

PROJECT MANUAL

TILE IMPROVEMENTS

DRAINAGE DISTRICT NO. 14

WORTH COUNTY, IOWA

BMI PROJECT NO. 0A1.124363

300 W. McKinley Street, PO Box 68, Jefferson, Iowa 50129

Phone: (515) 766-4423



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PROJECT AT A GLANCE

TILE IMPROVEMENTS
DRAINAGE DISTRICT NO. 14
WORTH COUNTY, IOWA
BMI PROJECT NO. 0A1.124363

1. Base Bid – Sections 1, 2 and 3: Project shall consist of installing 3,101 LF of 36” drainage tile including two borings, one 36” under the highway and one 48” under the railroad, and all associated work and incidentals required to complete the project.

Additional Alternate Sections: Section 4 includes installing 2,440 LF of 24” drainage tile, and all associated work and incidentals required to complete the project; Section 5 includes installing 2,774 LF of 18” drainage tile, and all associated work and incidentals required to complete the project; Section 6 includes installing 2,530 LF of 24” and 18” drainage tile, and all associated work and incidentals required to complete the project.

Bid to be awarded based on low Base Bid (Sections 1, 2 and 3). Alternates (Sections 4, 5 and/or 6) may be added. District may also upsize Section 1 to a 48” drainage tile. A decision will be made within 48 hours of bid opening.

2. Notice to Bidders: Publish Notice locally for two weeks.
Will be distributed via QuestCDN Project No. 8926144 and emailed to prospective contractors upon approval of plans and specifications by the Board of Supervisors.
3. Bid Opening: Monday, February 26th, 2024 at 10:15 A.M.
Worth County Courthouse, Auditor’s Office
Worth County Supervisors Board Room
1000 Central Avenue
Northwood, Iowa 50459

(Board may delay decision or award that day.)
4. Project Estimate: Base Bid - \$670,000
Total Alternates and Base Bid - \$1,100,000
5. Bid Security: 5% of Bid (Base Bid plus all Alternates)
6. Funding: Local to include Drainage Warrants at 8% interest.
7. Sales Tax: Sales Tax Exemption Certificates will be provided by the Worth County Auditor.

8. Completion Date: Work on the improvement shall commence upon receipt of signed Contracts and as stated in the Notice to Proceed. All work under the contract must be substantially completed by October 4th, 2024.
9. Liquidated Damages: \$500.00/Day
10. Landowner Notice: Letters will be sent to the owners where the work will be done informing them who will be doing the work and who to contact. The owners will be advised that work limit stakes will be marked along the full project site. They will be informed about the contract completion hearing and that damages measurements will be done by the Engineer for use in this hearing. Owners will be asked to inform their tenants of the work plans.
11. Contract Submittal Requirements:
Performance Bond - One year from completion of project.
Insurance requirements per SUDAS Specifications.

BOLTON & MENK, INC.

Jacob L. Hagan, P.E.
Project Engineer

CERTIFICATION

PROJECT MANUAL


FOR

TILE IMPROVEMENTS

DRAINAGE DISTRICT NO. 14

WORTH COUNTY, IOWA

BMI PROJECT NO. 0A1.124363

	<p>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.</p> <p><i>Jacob L. Hagan</i> _____ Date: <u>1/22/24</u></p> <p>Jacob L. Hagan, P.E. License No. 25738 My renewal date is December 31, 2024. Pages or sheets covered by this seal: All</p>
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**TILE IMPROVEMENTS
DRAINAGE DISTRICT NO. 14
WORTH COUNTY, IOWA**

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IMPROVEMENTS

DRAWINGS (UNDER SEPARATE COVER):

Twenty (20) sheets numbered A.01 through TC-215, inclusive, dated January 22, 2024, and with each sheet bearing the following general title:

Drainage District No. 14
Tile Improvements
Worth County, Iowa
2024

APPENDICES:

None

**This project is based on
SUDAS STANDARD SPECIFICATIONS, 2024 EDITION
unless modified herein.**

******END OF SECTION******

NOTICE TO BIDDERS
Tile Improvements
Drainage District No. 14
Worth County, Iowa

Time and Place for Filing Sealed Proposals. Sealed bids for the work comprising the repair and improvement as stated below must be filed before 10:15 A.M. on Monday, February 26th, 2024, in the office of the Worth County Auditor, Worth County Courthouse, 1000 Central Avenue, Northwood, Iowa 50459.

Time and Place Sealed Proposals Will be Opened and Considered. Sealed proposals will be opened and bids tabulated at 10.15 A.M. on Monday, February 26th, 2024, in the Board Room of the Worth County Board of Supervisors, for consideration by the Worth County Board of Supervisors at its meeting. The Worth County Board of Supervisors reserves the right to reject any and all bids.

Time for Commencement and Completion of Work. Work on the improvement shall commence upon approval of the contract by the Board, and as stated in the Notice to Proceed. All work under the Contract must be substantially completed no later than October 4th, 2024. Damages in the amount of \$500.00 per day will be assessed for each day the work remains incomplete.

Bid Security. Each bidder shall accompany its bid with bid security, as defined in Section 468.35a of the Iowa Code in the amount equal to five percent (5%) of the total amount of the Base Bid plus all Alternates.

Contract Documents. Copies of the project documents are available for a price of \$0.00 per set. This fee is refundable, provided the plans and specifications are returned complete and in good usable condition, and they are returned within fourteen (14) calendar days after the award of the project. Please make your check payable to Bolton & Menk, Inc. and send it to Bolton & Menk, Inc., 300 W. McKinley Street, PO Box 68, Jefferson, Iowa 50129, phone 515-766-4423. You may view the digital plan documents for free by entering QuestCDN Project #8926144 on the website's Project Search page. Documents may be downloaded for \$0.00. Please contact QuestCDN.com at 952-233-1632 or info@questcdn.com for assistance in free membership registration, viewing, downloading, and working with this digital project information.

Preference of Products and Labor. Preference shall be given to domestic construction materials by the contractor, subcontractors, material, men, and suppliers in performance of the contract and further, by virtue of statutory authority, preference will be given to products and provisions grown and coal produced within the State of Iowa, and to Iowa domestic labor, to the extent lawfully required under Iowa statutes. Failure to submit a fully completed Bidder Status Form with the bid may result in the bid being deemed nonresponsive and rejected.

Sales Tax Exemption Certificates. The bidder shall not include sales tax in the bid. The County Auditor will distribute tax exemption certificates and authorization letters to the Contractor and all subcontractors who are identified. The Contractor and subcontractor may make copies of the tax exemption certificates and provide a copy to each supplier providing construction materials. These tax exemption certificates and authorization letters are applicable only for this specific project under the Contract.

Payment. 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. The Board reserves the right to issue Drainage District Improvement Certificates pursuant to Chapter 468 of the Code of Iowa, as amended, which certificates may be given in exchange for outstanding warrants issued to the Contractor or to the holder thereof. Said warrants to be surrendered, if called by the Board, in exchange for Drainage District Improvement Certificates which shall be taken by the Contractor or holder at par and 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.

Project Description. Base Bid – Sections 1, 2 and 3: Project shall consist of installing 3,101 LF of 36” drainage tile including two borings, one 36” under the highway and one 48” under the railroad, and all associated work and incidentals required to complete the project.

Additional Alternate Sections: Section 4 includes installing 2,440 LF of 24” drainage tile, and all associated work and incidentals required to complete the project; Section 5 includes installing 2,774 LF of 18” drainage tile, and all associated work and incidentals required to complete the project; Section 6 includes installing 2,530 LF of 24” and 18” drainage tile, and all associated work and incidentals required to complete the project.

Bid to be awarded based on low Base Bid (Sections 1, 2 and 3). Alternates (Sections 4, 5 and/or 6) may be added. District may also upsize Section 1 to a 48” drainage tile. A decision will be made within 48 hours of bid opening.

This Notice is given by authority of the Worth County Board of Supervisors

Jacki Backhaus, County Auditor

******END OF SECTION*****

INSTRUCTIONS TO BIDDERS

Tile Improvements
Drainage District No. 14
Worth County, Iowa

The work comprising the above referenced project shall be constructed in accordance with the SUDAS Standard Specifications, 2024 Edition and as further modified by supplemental specifications and special provision included in the contract documents. The terms used in the contract version of the documents are defined in said Standard Specifications. Before submitting your bid, please review the requirements of Division One, General Provisions and Covenants. Please be certain that all documents have been completed properly, as failure to complete and sign all documents and to comply with the requirements listed below can cause your bid not to be read.

I. BID SECURITY

- A. The bid security must be in the minimum amount of 5% of the total Base Bid plus all Alternates (do not deduct the amount of deduct alternates). Bid security shall be in the form of a cashier’s check, a certified check drawn on a FDIC insured bank in Iowa or drawn on a FDIC insured bank chartered under the laws of the United States; or a certified share draft drawn on a credit union in Iowa or chartered under the laws of the United States; or a bid bond executed by a corporation authorized to contract as a surety in Iowa or satisfactory to the Jurisdiction.
- B. The bid bond must be submitted on the enclosed Bid Bond form as no other bid bond forms are acceptable. All signatures on the bid bond must be original signatures in ink; facsimile (fax) of any signature on the bid bond is not acceptable.
- C. Bid security other than said bid bond shall be in accordance with Chapter 468.35 of the Iowa Code.

II. SUBMISSION OF THE PROPOSAL AND IDENTITY OF BIDDER

- A. The proposal shall be sealed in an envelope, properly identified as the Proposal with the project title and the name and address of the bidder, and deposited with the Jurisdiction at or before the time and at the place provided in the Notice to Bidders. It is the sole responsibility of the bidder to see that its proposal is delivered to the Jurisdiction prior to the time for opening bids, along with the appropriate bid security sealed in the separate envelope identified as Bid Security and attached to the outside of the bid proposal envelope. Any proposal received after the scheduled time for the receiving of proposals will be returned to the bidder unopened and will not be considered.
- B. The following documents shall be completed, signed and returned in the Proposal envelope. The bid cannot be read if any of these documents are omitted from the Proposal envelope.
 - 1. PROPOSAL – Complete each of the following parts:
 - Part B – Acknowledgment of Addenda, if any have been issued;
 - Part C – Bid Items, Quantities and Prices;
 - Part F – Additional Requirements; and

ITEM NO.	DESCRIPTION OF ATTACHMENT
1.	NONE

- Part G – Identity of Bidder.

Sign the proposal. The signature on the proposal and all proposal attachments must be an original signature in ink signed by the same individual who is the Company Owner or an authorized Officer of the Company; copies or facsimile of any signature will not be accepted.

The following documents must be submitted as printed. No alterations, additions, or deletions are permitted. If the Bidder notes a requirement in the contract documents which the Bidder believes will require a conditioned or unsolicited alternate bid, the Bidder must immediately notify the Engineer in writing. The Engineer will issue any necessary interpretation by an addendum.

C. The general provisions and covenants, Division 1 of the 2024 SUDAS Standard Specifications are modified as follows:

1. Section 1020.1.09B, Unit Price Attachment.

A computer generated unit price attachment may be submitted by the Bidder as specified by this Section.

III. PROSECUTION AND PROGRESS OF THE WORK

A. The work is located approximately 1 mile South of Northwood, in Drainage District No. 14, Worth County, Iowa.

Work on the repair or improvement shall commence upon approval of the contract by the Board of Supervisors, and as stated in the Notice to Proceed. All work under the Contract must be substantially completed no later than October 4th, 2024. Damages in the amount of \$500.00 per day will be assessed for each day the project remains incomplete.

B. Community Events.

None.

C. Each successful bidder will be required to furnish a corporate surety bond in an amount equal to 100% of its contract price. Said bond shall be issued by a responsible surety approved by Drainage District No. 14, Worth County, Iowa, and shall guarantee the faithful performance of the contract and the terms and conditions therein contained and shall guarantee the prompt payment of all material and labor, and protect and save harmless Drainage District No. 14, Worth County, Iowa, from claims and damages of any kind caused by the operations of the contract and shall also guarantee the maintenance of the improvement caused by failures in materials and construction for a period of one year from and after acceptance of the contract.

D. Drainage District No. 14, Worth County, Iowa in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42U.S.C. 2000d to 2000d-4 and title 49 Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

IV. PREFERENCE OF PRODUCTS AND LABOR

- A. In accordance with Iowa statutes, a resident bidder shall be allowed a preference as against a 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 of foreign county 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.

V. TAXES

- A. The Worth County Auditor will issue a sales tax exemption certificate to the Contractor for all materials purchased on the project. The Worth County Auditor will issue the appropriate exemption certificates and authorization letters to the Contractor and all subcontractors completing work on the project. Tax exemption certificates are applicable only for the specific project for which the tax exemption certificate is issued.
- B. The Contractor shall provide a listing to the County identifying all appropriate subcontractors qualified for use of the tax exemption certificate. The Contractor and subcontractors may make copies of the certificate and provide to each supplier providing construction material a copy of the tax exemption certificate.
- C. Income Tax:
 - 1. Successful Bidder is subject to payment of Iowa income tax on income from this work in amounts prescribed by law.
 - 2. If successful bidder is a non Iowa partnership, individual or association, he shall furnish evidence prior to execution of contract that bond or securities have been posted with the Iowa Department of Revenue in the amount required by law.

******END OF SECTION******

PROPOSAL

Tile Improvements
Drainage District No. 14
Worth County, Iowa

PROPOSAL: PART A – SCOPE

Drainage District No. 14, Worth County, Iowa, hereinafter called the “Jurisdiction”, has need of a qualified contractor to complete the work comprising the below referenced repair or improvement. The undersigned Bidder hereby proposes to complete the work comprising the below referenced repair or improvement as specified in the contract documents, which are officially on file with the Jurisdiction, in the office of the County Auditor, at the prices hereinafter provided in Part C of the Proposal, for the following described improvements:

PROJECT DESCRIPTION: Base Bid – Sections 1, 2 and 3: Project shall consist of installing 3,101 LF of 36” drainage tile including two borings, one 36” under the highway and one 48” under the railroad, and all associated work and incidentals required to complete the project.

Additional Alternate Sections: Section 4 includes installing 2,440 LF of 24” drainage tile, and all associated work and incidentals required to complete the project; Section 5 includes installing 2,774 LF of 18” drainage tile, and all associated work and incidentals required to complete the project; Section 6 includes installing 2,530 LF of 24” and 18” drainage tile, and all associated work and incidentals required to complete the project.

Bid to be awarded based on low Base Bid (Sections 1, 2 and 3). Alternates (Sections 4, 5 and/or 6) may be added. District may also upsize Section 1 to a 48” drainage tile. A decision will be made within 48 hours of bid opening.

PROPOSAL: PART B – ACKNOWLEDGMENT OF ADDENDA

The Bidder hereby acknowledges that all addenda become a part of the contract documents when issued, and that each such addendum has been received and utilized in the preparation of this bid. The Bidder hereby acknowledges receipt of the following addenda by inserting the number of each addendum in the blanks below:

ADDENDUM NUMBER _____ ADDENDUM NUMBER _____
ADDENDUM NUMBER _____ ADDENDUM NUMBER _____

and certifies that said addenda were utilized in the preparation of this bid.

PROPOSAL: PART C – BID ITEMS AND QUANTITIES

UNIT BID PRICE CONTRACTS: The Bidder must provide the Unit Bid Price, the Total Bid Price, any Alternate Prices and the Total Construction Costs on the Proposal Attachment: Part C – Bid Items and Quantities. In case of discrepancy, the Unit Bid Price governs. The quantities shown on the Proposal Attachment: Part C – Bid Items and Quantities are approximate only, but are considered sufficiently adequate for the purpose of comparing bids. The Total Construction Cost shall be used only for the comparison of bids. The jurisdiction shall only use the Total Construction Cost for determining the sufficiency of the bid security.

BASE BID CONTRACTS: The Bidder must provide any Bid Prices, any Alternate Prices, and the Total of the Base Bid plus any Add-Alternates on the Proposal Attachment: Part C – Bid Items and Quantities. The Jurisdiction shall only use the Total Construction Cost for comparison of bids. The Total Construction Cost, including any Add-Alternates shall be used for determining the sufficiency of the bid security.

PROPOSAL: PART D – GENERAL

The Bidder hereby acknowledges that the Jurisdiction, in advertising for public bids for this project reserves the right to:

1. Reject any or all bids. Award of the contract, if any, to be to the lowest responsible, responsive bidder;
2. Reject any or all alternates in determining the items to be included in the contract. Designation of the lowest responsible, responsive bidder to be based on comparison of the total bid only, not including any alternates; and
3. Make such alterations in the contract documents or in the proposal quantities as it determines necessary in accordance with the contract documents after execution of the contract. Such alterations shall not be considered a waiver of any conditions of the contract documents, and shall not invalidate any of the provisions thereof.

The Bidder hereby agrees to:

1. Enter into a contract, if this proposal is selected, in the form approved by the Jurisdiction, provide proof of registration with the Iowa Division of Labor in accordance with Chapter 91C of the Iowa Code, and furnish a performance, payment and maintenance bond;
2. Forfeit bid security, not as a penalty but as liquidated damages, upon failure to enter into such contract and/or to furnish said bond;
3. Commence the work upon written Notice to Proceed;
4. Substantially complete the work no later than October 4th, 2024; and
5. Pay liquidated damages for noncompliance with said completion provisions at the rate of five hundred dollars (\$500.00) for each calendar day thereafter that the work remains incomplete.

PROPOSAL: PART E – NON-COLLUSION AFFIDAVIT

The Bidder hereby certifies:

1. That this proposal is not affected by, contingent on, or dependent on any other proposal submitted for any improvement with the Jurisdiction;
2. That no individual employed by the Bidder has employed any person to solicit or procure the work on this project, nor will any employee of the Bidder make any payment or agreement for payment of any compensation in connection with the procurement of this project;
3. That no part of the bid price received by the Bidder was or will be paid to any person, corporation, firm, association, or other organization for soliciting the bid, other than the payment of their normal compensation to persons regularly employed by the Bidder whose services in connection with the construction of the project were in the regular course of their duties for the Bidder;
4. That this proposal is genuine and not collusive or sham; that the Bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to submit a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought, by agreement or collusion, or communication or conference, with any person, to fix the bid price of the Bidder or of any other bidder, and that all statements in this proposal are true; and
5. That the individual(s) executing this proposal have the authority to execute this proposal on behalf of the Bidder.

PROPOSAL: PART F – ADDITIONAL REQUIREMENTS

The Bidder hereby agrees to comply with the additional requirements listed below which are included in this proposal and identified as proposal attachments:

ITEM NO. **DESCRIPTION OF ATTACHMENT**

1. None.

PROPOSAL: PART G – IDENTITY OF BIDDER

The bidder shall indicate whether the bid is submitted by a/an:

Individual, Sole Proprietorship

Bidder

Partnership

Signature

Corporation

By

Name (Print/Type) / Title

Limited Liability Company

Street Address

Joint-Venture; all parties must join-in
and execute all documents

Street Address

Other

City, State, Zip Code

The bidder shall enter its Public Registration
Number _____ - _____ issued by the
Iowa Commissioner of Labor Pursuant
Section 91C.5 of the Iowa Code.

Telephone Number

**Type or print the name and title of the company's
owner, president, CEO, etc. if a different person than
entered above**

Failure to provide said Registration Number
shall result in the bid being read under
advisement. A contract will not be executed
until the Contractor is registered.

Name

Title

**NOTE: The signature on this proposal must be an original signature in ink; copies, facsimiles,
or electronic signatures will not be accepted.**

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.

Tile Improvements
 Drainage District No. 14
 Worth County, Iowa

PROPOSAL ATTACHMENT: PART C – ITEMS AND QUANTITIES

This is a UNIT BID PRICE CONTRACT. The bidder must provide the Unit Bid Price, the total Bid Price, and the Total Bid Amount; in case of discrepancy, the Unit Bid Price governs. The Quantities shown on the Proposal Attachment: Part C – Bid Items and quantities are approximate only, but are considered sufficiently adequate for the purpose of comparing bids. The Jurisdiction shall only use the Total Bid Amount for comparison of bids.

Bid awarded based on low Base Bid of Sections 1, 2 and 3. All Alternate Sections and Pipe Upsizing Section must be completed for Bid to be considered.

BASE BID NO. 1 - ITEMS AND QUANTITIES					
Item No.	Description	Unit	Approx. Quantity	Unit Price	Amount
SECTION 1 – LOWER MAIN ON PRIVATE LANDS					
101	CLASS IV RCP, 36" DIAMETER	LF	175	\$	\$
102	CLASS III RCP, 36" DIAMETER	LF	2,926	\$	\$
103	18" ON 36" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
104	12" ON 36" DIAMETER RCP TEE, FABRICATION ONLY	EA	3	\$	\$
105	24" ON 36" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
106	36" DIAMETER RCP ELBOW SECTION, FABRICATION ONLY	EA	3	\$	\$
107	LATERAL TILE CONNECTIONS, 10" DIAMETER OR SMALLER	EA	7	\$	\$
108	LATERAL TILE CONNECTIONS, 12" DIAMETER OR LARGER	EA	1	\$	\$
109	STANDARD BAR GUARD INTAKE, 12" DIAMETER	EA	2	\$	\$
110	TILE TRENCH STABILIZATION AND CRADLING ROCK	TN	150	\$	\$
111	ADMINISTRATION OF EROSION MANAGEMENT PLAN	LS	1	\$	\$
112	CLEARING & GRUBBING	LS	1	\$	\$
113	EXPLORATORY EXCAVATION	HR	2	\$	\$
114	RIPRAP, CLASS E	TN	25	\$	\$
115	MOBILIZATION	LS	1	\$	\$
SUBTOTAL SECTION 1:					\$

Item No.	Description	Unit	Approx. Quantity	Unit Price	Amount
SECTION 2 – IOWA DOT HIGHWAY 65					
201	DRAIN TILE, TRENCHLESS, STEEL, 0.531" WALL, 36" DIAMETER	LF	88	\$	\$
202	CLASS III RCP, 36" DIAMETER	LF	37	\$	\$
203	12" ON 36" DIAMETER RCP TEE, FABRICATION ONLY	EA	2	\$	\$
204	12" HICKENBOTTOM INTAKE	EA	2	\$	\$
205	MULCH FURNISHED AND PLACED	AC	0.1	\$	\$
206	SEEDING AND FERTILIZING (RURAL)	AC	0.1	\$	\$
207	TRAFFIC CONTROL	LS	1	\$	\$
208	SILT FENCE – INSTALL AND REMOVE	LF	200	\$	\$
209	MOBILIZATION	LS	1	\$	\$
SUBTOTAL SECTION 2:					\$
SECTION 3 – UNION PACIFIC RAILROAD					
301	DRAIN TILE, TRENCHLESS, STEEL, 0.688" WALL, 48" DIAMETER	LF	100	\$	\$
302	TILE TRENCH STABILIZATION AND CRADLING ROCK	TN	80	\$	\$
*303	RAILROAD INSURANCE AND PERMITTING	LS	1	\$25,000.00	\$25,000.00
304	SILT FENCE – INSTALL AND REMOVE	LF	100	\$	\$
305	EXPLORATORY EXCAVATION	HR	2	\$	\$
306	MOBILIZATION	LS	1	\$	\$
SUBTOTAL SECTION 3:					\$
BASE BID TOTAL (SECTIONS 1, 2 & 3):					\$

* Bid Item Number 303 (Railroad Insurance and Permitting) – Actual Payment will be Your Actual Cost Plus an Additional 10% of the Actual Cost. The \$25,000.00 shown is an Estimated Cost. Please use this number in your Bid Proposal. Final Amount of Item Number 303 will be the Actual Cost plus 10% and will be the amount shown on the Contract.

ALTERNATE SECTIONS - ITEMS AND QUANTITIES					
Item No.	Description	Unit	Approx. Quantity	Unit Price	Amount
SECTION 4 – UPPER MAIN ON PRIVATE LANDS					
401	CLASS III RCP, 24" DIAMETER	LF	2,440	\$	\$
402	12" ON 24" DIAMETER RCP TEE, FABRICATION ONLY	EA	2	\$	\$
403	15" ON 24" DIAMETER RCP TEE, FABRICATION ONLY	EA	3	\$	\$
404	LATERAL TILE CONNECTIONS, 10" DIAMETER OR SMALLER	EA	6	\$	\$
405	LATERAL TILE CONNECTIONS, 12" DIAMETER OR LARGER	EA	3	\$	\$
406	STANDARD BAR GUARD INTAKE, 12" DIAMETER	EA	2	\$	\$
407	TILE TRENCH STABILIZATION AND CRADLING ROCK	TN	125	\$	\$
408	ADMINISTRATION OF EROSION MANAGEMENT PLAN	LS	1	\$	\$
409	EXPLORATORY EXCAVATION	HR	2	\$	\$
410	MOBILIZATION	LS	1	\$	\$
SUBTOTAL SECTION 4:					\$
SECTION 5 – LATERAL 4 ON PRIVATE LANDS					
501	CLASS III RCP, 18" DIAMETER	LF	2,774	\$	\$
502	12" ON 18" DIAMETER RCP TEE, FABRICATION ONLY	EA	2	\$	\$
503	18" DIAMETER RCP ELBOW SECTION, FABRICATION ONLY	EA	2	\$	\$
504	LATERAL TILE CONNECTIONS, 10" DIAMETER OR SMALLER	EA	8	\$	\$
505	LATERAL TILE CONNECTIONS, 12" DIAMETER OR LARGER	EA	1	\$	\$
506	STANDARD BAR GUARD INTAKE, 12" DIAMETER	EA	3	\$	\$
507	TILE TRENCH STABILIZATION AND CRADLING ROCK	TN	125	\$	\$
508	ADMINISTRATION OF EROSION MANAGEMENT PLAN	LS	1	\$	\$
509	EXPLORATORY EXCAVATION	HR	2	\$	\$
510	MOBILIZATION	LS	1	\$	\$
SUBTOTAL SECTION 5:					\$

Item No.	Description	Unit	Approx. Quantity	Unit Price	Amount
SECTION 6 – LATERAL 5 ON PRIVATE LANDS					
601	CLASS III RCP, 24" DIAMETER	LF	1,600	\$	\$
602	CLASS III RCP, 18" DIAMETER	LF	930	\$	\$
603	CORRUGATED DRAIN PIPE, 10"	LF	50	\$	\$
604	15" ON 24" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
605	12" ON 24" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
606	12" ON 18" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
607	24" DIAMETER RCP ELBOW SECTION, FABRICATION ONLY	EA	2	\$	\$
608	24" TO 18" DIAMETER RCP REDUCER SECTION, FABRICATION ONLY	EA	1	\$	\$
609	LATERAL TILE CONNECTIONS, 10" DIAMETER OR SMALLER	EA	7	\$	\$
610	LATERAL TILE CONNECTIONS, 12" DIAMETER OR LARGER	EA	1	\$	\$
611	STANDARD BAR GUARD INTAKE, 12" DIAMETER	EA	2	\$	\$
612	TILE TRENCH STABILIZATION AND CRADLING ROCK	TN	125	\$	\$
613	ADMINISTRATION OF EROSION MANAGEMENT PLAN	LS	1	\$	\$
614	EXPLORATORY EXCAVATION	HR	2	\$	\$
615	MOBILIZATION	LS	1	\$	\$
SUBTOTAL SECTION 6:					\$
ALTERNATE SECTIONS BID TOTAL (SECTIONS 4, 5 & 6):					\$
TOTAL BASE BID PLUS ALTERNATE SECTIONS (SECTIONS 1 – 6):					\$

ALTERNATE UPGRADED PIPE SIZES FOR SECTIONS 1 & 2					
Item No.	Description	Unit	Approx. Quantity	Unit Price	Amount
101A	CLASS IV RCP, 48" DIAMETER	LF	175	\$	\$
102A/202A	CLASS III RCP, 48" DIAMETER	LF	2,963	\$	\$
103A	18" ON 48" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
104A/203A	12" ON 48" DIAMETER RCP TEE, FABRICATION ONLY	EA	5	\$	\$
105A	24" ON 48" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
106A	48" DIAMETER RCP ELBOW SECTION, FABRICATION ONLY	EA	3	\$	\$
201A	DRAIN TILE, TRENCHLESS, STEEL, 0.688" WALL, 48" DIAMETER	LF	88	\$	\$

NOTE: BIDDER UNDERSTANDS THAT THE OWNER RESERVES THE RIGHT TO REJECT AS UNACCEPTABLE ANY BID THAT OWNER DETERMINES TO BE UNBALANCED BETWEEN BID ITEMS OR SECTIONS SUBTOTALS.

IT IS UNDERSTOOD THAT THE ABOVE QUANTITIES ARE ESTIMATED FOR THE PURPOSE OF THIS BID. ALL QUANTITIES ARE SUBJECT TO REVISION BY THE DISTRICT. QUANTITY CHANGES WHICH AMOUNT TO TWENTY (20) PERCENT OR LESS OF THE TOTAL BID SHALL NOT AFFECT THE UNIT PRICE BID.

Bidder Name

BID BOND

Tile Improvements
Drainage District No. 14
Worth County, Iowa

KNOW ALL BY THESE PRESENT:

That we, _____, as Principal, and _____, as Surety, are held and firmly bound unto, Drainage District No. 14, Worth County, Iowa, as Obligee, (hereinafter referred to as "the Jurisdiction"), in the penal sum of _____ Dollars (\$ _____), lawful money of the United States, for which payment said Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents. The condition of the above obligation is such that whereas the Principal has submitted to the Jurisdiction a certain proposal, in a separate envelope, and hereby made a part hereof, to enter into a contract in writing, for the following described improvements;

PROJECT DESCRIPTION: Base Bid – Sections 1, 2 and 3: Project shall consist of installing 3,101 LF of 36" drainage tile including two borings, one 36" under the highway and one 48" under the railroad, and all associated work and incidentals required to complete the project.

Additional Alternate Sections: Section 4 includes installing 2,440 LF of 24" drainage tile, and all associated work and incidentals required to complete the project; Section 5 includes installing 2,774 LF of 18" drainage tile, and all associated work and incidentals required to complete the project; Section 6 includes installing 2,530 LF of 24" and 18" drainage tile, and all associated work and incidentals required to complete the project.

Bid to be awarded based on low Base Bid (Sections 1, 2 and 3). Alternates (Sections 4, 5 and/or 6) may be added. District may also upsize Section 1 to a 48" drainage tile. A decision will be made within 48 hours of bid opening.

The Surety hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Jurisdiction may accept such bid or execute such Contract; and said Surety does hereby waive notice of any such extension.

In the event that any actions or proceedings are initiated with respect to this Bond, the parties agree that the venue thereof shall be Worth County, State of Iowa. If legal action is required by the Jurisdiction against the Surety or Principal to enforce the provisions of the bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Surety or Principal agrees to pay the Jurisdiction all damages, costs, and attorney fees incurred by enforcing any of the provisions of this Bond. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to all rights, powers and remedies given to the Jurisdiction, by law. The Jurisdiction may proceed against Surety for any amount guaranteed hereunder whether action is brought against Principal or whether Principal is joined in any such action or actions or not.

NOW, THEREFORE, if said proposal by the Principal be accepted, and the Principal shall enter into a contract with Jurisdiction in accordance with the terms of such proposal, including the provision of insurance and of a bond as may be specified in the contract documents, with good and sufficient surety for the faithful performance of such contract, for the prompt payment of labor and material furnished in the prosecution thereof, and for the maintenance of said improvements as may be required therein, then this obligation shall become null and void; otherwise, the Principal shall pay to the Jurisdiction the full amount of the bid bond, together with court costs, attorney's fees, and any other expense of recovery.

Signed and sealed this _____ day of _____, 2024.

SURETY:

PRINCIPAL:

By _____
Surety Company

Signature Attorney-in-Fact/Officer

Name of Attorney-in-Fact/Officer

Company Name

Company Address

City, State, Zip Code

Company Telephone Number

By _____
Bidder

Signature

Name (Print/Type)

Title

Address

City, State, Zip Code

Telephone Number

NOTE: All signatures on this bid bond must be original signatures in ink; copies or facsimile of any signature will not be accepted. This bond must be sealed with the Surety's raised, embossing seal or official adhesive seal. The Certificate or Power of Attorney accompanying this bond must be valid on its face and sealed with the Surety's raised, embossing seal or official adhesive seal.

CONTRACT

Tile Improvements
Drainage District No. 14
Worth County, Iowa

THIS CONTRACT, made and entered into this _____ day of _____, 2024, by and between Drainage District No. 14, Worth County, Iowa, hereinafter called the "Jurisdiction", and _____ hereinafter called the "Contractor".

WITNESSETH:

The Contractor hereby agrees to complete the work comprising of the Tile Improvements as specified in the contract documents, which are officially on file with the Jurisdiction, in the office of the Worth County Auditor, Worth County Courthouse, 1000 Central Avenue, Northwood, Iowa 50459. This contract includes all such contract documents. All work under this contract shall be constructed in accordance with the SUDAS Standard Specifications, 2024 Edition, and as further modified by the supplemental specifications and special provisions included in said contract documents, and the Contract Attachment which is attached hereto. The Contractor further agrees to complete the work in strict accordance with said contract documents, and to guarantee the work as required by law, for the time required in said contract documents, after its acceptance by the Jurisdiction.

This contract is awarded and executed for completion of the work specified in the contract documents for the bid prices shown on the Contract Attachment: Bid Items and Quantities, which were proposed by the Contractor in its proposal submitted in accordance with the Notice to Bidders and Notice of Public Hearing for the following described improvements:

PROJECT DESCRIPTION: Base Bid – Sections 1, 2 and 3: Project shall consist of installing 3,101 LF of 36” drainage tile including two borings, one 36” under the highway and one 48” under the railroad, and all associated work and incidentals required to complete the project.

Additional Alternate Sections: Section 4 includes installing 2,440 LF of 24” drainage tile, and all associated work and incidentals required to complete the project; Section 5 includes installing 2,774 LF of 18” drainage tile, and all associated work and incidentals required to complete the project; Section 6 includes installing 2,530 LF of 24” and 18” drainage tile, and all associated work and incidentals required to complete the project.

Bid to be awarded based on low Base Bid (Sections 1, 2 and 3). Alternates (Sections 4, 5 and/or 6) may be added. District may also upsize Section 1 to a 48” drainage tile. A decision will be made within 48 hours of bid opening.

The Contractor agrees to perform said work for and in consideration of the Jurisdiction’s payment of the bid amount of _____ Dollars (\$ _____), which amount shall constitute the required amount of the performance, payment and maintenance bond. The Contractor hereby agrees to commence work as stated in the written Notice to Proceed; and substantially completed no later than October 4th, 2024; and to pay liquidated damages for noncompliance with said completion provisions at a rate of Five Hundred Dollars (\$500.00) for each calendar day that the work remains incomplete.

IN WITNESS WHEREOF, the Parties hereto have executed this instrument, in triplicate on the date first shown written.

JURISDICTION:
Worth County Board of Supervisors

CONTRACTOR:

By _____
AJ Stone, Chairman of the Board

Company Name

(Seal)
ATTEST:

By _____
Contractor's Contact Name

Jacki Backhaus, County Auditor

Title

Street Address

City, State, Zip Code

Telephone

CONTRACTOR PUBLIC REGISTRATION INFORMATION To Be Provided By:

1. All Contractors: The Contractor shall enter its Public Registration No. _____ issued by the Iowa Commissioner of Labor pursuant to Section 91C.5 of the Iowa Code.
2. Out-of-State Contractors:
 - A. Pursuant to Section 91C.7 of the Iowa Code, an out-of-state contractor, before commencing a contract in excess of five thousand dollars in value in Iowa, shall file a bond with the division of labor services of the department of workforce development. The contractor should contact 515-242-5871 for further information. Prior to contract execution, the Jurisdictional Engineer may forward a copy of this contract to the Iowa Department of Workforce Development as notification of pending construction work. It is the contractor’s responsibility to comply with said Section 91C.7 before commencing this work.
 - B. Prior to entering into contract, the designated low bidder, if it be a corporation organized under the laws of a state other than Iowa, shall file with the Jurisdictional Engineer a certificate from the Secretary of the State of Iowa showing that it has complied with all the provisions of Chapter 490 of the Code of Iowa, or as amended, governing foreign corporations. For further information contact the Iowa Secretary of State Office at 515-281-5204.

Bond No. _____

Name of Surety _____

NOTE: All signatures on this contract must be original signatures in ink; copies or facsimile of any signature will not be accepted.

CORPORATE ACKNOWLEDGMENT

State of _____)
) SS
_____ County)

On this ____ day of _____, 2024, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ and _____, to me known, who, being by me duly sworn, did say that they are the _____, and _____, respectively, of the corporation executing the foregoing instrument; that (no seal has been procured by) (the seal affixed thereto is the seal of) the corporation; that said instrument was signed (and sealed) on behalf of the corporation by authority of this Board of Directors; that _____ and _____ acknowledged the execution of the instrument to be the voluntary act and deed of the corporation, by it and by them voluntarily executed.

Notary Public in and for the State of _____
My commission expires _____, 20____

PARTNERSHIP ACKNOWLEDGMENT

State of _____)
) SS
_____ County)

On this ____ day of _____, 2024, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ to me personally known, who being by me duly sworn, did say that the person is one of the partners of _____ a partnership, and that the instrument was signed on behalf of the partnership by authority of the partners and the partner acknowledged the execution of the instrument to be the voluntary act and deed of the partnership by it and by the partner voluntarily executed.

Notary Public in and for the State of _____
My commission expires _____, 20_____

INDIVIDUAL ACKNOWLEDGMENT

State of _____)
) SS
_____ County)

On this ____ day of _____, 2024, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ and _____ to me known to be the identical person(s) named in and who executed the foregoing instrument, and acknowledged that (he) (she) (they) executed the instrument as (his) (her) (their) voluntary act and deed.

Notary Public in and for the State of _____
My commission expires _____, 20_____

LIMITED LIABILITY COMPANY ACKNOWLEDGMENT

State of _____)
) SS
_____ County)

On this ____ day of _____, 2024, before me a Notary Public in and for said county, personally appeared _____, to me personally known, who being by me duly sworn did say that person is _____ of said _____, that (the seal affixed to said instrument is the seal of said OR no seal has been procured by the said) _____, and that said instrument was signed and sealed on behalf of the said _____, by authority of its managers and the said _____ acknowledged the execution of said instrument to be the voluntary act and deed of said _____, by it voluntarily executed.

Notary Public in and for the State of _____
My commission expires _____, 20_____

CONTRACT ATTACHMENT: ITEM 1: GENERAL – None

CONTRACT ATTACHMENT: ITEM 2: BID ITEMS AND QUANTITIES (EITHER BASE OR ALTERNATE)

THIS CONTRACT IS AWARDED AND EXECUTED FOR COMPLETION OF THE WORK SPECIFIED IN THE CONTRACT DOCUMENTS FOR THE BID PRICES TABULATED BELOW AS PROPOSED BY THE CONTRACTOR IN ITS PROPOSAL SUBMITTED IN ACCORDANCE WITH NOTICE TO BIDDERS AND NOTICE OF PUBLIC HEARING. ALL QUANTITIES ARE SUBJECT TO REVISION BY THE JURISDICTION. THE JURISDICTION RESERVES THE RIGHT TO ADJUST QUANTITIES AS NECESSARY TO MAXIMIZE FUNDS BUDGETED FOR THIS PROJECT.

BASE BID NO. 1 - ITEMS AND QUANTITIES					
Item No.	Description	Unit	Approx. Quantity	Unit Price	Amount
SECTION 1 – LOWER MAIN ON PRIVATE LANDS					
101	CLASS IV RCP, 36" DIAMETER	LF	175	\$	\$
102	CLASS III RCP, 36" DIAMETER	LF	2,926	\$	\$
103	18" ON 36" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
104	12" ON 36" DIAMETER RCP TEE, FABRICATION ONLY	EA	3	\$	\$
105	24" ON 36" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
106	36" DIAMETER RCP ELBOW SECTION, FABRICATION ONLY	EA	3	\$	\$
107	LATERAL TILE CONNECTIONS, 10" DIAMETER OR SMALLER	EA	7	\$	\$
108	LATERAL TILE CONNECTIONS, 12" DIAMETER OR LARGER	EA	1	\$	\$
109	STANDARD BAR GUARD INTAKE, 12" DIAMETER	EA	2	\$	\$
110	TILE TRENCH STABILIZATION AND CRADLING ROCK	TN	150	\$	\$
111	ADMINISTRATION OF EROSION MANAGEMENT PLAN	LS	1	\$	\$
112	CLEARING & GRUBBING	LS	1	\$	\$
113	EXPLORATORY EXCAVATION	HR	2	\$	\$
114	RIPRAP, CLASS E	TN	25	\$	\$
115	MOBILIZATION	LS	1	\$	\$
SUBTOTAL SECTION 1:					\$

Item No.	Description	Unit	Approx. Quantity	Unit Price	Amount
SECTION 2 – IOWA DOT HIGHWAY 65					
201	DRAIN TILE, TRENCHLESS, STEEL, 0.531" WALL, 36" DIAMETER	LF	88	\$	\$
202	CLASS III RCP, 36" DIAMETER	LF	37	\$	\$
203	12" ON 36" DIAMETER RCP TEE, FABRICATION ONLY	EA	2	\$	\$
204	12" HICKENBOTTOM INTAKE	EA	2	\$	\$
205	MULCH FURNISHED AND PLACED	AC	0.1	\$	\$
206	SEEDING AND FERTILIZING (RURAL)	AC	0.1	\$	\$
207	TRAFFIC CONTROL	LS	1	\$	\$
208	SILT FENCE – INSTALL AND REMOVE	LF	200	\$	\$
209	MOBILIZATION	LS	1	\$	\$
SUBTOTAL SECTION 2:					\$
SECTION 3 – UNION PACIFIC RAILROAD					
301	DRAIN TILE, TRENCHLESS, STEEL, 0.688" WALL, 48" DIAMETER	LF	100	\$	\$
302	TILE TRENCH STABILIZATION AND CRADLING ROCK	TN	80	\$	\$
303	RAILROAD INSURANCE AND PERMITTING	LS	1	\$	\$
304	SILT FENCE – INSTALL AND REMOVE	LF	100	\$	\$
305	EXPLORATORY EXCAVATION	HR	2	\$	\$
306	MOBILIZATION	LS	1	\$	\$
SUBTOTAL SECTION 3:					\$
BASE BID TOTAL (SECTIONS 1, 2 & 3):					\$

ALTERNATE SECTIONS - ITEMS AND QUANTITIES					
Item No.	Description	Unit	Approx. Quantity	Unit Price	Amount
SECTION 4 – UPPER MAIN ON PRIVATE LANDS					
401	CLASS III RCP, 24" DIAMETER	LF	2,440	\$	\$
402	12" ON 24" DIAMETER RCP TEE, FABRICATION ONLY	EA	2	\$	\$
403	15" ON 24" DIAMETER RCP TEE, FABRICATION ONLY	EA	3	\$	\$
404	LATERAL TILE CONNECTIONS, 10" DIAMETER OR SMALLER	EA	6	\$	\$
405	LATERAL TILE CONNECTIONS, 12" DIAMETER OR LARGER	EA	3	\$	\$
406	STANDARD BAR GUARD INTAKE, 12" DIAMETER	EA	2	\$	\$
407	TILE TRENCH STABILIZATION AND CRADLING ROCK	TN	125	\$	\$
408	ADMINISTRATION OF EROSION MANAGEMENT PLAN	LS	1	\$	\$
409	EXPLORATORY EXCAVATION	HR	2	\$	\$
410	MOBILIZATION	LS	1	\$	\$
SUBTOTAL SECTION 4:					\$
SECTION 5 – LATERAL 4 ON PRIVATE LANDS					
501	CLASS III RCP, 18" DIAMETER	LF	2,774	\$	\$
502	12" ON 18" DIAMETER RCP TEE, FABRICATION ONLY	EA	2	\$	\$
503	18" DIAMETER RCP ELBOW SECTION, FABRICATION ONLY	EA	2	\$	\$
504	LATERAL TILE CONNECTIONS, 10" DIAMETER OR SMALLER	EA	8	\$	\$
505	LATERAL TILE CONNECTIONS, 12" DIAMETER OR LARGER	EA	1	\$	\$
506	STANDARD BAR GUARD INTAKE, 12" DIAMETER	EA	3	\$	\$
507	TILE TRENCH STABILIZATION AND CRADLING ROCK	TN	125	\$	\$
508	ADMINISTRATION OF EROSION MANAGEMENT PLAN	LS	1	\$	\$
509	EXPLORATORY EXCAVATION	HR	2	\$	\$
510	MOBILIZATION	LS	1	\$	\$
SUBTOTAL SECTION 5:					\$

Item No.	Description	Unit	Approx. Quantity	Unit Price	Amount
SECTION 6 – LATERAL 5 ON PRIVATE LANDS					
601	CLASS III RCP, 24" DIAMETER	LF	1,600	\$	\$
602	CLASS III RCP, 18" DIAMETER	LF	930	\$	\$
603	CORRUGATED DRAIN PIPE, 10"	LF	50	\$	\$
604	15" ON 24" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
605	12" ON 24" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
606	12" ON 18" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
607	24" DIAMETER RCP ELBOW SECTION, FABRICATION ONLY	EA	2	\$	\$
608	24" TO 18" DIAMETER RCP REDUCER SECTION, FABRICATION ONLY	EA	1	\$	\$
609	LATERAL TILE CONNECTIONS, 10" DIAMETER OR SMALLER	EA	7	\$	\$
610	LATERAL TILE CONNECTIONS, 12" DIAMETER OR LARGER	EA	1	\$	\$
611	STANDARD BAR GUARD INTAKE, 12" DIAMETER	EA	2	\$	\$
612	TILE TRENCH STABILIZATION AND CRADLING ROCK	TN	125	\$	\$
613	ADMINISTRATION OF EROSION MANAGEMENT PLAN	LS	1	\$	\$
614	EXPLORATORY EXCAVATION	HR	2	\$	\$
615	MOBILIZATION	LS	1	\$	\$
SUBTOTAL SECTION 6:					\$
ALTERNATE SECTIONS BID TOTAL (SECTIONS 4, 5 & 6):					\$
TOTAL BASE BID PLUS ALTERNATE SECTIONS (SECTIONS 1 – 6):					\$

ALTERNATE UPGRADED PIPE SIZES FOR SECTIONS 1 & 2					
Item No.	Description	Unit	Approx. Quantity	Unit Price	Amount
101A	CLASS IV RCP, 48" DIAMETER	LF	175	\$	\$
102A/202A	CLASS III RCP, 48" DIAMETER	LF	2,963	\$	\$
103A	18" ON 48" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
104A/203A	12" ON 48" DIAMETER RCP TEE, FABRICATION ONLY	EA	5	\$	\$
105A	24" ON 48" DIAMETER RCP TEE, FABRICATION ONLY	EA	1	\$	\$
106A	48" DIAMETER RCP ELBOW SECTION, FABRICATION ONLY	EA	3	\$	\$
201A	DRAIN TILE, TRENCHLESS, STEEL, 0.688" WALL, 48" DIAMETER	LF	88	\$	\$

NOTE: IT IS UNDERSTOOD THAT THE ABOVE QUANTITIES ARE ESTIMATED FOR THE PURPOSE OF THIS BID. ALL QUANTITIES ARE SUBJECT TO REVISION BY THE DISTRICT. QUANTITY CHANGES WHICH AMOUNT TO TWENTY (20) PERCENT OR LESS OF THE TOTAL BID SHALL NOT AFFECT THE UNIT PRICE BID.

Bidder Name

PERFORMANCE, PAYMENT AND MAINTENANCE BOND

Tile Improvements
Drainage District No. 14
Worth County, Iowa

KNOW ALL BY THESE PRESENT:

That we, _____, as Principal (hereinafter the "Contractor" or "Principal"), and _____, as Surety are held and firmly bound unto Drainage District No. 2, Worth County, Iowa, as Obligee (hereinafter referred to as "the Jurisdiction"), and to all persons who may be injured by any breach of any of the conditions of this Bond in the penal sum of _____ DOLLARS (\$ _____), lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, legal representatives and assigns, jointly or severally, firmly by these present.

The conditions of the above obligations are such that whereas said Contractor entered into a contract with the Jurisdiction, bearing date the _____ day of _____, 2024, (hereinafter the "Contract"), wherein said Contractor undertakes and agrees to construct the following described improvements:

PROJECT DESCRIPTION: Base Bid – Sections 1, 2 and 3: Project shall consist of installing 3,101 LF of 36" drainage tile including two borings, one 36" under the highway and one 48" under the railroad, and all associated work and incidentals required to complete the project.

Additional Alternate Sections: Section 4 includes installing 2,440 LF of 24" drainage tile, and all associated work and incidentals required to complete the project; Section 5 includes installing 2,774 LF of 18" drainage tile, and all associated work and incidentals required to complete the project; Section 6 includes installing 2,530 LF of 24" and 18" drainage tile, and all associated work and incidentals required to complete the project.

Bid to be awarded based on low Base Bid (Sections 1, 2 and 3). Alternates (Sections 4, 5 and/or 6) may be added. District may also upsize Section 1 to a 48" drainage tile. A decision will be made within 48 hours of bid opening.

and to faithfully perform all the terms and requirements of said Contract within the time therein specified, in a good and workmanlike manner, and in accordance with the Contract Documents. Provided, however, that one year after the date of acceptance as complete of the work under the above referenced Contract, the maintenance portion of this Bond shall continue in force for the stated maintenance period.

It is expressly understood and agreed by the Contractor and Surety in this Bond that the following provisions are a part of this Bond and are binding upon said Contractor and Surety, to-wit:

PERFORMANCE: The Contractor shall well and faithfully observe, perform, fulfill and abide by each and every covenant, condition and part of said Contract and Contract Documents, by reference made a part hereof, for the above referenced improvements, and shall indemnify and save harmless the Jurisdiction from all outlay and expense incurred by the Jurisdiction by reason of the Contractor's default of failure to perform as required. The Contractor shall also be responsible for the default or failure to perform as required under the Contract and

Contract Documents by all its subcontractors, suppliers, agents, or employees furnishing materials or providing labor in the performance of the Contract.

PAYMENT: The Contractor and the Surety on this Bond are hereby agreed to pay all just claims submitted by persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the performance of the Contract on account of which this Bond is given, including but not limited to claims for all amounts due for labor, materials, lubricants, oil, gasoline, repairs on machinery, equipment and tools, consumed or used by the Contractor or any subcontractor, wherein the same are not satisfied out of the portion of the contract price which the Jurisdiction is required to retain until completion of the improvement, but the Contractor and Surety shall not be liable to said persons, firms, or corporations unless the claims of said claimants against said portion of the contract price shall have been established as provided by law. The Contractor and Surety hereby bind themselves to the obligations and conditions set forth in Chapter 573, Code of Iowa, which by this reference is made a part hereof as though fully set out herein.

MAINTENANCE: The Contractor and the Surety on this Bond hereby agree, at their own expense:

To remedy any and all defects that may develop in or result from work to be performed under the Contract within the of 1 year period for agricultural work, from the date of acceptance of the work under the Contract, by reason of defects in workmanship or materials used in construction of said work;

To keep all work in continuous good repair; and

To pay the Jurisdiction's reasonable costs of monitoring and inspection to assure that any defects are remedied, and to repay the Jurisdiction all outlay and expense incurred as a result of Contractor's and Surety's failure to remedy any defect as required by this section.

Contractor's and Surety's agreement herein made extends to defects in workmanship or materials not discovered or known to the Jurisdiction at the time such work was accepted.

GENERAL: Every Surety on this Bond shall be deemed and held bound, any contract to the contrary notwithstanding, to the following provisions:

To consent without notice to any extension of time to the Contractor in which to perform the Contract;

To consent without notice to any change in the Contract or Contract Documents, which thereby increases the total contract price and the penal sum of this Bond, provided that all such changes do not, in the aggregate, involve an increase of more than twenty percent of the total contract price, and that this Bond shall then be released as to such excess increase; and

To consent without notice that this Bond shall remain in full force and effect until the Contract is completed, whether completed within the specified contract period, within an extension thereof, or within a period of time after the contract period has elapsed and the liquidated damage penalty is being charged against the Contractor.

The Contractor and every Surety on the Bond shall be deemed and held bound, any contract to the contrary notwithstanding, to the following provisions:

That no provision of this Bond or of any other Contract shall be valid which limits to less than five years after the acceptance of the work under the Contract the right to sue on this Bond.

That as used herein, the phrase "all outlay and expense" is not to be limited in any way, but shall include the actual and reasonable costs and expenses incurred by the Jurisdiction including interest, benefits and overhead where applicable. Accordingly, "all outlay and expense" would include but not be limited to all contract or employee expense, all equipment usage or rental, materials, testing, outside experts, attorneys fees (including overhead expenses of the Jurisdiction's staff attorneys), and all costs and expenses of litigation as they are incurred by the

Jurisdiction. It is intended the Contractor and Surety will defend and indemnify the Jurisdiction on all claims made against the Jurisdiction on account of Contractor's failure to perform as required in the Contract and Contract Documents, that all agreements and promises set forth in the Contract and Contract Documents, in approved change orders, and in this Bond will be fulfilled, and that the Jurisdiction will be fully indemnified so that it will be put into the position it would have been in had the Contract been performed in the first instance as required.

In the event the Jurisdiction incurs any "outlay and expense" in defending itself with respect to any claim as to which the Contractor or Surety should have provided the defense, or in the enforcement of the promises given by the Contractor in the Contract, Contract Documents, or approved change orders, or in the enforcement of the promises given by the Contractor and Surety in this Bond, the Contractor and Surety agree that they will make the Jurisdiction whole for all such outlay and expense, provided that the Surety's obligation under this Bond shall not exceed 125% of the penal sum of this Bond.

In the event that any actions or proceedings are initiated with respect to this Bond, the parties agree that the venue thereof shall be Worth County, State of Iowa. If legal action is required by the Jurisdiction to enforce the provisions of this Bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Contractor and the Surety agree, jointly and severally, to pay the Jurisdiction all outlay and expense incurred therefore by the Jurisdiction. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to all rights, powers and remedies given to the Jurisdiction, by law. The Jurisdiction may proceed against surety for any amount guaranteed hereunder whether action is brought against the Contractor or whether Contractor is joined in any such action or actions or not.

NOW THEREFORE, the condition of this obligation is such that if said Principal shall faithfully perform all the promises of the Principal, as set forth and provided in the Contract, in the Contract Documents, and in this Bond, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

When a work, term, or phrase is used in this Bond, it shall be interpreted or construed first as defined in this Bond, the Contract, or the Contract Documents; second, if not defined in the Bond, Contract, or Contract Documents, it shall be interpreted or construed as defined in applicable provisions of the Iowa Code; third, if not defined in the Iowa Code, it shall be interpreted or construed according to its generally accepted meaning in the construction industry; and fourth, if it has no generally accepted meaning in the construction industry, it shall be interpreted or construed according to its common or customary usage.

Failure to specify or particularize shall not exclude terms or provisions not mentioned and shall not limit liability hereunder. The Contract and Contract Documents are hereby made a part of this Bond.

(CON'T – PERFORMANCE, PAYMENT AND MAINTENANCE BOND)

Witness our hands, in triplicate, this _____ day of _____, 2024.

Surety Countersigned By:

PRINCIPAL:

Signature of Iowa Resident Commission Agent as
Prescribed by Chapter 515.52-57, Iowa Code.
(Require only if Attorney-in-Fact is not also an
Iowa Resident Commission Agent).

Contractor

By:

Signature

Name of Resident Commission Agent

Title

Company Name

SURETY:

Company Address

Surety Company

City, State, Zip Code

By:

Signature Attorney-in-Fact Officer

Company Telephone Number

Name of Attorney-in-Fact Officer

Company Name

Company Address

City, State, Zip Code

Company Telephone Number

NOTE: All signatures on this Performance, Payment and Maintenance Bond must be original signatures in ink; copies or facsimile of any signature will not be accepted. This Bond must be sealed with the Surety's raised, embossing seal or official adhesive seal. The Certificate or Power of Attorney accompanying this Bond must be valid on its face and sealed with the Surety's raised, embossing seal or official adhesive seal.

SPECIAL PROVISIONS
FOR
PART 1 - GENERAL REQUIREMENTS
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20. INCIDENTAL CONTRACT ITEMS

1. DEFINITION AND INTENT

- A. The Technical Specifications that apply to the materials and construction practices for this project are defined as follows:
 1. The 2024 Edition of the SUDAS Standard Specifications, except as modified by these Special Provisions to the Technical Specifications.
 2. Omissions of words or phrases such as “the Contractor shall”, “in accordance with”, “shall be”, “as noted on the Plans”, “according to the Plans”, “a”, “an”, “the” and “all” are unintentional; supply omitted words or phrases by inference.
 3. “Owner”, and “District” shall mean Drainage District No. 2, Worth County, Iowa, acting through the Worth County Board of Supervisors.
 4. “Person” shall mean any individual, partnership, limited partnership, joint venture, society, association, joint stock company, corporation, limited liability company, estate, receiver, trustee, assignee, or referee, whether appointed by a court or otherwise, and any combination of individuals.
 5. “Engineer” shall mean the Bolton & Menk, Inc., or designated agent.

6. The intent of the Technical Specifications is to describe the construction desired, performance requirements, and standards of materials and construction.
 7. "Standard Drawings" shall mean the Figures bound within the SUDAS Standard Specifications and/or the Typical Drawings bound within the plans.
 8. "Work" shall mean the work to be done and the equipment, supplies, and materials to be furnished under the contract unless some other meaning is indicated by the context.
 9. "Or equal" shall follow manufacturers names used to establish standards and, if not stated, is implied.
- B. Engineer: Bolton & Menk, Inc., 300 W. McKinley Street, PO Box 68, Jefferson, Iowa 50129, (515) 766-4423.
2. DRAINAGE DISTRICT REQUIREMENTS REGARDING THE PROJECT CLOSEOUT AND THE RELEASE OF RETAINED FUNDS
- A. The general provisions and covenants, Division 1 of the 2024 SUDAS Standard Specifications are modified as follows:
 - B. The provisions of Iowa Code Sections 468.100 -103 shall take precedence over any conflicting provisions of the contract documents. This includes the following provisions.
 1. Progress payments of 90% will be paid throughout the contract and no part of the retained funds owed contractor will be released until the statutory requirements for the closeout of a drainage district construction contract are completed. A finding of substantial contract completion will not result in a reduction in the amount of retained funds. However, it will be considered by the board of supervisors in determining the amount of liquidated damages to assess for a late-completed contract.
 2. When the engineer finds the work completed he will report and certify the satisfactory completion of the work to the board of supervisors. Upon receipt of this report the board will set a date and time of a contract completion hearing at which to consider the report and give notice to the affected landowners and drainage district all as per Code Section 468.101.
 3. Any party interested in the said district or the improvement thereof may file objections to said report and submit evidence tending to show said report should not be accepted. Any interested party having a claim for damages arising out of the construction of the improvements or repair shall file said claim with the board at or before the time fixed for hearing on completion of the contract.
 4. If it finds the work under the contract has been completed and accepted, the board shall compute the balance due, and if there are no liens on file against such balance, it shall enter of record an order directing the auditor to draw a warrant in favor of said contractor upon the levee or drainage fund of said district for such balance found to be due, but such warrants shall not be delivered to the contractor until the expiration of thirty days after the acceptance of the work.
 5. If any claims for damages have been filed as provided in Code Section 468.102, the board shall review said claims and determine said claims. If the determination by the board on any claim for damages results in a finding by the board that the damages resulting to the claimant were due to the negligence of the contractor, then the board shall provide for payment of said claim out of the remaining funds owing to the contractor. If the determination by the board results in a finding that the damages resulting to the claimant were not due to the negligence of the contractor but resulted from unavoidable necessity in the performance of the contract, then the

board shall allow for payment of said claim in the amount fixed by the board out of the funds in said drainage district.

6. If the Board of Supervisors determines at the hearing that the contractor has not completed the contract in full and that some uncompleted work remains to be done the board of supervisors may continue the hearing until that work is completed. The board may otherwise use its discretionary authority to close the hearing and to accept the work so as to allow for the release of the retained funds but to withhold a sum determined by the board to not be released to the contractor until the engineer reports that the uncompleted work has been completed. The funds held pending the finish of uncompleted work will then be released to be paid to the contractor with the balance of the retained funds at the appropriate time or to be paid immediately if the balance of the retained funds has already been paid.

3. GENERAL PROVISIONS AND COVENANTS

- A. The general provisions and covenants, Division 1 of the 2024 SUDAS Standard Specifications are modified as follows:

1. Section 1020.1.09B, Unit Price Attachment.

A computer generated unit price attachment may be submitted by the Bidder as specified by this Section.

2. Section 1050.1.05 Shop Drawings, Certificates and Equipment Lists.

The Contractor shall submit a minimum of three (3) copies plus any additional required by the Contractor.

4. WORK REQUIRED

- A. Work under this contract includes all materials, equipment, transportation, traffic control and associated work for the construction of the tile improvements as described in the Official Publication.
- B. This project consists of one contract for all work described.
- C. The construction work will need to be phased to facilitate timely construction of the improvements.

5. SALVAGE OF MATERIALS AND EQUIPMENT

- A. The Owner retains first right of refusal for retaining any existing materials removed by the construction.
- B. The Contractor shall carefully remove, in a manner to prevent damage, all materials and equipment specified or indicated as salvage. The Contractor shall protect and store items specified.
- C. Any items damaged in removal, storage, or handling through carelessness or improper procedures shall be replaced by the Contractor in kind with new items.

6. PLANS AND SPECIFICATIONS

- A. The District will furnish 5 sets of plans and specifications to the Contractor after award of the contract. The Contractor shall compensate the Owner for printing costs for additional copies required.
- B. Provide one set of plans and specifications for each foreman and superintendent in charge of each crew on the job.

7. CONSTRUCTION FACILITIES

- A. Provide telephone numbers where Contractor's representative can be reached during work days and on nights and weekends in event of emergency.
- B. The Contractor shall provide suitable storage facilities necessary for proper storage of materials and equipment.
- C. Do not store construction equipment, employee's vehicles, or materials on roads open to traffic. Location for storage of equipment by Contractors is subject to approval of Engineer.
- D. Provide and maintain suitable sanitary facilities for construction personnel for duration of work; remove upon completion of work.
- E. The Contractor will be required to make arrangements for all services required during the construction period and pay for such services at no additional cost to the Owner.

8. SUBMITTALS

- A. Provide construction schedule showing dates of starting and completing various portions of work.
- B. Submit the following information for Engineer's review. Provide 3 copies plus copies required by Contractor. This information shall be submitted to the Engineer at the preconstruction conference or at least 14 days prior to utilization of the particular item on this project.
 - 1. Testing reports.
 - 2. Manufacturer's data for materials that are to be permanently incorporated into the project.
 - 3. Details of proposed methods of any special construction required.
 - 4. Submit purchase orders and subcontracts without prices.
 - 5. Such other information as the Engineer may request to insure compliance with contract documents.
- C. Provide Traffic Control and staging plan (3 copies).

9. STANDARDS AND CODES

- A. Construct improvements with best present day construction practices and equipment.
- B. Conform with and test in accordance with applicable sections of the following standards and codes.
 - 1. American Association of State Highway and Transportation Officials (AASHTO).
 - 2. American Society for Testing and Materials (ASTM).
 - 3. Iowa Department of Transportation Standard Specifications (Iowa DOT).
 - 4. American National Standards Institute (ANSI).
 - 5. American Water Works Association (AWWA).
 - 6. American Welding Society (AWS).
 - 7. Federal Specifications (FS).
 - 8. Iowa Occupational Safety and Health Act of 1972 (IOSHA).
 - 9. Manual of Accident Prevention in Construction by Associated General Contractors of America, Inc. (AGC).
 - 10. Standards and Codes of the State of Iowa and the local ordinances.

11. Other standards and codes which may be applicable to acceptable standards of the industry for equipment, materials and installation under the contract.
10. SOIL BORINGS
 - A. None.
11. CONSTRUCTION WITHIN RIGHT-OF-WAYS
 - A. All work on this project will be within Owner's Right-of-Way, Easements or Public Property.
12. EMPLOYMENT PRACTICES
 - A. Neither the Contractor nor the Contractor's subcontractors shall employ any person whose physical or mental condition is such that this employment will endanger the health and safety of anyone employed on the Project.
 - B. The Contractor shall not commit any of the following employment practices and agrees to include the following clauses in any Subcontracts:
 1. To discharge from employment or refuse to hire any individual because of sex, race, color, religion, national origin, sexual orientation, marital status, age, or disability unless such disability is related to job performance of such person or employee.
 2. To discriminate against any individual in terms, conditions, or privileges or employment because of sex, race, color, religion, national origin, sexual orientation, marital status, age, or disability unless such disability is related to job performance of such person or employee.
13. WORK HOURS/COMMUNITY EVENTS
 - A. The Contractor will be required to limit the Contractor's work hours on the Project from 7:00 a.m. to 7:00 p.m., Monday through Saturday, unless otherwise directed by the Engineer.
 - B. The following Community Events are scheduled. Contractor is required to coordinate with the Owner as needed to allow use of adjacent public property.
 1. None.
14. DUST ABATEMENT
 - A. The Contractor shall make a reasonable effort to assure dust does not become a problem. The Engineer reserves the right to stop Contractor's operations whenever dust becomes a problem on the Project and direct the Contractor to revise operations to solve the dust problem.
15. QUANTITIES
 - A. The Contractor is to realize some of the quantities on this Project are best estimates and may vary from actual conditions at time of construction of the Project. Quantities must be regarded as approximate only, and are given as a guide to the Bidder and for comparison of Bids. The Owner reserves the right to increase or decrease these quantities as designated in the Contract, and the Contractor will be paid for only as much work as the Contractor is required to do by the Owner at the unit price stated in the Proposal.
16. MAINTENANCE BOND AND WARRANTY PERIODS
 - A. The requirements of the Payment, Performance and Maintenance Bond warranty period are modified as follows:
 1. To remedy any and all defects that may develop in or result from work to be performed under the Contract within a 1-year period for drainage repair or improvements, from the date of

acceptance of the work under the Contract, by reason of defects in workmanship or materials used in construction of said work.

17. MATERIALS TESTS

- A. Material testing is as specified for construction and will be completed by an independent testing laboratory retained by the Contractor and approved by the Engineer. Testing shall meet the requirements of the SUDAS Standard Specifications.
- B. Coordinate all material testing with the Engineer.
- C. Provide transportation of all samples to the laboratory.
- D. Do not ship materials to the project site until laboratory tests have been furnished showing compliance of materials with specifications.
- E. Provide gradation and materials certifications for all granular materials. Certify that sources of Portland Cement and aggregates are Iowa DOT approved.
- F. Certify that materials and equipment are manufactured with applicable specifications.

18. FIELD TESTS

Testing shall meet the requirements of the SUDAS Standard Specifications. Owner/Contractor testing responsibility is as follows:

- A. Testing Responsibility
 - 1. Owner
 - (a) Division 2, Earthwork, Section 3.09 - Field Quality Control.
 - (b) Division 3, Trench and Trenchless Construction, Section 3.06 - Trench Compaction Testing.
- B. The contractor shall be responsible for testing that is required of the contractor by the SUDAS Standard Specifications.
- C. If test results do not meet those specified, the Contractor shall make necessary corrections and repeat testing to demonstrate compliance with the specifications. Contractor shall pay all costs for retesting.

19. MEASUREMENT AND PAYMENT

- A. Contract unit or lump sum prices are full compensation for furnishing all materials, equipment, tools, transportation, and labor necessary to construct and complete each item of work as specified. No separate payment will be made for work included in this project except as set forth in the bid item reference notes. Refer to the C sheets for bid items reference notes. All other items of work are incidental to construction.
- B. 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. The Board reserves the right to issue Drainage District Improvement Certificates pursuant to Chapter 468 of the Code of Iowa, as amended, which certificates may be given in exchange for outstanding warrants issued to the Contractor or to the holder thereof. Said warrants to be surrendered, if called by the Board, in exchange for Drainage District Improvement Certificates which shall be taken by the Contractor or holder at par and 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.

- C. 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.

20. INCIDENTAL CONTRACT ITEMS

- A. The following list includes major items that are incidental to the project and will not be paid for as separate bid items. Other items may be designated as incidental under certain bid items.

- Connections to drain tile and pipes unless specified for separate payment.
- Construction and removal of temporary field entrances and access roads.
- Construction fencing.
- Construction staging & phasing.
- Coordination and cooperation with affected property owners.
- Coordination and cooperation with Worth County.
- Coordination and cooperation with other Contractors.
- Coordination and cooperation with other projects in the area.
- Coordination and cooperation with utility companies.
- Dewatering and handling storm water flow during construction.
- Dust control measures.
- Engineering fabric.
- Excavation, verification and protection of existing utilities.
- Field testing.
- Finish grading.
- Full depth sawcutting of existing pavement.
- Grading for drainage outlets.
- Granular backfill and bedding for pipe installation.
- Granular surfacing removal.
- Maintenance and watering for seeding and sodding.
- Maintenance of erosion control measures, including silt removal.
- Material testing.
- Monitoring weather conditions.
- Mowing.
- Overhaul.
- Pipe and structure bedding material.
- Protection of existing utilities and light poles.
- Removing and reinstalling existing signs.
- Reseeding.
- Site cleanup/restoration.
- Temporary safety closures.
- Temporary sheeting and shoring.

END OF SECTION

SPECIAL PROVISIONS
FOR
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17. SITE WORK AND LANDSCAPING
18. P.C.C. PAVING, SIDEWALK, DRIVEWAY AND TRAIL
19. TRENCH BACKFILL

1. GENERAL
 - A. Procedures outlined herein are not intended to fully cover all special construction procedures but are offered as an aid to the Contractor in planning work.
 - B. Cooperate with the Owner and the Engineer to minimize inconvenience to property owners, other jurisdictions and motorists and to prevent delays in construction and interruption to continuous operation of utility services and site access.
 - C. Provide adequate personnel and equipment to perform work within specified time of construction.
 - D. Install and maintain orange safety fence around all open trenches or open structures when left unattended.
 - E. Provide surface restoration and clean up as construction progresses.
2. EXISTING UTILITIES
 - A. Location of utility lines, mains, cables and appurtenances shown on plans are from information provided by utility companies and records of the Owner.

- B. Prior to construction, contact all utility companies and have all utility lines and services located. The Contractor is responsible for excavating and exposing underground utilities to field verify their locations ahead of the work.
- C. Contractor is solely responsible for damage to utilities or private or public property due to utility disruption.
- D. The Contractor shall notify utility company immediately if utility infrastructure is damaged during construction.
- E. With the exception of water lines, utility companies will relocate utility infrastructure in direct conflict with line and grade of the work during construction. Support and protect all utilities that are not moved.
- F. Utility services are not generally shown on plans; protect and maintain services during construction. Notify Jurisdiction and affected property Jurisdictions 48 hours prior to any planned utility service interruptions.
- G. If utility work does occur during the construction period, work schedules from the Contractor and from the utility companies will be submitted to the Engineer for coordination to obtain mutually acceptable schedules, if possible.
- H. Existing utilities shall remain in substantially continuous operation during construction. Select the order and methods of construction that will not interfere with the operation of the utility systems. Interrupt utility services only with approval of Owner and Engineer.
- I. No claims for additional compensation or time extensions will be allowed to the Contractor for interference or delay caused by utility companies.

3. PROJECT SUPERVISION

- A. The Contractor shall be represented in person at the construction site at all times that construction operations are proceeding by a qualified superintendent or other designated, qualified representative capable of providing adequate supervision. The superintendent or representative must be duly authorized to receive and execute instructions, notices and written orders from the Engineer.
- B. Issues that arise during construction relating to traffic control and construction staging, etc. are the responsibility of the Contractor.
- C. Weekly progress meetings, if specified at the preconstruction conference, with the Contractor, Engineer and Owner will be held at the project site to review the updated project schedule and progress, coordinate activities, resolve conflicts and coordinate the construction work. The day and time for this meeting will be set at the preconstruction conference.
- D. Refer to Division 1 – General Provisions and Covenants, Section 1080 – Contractual Provisions, Part 1 – Prosecution and Progress of the Work, Section 1.10 Contractors Employees, Methods and Equipment for additional requirements.

4. COORDINATION WITH OTHERS

- A. Cooperate and coordinate construction with the Owner, utility companies, affected property Jurisdictions and other contractors working in vicinity of this project.
- B. It is the Contractor’s responsibility to schedule and coordinate work to minimize construction delays and conflicts.
- C. Coordinate with property owners prior to beginning work that will affect their parcel.

5. CONSTRUCTION LIMITS

- A. Confine the construction operations within the construction limits shown on the plans.
- B. Do not store equipment, vehicles or materials within the right-of-way of any roads open to traffic or on temporary access roads at any time.
- C. Areas disturbed outside of construction limits shall be restored at the Contractor's expense to the satisfaction of the Owner. Contractor shall protect trees, fences, and landscaping within the construction limits not marked as remove.

6. CONSTRUCTION SCHEDULE

- A. The Contractor will prepare and submit to the Engineer for approval a project schedule that will assure the completion of the project within the time specified.
- B. Adequate equipment and forces shall be made available by the Contractor to start work immediately upon receipt of the Notice to Proceed.
- C. Submit construction schedule at the preconstruction conference and periodically update it as requested by the Engineer.
- D. The Contractor shall be required to meet the final completion date as specified in the written Notice to Proceed.
- E. Notify the City, County, State and property owners at least 48 hours prior to any road closures.
 - 1. Notify all property owners, affected by the road closures by written notice placed on the front door. Include the following items in the notice:
 - (a) The road name, location and proposed date of road closure.
 - (b) The estimated schedule for completion of work.
 - (c) The estimated date for reopening of the road.

7. CONSTRUCTION PHASING

- A. Refer to construction staging and traffic control plans when included in construction plans.
- B. Include construction phasing on the required construction schedule submittal.

8. CONSTRUCTION STAKING

The Owner, or an authorized representative, will provide construction staking. The Contractor shall provide two Working Days written notice to the Engineer to begin requested survey, staking, or layout work. Subsequent staking shall require two working days' notice in advance of the staking needs. Contractor shall be responsible for layout of all other construction items including, but not limited to, traffic control, structure removal, pavement markings, seeding, inlet filters and silt fence.

One-time staking shall be provided. Any re-staking shall be paid for by the Contractor.

Construction staking, provided by the Owner on the project, will include the following:

A. HORIZONTAL AND VERTICAL CONTROL

Locate and maintain all horizontal control points and vertical benchmarks as listed on the plan sheets that may be destroyed by the plan construction.

B. REMOVAL LIMITS

Locate removals and pavement, sidewalks, drives, structure, trees. Removals not authorized or outside of removal limits shall be at Contractor expense.

C. DRAIN TILE, CULVERTS/STRUCTURES

1. Offset grade stakes shall be provided for all structures and bends. Offset grade stakes shall also be provided 50' from both sides of a structure.
2. Centerline stakes for drain tile shall be provided in a manner which ensures a direct line of site between adjacent stakes.

D. GRADE STAKING

1. Ditch grade at 100-foot intervals including grade breaks.

9. CONSTRUCTION SURVEY DOCUMENTATION & RESPONSIBILITIES OF ENGINEER AND CONTRACTOR

- A. Tie-ins with existing pavements and utilities shall be verified for correctness of alignment and elevation prior to construction staking. Any discrepancies discovered during this verification process will be brought to the attention of the Engineer for review and assistance with resolution prior to staking.
- B. When survey work is done under traffic conditions, the traffic control shall be in place prior to commencement of survey work.
- C. The Engineer will have a representative at the preconstruction conference to discuss construction staking.
- D. The Owner and Engineer will not be responsible for delays due to lack of grade or line stakes unless the Contractor has given the Engineer a 48 hour notice that such stakes will be needed and the Contractor's work is being conducted in a satisfactory manner and at the specified rate of progress.

10. DISPOSAL

- A. Remove from project site and dispose of trees, shrubs, vegetation, excess soil excavation, rubbish, concrete, granular materials and other materials encountered as shown on plans and as specified. Excess soil excavation not designated for waste locations shall be disposed as directed by the Engineer.
- B. Dispose of materials in accordance with applicable laws and ordinances. Disposal sites are subject to the review and approval of the Engineer.
 1. Dispose of broken concrete, asphalt, granular material, rubble, excess or unsuitable excavated material. Contractor is responsible for selecting disposal site.
 2. Cooperate with all applicable City, State and Federal agencies concerning disposal of materials.
 3. The Owner has the first right to any excess materials from construction.

11. EROSION/POLLUTION PREVENTION PLAN

- A. If Contractor fails to install and/or perform the appropriate erosion and sediment control practices, as determined by the Engineer, the Engineer may issue a written order to the Contractor. **Failure to perform this work within 24 hours of notification of non-compliance may result in the Owner or Engineer arranging for completion of the work by others. A contract deduction shall be made equal to the total of all costs to perform such work so arranged, including but not limited to, labor, materials, equipment, and administrative costs.**
- B. Contractor is responsible for preparing the SWPPP to match staging, phasing, and construction methods as work progresses. Contractor shall comply with the erosion control requirements of said plan, the Iowa Code, and local ordinances. Protect against erosion and dust pollution on this project site and any off-site deposit or borrow area used for this project.

- C. The Contractor will publish the necessary notification for the NPDES permit prior to the start of construction. The Contractor shall obtain an NPDES permit from the Iowa DNR for the area within the limits of this project based on the Pollution Prevention Plan. It shall be the Contractor's responsibility to update the plan during construction and have the plan available on site at all times.
- D. Contractor shall protect adjoining property (including public sanitary/storm sewer systems and streets) from any damage resulting from movement of earth or other debris from the project site. Any damage shall be repaired immediately.
- E. Contractor shall prevent the accumulation of earth or debris on adjoining public or private property. Contractor shall remove any accumulation of earth or debris immediately and prevent the repetition of any instance where earth or debris moves from the project site to adjoining public or private property.
- F. Contractor shall provide erosion control measures necessary to protect against siltation and erosion from the flow of storm water. Maintain continuous operation of the storm sewer system throughout the construction period.
- G. Contractor shall use silt fence and similar erosion control methods at all drainage courses, swales, and storm sewer system inlets/outlets to protect against siltation and erosion as shown in the construction drawings or directed by the Engineer.
 - 1. Erosion protection measures, other than those specified as unit price pay items, are incidental.
- H. The Contractor will be fully liable for all damages to public and private property caused by their action or inaction in providing for handling of storm water flow during construction.
- I. As construction progresses, stabilization is required in those segments of the corridor that become available to do so. The Contractor shall not wait until all grading and paving operations are completed before commencing final surface restoration.
 - 1. The Contractor shall anticipate multiple mobilizations to complete finish grading operations in surface restoration areas.
 - 2. City will contract for vegetation restoration separately. Contractor will coordinate with them for access to site to do their work.

12. DEWATERING

- A. Perform all construction work in dry conditions.
- B. Submit dewatering methods to the Engineer for review. Obtain the Engineer's approval on methods prior to construction.
- C. Groundwater levels are subject to variation. No additional compensation will be permitted due to high groundwater conditions.
- D. If excavation encounters only cohesive soils with no wet sand seams or layers, it may be possible to control water seepage by draining groundwater to temporary construction sumps and pumping it outside the perimeter of the excavation.
- E. Do not pump water from open excavation in sand and gravel below the natural ground water level.
- F. Maintain water levels 2 feet or more below the bottom of excavations in saturated cohesionless (sand and/or gravel) soils to prevent upward seepage, which could reduce subgrade support.
 - 1. Install dewatering system (well points or shallow wells) when working in cohesionless soils.

- 2. Costs of installing and operating dewatering system must be approved by Owner before dewatering starts.
- G. Provide for handling surface water encountered during construction.
 - 1. Prevent surface water from flowing into excavation, remove water as it accumulates.
 - 2. Divert surface water and storm sewer flow around areas of construction.
 - 3. Do not use sanitary sewers for the disposal of trench water.
- H. Backfill pipe and structures prior to stopping dewatering operations. Do not lay pipe or construct concrete structures on excessively wet soils.
- I. The costs of handling both surface water and groundwater are incidental.

13. TRAFFIC CONTROL

- A. Furnish, erect and maintain traffic control devices as specified in the construction drawings and directed by the Engineer including signs, barrels, cones, and barricades to direct traffic and separate traffic from work areas. Traffic control shall be in place prior to the closing of any roads.
- B. Provide traffic control devices in accordance with the Iowa DOT Standard Specification, Section 2528, Traffic Control, and the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).
- C. Adjustments to the traffic control or the addition of flaggers will be required if, in the opinion of the Engineer, undue traffic congestion occurs.
- D. Provide continuous access for police, fire, and other emergency vehicles.

14. TEMPORARY FENCES

- A. Install temporary fencing around open excavations or material storage areas and as directed by Engineer to prevent access of unauthorized persons to construction areas.
- B. Provide orange plastic mesh safety fence with a nominal height of 48". Support fence securely on driven posts in vertical position without sagging.
 - 1. Materials: Iowa DOT Section 4188.03.
 - 2. Use unless required otherwise.
- C. Temporary fencing installed around open excavations or material storage areas is incidental to construction and will not be measured for payment.
- D. Remove temporary fencing upon completion of construction.

15. RESPONSIBILITY OF CONTRACTOR

- A. Supervision of the work.
- B. Protection of all property from injury or loss resulting from construction operations.
- C. Replace or repair objects sustaining any such damage, injury or loss to satisfaction of Owner and Engineer.
- D. Cooperate with Owner, Engineer, and representatives of utilities in locating underground utility lines and structures. Incorrect, inaccurate or inadequate information concerning location of utilities or structures shall not relieve the Contractor of responsibility for damage thereto caused by construction operations.

- E. Keep cleanup current with construction operations.
- F. Comply with all Federal, State, and the local laws and ordinances.

16. EARTHWORK

A. Clearing and Grubbing

- 1. Work shall be conducted in a manner which minimizes the inconvenience caused by the Work to adjacent landowners.
- 2. Engineer has the authority to limit clearing and grubbing to specific areas until all Work in that area is complete.
- 3. Engineer has the authority to temporarily prohibit clearing and grubbing in an area for the purpose of allowing time for a crop to be harvested, if said temporary prohibition does not materially negatively affect the progress of the project.

B. Class 13 Excavation

- 1. Unless otherwise detailed on the plans or directed by the Engineer, excavation shall commence at the downstream end of the project and proceed upstream.
- 2. Unless otherwise detailed on the plans or as directed by the Engineer, no spoil shall be placed within public road right-of-way.
- 3. Contractor shall notify the County Engineer prior to commencing work within any County right of way. All work performed within County Right-of-Way shall be performed in compliance with County requirements.
- 4. Excessive over excavation and bottom width ditch expansion shall be avoided. Unless otherwise shown on the plans, spoil shall be removed uniformly from the ditch and shall be disposed of as it is excavated.
- 5. Unless otherwise shown on the plans, excavation shall be carried out from both sides of the ditch and spoil shall be placed in approximately equal amounts on both sides of the ditch.
- 6. Contractor shall fill and/or shape overbank washouts to reasonably conform to the ditch cross section plan design.

C. Spoil Bank Leveling

- 1. Spoil shall be shaped and sloped to a uniform cross section in compliance with the typical ditch cross section shown on the plans.

17. SITE WORK AND LANDSCAPING

A. Fence Removal

- 1. After the contract has been awarded the Engineer shall notify all landowners with property within the work limits that have fence which will interfere with the prosecution of the work.
- 2. Contractor shall give ten (10) days notice to Engineer prior to removing any livestock fencing. After the 10 day notice period has expired, Contractor may remove fence that interferes with the prosecution of the work.
- 3. Fence may be disposed of by burial within the work limits. Wire mesh shall be flattened. All fencing material disposed of by burying shall be buried to a depth of at least 4 feet below finished grade.

18. P.C.C. PAVING, SIDEWALK, DRIVEWAY AND TRAIL

- A. Special care should be taken when forming at intersections so that the profiles and elevations shown on the cross sections, plan and profile, and intersection detail sheets are obtained. Short lengths of forms or flexible forms may be necessary.
- B. Maturity testing shall be utilized for all work requiring a paving machine.
- C. Maturity testing shall be utilized to expedite street opening. If maturity testing is not used, the Contractor shall coordinate with a testing agency to collect cylinders and test them at ages they determine to expedite street opening.
- D. All sidewalks will be constructed to meet American with Disabilities Act (PROWAG) requirements. If it is not possible to maintain PROWAG required slopes, the contractor shall notify the Engineer immediately. Any sidewalks that are placed with non-compliant slopes shall be removed and replaced at the Contractor's expense. Pedestrian ramps shall be doweled.
- E. The Contractor shall perform smoothness testing and furnish test results to the Engineer in accordance with Section 7010, 3.08.C1. Smoothness incentives are not in effect for this project.
- F. Refer to SUDAS Section 7010, 1.08D for concrete thickness pay factor and thickness cores. Pavement disincentives will be charged and no thickness incentives will be paid.
- G. The use of a paving machine is required for all mainline sections of paving.
- H. Concrete mix for work associated with street paving, driveways, trails and sidewalks shall conform to the following requirements:
 - 1. Concrete shall be Class C-4.
 - 2. Minimum Compressive Strength at 28 days shall be 4,000 psi. Areas not meeting this requirement will be subject to repairs, replacement, or reduced payment as determined by the Engineer. Compression test results will represent all concrete placed in the same lot.
 - 3. Slump, air content, water-cement ratio and supplementary cementitious materials are specified in SUDAS.
 - 4. Use of ground granulated blast furnace slag is not permitted on the project.
- I. Cracked panels shall be removed and replaced at the Contractor's expense, unless in the judgement of the Engineer, the crack can be repaired in place.
- J. Maturity testing shall be utilized to expedite street opening. If maturity testing is not used, the Contractor shall coordinate with a testing agency to collect samples and test them at ages they determine to expedite street opening.

19. TRENCH BACKFILL

- A. Contractor shall compact backfill adjacent to or within 12" over pipe with hand operated pneumatic or mechanical tampers or other approved techniques to consolidate primary trench backfill.
- B. Contractor shall compact secondary backfill with rollers or vibrating plate compactors in lifts to the specified density and moisture content.
- C. Contractor shall not use drop hammers, backhoe buckets, or flooding/jetting for compacting backfill.

END OF SECTION

SUPPLEMENTAL SPECIFICATIONS

FOR

RURAL PUBLIC DRAINAGE REPAIRS AND IMPROVEMENTS

INDEX

THESE SUPPLEMENTAL SPECIFICATIONS ARE INTENDED TO PROVIDE DETAILED SPECIFICATIONS SPECIFIC TO RURAL DRAINAGE DISTRICT PROJECTS. THEY ARE TO BE CONSIDERED IN TANDEM WITH THE SUDAS SPECIFICATIONS AND WHERE IN CONFLICT THESE SUPPLEMENTAL SPECIFICATIONS SHALL APPLY. ALL OTHER DEFERENCE IS GIVEN TO THE PLAN NOTES, ESTIMATE REFERENCES AND THE SUDAS SPECIFICATIONS IN THAT ORDER.

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- 3.11. ADMINISTRATION OF EROSION MANAGEMENT PLAN**
- 3.12. OPEN DITCH SILT CURTAINS**

PART 1 – GENERAL

1.01. DESCRIPTION OF WORK

Additional work items for Drainage District Improvements / Repairs.

1.02. SUBMITTALS (IF NOT INCLUDED IN SUDAS SPECIFICATIONS)

- A. **Open Ditch Seeding and Fertilizing:** Provide all seed sacks with identification tags attached, Germination tests less than one year old required. Provide fertilizer bag tags or other proof of compliance.
- B. **Open Ditch Surface Drain and Tile Extension Pipes:** Provide manufacturer's certification of compliance with specification requirements for pipe, drain tile and appurtenances.
- C. **Steel Sheet Pile:** Provide manufacturer's shop drawings and certification of compliance with specification requirements for Steel Sheet Pile.
- D. Comply with Division 1 – General Provisions and Covenants.

1.03. SUBSTITUTIONS

- A. **Open Ditch Surface Drains and Tile Extensions:** Obtain prior approval for additions or changes in location, diameter and length of pipe shown on drawings or as otherwise required by Engineer.
- B. Comply with Division 1 – General Provisions and Covenants.

1.04. DELIVERY, STORAGE AND HANDLING

Comply with Division 1 – General Provisions and Covenants.

1.05. SCHEDULING AND CONFLICTS

Comply with Division 1 – General Provisions and Covenants.

1.06. SPECIAL REQUIREMENTS

1.07. MEASUREMENT AND PAYMENT

A. Open Ditch Excavation:

1. **Measurement:** Open ditch excavation shown on plans computed by using the average end area method using surveyed cross-sections for the preparation of the plans, to which a percentage has been added to allow for up to 0.5 feet of extra depth in the ditch bottom and for other necessary over-excavation. This percentage is shown in the estimate reference. No additional measurements will be made. The quantities of excavation on the drawings and in the Contract represent the final quantity of excavation for the completed work.
2. **Payment:** Unit price per cubic yard for the quantity of open ditch excavation stated in the Proposal.
3. **Includes:** Construction of access roads, excavating and depositing spoil, overhaul, over excavation, removal of minor ditch bank sloughs, excavation to allow for placements of revetment, excavation of silt traps upstream of temporary open ditch silt curtains where specified, patrolling for sediment and removal in reaches previously cleaned, and finish shaping and sloping of the channel. Includes removal of friable ledge rock as can be accomplished using contractors planned equipment. Includes furnishing all equipment, tools, labor and incidentals necessary to complete the work.
4. **Does not Include:** Excavation of solid ledge rock or bedrock or necessary topsoil work when specified (Each will be paid under separate bid items or negotiated extra work).

B. Remove Sloughs and Meanders:

1. **Measurement:** Per station which includes removal of all sloughs, meanders on both sides and excavation required to bring ditch to design elevation. Also includes excavation required to construct slope in the areas that have sloughed to a stable 2:1 slope. Includes spoil leveling unless otherwise allowed by the engineer. This also includes furnishing all material, labor, equipment, tools and all miscellaneous associated work necessary to complete the item.
2. **Payment:** Unit price bid per station shown on the proposal. Contract price and payment shall constitute full compensation for access, excavating and depositing spoil, shaping and sloping of the channel and bank, and furnishing all equipment, tools, labor and incidentals necessary to complete the work in accordance with the drawings and specifications.

C. Open Ditch Spoil Bank Leveling:

1. **Measurement:** Measure at 100 foot stations along centerline of ditch with no deduction for Public Road rights-of-way, intersecting open ditches, private crossings and the like. Measurement may in some circumstances apply to one side of open ditch.
2. **Payment:** Unit price per 100 foot station shall be full compensation for spoil shaped and sloped to a relatively uniform cross section in conformance with the typical leveled spoil bank cross section shown on the plans.
3. **Includes:** Deep tilling, rock removal (performed two (2) times) and disking, leveling and shaping deposited spoil both old and new to uniform cross-section on one side or both sides of the open ditch respective as specified. Includes furnishing all labor, equipment, tools and miscellaneous associated work necessary to complete item. Includes construction or re-construction of road ditch dikes and field entrances and minor shaping and grading to maintain drainage on the field side of the spoil bank.
4. **Does not Include:** Necessary topsoil work when specified (Paid under separate bid items).

D. Open Ditch Seeding and Fertilizing:

1. **Measurement:** Measure at 100 foot stations along centerline of ditch with no deduction for public road rights-of-way, intersecting open ditches, private crossings and the like. No measurement of the area actually seeded will be taken.
2. **Payment:** Unit price per 100 foot stations shall be full compensation for seeding and fertilizing disturbed ditch banks on both sides of the open ditch at the rates specified in the contract documents.
3. **Includes:** Supplying seed sacks and tags and fertilizer tags or other evidence of compliance with the specs to the Engineer. All required seed treatments, any necessary seed bed preparation, labor, equipment, tools and miscellaneous associated work necessary to complete item on one side or both sides as specified.

E. Open Ditch Surface Drain and Tile Extension Pipes:

1. **Measurement:** Lineal foot by nominal pipe size.
2. **Payment:** Unit Price bid per lineal foot. Necessary extensions of drain tile to the tile outlet pipe or relays shall be paid at the unit price bid for applicable diameter tile outlet pipe for the actual length installed.

3. **Includes:** Providing log of tile extension and surface drain work to Engineer. Furnishing, handling, laying pipe materials, concrete collars, connecting bands, trench excavation, backfilling, removal and disposal of replaced material, administration of changes in pipe sizes, lengths and locations, movements of equipment throughout the work limits, and providing all materials, labor, equipment, tools and miscellaneous associated work to complete item. Also includes transportation, handling, restock and other associated fees for returning or adding pipe.
4. **Does Not Include:** Bedding rock where it is determined by the engineer to be needed to complete the work will be paid for separately under appropriate bid item.

F. Drainage Pipe Tees / Elbows / End Caps / Apron Section / Reducers / Field Tile Connections:

1. **Measurement:** Number of each by nominal size as bid.
2. **Payment:** Unit price for each by specified size.
3. **Includes:** All materials, labor, equipment, tools and miscellaneous associated work necessary to fabricate or extend or connect pipe or install appurtenances. For tees, elbows and reducers, price includes fabrication of the structure and installation only. All lengths of pipe shall be paid under the appropriate bid items. End caps and apron sections include the materials cost and their lengths are not included in the drainage pipe measurements for payment. Includes pipe bedding rock required to account for avoidable over excavation of the installation trenches depths or widths.
 - a. **Tees:** Stub pipe is assumed 1 LF in length.
 - b. **Field Tile Connections < 12" Diameter:** Includes furnishing up to 20 LF of Heavy Duty Corrugated Polyethylene Drainage Tubing.
 - c. **Field Tile Connections >= 12" Diameter:** Includes field fabricating as needed of up to two standard length sections of RCP (The class to be the same or stronger as the receiving pipe) of the same or next larger standard size than the tile being connected. Length of RCP installed will be paid under the appropriate bid item for the size and class of pipe installed.
4. **Does not Include:** Bedding rock where it is determined by the engineer to be needed to complete the work will be paid for separately under appropriate bid item.

G. Steel Sheet Pile:

1. **Measurement:** Square foot of material.

2. **Payment:** Unit price per square foot of material furnished and installed to the plan lines shown on the plans.
3. **Includes:** Steel waler and other appurtenances, temporary guide structures, excess material to account for deformation of tops of sheet pile sheets and for other damages during construction, all materials, labor, equipment, tools and miscellaneous associated work necessary to construct or fabricate the sheet pile wall to the neat lines shown on the plans.
4. **Does not Include:** Payment will not be made for area of sheet pile which is accepted by engineer but installed short of plan lines.

H. Geotextile Fabric:

1. **Measurement:** Square yard of material placed.
2. **Payment:** Unit price per square yard of material placed as shown on the plans.
3. **Includes:** All materials, labor, equipment, tools and miscellaneous associated work necessary to place, shape, compact and grade the receiving earth surface for the installation of geotextile fabric. Includes cutting and overlaps. Includes anchoring work and materials.

I. Concrete Grout for Riprap Revetment:

1. **Measurement:** Cubic yard of material placed.
2. **Payment:** Unit price per cubic yard of material placed as shown on the plans.
3. **Includes:** All materials, labor, equipment, tools and miscellaneous associated work necessary to mix, transport and place and incorporate into the receiving riprap the concrete grout as shown on the plans. Includes brooming the grout into riprap and removing by broom excess grout from exposed surfaces of the riprap. When ready-mixed grout is furnished, the contractor shall furnish delivery tickets showing the time of loading and the quantities of materials used for each load of grout mix.

J. Exploratory Investigation:

1. **Measurement:** Hours spent locating existing tile and other underground facilities as shown on the plans or directed by the Engineer.

2. **Payment:** Unit price per hour for time spent locating existing tile and other underground facilities as shown on the plans or directed by the Engineer.
3. **Includes:** Excavator, operator, all labor, materials and appurtenant equipment necessary to locate existing tile and other underground facilities and to backfill all excavations.
4. **Does not Include:**
 - a. Down time waiting for Engineer to review exploratory pit.
 - b. Repair of tile lines damaged during the search not due to negligence as determined by Engineer.
 - c. Necessary repairs will be paid separately as extra work.

K. Administration of Erosion Management Plan:

1. **Measurement:** Lump Sum item, no measurement will be made. Engineer will verify that efforts to comply with the plan have been made.
2. **Payment:** Paid as Lump Sum upon completion of the work. May be adjusted if engineer determines that efforts to comply with the plan requirements were not satisfactorily made.
3. **Includes:** Scouting installation locations of erosion controls, patrolling for maintenance of erosion controls, cleaning of silt fence, all labor, equipment, tools and miscellaneous work necessary to reasonably control erosion and pollution on the project site.

L. Open Ditch Silt Curtains:

1. **Measurement:** For each temporary silt curtain placed and removed.
2. **Payment:** For each temporary silt curtain placed and removed in compliance with the requirements of the Storm Water Erosion Management Plan.
3. **Includes:** All labor, material, equipment, tools and miscellaneous work necessary install and remove the Temporary Silt Curtain as described in the Storm Water Erosion Management Plan.

4. Does Not Include:

- a. Excavation of sediment pit upstream of curtain paid for under open ditch excavation bid item.
5. Cleaning or maintenance of in place structures. All maintenance of silt fence is paid under the Administration of Erosion Management Plan Bid Item.

PART 2 – PRODUCTS

2.01. OPEN DITCH EXCAVATION

- A. Open ditch excavation includes all materials at or above the design grade plus an assumed up to 0.5 feet of over-excavation within the existing or designed channel cross-section to account for immediate sediment deposition, regardless of its nature.
- B. Rock ledges may be encountered from time to time. Contractor shall notify the engineer immediately when such is encountered. Contractor shall remove the friable rock to the extent possible using the equipment contractor intended to use to excavate earth from the open ditch.

2.02. OPEN DITCH SEEDING AND FERTILIZING

A. **Seed Mixture (Germination tests less than one year old):**

Brome Grass 50 lb/Ac (1.15 lb/1000 SF) PLS

Winter Rye 1.5 Bu/Ac PLS

Oats 2.5 Bu/Ac PLS

B. **Pre-Seeding Fertilizer:** 6-20-20 – 500 lb/Ac (11 lb/1000 SF)

C. **Post Emergence Fertilizer:** Urea – 65 lb/Ac (1.5 lb/1000 SF)

2.03. OPEN DITCH SURFACE DRAIN AND TILE EXTENSION PIPES

A. **Tile Outlet and Surface Drain Pipes:**

1. **Corrugated Metal Pipe (CMP):** SUDAS 4020-201-G

- a. Annular Corrugations Only.
- b. Riveted Seams Only.
- c. 16 gauge unless otherwise specified.
- d. Use same material as pipe for all joint material and appurtenances.
- e. 12" minimum diameter for Tile Outlets.
- f. 15" Minimum Diameter for Surface Drains.

B. **Drain Tile Extensions to Tile Outlet Pipe:**

1. **Reinforced Concrete Pipe (RCP):** SUDAS 4020-201-A

- a. For finished cover depths less than 8 feet, class III pipe shall be used.
- b. For finished cover depths greater than 8 feet, class IV pipe shall be used.

2. **Polyvinyl Chloride Pipe (PVC):** SUDAS 4020-201-E

C. **Accessories:**

1. **Animal Guards:** Agri Drain Zinc Coated Steel - Install far enough in the pipe to allow it to swivel up and let trash pass without exposing the guard beyond the pipe.
2. **Flap Gate:** Agri Drain Heavy Duty, 3/16" steel construction with powder coat finish, sealing collar, dual stainless steel bolt hinge.
3. **Connecting Bands:** 12" wide.
4. **Anti-Seep Collars:** Bottom half only.

2.04. **REINFORCED CONCRETE PIPE TEES / ELBOWS / END CAPS / APRONS / REDUCERS / FIELD TILE CONNECTIONS**

- A. **Tees:** Shall conform to IDOT Standard Road Plan DR-142.
- B. **Elbows:** Shall conform to IDOT Standard Road Plan DR-141.
- C. **Endcaps:** Shall conform to IDOT Standard Road Plan DR-142.
- D. **Aprons:** Shall conform to IDOT Standard Road Plan DR-201.
- E. **Reducers:** Shall conform to ASTM C76, shall have reinforcement continuous through the pipe sizes transition area and be manufactured by the concrete pipe supplier.
- F. **Field Tile Connections:**
 1. **RCP:** Conform to ASTM C76.
 2. **Polyethylene:** Conform to AASHTO M 252, Type C, corrugated interior and exterior or Type S corrugated exterior and smooth interior. Pipe shall be non-perforated.

2.05. STEEL SHEET PILING

- A. Sheet piling shall conform to the requirements of ASTM A328 (Steel Sheet Piling), A572 (HighStrength Low-Alloy Columbium-Vanadium Structural Steel), or A690 (High-Strength Low-Alloy steel H-Piles and Sheet Piling for Use in Marine Environments). The sheet piling provided shall meet the required cross-section, section modulus, thickness, and steel grade shown on the drawings. Fabrication of sheet piles from shorter lengths of pile stock is not permitted.

2.06. ENGINEERING FABRIC FOR UNDERLAYING RIPRAP REVEMENT

- A. Comply with Iowa DOT Article 4196.01, B (Embankment Erosion Control) and Iowa DOT Materials I.M. 490.01, Appendix G

2.07. CONCRETE GROUT FOR RIPRAP REVETMENT

- A. Cement shall be Type I or Type II Portland cement conforming to ASTM C 150. Fly ash shall be in compliance with ASTM C 618, Class F or C. It may be used as a partial substitution for Portland cement for amounts not to exceed 20 percent of the total amount of cementitious material in the grout. The loss by ignition shall not exceed 4.0 percent. Fine aggregate shall conform to ASTM C 33 and shall be composed of clean, uncoated grains of material. Water shall be clean and free of harmful chemicals. Air entraining admixtures shall conform to ASTM C 260.

B. GROUT MIX:

The grout mix shall be as follows:

1. **Cement:** 10 sacks or 940 pounds per cubic yard.
2. **Fine concrete aggregate:** 2,100 pounds per cubic yard.
3. **Water:** 45 gallons per cubic yard or enough to provide a thick creamy consistency.
4. **Air content:** 6 to 10 percent.

No mixing water in excess of the amount called for in the grout mix shall be added during mixing, hauling or after arrival of the mix at the delivery point.

2.08. OPEN DITCH TEMPORARY SILT CURTAIN

- A. **Fabric:** Comply with Iowa DOT Standard Specifications Article 4196.01.
- B. **Posts:** 4 foot minimum steel (T-section) weighing at least 1.25 pounds per foot, exclusive of anchor plate. Painted Posts are not required. Good used posts are acceptable.

PART 3 – EXECUTION

3.01. OPEN DITCH EXCAVATION

A. Alignment:

1. Follow alignment provided which will be the approximate centerline of existing open ditch unless otherwise shown or as directed by Engineer.

B. Equipment:

1. Excavators shall be used for cleanout to minimize bank disturbance. Draglines will not be allowed without permission of engineer.
2. Other equipment, as required, to complete project.

C. Preparation:

1. Obtain Engineer's acceptance of clearing and grubbing work.
2. Construct an adequate work road where excavation will be from an existing spoil bank.

D. Excavation:

1. Includes sloping, shaping and removal of material from open ditch channel to reconstruct ditch bottom and side slopes.
2. Shape and slope ditch bottom and side slopes to reasonably conform with alignment, grade and cross sections of existing ditch bank, or flatter, or as shown on plans or as established by Engineer. All work not in conformance with this requirement shall be redone at no additional expense.
3. Unless otherwise detailed on the plans or directed or allowed by the Engineer, excavation shall commence at the downstream end of the project and proceed upstream.
4. Unless otherwise shown on the plans, excavation shall be carried out from both sides of the ditch and spoil shall be placed in approximately equal amounts on both sides of the ditch.

5. Avoid excessive over-excavation or bottom width expansion which threatens stability of ditch slopes.

E. Deposition:

1. Unless otherwise shown on the plans, spoil shall be removed uniformly from the ditch and shall be cast in piles beside the ditch as it is excavated.
2. Deposit all excavated material at least the width of the excavator tracks set back from the top of the existing ditch bank on existing ground surface unless directed or allowed otherwise by Engineer.
3. Contractor shall fill and/or shape overbank washouts to reasonably conform to the ditch cross section plan design. This is subsidiary to the work.
4. Locate spoil bank where shown on plans.

F. Work in Road/Railroad Rights-of-Way:

1. Unless otherwise provided for contractor shall apply for and secure permits to work in rights-of-way.
2. Unless otherwise detailed on the plans or as directed by the Engineer, no spoil shall be placed within public road or railroad right-of-way, except where permitted for access.
3. Contractor shall notify the appropriate road or railroad representative prior to commencing work within any right-of-way.

G. Procedures at Bridges:

1. Private Bridges (only those not scheduled for removal):
 - a. Remove and replace bridge deck to facilitate necessary excavation at contractor's option and expense.
 - b. Contractor will not be held responsible for damage to structure due to design grade line being below existing footings.
2. Private Bridges (only those scheduled for removal):
 - a. Remove bridge deck and cut pilings flush with ditch bank.
 - b. Burn and bury or otherwise dispose of all bridge materials removed.

3. County, State or Bridges or Culverts:

- a. Remove sediment in a manner approved by Agency consistent with permit requirements.

3.02. REMOVE SLOUGHS AND MEANDERS:

A. Bank Slides, Scour and Sloughs:

1. Any areas of scour, bank slide, or sloughing should be shaped to a uniform cross section in compliance with the typical cross section shown on the plans. Shape bank to a stable 2:1 slope. Shape all areas of bank failure and erosion to stable slopes.

B. SILT DEPOSITS AND MEANDERS:

1. Remove any siltation, sand, or deposited materials. Includes all bank shaping as needed for stability.

C. SPOIL BANK LEVELING:

1. Remove any rocks, rubbish and debris, and level spoil and slope to a uniform cross section with bulldozer.

3.03. OPEN DITCH SPOIL BANK LEVELING

A. Shaping:

1. Spoil shall be located shaped and sloped to a uniform cross section in compliance with the typical cross section shown on the plans.
2. Deep till, disk and spring tooth harrow spoil banks to depth of 8" minimum and pick up rocks and debris that surface. Perform this operation (deep till and rock / debris removal) two (2) times. Operation shall continue until all dirt clods are 4" or smaller with uniform slope and appearance from top of bank to toe of slope, subject to Engineer's approval.
3. Deep till and level all compacted areas caused by the contractor's equipment.

B. Cleanup:

1. Pick up and dispose of all boulders and rocks over 3" in diameter (fist size).
2. Dispose of all broken concrete over 3" in size.

3. Dispose of all large tree roots and other rubbish that surface during finishing operations.
4. Dispose in manner approved by Engineer.

3.04. OPEN DITCH SEEDING AND FERTILIZING

A. Equipment:

1. If a contractor chooses to perform daily seeding, the final pass of the excavator shall be with a toothed bucket to sufficiently disturb the ditch bank to more effectively hold seed.
2. If contractor chooses to do non-daily seeding and in areas where timely daily seeding has not been accomplished, a scarifier or other approved means shall be used to disturb the bank to a depth of 2 inches. An acceptable scarifier is shown on the plans.

B. Daily Seeding Method (April 1 – October 15):

1. Between April 1 and October 15, disturbed open ditch bank slopes above the normal water surface are to be fertilized and seeded with a portable cyclone seeder or by other approved means at least once each day including at the end of each day of work.
2. Fertilizer and seed shall be uniformly placed and sown as soon as practical on the fresh cut slope while the cut is still wet so that the placed material will adhere. No special preparation of areas to be seeded will be required, unless directed otherwise by Engineer.
3. Ditch bank slopes finished after October 15 are to be fertilized and seeded between the following April 1 and May 1 using the non-daily seeding method.
4. If weather prevents seeding at the end of the day, the reach shall be seeded first thing the next work day. Engineer shall determine when bank disturbance is required following a delay caused by weather. All other delays shall be assumed to trigger the requirement to seed according to the non-daily seeding method.
5. If contractor's daily seeding work is not being satisfactorily done the engineer may require that the remaining seeding be done using the non-daily seeding method for no additional compensation. Engineer may direct that poorly done areas of the seeding be redone using the non-daily seeding method and for no additional compensation.

6. After seed has germinated, contractor shall uniformly surface apply post emergence fertilizer at the specified rate.

C. Non-Daily Seeding Method (April 1 – June 1 and August 15 – October 15):

1. The contractor may opt to forego daily seed applications and instead seed long reaches of the banks of the ditch at a time. Under this option, contractor must moisten the denuded bank by applying a minimum of 0.5 gal/sf of water from the channel prior to scarifying the denuded ditch bank to a depth of 2 inches with a scarifier (or other approved means of bank disturbance) prior to applying fertilizer and seed. An acceptable scarifier is shown on the plans.
2. Engineer at Engineer's sole discretion may require up to two additional applications of water and up to two passes of the scarifier if ditch banks are not sufficiently prepared for seeding.
3. Fertilizer and seed shall be uniformly placed and sown as soon as practical on the fresh cut slope while the cut is still wet so that the placed material will adhere. No special preparation of areas to be seeded will be required, unless directed otherwise by Engineer.
4. After seed has germinated, contractor shall uniformly surface apply post emergence fertilizer at the specified rate.

3.05. OPEN DITCH SURFACE DRAIN AND TILE EXTENSION PIPES

- A. Contractor is required to maintain and provide a log of all drain tile line extension and surface drain pipes work on the open ditch. Contractor shall record the location, existing tile material, size, strength and length of materials installed, other work performed and equipment and labor time. Maintaining this log is incidental to the contract and it is to be shared with the engineer's representative during the work to better assure that it is being accurately and consistently kept. Failure to maintain an accurate log may result in Contractor being required to expose some or all of the pipe for field verification of quantities at contractor's expense.

B. Installation:

1. Complete channel excavation at the pipe location prior to commencing this work.
2. Pipes shall be in minimum lengths of twenty (20) feet unless directed or allowed otherwise by Engineer.

3. Field cutting by contractor shall be anticipated. Make all cuts for metal pipe with torch or saw. Grind rough edges.
4. Excavate and backfill as required for installation.

C. Trench, Pipe Bedding and Envelope:

1. Trench shall be not more than 24 inches wider than outside diameter of pipe.
2. The trench bottom shall be carefully shaped to closely match at least one sixth of the outside radius of the pipe.
3. Backfill shall be with on-site moist soil mechanically compacted in shallow lifts not exceeding six inches thick around and to six inches above the pipe to the satisfaction of the engineer. No density tests will be required. The remainder fill shall also be moist soil in uniformly placed and consolidated 12-inch layers to the finished ground surface.

D. Existing Drain Tile and Outlet Pipes:

1. Do not disturb existing drain tile except as necessary to extend tile and connect corrugated metal pipe outlets.
2. If given two weeks advance notice, engineer will mark all known pipe prior to excavation of the open ditch. If Contractor damages a marked pipe which was to remain un-disturbed, Contractor shall repair or replace the damaged pipe at no expense to Owner.
3. When necessary to extend or relay tile lines 12" diameter or larger, to connect to tile outlet pipe, the extension shall be made with reinforced concrete pipe of the class and size required. The RCP shall be the same or next larger standard size as is the tile being connected.
4. All smaller tile shall be extended using 10" diameter PVC as specified in the contract documents. This pipe shall be fitted over the existing tile whenever possible and be connected to the tile outlet pipe.
5. Necessary extensions or relays of existing tile less than forty feet in length may be completed when discovered, longer extensions must be first approved by Engineer.

6. Joint shall be double wrapped continuously around circumference with 12" wide geotechnical fabric. Connections of dissimilar tile shall then be encased with concrete 6" thick by 12" wide minimum.
7. Where a lateral tile line is found to be crushed, cracked and/or filled with sediment, Contractor shall notify the Engineer prior to doing additional work. Engineer will determine if replacement or abandonment is warranted.
8. Remedial tile work will not extend beyond the work limits.

E. Surface Drain Pipe:

1. Locate in low spots along open ditch or as directed by Engineer to provide drainage of surface runoff waters through finished spoil banks.
2. Camber trench bottom slightly in deeper areas in anticipation of spoil bank foundation settlement.
3. Install with the pipe inlet end 1/2 pipe diameter (not to exceed 1.0 foot) below the low grade elevation at outer spoil slope toe.
4. Install outlet with no more than two (2) feet of exposed pipe, no more than three (3) feet above the design ditch flow line (ditch bottom).
5. Provide minimum fall of one (1) foot over total pipe installation.
6. Shape spoil bank and surrounding area to drain toward inlet.
7. Install so that pipe orientation is approximately perpendicular to the open ditch centerline.
8. See plan detail.

F. Drain Tile Outlet Pipe:

1. Locate as most direct connection to open ditch, unless directed otherwise by Engineer.
2. Terminate metal pipe extension with no more than two (2) feet exposed, no more than three (3) feet above the design ditch flow line (ditch bottom).

3. Size outlet pipe to fit over drain and at least six (6) inches on undisturbed soil.
4. The pipe length shall be 20 feet and of one piece.
5. Complete connection as specified in 3.03 D for dissimilar materials.
6. Place erosion protection (rip rap) beneath pipe outlet, if directed by Engineer (Paid separately).
7. Install so that pipe orientation is approximately perpendicular to the open ditch centerline.
8. See plan detail.

G. Clean-up:

1. In anticipation of settlement, slightly mound excess trench excavation over trench.
2. Reshape spoil bank as needed.

3.06. REINFORCED CONCRETE PIPE TEES / ELBOWS / END CAPS / APRONS / REDUCERS / FIELD TILE CONNECTIONS

A. **Aprons:** Tie at least the first two joints.

B. **Field Tile Connections:** Comply with details and notes shown on plans.

3.07. STEEL SHEET PILING

A. Driving Sheet Pile:

1. Equipment properly sized and designed to be used to install sheetpile shall be used.
2. The piling shall be driven in a manner so as to insure perfect interlocking throughout the entire length of each pile. The piles shall be held in proper alignment during driving by means of suitable temporary guide structures which shall be removed when they have served their purpose. Piling shall be driven to the full depth shown on the drawings unless otherwise approved by the engineer.

B. Cutting Off Piles:

1. The contractor shall cut the piling off at the specified elevations. Piling length provided shall be sufficient to permit removal of all materials damaged by driving.

C. Defective Piling:

1. Unless otherwise corrected and allowed by the engineer with prior approval, any piling damaged in driving, driven out of its proper location, driven below the specified cut off elevation, or inaccurately cut off shall be pulled and replaced or re-driven. Any piling ruptured in the interlock or otherwise damaged during driving shall be pulled and replaced.

3.08. GEOTEXTILE FABRIC

A. Storage:

1. Prior to use, the geotextile shall be stored in a clean dry place, out of direct sunlight, not subject to extremes of either hot or cold, and with the manufacturer's protective cover in place. Receiving, storage, and handling at the job site shall be in accordance with the requirements in ASTM D 4873.

B. Surface Preparation:

1. The surface on which the geotextile is to be placed shall be graded to the neat lines and grades as shown on the drawings. The surface shall be firm throughout, reasonably smooth and free of loose rock and clods, holes, depressions, projections, muddy conditions and standing or flowing water (unless otherwise shown on the drawings).

B. Placement:

1. Prior to placement of the geotextile, the soil surface will be inspected for quality assurance of design and construction. The geotextile shall be placed on the approved prepared surface at the locations and in accordance with the details shown on the drawings. The geotextile shall be unrolled along the placement area and loosely laid (not stretched) in such a manner that it will conform to the surface irregularities when material is placed on or against it. The geotextile may be folded and overlapped to permit proper placement in the designated area.
2. The geotextile shall be joined by overlapping a minimum of 18 inches (unless otherwise specified), and secured against the underlying foundation material. Securing pins, approved and provided by the geotextile manufacturer, shall be placed along the edge of the panel or roll material to adequately hold it in place during installation. Pins shall be steel or fiberglass formed as a "U", "L", or "T" shape or contain "ears" to prevent total penetration. Steel washers shall be provided on all but the "U" shaped pins. The upstream or up-slope geotextile shall overlap the abutting down-slope geotextile. At vertical laps, securing pins shall be inserted through both layers along a line through approximately the midpoint of the overlap. At horizontal laps and across slope laps, securing pins shall be inserted through the bottom layer only. Securing pins shall be placed along a line approximately 2 inches in from edge of the of the placed geotextile at intervals not to exceed 12 feet unless otherwise

specified. Additional pins shall be installed as necessary and where appropriate, to prevent any undue slippage or movement of the geotextile. The use of securing pins will be held to the minimum necessary. Pins are to be left in place unless otherwise specified.

3. Should the geotextile be torn or punctured, or the overlaps disturbed, as evidenced by visible geotextile damage, subgrade pumping, intrusion, or grade distortion, the backfill around the damaged or displaced area shall be removed and restored to the original approved condition. The repair shall consist of a patch of the same type of geotextile being used, overlaying the existing geotextile. The patch shall extend a minimum of 2 feet from the edge of any damaged area.
4. The geotextile shall not be placed until it can be anchored and protected with the specified covering within 48 hours or protected from exposure to ultraviolet light. In no case shall material be dropped on uncovered geotextile from a height greater than 3 feet.

3.09. CONCRETE GROUT FOR RIRAP REVETMENT

A. Conveying and Placing:

1. Grout mix shall be delivered to the site and placed within 1 ½ hours after the introduction of the cement to the aggregates. In hot weather or under conditions contributing to quick setup of the grout mix, discharge of the concrete shall be accomplished in 45 minutes unless a set-retarding admixture is used, in which case the manufacturer's recommended time limit will apply.
2. Grout mix shall not be dropped more than 5 feet vertically unless suitable equipment is used to prevent segregation.
3. The grout mix shall not be placed until the rock riprap has been inspected and approved.
4. Rock to be grouted shall be kept wet for at least 2 hours immediately prior to grouting. Grout shall not be placed in standing or flowing water.
5. The grout shall be consolidated by heavy brooming, spading, mechanical vibration, and/or similar means. The finished surface shall be broomed to remove excess grout from exposed surfaces of the riprap. The grout shall not be forced to flow laterally to its final location.
6. The average rate of grout application shall be 3.6 cubic feet per square yard of riprap (0.4 cubic feet per square foot).

B. Curing Concrete:

Concrete shall be cured for 7 days by either:

1. Applying white pigmented curing compound at a rate of 1 gallon per 150 square feet or as recommended by the manufacturer.
2. Water soak exposed surface for the entire 7 days.
3. Cover with burlap, mats or other material and maintain in a moist condition.
4. Cover with four (4) mil plastic sheeting while concrete is still wet.
Grout mix shall not be placed when daily minimum temperatures are expected to be lower than 40 degrees F unless facilities are provided to maintain the temperature of the materials at 50 to 90 degrees F during the placement and curing period. Grout may not be placed on frozen surfaces. When freezing conditions are expected, rock shall be heated to 50 to 90 degrees F for at least 24 hours prior to placing grout.

3.10. EXPLORATORY INVESTIGATION

- A. Contractor shall use standard care in locating drains to minimize damages.
- B. Contractor shall leave holes open until engineer completes assessment of the found and exposed drains.

3.11. ADMINISTRATION OF EROSION MANAGEMENT PLAN

- A. Contractor shall comply will all stipulations of the Storm Water Erosion Management Plan.

3.12. OPEN DITCH SILT CURTAINS

- A. Close attention is warranted for the placement and maintenance of temporary open ditch silt curtains.
- B. A set of two $\frac{3}{4}$ length silt fences shall be used. The first fence should be placed extending from on bank $\frac{3}{4}$ the way across the channel to the other bank leaving a small area of unrestricted flow. The second fence should be placed approximately 5 ft. up or downstream in the same fashion with the fence beginning on the opposite bank and extending $\frac{3}{4}$ the way back across the channel.
- C. Placement of two silt fences in this manner will allow for the safe escape of fish and will act as a trap for sediments which are suspended during construction activities.

- D. The first set of silt fences / curtains shall be placed immediately downstream of where the project begins as shown on the plans.
- E. When the project has been completed ½ way upstream, the first set of silt fences / curtains shall be carefully removed, cleaned away from the waterway and placed just downstream of where the current dredging operation is being performed.
- F. When all dredging / removal operations have been completed in the waterway, remove the second set of silt fences / curtains as described in E. above.

END OF SECTION

CONSTRUCTION PLANS FOR DRAINAGE DISTRICT NO. 14 TILE IMPROVEMENTS WORTH COUNTY, IOWA 2024

GOVERNING SPECIFICATIONS

THE 2024 EDITION OF THE "IOWA STATEWIDE URBAN STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS" SHALL GOVERN.

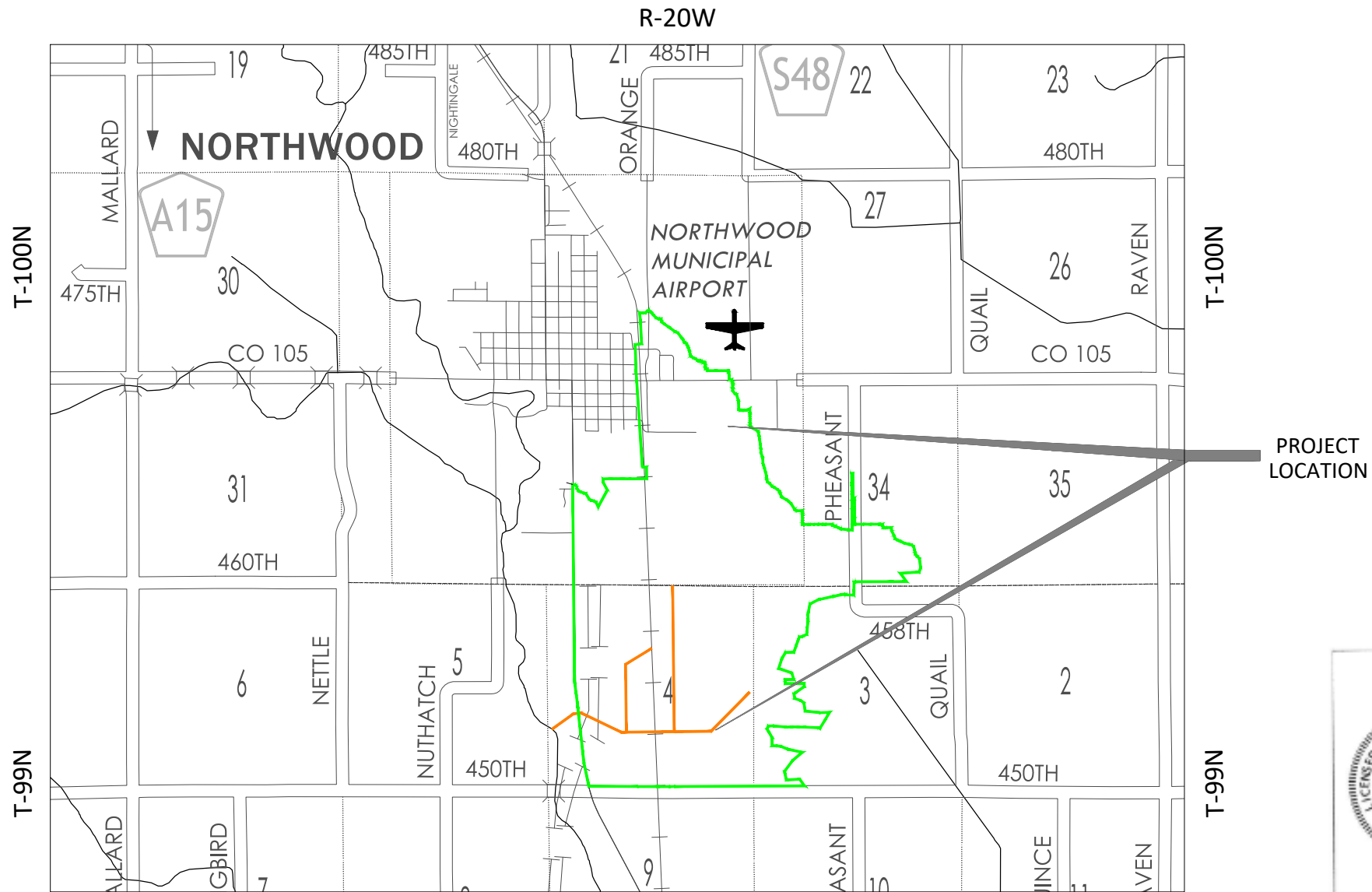
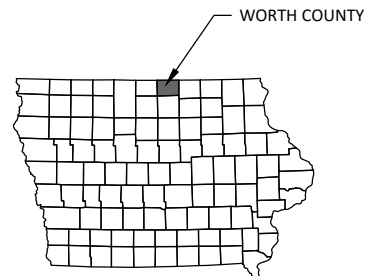
IOWA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION", SERIES 2015 AND ALL CURRENT GENERAL SUPPLEMENTAL SPECIFICATIONS AND MATERIALS INSTRUCTIONAL MEMORANDUM SHALL GOVERN AS REFERENCED.

ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.




THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

NOTE: THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY IOWA ONE CALL, 811 OR 1-800-292-8989.



SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
A.01	TITLE SHEET
A.02	LANDOWNER PLAT
B.01	RCP INSTALLATION
B.02	CPDT INSTALLATION
B.03	TILE INTAKE DETAIL
C.01	QUANTITIES
C.02	ESTIMATE REFERENCE NOTES
C.03	CONSTRUCTION NOTES
C.04	SWEMP
G.01	ALIGNMENT GEOMETRY
M.01 - M.02	PLAN & PROFILE - DD No. 14 - PROPOSED MAIN
M.03	PLAN & PROFILE - DD No. 14 - PROPOSED LATERAL 4
M.04	PLAN & PROFILE - DD No. 14 - PROPOSED LATERAL 5
V.01	BORING DETAIL - ORCHID AVE.
V.02	BORING DETAIL - UNION PACIFIC RAILROAD

IOWA DOT STANDARD RAOD PLANS	
SHEET NUMBER	SHEET TITLE
TC-202	WORK WITHIN 15 FT OF TRAVELED WAY
TC-1	WORK NOT AFFECTING TRAFFIC (TWO-LANE OR MULTILANE)
TC-213	LANE CLOSURES WITH FLAGGERS
TC-215	LANE CLOSURES WITH SIGNALS (UP TO THREE DAYS)



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.

Jacob Hagan
JACOB L. HAGAN, P.E.

REG. NO. 25738 DATE: 1/22/24

MY LICENSE RENEWAL DATE IS 12/31/2024

PAGES OR SHEETS COVERED BY THIS SEAL:
ALL PLAN SHEETS

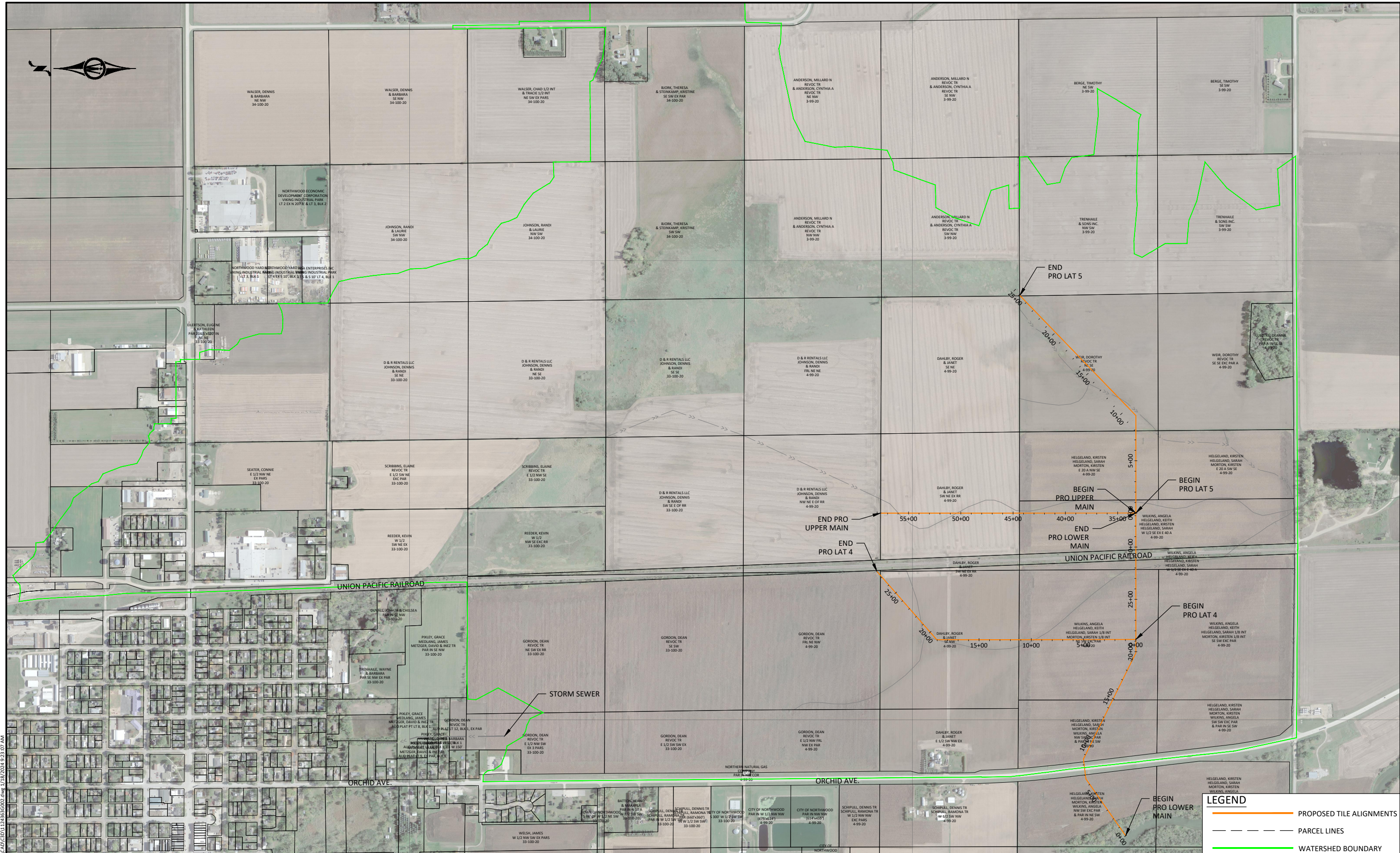
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CLH			
JLH			
CLIENT PROJ. NO.			



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TILE IMPROVEMENTS
DD 14 WORTH COUNTY, IOWA
LANDOWNER PLAT

SHEET
A.02

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PIPE HAUNCH FILL AND COMPACTION METHOD PLAN REQUIREMENTS COMPLIANCE VERIFICATION

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE INSTALLATION OF ALL PIPE ACCORDING TO PLAN REQUIREMENTS. THE CONTRACTOR'S PARTICIPATION IN AND COMPLIANCE WITH THE FOLLOWING PROCEDURE IS REQUIRED AND WILL ALLOW FOR FEWER SOIL DENSITY TESTS TO ENSURE PROPER PIPE INSTALLATION.

STEP 1
BEFORE COMMENCING PIPE INSTALLATION, STANDARD SOIL PROCTOR DENSITY TEST RESULTS OF REPRESENTATIVE SAMPLE(S) OF PIPE HAUNCH FILL SHALL BE PROVIDED BY AN INDEPENDENT QUALIFIED SOILS TESTING LAB. THE SELECTION OF THE SAMPLE(S) WILL BE MADE BY THE ENGINEER AND CONTRACTOR (WHEN SPECIFIED).

STEP 2
CONTRACTOR MAY BEGIN EXCAVATING THE MODIFIED TYPE 4 TRENCH WITH THE REQUIRED SHAPED BOTTOM GROOVE AND PLACE SEVERAL PIPE SECTIONS ONLY WHEN BOTH ENGINEER AND TESTING LAB TECHNICIAN ARE PRESENT

CONTRACTOR SHALL DEMONSTRATE THE INTENDED METHODS FOR COMPACTING THE FILL FOR THE PIPE HAUNCH AREAS. SOIL DENSITY TESTS SHALL BE TAKEN AT LOCATIONS DESIGNATED BY THE ENGINEER TO CONFIRM THAT THE INTENDED METHODS FOR FILL AND COMPACTION OF THE PIPE HAUNCH AREAS SATISFIES THE PLAN REQUIREMENTS. CONTRACTOR SHALL MODIFY THE INSTALLATION METHODS AND REPEAT STEP 2 UNTIL ACCEPTABLE TESTS RESULTS ARE ACHIEVED.

STEP 3
CONTRACTOR MAY INSTALL THE NEXT SEVERAL HUNDRED FEET OF PIPE. ENGINEER SHALL DESIGNATE SEVERAL LOCATIONS (APPROXIMATELY 10% OF THE INSTALLED LENGTH) WHERE CONTRACTOR SHALL LEAVE THE PIPE UNBLINDED FOR FURTHER DENSITY TESTS OF THE HAUNCH FILL AREA. ALL DENSITY TESTS MUST MEET PLAN REQUIREMENTS BEFORE WORK MAY PROCEED FURTHER.

IF DENSITY TESTING DATA CONFIRMS TO THE SATISFACTION OF THE ENGINEER THAT THE CONTRACTOR'S INSTALLATION METHOD WILL PRODUCE CONSISTENT COMPLIANCE WITH PLAN REQUIREMENTS, CONTRACTOR MAY CONTINUE INSTALLATION OF THE PIPE WITH NO ADDITIONAL TESTING REQUIRED. IF NOT, STEPS 2 AND 3 SHALL BE REPEATED UNTIL A RELIABLE, SUCCESSFUL METHOD OF PIPE INSTALLATION THAT PRODUCES SATISFACTORY RESULTS IS ESTABLISHED.

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

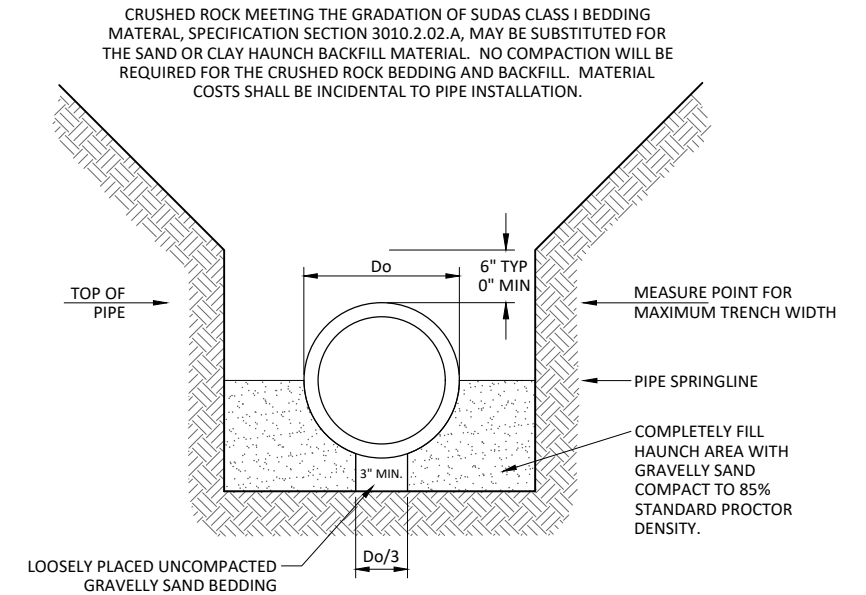
STEP 4A SOIL OR TRENCH CONDITION CHANGES

TO VERIFY CONTRACTOR'S COMPLIANCE WITH PLAN REQUIREMENTS UNDER THE CHANGED CONDITIONS, ENGINEER MAY STOP WORK AND REQUIRE ADDITIONAL SOIL PROCTOR TESTS AND/OR SOIL DENSITY TESTS SIMILAR TO STEPS 1 THROUGH 3. THE WORK AND COSTS OF THE FIRST TWO REVERIFICATIONS IS SUBSIDIARY TO THE PIPE INSTALLATION. SUBSEQUENT VERIFICATIONS WILL BE CONSIDERED EXTRA WORK.

STEP 4B CONTRACTOR FAILS TO CONSISTENTLY PERFORM INSTALLATION METHOD OR INSTRUCT OTHER INSTALLERS

IF CONTRACTOR FAILS TO CONSISTENTLY PERFORM OR ADEQUATELY INSTRUCT SUBCONTRACTORS AND/OR SUBSEQUENT PIPE INSTALLATION WORKERS ON THE APPROVED INSTALLATION METHOD, ENGINEER MAY STOP WORK AND REQUIRE ADDITIONAL SOIL PROCTOR TESTS AND/OR SOIL DENSITY TESTS SIMILAR TO STEPS 1 THROUGH 3 TO VERIFY CONTRACTOR'S COMPLIANCE WITH PLAN REQUIREMENTS. THE WORK AND COSTS OF ALL VERIFICATIONS UNDER SUCH CONDITIONS IS SUBSIDIARY TO THE PIPE INSTALLATION.

EXCEPTION
IF CONTRACTOR ELECTS TO SHAPE THE TRENCH BOTTOM SUCH THAT A MINIMUM OF 45% OF THE OUTER CIRCUMFERENCE OF THE PIPE IS FIRMLY BEDDED IN AND CONSISTENTLY SUPPORTED BY UNDISTURBED SOIL, PIPE HAUNCH FILL COMPACTION TESTING WILL NOT BE REQUIRED. THE CONTRACTOR IS REQUIRED TO COMPLY WITH A PROPER INSTALLATION METHOD AND TO FULLY COMPLY WITH THE REQUIREMENTS OF THE VERIFICATION OUTLINED ABOVE FOR ALL SITUATIONS WHERE THIS EXCEPTION IS NOT MET.

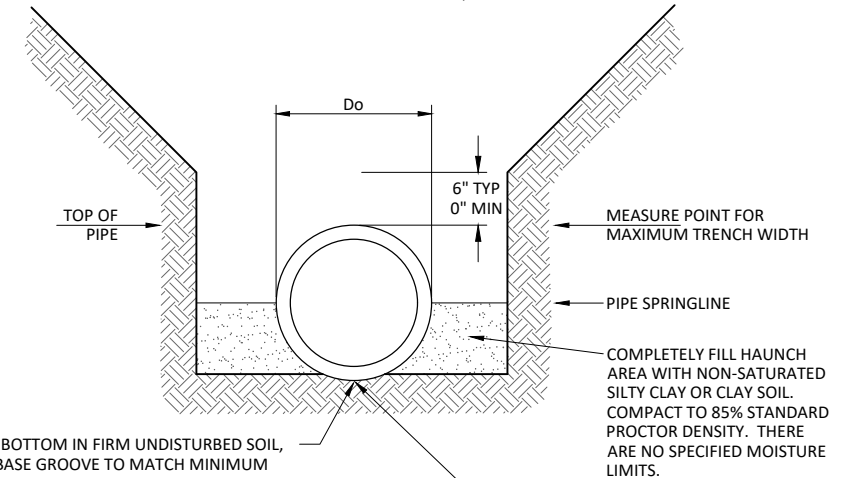


GRAVELLY SAND BEDDING SHALL BE CONSISTENT WITH THE GRADATION AND OTHER CHARACTERISTICS OF STANDARD AASHTO A1 OR A3 SOIL. A REPRESENTATIVE SAMPLE OF THE MATERIAL AND A GRADATION REPORT OR SUPPLIER'S CERTIFICATION OF COMPLIANCE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO DELIVERY TO SITE.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

TRENCH INSTALLATION TYPE 3

NOT TO SCALE
SOURCE: AMERICAN CONCRETE PIPE ASSOCIATION
CONCRETE PIPE DESIGN MANUAL

MINIMUM TRENCH WIDTH SHALL BE OUTSIDE DIAMETER OF PIPE PLUS 12" OR THAT WIDTH WHICH IS REQUIRED FOR COMPACTION, WHICHEVER IS GREATER

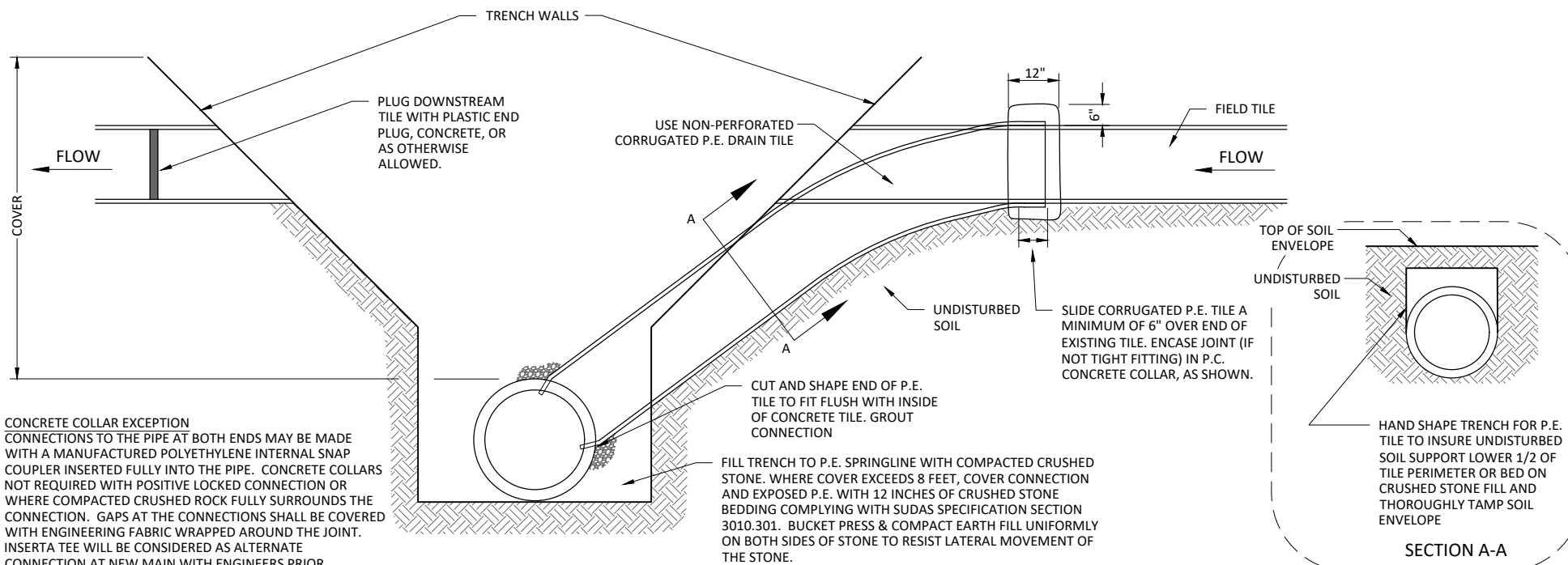


WHERE TRENCH BOTTOM IN FIRM UNDISTURBED SOIL, SHAPE TRENCH BASE GROOVE TO MATCH MINIMUM 1/6 OF THE OUTER CIRCUMFERENCE OF THE PIPE. WHERE THE SHAPED GROOVE CANNOT BE CONSTRUCTED INTO UNDISTURBED GROUND OR WHERE EXCESS CUT OCCURS OVER EXCAVATE AND PLACE MINIMUM 3-INCH THICK COMPACTED GRAVELLY SAND BEDDING TO RESTORE GRADE SUCH THAT 1/6 OR MORE OF THE OUTER CIRCUMFERENCE OF THE PIPE IS BEDDED. THIS MATERIAL AND WORK IS SUBSIDIARY TO THE INSTALLATION OF THE PIPE. CONTRACTOR MAY SUBSTITUTE PIPE BEDDING ROCK AS THE BEDDING MATERIAL. IT ALSO IS SUBSIDIARY.

WHERE FIRM BASE IS NOT ENCOUNTERED. OVER EXCAVATE AS DIRECTED BY ENGINEER. PLACE CRADLING ROCK AND BED PIPE IN IT SUCH THAT 1/6 OR MORE OF THE OUTER CIRCUMFERENCE OF THE PIPE IS SUPPORTED. THIS ROCK IS PAID FOR UNDER A SEPARATE BID ITEM.

MODIFIED TRENCH INSTALLATION TYPE 4

NOT TO SCALE
SOURCE: AMERICAN CONCRETE PIPE ASSOCIATION
CONCRETE PIPE DESIGN MANUAL



TYPICAL FIELD TILE CONNECTION
FOR FIELD TILE UP TO 10" DIAMETER

CONCRETE COLLAR EXCEPTION
CONNECTIONS TO THE PIPE AT BOTH ENDS MAY BE MADE WITH A MANUFACTURED POLYETHYLENE INTERNAL SNAP COUPLER INSERTED FULLY INTO THE PIPE. CONCRETE COLLARS NOT REQUIRED WITH POSITIVE LOCKED CONNECTION OR WHERE COMPACTED CRUSHED ROCK FULLY SURROUNDS THE CONNECTION. GAPS AT THE CONNECTIONS SHALL BE COVERED WITH ENGINEERING FABRIC WRAPPED AROUND THE JOINT. INSERTA TEE WILL BE CONSIDERED AS ALTERNATE CONNECTION AT NEW MAIN WITH ENGINEERS PRIOR APPROVAL AND INSTALLATION PER MANUFACTURERS RECOMMENDATION.



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JLH			
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TILE IMPROVEMENTS
DD 14 WORTH COUNTY, IOWA
RCP INSTALLATION

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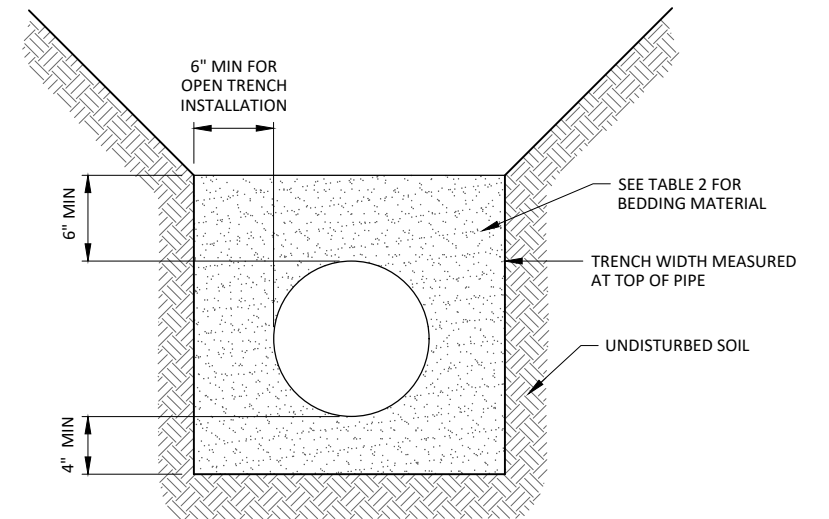
CORRUGATED POLYETHYLENE DRAINAGE TUBING MATERIAL & INSTALLATION NOTES

- ALL CPDT AND CONNECTORS FURNISHED SHALL BE IN COMPLIANCE WITH MATERIAL STANDARDS ASTM F405 AND F667, AS APPLICABLE, AND SHALL BE CLASSIFIED AS HEAVY-DUTY UNDER THOSE STANDARDS.
- EXCEPT MODIFIED HEREIN OR OTHERWISE APPROVED BY ENGINEER, ALL CPDT SHALL BE INSTALLED IN COMPLIANCE WITH THE ASTM 449 STANDARD PRACTICE.
- FOR PIPES 6" DIAMETER AND SMALLER A 90° V GROOVE BOTTOM MAY BE USED, FOR ALL LARGER PIPE A TRAPEZOIDAL BOTTOM OR A CIRCULAR BOTTOM CONFORMING TO THE OUTSIDE DIAMETER OF THE PIPE SHALL BE USED. PRIOR TO THE INSTALLATION OF CPDT, CONTRACTOR MUST PROVE TO ENGINEER THAT THE INSTALLATION REQUIREMENTS, INCLUDING THE SHAPE OF THE TRENCH BOTTOM, WILL BE ACCOMPLISHED.
- WHERE TRENCH BOTTOM IS IN FIRM UNDISTURBED SOIL, SHAPE TRENCH BASE GROOVE. WHERE EXCESS CUT OCCURS, OVEREXCAVATE AND PLACE MINIMUM THREE (3) INCH THICK, GRAVELLY SAND BEDDING TO RESTORE GRADE. THIS BEDDING SHALL MEET THAT REQUIRED FOR TRENCH INSTALLATION TYPE 3 ON PLAN SHEET C.02. IF DUE TO CONTRACTOR ERROR THIS MATERIAL AND WORK IS SUBSIDIARY TO THE INSTALLATION OF THE PIPE. CONTRACTOR MAY SUBSTITUTE PIPE BEDDING ROCK AS THE BEDDING MATERIAL.
- NATIVE SOILS MAY BE USED AS BACKFILL MATERIAL UNLESS UNSTABLE TRENCH CONDITIONS PREVENT THE TRENCH BOTTOM HOLDING THE SHAPED GROOVE. IF TRENCH BOTTOM WILL NOT HOLD GROOVE SHAPE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY. A FLAT BOTTOM TRENCH INSTALLATION WILL THEN BE ASSUMED. THE REQUIRED BEDDING MATERIAL WILL BE PAID UNDER THE TILE TRENCH STABILIZATION AND CRADLING ROCK BID ITEM.
- MINIMUM TRENCH WIDTH IS PIPE OUTSIDE DIAMETER PLUS FOUR (4) INCHES FOR PLOWED INSTALLATION AND PIPE OUTSIDE DIAMETER PLUS TWELVE (12) INCHES FOR OPEN TRENCH INSTALLATION.
- ALL LATERAL CONNECTIONS, ELBOWS, TEES, ALIGNMENT CURVES, START HOLES AND ALL PORTIONS OF THE TRENCH NOT MEETING THE GROOVED TRENCH INSTALLATION REQUIREMENTS SHALL BE FILLED TO A MINIMUM OF SIX (6) INCH COVER OVER THE PIPE WITH GRADED CRUSHED STONE OR GRAVEL AS SHOWN ON TABLE 2 OF THIS SHEET. UNLESS DUE TO CONTRACTOR ERROR THIS BEDDING MATERIAL WILL BE PAID UNDER THE TILE TRENCH STABILIZATION AND CRADLING ROCK BID ITEM.
- MANUFACTURER'S ENDCAPS SHALL BE INSTALLED AT THE TERMINATION OF EACH LINE UNLESS A CONNECTION TO AN EXISTING DRAIN IS MADE.
- WITH THE INSTALLATION OF THE FIRST REACH OF CPDT ON THE PROJECT, CONTRACTOR IS REQUIRED TO WORK WITH THE ENGINEER TO CHECK AND CONFIRM THAT THE PIPE STRETCH, IF ANY, DOES NOT EXCEED 5%.
- ALIGNMENT TURNS MAYBE MADE USING EITHER A MANUFACTURED FITTING OR CURVING THE LINE WITH A 25' MINIMUM RADIUS.

Nominal Pipe Diameter (IN)	Pipe Quality (ASTM)	Trench Width at Top of the Pipe (FT)			
		12"	18"	24"	30" or Greater
4	Standard	13	7	5.5	5
	Heavy-duty	Any	10	7	6
6	Standard	10	7	5.5	5
	Heavy-duty	Any	9.5	6.5	6
8	Standard	10	7	5.5	5
	Heavy-duty	Any	10	7	6
10	Heavy-duty	...	9	7	6
12	Heavy-duty	...	9	7	6
15	Heavy-duty	7	6

Description	Percentage Passing Sieve Sizes			Minimum Standard Density (%)	Maximum Compaction Layer Height (IN.)
	1"	3/4"	No. 4		
Crushed Stone Crushed Gravel*	100%	> 95%	< 5%	Dumped	18

* Class 1 Bedding Material Per SUDAS 3010.202A is an Allowable Substitute

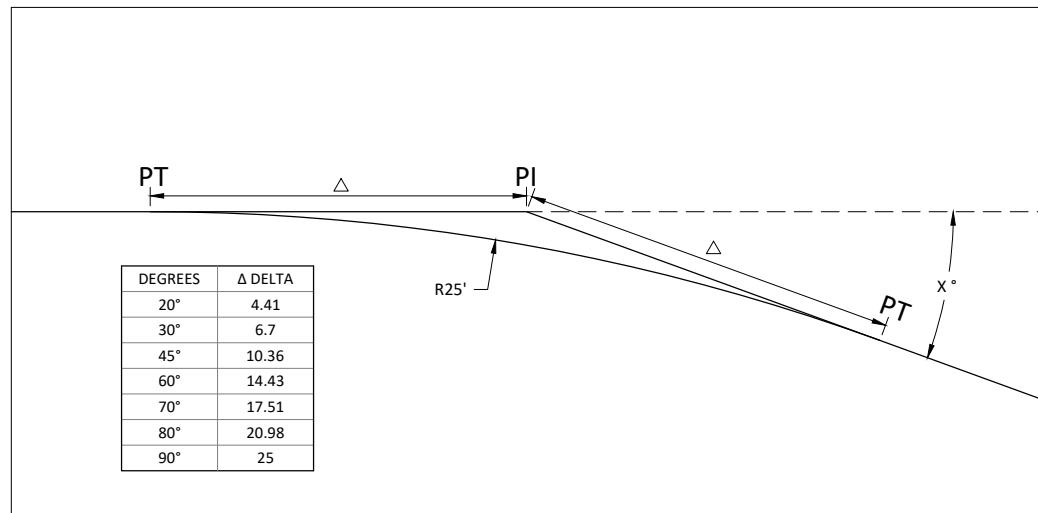


FILL TRENCH TO 6" ABOVE TOP OF PIPE WITH CRUSHED STONE OR GRAVEL MEETING THE REQUIREMENTS IN TABLE 2. BEDDING MATERIAL SHALL BE INCIDENTAL TO THE PIPE INSTALLATION.

FLAT BOTTOM TRENCH INSTALLATION

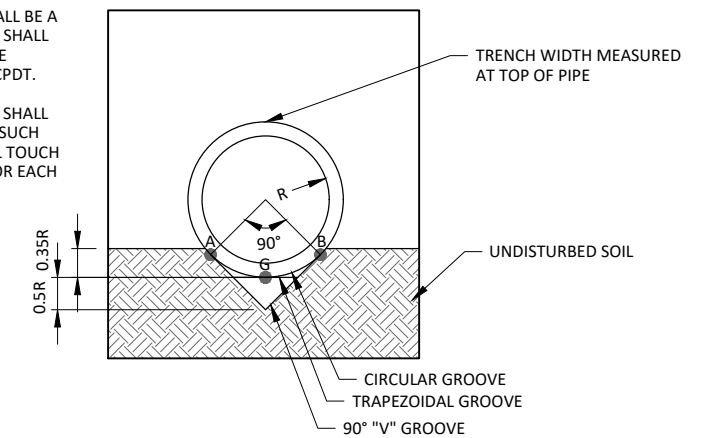
NOT TO SCALE
SOURCE: ASTM F449

NOTE: THIS IS AN ALLOWED ALTERNATIVE INSTALLATION FOR CPDT



THE CIRCULAR GROOVE SHALL BE A MINIMUM 0.35R DEEP AND SHALL MATCH THE OUTSIDE CURVE SHAPE OF THE DEFLECTED CPDT.

THE TRAPEZOIDAL GROOVE SHALL BE SHAPED AND ADJUSTED SUCH THAT POINTS A, B, & C WILL TOUCH THE UNDEFLECTED CPDT FOR EACH SIZE INSTALLED.



PREFERRED TRENCH INSTALLATION BOTTOM

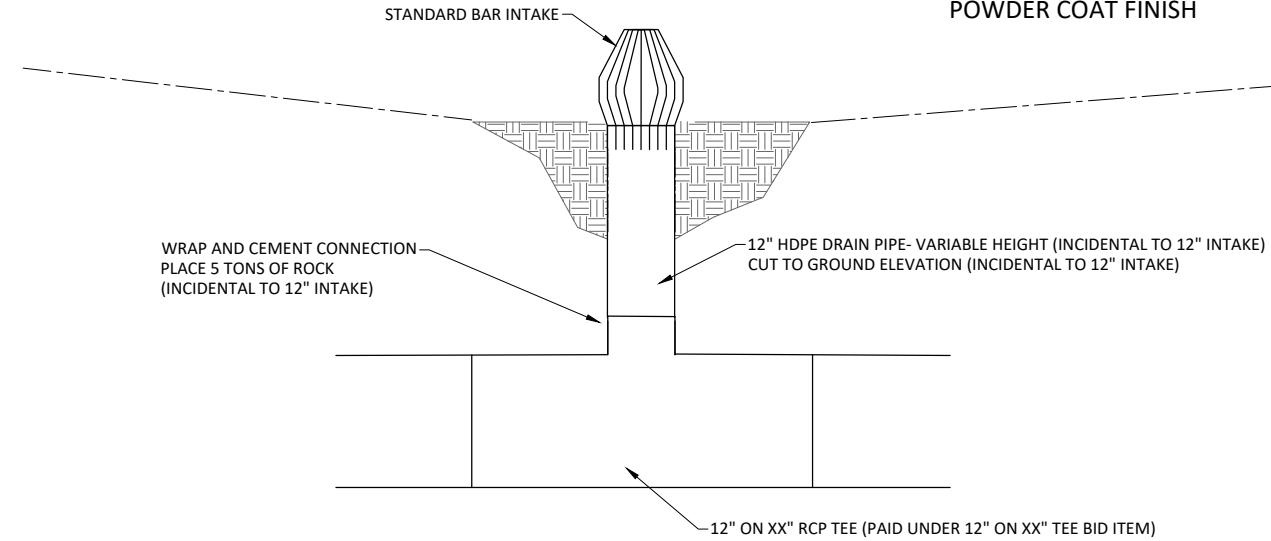
TRAPEZOIDAL GROOVE, "V" GROOVE, & CIRCULAR GROOVE
NOT TO SCALE
SOURCE: ASTM F449

DESIGNED	REV	DESCRIPTION	DATE
JLH			
CLH			
JLH			
CLIENT PROJ. NO.			

12" STANDARD INTAKE DETAIL

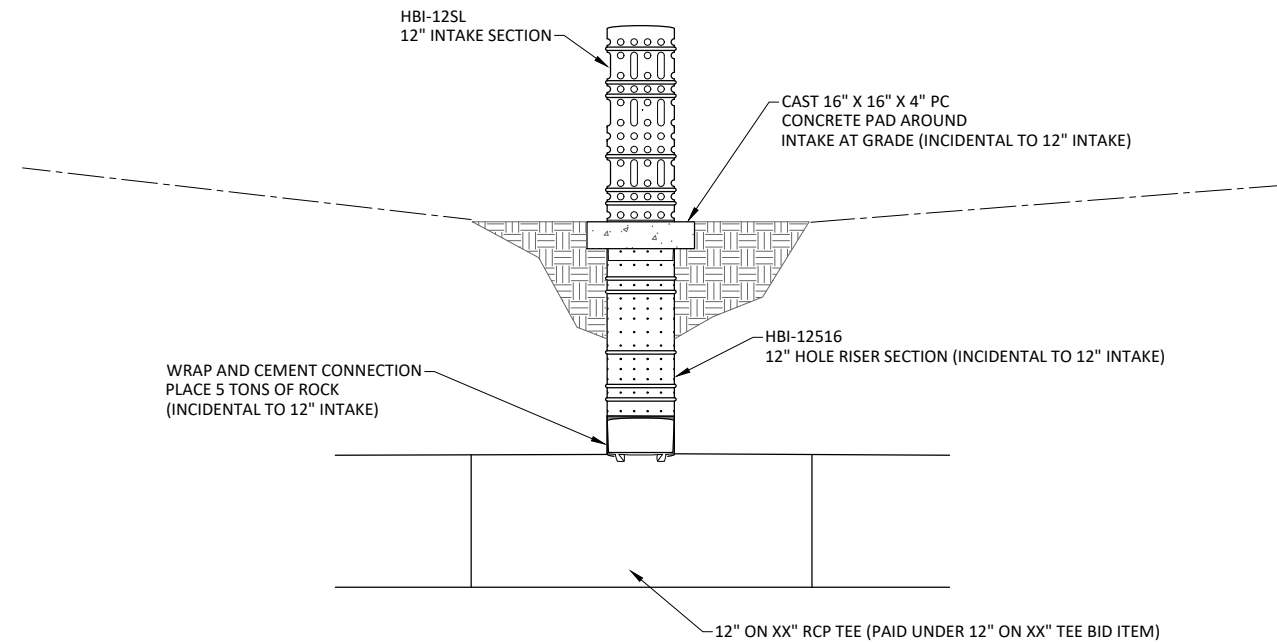
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BAR GUARD SHALL MEET FOLLOWING SPECS:
 BAR DIAMETER- 1/4"
 NUMBER OF BARS- 35
 POWDER COAT FINISH



12" HICKENBOTTOM DETAIL

NOT DRAWN TO SCALE



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DESIGNED	REV	DESCRIPTION	DATE
JLH			
DRAWN			
CLH			
CHECKED			
JLH			
CLIENT PROJ. NO.			

TILE IMPROVEMENTS
 DD 14 WORTH COUNTY, IOWA

INTAKE DETAILS

SHEET

B.03

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
101	4020-108-A-1	CLASS IV R.C.P., 36" DIA.
102, 202	4020-108-A-1	CLASS III R.C.P., 36" DIA.
401, 601	4020-108-A-1	CLASS III R.C.P., 24" DIA.
501, 502	4020-108-A-1	CLASS III R.C.P., 18" DIA.
		SPOON METHOD MAY BE USED PER DIRECTION OF ENGINEER. CONTRACTOR SHALL HAVE PROPER EQUIPMENT AND DEMONSTRATE ABILITY TO DO SPOON METHOD. PIPE BEDDING IS INCIDENTAL TO INSTALLATION UNLESS POOR SOIL CONDITIONS PER ENGINEER.
103	BMIDD-108-E-1	18" ON 36" DIA. R.C.P. TEE, FABRICATION ONLY
104	BMIDD-108-E-1	12" ON 36" DIA. R.C.P. TEE, FABRICATION ONLY
105	BMIDD-108-E-1	24" ON 36" DIA. R.C.P. TEE, FABRICATION ONLY
402, 605	BMIDD-108-E-1	12" ON 24" DIA. R.C.P. TEE, FABRICATION ONLY
403, 604	BMIDD-108-E-1	15" ON 24" DIA. R.C.P. TEE, FABRICATION ONLY
502, 606	BMIDD-108-E-1	12" ON 18" DIA. R.C.P. TEE, FABRICATION ONLY
		BEDDING STONE IS INCIDENTAL.
107, 404, 504, 609	BMIDD-108-E-1	LATERAL TILE CONNECTIONS, 10" DIA. OR SMALLER
108, 405, 505, 610	BMIDD-108-E-1	LATERAL TILE CONNECTIONS, 12" DIA. OR LARGER
		SEE DETAIL ON SHEET B.01. TILE CONNECTIONS LARGER THAN 12" REQUIE A RCP TEE. THIS TEE IS PAID UNDER A SEPARATE BID ITEM. 5 TONS OF ROCK PER LARGE TILE CONNECTION. 3 TONS PER SMALL TILE CONNECTION. ROCK IS PAID UNDER SEPARATE BID ITEM. INCLUDES UP TO 25' OF SINGE WALL CORRUGATED DRAIN PIPE PER TILE CONNECTION AS INCIDENTAL.
109, 406, 506, 611	2502.05-D-1	STANDARD BAR GUARD INTAKE, 12" DIA.
		SEE DETAIL SHEET B.03. TEE IS PAID UNDER SEPATATE BID ITEM. ROCK IS PAID UNDER SEPARATE BID ITEM.
110, 302, 407, 507, 612	2601.05-A-6	TILE TRENCH STABILIZATION AND CRADLING ROCK
		ROCK FOR PLACING STRUCTURES IS PAID UNDER THOSE STRUCTURES. ROCK FOR BEDDING PIPE IS PAID UNDER RCP ITEM. ROCK WILL ONLY BE PAID FOR TILE CONNECTIONS, INTAKES AND BEDDING NEEDS DUE TO POOR BEDDING CONDITIONS. ALL TICKETS MUST BE SUBMITTED.
111, 408, 508, 613	BMIDD-108-J-1	ADMINISTRATION OF EROSION MANAGEMENT PLAN
		SEE SHEET C.04. THIS INCLUDES GOOD STEWARDSHIP OF THE SITE. INLCUDES MAINTAINING EROSION CONTROL DEVICES AS NEEDED. THE INSTALLATION OF EROSION CONTROL DEVICES WILL BE PAID AS A SEPARATE ITEM.
112	2010-108-A-1	CLEARING & GRUBBING
		THIS INCLUDES CLEARING AND GRUBBING ALL TREES, BRUSH, ROCKS, RUBBISH ALONG THE ENTIRE SITE INCLUDING FENCE CUTS. THIS INCLUDES ALL SECTIONS. TREES TO BE CLEARED WITHIN 60' OF PROPOSED TILE NEAR OUTLET. BURN AND BURY ON SITE. ALL ROCKS TO BE BURIED.
113, 305, 409, 509, 614	BMIDD-108-I-1	EXPLORATORY EXCAVATION
		INLCUDES ALL WORK TO LOCATE EXISTING TILE PER DIRECTION OF ENGINEER.
115	9040-108-J-1	RIPRAP, CLASS E
		FIELD STONE MAY BE USED PER APPROVAL OF ENGINEER. NO ENGINEERING FABRIC IS REQUIRED.
116, 306, 410, 510, 615	11020-108-A-1	MOBILIZATION
301	4020-108-A-2	DRAIN TILE, TRENCHLESS, STEEL, 0 688" WALL, 48" DIA.
		INLCUDES INSTALLING TWO AGRI-DRAIN "TILE LINE" SIGN AT THE RIGHT-OF-WAY LINES ON BOTH SIDES OF THE TRACK FASTENED ON A 6' METAL T-POST. INCLUDES ALL LABOR AND MATERIALS TO COMPLETE THE BORING. VIDEO INSPECTION NOT REQUIRED. BEDDING STONE USED IN BORE PITS IS INCIDENTAL.
303	BMIDD-108-X-1	RAILROAD INSURANCE AND PERMITTING
		ENGINEER HAS SUBMITTED PERMIT FOR INSTALLING TILE. SEE SHEET C.05. TO BE PAID ON ACTUAL PERMITTING, FLAGGING, INSPECTION AND INSURANCE EXPENSE PLUS 10% FOR CONTRACTOR'S CHARGE. PROVIDE RECIEPTS FOR ALL EXPENSES.
603	BMIDD-108-X-1	CORRUGATED DRAIN PIPE, 10"
		SEE SHEET B.02.

IDOT ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
201	2503.05-A-2	DRAIN TILE, TRENCHLESS, STEEL, 0.531" WALL, 36" DIA.
		VIDEO INSPECTION IS NOT REQUIRED. INCLUDES BEDDING STONE USED IN BORE PITS.
202	2503.05-A-1	CLASS III R.C.P., 36" DIA.
203	2503.05-A-1	12" ON 36" DIA. R.C.P. TEE, FABRICATION ONLY
		BEDDING STONE IS INCIDENTAL.
204	2502.05-D-1	12" HICKENBOTTOM INTAKE
		SEE SHEET B.03 FOR DETAILS. BEDDING ROCK IS INCIDENTAL.
205	2601.05-A-6	MULCH FURNISHED AND PLACED
206	2601.05-A-2	SEEDING AND FERTILIZING (RURAL)
		SEE NOTES ON SHEET C.03. WATERING IS NOT REQUIRED.
207	2528.04-A	TRAFFIC CONTROL
		SEE TRAFFIC CONTROL SHEETS. PER DIRECTION OF IOWA DOT.
208	2602.05-A-2	SILT FENCE- INSTALLATION & REMOVAL
		INCLUDES INSTALLING, MAINTIANING, AND REMOVING.
210	2533.05-A	MOBILIZATION

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DESIGNED	REV	DESCRIPTION	DATE
JLH			
DRAWN			
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CHECKED			
JLH			
CLIENT PROJ. NO.			

TILE IMPROVEMENTS
DD 14 WORTH COUNTY, IOWA
ESTIMATE REFERENCE NOTES

SHEET
C.02

CONSTRUCTION NOTES - FOR SUBSURFACE DRAINS WORK

PLAN NOTES SUPERSEDE CONFLICTING PROVISIONS IN THE TECHNICAL SPECIFICATIONS.

- WORK LIMITS.** ARE 50 FEET FROM THE CENTERLINE OF THE TILE, OR AS OTHERWISE SHOWN ON THE PLANS. THE WORK AREA MAY BE EXPANDED IF NECESSARY TO COMPLETE THE WORK WITH THE PRIOR APPROVAL OF ENGINEER. THE CONTRACTOR MAY SHIFT THE CORRIDOR RELATIVE TO THE CENTERLINE.
- ACCESS.** IS AVAILABLE AT INTERSECTIONS OF WORK LIMITS AND PUBLIC ROADS OR AS CAN BE OTHERWISE ARRANGED BY CONTRACTOR. CONTRACTOR IS RESPONSIBLE TO SECURE PERMISSION OF COUNTY ENGINEER TO CONSTRUCT TEMPORARY ACCESSES IF NECESSARY.
- CONNECT INTERCEPTED TILE.** 12" DIAMETER OR LARGER TO NEW TILE WITH RCP OF SAME OR NEXT LARGER SIZE. USE OF TWO STANDARD LENGTH SECTIONS OF RCP IS REQUIRED UNLESS LESS OR MORE IS AUTHORIZED ON A SITE BY SITE BASIS. RCP CLASS SHALL BE SAME OR STRONGER THAN THE CLASS OF THE RECEIVING PIPE. FIELD CUT AND SHAPE HOLE IN RECEIVING PIPE AND ENDS OF CONNECTING PIPE TO PROVIDE FOR TIGHT FIT AND UNRESTRICTED FLOW. ENCASE ALL CONNECTIONS, EXCEPT FULLY SEATED TONGUE & GROOVE JOINTS, IN MINIMUM 6-INCH THICK BY 12-INCH WIDE PC CONCRETE COLLARS. CONNECTION IS TO BE SUPPORTED ACROSS THE MAIN LINE TRENCH AND BE BEDDED IN THE INSTALLATION TRENCH WITH CRUSHED STONE BEDDING AS PER SUDAS SECTION 3010-108-C. PAYMENT FOR CRUSHED ROCK BEDDING SHALL BE LIMITED TO 5 TONS PER CONNECTION UNLESS OTHERWISE APPROVED BY ENGINEER PRIOR TO BACKFILL. THE FURNISHING AND PLACEMENT OF SPECIFIED CRUSHED ROCK FOR SUPPORT AND BEDDING SHALL BE CONSIDERED PART OF, AND BE MEASURED AND PAID FOR UNDER THE TRENCH STABILIZATION AND PIPE BEDDING ROCK BID ITEM. KEEP AND DELIVER TO ENGINEER A LOG OF CONNECTIONS INCLUDING LOCATION AND MATERIALS USED. CAPPING OF DOWNSTREAM LINE WITH A PC CONCRETE PLUG IS INCLUDED IN THIS BID ITEM. SECTIONS OF RCP USED ARE TO BE MEASURED AND PAID FOR UNDER THE APPLICABLE PIPE BID ITEM.
- CONNECT INTERCEPTED 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 SUDAS SECTION 3010-108-C. PAYMENT FOR CRUSHED ROCK BEDDING SHALL BE LIMITED TO 3 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 TRENCH STABILIZATION AND PIPE BEDDING ROCK 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. FURNISHING UP TO 20 FEET OF DRAINAGE TUBING IS INCLUDED IN THIS BID ITEM. SEE DETAIL ON SHEET B.01.
- UTILITIES.** IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY UTILITY COMPANIES AND TO COOPERATE WITH THEM IN THE LOCATION, MARKING & PROTECTION OF THEIR FACILITIES. CONTRACTOR IS TO IMMEDIATELY NOTIFY ENGINEER OF APPARENT CONFLICTS OF EXISTING PUBLIC UTILITIES WITH THE PLAN GRADE OF THE TILE.
PRIOR TO STARTING 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 COMPANIES. NO COMPENSATION WILL BE ALLOWED FOR DAMAGE CAUSED DUE TO CONTRACTOR'S FAILURE TO COMPLY WITH THIS REQUIREMENT. CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA 1-CALL AT 1-800-292-8989.
- 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 INCIDENTAL.
- DRAINAGE.** MAINTAIN DRAINAGE OF THE EXISTING DRAIN, DRAINAGE WAYS, AND TRIBUTARY FACILITIES AT ALL TIMES DURING CONSTRUCTION.
- STORAGE.** NO WORK, OR EQUIPMENT OR MATERIAL STORAGE, TO BE DONE WITHIN COUNTY ROAD RIGHT-OF-WAY OR CITY STREETS WITHOUT THE KNOWLEDGE AND PERMISSION OF THE COUNTY ENGINEER OR CITY. CONTRACTOR IS RESPONSIBLE TO CONTACT COUNTY ENGINEER OR CITY AND TO OPERATE IN COMPLIANCE WITH THE REQUIRED SAFETY MEASURES.

COMMON ABBREVIATIONS USED IN PLANS AND SPECIFICATIONS:

- RCP - REINFORCED CONCRETE PIPE
- CMP - CORRUGATED METAL PIPE
- HDPE - HIGH DENSITY POLYETHYLENE PIPE (DUAL WALL PLASTIC)
- CPDT - CORRUGATED POLYETHYLENE DRAINAGE TUBING (SINGLE WALL PLASTIC)
- DIA. - DIAMETER
- N - NORTHING
- E - EASTING
- EL. OR ELEV. - ELEVATION
- BM - BENCHMARK
- ROW - RIGHT OF WAY
- NO. - NUMBER
- IDOT - IOWA DEPARTMENT OF TRANSPORTATION
- DR-X - CURRENT IDOT STANDARD ROAD PLAN OR DETAIL
- RS&R - REMOVE SALVAGE AND RELAY
- F&I - FURNISH AND INSTALL
- SD - SURFACE DRAIN
- TE - TILE EXTENSION
- UAC - USE AS CONSTRUCTED

- TOPSOIL-TRENCH EXCAVATION.** FOR ALL REACHES OF THE TRENCH EXCAVATION, THE CONTRACTOR IS REQUIRED TO SEGREGATE MOST OF THE TOPSOIL FROM SUBSOIL BY PLACING TOPSOIL ON ONE SIDE OF TRENCH AND REMAINING EXCAVATION ON THE OPPOSITE SIDE. CONTRACTOR IS REQUIRED TO OPERATE SUCH THAT MOST OF THE TOPSOIL IS RETURNED TO THE TOP FOOT OF THE COMPLETED TILE TRENCH BACKFILL. TO ASSURE COMPLIANCE WITH THIS NOTE CONTRACTOR IS REQUIRED TO DESCRIBE TO ENGINEER AT THE PRE-CONSTRUCTION CONFERENCE HOW TOPSOIL WILL BE MANAGED.
WHERE NOTED ON THE PLANS, CONTRACTOR IS REQUIRED TO STRIP 18" OF TOPSOIL. THE WIDTH NOTED FROM THE TOP OF THE PIPE TRENCH, STOCKPILE NEAR THE WORK LIMITS AND RESPREAD OVER COMPLETED TILE TRENCH. WHERE TRENCH DEPTHS EXCEED 13 FEET THE TOPSOIL STRIPPING WIDTH IS BASED UPON THE ASSUMPTION THAT CONTRACTOR WILL OBSERVE OSHA TRENCH EXCAVATION STANDARD 1926.652(B)(1). IF AN ALTERNATIVE IS OBSERVED THE TOPSOIL STRIPPING WILL BE CORRESPONDINGLY CHANGED.
- OPEN CUT SECONDARY ROAD RIGHT OF WAY CROSSINGS.** UNDER SECTION II CONTRACTOR SHALL NOTIFY AND COMPLY WITH THE REQUIREMENTS OF THE COUNTY ENGINEER. AFTER PLACING PIPE SECTIONS IN THE OPENED ROAD GRADE USING A TYPE 4 TRENCH INSTALLATION, BACKFILL TO ONE FOOT BELOW THE ROAD SURFACE WITH APPROVED EXCAVATED MATERIALS PLACED AND MECHANICALLY COMPACTED IN UNIFORM SHALLOW LIFTS. NO DENSITY TESTS REQUIRED. THE COUNTY WILL FURNISH AND DELIVER GRANULAR SURFACE MATERIAL WHICH SHALL BE PLACED, SPREAD, COMPACTED AND ROUGH GRADED BY CONTRACTOR. EXCESS EXCAVATED ROAD GRADE MATERIAL SHALL BE LOADED IN CLAY COUNTY TRUCKS FOR DISPOSAL BY COUNTY. THE COUNTY WILL DO FINAL GRADING. NO PIPE JOINT SEAL OR TIES ARE REQUIRED. ROAD SHALL BE CLOSED TO TRAFFIC DURING CONSTRUCTION. CONSTRUCTION SHALL BE SUBSTANTIALLY COMPLETED DURING DAYLIGHT HOURS AND THE ROAD OPENED TO TRAFFIC IN ONE WORKING DAY. BARRICADES AND SIGNING SHALL BE SECURED, INSTALLED, AND MAINTAINED BY CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE COUNTY ENGINEER (712-262-2825). CONTRACTOR MAY BORROW AND RETURN THESE MATERIALS THROUGH THE COUNTY ENGINEER FROM THE COUNTY SHED AT CLAY. DISTURBED AREAS IN ROAD DITCHES SHALL BE COVERED WITH A MINIMUM 3 INCHES OF TOPSOIL AND SHALL BE FERTILIZED AND RESEED AS PER CONSTRUCTION NOTE. EXCESS ROAD DITCH MATERIAL MAY BE BLENDED INTO TRENCH BACKFILL ON ADJACENT LANDS.
- CROSS ROAD BORING (IOWA DOT HIGHWAY PAVEMENT).** FOR IOWA HIGHWAY CROSSINGS OWNER WILL SECURE PERMITS. CONTRACTOR SHALL COMPLY WITH PERMIT REQUIREMENTS, GIVE NOTIFICATIONS AS REQUIRED, AND FULLY COOPERATE WITH THE ENGINEER. EACH STEEL CASING PIPE SHALL BE JACKED AND BORED UNDER THE ROADWAY PAVEMENT AND SHOULDERS IN ACCORDANCE WITH SUDAS AND SPECIFICATION SECTIONS 2503 AND 2553 OF THE IOWA DOT STANDARD SPECIFICATIONS, AND WITH PLAN DETAILS. THE REMAINDER OF THE INSTALLATION IN THE HIGHWAY RIGHT-OF-WAY AT EACH LOCATION MAY BE CONSTRUCTED IN OPEN TRENCHES. NECESSARY SIGNING SHALL BE SECURED, INSTALLED AND MAINTAINED BY CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE ENGINEER.
WHERE PIPES CROSS THE OVER DUG BORE PIT THE PIPE SHALL BE SUPPORTED ON THE TRENCH CRADLING ROCK BEDDING. THE EXCAVATED BORE PITS AND TILE TRENCHES IN THE HIGHWAY RIGHT-OF-WAY SHALL ONLY BE BACKFILLED WITH APPROVED MATERIAL TAKEN FROM THE ONSITE EXCAVATION OR FROM ADJACENT TRENCH EXCAVATION MATERIALS. THIS SOIL BACKFILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SUDAS STD. 3010 EXCEPT THAT THE REQUIRED STANDARD PROCTOR DENSITY SHALL BE 90% AND NO SOIL MOISTURE LIMITS ARE REQUIRED. SLIGHTLY MOUND BACKFILL, NOT TO EXCEED 3 INCHES IN HEIGHT, OVER THE BORE PITS AND PIPE TRENCHES TO ALLOW FOR ANTICIPATED MINOR SETTLEMENT. DISTURBED AREAS IN ROAD DITCHES SHALL BE COVERED WITH A MINIMUM 3 INCHES TOPSOIL. EXCESS EXCAVATION MAY BE BLENDED INTO TRENCH BACKFILL ON ADJACENT LANDS.
- ROAD CROSSING DETAILS.** CONTRACTOR IS REQUIRED TO USE SEPARATE STOCKPILES AND PROVIDE SEPARATE WEIGH TICKETS OF TRENCH STABILIZATION ROCK AND PIPE BEDDING MATERIAL. SURPLUS ROCK MAY BE SHIFTED TO OTHER AREAS OF WORK WITH PRIOR CALCULATION BY ENGINEER OF THE WEIGHT OF THE MATERIAL TRANSFERRED.
ROAD CROSSING WORK INCLUDES SECURING AND MAINTAINING ROAD WORK SIGNAGE FOR THE PLACEMENT OF FILL, GRADING AND SEEDING IN THE ROAD DITCHES.
THE IDOT ENGINEER WILL MAKE FINAL SIGNING DECISIONS. SIGNING REQUIREMENTS ARE IN ACCORDANCE WITH THE CURRENT SIGNING STANDARDS OF THE IDOT.
- ROAD DITCH SEEDING.** DISTURBED AREAS IN THE ROAD DITCHES SHALL BE FERTILIZED AND RESEED AS PER SPECIFICATIONS ON 2601 OF THE IOWA DOT. SEED MIX SHALL BE AS SHOWN IN IOWA DOT TABLE 2601.03-3. THE ALLOWED SEEDING PERIODS ARE MARCH 1 THROUGH MAY 31 AND AUGUST 10 THROUGH SEPTEMBER 30.
FERTILIZER AND SEED RATES: MIXES AND TYPES AREA AS FOLLOWS. CONTRACTOR MUST CONFIRM CALCULATION OF REQUIRED QUANTITIES WITH ENGINEER.
FERTILIZER - 300 LBS. OF 6-24-24 OR EQUIVALENT CHEMICALLY COMBINED COMMERCIAL FERTILIZER PER ACRE.
SEED - PURE, LIVE AS PER GERMINATION TESTS LESS THAN ONE YEAR OLD.
FESCUE, TALL 100 LBS./ACRE
RYEGRASS, PERENNIAL; 75 LBS./ACRE
BLUEGRASS, KENTUCKY 20 LBS./ACRE

- SEDIMENT CONTROL.** CONTRACTOR SHALL FURNISH AND INSTALL TEMPORARY SILT FENCES AT LOCATIONS DESIGNATED BY ENGINEER AND IN COMPLIANCE WITH THE STORMWATER EROSION MANAGEMENT PLAN. IN ROAD DITCHES PLACE A SILT FENCE ACROSS THE DITCH BOTTOM ON THE SIDE OF THE SITE TOWARD WHICH SURFACE RUNOFF FLOWS. CONTRACTOR IS REQUIRED TO MAINTAIN THE SILT FENCES IN PROPER WORKING ORDER, INCLUDING CLEANING, REPAIRING OR REPLACING THROUGHOUT THE CONTRACT PERIOD. CONTRACTOR SHALL REMOVE THE FENCE AT THE END OF THE CONTRACT PERIOD.
- 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 OF THE CONTRACTOR'S, ENGINEER'S, AND OWNER'S PERSONNEL.
- FENCE CUTS.** EXISTING FENCES IN POOR CONDITION ARE TO BE REMOVED TO THE WIDTH NECESSARY TO DO THE WORK PROPERLY. CUT, DETACH AND FLATTEN WIRE AND PULL POSTS. BURY ON SITE. FENCES IN GOOD CONDITION ARE TO BE CUT AND THE WIRES PULLED BACK. FENCE POST PULLED AND STORED BY OPENING.FENCE RESTORATION NOT REQUIRED.
- TRAFFIC CONTROL.** IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO SECURE ALL NECESSARY TRAFFIC CONTROL SIGNS, DEVICES, ETC. AS SPECIFIED OR ALLOWED, AND TO PLACE, MAINTAIN, AND REMOVE SAME AS CONSTRUCTION COMMENCES AND IS COMPLETED IN ACCORDANCE WITH THE CURRENT COUNTY STANDARDS. FAILURE TO COMPLY WITH THIS PORTION OF THE SPECIFICATIONS WILL RESULT IN NONCOMPLIANCE WITH REQUIRED TRAFFIC CONTROL. A REDUCTION IN THE LUMP SUM PAID WILL BE MADE FOR EXCESSIVE NONCOMPLIANCE WITH REQUIRED TRAFFIC CONTROL. NO WORK SHALL COMMENCE IN ANY GIVEN AREA UNTIL ALL APPROPRIATE TRAFFIC CONTROL IS IN PLACE.
- MANUFACTURED PIPE FIXTURES.** SHALL BE BUILT IN CONFORMANCE WITH THE FOLLOWING IDOT STANDARD SPECIFICATIONS.
ELBOW = DR-141
PIPE CAP = DR-142
TEE = DR-142
- CORRUGATED POLYETHYLENE DRAINAGE TUBING.** SHALL BE INSTALLED IN ACCORDANCE WITH ASTM 449. THE DETAILS ON SHEET B.02 APPLY TO THIS MATERIAL USED IN CONNECTIONS.
- WORK IN WINTER WEATHER.** THE CONTRACT COMPETION DATE IS FIRM SAVE FOR EXCEPTIONALLY SEVERE WEATHER AND THE CONTRACTOR IS EXPECTED TO WORK IN WINTER WEATHER AND FROZEN GROUND CONDITIONS TO COMPLETE THE WORK ON TIME.

IDOT ROAD CROSSING GENERAL NOTES -

GENERAL CONSTRUCTION NOTES:

- THE LOCATION, CONSTRUCTION, AND MAINTENANCE OF THE UTILITY INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT DEPARTMENT'S UTILITY ACCOMMODATION POLICY.
- A COPY OF THE APPROVED PERMIT SHALL BE AVAILABLE ON THE JOB SITE AT ALL TIMES FOR EXAMINATION BY DEPARTMENT PERSONNEL.
- OPERATIONS IN THE CONSTRUCTION AND MAINTENANCE OF THIS UTILITY INSTALLATION SHALL BE CARRIED ON IN SUCH A MANNER AS TO CAUSE MINIMUM INTERFERENCE TO OR DISTRACTION OF TRAFFIC ON SAID HIGHWAY.
- TRAFFIC PROTECTION SHALL MINIMALLY BE IN ACCORDANCE WITH PART VI OF THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS. THE APPLICANT SHALL BE RESPONSIBLE FOR CORRECTLY USING TRAFFIC CONTROL DEVICES INCLUDING SIGNS, WARNING LIGHTS, AND CHANNELIZING DEVICES AS NEEDED WHILE WORK IS IN PROGRESS OR THE CLEAR ZONE IS IMPACTED. FLAGGING OPERATIONS ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE DEPARTMENT'S TC SERIES STANDARDS ARE THE PREFERRED TRAFFIC CONTROL SPECIFICATION PLANS.
- CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS WITHIN THE RIGHT-OF-WAY AND SHALL BE RESPONSIBLE FOR THE VEGETATIVE COVER UNTIL IT BECOMES WELL ESTABLISHED. ANY SURFACED AREAS SUCH AS DRIVEWAYS OR SHOULDERS AND SODDED WATERWAYS AND PLANTINGS WHICH ARE DISTURBED SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. ANY DAMAGE TO ANY OTHER UNDERGROUND FACILITIES DURING INSTALLATION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- ALL PERSONNEL IN THE HIGHWAY RIGHT-OF-WAY SHALL WEAR ANSI 107 CLASS 2 APPAREL AT ALL TIMES WHEN EXPOSED TO TRAFFIC OR CONSTRUCTION EQUIPMENT.
- AS PER POLICY SECTION 115.4(9) PARKING OR STORAGE IN THE CLEAR ZONE IS PROHIBITED. WHEN NOT IN ACTUAL USE, VEHICLES, EQUIPMENT AND MATERIALS SHALL NOT BE PARKED OR STORED WITHIN THE CLEAR ZONE OR MEDIAN.
- UNLESS SPECIFICALLY NOTED IN SPECIAL REQUIREMENTS SECTION, ALL WORK PERFORMED WITHIN THE RIGHT-OF-WAY SHALL BE RESTRICTED TO 30 MINUTES AFTER SUNRISE TO 30 MINUTES BEFORE SUNSET.
- ALL ABOVE AND BELOW GROUND APPURTENANCES (PEDESTALS, HYDRANTS, DRAINS, ACCESSES, ETC.) SHALL BE MARKED WITH HIGH VISIBILITY POSTS AND SIGNS. THE MINIMUM HEIGHT REQUIREMENT FOR THE SIGNS SHALL BE 5 FOOT. URBAN ROADWAY SECTIONS MAY BE EXEMPTED WITH DEPARTMENT APPROVAL.

WORK LIMITS IN TOPSOIL STRIP AREAS

CUT	WIDTH
13'	145'
14'	150'
15'	155'
16'	160'
17'	165'
18'	170'
19'	175'
20'	180'
21'	220'
22'	230'
23'	240'
24'	250'
25'	260'
26'	270'

TOPSOIL STRIPPING REQUIREMENTS OVER TILE TRENCH

CUT TO FL (FT.)	STRIPPING WIDTH (FT.)
<13'	NONE
13'	23'
14'	25'
15'	27'
16'	29'
17'	31'
18'	33'
19'	35'
20'	37'
21'	56'
22'	59'
23'	62'
24'	65'
25'	68'
26'	71'



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TILE IMPROVEMENTS
DD 14 WORTH COUNTY, IOWA

CONSTRUCTION NOTES

SHEET

C.03

STORM WATER EROSION MANAGEMENT PLAN

FOR

DRAINAGE IMPROVEMENTS

DRAINAGE DISTRICT No. 14

WORTH COUNTY, IOWA

2024

SITE DESCRIPTION

PROJECT NAME: Drainage District No. 14
 PROJECT TYPE: Installation of Subsurface Drainage Main & Laterals
 PROJECT LOCATION: Sections 3 and 4 of Kensett Township (T-99-N, R-20-W)
 COUNTY: Worth
 CONTACT NAME: Agent for the County Board of Supervisors is (Bolton-Menk, Jacob Hagan)
 ADDRESS: 300 West McKinley St. P.O. Box 68, Jefferson, Iowa 50129
 PHONE: (515) 386-4101

DESCRIPTION: (Describe purpose and type of soil disturbing activities.)

This stormwater and erosion management plan is for site excavating and grading associated with the installation of subsurface drainage district improvements. Soil disturbing activities will include: excavation, shallow stockpiling and respreading of topsoil; excavation and backfilling of tile trench; installation of erosion control facilities; application of temporary seeding.

The great majority of this site is and will continue to be under cultivation for the production of agricultural row crops. The remaining portion of the site consists of fence lines and roads rights-of-way.

The primary soils association is Harcot - Saude - Talcot Deep - Marshan Deep.

Subsurface work will occur primarily in somewhat poorly drained Harcot with slopes ranging from 0-2%. Remaining subsurface work will occur in areas of poorly drained Talcot Deep silty clay loam with slopes ranging from 0-2%.

SEQUENCE OF MAJOR SOIL DISTURBING ACTIVITIES - TILE WORK

- Remove topsoil and stockpile immediate adjacent to trench
- 1. Excavate for installation of subsurface drainage main
- 2. Backfill trench after installation of pipe
- 3. Grade trench surface
- 4. Apply and spread topsoil
- 5. Stabilize denuded areas within 14 days of last construction activity
- 6. When all construction is completed, remove silt fences and sedimentation controls

SEQUENCE OF MAJOR SOIL DISTURBING ACTIVITIES - OPEN DITCH WORK

- 1. Install temporary silt curtain if required
- 2. Clear and grub channel
- 3. Install temporary silt fence in front of surface drain inlets as shown on details
- 4. Excavate channel and dispose of material on adjacent spoil bank or farmland
- 5. Level and shape excavated spoil material
- 6. Repair or replace all necessary tile extensions and surface drain pipes
- 7. Reinstall temporary sit fence in front of surface drain inlets when site is not anticipated to be restored to primary use within 14 days of last construction activity
- 8. Stabilize denuded areas within 14 days of last construction activity
- 9. When all construction is completed, remove silt fences and sedimentation controls

RECEIVING WATERS

Storm water will discharge from the Drainage District No. 14 watershed into Shell Rock River in the SW ¼ of Section 4 of Kensett Township (T-99-N) (R-20-W) in Worth County.

ENDANGERED SPECIES PROTECTION

The following is a listing of Endangered and Threatened Species and Critical Habitat Protection for Pocahontas County, Iowa as identified by the U.S. Fish and Wildlife Service website at: http://ecos.fws.gov/tess_public/reports/species-by-current-range-county?fips=19151

Name: Western Prairie Fringed Orchid
Scientific Name: Platanthera praeclara
Status: Threatened
Habitat: Wet Prairies

Name: Prairie Bush Clover
Scientific Name: Lespedeza Leptostachya
Status: Threatened
Habitat: Dry-Mesic Prairies

Name: Northern Long-Eared Bat
Scientific Name: Myotis septentrionalis
Status: Threatened
Habitat: Crevices of both live and dead trees

Water discharge activities from the installation of a subsurface drainage main for Worth County Drainage District No. 14 are not likely to adversely affect any federally listed threatened or endangered species in Worth County or result in the destruction or adverse modification of federally

POTENTIAL SOURCES OF POLLUTION

Site sources of pollution generated as a result of this work relates to soils and sediments which may be transported as a result of a storm event. This storm water and erosion management plan also provides conveyance of other non-project related operations. Potentially, this runoff may contain various pollutants related to site specific land uses. Pollutants from various sources have the potential to enter the storm water system during project construction. A description of these potential pollutants and control measures to reduce the risk of storm water contamination is provided below.

- Petroleum Based Products
- Pesticides or Herbicides **
- Fertilizers **
- Diesel Fuel or Gasoline
- Construction Wastes
- Antifreeze/Coolants
- Hydraulic Oil/Fluids
- Erosion/Sediment
- Solid Waste/Garbage

** Run-On / Run-Off from rural agricultural land use may contain chemicals including herbicides, fungicides, and fertilizers. Runoff may also contain applied livestock manures.

CONTROLS

RUNOFF/STABILIZATION CONTROLS:

The installation of all runoff controls is to be completed prior to any earth disturbing activities commencing. The following is a sequence of management

1. Install down slope and side slope perimeter controls before the land disturbing activities occur.
2. Do not disturb an area until it is necessary for construction to proceed.
3. Cover or stabilize disturbed areas as soon as possible.
4. Do not remove temporary perimeter controls until after all upstream areas are finally stabilized.

Staging of Earthwork Activities -- The excavation and moving of soil materials shall be scheduled so that areas unprotected from erosion will be minimized. These areas will be unprotected for the shortest time feasible.

Temporary Silt Curtain -- When Topeka Shiner or other fish species are listed in the Endangered Species Protection table included in this SWEMP, Temporary Silt Curtains conforming to the contract documents shall be used downstream of the outlet to the receiving stream. If the project includes repair or improvement of an open ditch, the relocation of the curtain shall be as described in the contract documents.

Temporary Stabilization -- Topsoil stockpiles and disturbed portions of the site where construction activity ceases for at least 21 days will be stabilized with temporary seed no later than 14 days from the last construction activity in that area. This applies to areas where agriculture row crops will not be immediately replanted and no herbicide was applied in the crop year. The temporary seed used shall be oats applied at the rate of 120 pounds per acre.

Areas with Herbicide -- Areas that have been in contact with herbicide are not to receive temporary stabilization of seed. Instead, silt fences will be installed at areas where flow concentration leaves the site. Additional erosion control measures may be required on long slopes and on other areas to ensure runoff control.

Permanent Stabilization -- Disturbed portions of the site where construction activity permanently ceases shall be returned to agricultural row crop production. It shall be assumed that this return to past uses is a permanent stabilization.

Work in Road Rights-of-Way -- Crushed rock surfacing will be placed on roadways and entrances to stabilize the soil. Permanent grasses shall be planted and again established in areas not receiving rock surfacing.

OTHER CONTROLS

Offsite Sediment Tracking -- Public access roads to the site will be kept relatively free of excess mud, dirt, and rock tracked from the site. Paved streets adjacent to the site will be inspected daily and cleaned as necessary to remove any excess mud, dirt, or rock tracked from the site.

Petroleum Products -- Construction equipment will require fuel and oil on a regular basis. The potential exists for spills or leaks. All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to ensure proper operation and reduce the chance of leaks. Petroleum products will be stored in clearly labeled and tightly sealed containers or tanks. Any soil contaminated by fuel or oil spills will be removed and disposed of by the Contractor to an approved disposal site.

Fertilizers -- Fertilizers will be applied as recommended by the manufacturer. Once applied, the fertilizer will be worked into the soil to limit exposure to storm waters. Fertilizers will be stored in a covered area or in water tight containers. Any partially used bags or containers will be properly sealed and stored to avoid spills or leaks.

Sanitary Facilities -- Sanitary facilities such as chemical toilets or septic tanks shall not be placed adjacent to live streams, wells or springs. They shall be located at a distance sufficient to prevent contamination of any water sources. At the completion of construction work, facilities shall be disposed of without causing pollution.

Waste Materials -- All construction waste material will be collected and stored in metal dumpsters. All trash and construction debris will be deposited in the dumpsters. No construction waste will be buried onsite. Any burning will be conducted in accordance with local or state regulations. All site personnel will be instructed by the Contractor of the proper waste disposal procedures. In the event of conflict with other government laws, rules and regulations, the more restrictive laws, rules or regulations shall apply. During the course of this construction, it is possible that situations will arise where unknown material will be encountered. When such situations occur, they shall be handled according to all federal, state, and local ordinances in effect at the time.

NON-STORM DISCHARGES

The following sources of non-storm water discharges may be combined with storm water discharges from project construction activities.

- Uncontaminated ground water or spring water
- Existing subsurface drains where flows are not contaminated with process materials such as solvents.
- Uncontaminated excavation dewatering discharges

MAINTENANCE AND INSPECTION PROCEDURES

Site inspection and facility maintenance are important features of an effective storm water management system. The following are the inspection and maintenance practices that will be used to maintain erosion and sediment controls.

- The Contractor is required to maintain all silt fences in proper working order including cleaning, repairing, or replacing measures throughout the contract period.
- Disturbed areas should be kept to a minimum. Do not disturb areas unless it is necessary for construction to proceed, this includes areas outside of the construction area.
- All silt fences will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of discovery.
- Silt fences will be inspected for depth of sediment, tears, to ensure the fabric is securely attached to the fence posts and to see that fence posts are firmly in the ground. Built-up sediment will be removed from silt fence when it has reached one-third of the height of the fence.
- Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and healthy growth.
- Inspect rip-rap and aggregate covered areas for bare spots and washouts.

SPILL PREVENTION

Best Management Practices -- Chemicals, petroleum products, and other materials will be used and stored at the construction site. Best Management Practices, such as good housekeeping measures, inspections, containment, and spill prevention practices will be used to limit contact between storm water and potential pollutants.

Good Housekeeping -- the good housekeeping practices listed below will be followed to reduce the risk of potential pollutants entering storm water discharges. All construction personnel will be responsible for monitoring and maintaining housekeeping tasks, or notifying the appropriate person of a problem.

- Store only enough products required to do the job.
- Store all materials in a neat and orderly manner in the appropriate containers and, if possible, under a roof or within an enclosure.
- Keep products in the original container with the original manufacturer's label.
- Do not mix products unless recommended by the manufacturer.
- Use and dispose of products according to manufacturer's recommendations.
- Perform regular inspections of the material storage areas.

Spill Prevention and Response -- In addition to the housekeeping procedures described above, spill prevention and cleanup practices will be as follows.

- Construction personnel will be informed of the manufacturer's recommended spill cleanup methods, and the location of that information and cleanup supplies.
- Materials and equipment for the cleanup of small spills will be kept in the materials storage area
- All containers will be labeled, tightly sealed, and stacked or stored neatly and securely.

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TILE IMPROVEMENTS
 DD 14 WORTH COUNTY, IOWA
 SWEMP

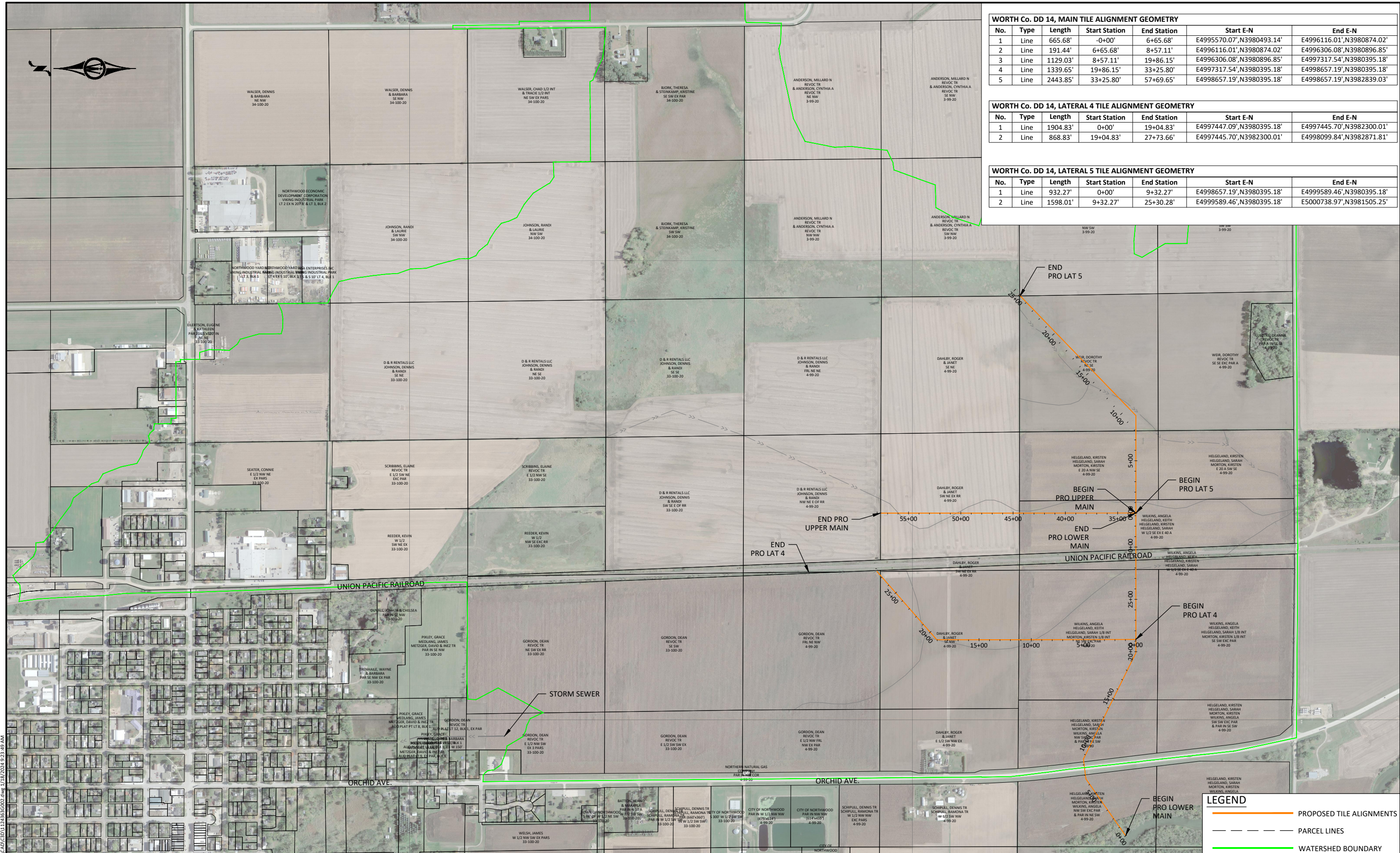
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WORTH Co. DD 14, MAIN TILE ALIGNMENT GEOMETRY						
No.	Type	Length	Start Station	End Station	Start E-N	End E-N
1	Line	665.68'	-0+00'	6+65.68'	E4995570.07',N3980493.14'	E4996116.01',N3980874.02'
2	Line	191.44'	6+65.68'	8+57.11'	E4996116.01',N3980874.02'	E4996306.08',N3980896.85'
3	Line	1129.03'	8+57.11'	19+86.15'	E4996306.08',N3980896.85'	E4997317.54',N3980395.18'
4	Line	1339.65'	19+86.15'	33+25.80'	E4997317.54',N3980395.18'	E4998657.19',N3980395.18'
5	Line	2443.85'	33+25.80'	57+69.65'	E4998657.19',N3980395.18'	E4998657.19',N3982839.03'

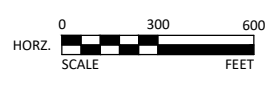
WORTH Co. DD 14, LATERAL 4 TILE ALIGNMENT GEOMETRY						
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1	Line	1904.83'	0+00'	19+04.83'	E4997447.09',N3980395.18'	E4997445.70',N3982300.01'
2	Line	868.83'	19+04.83'	27+73.66'	E4997445.70',N3982300.01'	E4998099.84',N3982871.81'

WORTH Co. DD 14, LATERAL 5 TILE ALIGNMENT GEOMETRY						
No.	Type	Length	Start Station	End Station	Start E-N	End E-N
1	Line	932.27'	0+00'	9+32.27'	E4998657.19',N3980395.18'	E4999589.46',N3980395.18'
2	Line	1598.01'	9+32.27'	25+30.28'	E4999589.46',N3980395.18'	E5000738.97',N3981505.25'



LEGEND

- PROPOSED TILE ALIGNMENTS (Orange line)
- PARCEL LINES (Black dashed line)
- WATERSHED BOUNDARY (Green line)



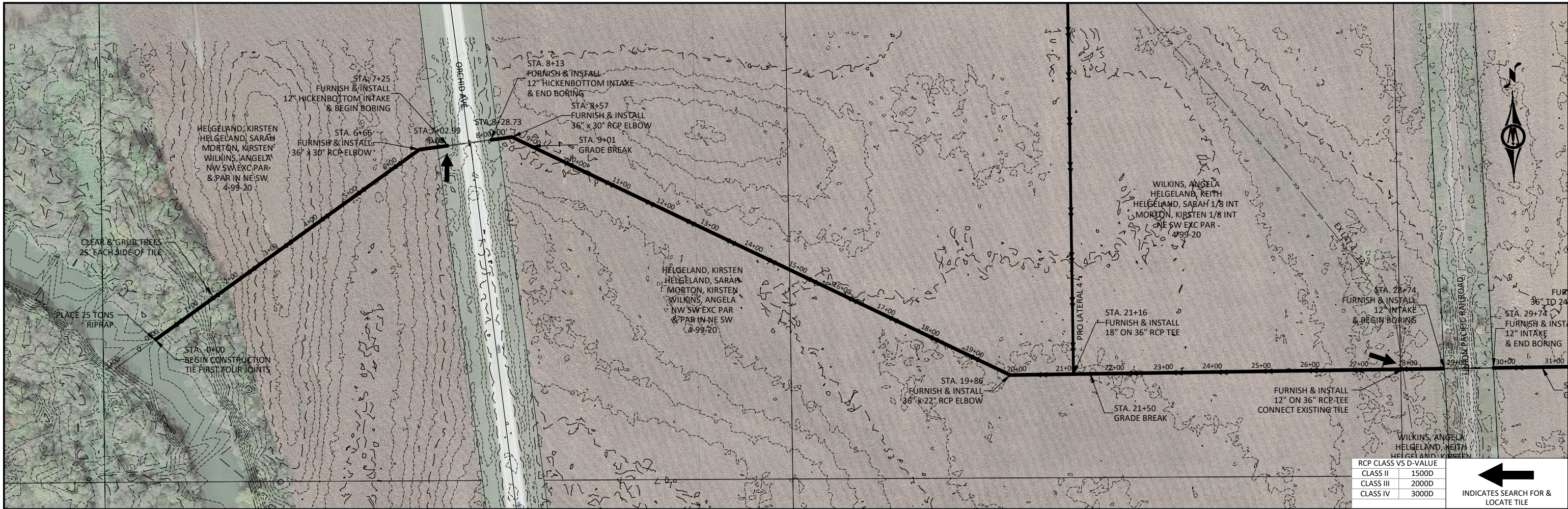
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TILE IMPROVEMENTS
 DD 14 WORTH COUNTY, IOWA
ALIGNMENT GEOMETRY

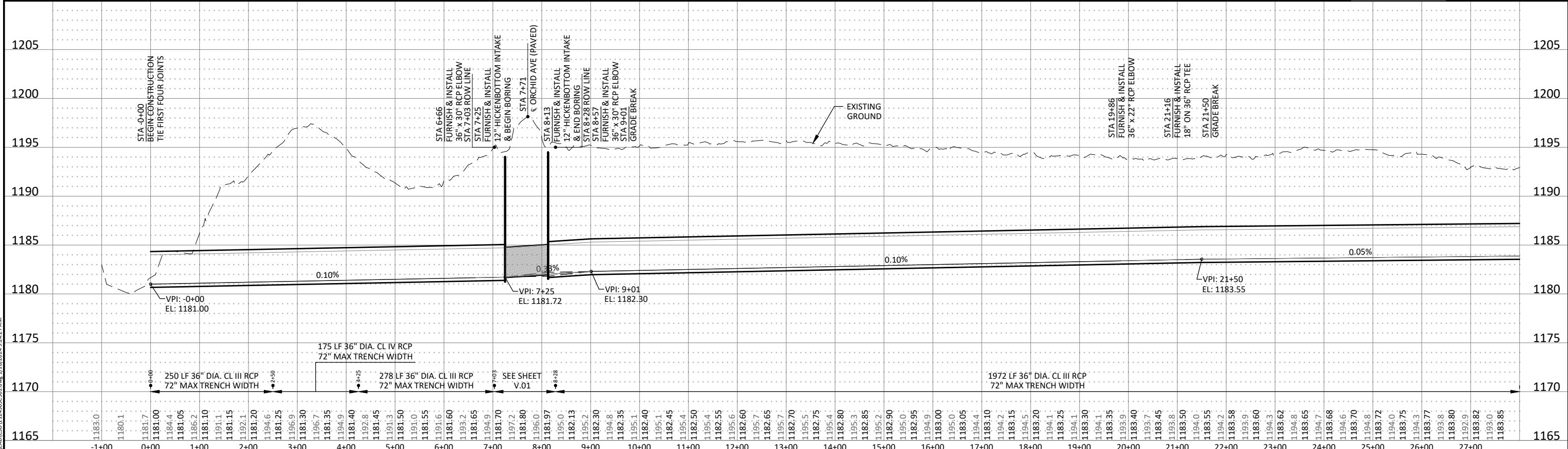
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RCP CLASS VS D-VALUE	
CLASS II	1500D
CLASS III	2000D
CLASS IV	3000D

← INDICATES SEARCH FOR & LOCATE TILE



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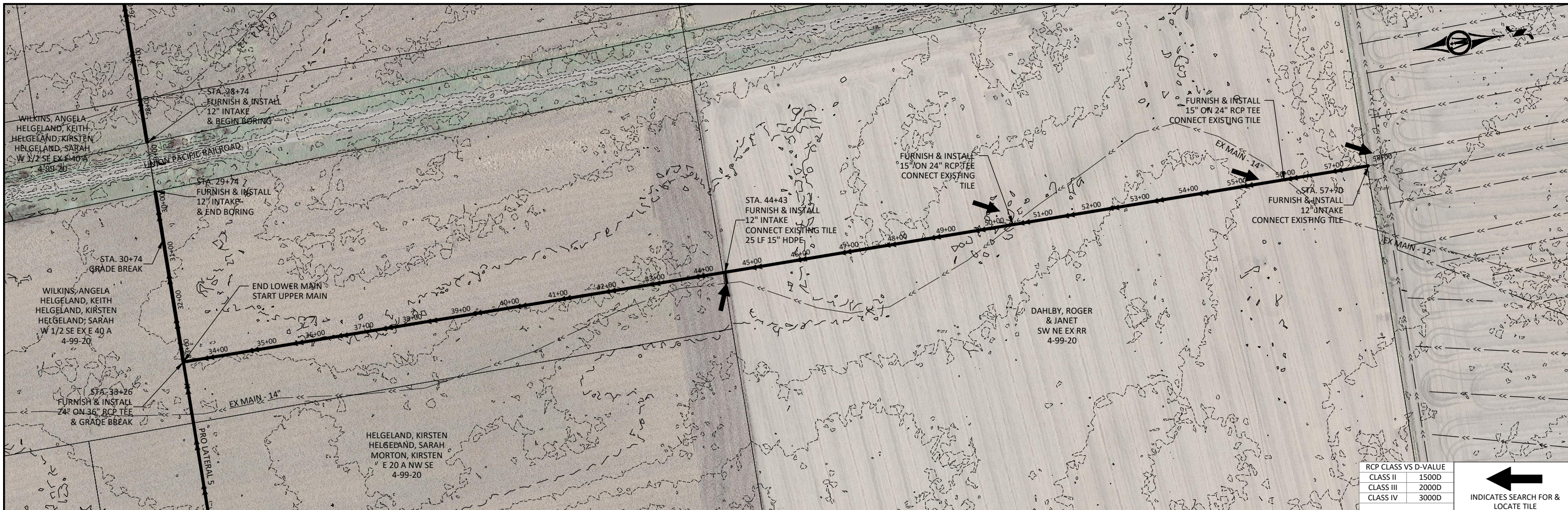


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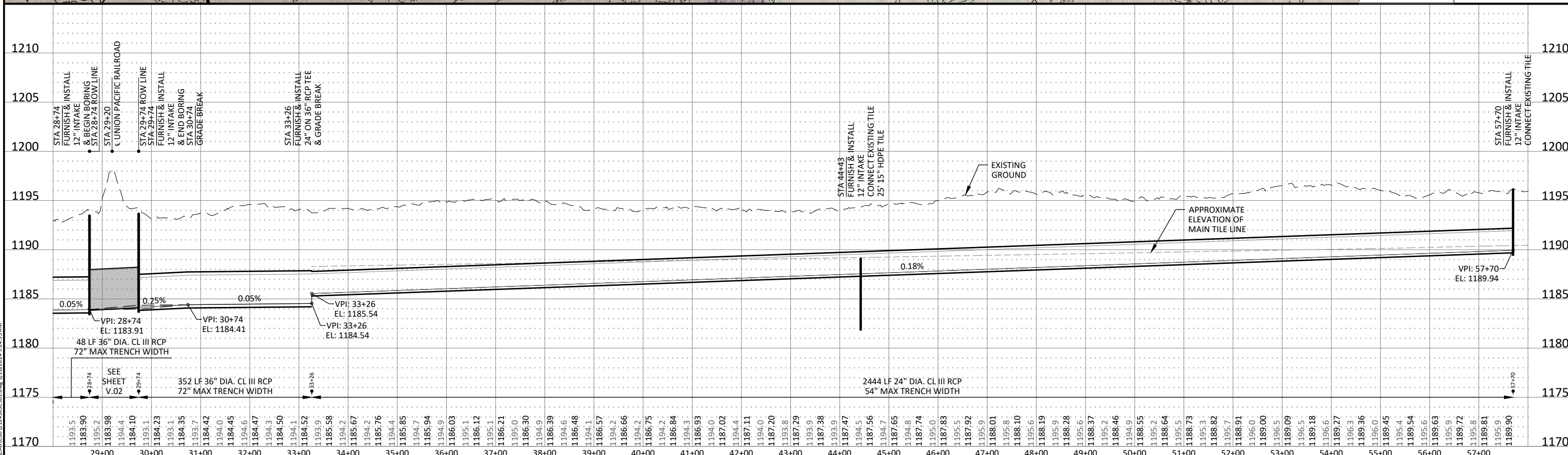
TILE IMPROVEMENTS
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 PLAN & PROFILE - PROPOSED MAIN

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RCP CLASS VS D-VALUE	
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CLASS III	20000
CLASS IV	30000

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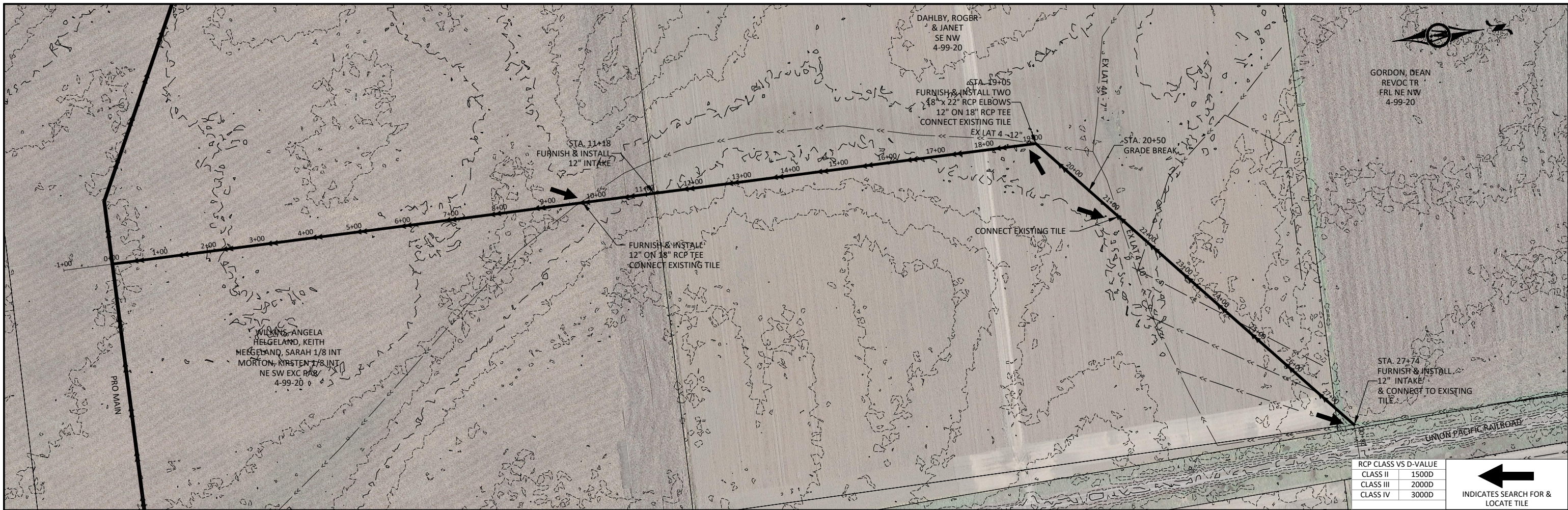


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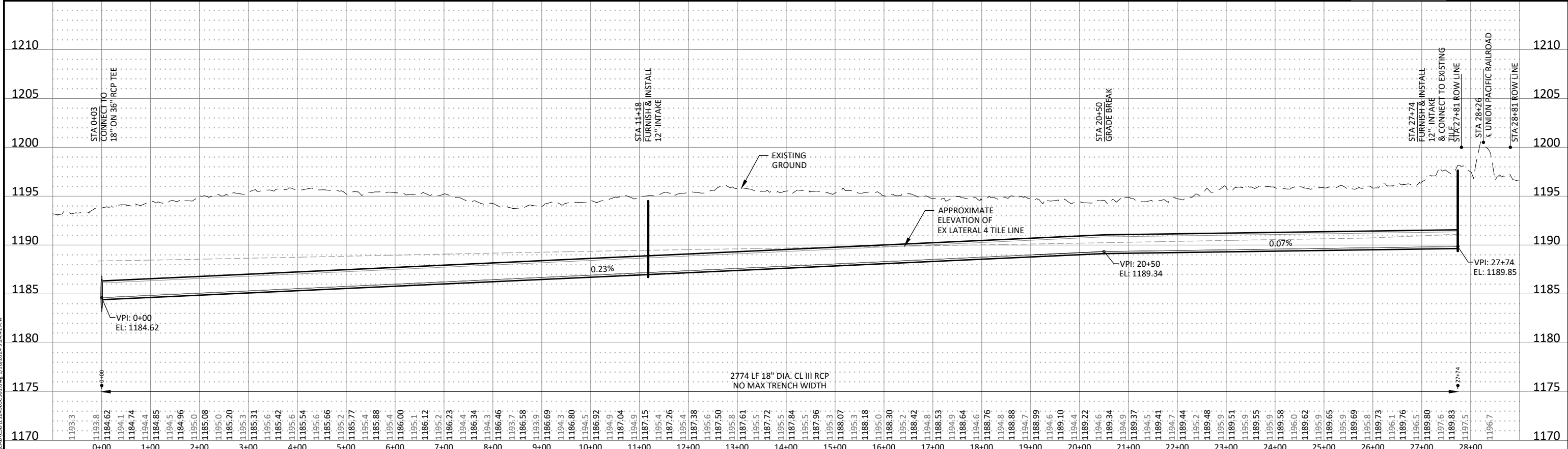
TILE IMPROVEMENTS
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PLAN & PROFILE - PROPOSED MAIN

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RCP CLASS VS D-VALUE	
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CLASS III	2000D
CLASS IV	3000D

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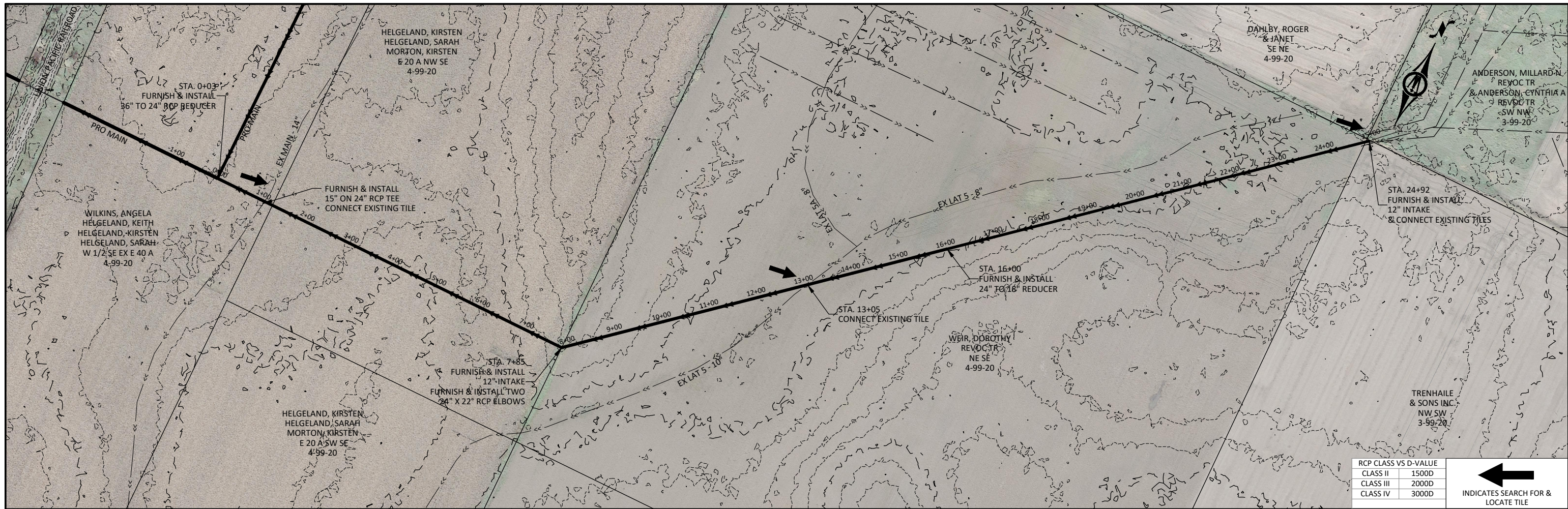
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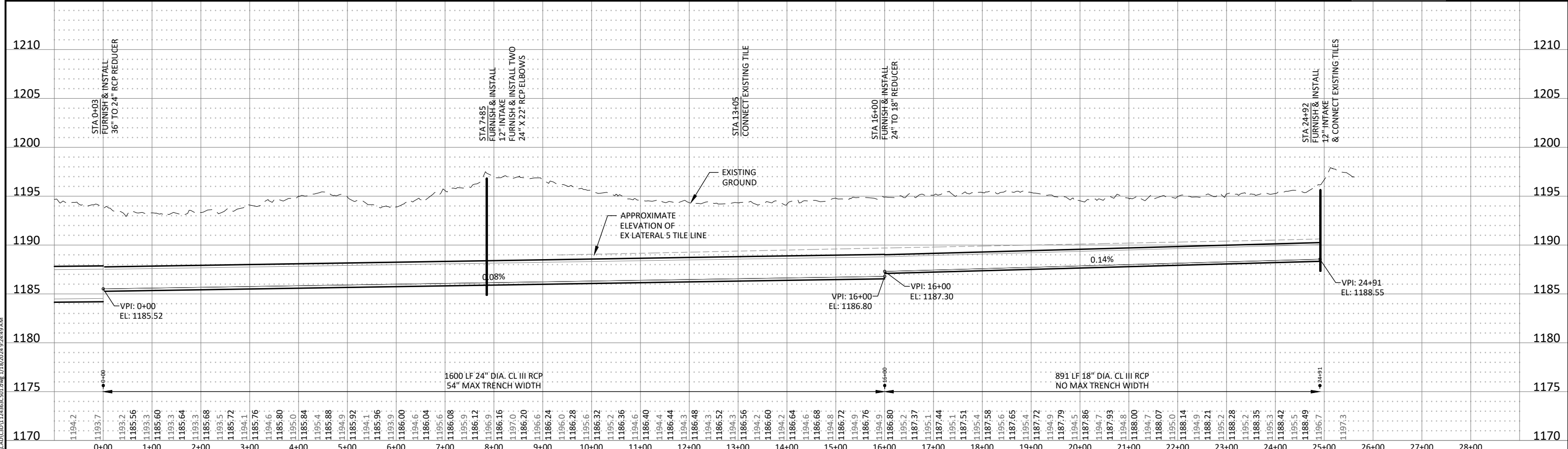
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CLASS III	20000
CLASS IV	30000

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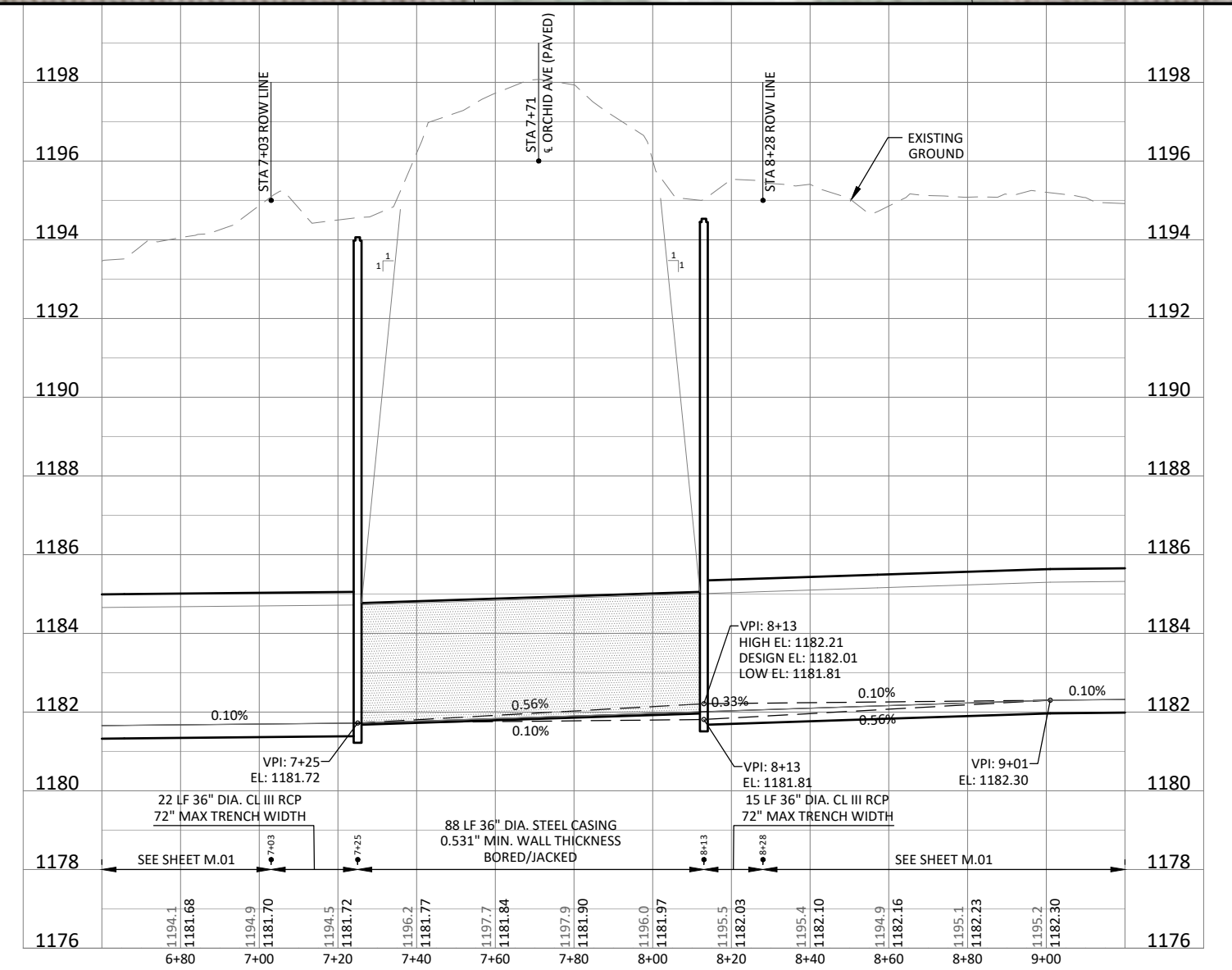


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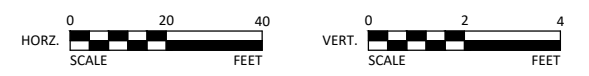
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TILE IMPROVEMENTS
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PLAN & PROFILE - PROPOSED LATERAL 5

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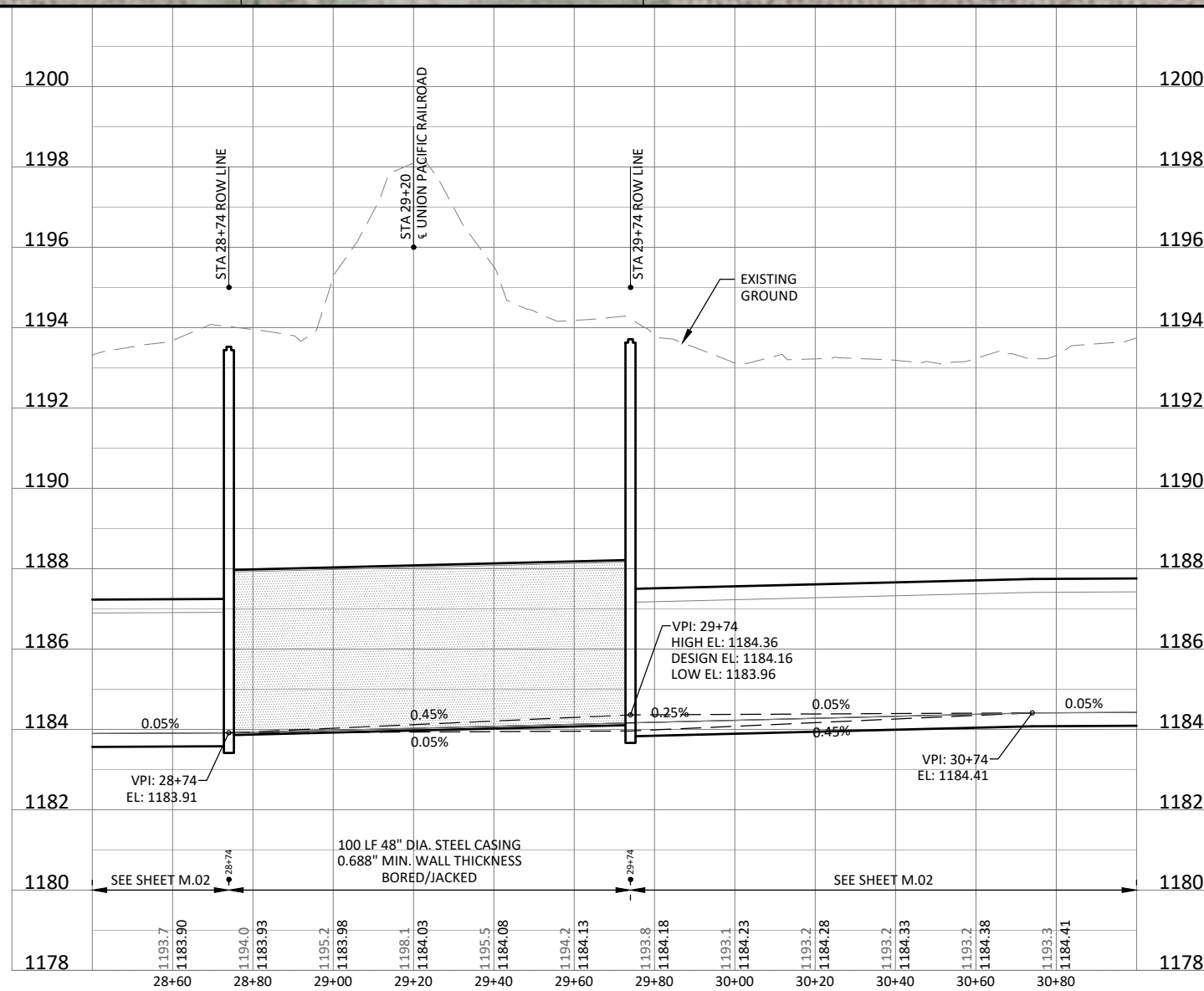
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HELGELAND, KEITH
MORTON, KIRSTEN 1/8 INT
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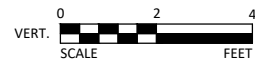
UNION PACIFIC RAILROAD

WILKINS, ANGELA
HELGELAND, KEITH
HELGELAND, KIRSTEN
HELGELAND, SARAH
W 1/2 SE EX E 40 A
4-99-20

WILKINS, ANGELA
HELGELAND, KEITH
HELGELAND, KIRSTEN
HELGELAND, SARAH
W 1/2 SE EX E 40 A
4-99-20



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TILE IMPROVEMENTS
DD 14 WORTH COUNTY, IOWA
BORING DETAIL - UNION PACIFIC RAILROAD

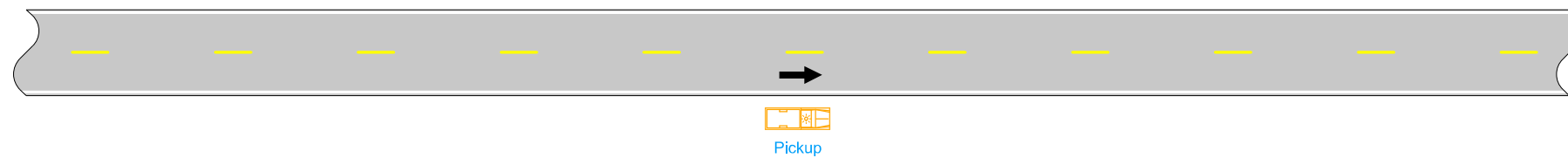
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Do not allow work to interfere with the flow of traffic.

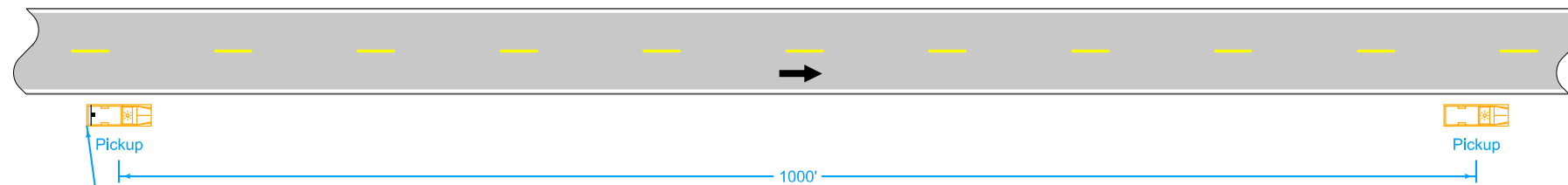
When parked, locate vehicles as far from the open traffic lane as possible. Entrances and driveways should be used whenever appropriate.

Equip all vehicles with an amber revolving light or amber strobe light.

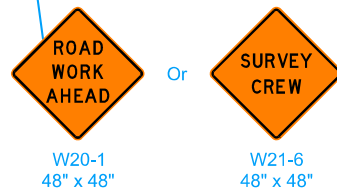
① For work lasting longer than one hour, refer to [TC-202](#) or [TC-402](#).



VEHICLE STOPPED ON SHOULDER FOR LESS THAN ONE HOUR ①



SLOW-MOVING OPERATION



LEGEND	
	Traffic Sign
	Direction of Traffic

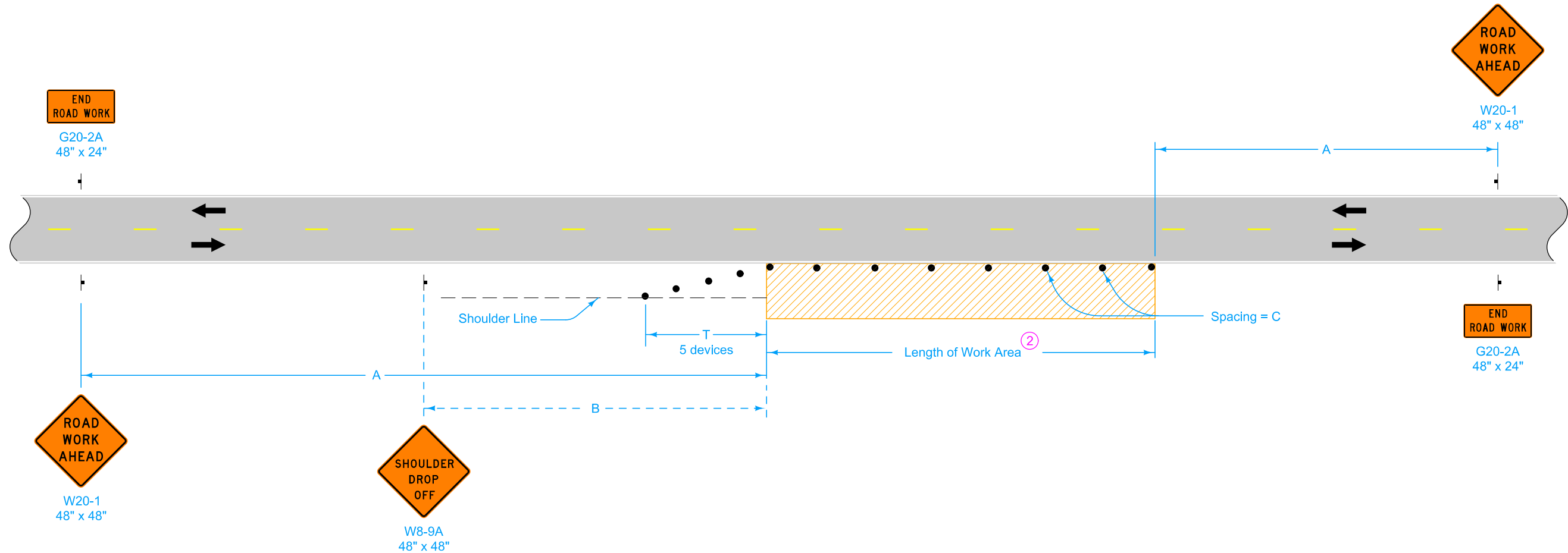
Possible Contract Item:
Traffic Control

 STANDARD ROAD PLAN	REVISION	
	3	10-15-19
	TC-1	
SHEET 1 of 1		

REVISIONS: New logo.

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**WORK NOT AFFECTING TRAFFIC
(TWO-LANE OR MULTI-LANE)**



LEGEND

- ⊥ Traffic Sign
- 42" Channelizer
- ▨ Work Area
- ← Direction of Traffic

SPEED LIMIT (mph)*	A	B	C ^②	T
35 or less	500'	250'	40'	100'
40 - 45	700'	350'	80' ^①	200'
50 or greater	1000'	500'	100' ^①	200'

* Speed Limit refers to regulatory speed limit before road work.

When a pavement edge drop-off exists, install a SHOULDER DROP-OFF sign.

No pavement edge drop-offs greater than pavement depth will be allowed during non-working hours.

Shoulder edge drop-offs shall be mitigated according to Article 1107.08.K2 of the Standard Specifications.

For work lasting less than one hour, refer to TC-1.

① When the length of a pavement edge drop-off is 1000 feet or less, the temporary fillet requirement of Article 1107.08 of the Standard Specifications does not apply. Reduce channelizer spacing to 40 feet.

② For work areas less than 200 feet long, use channelizers spaced at 20 foot centers or use a vehicle with an amber revolving light or amber strobe light.

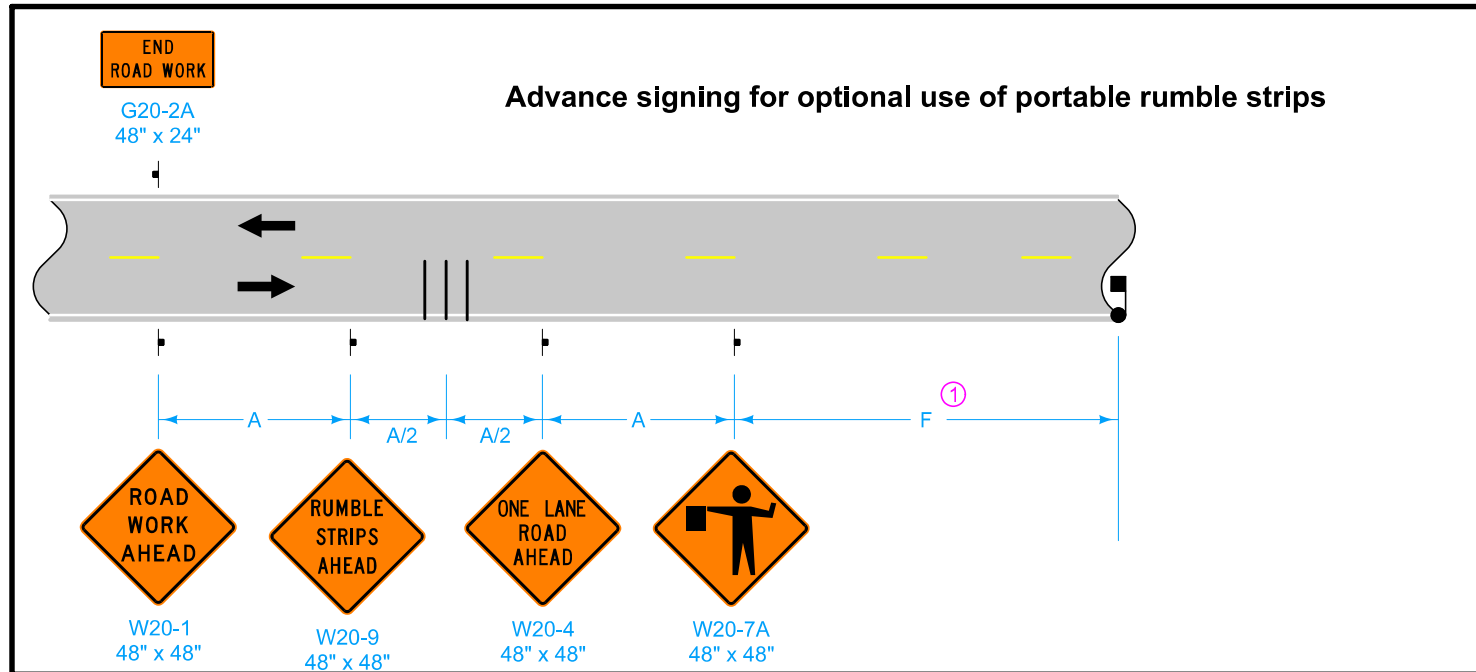
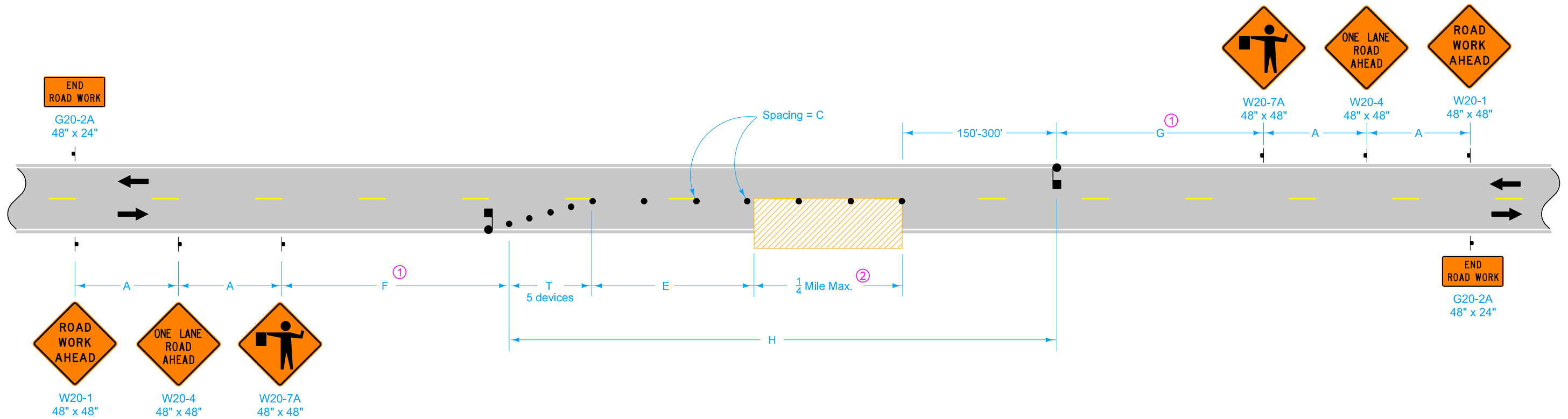
Possible Contract Item:
Traffic Control

 STANDARD ROAD PLAN	REVISION	
	10	4-18-23
TC-202		
SHEET 1 of 1		

REVISIONS: Added speed limit note.

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WORK WITHIN 15 FT
OF TRAVELED WAY



LEGEND

- Traffic Sign
- Flagger
- 42" Channelizer
- Work Area
- Direction of Traffic
- Portable rumble strips

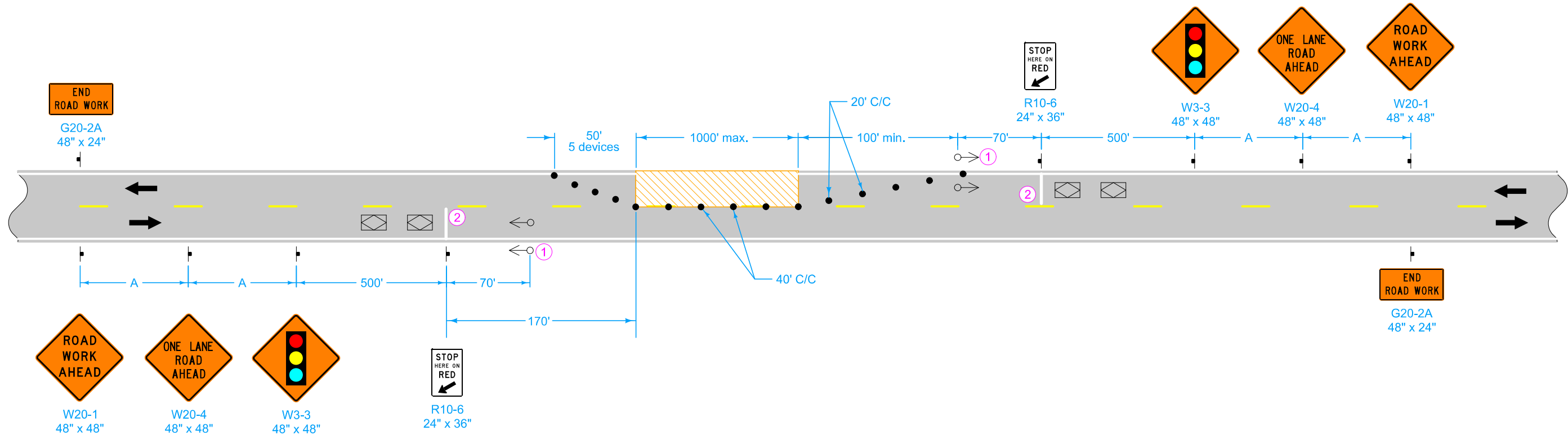
SPEED LIMIT (mph)*	A	C	E	F and G Range	F + G Max.	H Max.	T
35 or less	250'	40'	0'-200'	500'-3000'	3500'	2000'	50'
40 - 45	350'	80'	0'-200'	700'-3000'	3700'	2000'	100'
50 or greater	500'	100'	200'-300'	1000'-3000'	4000'	2000'	100'

* Speed Limit refers to regulatory speed limit before road work.

- ① Keep F and G distances as near to minimum values as work permits. However, to allow advancement of the work area without moving signs, F and G distances may be varied within the limits of the table. Maximum movement can be achieved by setting one F or G value at the minimum and the other value at its maximum.
- ② If length of work area exceeds 1/4 mile, use [TC-214](#).

Possible Contract Items:
 Flaggers
 Traffic Control

	REVISION	
	6	4-18-23
STANDARD ROAD PLAN		TC-213
REVISIONS: Added speed limit note.		SHEET 1 of 1
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LANE CLOSURE WITH FLAGGERS		



SPEED LIMIT (mph)*	A
35 or less	250'
40-45	350'
50 or greater	500'

* Speed Limit refers to regulatory speed limit before road work.

LEGEND

- Vehicle Detection Area
- Temporary Traffic Signal
- Traffic Sign
- 42" Channelizer
- Work Area
- Direction of Traffic

TIMING FOR ACTUATED SIGNALS
Recommended Settings (secs)

Distance between stop lines	All Red* (secs)	Distance between stop lines	All Red* (secs)
450'	9 - 15	950'	19 - 33
550'	11 - 19	1050'	21 - 36
650'	13 - 22	1150'	23 - 39
750'	15 - 26	1250'	25 - 43
850'	17 - 29	1350'	27 - 46

* All Red values based on operating speeds between 20 mph and 35 mph

Possible Contract Items:
 Pavement Marking Items
 Pavement Markings Removed
 Temporary Traffic Signals
 Traffic Control

Possible Tabulations:
 108-22
 108-28

This layout is for conditions lasting up to three calendar days. For situations lasting longer than three days refer to **TC-216**.

- ① For Temporary Traffic Signals, meet the requirements of Section 2528.03 of the Standard Specifications except for the following:
 In lieu of a trailer or span-wire mounted system, signal heads may be located on the shoulders, one on each side of the roadway. Mount shoulder signal heads a minimum of 8 feet from the bottom of the signal head to the top of the ground surface.
- ② 24-inch stop lines required during nighttime operation.

	REVISION	
	5	4-18-23
STANDARD ROAD PLAN		TC-215
		SHEET 1 of 1
REVISIONS: Added speed limit note. Formatted speed limit table.		
<i>Steve Miller</i> APPROVED BY DESIGN METHODS ENGINEER		
LANE CLOSURE WITH SIGNALS (UP TO THREE DAYS)		