

June 5, 2026

Re: **On-Site Visit Opportunities**; Project EM-P 0044(207)290 – PCN 05X0 – SD44 Missouri River Bridge (Platte/Winner)

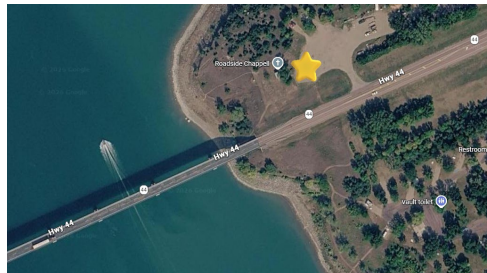
To Whom It May Concern,

The South Dakota Department of Transportation (SDDOT) will offer two on-site visit opportunities for contractors interested in the Platte/Winner Bridge project. These visits are intended to provide prospective bidders with the chance to become familiar with the project site and meet with SDDOT. The preference is for subcontractors to coordinate on-site visits with prime contractors.

The SDDOT will be available to meet with contractors on Tuesday, June 23rd and Thursday, June 25th from 10:00 a.m. to 4:00 p.m. CST.

Meeting Location

Attendees should meet in the parking lot on the northeast side of the project site.



Attendance Request

Contractors must sign up for a time slot by filling out the form attached and emailing it to the SDDOT at DOTBids@State.SD.US. The SDDOT asks that all requests for on-site visits be made by Friday, June 19th.

We appreciate your interest in the Platte/Winner Bridge project and look forward to meeting with you on site.

Sincerely,
SD DOT

Contractor On-Site Visit Request Form

Project: SD44 Platte/Winner Bridge – PCN 05X0

Date of Request: _____

Company Information

- Company Name: _____
- Primary Contact Name: _____
- Phone Number: _____
- Email Address: _____

Attendees for On-Site Visit

(Please list all individuals who will attend.)

1. Name: _____ Phone: _____
2. Name: _____ Phone: _____
3. Name: _____ Phone: _____
4. Additional attendees (if any): _____

Type of Work Performed by Your Company

Requested On-Site Visit Time

Site visits are offered in 30-minute increments between **10:00 AM and 4:00 PM**. If your preferred time slot is not available, the SDDOT will contact you to pick a new time. The contractor will receive an email notification once their requested time slot has been reviewed and approved.

Preferred Time Slot: _____

Request for Additional Time (Optional)

If your team requires more than the standard 30-minute visit, please describe the reason and the amount of additional time requested. Additional time is not guaranteed but will be considered:

Signature

By submitting this form, the contractor acknowledges that site visit scheduling is subject to availability and confirmation.

Name: _____

Title: _____

Signature: _____ Date: _____

June 5, 2026

Re: **Virtual Pre-Bid Meeting** Project EM-P 0044(207)290 – PCN 05X0 – SD44 Missouri River Bridge
(Platte/Winner)

To Whom It May Concern,

A pre-bid meeting for the Platte/Winner Bridge Reconstruction Project is scheduled for Tuesday, July 7th at 1:30 PM CST and will be conducted via Microsoft Teams. All interested contracting parties are invited to participate using the meeting link provided below.

The meeting will include a presentation outlining the project's overall scope of work, key design elements, traffic control considerations, and contract time. Contractors will also have the opportunity to ask questions of Department staff, consultants, and project stakeholders.

Although attendance is not mandatory, all interested contracting parties are strongly encouraged to join.

Participants must join the meeting using the link provided. To minimize audio feedback, please ensure your computer microphone is muted. Because the meeting will be held virtually, we ask that you enter your company name followed by the names of all attendees from your organization into the Microsoft Teams chat upon joining. A recording of the pre-bid meeting will be made available on the SDDOT Contractor SharePoint site following the meeting.

Join Platte/Winner Bridge Pre-Bid Meeting

Date: July 7, 2026

Time: 1:30 – 3:30 PM (CST)

Meeting ID: 228 438 244 171 169

Additional instructions regarding the meeting format will be provided at the beginning of the meeting.

We look forward to seeing you there!

Sincerely,
SD DOT

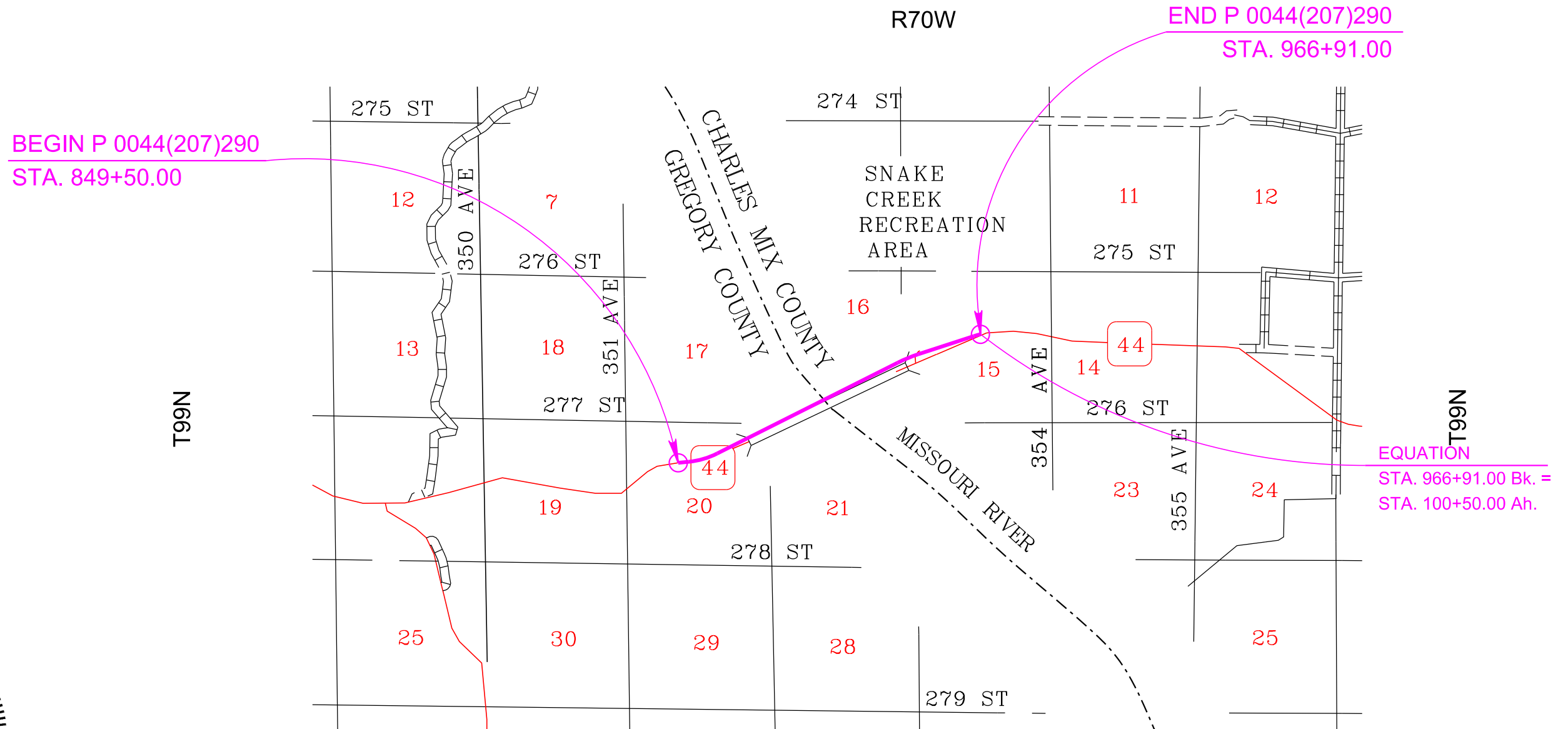
SECTION B: GRADING PLANS

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B1	TOTAL SHEETS B94
Plotting Date: 1/3/2024			

INDEX OF SHEETS

- B1 General Layout with Index
- B2-B13 Grading Notes and Tables
- B14-B16 Typical Grading Sections
- B17-B18 Horizontal Alignment Data
- B19 Control Data
- B20 Legend
- B21-B37 SD 44 Plan and Profile
- B38-B49 Sideroads Plan and Profile
- B50 West Boat Ramp Grading
- B51-B54 Slide Repairs Plan and Profiles
- B55 Traffic Diversion Plan
- B56-B61 Pavement Removal Layout
- B62-B63 Guard Rail Layouts
- B64 East Bank Restoration Detail
- B65-B94 Standard Plates



Plot Scale - 1:200

Plotted From - mbrua

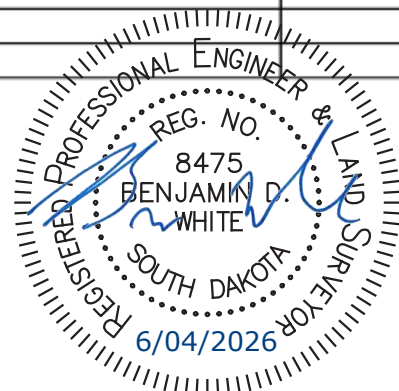
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SECTION B ESTIMATE OF QUANTITIES

Rev 05/27/2026 BDW
Rev 06/04/2026 BDW

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B2	B94

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	52	Each
009E3225	Reestablish Public Land Survey System Corner	1	Each
009E3230	Grade Staking	3.079	Mile
009E3250	Miscellaneous Staking	3.079	Mile
009E3280	Slope Staking	3.079	Mile
009E3290	Structure Staking	1	Each
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
009E4300	Construction Schedule, Category III	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0210	Remove Building(s)	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	180	Ft
110E0400	Remove Drop Inlet	4	Each
110E0550	Remove Cattle Guard	1	Each
110E0600	Remove Fence	7,445	Ft
110E0730	Remove Beam Guardrail	368.0	Ft
110E1010	Remove Asphalt Concrete Pavement	38,238.2	SqYd
110E1970	Remove Water Main	3,648	Ft
120E0010	Unclassified Excavation	605,992	CuYd
120E0600	Contractor Furnished Borrow Excavation	56,331	CuYd
120E1000	Muck Excavation	2,978	CuYd
120E2000	Undercutting	36,050	CuYd
120E6100	Water for Embankment	4,406.5	MGal
240E0010	Obliterate Old Road	21	Sta
250E0020	Incidental Work, Grading	Lump Sum	LS
450E0122	18" RCP Class 2, Furnish	190	Ft
450E0130	18" RCP, Install	190	Ft
450E0142	24" RCP Class 2, Furnish	190	Ft
450E0150	24" RCP, Install	190	Ft
450E0164	30" RCP Class 4, Furnish	144	Ft
450E0170	30" RCP, Install	144	Ft
450E2008	18" RCP Flared End, Furnish	8	Each
450E2009	18" RCP Flared End, Install	8	Each
450E2024	30" RCP Flared End, Furnish	2	Each
450E2025	30" RCP Flared End, Install	2	Each
450E2200	24" RCP Sloped End, Furnish	2	Each
450E2201	24" RCP Sloped End, Install	2	Each
450E2308	24" RCP Safety End, Furnish	2	Each
450E2311	24" RCP Safety End, Install	2	Each
450E4768	24" CMP 14 Gauge, Furnish	158	Ft
450E4770	24" CMP, Install	158	Ft
450E4778	30" CMP 14 Gauge, Furnish	88	Ft
450E4780	30" CMP, Install	88	Ft



BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E5015	24" CMP Elbow, Furnish	2	Each
450E5016	24" CMP Elbow, Install	2	Each
450E5310	24" CMP Sloped End, Furnish	1	Each
450E5311	24" CMP Sloped End, Install	1	Each
450E5314	30" CMP Sloped End, Furnish	1	Each
450E5315	30" CMP Sloped End, Install	1	Each
450E5414	30" CMP Safety End, Furnish	2	Each
450E5417	30" CMP Safety End, Install	2	Each
450E8014	24" RCP to CMP Transition, Furnish	1	Each
450E8015	24" Pipe Transition, Install	1	Each
451E3103	3" Pipe Cap	2	Each
451E7510	Verify Utilities	2	Each
464E0100	Controlled Density Fill	62.0	CuYd
600E0200	Type II Field Laboratory	1	Each
610E0012	12' Cattle Guard	1	Each
620E0020	Type 2 Right-of-Way Fence	7,385	Ft
620E0510	Type 1 Temporary Fence	900	Ft
620E1020	2 Post Panel	46	Each
620E1030	3 Post Panel	11	Each
620E2016	16' Tubular Gate	1	Each
630E0500	Type 1 MGS	225.0	Ft
630E1500	Type 1 Guardrail Transition	4	Each
630E2019	MGS Tangent End Terminal	4	Each
671E7010	Adjust Manhole	1	Each
680E0224	4" PVC Outlet Pipe	165	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	770	Ft
680E2000	Concrete Headwall for Underdrain	4	Each
680E2500	Porous Backfill	326.0	Ton
700E0110	Class A Riprap	308.0	Ton
700E0210	Class B Riprap	6,097.2	Ton
831E0110	Type B Drainage Fabric	5,866	SqYd
900E0010	Refurbish Single Mailbox	1	Each
900E0012	Refurbish Double Mailbox	1	Each
900E1080	Orange Plastic Safety Fence	225	Ft
900E5815	Channel Cross Section Survey	Lump Sum	LS

COORDINATION BETWEEN CONTRACTORS

A separate SD GF&P project to relocate the existing park residence structure to state property on the south side of SD Highway 44 is anticipated to bid in summer of 2026 with an anticipated completion date of fall 2026 / spring 2027.

The Contractor will schedule work so as not to interfere with or hinder the progress of the work performed by other Contractors on the project described above.

GRADING OPERATIONS

For embankment soil with an optimum moisture of 20% or greater, the Density Specification (Percent of Maximum Dry Density) will be 92% to 98% and the Moisture Specification (Percent of Optimum Moisture) will be -2% to +3%.

Water for Embankment is estimated at the rate of 15 gallons of water per cubic yard of Embankment minus Waste.

The estimated cubic yards of excavation and/or embankment required to construct outlet ditches, ditch blocks, and approaches are included in the earthwork balance notes on the profile sheets.

Special ditch grades and other sections of the roadway different than the typical section(s) will be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer will contact the Designer for the proposed change.

Generally, all shallow inlet and outlet ditches as noted on the plan sheets will be cut with a 20-foot wide bottom with 5:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

Permanent fence will be placed ahead of the grading operation unless otherwise directed by the Engineer.

TYPE II FIELD LABORATORY

The lab will be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection will be provided with a multi-port wireless router. The internet connection will be a minimum speed of 20 Mbps unless limited by job location and approved by the DOT.

Prior to installing the wireless router, the Contractor will submit the wireless router's technical data to the Area Office to check for compatibility with the state's computer equipment. The internet connection is intended for state personnel usage only. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer. These items will be incidental to the contract unit price per each for "Type II Field Laboratory".

UTILITIES

The Contractor will be aware that the existing utilities shown in the plans were surveyed prior to the design of this project and might have been relocated or replaced by a new utility facility prior to construction of this project, might be relocated or replaced by a new utility facility during the construction of this project, or might not require adjustment and may remain in its current location. The Contractor will contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided elsewhere in the plans or bidding documents.

EMBANKMENT CONSTRUCTION

Embankment construction will not begin until all unstable compressible materials have been excavated from the embankment footprint to the satisfaction of the Engineer. A suitable embankment foundation consists of compacted soil which does not pump, rut, or otherwise displace when traveled over with construction equipment. Each embankment will be benched into the existing slopes in accordance with Section 120.3.B.2 of the Specifications.



BRIDGE BERM EMBANKMENT CONSTRUCTION

To improve long-term performance of the new bridge berms, all fill materials required to construct the new bridge berms and reestablish the riverbank at the below locations will conform to the following requirements: 100% passing the 1 – 1/2” sieve, a maximum of 70% passing the #4 sieve, a maximum Liquid Limit (LL) of 45, and a Plastic Index (PI) greater than 10 but less than 25.

Station	to	Station	Quantity (CuYd)
872+00		876+42	48232
932+60		935+00	8099
Total:			56331

For the bridge berm material used at the above locations, the Contractor will be responsible for one sieve analysis test prior to placement of material. The Department will be responsible for one sieve analysis test for every 10,000 cubic yards of material. Independent Assurance testing will not be required.

TRAFFIC DIVERSION

The traffic diversion is located from Sta. 960+99 R2 to 102+35 R3. The traffic diversion will be constructed according to Section 5.14 B of the Specifications. Installation and removal of the traffic diversion will meet all requirements as set forth in the South Dakota Surface Water Quality Standards.

The traffic diversion located from Sta. 960+99 R2 to 102+35 R3 will be constructed in accordance with the geometric layout shown in the plans.

The removed traffic diversion embankment will be used in the mainline embankment unless otherwise approved by the Engineer.

Traffic Diversion Excavation as shown on the plans profile sheets is the excavation required to construct the traffic diversion portion that is located inside the mainline cross section work limits. The Traffic Diversion Excavation quantity is included in the mainline excavation quantity in the Table of Excavation Quantities by Balances and in the Table of Unclassified Excavation.

OBLITERATING OLD ROAD

The Contractor will obliterate the existing roadway at the locations listed in the Table of Obliterating Old Road.

The Contractor will obliterate the existing roadway in accordance with Section 240 of the Specifications when the existing roadway is not being removed in accordance with the template section.

The earthwork necessary for obliterating the existing road will be accomplished to such an extent that placing topsoil and seeding can be done in a satisfactory manner. Quantities of topsoil, fertilizing, mulching, and seeding for the obliterated sections of the old road are included in the Section D - Erosion and Sediment Control Plans Estimate of Quantities.

TABLE OF OBLITERATING OLD ROAD

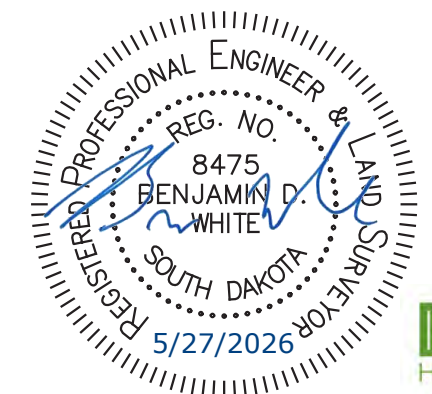
Station	to	Station	L/R	Length (Sta)
863+02		866+49	R	3.5
932+70		942+19	R	10.5**
947+37		953+91	R	6.5
Total:				21

**Includes north park entrance from Sta. 941+43 to 942+33

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SHRINKAGE FACTOR: Embankment +30%

FOR BIDDING PURPOSES ONLY

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TABLE OF EXCAVATION QUANTITIES BY BALANCES

Station to Station	Excavation (CuYd)	* Undercut (CuYd)	* Muck Exc. (CuYd)	Landslide Debris Exc. (CuYd)	* Contractor Furnished Borrow Exc (CuYd)	Total Excavation (CuYd)	**Out-of-Balance Exc. (CuYd)	** Waste (CuYd)	**Out-of-Balance Waste (CuYd)	** Haul (CuYdSta)	**Out-of-Balance Haul (CuYdSta)
West of Bridge											
848+00 872+00	222,060	10,471				232,531		190,757	7,118	3,176,700	
872+00 876+42	1,742				48,232	49,974		1,742			
GFP Access	19,312	1,208				20,520		18,084		68,800	
Boat Access	1,281	48				1,329	7,118				21,400
West Boat Ramp	37,016					37,016		36,704			
Subtotal	281,411	11,727			48,232	336,840	7,118	247,287	7,118	3,245,500	21,400
East of Bridge											
932+60 935+00					8,099	8,099					
935+00 966+91	172,129	18,598	2,978			193,705		44,651	102,964	2,825,400	
Park Drive North	10,490	1,288				11,778		10,076		39,600	
Park Drive South	8,047	2,308				10,355		7,355		15,300	
House Entrance	3,397	974				4,371		2,857		5,600	
Shop Entrance	4,106	987				5,093	2,513				12,600
North Slide	4,607			16,090		20,697	12,804				102,500
Mainline Slide	982			14,354		15,336	3,324				10,000
South Slide	4,544			15,022		19,566	84,323				674,600
Traffic Diversion	43	168				211					
East River Bank	720					720					
Subtotal	209,065	24,323	2,978	45,466	8,099	289,931	102,964	64,939	102,964	2,885,900	799,700
Totals:	490,476	36,050	2,978	45,466	56,331	626,771	110,082	312,226	110,082	6,131,400	821,100

* The quantities for these items are in the Estimate of Quantities under their respective contract items.

** The quantities for these items are for information only.

TABLE OF UNCLASSIFIED EXCAVATION

Excavation	(CuYd)	490,476
Undercut		36,050
Topsoil		34,000
Debris Excavation		45,466
Total		605,992



PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY

When plan quantities are used for payment, the Unclassified Excavation quantity will be used for final payment and the plans quantity of Topsoil and salvaged surfacing items listed in the Table of Unclassified Excavation will not be adjusted according to field measurements.

The following paragraphs are general earthwork information and information in regard to computing the Unclassified Excavation quantity when final cross sections are taken in the field:

The Unstable Material Excavation quantity is included in the Excavation quantity listed in the Table of Unclassified Excavation. When finaling a project, the Unstable Material Excavation quantity will be added to the Excavation quantity to compute the Unclassified Excavation quantity.

The Topsoil quantity in the Table of Unclassified Excavation is an estimate. When finaling a project, the total quantity of field measured Topsoil will be used in place of the estimated Topsoil quantity. The quantity of Topsoil from the cuts will be paid for twice as Unclassified Excavation, as it will be in both the Excavation and Topsoil quantities. This will be full compensation for Excavation, which includes necessary undercutting to provide space for placement of topsoil.

The Excavation quantities from individual balances and the Table of Unclassified Excavation have been reduced by the volume of in place surfacing that will be removed and/or salvaged.

The volume of in place Asphalt Surfacing removed will NOT be paid for as Unclassified Excavation.

The Excavation quantities from individual balances and the table above have been reduced by the volume of in place concrete pavement and asphalt pavement that will be removed.

HAUL

Included in the Table of Excavation Quantities by Balances are Out-of-Balance Haul and Haul. They are not pay items and are for informational purposes only. Haul was not estimated for moving Contractor Furnished Borrow Excavation. The mass haul diagram is available as part of the bid package for use in figuring this haul.

Out-of-Balance Haul: Estimated quantity (CuYdSta) for moving material from an earthwork balance to another earthwork balance.

Haul: Estimated quantity (CuYdSta) for moving unclassified excavation material to the locations where it is needed throughout the earthwork balance.

UNDERCUTTING

In all grading sections the earthen subgrade will be undercut 3 feet below the earthen subgrade surface. The undercut material or other suitable material, as directed by the Engineer, will then be replaced and compacted to the density specified for the section being constructed.

Shallow embankment sections, fills less than 3 feet in height measured at the finished subgrade shoulders, will be undercut to ensure a minimum 3-foot height of earth embankment for the entire width of roadbed. The upper 6 inches of undercut material that consists of topsoil with a high humus content

will be used as topsoil, placed in the fill slopes outside the shoulders of the earthen subgrade, or placed in the lower portion (below 4 foot depth) in fills which are greater than 4 feet in height. The remaining undercut soil and soil obtained from adjacent excavation (excluding the upper 6 inches) will then be replaced and compacted to the density specified to the section being constructed.

The undercut depth will be 2 feet for GFP Access, Boat Access, Park Drive North, Park Drive South, House Entrance and Shop Entrance.

The plan shown quantity will be the basis of payment. However, if there are additional areas of undercut other than what is shown in the plans, the Engineer will direct removal of these areas and the additional areas will be measured according to the Engineer.

TABLE OF UNDERCUTTING LOCATIONS RURAL

Station	to	Station
<i>Mainline</i>		
849+50		867+00
867+50		872+00
936+00		966+91/101+00
<i>GFP Access</i>		
51+50		56+32
<i>Boat Access</i>		
0+50		2+00
3+50		5+50
<i>Park Drive North</i>		
5+50		10+38
<i>Park Drive South</i>		
15+00		22+24
<i>House Entrance</i>		
31+50		35+61
<i>Shop Entrance</i>		
40+50		43+00
43+50		45+50

UNSTABLE MATERIAL EXCAVATION

The areas of unstable material excavation are drawn on the cross sections with a normal depth of 2 feet. The estimated quantity of 5,837 cubic yards of unstable material excavation will be paid for at the contract unit price per cubic yard for "Unclassified Excavation".

All areas designated as Unstable will be excavated. The unstable material excavated on this project will be placed outside the subgrade shoulder in fill sections or stockpiled and used as topsoil.

Field measurement of unstable material excavation will not be made. However, if there are additional areas of unstable material excavation other than what is shown in the plans, the Engineer will direct removal of these areas and the additional areas will be measured according to the Engineer.



FOR BIDDING PURPOSES ONLY

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TABLE OF UNSTABLE MATERIAL EXCAVATION

Station	to	Station	L/R	Depth (Ft)	Quantity (CuYd)
855+50		856+50	L	2	135
859+50		861+00	L	2	624
867+00		867+50	R	2	388
872+00		875+00	L	2	2,221
952+00		954+00	L/R	2	1,606
<i>Boat Access</i>					
1+00		4+00	R	2	863
Total:					5,837

MUCK EXCAVATION

The areas of muck excavation are drawn on the cross sections with a normal depth of 3 feet. The estimated quantity of 2,978 cubic yards of muck excavation will be paid for at the contract unit price per cubic yard for "Muck Excavation".

Muck excavation consists of the removal of highly organic and/or highly saturated material from the designated areas shown on the cross sections. Highly organic muck material will not be used in the embankment but may be used as topsoil. Non-organic muck material may be used as embankment outside of the fill subgrade shoulder if it is properly handled and dried prior to placement in the embankment.

Field measurement of muck excavation will not be made unless the Engineer orders additional excavation, or when the Engineer determines, in accordance with Section 120.3 A.1 of the Specifications, that the classification of excavation be changed.

If the areas designated as muck excavation can be removed with similar equipment and procedures as used for unclassified excavation, the material will be measured and paid for as "Unclassified Excavation".

TABLE OF MUCK EXCAVATION

Station	to	Station	L/R	Depth (Ft)	Quantity (CuYd)
949+00		952+00	R	3	2,978
Total:					2,978

GENERAL GEOLOGY

The Pierre Shale and Shale derived embankment materials will be encountered throughout the project limits. At some locations east of the Missouri River, the Pierre Shale is covered by a varying thickness of Glacial Till. The South Dakota Geological Survey describes each as outline below:

Stagnation Moraine Till consists of compact silty, clay-rich matrix with sand to boulder sized clasts of glacial origin.



GENERAL GEOLOGY, Continued

The *Pierre Shale* consists of blue-gray to dark gray, fissile to blocky shale with persistent beds of bentonite, black organic shale, and light-brown chalky shale. Contains minor sandstone, conglomerate, and abundant carbonate and ferruginous concretions. The Pierre Shale may be encountered in outcrop and at depth throughout the project limits.

CLASSIFICATION OF EXCAVATION

Large glacial boulders may be encountered sporadically within the project limits. Very large boulders could require more effort to excavate. Most of the material encountered should be able to be excavated using conventional methods associated with normal Unclassified Excavation. Muck Excavation will be required at the areas shown in the plans or as directed by the Engineer.

PIPE CULVERT UNDERCUT

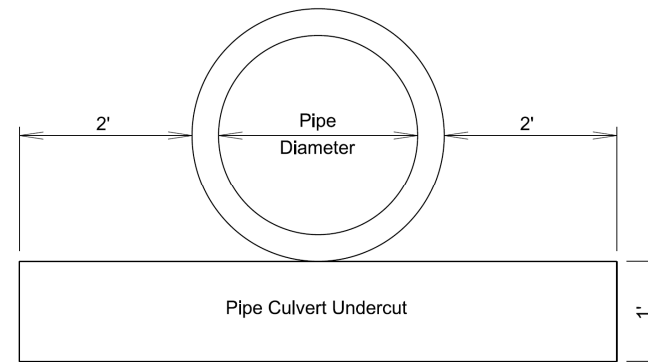
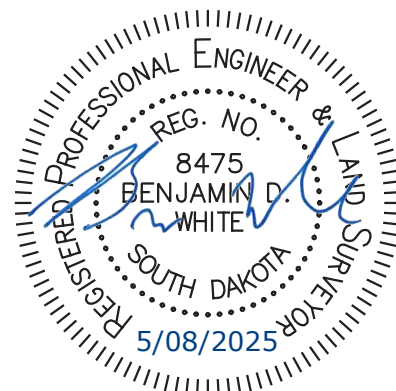
Pipe culvert undercut may be required for this project. The Engineer will determine which pipe will be undercut in accordance with Section 421 of the Specifications.

If pipe culvert undercut is required, the table below contains the rate for one-foot depth of pipe culvert undercut per foot of pipe length. When calculating pipe culvert undercut, the length of pipe ends should be included in the overall pipe length.

The table below contains the rate for one-foot depth of pipe culvert undercut per foot of pipe length and should be used as an aid in determining the actual amount of undercut to be performed during construction. The table is derived from the drawing below and conforms to the Specifications. When calculating pipe culvert undercut, the length of pipe ends should be included in the overall pipe length.

Storm sewer and approach pipes do not require undercutting unless specified otherwise in these plans.

Pipe Diameter (In)	Round Pipe Undercut Rate for 1' Depth (CuYd/Ft)	Arch Pipe Undercut Rate for 1' Depth (CuYd/Ft)
24	0.2407	0.2577
30	0.2623	0.2847
36	0.2840	0.3110
42	0.3056	0.3337
48	0.3272	0.3596
54	0.3488	0.3827
60	0.3704	0.4105
66	0.3920	---
72	0.4136	0.4630
78	0.4352	---
84	0.4568	0.5123
90	0.4784	---



INCIDENTAL WORK, GRADING

Station	L/R	Remarks
854+75-40'	L	Take Out 18"-88' CMP
855+92-72'	L	Take Out 1 End Section
861+01-27'	L	Take Out 1 End Section
867+39-34'	R	Take Out 24"-359' CMP
873+00-513'	R	Take Out 24"-14' CMP
932+83-326'	R	Take Out 1 End Section
933+20-213'	R	Take Out 1 End Section
941+29-336'	R	Take Out 18"-160' RCP
941+71-166'	R	Take Out 18"-147' CMP
949+10-70'	R	Take Out 2 End Sections
955+90-33'	R	Take Out 18"-72' CMP
958+33-102'	R	Take Out 18"-42' CMP
<i>Park Drive South</i>		
15+20-46'	L	Take Out 18"-94' CMP
<i>House Entrance</i>		
31+85-22'	L	Adjust Sanitary Cleanout
32+65-21'	L	Adjust Sanitary Cleanout
33+96-37'	L	Take Out 2 End Sections
34+39-38'	L	Adjust Sanitary Cleanout
<i>Shop Entrance</i>		
40+29-39'	L	Adjust Sanitary Cleanout
40+46-96'	L	Take Out 18"-64' RCP
40+51-57'	L	Adjust Sanitary Cleanout
41+81-38'	L	Take Out 18"-70' RCP
42+64-50'	L	Take Out 2 End Sections
<i>South Slide Repair</i>		
7+15-30'	R	Exhume Existing Outlet

REMOVAL OF BUILDING(S)

Included in these plans is the removal and disposal of several buildings and related facilities. The locations and types of buildings are as follows:

Station	L/R	Type
934+07	R	Wayside Chapel
937+90	L	Remove Septic Tank & Drain Field (Remove Building)
938+43	L	Remove Residence Foundation, Deck & Associated Footings (Remove Building)
938+84	L	Remove Propane Tank & Gas Service Line (Remove Building)
945+13	R	Septic Tank & Drain Field

These buildings will be removed in accordance with Section 110 of the Specifications and all local codes. The disconnecting and capping of utility services will be the responsibility of the Contractor.

These buildings have not been inspected for asbestos. The Contractor will be responsible for providing an asbestos inspection and following all local, state, and federal regulations regarding the removal of asbestos, if found. All costs for the inspection will be incidental to the contract lump sum price for

"Remove Building(s)". All costs for removal of the asbestos will be handled during construction by CCO.

REMOVAL OF EXISTING ASPHALT CONCRETE PAVEMENT

The Los Angeles Abrasion Loss value on the aggregate used for the in-place asphalt concrete was 20. This value was obtained from testing during construction of the in-place asphalt concrete.

An estimated 38,238.2 Square Yards of the in-place asphalt concrete surfacing will be removed from the existing highway according to the in-place surfacing typical sections and wasted as directed by the Engineer.

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL

Station to	Station	L/R	Quantity (SqYd)
849+50	876+17	R	11,137.9
932+69	966+91	L/R	27,100.3
Total:			38,238.2

TABLE OF CONCRETE CURB AND/OR GUTTER REMOVAL

Station to	Station	L/R	Quantity (Ft)
875+76-91'	876+21-93'	R	45.0
875+77-118'	876+22-119'	R	45.0
932+76-279'	933+21-280'	R	45.0
932+77-253'	933+22-253'	R	45.0
Total:			180.0

TABLE OF DROP INLET REMOVAL

All costs for removal of the frame and grate assembly will be incidental to the contract unit price per each for "Remove Drop Inlet".

Station	L/R	Quantity (Each)
876+10	R	2
932+83	R	2
Total:		4

TABLE OF CATTLE GUARDS

Station	L/R	Size
54+97.31-6' L to 55+7.31-6' R	L	12' Cattle Guard with Wings



LANDSLIDE DEBRIS EXCAVATION

Landslide Debris Excavation will be required at each site as shown on the cross sections. It is anticipated that most of the excavated Landslide Debris can be used in the construction of embankment. The Landslide Debris Excavation limits will not exceed those shown on the cross sections unless directed by the Engineer. Steep temporary backslopes are required to excavate the Landslide Debris and reconstruct the inslopes. The temporary slopes will be unstable over the long-term. However, the slopes should remain globally stable over the short-term during construction if measures are taken to divert runoff away from the slopes and construction activities are sequenced to minimize the amount of time the temporary backslopes are left exposed and unsupported. Regular monitoring of temporary slopes is required during construction. If temporary slopes become unstable, excavation will cease, and the slope will be evaluated by the Engineer. Landslide Debris Excavation will be paid for as Unclassified Excavation.

LANDSLIDE UNSTABLE EXCAVATION

Prior to berm embankment construction Unstable Excavation will be required to excavate displaced or weak compressible soils and other organic materials. A nominal 5 ft. depth of compressible material is anticipated to be removed from the embankment footprint prior to construction of the embankment. The depth of unstable excavation may be adjusted by the Engineer to ensure a solid foundation free of organic, soft, unstable material is prepared. Unstable and/or highly organic material will be stockpiled for use as topsoil or wasted at a site approved by the Engineer.

LANDSLIDE REPAIR CONSTRUCTION

Construct the landslide repairs sequentially in the following order: North Slide Repair, South Slide Repair, Mainline Slide Repair.

North Slide Repair

Mitigate the slope stability issues at this site by excavating landslide debris and unstable compressible material, installing underdrains, constructing a berm, and reconstructing the inslope.

The temporary Landslide Debris Excavation slope will be 2 ½:1. Warp into and out of full Landslide Debris Excavation at Station 1+00± and Station 4+00±, Rt. Excavate 5' of unstable compressible material from the proposed embankment footprint prior to underdrain installation and fill placement. Install underdrains (see underdrain notes). Reconstruct the mainline inslope and ditch as shown on the cross sections from Station 959+00± to Station 963+25±, Lt.

Mainline Slide Repair

Reconstruct the mainline embankment excavating landslide debris and compressible material, installing underdrains, and reconstructing the mainline embankment. The temporary Landslide Debris Excavation slope will be 2:1. Warp into and out of full Landslide Debris Excavation at Station 964+00± and 965+75±, Rt. Excavate 5' of unstable compressible material from the proposed embankment footprint prior to underdrain installation and fill placement. Install underdrains (see underdrain notes). Reconstruct the mainline embankment from Station 963+00± to Station 966+50± as shown on the cross sections.

South Slide Repair

Expand the existing berm by excavating landslide debris and unstable compressible material from the drainage area, exhuming, and extending the existing underdrain, and constructing the berm. Excavate landslide debris as

shown on the channel cross sections. Excavate 5' of unstable compressible material from the proposed embankment footprint prior to extending the underdrain and fill placement. Exhume and extend the existing underdrain (see underdrain notes). Shape the outlet channel slopes, construct the lower berm embankment, repair erosion, and shape the top of the berm as shown on the cross sections.

UNDERDRAINS

Underdrains will be required to capture water from local seeps and improve subgrade and embankment foundation conditions. Underdrains will be installed as per the following:

North Slide Repair

An underdrain system will be installed at the toe of the temporary Landslide Debris Excavation slope from Sta. 1+00 to Sta. 4+50. The underdrain will consist of 4-inch Slotted Corrugated Polyethylene Tubing placed in a 2-foot-wide by 3-foot-deep trench backfilled with 3 feet of Porous Backfill. The underdrain will outlet through 100 feet of 4-inch PVC Outlet Pipe placed in a 2-foot-wide trench of variable depth backfilled with soil. The underdrain outlet pipe will daylight at an Outlet Headwall placed at approximately 5+14-95' L as directed by the Engineer.

The estimated quantities for the underdrain system are as follows:

4" PVC Outlet Pipe	100	Ft
4" Slotted Corrugated Polyethylene Tubing	390	Ft
Porous Backfill	166	Ton
Concrete Headwall for Underdrain (See Standard Plate 680.01)	1	Each
Excavation	105	CuYd

Mainline Slide Repair

An underdrain system will be installed at the toe of the temporary Landslide Debris Excavation slope from Sta. 964+00-108' R to Sta. 965+75-124' R. (see plans and cross sections for details). Excavate all landslide debris and unstable compressible material from the berm footprint prior to underdrain installation. Reconstruct the embankment to an elevation needed to construct and maintain positive flow from the underdrain. The longitudinal underdrain will consist of 4-inch Slotted Corrugated Polyethylene Tubing placed in a 2-foot-wide by 3-foot-deep trench backfilled with 3 feet of Porous Backfill.

The underdrain will outlet through lateral drains teed into each end of the longitudinal drain. The lateral drains will consist of 4-inch Slotted Corrugated Polyethylene Tubing placed in a 2-foot-wide by 3-foot-deep trench backfilled with 3 feet of Porous Backfill. Each lateral drain will outlet through 20 feet of 4-inch PVC Outlet Pipe placed in a 2-foot-wide trench of variable depth backfilled with soil. The lateral underdrain outlet pipes will daylight at Outlet Headwalls placed at the toe of the proposed inslope at 964+00-108' R and 965+75-124' R as directed by the Engineer.

The estimated quantities for the underdrain system are as follows:

4" PVC Outlet Pipe	40	Ft
4" Slotted Corrugated Polyethylene Tubing	280	Ft
Porous Backfill	118	Ton
Concrete Headwall for Underdrain (See Standard Plate 680.01)	2	Each

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South Slide Repair

Exhume the existing underdrain outlet near the toe of the existing berm at Sta. 7+15-30' R. Remove the existing headwall and extend the drain to the toe of the proposed berm at Sta. 8+25-30' L. Excavate all landslide debris and unstable compressible material from the berm footprint prior to underdrain installation. Backfill the berm excavation as needed to construct and maintain positive flow from the underdrain.

The underdrain will consist of 4-inch Slotted Corrugated Polyethylene Tubing placed in a 2-foot-wide by 3-foot-deep trench backfilled with 3 feet of Porous Backfill. The underdrain will outlet through 25 feet of 4-inch PVC Outlet Pipe placed in a 2-foot-wide trench of variable depth backfilled with soil. The underdrain outlet pipe will daylight at an Outlet Headwall placed at approximately 8+25-30' L as directed by the Engineer.

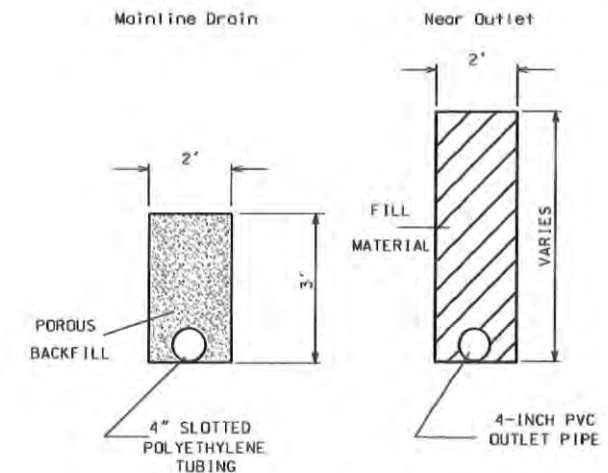
The estimated quantities for the underdrain system are as follows:

4" PVC Outlet Pipe	25	Ft
4" Slotted Corrugated Polyethylene Tubing	100	Ft
Porous Backfill	42	Ton
Concrete Headwall for Underdrain (See Standard Plate 680.01)	1	Each

TYPICAL UNDERDRAIN INSTALLATION

GREG 05X0 - LANDSLIDE REPAIR

Mainline Embankment and Berm Underdrains



UNDERDRAINS WILL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 680, SPECIFICATONS



UNDERDRAIN CONSTRUCTION

The 4-inch PVC Outlet Pipe will be Schedule 40 PVC Pipe conforming to ASTM D1785 designated as PVC 1120, PVC 1220, or PVC 2120. Pipe sections will be connected using a PVC Solvent Cement conforming to ASTM D2564. All labor, tools, equipment, and incidentals necessary for the installation of the PVC Outlet Pipe will be incidental to the contract unit price per foot for 4-inch PVC Outlet Pipe.

Care will be taken to ensure that the underdrain and outlet pipes are not damaged during construction. Sufficient cover material is to be placed over the pipes before compaction equipment is allowed over the underdrain system. Damaged pipe will be replaced by the Contractor at no additional cost to the Department.

The underdrain locations given are based on the best information available to the Geotechnical Engineering Activity. Actual field conditions may require that adjustments be made by the Engineer during construction to provide for sufficient drainage. The Geotechnical Engineering Activity will be available for onsite assistance if necessary.

Underdrain trenches will be graded to maintain a minimum of 0.01 ft/ft. or 1% drop from beginning to outlet. The Contractor will ensure all segments of drainage tubing and outlet pipe are positively connected and remain soil tight during installation of the underdrain system. The Outlet Headwall will be placed to blend in with the surrounding topography with the outlet pipe placed above the bottom of the drainage to permit proper flow from the outlet.

Underdrain headwalls will be cleared of topsoil, straw, or other debris after seeding operations have been completed. The as built headwall location will be recorded and submitted to the Engineer. Each headwall location will be identified by GPS coordinates and Station and Offset. The headwall locations will be cataloged in the Mitchell Area office for reference in post construction maintenance.

The total project underdrain quantities are summarized below.

Estimate of Quantities:

4-inch Corrugated Slotted Polyethylene Drainage Tubing	770 feet
4-inch PVC Outlet Pipe	165 feet
Porous Backfill	326 tons
Headwalls (Standard Plate No. 680.01)	4 each

CORRUGATED METAL PIPE

Corrugated metal pipes will have 2 3/8-inch x 1/2-inch corrugations for 42-inch and smaller round pipe and 48-inch and smaller arch pipe unless otherwise stated in the plans. Corrugated metal pipes will have 3-inch x 1-inch or 5-inch x 1-inch corrugations for 48-inch and larger round pipe and 54-inch and larger arch pipe unless otherwise stated in the plans.

Areas within the project have soils that are highly corrosive to steel. Corrugated metal pipe in these areas will be polymer coated 14 gauge steel as specified in the Table of Pipe Quantities. Any required connection bands, elbows, tees, crosses, wyes, reducers, and transitions will also be polymer coated. The connection bands will be 24 inches wide. All polymer coated corrugated metal pipe and components will be in conformance with AASHTO M245. Riveted pipe will not be allowed.

All damage to the polymer coating will be repaired in accordance with the manufacturer's recommendations prior to installation of the pipe.

All costs associated with the polymer coating including repair of polymer coating will be incidental to the corresponding CMP contract items.

Metal pipe end sections connected to polymer coated CMP will be aluminum-coated (Type 2) in accordance with AASHTO M36 as specified in the Table of Pipe Quantities. All costs associated for gauge, coating, and connections will be incidental to the corresponding CMP End Section contract items

PIPE FOR APPROACHES AND INTERSECTING ROADS

Class 2 reinforced concrete pipe, high density polyethylene pipe, polypropylene pipe (will be in conformance with AASHTO M330), or steel reinforced polyethylene pipe may be substituted for corrugated metal pipe at approaches and intersecting roads at no additional cost to the State.

If corrugated metal pipes are provided, the pipes will be as specified in the CORRUGATED METAL PIPE note.

If high density polyethylene pipe, polypropylene pipe (will be in conformance with AASHTO M330), or steel reinforced polyethylene pipe are provided, then the end sections will be metal, be compatible, and conform to the type of end section as shown in the plans.

PIPE FOR DOWNSPOUTS

The substitution of Class 2 reinforced concrete pipe, high density polyethylene pipe, polypropylene pipe, or steel reinforced polyethylene pipe for corrugated metal downspout pipes is not allowed.

CONTROLLED DENSITY FILL FOR PIPE

Controlled density fill will be in conformance with Section 464 of the Specifications.

The controlled density fill will be placed between the pipes from the base of pipe elevation to the haunch of the pipes and extend to the end of the end section.

TABLE OF CONTROLLED DENSITY FILL FOR PIPE

Station	Quantity (CuYd)
872+90-479'R	8.4
876+10-88' R	4.0
876+10-116' R	3.7
932+83-326' R	1.2
932+85-245' R	1.4
949+10-70' R	31.8
33+96-37' L (House)	4.5
42+64+50' L (Shop)	7.0
Total:	62.0

CONCRETE PIPE CONNECTIONS

Pipe connections to existing pipes will be done by breaking a hole into the existing structure and inserting the pipe. A concrete collar will then be poured around the pipe in the area of the connection.

When it is not possible to use a normal pipe joint (male-female ends), connections to existing pipe will be made by placing a 2' wide by 6" thick M6 concrete collar around the outside of the connection. The concrete collar will be reinforced with 6x6 W2.9 x W2.9 wire mesh.

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All costs for constructing the concrete collars including materials and labor will be incidental to the contract unit price per foot for the corresponding pipe contract item.

PIPE COVER

The earthen subgrade cover for some pipe installations is less than one foot. The Contractor will take the necessary precautions to ensure the structural properties of the pipes are not damaged after installation and prior to the placement of final surfacing. Any additional costs for preventing damage to these pipes will be incidental to the contract unit price per foot for the corresponding pipe installation contract item.

STORM SEWER

Reinforced concrete pipe may be bell and spigot. The pipe sections will be adjoined such that the ends are fully entered and the inner surfaces are reasonably flush and even.

Lift holes in the reinforced concrete pipe will be plugged with grout.

Watertight joints are required for reinforced concrete pipe, drop inlets, manholes, and junction boxes where storm sewers run parallel to and within 10 feet horizontally from existing or proposed water mains.

Watertight joints are required where reinforced concrete pipes, drop inlets, manholes, or junction boxes cross water mains and are separated a distance of 18 inches or less, above or below, the water main.

If watertight joints are required then the watertight joints will extend for a distance of 10 feet beyond the water main. This measurement will be from the sealed concrete joint to the outer most surface of the water main.



STORM SEWER, Continued

Watertight joint seals will conform to the following requirements:

- Reinforced Concrete Pipe (Circular):** Gasketed pipe will conform to the requirements of ASTM C443 and the gasket will be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe will be sealed with a mastic joint seal conforming to the requirements of ASTM C990 and encased with a minimum 2-foot wide by 6-inch thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.
- Reinforced Concrete Pipe (Arch):** Gasketed pipe will conform to the requirements of ASTM C443 and the gasket will be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe joints will be sealed with a hydrophilic flexible water stop seal and wrapped with a 1-foot wide strip of fabric above the cradle. The fabric will conform to the requirements of Section 831 of the Specifications for Type A Drainage Fabric. The hydrophilic flexible water stop will be from the list below.

Approved List of Self-adhesive Joint Wrap

Product	Manufacturer
Mar Mac Seal Wrap	Mar Mac Construction Products McBee, SC 843-335-5909 www.marmac.com

ConWrap CS-212	Concrete Sealants, Inc. Tipp City, OH 800-332-7325 http://www.conseal.com
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Approved List of Hydrophilic Flexible Water Stop Seal:

Product	Manufacturer
Waterstop RX	Cetco Hoffman Estates, IL 800-527-9948 www.cetco.com
Conseal CS-231	Concrete Sealants, Inc. Tipp City, OH 800-332-7325 http://www.conseal.com

Gaskets and seals (mastic, waterstop, and seal wraps) will be installed in accordance with the Manufacturer's recommendations.

The cost for furnishing and installing all gaskets, mastic joint seal, water stop seal, seal wrap, concrete collars, and for plugging the lift holes will be incidental to the contract unit price per foot for the corresponding pipe contract item.

ADJUSTMENT OF MANHOLES

The Contractor will adjust manholes to the extent necessary on this project. Adjusting the manholes may consist of removing the upper course of brick or

removing the concrete walls, replacing the removed materials with brick or Class M6 concrete, placing adjusting rings if necessary, and resetting the

manhole frame and lid. The elevation of the lid will be set at the same elevation of the adjacent new pavement or surrounding ground. All manhole frames, lids, and rings that are cracked or broken due to carelessness of the

Contractor will be replaced with new manhole frames, lids, and rings that conform with the Specifications at the Contractor's expense. Manholes will be adjusted to the satisfaction of the Engineer. All costs involved in adjusting

the manholes will be incidental to the contract unit price per each for "Adjust Manhole".

The Engineer may direct adjustment of manholes that were not included in these plans. Payment for adjusting manholes that were not included in the plans will be at the contract unit price per each for "Adjust Manhole".

TABLE OF ADJUST MANHOLES

Station	L/R	Type of Adjustment
1+87-21'	R	Raise Sanitary Manhole 3 feet (North Slide)

TABLE OF RIPRAP AND DRAINAGE FABRIC

Station	L/R	Class A Riprap (Ton)	Type B Drainage Fabric (SqYd)
<i>Mainline</i>			
867+90	R	33.6	24
948+72	R	26.6	19
958+00	R	61.6	44
<i>Boat Access</i>			
4+91	R	36.4	26
<i>Park Drive North</i>			
5+56	L	67.2	48
<i>Park Drive South</i>			
15+20	L	15.4	11
<i>House Entrance</i>			
35+26	L	33.6	24
<i>Shop Entrance</i>			
40+39	L	33.6	24
Totals:		308.0	220

Station	L/R	Class B Riprap (Ton)	Type B Drainage Fabric (SqYd)
<i>Mainline</i>			
931+77-934+90	L/R	5378.5	5132
936+00	L	175.0	125
935+75	R	204.2	146
<i>GFP Access</i>			
55+50	R	192.5	138
56+00	L	147.0	105
Totals:		6097.2	5646

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MAILBOXES

The Contractor will reset the existing mailboxes on new posts with the necessary support hardware for single and double mailbox assemblies. The local Postmaster will determine the recommended mounting height of the

mailboxes throughout the project. The Contractor will coordinate with the Engineer on the proper postal representative to contact.

All costs for removing existing mailboxes, providing temporary mailboxes, and resetting mailboxes with new posts and necessary support hardware will be incidental to the contract unit price per each for "Refurbish Single Mailbox" and "Refurbish Double Mailbox".

One single mailbox will be refurbished at Sta. 35+00 R (House Entrance) and one double mailbox will be refurbished at Sta. 35+00 R (House Entrance).

BRACE PANELS FOR ROW FENCE

The E-Z Brace or an approved equal may be utilized as an alternate horizontal brace in the brace panels if approved by the Engineer. The E-Z Brace will be attached to each wood post utilizing two 5/16" x 3" lag screws. Holes of appropriate diameter, based on wood post condition, will be drilled before placement of lag screws. The following is the contact regarding the E-Z Brace:

Charlie Mack
Macksteel E-Z Braces
415 20th Ave. SE.
Watertown, SD 57201
605-882-2177



TABLE OF SUPERELEVATION

Station	to	Station	
849+50.00		851+47.83	- Normal Crown Section
851+47.83		853+69.83	- Superelevation Transition
853+69.83		863+44.82	- 2910' Radius Curve Left 0.054'/' Superelevation Rate Point of Rotation at Centerline
863+44.82		865+66.82	- Superelevation Transition
865+66.82		934+31.25	- Normal Crown Section
934+31.25		936+06.25	- Superelevation Transition
936+06.25		943+12.78	- 5210' Radius Curve Right 0.036'/' Superelevation Rate Point of Rotation at Centerline
943+12.78		945+64.78	- Superelevation Transition
945+64.78		962+79.36	- Normal Crown Section
962+79.36		964+95.36	- Superelevation Transition
964+95.36		966+91.00	- 3274.05' Radius Curve Right 0.052'/' Superelevation Rate Point of Rotation at Centerline
<i>Park Drive North</i>			
6+00.00		6+18.85	-2% to -1% Right Lane
6+18.85		6+75.00	-1% Right Lane
6+75.00		7+08.36	-1% to -2% Right Lane



PUBLIC LANDS SURVEY SYSTEM, RIGHT OF WAY, AND PROPERTY CORNERS

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The Contractor will have a Land Surveyor, licensed in the State of South Dakota, to set, reestablish or verify public land survey system (PLSS) corners, right of way (ROW) corners, and property corners as directed by the appropriate SDDOT Region Land Surveyor. It is estimated that 1 PLSS corners and 52 ROW and property corners will be set, reestablished, or verified for this project. The Contractor's Land Surveyor, under the direction of the Region Land Surveyor, will set, reestablish, or verify all corner monuments after surfacing and fencing operations are completed in accordance with the PUBLIC LANDS SURVEY SYSTEM CORNERS section and the RIGHT OF WAY AND PROPERTY CORNERS section in Chapter 8 of the SDDOT Survey Manual.

< <https://dot.sd.gov/doing-business/engineering/design-services/surveyors> >

All costs associated with furnishing and installing PLSS caps, rebar, and all other materials associated with setting, reestablishing, or verifying PLSS, ROW corners, and property corners in accordance with the SDDOT Survey Manual will be incidental to the contract unit price per each for "Reestablish Public Land Survey System Corner" and/or "Reestablish Right-of-Way and Property Corner".

TABLE OF GUARDRAIL

Location	Remove Beam Guardrail (Ft)	Type 1 MGS (Ft)	Type 1 Guardrail Transition (Each)	MGS MASH Tangent End Terminal (Each)
875+32-80' R to 876+15-88' R	82.5			
875+32-117' R to 876+15-113' R	82.5			
932+69-246' R to 933+89-240' R	120.5			
932+69-275' R to 933+50-284' R	82.5			
Structure No. 12-089-076				
Begin Bridge Lt.		12.5	1	1
Begin Bridge Rt.		100.0	1	1
End Bridge Lt.		100.0	1	1
End Bridge Rt.		12.5	1	1
Totals:	368.0	225.0	4	4



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TABLE OF CONSTRUCTION STAKING
(See Special Provision for Contractor Staking)

Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Grade Staking			Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Structure Staking Quantity (Each)	
					Length (Mile)	Lane Factor	*Sets of Stakes				
SD 44 (2 Lanes AC Pavement)	849+50.00	966+91.00	2	11,741	2.224	1	1	2.224	2.224		
SD 44 (Str. No. 12-089-076)										1	
Park Drive North	5+00.00	10+30.48	2	531	0.101	1	1	0.101	0.101		
Park Drive South	15+00.00	22+24.79	2	725	0.138	1	1	0.138	0.138		
House Entrance	30+00.00	35+61.88	2	562	0.107	1	1	0.107	0.107		
Shop Entrance	40+00.00	45+83.24	2	584	0.111	1	1	0.111	0.111		
Boat Access	0+00.00	5+81.63	2	582	0.111	1	1	0.111	0.111		
GFP Access	50+00.00	56+32.33	1	633	0.120	1	1	0.120	0.120		
Temporary Road	0+00.00	8+79.00	2	879	0.167	1	1	0.167	0.167		
							Totals:	3.079	3.079	3.079	1

* 1 = Blue Top Stakes Only (Asphalt Concrete Pavement)

** Grade Staking Quantity = (Length) x (Lane Factor) x (Sets of Stakes)



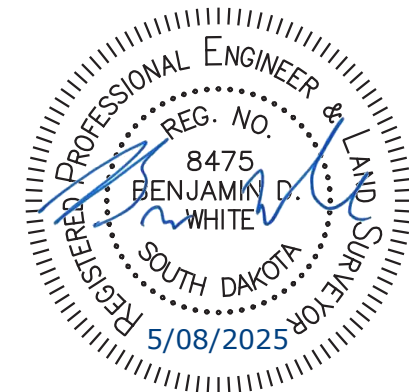
FENCE QUANTITIES

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B13	TOTAL SHEETS B94
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Station to Station	Side (L/R)	Right-of-Way Fence			Temporary Fence		Post Panels		Gates		Cattle Guard 12' (Each)	Fence Remove (Ft)		
		Type 2 (Ft)			Type 1 (Ft)		2 Post (Each)	3 Post (Each)	Barbed Wire 24' (Each)	Tubular 16' (Each)				
849+52 to 874+80	L	2480					11	4						
960+54 to 962+13	L	510					3							
960+54 to 101+68	L	760					2	2						
848+75 to 855+80	R	735					7	1						
863+90 to 870+98	R	840					6	1						
947+42 to 959+62	R	1310					4	3						
958+50	R								1					
961+94.29 to 100+75	R	750					13							
848+74-286' to 855+78-179'	R											735		
849+54-223' to 877+29-32'	L											3355		
958+38-145' to 963+79-418'	R											655		
960+53-79' to 962+14-569'	L											520		
960+53-79' to 101+76-95'	L											780		
963+39-713' to 100+79-376'	R											500		
963+87-742' R to 100+72-372'	R				900							900		
GFP Access														
54+97.31-6' to 55+7.31-6'	L/R										1			
TOTALS:		7385			900		46	11		1	1		7445	

Rev 05/02/2025 BRA

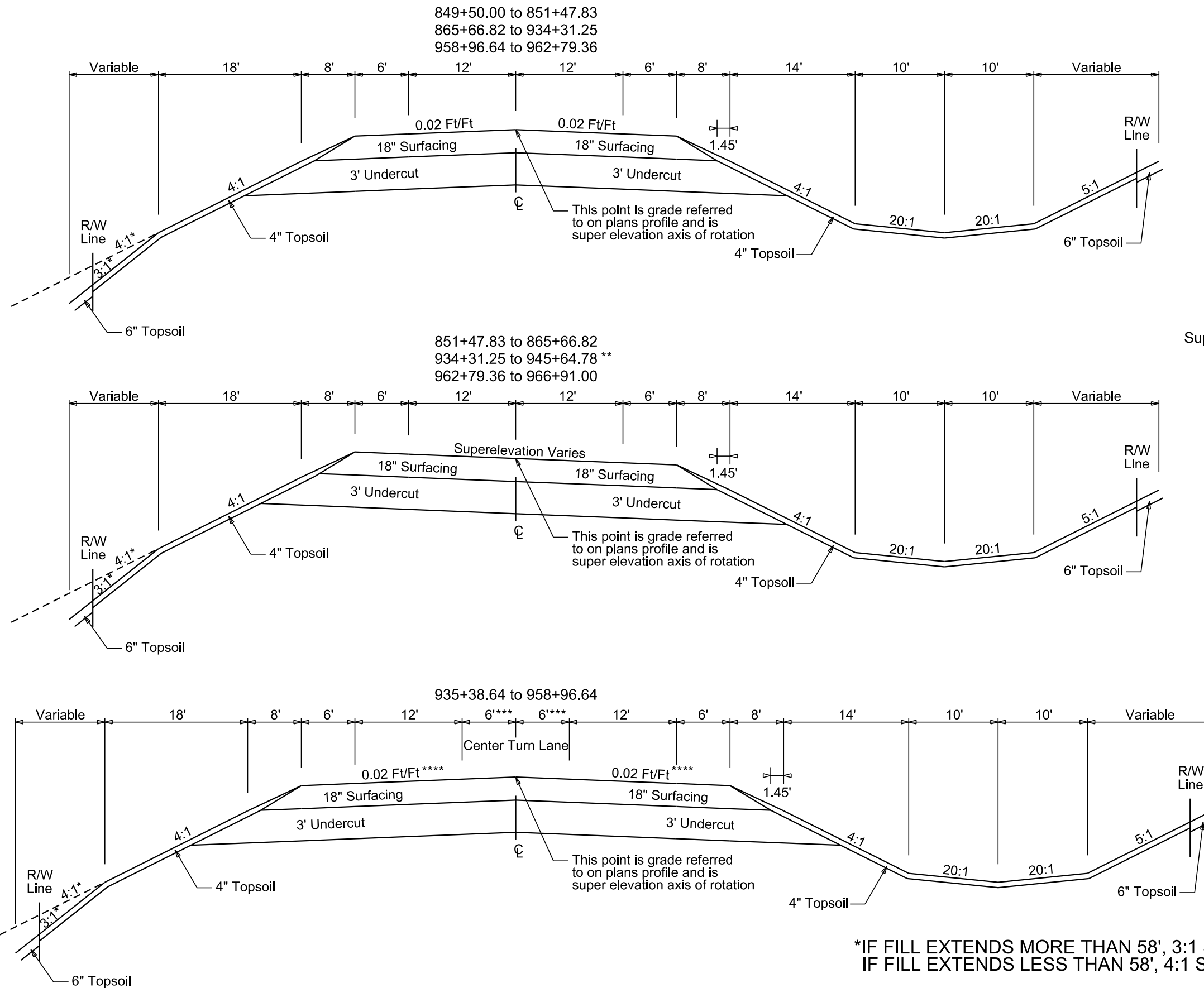


TYPICAL GRADING SECTION

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B14	B94

Plotting Date: 1/3/2024



Superelevation:

851+47.83 to 853+69.83:	-2.0% to 5.4%
853+69.83 to 863+44.82:	5.4%
863+44.82 to 865+66.82:	5.4% to -2.0%
934+31.25 to 936+06.25:	2.0% to -3.6%
936+06.25 to 943+12.78:	-3.6%
943+12.78 to 945+64.78:	-3.6% to 2.0%
962+79.36 to 964+95.36:	2.0% to -5.2%
964+95.36 to 966+91.00:	-5.2%

**See Typical Section below for center turn lane location

Transitions:
 ***935+38.64 to 939+58.64 - 0' to 6'
 ***954+76.64 to 958+96.64 - 6' to 0'
 ****Slope varies due to superelevation



*IF FILL EXTENDS MORE THAN 58', 3:1 SLOPE
 IF FILL EXTENDS LESS THAN 58', 4:1 SLOPE



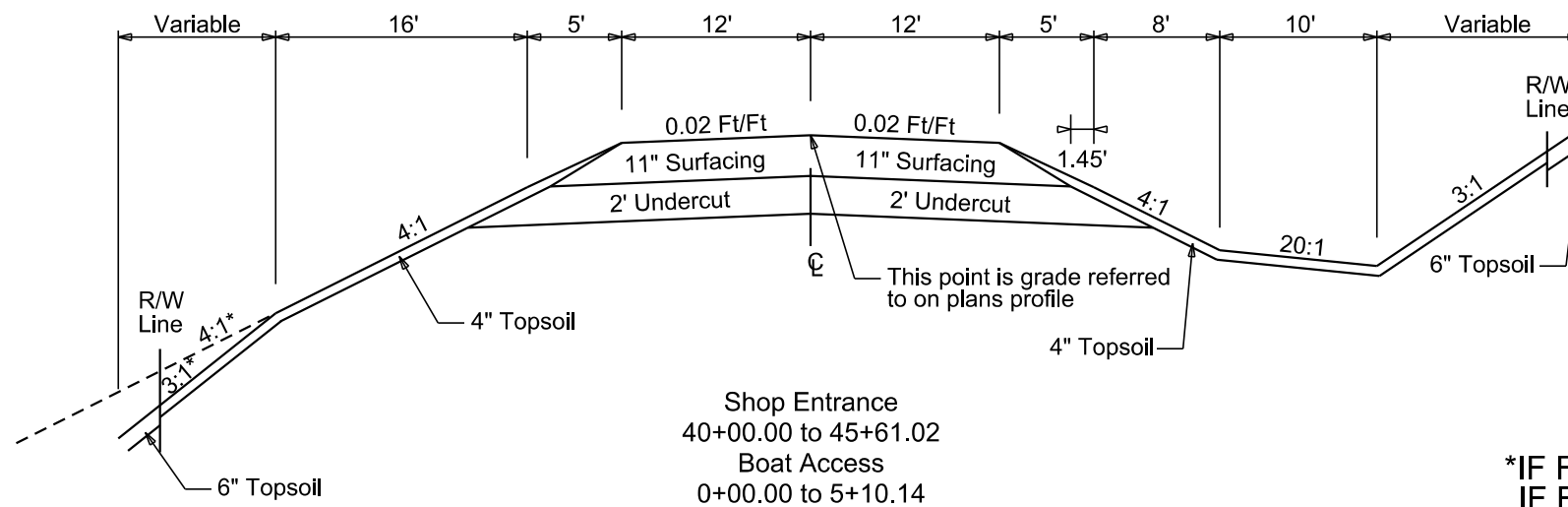
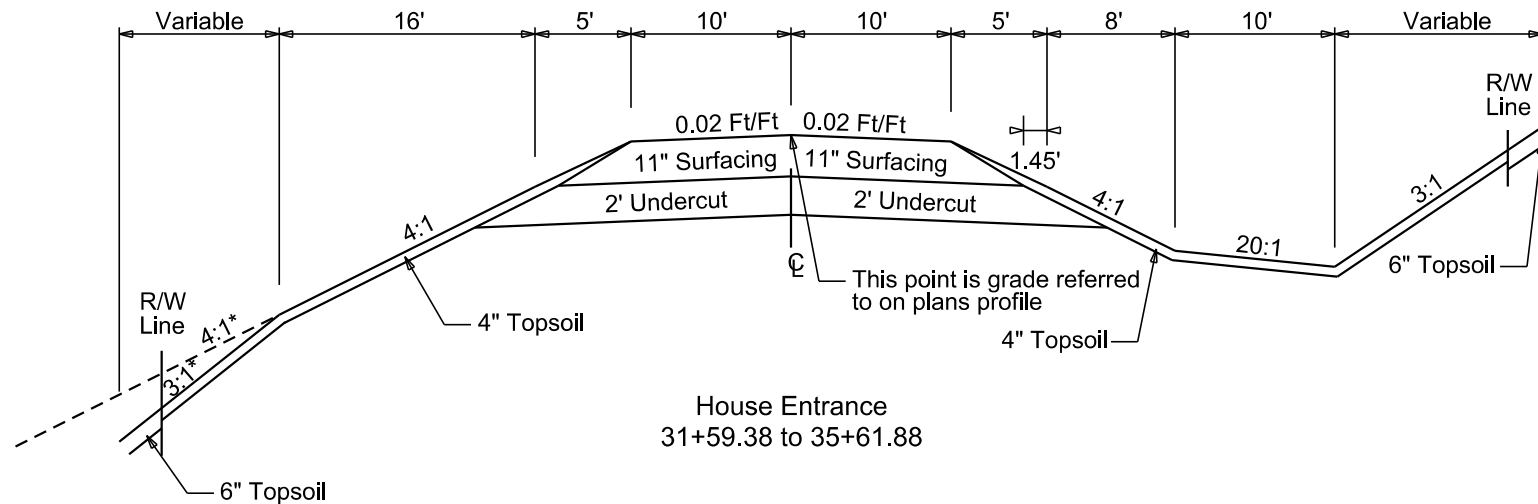
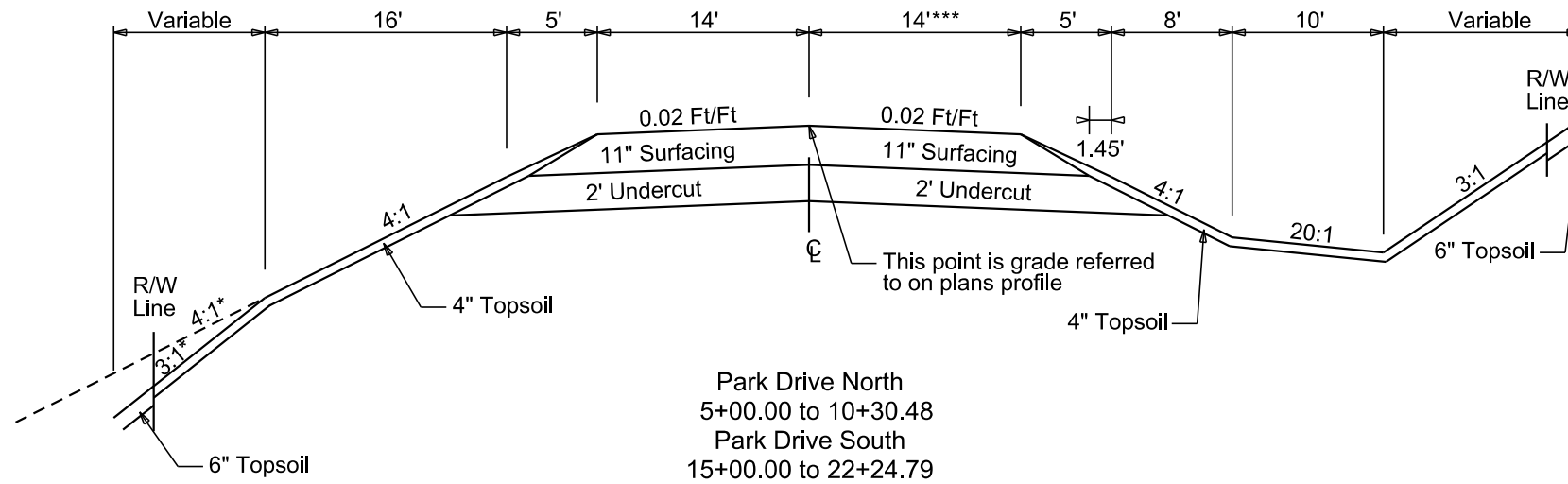
TYPICAL GRADING SECTION

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B15	TOTAL SHEETS B94
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Plotting Date: 1/3/2024

Transitions:
*** 5+00.00 to 6+64.87 - 34'



*IF FILL EXTENDS MORE THAN 56', 3:1 SLOPE
IF FILL EXTENDS LESS THAN 56', 4:1 SLOPE

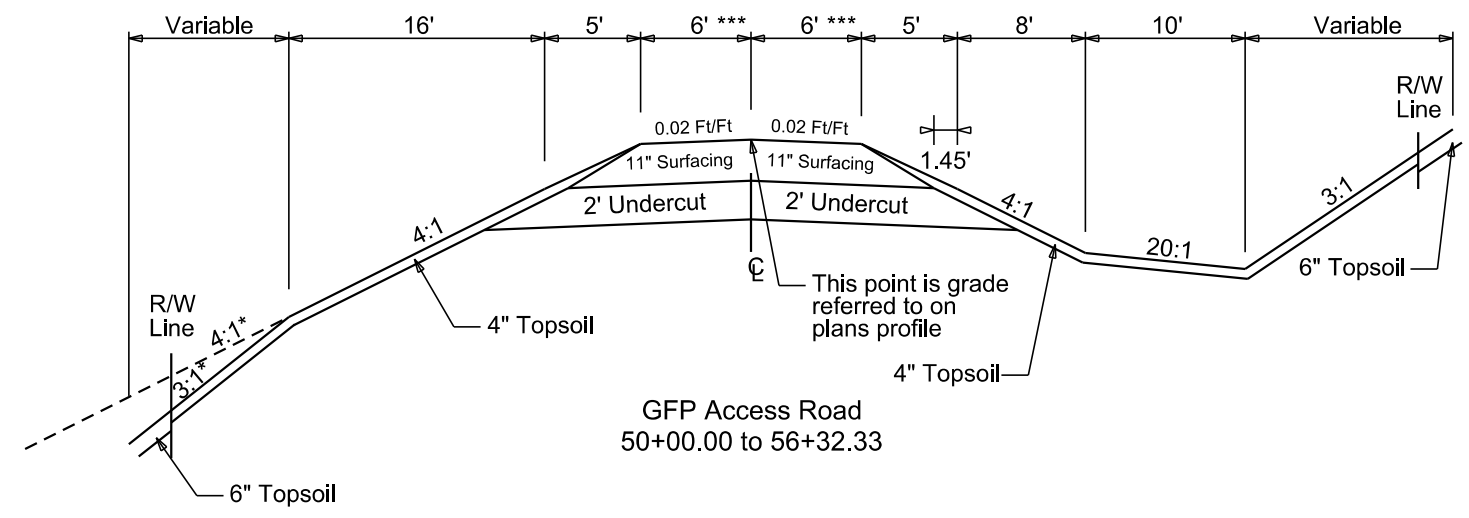


TYPICAL GRADING SECTION

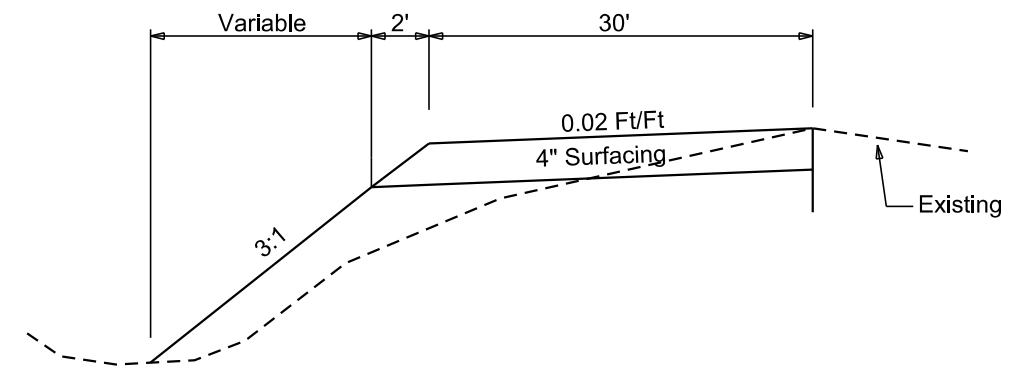
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B16	B94

Plotting Date: 1/3/2024



GFP Access Road
50+00.00 to 56+32.33



Traffic Diversion
960+99.14 R2 to 102+35.47 R3

Transitions:
 *** 50+00.00 to 51+01.12 - 12'
 *** 51+01.12 to 52+21.27 - 12' to 6'



HORIZONTAL ALIGNMENT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B17	TOTAL SHEETS B94
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Plotting Date: 1/3/2024

MAINLINE

Type	Station		Northing	Easting
POB	822+13.08 R1		383308.436	2280950.866
		TL= 417.71 N 45°50'06.0" E		
PC	826+30.79 R1		383599.463	2281250.501
PI	832+95.85 R1	R = 1909.86 Delta = 38°23'55.7" R	384062.829	2281727.574
PT	839+10.75 R1		384129.647	2282389.270
		TL= 65.95 N 84°14'01.6" E		
PI	847+60.60 R2		384136.274	2282454.890
	EQNBK 839+76.70 R1		384136.274	2282454.890
	EQNAHD 847+60.60 R2		384136.274	2282454.890
		TL= 564.83 N 84°14'01.6" E		
PC	853+25.43 R2		384193.022	2283016.865
PI	858+63.33 R2	R = 2910.00 Delta = 20°56'42.6" L	384247.064	2283552.040
PT	863+89.22 R2		384488.847	2284032.533
		TL= 7182.03 N 63°17'19.0" E		
PC	935+71.25 R2		387717.143	2290448.111
PI	939+67.98 R2	R = 5210.00 Delta = 8°42'32.9" R	387895.473	2290802.504
PT	943+63.18 R2		388018.084	2291179.814
		TL= 2088.97 N 71°59'51.9" E		
PC	964+52.16 R2		388663.690	2293166.520
PI	965+71.63 R2	R = 3274.05 Delta = 4°10'47.2" R	388700.615	2293280.146
PCC	100+50.00 R3		388729.159	2293396.162
	EQNBK 966+91.00 R2		388729.159	2293396.162
	EQNAHD 100+50.00 R3		388729.159	2293396.162
PI	105+30.10 R3	R = 3274.05 Delta = 16°41'04.2" R	388843.862	2293862.356
PT	110+03.40 R3		388819.890	2294341.856
		TL= 906.96 S 87°08'16.7" E		
POE	119+10.36 R3		388774.604	2295247.687

PARK DRIVE NORTH

Type	Station		Northing	Easting
POB	5+00.00		388127.631	2291516.919
		TL= 77.82 N 18°00'08.1" W		
PC	5+77.82		388201.637	2291492.870
PI	7+73.14	R = 600.00 Delta = 36°03'53.3" L	388387.401	2291432.503
PCC	9+55.48		388502.027	2291274.346
PI	9+93.00	R = 996.82 Delta = 4°18'39.2" R	388524.044	2291243.968
PT	10+30.48		388548.282	2291215.331

PARK DRIVE SOUTH

Type	Station		Northing	Easting
POB	15+00.00		387655.041	2291135.467
		TL= 14.99 N 16°59'38.2" W		
PC	15+14.99		387669.376	2291131.086
PI	15+80.05	R = 75.00 Delta = 81°53'07.8" R	387731.600	2291112.609
PT	16+22.18		387759.209	2291202.811
		TL= 357.98 N 64°53'29.0" E		
PC	19+80.16		387911.114	2291495.140
PI	20+68.47	R = 100.00 Delta = 82°53'37.1" L	387948.586	2291575.102
PT	21+24.84		388032.570	2291547.811
		TL= 99.95 N 18°00'08.1" W		
POE	22+24.79		388127.631	2291516.919

HOUSE ENTRANCE

Type	Station		Northing	Easting
POB	30+00.00		388254.785	2290916.469
		TL= 190.37 N 78°30'30.9" E		
PC	31+90.37		388292.711	2291103.025
PI	32+27.63	R = 150.00 Delta = 27°53'45.2" R	388300.133	2291139.533
PT	32+63.40		388289.612	2291175.270
		TL= 137.24 S 73°35'43.9" E		
PC	34+00.64		388250.855	2291306.918
PI	34+59.30	R = 150.00 Delta = 42°43'12.9" L	388234.287	2291363.194
PT	35+12.48		388260.294	2291415.779
		TL= 49.40 N 63°41'03.2" E		
POE	35+61.88		388282.195	2291460.062

SHOP ENTRANCE

Type	Station		Northing	Easting
POB	40+00.00		388282.195	2291460.062
		TL= 53.07 N 63°41'03.2" E		
PC	40+53.07		388305.721	2291507.630
PI	41+72.73	R = 200.00 Delta = 61°47'14.0" L	388358.772	2291614.896
PCC	42+68.75		388478.373	2291618.857
PI	44+52.82	R = 200.00 Delta = 85°15'09.1" R	388662.351	2291624.950
PT	45+66.33		388674.505	2291808.801
		TL= 16.91 N 87°08'58.3" E		
POE	45+83.24		388672.346	2291825.688

BOAT ACCESS

Type	Station		Northing	Easting
POB	0+00.00		384624.058	2284301.236
		TL= 54.42 S 26°42'41.0" E		
PC	0+54.42		384575.447	2284325.697
PI	1+39.42	R = 85.00 Delta = 90°00'00.0" L	384499.518	2284363.904
PT	1+87.94		384537.725	2284439.833
		TL= 393.69 N 63°17'19.0" E		
POE	5+81.63		384714.690	2284791.514



The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone NAD 83(2011); epoch 2010.00; Geoid12A; SF = 0.9998442579



HORIZONTAL ALIGNMENT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B18	B94

Plotting Date: 1/3/2024

GFP ACCESS

Type	Station		Northing	Easting
POB	50+00.00		384624.057	2284301.236
		TL= 52.00 N 26°42'41.0" W		
PC	50+52.00		384670.508	2284277.862
PI	50+82.00	R = 30.00 Delta = 90°00'00.0" R	384697.307	2284264.377
PT	50+99.12		384710.792	2284291.176
		TL= 2.00 N 63°17'19.0" E		
PI	51+01.12		384711.691	2284292.963
		TL= 120.15 N 66°09'03.7" E		
PI	52+21.27		384760.270	2284402.853
		TL= 213.55 N 63°17'19.0" E		
PC	54+34.83		384856.262	2284593.617
PI	54+37.22	R = 30.00 Delta = 9°06'54.5" L	384857.337	2284595.753
PT	54+39.60		384858.737	2284597.692
		TL= 70.95 N 54°10'24.6" E		
PC	55+10.55		384900.268	2284655.221
PI	55+17.31	R = 30.00 Delta = 25°23'28.8" L	384904.224	2284660.701
PT	55+23.85		384910.148	2284663.955
		TL= 50.04 N 28°46'55.8" E		
PC	55+73.89		384954.007	2284688.049
PI	55+87.67	R = 60.00 Delta = 25°51'35.4" L	384966.080	2284694.681
PT	56+00.97		384979.837	2284695.384
		TL= 31.36 N 2°55'20.4" E		
POE	56+32.33		385011.157	2284696.982

NORTH SLIDE REPAIR

Type	Station		Northing	Easting
POB	0+00.00		388598.693	2292604.632
		TL= 569.16 N 28°13'23.1" E		
POE	5+69.16		389100.190	2292873.793

SOUTH SLIDE REPAIR

Type	Station		Northing	Easting
POB	0+00.00		388812.549	2293113.503
		TL= 1101.32 S 19°17'39.5" E		
POE	11+01.32		387773.086	2293477.402

TRAFFIC DIVERSION

Type	Station		Northing	Easting
POB	0+00.00		388524.010	2292795.471
		TL= 44.64 N 65°35'36.3" E		
PC	0+44.64		388542.455	2292836.123
PI	0+79.06	R = 353.00 Delta = 11°08'14.2" L	388555.940	2292867.788
PT	1+13.26		388575.286	2292896.253
		TL= 70.00 N 55°47'48.0" E		
PC	1+83.26		388614.636	2292954.146
PI	2+33.50	R = 353.00 Delta = 16°12'03.9" R	388642.879	2292995.699
PT	2+83.07		388658.406	2293043.482
		TL= 300.75 N 71°59'51.9" E		
PC	5+83.82		388751.355	2293329.510
PI	6+51.31	R = 353.00 Delta = 21°38'41.2" R	388772.210	2293393.688
PT	7+17.18		388767.923	2293461.033
		TL= 20.00 S 86°21'26.9" E		
PC	7+37.18		388766.653	2293480.993
PI	7+85.66	R = 353.00 Delta = 15°38'27.7" L	388763.572	2293529.379
PT	8+33.54		388773.652	2293576.803
		TL= 45.46 N 78°53'29.0" E		
POE	8+79.00		388782.409	2293621.406



The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone NAD 83(2011); epoch 2010.00; Geoid12A; SF = 0.9998442579



CONTROL DATA

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B19	B94
Plotting Date:		1/3/2024	

HORIZONTAL AND VERTICAL CONTROL POINTS					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
20	103+43 R3	105' L	388890.577	2293667.245	1517.06
21	947+93 R2	385' R	387784.819	2291707.302	1412.60
22	933+70 R2	348' R	387316.428	2290424.967	1398.65
23	872+05 R2	212' R	384666.297	2284856.433	1415.23
24	857+11 R2	44' R	384213.951	2283406.928	1499.67
25	832+87 R1	25' L	383990.279	2281779.621	1553.81



The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone NAD 83(2011); epoch 2010.00; Geoid12A; SF = 0.9998442579
The elevations shown on this sheet are based on NAVD 88.



LEGEND

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B20	TOTAL SHEETS B94
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Plotting Date: 1/3/2024

Anchor		Hedge		Shrub Tree		State and National Line	
Antenna		Highway R.O.W. Marker		Sidewalk		County Line	
Approach		Interstate Close Gate		Sign Face		Section Line	
Assumed Corner		Iron Pin		Sign Post		Quarter Line	
Azimuth Marker		Irrigation Ditch		Slough Or Marsh		Sixteenth Line	
BBQ Grill/ Fireplace		Lake Edge		Spring		Property Line	
Bearing Tree		Lawn Sprinkler		Stream Gauge		Construction Line	
Bench Mark		Mailbox		Street Marker		R. O. W. Line	
Box Culvert		Manhole Electric		Subsurface Utility Exploration Test Hole		New R. O. W. Line	
Bridge		Manhole Gas		Telephone Fiber Optics		Cut and Fill Limits	
Brush		Manhole Misc		Telephone Junction Box		Control of Access	
Buildings		Manhole Sanitary Sewer		Telephone Pole		New Control of Access	
Bulk Tank		Manhole Storm Sewer		Television Cable Jct Box		Proposed ROW	
Cattle Guard		Manhole Telephone		Television Tower		(After Property Disposal)	
Cemetery		Manhole Water		Test Wells/Bore Holes			
Centerline		Merry-Go-Round		Traffic Signal		Drainage Arrow	
Cistern		Microwave Radio Tower		Trash Barrel			
Clothes Line		Misc. Line		Tree Belt			
Commercial Sign Double Face		Misc. Property Corner		Tree Coniferous		Remove Concrete Pavement	
Commercial Sign One Post		Misc. Post		Tree Deciduous		Remove Concrete Driveway Pavement	
Commercial Sign Overhead		Overhang Or Encroachment		Tree Stumps		Remove Asphalt Concrete Pavement	
Commercial Sign Two Post		Overhead Utility Line		Triangulation Station		Remove Blotter & Aggregate Surface	
Concrete Symbol		Parking Meter		Underground Electric Line		Remove Concrete Sidewalk	
Creek Edge		Pipe With End Section		Underground Gas Line		Remove Concrete Approach Pavement	
Curb/Gutter		Pipe With Headwall		Underground High Pressure Gas Line		Remove Concrete Median Pavement	
Curb		Pipe Without End Section		Underground Sanitary Sewer		Remove Concrete Curb	
Dam Grade/Dike/Levee		Playground Slide		Underground Storm Sewer		Remove Concrete Curb and Gutter	
Deck Edge		Playground Swing		Underground Tank		Remove Concrete Gutter	
Ditch Block		Power And Light Pole		Underground Telephone Line			
Doorway Threshold		Power And Telephone Pole		Underground Television Cable		Detectable Warning	
Drainage Profile		Power Meter		Underground Water Line		Pedestrian Push Button Pole	
Drop Inlet		Power Pole		Warning Sign One Post		and 30" x 48" Clear Space	
Edge Of Asphalt		Power Pole And Transformer		Warning Sign Two Post		with 1.5% slope	
Edge Of Concrete		Power Tower Structure		Water Fountain			
Edge Of Gravel		Propane Tank		Water Hydrant			
Edge Of Other		Property Pipe		Water Meter			
Edge Of Shoulder		Property Pipe With Cap		Water Tower			
Elec. Trans./Power Jct. Box		Property Stone		Water Valve			
Environmental Sensitive Site		Public Telephone		Water Well			
Fence Barbwire		Railroad Crossing Signal		Weir Rock			
Fence Chainlink		Railroad Milepost Marker		Windmill			
Fence Electric		Railroad Profile		Wingwall			
Fence Misc.		Railroad R.O.W. Marker		Witness Corner			
Fence Rock		Railroad Signs					
Fence Snow		Railroad Switch					
Fence Wood		Railroad Track					
Fence Woven		Railroad Trestle					
Fire Hydrant		Rebar					
Flag Pole		Rebar With Cap					
Flower Bed		Reference Mark					
Gas Valve Or Meter		Regulatory Sign One Post					
Gas Pump Island		Regulatory Sign Two Post					
Grain Bin		Retaining Wall					
Guardrail		Riprap					
Guide Sign One Post		River Edge					
Guide Sign Two Post		Rock And Wire Baskets					
Gutter		Rockpiles					
Guy Pole		Satellite Dish					
Haystack		Septic Tank					



855+18-61' R to 856+14-123' R
Retain 18" - 177' CMP
& 1 CMP Safety End
& 1 CMP Flared End
& Gabions

855+96-66' L to 856+38-107' R
Retain 30" - 177' CMP
Skewed 14° RHF
& 1 CMP Sloped End
& Gabions

854+75-40' L to 855+59-71' L
Take Out 18" - 88' CMP
(Incidental Work, Grading)

855+92-72' L
Take Out 1 End Section
(Incidental Work, Grading)

855+92-82' L to 855+96-66' L (8 ac)
Install 30" - 10' CMP
Skewed 14° RHF
& 1 CMP Sloped End

861+04-21' L to 861+62-103' R
Retain 24" - 18' RCP
Skewed 26° RHF
& 1 RCP Sloped End
& Gabions

FOR BIDDING PURPOSES ONLY

861+01-27' L
Take Out 1 End Section
(Incidental Work, Grading)

860+93-43' L to 861+04-21' L (4 ac)
Install 24" - 18' RCP
Skewed 26° RHF
& 1 RCP Sloped End

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B21	B94

Plotting Date: 1/3/2024

State of South Dakota
(SD Game, Fish, and Parks)

Parcel A1

NW1/4

State of South Dakota
(SD Game, Fish, and Parks)

Parcel A2

W1/2 E1/2

849+52 L
Tie Into Existing Fence
Begin Type 2 Fence

Type 2 Fence

Type 2 Fence

BEGIN P 0044(207)290
Station 849+50.00

N 84° 14' 02" E

Present SD Hwy 44

Proposed SD Hwy 44

Present SD Hwy 44

PI 858+63.33
N 384.247.06
E 2,283.552.04
Del 20° 56' 43" (LT)
Dc 1° 58' 08"
T 537.90'
L 1,063.79'
R 2,910.00'

848+75 R
Tie Into Existing Fence
Begin Type 2 Fence

Type 2 Fence

855+80 R
Tie Into Existing Fence
End Type 2 Fence

State of South Dakota
(SD Game, Fish, and Parks)

Parcel A1

State of South Dakota
(SD Game, Fish, and Parks)
(INFORMATION ONLY)

Sec. 20 - T99N - R70W

Parcel A1
849+50.65 to 856+45.44 L
Temporary Easement containing
1.0 ac, more or less

Parcel A1
848+55.67 to 855+69.21 R
Temporary Easement containing
0.9 ac, more or less

Parcel A2
856+43.49 to 871+06.30 L
Temporary Easement containing
4.2 ac, more or less

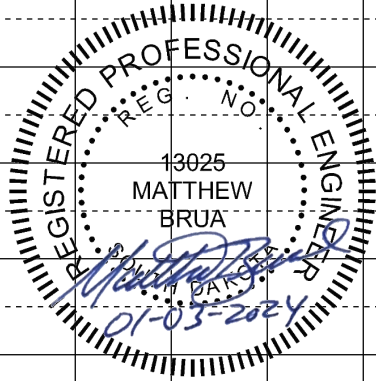
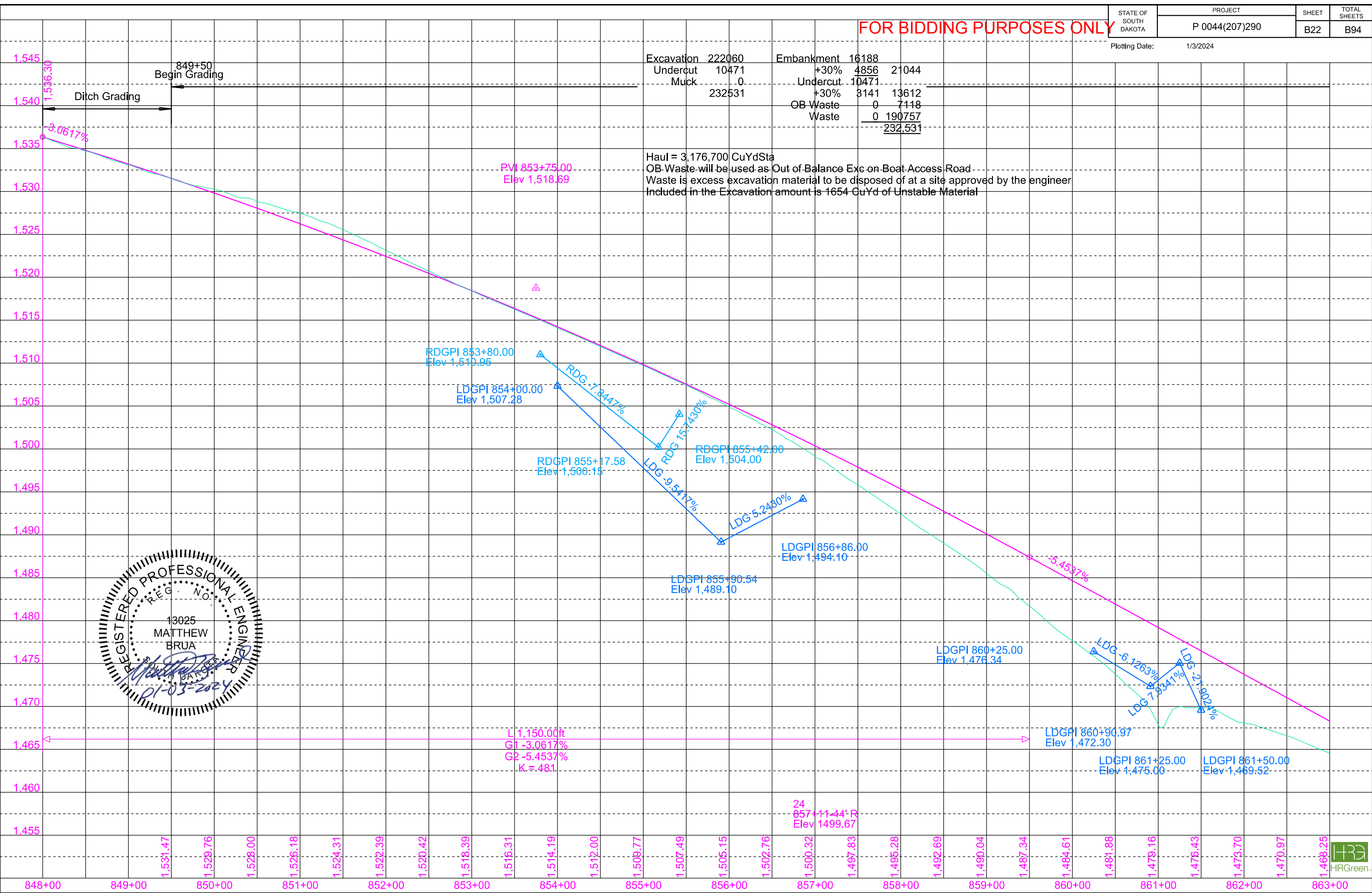


FOR BIDDING PURPOSES ONLY

Plotting Date: 1/3/2024

Excavation	222060	Embankment	16188
Undercut	10471	+30%	4856 21044
Muck	0	Undercut	10471
	232531	+30%	3141 13612
		OB Waste	0 7118
		Waste	0 190757
			<u>232,531</u>

Haul = 3,176,700 CuYdSta
 OB Waste will be used as Out of Balance Exc on Boat Access Road
 Waste is excess excavation material to be disposed of at a site approved by the engineer
 Included in the Excavation amount is 1654 CuYd of Unstable Material



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B23	B94

Plotting Date: 8/15/2024
Rev 08/15/2024 KJB

FOR BIDDING PURPOSES ONLY

867+39-34' R to 868+69-365' R
Take Out 24" - 359' CMP
(Incidental Work, Grading)

867+90 R
Install Class A Riprap
and Type B Drainage Fabric
(Riprap Dimensions: 14"x20"x2'-3")

872+59-138' R to 873+22-142' R
Retain 18" - 63' CMP
& 2 CMP Flared Ends

873+99.70 to 875+21.92 L
Install Type 1 Guardrail Transition
& 12.5' Type 1 MGS Guardrail
& MGS Tangent End Terminal

875+32-80' R to 876+15-88' R
Take Out Concrete Curb and Gutter

875+77-118' R to 876+22-119' R
Take Out Concrete Curb and Gutter

875+39.75 to 933+10.25
Install 5770' - 6" Continuous
Composite Steel Girder Bridge
(See Section E)

Sec. 20 - T99N - R70W

State of South Dakota
(SD Game, Fish, and Parks)

State of South Dakota
(SD Game, Fish, and Parks)

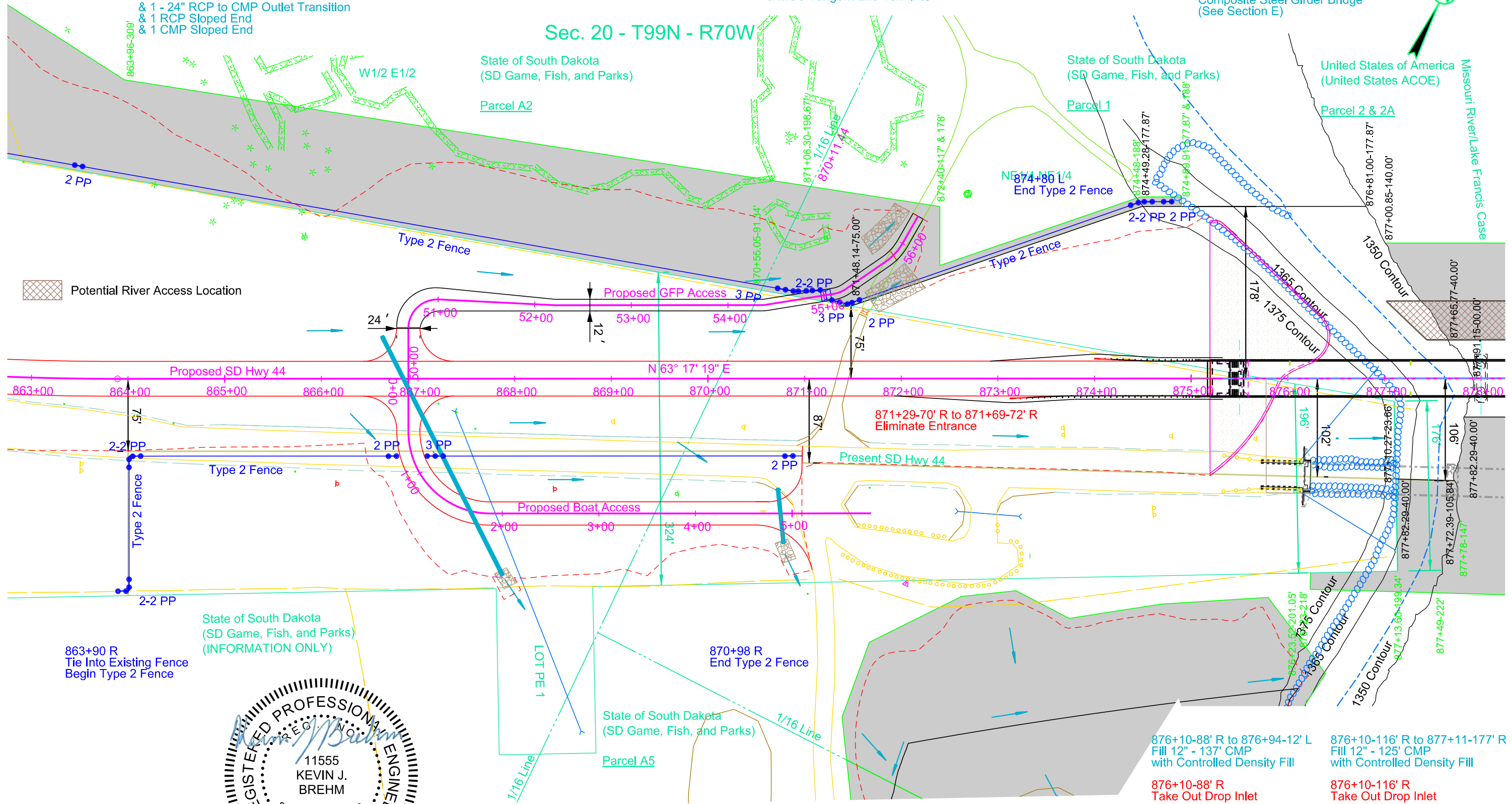
United States of America
(United States ACOE)

Missouri River/Lake Francis Case

Parcel A2

Parcel 1

Parcel 2 & 2A



Potential River Access Location

State of South Dakota
(SD Game, Fish, and Parks)
(INFORMATION ONLY)

State of South Dakota
(SD Game, Fish, and Parks)

863+02-75' R to 866+49-90' R
Obliterate Old Road (3.5 Sta)



Parcel 1
870+55.07 to 874+89.91 L
Temporary Easement containing
0.4 ac, more or less

Parcel 1
876+23 to 877+78 R
Temporary Easement containing
0.2 ac, more or less

Remove Steel Guardrail
at following locations:
875+32-80' R to 876+15-88' R
875+32-117' R to 876+15-113' R

876+10-88' R to 876+94-12' L
Fill 12" - 137' CMP
with Controlled Density Fill

876+10-116' R to 877+11-177' R
Fill 12" - 125' CMP
with Controlled Density Fill

876+10-88' R
Take Out Drop Inlet

876+10-116' R
Take Out Drop Inlet

876+16.57-102.7' R to 932+69.81-262.6' R
Take Out Bridge
(Incidental Work, Structure)
(See Section E)



Plotting Date: 1/3/2024

FOR BIDDING PURPOSES ONLY

Excavation	1742	Embankment	37101
Undercut	0	+30%	11131
Cont Furnished Borr	48232	Undercut	0
Muck	0	+30%	0
	49974	Waste	1742
			1742
			49974

Waste is unsuitable excavation material to be disposed of at a site approved by the engineer. Included in the Excavation amount is 1714 CuYd of Unstable Material

866+90 L
24' Drive

866+90 R
24' Drive

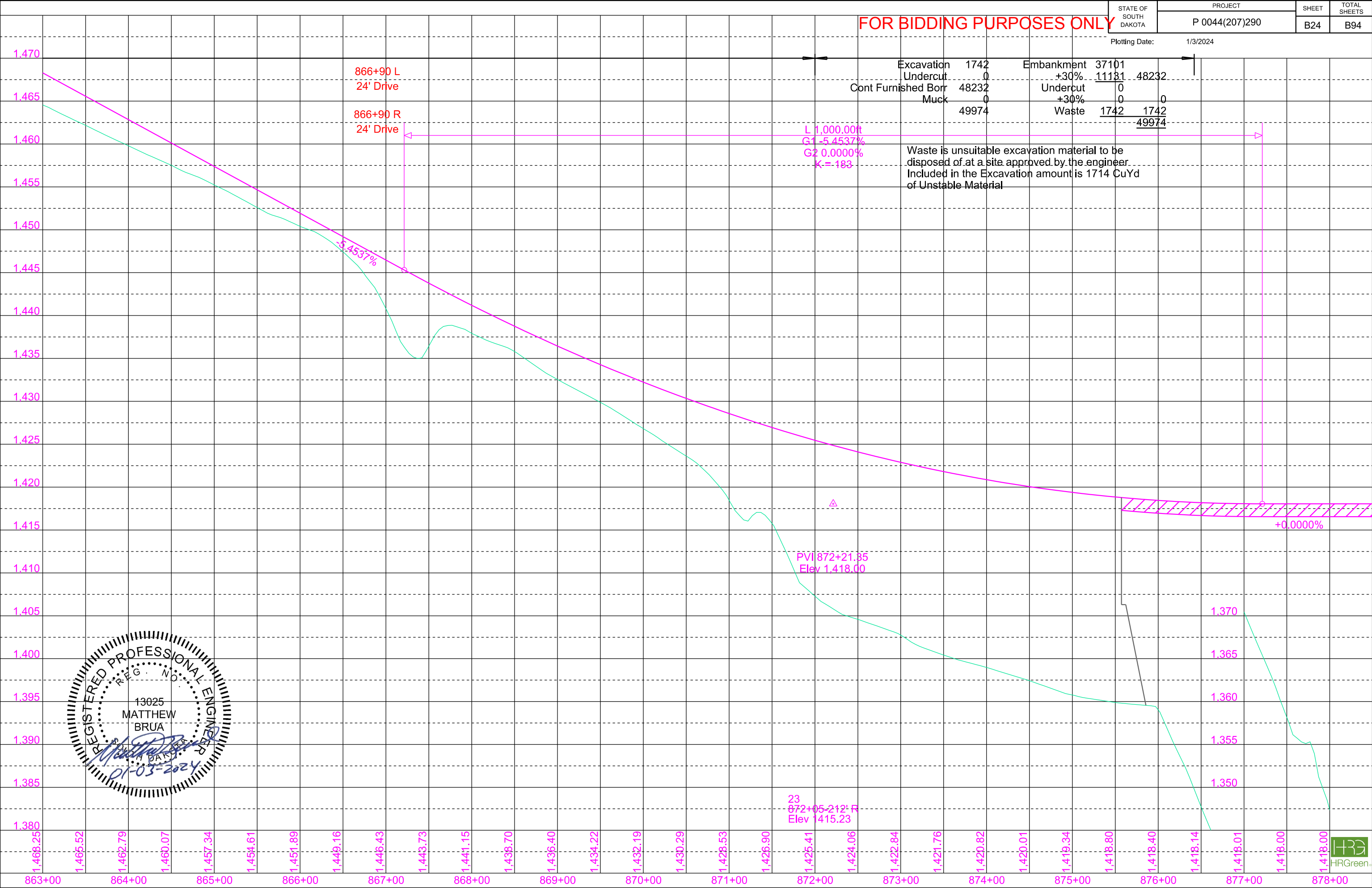
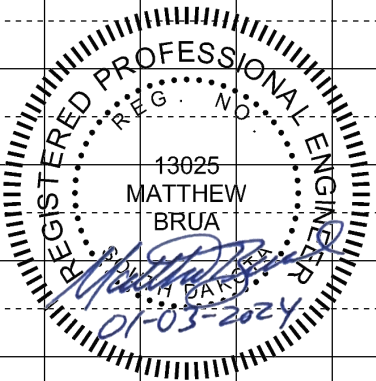
L 1,000.00ft
G1 -5.4537%
G2 0.0000%
K = -183

-5.4537%

PVI 872+21.35
Elev 1,418.00

23
872+05.212' R
Elev 1,415.23

+0.0000%



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B25	TOTAL SHEETS B94
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Plotting Date: 8/15/2024
Rev 08/15/2024 KJB

 Potential River Access Location

Missouri River/Lake Francis Case

Sec. 17 - T99N - R70W

SE1/4 SE1/4

Sec. 20 - T99N - R70W

United States of America
(United States ACOE)

Parcel 2 & 2A

NE1/4 NE1/4

United States of America
(United States ACOE)

Parcel 3 & 3A

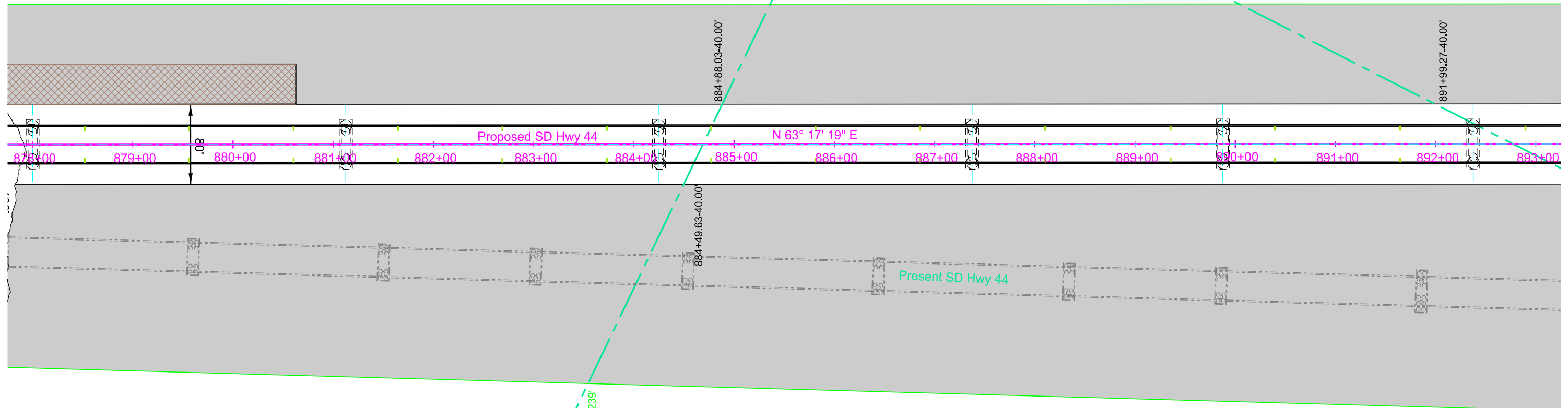
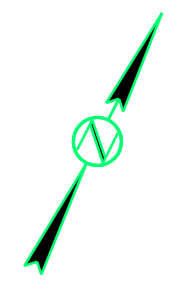
Sec. 16 - T99N - R70W

United States of America
(United States ACOE)

Parcel 4 & 4A

Government Lot 7

SW1/4



W1/2 NW1/4

Sec. 21 - T99N - R70W

Parcel 2
877+00.85 to 885+36 L
Temporary Easement containing
1.8 ac, more or less

Parcel 2
877+49.28 to 884+49.63 R
Temporary Easement containing
2.8 ac, more or less

Parcel 3
884+88.03 to 891+99.27 L
Temporary Easement containing
1.4 ac, more or less

Parcel 3
883+54 to 898+00 R
Temporary Easement containing
5.9 ac, more or less

Parcel 4
890+04 to 910+92.50 L
Temporary Easement containing
4.6 ac, more or less



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA

PROJECT

P 0044(207)290

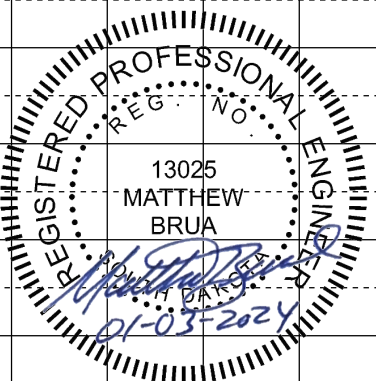
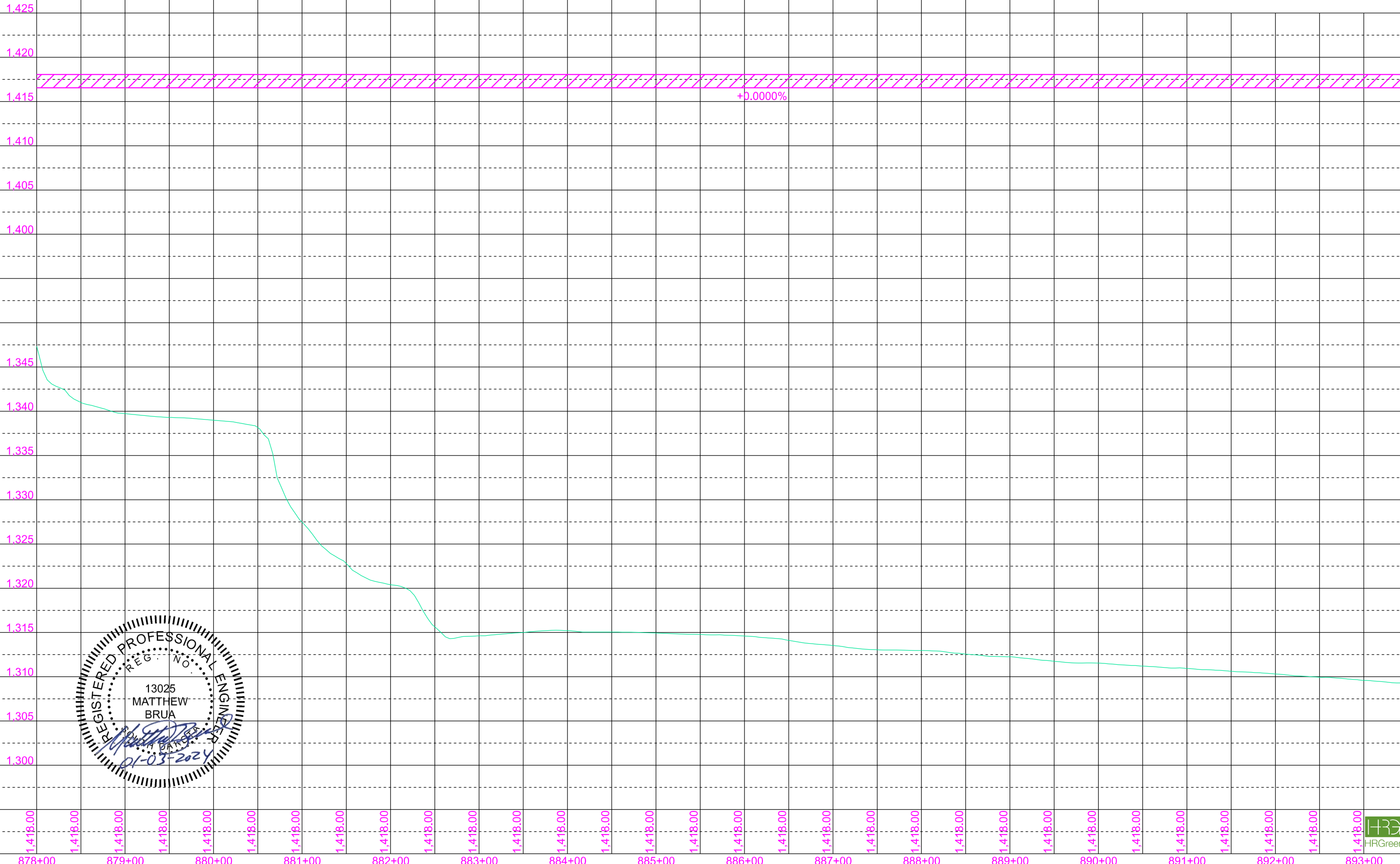
SHEET

B26

TOTAL SHEETS

B94

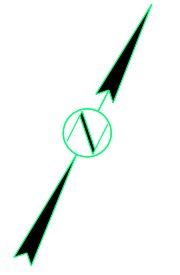
Plotting Date: 1/3/2024



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B27	B94

Plotting Date: 3/26/2025
Rev 3/26/2025 BDW



Sec. 16 - T99N - R70W

SW1/4

United States of America
(United States ACOE)

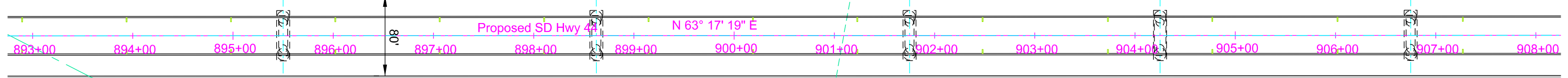
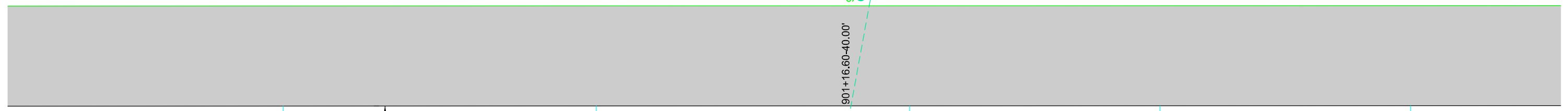
Parcel 4 & 4A

Government Lot 7

School and Public
Lands

Parcel 4B

Missouri River/Lake Francis Case



United States of America
(United States ACOE)

Parcel 3 & 3A

W1/2 NW1/4

Sec. 21 - T99N - R70W

United States of America
(United States ACOE)

Parcel A3

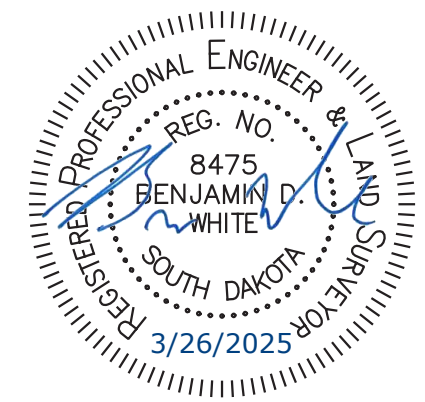
Government Lot 2

Section Line

1/4 Line

Parcel A3
897+94 to 898+26 R
Temporary Easement containing
195 sf, more or less.

Parcel 4
893+55.72 to 910+63.53 R
Temporary Easement containing
8.5 ac, more or less



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA

PROJECT

P 0044(207)290

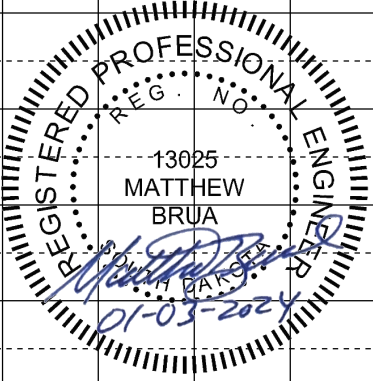
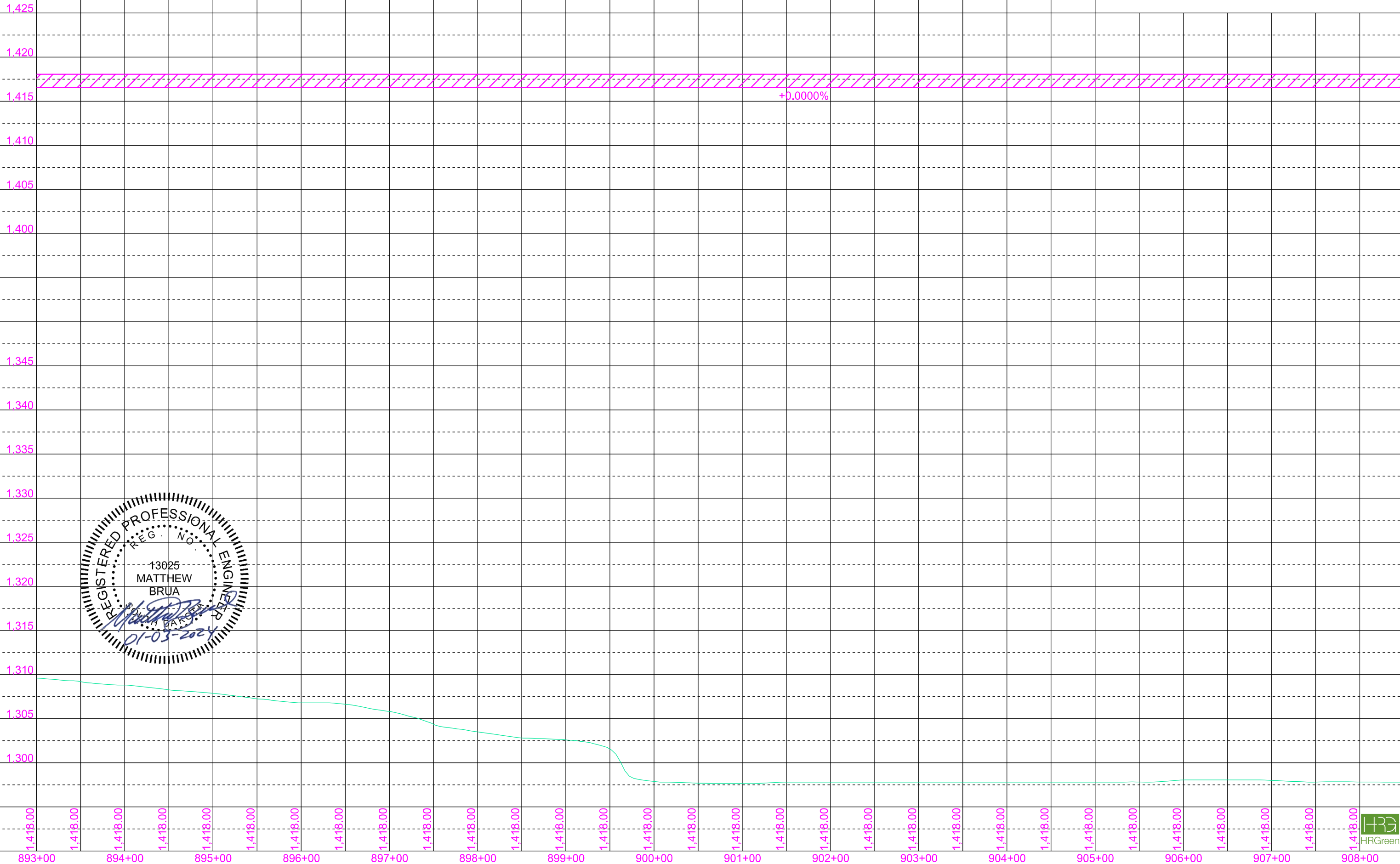
SHEET

B28

TOTAL SHEETS

B94

Plotting Date: 1/3/2024



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B29	TOTAL SHEETS B94
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Plotting Date: 3/26/2025
Rev 3/26/2025 BDW

Sec. 16 - T99N - R70W

United States of America
(United States ACOE)

Parcel 4 & 4A

School and Public
Lands

Parcel 4B

United States of America
(United States ACOE)

Parcel 5 & 5A

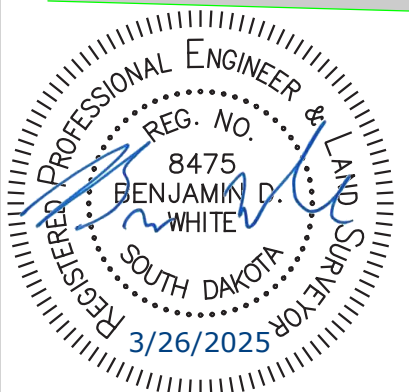
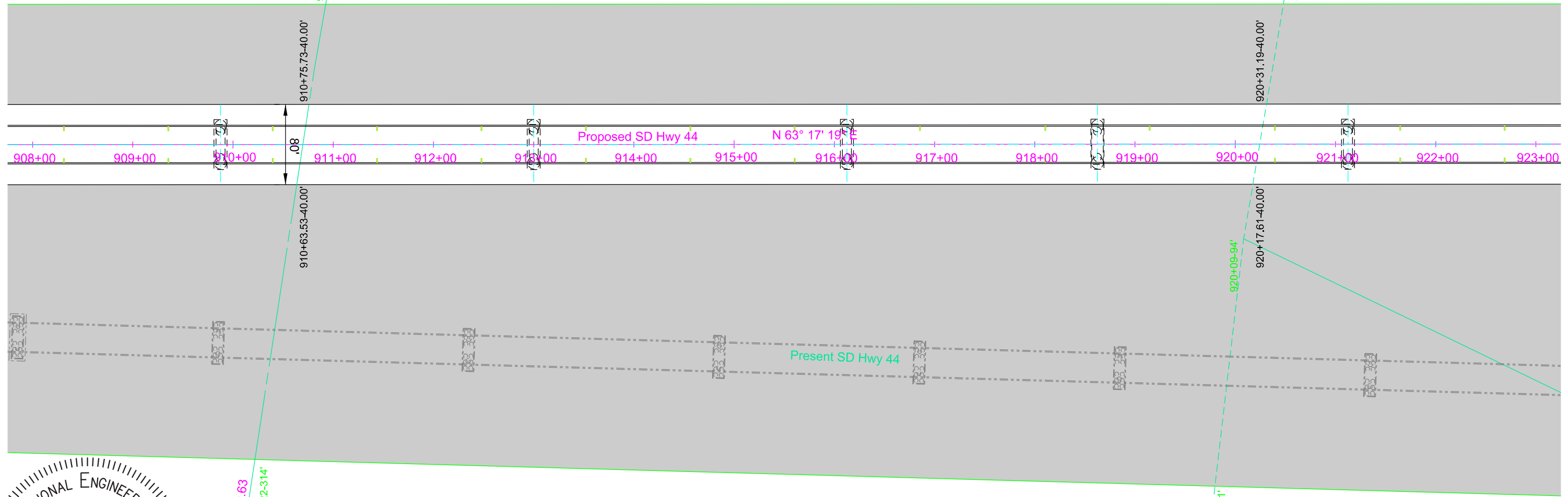
School and Public
Lands

Parcel 5B

Missouri River/Lake Francis Case

GREGORY COUNTY
CHARLES MIX COUNTY

Government Lot 3



Parcel 5
910+75.73 to 931+39 L
Temporary Easement containing
4.6 ac, more or less_

Parcel 5
910+22 to 931+59 R
Temporary Easement containing
12.6 ac, more or less_

Parcel A4
919+80 to 925+51 R
Temporary Easement containing
1.6 ac, more or less_

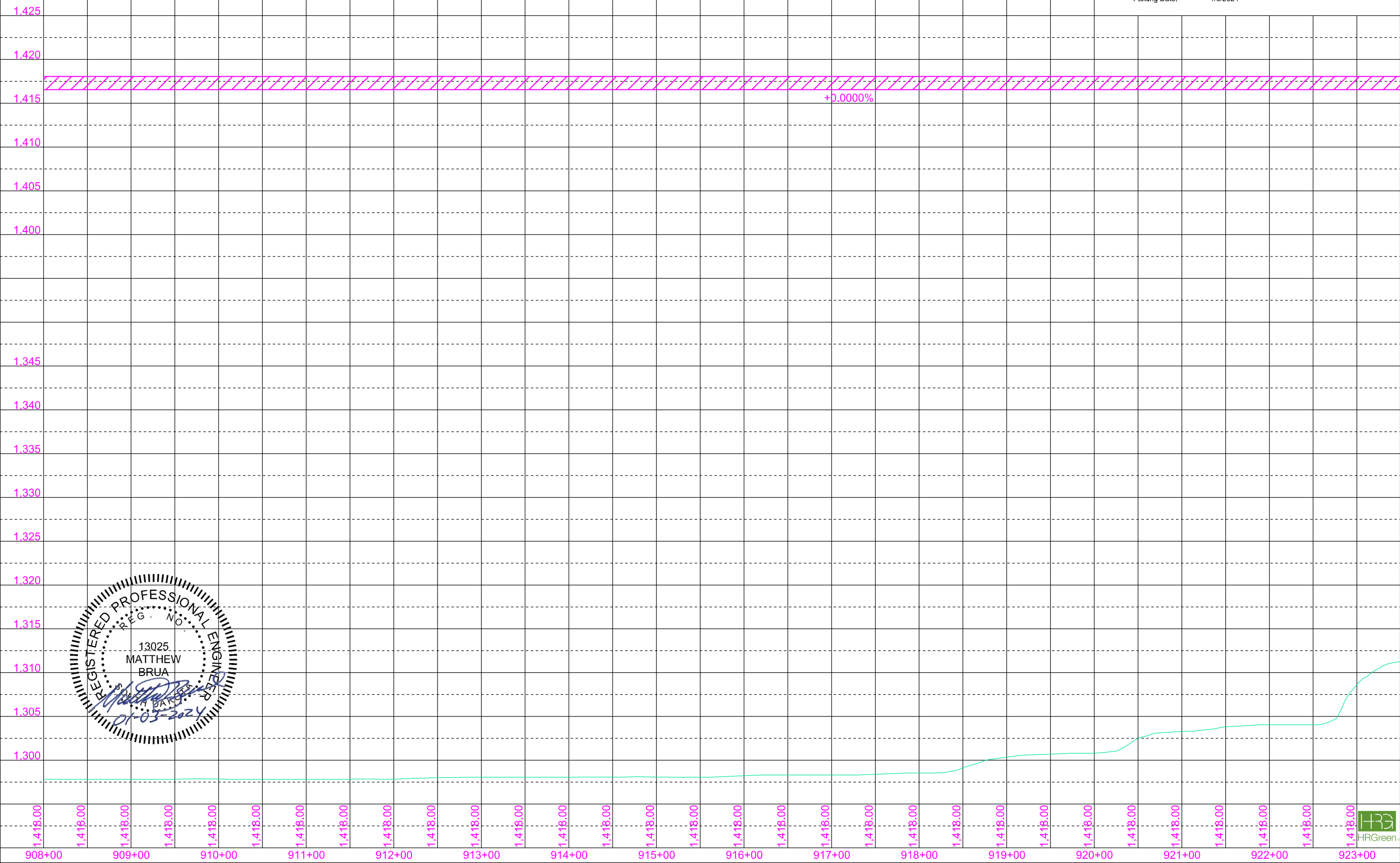
Government Lot 4
United States of America
(United States ACOE)
Parcel A4



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B30	B94

Plotting Date: 1/3/2024



931+77-215' R to 934+90-191' L
Install Class B Riprap (5378.5 tons)
and Type B Drainage Fabric (5132.0 SY)

933+28.08 to 935+37.78 L
Install Type 1 Guardrail Transition
& 100' Type 1 MGS Guardrail
& MGS Tangent End Terminal

933+28.08 to 934+50.30 R
Install Type 1 Guardrail Transition
& 12.5' Type 1 MGS Guardrail
& MGS Tangent End Terminal

Remove Steel Guardrail
at following locations:
932+69-246' R to 933+89-240' R
932+69-275' R to 933+50-284' R

932+76-279' R to 933+21-280' R
Take Out Concrete Curb and Gutter

932+77-253' R to 933+22-253' R
Take Out Concrete Curb and Gutter

932+83-275' R
Take Out Drop Inlet

932+83-326' R
Take Out 1 End Section
(Incidental Work, Grading)

932+83-326' R to 932+85-286' R
Fill 12" - 40' CMP
with Controlled Density Fill

932+83-247' R
Take Out Drop Inlet

933+20-213' R
Take Out 1 End Section
(Incidental Work, Grading)

932+85-245' R to 933+20-213' R
Fill 12" - 48' CMP
with Controlled Density Fill

933+36-85' R
Do Not Disturb
Environmental Sensor Station

934+07-103' R
Remove Wayside Chapel
(Remove Building)

937+90-117' L
Remove Septic Tank and
Drainfield
(Remove Building)

FOR BIDDING PURPOSES ONLY

935+78-53' L to 936+28-54' L
Install Class B Riprap and
Type B Drainage Fabric
(Riprap Dimensions: 30"x50"x2'-3")

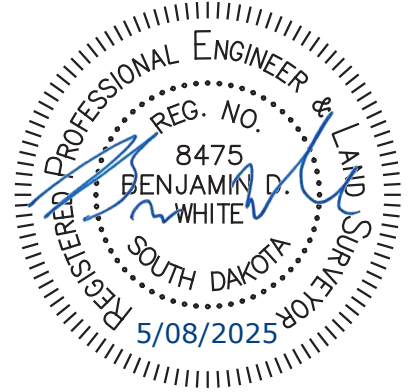
STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B31	TOTAL SHEETS B94
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Plotting Date: 4/28/2025
Rev 02/09/2024 MJB
Rev 08/15/2024 KJB
Rev 05/02/2025 BDW

935+57-50' R to 936+07-51' R
Install Class B Riprap and
Type B Drainage Fabric
(Riprap Dimensions: 35"x50"x2'-3")

SEC. 15 - T99N-R70W

SW1/4



Sec. 16 - T99N - R70W

United States of America
(United States ACOE)

Parcel 5 & 5A

Government Lot 3

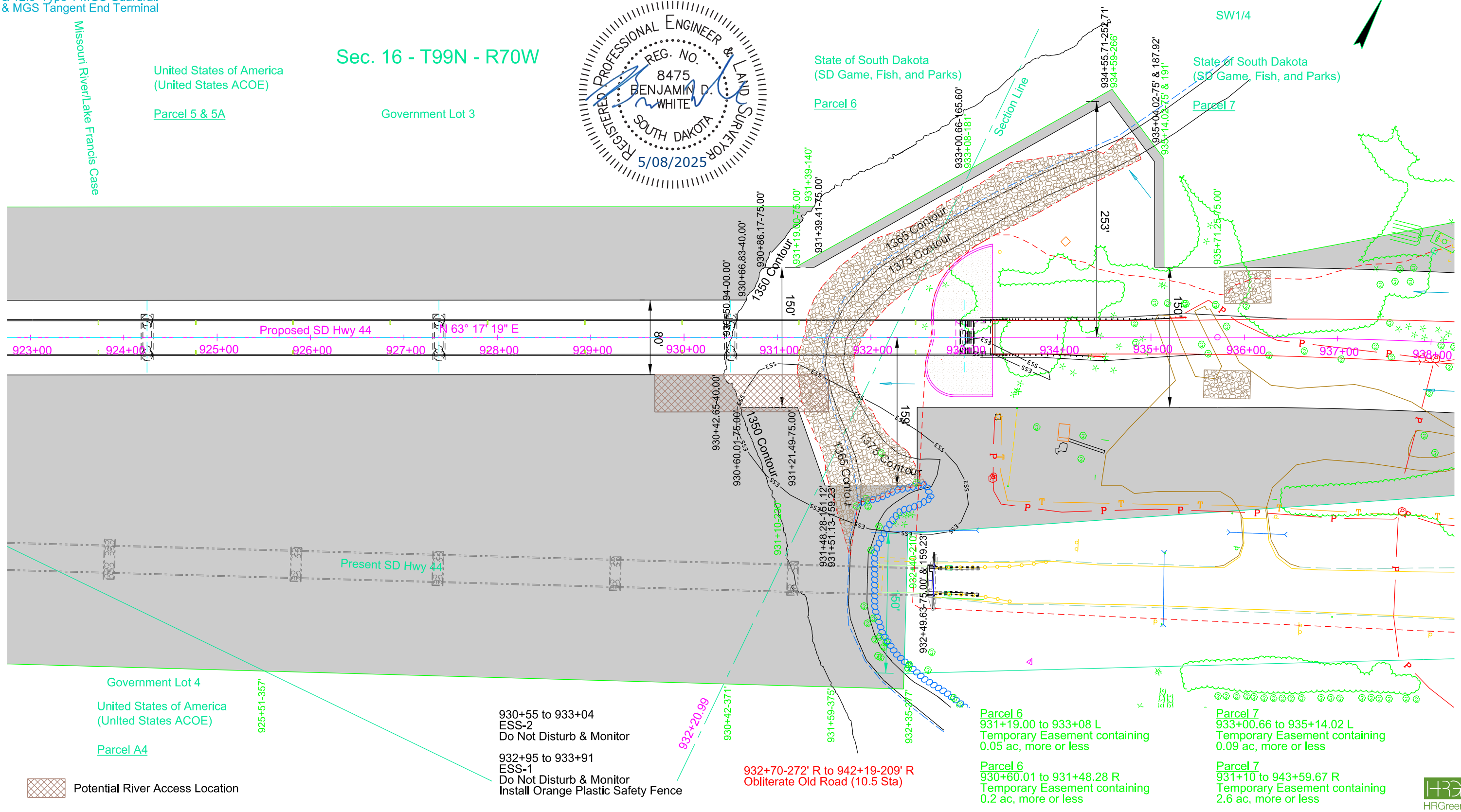
State of South Dakota
(SD Game, Fish, and Parks)

Parcel 6

State of South Dakota
(SD Game, Fish, and Parks)

Parcel 7

Missouri River/Lake Francis Case



Government Lot 4

United States of America
(United States ACOE)

Parcel A4

930+55 to 933+04
ESS-2
Do Not Disturb & Monitor

932+95 to 933+91
ESS-1
Do Not Disturb & Monitor
Install Orange Plastic Safety Fence

932+70-272' R to 942+19-209' R
Obliterate Old Road (10.5 Sta)

Parcel 6
931+19.00 to 933+08 L
Temporary Easement containing
0.05 ac, more or less

Parcel 6
930+60.01 to 931+48.28 R
Temporary Easement containing
0.2 ac, more or less

Parcel 7
933+00.66 to 935+14.02 L
Temporary Easement containing
0.09 ac, more or less

Parcel 7
931+10 to 943+59.67 R
Temporary Easement containing
2.6 ac, more or less

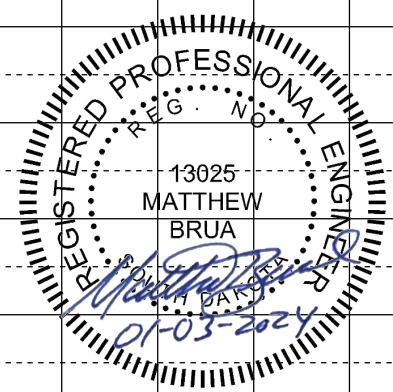
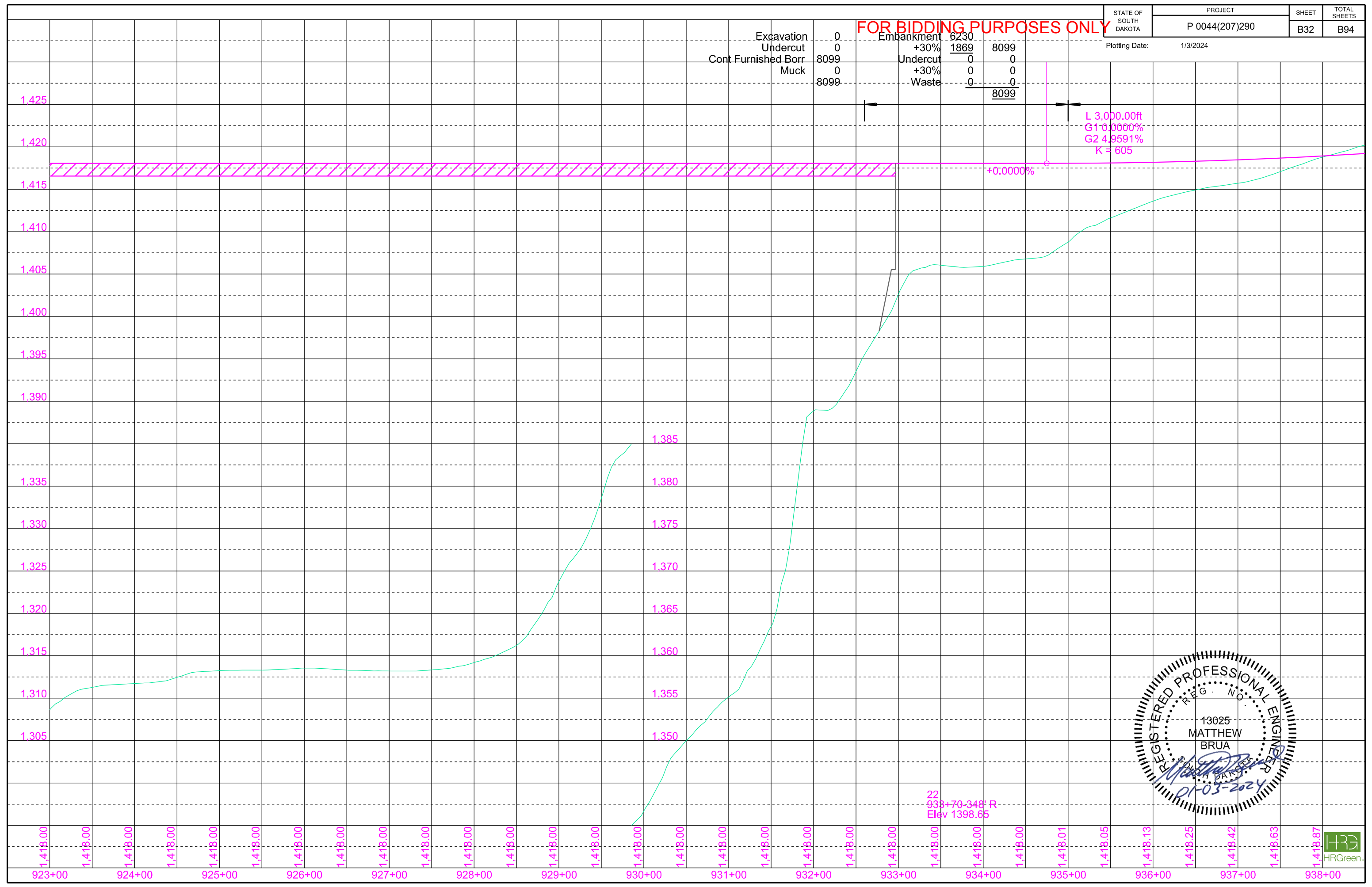
Potential River Access Location



FOR BIDDING PURPOSES ONLY

Plotting Date: 1/3/2024

Excavation	0	Embankment	6230
Undercut	0	+30%	1869
Cont Furnished Borr	8099	Undercut	0
Muck	0	+30%	0
	8099	Waste	0
			8099



945+13-51' R
Remove Septic Tank and
Drain Field (Remove Building)

938+63-80' L to 942+11-82' R
Remove 386' Watermain

941+29-326' R to 945+4-55' L
Remove 612' Watermain
(Contractor to Field Verify
Valve Location)

941+29-326' R
Install 3" Watermain Cap

938+43-88' L
Remove Residence Foundation,
Deck and Associated Footings
(Remove Building)

938+84-86' L
Remove Propane Tank and
Gas Service Line
(Remove Building)

SEC. 15 - T99N-R70W

N1/2 SW1/4

State of South Dakota
(SD Game, Fish, and Parks)

Parcel 7
PI 939+67.98
N 387.895.47
E 2,290.802.50
Del 8° 42' 33" (RT)
Dc 1° 05' 59"
L 396.73'
T 791.94'
R 5,210.00'

941+29-336' R to 942+29-206' R
Take Out 18" - 160' RCP
(Incidental Work, Grading)

941+71-166' R to 942+66-52' R
Take Out 18" - 147' CMP
(Incidental Work, Grading)

945+4-55' L to 949+30-132' L
Remove 577' Watermain

941+31-197' R to 960+65-21' L
Remove 1,938' Watermain
(Contractor to Field Verify Valve Location)

948+37-231' L to 949+30-132' L
Remove 135' Watermain

948+37-231' L
Install 3" Watermain Cap

948+72 R
Install Class A Riprap
and Type B Drainage Fabric
(Riprap Dimensions: 10'x22'x2'-3")

949+10-70' R to 949+38-340' R
Fill 24" - 273' CMP
with Controlled Density Fill

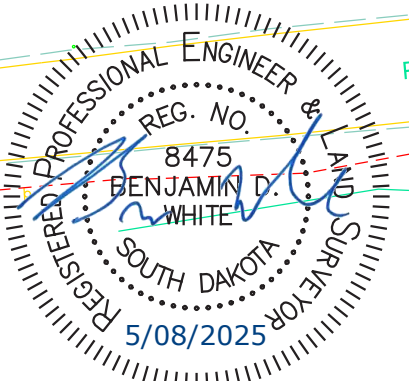
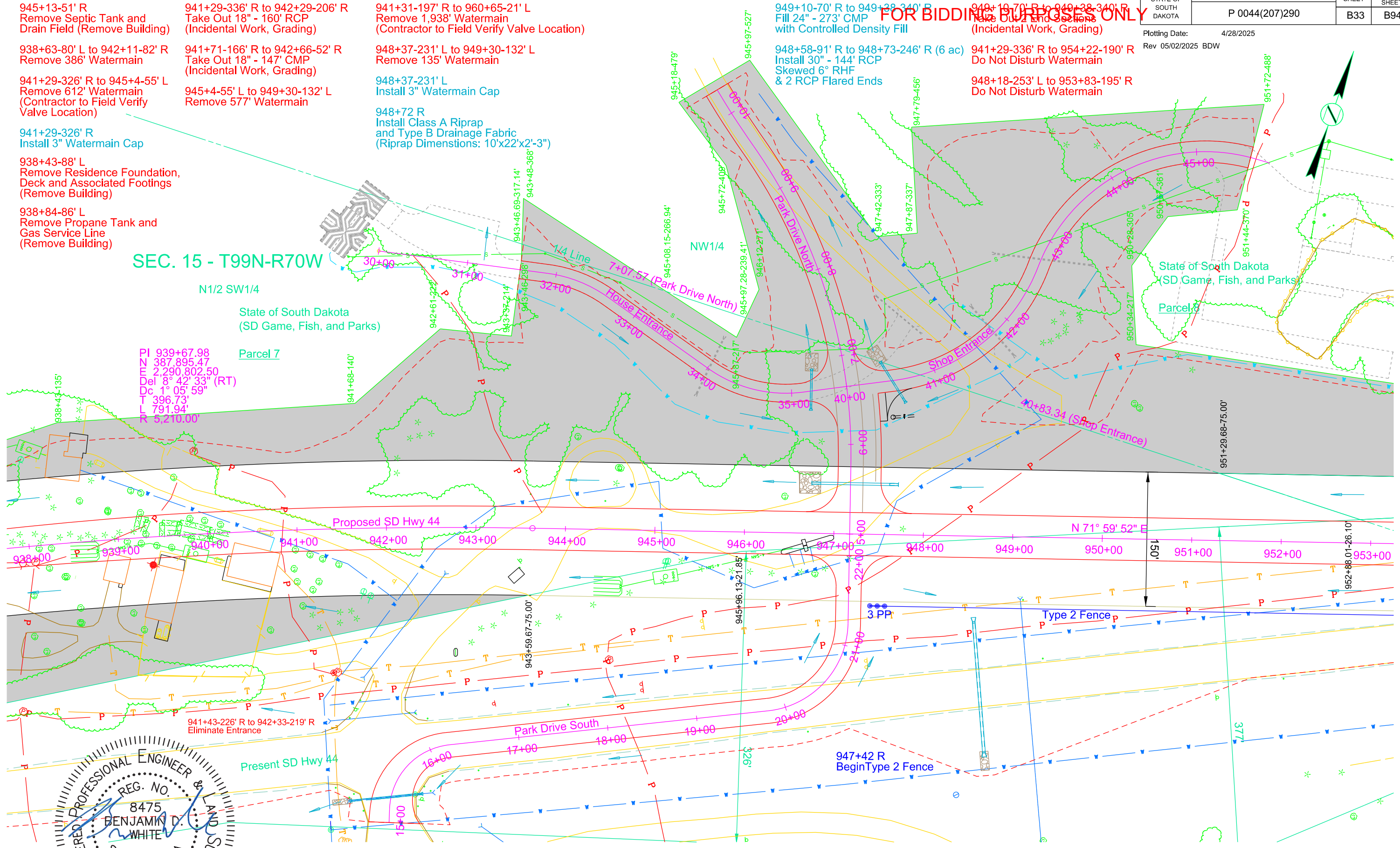
948+58-91' R to 948+73-246' R (6 ac)
Install 30" - 144' RCP
Skewed 6° RHF
& 2 RCP Flared Ends

949+10-70' R to 949+38-340' R
Take Out Building
(Incidental Work, Grading)

941+29-336' R to 954+22-190' R
Do Not Disturb Watermain

948+18-253' L to 953+83-195' R
Do Not Disturb Watermain

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290		
Plotting Date: 4/28/2025		Rev 05/02/2025 BDW	



Parcel 7
935+71.25 to 951+29.68 L
Temporary Easement containing
3.3 ac, more or less

Parcel 8
943+46.69 to 945+08.15 L
Temporary Easement containing
0.1 ac, more or less

Parcel 8
945+18 to 962+05.39 L
Temporary Easement containing
5.1 ac, more or less

947+37-207' R to 953+91-125' R
Obliterate Old Road (6.5 Sta)



FOR BIDDING PURPOSES ONLY

Plotting Date: 1/3/2024



Excavation	172129	Embankment	16856
Undercut	18598	+30%	5057 21913
Muck	2978	Undercut	18598
	193705	+30%	5579 24177
		OB Waste	0.102964
		Waste	2978 44651
			<u>193705</u>

947+18 L
48' Int Road

947+18 R
28' Int Road

Haul = 2,825,400 CuYdSta
OB Waste will be used as Out of Balance Exc on Shop Access Road, North Slide, Mainline Slide, and South Slide. Waste is excess excavation and muck material to be disposed of at a site approved by the engineer. Included in the Excavation amount is 1606 CuYd of Unstable Material.



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B35	B94

Plotting Date: 1/3/2024

955+82-59' R to 956+72-48' R
Eliminate Entrance

955+90-33' R to 956+61-26' R
Take Out 18" - 72' CMP
(Incidental Work, Grading)

955+80-173' L to 960+47-226' L
Do Not Disturb Sanitary Service

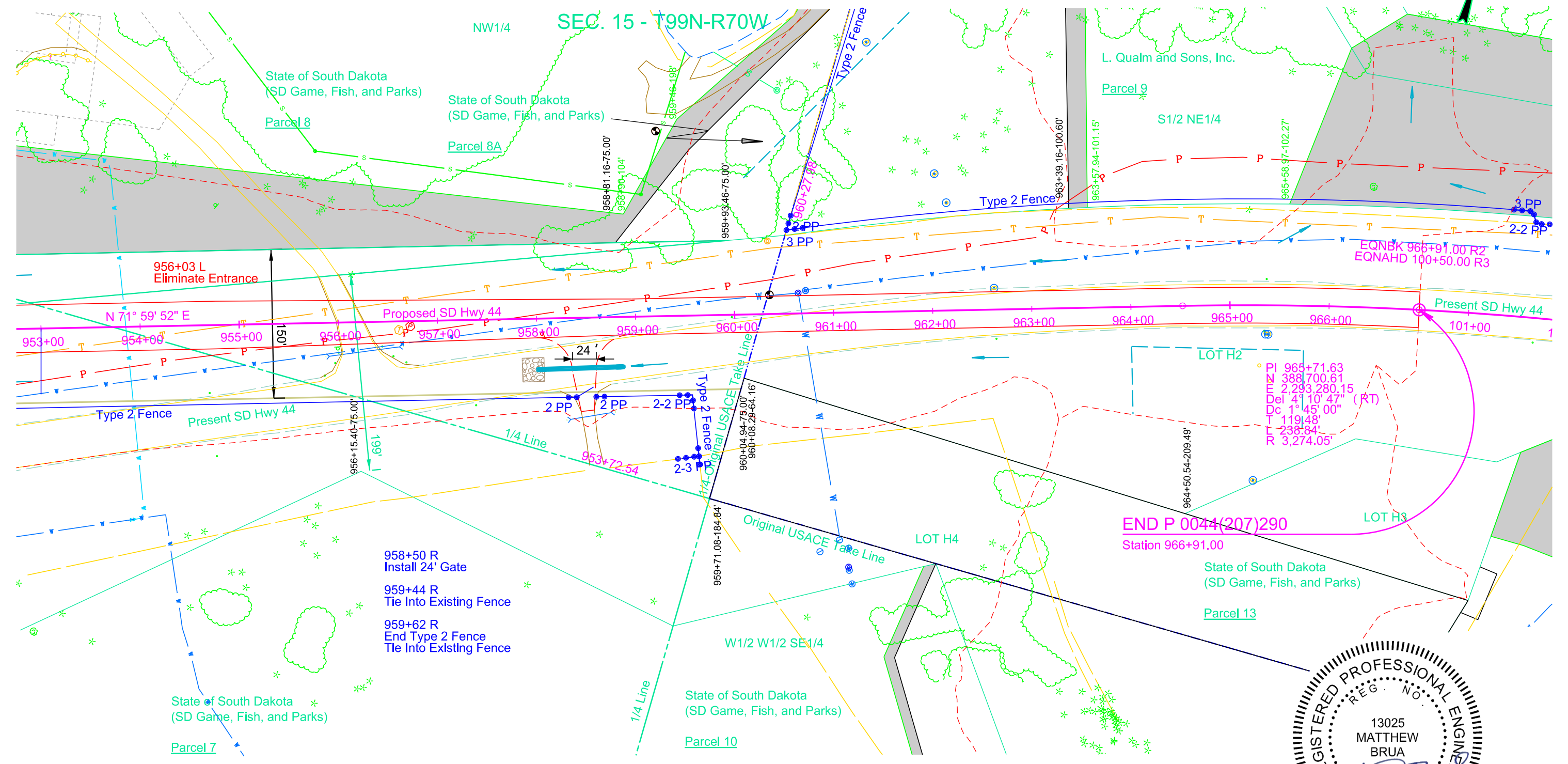
958+33-102' R to 958+74-96' R
Take Out 18" - 42' CMP
(Incidental Work, Grading)

958+00-51' R to 958+88-50' R (2 ac)
Install 24" - 68' RCP
& 2 RCP Safety Ends

958+00 R
Install Class A Riprap
and Type B Drainage Fabric
(Riprap Dimensions: 24"x22"x2'-3")

960+54 L
Begin Type 2 Fence

101+68 L
End Type 2 Fence
Tie Into Existing Fence



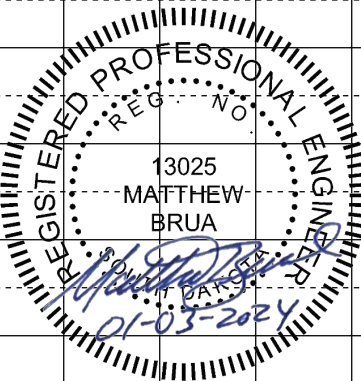
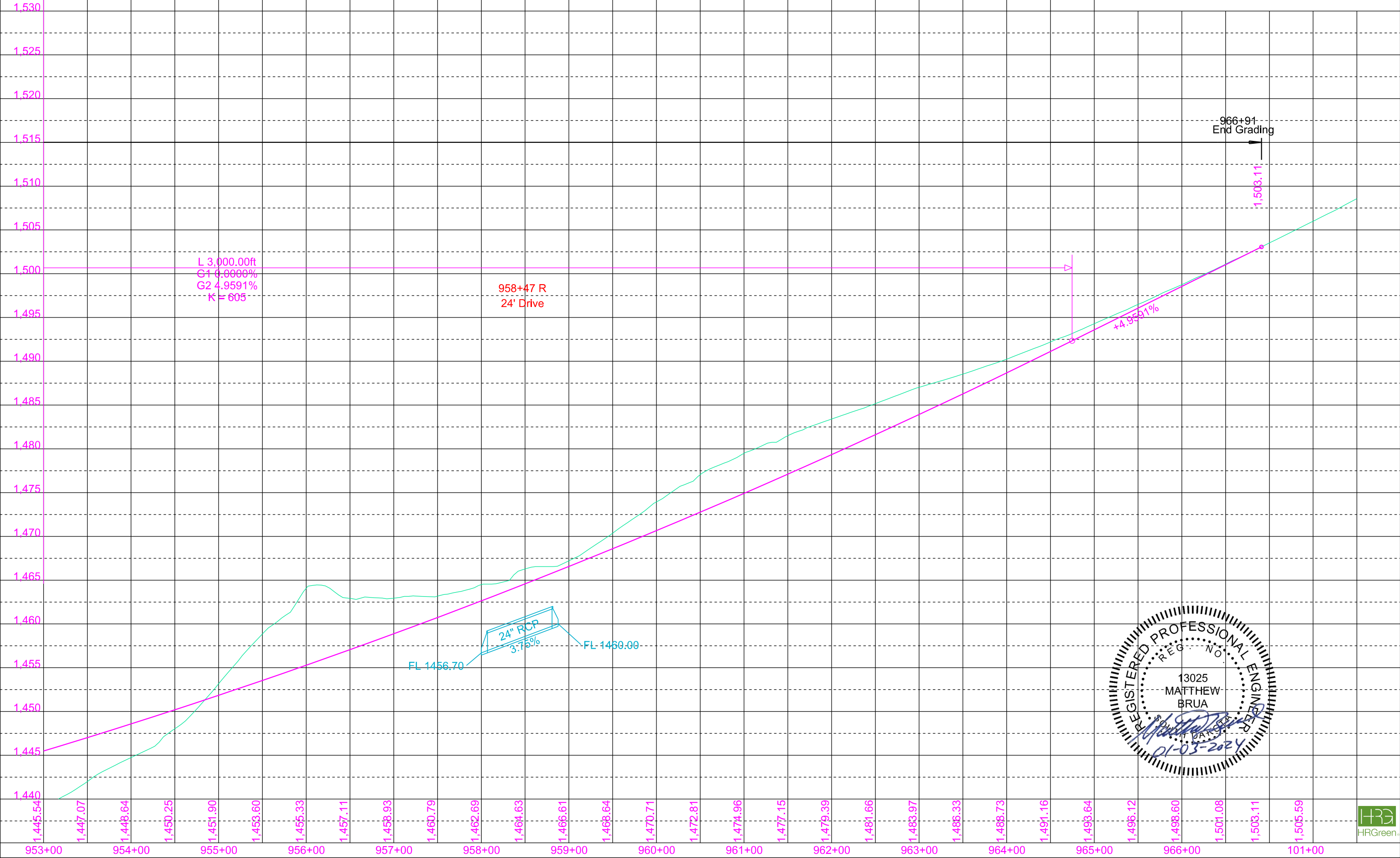
END P 0044(207)290
Station 966+91.00



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B36	B94

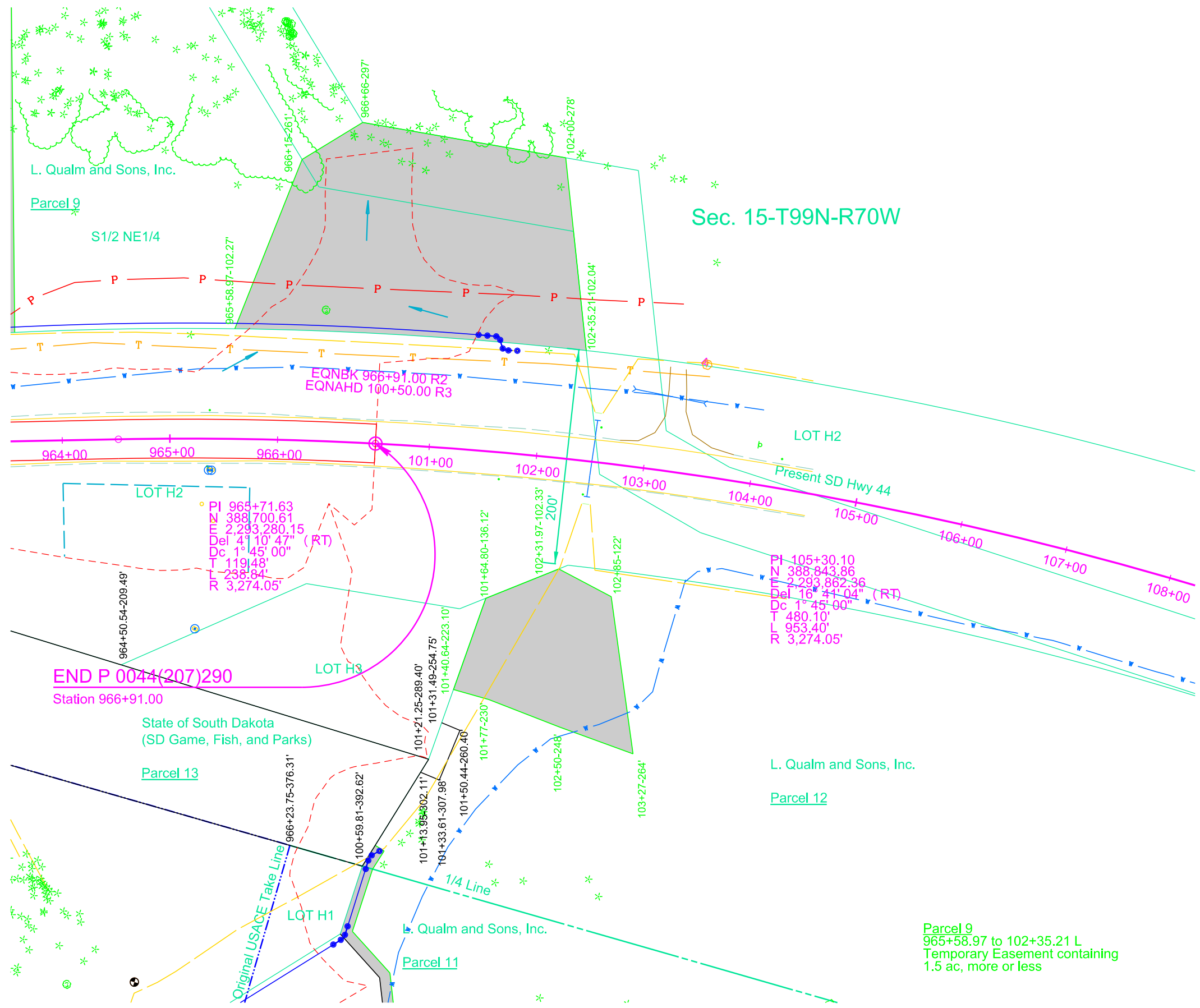
Plotting Date: 1/3/2024



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B37	TOTAL SHEETS B94
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Plotting Date: 1/3/2024



L. Qualm and Sons, Inc.

Parcel 9

S1/2 NE1/4

Sec. 15-T99N-R70W

LOT H2

Present SD Hwy 44

LOT H2

PI 965+71.63
 N 388,700.61'
 T 2,293,280.15'
 Del 4° 10' 47" (RT)
 Dc 1° 45' 00"
 T 119.48'
 R 238.84'
 R 3,274.05'

PI 105+30.10
 N 388,843.86'
 T 2,293,862.36'
 Del 16° 41' 04" (RT)
 Dc 1° 45' 00"
 T 480.10'
 R 953.40'
 R 3,274.05'

END P 0044(207)290

Station 966+91.00

State of South Dakota
(SD Game, Fish, and Parks)

Parcel 13

L. Qualm and Sons, Inc.

Parcel 12

Parcel 11

Parcel 9
 965+58.97 to 102+35.21 L
 Temporary Easement containing
 1.5 ac, more or less

Parcel 12
 101+40.64 to 103+27 R
 Temporary Easement containing
 0.4 ac, more or less



FOR BIDDING PURPOSES ONLY

1" = 40'

STATE OF SOUTH DAKOTA

PROJECT P 0044(207)290

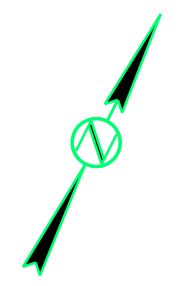
SHEET B38

TOTAL SHEETS B94

Plotting Date: 1/3/2024

BOAT ACCESS

4+85-25' L to 4+91-31' R (1 ac)
Install 18" - 44' RCP
Skewed 5.8° RHF
& 2 RCP Flared Ends
4+91 R
Install Class A Riprap
and Type B Drainage Fabric
(Riprap Dimensions: 14'x22'x2'-3")



Sec. 20 - T99N - R70W
W1/2 E1/2

NE1/4 NE1/4

Proposed SD Hwy 44

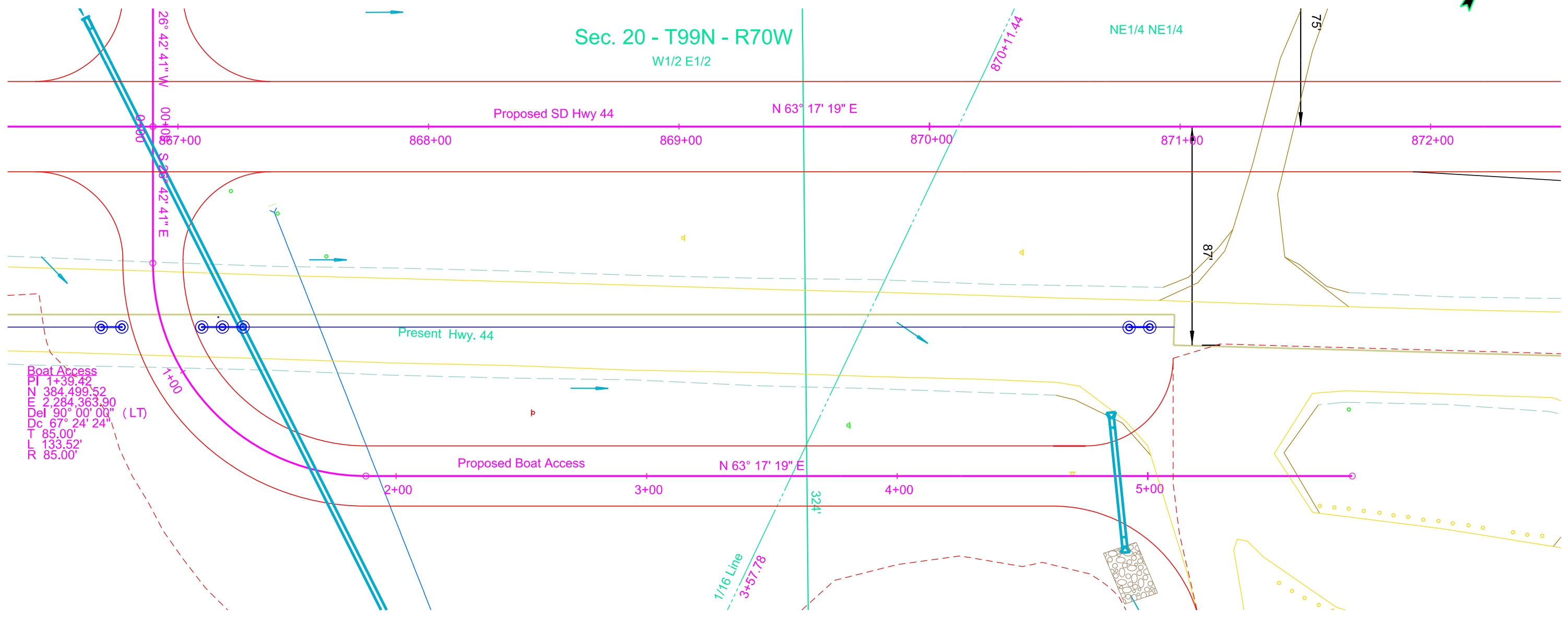
N 63° 17' 19" E

Present Hwy. 44

Proposed Boat Access

N 63° 17' 19" E

Boat Access
PI 1+39.42
N 384.499.52
E 2,284.363.90
Del 90° 00' 00" (LT)
Dc 67° 24' 24"
T 85.00'
L 133.52'
R 85.00'



FOR BIDDING PURPOSES ONLY

Plotting Date: 1/3/2024

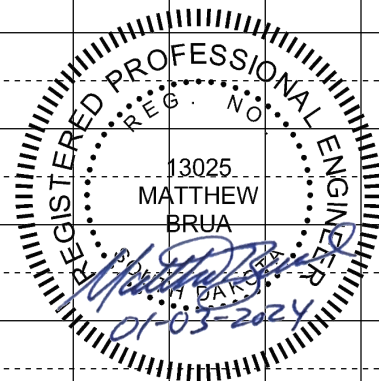
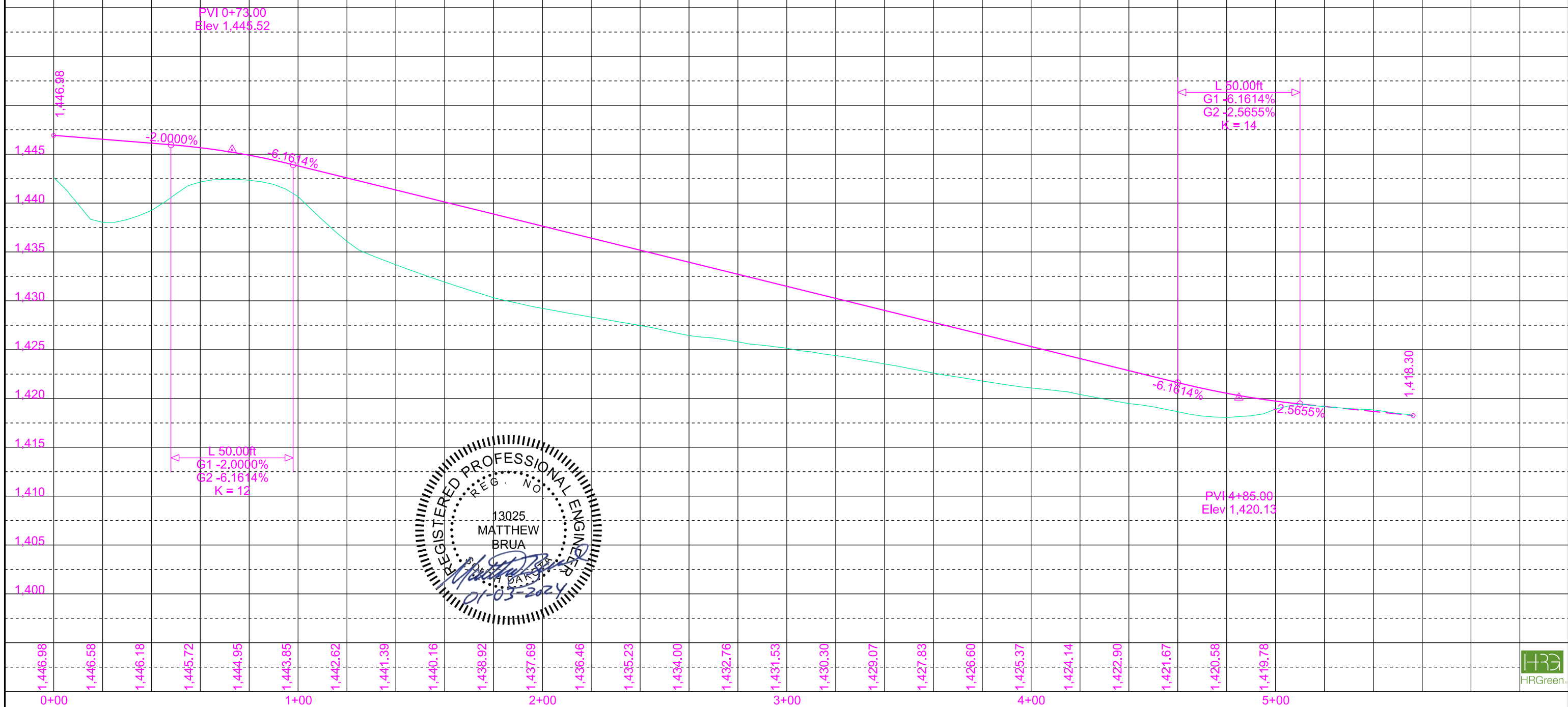
BOAT ACCESS

0+00
Begin Grading

Excavation	1281	Embankment	6450
Undercut	48	+30%	1935 8385
OB Exc	7118	Undercut	48
Muck	0	+30%	14 62
	8447	Waste	0 0
			8447

5+10
End Grading

Out of Balance Exc Haul = 21,400 CuYdSta
 (Assumed OB Exc Haul from 865+00 to 1+00)
 OB Exc is Out of Balance Waste from Sta 848+00 to 872+00 Balance (7118 CuYd)
 Included in the Excavation amount is 863 CuYd of Unstable Material



FOR BIDDING PURPOSES ONLY

1" = 40'

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B40	B94

Plotting Date: 1/3/2024

GFP ACCESS

54+97.31-6' L to 55+7.31-6' R
Install 12' Cattle Guard

54+97.31-6' L to 55+7.31-6' R
Install 16' Tubular Gate

55+50 R
Install Class B Riprap
and Type B Drainage Fabric
(Riprap Dimensions: 30'x55'x2'-3")

56+00 L
Install Class B Riprap
and Type B Drainage Fabric
(Riprap Dimensions: 21'x60'x2'-3")

State of South Dakota (SD Game, Fish, and Parks)

Parcel A2

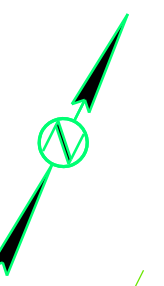
Sec. 20 - T99N - R70W

W1/2 E1/2

NE1/4 NE1/4

State of South Dakota (SD Game, Fish, and Parks)

Parcel 1



GFP Access
PI 50+82.00
N 384.697.31
E 2,284.264.38
Del 90° 00' 00" (RT)
Dc 190° 59' 09"
T 30.00'
L 47.12'
R 30.00'

GFP Access
PI 54+37.22
N 384.857.34
E 2,284.595.75
Del 9° 06' 54" (LT)
Dc 190° 59' 09"
T 2.39'
L 4.77'
R 30.00'

GFP Access
PI 55+17.31
N 384.904.22
E 2,284.660.70
Del 25° 23' 29" (LT)
Dc 190° 59' 09"
T 6.76'
L 13.29'
R 30.00'

GFP Access
PI 55+87.67
N 384.966.08
E 2,284.694.68
Del 25° 51' 35" (LT)
Dc 95° 29' 35"
T 13.77'
L 27.08'
R 60.00'

N 63° 17' 19" E
51+00

N 66° 09' 04" E

Proposed GFP Access

N 63° 17' 19" E

N 54° 40' 25" E

N 28° 46' 56" E

N 2° 35' 20" E

N 26° 42' 41" W
00+00

Proposed SD Hwy 44

N 63° 17' 19" E

867+00

868+00

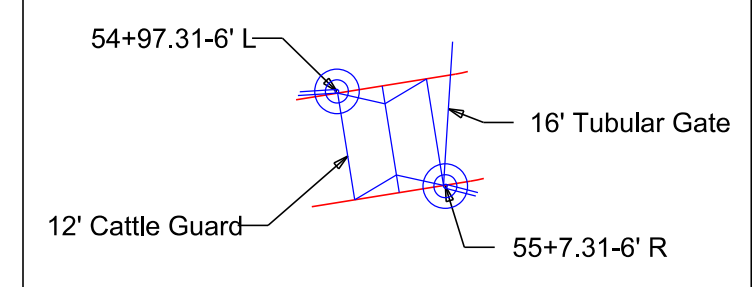
869+00

870+00

871+00

872+00

Detail A



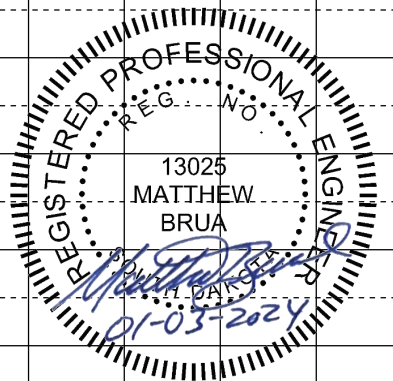
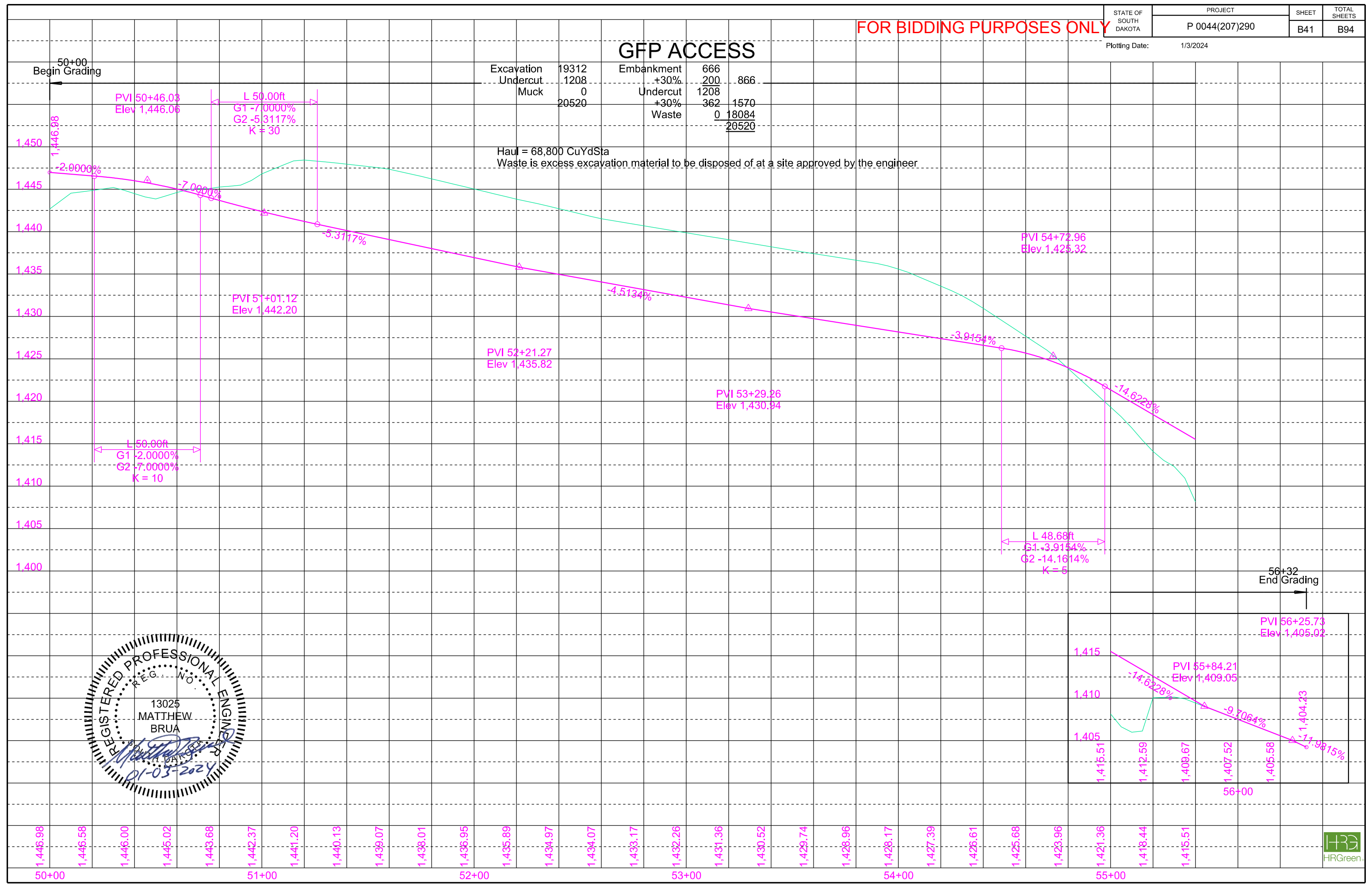
FOR BIDDING PURPOSES ONLY

Plotting Date: 1/3/2024

GFP ACCESS

Excavation	19312	Embankment	666
Undercut	1208	+30%	200 866
Muck	0	Undercut	1208
	20520	+30%	362 1570
		Waste	0 18084
			<u>20520</u>

Haul = 68,800 CuYdSta
Waste is excess excavation material to be disposed of at a site approved by the engineer



FOR BIDDING PURPOSES ONLY

1" = 40'

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B42	B94

Plotting Date: 1/3/2024
Rev 10/17/2023 MJB

PARK DRIVE NORTH

5+56-43' L to 5+56-54' R (2 ac)
Install 30"-78' CMP
& 2 CMP Safety Ends

5+56 L
Install Class A Riprap
and Type B Drainage Fabric
(Riprap Dimensions: 24"x24"x2'-3")

SEC. 15 - T99N-R70W

State of South Dakota
(SD Game, Fish, and Parks)

Parcel 7

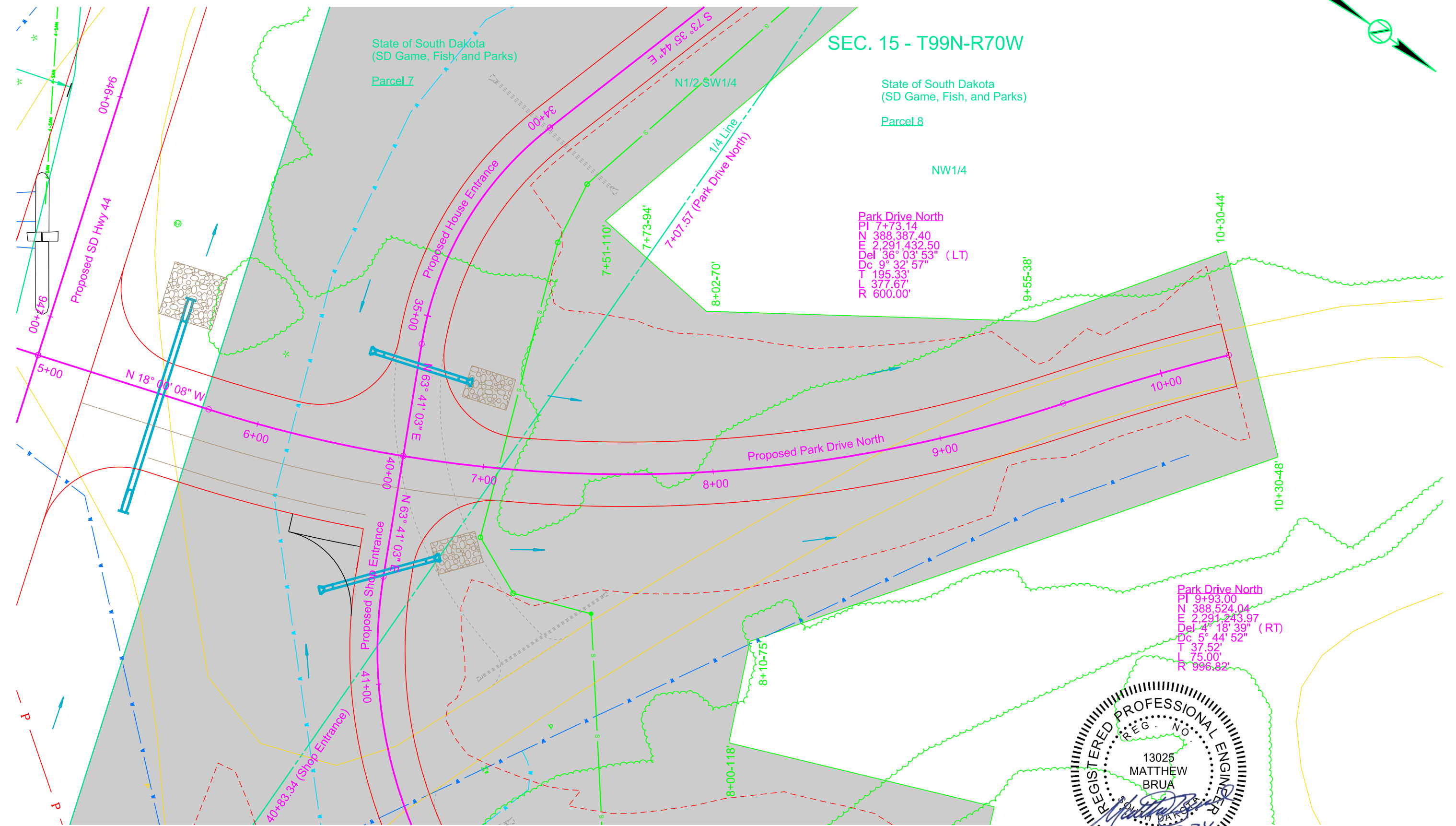
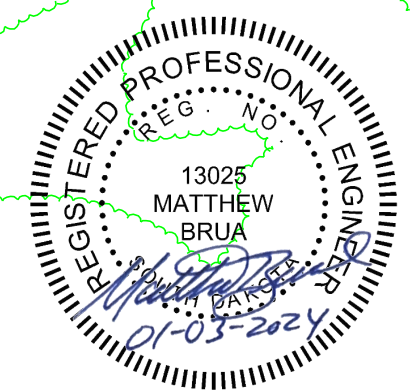
State of South Dakota
(SD Game, Fish, and Parks)

Parcel 8

NW1/4

Park Drive North
 PI 7+73.14
 N 388,387.40
 E 2,291,432.50
 Del 36° 03' 53" (LT)
 Dc 9° 32' 57"
 T 195.33'
 L 377.67'
 R 600.00'

Park Drive North
 PI 9+93.00
 N 388,524.04
 E 2,291,243.97
 Del 4° 18' 39" (RT)
 Dc 5° 44' 52"
 T 37.52'
 L 75.00'
 R 996.82'



FOR BIDDING PURPOSES ONLY

Plotting Date: 1/3/2024

PARK DRIVE NORTH

5+00
Begin Grading

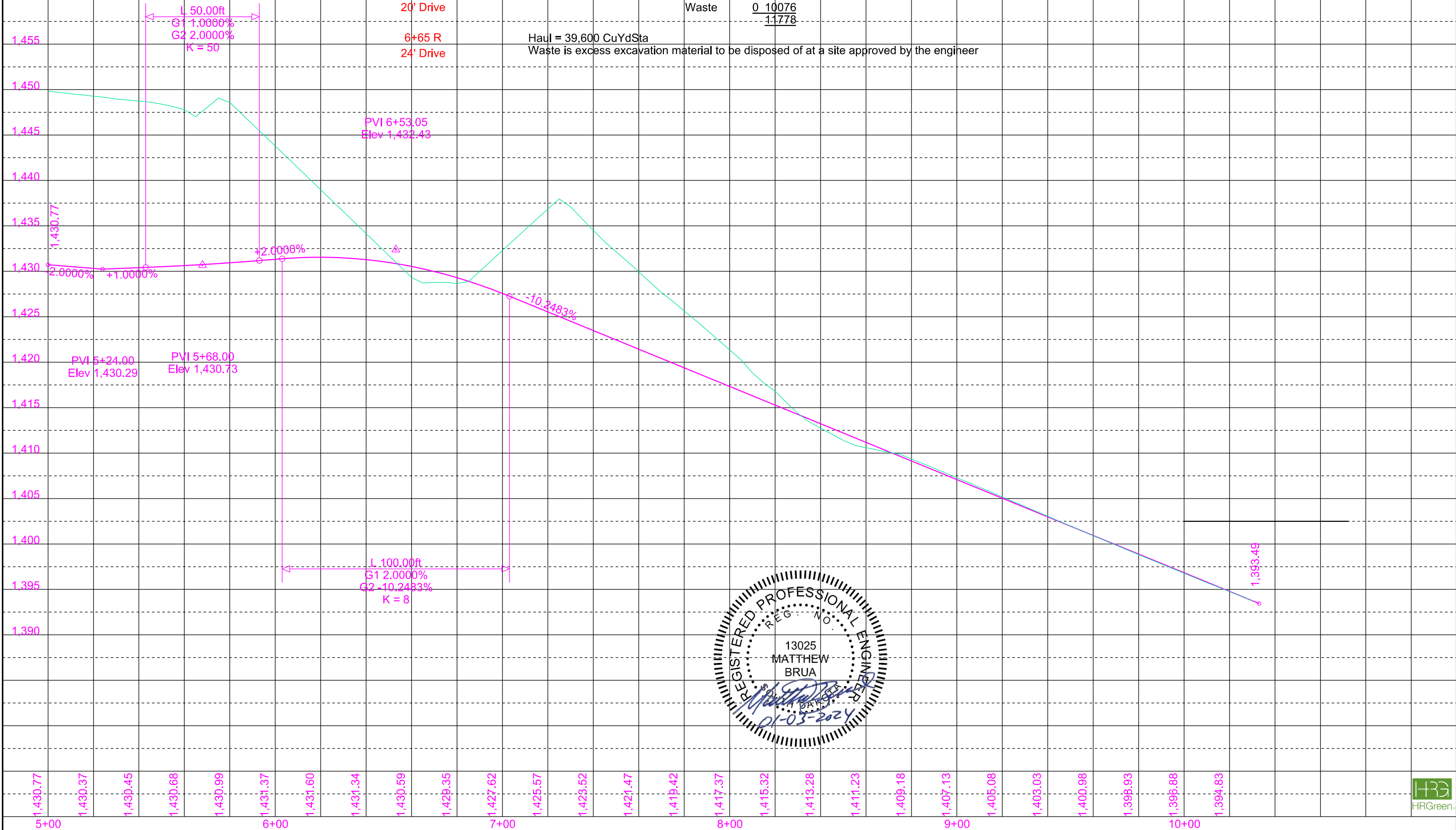
10+33
End Grading

Excavation	10490	Embankment	22
Undercut	1288	+30%	6 28
Muck	0	Undercut	1288
	11778	+30%	386 1674
		Waste	0 10076
			11778

6+65 L
20' Drive

6+65 R
24' Drive

Haul = 39,600 CuYdSta
Waste is excess excavation material to be disposed of at a site approved by the engineer



15+20-46' L to 15+62-41' R
Take Out 18" - 94' CMP
(Incidental Work, Grading)

15+20 L
Install Class A Riprap
and Type B Drainage Fabric
(Riprap Dimensions: 6'x22'x2'-3")

15+20-45' L to 15+49-33' R (0.6 ac)
Install 18" - 70' RCP
Skewed 18.2° RHF
& 2 RCP Flared Ends

FOR BIDDING PURPOSES ONLY

1" = 40'

STATE OF SOUTH DAKOTA

PROJECT	SHEET	TOTAL SHEETS
P 0044(207)290	B44	B94

Plotting Date: 1/3/2024

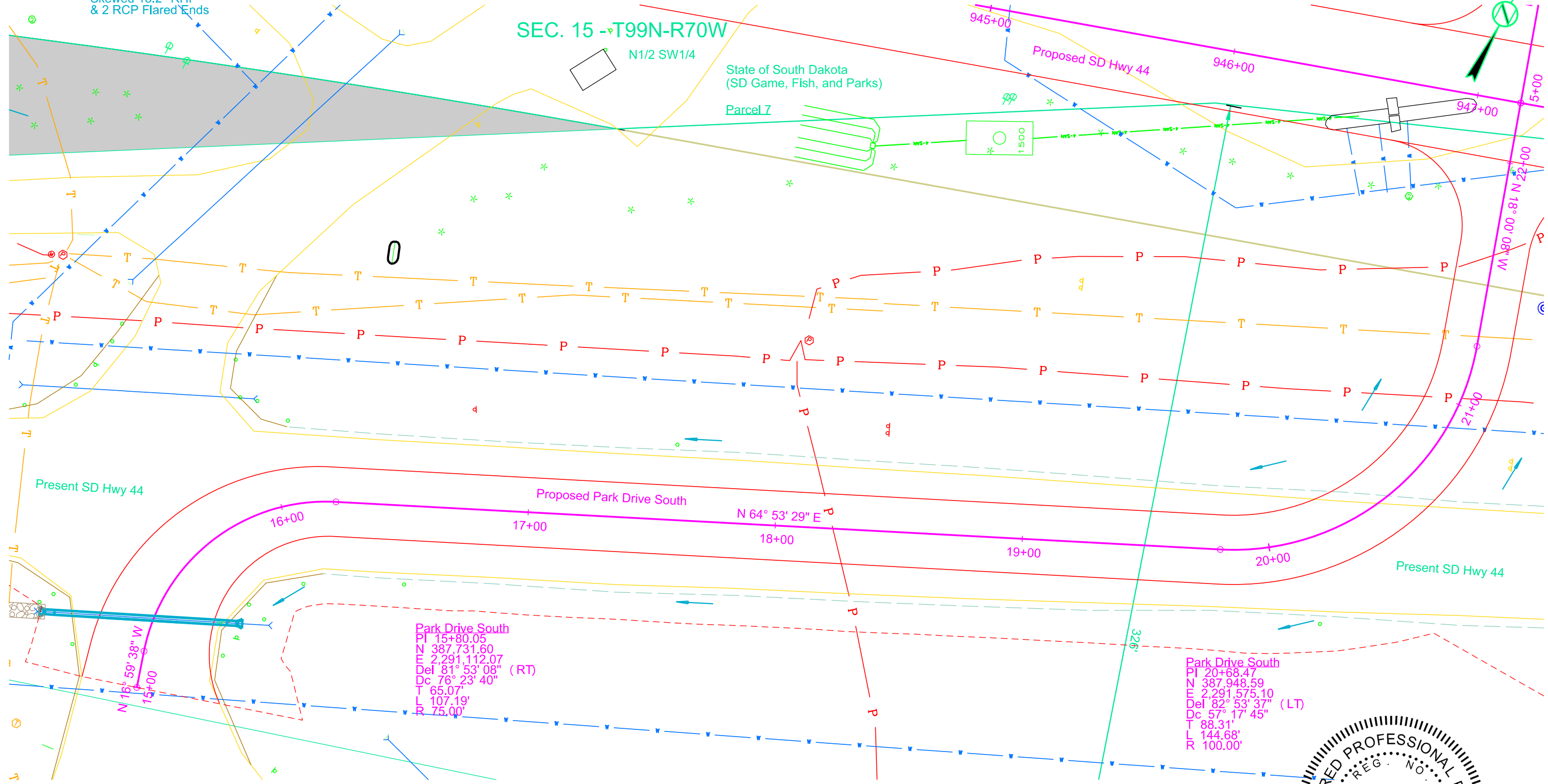
PARK DRIVE SOUTH

SEC. 15 -T99N-R70W

N1/2 SW1/4

State of South Dakota
(SD Game, Fish, and Parks)

Parcel 7



Park Drive South
 PI 15+80.05
 N 387,731.60
 E 2,291,112.07
 Del 81° 53' 08" (RT)
 Dc 76° 23' 40"
 T 65.07'
 L 107.19'
 R 75.00'

Park Drive South
 PI 20+68.47
 N 387,948.59
 E 2,291,575.10
 Del 82° 53' 37" (LT)
 Dc 57° 17' 45"
 T 88.31'
 L 144.68'
 R 100.00'

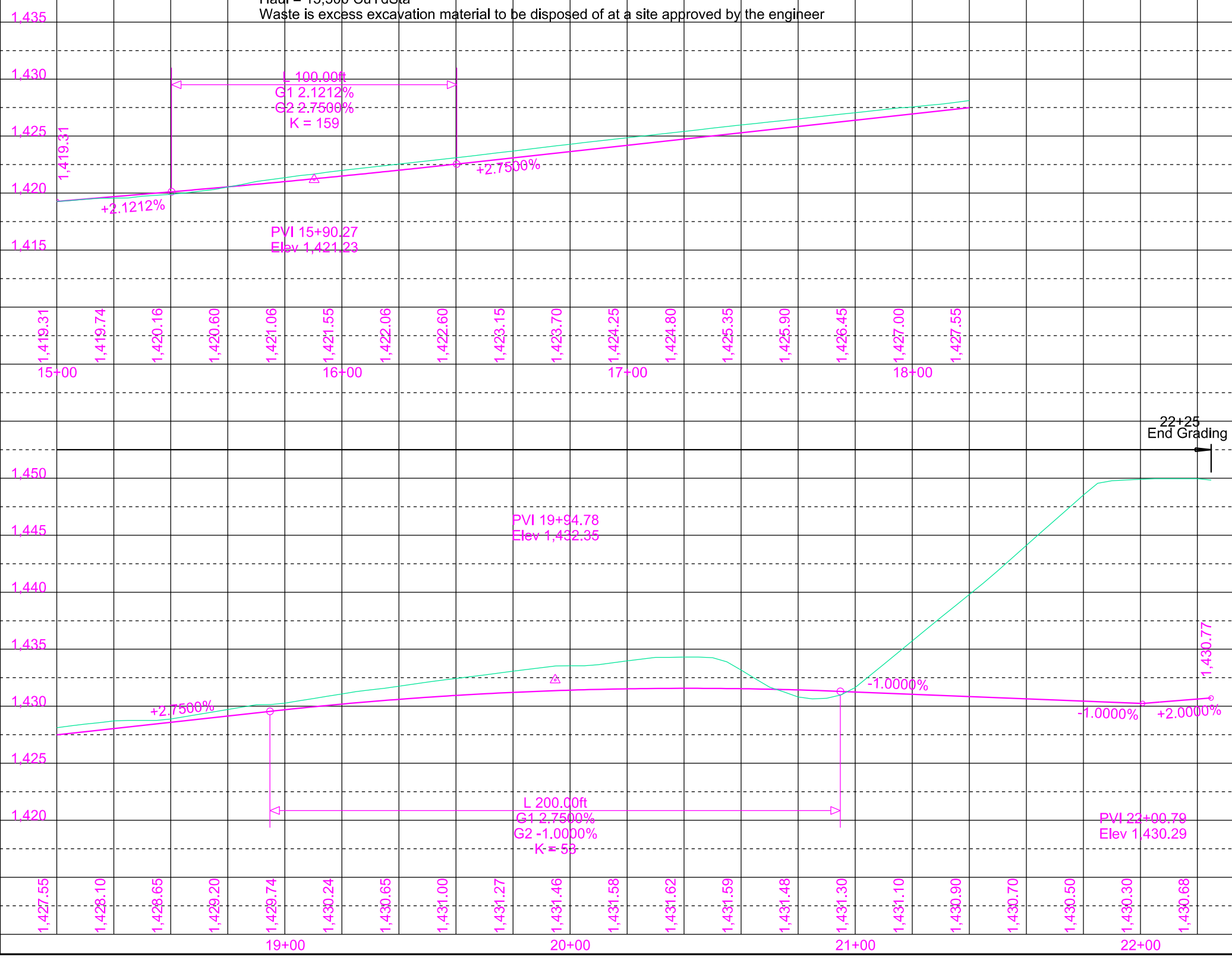


FOR BIDDING PURPOSES ONLY

PARK DRIVE SOUTH

Excavation	8047	Embankment	0
Undercut	2308	+30%	0
Muck	0	Undercut	2308
	10355	+30%	692
		Waste	0
			3000
			7355
			<u>10355</u>

Haul = 15,300 CuYds
Waste is excess excavation material to be disposed of at a site approved by the engineer



FOR BIDDING PURPOSES ONLY

1" = 40'

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B46	TOTAL SHEETS B94
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Plotting Date: 1/3/2024
Rev 10/17/2023 MJB

HOUSE ENTRANCE

Adjust Sewer Cleanouts at the following locations:
 31+85-22' L
 32+65-21' L
 34+39-38' L
 (Incidental Work, Grading)

31+59-23' R to 35+62-53' R
 Do Not Disturb Watermain

33+96-37' L to 34+06-30' R
 Take Out 2 End Sections
 (Incidental Work, Grading)

35+26 L
 Install Class A Riprap
 and Type B Drainage Fabric
 (Riprap Dimensions: 14'x20'x2'-3")

35+26-25' L to 35+19-22' R (0.5 ac)
 Install 18"-34' RCP
 & 2 RCP Flared Ends

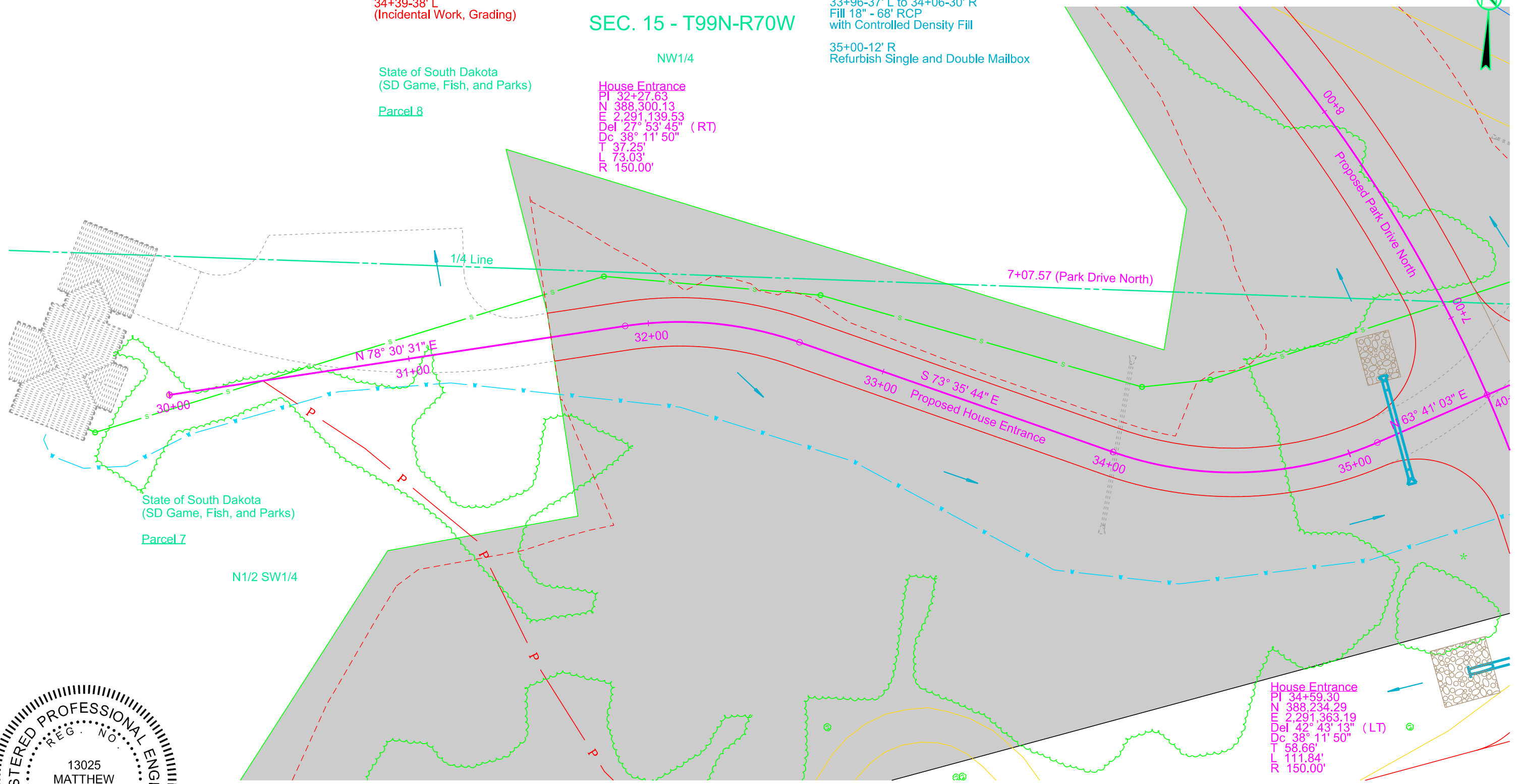
SEC. 15 - T99N-R70W

NW1/4

State of South Dakota
(SD Game, Fish, and Parks)

Parcel 8

House Entrance
 PI 32+27.63
 N 388,300.13
 E 2,291,139.53
 Del 27° 53' 45" (RT)
 Dc 38° 11' 50"
 T 37.25'
 L 73.03'
 R 150.00'



State of South Dakota
(SD Game, Fish, and Parks)

Parcel 7

N1/2 SW1/4



House Entrance
 PI 34+59.30
 N 388,234.29
 E 2,291,363.19
 Del 42° 43' 13" (LT)
 Dc 38° 11' 50"
 T 58.66'
 L 111.84'
 R 150.00'



Plotting Date: 1/3/2024

FOR BIDDING PURPOSES ONLY

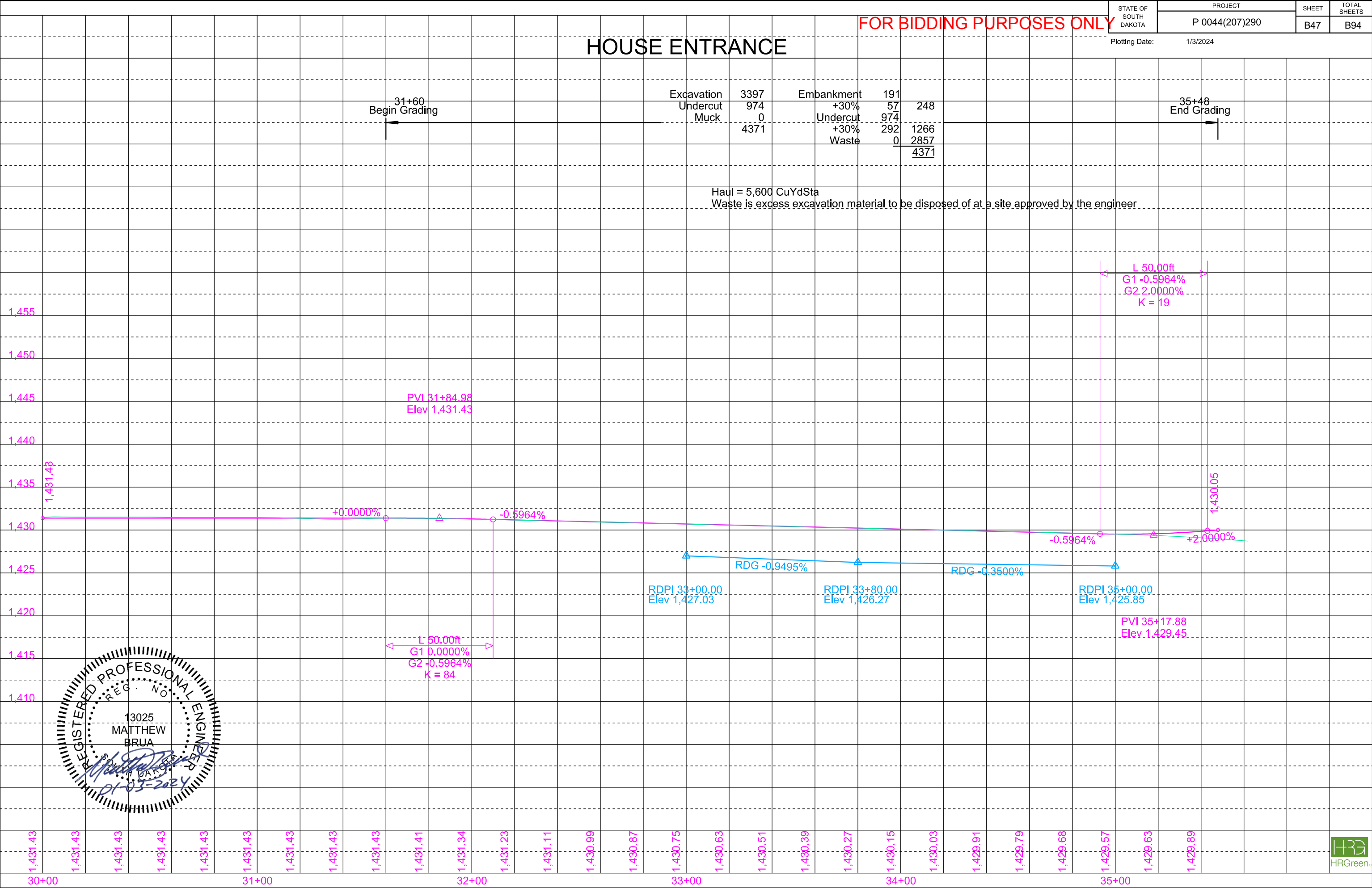
HOUSE ENTRANCE

31+60
Begin Grading

35+48
End Grading

Excavation	3397	Embankment	191
Undercut	974	+30%	57
Muck	0	Undercut	974
	4371	+30%	292
		Waste	0
			2857
			4371

Haul = 5,600 CuYdSta
Waste is excess excavation material to be disposed of at a site approved by the engineer



1" = 40'

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B48	B94

Plotting Date: 1/3/2024
Rev 10/17/2023 MJB

40+27-53' R to 41+47-56' L
Do Not Disturb Watermain

Adjust Sewer Cleanouts
at the following locations:
40+29-39' L
40+51-57' L
(Incidental Work, Grading)

40+55-92' L
Do Not Disturb Sanitary
Sewer Manhole

40+46-96' L to 41+00-45' R
Take Out 18" - 64' RCP
(Incidental Work, Grading)

40+41-23' L to 40+62-27' R (2 ac)
Install 18"-42' RCP
Skewed 24.3° RHF
& 2 RCP Flared Ends

40+39 L
Install Class A Riprap
and Type B Drainage Fabric
(Riprap Dimensions: 14'x20'x2'-3")

41+81-38' L to 41+78-32' R
Take Out 18" - 70' RCP
(Incidental Work, Grading)

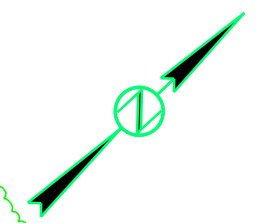
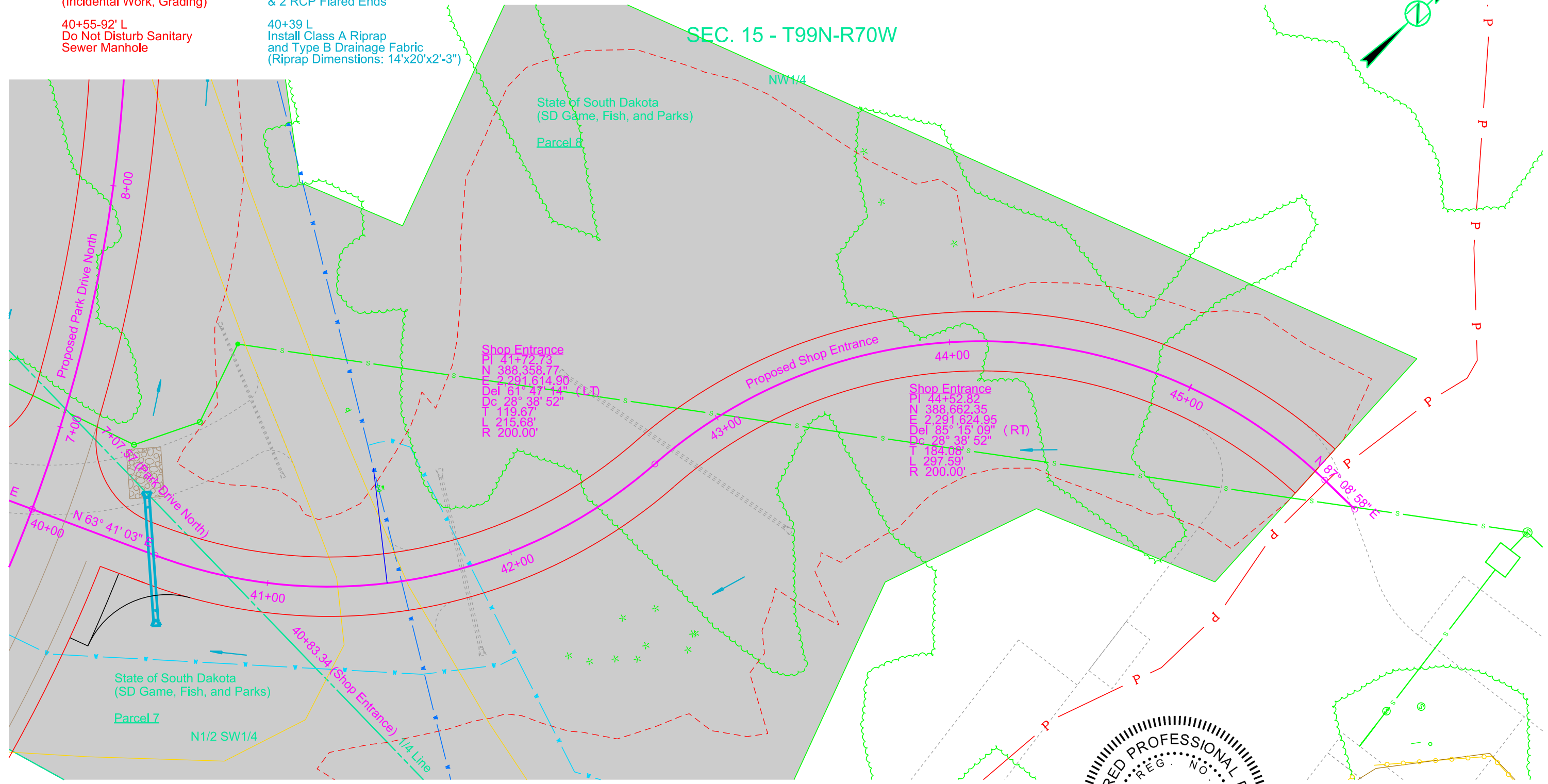
SHOP ENTRANCE

42+64-50' L to 43+00-52' R
Take Out 2 End Sections
(Incidental Work, Grading)

42+64-50' L to 43+00-52' R
Fill 18" - 106' RCP
with Controlled Density Fill

FOR BIDDING PURPOSES ONLY

SEC. 15 - T99N-R70W



FOR BIDDING PURPOSES ONLY

Plotting Date: 1/3/2024

SHOP ENTRANCE

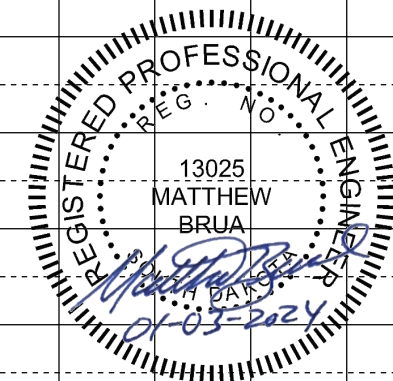
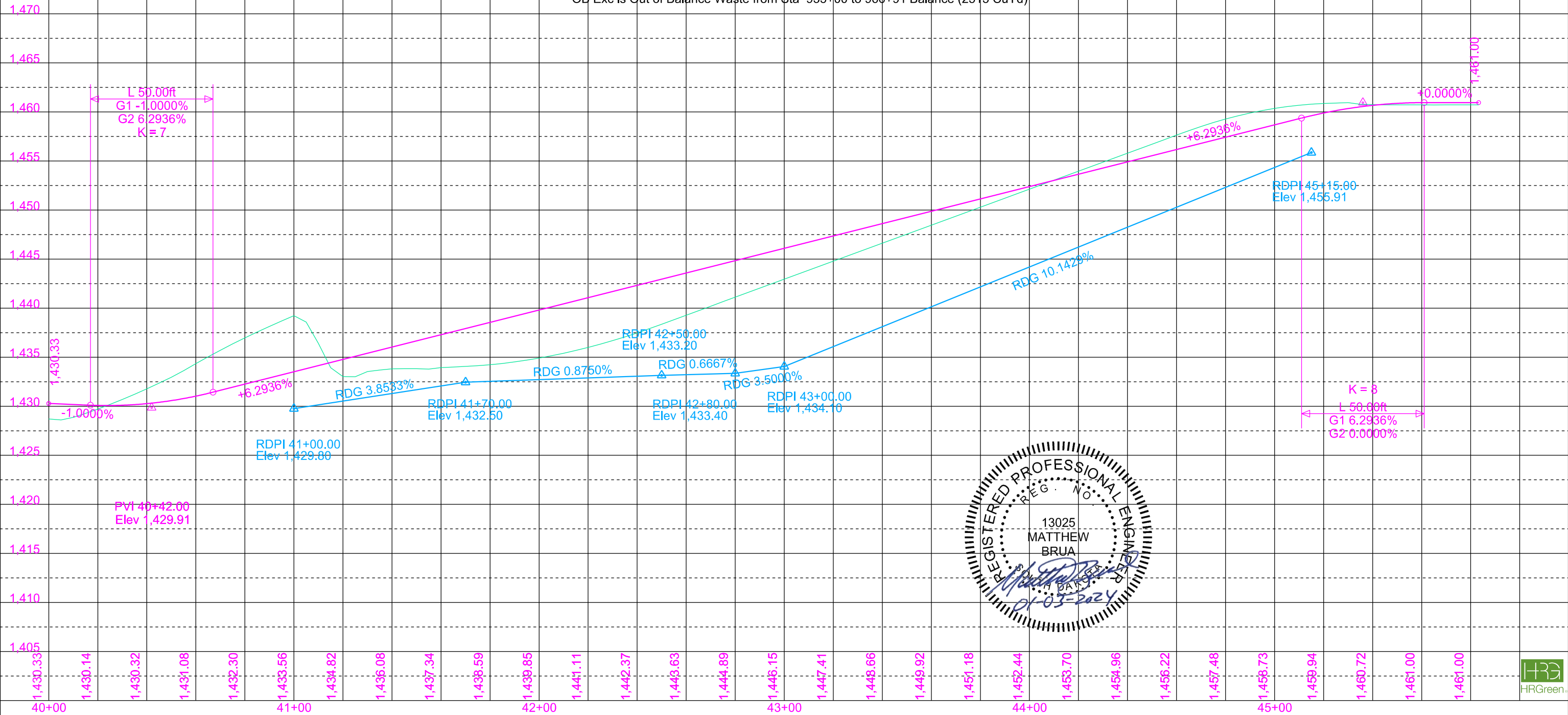
40+00
Begin Grading

45+61
End Grading

Excavation	4106	Embankment	4864
Undercut	987	+30%	1459
OB Exc	2513	Undercut	987
Muck	0	+30%	296
	7606	Waste	0
			7606

Out of Balance Exc Haul = 12,600 CuYdSta
(Assumed OB Exc Haul from 947+00 to 43+00)
OB Exc is Out of Balance Waste from Sta 935+00 to 966+91 Balance (2513 CuYd)

PVI 45+36.00
Elev 1,461.00

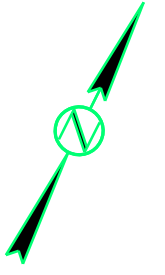


FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B50	B94

Plotting Date: 1/3/2024
 Rev 10/17/2023 MJB

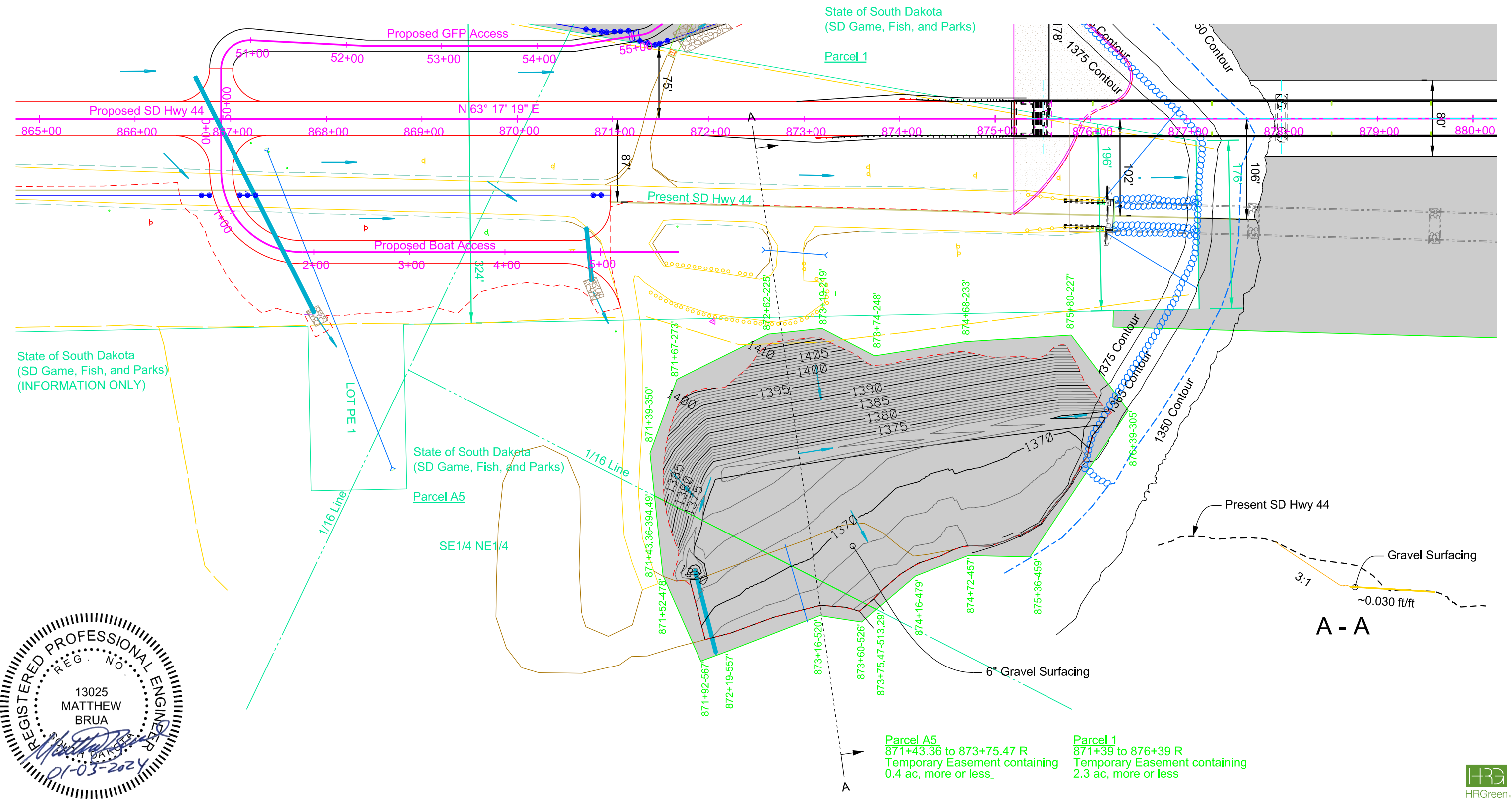
WEST BOAT RAMP



873+00-513' R to 873+04-527' R
 Take Out 24" - 14' CMP
 (Incidental Work, Grading)

871+85-472' R to 872+08-559' R
 Install 24" - 90' CMP

872+80-445' R to 873+00-513' R
 Fill 24" - 72' CMP
 with Controlled Density Fill



State of South Dakota
 (SD Game, Fish, and Parks)
 (INFORMATION ONLY)

State of South Dakota
 (SD Game, Fish, and Parks)



Parcel A5
 871+43.36 to 873+75.47 R
 Temporary Easement containing
 0.4 ac, more or less

Parcel 1
 871+39 to 876+39 R
 Temporary Easement containing
 2.3 ac, more or less



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B51	TOTAL SHEETS B94
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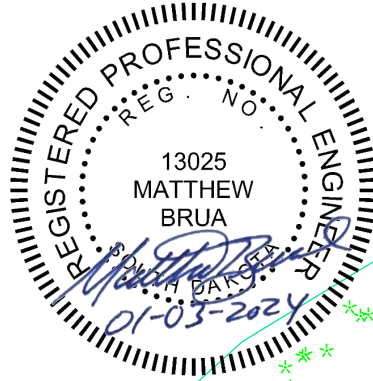
Plotting Date: 1/3/2024

SLIDE REPAIRS

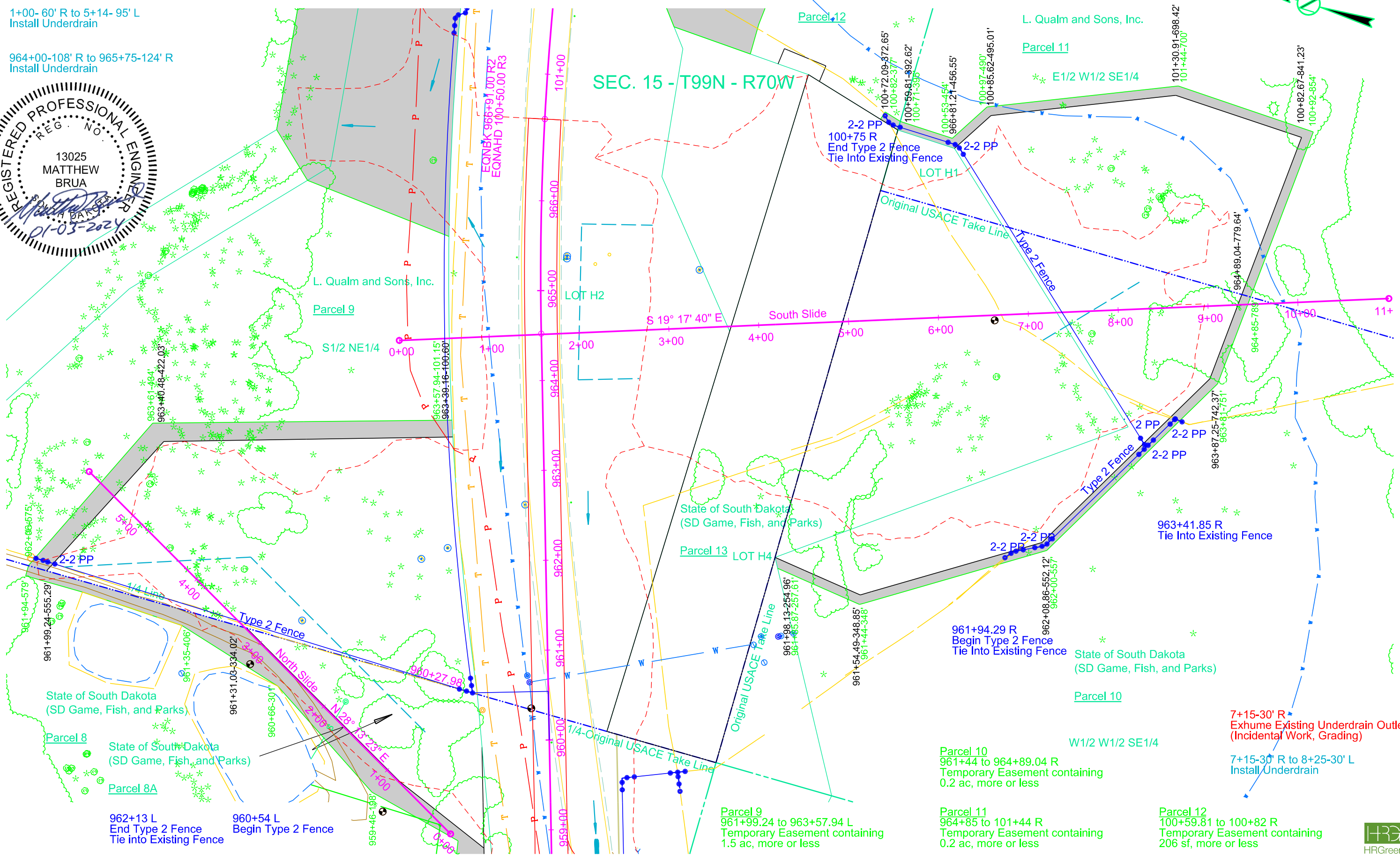
1+87-21' R
Adjust Sanitary Manhole

1+00- 60' R to 5+14- 95' L
Install Underdrain

964+00-108' R to 965+75-124' R
Install Underdrain



SEC. 15 - T99N - R70W



7+15-30' R
Exhume Existing Underdrain Outlet
(Incidental Work, Grading)

7+15-30' R to 8+25-30' L
Install Underdrain

Parcel 10
961+44 to 964+89.04 R
Temporary Easement containing
0.2 ac, more or less

Parcel 11
964+85 to 101+44 R
Temporary Easement containing
0.2 ac, more or less

Parcel 12
100+59.81 to 100+82 R
Temporary Easement containing
206 sf, more or less



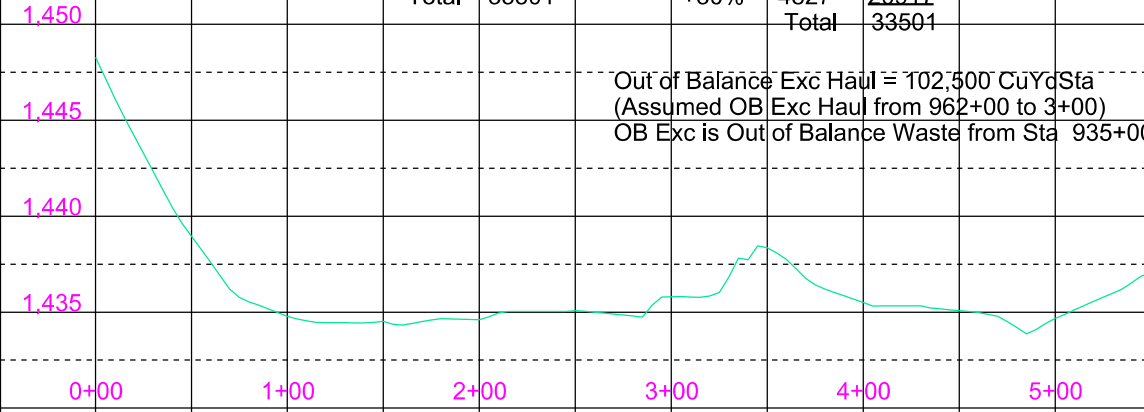
FOR BIDDING PURPOSES ONLY

Plotting Date: 1/3/2024

SLIDE REPAIRS

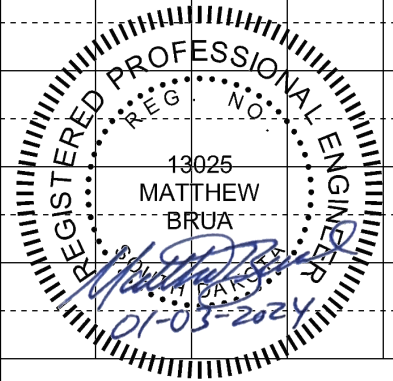
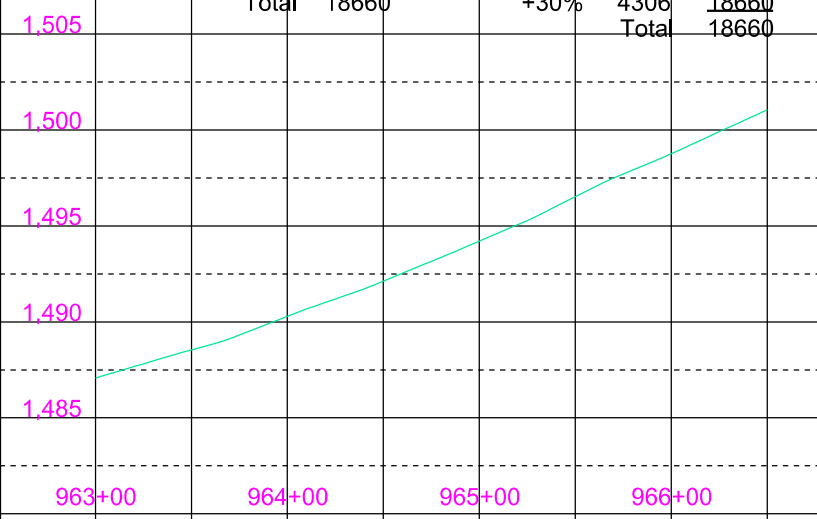
North Slide			
Exc	Emb		
4607	9680		
Debris Exc 16090	+30% 2904	12584	
OB Exc 12804	Debris Exc 16090		
Total 33501	+30% 4827	20917	
	Total 33501		

Out of Balance Exc Haul = 102,500 CuYdSta
 (Assumed OB Exc Haul from 962+00 to 3+00)
 OB Exc is Out of Balance Waste from Sta 935+00 to 966+91 Balance (12804 CuYd)



Mainline Slide			
Exc	Emb		
982	0		
Debris Exc 14354	+30% 0	0	
OB Exc 3324	Debris Exc 14354		
Total 18660	+30% 4306	18660	
	Total 18660		

Out of Balance Exc Haul = 10,000 CuYdSta
 (Assumed OB Exc Haul from 962+00 to 965+00)
 OB Exc is Out of Balance Waste from Sta 935+00 to 966+91 Balance (3324 CuYd)



FOR BIDDING PURPOSES ONLY

Plotting Date: 1/3/2024

SLIDE REPAIRS

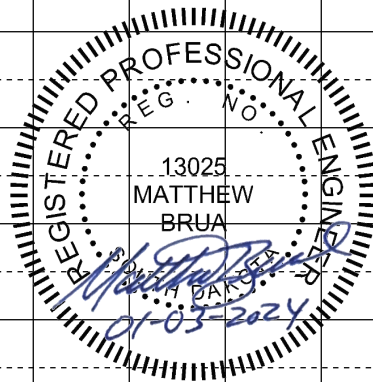
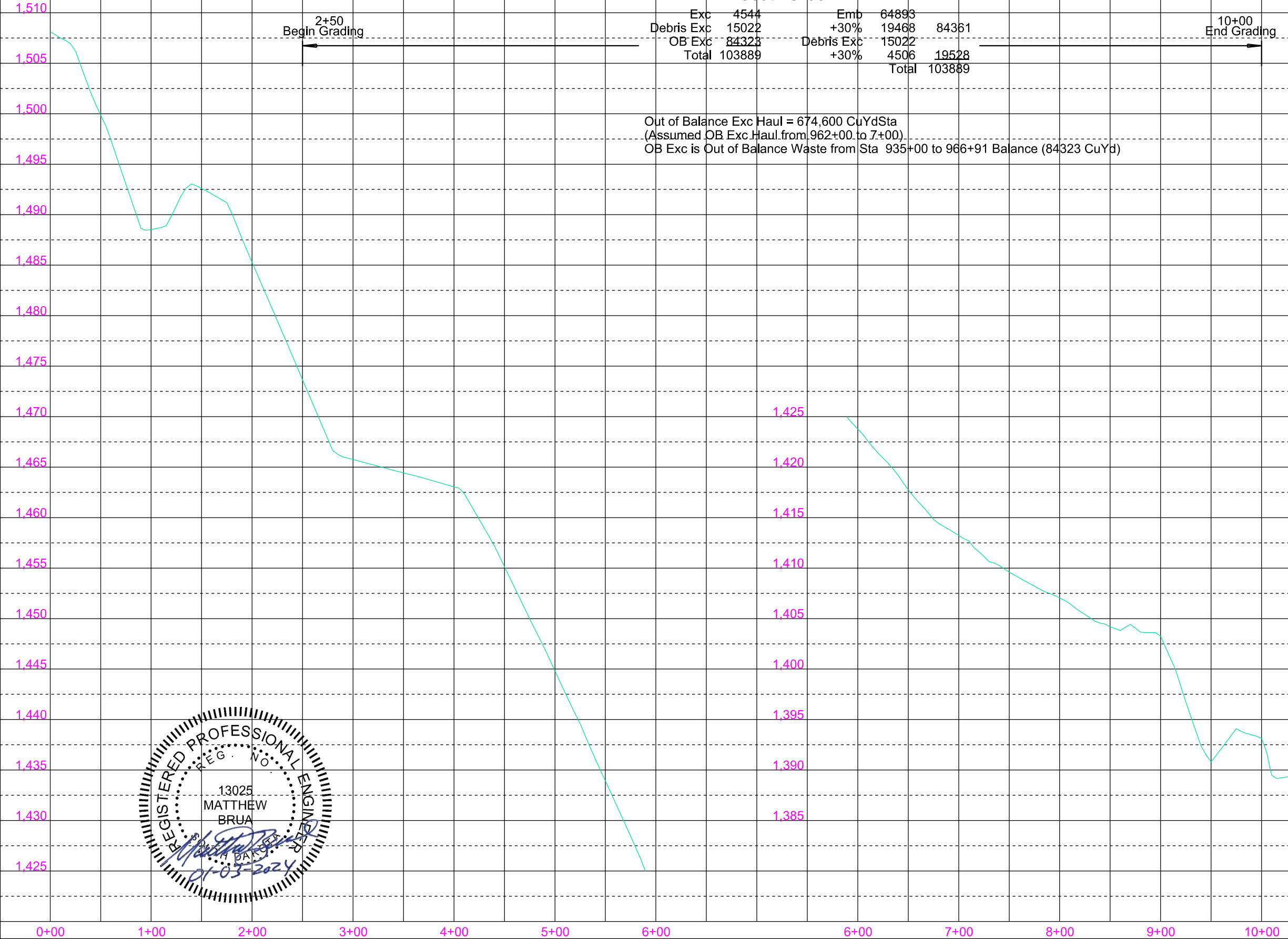
South Slide

2+50
Begin Grading

Exc	4544	Emb	64893	
Debris Exc	15022	+30%	19468	84361
OB Exc	84323	Debris Exc	15022	
Total	103889	+30%	4506	19528
		Total		103889

10+00
End Grading

Out of Balance Exc Haul = 674,600 CuYdSta
 (Assumed OB Exc Haul from 962+00 to 7+00)
 OB Exc is Out of Balance Waste from Sta 935+00 to 966+91 Balance (84323 CuYd)

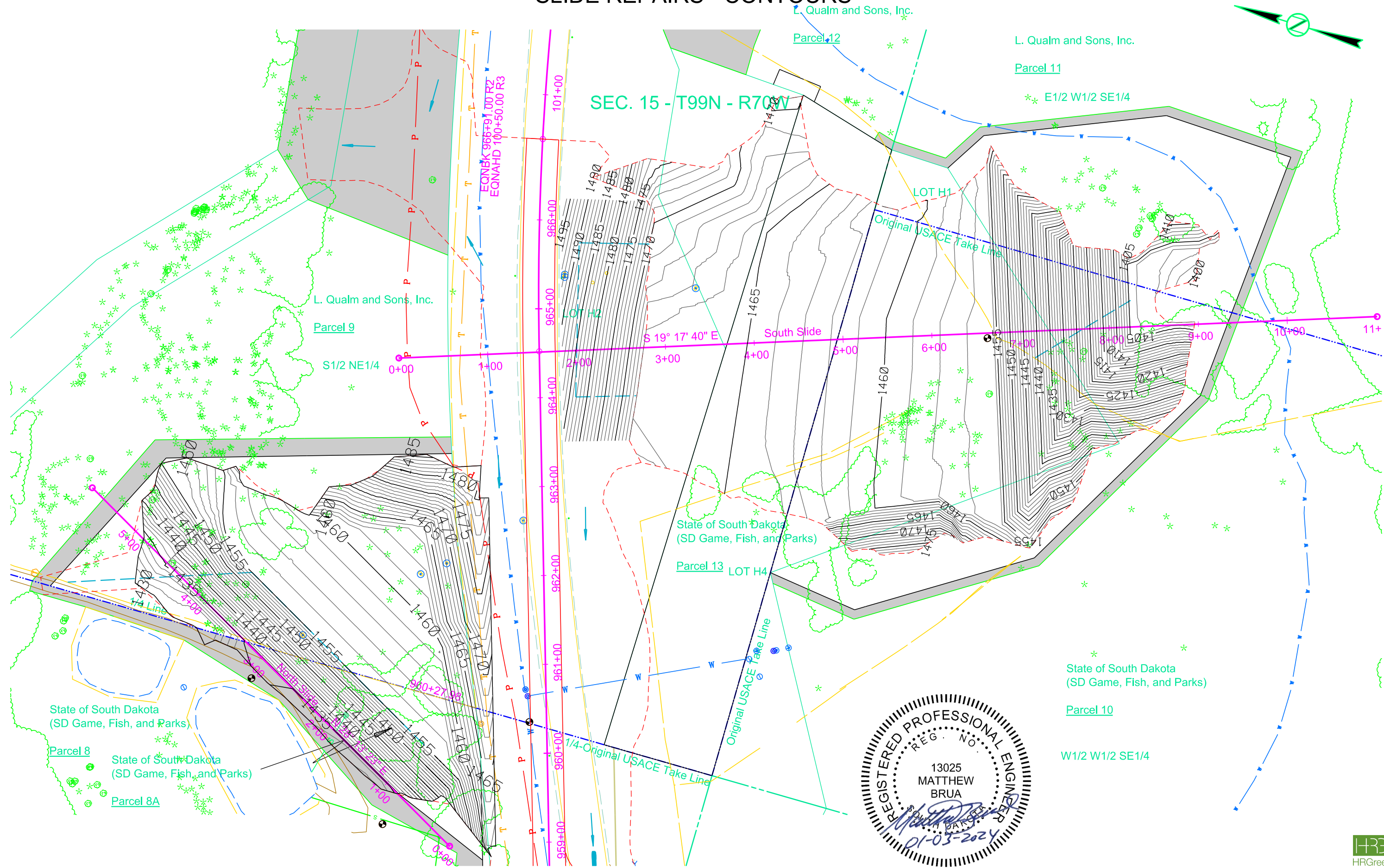
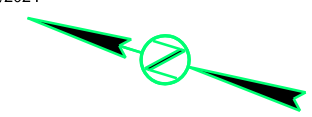


SLIDE REPAIRS - CONTOURS

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B54	B94

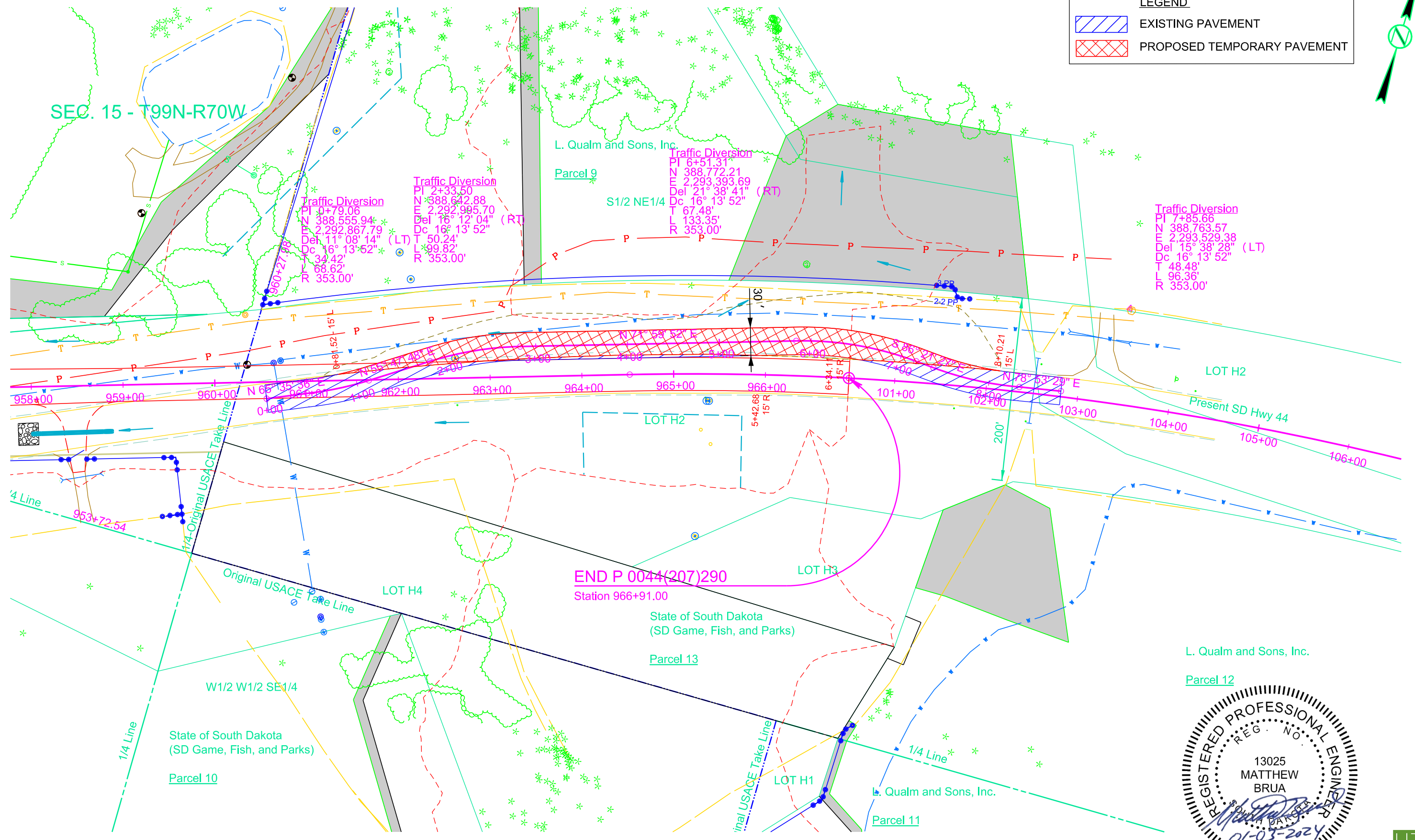
Plotting Date: 1/3/2024



TRAFFIC DIVERSION

LEGEND

- EXISTING PAVEMENT
- PROPOSED TEMPORARY PAVEMENT



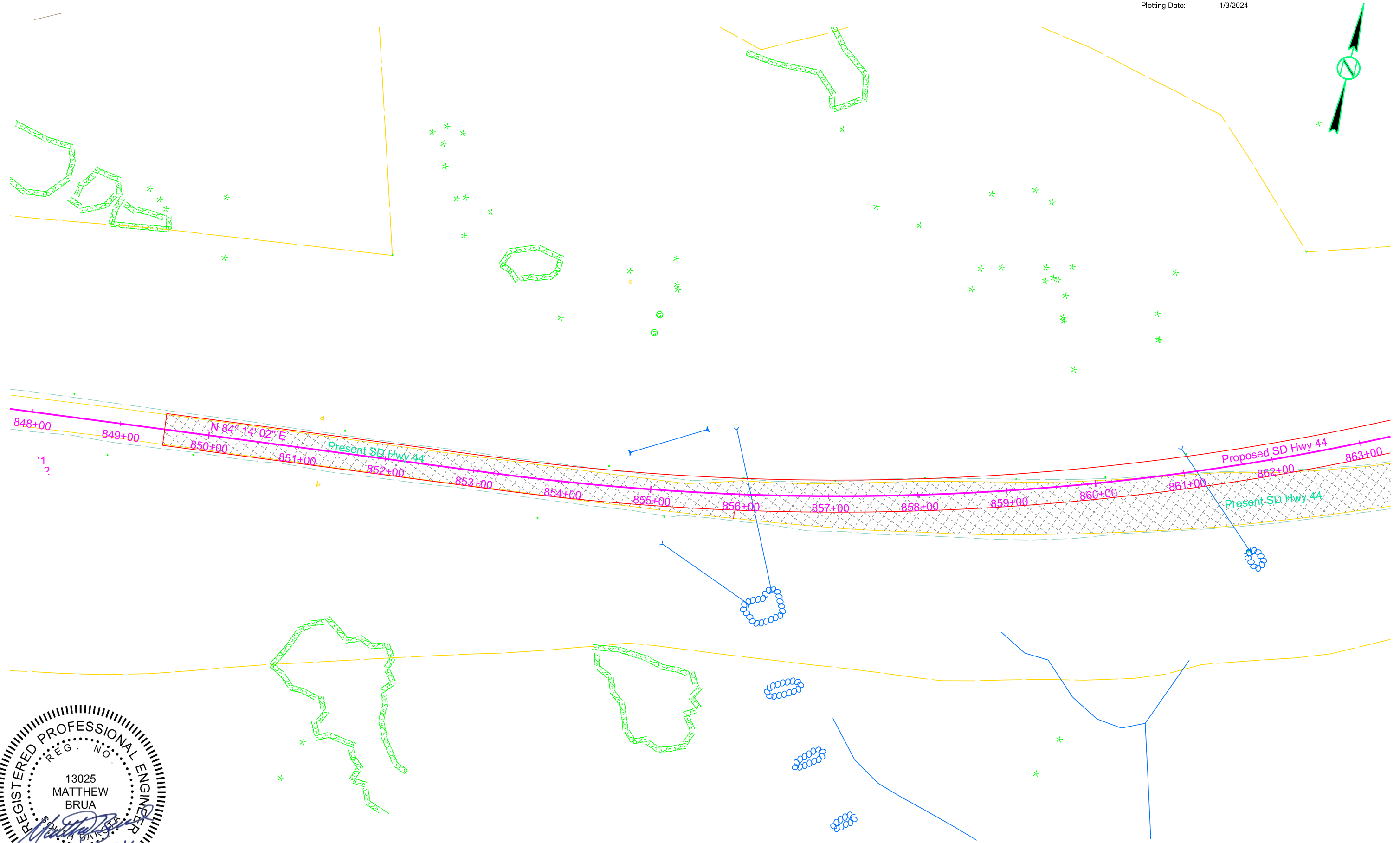
L. Qualm and Sons, Inc.
Parcel 12

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13025
MATTHEW BRUA
STATE OF SOUTH DAKOTA
01-03-2024



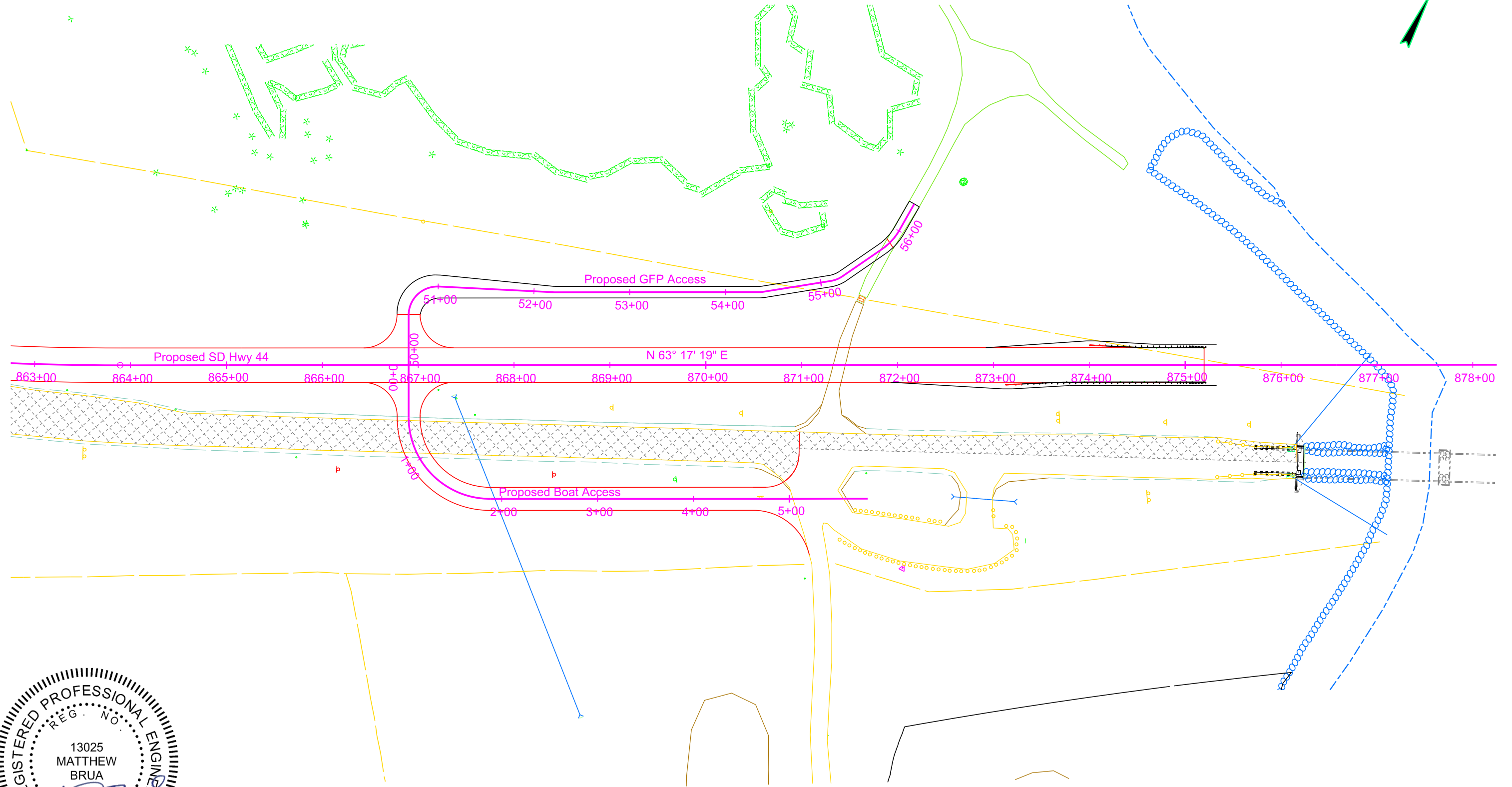
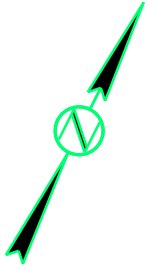
PAVEMENT REMOVAL LAYOUT FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B56	B94
Plotting Date: 1/3/2024			



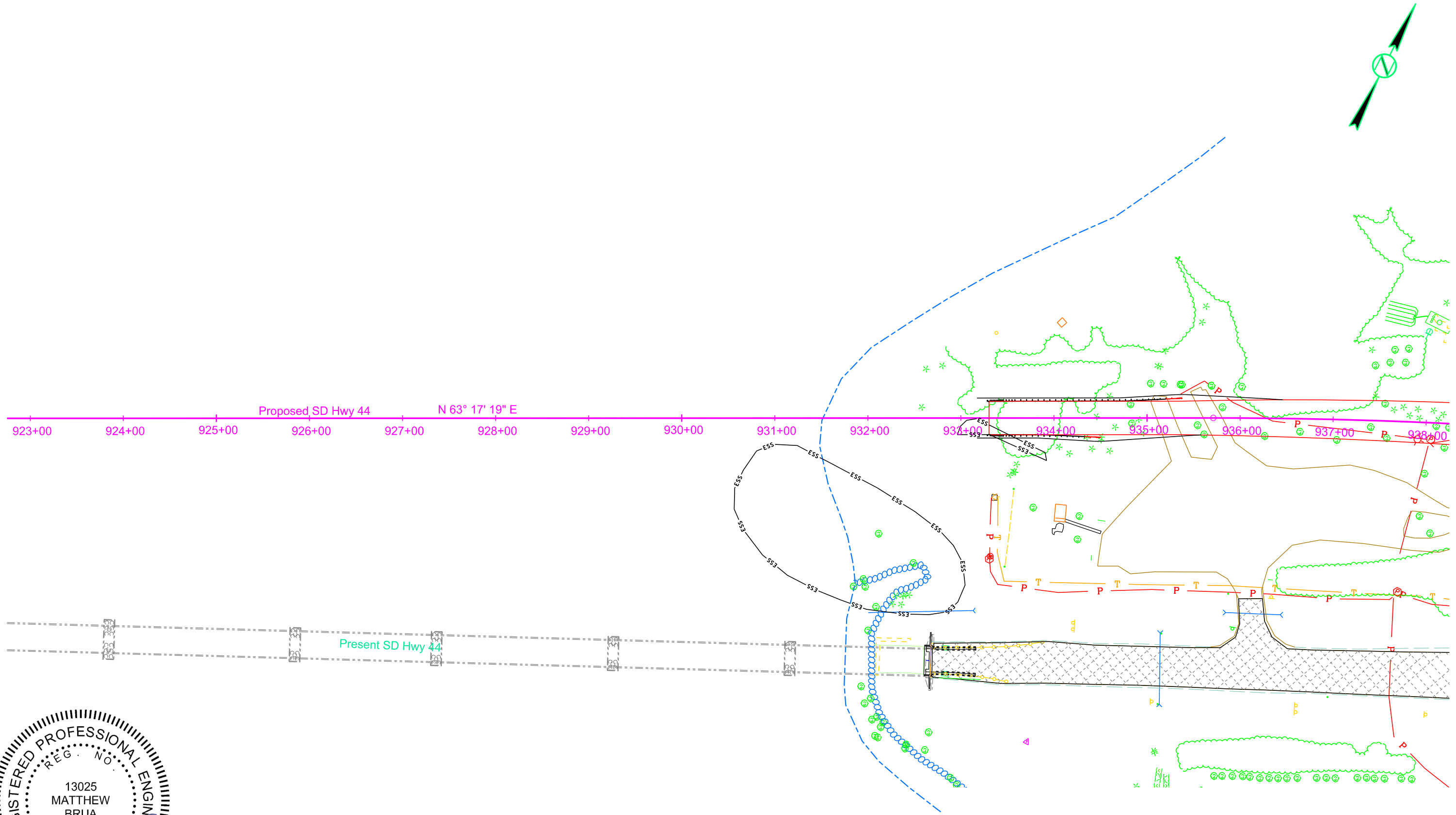
PAVEMENT REMOVAL LAYOUT FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B57	B94
Plotting Date: 1/3/2024			



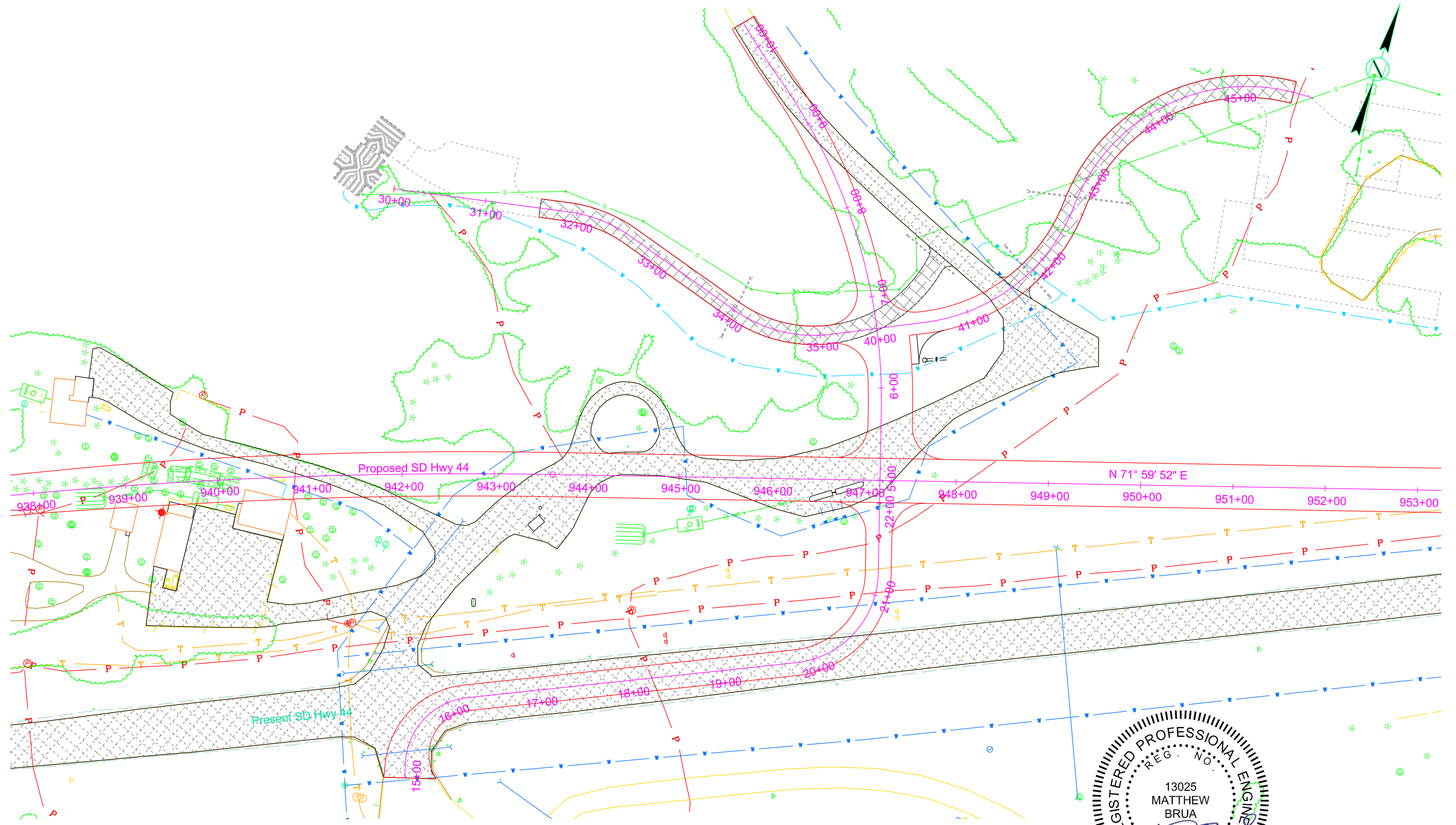
PAVEMENT REMOVAL LAYOUT FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B58	TOTAL SHEETS B94
Plotting Date: 1/3/2024			



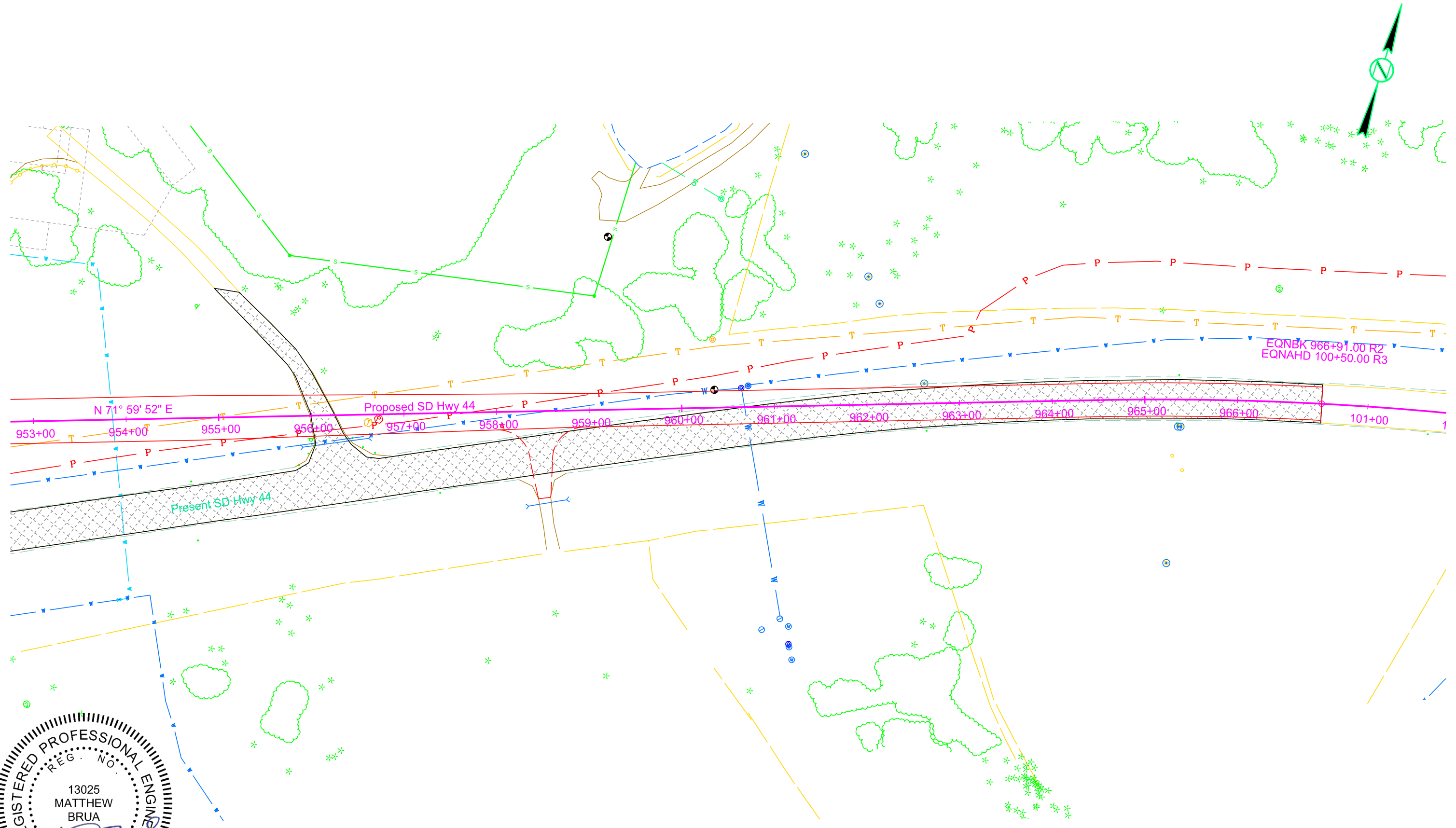
PAVEMENT REMOVAL LAYOUT FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B59	B94
Plotting Date: 1/3/2024			



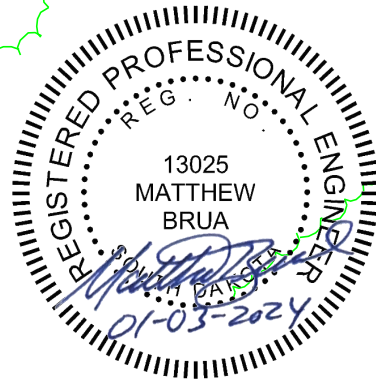
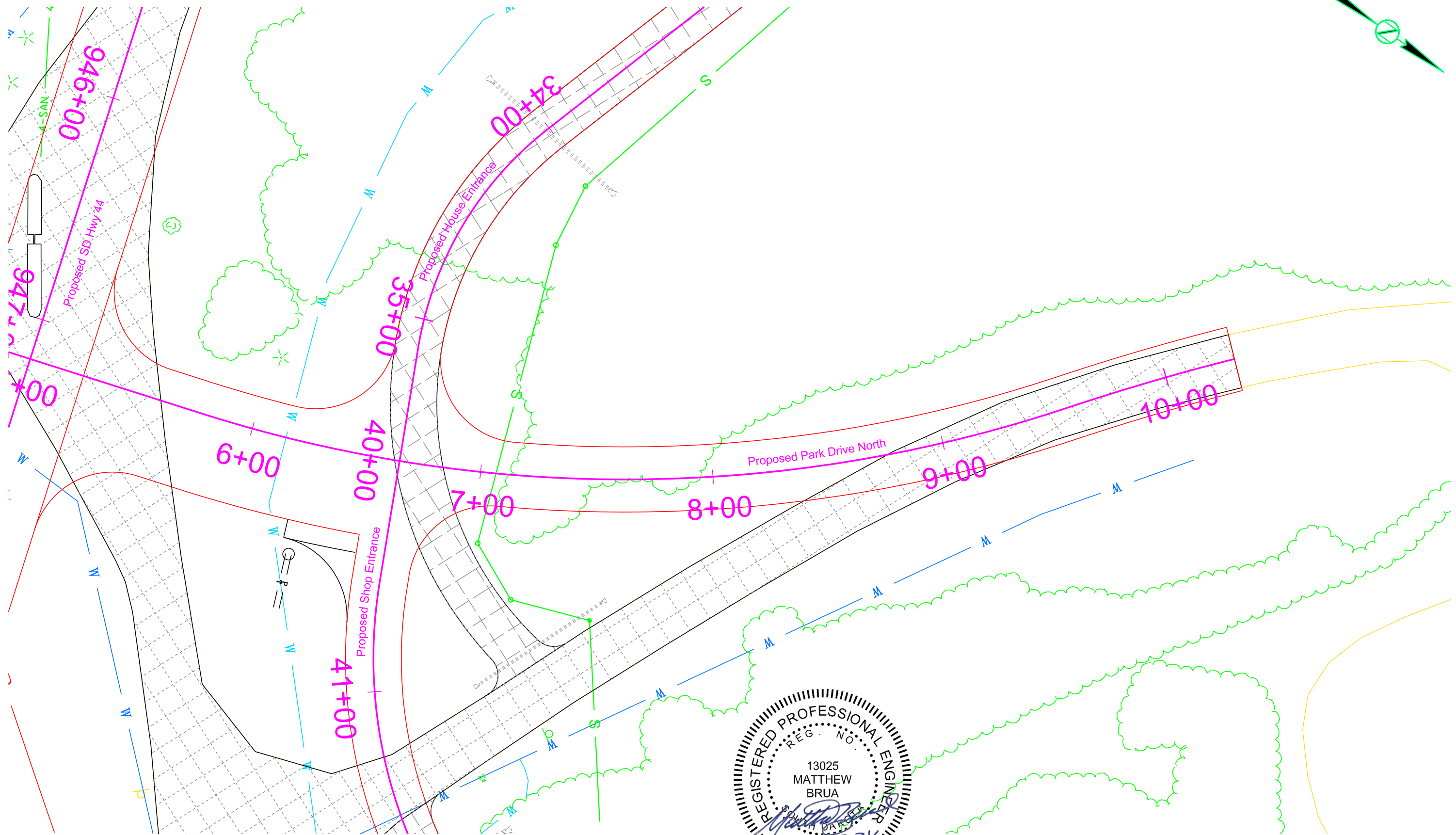
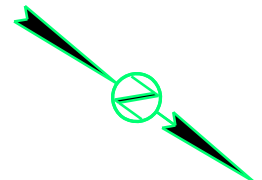
PAVEMENT REMOVAL LAYOUT FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B60	B94
Plotting Date: 1/3/2024			



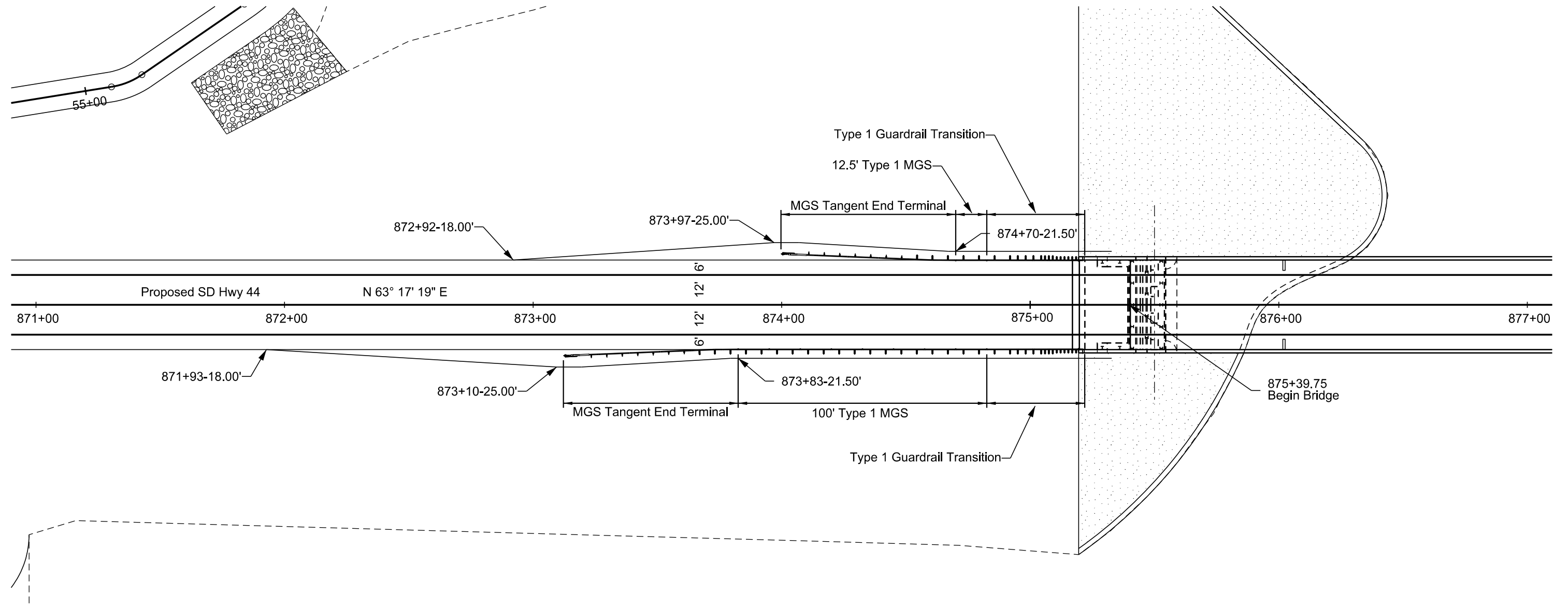
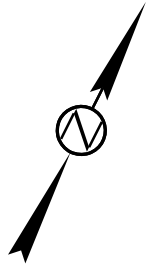
PAVEMENT REMOVAL LAYOUT FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B61	TOTAL SHEETS B94
Plotting Date: 1/3/2024			



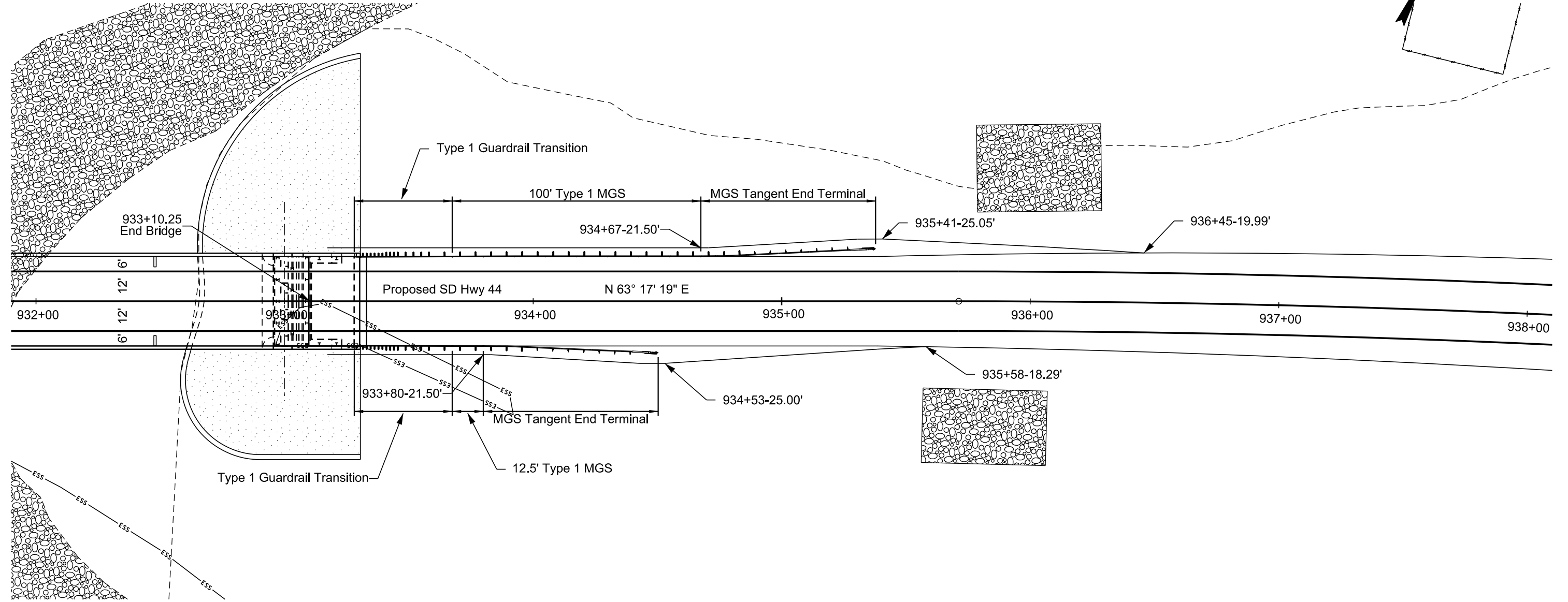
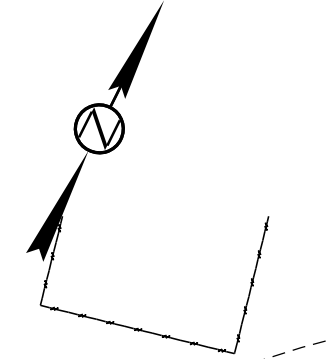
GUARDRAIL LAYOUT FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B62	TOTAL SHEETS B94
Plotting Date: 1/3/2024			



GUARDRAIL LAYOUT FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B63	B94
Plotting Date: 1/3/2024			

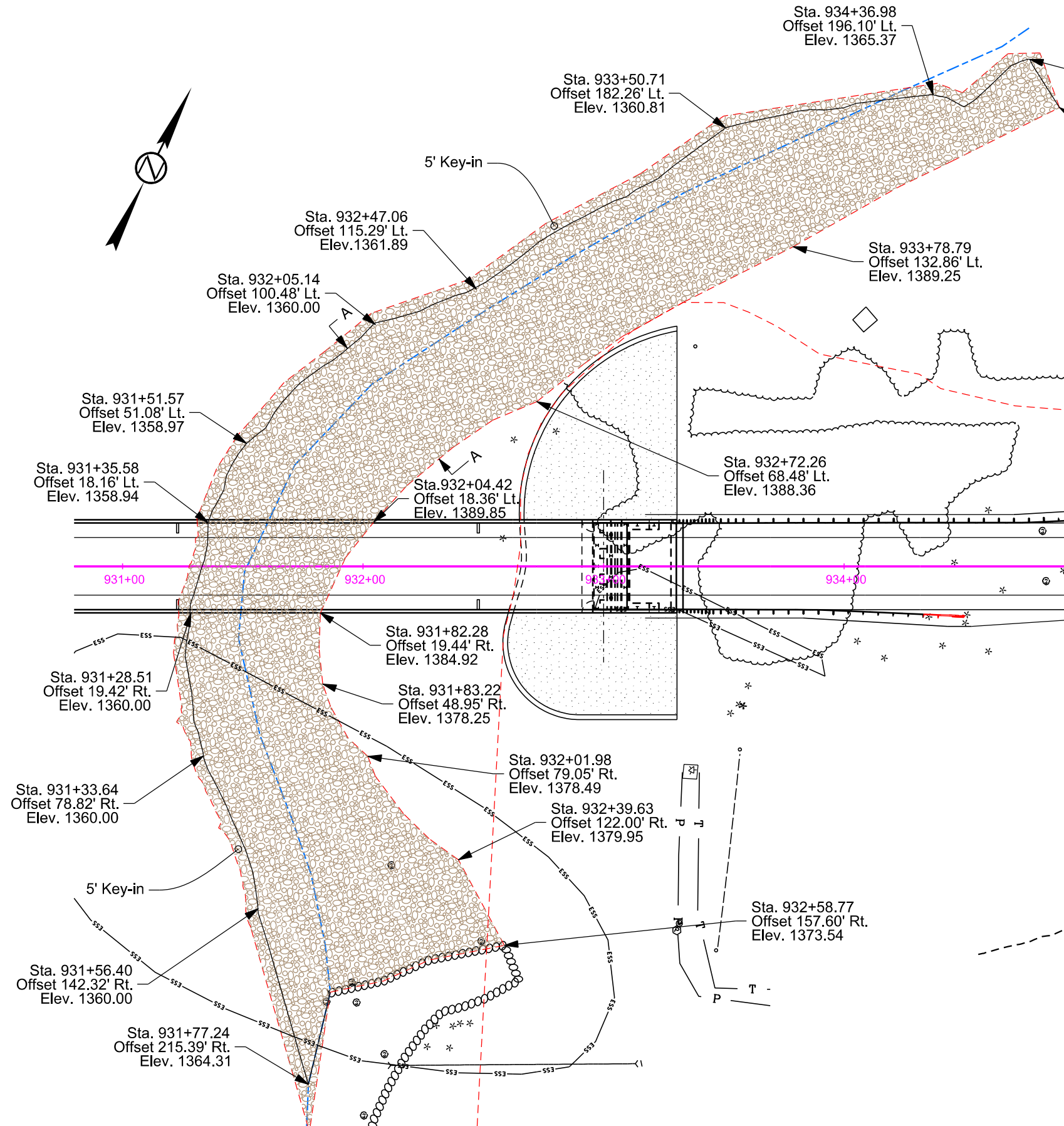


EAST BANK SLOPE RESTORATION

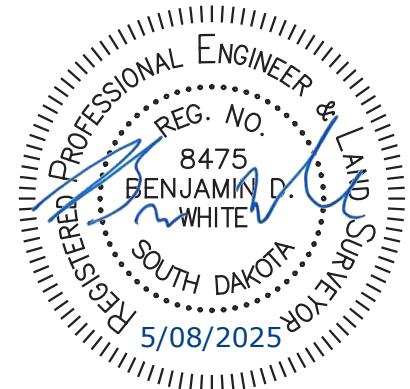
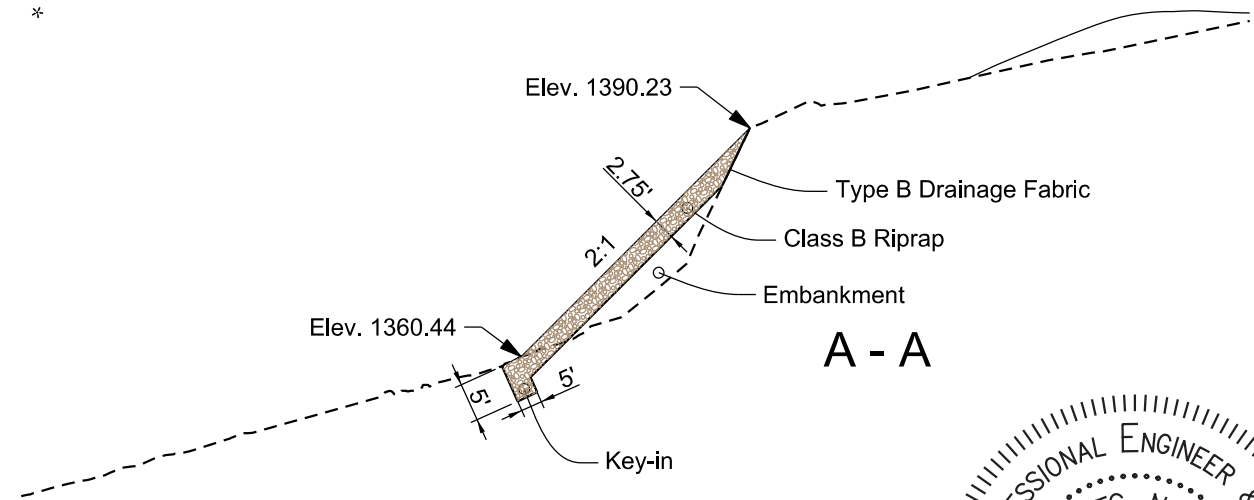
FOR BIDDING PURPOSES ONLY

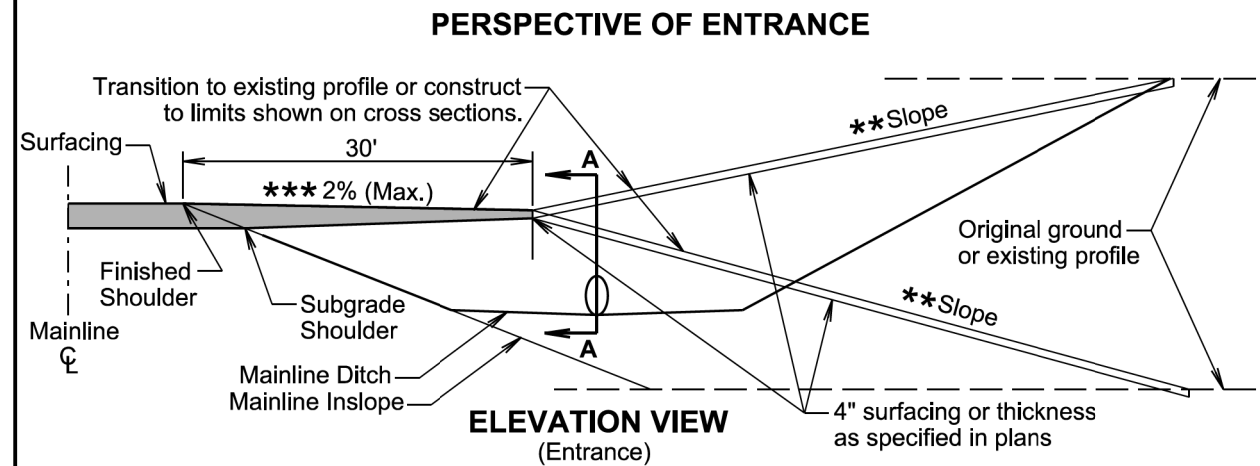
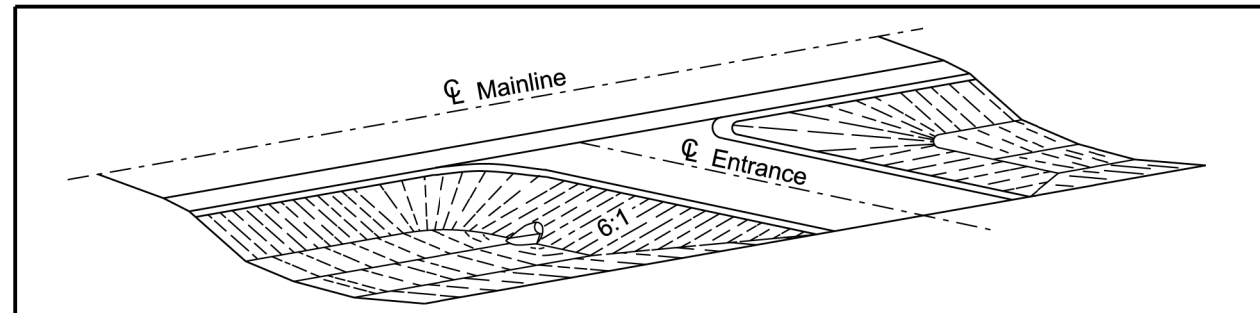
STATE OF SOUTH DAKOTA	PROJECT P 0044(207)290	SHEET B64	TOTAL SHEETS B94
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Plotting Date: 4/28/2025
Rev 05/02/2025 BDW



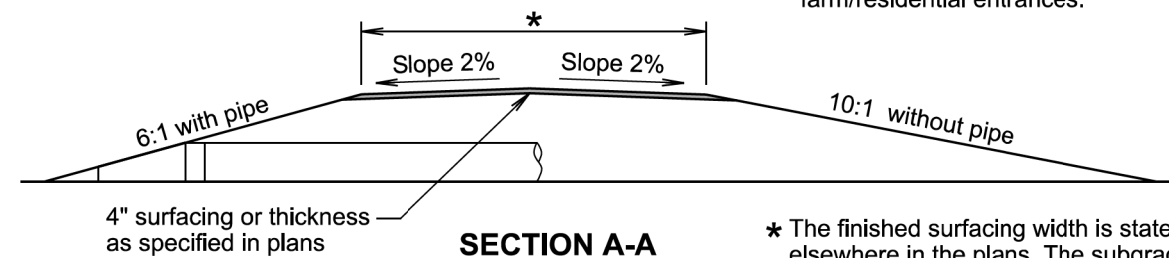
Quantities
Excavation - 720 CY
Embankment - 630 CY
Class B Riprap - 5378.5 Tons
Type B Drainage Fabric - 5132.0 SY





*** 2% When on the inside of superelevation and 0% or flat when on outside of superelevation.

** Entrance maximum slope is typically 10:1 for field entrances and 15:1 for farm/residential entrances.



* The finished surfacing width is stated elsewhere in the plans. The subgrade width is 4' wider than the finished surfacing width unless stated otherwise in the plans.

GENERAL NOTES:

The ditch section shown above in the perspective view is only for illustrative purpose.

The elevation view above is typical for either a ditch cut or fill section. Entrances that vary from above should be specified in the plans.

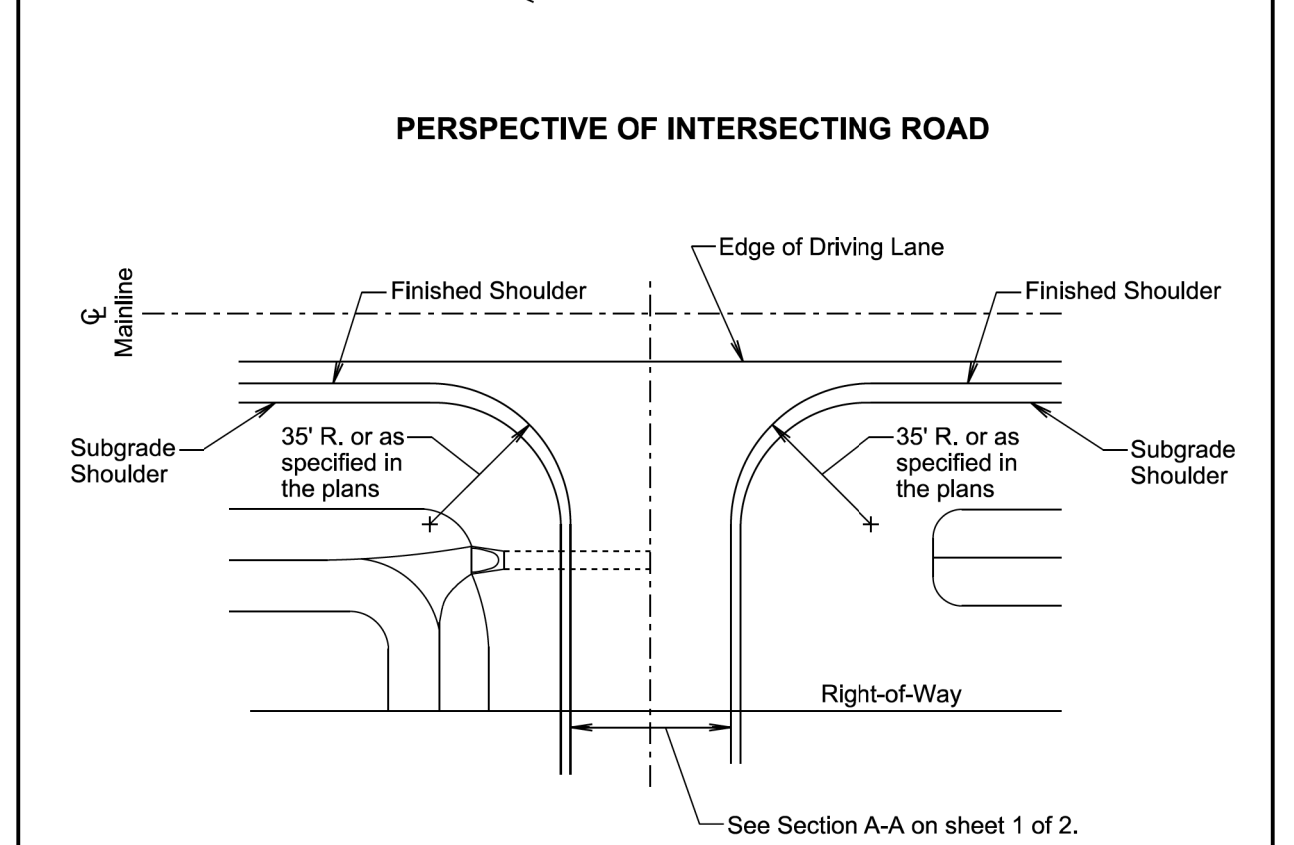
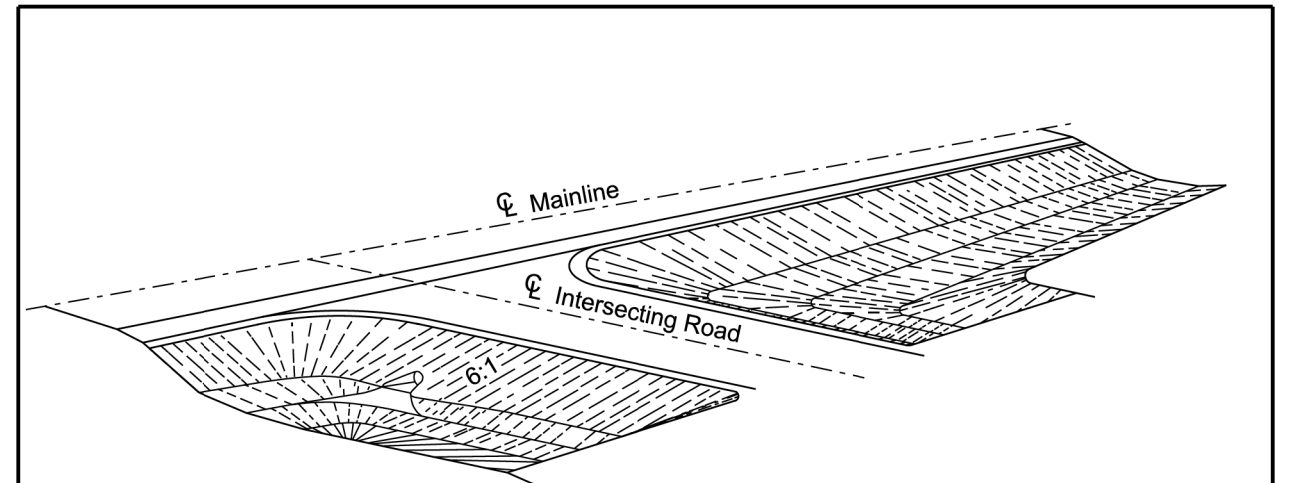
Pipe length will be adjusted if necessary during construction to obtain the 6:1 slope. For grading projects, the pipe length is estimated typically using a 4" thickness of surfacing directly over the subgrade above the pipe.

The transition area between the mainline inslope and the entrance or intersecting road inslope will be rounded to eliminate an abrupt transition.

The turning radii will be 35' for intersecting roads and entrances unless stated otherwise in the plans.

November 19, 2021

Published Date: 2026	S D D O T	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 1 of 2



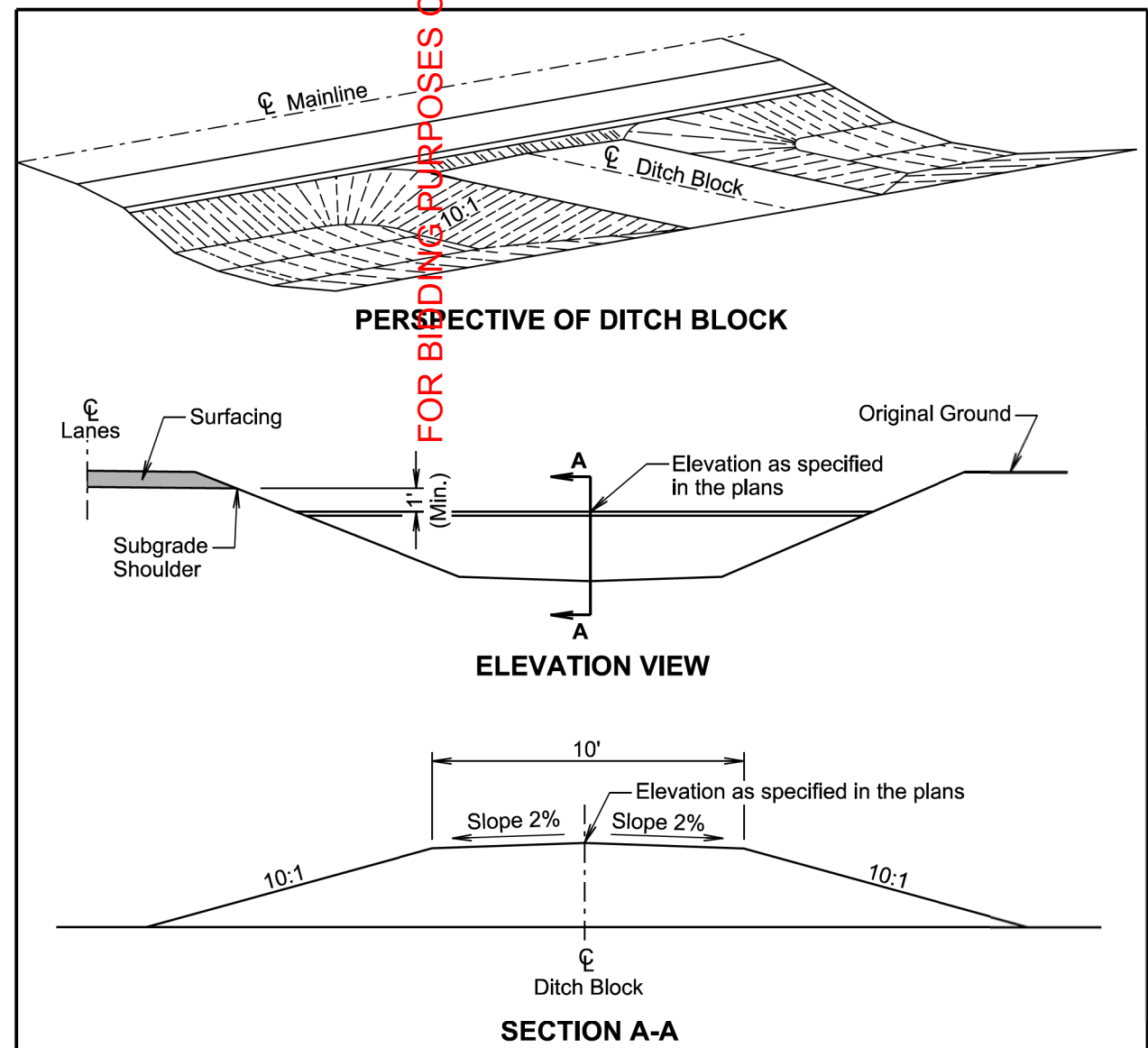
GENERAL NOTES:

The 6:1 or 10:1 intersecting road inslope will transition to the existing intersecting road inslope near the right-of-way or at a location as determined by the Engineer.

November 19, 2021

Published Date: 2026	S D D O T	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 2 of 2

FOR BIDDING PURPOSES ONLY



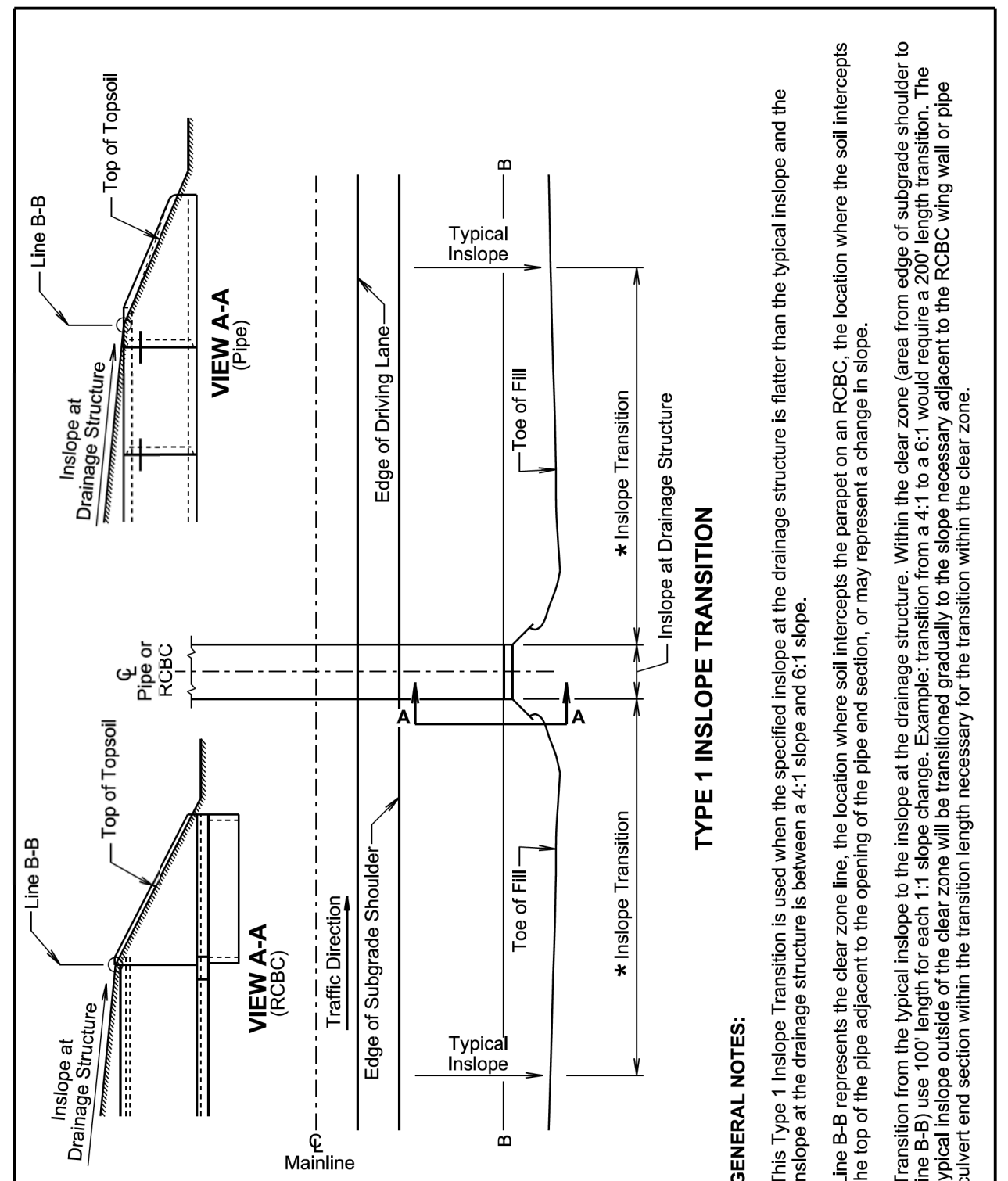
GENERAL NOTES:

- The ditch section shown above in the perspective and elevation view is only for illustrative purpose.
- The inslopes of the ditch block will be 10:1 or as specified in the plans.
- The transition area between the mainline inslope and the ditch block inslope will be rounded to eliminate an abrupt transition.

September 14, 2018

SD DOT	DITCH BLOCK	PLATE NUMBER 120.02
		Sheet 1 of 1

Published Date: 2026



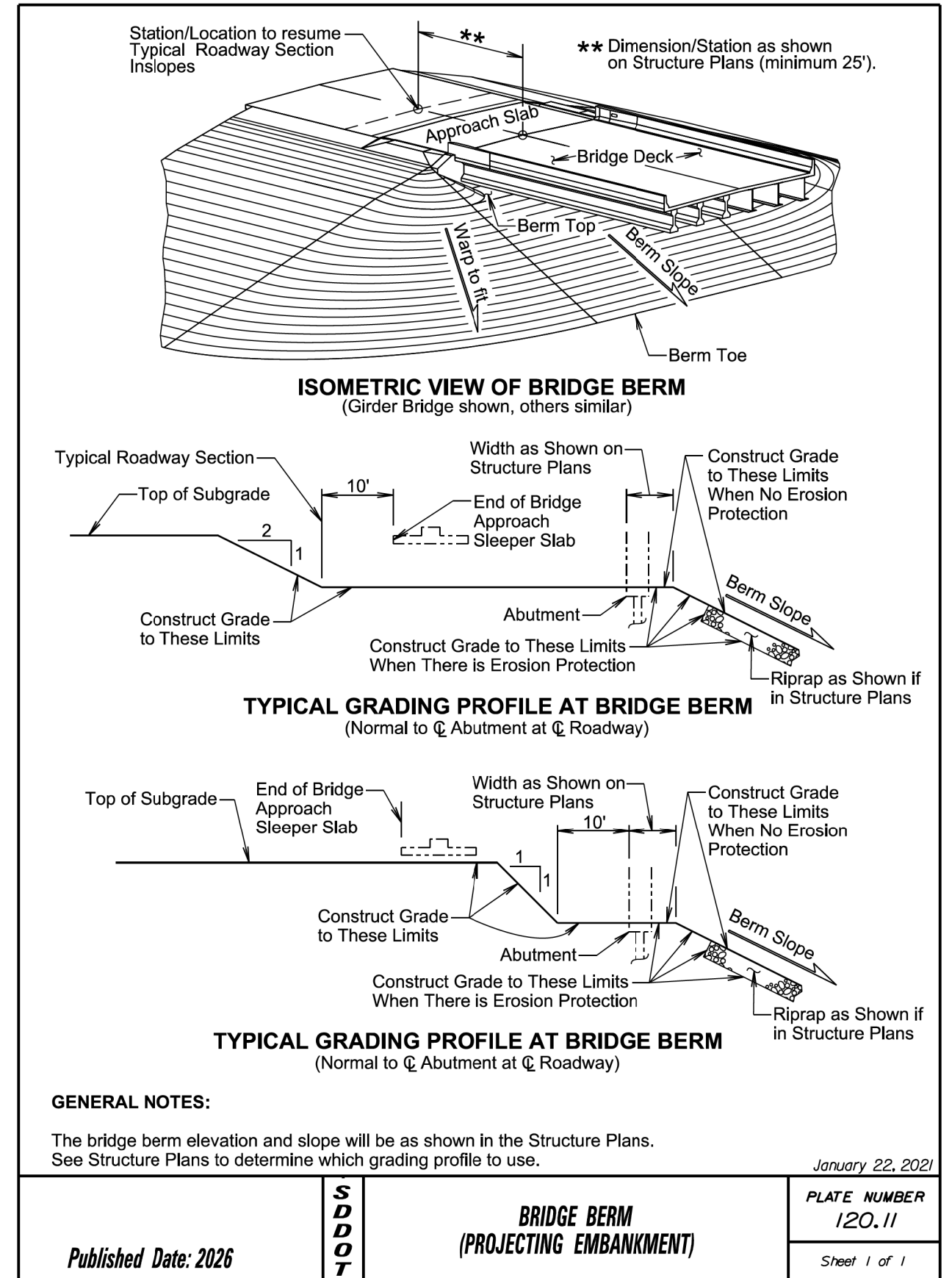
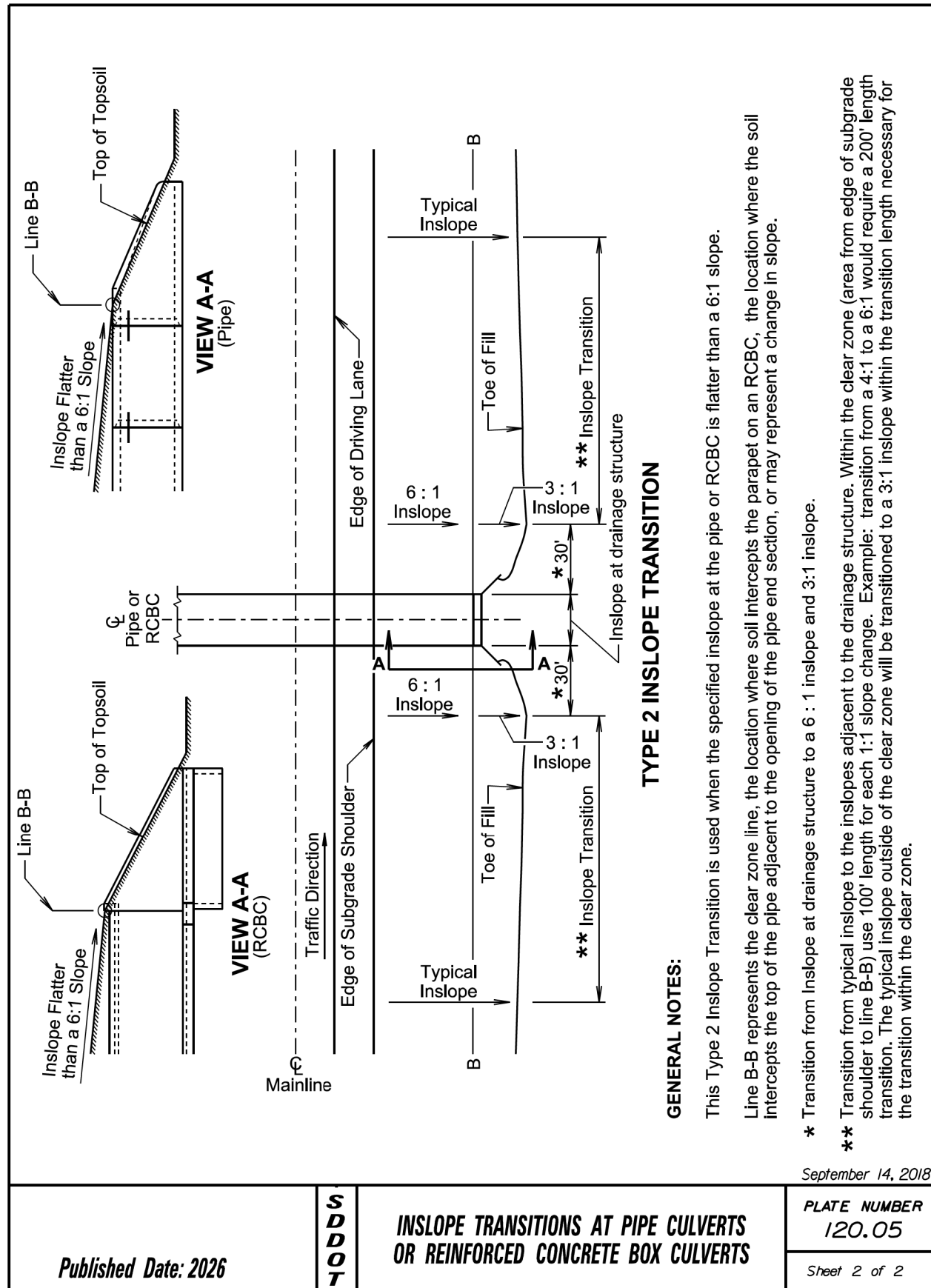
GENERAL NOTES:

- This Type 1 Inslope Transition is used when the specified inslope at the drainage structure is flatter than the typical inslope and the inslope at the drainage structure is between a 4:1 slope and 6:1 slope.
- Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.
- Transition from the typical inslope to the inslope at the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned gradually to the slope necessary adjacent to the RCBC wing wall or pipe culvert end section within the transition length necessary for the transition within the clear zone.

September 14, 2018

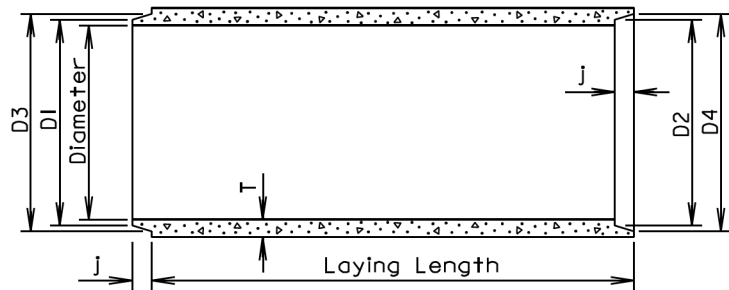
SD DOT	INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS	PLATE NUMBER 120.05
		Sheet 1 of 2

Published Date: 2026

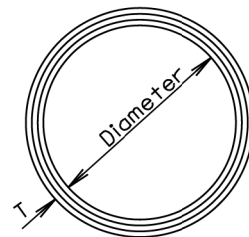


TOLERANCES IN DIMENSIONS

Diameter: $\pm 1.5\%$ for 24" Dia. or less and $\pm 1\%$ or $3/8"$ whichever is more for 27" Dia. or greater.
 Diameters at joints: $\pm 3/16"$ for 30" Dia. or less and $\pm 1/4"$ for 36" or greater.
 Length of joint (J): $\pm 1/4"$.
 Wall thickness (T): not less than design T by more than 5% or $3/16"$, whichever is greater.
 Laying length: shall not underrun by more than $1/2"$.



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

Construction of R.C.P. shall conform to the requirements of Section 990 of the Specifications.

Not more than 2 four-foot sections shall be permitted near the ends of any culvert. Four-foot lengths shall be used only to secure the required length of culvert.

Diam. (in.)	Approx. Wt. / Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 3/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 7/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322	3 1/4	3	29 1/4	29 5/8	30 1/4	30 5/8
30	384	3 1/2	3 1/4	32 3/8	32 3/4	33 1/2	33 7/8
36	524	4	3 3/4	38 3/4	39 1/4	40	40 1/2
42	685	4 1/2	4	45 1/8	45 5/8	46 1/2	47
48	867	5	4 1/2	51 1/2	52	53	53 1/2
54	1070	5 1/2	4 1/2	57 7/8	58 3/8	59 3/8	59 7/8
60	1296	6	5	64 1/4	64 3/4	66	66 1/2
66	1542	6 1/2	5 1/2	70 5/8	71 1/8	72 1/2	73
72	1810	7	6	77	77 1/2	79	79 1/2
78	2098	7 1/2	6 1/2	83 3/8	83 3/8	85 5/8	86 1/8
84	2410	8	7	89 3/4	90 1/4	92 1/8	92 5/8
90	2740	8 1/2	7	95 3/4	96 1/4	98 1/8	98 5/8
96	2950	9	7	102 1/8	102 5/8	104 1/2	105
102	3075	9 1/2	7 1/2	109	109 1/2	111 1/2	112
108	3870	10	7 1/2	115 1/2	116	118	118 1/2

June 26, 2015

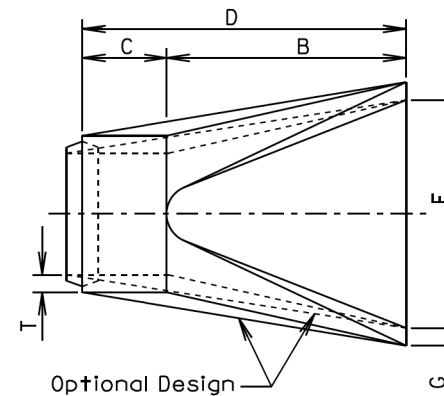
S
D
D
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T

REINFORCED CONCRETE PIPE

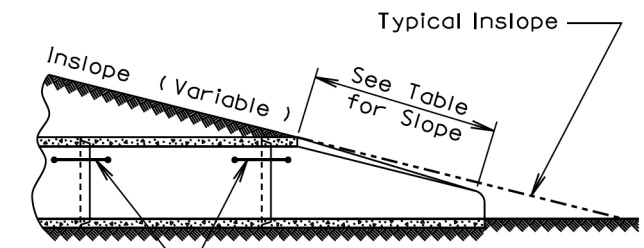
PLATE NUMBER
450.01

Sheet 1 of 1

Published Date: 2026



TOP VIEW

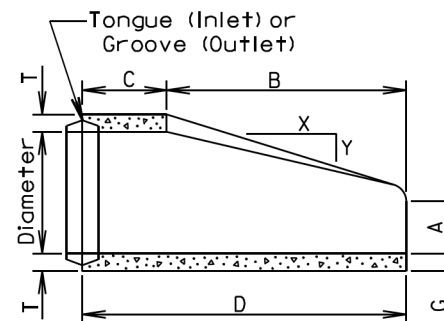


SLOPE DETAIL

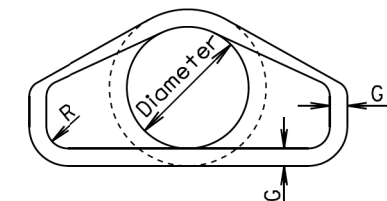
GENERAL NOTES:

Lengths of concrete pipe shown on plan sheets are between flared ends only.

Construction of R.C.P. Flared End shall conform to the requirements of Section 990 of the Specifications.



LONGITUDINAL SECTION



END VIEW

Dia. (in.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4:1	2	4	24	48 7/8	72 7/8	24	2	1 1/2
15	740	2.4:1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3:1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4:1	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	1 1/2
24	1520	2.5:1	3	9 1/2	43 1/2	30	73 1/2	48	3	1 1/2
27	1930	2.5:1	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	1 1/2
30	2190	2.5:1	3 1/2	12	54	19 3/4	73 3/4	60	3 1/2	1 1/2
36	4100	2.5:1	4	15	63	34 3/4	97 3/4	72	4	1 1/2
42	5380	2.5:1	4 1/2	21	63	35	98	78	4 1/2	1 1/2
48	6550	2.5:1	5	24	72	26	98	84	5	1 1/2
54	8240	2:1	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	1 1/2
60	8730	1.9:1	6	35	60	39	99	96	5	1 1/2
66	10710	1.7:1	6 1/2	30	72	27	99	102	5 1/2	1 1/2
72	12520	1.8:1	7	36	78	21	99	108	6	1 1/2
78	14770	1.8:1	7 1/2	36	90	21	111	114	6 1/2	1 1/2
84	18160	1.6:1	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2
90	20900	1.5:1	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	6

June 26, 2015

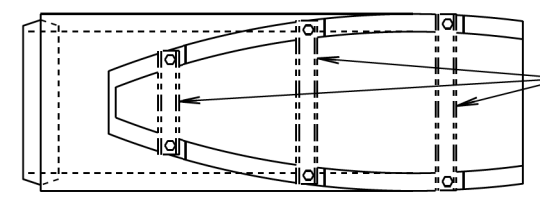
S
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R. C. P. FLARED ENDS

PLATE NUMBER
450.10

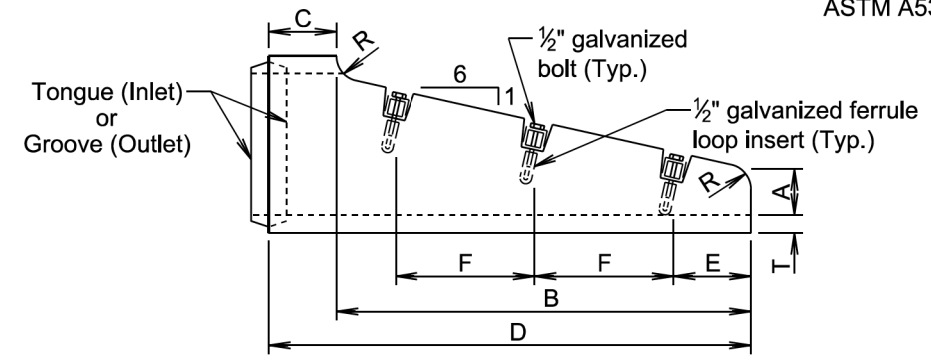
Sheet 1 of 1

Published Date: 2026

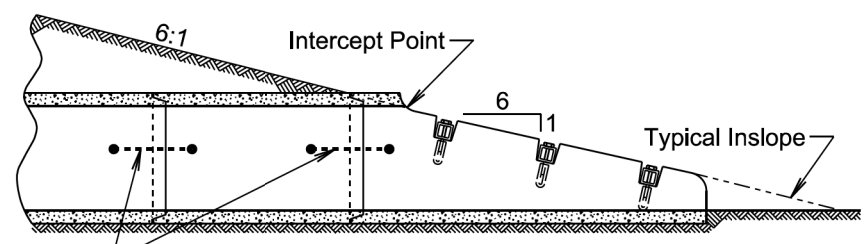


TOP VIEW

If bars are specified in the plans then provide HSS 2.5x2.5x.1875 Structural Steel Tubing in conformance with ASTM A500, Grade B or C or 3" Diameter Schedule 40 Pipe in conformance with ASTM A53, Grade B.



SIDE VIEW



ELEVATION VIEW

R. C. P. SAFETY ENDS											
Dia. (in.)	T (in.)	R (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	No. Sections	No. Bars	
FOR CIRCULAR PIPE											
15	2 1/4	3	6	48	9	57	6	18	1	3	
18	2 1/2	3	6	69	9	78	9	24	1	3	
* 24	3	3	6	111	9	120	6	24	1 or 2	5	
FOR ARCH PIPE											
** 18	2 1/2	1	6	39	33	72	6	24	1	2	

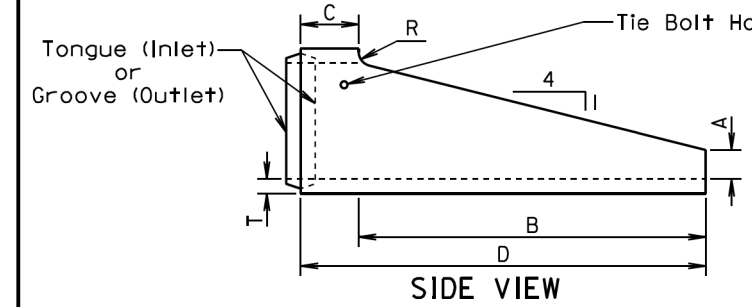
* The use of 2 sections must be an approved design.
** Equivalent Diameter of Circular R.C.P.

GENERAL NOTES:

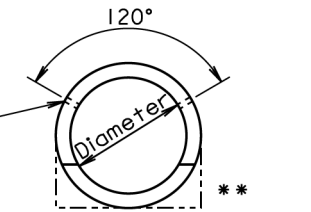
- The length of concrete pipe shown on the plans is between safety ends.
- Safety ends without bars are acceptable with or without the bar notches.
- Bars will be galvanized after fabrication in accordance with ASTM A123.

April 8, 2025

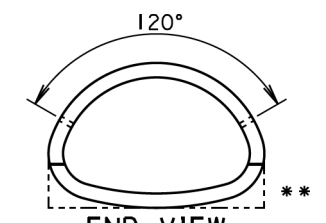
Published Date: 2026	S D D O T	R.C.P. SAFETY ENDS WITH OR WITHOUT BARS	PLATE NUMBER 450.12
		Sheet 1 of 1	



SIDE VIEW



END VIEW "CIRCULAR"

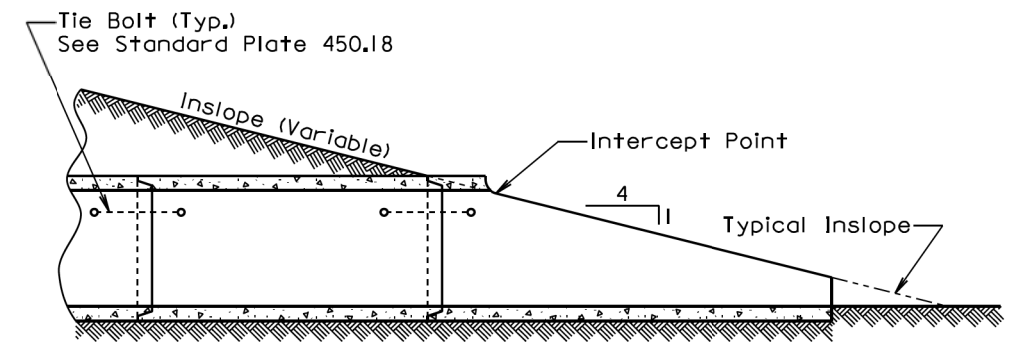


END VIEW "ARCH"

Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	R (in.)
FOR CIRCULAR PIPE						
24	3	6	72	12	84	3
30	3 1/2	7 1/2	90	12	102	3 1/2
FOR ARCH PIPE						
* 24	3	6	48	12	60	3
* 30	3 1/2	7 1/2	60	12	72	3 1/2
* 36	4 1/2	8 5/8	66	30	96	0
* 42	4 1/2	10	77 1/4	18 3/4	96	0

* Equivalent Diameter of Circular R.C.P.
** Acceptable Flat Bottom Alternate.

ALTERNATE						
Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	R (in.)
FOR CIRCULAR PIPE						
24	3	9	72	12	84	0
30	3 1/2	11	90	12	102	0
FOR ARCH PIPE						
* 24	3	9	48	12	60	0
* 30	3 1/2	11	60	12	72	0



SECTION (Along Centerline of Pipe)

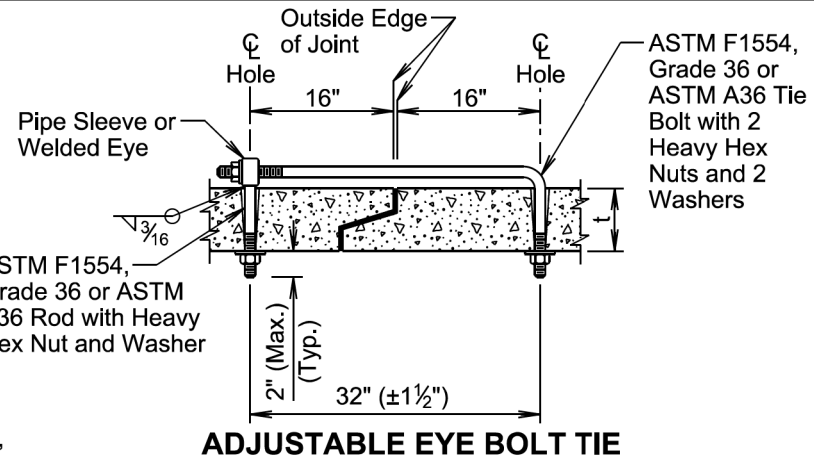
GENERAL NOTE:

The length of concrete pipe shown in the construction plans is between sloped ends.

September 22, 2006

Published Date: 2026	S D D O T	R. C. P. SLOPED ENDS	PLATE NUMBER 450.13
		Sheet 1 of 1	

Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3¼	5/8	¾
3½-6½	¾	1
≥ 7	1	1¼



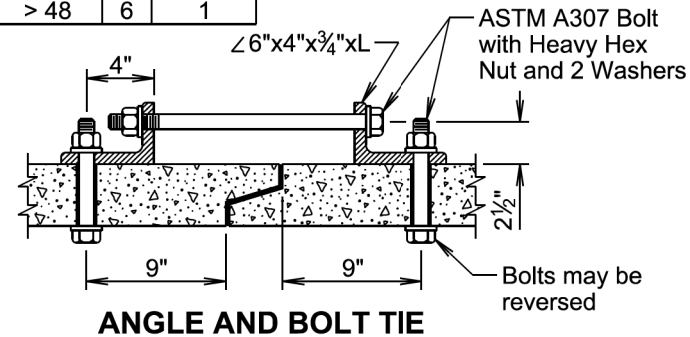
GENERAL NOTES:

Tie bolts will conform to ASTM F1554, Grade 36 or ASTM A36. Nuts will be heavy hex conforming to ASTM A563. Washers will conform to ASTM F436.

Pipe Sleeve will conform to ASTM A53, Grade B or ASTM A500, Grade B or C.

Galvanize adjustable eye bolt tie assembly in accordance with ASTM A153.

Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	¾
> 48	6	1



GENERAL NOTES:

Angles will conform to ASTM A36.

Bolts will conform to ASTM A307. Nuts will be heavy hex conforming to ASTM A563. Washers will conform to ASTM F436.

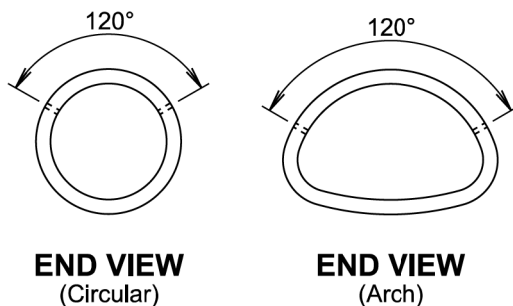
Galvanize angles, bolts, nuts, and washers in accordance with ASTM A153.

GENERAL NOTES:

In lieu of the tie bolts detailed above other types of tie bolt connections may be installed as approved by the Office of Bridge Design.

All pipe sections of R.C.P. and R.C.P. Arch will be tied with tie bolts except for pipe located between drop inlets, manholes, and junction boxes. All pipe sections of pipes that only enter or exit drop inlets, manholes, and junction boxes will be tied with tie bolts.

There will be no separate measurement or payment for the tie bolts. The cost for furnishing and installing the tie bolts will be incidental to the contract unit price per foot for the corresponding bid item for R.C.P. or R.C.P. Arch.



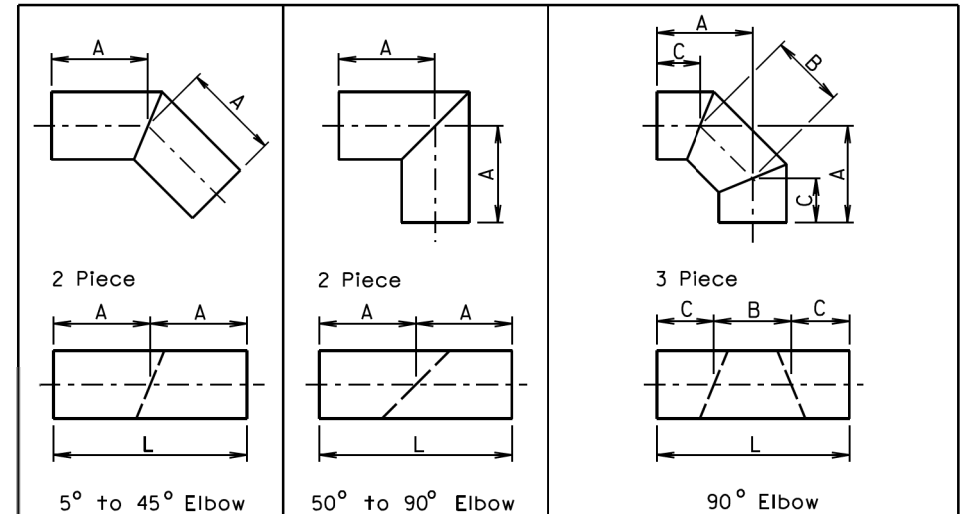
END VIEW (Circular)

END VIEW (Arch)

April 8, 2025

June 26, 2001

Published Date: 2026	S D D O T	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	PLATE NUMBER 450.18
			Sheet 1 of 1



Diameter	A		L		Diameter	A		L		Diameter	A	B	C	L
	Inches	Feet	Feet	Feet		Inches	Feet	Feet	Inches		Inches	Feet		
12	1	2	12	2	4	12	25½	11	18½	4				
15	1	2	15	2	4	15	26½	12	18	4				
18	1	2	18	2	4	18	27	14	17	4				
21	2	4	21	2	4	21	27	15	16½	4				
24	2	4	24	2	4	24	27½	16	16	4				
27	2	4	27	2	4	27	27½	17	15½	4				
30	2	4	30	3	6	30	40	19	26½	6				
33	2	4	33	3	6	33	40	20	26	6				
36	2	4	36	3	6	36	40½	21	25½	6				
42	2	4	42	3	6	42	41	23	24½	6				
48	2	4	48	4	8	48	53½	26	35	8				
54	3	6	54	4	8	54	54	28	34	8				
60	3	6	60	4	8	60	54½	31	32½	8				
66	3	6	66	4	8	66	54	33	31½	8				
72	3	6	72	5	10	72	67½	36	42	10				
78	3	6	78	5	10	78	68	39	40½	10				
84	3	6	84	5	10	84	68½	41	39½	10				
90	3	6	90	6	12	90	70	46	37	10				
96	3	6	96	6	12	96	82	46	49	12				

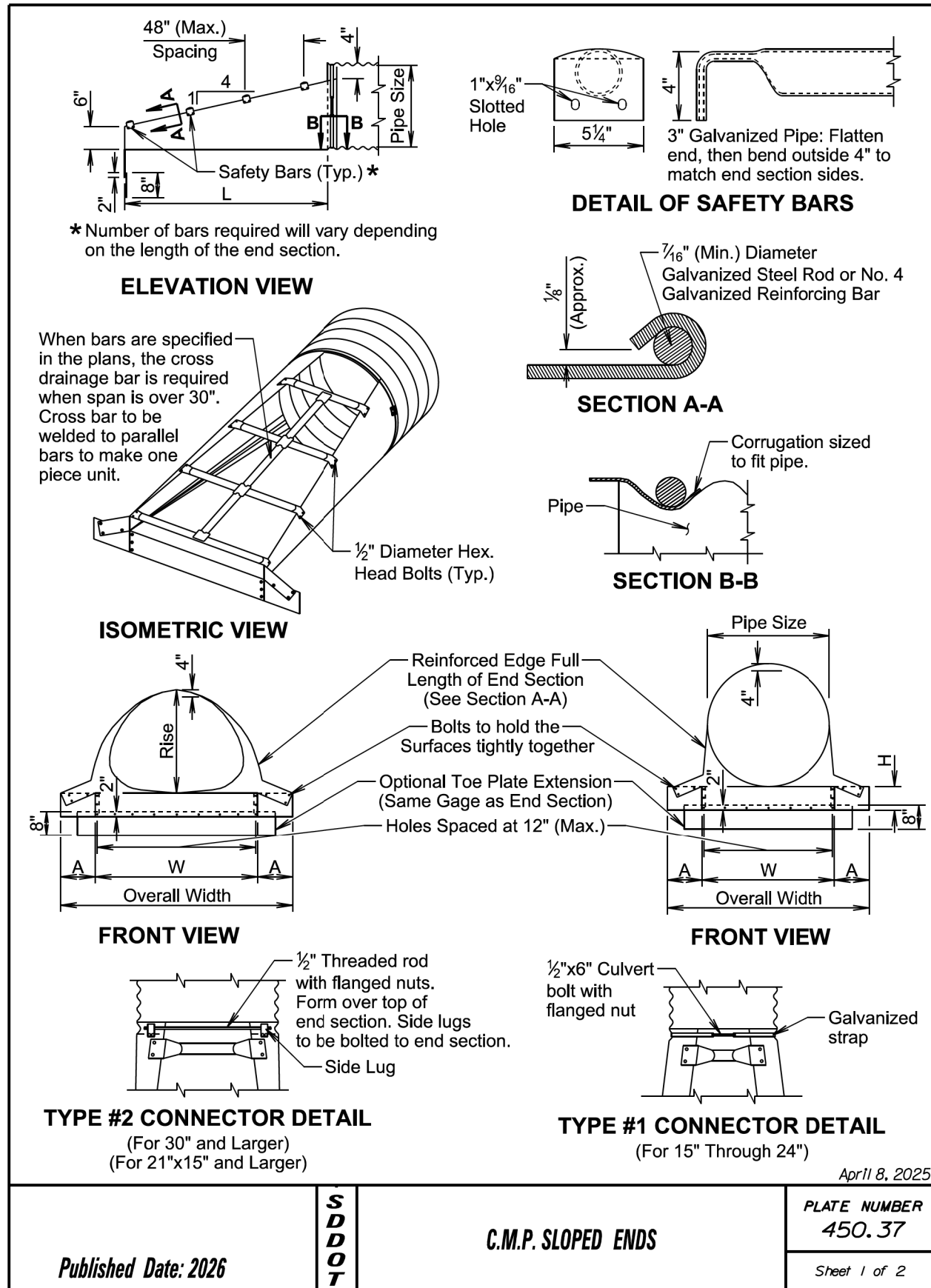
FABRICATED ELBOW LENGTHS FOR ALL CORRUGATIONS

GENERAL NOTES:

All dimensions shown are nominal.

L = Linear Feet of C.M.P. required to fabricate fitting.

Published Date: 2026	S D D O T	C.M.P. FABRICATED LENGTHS FOR ELBOWS	PLATE NUMBER 450.32
			Sheet 1 of 1



ARCH C.M.P. SLOPED ENDS

Equiv. Dia. (Inch)	(Inches)		(Min.) Thick. Inch	Dimensions (Inches)			L Dimensions			
	Span	Rise		Gage	A	H	W	Overall Width	Slope	Length (Inch)
18	21	15	.064	16	8	6	27	43	4:1	20
21	24	18	.064	16	8	6	30	46	4:1	32
24	28	20	.064	16	8	6	34	50	4:1	40
30	35	24	.079	14	12	9	41	65	4:1	56
36	42	29	.109	12	12	9	48	72	4:1	76
42	49	33	.109	12	16	12	55	87	4:1	92
48	57	38	.109	12	16	12	63	95	4:1	112
54	64	43	.109	12	16	12	70	102	4:1	132
60	71	47	.109	12	16	12	77	109	4:1	148
72	83	57	.109	12	16	12	89	121	4:1	188

CIRCULAR C.M.P. SLOPED ENDS

Pipe Dia. (Inch)	(Min.) Thick. Inch		Dimensions (Inches)			L Dimensions		
	Inch	Gage	A	H	W	Overall Width	Slope	Length (Inch)
15	.064	16	8	6	21	37	4:1	20
18	.064	16	8	6	24	40	4:1	32
21	.064	16	8	6	27	43	4:1	44
24	.064	16	8	6	30	46	4:1	56
30	.109	12	12	9	36	60	4:1	80
36	.109	12	12	9	42	66	4:1	104
42	.109	12	16	12	48	80	4:1	128
48	.109	12	16	12	54	86	4:1	152
54	.109	12	16	12	60	92	4:1	176
60	.109	12	16	12	66	98	4:1	200

GENERAL NOTES:

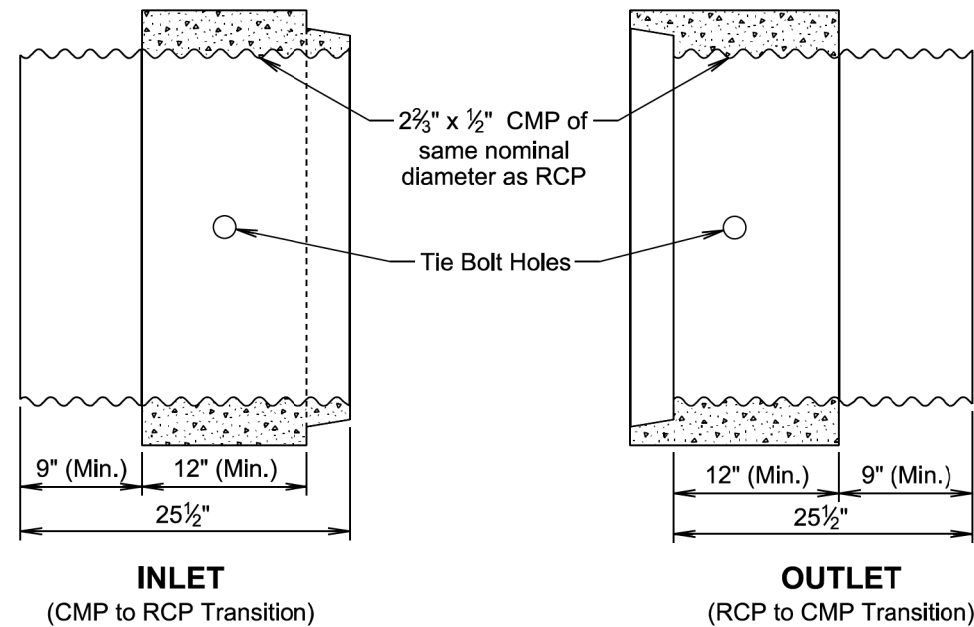
- Safety bars will be provided when specified in the plans.
- Sloped ends will be fabricated from galvanized steel and will conform to the requirements of the Specifications.
- Safety bars will be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5x.216 in conformance with ASTM A500, grade B or C.
- Slotted holes for safety bar attachment will be provided for all end sections.
- Attachment to circular pipes 15" through 24" diameter will be made with Type #1 straps. All other sizes will be attached with Type #2 rods and lugs.
- When stated in the plans, optional toe plate extension will be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension will be same gage as end section. Dimensions will be overall width less 6" by 8" high.
- Installation will be performed in accordance with the Specifications.
- Cost of all work and materials required for fabrication and installation of sloped ends will be incidental to the bid items for the various sizes of sloped ends.

April 8, 2025

Published Date: 2026	S D D O T	C.M.P. SLOPED ENDS	PLATE NUMBER 450.37
			Sheet 1 of 2

Published Date: 2026	S D D O T	C.M.P. SLOPED ENDS	PLATE NUMBER 450.37
			Sheet 2 of 2





GENERAL NOTE:

Arch pipe transitions will be fabricated similar to the round transition shown above.

All pipe transitions will be precast as shown. Alternate designs other than shown will need to be approved by the Engineer.

November 19, 2022

<i>Published Date: 2026</i>	S D D O T	C.M.P. TO R.C.P. TRANSITION AND R.C.P. TO C.M.P. TRANSITION	PLATE NUMBER 450.50
			Sheet 1 of 1

SPECIFICATIONS:

Design Specifications: AASHTO Specifications for Highway Bridges, 1996 Edition (Service Load).

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

GENERAL NOTES:

Design Loading: HS20-44 AASHTO.

Cattle guards will be constructed in accordance with Section 610.

All concrete will be Class M6 in accordance with Section 462.

All reinforcing steel will conform to ASTM A615, Grade 60.

Use 1 1/2" clear cover on all reinforcing steel except as shown.

All structural steel will conform to ASTM A709, Grade 36. The end welded deformed bar anchors will conform to ASTM A1064 or ASTM A706 Grade 60. The 1/2" diameter x 6" concrete anchors will conform to Section 970.2 B. All bolts and washers will conform to ASTM A307, except that lock washers will conform to AISI B18.21.1.

3/4" diameter concrete inserts will be internally threaded for use with a standard galvanized A307 bolt and will be of such design that when installed in the concrete it will be capable of sustaining a safe working load in tension of 5500 pounds. The inserts will be galvanized or made of a corrosion resistant material.

Place 3/4" diameter concrete inserts in ends of abutment foundations for 3/4" diameter galvanized connecting bolts. See detail W on sheet 4 of 5.

The armor angles, connecting channels, and bearing plates will be painted with a paint system which conforms to Section 412. 2 and will be applied in accordance with the manufacturer's recommendations. The top coat will be green in color, conforming to Federal Standard 24108.

If the cattle guard must be installed to conform to a grade other than a zero grade, all elements of the cattle guard foundation will be built normal to the grade.

Alternate designs will be considered; submit detailed drawings and specifications of the proposed similar cattle guard through proper channels to the Office of Bridge Design for approval.

In lieu of concrete inserts and A307 bolts, a 3/4" diameter A307 rod threaded full length may be drilled and epoxied into the hardened concrete. The diameter of the drilled holes in the concrete for the threaded rod will not be less than 1/8" nor more than 3/8" greater than the overall diameter of the threaded rod and the depth will be a minimum of ten rod diameters.

The epoxy resin mixture for bonding the threaded rod in place will conform to ASTM C881 Type IV Grade 3 requirements for bonding steel to hardened concrete.

The epoxy resin adhesive will be mixed and applied as recommended by the manufacturer. Special attention must be given to the elimination of voids by using effective grouting procedures as approved by the Engineer.

Soil bearing pressure will be a minimum of 3000 psf as approved by the Engineer.

April 8, 2025

<i>Published Date: 2026</i>	S D D O T	CAST-IN-PLACE CATTLE GUARD FOUNDATIONS	PLATE NUMBER 610.01
			Sheet 1 of 5

INFORMATIONAL QUANTITIES (For Two Foundations)							
ITEM	UNIT	QUANTITY					
		10' GUARD	12' GUARD	14' GUARD	20' GUARD	24' GUARD	30' GUARD
Class M6 Concrete	Cu. Yd.	2.8	3.3	3.9	5.5	6.6	8.3
Reinforcing Steel	Lb.	300	359	418	594	712	888
* Structural Steel	Lb.	487	524	561	671	745	856

* Includes armor angles with bar anchors, bearing plates with concrete anchors, connecting channels, bolts and washers; excludes concrete inserts.

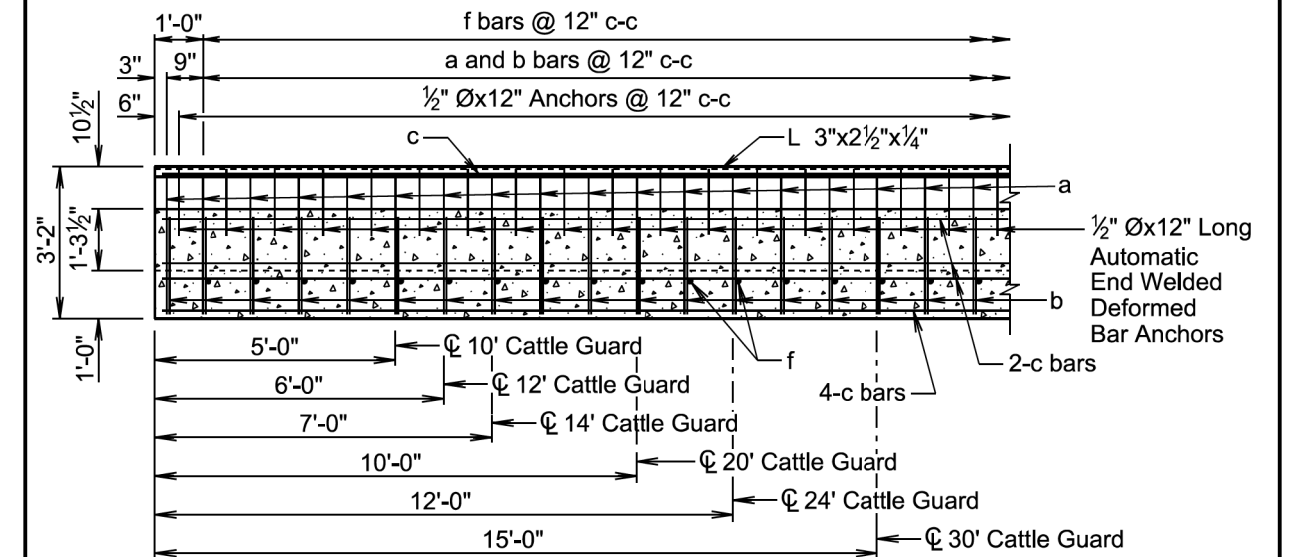
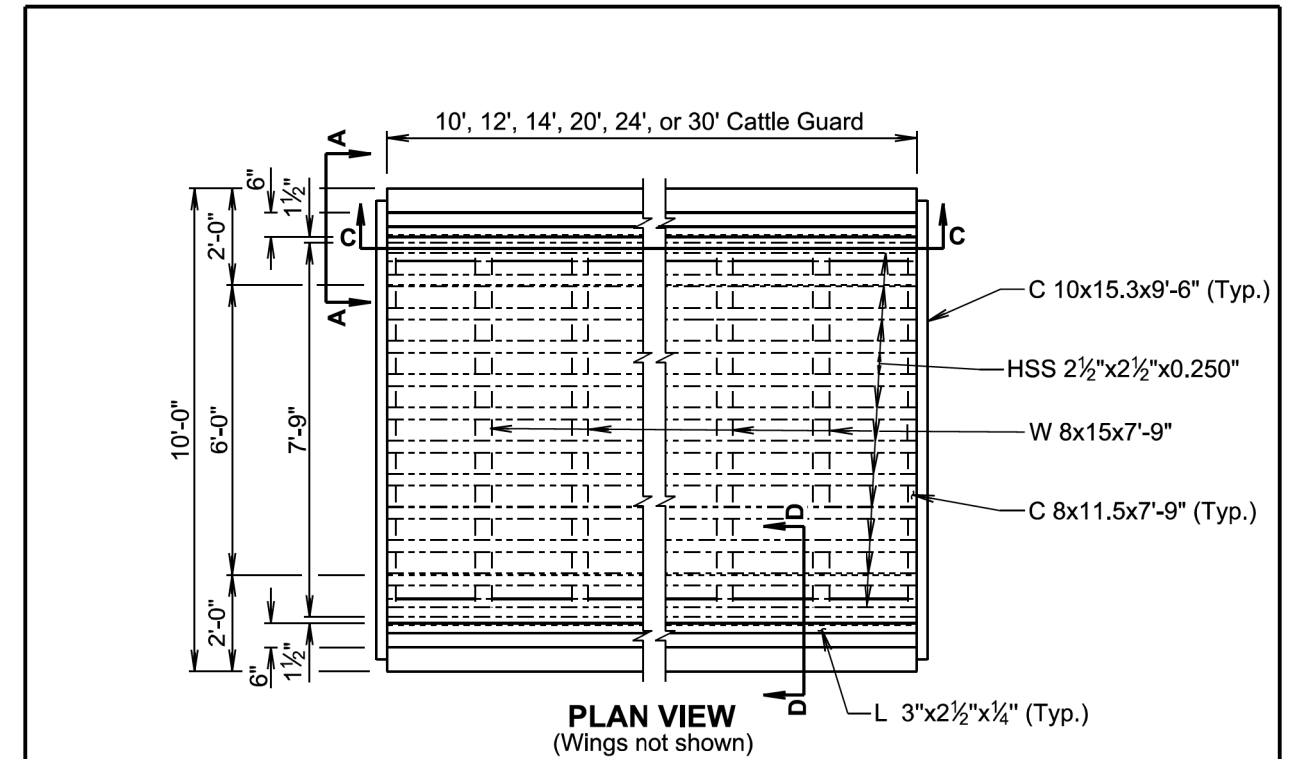
REINFORCING SCHEDULE (For Two Foundations)												
	Mk.	No.	Size	Length	Type		Mk.	No.	Size	Length	Type	Bending Details
10' GUARD	a	22	4	5'-4"	21A	20' GUARD	a	42	4	5'-4"	21A	
	b	22	4	3'-11"	17A		b	42	4	3'-11"	17A	
	c	22	4	9'-9"	Str.		c	22	4	19'-9"	Str.	
	f	18	4	1'-9"	Str.		f	38	4	1'-9"	Str.	
12' GUARD	a	26	4	5'-4"	21A	24' GUARD	a	50	4	5'-4"	21A	
	b	26	4	3'-11"	17A		b	50	4	3'-11"	17A	
	c	22	4	11'-9"	Str.		c	22	4	23'-9"	Str.	
	f	22	4	1'-9"	Str.		f	46	4	1'-9"	Str.	
14' GUARD	a	30	4	5'-4"	21A	30' GUARD	a	62	4	5'-4"	21A	
	b	30	4	3'-11"	17A		b	62	4	3'-11"	17A	
	c	22	4	13'-9"	Str.		c	22	4	29'-9"	Str.	
	f	26	4	1'-9"	Str.		f	58	4	1'-9"	Str.	

NOTE: All dimensions are out to out of bars.

BILL OF MATERIALS (For Two Foundations)							
ITEM	UNIT	QUANTITY					
		10' GUARD	12' GUARD	14' GUARD	20' GUARD	24' GUARD	30' GUARD
Bearing PL (6" Width)	Each	4	4	4	4	4	4
Bearing PL (12" Width)	Each	8	10	12	18	22	28
Connecting Channels	Each	2	2	2	2	2	2
Clamping Bolts	Each	20	24	28	40	48	60
Connecting Bolts	Each	24	24	24	24	24	24

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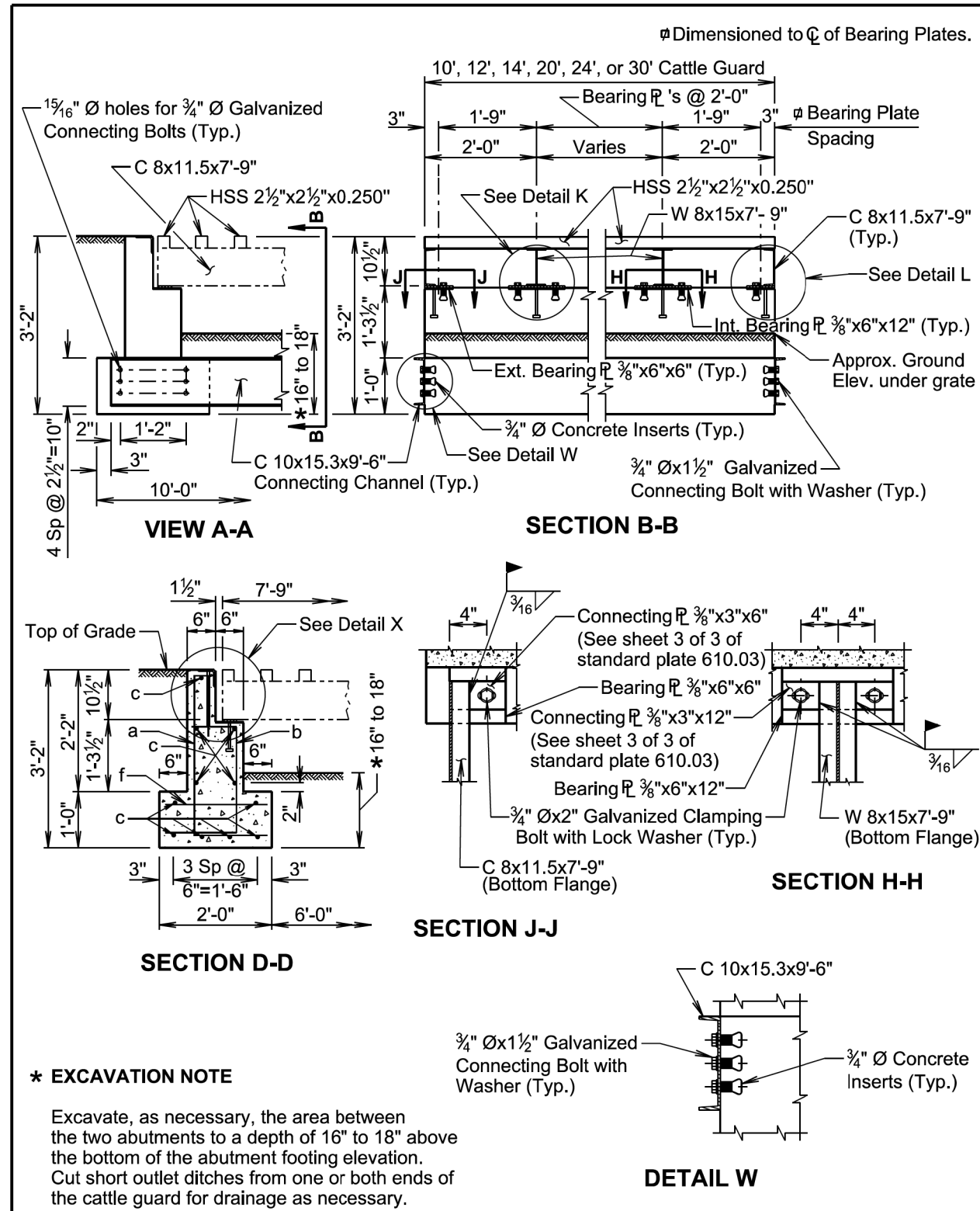
Published Date: 2026	S D D O T	CAST-IN-PLACE CATTLE GUARD FOUNDATIONS	PLATE NUMBER 610.01
			Sheet 2 of 5



SECTION C-C
(All footings symmetric about C-C)
(Bearing plates with concrete anchors not shown.)

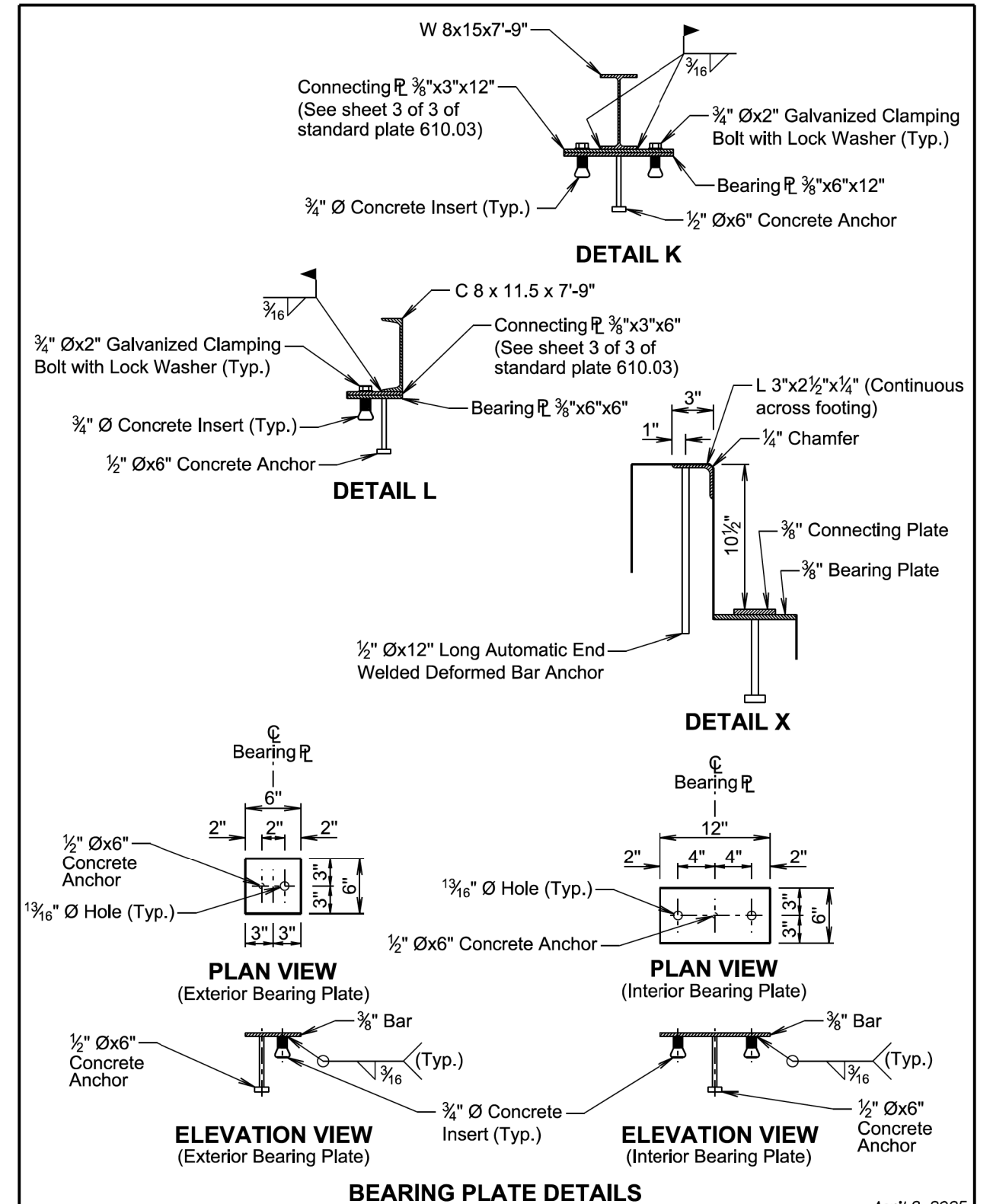
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Published Date: 2026	S D D O T	CAST-IN-PLACE CATTLE GUARD FOUNDATIONS	PLATE NUMBER 610.01
			Sheet 3 of 5



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Published Date: 2026	S D D O T	CAST-IN-PLACE CATTLE GUARD FOUNDATIONS	PLATE NUMBER 610.01
			Sheet 4 of 5



BEARING PLATE DETAILS

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Published Date: 2026	S D D O T	CAST-IN-PLACE CATTLE GUARD FOUNDATIONS	PLATE NUMBER 610.01
			Sheet 5 of 5

SPECIFICATIONS:

Design Specifications: AASHTO Specifications for Highway Bridges, 1996 Edition (Service Load).

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

GENERAL NOTES:

Design Loading: HS20-44 AASHTO.

Cattle guards will be constructed in accordance with Section 610.

All concrete will be Class M6 in accordance with Section 462.

All reinforcing steel will conform to ASTM A615, Grade 60.

Use 1 1/2" clear cover on all reinforcing steel except as shown.

All structural steel will conform to ASTM A709, Grade 36. The end welded deformed bar anchors will conform to ASTM A1064 or ASTM A706 Grade 60. The 1/2" diameter x 6" concrete anchors will conform to Section 970.2 B. All bolts, nuts, and washers will conform to ASTM A307, except that lock washers will conform to AISI B18.21.1.

Welding and weld inspection will be in accordance with AWS D1.1-(Current Year).

3/4" diameter concrete inserts will be internally threaded for use with a standard galvanized A307 Bolt and will be of such design that when installed in the concrete it will be capable of sustaining a safe working load in tension of 5500 pounds. The inserts will be galvanized or made of a corrosion resistant material.

The armor angles, connecting plates, connecting channels, and bearing plates will be painted with a paint system which conforms to Section 412.2 and will be applied in accordance with the manufacturer's recommendations. The top coat will be green in color, conforming to Federal Standard 24108.

If the cattle guard must be installed to conform to a grade other than a zero grade, all elements of the cattle guard foundation will be built normal to the grade.

Alternate designs will be considered; submit detailed drawings and specifications of the proposed similar cattle guard through proper channels to the Office of Bridge Design for approval.

Soil bearing pressure will be a minimum of 3000 psf as approved by the Engineer.

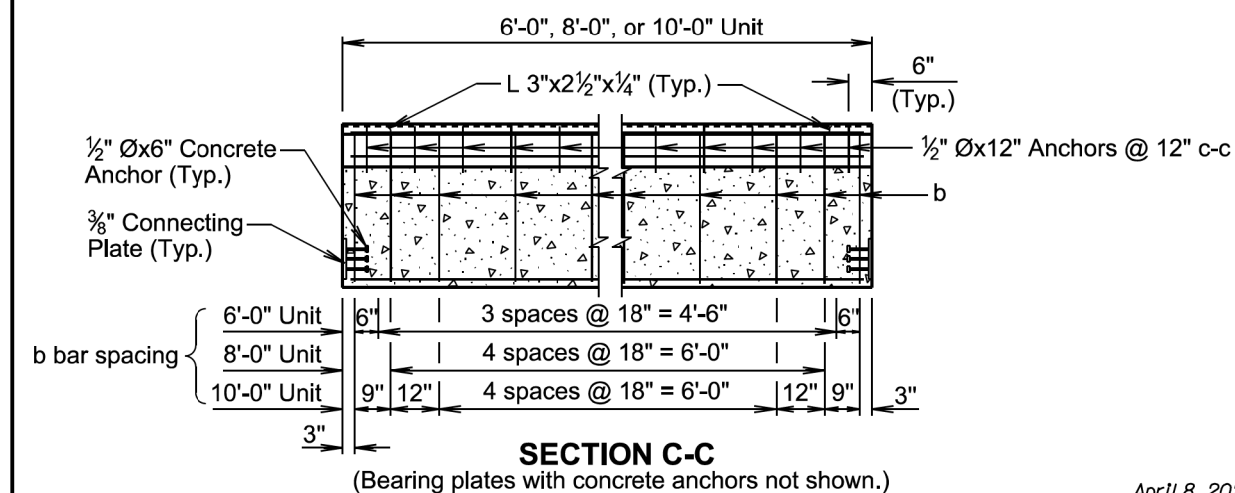
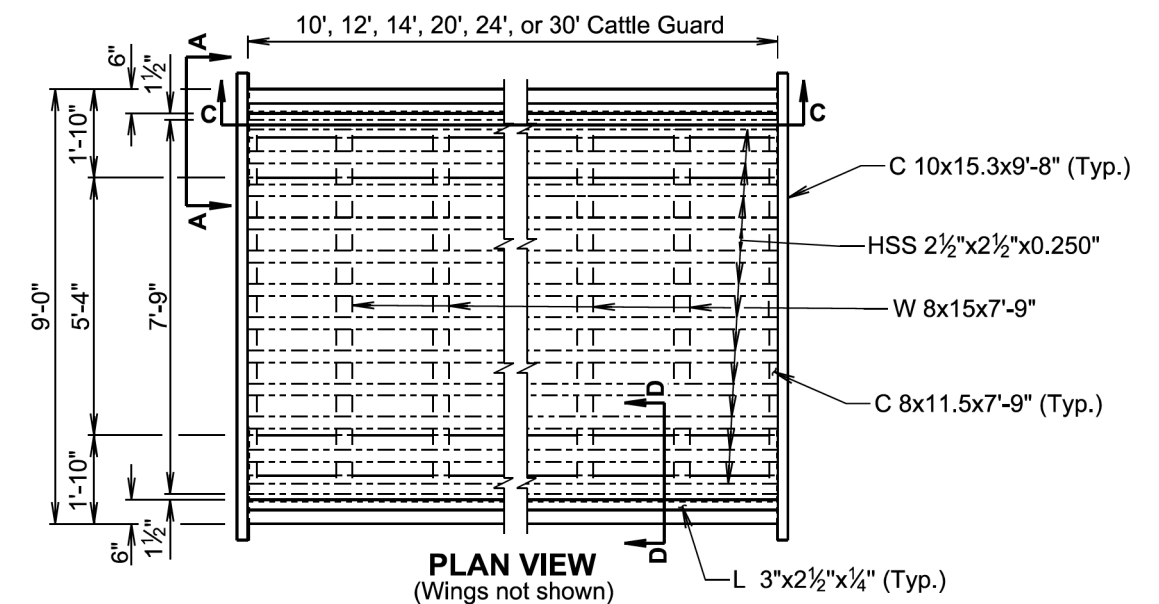
BILL OF MATERIALS FOR CATTLE GUARD FOUNDATIONS						
WIDTH OF CATTLE GUARD	PRECAST FOUNDATION UNITS			CONN. CHANNELS	CLAMP. BOLTS	CONN. BOLTS
	6'-0"	8'-0"	10'-0"			
10'			2	2	20	24
12'	4			2	24	36
14'	2	2		2	28	36
20'			4	2	40	36
24'		6		2	48	48
30'			6	2	60	48

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			Sheet 1 of 5

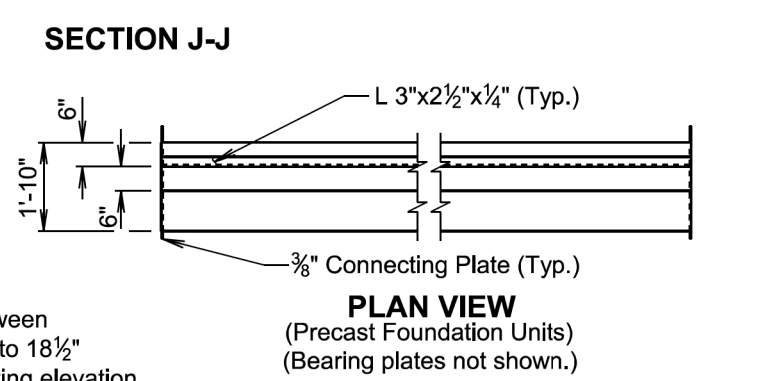
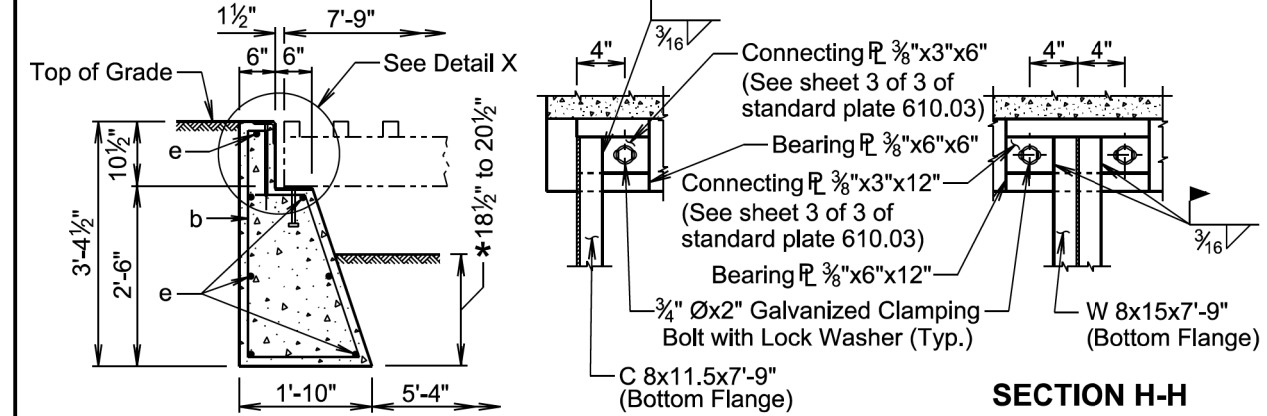
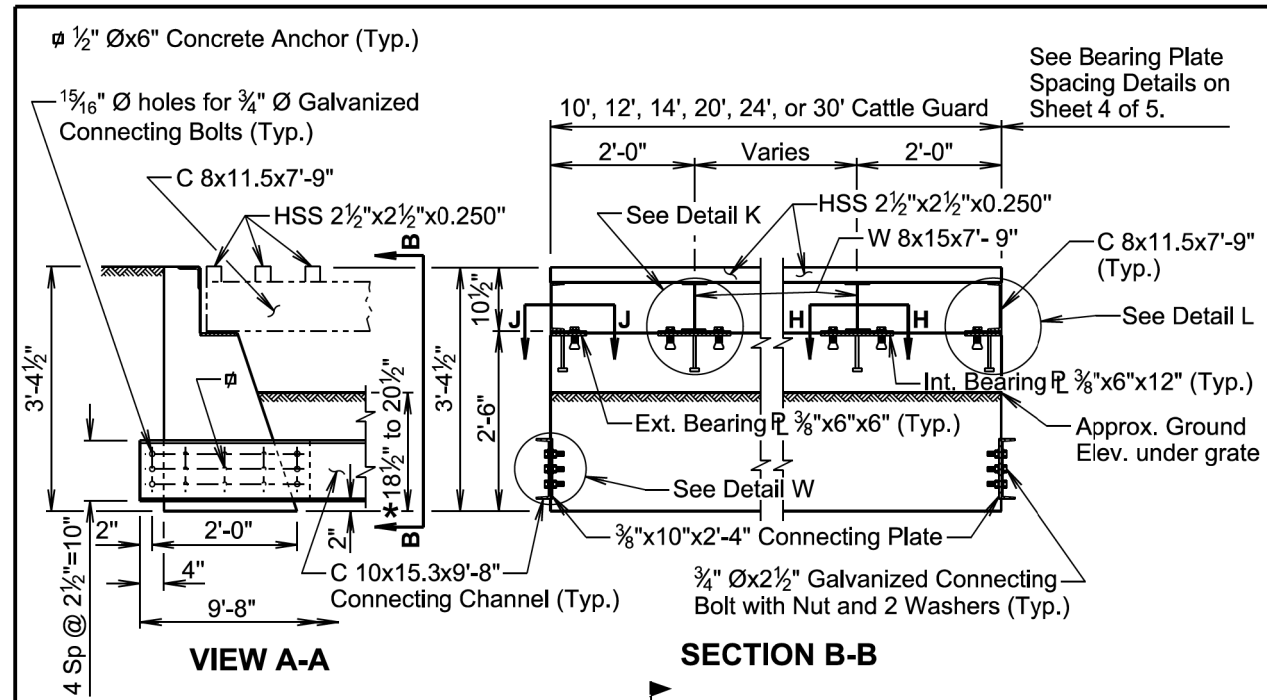
MAKEUP QUANTITIES FOR PRECAST FOUNDATION UNITS

TYPE OF UNIT	BEARING PLATES		M6 CONC. (Cu. Yds.)	APPROX. WEIGHT OF UNIT (Lb.)	CHANNEL CONN. PLATES	REINFORCING SCHEDULE									
	6" Width	12" Width				Mk.	No.	Size	Length	Type	Bending Details				
6'-0"	2	2	0.9	3760	2	<p>Type 21A NOTE: All dimensions are out to out of bars.</p>									
8'-0"	2	3	1.2	4990	2										
10'-0"	2	4	1.5	6270	2										
6'-0" Unit											b	6	4	9'-0"	21A
											e	7	4	5'-8"	Str.
8'-0" Unit						b	7	4	9'-0"	21A					
						e	7	4	7'-8"	Str.					
10'-0" Unit						b	9	4	9'-0"	21A					
						e	7	4	9'-8"	Str.					



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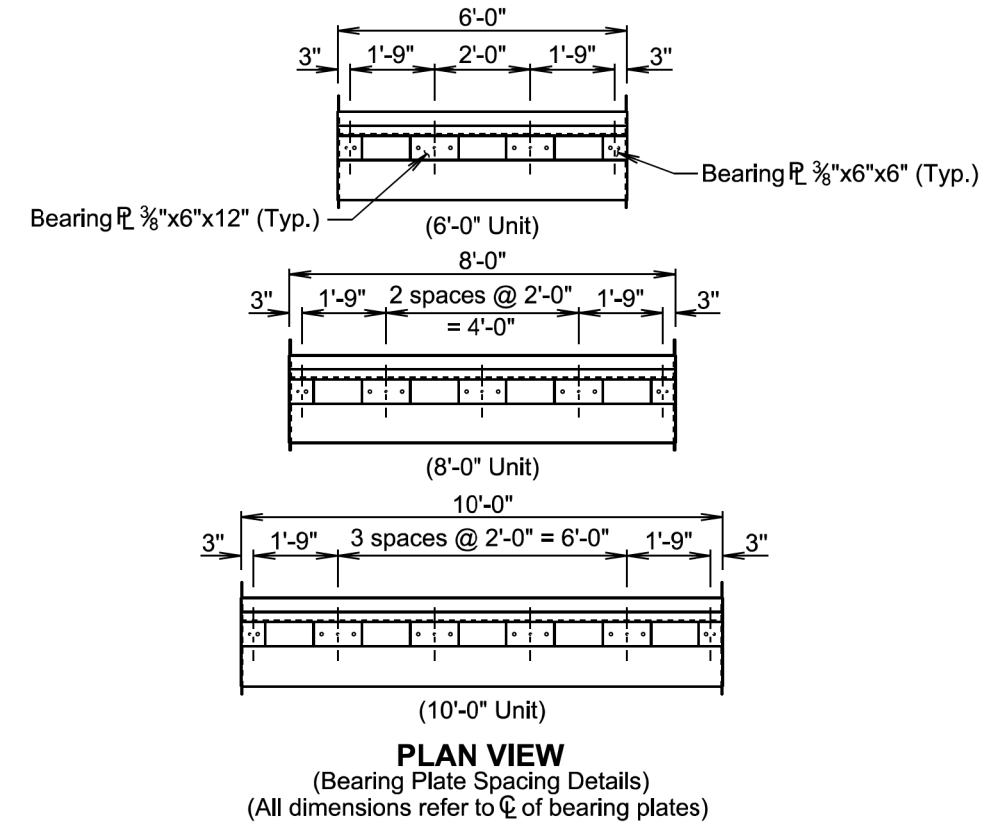
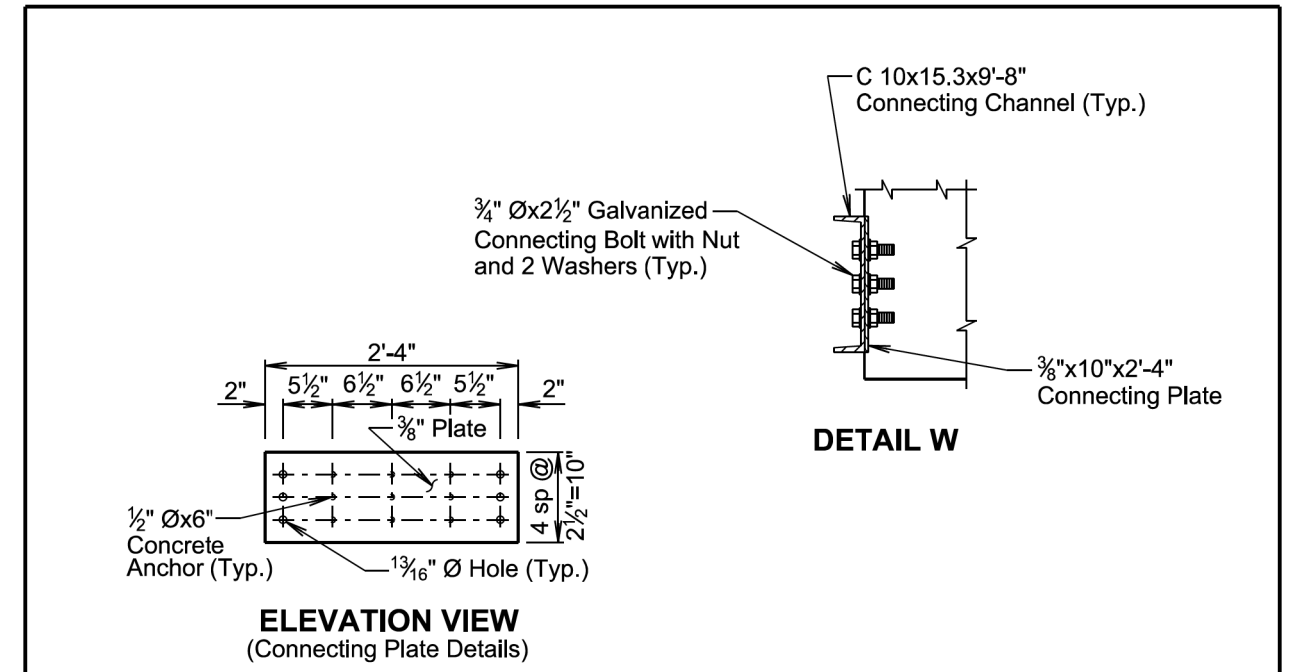
Published Date: 2026	S D D O T	PRECAST CATTLE GUARD FOUNDATIONS	PLATE NUMBER 610.02
			Sheet 2 of 5



*** EXCAVATION NOTE**
Excavate, as necessary, the area between the two abutments to a depth of 16 1/2" to 18 1/2" above the bottom of the abutment footing elevation. Cut short outlet ditches from one or both ends of the cattle guard for drainage as necessary.

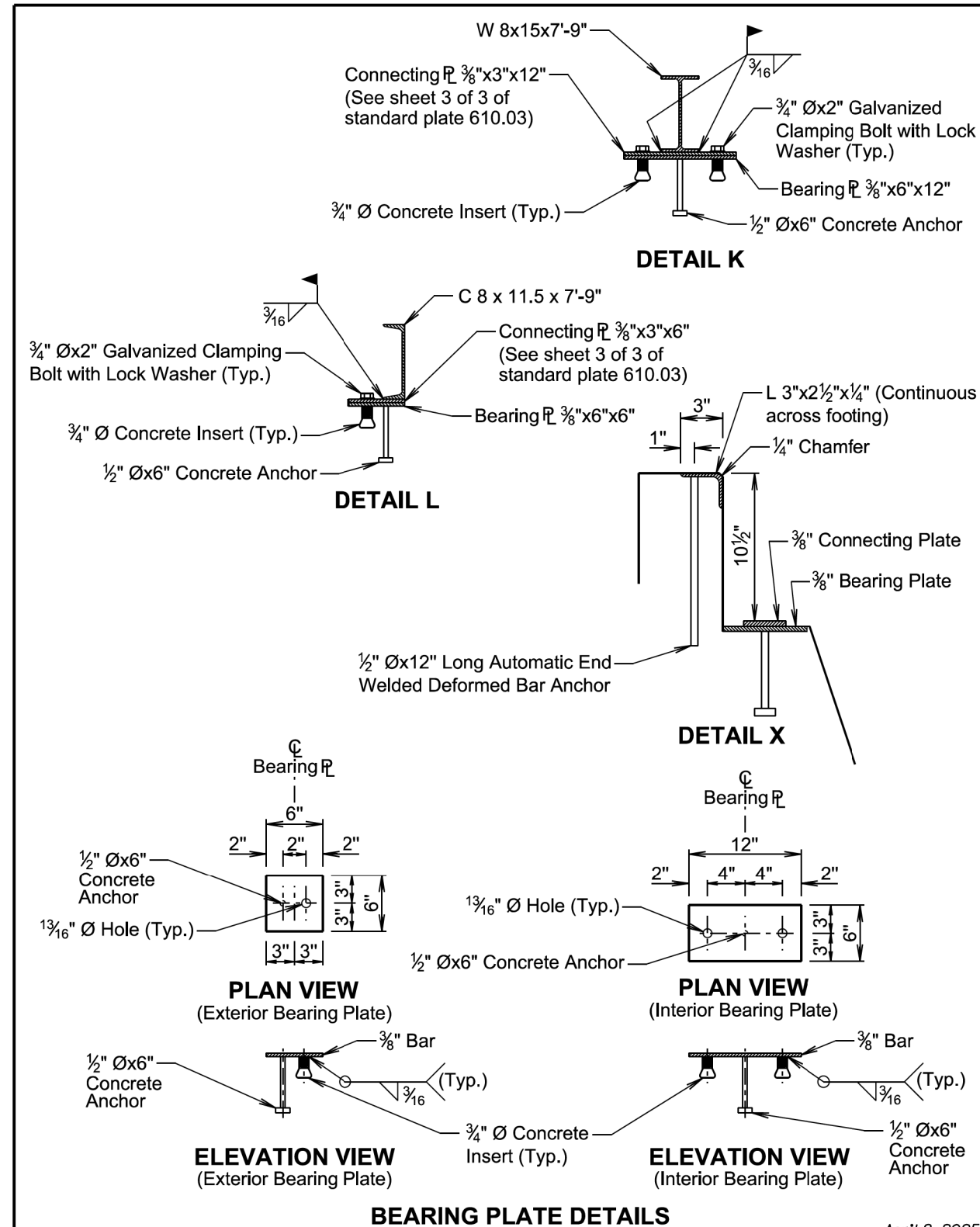
April 8, 2025

Published Date: 2026	S D D O T	PRECAST CATTLE GUARD FOUNDATIONS	PLATE NUMBER 610.02
			Sheet 3 of 5



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Published Date: 2026	S D D O T	PRECAST CATTLE GUARD FOUNDATIONS	PLATE NUMBER 610.02
			Sheet 4 of 5



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Published Date: 2026	S D D O T	PRECAST CATTLE GUARD FOUNDATIONS	PLATE NUMBER 610.02
			Sheet 5 of 5

SPECIFICATIONS:

Design Specifications: AASHTO Specifications for Highway Bridges, 1996 Edition (Service Load).

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

GENERAL NOTES:

Design Loading: HS20-44 AASHTO.

Cattle guards will be constructed in accordance with Section 610.

All structural steel will conform to ASTM A709, Grade 36. Structural tubing will conform to ASTM A500, Grade B or C. All bolts and nuts will be galvanized and will conform to ASTM A307. All lock washers will be galvanized and will conform to AISI B18.21.1.

Welding and weld inspection will be in accordance with AWS D1.1-(Current Year).

Cattle guard grate, wings, and connecting plates will be painted with a paint system which conforms to Section 412. 2 and will be applied in accordance with the manufacturer's recommendations. The top coat will be green in color, conforming to Federal Standard 24108.

Grate sections may be combined to obtain larger grate widths. Refer to the detail of multiple installation joint on sheet 3 of 3 when larger grate widths are required.

Cattle guard grate and wing details will be used in conjunction with cast-in-place or precast cattle guard foundation details on standard plate 610.01 or 610.02 when cattle guard foundations are required.

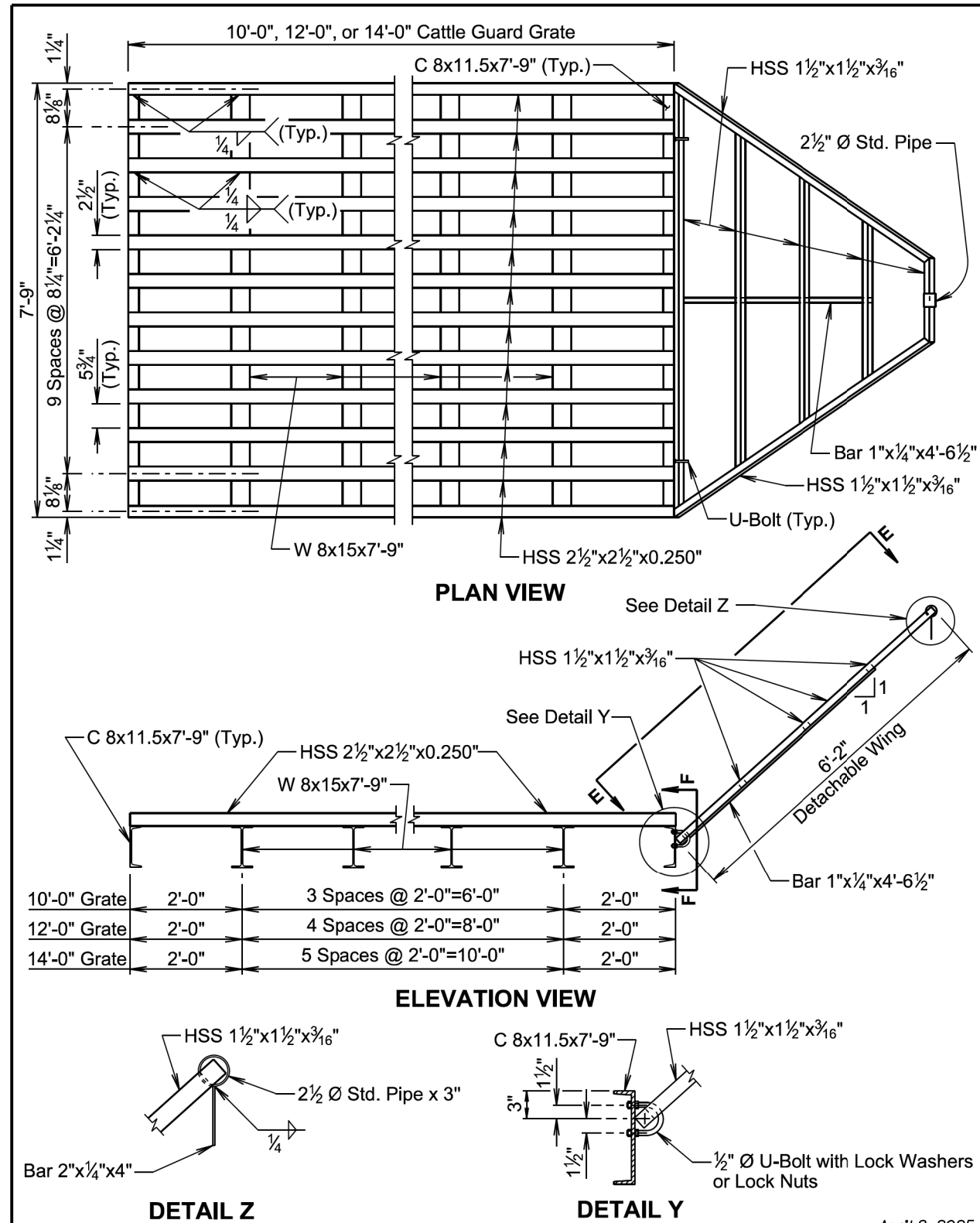
All materials must meet or exceed Plans Specifications.

INFORMATIONAL QUANTITIES		QUANTITY			
ITEM	UNIT	10' GRATE	12' GRATE	14' GRATE	2-WINGS
Structural Steel	Lb.	1496	1783	2070	114

BILL OF MATERIALS FOR CATTLE GUARD GRATES						
WIDTH OF CATTLE GUARD	CATTLE GUARD GRATE			CONNECTING PLATES		GRATE CONN. BOLTS
	10'-0"	12'-0"	14'-0"	6"	12"	
10'	1			4	8	—
12'		1		4	10	—
14'			1	4	12	—
20'	2			4	18	6
24'		2		4	22	6
30'	3			4	28	12

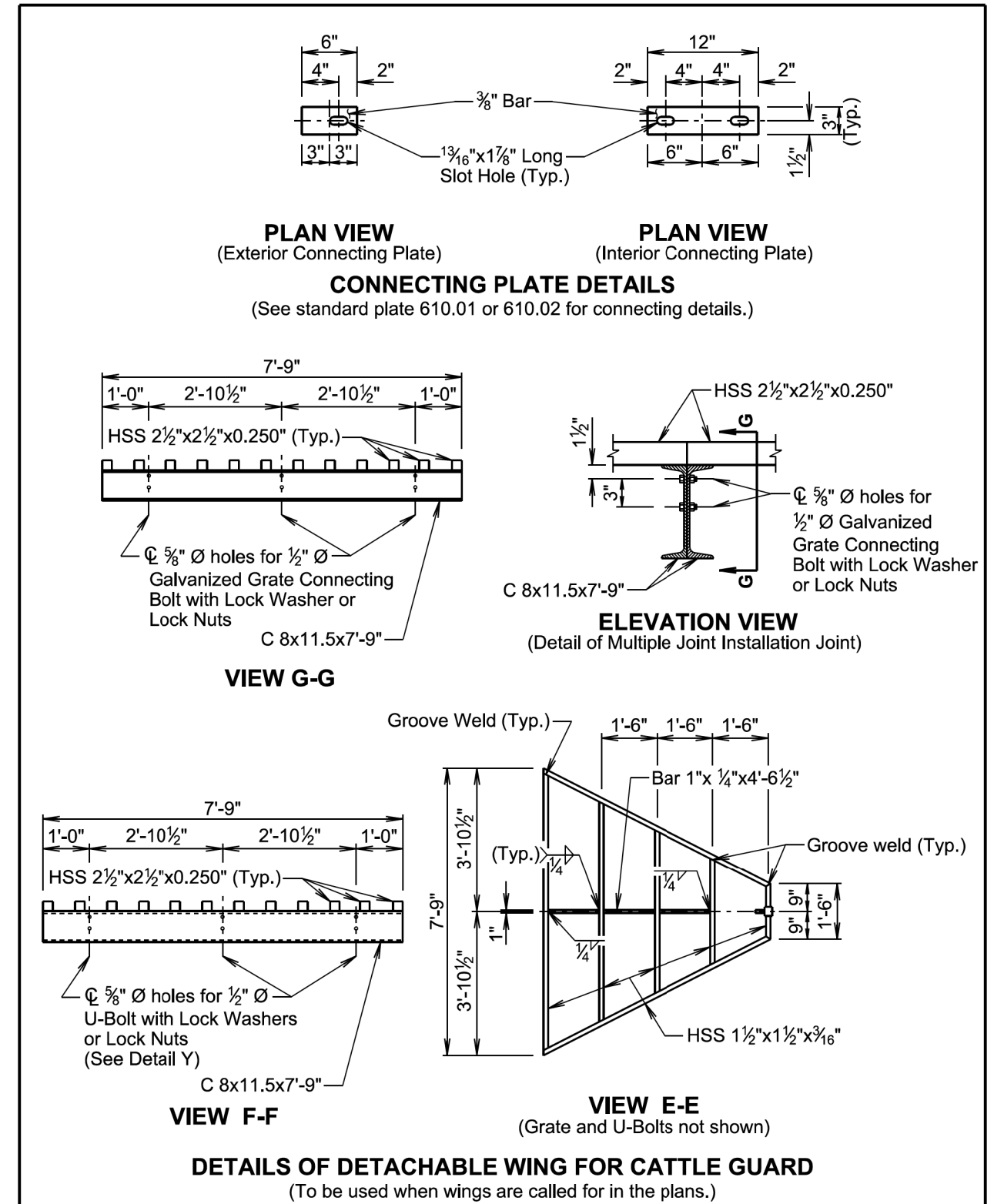
April 8, 2025

Published Date: 2026	S D D O T	CATTLE GUARD GRATE AND WING	PLATE NUMBER 610.03
			Sheet 1 of 3



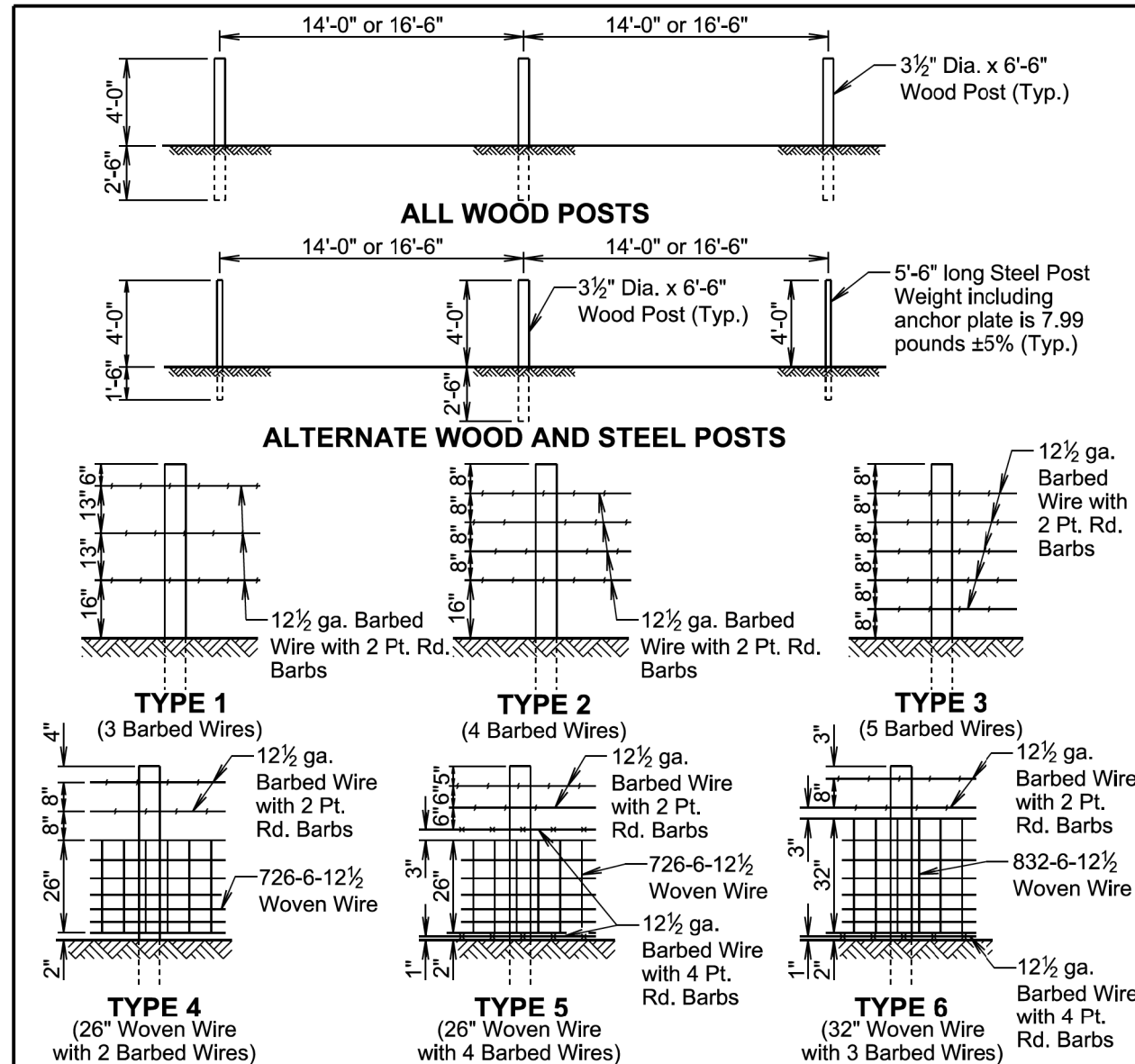
April 8, 2025

Published Date: 2026	S D D O T	CATTLE GUARD GRATE AND WING	PLATE NUMBER 610.03
			Sheet 2 of 3



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Published Date: 2026	S D D O T	CATTLE GUARD GRATE AND WING	PLATE NUMBER 610.03
			Sheet 3 of 3



TYPE OF FENCE		LINE POST SPACING	WIRE GAGE	BARBED WIRE		WOVEN WIRE
TYPE	DESCRIPTION			NUMBER AND SHAPE OF BARBS	STYLE OR DESIGN NO.	
1	3 Barbed Wires	16'-6"	12½	2 Point Round	—	
2	4 Barbed Wires	16'-6"	12½	2 Point Round	—	
3	5 Barbed Wires	16'-6"	12½	2 Point Round	—	
4	26" Woven Wire with 2 Barbed Wires	14'-0"	12½	2 Point Round	726-6-12½	
5	26" Woven Wire with 4 Barbed Wires	14'-0"	12½	2 wires with 2 Pt. Rd. 2 wires with 4 Pt. Rd.	726-6-12½	
6	32" Woven Wire with 3 Barbed Wires	14'-0"	12½	2 wires with 2 Pt. Rd. 1 wire with 4 Pt. Rd.	832-6-12½	

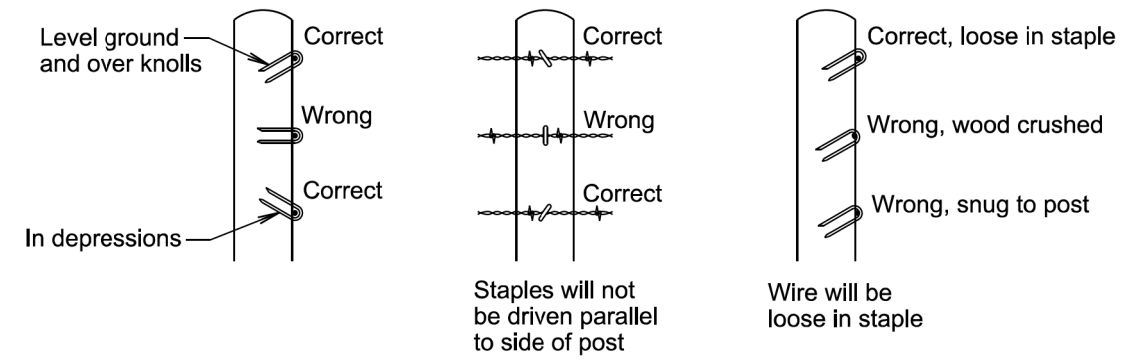
GENERAL NOTES:

Fence types designated on the plans that are followed by the letter S will have smooth (barbless) wires.

When type 5S or 6S is designated the bottom wire may be barbed, smooth, or left off.

All radius of curvature stated for fence are at centerline of roadway.

April 8, 2025



STAPLE INSTALLATION

GENERAL NOTES:

The Right-of-Way fence will consist of barbed wire or a combination of woven wire and barbed wire. The barbed wire and/or woven wire will be fastened to all wood posts or fastened to alternating wood and steel posts. Only wood posts will be used for brace panels. Gates will be of the type designated in the plans or as otherwise directed by the Engineer. Fence will be constructed conforming to the details on the standard plates and in the plans unless otherwise directed by the Engineer.

Right-of-Way fence on Interstate Projects will be constructed one foot within the Interstate Right-of-Way lines except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

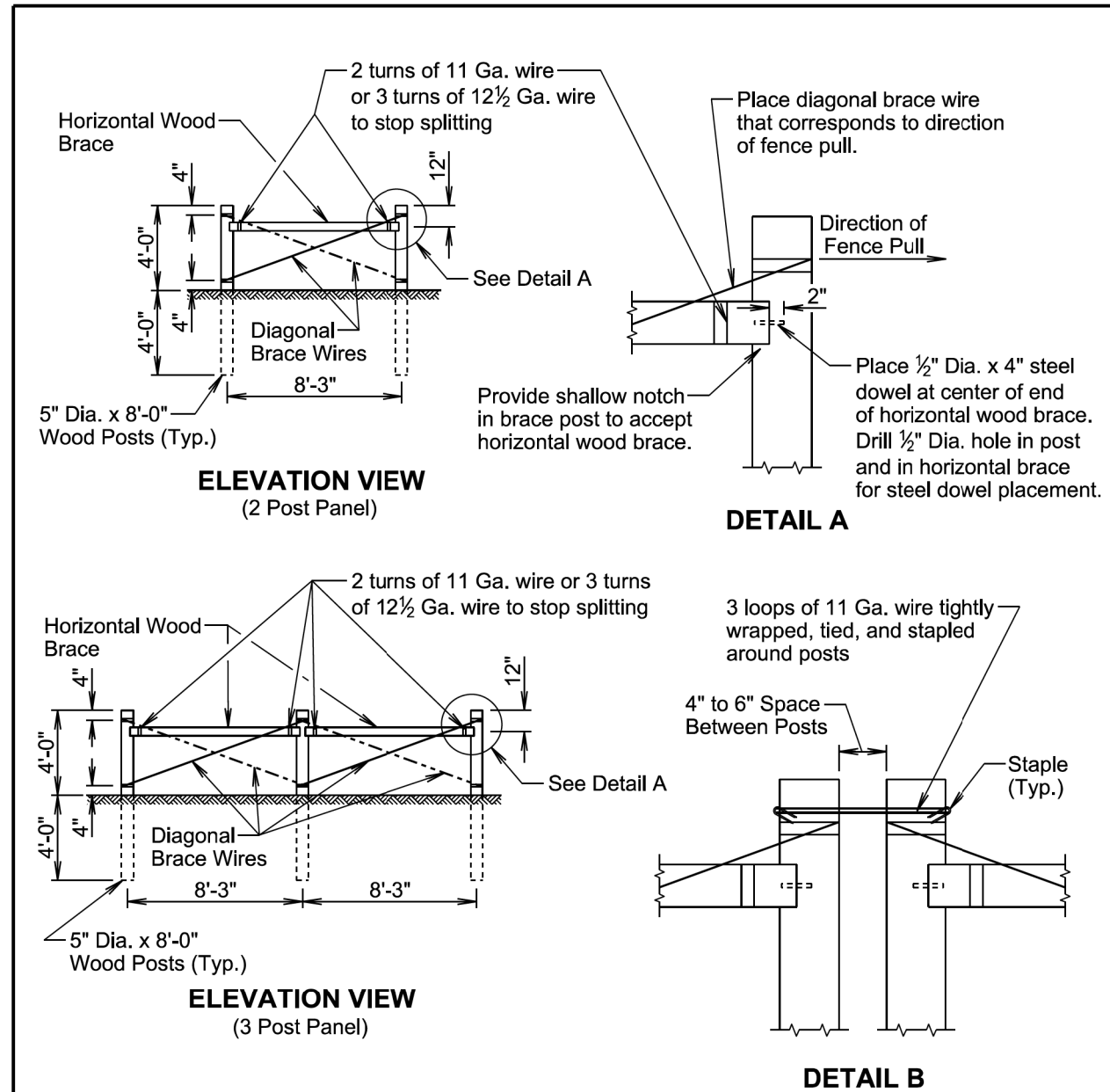
Right-of-Way fence other than on Interstate Projects will be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

Barbs will be fabricated from zinc coated 14 ga. wire. Two point barbs will be wrapped twice around one main strand at four-inch spacings and the four point barbs will be interlocked and wrapped around both main strands at five-inch spacings.

The gages of wire and wood post lengths and sizes are the minimum acceptable unless otherwise specified in the plans. The tolerances for steel posts will be as stated in AASHTO M281. Woven wire will conform to design and specifications of ASTM A116 and barbed wire will conform to ASTM A121.

Published Date: 2026	S D D O T	RIGHT-OF-WAY FENCE	PLATE NUMBER 620.01
			Sheet 1 of 1

Published Date: 2026	S D D O T	STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES	PLATE NUMBER 620.02
			Sheet 1 of 1



GENERAL NOTES:

- Two Post Panels will be installed at least every 1320' between corners.
- Two Post Panels will be installed at any sharp vertical angle crest points and as directed by the Engineer.
- Horizontal wood braces will consist of 4" dia. x 8' wood posts or rough 4" x 4" x 8' timbers.
- Diagonal brace wires will be fabricated with 4 strands of 9 Ga. galvanized wire twisted tight. The diagonal brace wires will be installed in accordance with the direction of the fence pull. Two diagonal brace wires are required if fence pull is in both directions.

March 31, 2024

S D D O T	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
	Published Date: 2026	Sheet 1 of 3

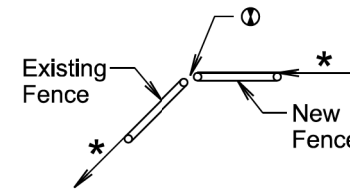
SPACING OF 2 POST PANELS WITHIN CURVES	RADIUS OF CURVE	SPACING OF 2 POST PANEL
Greater than 1800 Ft.		** 1320'
Less than 1800 Ft.		** At P.C., P.T., and at every 1320' between P.C. and P.T.

GENERAL NOTE:

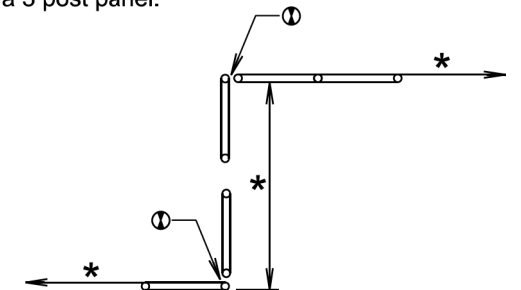
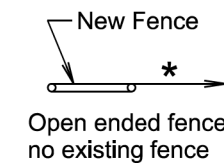
- All radius of curvature stated for fence are at centerline of roadway.
- If fence length is less than 600' to next corner use a 2 post panel.
- If fence length is greater than 600' to next corner use a 3 post panel.

- ** Fence lengths greater than 1320' and less than 2640' place 2 Post Panel approximately at midpoint.

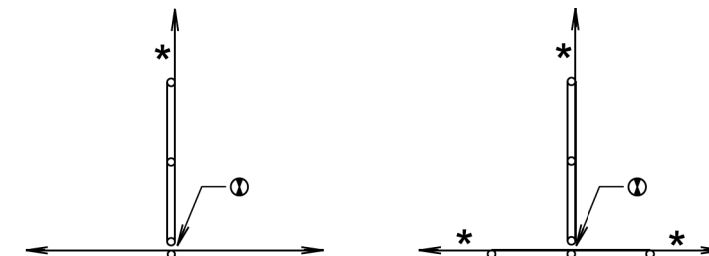
① See Detail B on Sheet 1 of 3.



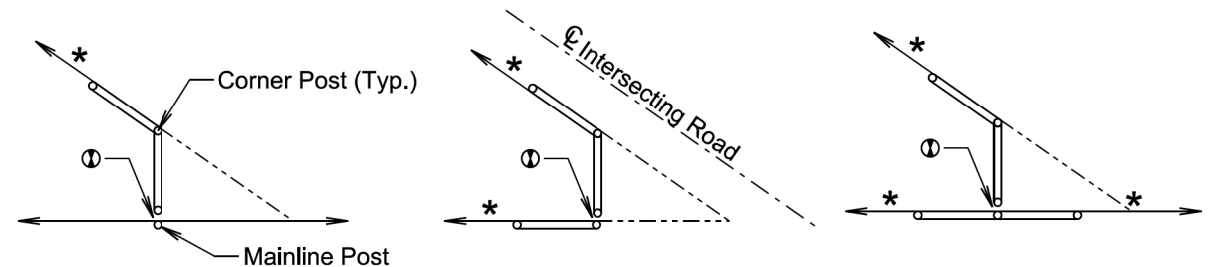
BEGIN OR END FENCE
(Where new fence ties into existing fence)



SHORT JOGS IN FENCE



CROSS FENCE



SHARP ANGLES IN CROSS FENCE



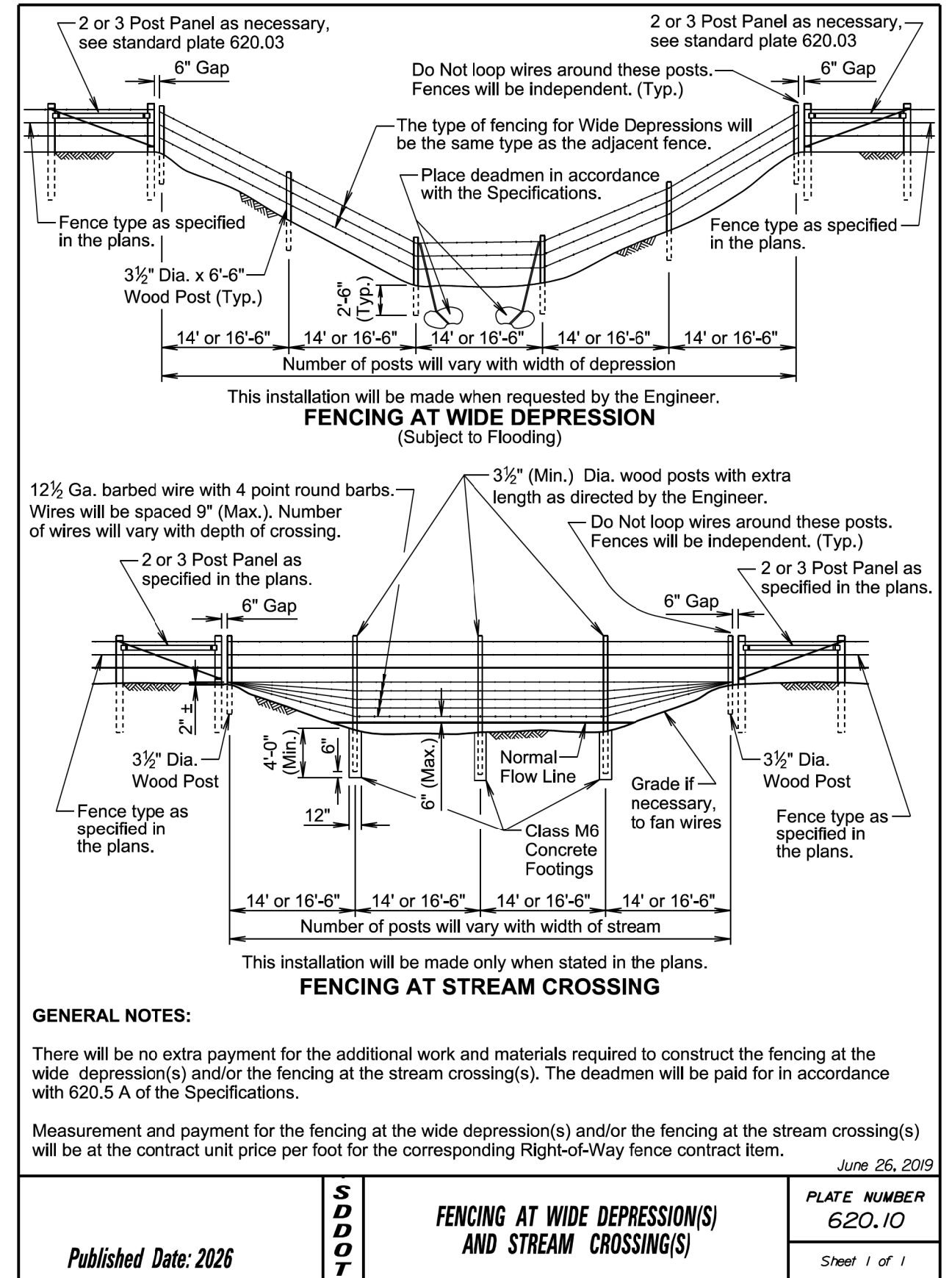
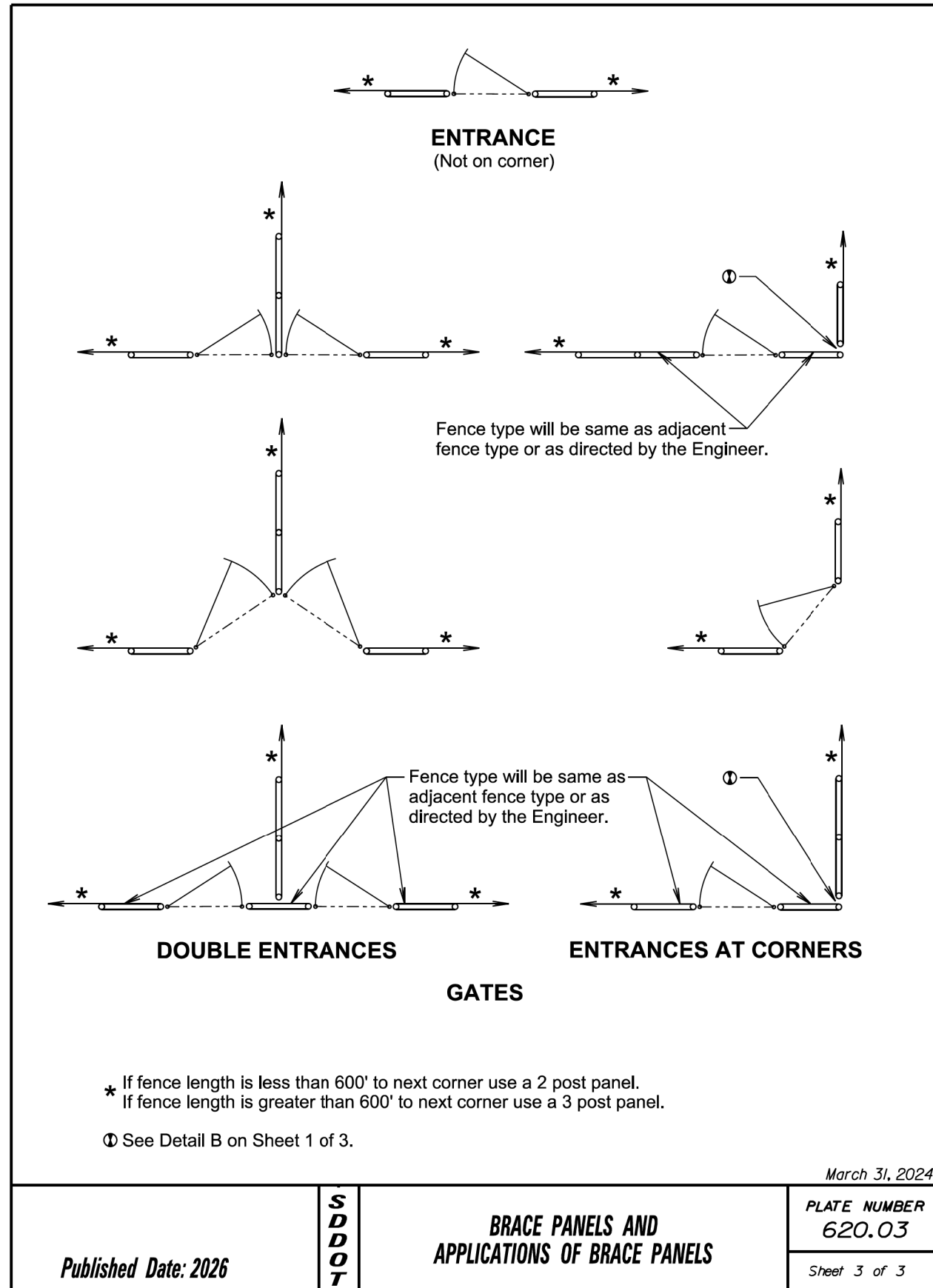
Additional fence panel is NOT required when an angle in the mainline fence is 10° and less.

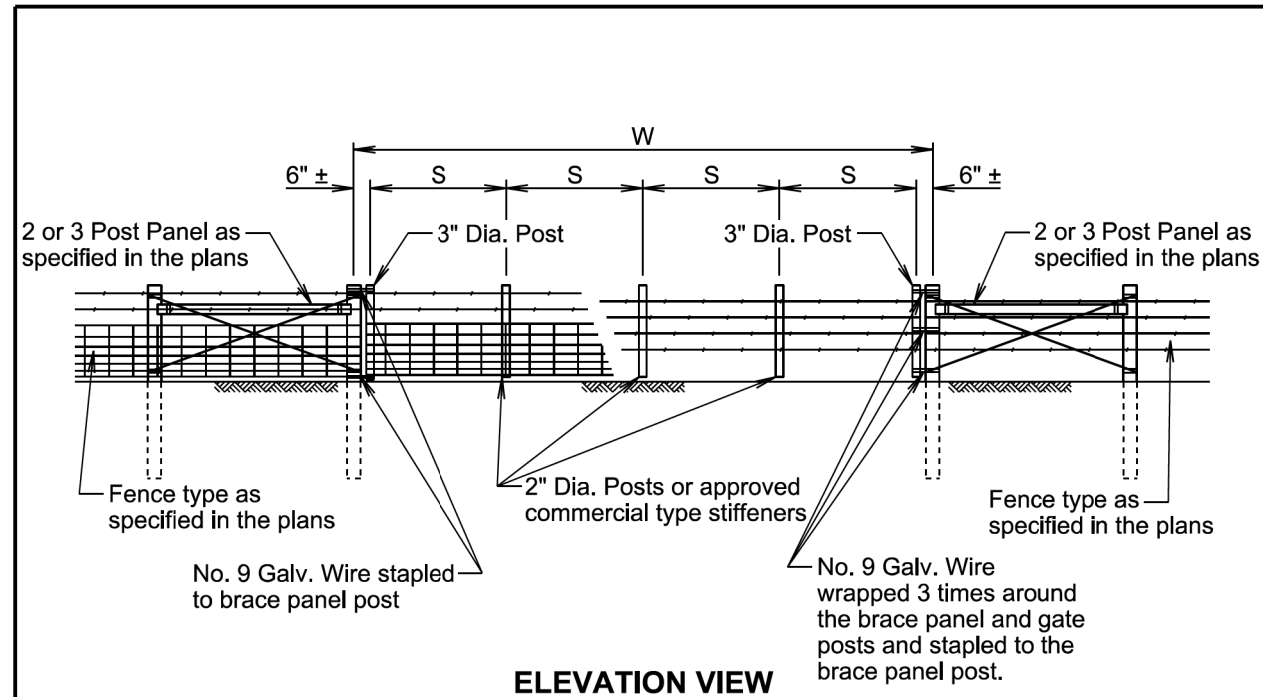
Additional fence panel is required when an angle in the mainline fence is greater than 10°.

ANGLES IN MAINLINE FENCE

March 31, 2024

S D D O T	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
	Published Date: 2026	Sheet 2 of 3





ELEVATION VIEW

W Gate Width (Ft.)	S Post Spacing
16	3 @ 5'-0" ±
20	4 @ 4'-9" ±
24	4 @ 5'-9" ±
30	5 @ 5'-10" ±
40	6 @ 6'-6" ±

GENERAL NOTES:

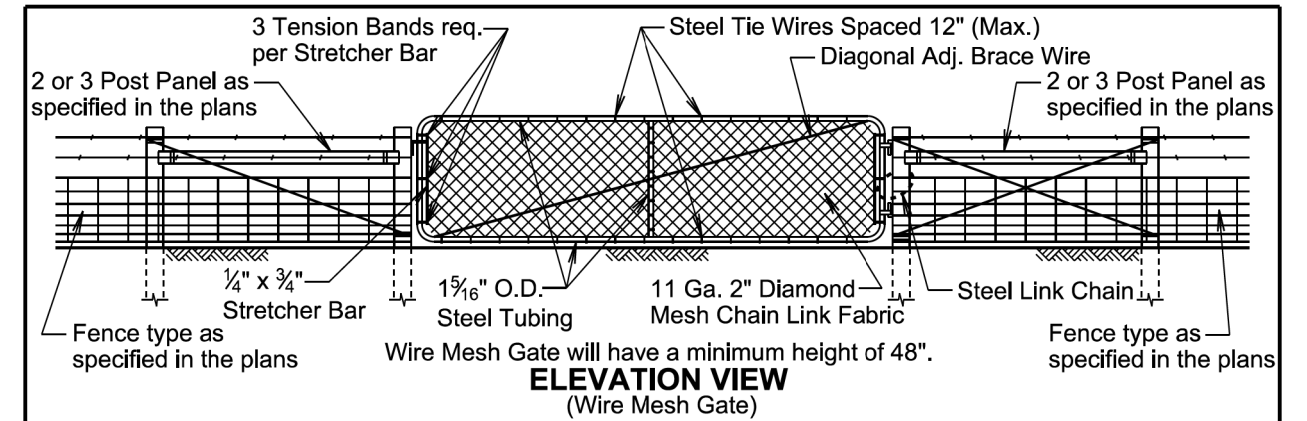
Creosote treatment of the gate posts will not be accepted.

The type of fencing in the gate will be of the same type as specified for the adjacent Right-of-Way fence.

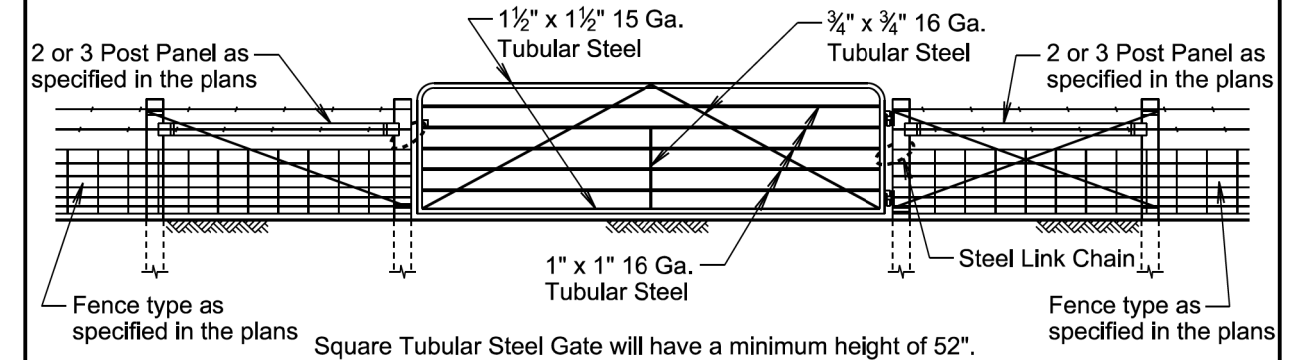
All costs for furnishing and constructing the wire gate(s) will be incidental to the contract unit price per foot for the respective Right-of-Way fence contract item.

June 26, 2019

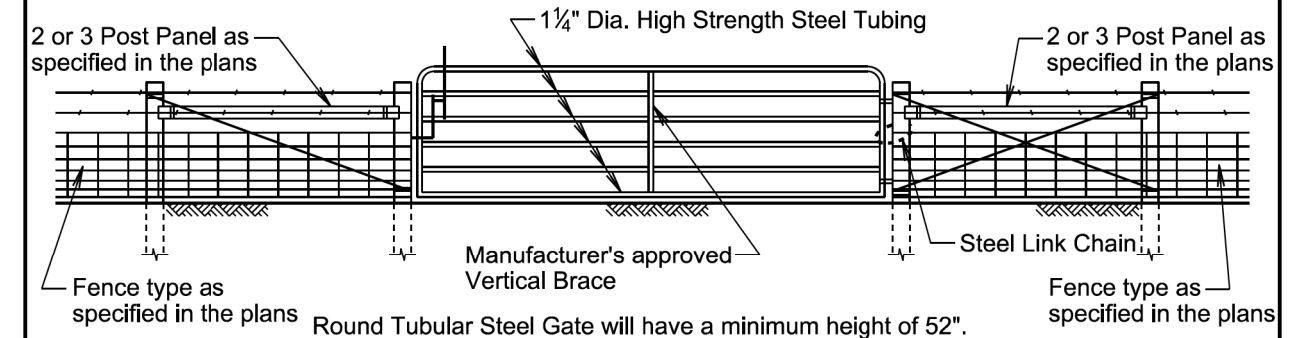
<i>Published Date: 2026</i>	S D D O T	WIRE GATES	PLATE NUMBER 620.20
			Sheet 1 of 1



ELEVATION VIEW
(Wire Mesh Gate)



ELEVATION VIEW
(Square Tubular Steel Gate)



ELEVATION VIEW
(Round Tubular Steel Gate)

GENERAL NOTES:

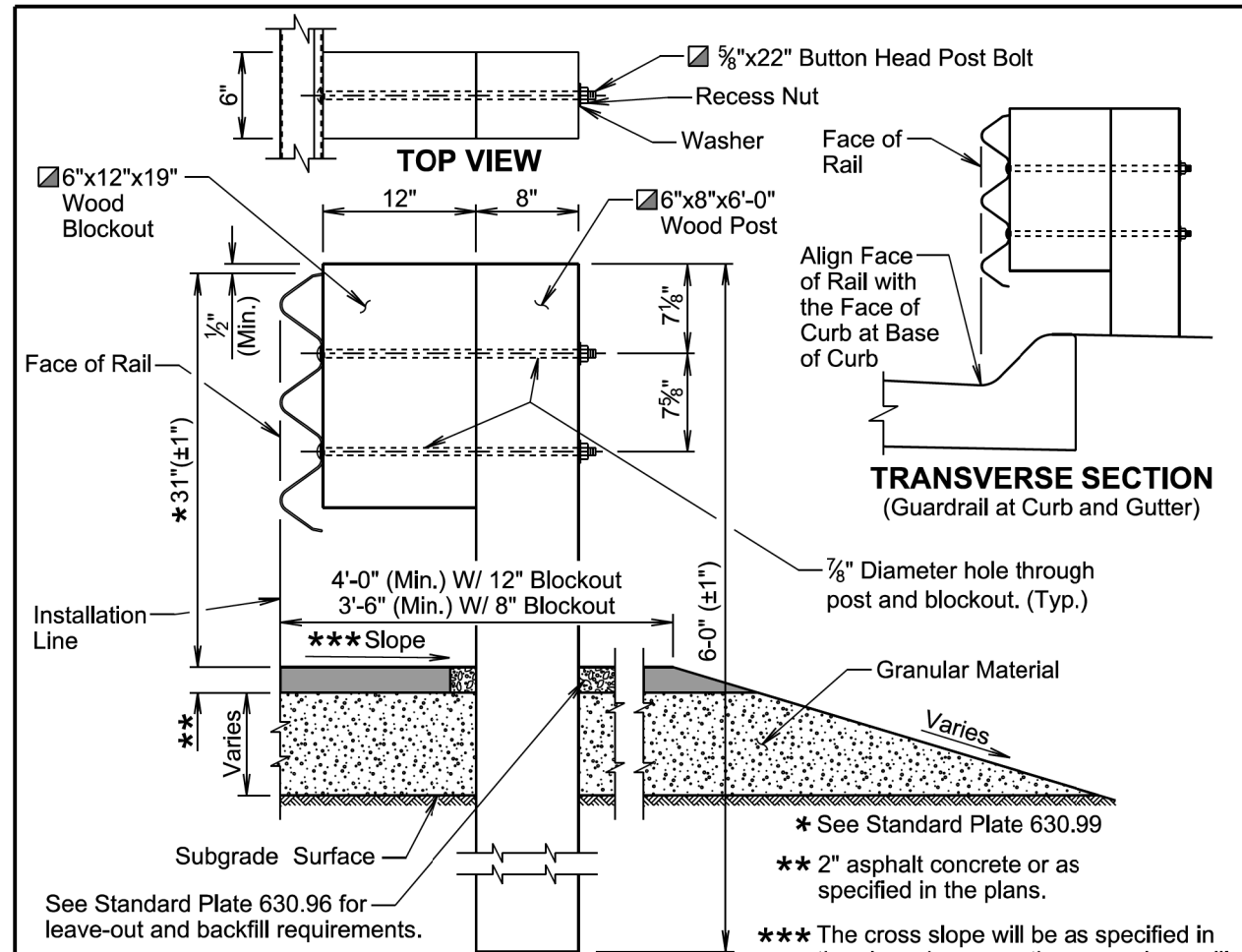
Only single tubular frame gates are shown on this standard plate. If double tubular frame gates are specified, the gates will be of the same type and materials as shown above. Double tubular gates will swing toward the middle of the opening and will be secured by a chain, latch, or other suitable hardware.

Gate hardware will conform to the specific type of gate installed. The gate and gate hardware will either be painted or galvanized. The paint on the gates and hardware will be subject to approval by the Engineer.

The Steel Link Chain will be a minimum of 1/4", 4' long, rust resistant, and have electrically welded links. The chain will be wrapped around the gate hinge post and gate frame and the ends of the chain will be welded together with enough slack in the chain to provide free operation of the gate.

June 26, 2019

<i>Published Date: 2026</i>	S D D O T	TUBULAR FRAME GATES	PLATE NUMBER 620.21
			Sheet 1 of 1



TRANSVERSE SECTION
(Guardrail at Curb and Gutter)

GENERAL NOTES:

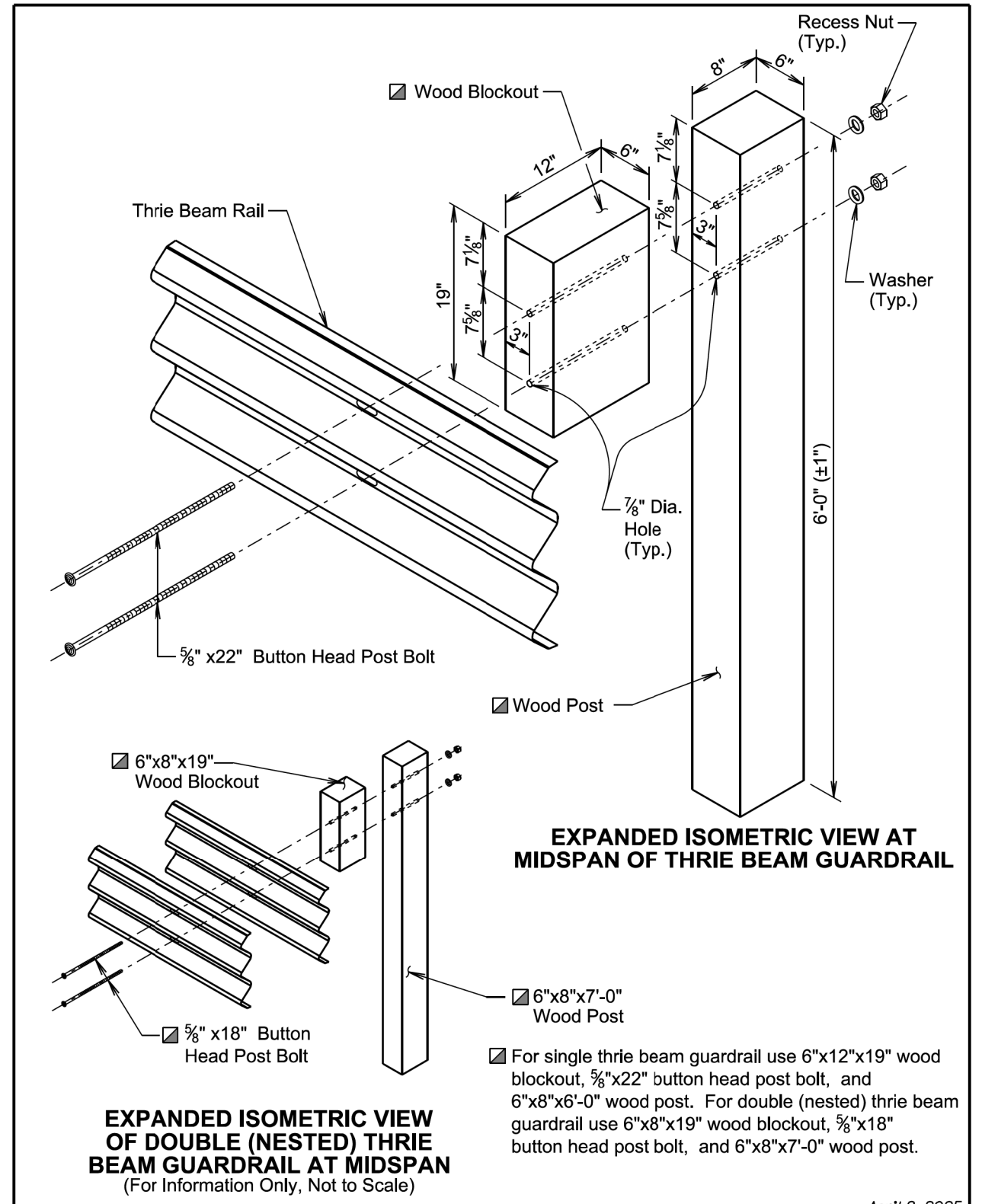
TRANSVERSE SECTION

- Asphalt concrete will be the same type used elsewhere on the project or will be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete will conform to the Specifications for "Asphalt Concrete Composite."
- Granular material will be the same type used elsewhere on the project or will be as specified in the plans. If granular material type is not specified in the plans, the material will conform to the Specifications for "Base Course". The granular material will be placed the same thickness as the mainline surfacing or as specified in the plans.
- Topsoil is not shown in the transverse section drawing.
- ☑ The post and blockout illustrated above is typical for single thrie beam guardrail. When other variations of posts and blockouts are specified on other standard plates (e.g. transitions) then the posts and blockouts will be as specified on the other standard plates or as specified in the plans.
- Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.
- The top of post and top of block will have a true square cut. The top of block will be a maximum of $\pm 1/2$ inch from the top of the post.

April 8, 2025

S D D O T	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
		Sheet 1 of 5

Published Date: 2026



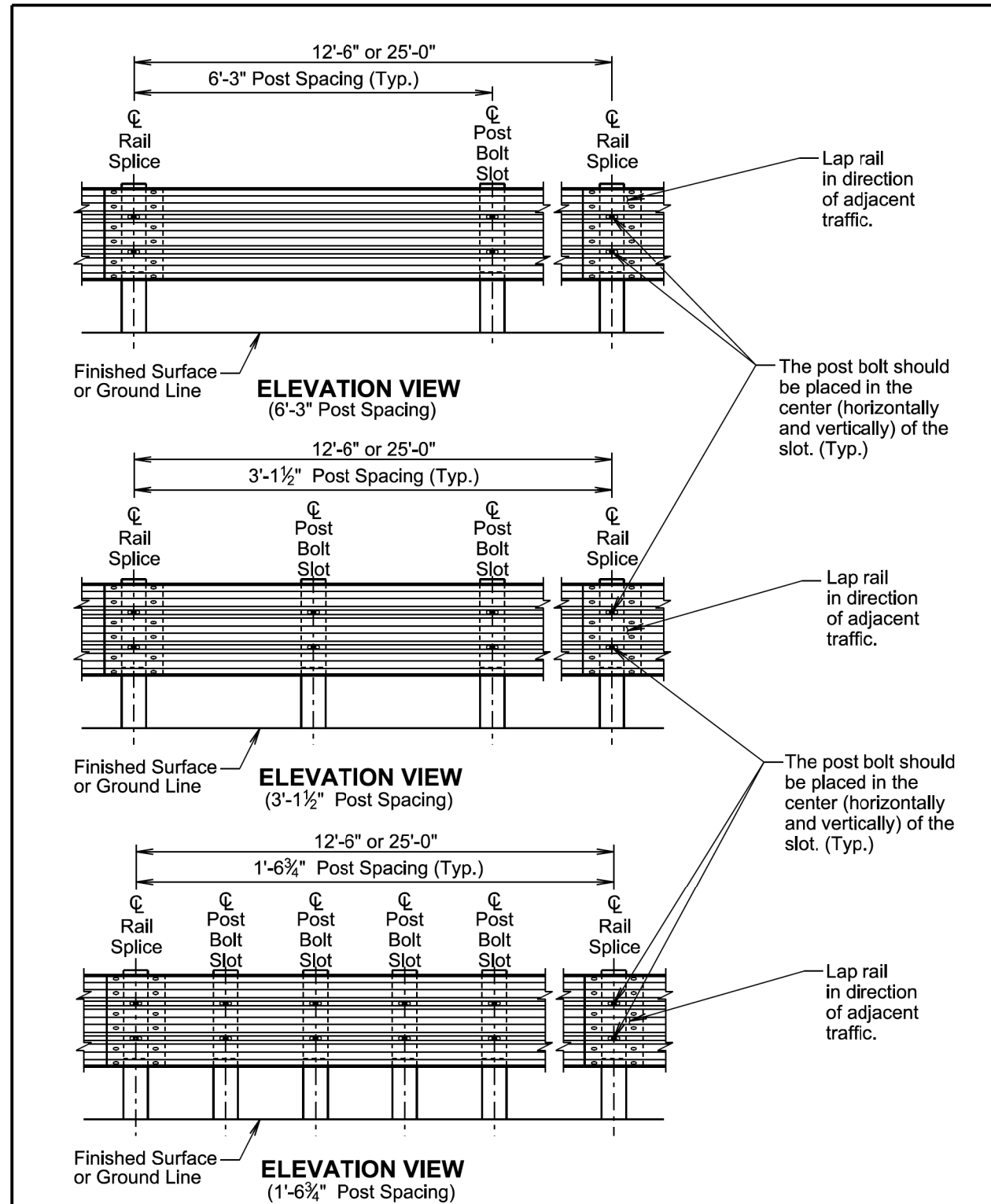
EXPANDED ISOMETRIC VIEW AT MIDSPAN OF THRIE BEAM GUARDRAIL

EXPANDED ISOMETRIC VIEW OF DOUBLE (NESTED) THRIE BEAM GUARDRAIL AT MIDSPAN
(For Information Only, Not to Scale)

April 8, 2025

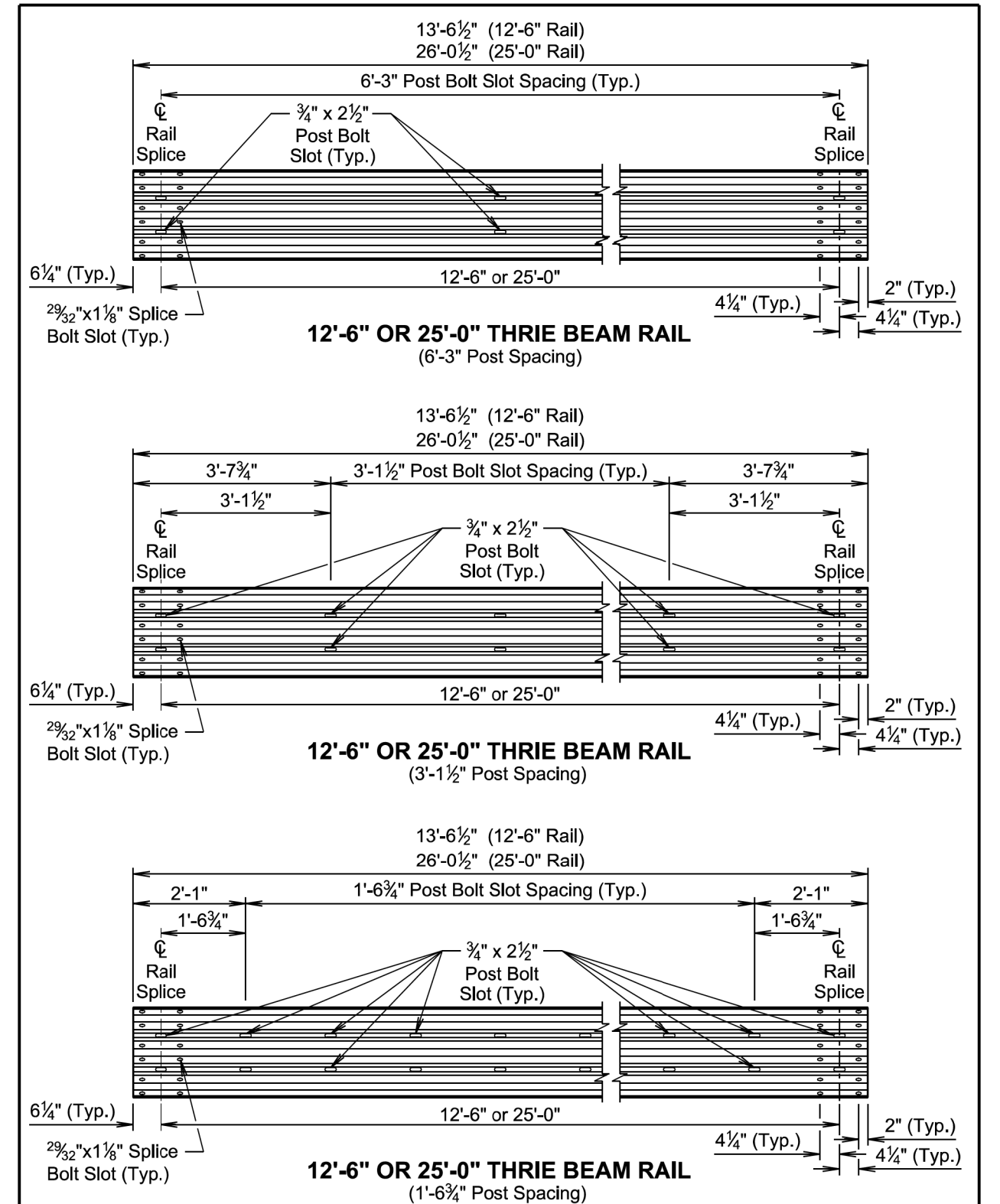
S D D O T	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
		Sheet 2 of 5

Published Date: 2026



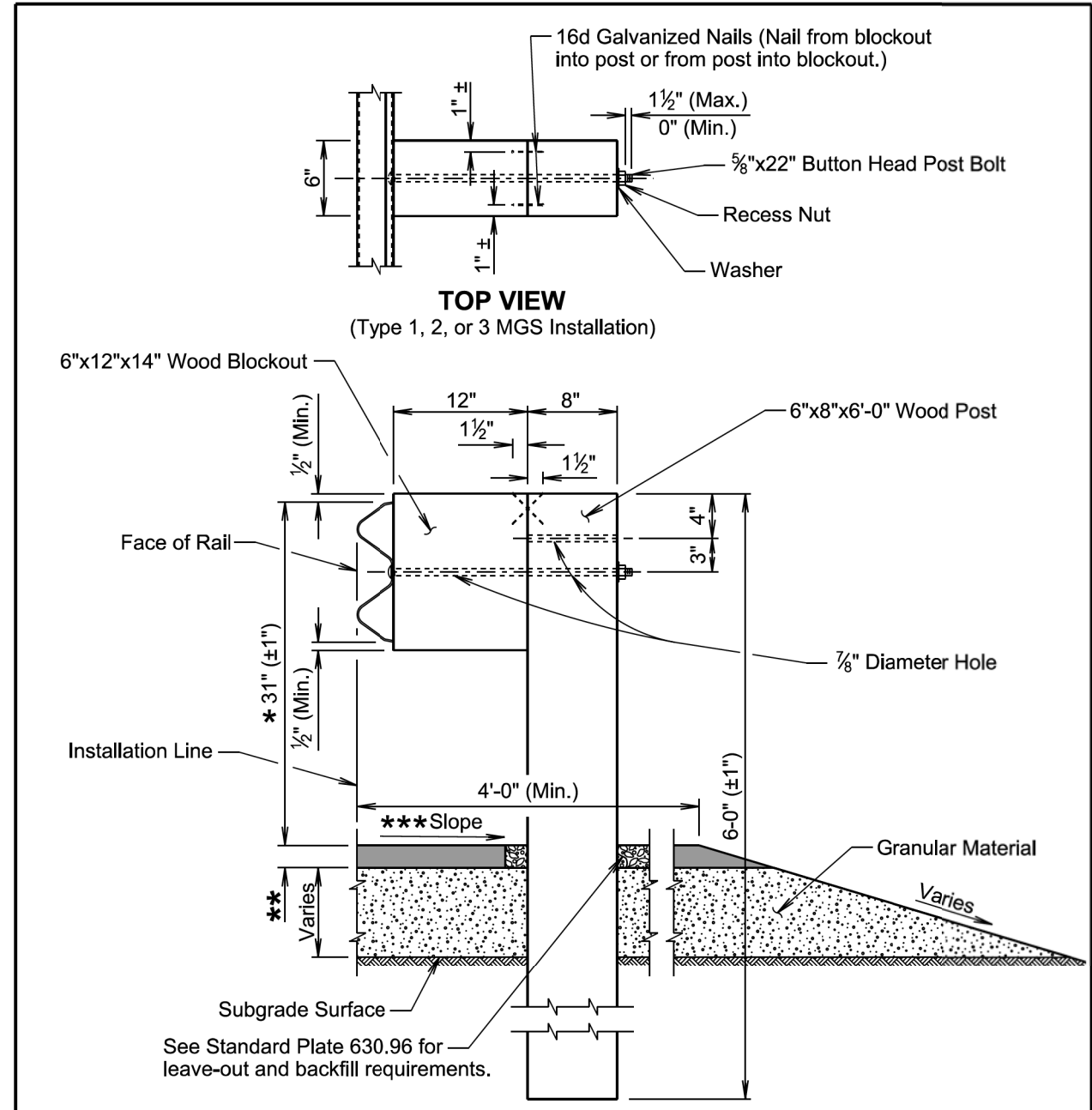
April 8, 2025

Published Date: 2026	S D D O T	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 3 of 5



April 8, 2025

Published Date: 2026	S D D O T	THRIE BEAM GUARDRAIL	PLATE NUMBER 630.01
			Sheet 4 of 5

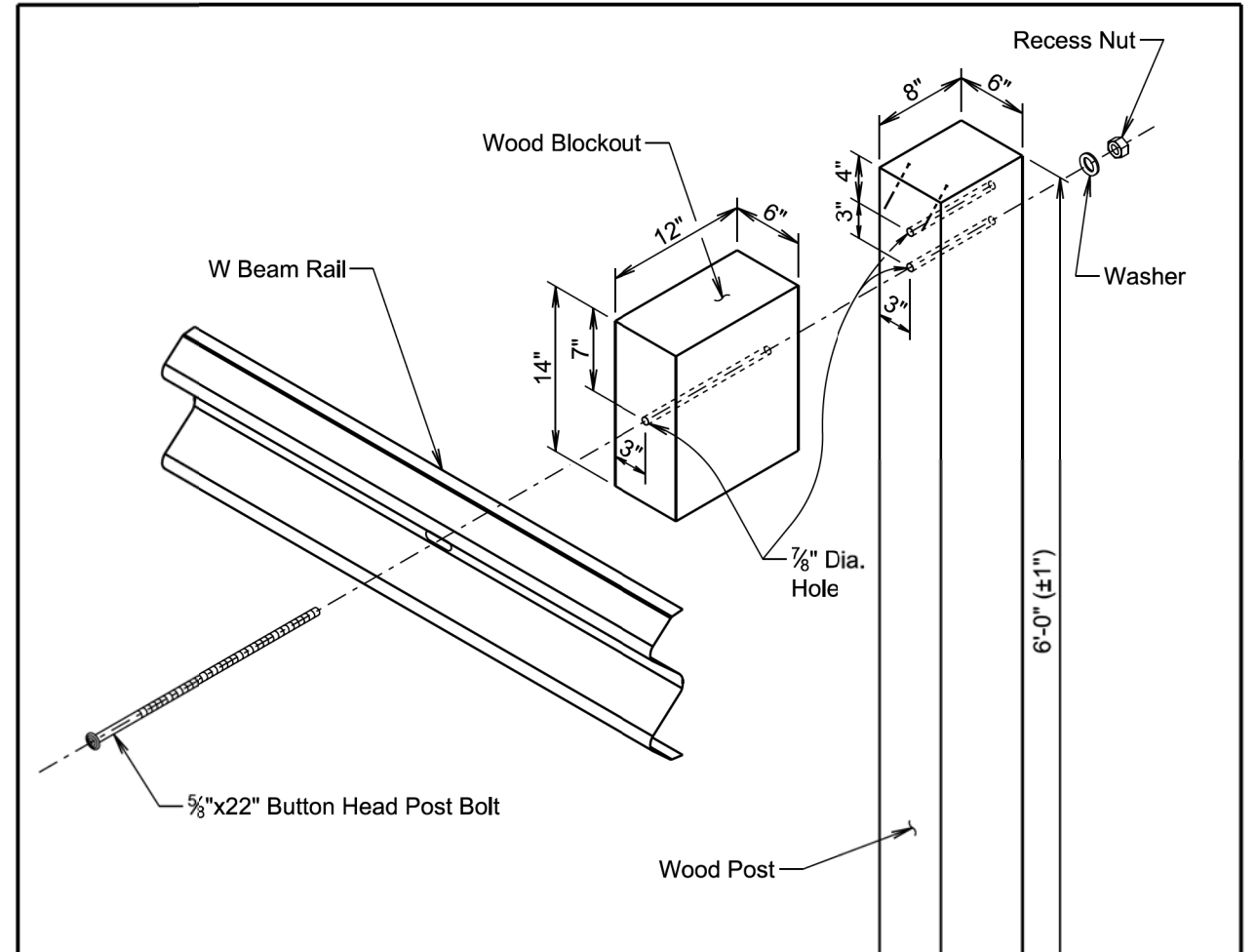


TRANSVERSE SECTION
(Type 1, 2, or 3 MGS Installation)

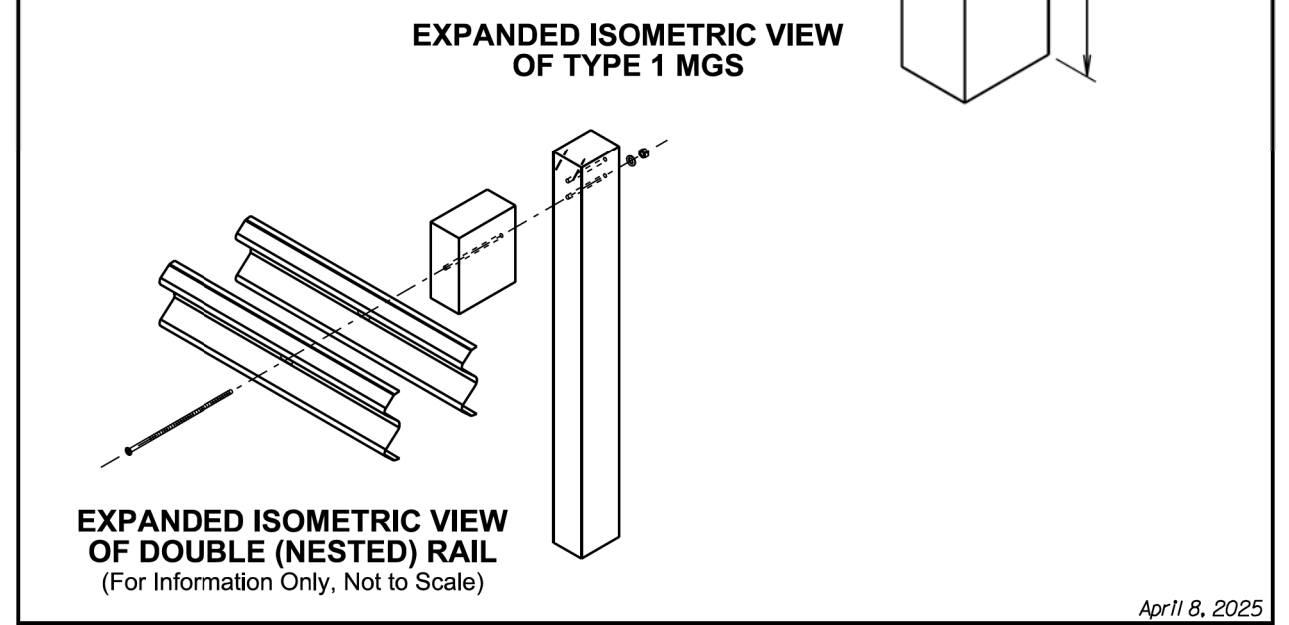
- * See Standard Plate 630.99
- ** 2" asphalt concrete or as specified in the plans.
- *** The cross slope will be as specified in the plans; however, the cross slope will not be steeper than a 10:1 slope.

April 8, 2025

Published Date: 2026	S D D O T	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 2 of 6



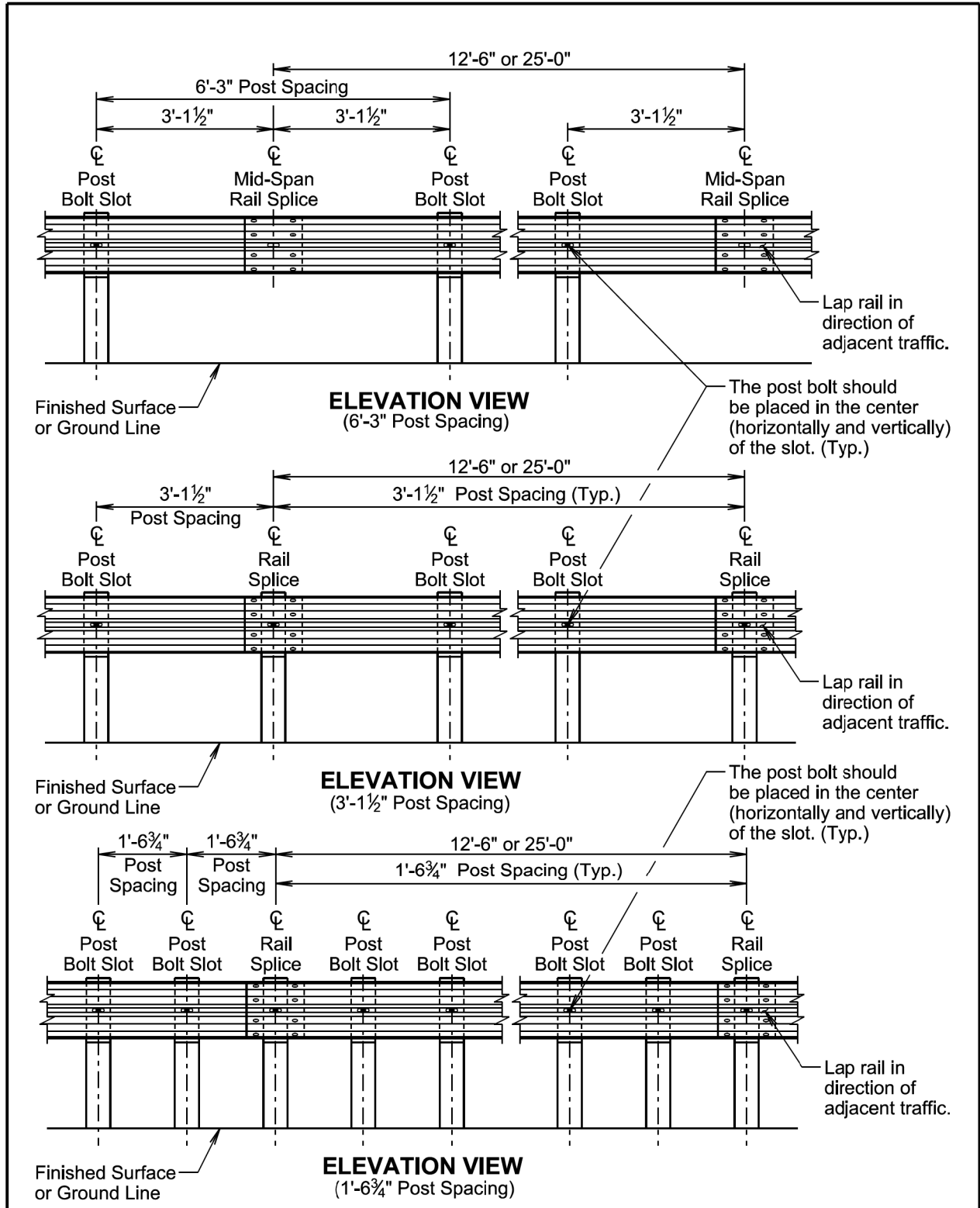
EXPANDED ISOMETRIC VIEW OF TYPE 1 MGS



EXPANDED ISOMETRIC VIEW OF DOUBLE (NESTED) RAIL
(For Information Only, Not to Scale)

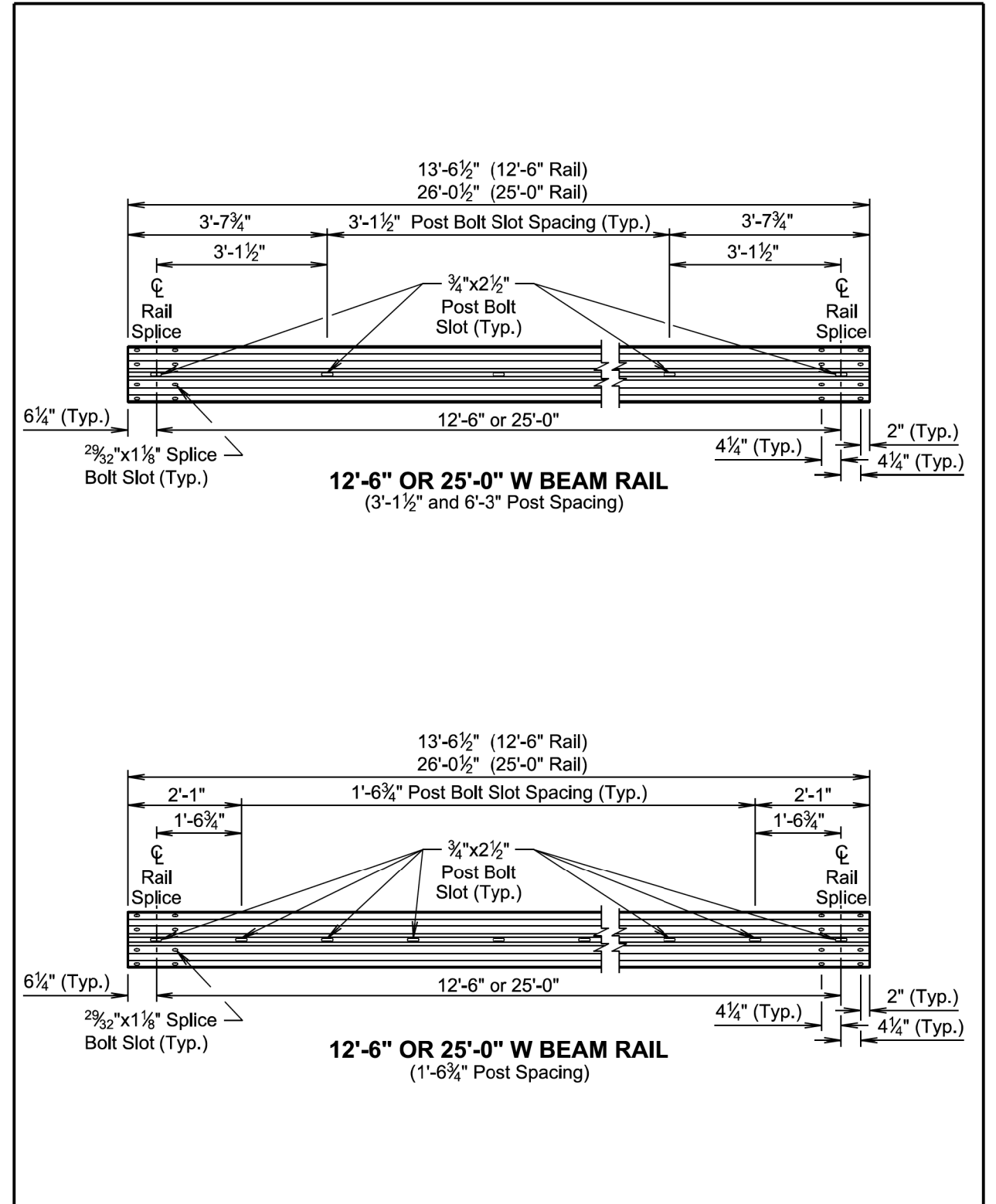
April 8, 2025

Published Date: 2026	S D D O T	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 3 of 6



April 8, 2025

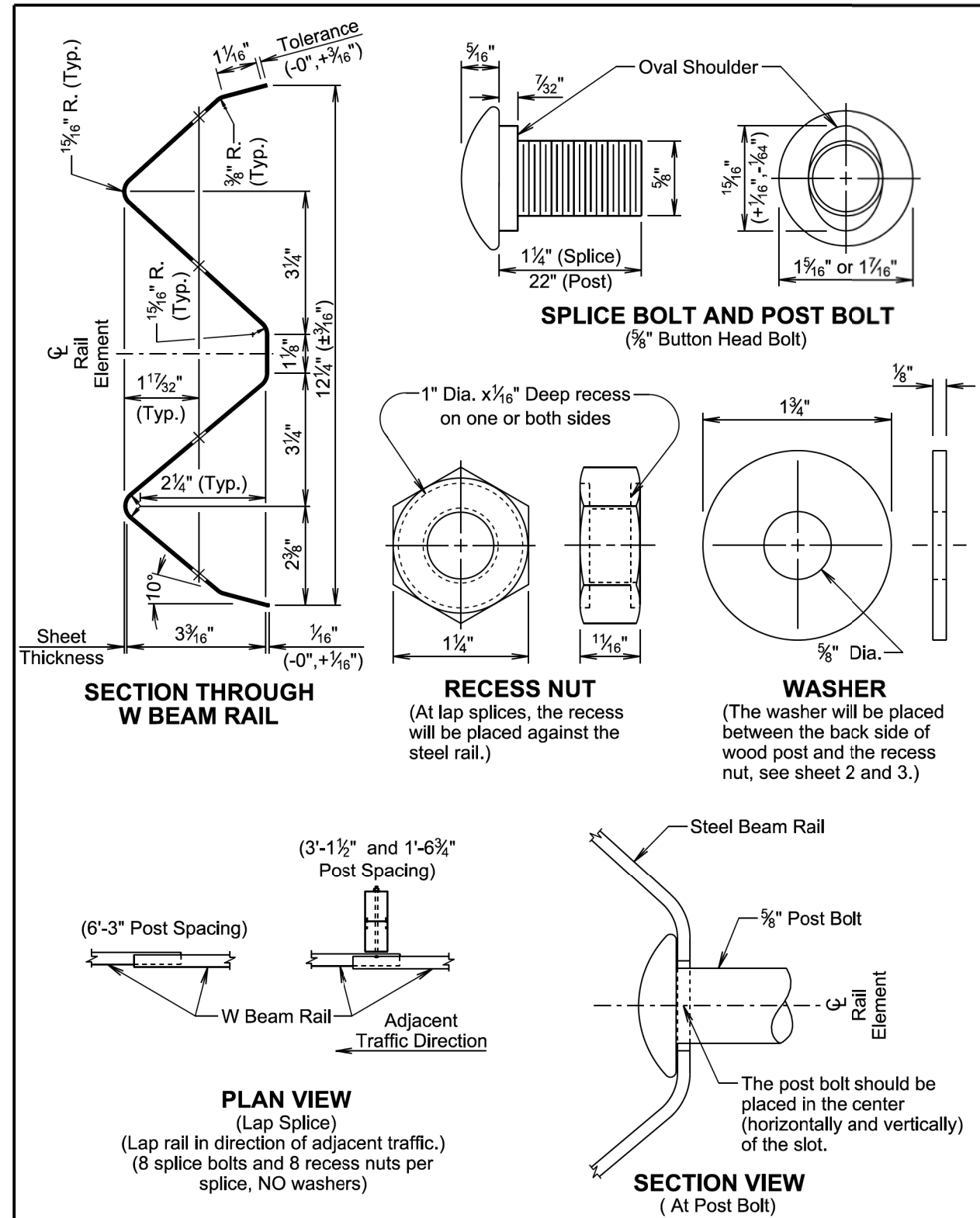
Published Date: 2026	S D D O T	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 4 of 6



April 8, 2025

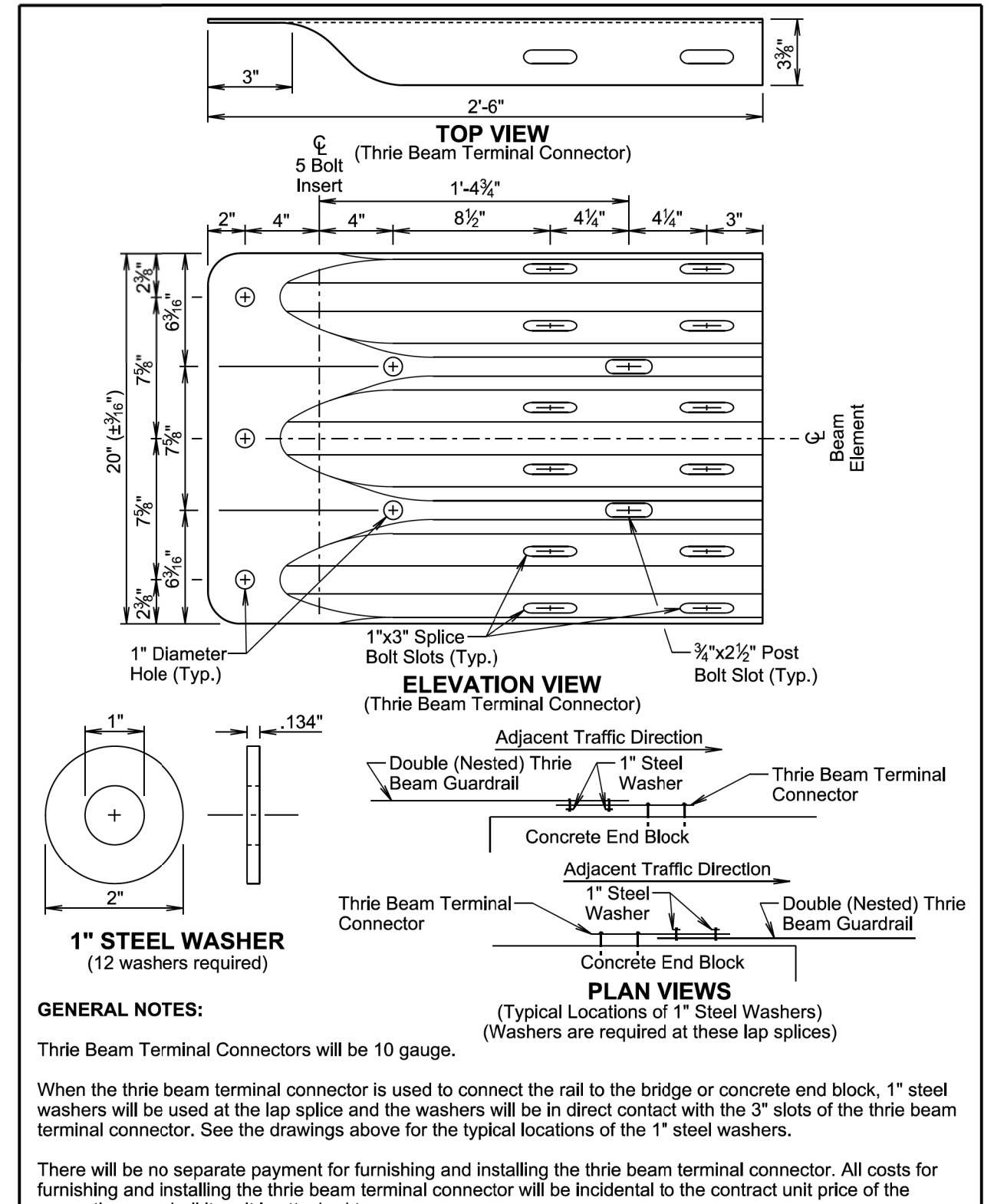
Published Date: 2026	S D D O T	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 5 of 6





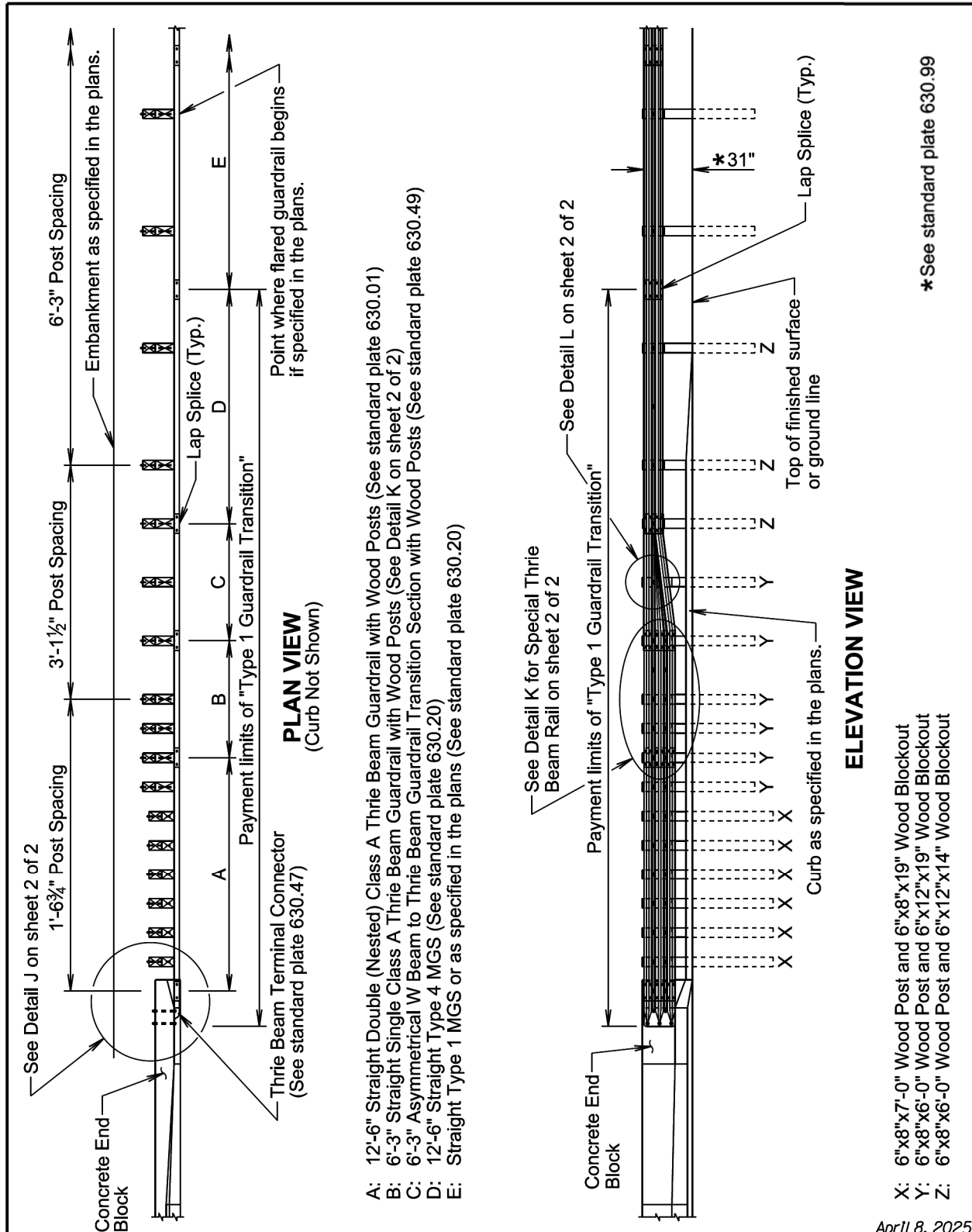
April 8, 2025

Published Date: 2026	S D D O T	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 6 of 6



September 14, 2019

Published Date: 2026	S D D O T	THRIE BEAM TERMINAL CONNECTOR	PLATE NUMBER 630.47
			Sheet 1 of 1



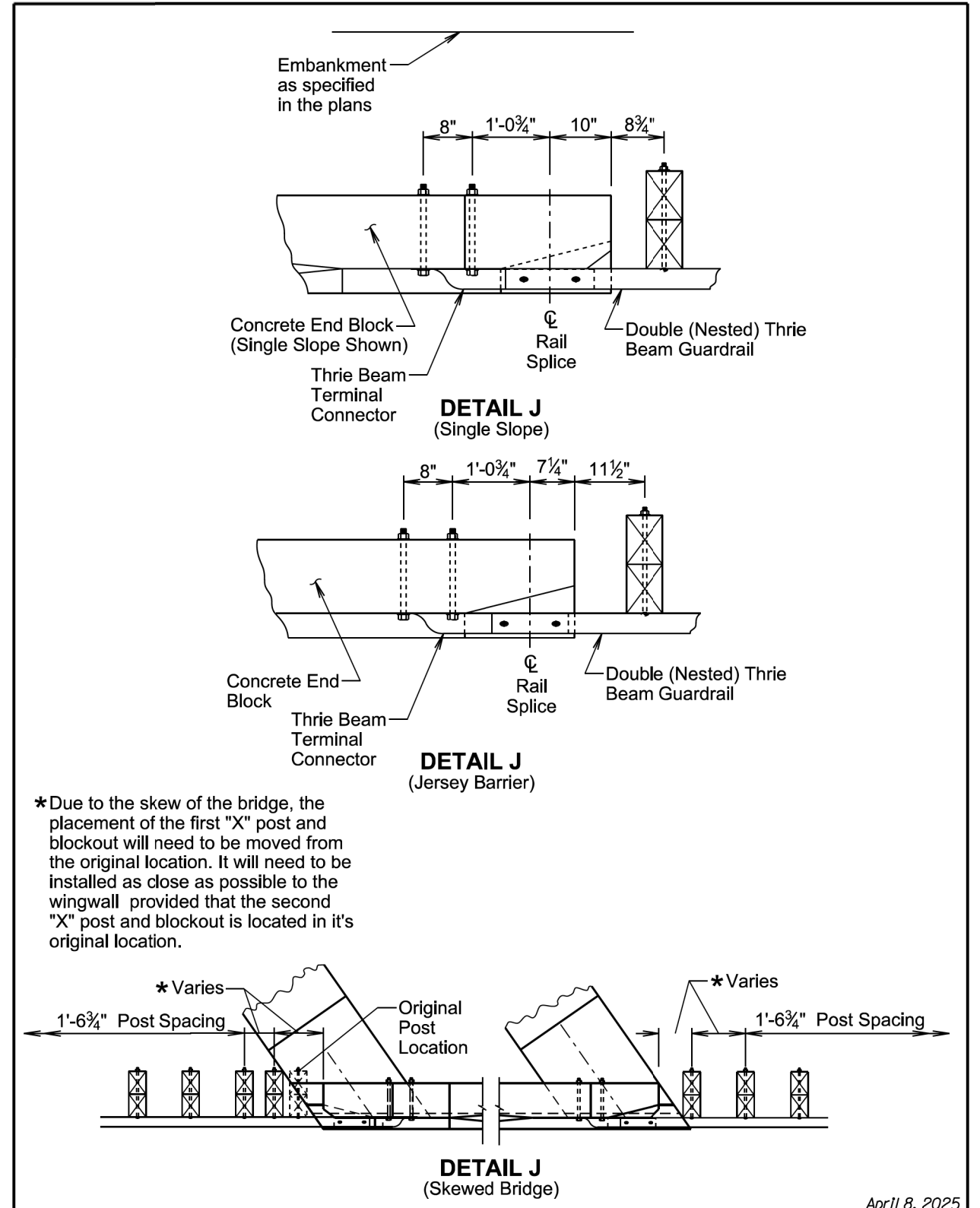
- A: 12'-6" Straight Double (Nested) Class A Thrie Beam Guardrail with Wood Posts (See standard plate 630.01)
- B: 6'-3" Straight Single Class A Thrie Beam Guardrail with Wood Posts (See Detail K on sheet 2 of 2)
- C: 6'-3" Asymmetrical W Beam to Thrie Beam Guardrail Transition Section with Wood Posts (See standard plate 630.49)
- D: 12'-6" Straight Type 4 MGS (See standard plate 630.20)
- E: Straight Type 1 MGS or as specified in the plans (See standard plate 630.20)

- X: 6"x8"x7'-0" Wood Post and 6"x8"x19" Wood Blockout
- Y: 6"x8"x6'-0" Wood Post and 6"x12"x19" Wood Blockout
- Z: 6"x8"x6'-0" Wood Post and 6"x12"x14" Wood Blockout

April 8, 2025

* See standard plate 630.99

S D D O T	TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.50
	Published Date: 2026	Sheet 1 of 3



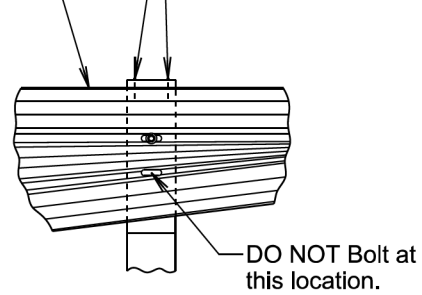
* Due to the skew of the bridge, the placement of the first "X" post and blockout will need to be moved from the original location. It will need to be installed as close as possible to the wingwall provided that the second "X" post and blockout is located in its original location.

April 8, 2025

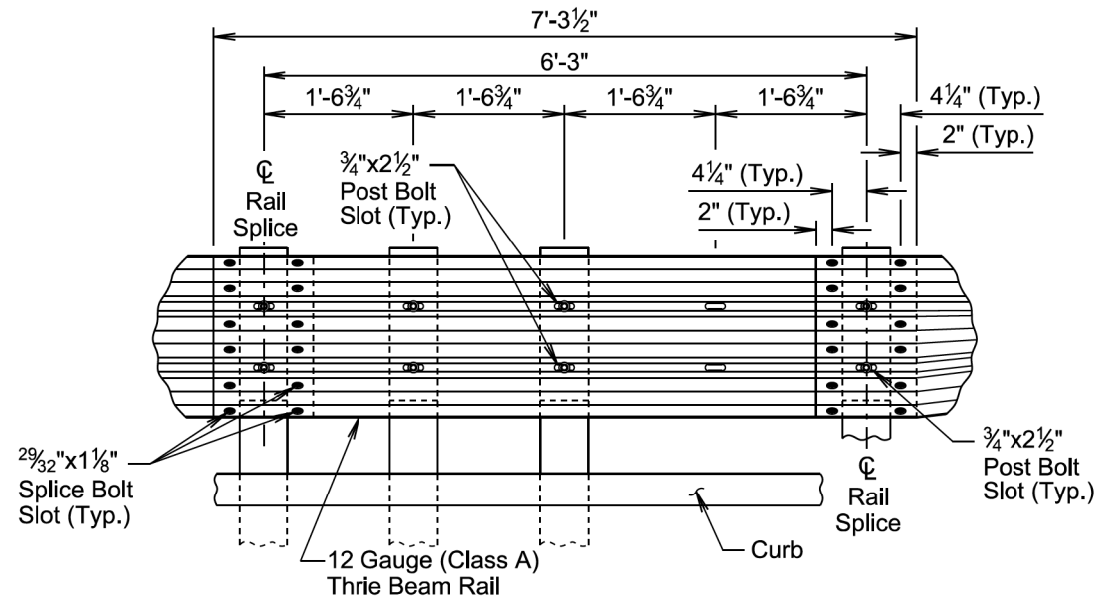
S D D O T	TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.50
	Published Date: 2026	Sheet 2 of 3

Asymmetrical W Beam to Thrie Beam Guardrail Transition Section

16d Galvanized Nails (Nail from breakout into post or from post into breakout.)



DETAIL L



DETAIL K
(Special Thrie Beam Rail)

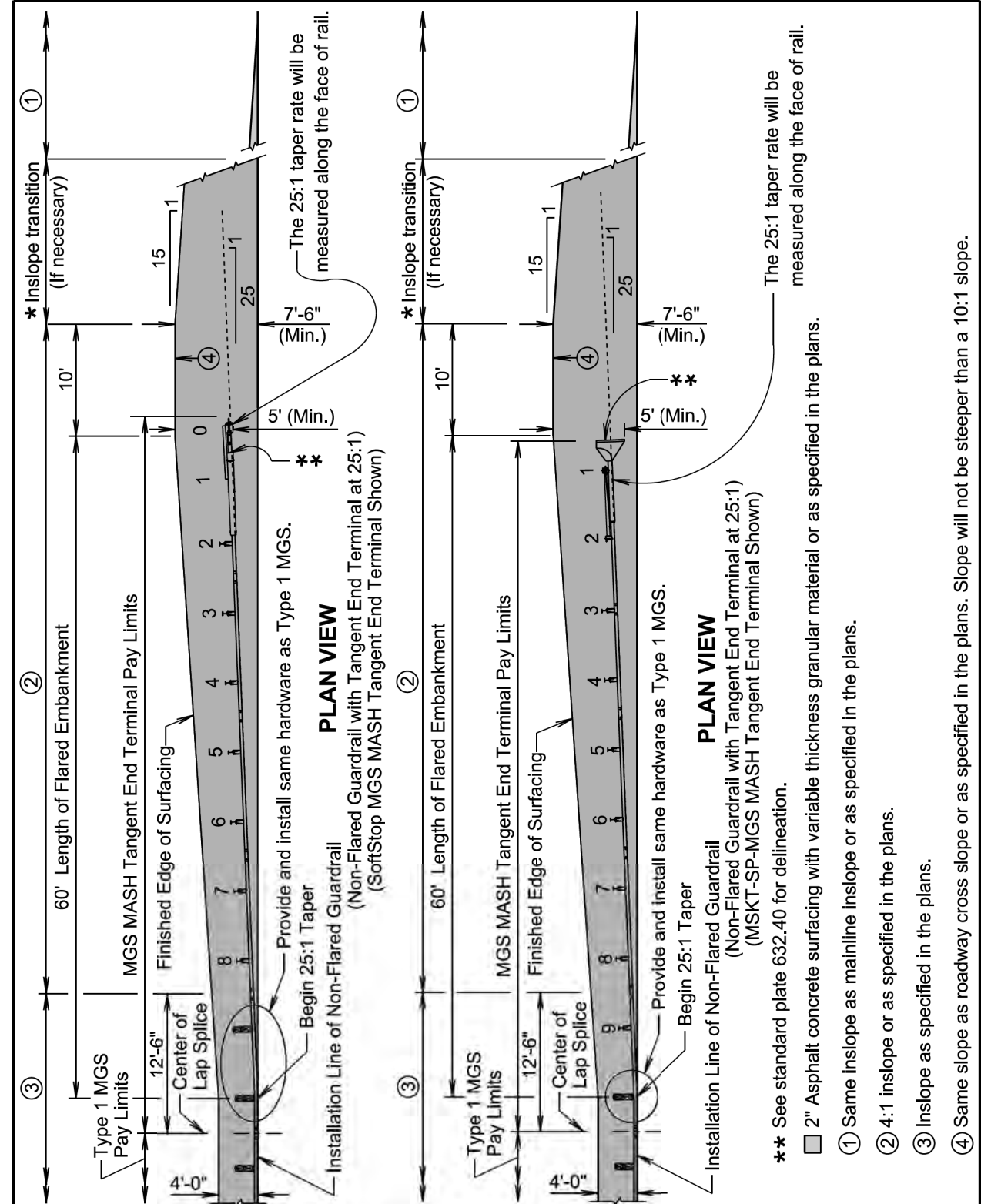
GENERAL NOTES:

Throughout the type 1 guardrail transition, slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.

All costs for furnishing and installing the type 1 guardrail transition including labor, equipment, and materials which includes all rail sections, posts and blockouts, hardware, and incidentals will be included in the contract unit price per each for "Type 1 Guardrail Transition".

April 8, 2025

Published Date: 2026	S D D O T	TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.50
			Sheet 3 of 3



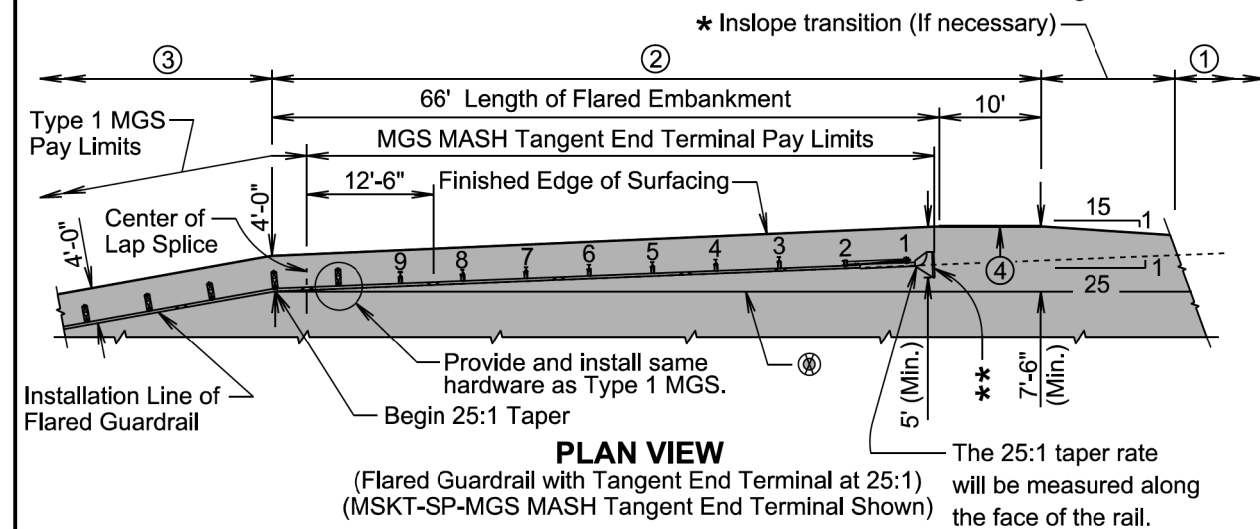
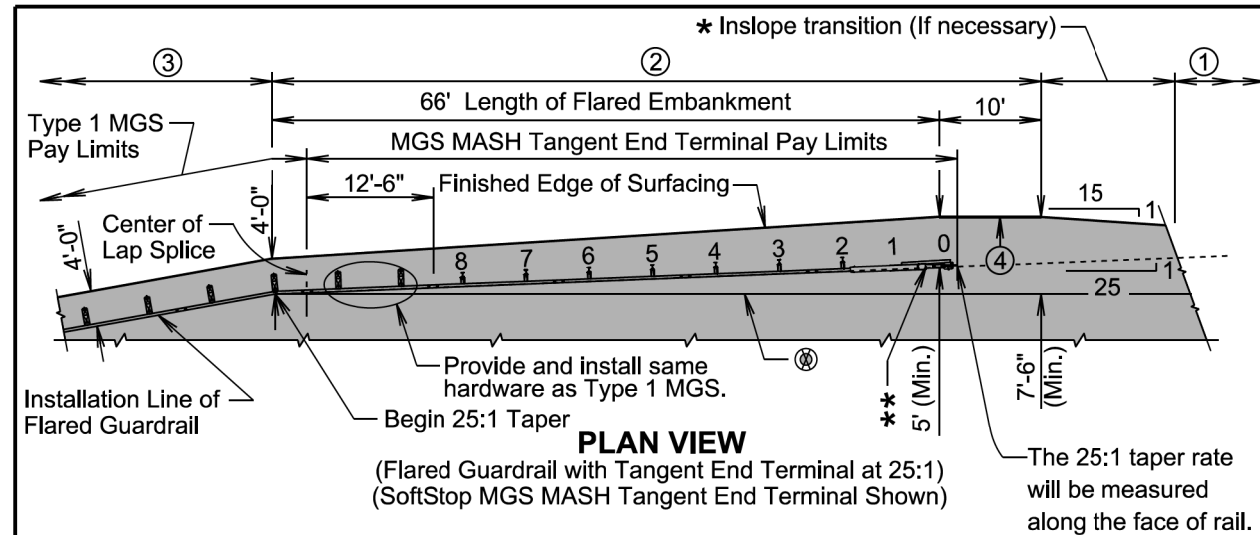
PLAN VIEW

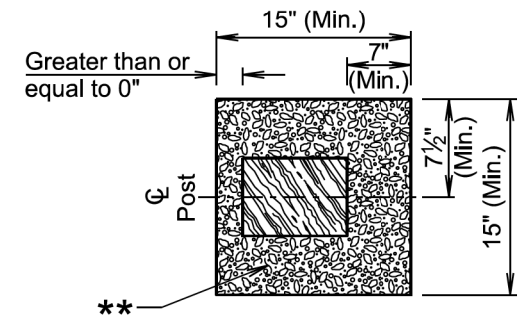
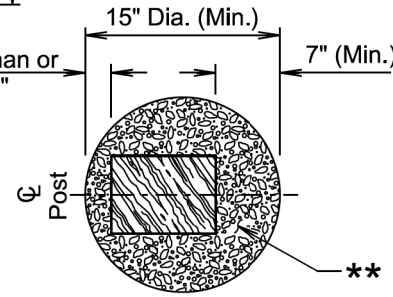
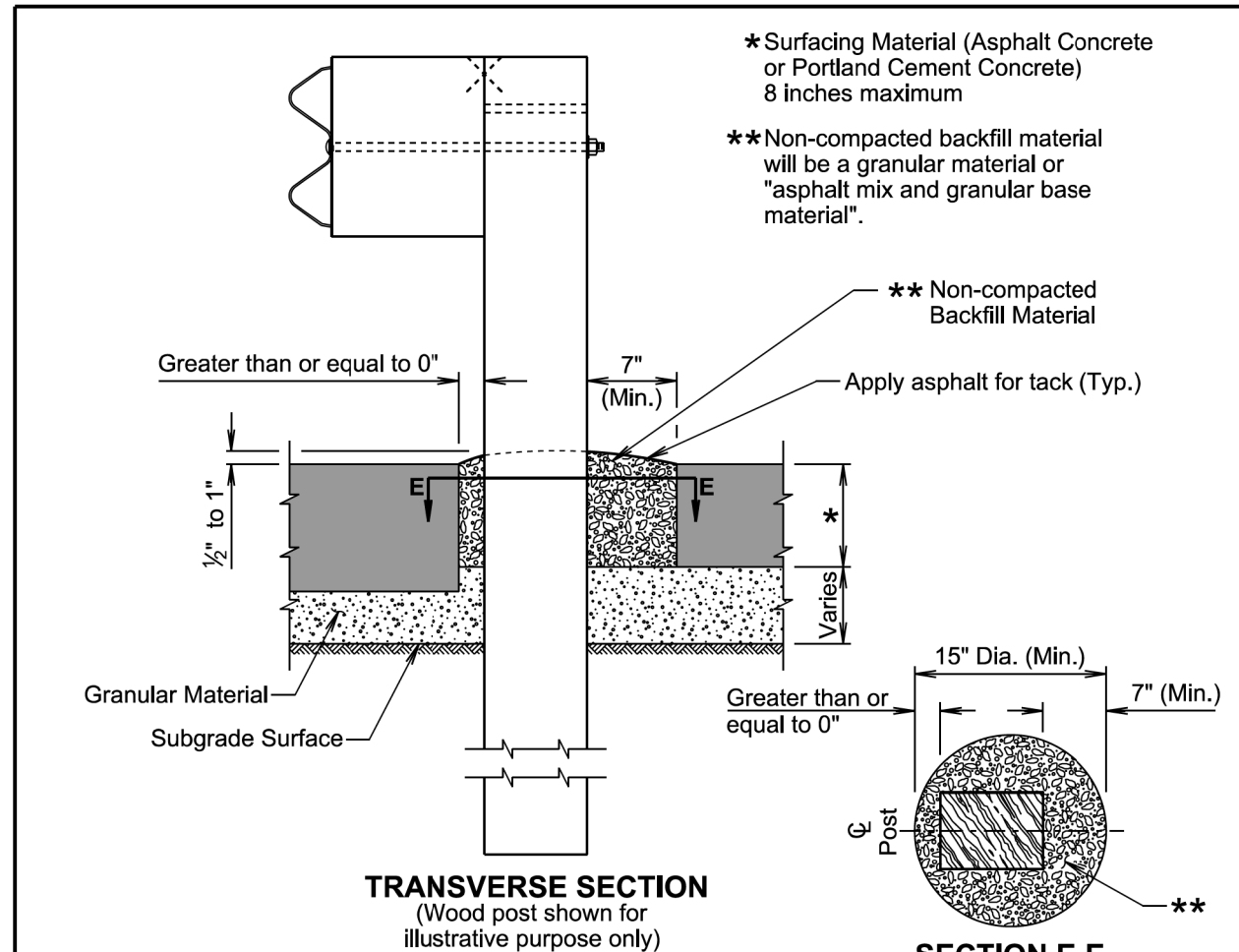
PLAN VIEW

- ** See standard plate 632.40 for delineation.
- 2" Asphalt concrete surfacing with variable thickness granular material or as specified in the plans.
- ① Same inslope as mainline inslope or as specified in the plans.
- ② 4:1 inslope or as specified in the plans.
- ③ Inslope as specified in the plans.
- ④ Same slope as roadway cross slope or as specified in the plans. Slope will not be steeper than a 10:1 slope.

April 8, 2025

Published Date: 2026	S D D O T	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH TANGENT END TERMINAL INSTALLED WITH 25:1 TAPER	PLATE NUMBER 630.90
			Sheet 1 of 3





GENERAL NOTES:

The leave-out limits may be increased to accommodate construction equipment and tolerances.

When posts are installed in augured or dug holes, the backfill material will be compacted to the bottom of the pavement surfacing material to the satisfaction of the Engineer. The backfill material for the thickness of the pavement surfacing material will be non-compacted.

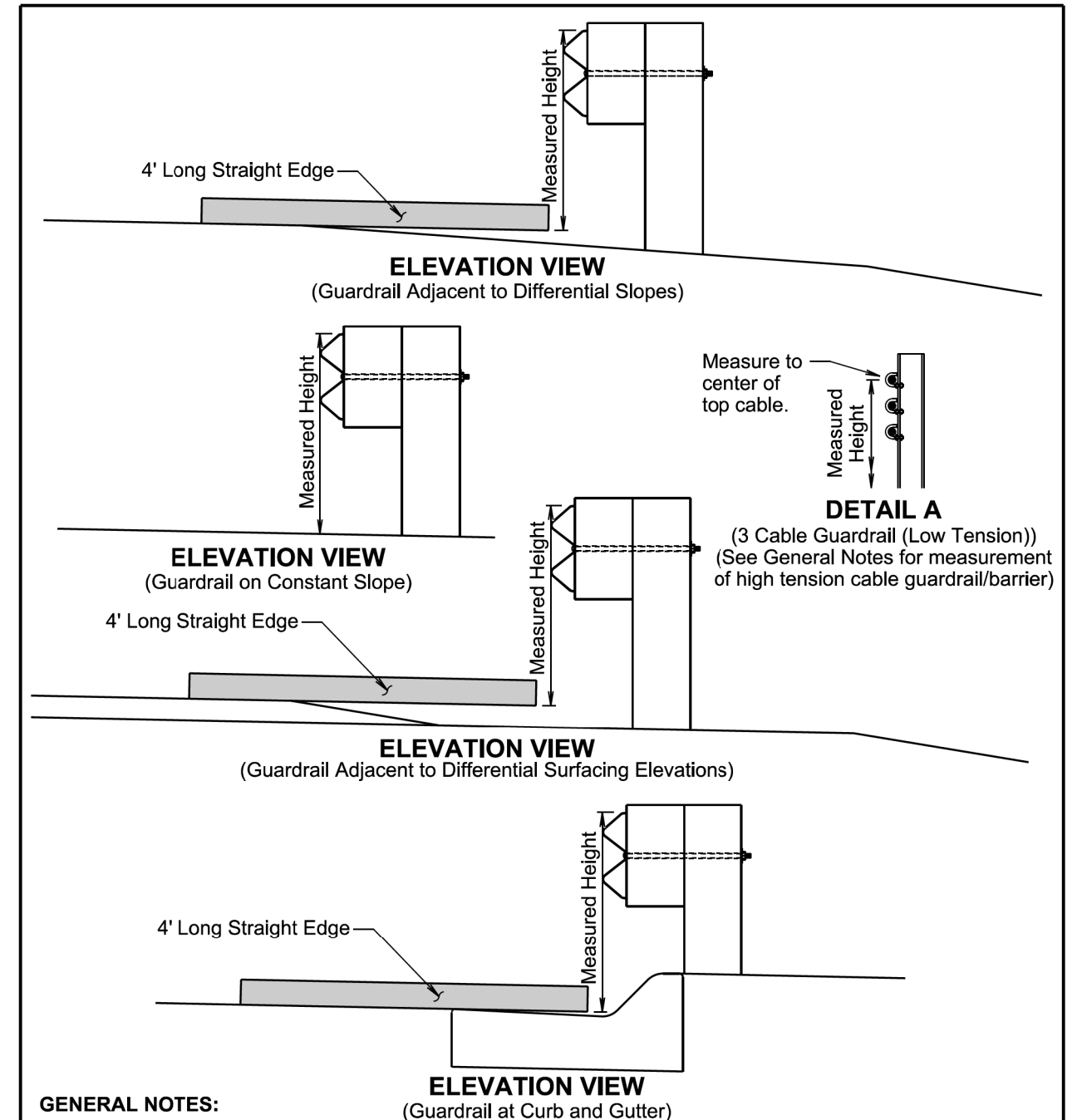
The backfill material will be mounded 1/2 inch to 1 inch above the top of the adjacent surfacing as illustrated above.

Asphalt for tack will be applied to the surface of the backfill material at the rate of 0.15 to 0.20 gallons per square yard.

All costs for constructing the leave-out including labor, equipment, and materials which includes the backfill material and tack coat will be incidental to the contract unit price for the respective guardrail contract item.

November 19, 2021

Published Date: 2026	S D D O T	GUARDRAIL POST INSTALLED IN ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE	PLATE NUMBER 630.96
			Sheet 1 of 1



GENERAL NOTES:

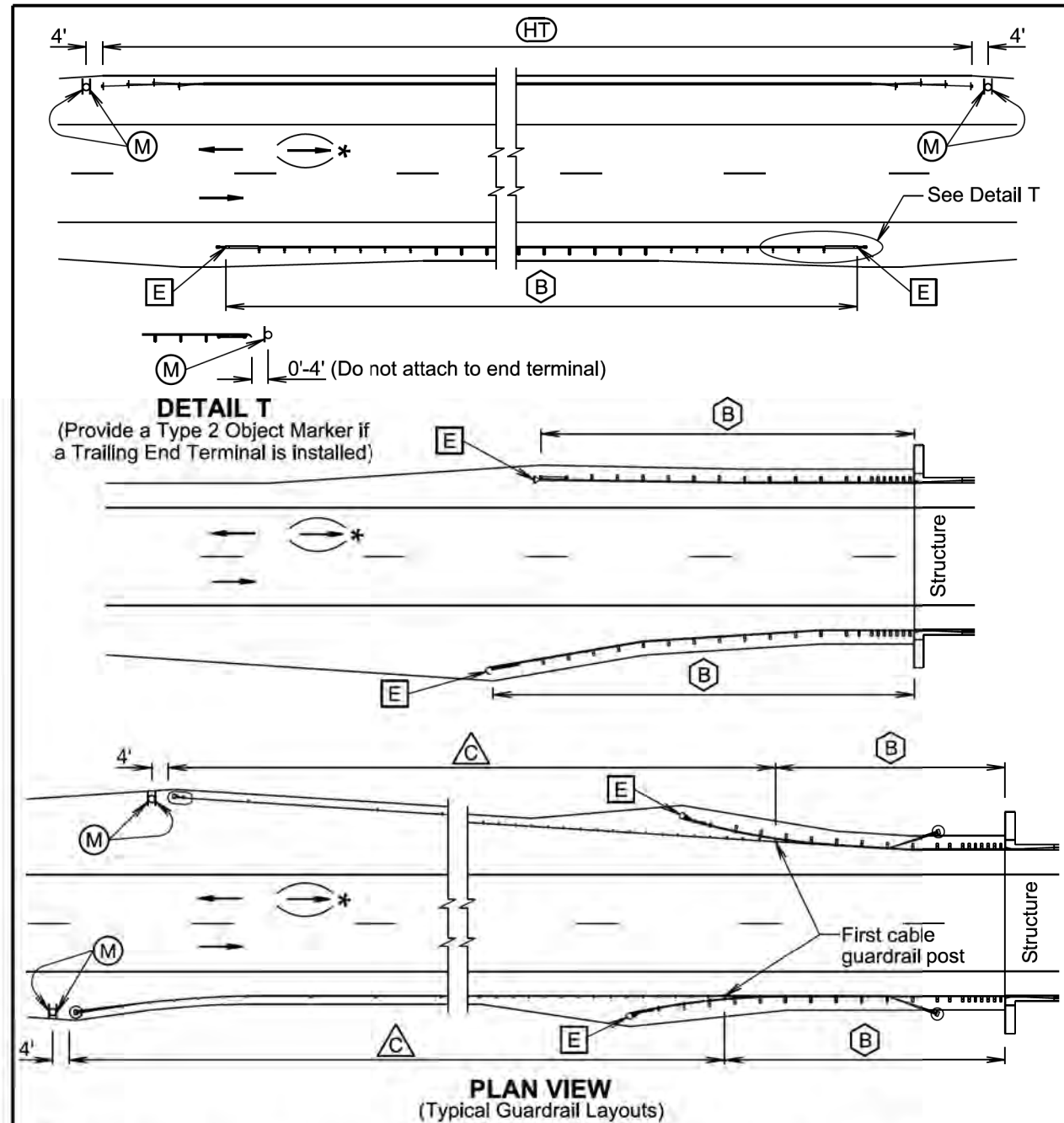
The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems except for high tension cable guardrail/barrier will be measured in accordance with this standard plate.

When measuring height of 3 cable guardrail (low tension) the height will be measured to the center of the top cable. See Detail A.

The height of high tension cable guardrail/barrier will be measured in accordance with the Manufacturer's installation instructions.

September 14, 2019

Published Date: 2026	S D D O T	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.99
			Sheet 1 of 1

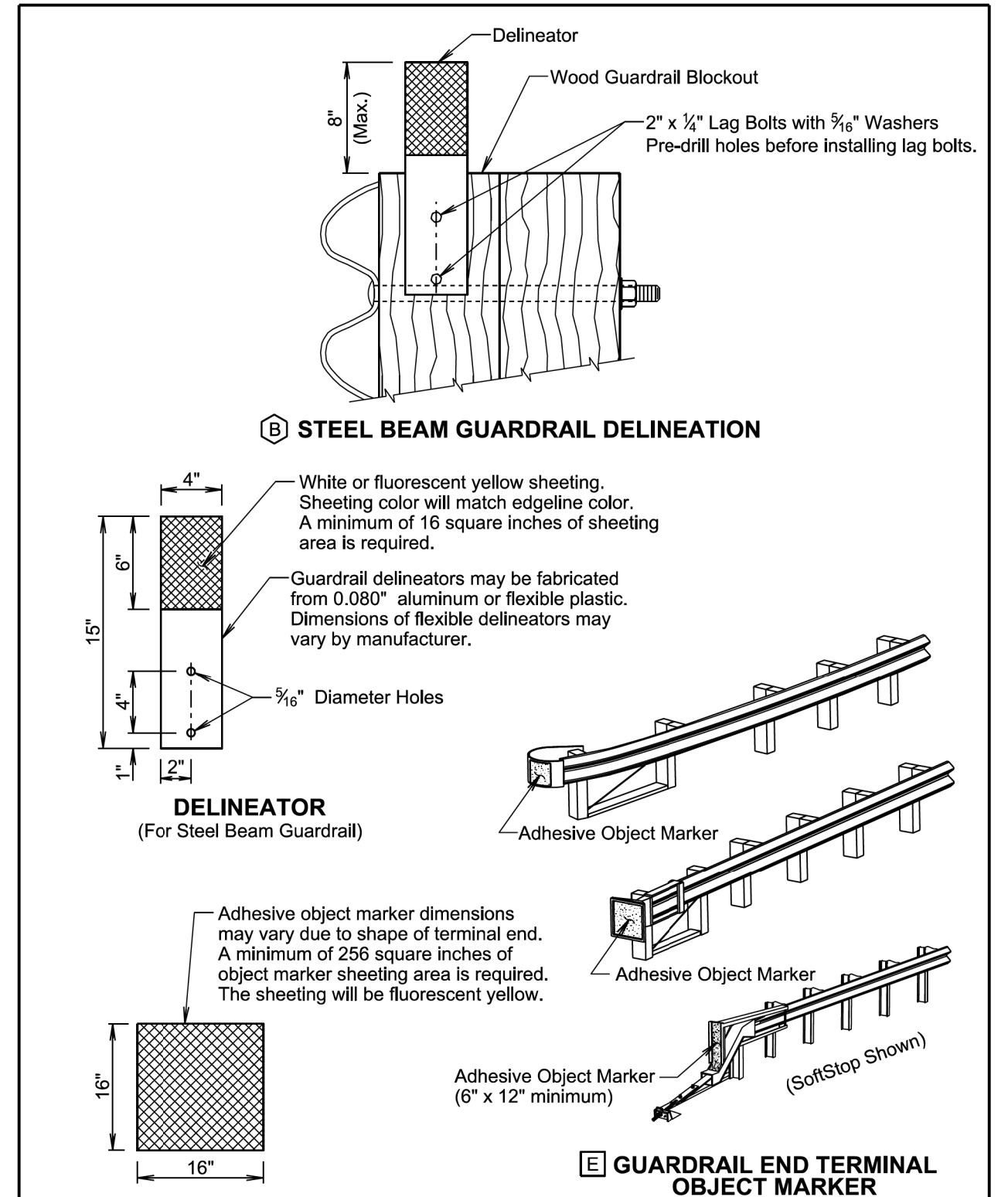


- (B) Steel Beam Guardrail Delineation
- (E) Guardrail End Terminal Object Marker
- (C) 3 Cable Guardrail (Low Tension) Delineation
- (HT) High Tension Cable Guardrail Delineation
- (M) Type 2 Object Marker

*For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

April 8, 2025

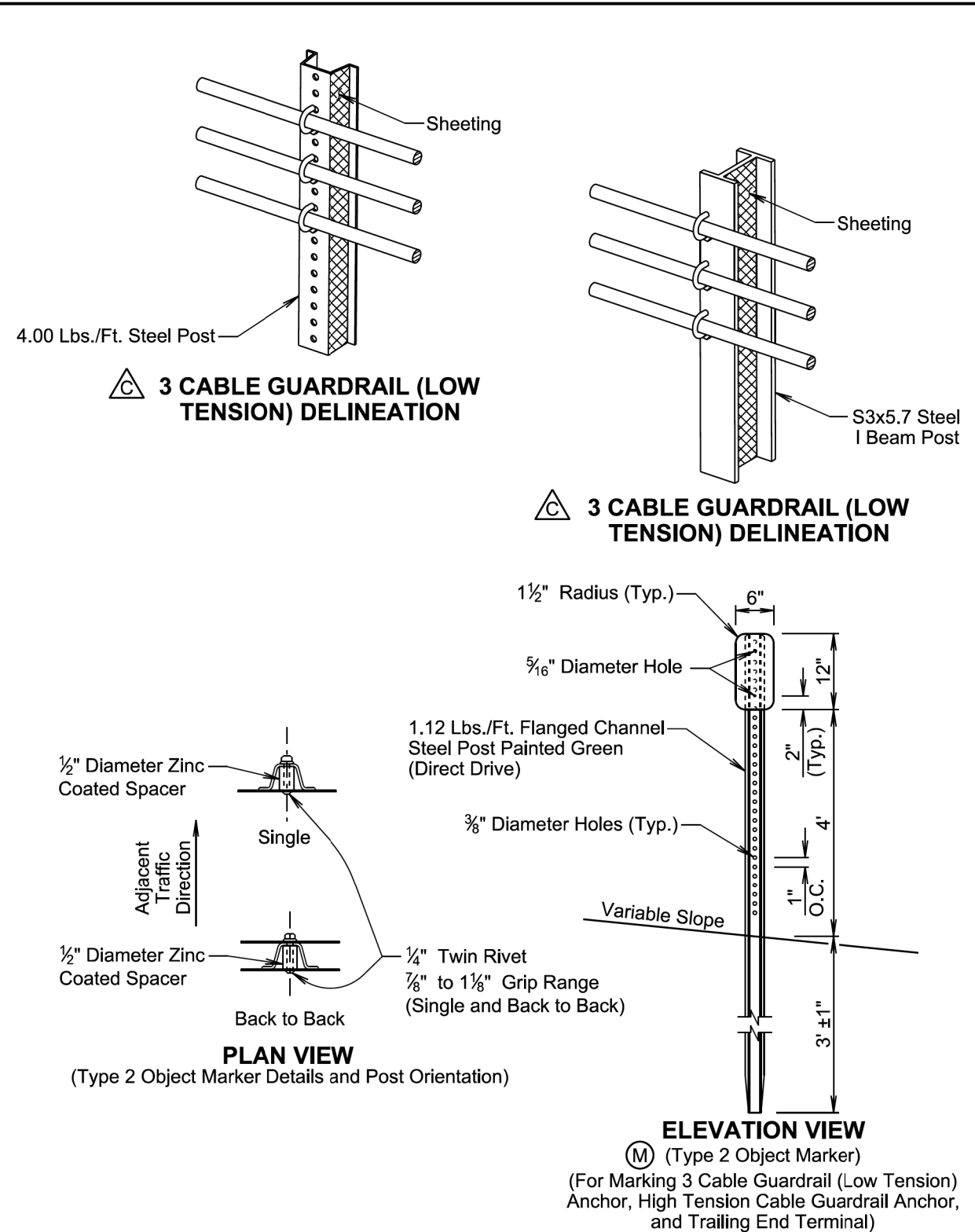
Published Date: 2026	S D D O T	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 1 of 4



ADHESIVE OBJECT MARKER

April 8, 2025

Published Date: 2026	S D D O T	DELINEATION GUARDRAIL	PLATE NUMBER 632.40
			Sheet 2 of 4



April 8, 2025

Published Date: 2026	S D D O T	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 3 of 4

GENERAL NOTES:

The delineation of high tension cable guardrail will be reflective sheeting placed back to back on every third post cap or cable spacer. Maximum spacing of delineation will not exceed 35 feet. The sheeting will be type XI in conformance with ASTM D4956. The color of the reflective sheeting will be the same as the nearest pavement marking.

The delineators for steel beam guardrail and sheeting on 3 cable guardrail (low tension) posts will be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting will be type XI in conformance with ASTM D4956. Along two-way roadways the sheeting will be on both sides of the delineators and guardrail posts and will be white in color. For one-way roadways the sheeting will only be required on the side facing traffic and the color will be the same as the nearest pavement marking, yellow on the left side of the roadway and white on the right side.

When steel beam guardrail is attached to a bridge the first delineator will be attached to the post nearest the bridge.

At bridges with guardrail less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object marker. The spacing between the delineators will be approximately one third of the length of the guardrail.

At bridges with guardrail 200 feet and greater in length, including bridges that have steel beam guardrail transitioning to 3 cable guardrail (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will extend throughout the length of the guardrail system.

Steel beam guardrail that is not attached to a bridge and is less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object markers. The spacing between the delineators will be approximately one third of the length of the guardrail.

Steel beam guardrail that is not attached to a bridge and is 200 feet and greater in length, including steel beam guardrail transitioning to 3 cable guardrail (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will extend throughout the length of the guardrail system.

All costs for furnishing and installing single or back to back guardrail delineation on 3 cable guardrail and steel beam guardrail will be included in the contract unit price per each for "Guardrail Delineator".

All costs for furnishing and installing the reflective sheeting on the cable spacers or post caps for the high tension cable guardrail will be incidental to the respective high tension cable guardrail contract item.

An adhesive object marker will be placed on the end of the W beam guardrail or MGS end terminal. The adhesive object marker dimensions may vary due to the shape of the terminal end. A minimum of 256 square inches of object marker reflective sheeting area is required on end terminals with sufficient surface area. Other end terminals (SoftStop) will require an adhesive object marker with a minimum size of 6" x 12". The reflective sheeting will be fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the adhesive object marker will be incidental to various contract items.

A type 2 object marker will be placed such that the edges of the type 2 object marker and the 3 cable guardrail (low tension) anchor, high tension cable guardrail anchor, or the trailing end terminal that are nearest to the roadway will be installed in line with the same lateral offset from the traveled way at the location as noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") will have fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware will be included in the contract unit price per each for "Type 2 Object Marker" for single-sided and "Type 2 Object Marker Back to Back" for back to back type 2 object markers.

April 8, 2025

Published Date: 2026	S D D O T	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 4 of 4