

SECTION B: GRADING PLANS

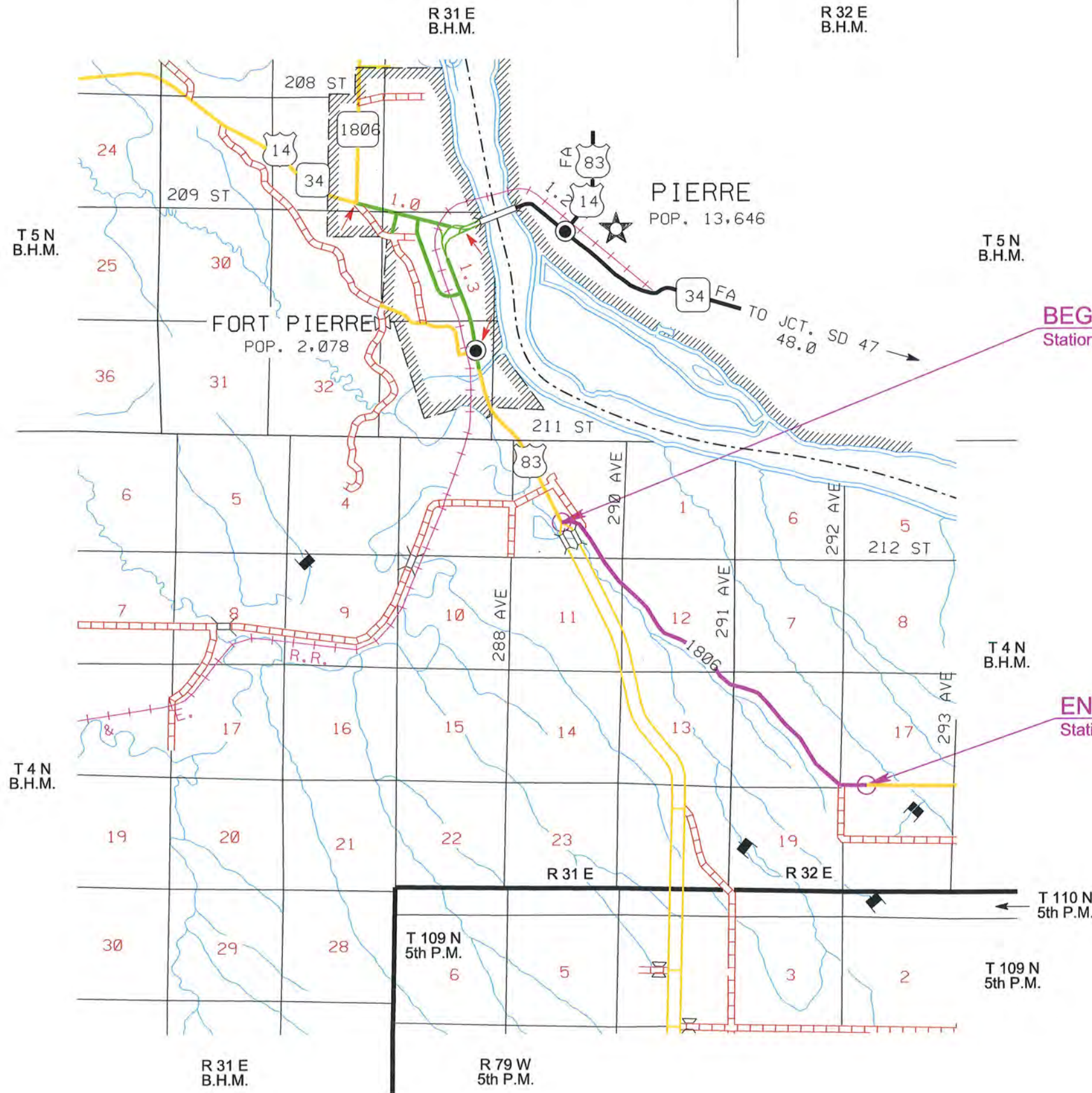
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B1	B102

Plotting Date: 9/9/2021

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BEGIN P 1806(15)176
Station 0+00.00

END P 1806(15)176
Station 199+92.16



SECTION B ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	4	Each
009E3225	Reestablish Public Land Survey System Corner	136	Each
009E4100	Construction Schedule, Category I	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0600	Remove Fence	8,410	Ft
110E7510	Remove Pipe End Section for Reset	4	Each
120E0010	Unclassified Excavation	189,319	CuYd
120E0600	Contractor Furnished Borrow Excavation	93,260	CuYd
120E6100	Water for Embankment	1,902.1	MGal
250E0020	Incidental Work, Grading	Lump Sum	LS
260E1010	Base Course	3,583.0	Ton
260E1030	Base Course, Salvaged	840.0	Ton
260E6000	Granular Material, Furnish	420.0	Ton
270E0020	Salvage and Stockpile Asphalt Mix Material	420.0	Ton
270E0220	Blend and Stockpile Granular Material	840.0	Ton
320E1200	Asphalt Concrete Composite	450.0	Ton
421E0100	Pipe Culvert Undercut	598	CuYd
450E0142	24" RCP Class 2, Furnish	240	Ft
450E0150	24" RCP, Install	240	Ft
450E0162	30" RCP Class 2, Furnish	94	Ft
450E0170	30" RCP, Install	94	Ft
450E0182	36" RCP Class 2, Furnish	140	Ft
450E0190	36" RCP, Install	140	Ft
450E0192	42" RCP Class 2, Furnish	72	Ft
450E0200	42" RCP, Install	72	Ft
450E2028	36" RCP Flared End, Furnish	2	Each
450E2029	36" RCP Flared End, Install	2	Each
450E2032	42" RCP Flared End, Furnish	1	Each
450E2033	42" RCP Flared End, Install	1	Each
450E2200	24" RCP Sloped End, Furnish	6	Each
450E2201	24" RCP Sloped End, Install	6	Each
450E2204	30" RCP Sloped End, Furnish	4	Each
450E2205	30" RCP Sloped End, Install	4	Each
450E3042	42" RCP Arch Class 2, Furnish	134	Ft
450E3050	42" RCP Arch, Install	134	Ft
450E3052	48" RCP Arch Class 2, Furnish	78	Ft
450E3060	48" RCP Arch, Install	78	Ft
450E3072	60" RCP Arch Class 2, Furnish	232	Ft
450E3080	60" RCP Arch, Install	232	Ft
450E3082	72" RCP Arch Class 2, Furnish	124	Ft
450E3090	72" RCP Arch, Install	124	Ft
450E4516	42" RCP Arch Flared End, Furnish	2	Each
450E4517	42" RCP Arch Flared End, Install	2	Each
450E4520	48" RCP Arch Flared End, Furnish	2	Each
450E4521	48" RCP Arch Flared End, Install	2	Each
450E4528	60" RCP Arch Flared End, Furnish	4	Each
450E4529	60" RCP Arch Flared End, Install	4	Each
450E4532	72" RCP Arch Flared End, Furnish	2	Each
450E4533	72" RCP Arch Flared End, Install	2	Each
450E4768	24" CMP 14 Gauge, Furnish	16	Ft
450E4770	24" CMP, Install	16	Ft

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E4778	30" CMP 14 Gauge, Furnish	146	Ft
450E4780	30" CMP, Install	146	Ft
450E4788	36" CMP 14 Gauge, Furnish	364	Ft
450E4790	36" CMP, Install	364	Ft
450E4798	42" CMP 14 Gauge, Furnish	978	Ft
450E4800	42" CMP, Install	978	Ft
450E4808	48" CMP 14 Gauge, Furnish	808	Ft
450E4810	48" CMP, Install	808	Ft
450E5020	30" CMP Elbow, Furnish	2	Each
450E5021	30" CMP Elbow, Install	2	Each
450E5025	36" CMP Elbow, Furnish	6	Each
450E5026	36" CMP Elbow, Install	6	Each
450E5030	42" CMP Elbow, Furnish	16	Each
450E5031	42" CMP Elbow, Install	16	Each
450E5035	48" CMP Elbow, Furnish	12	Each
450E5036	48" CMP Elbow, Install	12	Each
450E5223	36" CMP Flared End, Furnish	3	Each
450E5224	36" CMP Flared End, Install	3	Each
450E5227	42" CMP Flared End, Furnish	13	Each
450E5228	42" CMP Flared End, Install	13	Each
450E5231	48" CMP Flared End, Furnish	12	Each
450E5232	48" CMP Flared End, Install	12	Each
450E5310	24" CMP Sloped End, Furnish	6	Each
450E5311	24" CMP Sloped End, Install	6	Each
450E5314	30" CMP Sloped End, Furnish	4	Each
450E5315	30" CMP Sloped End, Install	4	Each
450E7624	24" Steel Pipe, Furnish	302	Ft
450E7625	24" Steel Pipe, Install	46	Ft
450E7630	30" Steel Pipe, Furnish	160	Ft
450E7631	30" Steel Pipe, Install	42	Ft
450E8019	30" RCP to CMP Transition, Furnish	1	Each
450E8020	30" Pipe Transition, Install	1	Each
450E8024	36" RCP to CMP Transition, Furnish	2	Each
450E8025	36" Pipe Transition, Install	2	Each
450E8029	42" RCP to CMP Transition, Furnish	1	Each
450E8030	42" Pipe Transition, Install	1	Each
450E9001	Reset Pipe End Section	4	Each
451E5124	Bore and Jack 24" Pipe	256	Ft
451E5130	Bore and Jack 30" Pipe	118	Ft
462E0250	Cellular Grout	64.5	CuYd
464E0100	Controlled Density Fill	25.9	CuYd
620E0020	Type 2 Right-of-Way Fence	8,399	Ft
620E0515	Type 1A Temporary Fence	14,474	Ft
620E1020	2 Post Panel	76	Each
620E1030	3 Post Panel	11	Each
680E0040	4" Underdrain Pipe	78	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	309	Ft
680E2000	Concrete Headwall for Underdrain	2	Each
680E2500	Porous Backfill	130.0	Ton
700E0110	Class A Riprap	302.9	Ton
700E0210	Class B Riprap	9,211.4	Ton
700E0310	Class C Riprap	831.4	Ton
720E1010	PVC Coated Bank and Channel Protection Gabion	742.0	CuYd
831E0110	Type B Drainage Fabric	12,608	SqYd

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Rev 9/8/2021 JJK

GRADING OPERATIONS

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 sections 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.

Temporary fence and/or permanent fence will be placed ahead of the grading operation unless otherwise directed by the Engineer.

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.

INSLOPE TRANSITIONS

Inslope transitions will be required at various pipe locations. Refer to Standard Plate 120.05 for details.

TABLE OF INSLOPE TRANSITIONS AT PIPE CULVERTS

Station	L/R	Type
10+06	L	2
26+41	L	2
48+18	L	2
55+75	L	2
80+65	L	2
122+29	L	1

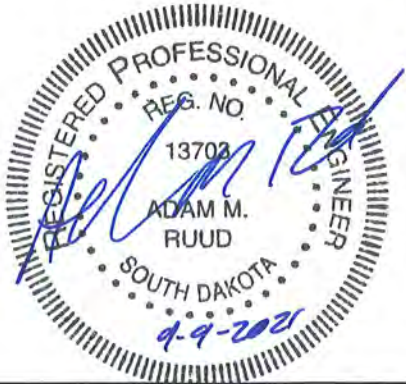


TABLE OF EXCAVATION QUANTITIES BY BALANCES

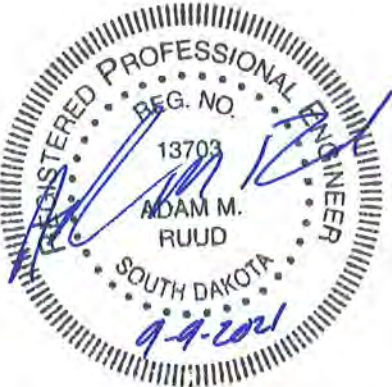
Station to	Station	Excavation (CuYd)	Landslide Debris Excavation (CuYd)	Unstable Excavation – Drainage Channel (CuYd)	* Contractor Furnished Borrow Exc. (CuYd)	Total Excavation (CuYd)	**Out-of- Balance Exc. (CuYd)	** Waste (CuYd)	Unstable Excavation – Drainage Channel (CuYd)	** Out-of- Balance Haul (CuYdSta)
9+55	11+48	1,985				1,985		76		
20+88	22+05	1,202				1,202		1,077		
24+61	26+75	1,526				1,526		1,453		
35+14	36+16	1,139				1,139		1,139		
47+25	48+75	2,313		157		2,470		1,146	157	
53+75	62+12	16,694		4,003	7,344	28,041	4,891		4,003	125,912
66+65	87+80	34,753		7,568	16,482	58,803			7,568	
89+30	90+30	0			171	171				
93+31	99+25	317		5,423	12,174	17,914	6,793		5,423	93,064
106+42	114+10	31,615	6,509	5,856		43,980		6,793	5,856	
116+50	118+10	380			17	397				
121+79	124+66	161			1,148	1,309				
126+14	154+52	3,492	7,406	18,616	48,393	77,907			18,616	
157+48	159+07	123			304	427				
162+15	168+85	940		2,330	5,300	8,570	219		2,330	5,182
171+55	171+74	3				3				
188+91	189+86	225				225		219		
***9+55	189+83				1,927	1,927				
Totals:		96,868	13,915	43,953	93,260	247,996	11,903	11,903	43,953	224,158

* 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.
*** The quantities are for temporary shoulder widening on both sides of the roadway throughout the corridor during construction. Incorporate material used for widening into final inslope grading

TABLE OF UNCLASSIFIED EXCAVATION

	(CuYd)
Excavation	96,868
Landslide Debris Excavation	13,915
Unstable Excavation – Drainage Channel	43,953
Topsoil ¹	19,367
Pipe Culvert Excavation ²	14,460
Salvaged Asphalt Mix Material	222
Granular Base Material ³	533
Total	189,319

¹ The topsoil quantity to be paid for as unclassified excavation is the amount to be stripped. This is based on a 3-inch depth in all disturbed areas and accounts for an additional 3% for slopes.
² All work necessary to excavate and backfill all pipes including labor, equipment, and incidentals will be incidental to the contract unit price per cubic yard for "Unclassified Excavation". Payment for pipe culvert excavation, including excavation for bedding, listed above will be based only on plans quantity and measurement of these excavation quantities during construction will not be performed.
³ The granular base material quantity to be paid for as unclassified excavation is the amount to be removed from below the asphalt mix material to be salvaged. This is based on a 12-inch depth.



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 finalizing a project, the Unstable Material Excavation quantity will be added to the Excavation quantity to compute the Unclassified Excavation quantity.

Out-of-Balance Excavation is material obtained from waste generated from excavation from other balances. The quantity of Out-of-Balance Excavation is included in the Excavation quantity in the balance where it is excavated and is paid for once as Unclassified Excavation.

The Topsoil quantity in the Table of Unclassified Excavation is an estimate. When finalizing 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.

HAUL

Included in the Table of Excavation Quantities by Balances is Out-of-Balance Haul. This is not a pay item and is for informational purposes only. Haul was not estimated for moving Contractor Furnished Borrow Excavation.

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

For Purpose of Extra Haul Computations:

Average Haul = (Out-of-Balance Haul)/Unclassified Excavation

Sta. 53+75 to Sta. 62+12
Average Haul = 125,912 CuYdSta/22,524 CuYd = 5.59 Sta.

Sta. 93+31 to Sta.99+25
Average Haul = 93,064 CuYdSta/8,586 CuYd = 10.84 Sta.

Sta. 162+15 to Sta. 168+85
Average Haul = 5,182 CuYdSta/4,270 CuYd = 1.21 Sta.

Compensation for "Extra Haul" will not be made for haul distances less than 5 stations. When payment for "Extra Haul" is authorized, the distance used for "Extra Haul" calculations will be that in excess of 5 stations.

LANDSLIDE DEBRIS EXCAVATION

Landslide Debris Excavation will be required to reconstruct the inslope from Station 107+00± to Station 114+00± and from Station 128+00± to Station 132+00± Rt. 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 must not exceed those shown on the cross sections unless directed by the Engineer. Temporary 2:1 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.

UNSTABLE EXCAVATION – DRAINAGE CHANNEL EMBANKMENT

Prior to checkdam and channel embankment construction, Unstable Excavation will be required within the drainage channels to excavate displaced or weak compressible soils and other organic materials. A nominal 3 ft. depth of compressible material is anticipated to be removed from drainage areas prior to construction of the embankment. The depth of the 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. Placement of unstable material as topsoil will be paid for as "Unclassified Excavation".

The areas of unstable material excavation are drawn on the cross sections with a normal depth of 3 feet. The estimated quantity of 30,329 cubic yards of unstable material excavation will be paid for at the contract unit price per cubic yard for "Unclassified Excavation".

The excavation quantities for unstable material are included in the plan and profile sheets and are also included in the Table of Excavation Quantities and Balances.

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.

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TABLE OF UNSTABLE MATERIAL EXCAVATION

Station	to	Station	L/R	Depth (Ft)	Quantity (CuYd)
47+80		48+30	R	3	157
54+00		62+00	R	3	4,003
68+00		75+10	R	3	2,297
77+30		85+50	R	3	4,622
87+00		87+50	R	3	649
94+30		99+00	R	3	5,423
107+00		113+20	R	3	5,856
126+20		139+50	R	3	13,929
142+50		145+30	R	3	1,186
146+50		147+50	R	3	258
151+50		154+00	R	3	3,243
162+50		164+90	R	3	776
165+60		168+75	R	3	1,554
Total:					43,954

SALVAGE AND STOCKPILE ASPHALT MIX MATERIAL

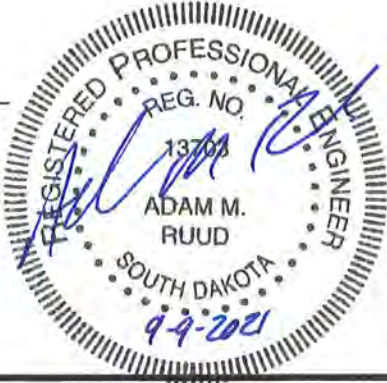
An estimated 420 tons (222 Cubic Yards) of asphalt mix material will be salvaged from the entire length of the existing highway and stockpiled at a site furnished by the Contractor and satisfactory to the Engineer.

Salvaged material will be processed to meet the requirements of Section 884.2 D.7 prior to stockpiling. The Contractor will ensure that no vegetation, topsoil, subgrade, or other foreign material is incorporated into the salvaged asphalt mix material.

The quantity of salvage asphalt mix material may vary from the plans. No adjustment will be made to the contract unit price for variations of the quantity of "Salvage and Stockpile Asphalt Mix Material."

The following table is furnished for information only.

Station	Distance from Centerline (Feet)		Thickness of Asphalt Mix Material (Inches)
	Lt.	Rt.	
10+20	12	12	5
21+50	-	12	5
26+43	12	12	5
48+13	12	12	5
55+75	12	12	5
80+65	12	12	5
94+53	12	12	5
122+30	12	12	5
153+08	12	12	5
158+68	12	12	5
Average Thickness:			5



BASE COURSE, SALVAGED

Base Course, Salvaged will be obtained from Salvaged and Stockpiled Asphalt Mix Material and may be used without further gradation testing.

The Contractor will ensure the Base Course, Salvaged material contains no more than 50% salvaged asphalt mix material and at least 50% granular material. Blended material will be to the satisfaction of the Engineer.

All other requirements for Base Course, Salvaged will apply.

BLEND AND STOCKPILE GRANULAR MATERIAL

An estimated 420 tons of Salvaged Asphalt Mix Material will be blended with 420 tons of Granular Material, Furnish and stockpiled at the Contractor's furnished stockpile site.

The Contractor will use a portable platform scale, stationary commercial scale, stationary commercial plant, portable plant scale, or a belt scale to control the blending and weighing of the salvage material with Contractor furnished granular material.

The salvaged asphalt mix material will be crushed to meet the requirements of Section 884.2 D.2 prior to blending into the stockpile.

No further gradation testing of the blended material will be required.

All salvaged and stockpiled materials must be incorporated into the project prior to importing additional base course for permanent mainline base course.

All costs for crushing the salvaged asphalt mix material, stockpiling, and blending the materials will be incidental to the contract unit price per ton for Blend and Stockpile Granular Material.

CONTRACTOR FURNISHED BORROW EXCAVATION

The Contractor will provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material will be approved by the Engineer. The plans quantity for "Contractor Furnished Borrow Excavation" as shown in the Estimate of Quantities will be the basis of payment for this item.

Restoration of the Contractor furnished borrow excavation site will be the responsibility of the Contractor.

MAINLINE CROSS PIPE REPLACEMENT

Pipe culverts at Sta. 10+18, Sta. 26+42, Sta. 48+14, Sta. 48+23, Sta. 55+64, Sta. 55+84, Sta. 80+65, Sta. 94+53, Sta. 122+29, Sta. 153+07 and Sta. 158+66 will be installed in accordance with the following notes and as shown on the Pipe Installation Detail.

After the existing pipe has been removed, the new pipe culvert will be undercut to a minimum depth of 1 foot. The depth of undercut is an estimate and the actual depth necessary will be determined during construction. The Engineer will determine how much undercut will be done in accordance with Section 421 of the specifications but will not reduce the undercut to less than 1 foot in depth.

Select fill material for backfilling the undercut area will conform to the gradation requirements of Base Course in Section 882. If groundwater is encountered during construction, the select fill material for backfilling the undercut area and Class B Bedding will conform to the gradation requirements of Section 421.2 A. until backfill placement is above the groundwater level. The Engineer will process a CCO to provide for compensation to the Contractor for the added cost of the changed material. All other requirements of Section 421 will apply.

Pipe culverts will be bedded in accordance with Section 450.3 F.2, Class B Bedding with the following exceptions. The excavated area will extend 2 feet from the outermost diameter on both sides of the pipe with the back of the excavated area being sloped 2:1 upward to the top of the roadway surface. Select fill material for Class B Bedding will conform to the gradation requirements of Base Course in Section 882.

After the minimum testing requirements of M.S.T.R Section 4.1.F.3.a.1 (SDDOT Materials Manual) have been met, the minimum density testing requirements will be one test per zone. Each zone from the top of the pipe to the top of the subgrade will be 2 feet in depth. Moisture testing will remain as per M.S.T.R.

The remainder of the pipe culvert excavation will be backfilled with soils taken from the pipe removal excavation or other suitable material as approved by the Engineer. The backfill will be benched into 2:1 excavation slope. Compaction of the backfill material will be governed by the Specified Density Method.

After the new pipe has been backfilled to the top of the subgrade, a 12" depth of Base Course and 5" (2-2.5" lifts) depth of asphalt concrete composite will be placed as a patch matching the existing asphalt concrete.

All costs to remove and dispose of asphalt concrete pavement, including full depth saw cutting of the asphalt concrete pavement, will be incidental to the contract unit price per square yard to Salvage and Stockpile Asphalt Mix and Granular Base. The excavation of material for pipe culvert undercut will be paid for at the contract unit price per cubic yard for Pipe Culvert Undercut.

The select fill material used for backfilling the pipe culvert undercut and Class B Bedding is estimated to be 2,098 tons and will be paid for at the contract unit price per ton for Base Course. The 3" layer of bedding material to form the cradle in the pipe foundation will be incidental to the corresponding pipe installation contract items. The cost for asphalt concrete composite installed over the pipe replacement will be paid for at the contract unit price per ton for Asphalt Concrete Composite.

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EXCAVATION FOR DEEP PIPE REMOVAL

Included in the quantity of "Unclassified Excavation" are 4,278 cubic yards of excavation for removal of deep pipes. Deep pipes are existing mainline pipes at depths of 10 feet or greater (measured from the flow line to the lowest elevation of either the existing ground line, undercut line, or bottom of removed or salvaged surfacing).

All work necessary to excavate and backfill the deep pipes including labor, equipment, and incidentals will be incidental to the contract unit price per cubic yard for "Unclassified Excavation". Payment for deep pipe excavation will be based only on plans quantity and measurement of these excavation quantities during construction will not be performed.

The excavation quantities for deep pipes are not included with the earthwork balance quantities on the plans profile sheets. The quantities computed for excavation of the deep pipes are based on the limits shown in the drawing below. The drawing shows a box culvert for illustration purposes only; the limits are similar for a pipe.

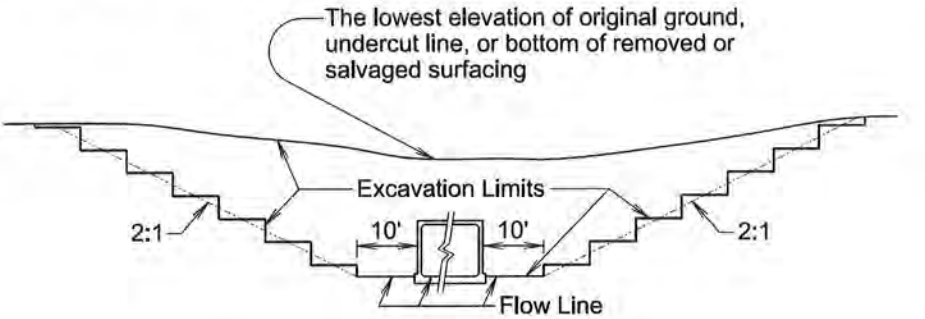


TABLE OF EXCAVATION FOR DEEP PIPE REMOVAL

Station	Type	Quantity (CuYd)
94+53	Pipe	1,835
153+07	Pipe	1,130
158+66	Pipe	1,313
Total:		4,278



LARGE DIAMETER PIPE UNDERCUT

Provide 24 inches of undercut and backfill to remove soft soils and soils with very high shrink-swell potential at the following locations: Sta. 26+42, Sta. 48+14, Sta. 48+23, Sta. 94+53.

After the existing pipe has been removed, the new pipe culvert will be undercut to a minimum depth of 2 feet. The depth of undercut is an estimate and the actual depth necessary will be determined during construction. The Engineer will determine how much undercut will be done in accordance with Section 421 of the Specifications but will not reduce the undercut to less than the depth stated above.

Material for backfilling the undercut area must conform to the graduation requirements of Base Course in Section 882. In sections where groundwater is encountered during construction, the select fill material for backfilling the undercut area must conform to the graduation requirements of Box Culvert Undercut Backfill. All other requirements of Section 421 will apply.

High sulfate levels are likely to be encountered on this project. The type of cement will be either a type V or a type II with 20% to 25% Class F Modified Fly Ash substituted for cement in accordance with Section 605. The Water/Cementitious material ratio will not exceed 0.45 as defined in section 460.3 C. The mix will be as per fabricator's design; however, minimum compressive strength will not be less than 4500 psi at 28 days. The pipe must be marked in an acceptable way to designate meeting requirements or sulfate resistance.

PIPE CULVERT UNDERCUT

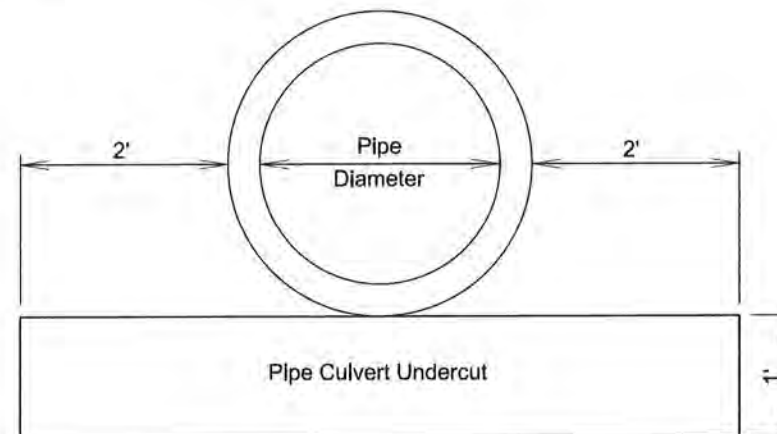
The depth of undercut is an estimate and the actual depth necessary will be determined during construction. Pipes listed may or may not require undercutting and pipes not listed may require undercutting. The Engineer will determine which pipe will be undercut in accordance with Section 421 of the Specifications.

Station	Undercut Depth (Ft)	Quantity (CuYd)
10+18	1	24
26+42	2	68
48+14	2	108
48+23	2	108
55+64	1	22
55+84	1	22
80+65	1	38
94+53	2	130
122+29	1	21
153+07	1	22
158+66	1	35
Total:		598

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	---



FOR BIDDING PURPOSES ONLY

INCIDENTAL WORK, GRADING

Station	L/R	Remarks
10+17	L & R	Take out 42" CMP & End Sections
21+53	R	Take out 42" CMP Downspout
26+42	L & R	Take out 24" RCP & End Sections
35+93	R	Take out 30" Twin RCP Segments & End Sections
48+09	L & R	Take out 42" Twin RCPs & End Sections
55+64	L & R	Take out 42" CMP & End Sections
68+16	R	Take out 30" CMP End Section
74+56	R	Take out 36" CMP Segment & End Section
80+65	L & R	Take out 24" RCP & End Sections
89+89	L & R	Take out 24" CMP End Sections
94+53	L & R	Take out 42" CMP & End Sections
103+92	R	Take out 24" End Section
108+82	R	Take out 24" RCP End Section
117+20	R	Take out 30" RCP End Section
117+75	R	Take out Outlet Headwall and Witness Post for Reset
118+25	R	Take out 48" Twin CMPs & End Sections
122+29	L & R	Take out 24" CMP & End Sections
125+46	R	Take out 66" CMP & End Sections
131+17	R	Take out 24" CMP End Section
134+16	L & R	Take out 24" CMP End Sections
145+37	L & R	Take out 24" CMP End Sections
153+07	L & R	Take out 24" RCP & End Sections
158+66	L & R	Take out 24" CMP & End Sections
166+64	R	Take out 24" RCP End Section
171+83	L & R	Take out 24" RCP End Sections



UNDERDRAIN

Station 108+25± to Station 111+00± – Toe Drain

An underdrain will be installed from Sta. 111+00±, 80' Rt. to Sta. 108+50±, 80' Rt. and outlet at Sta. 108+24 123' R (see plans and cross sections for details). Excavate all landslide debris and unstable material and construct the embankment to elevation 1616 prior to underdrain installation.

The underdrain system will consist of 4-inch Slotted Corrugated Polyethylene Tubing placed in the bottom of a 2-foot-wide by 3-foot-deep trench backfilled with 3 feet of Porous Backfill. The underdrain will outlet through 48 feet of 4-inch PVC Pipe placed in a 2-foot-wide trench of variable depth backfilled with compacted soil. The underdrain outlet pipes will daylight at an Outlet Headwall at approximately Station 108+24, 123' Rt. as directed by the Engineer. The Outlet Headwall will be installed adjacent to the mainline pipe.

The estimated quantities for the underdrain system are as follows:

4" Underdrain Pipe (Schedule 40 PVC)	48	Ft
4" Slotted Corrugated Polyethylene Tubing	254	Ft
Porous Backfill	107	Ton
Concrete Headwall for Underdrain	1	Each
(See Standard Plate 680.01)		

Station 117+75±, 100' Rt

An existing underdrain outlet is partially buried by soil and vegetation at Sta. 117+75 100' R (see plans and cross sections for details). Exhume the existing underdrain outlet headwall and the last 20 feet of outlet tubing. Replace the outlet tubing with Schedule 40 PVC pipe and reset the headwall and witness post. Shape the outlet channel to establish positive drainage away from the outlet as needed.

4" Underdrain Pipe (Schedule 40 PVC)	20	Ft
--------------------------------------	----	----

Station 129+00 – Lateral Drain

A lateral underdrain will be installed into the reconstructed inslope from Sta. 129+00, 60' R to Sta 129+00, 115' R. Excavate all landslide debris and unstable material and construct the embankment to elevation 1674 prior to underdrain installation.

The underdrain will consist of 4-inch Slotted Corrugated Polyethylene Tubing placed in a 2-foot-wide by 3-foot-deep trench. The trench will then be backfilled with 3 feet of porous backfill. The underdrain will outlet through 10 feet of 4-inch PVC Pipe placed in a 2-foot-wide trench of variable depth backfilled with compacted soil. The underdrain outlet pipe will daylight at an outlet headwall at approximately Sta. 129+00 125' R, as directed by the Engineer. The Outlet Headwall will be installed at the toe of the proposed slope.

4" Underdrain Pipe (Schedule 40 PVC)	10	Ft
4" Slotted Corrugated Polyethylene Tubing	55	Ft
Porous Backfill	23	Ton
Concrete Headwall for Underdrain	1	Each
(See Standard Plate 680.01)		

UNDERDRAIN CONSTRUCTION

Each underdrain trench will be graded to maintain a minimum of .01ft/ft. or 1% drop from beginning to outlet. Each 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.

The 4" Dia. 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 2564. All labor, tools, equipment, and incidentals necessary for the installation of the of the PVC Outlet Pipe will be incidental to the contract unit price per foot for 4" Underdrain Pipe.

The Contractor will ensure all segments of drainage tubing and outlet pipe are positively connected utilizing couplers, tees, gaskets, fittings or other approved methods. The contractor must take precautions to assure each connection remains soil tight during installation of the underdrain system.

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

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

Headwalls must be cleared of topsoil, straw, or other debris after seeding operations have been completed. The as built headwall locations 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 Pierre Area office for reference in post construction maintenance.

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 must be benched into the existing slopes in accordance with Section 120.3.B.2 of the Standard Specifications for Roads and Bridges.

Compaction of the embankment will be according to the Specified Density Method. Moisture testing will remain as per Minimum Sample testing Requirements. Minimum density testing requirements will be one test per zone per segment. Individual checkdam, fenceberm, and roadway embankment test segments are indicated by the following mainline stations:

Sta. 55+00 to Sta. 61+00 – Mainline fenceberm/channel bank
Sta. 68+00 to Sta. 87+00 – Mainline fenceberm and checkdam
Sta. 94+00 to Sta. 98+00 – Checkdam
Sta 107+00 to Sta. 114+00 – Mainline embankment and checkdam
Sta. 128+00 to Sta. 131+00 – Mainline embankment
Sta. 143+00 to Sta. 154+00 – Channel bank and checkdam
Sta. 162+00 to Sta. 168+00 – Channel bank

FOR BIDDING PURPOSES ONLY

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.

CHECK DAM DOWNSPOUT RECONSTRUCTION

At sites where check dams must be repaired and downspouts must be replaced, the contractor must excavate enough material to exhume the existing pipe and prepare the underlying embankment to receive the new pipe. Displaced and/or saturated material will be excavated and replaced with suitable material as directed by the Engineer. Check dam embankment will be benched into the existing berm slopes and compacted according to the Specified Density Method. The pipe backfill must be placed as per section 450 of the Standard Specifications.

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.

Controlled density fill between metal pipes will require the pipes to be anchored to resist floating. Anchoring methods will be determined by the Contractor and approved by the Engineer. Payment for anchoring the pipes will be incidental to the pipe installation contract item.

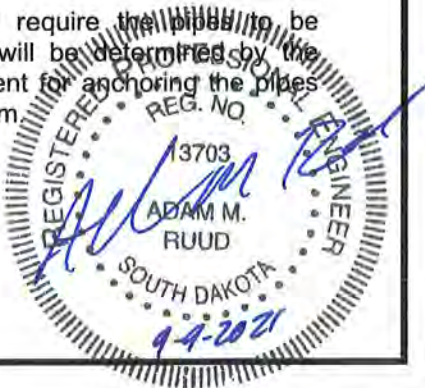


TABLE OF CONTROLLED DENSITY FILL FOR PIPE

Station	Quantity (CuYd)
48+18	25.87
Total:	25.9

CELLULAR GROUT

The Contractor will submit a proposed grouting procedure to the Engineer at least two weeks prior to beginning this work.

Bulkheads will be constructed at each end of the pipe. Each bulkhead will be constructed to withstand the pressure of the grouting operation. The bulkhead will extend from the end of the existing pipe inward a minimum depth of 18 inches and will be free from leaks.

Pressure grouting will be done to ensure all the voids are filled including all breaks or holes in and around the existing pipe.

The grout will be a cellular grout (grout with pre-generated foam) with a minimum 28-day compressive strength of 100 pounds per square inch. If water is not present within the pipe a low-density grout with a minimum of 30 pounds per cubic foot wet density may be used. When it is not possible to dewater the existing pipe, a high-density grout with a minimum of 70 pounds per cubic foot will be used which may include approved sand. The foaming agent used will meet the requirements of ASTM C869 when tested in accordance with ASTM C796.

Both of the cellular grout mix designs will be submitted to the SDDOT Concrete Engineer for approval prior to use. The mix design submittal will include the base cement slurry mix per cubic yard, expansion factor from the foaming agent, and the cellular grout wet density (pounds per cubic foot).

The Contractor will install a bypass valve adjacent to the location where the pressure grouting hose is attached for obtaining samples to be checked for wet density. The wet density of the cellular grout will be checked by the Contractor to verify the proper minimum wet density before the cellular grout filling operations begin and at a minimum once every two hours during production. The SDDOT will document the results of the density checks.

Cellular grout will be wasted until the cellular grout meets the minimum wet density required; however, if 0.5 cubic yards or more of base cement slurry is wasted trying to meet density requirements, then that quantity will not be included for payment.

If grout holes are utilized, cylindrical wooden plugs or other approved plugs will be inserted to plug holes until the grout has set. After the plugs are removed the holes will be filled with concrete.

The quantity of cellular grout was estimated based on volume of the existing pipe and voids outside the existing pipe.

The quantity of base cement slurry ordered will be approved by the Engineer. The quantity of base cement slurry needed will be calculated to the nearest tenth of a cubic yard using the approved mix design, expansion factor of the foaming agent, and estimated amount of cellular grout. The quantity for payment to the nearest tenth of a cubic yard of "Cellular Grout" is a calculated quantity based on the amount of base cement slurry used on the project to the nearest tenth of a cubic yard, expansion factor of the foaming agent, and approved mix design.

All costs for furnishing and installing the cellular grout including bulkhead construction, inlet bevel construction, and incidentals necessary to satisfactorily complete the work will be included in the contract unit price per cubic yard for "Cellular Grout".

TABLE OF CELLULAR GROUT

Station	Quantity (CuYd)
89+89	11.24
134+16	20.34
145+37	17.66
171+83	15.25
Total:	64.5

The quantity at each location includes an additional 15% to account for void volume outside the existing pipe.

REINFORCED CONCRETE PIPE

High sulfate levels are likely to be encountered on this project. The type of cement used for the reinforced concrete pipes will be either a type II with 20% to 25% class F modified fly ash substituted for cement in accordance with Specifications Section 605 or a type V. The water/cementitious material ratio will not exceed 0.45 as defined in Specifications Section 460.3 C. The mix will be as per the fabricator's design; however, minimum compressive strength will not be less than 4500 psi at 28 days. The pipe must be marked in an acceptable way to designate meeting requirements for sulfate resistance.

CONCRETE PIPE CONNECTIONS

Pipe connections to existing pipes, manholes, junction boxes, and drop inlets 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.

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. Care must be taken not to damage the structural properties of the pipes 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.

FOR BIDDING PURPOSES ONLY

BORE AND JACK STEEL PIPE

The Contractor will install steel pipe at stations 134+08, 145+33 and 171+74 by boring and jacking the pipe through the existing highway embankment. The pipe will be installed by boring and jacking methods as specified herein unless an alternate plan is submitted in writing and approved by the Engineer.

As shown on the appropriate pipe cross section, some excavation of the existing roadway embankment is anticipated in order to reduce the length of the bore and jack pipe installation.

Steel pipe for boring and jacking will meet or exceed the requirements of ASTM A139, Grade B. Hydrostatic testing will not be required for this application. The pipe will have a minimum wall thickness of 0.5 inches.

The exterior of the steel pipe will be coated with a two-component coal tar epoxy meeting the requirements of Sherwin-Williams Targuard, Tnemec Hi-Build Tnemec-Tar, or an approved equal, and will be applied in conformance with the manufacturer's recommendations.

The pipe joints will be welded by a certified welder in accordance with Section 410.3 D of the Specifications. After the welding has been completed, a two-component coal tar epoxy meeting the requirements of Sherwin-Williams Targuard, Tnemec Hi-Build Tnemec-Tar, or an approved equal will be applied in the field to cover the exposed area.

The jacking pit will be constructed of sufficient size to accommodate equipment and workmen. The pit walls will be sloped or shored to comply with all applicable State and Federal regulations. The Contractor will be responsible for the design of the pit floor and jacking thrust restraint wall to carry the cyclic loads and thrust applied by the Contractor's operation. Water will not be allowed to accumulate in the jacking pit. All components of the jacking pit will be removed after installation of the pipe unless otherwise allowed by the Engineer.

The pipe will be pushed into position from a jacking pit with hydraulic jacks while simultaneously excavating at the forward end of the pipe. Each pipe section will be jacked from the jacking pit as the excavation at the boring head progresses so that the excavation is supported by the boring head or the pipe at all points.

Jacking thrust will be applied to the pipe by means of a yoke or frame designed to distribute the thrust uniformly around the pipe joint. The thrust will be applied to the pipe joint only in the location and only to the maximum force recommended by the pipe manufacturer. The pipe will be jacked into place without visible damage to the pipe or joint.

The boring head excavation will be circular with a maximum diameter equal to the outside diameter of the jacking pipe plus 1 inch. The Contractor will take whatever corrective action is necessary to prevent running, flowing, or squeezing ground conditions at the cutting face from causing large voids or significant loss of soil that may cause surface settlement.

The Contractor will control the alignment and grade of the pipe installation to meet the following tolerances:

1. Maximum horizontal deviation from plan shown alignment will be less than 0.15% of pipe length from the downstream end of pipe to the point of measurement.

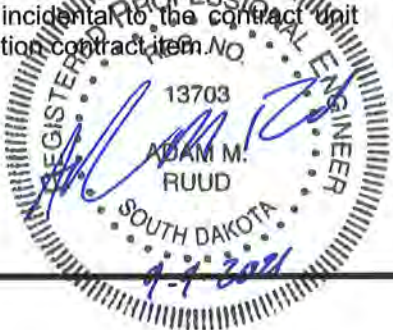


TABLE OF PVC COATED BANK AND CHANNEL PROTECTION GABIONS
AND DRAINAGE FABRIC

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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BORE AND JACK STEEL PIPE, (Continued)

2. Maximum vertical deviation from plan shown alignment will be less than 0.075% of pipe length from the downstream end of pipe to the point of measurement.

All material excavated by the boring head for the pipe installation will be disposed of by the Contractor. The excavated material from the boring pit will be used as backfill for the pit and compacted into place to the satisfaction of the Engineer.

Steel casing will be installed horizontally through up to 150' ± of embankment. The pipes will be placed through an approximate 10' to 15' vertical depth of silt and clay fill material. The parent formations from which the embankment materials were excavated include beds of shale, claystone, and sandstone. Large boulders are not anticipated to be encountered within the bore and jack envelope.

Installation of CMP ends on the steel pipe will require the placement of a minimum of 2 welded stops at each pipe end to prevent the end from slipping off the steel pipe. The location and size will be determined in the field by the Engineer and installed by a certified welder. Stops will be coated with a coal tar epoxy. All costs, including labor and materials for the installation of the stops will be incidental to the contract unit price per foot for the corresponding steel pipe furnish contract item. Alternative methods of attachment may be allowed with the approval of the Engineer.

Payment for furnishing the pipe will be incidental to the contract unit price per foot for the corresponding steel pipe furnish contract item.

All costs involved with boring and jacking the pipe including labor, equipment, welding, materials, disposal of waste material, constructing and backfilling the jacking pit, and excavating and backfilling the roadway embankment will be incidental to the contract unit price per foot for the corresponding bore and jack pipe contract item.

STEEL PIPE

Steel pipe will meet the same requirements, including pipe specifications, welding and coal tar epoxy coating as the steel pipe used in the bore and jack installation.

Station	L/R	PVC Coated Bank and Channel Protection Gabion (CuYd)	Type B Drainage Fabric (SqYd)
10+68	R	10.0	29
41+53	R	10.0	29
41+73	R	10.0	29
77+43	R	24.0	68
86+93	R	226.0	380
95+50	R	24.0	68
103+92	R	4.5	15
108+51	R	24.0	68
124+80	R	20.0	58
131+19	R	4.5	15
131+48	R	143.0	240
134+16	R	4.5	15
142+22	R	90.0	186
151+58	R	20.0	58
153+07	R	4.5	15
165+84	R	114.0	207
166+64	R	4.5	15
171+64	R	4.5	15
Totals:		742.0	1,510

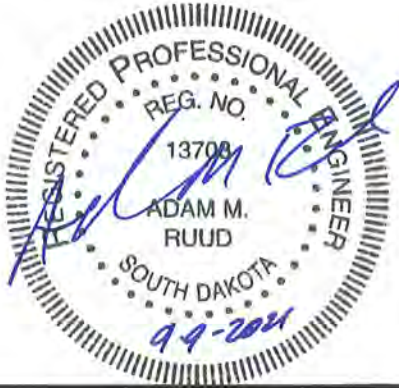
TABLE OF RIPRAP AND DRAINAGE FABRIC

Station	L/R	Class A Riprap (Ton)	Class B Riprap (Ton)	Class C Riprap (Ton)	Type B Drainage Fabric (SqYd)
10+16	L	45.2			70
10+66	R		90.7		155
21+41	R		280.3		296
25+68	R		661.4		687
26+41	L	51.8			80
35+57	R		451.2		512
47+98	R			831.4	627
48+21	L	61.7			93
55+74	L	73.4			109
57+98	R		3,212.5		3,173
68+35	R		191.0		240
74+50	R		141.8		157
78+12	R		576.9		594
80+62	R		49.7		63
80+64	L	27.5			45
86+93	R		48.7		89
94+46	R		143.2		156
95+88	R		393.4		409
108+08	R		59.9		82
109+07	R		501.0		517
117+28	R		308.5		315
122+27	L	43.3			67
122+28	R		73.5		87
131+48	R		51.8		92
138+26	R		1,135.0		1,401
142+22	R		55.0		95
145+34	R		83.2		97
151+99	R		388.5		405
158+66	R		73.2		87
165+84	R		55.0		97
189+26	L		186.0		201
Totals:		302.9	9,211.4	831.4	11,098

TEMPORARY FENCE

The Contractor will verify the location of the temporary fence with the landowner prior to installation of the fence.

14,474 feet of Type 1A Temporary Fence has been provided for installation around all work areas beyond the right of way fence.



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 are contacts regarding the E-Z Brace:

Roger Papka
E-Z Brace
1160 Karen St.
Watertown, SD 57201
605-881-6142

Dennis Mack
E-Z Brace
108 18th St. NE
Watertown, SD 57201
605-881-4990

TEMPORARY SURFACING

Granular material salvaged from the excavation of the roadway will not be allowed for use as temporary roadway surfacing.

Temporary Roadway Surfacing for the mainline and the temporary shoulder widening for traffic control will be Base Course. The quantity of Base Course for Temporary Roadway Surfacing is an estimate based on a 5" depth.

The Contractor will maintain temporary roadway surfacing as directed by the Engineer.

Upon removal of temporary roadway surfacing, the material will become property of the Contractor. All costs to furnish, place, maintain, and remove Temporary Roadway Surfacing will be incidental to the contract unit price per ton for "Base Course".

TABLE OF BASE COURSE FOR TEMPORARY SURFACING

*Station to Station	Temporary Widened Shoulder Surfacing Width from Edge of Existing Pavement (Feet)		Temporary Mainline Surfacing Width from Centerline (Feet)		Temporary Roadway Surfacing (Ton)
	Lt.	Rt.	Lt.	Rt.	
9+35 to 11+05	12	12	12	12	131.3
21+15 to 21+85	-	-	-	12	24.5
25+70 to 27+15	12	12	12	12	109.4
47+25 to 49+00	12	12	12	12	135.6
54+90 to 56+60	12	12	12	12	131.3
79+95 to 81+35	12	12	12	12	105.0
93+65 to 95+40	12	12	12	12	135.6
121+55 to 123+05	12	12	12	12	113.8
152+25 to 153+90	12	12	12	12	126.9
157+80 to 159+55	12	12	12	12	135.6
Total:					1,149.0

*Station range includes limits of temporary widening when applicable.

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

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 4 PLSS corners and 136 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".

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PROJECT
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SHEET	TOTAL SHEETS
B11	B102

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PROJECT

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TOTAL
SHEETS

B12

B102

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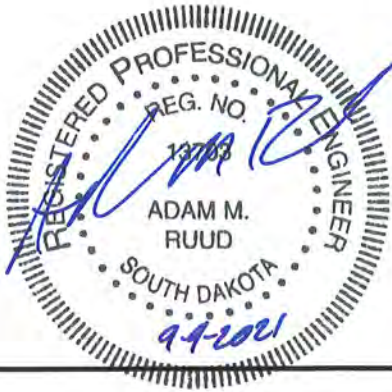
FENCE QUANTITIES

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Station to Station		Side (L/R)	Right-of-Way Fence		Temporary Fence		Post Panels		Remove Fence (Ft)
			Type 2 (Ft)		Type 1A (Ft)		2 Post Panel (Each)	3 Post Panel (Each)	
9+45	11+10	R	165		435		4		165
20+91	22+05	R	114		382		4		114
25+11	26+85	R	175		435		4		175
35+14	36+33	R	120		398		4		120
47+25	48+75	R	205		386		8		205
55+00	56+11	L	115		98		4		115
54+06	62+03	R	776		1303		2	2	778
66+65	87+80	R	2153		2653		2	4	2153
89+22	90+37	R	115		173		4		115
93+79	99+19	R	517		791		4		519
106+51	114+10	R	772		1756		2	2	772
116+50	118+10	R	162		590		4		162
121+79	122+82	R	100		3531		4		100
126+12	136+60	R	991				2	2	996
142+16	147+75	R	570				4		570
150+90	154+52	R	349				4		351
157+32	158+60	L	129		219		4		129
158+17	159+07	R	90		215		4		90
162+05	168+85	R	685		952		4	1	685
188+91	189+86	L	96		157		4		96
TOTALS:			8399		14474		76	11	8410

Post Type and Sequence:
Right-of-way fence shall be constructed using alternate wood and steel posts except as noted.



TYPICAL GRADING SECTION

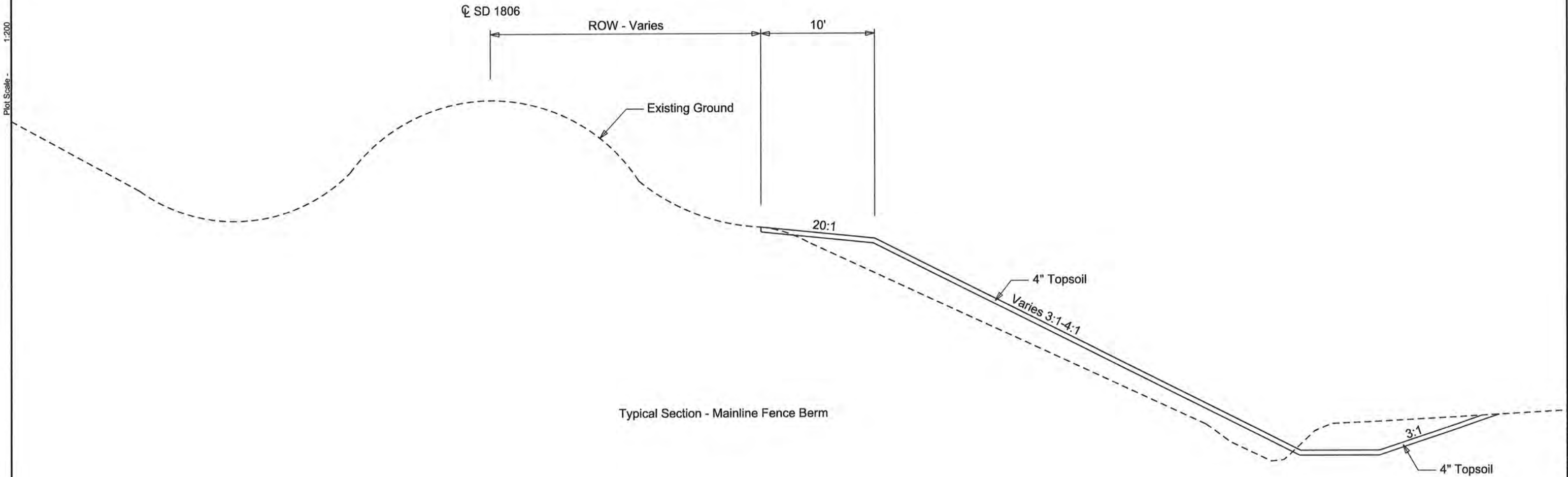
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B14	B102

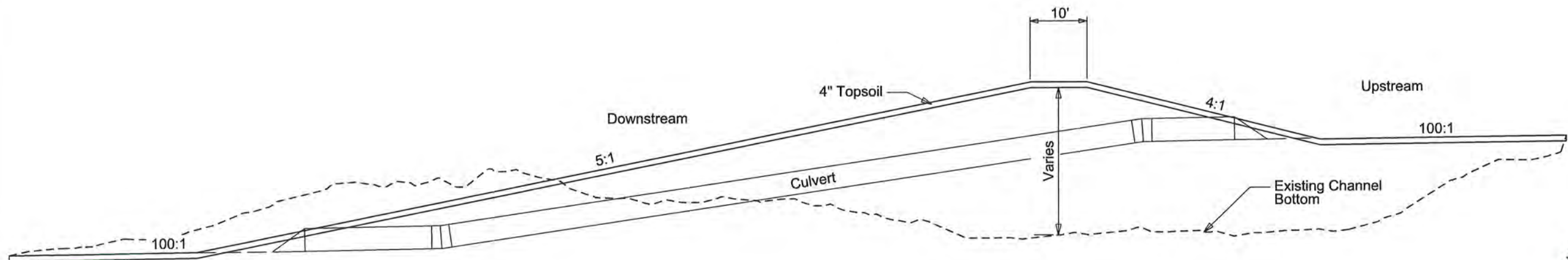
Plotting Date: 9/9/2021

Plot Scale - 1:200

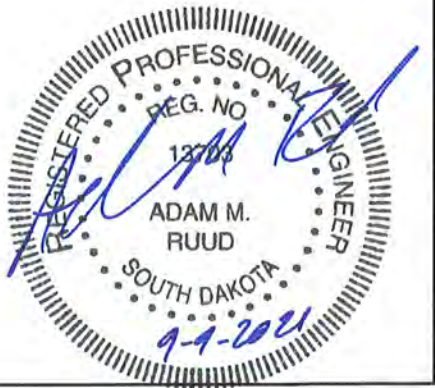
Plotted From - aruud



Typical Section - Mainline Fence Berm



Typical Section - Check Dam



File - ...Plans\Section B\Typ045K_1.dgn

TYPICAL GRADING SECTION

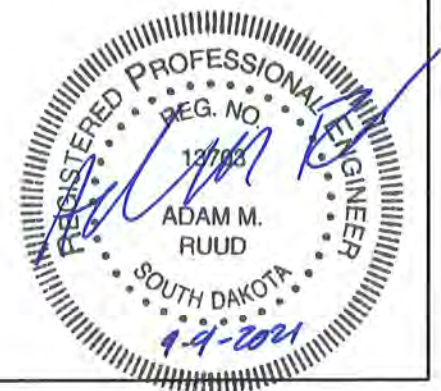
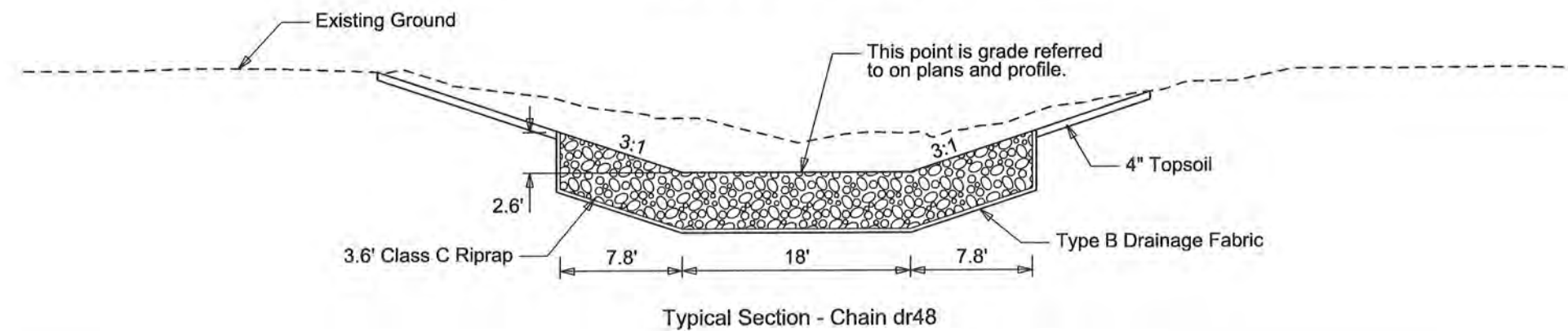
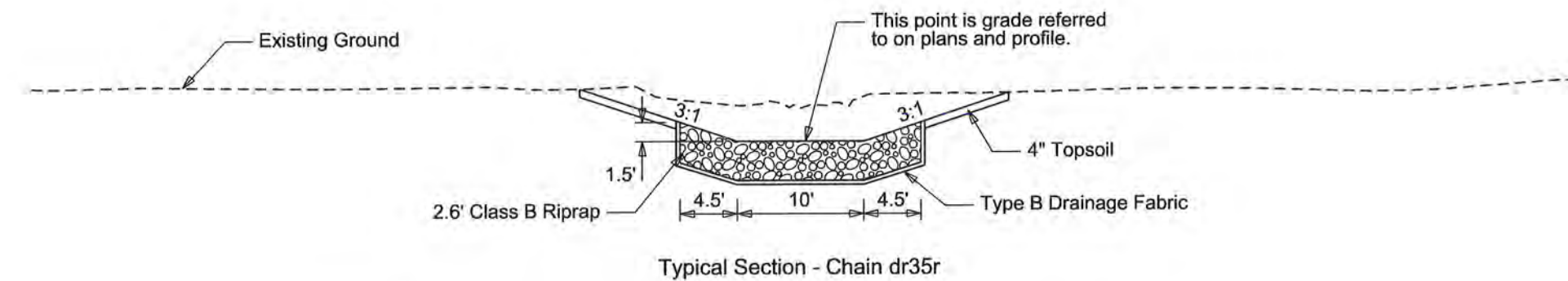
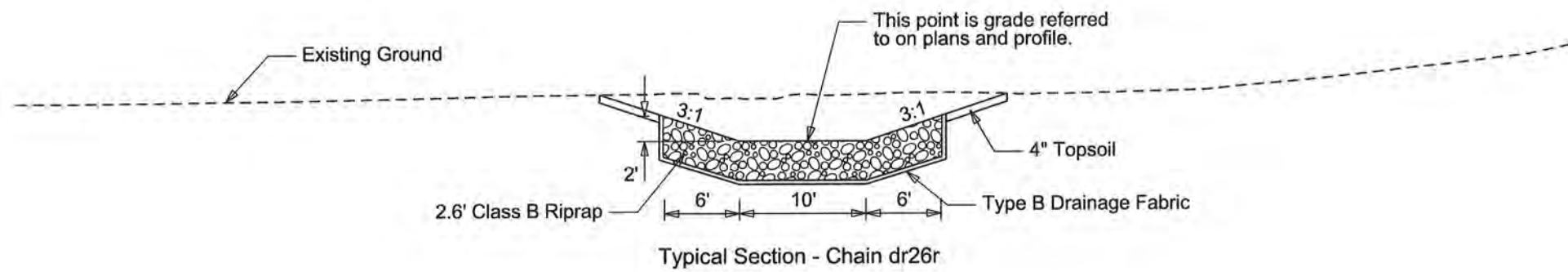
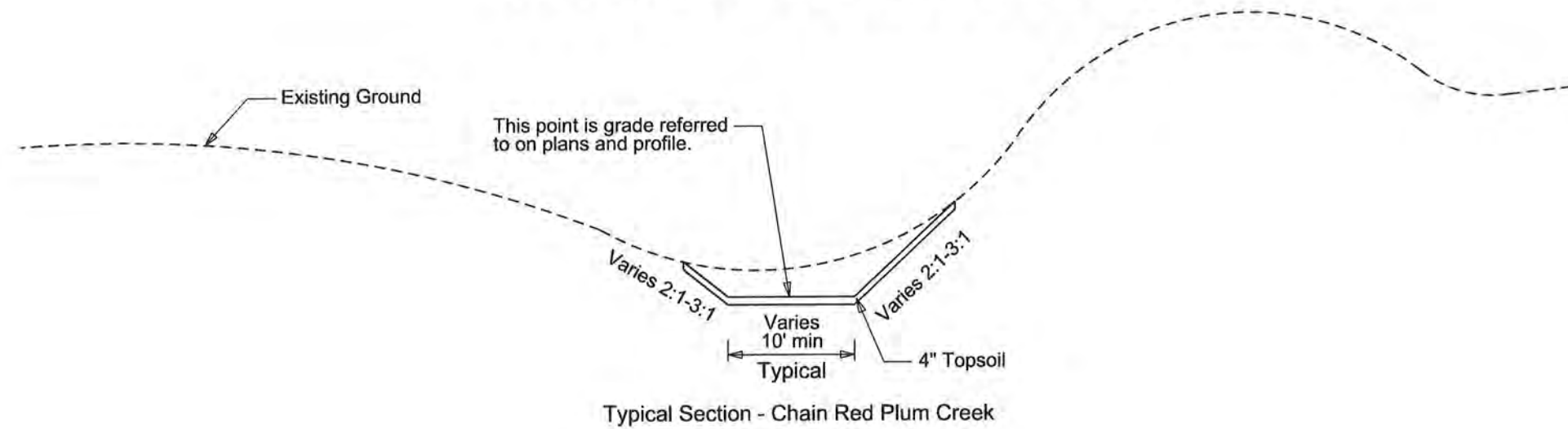
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B15	B102

Plotting Date: 9/9/2021

Plot Scale - 1:200

Plotted From - around



TYPICAL GRADING SECTION

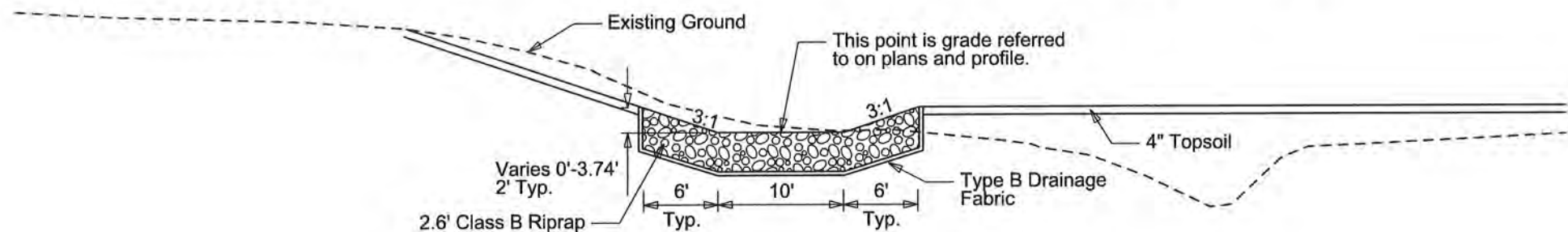
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B16	B102

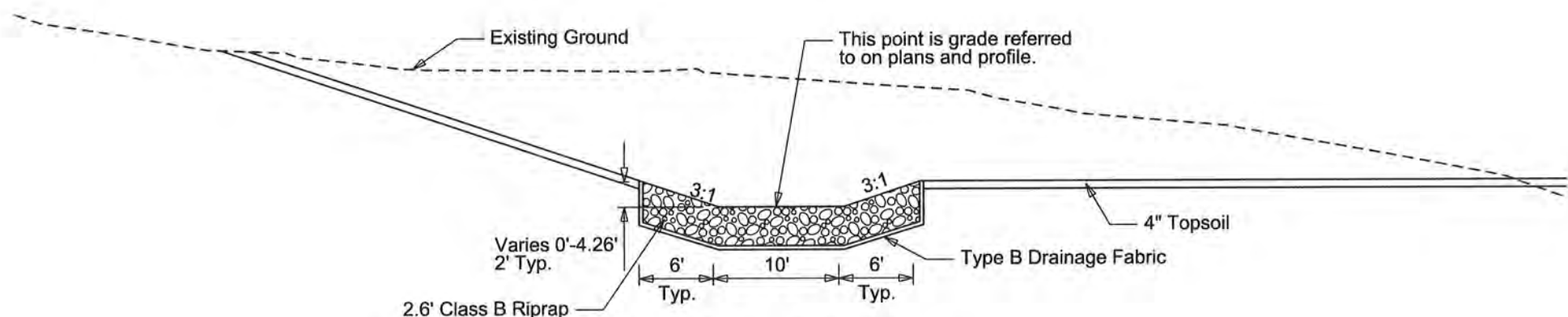
Plotting Date: 9/9/2021

Plot Scale - 1"=200'

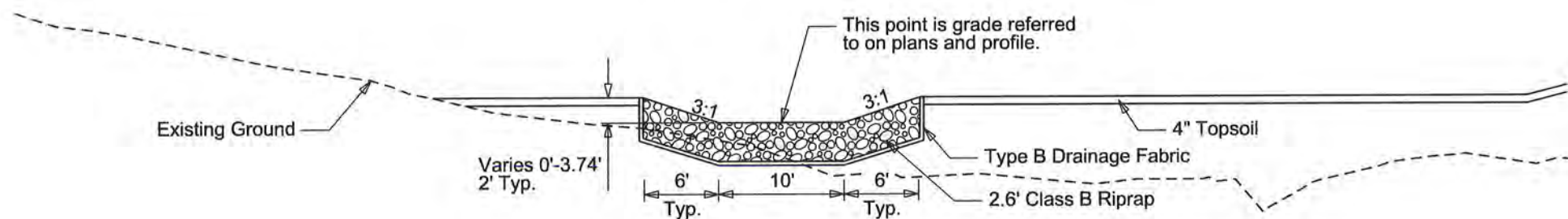
Plotted From - around



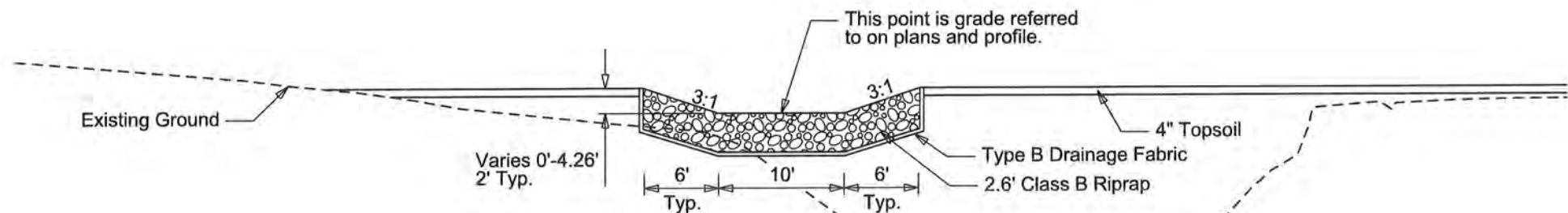
Typical Section - Chain dr35spw



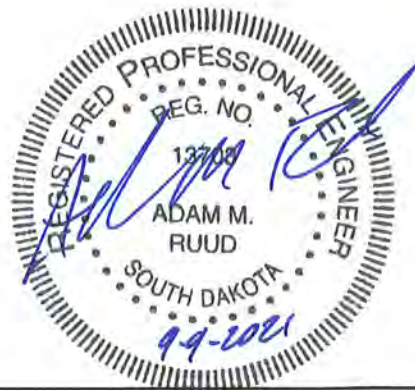
Typical Section - Chain dr78spw



Typical Section - Chain dr93spw



Typical Section - Chain dr111spw

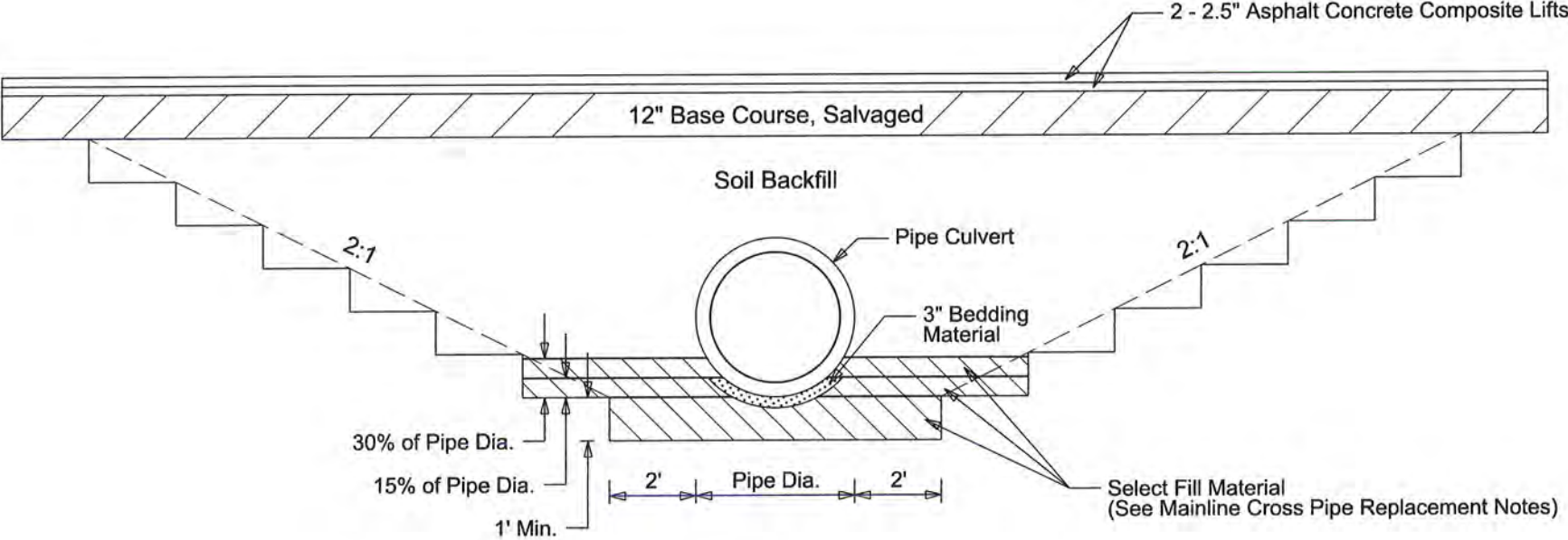


PIPE INSTALLATION DETAILS

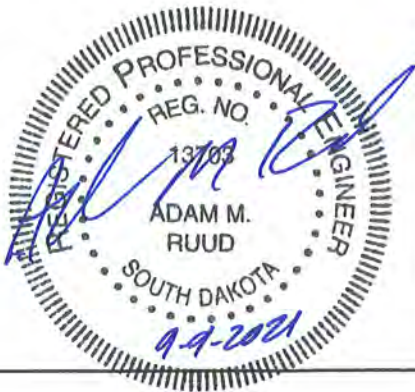
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B17	B102

Plotting Date: 9/9/2021



Mainline Cross Pipe Installation Detail



Plot Scale - 1:200

Plotted From - aruud

File - ...\\CAD\\Plans\\Section B\\Detail.dgn

GABION SPILLWAY DETAILS

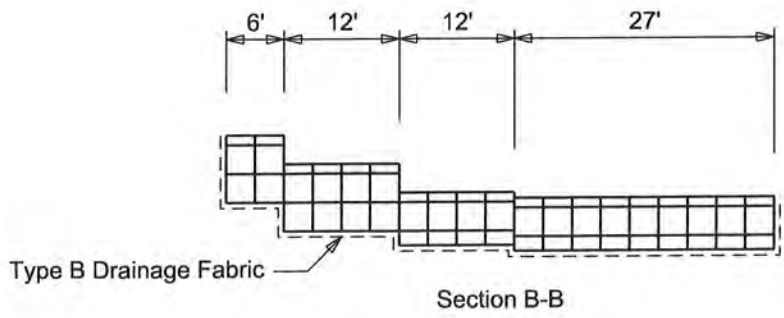
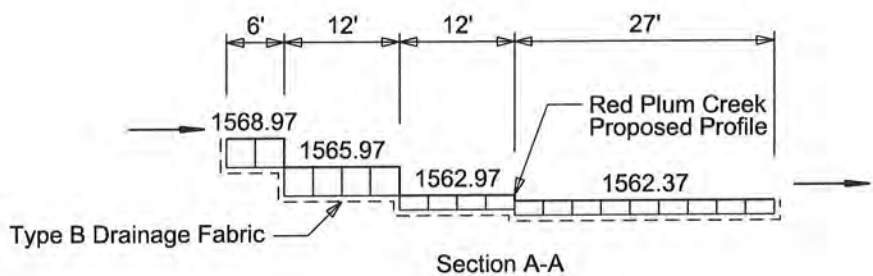
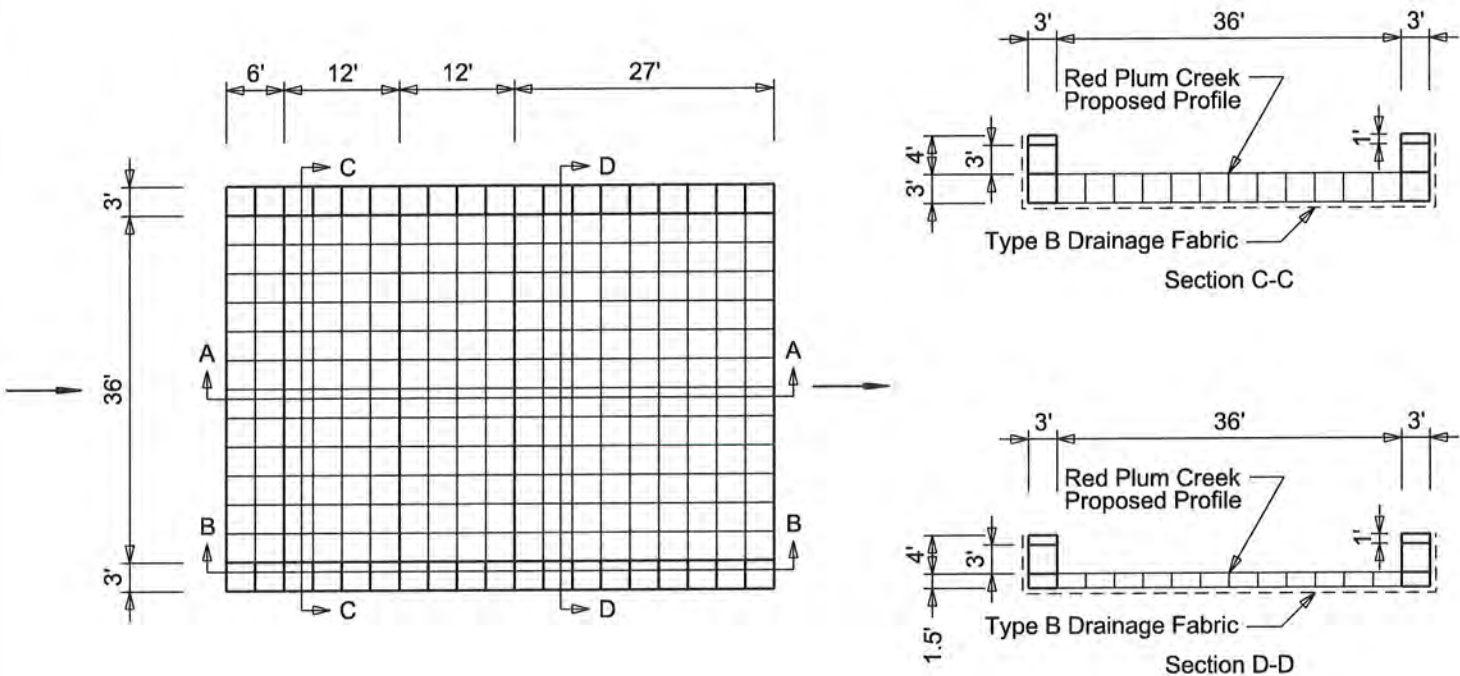
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B18	B102

Plotting Date: 9/9/2021

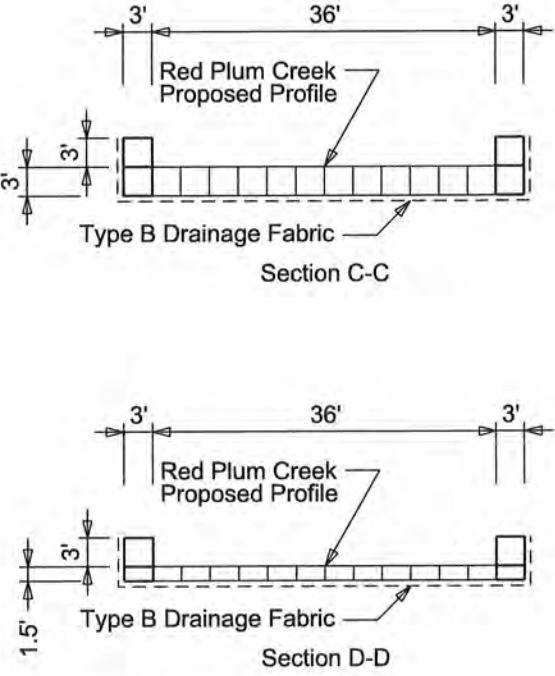
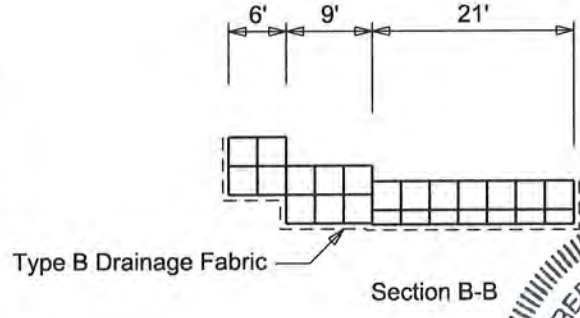
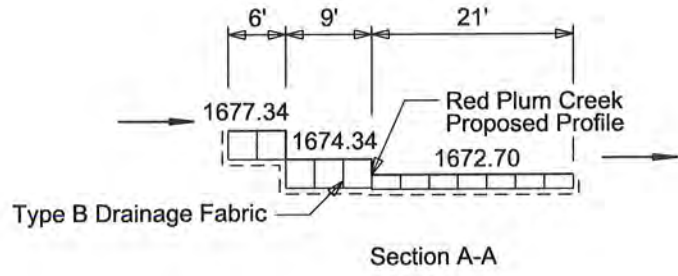
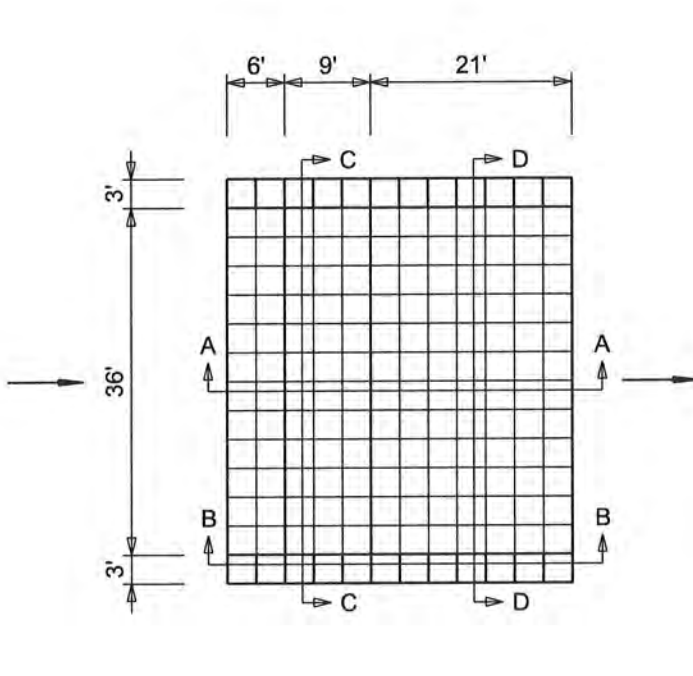
Station 86+93 - 175' R

Station 131+48 - 191' R



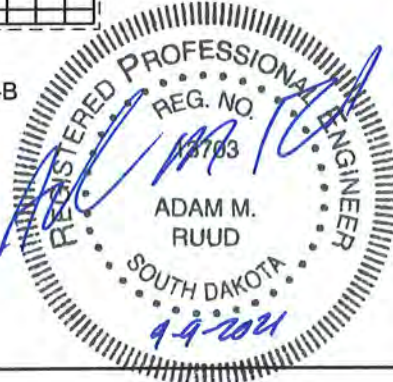
Standard Gabion Size*	CuYd	Quantity					Volume (CuYd)
		Step 1	Step 2	Step 3	Step 4	Total	
A	2.0	4				4	8.0
B	3.0				6	6	18.0
C	4.0	6	16	2		24	96.0
D	1.0					0	0.0
E	1.5				6	6	9.0
F	2.0			14	27	41	82.0
G	0.7	2				2	1.4
H	1.0				6	6	6.0
I	1.3		2	2		4	5.2
Total							225.6

*See Standard Plate 720.01



Standard Gabion Size*	CuYd	Quantity					Volume (CuYd)
		Step 1	Step 2	Step 3	Total		
A	2.0	4			4		8.0
B	3.0		4	2	6		18.0
C	4.0	6	9	2	17		68.0
D	1.0				0		0.0
E	1.5			2	2		3.0
F	2.0			23	23		46.0
G	0.7				0		0.0
H	1.0				0		0.0
I	1.3				0		0.0
Total							143.0

*See Standard Plate 720.01



GABION SPILLWAY DETAILS

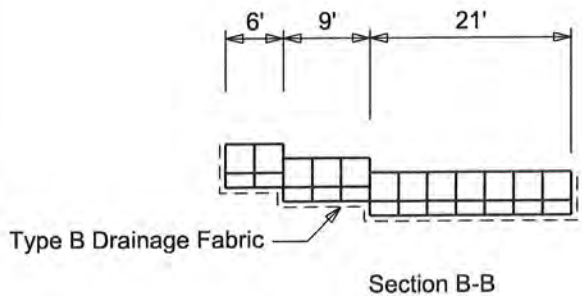
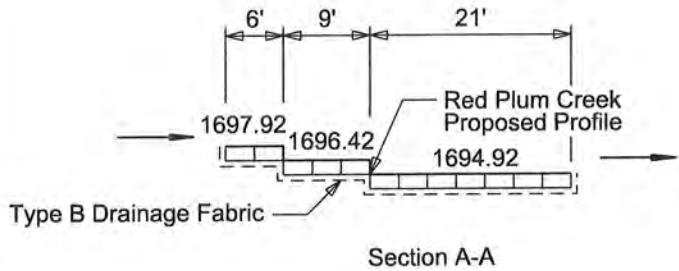
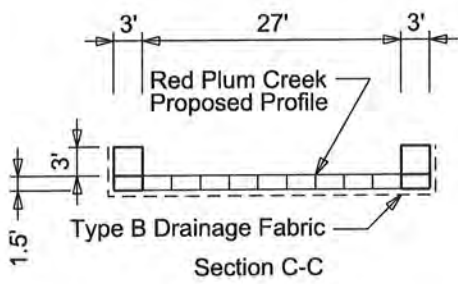
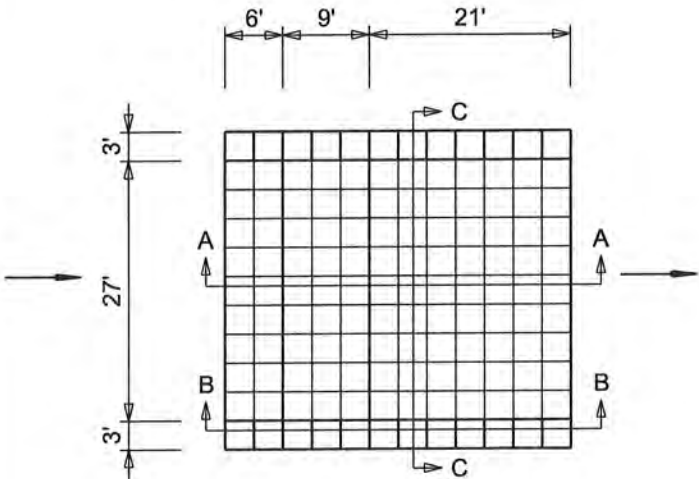
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B19	B102

Plotting Date: 9/9/2021

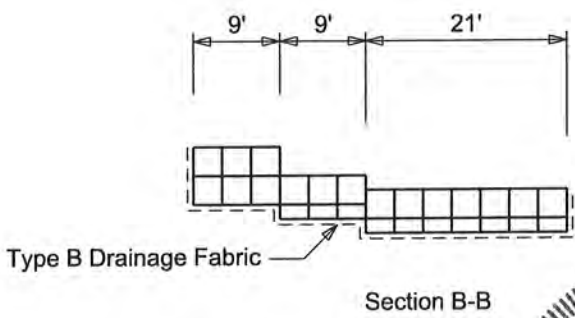
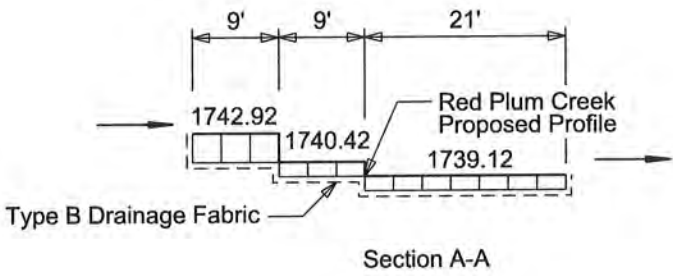
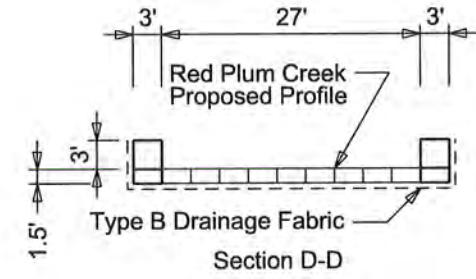
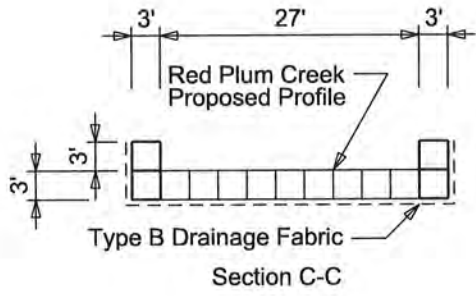
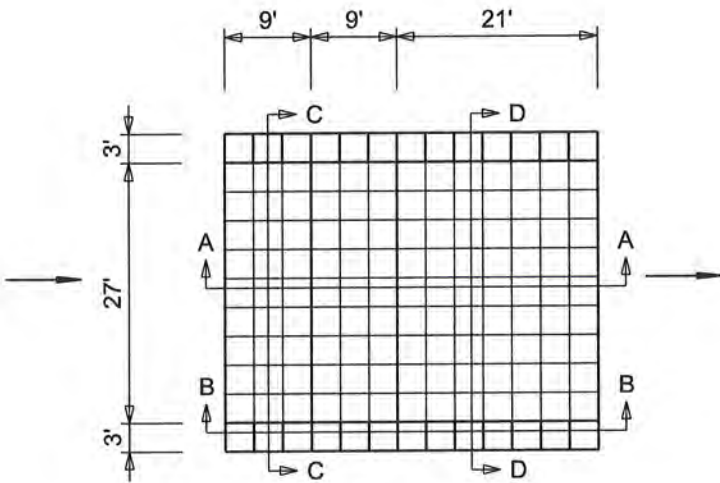
Station 142+22 - 122' R

Station 165+84 - 125' R



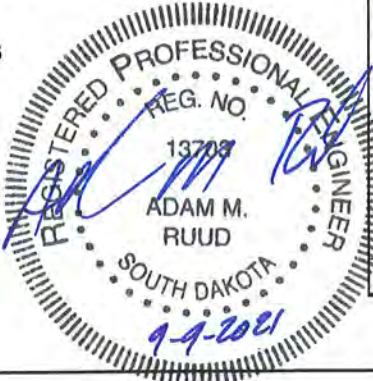
Standard Gabion Size*	CuYd	Quantity				Volume (CuYd)
		Step 1	Step 2	Step 3	Total	
A	2.0	2			2	4.0
B	3.0		2	2	4	12.0
C	4.0			2	2	8.0
D	1.0	2			2	2.0
E	1.5	6	11	23	40	60.0
F	2.0			2	2	4.0
G	0.7				0	0.0
H	1.0				0	0.0
I	1.3				0	0.0
Total						90.0

*See Standard Plate 720.01



Standard Gabion Size*	CuYd	Quantity				Volume (CuYd)
		Step 1	Step 2	Step 3	Total	
A	2.0				0	0.0
B	3.0	13	2	2	17	51.0
C	4.0			2	2	8.0
D	1.0				0	0.0
E	1.5		11	23	34	51.0
F	2.0			2	2	4.0
G	0.7				0	0.0
H	1.0				0	0.0
I	1.3				0	0.0
Total						114.0

*See Standard Plate 720.01



Plot Scale - 1:200

Plotted From - anuud

File - ...detail_gabion spillways2.dgn

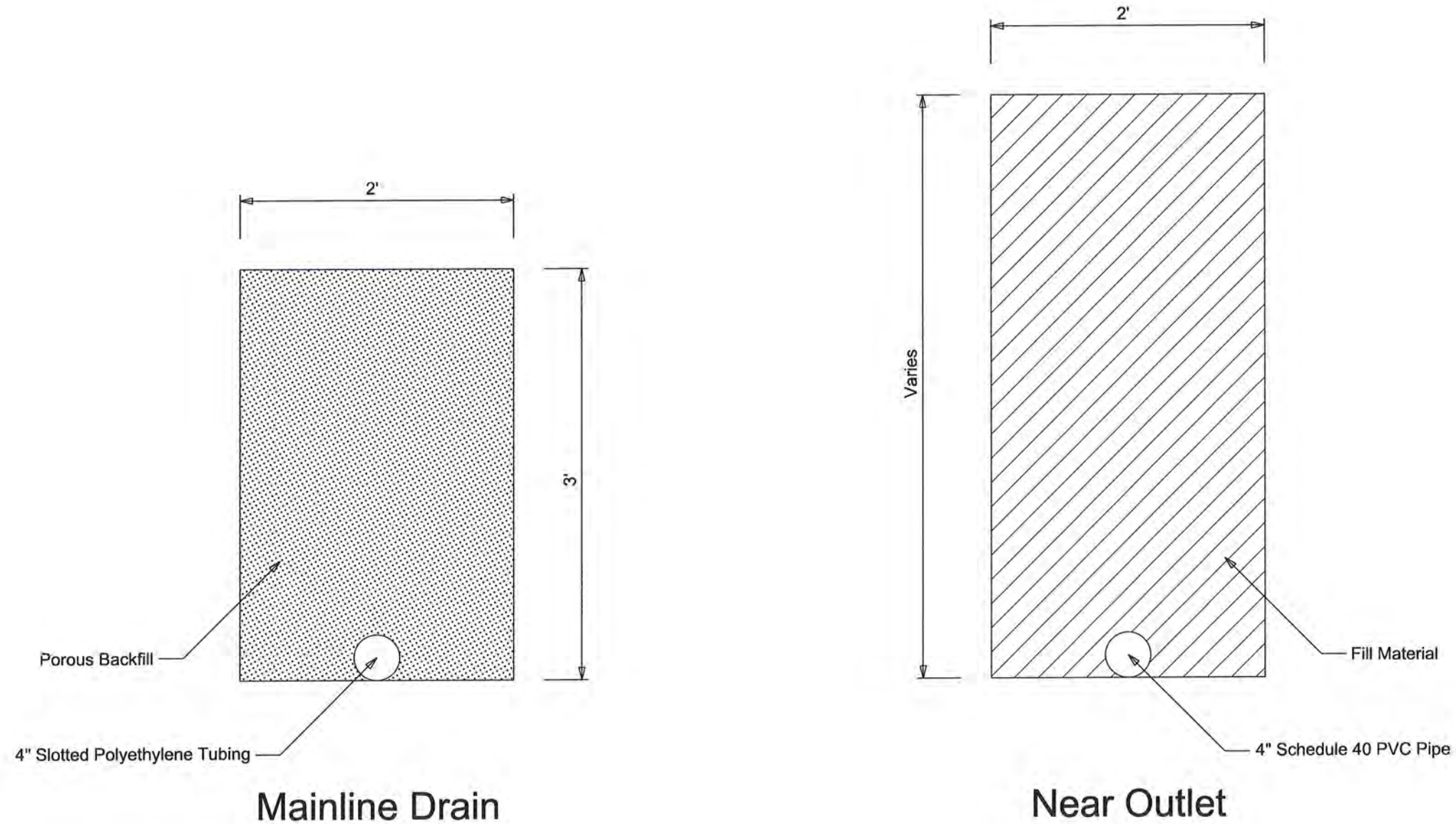
TYPICAL UNDERDRAIN INSTALLATION DETAILS

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B20	B102

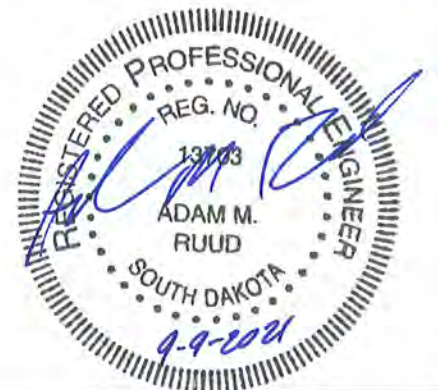
Plotting Date: 9/9/2021

Plot Scale - 1:200



Toe Drain - Sta. 108+25 R to Sta. 111+00 R
Lateral Drain - Sta. 129+00 R

Underdrains shall be constructed in accordance with Section 680,
Standard Specifications for Roads and Bridges 2015 Edition.



Plotted From - aruud

File - ...detail_underdrain.dgn

HORIZONTAL ALIGNMENT DATA

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B21	B102

MAINLINE

Type	Station			Northing	Easting
POB	0+00.00			728224.185	1962236.561
		TL= 224.49	N 64°15'06" E		
PC	2+24.49			728321.707	1962438.762
PI	6+17.03	R = 475.00	Delta = 79°08'25" R	728492.232	1962792.324
PT	8+80.59			728177.130	1962645.111
		TL= 1031.97	S 36°36'29" E		
PI	19+12.56			727348.732	1963641.812
		TL= 1231.25	S 36°33'51" E		
PC	31+43.81			726359.802	1964375.296
PI	38+23.74	R = 11459.16	Delta = 6°47'29" L	725813.687	1964780.347
PT	45+02.08			725319.303	1965247.137
		TL= 959.76	S 43°21'20" E		
PC	54+61.84			724621.457	1965906.030
PI	58+18.69	R = 2864.79	Delta = 14°12'04" R	724361.984	1966151.020
PT	61+71.89			724050.338	1966324.868
		TL= 262.58	S 29°09'16" E		
PC	64+34.47			723821.027	1966452.786
PI	69+17.91	R = 1637.00	Delta = 32°54'22" L	723398.833	1966688.302
PT	73+74.63			723172.321	1967115.394
		TL= 737.71	S 62°03'37" E		
PC	81+12.34			722826.672	1967767.121
PI	83+27.29	R = 4000.00	Delta = 6°09'07" R	722725.962	1967957.013
PT	85+41.82			722605.482	1968135.018
		TL= 602.14	S 55°54'31" E		
PC	91+43.95			722267.976	1968633.674
PI	95+19.75	R = 1660.00	Delta = 25°30'41" R	722057.337	1968944.886
PT	98+83.08			721733.199	1969135.034
		TL= 284.09	S 30°23'50" E		
PC	101+67.17			721488.165	1969278.779
PI	104+11.39	R = 1190.00	Delta = 23°11'43" L	721277.515	1969402.351
PT	106+48.92			721132.564	1969598.903
		TL= 607.419	S 53°35'32" E		
PC	112+56.34			720772.044	1970087.762
PI	114+67.74	R = 1146.00	Delta = 20°54'14" L	720646.571	1970257.903
PT	116+74.47			720590.061	1970461.613
		TL= 559.01	S 74°29'46" E		
PC	122+33.46			720440.635	1971000.283
PI	128+10.58	R = 1432.00	Delta = 43°54'03" R	720286.367	1971556.408
PT	133+30.68			719789.586	1971850.147
		TL= 442.86	S 30°35'43" E		
PC	137+73.54			719408.378	1972075.549

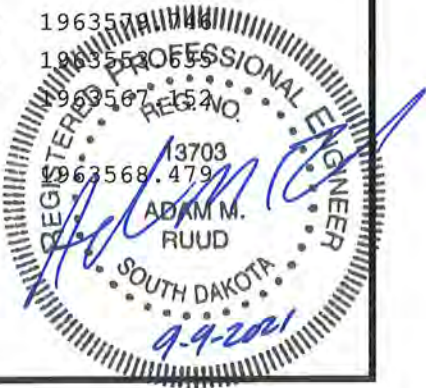
MAINLINE (continued)

Type	Station			Northing	Easting
PI	140+90.24	R = 1637.00	Delta = 21°53'56" L	719135.767	1972236.740
PT	143+99.21			718942.946	1972487.974
		TL= 431.17	S 52°29'38" E		
PC	148+30.38			718680.431	1972830.015
PI	152+26.45	R = 2292.00	Delta = 19°36'31" R	718439.282	1973144.218
PT	156+14.78			718106.672	1973359.271
		TL= 1145.49	S 32°53'07" E		
PC	167+60.28			717144.733	1973981.225
PI	178+13.48	R = 1920.00	Delta = 57°29'35" L	716260.298	1974553.068
PT	186+86.89			716267.253	1975606.243
		TL= 1305.27	N 89°37'18" E		
POE	199+92.16			716275.872	1976911.488

DR26R

Type	Station			Northing	Easting
POB	0+00.00			726853.797	1964195.643
		TL= 209.99	S 52°42'47" W		
PC	2+09.99			726726.585	1964028.573
PI	2+43.30	R = 50.00	Delta = 67°21'08" R	726706.402	1964002.067
PT	2+68.76			726723.093	1963973.234
		TL= 61.75	N 59°56'04" W		
PC	3+30.52			726754.031	1963919.789
PI	3+41.11	R = 50.00	Delta = 23°55'20" L	726759.338	1963910.622
PT	3+51.39			726760.471	1963900.090
		TL= 132.72	N 83°51'25" W		
PC	4+84.11			726774.673	1963768.137
PI	4+93.93	R = 50.00	Delta = 22°14'04" L	726775.725	1963758.368
PT	5+03.51			726773.002	1963748.928
		TL= 21.51	S 73°54'31" W		
PC	5+25.02			726767.040	1963728.262
PI	5+52.90	R = 50.00	Delta = 58°17'11" R	726759.313	1963701.476
PT	5+75.89			726778.038	1963680.821
		TL= 136.43	N 47°48'18" W		
PC	7+12.31			726869.672	1963577.111
PI	7+47.56	R = 50.00	Delta = 70°21'29" R	726893.343	1963550.655
PT	7+73.71			726925.892	1963516.520
		TL= 3.46	N 22°33'11" E		
POE	7+77.17			726929.086	1963568.479

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/96); Geoid 03; SF = 0.9999030709



HORIZONTAL ALIGNMENT DATA

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B22	B102

DR35R

Type	Station			Northing	Easting
POB	0+00.00			726004.503	1964649.771
		TL= 83.69	S 51°11'27" W		
PC	0+83.69			725952.051	1964584.556
PI	0+96.53	R = 50.00	Delta = 28°47'41" R	725944.007	1964574.554
PT	1+08.82			725941.775	1964561.914
		TL= 83.69	S 79°59'08" W		
PC	1+92.51			725927.223	1964479.502
PI	2+00.98	R = 50.00	Delta = 19°14'21" L	725925.749	1964471.157
PT	2+09.30			725921.608	1964463.763
		TL= 152.93	S 60°44'47" W		
PC	3+62.22			725846.875	1964330.340
PI	4+16.46	R = 50.00	Delta = 94°39'14" R	725820.372	1964283.020
PT	4+44.82			725869.685	1964260.443

DR48R

Type	Station			Northing	Easting
POB	0+00.00			725155.617	1965539.131
		TL= 224.36	S 48°40'01" W		
PC	2+24.36			725007.445	1965370.666
PI	3+15.71	R = 100.00	Delta = 84°49'32" R	724947.112	1965302.070
PT	3+72.40			725009.987	1965235.796

DR35SPW

Type	Station			Northing	Easting
POB	0+00.00			718251.707	1973038.164
		TL= 218.94	N 43°04'01" W		
POE	2+18.94			718411.659	1972888.657

DR78SPW

Type	Station			Northing	Easting
POB	0+00.00			720757.222	1969771.990
		TL= 176.17	N 53°35'32" W		
PC	1+76.17			720861.786	1969630.203
PI	1+99.59	R = 50.00	Delta = 50°11'40" R	720875.686	1969611.355
PT	2+19.98			720899.063	1969609.967
		TL= 31.65	N 3°23'52" W		
POE	2+51.62			720930.656	1969608.091

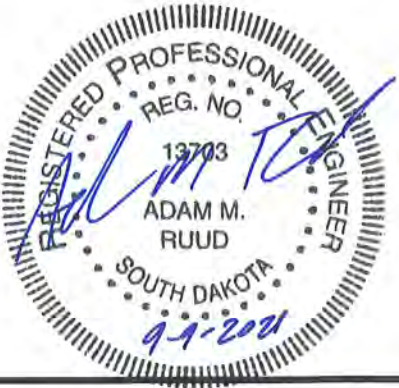
DR93SPW

Type	Station			Northing	Easting
POB	0+00.00			721800.929	1968898.507
		TL= 140.55	N 38°24'13" W		
PC	1+40.55			721911.072	1968811.197
PI	1+63.87	R = 50.00	Delta = 50°00'00" R	721929.343	1968796.713
PT	1+84.18			721952.183	1968801.400
		TL= 21.54	N 11°35'47" E		
POE	2+05.73			721973.287	1968805.731

DR111SPW

Type	Station			Northing	Easting
POB	0+00.00			722695.733	1967487.535
		TL= 199.95	N 62°03'37" W		
PC	1+99.95			722789.418	1967310.891
PI	2+23.37	R = 50.00	Delta = 50°11'40" R	722800.391	1967290.202
PT	2+43.75			722823.309	1967285.386
		TL= 31.25	N 11°51'57" W		
POE	2+75.01			722853.894	1967278.960

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/96); Geoid 03; SF = 0.9999030709



HORIZONTAL ALIGNMENT DATA

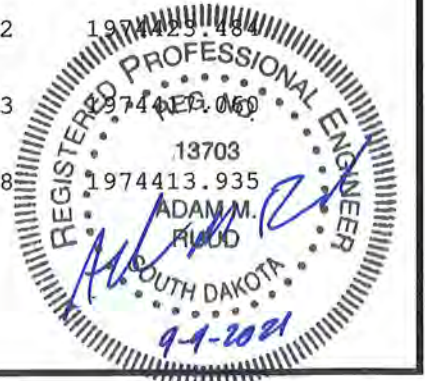
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B23	B102

Red Plum Creek

Red Plum Creek (continued)

<u>Type</u>	<u>Station</u>			<u>Northing</u>	<u>Easting</u>	<u>Type</u>	<u>Station</u>			<u>Northing</u>	<u>Easting</u>
POB	0+00.00			715428.033	1974693.739						
		TH= 7.25	N 16°41'57" W			PI	5+51.30	TH= 14.60	N 28°23'35" W	715957.895	1974648.947
PI	0+07.25			715434.978	1974691.655			TH= 13.36	N 24°34'02" W	715970.048	1974643.391
		TH= 25.99	N 22°47'47" W			PI	5+64.66	TH= 11.95	N 13°28'46" W	715981.666	1974640.606
PI	0+33.24			715458.936	1974681.586			TH= 19.99	N 10°36'16" W	716001.312	1974636.928
		TH= 22.57	N 22°37'12" W			PI	5+76.61	TH= 26.14	N 14°16'03" W	716026.645	1974630.486
PI	0+55.81			715479.770	1974672.905			TH= 28.28	N 17°52'43" W	716053.555	1974621.806
		TH= 25.81	N 17°12'58" W			PI	5+96.60	TH= 30.29	N 20°15'15" W	716081.972	1974611.320
PI	0+81.62			715504.422	1974665.266			TH= 26.47	N 66°17'12" W	716092.617	1974587.083
		TH= 32.19	N 20°11'40" W			PI	6+22.74	TH= 18.56	N 48°14'44" W	716104.976	1974573.239
PI	1+13.80			715534.631	1974654.155			TH= 30.63	N 65°16'09" W	716117.791	1974545.417
		TH= 25.63	N 28°18'03" W			PI	6+51.01	TH= 34.24	N 30°27'56" W	716147.305	1974528.056
PI	1+39.44			715557.200	1974642.002			TH= 35.42	N 36°01'39" W	716175.951	1974507.222
		TH= 32.53	N 16°06'48" W			PI	6+81.30	TH= 21.37	N 45°07'53" W	716191.027	1974492.076
PI	1+71.97			715588.450	1974632.975			TH= 20.40	N 48°18'42" W	716204.597	1974476.840
		TH= 27.46	N 13°09'27" W			PI	7+07.77	TH= 15.16	N 23°37'46" W	716218.486	1974470.764
PI	1+99.42			715615.186	1974626.725			TH= 30.72	N 42°42'34" W	716241.055	1974449.930
		TH= 18.61	N 8°35'01" W			PI	7+26.33	TH= 21.91	N 33°41'24" W	716259.284	1974437.778
PI	2+18.03			715633.589	1974623.947			TH= 26.52	N 32°36'54" W	716281.622	1974425.484
		TH= 15.31	N 3°54'02" E			PI	7+56.96	TH= 12.83	N 30°01'60" W	716292.733	1974409.069
PI	2+33.35			715648.867	1974624.988			TH= 7.62	N 24°13'40" W	716299.678	1974413.935
		TH= 14.97	N 3°59'27" E			PI	8+26.62	TH= 20.01	N 46°03'16" W		
PI	2+48.31			715663.798	1974626.030						
		TH= 25.25	N 18°26'06" E								
PI	2+73.57			715687.756	1974634.016						
		TH= 31.84	N 18°26'06" E								
PI	3+05.41			715717.964	1974644.086						
		TH= 38.07	N 14°47'48" E								
PI	3+43.48			715754.770	1974653.808						
		TH= 37.33	N 18°26'06" E								
PI	3+80.81			715790.187	1974665.614						
		TH= 20.21	N 4°55'38" E								
PI	4+01.02			715810.325	1974667.350						
		TH= 69.24	N 3°44'15" W								
PI	4+70.27			715879.423	1974662.836						
		TH= 31.53	N 11°19'48" W								
PI	5+01.80			715910.339	1974656.641						
		TH= 18.09	N 4°20'42" E								
PI	5+19.89			715928.377	1974658.012						
		TH= 16.81	N 7°14'53" W								
PI	5+36.70			715945.048	1974655.891						



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HORIZONTAL ALIGNMENT DATA

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B24	B102

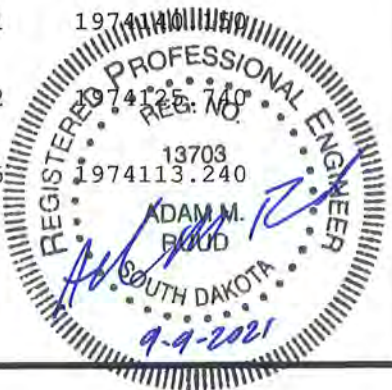
Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	10+03.16			716313.567	1974399.525
		TH= 8.72	N 35°16'21" W		
PI	10+11.88			716320.685	1974394.490
		TH= 12.15	N 0°49'06" W		
PI	10+24.04			716332.838	1974394.317
		TH= 9.71	N 26°33'54" W		
PI	10+33.74			716341.518	1974389.977
		TH= 12.19	N 35°43'39" W		
PI	10+45.93			716351.414	1974382.859
		TH= 10.83	N 6°35'24" W		
PI	10+56.76			716362.173	1974381.616
		TH= 18.34	N 32°33'25" W		
PI	10+75.10			716377.629	1974371.747
		TH= 15.72	N 43°12'36" W		
PI	10+90.82			716389.088	1974360.983
		TH= 12.12	N 29°08'03" W		
PI	11+02.95			716399.678	1974355.081
		TH= 10.74	N 14°02'10" W		
PI	11+13.68			716410.095	1974352.477
		TH= 17.96	N 20°10'50" W		
PI	11+31.64			716426.949	1974346.282
		TH= 11.47	N 3°25'35" E		
PI	11+43.10			716438.393	1974346.967
		TH= 18.54	N 6°51'01" E		
PI	11+61.64			716456.796	1974349.178
		TH= 17.25	N 40°06'03" W		
PI	11+78.89			716469.991	1974338.067
		TH= 16.36	N 17°16'53" W		
PI	11+95.25			716485.616	1974333.206
		TH= 12.09	N 12°26'22" W		
PI	12+07.34			716497.421	1974330.601
		TH= 22.83	N 25°12'04" W		
PI	12+30.18			716518.081	1974320.879
		TH= 20.44	N 28°57'36" W		
PI	12+50.61			716535.963	1974310.983
		TH= 25.88	N 31°33'26" W		
PI	12+76.49			716558.012	1974297.442
		TH= 12.74	N 37°48'24" W		
PI	12+89.23			716568.081	1974289.629
		TH= 14.06	N 32°54'19" W		
PI	13+03.29			716579.887	1974281.990

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 12.74	N 24°07'16" W		
PI	13+16.04			716591.519	1974276.782
		TH= 20.75	N 34°05'20" W		
PI	13+36.79			716608.706	1974265.150
		TH= 13.4	N 18°54'16" W		
PI	13+50.19			716621.380	1974260.810
		TH= 16.65	N 30°02'29" W		
PI	13+66.83			716635.789	1974252.476
		TH= 22.87	N 30°04'07" W		
PI	13+89.70			716655.581	1974241.018
		TH= 13.51	N 25°54'23" W		
PI	14+03.21			716667.734	1974235.115
		TH= 10.08	N 10°55'22" W		
PI	14+13.29			716677.630	1974233.206
		TH= 7.63	N 11°49'17" W		
PI	14+20.92			716685.095	1974231.643
		TH= 10.45	N 35°32'16" W		
PI	14+31.37			716693.602	1974225.567
		TH= 11.63	N 37°43'30" W		
PI	14+43.01			716702.803	1974218.449
		TH= 11.91	N 46°46'17" W		
PI	14+54.92			716710.963	1974209.768
		TH= 18.92	N 56°36'05" W		
PI	14+73.84			716721.380	1974193.969
		TH= 15.48	N 59°41'50" W		
PI	14+89.33			716729.192	1974180.601
		TH= 12.32	N 49°34'26" W		
PI	15+01.64			716737.178	1974171.226
		TH= 8.94	N 24°04'32" W		
PI	15+10.58			716745.338	1974167.580
		TH= 11.64	N 20°03'22" W		
PI	15+22.22			716756.276	1974163.587
		TH= 16.47	N 42°26'10" W		
PI	15+38.69			716768.429	1974152.476
		TH= 15.70	N 51°44'10" W		
PI	15+54.39			716778.151	1974141.110
		TH= 15.21	N 71°21'30" W		
PI	15+69.60			716783.012	1974125.740
		TH= 12.67	N 80°32'16" W		
PI	15+82.27			716785.095	1974113.240
		TH= 10.49	N 77°34'27" W		

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HORIZONTAL ALIGNMENT DATA

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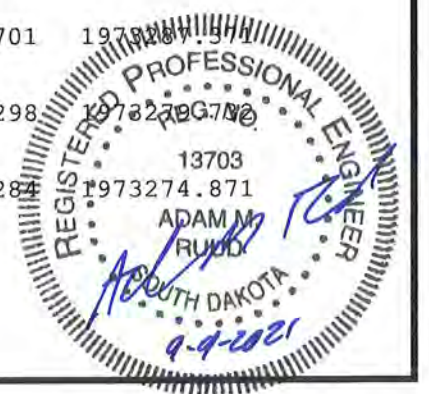
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B25	B102

Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	15+92.76			716787.352	1974102.997
		TH= 13.62	N 70°38'28" W		
PI	16+06.38			716791.866	1974090.150
		TH= 17.00	N 55°49'23" W		
PI	16+23.37			716801.415	1974076.087
		TH= 8.96	N 44°12'55" W		
PI	16+32.34			716807.838	1974069.837
		TH= 8.19	N 4°51'52" W		
PI	16+40.53			716815.998	1974069.143
		TH= 5.91	N 1°41'05" E		
PI	16+46.43			716821.901	1974069.316
		TH= 11.03	N 7°14'13" E		
PI	16+57.46			716832.838	1974070.705
		TH= 7.14	N 18°26'06" E		
PI	16+64.59			716839.609	1974072.962
		TH= 5.66	N 17°52'43" E		
PI	16+70.25			716844.991	1974074.698
		TH= 7.71	N 14°20'58" W		
PI	16+77.95			716852.456	1974072.789
		TH= 14.62	N 42°35'39" W		
PI	16+92.58			716863.220	1974062.893
		TH= 21.83	N 39°30'50" W		
PI	17+14.40			716880.061	1974049.004
		TH= 11.37	N 31°15'49" W		
PI	17+25.78			716889.783	1974043.101
		TH= 22.72	N 38°47'48" W		
PI	17+48.50			716907.491	1974028.865
		TH= 36.36	N 38°01'08" W		
PI	17+84.86			716936.137	1974006.469
		TH= 11.23	N 39°21'06" W		
PI	17+96.09			716944.818	1973999.351
		TH= 14.45	N 35°13'03" W		
PI	18+10.54			716956.623	1973991.018
		TH= 11.09	N 39°55'13" W		
PI	18+21.63			716965.130	1973983.900
		TH= 14.59	N 51°45'58" W		
PI	18+36.22			716974.158	1973972.441
		TH= 21.12	N 38°39'35" W		
PI	18+57.34			716990.651	1973959.247
		TH= 110.02	N 43°54'34" W		
PC	19+67.35			717069.911	1973882.948

Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	19+77.00	R = 100.00	Delta = 11°01'28" R	717076.863	1973876.255
PT	19+86.60			717084.967	1973871.016
		TH= 501.12	N 32°53'07" W		
PC	24+87.71			717505.784	1973598.931
PI	25+37.22	R = 500.00	Delta = 11°18'36" R	717547.361	1973572.049
PT	25+86.41			717593.402	1973553.843
		TH= 53.95	N 21°34'31" W		
PC	26+40.36			717643.573	1973534.004
PI	26+89.87	R = 500.00	Delta = 11°18'36" L	717689.614	1973515.798
PT	27+39.06			717731.190	1973488.917
		TH= 198.59	N 32°53'07" W		
PI	29+37.65			717897.962	1973381.088
		TH= 0.52	N 15°38'32" W		
PI	29+38.18			717898.465	1973380.947
		TH= 10.94	N 41°47'04" W		
PI	29+49.12			717906.624	1973373.656
		TH= 12.42	N 26°33'54" W		
PI	29+61.54			717917.736	1973368.100
		TH= 12.61	N 22°40'50" W		
PI	29+74.15			717929.368	1973363.239
		TH= 19.55	N 33°24'28" W		
PI	29+93.70			717945.687	1973352.475
		TH= 14.45	N 38°39'35" W		
PI	30+08.15			717956.972	1973343.447
		TH= 31.75	N 41°00'33" W		
PI	30+39.90			717980.930	1973322.614
		TH= 15.15	N 25°05'47" W		
PI	30+55.04			717994.645	1973316.190
		TH= 17.03	N 29°57'44" W		
PI	30+72.08			718009.402	1973307.683
		TH= 10.81	N 42°23'51" W		
PI	30+82.89			718017.388	1973300.391
		TH= 16.41	N 29°49'12" W		
PI	30+99.30			718031.625	1973292.232
		TH= 7.78	N 38°39'35" W		
PI	31+07.08			718037.701	1973281.511
		TH= 10.09	N 49°11'06" W		
PI	31+17.18			718044.298	1973274.871
		TH= 9.35	N 31°19'43" W		
PI	31+26.52			718052.284	1973274.871
		TH= 4.35	N 28°36'38" W		



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HORIZONTAL ALIGNMENT DATA

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B26	B102

Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	31+30.88			718056.104	1973272.787
		TH= 12.74	N 52°11'37" W		
PI	31+43.62			718063.916	1973262.718
		TH= 16.35	N 48°00'46" W		
PI	31+59.97			718074.854	1973250.565
		TH= 16.88	N 30°15'23" W		
PI	31+76.85			718089.437	1973242.058
		TH= 12.17	N 42°06'31" W		
PI	31+89.02			718098.465	1973233.898
		TH= 11.91	N 46°46'17" W		
PI	32+00.94			718106.625	1973225.218
		TH= 11.01	N 52°02'45" W		
PI	32+11.94			718113.396	1973216.537
		TH= 7.97	N 69°35'24" W		
PI	32+19.91			718116.173	1973209.072
		TH= 8.80	S 75°08'29" W		
PI	32+28.71			718113.916	1973200.565
		TH= 8.47	S 45°49'49" W		
PI	32+37.18			718108.014	1973194.489
		TH= 7.86	S 46°47'24" W		
PI	32+45.04			718102.632	1973188.759
		TH= 5.69	S 77°39'39" W		
PI	32+50.73			718101.416	1973183.204
		TH= 5.21	N 53°07'48" W		
PI	32+55.94			718104.541	1973179.037
		TH= 10.71	N 19°54'14" W		
PI	32+66.65			718114.611	1973175.391
		TH= 7.19	N 8°19'32" W		
PI	32+73.84			718121.729	1973174.350
		TH= 20.53	N 18°44'29" W		
PI	32+94.37			718141.173	1973167.752
		TH= 32.06	N 40°25'19" W		
PI	33+26.43			718165.578	1973146.967
		TH= 16.58	N 35°21'44" W		
PI	33+43.01			718179.098	1973137.372
		TH= 21.89	N 13°41'50" W		
PI	33+64.90			718200.367	1973132.188
		TH= 98.59	N 45°10'42" W		
PI	34+63.49			718269.862	1973062.259
		TH= 166.34	N 43°04'01" W		
PC	36+29.83			718391.382	1972948.675

Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	36+46.95	R = 50.00	Delta = 37°47'51" L	718403.887	1972936.986
PT	36+62.81			718406.605	1972920.085
		TH= 55.59	N 80°51'52" W		
PC	37+18.40			718415.431	1972865.201
PI	37+77.04	R = 30.00	Delta = 125°48'33" R	718424.741	1972807.308
PT	37+84.28			718466.243	1972848.731
		TH= 13.46	N 44°56'41" E		
PC	37+97.73			718475.768	1972858.237
PI	38+52.24	R = 100.00	Delta = 122°20'27" L	718514.345	1972896.740
PT	38+61.79			718526.238	1972843.550
		TH= 32.48	N 77°23'45" W		
PC	38+94.27			718533.325	1972811.858
PI	39+06.84	R = 20.00	Delta = 64°19'36" R	718536.069	1972799.584
PT	39+16.72			718548.320	1972796.740
		TH= 1.16	N 13°04'10" W		
PC	39+17.88			718549.445	1972796.479
PI	39+36.55	R = 30.00	Delta = 63°47'48" L	718567.634	1972792.256
PT	39+51.28			718571.877	1972774.073
		TH= 11.54	N 76°51'58" W		
PC	39+62.82			718574.499	1972762.832
PI	39+72.50	R = 30.00	Delta = 35°45'57" R	718576.699	1972753.406
PT	39+81.55			718583.993	1972747.043
		TH= 31.79	N 41°06'01" W		
PI	40+13.34			718607.951	1972726.143
		TH= 26.13	N 56°18'29" W		
PI	40+39.47			718622.443	1972704.406
		TH= 47.41	N 48°51'11" W		
PI	40+86.88			718653.639	1972668.704
		TH= 41.99	N 56°18'29" W		
PI	41+28.86			718676.930	1972633.771
		TH= 122.27	N 52°29'38" W		
PI	42+51.13			718751.370	1972536.780
		TH= 9.75	N 82°10'45" W		
PI	42+60.88			718752.697	1972527.121
		TH= 20.05	N 56°29'53" W		
PI	42+80.93			718763.763	1972510.406
		TH= 21.49	N 29°13'34" W		
PI	43+02.41			718782.115	1972499.911
		TH= 107.15	N 52°29'38" W		
PC	44+09.56			718847.751	1972414.913
PI	44+67.37	R = 1757.00	Delta = 3°46'09" R	718882.951	1972368.050

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HORIZONTAL ALIGNMENT DATA

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B27	B102

Red Plum Creek (continued)

Type	Station		Northing	Easting
PT	45+25.15		718921.090	1972325.599
		TH= 316.24	N 48°43'29" W	
PI	48+41.38		719129.704	1972087.933
		TH= 2.34	N 50°56'09" W	
PI	48+43.72		719131.178	1972086.117
		TH= 13.20	N 45°00'00" W	
PI	48+56.92		719140.509	1972076.785
		TH= 8.97	N 32°09'08" W	
PI	48+65.89		719148.105	1972072.011
		TH= 9.71	N 26°33'54" W	
PI	48+75.59		719156.785	1972067.671
		TH= 13.81	N 30°11'30" W	
PI	48+89.40		719168.721	1972060.726
		TH= 20.84	N 35°40'35" W	
PI	49+10.24		719185.648	1972048.574
		TH= 18.06	N 32°44'07" W	
PI	49+28.30		719200.839	1972038.808
		TH= 16.75	N 36°34'23" W	
PI	49+45.05		719214.294	1972028.825
		TH= 5.93	N 43°09'09" W	
PC	49+50.99		719218.623	1972024.767
PI	49+59.33	R = 50.00	Delta = 18°57'01" L	719224.711
PT	49+67.52		719228.615	1972011.685
		TH= 8.35	N 62°06'10" W	
PI	49+75.88		719232.523	1972004.303
		TH= 16.43	N 56°18'36" W	
PI	49+92.31		719241.638	1971990.631
		TH= 15.5	N 44°25'58" W	
PI	50+07.81		719252.706	1971979.78
		TH= 31.15	N 39°20'44" W	
PI	50+38.96		719276.794	1971960.032
		TH= 12.76	N 41°33'09" W	
PI	50+51.71		719286.343	1971951.568
		TH= 11.50	N 35°47'20" W	
PI	50+63.22		719295.674	1971944.841
		TH= 11.26	N 27°33'10" W	
PI	50+74.48		719305.657	1971939.632
		TH= 10.92	N 20°57'21" W	
PI	50+85.40		719315.857	1971935.726
		TH= 9.96	N 16°27'36" W	
PI	50+95.36		719325.405	1971932.905

Red Plum Creek (continued)

Type	Station		Northing	Easting
		TH= 10.37	N 15°46'51" W	
PI	51+05.73		719335.388	1971930.084
		TH= 11.70	N 10°41'06" W	
PI	51+17.44		719346.89	1971927.914
		TH= 20.73	N 10°15'04" W	
PI	51+38.17		719367.289	1971924.224
		TH= 9.84	N 14°02'10" W	
PI	51+48.01		719376.838	1971921.837
		TH= 9.00	N 15°22'35" W	
PI	51+57.01		719385.518	1971919.45
		TH= 14.71	N 21°38'40" W	
PI	51+71.72		719399.19	1971914.025
		TH= 10.79	N 30°10'25" W	
PI	51+82.51		719408.522	1971908.599
		TH= 9.42	N 28°55'35" W	
PI	51+91.94		719416.768	1971904.042
		TH= 10.58	N 28°08'30" W	
PI	52+02.52		719426.1	1971899.051
		TH= 24.00	N 34°47'21" W	
PC	52+26.52		719445.810	1971885.358
PI	52+36.02	R = 40.00	Delta = 26°43'22" R	719453.612
PT	52+45.17		719463.019	1971878.604
		TH= 3.76	N 8°03'59" W	
PC	52+48.93		719466.737	1971878.077
PI	52+57.37	R = 40.00	Delta = 23°50'26" L	719475.098
PT	52+65.57		719482.266	1971872.429
		TH= 6.56	N 31°54'25" W	
PI	52+72.13		719487.832	1971868.964
		TH= 131.26	N 31°58'25" W	
PC	54+03.39		719599.178	1971799.458
PI	54+08.67	R = 12.00	Delta = 47°32'49" L	719603.662
PRC	54+13.35		719604.624	1971791.461
PI	54+52.84	R = 100.00	Delta = 43°06'04" R	719611.807
PT	54+88.57		719643.587	1971729.181
		TH= 475.01	N 36°25'10" W	
PC	59+63.58		720025.826	1971157.561
PI	60+75.83	R = 400.00	Delta = 31°20'59" L	720116.14
PT	61+82.45		720158.28	1971157.561
		TH= 128.63	N 67°46'09" W	
PI	63+11.08		720207.28	1971157.561
		TH= 103.02	N 67°46'09" W	



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HORIZONTAL ALIGNMENT DATA

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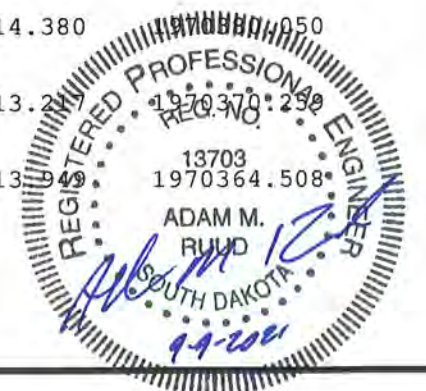
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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Red Plum Creek (continued)

Type	Station			Northing	Easting
PC	64+14.09			720246.257	1971062.202
PI	64+37.60	R = 400.00	Delta = 6°43'37" L	720255.151	1971040.441
PT	64+61.06			720261.435	1971017.788
		TH= 78.27	N 74°29'46" W		
PI	65+39.32			720282.357	1970942.368
		TH= 6.40	N 70°30'50" W		
PI	65+45.73			720284.492	1970936.332
		TH= 19.69	N 75°57'50" W		
PI	65+65.41			720289.267	1970917.235
		TH= 13.32	N 83°27'13" W		
PI	65+78.74			720290.786	1970903.997
		TH= 17.91	N 70°54'23" W		
PI	65+96.65			720296.645	1970887.070
		TH= 16.15	N 59°18'01" W		
PI	66+12.80			720304.892	1970873.181
		TH= 17.12	N 59°32'04" W		
PI	66+29.92			720313.572	1970858.424
		TH= 15.70	N 78°50'43" W		
PI	66+45.63			720316.610	1970843.016
		TH= 10.37	N 52°39'02" W		
PI	66+56.00			720322.904	1970834.769
		TH= 12.46	N 54°55'35" W		
PI	66+68.46			720330.065	1970824.570
		TH= 10.72	N 54°03'28" W		
PI	66+79.19			720336.359	1970815.889
		TH= 11.94	N 62°58'09" W		
PI	66+91.12			720341.784	1970805.255
		TH= 17.11	N 74°33'13" W		
PI	67+08.23			720346.341	1970788.762
		TH= 18.48	N 77°06'23" W		
PI	67+26.71			720350.465	1970770.750
		TH= 13.04	N 71°33'54" W		
PI	67+39.75			720354.588	1970758.380
		TH= 10.03	N 68°25'43" W		
PI	67+49.79			720358.277	1970749.049
		TH= 14.43	N 77°50'42" W		
PI	67+64.22			720361.315	1970734.943
		TH= 11.50	N 89°59'60" W		
PI	67+75.72			720361.315	1970723.441
		TH= 13.38	S 81°36'26" W		
PI	67+89.10			720359.362	1970710.203

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 17.69	S 75°47'36" W		
PI	68+06.78			720355.022	1970693.059
		TH= 9.11	N 89°59'60" W		
PI	68+15.90			720355.022	1970683.944
		TH= 14.67	N 82°20'58" W		
PI	68+30.57			720356.975	1970669.405
		TH= 8.16	N 61°23'22" W		
PI	68+38.73			720360.881	1970662.243
		TH= 9.36	N 44°03'39" W		
PI	68+48.09			720367.609	1970655.733
		TH= 11.34	N 45°46'39" W		
PI	68+59.43			720375.519	1970647.605
		TH= 163.86	N 77°57'42" W		
PI	70+23.29			720409.695	1970487.345
		TH= 12.26	N 88°18'35" W		
PI	70+35.55			720410.057	1970475.090
		TH= 16.29	N 79°11'13" W		
PI	70+51.84			720413.113	1970459.088
		TH= 12.51	N 76°57'22" W		
PI	70+64.35			720415.936	1970446.903
		TH= 9.67	N 80°41'53" W		
PI	70+74.02			720417.499	1970437.363
		TH= 8.73	N 64°15'38" W		
PI	70+82.75			720421.288	1970429.503
		TH= 9.69	N 69°03'56" W		
PI	70+92.43			720424.749	1970420.457
		TH= 10.95	N 85°24'23" W		
PI	71+03.38			720425.626	1970409.540
		TH= 10.10	S 53°05'05" W		
PI	71+13.48			720419.561	1970401.467
		TH= 7.71	S 72°08'35" W		
PI	71+21.19			720417.197	1970394.127
		TH= 7.85	S 80°17'53" W		
PI	71+29.04			720415.874	1970386.390
		TH= 6.51	S 76°44'28" W		
PI	71+35.55			720414.380	1970370.250
		TH= 9.86	S 83°13'44" W		
PI	71+45.41			720413.244	1970364.508
		TH= 5.80	N 82°45'10" W		
PI	71+51.21			720413.049	1970350.850
		TH= 6.59	S 86°43'12" W		



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HORIZONTAL ALIGNMENT DATA

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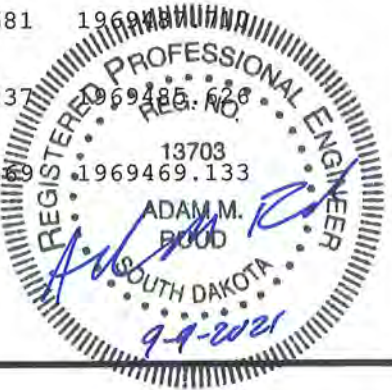
Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	71+57.80			720413.572	1970357.929
		TH= 12.37	S 72°03'24" W		
PI	71+70.17			720409.761	1970346.163
		TH= 9.00	S 60°50'30" W		
PI	71+79.17			720405.376	1970338.302
		TH= 13.10	S 86°22'11" W		
PI	71+92.27			720404.547	1970325.233
		TH= 12.45	S 84°11'16" W		
PI	72+04.71			720403.286	1970312.850
		TH= 9.65	N 66°52'39" W		
PI	72+14.36			720407.076	1970303.975
		TH= 10.48	N 82°42'49" W		
PI	72+24.84			720408.405	1970293.579
		TH= 11.77	S 68°22'04" W		
PI	72+36.61			720404.067	1970282.642
		TH= 8.57	N 70°27'48" W		
PI	72+45.18			720406.932	1970274.569
		TH= 9.95	N 47°07'16" W		
PI	72+55.13			720413.703	1970267.277
		TH= 8.50	N 40°01'49" W		
PI	72+63.63			720420.213	1970261.808
		TH= 10.11	N 34°30'31" W		
PI	72+73.74			720428.546	1970256.079
		TH= 7.26	N 27°29'43" W		
PI	72+81.01			720434.991	1970252.725
		TH= 9.45	N 64°03'21" W		
PI	72+90.45			720439.124	1970244.229
		TH= 18.85	N 80°57'16" W		
PI	73+09.31			720442.088	1970225.610
		TH= 13.02	N 70°06'53" W		
PI	73+22.32			720446.515	1970213.371
		TH= 21.17	N 85°03'39" W		
PI	73+43.50			720448.338	1970192.277
		TH= 27.12	N 78°21'59" W		
PI	73+70.62			720453.807	1970165.714
		TH= 40.83	N 67°53'46" W		
PI	74+11.44			720469.170	1970127.887
		TH= 21.70	N 58°07'00" W		
PI	74+33.14			720480.630	1970109.464
		TH= 9.58	N 45°00'00" W		
PI	74+42.72			720487.401	1970102.693

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 20.81	N 44°30'21" W		
PI	74+63.52			720502.241	1970088.107
		TH= 27.52	N 83°28'21" W		
PI	74+91.04			720505.370	1970060.766
		TH= 16.76	N 44°22'13" W		
PI	75+07.80			720517.349	1970049.047
		TH= 21.45	N 29°03'17" W		
PI	75+29.25			720536.099	1970038.631
		TH= 20.07	N 22°54'21" W		
PI	75+49.32			720554.588	1970030.818
		TH= 14.22	N 8°58'21" W		
PI	75+63.54			720568.634	1970028.601
		TH= 8.05	N 8°58'21" W		
PC	75+71.59			720576.581	1970027.346
PI	76+12.62	R = 100.00	Delta = 44°37'11" L	720617.112	1970020.946
PT	76+49.46			720641.467	1969987.922
		TH= 418.66	N 53°35'32" W		
PC	80+68.13			720889.955	1969650.976
PI	80+73.49	R = 20.00	Delta = 30°00'00" R	720893.135	1969646.663
PT	80+78.60			720898.046	1969644.518
		TH= 3.89	N 23°35'32" W		
PC	80+82.49			720901.610	1969642.962
PI	80+87.85	R = 20.00	Delta = 30°00'00" L	720906.521	1969640.817
PT	80+92.96			720909.702	1969636.504
		TH= 123.11	N 53°35'32" W		
PC	82+16.07			720982.770	1969537.425
PI	82+17.68	R = 10.00	Delta = 18°15'46" R	720983.724	1969536.132
PT	82+19.26			720985.035	1969535.202
		TH= 20.84	N 35°19'46" W		
PC	82+40.09			721002.036	1969523.152
PI	82+57.70	R = 100.00	Delta = 19°58'32" L	721016.403	1969512.968
PT	82+74.96			721026.427	1969498.489
		TH= 8.25	N 55°18'17" W		
PI	82+83.21			721031.125	1969491.703
		TH= 6.84	N 35°42'24" W		
PI	82+90.05			721036.681	1969485.628
		TH= 5.93	N 20°33'22" W		
PI	82+95.99			721042.237	1969485.628
		TH= 20.18	N 54°48'22" W		
PI	83+16.17			721053.869	1969469.133
		TH= 26.24	N 64°06'47" W		

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HORIZONTAL ALIGNMENT DATA

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	83+42.41			721065.327	1969445.522
		TH= 7.57	N 53°23'35" W		
PI	83+49.98			721069.841	1969439.446
		TH= 18.64	N 62°14'29" W		
PI	83+68.62			721078.521	1969422.953
		TH= 14.62	N 47°24'22" W		
PI	83+83.24			721088.417	1969412.189
		TH= 10.47	N 49°42'28" W		
PI	83+93.71			721095.188	1969404.203
		TH= 8.85	N 28°04'21" W		
PI	84+02.57			721103.001	1969400.036
		TH= 6.61	N 3°00'46" W		
PI	84+09.17			721109.598	1969399.689
		TH= 13.42	N 10°26'15" W		
PI	84+22.59			721122.792	1969397.258
		TH= 7.14	N 4°11'06" W		
PI	84+29.73			721129.910	1969396.737
		TH= 9.01	N 25°05'01" W		
PI	84+38.74			721138.070	1969392.918
		TH= 10.64	N 33°41'24" W		
PI	84+49.38			721146.924	1969387.015
		TH= 11.77	N 37°12'29" W		
PI	84+61.15			721156.299	1969379.897
		TH= 9.90	N 52°07'30" W		
PI	84+71.05			721162.376	1969372.084
		TH= 6.65	N 70°08'41" W		
PI	84+77.69			721164.633	1969365.834
		TH= 7.05	N 37°59'55" W		
PI	84+84.74			721170.188	1969361.494
		TH= 7.08	N 11°18'36" W		
PI	84+91.82			721177.133	1969360.105
		TH= 6.76	N 41°52'40" W		
PI	84+98.58			721182.167	1969355.591
		TH= 10.27	N 71°15'31" W		
PI	85+08.85			721185.466	1969345.869
		TH= 7.77	N 67°31'20" W		
PI	85+16.62			721188.436	1969338.691
		TH= 5.76	N 63°19'60" W		
PI	85+22.38			721191.022	1969333.543
		TH= 6.83	N 64°24'41" W		
PI	85+29.21			721193.973	1969327.380

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 20.39	N 47°04'12" W		
PI	85+49.61			721207.862	1969312.449
		TH= 12.90	N 23°48'21" W		
PI	85+62.51			721219.667	1969307.241
		TH= 20.53	N 18°44'29" W		
PI	85+83.04			721239.112	1969300.643
		TH= 56.56	N 53°10'51" W		
PI	86+39.60			721273.007	1969255.366
		TH= 40.62	N 23°41'50" W		
PI	86+80.22			721310.204	1969239.04
		TH= 36.15	N 83°31'19" W		
PI	87+16.38			721314.283	1969203.119
		TH= 39.06	N 5°48'59" W		
PI	87+55.44			721353.146	1969199.160
		TH= 23.66	N 2°30'16" W		
PI	87+79.10			721376.786	1969198.126
		TH= 18.49	N 4°02'16" W		
PI	87+97.59			721395.232	1969196.824
		TH= 34.86	N 12°13'10" W		
PI	88+32.45			721429.303	1969189.445
		TH= 27.16	N 22°03'23" W		
PI	88+59.62			721454.477	1969179.246
		TH= 23.27	N 19°37'04" W		
PI	88+82.89			721476.395	1969171.433
		TH= 23.53	N 29°52'34" W		
PI	89+06.41			721496.794	1969159.714
		TH= 38.11	N 37°07'51" W		
PI	89+44.52			721527.176	1969136.711
		TH= 14.45	N 48°39'08" W		
PI	89+58.97			721536.725	1969125.860
		TH= 40.70	N 65°45'30" W		
PI	89+99.67			721553.435	1969088.751
		TH= 41.75	N 46°15'49" W		
PI	90+41.42			721582.298	1969058.586
		TH= 33.95	N 32°28'16" W		
PI	90+75.37			721610.944	1969045.586
		TH= 21.36	N 20°49'43" W		
PI	90+96.74			721630.909	1969032.761
		TH= 20.87	N 3°34'35" E		
PI	91+17.61			721651.743	1969018.63
		TH= 0.54	N 14°44'37" E		



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HORIZONTAL ALIGNMENT DATA

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B31	B102

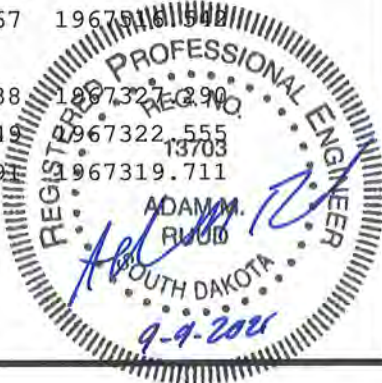
Red Plum Creek (continued)

Type	Station			Northing	Easting
PC	91+18.15			721652.267	1969034.201
PI	91+38.16	R = 40.00	Delta = 53°08'50" L	721671.616	1969039.293
PT	91+55.26			721687.295	1969026.864
		TH= 309.34	N 38°24'13" W		
PC	94+64.59			721929.708	1968834.706
PI	94+70.90	R = 20.00	Delta = 35°00'00" R	721934.649	1968830.789
PT	94+76.81			721940.944	1968830.415
		TH= 0.32	N 3°24'13" W		
PC	94+77.13			721941.268	1968830.395
PI	94+84.42	R = 20.00	Delta = 40°00'46" L	721948.538	1968829.963
PRC	94+91.10			721953.827	1968824.958
PI	95+01.80	R = 1517.0396	Delta = 0°48'29" L	721961.597	1968817.606
PRC	95+12.49			721969.262	1968810.146
PI	95+53.90	R = 50.00	Delta = 79°15'43" L	721998.937	1968781.264
PT	95+81.66			721976.090	1968746.728
		TH= 19.51	S 56°30'50" W		
PI	96+01.17			721965.328	1968730.460
		TH= 20.42	S 75°13'32" W		
PI	96+21.59			721960.120	1968710.712
		TH= 23.76	N 80°32'16" W		
PI	96+45.35			721964.026	1968687.274
		TH= 16.79	N 57°07'53" W		
PI	96+62.15			721973.141	1968673.168
		TH= 35.36	N 48°28'60" W		
PI	96+97.51			721996.578	1968646.693
		TH= 18.20	N 39°11'36" W		
PI	97+15.71			722010.684	1968635.191
		TH= 42.66	N 45°00'00" W		
PI	97+58.37			722040.849	1968605.026
		TH= 30.86	N 63°15'17" W		
PI	97+89.23			722054.738	1968577.465
		TH= 24.79	N 69°30'10" W		
PI	98+14.02			722063.419	1968554.245
		TH= 26.57	N 72°53'50" W		
PI	98+40.59			722071.231	1968528.854
		TH= 18.87	N 59°36'05" W		
PI	98+59.46			722080.780	1968512.578
		TH= 24.10	N 51°34'55" W		
PI	98+83.55			722095.754	1968493.698
		TH= 50.19	N 46°13'35" W		
PI	99+33.74			722130.476	1968457.456

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 33.50	N 58°46'54" W		
PI	99+67.24			722147.837	1968428.810
		TH= 41.73	N 59°48'03" W		
PI	100+08.97			722168.829	1968392.741
		TH= 36.36	N 59°48'03" W		
PI	100+45.33			722187.117	1968361.319
		TH= 45.08	N 56°23'11" W		
PI	100+90.41			722212.073	1968323.775
		TH= 30.91	N 51°50'34" W		
PI	101+21.32			722231.171	1968299.47
		TH= 18.28	N 50°16'53" W		
PC	101+39.60			722242.852	1968285.409
PI	101+58.00	R = 200.00	Delta = 10°30'41" R	722254.608	1968271.258
PT	101+76.29			722268.749	1968259.489
		TH= 28.13	N 39°46'11" W		
PI	102+04.42			722290.367	1968241.497
		TH= 21.09	N 34°46'52" W		
PC	102+25.50			722307.686	1968229.468
PI	102+64.15	R = 301.2331	Delta = 14°37'23" L	722339.431	1968207.421
PT	103+02.38			722364.581	1968178.073
		TH= 3.25	N 49°24'15" W		
PI	103+05.63			722366.695	1968175.606
		TH= 187.60	N 55°54'31" W		
PC	104+93.23			722471.849	1968020.244
PI	104+98.09	R = 50.00	Delta = 11°05'22" R	722474.570	1968016.224
PT	105+02.91			722478.013	1968012.803
		TH= 93.94	N 44°49'09" W		
PC	105+96.86			722544.650	1967946.585
PI	107+48.06	R = 500.00	Delta = 33°39'04" L	722651.903	1967840.007
PT	108+90.52			722682.125	1967691.856
		TH= 141.59	N 78°28'12" W		
PI	110+32.10			722710.426	1967553.125
		TH= 23.63	N 78°28'12" W		
PC	110+55.73			722715.148	1967529.975
PI	110+62.94	R = 50.00	Delta = 16°24'35" R	722716.589	1967522.911
PT	110+70.05			722719.967	1967511.544
		TH= 214.22	N 62°03'37" W		
PC	112+84.27			722820.338	1967327.390
PI	112+89.63	R = 20.00	Delta = 30°00'00" R	722822.849	1967322.555
PT	112+94.74			722827.391	1967319.711
		TH= 3.28	N 32°03'37" W		

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HORIZONTAL ALIGNMENT DATA

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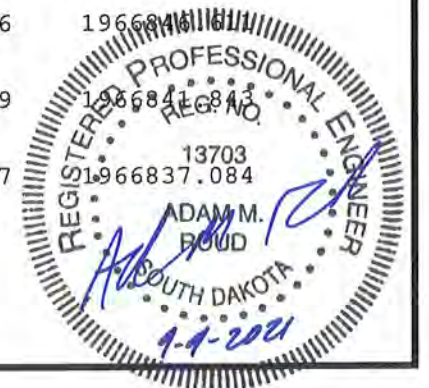
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B32	B102

Red Plum Creek (continued)

Type	Station			Northing	Easting
PC	112+98.03			722830.172	1967317.969
PI	113+03.39	R = 20.00	Delta = 30°00'01" L	722834.714	1967315.124
PT	113+08.50			722837.225	1967310.389
		TH= 188.95	N 62°03'38" W		
PI	114+97.45			722925.754	1967143.464
		TH= 139.54	N 63°12'22" W		
PI	116+36.99			722988.658	1967018.903
		TH= 5.63	N 63°04'18" W		
PI	116+42.62			722991.206	1967013.887
		TH= 5.68	N 62°53'37" W		
PI	116+48.29			722993.793	1967008.832
		TH= 5.68	N 62°43'07" W		
PI	116+53.97			722996.396	1967003.785
		TH= 5.68	N 62°32'37" W		
PI	116+59.65			722999.014	1966998.746
		TH= 5.68	N 62°22'07" W		
PI	116+65.33			723001.648	1966993.715
		TH= 5.68	N 62°11'37" W		
PI	116+71.01			723004.297	1966988.692
		TH= 5.68	N 62°01'06" W		
PI	116+76.69			723006.962	1966983.676
		TH= 5.68	N 61°50'36" W		
PI	116+82.37			723009.642	1966978.668
		TH= 5.68	N 61°40'06" W		
PI	116+88.05			723012.338	1966973.669
		TH= 5.68	N 61°29'36" W		
PI	116+93.73			723015.049	1966968.677
		TH= 5.68	N 61°19'05" W		
PI	116+99.41			723017.775	1966963.693
		TH= 5.68	N 61°08'35" W		
PI	117+05.09			723020.517	1966958.717
		TH= 5.68	N 60°58'05" W		
PI	117+10.77			723023.275	1966953.75
		TH= 5.68	N 60°47'35" W		
PI	117+16.46			723026.047	1966948.79
		TH= 5.68	N 60°37'04" W		
PI	117+22.14			723028.835	1966943.839
		TH= 5.68	N 60°26'34" W		
PI	117+27.82			723031.638	1966938.896
		TH= 5.68	N 60°16'04" W		
PI	117+33.50			723034.456	1966933.961

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 5.68	N 60°05'34" W		
PI	117+39.19			723037.290	1966929.035
		TH= 5.68	N 59°55'04" W		
PI	117+44.87			723040.139	1966924.117
		TH= 5.68	N 59°44'33" W		
PI	117+50.55			723043.003	1966919.208
		TH= 5.68	N 59°34'03" W		
PI	117+56.24			723045.882	1966914.307
		TH= 5.68	N 59°23'33" W		
PI	117+61.92			723048.776	1966909.414
		TH= 5.68	N 59°13'03" W		
PI	117+67.61			723051.686	1966904.53
		TH= 5.69	N 59°02'32" W		
PI	117+73.29			723054.610	1966899.655
		TH= 5.69	N 58°52'02" W		
PI	117+78.98			723057.549	1966894.788
		TH= 5.69	N 58°41'32" W		
PI	117+84.66			723060.504	1966889.931
		TH= 5.69	N 58°31'02" W		
PI	117+90.35			723063.473	1966885.082
		TH= 5.69	N 58°20'31" W		
PI	117+96.03			723066.458	1966880.241
		TH= 5.69	N 58°10'01" W		
PI	118+01.72			723069.457	1966875.410
		TH= 5.69	N 57°59'31" W		
PI	118+07.41			723072.472	1966870.588
		TH= 5.69	N 57°49'01" W		
PI	118+13.10			723075.501	1966865.774
		TH= 5.69	N 57°38'31" W		
PI	118+18.78			723078.545	1966860.970
		TH= 5.69	N 57°28'00" W		
PI	118+24.47			723081.604	1966856.174
		TH= 5.69	N 57°17'30" W		
PI	118+30.16			723084.678	1966851.388
		TH= 5.69	N 57°06'60" W		
PI	118+35.85			723087.766	1966846.111
		TH= 5.69	N 56°56'30" W		
PI	118+41.54			723090.869	1966841.684
		TH= 5.69	N 56°45'59" W		
PI	118+47.23			723093.987	1966837.084
		TH= 5.69	N 56°35'29" W		



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HORIZONTAL ALIGNMENT DATA

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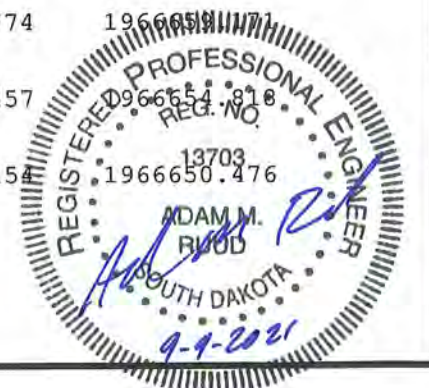
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B33	B102

Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	118+52.92			723097.120	1966832.335
		TH= 5.69	N 56°24'59" W		
PI	118+58.61			723100.268	1966827.594
		TH= 5.69	N 56°14'29" W		
PI	118+64.30			723103.430	1966822.864
		TH= 5.69	N 56°03'58" W		
PI	118+69.99			723106.606	1966818.142
		TH= 5.69	N 55°53'28" W		
PI	118+75.68			723109.798	1966813.430
		TH= 5.69	N 55°42'58" W		
PI	118+81.37			723113.003	1966808.728
		TH= 5.69	N 55°32'28" W		
PI	118+87.06			723116.224	1966804.035
		TH= 5.69	N 55°21'58" W		
PI	118+92.75			723119.459	1966799.352
		TH= 5.69	N 55°11'27" W		
PI	118+98.44			723122.708	1966794.678
		TH= 5.69	N 55°00'57" W		
PI	119+04.14			723125.972	1966790.014
		TH= 5.69	N 54°50'27" W		
PI	119+09.83			723129.250	1966785.36
		TH= 5.69	N 54°39'57" W		
PI	119+15.52			723132.543	1966780.716
		TH= 5.69	N 54°29'26" W		
PI	119+21.22			723135.850	1966776.081
		TH= 5.69	N 54°18'56" W		
PI	119+26.91			723139.171	1966771.456
		TH= 5.69	N 54°08'26" W		
PI	119+32.60			723142.507	1966766.841
		TH= 5.69	N 53°57'56" W		
PI	119+38.30			723145.856	1966762.237
		TH= 5.69	N 53°47'25" W		
PI	119+43.99			723149.221	1966757.642
		TH= 5.70	N 53°36'55" W		
PI	119+49.69			723152.599	1966753.057
		TH= 5.70	N 53°26'25" W		
PI	119+55.38			723155.991	1966748.482
		TH= 5.70	N 53°15'55" W		
PI	119+61.08			723159.398	1966743.917
		TH= 5.70	N 53°05'25" W		
PI	119+66.78			723162.819	1966739.363

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 5.70	N 52°54'54" W		
PI	119+72.47			723166.254	1966734.819
		TH= 5.70	N 52°44'24" W		
PI	119+78.17			723169.703	1966730.285
		TH= 5.70	N 52°33'54" W		
PI	119+83.87			723173.166	1966725.761
		TH= 5.70	N 52°23'24" W		
PI	119+89.56			723176.643	1966721.248
		TH= 5.70	N 52°12'53" W		
PI	119+95.26			723180.134	1966716.745
		TH= 5.70	N 52°02'23" W		
PI	120+00.96			723183.639	1966712.252
		TH= 5.70	N 51°51'53" W		
PI	120+06.66			723187.158	1966707.770
		TH= 5.70	N 51°41'23" W		
PI	120+12.36			723190.690	1966703.299
		TH= 5.70	N 51°30'52" W		
PI	120+18.06			723194.237	1966698.838
		TH= 5.70	N 51°20'22" W		
PI	120+23.75			723197.797	1966694.387
		TH= 5.70	N 51°09'52" W		
PI	120+29.45			723201.372	1966689.947
		TH= 5.70	N 50°59'22" W		
PI	120+35.15			723204.959	1966685.518
		TH= 5.70	N 50°48'52" W		
PI	120+40.85			723208.561	1966681.100
		TH= 5.70	N 50°38'21" W		
PI	120+46.56			723212.176	1966676.693
		TH= 5.70	N 50°27'51" W		
PI	120+52.26			723215.805	1966672.296
		TH= 5.70	N 50°17'21" W		
PI	120+57.96			723219.448	1966667.910
		TH= 5.70	N 50°06'51" W		
PI	120+63.66			723223.104	1966663.535
		TH= 5.70	N 49°56'20" W		
PI	120+69.36			723226.774	1966659.171
		TH= 5.70	N 49°45'50" W		
PI	120+75.06			723230.457	1966654.818
		TH= 5.70	N 49°35'20" W		
PI	120+80.77			723234.154	1966650.476
		TH= 5.70	N 49°24'50" W		



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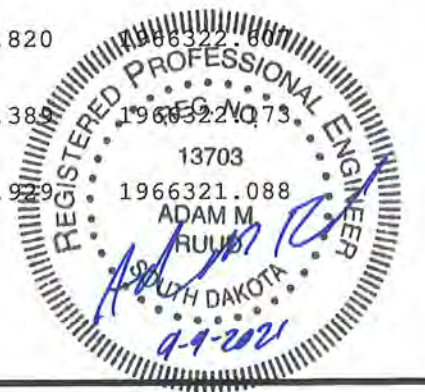
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B34	B102

Red Plum Creek (continued)

Type	Station		Northing	Easting
PI	120+86.47		723237.864	1966646.145
		TH= 5.70	N 49°14'19" W	
PI	120+92.17		723241.588	1966641.825
		TH= 5.70	N 49°03'49" W	
PI	120+97.88		723245.325	1966637.517
		TH= 5.70	N 48°53'19" W	
PI	121+03.58		723249.075	1966633.219
		TH= 5.70	N 48°42'49" W	
PI	121+09.28		723252.839	1966628.933
		TH= 5.70	N 48°32'19" W	
PI	121+14.98		723256.611	1966624.663
		TH= 3.12	N 48°23'51" W	
PI	121+18.10		723258.68	1966622.333
		TH= 1.71	N 50°27'43" W	
PI	121+19.81		723259.768	1966621.016
		TH= 5.70	N 50°20'28" W	
PI	121+25.51		723263.407	1966616.626
		TH= 5.71	N 50°09'56" W	
PI	121+31.22		723267.068	1966612.237
		TH= 5.72	N 49°59'24" W	
PI	121+36.94		723270.743	1966607.859
		TH= 5.72	N 49°48'52" W	
PI	121+42.65		723274.432	1966603.492
		TH= 5.72	N 49°38'20" W	
PI	121+48.37		723278.135	1966599.135
		TH= 5.72	N 49°27'48" W	
PI	121+54.09		723281.851	1966594.789
		TH= 5.72	N 49°17'16" W	
PI	121+59.81		723285.582	1966590.454
		TH= 5.72	N 49°06'44" W	
PI	121+65.53		723289.327	1966586.129
		TH= 5.72	N 48°56'12" W	
PI	121+71.25		723293.085	1966581.815
		TH= 1.86	N 48°45'40" W	
PC	121+73.11		723294.310	1966580.418
PI	122+58.45	R = 150.00	Delta = 59°16'23" L	723350.565 1966516.246
PT	123+28.29		723324.145	1966435.100
		TH= 3.96	S 71°57'57" W	
PI	123+32.25		723322.918	1966431.331
		TH= 12.29	S 72°31'31" W	
PI	123+44.54		723319.229	1966419.612

Red Plum Creek (continued)

Type	Station		Northing	Easting
		TH= 12.18	N 85°54'52" W	
PI	123+56.72		723320.097	1966407.46
		TH= 11.90	N 75°12'12" W	
PI	123+68.62		723323.135	1966395.958
		TH= 9.59	N 84°48'20" W	
PI	123+78.21		723324.004	1966386.409
		TH= 7.00	S 82°52'30" W	
PI	123+85.20		723323.135	1966379.465
		TH= 4.56	N 89°59'60" W	
PI	123+89.76		723323.135	1966374.907
		TH= 8.08	N 59°18'01" W	
PI	123+97.84		723327.259	1966367.963
		TH= 20.88	N 52°10'38" W	
PI	124+18.72		723340.063	1966351.470
		TH= 38.68	N 52°17'39" W	
PI	124+57.39		723363.717	1966320.871
		TH= 19.02	N 64°18'43" W	
PI	124+76.42		723371.964	1966303.727
		TH= 20.31	N 53°15'09" W	
PI	124+96.73		723384.116	1966287.451
		TH= 12.97	N 17°31'32" W	
PI	125+09.70		723396.486	1966283.544
		TH= 10.50	N 7°07'30" E	
PI	125+20.20		723406.903	1966284.847
		TH= 12.33	N 28°22'09" E	
PI	125+32.53		723417.754	1966290.706
		TH= 9.56	N 50°31'39" E	
PI	125+42.09		723423.830	1966298.084
		TH= 11.21	N 47°21'12" E	
PI	125+53.30		723431.426	1966306.331
		TH= 16.07	N 34°32'54" E	
PI	125+69.37		723444.663	1966315.446
		TH= 20.52	N 19°46'34" E	
PI	125+89.90		723463.978	1966322.39
		TH= 15.84	N 0°47'05" E	
PI	126+05.74		723479.820	1966322.60
		TH= 22.57	N 1°06'06" W	
PI	126+28.32		723502.389	1966322.073
		TH= 14.58	N 4°16'04" W	
PI	126+42.90		723516.929	1966321.088
		TH= 11.69	N 21°48'05" W	



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HORIZONTAL ALIGNMENT DATA

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B35	B102

Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	126+54.58			723527.780	1966316.748
		TH= 14.12	N 45°00'00" W		
PI	126+68.70			723537.762	1966306.765
		TH= 9.13	N 71°59'45" W		
PI	126+77.83			723540.584	1966298.084
		TH= 11.97	S 85°50'25" W		
PI	126+89.79			723539.716	1966286.149
		TH= 16.41	S 69°53'15" W		
PI	127+06.20			723534.073	1966270.741
		TH= 11.68	S 41°59'14" W		
PI	127+17.88			723525.393	1966262.928
		TH= 10.72	S 21°22'14" W		
PI	127+28.60			723515.410	1966259.022
		TH= 10.91	S 17°21'15" W		
PI	127+39.52			723504.993	1966255.767
		TH= 5.84	S 21°48'05" W		
PI	127+45.36			723499.568	1966253.596
		TH= 14.93	S 57°27'54" W		
PI	127+60.29			723491.538	1966241.010
		TH= 13.01	S 62°09'09" W		
PI	127+73.30			723485.462	1966229.508
		TH= 9.33	S 72°24'27" W		
PI	127+82.63			723482.641	1966220.61
		TH= 6.57	N 82°24'19" W		
PI	127+89.20			723483.509	1966214.100
		TH= 11.07	N 64°26'24" W		
PI	128+00.26			723488.283	1966204.117
		TH= 10.17	N 39°48'20" W		
PI	128+10.43			723496.096	1966197.607
		TH= 10.58	N 28°08'30" W		
PI	128+21.02			723505.427	1966192.615
		TH= 8.54	N 27°12'58" W		
PI	128+29.56			723513.023	1966188.709
		TH= 11.77	N 5°17'24" W		
PI	128+41.33			723524.742	1966187.624
		TH= 7.38	N 0°00'00" E		
PI	128+48.71			723532.120	1966187.624
		TH= 23.56	N 5°48'56" E		
PI	128+72.26			723555.558	1966190.011
		TH= 15.16	N 23°37'46" E		
PI	128+87.42			723569.447	1966196.088

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 8.95	N 50°54'22" E		
PI	128+96.37			723575.089	1966203.032
		TH= 11.28	N 67°22'49" E		
PI	129+07.66			723579.429	1966213.449
		TH= 17.98	N 72°26'23" E		
PI	129+25.64			723584.855	1966230.593
		TH= 8.53	N 75°15'23" E		
PI	129+34.17			723587.025	1966238.84
		TH= 4.58	N 58°34'14" E		
PI	129+38.74			723589.412	1966242.746
		TH= 5.55	N 30°34'45" E		
PI	129+44.29			723594.186	1966245.567
		TH= 15.22	N 3°16'14" W		
PI	129+59.50			723609.377	1966244.699
		TH= 11.32	N 12°10'17" W		
PI	129+70.83			723620.445	1966242.312
		TH= 16.24	N 22°47'48" W		
PI	129+87.07			723635.419	1966236.018
		TH= 17.65	N 43°30'20" W		
PI	130+04.72			723648.223	1966223.866
		TH= 13.42	N 67°09'59" W		
PI	130+18.14			723653.431	1966211.496
		TH= 12.81	N 88°03'31" W		
PI	130+30.96			723653.865	1966198.692
		TH= 18.55	N 83°57'21" W		
PI	130+49.50			723655.818	1966180.246
		TH= 19.1	N 89°20'56" W		
PI	130+68.60			723656.035	1966161.148
		TH= 12.01	N 69°55'43" W		
PI	130+80.62			723660.158	1966149.864
		TH= 14.07	N 38°06'27" W		
PI	130+94.68			723671.226	1966141.183
		TH= 12.57	N 21°15'02" W		
PI	131+07.26			723682.945	1966136.626
		TH= 7.60	N 1°38'12" W		
PI	131+14.86			723690.540	1966136.409
		TH= 5.23	N 4°45'49" E		
PI	131+20.08			723695.749	1966136.849
		TH= 11.46	N 18°46'41" E		
PI	131+31.54			723706.599	1966140.532
		TH= 18.45	N 25°03'28" E		

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HORIZONTAL ALIGNMENT DATA

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B36	B102

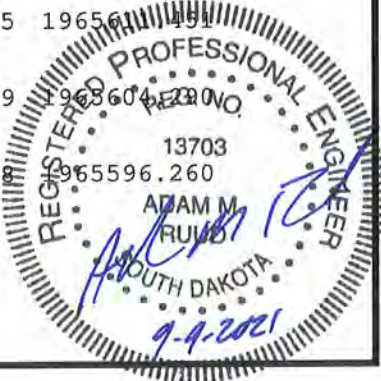
Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	131+49.99			723723.310	1966148.345
		TH= 15.80	N 52°48'55" E		
PI	131+65.79			723732.858	1966160.931
		TH= 11.81	N 72°53'50" E		
PI	131+77.60			723736.330	1966172.216
		TH= 14.81	S 55°08'44" E		
PI	131+92.40			723727.867	1966184.369
		TH= 12.98	S 51°47'20" E		
PI	132+05.39			723719.837	1966194.569
		TH= 11.62	S 57°12'02" E		
PI	132+17.00			723713.544	1966204.334
		TH= 14.17	N 84°43'34" E		
PI	132+31.17			723714.846	1966218.440
		TH= 6.86	N 34°41'43" E		
PI	132+38.03			723720.488	1966222.346
		TH= 11.55	N 5°23'22" W		
PI	132+49.58			723731.990	1966221.261
		TH= 11.20	N 8°54'54" W		
PI	132+60.79			723743.058	1966219.525
		TH= 13.63	N 13°48'54" W		
PI	132+74.42			723756.296	1966216.270
		TH= 11.53	N 19°47'56" W		
PI	132+85.95			723767.146	1966212.364
		TH= 11.58	N 30°24'40" W		
PI	132+97.53			723777.129	1966206.504
		TH= 11.36	N 43°27'07" W		
PI	133+08.89			723785.376	1966198.692
		TH= 8.92	N 71°33'54" W		
PI	133+17.81			723788.197	1966190.228
		TH= 12.29	N 54°20'41" W		
PI	133+30.09			723795.358	1966180.246
		TH= 10.29	N 42°26'10" W		
PI	133+40.39			723802.954	1966173.301
		TH= 20.83	N 33°31'28" W		
PI	133+61.21			723820.315	1966161.799
		TH= 17.36	N 36°52'12" W		
PI	133+78.57			723834.204	1966151.383
		TH= 21.84	N 49°01'42" W		
PI	134+00.42			723848.527	1966134.890
		TH= 16.40	N 25°53'13" W		
PI	134+16.82			723863.284	1966127.728

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 15.78	N 18°26'06" W		
PI	134+32.60			723878.258	1966122.737
		TH= 10.24	N 36°23'04" W		
PI	134+42.85			723886.504	1966116.661
		TH= 10.57	N 40°40'04" W		
PC	134+53.42			723894.520	1966109.773
PI	134+83.49	R = 50.00	Delta = 62°02'40" R	723917.328	1966090.178
PT	135+07.56			723945.329	1966101.138
		TH= 24.05	N 21°22'36" E		
PC	135+31.61			723967.724	1966109.904
PI	135+81.44	R = 100.00	Delta = 52°58'26" L	724014.126	1966128.067
PRC	136+24.07			724056.568	1966101.959
PI	138+93.47	R = 2675.5878	Delta = 11°29'59" L	724286.037	1965960.805
PRC	141+61.07			724482.759	1965776.737
PI	142+84.98	R = 50.00	Delta = 136°02'54" L	724573.234	1965692.082
PT	142+79.80			724449.344	1965690.233
		TH= 0.34	S 0°51'18" W		
PI	142+80.13			724449.005	1965690.228
		TH= 14.54	S 0°51'18" W		
PI	142+94.68			724434.465	1965690.010
		TH= 15.14	S 25°27'48" W		
PI	143+09.82			724420.793	1965683.500
		TH= 9.51	S 55°13'20" W		
PI	143+19.33			724415.368	1965675.688
		TH= 12.37	S 88°59'42" W		
PI	143+31.70			724415.151	1965663.318
		TH= 7.64	S 55°24'28" W		
PI	143+39.35			724410.810	1965657.024
		TH= 12.64	S 50°34'20" W		
PI	143+51.99			724402.781	1965647.259
		TH= 17.21	S 84°56'11" W		
PI	143+69.20			724401.262	1965630.115
		TH= 8.85	N 78°41'24" W		
PI	143+78.05			724402.998	1965621.434
		TH= 10.97	N 65°27'44" W		
PI	143+89.03			724407.555	1965611.451
		TH= 9.53	N 48°41'29" W		
PI	143+98.56			724413.849	1965604.420
		TH= 11.36	N 45°00'00" W		
PI	144+09.92			724421.878	1965596.260
		TH= 9.21	N 43°05'27" W		

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HORIZONTAL ALIGNMENT DATA

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	144+19.13			724428.606	1965589.967
		TH= 10.69	N 23°57'45" W		
PI	144+29.82			724438.371	1965585.627
		TH= 12.05	N 13°32'09" W		
PI	144+41.87			724450.090	1965582.805
		TH= 15.91	N 5°28'39" W		
PI	144+57.78			724465.932	1965581.286
		TH= 11.17	N 7°48'55" E		
PI	144+68.96			724477.000	1965582.805
		TH= 7.76	N 17°55'41" E		
PI	144+76.71			724484.378	1965585.193
		TH= 10.64	N 1°10'09" W		
PI	144+87.35			724495.012	1965584.976
		TH= 14.64	N 11°58'34" W		
PI	145+01.99			724509.335	1965581.937
		TH= 8.26	N 29°55'53" W		
PI	145+10.25			724516.496	1965577.814
		TH= 14.17	N 27°20'60" W		
PI	145+24.42			724529.083	1965571.304
		TH= 5.08	N 19°58'59" W		
PI	145+29.50			724533.857	1965569.568
		TH= 20.86	N 18°48'43" W		
PI	145+50.37			724553.606	1965562.840
		TH= 10.52	N 21°48'05" W		
PI	145+60.88			724563.371	1965558.934
		TH= 10.35	N 56°58'34" W		
PI	145+71.24			724569.014	1965550.253
		TH= 10.24	N 53°36'56" W		
PI	145+81.48			724575.090	1965542.007
		TH= 10.24	N 36°23'04" W		
PI	145+91.72			724583.337	1965535.930
		TH= 18.10	N 22°34'01" W		
PI	146+09.82			724600.047	1965528.986
		TH= 22.93	N 17°03'46" W		
PI	146+32.75			724621.965	1965522.258
		TH= 16.32	N 13°51'05" W		
PI	146+49.06			724637.807	1965518.352
		TH= 24.52	N 0°30'25" E		
PI	146+73.59			724662.330	1965518.569
		TH= 14.03	N 8°00'17" W		
PI	146+87.61			724676.219	1965516.616

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 13.88	N 9°54'15" W		
PI	147+01.49			724689.891	1965514.229
		TH= 9.61	N 25°24'28" W		
PI	147+11.10			724698.571	1965510.106
		TH= 8.64	N 28°29'44" W		
PI	147+19.74			724706.167	1965505.982
		TH= 10.90	N 31°09'34" W		
PI	147+30.65			724715.498	1965500.340
		TH= 8.00	N 40°36'05" W		
PI	147+38.65			724721.575	1965495.132
		TH= 11.84	N 76°13'06" W		
PI	147+50.49			724724.396	1965483.630
		TH= 8.35	S 62°06'10" W		
PI	147+58.84			724720.490	1965476.251
		TH= 11.50	S 54°12'40" W		
PI	147+70.35			724713.762	1965466.920
		TH= 13.98	S 64°13'51" W		
PI	147+84.32			724707.686	1965454.333
		TH= 11.37	S 66°22'14" W		
PI	147+95.69			724703.129	1965443.916
		TH= 10.13	S 46°44'09" W		
PI	148+05.83			724696.184	1965436.538
		TH= 10.02	S 17°39'01" W		
PI	148+15.85			724686.635	1965433.500
		TH= 10.31	S 8°28'16" E		
PI	148+26.16			724676.436	1965435.019
		TH= 11.58	S 6°27'32" E		
PI	148+37.73			724664.934	1965436.321
		TH= 9.20	S 19°17'24" W		
PI	148+46.93			724656.253	1965433.283
		TH= 11.98	S 54°34'59" W		
PI	148+58.91			724649.309	1965423.517
		TH= 9.68	S 70°20'46" W		
PI	148+68.59			724646.054	1965414.402
		TH= 11.37	S 66°22'14" W		
PI	148+79.96			724641.497	1965405.986
		TH= 13.11	S 61°18'50" W		
PI	148+93.07			724635.203	1965394.484
		TH= 17.71	S 72°53'50" W		
PI	149+10.78			724629.995	1965375.557
		TH= 12.74	N 45°41'25" W		



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HORIZONTAL ALIGNMENT DATA

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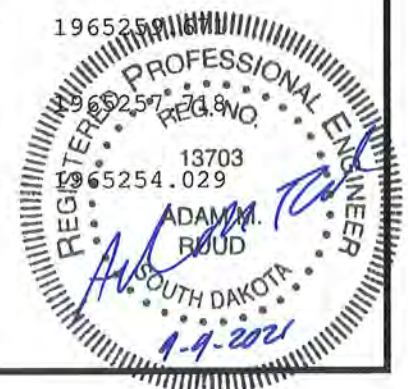
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	149+23.52			724638.892	1965366.442
		TH= 12.26	N 76°42'05" W		
PI	149+35.79			724641.714	1965354.506
		TH= 7.64	N 83°28'49" W		
PI	149+43.43			724642.582	1965346.911
		TH= 11.63	N 75°57'50" W		
PI	149+55.06			724645.403	1965335.626
		TH= 6.70	N 65°05'43" W		
PI	149+61.76			724648.224	1965329.550
		TH= 10.29	N 24°56'38" W		
PI	149+72.05			724657.556	1965325.209
		TH= 15.20	N 2°27'15" E		
PI	149+87.26			724672.747	1965325.861
		TH= 13.28	N 4°41'09" E		
PI	150+00.54			724685.984	1965326.946
		TH= 10.45	N 4°45'49" W		
PI	150+10.99			724696.401	1965326.078
		TH= 11.37	N 23°37'46" W		
PI	150+22.36			724706.818	1965321.520
		TH= 11.08	N 23°03'05" W		
PI	150+33.45			724717.017	1965317.180
		TH= 9.92	N 10°04'50" W		
PI	150+43.37			724726.783	1965315.444
		TH= 11.28	N 0°00'00" E		
PI	150+54.65			724738.068	1965315.444
		TH= 10.02	N 4°58'11" W		
PI	150+64.67			724748.050	1965314.576
		TH= 11.63	N 8°35'01" E		
PI	150+76.30			724759.552	1965316.312
		TH= 8.99	N 81°40'28" E		
PI	150+85.30			724760.854	1965325.209
		TH= 11.55	N 84°36'39" E		
PI	150+96.85			724761.939	1965336.711
		TH= 11.58	N 77°00'19" E		
PI	151+08.43			724764.544	1965347.996
		TH= 12.16	N 55°10'32" E		
PI	151+20.59			724771.488	1965357.979
		TH= 7.68	N 47°17'26" E		
PI	151+28.27			724776.696	1965363.621
		TH= 7.22	N 32°44'07" E		
PI	151+35.49			724782.773	1965367.527

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 18.82	N 7°17'20" E		
PI	151+54.31			724801.436	1965369.914
		TH= 9.77	N 1°16'23" E		
PI	151+64.08			724811.202	1965370.131
		TH= 14.81	N 34°51'16" W		
PI	151+78.89			724823.354	1965361.668
		TH= 14.42	N 45°00'00" W		
PI	151+93.31			724833.554	1965351.468
		TH= 14.58	N 45°36'11" W		
PI	152+07.89			724843.754	1965341.052
		TH= 10.58	N 61°51'30" W		
PI	152+18.47			724848.745	1965331.720
		TH= 12.77	N 80°13'03" W		
PI	152+31.25			724850.915	1965319.133
		TH= 8.47	S 87°03'52" W		
PI	152+39.72			724850.481	1965310.670
		TH= 9.48	S 74°03'17" W		
PI	152+49.20			724847.877	1965301.555
		TH= 8.43	S 55°29'29" W		
PI	152+57.63			724843.103	1965294.610
		TH= 7.89	S 31°30'15" W		
PI	152+65.52			724836.375	1965290.487
		TH= 7.90	S 20°55'28" W		
PI	152+73.42			724828.997	1965287.666
		TH= 6.31	S 49°11'06" W		
PI	152+79.72			724824.873	1965282.892
		TH= 9.16	N 76°17'35" W		
PI	152+88.88			724827.044	1965273.994
		TH= 13.97	N 57°03'03" W		
PI	153+02.85			724834.639	1965262.275
		TH= 11.84	N 26°05'44" W		
PI	153+14.69			724845.273	1965257.067
		TH= 11.29	N 1°06'06" E		
PI	153+25.98			724856.558	1965257.284
		TH= 11.32	N 12°10'17" E		
PI	153+37.30			724867.625	1965254.029
		TH= 16.82	N 6°39'60" W		
PI	153+54.12			724884.335	1965254.029
		TH= 15.21	N 14°02'10" W		
PI	153+69.33			724899.092	1965254.029
		TH= 12.35	N 18°26'06" W		



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HORIZONTAL ALIGNMENT DATA

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	153+81.69			724910.811	1965250.123
		TH= 9.79	N 12°48'15" W		
PI	153+91.48			724920.360	1965247.952
		TH= 9.28	N 10°47'03" W		
PI	154+00.76			724929.474	1965246.216
		TH= 9.99	N 2°29'22" E		
PI	154+10.75			724939.457	1965246.650
		TH= 18.23	N 9°43'53" E		
PI	154+28.98			724957.426	1965249.732
		TH= 20.36	N 9°19'19" E		
PI	154+49.34			724977.521	1965253.031
		TH= 13.58	N 12°55'34" W		
PI	154+62.93			724990.759	1965249.992
		TH= 13.60	N 28°36'38" W		
PI	154+76.52			725002.695	1965243.482
		TH= 11.67	N 46°30'27" W		
PI	154+88.19			725010.724	1965235.018
		TH= 11.94	N 65°17'51" W		
PI	155+00.13			725015.716	1965224.168
		TH= 14.43	N 74°17'29" W		
PI	155+14.56			725019.622	1965210.279
		TH= 6.93	S 69°51'49" W		
PI	155+21.49			725017.235	1965203.768
		TH= 10.29	S 34°41'43" W		
PI	155+31.79			725008.771	1965197.909
		TH= 15.45	S 60°33'17" W		
PI	155+47.24			725001.176	1965184.454
		TH= 15.19	S 45°34'44" W		
PI	155+62.43			724990.542	1965173.603
		TH= 8.19	S 32°00'20" W		
PI	155+70.62			724983.598	1965169.263
		TH= 10.86	S 2°17'26" W		
PI	155+81.48			724972.747	1965168.829
		TH= 11.96	S 11°30'50" E		
PI	155+93.44			724961.028	1965171.216
		TH= 11.08	S 2°14'45" W		
PI	156+04.52			724949.960	1965170.782
		TH= 10.81	S 10°24'28" W		
PI	156+15.33			724939.327	1965168.829
		TH= 16.36	S 21°48'05" W		
PI	156+31.69			724924.136	1965162.753

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 10.47	S 34°01'10" W		
PI	156+42.16			724915.455	1965156.893
		TH= 11.28	S 59°58'54" W		
PI	156+53.44			724909.813	1965147.128
		TH= 8.35	S 81°01'39" W		
PI	156+61.79			724908.511	1965138.881
		TH= 19.06	N 82°08'48" W		
PI	156+80.85			724911.115	1965120.001
		TH= 11.92	N 56°53'19" W		
PI	156+92.77			724917.625	1965110.018
		TH= 10.13	N 46°44'09" W		
PI	157+02.90			724924.570	1965102.640
		TH= 11.39	N 49°38'08" W		
PI	157+14.29			724931.948	1965093.959
		TH= 12.23	N 27°28'28" W		
PI	157+26.52			724942.799	1965088.317
		TH= 9.35	N 21°48'05" W		
PI	157+35.87			724951.480	1965084.844
		TH= 14.58	N 14°39'24" W		
PI	157+50.45			724965.586	1965081.155
		TH= 12.49	N 17°10'33" W		
PI	157+62.94			724977.521	1965077.466
		TH= 8.54	N 27°12'58" W		
PI	157+71.48			724985.117	1965073.560
		TH= 6.53	N 21°26'52" W		
PI	157+78.01			724991.193	1965071.173
		TH= 7.67	N 28°44'23" W		
PI	157+85.69			724997.921	1965067.483
		TH= 7.55	N 18°26'06" W		
PI	157+93.23			725005.082	1965065.096
		TH= 8.96	N 6°57'11" W		
PI	158+02.20			725013.980	1965064.011
		TH= 5.86	N 0°00'00" E		
PI	158+08.06			725019.839	1965064.011
		TH= 9.64	N 7°45'55" E		
PI	158+17.69			725029.388	1965058.313
		TH= 12.48	N 13°04'10" E		
PI	158+30.17			725041.540	1965049.140
		TH= 15.17	N 19°12'46" E		
PI	158+45.34			725055.863	1965073.126
		TH= 10.64	N 16°35'15" E		



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HORIZONTAL ALIGNMENT DATA

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	158+55.98			725066.063	1965076.164
		TH= 16.50	N 1°30'27" E		
PI	158+72.48			725082.556	1965076.598
		TH= 10.32	N 14°37'15" W		
PI	158+82.80			725092.539	1965073.994
		TH= 3.23	N 19°39'14" W		
PI	158+86.02			725095.577	1965072.909
		TH= 11.68	N 41°59'14" W		
PI	158+97.70			725104.258	1965065.096
		TH= 8.76	N 41°59'14" W		
PI	159+06.46			725110.768	1965059.237
		TH= 13.79	N 61°49'17" W		
PI	159+20.25			725117.278	1965047.084
		TH= 12.54	N 64°36'44" W		
PI	159+32.79			725122.655	1965035.755
		TH= 1.63	N 64°36'44" W		
PI	159+34.42			725123.355	1965034.280
		TH= 7.92	N 80°32'16" W		
PI	159+42.34			725124.657	1965026.468
		TH= 10.26	S 83°55'39" W		
PI	159+52.60			725123.572	1965016.268
		TH= 13.25	N 88°07'20" W		
PI	159+65.84			725124.006	1965003.030
		TH= 15.48	N 75°22'45" W		
PI	159+81.32			725127.912	1964988.056
		TH= 7.90	N 69°04'32" W		
PI	159+89.22			725130.733	1964980.678
		TH= 9.29	N 37°24'19" W		
PI	159+98.51			725138.112	1964975.035
		TH= 11.47	N 29°28'33" W		
PI	160+09.97			725148.094	1964969.393
		TH= 11.41	N 21°11'39" W		
PI	160+21.38			725158.728	1964965.270
		TH= 15.32	N 7°19'35" W		
PI	160+36.70			725173.919	1964963.317
		TH= 7.90	N 20°55'28" E		
PI	160+44.60			725181.298	1964966.138
		TH= 11.67	N 71°33'54" E		
PI	160+56.26			725184.987	1964977.205
		TH= 10.86	N 87°42'34" E		
PI	160+67.12			725185.421	1964988.056

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 15.65	S 86°49'13" E		
PI	160+82.77			725184.553	1965003.681
		TH= 25.25	S 85°33'49" E		
PI	161+08.02			725182.600	1965028.855
		TH= 7.07	N 42°30'38" E		
PI	161+15.09			725187.808	1965033.629
		TH= 17.59	N 15°45'04" E		
PI	161+32.67			725204.735	1965038.403
		TH= 8.85	N 11°18'36" W		
PI	161+41.53			725213.416	1965036.667
		TH= 14.56	N 26°33'54" W		
PI	161+56.08			725226.437	1965030.157
		TH= 14.59	N 30°22'45" W		
PI	161+70.67			725239.023	1965022.778
		TH= 32.63	N 34°25'48" W		
PI	162+03.30			725265.933	1965004.332
		TH= 7.48	N 60°27'40" W		
PI	162+10.78			725269.622	1964997.822
		TH= 11.82	N 82°36'50" W		
PI	162+22.60			725271.141	1964986.103
		TH= 11.21	S 75°25'33" W		
PI	162+33.81			725268.320	1964975.252
		TH= 10.35	S 56°58'34" W		
PI	162+44.16			725262.678	1964966.572
		TH= 11.46	S 37°18'14" W		
PI	162+55.62			725253.563	1964959.627
		TH= 16.53	S 29°55'54" W		
PI	162+72.15			725239.240	1964951.381
		TH= 13.25	S 58°23'33" W		
PI	162+85.40			725232.296	1964940.096
		TH= 31.55	S 64°18'59" W		
PI	163+16.94			725218.624	1964911.667
		TH= 31.71	S 59°34'27" W		
PI	163+48.66			725202.565	1964884.323
		TH= 20.73	S 59°08'21" W		
PI	163+69.39			725191.931	1964866.528
		TH= 8.78	S 50°00'47" W		
PI	163+78.17			725186.289	1964859.801
		TH= 10.69	S 66°02'15" W		
PI	163+88.85			725181.949	1964850.035
		TH= 10.44	S 86°25'25" W		



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HORIZONTAL ALIGNMENT DATA

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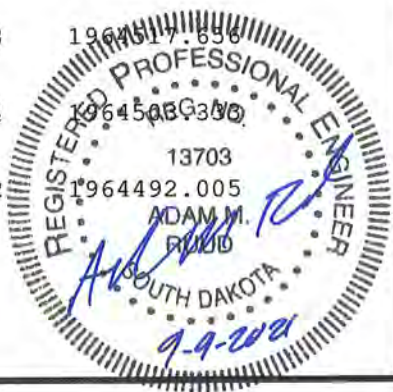
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	163+99.29			725181.298	1964839.618
		TH= 5.43	N 73°44'23" W		
PI	164+04.71			725182.817	1964834.410
		TH= 10.28	N 45°51'18" W		
PI	164+15.00			725189.978	1964827.032
		TH= 10.44	N 46°41'05" W		
PI	164+25.44			725197.140	1964819.436
		TH= 10.12	N 22°42'52" W		
PI	164+35.55			725206.471	1964815.530
		TH= 4.47	N 14°02'11" E		
PI	164+40.03			725210.812	1964816.615
		TH= 7.64	N 34°35'32" E		
PI	164+47.67			725217.105	1964820.955
		TH= 3.91	N 33°41'24" E		
PI	164+51.58			725220.360	1964823.125
		TH= 7.43	N 6°42'35" W		
PI	164+59.01			725227.739	1964822.257
		TH= 6.47	N 13°34'14" W		
PI	164+65.49			725234.032	1964820.738
		TH= 13.79	N 28°10'43" W		
PI	164+79.27			725246.185	1964814.228
		TH= 8.67	N 31°42'05" W		
PI	164+87.95			725253.563	1964809.670
		TH= 8.51	N 41°54'01" W		
PI	164+96.46			725259.900	1964803.985
		TH= 15.03	N 54°31'12" W		
PI	165+11.49			725268.624	1964791.745
		TH= 17.57	N 80°11'19" W		
PI	165+29.07			725271.619	1964774.427
		TH= 11.36	S 85°23'60" W		
PI	165+40.43			725270.707	1964763.099
		TH= 9.56	S 70°05'01" W		
PI	165+49.99			725267.452	1964754.115
		TH= 9.02	S 46°10'09" W		
PI	165+59.01			725261.202	1964747.604
		TH= 10.59	S 73°34'15" W		
PI	165+69.60			725258.207	1964737.448
		TH= 14.79	N 77°47'58" W		
PI	165+84.39			725261.332	1964722.995
		TH= 17.39	N 69°23'37" W		
PI	166+01.78			725267.452	1964706.719

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 18.09	N 83°23'12" W		
PI	166+19.86			725269.536	1964688.750
		TH= 11.08	S 87°18'21" W		
PI	166+30.94			725269.015	1964677.682
		TH= 16.81	N 79°44'05" W		
PI	166+47.75			725272.010	1964661.146
		TH= 16.77	N 53°50'31" W		
PI	166+64.52			725281.905	1964647.604
		TH= 16.33	N 41°26'38" W		
PI	166+80.85			725294.145	1964636.797
		TH= 23.42	N 31°07'39" W		
PI	167+04.28			725314.197	1964624.687
		TH= 36.74	N 32°06'47" W		
PI	167+41.02			725345.317	1964605.156
		TH= 18.71	N 24°14'45" W		
PI	167+59.72			725362.374	1964597.474
		TH= 16.22	N 5°31'39" W		
PI	167+75.95			725378.520	1964595.911
		TH= 23.13	N 7°45'55" W		
PI	167+99.07			725401.437	1964592.786
		TH= 16.04	N 32°23'59" W		
PI	168+15.11			725414.978	1964584.193
		TH= 12.53	N 69°18'16" W		
PI	168+27.64			725419.406	1964572.474
		TH= 15.68	S 78°30'12" W		
PI	168+43.32			725416.281	1964557.109
		TH= 10.25	S 40°21'52" W		
PI	168+53.57			725408.468	1964550.469
		TH= 29.44	S 23°43'51" W		
PI	168+83.01			725381.515	1964538.620
		TH= 19.56	S 11°54'30" W		
PI	169+02.58			725362.374	1964534.583
		TH= 7.40	S 66°08'23" W		
PI	169+09.98			725359.379	1964527.812
		TH= 10.18	S 86°19'56" W		
PI	169+20.16			725358.728	1964517.656
		TH= 14.69	N 77°11'45" W		
PI	169+34.85			725361.984	1964508.350
		TH= 12.58	N 64°13'50" W		
PI	169+47.42			725367.452	1964492.005
		TH= 14.18	N 46°29'16" W		



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HORIZONTAL ALIGNMENT DATA

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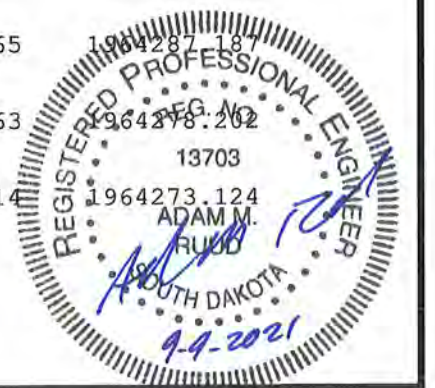
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	169+61.61			725377.218	1964481.718
		TH= 12.06	N 24°54'17" W		
PI	169+73.67			725388.156	1964476.64
		TH= 20.27	N 14°07'32" W		
PI	169+93.94			725407.817	1964471.692
		TH= 15.90	N 2°20'49" E		
PI	170+09.84			725423.702	1964472.343
		TH= 13.57	N 3°51'02" E		
PI	170+23.41			725437.244	1964473.255
		TH= 7.87	N 19°20'05" E		
PI	170+31.28			725444.666	1964475.859
		TH= 5.99	N 44°07'07" E		
PI	170+37.26			725448.963	1964480.026
		TH= 14.58	N 82°18'14" E		
PI	170+51.85			725450.916	1964494.479
		TH= 13.42	N 50°54'22" E		
PI	170+65.27			725459.38	1964504.896
		TH= 12.77	N 1°45'12" W		
PI	170+78.04			725472.14	1964504.505
		TH= 17.93	N 11°18'36" W		
PI	170+95.96			725489.718	1964500.989
		TH= 17.82	N 21°52'45" W		
PI	171+13.78			725506.255	1964494.349
		TH= 14.12	N 29°52'34" W		
PI	171+27.90			725518.494	1964487.317
		TH= 11.48	N 24°49'14" W		
PI	171+39.37			725528.911	1964482.500
		TH= 12.47	N 49°39'30" W		
PI	171+51.85			725536.984	1964472.994
		TH= 9.51	S 89°12'55" W		
PI	171+61.35			725536.854	1964463.489
		TH= 14.07	S 78°47'39" W		
PI	171+75.42			725534.119	1964449.687
		TH= 13.67	S 76°13'42" W		
PI	171+89.10			725530.864	1964436.406
		TH= 12.92	N 77°47'03" W		
PI	172+02.02			725533.598	1964423.776
		TH= 11.62	N 77°03'13" W		
PI	172+13.64			725536.203	1964412.447
		TH= 14.64	N 84°53'52" W		
PI	172+28.28			725537.505	1964397.864

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 11.13	N 69°26'38" W		
PI	172+39.41			725541.411	1964387.447
		TH= 16.83	N 63°49'53" W		
PI	172+56.24			725548.833	1964372.343
		TH= 32.05	N 49°26'57" W		
PI	172+88.28			725569.666	1964347.994
		TH= 8.58	N 59°55'53" W		
PI	172+96.86			725573.963	1964340.572
		TH= 16.16	N 40°45'06" W		
PI	173+13.02			725586.203	1964330.025
		TH= 13.52	N 23°51'02" W		
PI	173+26.54			725598.573	1964324.557
		TH= 12.47	N 7°11'57" W		
PI	173+39.01			725610.942	1964322.994
		TH= 11.92	N 6°16'16" E		
PI	173+50.93			725622.791	1964324.296
		TH= 11.34	N 34°14'15" E		
PI	173+62.27			725632.166	1964330.676
		TH= 15.1	N 0°29'38" W		
PI	173+77.37			725647.270	1964330.546
		TH= 12.48	N 16°21'21" W		
PI	173+89.86			725659.250	1964327.031
		TH= 12.72	N 10°37'11" W		
PI	174+02.58			725671.750	1964324.687
		TH= 13.96	N 17°55'41" W		
PI	174+16.54			725685.031	1964320.390
		TH= 11.04	N 17°09'09" W		
PI	174+27.57			725695.578	1964317.135
		TH= 4.98	N 42°52'44" W		
PI	174+32.55			725699.224	1964313.749
		TH= 16.59	N 36°03'38" W		
PI	174+49.14			725712.635	1964303.984
		TH= 9.29	N 58°45'39" W		
PI	174+58.43			725717.453	1964296.041
		TH= 11.81	N 48°34'35" W		
PI	174+70.24			725725.265	1964287.187
		TH= 14.36	N 38°44'28" W		
PI	174+84.59			725736.463	1964278.202
		TH= 11.82	N 25°26'10" W		
PI	174+96.42			725747.14	1964273.124
		TH= 9.59	N 18°11'21" W		



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HORIZONTAL ALIGNMENT DATA

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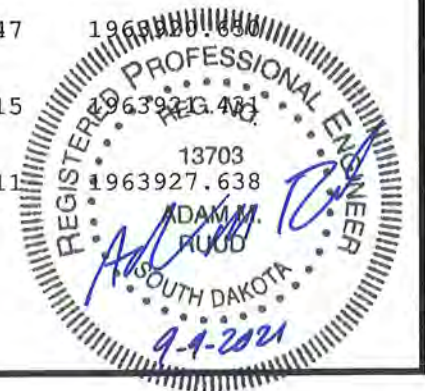
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B43	B102

Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	175+06.01			725756.255	1964270.129
		TH= 13.31	N 3°55'33" W		
PI	175+19.32			725769.536	1964269.218
		TH= 35.29	N 0°38'03" E		
PI	175+54.61			725804.823	1964269.609
		TH= 13.45	N 4°26'28" W		
PI	175+68.06			725818.234	1964268.567
		TH= 25.61	N 11°08'19" W		
PI	175+93.68			725843.364	1964263.619
		TH= 24.32	N 5°13'20" W		
PI	176+18.00			725867.583	1964261.406
		TH= 11.89	N 24°35'59" W		
PI	176+29.88			725878.391	1964256.458
		TH= 9.86	N 46°36'22" W		
PI	176+39.74			725885.161	1964249.296
		TH= 8.77	N 71°50'03" W		
PI	176+48.51			725887.896	1964240.963
		TH= 10.11	S 82°36'02" W		
PI	176+58.62			725886.594	1964230.937
		TH= 10.30	S 73°51'20" W		
PI	176+68.92			725883.729	1964221.041
		TH= 10.52	S 49°00'51" W		
PI	176+79.44			725876.828	1964213.098
		TH= 23.88	S 37°14'41" W		
PI	177+03.32			725857.818	1964198.645
		TH= 25.54	S 39°12'26" W		
PI	177+28.87			725838.026	1964182.499
		TH= 21.34	S 33°18'08" W		
PI	177+50.21			725820.187	1964170.780
		TH= 17.87	S 17°22'44" W		
PI	177+68.08			725803.130	1964165.442
		TH= 12.80	S 9°21'60" W		
PI	177+80.88			725790.500	1964163.358
		TH= 14.70	S 22°55'56" W		
PI	177+95.59			725776.958	1964157.629
		TH= 17.70	S 32°59'19" W		
PI	178+13.28			725762.114	1964147.994
		TH= 12.60	S 60°15'19" W		
PI	178+25.88			725755.864	1964137.056
		TH= 10.58	S 71°20'32" W		
PI	178+36.46			725752.479	1964127.030

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 10.96	N 74°08'53" W		
PI	178+47.43			725755.474	1964116.483
		TH= 12.71	N 60°32'47" W		
PI	178+60.14			725761.724	1964105.416
		TH= 19.49	N 40°23'37" W		
PI	178+79.63			725776.568	1964092.785
		TH= 15.84	N 44°20'02" W		
PI	178+95.46			725787.896	1964081.718
		TH= 15.52	N 37°09'30" W		
PI	179+10.99			725800.265	1964072.343
		TH= 13.77	N 10°21'12" W		
PI	179+24.75			725813.807	1964069.869
		TH= 20.28	N 10°43'58" W		
PI	179+45.03			725833.729	1964066.093
		TH= 16.12	N 31°07'21" W		
PI	179+61.15			725847.531	1964057.759
		TH= 28.92	N 38°25'05" W		
PI	179+90.07			725870.187	1964039.791
		TH= 19.01	N 48°53'17" W		
PI	180+09.08			725882.687	1964025.468
		TH= 17.30	N 64°35'32" W		
PI	180+26.38			725890.109	1964009.843
		TH= 21.66	N 59°16'21" W		
PI	180+48.04			725901.177	1963991.223
		TH= 24.01	N 53°22'43" W		
PI	180+72.05			725915.500	1963971.952
		TH= 37.27	N 58°51'53" W		
PI	181+09.32			725934.771	1963940.051
		TH= 10.68	N 52°25'53" W		
PI	181+20.00			725941.281	1963931.587
		TH= 9.51	N 48°53'17" W		
PI	181+29.50			725947.531	1963924.426
		TH= 10.35	N 21°23'59" W		
PI	181+39.85			725957.167	1963920.650
		TH= 6.38	N 0°00'00" E		
PI	181+46.23			725963.547	1963910.880
		TH= 11.10	N 4°02'16" E		
PI	181+57.33			725974.615	1963920.481
		TH= 15.77	N 23°10'40" E		
PI	181+73.09			725989.111	1963927.638
		TH= 27.58	N 32°08'21" E		



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HORIZONTAL ALIGNMENT DATA

STATE OF
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Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	182+00.67			726012.462	1963942.308
		TH= 18.12	N 18°26'06" E		
PI	182+18.79			726029.649	1963948.037
		TH= 20.38	N 10°18'18" E		
PI	182+39.17			726049.702	1963951.683
		TH= 15.43	N 21°48'05" E		
PI	182+54.60			726064.024	1963957.412
		TH= 17.13	N 24°13'40" E		
PI	182+71.73			726079.650	1963964.443
		TH= 21.16	N 34°28'20" E		
PI	182+92.89			726097.097	1963976.422
		TH= 14.59	N 34°49'28" E		
PI	183+07.49			726109.077	1963984.756
		TH= 17.69	N 13°37'37" E		
PI	183+25.17			726126.264	1963988.922
		TH= 13.14	N 13°45'39" W		
PI	183+38.31			726139.025	1963985.797
		TH= 8.70	N 51°04'21" W		
PI	183+47.01			726144.493	1963979.027
		TH= 18.95	N 77°18'01" W		
PI	183+65.97			726148.660	1963960.537
		TH= 14.36	N 85°50'25" W		
PI	183+80.33			726149.702	1963946.214
		TH= 15.38	S 87°05'21" W		
PI	183+95.71			726148.920	1963930.849
		TH= 11.77	S 65°08'11" W		
PI	184+07.48			726143.973	1963920.172
		TH= 10.85	S 59°44'37" W		
PI	184+18.33			726138.504	1963910.797
		TH= 12.72	S 55°00'29" W		
PI	184+31.05			726131.212	1963900.381
		TH= 20.01	S 71°48'03" W		
PI	184+51.06			726124.962	1963881.370
		TH= 28.56	S 83°43'03" W		
PI	184+79.62			726121.837	1963852.985
		TH= 29.45	S 87°58'22" W		
PI	185+09.06			726120.795	1963823.558
		TH= 22.55	S 83°22'03" W		
PI	185+31.61			726118.191	1963801.162
		TH= 19.58	N 76°08'55" W		
PI	185+51.19			726122.879	1963782.151

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 8.09	N 33°10'43" W		
PI	185+59.28			726129.650	1963777.724
		TH= 8.14	N 7°21'09" W		
PI	185+67.42			726137.723	1963776.682
		TH= 15.25	N 7°51'12" E		
PI	185+82.67			726152.827	1963778.766
		TH= 15.84	N 9°27'44" E		
PI	185+98.51			726168.452	1963781.370
		TH= 10.55	N 20°13'30" E		
PI	186+09.05			726178.348	1963785.016
		TH= 14.56	N 47°10'29" E		
PI	186+23.61			726188.243	1963795.693
		TH= 14.52	N 57°27'00" E		
PI	186+38.13			726196.056	1963807.932
		TH= 14.10	N 78°16'30" E		
PI	186+52.23			726198.921	1963821.735
		TH= 7.05	S 85°45'49" E		
PI	186+59.28			726198.400	1963828.766
		TH= 10.31	S 45°00'00" E		
PI	186+69.59			726191.108	1963836.058
		TH= 13.92	S 82°28'34" E		
PI	186+83.51			726189.285	1963849.860
		TH= 23.58	N 83°39'35" E		
PI	187+07.09			726191.889	1963873.297
		TH= 19.90	N 83°59'28" E		
PI	187+26.99			726193.973	1963893.089
		TH= 23.65	N 78°33'59" E		
PI	187+50.64			726198.660	1963916.266
		TH= 11.60	N 45°54'34" E		
PI	187+62.24			726206.733	1963924.599
		TH= 8.35	N 3°34'35" W		
PI	187+70.59			726215.066	1963924.079
		TH= 12.74	N 24°59'36" W		
PI	187+83.33			726226.611	1963918.697
		TH= 16.21	N 20°22'35" W		
PI	187+99.54			726241.802	1963913.054
		TH= 16.29	N 41°45'37" W		
PI	188+15.83			726253.955	1963902.204
		TH= 12.53	N 38°48'53" W		
PI	188+28.36			726263.721	1963894.348
		TH= 16.77	N 68°44'58" W		



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HORIZONTAL ALIGNMENT DATA

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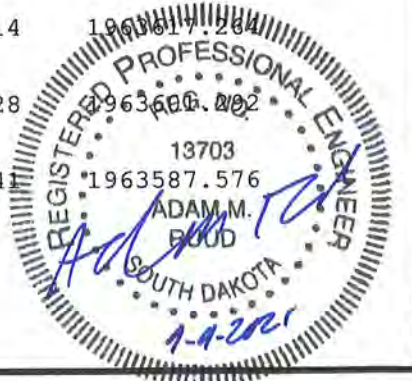
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B45	B102

Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	188+45.13			726269.797	1963878.723
		TH= 15.16	N 69°54'17" W		
PI	188+60.28			726275.006	1963864.486
		TH= 13.97	S 57°41'34" W		
PI	188+74.25			726267.540	1963852.681
		TH= 18.17	S 45°46'27" W		
PI	188+92.42			726254.867	1963839.660
		TH= 20.03	S 56°18'36" W		
PI	189+12.45			726243.756	1963822.993
		TH= 29.89	S 67°27'25" W		
PI	189+42.34			726232.297	1963795.389
		TH= 26.38	S 73°57'04" W		
PI	189+68.72			726225.006	1963770.042
		TH= 19.14	S 86°21'32" W		
PI	189+87.85			726223.790	1963750.945
		TH= 12.02	N 79°10'37" W		
PI	189+99.87			726226.047	1963739.139
		TH= 18.31	N 68°17'58" W		
PI	190+18.18			726232.818	1963722.125
		TH= 16.49	S 89°23'49" W		
PI	190+34.68			726232.645	1963705.632
		TH= 23.90	S 73°32'24" W		
PI	190+58.57			726225.874	1963682.715
		TH= 18.99	S 75°42'35" W		
PI	190+77.56			726221.186	1963664.312
		TH= 23.79	S 88°44'44" W		
PI	191+01.36			726220.665	1963640.528
		TH= 12.79	N 71°48'39" W		
PI	191+14.15			726224.658	1963628.375
		TH= 11.15	N 37°24'19" W		
PI	191+25.29			726233.513	1963621.604
		TH= 14.24	N 12°40'49" W		
PI	191+39.53			726247.402	1963618.479
		TH= 18.92	N 0°31'32" W		
PI	191+58.45			726266.325	1963618.305
		TH= 20.44	N 20°53'52" E		
PI	191+78.90			726285.422	1963625.597
		TH= 22.13	N 41°49'13" E		
PI	192+01.03			726301.915	1963640.354
		TH= 21.67	N 37°30'46" E		
PI	192+22.70			726319.103	1963653.549

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 13.64	N 68°20'03" E		
PI	192+36.33			726324.138	1963666.222
		TH= 14.11	S 55°31'40" E		
PI	192+50.44			726316.152	1963677.854
		TH= 16.33	S 43°42'28" E		
PI	192+66.77			726304.346	1963689.139
		TH= 22.62	S 65°59'34" E		
PI	192+89.39			726295.145	1963709.799
		TH= 20.50	S 88°03'31" E		
PI	193+09.89			726294.450	1963730.285
		TH= 13.50	N 81°52'12" E		
PI	193+23.39			726296.360	1963743.653
		TH= 11.08	N 54°34'00" E		
PI	193+34.47			726302.783	1963752.681
		TH= 16.85	N 41°14'29" E		
PI	193+51.33			726315.457	1963763.792
		TH= 19.73	N 21°08'46" E		
PI	193+71.06			726333.860	1963770.910
		TH= 12.50	N 1°35'28" E		
PI	193+83.56			726346.360	1963771.257
		TH= 16.55	N 24°08'44" W		
PI	194+00.11			726361.464	1963764.486
		TH= 41.58	N 41°16'33" W		
PI	194+41.70			726392.714	1963737.056
		TH= 27.75	N 46°00'50" W		
PI	194+69.44			726411.985	1963717.090
		TH= 27.30	N 51°27'14" W		
PI	194+96.75			726428.999	1963695.736
		TH= 16.80	N 76°15'03" W		
PI	195+13.55			726432.992	1963679.417
		TH= 27.26	N 64°44'26" W		
PI	195+40.81			726444.624	1963654.764
		TH= 19.92	N 83°29'40" W		
PI	195+60.73			726446.881	1963634.972
		TH= 18.19	S 76°45'34" W		
PI	195+78.92			726442.714	1963617.264
		TH= 17.86	S 63°26'06" W		
PI	195+96.78			726434.728	1963600.002
		TH= 14.49	S 71°07'52" W		
PI	196+11.27			726430.044	1963587.576
		TH= 16.54	N 69°05'31" W		



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HORIZONTAL ALIGNMENT DATA

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B46	B102

Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	196+27.81			726435.943	1963572.125
		TH= 18.43	N 47°17'26" W		
PI	196+46.24			726448.443	1963558.583
		TH= 15.14	N 26°33'54" W		
PI	196+61.38			726461.985	1963551.812
		TH= 17.89	N 1°06'45" W		
PI	196+79.27			726479.867	1963551.465
		TH= 22.20	N 12°11'19" W		
PI	197+01.47			726501.568	1963546.778
		TH= 16.07	N 6°12'12" E		
PI	197+17.53			726517.541	1963548.514
		TH= 24.18	N 15°49'57" E		
PI	197+41.72			726540.805	1963555.111
		TH= 14.83	N 27°09'54" E		
PI	197+56.55			726553.999	1963561.882
		TH= 16.19	N 54°36'19" E		
PI	197+72.73			726563.374	1963575.076
		TH= 20.23	N 50°34'20" E		
PI	197+92.96			726576.221	1963590.701
		TH= 18.56	N 42°20'45" E		
PI	198+11.52			726589.937	1963603.201
		TH= 13.28	N 27°14'07" E		
PI	198+24.80			726601.742	1963609.278
		TH= 12.93	N 22°05'14" E		
PI	198+37.72			726613.721	1963614.139
		TH= 12.88	N 3°51'56" E		
PI	198+50.60			726626.569	1963615.007
		TH= 17.79	N 17°01'14" W		
PI	198+68.39			726643.583	1963609.798
		TH= 11.26	N 19°49'56" W		
PI	198+79.65			726654.173	1963605.979
		TH= 11.74	N 29°13'09" W		
PI	198+91.39			726664.416	1963600.250
		TH= 25.87	N 69°59'03" W		
PI	199+17.26			726673.270	1963575.944
		TH= 22.00	N 78°09'29" W		
PI	199+39.25			726677.784	1963554.416
		TH= 10.08	S 79°04'38" W		
PI	199+49.33			726675.874	1963544.521
		TH= 16.12	S 67°51'17" W		
PI	199+65.45			726669.798	1963529.590

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 19.30	S 59°44'37" W		
PI	199+84.75			726660.076	1963512.923
		TH= 24.81	S 43°17'55" W		
PI	200+09.56			726642.020	1963495.909
		TH= 17.23	S 40°54'52" W		
PI	200+26.79			726628.999	1963484.625
		TH= 17.16	S 62°54'59" W		
PI	200+43.95			726621.187	1963469.347
		TH= 11.49	S 63°02'52" W		
PI	200+55.44			726615.978	1963459.104
		TH= 18.99	N 75°42'35" W		
PI	200+74.43			726620.666	1963440.701
		TH= 18.55	N 54°31'29" W		
PI	200+92.97			726631.430	1963425.597
		TH= 18.09	N 52°48'01" W		
PI	201+11.07			726642.367	1963411.187
		TH= 23.11	N 48°02'41" W		
PI	201+34.18			726657.819	1963393.999
		TH= 28.53	N 48°27'12" W		
PI	201+62.71			726676.742	1963372.645
		TH= 21.45	N 39°44'46" W		
PI	201+84.16			726693.235	1963358.930
		TH= 26.73	N 28°43'45" W		
PI	202+10.89			726716.673	1963346.083
		TH= 14.22	N 17°46'17" W		
PI	202+25.11			726730.215	1963341.742
		TH= 12.92	N 6°10'13" E		
PI	202+38.03			726743.062	1963343.131
		TH= 25.67	N 23°05'49" E		
PI	202+63.70			726766.673	1963353.201
		TH= 22.40	N 35°32'16" E		
PI	202+86.10			726784.902	1963366.222
		TH= 17.03	N 60°02'16" E		
PI	203+03.13			726793.409	1963380.979
		TH= 15.10	N 72°36'24" E		
PI	203+18.23			726797.923	1963381.088
		TH= 13.89	N 71°47'30" E		
PI	203+32.12			726802.263	1963408.589
		TH= 8.49	N 40°51'19" E		
PI	203+40.62			726808.687	1963414.138
		TH= 11.21	N 16°11'21" E		



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HORIZONTAL ALIGNMENT DATA

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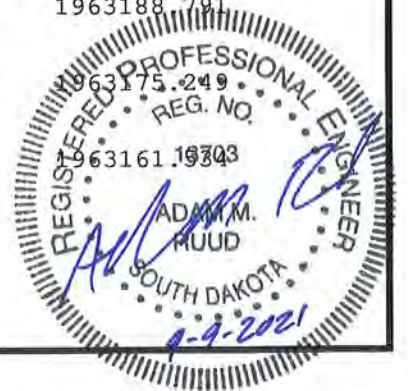
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B47	B102

Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	203+51.83			726819.451	1963417.263
		TH= 25.84	N 38°10'44" E		
PI	203+77.67			726839.763	1963433.236
		TH= 35.32	N 54°12'02" E		
PI	204+12.98			726860.423	1963461.882
		TH= 36.53	N 53°53'33" E		
PI	204+49.52			726881.951	1963491.396
		TH= 31.27	N 60°01'06" E		
PI	204+80.78			726897.576	1963518.479
		TH= 33.38	N 57°57'47" E		
PI	205+14.17			726915.284	1963546.778
		TH= 18.01	N 63°40'55" E		
PI	205+32.18			726923.270	1963562.923
		TH= 16.09	N 43°41'17" E		
PI	205+48.26			726934.902	1963574.035
		TH= 10.12	N 5°54'22" E		
PI	205+58.39			726944.972	1963575.076
		TH= 11.85	N 34°51'16" W		
PI	205+70.24			726954.694	1963568.305
		TH= 20.91	N 65°59'21" W		
PI	205+91.14			726963.201	1963549.208
		TH= 19.76	N 71°33'54" W		
PI	206+10.91			726969.451	1963530.458
		TH= 19.38	N 83°49'47" W		
PI	206+30.29			726971.534	1963511.187
		TH= 31.22	N 84°34'29" W		
PI	206+61.51			726974.486	1963480.111
		TH= 23.87	N 79°05'55" W		
PI	206+85.37			726979.000	1963456.673
		TH= 22.16	N 84°09'20" W		
PI	207+07.54			726981.257	1963434.625
		TH= 14.58	N 89°19'05" W		
PI	207+22.12			726981.430	1963420.041
		TH= 19.5	N 76°05'15" W		
PI	207+41.62			726986.118	1963401.118
		TH= 15.85	N 61°11'21" W		
PI	207+57.47			726993.757	1963387.229
		TH= 20.41	N 68°01'03" W		
PI	207+77.88			727001.395	1963368.305
		TH= 12.77	N 67°37'12" W		
PI	207+90.64			727006.257	1963356.499

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 23.01	N 48°58'36" W		
PI	208+13.66			727021.361	1963339.138
		TH= 9.59	N 35°25'01" W		
PI	208+23.24			727029.173	1963333.583
		TH= 8.19	N 21°07'29" W		
PI	208+31.43			727036.812	1963330.631
		TH= 11.05	N 30°11'30" W		
PI	208+42.48			727046.361	1963325.076
		TH= 9.03	N 37°58'18" W		
PI	208+51.51			727053.479	1963319.520
		TH= 12.12	N 51°58'52" W		
PI	208+63.63			727060.944	1963309.972
		TH= 5.99	N 79°59'31" W		
PI	208+69.62			727061.986	1963304.069
		TH= 4.72	N 83°39'35" W		
PI	208+74.34			727062.507	1963299.381
		TH= 8.51	N 87°39'46" W		
PI	208+82.85			727062.854	1963290.874
		TH= 29.69	S 89°19'48" W		
PI	209+12.54			727062.507	1963261.187
		TH= 8.93	S 76°30'15" W		
PI	209+21.47			727060.423	1963252.506
		TH= 13.62	S 72°57'04" W		
PI	209+35.09			727056.430	1963239.485
		TH= 11.17	S 78°20'27" W		
PI	209+46.26			727054.173	1963228.548
		TH= 11.70	N 84°02'08" W		
PI	209+57.95			727055.389	1963216.916
		TH= 8.73	N 72°38'46" W		
PI	209+66.68			727057.993	1963208.583
		TH= 8.47	N 45°49'49" W		
PI	209+75.15			727063.896	1963202.506
		TH= 11.99	N 34°22'49" W		
PI	209+87.14			727073.791	1963195.735
		TH= 15.68	N 26°16'53" W		
PI	210+02.83			727087.854	1963188.791
		TH= 27.82	N 29°07'27" W		
PI	210+30.65			727112.160	1963175.249
		TH= 22.81	N 36°57'26" W		
PI	210+53.46			727130.389	1963161.193
		TH= 16.09	N 34°53'27" W		



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HORIZONTAL ALIGNMENT DATA

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B48	B102

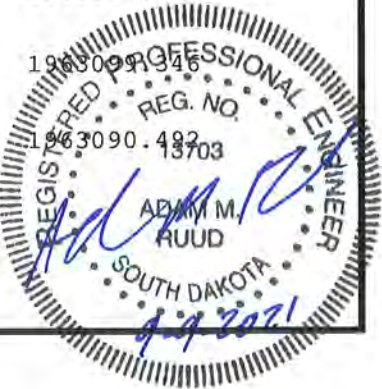
Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	210+69.55			727143.583	1963152.332
		TH= 16.31	N 11°40'08" W		
PI	210+85.86			727159.555	1963149.034
		TH= 14.61	N 3°24'23" E		
PI	211+00.47			727174.139	1963149.902
		TH= 16.76	N 10°08'44" E		
PI	211+17.22			727190.632	1963152.853
		TH= 16.90	N 9°27'44" E		
PI	211+34.12			727207.299	1963155.631
		TH= 6.17	N 32°20'51" E		
PI	211+40.29			727212.507	1963158.930
		TH= 11.70	N 84°02'08" E		
PI	211+51.98			727213.722	1963170.562
		TH= 11.70	S 84°02'08" E		
PI	211+63.68			727212.507	1963182.194
		TH= 18.66	N 84°39'39" E		
PI	211+82.33			727214.243	1963200.770
		TH= 11.26	N 72°57'44" E		
PI	211+93.59			727217.542	1963211.534
		TH= 9.20	N 31°53'27" E		
PI	212+02.79			727225.354	1963216.395
		TH= 16.48	N 11°32'48" E		
PI	212+19.27			727241.500	1963219.694
		TH= 14.44	N 3°26'51" W		
PI	212+33.71			727255.910	1963218.826
		TH= 9.48	N 23°44'58" W		
PI	212+43.19			727264.590	1963215.006
		TH= 18.32	N 41°32'36" W		
PI	212+61.52			727278.306	1963202.853
		TH= 29.40	N 41°24'32" W		
PI	212+90.91			727300.354	1963183.409
		TH= 11.12	N 51°20'25" W		
PI	213+02.03			727307.299	1963174.728
		TH= 8.81	N 57°52'30" W		
PI	213+10.85			727311.986	1963167.263
		TH= 6.77	S 88°31'52" W		
PI	213+17.62			727311.813	1963160.492
		TH= 5.86	S 78°01'26" W		
PI	213+23.48			727310.597	1963154.763
		TH= 4.77	N 56°53'19" W		
PI	213+28.24			727313.201	1963150.770

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 10.49	N 19°20'05" W		
PI	213+38.73			727323.097	1963147.298
		TH= 26.93	N 2°13'00" W		
PI	213+65.66			727350.007	1963146.256
		TH= 16.47	N 18°26'06" E		
PI	213+82.13			727365.632	1963151.464
		TH= 23.39	N 18°04'19" E		
PI	214+05.52			727387.872	1963158.721
		TH= 17.94	N 13°25'52" E		
PI	214+23.46			727405.320	1963162.888
		TH= 28.76	N 16°18'06" E		
PI	214+52.22			727432.924	1963170.961
		TH= 31.40	N 24°45'31" E		
PI	214+83.62			727461.439	1963184.112
		TH= 12.25	N 1°49'41" E		
PI	214+95.87			727473.679	1963184.503
		TH= 15.63	N 10°33'40" W		
PI	215+11.50			727489.044	1963181.638
		TH= 26.18	N 12°55'50" W		
PI	215+37.68			727514.564	1963175.779
		TH= 10.98	N 22°18'22" W		
PI	215+48.66			727524.721	1963171.612
		TH= 14.99	N 66°59'51" W		
PI	215+63.66			727530.580	1963157.810
		TH= 7.28	S 79°41'43" W		
PI	215+70.94			727529.278	1963150.648
		TH= 11.39	S 38°58'00" W		
PI	215+82.32			727520.424	1963143.487
		TH= 12.87	S 27°05'01" W		
PI	215+95.19			727508.966	1963137.628
		TH= 11.99	S 41°28'43" W		
PI	216+07.18			727499.981	1963129.685
		TH= 17.48	S 55°00'29" W		
PI	216+24.67			727489.955	1963115.362
		TH= 11.61	S 42°16'25" W		
PI	216+36.28			727481.361	1963107.549
		TH= 8.92	S 66°48'05" W		
PI	216+45.21			727477.846	1963094.376
		TH= 9.35	S 71°18'46" W		
PI	216+54.55			727474.851	1963090.482
		TH= 12.67	N 85°17'07" W		

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HORIZONTAL ALIGNMENT DATA

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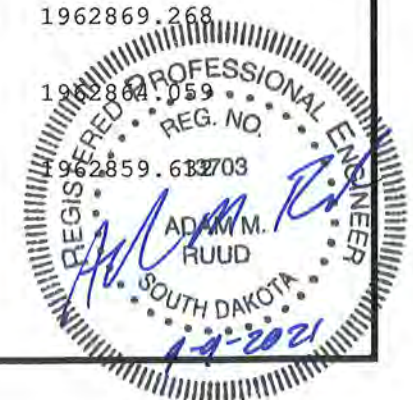
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B49	B102

Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	216+67.23			727475.893	1963077.862
		TH= 10.46	N 71°06'50" W		
PI	216+77.69			727479.278	1963067.966
		TH= 14.12	N 52°29'45" W		
PI	216+91.80			727487.872	1963056.768
		TH= 13.56	N 48°30'13" W		
PI	217+05.36			727496.856	1963046.612
		TH= 17.90	N 38°12'15" W		
PI	217+23.26			727510.919	1963035.544
		TH= 18.20	N 19°12'46" W		
PI	217+41.46			727528.106	1963029.554
		TH= 12.33	N 31°10'17" W		
PI	217+53.78			727538.653	1963023.174
		TH= 13.94	N 8°03'16" W		
PI	217+67.72			727552.455	1963021.221
		TH= 13.00	N 37°40'25" W		
PI	217+80.72			727562.742	1963013.278
		TH= 8.29	N 67°51'52" W		
PI	217+89.01			727565.867	1963005.596
		TH= 6.47	S 49°53'57" W		
PI	217+95.48			727561.700	1963000.648
		TH= 13.83	S 33°05'30" W		
PI	218+09.31			727550.111	1962993.096
		TH= 20.29	S 41°52'40" W		
PI	218+29.60			727535.007	1962979.554
		TH= 24.23	S 61°46'58" W		
PI	218+53.83			727523.549	1962958.200
		TH= 13.51	S 57°59'41" W		
PI	218+67.35			727516.387	1962946.742
		TH= 14.37	S 72°03'27" W		
PI	218+81.72			727511.960	1962933.070
		TH= 11.99	S 87°30'38" W		
PI	218+93.71			727511.440	1962921.091
		TH= 16.98	N 69°20'28" W		
PI	219+10.69			727517.429	1962905.205
		TH= 20.73	N 63°55'04" W		
PI	219+31.42			727526.544	1962886.585
		TH= 20.10	N 36°34'23" W		
PI	219+51.52			727542.690	1962874.606
		TH= 11.54	N 20°28'49" W		
PI	219+63.06			727553.497	1962870.570

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 13.87	N 12°28'14" E		
PI	219+76.93			727567.039	1962873.565
		TH= 10.34	N 58°54'45" E		
PI	219+87.27			727572.377	1962882.419
		TH= 5.01	N 81°01'39" E		
PI	219+92.27			727573.158	1962887.367
		TH= 8.57	N 73°13'03" E		
PI	220+00.84			727575.632	1962895.570
		TH= 4.94	N 71°33'54" E		
PI	220+05.78			727577.195	1962900.257
		TH= 13.26	N 72°16'36" E		
PI	220+19.04			727581.231	1962912.888
		TH= 8.57	N 65°46'20" E		
PI	220+27.61			727584.747	1962920.700
		TH= 22.29	N 39°32'55" E		
PI	220+49.90			727601.934	1962934.893
		TH= 15.64	N 34°29'02" E		
PI	220+65.54			727614.825	1962943.747
		TH= 25.84	N 3°45'23" E		
PI	220+91.38			727640.606	1962945.440
		TH= 15.50	N 0°57'46" W		
PI	221+06.87			727656.101	1962945.179
		TH= 13.17	N 14°18'40" W		
PI	221+20.04			727668.862	1962941.924
		TH= 13.44	N 31°32'05" W		
PI	221+33.49			727680.320	1962934.893
		TH= 14.31	N 49°03'34" W		
PI	221+47.79			727689.695	1962924.086
		TH= 24.36	N 51°17'33" W		
PI	221+72.15			727704.929	1962905.075
		TH= 21.26	N 49°58'11" W		
PI	221+93.41			727718.601	1962888.799
		TH= 14.34	N 60°38'32" W		
PI	222+07.75			727725.632	1962876.299
		TH= 7.37	N 72°31'31" W		
PI	222+15.12			727727.846	1962869.268
		TH= 5.52	S 70°42'36" W		
PI	222+20.64			727726.023	1962864.059
		TH= 5.42	S 54°46'57" W		
PI	222+26.06			727722.898	1962859.637
		TH= 8.66	S 74°17'29" W		



The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System, South Zone (NAD 83/96); Geoid 03; SF = 0.9999030709

HORIZONTAL ALIGNMENT DATA

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B50	B102

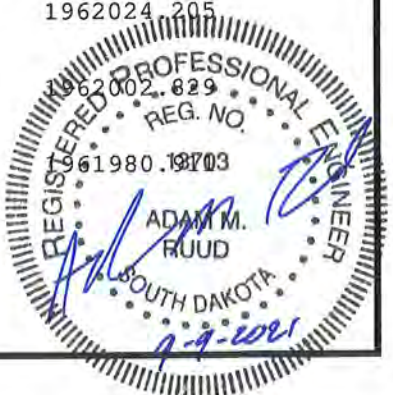
Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	222+34.72			727720.554	1962851.299
		TH= 9.57	N 75°01'06" W		
PI	222+44.29			727723.028	1962842.054
		TH= 14.33	N 87°55'03" W		
PI	222+58.62			727723.549	1962827.731
		TH= 24.90	S 87°00'11" W		
PI	222+83.52			727722.247	1962802.861
		TH= 12.32	N 83°19'32" W		
PI	222+95.85			727723.679	1962790.622
		TH= 18.44	N 67°58'34" W		
PI	223+14.29			727730.595	1962773.524
		TH= 10.30	N 58°52'09" W		
PI	223+24.59			727735.919	1962764.710
		TH= 10.20	N 84°52'18" W		
PI	223+34.78			727736.830	1962754.554
		TH= 12.63	N 89°59'60" W		
PI	223+47.41			727736.830	1962741.924
		TH= 14.77	S 84°56'34" W		
PI	223+62.19			727735.528	1962727.210
		TH= 10.58	S 76°28'37" W		
PI	223+72.77			727733.054	1962716.924
		TH= 15.58	S 77°56'19" W		
PI	223+88.34			727729.799	1962701.689
		TH= 17.72	S 87°53'40" W		
PI	224+06.06			727729.148	1962683.981
		TH= 18.39	N 77°44'07" W		
PI	224+24.45			727733.054	1962666.012
		TH= 41.47	N 52°00'52" W		
PI	224+65.92			727758.575	1962633.330
		TH= 23.84	N 40°07'34" W		
PI	224+89.76			727776.804	1962617.965
		TH= 21.08	N 27°11'53" W		
PI	225+10.84			727795.555	1962608.330
		TH= 17.57	N 11°58'34" W		
PI	225+28.41			727812.742	1962604.684
		TH= 16.14	N 21°06'54" E		
PI	225+44.56			727827.803	1962610.500
		TH= 8.98	N 37°08'48" E		
PI	225+53.54			727834.964	1962615.925
		TH= 6.74	N 14°55'53" W		
PI	225+60.28			727841.475	1962614.189

Red Plum Creek (continued)

Type	Station			Northing	Easting
		TH= 14.92	N 49°07'39" W		
PI	225+75.20			727851.240	1962602.904
		TH= 13.02	N 53°07'48" W		
PI	225+88.22			727859.053	1962592.488
		TH= 21.35	N 72°51'16" W		
PI	226+09.57			727865.346	1962572.088
		TH= 28.81	N 83°56'45" W		
PI	226+38.38			727868.384	1962543.442
		TH= 18.31	S 80°05'17" W		
PI	226+56.68			727865.233	1962525.409
		TH= 216.13	S 83°34'53" W		
PI	228+72.82			727841.071	1962310.632
		TH= 26.95	N 56°45'40" W		
PI	228+99.76			727855.841	1962288.095
		TH= 15.79	N 35°15'47" W		
PI	229+15.55			727868.732	1962278.980
		TH= 30.23	N 53°13'44" W		
PI	229+45.78			727886.831	1962254.761
		TH= 28.76	N 47°34'09" W		
PI	229+74.54			727906.232	1962233.537
		TH= 23.86	N 36°07'10" W		
PI	229+98.39			727925.503	1962219.475
		TH= 31.72	N 36°49'22" W		
PI	230+30.11			727950.893	1962200.464
		TH= 54.63	N 42°58'19" W		
PI	230+84.75			727990.867	1962163.225
		TH= 51.92	N 36°08'31" W		
PI	231+36.66			728032.794	1962132.604
		TH= 38.70	N 20°31'06" W		
PI	231+75.36			728069.036	1962119.041
		TH= 59.81	N 41°28'10" W		
PI	232+35.17			728113.849	1962079.436
		TH= 37.21	N 45°35'26" W		
PI	232+72.38			728139.891	1962052.851
		TH= 41.44	N 43°43'37" W		
PI	233+13.82			728169.839	1962024.205
		TH= 24.75	N 59°43'32" W		
PI	233+38.57			728182.317	1962002.829
		TH= 26.73	N 55°05'03" W		
PI	233+65.30			728197.617	1961980.187
		TH= 45.33	N 50°38'00" W		

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/96); Geoid 03; SF = 0.9999030709



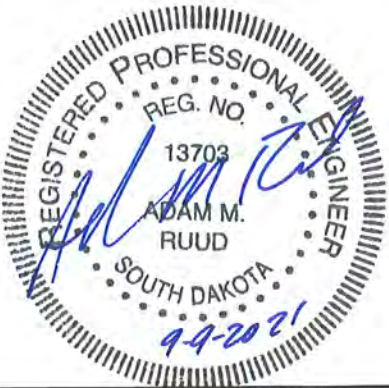
HORIZONTAL ALIGNMENT DATA

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B51	B102

Red Plum Creek (continued)

Type	Station			Northing	Easting
PI	234+10.64			728226.371	1961945.863
		TH= 13.89	N 45°18'60" W		
PI	234+24.53			728236.137	1961935.989
		TH= 136.60	N 39°27'21" W		
POE	235+61.12			728341.606	1961849.183



The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/96); Geoid 03; SF = 0.9999030709

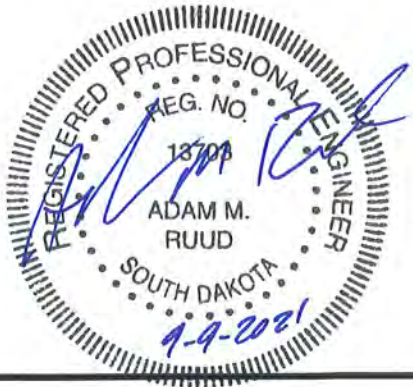
CONTROL DATA

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B52	B102

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
SDPR	5+15	19122' L	Mickleson Base	747230.9630	1965829.1890	1730.42
111	8+04	23725' L	FUGRO111	745268.7040	1979489.4650	1716.01
101	82+10	146' L	CP101	722906.7690	1967924.5870	1585.28
102	76+07	3564' R	CP102	719914.8640	1965650.5120	1794.37
103	Outside Alignment	Outside Alignment	CP103	716394.5280	1977708.4910	1763.57
104	173+64	10408' R	CP104	708618.2150	1967820.6130	1816.78
105	186+38	2526' R	CP105	713741.8780	1975509.7040	1805.61

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/96);
Geoid 3; SF = 0.9999030709
The elevations shown on this sheet are based on NAVD 88.



LEGEND

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B53	B102

Plotting Date: 9/9/2021

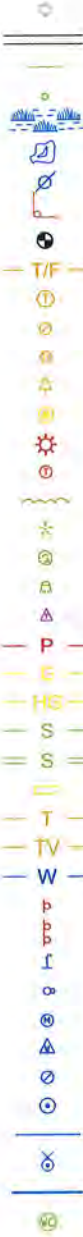
Anchor
Antenna
Approach
Assumed Corner
Azimuth Marker
BBQ Grill/ Fireplace
Bearing Tree
Bench Mark
Box Culvert
Bridge
Brush
Buildings
Bulk Tank
Cattle Guard
Cemetery
Centerline
Cistern
Clothes Line
Commercial Sign Double Face
Commercial Sign One Post
Commercial Sign Overhead
Commercial Sign Two Post
Concrete Symbol
Creek Edge
Curb/Gutter
Curb
Dam Grade/Dike/Levee
Deck Edge
Ditch Block
Doorway Threshold
Drainage Profile
Drop Inlet
Edge Of Asphalt
Edge Of Concrete
Edge Of Gravel
Edge Of Other
Edge Of Shoulder
Elec. Trans./Power Jct. Box
Environmental Sensitive Site
Fence Barbwire
Fence Chainlink
Fence Electric
Fence Misc.
Fence Rock
Fence Snow
Fence Wood
Fence Woven
Fire Hydrant
Flag Pole
Flower Bed
Gas Valve Or Meter
Gas Pump Island
Grain Bin
Guardrail
Guide Sign One Post
Guide Sign Two Post
Gutter
Guy Pole
Haystack



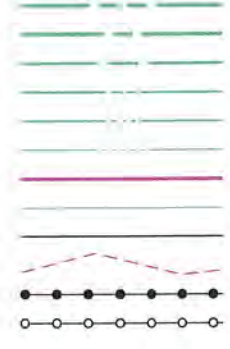
Hedge
Highway R.O.W. Marker
Interstate Close Gate
Iron Pin
Irrigation Ditch
Lake Edge
Lawn Sprinkler
Mailbox
Manhole Electric
Manhole Gas
Manhole Misc
Manhole Sanitary Sewer
Manhole Storm Sewer
Manhole Telephone
Manhole Water
Merry-Go-Round
Microwave Radio Tower
Misc. Line
Misc. Property Corner
Misc. Post
Overhang Or Encroachment
Overhead Utility Line
Parking Meter
Pipe With End Section
Pipe With Headwall
Pipe Without End Section
Playground Slide
Playground Swing
Power And Light Pole
Power And Telephone Pole
Power Meter
Power Pole
Power Pole And Transformer
Power Tower Structure
Propane Tank
Property Pipe
Property Pipe With Cap
Property Stone
Public Telephone
Railroad Crossing Signal
Railroad Milepost Marker
Railroad Profile
Railroad R.O.W. Marker
Railroad Signs
Railroad Switch
Railroad Track
Railroad Trestle
Rebar
Rebar With Cap
Reference Mark
Regulatory Sign One Post
Regulatory Sign Two Post
Retaining Wall
Riprap
River Edge
Rock And Wire Baskets
Rockpiles
Satellite Dish
Septic Tank



Shrub Tree
Sidewalk
Sign Face
Sign Post
Slough Or Marsh
Spring
Stream Gauge
Street Marker
Subsurface Utility Exploration Test Hole
Telephone Fiber Optics
Telephone Junction Box
Telephone Pole
Television Cable Jct Box
Television Tower
Test Wells/Bore Holes
Traffic Signal
Trash Barrel
Tree Belt
Tree Coniferous
Tree Deciduous
Tree Stumps
Triangulation Station
Underground Electric Line
Underground Gas Line
Underground High Pressure Gas Line
Underground Sanitary Sewer
Underground Storm Sewer
Underground Tank
Underground Telephone Line
Underground Television Cable
Underground Water Line
Warning Sign One Post
Warning Sign Two Post
Water Fountain
Water Hydrant
Water Meter
Water Tower
Water Valve
Water Well
Weir Rock
Windmill
Wingwall
Witness Corner



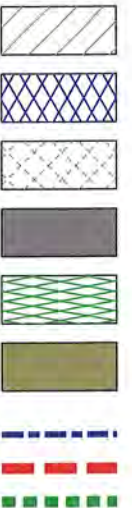
State and National Line
County Line
Section Line
Quarter Line
Sixteenth Line
Property Line
Construction Line
R. O. W. Line
New R. O. W. Line
Cut and Fill Limits
Control of Access
New Control of Access
Proposed ROW
(After Property Disposal)



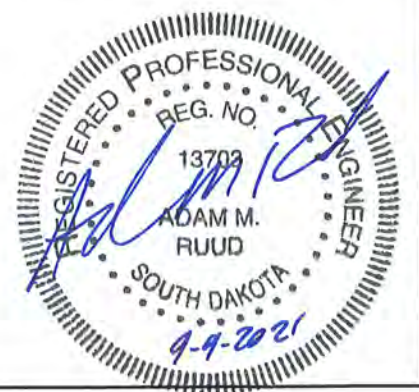
Drainage Arrow



Remove Concrete Pavement
Remove Concrete Driveway Pavement
Remove Asphalt Concrete Pavement
Temporary Easement
Remove Concrete Approach Pavement
Remove Concrete Median Pavement
Remove Concrete Curb
Remove Concrete Curb and Gutter
Remove Concrete Gutter



Detectable Warning
Pedestrian Push Button Pole
and 30" x 48" Clear Space
with 1.5% slope



Plot Scale: 1"=200'

Plotted From: arund

File: ...CAD\Plans\Section B Legend.dgn

Plotting Date: 9/9/2021

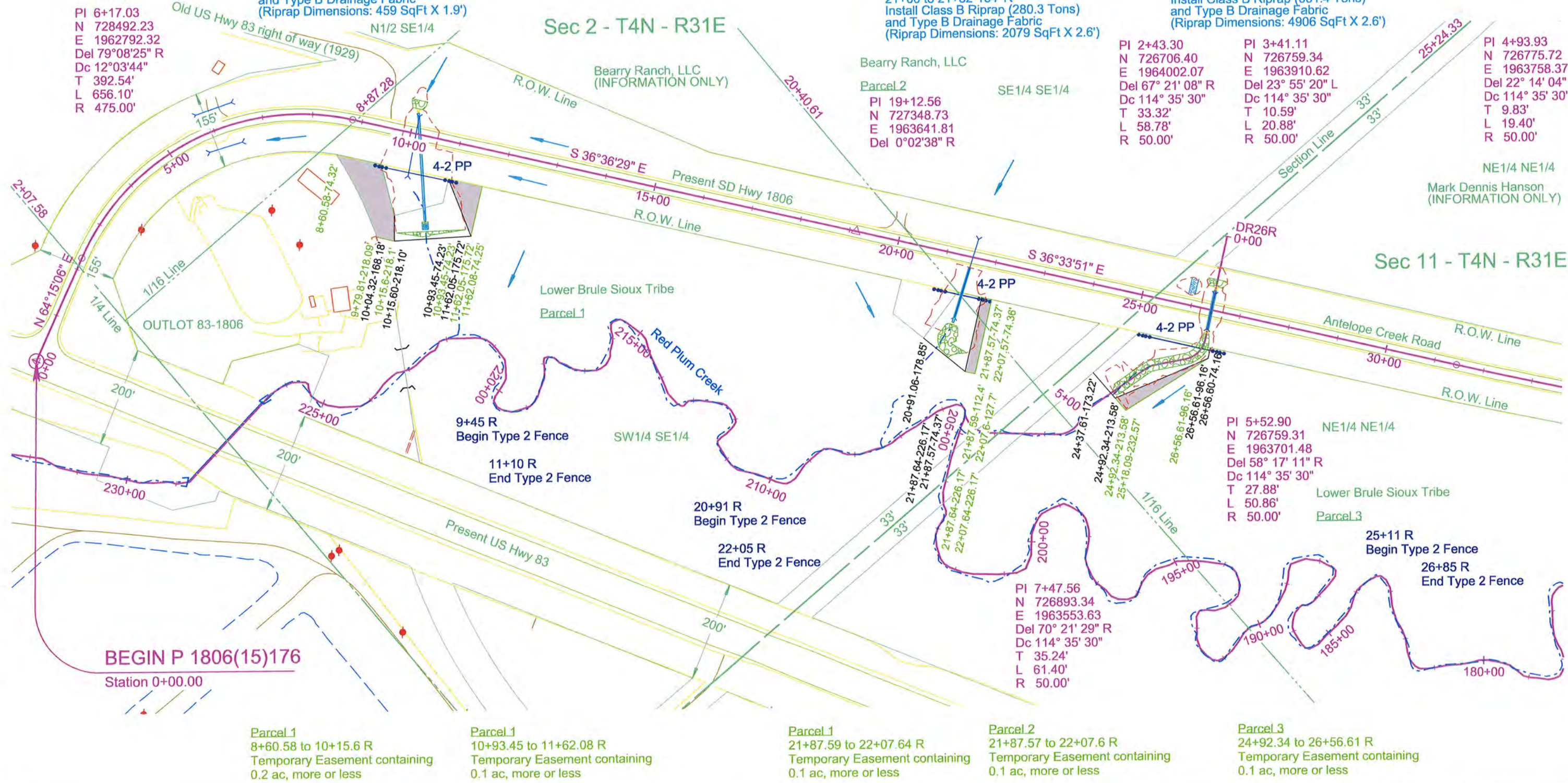
FOR BIDDING PURPOSES ONLY



- 10+17
Take Out 42" - 134' CMP
(44', 58', & 28')
& 15° & 30° Elbows
& 2 Flared Ends
(Incidental Work, Grading)
- 10+18 (40 ac)
Install 42" - 72' RCP
Install 42" - 144' CMP (104' & 40')
Skew 16° RHF
& 2 - 10° Elbows
& 1 - 42" RCP to CMP Outlet Transition
& 1 RCP Flared End
& 1 CMP Flared End
- 9+88 to 10+20-59' L
Install Class A Riprap (45.2 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 459 SqFt X 1.9')
- 10+68-169' R
Install Pipe Outlet Protection
Gabion (10 CuYd) and Type B
Drainage Fabric (29 SqYd)
- 10+16 to 11+48-189' R
Install Class B Riprap (90.7 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 673 SqFt X 2.6')

- 21+53
Take Out 42" - 88' CMP
(68' & 20')
& 15° & 30° Elbows
(Incidental Work, Grading)
Remove 42" CMP Flared End for Reset
- 21+53
Retain 42" - 52' CMP
& 1 Flared End
- 21+53 (43 ac)
Install 42" - 116' CMP
(4', 92' & 20')
Skew 4.5° LHF
& 2 - 10° Elbows
Reset 42" Flared End (West)
- 21+00 to 21+82-164' R
Install Class B Riprap (280.3 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 2079 SqFt X 2.6')

- 26+42
Take Out 24" - 68' RCP
& 2 Flared Ends
(Incidental Work, Grading)
- 26+42 (42 ac)
Install 48" - 78' RCPA
& 2 Flared Ends
- 26+20 to 26+62-55' L
Install Class A Riprap (51.8 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 526 SqFt X 1.9')
- 24+84 to 26+52-128' R
Install Class B Riprap (661.4 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 4906 SqFt X 2.6')



Parcel 1
8+60.58 to 10+15.6 R
Temporary Easement containing
0.2 ac, more or less

Parcel 1
10+93.45 to 11+62.08 R
Temporary Easement containing
0.1 ac, more or less

Parcel 1
21+87.59 to 22+07.64 R
Temporary Easement containing
0.1 ac, more or less

Parcel 2
21+87.57 to 22+07.6 R
Temporary Easement containing
0.1 ac, more or less

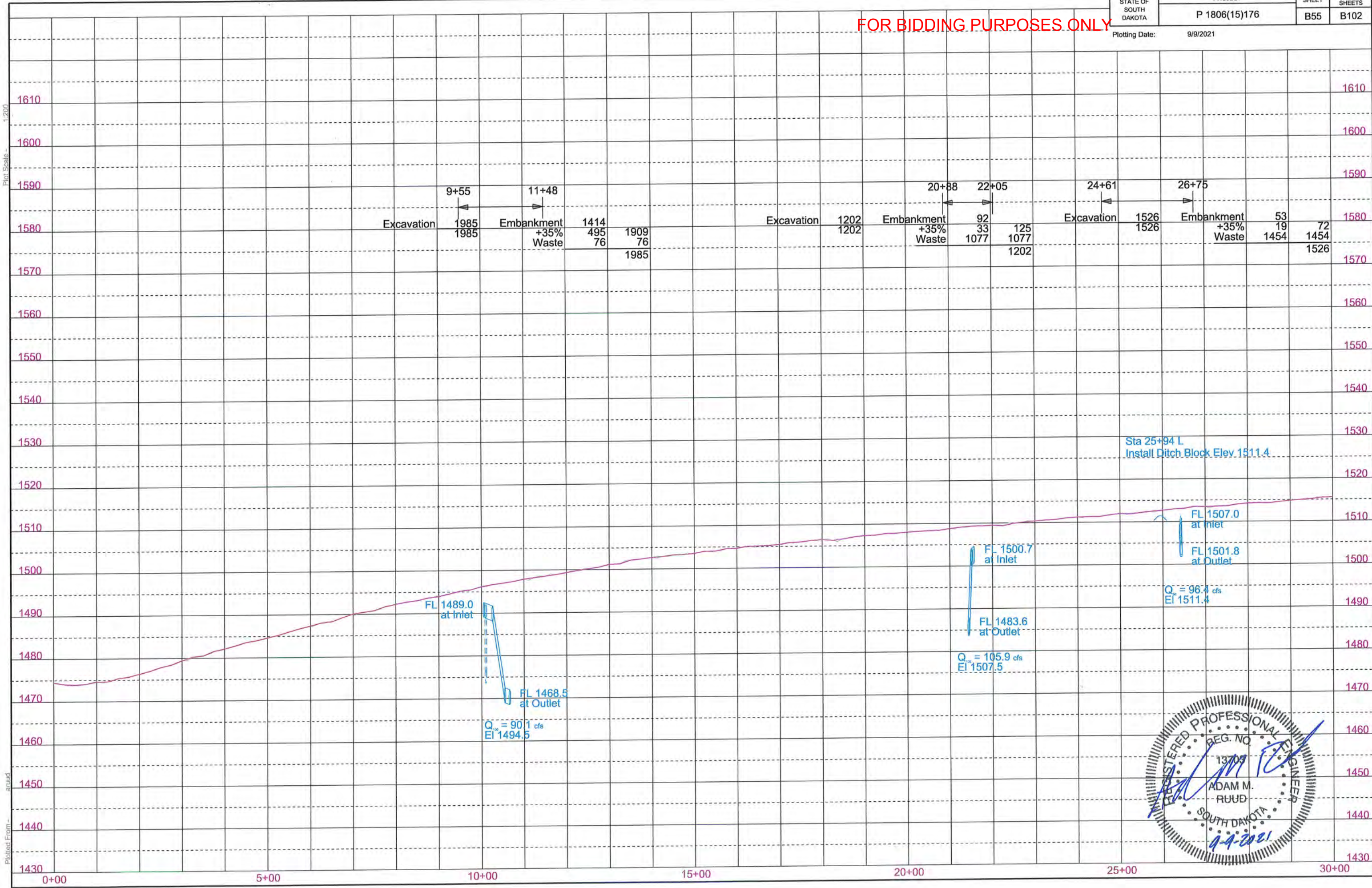
Parcel 3
24+92.34 to 26+56.61 R
Temporary Easement containing
0.1 ac, more or less

Plot Scale = 1"=200'

Plotted From = around

FOR BIDDING PURPOSES ONLY

Plotting Date: 9/9/2021



FOR BIDDING PURPOSES ONLY

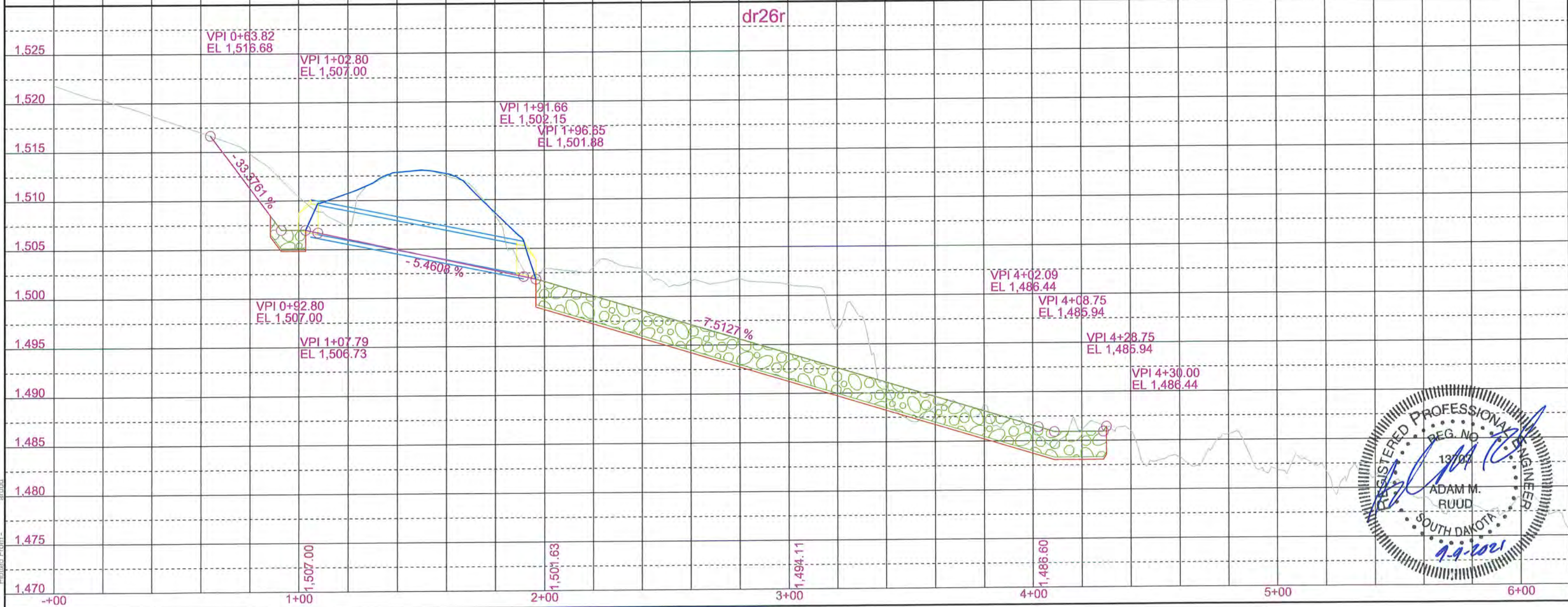
STATE OF SOUTH DAKOTA	PROJECT P 1806(15)176	SHEET B56	TOTAL SHEETS B102
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Plotting Date: 9/9/2021

Plot Scale -
1:200

Plotted From -
around

File - ...\\Section B1000v_drains.dgn



Plotting Date: 9/9/2021

FOR BIDDING PURPOSES ONLY



35+93
Take Out 30" - 2' Twin RCP
& 2 Flared Ends
(Incidental Work, Grading)

35+93
Retain 30" - 63' Twin RCP
& 2 Flared Ends

35+93 (11 ac)
Install 30" Twin RCP Sloped Ends
(West)

35+13 to 36+01-133' R
Install Class B Riprap (451.2 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 3347 SqFt X 2.6')

41+63
Remove 42" Twin RCP Flared Ends for
Reset

41+63 (19 ac)
Retain 42" - 65' Twin RCP
& 2 Flared Ends

41+63 (19 ac)
Reset 42" Twin RCP Flared Ends
(West)

41+63 R
Install Twin Pipe Outlet Protection
Gabion (10 CuYd) and Type B
Drainage Fabric (29 SqYd)

48+09
Take Out 42" - 46' Twin RCP
& 4 Flared Ends
(Incidental Work, Grading)

48+18 (133 ac)
Install 60" - 116' Twin RCPA
Skew 2" LHF
with Controlled Density Fill (25.87 CuYd)
& 4 Flared Ends
(Spaced 9' C to C)

47+98 to 48+43-58' L
Install Class A Riprap (61.7 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 626 SqFt X 1.9')

47+66 to 48+30-146' R
Install Class C Riprap (831.4 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 4454 SqFt X 3.6')

55+64
Take Out 42" - 154' CMP
(46', 78' & 30')
& 15' & 45' Elbows
& 2 Flared Ends
(Incidental Work, Grading)

55+74 (133 ac)
Install 36" - 70' Twin RCP
Install 36" - 136' Twin CMP (88' & 48')
& 4 - 12.5" Elbows
& 2 - 36" RCP to CMP Outlet Transition
& 2 RCP Flared End
& 2 CMP Flared End
(Spaced 20' C to C)

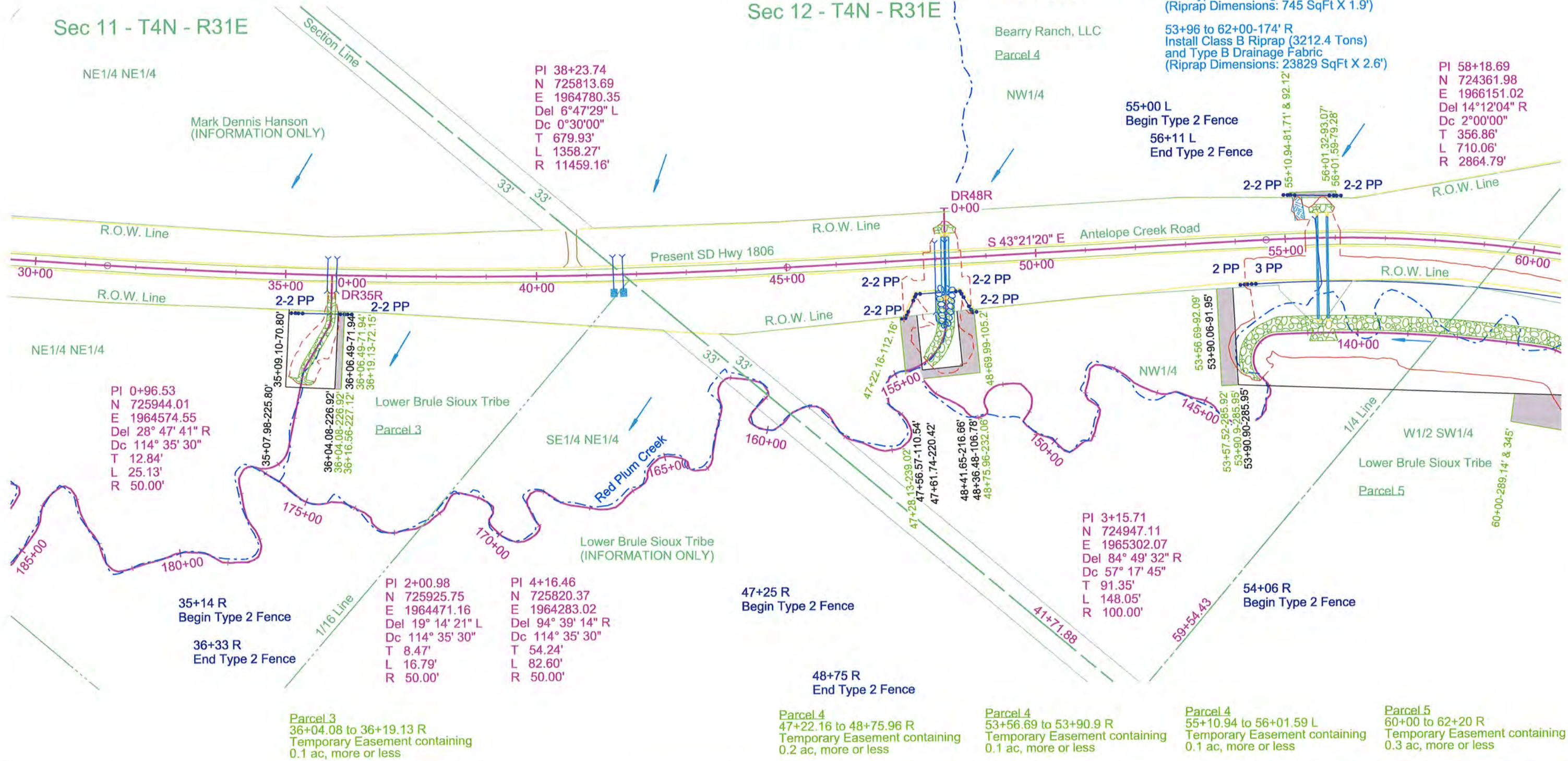
55+49 to 55+99-58' L
Install Class A Riprap (73.4 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 745 SqFt X 1.9')

53+96 to 62+00-174' R
Install Class B Riprap (3212.4 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 23829 SqFt X 2.6')



Sec 11 - T4N - R31E

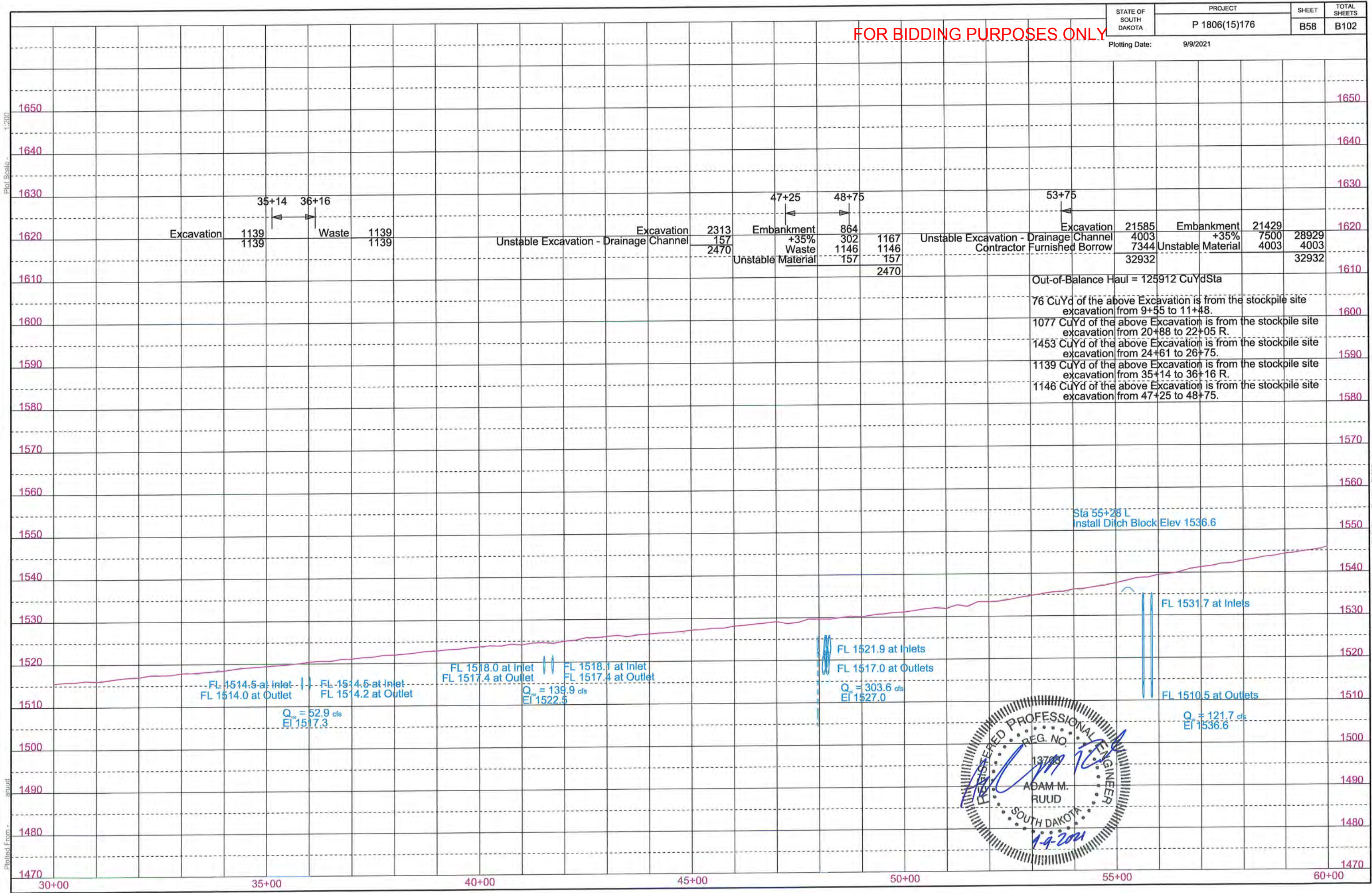
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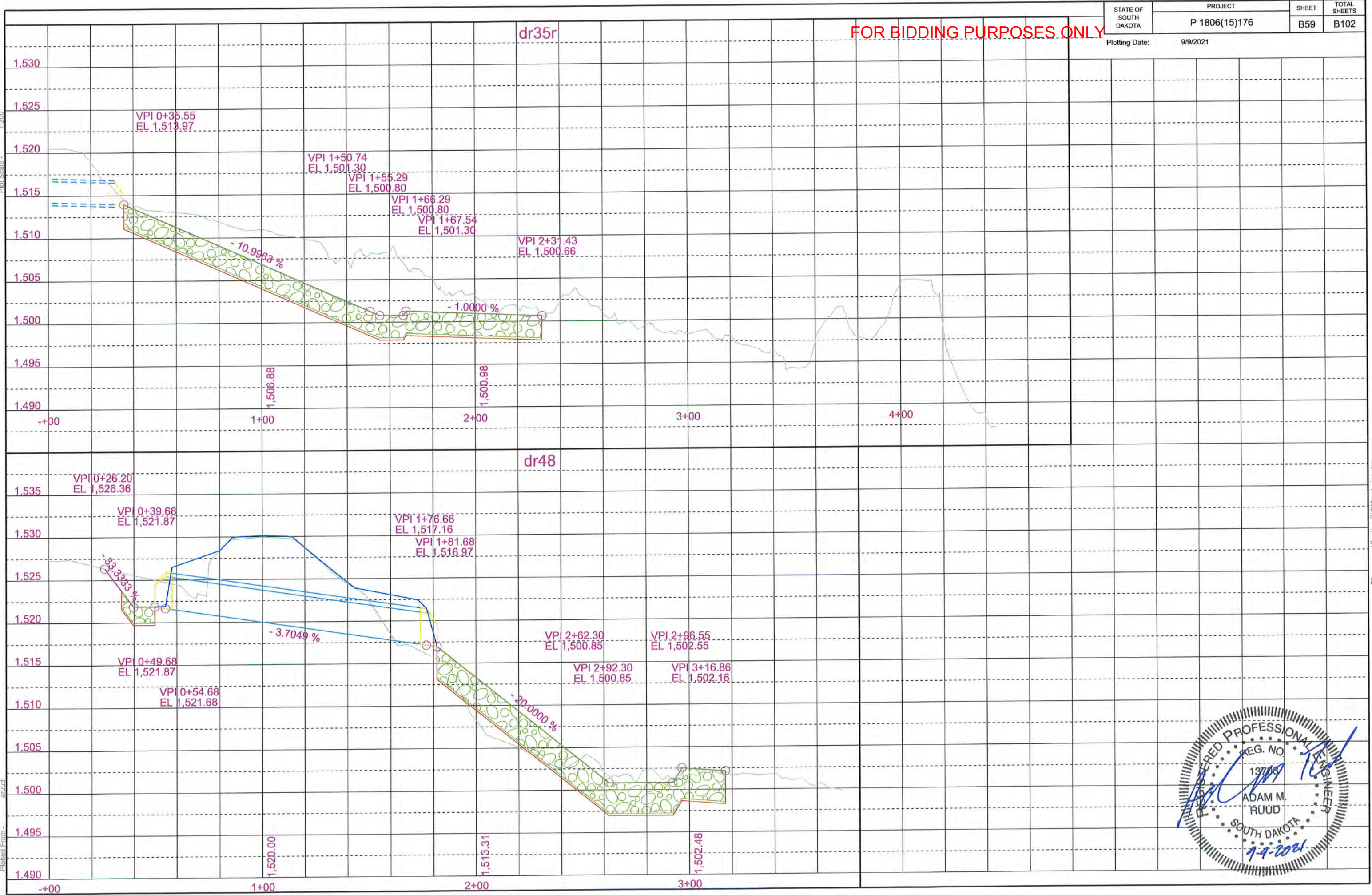


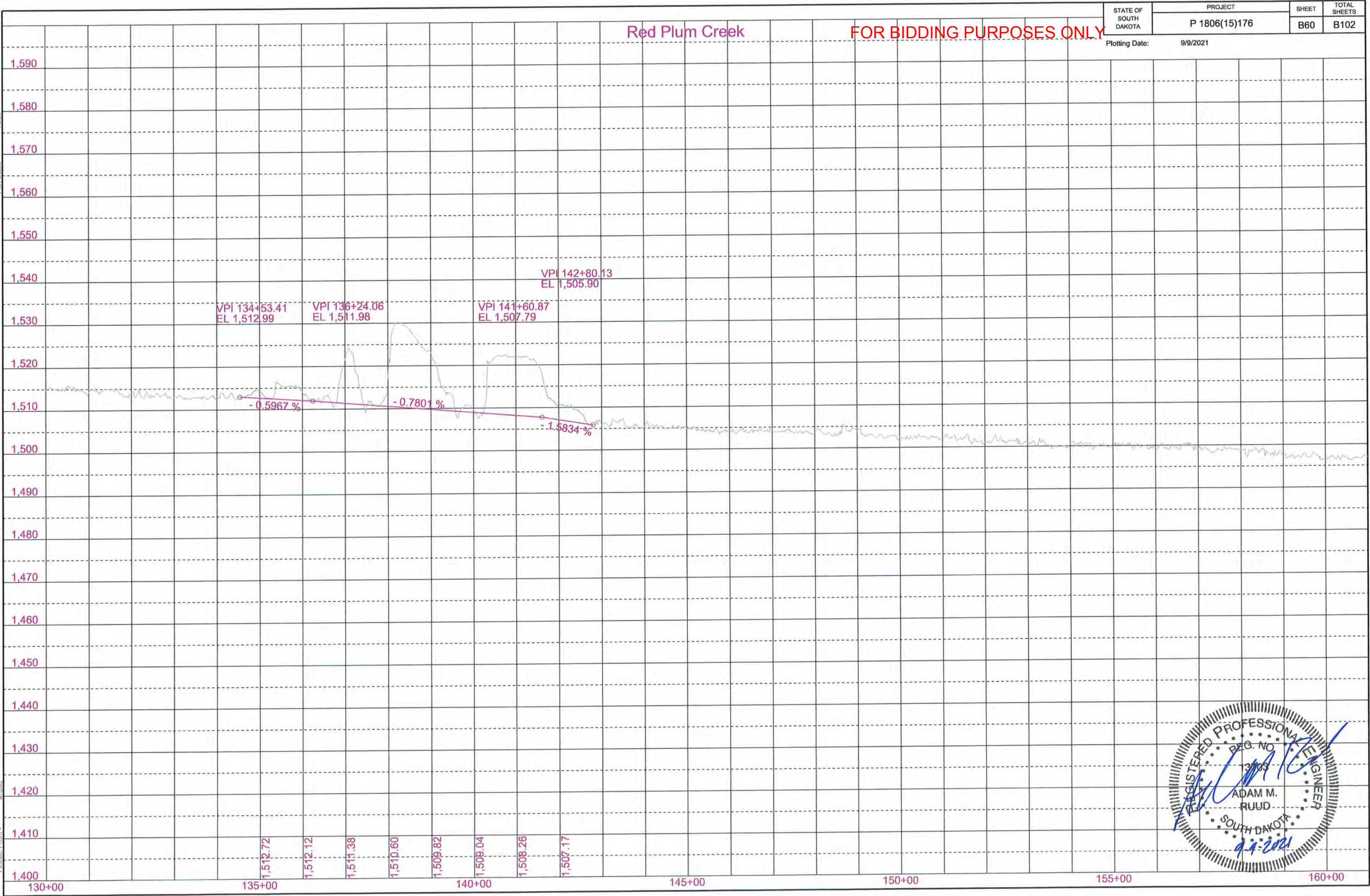
Plot Scale - 1:200

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Plot Scale: 1"=200'
Plotted From: around

68+16
Take Out 30" CMP Flared End
(Incidental Work, Grading)

68+16
Retain 30" - 97' CMP w/ 24" HDPE Slip-lining
& 1 Flared End

68+16 (3 ac)
Install 30" - 66' CMP
Skew 3° RHF
& 1 Sloped End

68+19 to 68+51-183' R
Install Class B Riprap (191.0 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 1417 SqFt X 2.6')

74+56
Take Out 36" - 4' CMP w/ 30" HDPE Slip-lining
& 1 Flared End
(Incidental Work, Grading)

74+56
Retain 36" - 121' CMP w/ 30" HDPE Slip-lining
& 1 Flared End

74+56 (9 ac)
Install 36" - 92' CMP (62' & 30')
Skew 2° LHF
& 1 - 10° Elbow
& 1 - 12.5° Elbow
& 1 CMP Flared End

74+34 to 74+65-201' R
Install Class B Riprap (141.8 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 1052 SqFt X 2.6')

78+29 - 212' R (659 ac)
Install 48" - 164' Twin CMP
(16', 124' & 24')
& 4 - 7.5° Elbows
& 4 Flared Ends
(Spaced 22' C to C)

77+43-212' R
Install Twin Pipe Outlet Protection
Gabion (12 CuYd) and Type B
Drainage Fabric (34 SqYd)

77+21 to 79+02-247' R
Install Class B Riprap (576.9 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 4279 SqFt X 2.6')

80+65
Take Out 24" - 74' RCP
& 2 Flared Ends
(Incidental Work, Grading)

80+65 (18 ac)
Install 42" - 134' RCPA
& 2 Flared Ends

80+53 to 80+74-53' L
Install Class A Riprap (27.5 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 279 SqFt X 1.9')

80+54 to 80+70-27' R
Install Class B Riprap (49.7 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 369 SqFt X 2.6')

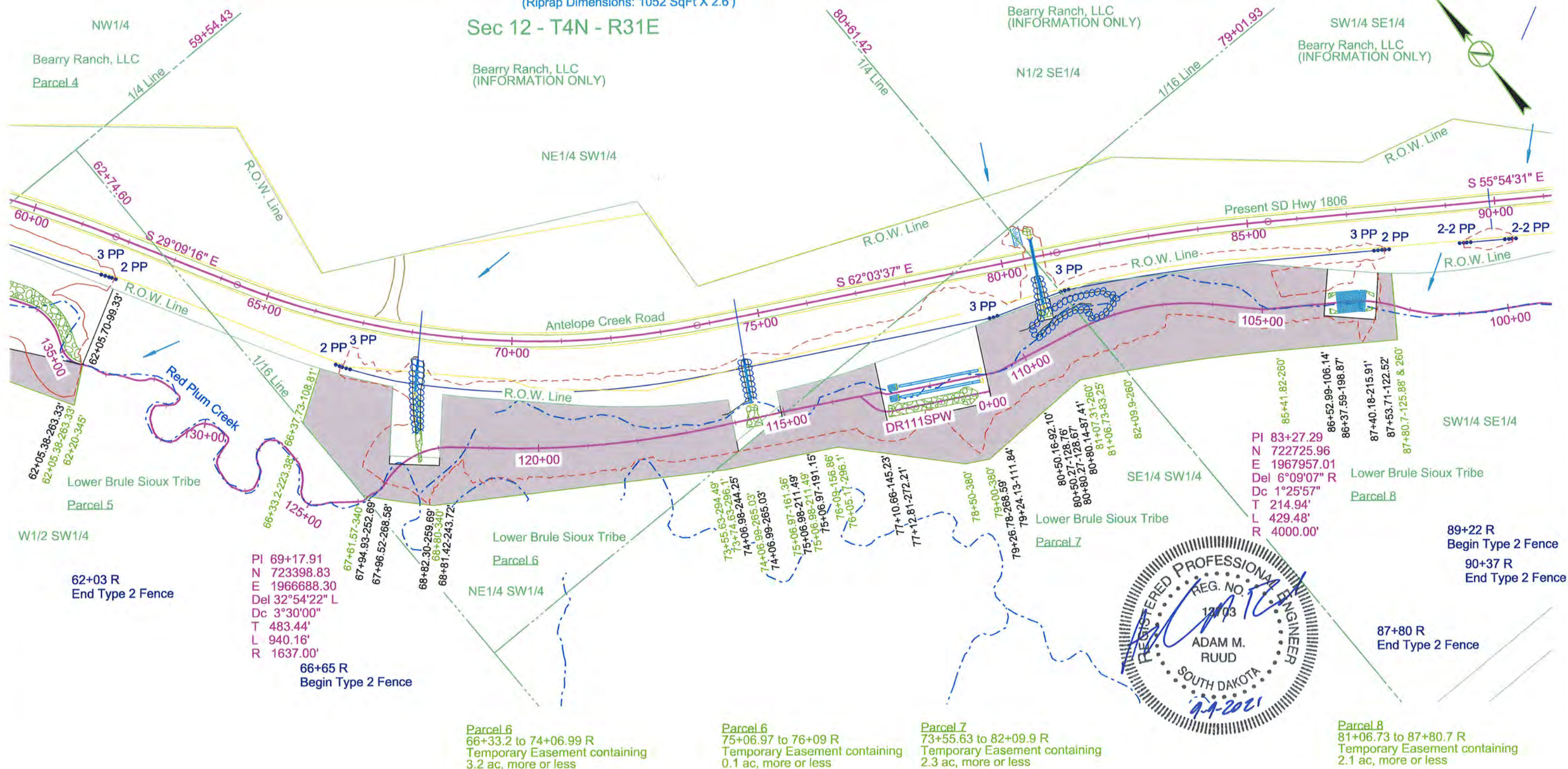
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B61	B102

Plotting Date: 9/9/2021 Rev 09/25/2020 AMR

Sta 86+93-175' R
Install PVC Coated Bank and Channel
Protection Gabions (226 CuYd;
Bottom Width: 36', Side Walls: 4'),
Class B Riprap (48.7 Tons)
(Riprap Dimensions: 361 SqFt X 2.6')
and Type B Drainage Fabric (469 SqYd)

89+89
Abandon 24" - 84' CMP
(42', 30' & 8')
& 2 - 20° Elbows
Plug Pipe with Cellular Grout (11.24 CuYd)
Take Out 2 Flared Ends
(Incidental Work, Grading)



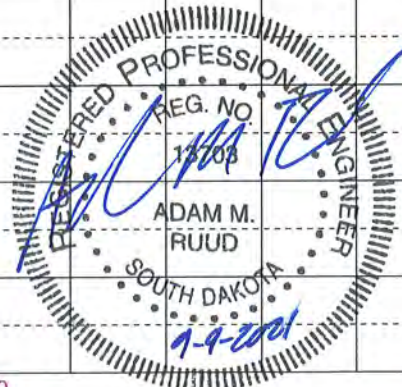
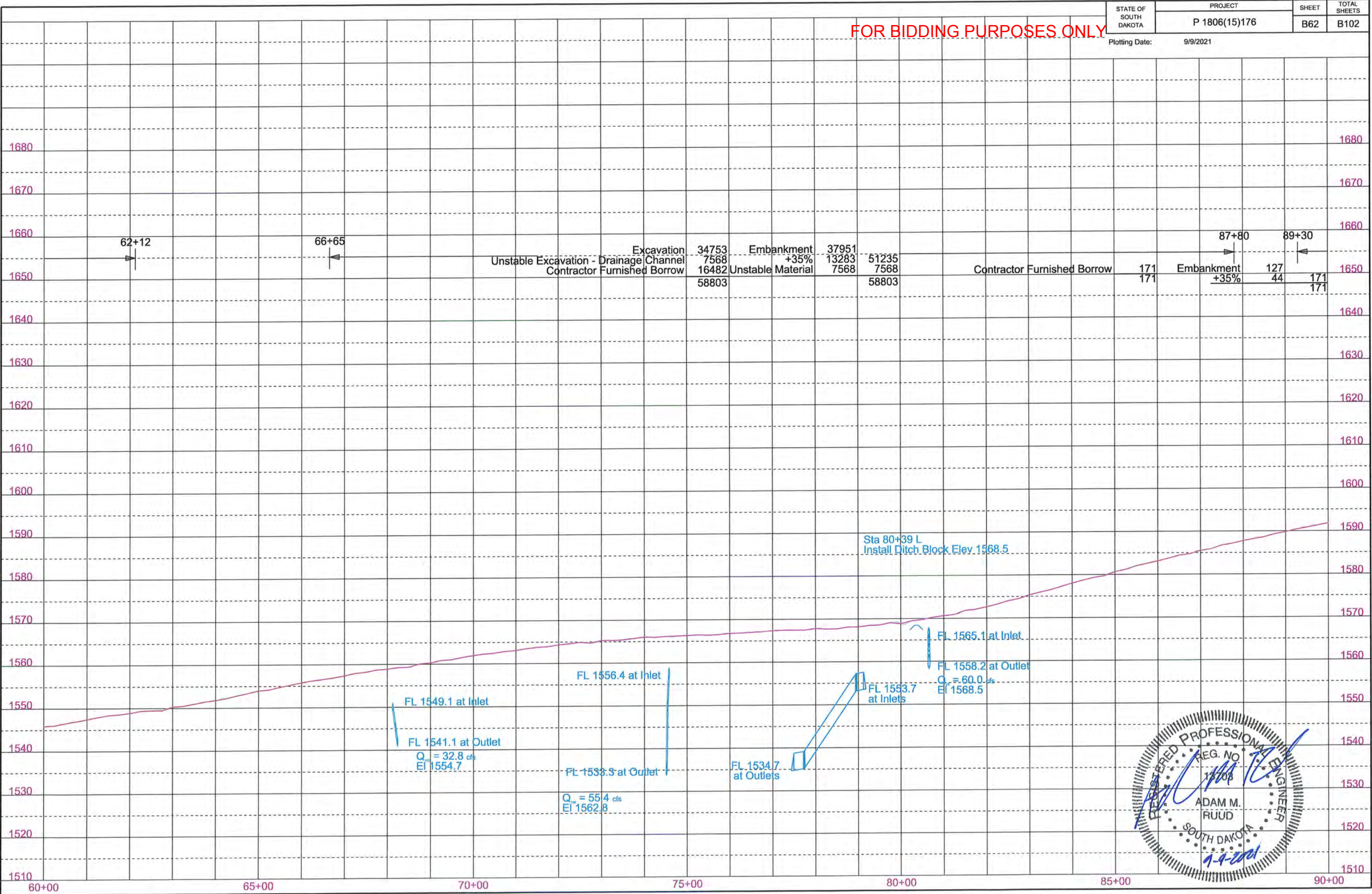
FOR BIDDING PURPOSES ONLY

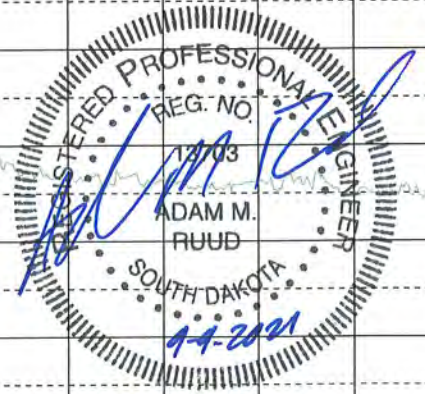
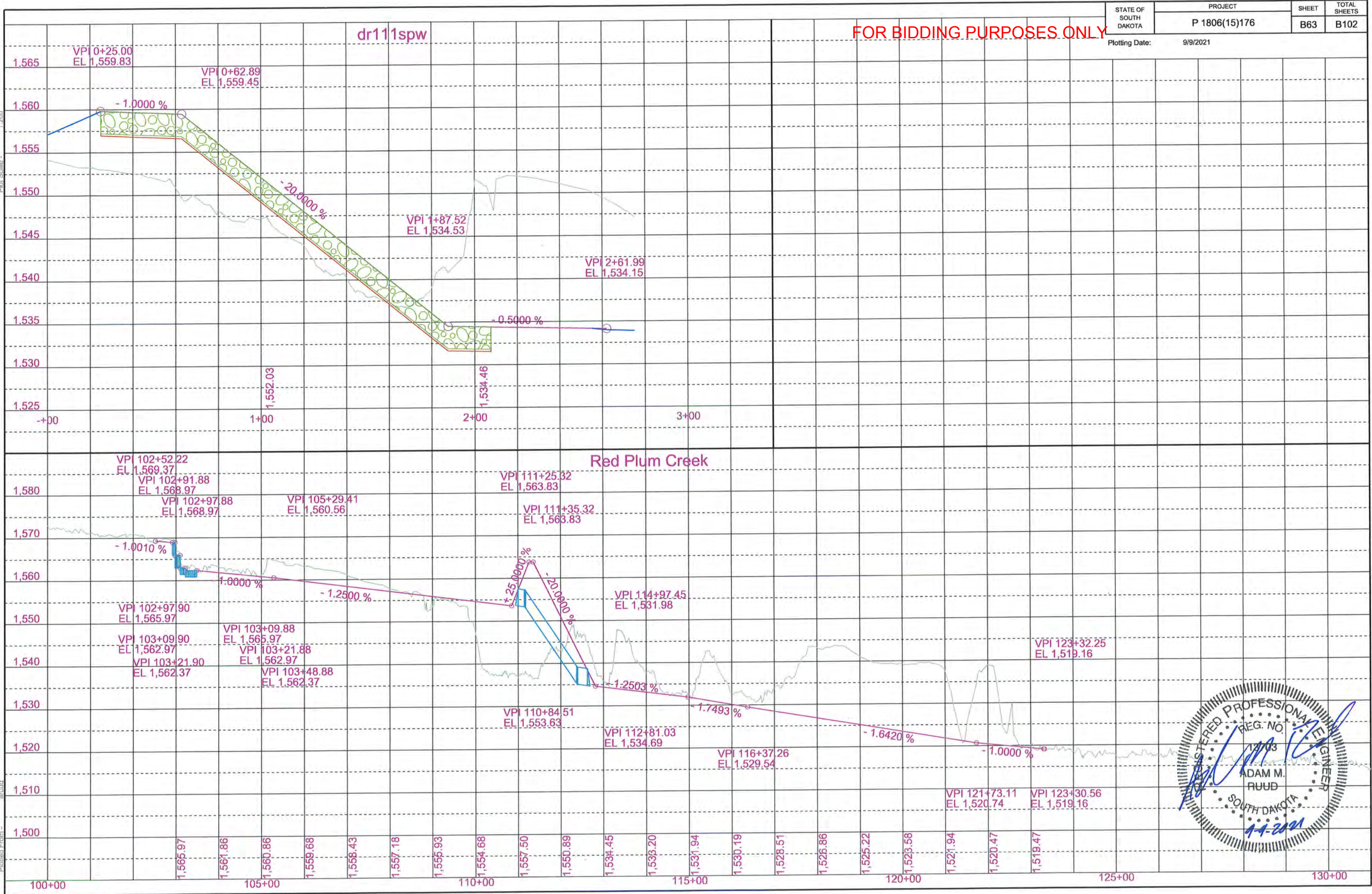
STATE OF SOUTH DAKOTA	PROJECT P 1806(15)176	SHEET B62	TOTAL SHEETS B102
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Plotting Date: 9/9/2021

Plot Scale - 1"=200'

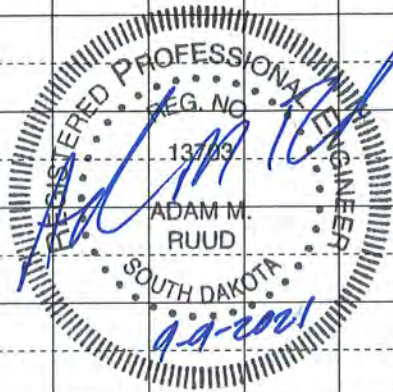
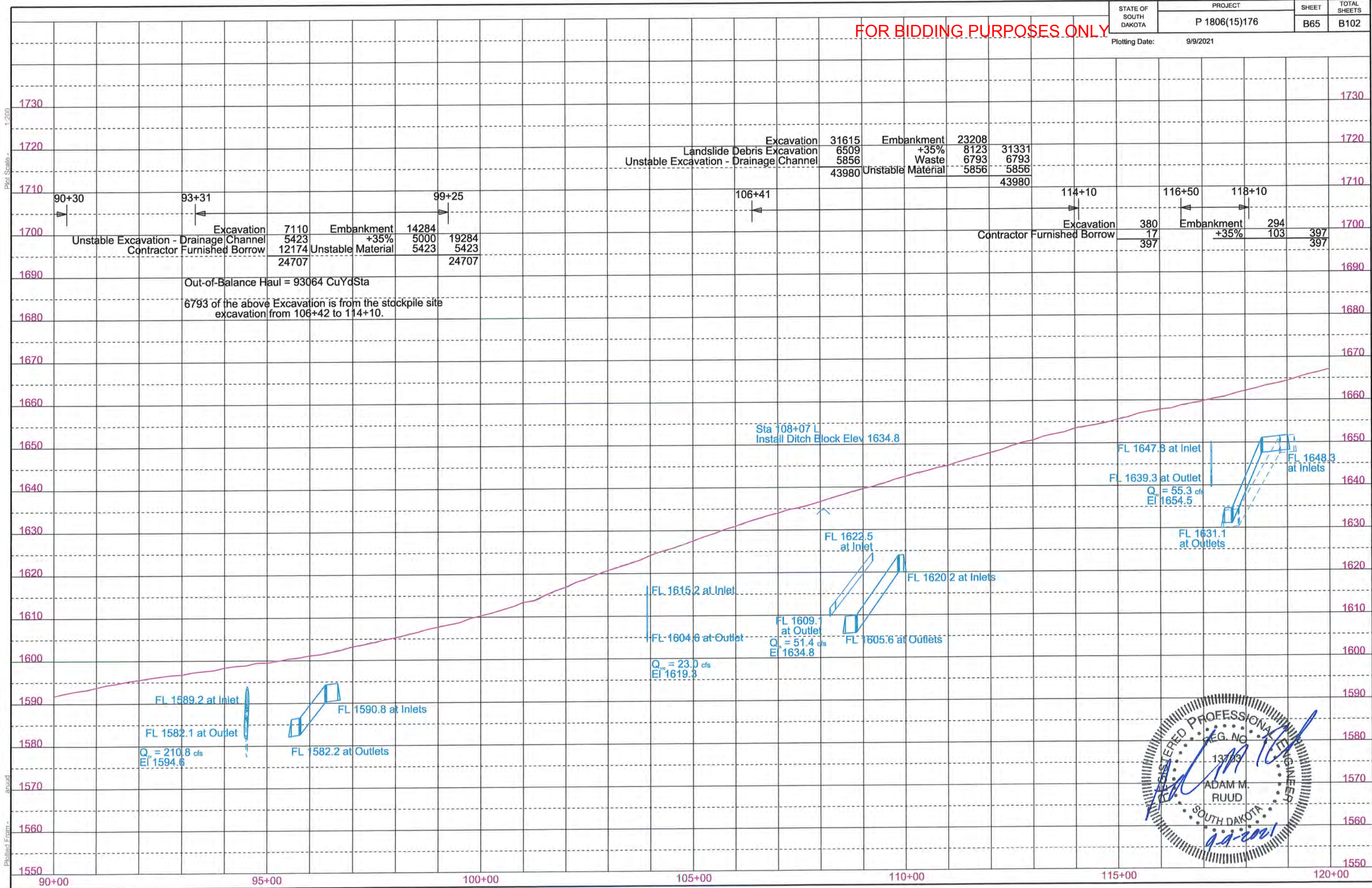
Plotted From - ground

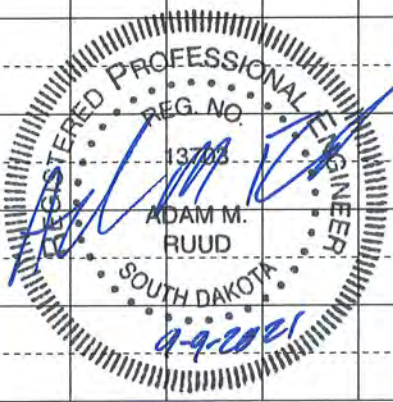
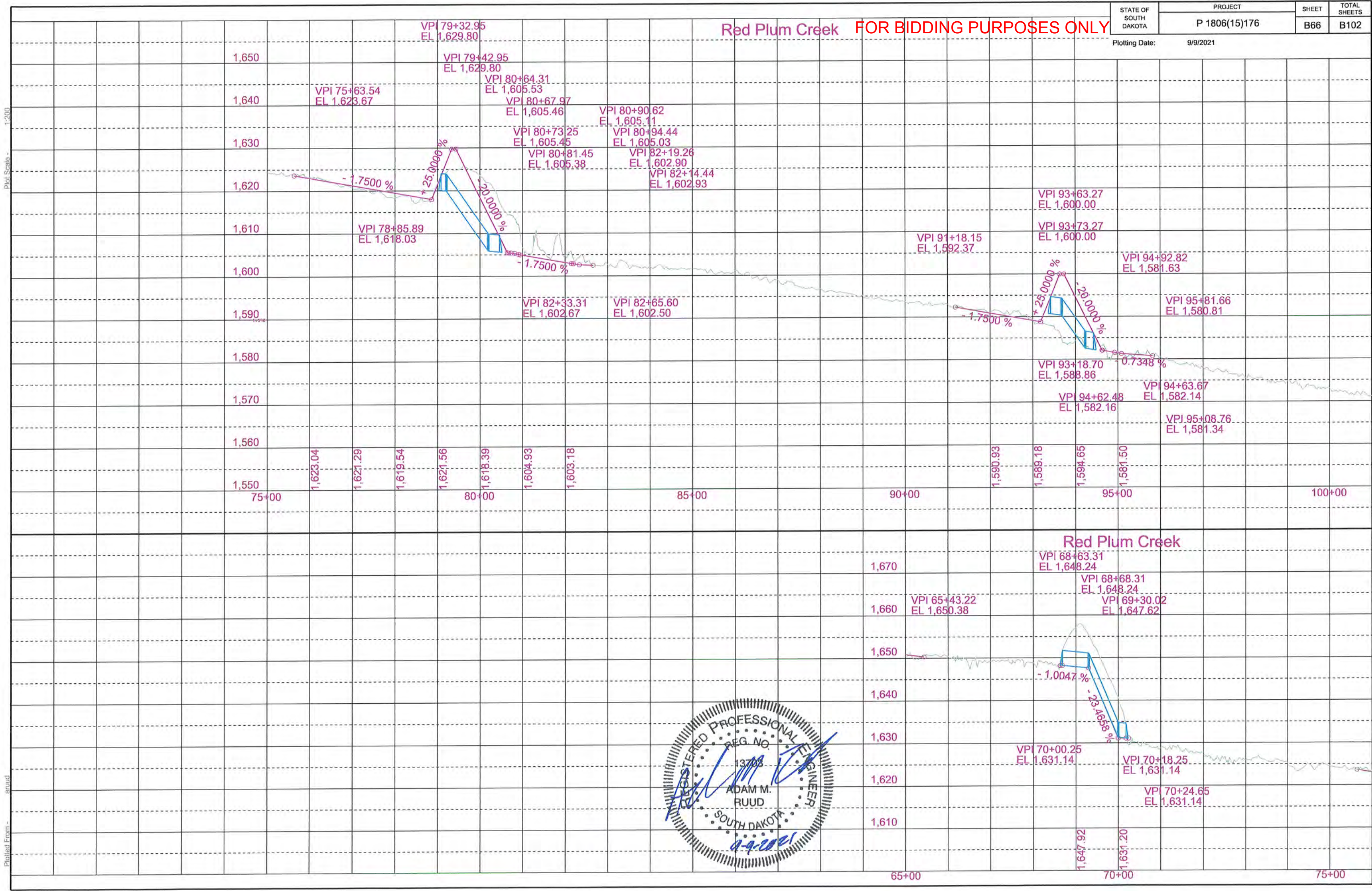


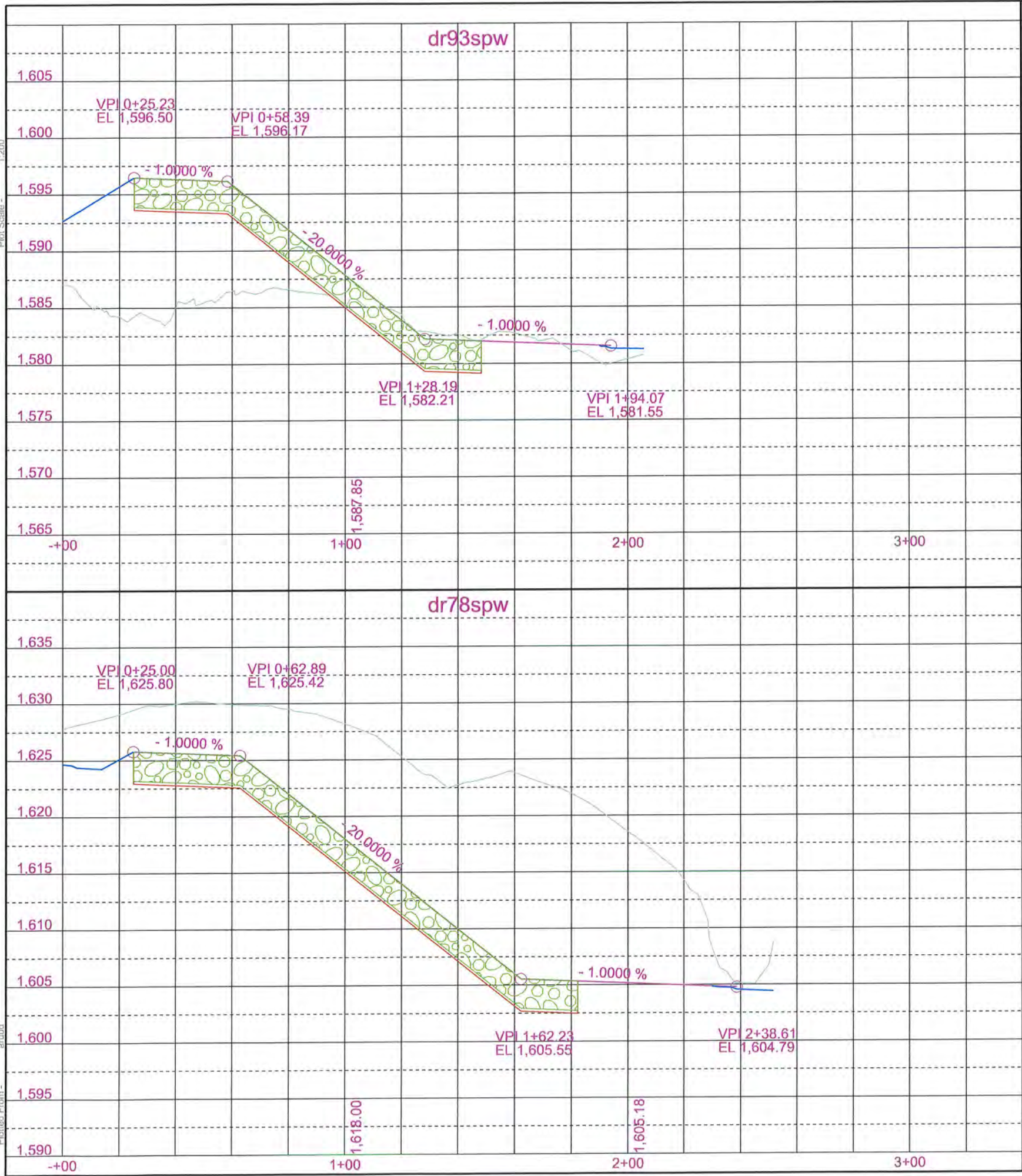


FOR BIDDING PURPOSES ONLY

Plotting Date: 9/9/2021

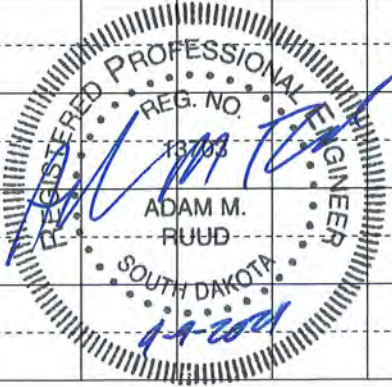






FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B67	B102
Plotting Date: 9/9/2021			



Plot Scale - 1"=200' around

122+29
Take Out 24" - 158' CMP
(58', 76' & 20')
& 2 - 20° Elbows
& 2 Flared Ends
(Incidental Work, Grading)

122+29 (18 ac)
Install 30" - 70' RCP
Install 30" - 80' CMP (62' & 18')
& 2 - 12.5° Elbows
& 1 - 30" RCP to CMP Outlet Transition
& 1 RCP Sloped End
& 1 CMP Sloped End

122+10 to 122+44-55' L
Install Class A Riprap (43.3 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 440 SqFt X 1.9')

122+13 to 122+44-123' R
Install Class B Riprap (73.5 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 545 SqFt X 2.6')

125+46 - 160' R
Take Out 66" - 96' CMP
& 2 - 10° Elbows
& 2 Flared Ends
(Incidental Work, Grading)

125+45 - 160' R (270 ac)
Install 42" - 106' Twin CMP
(32', 56' & 18')
& 4 - 12.5° Elbows
& 4 Flared Ends
(Spaced 24' C to C)

124+80-165' R
Install Twin Pipe Outlet Protection
Gabion (10 CuYd) and Type B
Drainage Fabric (29 SqYd)

129+00 - 60' R
Lateral Drain
Install 4" - 55' Slotted Corrugated
Polyethylene Drainage Tubing
Install 4" - 10' Underdrain Pipe
& Concrete Headwall for Underdrain

131+17
Take Out 24" CMP Flared End
(Incidental Work, Grading)

131+17
Retain 24" - 126' CMP
(106' & 20')
& 5° Elbow
& 1 Flared End

131+17 (6 ac)
Install 24" - 16' CMP
Skew 1° RHF
& 1 Sloped End

131+19-19' R
Install Pipe Outlet Protection
Gabion (4.5 CuYd) and Type B
Drainage Fabric (15 SqYd)

131+48-191' R
Install PVC Coated Bank and Channel
Protection Gabions (143 CuYd;
Bottom Width: 36', Side Walls: 3'),
Class B Riprap (51.8 Tons)
(Riprap Dimensions: 384 SqFt X 2.6')
and Type B Drainage Fabric (332 SqYd)

134+16
Abandon 24" - 152' CMP
Plug Pipe with Cellular Grout
(20.34 CuYd)
Take Out 2 Flared Ends
(Incidental Work, Grading)

134+08 (12 ac)
Bore & Jack 24" - 150' Steel Pipe
Install 24" - 46' Steel Pipe
& 2 CMP Sloped Ends

134+08 R
Install Pipe Outlet Protection
Gabion (4.5 CuYd) and Type B
Drainage Fabric (15 SqYd)

134+48 to 142+05-132' R
Install Class B Riprap (55.0 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 8419 SqFt X 2.6')

142+22-122' R
Install PVC Coated Bank and Channel
Protection Gabions (90 CuYd;
Bottom Width: 27', Side Walls: 3'),
Class B Riprap (55.0 Tons)
(Riprap Dimensions: 408 SqFt X 2.6')
and Type B Drainage Fabric (281 SqYd)

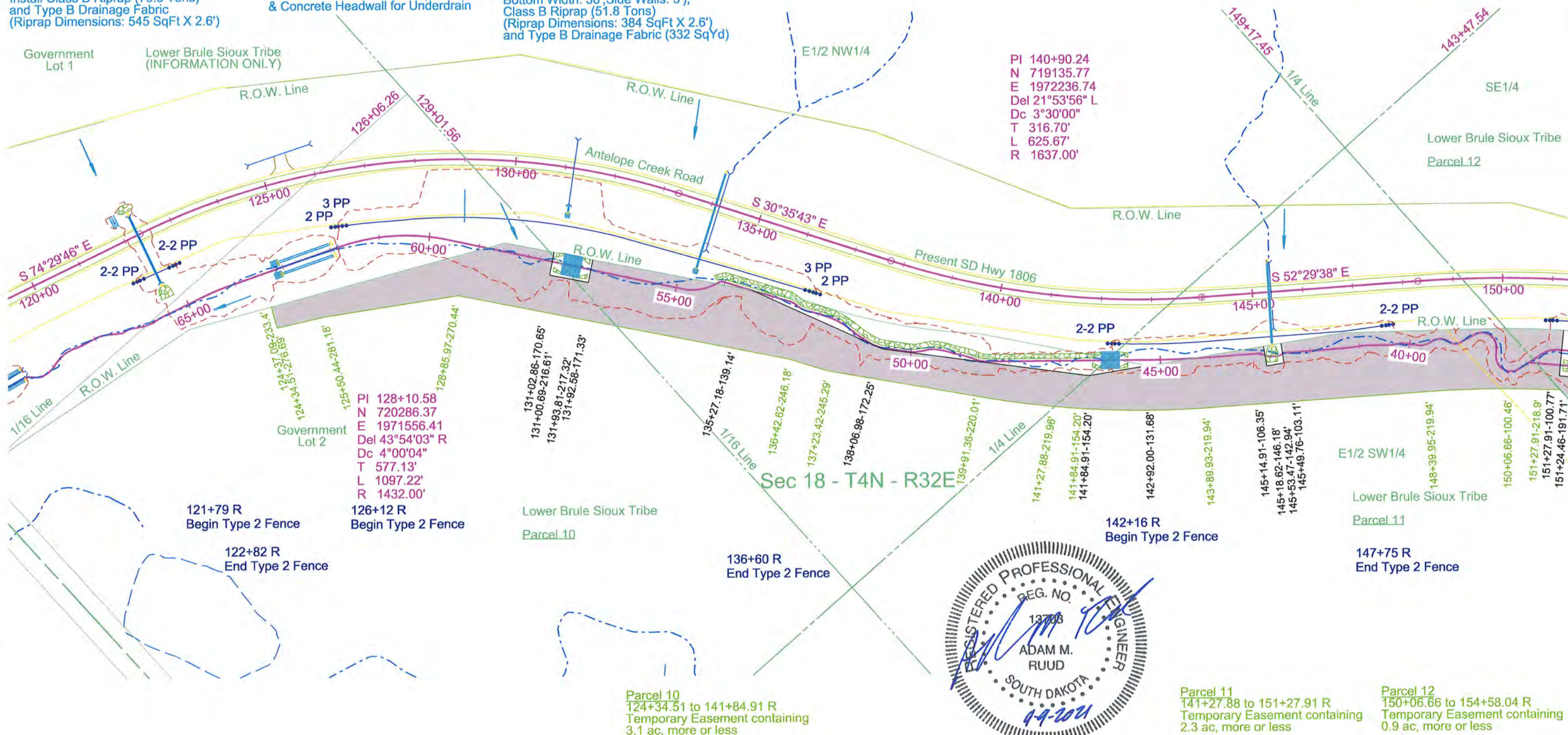
145+37
Abandon 24" - 132' CMP
(70', 38' & 24')
& 2 - 15° Elbows
Plug Pipe with Cellular Grout (17.66 CuYd)
Take Out 2 Flared Ends
(Incidental Work, Grading)

145+33 (17 ac)
Bore & Jack 30" - 118' Steel Pipe
Install 30" - 42' Steel Pipe
& 2 CMP Sloped Ends

145+19 to 145+42-123' R
Install Class B Riprap (83.2 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 617 SqFt X 2.6')

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B68	B102

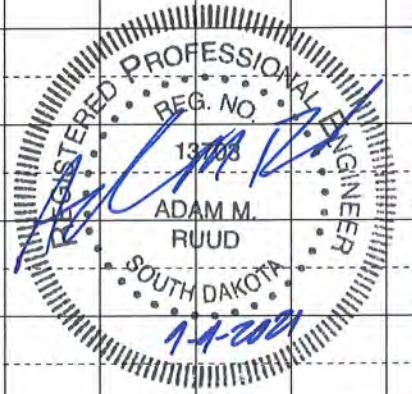
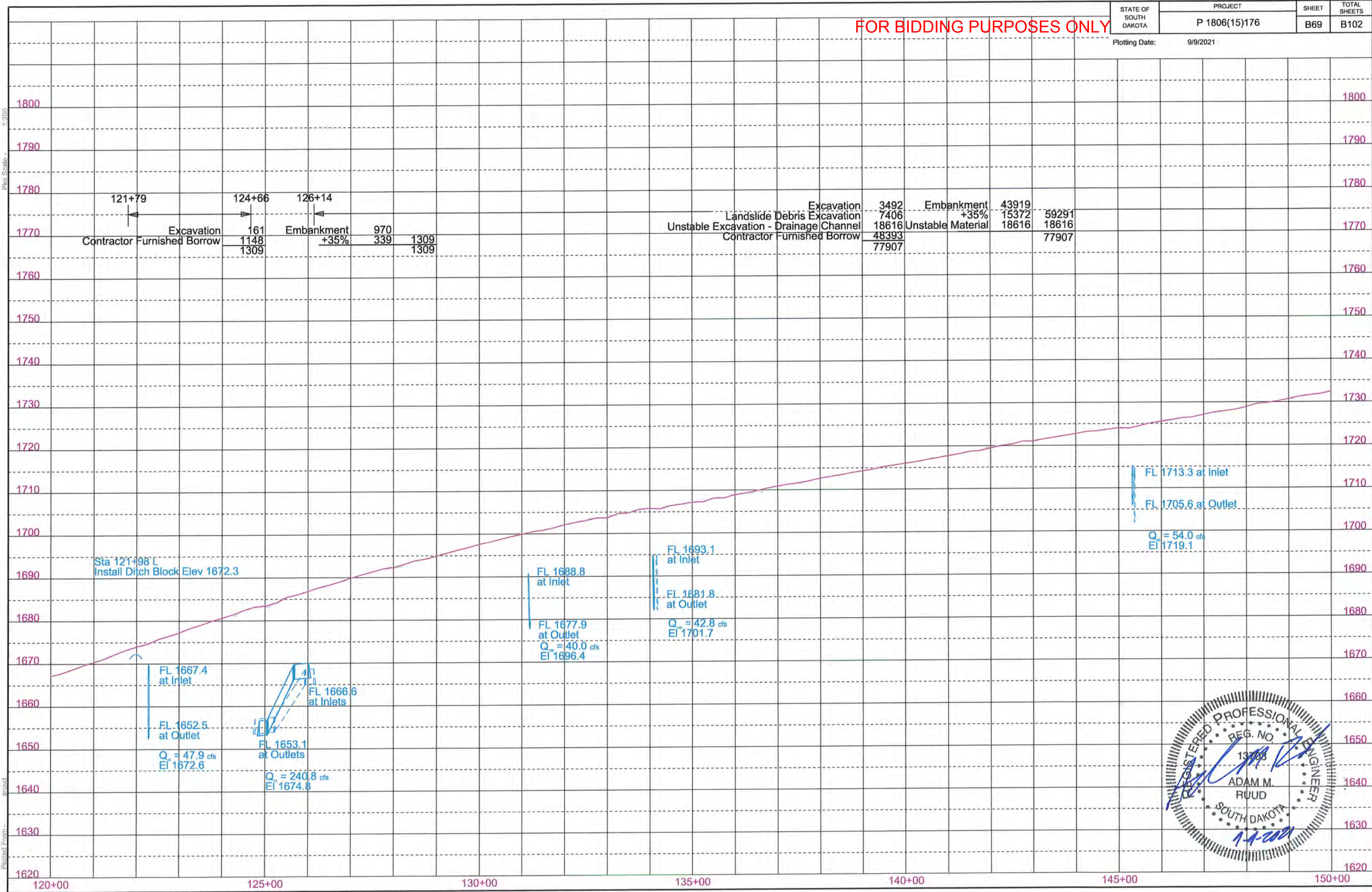
Plotting Date: 9/9/2021 Rev 09/25/2020 AMR

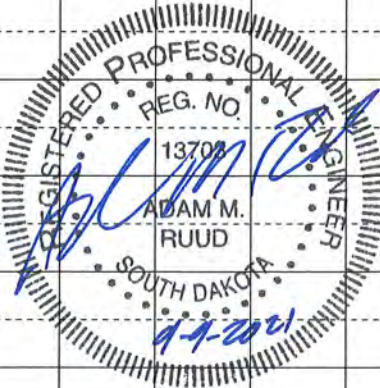
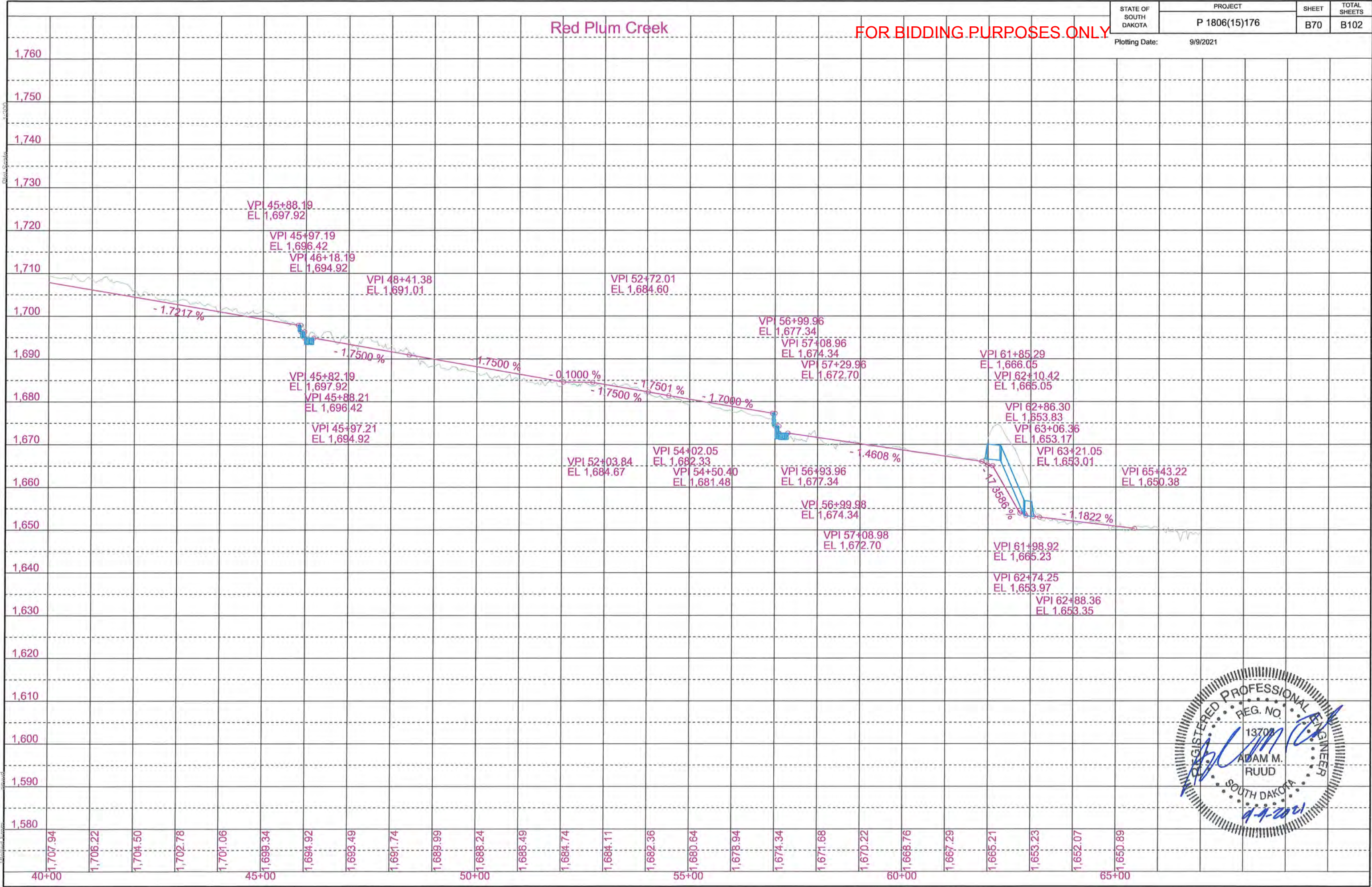


FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B69	B102

Plotting Date: 9/9/2021





152+17 - 142' R (164 ac)
Install 42" - 101' Twin CMP
(18', 65' & 18')
& 4 - 7.5° Elbows
& 4 Flared Ends
(Spaced 22' C to C)

151+58-141' R
Install Twin Pipe Outlet Protection
Gabion (10 CuYd) and Type B
Drainage Fabric (29 SqYd)

151+31 to 152+67-172' R
Install Class B Riprap (388.5 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 2882 SqFt X 2.6')

153+07
Take Out 24" - 100' RCP
& 2 Flared Ends
(Incidental Work, Grading)

153+07 (14 ac)
Install 24" - 78' RCP
& 2 Sloped Ends

153+07 R
Install Pipe Outlet Protection
Gabion (4.5 CuYd) and Type B
Drainage Fabric (15 SqYd)

158+66
Take Out 24" - 122' CMP
(74', 30' & 18')
& 2 - 15° Elbows
& 2 Flared Ends
(Incidental Work, Grading)

158+66 (14 ac)
Install 24" - 130' RCP
& 2 Sloped Ends

158+50 to 158+81-107' R
Install Class B Riprap (73.2 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 543 SqFt X 2.6')

165+84-125' R
Install PVC Coated Bank & Channel
Protection Gabion (114 CuYd;
Bottom Width: 27', Side Walls: 3'),
Class B Riprap (55.0 Tons)
(Riprap Dimensions: 408 SqFt X 2.6')
and Type B Drainage Fabric (304 SqYd)

166+64
Take Out 24" RCP Flared End
(Incidental Work, Grading)

166+64
Retain 24" - 96' RCP
& 1 Flared End

166+64 (14 ac)
Install 24" RCP Sloped End (West)

166+64 R
Install Pipe Outlet Protection
Gabion (4.5 CuYd) and Type B
Drainage Fabric (15 SqYd)

171+83
Abandon 24" - 114' RCP
Plug Pipe with Cellular Grout (15.25 CuYd)
Take Out 2 Flared Ends
(Incidental Work, Grading)

171+74 (12 ac)
Bore & Jack 24" - 106' Steel Pipe
Skew 17.5° LHF
& 2 CMP Sloped Ends

171+57-56' R
Install Pipe Outlet Protection
Gabion (4.5 CuYd) and Type B
Drainage Fabric (15 SqYd)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B71	B102

Plotting Date: 9/9/2021 Rev 09/25/2020 AMR

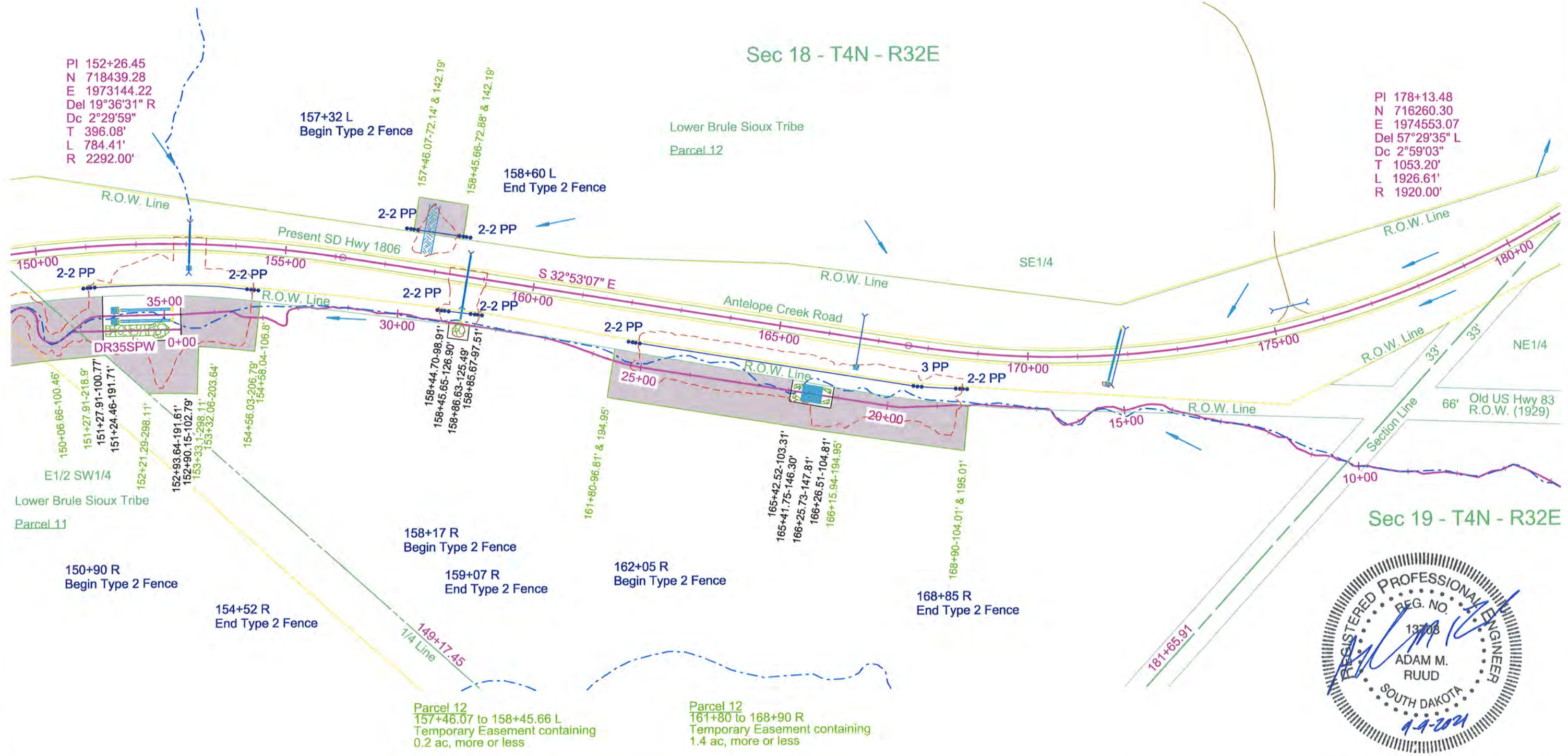
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Sec 18 - T4N - R32E

Lower Brule Sioux Tribe
Parcel 12

PI 178+13.48
N 716260.30
E 1974553.07
Del 57°29'35" L
Dc 2°59'03"
T 1053.20'
L 1926.61'
R 1920.00'



Sec 19 - T4N - R32E



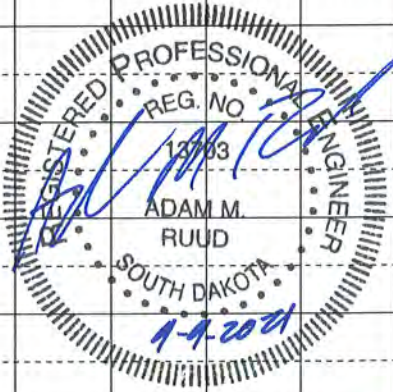
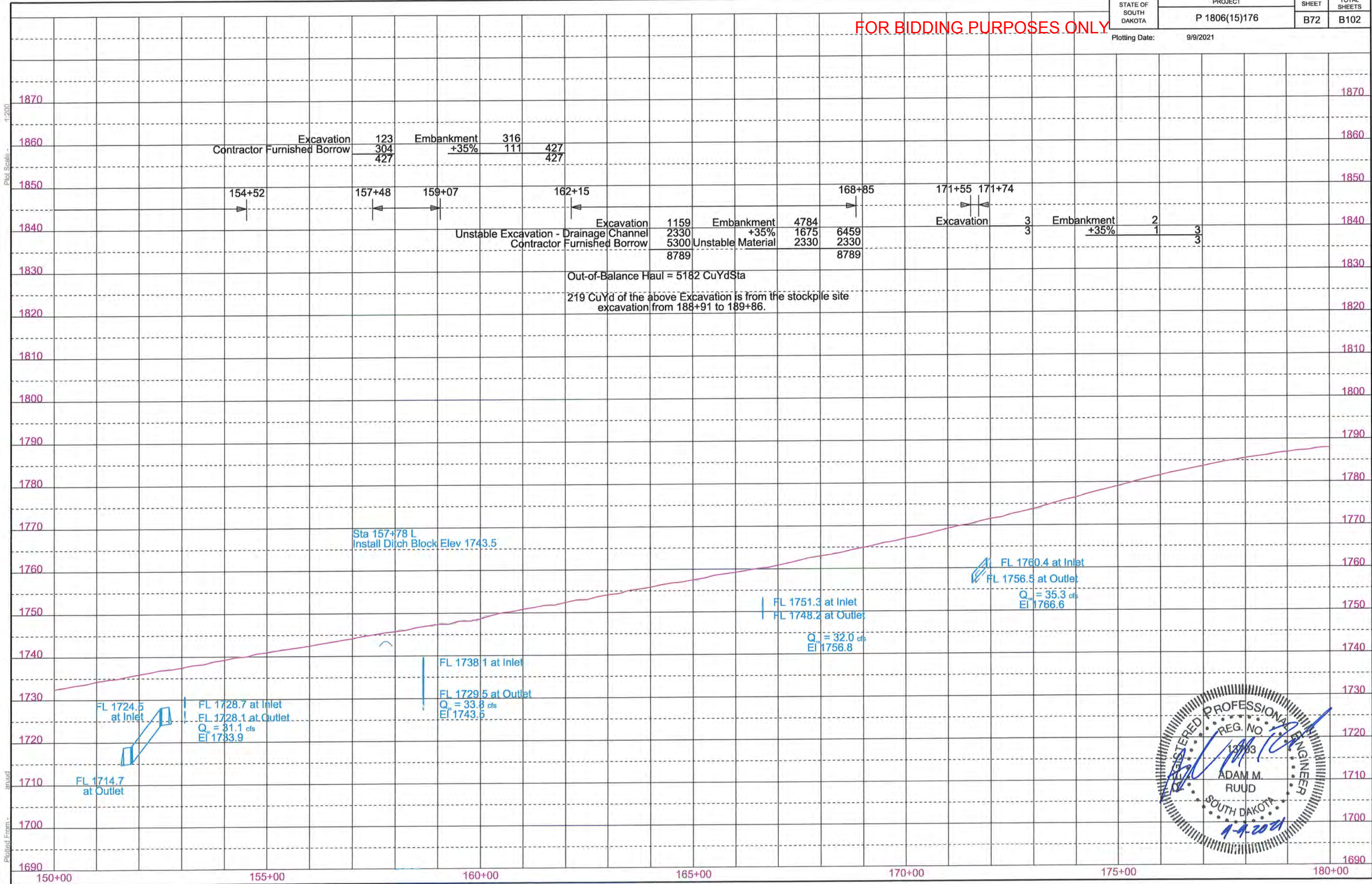
Plot Scale - 1"=200'

Plotted From - arcuod

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FOR BIDDING PURPOSES ONLY

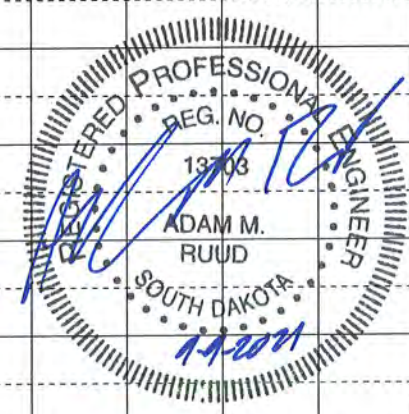
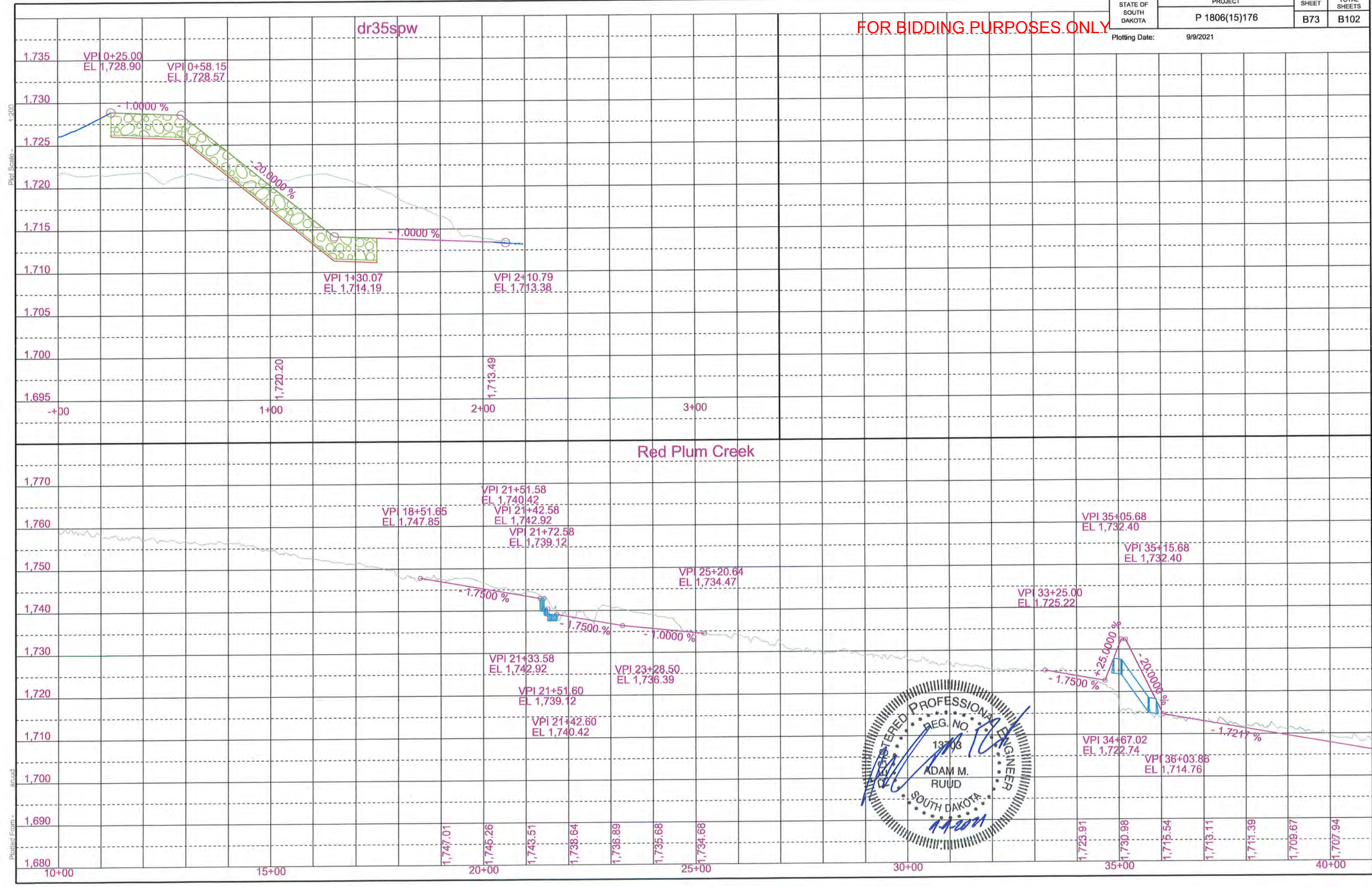
Plotting Date: 9/9/2021



Plotting Date: 9/9/2021

FOR BIDDING PURPOSES ONLY

dr35spw



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Plot Scale - 1"=200'

Plotted From - arund

189+24
Remove 36" RCP Flared End for Reset

189+24
Retain 36" - 299' RCP
& 1 Flared Ends

189+24 (62 ac)
Reset 36" Flared End (North)

188+99 to 189+54-191' L
Install Class B Riprap (186.0 Tons)
and Type B Drainage Fabric
(Riprap Dimensions: 1380 SqFt X 2.6')

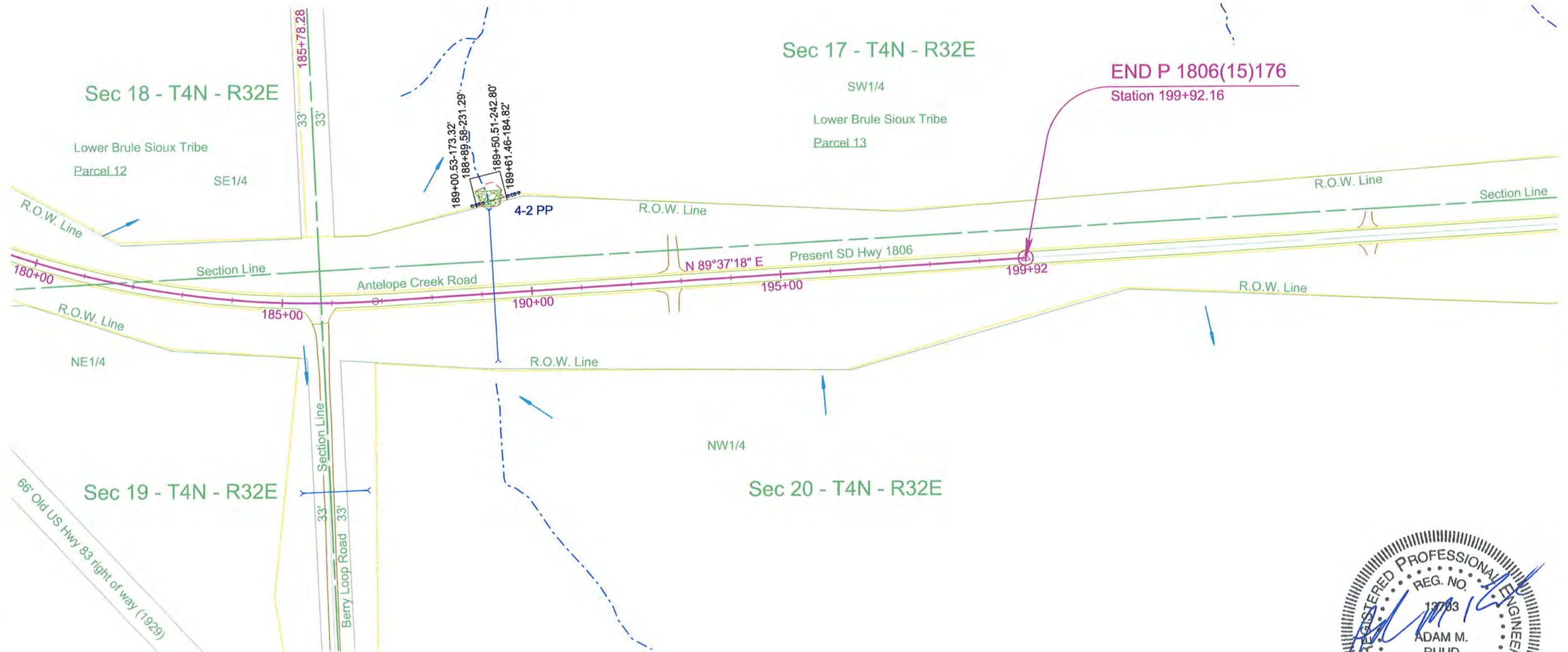
188+91 L
Begin Type 2 Fence

189+86 L
End Type 2 Fence

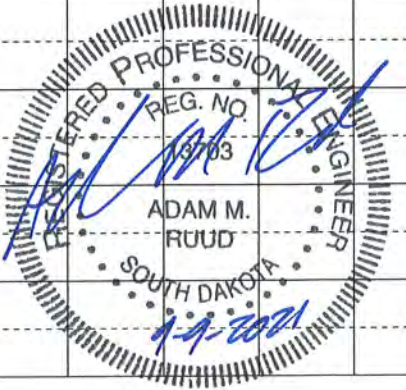
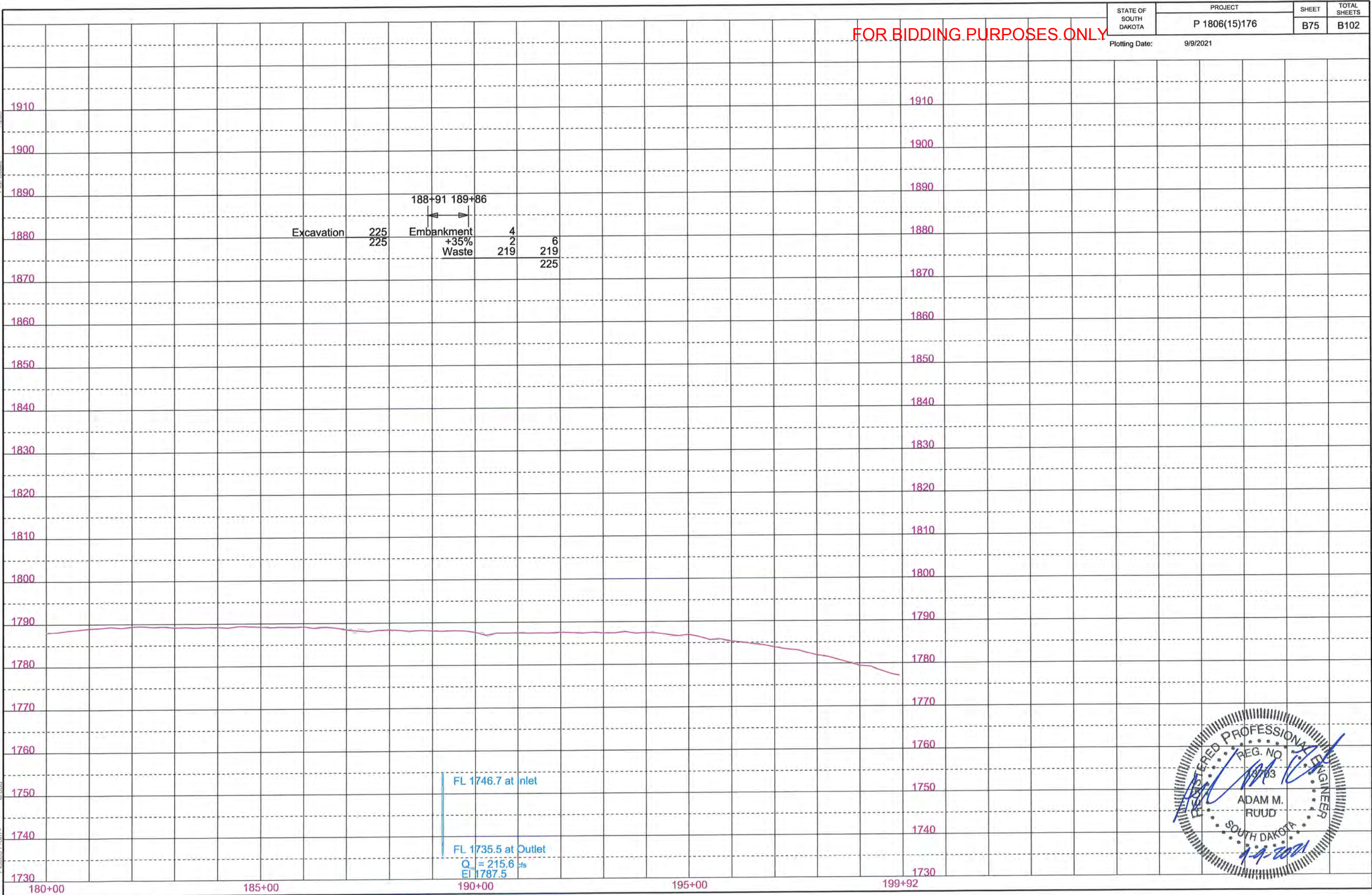
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B74	B102

Plotting Date: 9/9/2021



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Sta 10+00, Sta 21+50 CONTOURS

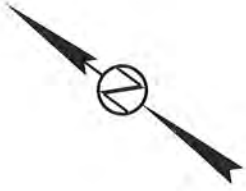
Sec 2 - T4N - R31W

FOR BIDDING PURPOSES ONLY

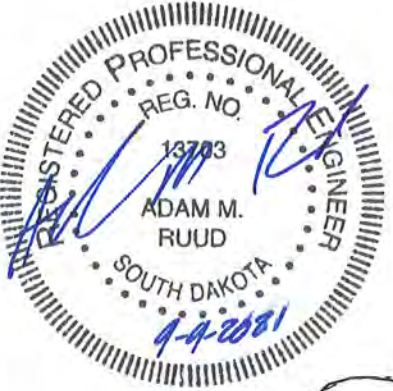
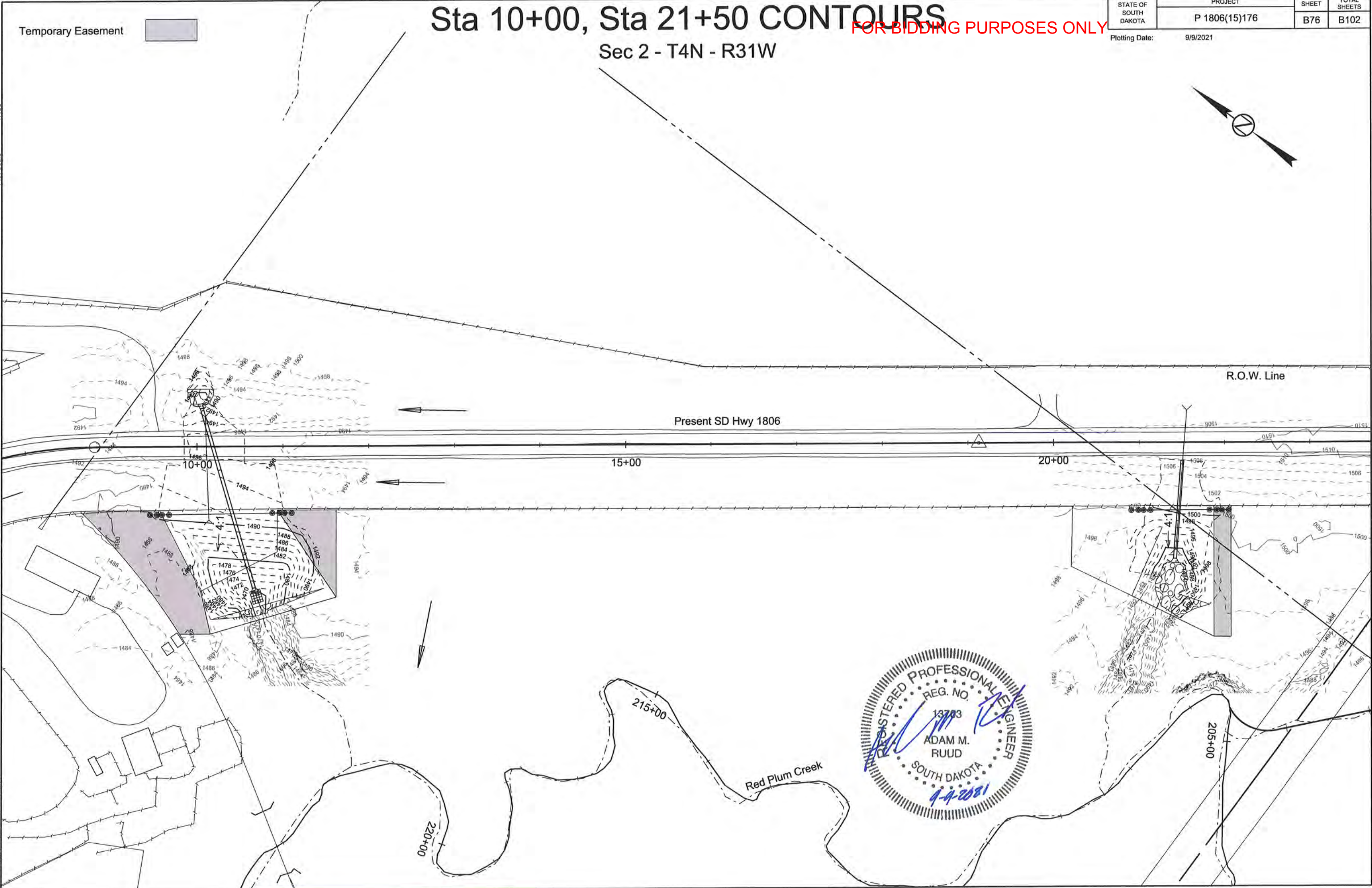
Temporary Easement



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B76	B102
Plotting Date: 9/9/2021			



Plot Scale - 1:100



Plotted From - arund

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Temporary Easement



dr26r, dr35r CONTOURS

FOR BIDDING PURPOSES ONLY

Sec 11 - T4N - R31E

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B77	B102

Plotting Date: 9/9/2021

Sec 12-T4N-R31E

Section Line



Sec 2-T4N-R31E

Sec 11-T4N-R31E

R.O.W. Line

Present SD Hwy 1806

0+00

25+00

30+00

35+00

0+00

5+00

175+00

Red Plum Creek



Plot Scale - 1:100

Plotted From - arund

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Temporary Easement

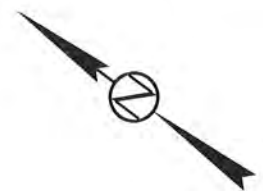


dr48r, Sta 55+00 CONTOURS

Sec 12 - T4N - R31E

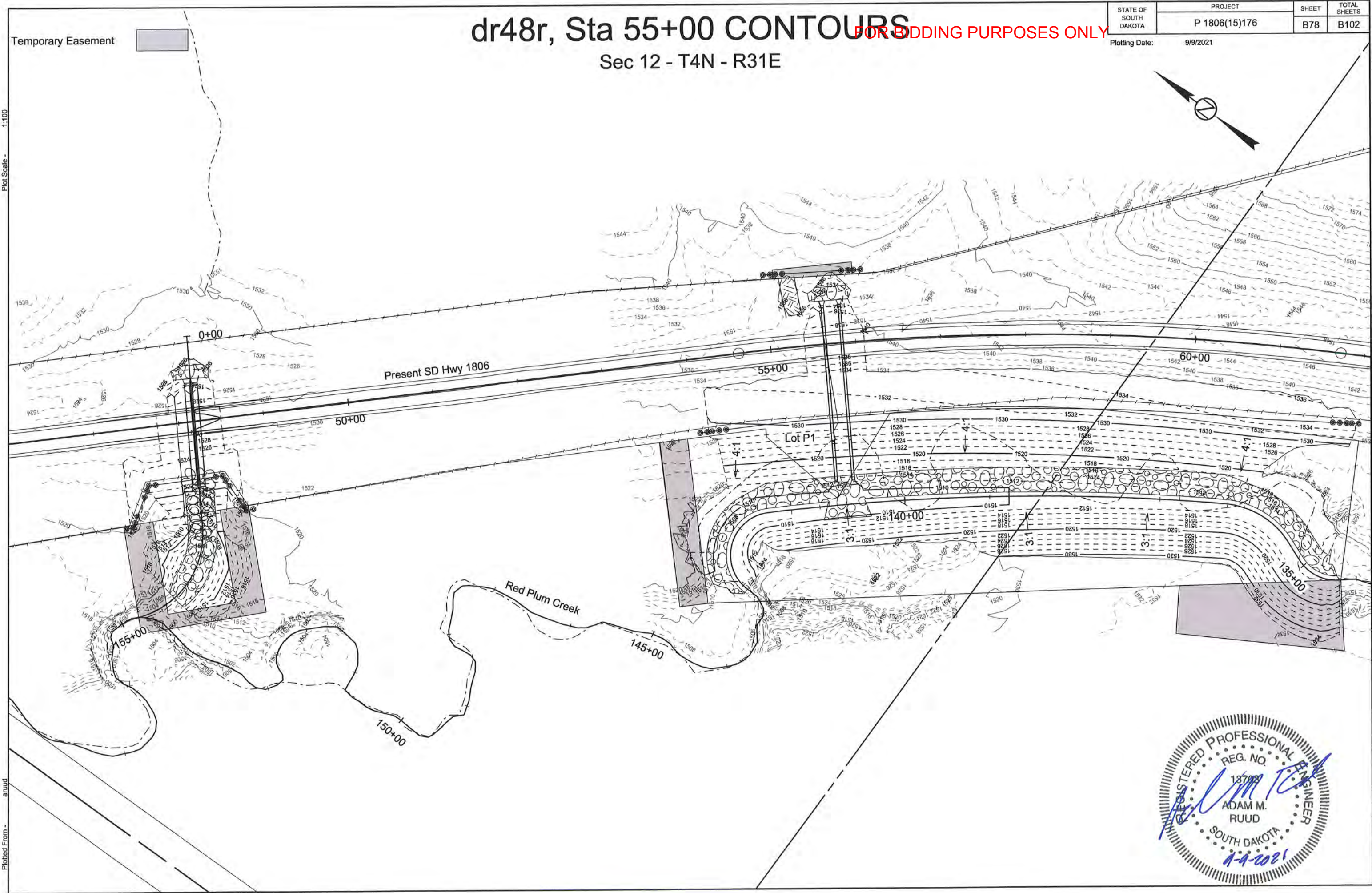
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B78	B102
Plotting Date: 9/9/2021			



Plot Scale - 1:100

Plotted From - arund



File - ...Section B\Grading_048.055.dgn

Sta 68+00 CONTOURS

FOR BIDDING PURPOSES ONLY

Sec 12 - T4N - R31E

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B79	B102

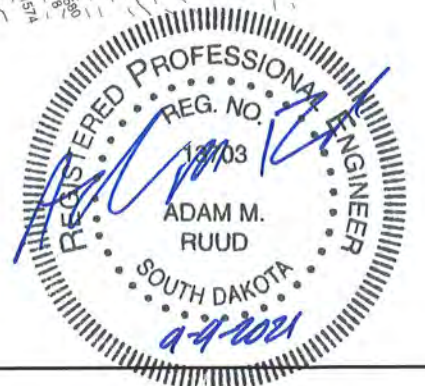
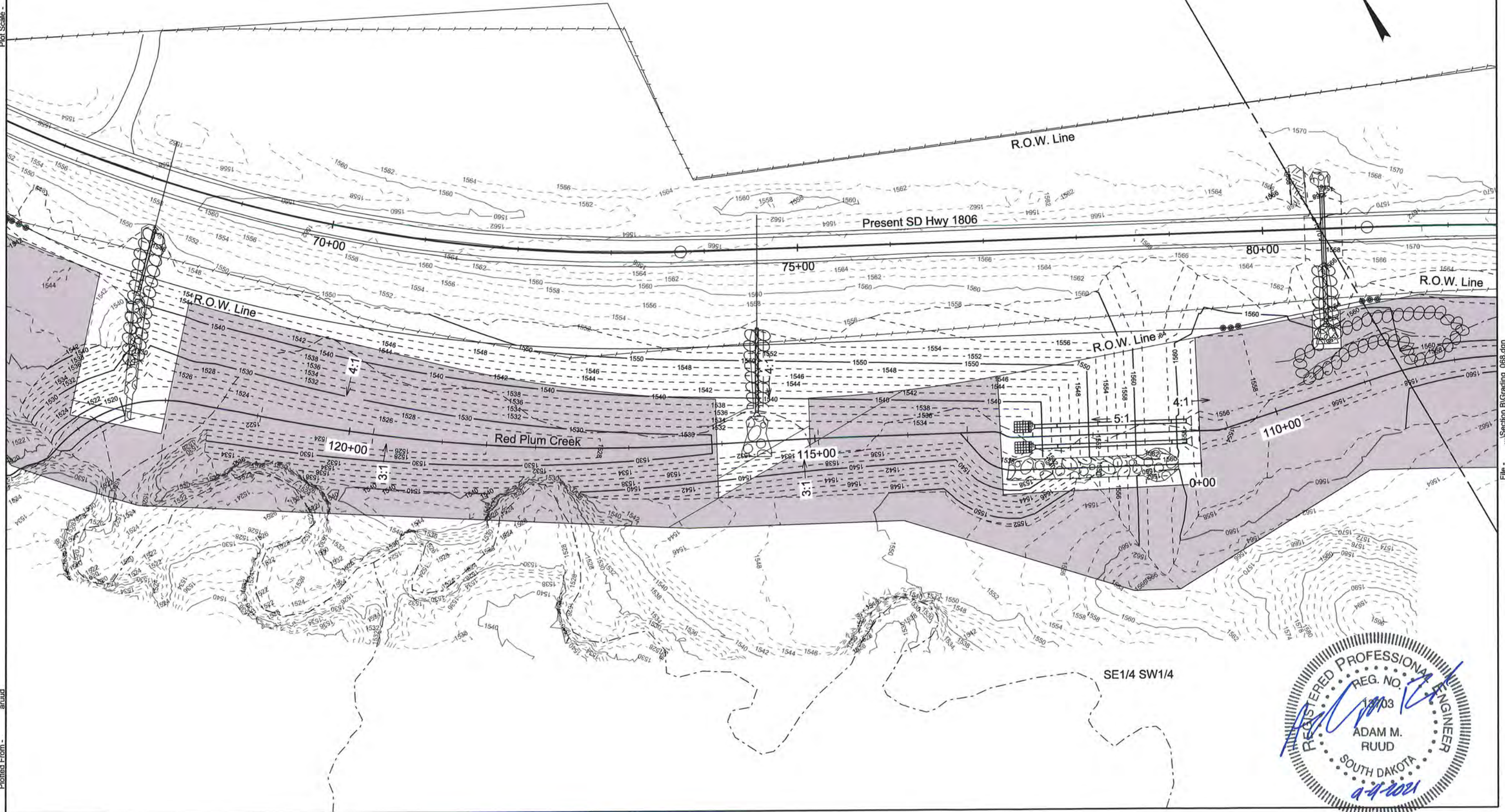
Plotting Date: 9/9/2021

Temporary Easement



Plot Scale - 1:100

Plotted From - arund



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Sta 90+00, Sta 94+00 CONTOURS

FOR BIDDING PURPOSES ONLY

Sec 12 - T4N - R31E

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B80	B102

Plotting Date: 9/9/2021

Temporary Easement



Plot Scale - 1:100

Plotted From - arund



Sta 108+00, Sta 117+00 CONTOURS

FOR BIDDING PURPOSES ONLY

Sec 13 - T4N - R31E

STATE OF SOUTH DAKOTA	PROJECT P 1806(15)176	SHEET B81	TOTAL SHEETS B102
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Plotting Date: 9/9/2021

Temporary Easement



Sec 13-T4N-R31E

Antelope Creek Road

Present SD Hwy 1806

Present SD Hwy. 1806

R.O.W. Line



Plot Scale - 1:100

Plotted From - around



Sta 122+00, Sta 131+00, Sta 134+00 CONTOURS

FOR BIDDING PURPOSES ONLY

Sec 13 - T4N - R31E

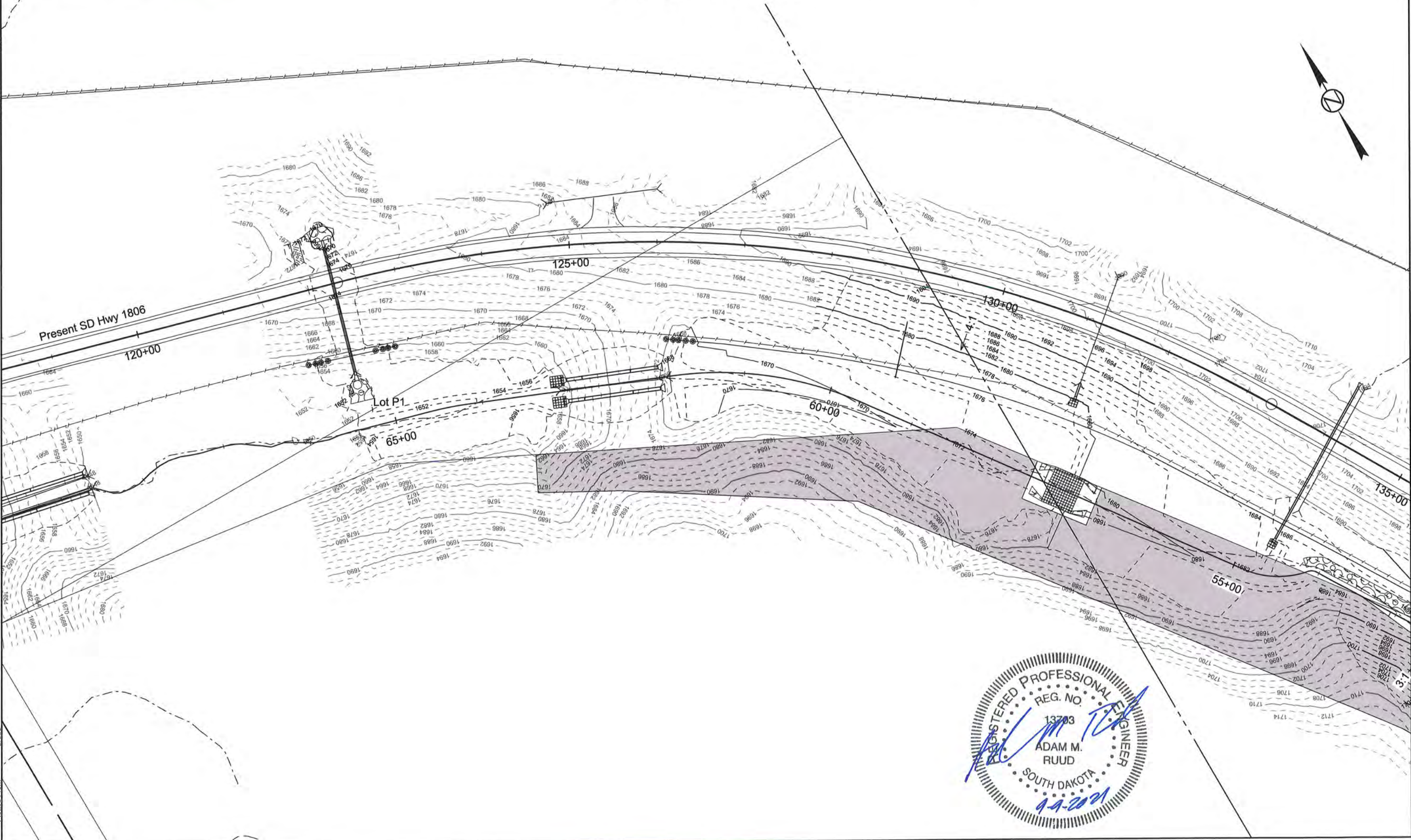
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B82	B102

Plotting Date: 9/9/2021

Temporary Easement



Plot Scale - 1:100



Plotted From - aruud

File - ...Grading_122,131,134.dgn

Sta 145+00, Sta 153+00 CONTOURS

FOR BIDDING PURPOSES ONLY

Sec 18 - T4N - R32E

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B83	B102

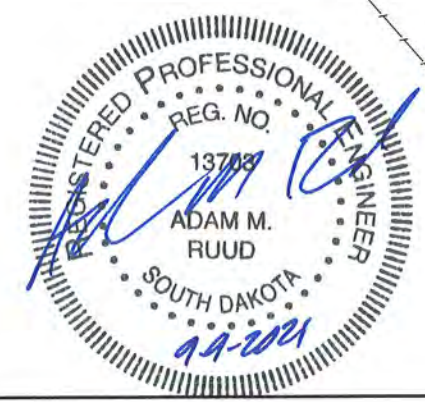
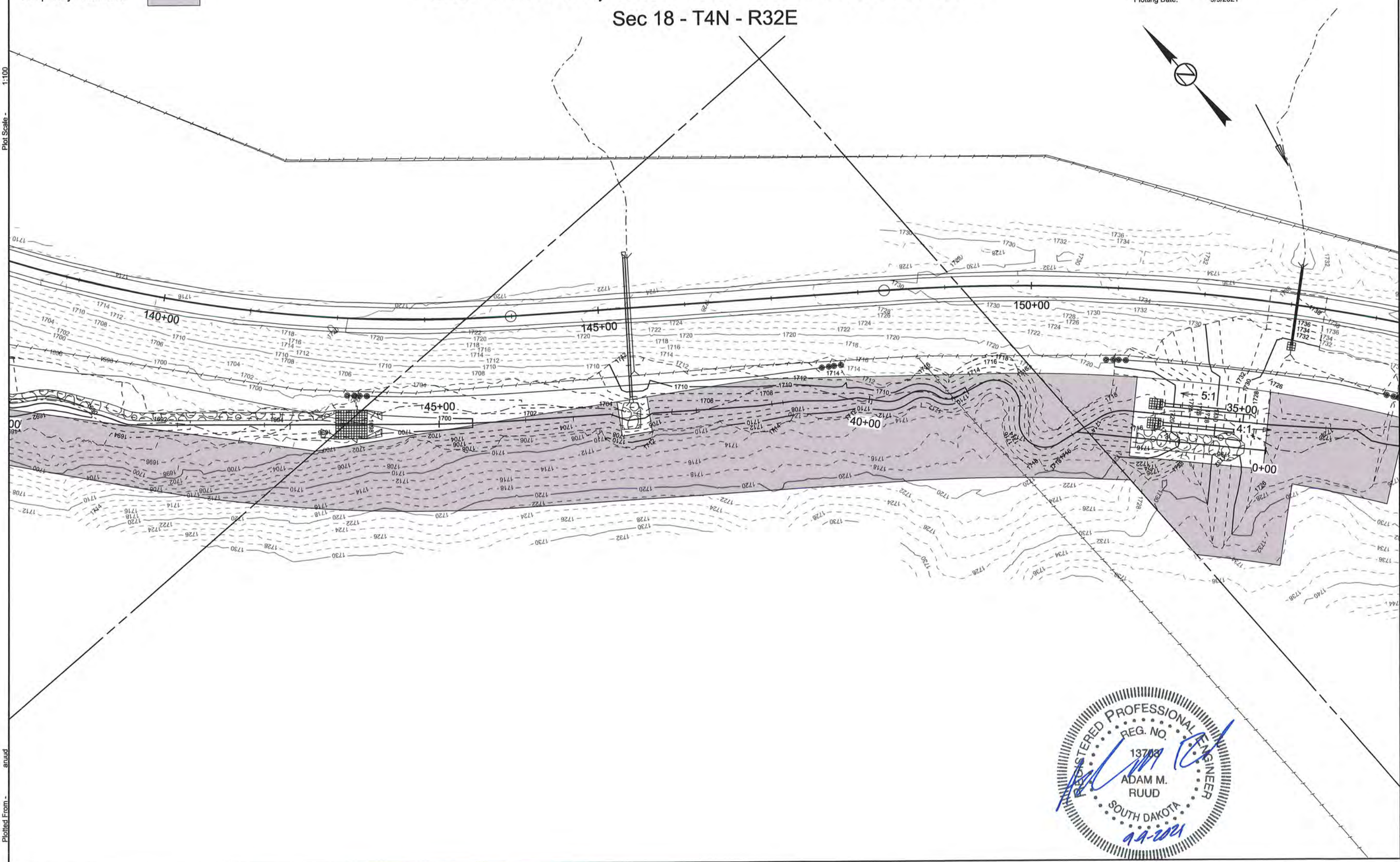
Plotting Date: 9/9/2021

Temporary Easement



Plot Scale - 1:100

Plotted From - arund



File - ...Section B\Grading_145,153.dgn

Sta 158+00, Sta 166+00, Sta 172+00 CONTOURS

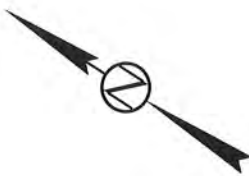
FOR BIDDING PURPOSES ONLY

Sec 18 - T4N - R32E

Temporary Easement

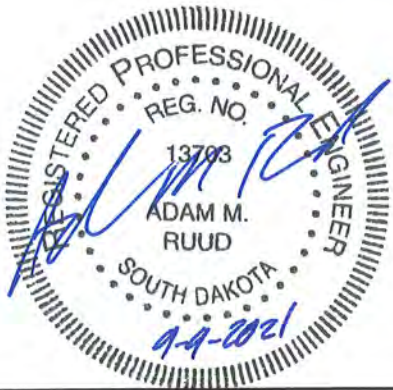
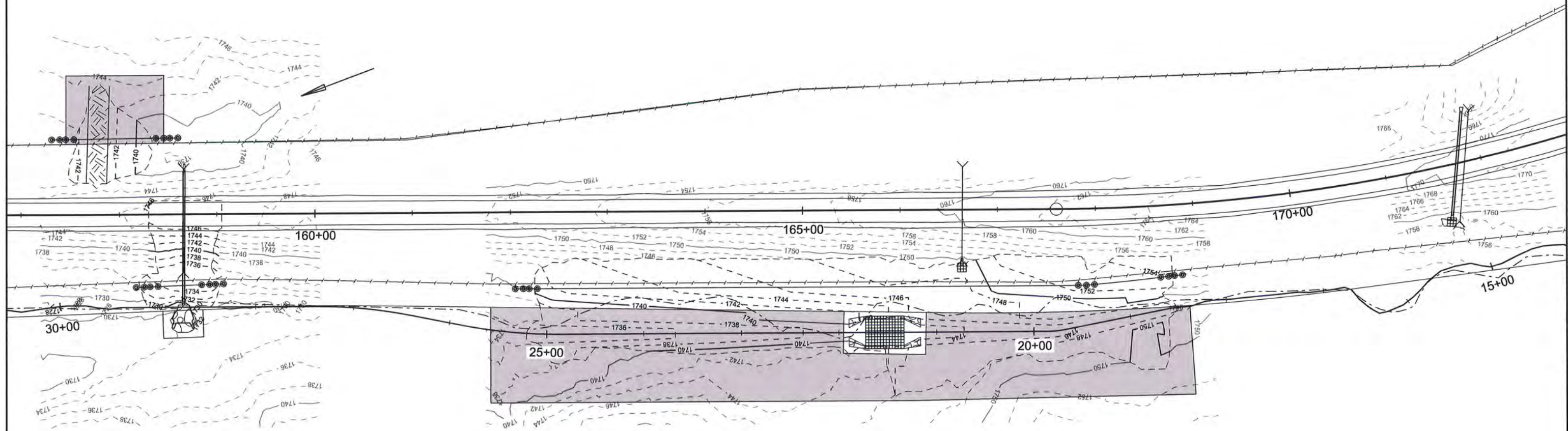


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B84	B102
Plotting Date:		9/9/2021	



Plot Scale - 1:100

Plotted From - anuud



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Sta 189+00 CONTOURS

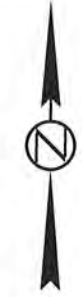
FOR BIDDING PURPOSES ONLY

Sec 18 - T4N - R32E

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B85	B102

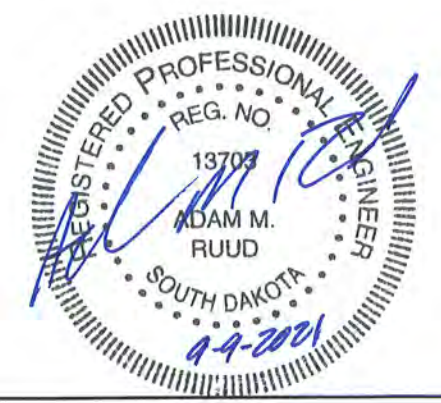
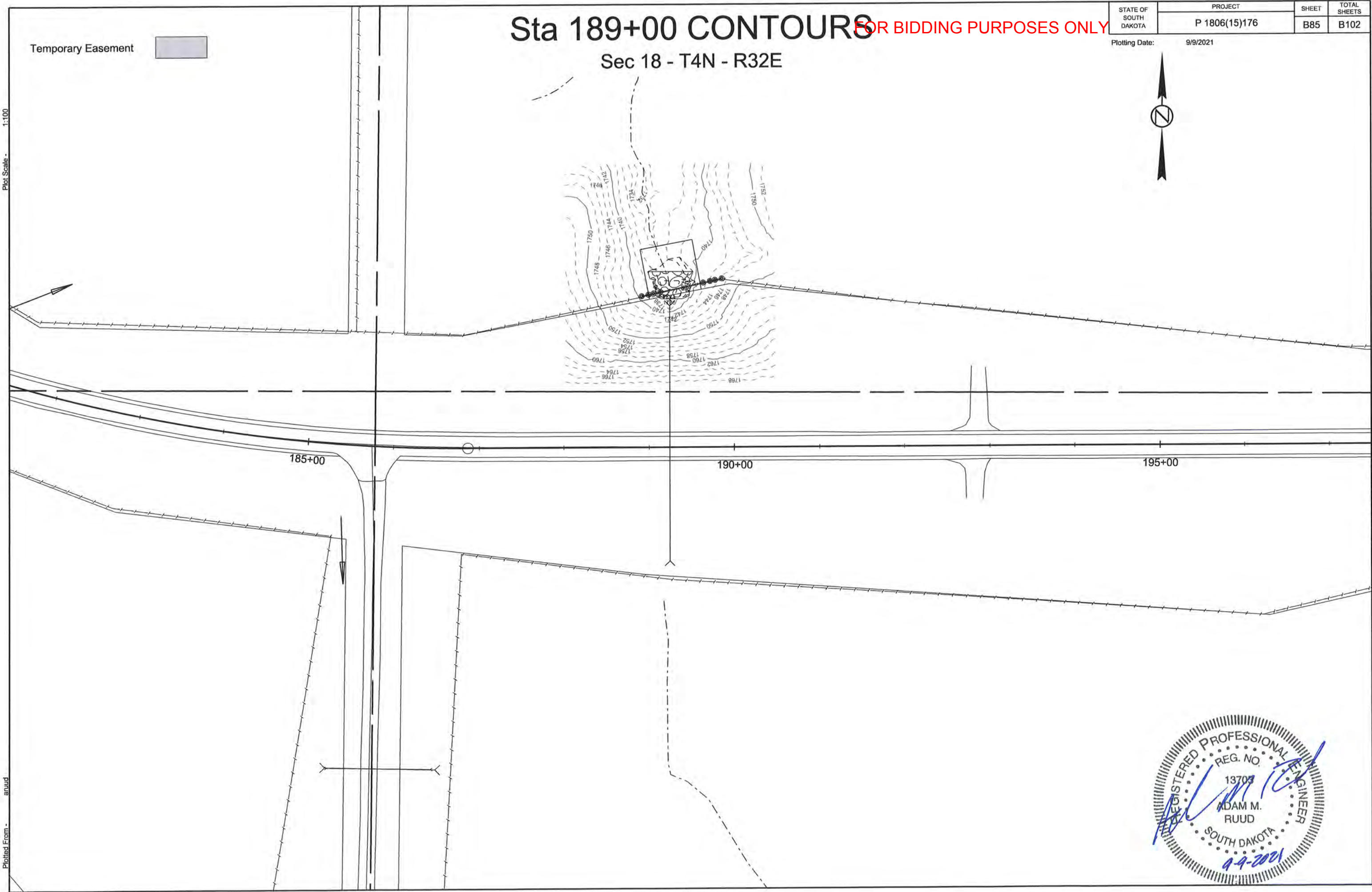
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Temporary Easement

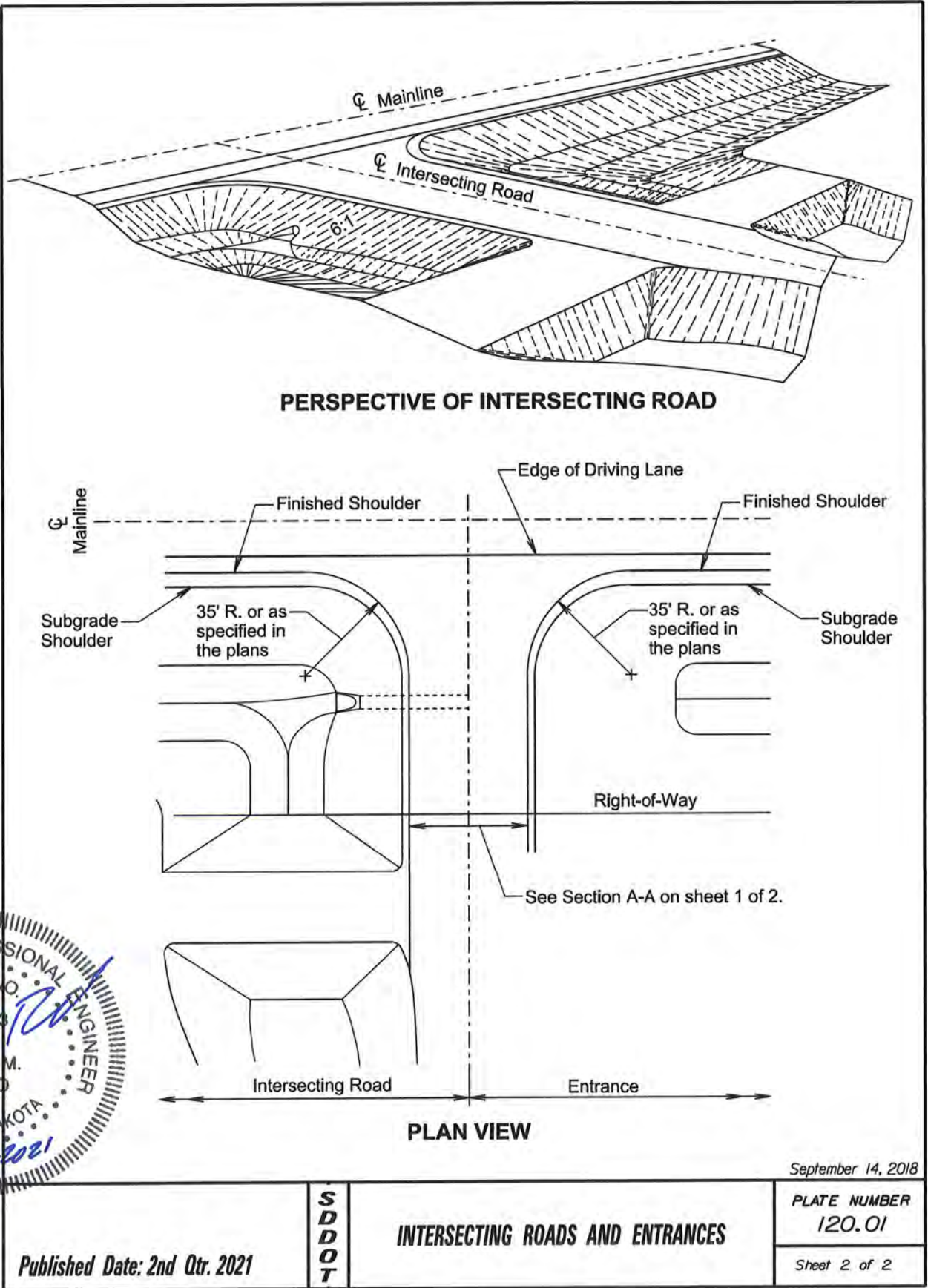
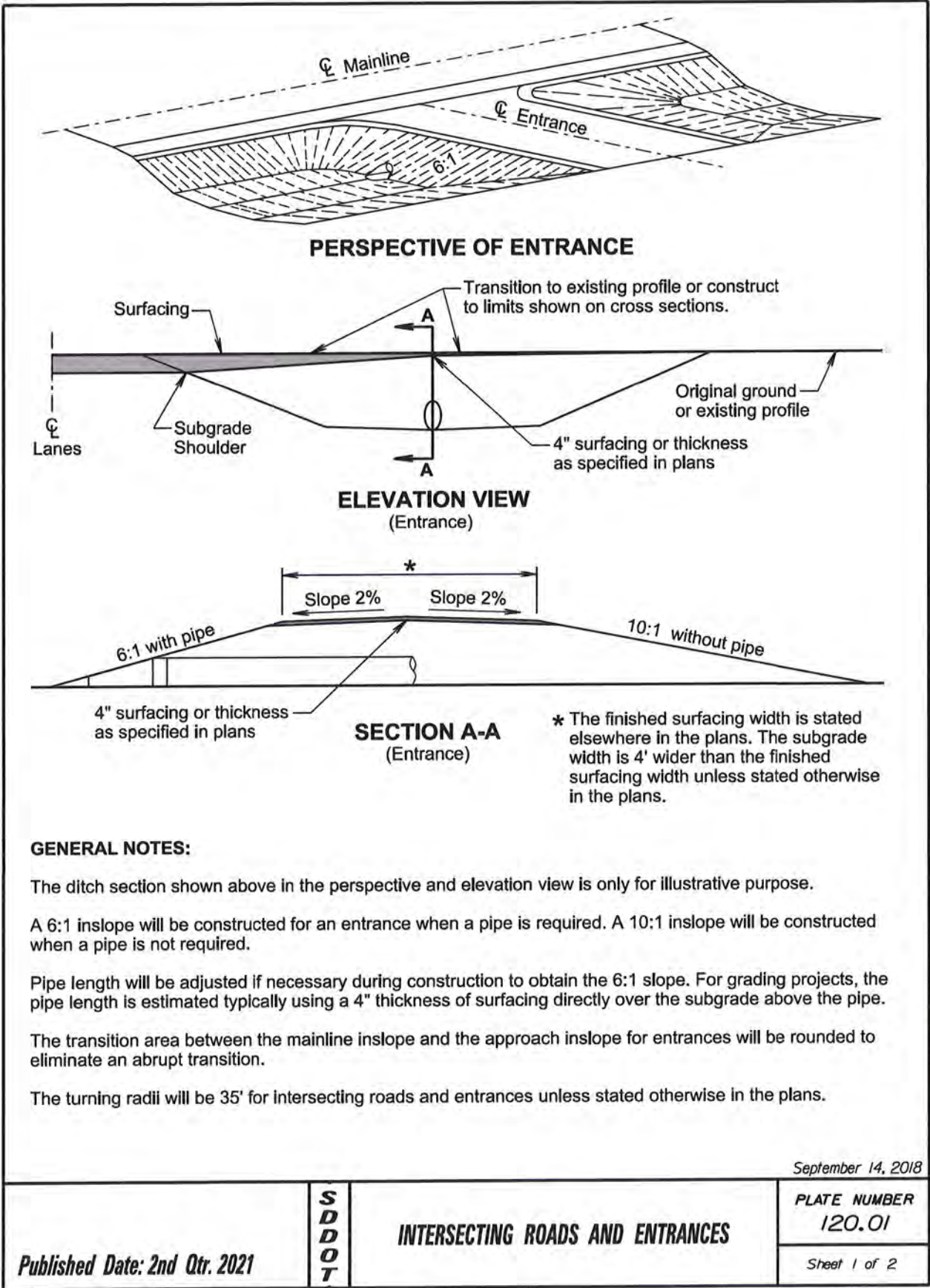


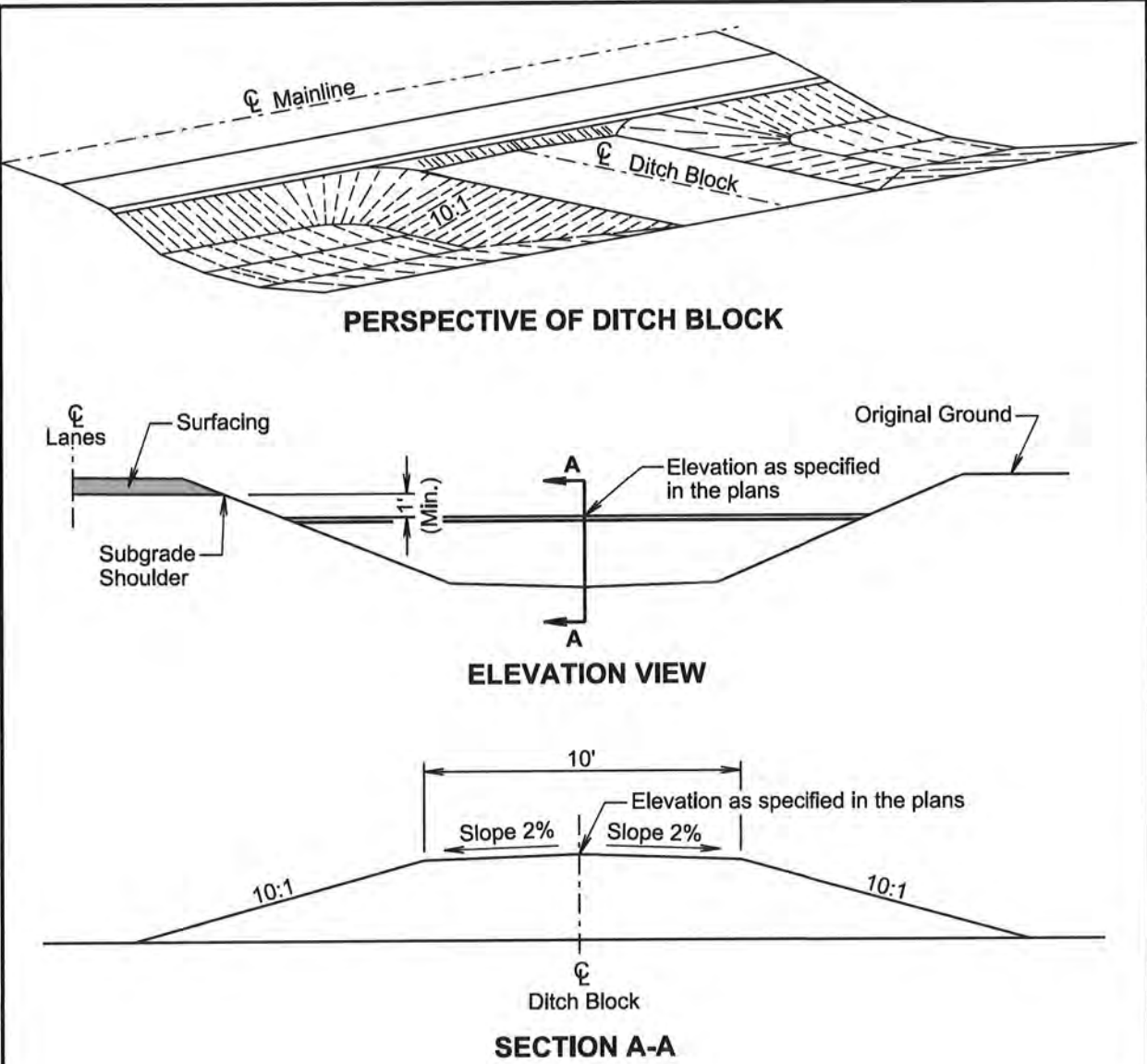
Plot Scale - 1:100

Plotted From - around



File - ...Section B\Grading_189.dgn





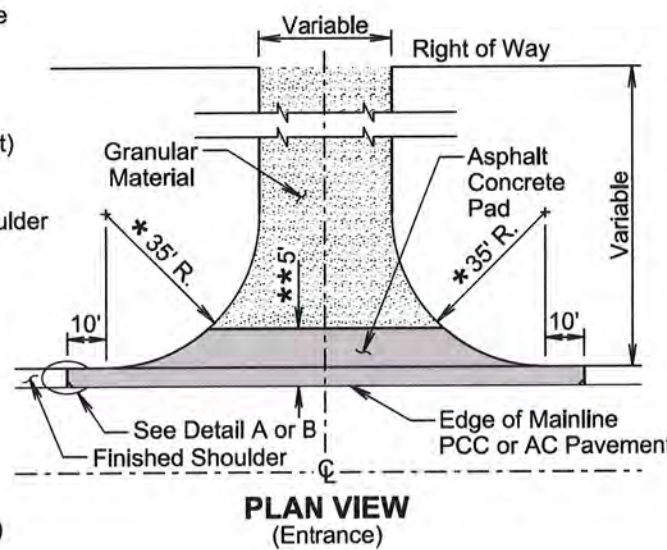
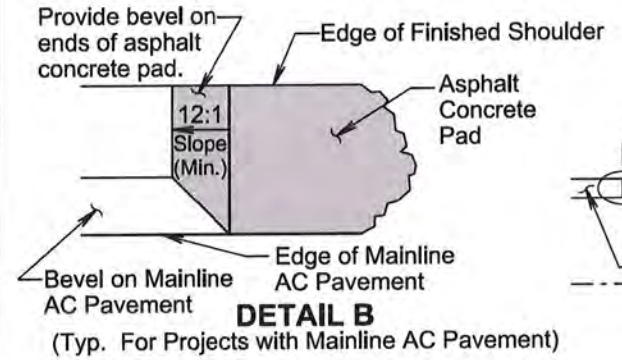
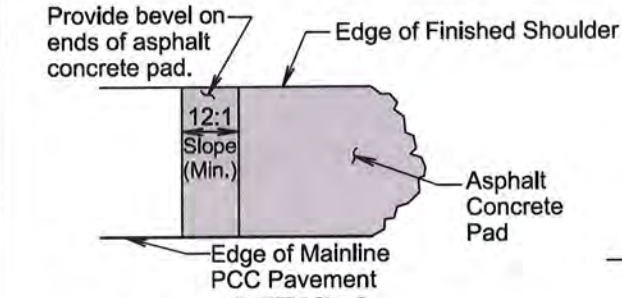
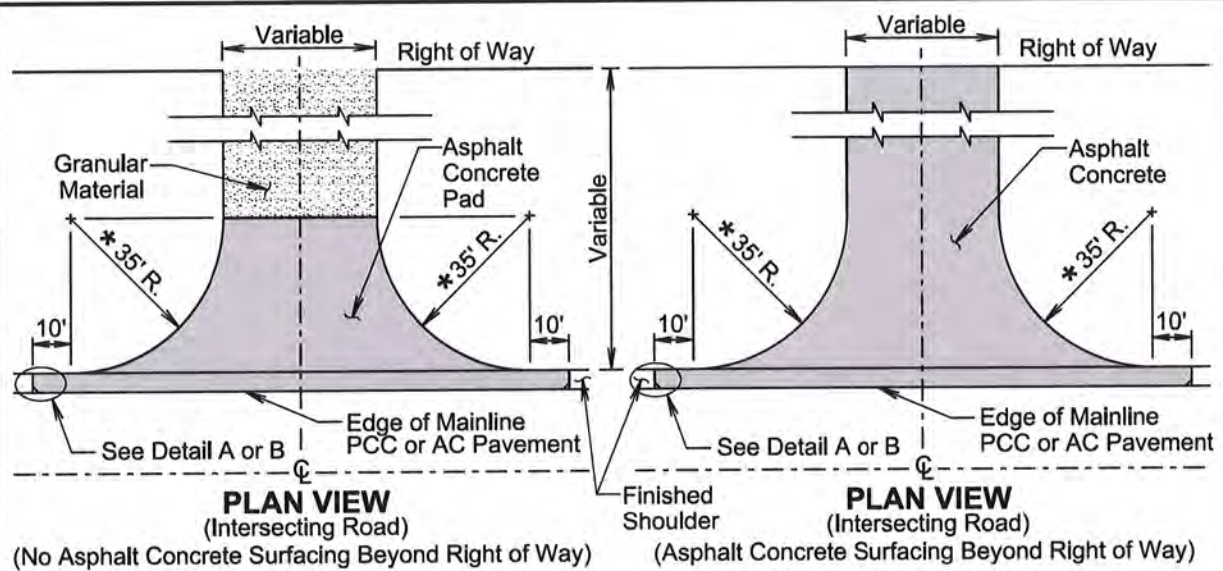
GENERAL NOTES:

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.





GENERAL NOTES:

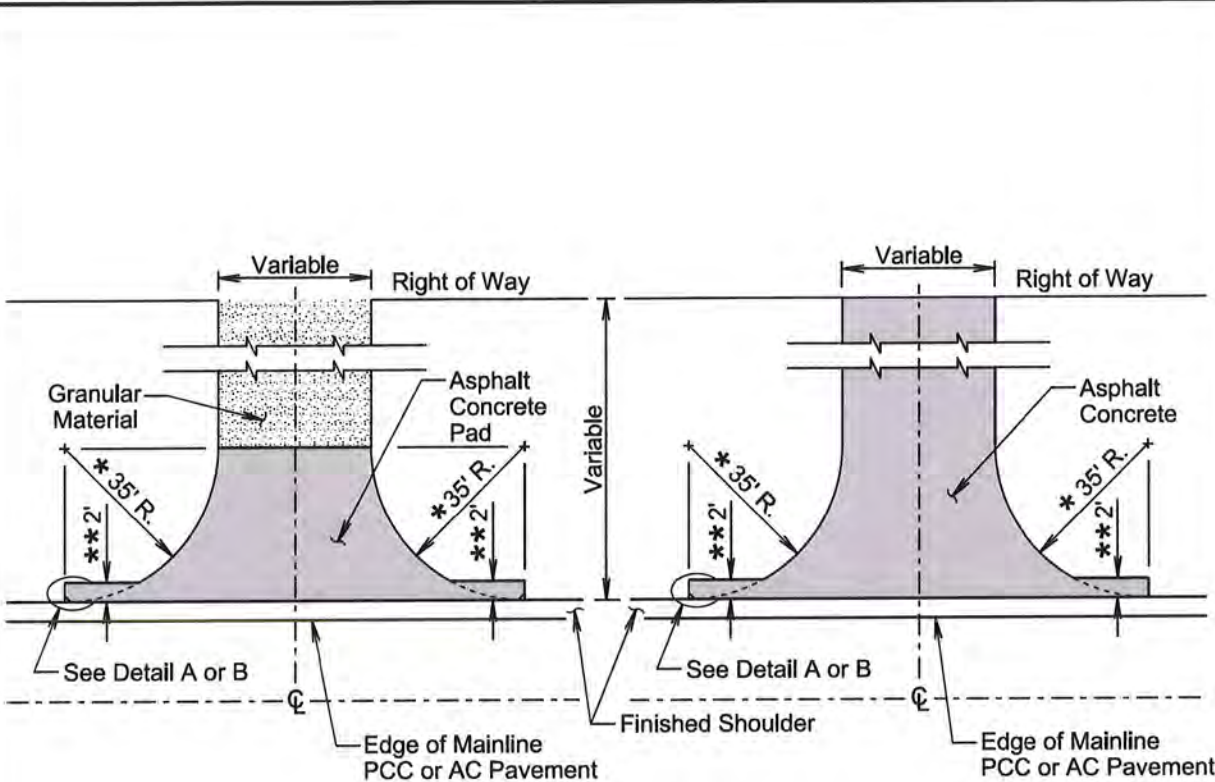
The precise construction limits for situations other than shown above will be determined by the Engineer during construction.

* For new construction, 35' radius typical or as specified in the plans. For resurfacing projects, radius is variable depending on existing conditions.

** For shoulder widths < 4', the Asphalt Concrete Pad width must be 5'. For shoulders widths of 4' or more, pave the full width of the shoulder only.

August 27, 2020





PLAN VIEW
(Intersecting Road)
(No Asphalt Concrete Surfacing
Beyond Right of Way)

PLAN VIEW
(Intersecting Road)
(Asphalt Concrete Surfacing
Beyond Right of Way)

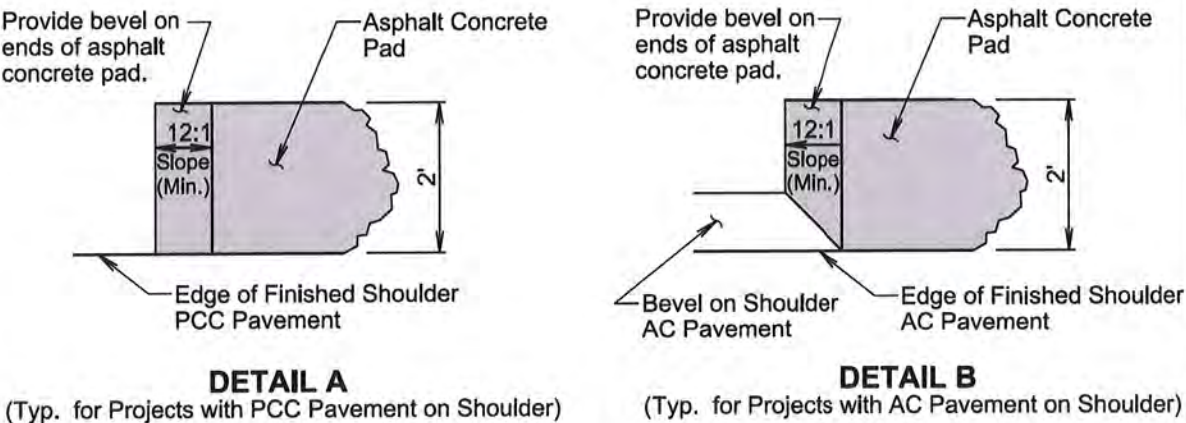
GENERAL NOTES:

The precise construction limits for situations other than shown above will be determined by the Engineer during construction.

- * For new construction, 35' radius typical or as specified in the plans. For resurfacing projects, radius is variable depending on existing conditions.
- ** The Contractor may adjust the screed of the paver during mainline paving operations to provide the 2-foot asphalt concrete pad or the Contractor may provide the 2-foot asphalt concrete pad during paving of the intersecting roads as shown above. The Engineer may eliminate the 2-foot asphalt concrete pads if the Engineer, in the Engineer's sole discretion, determines the pads are infeasible to construct due to site specific reasons including, but not limited to; existing inslope configuration, borrow and material availability, and right-of-way constraints.

August 27, 2020

Published Date: 2nd Qtr. 2021	S D D O T	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04
			Sheet 1 of 2

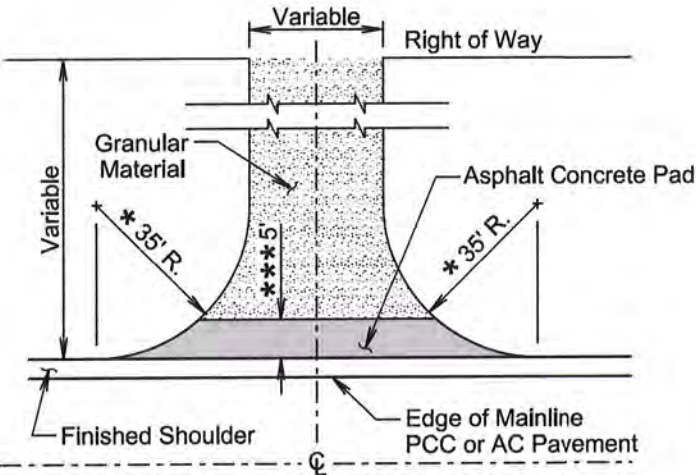


DETAIL A

(Typ. for Projects with PCC Pavement on Shoulder)

DETAIL B

(Typ. for Projects with AC Pavement on Shoulder)



PLAN VIEW
(Entrance)

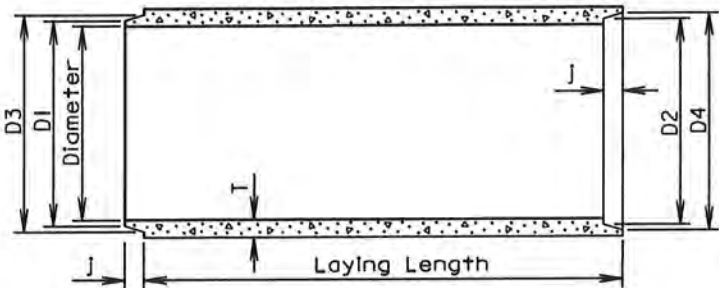
*** Not required if finished shoulder width is 4' or greater.

August 27, 2020

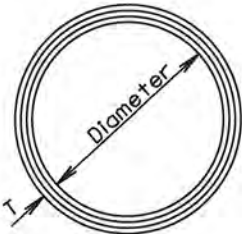
Published Date: 2nd Qtr. 2021	S D D O T	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04
			Sheet 2 of 2

TOLERANCES IN DIMENSIONS

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



LONGITUDINAL SECTION



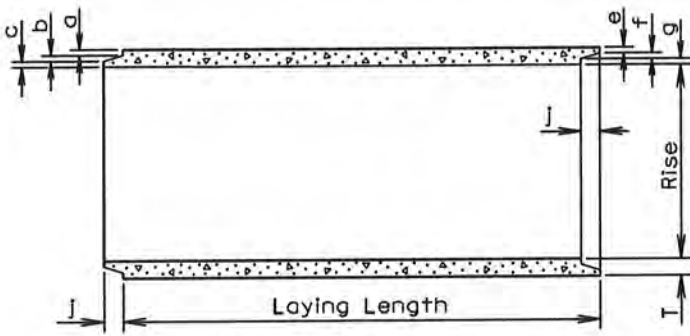
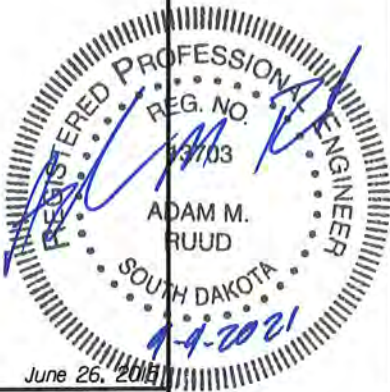
END VIEW

GENERAL NOTES:

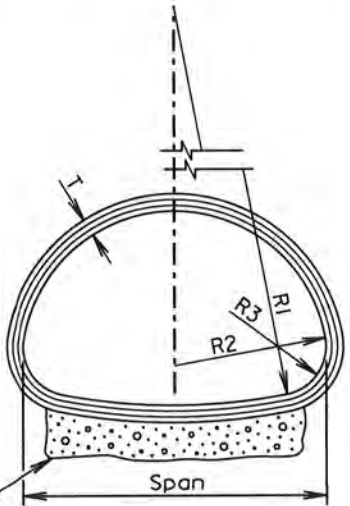
Construction of R.C.P. shall conform to the requirements of Section 990 of the Specifications.

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 7/8	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 3/8
36	524	4	3 3/4	38 3/4	39 1/4	40	40 1/2
42	685	4 1/2	4	45 5/8	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 7/8	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



LONGITUDINAL SECTION



END VIEW

TOLERANCES IN DIMENSIONS

Radial dimensions at joints: $\pm \frac{1}{8}"$ for 65" span or less and $\pm \frac{1}{4}"$ for longer spans.
Rise and Span: $\pm 2\%$ of tabular values.
Length of joint (J): $\pm \frac{1}{4}"$.
Wall thickness (T): not less than design T by more than 5% or $\frac{3}{16}"$, whichever is greater.
Laying length: shall not underrun by more than $\frac{1}{2}"$.

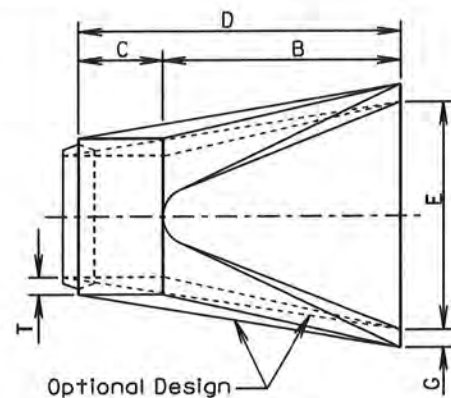
Gravel Bedding Material shall be supplied for 102" to 169" spans. It shall be placed to a thickness of 6" (Min.) x 85% of the Span x Length of culvert and shall conform to the gradation requirements for gravel surfacing except material may be screened or may be plan provided material.

* Size (in.)	Approx. Wt./Ft. (lb.)	Rise (in.)	Span (in.)	T (in.)	a (in.)	b (in.)	c (in.)	J (in.)	e (in.)	f (in.)	g (in.)	R1 (in.)	R2 (in.)	R3 (in.)
18	170	13 1/2	22	2 1/2	1 3/8	3/8	3/4	2	1 1/8	3/8	1	27 1/2	13 3/4	5 1/4
24	320	18	28 1/2	3 1/2	1 5/8	1/2	1 3/8	3	1 3/8	1/2	1 5/8	40 1/16	14 3/4	4 5/8
30	450	22 1/2	36 1/4	4	1 9/16	5/8	1 9/16	3 1/2	1 9/16	5/8	1 13/16	51	18 3/4	6 1/8
36	600	26 5/8	43 3/4	4 1/2	2	3/4	1 3/4	4	1 3/4	3/4	2	62	22 1/2	6 1/2
42	740	31 5/16	51 1/8	4 1/2	2	3/4	1 3/4	4	1 3/4	3/4	2	73	26 1/4	7 3/4
48	890	36	58 1/2	5	2 1/4	3/4	2	5	2	3/4	2 1/4	84	30	8 7/8
54	1100	40	65	5 1/2	2 1/2	3/4	2 1/4	5	2 1/4	3/4	2 1/2	92 1/2	33 3/8	10
60	1400	45	73 1/2	6	3 5/16	3/4	1 15/16	5	2 3/4	3/4	2 1/2	105	37 1/2	11
72	1900	54	88	7	3 9/16	1	2 3/16	6	3 1/4	1	2 3/4	126	45	13 5/16
84	2500	62	102	8	4 1/8	1	2 7/8	6	3 1/2	1	3 1/2	162 1/2	52	14 1/2
96	3300	78	122 3/8	9	4 1/2	1	3 1/2	7	4	1	4	218	62	20
108	4200	88	138 1/2	10	5	1	4	7	4 1/2	1	4 1/2	269	70	22
120	5100	96 7/8	154	11	5 1/2	1	4 1/2	7	5	1	5	301 3/8	78	24
132	5100	106 1/2	168 3/4	10		1	4	7	4 1/2	1	4 1/2	329	85 5/8	26 7/8

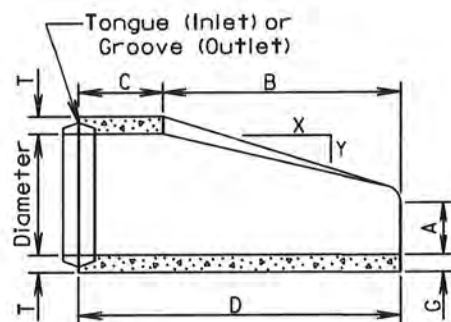
* Equivalent Diameter of Circular R.C.P.

GENERAL NOTES:

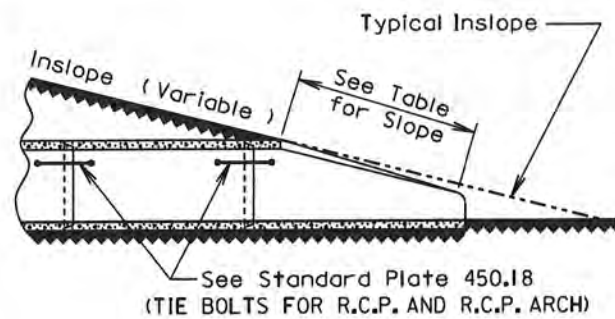
Construction of R.C.P. Arch shall conform to the requirements of Section 990 of the Specifications. Not more than 2 four-foot sections shall be permitted near the ends of any culvert. Four-foot lengths shall be used only to secure the required length of culvert.



TOP VIEW



LONGITUDINAL SECTION

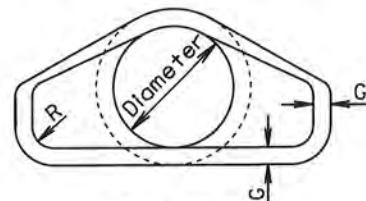


SLOPE DETAIL

GENERAL NOTES:

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

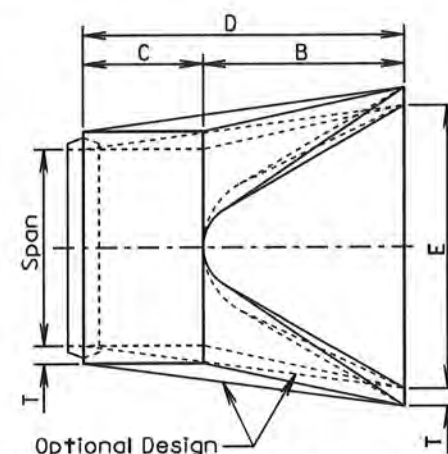
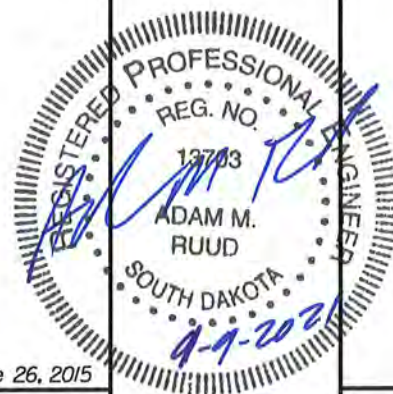
Construction of R.C.P. Flared End shall conform to the requirements of Section 990 of the Specifications.



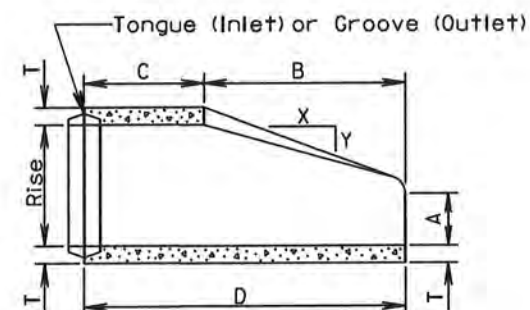
END VIEW

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 1/2	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

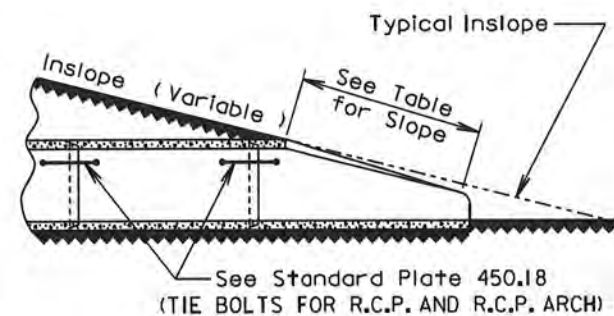
June 26, 2015



TOP VIEW



LONGITUDINAL SECTION



SLOPE DETAIL



END VIEW

GENERAL NOTES:

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

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

* Size (in.)	Approximate Weight of Section (lbs.)	Rise (in.)	Span (in.)	Slope (X:Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	R (in.)
18	1100	13 1/2	22	3:1	2 1/2	7	27	45	72	36	2
24	1750	18	28 1/2	3:1	3 1/2	8 1/2	39	33	72	48	3
30	3300	22 1/2	36 1/4	3:1	4	9 1/2	50	46	96	60	3
36	4350	26 5/8	43 3/4	3:1	4 1/2	11 1/8	60	36	96	72	6
42	5250	31 5/16	51 1/8	3:1	4 1/2	15 1/16	60	36	96	78	6
48	6400	36	58 1/2	3:1	5	21	60	36	96	84	6
54	7850	40	65	3:1	5 1/2	25 1/2	60	36	96	90	6
60	9500	45	73 1/2	3:1	6	31	60	36	96	96	6
72	13550	54	88	2:1	7	31	60	39	99	120	6
84	17950	62	102	2:1	8	28 1/2	83	19	102	144	6

*Equivalent Diameter of Circular R. C. P.

June 26, 2015

Diagram showing side and end views of a pipe with dimensions C, R, 4, B, D, and labels for Tongue (Inlet) or Groove (Outlet), Tie Bolt Hole, and END VIEW "CIRCULAR" and "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.

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

Diagram showing a section of a pipe with labels for Tie Bolt (Typ.) See Standard Plate 450.18, Inslope (Variable), Intercept Point, 4, Typical Inslope, and 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: 2nd Qtr. 2021	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)
≤ 3/4	5/8	3/4
3/2-6/2	3/4	1
≥ 7	1	1 1/4

GENERAL NOTES:

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

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

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

Diagram of an adjustable eye bolt tie showing dimensions 16", 16", 32" (±1/2"), 2" Max. (Typ.), and labels for Pipe Sleeve or Welded Eye, Outside Edge of Joint, Hole, and ASTM F1554 Grade 36 or ASTM A36 Tie Bolt with 2 Heavy Hex Nuts and 2 Washers.

ADJUSTABLE EYE BOLT TIE

Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	3/4
> 48	6	1

GENERAL NOTES:

Angles shall conform to ASTM A36.

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

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

Diagram of an angle and bolt tie showing dimensions 4", 9", 9", 2 1/2", and labels for 6" x 4" x 3/4" x L, ASTM A307 Bolt with Heavy Hex Nut and 2 Washers, and Bolts may be reversed.

ANGLE AND BOLT TIE

Diagram showing end views of circular and arch pipes with 120 degree angles.

END VIEW "CIRCULAR" END VIEW "ARCH"

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 shall 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, manhole, and junction boxes shall 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 shall be incidental to the contract unit price per foot for the corresponding bid item for R.C.P. or R.C.P. Arch.

February 28, 2013

Published Date: 2nd Qtr. 2021	S D D O T	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	PLATE NUMBER 450.18
			Sheet 1 of 1

2 Piece			2 Piece			3 Piece				
5° to 45° Elbow			50° to 90° Elbow			90° Elbow				
Diameter	A	L	Diameter	A	L	Diameter	A	B	C	L
Inches	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.



June 26, 2001

Alternate Type Connector Sections may be used with approval of the Engineer.

PLAN

ELEVATION

1" O.D. 14 Ga. Galv. Tubing

Sheet

3/4" x 1/2" Gal. Buttonhead Rivets spaced 6" C. to C. Overall length of rivets=0.78"

TUBING ATTACHMENT DETAILS SECTION A-A

Finish Earth Slope as Required

Approx. 2 1/2:1 Slope

Standard Coupling Band

Flow Line

SECTION A-A (alternate)

SECTION A-A (alternate)

GENERAL NOTES:
All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by 3/8" Dia. galvanized rivets or bolts.
For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x 1/4" for 60" through 72" diameters and 2 1/2" x 2 1/2" x 1/4" for 78" and 84" diameters. The angles shall be attached by 3/8" diameter galvanized nuts and bolts.
Rivets and Bolts shall be 3/8" Dia. Min. for 10 Ga. and 12 Ga. sheet, and 5/16" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

March 31, 2000

Dia. D (in.)	Ga.	DIMENSIONS (in.)						Approx. Slope	Body
		A	B	H	L	W			
12	16	6	6	6	21	24	2 1/2:1	1 Pc.	
15	16	7	8	6	26	30	2 1/2:1	1 Pc.	
18	16	8	10	6	31	36	2 1/2:1	1 Pc.	
21	16	9	12	6	36	42	2 1/2:1	1 Pc.	
24	16	10	13	6	41	48	2 1/2:1	1 Pc.	
30	14	12	16	8	46	60	2 1/2:1	1 Pc.	
36	14	14	19	9	51	72	2 1/2:1	2 Pc.	
42	12	16	22	11	60	84	2 1/2:1	2 Pc.	
48	12	18	27	12	69	90	2 1/4:1	2 Pc.	
54	12	18	30	12	78	102	2:1	3 Pc.	
60	12	18	33	12	84	114	1 3/4:1	3 Pc.	
66	12	18	36	12	87	120	1 1/2:1	3 Pc.	
72	12	18	39	12	87	126	1 1/3:1	3 Pc.	
78	12	18	42	12	87	132	1 1/4:1	3 Pc.	
84	12	18	45	12	87	138	1 1/6:1	3 Pc.	

STANDARD CONNECTIONS

Threaded 5/8" Dia. Rod over Top of culvert

Pipe

Bolted on Side Lug

Dimple Band Collar bolted to end section with 3/8" bolts

For 30" through 84"

Alternate for all sizes

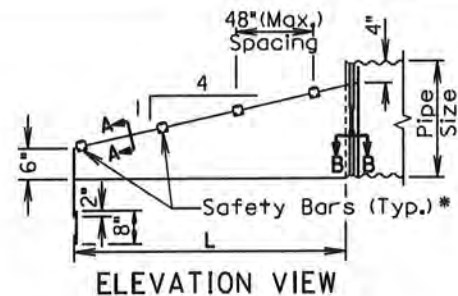
Pipe

Strap Bolt

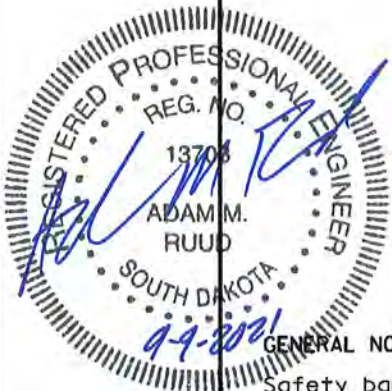
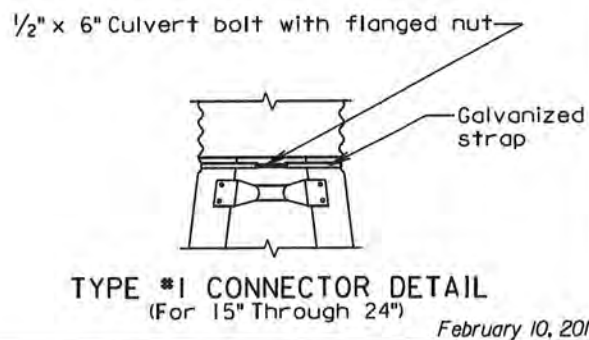
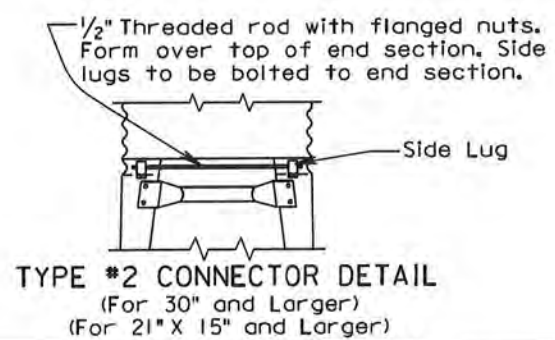
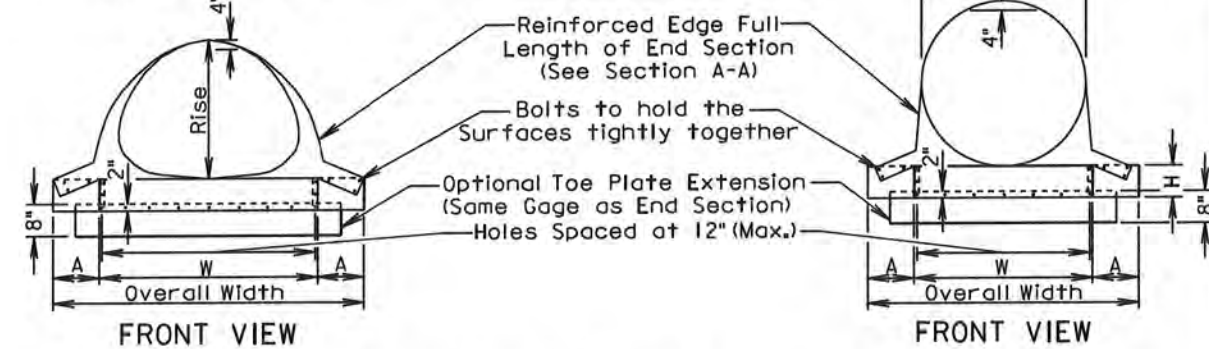
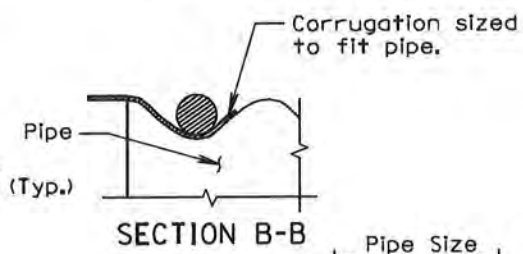
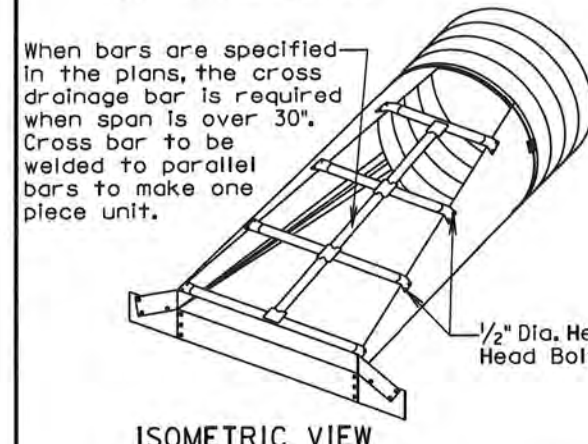
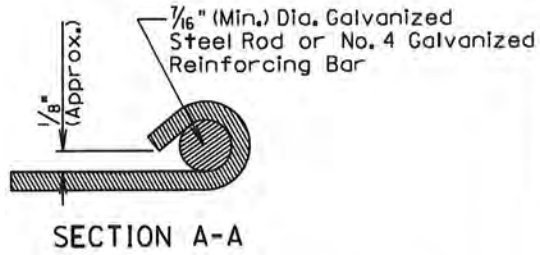
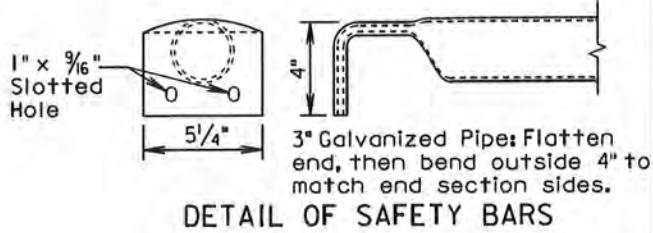
Flat Strap Connector

For 12" through 24" only

1/2" I.D. (Metal Edge)



*Number of bars required will vary depending on the length of the end section.



GENERAL NOTES:

Safety bars shall be attached to sloped ends over 30" in diameter only when specified in the plans.

Sloped ends shall be fabricated from galvanized steel and shall conform to the requirements of the Specifications.

Safety bars shall 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.

Slotted holes for safety bar attachment shall be provided for all end sections.

Attachment to circular pipes 15" through 24" diameter shall be made with Type #1 straps. All other sizes shall be attached with Type #2 rods and lugs.

When stated in the plans, optional toe plate extension shall be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension shall be same gauge as end section. Dimensions shall be overall width less 6" by 8" high.

Installation shall be performed in accordance with the Specifications.

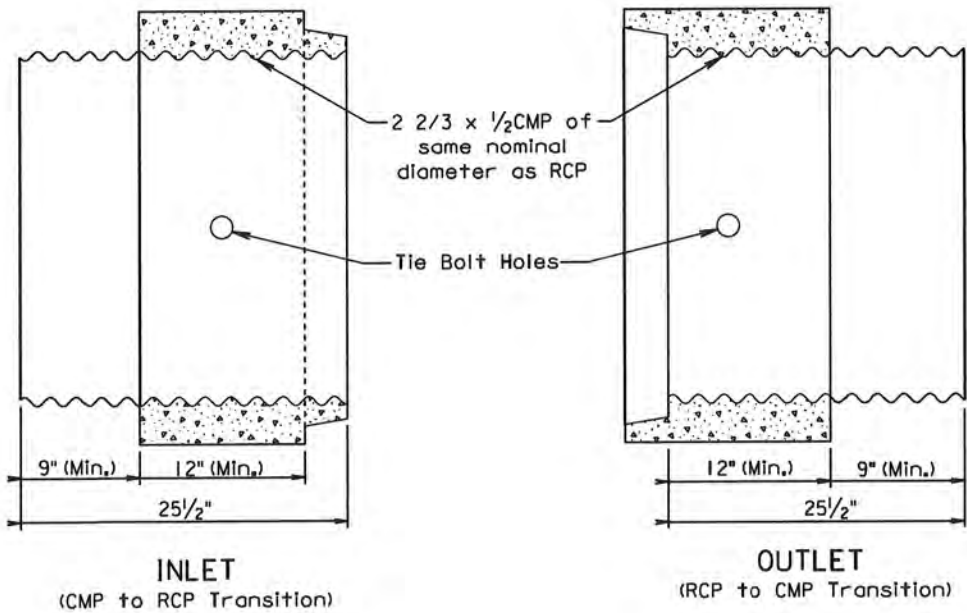
Cost of all work and materials required for fabrication and installation of sloped ends shall be incidental to the bid items for the various sizes of sloped ends.

ARCH C.M.P. SLOPED ENDS										
Equiv. Dia. (Inch)	(Inches)		Min. Thick.	Dimensions (Inches)				L Dimensions		
	Span	Rise	Inch	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

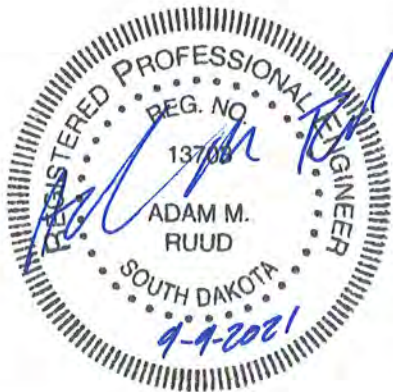
CIRCULAR C.M.P. SLOPED ENDS									
Pipe Dia. (Inch)	Min. Thick.	Dimensions (Inches)				L Dimensions			
	Inch	Gage	A	H	W	Overall Width	Slope	Length (Inch)	
15	.064	16	8	6	21	37	4:1	20	
18	.064	16	8	6	24	40	4:1	32	
21	.064	16	8	6	27	43	4:1	44	
24	.064	16	8	6	30	46	4:1	56	
30	.109	12	12	9	36	60	4:1	80	
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	

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 1806(15)176	B96	B102



GENERAL NOTE:
Arch pipe transitions shall be fabricated similar to the round transition shown above.

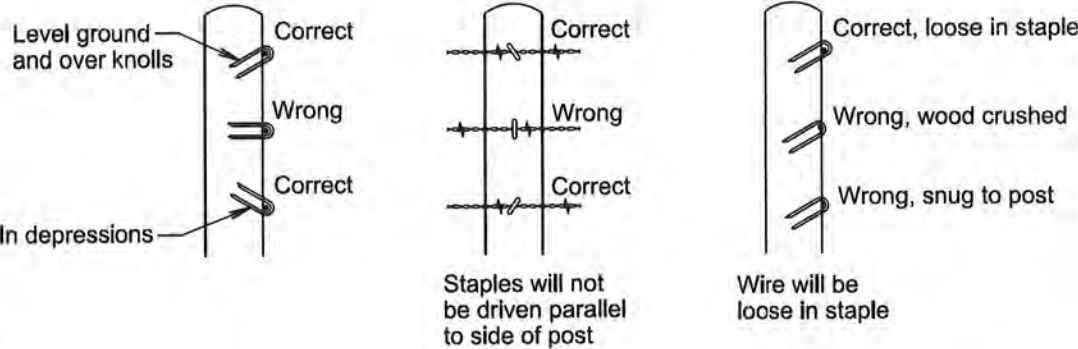
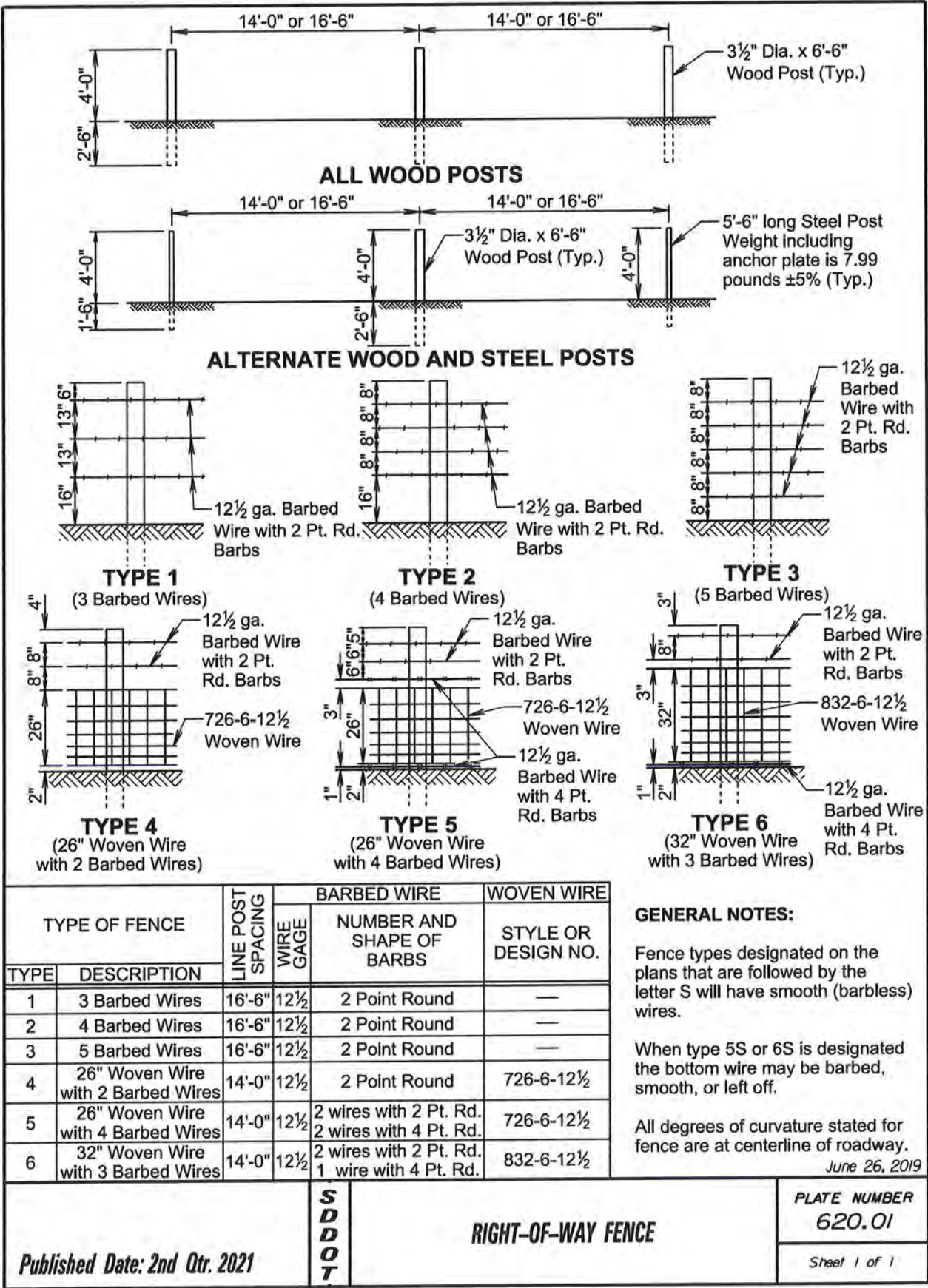


Published Date: 2nd Qtr. 2021

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T

C.M.P. TO R.C.P. TRANSITION
AND
R.C.P. TO C.M.P. TRANSITION

March 31, 2000
PLATE NUMBER
450.50
Sheet 1 of 1



STAPLE INSTALLATION

GENERAL NOTES:

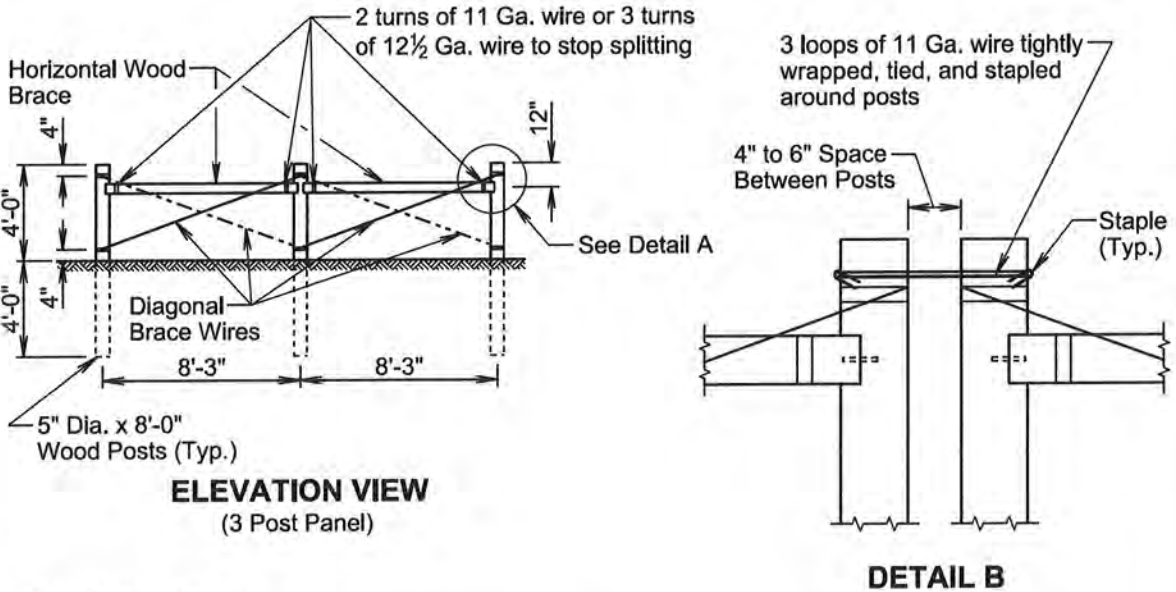
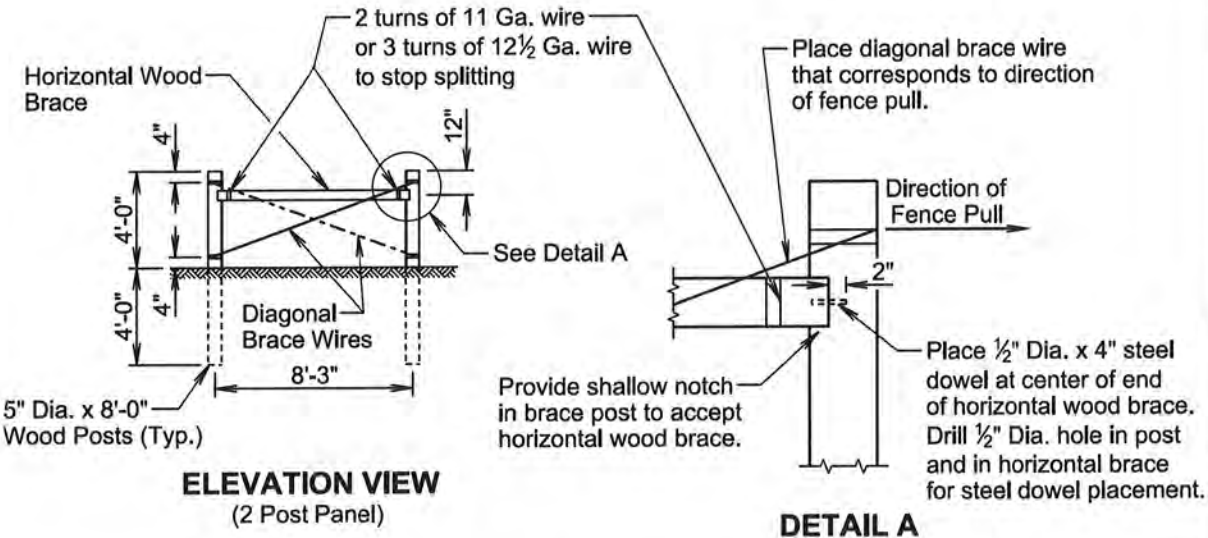
The Right-of-Way fence will consist of barbed wire or a combination of woven wire and barbed wire. The barbed wire and/or woven wire will be fastened to all wood posts or fastened to alternating wood and steel posts. Only wood posts will be used for brace panels. Gates will be of the type designated 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.



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.

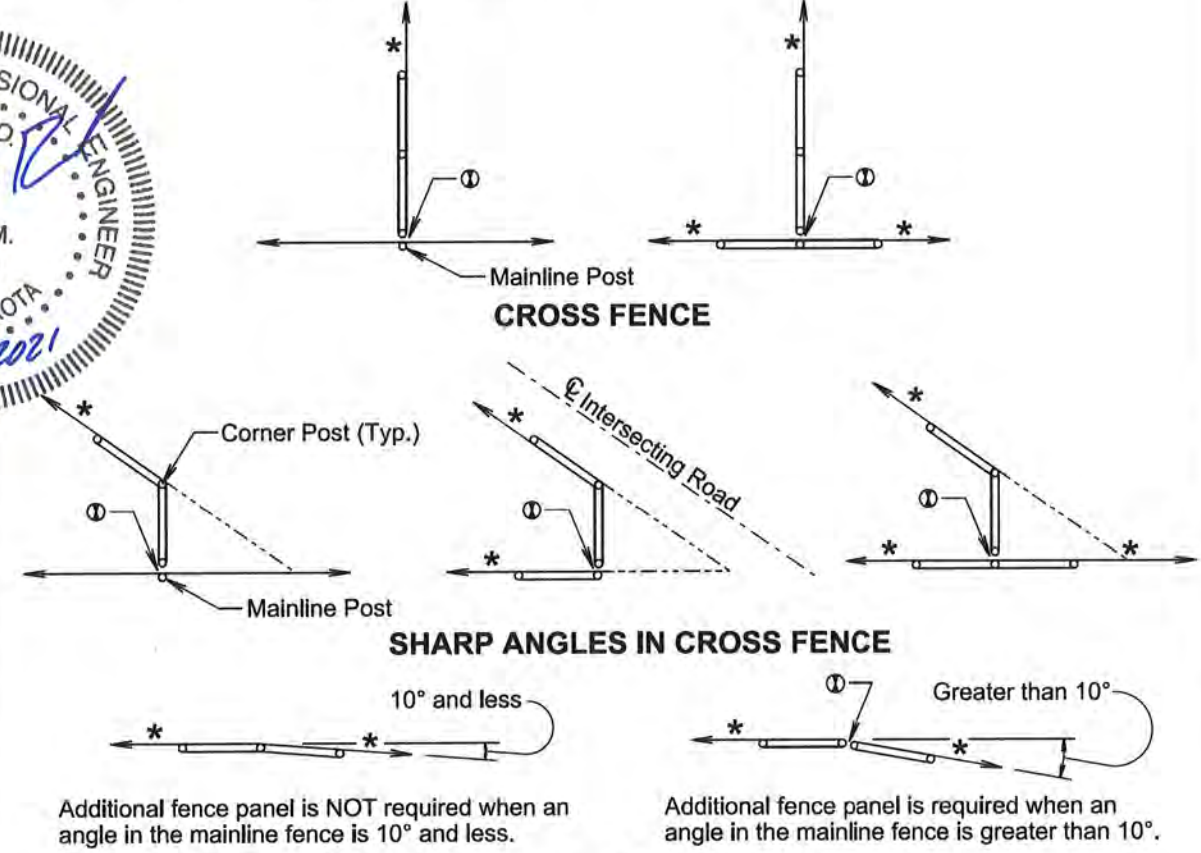
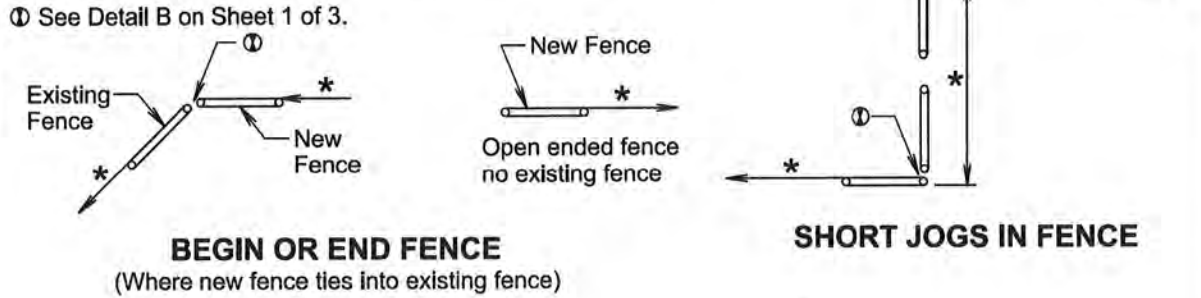
SPACING OF 2 POST PANELS WITHIN CURVES	
DEGREE OF CURVE	SPACING OF 2 POST PANEL
less than 3°15'	** 1320'
3°15' and greater	** At P.C., P.T., and at every 1320' between P.C. and P.T.

GENERAL NOTE:

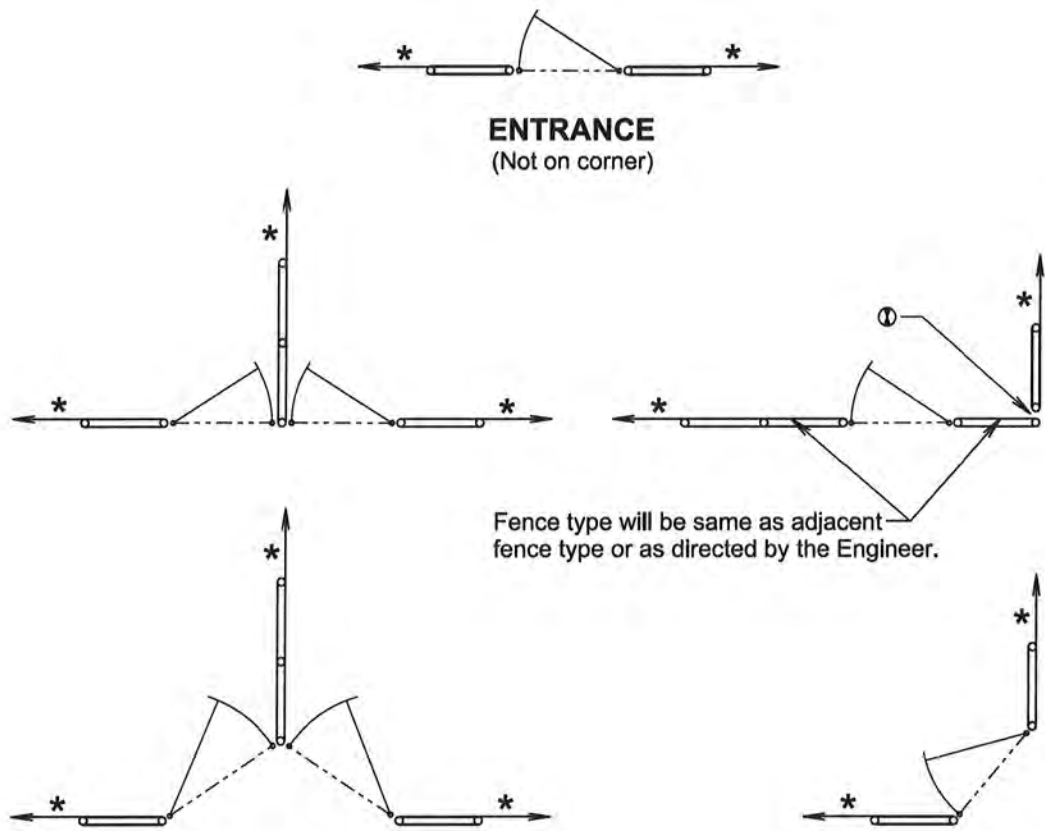
All degrees of curvature stated for fence are at centerline of roadway.

* 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.



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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DOUBLE ENTRANCES

ENTRANCES AT CORNERS

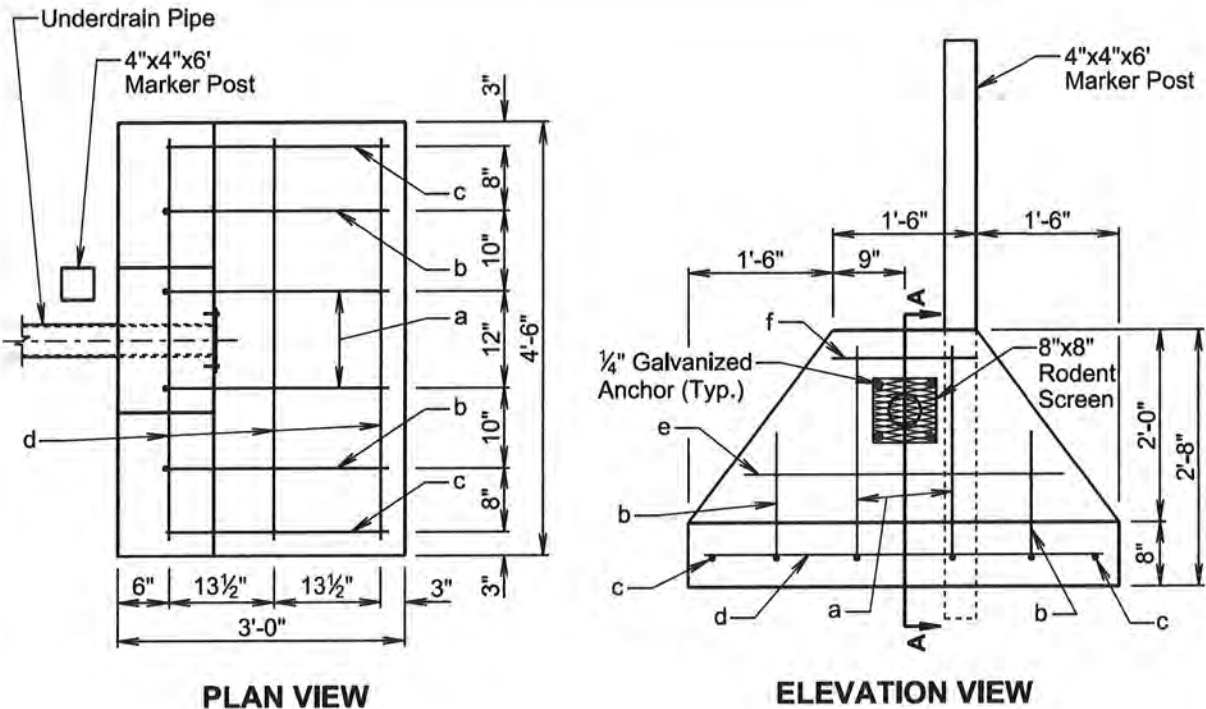
GATES

* 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.
① See Detail B on Sheet 1 of 3.

June 26, 2019

Published Date: 2nd Qtr. 2021	S D D O T	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 3 of 3





GENERAL NOTES:

The concrete will be Class M6. The concrete will conform to the requirements of Section 462 of the Specifications except the minimum curing time will be 72 hours. It is estimated that 0.55 cubic yards of concrete is required for each unit.

Four cast-in-place or drilled-in 1/4" galvanized anchors will be placed in the headwall. Each galvanized anchor will be placed approximately 1" from the outside corner of the rodent screen. It is preferred that the anchor location be centered at an opening in the rodent screen.

All reinforcing steel will conform to ASTM A615, Grade 60. It is estimated that 25.7 pounds of reinforcing steel is required for each unit.

The underdrain pipe will be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

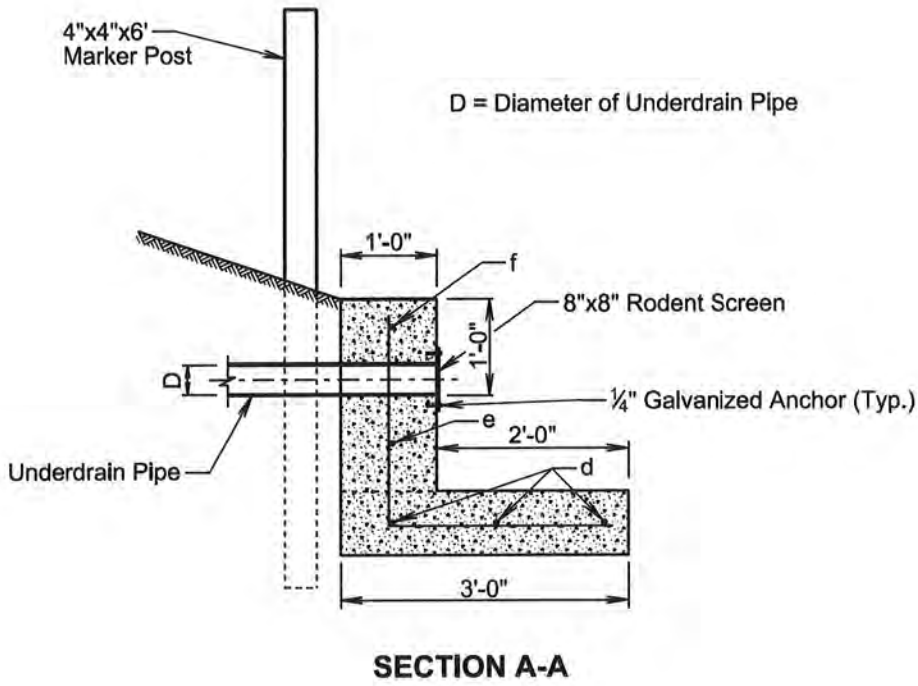
The 8"x8" rodent screen will be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size will be 1/2". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires. The rodent screen will be centered about the hole in the headwall and fastened to the headwall with the appropriate bolts or nuts with washers.

A 4"x4"x6' marker post will be placed at the approximate location as depicted in the above drawings for each concrete headwall. The marker post will project 3"± above the ground line. The marker post will be cedar or treated with a wood preservative and will be painted with two coats of white paint.

All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, rodent screen, anchors, and marker post will be incidental to the contract unit price per each for "Concrete Headwall for Underdrain".

December 23, 2019

Published Date: 2nd Qtr. 2021	S D D O T	CONCRETE HEADWALL FOR UNDERDRAIN	PLATE NUMBER
			680.01
			Sheet 1 of 2

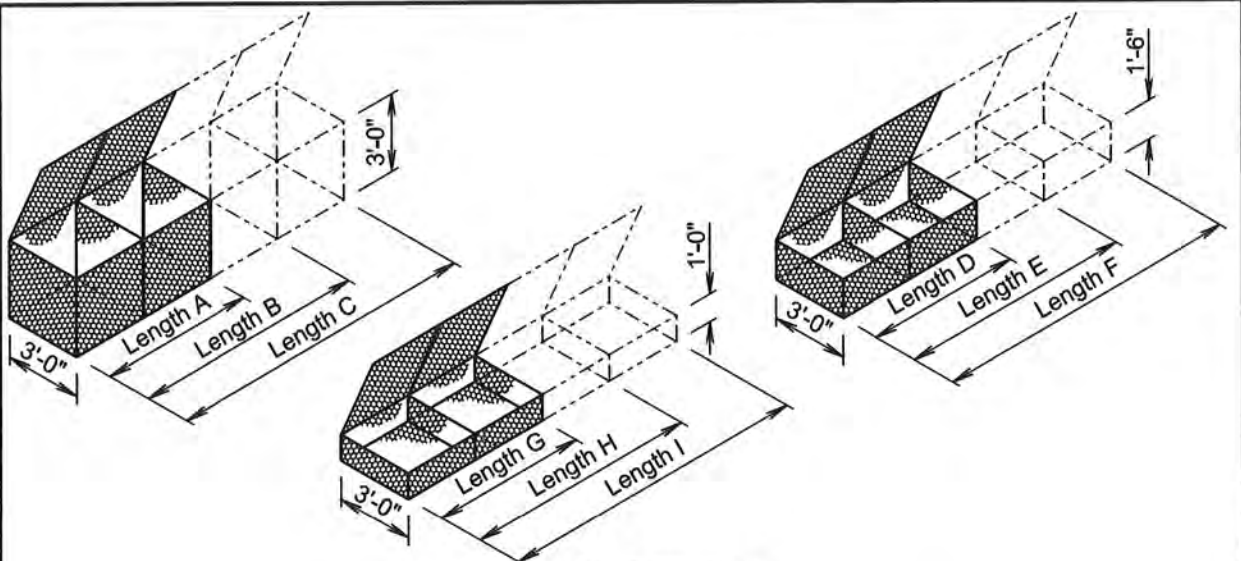


REINFORCING SCHEDULE					
MK.	No.	Size	Length	Type	Bending Details
a	2	4	4'-6"	17A	<p>The bending details show two types of hooks. 'TYPE 17A' is a 90-degree hook with a vertical leg dimension of 2'-2" and a horizontal leg dimension of 2'-4". 'TYPE 17A' is also shown as a 180-degree hook with a vertical leg dimension of 1'-0" and a horizontal leg dimension of 2'-4".</p>
b	2	4	3'-9"	17A	
c	2	4	2'-4"	Str.	
d	3	4	4'-2"	Str.	
e	1	4	3'-4"	Str.	
f	1	4	1'-6"	Str.	
NOTE: All dimensions are out to out of bars.					



December 23, 2019

Published Date: 2nd Qtr. 2021	S D D O T	CONCRETE HEADWALL FOR UNDERDRAIN	PLATE NUMBER
			680.01
			Sheet 2 of 2



GABION DETAILS

STANDARD SIZES					
SIZE	LENGTH	WIDTH	HEIGHT	NUMBER OF CELLS	CAPACITY (Cu. Yd.)
A	6'-0"	3'-0"	3'-0"	2	2.0
B	9'-0"	3'-0"	3'-0"	3	3.0
C	12'-0"	3'-0"	3'-0"	4	4.0
D	6'-0"	3'-0"	1'-6"	2	1.0
E	9'-0"	3'-0"	1'-6"	3	1.5
F	12'-0"	3'-0"	1'-6"	4	2.0
G	6'-0"	3'-0"	1'-0"	2	0.7
H	9'-0"	3'-0"	1'-0"	3	1.0
I	12'-0"	3'-0"	1'-0"	4	1.3

GENERAL NOTES:

Above dimensions subject to mill tolerances.

Lacing and internal connecting wire will be 0.0866 inch diameter steel wire ASTM A641, Class 3 soft temper measured after galvanizing and for PVC coated gabions will be 0.0866 inch diameter steel wire measured after galvanizing but before PVC coating.

The lacing procedure is as follows:

1. Cut a length of lacing wire approximately 1½ times the distance to be laced but not exceeding 5 feet.
2. Secure the wire terminal at the corner by looping and twisting.
3. Proceed lacing with alternating single and double loops at a spacing not to exceed 6 inches.
4. Securely fasten the other lacing wire terminal.

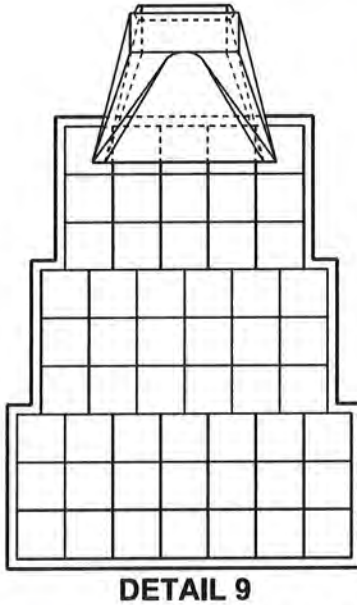
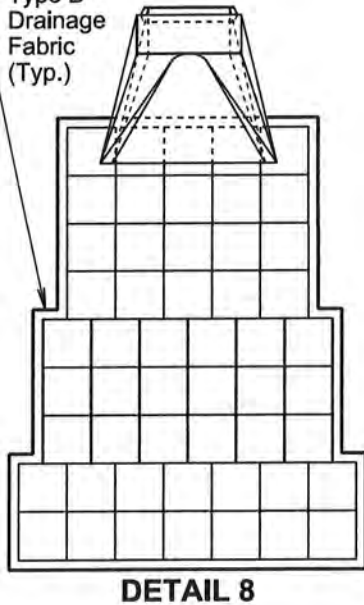
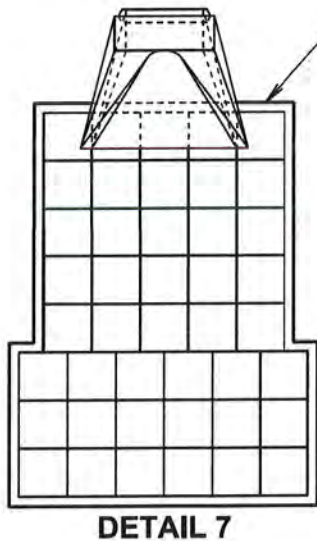
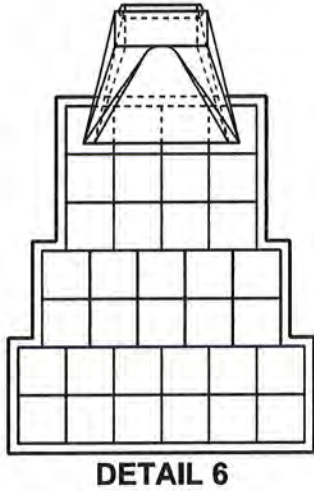
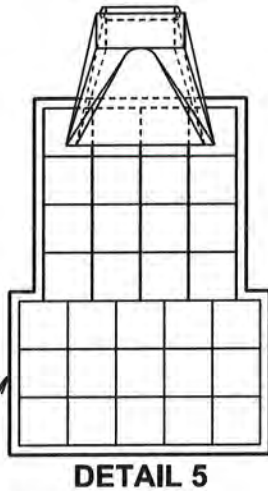
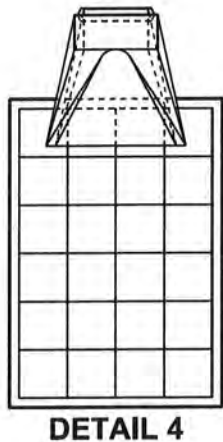
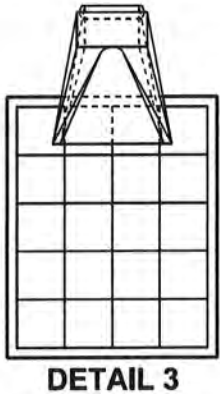
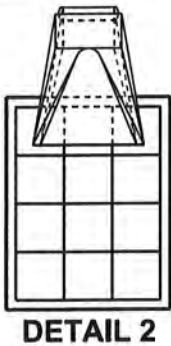
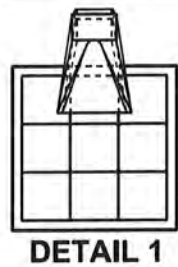
Wire lacing or interlocking type fasteners will be used for gabion assembly and final construction of gabion structures. Interlocking fasteners for galvanized gabions will be high tensile 0.120 inch diameter galvanized steel wire measured after galvanizing. The galvanizing will conform to ASTM A641-92, Class 3 coating. Fasteners will also be in accordance with ASTM A764, Class II, Type III.

Interlocking fasteners for PVC coated gabions will be high tensile 0.120 inch diameter stainless steel wire conforming to ASTM A313, Type 302, Class 1. The spacing of the interlocking fasteners during all phases of assembly and construction will not exceed 6 inches.

All fasteners will be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

February 14, 2020





Type B
Drainage
Fabric
(Typ.)

* ESTIMATED QUANTITIES			
Detail	Pipe Diameter (Inches)	Gabion (Cu. Yd.)	Type B Drainage Fabric (Sq. Yd.)
1	12, 18, and 24	4.5	15
2	30 and 36	6.0	19
3	42	10.0	29
4	48 and 54	12.0	34
5	60	15.5	43
6	66	17.0	47
7	72	21.5	57
8	78	26.0	68
9	84	27.0	70



GENERAL NOTES:

Gabions at outlets of CMP and RCP will be placed under the end section a distance of 2 feet from the outlet end. For CMP end section installations, the upper fabric of the gabions will be modified to accommodate the metal end section as approved by the Engineer.

* Gabion and type B drainage fabric quantities on this standard plate are based on standard gabion sizes D, E, and F as depicted on standard plate 720.01.

Type B drainage fabric will be placed under the gabions and around the exterior sides (perimeter) of the gabions as approved by the Engineer. The type B drainage fabric will be in conformance with Section 831 of the Specifications. Measurement and payment of the type B drainage fabric will be in conformance with Section 720 of the Specifications.

February 14, 2020

February 14, 2020