

**WALSH COUNTY
WATER RESOURCE DISTRICT**

600 Cooper Avenue
Grafton, ND 58237

Phone: (701) 352-0081
Fax: (701) 352-5073
Email: wewrb@nd.gov

March 28, 2018

North Dakota Industrial Commission
Attn: Outdoor Heritage Fund Program
State Capitol – 14th Floor
600 East Boulevard Avenue, Dept. 405
Bismarck, ND 58505-0840

**Subject: Outdoor Heritage Fund Grant Application – Drain 22 Outlet Stabilization Project
Walsh County Water Resource District**

Dear Outdoor Heritage Fund Advisory Board,

The Walsh County Water Resource District (WCWRD) respectfully requests consideration to fund the Drain 22 Outlet Stabilization Project. Attached you will find the Outdoor Heritage Fund Grant Application for the Project.

Significant erosion has occurred at two branches of Drain 22, where a rapid change in elevation is required to drop flows into the Red River floodplain. This rapid change in elevation has proved to be an excessive grade line for an earthen channel. Erosion has resulted in sediment loading into the Red River, reduced habitat from loss of perennial vegetation, and loss of private property adjacent to the channel.

The Project will stabilize the outlets of the two branches of Drain 22 where significant erosion has been observed. A stable channel will be constructed using rock riprap to reinforce grades that are too steep for an earthen channel. Seeding will also be used to stabilize earthen side slopes after riprap has been placed. When completed, the project will minimize future sediment loading on the Red River, preserve habitat, and reduce the loss of private property.

If you have any questions, please do not hesitate to contact our office at (701) 352-0081.

Sincerely,

Walsh County Water Resource District

Board Members

Daryl Campbell, Chairman

Larry Tanke, Vice Chairman

Albin Jallo, Manager

Outdoor Heritage Fund Grant Application



The purpose of the North Dakota Outdoor Heritage Fund is to provide funding to state agencies, tribal governments, political subdivisions, and nonprofit organizations, with higher priority given to projects that enhance conservation practices in this state by:

Directive A. Providing access to private and public lands for sportsmen, including projects that create fish and wildlife habitat and provide access for sportsmen;

Directive B. Improving, maintaining and restoring water quality, soil conditions, plant diversity, animal systems and by supporting other practices of stewardship to enhance farming and ranching;

Directive C. Developing, enhancing, conserving and restoring wildlife and fish habitat on private and public lands; and

Directive D. Conserving natural areas and creating other areas for recreation through the establishment and development of parks and other recreation areas.

Exemptions

Outdoor Heritage Fund grants may not be used to finance the following:

- A. Litigation;
- B. Lobbying activities;
- C. Any activity that would interfere, disrupt, or prevent activities associated with surface coal mining operations; sand, gravel, or scoria extraction activities; oil and gas operations; or other energy facility or infrastructure development;
- D. The acquisition of land or to encumber any land for a term longer than twenty years; or
- E. Projects outside this state or projects that are beyond the scope of defined activities that fulfill the purposes of Chapter 54-17.8 of the North Dakota Century Code.

NO CONSIDERATION:

In addition to those specific items in law that are ineligible for funding, in the absence of a finding of exceptional circumstances by the Industrial Commission, the following projects will NOT receive consideration for funding:

- A completed project or project commenced before the grant application is submitted;
- A feasibility or research study;
- Maintenance costs;
- A paving project for a road or parking lot;
- A swimming pool or aquatic park;
- Personal property that is not affixed to the land;
- Playground equipment, except that grant funds may be provided for up to 25% of the cost of the equipment not exceeding \$10,000 per project and all playground equipment grants may not exceed 5% of the total grants per year (see Budget Form for how this will be calculated);
- Staffing or outside consultants except for costs for staffing or an outside consultant to design and implement an approved project based on the documented need of the applicant and the expenditures may not exceed 5% of the grant to a grantee if the grant exceeds \$250,000 and expenditures may not exceed 10% of the grant to a grantee if the grant is \$250,000 or less (see Budget Form for how this will be calculated);

- A building except for a building that is included as part of a comprehensive conservation plan for a new or expanded recreational project (see Budget Form for definition of comprehensive conservation plan and new or expanded recreational project); or
- A project in which the applicant is not directly involved in the execution and completion of the project.

Application Deadline

Applications for this grant round cycle are due on **April 1, 2018 at 5:00 p.m. CT**. All information, including attachments, must be submitted by that date. See instructions below for submission information.

Instructions

Please download this Word document (available on the Industrial Commission/Outdoor Heritage Fund Program website at <http://www.nd.gov/ndic/outdoor-infopage.htm>) to your computer and provide the information as requested. You are not limited to the spacing provided except in those instances where there is a limit on the number of words. After completing the application, save it and attach it to an e-mail and send it to outdoorheritage@nd.gov or print it and mail it to the address noted in the next paragraph.

Attachments in support of your application may be sent by mail to North Dakota Industrial Commission, ATTN: Outdoor Heritage Fund Program, State Capitol – Fourteenth Floor, 600 East Boulevard Ave. Dept. 405, Bismarck, ND 58505 or by e-mail to outdoorheritage@nd.gov. The application and all attachments must be received or postmarked by the application deadline. You will be sent a confirmation by e-mail of receipt of your application.

You may submit your application at any time prior to the application deadline. Early submission is appreciated and encouraged to allow adequate time to review your application and ensure that all required information has been included. Incomplete applications may not be considered for funding. **Any item noted with an * is required.**

Oral Presentation. Please note that you will be given an opportunity to make a ten-minute Oral Presentation at a meeting of the Outdoor Heritage Fund Advisory Board. These presentations are strongly encouraged.

Open Record. Please note that your application and any attachments will be open records as defined by law and will be posted on the Industrial Commission/Outdoor Heritage Fund website.

Name of Organization: *Walsh County Water Resource District*

Federal Tax ID#: *45-6007239*

Contact Person/Title: *Jennifer Lindenberg, Office Manager*

Address: *600 Cooper Avenue*

City: *Grafton*

State: *ND*

Zip Code: 58237

E-mail Address: wcwrb@nd.gov

Web Site Address: www.co.walsh.nd.us

Phone * 701-352-0081

Fax #: 701-352-5073

List names of co-applicants if this is a joint proposal *Not Applicable*

MAJOR Directive: (select the Directive that best describes your grant request)*

Choose only one response

☐ **Directive A.** Providing access to private and public lands for sportsmen, including projects that create fish and wildlife habitat and provide access for sportsmen;

☒ **Directive B.** Improving, maintaining and restoring water quality, soil conditions, plant diversity, animal systems and by supporting other practices of stewardship to enhance farming and ranching;

☐ **Directive C.** Developing, enhancing, conserving and restoring wildlife and fish habitat on private and public lands; and

☐ **Directive D.** Conserving natural areas and creating other areas for recreation through the establishment and development of parks and other recreation areas.

Additional Directive: (select the directives that also apply to the grant application purpose)*

Choose all that apply

☐ **Directive A.** Providing access to private and public lands for sportsmen, including projects that create fish and wildlife habitat and provide access for sportsmen;

☐ **Directive B.** Improving, maintaining and restoring water quality, soil conditions, plant diversity, animal systems and by supporting other practices of stewardship to enhance farming and ranching;

☒ **Directive C.** Developing, enhancing, conserving and restoring wildlife and fish habitat on private and public lands; and

☐ **Directive D.** Conserving natural areas and creating other areas for recreation through the establishment and development of parks and other recreation areas.

Type of organization: (select the category that describes your organization)*

- ☐ State Agency
- ☒ Political Subdivision
- ☐ Tribal Entity
- ☐ Tax-exempt, nonprofit corporation.

Project Name: *Walsh County Drain 22 Outlet Stabilization Project*

Abstract/Executive Summary. **An Executive Summary of the project stating its objectives, expected results, duration, total project costs and participants.*** (no more than 500 words)

Walsh County Drain 22 is located on the eastern edge of Walsh County, just north of the community of Oslo, MN. The drain consists of three branches; each outletting directly into the Red River of the North. Two of these branches have had a history of erosion where the channel makes a significant drop into the Red River floodplain. The bank erosion results in sediment being carried downstream, directly into the Red River. It's estimated that 4,000+ tons of sediment have eroded into the Red River, and that number will continue to climb without intervention.

Several improvements are planned for the Walsh County Drain 22 system, including cleaning out drainage channels, replacing damaged culverts, installing riprap erosion control, seeding. As part of these systemwide improvements, the Walsh County Water Resource District proposes to stabilize the outlets of the two branches where the most significant erosion has occurred. The proposed stabilization project would consist of resloping the channel to establish a stable channel gradient and side slopes, installation of rock riprap to reinforce the channel and eliminate the channel erosion, and seeding of side slopes adjacent to the rock riprap. Land rights will be secured by the Walsh County Water Resource District. The objectives of the project are to minimize future erosion occurring at the outlets of the two branches, reducing future maintenance costs for the assessed landowners. This will also result in reduced sediment loading into the Red River of the North as a result of erosion at the outlets of the Drain 22 system.

Total construction costs for the entire Drain 22 drainage system improvement project are estimated at \$ 394,920. Of those costs, \$ 150,574 is associated with the construction of the outlet stabilization portion of the project. The Walsh County Water Resource District has successfully acquired funding from the ND State Water Commission's (NDSWC) Cost-Share program for 45% of construction costs. NDSWC Cost-Share will be combined with local funds generated from the Drain 22 assessment district, and will be used for match for the proposed ND Outdoor Heritage Fund grant. The total amount being requested is for 55% of the construction costs associated with the outlet stabilization portion of the project, or \$ 81,366.

This project is truly "shovel ready" and if successful, the Walsh County Water Resource District is ready to immediately move into construction in the spring of 2018. The anticipated completion of the entire Drain 22 improvement project, including the outlet stabilization portion of the project, being completed by fall of 2018. Project partners are the Walsh County Water Resource District and landowners residing within the assessment district. Because this project would be

administered through ND Century Code 61-21, the Walsh County Water Resource District will have a legal means to ensure the project is properly maintained for years to come.

Project Duration:* 12 weeks

Amount of Grant request \$ * \$ 81,366 (See Attachment 1 – Budget Table)

Total Project Costs \$* \$ 150,574 (Outlet Stabilization Construction)
\$ 394,920 (Total Drain 22 Improvements Construction)

(Note that in-kind and indirect costs can be used for matching funds)

A minimum of 25% Match Funding is required. Amount of Matching Funds \$* \$ 265,669

Please indicate if the matching funds will be in-kind, indirect or cash.

Please see below for matching funds. Matching funds will be in cash.

Source(s) of Matching Funds*

Please provide verification that these matching funds are available for your project. Note that effective as of July 1, 2015 no State General Fund dollars can be used for a match unless funding was legislatively appropriated for that purpose.

The ND State Water Commission has approved 45% of eligible expenses, or \$ 266,086 (maximum), through their cost share program. Of this, it's estimated that \$ 31,144 will be used towards the outlet stabilization portion of the project.

The remaining costs will be assessed to benefitting landowners by the Walsh County Water Resource District, under the authority of ND Century Code 61-21. Approximately \$ 38,065 will be used towards the outlet stabilization portion of the project.

Certifications *

☒ I certify that this application has been made with the support of the governing body and chief executive of my organization.

☒ I certify that if awarded grant funding none of the funding will be used for any of the exemptions noted on Page 1 of this application.

Narrative

Organization Information – Briefly summarize your organization's history, mission, current programs and activities. *

Include an overview of your organizational structure, including board, staff and volunteer involvement. (no more than 300 words)

The Walsh County Water Resource District (WCWRD) is a political subdivision consisting of three board members appointed by the Walsh County Commission. An appointment to the WCWRD board lasts for three years. The board consists of a chairman, vice-chairman, and manager. The WCWRD operates under the authority granted under ND Century Code Title 61 (Waters). This includes a regulatory role within ND's water related permitting, administration of

legal assessment drains, and water resources management within Walsh County. The WCWRD currently has one full-time staff who serves as the Office Manager (Jennifer Lindenberger). Jennifer provides administrative and financial services for the WCWRD. The WCWRD also uses various consultants as needed to perform their required duties.

Specific to the administration of the legal assessment drains, the WCWRD acts as the caretaker for each drainage system on behalf of the benefitting landowners. Improvements to existing legal assessment drains are also investigated by the WCWRD on behalf of the benefitting landowners requesting the improvements. In order for improvements to be investigated, the requesting landowners first must submit a signed petition and bond to the WCWRD. If the WCWRD board determines the proposed improvements have merit, the WCWRD board will appoint an engineer to investigate the improvements in order to determine costs and benefits. If, after the findings of the engineer, the WCWRD board determines that sufficient benefits exist the improvements will be brought to a vote of the benefitting landowners. The vote is determined by simple majority. In the case of the Drain 22 improvements, the vote passed by 73.05% in favor of the improvements.

Purpose of Grant – Describe the proposed project identifying how the project will meet the specific directive(s) of the Outdoor Heritage Fund Program *

Identify project goals, strategies and benefits and your timetable for implementation. Include information about the need for the project and whether there is urgency for funding. Please indicate if this is a new project or if it is replacing funding that is no longer available to your organization. Identify any innovative features or processes of your project. Please note that if your proposal provides funding to an individual, the names of the recipients must be reported to the Industrial Commission/Outdoor Heritage Fund. These names will be disclosed upon request.

Background

Walsh County Drain 22 is located in the eastern tier of Walsh County, entirely in Walshville Township, east of Interstate 29. Much of the watershed resides within the Red River floodplain and is frequently inundated during severe spring floods. Land use within the watershed to Drain 22 is almost entirely comprised of land used for agricultural production, which represents the primary industry for the local economy. The landscape within the watershed is extremely flat, and without reasonable drainage, would be difficult to support agricultural production do to prolonged inundation.

Project Goals

The primary goal of the Project is to stabilize the outlets of two of the outlets of Drain 22 into the Red River. These branches are designated as "Drain 22B" and Drain 22". Stabilization of the outlets will result in increased downstream water quality from reduced sediment and nutrient loading, enhanced public safety, reduced encroachment on private property, and a sustainable drainage system to enhance agricultural production for the contributing watershed. The project will also result in increased wildlife habitat by allowing establishment of perennial vegetation on the stabilized banks.

Need for the Project

The purpose is to reduce erosion at two of the outlets of Drain 22 into the Red River. The project is needed for the following reasons:

- *Currently erosion at the outlets of Drain 22 has resulted in a substantial amount of sediment and nutrients directly out letting into the Red River.*

- The erosion caused by the current outlets of Drain 22 has posed a risk to existing infrastructure, including Walsh County Road No. 2.
- The unstable soil conditions along the banks of the current outlets also results in significant bank failures that encroach on adjacent private lands.
- Drain 22 provides necessary drainage of land within the watershed for agricultural production. A stable, functional outlet is a necessity for a functional drainage system.

(See Attachment 2 for images of erosion at each of the outlet locations)

Project Description

The improvements to the outlets of Drain 22 will occur on two (2) of the three (3) branches of Drain 22. The first location that an improvement to the outlet is proposed is on the branch referred to as "Drain 22B." Currently, the outlet of Drain 22B has severe channel erosion and bank failures (see photo below). Flows from the Drain 22B drainage area pass through a 96" diameter Corrugated Metal Pipe (CMP) under Walsh County Road No. 2. The proposed improvement to the outlet of Drain 22B will be to reshape the channel to an eight (8) foot wide channel bottom between the outlet of the 96" CMP and the wooded floodplain. This requires a 10.8 foot vertical drop over approximately 170 feet horizontally. In order to facilitate a stable slope for flows from Drain 22B, a riprap channel will be constructed. Riprap will be placed to provide a stable drop and energy dissipation before entering into the earthen channel within the wooded floodplain. Riprap has been sized at a NDDOT Grade III riprap to ensure the riprap remains in place during high flows. This gradation requires 65% of stones to be between 24" – 36" diameter. After placement of the riprap, exposed earthen slopes will be seeded using ND Department of Transportation (NDDOT) Class II seed mix. A 1-year temporary erosion control blanket will be installed to ensure that the constructed slopes will not erode before vegetation is established.

The second location that an improvement to the outlet is proposed is on the branch referred to as "Drain 22." Currently, the outlet of Drain 22 has severe channel erosion and bank failures (see photo below). Flows from the Drain 22 drainage area pass through a 48" diameter Corrugated Metal Pipe (CMP) through a private field crossing. The bank had recently failed during the summer of 2017, leaving the existing 48" CMP exposed and damaged beyond repair. The proposed improvement to the outlet of Drain 22 will be to install a new 48" CMP further upstream from the Red River bank, and to reshape the channel to an eight (8) foot wide channel bottom between the newly installed 48" CMP and the Red River floodplain. This requires an 11.2 foot vertical drop over approximately 105 feet horizontally. In order to facilitate a stable slope for flows from Drain 22, a riprap channel will be constructed. Riprap will be placed to provide a stable drop and energy dissipation before entering into the Red River floodplain. Riprap has been sized at a NDDOT Grade II riprap to ensure the riprap remains in place during high flows. This gradation requires 80% of stones to be between 16" – 28" diameter. After placement of the riprap, exposed earthen slopes will be seeded using ND Department of Transportation (NDDOT) Class II seed mix. A 1-year temporary erosion control blanket will be installed to ensure that the constructed slopes will not erode before vegetation is established.

At both locations, land will be purchased by the WCWRD to ensure land rights for future maintenance of the improvements. Construction easements will also be secured to allow for additional access during installation of the project.

(See the Attachment 3 - Construction Plans; sheets C-104 and C-303 for details)

Project Readiness

The proposed improvements have already been approved by the benefitting landowners through provisions in ND Century Code 61-21, and cost share has been secured through the ND State Water Commission at 45% of eligible items.

The project is truly “shovel ready”, with final plans and specifications already completed.

Timeline

The WCWRD is planning on construction beginning as soon as conditions allow in the spring of 2018. The anticipated completion for the project is August 31, 2018.

If your project includes tree/shrub/grass planting, please provide a planting plan describing the site design, planting methods, number of trees/shrubs by species and stock size, grass species and future maintenance. A statement certifying that the applicant will adhere to USDA-NRCS tree/shrub/grass planting specifications along with the name of the governmental entity designing the planting may be substituted for a planting plan.

If your project includes Section 319 program funding, please provide, in detail, the specific best management practices that will be implemented and the specific projects for which you are seeking funding.

If you are requesting funding for fencing, please note that the Board/Commission's preference is for a minimum cost share of 40% by the recipient. Please include detailed information on the type of fencing to be installed, whether funding is requested for boundary fencing, new or replacement of existing fencing, and/or cross fencing.

Management of Project – Provide a description of how you will manage and oversee the project to ensure it is carried out on schedule and in a manner that best ensures its objectives will be met.*

Include a brief background and work experience for those managing the project.

Installation of the improvements to Drain 22 will be the responsibility of the WCWRD. Houston Engineering, Inc. has been retained by the WCWRD to provide engineering and construction management.

Evaluation – Describe your plan to document progress and results. *

How will you tell if the project is successful? Please be specific on the methods you will utilize to measure success. Note that regular reporting, final evaluation and expenditure reports will be required for every grant awarded.

After installation of the improvements is complete, a final review by the WCWRD is required to ensure that all measures are installed consistent with the project specifications. The contractor will be required to make any necessary changes before final payment is made. Since the project is being completed using ND Century Code 61-21, the WCWRD has a legal responsibility to ensure that Drain 22 remains operable as defined in the landowner voted improvements. This will include annual inspections, and repair work as necessary.

Financial Information

ATTACHMENT: Project Budget – Using the standard project budget format that is available on the website at <http://www.nd.gov/ndic/outdoor-info/page.htm> , please include a detailed total project budget that specifically outlines all the funds you are requesting. Note that a minimum of 25% match funding is required.*

The project budget should identify all matching funds, funding sources and indicate whether the matching funds are in the form of cash or in-kind services. Effective July 1, 2015 no State General Fund dollars can be used for a match unless funding was legislatively appropriated for that purpose. As noted on the standard project budget format, certain values have been identified for in-kind services. Please utilize these values in identifying your matching funds. **NOTE: No indirect costs will be funded.**

☒ I certify that a project budget will be sent to the Commission*

Sustainability – Indicate how the project will be funded or sustained in future years. *

Include information on the sustainability of this project after all the funding from the Outdoor Heritage Fund has been expended and whether the sustainability will be in the form of ongoing management or additional funding from a different source.

ND Century Code 61-21 allows for the WCWRD to assess maintenance funds to benefitting landowners. These funds will be used to maintain the outlet improvements. The Assessment District for Drain 22 will be used to finance future maintenance costs long into perpetuity.

Partial Funding – Indicate how the project will be affected if less funding is available than that requested. *

Partial funding will place a greater burden on the benefitting landowners. The agreement of landowners to perform the outlet improvements shows good stewardship towards clean water and reduced erosion. Fulling funding this request allows for recognition of both parties on responsible agricultural drainage.

Partnership Recognition - If you are a successful recipient of Outdoor Heritage Fund dollars, how would you recognize the Outdoor Heritage Fund partnership? * Please note it is a requirement that there be signage at the location of the project acknowledging the funding from the Outdoor Heritage Fund if appropriate for your project.

The WCWRD will acknowledge the ND Outdoor Heritage Fund through their website, and will also work with the local paper of record (Walsh County Record) on a project showcase to be published. If deemed appropriate by the Industrial Commission, the WCWRD will provide signage acknowledging funding through the Outdoor Heritage Fund.

Scoring of Grants

All applications will be scored by the Outdoor Heritage Fund Advisory Board after your ten-minute oral presentation. The ranking sheet(s) that will be used by the Board is available on the website at <http://www.nd.gov/ndic/outdoor-infopage.htm>.

Awarding of Grants*

All decisions on requests will be reported to applicants no later than 30 days after Industrial Commission consideration. The Commission can set a limit on duration of an offer on each application or if there isn't a specific date indicated in the application for implementation of the project, then the applicant has until the next Outdoor Heritage Fund Advisory Board regular meeting to sign the contract and get the project underway or the commitment for funding will be terminated and the applicant may resubmit for funding. Applicants whose proposals have been approved will receive a contract outlining the terms and conditions of the grant. Please note the appropriate sample contract for your organization on the website at <http://www.nd.gov/ndic/outdoor-infopage.htm> that set forth the general provisions that will be included in any contract issued by the North Dakota Industrial Commission. Please indicate if you can meet all the provisions of the sample contract. If there are provisions in that contract that your organization is unable to meet, please indicate below what those provisions would be. *

The Walsh County Water Resource District is able to meet all provisions in the sample contract.

Responsibility of Recipient

The recipient of any grant from the Industrial Commission must use the funds awarded for the specific purpose described in the grant application and in accordance with the contract. The recipient cannot use any of the funds for the purposes stated under Exemptions on the first page of this application.

If you have any questions about the application or have trouble submitting the application, please contact Karlene Fine at 701-328-3722 or kfine@nd.gov

Revised: June 30, 2017

ND OUTDOOR HERITAGE FUND - BUDGET ESTIMATE

for
 Drain 22 Outlet Stabilization
 County of Walsh, North Dakota
 Walsh County Water Resource District
 Grafton, North Dakota
 March 27, 2018

Item	Estimated Quantity	Unit Price	Total Cost	OHF Request (54%)	Matching Funds (Direct)	
					ND State Water Commission	Local Assessment District
Mobilization	1	\$ 1,480.00	\$ 1,480.00	\$ 814.00	\$ 299.70	\$ 366.30
Common Excavation	4,600	\$ 3.15	\$ 14,490.00	\$ 7,969.50	\$ 2,934.23	\$ 3,586.27
Excavation Material Haul	1,800	\$ 2.20	\$ 3,960.00	\$ 2,178.00	\$ 801.90	\$ 980.10
Seeding & Mulching	1.2	\$ 650.00	\$ 780.00	\$ 429.00	\$ 157.95	\$ 193.05
Riprap NDDOT Grade II	310	\$ 54.50	\$ 16,895.00	\$ 9,292.25	\$ 3,421.24	\$ 4,181.51
Riprap NDDOT Grade III	1,280	\$ 53.00	\$ 67,840.00	\$ 37,312.00	\$ 13,737.60	\$ 16,790.40
Remove Drain 22B Outlet Debris	1	\$ 600.00	\$ 600.00	\$ 330.00	\$ 121.50	\$ 148.50
Temporary Construction Entrance	2	\$ 585.00	\$ 1,170.00	\$ 643.50	\$ 236.93	\$ 289.57
Erosion Control Blanket	1,800	\$ 1.35	\$ 2,430.00	\$ 1,336.50	\$ 492.08	\$ 601.42
Construction Subtotal			\$ 109,645.00	\$ 60,304.75	\$ 22,203.13	\$ 27,137.12
Contingencies (20%)			\$ 21,929.00	\$ 12,060.95	\$ 4,440.63	\$ 5,427.42
Construction Total			\$ 131,574.00	\$ 72,365.70	\$ 26,643.76	\$ 32,564.54
Engineering - Construction Administration			\$ 19,000.00	\$ 9,000.00	\$ 4,500.00	\$ 5,500.00
Total Costs			\$ 150,574.00	\$ 81,365.70	\$ 31,143.76	\$ 38,064.54

Drain 22B Outlet: Looking east toward the Red River



Drain 22B Outlet: Recent bank erosion



Drain 22 Outlet: Recent bank erosion

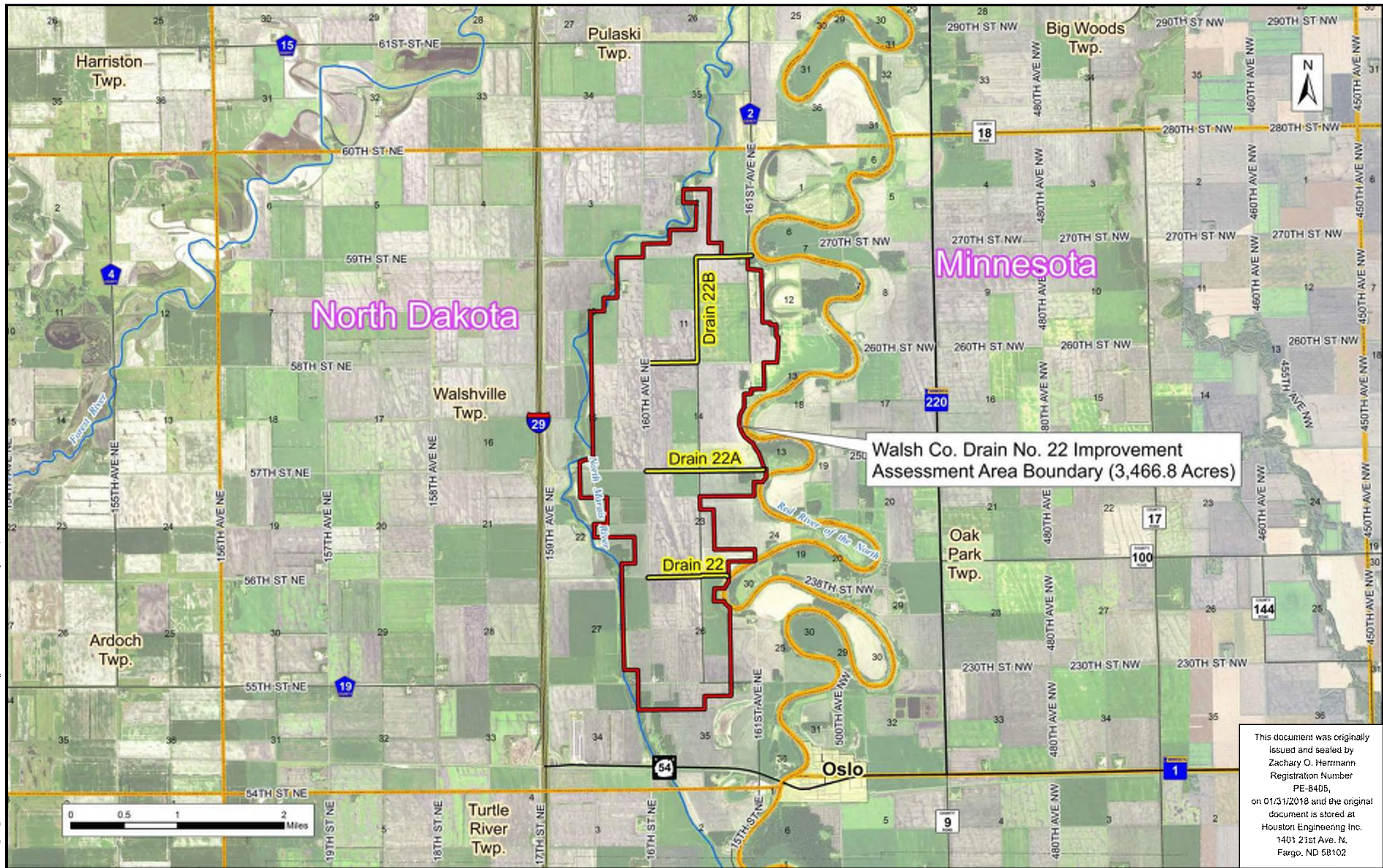


Drain 22 Outlet: Recent bank erosion





Proj. No. 7135-023
Houston
 Engineering Inc.
 Ph: 701.237.5065



Walsh Co. Drain No. 22 Improvement
Assessment Area Boundary (3,466.8 Acres)

This document was originally issued and sealed by Zachary O. Herrmann Registration Number PE-8405, on 01/31/2018 and the original document is stored at Houston Engineering Inc. 1401 21st Ave. N. Fargo, ND 58102

H:\Fargo\JBN\7100\7135\16_7135_023\CADD\December2016\Plans\LOCATION MAP.dwg LOCATION MAP-1/31/2018 1:45 PM (pleclare)

				 Houston Engineering Inc.	Fargo	Drawn by PDL	Date 01-31-2018	DRAIN 22 SYSTEM IMPROVEMENTS WALSH COUNTY WATER RESOURCE DISTRICT GRAFTON, NORTH DAKOTA	LOCATION MAP PROJECT NO. 7135-023	SHEET G-002
					P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision	Date	By							



NOTES:
1. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PRIOR TO INSTALLATION OF THE CULVERT CROSSING COUNTY ROAD 2.
2. THE CONTRACTOR SHALL HAVE 14 CALENDAR DAYS TO COMPLETE THE CROSSING AND REOPEN THE ROADWAY TO TRAFFIC OPERATIONS. THE ROADWAY SHALL NOT BE REOPENED UNTIL APPROVED BY THE ENGINEER.
3. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL RESIDENTIAL PROPERTIES AT ALL TIMES. ALL WORK SHALL BE PHASED ACCORDINGLY TO MAINTAIN ACCESS.

This document was originally issued and sealed by Zachary O. Herrmann Registration Number PE-8405, on 01/31/2018 and the original document is stored at Houston Engineering Inc. 1401 21st Ave. N. Fargo, ND 58102

(A)	STREET CLOSED TO THRU TRAFFIC	R11-4A-60	(J)	NORTH	M3-1-24
(B)	STREET CLOSED	R11-2-48		WALSH 2 COUNTY	M1-6-24
(C)	ROAD CLOSED AHEAD	W20-5-48	(K)	DETOUR NORTH	M4-8-24
				WALSH 2 COUNTY	M3-1-24
				↑	M1-6-24
					M6-3-21
(D)	DETOUR AHEAD	W20-2-48	(L)	DETOUR SOUTH	M4-8-24
				WALSH 2 COUNTY	M3-3-24
				↱	M1-6-24
					M5-1R-21
(E)	DETOUR NORTH	M4-8-24		DETOUR SOUTH	M4-8-24
	WALSH 2 COUNTY	M3-1-24		WALSH 2 COUNTY	M3-3-24
	↶	M1-6-24	(M)	↷	M1-6-24
		M5-1L-21			M6-1R-21
(F)	DETOUR NORTH	M4-8-24		DETOUR SOUTH	M4-8-24
	WALSH 2 COUNTY	M3-1-24		WALSH 2 COUNTY	M3-3-24
	↶	M1-6-24	(N)	↷	M1-6-24
		M6-1L-21			M5-1L-21
(G)	DETOUR NORTH	M4-8-24		DETOUR SOUTH	M4-8-24
	WALSH 2 COUNTY	M3-1-24		WALSH 2 COUNTY	M3-3-24
	↱	M1-6-24	(O)	↶	M1-6-24
		M5-1R-21			M6-1L-21
(H)	DETOUR NORTH	M4-8-24		DETOUR SOUTH	M4-8-24
	WALSH 2 COUNTY	M3-1-24		WALSH 2 COUNTY	M3-3-24
	↱	M1-6-24	(P)	↷	M1-6-24
		M6-1R-21			M6-2R-21
(I)	DETOUR NORTH	M4-8-24		↶	M3-3-24
	WALSH 2 COUNTY	M3-1-24	(Q)	WALSH 2 COUNTY	M1-6-24
	↷	M1-6-24			
		M6-2R-21			

					Fargo	Drawn by PDL	Date 01-31-2018	DRAIN 22 SYSTEM IMPROVEMENTS WALSH COUNTY WATER RESOURCE DISTRICT GRAFTON, NORTH DAKOTA	DRAIN 22 TRAFFIC CONTROL PROJECT NO. 7135-023	SHEET T-101
No.	Revision	Date	By		P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			

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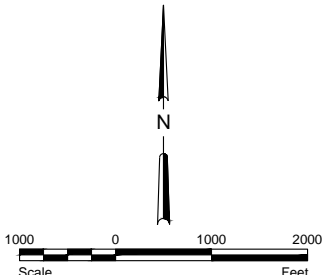


NOTES:
1. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PRIOR TO INSTALLATION OF THE CULVERT CROSSING COUNTY ROAD 2.
2. THE CONTRACTOR SHALL HAVE 14 CALENDAR DAYS TO COMPLETE THE CROSSING AND REOPEN THE ROADWAY TO TRAFFIC OPERATIONS. THE ROADWAY SHALL NOT BE REOPENED UNTIL APPROVED BY THE ENGINEER.
3. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL RESIDENTIAL PROPERTIES AT ALL TIMES. ALL WORK SHALL BE PHASED ACCORDINGLY TO MAINTAIN ACCESS.

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(A)	STREET CLOSED TO THRU TRAFFIC	R11-4A-60	(J)	NORTH	M3-1-24
(B)	STREET CLOSED	R11-2-48		WALSH 2 COUNTY	M1-6-24
(C)	ROAD CLOSED AHEAD	W20-5-48	(K)	DETOUR NORTH	M4-8-24
(D)	DETOUR AHEAD	W20-2-48		WALSH 2 COUNTY	M3-1-24
	DETOUR NORTH	M4-8-24		WALSH 2 COUNTY	M1-6-24
(E)	WALSH 2 COUNTY	M3-1-24		↑	M6-3-21
	WALSH 2 COUNTY	M1-6-24	(L)	DETOUR SOUTH	M4-8-24
	WALSH 2 COUNTY	M5-1L-21		WALSH 2 COUNTY	M3-3-24
(F)	DETOUR NORTH	M4-8-24		↱	M5-1R-21
	WALSH 2 COUNTY	M3-1-24		WALSH 2 COUNTY	M4-8-24
	WALSH 2 COUNTY	M1-6-24	(M)	DETOUR SOUTH	M3-3-24
	WALSH 2 COUNTY	M6-1L-21		WALSH 2 COUNTY	M1-6-24
(G)	DETOUR NORTH	M4-8-24		↲	M6-1R-21
	WALSH 2 COUNTY	M3-1-24	(N)	DETOUR SOUTH	M4-8-24
	WALSH 2 COUNTY	M1-6-24		WALSH 2 COUNTY	M3-3-24
	WALSH 2 COUNTY	M6-1L-21		WALSH 2 COUNTY	M1-6-24
(H)	DETOUR NORTH	M4-8-24		↲	M5-1L-21
	WALSH 2 COUNTY	M3-1-24	(O)	DETOUR SOUTH	M4-8-24
	WALSH 2 COUNTY	M1-6-24		WALSH 2 COUNTY	M3-3-24
	WALSH 2 COUNTY	M6-1R-21		WALSH 2 COUNTY	M1-6-24
(I)	DETOUR NORTH	M4-8-24	(P)	DETOUR SOUTH	M4-8-24
	WALSH 2 COUNTY	M3-1-24		WALSH 2 COUNTY	M3-3-24
	WALSH 2 COUNTY	M1-6-24		WALSH 2 COUNTY	M1-6-24
	WALSH 2 COUNTY	M6-2R-21		↗	M6-2R-21
			(Q)	SOUTH	M3-3-24
				WALSH 2 COUNTY	M1-6-24

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- NOTES:
1. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PRIOR TO INSTALLATION OF THE CULVERT CROSSING COUNTY ROAD 2.
 2. THE CONTRACTOR SHALL HAVE 14 CALENDAR DAYS TO COMPLETE THE CROSSING AND REOPEN THE ROADWAY TO TRAFFIC OPERATIONS. THE ROADWAY SHALL NOT BE REOPENED UNTIL APPROVED BY THE ENGINEER.
 3. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL RESIDENTIAL PROPERTIES AT ALL TIMES. ALL WORK SHALL BE PHASED ACCORDINGLY TO MAINTAIN ACCESS.

A

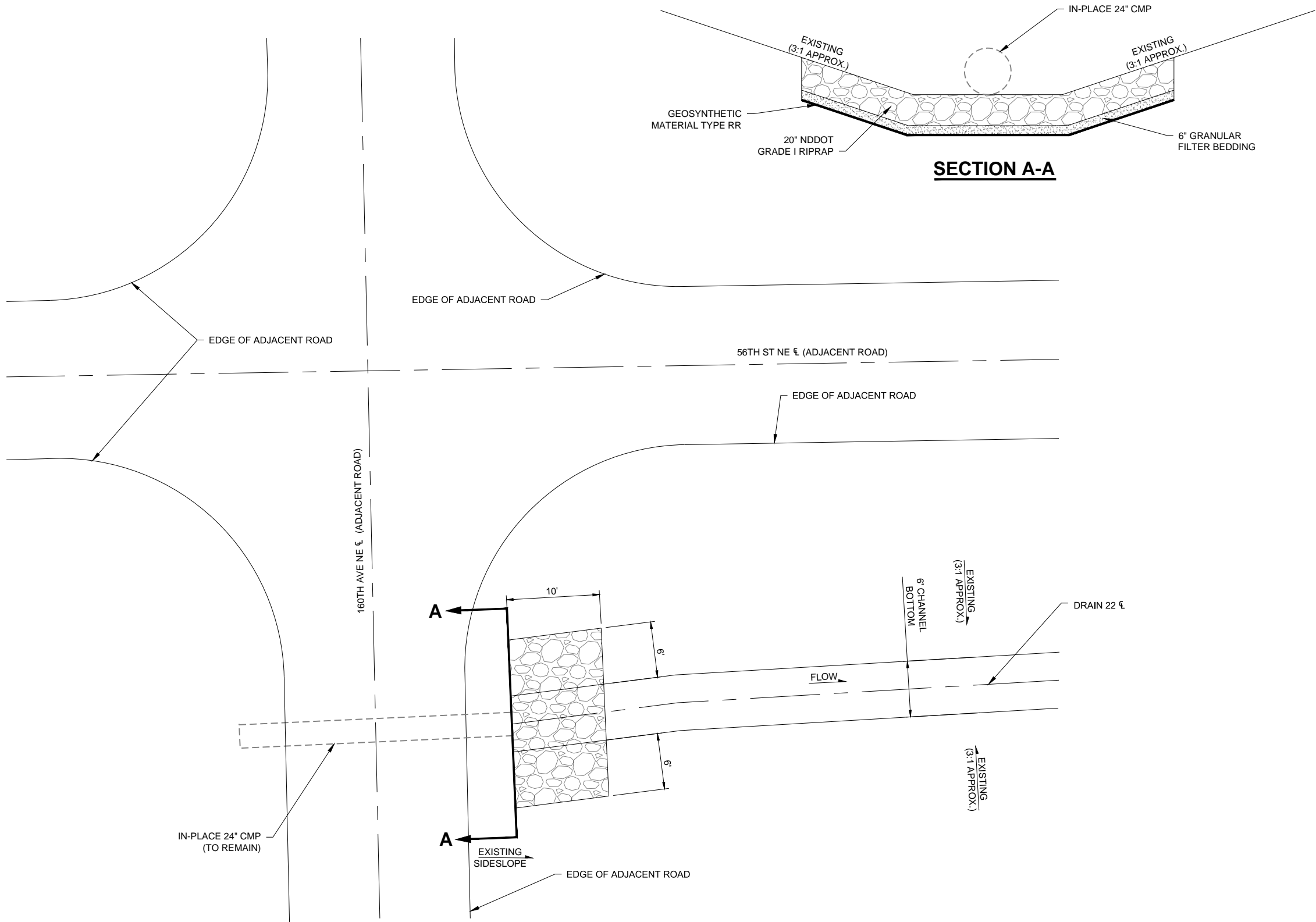
ROAD
WORK
AHEAD

W20-1-48

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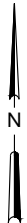
					Fargo	Drawn by PDL	Date 01-31-2018	DRAIN 22 SYSTEM IMPROVEMENTS WALSH COUNTY WATER RESOURCE DISTRICT GRAFTON, NORTH DAKOTA	DRAIN 22B TRAFFIC CONTROL PROJECT NO. 7135-023	SHEET T-301
No.	Revision	Date	By		P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			

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SECTION A-A

- NOTES:
1. RIRAP SHALL BE MEASURED AND PAID BASED ON THE "NDDOT GRADE I RIPRAP" BID ITEM.
 2. COMMON EXCAVATION, GEOSYNTHETIC MATERIAL TYPE RR, AND GRANULAR FILTER BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE "NDDOT GRADE I RIPRAP" BID ITEM.
 3. IN-PLACE TOPSOIL FROM ALL DISTURBED AREAS SHALL BE REMOVED AND STOCKPILED IN THE CONSTRUCTION EXTENTS. COSTS FOR REMOVAL AND STOCKPIILING OF TOPSOIL REQUIRED FOR THE INSTALLATION OF RIPRAP SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 4. STOCKPILED TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED OVER ALL DISTURBED AREAS AFTER INSTALLATION OF RIPRAP, AND OTHER INCIDENTAL ITEMS. COSTS FOR REDISTRIBUTION OF TOPSOIL REQUIRED SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 5. ROAD AND DITCH SIDE SLOPES SHALL BE SEEDED AFTER TOPSOIL HAS BEEN DISTRIBUTED.
 6. ADJACENT ROADS SHALL NOT BE DISTURBED. ANY DISTURBED AREAS SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER. ALL COSTS ASSOCIATED WITH REPAIR OF DISTURBED AREAS OF THE ADJACENT ROAD SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 7. ANY IN-PLACE CULVERTS DESIGNATED TO REMAIN THAT ARE DAMAGED AS A RESULT OF CONTRACT WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. COSTS ASSOCIATED WITH WORK AND MATERIALS REQUIRED TO REPAIR OR REPLACE IN-PLACE CULVERTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 8. ALL TREES SHALL REMAIN IN PLACE AND PROTECTED BY THE CONTRACTOR. NO TREES SHALL BE REMOVED UNLESS MARKED BY THE ENGINEER OR REPRESENTATIVE. ALL COSTS ASSOCIATED WITH TREE AND/OR BRUSH REMOVAL, OR ANY OTHER CLEARING AND GRUBBING WORK, SHALL BE CONSIDERED INCIDENTAL TO OTHER BID ITEMS.
 9. ANY DEBRIS WITHIN THE CONSTRUCTION EXTENTS SHALL BE REMOVED BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER. ALL COSTS ASSOCIATED WITH DEBRIS REMOVAL SHALL BE INCIDENTAL TO OTHER BID ITEMS.



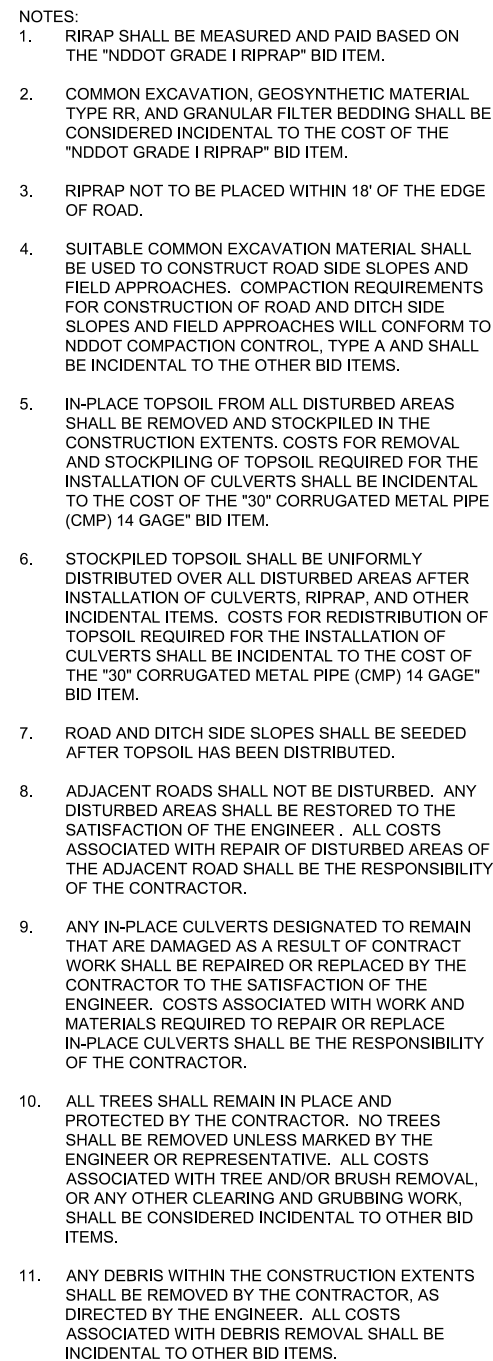
160TH AVE NE CULVERT RIPRAP APRON DETAIL (STA 10+00)
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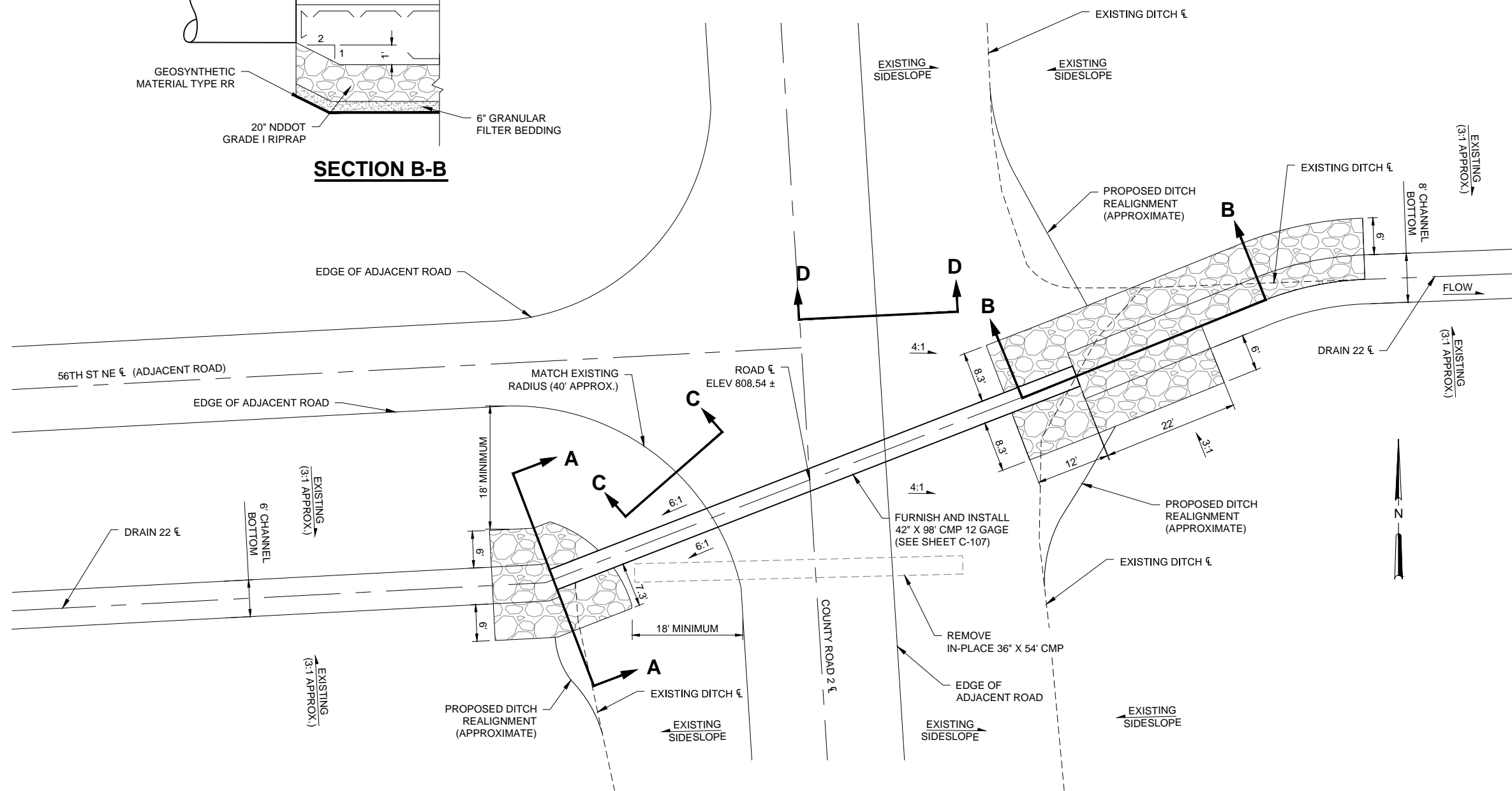
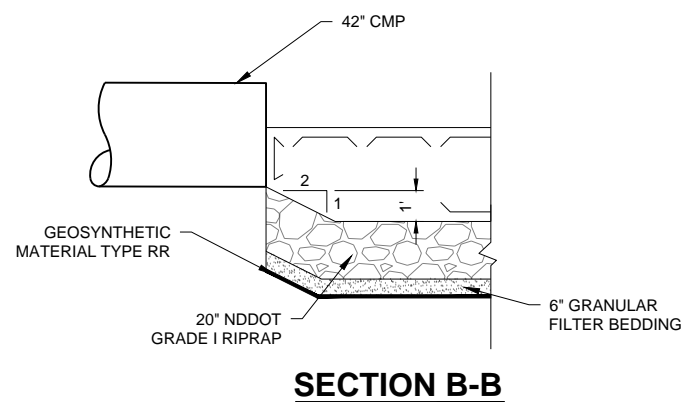
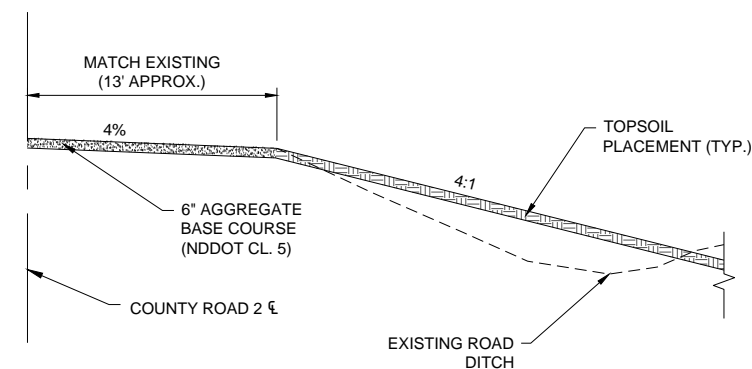
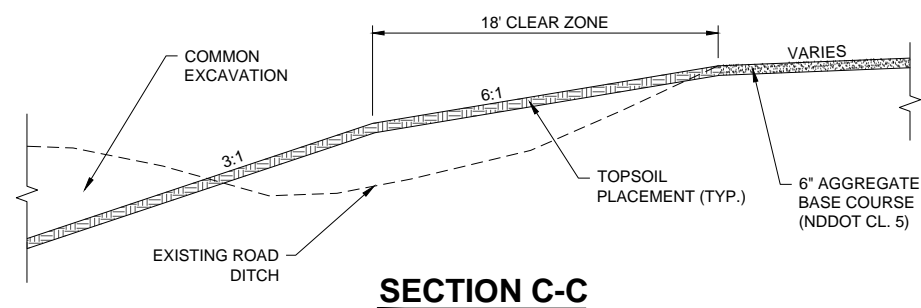
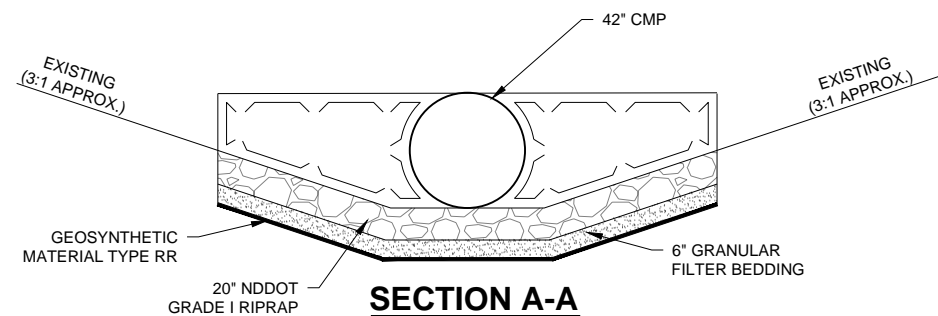


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P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			



FIELD APPROACH CULVERT RIPRAP APRON DETAIL (STA 23+13)
NOT TO SCALE

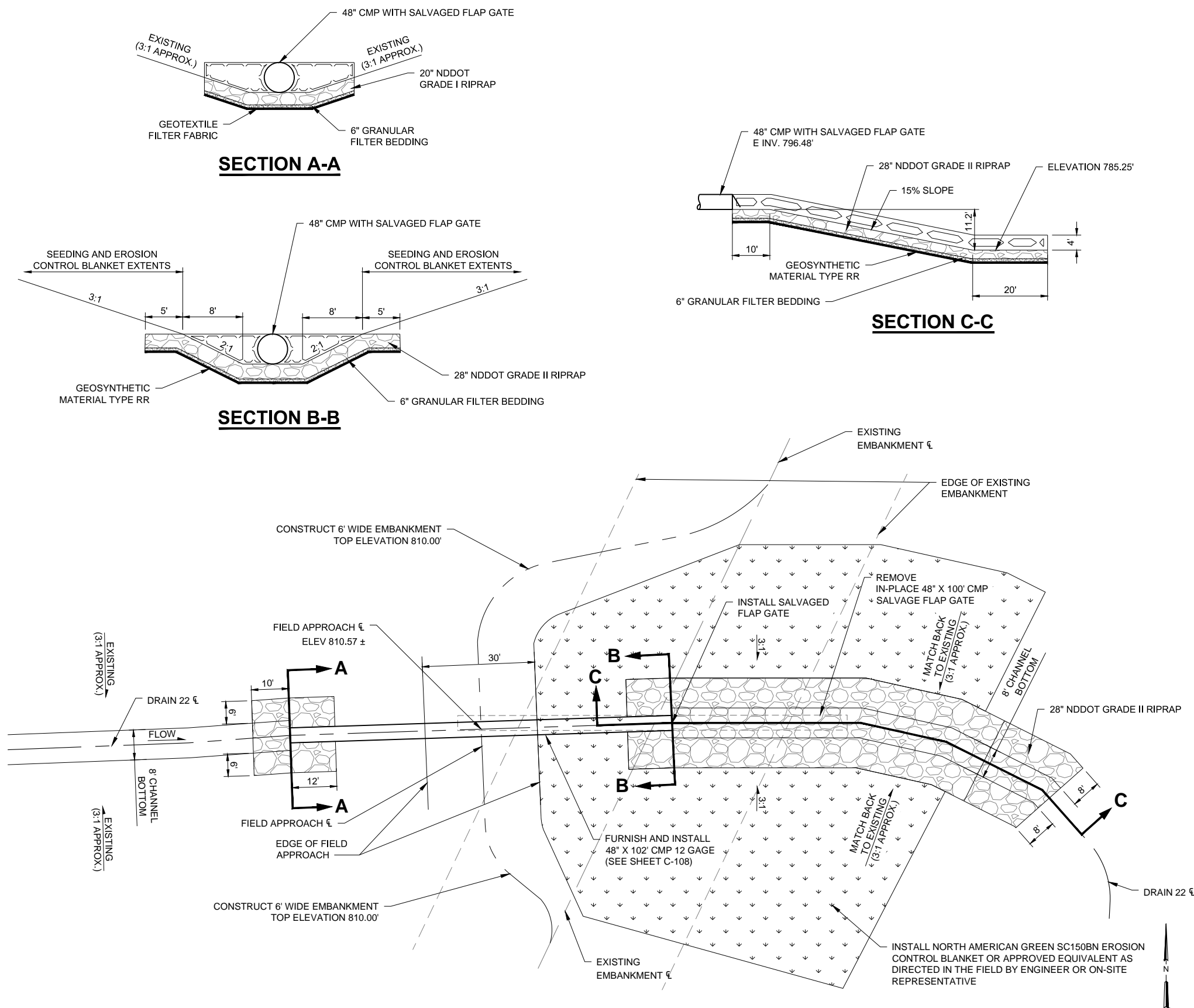
					 Houston Engineering Inc.	Fargo	Drawn by PDL	Date 01-31-2018	DRAIN 22 SYSTEM IMPROVEMENTS WALSH COUNTY WATER RESOURCE DISTRICT GRAFTON, NORTH DAKOTA	DRAIN 22 FIELD APPROACH CULVERT RIPRAP APRON DETAIL PROJECT NO. 7135-023	SHEET C-102
						P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision	Date	By								



- NOTES:
1. RIPRAP SHALL BE MEASURED AND PAID BASED ON THE "NDDOT GRADE I RIPRAP" BID ITEM.
 2. COMMON EXCAVATION, GEOSYNTHETIC MATERIAL TYPE RR, AND GRANULAR FILTER BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE "NDDOT GRADE I RIPRAP" BID ITEM.
 3. RIPRAP NOT TO BE PLACED WITHIN 18' OF THE EDGE OF ROAD.
 4. EXISTING DRAINAGE DITCHES SHALL BE REALIGNED WITHIN THE EXTENT OF THE PERMANENT RIGHT-OF-WAY TO ENSURE PROPER DRAINAGE TO THE SATISFACTION OF THE ENGINEER. COMMON EXCAVATION REQUIRED TO REALIGN TOWNSHIP AND COUNTY ROAD DITCHES SHALL BE INCIDENTAL TO THE COST OF THE "42" CORRUGATED METAL PIPE (CMP) 12 GAGE" BID ITEM.
 5. COMPACTION REQUIREMENTS FOR CONSTRUCTION OF ROAD AND DITCH SIDE SLOPES SHALL CONFORM TO NDDOT COMPACTION CONTROL, TYPE A AND SHALL BE INCIDENTAL TO THE COST OF THE "42" CORRUGATED METAL PIPE (CMP) 12 GAGE" BID ITEM.
 6. IN-PLACE TOPSOIL FROM ALL DISTURBED AREAS SHALL BE REMOVED AND STOCKPILED WITHIN THE CONSTRUCTION EXTENTS. COSTS FOR REMOVAL AND STOCKPILING OF TOPSOIL ASSOCIATED WITH REALIGNMENT OF TOWNSHIP AND COUNTY ROAD DITCHES SHALL BE INCIDENTAL TO THE COST OF THE "42" CORRUGATED METAL PIPE (CMP) 12 GAGE" BID ITEM.
 7. STOCKPILED TOPSOIL SHALL BE UNIFORMLY REDISTRIBUTED OVER ALL DISTURBED AREAS AFTER INSTALLATION OF RIPRAP AND CONSTRUCTION OF ROAD AND DITCH SIDE SLOPES. COSTS FOR TOPSOIL PLACEMENT ASSOCIATED WITH REALIGNMENT OF TOWNSHIP AND COUNTY ROAD DITCHES SHALL BE INCIDENTAL TO THE COST OF THE "42" CORRUGATED METAL PIPE (CMP) 12 GAGE" BID ITEM.
 8. ROAD AND DITCH SIDE SLOPES SHALL BE SEEDED AFTER TOPSOIL HAS BEEN DISTRIBUTED.
 9. ADJACENT ROADS SHALL NOT BE DISTURBED. ANY DISTURBED AREAS SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER. ALL COSTS ASSOCIATED WITH REPAIR OF DISTURBED AREAS OF THE ADJACENT ROAD SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 10. ANY IN-PLACE CULVERTS DESIGNATED TO REMAIN THAT ARE DAMAGED AS A RESULT OF CONTRACT WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. COSTS ASSOCIATED WITH WORK AND MATERIALS REQUIRED TO REPAIR OR REPLACE IN-PLACE CULVERTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

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					P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision	Date	By							



- NOTES:
1. RIRAP SHALL BE MEASURED AND PAID BASED ON THE APPROPRIATE NDDOT RIRAP GRADATION BID ITEM.
 2. COMMON EXCAVATION, GEOSYNTHETIC MATERIAL TYPE RR, AND GRANULAR FILTER BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE APPROPRIATE NDDOT RIRAP GRADATION BID ITEM.
 3. SUITABLE COMMON EXCAVATION MATERIAL SHALL BE USED TO CONSTRUCT ROAD SIDE SLOPES AND FIELD APPROACHES. COMPACTION REQUIREMENTS FOR CONSTRUCTION OF DITCH SIDE SLOPES AND FIELD APPROACHES SHALL CONFORM TO NDDOT COMPACTION CONTROL, TYPE A AND SHALL BE CONSIDERED INCIDENTAL TO THE OTHER BID ITEMS.
 4. IN-PLACE TOPSOIL FROM ALL DISTURBED AREAS EXCLUDING THE EXISTING ROADWAY SHALL BE REMOVED AND STOCKPILED IN THE CONSTRUCTION EXTENTS. COSTS FOR REMOVAL AND STOCKPIILING OF TOPSOIL REQUIRED FOR THE INSTALLATION OF CULVERTS SHALL BE INCIDENTAL TO THE COST OF THE "48" CORRUGATED METAL PIPE (CMP) 12 GAGE" BID ITEM.
 5. STOCKPILED TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED OVER ALL DISTURBED AREAS AFTER INSTALLATION OF CULVERTS, RIRAP, AND OTHER INCIDENTAL ITEMS. COSTS FOR REDISTRIBUTION OF TOPSOIL REQUIRED FOR THE INSTALLATION OF CULVERTS SHALL BE INCIDENTAL TO THE COST OF THE "48" CORRUGATED METAL PIPE (CMP) 12 GAGE" BID ITEM.
 6. FIELD APPROACH AND DITCH SIDE SLOPES SHALL BE SEEDED AFTER TOPSOIL HAS BEEN DISTRIBUTED.
 7. THE CONTRACTOR SHALL CONSTRUCT A CONTINUOUS 6' WIDE EMBANKMENT FROM THE NEW FIELD APPROACH TO THE EXISTING EMBANKMENT. SUITABLE COMMON EXCAVATION MATERIAL SHALL BE USED TO CONSTRUCT THE EMBANKMENT. VERIFY EXACT LOCATION OF EMBANKMENT ALIGNMENT IN THE FIELD WITH ENGINEER. COMPACTION REQUIREMENTS FOR THE CONSTRUCTION OF THE EMBANKMENT SHALL CONFORM TO NDDOT COMPACTION CONTROL, TYPE A AND SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 8. EARTHWORK QUANTITIES TO REMOVE THE EXISTING FIELD APPROACH ARE INCLUDED IN THE "COMMON EXCAVATION" BID ITEM. ALL COSTS ASSOCIATED WITH CONSTRUCTING THE NEW FIELD APPROACH SHALL BE INCLUDED IN THE BID ITEM "48" CORRUGATED METAL PIPE (CMP) 12 GAGE".
 9. CONTRACTOR SHALL SALVAGE THE EXISTING 48" FLAP GATE AND REINSTALL ON THE NEW 48" CMP. ALL COSTS ASSOCIATED WITH REMOVAL, INSTALLATION, AND ANY REQUIRED MODIFICATIONS OF THE FLAP GATE SHALL BE INCLUDED IN THE BID ITEM "SALVAGE AND REINSTALL 48" FLAP GATE".
 10. ADJACENT ROADS SHALL NOT BE DISTURBED. ANY DISTURBED AREAS SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER. ALL COSTS ASSOCIATED WITH REPAIR OF DISTURBED AREAS OF THE ADJACENT ROAD SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 11. ANY IN-PLACE CULVERTS DESIGNATED TO REMAIN THAT ARE DAMAGED AS A RESULT OF CONTRACT WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. COSTS ASSOCIATED WITH WORK AND MATERIALS REQUIRED TO REPAIR OR REPLACE IN-PLACE CULVERTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 12. ALL TREES SHALL REMAIN IN PLACE AND PROTECTED BY THE CONTRACTOR. NO TREES SHALL BE REMOVED UNLESS MARKED BY THE ENGINEER OR REPRESENTATIVE. ALL COSTS ASSOCIATED WITH TREE AND/OR BRUSH REMOVAL, OR ANY OTHER CLEARING AND GRUBBING WORK, SHALL BE CONSIDERED INCIDENTAL TO OTHER BID ITEMS.
 13. ANY DEBRIS WITHIN THE CONSTRUCTION EXTENTS SHALL BE REMOVED BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER. ALL COSTS ASSOCIATED WITH DEBRIS REMOVAL SHALL BE INCIDENTAL TO OTHER BID ITEMS.
 14. ALL AREAS DESIGNATED WITHIN THE EROSION CONTROL BLANKET EXTENTS SHALL BE SEEDED, FERTILIZED, AND COVERED WITH NORTH AMERICAN GREEN SC150BN EROSION CONTROL BLANKET OR APPROVED EQUIVALENT USING THE MANUFACTURERS RECOMMENDED INSTALLATION INSTRUCTIONS. EROSION CONTROL BLANKET SHALL NOT BE MEASURED FOR PAYMENT, RATHER SHALL BE REIMBURSED AT PLAN QUANTITY BASED ON THE "EROSION CONTROL BLANKET" BID ITEM.

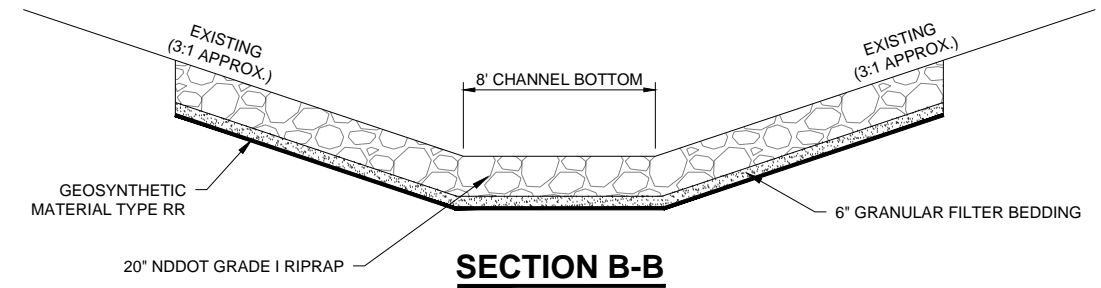
FIELD APPROACH CULVERT RIRAP APRONS AND DROP STRUCTURE DETAIL (STA 47+96)
NOT TO SCALE

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P: 701.237.5065	F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			

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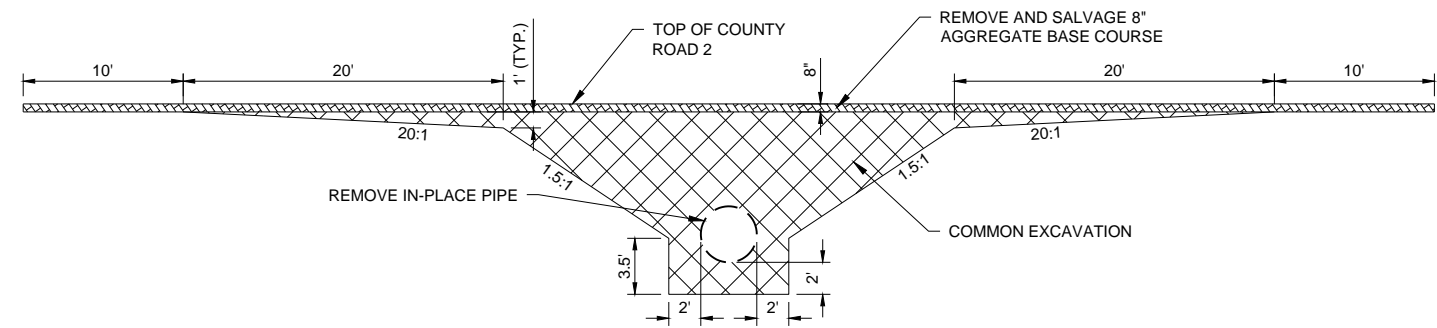


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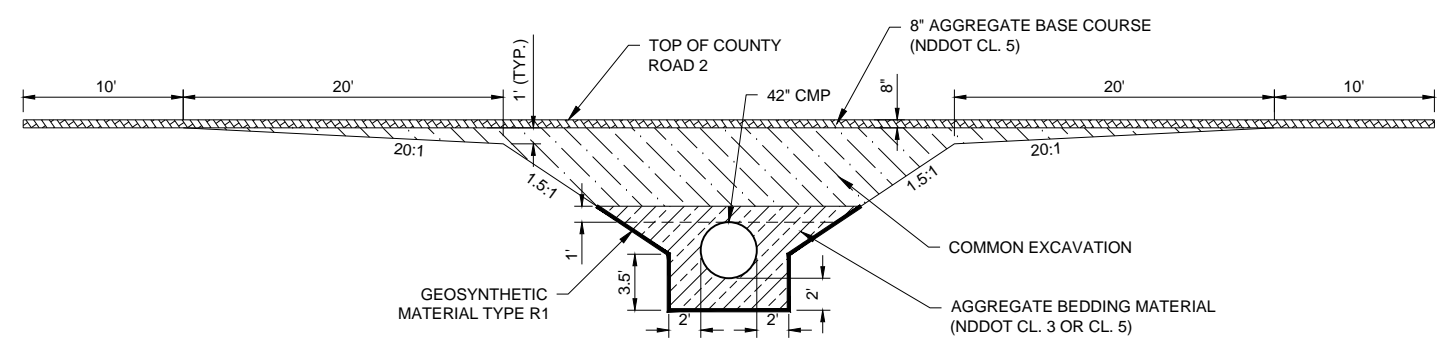
1. PAYMENT FOR REMOVAL OF IN-PLACE PIPE(S) SHALL BE MADE UNDER THE "REMOVE PIPE ALL TYPES AND SIZES" BID ITEM.
2. COMMON EXCAVATION AND AGGREGATE BEDDING MATERIAL SHALL BE CONSIDERED INCIDENTAL TO THE UNIT COST OF "30" CORRUGATED METAL PIPE (CMP) 14 GAGE" BID ITEM.
3. ALL JOINTS SHALL BE WRAPPED IN THEIR ENTIRETY WITH NDDOT GEOSYNTHETIC MATERIAL TYPE S2. OVERLAP OF JOINTS SHALL BE ONE WIDTH OF THE GEOSYNTHETIC ROLL AND FASTENED WITH STAPLES. THE GEOSYNTHETIC MATERIAL AND INSTALLATION COSTS SHALL BE CONSIDERED INCIDENTAL TO THE OTHER BID ITEMS REQUIRED FOR THE CMP PIPE INSTALLATION
4. TOP OF FIELD APPROACH WIDTH SHALL GENERALLY MATCH THE EXISTING FIELD APPROACH WIDTH.
5. COMMON EXCAVATION MATERIAL USED FOR FILL ABOVE AGGREGATE BEDDING MATERIAL SHALL CONFORM TO NDDOT COMPACTION CONTROL, TYPE A.
6. CLAY PLUGS SHALL BE CONSTRUCTED WITH SUITABLE CLAY SPOIL MATERIAL FROM COMMON EXCAVATION. ALL COSTS ASSOCIATED WITH CONSTRUCTION OF THE CLAY PLUG SHALL BE INCIDENTAL TO THE "30" CORRUGATED METAL PIPE (CMP) 14 GAGE" BID ITEM. SUITABLE COMMON EXCAVATION MATERIAL SHALL BE PLACED AROUND THE CULVERT IN LIEU OF AGGREGATE BEDDING MATERIAL.

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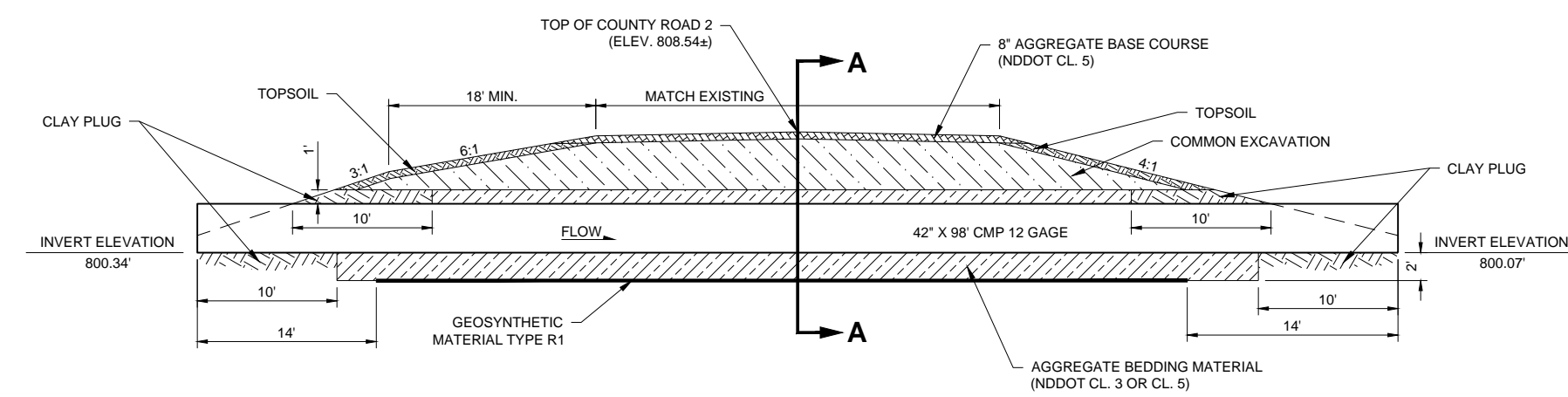
				 Houston Engineering Inc.	Fargo	Drawn by PDL	Date 01-31-2018	DRAIN 22 SYSTEM IMPROVEMENTS WALSH COUNTY WATER RESOURCE DISTRICT GRAFTON, NORTH DAKOTA	DRAIN 22 FIELD APPROACH CULVERT INSTALLATION DETAIL	SHEET
No.	Revision	Date	By		P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN		PROJECT NO. 7135-023	C-106



SECTION A-A



SECTION A-A



DRAIN 22 CULVERT INSTALLATION AND EXCAVATION DETAIL (STA 36+54)
NOT TO SCALE

- NOTES:
1. PAYMENT FOR REMOVAL OF IN-PLACE PIPE(S) SHALL BE MADE UNDER THE "REMOVE PIPE ALL TYPES AND SIZES" BID ITEM.
 2. COMMON EXCAVATION AND AGGREGATE BEDDING MATERIAL SHALL BE CONSIDERED INCIDENTAL TO THE UNIT COST OF "42" CORRUGATED METAL PIPE (CMP) 12 GAGE" BID ITEM.
 3. GEOSYNTHETIC MATERIAL TYPE R1 SHALL NOT BE MEASURED FOR PAYMENT, RATHER SHALL BE REIMBURSED AT PLAN QUANTITY BASED ON THE "GEOSYNTHETIC MATERIAL TYPE R1" BID ITEM.
 4. ALL JOINTS SHALL BE WRAPPED IN THEIR ENTIRETY WITH NDDOT GEOSYNTHETIC MATERIAL TYPE S2. OVERLAP OF JOINTS SHALL BE ONE WIDTH OF THE GEOSYNTHETIC ROLL AND FASTENED WITH STAPLES. THE GEOSYNTHETIC MATERIAL AND INSTALLATION COSTS SHALL BE CONSIDERED INCIDENTAL TO THE OTHER BID ITEMS REQUIRED FOR THE CMP PIPE INSTALLATION.
 5. REMOVAL AND SALVAGE OF 8" AGGREGATE BASE COURSE AND ALL RELATED INCIDENTAL ITEMS SHALL BE INCIDENTAL TO THE INSTALLATION OF THE RELATED DRAINAGE STRUCTURE INVOLVED. THE SUITABILITY OF REMOVED AGGREGATE BASE COURSE FOR REUSE SHALL BE AT THE DISCRETION OF THE ENGINEER.
 6. COMMON EXCAVATION MATERIAL USED FOR FILL ABOVE AGGREGATE BEDDING MATERIAL SHALL CONFORM TO NDDOT COMPACTION CONTROL, TYPE A.
 7. CLAY PLUGS SHALL BE CONSTRUCTED WITH WITH SUITABLE CLAY SPOIL MATERIAL FROM COMMON EXCAVATION. ALL COSTS ASSOCIATED WITH CONSTRUCTION OF THE CLAY PLUG SHALL BE INCIDENTAL TO THE "42" CORRUGATED METAL PIPE (CMP) 12 GAGE" BID ITEM. SUITABLE COMMON EXCAVATION MATERIAL SHALL BE PLACED AROUND THE CULVERT IN LIEU OF AGGREGATE BEDDING MATERIAL.

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						P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision		Date	By							

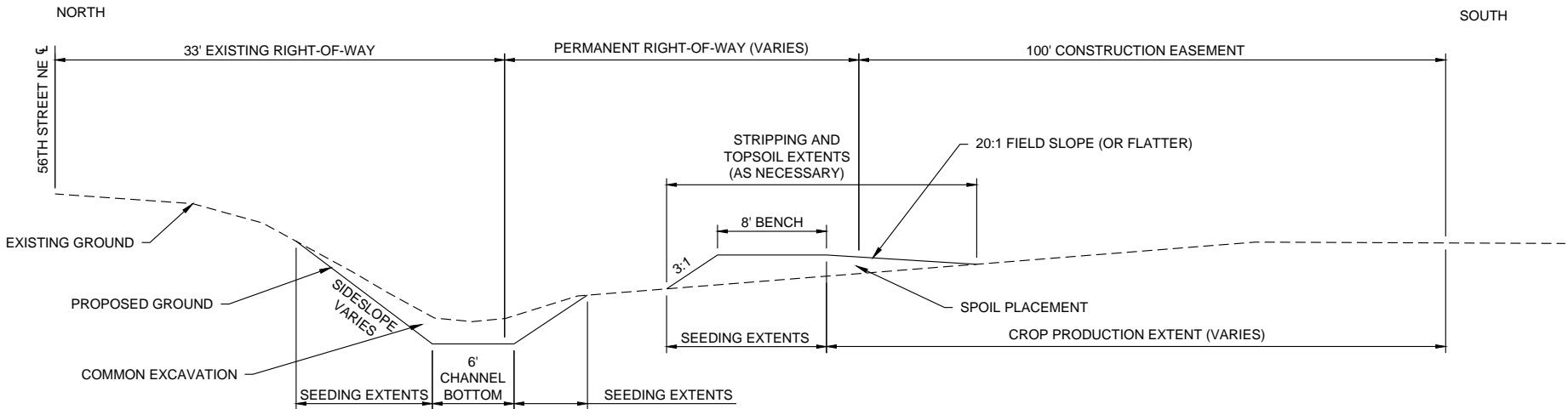


NOT TO SCALE

1. PAYMENT FOR REMOVAL OF IN-PLACE PIPE(S) SHALL BE MADE UNDER THE "REMOVE PIPE ALL TYPES AND SIZES" BID ITEM.
2. COMMON EXCAVATION AND AGGREGATE BEDDING MATERIAL SHALL BE CONSIDERED INCIDENTAL TO THE UNIT COST OF "48" CORRUGATED METAL PIPE (CMP) 12 GAGE" BID ITEM.
3. COMMON EXCAVATION MATERIAL USED FOR FILL ABOVE AGGREGATE BEDDING MATERIAL SHALL CONFORM TO NDDOT COMPACTION CONTROL, TYPE A.
4. ALL JOINTS SHALL BE WRAPPED IN THEIR ENTIRETY WITH NDDOT GEOSYNTHETIC MATERIAL TYPE S2. OVERLAP OF JOINTS SHALL BE ONE WIDTH OF THE GEOSYNTHETIC ROLL AND FASTENED WITH STAPLES. THE GEOSYNTHETIC MATERIAL AND INSTALLATION COSTS SHALL BE CONSIDERED INCIDENTAL TO THE OTHER BID ITEMS REQUIRED FOR THE CMP PIPE INSTALLATION
5. EARTHWORK QUANTITIES TO REMOVE THE EXISTING FIELD APPROACH ARE INCLUDED IN THE BID ITEM "COMMON EXCAVATION". ALL COSTS ASSOCIATED WITH CONSTRUCTING THE NEW FIELD APPROACH SHALL BE INCLUDED IN THE "48" CORRUGATED METAL PIPE (CMP) 12 GAGE" BID ITEM.
6. CONTRACTOR SHALL SALVAGE THE EXISTING 48" FLAP GATE AND REINSTALL ON THE NEW 48" CMP. ALL COSTS ASSOCIATED WITH REMOVAL, INSTALLATION, AND ANY REQUIRED MODIFICATIONS OF THE FLAP GATE SHALL BE INCLUDED IN THE BID ITEM "SALVAGE AND REINSTALL 48" FLAP GATE".
7. CLAY PLUGS SHALL BE CONSTRUCTED WITH SUITABLE CLAY SPOIL MATERIAL FROM COMMON EXCAVATION. ALL COSTS ASSOCIATED WITH CONSTRUCTION OF THE CLAY PLUG SHALL BE INCIDENTAL TO THE "48" CORRUGATED METAL PIPE (CMP) 12 GAGE" BID ITEM. SUITABLE COMMON EXCAVATION MATERIAL SHALL BE PLACED AROUND THE CULVERT IN LIEU OF AGGREGATE BEDDING MATERIAL.

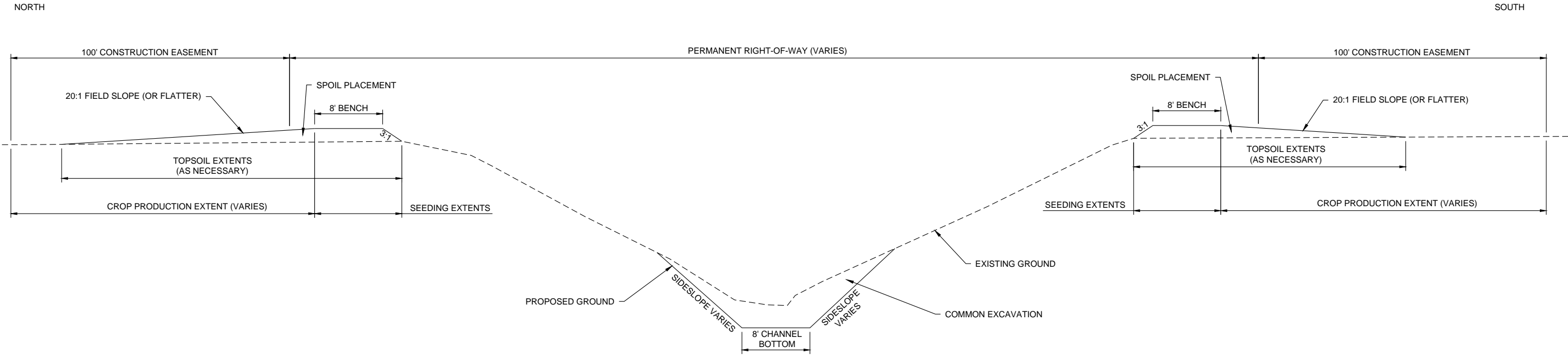
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				 Houston Engineering Inc.	Fargo	Drawn by PDL	Date 01-31-2018	DRAIN 22 SYSTEM IMPROVEMENTS WALSH COUNTY WATER RESOURCE DISTRICT GRAFTON, NORTH DAKOTA	DRAIN 22 FIELD APPROACH CULVERT INSTALLATION DETAIL	SHEET	
					P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			PROJECT NO. 7135-023	C-108
No.	Revision	Date	By								



DRAIN 22 TYPICAL SECTION (STA 10+24 TO STA 36+07)
NOT TO SCALE

- NOTES:
1. SPOIL MATERIAL SHALL NOT BE PLACED IN THE EXISTING SWALES.
 2. STRIPPING AND TOPSOILING SHALL ONLY BE REQUIRED IF MATERIALS NOT SUITABLE FOR CROP PRODUCTION ARE ENCOUNTERED DURING EXCAVATION. REQUIREMENTS FOR STRIPPING AND TOPSOILING SHALL BE AT THE DISCRETION OF THE ENGINEER. STRIPPING AND TOPSOILING COSTS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "COMMON EXCAVATION".
 3. TOPSOIL STRIPPING MATERIAL SHALL BE STOCKPILED WITHIN THE CONSTRUCTION EASEMENT. TOPSOIL SHALL BE PLACED IN THE DESIGNATED TOPSOIL EXTENTS AFTER EXCAVATION AND PLACEMENT OF SPOIL MATERIAL IS COMPLETE.
 4. TOPSOILING WITHIN AREAS INDICATED AS "CROP PRODUCTION EXTENT" IN THE TYPICAL SECTIONS SHALL BE PLACED AT A DEPTH EQUAL TO THE EXISTING TOPSOIL OR 6 INCHES, WHICHEVER IS GREATER. THE REMAINING TOPSOIL SHALL BE PLACED UNIFORMLY IN THE DESIGNATED "TOPSOIL EXTENTS" AREAS OUTSIDE OF THE "CROP PRODUCTION EXTENT" AREAS AS INDICATED IN THE TYPICAL SECTIONS.
 5. ALL DISTURBED AREAS WITHIN THE DESIGNATED SEEDING EXTENTS SHALL BE SEEDED EXCEPT CHANNEL BOTTOM (UNLESS OTHERWISE NOTED).
 6. COMMON EXCAVATION SHALL NOT BE MEASURED FOR PAYMENT, RATHER SHALL BE REIMBURSED AT PLAN QUANTITY BASED ON THE "COMMON EXCAVATION" BID ITEM.
 7. SPOIL PLACEMENT SHALL NOT BE MEASURED FOR PAYMENT, RATHER SHALL BE INCIDENTAL TO THE "COMMON EXCAVATION" BID ITEM.
 8. SEEDING EXTENTS SHALL NOT BE MEASURED FOR PAYMENT, RATHER SHALL BE REIMBURSED AT PLAN QUANTITY BASED ON THE "SEEDING & MULCHING" BID ITEM.
 9. THE CONTRACTOR SHALL MAKE THE ENGINEER AWARE OF ANY POTENTIAL CROP DAMAGES WITHIN THE CONSTRUCTION EASEMENT AND RIGHT-OF-WAY BEFORE ANY SUCH DAMAGES WILL OCCUR. THE ENGINEER SHALL APPROVE ANY CROP DAMAGES BEFORE THEY OCCUR.
 10. TO MINIMIZE FUTURE OVERTOPPING OF THE ADJACENT TOWNSHIP ROAD, SPOIL PLACEMENT HEIGHTS SHALL NOT EXCEED THE ADJACENT TOWNSHIP ROAD ELEVATION MINUS 1 FOOT OR AS DIRECTED BY THE ENGINEER.
 11. WHERE SPOIL IS PLACED ON BOTH SIDES OF THE CHANNEL, SPOIL HEIGHTS SHALL BE WITHIN 0.2 FEET OF THE SIDE OF THE CHANNEL UNLESS OTHERWISE DIRECTED BY THE ENGINEER.



DRAIN 22 TYPICAL SECTION (STA 37+06 TO STA 47+45)
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No.	Revision	Date	By



Fargo	Drawn by PDL	Date 01-31-2018
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DRAIN 22 SYSTEM IMPROVEMENTS
WALSH COUNTY WATER RESOURCE DISTRICT
GRAFTON, NORTH DAKOTA

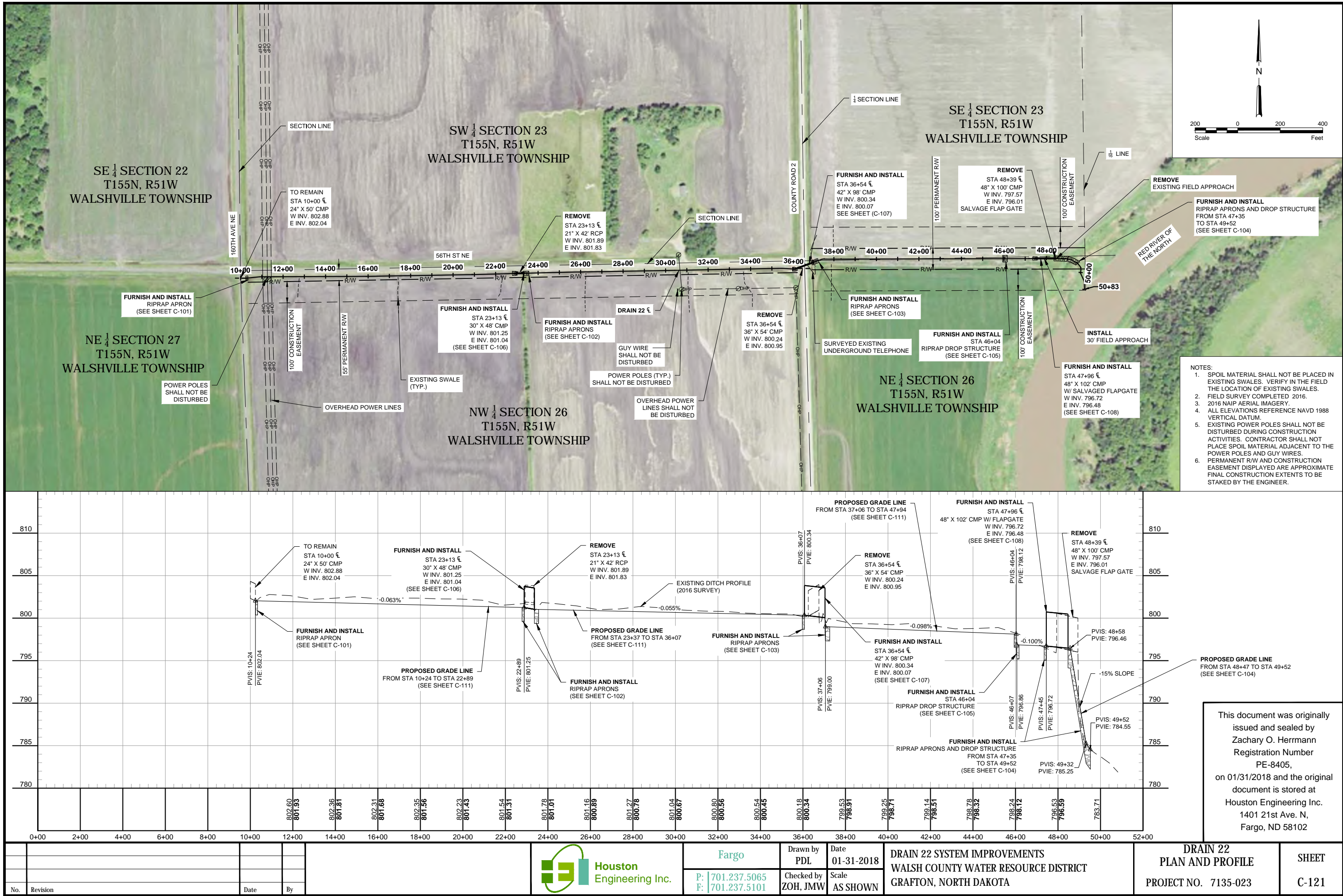
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TYPICAL SECTIONS
PROJECT NO. 7135-023

SHEET
C-111

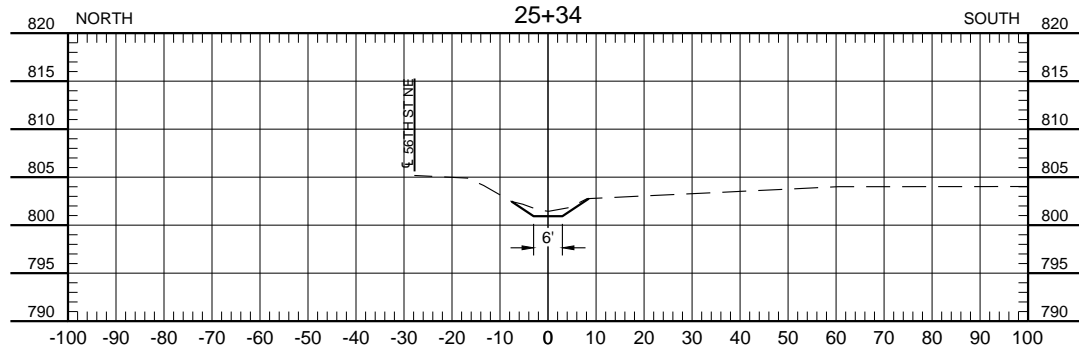
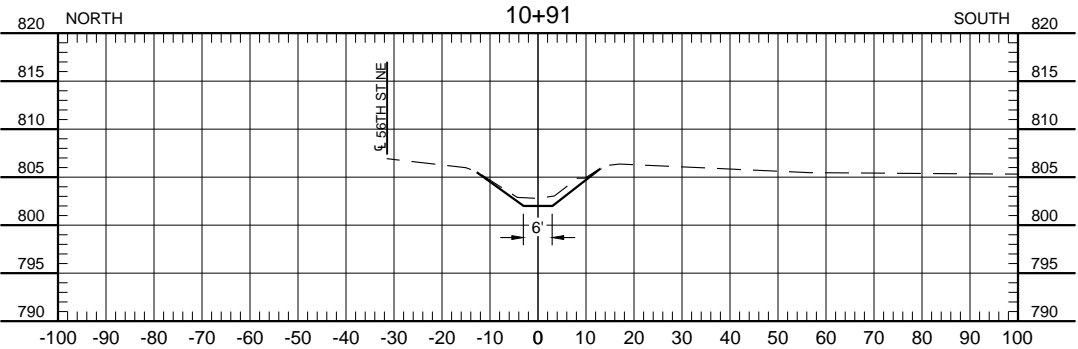
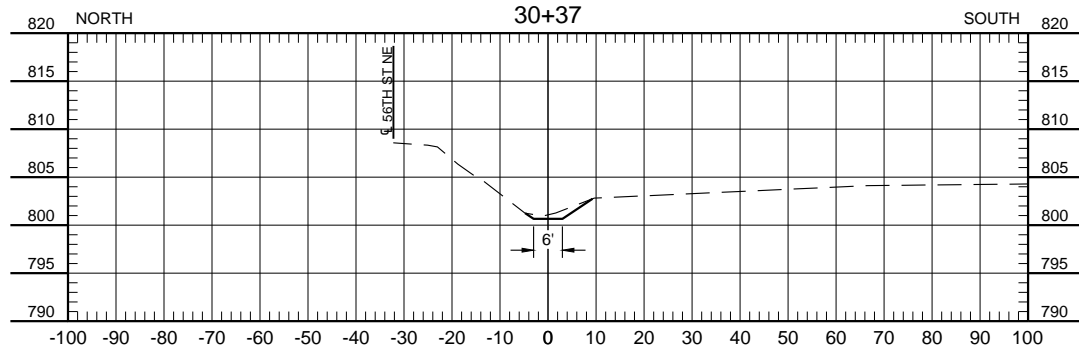
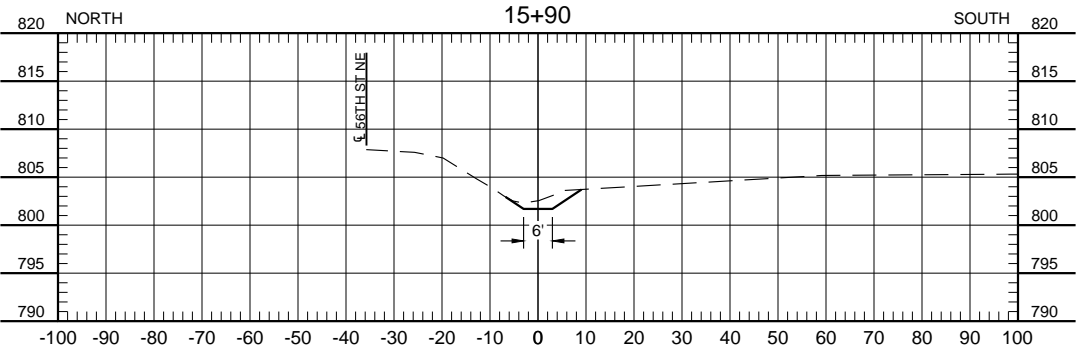
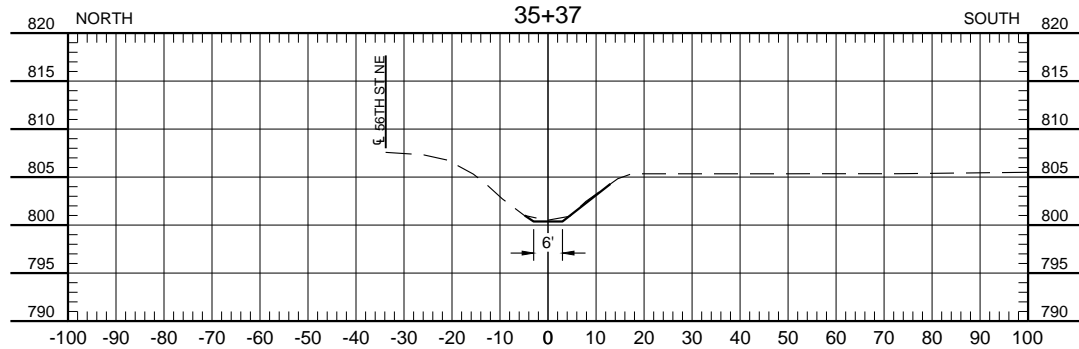
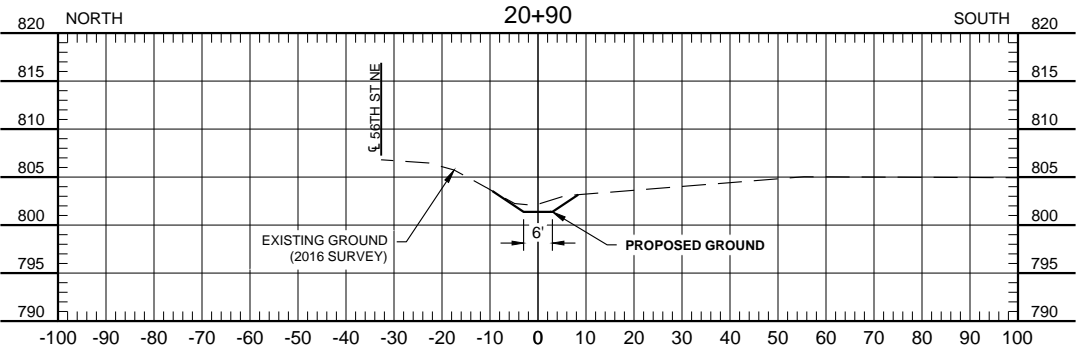
-
- The diagram illustrates a cross-section of a ditch installation. Key features include:
- Orientation:** NORTH (top) and SOUTH (bottom).
 - Construction Easement:** 100' CONSTRUCTION EASEMENT on both sides.
 - Right-of-Way:** PERMANENT RIGHT-OF-WAY (VARIES).
 - Ground Profiles:** EXISTING GROUND (dashed line) and PROPOSED GROUND (solid line).
 - Slopes:** 3:1 SIDESLOPE (outer), 2:1 SIDESLOPE (inner).
 - Blanket Extents:** SEEDING AND EROSION CONTROL BLANKET EXTENTS.
 - Topsoil Extents:** TOPSOIL EXTENTS.
 - Common Excavation:** COMMON EXCAVATION.
 - Riprap Installation:** SEE SHEET C-104 FOR RIPRAP INSTALLATION DETAILS.
 - Channel Bottom:** 8' CHANNEL BOTTOM.
 - Stripping Extents:** STRIPPING EXTENTS.
 - Dimensions:** 5' (horizontal offset), 4' (vertical offset).

NOT TO SCALE

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No.	Revision	Date	By

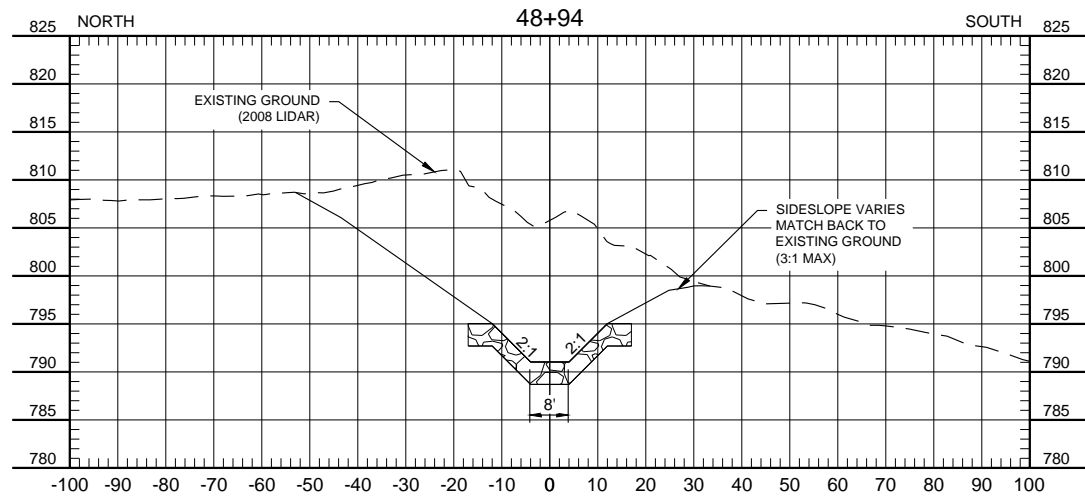
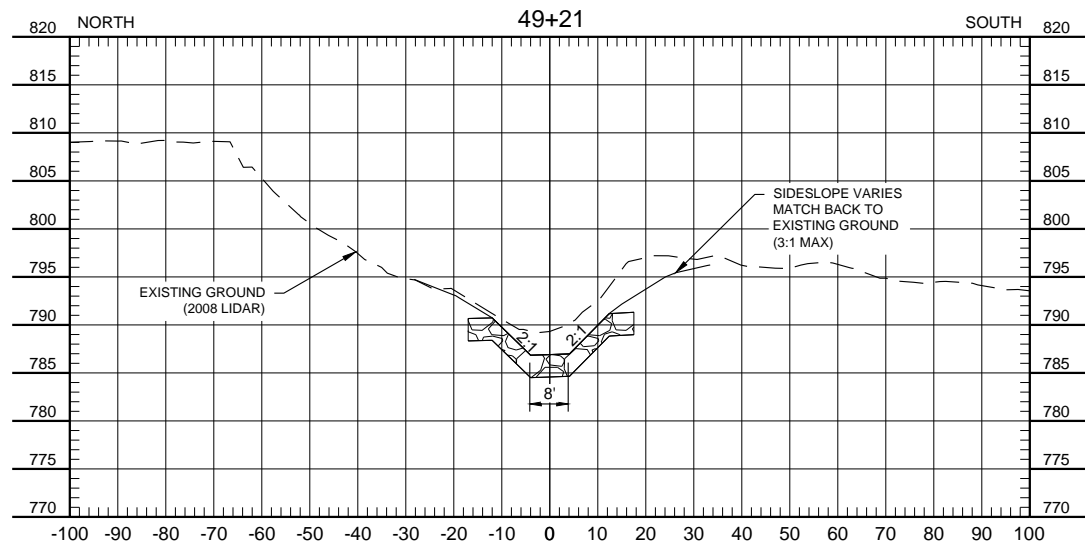
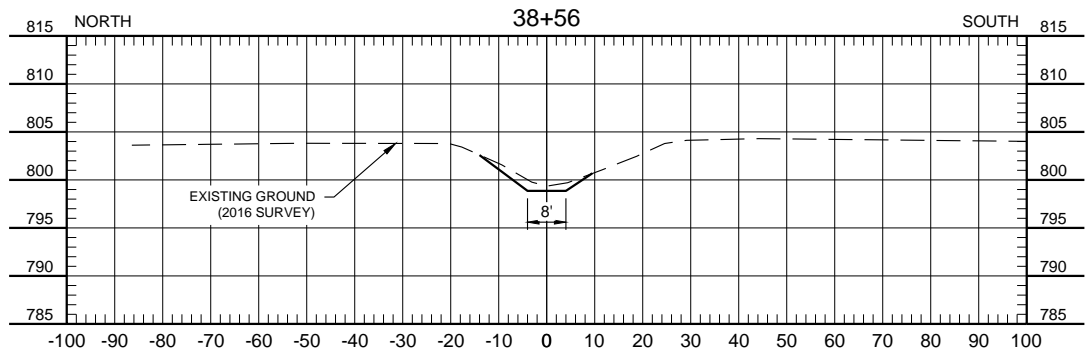
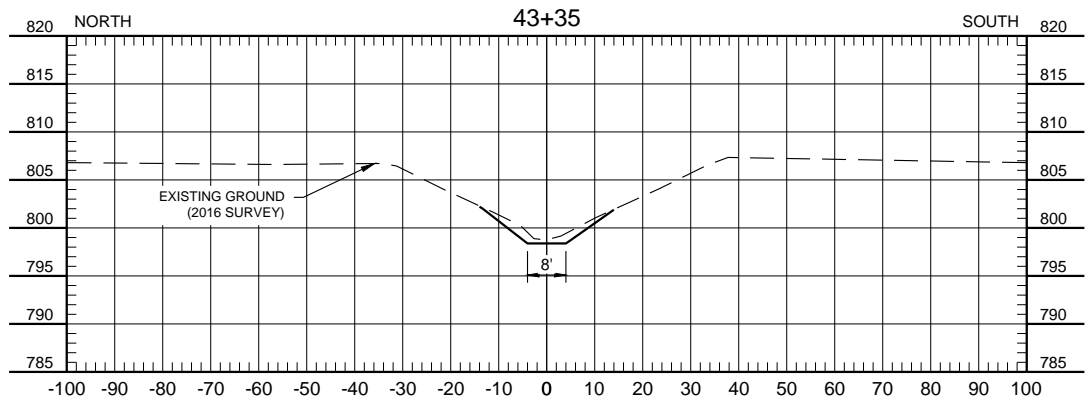
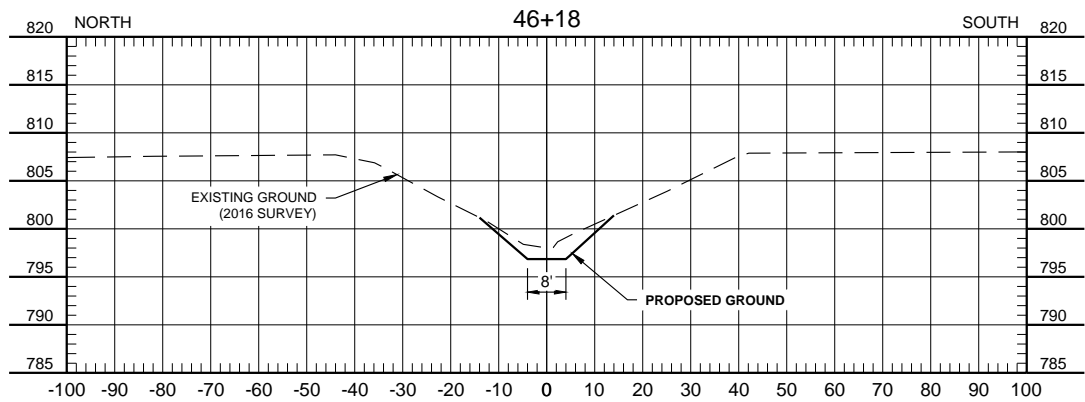


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DRAIN 22 SYSTEM IMPROVEMENTS
WALSH COUNTY WATER RESOURCE DISTRICT
GRAFTON, NORTH DAKOTA

DRAIN 22
CROSS SECTIONS
PROJECT NO. 7135-023

SHEET
C-131

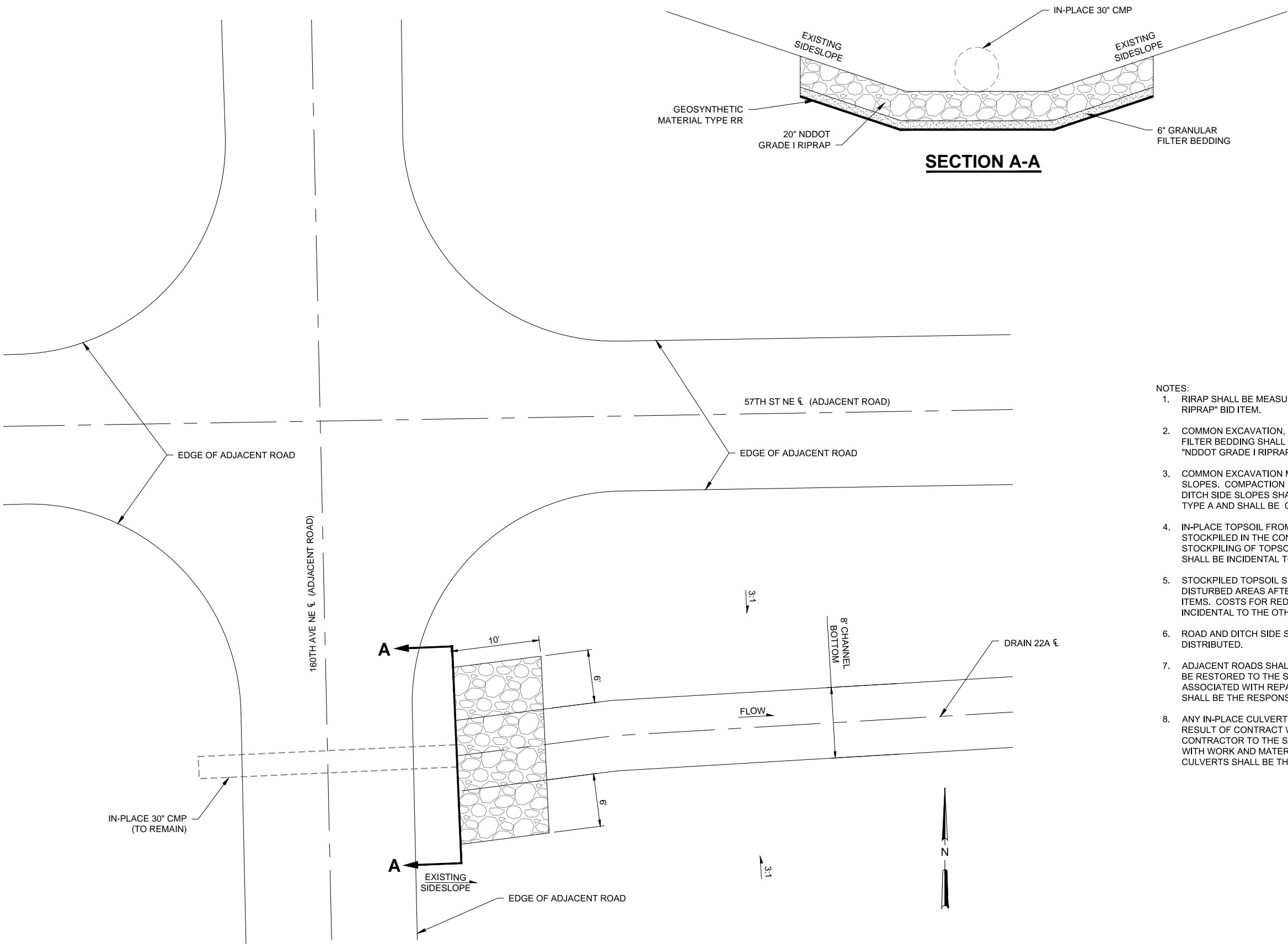


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No.	Revision	Date	By



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SECTION A-A

- NOTES:
- 1. RIPRAP SHALL BE MEASURED AND PAID BASED ON THE "NDDOT GRADE I RIPRAP" BID ITEM.
 - 2. COMMON EXCAVATION, GEOSYNTHETIC MATERIAL TYPE RR, AND GRANULAR FILTER BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE "NDDOT GRADE I RIPRAP" BID ITEM.
 - 3. COMMON EXCAVATION MATERIAL SHALL BE USED TO CONSTRUCT ROAD SIDE SLOPES. COMPACTION REQUIREMENTS FOR CONSTRUCTION OF ROAD AND DITCH SIDE SLOPES SHALL CONFORM TO NDDOT COMPACTION CONTROL, TYPE A AND SHALL BE CONSIDERED INCIDENTAL TO THE OTHER BID ITEMS.
 - 4. IN-PLACE TOPSOIL FROM ALL DISTURBED AREAS SHALL BE REMOVED AND STOCKPILED IN THE CONSTRUCTION EXTENTS. COSTS FOR REMOVAL AND STOCKPIILING OF TOPSOIL REQUIRED FOR THE INSTALLATION OF RIPRAP SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 - 5. STOCKPILED TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED OVER ALL DISTURBED AREAS AFTER INSTALLATION OF RIPRAP, AND OTHER INCIDENTAL ITEMS. COSTS FOR REDISTRIBUTION OF TOPSOIL REQUIRED SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 - 6. ROAD AND DITCH SIDE SLOPES WILL BE SEEDED AFTER TOPSOIL HAS BEEN DISTRIBUTED.
 - 7. ADJACENT ROADS SHALL NOT BE DISTURBED. ANY DISTURBED AREAS SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER. ALL COSTS ASSOCIATED WITH REPAIR OF DISTURBED AREAS OF THE ADJACENT ROAD SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - 8. ANY IN-PLACE CULVERTS DESIGNATED TO REMAIN THAT ARE DAMAGED AS A RESULT OF CONTRACT WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. COSTS ASSOCIATED WITH WORK AND MATERIALS REQUIRED TO REPAIR OR REPLACE IN-PLACE CULVERTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

160TH AVE NE CULVERT RIPRAP APRON DETAIL (STA 100+00)
NOT TO SCALE

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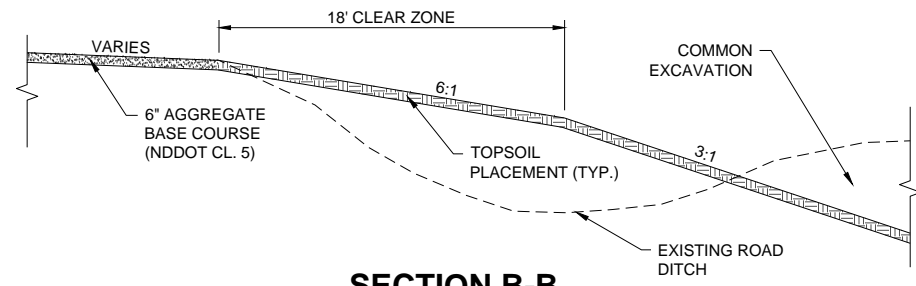
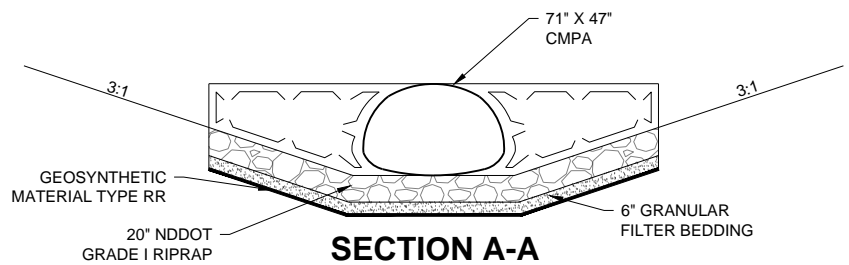
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No.	Revision	Date	By



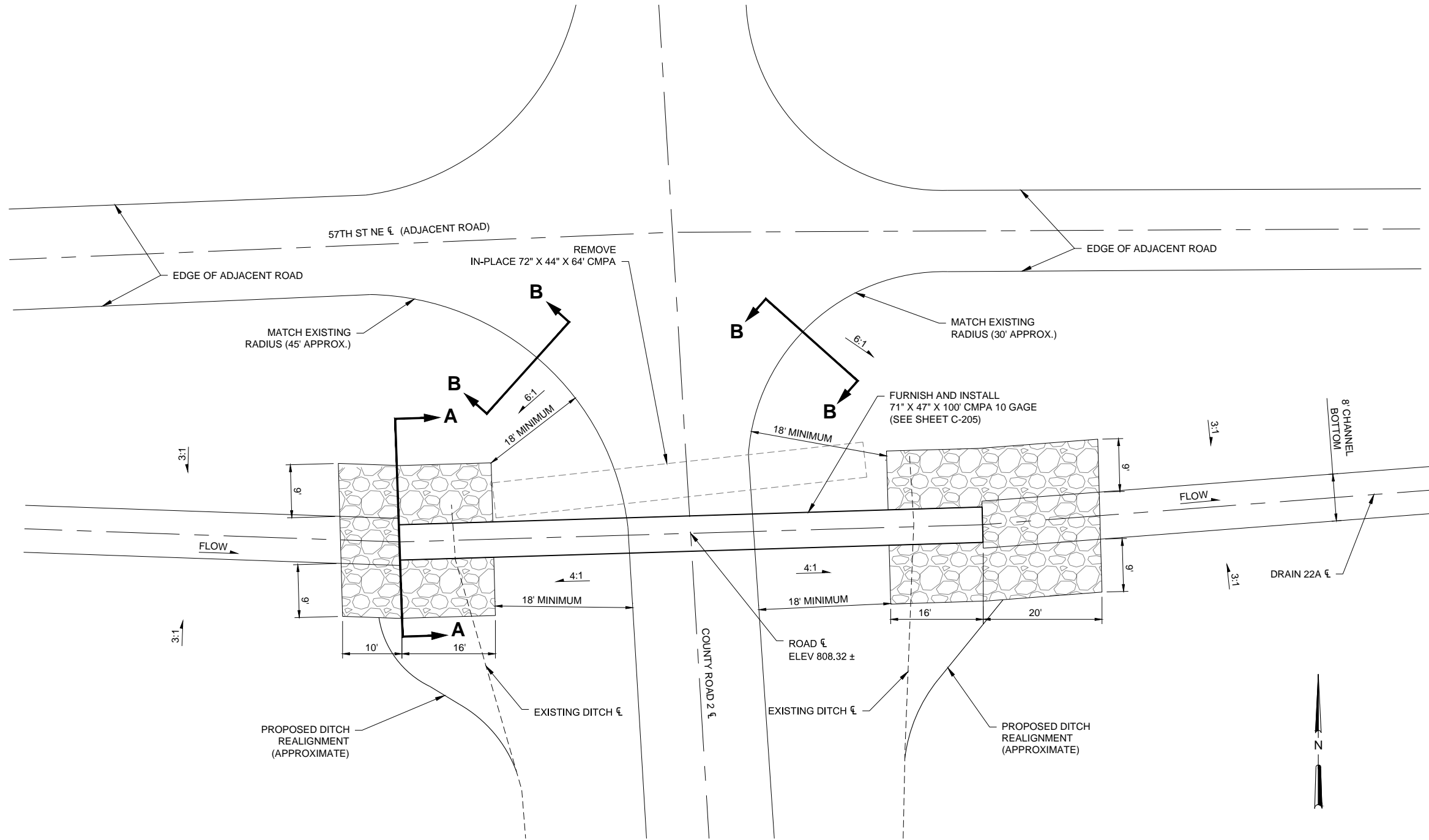
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DRAIN 22 SYSTEM IMPROVEMENTS WALSH COUNTY WATER RESOURCE DISTRICT GRAFTON, NORTH DAKOTA	DRAIN 22A 160TH AVENUE NORTHEAST CULVERT RIPRAP APRON DETAIL PROJECT NO. 7135-023	SHEET C-201
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SECTION B-B

- NOTES:
1. RIPRAP SHALL BE MEASURED AND PAID BASED ON THE "NDDOT GRADE I RIPRAP" BID ITEM.
 2. COMMON EXCAVATION, GEOSYNTHETIC MATERIAL TYPE RR, AND GRANULAR FILTER BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE "NDDOT GRADE I RIPRAP" BID ITEM.
 3. RIPRAP SHALL NOT BE PLACED WITHIN 18' OF THE EDGE OF ROAD.
 4. EXISTING DRAINAGE DITCHES SHALL BE REALIGNED WITHIN THE EXTENT OF THE PERMANENT RIGHT-OF-WAY TO ENSURE PROPER DRAINAGE TO THE SATISFACTION OF THE ENGINEER. COMMON EXCAVATION REQUIRED TO REALIGN TOWNSHIP AND COUNTY ROAD DITCHES SHALL BE INCIDENTAL TO THE COST OF THE "71" X 47" CORRUGATED METAL PIPE ARCH (CMPA) 10 GAGE" BID ITEM
 5. COMPACTION REQUIREMENTS FOR CONSTRUCTION OF ROAD AND DITCH SIDE SLOPES SHALL CONFORM TO NDDOT COMPACTION CONTROL, TYPE A AND SHALL BE INCIDENTAL TO THE COST OF THE "71" X 47" CORRUGATED METAL PIPE ARCH (CMPA) 10 GAGE" BID ITEM.
 6. IN-PLACE TOPSOIL FROM ALL DISTURBED AREAS EXCLUDING THE EXISTING ROADWAY SHALL BE REMOVED AND STOCKPILED WITHIN THE CONSTRUCTION EXTENTS. COSTS FOR REMOVAL AND STOCKPILING OF TOPSOIL ASSOCIATED WITH REALIGNMENT OF TOWNSHIP AND ROAD DITCHES SHALL BE INCIDENTAL TO THE COST OF THE "71" X 47" CORRUGATED METAL PIPE ARCH (CMPA) 10 GAGE" BID ITEM.
 7. STOCKPILED TOPSOIL SHALL BE UNIFORMLY REDISTRIBUTED OVER ALL DISTURBED AREAS AFTER INSTALLATION OF RIPRAP AND CONSTRUCTION OF ROAD AND DITCH SIDE SLOPES. COSTS FOR TOPSOIL PLACEMENT ASSOCIATED WITH REALIGNMENT OF TOWNSHIP ROAD DITCHES SHALL BE INCIDENTAL TO THE COST OF THE "71" X 47" CORRUGATED METAL PIPE ARCH (CMPA) 10 GAGE" BID ITEM.
 8. ROAD AND DITCH SIDE SLOPES SHALL BE SEEDED AFTER TOPSOIL HAS BEEN DISTRIBUTED.
 9. ADJACENT ROADS SHALL NOT BE DISTURBED. ANY DISTURBED AREAS SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER . ALL COSTS ASSOCIATED WITH REPAIR OF DISTURBED AREAS OF THE ADJACENT ROAD SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 10. ANY IN-PLACE CULVERTS DESIGNATED TO REMAIN THAT ARE DAMAGED AS A RESULT OF CONTRACT WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. COSTS ASSOCIATED WITH WORK AND MATERIALS REQUIRED TO REPAIR OR REPLACE IN-PLACE CULVERTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.



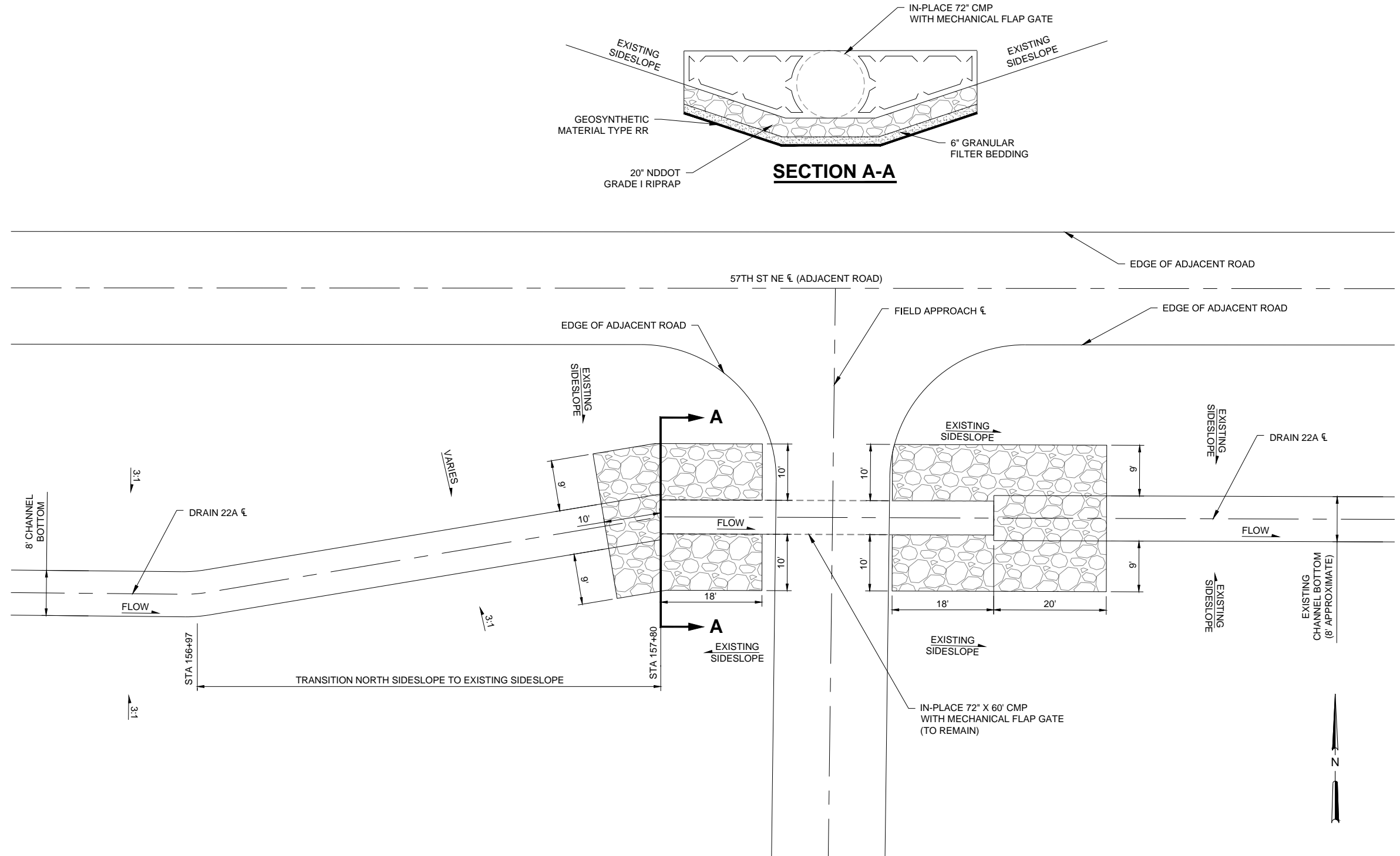
COUNTY ROAD 2 CULVERT RIPRAP APRON DETAIL (STA 126+31)
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					Fargo		Drawn by PDL	Date 01-31-2018	DRAIN 22 SYSTEM IMPROVEMENTS WALSH COUNTY WATER RESOURCE DISTRICT GRAFTON, NORTH DAKOTA	DRAIN 22A COUNTY ROAD 2 CULVERT RIPRAP APRON DETAIL PROJECT NO. 7135-023	SHEET C-202
No.	Revision	Date	By		P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN				

- NOTES:
1. RIRAP SHALL BE MEASURED AND PAID BASED ON THE "NDDOT GRADE I RIRAP" BID ITEM.
 2. COMMON EXCAVATION, GEOSYNTHETIC MATERIAL TYPE RR, AND GRANULAR FILTER BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE "NDDOT GRADE I RIRAP" BID ITEM.
 3. COMMON EXCAVATION MATERIAL SHALL BE USED TO CONSTRUCT ROAD SIDE SLOPES. COMPACTION REQUIREMENTS FOR CONSTRUCTION OF ROAD AND DITCH SIDE SLOPES SHALL CONFORM TO NDDOT COMPACTION CONTROL, TYPE A AND SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 4. IN-PLACE TOPSOIL FROM ALL DISTURBED AREAS EXCLUDING THE EXISTING ROADWAY SHALL BE REMOVED AND STOCKPILED IN THE CONSTRUCTION EXTENTS. COSTS FOR REMOVAL AND STOCKPILING OF TOPSOIL REQUIRED FOR THE INSTALLATION OF RIRAP SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 5. STOCKPILED TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED OVER ALL DISTURBED AREAS AFTER INSTALLATION OF RIRAP, AND OTHER INCIDENTAL ITEMS. COSTS FOR REDISTRIBUTION OF TOPSOIL REQUIRED SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 6. ROAD AND DITCH SIDE SLOPES SHALL BE SEEDED AFTER TOPSOIL HAS BEEN DISTRIBUTED.
 7. ADJACENT ROADS SHALL NOT BE DISTURBED. ANY DISTURBED AREAS SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER . ALL COSTS ASSOCIATED WITH REPAIR OF DISTURBED AREAS OF THE ADJACENT ROAD SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 8. ANY IN-PLACE CULVERTS DESIGNATED TO REMAIN THAT ARE DAMAGED AS A RESULT OF CONTRACT WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. COSTS ASSOCIATED WITH WORK AND MATERIALS REQUIRED TO REPAIR OR REPLACE IN-PLACE CULVERTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 9. ALL TREES SHALL REMAIN IN PLACE AND PROTECTED BY THE CONTRACTOR. NO TREES SHALL BE REMOVED UNLESS MARKED BY THE ENGINEER OR REPRESENTATIVE. ALL COSTS ASSOCIATED WITH TREE AND/OR BRUSH REMOVAL, OR ANY OTHER CLEARING AND GRUBBING WORK, SHALL BE CONSIDERED INCIDENTAL TO OTHER BID ITEMS.
 10. ANY DEBRIS WITHIN THE CONSTRUCTION EXTENTS SHALL BE REMOVED BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER. ALL COSTS ASSOCIATED WITH DEBRIS REMOVAL SHALL BE INCIDENTAL TO OTHER BID ITEMS.

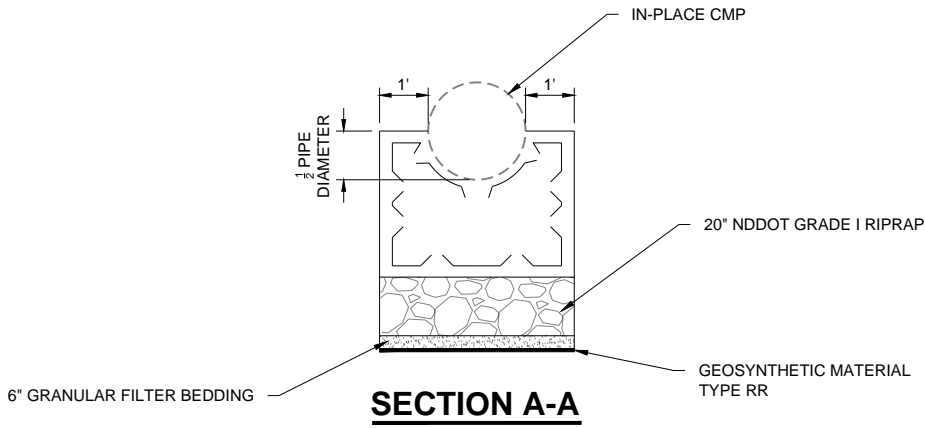


FIELD APPROACH CULVERT RIRAP APRON DETAIL (STA 158+10)
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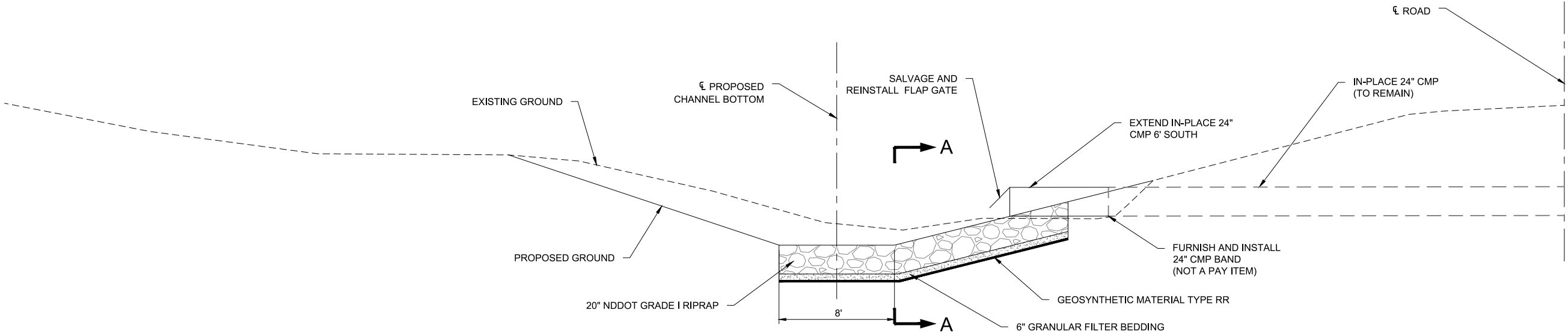
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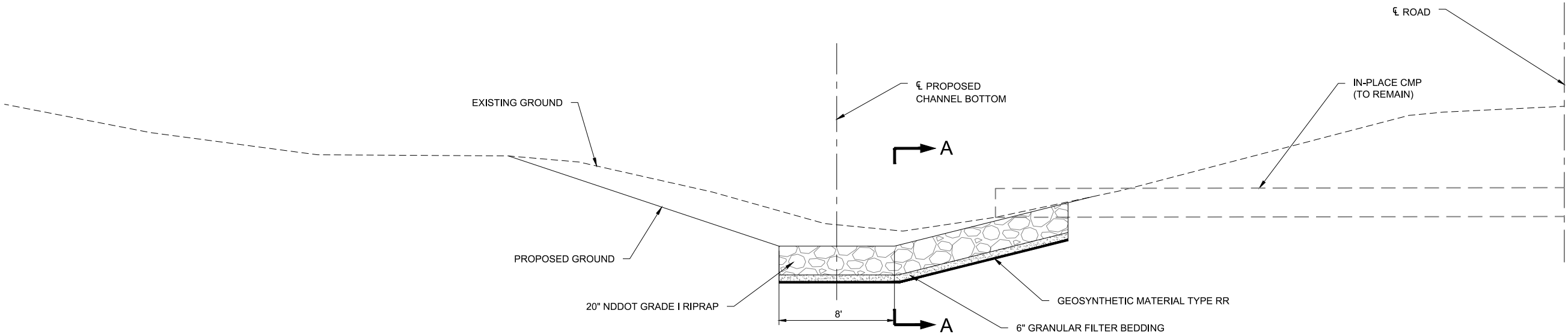
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							P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision	Date	By									



- NOTES:
1. RIPRAP SHALL NOT BE MEASURED FOR PAYMENT, RATHER WILL BE REIMBURSED AT PLAN QUANTITY BASED ON THE "RIPRAP NDDOT GRADE I" BID ITEM.
 2. COMMON EXCAVATION, GEOSYNTHETIC MATERIAL TYPE RR, AND GRANULAR FILTER BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF NDDOT GRADE I RIPRAP.
 3. ANY IN-PLACE CULVERTS DESIGNATED TO REMAIN THAT ARE DAMAGED AS A RESULT OF CONTRACT WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. COSTS ASSOCIATED WITH WORK AND MATERIALS REQUIRED TO REPAIR OR REPLACE IN-PLACE CULVERTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 4. EXCAVATED MATERIAL SHALL BE USED TO BACKFILL SIDE INLET PIPES. COMMON EXCAVATION MATERIAL USED FOR BACKFILL MATERIAL WILL CONFORM TO NDDOT COMPACTION CONTROL, TYPE A.
 5. CMP PIPE EXTENSIONS SHALL BE PAID BASED ON THE APPROPRIATE CMP BID ITEM. CMP BANDS SHALL BE INCIDENTAL TO THE COST OF THE APPROPRIATE SIZE CMP BID ITEM.
 6. CONTRACTOR SHALL SALVAGE THE EXISTING 24" FLAP GATE AND REINSTALL ON THE NEW 24" CMP. ALL COSTS ASSOCIATED WITH REMOVAL, INSTALLATION, AND ANY REQUIRED MODIFICATIONS OF THE FLAP GATE SHALL BE INCLUDED IN THE BID ITEM "SALVAGE AND REINSTALL 24" FLAP GATE".



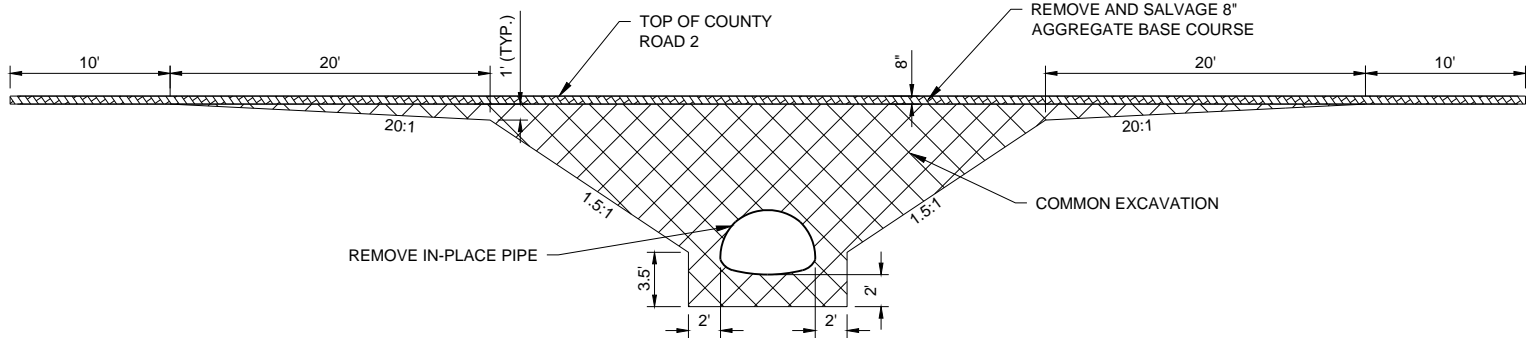
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NOT TO SCALE



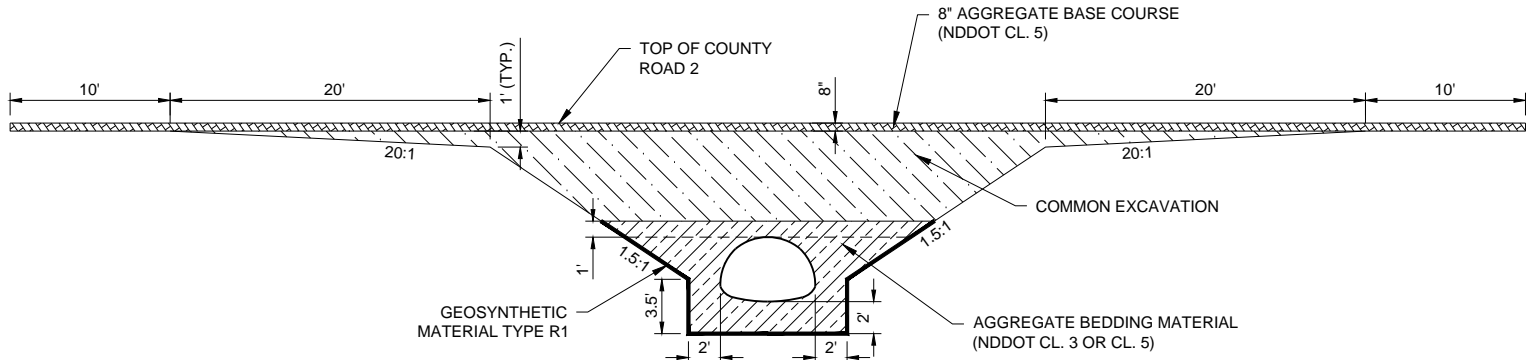
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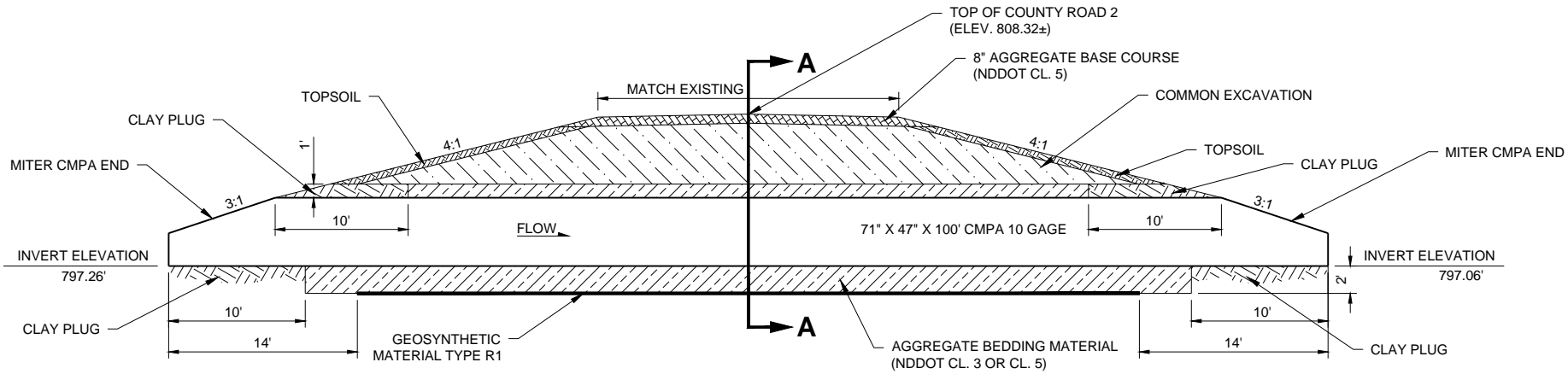
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					P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision	Date	By							



SECTION A-A



SECTION A-A



DRAIN 22A CULVERT INSTALLATION AND EXCAVATION DETAIL (STA 126+31)

NOT TO SCALE

- NOTES:
1. PAYMENT FOR REMOVAL OF IN-PLACE PIPE(S) SHALL BE MADE UNDER THE "REMOVE PIPE ALL TYPES AND SIZES" BID ITEM.
 2. COMMON EXCAVATION AND AGGREGATE BEDDING MATERIAL SHALL BE CONSIDERED INCIDENTAL TO THE UNIT COST OF "71" X 47" CORRUGATED METAL PIPE ARCH (CMPA) 10 GAGE" BID ITEM.
 3. GEOSYNTHETIC MATERIAL TYPE R1 SHALL NOT BE MEASURED FOR PAYMENT, RATHER SHALL BE REIMBURSED AT PLAN QUANTITY BASED ON THE "GEOSYNTHETIC MATERIAL TYPE R1" BID ITEM.
 4. ALL JOINTS SHALL BE WRAPPED IN THEIR ENTIRETY WITH NDDOT GEOSYNTHETIC MATERIAL TYPE S2. OVERLAP OF JOINTS SHALL BE ONE WIDTH OF THE GEOSYNTHETIC ROLL AND FASTENED WITH STAPLES. THE GEOSYNTHETIC MATERIAL AND INSTALLATION COSTS SHALL BE CONSIDERED INCIDENTAL TO THE OTHER BID ITEMS REQUIRED FOR THE CMP PIPE INSTALLATION.
 5. REMOVAL AND SALVAGE OF 8" AGGREGATE BASE COURSE AND ALL RELATED INCIDENTAL ITEMS SHALL BE INCIDENTAL TO THE INSTALLATION OF THE RELATED DRAINAGE STRUCTURE INVOLVED. THE SUITABILITY OF REMOVED AGGREGATE BASE COURSE FOR REUSE SHALL BE AT THE DISCRETION OF THE ENGINEER.
 6. COMMON EXCAVATION MATERIAL USED FOR FILL ABOVE AGGREGATE BEDDING MATERIAL SHALL CONFORM TO NDDOT COMPACTION CONTROL, TYPE A.
 7. TOP OF ROAD WIDTH SHALL GENERALLY CONFORM TO DIMENSION SPECIFIED IN THE RIPRAP DETAILS AND GENERALLY MATCH THE EXISTING ROAD WIDTH.
 8. CLAY PLUGS SHALL BE CONSTRUCTED WITH SUITABLE CLAY SPOIL MATERIAL FROM COMMON EXCAVATION. ALL COSTS ASSOCIATED WITH CONSTRUCTION OF THE CLAY PLUG SHALL BE INCIDENTAL TO THE "71" X 47" X CORRUGATED METAL PIPE ARCH (CMPA) 10 GAGE" BID ITEM. SUITABLE COMMON EXCAVATION MATERIAL SHALL BE PLACED AROUND THE CULVERT IN LIEU OF AGGREGATE BEDDING MATERIAL.

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01-31-2018
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ZOH, JMW
Scale
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DRAIN 22 SYSTEM IMPROVEMENTS
WALSH COUNTY WATER RESOURCE DISTRICT
GRAFTON, NORTH DAKOTA

DRAIN 22A COUNTY ROAD 2
CULVERT INSTALLATION DETAIL
PROJECT NO. 7135-023

SHEET
C-205

I:\Fargo\JBN\7100\7135\16_7135_023\CAD\December2016\Plans\Drain22A_Culvert_Install.dwg INSTALLATION DETAIL-1/31/2018 1:48 PM - (p.leclaire)

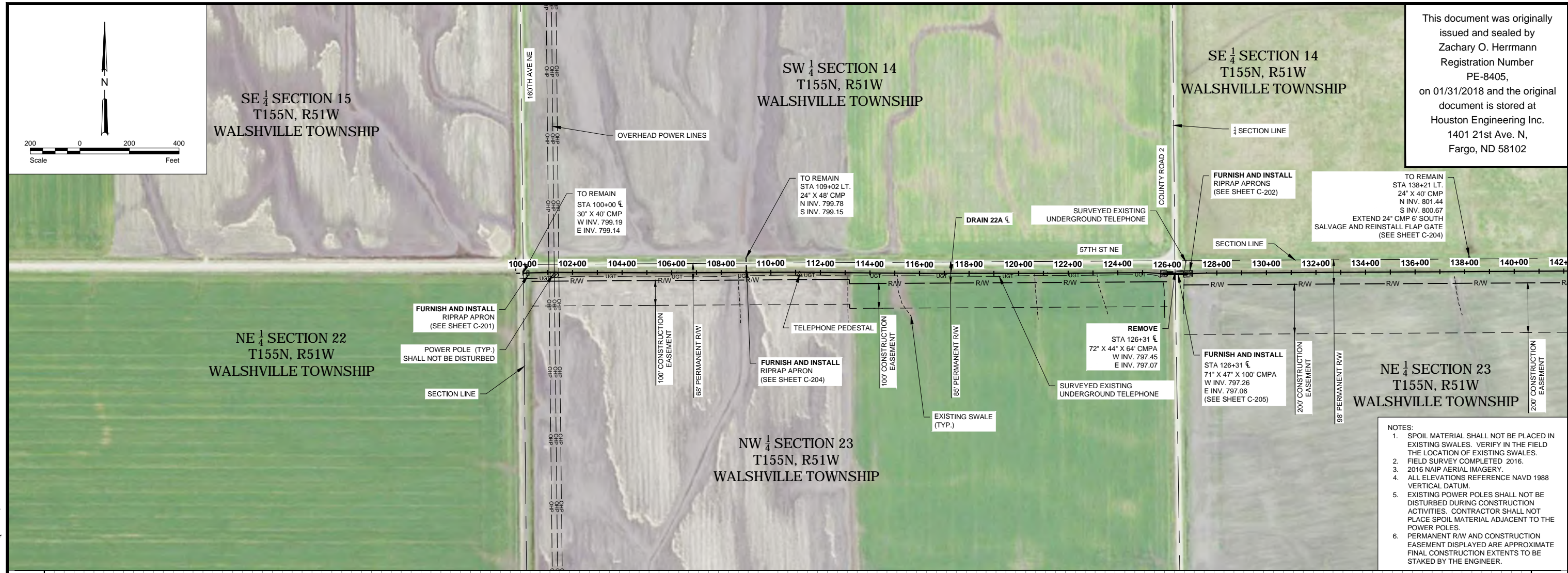
No.	Revision	Date	By

-
- The diagram illustrates a cross-section of a proposed channel and construction easement. Key features include:
- EXISTING GROUND:** Represented by a dashed line showing the current terrain profile.
 - PROPOSED GROUND:** Represented by a solid line showing the planned channel and surrounding areas.
 - Channel Dimensions:** The channel has an **8' CHANNEL BOTTOM** and **3:1 SIDESLOPE** on both sides.
 - Construction Easement:** A **20:1 FIELD SLOPE (OR FLATTER)** is specified for the area adjacent to the channel.
 - Right-of-Way and Easement:** The diagram shows a **33' EXISTING RIGHT-OF-WAY**, a **PERMANENT RIGHT-OF-WAY (VARIES)**, and a **CONSTRUCTION EASEMENT (VARIES)**.
 - Soil and Seeding:** **TOPSOIL EXTENTS** and **SEEDING EXTENTS** are indicated for the areas on either side of the channel.
 - Spoil Placement:** An **8' BENCH** is shown for **SPOIL PLACEMENT**.
 - Crop Production:** A **CROP PRODUCTION EXTENT (VARIES)** is indicated for the area to the right of the construction easement.
 - Stripping:** **STRIPPING EXTENTS** are indicated for the entire width of the project area.
 - Orientation:** The diagram is oriented with **NORTH** at the top and **SOUTH** at the bottom.
 - Location:** The project is located near **57TH STREET NE S**.

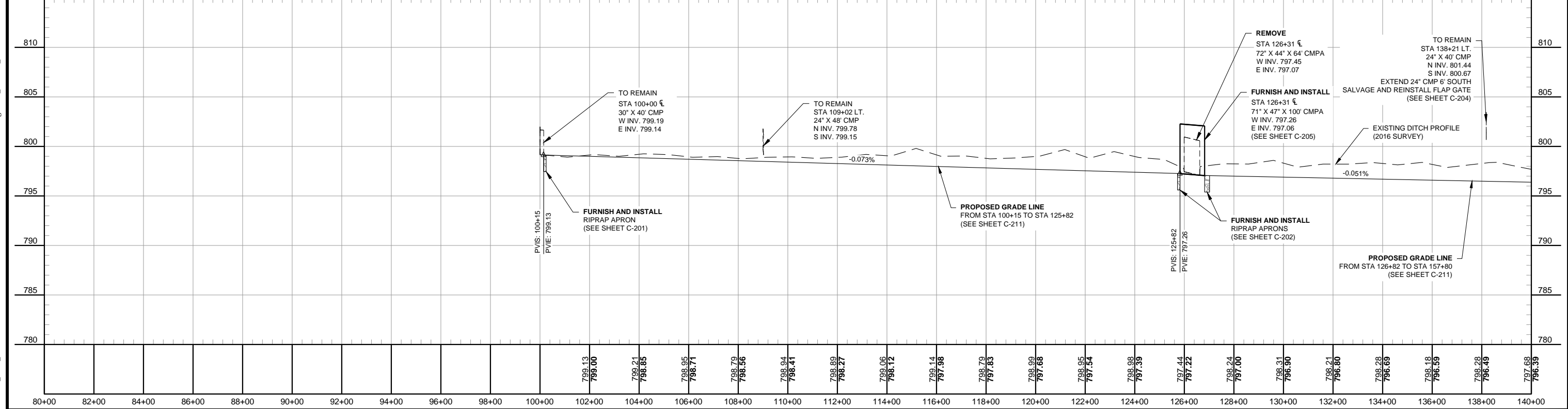
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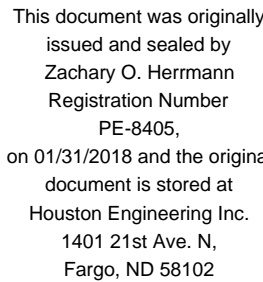
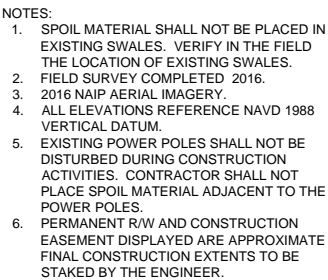


- NOTES:
1. SPOIL MATERIAL SHALL NOT BE PLACED IN EXISTING SWALES. VERIFY IN THE FIELD THE LOCATION OF EXISTING SWALES.
 2. FIELD SURVEY COMPLETED 2016.
 3. 2016 NAIP AERIAL IMAGERY.
 4. ALL ELEVATIONS REFERENCE NAVD 1988 VERTICAL DATUM.
 5. EXISTING POWER POLES SHALL NOT BE DISTURBED DURING CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL NOT PLACE SPOIL MATERIAL ADJACENT TO THE POWER POLES.
 6. PERMANENT R/W AND CONSTRUCTION EASEMENT DISPLAYED ARE APPROXIMATE FINAL CONSTRUCTION EXTENTS TO BE STAKED BY THE ENGINEER.

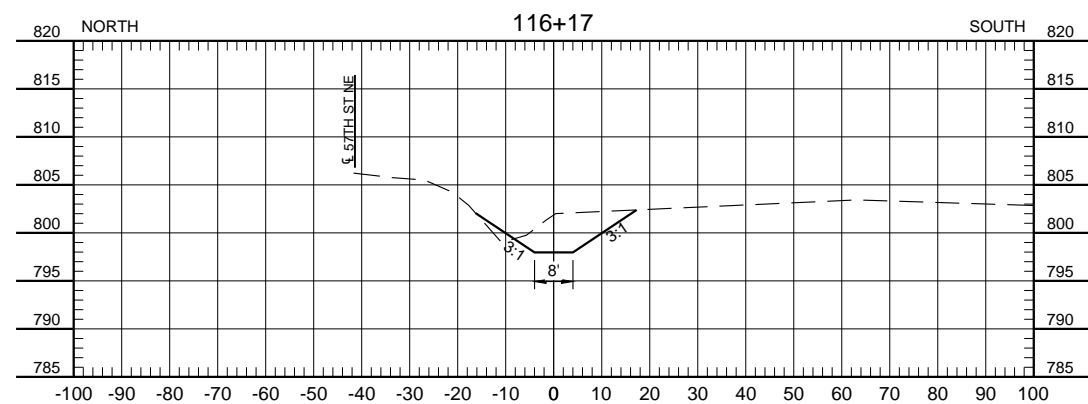
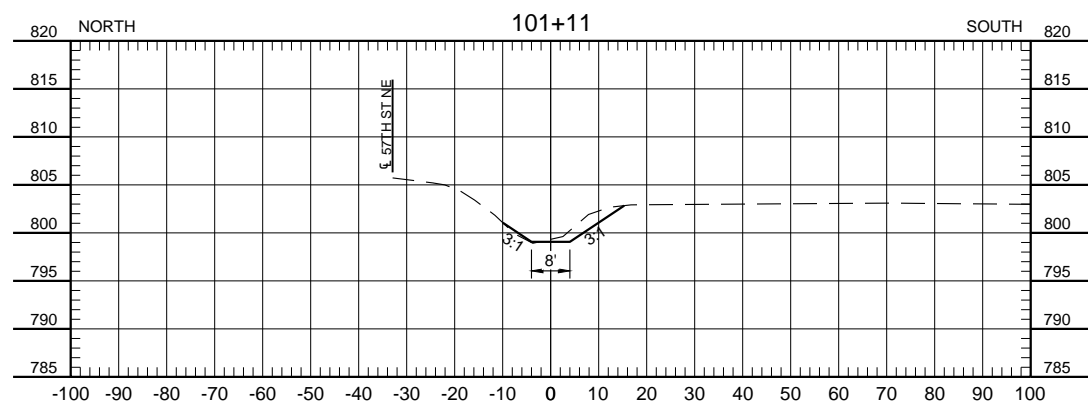
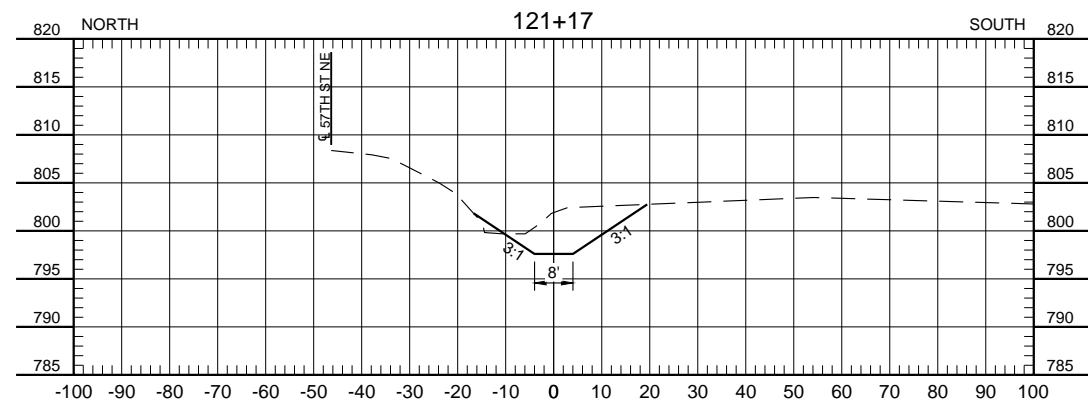
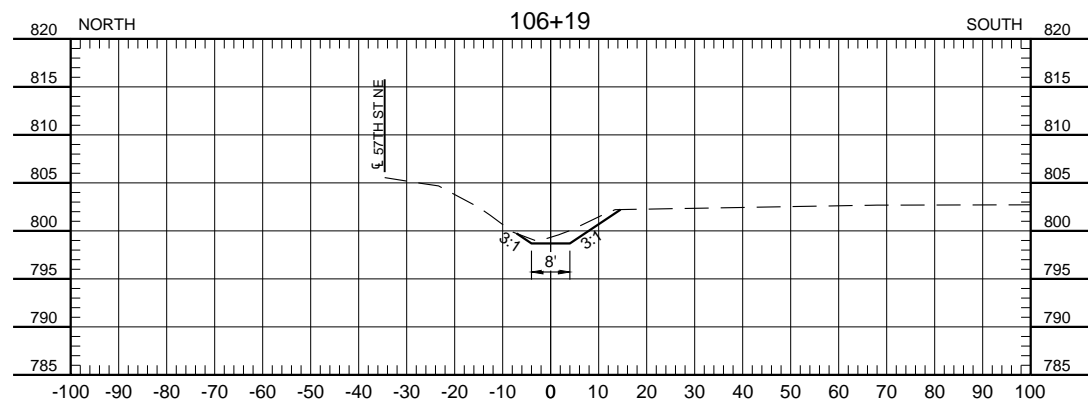
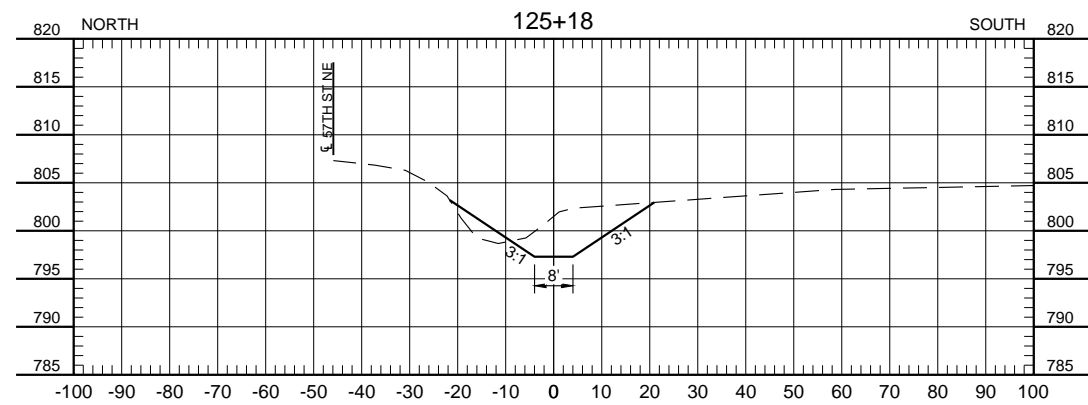
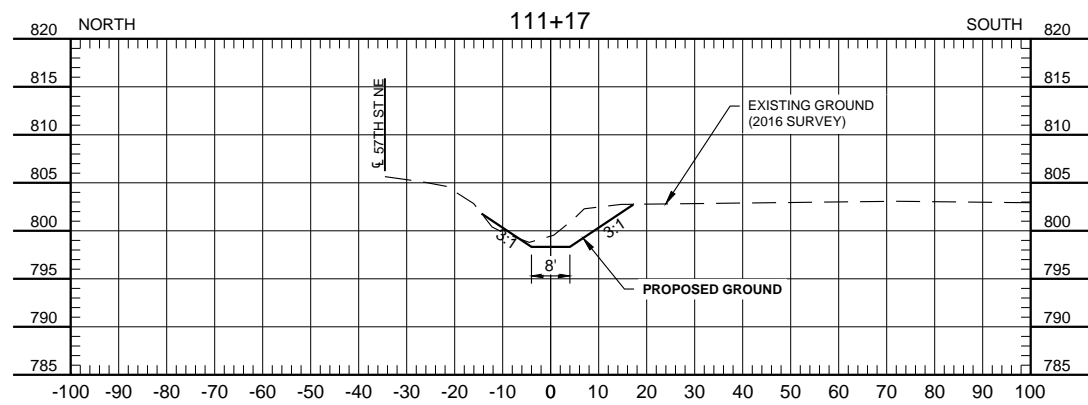


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							P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision		Date	By								

H:\Fargo\JBN\7100\7135\16_7135_023\CAD\December2016\Plans\PLAN AND PROFILE UPDATE 07-14-2017.dwg-PLAN_PROFILE.80to140-1/31/2018 1:49 PM (pledare)

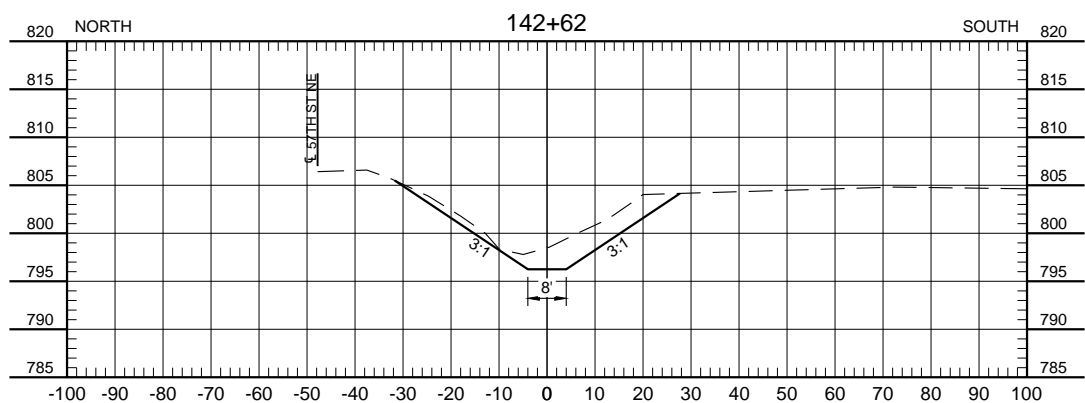
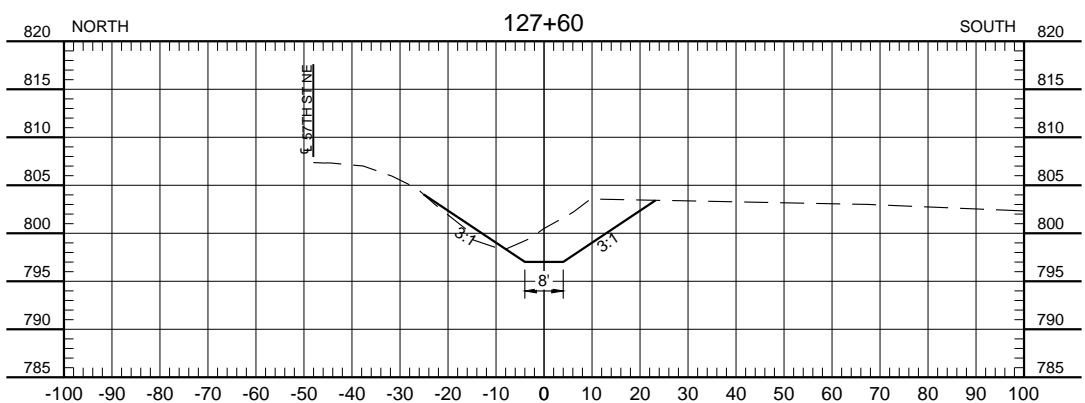
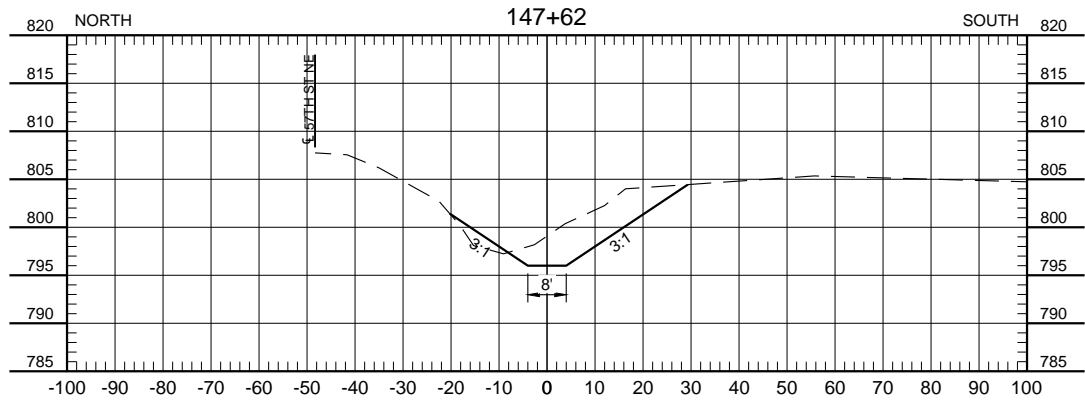
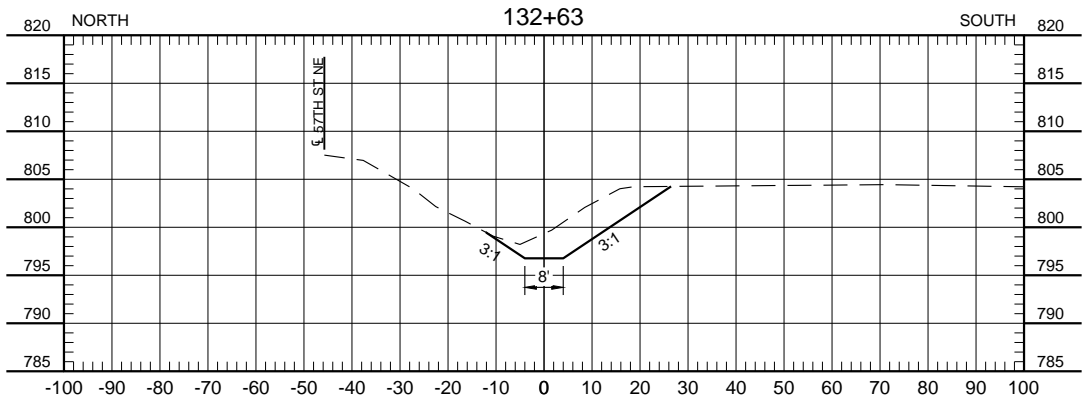
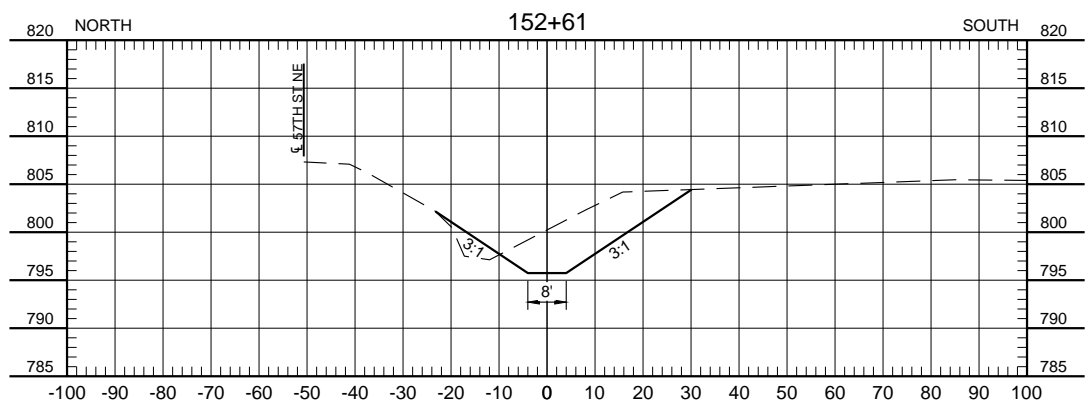
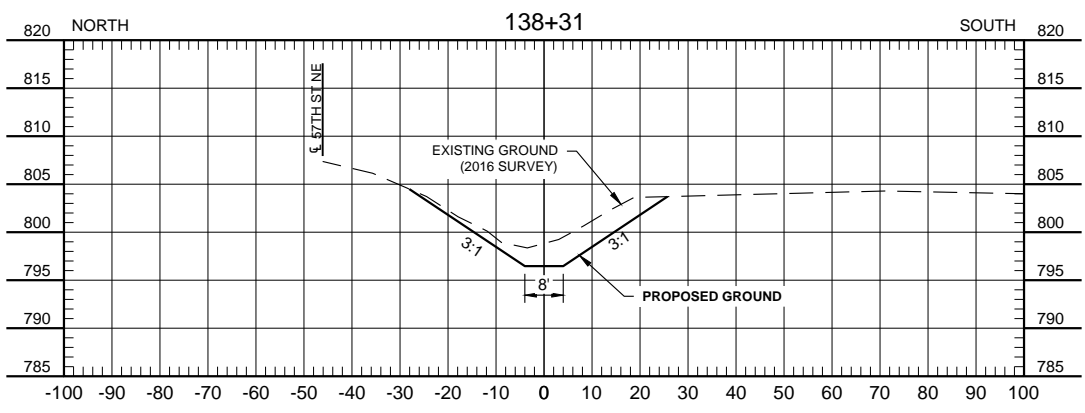


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					P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision	Date	By							



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					P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision	Date	By							



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No.	Revision	Date	By



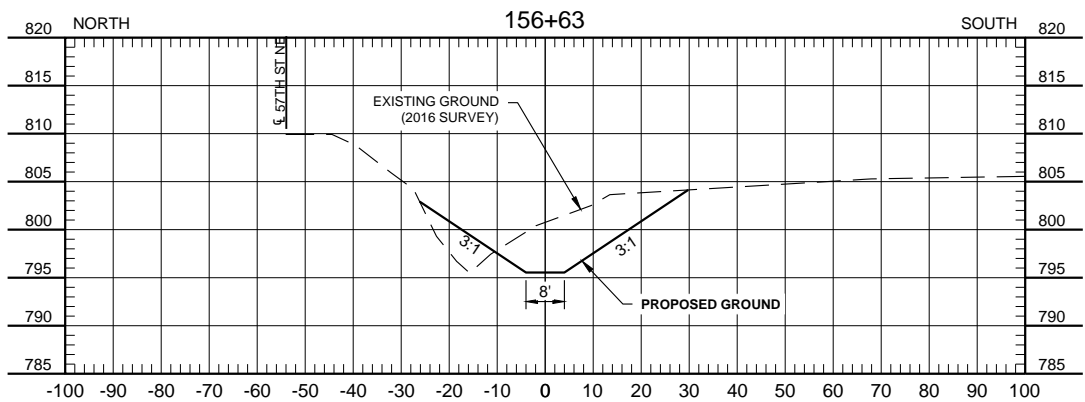
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DRAIN 22 SYSTEM IMPROVEMENTS
WALSH COUNTY WATER RESOURCE DISTRICT
GRAFTON, NORTH DAKOTA

DRAIN 22A
CROSS SECTIONS
PROJECT NO. 7135-023

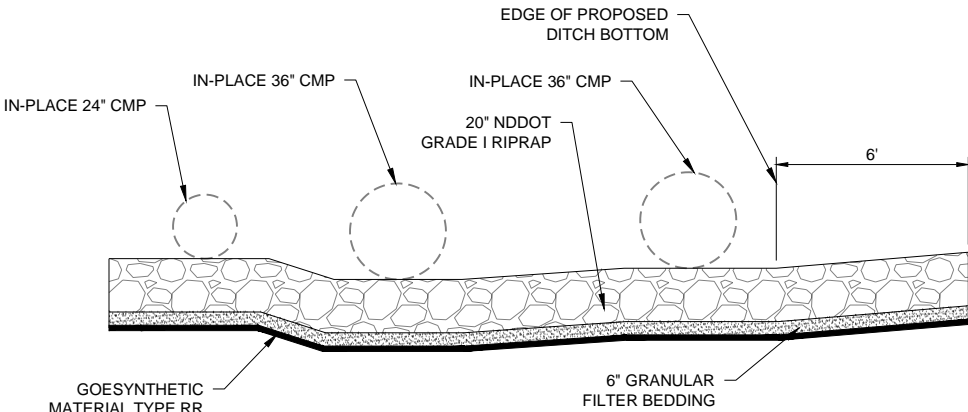
SHEET
C-232

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						P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision	Date	By								

- NOTES:
1. RIRAP SHALL BE MEASURED AND PAID BASED ON THE "NDDOT GRADE I RIPRAP" BID ITEM.
 2. COMMON EXCAVATION, GEOSYNTHETIC MATERIAL TYPE RR, AND GRANULAR FILTER BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE "NDDOT GRADE I RIPRAP" BID ITEM.
 3. IN-PLACE TOPSOIL FROM ALL DISTURBED AREAS SHALL BE REMOVED AND STOCKPILED IN THE CONSTRUCTION EXTENTS. COSTS FOR REMOVAL AND STOCKPIILING OF TOPSOIL REQUIRED FOR THE INSTALLATION OF RIPRAP SHALL BE CONSIDERED INCIDENTAL TO THE OTHER BID ITEMS.
 4. STOCKPILED TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED OVER ALL DISTURBED AREAS AFTER INSTALLATION OF RIPRAP, AND OTHER INCIDENTAL ITEMS. COSTS FOR REDISTRIBUTION OF TOPSOIL REQUIRED SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 5. ROAD AND DITCH SIDE SLOPES SHALL BE SEEDED AFTER TOPSOIL HAS BEEN DISTRIBUTED.
 6. ADJACENT ROADS SHALL NOT BE DISTURBED. ANY DISTURBED AREAS SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER . ALL COSTS ASSOCIATED WITH REPAIR OF DISTURBED AREAS OF THE ADJACENT ROAD SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 7. ANY IN-PLACE CULVERTS DESIGNATED TO REMAIN THAT ARE DAMAGED AS A RESULT OF CONTRACT WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. COSTS ASSOCIATED WITH WORK AND MATERIALS REQUIRED TO REPAIR OR REPLACE IN-PLACE CULVERTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 8. ALL TREES SHALL REMAIN IN PLACE AND PROTECTED BY THE CONTRACTOR. NO TREES SHALL BE REMOVED UNLESS MARKED BY THE ENGINEER OR REPRESENTATIVE. ALL COSTS ASSOCIATED WITH TREE AND/OR BRUSH REMOVAL, OR ANY OTHER CLEARING SHALL BE CONSIDERED INCIDENTAL TO OTHER BID ITEMS.
 9. ANY DEBRIS WITHIN THE CONSTRUCTION EXTENTS SHALL BE REMOVED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER. ALL COSTS ASSOCIATED WITH DEBRIS REMOVAL SHALL BE INCIDENTAL TO OTHER BID ITEMS.



SECTION A-A

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160TH AVE NE CULVERT RIPRAP APRON DETAIL (STA 200+00)
NOT TO SCALE

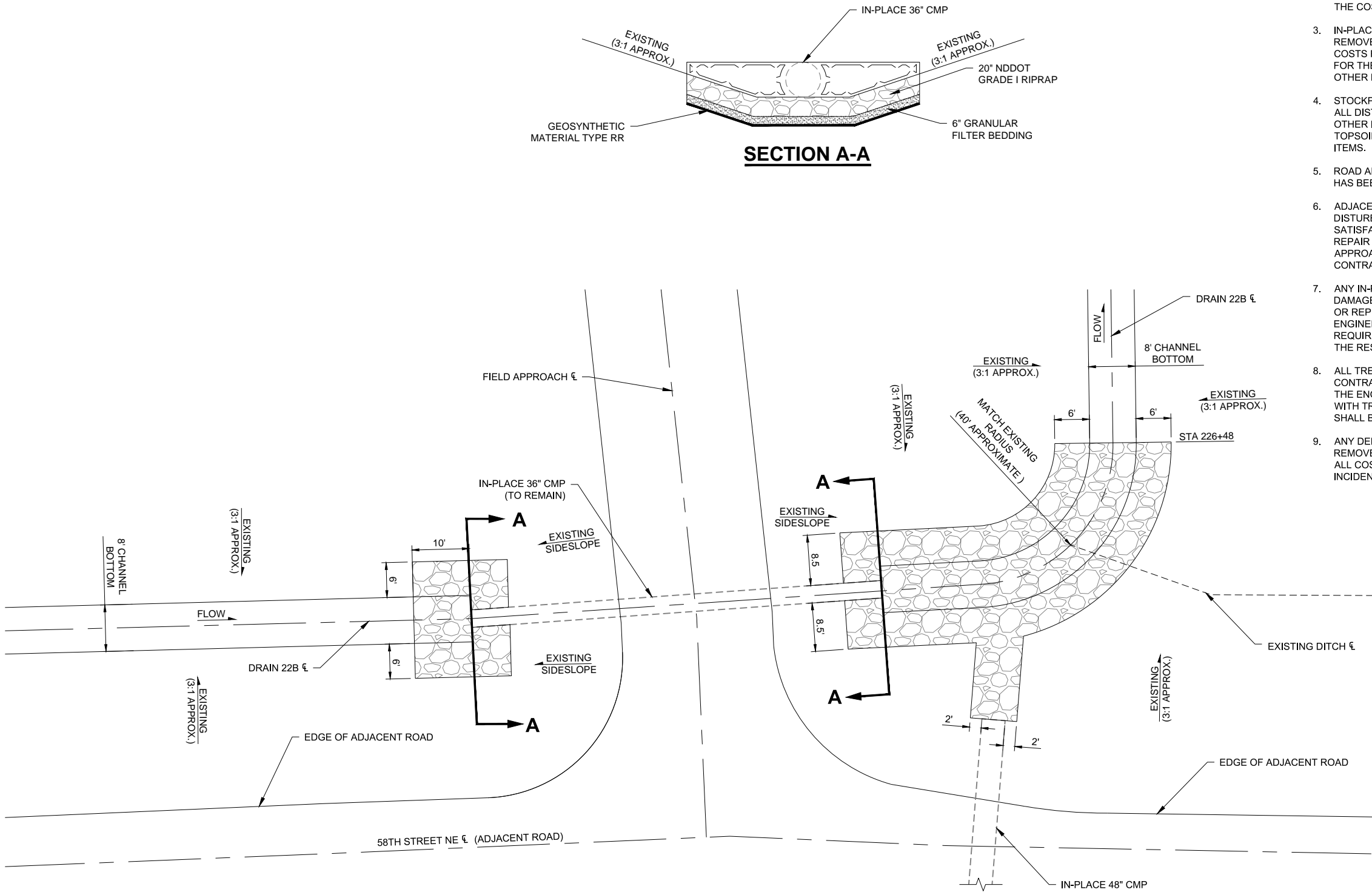
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					 Houston Engineering Inc.	Fargo	Drawn by PDL	Date 01-31-2018	DRAIN 22 SYSTEM IMPROVEMENTS WALSH COUNTY WATER RESOURCE DISTRICT GRAFTON, NORTH DAKOTA	DRAIN 22B 160TH AVENUE NORTHEAST CULVERT RIPRAP APRON DETAIL PROJECT NO. 7135-023	SHEET C-301
						P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision		Date	By							

P: 701.237.5065
F: 701.237.5101

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ZOH, JMW
Scale
AS SHOWN

- NOTES:
1. RIPRAP SHALL BE MEASURED AND PAID BASED ON THE "NDDOT GRADE I RIPRAP" BID ITEM.
 2. COMMON EXCAVATION, GEOSYNTHETIC MATERIAL TYPE RR, AND GRANULAR FILTER BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE "NDDOT GRADE I RIPRAP" BID ITEM.
 3. IN-PLACE TOPSOIL FROM ALL DISTURBED AREAS SHALL BE REMOVED AND STOCKPILED IN THE CONSTRUCTION EXTENTS. COSTS FOR REMOVAL AND STOCKPIILING OF TOPSOIL REQUIRED FOR THE INSTALLATION OF RIPRAP SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 4. STOCKPILED TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED OVER ALL DISTURBED AREAS AFTER INSTALLATION OF RIPRAP, AND OTHER INCIDENTAL ITEMS. COSTS FOR REDISTRIBUTION OF TOPSOIL REQUIRED SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 5. ROAD AND DITCH SIDE SLOPES SHALL BE SEEDED AFTER TOPSOIL HAS BEEN DISTRIBUTED.
 6. ADJACENT ROADS (AND FIELD APPROACHES) SHALL NOT BE DISTURBED. ANY DISTURBED AREAS SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER. ALL COSTS ASSOCIATED WITH REPAIR OF DISTURBED AREAS OF THE ADJACENT ROAD (AND FIELD APPROACHES) SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 7. ANY IN-PLACE CULVERTS DESIGNATED TO REMAIN THAT ARE DAMAGED AS A RESULT OF CONTRACT WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. COSTS ASSOCIATED WITH WORK AND MATERIALS REQUIRED TO REPAIR OR REPLACE IN-PLACE CULVERTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 8. ALL TREES SHALL REMAIN IN PLACE AND PROTECTED BY THE CONTRACTOR. NO TREES SHALL BE REMOVED UNLESS MARKED BY THE ENGINEER OR REPRESENTATIVE. ALL COSTS ASSOCIATED WITH TREE AND/OR BRUSH REMOVAL, OR ANY OTHER CLEARING SHALL BE CONSIDERED INCIDENTAL TO OTHER BID ITEMS.
 9. ANY DEBRIS WITHIN THE CONSTRUCTION EXTENTS SHALL BE REMOVED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER. ALL COSTS ASSOCIATED WITH DEBRIS REMOVAL SHALL BE INCIDENTAL TO OTHER BID ITEMS.



FIELD APPROACH CULVERT RIPRAP APRON DETAIL (STA 225+60)
NOT TO SCALE

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No.	Revision	Date	By



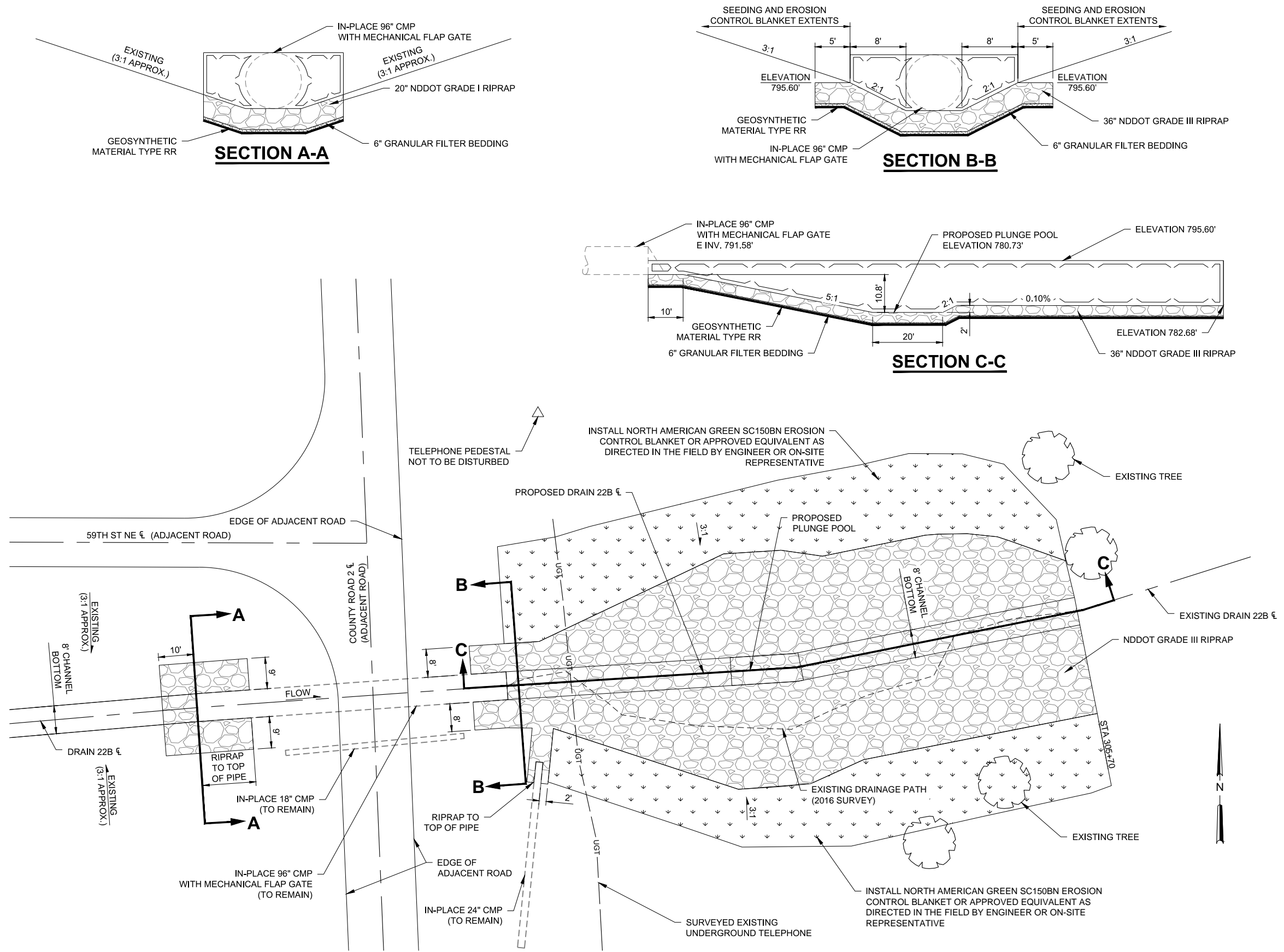
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DRAIN 22 SYSTEM IMPROVEMENTS
WALSH COUNTY WATER RESOURCE DISTRICT
GRAFTON, NORTH DAKOTA

DRAIN 22B FIELD APPROACH
CULVERT RIPRAP APRON DETAIL
PROJECT NO. 7135-023

SHEET
C-302

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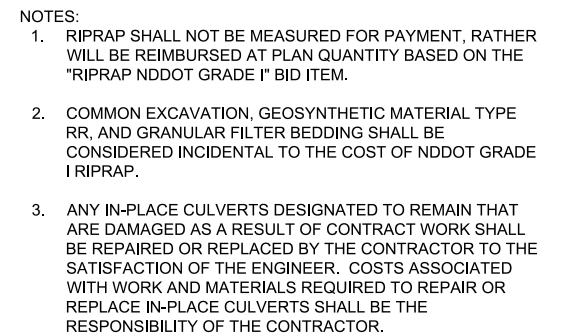


- NOTES:
1. RIPRAP SHALL BE MEASURED AND PAID BASED ON THE APPROPRIATE NDDOT RIPRAP GRADATION BID ITEM.
 2. COMMON EXCAVATION, GEOSYNTHETIC MATERIAL TYPE RR, AND GRANULAR FILTER BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE APPROPRIATE NDDOT RIPRAP GRADATION BID ITEM.
 3. EXISTING DRAINAGE DITCHES SHALL BE REALIGNED WITHIN THE EXTENT OF THE PERMANENT RIGHT-OF-WAY TO ENSURE PROPER DRAINAGE TO THE SATISFACTION OF THE ENGINEER. COMMON EXCAVATION REQUIRED TO REALIGN TOWNSHIP AND COUNTY ROAD DITCHES SHALL BE INCIDENTAL TO OTHER BID ITEMS.
 4. SUITABLE COMMON EXCAVATION MATERIAL SHALL BE USED TO CONSTRUCT THE DRAIN BOTTOM SIDE SLOPES. COMPACTION REQUIREMENTS FOR CONSTRUCTION OF DRAIN BOTTOM AND SIDE SLOPES WILL CONFORM TO NDDOT COMPACTION CONTROL, TYPE A AND SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 5. IN-PLACE TOPSOIL FROM ALL DISTURBED AREAS SHALL BE REMOVED AND STOCKPILED IN THE CONSTRUCTION EXTENTS. COSTS FOR REMOVAL AND STOCKPILING OF TOPSOIL REQUIRED FOR THE INSTALLATION OF RIPRAP SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 6. STOCKPILED TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED OVER ALL DISTURBED AREAS AFTER INSTALLATION OF RIPRAP, AND OTHER INCIDENTAL ITEMS. COSTS FOR REDISTRIBUTION OF TOPSOIL REQUIRED SHALL BE INCIDENTAL TO THE OTHER BID ITEMS.
 7. ROAD AND DITCH SIDE SLOPES SHALL BE SEEDED AFTER TOPSOIL HAS BEEN DISTRIBUTED.
 8. ADJACENT ROADS (AND FIELD APPROACHES) SHALL NOT BE DISTURBED. ANY DISTURBED AREAS SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER. ALL COSTS ASSOCIATED WITH REPAIR OF DISTURBED AREAS OF THE ADJACENT ROAD (AND FIELD APPROACHES) SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 9. ANY IN-PLACE CULVERTS DESIGNATED TO REMAIN THAT ARE DAMAGED AS A RESULT OF CONTRACT WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. COSTS ASSOCIATED WITH WORK AND MATERIALS REQUIRED TO REPAIR OR REPLACE IN-PLACE CULVERTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 10. ALL TREES SHALL REMAIN IN PLACE AND PROTECTED BY THE CONTRACTOR. NO TREES SHALL BE REMOVED UNLESS MARKED BY THE ENGINEER OR REPRESENTATIVE. ALL COSTS ASSOCIATED WITH TREE AND/OR BRUSH REMOVAL, OR ANY OTHER CLEARING SHALL BE CONSIDERED INCIDENTAL TO OTHER BID ITEMS.
 11. ALL CONCRETE MATERIAL, DEBRIS MATERIAL, AND RETAINING WALLS LOCATED IN THE DRAIN 22B PROJECT EXTENTS EAST OF COUNTY ROAD 2 SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED AND DISPOSED OF PROPERLY. ALL COSTS ASSOCIATED WITH THE REMOVAL AND DISPOSAL WILL BE A LUMP SUM PAYMENT FOR THE BID ITEM "REMOVE DRAIN 22B OUTLET DEBRIS".
 12. ALL AREAS DESIGNATED WITHIN THE EROSION CONTROL BLANKET EXTENTS SHALL BE SEEDED, FERTILIZED, AND COVERED WITH NORTH AMERICAN GREEN SC150BN EROSION CONTROL BLANKET OR APPROVED EQUIVALENT USING THE MANUFACTURERS RECOMMENDED INSTALLATION INSTRUCTIONS. EROSION CONTROL BLANKET SHALL NOT BE MEASURED FOR PAYMENT, RATHER SHALL BE REIMBURSED AT PLAN QUANTITY BASED ON THE "EROSION CONTROL BLANKET" BID ITEM.

COUNTY ROAD 2 CULVERT RIPRAP APRON AND DROP STRUCTURE DETAIL (STA 303+63)
NOT TO SCALE

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						P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision	Date	By								



EXISTING GROUND

PROPOSED GROUND

20" NDDOT GRADE I RIPRAP

PROPOSED CHANNEL BOTTOM

8'

6" GRANULAR FILTER BEDDING

GEOSYNTHETIC MATERIAL TYPE RR

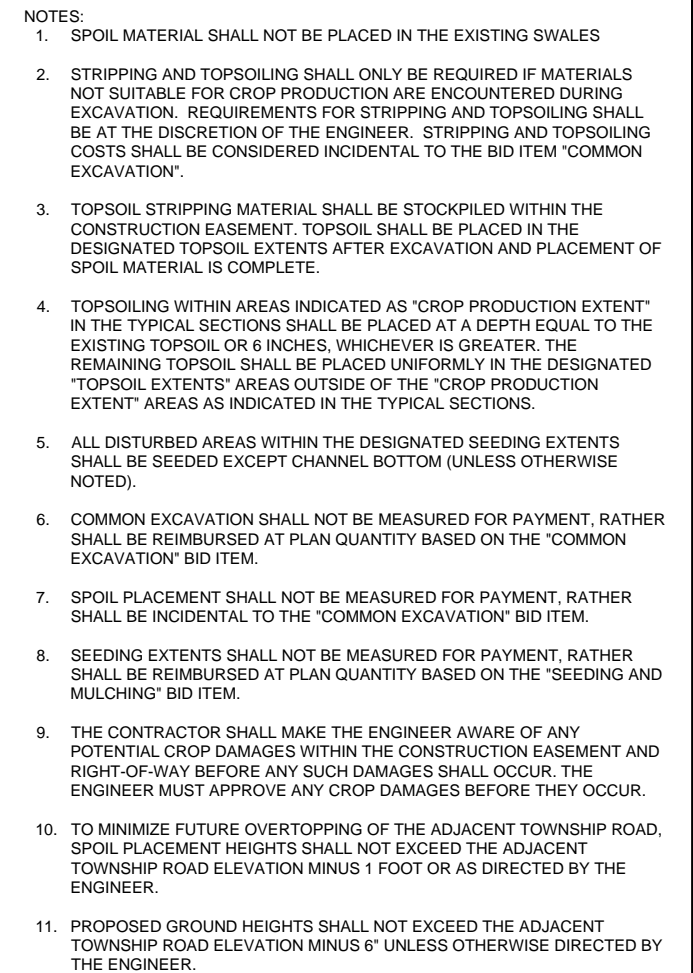
IN-PLACE CMP (TO REMAIN)

ROAD

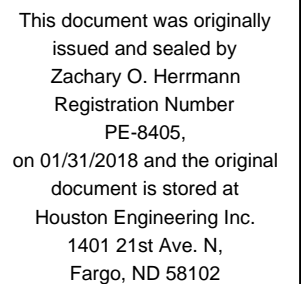
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No.	Revision	Date	By			P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN		PROJECT NO. 7135-023	C-304

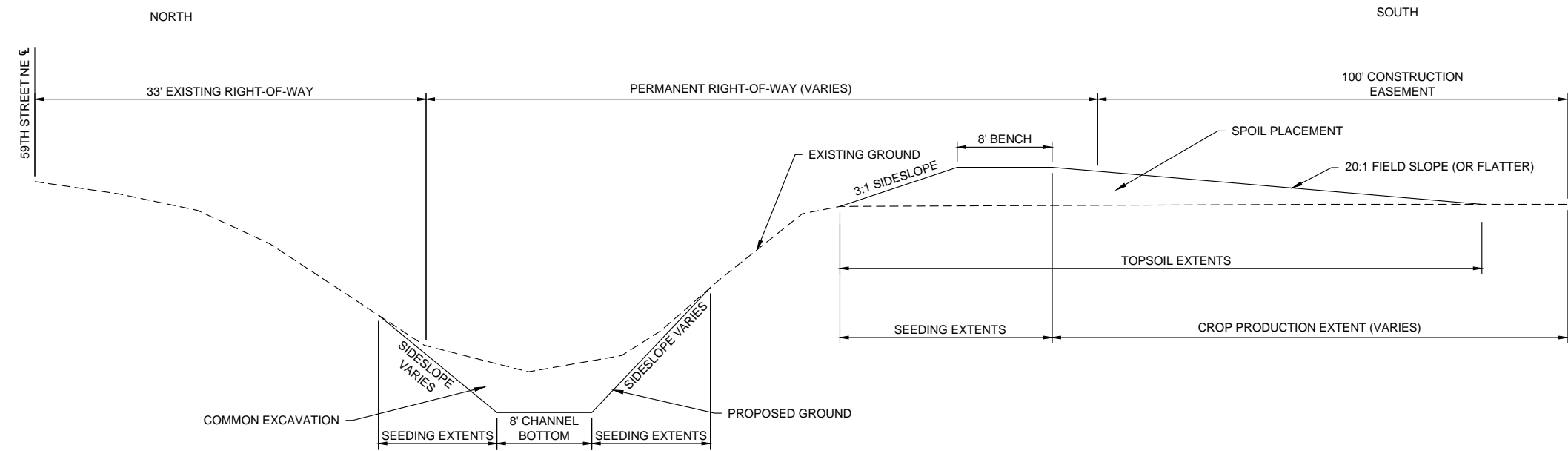


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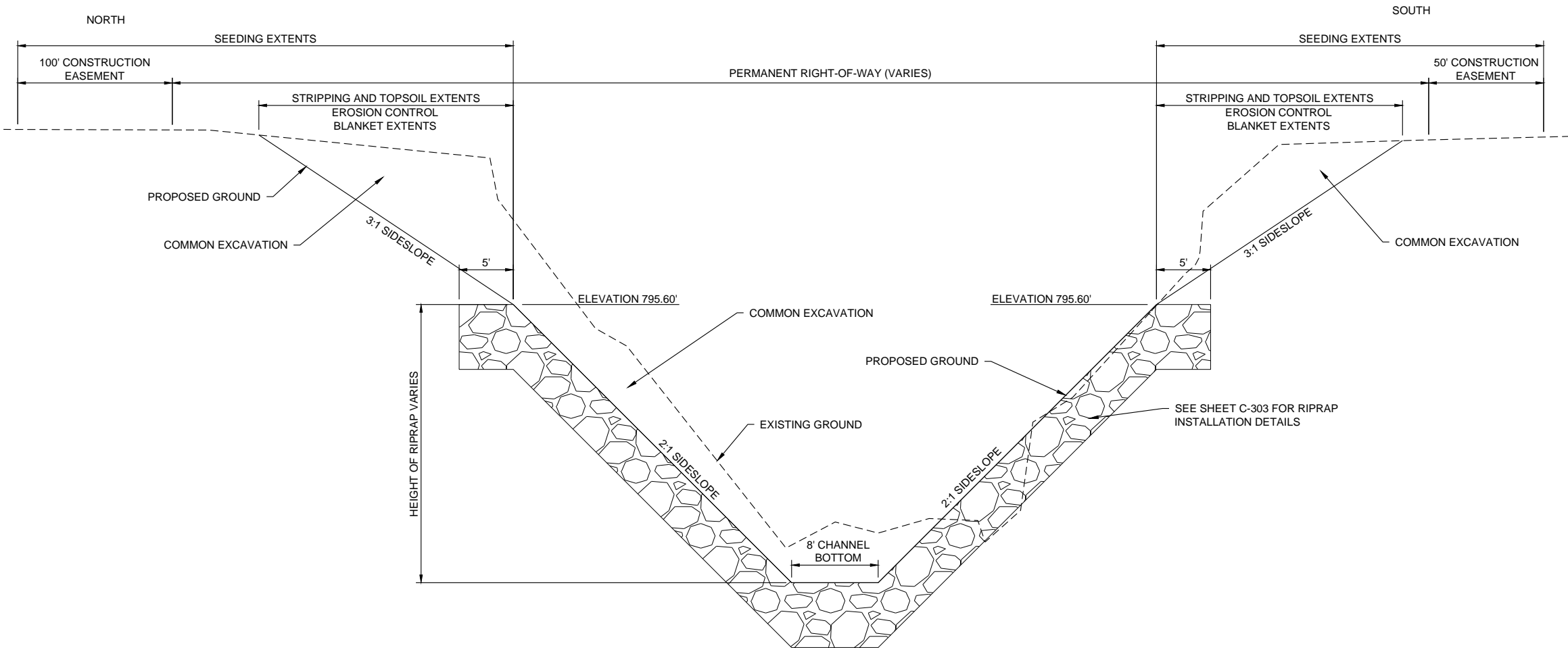


NOT TO SCALE

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DRAIN 22B TYPICAL SECTION (STA 278+35 TO STA 303+15)
NOT TO SCALE



DRAIN 22B TYPICAL SECTION (STA 304+03 TO STA 305+70)
NOT TO SCALE

- NOTES:
1. SPOIL MATERIAL SHALL NOT BE PLACED IN THE EXISTING SWALES
 2. STRIPPING AND TOPSOILING SHALL ONLY BE REQUIRED IF MATERIALS NOT SUITABLE FOR CROP PRODUCTION ARE ENCOUNTERED DURING EXCAVATION. REQUIREMENTS FOR STRIPPING AND TOPSOILING SHALL BE AT THE DISCRETION OF THE ENGINEER. STRIPPING AND TOPSOILING COSTS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "COMMON EXCAVATION".
 3. TOPSOIL STRIPPING MATERIAL SHALL BE STOCKPILED WITHIN THE CONSTRUCTION EASEMENT. TOPSOIL SHALL BE PLACED IN THE DESIGNATED TOPSOIL EXTENTS AFTER EXCAVATION AND PLACEMENT OF SPOIL MATERIAL IS COMPLETE.
 4. TOPSOILING WITHIN AREAS INDICATED AS "CROP PRODUCTION EXTENT" IN THE TYPICAL SECTIONS SHALL BE PLACED AT A DEPTH EQUAL TO THE EXISTING TOPSOIL OR 6 INCHES, WHICHEVER IS GREATER. THE REMAINING TOPSOIL SHALL BE PLACED UNIFORMLY IN THE DESIGNATED "TOPSOIL EXTENTS" AREAS OUTSIDE OF THE "CROP PRODUCTION EXTENT" AREAS AS INDICATED IN THE TYPICAL SECTIONS.
 5. ALL DISTURBED AREAS WITHIN THE DESIGNATED SEEDING EXTENTS SHALL BE SEEDED EXCEPT CHANNEL BOTTOM (UNLESS OTHERWISE NOTED).
 6. COMMON EXCAVATION SHALL NOT BE MEASURED FOR PAYMENT, RATHER SHALL BE REIMBURSED AT PLAN QUANTITY BASED ON THE "COMMON EXCAVATION" BID ITEM.
 7. SPOIL PLACEMENT SHALL NOT BE MEASURED FOR PAYMENT, RATHER SHALL BE INCIDENTAL TO THE "COMMON EXCAVATION" BID ITEM.
 8. SEEDING EXTENTS SHALL NOT BE MEASURED FOR PAYMENT, RATHER SHALL BE REIMBURSED AT PLAN QUANTITY BASED ON THE "SEEDING & MULCHING" BID ITEM.
 9. STRIPPING AND TOPSOILING SHALL BE CONSIDERED INCIDENTAL TO THE "COMMON EXCAVATION" BID ITEM.
 10. THE CONTRACTOR SHALL MAKE THE ENGINEER AWARE OF ANY POTENTIAL CROP DAMAGES WITHIN THE CONSTRUCTION EASEMENT AND RIGHT-OF-WAY BEFORE ANY SUCH DAMAGES WILL OCCUR. THE ENGINEER SHALL APPROVE ANY CROP DAMAGES BEFORE THEY OCCUR.
 11. TO MINIMIZE FUTURE OVERTOPPING OF THE ADJACENT TOWNSHIP ROAD, SPOIL PLACEMENT HEIGHTS SHALL NOT EXCEED THE ADJACENT TOWNSHIP ROAD ELEVATION MINUS 1 FOOT OR AS DIRECTED BY THE ENGINEER.
 12. SPOIL MATERIAL SHALL NOT BE PLACED ADJACENT TO THE DRAIN FROM STA. 299+47 TO STA. 303+15
 13. SPOIL MATERIAL FROM STA. 299+47 TO STA. 303+15 SHALL BE HAULED TO OTHER DESIGNATED SPOIL PLACEMENT AREAS, SUBJECT TO APPROVAL BY THE ENGINEER.
 14. EXCESS SPOIL MATERIAL FROM COMMON EXCAVATION BETWEEN STA 304+03 AND STA 305+70 SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE HAULED OFF SITE AND BECOME THE RESPONSIBILITY OF THE CONTRACTOR. EXCESS SPOIL MATERIAL FROM COMMON EXCAVATION HAULED OFF SITE SHALL NOT BE MEASURED FOR PAYMENT, RATHER SHALL BE REIMBURSED AT PLAN QUANTITY BASED ON THE "EXCAVATION MATERIAL HAUL" BID ITEM.

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PE-8405,
on 01/31/2018 and the original document is stored at
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1401 21st Ave. N,
Fargo, ND 58102

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No.	Revision	Date	By	



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P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN

DRAIN 22 SYSTEM IMPROVEMENTS
WALSH COUNTY WATER RESOURCE DISTRICT
GRAFTON, NORTH DAKOTA

DRAIN 22B
TYPICAL SECTIONS
PROJECT NO. 7135-023

SHEET
C-312

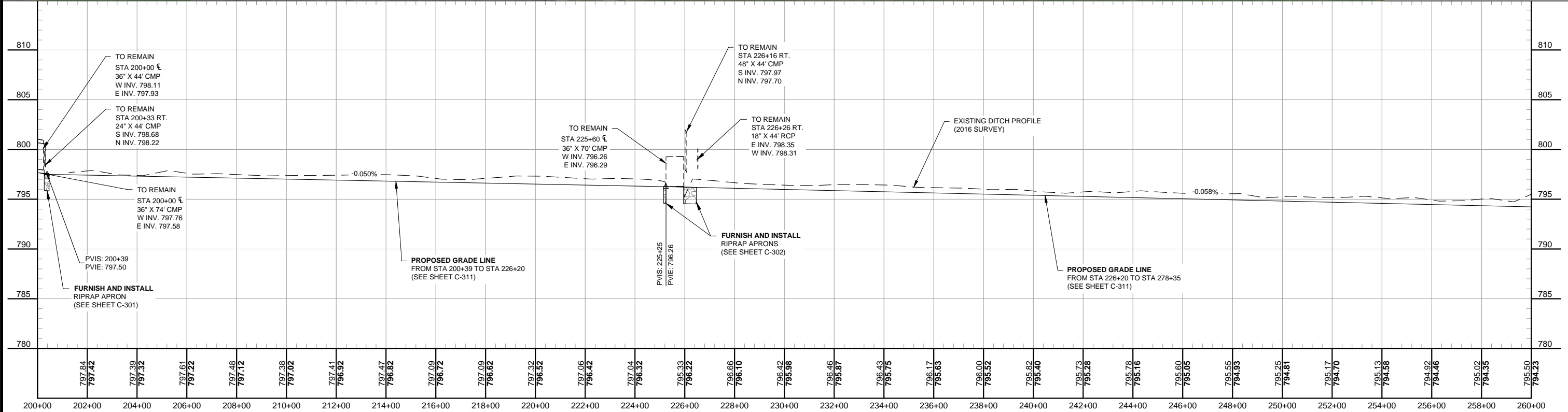
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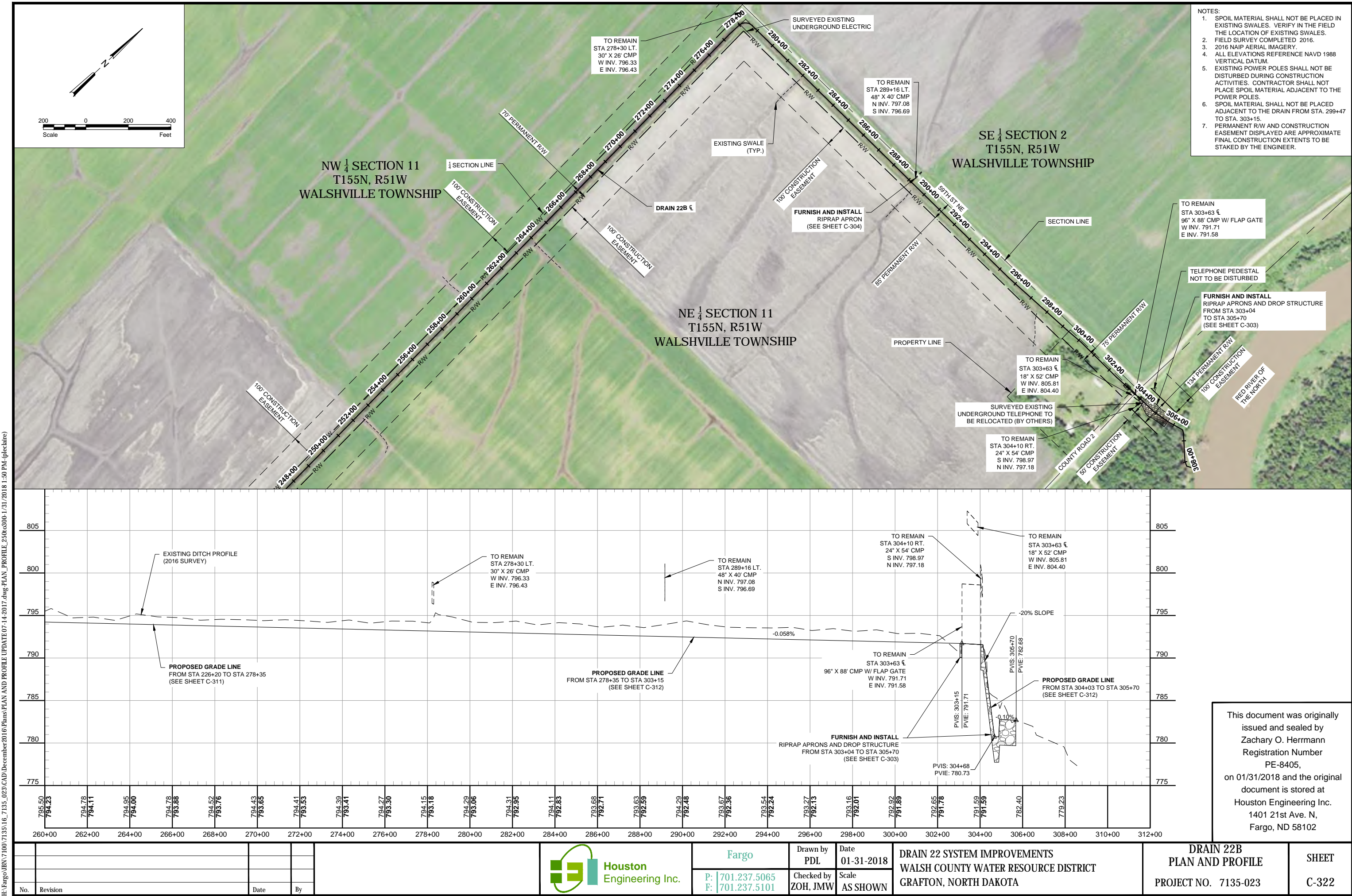
NOTES:

1. SPOIL MATERIAL SHALL NOT BE PLACED IN EXISTING SWALES. VERIFY IN THE FIELD THE LOCATION OF EXISTING SWALES.
2. FIELD SURVEY COMPLETED 2016.
3. 2016 NAIP AERIAL IMAGERY.
4. ALL ELEVATIONS REFERENCE NAVD 1988 VERTICAL DATUM.
5. EXISTING POWER POLES SHALL NOT BE DISTURBED DURING CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL NOT PLACE SPOIL MATERIAL ADJACENT TO THE POWER POLES.
6. PERMANENT R/W AND CONSTRUCTION EASEMENT DISPLAYED ARE APPROXIMATE FINAL CONSTRUCTION EXTENTS TO BE STAKED BY THE ENGINEER.



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					P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision	Date	By							

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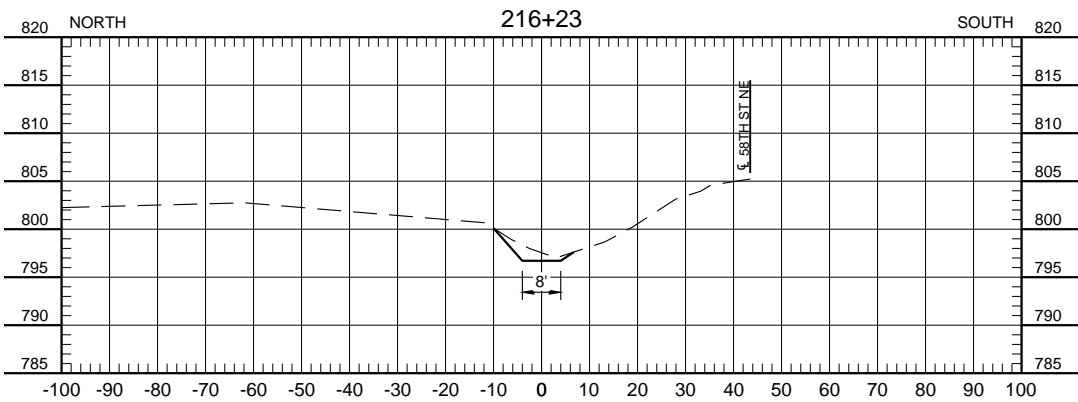
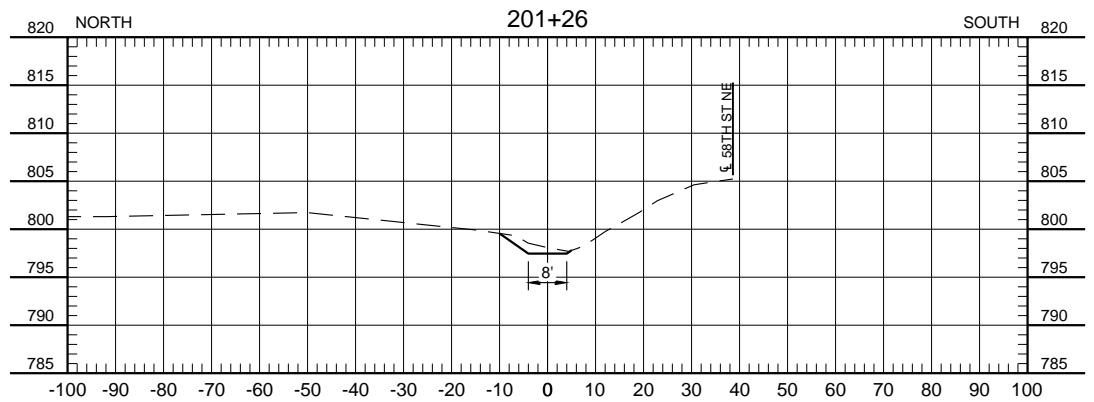
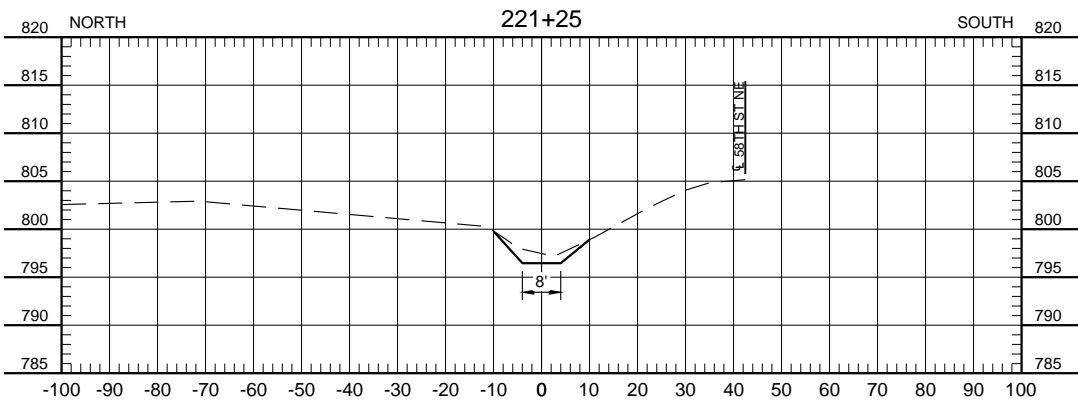
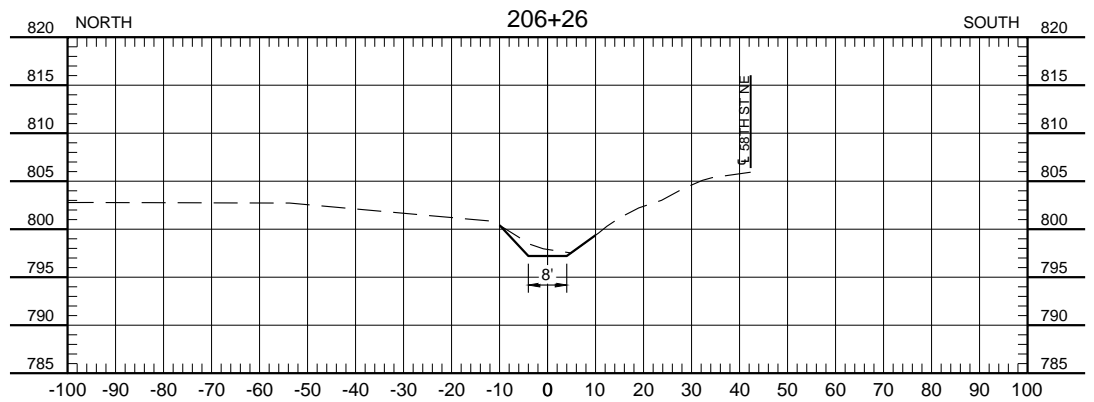
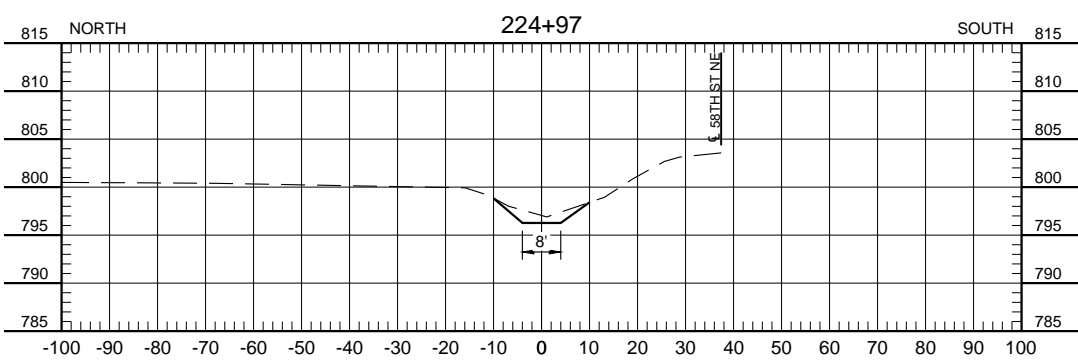
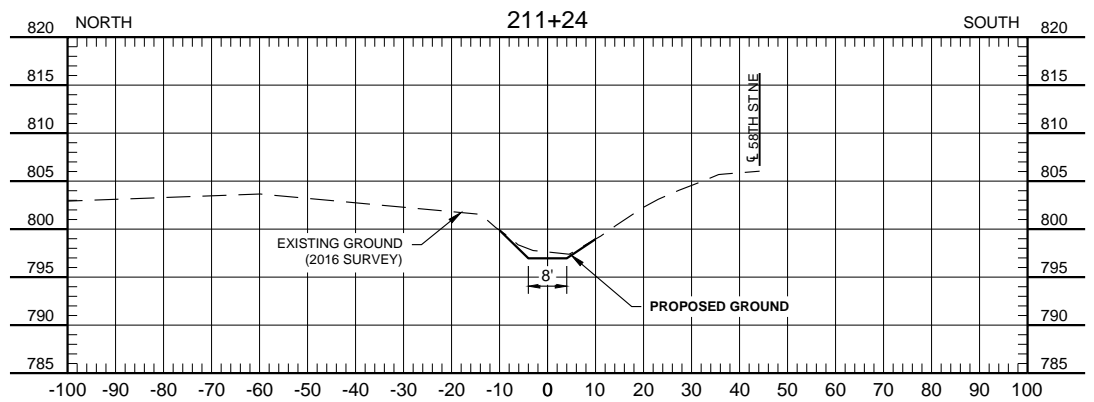
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DRAIN 22 SYSTEM IMPROVEMENTS
WALSH COUNTY WATER RESOURCE DISTRICT
GRAFTON, NORTH DAKOTA

DRAIN 22B
PLAN AND PROFILE
PROJECT NO. 7135-023
SHEET C-322



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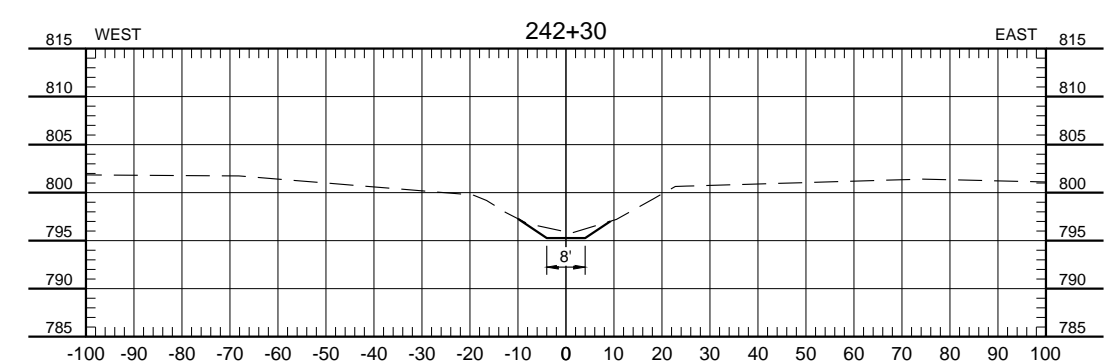
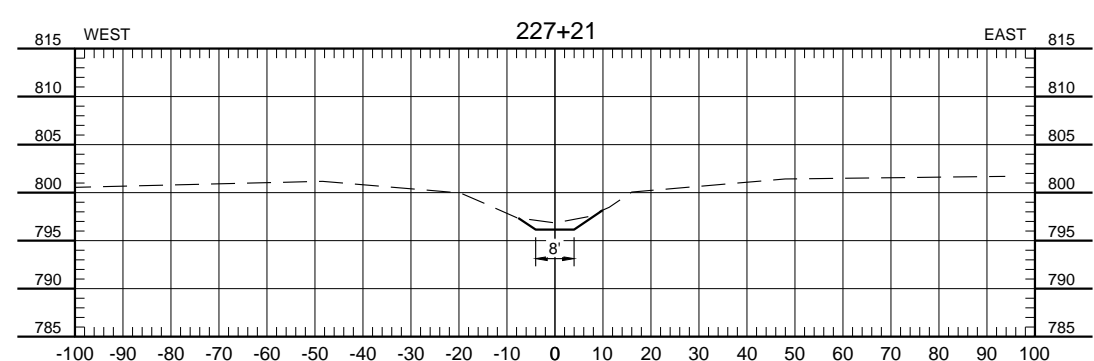
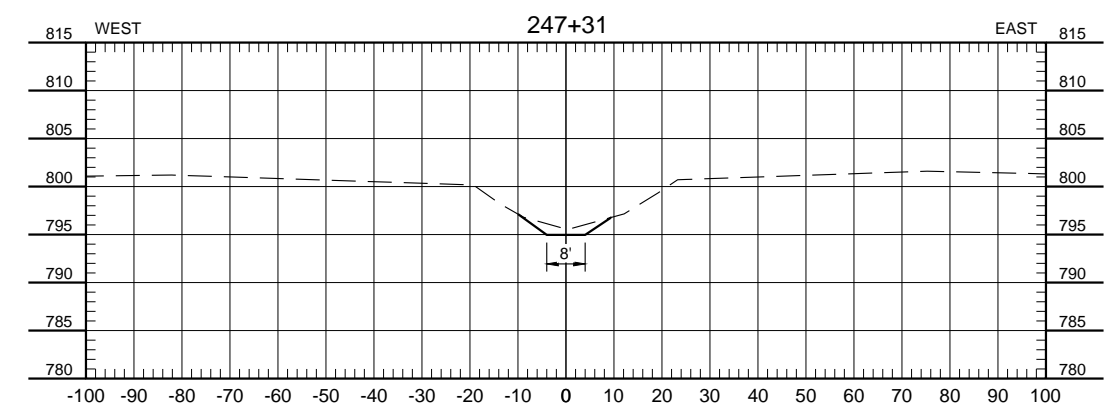
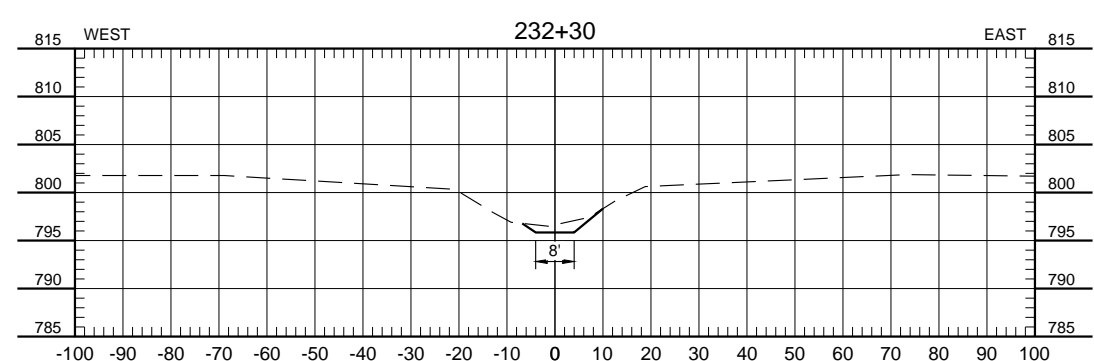
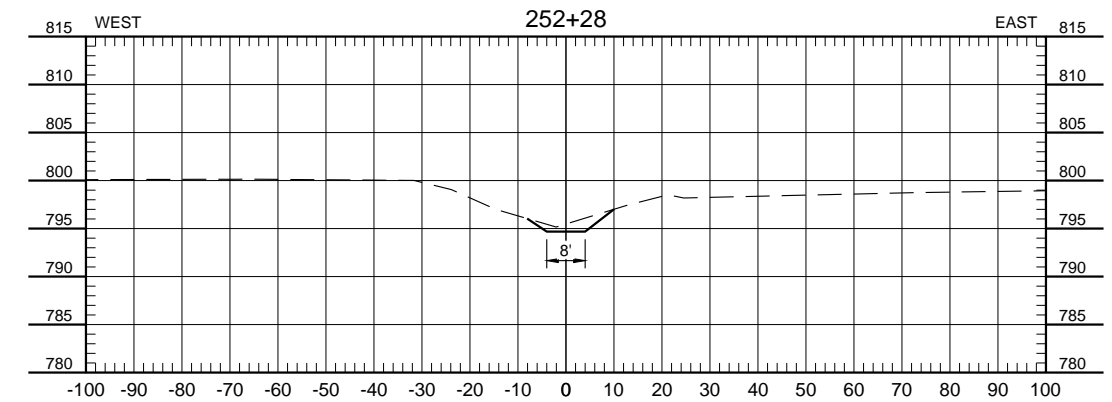
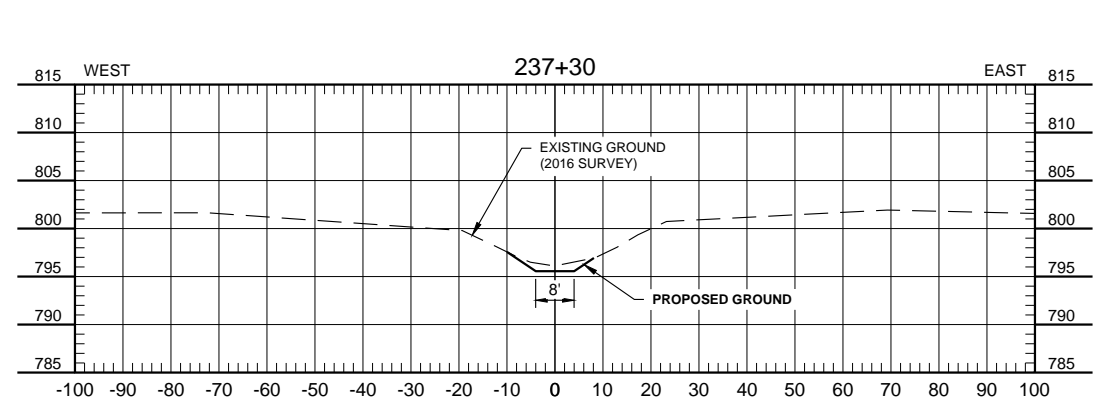


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DRAIN 22 SYSTEM IMPROVEMENTS
WALSH COUNTY WATER RESOURCE DISTRICT
GRAFTON, NORTH DAKOTA

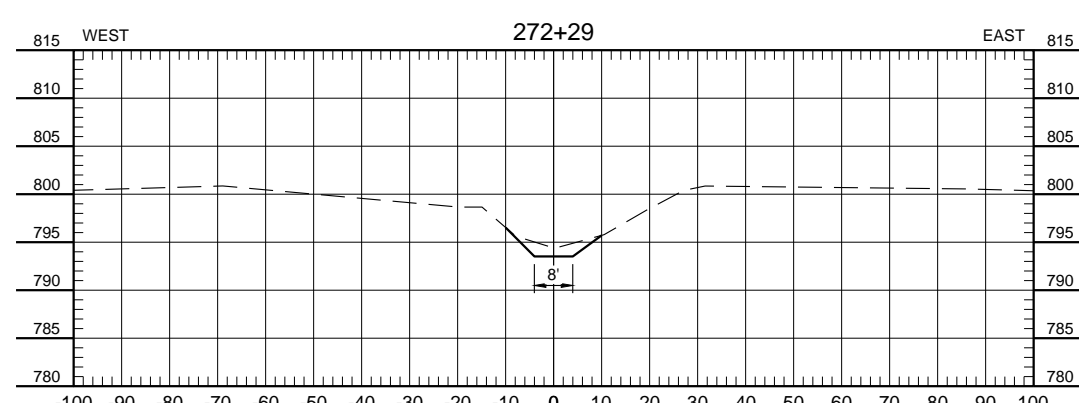
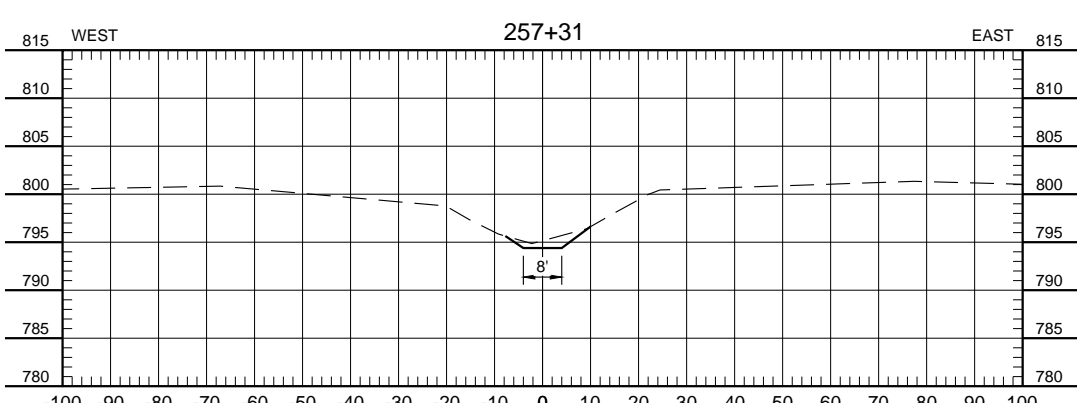
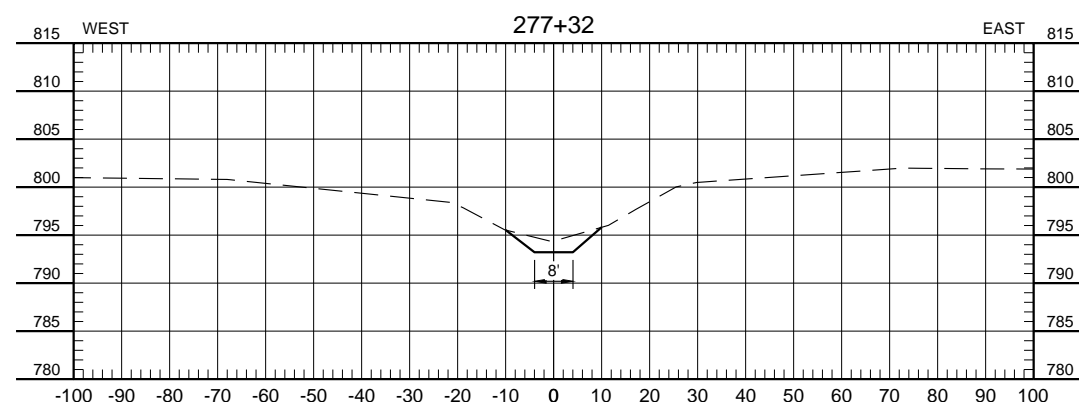
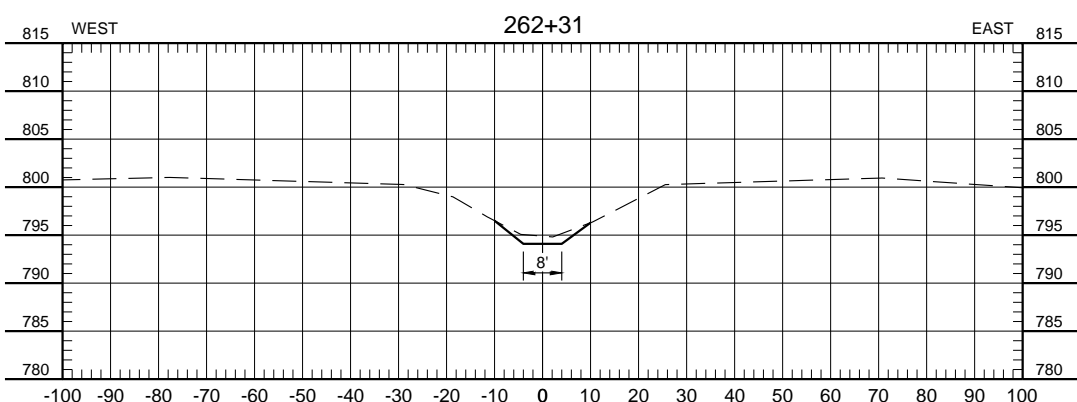
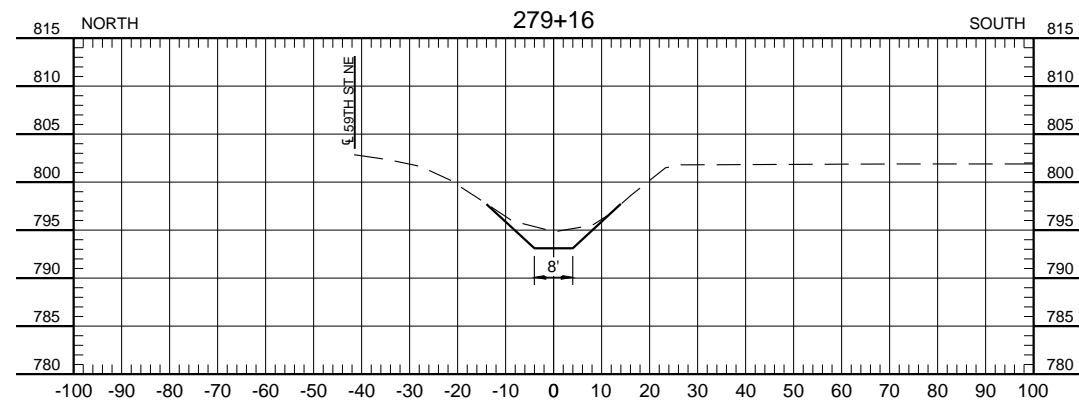
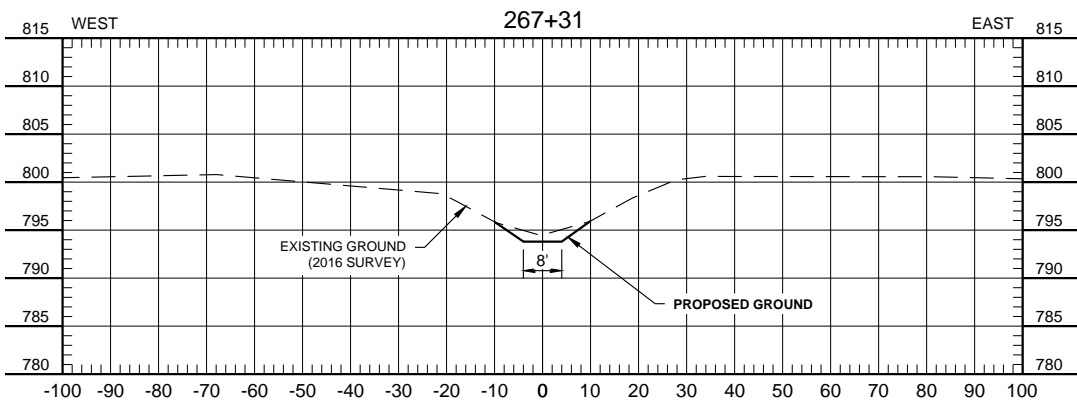
DRAIN 22B
CROSS SECTIONS
PROJECT NO. 7135-023

SHEET
C-331



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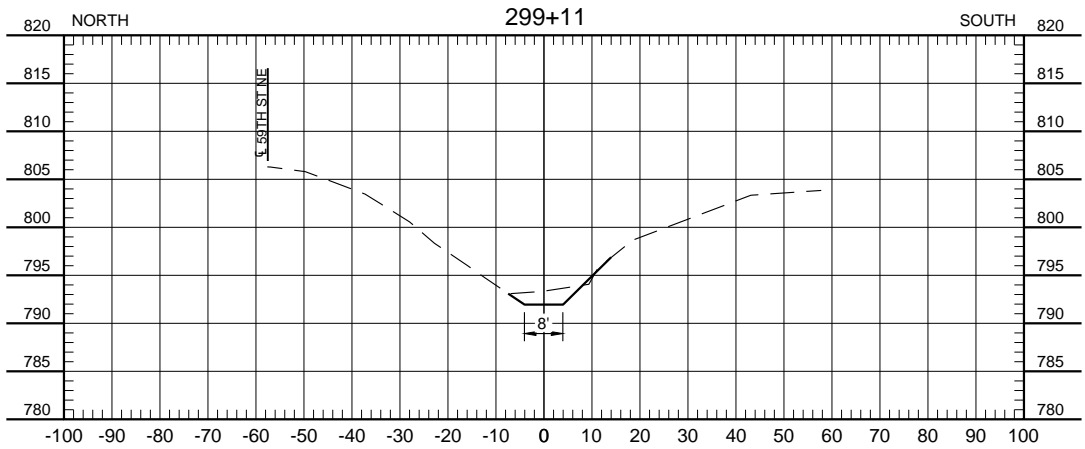
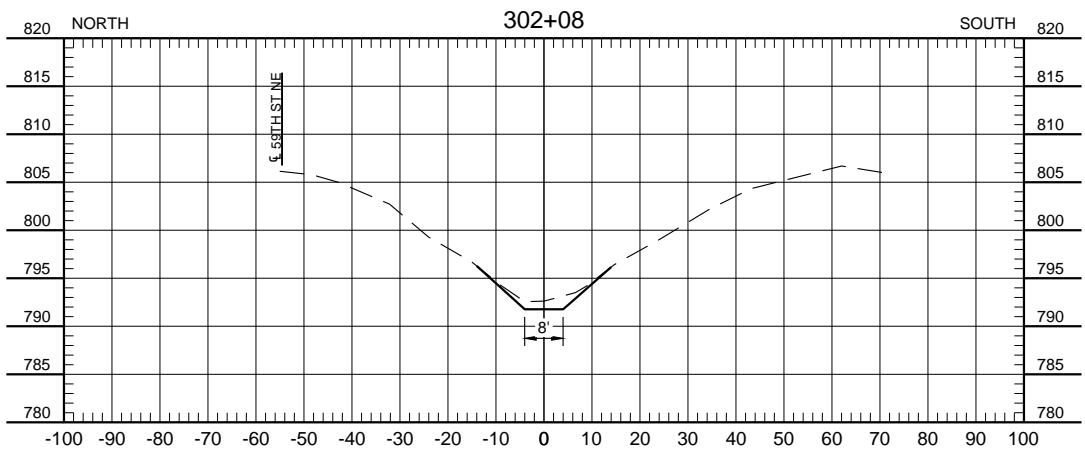
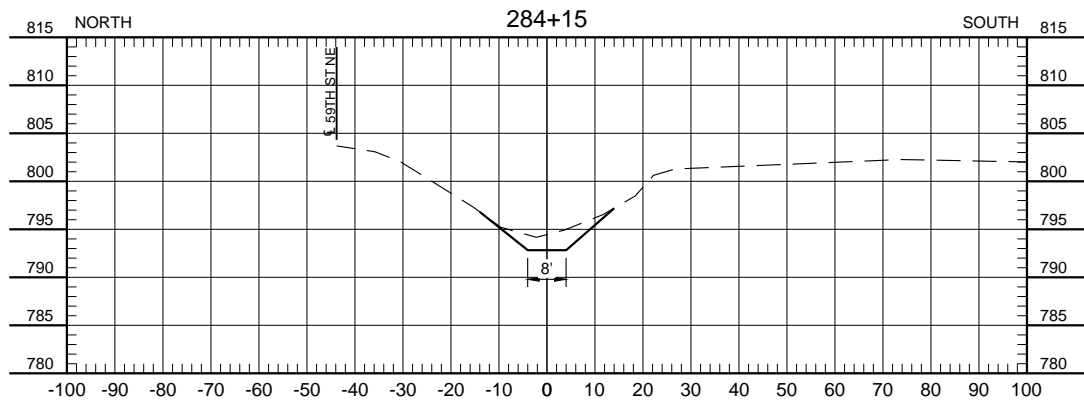
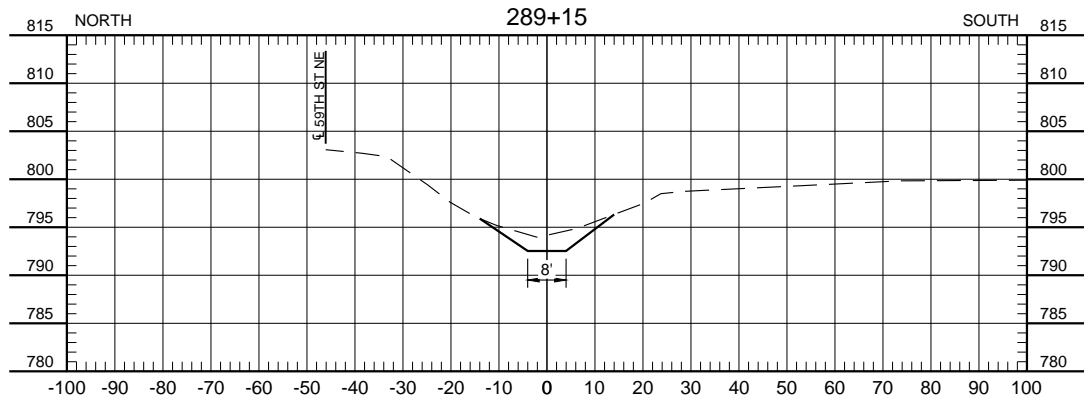
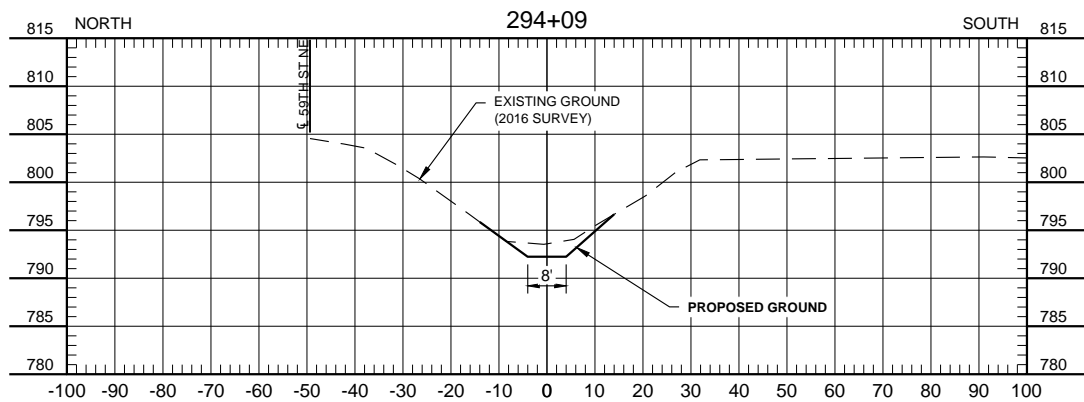


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DRAIN 22 SYSTEM IMPROVEMENTS
WALSH COUNTY WATER RESOURCE DISTRICT
GRAFTON, NORTH DAKOTA

DRAIN 22B
CROSS SECTIONS
PROJECT NO. 7135-023

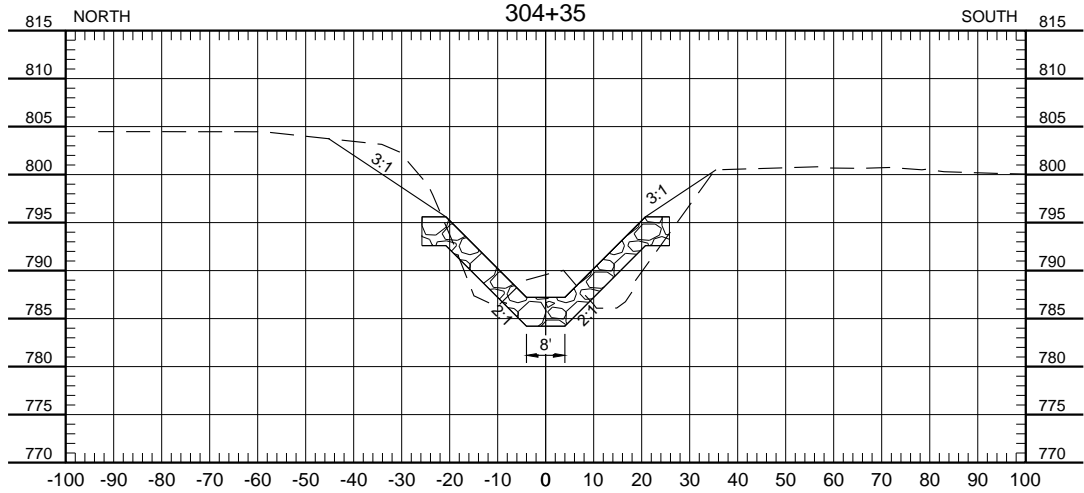
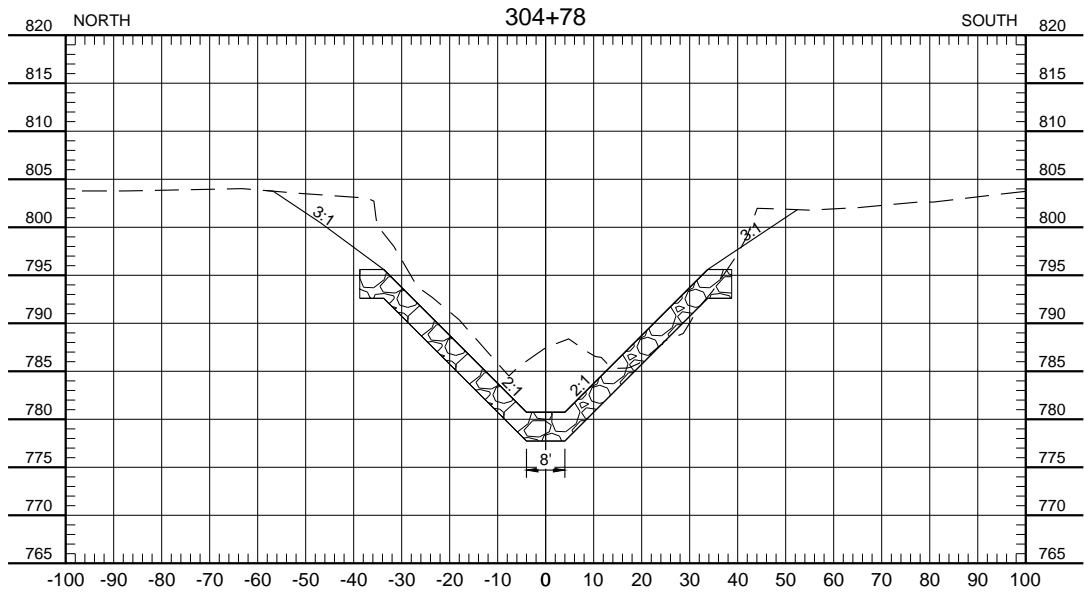
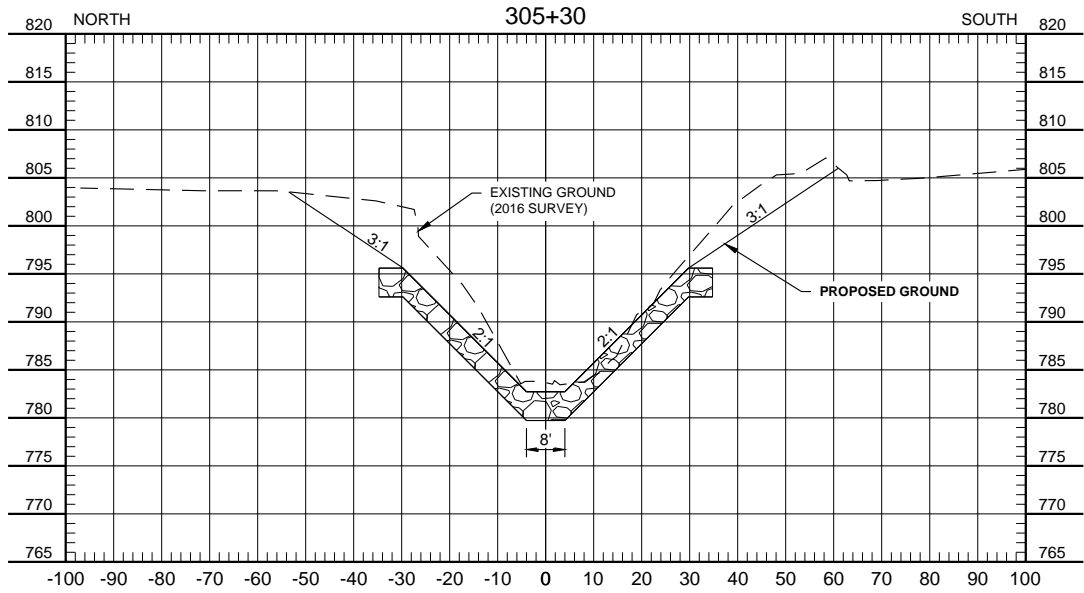
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				 Houston Engineering Inc.	Fargo	Drawn by PDL	Date 01-31-2018	DRAIN 22 SYSTEM IMPROVEMENTS WALSH COUNTY WATER RESOURCE DISTRICT GRAFTON, NORTH DAKOTA	DRAIN 22B CROSS SECTIONS PROJECT NO. 7135-023	SHEET C-334
					P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
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					Fargo	Drawn by PDL	Date 01-31-2018	DRAIN 22 SYSTEM IMPROVEMENTS WALSH COUNTY WATER RESOURCE DISTRICT GRAFTON, NORTH DAKOTA	DRAIN 22B CROSS SECTIONS PROJECT NO. 7135-023	SHEET C-335
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PROJECT DESCRIPTION

1. THE PROJECT CONSISTS OF WALSH COUNTY DRAIN NO. 22 SYSTEM IMPROVEMENTS SITUATED IN SECTIONS 1,11, 12, 23, 24 AND 26 OF WALSHVILLE TOWNSHIP IN WALSH COUNTY, NORTH DAKOTA. THE PROJECT INCLUDES THE FOLLOWING IMPROVEMENTS: EXCAVATION, INSTALLATION OF DRAIN CENTERLINE CULVERTS, AND RIPRAP PROTECTION.

THE PROPOSED SITE WILL DRAIN EAST INTO THE RED RIVER OF THE NORTH.

2. THE TOTAL SITE AREA IMPACTED BY CONSTRUCTION IS ESTIMATED AT 94.2 ACRES.

OFFSITE AREAS:

NO OFF SITE BORROW AREAS WILL BE NEEDED FOR THE CONSTRUCTION OF THE PROJECT.

CRITICAL AREAS:

CRITICAL EROSION AREAS INCLUDE AREAS WHERE SLOPES EXCEED 5:1. CUT AND FILL SLOPES FOR THIS PROJECT ARE DESIGNED AT A 2:1 MAXIMUM. OTHER CRITICAL AREAS INCLUDE LOCATIONS DESIGNED TO RECEIVE CONCENTRATED RUNOFF (SWALES & PIPE OUTFALLS). ADDITIONAL POINTS OF CONCERN ARE LOCATED AT THE INGRESS AND EGRESS LOCATIONS FOR CONSTRUCTION TRAFFIC. THESE AREAS WILL BE PROTECTED FROM EROSION BY MEASURES INDICATED ON THE PLANS.

RECEIVING WATERS:

STORM WATER FROM THIS SITE WILL BE COLLECTED IN THE EXISTING AND NEWLY CONSTRUCTED WALSH COUNTY DRAIN 22 SYSTEM. THE ULTIMATE RECEIVING WATERS FOR THIS PROJECT WILL BE THE RED RIVER OF THE NORTH.

GENERAL NOTES:

- REFER TO SPECIFICATION SECTION 5.7 NORTH DAKOTA POLLUTANT ELIMINATION SYSTEM FOR SWPPP RESPONSIBILITIES AND PERMITTING REQUIREMENTS.
- CONTRACTOR SHALL INSPECT SITE EROSION CONTROL WEEKLY AND AFTER EACH RAIN EVENT MEASURING 1/4" CONTRACTOR SHALL MAINTAIN A LOG OF ALL COMPLETED INSPECTIONS.
- NO ON-SITE SURFACE WATERS AND NO DIRECT DISCHARGE TO SURFACE WATERS UNDER PROJECT.
- A COPY OF THE INSPECTION LOG, EROSION CONTROL PLAN, AND SWPPP SHALL REMAIN ON SITE AT ALL TIMES.
- THE OFFICIAL RAIN GAGE FOR THIS SITE SHALL BE LOCATED ON-SITE.
- CONTRACTOR SHALL NOTIFY ENGINEER OR REPRESENTATIVE ONCE REPAIRS/MODIFICATIONS HAVE BEEN MADE AND SHALL KEEP A LOG OF ALL MODIFICATIONS/REPAIRS ON SITE.
- A COMPLETED N.O.T. SHALL BE SUBMITTED BY THE CONTRACTOR TO THE STATE AND WALSH COUNTY WATER RESOURCE DISTRICT PRIOR TO FINAL ACCEPTANCE.
- CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL DEVICES ON THIS SITE UNTIL FINAL ACCEPTANCE.
- CONTRACTOR SHALL UPDATE THIS EROSION CONTROL PLAN AS NEEDED TO REFLECT MEASURES IMPLEMENTED IN THE FIELD DURING CONSTRUCTION.
- ON-SITE CONVEYANCES ARE DITCH SYSTEMS.

OWNER:
WALSH COUNTY WATER RESOURCE DISTRICT
600 COOPER AVE.
GRAFTON, ND 58237
ATTN: JENNIFER LINDENBERGER, SECRETARY
(O): (701) 352-0081
EMAIL: wcwrb@nd.gov

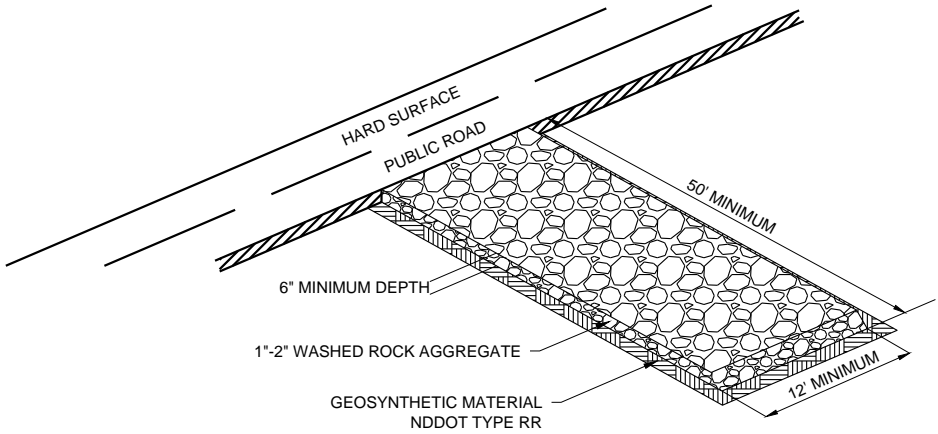


VICINITY MAP

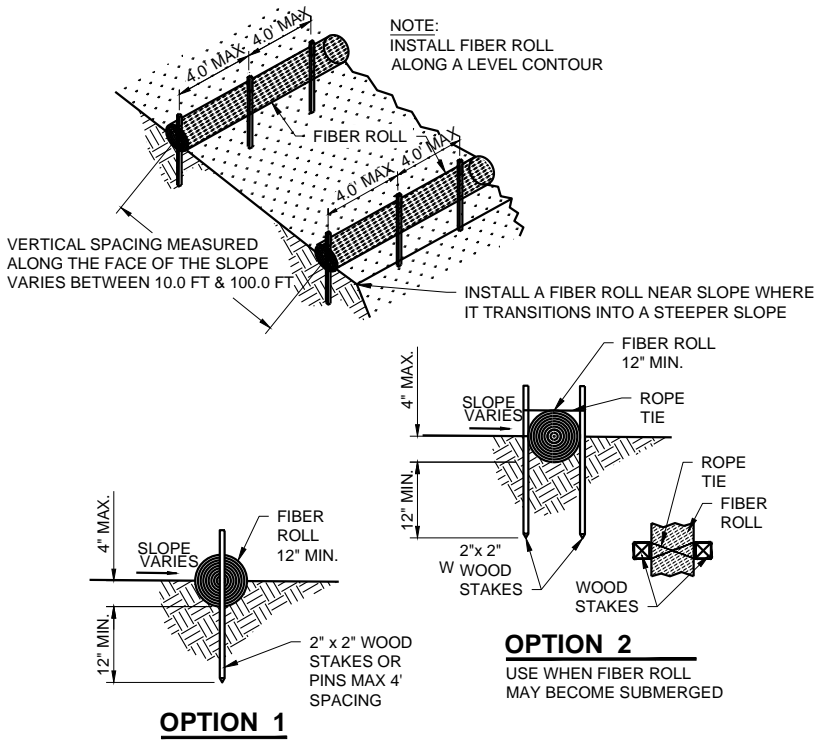
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						P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
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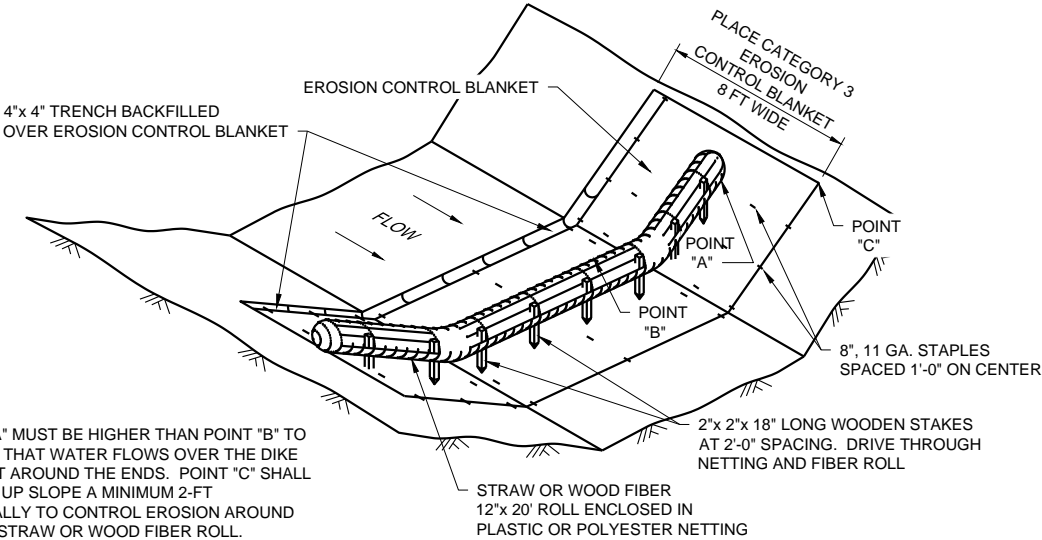
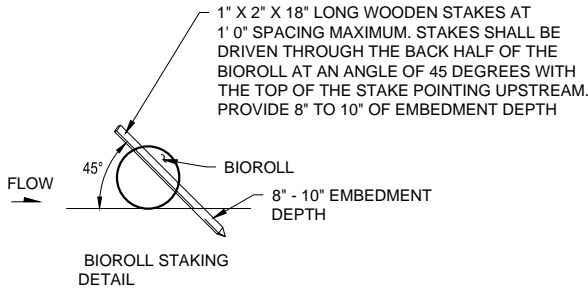
- NOTES:
- 1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 - 2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
 - 3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
 - 4. UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL REMOVE THE TEMPORARY CONSTRUCTION ENTRANCE UNLESS NOTED OTHERWISE, AND THE SITE SHALL BE RESTORED TO IT'S PREVIOUS CONDITION
 - 5. TEMPORARY CONSTRUCTION ENTRANCES ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL DETERMINE LOCATIONS OF ENTRANCES AND ENGINEER IS TO APPROVE THEM.
 - 6. COSTS ASSOCIATED WITH CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ENTRANCES SHALL BE INCLUDED IN THE BID ITEM "TEMPORARY CONSTRUCTION ENTRANCE".



TEMPORARY ROCK OR WOOD CHIP
CONSTRUCTION ENTRANCE
NOT TO SCALE



FIBER ROLL INSTALLATION
NOT TO SCALE



TEMPORARY DITCH CHECK
NOT TO SCALE

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No.	Revision	Date	By

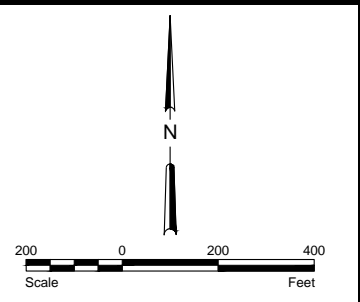
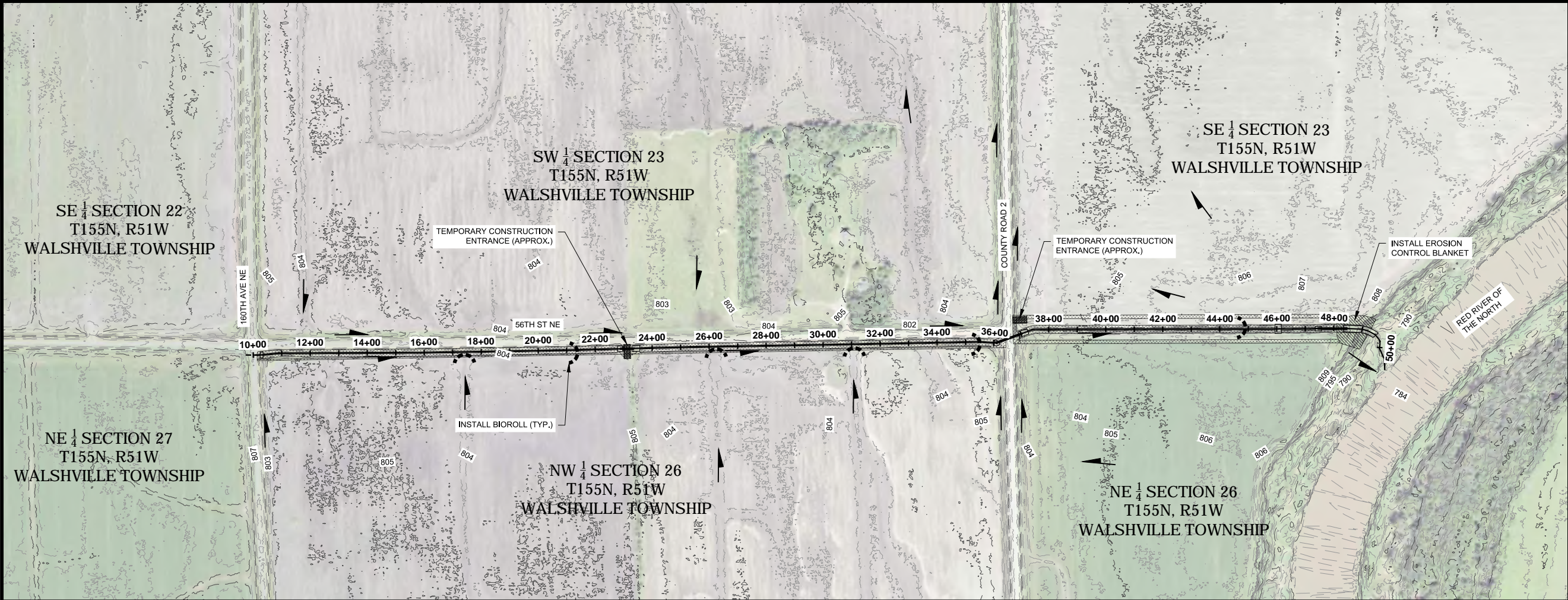


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DRAIN 22 SYSTEM IMPROVEMENTS
WALSH COUNTY WATER RESOURCE DISTRICT
GRAFTON, NORTH DAKOTA

TEMPORARY EROSION
CONTROL DETAILS
PROJECT NO. 7135-023

SHEET
E-002



LEGEND:

- BIOROLL
- EXISTING CULVERT
- PROPOSED CULVERT
- FLOW DIRECTION
- SEEDING AREAS
- EROSION CONTROL BLANKET
- TEMPORARY CONSTRUCTION ENTRANCE

- NOTES:**
- TEMPORARY CONSTRUCTION ENTRANCES ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL DETERMINE LOCATIONS OF ENTRANCES AND ENGINEER IS TO APPROVE THEM.
 - CONTOURS REPRESENT 2008 LIDAR DATA. ACTUAL ELEVATIONS MAY VARY.
 - CONTRACTOR SHALL SEED THE NEWLY CONSTRUCTED 6' WIDE EMBANKMENT AS DIRECTED BY THE ENGINEER.

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No.	Revision	Date	By

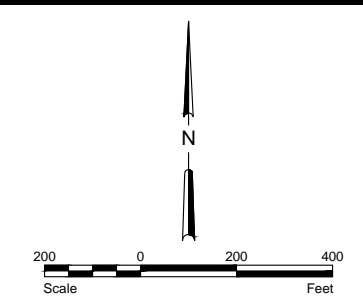


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DRAIN 22 SYSTEM IMPROVEMENTS
WALSH COUNTY WATER RESOURCE DISTRICT
GRAFTON, NORTH DAKOTA

DRAIN 22 TEMPORARY
EROSION CONTROL PLAN
PROJECT NO. 7135-023

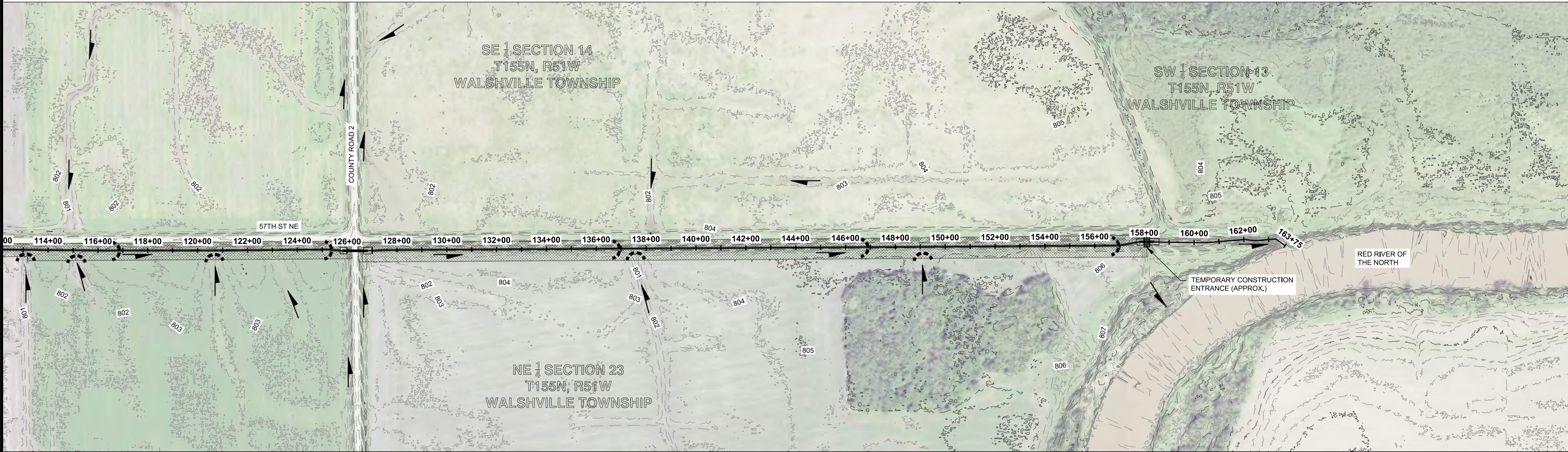
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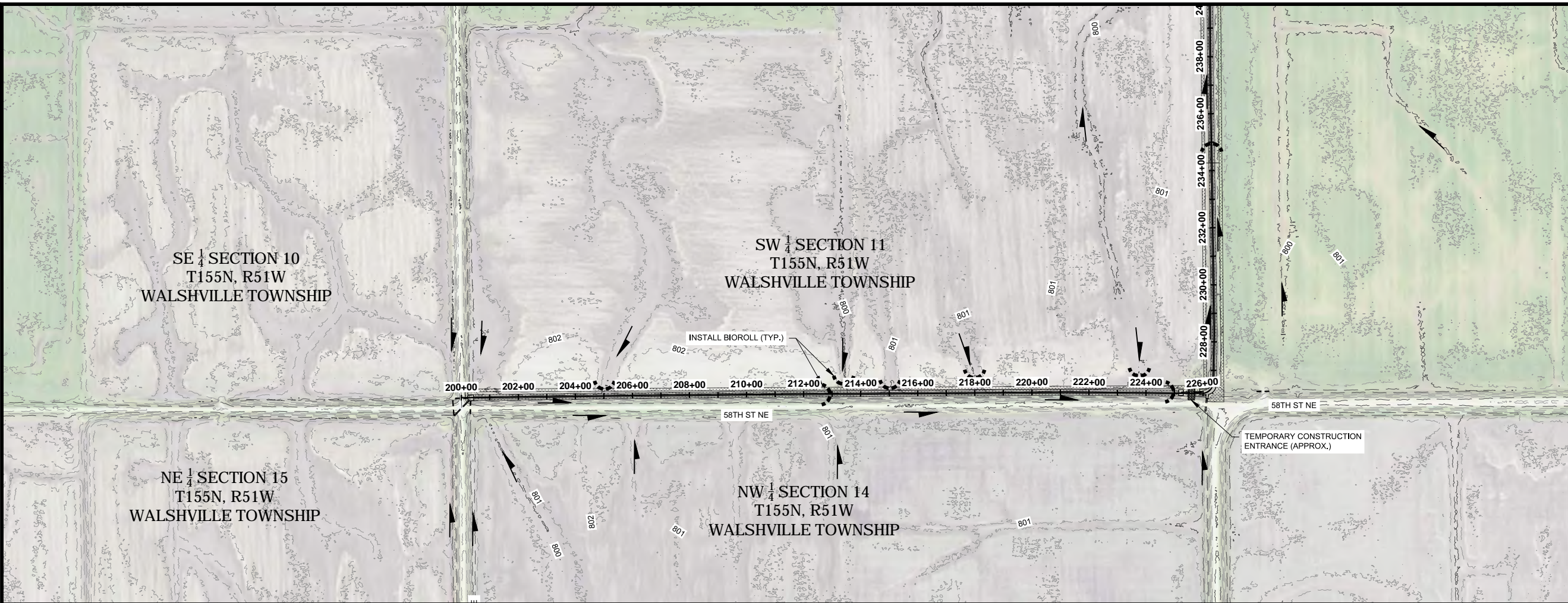
- BIOROLL
- EXISTING CULVERT
- PROPOSED CULVERT
- FLOW DIRECTION
- SEEDING AREAS
- TEMPORARY CONSTRUCTION ENTRANCE

- NOTES:**
- TEMPORARY CONSTRUCTION ENTRANCES ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL DETERMINE LOCATIONS OF ENTRANCES AND ENGINEER IS TO APPROVE THEM.
 - CONTOURS REPRESENT 2008 LIDAR DATA. ACTUAL ELEVATIONS MAY VARY



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						P: 701.237.5065 F: 701.237.5101	Checked by ZOH, JMW	Scale AS SHOWN			
No.	Revision		Date	By							

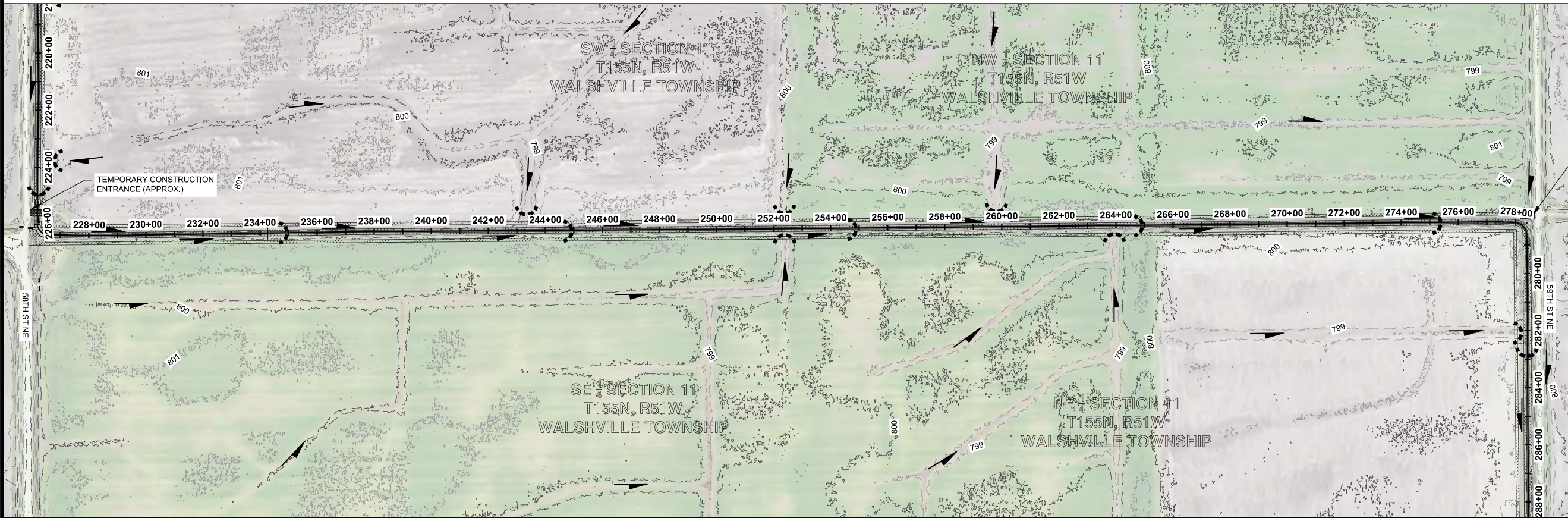
H:\Fargo\JBN 7100 7135.16_7135_023 CAD\December 2016 Plans\EROSION CONTROL PLAN VIEW.dwg PLAN_PROFILE_80to140-1/31/2018 1:53 PM (pictaire)



LEGEND:

- BIOROLL
- EXISTING CULVERT
- PROPOSED CULVERT
- FLOW DIRECTION
- SEEDING AREAS
- TEMPORARY CONSTRUCTION ENTRANCE

- NOTES:**
1. TEMPORARY CONSTRUCTION ENTRANCES ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL DETERMINE LOCATIONS OF ENTRANCES AND ENGINEER IS TO APPROVE THEM.
 2. CONTOURS REPRESENT 2008 LIDAR DATA. ACTUAL ELEVATIONS MAY VARY



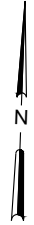
LEGEND:


- BIOROLL
- EXISTING CULVERT
- PROPOSED CULVERT
- FLOW DIRECTION
- SEEDING AREAS
- TEMPORARY CONSTRUCTION ENTRANCE

					Fargo		Drawn by PDL	Date 01-31-2018	DRAIN 22 SYSTEM IMPROVEMENTS WALSH COUNTY WATER RESOURCE DISTRICT GRAFTON, NORTH DAKOTA		DRAIN 22B TEMPORARY EROSION CONTROL PLAN PROJECT NO. 7135-023	SHEET E-301
No.	Revision	Date	By		P: 701.237.5065 F: 701.237.5101		Checked by ZOH, JMW	Scale AS SHOWN				








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N


Scale Feet

LEGEND:

	BIOROLL
	EXISTING CULVERT
	PROPOSED CULVERT
	FLOW DIRECTION
	SEEDING AREAS
	EROSION CONTROL BLANKET
	TEMPORARY CONSTRUCTION ENTRANCE

- NOTES:
- TEMPORARY CONSTRUCTION ENTRANCES ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL DETERMINE LOCATIONS OF ENTRANCES AND ENGINEER IS TO APPROVE THEM.
 - CONTOURS REPRESENT 2008 LIDAR DATA. ACTUAL ELEVATIONS MAY VARY.

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No.	Revision	Date	By



Fargo	Drawn by PDL	Date 01-31-2018
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DRAIN 22 SYSTEM IMPROVEMENTS
WALSH COUNTY WATER RESOURCE DISTRICT
GRAFTON, NORTH DAKOTA

DRAIN 22B TEMPORARY
EROSION CONTROL PLAN
PROJECT NO. 7135-023

SHEET
E-302