



## ***Burleigh County Water Resource District***

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***P.O. Box 1255  
Bismarck, North Dakota 58502-1255  
(701) 222-3499  
Website: [www.bcwrld.org](http://www.bcwrld.org)***



**Burleigh County, North Dakota**

# ***FOX ISLAND FLOOD CONTROL OPERATION & MAINTENANCE MANUAL***

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***April 2021***

# OPERATION & MAINTENANCE MANUAL

## Fox Island Flood Control Project Burleigh County, North Dakota

April 2021

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision, and that I am a duly Registered Professional Engineer under the laws of the State of North Dakota.

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Michael H. Gunsch  
North Dakota Reg. No. PE-3052

**Houston Engineering, Inc.**

3712 Lockport St.  
Bismarck, ND 58503  
Phone # 701-323-0200  
HEI No. 6025-0006

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision, and that I am a duly Registered Professional Engineer under the laws of the State of North Dakota.

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Travis G. Johnson  
North Dakota Reg. No. PE-5746

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# 1 INTRODUCTION

The Fox Island Flood Control Project (Project) was constructed starting in the fall of 2018 and completed in October 2020 to provide flood risk reduction to parts of southwest Bismarck, North Dakota. The Project includes an earthen levee, three gatewells, and a grade raise along Gallatin Loop, Gallatin Drive and Farwest Drive within the Fox Island Subdivision, tying into the existing the previously raised Tavis Road. The project was designed primarily to protect 105 rural residential properties within the Fox Island Area. Fifty-nine of these properties are included in the Construction Assessment District, while all 105 are part of the Operations and Maintenance District. The project was constructed according to City of Bismarck Construction Specifications for Municipal Public Works Improvements, which states that the Contractor shall guarantee all work and materials and performance of the finished project free from material defect or failure for a period of two years from the date of final payment. Final payment to Northern Improvement Company was approved on October 14, 2020. This Project was established by the Burleigh County Water Resource District (BCWRD). It was funded through a special state legislative appropriation, an allocation from Lincoln Township via the Burleigh County Commission, and the remaining funding was secured through a special assessment district under NDCC 61-16.1.

## 1.1 PURPOSE OF MANUAL

This operation and maintenance manual summarizes the procedures required for project maintenance during non-flood times and operations during flood events.

The manual has been organized with maps, drawings, and references to the pertinent components for project operations and maintenance. It begins with a project description, followed by standard maintenance procedures, and then concludes with operational procedures for impending flood situations, during flood operations, and post-flood operations.

## 1.2 AUTHORITY

The Burleigh County Water Resource District completed construction on the Fox Island Flood Control Project after initiating project evaluations after the 2009 ice jam event. The BCWRD is responsible for the operation and maintenance functions and all activities are coordinated under their authority with actual operations as noted below. The BCWRD has intentions to secure the services of the Burleigh County Highway Department to assist with O&M activities, however, any such agreement is outside the content of this manual.

## 1.3 RESPONSIBLE PARTY CONTACTS

Flood control regulations strongly recommend the BCWRD appoint a Project “Superintendent,” who is responsible for the development and maintenance of, and directly in charge of, an organizational structure responsible for efficient facility operations during flood periods and for continuous inspection and Project maintenance works during periods of low water. The BCWRD has designated the Fox Island portfolio lead as Fox Island Flood Control Project Superintendent.

**Parties that have been provided a copy of this O&M Manual for their use are listed in Appendix H.**

### 1.3.1 NOTIFICATION

Additional contact information including entity and telephone numbers are provided below. The Superintendent should verify and update these contacts and phone numbers at least annually or as necessary.

<u>Agency</u>	<u>Telephone Number</u>
City of Bismarck – Engineering	(701) 355-1505
City of Bismarck – Public Works	(701) 355-1700
City of Bismarck – Police Department	(701) 223-1212
City of Bismarck Emergency Management	(701) 222-6727
Bismarck Rural Fire Department	(701) 258-5792
Burleigh County Highway Department	(701) 204-7748
Burleigh County Sheriff's Department	(701) 222-6651
Burleigh County Emergency Management	(701) 222-6727
Burleigh County Water Resource District – James Landenberger	(701) 426-6439
North Dakota Department of Emergency Services	(701) 328-8100
North Dakota Department of Transportation Bismarck District	(701) 328-6950
National Weather Service (Bismarck)	(701) 250-4224

### 1.4 PROJECT LOCATION

The Project is located primarily within dedicated public roadway right-of-way and on easements within private property in the Fox Island Subdivisions southwest of the City of Bismarck city limits, Burleigh County, North Dakota. The Project area is bound on the north by the Whispering Bay Subdivision, on the west by the Missouri River, on the east by Tavis Road, and on the south by the Lincoln Township Roadways north of the Missouri River oxbow channel. **Figure 1** shows the Project location with respect to the City of Bismarck.



Figure 1: Project Location Map

## 1.5 PROJECT FEATURES

The Project utilizes an earthen levee, roadway grade raise, and three drainage structures to mitigate Missouri River flooding effects and reduce reliance on emergency measures for southwest Bismarck and Fox Island properties. The following sections describe the various project components. **Appendix D** includes the plan and profile drawings within the completed record drawings. The stationing begins at the west end on Gallatin Loop and extends in two runs, with the first heading approximately west then north and the second heading south then east. The north run is an earthen levee approximately 3,450 feet long and heads west to the Missouri River and then northeast paralleling the Missouri River and then east paralleling along the south side of the Whispering Bay access channel to Langer Lane. The southeast run, a township road grade raise, is approximately 5,656 feet long heading south on Gallatin Loop and then east on Gallatin Drive and Farwest Drive to the intersection with Tavis Road. An overview of the project features is illustrated in **Figure 2**. Note this project was designed to work in concert with flood control facilities previously constructed by the City of Bismarck, Burleigh County, and BCWRD under the *Burleigh County 20-Foot Flood Plan*. The Burleigh County Emergency Management Flood Annex document, dated February 2020, contains Action Plan sheets which indicate action levels and action plans for flood control structures for the City of Bismarck. The Control Structures contained in this Operations and Maintenance manual are shown on the Fox Island Action Plan sheet in Appendix 4 of the Flood Annex.

### 1.5.1 LEVEE

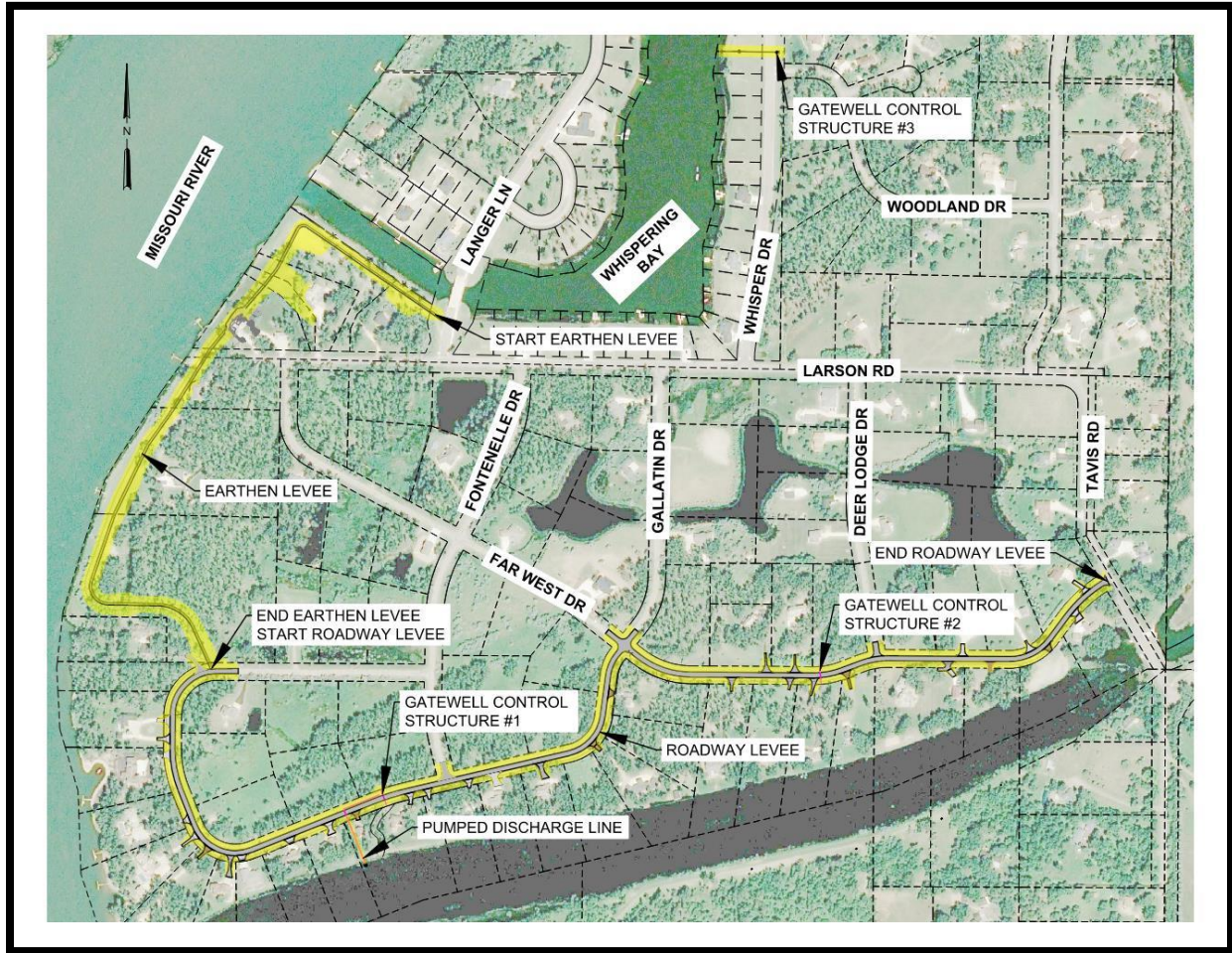
This Project consists of approximately 9,106 feet of grass covered earthen levee and raised paved roadway section. The north end of the earthen levee was constructed to with a top elevation set at 1637.24, and the proposed profile called for a 0.00% grade from Station 134+50 near Whisper Drive to the northwest until Station 125+84, where the grade changes to 0.02% and the levee turns southwest to Station 107+50 and then East until it reaches an elevation of 1637.02 at Station 100+00, where the north leg of the levee begins. At Station 0+62, the levee top elevation is set at 1636.84 and the levee continues south at a -0.02% grade to Station 10+00 and then east at a 0.00% grade to Station 55+78 where the levee top elevation is set at 1636.63. Up to two (2) inches of long term settlement is expected, resulting in slightly lower long term settled top of levee elevations. The side slopes on both the wet and dry sides are set at 4:1. The long-term settled elevations will provide the design minimum freeboard criteria of 0.7 feet based on the recorded water surface elevations experienced during the historic 2011 flood. This is based on the *Burleigh County 20 Foot Flood Plan*, adopted by the Burleigh County Commission and the City of Bismarck.

### 1.5.2 DRAINAGE STRUCTURES

As part of the project, an existing 24" RCP was removed, and a new culvert installed with a Gatewell Control Structure containing a 24"x24" sluice gate at Station 18+28 to allow surface waters to flow south out of the of Fox Island lake complex area (see **Figure 2**). Structure #1 ensures that during large summer rainfall events, or excessive groundwater elevations, like those occurring in the fall of 2019, water can be released south into the Missouri River. The invert elevation of this gated closure is approximately elevation 1627.76. The top of the Gatewell manhole is at elevation 1635.79. In addition, a pump discharge line was installed adjacent to and just west of this Gatewell structure for water removal from behind the levee when the gate is closed. The Gatewell system operational parameters are outlined in a *Pipeline Easement and Waiver* agreement contained in **Appendix E**. This discharge line is equipped with a 6 inch camlock connection and conveys water to the Missouri River backchannel south of Fox Island.

An additional 18" RCP culvert and Gatewell Control Structure was installed near the east end of the roadway section to provide an additional drainage location near Sta. 41+59 (see **Figure 2**). The invert elevation for Structure #2 is approximately 1631.77. The top of the Gatewell manhole is at approximately elevation 1635.75. This location was not set up to accommodate a pump removal system and is simply a levee closure location.

Structure #3 is located along Whisper Drive on the east side of the Whispering Bay Marina, and with the street right-of-way as shown in the upper portion of **Figure 2**. The Whisper Drive roadway was elevated as part of the development. The invert elevation for Gatewell Control Structure #3 is at approximately elevation 1628.34. The top of the gatewell manhole is at approximately elevation 1638.50. This location was designed to accommodate a pump removal system to remove water from the inland side within the northern Fox Island development area. These surface waters are pumped west into the river side of this two-cell structure through access hatches in the cover when the gate is closed during a flood event.



**Figure 2: Fox Island Flood Control Project Features**



**Table 1: Storm Sewer Outfall Summary**

Outfall		Gravity Outfall	Outfall Characteristics
Structure Number	Location		
1	West Gatewell (#1) (Sta 18+28)	24" RCP	Gatewell Manhole with Sluice Gate
2	East Gatewell (#2) (Sta 41+59)	18" RCP	Gatewell Manhole with Divider Wall and Sluice Gate
3	Whispering Bay Gatewell (#3)	24" RCP	Gatewell Manhole with Divider Wall and Sluice Gate {Note: The O&M on this facility is completed by the Burleigh County Highway Department}



**Figure 3: Gatewell Structure #1**

## 1.6 DATUM AND USGS GAGE

Elevations in this manual, unless otherwise noted, reference the North American Vertical Datum of 1988 (NAVD88), which is the same datum as the Burleigh County DFIRM's. River stages are referenced to the USGS Gage 06342500 (Bismarck Gage) located in Bismarck, North Dakota. Gage zero datum elevation is 1,618.28, National Geodetic Vertical Datum of 1929 (NGVD,29) which equates to an elevation 1619.62 (NAVD88).

## 1.7 FLOOD HISTORY

The Missouri River has a long history of flood risks along with frequent recent occurrences. Three of the top four recorded flood peaks have occurred in the last 24 years (including 1997, 2009, and 2011). **Table 2** shows the top 10 peak flood stages recorded at USGS Gage 06342500, Missouri River at Bismarck, ND (Bismarck Gage) during the post-Garrison Dam period from 1954 to 2020.

**Table 2: Top Ten Recorded Peak Flood Stages (1954-2020)**

USGS 06342500 Missouri River at Bismarck, ND			
Ranking	Year	Streamflow (cfs)	Stage (ft)
1	7/1/2011	155,000	19.25
100-year (BFE)			18.20
2	3/24/2009	30,000	16.11
3	6/13/1975	68,900	14.24
4	6/25/1997	59,500	13.98
5	2/25/1987	35,000	13.92
6	2/14/1988	34,000	13.33
7	3/27/1960	35,000	13.27
8	2/5/1989	26,500	13.12
9	3/25/2019	25,900	13.05
10	1/17/1992	24,000	12.70

## 1.8 PROJECT PERFORMANCE

The Project greatly enhances the County and City’s flood fighting capabilities throughout the Fox Island, Whispering Bay, and SouthBay neighborhoods, as well as protection for the City of Bismarck Sanitary Sewer Treatment facilities. The top of levee elevation provides at least 0.7 feet of freeboard above the 2011 maximum recorded River Stage of 19.25, after all anticipated settlement has occurred. The Project will not provide FEMA accreditable protection to remove the flood insurance requirement, as that requires three feet of freeboard above the 100-year or base flood elevation (BFE), which was uneconomical under the *Burleigh County 20-Foot Flood Plan*.

## 1.9 BURLEIGH COUNTY FLOOD INSURANCE STUDY

The BFEs in this manual reflect elevations documented in the Burleigh County Flood Insurance Study (FIS)<sup>1</sup> and the Burleigh County DFIRM, effective January 16, 2015. The DFIRM can be referenced on FEMA’s Map Service Center website at the following link: <https://msc.fema.gov/>. As identified in **Table 2**, the USGS gage height of the 100-year BFE at Bismarck is 18.2 feet. The DFIRM is currently under review by FEMA and the NDSWC, however it does not change the recorded 2011 flood elevations and the system design basis.

## 1.10 GENERAL REGULATIONS AND PROCEDURES

### 1.10.1 REGULATIONS

This manual is a guide for the operation and maintenance of the Fox Island Flood Control Project. Responsible officials should follow the flood control operation and maintenance requirements included in subsequent sections of this manual and are generally summarized as follows:

- Structures shall be continuously maintained and operated as necessary to obtain the maximum benefits.
- The responsible party for operation and maintenance shall appoint an official “Superintendent”. This person is responsible for the efficient operation of all structures and facilities during flood periods and periodic inspections during periods of low water.
- A reserve supply of materials needed for a flood emergency shall be available at all times.
- No encroachment or trespass that will adversely affect efficient system operation shall be permitted.

- No improvements or construction shall be conducted on or near the Project features without prior determination that such activities will not adversely affect the functionality of the protective measures. Any improvements found to be desirable should be completed in accordance with standard engineering practice.
- Superintendent shall prepare an Annual Levee Inspection Report covering inspection, maintenance, and operation of the protective works. This annual report shall be kept on file with the BCWRD and be incorporated into this manual.
- Owner shall always have access to all portions of the protective works.
- Necessary maintenance measures shall be promptly taken or made.
- Appropriate measures shall be taken to ensure the activities of all private and public entities are coordinated with the activities of the Superintendent and to prevent adverse impacts to or obstruction of the levee (e.g., private adjacent sand bagging efforts, public works activities, wastewater and sanitary protection efforts, etc.).

### 1.10.2 IMPROVEMENTS AND PROJECT MODIFICATIONS

The BCWRD should consider the implications, if any, that may arise from project improvements or modifications as such changes may affect the operation, maintenance, or any other aspects of the levee and grade raise effectiveness. This operation and maintenance manual may need to be revised to reflect these changes.

### 1.10.3 ENCROACHMENT OR TRESPASS ON RIGHT OF WAY

No encroachment or trespass which may adversely affect the efficient operation or maintenance of the project works shall be permitted on the rights-of-way for the levee and roadway system. The Superintendent shall be vigilant for encroachments or potential encroachments and shall coordinate with landowners and public entities within the right-of-way to prevent encroachments or other adverse impacts to the levee. The Superintendent shall resolve encroachments and affect removal or other mitigating action to the extent deemed necessary under their authority, local ordinances, and easements (**Appendix E**) to prevent or remove the encroachment.

A Vegetation Free Zone (VFZ) shall be enforced which prevents trees and woody vegetation from existing within 15 feet of the levee/roadway toe. The VFZ shall only apply to woody plants. Grass and non-woody vegetative cover that will inhibit erosion is encouraged. The VFZ maintains the levee/roadway integrity and ensures access exists for inspection, maintenance, and emergency flood fighting efforts. The VFZ also helps prevent tree roots from penetrating the earthen levee/roadway or undermining the foundations of the flood protection measures. Existing trees within the 15-foot VFZ shall be reviewed on a case-by-case basis to evaluate their effects on the levee system. Additional vegetation management guidance should follow *USACE Engineering Technical Letter 1110-2-583*<sup>2</sup>.

### 1.10.4 ANNUAL INSPECTION REPORT

The Superintendent must prepare a report documenting the annual inspection. This inspection is recommended to occur in early August each year to provide sufficient time for repair or maintenance needs before winter freeze-up. The levee system will then be prepared for spring runoff and potential flooding. The inspection should follow the last mowing or an annual mowing, as deemed necessary, to provide a cleaner landscape for locating cracks, animal burrow holes, and other concerning issues within the levee system.

A report format has been included in **Appendix B.1** that will be used to document the annual inspection. Each inspection shall include information with additional notations of issues or needed Project maintenance. Individual record drawing sheets from **Appendix D** should be attached to each inspection report to describe the locations for any required corrective measures. The inspection reporting should be revised as needed to document the levee system conditions to preserve their effectiveness. At a minimum, the report should include a summary of the following:

- Maintenance work identified during previous inspections
- Maintenance work completed since the last inspection report
- Noted deficiencies where corrective actions should be taken
- Items of potential concern that do not require immediate action, but should be monitored
- Maintenance work scheduled for the next year
- Any changes that need to be made to the operations and maintenance plan
- Changes in the Superintendent and in other normal or emergency contacts since the last inspection report.
- The manner in which the project functioned during any period of high river flow since the previous report
- Current condition of the Levee System and Storm Sewer Outfalls
- Any other information pertinent to operation and maintenance
- Include photographs of deficiencies with identified locations marked on the maps from **Appendix D**.

### 1.10.5 FIVE-YEAR INSPECTION

In addition to the annual inspection, every five years a more in-depth project inspection should be conducted by the BCWRD. The five-year inspection report will include a review of design documents and an assessment of the project's structural integrity. Visual review of the inlet and outlet pipes and gate structures is required along with a survey to verify that appropriate levee height is still being maintained. A copy of the five-year inspection shall be maintained by the BCWRD and retained in this O&M Manual.

### 1.10.6 POST-FLOOD AFTER ACTION REPORT

It is advised that a Post-Flood After Action Report be created to document how the system operated after each declared flood event. The documentation provides an opportunity to improve upon future flood mitigation efforts. A generalized example of a Post-Flood After Action Report outline is provided in **Appendix B.2**. Additional detail pertaining to development of the Post-Flood After Action Report is summarized in *Section 6 – Post Flood After Action Report*.

### 1.10.7 REPORTING EVIDENCE OF STRUCTURAL DISTRESS

Any evidence of structural distress of flood control project features should be documented and considered for immediate or future repair. Typical conditions that would indicate distress or initiation of a potential failure include:

- Settlement, sliding, or excessive ground deformation within or near the levee system
- Evidence of internal erosion (piping) in the vicinity of the levee system
- Excessive seepage or an observed increase in seepage quantities through or under the levee system
- Unusual vertical or horizontal movements of the levee system
- Excessive deflection, displacement, or cracking of concrete structures such as gatewells or internal asphalt or concrete lining
- Vibration, binding, or unusual noises or movement associated with gate operation
- Any other indications of distress or potential failure that could inhibit project operation

## 2 ORDINARY INSPECTIONS, MAINTENANCE AND OPERATIONS

### 2.1 GENERAL

This part of the operation and maintenance manual describes the normal operation and maintenance procedures that must be followed when there is no threat of flooding to ensure the project will continue to provide protection in the event of a flood.

Prior to any inspection or maintenance activities on their property, notification shall be given and access to the levee shall be coordinated with the private landowners. Contact information is provided in **Appendix H**.

Ordinary project maintenance shall follow an established annual recurrence and shall include maintenance work found necessary in annual inspections. In addition, on intervals not to exceed every 5 years, the condition of all culverts/discharge pipes and other drainage structures should be reviewed using television video camera or visual inspection. A top of levee survey should be completed on 5-year intervals. The specific sections referenced are as follows:

- Levee, Drainage Structures, and Erosion Protection

## 2.2 LEVEE

The Superintendent shall provide maintenance as needed to ensure serviceability of the structures during flood events. The top, side slopes, and all areas within 15 feet of levee toe shall be kept free of brush, trees, and other undesirable vegetation. Should excessive vegetation grow within these areas, it shall be removed even with the ground surface and have treatment applied to kill the root system. The levee system shall also be kept free of animal burrows, which can affect performance during a flood. Additional repair may be required if burrowing animals or decaying root systems have caused voids in the levee system.

The same area shall be kept free of encroachments, such as unauthorized structures, tillage, excavation, pathways, or any other unauthorized use that is detrimental to the performance of the levee system.

Grass-covered slopes shall be mowed on a regular basis. At a minimum, mowing must be completed annually to ensure the serviceability and inspection of the system. Mowing promotes deeper establishment of the root system, which provides increased resistance to erosion due to precipitation and floodwaters. Regular mowing also discourages establishment of trees and brush. Any areas of the levee that become eroded due to natural forces or cracked due to settlement shall be repaired and replanted with an appropriate grass seed mix.

Any disturbance to the levee structure, including the placement of signs, utilities, pathways, etc. shall be coordinated with the Superintendent to ensure compatibility with the flood control features.

The levee height shall be monitored annually to note any differential settlement of the top of levee. At intervals not to exceed 5 years, levee top elevations should be surveyed to ensure design height is being maintained.

## 2.3 DRAINAGE STRUCTURES

Maintenance and inspection should follow the manufacturer manuals supplied in **Appendix C**. Manually operated sluice gates shall be examined, oiled, and trial operated annually. Operating wrenches for the sluice gates have been provided and are being stored at the Burleigh County Highway Department maintenance shop. Gatewell Manhole #2 has a handwheel operated sluice gate.

Pertaining to the flood control gates and structures, annual inspections and exercising of all gated outlets should be coordinated and conducted jointly with the Burleigh County Highway Department (701-204-7748) to ensure that personnel are adequately informed of the location and trained in the operation of drainage structures. Inspections shall also ensure that:

- Encroachments are not within 15 feet of the drainage structures
- Pipes, gates, and operating mechanisms are in good condition and operate as designed
- Precast concrete, end sections, trash racks, and headwalls as applicable are in good condition
- Inlet and outlet channels and gate manholes are open and free from debris
- Erosion is not occurring adjacent to structures which might endanger water tightness or stability

The exact interval at which specific operations take place shall be subject to the discretion of the Superintendent depending on the circumstance. Due to the frequency of flooding (major flooding is typically caused by spring runoff, major summer Garrison releases, and/or ice jams), it is advised that these inspections be required on an annual basis. Immediate steps should be taken to repair damage, replace missing or broken parts, or remedy adverse conditions disclosed by such inspections. Periodic video or visual inspections per Section 2.1 will also be required.

Normal gate operation involves keeping gates fully open allowing for the free flow of water through the structure.

## **2.4 EROSION PROTECTION**

The levee embankment and foundation shall be protected by permanent grass cover. Areas where grass cover has been damaged or destroyed shall be restored or replaced so as not to compromise the integrity of the levee.

Areas with stone or precast concrete riprap shall be kept free of brush, trees, and undesirable vegetation that can hinder inspection. Any brush, trees, or undesirable vegetation within areas that have been protected with stone or precast concrete riprap shall be sprayed with an approved herbicide, and the large brush and trees cut off at grade. Stumps will be treated to kill the root system. Stone or precast concrete riprap displaced by natural events or human intervention will be replaced. Prompt replacement of stone or precast concrete riprap is necessary to prevent degradation of the underlying aggregate or geotextile filter and accelerated degradation of the erosion protection system.

Grass cover should be mowed prior to the fall inspection to provide a better opportunity to identify cracks, animal burrows and other issues with the embankment material.

# **3 IMPENDING FLOOD – INSPECTIONS, TESTS, AND OPERATIONS**

## **3.1 GENERAL PREPARATION FOR FLOOD EMERGENCIES**

The maintenance procedures in Section 2 allow the system to be ready for operation should it be needed. The procedures in this section will guide operations after a flood event has been forecasted. The procedures shall begin each spring before initial runoff and as necessary when the National Weather Service generates its flood forecasts.

When flood stages are imminent, the BCWRD shall arrange for mobilization of necessary personnel, equipment, and supplies depending on the forecasted crest. The mobilization shall ascertain that all personnel are familiar with the operating procedures, and that sufficient personnel are available to provide the required surveillance of all project components during the flood.

## **3.2 FLOOD WARNING AND PREDICTION**

The National Weather Service (NWS) – Advanced Hydrologic Prediction Service provides flood warning and prediction forecasts and outlooks for the Missouri River. Critical flood events on the Missouri River that would cause project operation will predominantly occur during large summer releases from Garrison Dam and/or winter/spring ice jam events. The NWS provides probabilistic outlooks leading up to a flood event. As the Missouri River begins to rise, a 7-day and three week deterministic forecast is then produced by the USACE with estimated river stages and crest dates. This information typically provides sufficient lead time to complete closure of the Gatewell structures before floodwaters reach critical stages. The NWS references the Bismarck Gage previously mentioned in Section 1.

Web-link: <http://www.weather.gov/mbrfc/>

### 3.3 SUPERINTENDENT RESPONSIBILITIES

Floodwaters reach critical project components at different river stages. If flood forecasts show the Missouri River will reach or exceed 12 feet, which results in a Missouri River elevation of approximately 1628.0± at the project site, the Superintendent shall begin taking the necessary actions to prepare for an impending flood. Throughout the preparation process, the Superintendent shall use discretion as to the extent of action necessary based on the forecasted flood levels and coordinate with other activities included in the Burleigh County Flood Annex.

Actions may include the following:

- Review this operations and maintenance manual.
- Assemble and maintain sufficient personnel to provide patrolling of project features while the river remains above the critical elevations of components described in **Table 3**. These elevations generally reflect the ground elevation on the dry side of the system. The frequency of the surface patrol shall be at the discretion of the Superintendent based on the current river stage, flood forecast, and associated risk in cooperation with Burleigh County Emergency Management and the Burleigh County Flood Annex.
- Ensure responsible personnel are familiar with and assigned to implement the operating procedures and flood fight activities as indicated for the Fox Island Action Plan sheet included in Appendix 4 of the Burleigh County Flood Annex.
- Arrange for mobilization of all necessary personnel, equipment, and supplies.
- Perform a pre-flood inspection to ensure drainage gates will close and are not frozen or bound with debris and seats are clear of sediment.
- Perform maintenance necessary to ensure sufficient operation
- Monitor rainfall and stream flow forecasts when gates become closed

**Table 3: Levee System Patrolling Stages**

Name	Project Stationing		Elevation	River Stage (ft)
	Upstream	Downstream		
Reach 1 – Earthen Levee	100+00	134+50	1632.0	16
Reach 2 – Roadway	0+00	56+56	1630.0	14

### 3.4 PREPARATION OF LEVEE

Once a deterministic flood prediction has been made that has forecasted the Missouri River to reach or exceed a stage of 11 feet, the Superintendent shall conduct a pre-flood inspection to ensure that the levees are sufficient to provide the designed level of flood protection. At this time, inspection and maintenance records from the previous fall inspection should be reviewed to verify that there are no outstanding issues. Any critical maintenance or repairs should be completed before the start of the flood. Actual patrolling of the levees shall start when the flood waters reach the river stages defined in **Table 3**. The levee should be patrolled, and all features monitored from this time until the floodwaters recede below the critical river stage. The inspection frequency shall be determined by event severity and forecasted water elevations to ensure adequate monitoring.

### 3.5 PREPARATION OF DRAINAGE STRUCTURES

If the Missouri River is forecasted to reach a river stage of 11 feet, the Superintendent shall conduct a pre-flood inspection to ensure that the drainage structures will operate and close properly once the floodwaters rise and gates need to be closed. Any trash, debris, ice, or other obstructions in drainage structures shall be removed. Inspection shall also involve checking, servicing, and trial closure. These procedures also apply to gates not ordinarily operated during floods to assure that they will operate in an emergency, if needed. The gate manuals in **Appendix C** should be consulted, as necessary. **Table 4** presents various gate information including the BFE at the gate location, the invert of the gate closure (and corresponding river stage), and the elevation and approximate river stage when the gate shall be closed (Gate Closure Trigger) in accordance with the critical drainage structure closure elevations listed in **Table 4**. At the option of the Superintendent, the gates may be closed when the river stage is at a lower elevation if the projected river stage is forecast to reach the Gate Closure Trigger elevation, or as a general precaution during periods of increased flood risk. Structure #3 at Whispering Bay is included for reference only due to proximity but is not part of the Fox Island Action Plan.

**Table 4: Critical Drainage Structure Closure Elevations**

Outfall Location	Gate Invert		Gate Closure Trigger	
	Elevation (ft)	River Stage (ft)	Closure Elevation (ft)	River Stage (ft)
West Gatewell (#1) <sup>1</sup>	1627.76	10.25	1628.51	11.00
East Gatewell (#2)	1631.77	14.26	1631.76	14.25
Whispering Bay (#3)	1628.34	10.83	1628.51	11.00
{1} See Appendix E – Landowner Agreement for Gatewell operation				

## 4 DURING FLOOD OPERATIONS

### 4.1 GENERAL

The following sections summarize operations and provide details for the operation of specific project features. These operations will be conducted according to the Burleigh County Emergency Management Burleigh County Flood Annex and associated Action Plan for Fox Island included in **Appendix 4** of the Flood Annex, and in coordination with Burleigh County Emergency Management.

### 4.2 LEVEE

Periodic patrolling of the levee system will begin when the river reaches a stage as defined in **Table 3**. At a minimum, patrolling operations should occur daily, but may be more or less frequent under the Superintendent's discretion while considering the flood magnitude. Patrolling operations should detect locations that require prompt action and correcting any conditions that might jeopardize the levee integrity and the stability of the outlet structures. Significant seepage or identified boils should be monitored closely and repaired promptly.



Patrolling may require removal of private fences and closures normally in place to prevent unauthorized access to the levee. A private fence near the west end of Larson Road and another near Langer Lane may need to be removed to allow access down the top of the levee for inspection, maintenance, or possibly to allow the placement of fill or sandbags on top of the levee. When these actions are initiated, additional traffic control and signage may be required to prevent the public from trespassing on the levee. When these actions are taken, notification will be given to the agencies listed in Section 1.3.1, as appropriate. An email list will be assembled for any residents that have provided an email address and request to be kept informed. They will be provided an email update regarding changes in flood status and other activities conducted in response to the highwaters. These activities should be coordinated with others described within the Burleigh County Flood Annex.

### 4.3 DRAINAGE STRUCTURES

The Superintendent will coordinate periodic inspections of the drainage structures, perform maintenance as necessary, and ensure that the gated outlets are operating properly. Procedures may include removing trash, debris, ice, or other obstructions. Exterior ditches should be observed during flooding to ensure that they have not become blocked with sediment, debris, ice jamming, or any other obstruction. River flood stages should be continuously monitored, and conditions reported to the protected residents.

### 4.4 FLOOD EMERGENCY CONDITIONS

A flood emergency is defined when the flood waters are projected to approach the base level capacity of the system to protect from a predicted flood event. Floodwaters may threaten to overtop the levee, seepage through or under the levee may become severe, or a large rainfall event may result in interior runoff that exceeds the capacity of the lakes from the inside via excess surface waters and creates adverse impacts to septic systems. All these will be cause for emergency action and standard operations. Emergency actions could include raising the top of the levee with fill or sandbags, performing emergency repairs to the levee, or bringing in portable pumps. Continuous monitoring of the levee should be performed during flood emergency conditions.

In the event that portable pumps are deemed necessary to remove water from behind the levee, two pumping locations have been designated to protect the properties within the special assessment district.

**West Gatewell (#1):** Gatewell #1 located at 3367 Gallatin Drive is identified as a pumping location and a pumping easement has been secured for the purpose of dewatering the adjacent property behind the levee and removal of water from the interior lake system. A pipe has been installed with a 6 inch camlock coupler next to the gatewell for connection to a portable pump to remove water. The operation of this discharge line versus open surface removal is governed under a *Pipeline Easement and Waiver* as described in **Appendix E.16**.

**Tavis Road Pumping Easement (#2):** A pumping easement exists between the properties at 3152 Tavis Road and 3202 Tavis Road for the purpose of setting up a temporary pump to remove water from the internal lakes and discharge downstream from the Tavis Road gate structure to the south. The pump is to be located at the west end of the pumping easement with the discharge pipe placed east down the pumping easement to Tavis Road, and then south along and within the west side of Tavis Road right-of-way to the Missouri River Oxbow at the Tavis Road gate structure, discharging on the west side.

Based on 2019 high groundwater and surface water conditions, it was generally determined that when water levels exceed elevation 1629.0 (NAVD '88) within the lake system, pumping is recommended. Then pumping to maintain a water level of 1627.0 or lower internal lake elevations should be the goal during the flood emergency.

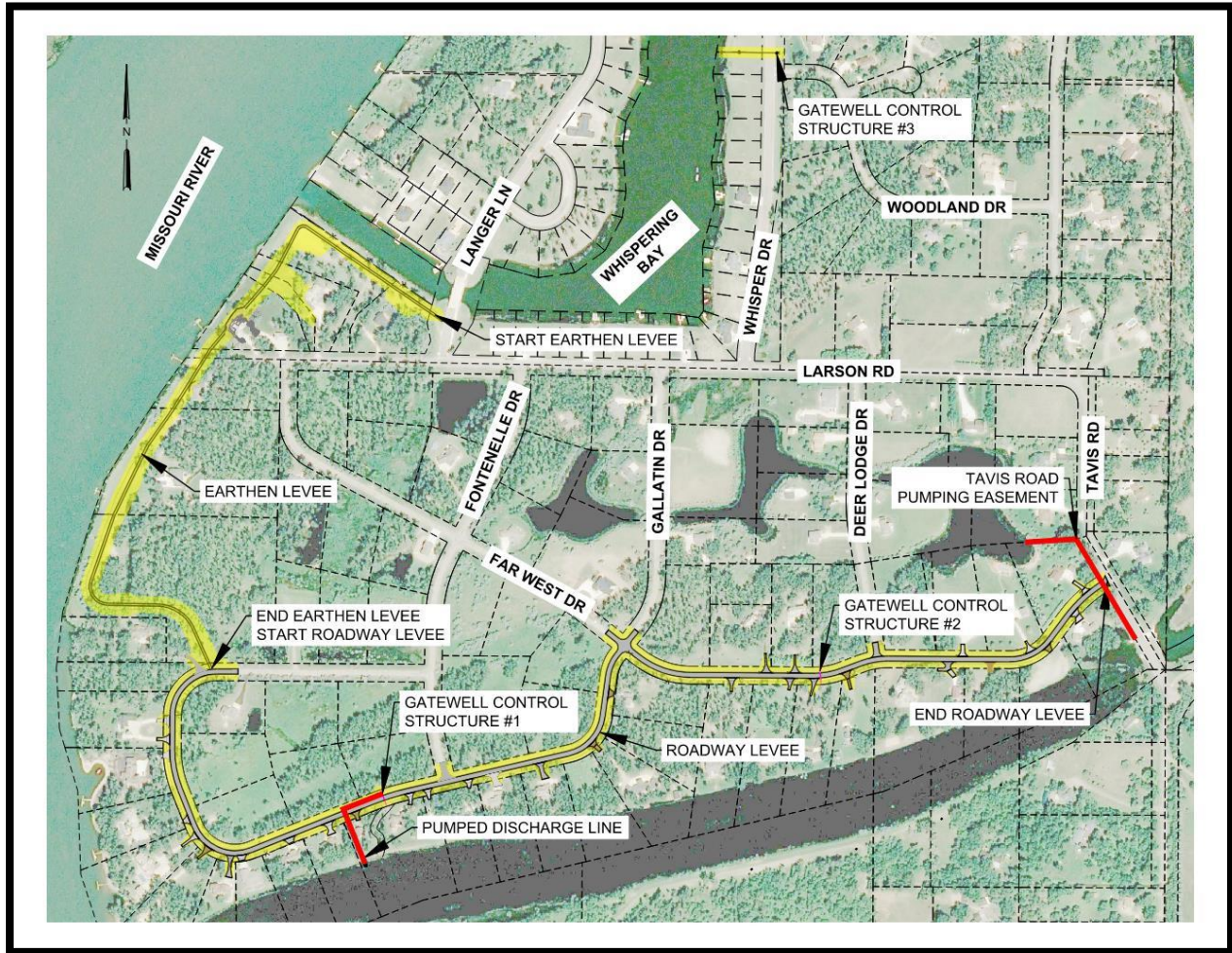


Figure 4: Fox Island Flood Pumping Locations

## 5 POST-FLOOD INSPECTIONS, TESTS, AND OPERATIONS

### 5.1 GENERAL

When a flood event is determined to have ended, or as soon as conditions permit, and in conjunction with other emergency agencies, the Superintendent shall coordinate cleanup of all flood control facilities, conduct an inspection and repair all damage to the levee system.

Demobilization of flood control activities should include the following:

- Release of emergency personnel
- Making an inventory of supplies and replenishing stockpiles as required
- Cleaning, storing, and replenishing equipment and parts
- Preparing a Post-Flood Report that includes flood activities, damages, and repairs (See Section 6)

When demobilization is complete, procedures should revert to normal operation and maintenance as described in *Section 2 – Ordinary Inspections, Maintenance, and Operations*.

## 5.2 LEVEE

All areas of levee damaged by high water should be repaired as soon as practicable following high-water events. Eroded areas should be brought up to the original levee cross section. Stone or precast concrete riprap that has been displaced, washed out, or removed will be replaced. Any areas in which the vegetative slope protection has been damaged should be repaired and seeded or sodded. Normal maintenance will then resume.

## 5.3 DRAINAGE STRUCTURES

Immediately following a flood, all drainage structures, including manholes, pipes, gates, drainage ditches, and headwalls should be examined for structural damage. Any defects should be corrected to ensure that the structures will function properly in the future. Necessary repairs should be completed as soon as possible.

Outlet channels and drainage ditches should be cleared of sediment and debris. Reshaping of the ditch and reestablishment of vegetative cover will be done, as necessary.

All missing or damaged rip-rap should be replaced along the flood protection embankments. Grass lining should also be restored where damaged in order to protect against future erosion.

## 6 POST-FLOOD AFTER ACTION REPORT

After each flood where operation of any component occurs, the Superintendent is encouraged to compile a post-flood after action report that covers all aspects of project activities. The report should document the complete flood history, including a log of operations and decisions based on the daily river stages, a discussion of pertinent factors in maintaining the project, and any other relevant information such as what worked and what should be changed prior to the next flood.

Operation and maintenance factors should include problems encountered (including the effects of ice on operation), damages incurred, repairs required, and any other significant occurrences during the flood. The record drawings within **Appendix D** can be used to reference locations for documented issues.

If possible, the report should include any other information about operation that may help make operations better during the next flood. Post-flood after action reports that are properly recorded, well documented, and readily available are valuable in planning to better respond to future flood events. A copy of the Post Flood After Action Report should be placed in this O&M manual for documentation and future reference. A sample Post-Flood After Action Report is provided in **Appendix B**.

## 7 REFERENCES

- 1 Federal Emergency Management Agency (FEMA), Flood Insurance Study Number 38015CV000B, Burleigh County, North Dakota.
- 2 Department of the Army, Corps of Engineers, Engineering Technical Letter 583, "Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures", 30 April 2014.
- 3 Houston Engineering, Inc., "Development Summary Report", 2016.

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# APPENDIX A

## USACE FLOOD-FIGHT HANDBOOK – 2016 ADDITION

# Flood Flight Handbook



**US Army Corps  
of Engineers®**  
St. Paul District



**2016 Edition**

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# Flood Fight Handbook

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## **Section 1: Flood Preparedness Overview**

Floods can happen at any time. Common causes include high river levels due to spring snow melt and heavy rain storms. There are many flood preparedness steps that can be taken to increase protection and reduce severity of impact on your home, business, and family.

This handbook describes engineering-related solutions to protect structures from flooding. It will help you determine what supplies and materiel to have on hand, as well as provide detailed guidance on implementing the different solutions.

The three main areas covered in the handbook are sandbag levees (Section 2), earth fill levees (Section 3), and interior drainage (Section 4). Section 5 identifies issues that may be encountered as well as guidance on how to deal with each issue.

There are many excellent sources of information for other areas of preparedness (e.g. family emergency plans, protection of the interior/contents of a structure, and business continuity planning). A list of links to some of these sources can be found in Section 6. The links are only provided as suggested resources and do not constitute endorsement by the U.S. Army Corps of Engineers of the linked websites, or the information, products or services contained therein.

Section 7 includes ten plates with visual diagrams and specifications. These can be used as quick references for personnel involved with implementing different solutions.

## **Section 2: Sandbagging for Flood Protection**

*Information in the following section was adapted from the North Dakota State University, Extension Service. A link to their web page is included in Section 6.*

A levee is an embankment, floodwall, or structure along a water course whose purpose is flood damage reduction or water conveyance. A properly built sandbag levee can prevent or reduce flood damage. Sandbag levees are labor-intensive, have more opportunities for error during construction, and require disposal procedures after the event. However, sandbag levees do not require heavy equipment and can be constructed by small groups of individuals. Sandbag levees should be used where a very low and relatively short barrier is required or where earth fill would not be practical, such as in the freeboard range along an arterial street. They are very useful where temporary closures are required, such as roads and railroad tracks. The sandbag size, fill material used, and method of placement all influence the effectiveness of the sandbag levee.

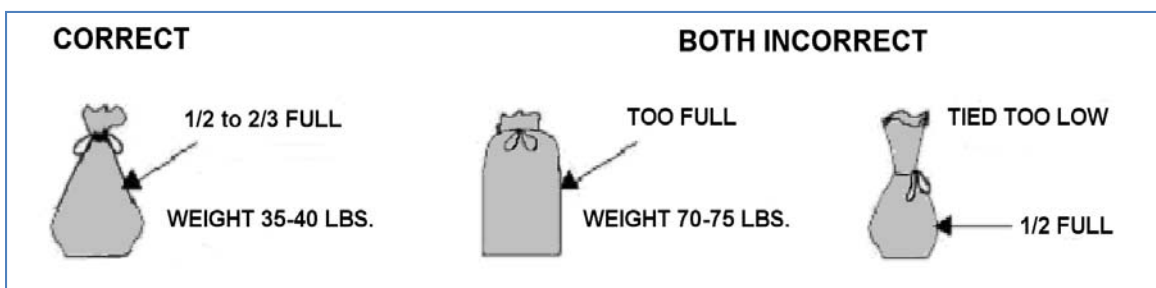
This section describes and illustrates a number of suggested techniques for using sandbags and other materials to build temporary flood protection levees. Additional details are shown on *Plates 1- 3* in Section 7 of this handbook.

Information about using sandbags for erosion protection on earth fill levees can be found in Section 3.4.1.

### **2.1 Sandbag Size and Fill Materials**

Bags must be filled and placed properly to give the best protection. Any available material can be used to fill sandbags, but sand is easiest to handle. Silt and clay will form a good levee but are more difficult to work with. Different size bags are available, but bags are easier to handle if weight is limited to between 35 and 40 pounds. This weight limit is particularly important when teenagers or older persons will be handling the bags and assisting with emergency operations and levee construction.

**Typically, sandbags are filled approximately half full and do not need to be tied, although they may be tied loosely near the top.** It is desired that the sandbags lay flat when placed. Overfilled bags reduce the levee's effectiveness by leaving gaps between the bags, allowing water to seep through. *Figure 1* illustrates the correct and incorrect ways to prepare sandbags. Tying is not required for a correctly filled sandbag.



**Figure 1: Correct and incorrect sandbag preparation.**

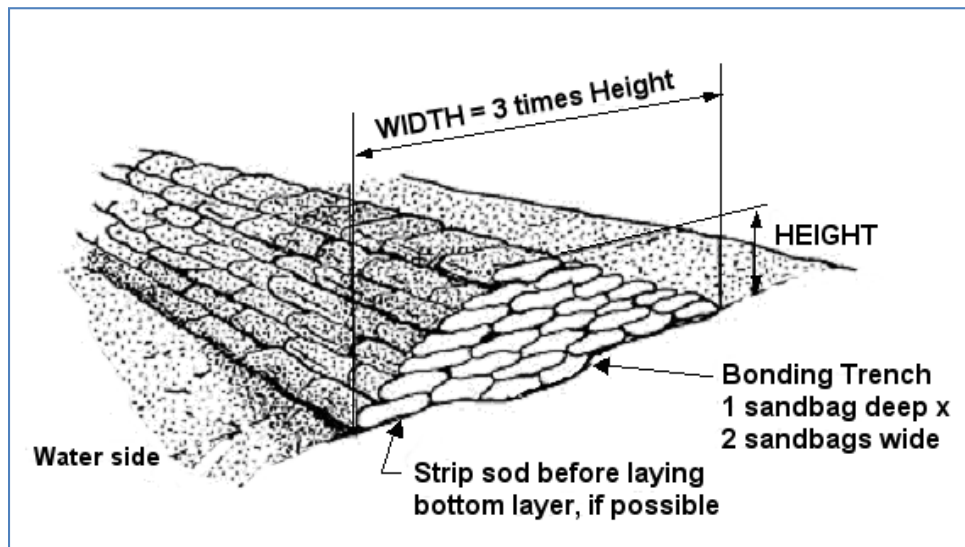
Ordinarily, filling sandbags is a two- or three-person operation. One member of the team should place the bottom of the empty bag on the ground slightly in front of wide-spread feet with arms extended. This person may also want to kneel or sit to avoid back strain from bending. The throat of the bag is folded outward about one and one-half inches to form a collar and held in that position to allow a second team member to empty a shovelful of material into the open end, until the bag is one-half to two-thirds full. The third team member stacks and stockpiles the filled sandbags. Gloves should be used to avoid injury, and safety goggles are desirable during dry and windy days. For larger operations, bag-holding racks and funnels on the back of dump trucks, and other power loading equipment can be used to expedite the filling operation.

Contact your county emergency office for information on where to obtain sandbags.

**2.2 Site Selection and Preparation**

When selecting the location for a levee, consider the ground elevation, ground condition, obstructions, and alignment. For stability, the levee should be kept as short and low as possible. Avoid any obstructions that would weaken the levee, and do not build the levee against a building wall unless the wall has been designed to retain floodwaters. If possible, plan to leave at least 8 feet between the landward toe / base of the levee and any building or obstructions to allow for future levee raises, levee monitoring, construction equipment and vehicles, and to prevent damage to building walls and foundations.

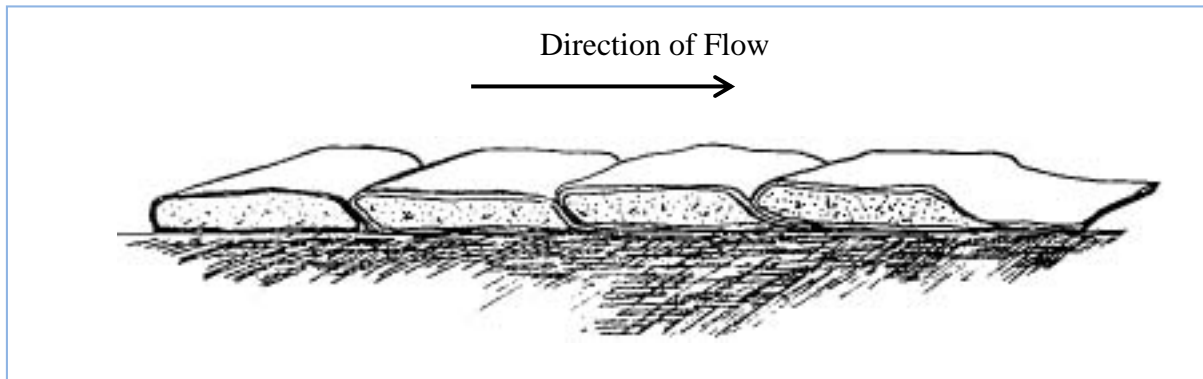
Remove all ice and snow from a strip of land at least as wide as the base of the levee. If the levee will be more than 2-3 feet high, remove a strip of sod to create a bonding trench along the center line of the alignment to better anchor the levee in place, as shown in *Figure 2*.



**Figure 2 – Proportions of sandbag levee showing bonding trench at base.**

**2.3 Stacking Sandbags to Form a Levee**

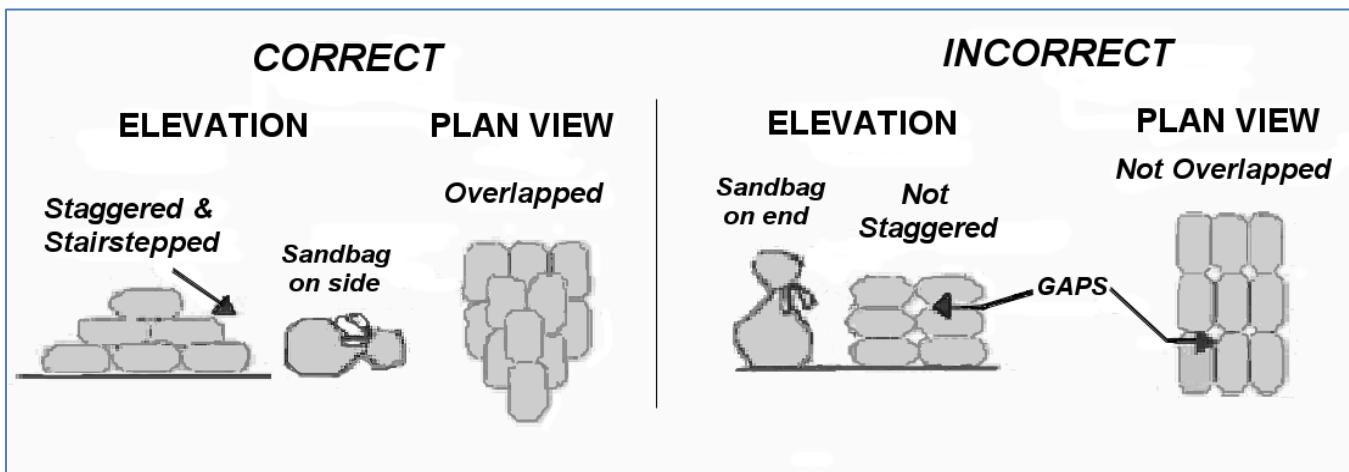
Overlap the sandbags as shown in *Figure 3*, placing the first layer of bags lengthwise along the levee and lapping the bags so the filled portion of one bag lies on the unfilled portion of the previous bag.



**Figure 3 – Sandbag placement**

The bags should be placed lengthwise and overlapped parallel to the direction of the river flow. The bonding trench shown in *Figure 2* should be filled with a layer that is two sandbags wide by one sandbag high; the first full layer is then placed over this bonding trench. The base of the levee should be three times as wide as the levee is high.

The second layer of bags should be staggered perpendicular to the first layer and placed over the seams of the previous layer, with additional layers laid in alternating directions to the top of the levee, as shown in the “Correct” example in *Figure 4*. By alternating placement directions, the gaps and seams along the edges and corners in each layer below will be covered and filled in by a sandbag in the next overlying layer. *Plate 1* in Section 7 of this handbook illustrates additional details of sandbag placement.



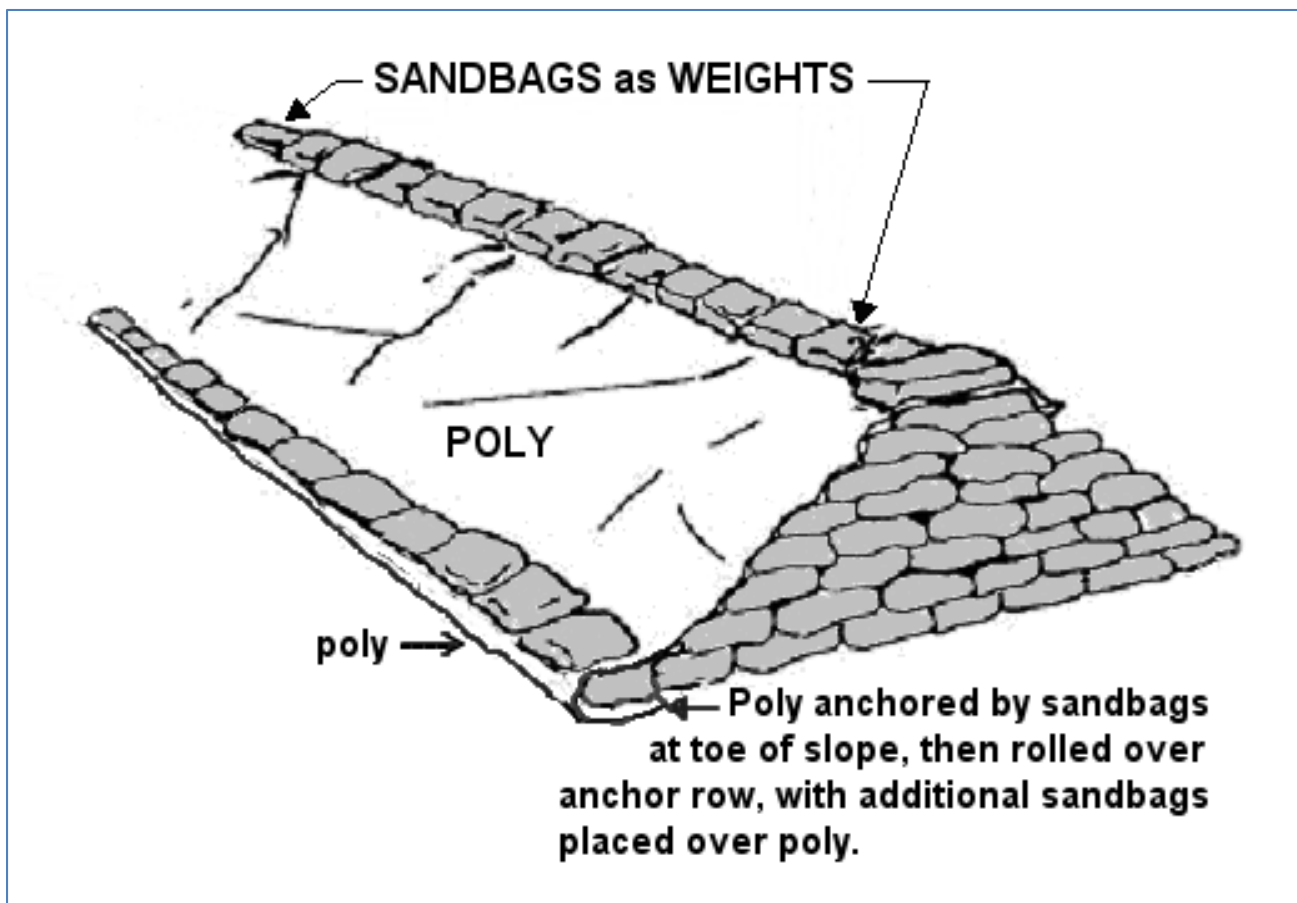
**Figure 4 – Correct and incorrect placement of staggered sandbag layers.**

## 2.4 Sealing the Levee

The finished levee can be sealed with a sheet of polyethylene plastic (poly) to improve water tightness. The poly sheeting should be about 6 mils thick, and is generally available in 20-foot-wide by 100-foot-long rolls from construction supply firms, lumberyards, and farm stores.

**2.4.1 Anchoring.** The poly must always be anchored at the bottom edge and weighted along the top and slope to be effective. Three methods are recommended to anchor the poly on the riverward face of a sandbag levee.

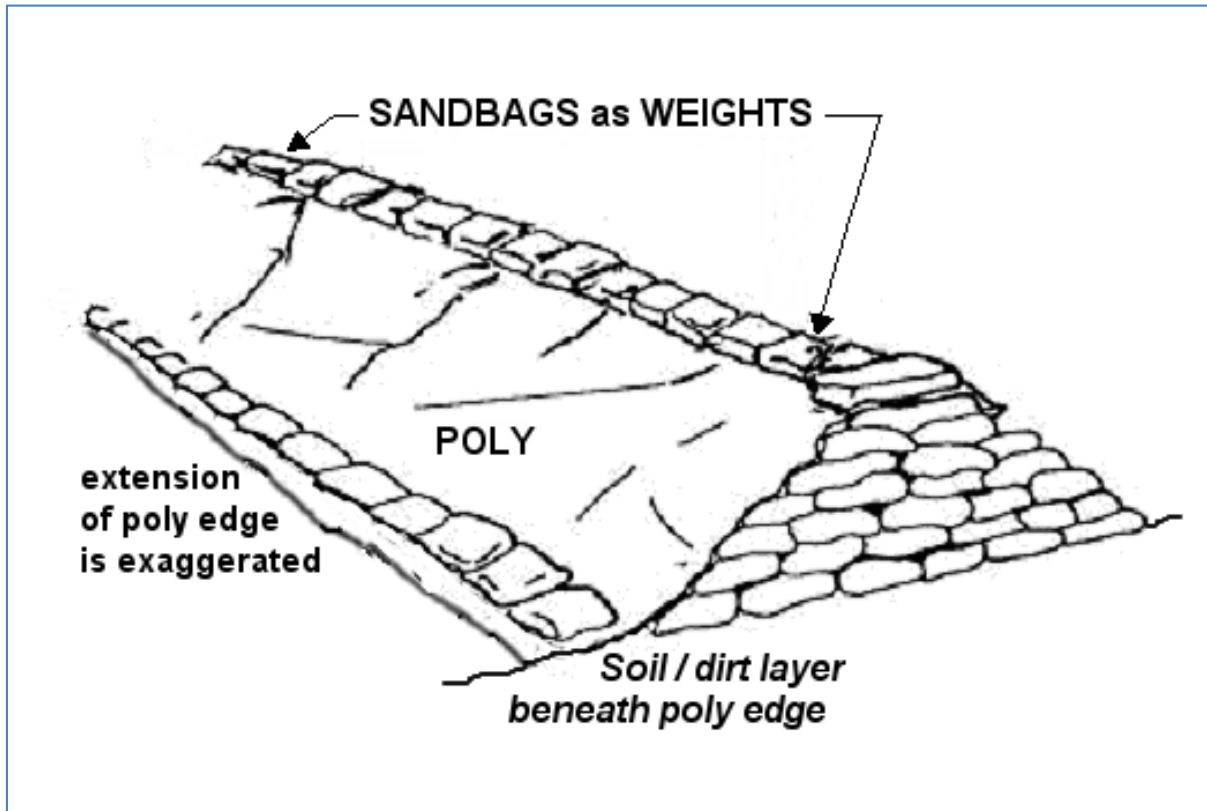
The most successful anchoring method is to place the poly flat on the ground surface extending away from the bottom row of sandbags, and then place one or more rows of sandbags over the flap. The poly should then be unrolled over the anchoring row of sandbags, anchored again, and then up the slope and over the top of the sandbag levee, far enough to allow for anchoring with additional sandbags. This method is illustrated in *Figure 5* and shown on *Plate 2* in Section 7 of this handbook.



**Figure 5 – Preferred method of tucking and anchoring poly with two rows of sandbags**

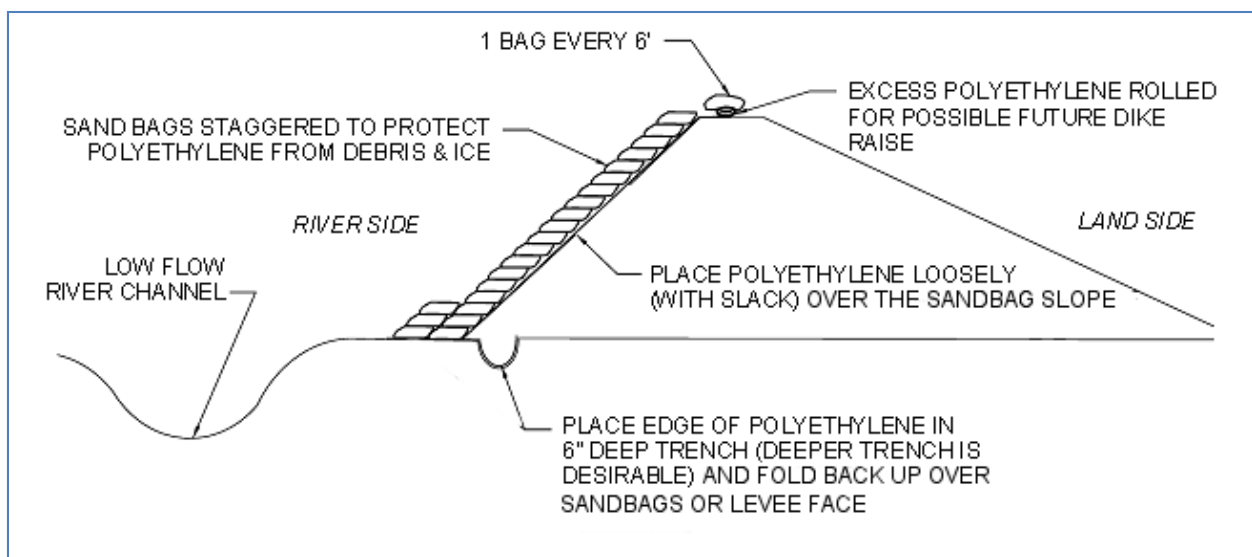
An alternate method to anchor poly is to spread a layer of dirt or sand one inch deep and about one foot wide along the base of the levee on the water side, to create a uniform surface to anchor the poly. Lay the poly sheeting so the bottom edge extends one to two feet beyond the bottom edge of the sandbags over the loose dirt, and then place sandbags over the edge of the poly to anchor. This method is illustrated in *Figure 6* and included on *Plate 2* in Section 7 of this handbook.





**Figure 6 – Poly edge placed over dirt and anchored with a row of sandbags.**

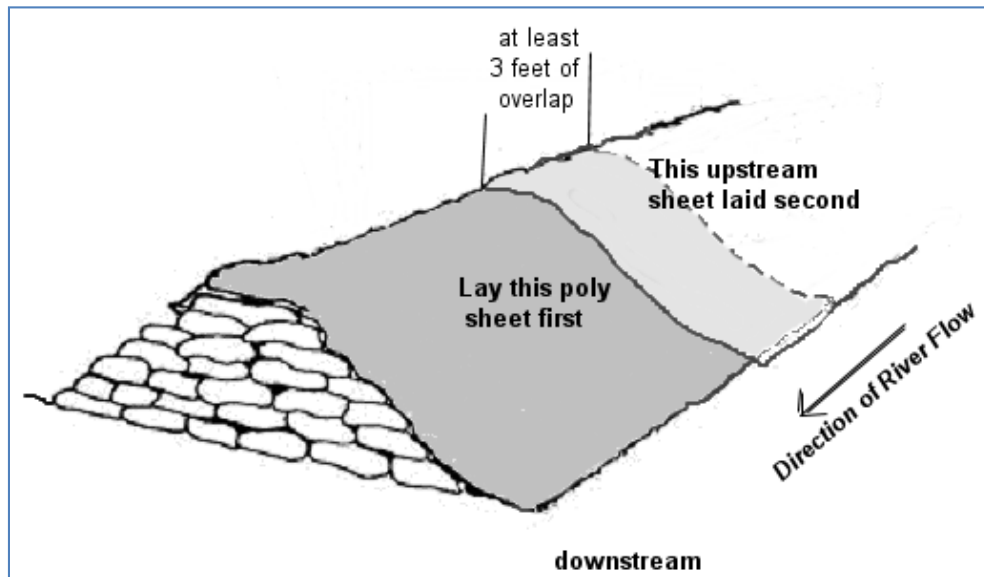
A third method to anchor the poly is to excavate a 6-inch or deeper trench along the toe of the levee, place poly in the trench, and backfill the trench, compacting the backfill material or placing a row of sandbags over the trench to prevent loss of the backfill material. This method, illustrated in *Figure 7*, will be unsuitable if water levels have reached the sandbags at the toe of the levee.



**Figure 7 – Poly anchored within a trench (placed under dry conditions).**

**2.4.2 Placement.** Poly should be placed from downstream to upstream along the slopes and the next sheet upstream overlapped by at least 3 feet, as shown on *Figure 8*. Overlapping in this direction prevents the current from flowing under the overlap and tearing the poly loose. After the poly is anchored in place, it should be unrolled up the slope and over the top. Lay the poly sheeting down very loosely, as the pressure of the water will make the poly conform easily to the sandbag surface if the poly is loose. If the poly is stretched too tightly the force of the water could puncture the poly.

**2.4.3 Weighting.** Once the poly is anchored and unrolled, additional sandbags, boards, and/or loose dirt should be used as weights along the top of the levee to keep the poly in place and prevent the wind or river current from disturbing it. These weights are not shown on the illustration. Avoid puncturing the poly with sharp objects or by walking on it.



**Figure 8 – Poly placement from downstream to upstream with overlap shown.**

**2.5 Number of Sandbags Needed**

The information in *Table 2.1* indicates the approximate number of sandbags that are needed for levees of various heights and lengths. Note that 5 feet high is the practical limit of a sandbag levee. If a higher sandbag levee is needed, alternative means of construction should be considered. The preferred height limit is 3 feet.

Estimated Number of Sandbags Per Linear Foot of Levee	
Height in Feet	Bags Required
1	6
2	21
3	45
4	78
5	120

LEVEE HEIGHT	Number of Sandbags Required For Length of Levee									
	50 FT	100 FT	175 FT	200 FT	250 FT	300 FT	350 FT	400 FT	450 FT	500 FT
<b>1 Foot</b>	300	600	1,050	1,200	1,500	1,800	2,100	2,400	2,700	3,000
<b>2 Feet</b>	1,050	2,100	3,675	4,200	5,250	6,300	7,350	8,400	9,450	10,500
<b>3 Feet</b>	2,250	4,500	7,875	9,000	11,250	13,500	15,750	18,000	20,250	22,500
<b>4 Feet</b>	3,900	7,800	13,650	15,600	19,500	23,400	27,300	31,200	35,100	39,000
<b>5 Feet</b>	6,000	12,000	21,000	24,000	30,000	36,000	42,000	48,000	54,000	60,000

**Table 2.1 - Estimated number of sandbags needed per foot of length and height of levee**

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## **Section 3: Earth Fill Levees**

Earth fill levees rather than sandbag levees are the preferred type of emergency flood barrier for large scale flood fights, and their construction should be directed by experienced flood fight workers.

### **3.1 Foundation Preparation**

Prepare the levee footprint as follows prior to placing fill:

- Remove snow from the ground surface and place snow on riverside of levee to eliminate ponding of water behind levee when snow melts.
- Trees should be cut and the stumps removed
- All obstructions above the ground surface should be removed, if possible. This will include brush, structures, snags, and similar debris.
- The foundation should then be stripped of topsoil and surface humus, if possible. Any material removed should be pushed landward of the toe of levee and windrowed.
- Stripping may be impossible if the ground is frozen; in this case, the foundation should be ripped or scarified, if possible, to provide a tough surface for bond with the embankment.

*NOTE: Clearing and grubbing, structure removal and stripping should be performed only if time permits.*

Every effort should be made to remove all ice or frozen ground. Frost or frozen ground can give a false sense of security in the early stages of a flood fight. It can act as a rigid boundary and support the levee; however, on thawing, soil strength may be reduced sufficiently for cracking or development of slides. It also forms an impervious barrier to prevent seepage. This may result in a considerable build up in pressure under the soils landward of the levee, and, upon thawing, pressure may be sufficient to cause sudden failure of the foundation material resulting in piping, slides, and boils. If the ground is frozen, it must be monitored, and one must be prepared to act quickly if sliding or boiling starts.

### **3.2 Levee Fill**

Earth fill materials for emergency levees will come from local borrow areas. An attempt should be made to use materials that are compatible with the foundation materials as explained below. However, due to time limitations, any local materials may be used if reasonable construction procedures are followed. The materials should not contain large frozen pieces of earth.

**Clay Fill:** The majority of earth fill levees erected in recent floods consisted of clay or predominantly clay materials. Clay is preferred because the cross-section width can be made smaller with steeper side slopes. Clay is also relatively impervious and has a relatively high resistance to erosion in a compacted state. A disadvantage in using clay is that adequate compaction is difficult to obtain without proper equipment. Another disadvantage is that if the clay is wet, subfreezing temperatures may cause the material to freeze in the borrow pit and in the hauling equipment. Cold and wet weather could cause delays and should definitely be considered in the overall construction effort.

**Sand Fill:** If sand is used, the cross-section of the levee should comply as closely as possible with recommendations described in the following design section. Flat slopes are important. Steep slopes, without poly coverage, will allow seepage through the levee, creating high outflow on the landward slope and may cause slumping of the slope and eventual failure.

**Silt:** Material that is primarily silt should be avoided. If it must be used, poly sheeting must always be applied to the river slope. When silt gets wet, it tends to collapse under its own weight and is very susceptible to erosion.

### **3.3 Levee Design Section**

The dimensions of the levee design section are generally dictated by the foundation soils and the materials available for construction. Therefore, even under emergency conditions, an attempt should be made to make the embankment compatible with the foundation. Information on foundation soils should be requested and considered, if available from local officials or engineers. The three foundation conditions and the levee design sections described below are classical and idealized, and assume a sand foundation, a clay foundation, or a thin clay layer over sand foundation. Actual field conditions generally depart from the ideals to various degrees. However, the described levee design sections for each foundation should be used as a guide to reduce the likelihood of serious flood fight problems during high water.

In determining the top width of any type of section, consideration should be given to whether a revised flood level forecast will require additional fill to be placed. A top width adequate for construction equipment will facilitate raising the levee. Finally, actual levee construction will, in many cases, depend on available time, materials, and right-of-way access.

#### **1. Sand Foundation** – Pervious and permeable (readily allowing water to pass through).

- a. Sand Section:* Use a ratio of 1V (V=Vertical) to 3H (H=Horizontal) on the riverside slopes, and a ratio of 1V to 5H on the landward slope, with a 10-foot top width.
- b. Clay Section:* Use a ratio of 1V to  $2\frac{1}{2}H$  for both the riverside and landside slopes. The bottom width of the levee section should comply with creep ratio criterion; i.e., L (across bottom) should be equal to  $C \times H$ ; where  $C=9$  for fine gravel and 15 for fine sand in the foundation, and H is levee height. This criterion can be met by using berms consisting of material placed on either the landward or riverward side of a levee that extends beyond the normal levee foot print. These berms are placed to control or relieve uplift pressures and lengthen the seepage path, although they will not significantly reduce the volume of seepage. Berms are not as high as the levee itself and thickness should be 3 feet or greater.

#### **2. Clay Foundations** – Impervious (does not allow water to pass through)

- a. Sand Section:* Same as paragraph 1.a. above.
- b. Clay Section:* Use a ratio of 1V to  $2\frac{1}{2}H$  for both the riverside and landside slopes.

#### **3. Clay Layer over Sand Foundation**

- a. Sand Section.* Use the same design as paragraph 1.a. above. Additionally, a landside berm of sufficient thickness may be necessary to prevent rupture of the clay layer. The berm may be composed of sand, gravel, or clay material. Standard design of berms requires considerable information and detailed analysis of soil conditions. However, prior technical assistance may reduce berm construction requirements in any emergency situation.
- b. Clay Section.* Use the same design as paragraph 1.b. above. A berm to prevent rupture may also be necessary as described in paragraph 3.a.

Proper compaction of the emergency levee is critical to stability. Use of standard compaction equipment such as a sheepsfoot roller, may not be feasible during emergency operations because of time constraints

or limited equipment availability. It is expected that in most cases the only compaction available will be from hauling and spreading equipment, such as dump trucks and dozers.

### **3.4 Erosion Protection for Emergency Levees**

Erosion (sometimes referred to as scour) protection may be required for earth fill levees. Factors that influence whether or not additional erosion protection is required include levee material (clay levees tend to be much more resistant to erosion than sand levees), channel velocities, presence of ice and/or debris in channel, wave action, and seepage. Methods of protecting levee slopes are numerous and varied. However, during a flood emergency, time, availability of materials, cost, and construction capability may limit the use of certain accepted methods of permanent slope protection.

Field personnel must decide the type and extent of slope protection the emergency levee will need. Several methods of protection have been established that prove highly effective in an emergency. Resourcefulness on the part of the field personnel may be necessary for success. The following is a brief summary of some of the options for providing emergency erosion protection for levees.

**3.4.1 Polyethylene and Sandbags.** A combination of polyethylene (poly) and sandbags has proven to be one of the most expedient, effective and economical methods of combating slope erosion on earth fill levees.

Anchoring the poly along the riverward toe is important for a successful job. Anchoring methods for poly on sandbag levees, described in Section 2.4.1, should be used for earth fill levees as well.

Ideally, poly and sandbag protection should be placed before water has reached the toe of the levee. However, wet placement may be required due to rising river levels or to replace or maintain damaged poly or poly displaced by the action of the current. Placement of poly on earth fill levees is the same as placement on sandbag levees, as described in Section 2.4.2.

It is mandatory that poly placed on levee slopes be held down by weights. Unless extremely high velocities, heavy debris, or a large amount of ice is anticipated, an effective method of weighting poly is a grid system of sandbags, as shown on *Plate 4*. A grid system can be constructed faster and requires fewer bags and much less labor than a total covering. Grid systems may include vertical rows of lapped bags or 2x4 boards held down by attached bags.

A grid system of counterweights is more suitable for placement under wet conditions. Counterweights consisting of two or more sandbags connected by a length of quarter-inch rope are saddled over the levee crown with a bag on each slope. The number and spacing of counterweights will depend on the uniformity of the levee slope and current velocity. For the more extreme conditions mentioned previously, a solid blanket of bags over the poly should be used. Sandbag anchors can also be formed at the bottom edge of the poly by bunching the poly around a fistful of sand or rock and tying a sandbag to each fist-sized ball. This counterweight method is shown on *Plate 5*.

If the counterweight method is used, efficient placement of the poly requires that a sufficient number of the rope and sandbag counterweights be prepared prior to the placement of each poly sheet. Placement consists of first casting out the poly sheet from the top of the levee with the bottom weights in place, and then adding counterweights to slowly sink the poly sheet into place. In most cases the poly will continue to move down slope until the bottom edge reaches the toe of the slope. Sufficient counterweights should be added quickly to ensure that no air voids exist between the poly and the levee face and to keep the poly from flapping or being carried away in the current.

For extreme conditions such as high velocity, excess seepage, ice or debris in the water or wave action, a solid blanket of bags over the poly should be used.

Poly and sandbags can be used in a variety of combinations, and time becomes the factor that may determine which combination to use. While the implementation of poly with sandbags is an effective remedy, it can be overused or misused. For example:

- On well-compacted clay embankments in areas of relatively low velocities, use of poly would be excessive, as compacted clay is unlikely to be scoured out.
- Placement of poly on landward slopes to prevent seepage must **never** be done. This will only force seepage to another exit that may prove more detrimental.
- A critical analysis of each situation should be made before poly and sandbags are used, with a view toward less waste and more efficient use of these materials and available manpower. However, if a situation is doubtful, poly should be used rather than risk a failure.

**3.4.2 Riprap.** The use of riprap is a positive means of providing slope protection and has been used in a few cases where erosive forces (caused by current, waves, or debris) were too large to effectively control by other means. Objections to using riprap when flood fighting are: (1) the relatively high cost, (2) a large amount may be necessary to protect a given area, (3) limited availability, and (4) little control over placement, particularly in the wet.

**3.4.3 Small Groins.** Groins extending 10 feet or more into the channel can be effective in deflecting current away from the levees. Groins can be constructed using sandbags, snow fence, rock, compacted earth or any other substantial materials available. Preferably, groins should be placed in the dry and at locations where severe scour may be anticipated. Consideration of the hydraulic aspects of placing groins should be given because haphazard placement may be detrimental. Hydraulic technical assistance should be sought if doubts arise in the use of groins. Construction of groins during high water will be very difficult and results will generally be minimal. If something other than compacted fill is used, some form of anchorage or bonding should be provided; generally snow fence anchored to a tree beyond the toe of levee is used, but junk car bodies can be tied together to act as anchors.

**3.4.4 Log Booms.** Log booms have been used to protect levee slopes from debris or ice attack. Logs are cabled together and anchored in the levee with a device referred to as a “dead man,” often consisting of a concrete block with reinforcing bar, or another heavy anchor. The anchor should be of sufficient size and weight to hold the log boom in place. The log boom is floated out into the current and, depending on the log size, will deflect floating objects and protect the levee.

**3.4.5 Miscellaneous Measures.** Other available methods of slope protection include placement of straw bales pegged into the slope and spreading straw on the slope and overlaying with snow fencing. Both have been successful against wave action.

### **3.5 Flashboard and Box Levee Barriers**

In addition to earth fill and sandbag levees, two additional types of flood barriers are flashboard and box levees. The construction of flashboard and box levees requires significant time and expense to complete, so they are not very practical for emergency situations unless constructed well in advance of a flood event. However, they may be suitable under certain circumstances. Both are constructed using lumber and earth fill, and they may be used for capping a levee or as a barrier in highly constricted areas. Construction details for these barriers are shown on *Plate 6*.

### **3.6    Closures**

Closures consist of gaps in the flood barrier system that are to be left open until flood stage reaches a critical elevation, at which point they are blocked and become part of the flood barrier. The critical elevation must be based on the time required to activate the work crew and reach the site, get materials to the site, and complete the construction, along with how fast the river is expected to rise.

Typical examples of closures include roadways and railroad tracks where traffic is allowed to continue to cross the flood barrier until the water level reaches an elevation where the risk of flooding becomes unacceptable. The size and number of closures should be kept to an absolute minimum. Although the means of blocking closures can typically be implemented fairly quickly, unanticipated problems occurring at a critical time when closure activities are underway could result in resources being reallocated elsewhere. This could result in a hole in the line of protection. If water rises faster than expected, sealing the closure can become difficult.



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## **Section 4: Interior Drainage Treatment**

High river stages often disrupt the normal drainage of sanitary and storm sewer systems, render sewage treatment plants inoperative, and cause untreated sewage to back up within the system into homes and businesses, and eventually directly into waterways. When the river recedes, some of the sewage and natural storm water runoff may be trapped in low-lying pockets behind the constructed levees, causing the ponded area and soils to become contaminated.

Hastily-constructed levees intended to keep out river water may also seal off normal outlet channels for local runoff, creating large ponds on the landward side of the levees. As the ponded runoff level increases, the levee now becomes vulnerable from both sides, nullifying the protection provided even if the levee is not overtopped. In these cases the ponded runoff will need to be pumped over the levee to the river side. Storm water sewers may also back up because of this ponding.

### **4.1 Preliminary Work**

To arrive at a reasonable plan for interior drainage, field personnel must obtain several items of information:

- Size of drainage area.
- Pumping capacity and/or ponding required. This can be estimated by hydraulic engineering personnel if data are not available.
- Basic plan for treatment.
- Storm and sanitary sewer and water line maps, if available.
- Location of sewer outfalls (both abandoned and in use).
- Inventory of available local pumping facilities.
- Probable location of pumping equipment.
- Whether additional ditching is necessary to drain surface runoff to ponding and/or pump locations.
- Location of septic tanks and drain fields abandoned and in use.

### **4.2 Pumps: Types, Sizes and Capacities**

Pumps vary in type, size, and capacity. Three common pump types are described below.

**4.2.1 Crisafulli Pumps.** Crisafulli pumps are normally used for pumping storm water from the dry side to the wet side of levees. Crisafulli pumps vary in size from 2-inch to 24-inches and are generally supplied with 50-foot lengths of butyl rubber hose. Care should be taken to prevent damage to the hose. Irrigation pipe or small diameter culverts can also serve as discharge piping. The outlet of a pump discharge line should extend riverward far enough off the toe of the levee so that discharges do not erode the levee slope. The discharge line will most likely need to be staked to a sheet of plywood or a tarp to prevent erosion. The discharge end should be tied down or otherwise fixed to prevent its movement. These pumps must not be operated on slopes greater than 20 degrees from horizontal. **Table 4.1** shows sizes and capacities (in gallons per minute, or gpm) of Crisafulli pumps.

<b>10-foot Head</b>			
<u>Pump Size</u>	<u>gpm</u>	<u>Elec. HP</u>	<u>Gas or Diesel HP</u>
2-inch	150	1	-
4-inch	500	7.5	15
6-inch	1,000	10	20
8-inch	3,000	15	25
12-inch	5,000	25	40
16-inch	9,500	40	65
24-inch	25,000	75	140
<b>20-foot Head</b>			
<u>Pump Size</u>	<u>gpm</u>	<u>Elec. HP</u>	<u>Gas or Diesel HP</u>
2-inch	130	1	-
4-inch	490	10	20
6-inch	850	15	25
8-inch	2,450	20	35
12-inch	3,750	30	50
16-inch	8,000	45	85
24-inch	19,000	100	190
<b>30-foot Head</b>			
<u>Pump Size</u>	<u>gpm</u>	<u>Elec. HP</u>	<u>Gas or Diesel HP</u>
2-inch	120	1	-
4-inch	475	12	25
6-inch	795	20	35
8-inch	2,150	25	45
12-inch	3,450	35	70
16-inch	7,100	60	125
24-inch	16,600	125	250
NOTE: Use high head pumps for heads over 20 feet.			

**Table 4.1 – Crisafulli Pumps**

**4.2.2 Flygt Pumps.** Flygt pumps are centrifugal pumps that are normally used for pumping from manholes or storm sewers where smaller capacities are required, and are submersible. *Table 4.2* shows sizes and capacities of Flygt pumps.

<u>Pump Size</u>	<u>Capacity*</u>	<u>Horsepower</u>
3-inch	90 - 150 gpm	1.3 - 2.0 HP
4-inch	100 - 250 gpm	2.7 - 3.5 HP
6-inch	1,150 gpm	30.0 HP
8-inch	2,300 gpm	29.0 HP
10-inch	3,300 gpm	62.0 HP
* at 25-foot head		

**Table 4.2 -- Flygt Centrifugal Pumps (Submersible)**

**4.2.3 Fire Engine Pumps.** Fire engine pumps have a 4-inch suction connection and a limited pumping capacity of about 750 gpm. These pumps should only be used if absolutely necessary.

**4.3 Determination of Pumping Requirements for Storm Water Runoff**

For storm water runoff, the pumping rate in gallons per minute (gpm) = KAM.

- K is a constant, which can be determined from **Table 4.3**. The values in this table reflect relatively minor rainfalls; damages from large rainfalls are still possible.
- A is the contributing drainage area in acres.
- M is a reduction factor if one or more substantial ponding areas are available. To determine the value of M, do the following:
  - First, calculate X using the following formula:  $X = (PA \times AD \times 100) / A$ . PA is the pond surface area in acres at maximum allowable pond elevation, AD is the average depth of ponding area in feet, and A is the contributing drainage area in acres.
  - Once you have calculated the value for X, use **Table 4.4** to determine the value of M.

<u>Area</u>	<u>"Minimum" K value*</u>	<u>"Desirable" K value*</u>
Red River and Souris River Basin	25 to 30	70 to 85
Headwaters Mississippi River Basin	25 to 30	70 to 90
Minnesota River Basin	30 to 35	90 to 100
Mississippi River Basin, Little Falls to St. Croix Basin at Prescott	30 to 35	85 to 95
Mississippi River Basin, Prescott to L/D No. 10	30 to 35	95 to 100
Wisconsin and Chippewa River Basin	30 to 35	85 to 100
Lake Superior Area	25 to 30	70 to 85

\* The K value varies from the smaller value for the northern part of the designated area to the larger value for the southern part of the area. The "minimum" K value in the first column is for a 1/10 year recurrence interval (10 rain events per year) varying from 0.5 to 0.7 inch in a 6-hour period. The "desirable" K value in the second column represents a 2-year recurrence interval (1 rain event per 2 years) varying from 1.5 to 2.2 inches in a 6-hour period.

**Table 4.3 – Values of K for Computation of Pumping Rates**

<u>X</u>	<u>M</u>
0-10	1.0
10-20	0.9
20-25	0.8
25-30	0.7
30-35	0.6
35-40	0.5
40-45	0.4
45-50	0.3
50-55	0.2
55-60	0.1
Greater than 60	0.0

**Table 4.4 – Values of M for Adjustment to Pumping Rate**

If a long duration flooding is expected, pumping provided should be above the minimum pumping capacities determined in this section. If the foundation is relatively pervious, a seepage allowance of 1 to 2 gpm per linear foot of levee should be added to the pumping rate determined from the above formula. If the foundation consists of a thick clay layer, seepage will be negligible.

**Example:** Local civil defense officials are considering the emergency construction of approximately 3,000 linear feet of levee, which will seal off the natural outlet for approximately 200 acres of local runoff from a small, non-storm-sewered city on the Minnesota River where 1965 floodwaters exceeded flood stage for 15 days. It is estimated that 20 acres of ponding area with a maximum depth of 4 feet will be available. What pumping capacities can be recommended for the removal of surface runoff and seepage through the levee?

- Assuming this city is in the northern part of the Minnesota River Basin, select K values from *Table 4.3*.

$$K \text{ minimum} = 30$$

$$K \text{ desirable} = 90$$

- Assuming the average depth of the ponding area is 1/2 of the maximum depth:

$$\text{Average depth} = 1/2 \times 4.0 = 2.0 \text{ feet}$$

$$X = \frac{20 \times 2.0 \times 100}{200} = 20.0$$

- Select M from *Table 4.4*

$$M = 0.9$$

- Runoff pumping rate from 200 acres:

$$\text{"Minimum"} = 30 \times 200 \times 0.9 = 5,400 \text{ gpm}$$

$$\text{"Desirable"} = 90 \times 200 \times 0.9 = 16,200 \text{ gpm}$$

- Seepage:

$$3,000 \text{ linear feet} \times 1 \text{ gpm/foot} = 3,000 \text{ gpm}$$

- Total Pumping:

$$\text{"Minimum"} \text{ Pumping Rate} = 5,400 + 3000 = 8,400 \text{ gpm}$$

$$\text{"Desirable"} \text{ Pumping Rate} = 16,200 + 3000 = 19,200 \text{ gpm}$$

**4.4 Determination of Pumping Requirements for Sewer Systems**

During high water, increased infiltration into sanitary sewers may necessitate increased pumping at the sewage treatment plant or at manholes at various locations to keep the system functioning. To estimate the quantity of sewage, allow 100 gallons per capita per day for sanitary sewage and an infiltration allowance of 15,000 gallons per mile of sewer per day. In some cases, it will be necessary to pump the entire amount of sewage, and in other cases only the added infiltration will have to be pumped to keep a system in operation.

**Example:** Estimate pumping capacity required at an emergency pumping station to be set up at the first manhole above the sewage treatment plant for a city of 5,000 population and approximately 30 miles of sewer (estimated from map of city). In this case, it is assumed that the treatment plant will not operate at all.

Computation:

$$\text{Sewage: } \frac{5000 \text{ persons} \times 100 \text{ gal} / \text{person} / \text{day}}{24 \text{ hrs} / \text{day} \times 60 \text{ minutes} / \text{hr}} = 347 \text{ gpm}$$

$$\text{Infiltration: } \frac{15000 \text{ gal} / \text{minute} / \text{day} \times 30 \text{ min}}{24 \text{ hrs} / \text{day} \times 60 \text{ minutes} / \text{hr}} = 312 \text{ gpm}$$

Adding these two values together, the required pumping capacity is 659 gpm. If using a Flygt centrifugal pump from **Table 4.2**, you could use one 6-inch or three 4-inch pumps.

**Table 4.5** indicates the size of pump needed to handle the full flow discharge from sewer pipes up to 24 inches in diameter. **Table 4.6** shows sizes and capacities of agricultural type pumps that may be useful in ponding areas or in low areas adjacent to the flood barrier where a sump hole could be excavated. **Table 4.7** lists full flow discharge capacities for clay sewer pipes laid on slopes of 0.001 and 0.005 feet per foot. Generally, the smaller pipes are laid on steeper slopes than the larger pipes.

<u>Sewer Pipe Diameter</u>	<u>Probable Required Pump Size</u>
6-inch	2-inch
8-inch	2- to 3-inch
10-inch	3- to 4-inch
12-inch	4- to 6-inch
15-inch	6- to 8-inch
18-inch	6- to 10-inch
21-inch	8- to 10-inch
24-inch	10- to 12-inch

**Table 4.5 – Matching Sewer Pipe Size to Pump Size**

<b>16-inch Regular Pump @ 540 rpm</b>		
<u>Total Dynamic Head (in feet)</u>	<u>Capacity (gpm)</u>	<u>Brake Horsepower</u>
0	13,500	100
5	12,000	95
10	10,600	91
15	8,900	85
20	7,100	78
25	5,300	70
30	3,300	60
35	1,400	47
38.3	0	36.5
<b>12-inch Regular Pump @ 540 rpm</b>		
<u>Total Dynamic Head (in feet)</u>	<u>Capacity (gpm)</u>	<u>Brake Horsepower</u>
0	5,525	42
5	5,100	40
10	4,600	38
15	3,900	35
20	2,900	30
24.8	0	15.6

**Table 4.6 – Pump Discharge Capacities for Ag. Pumps**

<u>Pipe Diameter</u>	S = 0.001		S = 0.005	
	<u>Cubic Feet per second (cfs)</u>	<u>Gallons per minute (gpm)</u>	<u>Cubic Feet per second (cfs)</u>	<u>Gallons per minute (gpm)</u>
6-inch	0.19	85	0.35	156
8-inch	0.35	156	0.76	340
10-inch	0.65	292	1.6	720
12-inch	1.2	540	2.5	1,120
15-inch	2.1	945	4.5	2,020
18-inch	3.4	1,520	7.3	3,260
21-inch	5	2,230	11.2	5,000
24-inch	8.2	3,660	15.2	6,800

**Table 4.7 – Flow Capacity of Clay Sewer Pipe on two different slopes (S)**

#### **4.5    Metal Culverts**

Pumping of ponded water is usually preferable to draining the water through a culvert since the tail water (drainage end of culvert) could increase in elevation to a point higher than the inlet, and water could back up into the area being protected. Installation of a flap gate at the outlet end may be desirable to minimize backup.

If a culvert is desired to pass water from a creek through a levee, an engineering-based computation of the drainage basin is required to determine pipe size.

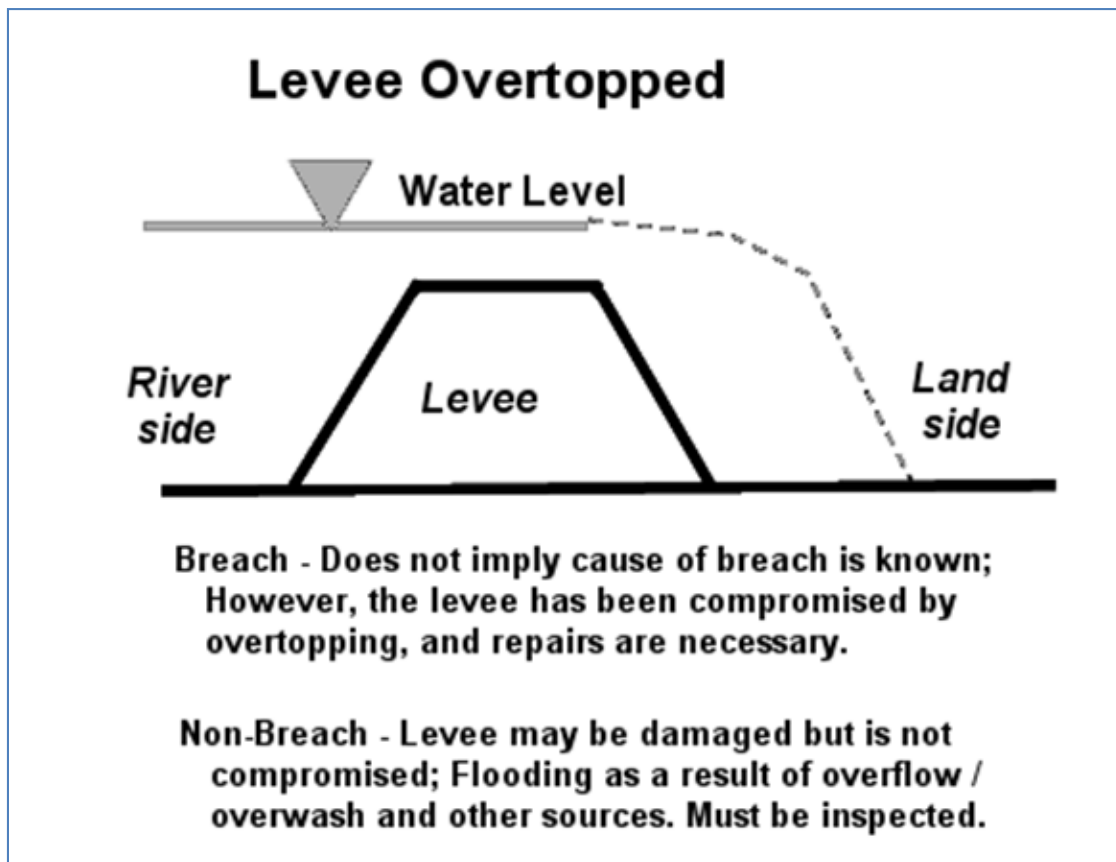
## **Section 5: Flood Fight Problems**

Many issues can arise during a flood fight. The most valuable asset in problem solving under emergency conditions is capable field personnel. Many problems can be solved quickly and efficiently through the application of common sense and sensitivity to human relations. Physical problems with the levees and related infrastructure can be identified early if a well-organized levee patrol team with a good communication system exists.

The problems most critical to the integrity of the flood barrier system are described below. Current conditions must be taken in to account before implementing a specific solution, including high and low temperatures, frost depth, and the level of water on levee slopes.

### **5.1 Definitions**

**Overtopping:** Overtopping occurs when water levels exceed the crest elevation of a levee and flow into protected areas. A breach may occur as a result of overtopping. In some cases, a levee may be overtopped without breaching (Non-Breach). In these cases, the water does not erode the levee structure and the levee is still functional for the next event. *Figure 9* illustrates overtopping results.



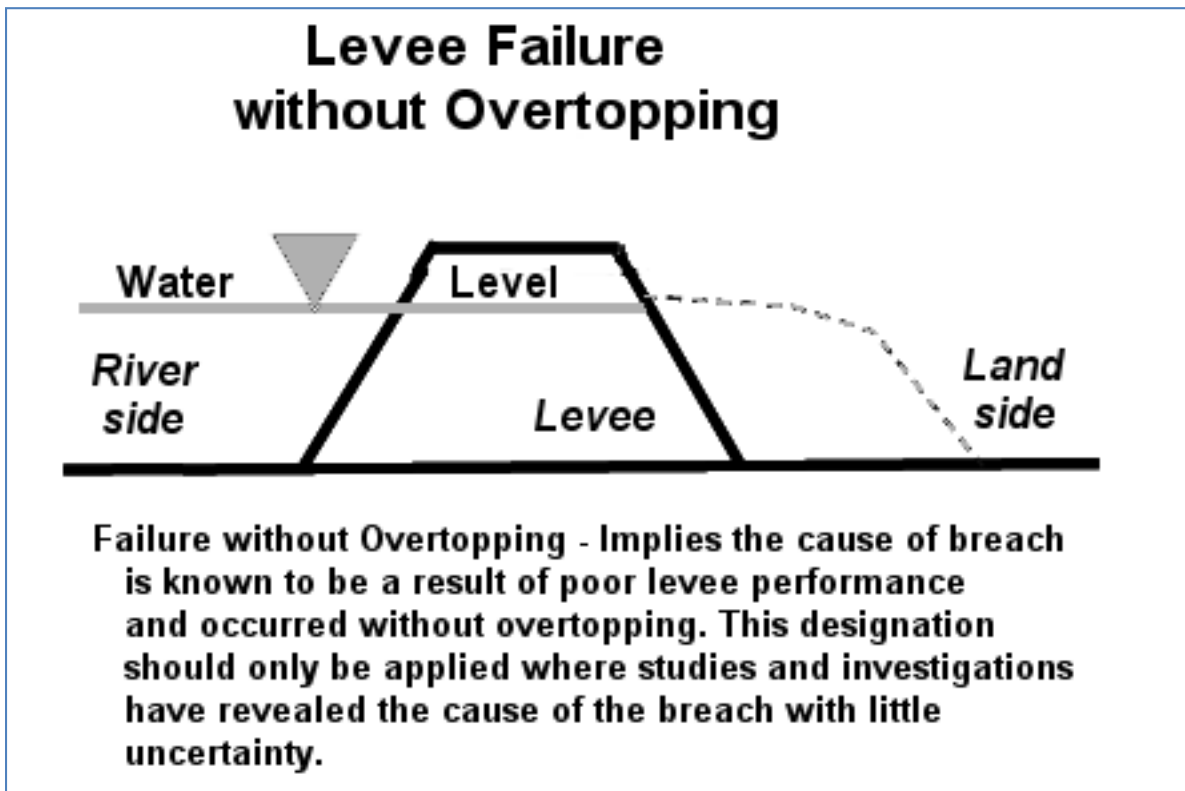
**Figure 9 – Possible results when levee is overtopped.**

**Breach:** A rupture, break, or gap in a levee system whose cause has not been determined.



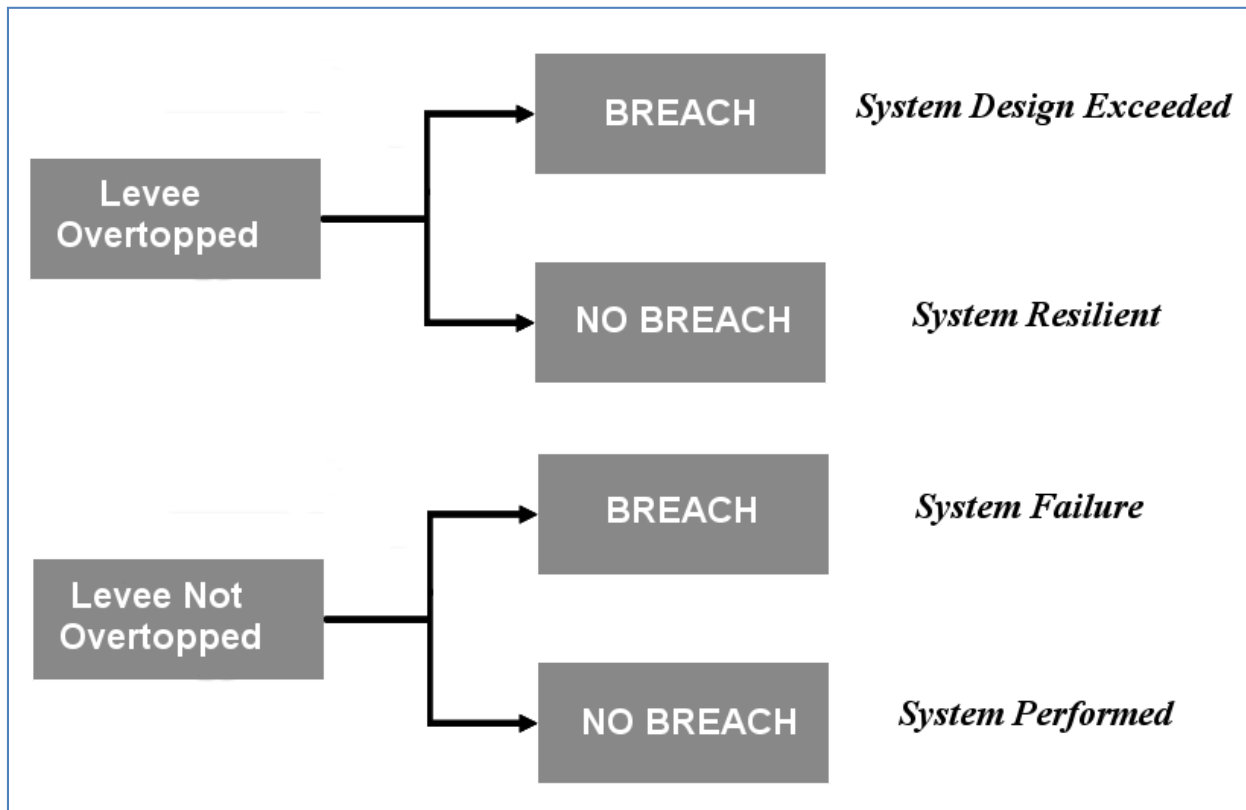
**Overtopping Breach:** A breach whose cause is known to be a result of overtopping (system exceeded). A breach occurs during overtopping due to damages caused by the water flowing over the top of the levee. Once breached the levee must be repaired to function during the next flood event.

**Failure Breach:** A breach in a levee system for which a cause is known and which occurred without overtopping. A failure breach occurs due to a failure of the embankment at a level below the top of the levee. *Figure 10* illustrates a failure breach.



**Figure 10 – Failure Breach**

The chart below (*Figure 11*) further defines the appropriate flooding descriptions that correspond to the levee responses to rising water.



**Figure 11 - Appropriate flooding descriptions corresponding to the levee responses to rising**

## **5.2 Overtopping**

Since most emergency levees are in urban areas, overtopping should be prevented at any cost. Overtopping will generally be caused by (1) unusual hydrologic phenomena that cause a much higher stage than anticipated, e.g. heavy rainfall or an ice dam in the channel, (2) insufficient time in which to complete the flood barrier, or (3) unexpected settlement or failure of the barrier.

Generally, emergency barriers are built two feet above the predicted crest level. If the crest prediction is raised during construction, additional height must be added to the barrier. On an existing or completed barrier, predictions of increases to water levels or settlement of the barrier will call for some form of capping to raise the barrier. Capping should be done with earth fill or sandbags using normal construction procedures.

## **5.3 Breaches**

Levee breaches may occur as a result of overtopping; however there are other causes as well. Unlike overtopping, the solutions for breaches vary depending on the cause. The following subsections describe the different causes and how to prevent them.

## **5.4 Seepage**

Seepage is percolation of water through or under a levee and generally first appears at the landside toe. Seepage through the levee is likely to occur only in a relatively pervious section. Seepage, as such, is generally not a problem unless (1) the landward levee slope becomes saturated over a large area, (2) seepage water is carrying material from the levee, or (3) pumping capacity is exceeded. Seepage that causes severe sand boils and piping is covered in the next subsection.

Seepage is almost impossible to eliminate and any attempt to do so may create a much more severe condition. Pumping of seepage should be held to a minimum, based on the maximum ponding elevation that can be tolerated without damages. In the past, attempts to keep low areas pumped dry resulted in sand boils, and additional time and effort were then expended in trying to control these sand boils caused by pumping. Therefore, seepage should be permitted if no apparent ill effects are observed and if adequate pumping capacity is available. If seepage causes saturation and sloughing of the landward slope, the section should be flattened to a 1V to 4H ratio or flatter. Material for flattening should be at least as pervious as the existing embankment material to avoid a pressure build up. Do not place clay over sand to flatten a slope.

## **5.5 Sand Boils**

**5.5.1 Definition.** A sand boil is the rupture of the top foundation stratum landward of a levee caused by excess hydrostatic head in the substratum. Even when a levee is properly constructed and of such mass to resist the destructive action of flood water, water may seep through a sand or gravel stratum under the levee and break through the ground surface on the landside in the form of bubbling springs. When such a seep occurs, a stream of water bursts through the ground surface carrying with it sand or silt that is distributed around the hole in the shape of a cone. Depending on the magnitude of pressure and the size of the boil, it may eventually discharge relatively clear water or it may continue to carry quantities of sand and silt. Sand boils usually occur within 10 to 300 feet from the landside toe of the levee, but in some instances, have occurred up to 1,000 feet away.

**5.5.2 Destructive Action.** Sand boils can produce three distinctly different effects on a levee, depending on the condition of flow under the levee:

- a. Piping Flow.* Piping is the active erosion of subsurface material as a result of substratum pressure and concentration of seepage in a localized channel. The flow breaks out at the landside toe in the form of one or more large sand boils. Unless checked, this flow causes the development of a cavern under the levee, resulting in the subsidence of the levee and possible overtopping. This case can be easily recognized by the slumping of the levee crown.
- b. Non Piping Flow.* In this case, the water flows under pressure beneath the levee without following a defined path, as in the case above. This flow results in one or more boils outcropping at or near the landside toe. The flow from these boils tends to undercut the landside toe, resulting in sloughing of the landward slope.
- c. Saturating Flow.* In this case, numerous small boils, many of which are scarcely noticeable, outcrop at or near the landside toe. While no boil may appear to be dangerous by itself, the group of boils may cause saturation and flotation ("quickness") of the soil. This can reduce the shear strength of the material at the levee toe to such an extent that failure of the slope through sliding may result.

**5.5.3 Combating Sand Boils.** All sand boils should be watched closely, especially those within 100 feet of the toe of the levee. All boils should be conspicuously marked with flagging so that patrols can locate them without difficulty and observe changes in their condition. A sand boil that discharges clear water in a steady flow is usually not dangerous to the safety of the levee. However, if the flow of water increases and the sand boil begins to discharge material, corrective action should be undertaken immediately.

The accepted method of treating sand boils is to construct a ring of sandbags around the boil, building up a head of water within the ring sufficient to check the velocity of flow, thereby

preventing further movement of sand and silt. *Plate 10* illustrates and describes the techniques for ringing a boil with sandbags. Actual conditions at each sand boil will determine the exact dimensions of the boil and the flow of water from it, and the required sandbag ring.

In general, the following considerations should control construction of the sandbag ring: (1) the base width of the sandbag section on each side of the ring should be no less than 1-1/2 times the contemplated height, (2) weak soils near the boil should be included within the ring, thereby preventing a break through later, and (3) the ring should be sufficient size to permit sacking operations to keep ahead of the flow of water. The height of the ring should only be high enough to stop the movement of soil in the water, and not so high as to completely eliminate seepage. The practice of raising the ring to the river elevation is not necessary and may be dangerous in high stages.

If seepage flow is completely stopped, a new boil will likely develop beyond the ring. This boil could erupt suddenly and cause considerable damage. Where many boils are found to exist in a given area, a ring levee of sandbags should be constructed around the entire area, and, if necessary, water should be pumped into the area to provide sufficient weight to counterbalance the upward pressure.

In the case of smaller sand boils, large diameter metal or concrete pipe can be placed around the boil to reduce the flow of soil material from the boil. In such cases, take care not to stop the water flow from the boil, only the material flow. It may be necessary to cut a hole in the side of the pipe to allow water to exit.

## **5.6 Erosion**

Erosion of the riverside slope is one of the most severe problems that will be encountered during a flood fight. Emergency operations to control erosion include the use of polyethylene sheeting and sandbag anchors. Poly placement along the riverward face of the levee is discussed at length in Section 3.4, Erosion Protection for Emergency Levees.

## **5.7 Sewer-Related Problems**

During a flood fight, continued surveillance of possible sewer problems is necessary. Existing sewers in the protected area may cause problems because of seepage into the lines, leakage through blocked outlets to the river, insufficient manhole pumps, or old or abandoned sewer locations that were not known during pre-flood preparations. Any of these conditions can cause high pressures in parts of the sewer system and lead to backflow, collapse of the lines at weak points, and manhole covers blowing off.

Watertight sluice gates, or flap gates can be used to prevent backflow. Emergency stoppers may be constructed of lumber, sandbags, or other materials, using poly as a seal, preferably placed on the discharge end of the outfall pipe. *Plate 7* shows examples of prefabricated pipe stoppers that can be placed in the pipe to block flows. *Plates 8 and 9* illustrate methods of sealing off the outlet openings of a manhole with standard materials that are normally available so that the manhole may be used as an emergency pumping station.

If the water level in a manhole approaches the top, additional pumps in other manholes may alleviate the problem. In sanitary sewers, additional pumping may be required at various locations in the system to provide continued service to the homes in the protected area. When pumps are not available, manholes may have to be ringed with sandbags or contained by some other method, such as concrete culverts with

a sandbag base that allows the water to rise up above the top of the manhole. Some leakage may occur that will require safe disposal.

To eliminate the problem of disposing of this leakage from manholes, the ring levee would have to be raised above the river water surface elevation. Doing so creates high pressures on the sewer and should not be done. As with sand boils, it is best to ring the manhole part way to reduce the head and dispose of any leakage that occurs.

Directly weighing down manhole covers with sandbags or other items is not recommended where high heads are possible as this will not work. A 10-foot head on a manhole cover 2 feet in diameter would exert a force of 2,060 pounds. Thus, a counterweight of more than one ton would have to be placed directly on the cover.

### **5.8 Other Causes of Levee Failure**

In addition to the problems covered above, the following conditions could contribute to failure:

- Joining of an earth levee to a solid wall, such as concrete or piling.
- Structures projecting from the riverside of levee.
- A utility line crossing or a drain pipe crossing through the levee fill.
- The elevation of the tops of “stoplogs” on roads or railroad tracks are at a lower elevation than the top of the levee.
- Relying on railroad embankments as levees. Material comprising a railroad embankment may not be suitable as levee fill. Furthermore, the railroad embankment section often has a narrow top width and steep side slopes.
- Allowing pump discharge lines to discharge directly on the riverward levee slope. When discharge lines are allowed to discharge on the levee slope, severe erosion can occur, thus threatening the levee stability. Insure that outlets for pump discharge lines are placed riverward beyond the levee toe, and appropriately anchored to prevent movement.

## 5.9 Interior Flooding

Even when the levee performs as designed (*Figure 12*), interior flooding can occur. Some of the causes of interior flooding are:

- Seepage
- Sand Boils
- Rainfall Runoff
- Levee Penetrations – drainage conduits designed to drain the interior area during low flows do not close properly during the flood event and allow water to flow from the river side to the interior side.
- Pump Station Failures – pump stations designed to pump interior drainage over the levee can fail during an event due to pump failures loss of power.

Solutions for interior flooding are described in Section 4, Interior Drainage.

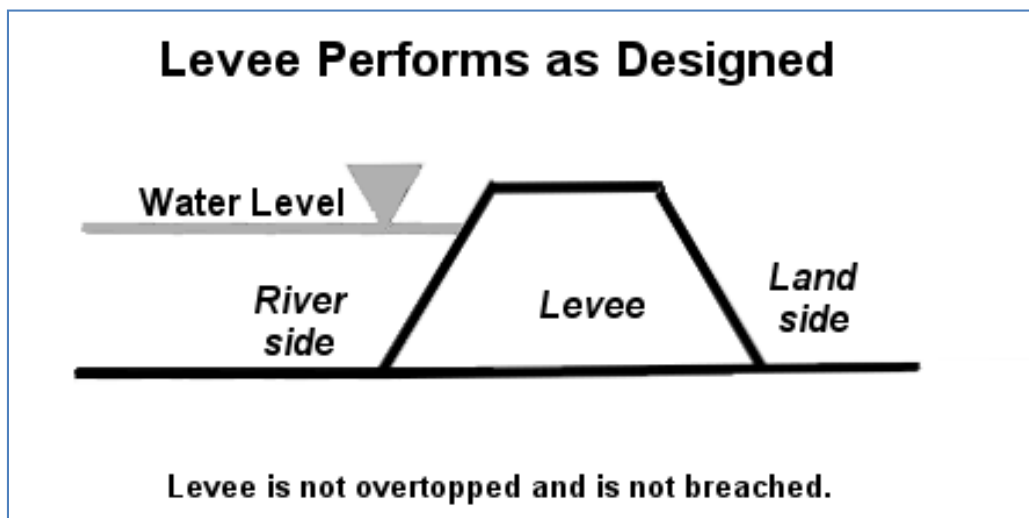


Figure 12 – Levee performs as designed.

## **Section 6: List of Resources and Hyperlinks**

U.S. Army Corps of Engineers, St. Paul District:

<http://www.mvp.usace.army.mil/Missions/EmergencyManagement.aspx>

Community Emergency Action Plan Guidebook:

<http://www.mvp.usace.army.mil/Missions/CivilWorks/FloodRiskManagement/EmergencyActionPlanGuidebook.aspx>

NDSU Flood Resources: <https://www.ag.ndsu.edu/flood/>

Flood Response Training for Community Emergency Response Teams (CERTs):

<https://www.fema.gov/media-library/assets/documents/28668>

Red Cross Flood Information: <http://www.redcross.org/prepare/disaster/flood>

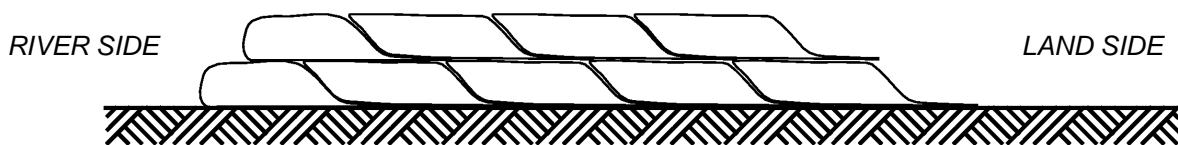
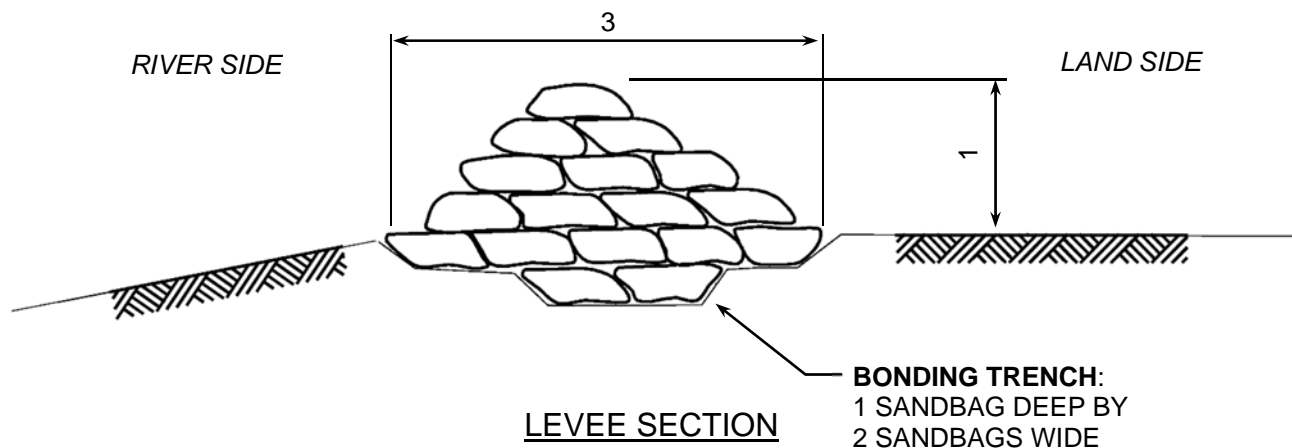
Family and Business Preparedness: <http://www.ready.gov/>

**NOTES**



**Section 7: Plates Showing Emergency Flood Control Activities**

- PLATE 1: Recommended Method for Sandbag Levee Construction
- PLATE 2: Recommended Methods for Anchoring Polyethylene Sheeting at the Levee Toe
- PLATE 3: Alternate Method for Anchoring Polyethylene Sheeting at the Levee Toe (when placed in the dry)
- PLATE 4: Recommended Method for Placement of Polyethylene Sheeting on Temporary Levees (when placed in the dry)
- PLATE 5: Recommended Method for Placement of Polyethylene Sheeting on Temporary Levees (when placed in the wet)
- PLATE 6: Recommended Method for Flashboard and Box Levees
- PLATE 7: Recommended Method for Plugging Pipes
- PLATE 8: Recommended Method for Adapting Manhole for Pumping, Method 1
- PLATE 9: Recommended Method for Adapting Manhole for Pumping, Method 2
- PLATE 10: Recommended Method for Ringing Sand Boils



LEVEE HEIGHT	NUMBER OF SAND BAGS REQUIRED FOR LENGTH OF LEVEE									
	50 FT	100 FT	175 FT	200 FT	250 FT	300 FT	350 FT	400 FT	450 FT	500 FT
<b>1 Foot</b>	300	600	1,050	1,200	1,500	1,800	2,100	2,400	2,700	3,000
<b>2 Feet</b>	1,050	2,100	3,675	4,200	5,250	6,300	7,350	8,400	9,450	10,500
<b>3 Feet</b>	2,250	4,500	7,875	9,000	11,250	13,500	15,750	18,000	20,250	22,500
<b>4 Feet</b>	3,900	7,800	13,650	15,600	19,500	23,400	27,300	31,200	35,100	39,000
<b>5 Feet</b>	6,000	12,000	21,000	24,000	30,000	36,000	42,000	48,000	54,000	60,000

**NOTES:**

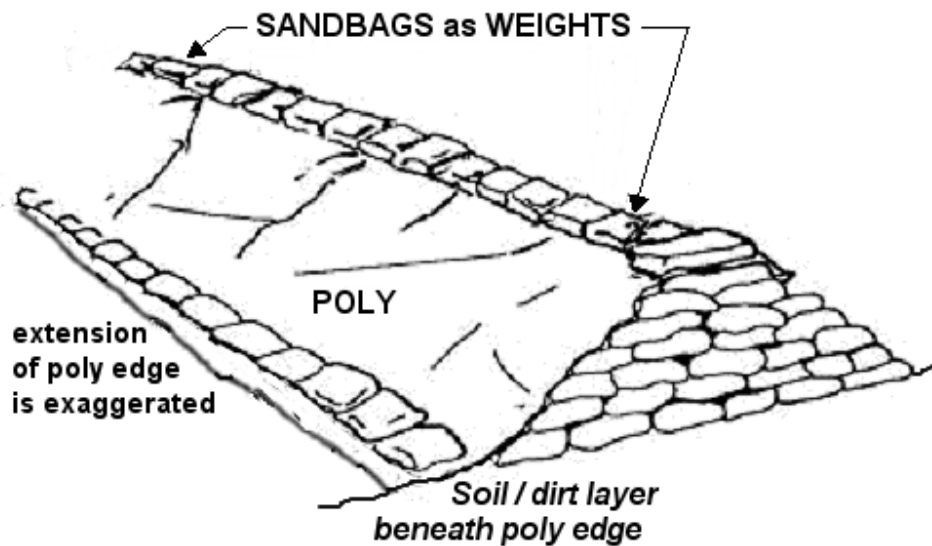
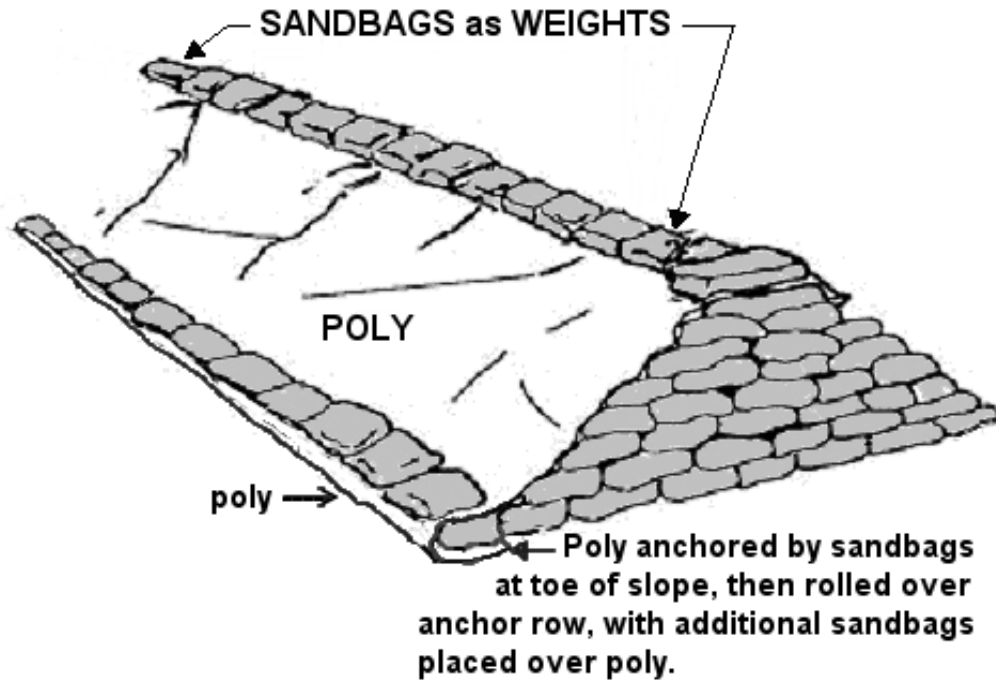
1. START UPSTREAM.
2. STRIP SOD BEFORE LAYING.
3. ALTERNATE DIRECTION OF SACKS WITH BOTTOM LAYER PARALLEL TO FLOW.
4. NEXT LAYER PERPENDICULAR TO FLOW WITH OPEN END AWAY FROM WET SIDE
5. LAP UNFILLED PORTION UNDER NEXT SACK.
6. TYING OR SEWING SACKS NOT NECESSARY.
7. TAMP THOROUGHLY IN PLACE, SACKS SHOULD BE APPROXIMATELY ½-FULL OF SAND.



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St. Paul District

**PLATE 1**

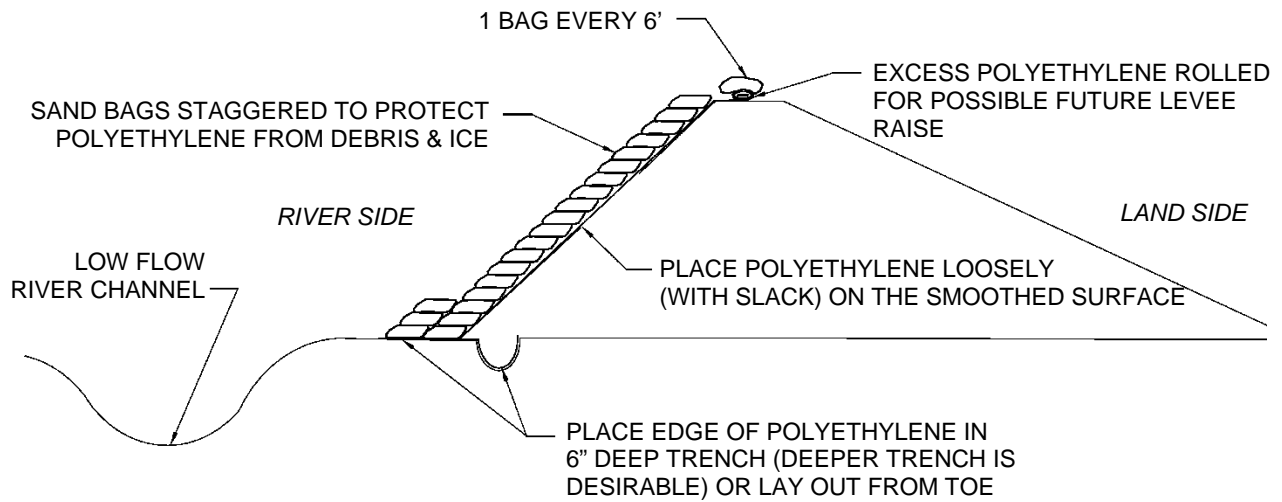
RECOMMENDED METHOD FOR  
SANDBAG LEVEE CONSTRUCTION



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**PLATE 2**

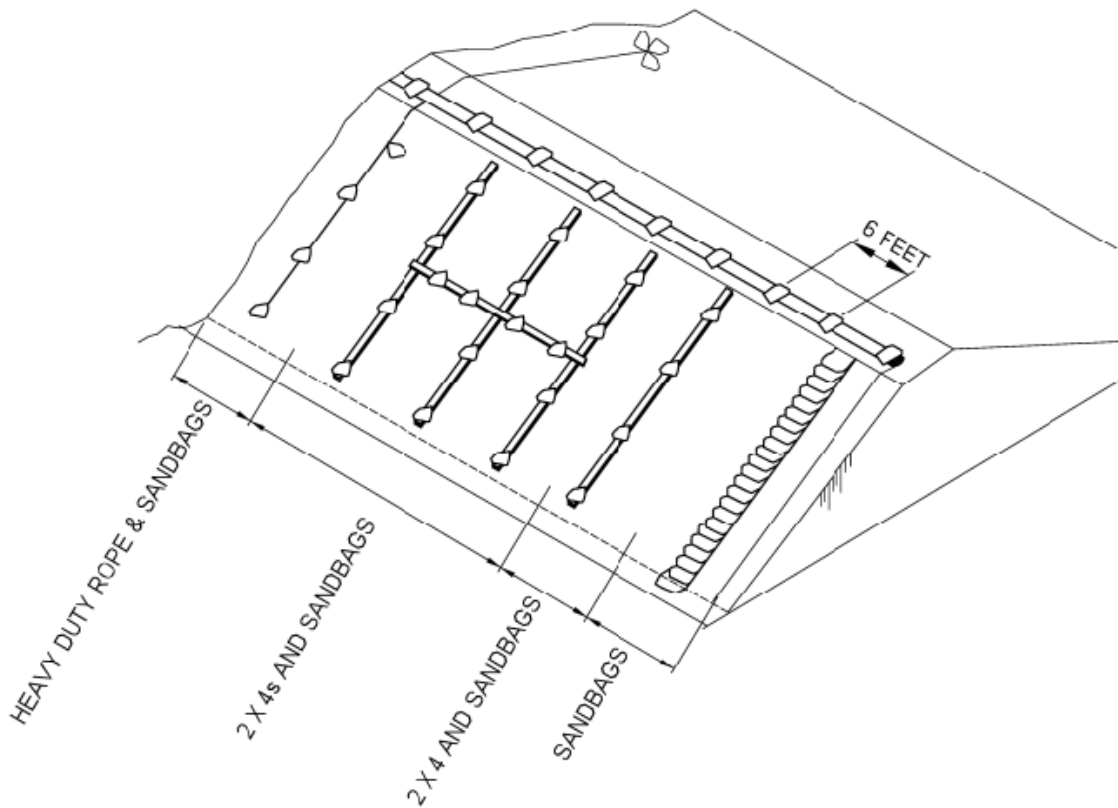
RECOMMENDED METHODS FOR  
ANCHORING POLYETHYLENE  
SHEETING AT THE LEVEE TOE



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### **PLATE 3**

ALTERNATE METHOD FOR  
ANCHORING POLYETHYLENE  
SHEETING AT THE LEVEE TOE  
(WHEN PLACED IN THE DRY)



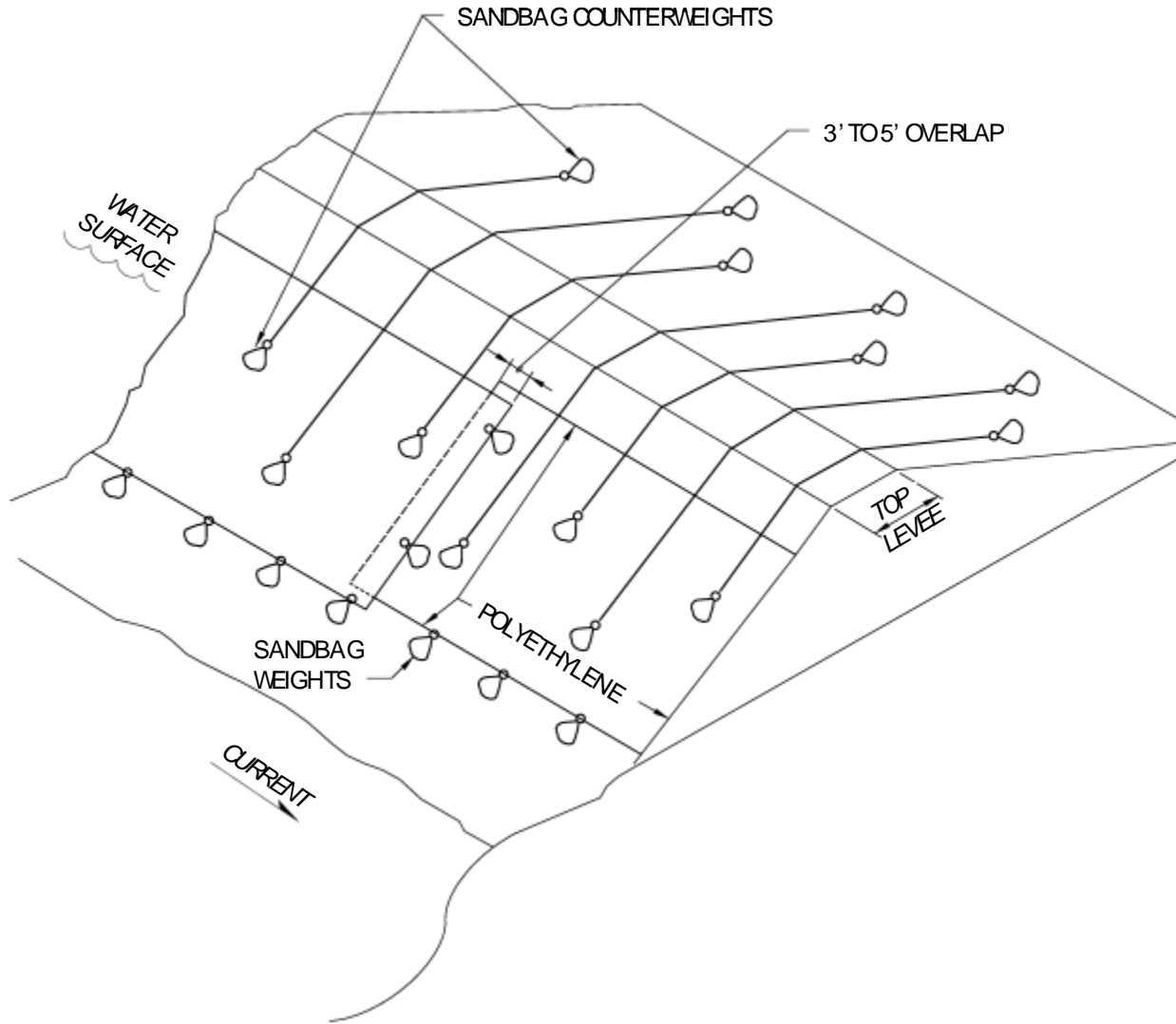
- RECOMMENDED POLYETHYLENE**
- 1st - 6 MIL BLACK
  - 2nd - 6 MIL CLEAR
  - 3rd - 4 MIL BLACK
  - 4th - 4 MIL CLEAR
  - 5th - 2 MIL BLACK OR CLEAR  
(USE AS A LAST RESORT)



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**PLATE 4**

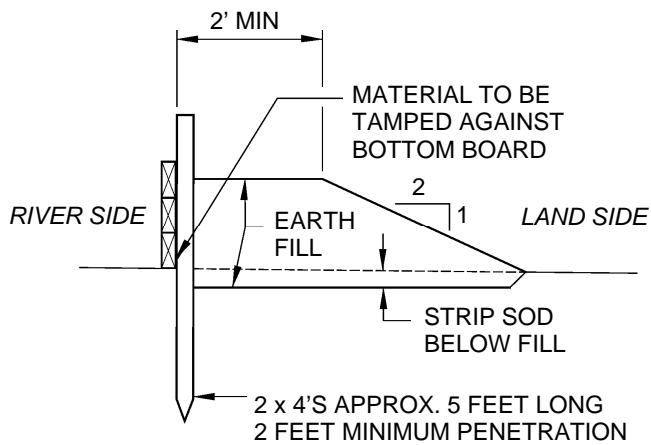
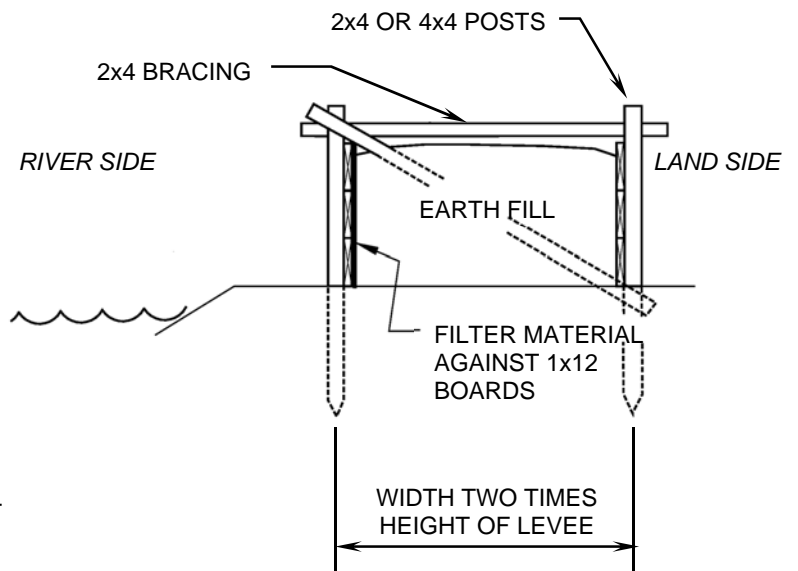
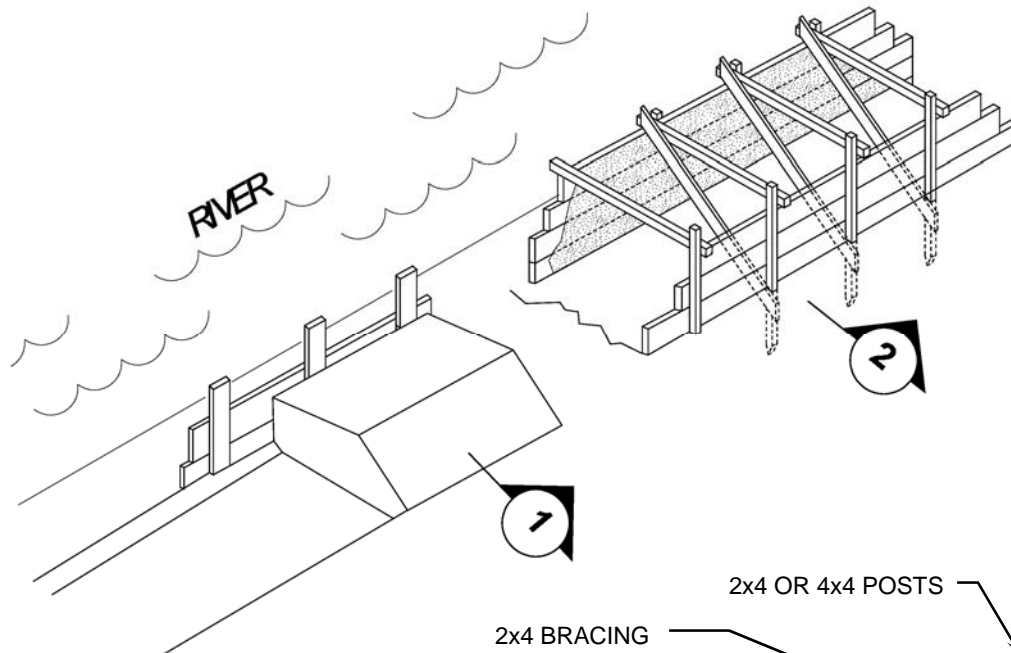
RECOMMENDED METHOD FOR  
PLACEMENT OF POLYETHYLENE  
SHEETING ON TEMPORARY LEVEES  
(WHEN PLACED IN THE DRY)



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of Engineers**  
St. Paul District

**PLATE 5**

RECOMMENDED METHOD FOR  
PLACEMENT OF POLYETHYLENE  
SHEETING ON TEMPORARY LEVEES  
(WHEN PLACED IN THE WET)



FLASHBOARD LEVEE

1

BOX LEVEE

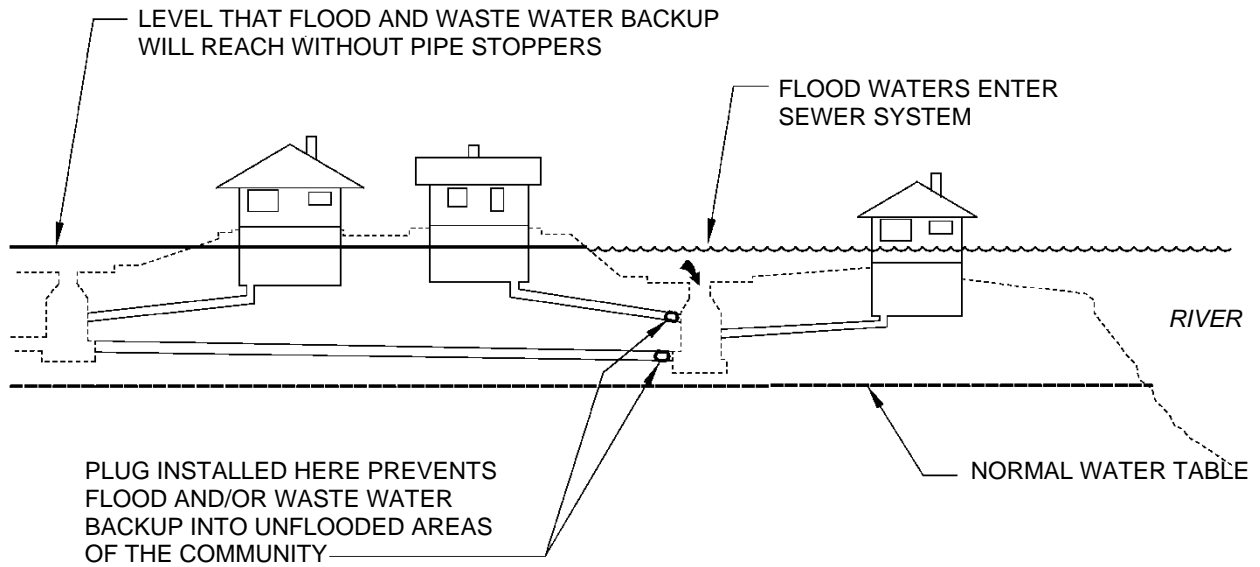
2



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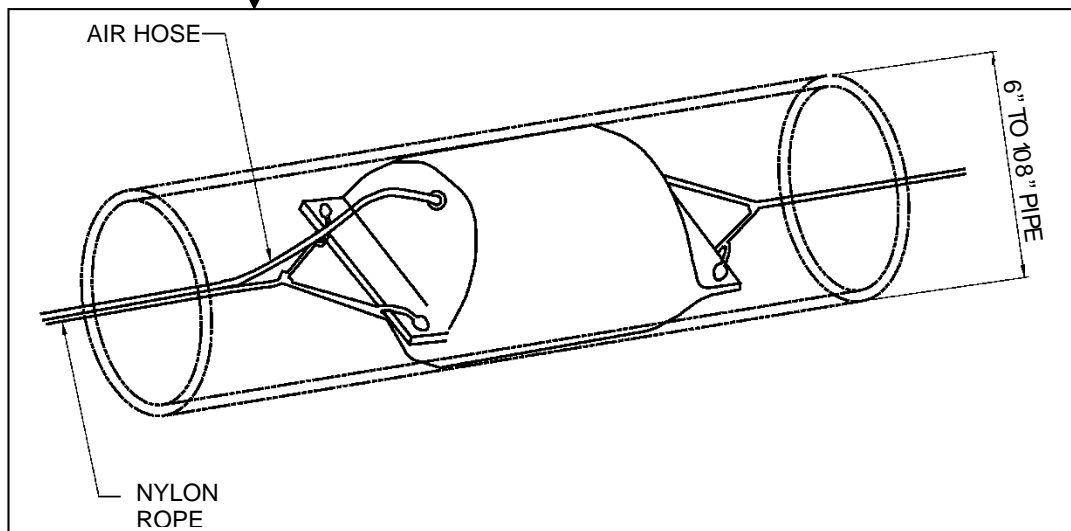
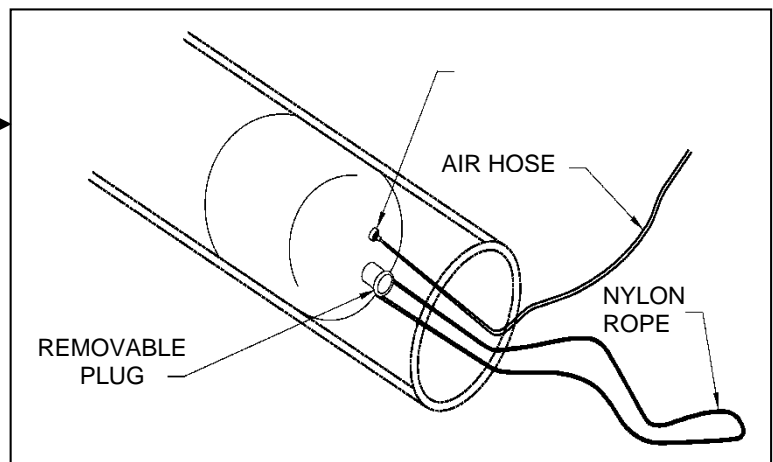
**PLATE 6**

RECOMMENDED METHOD FOR FLASHBOARD  
AND BOX LEVEES



PIPE STOPPER: DESIGN 1

PIPE STOPPER: DESIGN 2

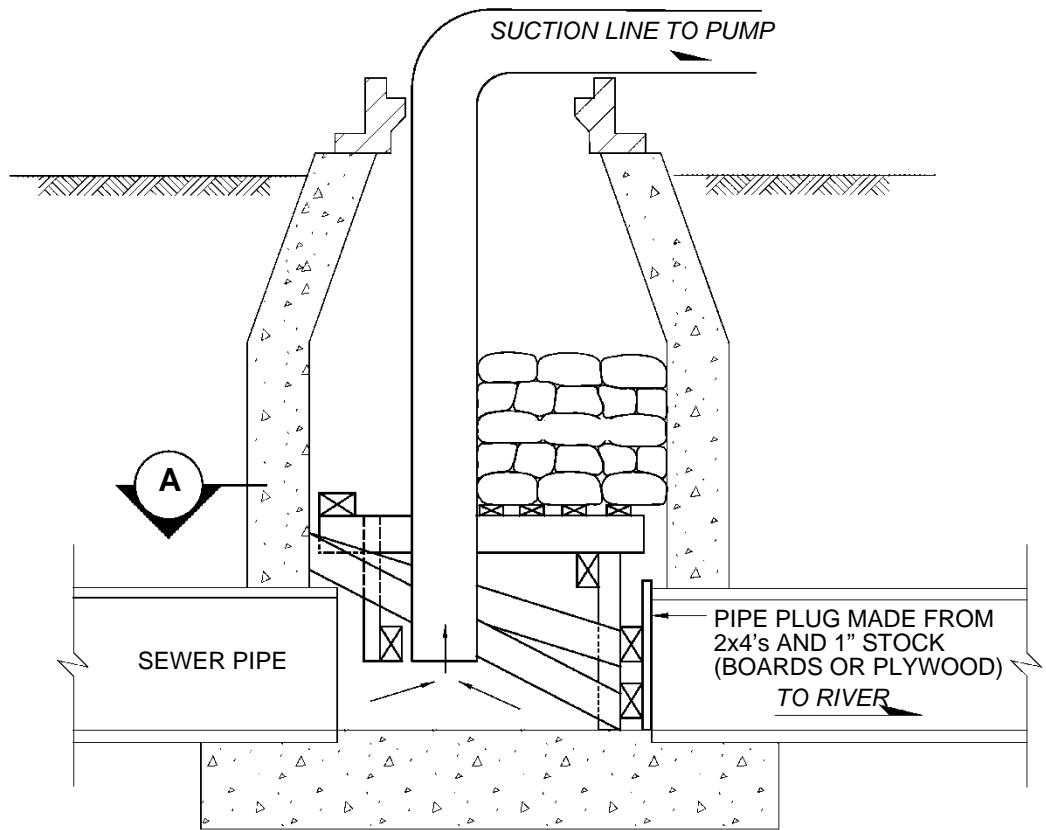


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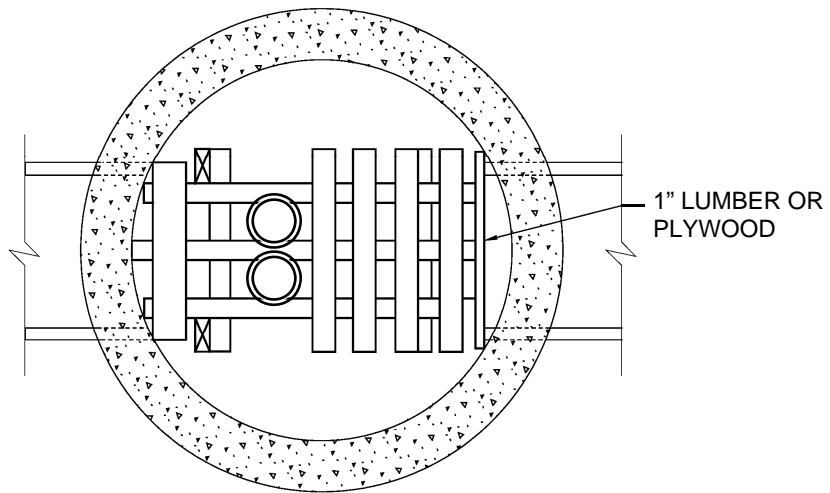
**PLATE 7**

RECOMMENDED METHOD FOR  
PLUGGING PIPES





**ADAPTING MANHOLE FOR PUMPING  
DURING FLOOD EMERGENCY**



**SECTION A**

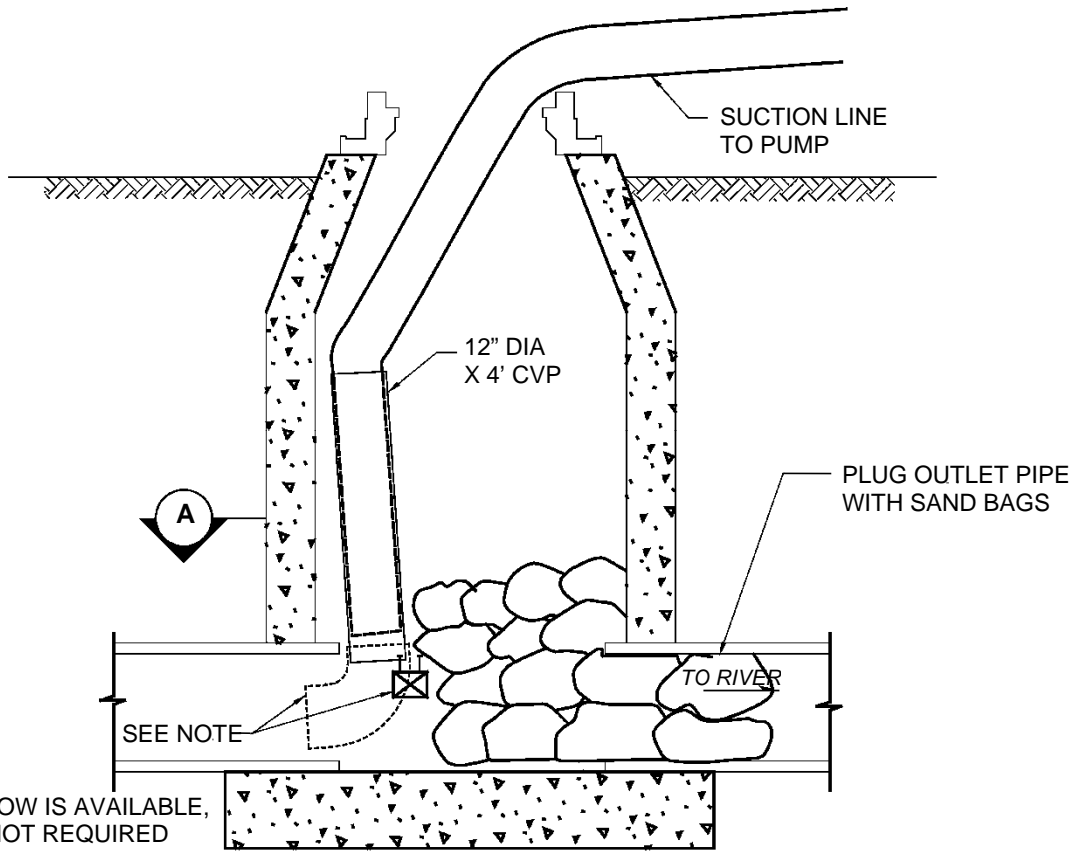


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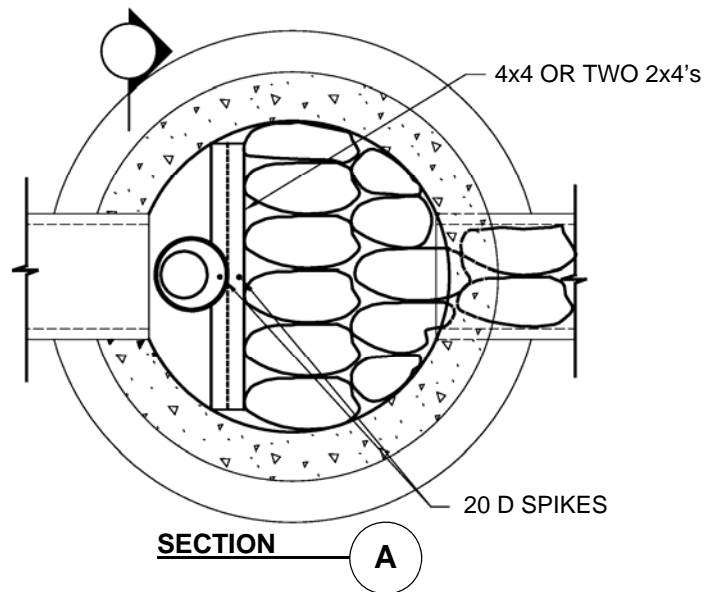
**PLATE 8**

RECOMMENDED METHOD FOR ADAPTING  
MANHOLE FOR PUMPING

(METHOD 1)



**ADAPTING MANHOLE FOR PUMPING  
DURING FLOOD EMERGENCY**

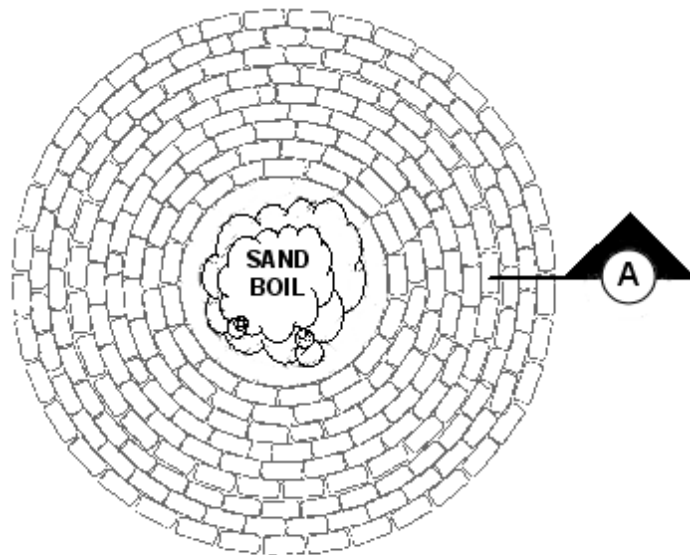
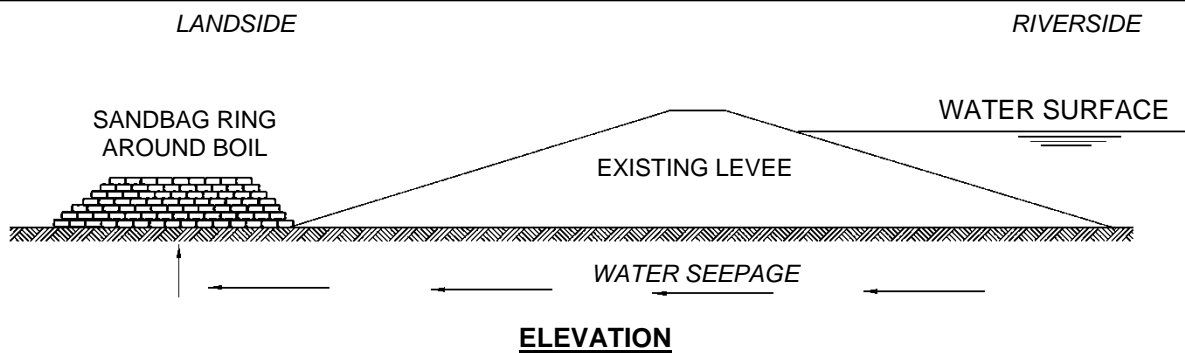


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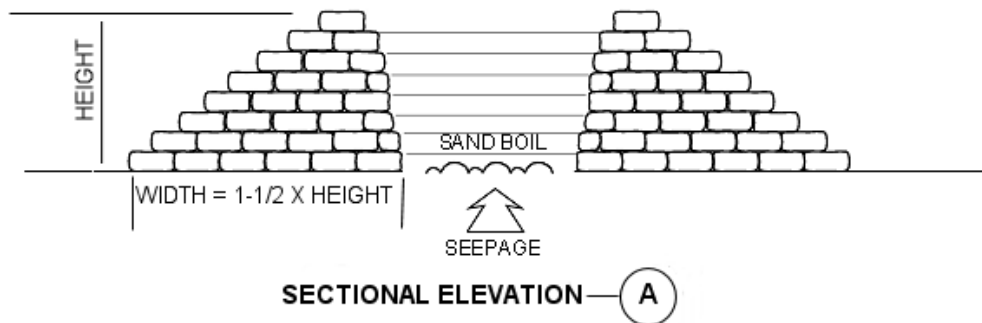
**PLATE 9**

RECOMMENDED METHOD FOR ADAPTING  
MANHOLE FOR PUMPING

(METHOD 2)



**PLAN VIEW**



**SECTIONAL ELEVATION** — A

**NOTES:**

1. BOTTOM WIDTH TO BE NO LESS THAN 1-1/2 TIMES THE HEIGHT. TIE INTO LEVEE IF BOIL IS NEAR TOE.
2. ENTIRE BASE TO BE CLEARED AND SCARIFIED.
3. LOOSE EARTH TO BE USED BETWEEN ALL SACKS.
4. ALL JOINTS TO BE STAGGERED.



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St. Paul District

**PLATE 10**

RECOMMENDED METHOD FOR RINGING  
SAND BOILS



# APPENDIX B

## Project Report Forms

**B.1 - ANNUAL INSPECTION REPORT**

**B.2 - POST FLOOD REPORT**

**B.3 - DISCHARGE MONITORING REPORT**

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# APPENDIX B.1

Annual Inspection Report



# Fox Island Flood Control Project

## Flood Risk Reduction Annual Levee Inspection Report

Levee Name/Location: \_\_\_\_\_

Original Construction Project No. \_\_\_\_\_ Inspector(s) \_\_\_\_\_

Superintendent: \_\_\_\_\_

Inspection Date: \_\_\_\_\_ Date of Previous Inspection: \_\_\_\_\_

Reason for Inspection: \_\_\_\_\_ Scheduled  
\_\_\_\_\_ After Flood  
\_\_\_\_\_ Other (Please Specify) \_\_\_\_\_  
-----

GPS Photos Taken: Y or N      Photos Downloaded: Y or N  
Saved In: \_\_\_\_\_

Previous, Most Recent Flood Crest: \_\_\_\_\_ ft (at Bismarck Gage)

Did levee system function properly during high water?    Y or N

Issues to be addressed, if any: \_\_\_\_\_  
-----

Reviewed Last Inspection Report: Y or N

Maintenance work completed since last inspection: \_\_\_\_\_  
-----  
-----  
-----

Were Previously Recommended Corrective Measures Completed: Y or N

If so, describe action taken: \_\_\_\_\_  
-----  
-----  
-----

Date of Last Top of Levee Survey: \_\_\_\_\_

\*If its been 5 years or more since last survey, schedule one to be completed

Original Designed Top of Levee Elevation: \_\_\_\_\_

If survey was completed under this inspection, please note any deficiencies in original design elevation (by station). Attach copy of survey with this inspection form.

-----  
-----

**Condition of Levee**

\*Specify the approximate locations and take pictures of all issues

Vegetation: \_\_\_\_\_ % Cover

Cracks: \_\_\_\_\_

-----  
-----  
-----  
-----

Width, Depth & Length of Cracks

Slides or Slumping Issues: \_\_\_\_\_  
-----  
-----

Erosion Issues: \_\_\_\_\_

-----  
-----

Clear Zone Encroachments: \_\_\_\_\_

-----  
-----

Detail what the Encroachment is

Retaining Wall Condition: \_\_\_\_\_  
-----  
-----

Flood Wall Condition: \_\_\_\_\_

-----  
-----  
-----

Possible issues to watch are:  
random cracking, caulk condition,  
staining

Pump Station & Gate Wells: \_\_\_\_\_  
-----  
-----

Complete inspections with Hwy  
Department Staff. Review Hwy  
Department notes on maintenance  
activities since last inspection

Rodent Issues: \_\_\_\_\_

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Riprap Condition: \_\_\_\_\_

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**Corrective Measures Recommended:**

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Date Corrective Measures were taken care of: \_\_\_\_\_  
Project Numbers of Repair Projects, (if applicable): \_\_\_\_\_

**Items to be monitored:**

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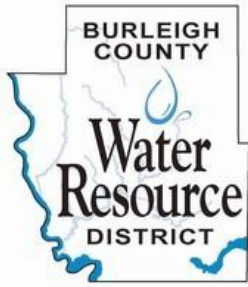
*Provide Copy of Report to Superintendent for O&M records*





# APPENDIX B.2

## Post-Flood Report



# Fox Island Flood Control Project

## Flood Risk Reduction Post Flood Report

Levee Name/Location: _____	Date: _____
Original Construction Project No. _____	Superintendent: _____
Recorded Flood Crest: _____ ft (at Bismarck Gage)	Did floodwaters reach toe of levee? Y or N
Flood History (Describe Warnings Received)	
Describe Warnings Received:	
-----	
Operation of each feature:	
Levee: _____	
Outlet Structures: _____	
Daily Tabulation of River Stages: <a href="https://waterdata.usgs.gov/nd/nwis/uv?site_no=06342500">https://waterdata.usgs.gov/nd/nwis/uv?site_no=06342500</a>	
Attach documentation from NOAA website.	
Notes:	

<u>Pertinent factors in maintaining levee during flood:</u>

<u>Were any problems encountered during high water?</u> Y or N
Issues to be addressed, if any: _____

<u>Were any damages incurred during high water?</u> Y or N
If so, please explain: _____

<u>Are any repairs required?</u> Y or N If
so, please explain: _____

<u>What manpower and resources were required during high water?</u>





# APPENDIX B.3

## Discharge Monitoring Report

March 30, 2020

Houston Engineering Inc  
Nicolas Cullen  
3712 Lockport St  
Bismarck, ND 58503

**Notice of Coverage and Issuance of an NDPDES Permit**

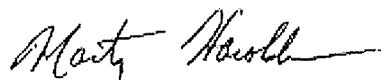
**NDPDES Facility No: NDG070740 Name: Burleigh County Water Resource District**

**NDPDES General Permit NDG070000**

This letter shall serve as notice that the above-referenced facility is covered under General Permit No. NDG070000. A general discharge permit is valid only when accompanied by this notice of coverage letter. This general permit will be in effect from April 01 2020 and will expire on March 31 2025. With coverage under a general discharge permit, the NDPDES number for your facility is NDG070740. Please refer to this number on all permit related correspondence.

Should you have any questions, please contact Sarah Waldron Feld at 701.328.5237 or the Division of Water Quality-NDPDES Permits Program at 701.328.5210. Note that enclosures are not being sent to carbon copy recipients.

Sincerely,



Marty Haroldson  
NDPDES Program Manager  
Division of Water Quality

Enc.

**RECEIVED**

APR 02 2020

**HOUSTON ENGINEERING, INC.  
BISMARCK, ND**

**NDPDES Permits Program-Division of Water Quality**

**Receipt of an NDPDES Permit**

**NDPDES Facility No: NDG070740 Name: Burleigh County Water Resource District**

Your North Dakota Pollutant Discharge Elimination System (NDPDES) wastewater discharge permit will be in effect on April 01 2020. Please complete this form, make a copy for your records, and return it to us at the address below by April 29 2020

<p><b>Receipt of an NDPDES Permit</b></p> <p>Burleigh County Water Resource District has received a copy of its NDPDES Permit NDG070740. We are aware that the permit is effective on April 01 2020 and expires on March 31 2025.</p> <p>Date Received: _____</p> <p>Received By: _____</p> <p>Title: _____</p> <p>Telephone: _____</p> <p>Comments:</p>
--

Please return the completed form to:

North Dakota Dept of Env. Quality  
Div of Water Quality Permits Program  
918 East Divide Ave  
Bismarck ND 58501-1947

<b>For Office Use Only</b>
Route to: Sarah Waldron Feld

Permit No: NDG070000  
Effective Date: April 01, 2020  
Expiration Date: March 31, 2025

AUTHORIZATION TO DISCHARGE UNDER THE  
NORTH DAKOTA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with Chapter 33.1-16-01 of the North Dakota Department of Health rules as promulgated under Chapter 61-28 (North Dakota Water Pollution Control Act) of the North Dakota Century Code,

operations engaged in temporary discharge activities

are authorized to discharge from locations throughout the state of North Dakota

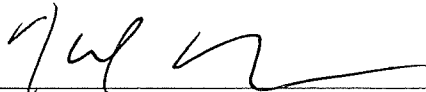
to waters of the State

provided all the conditions of this permit are met.

This permit and the authorization to discharge shall expire at midnight,

March 31, 2025.

Signed this 30 day of March, 2020.



Karl H. Rockeman, P.E.  
Director  
Division of Water Quality

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**DEFINITIONS Standard Permit BP 2019.05.29**

1. **"Act"** means the Clean Water Act.
2. **"Average monthly discharge limitation"** means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.
3. **"Average weekly discharge limitation"** means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.
4. **"Best management practices"** (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage areas.
5. **"Bypass"** means the intentional diversion of waste streams from any portion of a treatment facility.
6. **"Composite"** sample means a combination of at least 4 discrete sample aliquots, collected over periodic intervals from the same location, during the operating hours of a facility not to exceed a 24 hour period. The sample aliquots must be collected and stored in accordance with procedures prescribed in the most recent edition of Standard Methods for the Examination of Water and Wastewater.
7. **"Daily discharge"** means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.
8. **"Department"** means the North Dakota Department of Environmental Quality, Division of Water Quality.
9. **"DMR"** means discharge monitoring report.
10. **"EPA"** means the United States Environmental Protection Agency.
11. **"Geometric mean"** means the  $n^{\text{th}}$  root of a product of  $n$  factors, or the antilogarithm of the arithmetic mean of the logarithms of the individual sample values.
12. **"Grab"** for monitoring requirements, means a single "dip and take" sample collected at a representative point in the discharge stream.
13. **"Instantaneous"** for monitoring requirements, means a single reading, observation, or measurement. If more than one sample is taken during any calendar day, each result obtained shall be considered.
14. **"Maximum daily discharge limitation"** means the highest allowable "daily discharge."
15. **"Salmonid"** means of, belonging to, or characteristic of the family Salmonidae, which includes the salmon, trout, and whitefish.
16. **"Sanitary Sewer Overflows (SSO)"** means untreated or partially treated sewage overflows from a sanitary sewer collection system.

17. "**Severe property damage**" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
18. "**Total drain**" means the total volume of effluent discharged.
19. "**Upset**" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

**DEFINITIONS Whole Effluent Toxicity (WET) BP 2017.04.06**

20. "**Acute toxic unit**" ("TUa") is a measure of acute toxicity. TUa is the reciprocal of the effluent concentration that causes 50 percent of the organisms to die by the end on the acute exposure period (i.e.,  $100/\text{LC50}$ ).
21. "**Chronic toxic unit**" ("TUc") is a measure of chronic toxicity. TUc is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of the chronic exposure period (i.e.,  $100/\text{IC25}$ ).
22. "**Inhibition concentration**", ("IC"), is a point estimate of the toxicant concentration that causes a given percent reduction (p) in a non-quantal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., Interpolation Method).
23. "**LC50**" means the concentration of toxicant (e.g., effluent) which is lethal to 50 percent of the organisms exposed in the time period prescribed by the test.
24. "**No observed effect concentration**", ("NOEC"), is the highest concentration of toxicant (e.g., effluent) to which organisms are exposed in a chronic toxicity test [full life-cycle or partial life-cycle (short term) test], that causes no observable adverse effects on the test organisms (i.e., the highest concentration of effluent in which the values for the observed responses are not statistically significantly different from the controls).

**OUTFALL DESCRIPTION**

**Outfall 001** – Active. Final Outfall. Temporary discharge activities

**PERMIT SUBMITTALS SUMMARY**

Coverage Point	Submittal	Frequency	First Submittal Date
001, etc.	Discharge Monitoring Report	Quarterly	July 31, 2020
Application Renewal	NDPDES Application Renewal	1/permit cycle	October 1, 2025

**SPECIAL CONDITIONS**

**Daily Logs**

The permittee shall maintain a log relating to the authorized discharge(s). The following information shall be included in the summaries with appropriate discharge monitoring report forms:

- a. Flow information and dates discharges;
- b. sample results;
- c. records of visual observations;
- d. notations of any problems relating to treatment of the discharge; and
- e. name of receiving water.

**COVERAGE UNDER THIS PERMIT**

**Applicability of General Permit**

Under this general permit, authorization to discharge relatively uncontaminated waters from temporary discharge activities into the waters of the State of North Dakota may be granted. Such activities are hydrostatic testing of pipes, tanks or other similar vessels; disinfection of potable water lines; pump testing of water wells; dewatering of swimming pools and similar structures; construction dewatering; the treatment of gasoline or diesel contaminated ground water; and other short-term discharges. The water discharged from any of these activities must not contribute non-conventional or toxic pollutant loadings to waters of the state.

Temporary dewatering activities as related to construction activities may be covered under the 2020 Construction – Stormwater permit NDR110000. The department determined that if construction dewatering activities are discharging relatively uncontaminated water using items outlined in their Stormwater Pollution Prevention Plan (SWPPP) then there is no need to administratively provide multiple permits for the same activities. This concept may change as rules and regulations change for stormwater activities.

### Request for Authorization-Notice of Intent (NOI)

To be eligible for authorization to discharge under this general permit, the owner, operator, and/or authorized agent of any facility conducting temporary dewatering activities must fulfill the requirements of a Notice of Intent (NOI) by submitting a Short Form C (SFN 8319 (03/2019)), North Dakota Pollutant Discharge Elimination System (NDPDES) permit application to the North Dakota Department of Health at its address listed in the permit at least 30 days prior to the anticipated start of any discharge. The department will then have 30 days to grant discharge authority, deny discharge authority, or request additional information. If the department fails to act on any request within the 30-day period, the facility is automatically covered under the permit. The department may waive, at its discretion, the 30-day period in special cases.

After coverage has been obtained, all permittees shall be required to provide the following information to the department, in writing, at least five days prior to the start of any discharge. If all this information was included in/with the permit application, it does not need to be resubmitted.

- a. The name, address, and descriptive location of the facility.
- b. The name of principal in charge of operation of the facility.
- c. The name of receiving waters.
- d. The location of the discharge point(s).
- e. A brief description of the type of activity resulting in the discharge.
- f. A map or schematic diagram showing the general area and/or routing of the activity.
- g. The anticipated total volume to be discharged.
- h. The anticipated average and maximum rates of discharge.
- i. The anticipated dates of discharge.
- j. For hydrostatic testing only, the type (size and material) of pipe or vessel, whether the pipe or vessel has been used or is of virgin material and a description of the fluid normally transported through the pipeline or contained in the vessel.
- k. For hydrostatic testing only, the source of water to be used in the testing. If water is to be obtained from a well, (other than used for potable water supply) or from an impoundment, the concentration of total dissolved solids or the specific conductance of this water shall be reported.
- l. Describe briefly what measures will be taken to minimize, within practical means, the effects of the discharge on water quality in the receiving waters. A list of BMPs can be found in Table 1.

The department may waive, at its discretion, some of the items listed above and/or the five-day period in special cases.

## Discharges Not Covered

Temporary discharges associated with the process wastewater or any waster containing sanitary waste.

Any discharge not permitted correctly by local, state, or federal agencies (such as the U.S. Army Corps of Engineers Section 404 permits).

This general permit does not substitute for obligations under the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), or the National Historic Preservation Act (NHPA), it is your responsibility to ensure the project and resulting discharges comply with the respective requirements.

Discharges to waters for which there is a total maximum daily load (TMDL) allocation for sediment and/or parameters associated with sediment transport are not covered unless you develop a Pollution Prevention Plan that is consistent with the assumptions, allocations and requirements in the approved TMDL. If a specific numeric waste load allocation has been established that would apply to the project's discharges, the permittee(s) must incorporate that allocation into the Pollution Prevention Plan and implement necessary steps to meet that allocation.

## Request for Discharge of Water Treatment Additives

In the event a permittee proposes to discharge water additives, the permittee shall submit a request to discharge water additives to the department for review. Written notice from the department to discharge such additives at specified levels shall be obtained prior to discharge by the permittee. Additional monitoring and reporting may be required as a condition for approval to discharge the additive.

A request to discharge water additives shall include all of the following water additive usage and discharge information:

- a. Material Safety Data Sheet (MSDS);
- b. the proposed water additive discharge concentration;
- c. the discharge frequency (i.e. number of hours per day and number of days per year);
- d. the monitoring point from which the product is to be discharged;
- e. the type of removal treatment, if any, that the water additive receives prior to discharge;
- f. product function (i.e. microbiocide, flocculant, etc.);
- g. a 48-hour LC<sub>50</sub> or EC<sub>50</sub> for a North American freshwater planktonic crustacean (either *Ceriodaphnia* so., *Daphnia* sp. or *Simocephalus* sp.); and
- h. the results of toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean).

## Notice of Termination (NOT)

Permittees wanting to terminate coverage under this permit must submit a Notice of Termination (NOT) or other written request identifying the facility, reason why the permit is no longer needed and signed in accordance with the signatory requirement of the permit. NOT's can also be submitted through the department's Electronic Reporting Information System (ERIS). Compliance with the conditions of this permit is required until an official cancellation letter from the department is received.

## POLLUTION PREVENTION PLAN

Instead of monitoring for total suspended solids, the permittee may request to develop and implement a pollution prevention plan before beginning temporary discharge activities. The plan must detail the best management practices the permittee will undertake to reduce or eliminate any discharge of pollutants. The following table lists examples of best management practices for temporary discharge activities.

<b>Table 1: Examples of Best Management Practices</b>	
<b>Best Management Practice</b>	<b>Description of Practice</b>
Block and Gravel Inlet Protection	<ul style="list-style-type: none"> <li>Used in small drainage areas before the area has been permanently stabilized</li> <li>Where there is danger of silting in an inlet</li> </ul>
Buffer Zones	<ul style="list-style-type: none"> <li>Floodplains, next to wetlands, along stream banks, and on steep, unstable slopes</li> </ul>
Check Dams	<ul style="list-style-type: none"> <li>Across swales or drainage ditches to reduce the velocity of flow</li> </ul>
Dust Control	<ul style="list-style-type: none"> <li>Used where open dry areas of soil are anticipated on the site</li> </ul>
Drainage Swale or Earth Dike	<ul style="list-style-type: none"> <li>Divert upslope flows from disturbed areas and to divert runoff to a stabilized outlet</li> <li>To reduce the length of slope the runoff will cross</li> <li>At the perimeter of the construction site to prevent sediment-laden runoff from leaving the site</li> <li>To direct sediment-laden runoff to a sediment trapping device</li> </ul>
Excavated Gravel Inlet Protection	<ul style="list-style-type: none"> <li>Used in small drainage areas before the area has been permanently stabilized</li> <li>Where there is danger of silting in an inlet</li> <li>Where ponds around the inlet structure could be a problem to traffic on site</li> </ul>
Filter Fabric Inlet Protection	<ul style="list-style-type: none"> <li>Used in small drainage areas before the area has been permanently stabilized</li> <li>Where there is danger of silting in an inlet</li> </ul>
Geotextiles	<ul style="list-style-type: none"> <li>Stabilize the flow on channels and swales</li> <li>Used on recently planted slopes to protect seedlings until they become established</li> </ul>
Mulching	<ul style="list-style-type: none"> <li>Areas where slopes are steeper than 2:1</li> <li>Where runoff is flowing across the area</li> <li>When seedlings need protection from bad weather</li> </ul>
Permanent Seeding and Planting	<ul style="list-style-type: none"> <li>Areas where soils are unstable because of their texture, structure, water table, winds, or slopes</li> <li>Filter strips, buffer areas, vegetated swales, steep slopes, and stream banks</li> </ul>
Pipe Slope Drain	<ul style="list-style-type: none"> <li>On slopes before permanent stormwater drainage structures have been installed</li> <li>Where diversion measures have been used to concentrate flows</li> </ul>



Silt Fence	<ul style="list-style-type: none"> <li>• Immediately upstream of the point(s) of runoff discharge from a site before flow becomes concentrated</li> <li>• Below disturbed areas where runoff may occur in the form of overland flow</li> </ul>
Stabilized Construction Entrance	<ul style="list-style-type: none"> <li>• Wherever vehicles are leaving a construction site and enter onto a public road</li> <li>• At any unpaved entrance/exit where there is risk of transporting mud or sediment onto paved roads</li> </ul>
Temporary Sediment Trap	<ul style="list-style-type: none"> <li>• At the outlet of the perimeter controls installed during the first stage of construction</li> <li>• At the outlet of any structure which concentrates sediment-laden runoff, e.g. at the discharge point of diversions, channels, slope drains, or other runoff conveyances</li> <li>• Above a stormwater inlet that is in line to receive sediment-laden runoff</li> </ul>
Temporary Seeding	<ul style="list-style-type: none"> <li>• Areas which have been disturbed by construction and which are likely to be redisturbed, e.g. denuded areas, soil stockpiles, dikes, dams, sides of sediment basins, and temporary roadbanks</li> </ul>
<p>Note: <i>Information obtained from the Environmental Protection Agency's "Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices" (September 1992)</i></p>	

### Deadlines for Plan Preparation and Compliance

If the permittee develops a pollution prevention plan instead of sampling, the plan must be developed and implemented prior to the start of dewatering.

### Signature and Plan Review

The plan shall be signed in accordance with the signatory requirements and retained on-site at the location which generates the dewatering discharge.

The permittee shall make plans available upon request to the department or in the case of a discharge through a municipal separate storm sewer system, to the operator or the municipal system.

The department may notify the permittee at any time that the plan does not meet the minimum requirements of this part. Such notification shall identify those provisions of the permit which are not being met by the plan and identify which provisions require modifications in order to meet the minimum requirements. Within 7 days of notification, the permittee shall make the required changes to the plan and shall submit to the department a written certification that the requested changes have been made.

### Keeping Plans Current

The permittee shall amend the plan whenever there is a change in design, construction, operation, maintenance, or BMPs. The plan shall also be amended if the plan proves to be ineffective in controlling pollutants present in the discharge. The plan shall also include a description of the amendment process.

**I. LIMITATIONS AND MONITORING REQUIREMENTS**

**A. Discharge Authorization**

During the period beginning on the effective date of this permit and the effective date of an individual coverage letter, and lasting until the expiration of this permit or termination of the individual coverage, the permittee is authorized to discharge pollutants from the outfall(s) as specified to the following:  
**Waters of the State of North Dakota.**

This permit authorizes the discharge of only those pollutants resulting from facility processes, waste streams, and operations that have been clearly identified in the permit application process.

**B. Effluent Limitations and Monitoring**

1. The permittee must limit and monitor all discharges as specified below:

<b>Table 2: Effluent associated with disinfection of potable water lines, swimming pools and similar structures.</b>					
Parameter	Effluent Limitations			Monitoring Requirements	
	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type
Total Suspended Solids (TSS)	*	*	100 mg/l	1/week	Grab
pH, SU	Shall remain between 7.0 to 9.0 for all Class I and IA waters; Shall remain between 6.0 to 9.0 for all Class II and Class III waters.			1/week	Grab
Total Residual Chlorine <sup>b</sup>	*	*	0.05 mg/l	<sup>a</sup>	Grab

<b>Table 3: Effluent associated with pump testing of water wells.</b>					
Parameter	Effluent Limitations			Monitoring Requirements	
	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type
Total Suspended Solids (TSS)	*	*	100 mg/l	1/week	Grab
pH, SU	Shall remain between 7.0 to 9.0 for all Class I and IA waters; Shall remain between 6.0 to 9.0 for all Class II and Class III waters.			1/week	Grab
Total Radium (uranium-bearing wells)	5pCi/l	*	*	<sup>a</sup>	Grab

<b>Table 4: Effluent associated with construction dewatering</b>					
Parameter	Effluent Limitations			Monitoring Requirements	
	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type
Total Suspended Solids (TSS)	*	*	100 mg/l	1/week	Grab
pH, SU	Shall remain between 7.0 to 9.0 for all Class I and IA waters; Shall remain between 6.0 to 9.0 for all Class II and Class III waters.			1/week	Grab
Oil and Grease <sup>c</sup>	*	*	10 mg/l	1/week	Visual

<b>Table 5: Effluent produced from the treatment of contaminated ground or surface water from remediation activities.</b>					
Parameter	Effluent Limitations			Monitoring Requirements	
	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type
Total Suspended Solids (TSS)	*	*	100 mg/l	1/week	Grab
pH, SU	Shall remain between 7.0 to 9.0 for all Class I and IA waters; Shall remain between 6.0 to 9.0 for all Class II and Class III waters.			1/week	Grab
Benzene	For direct discharges, the concentration shall not exceed 5 µg/l.			a	Grab
Total BTEX <sup>d</sup>	For direct discharges, the concentration shall not exceed 100 µg/l.			a	Grab
Total Petroleum Hydrocarbons <sup>e</sup>	A limit of 1 mg/l shall apply to water classification for domestic water supply. Otherwise the limit shall be 10 mg/l.			a	Grab
Oil and Grease <sup>c</sup>	*	*	10 mg/l	1/week	Visual

<b>Table 6: Effluent produced from the hydrostatic testing of pipes, tanks or other vessels</b>					
Parameter	Effluent Limitations			Monitoring Requirements	
	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type
Total Suspended Solids (TSS)	*	*	100 mg/l	1/week	Grab

Parameter	Effluent Limitations			Monitoring Requirements	
	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type
pH, SU	Shall remain between 7.0 to 9.0 for all Class I and IA waters; Shall remain between 6.0 to 9.0 for all Class II and Class III waters.			1/week	Grab
Benzene <sup>f</sup>	For direct discharges, the concentration shall not exceed 5 µg/l.			a	Grab
Total BTEX <sup>d,f</sup>	For direct discharges, the concentration shall not exceed 100 µg/l.			a	Grab
Total Residual Chlorine <sup>b</sup>	*	*	0.05 mg/l	a	Grab
Total Petroleum Hydrocarbons <sup>e</sup>	A limit of 1 mg/l shall apply to water classification for domestic water supply. Otherwise the limit shall be 10 mg/l.			a	Grab
Oil and Grease <sup>c</sup>	*	*	10 mg/l	1/week	Visual

Parameter	Effluent Limitations			Monitoring Requirements	
	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type
Flow, MG	Report	*	Report	Daily	Instantaneous or Calculated
Total Drain, MG	*	*	Report	Quarterly	Calculated

Notes:

- \*. This parameter is not limited. However, the department may impose limitations based on sample history and to protect the receiving waters.
- a. Sample frequency shall be assigned based on the type of activity and what type of treatment is being provided. Sample frequencies may consist of daily, weekly, monthly, or quarterly.
- b. Total residual chlorine shall be analyzed if chlorinated water is used during the hydrostatic test. The analysis for TRC shall be conducted using reliable devices (Equivalent to EPA Method 330.5 DPD-Spectrophotometric). The method achieves a method detection limit of less than 0.05 mg/l. In the calculation of average TRC concentrations, those analytical results that are less than the method detection limit shall be considered to be zero for calculation purposes. If all individual analytical results that would be used in the calculations are below the method detection limit, then "< 0.05 mg/l" shall be reported on the quarterly Discharge Monitoring Report (DMR). Otherwise, report the calculated value.

- c. In the event that an oil sheen or floating oil is observed in the discharge, a grab sample shall be immediately taken, analyzed and reported. The sample shall not exceed 10 mg/l. Any noncompliance shall be reported as required to the department.
- d. BTEX shall be measured as the sum of benzene, ethyl benzene, toluene, and xylene. EPA methods 602, 624, or 1624 shall be used for the measurement of benzene, ethyl benzene, and toluene. EPA methods 8260 or equivalent method shall be used for the measurement of xylene including ortho-, meta-, and para-xylene. (Note: Depending on Regional/State policy, EPA method 8260 may be used a substitute or equivalent for the CWA methods 602, 624, or 1624 required under the CWQ in 40 CFR Part 136.)
- e. Acceptable methods for this parameter are 1664 in the latest edition of Standard Methods for the Examination of Water and Wastewater and EPA SW846 Method 8015 (modified) for Total Purgeable Petroleum Hydrocarbons.
- f. This parameter shall be analyzed if the discharge is from hydrostatic test water from the testing of used pipes, tanks, or other similar vessels which have or may have contained petroleum products.

## II. MONITORING, RECORDING, AND REPORTING REQUIREMENTS BP 2019.05.29

### A. Representative Sampling (Routine and Non-Routine Discharges)

All samples and measurements taken shall be representative of the monitored discharge.

In order to ensure that the effluent limits set forth in this permit are not violated at times other than when routine samples are taken, the permittee must collect additional samples at the appropriate outfall whenever any discharge occurs that may reasonably be expected to cause or contribute to a violation that is unlikely to be detected by a routine sample. The permittee must analyze the additional samples for those parameters limited under **Part I Effluent Limitations and Monitoring** requirements of this permit that are likely to be affected by the discharge.

The permittee must collect such additional samples as soon as the spill, discharge, or bypassed effluent reaches the outfall. The samples must be analyzed in accordance with **B. Test Procedures**. The permittee must report all additional monitoring in accordance with **D. Additional Monitoring**.

### B. Test Procedures

The collection and transportation of all samples shall conform with EPA preservation techniques and holding times found in 40 CFR 136. All laboratory tests shall be performed by a North Dakota certified laboratory in conformance with test procedures pursuant to 40 CFR 136, unless other test procedures have been specified in this permit or approved by EPA as an alternate test procedure under 40 CFR 136.5. The method of determining the total amount of water discharged shall provide results within 10 percent of the actual amount.

### C. Recording of Results

Records of monitoring information shall include:

1. the date, exact place and time of sampling or measurements;
2. the name(s) of the individual(s) who performed the sampling or measurements;
3. the name of the laboratory;
4. the date(s) and time(s) analyses were performed;

5. the name(s) of the individual(s) who performed the analyses;
6. the analytical techniques or methods used; and
7. the results of such analyses.

**D. Additional Monitoring**

If the discharge is monitored more frequently than this permit requires, all additional results, if in compliance with B. Test Procedures, shall be included in the summary on the Discharge Monitoring Report.

**E. Reporting of Monitoring Results**

1. Monitoring results shall be summarized and reported to the department using Discharge Monitoring Reports (DMRs). If no discharge occurs during a reporting period, "No Discharge" shall be reported. The permittee must submit DMRs electronically using the electronic information reporting system unless requirements in subsection 3 are met.
2. Prior to December 21, 2020, the permittee may elect to electronically submit the following compliance monitoring data and reports instead of mailing paper forms. Beginning December 21, 2020, the permittee must report the following using the electronic reporting system:
  - a. General permit reports [e.g., notices of intent (NOI); notices of termination (NOT); no exposure certifications (NOE)];
  - b. Municipal separate storm sewer program reports;
  - c. Pretreatment program reports;
  - d. Sewer overflow/bypass event reports; and
  - e. Clean Water Act 316(b) annual reports.
3. The permittee may seek a waiver from electronic reporting. To obtain a waiver, the permittee must complete and submit an Application for Temporary Electronic Reporting Waiver form (SFN 60992) to the department. The department will have 120 days to approve or deny the waiver request. Once the waiver is approved, the permittee may submit paper versions of monitoring data and reports to the department.
  - a. One of the following criteria must be met in order to obtain a waiver. The department reserves the right to deny any waiver request, even if they meet one of the criteria below.
    1. No internet access,
    2. No computer access,
    3. Annual DMRs (upon approval of the department),
    4. Employee turnover (3-month periods only), or
    5. Short duration permits (upon approval of the department).

All reports must be postmarked by the last day of the month following the end of each reporting period. All original documents and reports required herein shall be signed and submitted to the department at the following address:

ND Department of Environmental Quality  
Division of Water Quality  
918 East Divide Ave  
Bismarck ND 58501-1947

**F. Records Retention**

All records and information (including calibration and maintenance) required by this permit shall be kept for at least three years or longer if requested by the department or EPA.

**III. COMPLIANCE RESPONSIBILITIES**

**A. Duty to Comply**

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

**B. Proper Operation and Maintenance**

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. If necessary to achieve compliance with the conditions of this permit, this shall include the operation and maintenance of backup or auxiliary systems.

**C. Planned Changes**

The department shall be given advance notice of any planned changes at the permitted facility or of an activity which may result in permit noncompliance. Any anticipated facility expansions, production increase, or process modifications which might result in new, different, or increased discharges of pollutants shall be reported to the department as soon as possible. Changes which may result in a facility being designated a "new source" as determined in 40 CFR 122.29(b) shall also be reported.

**D. Duty to Provide Information**

The permittee shall furnish to the department, within a reasonable time, any information which the department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the department, upon request, copies of records required to be kept by this permit. When a permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in a permit application or any report, it shall promptly submit such facts or information.

**E. Signatory Requirements**

All applications, reports, or information submitted to the department shall be signed and certified.

All permit applications shall be signed by a responsible corporate officer, a general partner, or a principal executive officer or ranking elected official.

All reports required by the permit and other information requested by the department shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

The authorization is made in writing by a person described above and submitted to the department;  
and

The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters.

If an authorization under E. Signatory Requirements is no longer accurate for any reason, a new authorization satisfying the above requirements must be submitted to the department prior to or together with any reports, information, or applications to be signed by an authorized representative.

Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

**F. Twenty-four Hour Notice of Noncompliance Reporting**

1. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The following occurrences of noncompliance shall be included in the oral report to the department at 701.328.5210:
  - a. Any lagoon cell overflow or any unanticipated bypass which exceeds any effluent limitation in the permit under G. Bypass of Treatment Facilities;
  - b. Any upset which exceeds any effluent limitation in the permit under H. Upset Conditions; or
  - c. Violation of any daily maximum effluent or instantaneous discharge limitation for any of the pollutants listed in the permit.
2. A written submission shall also be provided within five days of the time that the permittee became aware of the circumstances. The written submission shall contain:
  - a. A description of the noncompliance and its cause;
  - b. The period of noncompliance, including exact dates and times;
  - c. The estimated time noncompliance is expected to continue if it has not been corrected; and
  - d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

Reports shall be submitted to the address in Part II.E. Reporting of Monitoring Results. The department may waive the written report on a case by case basis if the oral report has been received within 24 hours by the department at 701.328.5210 as identified above.

All other instances of noncompliance shall be reported no later than at the time of the next Discharge Monitoring Report submittal. The report shall include the four items listed in this subsection.



### G. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to any of the following provisions in this section.
2. Bypass exceeding limitations-notification requirements.
  - a. Anticipated Bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of bypass.
  - b. Unanticipated Bypass. The permittee shall submit notice of an unanticipated bypass as required under F. Twenty-four Hour Notice of Noncompliance Reporting.
3. Prohibition of Bypass. Bypass is prohibited, and the department may take enforcement action against a permittee for bypass, unless:
  - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
  - b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
  - c. The permittee submitted notices as required under the 1. Anticipated Bypass subsection of this section.

The department may approve an anticipated bypass, after considering its adverse effects, if the department determines that it will meet the three (3) conditions listed above.

### H. Upset Conditions

An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based permit effluent limitations if the requirements of the following paragraph are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and the permittee can identify its cause(s);
2. The permitted facility was, at the time being, properly operated;
3. The permittee submitted notice of the upset as required under F. Twenty-four Hour Notice of Noncompliance Reporting and
4. The permittee complied with any remedial measures required under I. Duty to Mitigate.

In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

**I. Duty to Mitigate**

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. The permittee, at the department's request, shall provide accelerated or additional monitoring as necessary to determine the nature and impact of any discharge.

**J. Removed Materials**

Collected screenings, grit, solids, sludges, or other pollutants removed in the course of treatment shall be buried or disposed of in such a manner to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash shall not be directly blended with or enter either the final plant discharge and/or waters of the state. The permit issuing authority shall be contacted prior to the disposal of any sewage sludges. At that time, concentration limitations and/or self-monitoring requirements may be established.

**K. Duty to Reapply**

Any request to have this permit renewed should be made six months prior to its expiration date.

**IV. GENERAL PROVISIONS**

**A. Inspection and Entry**

The permittee shall allow department and EPA representatives, at reasonable times and upon the presentation of credentials if requested, to enter the permittee's premises to inspect the wastewater treatment facilities and monitoring equipment, to sample any discharges, and to have access to and copy any records required to be kept by this permit.

**B. Availability of Reports**

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the department and EPA. As required by the Act, permit applications, permits, and effluent data shall not be considered confidential.

**C. Transfers**

This permit is not transferable except upon the filing of a Statement of Acceptance by the new party and subsequent department approval. The current permit holder should inform the new controller, operator, or owner of the existence of this permit and also notify the department of the possible change.

**D. New Limitations or Prohibitions**

The permittee shall comply with any effluent standards or prohibitions established under Section 306(a), Section 307(a), or Section 405 of the Act for any pollutant (toxic or conventional) present in the discharge or removed substances within the time identified in the regulations even if the permit has not yet been modified to incorporate the requirements.

**E. Permit Actions**

This permit may be modified, revoked and reissued, or terminated for cause. This includes the establishment of limitations or prohibitions based on changes to Water Quality Standards, the development and approval of waste load allocation plans, the development or revision to water quality management plans, changes in sewage sludge practices, or the establishment of prohibitions or more stringent limitations for toxic or conventional pollutants and/or sewage sludges. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

**F. Need to Halt or Reduce Activity Not a Defense**

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

**G. State Laws**

Nothing in this permit shall be construed to preclude the institution of legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation preserved under Section 510 of the Act.

**H. Oil and Hazardous Substance Liability**

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

**I. Property Rights**

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

**J. Severability**

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

**V. BENEFICIAL REUSES**

**A. Irrigation**

Discharged water may be used for irrigation provided soil and water compatibility testing confirms the water is suitable for irrigation. Wastewater used for irrigation shall be applied at a rate which would allow complete infiltration and not result in ponding or runoff from the irrigated area.

Agricultural land may be irrigated as well as forage crops used for livestock consumption or pastures. Public properties such as golf courses or parks may be irrigated.

Runoff that occurs from irrigated areas shall be monitored at the frequencies and with the types of measurements described in Part I.B.

The permittee shall maintain monitoring records indicating the location and usage (e.g., park or agricultural) of the land being irrigated, the dates irrigation occurred, the amount of wastewater used, and the total flow. In addition, monitoring records must include results from collected samples

**B. Construction**

Discharged water may be used for construction purposes such as soil compaction, dust suppression and washing aggregate, provided the wastewater is applied in a manner that does not result in runoff or ponding.

Runoff that occurs from the application areas shall be monitored at the frequencies and with the types of measurements described in Part. I.B.

The permittee shall maintain monitoring records indicating the location and usage of the land where application occurs, the dates application occurred, the amount of wastewater used, and the total flow. In addition, monitoring records must include results from collected samples.

**C. Oil and Gas Production (including Hydraulic Fracturing)**

The specific user of the discharged water may determine the specific treatment requirements for receiving wastewater.

The permittee shall maintain monitoring records indicating the specific user, the amount of wastewater used, and the total flow. In addition, monitoring records must include results from collected samples.

**D. Other Uses as Approved**

The permittee must consult with the department before beneficially reusing wastewater for purposes not identified in this permit.

**FACT SHEET FOR NDPDES PERMIT  
NDG070000**

**GENERAL PERMIT FOR TEMPORARY DISCHARGES**

**DATE OF THIS FACT SHEET – JANUARY 2020**

**INTRODUCTION**

The Federal Clean Water Act (CWA, 1972, and later amendments in 1977, 1981, and 1987, etc.) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the CWA is the National Pollutant Discharge Elimination System (NPDES), which the US Environmental Protection Agency (EPA) oversees. In 1975, the State of North Dakota was delegated primacy of the NPDES program by EPA. The North Dakota Department of Environmental Quality, hereafter referred to as "department", has been designated the state water pollution control agency for all purposes of the Federal Water Pollution Control Act, as amended [33 U.S.C. 1251, et seq.], and is authorized to take all action necessary or appropriate to secure to this state the benefits of the act and similar federal acts. The department's authority and obligations for the wastewater discharge permit program is in the North Dakota Administrative Code (NDAC) 33.1-16 which was adopted under North Dakota Century Code (NDCC) chapter 61-28. In North Dakota, these permits are referred to as North Dakota Pollutant Discharge Elimination System (NDPDES) permits.

The following rules or regulations apply to NDPDES permits:

- Procedures the department follows for issuing NDPDES permits (NDAC chapter 33.1-16-01),
- Standards of Quality for Waters of the State (NDAC chapter 33.1-16-02.1).

These rules require any treatment facility operator to obtain an NDPDES permit before discharging wastewater to state waters. They also define the basis for limits on each discharge and for other requirements imposed by the permit.

According to NDAC section 33.1-16-01-08, the department must prepare a draft permit and accompanying fact sheet and make it available for public review. The department must also publish an announcement (public notice) during a period of thirty days, informing the public where a draft permit may be obtained and where comments regarding the draft permit may be sent (NDAC section 33.1-16-01-07). For more information regarding preparing and submitting comments about the fact sheet and permit, please see **Appendix A – Public Involvement**. Following the public comment period, the department may make changes to the draft NDPDES permit. The department will summarize the responses to comments and changes to the permit in **Appendix D – Response to Comments**.

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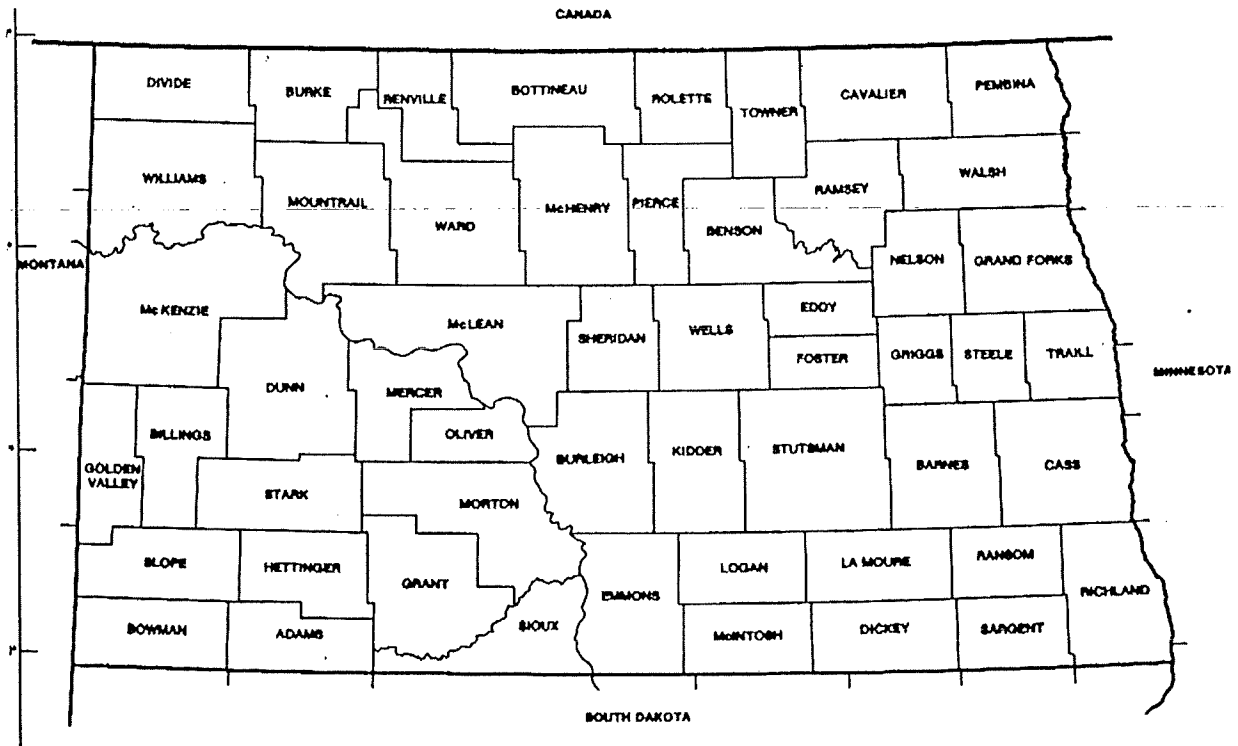
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### BACKGROUND INFORMATION

#### General Information

Permit Number:	NDG070000
Permit Type:	General Permit, Renewal
Type of Treatment:	Best Available Technology Economically Achievable (BAT); Best Professional Judgment (BPJ); Best Practical Technology (BPT); and Best Management Practices (BMPs)
Discharge Location:	Waters of the State of North Dakota

Figure 1 – A drawing of the State of North Dakota and its counties.



General permits provide a streamline means to cover a large number of facilities that are subject to the regulations of temporary discharge activities. These dischargers are subject to the requirements of Section 402 of the Clean Water Act, as enforced by the department. In addition, the general permit process places less of an administrative burden on the issuing authority and regulated community than the individual permitting process. The general permits require baseline control practices aimed at minimizing the impact of temporary discharges to waters of the state. Individual permits may be developed to address specific water quality concerns or specific industry segment practices. Obtaining an NDPDES general permit is essential to any temporary discharge activity.



## **COVERAGE UNDER THIS PERMIT**

### **Applicability of General Permit**

Under this general permit, authorization to discharge relatively uncontaminated waters from temporary discharge activities into the waters of the State of North Dakota may be granted. Such activities are hydrostatic testing of pipes, tanks or other similar vessels; disinfection of potable water lines; pump testing of water wells; dewatering of swimming pools and similar structures; construction dewatering; treatment of gasoline or diesel contaminated ground water; and other short-term discharges. The water discharged from any of these activities must not contribute non-conventional or toxic pollutant loadings to waters of the state.

Temporary dewatering activities as related to construction activities may be covered under the 2020 Construction – Stormwater permit NDR110000. The department determined that if construction dewatering activities are discharging relatively uncontaminated water using items outlined in their Stormwater Pollution Prevention Plan (SWPPP) then there is no need to administratively provide multiple permits for the same activity. This concept may change as rules and regulations change for stormwater activities.

### **Request for Authorization – Notice of Intent (NOI)**

To be eligible for authorization to discharge under this general permit, the owner, operator, and/or authorized agent of any facility conducting temporary discharge activities must fulfill the requirements of a Notice of Intent (NOI) by submitting Short Form C (SFN 8319 (03/2019)) to the department at the address listed in the permit at least 30 days prior to the anticipated start of any discharge. The department will then have 30 days to grant discharge authority, deny discharge authority, or request additional information. If the department fails to act on any request within the 30-day period, the facility is automatically covered under the permit. The department may waive, at its discretion, the 30-day period in special cases.

After coverage has been obtained, all permittees shall be required to provide the following information to the department, in writing, at least five days prior to the start of any discharge. If all this information was included in/with the NOI, it does not need to be resubmitted.

- a. The name, address, and descriptive location of the facility.
- b. The name of principal in charge of operation of the facility.
- c. The name of receiving waters.
- d. The location of the discharge point(s).
- e. A brief description of the type of activity resulting in the discharge.
- f. A map or schematic diagram showing the general area and/or routing of the activity.
- g. The anticipated total volume to be discharged.

- h. The anticipated average and maximum rates of discharge.
- i. The anticipated dates of discharge.
- j. For hydrostatic testing only, the type (size and material) of pipe or vessel, whether the pipe or vessel has been used or is of virgin material and a description of the fluid normally transported through the pipeline or contained in the vessel.
- k. For hydrostatic testing only, the source of water to be used in the testing. If water is to be obtained from a well, (other than used for potable water supply) or from an impoundment, the concentration of total dissolved solids or the specific conductance of this water shall be reported.
- l. Describe briefly what measures will be taken to minimize, within practical means, the effects of the discharge on water quality in the receiving waters. A list of BMPs is found in Appendix C.

The department may waive, at its discretion, some of the items listed above and/or the five-day period in special cases.

#### **Discharges Not Covered**

Temporary discharges associated with process wastewater or any water containing sanitary waste.

Any discharge not permitted by local, state, or federal agencies (such as U.S. Army Corps of Engineers Section 404 permits).

This general permit does not substitute for obligations under the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), or National Historic Preservation Act (NHPA), it is the responsibility of the permittee to ensure the project and resulting discharges comply with the respective requirements.

Discharges to waters for which there is a total maximum daily load (TMDL) allocation for sediment and/or parameters associated with sediment transport are not covered unless you develop a Pollution Prevention Plan that is consistent with the assumptions, allocations and requirements in the approved TMDL. If a specific numeric waste load allocation has been established that would apply to the project's discharges, the permittee(s) must incorporate that allocation into the Pollution Prevention Plan and implement necessary steps to meet that allocation. Information about TMDL allocations may be found at the following website:

[https://deq.nd.gov/WQ/3\\_Watershed\\_Mgmt/2\\_TMDLS/TMDLs.aspx](https://deq.nd.gov/WQ/3_Watershed_Mgmt/2_TMDLS/TMDLs.aspx)

### **Request for Discharge of Water Treatment Additives**

In the event a permittee proposes to discharge water additives, the permittee shall submit a request to discharge water additives to the department for review. Written notice from the department to discharge such additives at specified levels shall be obtained prior to discharge by the permittee. Additional monitoring and reporting may be required as a condition for the approval to discharge the additive.

A request to discharge water additives shall include all of the following water additive usage and discharge information:

- a. Safety Data Sheet (SDS);
- b. the proposed water additive discharge concentration;
- c. the discharge frequency (i.e. number of hours per day and number of days per year);
- d. the monitoring point from which the product is to be discharged;
- e. the type of removal treatment, if any, that the water additive receives prior to discharge;
- f. product function (i.e. microbiocide, flocculant, etc.);
- g. a 48-hour LC<sub>50</sub> or EC<sub>50</sub> for a North American freshwater planktonic crustacean (either *Ceriodaphnia* sp., *Daphnia* sp. Or *Simocephalus* sp.); and
- h. the results of a toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean).

### **Authorization to Discharge**

Coverage under this permit does not convey approval to discharge to any ditch, storm sewer, private property, or other method of routing the effluent from the site of discharge to the waters of the state. It shall be the permittee's responsibility to seek, apply for and obtain any additional authorizations necessary to initiate the discharge proposed in the permittee's NOI. If the process of obtaining all the authorizations necessary to initiate the discharge results in changes to the permittee's NOI, the permittee shall modify in writing the NOI for an NDPDES permit. The permittee is not authorized to discharge wastewater other than the type and at the location specified in the NOI.

### **Notice of Termination (NOT)**

Permittees wanting to terminate coverage under this permit must submit a Notice of Termination (NOT) or other written request identifying the facility, reason why the permit is no longer needed and signed in accordance with the signatory requirement of the permit. NOT's can also be submitted through the department's Electronic Reporting Information System (ERIS). Compliance with the conditions of this permit is required until an official cancellation letter from the department is received.

## POLLUTION PREVENTION PLAN

Instead of monitoring for total suspended solids, the permittee may request to develop and implement a Pollution Prevention Plan before beginning the temporary discharge activities. The plan must detail the best management practices (BMPs) the permittee will undertake to reduce or eliminate any discharge of pollutants. Table 1 lists some examples of BMPs for temporary discharge activities. Additional examples of BMPs can be found in **Appendix C**.

**Table 1: Examples of Best Management Practices**

Best Management Practice	Description of Practice
Filter Berm	<ul style="list-style-type: none"> <li>• A temporary ridge of gravel or crushed rock.</li> <li>• Retains sediment on-site by retarding and filtering runoff while allowing water to be discharged from the site.</li> </ul>
Vegetative Buffer	<ul style="list-style-type: none"> <li>• An area of growing vegetation between the discharge and the receiving waters.</li> <li>• Filters runoff and minimizes erosion.</li> </ul>
Filter Fence	<ul style="list-style-type: none"> <li>• A low fence made of filter cloth and fencing material.</li> <li>• Filters runoff water before discharge.</li> </ul>
Sediment Pond	<ul style="list-style-type: none"> <li>• Small ponding area either diked or excavated.</li> <li>• Allows the sediment to settle out before discharge.</li> </ul>

### Deadlines for Plan Preparation and Compliance

If the permittee develops a Pollution Prevention Plan instead of sampling, the plan must be developed and implemented prior to the start of the discharge.

### Signature and Plan Review

The plan shall be signed in accordance with the signatory requirements and retained on-site at the location which generates a permitted discharge.

The permittee shall make plans available upon request to the department or in the case of a discharge through a municipal separate storm sewer system, to the operator of the municipal system.

The department may notify the permittee at any time that the plan does not meet the minimum requirements of this part. Such notification shall identify those provisions of the permit which are not being met by the plan and identify which provisions require modifications in order to meet the minimum requirements. Within 7 days of notification, the permittee shall make the required changes to the plan and shall submit to the department a written certification that the requested changes have been made.

### Keeping Plans Current

The permittee shall amend the plan whenever there is a change in design, construction,

operation, maintenance, or BMPs. The plan shall also be amended if the plan proves to be ineffective in controlling pollutants present in the discharge. The plan shall also include a description of the amendment process.

**PROPOSED PERMIT LIMITS**

**EFFLUENT LIMITATIONS**

The proposed effluent limitations shall take effect once the permit becomes active or when the effective date of an individual coverage letter is obtained. The effluent limitations and the basis for these limitations are in the following tables:

**Table 2: Effluent associated with disinfection of potable water lines, swimming pools, and similar structures.**

Effluent Parameter	30-Day Average	7-Day Average	Daily Maximum	Basis <sup>a</sup>
Total Suspended Solids (TSS), mg/l	*	*	100	Previous Permit BPJ
pH, SU	Shall remain between 7.0 to 9.0 for all Class I and IA waters; Shall remain between 6.0 to 9.0 for all Class II and III waters			Previous Permit WQS
Total Residual Chlorine, mg/l <sup>b</sup>	*	*	0.05	Previous Permit BPJ

**Table 3: Effluent associated with pump testing of water wells.**

Effluent Parameter	30-Day Average	7-Day Average	Daily Maximum	Basis <sup>a</sup>
Total Suspended Solids (TSS), mg/l	*	*	100	Previous Permit BPJ
pH, SU	Shall remain between 7.0 to 9.0 for all Class I and IA waters; Shall remain between 6.0 to 9.0 for all Class II and III waters			Previous Permit WQS
Total Radium (uranium-bearing wells)	5pCi/l	*	*	Previous Permit WQS

**Table 4: Effluent associated with construction dewatering.**

Effluent Parameter	30-Day Average	7-Day Average	Daily Maximum	Basis <sup>a</sup>
Total Suspended Solids (TSS), mg/l	*	*	100	Previous Permit BPJ
pH, SU	Shall remain between 7.0 to 9.0 for all Class I and IA waters; Shall remain between 6.0 to 9.0 for all Class II and III waters			Previous Permit WQS
Oil and Grease, mg/l <sup>c</sup>	*	*	10	Previous Permit EPA Guidance BPJ

**Table 5: Effluent produced from the treatment of contaminated ground or surface water from remediation activities.**

Effluent Parameter	30-Day Average	7-Day Average	Daily Maximum	Basis <sup>a</sup>
Total Suspended Solids (TSS), mg/l	*	*	100	Previous Permit BPJ
pH, SU	Shall remain between 7.0 to 9.0 for all Class I and IA waters; Shall remain between 6.0 to 9.0 for all Class II and III waters			Previous Permit WQS
Benzene, µg/l	For direct discharges, the concentration shall not exceed 5 µg/l.			Previous Permit EPA Guidance BPJ
Total BTEX, µg/l <sup>d</sup>	For direct discharges, the concentration shall not exceed 100 µg/l.			Previous Permit EPA Guidance BPJ
Total Petroleum Hydrocarbons, mg/l <sup>e</sup>	A limit of 1 mg/l shall apply to water classification for domestic water supply. Otherwise the limit shall be 10 mg/l.			Previous Permit BPJ
Oil and Grease, mg/l <sup>c</sup>	*	*	10	Previous Permit EPA Guidance BPJ

Table 6: Effluent produced from the hydrostatic test of pipes, tanks, or other vessels.

Effluent Parameter	30-Day Average	7-Day Average	Daily Maximum	Basis <sup>a</sup>
Total Suspended Solids (TSS), mg/l	*	*	100	Previous Permit BPJ
pH, SU	Shall remain between 7.0 to 9.0 for all Class I and IA waters; Shall remain between 6.0 to 9.0 for all Class II and III waters			Previous Permit WQS
Benzene, µg/l <sup>f</sup>	For direct discharges, the concentration shall not exceed 5 µg/l.			Previous Permit EPA Guidance BPJ
Total BTEX, µg/l <sup>d, f</sup>	For direct discharges, the concentration shall not exceed 100 µg/l.			Previous Permit EPA Guidance BPJ
Total Residual Chlorine, mg/l <sup>b</sup>	*	*	0.05	Previous Permit BPJ
Total Petroleum Hydrocarbons, mg/l <sup>e, f</sup>	A limit of 1 mg/l shall apply to water classification for domestic water supply. Otherwise the limit shall be 10 mg/l.			Previous Permit BPJ
Oil and Grease, mg/l <sup>c</sup>	*	*	10	Previous Permit EPA Guidance BPJ

<b>Notes:</b>	
*	This parameter is not limited. However, the department may impose limitations based on sample history and to protect the receiving waters.
a.	<p>The basis of the effluent limitations is given below:</p> <p>"Previous Permit" refers to limitations in the previous permit. The NPDES regulations <b>40 CFR Part 122.44(1)(1) Reissued permits</b> require that when a permit is renewed or reissued, interim limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit unless the circumstances on which the previous permit was issued have materially and substantially changed since the previous permit was issued and would constitute cause for permit modification or revocation and reissuance under <b>40 CFR Part 122.62</b>.</p> <p>"WQS" refers to effluent limitations based on the State of North Dakota's "Standards of Quality for Waters of the State", NDAC Chapter 33-16-02.1.</p> <p>"BPJ" refers to best professional judgement.</p>
b.	Total residual chlorine shall be analyzed if chlorinated water is used during the hydrostatic test. The analysis for TRC shall be conducted using reliable devices (Equivalent to EPA Method 330.5 DPD-Spectrophotometric). The method achieves a method detection limit of less than 0.05 mg/l. In the calculation of average TRC concentrations, those analytical results that are less than the method detection limit shall be considered to be zero for calculation purposes. If all individual analytical results that would be used in the calculations are below the method detection limit, then "< 0.05 mg/l" shall be reported on the quarterly Discharge Monitoring Report (DMR). Otherwise, report the calculated value.
c.	In the event that an oil sheen or floating oil is observed in the discharge, a grab sample shall be immediately taken, analyzed, and reported. The sample shall not exceed 10 mg/l. Any noncompliance shall be reported as required to the department.
d.	BETX shall be measured as the sum of benzene, ethyl benzene, toluene, and xylene. EPA methods 602, 624, or 1624 shall be used for the measurement of benzene, ethyl benzene, and toluene. EPA method 8260 or equivalent method shall be used for the measurement of xylene including ortho-, meta-, and para-xylene. (Note: Depending on Regional/State policy, EPA method 8260 may be used as a substitute or equivalent for the CWA methods 602, 624, or 1624 required under the CWQ in 40 CFR Part 136.)
e.	Acceptable methods for this parameter are 1664 in the latest edition of Standard Methods for the Examination of Water and Wastewater and EPA SW846 Method 8015 (modified) for Total Purgeable Petroleum Hydrocarbons.
f.	This parameter shall be analyzed if the discharge is from hydrostatic test water from the testing of used pipes, tanks, or other similar vessels which have or may have contained petroleum products.



**SELF-MONITORING REQUIREMENTS**

All effluent is sampled at a point leaving the site but prior to entering waters of the state.

**Self-Monitoring Requirements**

Effluent Parameter	Frequency <sup>a</sup>	Sample Type <sup>b</sup>
TSS, mg/l	Weekly	Grab
pH, SU	Weekly	Grab
Benzene, µg/l	Weekly, Monthly, Quarterly	Grab
Total BTEX, µg/l	Weekly, Monthly, Quarterly	Grab
Oil & Grease, mg/l	Daily, Weekly	Visual <sup>c</sup>
Total Residual Chlorine, mg/l	Daily, Weekly	Grab
Total Petroleum Hydrocarbons, mg/l	Weekly, Monthly, Quarterly	Grab
Total Radium (uranium-bearing wells)	Weekly, Monthly	Grab
Flow, gpm	Daily	Instantaneous or Calculated
Total Drain, MG	Quarterly	Calculated

**Notes:**

- a. Sample frequency shall be assigned based on the type of activity and what type of treatment is being provided.
- b. Refer to Appendix B for definitions.
- c. If a visible sheen of floating oil is observed in the discharge, a grab sample shall be collected and the department shall be contacted.

**SURFACE WATER QUALITY-BASED EFFLUENT LIMITS**

The North Dakota Standards of Quality for Waters of the State (NDAC Chapter 33.1-16-02.1) are designed to protect existing water quality and preserve the beneficial uses of North Dakota's waters. Wastewater discharge permits must include conditions that ensure the discharge will meet the surface water quality standards. Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily load (TMDL) study. TMDLs result from a scientific study of the water body and are developed in order to reduce pollution from all sources.

### **Numerical Criteria for the Protection of Aquatic Life and Recreation**

Numerical water quality criteria are listed in the water quality standards for waters (NDAC Chapter 33.1-16-02.1). They specify the maximum levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. The department uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

### **Numerical Criteria for the Protection of Human Health**

The U.S. EPA has published numeric water quality criteria for the protection of human health that are applicable to dischargers. These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

### **Narrative Criteria**

Narrative water quality criteria (NDAC Chapter 33.1-16-02.1-08) limit concentrations of pollutants from exceeding applicable standards of the receiving waters. The department adopted a narrative biological goal solely to provide an additional assessment method that can be used to identify impaired surface waters.

### **Antidegradation**

The purpose of North Dakota's Antidegradation Policy (NDAC Chapter 33.1-16-02.1(Appendix IV)) is to:

- Provide all waters of the state one of three levels of antidegradation protection.
- Determine whether authorizing the proposed regulated activity is consistent with antidegradation requirements.

The department's fact sheet demonstrates that the existing and designated uses of the receiving water will be protected under the conditions of the proposed permit.

### **Mixing Zones**

The department's Water quality standards contain a Mixing Zone and Dilution Policy and Implementation Procedure, NDAC Chapter 33.1-16-02.1 (Appendix III). This policy addresses how mixing and dilution of point source discharges with receiving waters will be addressed in developing chemical-specific and whole effluent toxicity discharge limitations. Depending upon site-specific mixing patterns and environmental concerns, some pollutants/criteria may be allowed a mixing zone or dilution while others may not. In all cases, mixing zone and dilution allowances shall be limited, as necessary, to protect the integrity of the receiving water's ecosystem and designated uses.

## EVALUATION OF SURFACE WATER QUALITY-BASED EFFLUENT LIMITS FOR NUMERIC CRITERIA

### Total Suspended Solids (TSS)

Technology-based limits for most industries are derived assuming that the subject facilities are ongoing operations. Because of the relatively short duration of these temporary discharges, directly comparing TSS levels achieved by industries that are more permanent would not be a sound basis for deriving technology-based effluent limits.

A facility exercising reasonably diligent control of TSS through the use of a pond system, filtration, or other BMP should be capable of reliably achieving a TSS level of 100 mg/l or less. Effluent guidelines for conventional pollutants do not exist for the categories of point source dischargers covered by this permit. Therefore, the effluent limit for TSS will be 100 mg/l, based on the previous permit and best professional judgment (BPJ).

Because of the variety of available chemical flocculants, the use of such settling aids will be subject to prior review by the department.

### pH

The effluent limits for pH shall be in accordance to the state water quality standards based on receiving water classification. The following table summarizes pH limits, which are based on the beneficial uses criteria for waters of each respective classification and previous permit limits.

Receiving water classification	Effluent pH limit
Class I and IA	7.0 – 9.0 S.U.
Class II and III	6.0 – 9.0 S.U.

### Total Residual Chlorine

The total residual chlorine (TRC) concentration must be non-detectable at the point the discharge reaches the receiving waters. The department considers the analytical detection limit for TRC to be 0.05 mg/l. Any sample results less than 0.05 mg/l will be considered non-detectable. This can be verified by monitoring at any of the following locations:

1. At the point where the discharge reaches the receiving water;
2. at the discharge location; or
3. at a location between these two points.

This limit is based on BPJ.

### Total Petroleum Hydrocarbons

Total petroleum hydrocarbons (TPH) may be present in the discharge due to pump lubricant contamination, contaminated groundwater, or contaminated runoff entering the discharge. The

department shall apply a limit of 1 mg/l with a water classification for domestic water supplies. All other water classifications shall have a limit of 10 mg/l based on BPJ, since this level can generally be attained by conventional oil skimming methods or a submerged overflow.

### **BTEX and Benzene**

The total BTEX concentration shall not exceed 100 µg/l. BTEX shall be measured as the sum of benzene, ethyl benzene, toluene, and zylene. The benzene concentration shall not exceed 5 µg/l. These limits are based on EPA guidance for discharges of wastewater from petroleum contaminated ground water remediation sites and BPJ.

### **Oil and Grease**

Oil and Grease may be present in the discharge due to work related activities, contaminated groundwater, or contaminated runoff entering the discharge. The department shall apply a limit of 10 mg/l based on EPA guidance and BPJ, since this level can generally be attained by conventional oil skimming methods or a submerged overflow.

### **Total Radium (uranium-bearing wells)**

Total Radium (uranium-bearing wells) may be present in well drilling activities. The department shall apply a limit of 5pCi/l based on the states WQS to locations identified as having the potential to discharge total radium.

### **Phosphorus and Nitrogen (Nutrients)**

Nutrient monitoring was excluded from this general permit renewal. The North Dakota Nutrient Reduction Strategy addresses discharges from point sources, it specifically looks at the strategic planning importance for implementing nutrient controls for Publicly Owned Treatment Works (POTWs). Discharges covered by this permit do not fit into that category. In addition to the discharges covered under this permit not being a focus of the strategy, the nature of the discharges are not likely to include a significant concentration of nutrients.

### **HUMAN HEALTH**

North Dakota's water quality standards include numeric human health-based criteria that the department must consider when writing NDPDES permits. These criteria were established in 1992 by the U.S. EPA in its National Toxics Rule (40 CFR 131.36). The National Toxics Rule allows states to use mixing zones to evaluate whether discharges comply with human health criteria. The department determined that temporary discharge activities listed above are regulated to protect human health. The department will re-evaluate temporary discharge activities for impacts to human health at the next permit reissuance.

### **MONITORING REQUIREMENTS**

The department requires monitoring, recording, and reporting (NDAC Chapter 33.1-16-01-(21-23) and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's limits.

## **TEST PROCEDURES**

The collection and transportation of all samples shall conform to EPA preservation techniques and holding times. All laboratory tests shall be performed by a North Dakota certified laboratory in conformance with test procedures pursuant to 40 CFR 136, unless other test procedures have been specified or approved by EPA as an alternate test procedure under 40 CFR 136.5. The method of determining the total amount of water discharged shall provide results within 10 percent of the actual amount.

## **OTHER PERMIT CONDITIONS**

### **DAILY LOGS**

The permittee shall maintain a log relating to the authorized discharge(s). The following information shall be included in the summaries with appropriate discharge monitoring report forms:

- a. Flow information and dates discharged;
- b. sample results;
- c. records of visual observations;
- d. notations of any problems relating to treatment of the discharge; and
- e. name of receiving water.

### **BENEFICIAL REUSE**

Discharged water can be used for irrigation, construction purposes such as soil compaction, dust suppression and washing aggregate, oil and gas production and other uses as approved by the department. Any reuse runoff that occurs shall be monitored at the frequencies and the types of measurements described in Part I(B) of the permit. The permittee will maintain monitoring records indicating the location and usage of the land where application occurs, the dates application occurred, the amount of wastewater used, and the total flow. In addition, monitoring records must include results from collected samples.

## **PERMIT ISSUANCE PROCEDURES**

### **PERMIT ACTIONS**

This permit may be modified, revoked and reissued, or terminated for cause. This includes the establishment of limitations or prohibitions based on changes to standards of water quality, the development and approval of waste load allocation plans, the development or revision to water quality management plans, changes in sewage sludge practices, or the establishment of prohibitions or more stringent limitations for toxic or conventional pollutants and/or sewage sludges. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

### **PROPOSED PERMIT ISSUANCE**

This proposed permit meets all statutory requirements for the department to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the State of North Dakota. The department proposes to issue this permit for a term of five (5) years.

## APPENDIX A – PUBLIC INVOLVEMENT INFORMATION

The department proposes to reissue a general permit for temporary discharges within the State of North Dakota. This permit includes wastewater discharge limits and other conditions. This fact sheet describes the type of activities covered under this general permit and the department's reasons for requiring permit conditions.

The department will place a Public Notice of Draft on February 10, 2020 in the **Regional Papers** to inform the public and to invite comment on the proposed draft North Dakota Pollutant Discharge Elimination System permit and fact sheet.

The Notice –

- Tells where copies of the draft Permit and Fact Sheet are available for public evaluation.
- Offers to provide assistance to accommodate special needs.
- Urges people to submit their comments before the end of the comment period.
- Informs the public that if there is significant interest, a public hearing will be scheduled.

You may obtain further information from the department by telephone, 701.328.5210 or by writing to the address listed below.

North Dakota Department of Environmental Quality  
Division of Water Quality  
918 East Divide Avenue, 4<sup>th</sup> Floor  
Bismarck, ND 58501

The primary author of this permit and fact sheet is Sarah Waldron Feld.

## PUBLIC NOTICE

### North Dakota Department of Environmental Quality Public Notice Issue of an NDPDES Permit

Public Notice Date: 2/10/2020

Public Notice Number: ND-2020-003

#### Purpose of Public Notice

The Department intends to issue the following North Dakota Pollutant Discharge Elimination System (NDPDES) Discharge Permit under the authority of Section 61-28-04 of the North Dakota Century Code.

#### Permit Information

Application Date: 10/1/2019

Application Number: NDG07

Applicant Name: General Permit NDG070000-Temporary Discharge

Mailing Address: ND Dept of Env Quality, Div of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947

Telephone Number: 701.328.5237

Proposed Permit Expiration Date: 3/31/2025

#### Description

The department intends to reissue a NDPDES General Permit, NDG070000, to regulate temporary discharge activities in the State of North Dakota. The permit establishes effluent requirements based on technology and water quality considerations, prohibitions, best management practices, and other conditions applicable to these types of wastewaters. Anyone desiring coverage under this permit should contact the department for further information.

#### Tentative Determinations

Proposed effluent limitations and other permit conditions have been made by the Department. They assure that State Water Quality Standards and applicable provisions of the FWPCAA will be protected.

#### Information Requests and Public Comments

Copies of the application, draft permit, and related documents are available for review. Comments or requests should be directed to the ND Dept of Env Quality, Div of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947 or by calling 701.328.5210.

All comments received by March 23, 2020 will be considered prior to finalizing the permit. If there is significant interest, a public hearing will be scheduled. Otherwise, the Department will issue the final permit within sixty (60) days of this notice. If you require special facilities or assistance relating to a disability, call TDD at 1.800.366.6868.



## APPENDIX B – GLOSSARY

### DEFINITIONS Standard Permit BP 2019.05.29

1. **“Act”** means the Clean Water Act.
2. **“Average monthly discharge limitation”** means the highest allowable average of “daily discharges” over a calendar month, calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.
3. **“Average weekly discharge limitation”** means the highest allowable average of “daily discharges” over a calendar week, calculated as the sum of all “daily discharges” measured during a calendar week divided by the number of “daily discharges” measured during that week.
4. **“Best management practices”** (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage areas.
5. **“Bypass”** means the intentional diversion of waste streams from any portion of a treatment facility.
6. **“Composite”** sample means a combination of at least 4 discrete sample aliquots, collected over periodic intervals from the same location, during the operating hours of a facility not to exceed a 24 hour period. The sample aliquots must be collected and stored in accordance with procedures prescribed in the most recent edition of Standard Methods for the Examination of Water and Wastewater.
7. **“Daily discharge”** means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the “daily discharge” is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the “daily discharge” is calculated as the average measurement of the pollutant over the day.
8. **“Department”** means the North Dakota Department of Environmental Quality, Division of Water Quality.
9. **“DMR”** means discharge monitoring report.
10. **“EPA”** means the United States Environmental Protection Agency.
11. **“Geometric mean”** means the  $n^{\text{th}}$  root of a product of  $n$  factors, or the antilogarithm of the arithmetic mean of the logarithms of the individual sample values.

12. "**Grab**" for monitoring requirements, means a single "dip and take" sample collected at a representative point in the discharge stream.
13. "**Instantaneous**" for monitoring requirements, means a single reading, observation, or measurement. If more than one sample is taken during any calendar day, each result obtained shall be considered.
14. "**Maximum daily discharge limitation**" means the highest allowable "daily discharge."
15. "**Salmonid**" means of, belonging to, or characteristic of the family Salmonidae, which includes the salmon, trout, and whitefish.
16. "**Sanitary Sewer Overflows (SSO)**" means untreated or partially treated sewage overflows from a sanitary sewer collection system.
17. "**Severe property damage**" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
18. "**Total drain**" means the total volume of effluent discharged.
19. "**Upset**" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

**DEFINITIONS Whole Effluent Toxicity (WET) BP 2017.04.06**

20. "**Acute toxic unit**" ("TUa") is a measure of acute toxicity. TUa is the reciprocal of the effluent concentration that causes 50 percent of the organisms to die by the end on the acute exposure period (i.e.,  $100/\text{LC50}$ ).
21. "**Chronic toxic unit**" ("TUc") is a measure of chronic toxicity. TUc is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of the chronic exposure period (i.e.,  $100/\text{IC25}$ ).
22. "**Inhibition concentration**", ("IC"), is a point estimate of the toxicant concentration that causes a given percent reduction (p) in a non-quantal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., Interpolation Method).
23. "**LC50**" means the concentration of toxicant (e.g., effluent) which is lethal to 50 percent of the organisms exposed in the time period prescribed by the test.

24. **"No observed effect concentration"**, ("NOEC"), is the highest concentration of toxicant (e.g., effluent) to which organisms are exposed in a chronic toxicity test [full life-cycle or partial life-cycle (short term) test], that causes no observable adverse effects on the test organisms (i.e., the highest concentration of effluent in which the values for the observed responses are not statistically significantly different from the controls).

**APPENDIX C – EXAMPLES OF BEST MANAGEMENT PRACTICES (BMPs)**

Best Management Practice	Uses
Block and Gravel Inlet Protection	<ul style="list-style-type: none"> <li>• Used in small drainage areas before the area has been permanently stabilized</li> <li>• Where there is danger of silting in an inlet</li> </ul>
Buffer Zones	<ul style="list-style-type: none"> <li>• Floodplains, next to wetlands, along stream banks, and on steep, unstable slopes</li> </ul>
Check Dams	<ul style="list-style-type: none"> <li>• Across swales or drainage ditches to reduce the velocity of flow</li> </ul>
Dust Control	<ul style="list-style-type: none"> <li>• Used where open dry areas of soil are anticipated on the site</li> </ul>
Drainage Swale or Earth Dike	<ul style="list-style-type: none"> <li>• Divert upslope flows from disturbed areas and to divert runoff to a stabilized outlet</li> <li>• To reduce the length of slope the runoff will cross</li> <li>• At the perimeter of the construction site to prevent sediment-laden runoff from leaving the site</li> <li>• To direct sediment-laden runoff to a sediment trapping device</li> </ul>
Excavated Gravel Inlet Protection	<ul style="list-style-type: none"> <li>• Used in small drainage areas before the area has been permanently stabilized</li> <li>• Where there is danger of silting in an inlet</li> <li>• Where ponds around the inlet structure could be a problem to traffic on site</li> </ul>
Filter Fabric Inlet Protection	<ul style="list-style-type: none"> <li>• Used in small drainage areas before the area has been permanently stabilized</li> <li>• Where there is danger of silting in an inlet</li> </ul>
Geotextiles	<ul style="list-style-type: none"> <li>• Stabilize the flow on channels and swales</li> <li>• Used on recently planted slopes to protect seedlings until they become established</li> </ul>
Mulching	<ul style="list-style-type: none"> <li>• Areas where slopes are steeper than 2:1</li> <li>• Where runoff is flowing across the area</li> <li>• When seedings need protection from bad weather</li> </ul>
Permanent Seeding and Planting	<ul style="list-style-type: none"> <li>• Areas where soils are unstable because of their texture, structure, water table, winds, or slopes</li> <li>• Filter strips, buffer areas, vegetated swales, steep slopes, and stream banks</li> </ul>
Pipe Slope Drain	<ul style="list-style-type: none"> <li>• On slopes before permanent stormwater drainage structures have been installed</li> <li>• Where diversion measures have been used to concentrate flows</li> </ul>
Silt Fence	<ul style="list-style-type: none"> <li>• Immediately upstream of the point(s) of runoff discharge from a site before flow becomes concentrated</li> <li>• Below disturbed areas where runoff may occur in the form of overland flow</li> </ul>

Best Management Practice	Uses
Stabilized Construction Entrance	<ul style="list-style-type: none"> <li>• Wherever vehicles are leaving a construction site and enter onto a public road</li> <li>• At any unpaved entrance/exit where there is risk of transporting mud or sediment onto paved roads</li> </ul>
Temporary Sediment Trap	<ul style="list-style-type: none"> <li>• At the outlet of the perimeter controls installed during the first stage of construction</li> <li>• At the outlet of any structure which concentrates sediment-laden runoff, e.g. at the discharge point of diversions, channels, slope drains, or other runoff conveyances</li> <li>• Above a stormwater inlet that is in line to receive sediment-laden runoff</li> </ul>
Temporary Seeding	<ul style="list-style-type: none"> <li>• Areas which have been disturbed by construction and which are likely to be redisturbed, e.g. denuded areas, soil stockpiles, dikes, dams, sides of sediment basins, and temporary roadbanks</li> </ul>

*Information obtained from the Environmental Protection Agency's "Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices" (September 1992).*

**APPENDIX D – RESPONSE TO COMMENTS**

The department did not receive any comments during the public comment period.



**ELECTRONIC REPORTING INFORMATION SYSTEM (ERIS)  
SUBSCRIBER AGREEMENT**  
NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
SFN 60908 (6-2019)

For Office Use only.  
Date Received:

This subscriber agreement is required for all people who wish to submit reports that require a signature to the North Dakota Department of Environmental Quality using the ERIS system.

**SECTION A – USER INFORMATION:**

Name Nicolas Cullen (Houston Engineering, Inc.)		State of ND Login User Name*: nicolas_cullen	
Mailing Address 3712 Lockport Street	City Bismarck	State ND	ZIP Code 58503
Email Address ncullen@houstoneng.com	Job Title Project Engineer, PE, CFM	Telephone Number 7013230200      Ext	

\* Provide the user name you chose for ND log-in (<https://secure.apps.nd.gov/doh/eris/login.aspx>)

Table A2

Facility(s) for which the user requests authority to submit reports.	
1. Burleigh County Water Resource District	2.
3.	4.
5.	6.
7.	8.

Note: a separate subscriber agreement is required for facilities that have different owners.

Table A3

Reports that user is requesting to be able to submit for this facility:			
Facility No.*	Permit Number	Security Level	Report Short Name**
1	NDG070740	Submit	DMR EPA

Indicate the level of security this person is allowed to have on behalf of the company owner.

**Security Levels:**  
Submit – User can read, add, upload and submit reports;  
Upload – User can read, add and upload reports into ERIS, but cannot submit report to the Department;  
Read Only – User can read reports, but cannot upload or submit reports.

\*Enter corresponding facility number as listed in table A2 above.

\*\* See \_\_\_\_\_ for list of available reports and their Report Short Name.

### SECTION B – RESPONSIBLE OFFICIAL AUTHORIZATION

Authorization of responsible official to allow user to submit reports. A responsible official must be one of the following: a responsible corporate officer, a general partner, a principal executive officer or a ranking elected official. Note: if the person identified in Section A is one of these responsible officials, they do not need to sign Section B of the subscriber agreement.

I the undersigned responsible official for the above listed facility(s) do hereby duly authorize and delegate the individual listed in Section A the authority to sign and to submit the above listed reports for said facility(s):

Name <i>DENNIS REEP</i>	Title <i>CHAIRMAN, BUSINESS WRO</i>
Signature <i>[Handwritten Signature]</i>	Date <i>1-13-2021</i>

### SECTION C – USER SECURITY REQUIREMENTS

If approved to submit reports using ERIS, I understand and agree to:

- a. Protect my account password, Personal Identification Number (PIN) and security question answers from compromise, not allow anyone else to use the account, and not share the password, PIN or security question answers with any other person.
- b. Promptly report to the NDDEQ any evidence of the loss, theft, or other compromise of my user account credentials.
- c. Organization's eNotify NDDEQ if I cease to represent any of the above listed facilities as the submitter for the electronic reports as soon as this change in relationship occurs.
- d. Review, in a timely manner, the acknowledgements (email and onscreen) and copies of submitted documents submitted using my ERIS user account.
- e. Report any evidence of discrepancy between documents submitted, and those received by the ERIS.
- f. By affixing my signature, I explicitly provide that I will adhere to all ERIS policies, terms and conditions listed in the agreement.

### SECTION D – CERTIFICATION AND SIGNATURE

I understand that I will be held as legally bound, obligated, and responsible by the use of my electronic signature as I would be by a handwritten signature and that legal action can be taken against me based on my use of the electronic signature in submitting electronic documents.

Signature <i>[Handwritten Signature]</i>	Date <i>1-11-2021</i>
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## SECTION E – ERIS USER INFORMATION AND INSTRUCTIONS

When completed and signed, make a copy of this subscriber agreement for your records and return the **original** subscriber agreement to:

DEQ Data Coordinator  
North Dakota Department of Environmental Quality  
918 East Divide Avenue, 4<sup>th</sup> Floor  
Bismarck, ND 58501-1947

A copy of this Subscriber Agreement must be retained in your official records for **at least 5 years** after the user (Section A) ceases to use the system for submitting reports.

When the NDDEQ sets up the user account to use ERIS, a PIN number will be provided to you. If you have security rights to submit a report, you will be asked to setup challenge questions the first time you log into ERIS. To do this, you will be directed to a web page where you will be provided a list of challenge questions. You will be asked to provide answers for at least five of them. You also will have the ability to update your PIN number on this page.

Each time you submit a report, you will be asked to enter your PIN number. If the correct PIN number is entered, you will be presented with one of the challenge questions and asked to provide your answer. Providing the correct PIN and answering the challenge question correctly will enable ERIS to verify that you are the person submitting the reports and will serve as the digital signature for your report.

If the PIN number or challenge question is incorrectly entered five times, an email will be sent to the user's email address indicating the user account was trying to submit a report but failed the security test. The email also will warn that if you are not using this account, it may be compromised and you should check on the account status. You must notify the Department if you believe the account has been compromised. If the PIN number or challenge question from this user account is incorrectly answered three more times the account will be locked.

To ensure user accounts are kept current, extended inactivity will result in the user account being locked. The user will need to contact an ERIS Administrator at the Department who can verify the user's status and can unlock the user's ERIS account.

## SECTION F – FOR DEPARTMENT USE

Approved and Activated Date	Date Inactivated
Approved and Activated By	Inactivated By

## SECTION G – COMMENTS

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## Electronic Reporting Information System (ERIS) Subscriber Agreement Supporting Information

### NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY

Below is a list of reports that can be electronically submitted to the Department using ERIS. Some reports/documents require a signature from a legally authorized company representative when submitted. Those who use ERIS to submit a report which requires a signature must first complete an ERIS subscriber agreement (SFN 600908) and mail it to: North Dakota Department of Environmental Quality; Gold Seal Center 4th floor; 918 East Divide Avenue; Bismarck, ND 58501. Please allow a minimum of 30 days for the department to process the ERIS subscriber agreement and setup the user account in ERIS.

#### What are the ERIS Security Levels:

ERIS has 3 security levels that a user account can have which determine what rights an account has in ERIS. These are described below.

**Submit** – User can read, add, upload and submit reports to the Department.

**Add** – User can read, add and upload reports in ERIS, but cannot submit reports to the Department.

**Read Only** – User can read reports, but cannot add, upload or submit reports.

Those who need “Read-only” or “Add” access to ERIS, and do not need the “Submit” security level to submit a report do not need to complete a subscriber agreement, but it is helpful if they do so. They can contact their Department regulatory program contact and provide all the necessary information so they can be setup in ERIS.

#### -Reports that can be submitted through ERIS and an indication of which reports require a signature

Program	Report Short Name	Report Long Name - Description	Signature Required to submit
Air Quality	AQ-T5ACCR	Title V Annual Compliance Certification Report	Yes
	AQ-T5SAMR	Title V Semi-Annual Monitoring Report	Yes
Drinking Water	DWLD	Drinking Water Lab Data	No
	DBPR	Disinfection By-Products Rule Report	No
NDPDES	DMR-General	– General DMR form for Minor Municipal facilities	Yes
	DMR-EPA	Discharge Monitoring Report – EPA form for Major Municipal and Industrial facilities	Yes
	DMR-Stormwater	Discharge Monitoring Report – Stormwater Industrial facilities	Yes
	Disch Rev	Discharge Review for Minor Municipal facilities	No
	Dew/HydTest NOI	Dewatering / Hydrostatic Testing Notice of Intent	Yes
	Dew/HydTest NOT	Dewatering / Hydrostatic Testing Notice of Termination	Yes
NDPDES-Stormwater	SW-ALR	Stormwater Annual Location Report	Yes
	SW-AIR	Stormwater Annual Inspection Report	Yes
	SW-NOI	Stormwater Notice of Intent	Yes
	SW-NOT	Stormwater Notice of Termination	Yes

\*This report is in development and is not ready for electronic submission in ERIS; however you can register for them and you will be setup to access that report when it is completed in ERIS.

List of reports updated: 6/6/2019

# North Dakota Department of Environmental Quality--Division of Water Quality--NDPDES--Discharge Monitoring Report

NDG070740 Burleigh County Water Res  
1720 Burnt Boat Drive Bismarck ND 58503

001D  
For Official Use

Reporting Period: 07/01/2020-09/30/2020  
Due By: 10/31/2020

## Section 1: (East Fox Island) Section 2: Length of Discharge

**Did any discharges occur from this discharge point from 07/01/2020-09/30/2020?**

Yes  No  If 'Yes' then complete all blank non-gray items in sections 2,3 and 4. Mail to the address below by 10/31/2020. If 'No' then complete section 4 and mail to the address below by 10/31/2020.

Cell/Site	Start Date	End Date	# of Days	Total Days
#1				
#2				
#3				

## Section 3: Parameter Data

Parameter	Quantity or Loading		Quality or Concentration			No. of Exceedances		Frequency of Analysis	Sample Type
	Average	Maximum	Minimum	Average	Maximum	Units	Exceedances		
Total Suspended Solids 00530	XXXXXX	XXXXXX	XXXXXX	XXXXXX		mg/L			
Effluent	Permit Value				100 DAILY MX	mg/L		Weekly	Grab
pH 00400	XXXXXX	XXXXXX	XXXXXX	XXXXXX		S.U.			
Effluent	Permit Value		6 MINIMUM		9 MAXIMUM	S.U.		Weekly	Grab
Oil and Grease Visual 84066	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX			
Effluent	Permit Value	TOTAL						Daily	Visual
Total Petroleum Hydrocarbon 82181	XXXXXX	XXXXXX	XXXXXX	XXXXXX		mg/L			
Effluent	Permit Value				1 DAILY MX	mg/L		Conditional	Grab
Discharge Flow in Million Gals 50050	Result Value		XXXXXX	XXXXXX	XXXXXX	XXXXXX			
Effluent	Permit Value		Mgal/d					Daily	Calculated
Drain in Million Gallons 51500	Result Value		XXXXXX	XXXXXX	XXXXXX	XXXXXX			
Effluent	Permit Value		Mgal					Quarterly	Calculated
	Permit Value	TOTAL							

## Section 4 Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name: (Print) <i>Nicoles Colten</i>	Date: <i>10-20-2020</i>	Telephone: <i>701-751-6280</i>
Signature:		
Make a copy for your records		
Title <i>Project Engineer</i>	For Office Use: Rec'd: _____	Entered on: _____ Initials: _____

Mail to: North Dakota Dept of Environmental Quality, Division of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947 Telephone 701.328.5210

# North Dakota Department of Environmental Quality--Division of Water Quality--NDPDES--Discharge Monitoring Report

NDG070740 Burleigh County Water Res  
1720 Burnt Boat Drive Bismarck ND 58503

002D  
For Official Use

Reporting Period: 07/01/2020-09/30/2020  
Due By: 10/31/2020

## Section 1: (West Fox Island) Section 2: Length of Discharge

Did any discharges occur from this discharge point from 07/01/2020-09/30/2020?

Yes if 'Yes' then complete all blank non-gray items in sections 2,3 and 4. Mail to the address below by 10/31/2020.  
 No if 'No' then complete section 4 and mail to the address below by 10/31/2020.

Cell/Site	Start Date	End Date	# of Days	Total Days
#1				
#2				
#3				

## Section 3: Parameter Data

Parameter	Quantity or Loading		Quality or Concentration			No. of Exceedances		Frequency of Analysis	Sample Type
	Average	Maximum	Minimum	Average	Maximum	Units	Exceedances		
Total Suspended Solids 00530	XXXXXX	XXXXXX	XXXXXX	XXXXXX		mg/L			
Effluent					100 DAILY MX	mg/L		Weekly	Grab
pH 00400	XXXXXX	XXXXXX	XXXXXX	XXXXXX		S.U.			
Effluent			6 MINIMUM		9 MAXIMUM	S.U.		Weekly	Grab
Oil and Grease Visual 84066	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX			
Effluent		TOTAL						Daily	Visual
Total Petroleum Hydrocarbon 82181	XXXXXX	XXXXXX	XXXXXX	XXXXXX		mg/L			
Effluent					1 DAILY MX	mg/L		Conditional	Grab
Discharge Flow in Million Gals 50050			Mgal/d	XXXXXX	XXXXXX	XXXXXX			
Effluent			Mgal/d					Daily	Calculated
Drain in Million Gallons 51500	XXXXXX	XXXXXX	Mgal	XXXXXX	XXXXXX	XXXXXX			
Effluent		TOTAL	Mgal					Quarterly	Calculated

## Section 4 Certification:

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Name: (Print) <i>Nicoles Cullen</i>	Date: <i>10-20-2020</i>	Telephone: <i>701-751-6280</i>
Title <i>Project Engineer</i>	For Office Use: Rec'd: _____ Initials: _____	Entered on: _____ Initials: _____

Mail to: North Dakota Dept of Environmental Quality, Division of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947 Telephone 701.328.5210

# APPENDIX C

## MANUFACTURER MANUALS

**C.1 - SLUICE GATE INSTALLATION AND MAINTENANCE MANUAL**

**C.2 - SLUICE GATE #1 SUBMITTAL**

**C.3 - SLUICE GATE #2 SUBMITTAL**

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## S SERIES

### INSTALLATION AND MAINTENANCE MANUAL

(Revision 3)

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## 2. INTRODUCTION

**T**his manual is intended to provide all the necessary information for the installation, operation and maintenance of **Aquanox** Gates. It is intended to contractors responsible for the installation, to owners and to operators of the equipment, to preventive maintenance supervisor and to potential repairers to clearly diagnose problems and to make proper basic adjustment.

### 2.1. WARNINGS



It is important to read this manual before starting any work on the gates.



It is very important not to exceed the 178N (40 lb) on the gate actuator, either to open or close the gate.



The seals are factory calibrated. Any changes to this setting will void the warranty.



When installing the equipment, always apply an anti-seize on the stainless steel fasteners.



Reduce as much as possible the contact between stainless steel and carbon steel to prevent corrosion contamination. See Appendix 3 for additional information on contamination of stainless steel.



At all times when working on gates, make sure to comply with local safety standards and wear personal protective equipment.

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### 3. RECEIVING

Despite all the precautions taken during packing, some damage may have occurred during transportation of the goods to their destination. We recommend that you follow the following instructions when receiving your equipment.

Ensure the conformity of the delivered goods before signing the bill of lading.

**Look for any anomaly concerning the delivery** (damage, missing items in relation to bill of lading, broken pallet, parcel damaged, dented part , deformed pipe , etc.) as this may be a sign of events that may have caused greater damage. Indicate on the bill of lading any abnormality detected, otherwise no claim will be accepted.

After the receipt of the goods, and within 5 working days, verify with the bill of lading that all equipment has been received. Also verify the equipment tag. They must match the items listed on the bill of lading. No claims for missing parts will be accepted after the period of 5 working days.



Contact **Aquanox** to report any anomalies found or missing parts.

### 4. STORAGE

Cover and protect all equipment that will not be installed immediately.

- Leave the equipment attached to the pallet;
- Cover with a canvas or tarp;
- Store in a dry, and flat area;
- Do not stack the gates;
- Place the stems and pipes on wooden blocks;
- Place the other parts in a safe place;
- Protect from dust and sand;
- Avoid exposure to UV rays;
- For long-term storage, place inside in a dry and temperate area;
- Refer to the electric actuator documentation for specific storage instruction for this type of equipment.

5. GLOSSARY FOR RISING STEM WITH OPEN FRAME (MODEL S11)

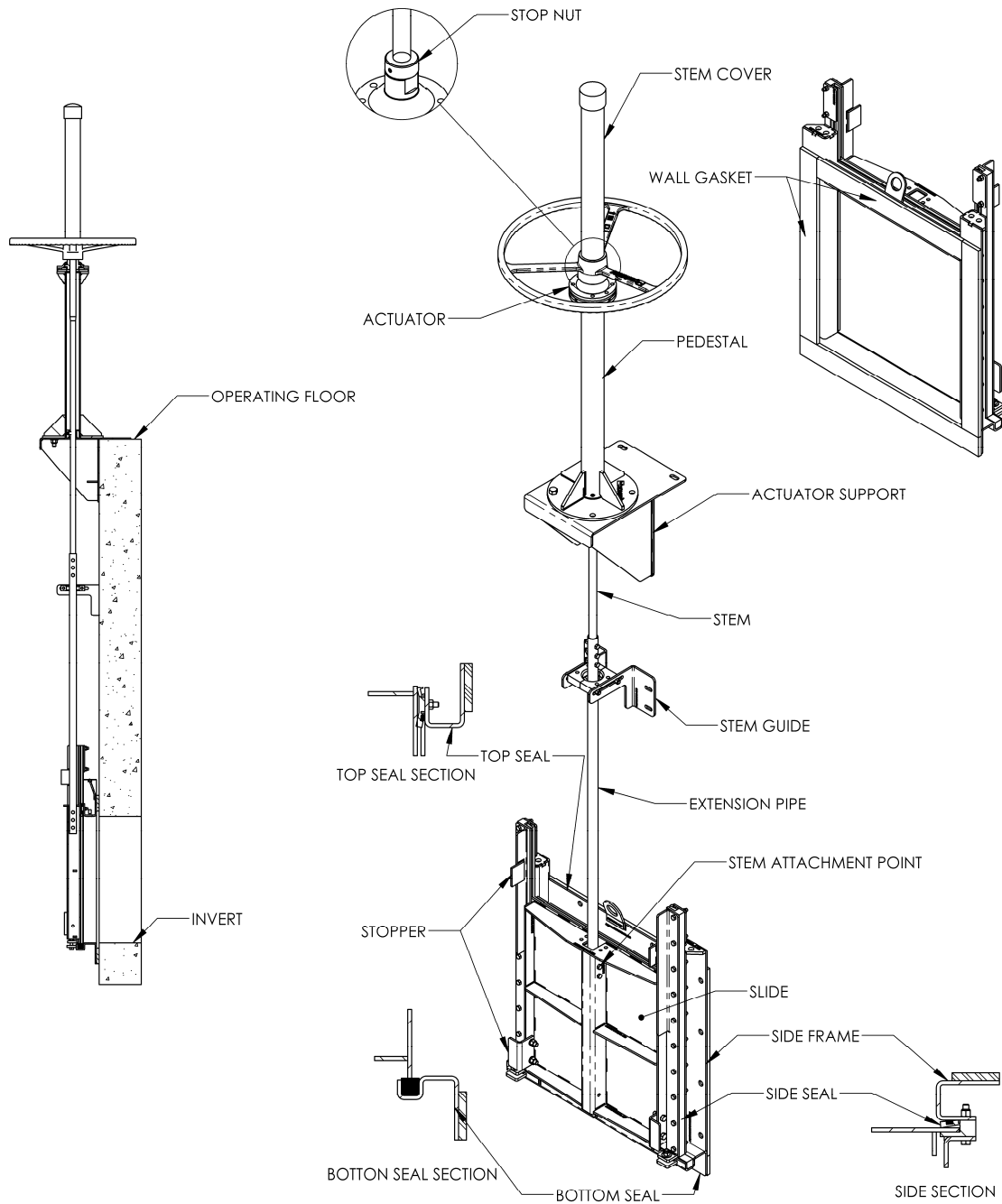


Figure 1

6. GLOSSARY FOR NON-RISING STEM WITH CLOSED FRAME (SÉRIE S22)

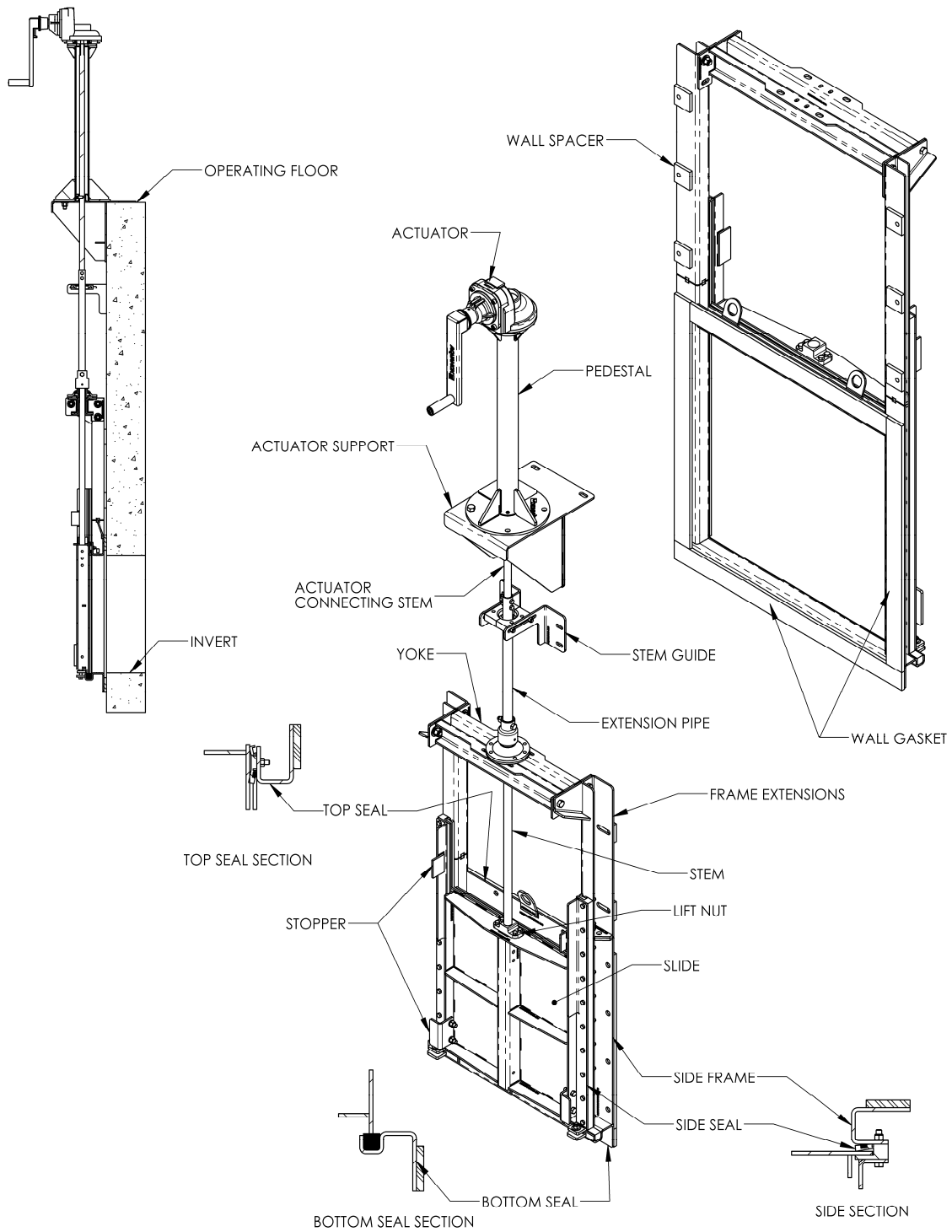


Figure 2

## 7. PREPARATION FOR INSTALLATION

### 7.1. NEW CONCRETE WALL

Verify the flatness of the wall on which the gate will be installed. A plumb line, a laser or a straight edge can be used.

- On the whole contact surface between the gate frame and the wall, a maximum variation of 3 mm (1/8") between the peaks and troughs is the tolerable limit;
- The maximum allowable warp is 3 mm (1/8") on the total length for each side;
- Maximum vertical alignment of 3 mm (1/8") over the entire length of the side;
- The wall must be uniform and flat within a tolerance of  $\pm 3$  mm (1/8"); imperfections must be rectified and/or filled with a suitable leveling grout.

Verify the distance between the invert and the operating floor. A maximum difference of  $\pm 20$  mm (3/4") between the measured distance and the installation drawing is acceptable for the proper operation of the gate.

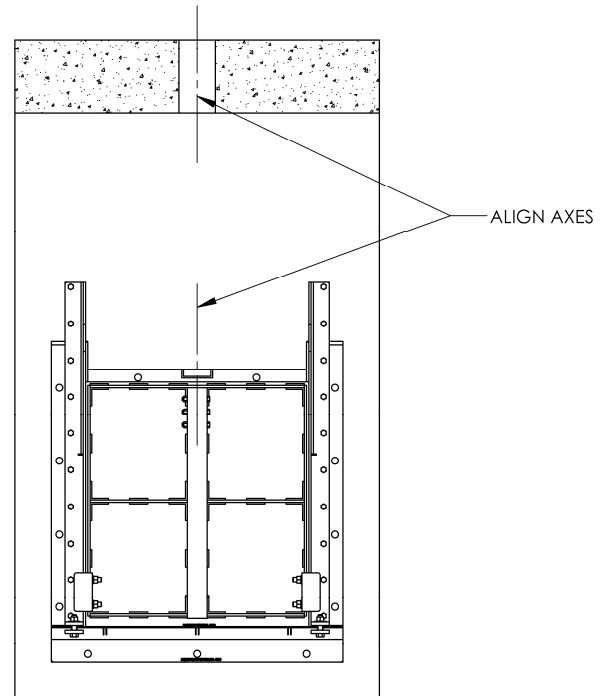


Figure 3

#### For gates with stem through the top slab

Verify the alignment of the hole in the floor. It should be centered with the stem attachment point of the slide. See the gate installation drawing for the hole diameter in the floor. The stem should not touch the sides of the hole (ref. Figure 3).

### 7.2. EXISTING CONCRETE WALL

For an installation on an existing concrete wall, make sure that the quality of the concrete meets the minimum installation requirements.

- Verify if there is any concrete spalling;
- Verify the porosity of the concrete;
- Verify the existence of cracks that may compromise the structural integrity of the installation or may create leaks;
- Verify the concrete resistance (refer to the installation drawing to validate the required strength and type of anchor to use).



If corrective work is needed, contact a qualified professional.

## 8. S11 & S22 GATE INSTALLATION WITH FLOOR MOUNTED ACTUATOR

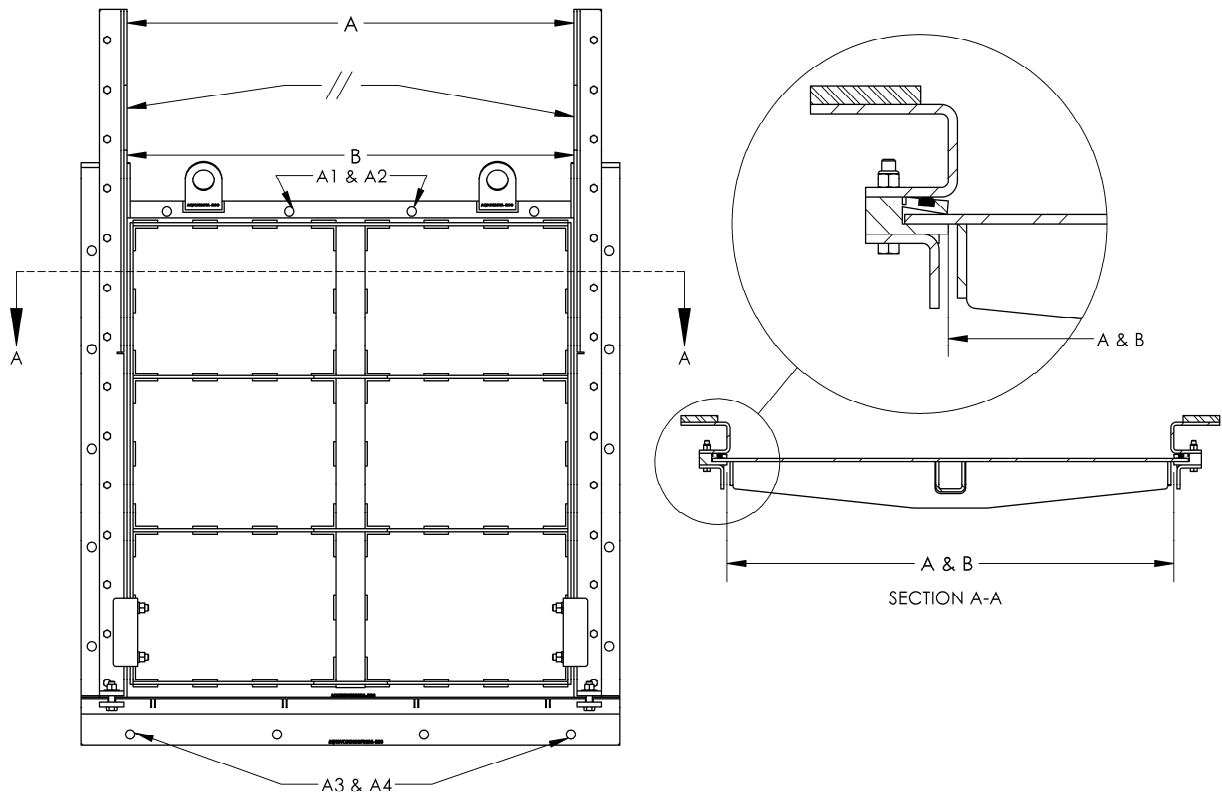


The side seals are factory adjusted. Any modification of this adjustment will void the warranty.




Always apply an anti-seize on the stainless steel fasteners.

- 1- Verify for warping of the gate. Make sure the side seals are parallel at  $\pm 3$  mm ( $1/8$  "). Dimension "A" should not be greater than 3 mm ( $1/8$  ") than dimension "B" to allow adequate sliding of the slide, (ref.: Figure 4).



**Figure 4**

- 2- Place the gate as per the installation drawing. Level the gate by using as a reference the side frame. The side frame should be vertically plumbed. Verify the alignment with the hole in the top floor slab (if applicable). Mark and drill the two anchor holes closest to the center on the top seal frame (identified A1 & A2 on Figure 4) and install the two anchors.  See Appendix 1 Caution for chemical anchoring.
- 3- Install the gate on the two anchors (after curing of concrete if chemical anchors), level and bolt the gate. Mark and drill the two anchor holes positioned on the outside of the bottom seal frame (identified A3 & A4 on Figure 4) and install the two anchors.
- 4- Verify the straightness of the bottom seal using a straight edge or a stretched cord from one corner to the other. A 2mm ( $1/16$  ") deformation is acceptable. Adjust as needed using intermediate anchors.
- 5- Mark and drill the missing holes and remove the gate.


- 6- Clean the wall from concrete dust.
- 7- Install the remaining anchors.
- 8- Clean the gate frame with a degreaser.
- 9- Bond the wall gasket with a contact adhesive to the frame or insert the wall gasket onto the anchors bolts.

For S22 models, gates with frame extensions and yoke.

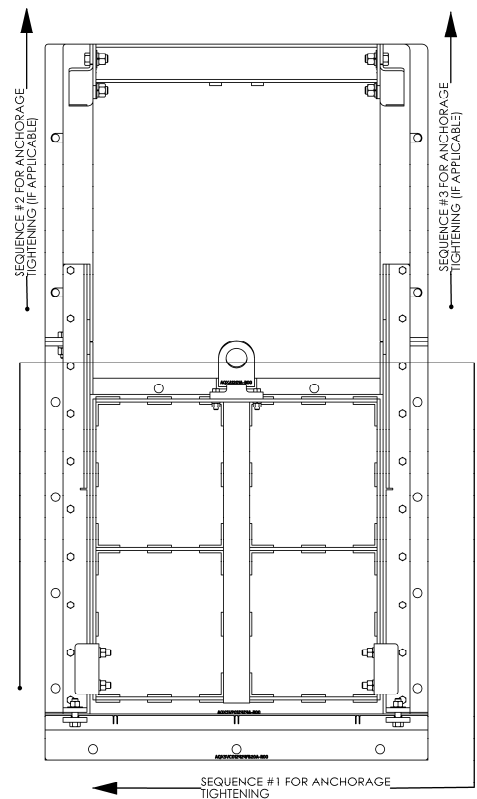
*Insert the 76 mm x 76 mm (3" x 3") wall spacers into the frame extension anchor bolts holes or bond the wall spacers to the frame extensions.*

 Apply anti-seize on each anchor rods before installing the gate.

- 10- Install the gate on the anchor rods and screw the nuts. Partially tighten the 4 anchor placed at the 4 corners of the gate face. The frame extensions should not touch the wall. Otherwise, the wall is uneven and must be corrected.
- 11- Tighten the anchor evenly all around the frame. For model S22, gates with yoke, do not tighten at this point the anchor of the frame extensions. Refer to Figure 5 for the anchor tightening sequence. Proceed with a rotary tightening sequence until a uniform torque is obtained. Make sure the frame extensions do not come in contact with the wall before the outline anchors are completely tightened.
- 12- Tighten the frame extension anchors to place in the same plane as the lower part of the frame (use a plumb bob, a laser or a straight edge).

 Take care not to over tighten the gate anchors as this may affect operating forces and gate leakage.

- 13- Clean with clear water the side and bottom seals and the gate to remove any residual metal or concrete. Ensure that the environment in which the gate is installed is properly cleaned and there is no more residue (boards, metal rods, etc.) that may affect the proper function of the gate.





**Figure 5**



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## 9. S22 GATE INSTALLATION WITH YOKE MOUNTED ACTUATOR

 The side seals are factory adjusted. Any modification of this adjustment will void the warranty.

 Always apply an anti-seize on the stainless steel fasteners.

- 1- Place the gate as per the installation drawing. Level the gate. Mark and drill the two anchor holes closest to the center of the top seal frame (identified A1 & A2 on Figure 4) and install the two anchors.  See Appendix 1 Caution for chemical anchoring.
- 2- Install the gate on the two anchors (after curing of concrete if chemical anchors), level and bolt the gate. Mark and drill the two anchor holes positioned on the outside of the bottom seal frame (identified A3 & A4 on Figure 4) and install the two anchors.  See Appendix 1 Caution for chemical anchoring.
- 3- Verify the straightness of the bottom seal using a straight edge or a stretched cord from one corner to the other. A 2mm (1/16") deformation is acceptable. Adjust as needed using intermediate anchors.
- 4- Mark and drill the missing holes and remove the gate.
- 5- Clean the wall from concrete dust.
- 6- Install the remaining anchors.
- 7- Clean the gate frame with a degreaser.
- 8- Bond the wall gasket with a contact adhesive to the frame or insert the wall gasket onto the anchors bolts.
- 9- Insert the 76 mm x 76 mm (3" x 3") wall spacers into the frame extension anchor bolts holes or bond the wall spacers to the frame extensions.

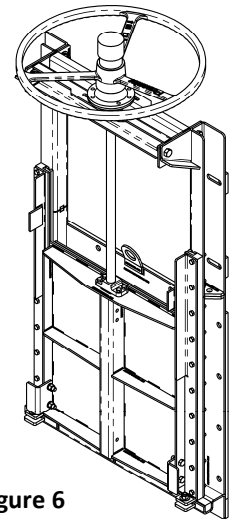



Figure 6

 Apply anti-seize on each anchor rods before installing the gate.

- 10- Install the gate on the anchor rods and screw the nuts. Partially tighten the 4 anchor placed at the 4 corners of the gate face. The frame extensions should not touch the wall. Otherwise, the wall is uneven and must be corrected.
- 11- Tighten the anchor evenly all around the frame. Do not tighten at this point the anchors of the frame extensions. Refer to Figure 5 for the anchor tightening sequence. Proceed with a rotary tightening sequence until a uniform torque is obtained. Make sure the frame extensions do not come in contact with the wall before the outline anchors are completely tightened.
- 12- Tighten the frame extension anchors to place in the same plane as the lower part of the frame (use a plumb bob, a laser or a straight edge).

 Take care not to over tighten the gate anchors as this may affect operating forces and gate leakage.

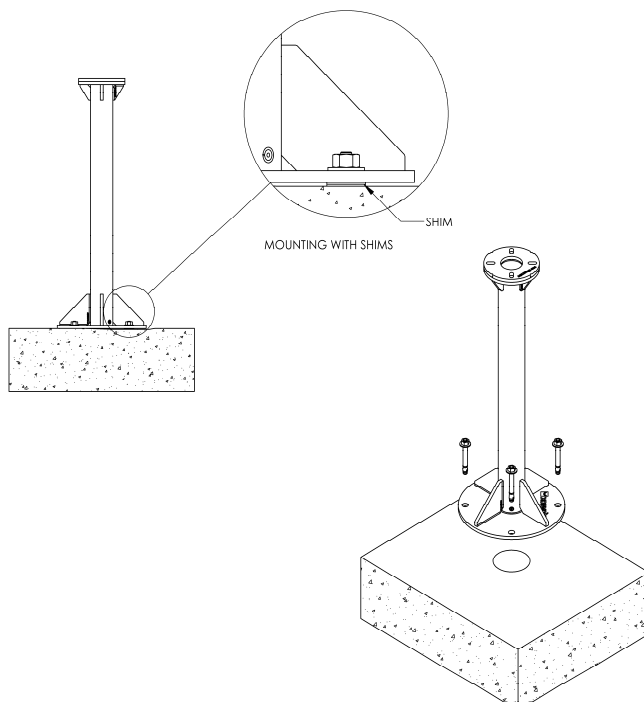


- 13- Clean with clear water the side and bottom seals and the gate to remove any residual metal or concrete. Ensure that the environment in which the gate is installed is properly cleaned and there is no more residue (boards, metal rods, etc.) that may affect the proper function of the gate.

## 10. INSTALLATION OF LIFTING COMPONENTS FOR RISING STEM (MODEL S11)

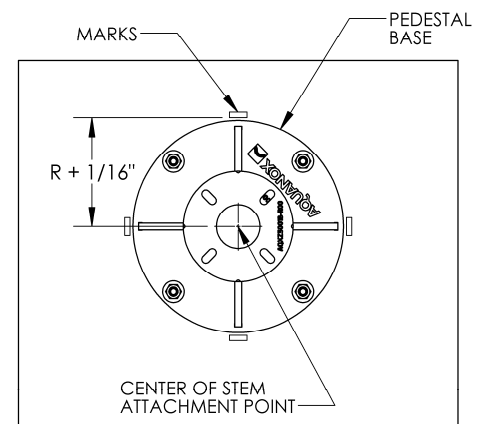
### 10.1. INSTALLATION WITH PEDESTAL AND RISING STEM

#### A ) MOUNTING WITH A HOLE IN TOP SLAB:



**Figure 7**

- 1- Ensure the flatness of the floor on the overall pedestal contact surface.
- 2- Find the center of stem attachment point of the gate on the top slab hole using a plumb bob or a laser.
- 3- From the center of stem attachment point just found, mark with 3 or 4 marks at  $2\text{mm} + R (R + 1/16 \text{ "})$  ( $R$  being the radius of the pedestal or half of its diameter (ref.: Figure 8).
- 4- Center the pedestal within the marks previously made and mark the position of the anchor holes. Drill the holes and insert anchors.



**Figure 8**

- 
- 5- Level **the top flange of the pedestal** on the X and Y axes using stainless steel shims of the appropriate thickness.

---

## B ) MOUNTING WITH ACTUATOR SUPPORT:

- 1- Locate the position of the actuator support using a plumb line or a laser aligned with the center of the stem attachment point on the gate.
- 2- Ensure the flatness of the floor on the entire surface of contact between the actuator support and the concrete (wall and floor).
- 3- Maintain the support position and check the level in the X and Y axes. Also check the vertical alignment of the actuator support with the stem attachment point on the gate. Correct concrete if needed.
- 4- Anchor actuator support in position.

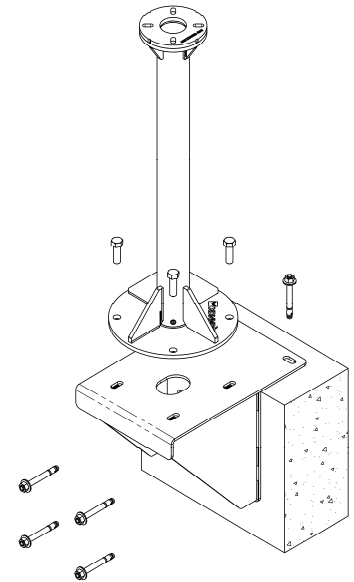


Figure 9

### *Installation of lifting components for rising stem ... continued*

- 1- Mark on the wall the stem guide elevations from the gate invert (refer to the gate installation drawing).
- 2- Install and bolt the pipe extensions on the gate. Use the installation drawing to position the pipe extensions in the correct order, in the case where more than one pipe extension is required.
- 3- Install and bolt the stem to the last pipe extension.
- 4- Install the actuator on the lift rod. Rotate the lifting nut to engage on the thread.  
**⚠** Firmly hold the actuator until the lifting nut is fully engaged on the threads.
- 5- Lower the actuator until it is near the pedestal surface and engages the 4 bolts of the mounting flange. Continue to lower the actuator until it sits firmly on the mounting surface. Tighten the bolts.
- 6- Place all lifting components under tension with one of the following methods:
  - A. Secure the gate in closed position with a clamp between the slide and the bottom frame.
  - B. Open the gate until it sits on the stoppers.
- 7- Apply a force of 178 N (40 lb) to the actuator so that all the lifting elements are in tension.
- 8- Install the stem guides at the elevations noted in step 1. **⚠** See *Appendix 1 Caution for chemical anchoring*.
- 9- Once the stem guides are anchored, proceed with final alignment using the bolts located on each side. Tighten into position.

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## 10.2. STOP NUT INSTALLATION



The stop nut is required only for manual gates with rising stems.



Not installing or not installing properly the stop nut can cause excessive leakage or damage to the gate components.

- 1- Fully close the gate to install the stop nut using one of the following two methods:
  - A. Closing the gate under dry condition
    - 1- Place on the gate bottom seal a thin strip of plastic (the thickness of a plastic bag) of about 50 mm (2") wide at each corner.
    - 2- Using the actuator, close the slide until to two plastic strips are well jammed between the slide and the bottom seal.
    - 3- Continue to close the gate slide 2 to 3mm (1/8") to compress the bottom seal.

**The gate is now fully closed**

- B. Closing the gate with water pressure

- 1- Using the actuator, close the gate until the water flow stops. Never apply more than 178 N (40 lb) on the actuator.

**The gate is now fully closed**

- 2- Using the depth measuring blade of a Vernier caliper, measure the distance A1 between the end of the gate stem and the contact surface (top of the lifting nut) (ref.: Figure 10)
- 3- Open the gate about 300mm (12").
- 4- Screw the stop nut on the stem until the distance from the top of the stem and the bottom of the stop nut is equal to distance A1.
- 5- Secure the stop nut into position by tightening the set screws.
- 6- Lower the gate into the closed position until the stop nut sits on the contact surface of the lifting nut and rechecks the distance A1. Do not apply a force greater than 178 N (40lb) on the actuator. Reposition the stop nut if necessary.



Figure 10

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### 10.3. LIFTING STEM LUBRICATION AND CLEANING

- 1- Open the gate to expose the stem threads.
- 2- Thoroughly clean the stem thread using a plastic or stainless steel brush to prevent contamination of the stem. See Appendix 3 for additional information on stainless steel contamination.
- 3- Lubricate the stem threads with the proper grease (ref.: Appendix 2 Stem lubrication)

### 10.4. STEM COVER INSTALLATION

#### A ) ON A GEAR BOX OR ELECTRIC ACTUATOR:

- 1- Close the gate. Screw the stem cover on the actuator.
- 2- To prevent water from entering the actuator, seal the base of the tube fitting with silicone.

#### B ) ON A HAND WHEEL WITH THRUST BEARING:

- 1- To prevent water from entering the actuator and to maintain the stem cover in position, apply silicone on the inside face of the hand wheel hub.
- 2- Insert the stem cover and allow drying without moving.

### 10.5. GRADUATED RULER INSTALLATION

- 1- Fully close the gate
- 2- Clean the stem cover with mild soap (⚠ do not use solvent).
- 3- Let dry.
- 4- Apply the adhesive ruler on the stem cover. The "0" of the ruler must align with the upper end of the gate stem when the gate is fully is closed.

## 11. INSTALLATION OF LIFTING COMPONENTS FOR NON-RISING STEM (MODEL S22)

### 11.1. INSTALLATION WITH PEDESTAL AND NON-RISING STEM

#### A ) MOUNTING WITH A HOLE IN TOP SLAB:

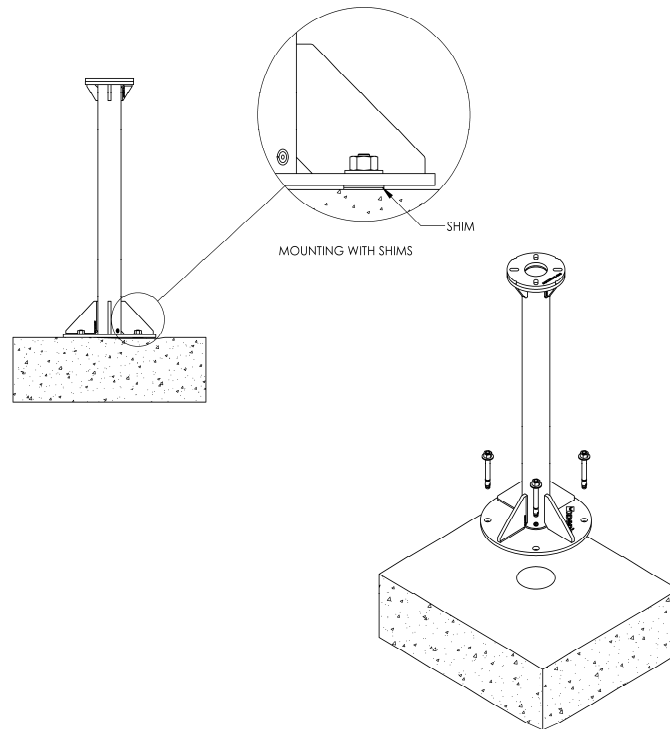


Figure 11

- 1- Ensure the flatness of the floor on the overall pedestal contact surface.
- 2- Find the center of stem attachment point of the gate on the top slab hole using a plumb bob or a laser.
- 3- From the center of stem attachment point just found, mark with 3 or 4 marks at  $2\text{mm} + R$  ( $R + 1/16''$ ) ( $R$  being the radius of the pedestal or half of its diameter (ref.: Figure 12)).
- 4- Center the pedestal within the marks previously made and mark the position of the anchor holes. Drill the holes and insert anchors.
- 5- Level **the top flange of the pedestal** on the X and Y axes using stainless steel shims of the appropriate thickness (ref.: Figure 11)

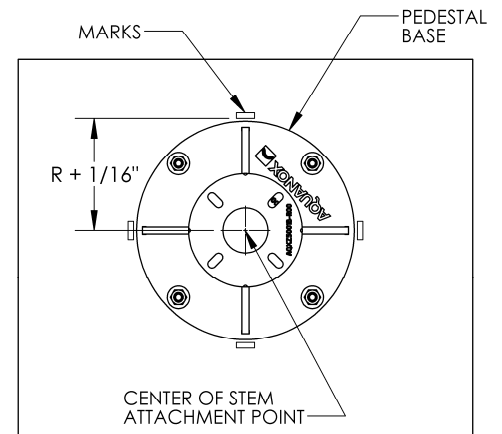
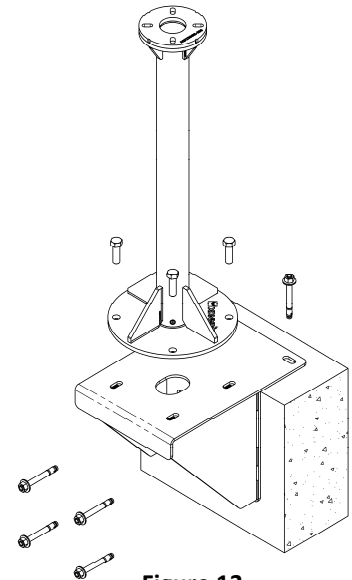


Figure 12

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## B ) MOUNTING WITH ACTUATOR SUPPORT:

- 1- Locate the position of the actuator support using a plumb line or a laser aligned with the center of the stem attachment point on the gate.
- 2- Ensure the flatness of the floor on the entire surface of contact between the actuator support and the concrete (wall and floor).
- 3- Maintain the support position and check the level in the X and Y axes. Also check the vertical alignment of the actuator support with the stem attachment point on the gate. Correct concrete if needed.
- 4- Anchor actuator support in position.



**Figure 13**

### *Installation of lifting components for non-rising stem ... continued*

- 1- Mark the wall, with a horizontal line, the elevation of the stem guide position from the invert (refer to the gate installation drawing).
- 2- Mark with a vertical line the center of the stem on each of the corresponding horizontal lines for every stem guide position.
- 3- Install all stem guides.
- 4- Bolt the first extension pipe on the gate and insert it into the corresponding stem guide.
- 5- Adjust the stem guide in the "front to back" axis using the bolts located on each side.
- 6- Repeat with the other extension pipes if applicable (refer to the gate installation drawing).
- 7- Install the actuator on the stem, engage the 4 bolts of the mounting flange. Tighten the bolts.
- 8- Turn the actuator to align the stem and operating nut key ways.
- 9- Insert the key.
- 10- Install the cap on the top of the actuator (if applicable).
- 11- To prevent water from entering the actuator, seal the base of the cap with silicone.
- 12- Close the gate for the stem cleaning and lubrication.
- 13- Thoroughly clean the stem thread using a plastic or stainless steel brush to prevent contamination of the stem. See Appendix 3 for additional information on stainless steel contamination.
- 14- Lubricate the stem threads with the proper grease (ref.: Appendix 2 Stem lubrication)

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## 11.2. INSTALLATION FOR NON-RISING STEM WITH FLOOR OPERATING NUT

- 1- Find the center of stem attachment point of the gate on the top slab hole using a plumb bob or a laser.
- 2- Mark the wall, with a horizontal line, the elevation of the stem guide position from the invert (refer to the gate installation drawing).
- 3- Mark with a vertical line the center of the stem on each of the corresponding horizontal lines for every stem guide position).
- 4- Bolt the first extension pipe on the gate and insert it into the corresponding stem guide.
- 5- Adjust the stem guide in the "front to back" axis using the bolts located on each side.
- 6- Repeat with the other extension pipes if applicable (refer to the gate installation drawing).
- 7- Bolt operating nut on the upper section of the last extension pipe.
- 8- Close the gate for the stem cleaning and lubrication.
- 9- Thoroughly clean the stem thread using a plastic or stainless steel brush to prevent contamination of the stem. See Appendix 3 for additional information on stainless steel contamination.
- 10- Lubricate the stem threads with the proper grease (ref.: Appendix 2 Stem lubrication)

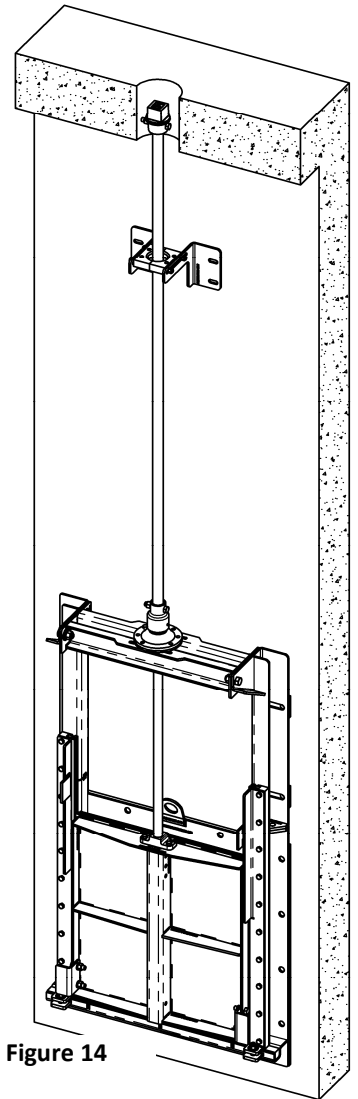


Figure 14



## 12. TROUBLESHOOTING



Never use excessive force on the actuator, permanent damage to seals and lifting equipment may result.

Symptoms	Cause	Solution
Leakage	Wood, concrete or other foreign materials on the seals.	Carefully remove what is causing the leak. Check for damage to the seals.
	Gate not properly mounted on the anchors.	Tighten the anchor bolts according to anchor manufacturer's recommendations.
	Top seal anchors too tight.	Partially reduce the tension on the top seal anchors.
	Excess of epoxy around the base of the anchor that prevents a proper compression of the wall gasket.	Remove the gate and remove the excess of epoxy around the bases. Replace the gate.
	Cracks, crumble or porosity in the concrete wall that bypass the seal.	Repair and seal cracks, crumble or porosity.
	The side seal bolts are not well adjusted.	The side seals are factory adjusted. The setting torque is measured to the optimized the ratio between the operation force and leakage rate. Therefore, contact <b>Aquanox</b> before adjusting the side seal bolts.
	Stop nut not properly adjusted.	Refer to the installation section to reposition the stop nut.
Excessive operating force	Stem or lift nut dirty or dry.	Clean and lubricate the threads.
	Wood, concrete or other foreign materials on the seals.	Carefully remove what is causing the leak. Check for damage to the seals.
	Misalignment of the lifting components.	Verify and adjust alignment.
	The gate frame improperly installed or warped.	Verify the frame squareness, contact <b>Aquanox</b> if the frame is warped.

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If there are problems in the operation of a gate and troubleshooting described above offers no solution, contact **Aquanox** (see section 15) and have, if possible, the following information:

- Equipment serial number (indicated on gate slide, or yoke, if any)
- Detailed description of the situation (eg. leakage rate measured on site is considered excessive)
- Photos or videos that can help understand and address the situation

### 12.1. GATE SETTING

The gate seals were adjusted and tested at the factory and do not require any adjustment after installation. However, the electric actuators need to be field adjusted after the installation. Refer to the electric actuator manual.

## 13. INSPECTION AND MAINTENANCE

In order to maintain the gates performances at its best, **Aquanox** recommends the following procedure.

### 13.1. INSPECTION FREQUENCY

Initial inspection: after 25 operation cycles or two weeks after start up, whichever comes first.

Second inspection: 50 cycles after the initial inspection or six months after start up, whichever comes first.

Subsequent inspections: Every 100 operation cycles or every six months, whichever comes first.

If the gate is used intensively or in extreme conditions, perform inspection every three months.

One complete operation cycle corresponds to the opening and closing of the gate.

### 13.2. GATE MAINTENANCE

Clean the gate with clean water to get rid of any deposit.

Verify whether the guides and seals are in good condition.

### 13.3. STEM MAINTENANCE

Verify the stem and lift nut thread conditions in order to detect excessive wear.

Open the gate to expose the stem threads.

Thoroughly clean the stem thread using a plastic or stainless steel brush to prevent contamination of the stem. See Appendix 3 for additional information on stainless steel contamination.

Lubricate the stem threads with the proper grease. Refer to Appendix 2 Stem lubrication.

Verify all bolts and fasteners on the stem.

Gate and stem maintenance should be performed at each inspection.

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## 14. WARRANTY

ISE Metal inc. warrants that the series S Slide Gates it manufactures and delivers to the Buyer are free from defects in material, workmanship and fabrication for a period of 60 months from the date of receipt of the equipment at their installation location. To benefit from this warranty, the Buyer shall promptly report in writing any failure during the warranty period. Provided that the buyer has stored, installed, maintained and used the equipment in a workmanlike manner and has complied with the manufacturer's instructions and recommendations put forth in the Installation, Operation and Maintenance Manual, at its discretion, ISE Metal will either correct the defect at its factory or provide the required parts. Shipping costs from the factory to the installation site and/or labor on the equipment installation site are not covered by this warranty. Accessories and equipment supplied by ISE Metal inc. with the gates, but manufactured by others will be protected by the warranty offered to ISE Metal by the manufacturers of the equipment which are transferable to Buyer. ISE Metal inc. will not be held responsible for any direct, indirect, consequential, contingent or incidental damages, repairs, replacements or other fixes and adjustments to the equipment nor any labor costs incurred by the Buyer or its subcontractors or others without the prior written consent of ISE Metal Inc. The effects of corrosion, erosion and normal wear and tear are specifically excluded from this warranty. The Buyer shall not use equipment that is considered defective without first obtaining a written consent of ISE Metal inc., otherwise the Buyer uses the equipment at their own risk and responsibility.

ISE Metal Inc. provides no other warranty or makes no other express or implied representation and any implied warranty of fitness for a particular purpose is declared non-existent.

Corrections by ISE Metal inc. of non-compliance described above constitute complete fulfillment of its responsibility in this manner.

## 15. CONTACT AQUANOX

If needed, Aquanox can be contacted with the following methods:

Web site: <http://www.ISEaquanox.com>

Phone: (819) 769-0157 or toll free: 1-855-769-0157

Mailing address: 20 route de Windsor, Sherbrooke (Quebec), Canada, J1C 0E5

## APPENDIX 1 CAUTION FOR CHEMICAL ANCHORING



Always ensure compliance with the hole diameters and depths recommended by the manufacturer because the cavity becomes the mixing chamber for the resin/hardener according to the volume of the epoxy bag. A non-compliant hole will result a partial or invalid epoxy curing.

Use an impact wrench when installing the anchor to obtain a homogenous mixture of the two epoxy components. To do so, use a nut, a washer and a lock nut (see Figure 15). It is very important to stop the impact wrench when the anchor rod reaches the bottom of the hole, because if the rod continues to rotate, the threads will evacuate the epoxy out of the hole. Be sure to wait for the curing time recommended by the manufacturer (proportional to the concrete temperature) before tightening.

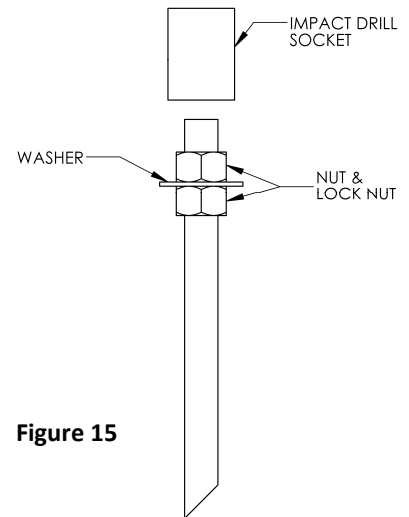


Figure 15

### Injectable chemical anchor

Always remove the gate before installing the injectable chemical anchors.



Hold the anchor rod centered into the hole and make sure to remove all excess of epoxy around the base of the anchor, because once cured, it will act as a shim and will prevent proper compression of the wall gasket.

Be sure to wait for the curing time recommended by the manufacturer (proportional to the concrete temperature) before tightening.

## APPENDIX 2 STEM LUBRICATION

		Type use				
		Standard	Frequent	Frequently submerge	Food industry	Non toxic
Type of grease	Esso Unirex EP2	X				
	Shell Darina XL EP	X				
	Shell SRS 2000	X	X	X		
	Shell FM 2	X			X	X
	Petro-Canada OG-2	X	X	X		
	Petro-Canada Purify-FG	X			X	X
	Prolab OG 700	X	X	X		

\* Equivalent greases are also acceptable.

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## APPENDIX 3 DECONTAMINATION AND PASSIVATION

Contact between stainless steel and carbon steel such as the tooling used during the installation (hammer, wrenches, chain hoist, grinding operation nearby, etc.) may locally contaminate stainless steel creating traces of corrosion. Note that these traces of corrosion are more of an aesthetic nature and generally do not affect the structural integrity of the equipment.



Contamination caused by grinding nearby

Contamination by nails left on the surface



It is possible to remove these traces using a passivation product designed for this purpose on the market. These products are often acid-based, certain precautions must be taken for their use and their possible contact with the sealing system of the gate.

Contact **Aquanox** for more information on this manner.



**SUBMITTAL DRAWINGS**

S/O: 15898

P/O: 190294KK

Project Name: **Burleigh County, ND  
Fox Island Flood Control Gate**

Customer: **Northwestern Power Equipment Co. Inc.**

Date: 2019-09-26  
Submittal No. 1  
Revision No.: 1

**TABLE OF CONTENT**

Item	Ident.	Qty	Model
01	ST MH #1	1	202-F5X-24x24-B-RMX/EC-20

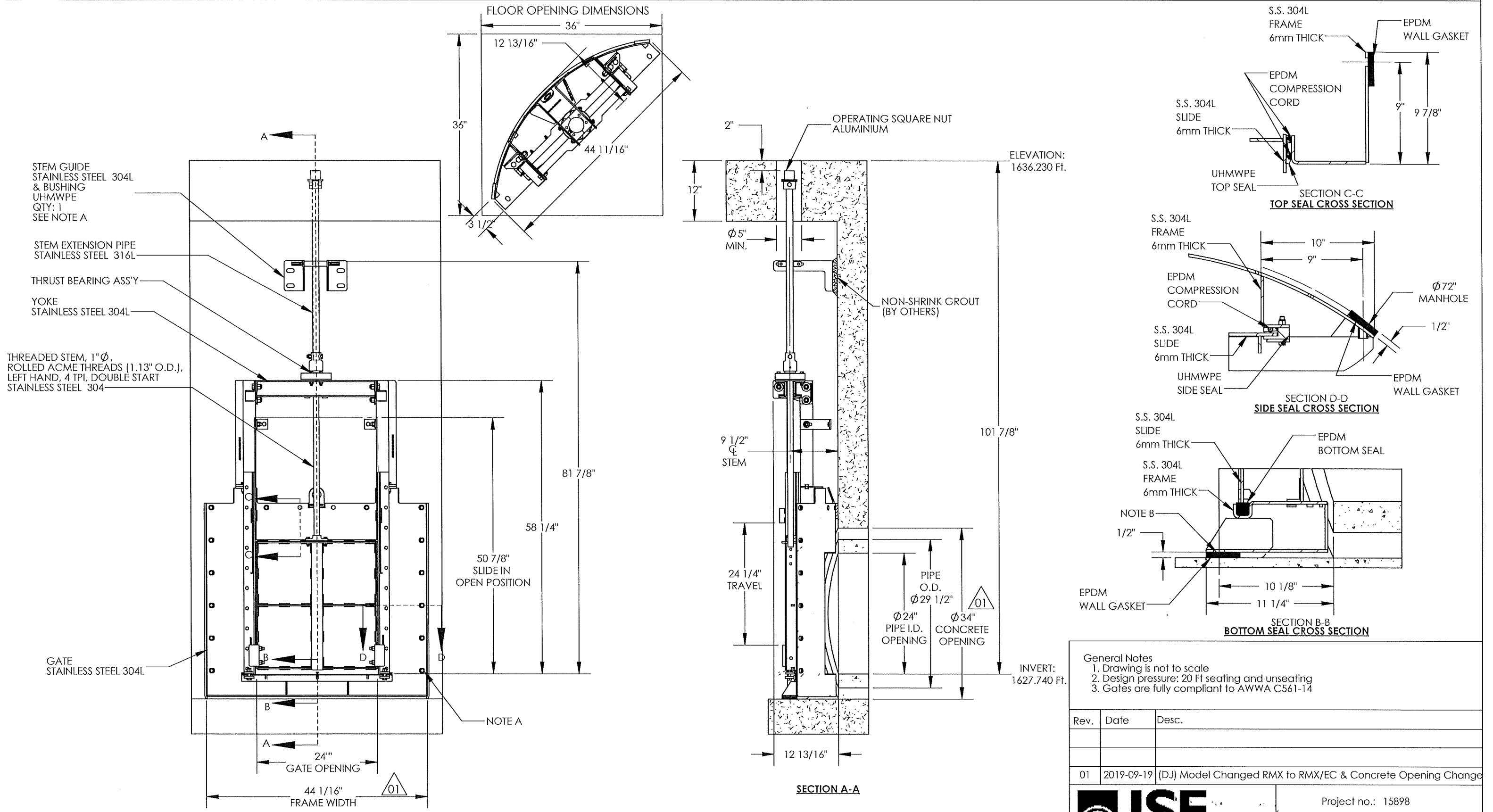
Fontaine-Aquanox Contact:

Rosaire St-Laurent  
Toll Free: (855) 769-0157 ext 360

<input checked="" type="checkbox"/> REVIEWED	<input type="checkbox"/> FURNISH AS CORRECTED
<input type="checkbox"/> REJECTED	<input type="checkbox"/> REVISE AND RESUBMIT
<input type="checkbox"/> SUBMIT SPECIFIED ITEM	
<small>This review is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with the requirements of the plans and specifications. Approval of a specific item shall not include approval of an assembly of which the item is a component. Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of his or her work with that of all other trades; and for performing all work in a safe and satisfactory manner.</small>	
<b>HOUSTON ENGINEERING, INC.</b>	
DATE <u>9/30/19</u> BY <u>TGJ</u>	



# Stainless Steel Slide Gate - Series 20



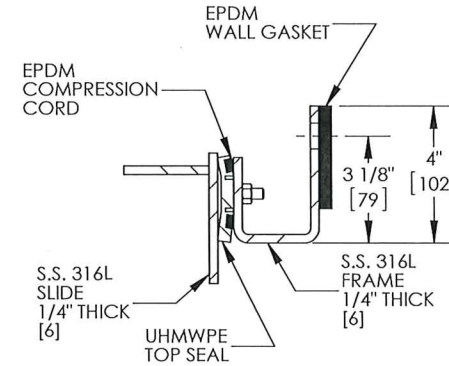
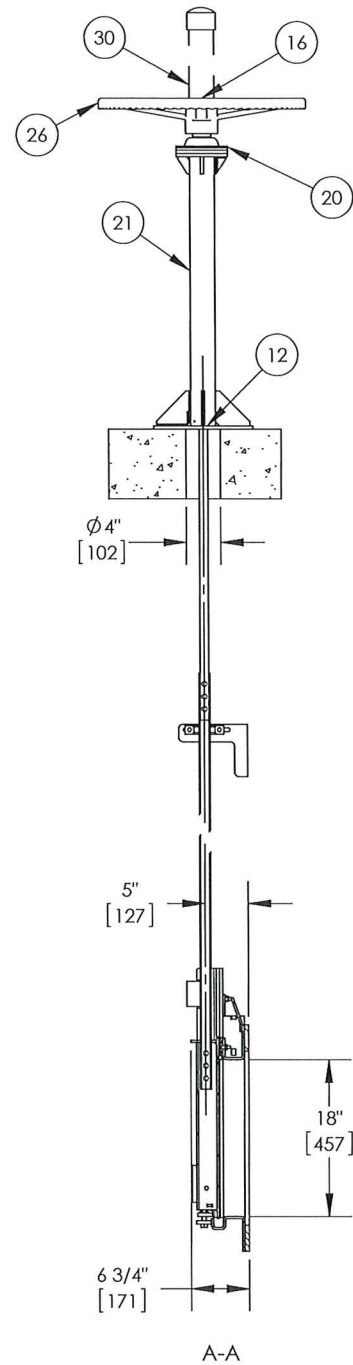
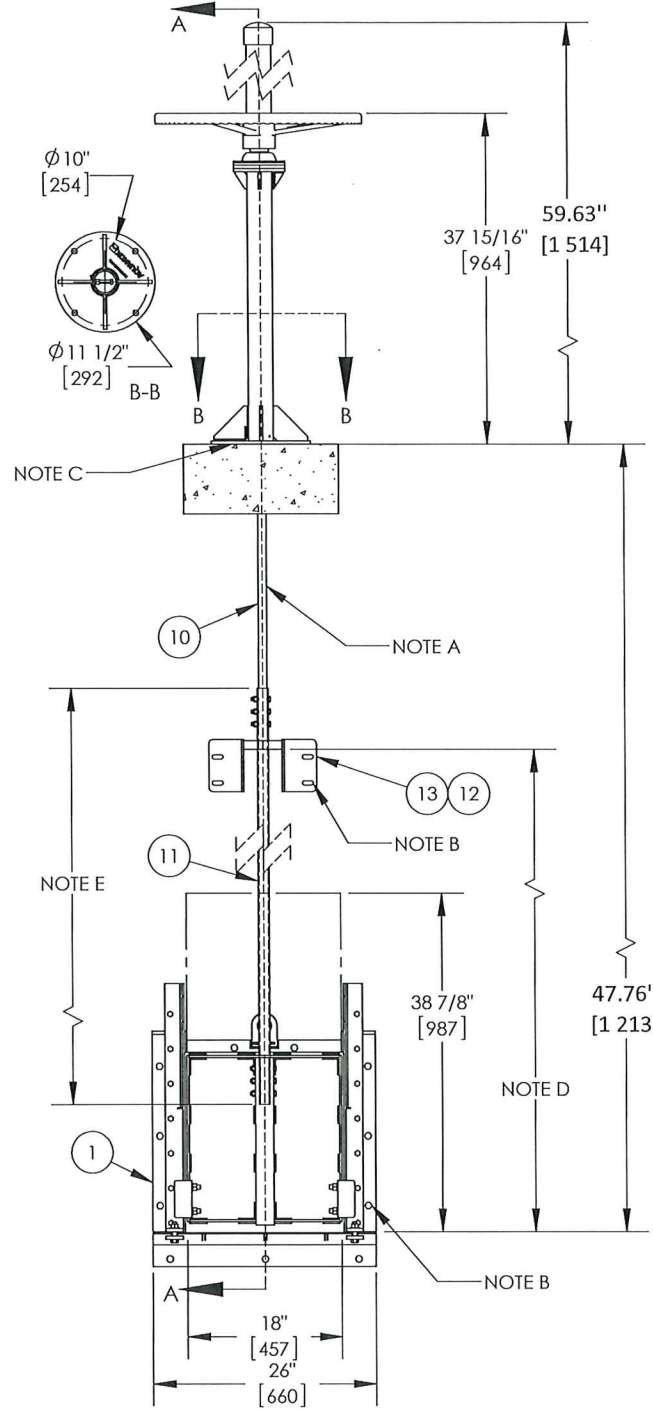
NOTE A: ANCHORS NOT SUPPLIED.  
 MECHANICAL: HILTI KWIK BOLT 3 OR BETTER, 1/2" [13mm] DIA.X 3.5" [89mm] EMBEDMENT IN 2000 PSI [14 Mpa] CONCRETE.  
 ADHESIVE: HILTI HVA OR BETTER, 1/2" [13mm] DIA.X 4.25" [110mm] EMBEDMENT IN 2000 PSI [14 Mpa] CONCRETE.  
 QTY: 22

NOTE B: ANCHORS NOT SUPPLIED.  
 ADHESIVE ONLY: HILTI HVA OR BETTER, 1/2" [13mm] DIA.X 4.25" [110mm] EMBEDMENT IN 2000 PSI [14 Mpa] CONCRETE.  
 QTY: 5

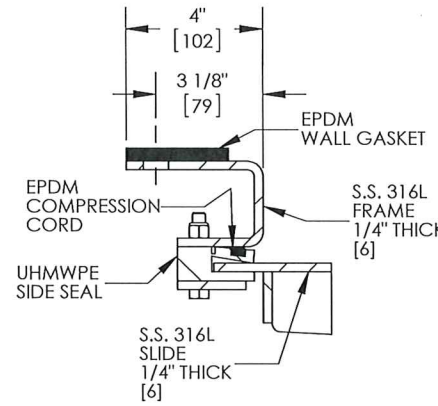
**General Notes**  
 1. Drawing is not to scale  
 2. Design pressure: 20 Ft seating and unseating  
 3. Gates are fully compliant to AWWA C561-14

Rev.	Date	Desc.
01	2019-09-19	(DJ) Model Changed RMX to RMX/EC & Concrete Opening Change

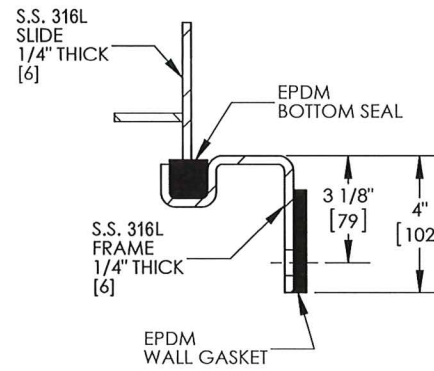
<p>ISE Métal Inc. - Sherbrooke, QC, Canada                  www.iseaquanox.com - 819-769-0157</p>	Project no.: 15898
	Burleigh County, ND Fox Island Flood Control
Item 01: ST MH #1 Slide Gate 304L SS	Model no.: 202-F5X-24x24-B-RMX/EC-20
Qty: 1	rev 0 DJ 2019-08-27 DWG no.: D15898-01-202F5X2424BRMXEC20



**TOP SEAL CROSS SECTION**



**SIDE SEAL CROSS SECTION**



**BOTTOM SEAL CROSS SECTION**

Description	Material
1 Gate	Stainless Steel 304L
10 Threaded Stem	Stainless Steel 304L
11 Stem extension	Stainless Steel 304L
12 Stem Guide Bushing	UHMWPE
13 Stem Guide Wall Bracket	Stainless Steel 316L
16 Stop nut	Aluminum
20 Thrust Bearing Ass'y	Stainless Steel 316L
21 Pedestal	Stainless Steel 304L
26 Handwheel	Aluminum
30 Graduated Stem Cover	Clear PVC

**REVIEWED**  **FURNISH AS CORRECTED**  
 **REJECTED**  **REVISE AND RESUBMIT**  
 **SUBMIT SPECIFIED ITEM**

*This review is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with the requirements of the plans and specifications. Approval of a specific item shall not include approval of an assembly of which the item is a component. Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of his or her work with that of all other trades; and for performing all work in a safe and satisfactory manner.*

**HOUSTON ENGINEERING, INC.**  
 DATE 7/3/19 BY TGJ

**Stem Guide Positioning**

Position guide #1:	40.9"	[1038mm]
Stem Guide Qty:	1	

**Stem Extension Pipe Sections**

Top	Length section #1:	6.0"	[152mm]
Btm	Nb of stem extension sections:	1	

NOTE A: THREADED STEM, 1"  $\phi$ , ROLLED ACME THREADS (1.13" O.D.), LEFT HAND, 4 TPI, DOUBLE START

NOTE B: ANCHORS NOT SUPPLIED. QTY=15

MECHANICAL: HILTI KWIK BOLT 3 OR BETTER, 1/2" [13mm] DIA.X 3.5" [89mm] EMBEDMENT IN 2000 PSI [14 Mpa] CONCRETE

ADHESIVE: HILTI HVA OR BETTER, 1/2" [13mm] DIA.X 4.25" [110mm] EMBEDMENT IN 2000 PSI [14 Mpa] CONCRETE

NOTE C: ANCHORS NOT SUPPLIED. QTY=4

MECHANICAL: HILTI KWIK BOLT 3 OR BETTER, 1/2" [13mm] DIA.X 3.5" [89mm] EMBEDMENT IN 4000 PSI [28MPa] CONCRETE

ADHESIVE: HILTI HVA OR BETTER, 1/2" [13mm] DIA.X 4.25" [110mm] EMBEDMENT IN 2000 PSI [14 Mpa] CONCRETE

NOTE D: STEM GUIDES POSITIONING. QTY=1, SEE TABLE ON RIGHT

NOTE E: LENGTH OF STEM EXTENSION PIPE SECTIONS. QTY=1, SEE TABLE ON RIGHT

**General Notes:**

1. Drawing is not to scale
2. Design pressure: 20ft [6m] seating and unseating
3. Gates are fully compliant to AWWA C561-12

Rev.	Date	Desc.
0	2018-07-20	

**ISE**  
 ISE Métal Inc. - Sherbrooke, QC, Canada  
 www.ISEAquanox.com - 819-769-0157

Project no.: 14668  
**Bismark, ND**  
 Fox Island Flood Control

Item 2: ST MH #2  
 Qty: 1

Model No.: 204-P1X-18x18-B-CW-20  
 Drawing No.: D14668-2-S11P1X1818BFB20

Page 1/1



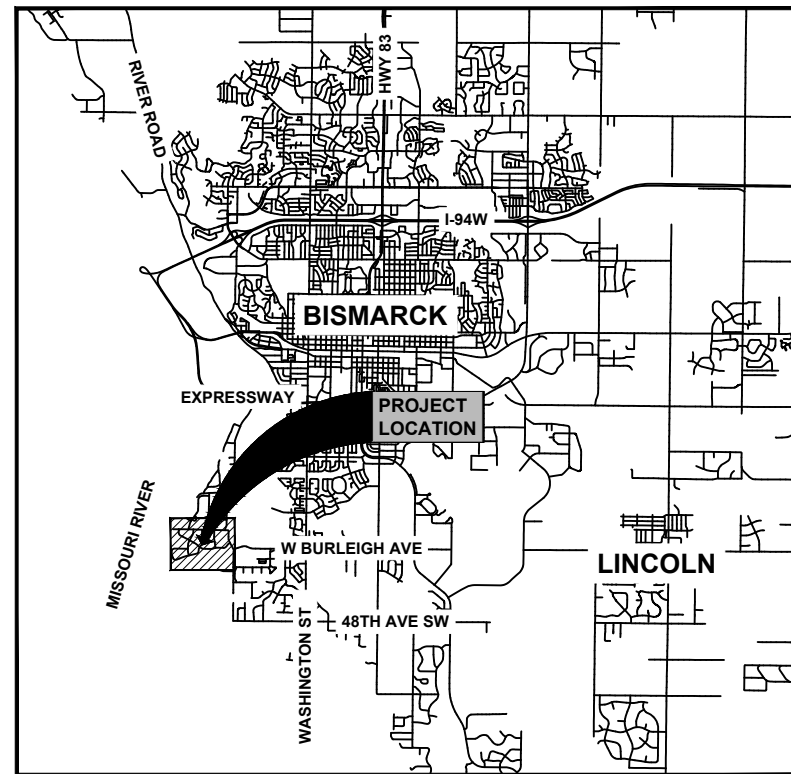


# APPENDIX D

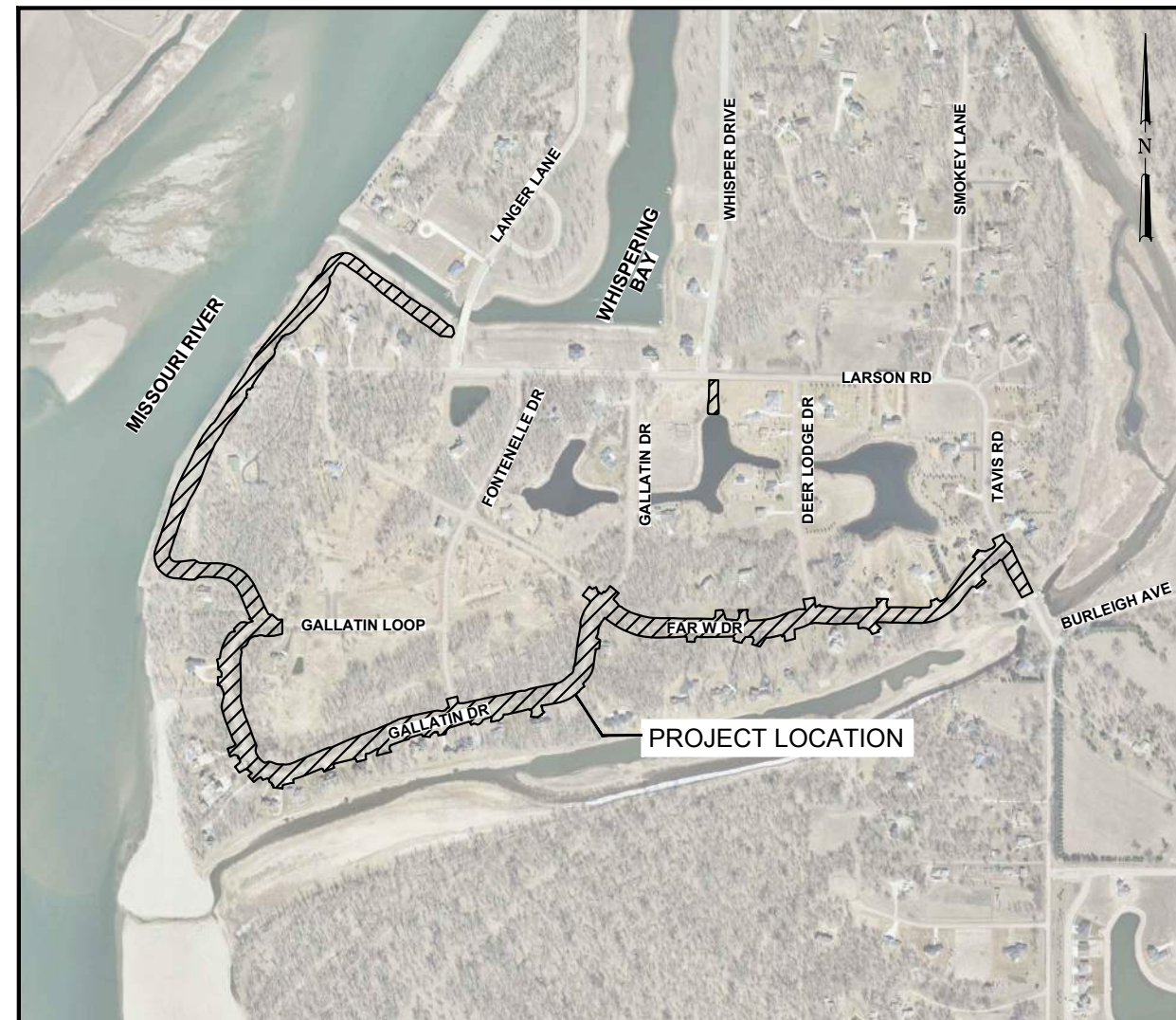
## FOX ISLAND FLOOD CONTROL RECORD DRAWINGS



# CONSTRUCTION PLANS FOR THE FOX ISLAND FLOOD CONTROL PROJECT BURLEIGH COUNTY, NORTH DAKOTA JUNE 2018



VICINITY MAP



<p><b>ENGINEER'S CERTIFICATE</b></p> <p>I, TRAVIS G. JOHNSON, A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NORTH DAKOTA, HEREBY CERTIFY THAT THE CONSTRUCTION PLANS FOR THE FOX ISLAND FLOOD CONTROL PROJECT, BURLEIGH COUNTY, NORTH DAKOTA WERE PREPARED UNDER MY SUPERVISION AND ARE COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.</p> <p style="text-align: right;">Travis G. Johnson /S/ DATE: 6/20/2018</p> <p>TRAVIS G. JOHNSON, PE REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA REGISTRATION NO. PE-5746</p>	<p>This document was originally issued and sealed by</p> <p style="text-align: center;"><b>TRAVIS G. JOHNSON</b></p> <p style="text-align: center;">Registration Number</p> <p style="text-align: center;">PE-5746</p> <p style="text-align: center;">on 6-20-18 and the original document is stored at</p> <p style="text-align: center;">Houston Engineering Inc.</p>
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**SHEET INDEX**

<b>GENERAL SHEETS</b>		<b>APPROACH PLAN &amp; PROFILES</b>	
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G-2	CONSTRUCTION NOTES & QUANTITIES	AP-2 - AP-17	PLAN & PROFILE APPROACHES
G-3	LEGEND AND ABBREVIATIONS	<b>TRAFFIC CONTROL</b>	
G-4	CONSTRUCTION PHASING	TC-1 - TC-5	TRAFFIC CONTROL PHASES
GD-1	STORM DETAILS	<b>STORM</b>	
GD-2	EROSION CONTROL DETAILS	ST-1	DRAINAGE RECONSTRUCT
<b>TYPICAL SECTIONS</b>		<b>LANDSCAPING</b>	
TS-1	EXISTING TYPICAL SECTIONS	LA-1	OVERVIEW
TS-2 - TS-4	PROPOSED TYPICAL SECTIONS	LA-2	LARSON RESIDENCE
TS-5	FLOOD WALL TYPICAL SECTIONS	LA-3 - LA-7	BROWN RESIDENCE
<b>REMOVALS SHEETS</b>		LA-8	NESS RESIDENCE
R-1	REMOVALS OVERVIEW	LA-9	HERINGER RESIDENCE
R-2 - R-12	REMOVALS	LA-10 - LA-13	LANDSCAPING DETAILS.
<b>LEVEE PLAN &amp; PROFILES</b>		LA-14	SCOTT /SHAFFER RESIDENCE
PP-1	OVERVIEW	<b>IRRIGATION</b>	
PP-2-13	PLAN & PROFILE ROADWAY	IR-1	BROWN RESIDENCE
PP-14 - PP-17	PLAN & PROFILE ROADWAY TIES	IR-2	NESS RESIDENCE
PP-18 - PP-24	PLAN & PROFILE EARTHEN LEVEE		

**UTILITY NOTE:**

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION, AS-BUILT MAPS AS PROVIDED BY MUNICIPALITIES OR UTILITY COMPANIES, AND/OR EXISTING DRAWINGS. THERE IS NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN INDICATE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. NOR IS THERE A GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY RESULT FROM THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES.

**GOVERNING STANDARDS:**

MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 2009 EDITION. THIS SPECIFICATION INCLUDES THE SHAPES, COLORS, AND FONTS USED IN ROAD MARKINGS AND SIGNS. ALL TRAFFIC CONTROL DEVICES MUST CONFORM TO THESE STANDARDS.

THESE RECORD DOCUMENTS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY FIELD PERSONNEL. THE DESIGN PROFESSIONAL HAS NOT VERIFIED THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

RECORD DRAWING: 12-01-2019

PREPARED BY:



BISMARCK, NORTH DAKOTA

**CONSTRUCTION NOTES**

1. THE TOPSOIL IN ALL AREAS TO BE DISTURBED SHALL BE STRIPPED, STOCKPILED, AND RESPREAD. THE TOPSOIL SHALL BE APPLIED TO THE ROADWAY SIDESLOPES AND ANY DISTURBED AREAS. ALL WORK AS DESCRIBED ABOVE SHALL BE PAID FOR BY THE UNIT PRICE BID FOR "TOPSOILING".
2. GRADE AND SHAPE AS NECESSARY USING EXCAVATION MATERIAL FIRST. BORROW MATERIAL SHALL BE PLACED SECOND AND ONLY AFTER EXCAVATION MATERIAL IS USED UP. SOIL MUST BE FREE FROM MASSES OF ORGANIC MATTER, STICKS, BRANCHES, ROOTS, AND OTHER DEBRIS, INCLUDING HAZARDOUS AND REGULATED SOLID WASTES.
3. AGGREGATE SURFACE SHALL BE CONSTRUCTED TO PLAN IN ACCORDANCE WITH NDDOT SPECIFICATION SECTION 302 AGGREGATE GRADATION TESTING IS AT THE DISCRETION OF THE FIELD ENGINEER. COST OF OBTAINING, HAULING, AND CONSTRUCTING AGGREGATE SHALL BE PAID FOR BY THE UNIT PRICE BID FOR "CLASS 13 AGGREGATE SURFACE".
4. HYDRO MULCHING SHALL BE PLACED WITHIN 24 HOURS AFTER THE SEEDING HAS BEEN COMPLETED. HYDRO MULCHING SHALL BE APPLIED UNIFORMLY OVER THE SEEDED AREAS AT A RATE OF 2 TONS PER ACRE.
5. WATER FOR COMPACTION & DUST CONTROL SHALL BE OBTAINED FROM AN APPROVED SOURCE AND THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS.
6. THE CONTRACTOR SHALL KEEP ALL STOCKPILES AND CONSTRUCTION EQUIPMENT WITHIN THE DESIGNATED CONSTRUCTION LIMITS. NO PERMISSION HAS BEEN GRANTED FROM ANY ADJACENT LANDOWNERS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY AGREEMENT WITH ADJACENT LANDOWNERS ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
7. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR ALL PROJECT SITE SAFETY.
8. CONSTRUCTION STAKING WILL BE SUPPLIED BY THE OWNER. THE CONTRACTOR SHALL PROTECT AND PRESERVE ALL SURVEY STAKES AND MONUMENTS. STAKES OR MONUMENTS DAMAGED BY THE CONTRACTOR SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE BY THE OWNER'S SURVEYOR.
9. THIS PROJECT SHALL BE COVERED UNDER A STATE OF NORTH DAKOTA, NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) STORMWATER DISCHARGE PERMIT. THE CONTRACTOR WILL BE THE ORIGINATOR AND SIGNER OF THIS PERMIT AND BE RESPONSIBLE FOR CONTROLLING EROSION AND SEDIMENT RUNOFF FROM THE PROJECT. THE CONTRACTOR SHALL SUBMIT A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCING ANY WORK ON THE PROJECT SITE.
10. CONTRACTOR SHALL PLACE EROSION CONTROL AS SHOWN ON THE PLANS, AS REQUIRED BY NPDES PERMIT, AND AS DIRECTED BY THE ENGINEER.
11. THE CONTRACTOR SHALL NOTIFY SURVEYOR 72 HOURS IN ADVANCE FOR SURVEY REQUESTS.
12. LOCATE AND PROTECT ALL EXISTING UTILITIES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CITY OF BISMARCK EXCAVATION PERMITS AND ALL ASSOCIATED COSTS.
14. ALL SITE CONSTRUCTION INCLUDING COMPACTION TESTING MUST CONFORM TO THE MOST RECENT EDITION OF THE CITY OF BISMARCK CONSTRUCTION SPECIFICATIONS FOR MUNICIPAL PUBLIC WORKS IMPROVEMENTS EXCEPT AS AMENDED BY CONSTRUCTION NOTES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING TESTING. THE OWNER AND ENGINEER SHALL BE SUPPLIED WITH COPIES OF ALL TEST REPORTS.
15. LOT DIMENSIONS SHOWN ARE PER PLAT. FIELD DIMENSIONS VARY FROM THE DIMENSIONS AND BEARINGS SHOWN.
16. A PORTION OF THE PROJECT AREA IS WITHIN A RECORDED FLOOD PLAIN.
17. A COMPACTION FACTOR OF 15% HAS BEEN ADDED TO ALL FILL MATERIAL AS MEASURED AT THE BORROW SITE.
18. THE COST OF CUTTING AND REMOVAL OF EXISTING ASPHALT PAVEMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "REMOVE ASPHALT".
19. THE COST OF CUTTING AND REMOVAL OF EXISTING CONCRETE PAVEMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "REMOVE CONCRETE".
20. ALL CONSTRUCTION SHALL OCCUR WITHIN THE DESIGNATED BOUNDARIES OF THE RIGHT OF WAY UNLESS OTHERWISE NOTED BY TEMPORARY CONSTRUCTION LIMITS.
21. CONTRACTOR SHALL WORK WITH ADJACENT LAND OWNER TO RELOCATE SPADABLE TREES WITHIN RIGHT OF WAY TO PRIVATE PROPERTY.
22. CONTRACTOR MUST EXERCISE CARE IN CONSTRUCTION OPERATIONS TO ENSURE THAT NO DAMAGE IS DONE TO EXISTING FACILITIES THAT REMAIN IN PLACE. COST TO REPAIR DAMAGE WILL BE AT THE CONTRACTORS EXPENSE
23. SWEEP PAVED AREAS THAT WERE USED BY CONSTRUCTION TRAFFIC BEFORE OPENING THESE AREAS TO PUBLIC TRAFFIC. SWEEP ALL NEWLY CONSTRUCTED PAVEMENT NO MORE THAN 24 HOURS BEFORE A SCHEDULED FINAL INSPECTION. USE A VACUUM OR PICK-TYPE SWEEPER TO PERFORM THIS WORK.
24. SWEEP PAVEMENT BEFORE CHIP SEAL OPERATION BEGIN. AFTER CHIP SEAL OPERATION ARE FINISHED THE CHIP FLOAT WILL BE SWEEPED FROM THE ROADWAY AS SOON AS THE OIL HAS CURED TO THE POINT THAT SWEEPING WILL NOT DISLodge THE CHIPS. THIS CAN BE DONE AS EARLY AS 24 HOURS, BUT IN NO CASE LONGER THAN 72 HOURS. USE A PICKUP BROOM TO MINIMIZE MATERIAL SWEEPED INTO DITCHES THAT ARE PART OF YARD. INCLUDE ALL COSTS CONNECTED WITH THIS IN THE PRICE BID FOR ASSOCIATED ITEMS.
25. PLACE FOG SEAL COAT OVER THE FINAL SEAL COAT WITH SS1H OR CSS1H EMULSIFIED ASPHALT. APPLY THE FOG SEAL TO THE CHIP SEAL AFTER THE SEAL COAT CHIPS HAVE BEEN SWEEPED.
26. SEAL STREET INTERSECTIONS TO THE BACK OF THE RADIUS. THESE AREAS HAVE BEEN MEASURED AND QUANTITIES ARE INCLUDED IN THE BASIS OF ESTIMATE.

**SITE PLAN CONSTRUCTION NOTES**

1. ALL CONSTRUCTION MUST CONFORM TO THE MOST RECENT EDITION OF THE CITY OF BISMARCK CONSTRUCTION SPECIFICATIONS FOR MUNICIPAL PUBLIC WORKS IMPROVEMENTS, UNLESS OTHERWISE NOTE, AS WELL AS STATE COUNTY AND FEDERAL REQUIREMENTS. COORDINATE WITH CITY STAFF REGARDING CITY UTILITIES.
2. ALL PERMITS NECESSARY FOR THE WORK OF THE CIVIL PLANS SHALL BE PAID AND OBTAINED BY THE CONTRACTOR. THE OWNER WILL PAY SURVEYING AND MATERIALS TESTING DIRECTLY. ANY RETESTS DUE TO FAILING TESTS SHALL BE PAID FOR BY THE CONTRACTOR. THE OWNER RESERVES THE RIGHT TO INCREASE OR DECREASE THE FREQUENCY OF TESTING BEYOND SPECIFIED.
3. PLACE TYPE 3 BARRICADE WHERE INDICATED.
4. EARTHWORK QUANTITIES REPRESENT TOTALS FOR THE ENTIRE SITE.

**SURVEY INFORMATION**

HORIZONTAL DATUM: NAD 83  
 VERTICAL DATUM: NAVD 88  
 COORDINATE SYSTEM: ND STATE PLANE SOUTH ZONE  
 UNIT OF MEASURE: INTERNATIONAL FOOT, GRID

**BASIS OF ESTIMATE**

**EARTHWORK**  
 FILL = 27,276 CY  
 (EARTH WORK QUANTITIES FOR LEVEE CONSTRUCTION WERE CALCULATED ASSUMING 6" OF TOPSOIL REMOVAL.)

**TOPSOIL, SEEDING AND MULCHING**  
 DISTURBED AREAS WITHIN CONSTRUCTION LIMITS

**EMULSIFIED ASPHALT FOR TACK COAT** 0.05 GAL/ SQ YD      **EMULSIFIED ASPHALT FOR CRS20** 0.38 GAL / SQ YD      **EMULSIFIED ASPHALT FOR FOG SEAL** 0.12 GAL / SQ YD

**SUPERPAVE FAA 42** CALCULATED AT 110% 2.0 TON/ CU YD      **COVER COAT MATERIAL CL41** 25 LB/ SQ YD

**ESTIMATED QUANTITIES**

Item	Description	Unit	Quantity	Item	Description	Unit	Quantity
1	Contract Bond	LSUM	1	34	Turf Reinforcement Mat SC-2S0	SY	4,647
2	Mobilization	LSUM	1	35	Remove and Reset Sign	EA	4
3	Public Relations Coordinator	LSUM	1	36	Remove and Reset Mailbox	EA	27
4	Clearing and Grubbing	LSUM	1	37	Remove Asphalt Surfacing	SY	17,975
5	Tree Removal 12" to 24"	EA	248	38	Remove Aggregate Surfacing	SY	512
6	Tree Removal Over 24"	EA	73	39	Remove Concrete Surfacing	SY	1,513
7	Tree Remove and Reset with Spade	EA	35	40	Remove Pipe All Types and Sizes	LF	352
8	Water	M GAL	3,000	41	Remove and Reset Fence	LF	100
9	Unclassified Excavation	CY	15,539	42	Gate Well Control Structure	EA	2
10	Borrow Excavation	CY	38,299	43	Flowable Fill Encasement	CY	100
11	Subgrade Preparation	SY	23,832	44	Sprinkler Head Remove and Replace	EA	106
12	Straw Wattles, 12 Inch Diameter	LF	5,841	45	Steel Sheet Piling	SF	5,430
13	Construction Fence	LF	2,350	46	Brick Fascia	SF	796
14	Class 5 Aggregate Base	TON	7,243	47	Concrete Cap	LF	199
15	Tensor TX 1305 Geogrid	SY	21,195	48	Steps Type 1	EA	3
16	Class 13 Aggregate Surface	TON	145	49	Steps Type 2	EA	6
17	Superpave FAA 42	TON	5,040	50	Dry Stacked Retaining Wall	SFF	200
18	Emulsified Asphalt Tack Coat	GAL	1,031	51	Segmental Retaining Wall	SFF	250
19	Emulsified Asphalt CRS2P	GAL	6,943	52	Hot Tub Concrete Slab	SF	80
20	Fog Seal	GAL	2,193	53	Concrete Base for Paver Patio	SF	1,600
21	Cover Coat Material CL 41	TON	230	54	Header Curb / Fascia / Coping	LF	135
22	Reinforced Concrete Surfacing 4"	SF	14,093	55	Paver Patio over Concrete Base	SF	1,600
23	Reinforced Concrete Surfacing 6"	SF	2,464	56	Paver Patio over Aggregate Base	SF	427
24	16" CMP Culvert	LF	260	57	Railing	LF	45
25	16" CMP Flared End Section	EA	12	58	Deck	EA	1
26	36" RCP Storm Sewer Pipe	LF	100	59	Natural Gas Lines (relocated)	LSUM	1
27	36" RCP Flared End Section	EA	2	60	Miscellaneous Conduit Future Irrigation & Lighting	LSUM	1
28	18" RCP Storm Sewer Pipe	LF	90	61	Landscaping Storm Sewer/ Catch Basin	LSUM	1
29	18" RCP Flared End Section	EA	2	62	Trees	EA	138
30	Topsoiling	CY	4,696	63	Shrubs	EA	16
31	Seeding Class II	AC	14	64	Perennials	EA	56
32	Overseeding	AC	14	65	Rock Mulch & Fabric	SF	1,000
33	Traffic Control and Flagging	LSUM	1	66	Landscape Curb Edging	LF	160

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No.	Revision	Date	By		Bismarck	Drawn by TP/EM/JP	Date 6-12-18	FOX ISLAND FLOOD CONTROL PROJECT BURLEIGH COUNTY WATER RESOURCE DISTRICT BURLEIGH COUNTY, NORTH DAKOTA	NOTES AND QUANTITIES PROJECT NO. 6025-006	SHEET G-2
					P: 701.323.0200 F: 701.323.0300	Checked by TGJ	Scale AS SHOWN			

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**LEGEND**

	EXISTING	NEW
WATER MAIN	W	W
SANITARY SEWER MAIN	SS	SS
SANITARY SEWER FORCE	SS <sub>F</sub>	SS <sub>F</sub>
STORM SEWER MAIN	STS	STS
STORM INLET		
MANHOLE		
CLEANOUT		
FIRE HYDRANT		
GATE VALVE		
CURBSTOP		
UTILITY POLE		
W / GUY WIRE		
LIGHT POLE		
TELEPHONE RISER		
ELECTRICAL PLUG IN		
OVERHEAD POWER	P	P
UNDERGROUND ELECTRIC	UGE	UGE
UNDERGROUND TELEPHONE	UGT	UGT
UNDERGROUND FIBER OPTIC	FO	FO
CABLE TV	CTV	CTV
GAS MAIN	GAS	GAS
CONIFEROUS TREE		
DECIDUOUS TREE		
SHRUB		
HEDGE		
SIGN		
FENCE	X	X
RAILROAD TRACKS		
SPOT ELEVATION		
STANDARD CURB & GUTTER		
MOUNTABLE CURB & GUTTER		
CURB & INVERTED GUTTER		
BUILDING		
NEW ASPHALT		
NEW CONCRETE		
NEW AGGREGATE SURFACE		
NEW SEEDING		
THICKENED EDGE SIDEWALK		
RIGHT OF WAY LINE	R/W	R/W
TEMPORARY EASEMENT	ESMT	ESMT
EASEMENT	ESMT	ESMT
DIRECTION OF DRAINAGE		
DRAINAGE DIRECTION		
IRON MONUMENT FOUND		
IRON MONUMENT SET		
CHISELED MARK ON CONCRETE		
PK NAIL		
SOIL BORING		
FLOODWAY		
TREE REMOVAL		

**NEW**

	NEW
WATER MAIN	W
SANITARY SEWER MAIN	SS
SANITARY SEWER FORCE	SS <sub>F</sub>
STORM SEWER MAIN	STS
STORM INLET	
MANHOLE	
CLEANOUT	
FIRE HYDRANT	
GATE VALVE	
CURBSTOP	
UTILITY POLE	
W / GUY WIRE	
LIGHT POLE	
TELEPHONE RISER	
ELECTRICAL PLUG IN	
OVERHEAD POWER	P
UNDERGROUND ELECTRIC	UGE
UNDERGROUND TELEPHONE	UGT
UNDERGROUND FIBER OPTIC	FO
CABLE TV	CTV
GAS MAIN	GAS
CONIFEROUS TREE	
DECIDUOUS TREE	
SHRUB	
HEDGE	
SIGN	
FENCE	X
RAILROAD TRACKS	
SPOT ELEVATION	
STANDARD CURB & GUTTER	
MOUNTABLE CURB & GUTTER	
CURB & INVERTED GUTTER	
BUILDING	
NEW ASPHALT	
NEW CONCRETE	
NEW AGGREGATE SURFACE	
NEW SEEDING	
THICKENED EDGE SIDEWALK	
RIGHT OF WAY LINE	R/W
TEMPORARY EASEMENT	ESMT
EASEMENT	ESMT
DIRECTION OF DRAINAGE	
DRAINAGE DIRECTION	
IRON MONUMENT FOUND	
IRON MONUMENT SET	
CHISELED MARK ON CONCRETE	
PK NAIL	
SOIL BORING	
FLOODWAY	
TREE REMOVAL	

**ABBREVIATIONS**

ABAN	ABANDON
ABND	ABANDONED
BC	BEGIN CURVE
BCR	BEGIN CURB RETURN
BLDG	BUILDING
BLKG	BLOCKING
BM	BENCH MARK
BNSF	BURLINGTON NORTHERN SANTA FE
BVC	BEGIN VERTICAL CURVE
C&G	CURB AND GUTTER
CATV	CABLE TELEVISION
CI	CAST IRON
CIP	CAST IRON PIPE / CAST IN PLACE
CIPP	CAST IN PLACE PIPE
CJ	CONSTRUCTION JOINT
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
CONC	CONCRETE
COORD	COORDINATE
COR	CORNER
COTG	CLEANOUT TO GRADE
CP	CANADIAN PACIFIC
CPLG	COUPLING
CPVC	CHLORINATED POLYVINYL CHLORIDE
CSP	CORRUGATED STEEL PIPE
CU	COPPER
CULV	CULVERT
CV	CHECK VALVE
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DMH	DROP MANHOLE
DWLS	DOWELS
DWY	DRIVEWAY
EA	EACH
EC	END CURVE
ECC	ECCENTRIC
ECCR	END CURB RETURN
EG	EXISTING GRADE
EL	ELEVATION
ELEC	ELECTRICAL
ENCL	ENCLOSURE
ENT	ENTRANCE
EP	EDGE OF PAVEMENT
EPT	ETHYLENE PROPYLENE
ESEMT	EASEMENT
EX	EXISTING
FD	FEEDER
FF	FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOWLINE
FLR	FLOOR
G	GAS
GB	GRADE BREAK
GI	GALVANIZED IRON
GIP	GALVANIZED IRON PIPE
GM	GAS METER
GV	GATE VALVE
HBP	HOT BITUMINOUS PAVEMENT
HGL	HYDRAULIC GRADE LINE
HWL	HIGH WATER LEVEL
HYD	HYDRAULIC / HYDRANT
INV	INVERT
MCR	MIDDLE OF CURB RETURN
MH	MANHOLE
MON	MONUMENT
NPS	NOMINAL PIPE SIZE
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PNL	PANEL
POB	POINT OF BEGINNING
POC	POINT OF CONNECTION
POT	POINT OF TANGENT
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENCY
PTFE	POLYTETRAFLUOROETHYLENE (TEFLON)
R	RADIUS
R/W	RIGHT OF WAY
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RED	REDUCER
REV	REVISION
RR	RAILROAD
STC	SLEEVE-TYPE COUPLING
SW	SIDEWALK
SWD	SIDEWALK DRAIN

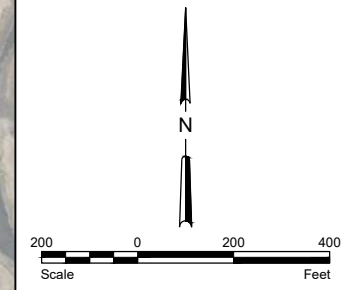
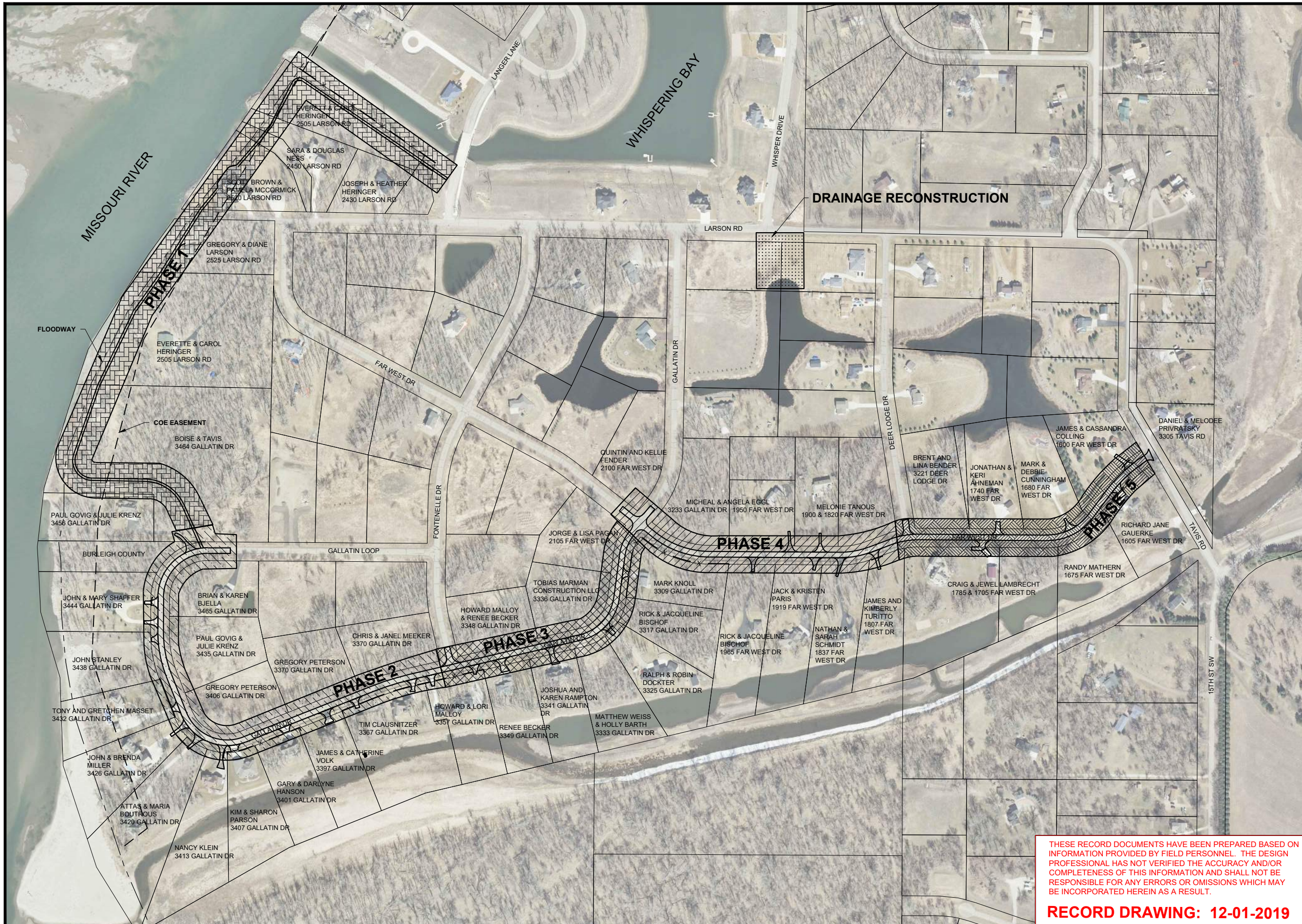
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						Checked by TGJ	Scale AS SHOWN			

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**CONSTRUCTION PHASE LEGEND**

DRAINAGE RECONSTRUCTION	
PHASE 1 CONSTRUCTION	
PHASE 2 CONSTRUCTION	
PHASE 3 CONSTRUCTION	
PHASE 4 CONSTRUCTION	
PHASE 5 CONSTRUCTION	

- GENERAL SHEET NOTES**
1. ROADWAY PHASES MAY NOT BE CONSTRUCTED SIMULTANEOUSLY.
  2. PHASE 1 AND DRAINAGE RECONSTRUCTION MAY BE CONSTRUCTED WITH THE ROADWAY PHASES.
  3. SEE SHEETS TC-1 - 6 FOR TRAFFIC CONTROL DURING CONSTRUCTION PHASING.

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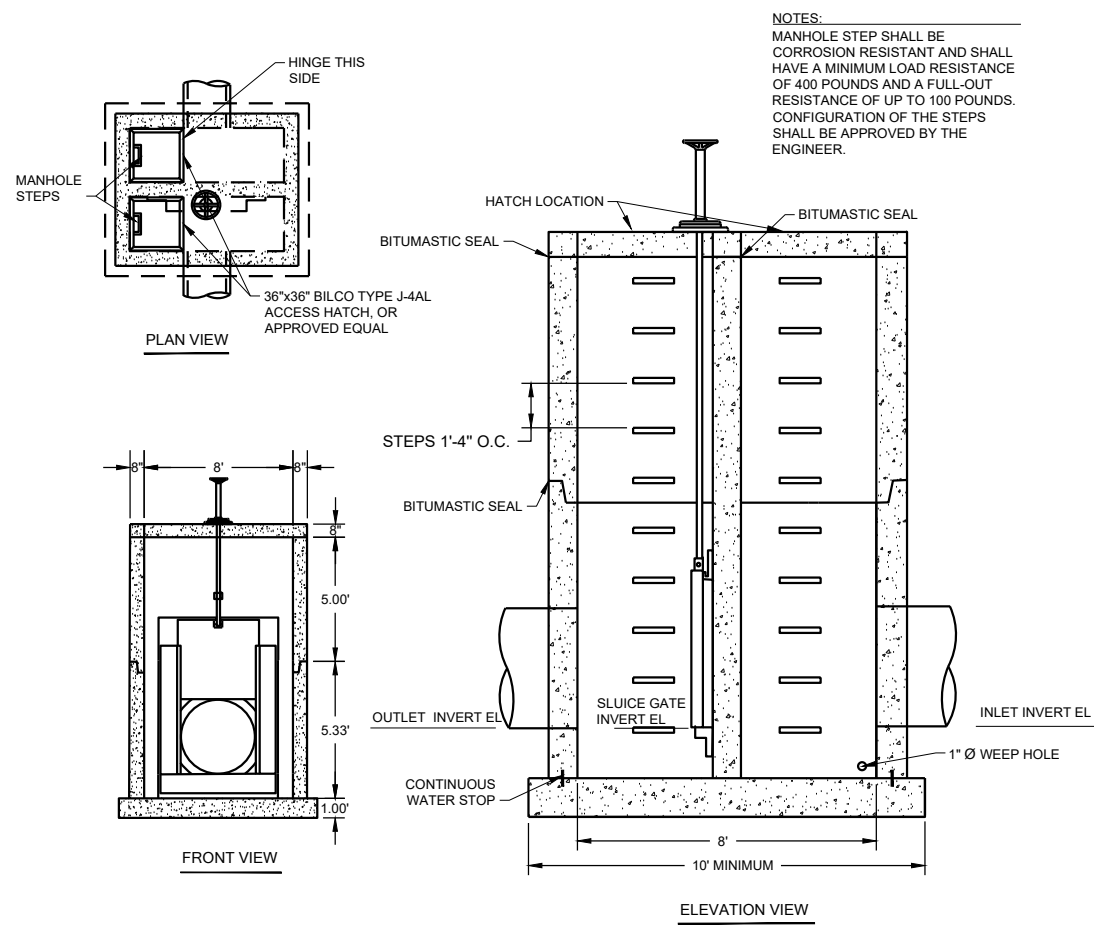


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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

CONSTRUCTION PHASING  
 PROJECT NO. 6025-006

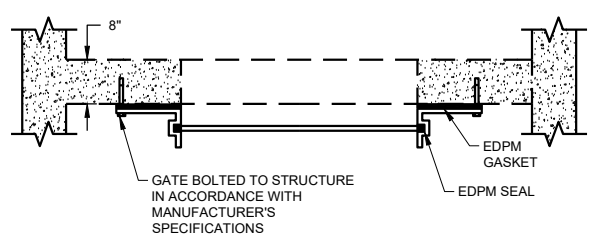
SHEET  
 G-4



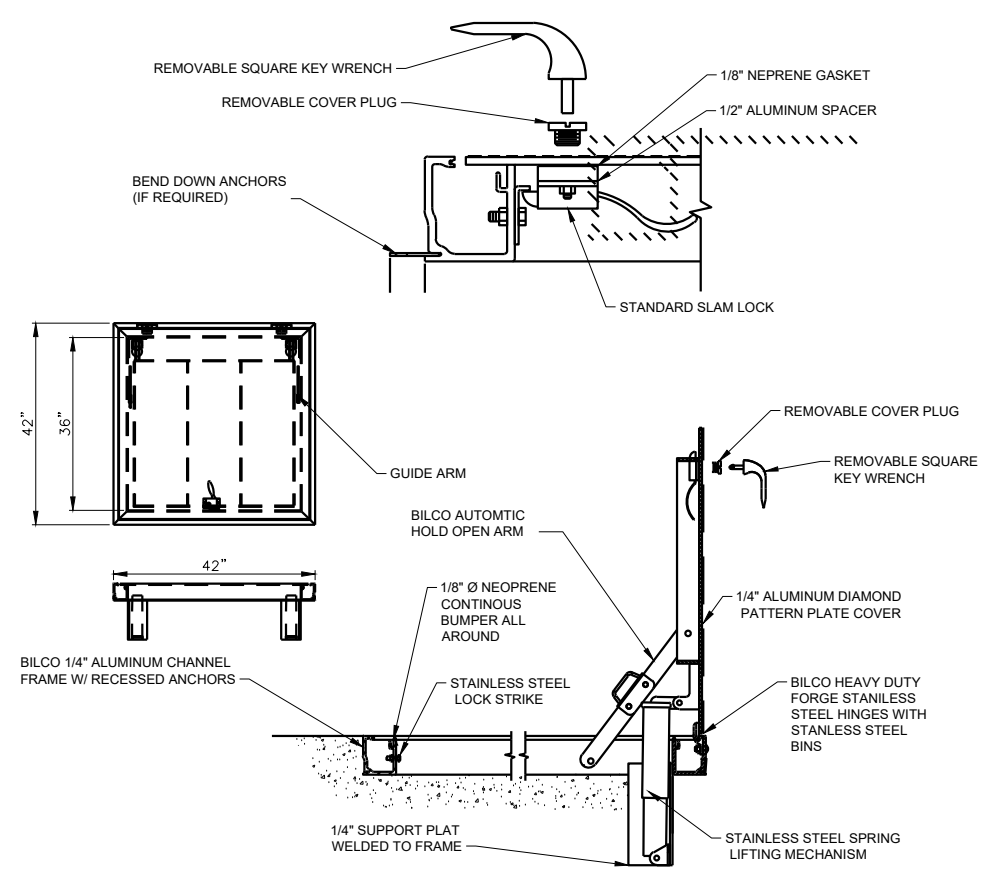
MANHOLE ELEVATIONS

	ST MH #1	ST MH #2
SLUCE GATE SIZE	36"	18"
INLET INVERT EL.	1627.78	1631.79
SLUCE GATE INVERT EL.	1627.76	1631.77
OUTLET INVERT EL.	1627.74	1631.75
VAULT FLOOR EL.	1626.92	1630.93
RIM EL.	1635.79	1635.75

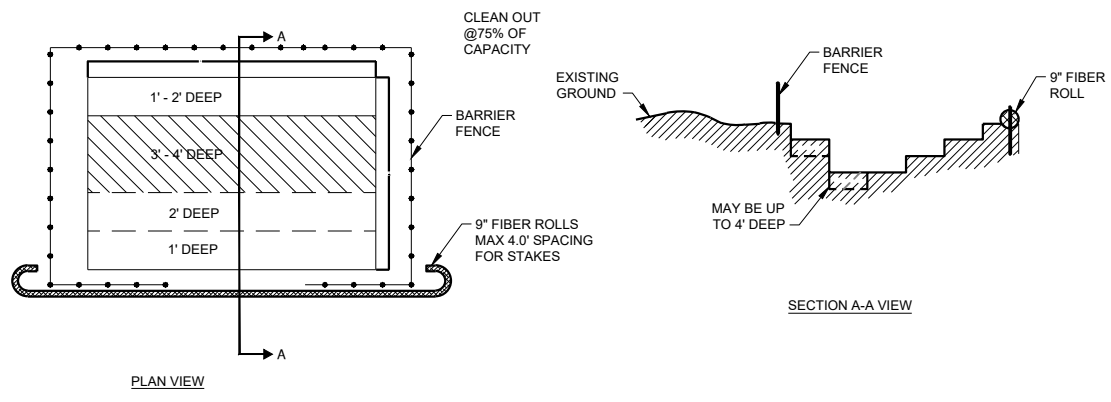
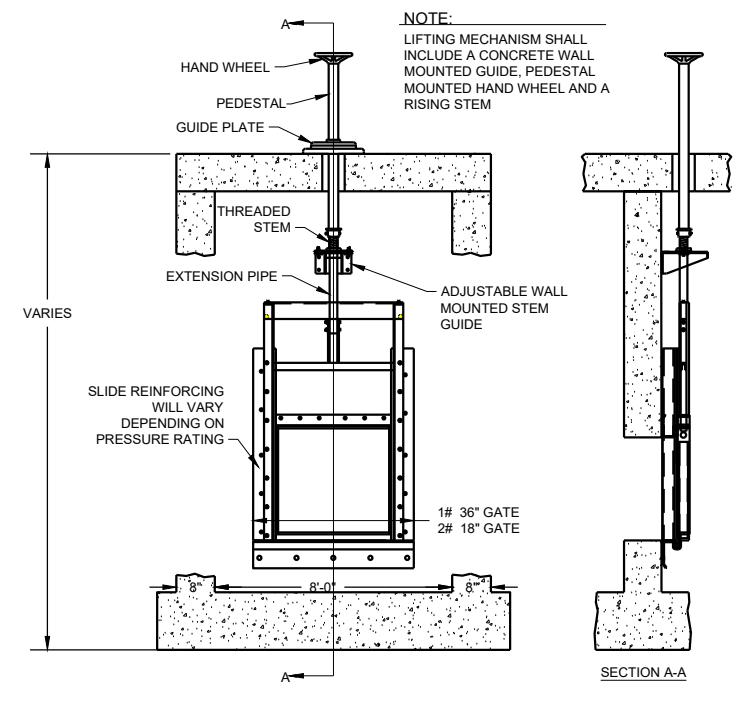
**A GATE WELL MANHOLE**  
GD-1 NOT TO SCALE



**D SLUCE GATE INSTALLATION DETAIL**  
GD-1 NOT TO SCALE



**B ACCESS HATCH**  
GD-1 NOT TO SCALE



- NOTES:
- CONTRACTOR SHALL INSTALL SIGNING DESIGNATING CONCRETE WASHOUT AREA.
  - CONTRACTOR SHALL EMPTY WASHOUT AREA WHEN IT REACHES 75% OF CAPACITY.
  - CONTRACTOR SHALL LINE WASHOUT WITH A MINIMUM 10 MIL PLASTIC OR COMPACT EXISTING CLAY TO FORM IMPERMEABLE LINER.

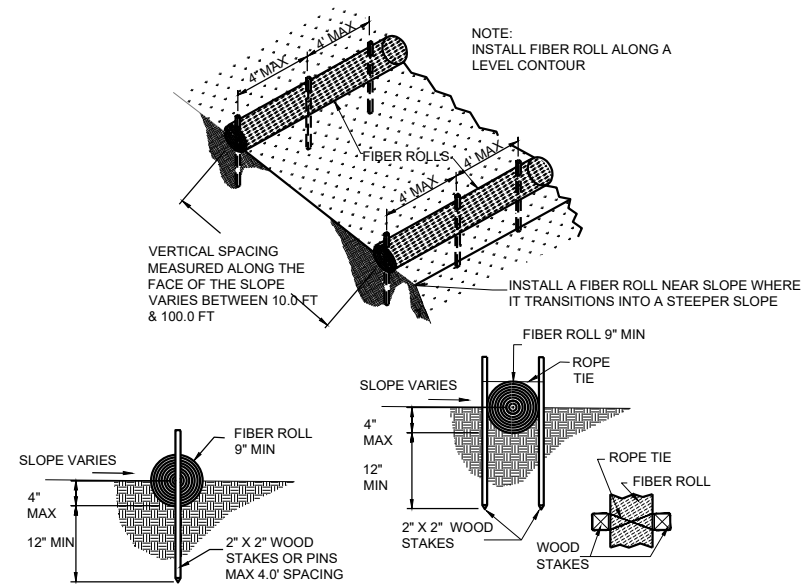
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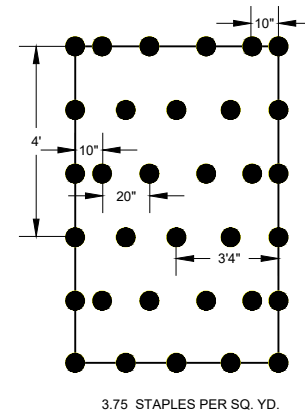
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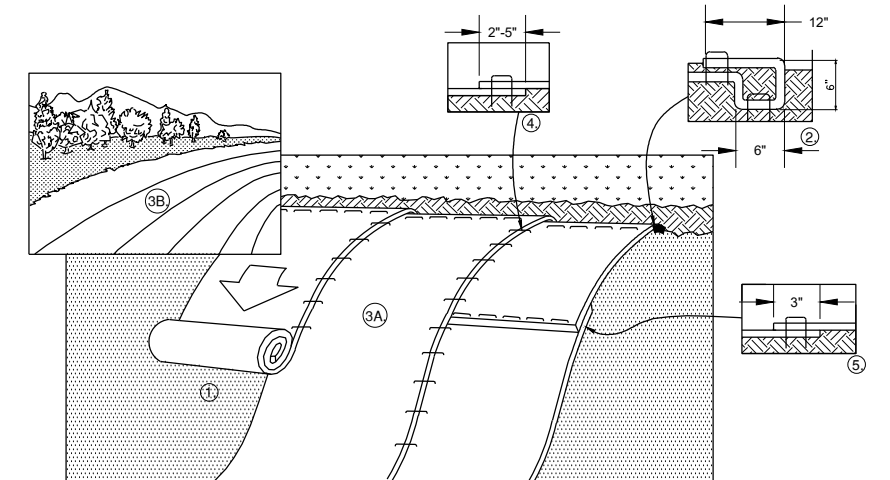
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**A** FIBER ROLL INSTALLATION  
GD-2 NOT TO SCALE



**B** STAPLE PATTERN FOR TURF MAT  
GD-2 NOT TO SCALE



- NOTE
1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
  2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP's.
  3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
  4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" - 5" OVERLAP DEPENDING ON RECP's TYPE.
  5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP's WIDTH. NOTE: \*IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

**C** PERMANENT TURF REINFORCEMENT MAT  
GD-2 NOT TO SCALE

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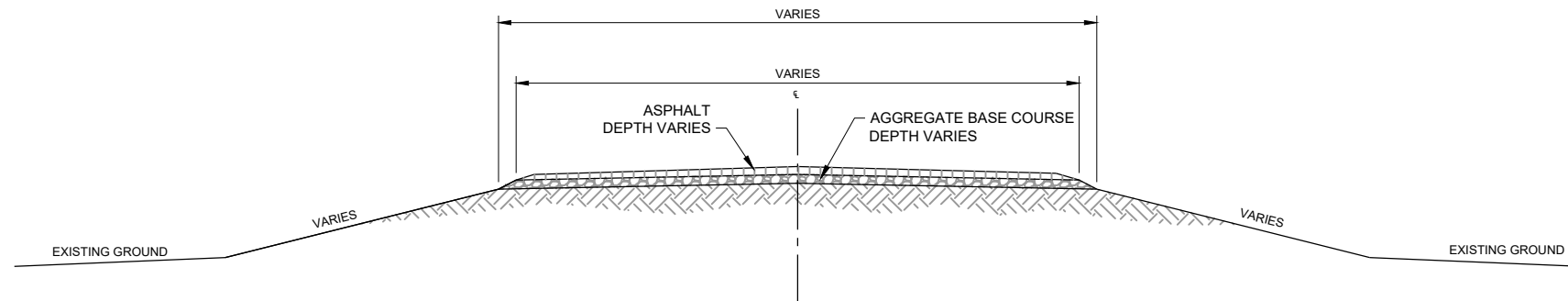
FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

EROSION CONTROL DETAILS  
 PROJECT NO. 6025-006

SHEET GD-2

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No.	Revision	Date	By



**A**  
**TS-1** **EXISTING TYPICAL ROADWAY SECTIONS**  
NOT TO SCALE

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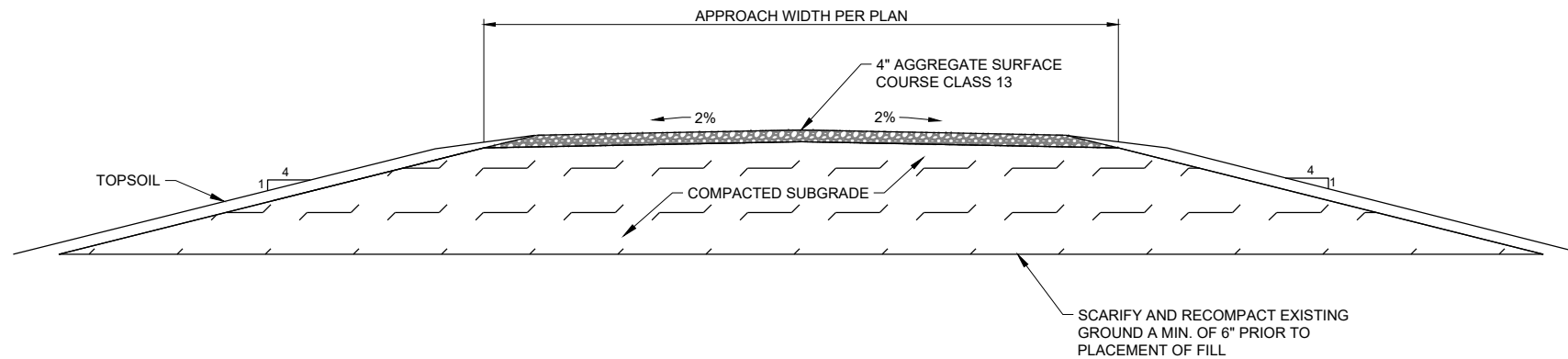
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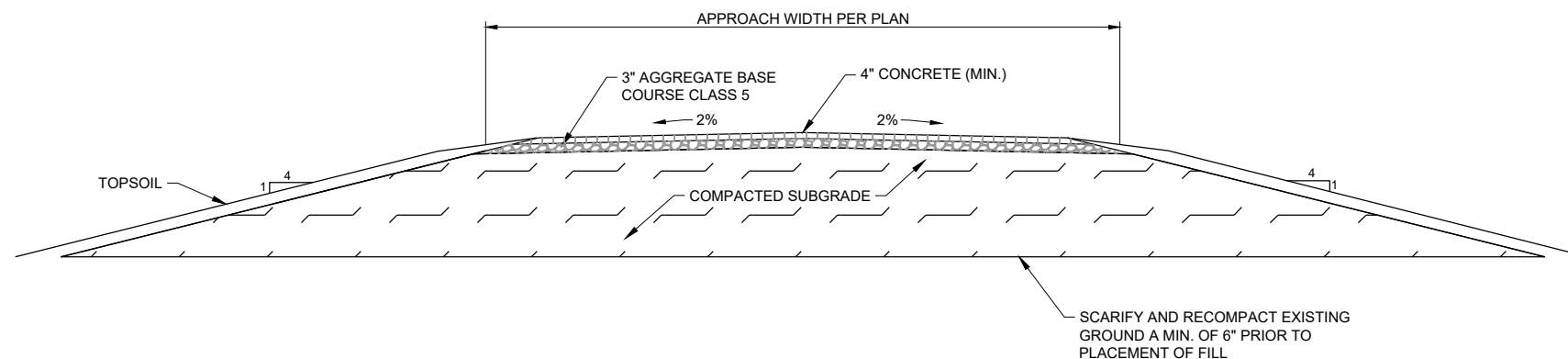
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No.	Revision	Date	By		Bismarck P: 701.323.0200 F: 701.323.0300	Drawn by TP/EM/JP Date 6-12-18	FOX ISLAND FLOOD CONTROL PROJECT BURLEIGH COUNTY WATER RESOURCE DISTRICT BURLEIGH COUNTY, NORTH DAKOTA	EXISTING TYPICAL SECTIONS PROJECT NO. 6025-006	SHEET TS-1
					Checked by TGJ Scale AS SHOWN				

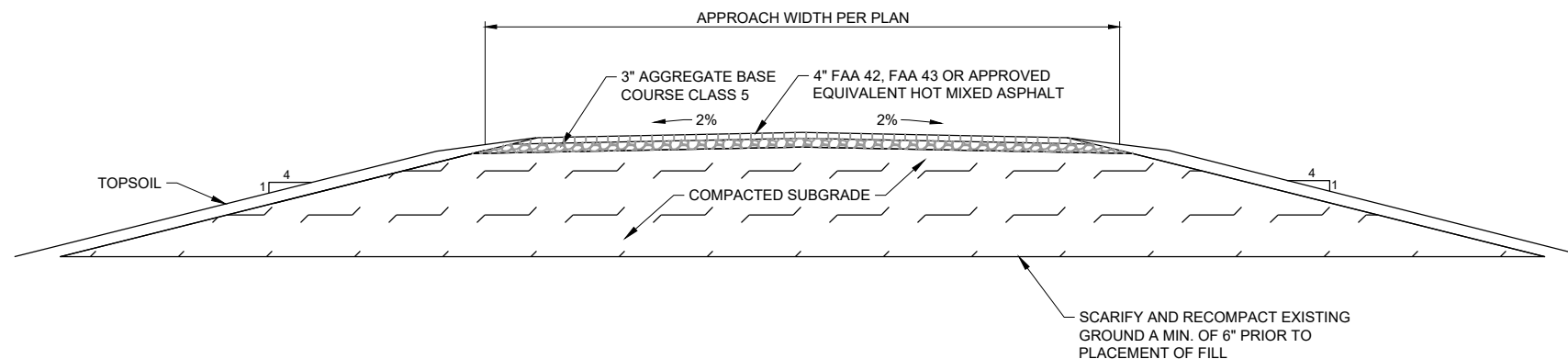




**A** PROPOSED AGGREGATE TYPICAL - RESIDENTIAL APPROACH  
 TS-2 NOT TO SCALE



**B** PROPOSED CONCRETE TYPICAL - RESIDENTIAL APPROACH  
 TS-2 NOT TO SCALE



**C** PROPOSED ASPHALT TYPICAL - RESIDENTIAL APPROACH  
 TS-2 NOT TO SCALE

NOTE:  
 RESIDENTIAL APPROACH SHALL BE 4" THICKNESS OR SHALL MATCH EXISTING PAVEMENT THICKNESS, WHICHEVER IS GREATER

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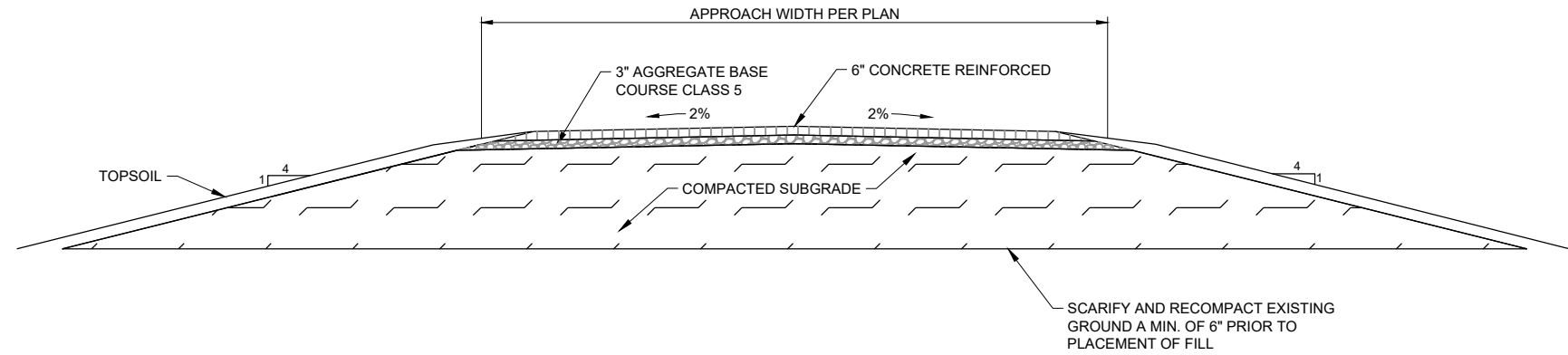


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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

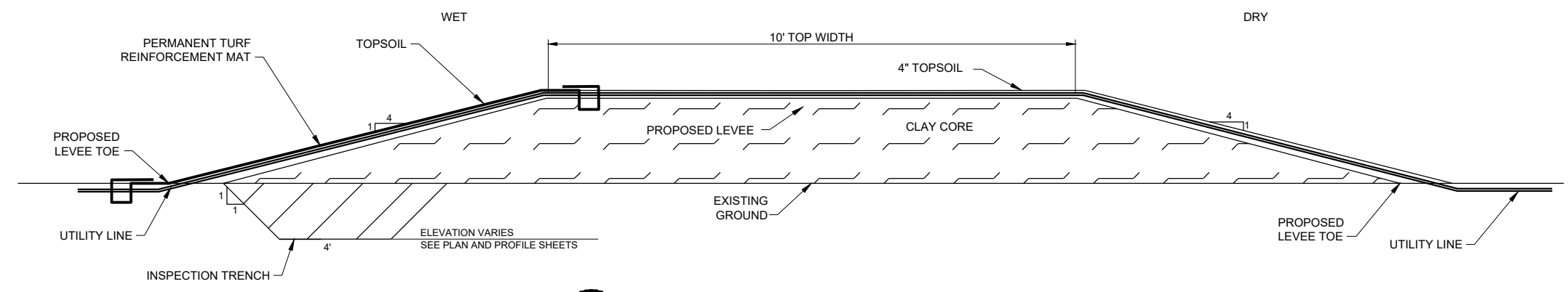
PROPOSED TYPICAL SECTIONS  
 PROJECT NO. 6025-006

SHEET  
 TS-2



**A**  
**TS-3** NOT TO SCALE  
**PROPOSED CONCRETE - SHAFFER APPROACH**

NOTES:  
ALL DISTURBED AREAS INSIDE RW LIMITS THAT ARE NOT GRAVEL OR PAVED ARE TO BE SEEDED. (UNLESS OTHERWISE NOTED)  
RW LIMITS TO BE STAKED IN FIELD.



**B**  
**TS-3** NOT TO SCALE  
**PRIVATE UTILITY LEVEE CROSSING**

NOTES:  
ALL PRIVATE UTILITIES CROSSING THE LEVEE MUST BE PLACED ABOVE THE CLAY CORE AND UNDER THE TURF REINFORCEMENT MAT

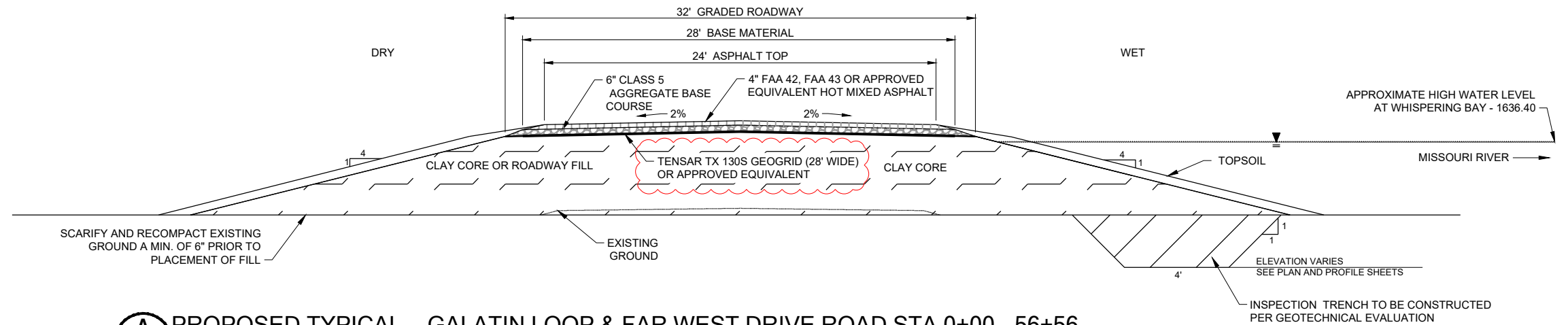
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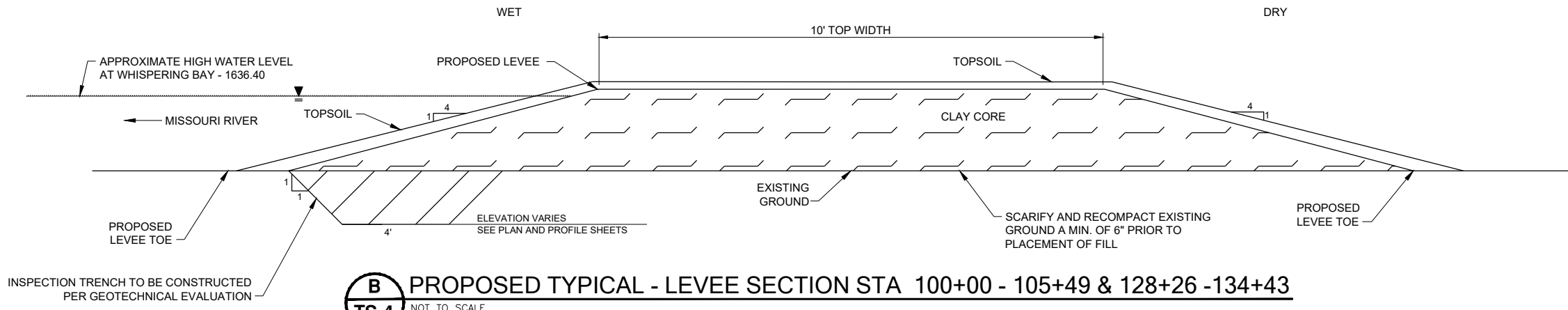
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						Checked by TGJ	Scale AS SHOWN			

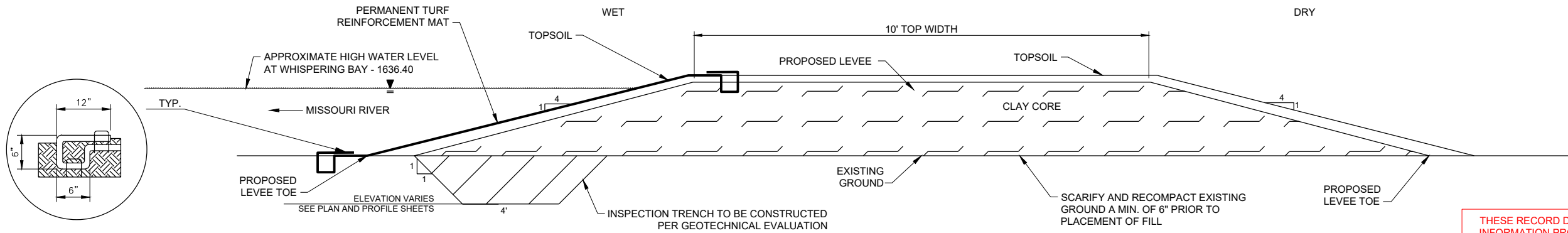


**A** PROPOSED TYPICAL - GALATIN LOOP & FAR WEST DRIVE ROAD STA 0+00 - 56+56  
 TS-4 NOT TO SCALE

NOTES:  
 GEOGRID SHALL HAVE 12" OVERLAP AT ALL SEAMS



**B** PROPOSED TYPICAL - LEVEE SECTION STA 100+00 - 105+49 & 128+26 - 134+43  
 TS-4 NOT TO SCALE



**C** PROPOSED TYPICAL - LEVEE SECTION STA 105+50- 120+45 & 122+05-125+78 & 126+86 -128+25  
 TS-4 NOT TO SCALE

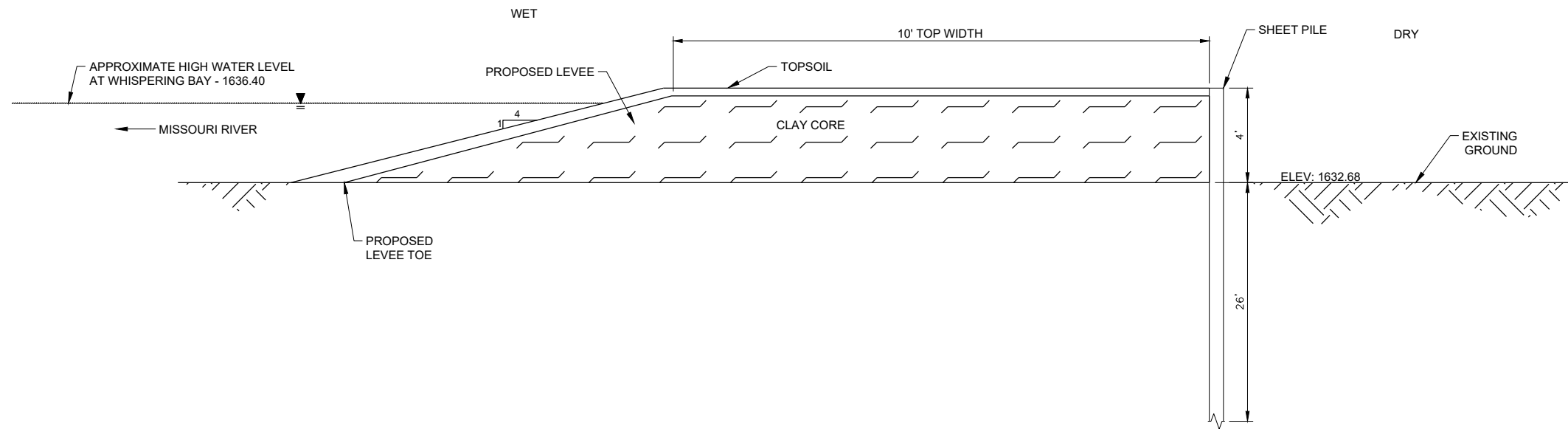
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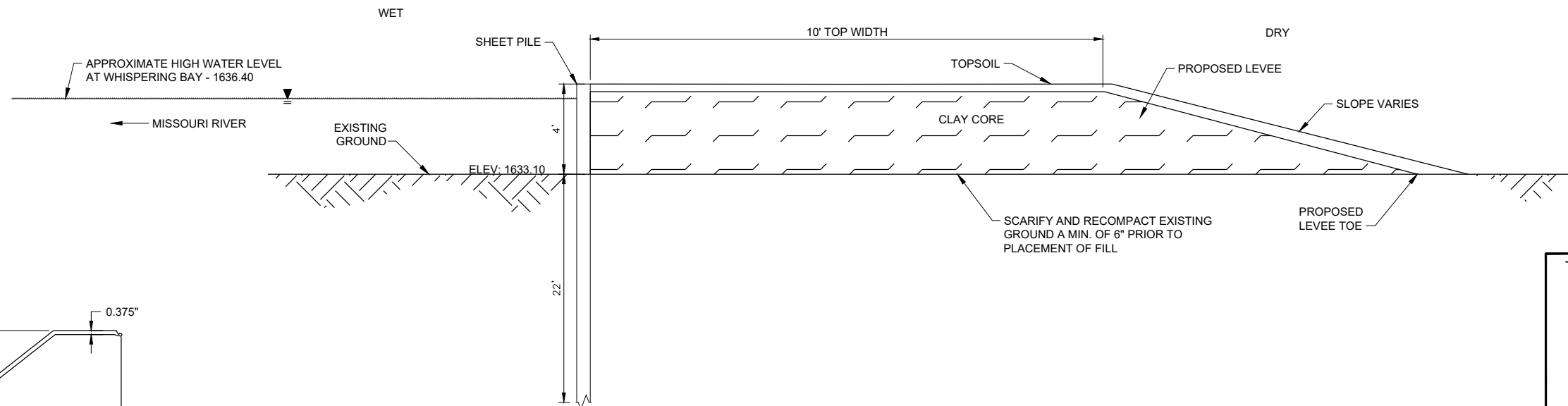
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1 ADDENDUM #1		7-3-18	JP		Bismarck P: 701.323.0200 F: 701.323.0300	Drawn by TP/EM/JP Date 6-12-18 Checked by TGJ Scale AS SHOWN	FOX ISLAND FLOOD CONTROL PROJECT BURLEIGH COUNTY WATER RESOURCE DISTRICT BURLEIGH COUNTY, NORTH DAKOTA	PROPOSED TYPICAL SECTIONS PROJECT NO. 6025-006	SHEET TS-4
No.	Revision	Date	By						

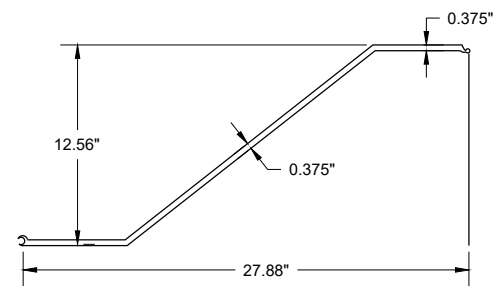


**A** PROPOSED TYPICAL - LEVEE SECTION WITH WALL STA 117+64 - 118+24 (LARSON PROPERTY)  
 TS-5 NOT TO SCALE

- NOTES:
1. INSPECTION TRENCH NOT REQUIRED AT WALL
  2. INSPECTION TRENCH SHALL BE TIED INTO THE BEGINNING AND END OF THE WALL.
  3. REFER TO LANDSCAPING PLANS FOR WALL FASCIA



**B** PROPOSED TYPICAL - LEVEE SECTION WITH WALL STA 121+08 - 122+29 (BROWN PROPERTY)  
 TS-5 NOT TO SCALE



**Z PILE PROFILE (PZC 13)**  
 NOT TO SCALE

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No.	Revision	Date	By



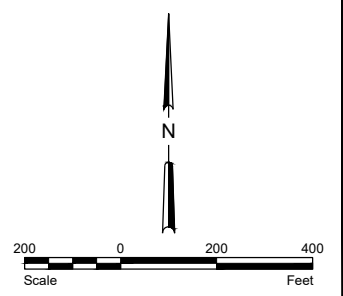
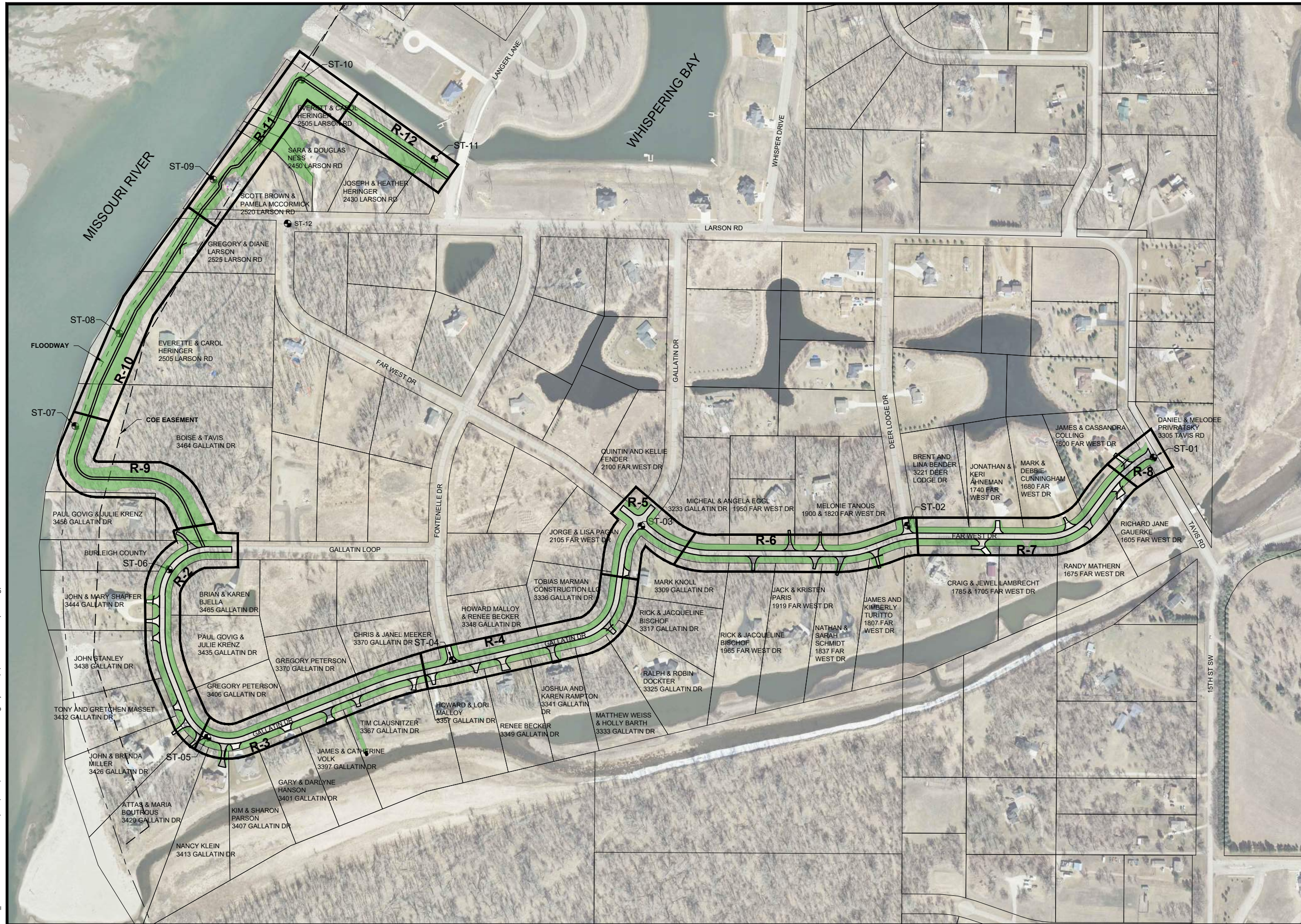
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

TYPICAL WALL SECTIONS  
 PROJECT NO. 6025-006

SHEET  
 TS-5

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**LEGEND**  
BORE LOCATION

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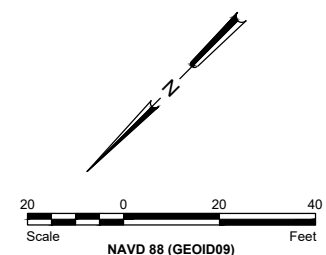
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**FOX ISLAND FLOOD CONTROL PROJECT**  
BURLEIGH COUNTY WATER RESOURCE DISTRICT  
BURLEIGH COUNTY, NORTH DAKOTA

**REMOVALS OVERVIEW**  
PROJECT NO. 6025-006

SHEET  
R-1

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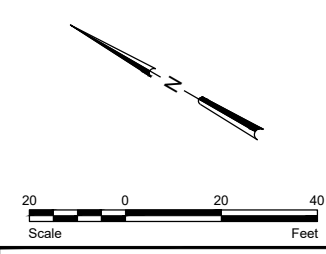
**LEGEND**

STRIP TOPSOIL	
CONCRETE REMOVAL	
AGGREGATE REMOVAL	
ASPHALT REMOVAL	
TREE REMOVAL	
CONSTRUCTION FENCE	

- GENERAL SHEET NOTES**
1. APPROACH REMOVAL LIMITS TO BE DETERMINED BY THE ENGINEER IN THE FIELD.
  2. CONTRACTOR SHALL WORK WITH RESIDENT TO REMOVE LANDSCAPE FEATURES AS NECESSARY FOR LEVEE CONSTRUCTION WITHIN TEMPORARY CONSTRUCTION EASEMENT.
  3. WHERE CONSTRUCTION FENCE IS SHOWN A MINIMUM OF 1' OFF PROPERTY LINE IS REQUIRED.

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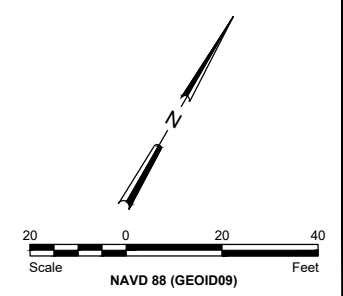
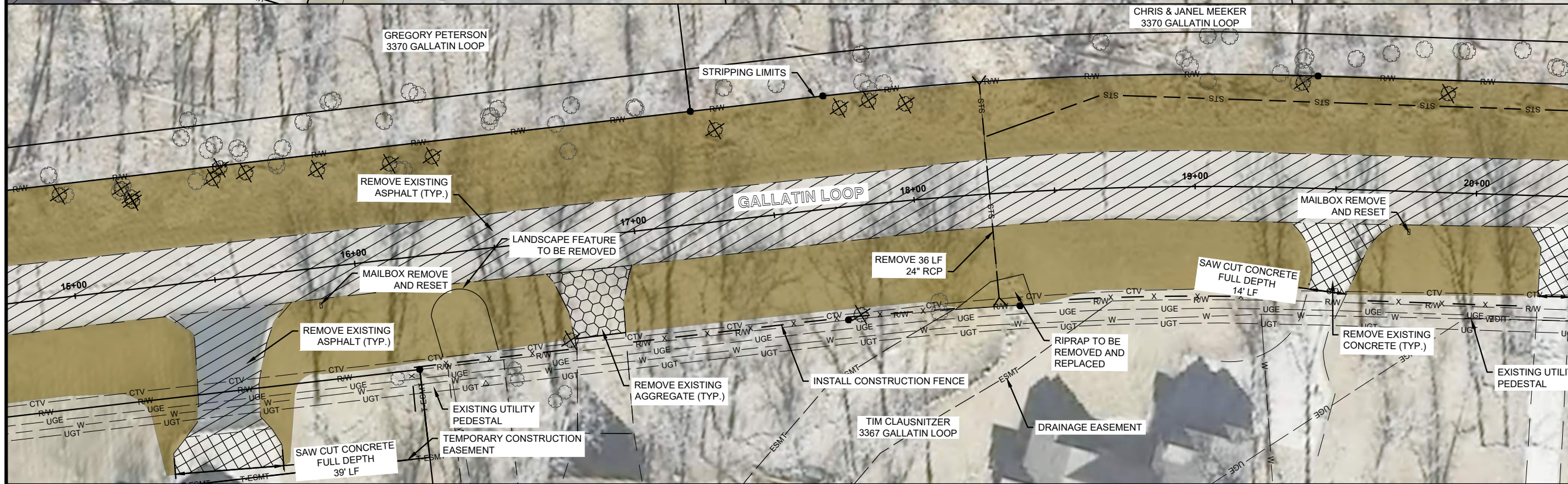
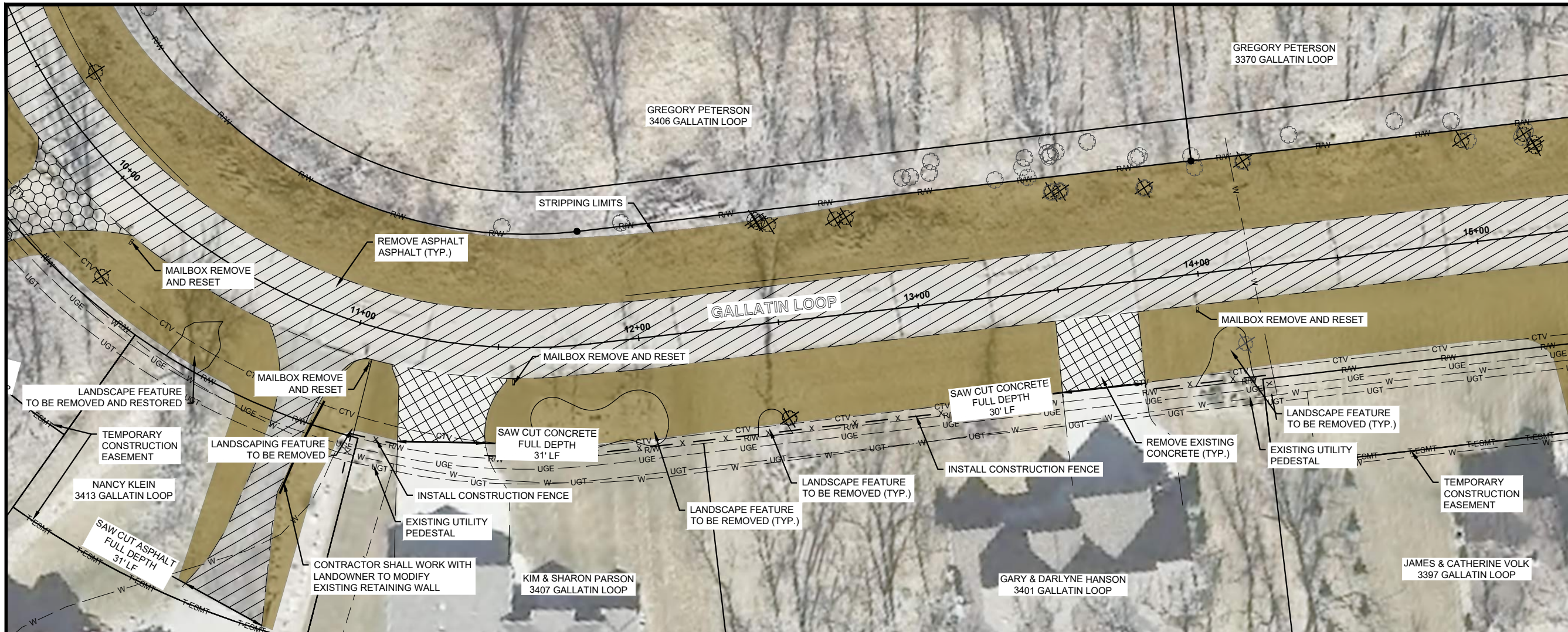


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**FOX ISLAND FLOOD CONTROL PROJECT**  
**BURLEIGH COUNTY WATER RESOURCE DISTRICT**  
**BURLEIGH COUNTY, NORTH DAKOTA**

**REMOVALS**  
 PROJECT NO. 6025-006  
**SHEET R-2**



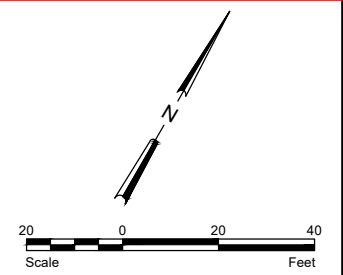
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STRIP TOPSOIL	
CONCRETE REMOVAL	
AGGREGATE REMOVAL	
ASPHALT REMOVAL	
TREE REMOVAL	
CONSTRUCTION FENCE	

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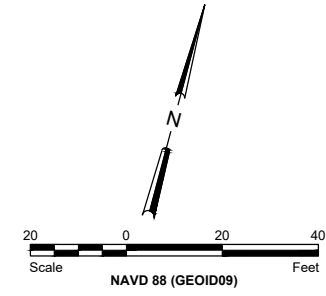
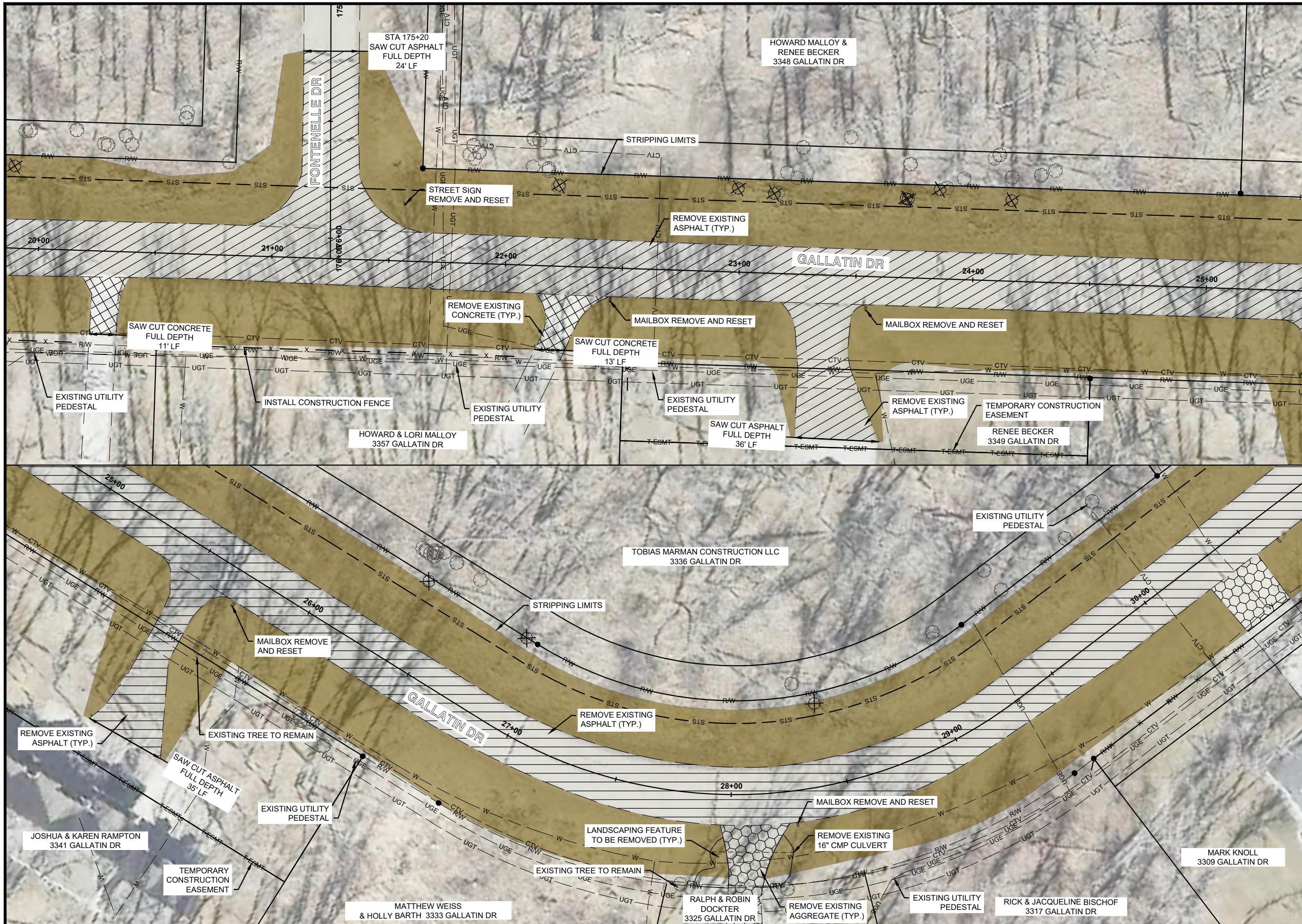
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**REMOVALS**  
 PROJECT NO. 6025-006

SHEET  
 R-3

FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA



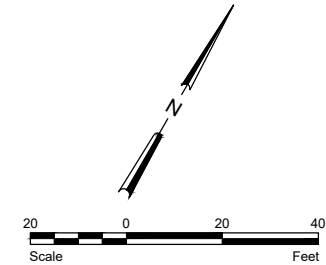
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STRIP TOPSOIL	
CONCRETE REMOVAL	
AGGREGATE REMOVAL	
ASPHALT REMOVAL	
TREE REMOVAL	
CONSTRUCTION FENCE	

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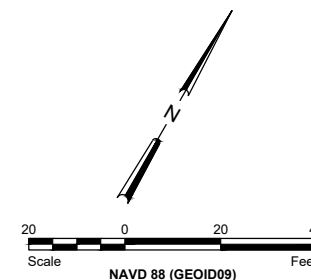
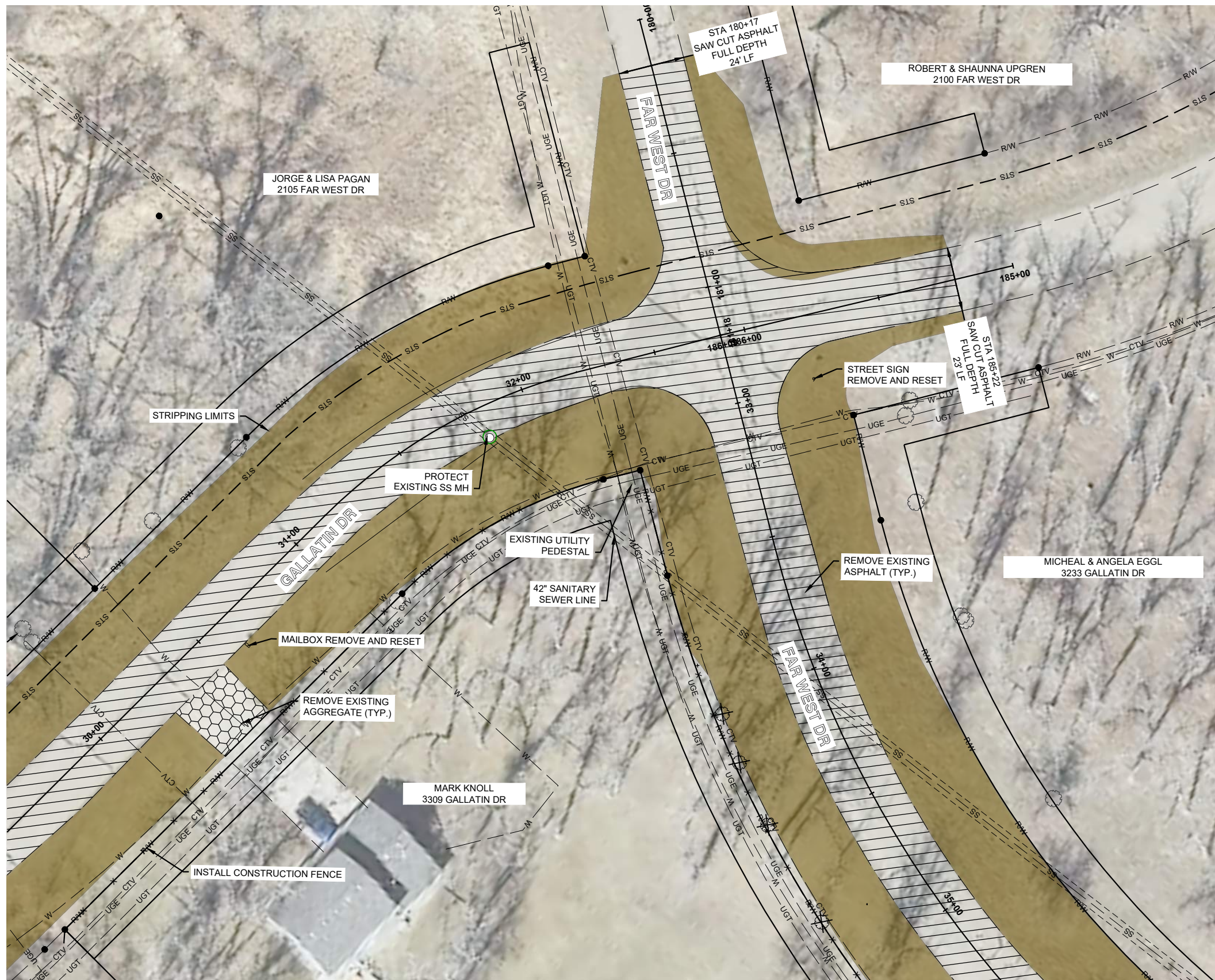
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

REMOVALS  
 PROJECT NO. 6025-006

SHEET  
 R-4





**LEGEND**

STRIP TOPSOIL	
CONCRETE REMOVAL	
AGGREGATE REMOVAL	
ASPHALT REMOVAL	
TREE REMOVAL	
CONSTRUCTION FENCE	

- GENERAL SHEET NOTES**
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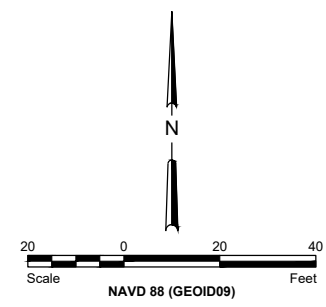
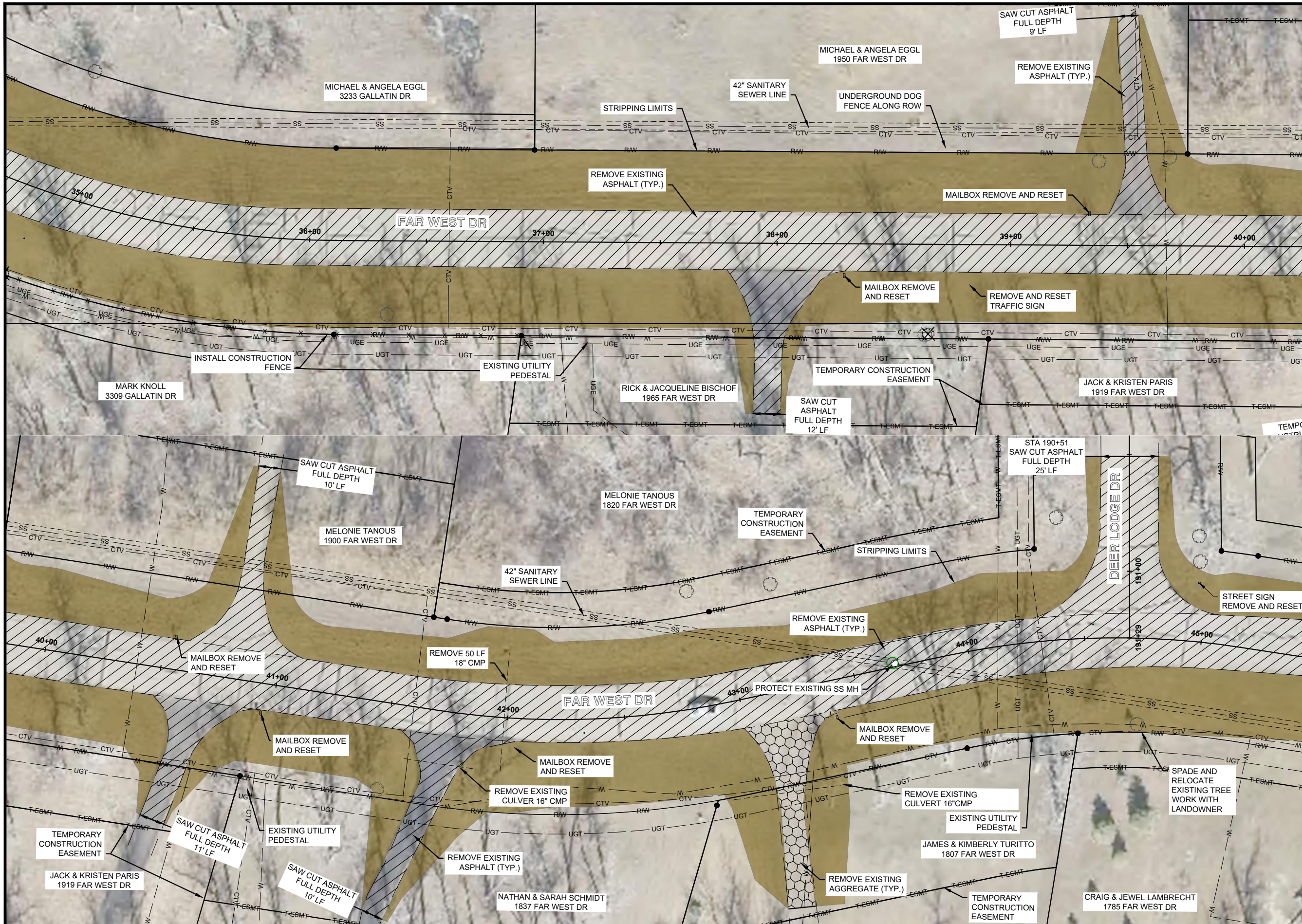


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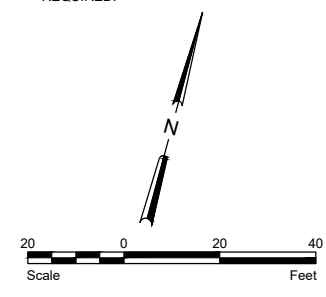
**FOX ISLAND FLOOD CONTROL PROJECT**  
**BURLEIGH COUNTY WATER RESOURCE DISTRICT**  
**BURLEIGH COUNTY, NORTH DAKOTA**

**REMOVALS**  
 PROJECT NO. 6025-006

**SHEET**  
 R-5



- LEGEND**
- STRIP TOPSOIL
  - CONCRETE REMOVAL
  - AGGREGATE REMOVAL
  - ASPHALT REMOVAL
  - TREE REMOVAL
  - CONSTRUCTION FENCE
- GENERAL SHEET NOTES**
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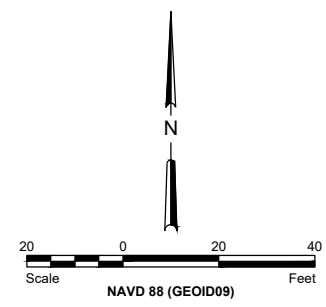
**FOX ISLAND FLOOD CONTROL PROJECT**  
**BURLEIGH COUNTY WATER RESOURCE DISTRICT**  
**BURLEIGH COUNTY, NORTH DAKOTA**

**REMOVALS**  
 PROJECT NO. 6025-006

**SHEET**  
 R-6

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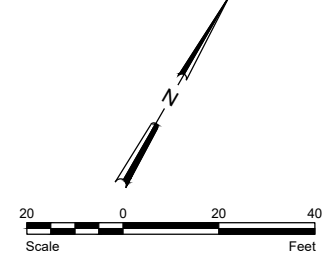
No.	Revision	Date	By



**LEGEND**

STRIP TOPSOIL	
CONCRETE REMOVAL	
AGGREGATE REMOVAL	
ASPHALT REMOVAL	
TREE REMOVAL	
CONSTRUCTION FENCE	

- GENERAL SHEET NOTES**
1. APPROACH REMOVAL LIMITS TO BE DETERMINED BY THE ENGINEER IN THE FIELD.
  2. CONTRACTOR SHALL WORK WITH RESIDENT TO REMOVE LANDSCAPE FEATURES AS NECESSARY FOR LEVEE CONSTRUCTION WITHIN TEMPORARY CONSTRUCTION EASEMENT.
  3. WHERE CONSTRUCTION FENCE IS SHOWN A MINIMUM OF 1' OFF PROPERTY LINE IS REQUIRED.



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No.	Revision	Date	By

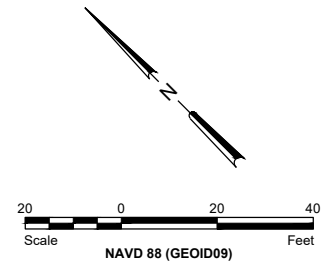


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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

REMOVALS  
 PROJECT NO. 6025-006

SHEET  
 R-7



**LEGEND**

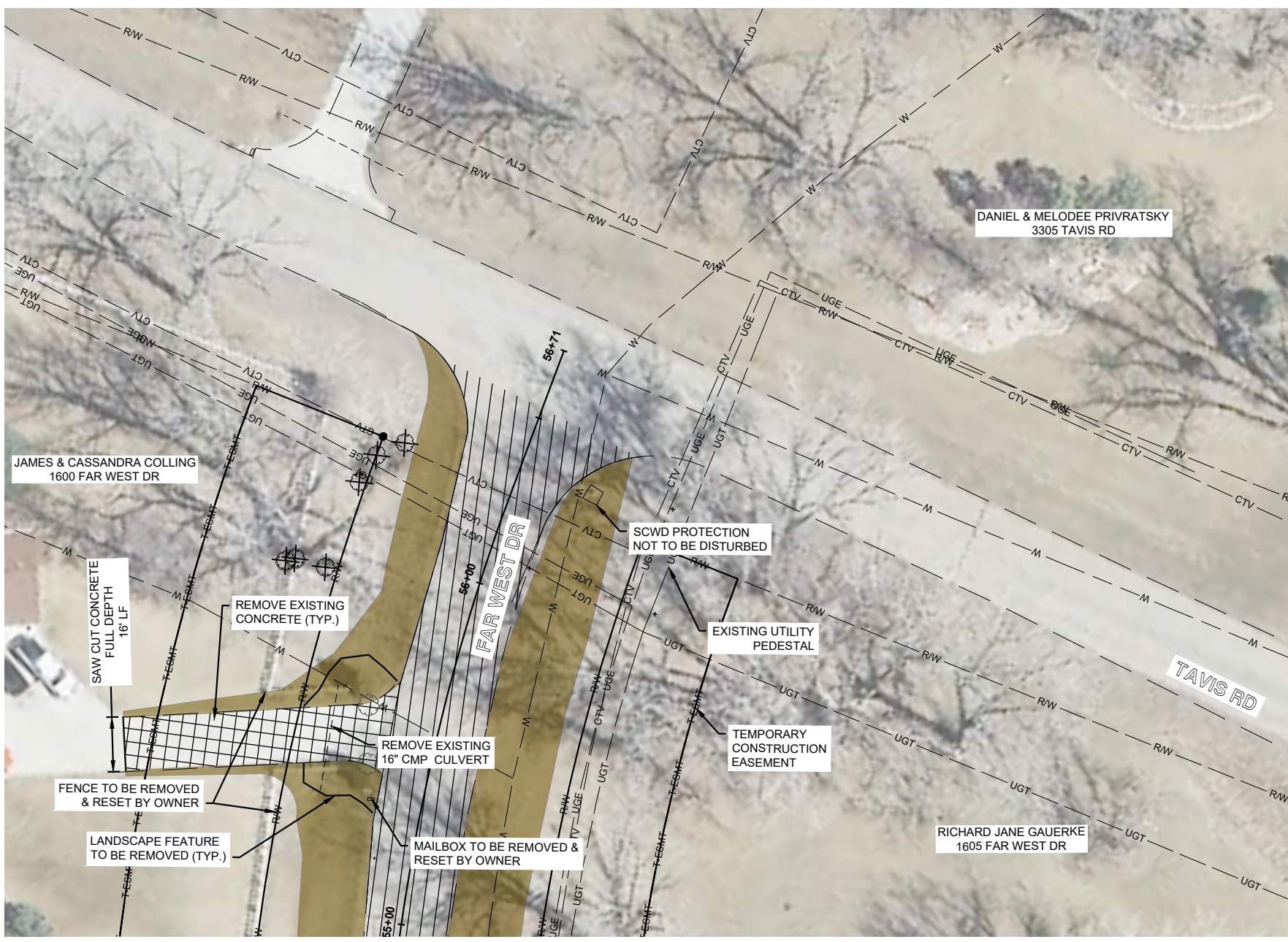
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CONCRETE REMOVAL	
AGGREGATE REMOVAL	
ASPHALT REMOVAL	
TREE REMOVAL	
CONSTRUCTION FENCE	

- GENERAL SHEET NOTES**
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  2. CONTRACTOR SHALL WORK WITH RESIDENT TO REMOVE LANDSCAPE FEATURES AS NECESSARY FOR LEVEE CONSTRUCTION WITHIN TEMPORARY CONSTRUCTION EASEMENT.
  3. WHERE CONSTRUCTION FENCE IS SHOWN A MINIMUM OF 1' OFF PROPERTY LINE IS REQUIRED.

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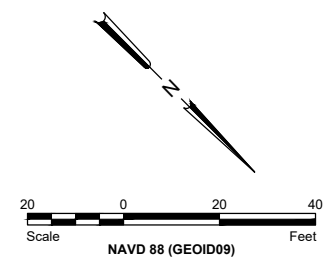
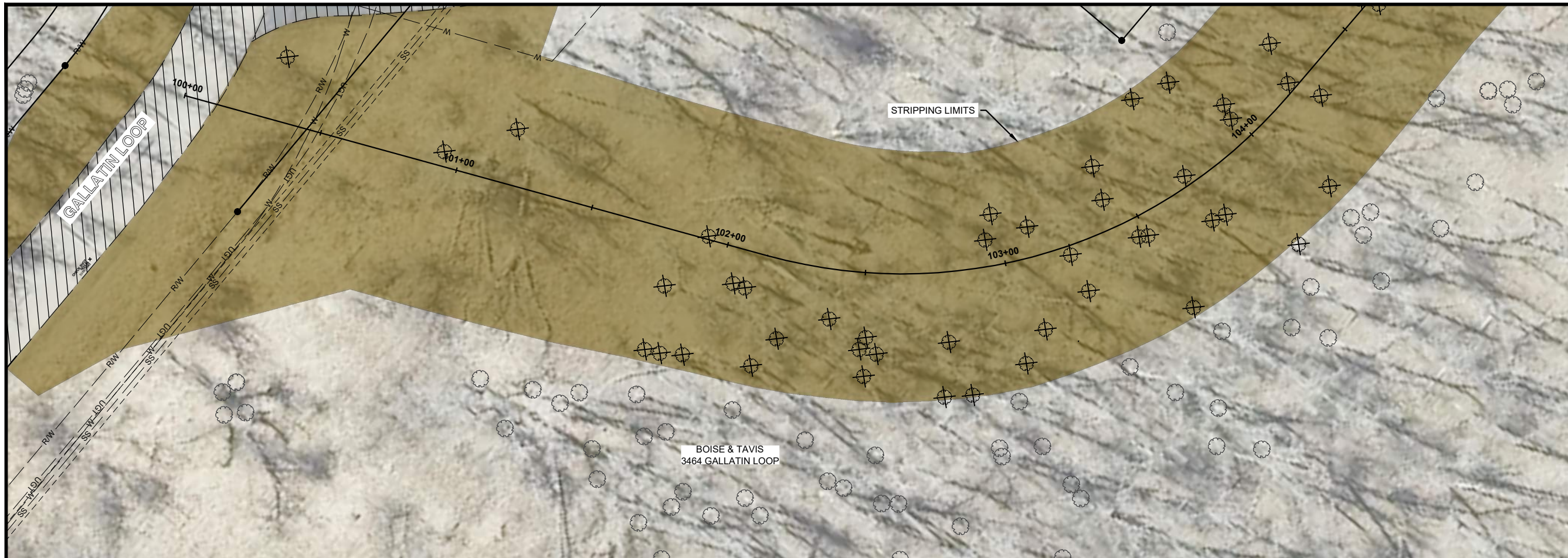


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 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

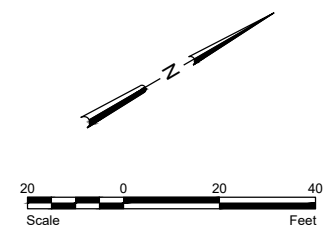
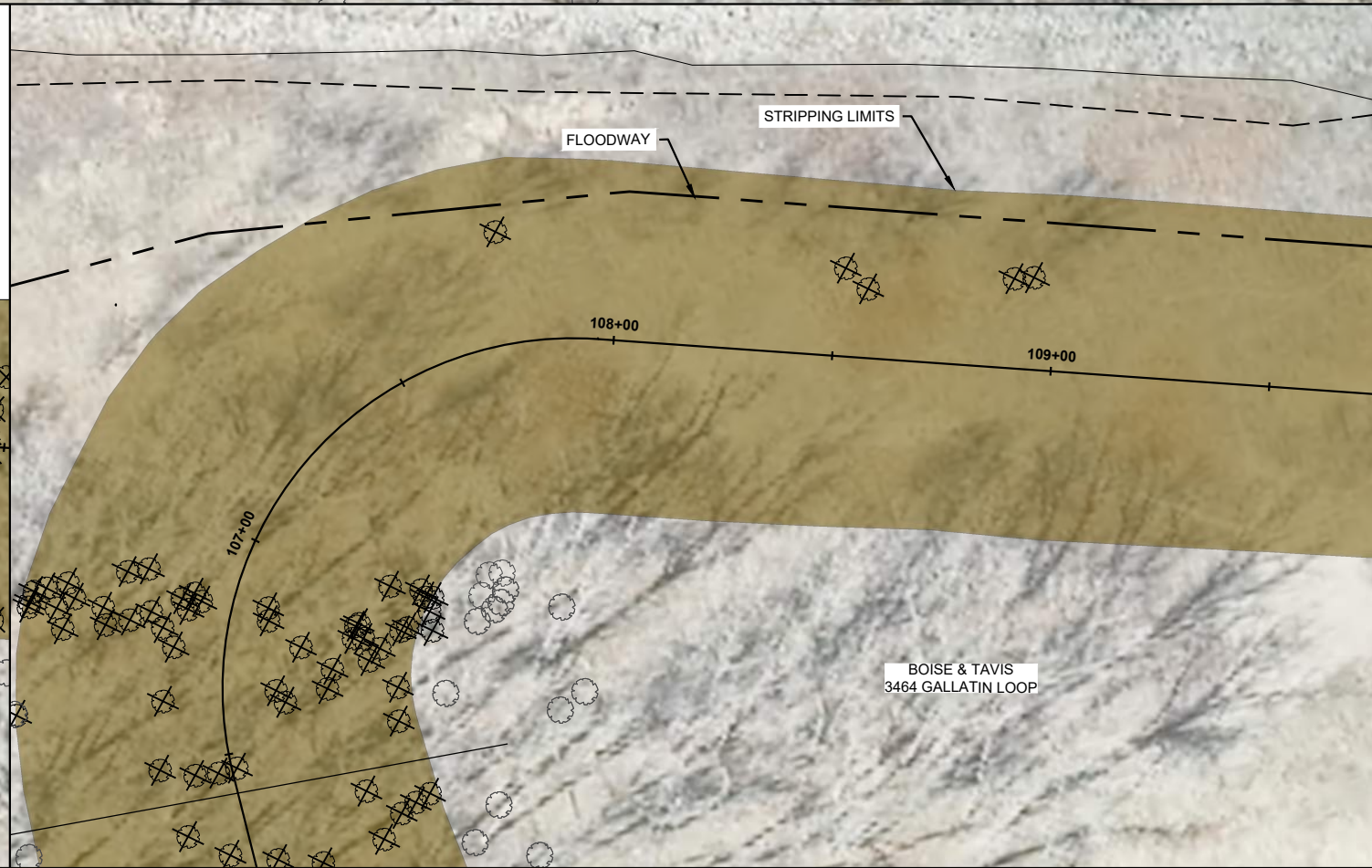
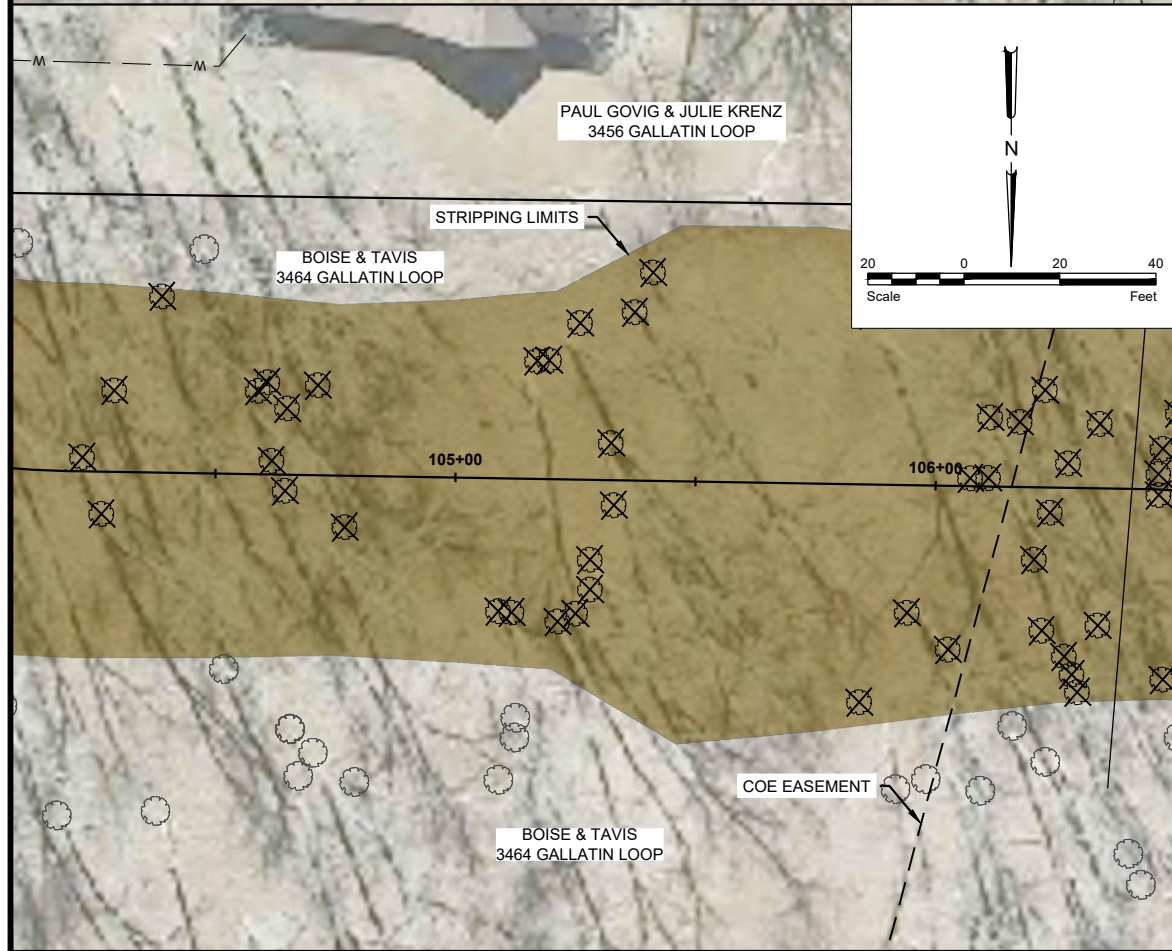
**REMOVALS**  
 PROJECT NO. 6025-006

SHEET  
 R-8



**LEGEND**

STRIP TOPSOIL	
CONCRETE REMOVAL	
AGGREGATE REMOVAL	
ASPHALT REMOVAL	
TREE REMOVAL	



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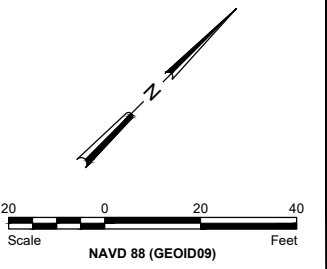
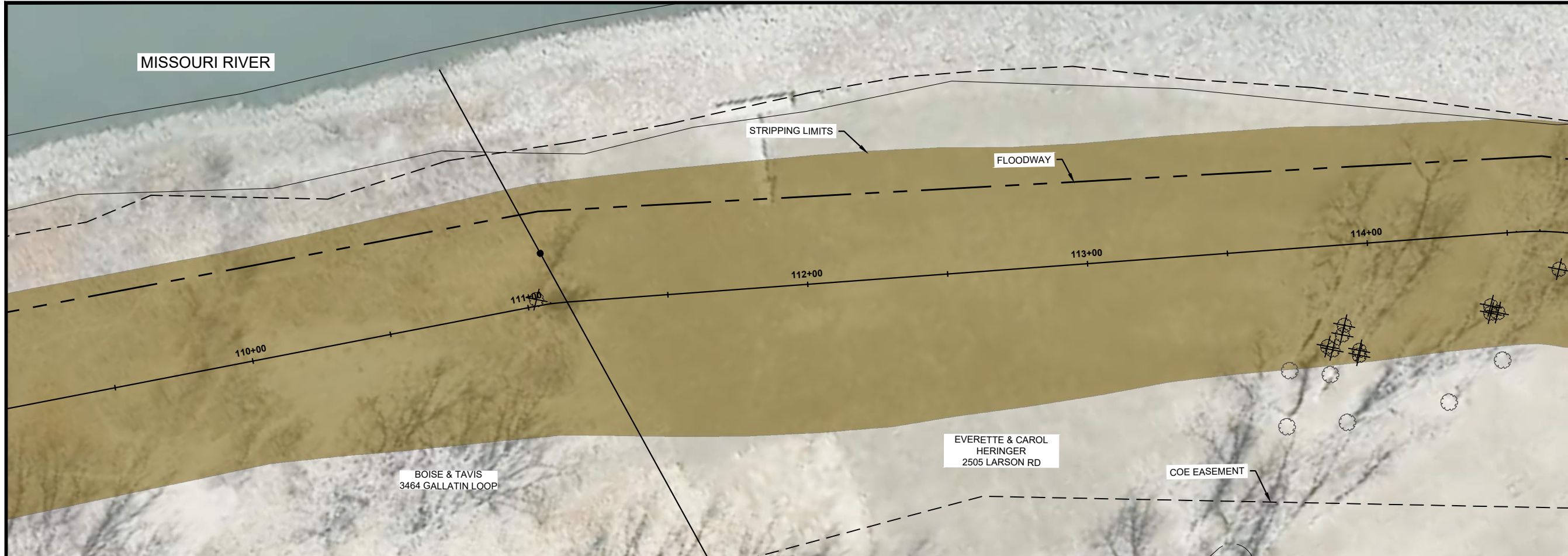


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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

**REMOVALS**  
 PROJECT NO. 6025-006

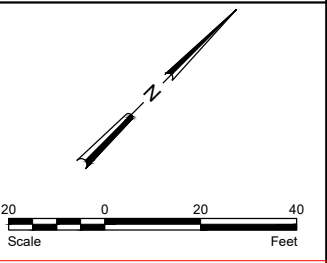
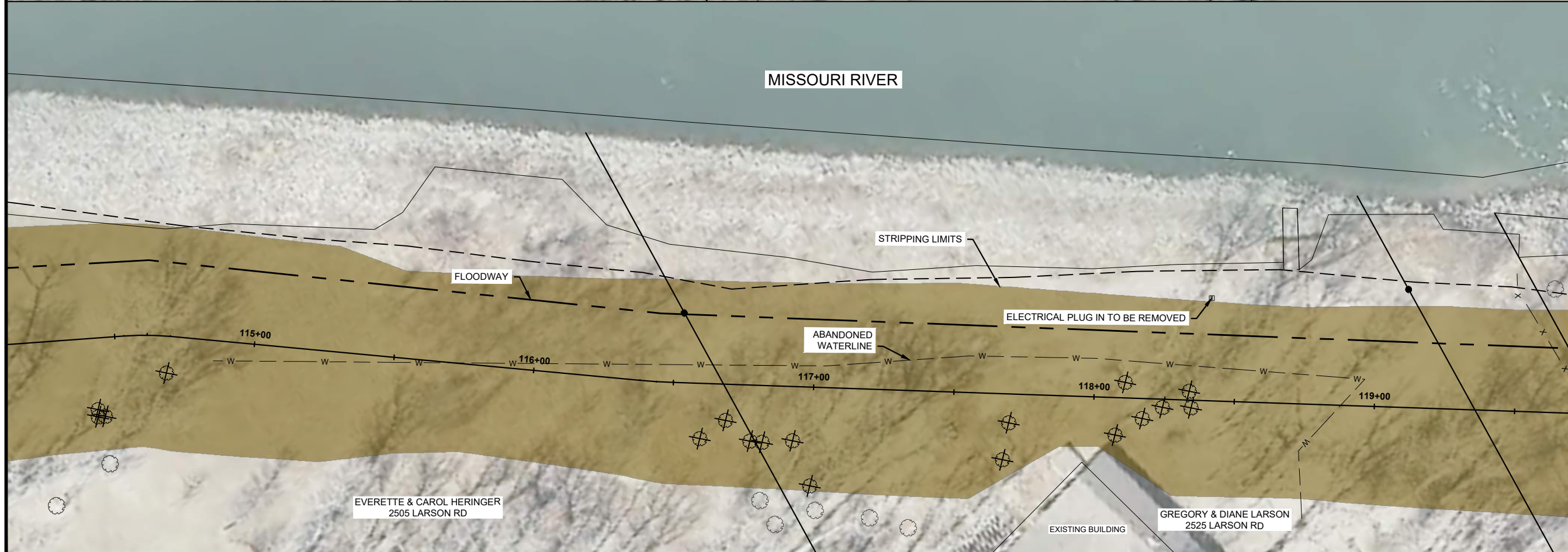
**SHEET**  
 R-9



**LEGEND**

STRIP TOPSOIL	
CONCRETE REMOVAL	
AGGREGATE REMOVAL	
ASPHALT REMOVAL	
TREE REMOVAL	

- GENERAL SHEET NOTES**
1. REMOVE DECK AND LANDSCAPE FEATURES AS NECESSARY FOR LEVEE AND FLOODWALL CONSTRUCTION. REFER TO LANDSCAPING PLANS.



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**FOX ISLAND FLOOD CONTROL PROJECT**  
**BURLEIGH COUNTY WATER RESOURCE DISTRICT**  
**BURLEIGH COUNTY, NORTH DAKOTA**

**REMOVALS**  
 PROJECT NO. 6025-006

**SHEET**  
**R-10**

MISSOURI RIVER

REMOVE AND RESET FENCE WITHIN CONSTRUCTION LIMITS

REMOVE DECK AS NEEDED

REMOVE LANDSCAPING AS NEEDED

STRIPPING LIMITS

FLOODWAY

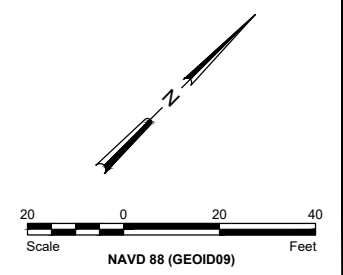
SARA & DOUGLAS NESS 2450 LARSON RD

SARA & DOUGLAS NESS 2450 LARSON RD

COE EASEMENT

SCOTT BROWN & PAMELA MCCORMICK 2520 LARSON RD

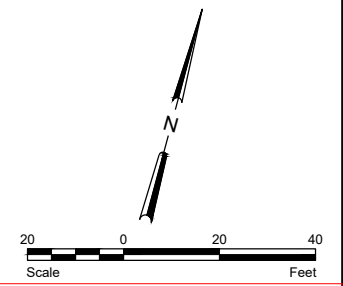
EXISTING BUILDING



**LEGEND**

STRIP TOPSOIL	
CONCRETE REMOVAL	
AGGREGATE REMOVAL	
ASPHALT REMOVAL	
TREE REMOVAL	

- GENERAL SHEET NOTES**
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MISSOURI RIVER

FLOODWAY

INSTALL CONSTRUCTION FENCE

WHISPERING BAY ACCESS CHANNEL

STRIPPING LIMITS

COE EASEMENT

EVERETT & CAROL HERINGER 2505 LARSON RD

SARA & DOUGLAS NESS 2450 LARSON RD

SARA & DOUGLAS NESS 2450 LARSON RD

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No.	Revision	Date	By



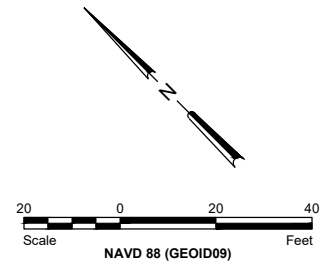
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BURLEIGH COUNTY WATER RESOURCE DISTRICT  
BURLEIGH COUNTY, NORTH DAKOTA

**REMOVALS**  
PROJECT NO. 6025-006

SHEET R-11



**LEGEND**

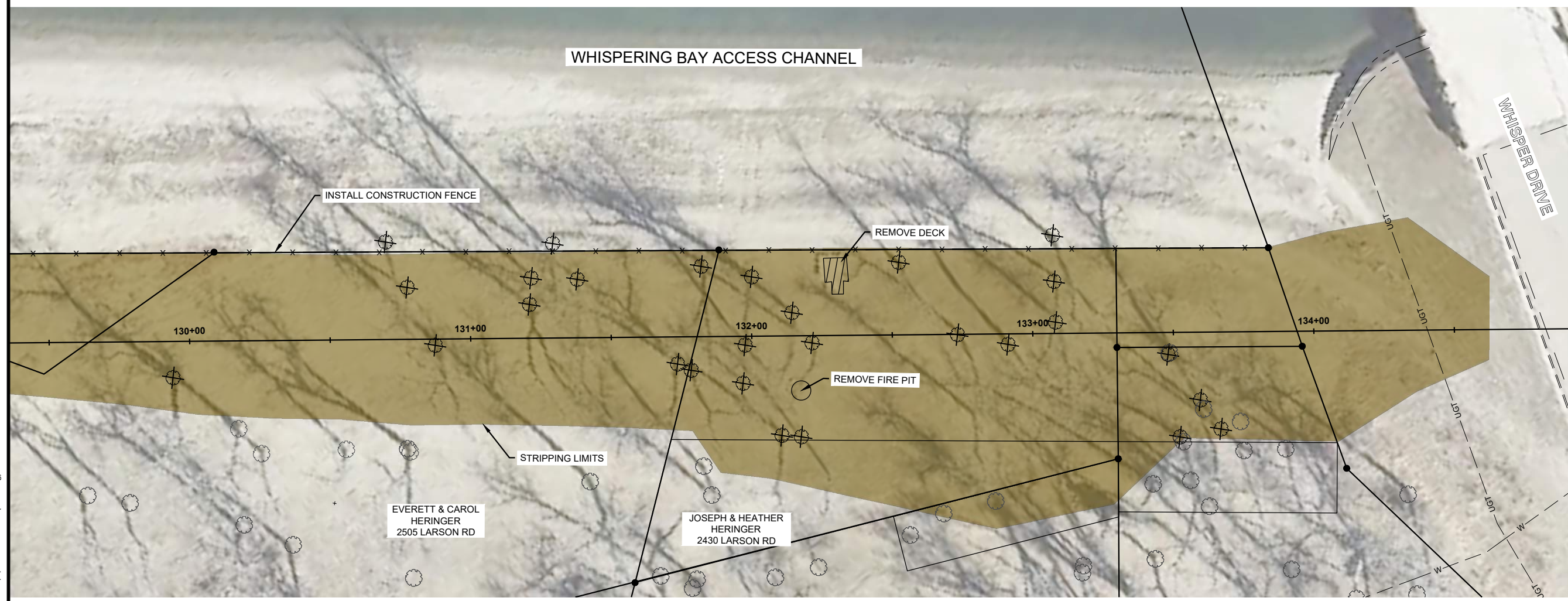
STRIP TOPSOIL	
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AGGREGATE REMOVAL	
ASPHALT REMOVAL	
TREE REMOVAL	

- GENERAL SHEET NOTES**
1. REMOVE DECK AND LANDSCAPE FEATURES AS NECESSARY FOR LEVEE AND FLOODWALL CONSTRUCTION. REFER TO LANDSCAPING PLANS.
  2. CONTRACTOR SHALL COORDINATE DISPOSAL OF DECK WITH HOME OWNER.

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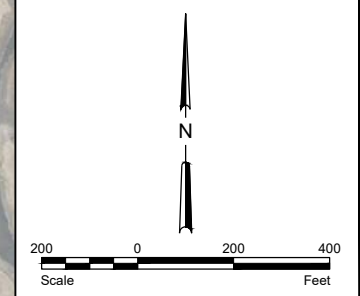
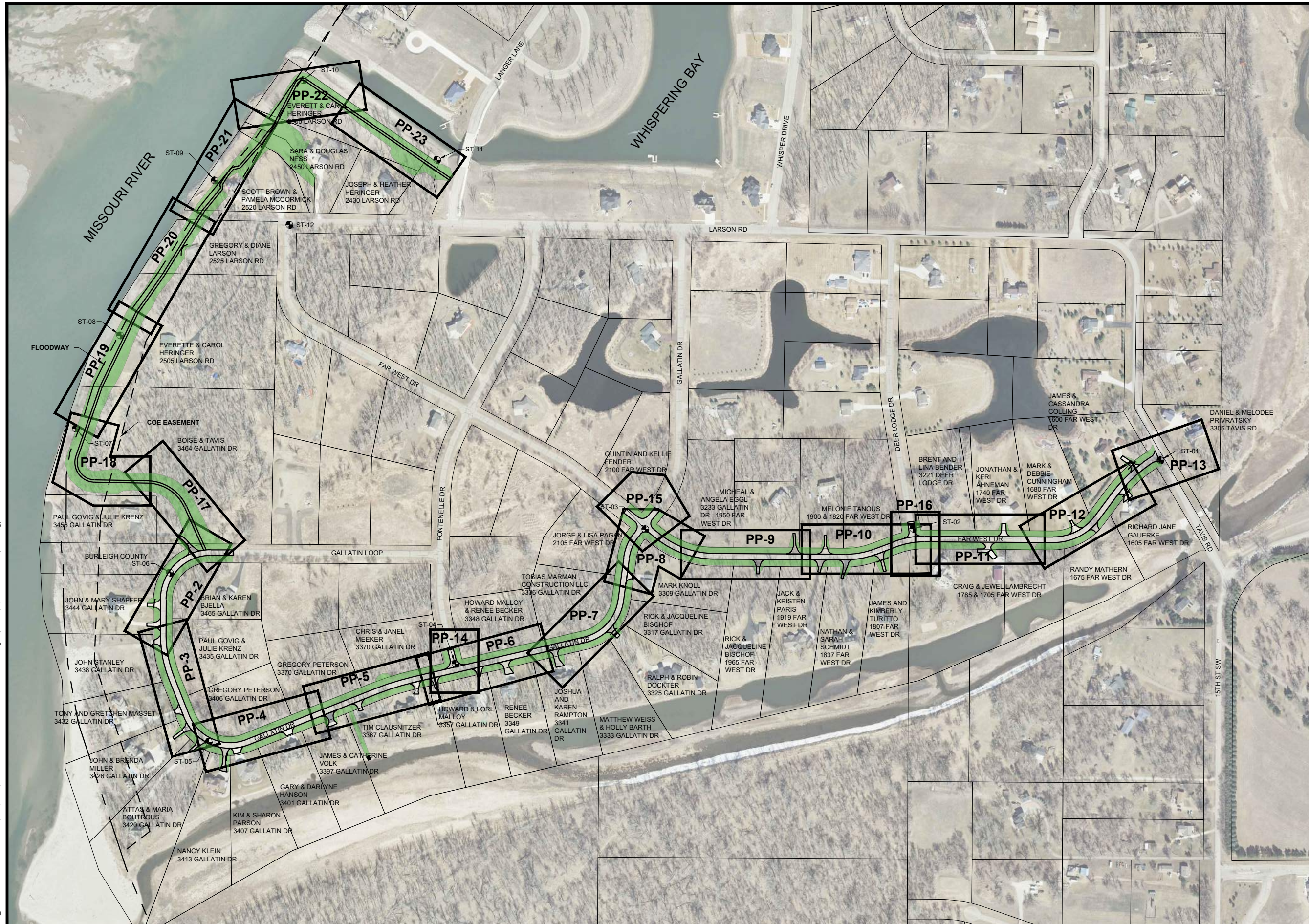
FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

**REMOVALS**  
 PROJECT NO. 6025-006

SHEET  
 R-12



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**LEGEND**  
BORE LOCATION

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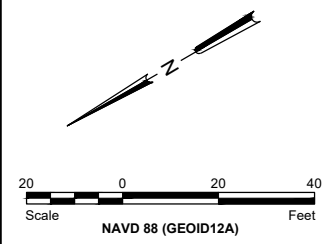
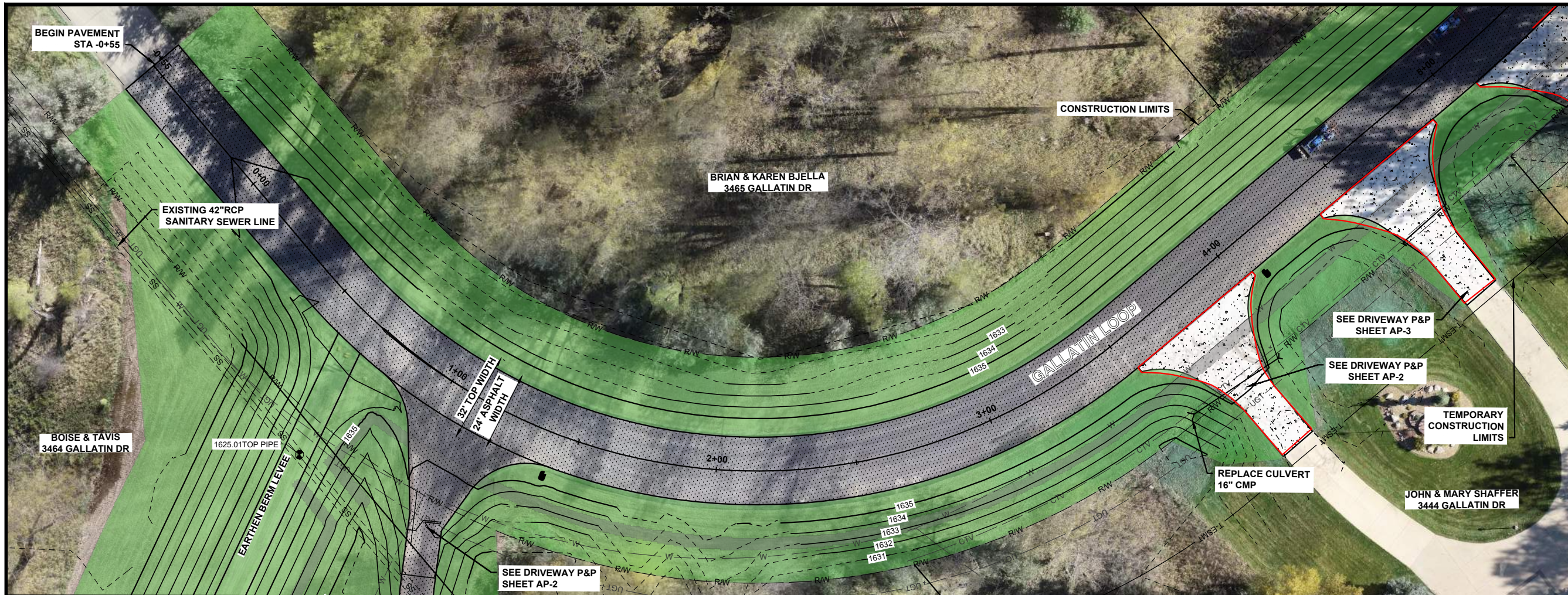


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Date 6-12-18  
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**FOX ISLAND FLOOD CONTROL PROJECT**  
BURLEIGH COUNTY WATER RESOURCE DISTRICT  
BURLEIGH COUNTY, NORTH DAKOTA

**LEVEE AND ROADWAY OVERVIEW**  
PROJECT NO. 6025-006

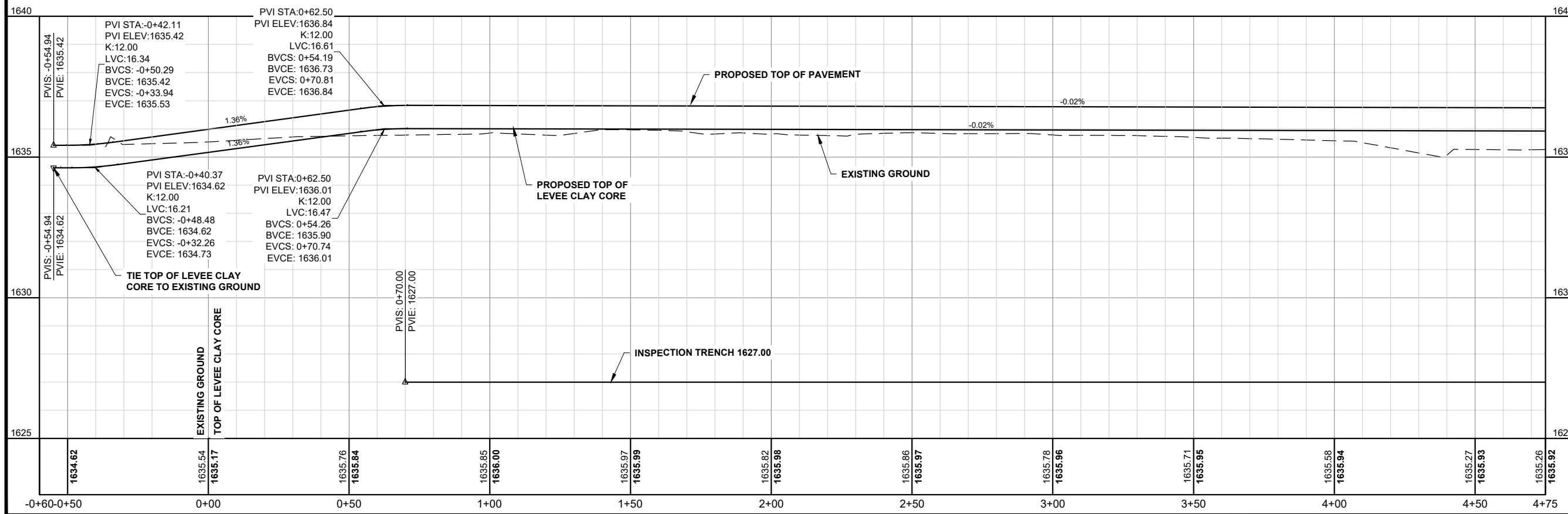
SHEET  
PP-1



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. APPROACH TIE IN TO BE DETERMINED BY ENGINEER IN THE FIELD.
  3. CONTRACTOR SHALL HYDROVAC TO LOCATE EXISTING WATER LINE AND CONFIRM DEPTH. WATER LINE SHALL BE PROTECTED FROM DAMAGE.
  4. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE.
  5. APPROACHES SHALL CONFORM TO BURLEIGH COUNTY CONSTRUCTION STANDARDS.



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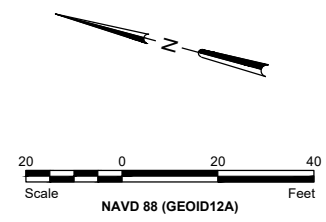
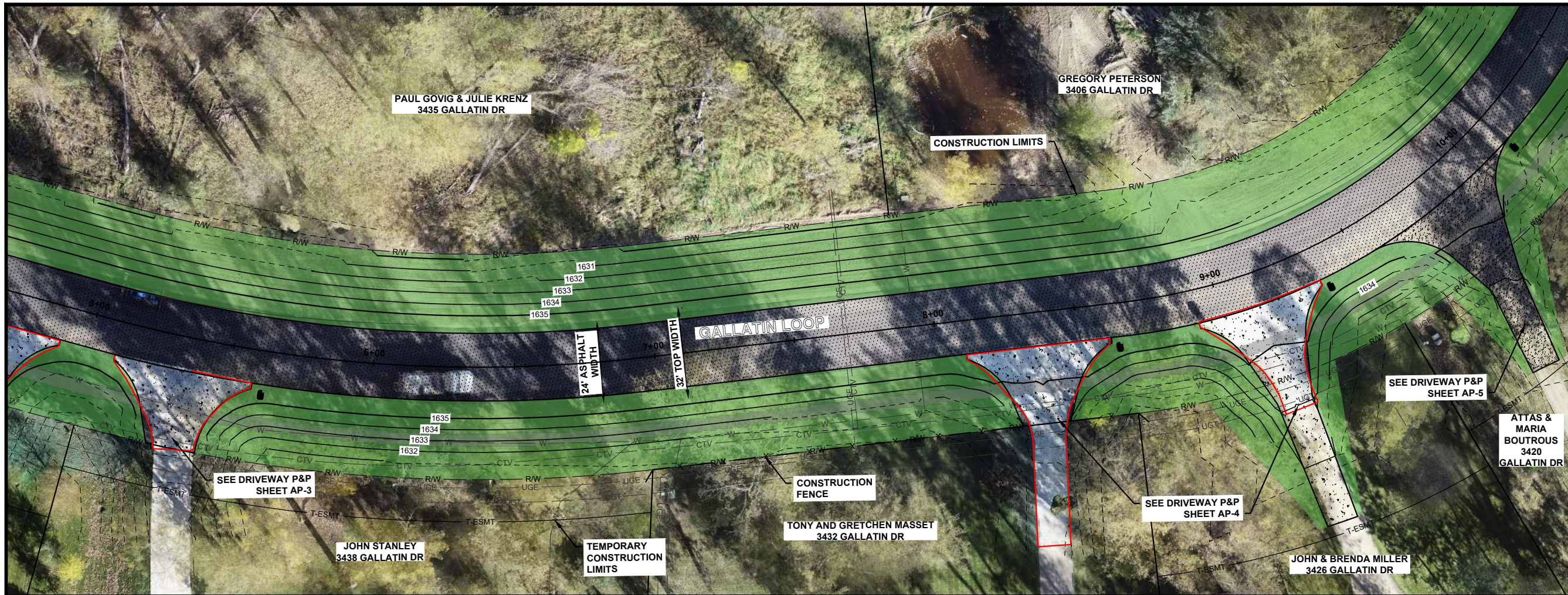
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 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

ROADWAY PLAN & PROFILE  
 PROJECT NO. 6025-006

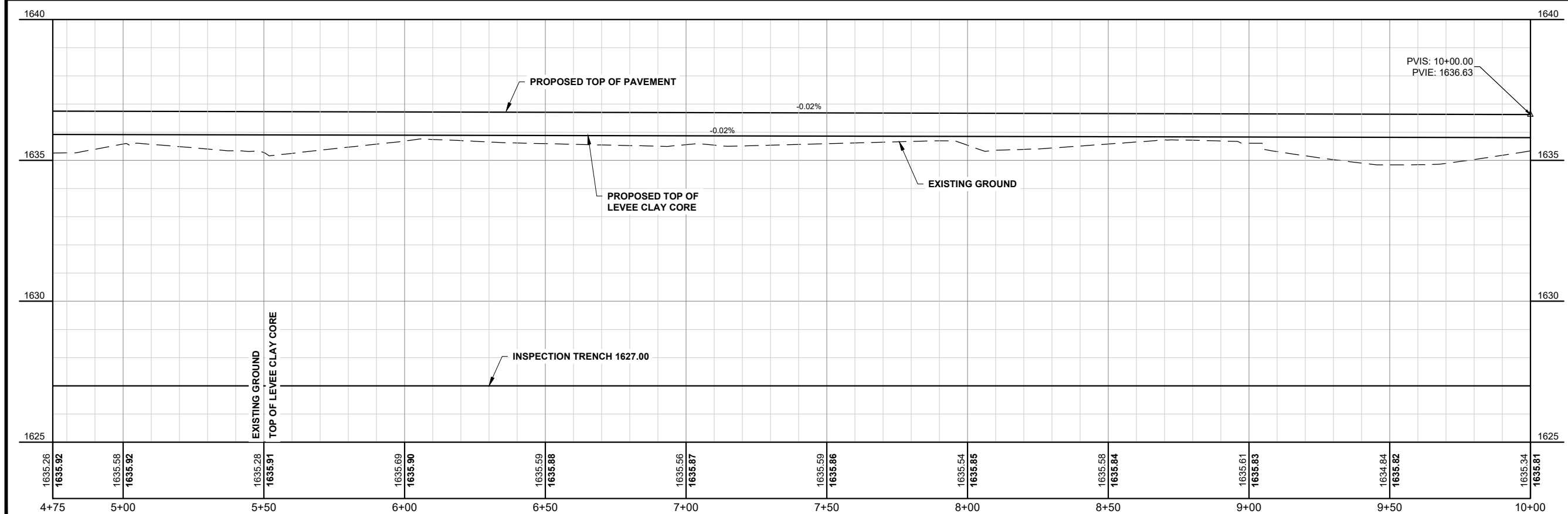
SHEET  
 PP-2



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
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  2. APPROACH TIE IN TO BE DETERMINED BY ENGINEER IN THE FIELD.
  3. CONTRACTOR SHALL HYDROVAC TO LOCATE EXISTING WATER LINE AND CONFIRM DEPTH. WATER LINE SHALL BE PROTECTED FROM DAMAGE.
  4. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE.
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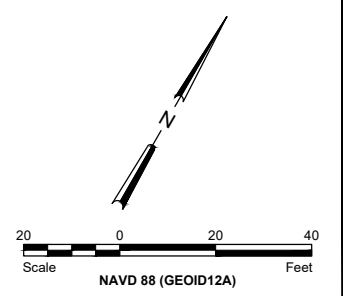
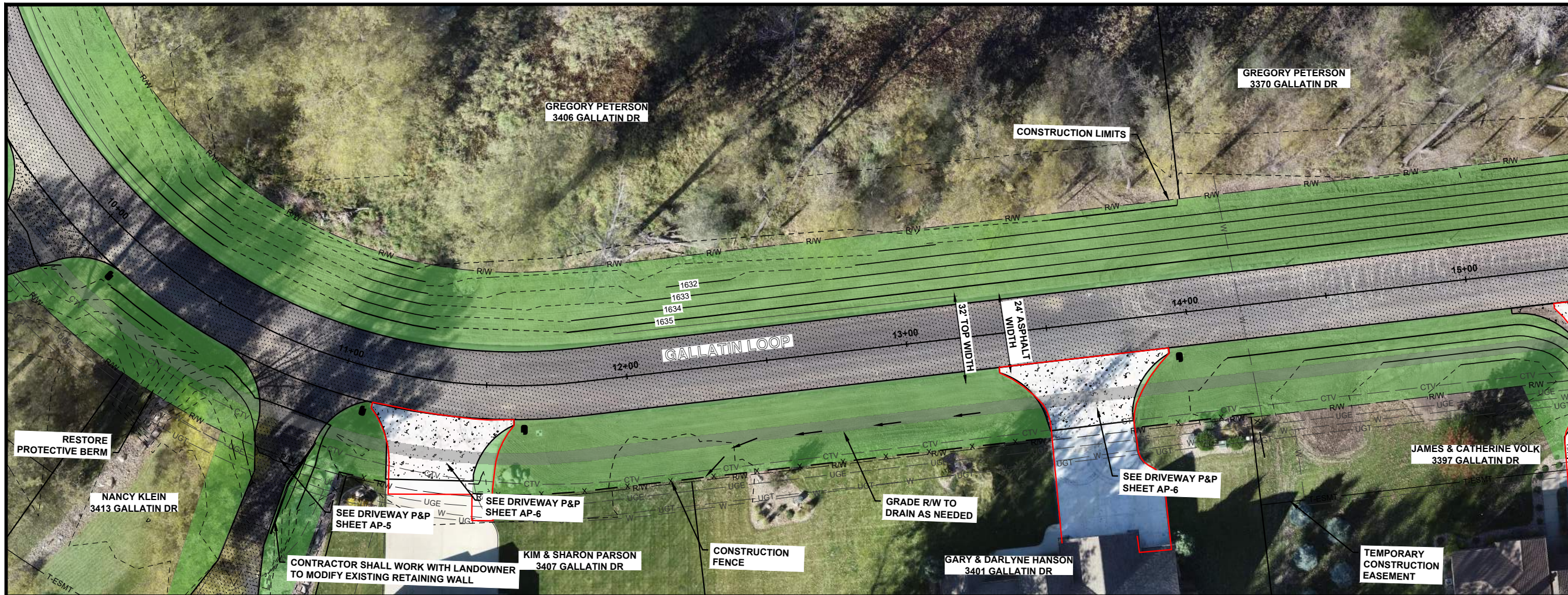
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

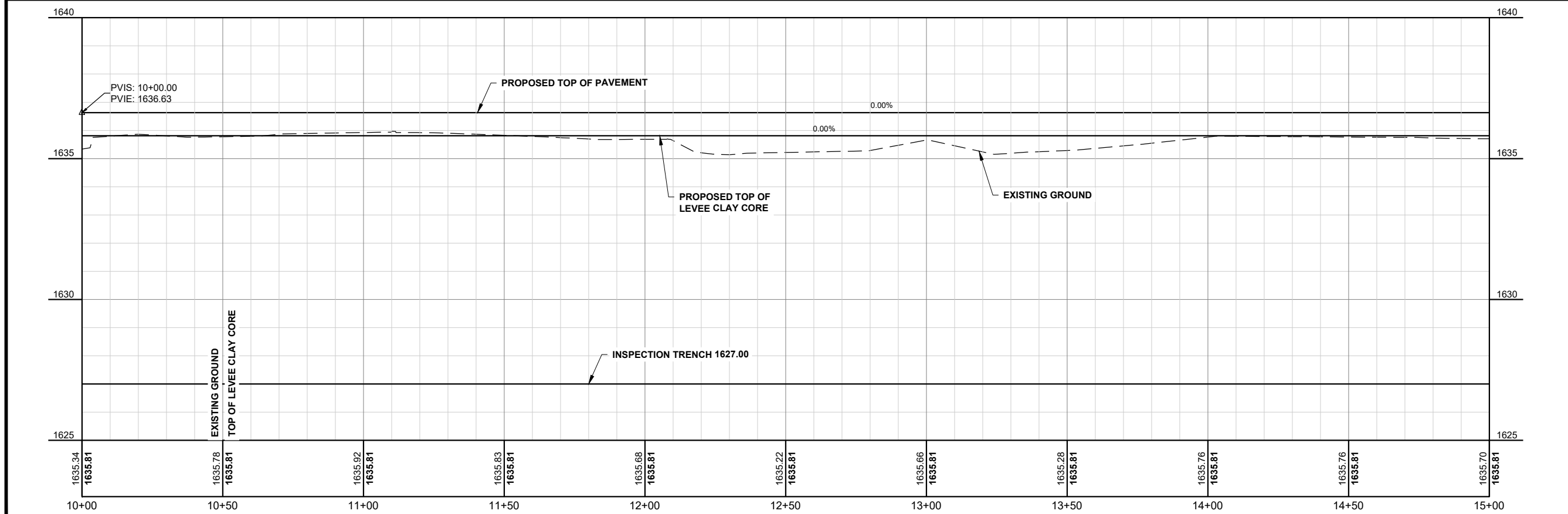
ROADWAY PLAN & PROFILE	SHEET PP-3
PROJECT NO. 6025-006	



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
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  2. APPROACH TIE IN TO BE DETERMINED BY ENGINEER IN THE FIELD.
  3. CONTRACTOR SHALL HYDROVAC TO LOCATE EXISTING WATER LINE AND CONFIRM DEPTH. WATER LINE SHALL BE PROTECTED FROM DAMAGE.
  4. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE.
  5. APPROACHES SHALL CONFORM TO BURLEIGH COUNTY CONSTRUCTION STANDARDS.



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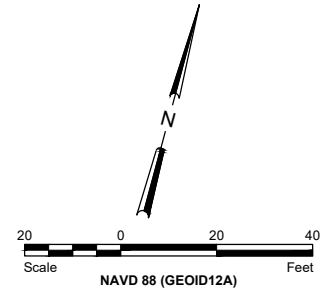
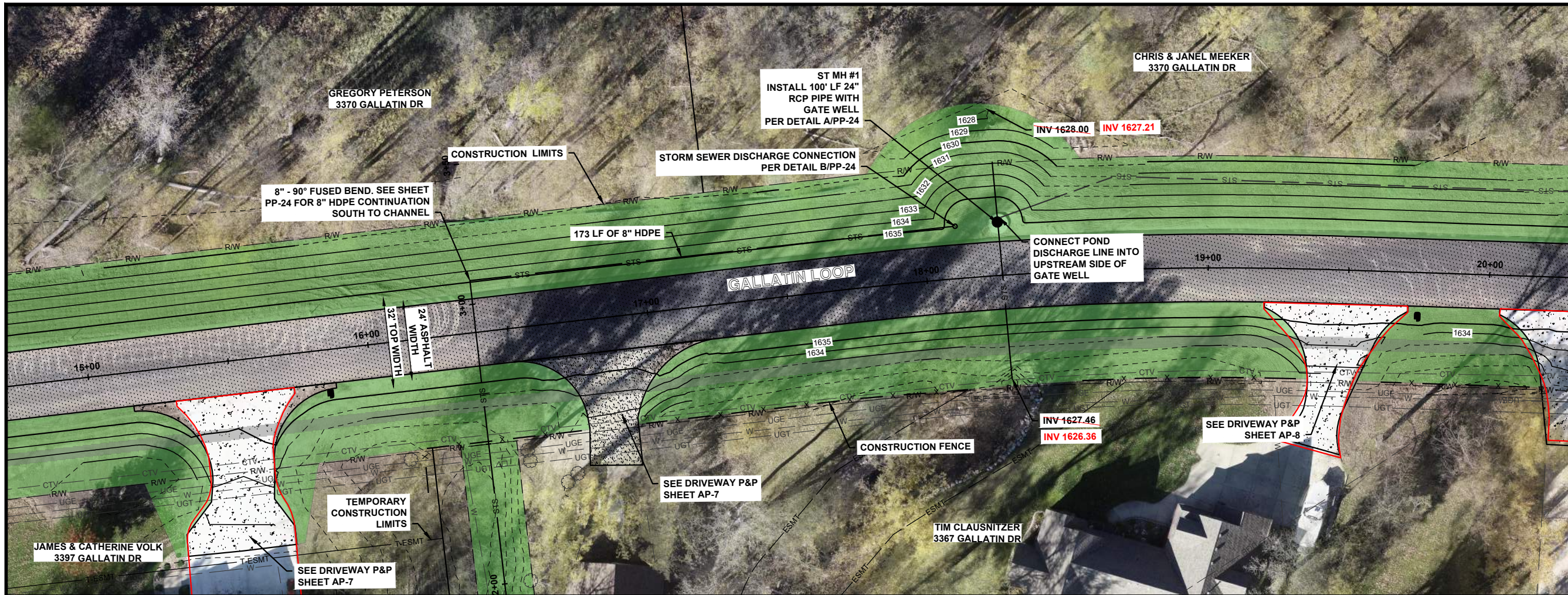
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1	CHANGE ORDER #1	11-13-18	EM/JP



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 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

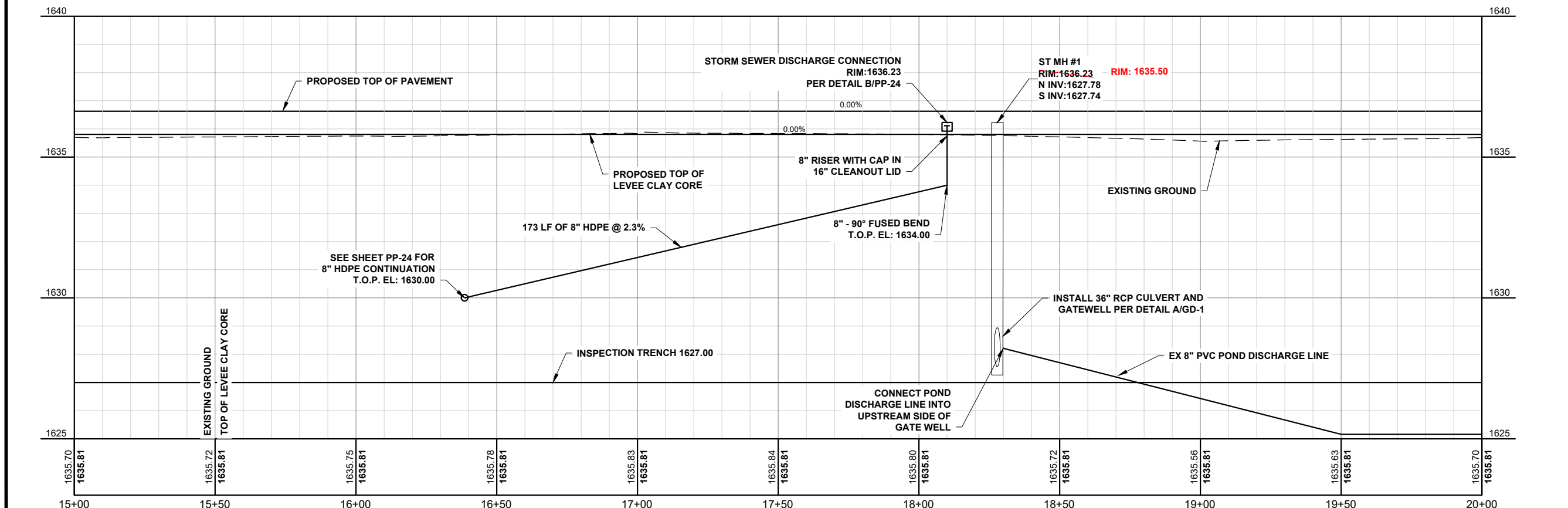
ROADWAY PLAN & PROFILE	SHEET PP-4
PROJECT NO. 6025-006	



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

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1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
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  3. CONTRACTOR SHALL HYDROVAC TO LOCATE EXISTING WATER LINE AND CONFIRM DEPTH. WATER LINE SHALL BE PROTECTED FROM DAMAGE.
  4. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE.
  5. APPROACHES SHALL CONFORM TO BURLEIGH COUNTY CONSTRUCTION STANDARDS.



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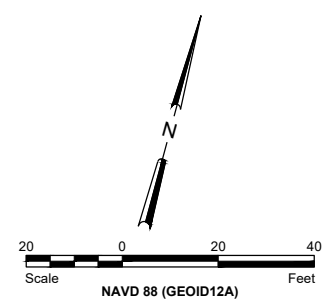
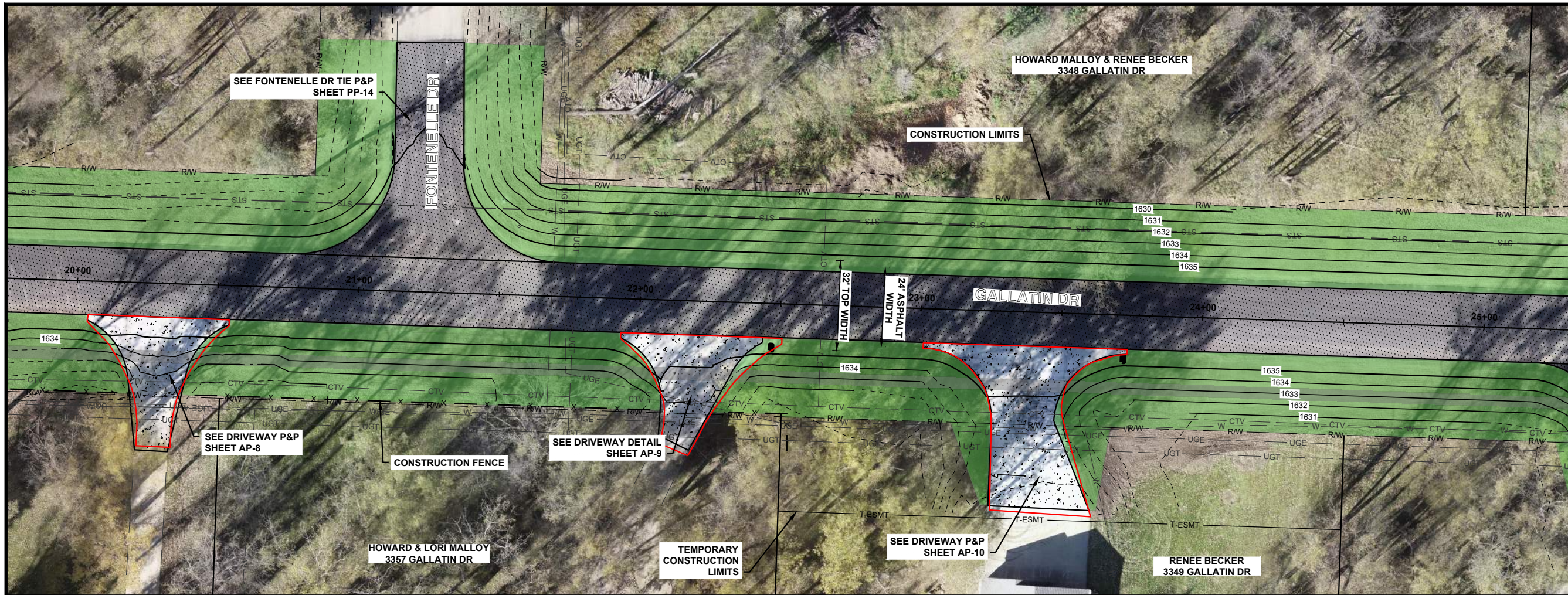
No.	Revision	Date	By
2	CHANGE ORDER #2	5-1-19	TP
1	CHANGE ORDER #1	11-13-18	EM/JP



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 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

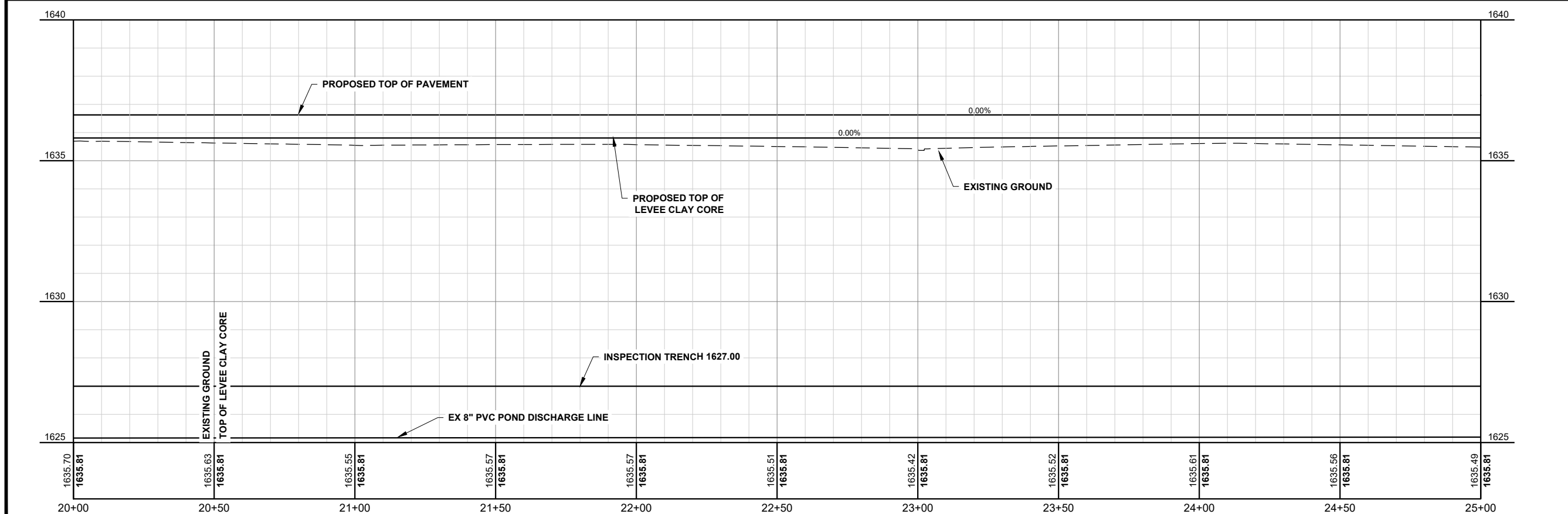
ROADWAY PLAN & PROFILE  
 PROJECT NO. 6025-006  
 SHEET PP-5



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. APPROACH TIE IN TO BE DETERMINED BY ENGINEER IN THE FIELD.
  3. CONTRACTOR SHALL HYDROVAC TO LOCATE EXISTING WATER LINE AND CONFIRM DEPTH. WATER LINE SHALL BE PROTECTED FROM DAMAGE.
  4. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE.
  5. APPROACHES SHALL CONFORM TO BURLEIGH COUNTY CONSTRUCTION STANDARDS.



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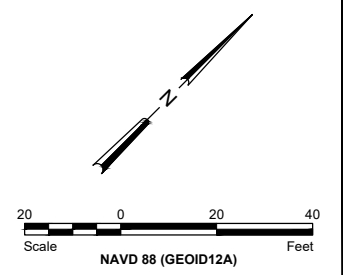
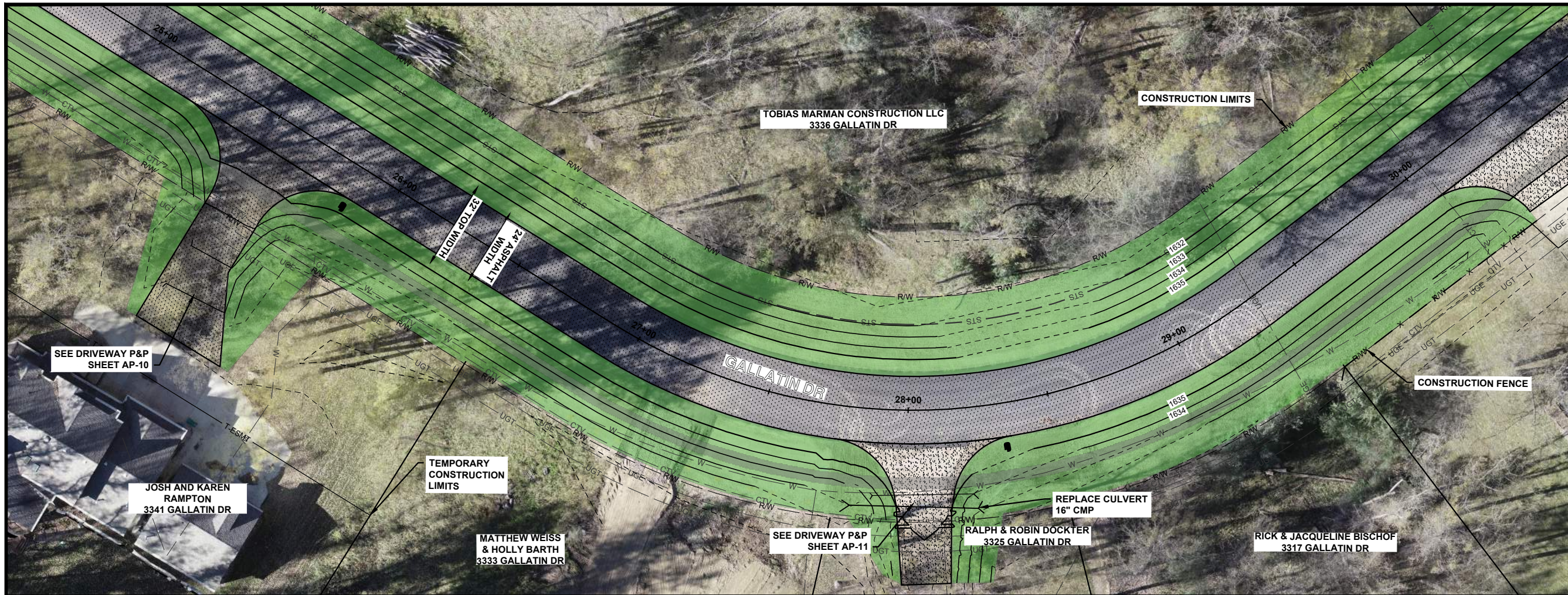


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 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

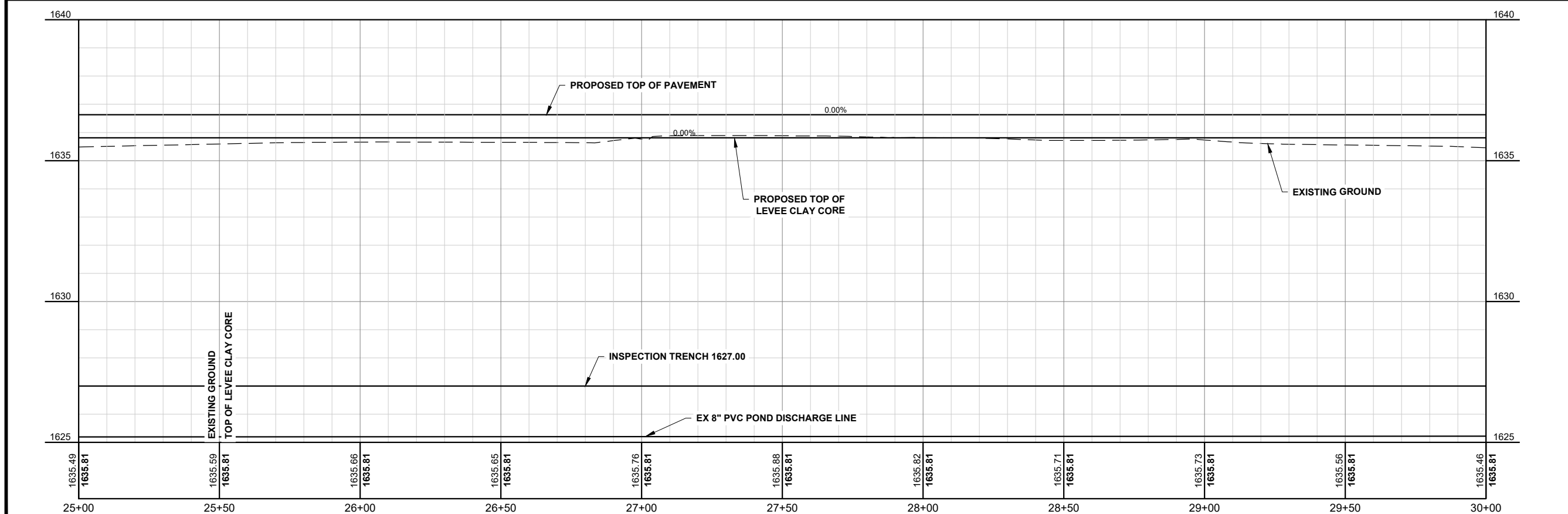
ROADWAY PLAN & PROFILE  
 PROJECT NO. 6025-006  
 SHEET PP-6



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
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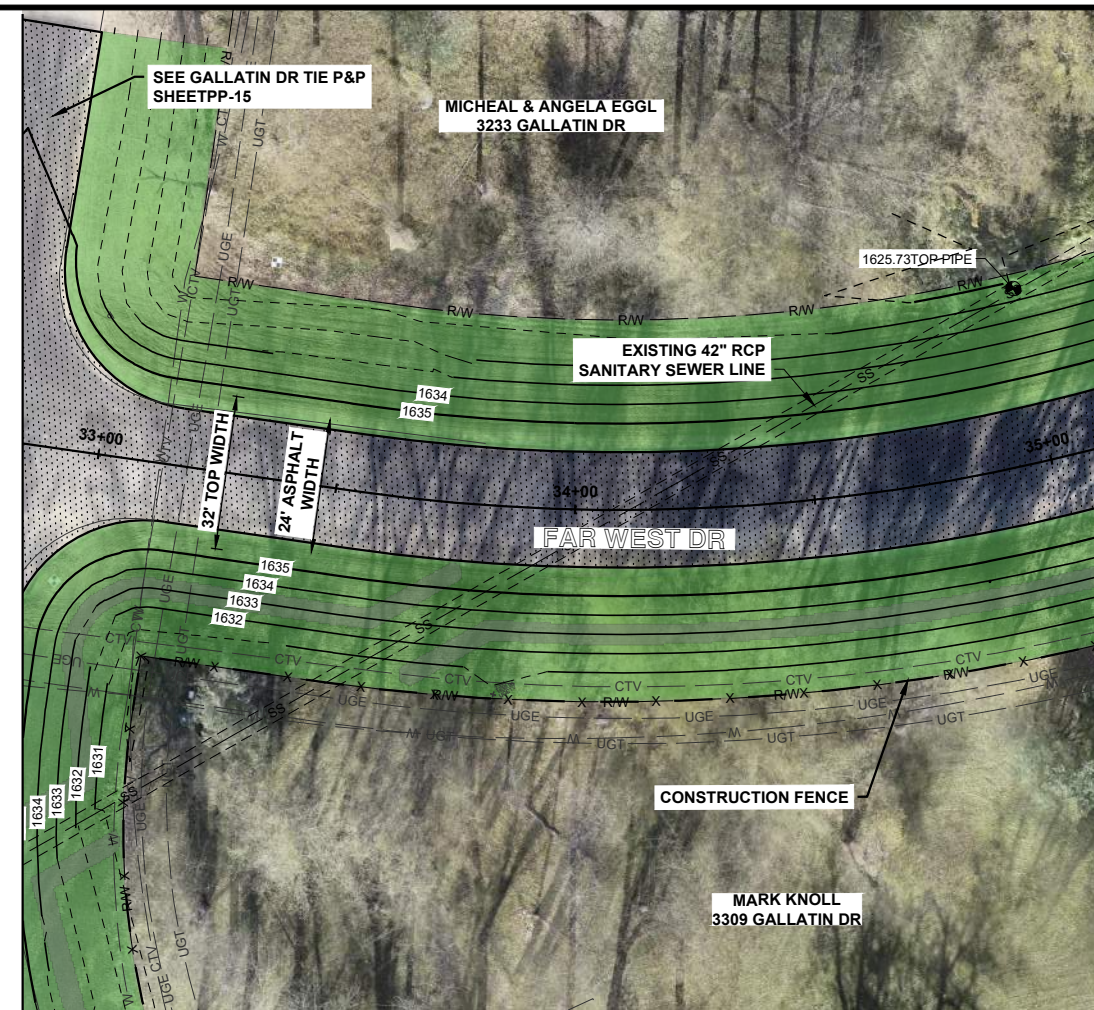
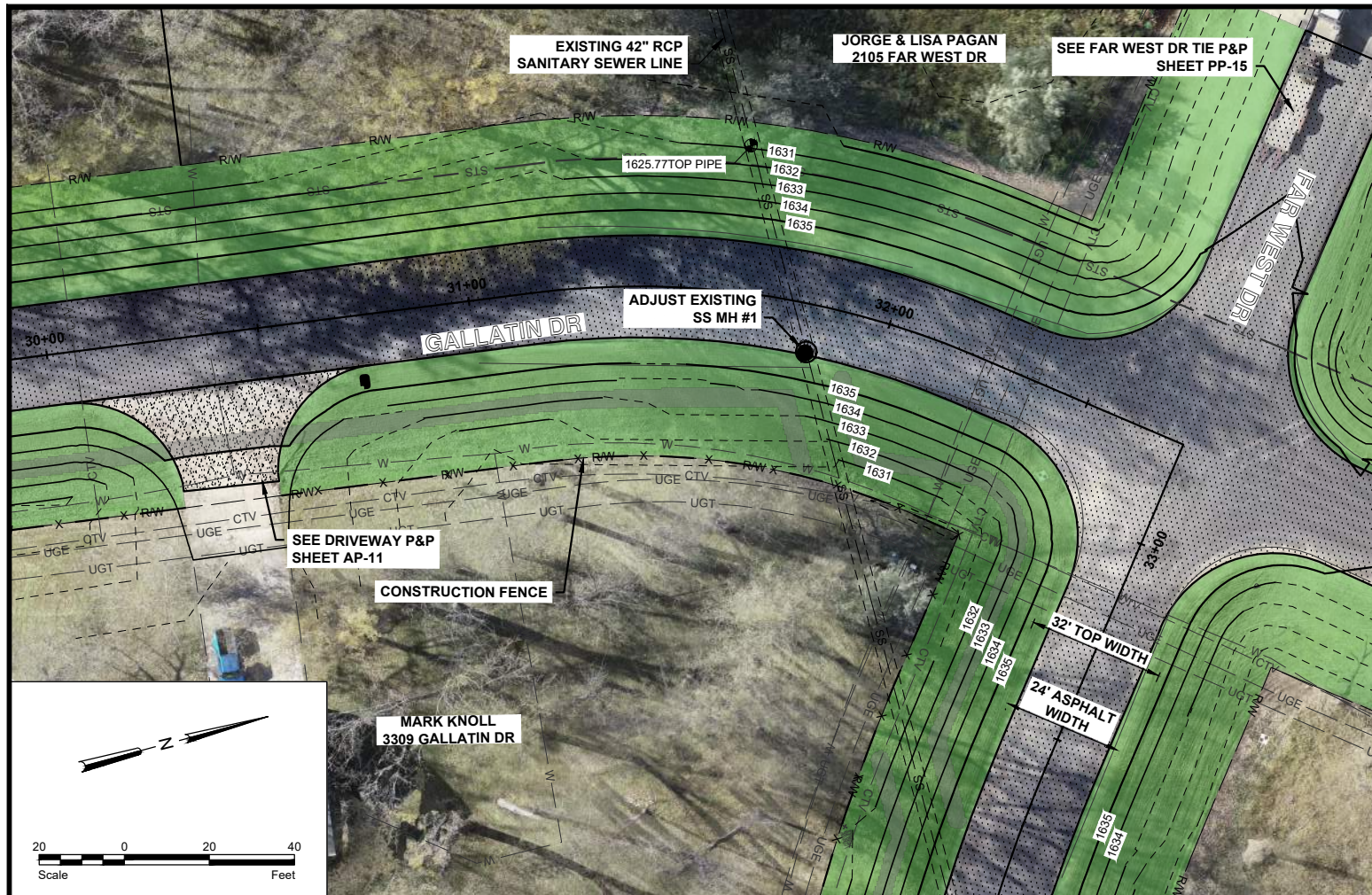


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 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

ROADWAY PLAN & PROFILE  
 PROJECT NO. 6025-006  
 SHEET PP-7



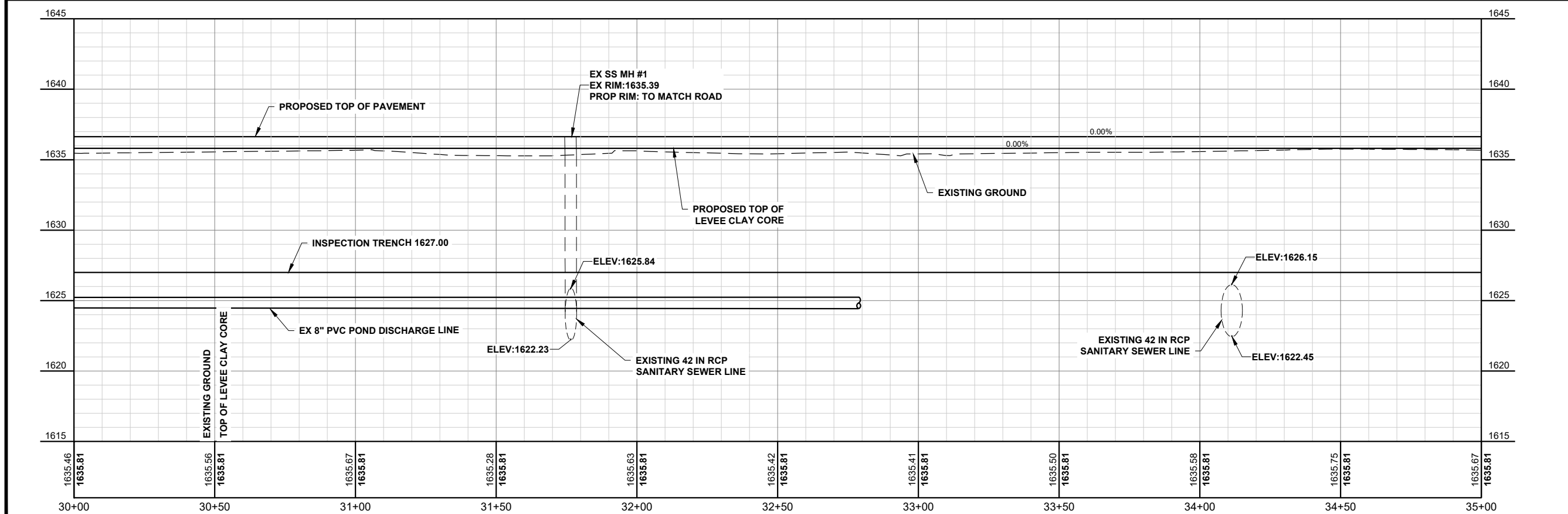
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**LEGEND**

- SEEDING
- INSPECTION TRENCH
- AGGREGATE SURFACE
- ASPHALT SURFACE
- CONCRETE SURFACE

**GENERAL SHEET NOTES**

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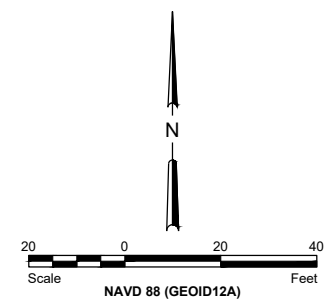
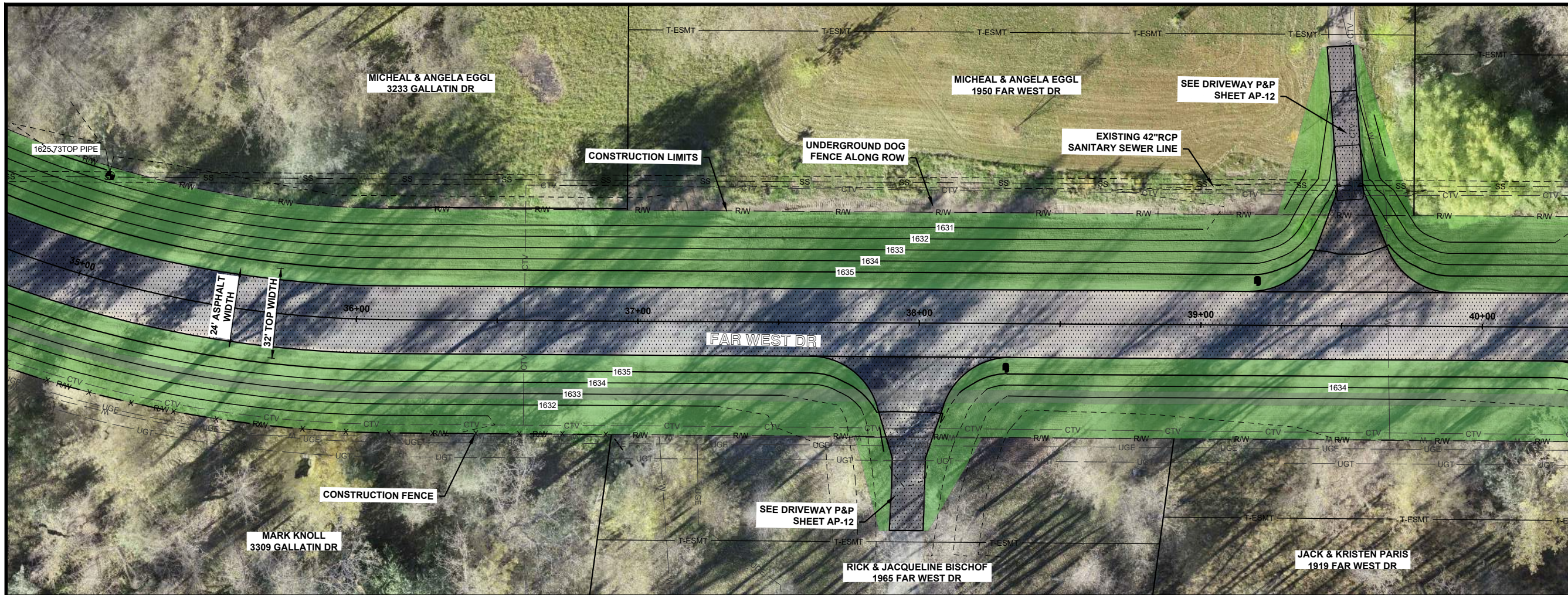


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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

ROADWAY PLAN & PROFILE	SHEET PP-8
PROJECT NO. 6025-006	

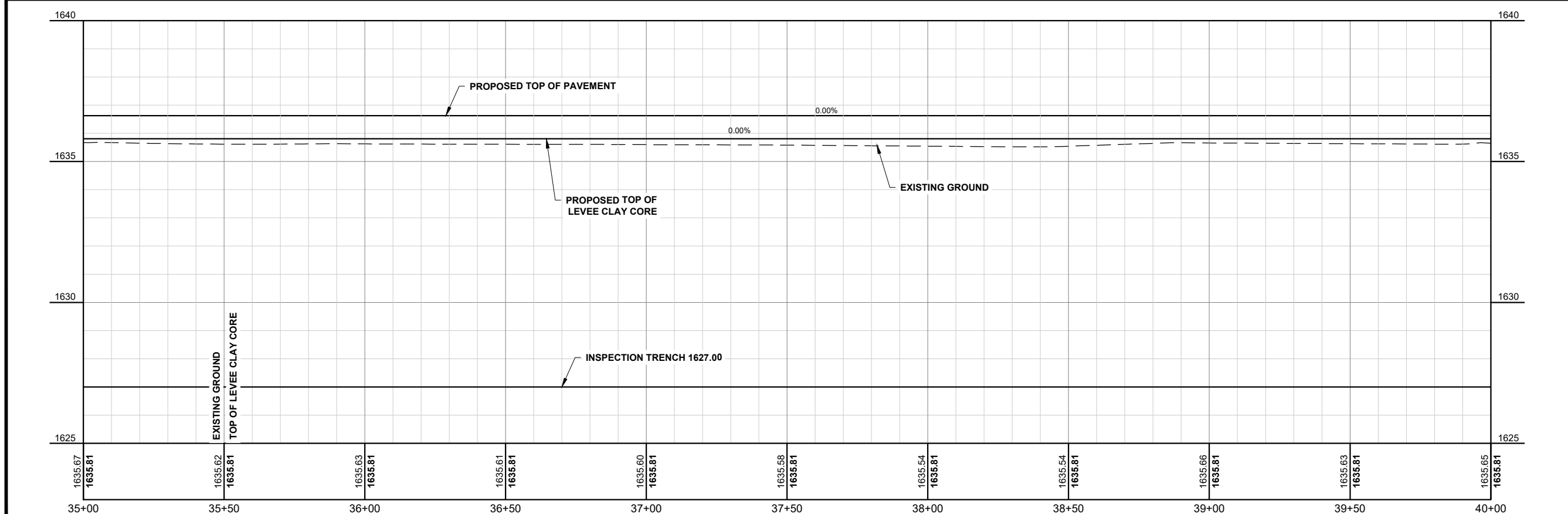




**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

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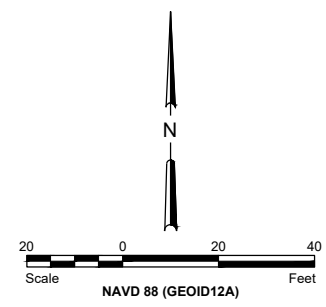
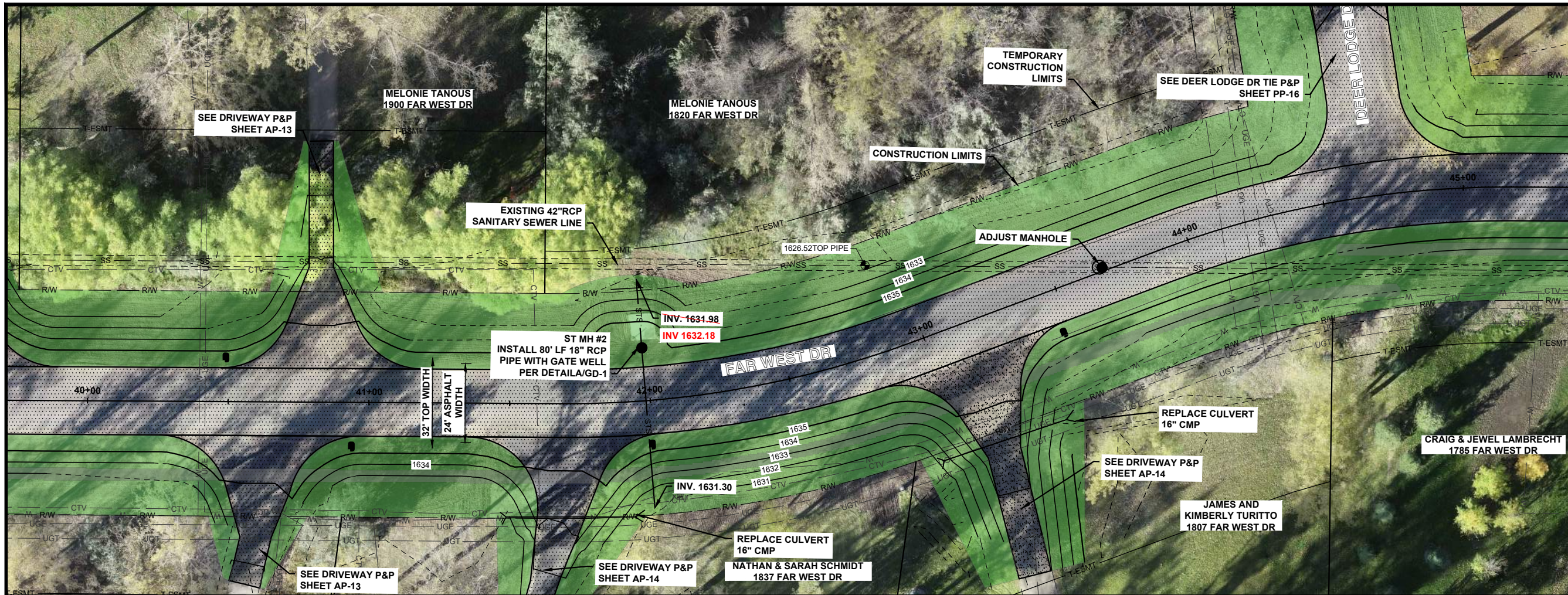
No.	Revision	Date	By
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 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

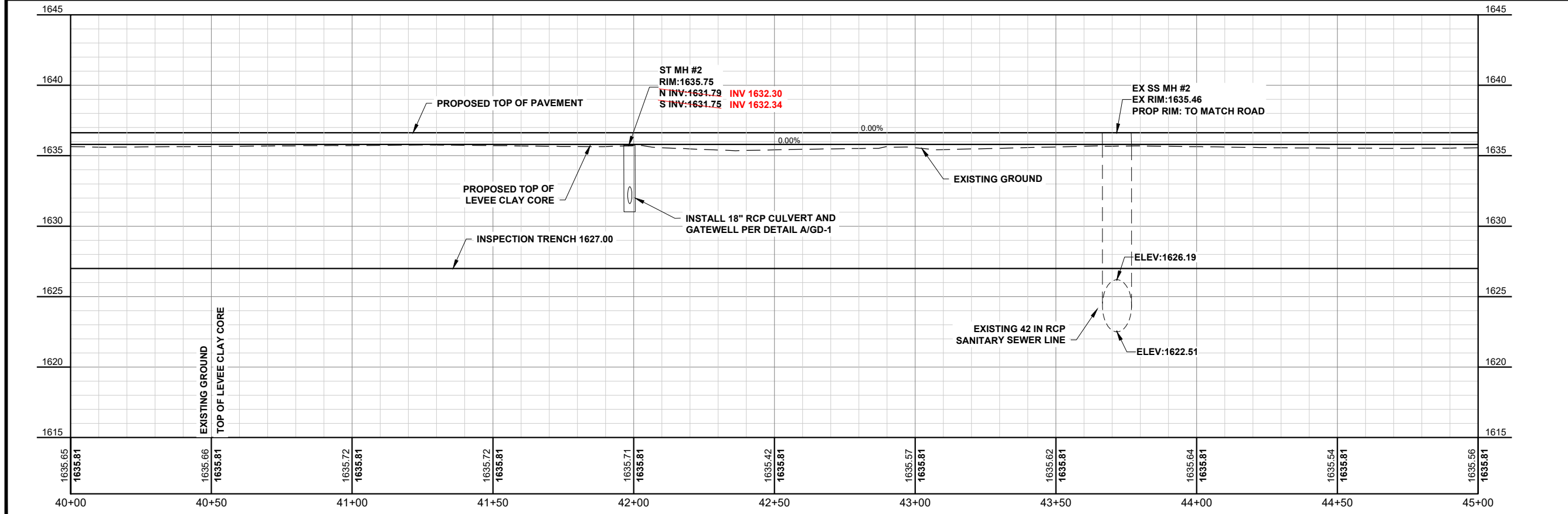
ROADWAY PLAN & PROFILE  
 PROJECT NO. 6025-006  
 SHEET PP-9



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

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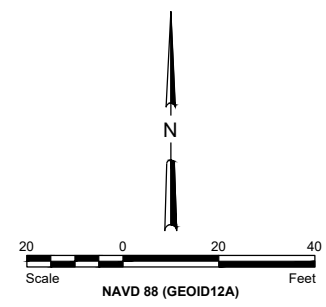
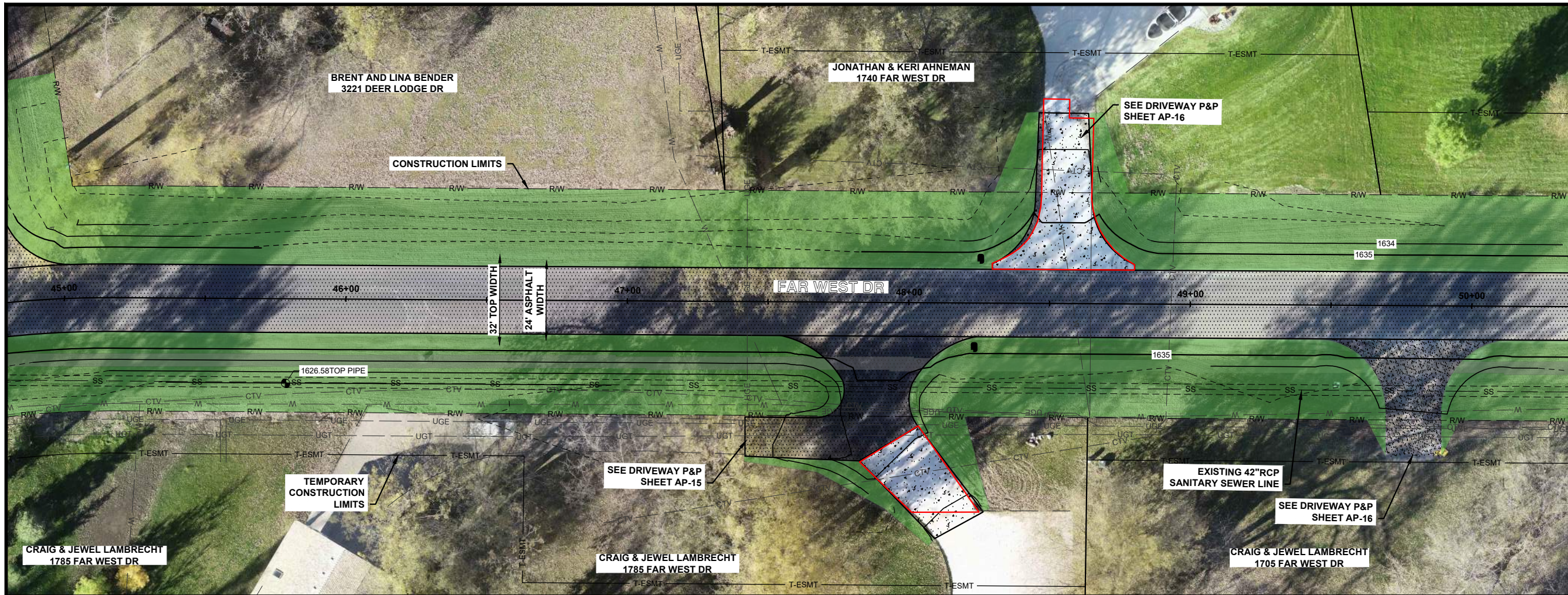
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**FOX ISLAND FLOOD CONTROL PROJECT**  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

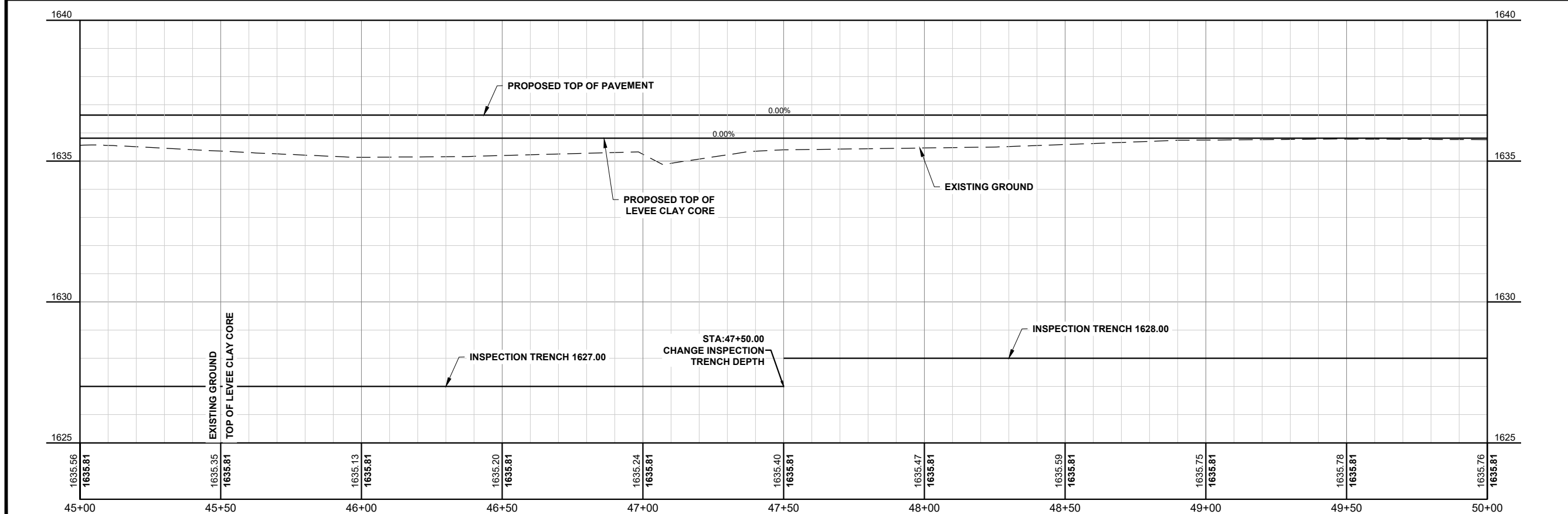
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 PROJECT NO. 6025-006  
 SHEET PP-10



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
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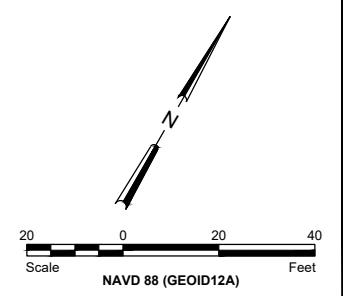
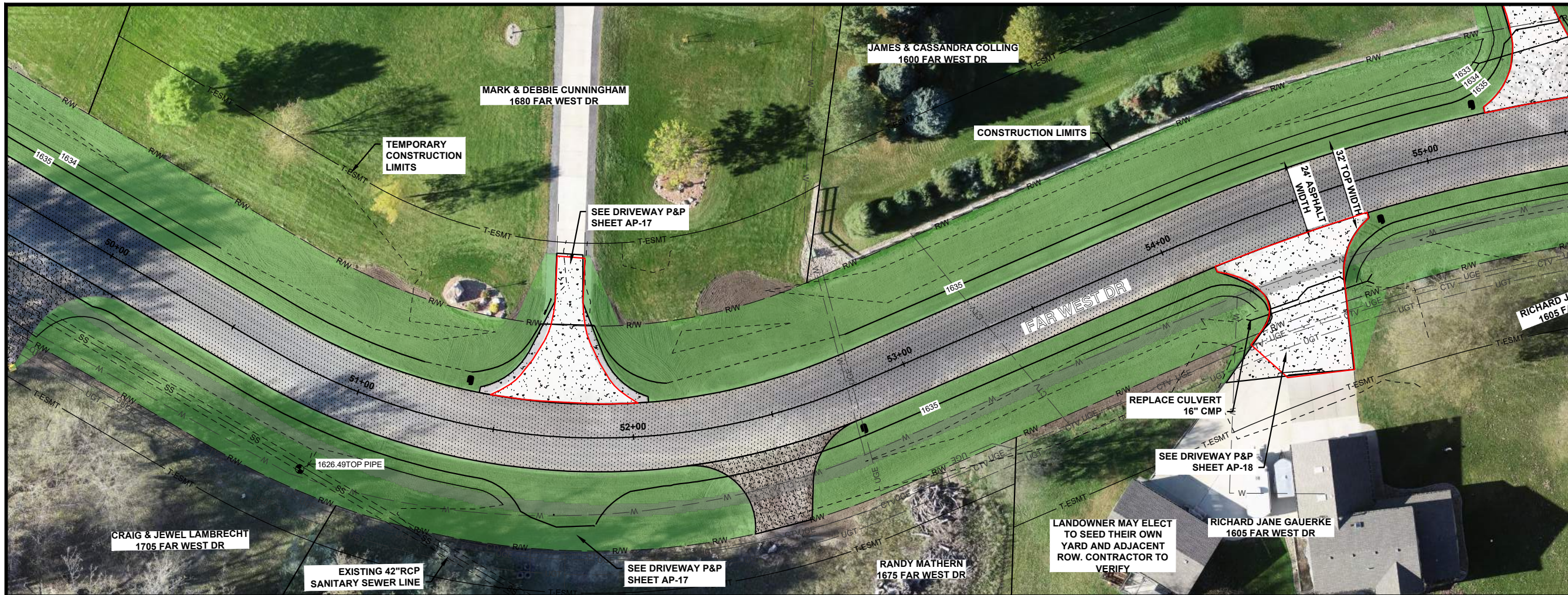


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 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

ROADWAY PLAN & PROFILE  
 PROJECT NO. 6025-006

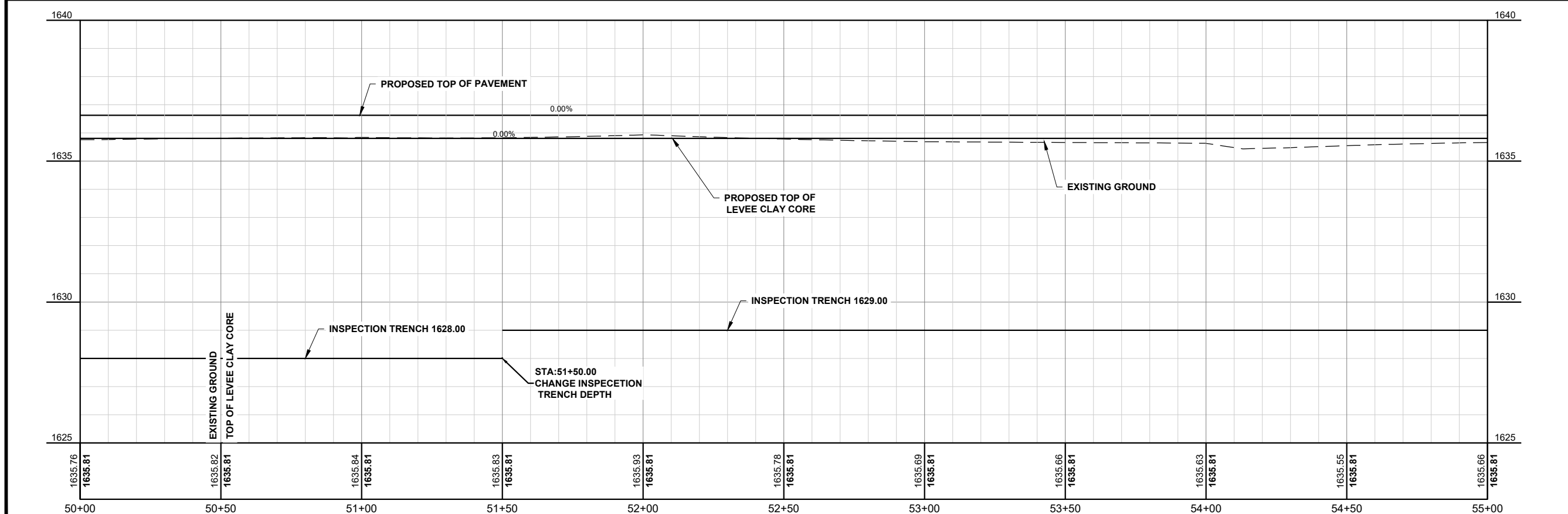
SHEET  
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**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
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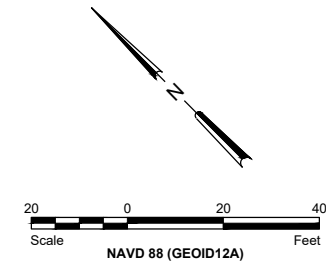
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FOX ISLAND FLOOD CONTROL PROJECT  
BURLEIGH COUNTY WATER RESOURCE DISTRICT  
BURLEIGH COUNTY, NORTH DAKOTA

ROADWAY PLAN & PROFILE  
PROJECT NO. 6025-006

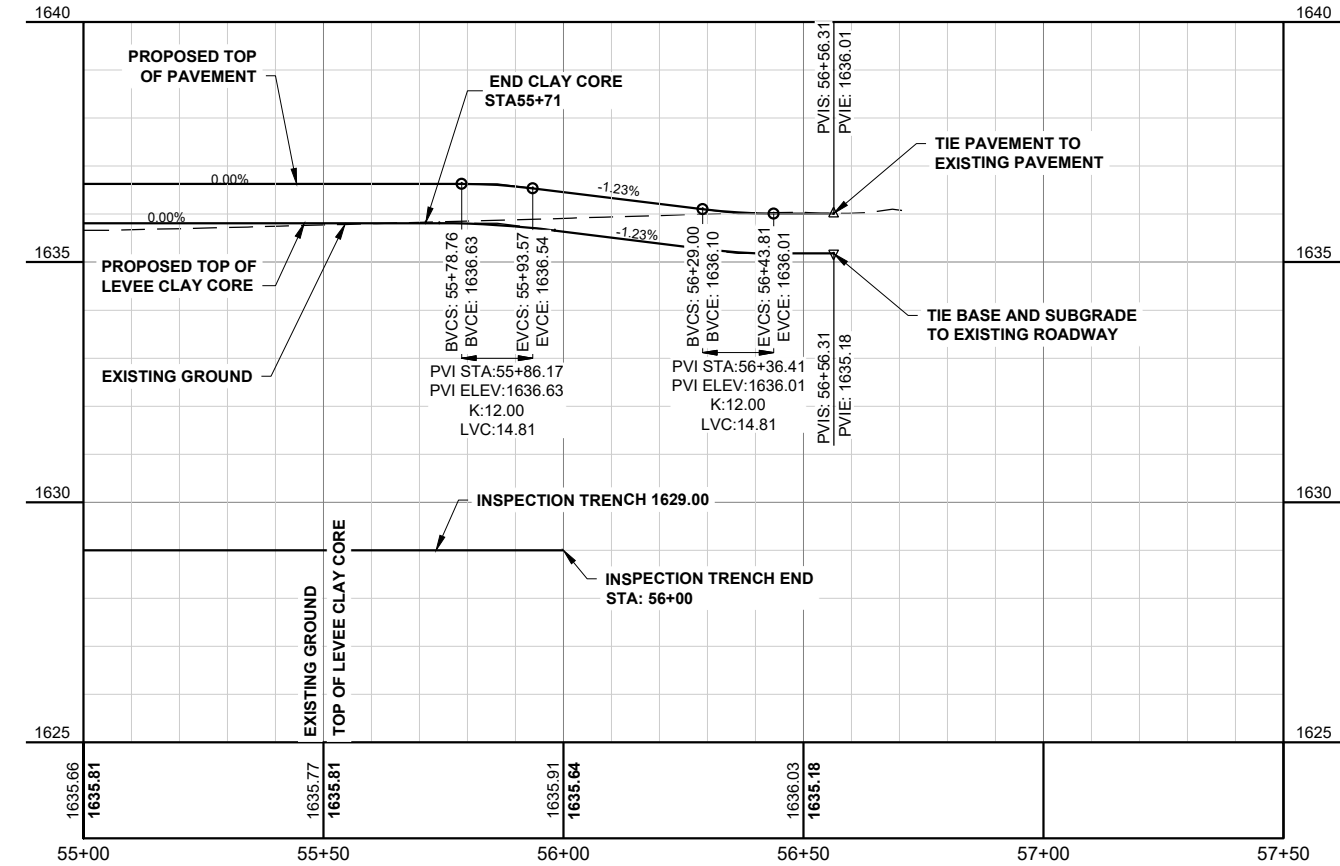
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**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

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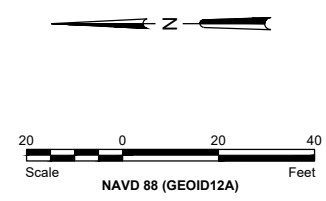


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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

ROADWAY PLAN & PROFILE  
 PROJECT NO. 6025-006

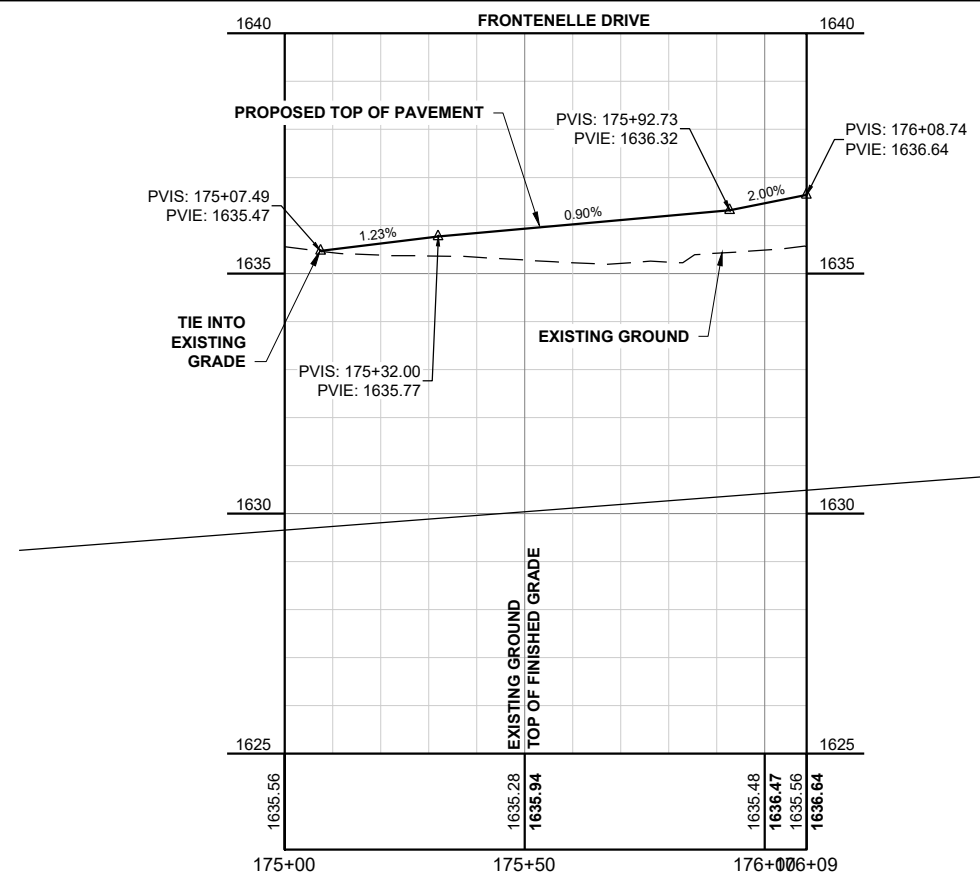
SHEET  
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**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

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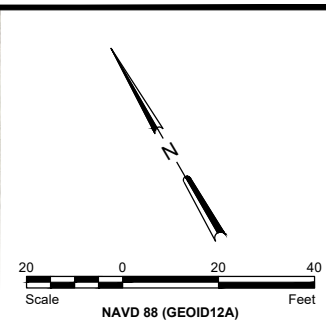
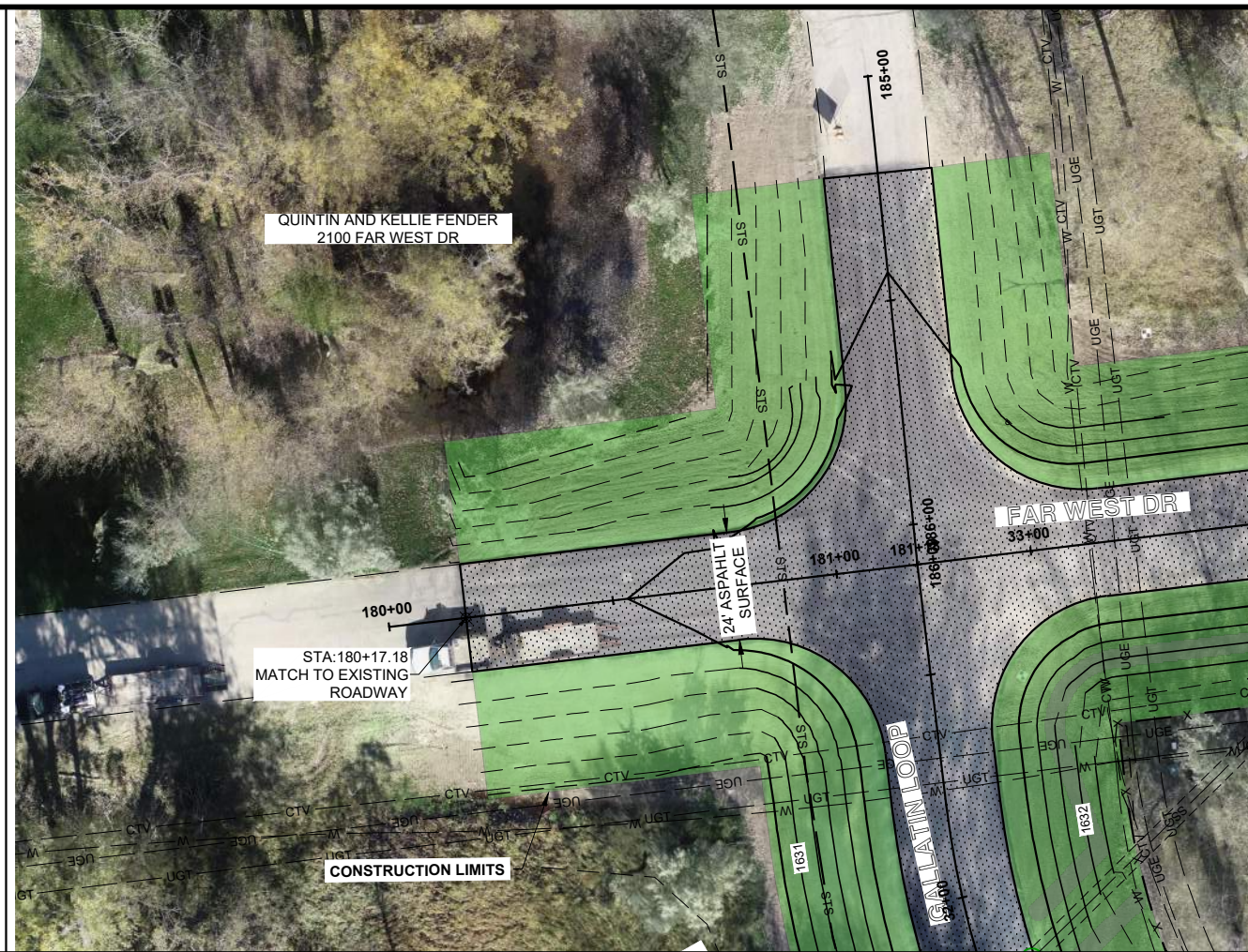
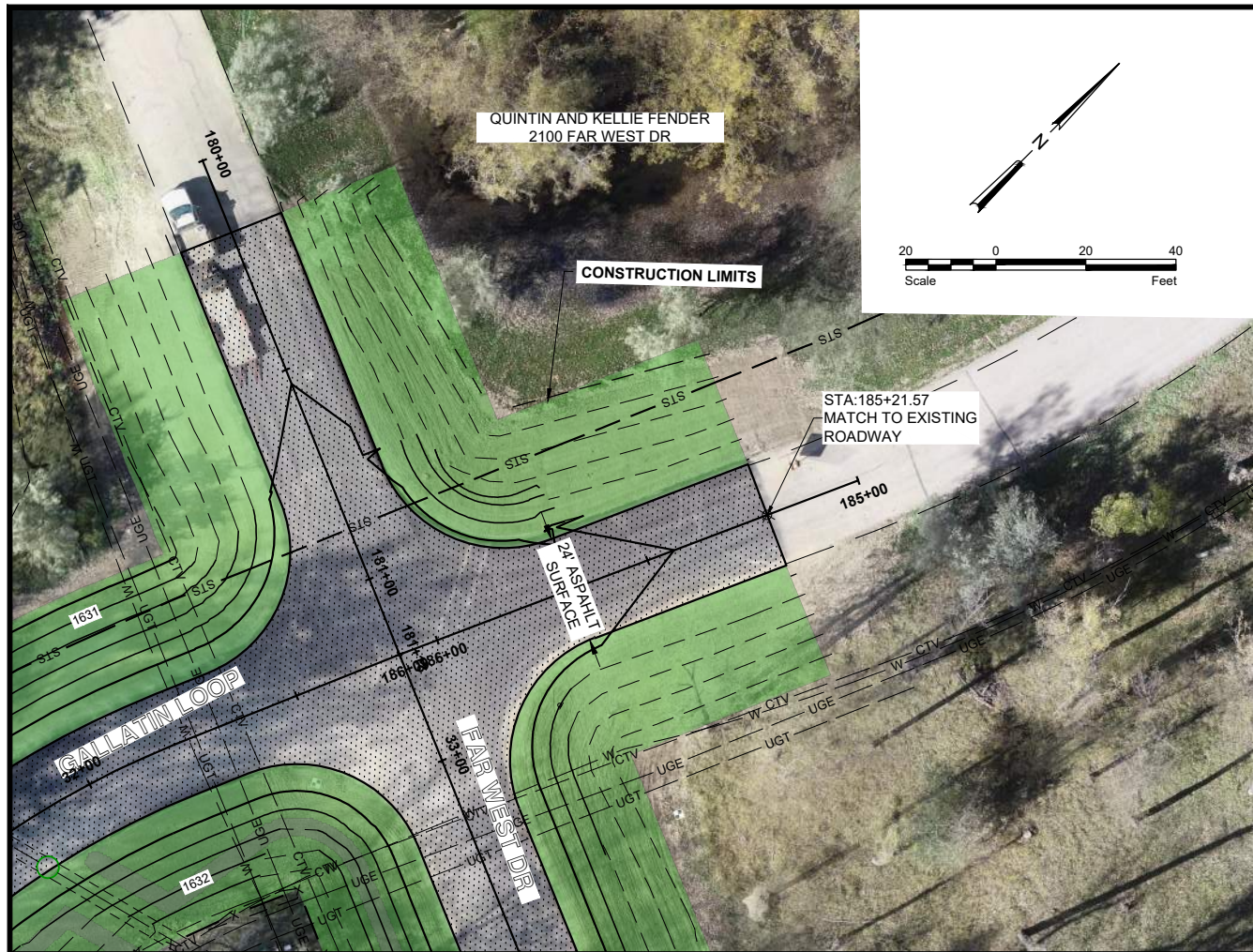


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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

ROADWAY PLAN & PROFILE -  
 FONTENELLE DR TIE  
 PROJECT NO. 6025-006

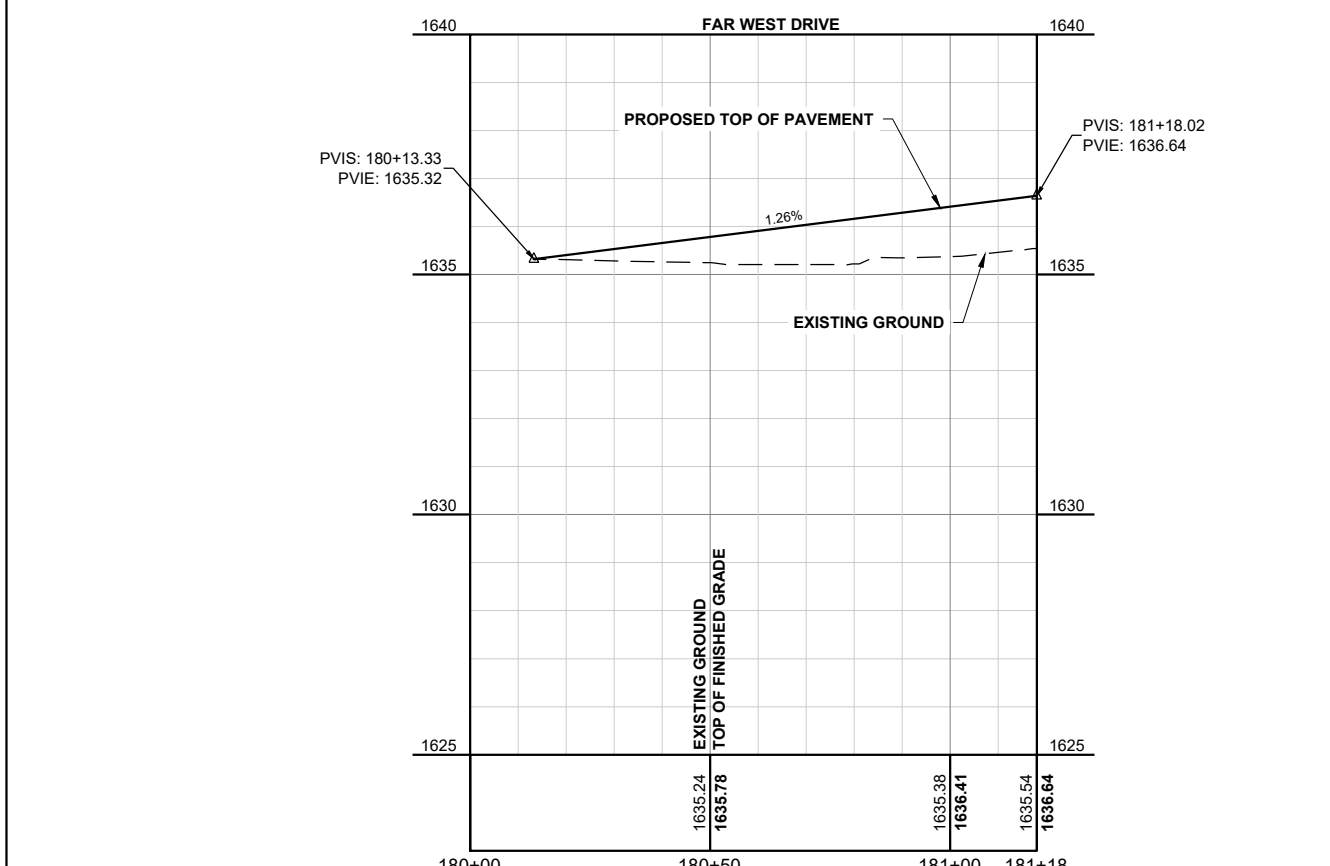
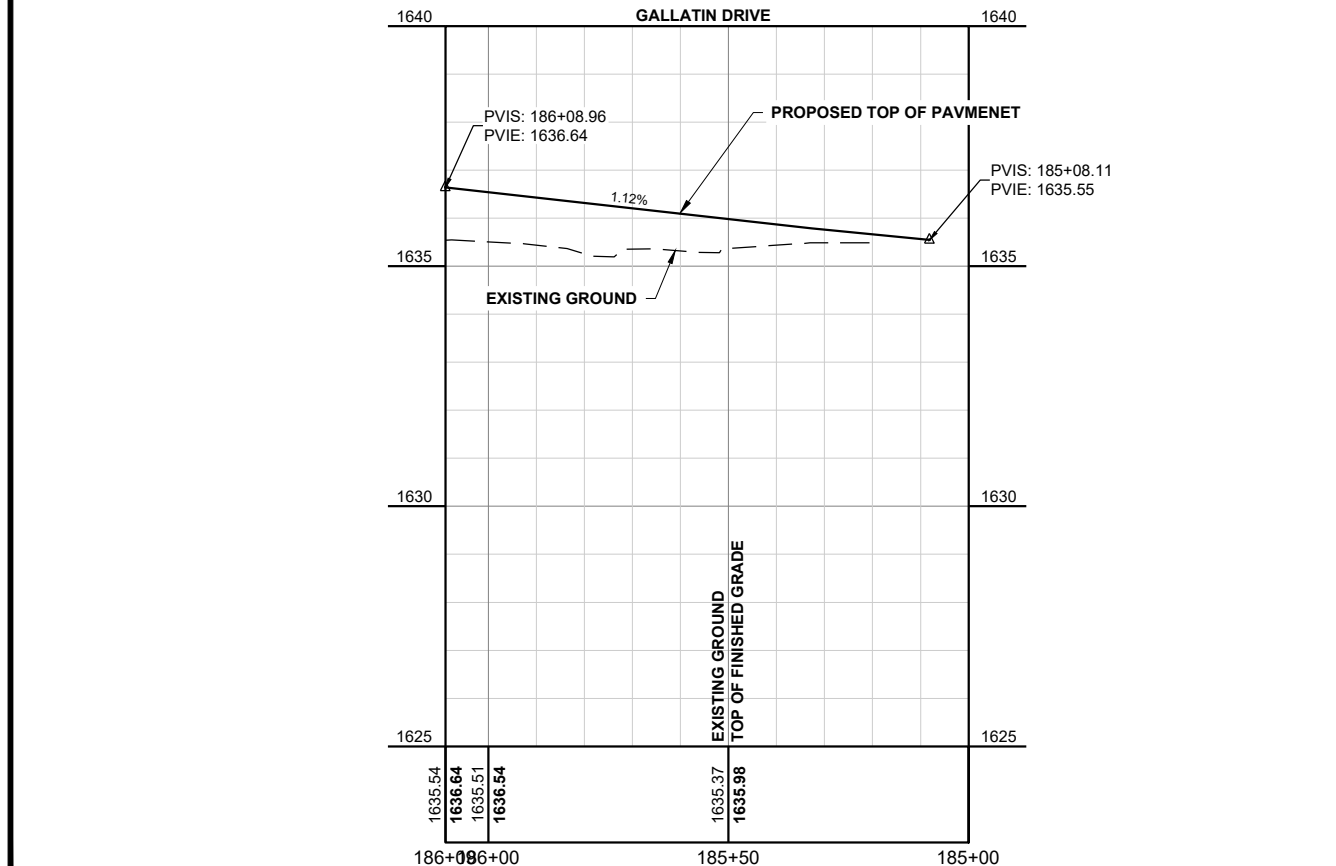
SHEET  
 PP-14



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE
  3. APPROACHES SHALL CONFORM TO BURLEIGH COUNTY CONSTRUCTION STANDARDS



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No.	Revision	Date	By
1	CHANGE ORDER #1	11-13-18	EM/JP



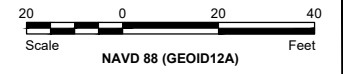
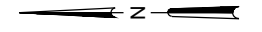
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 P: 701.323.0200  
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

ROADWAY PLAN & PROFILE -  
 GALLATIN & FAR WEST TIE  
 PROJECT NO. 6025-006

SHEET  
 PP-15

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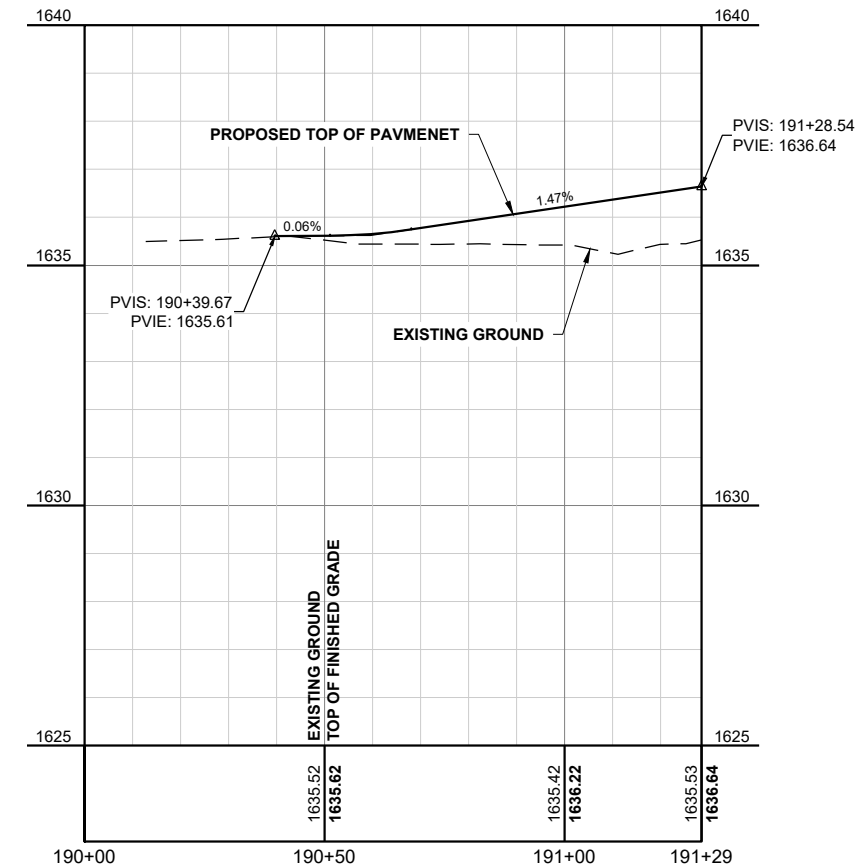


**LEGEND**

- SEEDING
- INSPECTION TRENCH
- AGGREGATE SURFACE
- ASPHALT SURFACE
- CONCRETE SURFACE

**GENERAL SHEET NOTES**

1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
2. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE
3. APPROACHES SHALL CONFORM TO BURLEIGH COUNTY CONSTRUCTION STANDARDS



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No.	Revision	Date	By
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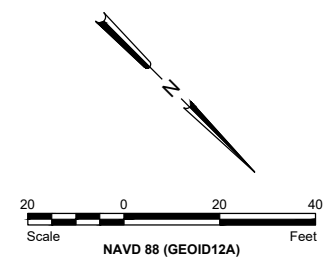
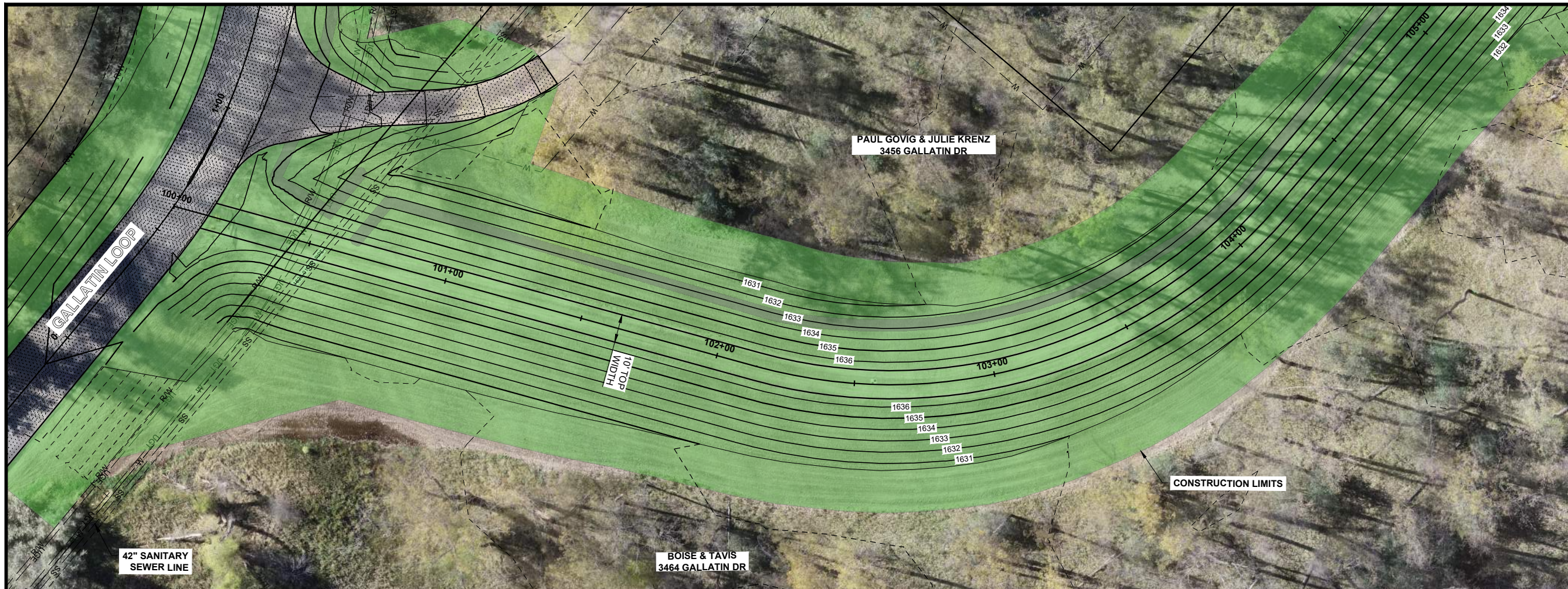
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 Checked by TGJ  
 Date 6-12-18  
 Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

ROADWAY PLAN & PROFILE -  
 DEER LODGE DR TIE  
 PROJECT NO. 6025-006

SHEET  
 PP-16

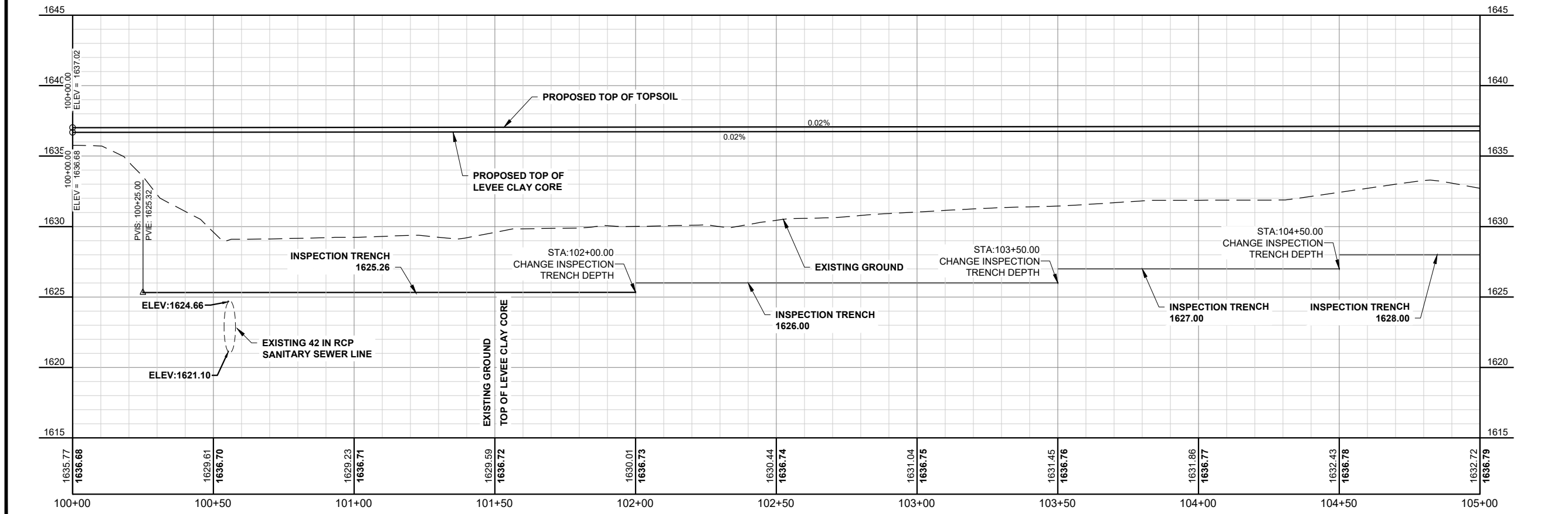




**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	
TEMPORARY EASEMENT	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. CONTRACTOR SHALL PROTECT EXISTING SANITARY SEWER FROM ANY DAMAGE. LINE CANNOT BE TAKEN OUT OF SERVICE



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No.	Revision	Date	By



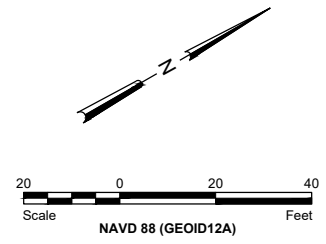
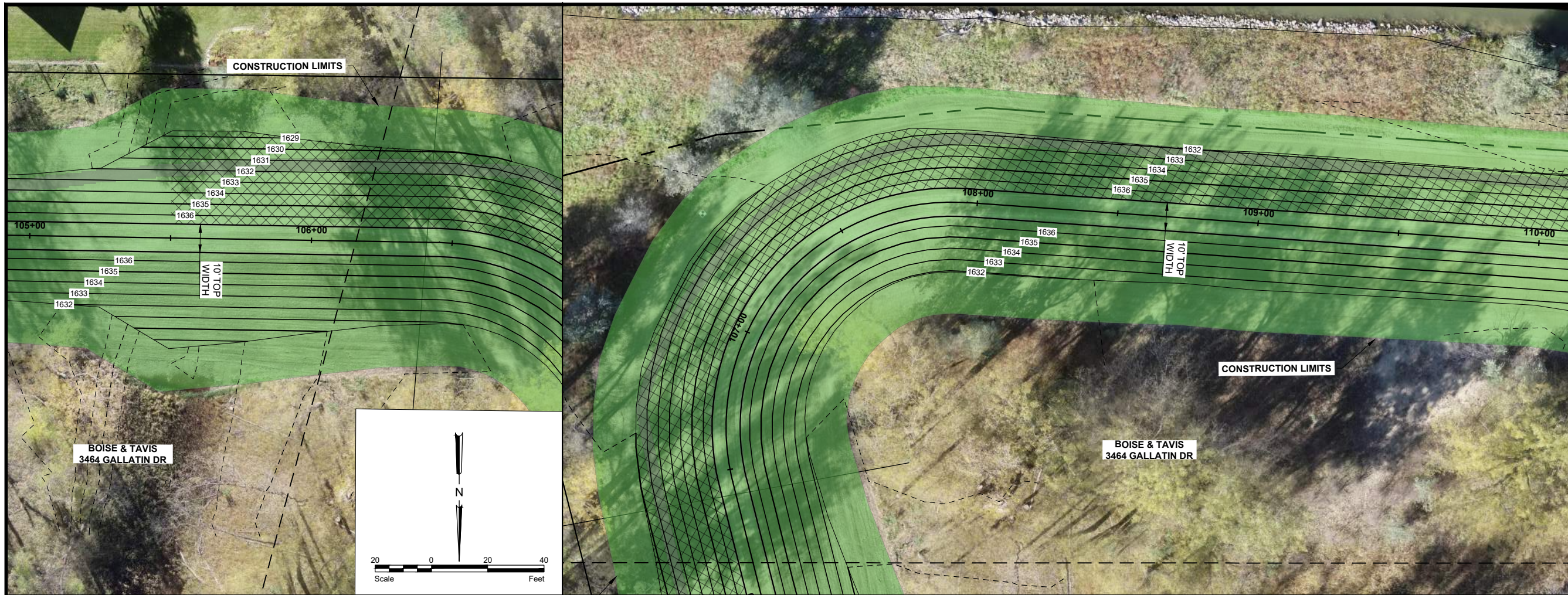
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 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

EARTHEN LEVEE PLAN & PROFILE  
 PROJECT NO. 6025-006

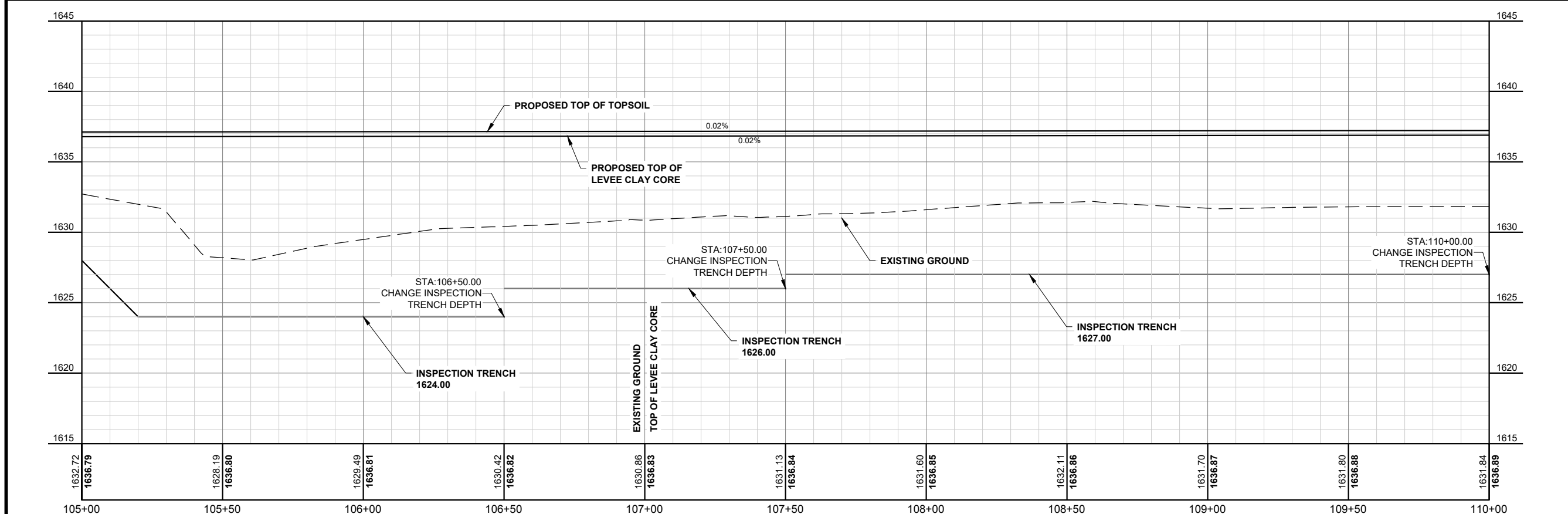
SHEET  
 PP-17



**LEGEND**

SEEDING	
INSPECTION TRENCH	
T.R.M. SC-250	
FLOODWAY	
COE EASEMENT	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.



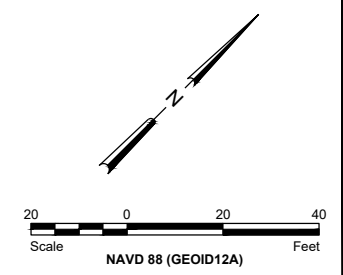
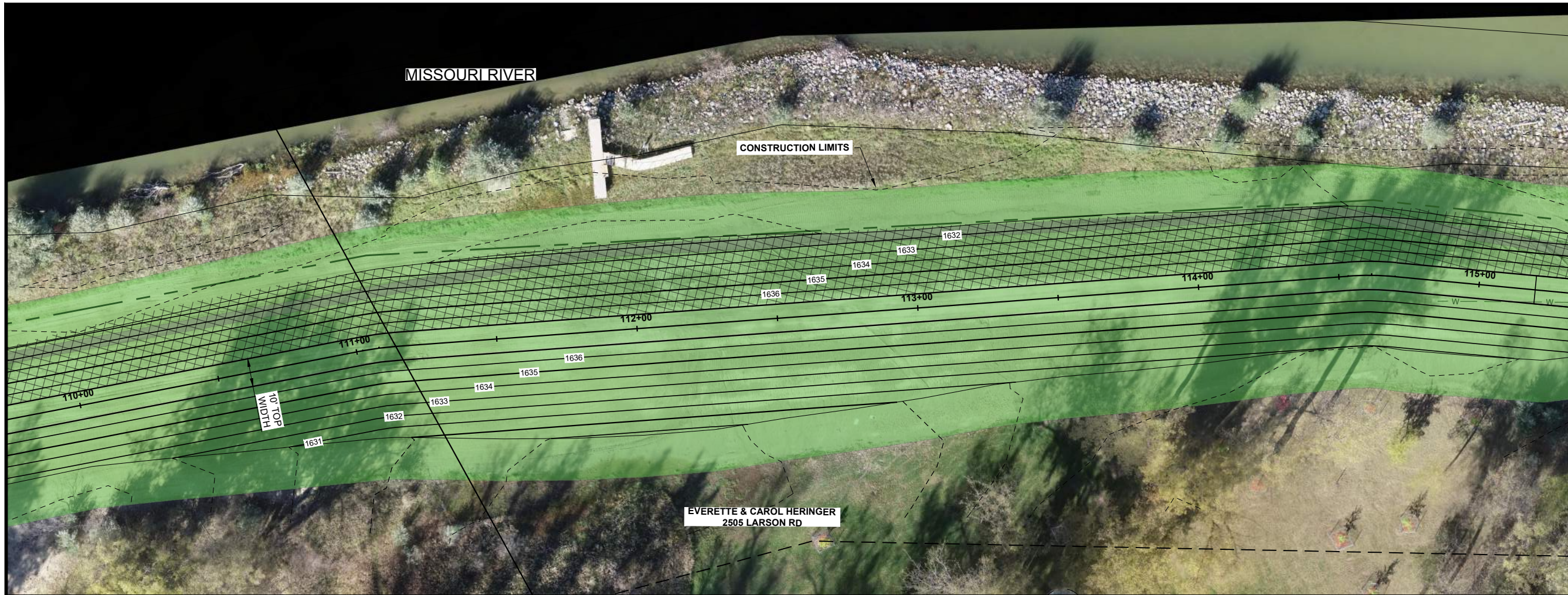
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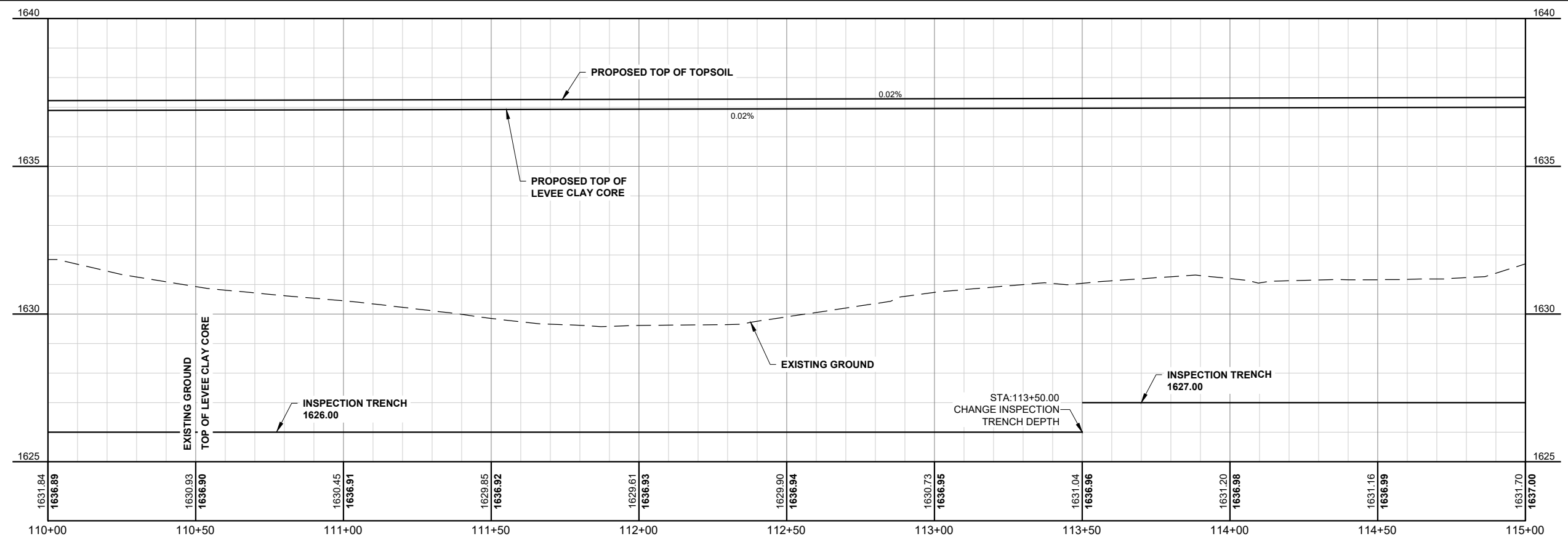
No.	Revision	Date	By		Bismarck P: 701.323.0200 F: 701.323.0300	Drawn by TP/EM/JP Date 6-12-18 Checked by TGJ Scale AS SHOWN	FOX ISLAND FLOOD CONTROL PROJECT BURLEIGH COUNTY WATER RESOURCE DISTRICT BURLEIGH COUNTY, NORTH DAKOTA	EARTHEN LEVEE PLAN & PROFILE PROJECT NO. 6025-006	SHEET PP-18



**LEGEND**

SEEDING	
INSPECTION TRENCH	
T.R.M. SC-250	
FLOODWAY	
COE EASEMENT	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.



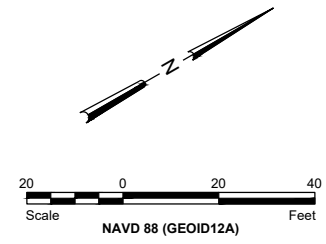
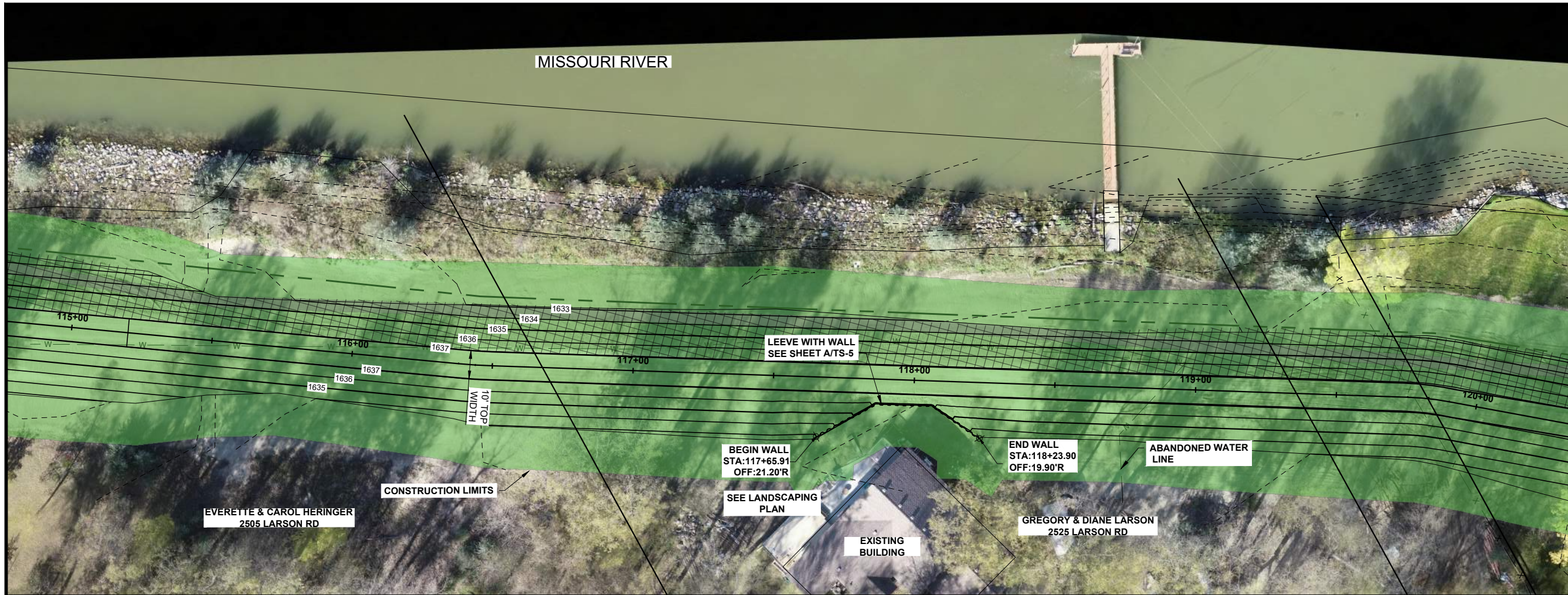
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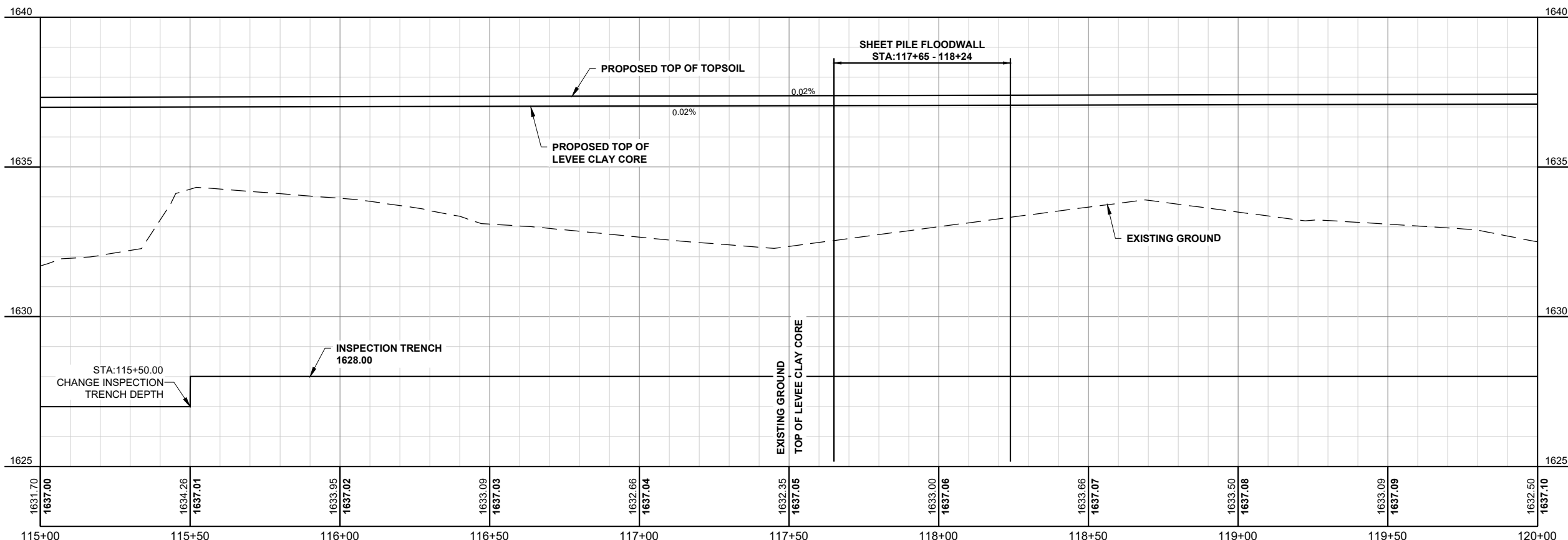
No.	Revision	Date	By		Bismarck P: 701.323.0200 F: 701.323.0300	Drawn by TP/EM/JP Date 6-12-18 Checked by TGJ Scale AS SHOWN	FOX ISLAND FLOOD CONTROL PROJECT BURLEIGH COUNTY WATER RESOURCE DISTRICT BURLEIGH COUNTY, NORTH DAKOTA	EARTHEN LEVEE PLAN & PROFILE PROJECT NO. 6025-006	SHEET PP-19



**LEGEND**

SEEDING	
INSPECTION TRENCH	
T.R.M. SC-250	
FLOODWAY	
COE EASEMENT	
TEMPORARY EASEMENT	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. SHEET PILE SHALL BE DRIVEN TO 1606.68 ELEV. DEPTH.



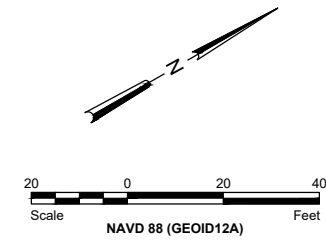
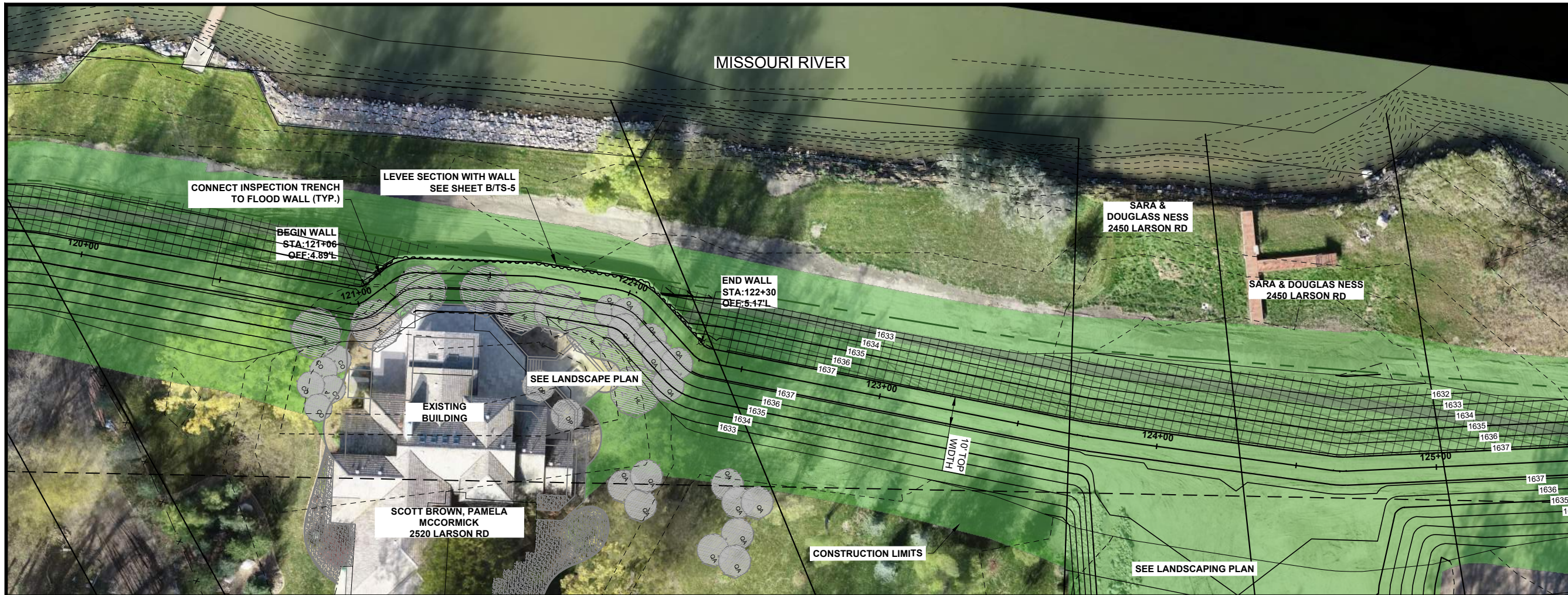
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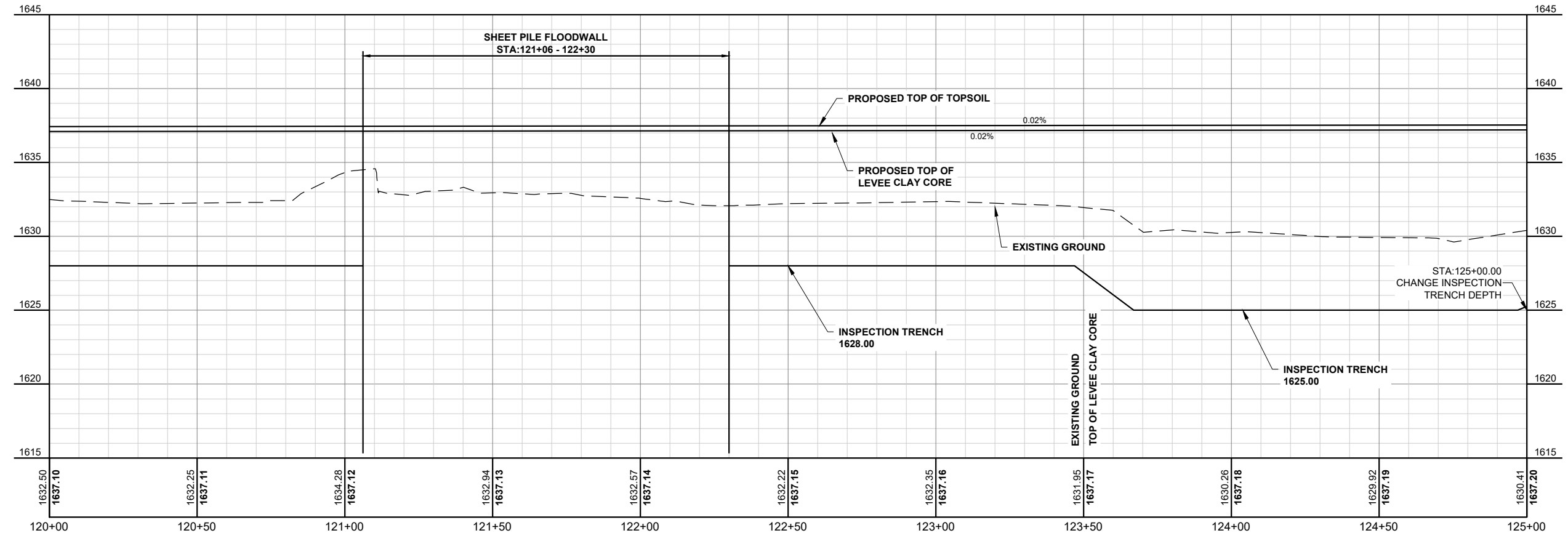
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**LEGEND**

SEEDING	
INSPECTION TRENCH	
T.R.M. SC-250	
FLOODWAY	
COE EASEMENT	
TEMPORARY EASEMENT	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. SHEET PILE FLOOD WALL SHALL BE DRIVEN TO 1611.10 ELEV. DEPTH.



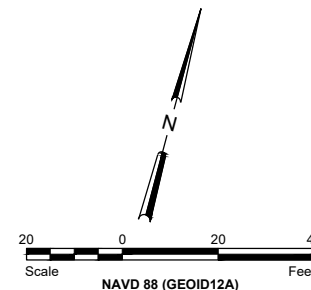
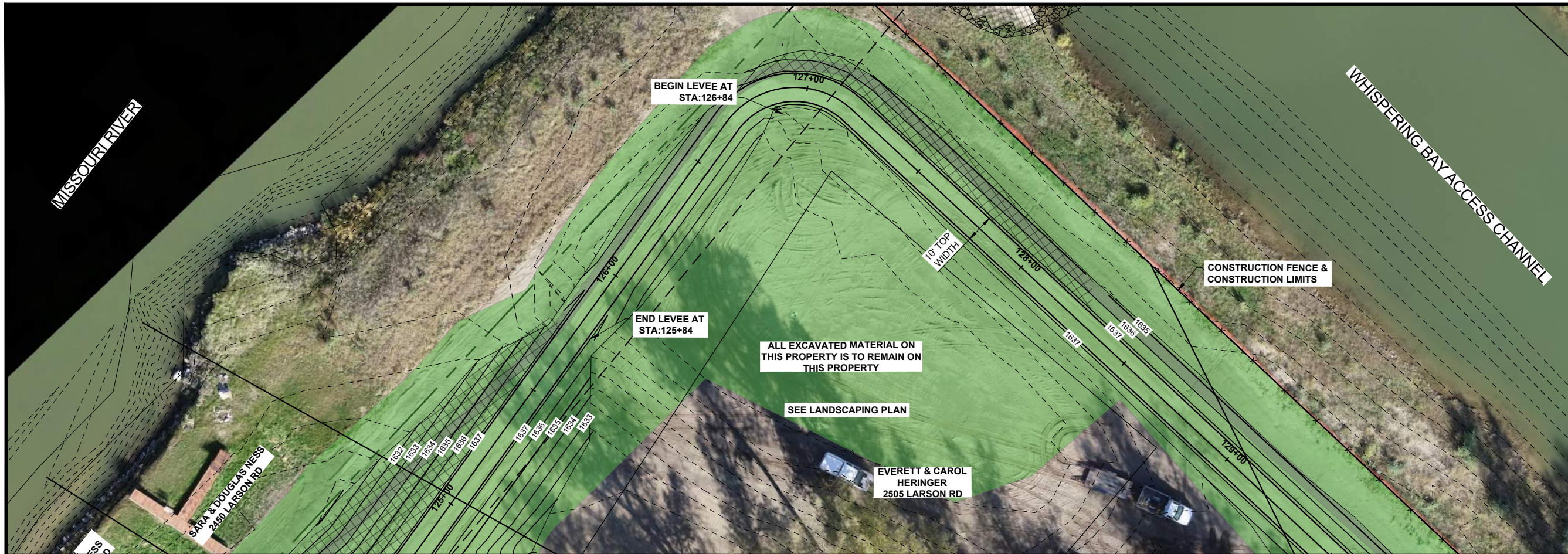
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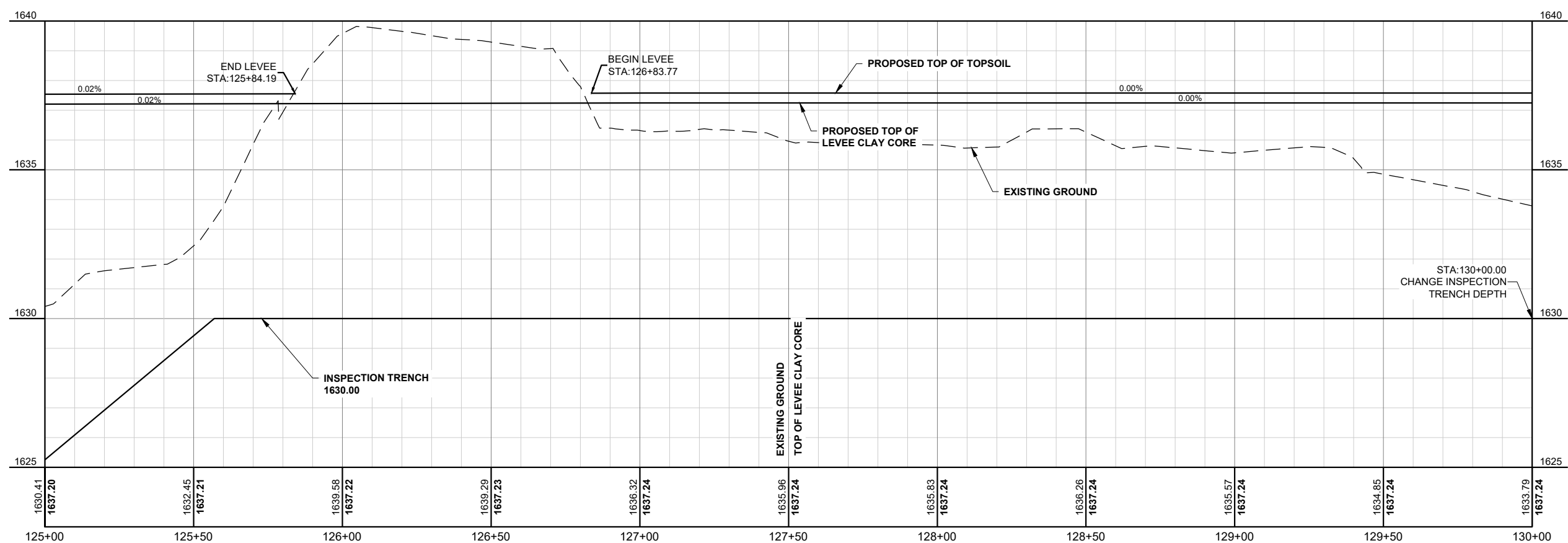
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						Checked by TGJ	Scale AS SHOWN			



**LEGEND**

SEEDING	
INSPECTION TRENCH	
T.R.M. SC-250	
FLOODWAY	
COE EASEMENT	
TEMPORARY EASEMENT	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.



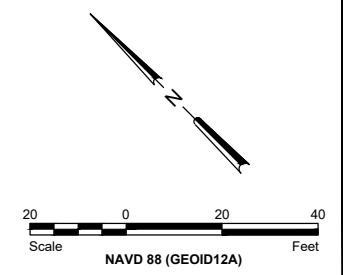
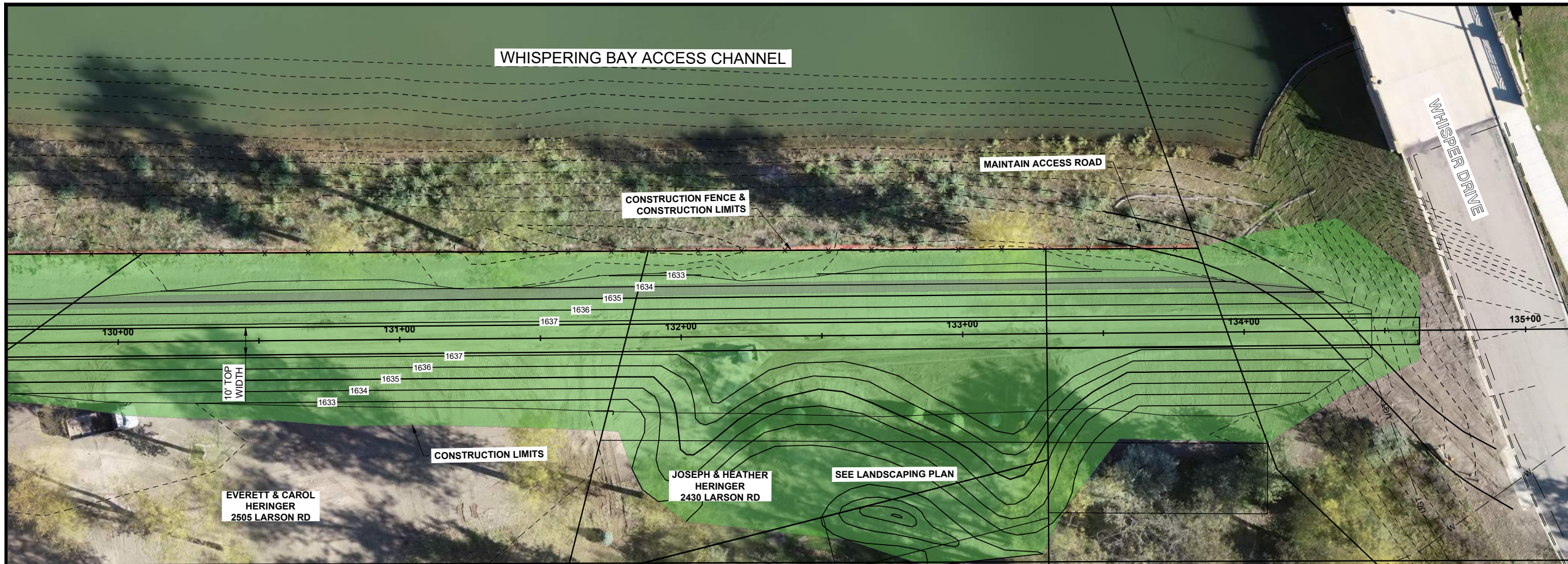
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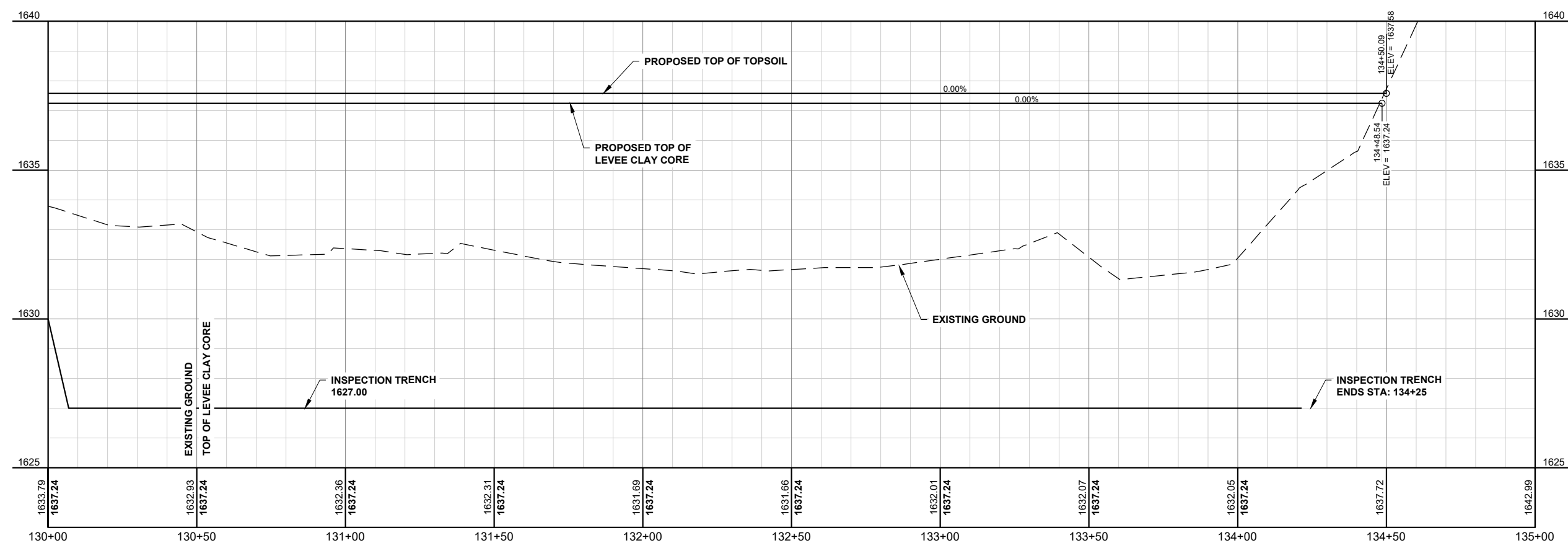
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No.	Revision	Date	By												



**LEGEND**

SEEDING	
INSPECTION TRENCH	
T.R.M. SC-250	
FLOODWAY	
COE EASEMENT	
TEMPORARY EASEMENT	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.



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No.	Revision	Date	By

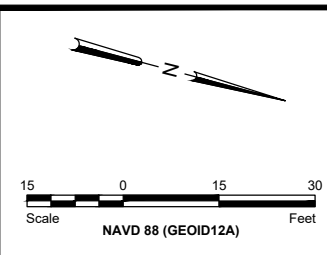


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 Drawn by TP/EM/JP  
 Checked by TGJ  
 Date 6-12-18  
 Scale AS SHOWN

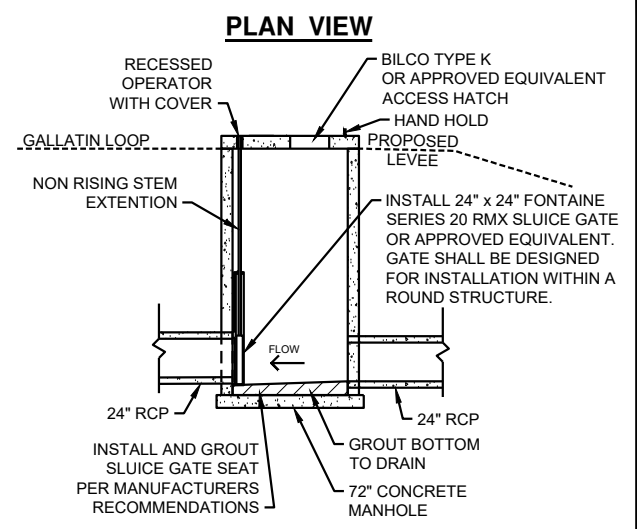
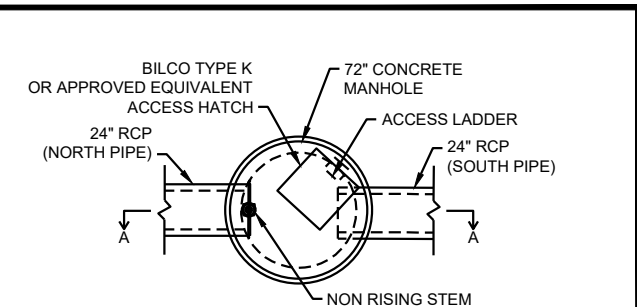
FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

EARTHEN LEVEE PLAN & PROFILE  
 PROJECT NO. 6025-006

SHEET  
 PP-23

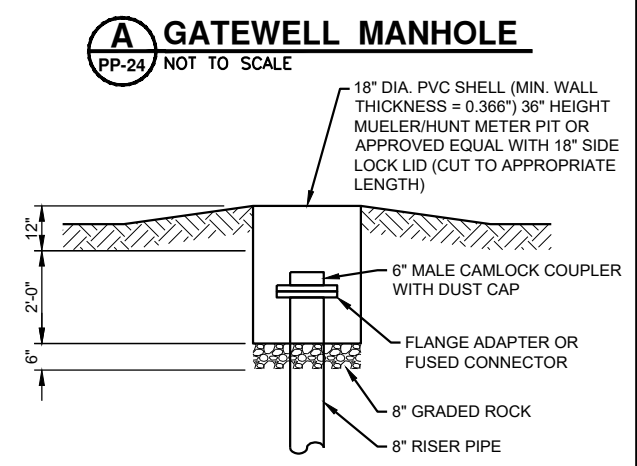
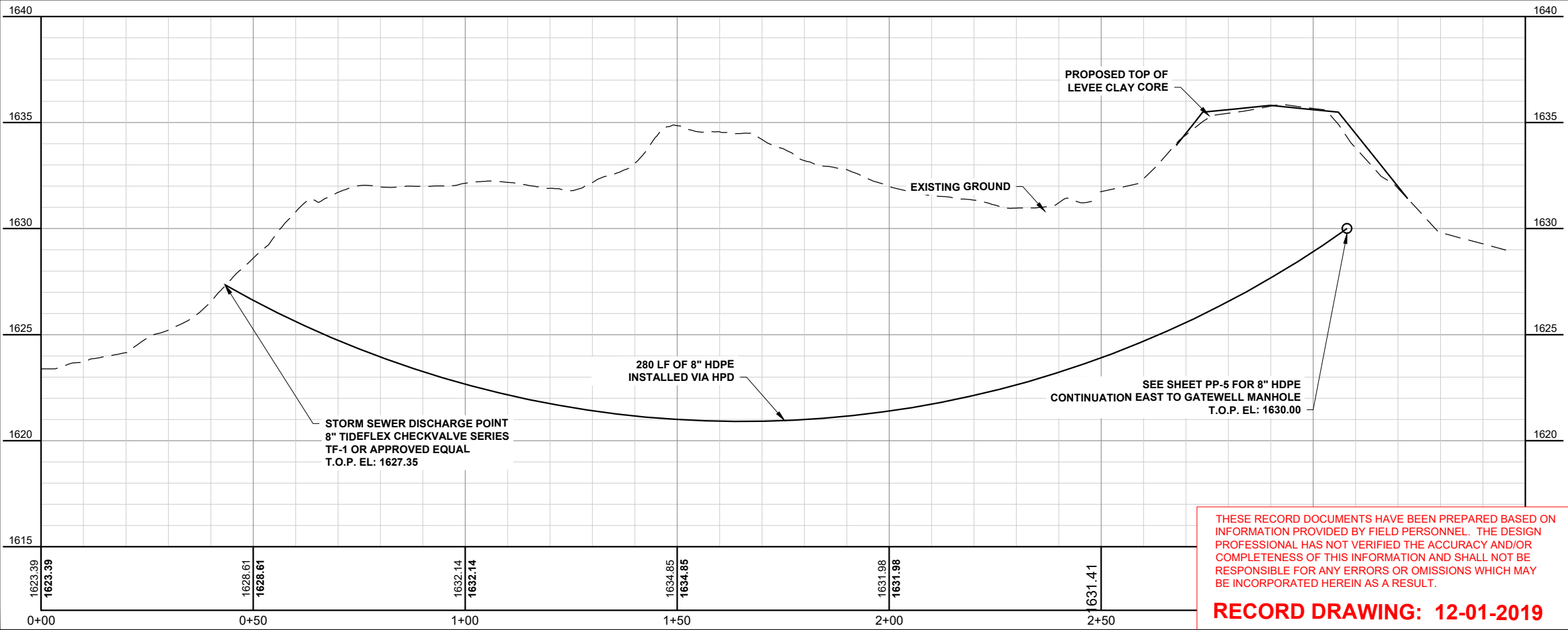


- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. APPROACH TIE IN TO BE DETERMINED BY ENGINEER IN THE FIELD.
  3. CONTRACTOR SHALL HYDROVAC TO LOCATE EXISTING WATER LINE AND CONFIRM DEPTH. WATER LINE SHALL BE PROTECTED FROM DAMAGE.
  4. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE.
  5. APPROACHES SHALL CONFORM TO BURLEIGH COUNTY CONSTRUCTION STANDARDS.



**NOTES:**  
 CONTRACTOR SHALL GRADE AROUND MANHOLE SO THAT STRUCTURE DOES NOT PROTRUDE FROM GROUND.

SLUICE GATE MOUNTING BOLTS SHALL BE A MIN. OF 5" FROM MANHOLE OPENING TO ENSURE PROPER EMBEDMENT IN STRUCTURE. MOUNTING BOLTS SHALL BE INSTALLED TO ALLOW REMOVAL OF GATE.



**B STORM DISCHARGE CONNECTION**  
 PP-24 NOT TO SCALE

**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

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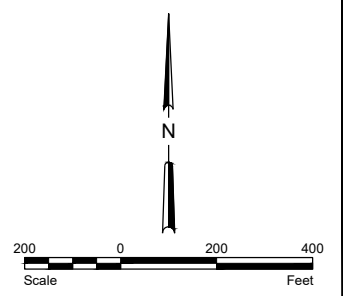
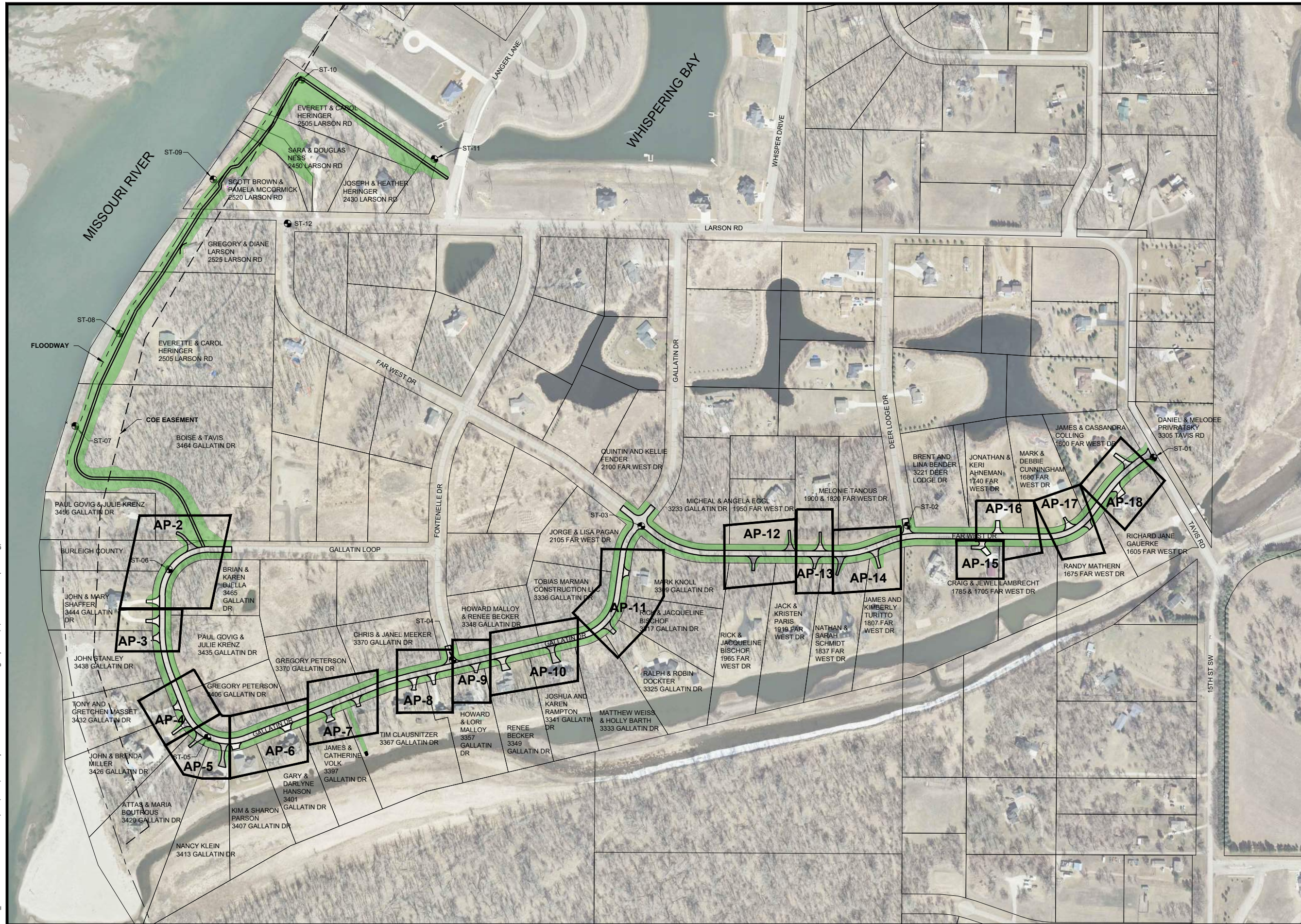
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**LEGEND**  
BORE LOCATION

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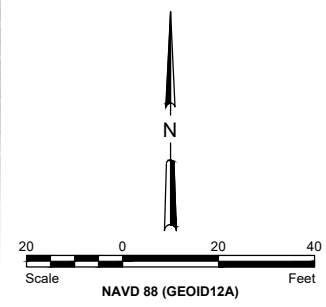
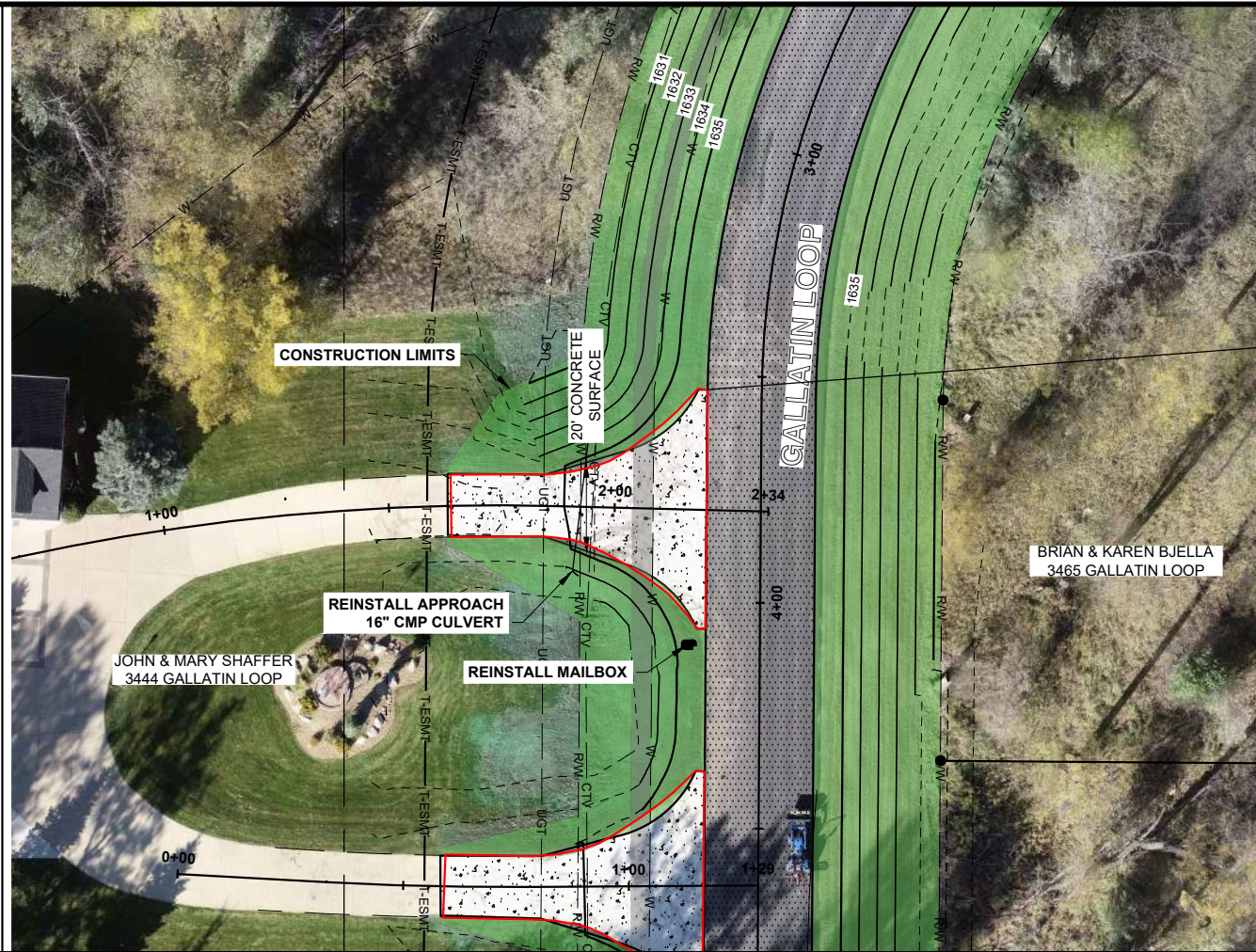
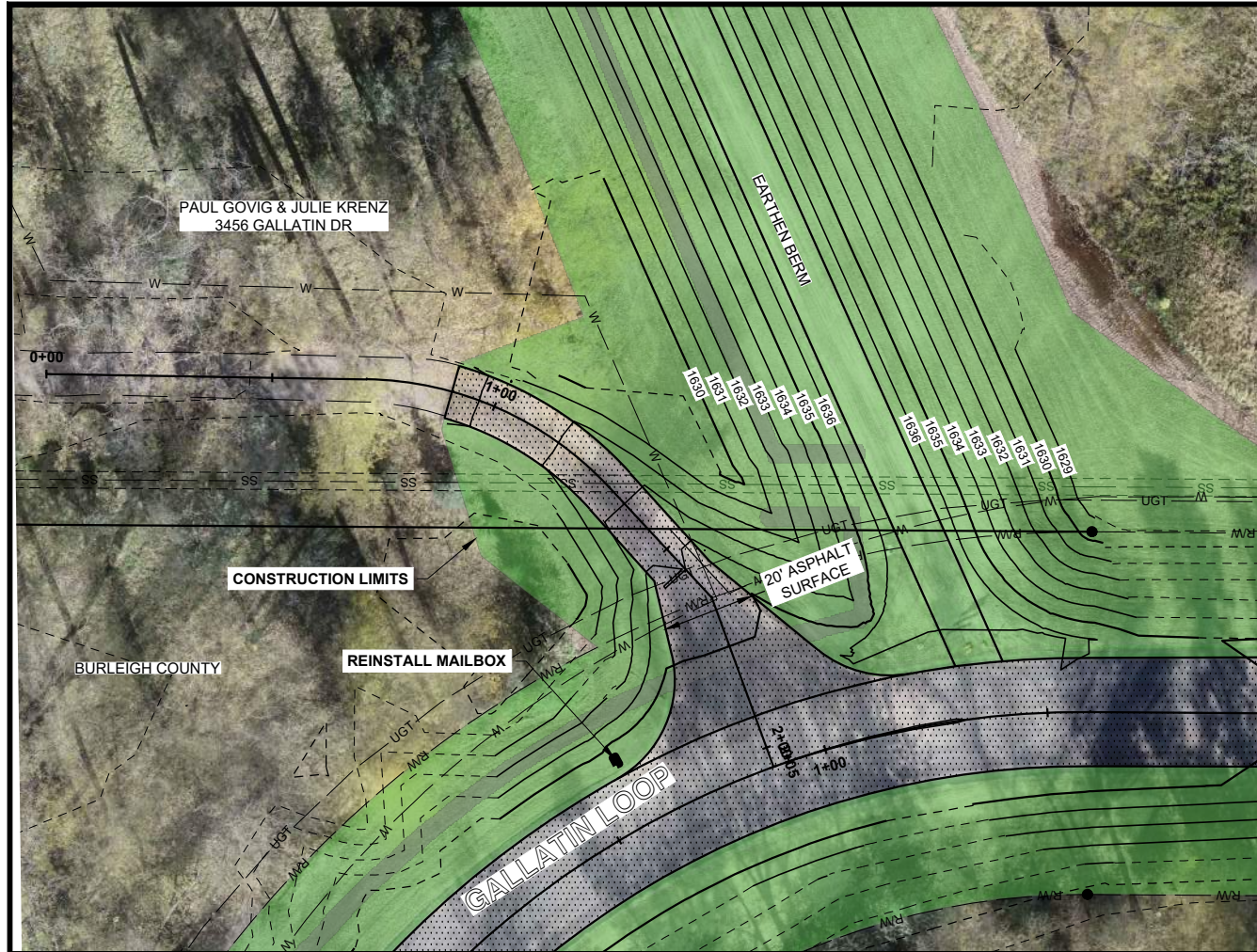


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**FOX ISLAND FLOOD CONTROL PROJECT**  
BURLEIGH COUNTY WATER RESOURCE DISTRICT  
BURLEIGH COUNTY, NORTH DAKOTA

**APPROACHES OVERVIEW**  
PROJECT NO. 6025-006

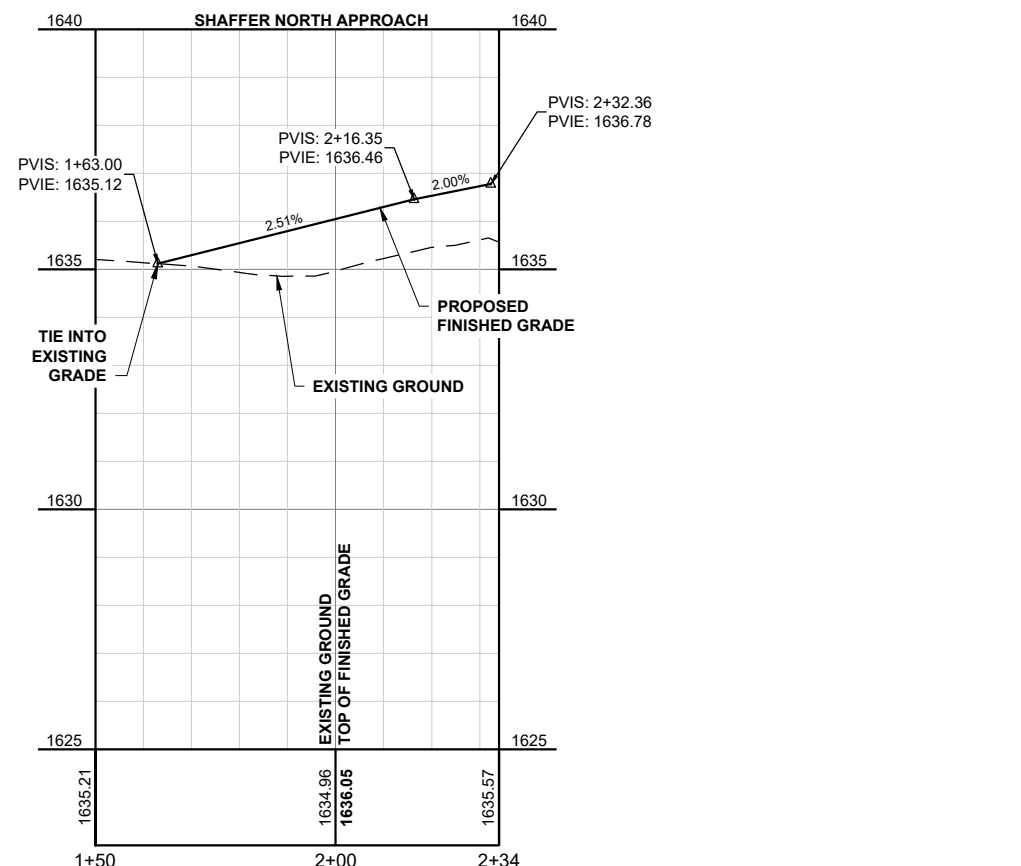
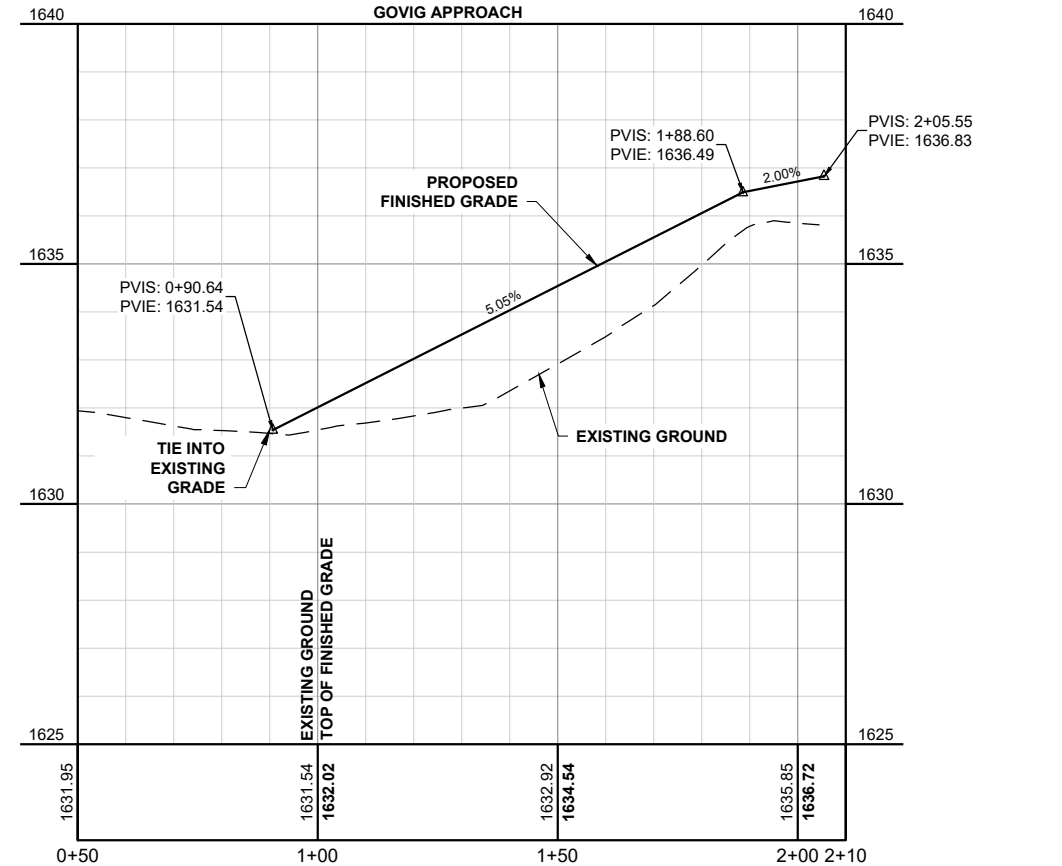
SHEET  
AP-1



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE
  3. APPROACHES SHALL CONFORM TO BURLEIGH COUNTY CONSTRUCTION STANDARDS



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No.	Revision	Date	By
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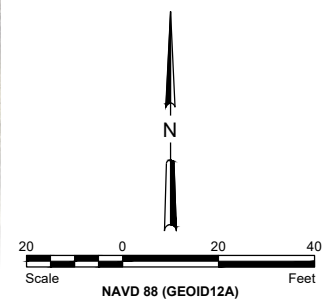
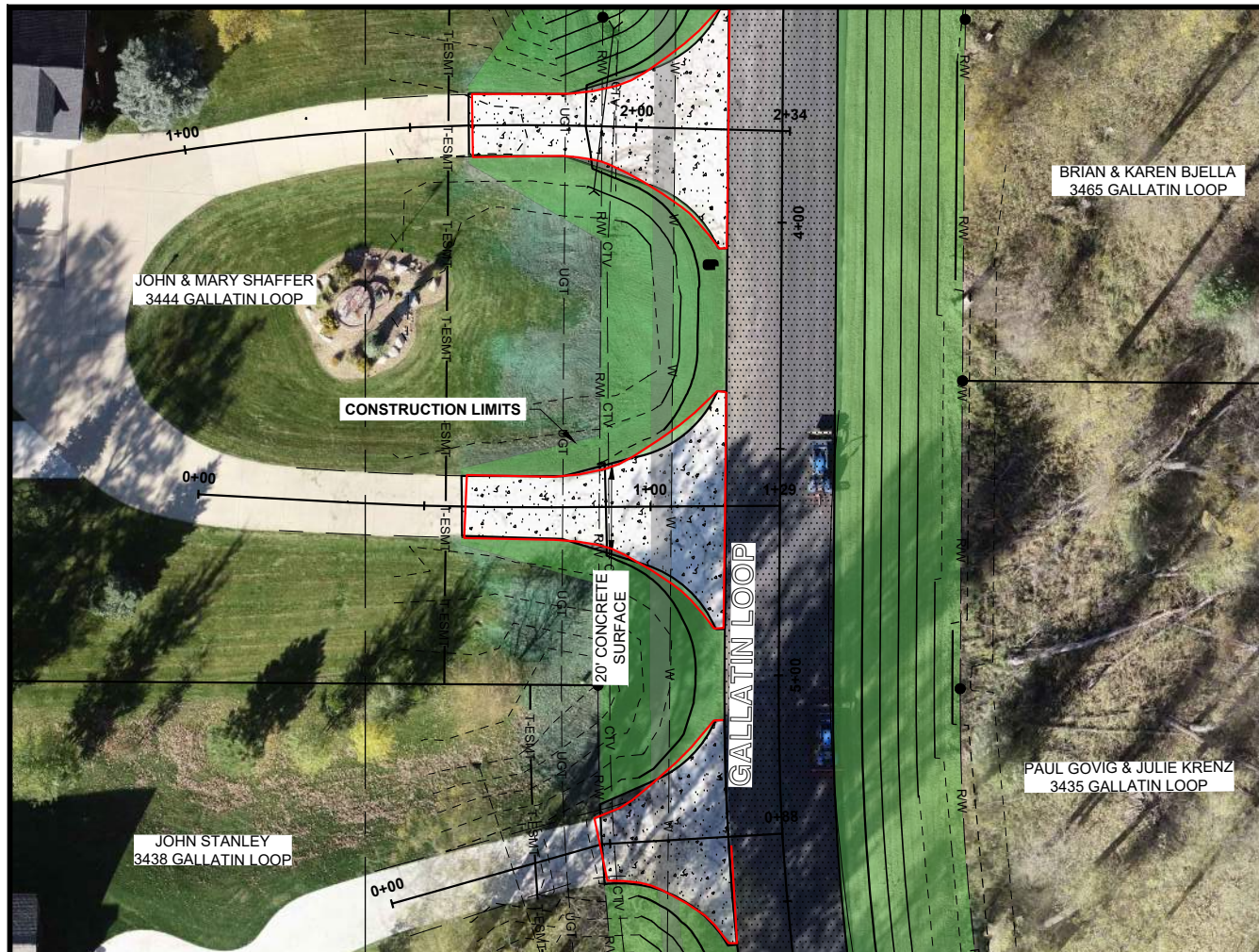
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FOX ISLAND FLOOD CONTROL PROJECT  
BURLEIGH COUNTY WATER RESOURCE DISTRICT  
BURLEIGH COUNTY, NORTH DAKOTA

GOVIG & NORTH SHAFER APPROACHES  
PROJECT NO. 6025-006

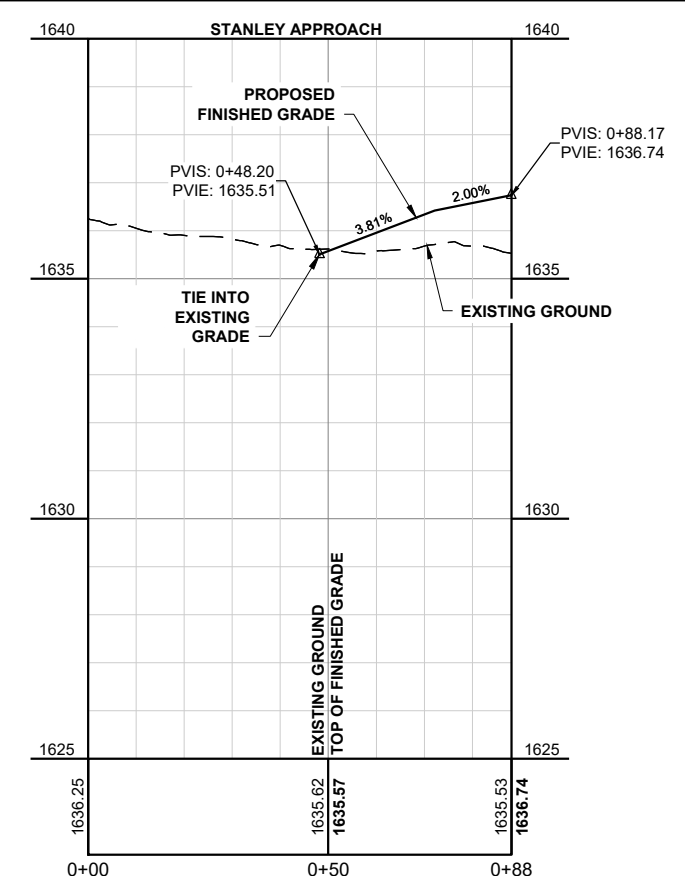
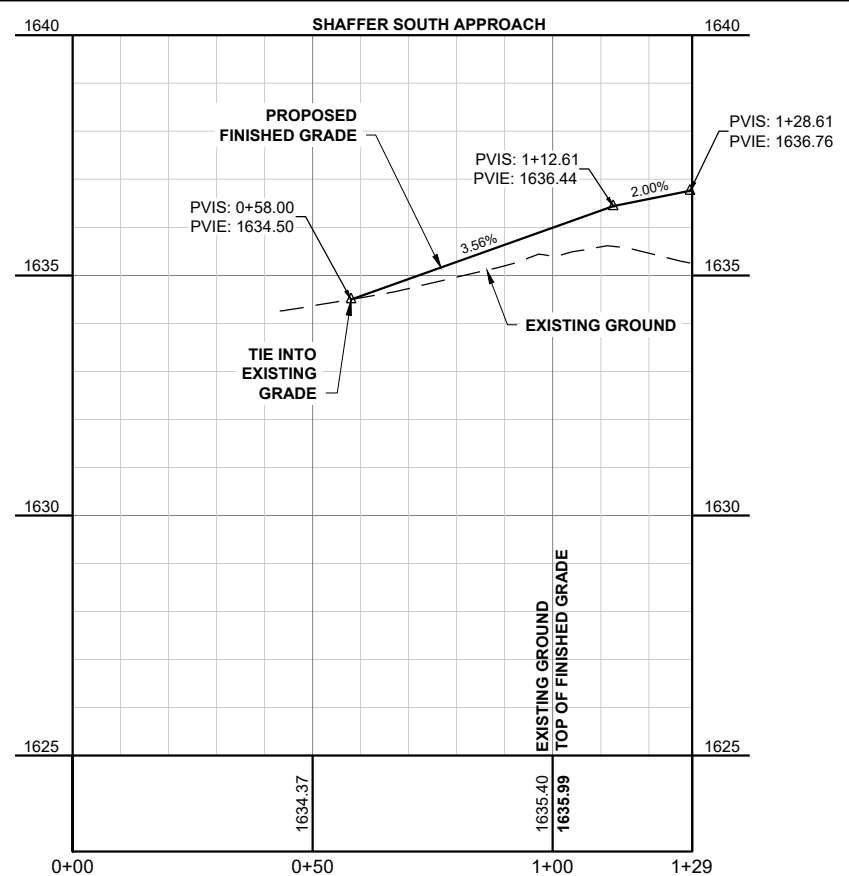
SHEET AP-2



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
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  2. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE
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No.	Revision	Date	By
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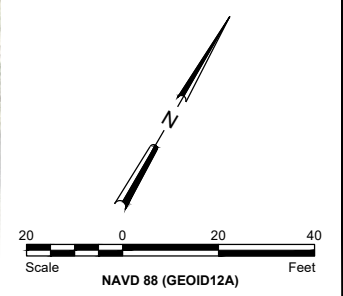
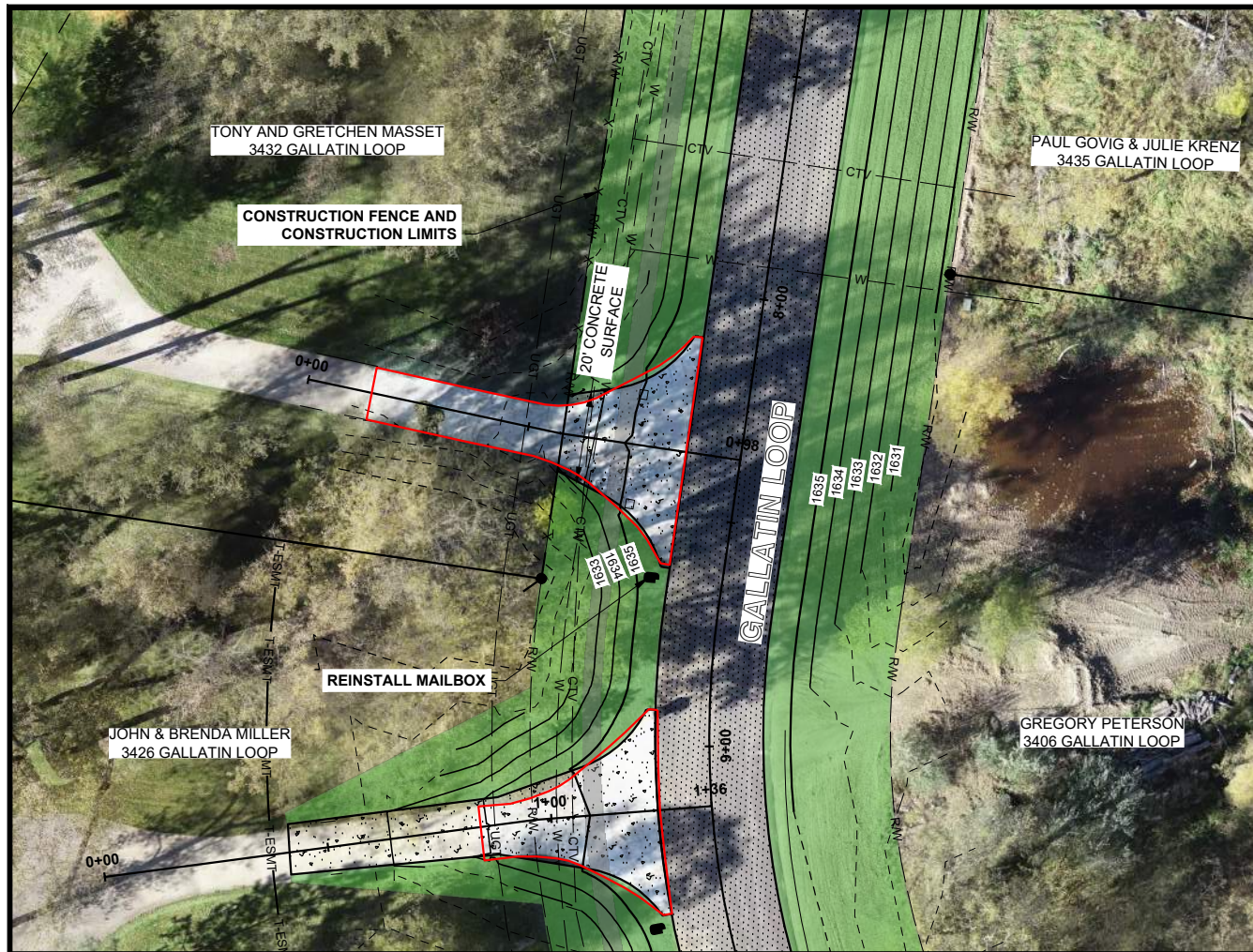


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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

SOUTH SHAFER & STANLEY APPROACHES  
 PROJECT NO. 6025-006

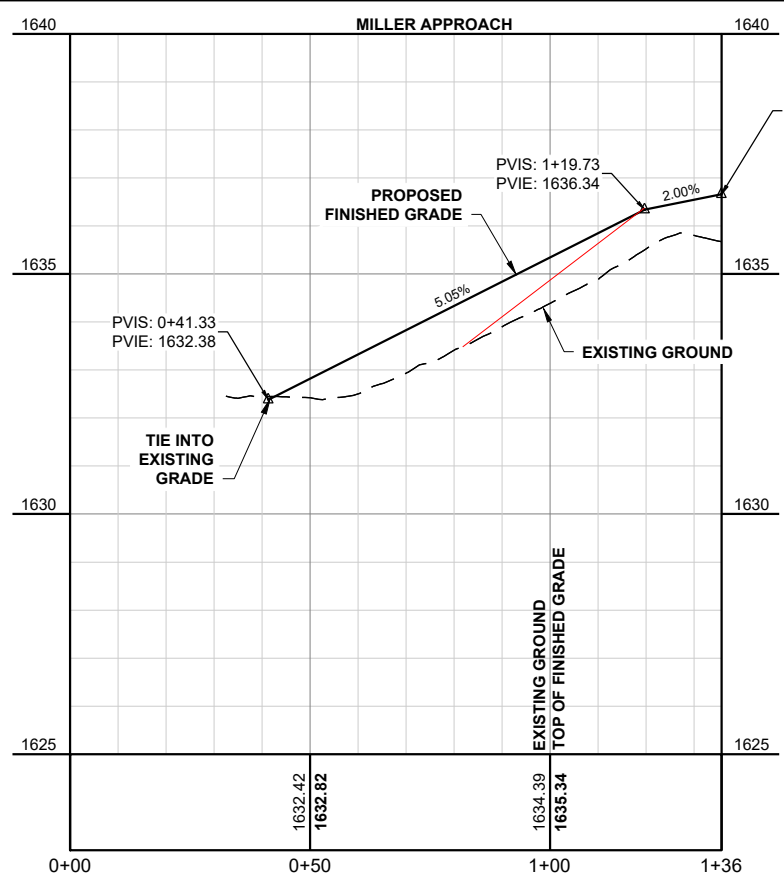
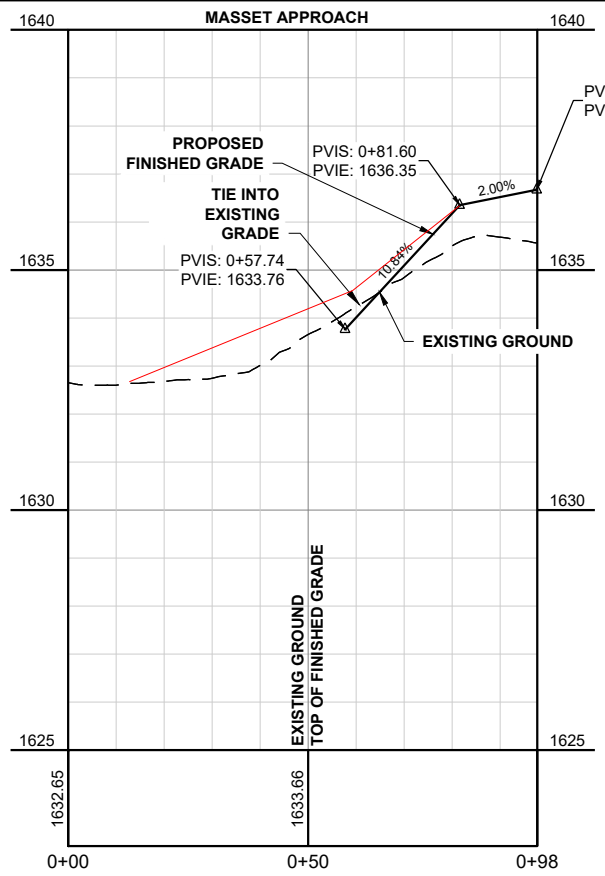
SHEET AP-3



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
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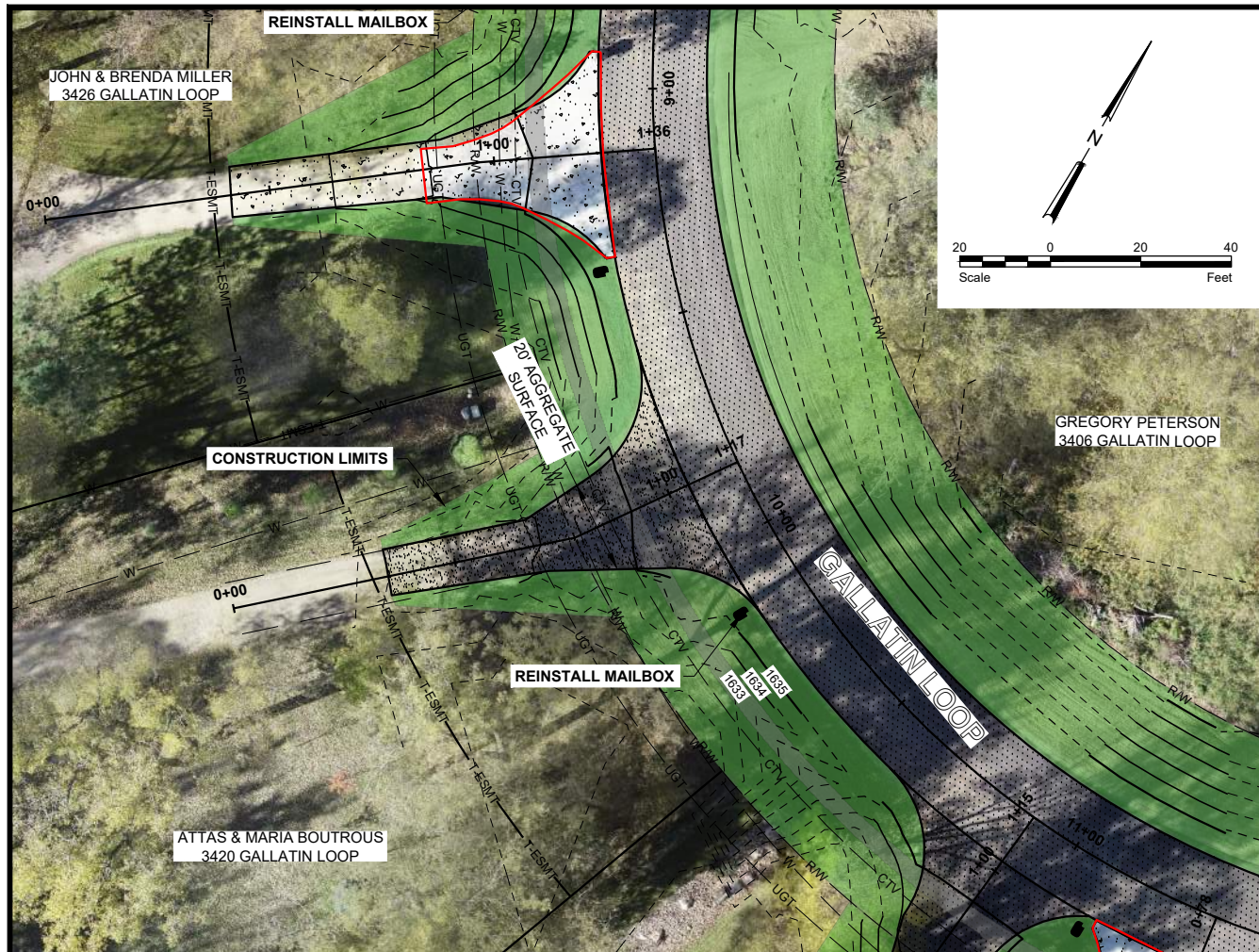


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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

MASSET & MILLER APPROACHES  
 PROJECT NO. 6025-006

SHEET AP-4



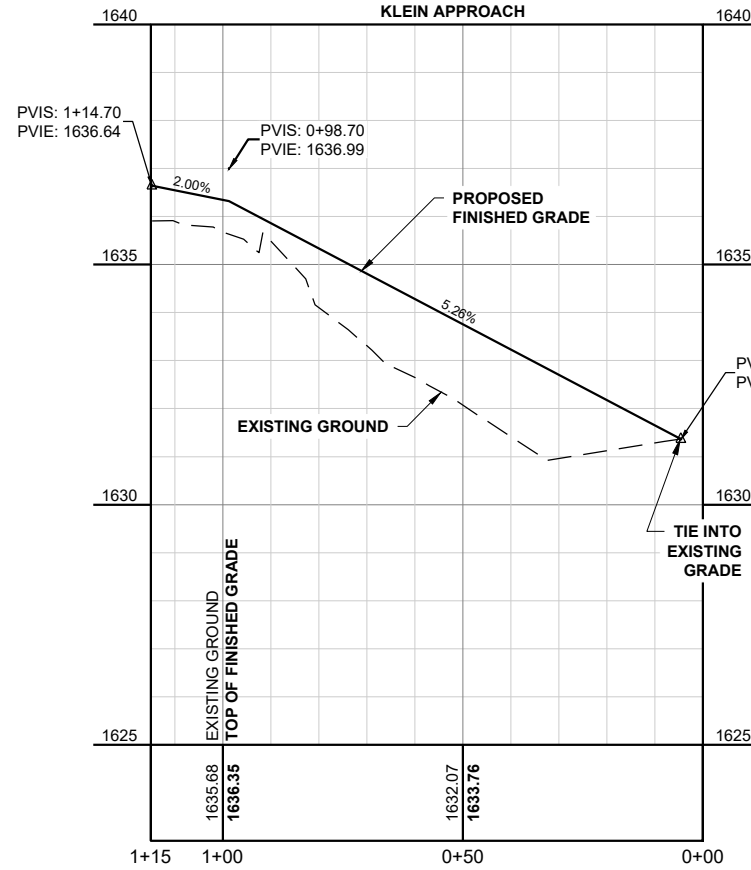
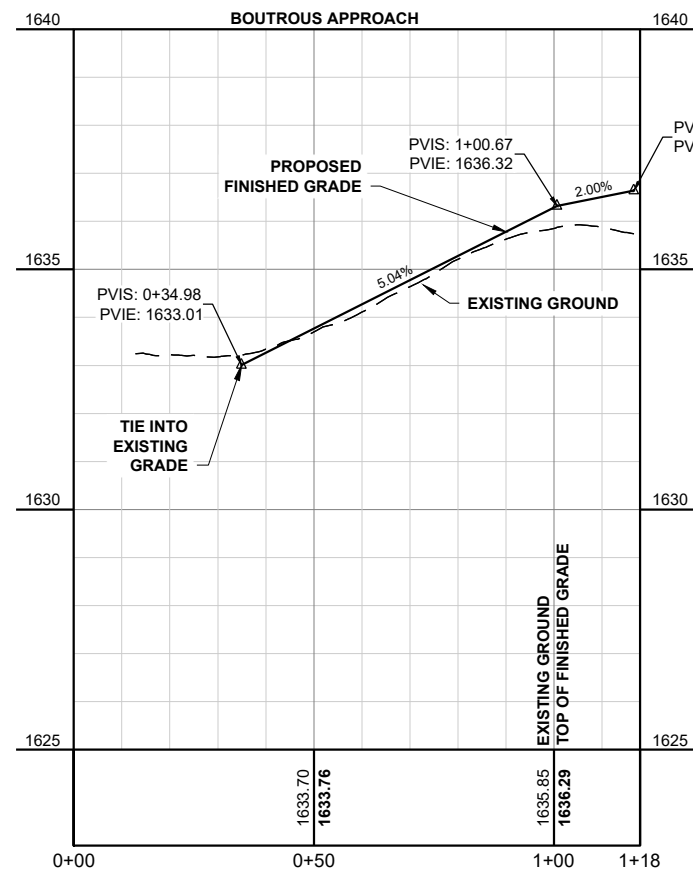
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**LEGEND**

- SEEDING
- INSPECTION TRENCH
- AGGREGATE SURFACE
- ASPHALT SURFACE
- CONCRETE SURFACE

**GENERAL SHEET NOTES**

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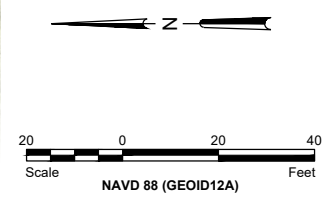


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 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

**BOUTROUS & KLEIN  
 APPROACHES**  
 PROJECT NO. 6025-006

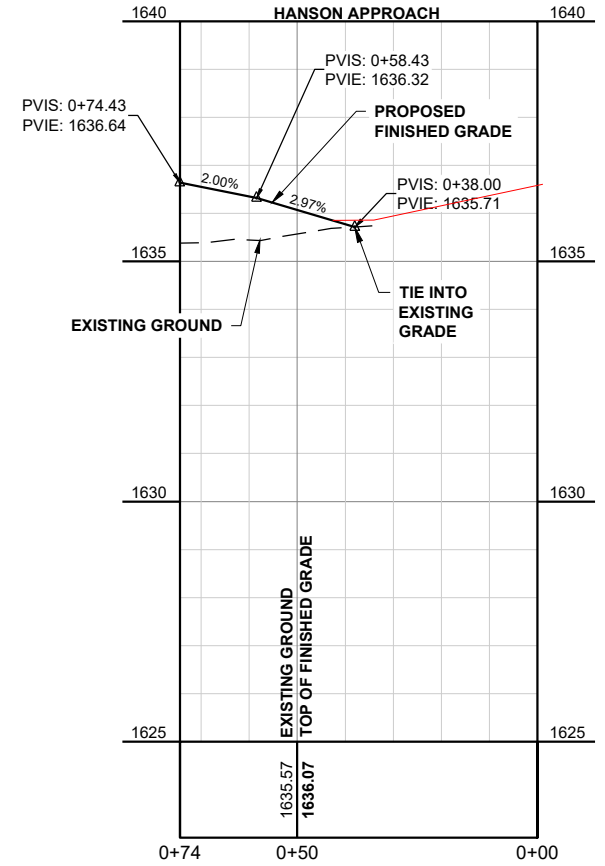
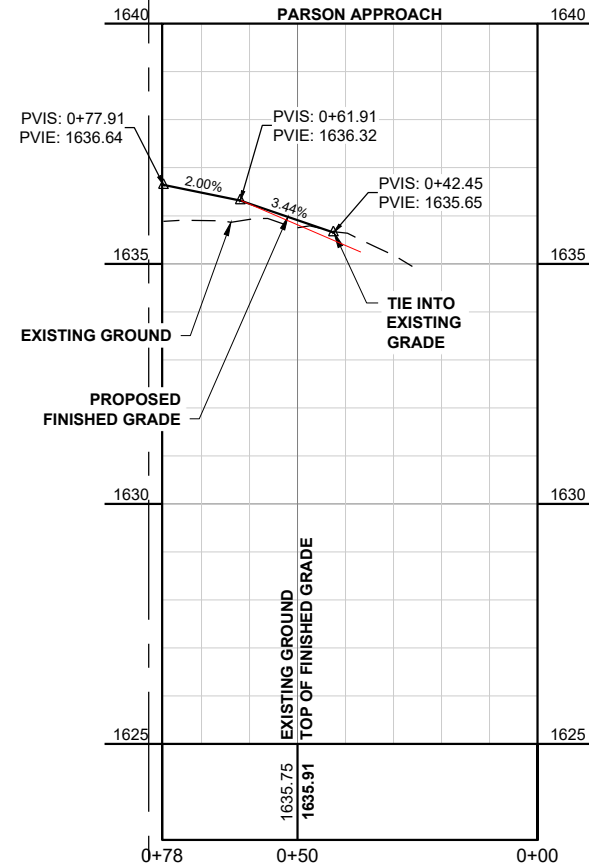
SHEET  
 AP-5



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
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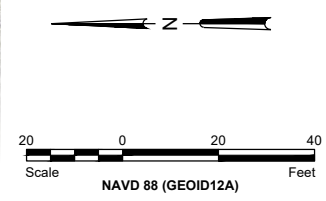
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 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

**PARSON & HANSON  
 APPROACHES**  
 PROJECT NO. 6025-006

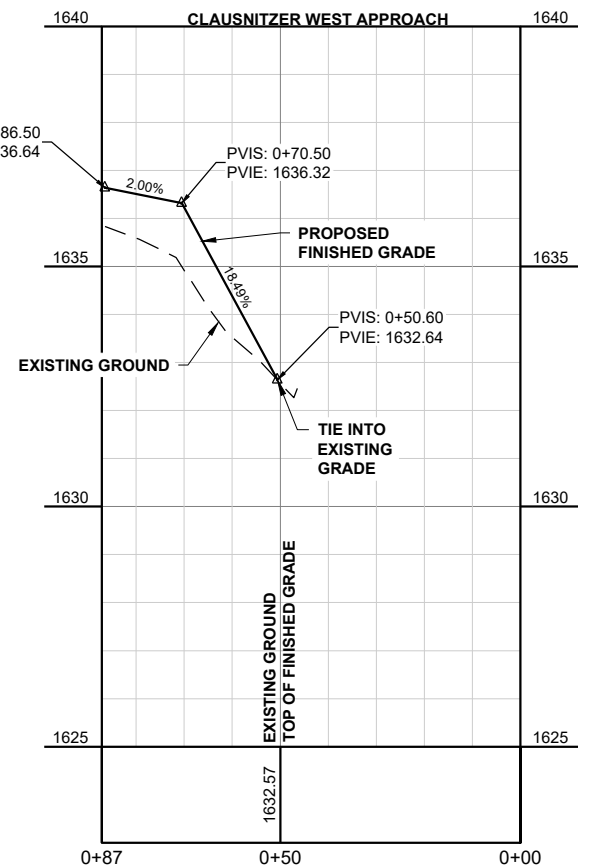
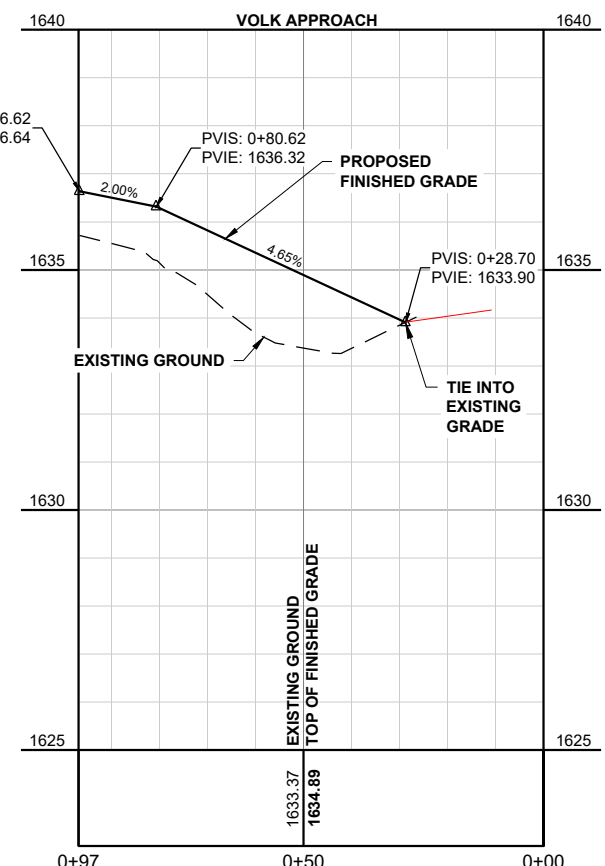
SHEET  
 AP-6



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
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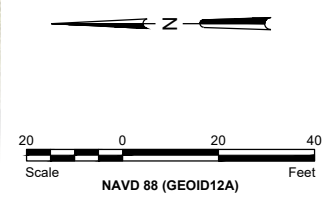
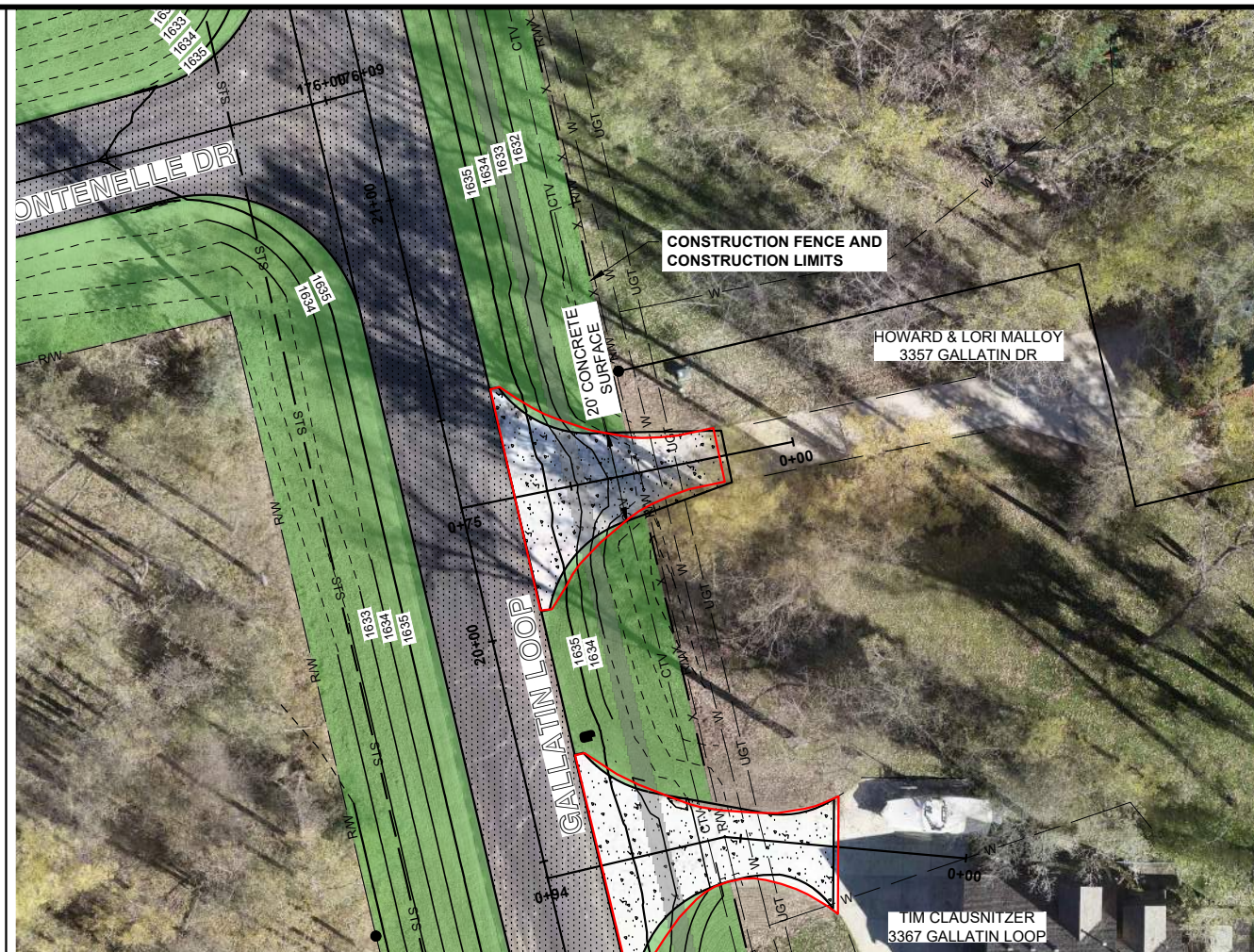
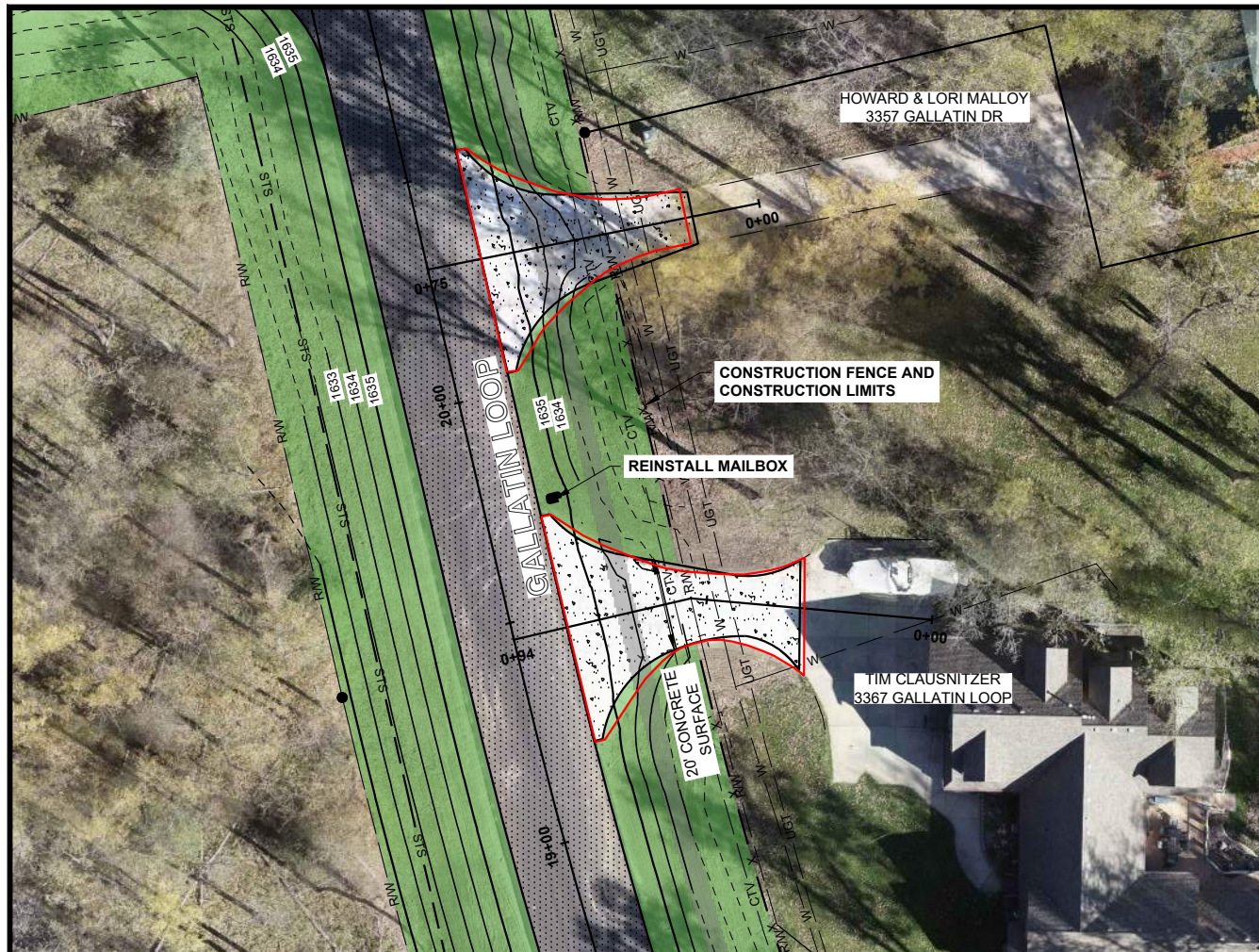


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 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

VOLK & WEST CLAUSNITZER APPROACHES  
 PROJECT NO. 6025-006  
 SHEET AP-7

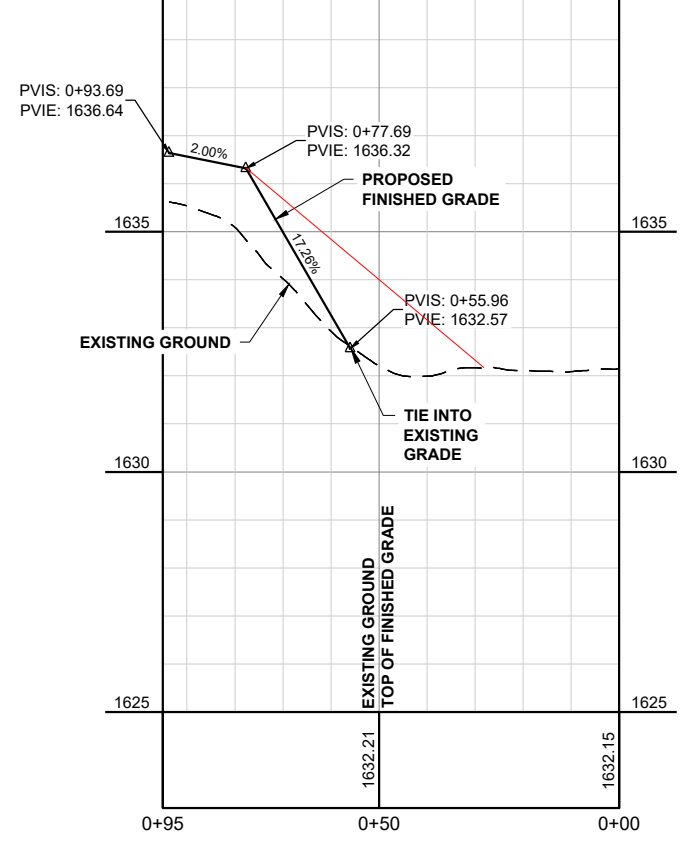


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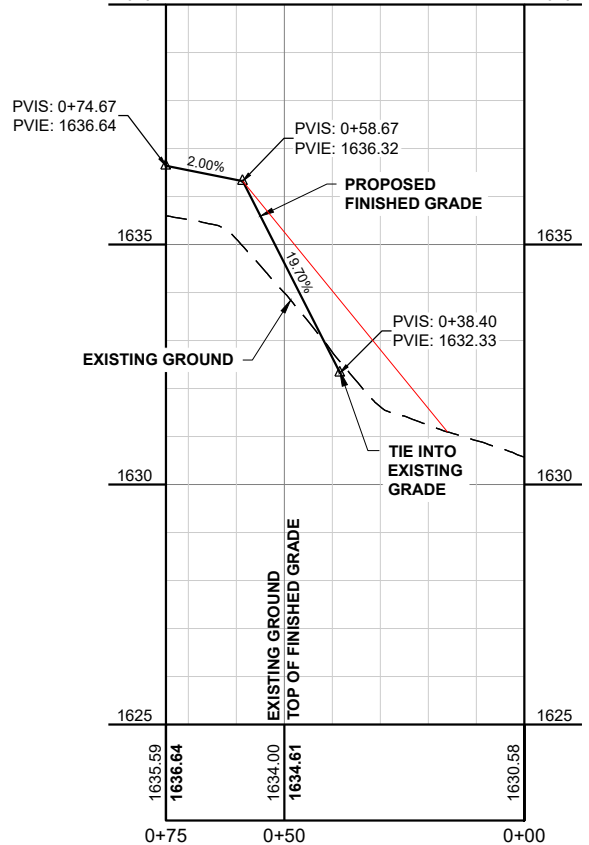
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INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
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1640 CLAUSNITZER EAST APPROACH 1640



1640 MALLOY WEST APPROACH 1640



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No.	Revision	Date	By
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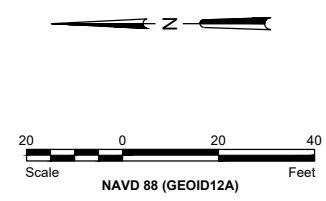
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

EAST CLAUSNITZER & WEST MALLOY APPROACHES  
 PROJECT NO. 6025-006

SHEET AP-8

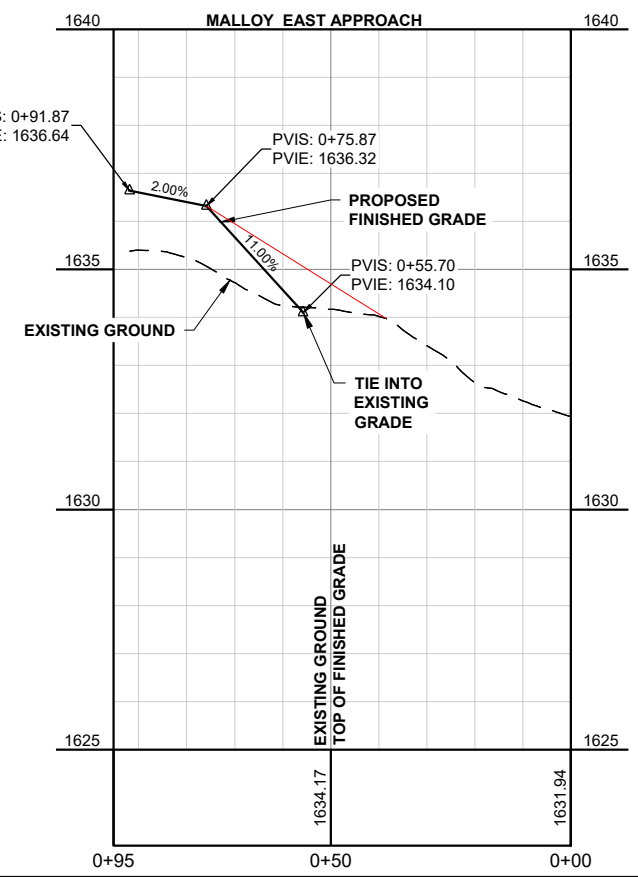




**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
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No.	Revision	Date	By
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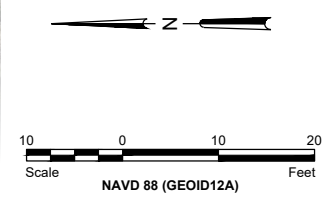
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

EAST MALLOY APPROACH  
 PROJECT NO. 6025-006

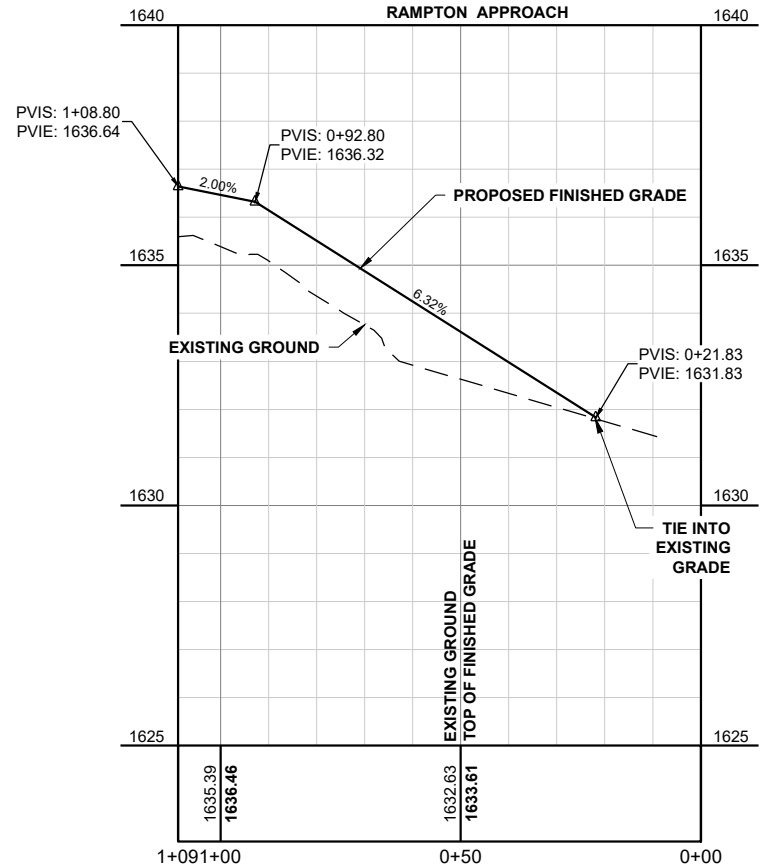
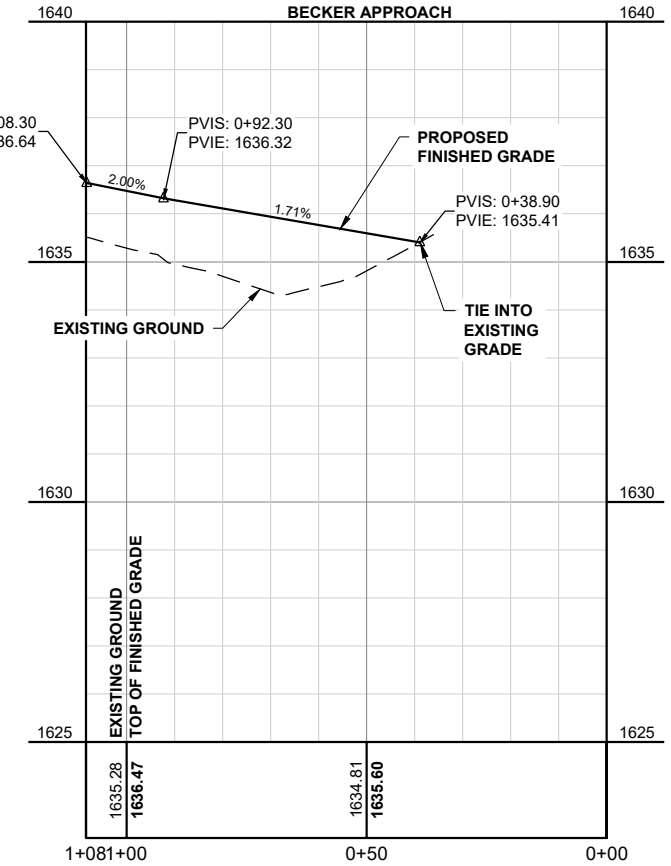
SHEET  
 AP-9



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
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No.	Revision	Date	By
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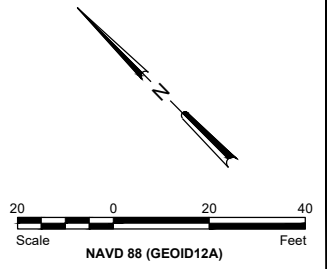
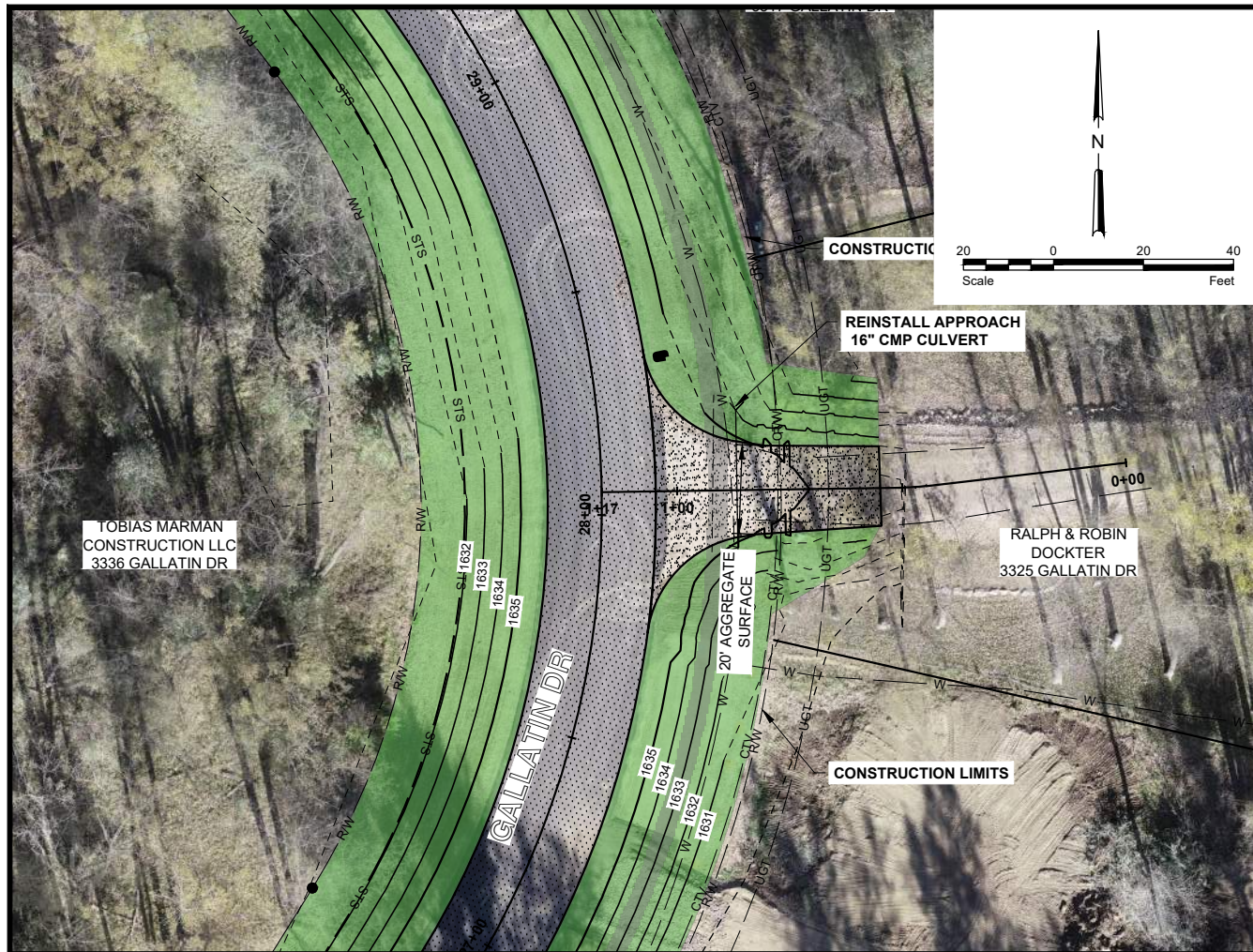
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

**BECKER & RAMPTON  
 APPROACHES**  
 PROJECT NO. 6025-006

SHEET  
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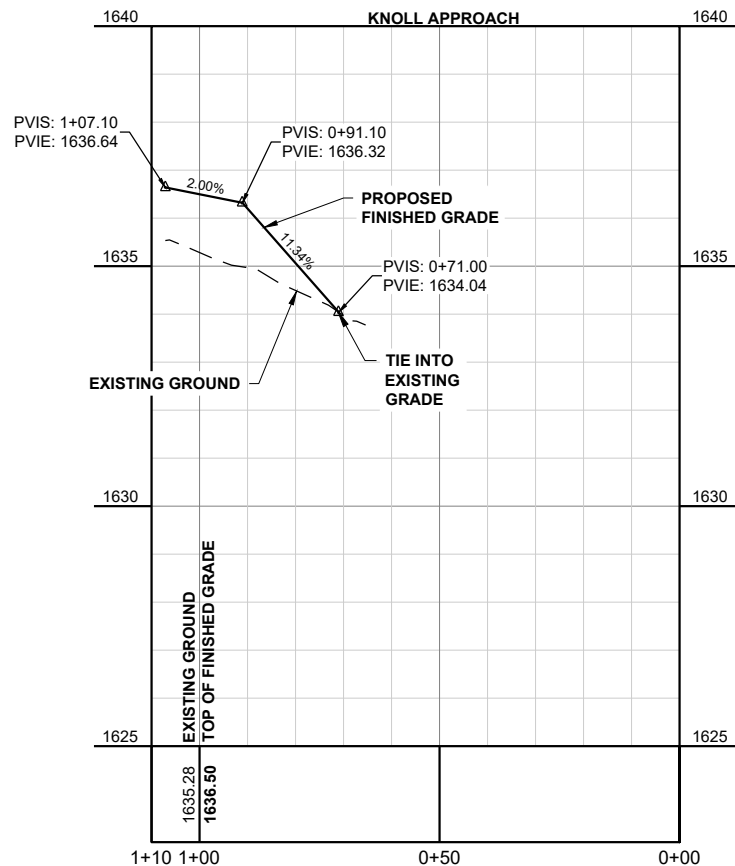
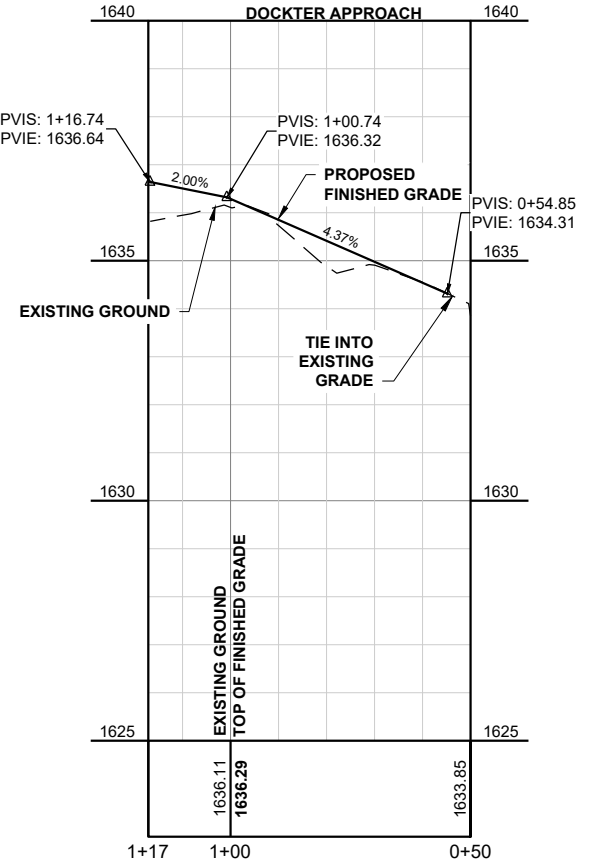
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**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE
  3. APPROACHES SHALL CONFORM TO BURLEIGH COUNTY CONSTRUCTION STANDARDS



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1	CHANGE ORDER #1	11-13-18	EM/JP



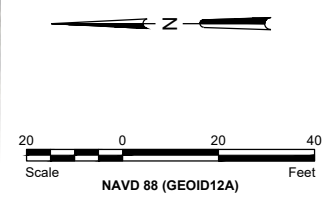
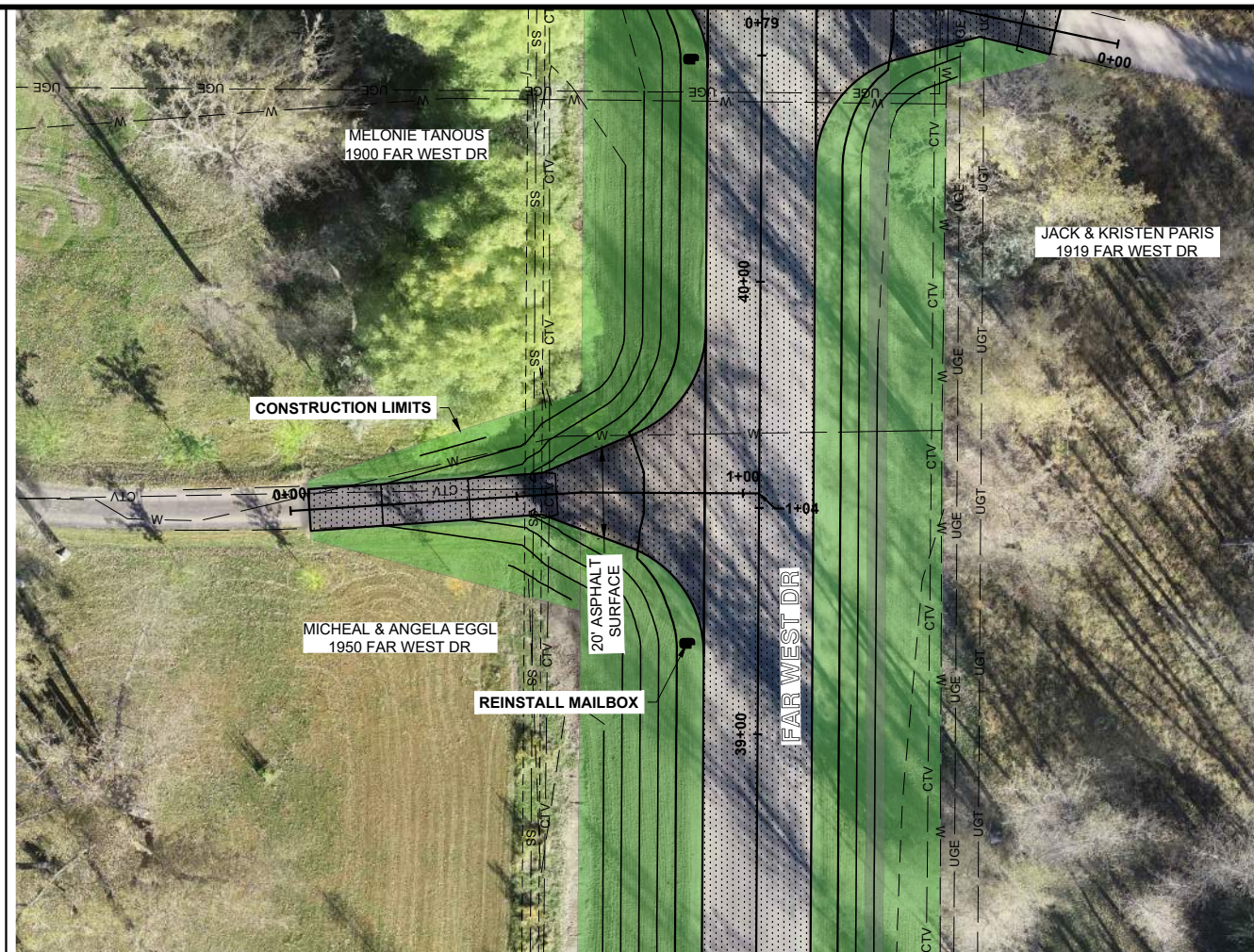
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P: 701.323.0200 F: 701.323.0300	Checked by TGJ	Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

DOCKTER & KNOLL APPROACHES  
 PROJECT NO. 6025-006

SHEET AP-11

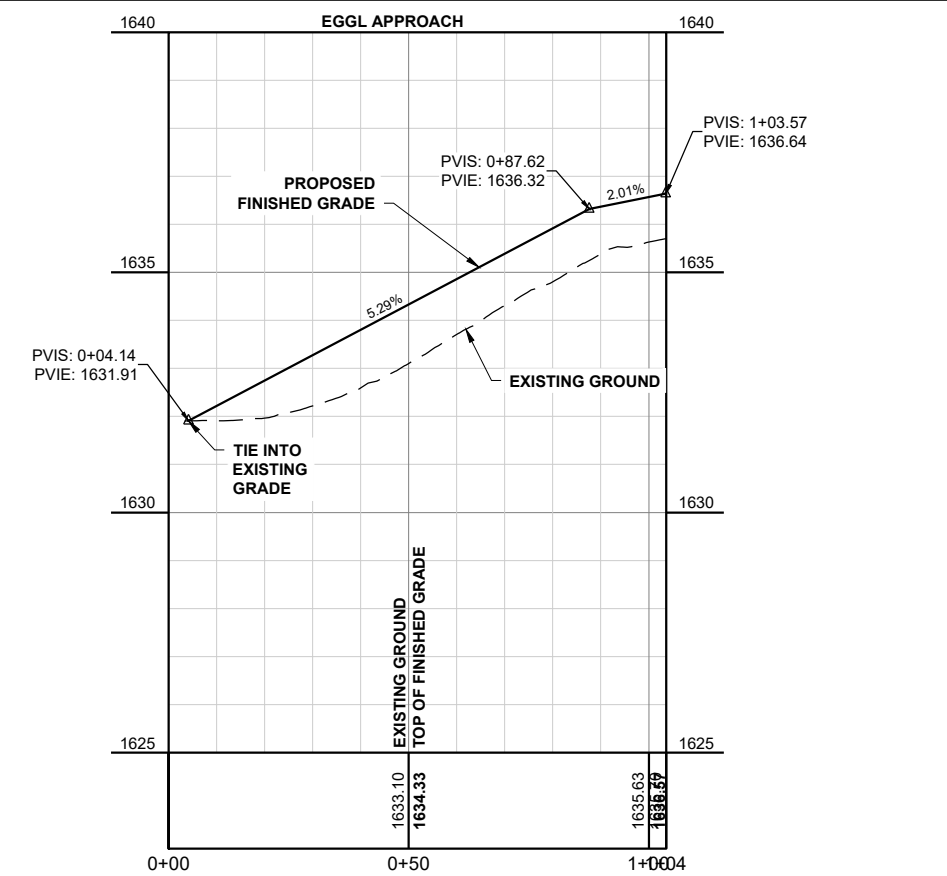
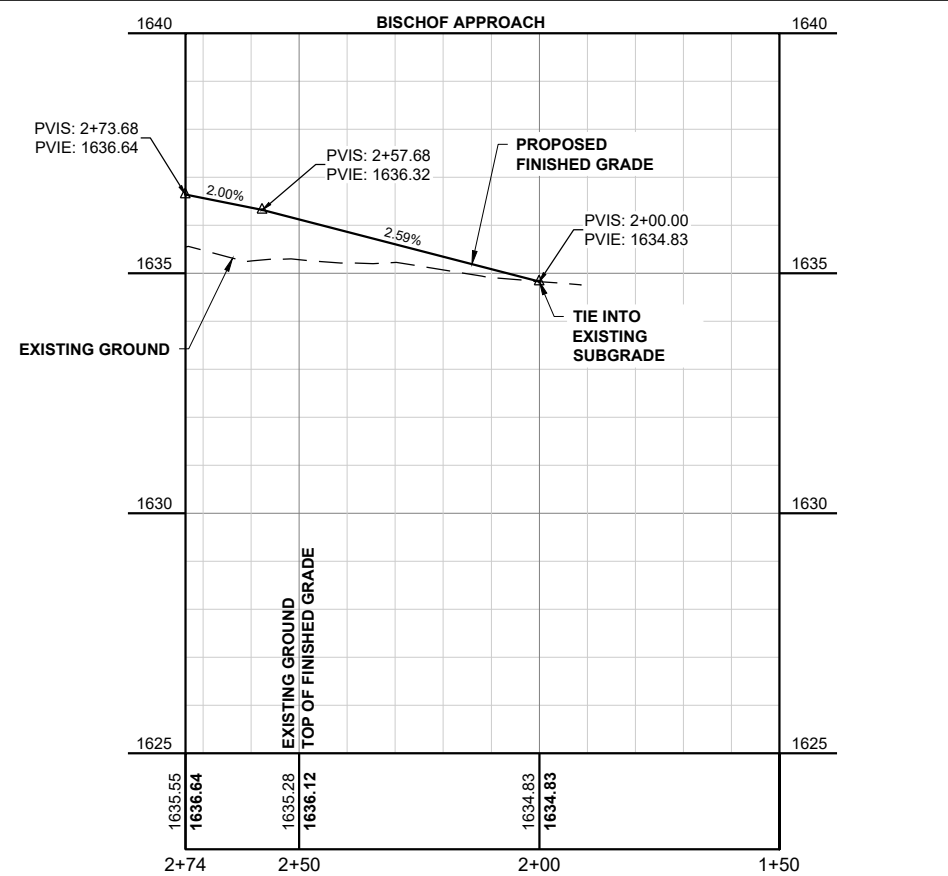
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**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE
  3. APPROACHES SHALL CONFORM TO BURLEIGH COUNTY CONSTRUCTION STANDARDS

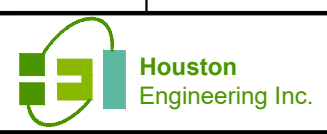


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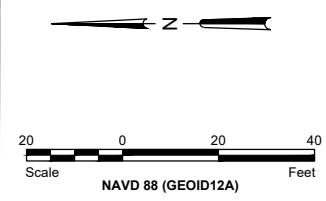
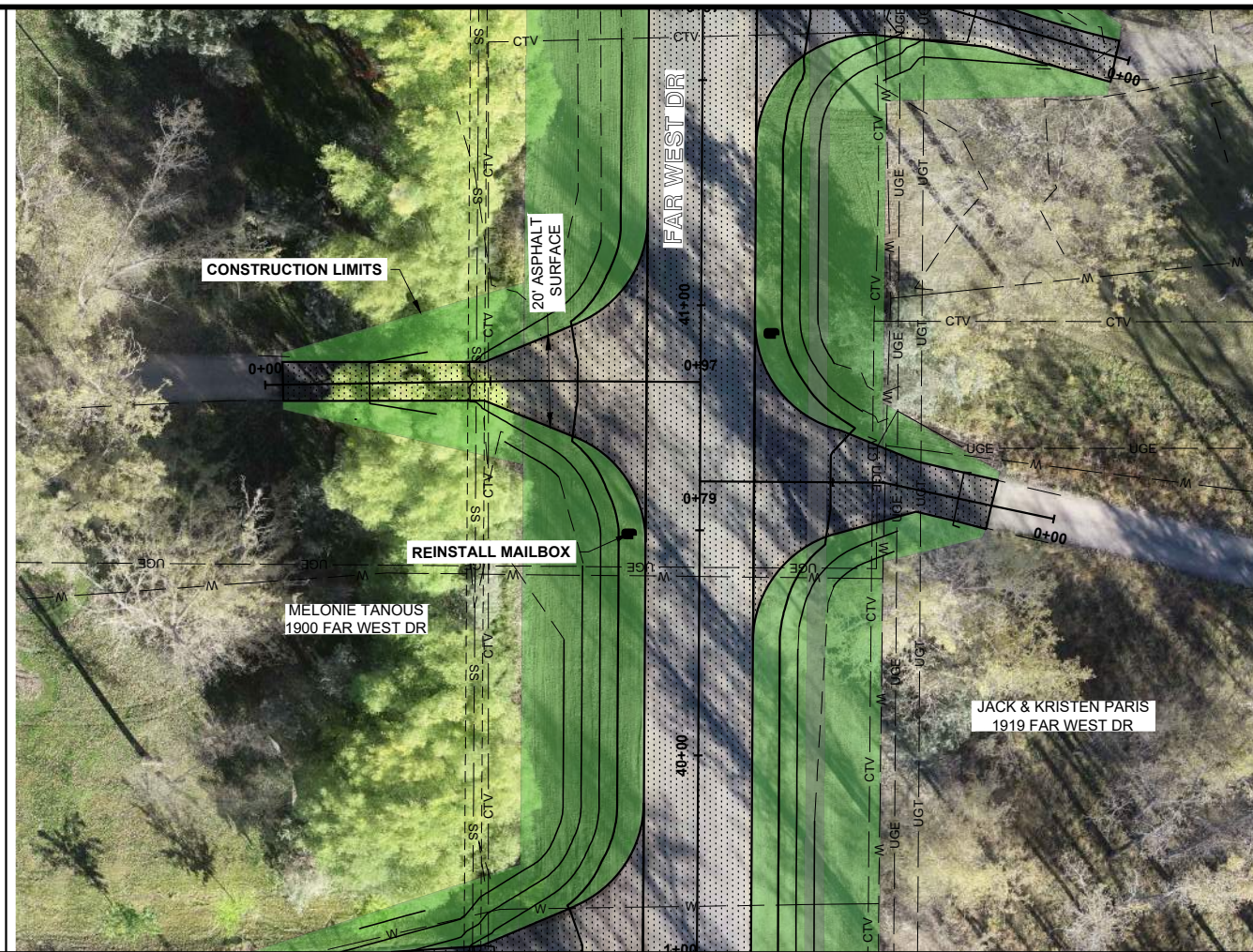
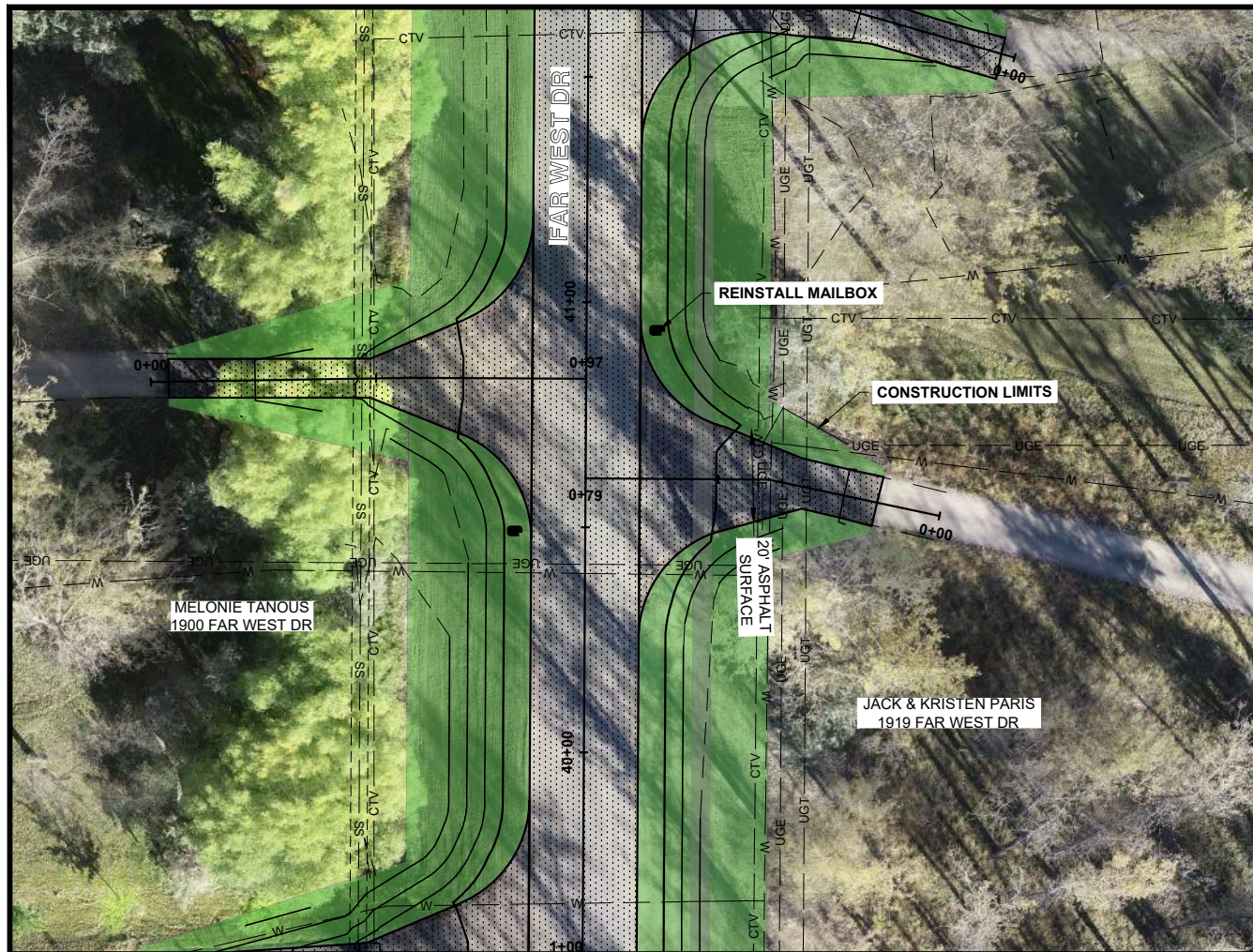
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

BISCHOF & EGGL  
 APPROACHES  
 PROJECT NO. 6025-006

SHEET  
 AP-12

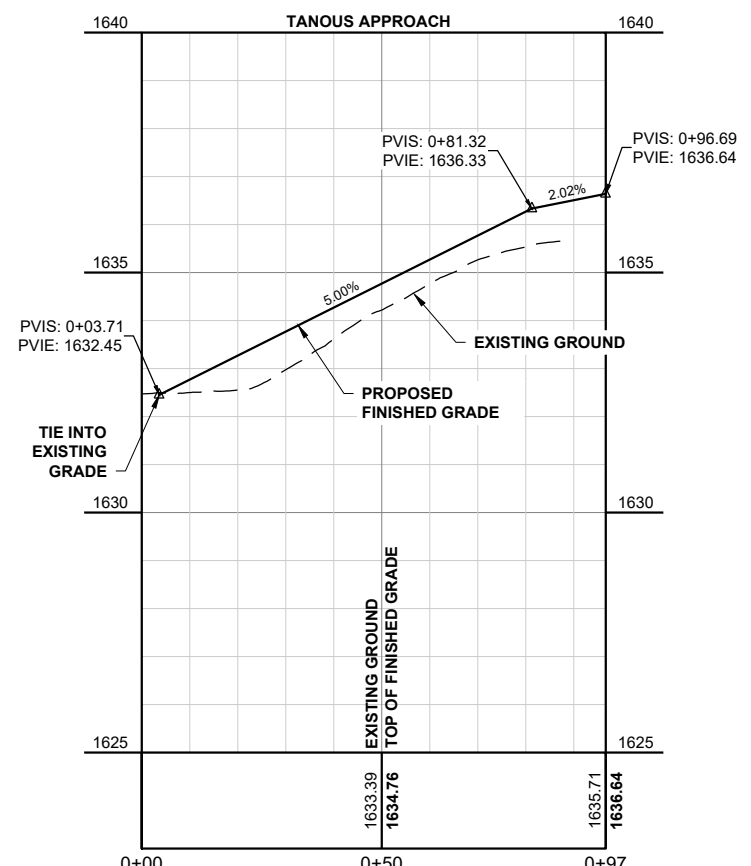
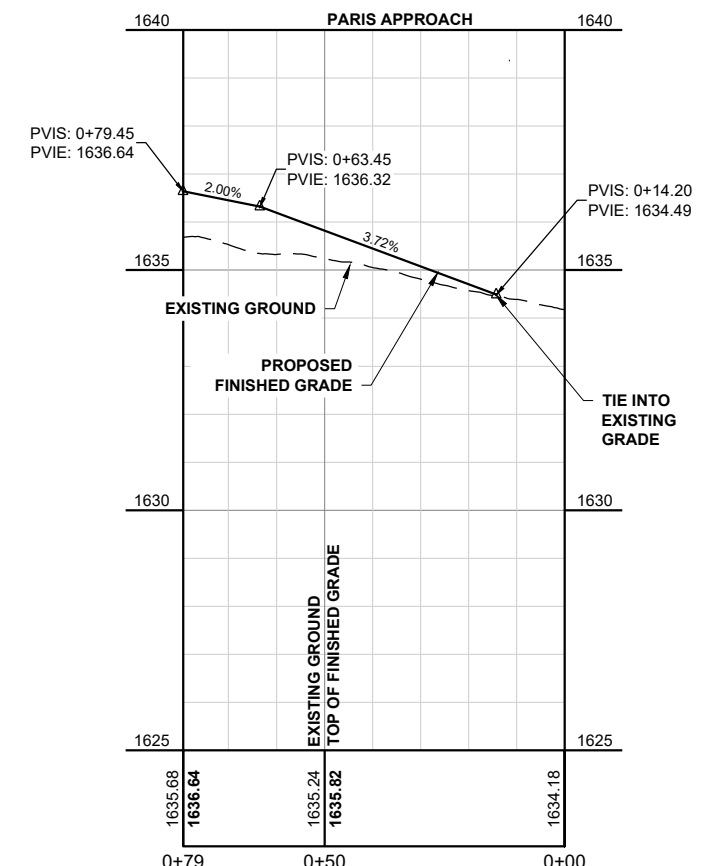
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**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE
  3. APPROACHES SHALL CONFORM TO BURLEIGH COUNTY CONSTRUCTION STANDARDS

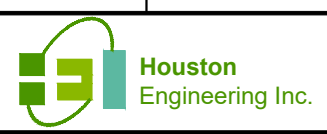


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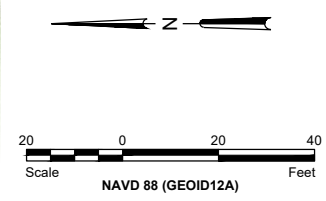
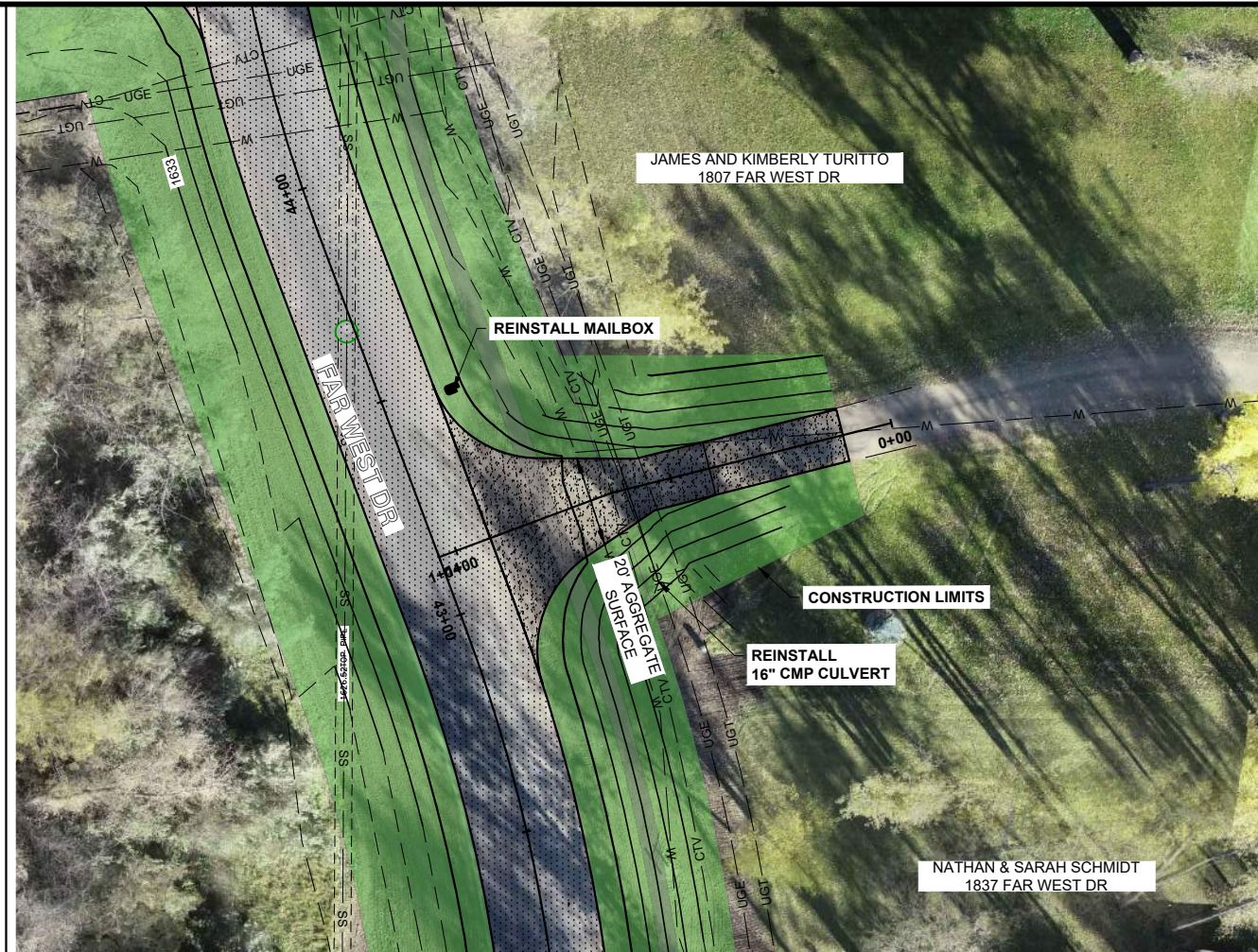
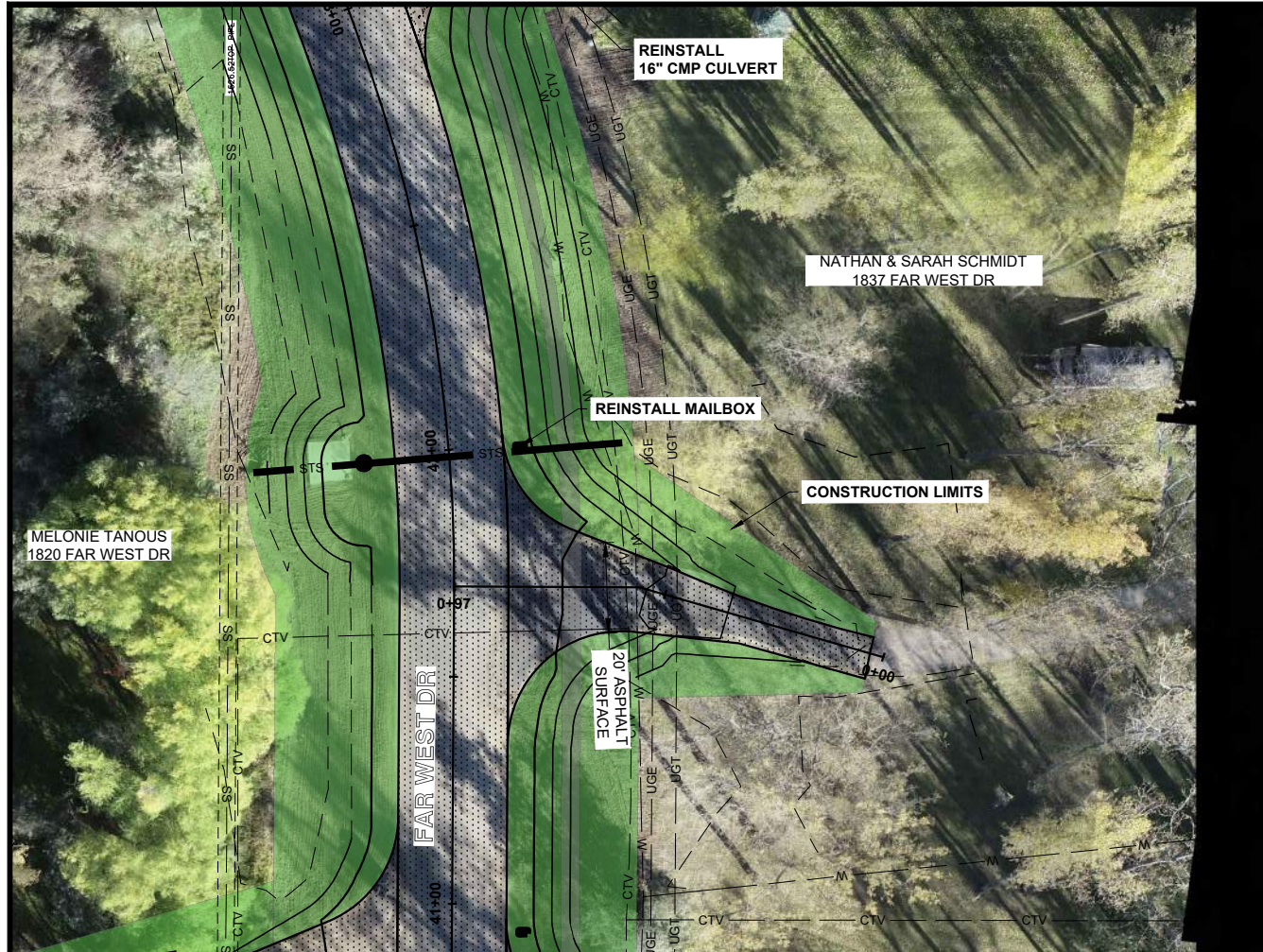


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FOX ISLAND FLOOD CONTROL PROJECT  
BURLEIGH COUNTY WATER RESOURCE DISTRICT  
BURLEIGH COUNTY, NORTH DAKOTA

PARIS & TANOUS APPROACHES  
PROJECT NO. 6025-006

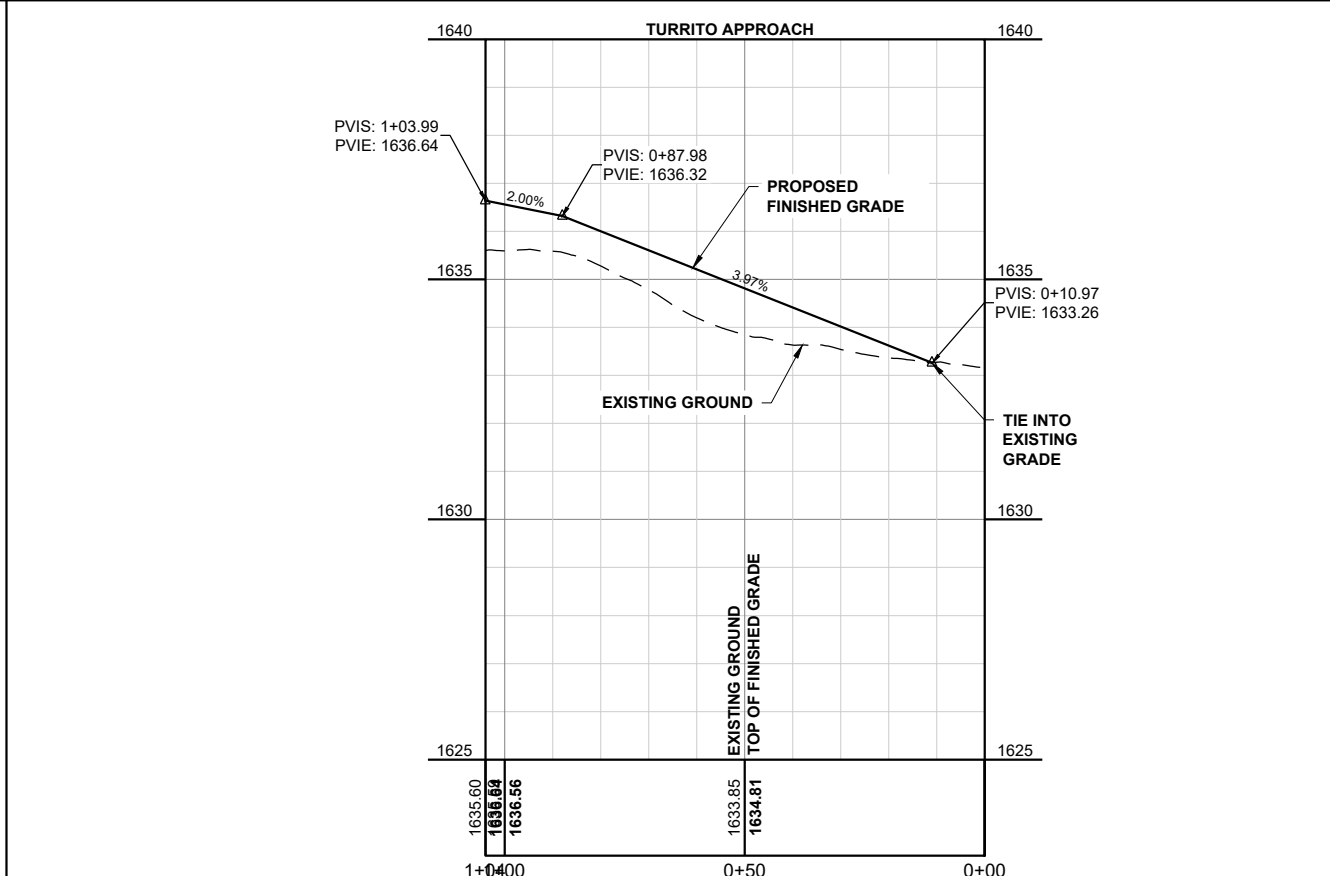
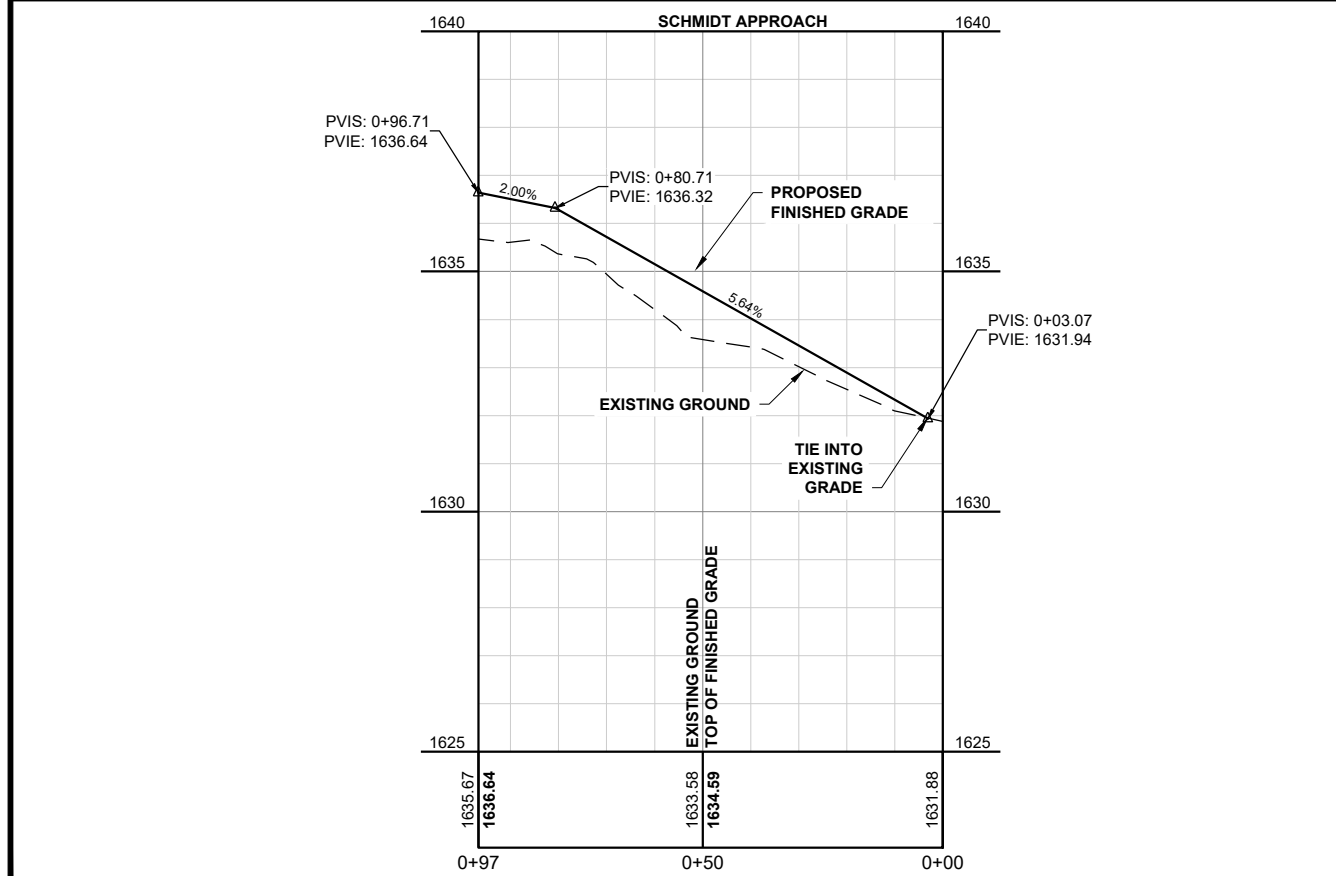
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**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE
  3. APPROACHES SHALL CONFORM TO BURLEIGH COUNTY CONSTRUCTION STANDARDS



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No.	Revision	Date	By



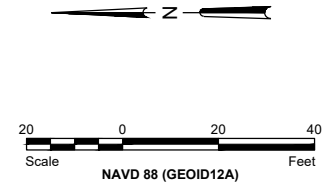
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

SCHMIDT & TURITTO APPROACHES  
 PROJECT NO. 6025-006

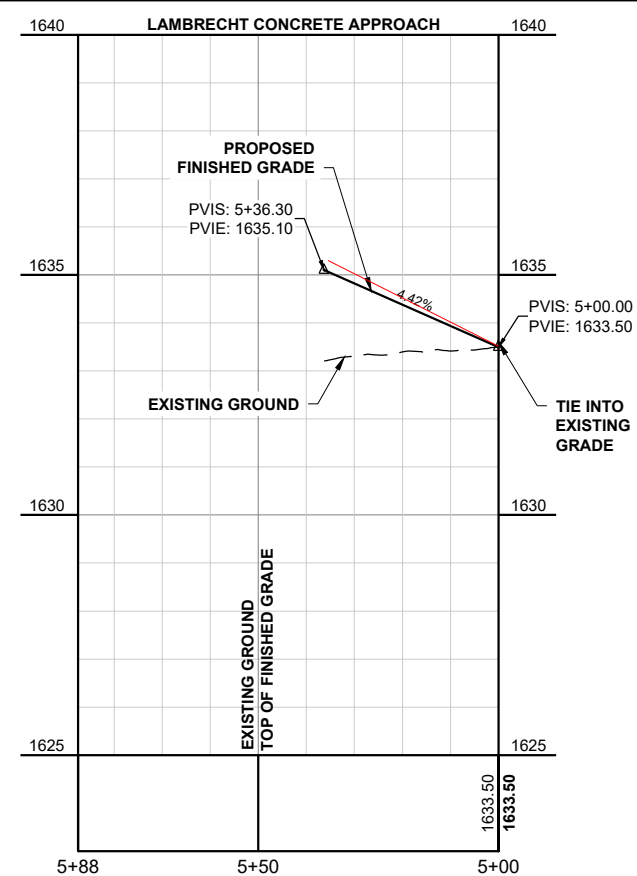
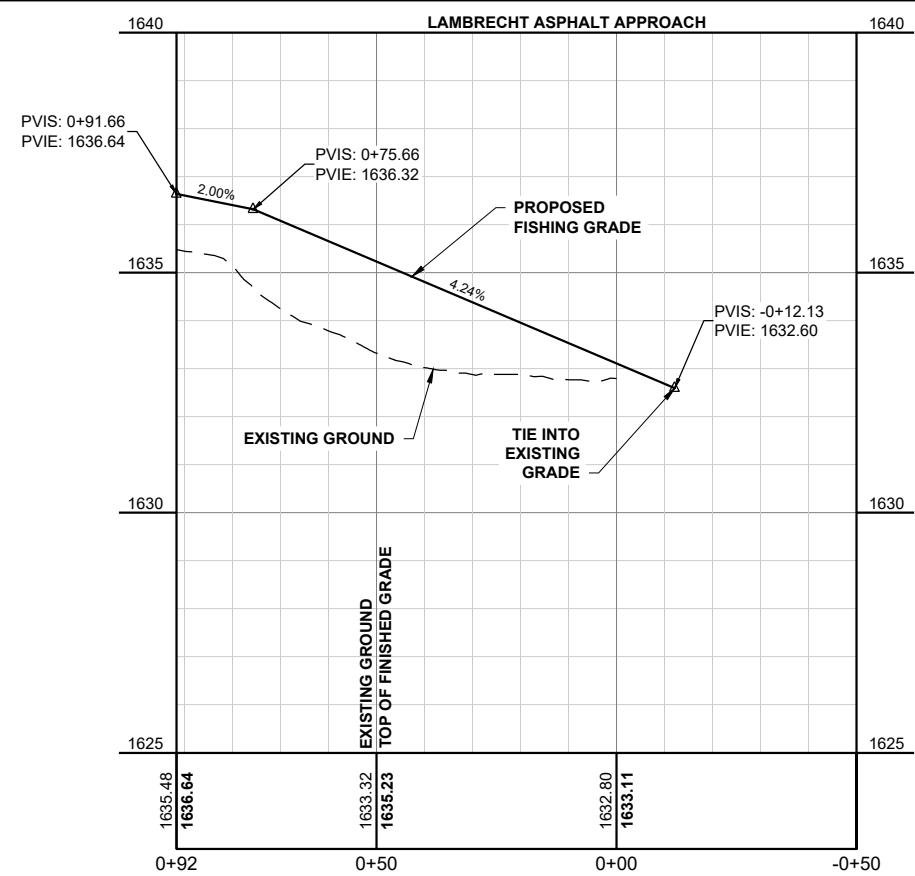
SHEET AP-14



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
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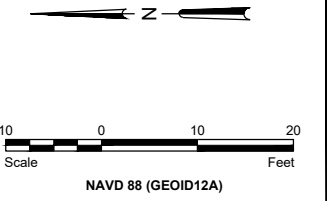
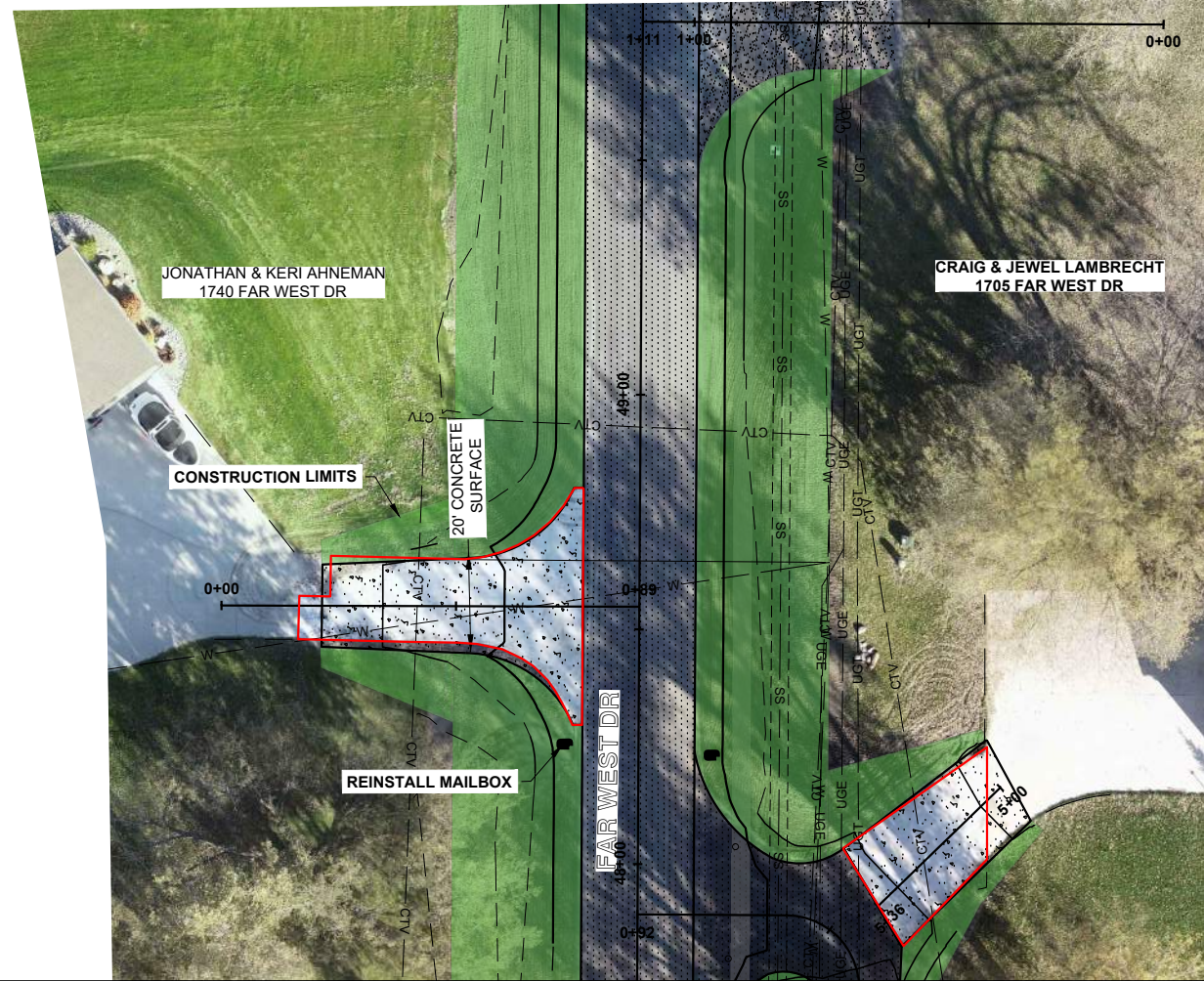
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

LAMBRECHT APPROACH  
 PROJECT NO. 6025-006

SHEET  
 AP-15

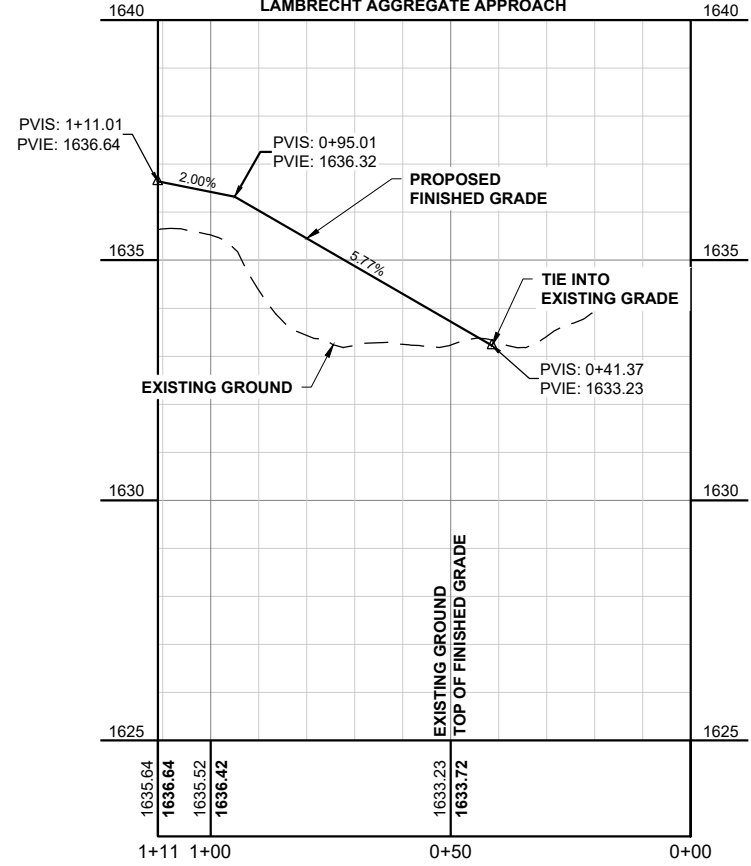
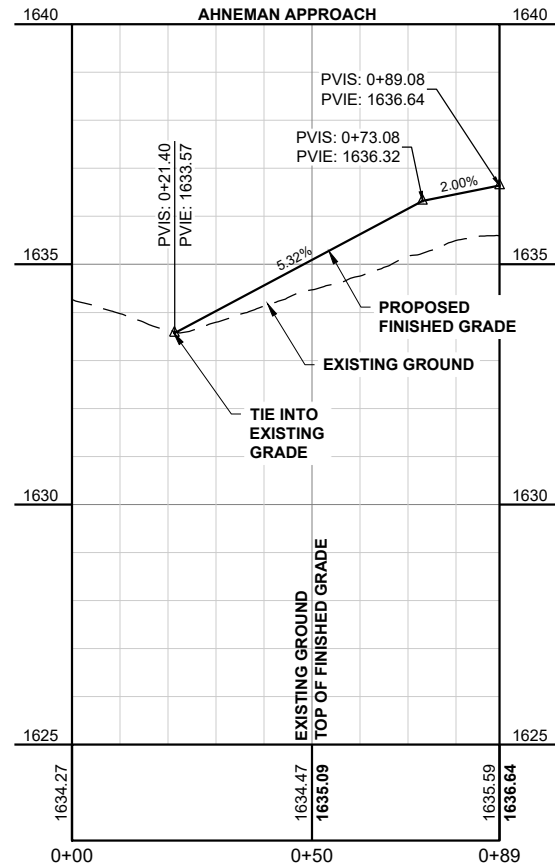
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**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
1. PROPOSED TOP OF LEVEE CLAY CORE PROFILE ACCOUNTS FOR 2" OF SETTLEMENT AS ESTIMATED BY GEOTECHNICAL EVALUATION COMPLETED BY BRAUN INTERTEC.
  2. PROPOSED CONTOURS REPRESENT TOP OF LEVEE CLAY CORE
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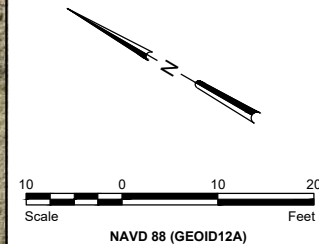
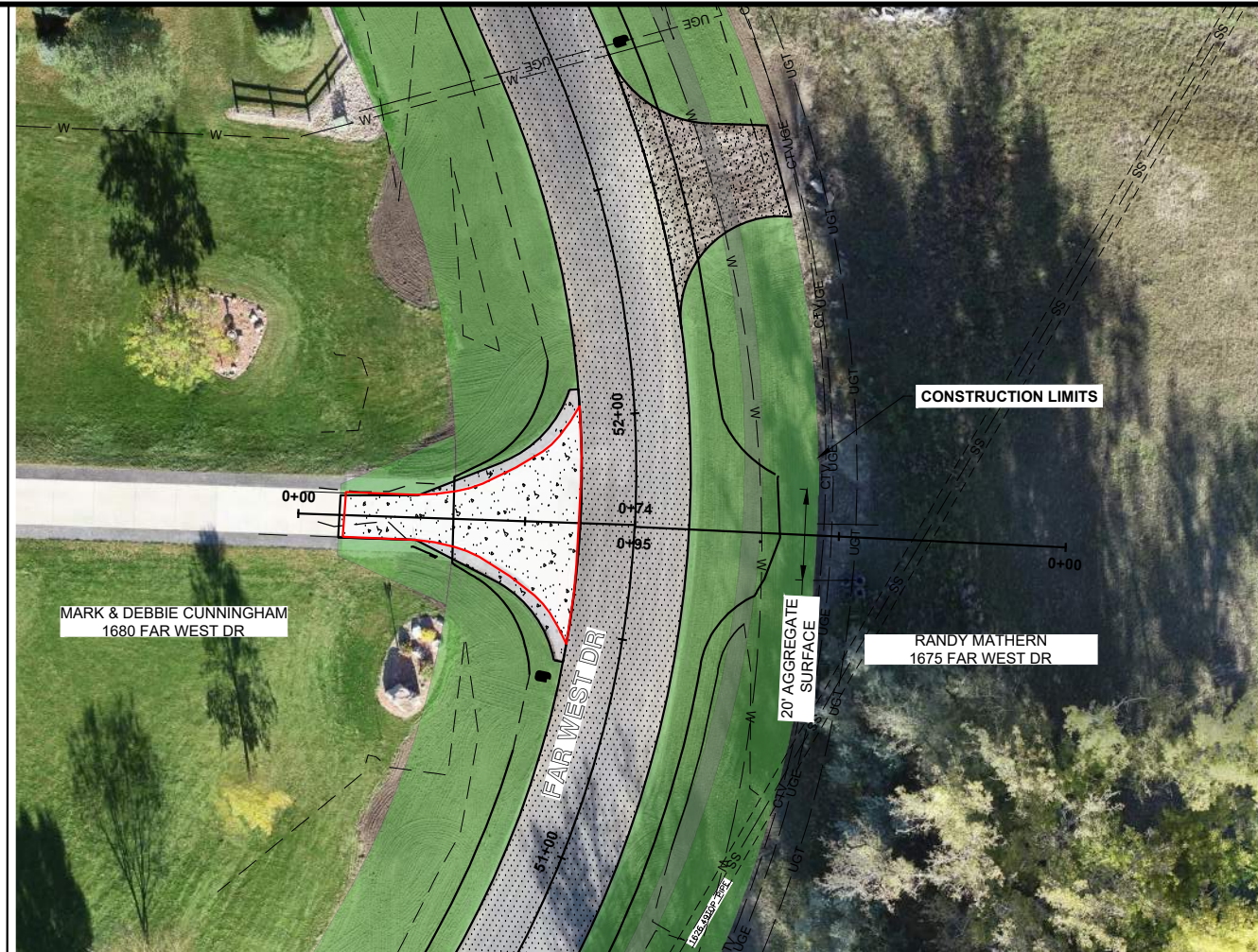
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

AHNEMAN AND LAMBRECHT  
 AGGR. APPROACHES  
 PROJECT NO. 6025-006

SHEET  
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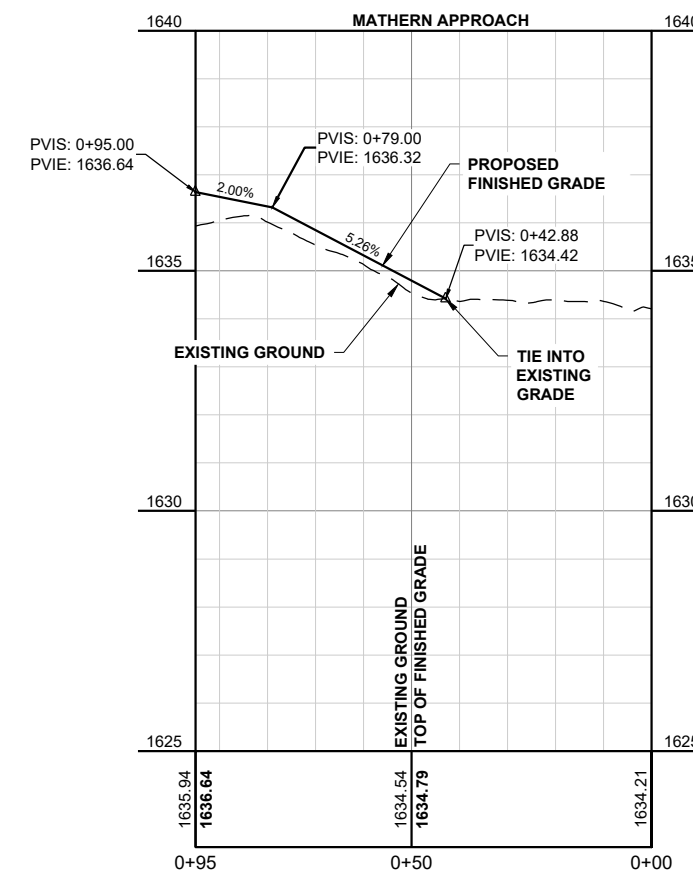
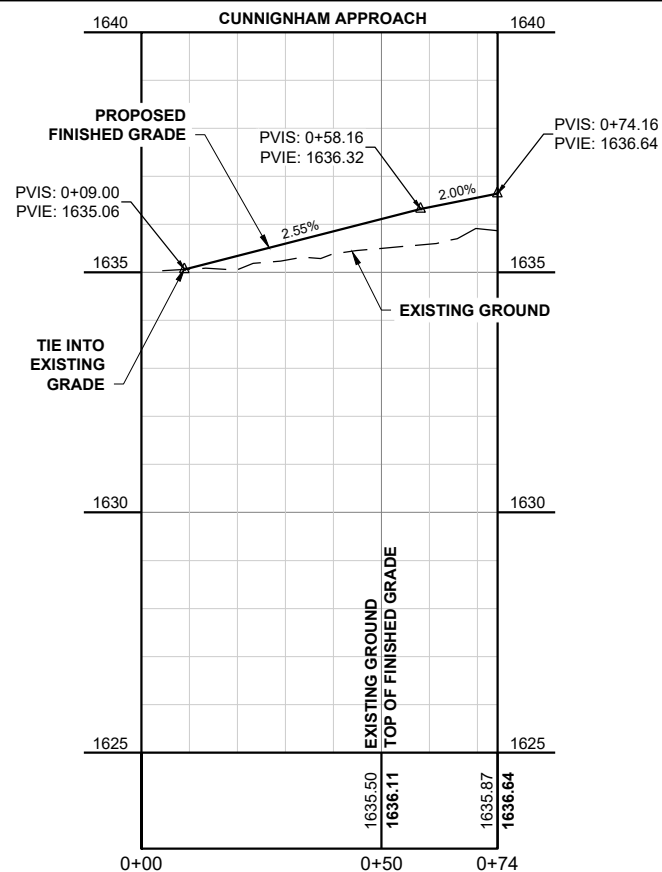


**LEGEND**

- SEEDING
- INSPECTION TRENCH
- AGGREGATE SURFACE
- ASPHALT SURFACE
- CONCRETE SURFACE

**GENERAL SHEET NOTES**

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No.	Revision	Date	By
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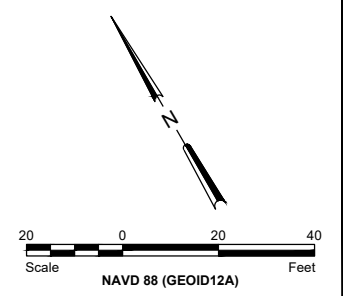
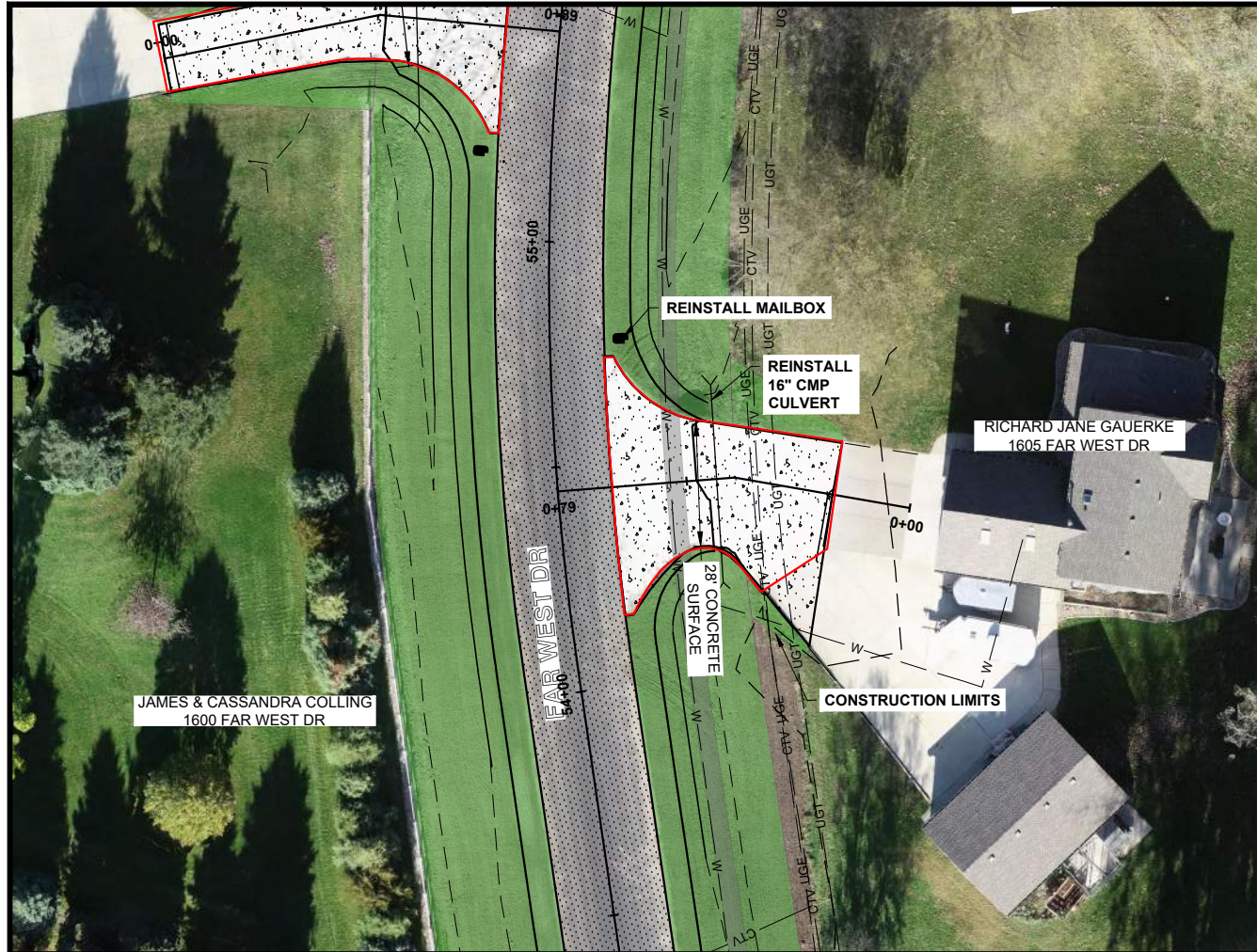


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FOX ISLAND FLOOD CONTROL PROJECT  
BURLEIGH COUNTY WATER RESOURCE DISTRICT  
BURLEIGH COUNTY, NORTH DAKOTA

CUNNINGHAM & MATTERN  
APPROACHES  
PROJECT NO. 6025-006

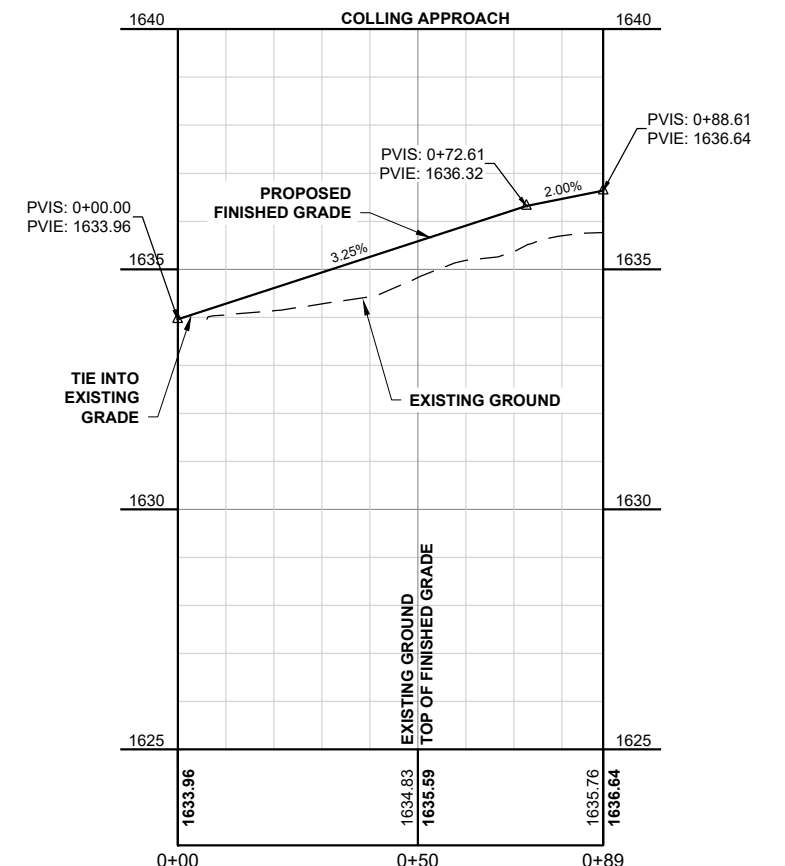
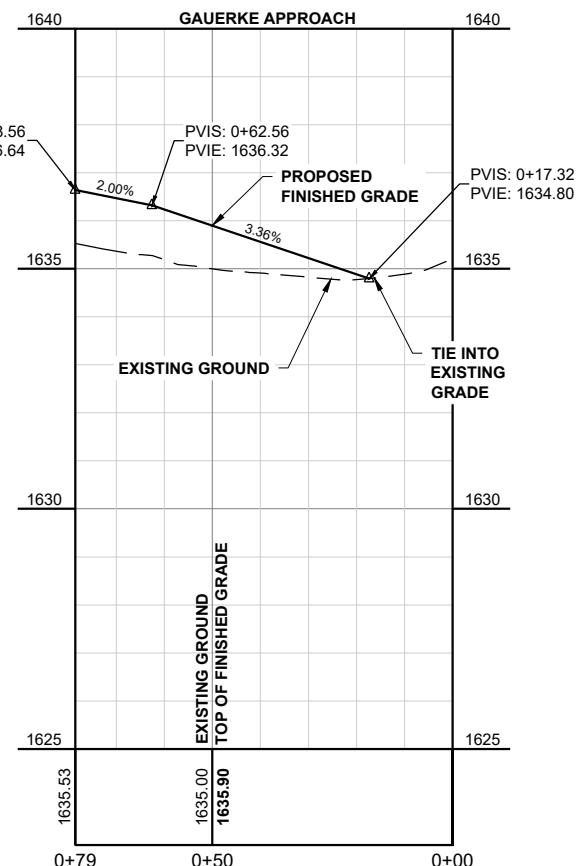
SHEET  
AP-17



**LEGEND**

SEEDING	
INSPECTION TRENCH	
AGGREGATE SURFACE	
ASPHALT SURFACE	
CONCRETE SURFACE	

- GENERAL SHEET NOTES**
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No.	Revision	Date	By

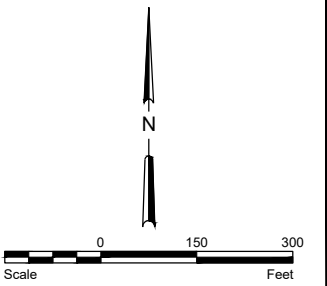


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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

GAUERKE & COLLING  
 APPROACHES  
 PROJECT NO. 6025-006

SHEET  
 AP-18



**LEGEND**

WORK AREA	
TYPE III BARRICADE WITH SIGN	
SIGN	

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No.	Revision	Date	By



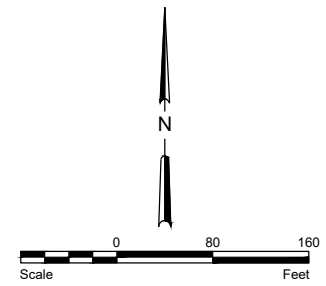
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

TRAFFIC CONTROL PHASE I  
 PROJECT NO. 6025-006

SHEET  
 TC-1

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**LEGEND**

WORK AREA	
TYPE III BARRICADE WITH SIGN	
SIGN	
DAYTIME ROADSIDE RESIDENT PARKING/TEMPORARY MAILBOX AREA	

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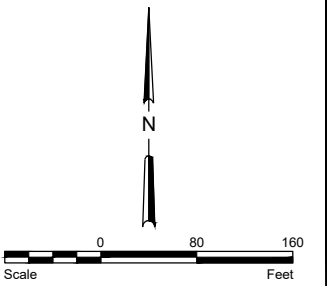


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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

TRAFFIC CONTROL PHASE II  
 PROJECT NO. 6025-006

SHEET  
 TC-2



**LEGEND**

WORK AREA	
TYPE III BARRICADE WITH SIGN	
SIGN	
DAYTIME ROADSIDE RESIDENT PARKING/TEMPORARY MAILBOX AREA	

THESE RECORD DOCUMENTS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY FIELD PERSONNEL. THE DESIGN PROFESSIONAL HAS NOT VERIFIED THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

**RECORD DRAWING:  
12-01-2019**

This document was originally issued and sealed by  
**TRAVIS G. JOHNSON**  
 Registration Number  
 PE-5746  
 on 6-20-18 and the original document is stored at  
 Houston Engineering Inc.

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No.	Revision	Date	By

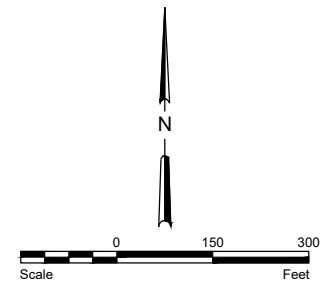


<b>Bismarck</b>	Drawn by TP/EM/JP	Date 6-12-18
P: 701.323.0200 F: 701.323.0300	Checked by TGJ	Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

TRAFFIC CONTROL PHASE III  
 PROJECT NO. 6025-006

SHEET  
 TC-3



**LEGEND**

WORK AREA	
TYPE III BARRICADE WITH SIGN	
SIGN	
DAYTIME ROADSIDE RESIDENT PARKING/TEMPORARY MAILBOX AREA	



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No.	Revision	Date	By



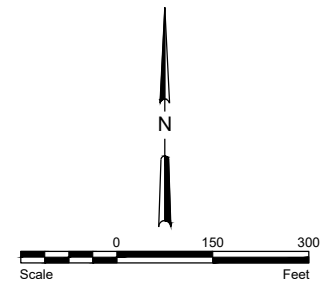
<b>Bismarck</b>	Drawn by TP/EM/JP	Date 6-12-18
P: 701.323.0200 F: 701.323.0300	Checked by TGJ	Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

TRAFFIC CONTROL PHASE IV  
 PROJECT NO. 6025-006

SHEET  
 TC-4

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**LEGEND**

WORK AREA	
TYPE III BARRICADE WITH SIGN	
SIGN	
DAYTIME ROADSIDE RESIDENT PARKING/TEMPORARY MAILBOX AREA	

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 PE-5746  
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No.	Revision	Date	By



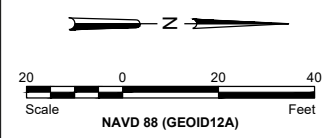
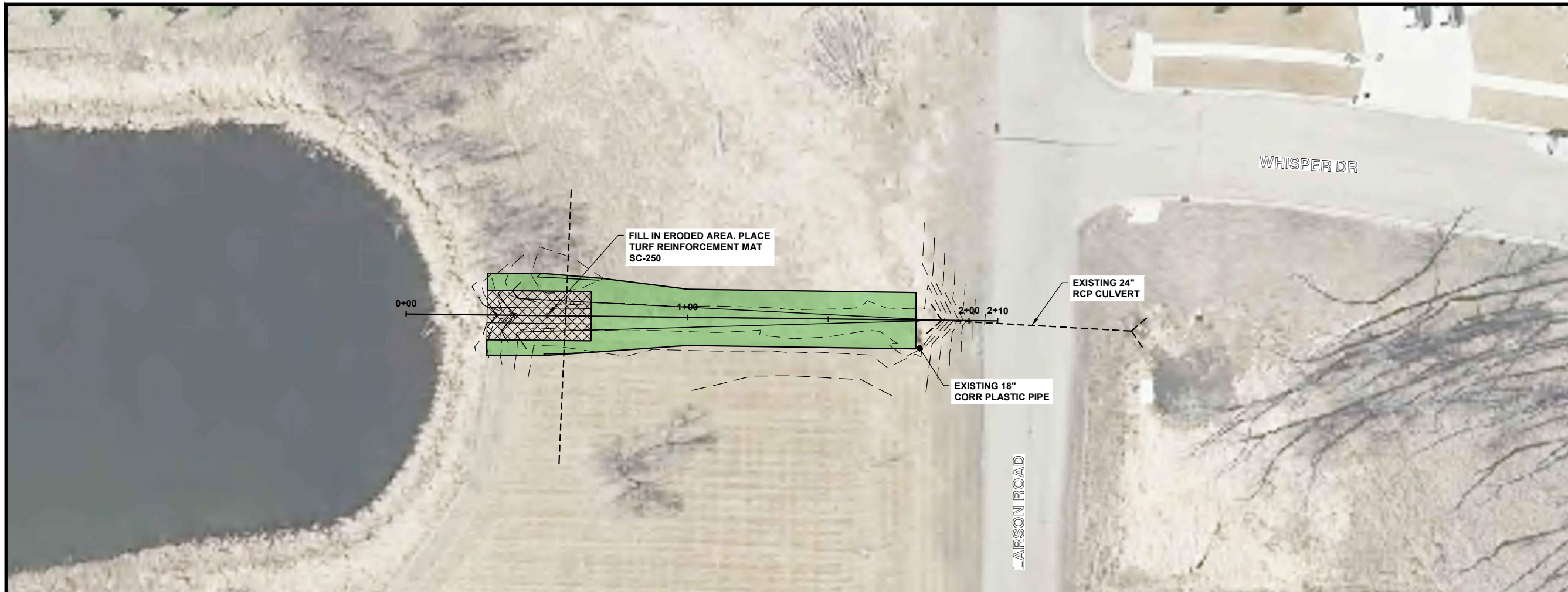
Bismarck	Drawn by TP/EM/JP	Date 6-12-18
P: 701.323.0200 F: 701.323.0300	Checked by TGJ	Scale AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

TRAFFIC CONTROL PHASE V  
 PROJECT NO. 6025-006

SHEET TC-5

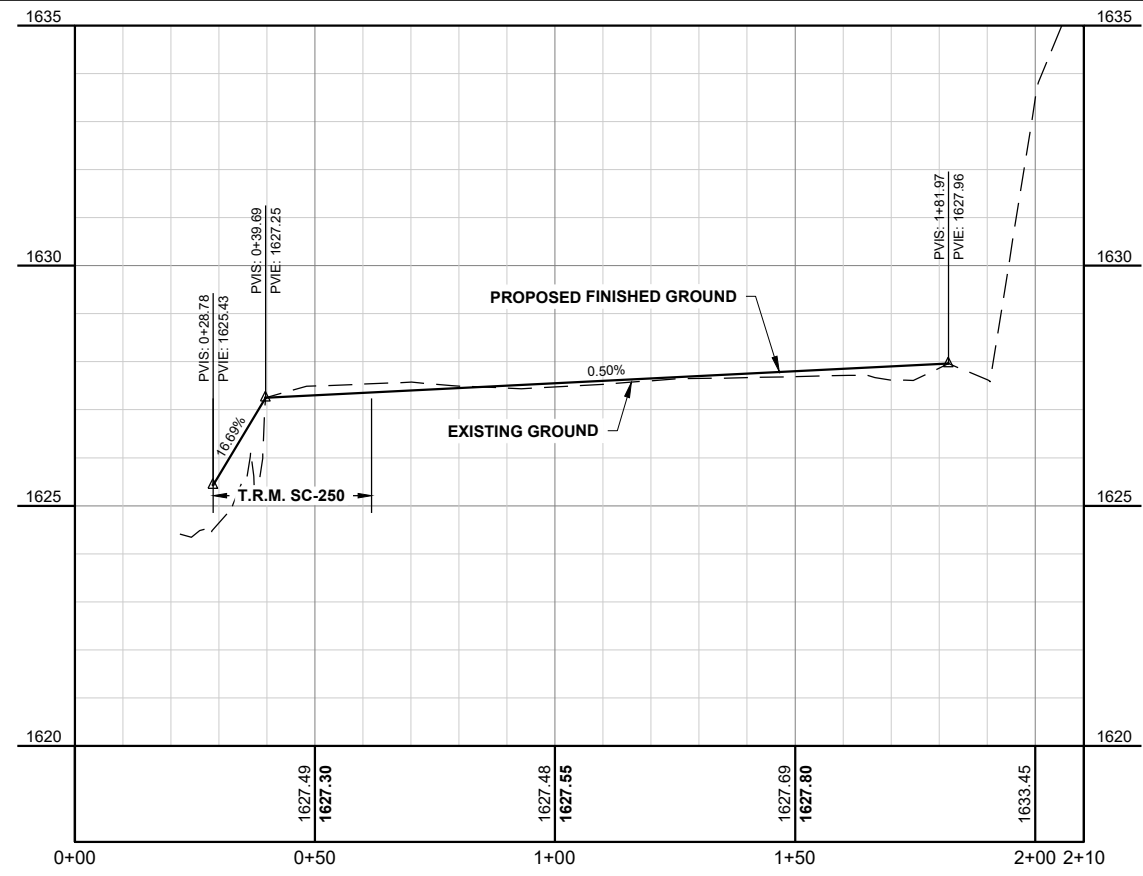
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**LEGEND**

SEEDING	
T.R.M. SC-250	

- GENERAL SHEET NOTES**
- SEE SHEET G-3 FOR PROJECT LOCATION.
  - ALL DISTURBED AREAS SHALL BE SEEDED.



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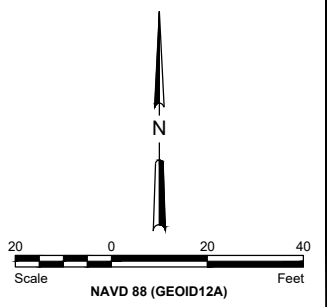
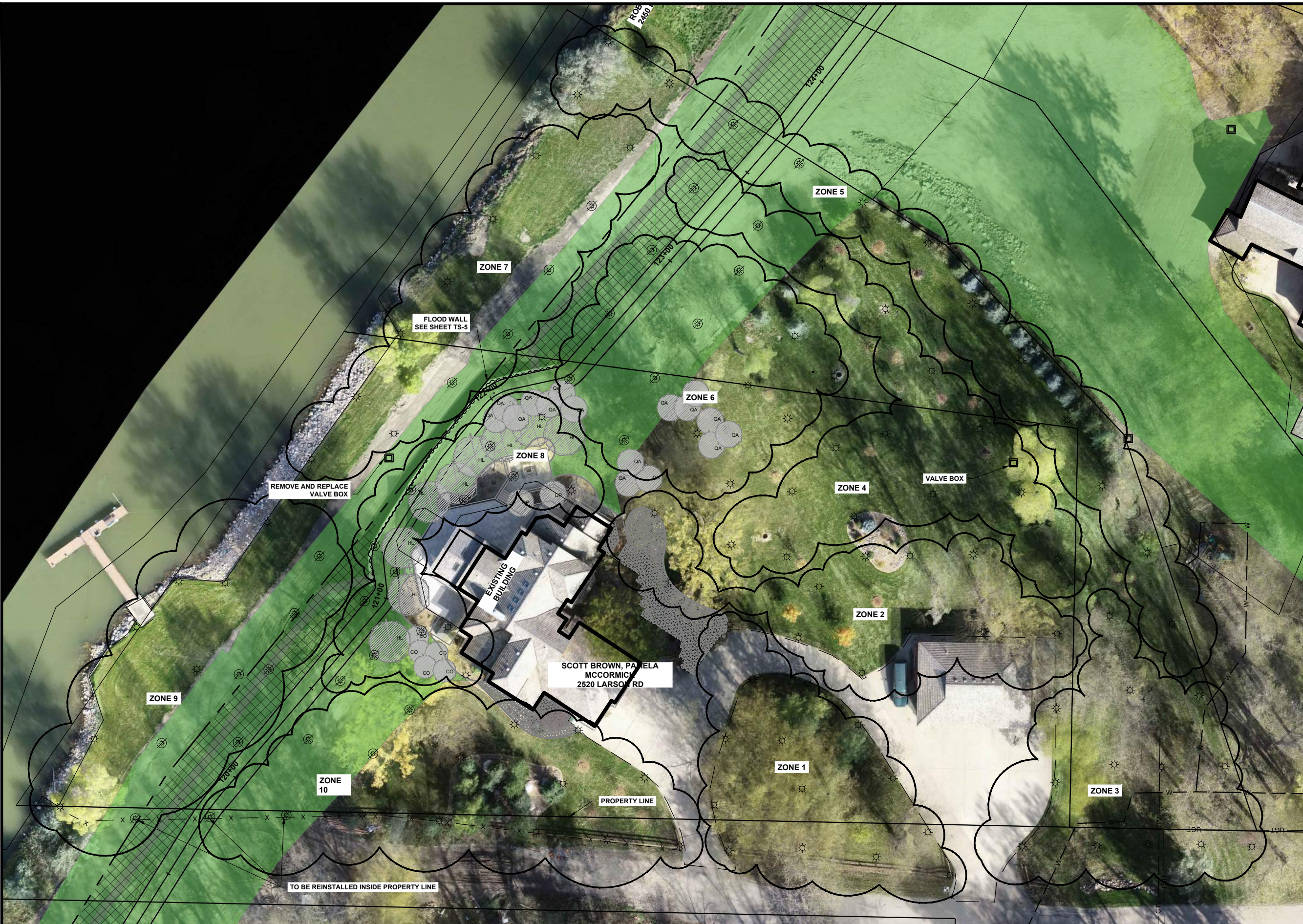
FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

**DRAINAGE RECONSTRUCTION**  
 PROJECT NO. 6025-006

SHEET  
 ST-1



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**LEGEND**

SEEDING	
T.R.M. SC-250	
EXISTING SPRINKLER HEAD	
SPRINKLER HEAD REMOVAL AND REPLACE	
EXISTING VALVE BOX	

- GENERAL SHEET NOTES**
1. ANY NEW UTILITY LINES INSTALLED ACROSS LEVEE LINES MUST FOLLOW PRIVATE UTILITY LEVEE CROSSING SEE SHEET TS-3

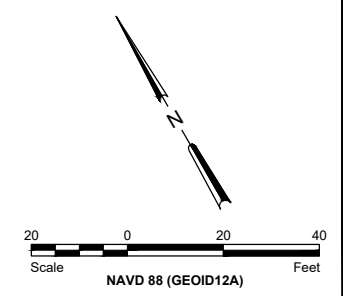
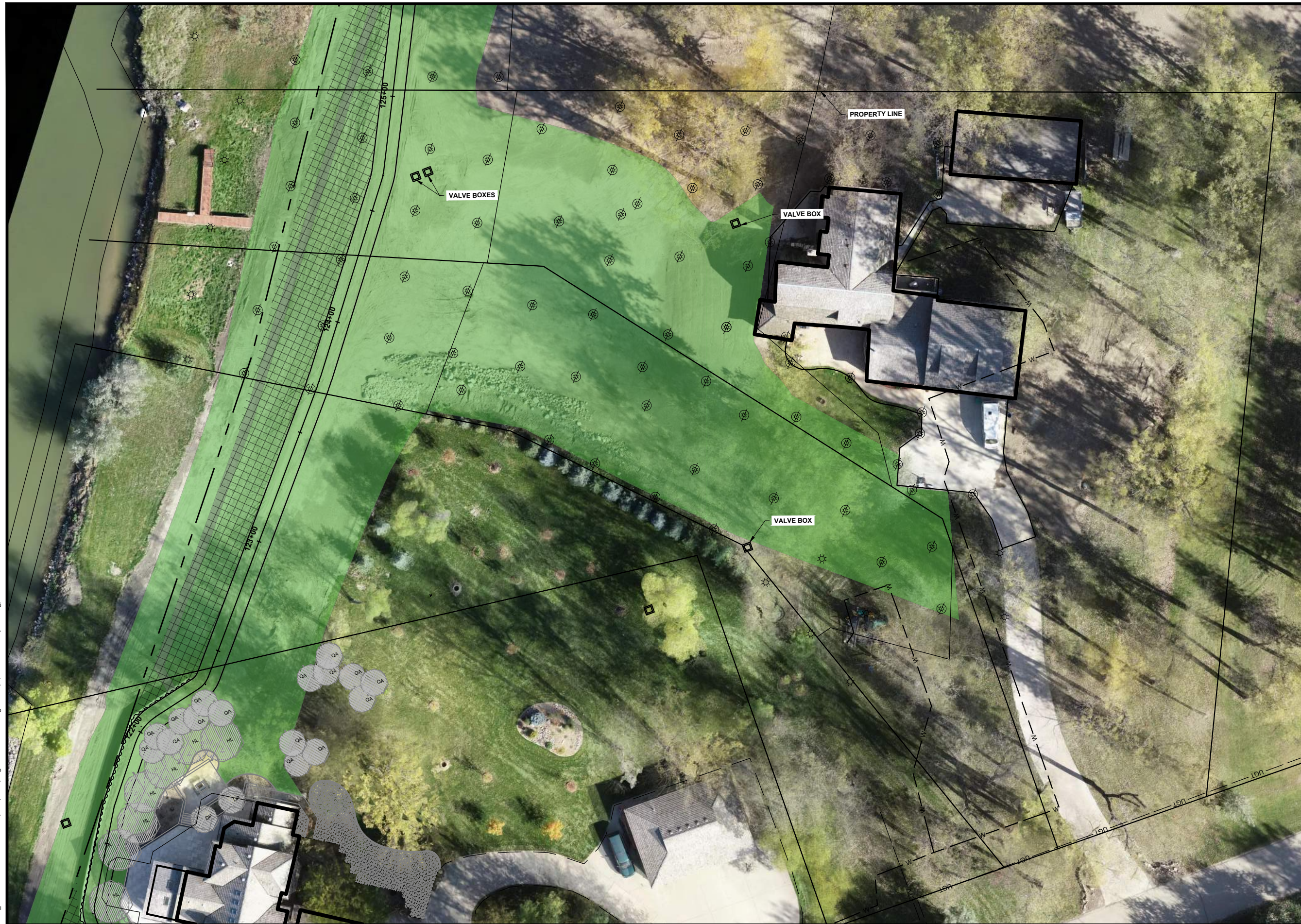
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No.	Revision	Date	By		Bismarck P: 701.323.0200 F: 701.323.0300	Drawn by TP/EM/JP Date 6-12-18	FOX ISLAND FLOOD CONTROL PROJECT BURLEIGH COUNTY WATER RESOURCE DISTRICT BURLEIGH COUNTY, NORTH DAKOTA	BROWN RESIDENCE PROJECT NO. 6025-006	SHEET IR-1
					Checked by TGJ	Scale AS SHOWN			

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**LEGEND**

SEEDING	
T.R.M. SC-250	
EXISTING SPRINKLER HEAD	
SPRINKLER HEAD REMOVAL AND REPLACE	
EXISTING VALVE BOX	

**GENERAL SHEET NOTES**

1. ANY NEW UTILITY LINES INSTALLED ACROSS LEVEE LINES MUST FOLLOW PRIVATE UTILITY LEVEE CROSSING SEE SHEET TS-3

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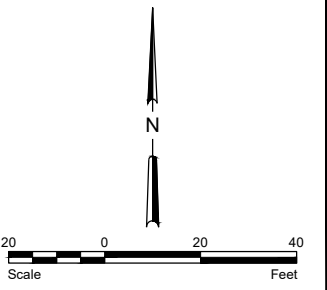
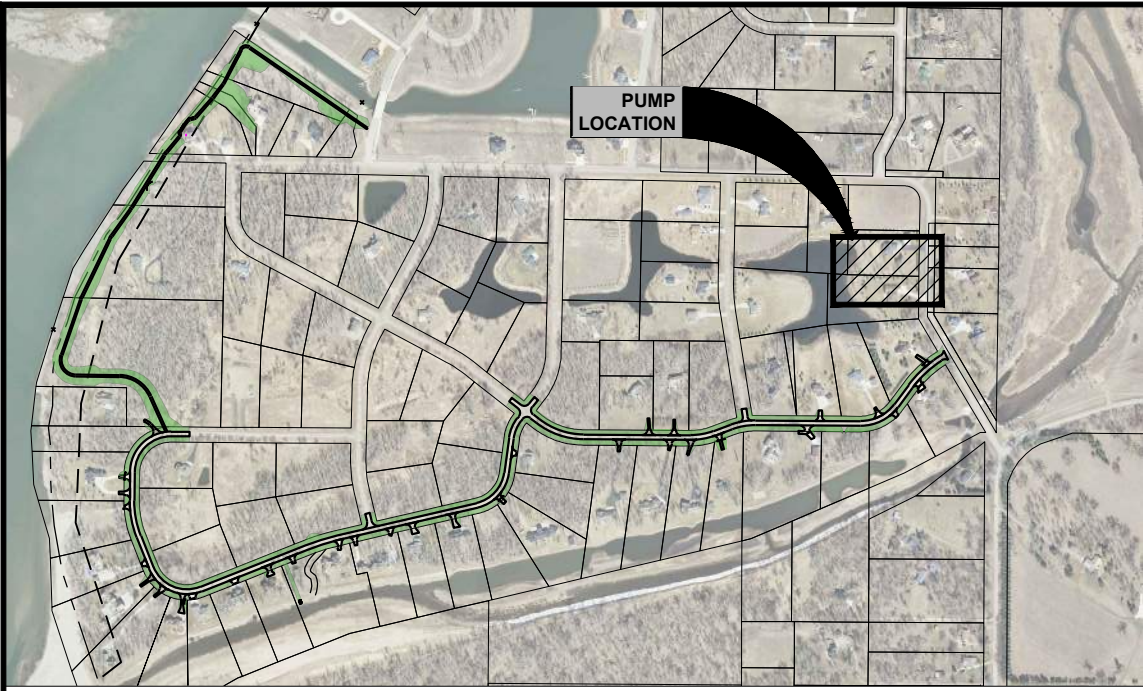


<b>Bismarck</b>	Drawn by TP/EM/JP	Date 6-12-18
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FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

NESS RESIDENCE  
 PROJECT NO. 6025-006

SHEET  
 IR-2



**LEGEND**

- EXISTING TREE
- TREE REMOVAL
- NEW TREE

**GENERAL SHEET NOTES**

1. THIS WORK IS TO BE AFTER ROADWAY GRADE RAISE IS COMPLETED
2. IRRIGATION SYSTEM IS TO BE PROTECTED AND ANY DAMAGE DONE TO IRRIGATION SYSTEM IS AT CONTRACTOR EXPENSE
3. NEW TREES SHALL BE FURNISHED AND INSTALLED AS INDICATED AND SHALL BE COLORADO BLUE SPRUCE (PICEA PUNGENS), 8' MINIMUM HEIGHT.
4. TREES TO BE PAID FOR PER EACH AT THE UNIT PRICE BID FOR "TREES (NEW - ALL TYPES)"

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No.	Revision	Date	By
1	ADDENDUM #1	7-3-18	JP



Bismarck		Drawn by	Date
P:	701.323.0200	JP	7-3-18
F:	701.323.0300	Checked by	Scale
		TGJ	AS SHOWN

FOX ISLAND FLOOD CONTROL PROJECT  
 BURLEIGH COUNTY WATER RESOURCE DISTRICT  
 BURLEIGH COUNTY, NORTH DAKOTA

GLASSER SMITH RESIDENCE  
 PROJECT NO. 6025-006

SHEET  
 LA-14

# APPENDIX E

## PROJECT EASEMENTS, AND PIPELINE EASEMENT AND WAIVER

E.1 - Lincoln Township ROW Easement

E.2 - Boise-Cossart Easement

E.3 - Doug & Sara Ness

E.4 - Duwayne & Sharon Ternes and Robert & Shaunna Upgren

E.5 - Everett & Carol Herringer

E.6 - Everett & Carol Herringer Lot 2 Blk 1

E.7 - Fox Island Drainage Pumping Easement Chris and Janel Meeker

E.8 - Gregory & Diane Larson

E.9 - James & Doris Smith

E.10 - Joseph & Heather Herringer Lot B of Lot 4A

E.11 - Joseph & Heather Herringer Lots A&B of Lot 4

E.12 - Lawrence & Carmen Glasser

E.13 - Melonie Tanous

E.14 - Scott Brown and Pamela McCormick Lot 2B Blk 1

E.15 - Scott Brown and Pamela McCormick Lot 5A Blk 1

E.16 - Tim & Stacy Clausnitzer

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## FOX ISLAND FLOOD CONTROL PROJECT LEVEE EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **Lincoln Township, (a.k.a. Burleigh County), 221 N 5<sup>th</sup> Street, Bismarck, North Dakota, 58501**, hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO The Burleigh County Water Resource District, 1720 Burnt Boat Drive, Suite 205 Bismarck, North Dakota 58503**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of constructing and maintaining an earthen flood control levee, which includes a roadway grade raise and associated modifications, for the purposes of protecting property on Fox Island from the waters of the Missouri River. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2215. If the easement is no longer used for an earthen levee for flood control, the easement is deemed abandoned. This easement covers portions of the Far West Drive and Gallatin Drive rights-of-way located within the Fox Island Subdivision and Fox Island Second Subdivision and are included as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

### **Description of Levee Easement 1:**

An 80.00 foot easement for levee construction within the right of way of Far West Drive, located in Fox Island Subdivision, Burleigh County, North Dakota, being described as follows:

Beginning at the easterly end of Far West Drive at the westerly right of way line of Tavis Road, Fox Island Subdivision; thence westerly on and along the 80.00 foot right of way of Far West Drive, a distance of 2395.24 feet to the westerly right of way line of Gallatin Drive, Fox Island Subdivision. Said Easement contains 4.39 acres, more or less.

### **Description of Levee Easement 2:**

An 80.00 foot easement for levee construction within the right of way of Gallatin Drive, located in Fox Island Subdivision and Gallatin Loop located in Fox Island Subdivision and Fox Island Second Subdivision, Burleigh County, North Dakota, being described as follows:

Beginning at the southerly right of way line of Far West Drive at its intersection with Gallatin Drive, Fox Island Subdivision; thence southerly and westerly on and along the 80.00 foot right of way of Gallatin Drive, a distance of 1191.08 feet to the intersection of Fontanelle Drive; thence westerly and northerly on and along the 80.00 foot right of way of Gallatin Loop, a distance of 1768.68 feet to the northerly line of said Fox Island Subdivision and the southerly line of Fox Island Second Subdivision; thence continuing on and along Gallatin Loop, Fox Island Second Subdivision, northerly and easterly, a distance of 534.16 feet to the extension of the east line of Lot 1 Block 3 of Fox Island Second Subdivision.

Said easement contains 6.27 acres, more or less.

All bearings given are based on the North Dakota State Plane Coordinate System, South Zone, NAD83, International Foot, with measured grid distances.

The legal description was prepared by Todd Marschall, Registered Land Surveyor, or under his direct supervision, Houston Engineering, 3712 Lockport Street, Bismarck, ND 58503.

The above described Levee Easement 1 and Levee Easement 2 contain a total combined area of 464,350 sq. ft. (10.66 acres) more or less, and is subject to all easements and dedicated rights of way of record, if any.

The said property, as described above, is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with the said earthen levee and customary appurtenances, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings, trees or other obstacles or encroachments of any kind shall be placed or located upon the tract, the exception being Grantor's general maintenance of the township roadway features. Grantor directs Grantee to remove any buildings, trees or other obstacles or encroachments of any kind should Grantee discover such obstacles in the course of its construction activities as allowed Grantee under the terms of this easement, with the exception of any existing utilities as set forth below. The installation of utilities, (e.g., irrigation lines, electrical lines, phone, cable, rural water, etc.) are not allowed without coordinating and obtaining approval from the Grantee.

Grantor reserves the right to otherwise use the said earthen levee for purposes not inconsistent with this easement and shall be allowed to install and maintain the township roadway including base and pavement materials, vegetated rights-of-way and traffic signage or otherwise use the earthen levee area so long as such improvements do not interfere with or otherwise impair the earthen levee structure or established/natural drainage, including any culverts or gates that are installed for management purposes. Grantor further has the responsibility to maintain pavement materials, grass, other vegetation, and signage that may be placed upon the earthen levee.

Grantor shall be responsible to maintain the constructed roadway pavement and the grassed surface conditions within the rights-of-way to reasonably prevent damages to the underlying levee. The Grantee may inspect the roadway levee on an annual basis or as deemed necessary to assure the flood control project and related appurtenances are in a functional and operational condition. The Grantee shall be responsible for the repair and maintenance of the roadway levee except for the routine maintenance of pavement, grassed surfaces, signage, and roadway features.

The above granted and conveyed premise is conveyed in accordance with North Dakota Century Code Section 54-01-17.1.

IN WITNESSES WHEREOF, this easement has been executed by the undersigned this 9<sup>th</sup> day of February, 2018.

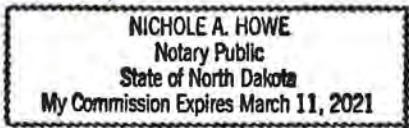
BURLEIGH COUNTY

By Marcus S. Hall  
Marcus Hall, Burleigh County Engineer

ATTEST

STATE OF NORTH DAKOTA     )  
  )  
COUNTY OF BURLEIGH     )

The foregoing instrument was acknowledged before me this 9<sup>th</sup> day of February, 2018, by Marcus Hall, Burleigh County Engineer.



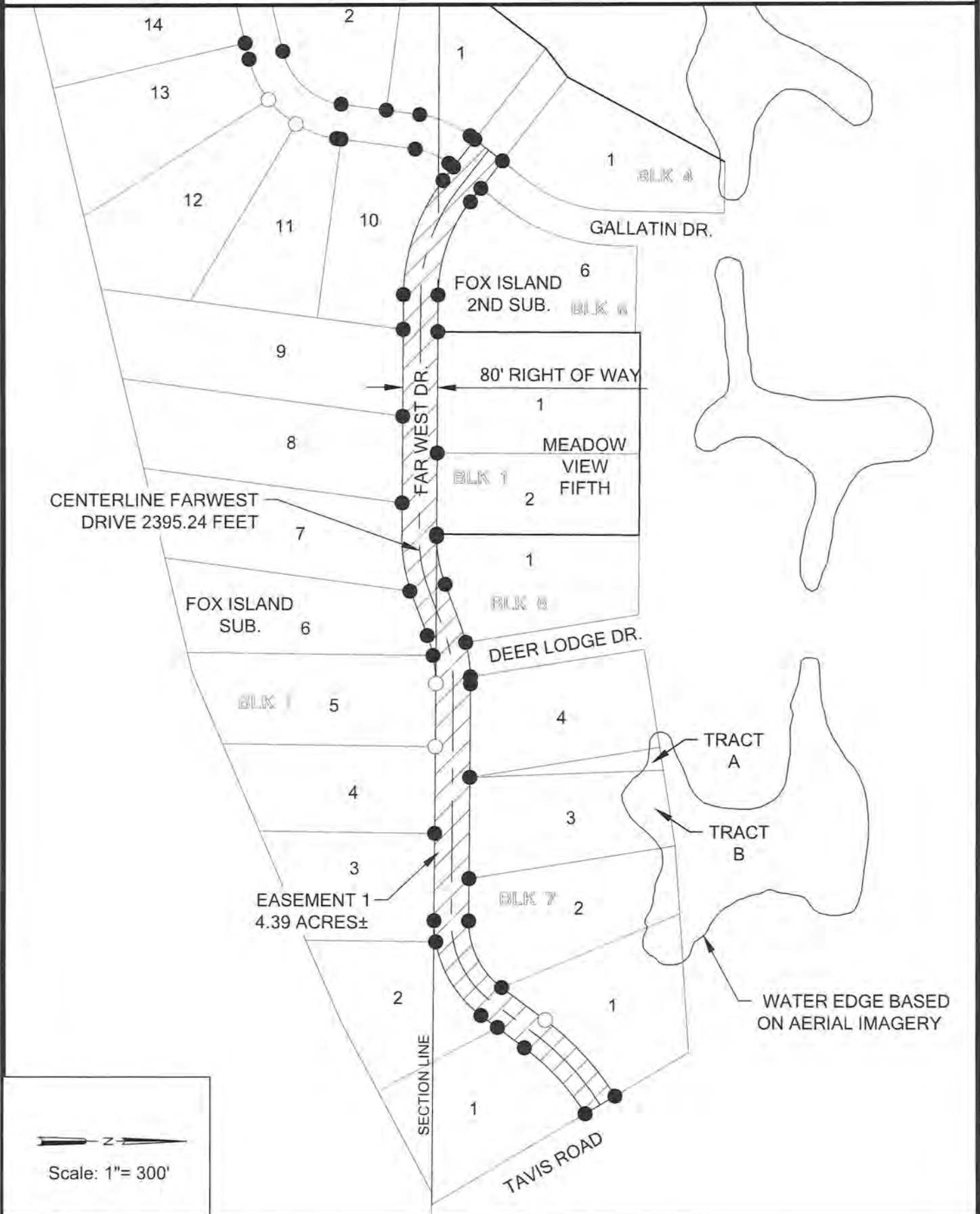
Nichole A. Howe  
-  
-

The legal description was prepared by:  
Houston Engineering  
3712 Lockport Street  
Bismarck, ND 58503  
(701) 323-0200

This document prepared by:  
David R. Bliss  
Bliss Law Firm, LLC (ID NO.: 04729)  
400 East Broadway Avenue, Suite 308  
P.O. Box 4126  
Bismarck, ND 58502-4126  
(701) 223-5769

EXHIBIT A  
 FAR WEST DRIVE, GALLATIN DRIVE, & GALLATIN LOOP  
 FOX ISLAND SUBDIVISION & FOX ISLAND SECOND SUBDIVISION  
 BURLEIGH COUNTY, NORTH DAKOTA

OWNER: BURLEIGH COUNTY



LEGEND

- MONUMENT CALCULATED LOCATION ○
- IRON MONUMENT FOUND ●
- PROPERTY LINE ———
- EASEMENT

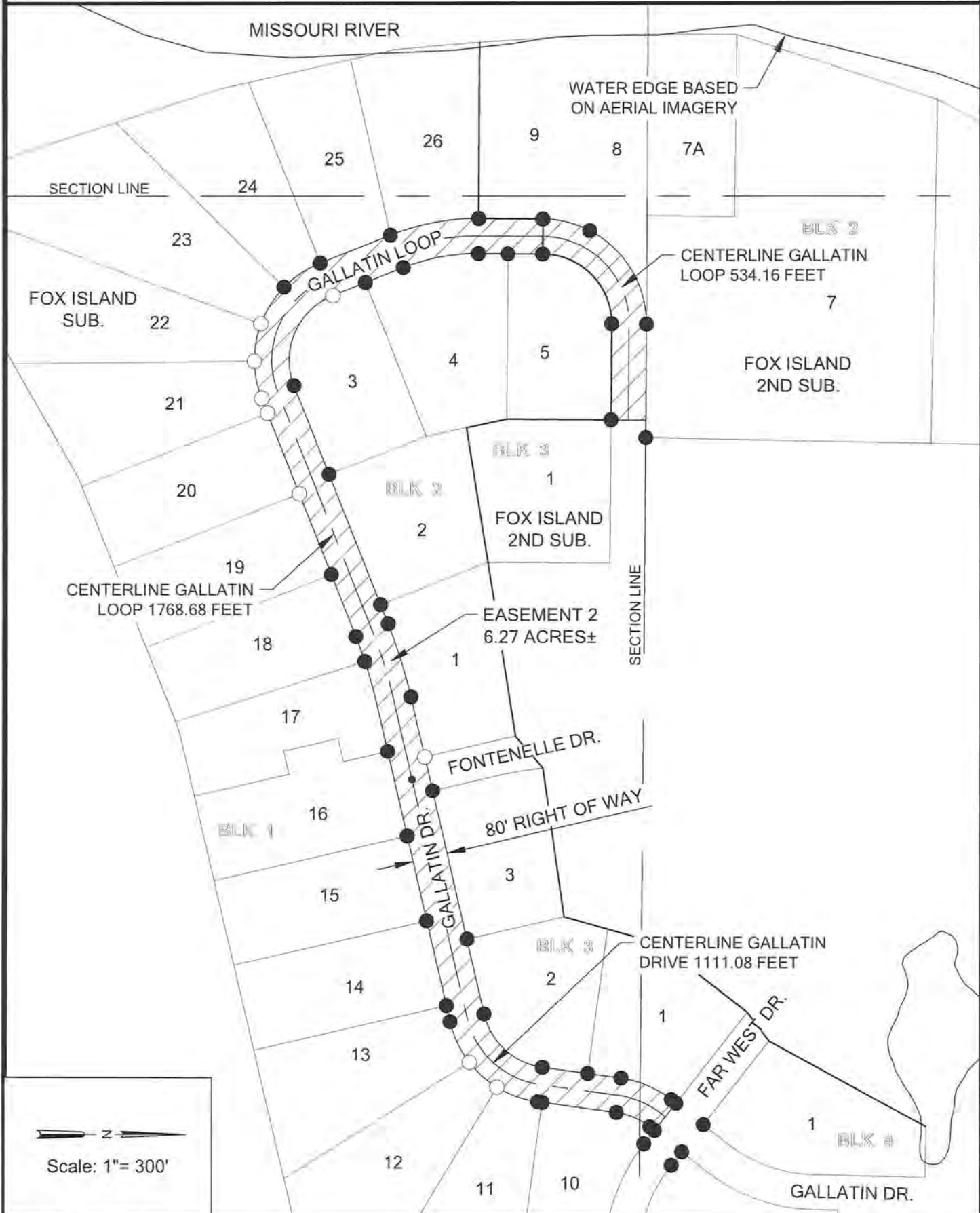
<b>Houston Engineering Inc.</b>	Bismarck
	P: 701.323.0200 F: 701.323.0300

## LEVEE EASEMENT PLAT



EXHIBIT A  
 FAR WEST DRIVE, GALLATIN DRIVE, & GALLATIN LOOP  
 FOX ISLAND SUBDIVISION & FOX ISLAND SECOND SUBDIVISION  
 BURLEIGH COUNTY, NORTH DAKOTA

OWNER: BURLEIGH COUNTY



Scale: 1" = 300'

LEGEND

- MONUMENT CALCULATED LOCATION ○
- IRON MONUMENT FOUND ●
- PROPERTY LINE ———
- EASEMENT

<b>Houston Engineering Inc.</b>	Bismarck
	P: 701.323.0200 F: 701.323.0300

# LEVEE EASEMENT PLAT

EXHIBIT A  
FAR WEST DRIVE, GALLATIN DRIVE, & GALLATIN LOOP  
FOX ISLAND SUBDIVISION & FOX ISLAND SECOND SUBDIVISION  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: BURLEIGH COUNTY

DESCRIPTION OF LEVEE EASEMENT 1:

AN 80.00 FOOT EASEMENT FOR LEVEE CONSTRUCTION WITHIN THE RIGHT OF WAY OF FAR WEST DRIVE, LOCATED IN FOX ISLAND SUBDIVISION, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

BEGINNING AT THE EASTERLY END OF FAR WEST DRIVE AT THE WESTERLY RIGHT OF WAY LINE OF TAVIS ROAD, OF SAID FOX ISLAND SUBDIVISION; THENCE WESTERLY, ON AND ALONG THE 80.00 FOOT RIGHT OF WAY OF FAR WEST DRIVE, A DISTANCE OF 2395.24 FEET AS MEASURED ON AND ALONG THE CENTERLINE OF SAID FAR WEST DRIVE TO THE WESTERLY RIGHT OF WAY LINE OF GALLATIN DRIVE, OF SAID FOX ISLAND SUBDIVISION.

SAID EASEMENT CONTAINS 4.39 ACRES, MORE OR LESS.

DESCRIPTION OF LEVEE EASEMENT 2:

AN 80.00 FOOT EASEMENT FOR LEVEE CONSTRUCTION WITHIN THE RIGHT OF WAY OF GALLATIN DRIVE, LOCATED IN FOX ISLAND SUBDIVISION AND WITHIN THE RIGHT OF WAY OF GALLATIN LOOP LOCATED IN FOX ISLAND SUBDIVISION AND FOX ISLAND SECOND SUBDIVISION, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWESTERLY RIGHT OF WAY LINE OF FAR WEST DRIVE AT ITS INTERSECTION WITH GALLATIN DRIVE, OF SAID FOX ISLAND SUBDIVISION; THENCE SOUTHERLY AND WESTERLY, ON AND ALONG THE 80.00 FOOT RIGHT OF WAY OF GALLATIN DRIVE, A DISTANCE OF 1111.08 FEET AS MEASURED ON AND ALONG THE CENTERLINE OF SAID GALLATIN DRIVE TO THE INTERSECTION OF FONTENELLE DRIVE OF SAID FOX ISLAND SUBDIVISION; THENCE WESTERLY AND NORTHERLY, ON AND ALONG THE 80.00 FOOT RIGHT OF WAY OF GALLATIN LOOP OF SAID FOX ISLAND SUBDIVISION, A DISTANCE OF 1768.68 FEET AS MEASURED ON AND ALONG THE CENTERLINE OF SAID GALLATIN LOOP TO THE NORTHERLY LINE OF SAID FOX ISLAND SUBDIVISION AND THE SOUTHERLY LINE OF SAID FOX ISLAND SECOND SUBDIVISION; THENCE CONTINUING ON AND ALONG SAID GALLATIN LOOP, NORTHERLY AND EASTERLY, A DISTANCE OF 534.16 FEET AS MEASURED ON AND ALONG THE CENTERLINE OF SAID GALLATIN LOOP TO THE NORTHERLY EXTENSION OF THE WEST LINE OF LOT 1 BLOCK 3 OF SAID FOX ISLAND SECOND SUBDIVISION.

SAID EASEMENT CONTAINS 6.27 ACRES, MORE OR LESS.

TOTAL EASEMENTS CONTAINS 10.66 ACRES, MORE OR LESS.

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.



2-14-18

TODD MARSCHALL  
ND LIC. NO. 4431

DATE

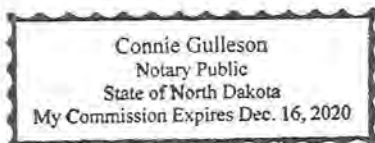


ON THIS 14<sup>th</sup> DAY OF February 2018, TODD MARSCHALL, PERSONALLY APPEARED BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.

Connie Guleson

NOTARY PUBLIC

Burleigh COUNTY, ND



 Houston Engineering Inc.	Bismarck
	P: 701.323.0200 F: 701.323.0300

## LEVEE EASEMENT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
3 OF 3



## FOX ISLAND FLOOD CONTROL LEVEE EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **LEE TAVIS & BEVERLY BOISE-COSSART**, hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of laying, constructing and maintaining an earthen dike or levee for flood control for the purposes of protecting property from the waters of the Missouri River. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2217. The property is required for a portion of the dike or levee to be constructed along the Missouri River as part of the Fox Island Flood Control Project, Bismarek, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR A LEVEE ON LOT 7 LESS LOT 7A, BLOCK 2 FOX ISLAND SECOND SUBDIVISION, SECTION 13, TOWNSHIP 138 NORTH, RANGE 81 WEST AND SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWED:

COMMENCING AT THE SOUTHEAST CORNER OF SAID LOT 7; THENCE NORTH 89°36'21" WEST, ON AND ALONG THE SOUTH LINE OF SAID LOT 7, A DISTANCE OF 208.77 FEET TO THE POINT OF BEGINNING OF THE EASEMENT TO BE DESCRIBED; THENCE NORTH 89°36'21" WEST, CONTINUING ON AND ALONG SAID SOUTH LINE, A DISTANCE OF 145.12 FEET; THENCE NORTH 22°05'32" WEST, A DISTANCE OF 146.96 FEET; THENCE WESTERLY AND TO THE LEFT, A DISTANCE OF 162.59 FEET ON A 138.13 FOOT RADIUS, NON-TANGENTIAL CURVE, SAID CURVE HAVING A CHORD OF NORTH 57°34'55" WEST, A DISTANCE OF 153.36 FEET; THENCE SOUTH 84°20'18" WEST, A DISTANCE 105.66 FEET; THENCE NORTH 89°01'55" WEST, A DISTANCE 113.34 FEET; THENCE NORTHWESTERLY AND TO THE RIGHT, A DISTANCE OF 216.14 FEET ON A 132.73 FOOT RADIUS, NON-TANGENTIAL CURVE, SAID CURVE HAVING A CHORD OF NORTH 38°22'44" WEST, A DISTANCE OF 193.04 FEET; THENCE NORTH 18°42'09" EAST, A DISTANCE OF 327.99 FEET TO THE NORTH LINE OF SAID LOT 7; THENCE SOUTH 88°49'30" EAST, ON AND ALONG THE NORTH LINE OF SAID LOT 7, A DISTANCE OF 100.65 FEET; THENCE SOUTH 25°46'43" WEST, A DISTANCE OF 132.21 FEET; THENCE SOUTH 18°19'30" WEST, A DISTANCE OF 203.18 FEET; THENCE EASTERLY AND TO THE LEFT, A DISTANCE OF 70.69 FEET ON A 37.39 FOOT RADIUS, NON-TANGENTIAL CURVE, SAID CURVE HAVING A CHORD OF SOUTH 37°18'02" EAST, A DISTANCE OF

IN WITNESSES WHEREOF, the Grantor has caused this instrument to be executed this 25<sup>th</sup>  
day of May, 2017

Lee Tavis

By Lee Tavis  
Lee TAVIS

STATE OF IN )  
COUNTY OF St. Joseph ) ss:

On this 25<sup>th</sup> day of May, 2017 before me, a notary public in and for said  
county and state, personally appeared Lee Tavis, described in and who has executed the within and  
foregoing instrument.

Shelby L. Modjeska  
Notary Public



SHELBY L. MODJESKA  
Resident of Elkhart County, IN  
Commission Expires: Sept. 17, 2021

IN WITNESSES WHEREOF, the Grantor has caused this instrument to be executed this 12<sup>th</sup>  
day of May 12, 2017

Beverly Boise-Cossart

By Beverly Boise-Cossart  
Beverly Boise-Cossart

STATE OF \_\_\_\_\_ )  
  ) ss:  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, before me, a notary public in and for said county and state, personally appeared Beverly Boise-Cossart, described in and who has executed the within and foregoing instrument.

\_\_\_\_\_  
Notary Public

*See attached*

The legal description was prepared by:  
Houston Engineering  
3712 Lockport Street  
Bismarck, ND 58503  
(701) 323-0200

This document prepared by:  
David R. Bliss  
Bliss Law Firm, LLC (ID NO.:04729)  
400 East Broadway Avenue, Suite 308  
P.O. Box 4126  
Bismarck, ND 58502-4126  
(701) 223-5769

**CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT**

**CIVIL CODE § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California )

County of Santa Barbara )

On May 12, 2017 before me, Karen Janet Cherry Notary Public  
Date Here Insert Name and Title of the Officer

personally appeared Beverly Boise - Cossart  
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.



Signature [Signature]  
Signature of Notary Public

Place Notary Seal Above

**OPTIONAL**

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

**Description of Attached Document**

Title or Type of Document: \_\_\_\_\_ Document Date: \_\_\_\_\_

Number of Pages: \_\_\_\_\_ Signer(s) Other Than Named Above: \_\_\_\_\_

**Capacity(ies) Claimed by Signer(s)**

Signer's Name: \_\_\_\_\_

Corporate Officer — Title(s): \_\_\_\_\_

Partner —  Limited  General

Individual  Attorney in Fact

Trustee  Guardian or Conservator

Other: \_\_\_\_\_

Signer Is Representing: \_\_\_\_\_

Signer's Name: \_\_\_\_\_

Corporate Officer — Title(s): \_\_\_\_\_

Partner —  Limited  General

Individual  Attorney in Fact

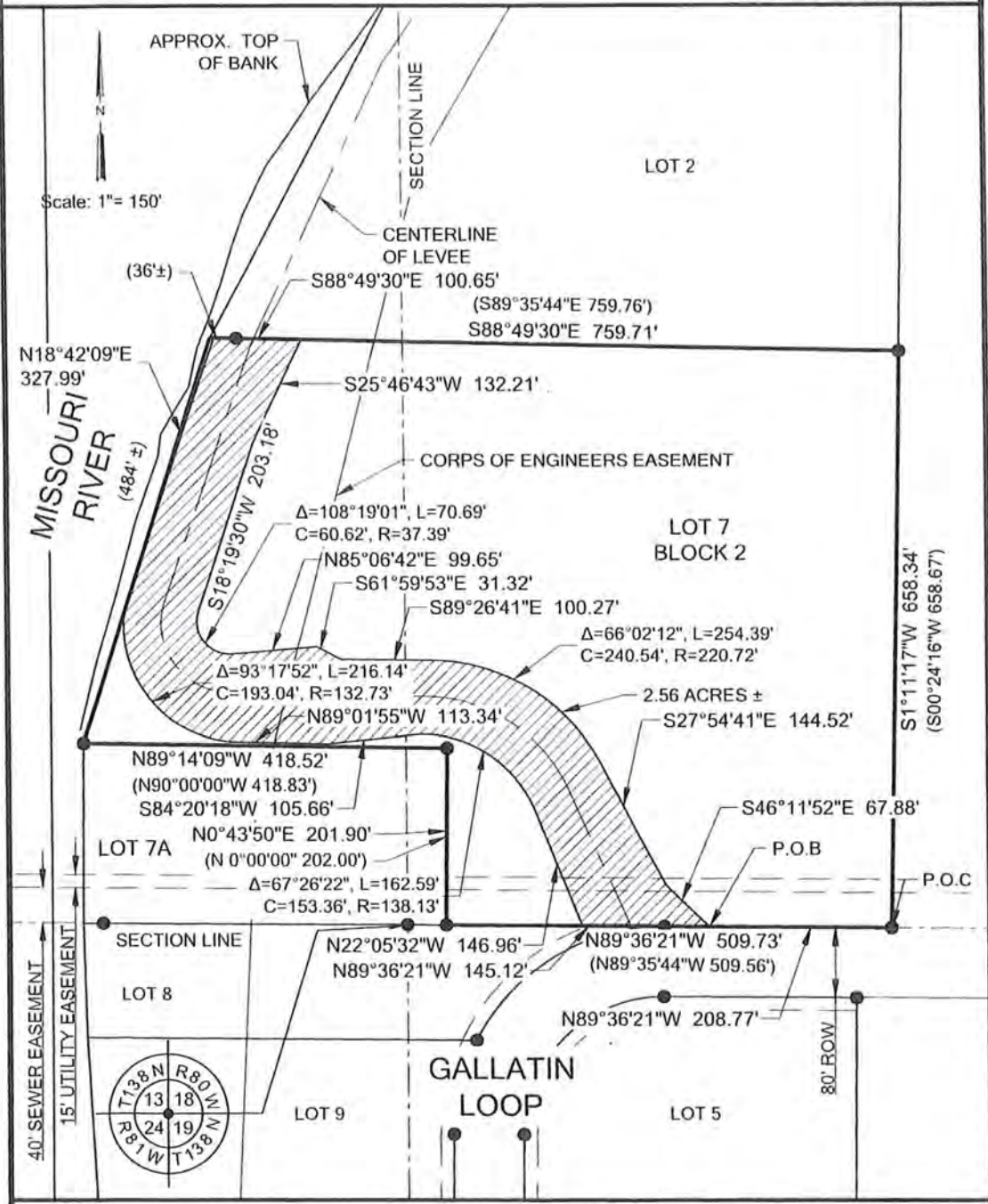
Trustee  Guardian or Conservator

Other: \_\_\_\_\_

Signer Is Representing: \_\_\_\_\_

EXHIBIT A  
 LOT 7 LESS LOT 7A, BLOCK 2, FOX ISLAND SECOND  
 SUBDIVISION, BURLEIGH COUNTY, NORTH DAKOTA

OWNER: LEE TAVIS &  
 BEVERLY BOISE-COSSART  
 3464 GALLATIN DR.  
 BISMARCK, ND 58504



**LEGEND**

- PLAT BEARING & DISTANCE (X')
- IRON MONUMENT FOUND ●
- PROPERTY LINE ———
- LEVEE EASEMENT [shaded area]
- POINT OF COMMENCEMENT P.O.C.
- POINT OF BEGINNING P.O.B.

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.  
 ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

<b>Houston Engineering Inc.</b>	Bismarck
	P: 701.323.0200 F: 701.323.0300

**LEVEE EASEMENT PLAT**

PROJECT NO. 6025-006	FOX ISLAND FLOOD CONTROL	SHEET 1 OF 2
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EXHIBIT A  
LOT 7 LESS LOT 7A, BLOCK 2, FOX ISLAND SECOND  
SUBDIVISION, BURLEIGH COUNTY, NORTH DAKOTA

OWNER: LEE TAVIS &  
BEVERLY BOISE-COSSART  
3464 GALLATIN DR.  
BISMARCK, ND 58504

DESCRIPTION OF LEVEE EASEMENT:

AN EASEMENT FOR A LEVEE ON LOT 7 LESS LOT 7A, BLOCK 2 FOX ISLAND SECOND SUBDIVISION, SECTION 13, TOWNSHIP 138 NORTH, RANGE 81 WEST AND SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID LOT 7; THENCE NORTH 89°36'21" WEST, ON AND ALONG THE SOUTH LINE OF SAID LOT 7, A DISTANCE OF 208.77 FEET TO THE POINT OF BEGINNING OF THE EASEMENT TO BE DESCRIBED; THENCE NORTH 89°36'21" WEST, CONTINUING ON AND ALONG SAID SOUTH LINE, A DISTANCE OF 145.12 FEET; THENCE NORTH 22°05'32" WEST, A DISTANCE OF 146.96 FEET; THENCE WESTERLY AND TO THE LEFT, A DISTANCE OF 162.59 FEET ON A 138.13 FOOT RADIUS, NON-TANGENTIAL CURVE, SAID CURVE HAVING A CHORD OF NORTH 57°34'55" WEST, A DISTANCE OF 153.36 FEET; THENCE SOUTH 84°20'18" WEST, A DISTANCE 105.66 FEET; THENCE NORTH 89°01'55" WEST, A DISTANCE 113.34 FEET; THENCE NORTHWESTERLY AND TO THE RIGHT, A DISTANCE OF 216.14 FEET ON A 132.73 FOOT RADIUS, NON-TANGENTIAL CURVE, SAID CURVE HAVING A CHORD OF NORTH 38°22'44" WEST, A DISTANCE OF 193.04 FEET; THENCE NORTH 18°42'09" EAST, A DISTANCE OF 327.99 FEET TO THE NORTH LINE OF SAID LOT 7; THENCE SOUTH 88°49'30" EAST, ON AND ALONG THE NORTH LINE OF SAID LOT 7, A DISTANCE OF 100.65 FEET; THENCE SOUTH 25°46'43" WEST, A DISTANCE OF 132.21 FEET; THENCE SOUTH 18°19'30" WEST, A DISTANCE OF 203.18 FEET; THENCE EASTERLY AND TO THE LEFT, A DISTANCE OF 70.69 FEET ON A 37.39 FOOT RADIUS, NON-TANGENTIAL CURVE, SAID CURVE HAVING A CHORD OF SOUTH 37°18'02" EAST, A DISTANCE OF 60.62 FEET; THENCE NORTH 85°06'42" EAST, A DISTANCE 99.65 FEET; THENCE SOUTH 61°59'53" EAST, A DISTANCE 31.32 FEET; THENCE SOUTH 89°26'41" EAST, A DISTANCE 100.27 FEET; THENCE SOUTHEASTERLY AND TO THE RIGHT, A DISTANCE OF 254.39 FEET ON A 220.72 FOOT RADIUS, NON-TANGENTIAL CURVE, SAID CURVE HAVING A CHORD OF SOUTH 57°37'55" EAST, A DISTANCE OF 240.54 FEET; THENCE SOUTH 27°54'41" EAST, A DISTANCE 144.52 FEET; THENCE SOUTH 46°11'52" EAST, A DISTANCE 67.88 FEET TO THE POINT OF BEGINNING.

SAID TRACT OF LAND CONTAINS 2.56 ACRES, MORE OR LESS.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.



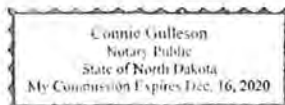
TODD MARSCHALL  
ND LIC. NO. 4431

4-10-17


DATE



ON THIS 10<sup>th</sup> DAY OF April 2017, TODD MARSCHALL, PERSONALLY APPEARED BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.



Connie Guleson  
NOTARY PUBLIC  
Burleigh COUNTY

 Houston Engineering Inc.	Bismarck
	P: 701.323.0200 F: 701.323.0300

**LEVEE EASEMENT**

PROJECT NO. 6025-006	FOX ISLAND FLOOD CONTROL	SHEET 2 OF 2
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## FOX ISLAND FLOOD CONTROL LEVEE EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **DOUGLAS AND SARA NESS**, hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of laying, constructing and maintaining an earthen dike or levee for flood control for the purposes of protecting property from the waters of the Missouri River. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2217. The property is required for a portion of the dike or levee to be constructed along the Missouri River as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR A LEVEE ON LOT 1, BLOCK 1 MILLS FIRST SUBDIVISION SECOND REPLAT, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID LOT 1; THENCE NORTH 69°17'12" WEST, ON AND ALONG THE NORTH LINE OF SAID LOT 1, A DISTANCE OF 325.33 FEET TO THE POINT OF BEGINNING OF THE EASEMENT TO BE DESCRIBED; THENCE SOUTH 30°25'01" WEST, A DISTANCE OF 75.12 FEET TO THE SOUTH LINE OF SAID LOT 1; THENCE NORTH 66°07'20" WEST, ON AND ALONG THE SOUTH LINE OF SAID LOT 1, A DISTANCE OF 103.61 FEET; THENCE NORTH 32°29'54" EAST, A DISTANCE 69.80 FEET, TO THE NORTH LINE OF SAID LOT 1; THENCE SOUTH 69°17'12" EAST, ON AND ALONG THE NORTH LINE OF SAID LOT 1, A DISTANCE OF 101.86 FEET, TO THE POINT OF BEGINNING.

SAID DESCRIBED EASEMENT CONTAINS 0.17 ACRES, MORE OR LESS AND IS SUBJECT TO ANY EASEMENTS, RESERVATIONS, RESTRICTIONS AND RIGHTS OF WAY OF RECORD IF ANY.



HOUSTON ENGINEERING INC.

ESMT

**866070**

\$30.00  
Page: 1 of 6  
12/8/2017 4:02 PM  
Burleigh County

The said property is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with the said earthen dike and customary appurtenances, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings, trees or other obstacles of any kind shall be placed or located upon the tract. The installation of utilities, (e.g., irrigation lines, electrical lines, phone, etc...) are not allowed without written permission. Should such installations occur without permission the Grantee may have these removed, and assess any associated costs to the Grantor.

Grantor reserves the right to otherwise use the said earthen dike for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the earthen dike or levee area so long as such improvements do not interfere with or otherwise impair the dike or levee structure or established/natural drainage, including any culverts or gates that are installed for management purposes. Grantor further has the responsibility to maintain the grass or other vegetation that may be planted or grown upon the dike or levee area. No obstructions (trees, structures, etc.) shall be allowed with said easement.

Grantor shall be responsible to maintain the grassed or other constructed surface conditions on the levee to reasonably prevent damages. The Grantee may inspect the dike or levee on an annual basis or as deemed necessary to assure the flood control project and related appurtenances are in a functional and operational condition.



IN WITNESSES WHEREOF, the Grantor has caused this instrument to be executed this 22<sup>nd</sup> day of August, 2017

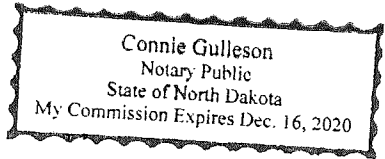
Douglas Ness and Sara Ness


By  \_\_\_\_\_  
Douglas Ness

By  \_\_\_\_\_  
Sara Ness

STATE OF NORTH DAKOTA    )  
  ) ss:  
COUNTY OF BURLEIGH    )

On this 22<sup>nd</sup> day of August, 2017, before me, a notary public in and for said county and state, personally appeared Douglas Ness and Sara Ness, described in and who has executed the within and foregoing instrument.



  
\_\_\_\_\_  
Notary Public

The legal description was prepared by:  
Houston Engineering  
3712 Lockport Street  
Bismarck, ND 58503  
(701) 323-0200

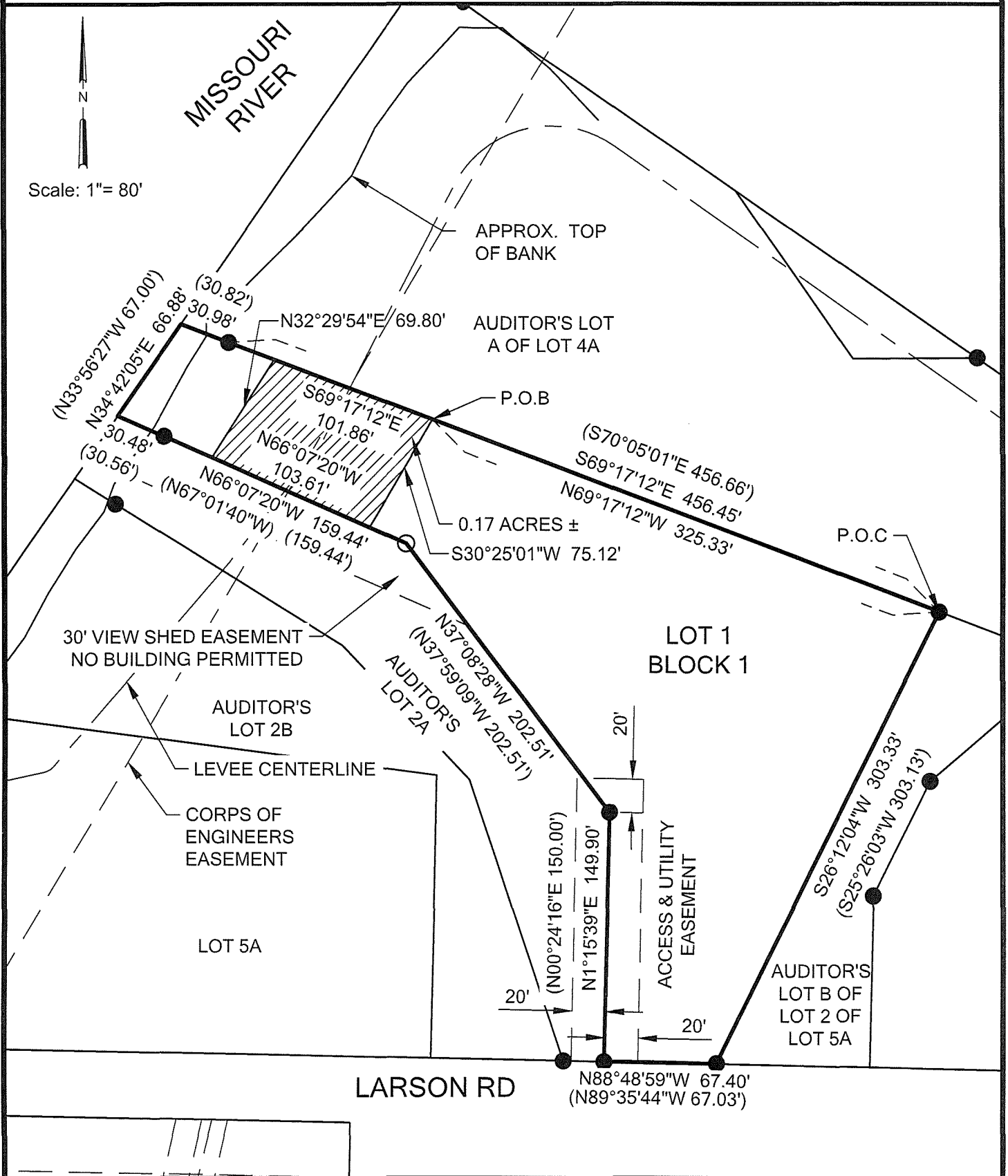
This document prepared by:  
David R. Bliss  
Bliss Law Firm, LLC (ID NO.: 04729)  
400 East Broadway Avenue, Suite 308  
P.O. Box 4126  
Bismarck, ND 58502-4126  
(701) 223-5769



**866070**  
\$30.00  
Page: 3 of 6  
12/8/2017 4:02 PM  
Burleigh County

EXHIBIT A  
LOT 1 BLOCK 1, MILLS FIRST  
SUBDIVISION SECOND REPLAT,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: DOUGLAS & SARA NESS  
2450 LARSON RD.  
BISMARCK, ND 58504



LEGEND

PLAT BEARING & DISTANCE	(X')
MONUMENT TO BE SET	○
IRON MONUMENT FOUND	●
PROPERTY LINE	—————
LEVEE EASEMENT	▨▨▨▨▨▨▨▨▨▨
POINT OF COMMENCEMENT	P.O.C.
POINT OF BEGINNING	P.O.B.

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES



Bismarck

P: 701.323.0200  
F: 701.323.0300

LEVEE EASEMENT PLAT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
1 OF 2

EXHIBIT A  
LOT 1 BLOCK 1, MILLS FIRST  
SUBDIVISION SECOND REPLAT,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: DOUGLAS & SARA NESS  
2450 LARSON RD.  
BISMARCK, ND 58504

DESCRIPTION OF LEVEE EASEMENT:

AN EASEMENT FOR A LEVEE ON LOT 1, BLOCK 1 MILLS FIRST SUBDIVISION SECOND REPLAT, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWED:

COMMENCING AT THE NORTHEAST CORNER OF SAID LOT 1; THENCE NORTH 69°17'12" WEST, ON AND ALONG THE NORTH LINE OF SAID LOT 1, A DISTANCE OF 325.33 FEET TO THE POINT OF BEGINNING OF THE EASEMENT TO BE DESCRIBED; THENCE SOUTH 30°25'01" WEST, A DISTANCE OF 75.12 FEET TO THE SOUTH LINE OF SAID LOT 1; THENCE NORTH 66°07'20" WEST, ON AND ALONG THE SOUTH LINE OF SAID LOT 1, A DISTANCE OF 103.61 FEET; THENCE NORTH 32°29'54" EAST, A DISTANCE 69.80 FEET, TO THE NORTH LINE OF SAID LOT 1; THENCE SOUTH 69°17'12" EAST, ON AND ALONG THE NORTH LINE OF SAID LOT 1, A DISTANCE OF 101.86 FEET, TO THE POINT OF BEGINNING.

SAID TRACT OF LAND CONTAINS 0.17 ACRES, MORE OR LESS.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

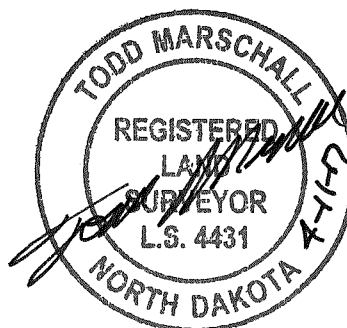
I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.



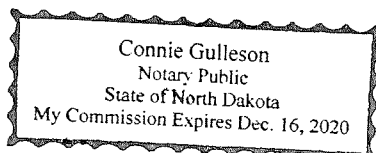
TODD MARSCHALL  
ND LIC. NO. 4431

4-11-17

DATE



ON THIS 11<sup>th</sup> DAY OF April 2017, TODD MARSCHALL, PERSONALLY APPEARED BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.



Connie Gulleson

NOTARY PUBLIC

Burleigh COUNTY, ND



HOUSTON ENGINEERING INC

ESMT

**866070**

\$30.00  
Page: 5 of 6  
12/8/2017 4:02 PM  
Burleigh County



Houston  
Engineering Inc.

Bismarck

P: 701.323.0200  
F: 701.323.0300

# LEVEE EASEMENT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
2 OF 2



HOUSTON ENGINEERING INC

ESMT

866070

\$30.00

Page: 6 of 6

12/8/2017 4:02 PM

Burleigh County

*Melissa Spawan, Deputy*





## FOX ISLAND FLOOD CONTROL LEVEE EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **ROBERT AND SHAUNNA UPGREN DUWAYNE AND SHARON TERNES**, hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of laying, constructing and maintaining an earthen dike or levee for flood control for the purposes of protecting property from the waters of the Missouri River. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2217. The property is required for a portion of the dike or levee to be constructed along the Missouri River as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR A LEVEE ON LOT 2A, BLOCK 1 MILLS FIRST SUBDIVISION SECOND REPLAT, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEASTERLY CORNER OF SAID AUDITOR'S LOT 2A; THENCE NORTH 37°08'28" WEST, ON AND ALONG THE NORTHERLY LINE OF SAID AUDITOR'S LOT 2A, A DISTANCE OF 202.51 FEET; THENCE NORTH 66°07'20" WEST, CONTINUING ON AND ALONG SAID NORTHERLY LINE, A DISTANCE OF 25.70 FEET TO THE POINT OF BEGINNING OF THE EASEMENT TO BE DESCRIBED; THENCE SOUTH 41°24'13" WEST, A DISTANCE OF 69.36 FEET, TO THE SOUTH LINE OF SAID AUDITOR'S LOT 2A; THENCE NORTH 58°08'47" WEST, ON AND ALONG SAID SOUTH LINE, A DISTANCE 90.61 FEET; THENCE NORTH 32°59'46" EAST, A DISTANCE OF 54.25 FEET, TO THE NORTH LINE OF SAID AUDITOR'S LOT 2A; THENCE SOUTH 66°07'20" EAST, ON AND ALONG SAID NORTH LINE, A DISTANCE OF 102.03 FEET, TO THE POINT OF BEGINNING.

SAID DESCRIBED EASEMENT CONTAINS 0.13 ACRES, MORE OR LESS AND IS SUBJECT TO ANY EASEMENTS, RESERVATIONS, RESTRICTIONS AND RIGHTS OF WAY OF RECORD IF ANY.



HOUSTON ENGINEERING INC

ESMT

**866066**

\$75.00  
Page: 1 of 7  
12/8/2017 4:02 PM  
Burleigh County

The said property is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with the said earthen dike and customary appurtenances, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings, trees or other obstacles of any kind shall be placed or located upon the tract. The installation of utilities, (e.g., irrigation lines, electrical lines, phone, etc...) are not allowed without written permission. Should such installations occur without permission the Grantee may have these removed, and assess any associated costs to the Grantor.

Grantor reserves the right to otherwise use the said earthen dike for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the earthen dike or levee area so long as such improvements do not interfere with or otherwise impair the dike or levee structure or established/natural drainage, including any culverts or gates that are installed for management purposes. Grantor further has the responsibility to maintain the grass or other vegetation that may be planted or grown upon the dike or levee area. No obstructions (trees, structures, etc.) shall be allowed with said easement.

Grantor shall be responsible to maintain the grassed or other constructed surface conditions on the levee to reasonably prevent damages. The Grantee may inspect the dike or levee on an annual basis or as deemed necessary to assure the flood control project and related appurtenances are in a functional and operational condition.





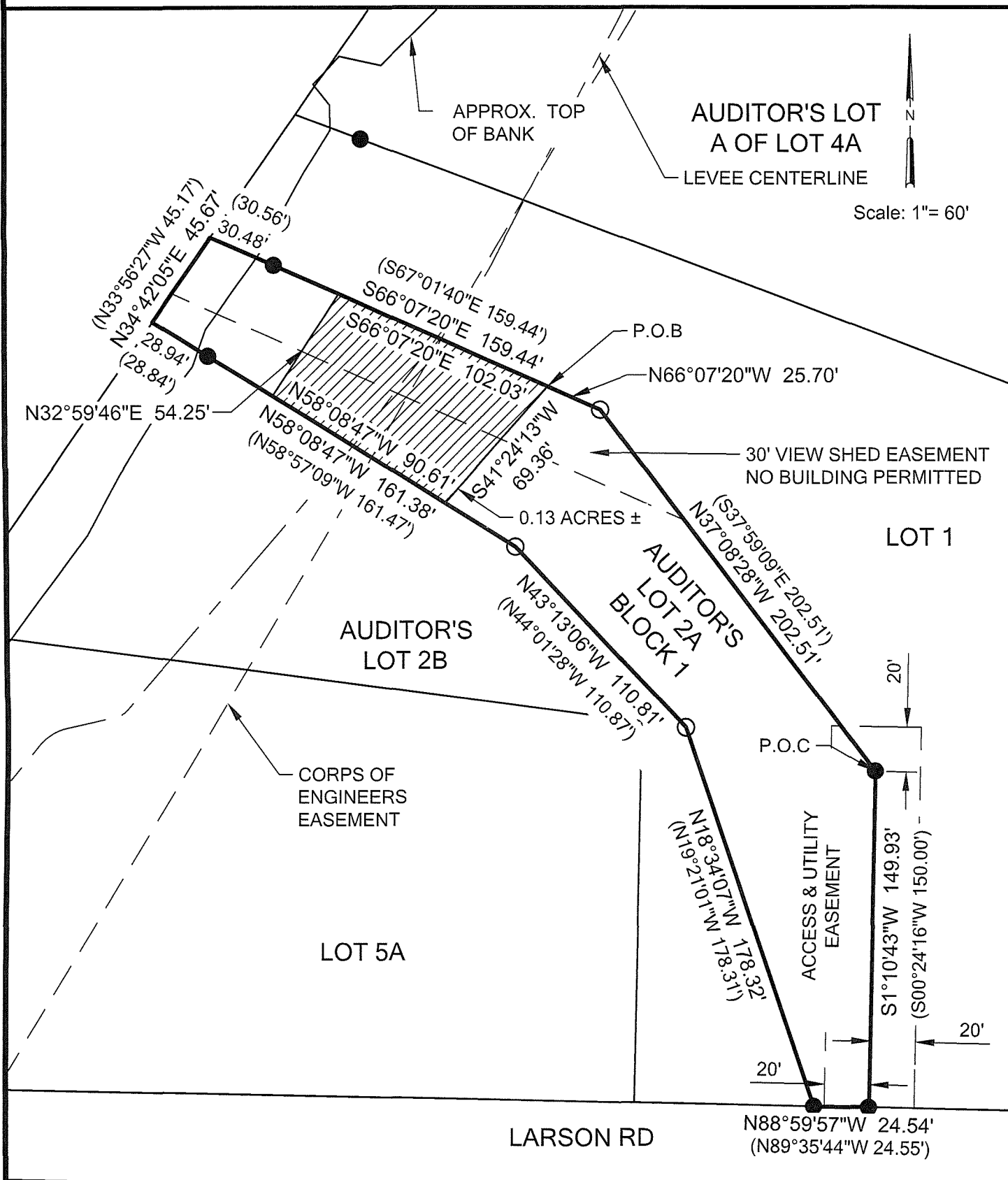




EXHIBIT A  
AUDITOR'S LOT 2A BLOCK 1, MILLS  
FIRST SUBDIVISION SECOND REPLAT,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: DUWAYNE & SHARON TERNES,  
ROBERT & SHAUNNA UPGREN

BISMARCK, ND 58504



LEGEND

- PLAT BEARING & DISTANCE (X')
- MONUMENT TO BE SET ○
- IRON MONUMENT FOUND ●
- PROPERTY LINE \_\_\_\_\_
- LEVEE EASEMENT [Hatched Box]
- POINT OF COMMENCEMENT P.O.C.
- POINT OF BEGINNING P.O.B.

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES



Bismarck

P: 701.323.0200  
F: 701.323.0300

LEVEE EASEMENT PLAT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
1 OF 2

EXHIBIT A  
AUDITOR'S LOT 2A BLOCK 1, MILLS  
FIRST SUBDIVISION SECOND REPLAT,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: DUWAYNE & SHARON TERNES,  
ROBERT & SHAUNNA UPGREN

BISMARCK, ND 58504

DESCRIPTION OF LEVEE EASEMENT:

AN EASEMENT FOR A LEVEE ON AUDITOR'S LOT 2A, BLOCK 1 MILLS FIRST SUBDIVISION  
SECOND REPLAT, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH  
PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEASTERLY CORNER OF SAID AUDITOR'S LOT 2A; THENCE NORTH  
37°08'28" WEST, ON AND ALONG THE NORTHERLY LINE OF SAID AUDITOR'S LOT 2A, A DISTANCE  
OF 202.51 FEET; THENCE NORTH 66°07'20" WEST, CONTINUING ON AND ALONG SAID  
NORTHERLY LINE, A DISTANCE OF 25.70 FEET TO THE POINT OF BEGINNING OF THE EASEMENT  
TO BE DESCRIBED; THENCE SOUTH 41°24'13" WEST, A DISTANCE OF 69.36 FEET, TO THE  
SOUTH LINE OF SAID AUDITOR'S LOT 2A; THENCE NORTH 58°08'47" WEST, ON AND ALONG SAID  
SOUTH LINE, A DISTANCE 90.61 FEET; THENCE NORTH 32°59'46" EAST, A DISTANCE OF 54.25  
FEET, TO THE NORTH LINE OF SAID AUDITOR'S LOT 2A; THENCE SOUTH 66°07'20" EAST, ON AND  
ALONG SAID NORTH LINE, A DISTANCE OF 102.03 FEET, TO THE POINT OF BEGINNING.

SAID TRACT OF LAND CONTAINS 0.13 ACRES, MORE OR LESS.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE  
SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

NOTE:

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER  
MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE  
LAWS OF THE STATE OF NORTH DAKOTA.

*Todd Marschall*

4-11-17

TODD MARSCHALL  
ND LIC. NO. 4431

DATE

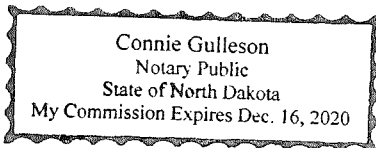



ON THIS 11<sup>th</sup> DAY OF April 2017, TODD MARSCHALL, PERSONALLY APPEARED  
BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN  
AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.

Connie Guleson

NOTARY PUBLIC

Burleigh COUNTY, ND



 <b>Houston Engineering Inc.</b>	Bismarck
	P: 701.323.0200 F: 701.323.0300

# LEVEE EASEMENT

PROJECT NO. 6025-006	FOX ISLAND FLOOD CONTROL	SHEET 2 OF 2
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HOUSTON ENGINEERING INC

ESMT

*Melissa Hanson Deputy*

**866066**

\$75.00  
Page: 7 of 7  
12/8/2017 4:02 PM  
Burleigh County





## FOX ISLAND FLOOD CONTROL LEVEE EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **EVERETT HERINGER AND CAROL HERINGER**, hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of laying, constructing and maintaining an earthen dike or levee for flood control for the purposes of protecting property from the waters of the Missouri River. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2217. The property is required for a portion of the dike or levee to be constructed along the Missouri River as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR A LEVEE ON AUDITOR'S LOT A OF LOT 4A AND AUDITOR'S LOT 1 OF LOT 4A, BLOCK 1 MILLS FIRST SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEASTERLY CORNER OF SAID AUDITOR'S LOT A OF LOT 4A; THENCE SOUTH 49°09'18" WEST, ON AND ALONG THE EASTERLY LINE OF SAID AUDITOR'S LOT A, A DISTANCE OF 65.49 FEET; THENCE NORTH 53°31'21" WEST, A DISTANCE OF 155.56 FEET; THENCE NORTH 50°00'19" WEST, A DISTANCE OF 138.30 FEET; THENCE NORTH 58°08'11" WEST, A DISTANCE OF 151.65 FEET; THENCE SOUTH 24°29'40" WEST, A DISTANCE OF 166.96 FEET TO THE SOUTH LINE OF SAID AUDITOR'S LOT A; THENCE NORTH 69°17'12" WEST, ON AND ALONG SAID SOUTH LINE OF AUDITOR'S LOT A, A DISTANCE 95.52 FEET; THENCE NORTH 35°22'28" EAST, A DISTANCE OF 193.63 FEET; THENCE NORTH 76°22'19" EAST, A DISTANCE OF 63.33 FEET TO THE NORTH LINE OF SAID AUDITOR'S LOT A; THENCE SOUTH 55°16'42" EAST, ON AND ALONG SAID NORTH LINE OF AUDITOR'S LOT A AND THE NORTH LINE OF SAID AUDITOR'S LOT 1 OF 4A, A DISTANCE 479.73 FEET; TO THE POINT OF BEGINNING.

SAID DESCRIBED EASEMENT CONTAINS 0.93 ACRES, MORE OR LESS AND IS SUBJECT TO ANY EASEMENTS, RESERVATIONS, RESTRICTIONS AND RIGHTS OF WAY OF RECORD IF ANY.



HOUSTON ENGINEERING INC

ESMT

**866071**

\$30.00

Page: 1 of 6

12/8/2017 4:02 PM

Burleigh County

The said property is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with the said earthen dike and customary appurtenances, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings, trees or other obstacles of any kind shall be placed or located upon the tract. The installation of utilities, (e.g., irrigation lines, electrical lines, phone, etc...) are not allowed without written permission. Should such installations occur without permission the Grantee may have these removed, and assess any associated costs to the Grantor.

Grantor reserves the right to otherwise use the said earthen dike for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the earthen dike or levee area so long as such improvements do not interfere with or otherwise impair the dike or levee structure or established/natural drainage, including any culverts or gates that are installed for management purposes. Grantor further has the responsibility to maintain the grass or other vegetation that may be planted or grown upon the dike or levee area. No obstructions (trees, structures, etc.) shall be allowed with said easement.

Grantor shall be responsible to maintain the grassed or other constructed surface conditions on the levee to reasonably prevent damages. The Grantee may inspect the dike or levee on an annual basis or as deemed necessary to assure the flood control project and related appurtenances are in a functional and operational condition.

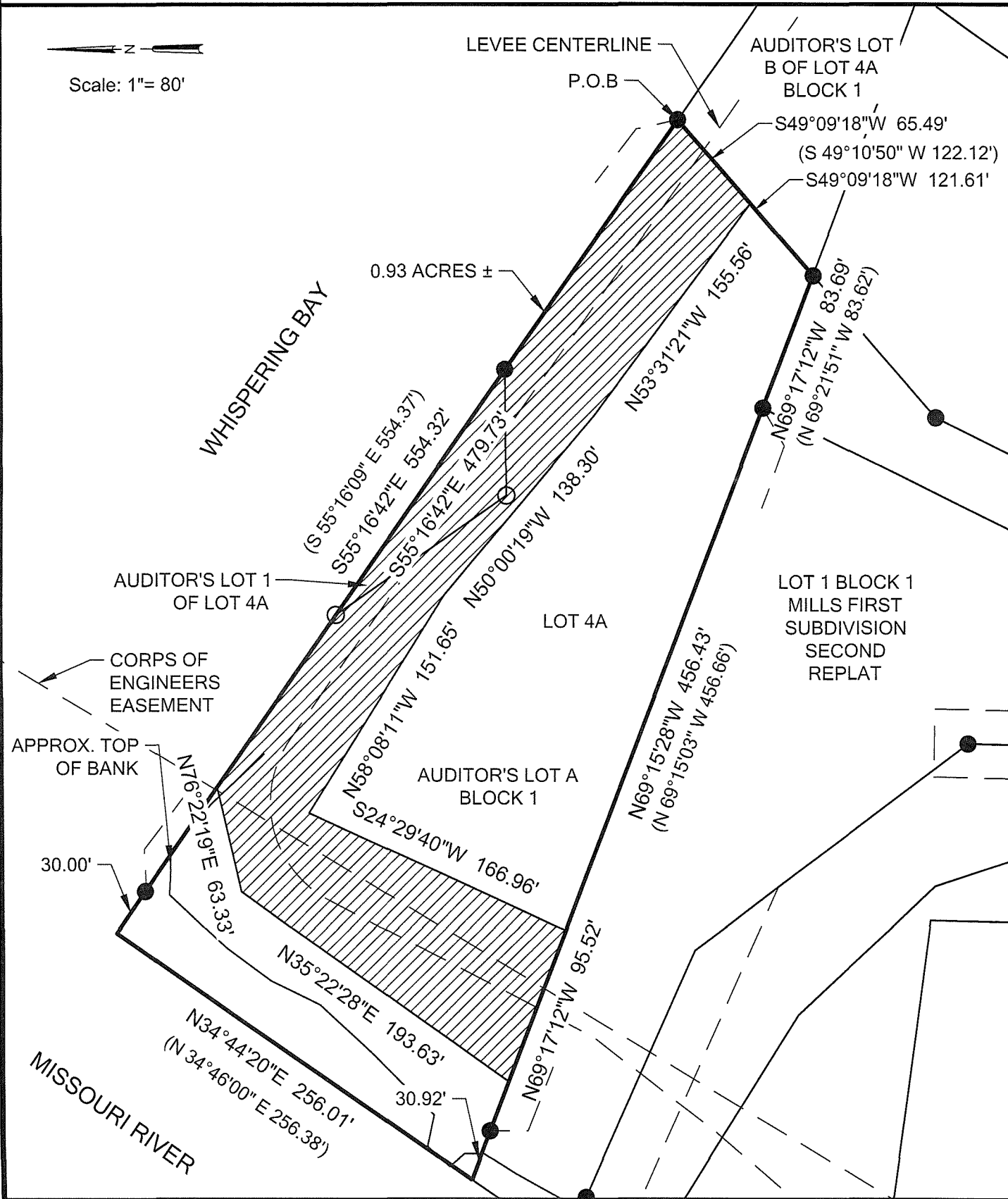






EXHIBIT A  
AUDITOR'S LOT A OF LOT 4A AND AUDITOR'S LOT 1 OF LOT 4A,  
BLOCK 1, MILLS FIRST SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: EVERETT & CAROL  
HERINGER  
2440 LARSON RD.  
BISMARCK, ND 58504



NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

LEGEND

- PLAT BEARING & DISTANCE (X)
- MONUMENT TO BE SET ○
- IRON MONUMENT FOUND ●
- PROPERTY LINE \_\_\_\_\_
- LEVEE EASEMENT [Hatched Box]
- POINT OF COMMENCEMENT P.O.C.
- POINT OF BEGINNING P.O.B.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES



Bismarck

P: 701.323.0200  
F: 701.323.0300

LEVEE EASEMENT PLAT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
1 OF 2

EXHIBIT A  
AUDITOR'S LOT A OF LOT 4A AND AUDITOR'S LOT 1 OF LOT 4A,  
BLOCK 1, MILLS FIRST SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: EVERETT & CAROL  
HERINGER  
2440 LARSON RD.  
BISMARCK, ND 58504

DESCRIPTION OF LEVEE EASEMENT:

AN EASEMENT FOR A LEVEE ON AUDITOR'S LOT A OF LOT 4A AND AUDITOR'S LOT 1 OF LOT 4A,  
BLOCK 1 MILLS FIRST SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE  
FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEASTERLY CORNER OF SAID AUDITOR'S LOT A OF LOT 4A; THENCE  
SOUTH 49°09'18" WEST, ON AND ALONG THE EASTERLY LINE OF SAID AUDITOR'S LOT A, A DISTANCE  
OF 65.49 FEET; THENCE NORTH 53°31'21" WEST, A DISTANCE OF 155.56 FEET; THENCE NORTH  
50°00'19" WEST, A DISTANCE OF 138.30 FEET; THENCE NORTH 58°08'11" WEST, A DISTANCE OF 151.65  
FEET; THENCE SOUTH 24°29'40" WEST, A DISTANCE OF 166.96 FEET TO THE SOUTH LINE OF SAID  
AUDITOR'S LOT A; THENCE NORTH 69°17'12" WEST, ON AND ALONG SAID SOUTH LINE OF AUDITOR'S  
LOT A, A DISTANCE 95.52 FEET; THENCE NORTH 35°22'28" EAST, A DISTANCE OF 193.63 FEET;  
THENCE NORTH 76°22'19" EAST, A DISTANCE OF 63.33 FEET TO THE NORTH LINE OF SAID AUDITOR'S  
LOT A; THENCE SOUTH 55°16'42" EAST, ON AND ALONG SAID NORTH LINE OF AUDITOR'S LOT A AND  
THE NORTH LINE OF SAID AUDITOR'S LOT 1 OF 4A, A DISTANCE 479.73 FEET; TO THE POINT OF  
BEGINNING.

SAID TRACT OF LAND CONTAINS 0.93 ACRES, MORE OR LESS.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE  
SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER MY  
DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE  
STATE OF NORTH DAKOTA.



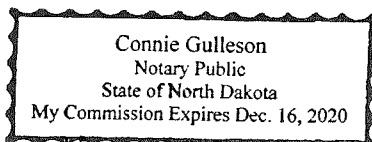
TODD MARSCHALL  
ND LIC. NO. 4431

8-18-17

DATE



ON THIS 18<sup>th</sup> DAY OF August 2017, TODD MARSCHALL, PERSONALLY APPEARED  
BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN AND  
FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.



Connie Gulleson

NOTARY PUBLIC

Burleigh COUNTY, ND



HOUSTON ENGINEERING INC

ESMT

**866071**

\$30.00  
Page: 5 of 6  
12/8/2017 4:02 PM  
Burleigh County



Houston  
Engineering Inc.

Bismarck

P: 701.323.0200  
F: 701.323.0300

# LEVEE EASEMENT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
2 OF 2



HOUSTON ENGINEERING INC

ESMT

*Melissa Gannon, Deputy*

**866071**

\$30.00

Page: 6 of 6

12/8/2017 4:02 PM

Burleigh County





## FOX ISLAND FLOOD CONTROL LEVEE EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **EVERETT HERINGER & CAROL HERINGER**, hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of laying, constructing and maintaining an earthen dike or levee for flood control for the purposes of protecting property from the waters of the Missouri River. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2217. The property is required for a portion of the dike or levee to be constructed along the Missouri River as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR A LEVEE ON LOT 2, BLOCK 1 LARSON SUBDIVISION, SECTION 13, TOWNSHIP 138 NORTH, RANGE 81 WEST AND SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID LOT 2; THENCE NORTH 88°49'30" WEST, ON AND ALONG THE SOUTH LINE OF SAID LOT 2, A DISTANCE OF 680.44 FEET TO THE POINT OF BEGINNING OF THE EASEMENT TO BE DESCRIBED; THENCE NORTH 88°49'30" WEST, CONTINUING ON AND ALONG SAID SOUTH LINE, A DISTANCE OF 116.53 FEET; THENCE NORTH 27°07'14" EAST, A DISTANCE OF 372.67 FEET; THENCE NORTH 37°06'08" EAST, A DISTANCE 188.23 FEET TO THE NORTH LINE OF SAID LOT 2; THENCE SOUTH 88°42'17" EAST, ON AND ALONG THE NORTH LINE OF SAID LOT 2, A DISTANCE OF 89.47 FEET; THENCE SOUTH 34°06'55" WEST, A DISTANCE OF 228.96 FEET; THENCE SOUTH 23°07'56" WEST, A DISTANCE OF 232.47 FEET; THENCE SOUTH 24°55'16" WEST, A DISTANCE OF 86.94 FEET, TO THE POINT OF BEGINNING.

SAID DESCRIBED EASEMENT CONTAINS 1.15 ACRES, MORE OR LESS AND IS SUBJECT TO ANY EASEMENTS, RESERVATIONS, RESTRICTIONS AND RIGHTS OF WAY OF RECORD IF ANY.



HOUSTON ENGINEERING INC

ESMT

**866069**

\$30.00  
Page: 1 of 6  
12/8/2017 4:02 PM  
Burleigh County

The said property is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with the said earthen dike and customary appurtenances, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings, trees or other obstacles of any kind shall be placed or located upon the tract. The installation of utilities, (e.g., irrigation lines, electrical lines, phone, etc...) are not allowed without written permission. Should such installations occur without permission the Grantee may have these removed, and assess any associated costs to the Grantor.

Grantor reserves the right to otherwise use the said earthen dike for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the earthen dike or levee area so long as such improvements do not interfere with or otherwise impair the dike or levee structure or established/natural drainage, including any culverts or gates that are installed for management purposes. Grantor further has the responsibility to maintain the grass or other vegetation that may be planted or grown upon the dike or levee area. No obstructions (trees, structures, etc.) shall be allowed with said easement.

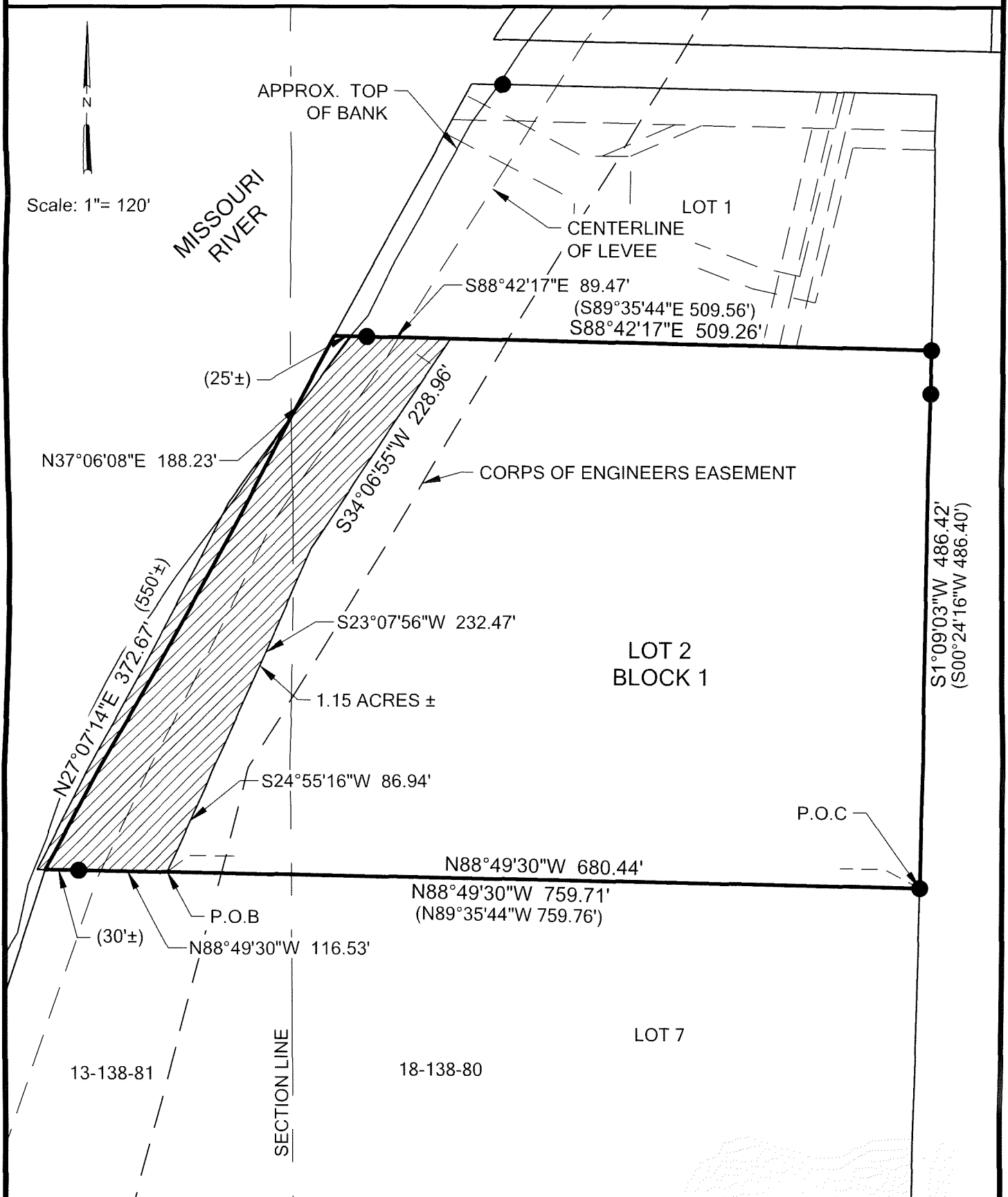
Grantor shall be responsible to maintain the grassed or other constructed surface conditions on the levee to reasonably prevent damages. The Grantee may inspect the dike or levee on an annual basis or as deemed necessary to assure the flood control project and related appurtenances are in a functional and operational condition.






EXHIBIT A  
LOT 2, BLOCK 1, LARSON SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: EVERETT & CAROL HERINGER  
2505 LARSON RD.  
BISMARCK, ND 58504



LEGEND

- PLAT BEARING & DISTANCE (X')
- MONUMENT TO BE SET ○
- IRON MONUMENT FOUND ●
- PROPERTY LINE \_\_\_\_\_
- LEVEE EASEMENT 
- POINT OF COMMENCEMENT P.O.C.
- POINT OF BEGINNING P.O.B.

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES



Bismarck

P: 701.323.0200  
F: 701.323.0300

LEVEE EASEMENT PLAT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
1 OF 2

EXHIBIT A  
LOT 2, BLOCK 1, LARSON SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: EVERETT & CAROL HERINGER  
2505 LARSON RD.  
BISMARCK, ND 58504

DESCRIPTION OF LEVEE EASEMENT:

AN EASEMENT FOR A LEVEE ON LOT 2, BLOCK 1 LARSON SUBDIVISION, SECTION 13, TOWNSHIP 138 NORTH, RANGE 81 WEST AND SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

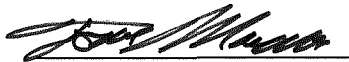
COMMENCING AT THE SOUTHEAST CORNER OF SAID LOT 2; THENCE NORTH 88°49'30" WEST, ON AND ALONG THE SOUTH LINE OF SAID LOT 2, A DISTANCE OF 680.44 FEET TO THE POINT OF BEGINNING OF THE EASEMENT TO BE DESCRIBED; THENCE NORTH 88°49'30" WEST, CONTINUING ON AND ALONG SAID SOUTH LINE, A DISTANCE OF 116.53 FEET; THENCE NORTH 27°07'14" EAST, A DISTANCE OF 372.67 FEET; THENCE NORTH 37°06'08" EAST, A DISTANCE 188.23 FEET TO THE NORTH LINE OF SAID LOT 2; THENCE SOUTH 88°42'17" EAST, ON AND ALONG THE NORTH LINE OF SAID LOT 2, A DISTANCE OF 89.47 FEET; THENCE SOUTH 34°06'55" WEST, A DISTANCE OF 228.96 FEET; THENCE SOUTH 23°07'56" WEST, A DISTANCE OF 232.47 FEET; THENCE SOUTH 24°55'16" WEST, A DISTANCE OF 86.94 FEET, TO THE POINT OF BEGINNING.

SAID TRACT OF LAND CONTAINS 1.15 ACRES, MORE OR LESS.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

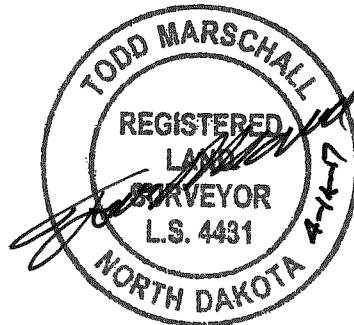
NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.



TODD MARSCHALL  
ND LIC. NO. 4431

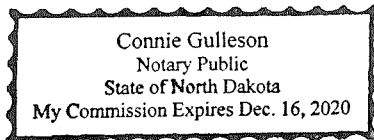
4-14-17  
DATE



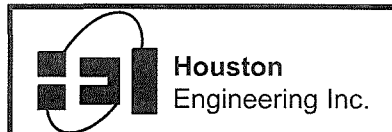
ON THIS 14<sup>th</sup> DAY OF April 2017, TODD MARSCHALL, PERSONALLY APPEARED BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.

Connie Gullison

NOTARY PUBLIC  
Burleigh COUNTY, ND



**866069**  
\$30.00  
Page: 5 of 6  
12/8/2017 4:02 PM  
Burleigh County



Bismarck

P: 701.323.0200  
F: 701.323.0300

**LEVEE EASEMENT**

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
2 OF 2





HOUSTON ENGINEERING INC

ESMT

866069

\$30.00

Page: 6 of 6

12/8/2017 4:02 PM

Burleigh County

*Melissa Hanson, Deputy*





## FOX ISLAND FLOOD CONTROL ACCESS, DRAINAGE, & PUMPING EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **CHRIS MEEKER & JANEL MEEKER** hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of maintaining the natural drainage outlet for the western half of Fox Island, and in cases where the established pumping structure fails to operate, setting up a temporary pump intake and the ingress and egress, to and from, together with the right to remove obstructions of any type and kind interfering with the placement and maintenance of said pump for the purposes of lowering the ground and surface waters during a Missouri River flood event. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2218. The property is required for access and the setup of a temporary pumping device, owned and operated by Burleigh County during a Missouri River flood event, as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR DRAINAGE ON LOT 1, BLOCK 2, FOX ISLAND SUBDIVISION, SECTION 19, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

THE EASTERLY 85.00 FEET OF THE WESTERLY 140.00 FEET OF THE SOUTHERLY 25.00 FEET OF SAID LOT 1 AS MEASURED PARALLEL WITH AND PERPENDICULAR TO THE SOUTHERLY LINE OF SAID LOT 1.

SAID TRACT OF LAND CONTAINS 0.05 ACRES, MORE OR LESS.

The said property is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.



**896395**

\$30.00  
Page: 1 of 6  
1/24/2020 2:11 PM  
Burleigh County

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with said temporary pump, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings other obstacles of any kind shall be placed or located upon the tract of land.

Grantor reserves the right to otherwise use the said tract of land for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the tract of land within the easement so long as such improvements do not interfere with or otherwise impair the setup of said temporary pump. Grantor further has the responsibility to maintain the grass or other vegetation on the tract of land.

The Grantee may inspect said temporary pump as deemed necessary to assure it is in functional and operational condition during the duration of its use. Grantee shall, after completing the deconstruction, removal, or after the exercise of any rights granted by this easement, restore the lands and existing utilities (ex. sprinklers, grass, etc.) to as near their original condition as reasonably possible and removal all debris, spoils, and equipment resulting from or used in the operation or access to the lands and agrees to pay for damages outside of the easement area that may arise from the construction, operation, or maintenance.

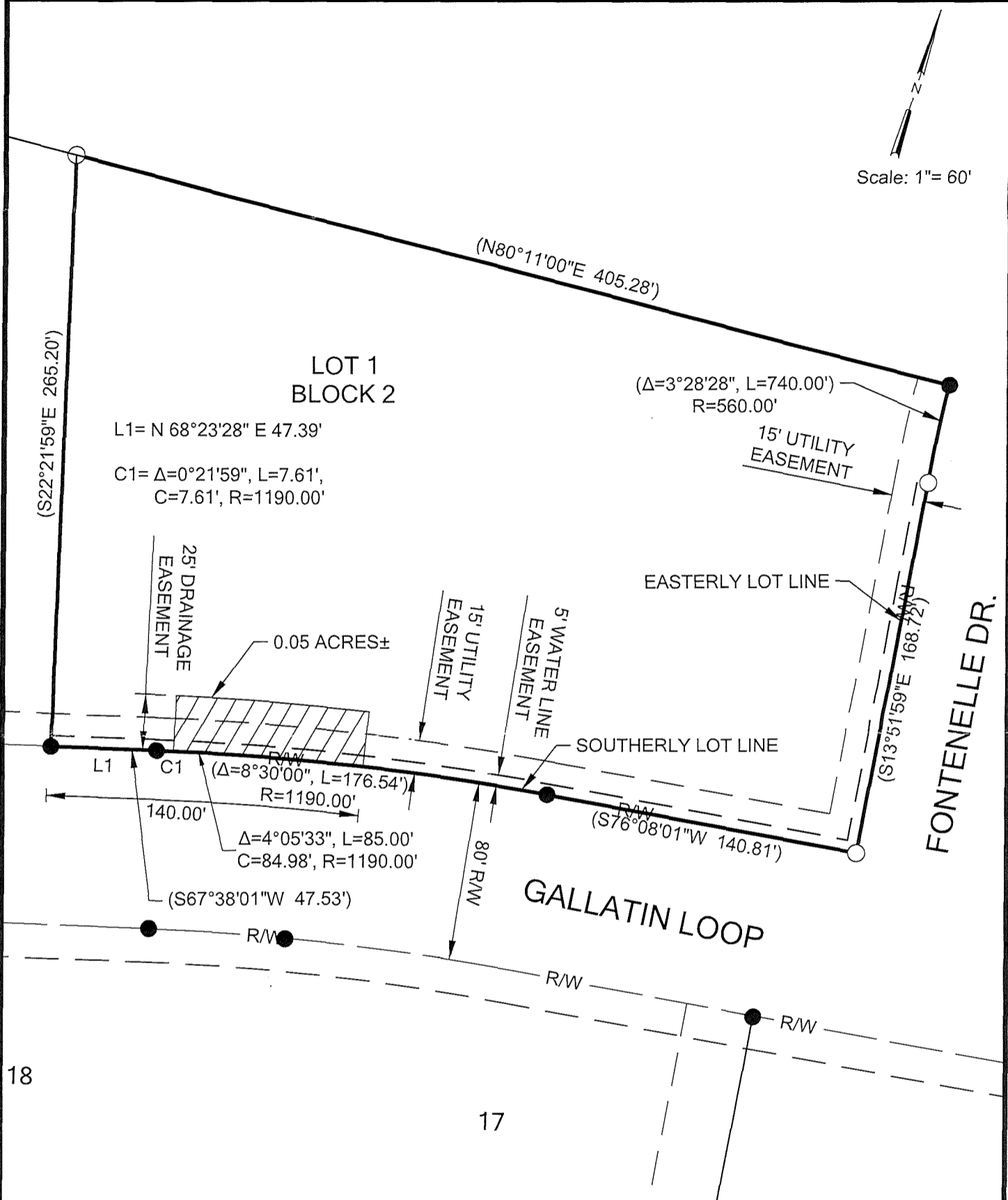
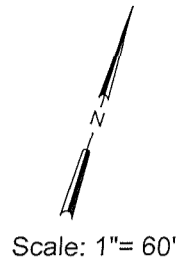


**896395**  
\$30.00  
Page: 2 of 6  
1/24/2020 2:11 PM  
Burleigh County



EXHIBIT A  
 LOT 1, BLOCK 2, FOX ISLAND SUBDIVISION  
 BURLEIGH COUNTY, NORTH DAKOTA

OWNER: CHRIS & JANEL MEEKER  
 3370 GALLATIN LOOP  
 BISMARCK ND 58504



LEGEND

PLAT BEARING & DISTANCE	(X')
MONUMENT TO BE SET	○
IRON MONUMENT FOUND	●
PROPERTY LINE	—————
LEVEE EASEMENT	
POINT OF COMMENCEMENT	P.O.C.
POINT OF BEGINNING	P.O.B.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

	Bismarck
	P: 701.323.0200 F: 701.323.0300

**DRAINAGE EASEMENT PLAT**

PROJECT NO. 6025-006	FOX ISLAND FLOOD CONTROL	SHEET 1 OF 2
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**896395**  
 \$30.00  
 Page: 4 of 6  
 1/24/2020 2:11 PM  
 Burleigh County

EXHIBIT A  
LOT 1, BLOCK 2, FOX ISLAND SUBDIVISION  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: CHRIS & JANEL MEEKER  
3370 GALLATIN LOOP  
BISMARCK ND 58504

DESCRIPTION OF DRAINAGE EASEMENT:

AN EASEMENT FOR DRAINAGE ON LOT 1, BLOCK 2, FOX ISLAND SUBDIVISION, SECTION 19, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

THE EASTERLY 85.00 FEET OF THE WESTERLY 140.00 FEET OF THE SOUTHERLY 25.00 FEET OF SAID LOT 1 AS MEASURED PARALLEL WITH AND PERPENDICULAR TO THE SOUTHERLY LINE OF SAID LOT 1.

SAID TRACT OF LAND CONTAINS 0.05 ACRES, MORE OR LESS.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

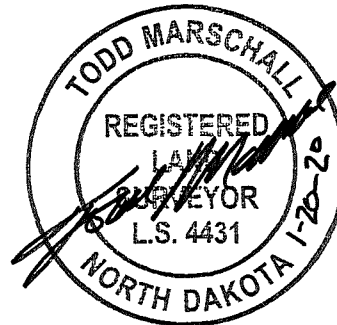
I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

*Todd Marschall*

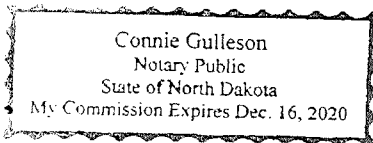
1-20-2020

TODD MARSCHALL  
ND LIC. NO. 4431

DATE



ON THIS 20<sup>th</sup> DAY OF January 2020, TODD MARSCHALL, PERSONALLY APPEARED BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.



Connie Guleson  
NOTARY PUBLIC  
Burleigh COUNTY, ND

 <b>Houston Engineering Inc.</b>	Bismarck
	P: 701.323.0200 F: 701.323.0300

# DRAINAGE EASEMENT

PROJECT NO. 6025-006	FOX ISLAND FLOOD CONTROL	SHEET 2 OF 2
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**896395**  
\$30.00  
Page: 5 of 6  
1/24/2020 2:11 PM  
Burleigh County



## FOX ISLAND FLOOD CONTROL LEVEE EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **GREGORY LARSON & DIANE LARSON**, hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of laying, constructing and maintaining an earthen dike or levee for flood control for the purposes of protecting property from the waters of the Missouri River. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2217. The property is required for a portion of the dike or levee to be constructed along the Missouri River as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR A LEVEE ON LOT 1, BLOCK 1 LARSON SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWED:

COMMENCING AT THE SOUTHEAST CORNER OF SAID LOT 1; THENCE NORTH 88°42'17" WEST, ON AND ALONG THE SOUTH LINE OF SAID LOT 1, A DISTANCE OF 433.80 FEET TO THE POINT OF BEGINNING OF THE EASEMENT TO BE DESCRIBED; THENCE NORTH 88°42'17" WEST, CONTINUING ON AND ALONG SAID SOUTH LINE, A DISTANCE OF 93.08 FEET; THENCE NORTH 31°58'32" EAST, A DISTANCE OF 267.95 FEET TO THE NORTH LINE OF SAID LOT 1; THENCE SOUTH 88°49'01" EAST, ON AND ALONG SAID NORTH LINE, A DISTANCE 93.12 FEET; THENCE SOUTH 34°27'35" WEST, A DISTANCE OF 131.41 FEET; THENCE SOUTH 64°08'03" WEST, A DISTANCE OF 31.15 FEET; THENCE SOUTH 29°59'34" WEST, A DISTANCE OF 13.78 FEET; THENCE SOUTH 00°00'00" EAST, A DISTANCE OF 37.39 FEET; THENCE SOUTH 30°09'22" WEST, A DISTANCE OF 65.01 FEET, TO THE POINT OF BEGINNING

SAID DESCRIBED EASEMENT CONTAINS 0.46 ACRES, MORE OR LESS AND IS SUBJECT TO ANY EASEMENTS, RESERVATIONS, RESTRICTIONS AND RIGHTS OF WAY OF RECORD IF ANY.

The said property is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.



**866067**

\$30.00  
Page: 1 of 6  
12/8/2017 4:02 PM  
Burleigh County

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with the said earthen dike and customary appurtenances, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings, trees or other obstacles of any kind shall be placed or located upon the tract. The installation of utilities, (e.g., irrigation lines, electrical lines, phone, etc...) are not allowed without written permission. Should such installations occur without permission the Grantee may have these removed, and assess any associated costs to the Grantor.

Grantor reserves the right to otherwise use the said earthen dike for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the earthen dike or levee area so long as such improvements do not interfere with or otherwise impair the dike or levee structure or established/natural drainage, including any culverts or gates that are installed for management purposes. Grantor further has the responsibility to maintain the grass or other vegetation that may be planted or grown upon the dike or levee area. No obstructions (trees, structures, etc.) shall be allowed with said easement.

Grantor shall be responsible to maintain the grassed or other constructed surface conditions on the levee to reasonably prevent damages. The Grantee may inspect the dike or levee on an annual basis or as deemed necessary to assure the flood control project and related appurtenances are in a functional and operational condition.





IN WITNESSES WHEREOF, the Grantor has caused this instrument to be executed this 31<sup>st</sup> day of October, 2017.

Gregory Larson & Diane Larson

By *Gregory Larson*  
Gregory Larson

By *Diane Larson*  
Diane Larson

STATE OF NORTH DAKOTA )  
 ) ss:  
COUNTY OF BURLEIGH )

On this 31<sup>st</sup> day of Oct., 2017, before me, a notary public in and for said county and state, personally appeared Gregory Larson and Diane Larson, described in and who has executed the within and foregoing instrument.

*Josh Pape*  
Notary Public



The legal description was prepared by:  
Houston Engineering  
3712 Lockport Street  
Bismarck, ND 58503  
(701) 323-0200

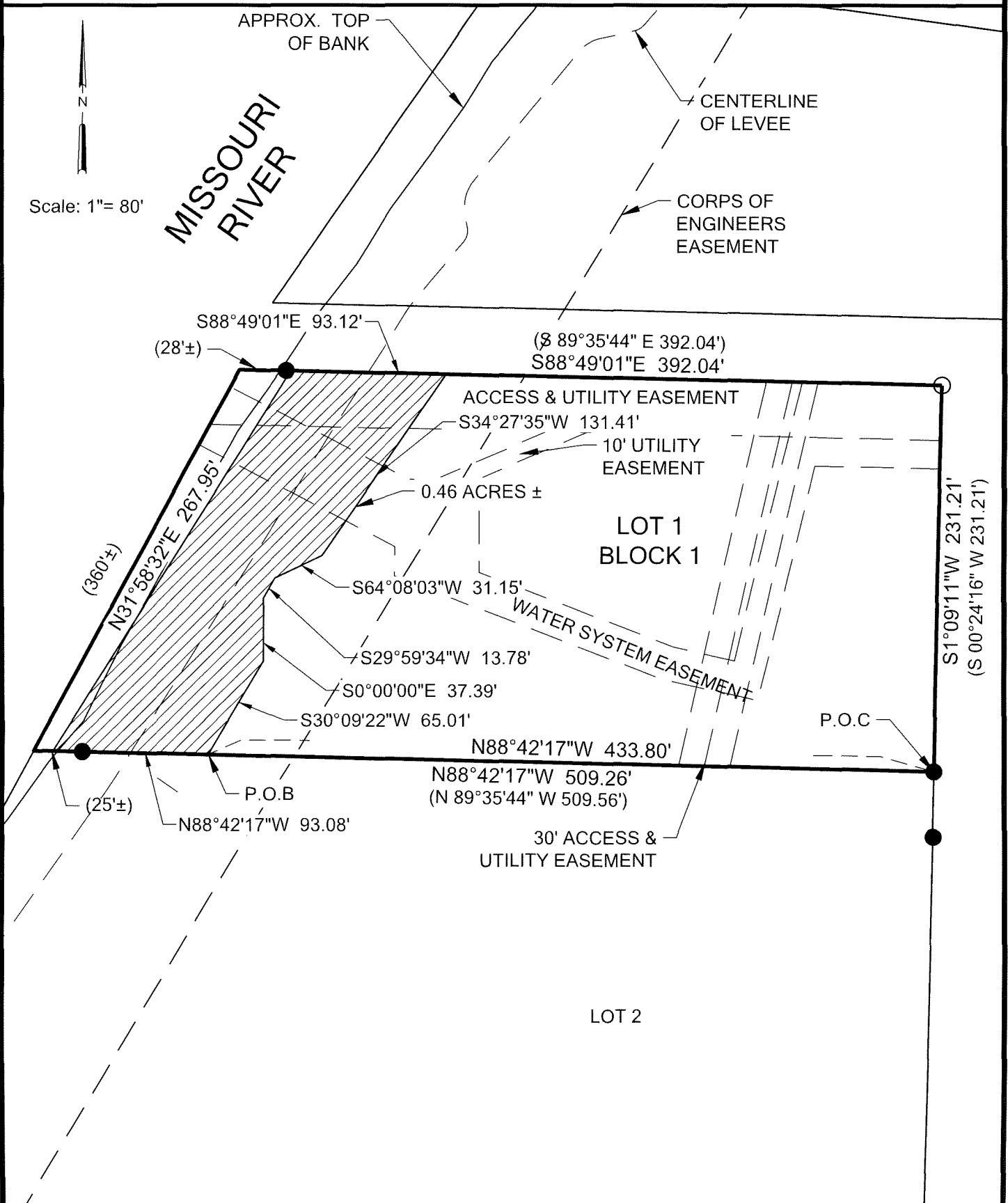
This document prepared by:  
David R. Bliss  
Bliss Law Firm, LLC (ID NO.: 04729)  
400 East Broadway Avenue, Suite 308  
P.O. Box 4126  
Bismarck, ND 58502-4126  
(701) 223-5769



**866067**  
\$30.00  
Page: 3 of 6  
12/8/2017 4:02 PM  
Burleigh County

EXHIBIT A  
LOT 1, BLOCK 1, LARSON SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: GREGORY & DIANE LARSON  
2525 LARSON RD.  
BISMARCK, ND 58504



LEGEND

- PLAT BEARING & DISTANCE (X')
- MONUMENT TO BE SET ○
- IRON MONUMENT FOUND ●
- PROPERTY LINE ———
- LEVEE EASEMENT [Hatched Box]
- POINT OF COMMENCEMENT P.O.C. ○
- POINT OF BEGINNING P.O.B. ●

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES



Bismarck

P: 701.323.0200  
F: 701.323.0300

LEVEE EASEMENT PLAT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
1 OF 2

EXHIBIT A  
LOT 1, BLOCK 1, LARSON SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: GREGORY & DIANE LARSON  
2525 LARSON RD.  
BISMARCK, ND 58504

DESCRIPTION OF LEVEE EASEMENT:

AN EASEMENT FOR A LEVEE ON LOT 1, BLOCK 1 LARSON SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID LOT 1; THENCE NORTH 88°42'17" WEST, ON AND ALONG THE SOUTH LINE OF SAID LOT 1, A DISTANCE OF 433.80 FEET TO THE POINT OF BEGINNING OF THE EASEMENT TO BE DESCRIBED; THENCE NORTH 88°42'17" WEST, CONTINUING ON AND ALONG SAID SOUTH LINE, A DISTANCE OF 93.08 FEET; THENCE NORTH 31°58'32" EAST, A DISTANCE OF 267.95 FEET TO THE NORTH LINE OF SAID LOT 1; THENCE SOUTH 88°49'01" EAST, ON AND ALONG SAID NORTH LINE, A DISTANCE 93.12 FEET; THENCE SOUTH 34°27'35" WEST, A DISTANCE OF 131.41 FEET; THENCE SOUTH 64°08'03" WEST, A DISTANCE OF 31.15 FEET; THENCE SOUTH 29°59'34" WEST, A DISTANCE OF 13.78 FEET; THENCE SOUTH 00°00'00" EAST, A DISTANCE OF 37.39 FEET; THENCE SOUTH 30°09'22" WEST, A DISTANCE OF 65.01 FEET, TO THE POINT OF BEGINNING

SAID TRACT OF LAND CONTAINS 0.46 ACRES, MORE OR LESS.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.



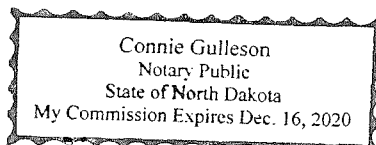
TODD MARSCHALL  
ND LIC. NO. 4431

4-11-17

DATE



ON THIS 11<sup>th</sup> DAY OF April 2017, TODD MARSCHALL, PERSONALLY APPEARED BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.



Connie Guleson

NOTARY PUBLIC

Burleigh COUNTY, ND



HOUSTON ENGINEERING INC

ESMT

**866067**

\$30.00  
Page: 5 of 6  
12/8/2017 4:02 PM  
Burleigh County



Houston  
Engineering Inc.

Bismarck

P: 701.323.0200  
F: 701.323.0300

## LEVEE EASEMENT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
2 OF 2



HOUSTON ENGINEERING INC

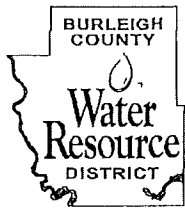
*Melissa Johnson, Deputy*

ESMT

**866067**

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Page: 6 of 6  
12/8/2017 4:02 PM  
Burleigh County





## FOX ISLAND FLOOD CONTROL ACCESS & PUMPING EASEMENT

KNOW ALL PERSONS BY THESE PRESENTS that JAMES W. SMITH & DORIS M. SMITH, hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10 00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of setting up a temporary pump and the ingress and egress, to and from, together with the right to remove obstructions interfering with the placement and maintenance of said pump for the purposes of lowering the internal lake level elevations during a Missouri River flood event. Such easement shall be subject to the deposition of *Becker, et al v Burleigh County, et al Civil No. 08-2018-cv-00725* and shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2217. The property is required for access and the setup of a temporary pumping device, owned and operated by Burleigh County during a Missouri River flood event, as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR DRAINAGE ON LOT 4, BLOCK 7 FOX ISLAND SECOND SUBDIVISION, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS.

THE SOUTHERLY 6.00 FEET OF SAID LOT 4 AS MEASURED PARALLEL WITH THE SOUTHERLY LINE OF SAID LOT 4 AND THE SOUTHERLY 15.00 FEET AS MEASURED PARALLEL WITH THE SOUTHERLY LINE OF SAID LOT 4 OF THE WESTERLY 30.00 FEET OF THE EASTERLY 318 22 FEET OF SAID LOT 4 AS MEASURED PARALLEL WITH THE EASTERLY LINE OF SAID LOT 4

SAID TRACT OF LAND CONTAINS 0 06 ACRES, MORE OR LESS

The said property is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.



HOUSTON ENGINEERING INC

ESMT

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Page 1 of 6  
5/2/2018 4 30 PM  
Burleigh County

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with said temporary pump, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings other obstacles of any kind shall be placed or located upon the tract of land

Grantor reserves the right to otherwise use the said tract of land for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the tract of land within the easement so long as such improvements do not interfere with or otherwise impair the setup of said temporary pump Grantor further has the responsibility to maintain the grass or other vegetation on the tract of land

The Grantee shall place buffer trees and remove and dispose of designated trees, as shown on Exhibit "B" Stumps shall be removed and all disturbed areas due to relevant activity shall be seeded Grantee may, after twenty-four (24) hours of notifying the Grantor, or immediately during a Missouri River flood event, trim branches hanging into the easement area that inhibit the ability to access and implement the purpose for which the grant is made

The Grantee may inspect said temporary pump as deemed necessary to assure it is in functional and operational condition during the duration of its use. Grantee shall, after completing the deconstruction, removal, or after the exercise of any rights granted by this easement, restore the lands and existing utilities (ex. sprinklers, grass, etc ) to as near their original condition as reasonably possible and removal all debris, spoils, and equipment resulting from or used in the operation or access to the lands and agrees to pay for damages outside of the easement area that may arise from the construction, operation, or maintenance



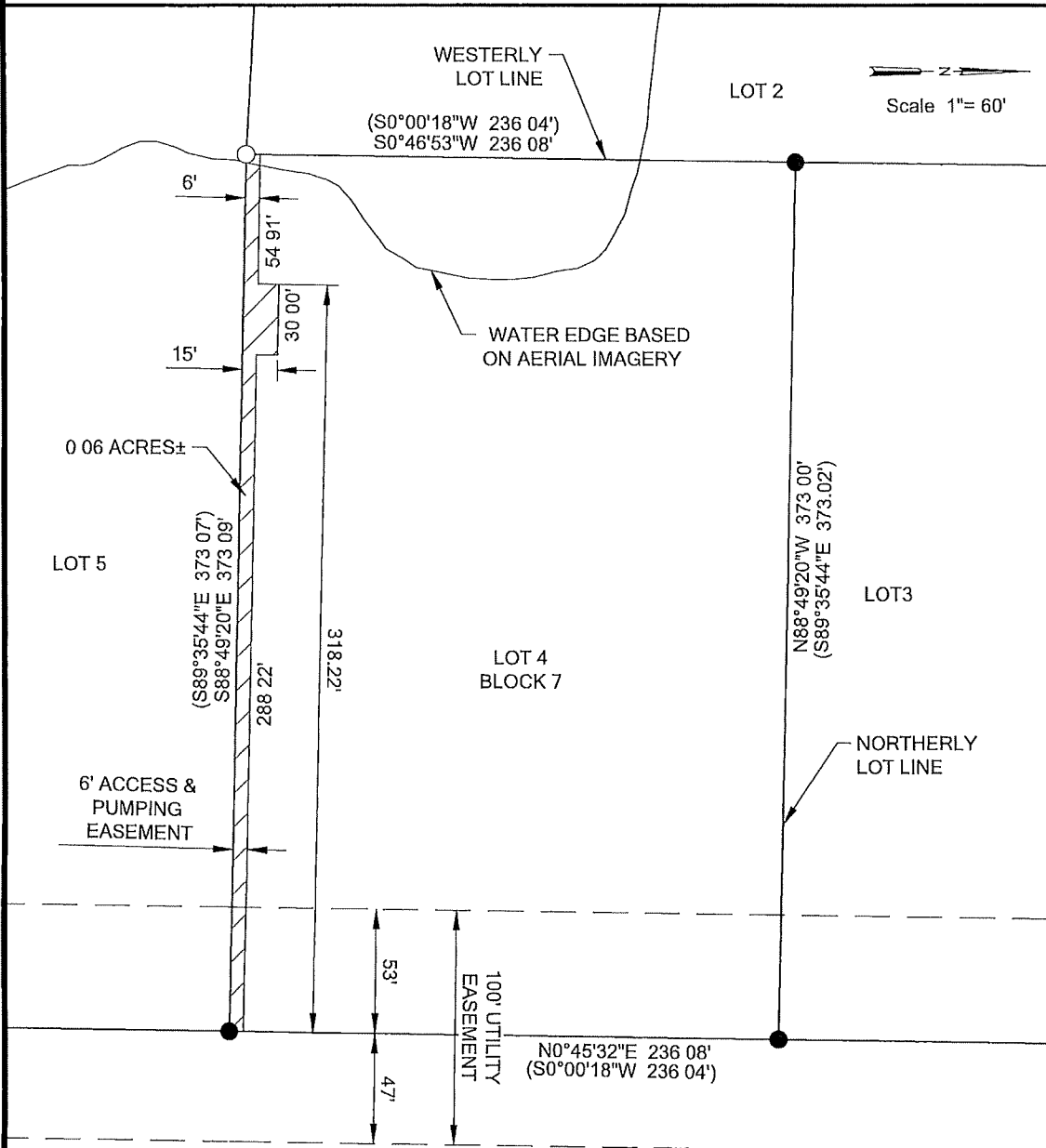
**871406**

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Page 2 of 6  
5/2/2018 4 30 PM  
Burling County



EXHIBIT A  
 LOT 4 BLOCK 7  
 FOX ISLAND SECOND SUBDIVISION  
 BURLEIGH COUNTY, NORTH DAKOTA

OWNER: JAMES W &  
 DORIS M SMITH  
 3152 TAVIS ROAD  
 BISMARCK ND 58504



TAVIS ROAD



HOUSTON ENGINEERING INC

ESMT

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\$30.00  
 Page: 4 of 6  
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 Burleigh County

LEGEND

- BEARING & DISTANCE X'
- PLAT BEARING & DISTANCE (X')
- MONUMENT CALCULATED LOCATION ○
- IRON MONUMENT FOUND ●
- PROPERTY LINE \_\_\_\_\_
- DRAINAGE EASEMENT

NOTE ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

Houston Engineering Inc

Bismarck

P 701 323 0200  
 F 701 323 0300

ACCESS & PUMPING EASEMENT PLAT

PROJECT NO  
 6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
 1 OF 2



EXHIBIT A  
LOT 4 BLOCK 7  
FOX ISLAND SECOND SUBDIVISION  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: JAMES W &  
DORIS M SMITH  
3152 TAVIS ROAD  
BISMARCK ND 58504

DESCRIPTION OF ACCESS & PUMPING EASEMENT

AN EASEMENT FOR ACCESS & PUMPING ON LOT 4, BLOCK 7 FOX ISLAND SECOND SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS

THE SOUTHERLY 6.00 FEET OF SAID LOT 4 AS MEASURED PARALLEL WITH THE SOUTHERLY  
LINE OF SAID LOT 4 AND THE SOUTHERLY 15 00 FEET AS MEASURED PARALLEL WITH THE  
SOUTHERLY LINE OF SAID LOT 4 OF THE WESTERLY 30 00 FEET OF THE EASTERLY 318.22 FEET  
OF SAID LOT 4 AS MEASURED PARALLEL WITH THE EASTERLY LINE OF SAID LOT 4

SAID TRACT OF LAND CONTAINS 0 06 ACRES, MORE OR LESS

NOTE ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE  
SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

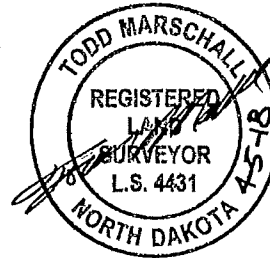
I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER  
MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE  
LAWS OF THE STATE OF NORTH DAKOTA



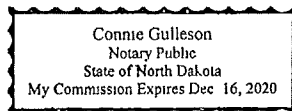
4-5-18

TODD MARSCHALL  
ND LIC NO 4431

DATE



ON THIS 5<sup>th</sup> DAY OF April 2018, TODD MARSCHALL, PERSONALLY APPEARED  
BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN  
AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME



Connie Gulleason

NOTARY PUBLIC

Burleigh COUNTY, ND



HOUSTON ENGINEERING INC

ESMT

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\$30 00  
Page 5 of 6  
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Burleigh County



Bismarck

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**ACCESS & PUMPING EASEMENT**

PROJECT NO  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
2 OF 2



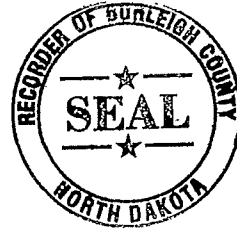
HOUSTON ENGINEERING INC

ESMT

*Debbie Foshier*

**871406**

\$30.00  
Page 6 of 6  
5/2/2018 4:30 PM  
Burleigh County





## FOX ISLAND FLOOD CONTROL LEVEE EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **JOSEPH HERINGER AND HEATHER HERINGER**, hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of laying, constructing and maintaining an earthen dike or levee for flood control for the purposes of protecting property from the waters of the Missouri River. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2217. The property is required for a portion of the dike or levee to be constructed along the Missouri River as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR A LEVEE ON AUDITOR'S LOT B OF LOT 4A, BLOCK 1 MILLS FIRST SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWESTERLY CORNER OF SAID AUDITOR'S LOT B; THENCE SOUTH 55°16'42" EAST, ON AND ALONG THE NORTH LINE OF SAID AUDITOR'S LOT B, A DISTANCE OF 141.26 FEET, TO THE NORTHEASTERLY CORNER OF SAID AUDITOR'S LOT B; THENCE SOUTH 35°18'20" WEST, ON AND ALONG THE EASTERLY LINE OF SAID AUDITOR'S LOT B, A DISTANCE OF 68.68 FEET; THENCE NORTH 54°43'49" WEST, A DISTANCE OF 159.05 FEET TO THE WESTERLY LINE OF SAID AUDITOR'S LOT B; THENCE NORTH 49°09'18" EAST, ON AND ALONG SAID WESTERLY LINE OF AUDITOR'S LOT B, A DISTANCE 69.35 FEET, TO THE POINT OF BEGINNING.

SAID DESCRIBED EASEMENT CONTAINS 0.23 ACRES, MORE OR LESS AND IS SUBJECT TO ANY EASEMENTS, RESERVATIONS, RESTRICTIONS AND RIGHTS OF WAY OF RECORD IF ANY.



**866068**

\$30.00  
Page: 1 of 6  
12/8/2017 4:02 PM  
Burleigh County

The said property is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with the said earthen dike and customary appurtenances, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings, trees or other obstacles of any kind shall be placed or located upon the tract. The installation of utilities, (e.g., irrigation lines, electrical lines, phone, etc...) are not allowed without written permission. Should such installations occur without permission the Grantee may have these removed, and assess any associated costs to the Grantor.

Grantor reserves the right to otherwise use the said earthen dike for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the earthen dike or levee area so long as such improvements do not interfere with or otherwise impair the dike or levee structure or established/natural drainage, including any culverts or gates that are installed for management purposes. Grantor further has the responsibility to maintain the grass or other vegetation that may be planted or grown upon the dike or levee area. No obstructions (trees, structures, etc.) shall be allowed with said easement.

Grantor shall be responsible to maintain the grassed or other constructed surface conditions on the levee to reasonably prevent damages. The Grantee may inspect the dike or levee on an annual basis or as deemed necessary to assure the flood control project and related appurtenances are in a functional and operational condition.



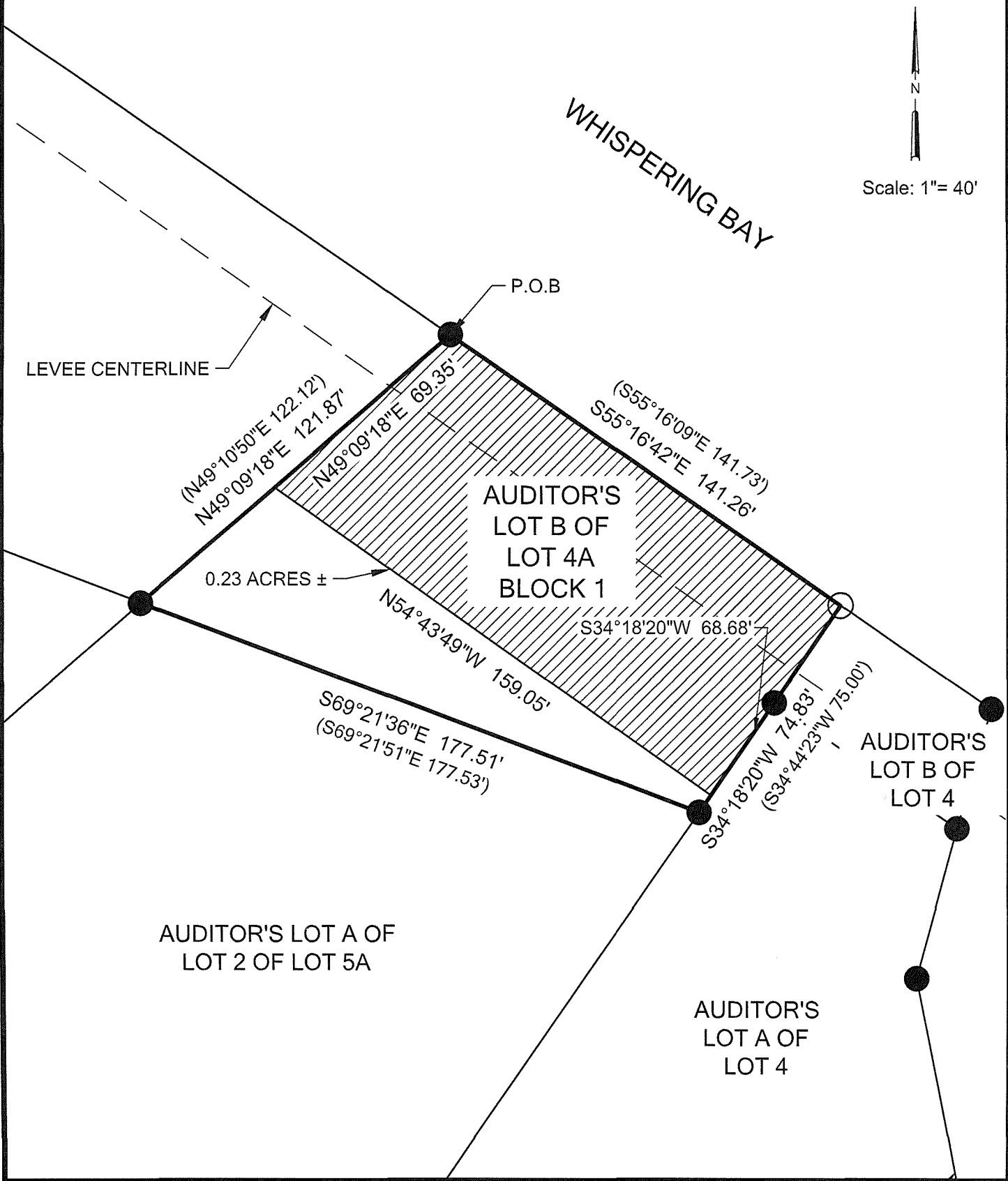
**866068**

\$30.00  
Page: 2 of 6  
12/8/2017 4:02 PM  
Burleigh County



EXHIBIT A  
AUDITOR'S LOT B OF LOT 4A,  
BLOCK 1, MILLS FIRST SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: JOSEPH & HEATHER  
HERINGER  
2430 LARSON RD.  
BISMARCK, ND 58504



LEGEND

PLAT BEARING & DISTANCE	(X')
MONUMENT TO BE SET	○
IRON MONUMENT FOUND	●
PROPERTY LINE	—————
LEVEE EASEMENT	▨▨▨▨▨▨▨▨▨▨
POINT OF COMMENCEMENT	P.O.C.
POINT OF BEGINNING	P.O.B.

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

**Houston Engineering Inc.**

Bismarck	
P:	701.323.0200
F:	701.323.0300

**LEVEE EASEMENT PLAT**

PROJECT NO. 6025-006	FOX ISLAND FLOOD CONTROL	SHEET 1 OF 2
-------------------------	--------------------------	-----------------

EXHIBIT A  
AUDITOR'S LOT B OF LOT 4A,  
BLOCK 1, MILLS FIRST SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: JOSEPH & HEATHER  
HERINGER  
2430 LARSON RD.  
BISMARCK, ND 58504

DESCRIPTION OF LEVEE EASEMENT:

AN EASEMENT FOR A LEVEE ON AUDITOR'S LOT B OF LOT 4A, BLOCK 1 MILLS FIRST SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWESTERLY CORNER OF SAID AUDITOR'S LOT B; THENCE SOUTH 55°16'42" EAST, ON AND ALONG THE NORTH LINE OF SAID AUDITOR'S LOT B, A DISTANCE OF 141.26 FEET, TO THE NORTHEASTERLY CORNER OF SAID AUDITOR'S LOT B; THENCE SOUTH 35°18'20" WEST, ON AND ALONG THE EASTERLY LINE OF SAID AUDITOR'S LOT B, A DISTANCE OF 68.68 FEET; THENCE NORTH 54°43'49" WEST, A DISTANCE OF 159.05 FEET TO THE WESTERLY LINE OF SAID AUDITOR'S LOT B; THENCE NORTH 49°09'18" EAST, ON AND ALONG SAID WESTERLY LINE OF AUDITOR'S LOT B, A DISTANCE 69.35 FEET, TO THE POINT OF BEGINNING.

SAID TRACT OF LAND CONTAINS 0.23 ACRES, MORE OR LESS.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.



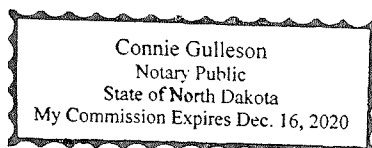
TODD MARSCHALL  
ND LIC. NO. 4431

4-11-17

DATE



ON THIS 11<sup>th</sup> DAY OF April 2017, TODD MARSCHALL, PERSONALLY APPEARED BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.



Connie Gulleson  
NOTARY PUBLIC  
Burleigh COUNTY, ND



**866068**

\$30.00  
Page: 5 of 6  
12/8/2017 4:02 PM  
Burleigh County



Houston  
Engineering Inc.

Bismarck

P: 701.323.0200  
F: 701.323.0300

## LEVEE EASEMENT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
2 OF 2



HOUSTON ENGINEERING INC

ESMT

*Melissa Johnson, Deputy*

**866068**

\$30.00  
Page: 6 of 6  
12/8/2017 4:02 PM  
Burleigh County







## FOX ISLAND FLOOD CONTROL LEVEE EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **JOSEPH HERINGER AND HEATHER HERINGER**, hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of laying, constructing and maintaining an earthen dike or levee for flood control for the purposes of protecting property from the waters of the Missouri River. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2217. The property is required for a portion of the dike or levee to be constructed along the Missouri River as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR A LEVEE ON AUDITOR'S LOT B OF LOT 4, BLOCK 1 OF WHISPERING BAY SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

ALL OF LOT B OF LOT 4, BLOCK 1

SAID TRACT OF LAND CONTAINS 0.05 ACRES, MORE OR LESS.

AN EASEMENT FOR A LEVEE ON AUDITOR'S LOT A OF LOT 4, BLOCK 1 OF WHISPERING BAY SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWESTERLY CORNER OF SAID AUDITOR'S LOT A; THENCE SOUTH 55°23'59" EAST, ON AND ALONG THE NORTH LINE OF SAID AUDITOR'S LOT A, A DISTANCE OF 65.95 FEET TO THE NORTHEASTERLY CORNER OF SAID AUDITOR'S LOT A; THENCE SOUTH 15°00'30" WEST, ON AND ALONG THE EASTERLY LINE OF SAID AUDITOR'S LOT A, A DISTANCE OF 36.45 FEET; THENCE NORTH 54°43'49" WEST, A DISTANCE OF 78.01 FEET TO THE WESTERLY LINE OF SAID AUDITOR'S LOT A;



HOUSTON ENGINEERING INC

ESMT

**866072**

\$30.00  
Page: 1 of 6  
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Burleigh County

THENCE NORTH 34°15'20" EAST, ON AND ALONG SAID WESTERLY LINE, A DISTANCE 33.43 FEET TO THE POINT OF BEGINNING.

SAID TRACT OF LAND CONTAINS 0.06 ACRES, MORE OR LESS.

TOTAL OF BOTH TRACTS OF LAND CONTAIN 0.11 ACRES, MORE OR LESS.

The said property is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with the said earthen dike and customary appurtenances, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings, trees or other obstacles of any kind shall be placed or located upon the tract. The installation of utilities, (e.g., irrigation lines, electrical lines, phone, etc..) are not allowed without written permission. Should such installations occur without permission the Grantee may have these removed, and assess any associated costs to the Grantor.

Grantor reserves the right to otherwise use the said earthen dike for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the earthen dike or levee area so long as such improvements do not interfere with or otherwise impair the dike or levee structure or established/natural drainage, including any culverts or gates that are installed for management purposes. Grantor further has the responsibility to maintain the grass or other vegetation that may be planted or grown upon the dike or levee area. No obstructions (trees, structures, etc.) shall be allowed with said easement.

Grantor shall be responsible to maintain the grassed or other constructed surface conditions on the levee to reasonably prevent damages. The Grantee may inspect the dike or levee on an annual basis or as deemed necessary to assure the flood control project and related appurtenances are in a functional and operational condition.



HOUSTON ENGINEERING INC

ESMT

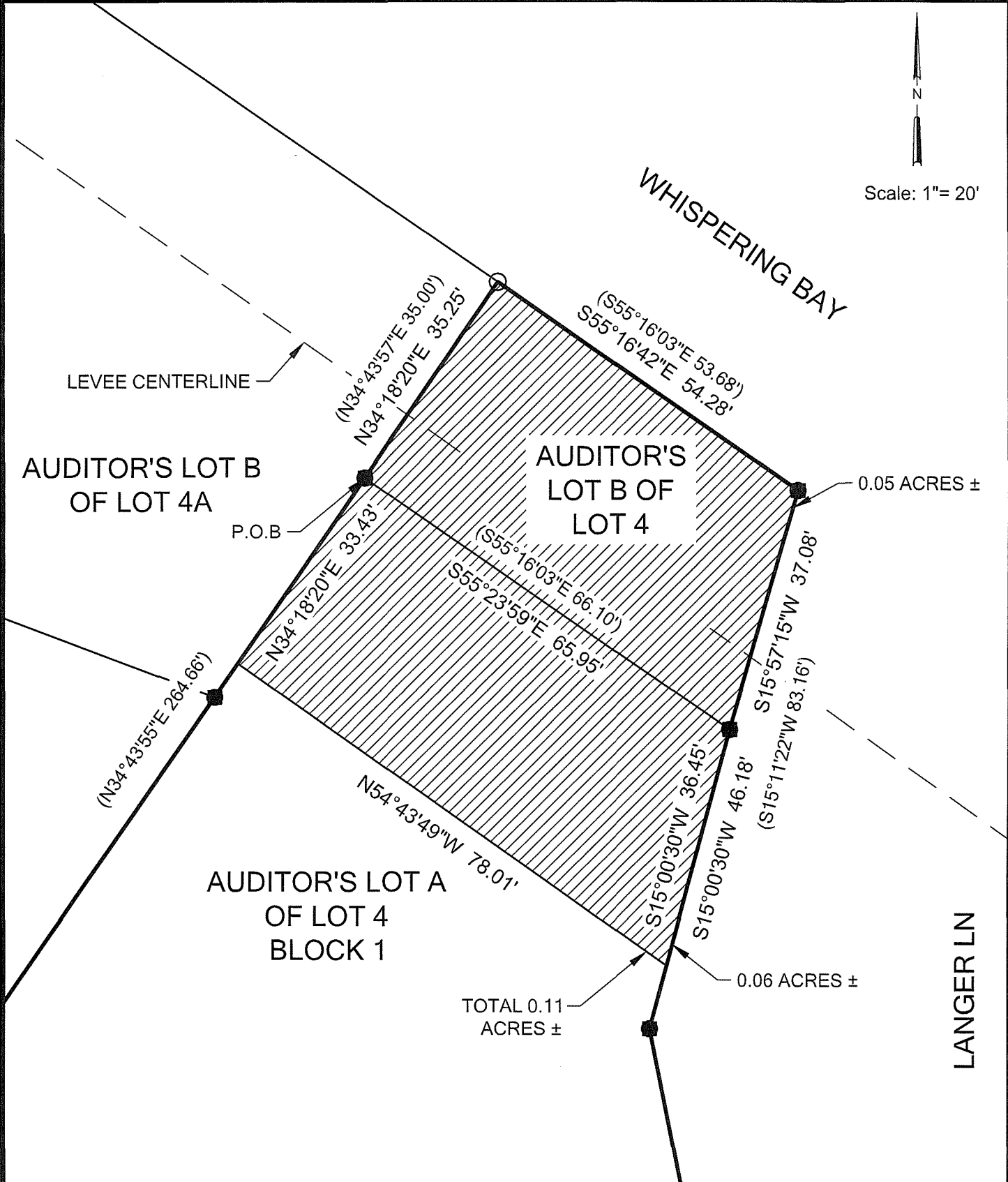
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Burleigh County

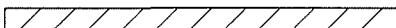


EXHIBIT A  
AUDITOR'S LOTS A & B OF LOT 4,  
BLOCK 1, WHISPERING BAY SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: JOSEPH & HEATHER  
HERINGER  
2430 LARSON RD.  
BISMARCK, ND 58504



LEGEND

- PLAT BEARING & DISTANCE (X')
- MONUMENT TO BE SET ○
- IRON MONUMENT FOUND ●
- PROPERTY LINE \_\_\_\_\_
- LEVEE EASEMENT 
- POINT OF COMMENCEMENT P.O.C.
- POINT OF BEGINNING P.O.B.

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

 **Houston Engineering Inc.**

Bismarck

P: 701.323.0200  
F: 701.323.0300

**LEVEE EASEMENT PLAT**

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
1 OF 2

EXHIBIT A  
AUDITOR'S LOTS A & B OF LOT 4,  
BLOCK 1, WHISPERING BAY SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: JOSEPH & HEATHER  
HERINGER  
2430 LARSON RD.  
BISMARCK, ND 58504

DESCRIPTION OF LEVEE EASEMENTS:

AN EASEMENT FOR A LEVEE ON AUDITOR'S LOT B OF LOT 4, BLOCK 1 OF WHISPERING BAY SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

ALL OF LOT B OF LOT 4, BLOCK 1

SAID TRACT OF LAND CONTAINS 0.05 ACRES, MORE OR LESS.

AN EASEMENT FOR A LEVEE ON AUDITOR'S LOT A OF LOT 4, BLOCK 1 OF WHISPERING BAY SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWESTERLY CORNER OF SAID AUDITOR'S LOT A; THENCE SOUTH 55°23'59" EAST, ON AND ALONG THE NORTH LINE OF SAID AUDITOR'S LOT A, A DISTANCE OF 65.95 FEET TO THE NORTHEASTERLY CORNER OF SAID AUDITOR'S LOT A; THENCE SOUTH 15°00'30" WEST, ON AND ALONG THE EASTERLY LINE OF SAID AUDITOR'S LOT A, A DISTANCE OF 36.45 FEET; THENCE NORTH 54°43'49" WEST, A DISTANCE OF 78.01 FEET TO THE WESTERLY LINE OF SAID AUDITOR'S LOT A; THENCE NORTH 34°15'20" EAST, ON AND ALONG SAID WESTERLY LINE, A DISTANCE 33.43 FEET TO THE POINT OF BEGINNING.

SAID TRACT OF LAND CONTAINS 0.06 ACRES, MORE OR LESS.

TOTAL OF BOTH TRACTS OF LAND CONTAIN 0.11 ACRES, MORE OR LESS.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

*Todd Marschall*

4-14-17

TODD MARSCHALL  
ND LIC. NO. 4431

DATE



HOUSTON ENGINEERING INC

ESMT

**866072**

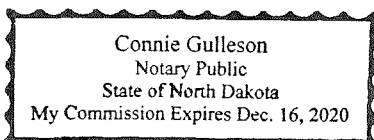
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Page: 5 of 6  
12/8/2017 4:02 PM  
Burleigh County

ON THIS 14<sup>th</sup> DAY OF April 2017, TODD MARSCHALL, PERSONALLY APPEARED BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.

*Connie Gulleason*

NOTARY PUBLIC

Burleigh COUNTY, ND



Bismarck

P: 701.323.0200  
F: 701.323.0300

## LEVEE EASEMENT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
2 OF 2



HOUSTON ENGINEERING INC

ESMT

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\$30.00  
Page: 6 of 6  
12/8/2017 4:02 PM  
Burleigh County

*Melissa Janson, Deputy*





# FOX ISLAND FLOOD CONTROL ACCESS & PUMPING EASEMENT

KNOW ALL PERSONS BY THESE PRESENTS that **LAWRENCE D. GLASSER & CARMEN K. GLASSER** hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of setting up a temporary pump and the ingress and egress, to and from, together with the right to remove obstructions interfering with the placement and maintenance of said pump for the purposes of lowering the internal lake level elevations during a Missouri River flood event Such easement shall be subject to the deposition of *Becker, et al. v. Burleigh County, et al. Civil No 08-2018-cv-00725* and shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2217. The property is required for access and the setup of a temporary pumping device, owned and operated by Burleigh County during a Missouri River flood event, as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR DRAINAGE ON LOT 5, BLOCK 7 FOX ISLAND SECOND SUBDIVISION, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

THE NORTHERLY 6.00 FEET OF SAID LOT 5 AS MEASURED PARALLEL WITH THE NORTHERLY LINE OF SAID LOT 5 AND THE NORTHERLY 15.00 FEET AS MEASURED PARALLEL WITH THE NORTHERLY LINE OF SAID LOT 5 OF THE WESTERLY 30.00 FEET OF THE EASTERLY 318 31 FEET OF SAID LOT 5 AS MEASURED PARALLEL WITH THE EASTERLY LINE OF SAID LOT 5.

SAID TRACT OF LAND CONTAINS 0.07 ACRES, MORE OR LESS.

The said property is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or



**871407**

\$30 00  
Page 1 of 6  
5/2/2018 4 30 PM  
Burleigh County

convenient to carry into effect the purpose for which the grant is made

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with said temporary pump, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings other obstacles of any kind shall be placed or located upon the tract of land

Grantor reserves the right to otherwise use the said tract of land for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the tract of land within the easement so long as such improvements do not interfere with or otherwise impair the setup of said temporary pump Grantor further has the responsibility to maintain the grass or other vegetation on the tract of land

The Grantee shall place buffer trees and remove and dispose of designated trees, as shown on Exhibit "B" Stumps shall be removed and all disturbed areas due to relevant activity shall be seeded Grantee may, after twenty-four (24) hours of notifying the Grantor, or immediately during a Missouri River flood event, trim branches hanging into the easement area that inhibit the ability to access and implement the purpose for which the grant is made

The Grantee may inspect said temporary pump as deemed necessary to assure it is in functional and operational condition during the duration of its use Grantee shall, after completing the deconstruction, removal, or after the exercise of any rights granted by this easement, restore the lands and existing utilities (ex sprinklers, grass, etc ) to as near their original condition as reasonably possible and removal all debris, spoils, and equipment resulting from or used in the operation or access to the lands and agrees to pay for damages outside of the easement area that may arise from the construction, operation, or maintenance

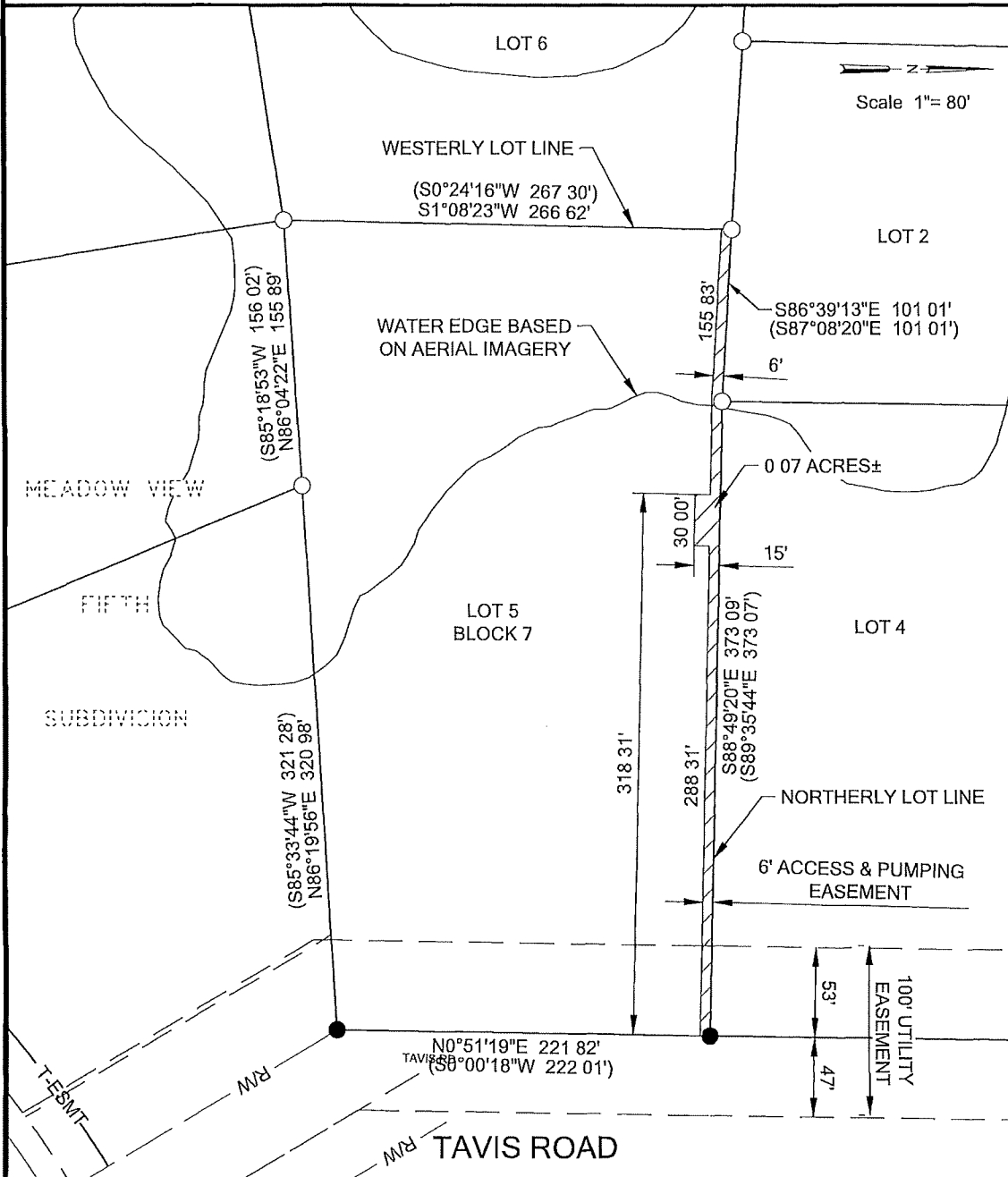






EXHIBIT A  
 LOT 5 BLOCK 7  
 FOX ISLAND SECOND SUBDIVISION  
 BURLEIGH COUNTY, NORTH DAKOTA

OWNER. LAWRENCE D &  
 CARMEN K. GLASSER  
 3202 TAVIS ROAD  
 BISMARCK ND 58504



**871407**  
 \$30.00  
 Page 4 of 6  
 5/2/2018 4:30 PM  
 Burleigh County

**LEGEND**

BEARING & DISTANCE	X'
PLAT BEARING & DISTANCE	(X')
MONUMENT CALCULATED LOCATION	○
IRON MONUMENT FOUND	●
PROPERTY LINE	—————
DRAINAGE EASEMENT	▨▨▨▨▨▨▨▨▨▨

NOTE ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

**Houston Engineering Inc**

Bismarck	
P	701.323.0200
F	701.323.0300

**ACCESS & PUMPING EASEMENT PLAT**

PROJECT NO 6025-006	FOX ISLAND FLOOD CONTROL	SHEET 1 OF 2
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EXHIBIT A  
LOT 5, BLOCK 7  
FOX ISLAND SECOND SUBDIVISION  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: LAWRENCE D &  
CARMEN K. GLASSER  
3202 TAVIS ROAD  
BISMARCK ND 58504

DESCRIPTION OF ACCESS & PUMPING EASEMENT

AN EASEMENT FOR ACCESS & PUMPING ON LOT 5, BLOCK 7 FOX ISLAND SECOND SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS

THE NORTHERLY 6.00 FEET OF SAID LOT 5 AS MEASURED PARALLEL WITH THE NORTHERLY  
LINE OF SAID LOT 5 AND THE NORTHERLY 15 00 FEET AS MEASURED PARALLEL WITH THE  
NORTHERLY LINE OF SAID LOT 5 OF THE WESTERLY 30.00 FEET OF THE EASTERLY 318 31 FEET  
OF SAID LOT 5 AS MEASURED PARALLEL WITH THE EASTERLY LINE OF SAID LOT 5

SAID TRACT OF LAND CONTAINS 0 07 ACRES, MORE OR LESS

NOTE ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE  
SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

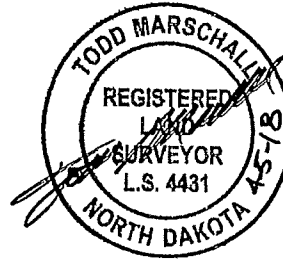
I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER  
MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE  
LAWS OF THE STATE OF NORTH DAKOTA



4-5-18

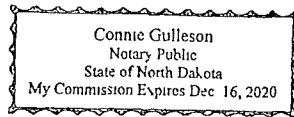
TODD MARSCHALL  
ND LIC NO 4431

DATE



ON THIS 5<sup>th</sup> DAY OF April 20 18, TODD MARSCHALL, PERSONALLY APPEARED  
BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN  
AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME

Connie Gulleson



NOTARY PUBLIC

Burleigh COUNTY, ND



HOUSTON ENGINEERING INC

ESMT

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Page 5 of 6  
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Burleigh County



Bismarck

P 701.323.0200  
F 701.323.0300

**ACCESS & PUMPING EASEMENT**

PROJECT NO  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
2 OF 2



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HOLLISTON ENGINEERING INC

ESMT

\$30.00

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Burling County

*Debbie Froskus*





## FOX ISLAND FLOOD CONTROL DRAINAGE EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **MELONIE TANOUS**, hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of constructing, operating, maintaining, and repairing drainage facilities across or upon the real property hereinafter described, together with the right to remove trees, brush, undergrowth, and other obstructions interfering with the location, construction and maintenance of said drainage easement. Grantee shall have the right of ingress and egress to said described easement property for purpose of herein granted. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2216. Said easement being more particularly described as follows:

AN EASEMENT FOR DRAINAGE ON LOT 1, BLOCK 6, FOX ISLAND SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

THE WESTERLY 55.00 FEET OF THE SOUTHERLY 7.00 FEET OF SAID LOT 1 AS MEASURED PARALLEL WITH AND PERPENDICULAR TO THE SOUTHERLY LINE OF SAID LOT 1.

SAID TRACT OF LAND CONTAINS 0.01 ACRES, MORE OR LESS.

The said property is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.

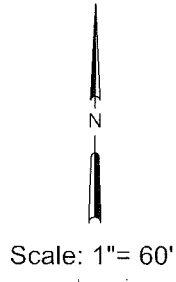
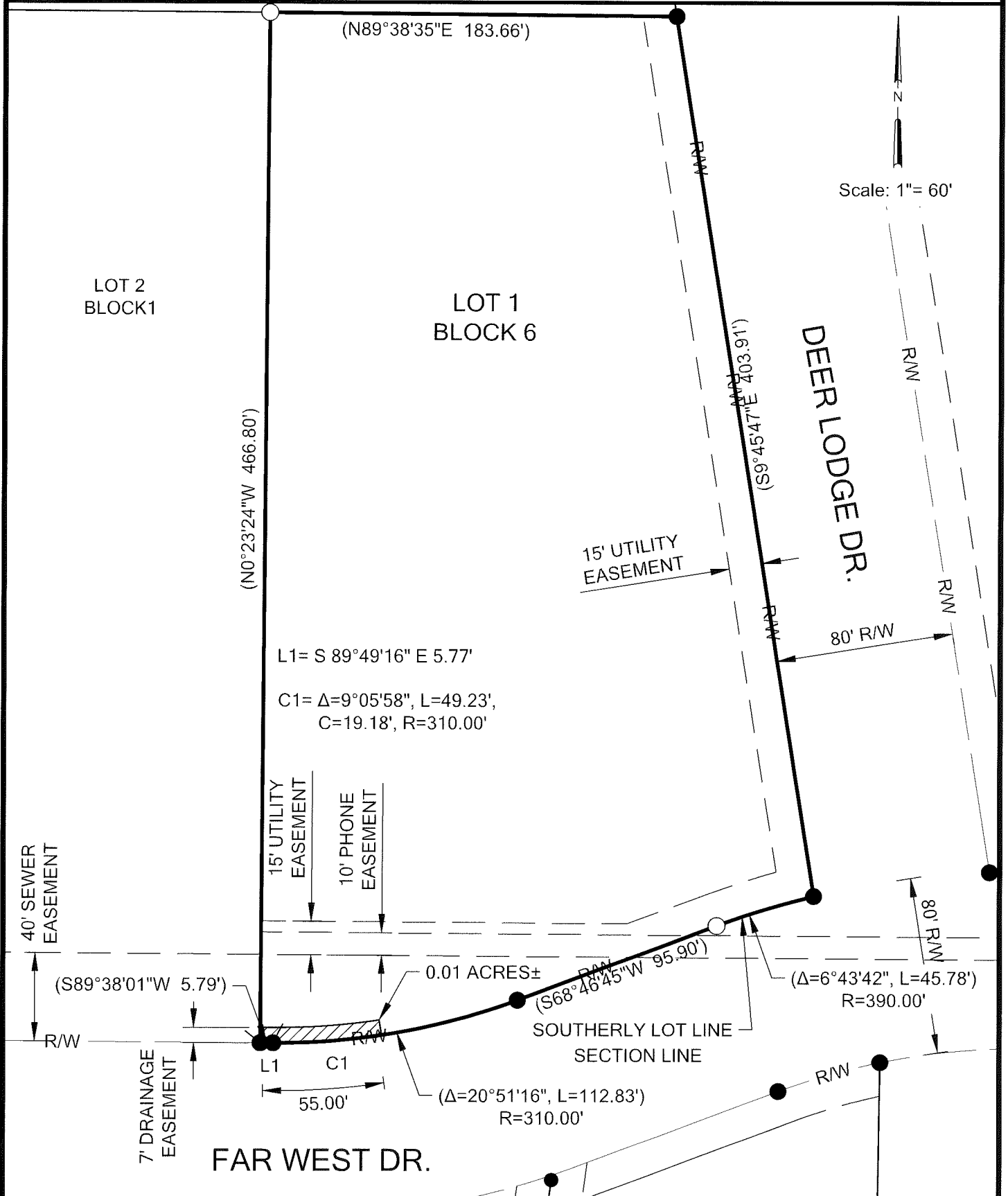
Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.

Grantor expressly warrants and states that no buildings, trees or other obstacles of any kind shall be placed or located upon the tract. Grantee may have these removed, and assess any associated costs to the Grantor.



EXHIBIT A  
 LOT 1, BLOCK 6, FOX ISLAND SUBDIVISION  
 BURLEIGH COUNTY, NORTH DAKOTA

OWNER: MELONIE TANOUS  
 1820 FAR WEST DR.  
 BISMARCK ND 58504



LEGEND

PLAT BEARING & DISTANCE	(X')
MONUMENT TO BE SET	○
IRON MONUMENT FOUND	●
PROPERTY LINE	—
LEVEE EASEMENT	
POINT OF COMMENCEMENT	P.O.C.
POINT OF BEGINNING	P.O.B.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

**Houston**  
Engineering Inc.

Bismarck  
 P: 701.323.0200  
 F: 701.323.0300

**DRAINAGE EASEMENT PLAT**

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
1 OF 2

EXHIBIT A  
LOT 1, BLOCK 6, FOX ISLAND SUBDIVISION  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: MELONIE TANOUS  
1820 FAR WEST DR.  
BISMARCK ND 58504

DESCRIPTION OF DRAINAGE EASEMENT:

AN EASEMENT FOR DRAINAGE ON LOT 1, BLOCK 6, FOX ISLAND SUBDIVISION, SECTION 18,  
TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY,  
NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

THE WESTERLY 55.00 FEET OF THE SOUTHERLY 7.00 FEET OF SAID LOT 1 AS MEASURED PARALLEL  
WITH AND PERPENDICULAR TO THE SOUTHERLY LINE OF SAID LOT 1.

SAID TRACT OF LAND CONTAINS 0.01 ACRES, MORE OR LESS.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE  
SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER MY  
DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE  
STATE OF NORTH DAKOTA.



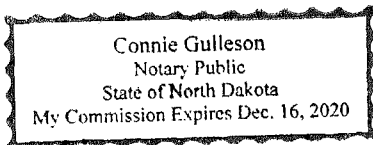
TODD MARSCHALL  
ND LIC. NO. 4431

6-25-2018

DATE



ON THIS 25<sup>th</sup> DAY OF June 2018, TODD MARSCHALL, PERSONALLY APPEARED  
BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN AND  
FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.



Connie Gulleon

NOTARY PUBLIC

Burleigh COUNTY, ND



Houston  
Engineering Inc.

Bismarck

P: 701.323.0200  
F: 701.323.0300

## DRAINAGE EASEMENT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
2 OF 2





## FOX ISLAND FLOOD CONTROL LEVEE EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **SCOTT C. BROWN & PAMELA R. MCCORMICK**, hereinafter referred to as "Grantor," for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable consideration, to it in hand paid the receipt whereof is hereby acknowledged, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of laying, constructing and maintaining an earthen dike or levee for flood control for the purposes of protecting property from the waters of the Missouri River. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2215. The property is required for a portion of the dike or levee to be constructed along the Missouri River as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR A LEVEE ON LOT 2B, BLOCK 1 MILLS FIRST SUBDIVISION SECOND REPLAT, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID AUDITOR'S LOT 2B; THENCE NORTH 18°34'07" WEST, ON AND ALONG THE EASTERLY LINE OF SAID AUDITOR'S LOT 2B, A DISTANCE OF 178.32 FEET; THENCE NORTH 43°13'06" WEST, CONTINUING ON AND ALONG SAID EASTERLY LINE, A DISTANCE OF 110.81 FEET; THENCE NORTH 58°08'47" WEST, ON AND ALONG THE NORTHERLY LINE OF SAID AUDITOR'S LOT 2B, A DISTANCE OF 36.93 FEET TO THE POINT OF BEGINNING OF THE EASEMENT TO BE DESCRIBED; THENCE SOUTH 44°51'12" WEST, A DISTANCE OF 107.27 FEET TO THE SOUTH LINE OF SAID AUDITOR'S LOT 2B; THENCE NORTH 82°29'06" WEST, ON AND ALONG THE SOUTH LINE OF SAID AUDITOR'S LOT 2B, A DISTANCE 96.69 FEET; THENCE NORTH 40°22'07" EAST, A DISTANCE OF 145.98 FEET TO THE NORTHERLY LINE OF SAID LOT 2B; THENCE SOUTH 58°08'47" EAST, ON AND ALONG SAID NORTHERLY LINE OF SAID AUDITOR'S LOT 2B, A DISTANCE OF 90.61 FEET TO THE POINT OF BEGINNING.

SAID DESCRIBED EASEMENT CONTAINS 0.24 ACRES, MORE OR LESS AND IS SUBJECT TO ANY EASEMENTS, RESERVATIONS, RESTRICTIONS AND RIGHTS OF WAY OF RECORD IF ANY.



HOUSTON ENGINEERING INC

ESMT

**868483**

\$30.00  
Page: 1 of 6  
2/13/2018 2:16 PM  
Burleigh County

The said property is pictorially represented on Exhibit "A" attached hereto and incorporated herein by reference.

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with the said earthen dike and customary appurtenances, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings, trees or other obstacles of any kind shall be placed or located upon the tract. The installation of utilities, (e.g., irrigation lines, electrical lines, phone, etc..) are not allowed without written permission. Should such installations occur without permission the Grantee may have these removed, and assess any associated costs to the Grantor.

Grantor reserves the right to otherwise use the said earthen dike for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the earthen dike or levee area so long as such improvements do not interfere with or otherwise impair the dike or levee structure or established/natural drainage, including any culverts or gates that are installed for management purposes. Grantor further has the responsibility to maintain the grass or other vegetation that may be planted or grown upon the dike or levee area. No obstructions (trees, structures, etc.) shall be allowed with said easement.

Grantor shall be responsible to maintain the grassed or other constructed surface conditions on the levee to reasonably prevent damages. The Grantee may inspect the dike or levee on an annual basis or as deemed necessary to assure the flood control project and related appurtenances are in a functional and operational condition.



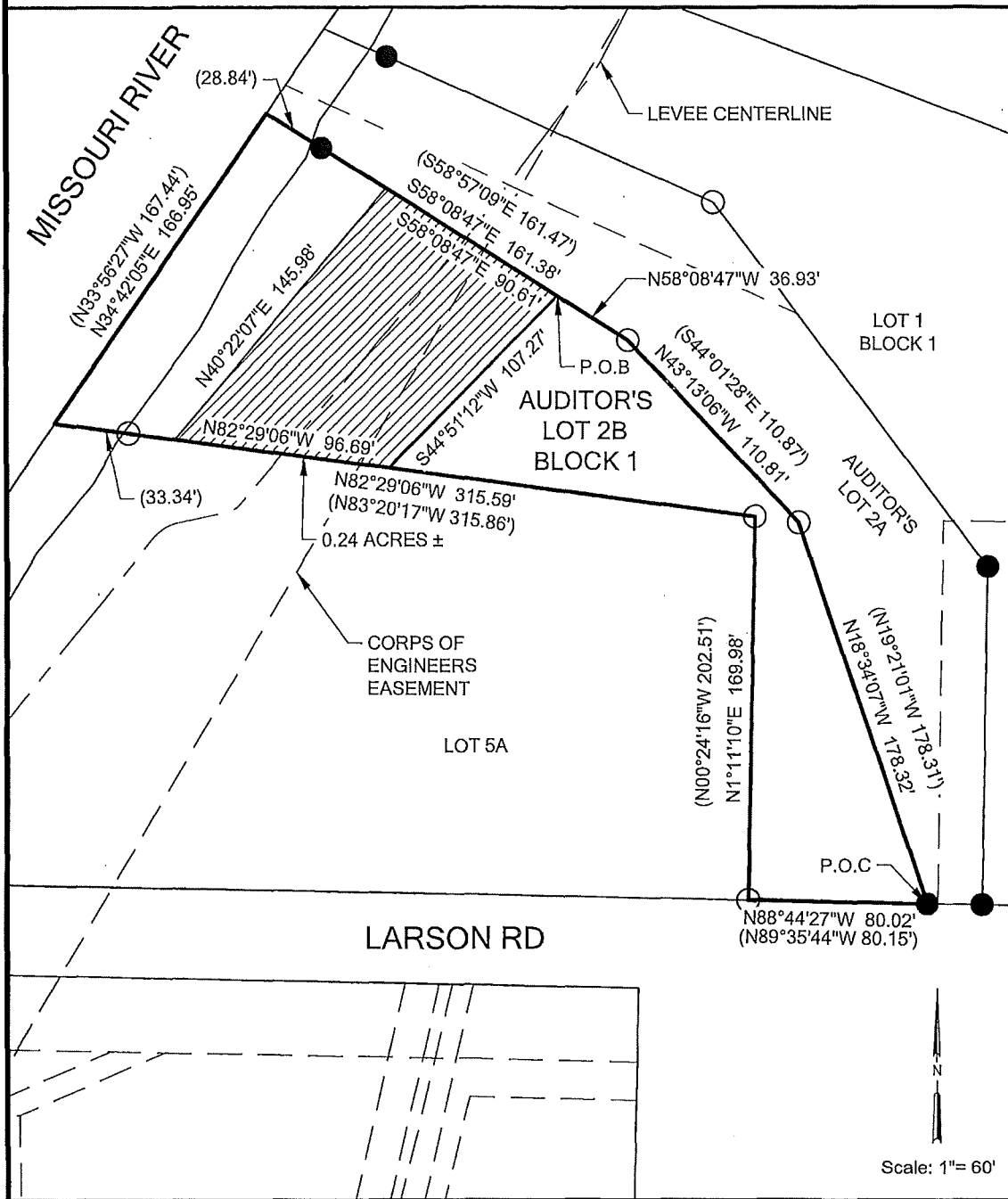
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Page: 2 of 6  
2/13/2018 2:16 PM  
Burleigh County



EXHIBIT A  
AUDITOR'S LOT 2B BLOCK 1, MILLS  
FIRST SUBDIVISION SECOND REPLAT,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: SCOTT BROWN & PAMELA  
MCCORMICK  
2520 LARSON RD.  
BISMARCK, ND 58504



LEGEND

PLAT BEARING & DISTANCE	(X')
MONUMENT TO BE SET	○
IRON MONUMENT FOUND	●
PROPERTY LINE	—
LEVEE EASEMENT	
POINT OF COMMENCEMENT	P.O.C.
POINT OF BEGINNING	P.O.B.

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES



Bismarck

P: 701.323.0200  
F: 701.323.0300

LEVEE EASEMENT PLAT

PROJECT NO.  
6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
1 OF 2

EXHIBIT A AUDITOR'S LOT 2B BLOCK 1, MILLS FIRST SUBDIVISION SECOND REPLAT, BURLEIGH COUNTY, NORTH DAKOTA	OWNER: SCOTT BROWN & PAMELA MCCORMICK 2520 LARSON RD. BISMARCK, ND 58504
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DESCRIPTION OF LEVEE EASEMENT:

AN EASEMENT FOR A LEVEE ON AUDITOR'S LOT 2B, BLOCK 1 MILLS FIRST SUBDIVISION SECOND REPLAT, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID AUDITOR'S LOT 2B; THENCE NORTH 18°34'07" WEST, ON AND ALONG THE EASTERLY LINE OF SAID AUDITOR'S LOT 2B, A DISTANCE OF 178.32 FEET; THENCE NORTH 43°13'06" WEST, CONTINUING ON AND ALONG SAID EASTERLY LINE, A DISTANCE OF 110.81 FEET; THENCE NORTH 58°08'47" WEST, ON AND ALONG THE NORTHERLY LINE OF SAID AUDITOR'S LOT 2B, A DISTANCE OF 36.93 FEET TO THE POINT OF BEGINNING OF THE EASEMENT TO BE DESCRIBED; THENCE SOUTH 44°51'12" WEST, A DISTANCE OF 107.27 FEET TO THE SOUTH LINE OF SAID AUDITOR'S LOT 2B; THENCE NORTH 82°29'06" WEST, ON AND ALONG THE SOUTH LINE OF SAID AUDITOR'S LOT 2B, A DISTANCE 96.69 FEET; THENCE NORTH 40°22'07" EAST, A DISTANCE OF 145.98 FEET TO THE NORTHERLY LINE OF SAID LOT 2B; THENCE SOUTH 58°08'47" EAST, ON AND ALONG SAID NORTHERLY LINE OF SAID AUDITOR'S LOT 2B, A DISTANCE OF 90.61 FEET TO THE POINT OF BEGINNING.

SAID TRACT OF LAND CONTAINS 0.24 ACRES, MORE OR LESS.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

*Todd Marschall*

4-11-17

TODD MARSCHALL  
ND LIC. NO. 4431

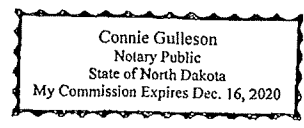
DATE



ON THIS 11<sup>th</sup> DAY OF April 2017, TODD MARSCHALL, PERSONALLY APPEARED BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.

*Connie Gulleason*

NOTARY PUBLIC  
Burleigh COUNTY, ND



	Bismarck
	P: 701.323.0200 F: 701.323.0300

## LEVEE EASEMENT

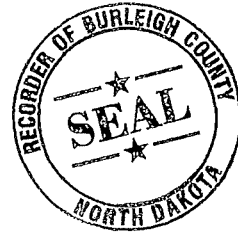
PROJECT NO. 6025-006	FOX ISLAND FLOOD CONTROL	SHEET 2 OF 2
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Page: 6 of 6  
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Burleigh County

ESMT  
*Debbie Koskus*





## FOX ISLAND FLOOD CONTROL LEVEE EASEMENT

**KNOW ALL PERSONS BY THESE PRESENTS** that **SCOTT C. BROWN & PAMELA R. MCCORMICK**, hereinafter referred to as "Grantor," for and in consideration of the improvements to be made on the Grantor's property, as illustrated in Exhibit A, which is hereby acknowledged to occur during project construction, **HEREBY GRANTS UNTO THE BURLEIGH COUNTY WATER RESOURCE DISTRICT**, its successors and assigns, hereinafter referred to as "Grantee," an easement over, upon and in the land hereinafter described for the purpose of laying, constructing and maintaining an earthen dike or levee for flood control for the purposes of protecting property from the waters of the Missouri River. Such easement shall expire at the end of ninety-nine (99) years from the date of execution, provided that Grantor, and its successors and assigns as owners of the parcel described herein, shall have the option upon the payment of Ten Dollars and other valuable consideration to Grantee, and its successors and assigns, to extend this easement for an additional ninety-nine (99) year term which expires in the year 2215. The property is required for a portion of the dike or levee to be constructed along the Missouri River as part of the Fox Island Flood Control Project, Bismarck, North Dakota. Said easement being more particularly described as follows:

AN EASEMENT FOR A LEVEE ON LOT 5A, BLOCK 1 MILLS FIRST SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID LOT 5A; THENCE NORTH 88°48'59" WEST, ON AND ALONG THE SOUTH LINE OF SAID LOT 5A, A DISTANCE OF 315.89 FEET TO THE POINT OF BEGINNING OF THE EASEMENT TO BE DESCRIBED; THENCE NORTH 88°48'59" WEST, CONTINUING ON AND ALONG SAID SOUTH LINE OF SAID LOT 5A, A DISTANCE OF 102.62 FEET; THENCE NORTH 39°48'13" EAST, A DISTANCE OF 254.44 FEET, TO THE NORTH LINE OF SAID LOT 5A; THENCE SOUTH 82°29'06" EAST, ON AND ALONG SAID NORTH LINE OF SAID LOT 5A, A DISTANCE 96.69 FEET; THENCE SOUTH 41°34'22" WEST, A DISTANCE OF 27.05 FEET; THENCE SOUTH 77°34'35" WEST, A DISTANCE OF 82.44 FEET; THENCE SOUTH 39°06'58" WEST, A DISTANCE OF 99.53 FEET; THENCE SOUTH 10°13'49" EAST, A DISTANCE OF 63.44 FEET; THENCE SOUTH 40°06'04" WEST, A DISTANCE OF 9.57 FEET, TO THE POINT OF BEGINNING.

SAID DESCRIBED EASEMENT CONTAINS 0.29 ACRES, MORE OR LESS AND IS SUBJECT TO ANY EASEMENTS, RESERVATIONS, RESTRICTIONS AND RIGHTS OF WAY OF RECORD IF ANY.

The said property is pictorially represented on Exhibit "B" attached hereto and incorporated herein by reference.



HOUSTON ENGINEERING INC

ESMT

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\$30.00  
Page: 1 of 6  
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Burleigh County

Grantor, its successors and assigns, hereby covenants to and with Grantee that Grantee's officers, contractors, agents and employees may at any and all times when necessary or convenient to do so, go upon said above described tract of land and do perform any and all acts necessary or convenient to carry into effect the purpose for which the grant is made.

Grantor, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with the said earthen dike and customary appurtenances, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises, and Grantor expressly warrants and states that no buildings, trees or other obstacles of any kind shall be placed or located upon the tract. The installation of utilities, (e.g., irrigation lines, electrical lines, phone, etc...) are not allowed without written permission. Should such installations occur without permission the Grantee may have these removed, and assess any associated costs to the Grantor.

Grantor reserves the right to otherwise use the said earthen dike for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the earthen dike or levee area so long as such improvements do not interfere with or otherwise impair the dike or levee structure or established/natural drainage, including any culverts or gates that are installed for management purposes. Grantor further has the responsibility to maintain the grass or other vegetation that may be planted or grown upon the dike or levee area. No obstructions (trees, structures, etc.) shall be allowed with said easement.

Grantor shall be responsible to maintain the grassed or other constructed surface conditions on the levee to reasonably prevent damages. The Grantee may inspect the dike or levee on an annual basis or as deemed necessary to assure the flood control project and related appurtenances are in a functional and operational condition.



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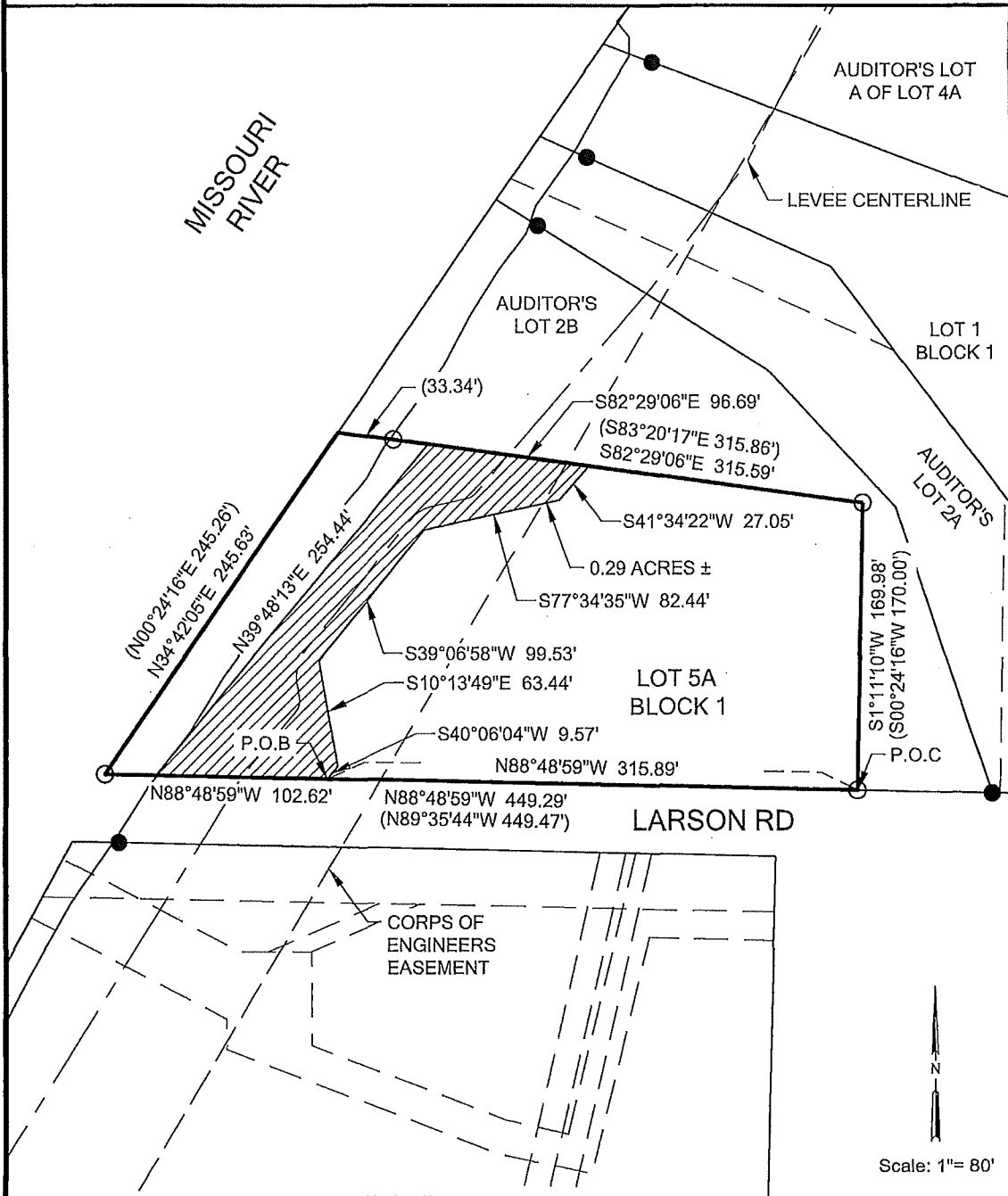
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Burleigh County





EXHIBIT A  
LOT 5A BLOCK 1, MILLS FIRST  
SUBDIVISION,  
BURLEIGH COUNTY, NORTH DAKOTA

OWNER: SCOTT BROWN & PAMELA  
MCCORMICK  
2520 LARSON RD.  
BISMARCK, ND 58504



LEGEND

- PLAT BEARING & DISTANCE (X)
- MONUMENT TO BE SET ○
- IRON MONUMENT FOUND ●
- PROPERTY LINE ———
- LEVEE EASEMENT [Hatched Box]
- POINT OF COMMENCEMENT P.O.C.
- POINT OF BEGINNING P.O.B.

NOTE: EASEMENT WILL TERMINATE AT THE ORDINARY HIGH WATER MARK.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83, INTERNATIONAL FOOT, WITH MEASURED GRID DISTANCES



Bismarck  
P: 701.323.0200  
F: 701.323.0300

LEVEE EASEMENT PLAT

PROJECT NO.  
-6025-006

FOX ISLAND FLOOD CONTROL

SHEET  
1 OF 2

EXHIBIT A LOT 5A BLOCK 1, MILLS FIRST SUBDIVISION, BURLEIGH COUNTY, NORTH DAKOTA	OWNER: SCOTT BROWN & PAMELA MCCORMICK 2520 LARSON RD. BISMARCK, ND 58504
---	---

DESCRIPTION OF LEVEE EASEMENT:

AN EASEMENT FOR A LEVEE ON LOT 5A, BLOCK 1 MILLS FIRST SUBDIVISION, SECTION 18, TOWNSHIP 138 NORTH, RANGE 80 WEST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA, BEING DESCRIBED AS FOLLOWS:


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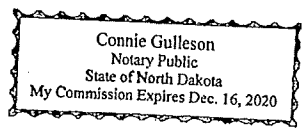
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	<u>4-11-17</u>	
TODD MARSCHALL	DATE	
ND LIC. NO. 4431		



ON THIS 11<sup>th</sup> DAY OF April 2017, TODD MARSCHALL, PERSONALLY APPEARED BEFORE ME, KNOWN TO ME TO THE PERSON DESCRIBED IN AND WHO EXECUTED THE WITHIN AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.



Connie Guleson  
 NOTARY PUBLIC  
Burleigh COUNTY, ND

 Houston Engineering Inc.	Bismarck
	P: 701.323.0200 F: 701.323.0300



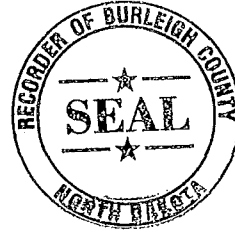
HOUSTON ENGINEERING INC

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\$30.00  
Page: 6 of 6  
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Burleigh County

*Debbie Kroshus*



# PIPELINE EASEMENT AND WAIVER

Tim A. and Stacy R. Clausnitzer (“the Landowner”) hereby grants the Burleigh County Water Resource District (“the District”), and the Burleigh County Highway Department on behalf of Lincoln Township (“the County”), the right to install and maintain a stormwater discharge pipeline, outfall riprap, check valve and related appurtenances in the pipeline easement described on *Exhibit A*. The pipeline easement’s purpose is to provide for the removal of floodwaters from within the Fox Island Flood Control protection area.

This pipeline easement does not replace the drainage easement located on Lot 17 and Lot 18, Block 1 of Fox Island Addition, as illustrated on *Exhibit B*, [Document No 574794] or its use as a natural watercourse. This pipeline easement is granted in lieu of the Landowner being required to remove a drainage obstruction located within the natural watercourse and drainage easement, as ordered by the District. This obstruction consists of a private flood control levee, gate structure and outfall, which hereafter will be allowed to remain for the term of this easement and the benefits provided to the Landowner. In turn, the Landowner agrees to compensate the District in the amount of \$4,000, which is hereby acknowledged, in consideration for increased expenses associated with the Fox Island Flood Control Project, which is operated and maintained by the District.

This pipeline easement shall run with the benefitted property in Burleigh County, North Dakota, legally described as:

## **Lot18, Block 1 of Fox Island Addition**

This easement is granted subject to the following conditions:

1. The Landowner shall comply with all rules regarding facilities located within or on the pipeline easement as set by the County and the District. The Landowner, its successors and assigns, further agrees that it will not disturb, injure, molest or in any manner interfere with the said pipeline and customary appurtenances, or with the material for laying, maintaining, operating or repairing the same, in, over, or upon the above described premises. The Landowner expressly warrants and states that no buildings, new trees or other obstacles of any kind shall be placed or located upon the designated easement tract. The installation of utilities, (e.g., irrigation lines, electrical lines, phone, etc...) are not allowed without written permission. However, existing features may be maintained. Should such installations occur without permission the County may have these removed, and assess any associated costs to the Landowner.

2. The Landowner reserves the right to otherwise use the said pipeline easement for purposes not inconsistent with this easement and shall be allowed to install and maintain grass cover and otherwise use the pipeline easement so long as such improvements do not interfere with or otherwise impair the pipeline structure’s operations or established/natural drainage, including any culverts or gates that are installed for management purposes.

902950

\$75.00  
Page: 1 of 9  
6/15/2020 11:04 AM  
Burleigh County



3. The Landowner shall be responsible to maintain the grassed or other constructed surface conditions within the pipeline easement to reasonably prevent damages to the facilities and their use. The County or the District may inspect the pipeline easement on an annual basis, or as deemed necessary, including access on and across such property, to assure the flood control project and related appurtenances are in a functional and operational condition. Access for any operation and maintenance activities related to the pipeline are allowed with any disturbances being restored to the conditions existing prior to the work being completed.

4. The term of this pipeline easement shall be for a period ninety-nine (99) years. Thereafter, the pipeline easement shall continue year to year. Only the County or the District may cancel this pipeline easement at any time after the initial term upon 30-day written notice to the Landowner.

5. At the end of the term or prior abandonment by the County or the District, the County shall, at its own expense, restore the easement to its original condition by filling the pipeline and capping the ends, if such restoration is required by the Landowner. The Landowner agrees that it has no authority to terminate this pipeline easement.

6. In exchange for the County's and the District's permission to operate and maintain the Landowner's private flood control facilities within the drainage easement, the Landowner agrees to release the County and the District, their assigns, or other franchised utilities from and waive any and all claims relating to said use of this facility, encroachments, including but not limited to, damages arising from damage to the facility use, loss of business, or other personal injury or property by the County or the District, their assigns, or other franchised utilities, including any operations associated with the Fox Island Flood Control Project and the associated stormwater removal pipeline.

7. The Landowner agrees that it is using the drainage easement at its own risk. The Landowner shall not look to the County, the District, their assigns, or other franchised utilities to pay for any expense or damage to the County's or District's franchised utilities. The Landowner agrees that it will hold harmless and indemnify the County, The District, and their assigns, or other franchised utilities from any and all claims in any way resulting from the placement and/or operation of the Fox Island Flood Control Project facilities. County agrees after installation of the pipeline that all disturbed areas within the easement will be reasonably restored to the conditions existing prior to the work being completed.

8. The Landowner agrees that the County and the District will have full access to the operation of the private levee control gate, and may open such gate after notification to the Landowner, when the water levels on the Missouri River are at or below a stage of 12 feet at the USGS Bismarck Gage, or if the waters at the culvert are below elevation 1627.7 (NADV 88), which is the southern invert of the 24" RCP under Gallatin Drive and approximately 1.6 feet above the north invert of the private culvert's invert elevation as of this date. This authority will allow the natural watercourse to function at its natural elevation without the need for the project pumping operations to continue.

902950

\$75.00  
Page: 2 of 9  
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Burleigh County

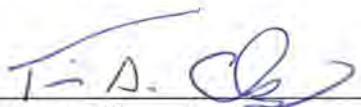


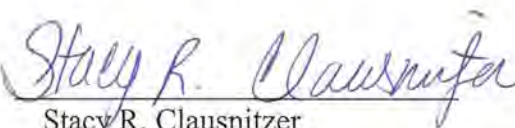
9. In the event the County is required to perform operation, maintenance or new construction with the pipeline easement, the Landowner shall cooperate with the County in temporarily protecting the pipeline and related facilities and accommodating the maintenance activities, which are at the County's expense.

10. This pipeline easement and the covenants, agreements and restrictions contained herein, shall run with the land benefitted and burdened hereunder. The County may assign this pipeline easement solely to the District or the Burleigh County Highway Department without further approval by the Landowner. If such assignment occurs, County will provide the Landowner with a copy of such assignment.

Landowner

Tim A. and Stacy R. Clausnitzer


  
\_\_\_\_\_  
Tim A. Clausnitzer

  
\_\_\_\_\_  
Stacy R. Clausnitzer

STATE OF NORTH DAKOTA                    )  
  ) SS.  
COUNTY OF BURLEIGH                    )

On this day 15<sup>th</sup> of August 2019, before me personally appeared Tim A. and Stacy R. Clausnitzer, known to me to be the owners of Lot 18, Block 1 of Fox Island Addition, who reside at 3367 Gallatin Drive, Bismarck, North Dakota. are described in and who executed the within instrument, and acknowledged to me that they executed the same.

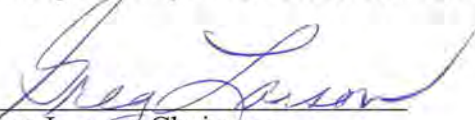


  
\_\_\_\_\_  
Notary Public  
My commission expires:

902950  
\$75.00  
Page: 3 of 9  
6/15/2020 11:04 AM  
Burleigh County  
ESMT  
HOUSTON ENGINEERING INC

County


Burleigh County Water Resource District

  
Greg Larson, Chairman

STATE OF NORTH DAKOTA     )  
  ) SS.  
COUNTY OF BURLEIGH     )

On this 29 day of August 2019, before me personally appeared Greg Larson who is the Chairman of Burleigh County Water Resource District, and that executed the within instrument, and acknowledged to me that such entity executed the same.


Connie Gulleon  
Notary Public  
State of North Dakota  
My Commission Expires Dec. 16, 2020

  
Notary Public  
My commission expires:

County

Burleigh County Highway Department (a.k.a., Lincoln Township)

Dated this 22<sup>nd</sup> day of August 2019.

  
Marcus J. Hall, PE  
Burleigh County Engineer  
MSH



STATE OF NORTH DAKOTA     )  
  ) SS.  
COUNTY OF BURLEIGH     )

On this 22<sup>nd</sup> day of August 2019, before me personally appeared Marcus Hall, known to me to be the County Engineer of Burleigh County, and a representative for Lincoln Township, described in and that that executed the within instrument, and acknowledged to me that such entity executed the same.

NICHOLE A. HOWE  
Notary Public  
State of North Dakota  
My Commission Expires March 11, 2021


  
Notary Public  
My commission expires:



EXHIBIT A  
 LOT 18 AND PART OF LOT 17 OF BLOCK 1  
 OF FOX ISLAND SUBDIVISION  
 BURLEIGH COUNTY, ND

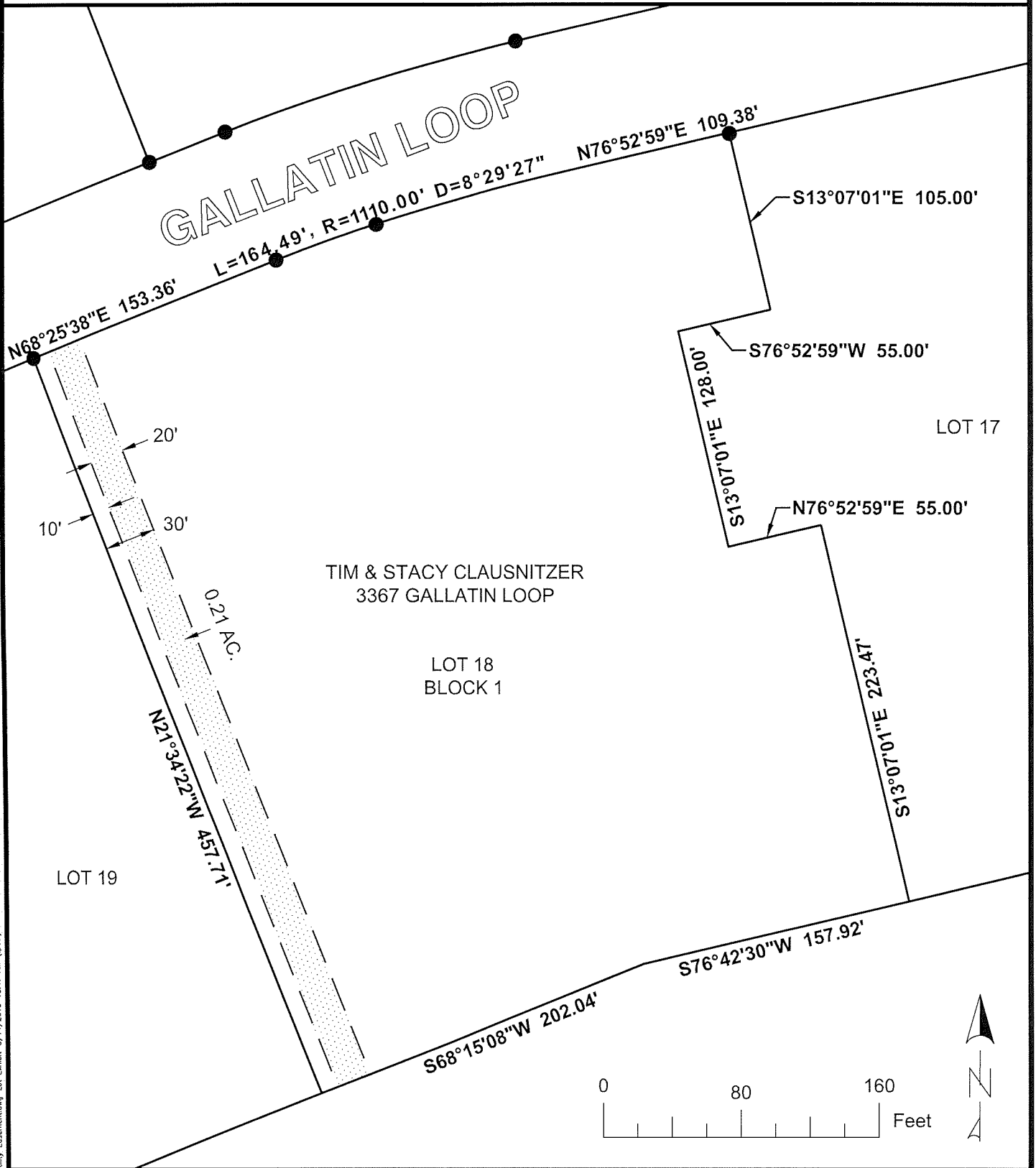
OWNER: TIM & STACY  
 CLAUSNITZER

HOUSTON ENGINEERING INC



ESMT

**902950**  
 \$75.00  
 Page: 5 of 9  
 6/15/2020 11:04 AM  
 Burleigh County



**LEGEND**

- IRON MONUMENT FOUND
- IRON MONUMENT SET
- CENTERLINE OF PIPELINE  STS
- PROPERTY LINE
- PERMANENT EASEMENT
- POINT OF BEGINNING  P.O.B.



Bismarck  
 P: 701.323.0200  
 F: 701.323.0300

**PIPELINE EASEMENT PLAT**

PROJECT NO.  
 6025-0006

FOX ISLAND FLOOD CONTROL PROJECT

SHEET  
 1 OF 2

H:\Bismarck\JRM\6025\6025-0006 Fox Island Flood Control\CAD\Easements\Clausnitzer STS Utility Easement.dwg - Lot Exhibit - 8/14/2019 10:47 AM - (pneu)

EXHIBIT A  
LOT 18 AND PART OF LOT 17 OF BLOCK 1  
OF FOX ISLAND SUBDIVISION  
BURLEIGH COUNTY, ND

OWNER: TIM & STACY  
CLAUSNITZER

DESCRIPTION OF PIPELINE EASEMENT:

A 20.00 FOOT WIDE EASEMENT OVER, UNDER AND ACROSS LOT 18, BLOCK 1, FOX ISLAND  
SUBDIVISION, BURLEIGH COUNTY, NORTH DAKOTA, DESCRIBED AS FOLLOWS:

THE EASTERLY 20.00 FEET OF THE WESTERLY 30.00 FEET OF SAID LOT 18.

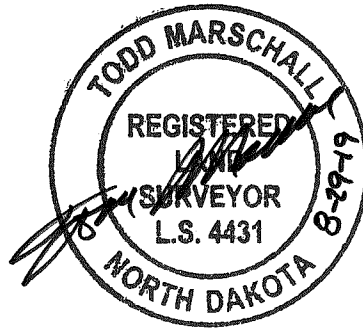
SAID TRACT OF LAND CONTAINS 0.21 ACRES, MORE OR LESS.

NOTE: ALL BEARINGS GIVEN ARE BASED ON THE NORTH DAKOTA STATE PLANE COORDINATE  
SYSTEM, SOUTH ZONE, NAD 83, US SURVEY FOOT, WITH MEASURED GRID DISTANCES

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER  
MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE  
LAWS OF THE STATE OF NORTH DAKOTA.

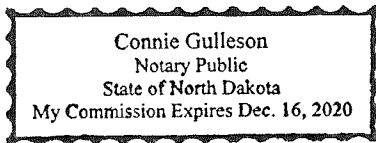
  
TODD MARSCHALL  
ND LIC. NO. 4431

8-29-19  
DATE



STATE OF NORTH DAKOTA) )SS  
BURLEIGH COUNTY )

ON THIS 29<sup>th</sup> DAY OF August 20 19, TODD MARSCHALL PERSONALLY APPEARED  
BEFORE ME, KNOWN TO ME TO BE THE PERSON DESCRIBED IN AND WHO EXECUTED THE  
WITHIN AND FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE  
SAME.




  
NOTARY PUBLIC

Bismarck, ND



**902950**  
\$75.00  
Page: 6 of 9  
6/15/2020 11:04 AM  
Burleigh County

 <b>Houston Engineering Inc.</b>	Bismarck
	P: 701.323.0200 F: 701.323.0300

# PIPELINE EASEMENT

PROJECT NO.  
6025-0006

FOX ISLAND FLOOD CONTROL PROJECT

SHEET  
2 OF 2



DRAINAGE EASEMENT

Exhibit B

902950  
\$75.00  
Page: 7 of 9  
6/15/2020 11:04 AM  
Burleigh County  
ESMT  
HOUSTON ENGINEERING INC

THIS AGREEMENT is made this 11th day of JUNE, 2002, between Troy M. Nelson and Kree Nelson, husband and wife, Grantors, and Burleigh County, North Dakota, as Grantee;

The Grantors, in consideration of One and no/00 (\$1.00) Dollars, receipt of which is hereby acknowledged, do hereby grant, convey and warrant unto the Grantee, its successors and assigns, an exclusive and perpetual easement to construct, operate, maintain, and repair drainage facilities across or upon the real property hereinafter described, together with the right to remove trees, brush, undergrowth, and other obstructions interfering with the location, construction and maintenance of said drainage easement. Grantee shall have the right of ingress and egress to said described easement property for purpose herein granted.

The real property affected by the grant of this easement is located in the County of Burleigh, State of North Dakota and is described as follows, to-wit:

A 30.00 foot wide drainage easement, 15.00 feet on each side of the centerline more fully described on Exhibit "A" attached hereto.

The Grantors herein have constructed, are in the process of constructing, and/or intend to construct, certain improvements to the drainage easement area. These improvements include a bridge across the drainage easement, rocks lining the bottom and sides of the drainage easement, and a pump and underground pipe intended to pump and circulate water through the drainage easement. None of these improvements interfere with the location, construction and maintenance of the easement property.

Therefore, notwithstanding the rights granted by this easement, the Grantors herein reserve the right to construct, operate, maintain and repair the aforementioned improvements within, on, under, across or about the drainage easement area, and none of said improvements shall be construed to impair the proper use and enjoyment of the easement rights granted herein, nor interfere with the location, construction and maintenance of the easement property.

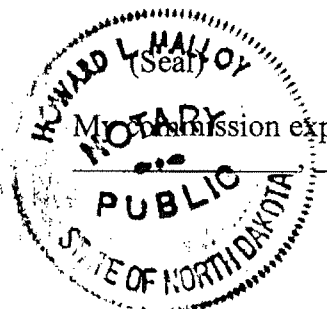
WITNESS the hand of the grantors:

Troy M Nelson  
Troy M. Nelson

Kree Nelson  
Kree Nelson

STATE OF NORTH DAKOTA )  
COUNTY OF BURLEIGH )ss

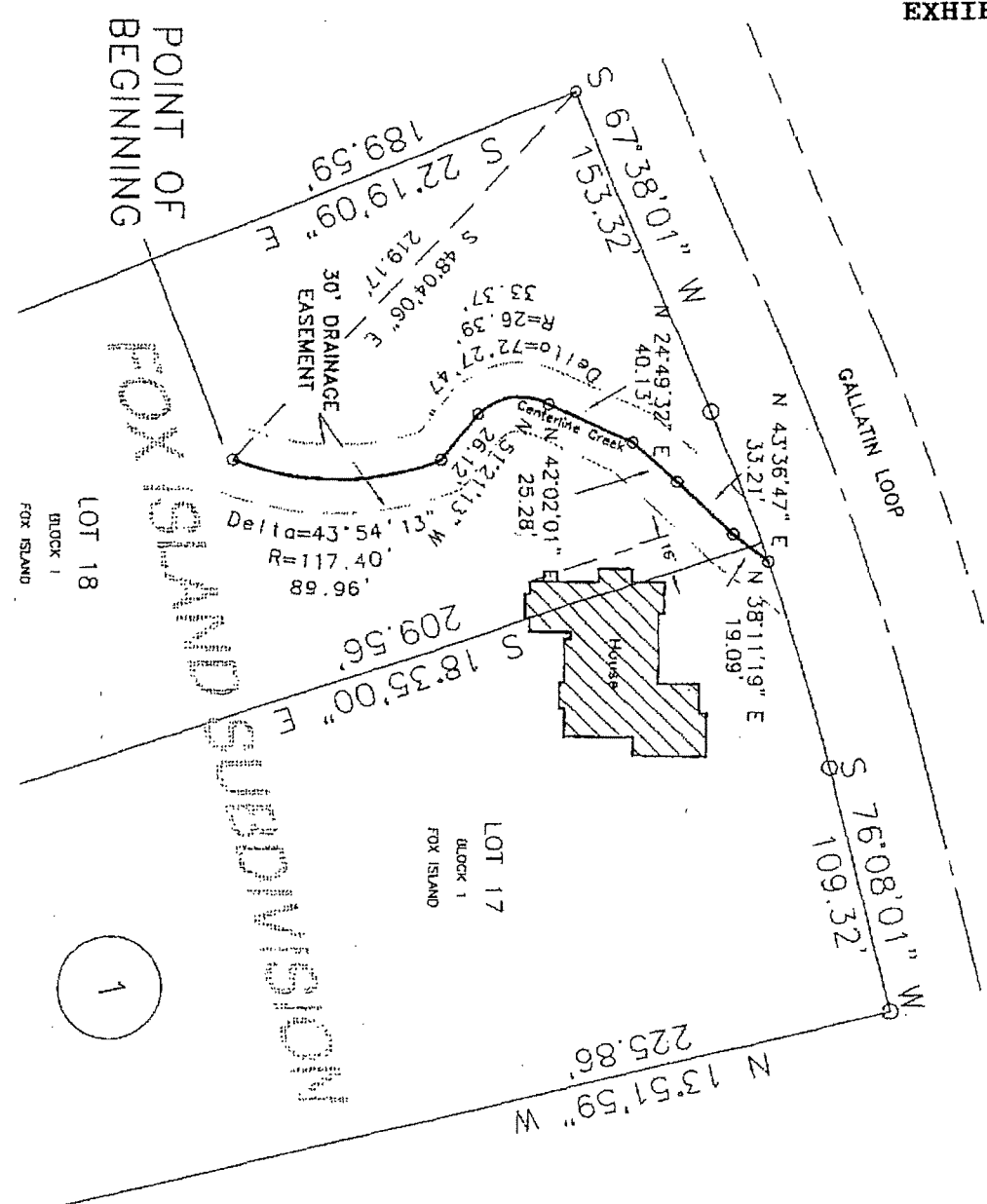
On this 11th day of JUNE, 2002, before me, personally appeared Troy M. Nelson and Kree Nelson, husband and wife, known to me to be the persons who are described in, and who executed the within and foregoing instrument, and severally acknowledged that they executed the same.



Howard L. Malloy  
Notary Public  
Howard L. Malloy County  
State of NORTH DAKOTA  
My Commission Expires SEPT. 12, 2002

May 24, 2009 - 2:23pm - 2:\work\m\990133\17184.dwg

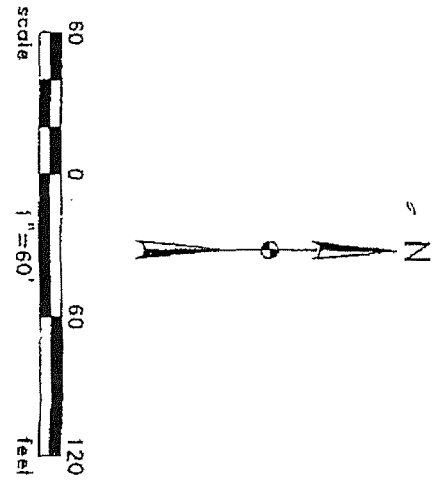
EXHIBIT "A"



A DRAINAGE EASEMENT OF LAND LYING IN LOT 17 & 18 BLOCK 1 OF FOX ISLAND SUBDIVISION TO THE CITY OF BISMARCK SECTION 19, TOWNSHIP 138 NORTH, RANGE 81 EAST OF THE FIFTH PRINCIPAL MERIDIAN, BURLEIGH COUNTY, NORTH DAKOTA MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF THE SAID LOT 18; THENCE S 48°04'06" E FOR 219.17 FEET TO THE POINT OF BEGINNING OF 30 FOOT DRAINAGE EASEMENT; THENCE FROM THE SAID POINT OF BEGINNING AND ALONG THE CENTERLINE OF SAID DRAINAGE EASEMENT ALONG A CURVE TO THE LEFT WHICH HAS A DELTA ANGLE OF 43°54'13" HAS A ARC LENGTH OF 89.96 FEET AND A RADIUS OF 117.40 FEET; THENCE N 51°21'13" W FOR 26.12 FEET; THENCE ALONG A CURVE TO THE RIGHT WHICH HAS A DELTA ANGLE OF 72°27'47" HAS A ARC LENGTH OF 33.37 FEET AND A RADIUS OF 26.39 FEET; THENCE N 24°49'32" E FOR 40.13 FEET; THENCE N 42°02'01" E FOR 25.28 FEET; THENCE N 43°36'47" E FOR 33.21 FEET; THENCE N 38°11'19" E FOR 19.09 FEET TO THE NORTH LINE OF SAID LOT 17.

SAID TRACT CONTAINS 267.16 L.F. OR 8.014 S.F. MORE OR LESS.



LOT 17 & 18 BLOCK 1 FOX ISLAND SUBDIVISION	1
KADTMES Lee & Jackson	EXISTING LAYOUT
10/15/2009	10/15/2009



# APPENDIX F

## ANNUAL INSPECTION REPORTS



# APPENDIX G

## POST-FLOOD AFTER ACTION REPORTS

# APPENDIX H

## OPERATIONS AND MAINTENANCE MANUAL COPY HOLDERS

**The following parties have been provided a copy of this O&M Manual for their use:**

James Landenberger – Burleigh County Water Resource District	(701) 426-6439
Brady Blaskowski – City of Bismarck Floodplain Development Manager	(701) 355-1467
Gary Stockert – City of Bismarck Emergency Manager	(701) 222-6727
Mary Senger – Burleigh County Emergency Manager	(701) 222-6727
Aaron Carranza – North Dakota State Water Commission	(701) 328-4813
Marcus Hall – Burleigh County Highway Department, County Engineer	(701) 204-7748

## PRIVATE LANDOWNERS LOCATED ON LEVEE SECTION

Joseph & Heather Herringer, 2430 Larson Road	(701) 426-4299
Everett & Carol Herringer, 2565 Larson Road, 2505 Larson Road	(701) 255-4404 / (701) 220-4852
Sara & Douglas Ness, 2450 Larson Road	(701) 471-5867
Scott Brown & Pamela McCormick, 2520 Larson Road	(701) 373-5475
Gregory & Dianne Larson, 2525 Larson Road	(701) 258-1461 / (701)400-7217
Boise & Tavis, 3464 Gallatin Drive	(701) 258-1461 / (701) 400-7217 (Contact via Greg Larson)

Original Date: April 11, 2021

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