BAI JOB # 23190-10

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	1	267

Plotting Date:

REVISION 4/9/2026 WJB

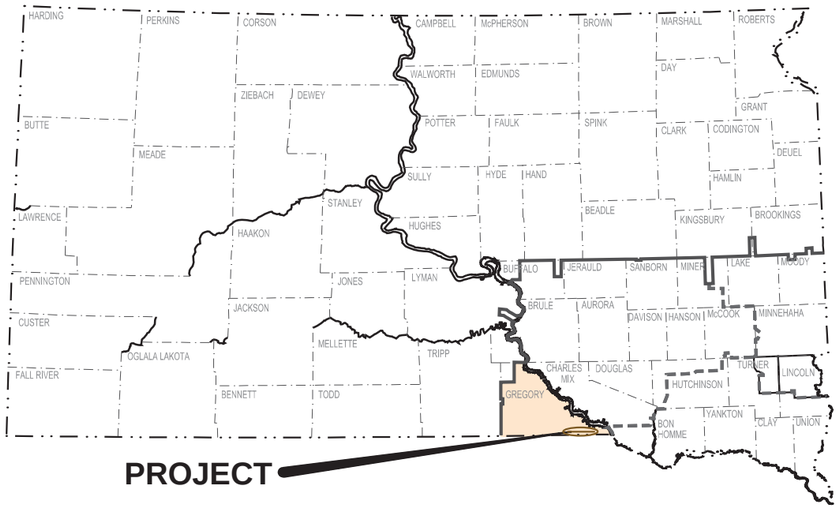
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECTS NH-PT 0018(222)311, NH 0281(122)0, P 0043(26)0 US HIGHWAYS 18 & 281 SD HIGHWAY 43 GREGORY COUNTY

INTERSECTION MODIFICATION - ROW, GRADING,
ASPHALT CONCRETE SURFACING, LIGHTING & SIGNING,
COLD MILLING ASPHALT CONCRETE, ASPHALT CONCRETE RESURFACING,
CULVERT WORK, STRUCTURE (2 - 12' X 4' BOX CULVERT, PRECAST),
PAVEMENT MARKING & GUARDRAIL

PCN 067V, 06D1, 06D8



CONSULTANT CONTACT

Waylon Blasius, PE
Banner Associates, Inc.
605-692-6342

DESIGN DESIGNATION (PCN 067V - US18)

ADT (2022)	807
ADT (2024)	1,114
DHV	131
D	50.0%
T DHV	10.0%
T ADT	22.0%
V	70 mph

DESIGN DESIGNATION (PCN 06D1 - US281)

ADT (2022)	526
ADT (2042)	726
DHV	85
D	50.0%
T DHV	14.7%
T ADT	32.2%
V	70 mph

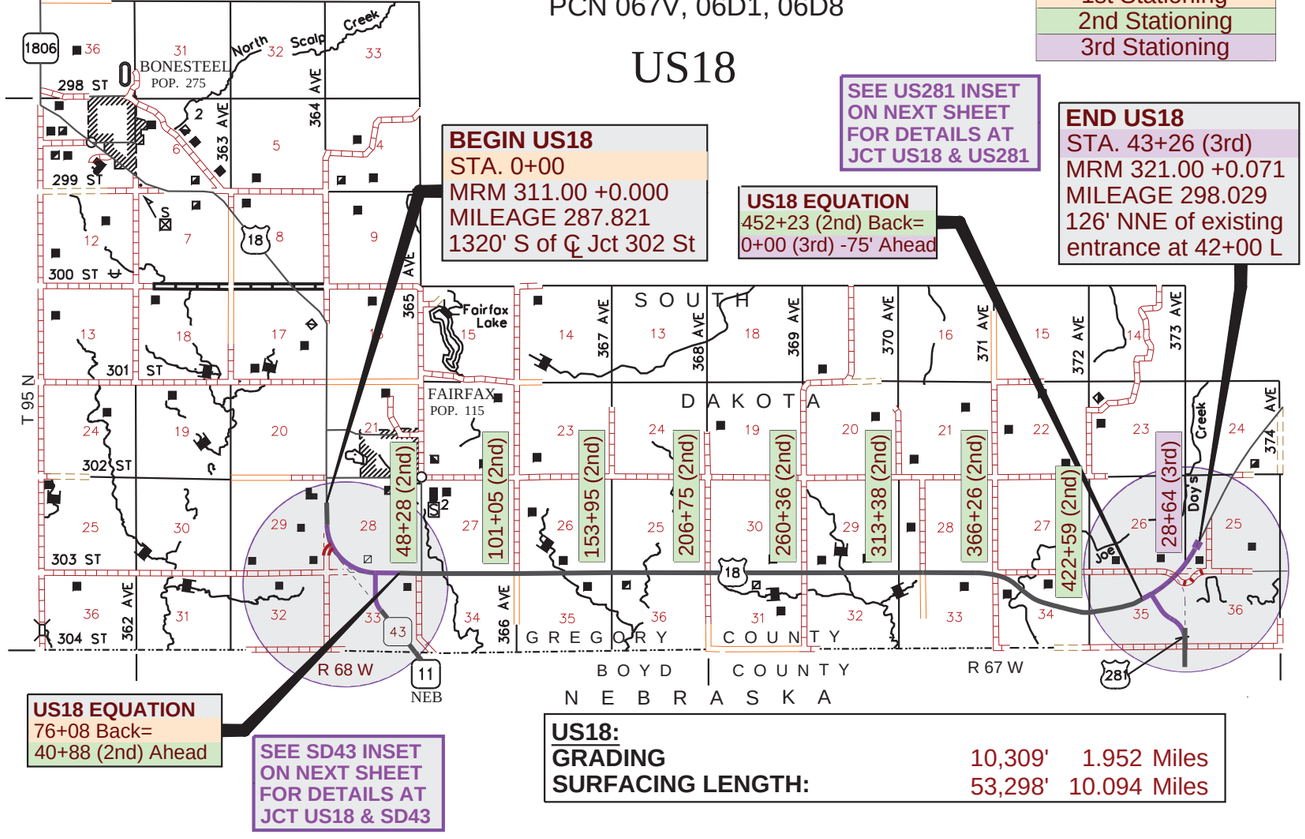
DESIGN DESIGNATION (PCN 06D8 - SD43)

ADT (2022)	426
ADT (2042)	588
DHV	69
D	50.0%
T DHV	13.4%
T ADT	29.4%
V	70 mph

STORM WATER PERMIT

Major Receiving
Body of Water: Tributary to Missouri River
Area Disturbed: 80 Acres
Total Project Area: 91 Acres
Approx. Begin Lat,Long: 43.01612, -98.9031

US18



US18 STATIONING
1st Stationing
2nd Stationing
3rd Stationing

BEGIN US18
STA. 0+00
MRM 311.00 +0.000
MILEAGE 287.821
1320' S of ℄ Jct 302 St

END US18
STA. 43+26 (3rd)
MRM 321.00 +0.071
MILEAGE 298.029
126' NNE of existing entrance at 42+00 L

SEE US281 INSET ON NEXT SHEET FOR DETAILS AT JCT US18 & US281

US18 EQUATION
452+23 (2nd) Back=
0+00 (3rd) -75' Ahead

US18 EQUATION
76+08 Back=
40+88 (2nd) Ahead

SEE SD43 INSET ON NEXT SHEET FOR DETAILS AT JCT US18 & SD43

US18:

GRADING	10,309'	1.952 Miles
SURFACING LENGTH:	53,298'	10.094 Miles

3

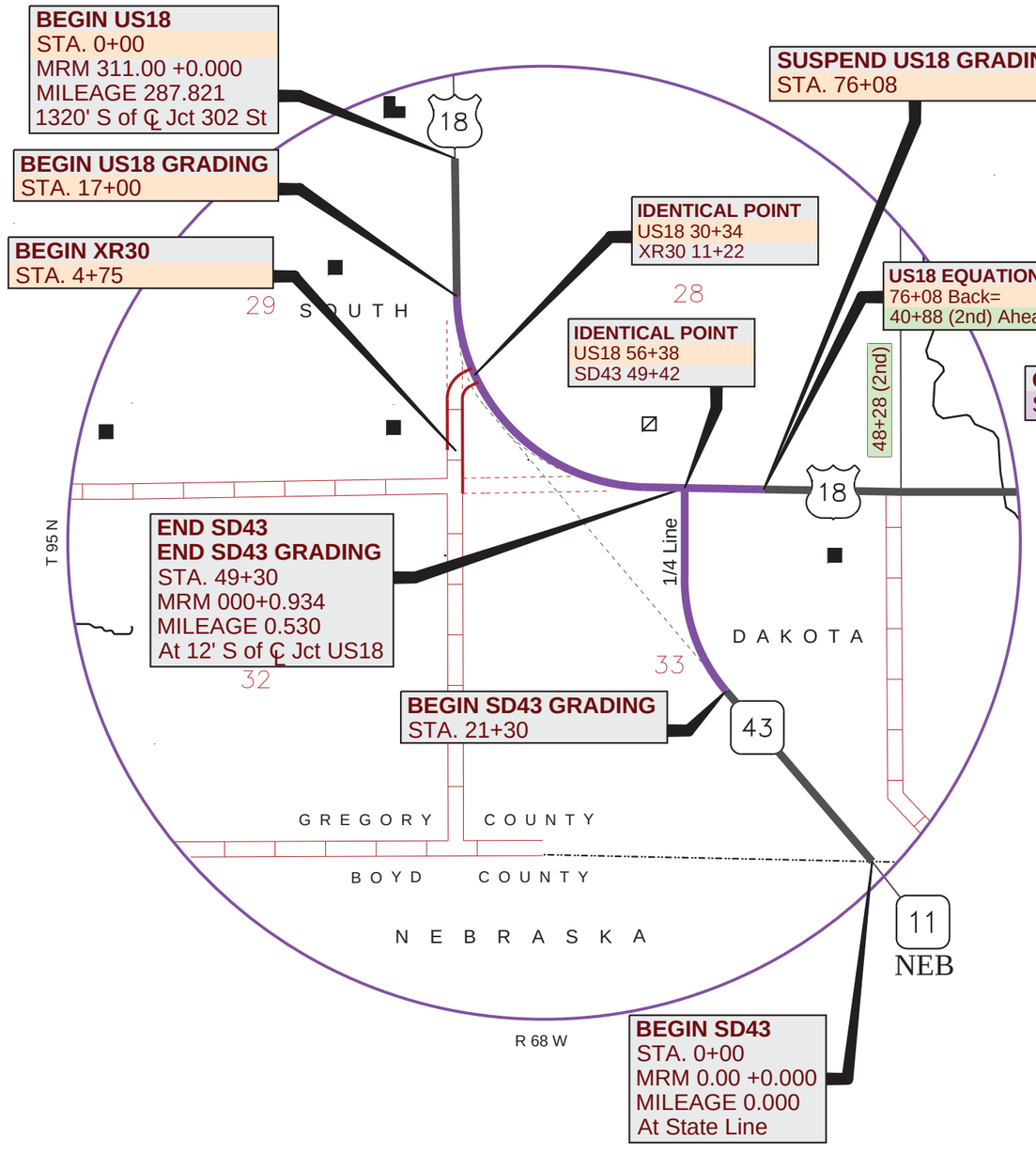
May 6, 2026

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	2	267

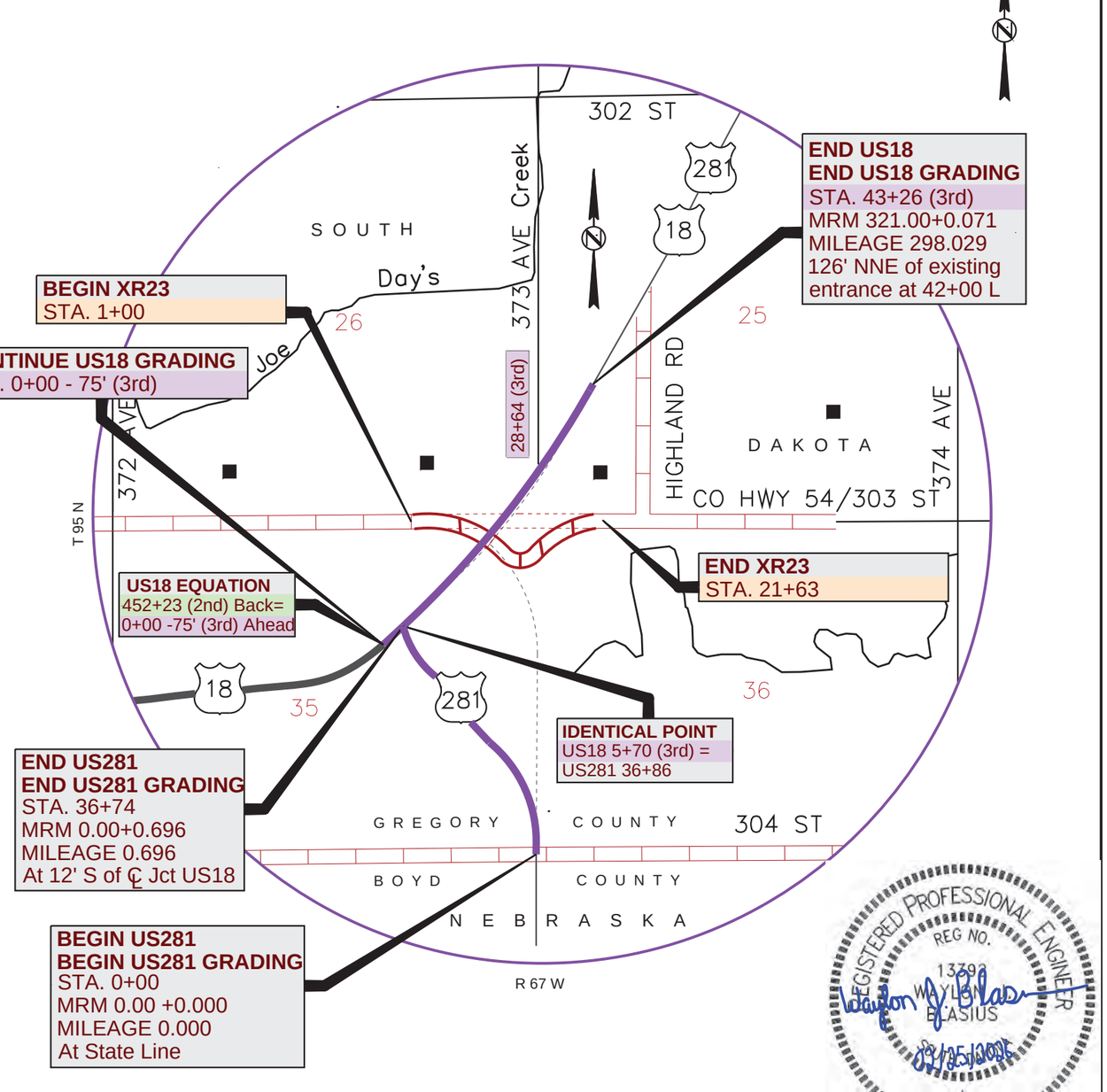
FOR BIDDING PURPOSES ONLY

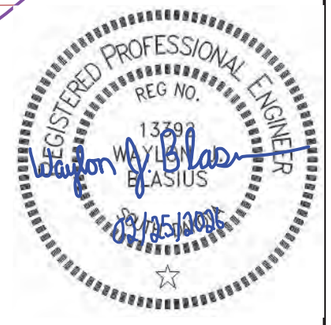
Plotting Date: 10/01/2025 Rev:

US18 & SD43



US18 & US281





SD43:

GRADING LENGTH:	2,800'	0.530 Mile
SURFACING LENGTH:	4,930'	0.934 Mile

US281:

GRADING & SURFACING LENGTH:	3,674'	0.696 Mile

US18

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON D. BLASIUS
10/31/2025

INDEX OF SHEETS

Sheets 1-3	Layout Maps
Sheet 4	Index of Sheets
Sheets 5-8	Estimate of Quantities
Sheets 9-12	Environmental Commitments
Sheets 13-27	Typical Sections
Sheets 28-30	Rates of Materials
Sheet 31	Table for Project Stationing
Sheets 32-33	Tables for Materials Quantities
Sheet 34	Table of Additional Quantities
Sheets 35-37	Summaries of Asphalt Concrete
Sheets 38-40	Tables for Pipe Quantities
Sheets 41-42	Table for Fence Quantities
Sheet 43	Table for Conduit and Cable Quantities
Sheet 44	Table of Construction Staking
Sheets 45-76	Plan Notes & SWPPP
Sheets 77-108	Pavement Marking & Traffic Control
Sheets 109-111	Control & Horizontal Alignment Data
Sheet 112	Legend
Sheets 113-141	Plan & Profile Sheets
Sheets 142-143	Borrow Pit Details
Sheets 144-148	Plan sheets for Precast Box Culvert
Sheets 149-153	Conduit Layouts
Sheets 154-159	Layouts for Cold Milling Tapers
Sheet 160	Erosion and Sediment Control Legend
Sheets 161-169	Erosion Control Layouts
Sheet 170	Options for Dewatering and Sediment Collecting
Sheet 171	SDDOT Construction Entrance
Sheets 172-196	Standard Plates
Sheets 197-267	Cross Sections

ESTIMATE OF QUANTITIES

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	5	267

Rev. 4-7-26 GAW

NH-PT 0018(222)311 – PCN 067V

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	61	Each
009E3225	Reestablish Public Land Survey System Corner	6	Each
009E3230	Grade Staking	1.953	Mile
009E3245	Final Cross Section Survey	1.953	Mile
009E3250	Miscellaneous Staking	1.953	Mile
009E3280	Slope Staking	1.953	Mile
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
009E4200	Construction Schedule, Category II	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0130	Remove Traffic Sign	54	Each
110E0600	Remove Fence	22,708	Ft
110E1010	Remove Asphalt Concrete Pavement	1,331.0	SqYd
110E1050	Remove Asphalt Concrete Approach Pavement	1,379.4	SqYd
110E1510	Remove Luminaire Pole	2	Each
110E1540	Remove Luminaire Pole Footing	2	Each
110E1690	Remove Sediment	1.2	CuYd
110E1700	Remove Silt Fence	80	Ft
110E7150	Remove Sign for Reset	2	Each
110E7152	Remove Delineator for Reset	31	Each
110E7500	Remove Pipe for Reset	110	Ft
110E7510	Remove Pipe End Section for Reset	12	Each
120E0010	Unclassified Excavation	166,725	CuYd
120E0100	Unclassified Excavation, Digouts	504	CuYd
120E0500	Option Borrow Excavation	74,641	CuYd
120E1000	Muck Excavation	9,741	CuYd
120E2000	Undercutting	22,890	CuYd
120E4100	Reprofiling Ditch	4.6	Sta
120E6100	Water for Embankment	2,090.0	MGal
120E6200	Water for Granular Material	444.0	MGal
210E1005	Surface Preparation	0.500	Mile
230E0010	Placing Topsoil	31,246	CuYd
230E0020	Contractor Furnished Topsoil	50	CuYd
240E0010	Obliterate Old Road	22	Sta
250E0020	Incidental Work, Grading	Lump Sum	LS
260E1010	Base Course	2,445.0	Ton
260E1030	Base Course, Salvaged	41,088.0	Ton
260E2010	Gravel Cushion	2,034.0	Ton
260E3500	Temporary Gravel Surfacing	100.0	Ton
* 260E6000	Granular Material, Furnish	4,550.0	Ton
260E6010	Granular Material	100.0	Ton
270E0042	Salvage Asphalt Mix and Granular Base Material	48,879.0	Ton
* 270E0200	Blend, Haul, and Stockpile Granular Material	19,612.0	Ton

NH-PT 0018(222)311 – PCN 067V (CONTINUED)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
270E0220	Blend and Stockpile Granular Material	40,514.0	Ton
320E0032	PG 58H-34 Asphalt Binder	1,666.6	Ton
320E1200	Asphalt Concrete Composite	420.0	Ton
320E1203	CLASS Q3R HOT MIXED ASPHALT CONCRETE	33,650.0	Ton
320E1800	Asphalt Concrete Blade Laid	1,217.0	Ton
320E4000	Hydrated Lime	345.0	Ton
320E7008	Grind 8" Rumble Strip or Stripe in Asphalt Concrete	15.6	Mile
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	4.5	Mile
330E0010	MC-70 Asphalt for Prime	83.7	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	119.1	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	6.9	Ton
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	11.6	Ton
330E1000	Blotting Sand for Prime	228.8	Ton
330E2000	Sand for Flush Seal	37.2	Ton
330E3000	Sand for Fog Seal	3.0	Ton
332E0010	Cold Milling Asphalt Concrete	163,409	SqYd
360E0020	AE150S Asphalt for Surface Treatment	82.0	Ton
360E1050	Type 3 Cover Aggregate	1,103.2	Ton
421E0100	Pipe Culvert Undercut	81	CuYd
450E0123	18" RCP Class 3, Furnish	20	Ft
450E0130	18" RCP, Install	20	Ft
450E0143	24" RCP Class 3, Furnish	206	Ft
450E0150	24" RCP, Install	206	Ft
450E0163	30" RCP Class 3, Furnish	430	Ft
450E0170	30" RCP, Install	430	Ft
450E0193	42" RCP Class 3, Furnish	112	Ft
450E0200	42" RCP, Install	112	Ft
450E0203	48" RCP Class 3, Furnish	108	Ft
450E0210	48" RCP, Install	108	Ft
450E2008	18" RCP Flared End, Furnish	6	Each
450E2009	18" RCP Flared End, Install	6	Each
450E2016	24" RCP Flared End, Furnish	1	Each
450E2017	24" RCP Flared End, Install	1	Each
450E2032	42" RCP Flared End, Furnish	2	Each
450E2033	42" RCP Flared End, Install	2	Each
450E2036	48" RCP Flared End, Furnish	2	Each
450E2037	48" RCP Flared End, Install	2	Each
450E2044	60" RCP Flared End, Furnish	2	Each
450E2045	60" RCP Flared End, Install	2	Each
450E2060	84" RCP Flared End, Furnish	2	Each
450E2061	84" RCP Flared End, Install	2	Each
450E2200	24" RCP Sloped End, Furnish	6	Each
450E2201	24" RCP Sloped End, Install	6	Each

NH-PT 0018(222)311 – PCN 067V (CONTINUED)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E2204	30" RCP Sloped End, Furnish	12	Each
450E2205	30" RCP Sloped End, Install	12	Each
450E3023	30" RCP Arch Class 3, Furnish	104	Ft
450E3030	30" RCP Arch, Install	104	Ft
450E4604	30" RCP Arch Sloped End, Furnish	2	Each
450E4605	30" RCP Arch Sloped End, Install	2	Each
450E4699	Tie Bolts for RCP	102	Each
450E4759	18" CMP 16 Gauge, Furnish	130	Ft
450E4760	18" CMP, Install	130	Ft
450E4769	24" CMP 16 Gauge, Furnish	374	Ft
450E4770	24" CMP, Install	374	Ft
450E5239	60" CMP Flared End, Furnish	2	Each
450E5240	60" CMP Flared End, Install	2	Each
450E5306	18" CMP Sloped End, Furnish	4	Each
450E5307	18" CMP Sloped End, Install	4	Each
450E5406	18" CMP Safety End, Furnish	2	Each
450E5407	18" CMP Safety End, Install	2	Each
450E5410	24" CMP Safety End, Furnish	10	Each
450E5411	24" CMP Safety End, Install	10	Each
450E7660	60" Steel Pipe, Furnish	188	Ft
450E8300	Culvert Joint Cleaning	983.5	Ft
450E8305	Repair Culvert Joint	983.5	Ft
* 450E8900	Cleanout Pipe Culvert	1	Each
450E8910	Cleanout for Culvert Treatment	1	Each
450E9000	Reset Pipe	110	Ft
450E9001	Reset Pipe End Section	11	Each
450E9236	Slipline 60" Pipe	122	Ft
450E9240	Slipline 72" Pipe	102	Ft
450E9244	Slipline 84" Pipe	186	Ft
451E5160	Bore and Jack 60" Pipe	188	Ft
451E7300	Repair Drain Tile	10	Ft
462E0250	Cellular Grout	139.6	CuYd
600E0300	Type III Field Laboratory	1	Each
620E0020	Type 2 Right-of-Way Fence	21,237	Ft
620E0510	Type 1 Temporary Fence	12,385	Ft
620E0520	Type 2 Temporary Fence	3,500	Ft
620E1020	2 Post Panel	70	Each
620E1030	3 Post Panel	36	Each
632E1320	2.0"x2.0" Perforated Tube Post	415.5	Ft
632E1340	2.5"x2.5" Perforated Tube Post	347.0	Ft
632E2022	4"x4" White Delineator Back to Back with 1.12 Lb/Ft Post	40	Each
632E2100	Reset Delineator	31	Each
632E2510	Type 2 Object Marker Back to Back	22	Each

ESTIMATE OF QUANTITIES (CONTINUED)

FOR BIDDING PURPOSES ONLY

NH-PT 0018(222)311 – PCN 067V (CONTINUED)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	455.8	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	50.8	SqFt
632E3500	Reset Sign	2	Each
633E0040	Cold Applied Plastic Pavement Marking, Arrow	12	Each
633E1200	High Build Waterborne Pavement Marking Paint, White	134	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	103	Gal
633E1260	High Build Waterborne Pavement Marking Paint, 24" White	100	Ft
633E1262	High Build Waterborne Pavement Marking Paint, 24" Yellow	309	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	12	Each
634E0010	Flagging	6,000.0	Hour
634E0020	Pilot Car	2,500.0	Hour
634E0110	Traffic Control Signs	831.2	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0135	Traffic Control Supervisor	Lump Sum	LS
634E0275	Type 3 Barricade	10	Each
634E0340	Temporary Raised Pavement Markers	2.0	Mile
634E0380	Tubular Marker	500	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
634E0630	Temporary Pavement Marking	21.0	Mile
635E0045	Breakaway Base Luminaire Pole with Arm, 45' Mounting Height	6	Each
635E3700	Roadway Luminaire, LED with Photoelectric Cell	6	Each
635E4010	1 Section Vehicle Signal Head	2	Each
635E5020	2' Diameter Footing	48.0	Ft
635E5301	Type 1 Electrical Junction Box	4	Each
635E5400	Electrical Service Cabinet	2	Each
635E8120	2" Rigid Conduit, Schedule 40	680	Ft
635E8215	1.5" Rigid Conduit, Schedule 80	135	Ft
635E8220	2" Rigid Conduit, Schedule 80	235	Ft
635E9018	1/C #8 AWG Copper Wire	2,850	Ft
635E9020	1/C #10 AWG Copper Wire	1,510	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	360	Ft
700E0210	Class B Riprap	280.2	Ton
700E0310	Class C Riprap	165.1	Ton
700E0410	Class D Riprap	318.5	Ton
730E0100	Cover Crop Seeding	51.6	Bu
730E0210	Type F Permanent Seed Mixture	838	Lb
731E0200	Fertilizing	2.50	Ton
732E0100	Mulching	16.8	Ton
734E0044	Soil Stabilizer	5.0	Acre
734E0103	Type 3 Erosion Control Blanket	3,750	SqYd
734E0154	12" Diameter Erosion Control Wattle	650	Ft
734E0165	Remove and Reset Erosion Control Wattle	125	Ft

NH-PT 0018(222)311 – PCN 067V (CONTINUED)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
734E0325	Surface Roughening	5.0	Acre
734E0602	Low Flow Silt Fence	2,000	Ft
734E0604	High Flow Silt Fence	544	Ft
734E0610	Mucking Silt Fence	22	CuYd
734E0620	Repair Silt Fence	80	Ft
831E0110	Type B Drainage Fabric	924	SqYd
900E0010	Refurbish Single Mailbox	6	Each
900E0012	Refurbish Double Mailbox	1	Each
900E0900	Curb Stop	2	Each
900E1320	Construction Entrance	2	Each
900E1980	Storage Unit	1	Each

*** - Denotes Non-Participating**

NH 0281(122)0 – PCN 06D1

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	14	Each
009E3225	Reestablish Public Land Survey System Corner	2	Each
009E3230	Grade Staking	0.692	Mile
009E3245	Final Cross Section Survey	0.692	Mile
009E3250	Miscellaneous Staking	0.692	Mile
009E3280	Slope Staking	0.692	Mile
009E3290	Structure Staking	1	Each
009E4200	Construction Schedule, Category II	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0130	Remove Traffic Sign	20	Each
110E0600	Remove Fence	8,477	Ft
110E1690	Remove Sediment	1.0	CuYd
110E1700	Remove Silt Fence	52	Ft
110E7040	Remove Gate for Reset	2	Each
120E0010	Unclassified Excavation	30,315	CuYd
120E0100	Unclassified Excavation, Digouts	35	CuYd
120E0500	Option Borrow Excavation	41,598	CuYd
120E1000	Muck Excavation	514	CuYd
120E2000	Undercutting	2,405	CuYd
120E6100	Water for Embankment	508.0	MGal
120E6200	Water for Granular Material	118.0	MGal
210E1005	Surface Preparation	0.200	Mile
230E0010	Placing Topsoil	12,747	CuYd
230E0020	Contractor Furnished Topsoil	50	CuYd
240E0010	Obliterate Old Road	27	Sta
250E0020	Incidental Work, Grading	Lump Sum	LS
260E1010	Base Course	69.0	Ton
260E1030	Base Course, Salvaged	12,296.0	Ton
260E3500	Temporary Gravel Surfacing	100.0	Ton
270E0042	Salvage Asphalt Mix and Granular Base Material	13,149.0	Ton
270E0220	Blend and Stockpile Granular Material	12,000.0	Ton
320E0032	PG 58H-34 Asphalt Binder	199.4	Ton
320E1203	CLASS Q3R HOT MIXED ASPHALT CONCRETE	4,285.0	Ton
320E4000	Hydrated Lime	42.4	Ton
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	1.4	Mile
320E7035	Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete	392.0	SqFt
330E0010	MC-70 Asphalt for Prime	24.9	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	8.7	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	0.6	Ton
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	3.3	Ton
330E1000	Blotting Sand for Prime	62.0	Ton

ESTIMATE OF QUANTITIES (CONTINUED)

FOR BIDDING PURPOSES ONLY

NH 0281(122)0 – PCN 06D1 (CONTINUED)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
330E2000	Sand for Flush Seal	0.3	Ton
330E3000	Sand for Fog Seal	1.0	Ton
332E0010	Cold Milling Asphalt Concrete	134	SqYd
360E0020	AE150S Asphalt for Surface Treatment	23.9	Ton
360E1050	Type 3 Cover Aggregate	322.0	Ton
450E0143	24" RCP Class 3, Furnish	80	Ft
450E0150	24" RCP, Install	80	Ft
450E2200	24" RCP Sloped End, Furnish	2	Each
450E2201	24" RCP Sloped End, Install	2	Each
450E4759	18" CMP 16 Gauge, Furnish	182	Ft
450E4760	18" CMP, Install	182	Ft
450E4769	24" CMP 16 Gauge, Furnish	152	Ft
450E4770	24" CMP, Install	152	Ft
450E5406	18" CMP Safety End, Furnish	4	Each
450E5407	18" CMP Safety End, Install	4	Each
450E5410	24" CMP Safety End, Furnish	4	Each
450E5411	24" CMP Safety End, Install	4	Each
620E0020	Type 2 Right-of-Way Fence	10,297	Ft
620E0510	Type 1 Temporary Fence	6,480	Ft
620E1020	2 Post Panel	26	Each
620E1030	3 Post Panel	12	Each
620E2100	Reset Gate	2	Each
632E1320	2.0"x2.0" Perforated Tube Post	60.5	Ft
632E1340	2.5"x2.5" Perforated Tube Post	175.0	Ft
632E2022	4"x4" White Delineator Back to Back with 1.12 Lb/Ft Post	14	Each
632E2510	Type 2 Object Marker Back to Back	6	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	224.6	SqFt
634E0010	Flagging	1,250.0	Hour
634E0020	Pilot Car	500.0	Hour
634E0110	Traffic Control Signs	243.7	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0135	Traffic Control Supervisor	Lump Sum	LS
634E0275	Type 3 Barricade	4	Each
634E0340	Temporary Raised Pavement Markers	0.5	Mile
634E0380	Tubular Marker	100	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
634E0630	Temporary Pavement Marking	1.6	Mile
730E0100	Cover Crop Seeding	91.8	Bu
730E0210	Type F Permanent Seed Mixture	218	Lb
731E0200	Fertilizing	4.20	Ton
734E0044	Soil Stabilizer	2.5	Acre
734E0103	Type 3 Erosion Control Blanket	970	SqYd
734E0154	12" Diameter Erosion Control Wattle	300	Ft

NH 0281(122)0 – PCN 06D1 (CONTINUED)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
734E0165	Remove and Reset Erosion Control Wattle	100	Ft
734E0604	High Flow Silt Fence	390	Ft
734E0610	Mucking Silt Fence	15	CuYd
734E0620	Repair Silt Fence	52	Ft
900E1320	Construction Entrance	1	Each

STR. NO. 27-410-349 (PCN 06D1)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0200	Structure Excavation, Box Culvert	74	CuYd
421E0200	Box Culvert Undercut	228	CuYd
560E2162	2-12'x4' Precast Concrete Box Culvert, Furnish	82.0	Ft
560E2163	2-12'x4' Precast Concrete Box Culvert, Install	82.0	Ft
560E3162	2-12'x4' Precast Concrete Box Culvert End Section, Furnish	2	Each
560E3163	2-12'x4' Precast Concrete Box Culvert End Section, Install	2	Each
700E0310	Class C Riprap	75.9	Ton
831E0110	Type B Drainage Fabric	86	SqYd
831E0300	Reinforcement Fabric (MSE)	327	SqYd

P 0043(26)0 – PCN 06D8

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	7	Each
009E3230	Grade Staking	0.533	Mile
009E3245	Final Cross Section Survey	0.533	Mile
009E3250	Miscellaneous Staking	0.533	Mile
009E3280	Slope Staking	0.533	Mile
009E4200	Construction Schedule, Category II	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0130	Remove Traffic Sign	14	Each
110E0600	Remove Fence	3,581	Ft
110E1010	Remove Asphalt Concrete Pavement	30.0	SqYd
110E1700	Remove Silt Fence	48	Ft
120E0010	Unclassified Excavation	20,565	CuYd
120E0100	Unclassified Excavation, Digouts	46	CuYd
120E2000	Undercutting	3,696	CuYd
120E6100	Water for Embankment	113.0	MGal
120E6200	Water for Granular Material	87.0	MGal
210E1005	Surface Preparation	0.100	Mile
230E0010	Placing Topsoil	4,737	CuYd
230E0020	Contractor Furnished Topsoil	50	CuYd
240E0010	Obliterate Old Road	26	Sta
250E0020	Incidental Work, Grading	Lump Sum	LS
260E1010	Base Course	92.0	Ton
260E1030	Base Course, Salvaged	9,130.0	Ton
260E3500	Temporary Gravel Surfacing	100.0	Ton
* 260E6000	Granular Material, Furnish	239.0	Ton
270E0042	Salvage Asphalt Mix and Granular Base Material	10,998.0	Ton
* 270E0200	Blend, Haul, and Stockpile Granular Material	478.0	Ton
270E0220	Blend and Stockpile Granular Material	10,000.0	Ton
320E0032	PG 58H-34 Asphalt Binder	196.3	Ton
320E1200	Asphalt Concrete Composite	10.0	Ton
320E1203	CLASS Q3R HOT MIXED ASPHALT CONCRETE	4,110.0	Ton
320E1800	Asphalt Concrete Blade Laid	61.0	Ton
320E4000	Hydrated Lime	41.3	Ton
320E7008	Grind 8" Rumble Strip or Stripe in Asphalt Concrete	0.8	Mile
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	1.1	Mile
320E7040	Grind 6" Transverse Rumble Strip in Asphalt Concrete	374.0	Ft
330E0010	MC-70 Asphalt for Prime	18.9	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	10.8	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	0.5	Ton
330E0300	SS-1h or CSS-1h Asphalt for Fog Seal	2.6	Ton
330E1000	Blotting Sand for Prime	47.0	Ton
330E2000	Sand for Flush Seal	0.2	Ton

ESTIMATE OF QUANTITIES (CONTINUED)

FOR BIDDING PURPOSES ONLY

P 0043(26)0 – PCN 06D8 (CONTINUED)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
330E3000	Sand for Fog Seal	1.0	Ton
332E0010	Cold Milling Asphalt Concrete	7,526	SqYd
360E0020	AE150S Asphalt for Surface Treatment	18.4	Ton
360E1050	Type 3 Cover Aggregate	247.0	Ton
450E0143	24" RCP Class 3, Furnish	104	Ft
450E0150	24" RCP, Install	104	Ft
450E0163	30" RCP Class 3, Furnish	74	Ft
450E0170	30" RCP, Install	74	Ft
450E2200	24" RCP Sloped End, Furnish	2	Each
450E2201	24" RCP Sloped End, Install	2	Each
450E2204	30" RCP Sloped End, Furnish	2	Each
450E2205	30" RCP Sloped End, Install	2	Each
450E4759	18" CMP 16 Gauge, Furnish	82	Ft
450E4760	18" CMP, Install	82	Ft
450E4769	24" CMP 16 Gauge, Furnish	86	Ft
450E4770	24" CMP, Install	86	Ft
450E5406	18" CMP Safety End, Furnish	2	Each
450E5407	18" CMP Safety End, Install	2	Each
450E5410	24" CMP Safety End, Furnish	2	Each
450E5411	24" CMP Safety End, Install	2	Each
620E0020	Type 2 Right-of-Way Fence	4,744	Ft
620E0510	Type 1 Temporary Fence	3,684	Ft
620E1020	2 Post Panel	11	Each
620E1030	3 Post Panel	6	Each
632E1320	2.0"x2.0" Perforated Tube Post	26.0	Ft
632E1340	2.5"x2.5" Perforated Tube Post	75.0	Ft
632E2022	4"x4" White Delineator Back to Back with 1.12 Lb/Ft Post	11	Each
632E2510	Type 2 Object Marker Back to Back	4	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	58.9	SqFt
634E0010	Flagging	1,250.0	Hour
634E0020	Pilot Car	500.0	Hour
634E0110	Traffic Control Signs	243.7	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0135	Traffic Control Supervisor	Lump Sum	LS
634E0275	Type 3 Barricade	4	Each
634E0340	Temporary Raised Pavement Markers	0.7	Mile
634E0380	Tubular Marker	100	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
634E0630	Temporary Pavement Marking	2.1	Mile
730E0100	Cover Crop Seeding	116.4	Bu
730E0210	Type F Permanent Seed Mixture	148	Lb
731E0200	Fertilizing	2.90	Ton
734E0044	Soil Stabilizer	2.5	Acre

P 0043(26)0 – PCN 06D8 (CONTINUED)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
734E0604	High Flow Silt Fence	214	Ft
734E0610	Mucking Silt Fence	13	CuYd
734E0620	Repair Silt Fence	48	Ft
900E1320	Construction Entrance	1	Each

*** - Denotes Non-Participating**

ENVIRONMENTAL COMMITMENTS

FOR BIDDING PURPOSES ONLY

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/doing-business/environmental/about-environmental/>

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT A: AQUATIC RESOURCES

COMMITMENT A1: WETLANDS

All efforts to avoid and minimize wetland impacts from the project have resulted in approximately 3.28 acres of wetlands (includes temporary and permanent) becoming impacted. Refer to the plans for location and boundaries of the impacted wetlands.

Table of Impacted Wetlands

PCN067V

Wetland No.	Station	Permanent Impact (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
WL 1	37+50 - 41+00 (L/R)	0.08	0.03	0.11
WL 2	40+00 - 41+50 (L)	0.03	0.00	0.03
WL 3	42+00 - 42+75 (R)	0.00	0.00	0.00
WL 4	42+00 - 44+50 (R)	0.00	0.00	0.00
WL 5	43+50 - 45+00 (R)	0.00	0.00	0.00
WL 6	55+50 - 63+00 (R)	0.00	0.00	0.00
WL 7	64+25 - 65+00 (L)	0.00	0.00	0.00
WL 8	76+25 - 77+25 (R)	0.00	0.00	0.00
WL 9	80+50 - 83+00 (L/R)	0.01	0.09	0.10
WL 10	107+50 - 112+00 (L/R)	0.00	0.00	0.00
WL 11	132+75 - 137+00 (L/R)	0.00	0.06	0.06
WL 12	143+50 - 144+25 (R)	0.00	0.04	0.04
WL 13	154+00 - 157+50 (L/R)	0.00	0.00	0.00
WL 14	156+00 - 157+75 (L)	0.00	0.00	0.00
WL 15	161+75 - 163+50 (L/R)	0.02	0.18	0.20
WL 16	184+50 - 187+00 (R)	0.00	0.00	0.00
WL 17&18	207+75 - 211+50 (L/R)	0.01	0.39	0.40
WL 19	228+00 - 232+00 (L/R)	0.00	0.00	0.00
WL 20	253+00 - 257+00 (L/R)	0.00	0.00	0.00
WL 21	268+25 - 270+00 (R)	0.00	0.02	0.02
WL 22	280+75 - 284+00 (L/R)	0.01	0.06	0.07
WL 23	306+00 - 307+50 (R)	0.00	0.00	0.00
WL 24	374+25 - 378+25 (L/R)	0.00	0.00	0.00
WL 25	382+00 - 384+50 (L/R)	0.01	0.18	0.19
WL 26	393+50 - 397+00 (L/R)	0.00	0.00	0.00
WL 27	419+25 - 419+75 (L)	0.00	0.00	0.00
06D1 - WL 4/WL 28	26+90 - 31+50 (L)	0.27	0.00	0.27
06D1 - WL 5	4+70 - 5+60 (L/R)	0.01	0.02	0.03

PCN 06D8

Wetland No.	Station	Permanent Impact (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
WL 1	37+00 - 40+00 (L/R)	0.22	0.63	0.85
WL 3	45+00 - 47+00 (R)	0.00	0.00	0.00
WL 4	41+50 - 44+50 (L/R)	0.22	0.06	0.28

PCN 06D1

Wetland No.	Station	Permanent Impact (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
WL 1	0+33 - 6+00 (L/R)	0.17	0.36	0.53
WL 2	12+75 - 18+00 (L/R)	0.00	0.05	0.05
WL 3	OLD US281 (R)	0.00	0.05	0.05

Action Taken/Required:

SDDOT will acquire 3.5 credits from the Ducks Unlimited Brule County In-Lieu Fee program to mitigate permanent impacts.

Temporary impacts identified in the Table of Impacted Wetlands will not be mitigated as original contours and elevations will be re-established. Prior to initiating temporary work in wetlands, the Contractor will submit a plan to the Project Engineer in accordance with Section 7.18 of the Specifications.

The Contractor will notify the Project Engineer if additional easement is needed to complete work adjacent to any wetland. The Project Engineer will obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any wetlands beyond the work limits and easements shown in the plans.

COMMITMENT A2: STREAMS

All efforts to avoid and minimize stream impacts from the project have resulted in approximately 0.02 acres of stream (includes temporary and permanent) becoming impacted. Refer to the plans for location and boundaries of the impacted streams.

Table of Impacted Streams

PCN 067V

Stream Name	Station	Permanent Impact (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
OW 1	80+50 - 83+00 (R)	0.00	0.01	0.01
OW 2	161+75 - 163+50 (L/R)	0.00	0.01	0.01
OW 3	280+75 - 284+00 (L/R)	0.00	0.00	0.00
OW 4	382+00 - 384+50 (R)	0.00	0.00	0.00
OW 5	419+75 - 420+90 (L)	0.00	0.00	0.00

PCN 06D1

Stream Name	Station	Permanent Impact (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
OW 1	5+00 - 8+00 (R)	0.00	0.00	0.00
OW 2	OLD US281 (R)	0.00	0.00	0.00

ENVIRONMENTAL COMMITMENTS

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COMMITMENT A2: STREAMS (CONTINUED)

Action Taken/Required:

It has been determined that project impacts do not require mitigation. Temporary impacts identified in the Table of Impacted Streams will not be mitigated as the finished ground under the bridge will be shaped to match the upstream channel and flood plain and the existing low water channel will be maintained as near as practical to the existing.

The Contractor will notify the Project Engineer if additional easement is needed to complete work adjacent to any stream. The Project Engineer will obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any streams beyond the work limits and easements shown in the plans.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

COMMITMENT B3: AMERICAN BURYING BEETLE

This project is in an area that contains habitat associated with the American Burying Beetle. All work included within the project limits, SDDOT designated sources and sites, and designated option sources and sites provided in the plans have been coordinated with the USFWS.

Action Taken/Required:

Earth disturbing activities will not occur outside the designated work limits shown in the plans unless specifically stated. The Contractor is responsible for obtaining USFWS review for any borrow sites, staging areas, waste sites, additional easements, and other ground disturbing activities outside the project work limits shown in the plans. At the pre-construction meeting the Contractor will provide the Project Engineer a copy of the USFWS review for any work outside the designated work limits shown in the plans to ensure all permit conditions and plans are clearly understood.

COMMITMENT B4: BALD AND GOLDEN EAGLE

Bald and/or Golden eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

COMMITMENT C: WATER SOURCE

If a Contractor needs access to state waters for extraction, the Contractor must obtain a water right, through the application of a Temporary Permit to Use Public Waters before work begins.

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Agriculture and Natural Resources (SDDANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Temporary permit to use public waters for highway construction purposes application can be found on the SDDANR website: https://danr.sd.gov/OfficeOfWater/WaterRights/PermitForms/default.aspx

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:
< https://sdleastwanted.sd.gov/maps/default.aspx>

South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species:
< https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04 >

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

This project may be in the vicinity of multiple streams and wetlands. These waters are considered waters of the state and are protected under Administrative Rules of South Dakota (ARSD) Chapter 74:51. Special construction measures may have to be taken to ensure that this water body is not impacted.

Action Taken/Required:

The Contractor is advised that the South Dakota Surface Water Quality Standards, administered by the South Dakota Department of Agriculture and Natural Resources (DANR), apply to this project. Special construction measures will be taken to ensure the above standard(s) of the surface waters are maintained and protected.

COMMITMENT D2: SURFACE WATER DISCHARGE

The DANR General Permit for Temporary Discharge Activities is required for temporary dewatering and discharges to waters of the state. The effluent limit for total suspended solids will be 90 mg/L 30-day average. The effluent limit applies to discharges to all waters of the state except discharges to waters classified as coldwater permanent fish life propagation waters according to the ARSD 74:51:01:45. For discharges to waters of the state classified as coldwater permanent fish life propagation waters, the effluent limit for total suspended solids will be 53 mg/L daily maximum.

The permittee has the option of completing effluent testing or implementing a pollution prevention plan for compliance with this permit. If the permittee develops a pollution prevention plan instead of total suspended solids sampling, the plan must be developed and implemented prior to discontinuing total suspended solids sampling. Refer to Section 4.0 of the permit. If any pollutants are suspected of being discharged, a sample must be taken for those parameters listed in Section 3.4 of the permit.

Refer to Commitment D1: Surface Water Quality for stream classification.

Action Taken/Required:

If construction dewatering is required and this project is currently covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the contractor will need to submit the dewatering information to the Project Engineer using the following SDDOT Dewatering Info CDX form:

<https://dot.sd.gov/doing-business/environmental/forms/>

ENVIRONMENTAL COMMITMENTS

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COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance and/or work in a waterway.

Action Taken/Required:

The DANR General Permit for Stormwater Discharges Associated with Construction Activities is required for construction activity disturbing one or more acres of earth and work in a waterway. The SDDOT is the owner of this permit and will submit the NOI to DANR 15 days prior to project start in order to obtain coverage under the General Permit. Work can begin once the DANR letter of approval is received.

The Contractor must adhere to the "Special Provision Regarding Storm Water Discharges to Waters of the State."

The Contractor will complete the DANR Contractor Certification Form prior to the pre-construction meeting. The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the permit for this project. Work may not begin on this project until this form is signed and submitted to DANR.

The form can be found at:
<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_CGPAppendixCCA2018Fillable.pdf >

The Contractor is advised that permit coverage may also be required for off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

Storm Water Pollution Prevention Plan

The Storm Water Pollution Prevention Plan (SWPPP) will be developed prior to the submittal of the NOI and will be implemented for all construction activities for compliance with the permit. The SWPPP must be kept on-site and updated as site conditions change. Erosion control measures and best management practices will be implemented in accordance with the SWPPP.

The DOT 298 Form will be used for site inspections and to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents and retained for a minimum of three years.

The inspection will include disturbed areas of the construction site that have not been finally stabilized, areas used for storage materials, structural control measures, and locations where vehicles enter or exit the site. These areas will be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWPPP will be observed to ensure that they are operating correctly, and sediment is not tracked off the site.

Information on storm water permits and SWPPPs are available on the following websites:

SDDOT: < https://dot.sd.gov/doing-business/environmental/stormwater >

DANR:<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/stormwater/default.aspx>

EPA: < https://www.epa.gov/npdes >

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) will be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Agriculture and Natural Resources.

The waste disposal site(s) will not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Environmental Office and the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements will apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating, "No Dumping Allowed".
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period not to exceed the duration of the project. Prior to project completion, the waste will be removed from view of the ROW or buried, and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) will be incidental to the various contract items.

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historic Preservation Office (SHPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view in which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 150 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

SHPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

COMMITMENT J: CONSTRUCTION PRACTICES FOR TEMPORARY WORKS IN WATERWAYS OF THE U.S.

The Contractor is advised that special construction measures must be taken to ensure that the waterways of the U.S. are not impacted.

Action Taken/Required:

Excavation will not occur below the ordinary high-water elevation in waterways outside of caissons, cribs, cofferdams, steel piling, or sheeting. The natural streambed will not be disturbed unless specified by the plans and under the observation of the Project Engineer. Refer to the Table of U.S. Waterways to Protect for ordinary high-water elevations. Any structure work over or within the waterway will be constructed according to Section 7.21 C of the Specifications.

All dredged or excavated materials will be placed at a site above the ordinary high-water elevation in a confined area (not classified as a wetland) that is a minimum of 50 feet away from concentrated flows of storm water, drainage courses, and inlets to prevent return of such material to the waterway.

The construction of temporary work platforms, crossings, or berms below the ordinary high-water elevation will be allowed if all material placed below the ordinary high-water elevation consists of Class B or larger riprap.

All temporary caissons, cribs, cofferdams, steel piling, sheeting, work platforms, crossings, and berms will be removed with minimal disturbance to the streambed. Proper construction practices will be used to minimize increases in suspended solids and turbidity in the waterway.

Bridge berms, wing dams, traffic diversions, channel reconstruction, stream diversions, grading, etc. will be constructed in close conformity with the plans to ensure that the hydraulic capacity of the waterway is not changed.

Temporary waterway crossings required for the Contractor's construction operations will be constructed with an adequate drainage structure size and minimum fill height to reduce the potential for upstream flooding. The Contractor will be responsible for sizing the temporary drainage structure for these crossings.

All temporary works in waterways of the US are required to be covered in the Corp of Engineers 404 Permit. At the time of the preconstruction meeting, the Contractor will submit documentation for all temporary works for the purpose of complying with the 404 Permit requirements in accordance with Section 423.3 A of the Specifications.

Table of U.S. Waterways to Protect

Station	Waterway	Ordinary High-Water Elevation
167+37 (067V)	Unnamed Tributary	1822.5'

Stream channel excavation within "Waters of the US" is subject to USACE regulatory jurisdiction. Stream channel excavation cannot exceed the permitted quantities and/or surface area. The 404 Permit is included in the Special Provisions.

The Contractor will take all precautions necessary to prevent any incidental discharges associated with the excavation and hauling of material from the stream channel. This pertains to any excavation operations such as, foundation, pier, or abutment excavation, channel cleanout, excavation for riprap protection, and removal of any temporary fill associated with construction activities.

COMMITMENT N: SECTION 404 PERMIT

The SDDOT has obtained a Section 404 Permit from the USACE for the permanent actions associated with this project.

Action Taken/Required:

The Contractor will comply with all requirements contained in the Section 404 Permit.

The Contractor will also be responsible for obtaining a Section 404 Permit for any dredge, excavation, or fill activities associated with material sources, storage areas, waste sites, and Contractor work sites outside the plan work limits that affect wetlands, floodplains, or waters of the United States.

TYPICAL GRADING SECTION

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	13	267

Plotting Date: 10/01/2025 Rev: 9-4-2024 NJF

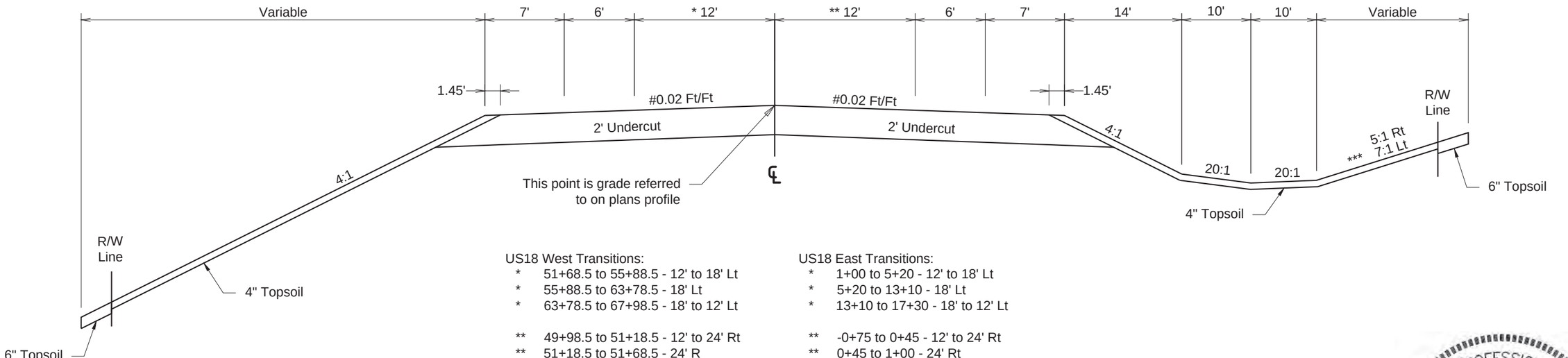
17+00 - 76+08.34
(US Hwy. 18 West)

-0+75 - 43+26.45
(US Hwy. 18 East)

0+33 - 36+56
(US Hwy. 281)

21+30.10 - 49+25.58
(SD Hwy. 43)

\# Shoulder/sluff sections are to match lane superelevation slope



US18 West Transitions:

* 51+68.5 to 55+88.5 - 12' to 18' Lt
* 55+88.5 to 63+78.5 - 18' Lt
* 63+78.5 to 67+98.5 - 18' to 12' Lt

** 49+98.5 to 51+18.5 - 12' to 24' Rt
** 51+18.5 to 51+68.5 - 24' R
** 51+68.5 to 55+88.5 - 24' to 30' R
** 55+88.5 to 63+78.5 - 30' R
** 63+78.5 to 73+08.5 - 30' to 24' R
** 67+98.5 to 73+08.5 - 24' R
** 73+08.5 to 76+08.5 - 24' to 12' R

*** 57+00 to 68+00 - 10:1 Lt.

US18 East Transitions:

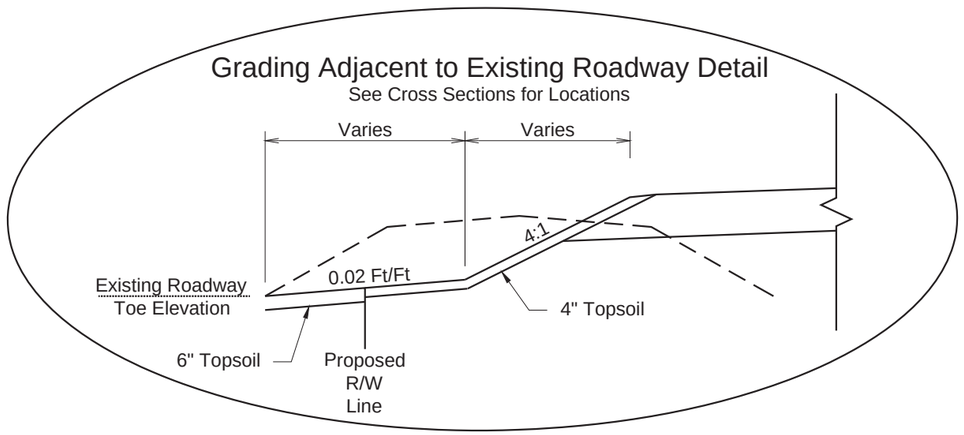
* 1+00 to 5+20 - 12' to 18' Lt
* 5+20 to 13+10 - 18' Lt
* 13+10 to 17+30 - 18' to 12' Lt

** -0+75 to 0+45 - 12' to 24' Rt
** 0+45 to 1+00 - 24' Rt
** 1+00 to 5+20 - 24' to 30' Rt
** 5+20 to 13+10 - 30' Rt
** 13+10 to 17+30 - 30' to 24' Rt
** 17+30 to 20+00 - 24' Rt
** 20+00 to 23+00 - 24' to 12' Rt

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13792
WAYLON D. BLASIUS
03/25/2026

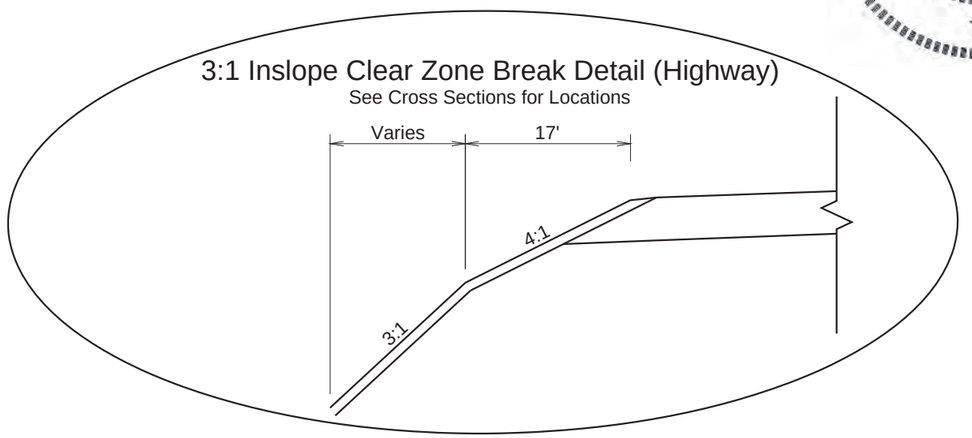
Grading Adjacent to Existing Roadway Detail

See Cross Sections for Locations



3:1 Inslope Clear Zone Break Detail (Highway)

See Cross Sections for Locations



TYPICAL GRADING SECTION

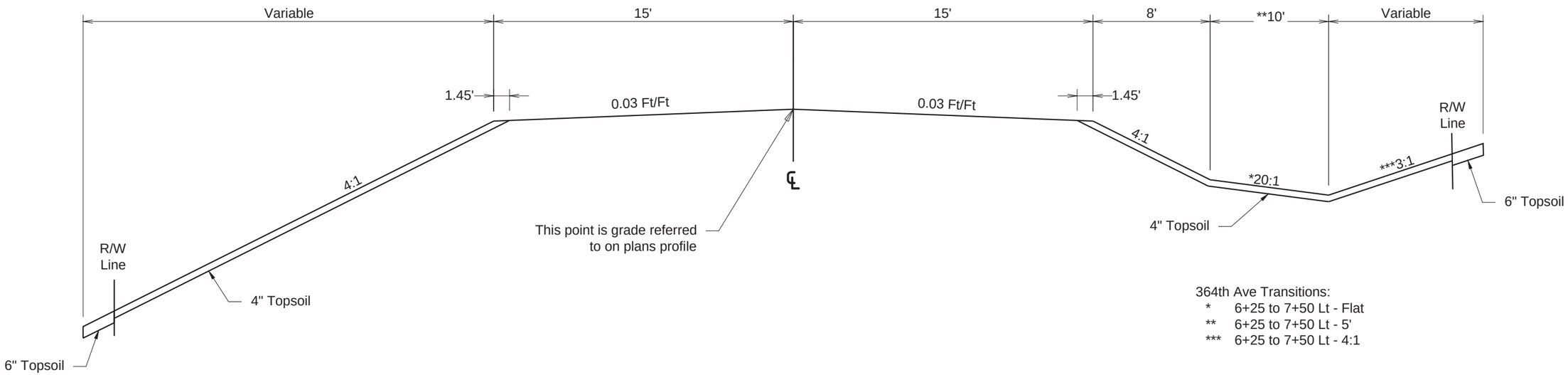
FOR BIDDING PURPOSES ONLY

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	14	267

Plotting Date: 10/01/2025 Rev:

6+51.45 - 9+38.46
10+00 - 19+21.16
(County Highway 54 / 303rd. Street)

5+00 - 11+20.69
(364th Ave.)

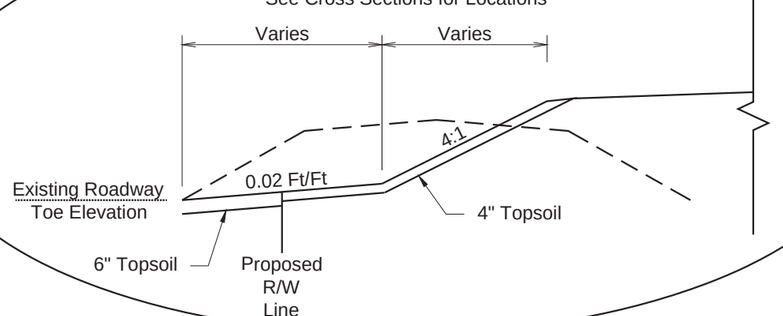


364th Ave Transitions:
- * 6+25 to 7+50 Lt - Flat
- ** 6+25 to 7+50 Lt - 5'
- *** 6+25 to 7+50 Lt - 4:1

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13392
WAYLON BLASIUS
10/25/2025

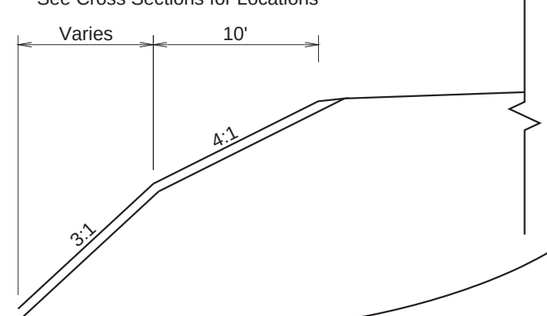
Grading Adjacent to Existing Roadway Detail

See Cross Sections for Locations



3:1 Inslope Clear Zone Break Detail (Gravel Road)

See Cross Sections for Locations



FOR BIDDING PURPOSES ONLY

Plotting Date: 12/29/2025

PLOT SCALE - 1:6

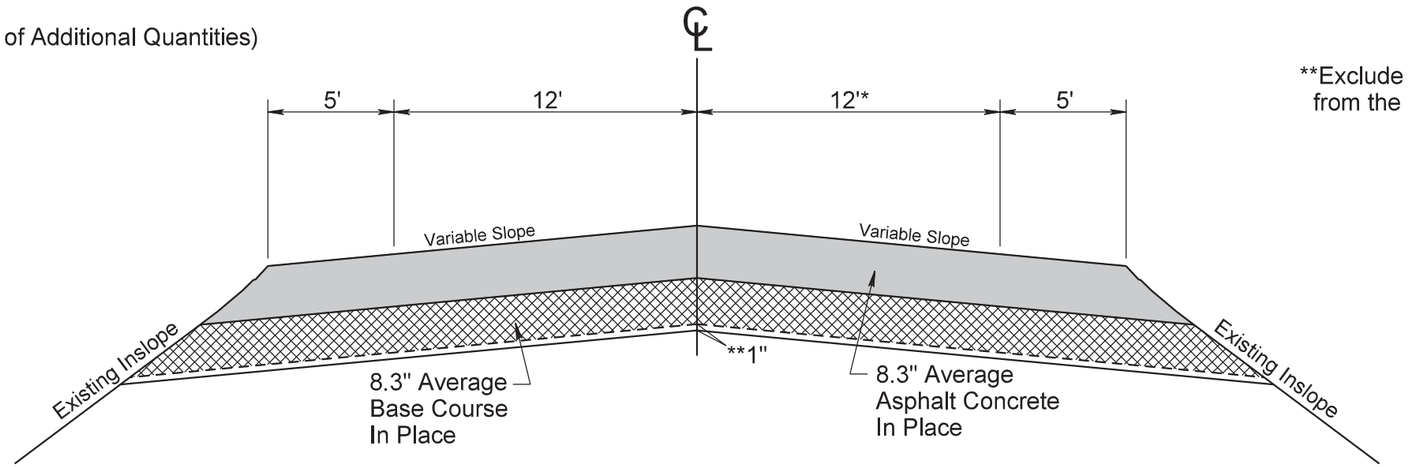
PLOT NAME - 1

TYPICAL SALVAGE & STOCKPILE SECTION

Salvage Asphalt Mix Material
(Quantity is included in the Table of Additional Quantities)

Salvage Granular Base Material
(Quantity is included in the Table of Additional Quantities)

SECTION A
NH-PT 0018(222)311
7671' US18 West



*Transition Lengths:
720' (24' wide)
600' (24' wide to 12' wide)

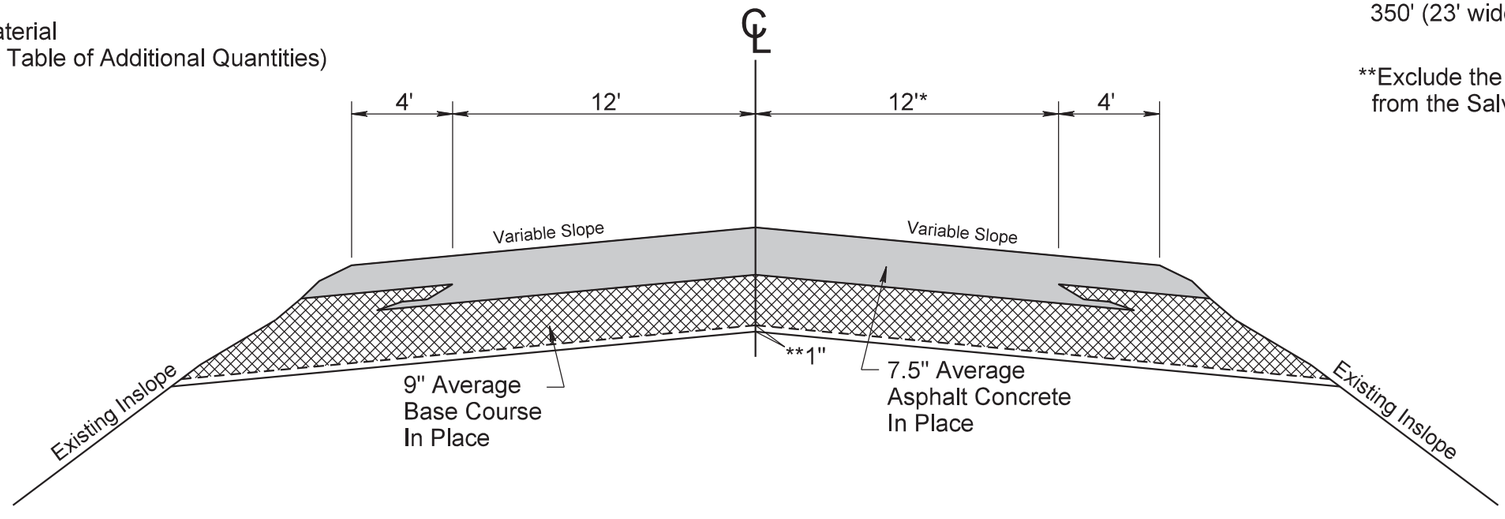
**Exclude the bottom 1" of in place Base Course from the Salvage Granular Base Material.

TYPICAL SALVAGE & STOCKPILE SECTION

Salvage Asphalt Mix Material
(Quantity is included in the Table of Additional Quantities)

Salvage Granular Base Material
(Quantity is included in the Table of Additional Quantities)

SECTION B
NH-PT 0018(222)311
4447' US18 East



*Transition Lengths:
350' (12' wide to 23' wide)
1231' (23' wide)
350' (23' wide to 12' wide)

**Exclude the bottom 1" of in place Base Course from the Salvage Granular Base Material.

PLOTTED FROM - TRMI11118

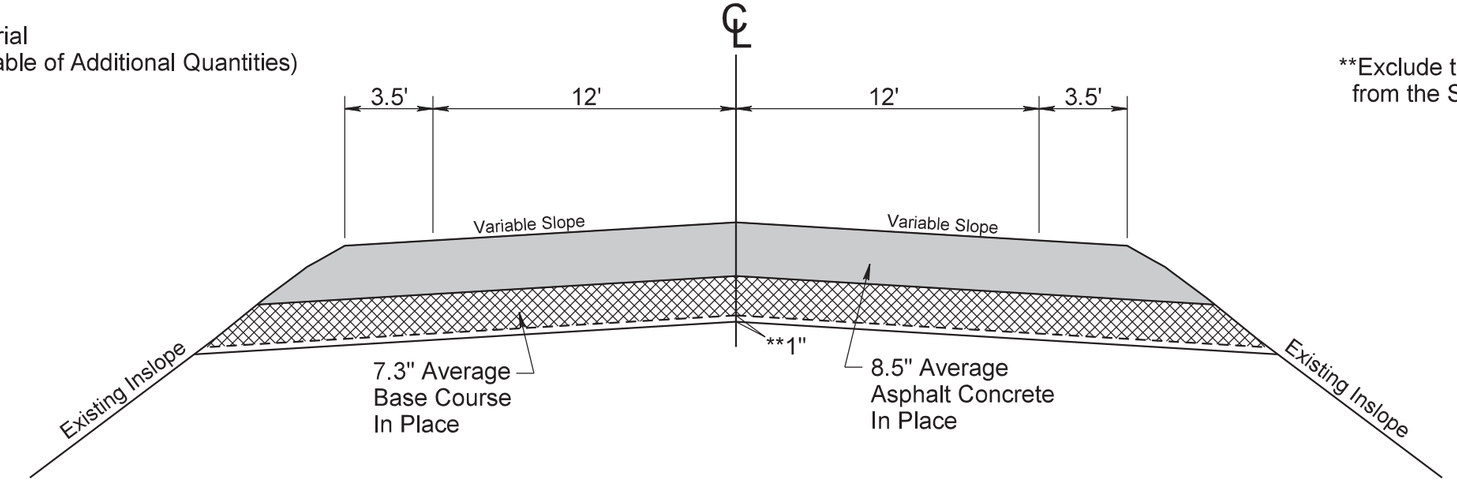
FILE - ...\TSECALL.DGN

TYPICAL SALVAGE & STOCKPILE SECTION

Salvage Asphalt Mix Material
(Quantity is included in the Table of Additional Quantities)

Salvage Granular Base Material
(Quantity is included in the Table of Additional Quantities)

SECTION C
NH 0281(122)0
4131' US281



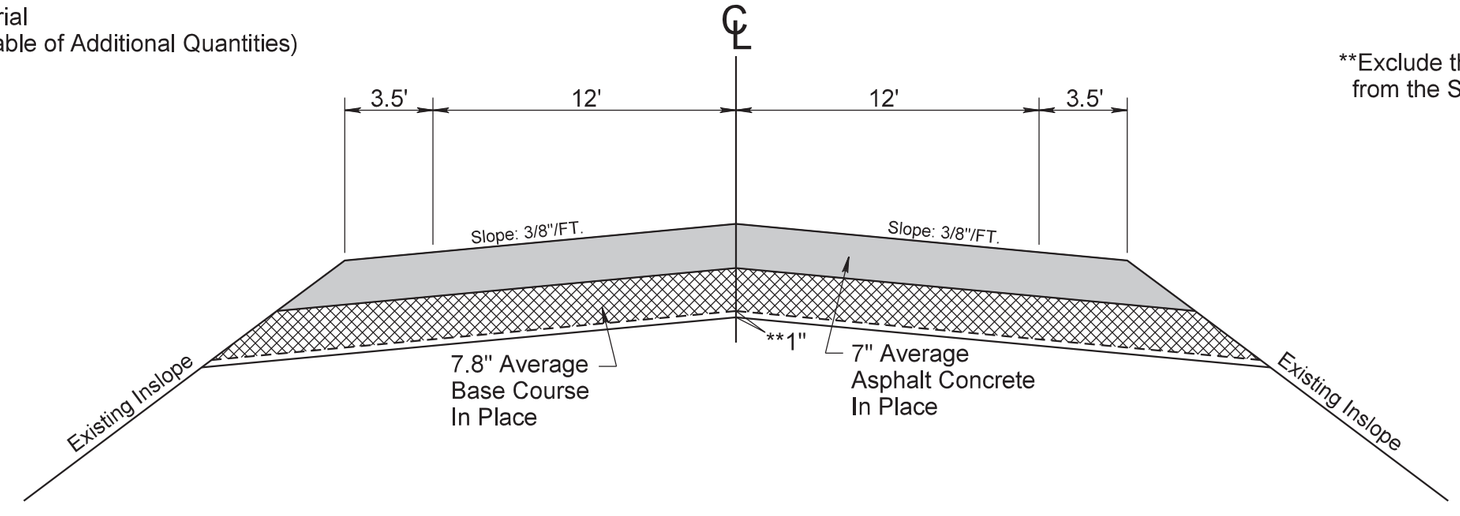
**Exclude the bottom 1" of in place Base Course from the Salvage Granular Base Material.

TYPICAL SALVAGE & STOCKPILE SECTION

Salvage Asphalt Mix Material
(Quantity is included in the Table of Additional Quantities)

Salvage Granular Base Material
(Quantity is included in the Table of Additional Quantities)

SECTION D
P 0043(26)0
3764' SD43



**Exclude the bottom 1" of in place Base Course from the Salvage Granular Base Material.

PLOT SCALE - 1:6
PLOT NAME - 2
PLOTTED FROM - TRMI11118
FILE - ...\TSECALL.DGN

FOR BIDDING PURPOSES ONLY

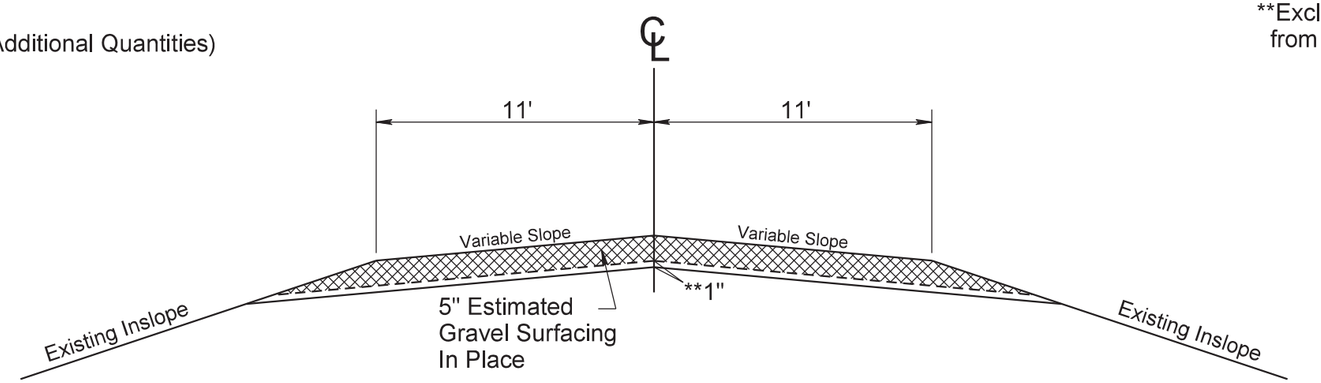
Plotting Date: 12/29/2025

TYPICAL SALVAGE & STOCKPILE SECTION

SECTION E
NH-PT 0018(222)311
1228' 364th Ave

Salvage Granular Base Material
(Quantity is included in the Table of Additional Quantities)

**Exclude the bottom 1" of in place Gravel Surfacing from the Salvage Granular Base Material.

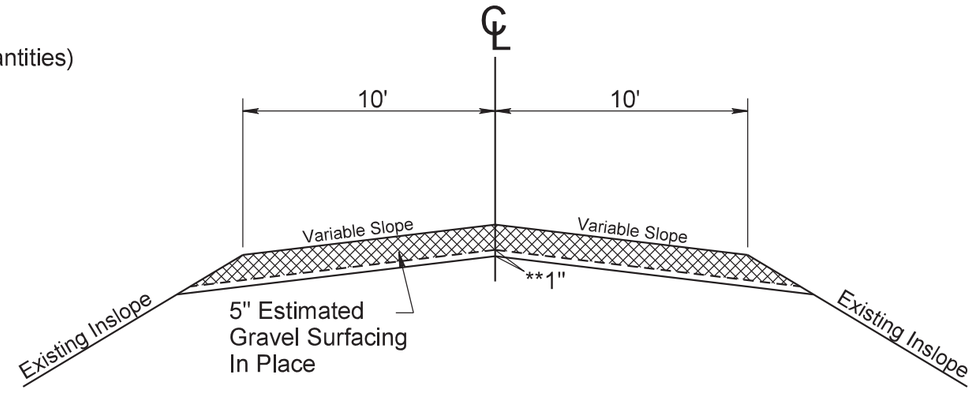


TYPICAL SALVAGE & STOCKPILE SECTION

SECTION F
NH-PT 0018(222)311
1100' Co. Rd. 54/303rd St East

Salvage Granular Base Material
(Quantity is included in the Table of Additional Quantities)

**Exclude the bottom 1" of in place Gravel Surfacing from the Salvage Granular Base Material.



PLOT SCALE - 1:6
PLOT NAME - 3
FILE - ...\TSECALL.DGN
PLOTTED FROM - TRMI11118

FOR BIDDING PURPOSES ONLY

Plotting Date: 12/29/2025

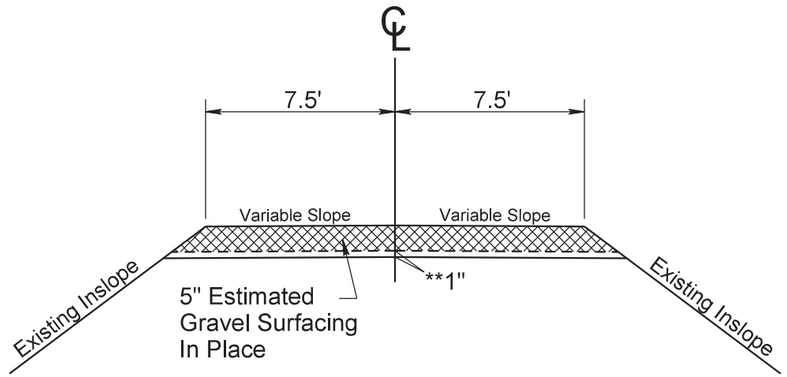
PLOT SCALE - 1:6

PLOT NAME - 4

TYPICAL SALVAGE & STOCKPILE SECTION

SECTION G
P 0043(26)0
1060' Co. Rd. 46/303rd St

Salvage Granular Base Material
(Quantity is included in the Table of Additional Quantities)



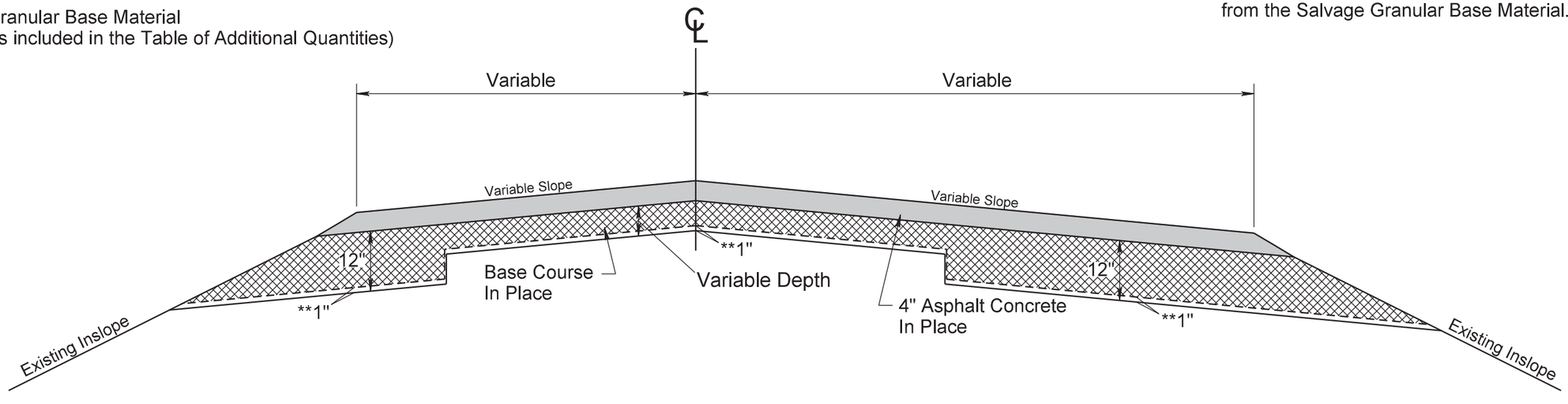
**Exclude the bottom 1" of in place Gravel Surfacing from the Salvage Granular Base Material.

TYPICAL SALVAGE & STOCKPILE SECTION

SECTION H
P 0043(26)0
700' Co. Rd. 46/303rd St

Salvage Asphalt Mix Material
(Quantity is included in the Table of Additional Quantities)

Salvage Granular Base Material
(Quantity is included in the Table of Additional Quantities)



**Exclude the bottom 1" of in place Base Course from the Salvage Granular Base Material.

PLOTTED FROM - TRM111118

FILE - ...\TSECALL.DGN

TYPICAL OBLITERATION SECTION

FOR BIDDING PURPOSES ONLY

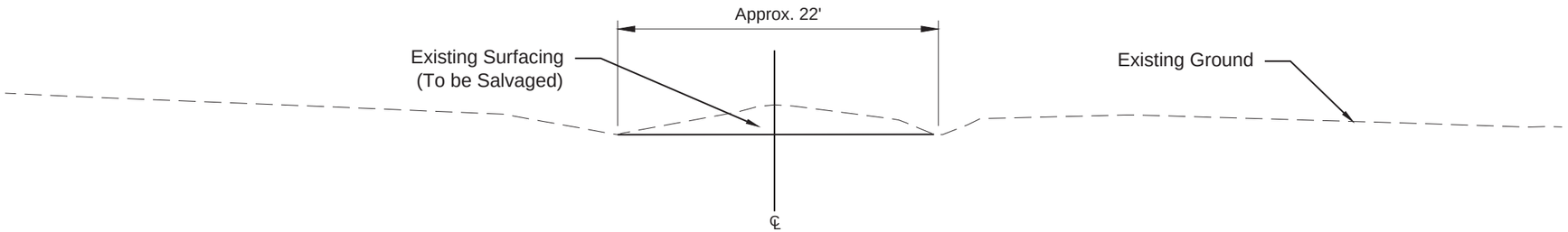
BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	19	267

Plotting Date: 10/01/2025 Rev:

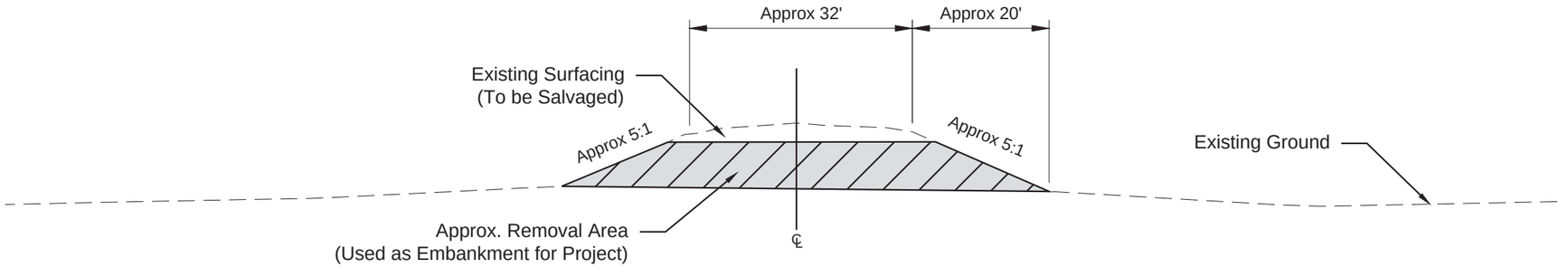
Note: All Obliteration will conform to section 240 of the Specifications, including any grading/shaping activities beyond that depicted in these sections.

Obliteration of Existing 364th Ave

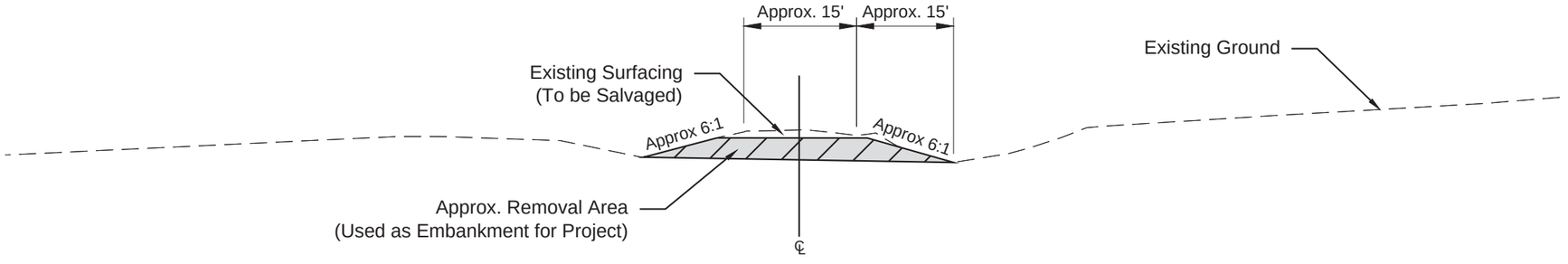
*Obliterated 364th Ave shall maintain a minimum elevation of 1930.0 to maintain existing drainage split



Obliteration of Existing SD43



Obliteration of Existing Co. Rd 46



REGISTERED PROFESSIONAL ENGINEER
REG NO.
13799
WAYLON
BLASIUS
03/25/2026

TYPICAL OBLITERATION SECTION

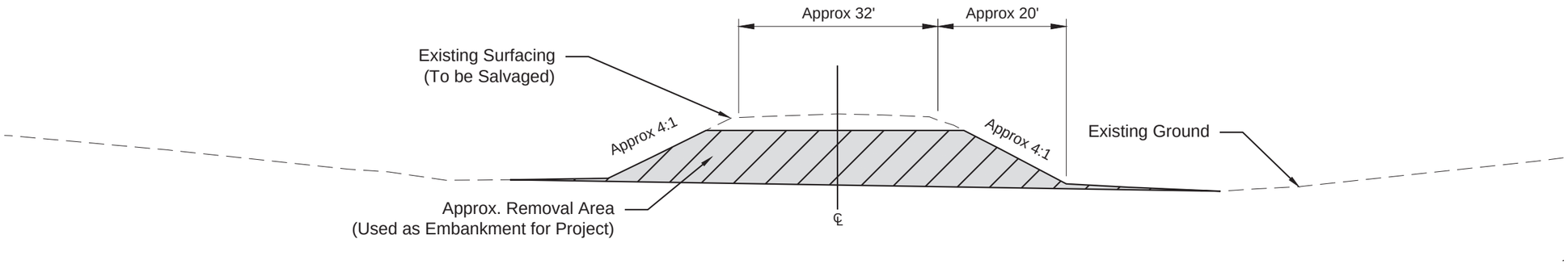
FOR BIDDING PURPOSES ONLY

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	20	267

Plotting Date: 10/01/2025 Rev:

Note: All Obliteration will conform to section 240 of the Specifications, including any grading/shaping activities beyond that depicted in these sections.

Obliteration of Existing US281



REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON
BLASIUS
03/25/2025

PLOT SCALE - 1:6

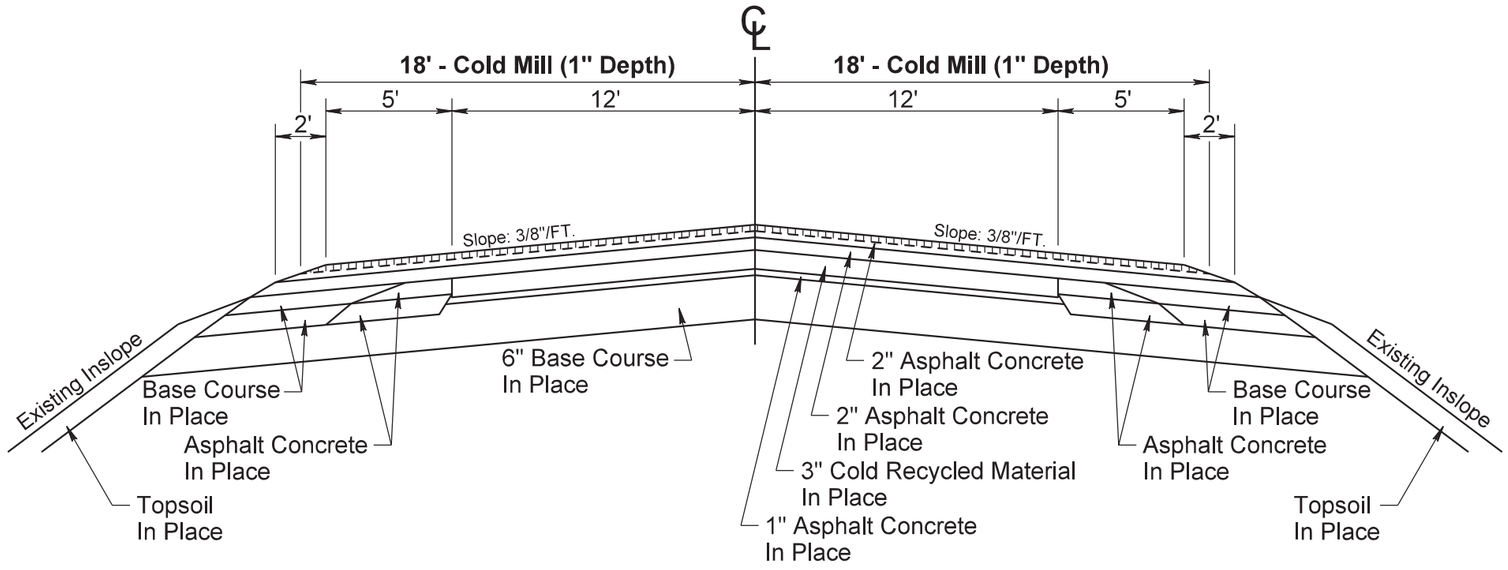
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	21	267

Plotting Date: 12/29/2025

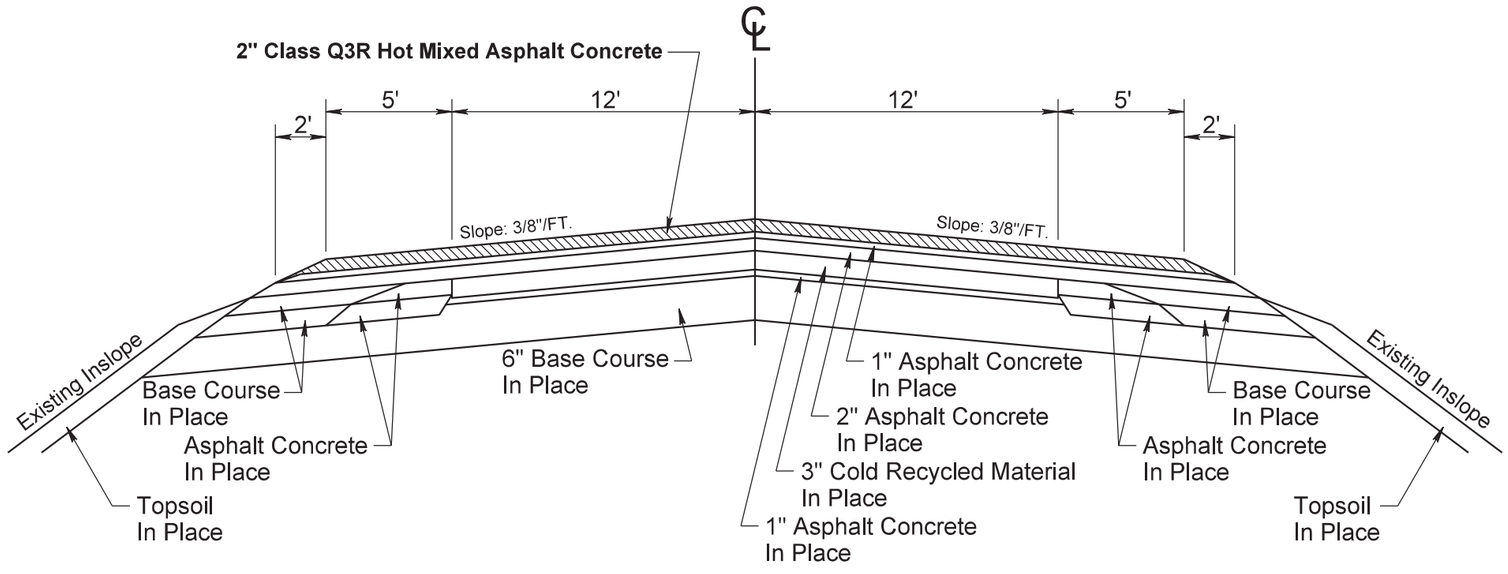
TYPICAL COLD MILLING SECTION

SECTION 1
NH-PT 0018(222)311
0+00 to 17+00



TYPICAL RESURFACING SECTION

SECTION 1
NH-PT 0018(222)311
0+00 to 17+00



PLOTTED FROM - TRMI11118

PLOT NAME - 5

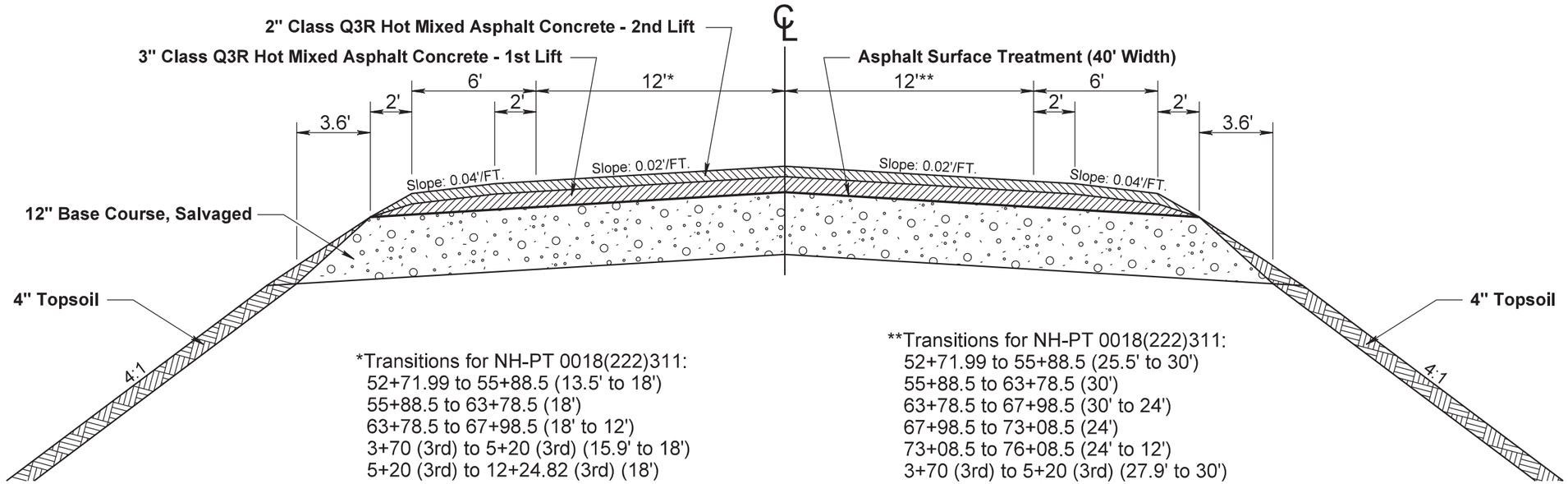
FILE - ...\TSECALL.DGN

FOR BIDDING PURPOSES ONLY

Plotting Date: 12/29/2025

TYPICAL SURFACING SECTION

SECTION 2
NH-PT 0018(222)311
17+00 to 17+20.32
52+71.99 to 76+08.5
3+70 (3rd) to 12+24.82 (3rd)
40+81.68 (3rd) to 43+26 (3rd)
NH 0281(122)0
20+02.71 to 26+79.29
34+99.07 to 36+50
P 0043(26)0
21+30.10 to 23+38.10
41+49.74 to 49+06



*Transitions for NH-PT 0018(222)311:
52+71.99 to 55+88.5 (13.5' to 18')
55+88.5 to 63+78.5 (18')
63+78.5 to 67+98.5 (18' to 12')
3+70 (3rd) to 5+20 (3rd) (15.9' to 18')
5+20 (3rd) to 12+24.82 (3rd) (18')

**Transitions for NH-PT 0018(222)311:
52+71.99 to 55+88.5 (25.5' to 30')
55+88.5 to 63+78.5 (30')
63+78.5 to 67+98.5 (30' to 24')
67+98.5 to 73+08.5 (24')
73+08.5 to 76+08.5 (24' to 12')
3+70 (3rd) to 5+20 (3rd) (27.9' to 30')
5+20 (3rd) to 12+24.82 (3rd) (30')

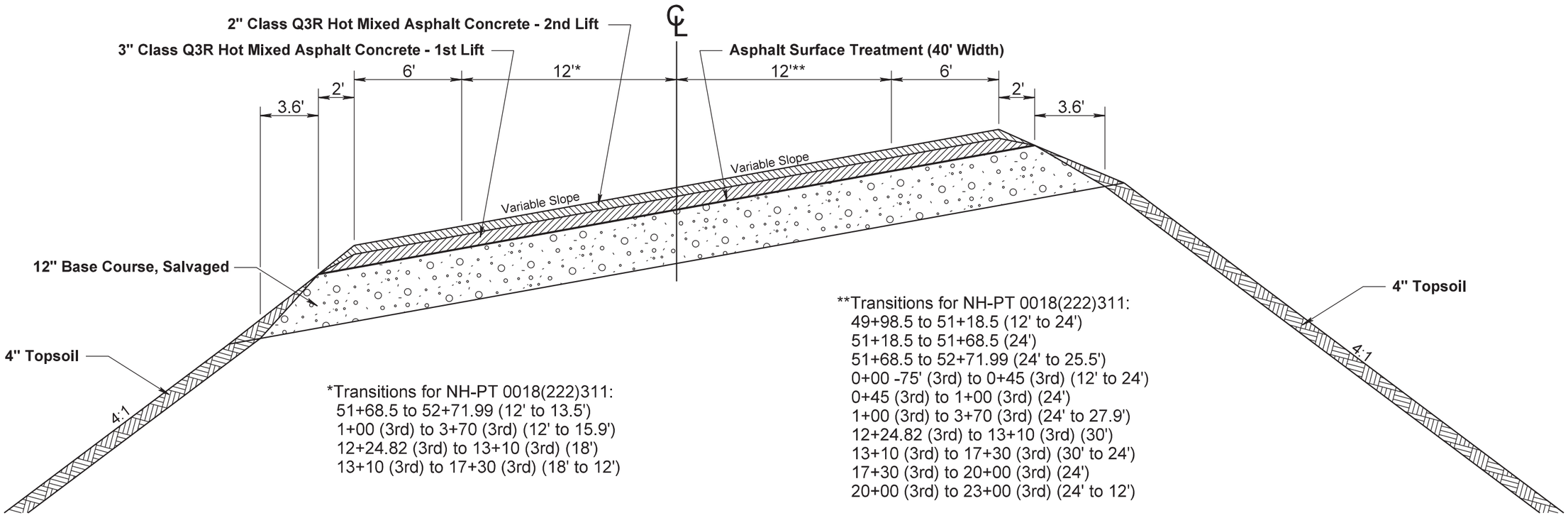
PLOT SCALE - 1:6
PLOT NAME - 6
PLOTTED FROM - TRM111118
FILE - ...\TSECALL.DGN

FOR BIDDING PURPOSES ONLY

Plotting Date: 12/29/2025

TYPICAL SURFACING SECTION

SECTION 3
NH-PT 0018(222)311
17+20.32 to 52+71.99
0+00 -75' (3rd) to 3+70 (3rd)
12+24.82 (3rd) to 40+81.68 (3rd)
NH 0281(122)0
0+33 to 20+02.71



*Transitions for NH-PT 0018(222)311:
51+68.5 to 52+71.99 (12' to 13.5')
1+00 (3rd) to 3+70 (3rd) (12' to 15.9')
12+24.82 (3rd) to 13+10 (3rd) (18')
13+10 (3rd) to 17+30 (3rd) (18' to 12')

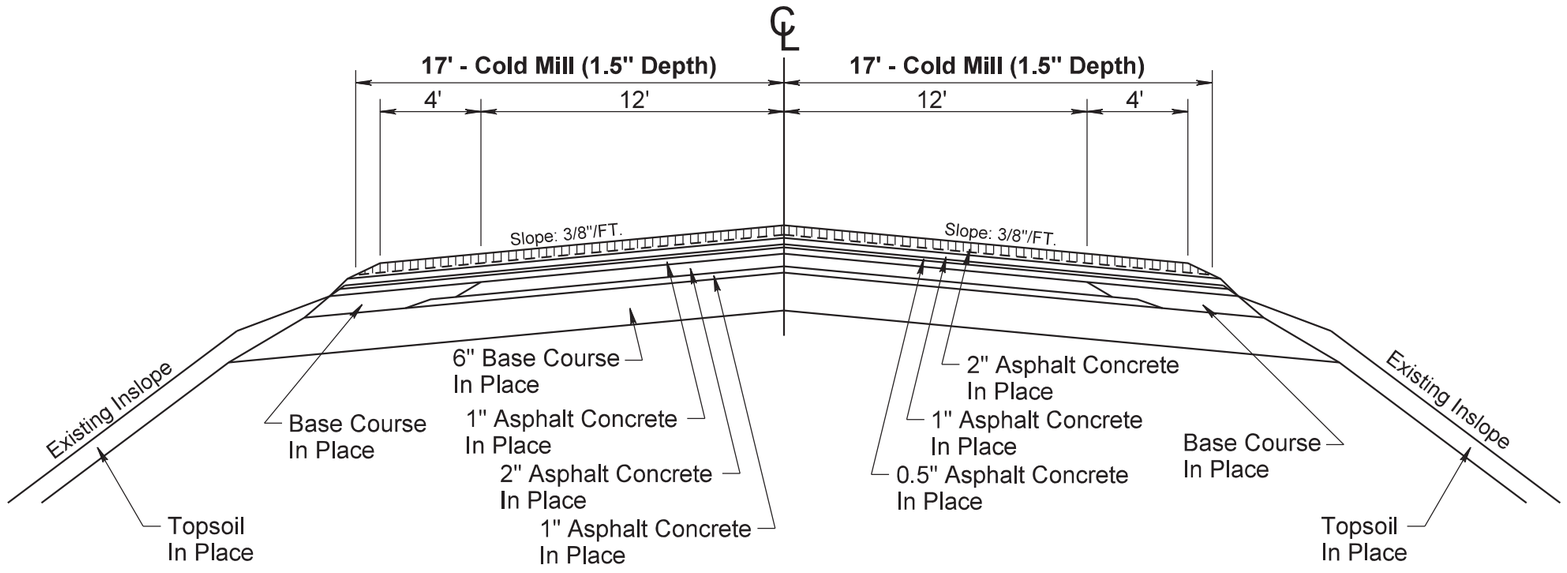
**Transitions for NH-PT 0018(222)311:
49+98.5 to 51+18.5 (12' to 24')
51+18.5 to 51+68.5 (24')
51+68.5 to 52+71.99 (24' to 25.5')
0+00 -75' (3rd) to 0+45 (3rd) (12' to 24')
0+45 (3rd) to 1+00 (3rd) (24')
1+00 (3rd) to 3+70 (3rd) (24' to 27.9')
12+24.82 (3rd) to 13+10 (3rd) (30')
13+10 (3rd) to 17+30 (3rd) (30' to 24')
17+30 (3rd) to 20+00 (3rd) (24')
20+00 (3rd) to 23+00 (3rd) (24' to 12')

PLOT SCALE - 1:6
PLOT NAME - 7
PLOTTED FROM - TRMI11118
FILE ...\TSECALL.DGN

FOR BIDDING PURPOSES ONLY

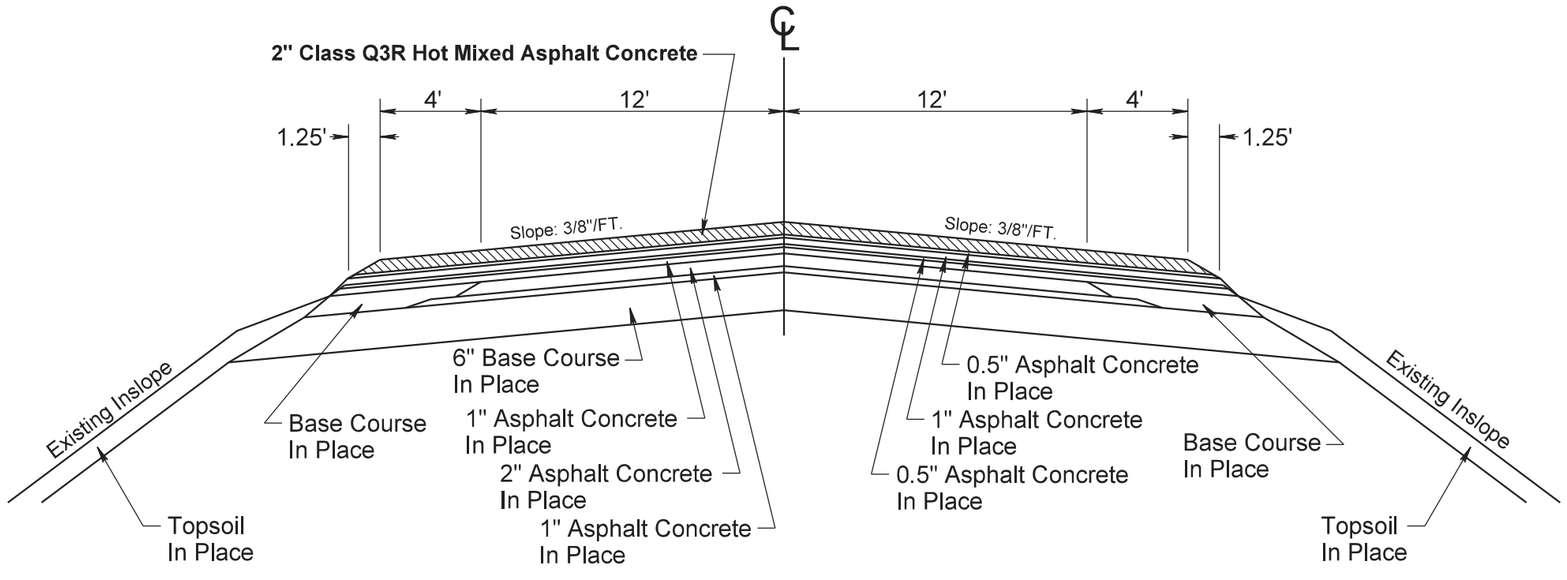
TYPICAL COLD MILLING SECTION

SECTION 4
NH-PT 0018(222)311
40+88 (2nd) to 452+23 (2nd)



TYPICAL RESURFACING SECTION

SECTION 4
NH-PT 0018(222)311
40+88 (2nd) to 452+23 (2nd)



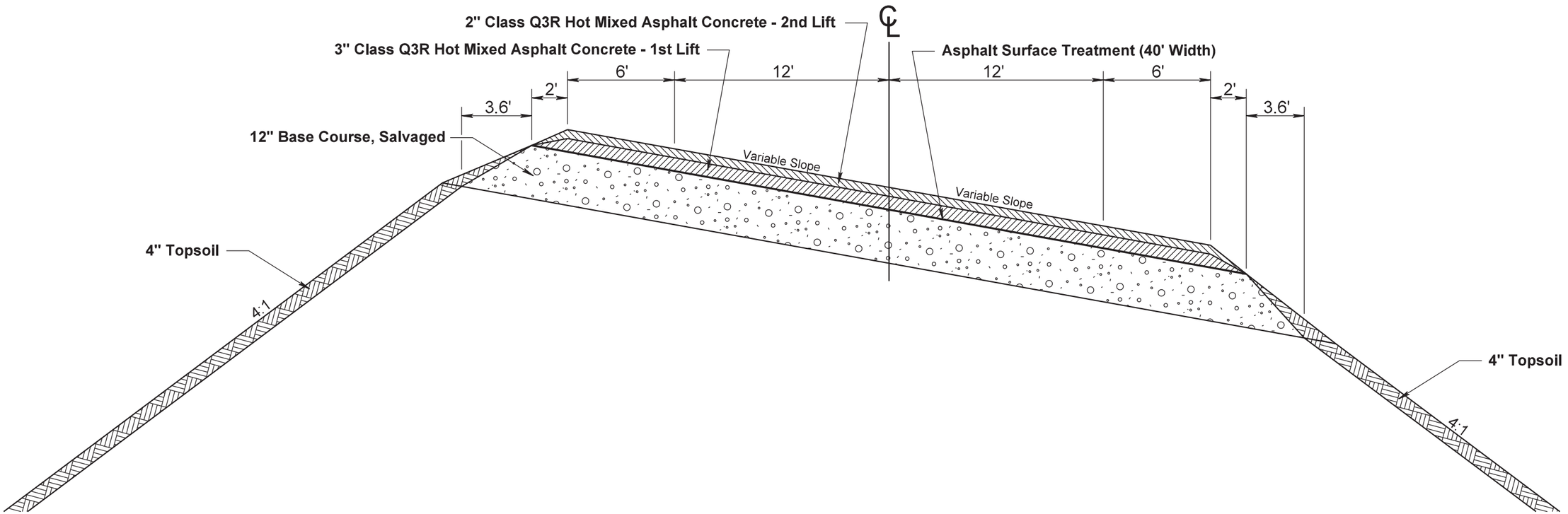
PLOT SCALE - 1:6
PLOTTED FROM - TRM111118
PLOT NAME - 8
FILE - ...\TSECALL.DGN

FOR BIDDING PURPOSES ONLY

Plotting Date: 12/29/2025

TYPICAL SURFACING SECTION

SECTION 5
NH 0281(122)0
26+79.29 to 34+99.07
P 0043(26)0
23+38.10 to 41+49.74



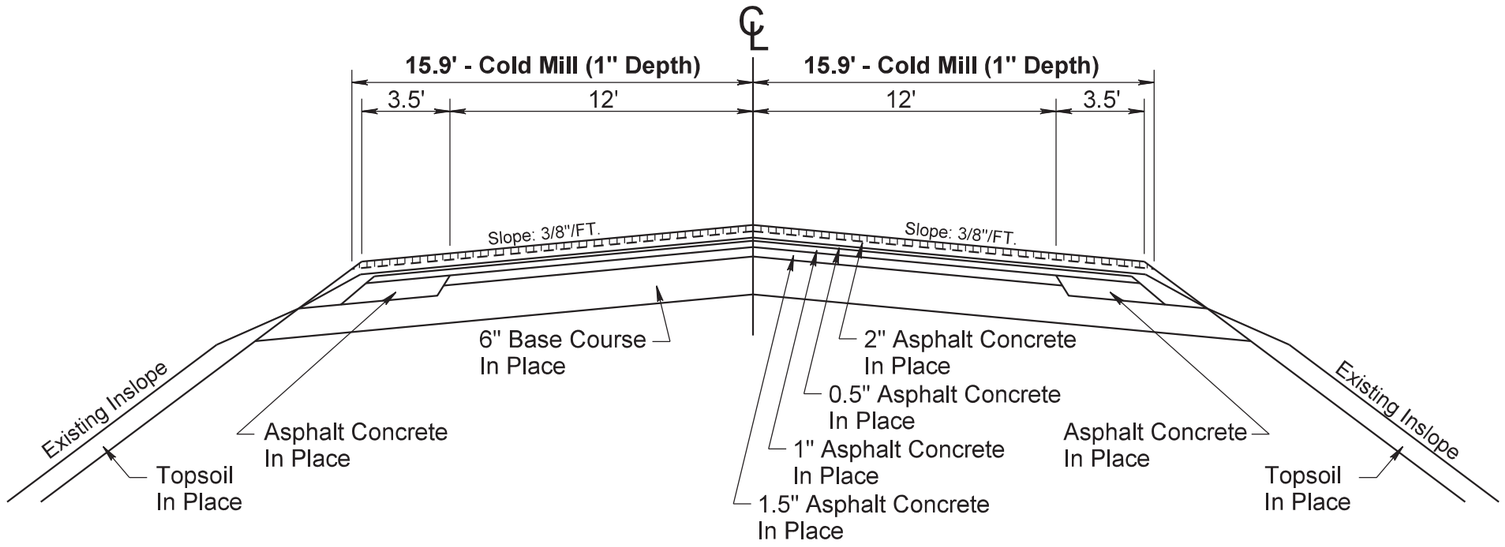
PLOT SCALE - 1:6
PLOT NAME - 9
FILE - ...\TSECALL.DGN
PLOTTED FROM - TRM111118

FOR BIDDING PURPOSES ONLY

Plotting Date: 12/29/2025

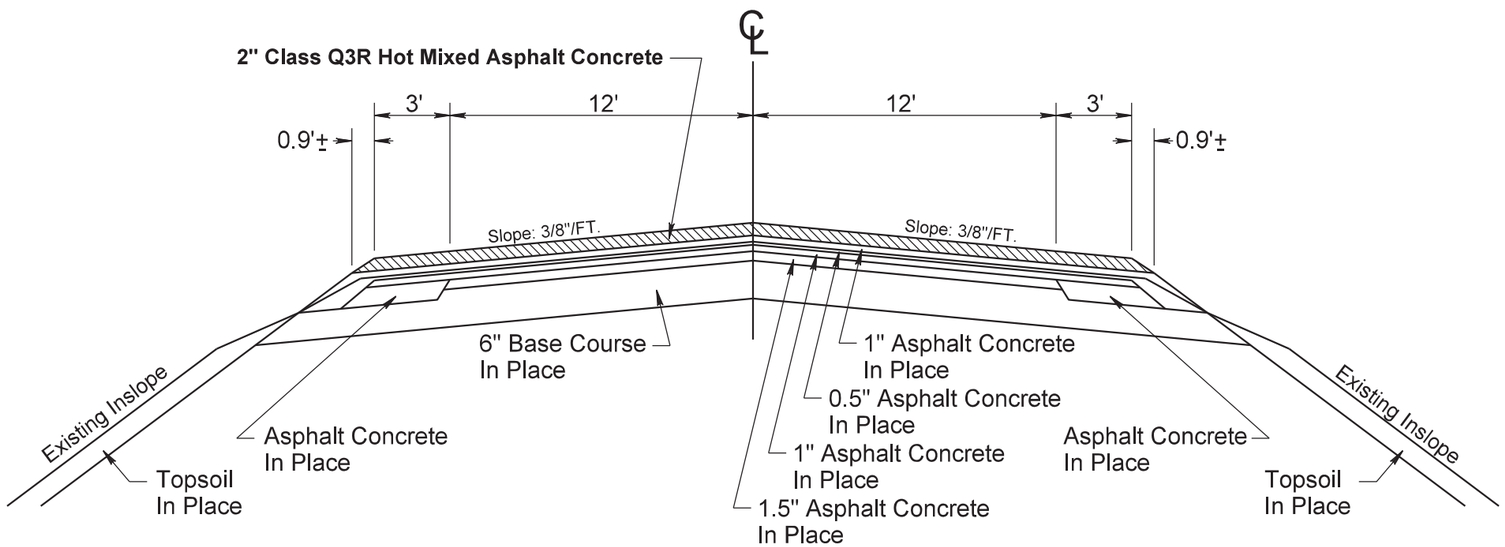
TYPICAL COLD MILLING SECTION

SECTION 6
P 0043(26)0
0+00 to 21+30.10



TYPICAL RESURFACING SECTION

SECTION 6
P 0043(26)0
0+00 to 21+30.10



PLOT SCALE - 1:6
PLOTTED FROM - TRM111118
PLOT NAME - 10
FILE - ...\TSECALL.DGN

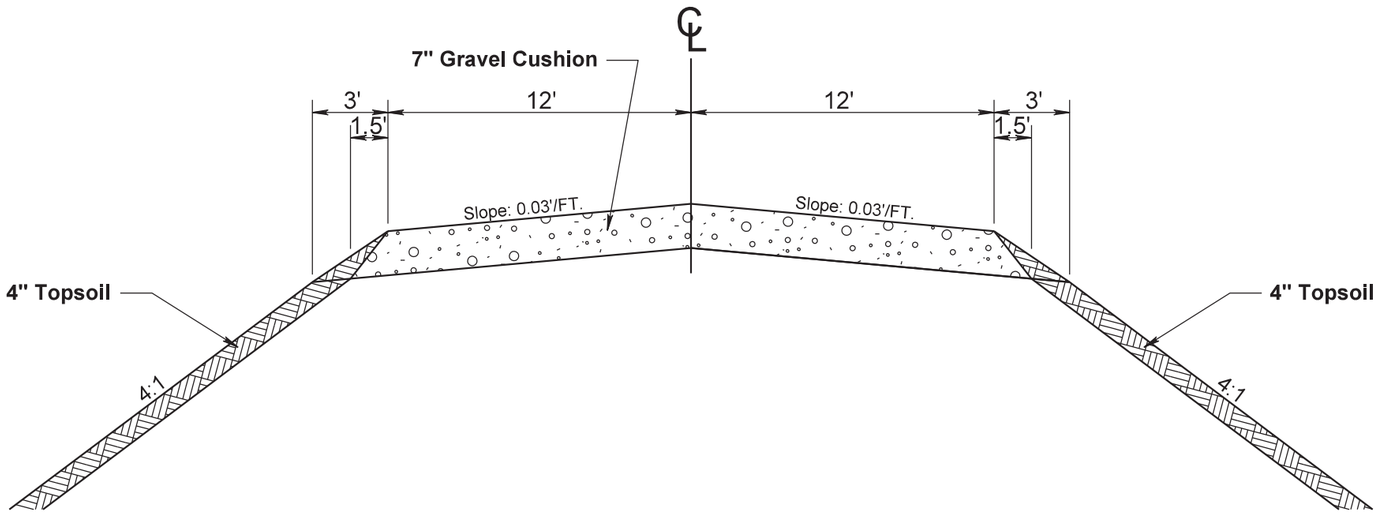
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	27	267

Plotting Date: 01/12/2026

TYPICAL SURFACING SECTION

SECTION 7
NH-PT 0018(222)311
364th Ave: 5+00 to 11+15
303rd St: 6+51.45 to 9+49
303rd St: 9+87 to 19+21.16



PLOT SCALE - 1:6
PLOT NAME - 13
FILE - ...\TSECALL.DGN
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RATES OF MATERIALS FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	28	267

Section 1
NH-PT 0018(222)311
2 Lane Resurface
0+00.00 to 17+00.00

The Estimate of quantities is based on the following quantities of materials per station.

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE

Salvaged Asphalt Concrete	8.34 Tons
Crushed Aggregate	33.38 Tons
PG 58H-34 Asphalt Binder	2.06 Tons
TOTAL:	**43.78 Tons**
Hydrated Lime	0.44 Ton
TOTAL:	**44.22 Tons**

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.11 ton applied 39 feet wide (Rate = 0.06 gallon per square yard).

FLUSH SEAL (Centered over Shoulder Rumble Strips)

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.02 ton applied 3 feet wide (1.5 feet wide each shoulder) (Rate = 0.075 gallon per square yard).

Section 2
NH-PT 0018(222)311
Multi Lane Surface
17+00.00 to 17+20.32
52+71.99 to 76+08.50
3+70.00 (3rd) to 12+24.82 (3rd)
40+81.68 (3rd) to 43+26.00 (3rd)
NH 0281(122)0
Multi Lane Surface
20+02.71 to 26+79.29
34+99.07 to 36+50.00
P 0043(26)0
Multi Lane Surface
21+30.10 to 23+38.10
41+49.74 to 49+06.00

The Estimate of quantities is based on the following quantities of materials per station.

BASE COURSE, SALVAGED

Crushed Aggregate	322.6 Tons
Water for Granular Material	3.1 MGals

MC-70 Asphalt for Prime at the rate of 0.55 ton applied 42 feet wide (Rate = 0.3 gallon per square yard).

Blotting Sand for Prime at the rate of 1.33 tons applied 24 feet wide (Rate = 10 pounds per square yard).

ASPHALT SURFACE TREATMENT

AE150S Asphalt for Surface Treatment at the rate of 0.66 ton applied 40 feet wide (Rate = 0.35 gallon per square yard).

Type 3 Cover Aggregate at the rate of 8.89 tons applied 40 feet wide (Rate = 40 pounds per square yard).

FOG SEAL

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 0.09 ton applied 40 feet wide (Rate = 0.05 gallon per square yard).

3" CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT

Salvaged Asphalt Concrete	12.72 Tons
Crushed Aggregate	50.89 Tons
PG 58H-34 Asphalt Binder	3.14 Tons
TOTAL:	**66.75 Tons**
Hydrated Lime	0.67 Ton
TOTAL:	**67.42 Tons**

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.12 ton applied 41 feet wide (Rate = 0.06 gallon per square yard).

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT

Salvaged Asphalt Concrete	8.94 Tons
Crushed Aggregate	35.73 Tons
PG 58H-34 Asphalt Binder	2.20 Tons
TOTAL:	**46.87 Tons**
Hydrated Lime	0.47 Ton
TOTAL:	**47.34 Tons**

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.12 ton applied 41 feet wide (Rate = 0.06 gallon per square yard).

FLUSH SEAL (Centered over Shoulder Rumble Strips)

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.02 ton applied 3 feet wide (1.5 feet wide each shoulder) (Rate = 0.075 gallon per square yard).

RATES OF MATERIALS FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	29	267

Section 3
NH-PT 0018(222)311
Multi Lane Surface Lt Curve
17+20.32 to 52+71.99
-0+75.00 (3rd) to 3+70.00 (3rd)
12+24.82 (3rd) to 40+81.68 (3rd)
NH 0281(122)0
Multi Lane Surface Lt Curve
0+33.00 to 20+02.71

The Estimate of quantities is based on the following quantities of materials per mile.

BASE COURSE, SALVAGED

Crushed Aggregate	17047 Tons
Water for Granular Material	163.6 MGals

MC-70 Asphalt for Prime at the rate of 29.2 tons applied 42 feet wide (Rate = 0.3 gallon per square yard).

Blotting Sand for Prime at the rate of 70 tons applied 24 feet wide (Rate = 10 pounds per square yard).

ASPHALT SURFACE TREATMENT

AE150S Asphalt for Surface Treatment at the rate of 34.9 tons applied 40 feet wide (Rate = 0.35 gallon per square yard).

Type 3 Cover Aggregate at the rate of 469 tons applied 40 feet wide (Rate = 40 pounds per square yard).

FOG SEAL

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 5 tons applied 40 feet wide (Rate = 0.05 gallon per square yard).

3" CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT

Salvaged Asphalt Concrete	708 Tons
Crushed Aggregate	2830 Tons
PG 58H-34 Asphalt Binder	174 Tons
	TOTAL: 3712 Tons
Hydrated Lime	37 Tons
	TOTAL: 3749 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 6.1 tons applied 41 feet wide (Rate = 0.06 gallon per square yard).

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT

Salvaged Asphalt Concrete	472 Tons
Crushed Aggregate	1887 Tons
PG 58H-34 Asphalt Binder	116 Tons
	TOTAL: 2475 Tons
Hydrated Lime	25 Tons
	TOTAL: 2500 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 6.1 tons applied 41 feet wide (Rate = 0.06 gallon per square yard).

FLUSH SEAL (Centered over Shoulder Rumble Strips)

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.6 ton applied 3 feet wide (1.5 feet wide each shoulder) (Rate = 0.075 gallon per square yard).

Section 4
NH-PT 0018(222)311
2 Lane Resurface
40+88.00 (2nd) to 452+23.00 (2nd)

The Estimate of quantities is based on the following quantities of materials per mile.

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE

Salvaged Asphalt Concrete	410 Tons
Crushed Aggregate	1641 Tons
PG 58H-34 Asphalt Binder	101 Tons
	TOTAL: 2152 Tons
Hydrated Lime	22 Tons
	TOTAL: 2174 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 5.3 tons applied 35.5 feet wide (Rate = 0.06 gallon per square yard).

FLUSH SEAL (Centered over Shoulder Rumble Stripes)

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.4 ton applied 2.4 feet wide (1.2 feet wide each shoulder) (Rate = 0.075 gallon per square yard).

RATES OF MATERIALS FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	30	267

Section 5
NH 0281(122)0
2 Lane Surface Rt Curve
26+79.29 to 34+99.07
P 0043(26)0
2 Lane Surface Rt Curve
23+38.10 to 41+49.74

The Estimate of quantities is based on the following quantities of materials per station.

BASE COURSE, SALVAGED

Crushed Aggregate	322.85 Tons
Water for Granular Material	3.1 MGals

MC-70 Asphalt for Prime at the rate of 0.55 ton applied 42 feet wide (Rate = 0.3 gallon per square yard).

Blotting Sand for Prime at the rate of 1.33 tons applied 24 feet wide (Rate = 10 pounds per square yard).

ASPHALT SURFACE TREATMENT

AE150S Asphalt for Surface Treatment at the rate of 0.66 ton applied 40 feet wide (Rate = 0.35 gallon per square yard).

Type 3 Cover Aggregate at the rate of 8.89 tons applied 40 feet wide (Rate = 40 pounds per square yard).

FOG SEAL

SS-1h or CSS-1h Asphalt for Fog Seal at the rate of 0.09 ton applied 40 feet wide (Rate = 0.05 gallon per square yard).

3" CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT

Salvaged Asphalt Concrete	13.40 Tons
Crushed Aggregate	53.60 Tons
PG 58H-34 Asphalt Binder	3.30 Tons
	TOTAL: 70.30 Tons
Hydrated Lime	0.70 Ton
	TOTAL: 71.00 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.12 ton applied 41 feet wide (Rate = 0.06 gallon per square yard).

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT

Salvaged Asphalt Concrete	8.94 Tons
Crushed Aggregate	35.73 Tons
PG 58H-34 Asphalt Binder	2.20 Tons
	TOTAL: 46.87 Tons
Hydrated Lime	0.47 Ton
	TOTAL: 47.34 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.12 ton applied 41 feet wide (Rate = 0.06 gallon per square yard).

FLUSH SEAL (Centered over Shoulder Rumble Strips)

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.02 ton applied 3 feet wide (1.5 feet wide each shoulder) (Rate = 0.075 gallon per square yard).

Section 6
P 0043(26)0
2 Lane Resurface
0+00.00 to 21+30.10

The Estimate of quantities is based on the following quantities of materials per station.

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE

Salvaged Asphalt Concrete	7.26 Tons
Crushed Aggregate	29.04 Tons
PG 58H-34 Asphalt Binder	1.79 Tons
	TOTAL: 38.09 Tons
Hydrated Lime	0.38 Ton
	TOTAL: 38.47 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.09 ton applied 33 feet wide (Rate = 0.06 gallon per square yard).

Section 7
NH-PT 0018(222)311
Gravel Surfacing
5+00.00 to 11+15.00
6+51.45 to 9+49.00
9+87.00 to 19+21.16

The Estimate of quantities is based on the following quantities of materials per station.

GRAVEL CUSHION

Crushed Aggregate	110.12 Tons
Water for Granular Material	1.32 MGals

FOR BIDDING PURPOSES ONLY

TABLE OF PROJECT STATIONING FOR NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0 - PCN 067V, 06D1 & 06D8

SECTION	PROJECT NUMBER	STATION	TO	STATION	DESCRIPTION	LENGTH	GROSS SECTION LENGTHS	EXCEPTION LENGTHS	BRIDGE LENGTHS	NET SECTION LENGTHS
1	NH-PT 0018(222)311	0+00.00	to	17+00.00	2 Lane Resurface	1700.00'	**1700.00'**			**1700.00' 0.322 mi.**
2	NH-PT 0018(222)311	17+00.00	to	17+20.32	Multi Lane Surface	20.32'	**3455.97'**			**3455.97' 0.655 mi.**
		52+71.99	to	76+08.50		2336.51'				
		3+70.00 (3rd)	to	12+24.82 (3rd)		854.82'				
		40+81.68 (3rd)	to	43+26.00 (3rd)		244.32'				
2	NH 0281(122)0	20+02.71	to	26+79.29	Multi Lane Surface	676.58'	**827.51'**			**827.51' 0.157 mi.**
		34+99.07	to	36+50.00		150.93'				
2	P 0043(26)0	21+30.10	to	23+38.10	Multi Lane Surface	208.00'	**964.26'**			**964.26' 0.183 mi.**
		41+49.74	to	49+06.00		756.26'				
3	NH-PT 0018(222)311	17+20.32	to	52+71.99	Multi Lane Surface Lt Curve	3551.67'	**6853.53'**			**6853.53' 1.298 mi.**
		-0+75.00 (3rd)	to	3+70.00 (3rd)		445.00'				
		12+24.82 (3rd)	to	40+81.68 (3rd)		2856.86'				
3	NH 0281(122)0	0+33.00	to	20+02.71	Multi Lane Surface Lt Curve	1969.71'	**1969.71'**			**1969.71' 0.373 mi.**
4	NH-PT 0018(222)311	40+88.00 (2nd)	to	452+23.00 (2nd)	2 Lane Resurface	41135.00'	**41135.00'**			**41135.00' 7.791 mi.**
5	NH 0281(122)0	26+79.29	to	34+99.07	2 Lane Surface Rt Curve	819.78'	**819.78'**			**819.78' 0.155 mi.**
5	P 0043(26)0	23+38.10	to	41+49.74	2 Lane Surface Rt Curve	1811.64'	**1811.64'**			**1811.64' 0.343 mi.**
6	P 0043(26)0	0+00.00	to	21+30.10	2 Lane Resurface	2130.10'	**2130.10'**			**2130.10' 0.403 mi.**
7	NH-PT 0018(222)311	5+00.00	to	11+15.00	Gravel Surfacing	615.00'	**1846.71'**			**1846.71' 0.350 mi.**
		6+51.45	to	9+49.00		297.55'				
		9+87.00	to	19+21.16		934.16'				

	GROSS SECTION LENGTHS	EXCEPTION LENGTHS	BRIDGE LENGTHS	NET SECTION LENGTHS
NH-PT 0018(222)311	**54991.21' 10.415 mi.**	**0.00' 0.000 mi.**	**0.00' 0.000 mi.**	**54991.21' 10.415 mi.**
NH 0281(122)0	**3617.00' 0.685 mi.**	**0.00' 0.000 mi.**	**0.00' 0.000 mi.**	**3617.00' 0.685 mi.**
P 0043(26)0	**4906.00' 0.929 mi.**	**0.00' 0.000 mi.**	**0.00' 0.000 mi.**	**4906.00' 0.929 mi.**
Grand Totals	**63514.21' 12.029 mi.**	**0.00' 0.000 mi.**	**0.00' 0.000 mi.**	**63514.21' 12.029 mi.**

FOR BIDDING PURPOSES ONLY

TABLE OF MATERIALS QUANTITIES FOR NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0 – PCN 067V, 06D1 & 06D8

N.A.B.I. = Not A Bid Item

SECTION	PROJECT	DESCRIPTION	UNCL. EXC. DIG-OUTS	REMOVE ASPHALT CONCRETE PAVEMENT	BASE COURSE	BASE COURSE SALVAGED	GRAVEL CUSHION	WATER FOR GRAN. MATER.	COLD MILLING ASPHALT CONCRETE	SALVAGE ASPHALT MIX AND GRANULAR BASE MATERIAL	GRANULAR MATERIAL, FURNISH	BLEND, HAUL AND STOCKPILE GRANULAR MATERIAL	BLEND AND STOCKPILE GRANULAR MATERIAL	ASPHALT CONCRETE BLADE LAID	PG 58H-34 ASPHALT BINDER	HYDRATED LIME	ASPHALT CONCRETE COMPOSITE
			CuYd	SqYd	Ton	Ton	Ton	MGal	SqYd	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton
1	NH-PT 0018(222)311	2 Lane Resurface	16	24	32	-	-	-	6800	-	214	428	-	-	-	-	8
2	NH-PT 0018(222)311	Multi Lane Surface	33	-	65	11149	-	108	-	-	-	-	-	-	-	-	-
2	NH 0281(122)0	Multi Lane Surface	8	-	16	2670	-	26	-	-	-	-	-	-	-	-	-
2	P 0043(26)0	Multi Lane Surface	9	-	18	3111	-	30	-	-	-	-	-	-	-	-	-
3	NH-PT 0018(222)311	Multi Lane Surface Lt Curve	65	-	130	22127	-	214	-	-	-	-	-	-	-	-	-
3	NH 0281(122)0	Multi Lane Surface Lt Curve	19	-	37	6359	-	61	-	-	-	-	-	-	-	-	-
4	NH-PT 0018(222)311	2 Lane Resurface	390	584	779	-	-	9	155399	-	4336	8672	-	-	-	-	195
5	NH 0281(122)0	2 Lane Surface Rt Curve	8	-	16	2647	-	26	-	-	-	-	-	-	-	-	-
5	P 0043(26)0	2 Lane Surface Rt Curve	17	-	34	5849	-	57	-	-	-	-	-	-	-	-	-
6	P 0043(26)0	2 Lane Resurface	20	30	40	-	-	-	7526	-	239	478	-	-	-	-	10
7	NH-PT 0018(222)311	Gravel Surfacing	-	-	-	-	2034	24	-	-	-	-	-	-	-	-	-
Subtotals:			**585**	**638**	**1167**	**53912**	**2034**	**555**	**169725**	**-**	**4789**	**9578**	**-**	**-**	**-**	**-**	**213**
NH-PT 0018(222)311 Add Quans for spot leveling and tight blading in Section 1														48	3.6	0.5	-
NH-PT 0018(222)311 Add Quans for in Section 2														-	-	-	-
NH 0281(122)0 Add Quans for in Section 2														-	-	-	-
P 0043(26)0 Add Quans for in Section 2														-	-	-	-
NH-PT 0018(222)311 Add Quans for in Section 3														-	-	-	-
NH 0281(122)0 Add Quans for in Section 3														-	-	-	-
NH-PT 0018(222)311 Add Quans for spot leveling and tight blading in Section 4														1169	86.8	11.6	-
NH 0281(122)0 Add Quans for in Section 5														-	-	-	-
P 0043(26)0 Add Quans for in Section 5														-	-	-	-
P 0043(26)0 Add Quans for spot leveling and tight blading in Section 6														61	4.5	0.6	-
Add Quans for spot leveling and tight blading			**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1278**	**94.9**	**12.7**	**-**
Table of Additional Quantities:			**-**	**723**	**1439**	**8602**	**-**	**94**	**1344**	**73026**	**-**	**10512**	**62514**	**-**	**-**	**-**	**217**
Totals:			**585**	**1361**	**2606**	**62514**	**2034**	**649**	**171069**	**73026**	**4789**	**20090**	**62514**	**1278**	**94.9**	**12.7**	**430**
NH-PT 0018(222)311 SUBTOTALS:			**504**	**608**	**1006**	**33276**	**2034**	**355**	**162199**	**-**	**4550**	**9100**	**-**	**1217**	**90.4**	**12.1**	**203**
NH-PT 0018(222)311 ADDITIONALS TABLE:			**-**	**723**	**1439**	**7812**	**-**	**89**	**1210**	**48879**	**-**	**10512**	**40514**	**-**	**-**	**-**	**217**
NH-PT 0018(222)311 TOTALS:			**504**	**1331**	**2445**	**41088**	**2034**	**444**	**163409**	**48879**	**4550**	**19612**	**40514**	**1217**	**90.4**	**12.1**	**420**
NH 0281(122)0 SUBTOTALS:			**35**	**-**	**69**	**11676**	**-**	**113**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
NH 0281(122)0 ADDITIONALS TABLE:			**-**	**-**	**-**	**620**	**-**	**5**	**134**	**13149**	**-**	**-**	**12000**	**-**	**-**	**-**	**-**
NH 0281(122)0 TOTALS:			**35**	**-**	**69**	**12296**	**-**	**118**	**134**	**13149**	**-**	**-**	**12000**	**-**	**-**	**-**	**-**
P 0043(26)0 SUBTOTALS:			**46**	**30**	**92**	**8960**	**-**	**87**	**7526**	**-**	**239**	**478**	**-**	**61**	**4.5**	**0.6**	**10**
P 0043(26)0 ADDITIONALS TABLE:			**-**	**-**	**-**	**170**	**-**	**-**	**-**	**10998**	**-**	**-**	**10000**	**-**	**-**	**-**	**-**
P 0043(26)0 TOTALS:			**46**	**30**	**92**	**9130**	**-**	**87**	**7526**	**10998**	**239**	**478**	**10000**	**61**	**4.5**	**0.6**	**10**

TABLE OF MATERIALS QUANTITIES FOR NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0 – PCN 067V, 06D1 & 06D8 (CONTINUED)

N.A.B.I. = Not A Bid Item

SECTION	PROJECT	DESCRIPTION	CLASS Q3R HOT MIXED ASPHALT CONCRETE	PG 58H-34 ASPHALT BINDER	HYDRATED LIME	SALV. MAT'L. N.A.B.I.	MC-70 ASPH. FOR PRIME	BLOTTING SAND FOR PRIME	SS-1h/ CSS-1h ASPH. FOR TACK	SS-1h/ CSS-1h ASPH. FOR FLUSH SEAL	SAND FOR FLUSH SEAL	AE150S ASPH. FOR SURF. TREAT	TYPE 3 COVER AGGR.	SS-1h/ CSS-1h ASPH. FOR FOG SEAL	SAND FOR FOG SEAL
			Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton
1	NH-PT 0018(222)311	2 Lane Resurface	752	35.0	7.4	142	-	-	1.9	0.3	-	-	-	-	-
2	NH-PT 0018(222)311	Multi Lane Surface	3966	184.5	39.3	749	19.0	46	8.3	0.7	-	22.8	308	3.1	-
2	NH 0281(122)0	Multi Lane Surface	950	44.2	9.4	179	4.6	11	2.0	0.2	-	5.5	74	0.7	-
2	P 0043(26)0	Multi Lane Surface	1107	51.5	11.0	209	5.3	13	2.3	0.2	-	6.4	86	0.9	-
3	NH-PT 0018(222)311	Multi Lane Surface Lt Curve	8112	377.4	80.3	1530	37.9	91	15.8	0.8	-	45.3	609	6.5	-
3	NH 0281(122)0	Multi Lane Surface Lt Curve	2331	108.5	23.1	440	10.9	26	4.6	0.2	-	13.0	175	1.9	-
4	NH-PT 0018(222)311	2 Lane Resurface	16938	788.2	167.7	3196	-	-	41.3	3.1	-	-	-	-	-
5	NH 0281(122)0	2 Lane Surface Rt Curve	970	45.1	9.6	184	4.5	11	2.0	0.2	-	5.4	73	0.7	-
5	P 0043(26)0	2 Lane Surface Rt Curve	2144	99.8	21.2	404	10.0	24	4.4	0.3	-	12.0	161	1.7	-
6	P 0043(26)0	2 Lane Resurface	819	38.1	8.1	155	-	-	1.9	-	-	-	-	-	-
7	NH-PT 0018(222)311	Gravel Surfacing	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotals:			**38089**	**1772.3**	**377.1**	**7188**	**92.2**	**222**	**84.5**	**6.0**	**-**	**110.4**	**1486**	**15.5**	**-**
NH-PT 0018(222)311 Add Quans for spot leveling and tight blading in Section 1			32	1.9	0.3	6	-	-	1.8	-	-	-	-	-	-
NH-PT 0018(222)311 Add Quans for in Section 2			-	-	-	-	5.8	16	-	-	-	-	-	-	1
NH 0281(122)0 Add Quans for in Section 2			-	-	-	-	1.4	4	-	-	-	-	-	-	-
P 0043(26)0 Add Quans for in Section 2			-	-	-	-	1.6	4	-	-	-	-	-	-	-
NH-PT 0018(222)311 Add Quans for in Section 3			-	-	-	-	9.1	26	-	-	-	-	-	-	2
NH 0281(122)0 Add Quans for in Section 3			-	-	-	-	2.6	7	-	-	-	-	-	-	1
NH-PT 0018(222)311 Add Quans for spot leveling and tight blading in Section 4			779	46.3	7.7	145	-	-	43.9	-	-	-	-	-	-
NH 0281(122)0 Add Quans for in Section 5			-	-	-	-	0.9	3	-	-	-	-	-	-	-
P 0043(26)0 Add Quans for in Section 5			-	-	-	-	2.0	6	-	-	-	-	-	-	1
P 0043(26)0 Add Quans for spot leveling and tight blading in Section 6			40	2.4	0.4	7	-	-	2.2	-	-	-	-	-	-
Add Quans for spot leveling and tight blading			**851**	**50.6**	**8.4**	**158**	**23.4**	**66**	**47.9**	**-**	**-**	**-**	**-**	**-**	**5**
Table of Additional Quantities:			**3105**	**144.5**	**30.5**	**586**	**11.9**	**49.8**	**6.2**	**2.0**	**38**	**13.9**	**186.2**	**2.0**	**-**
Totals:			**42045**	**1967.4**	**416.0**	**7932**	**127.5**	**337.8**	**138.6**	**8.0**	**38**	**124.3**	**1672**	**17.5**	**5**
NH-PT 0018(222)311 SUBTOTALS:			**30579**	**1433.3**	**302.7**	**5768**	**71.8**	**179**	**113.0**	**4.9**	**-**	**68.1**	**917**	**9.6**	**3**
NH-PT 0018(222)311 ADDITIONALS TABLE:			**3071**	**142.9**	**30.2**	**579**	**11.9**	**49.8**	**6.1**	**2.0**	**37.2**	**13.9**	**186.2**	**2.0**	**-**
NH-PT 0018(222)311 TOTALS:			**33650**	**1576.2**	**332.9**	**6347**	**83.7**	**228.8**	**119.1**	**6.9**	**37.2**	**82.0**	**1103**	**11.6**	**3**
NH 0281(122)0 SUBTOTALS:			**4251**	**197.8**	**42.1**	**803**	**24.9**	**62**	**8.6**	**0.6**	**-**	**23.9**	**322**	**3.3**	**1**
NH 0281(122)0 ADDITIONALS TABLE:			**34**	**1.6**	**0.3**	**7**	**-**	**-**	**0.1**	**0.0**	**0.3**	**-**	**-**	**-**	**-**
NH 0281(122)0 TOTALS:			**4285**	**199.4**	**42.4**	**810**	**24.9**	**62**	**8.7**	**0.6**	**0.3**	**23.9**	**322**	**3.3**	**1**
P 0043(26)0 SUBTOTALS:			**4110**	**191.8**	**40.7**	**775**	**18.9**	**47**	**10.8**	**0.5**	**-**	**18.4**	**247**	**2.6**	**1**
P 0043(26)0 ADDITIONALS TABLE:			**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.0**	**0.2**	**-**	**-**	**-**	**-**
P 0043(26)0 TOTALS:			**4110**	**191.8**	**40.7**	**775**	**18.9**	**47**	**10.8**	**0.5**	**0.2**	**18.4**	**247**	**2.6**	**1**

FOR BIDDING PURPOSES ONLY

TABLE OF ADDITIONAL QUANTITIES FOR NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0 - PCN 067V, 06D1 & 06D8

N.A.B.I. = Not A Bid Item

LOCATION	REMOVE ASPHALT CONCRETE PAVEMENT SqYd	BASE COURSE Ton	BASE COURSE SALVAGED Ton	WATER FOR GRAN. MATER. MGal	COLD MILLING ASPHALT CONCRETE SqYd	SALVAGE ASPHALT MIX AND GRANULAR BASE MATERIAL Ton	BLEND, HAUL AND STOCKPILE GRANULAR MATERIAL Ton	BLEND AND STOCKPILE GRANULAR MATERIAL Ton	ASPHALT CONCRETE COMPOSITE 1ST LIFT Ton	CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT Ton	PG 58H-34 ASPHALT BINDER <---- 1ST LIFT ----> Ton	HYDRATED LIME <---- 1ST LIFT ----> Ton	SALV. MAT'L. N.A.B.I. <---- 1ST LIFT ----> Ton	ASPHALT CONCRETE COMPOSITE 2ND LIFT Ton	CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT Ton	PG 58H-34 ASPHALT BINDER <---- 2ND LIFT ----> Ton	HYDRATED LIME <---- 2ND LIFT ----> Ton	SALV. MAT'L. N.A.B.I. <---- 2ND LIFT ----> Ton	MC-70 ASPH. FOR PRIME Ton	BLOTTING SAND FOR PRIME Ton	SS-1h/ CSS-1h ASPH. FOR FLUSH SEAL Ton	SAND FOR FLUSH SEAL Ton	AE150S ASPH. FOR SURF. TREAT Ton	TYPE 3 COVER AGGR. Ton	SS-1h/ CSS-1h ASPH. FOR FOG SEAL Ton
Mainline Transitions																										
Sec. 2 52+72 to 55+89	-	-	457	4	-	-	-	-	-	115	5.4	1.1	22	-	77	3.6	0.8	15	0.81	3.4	0.15	2.7	1.02	13.7	0.15
Sec. 2 55+89 to 63+79	-	-	1404	13	-	-	-	-	-	354	16.5	3.5	67	-	236	11.0	2.3	45	2.50	10.5	0.45	8.4	3.13	42.1	0.45
Sec. 2 63+79 to 67+99	-	-	560	5	-	-	-	-	-	141	6.6	1.4	27	-	94	4.4	0.9	18	1.00	4.2	0.18	3.4	1.25	16.8	0.18
Sec. 2 67+99 to 73+09	-	-	453	4	-	-	-	-	-	114	5.3	1.1	22	-	76	3.5	0.8	14	0.81	3.4	0.14	2.7	1.01	13.6	0.14
Sec. 2 73+09 to 76+09	-	-	133	1	-	-	-	-	-	34	1.6	0.3	6	-	22	1.0	0.2	4	0.24	1.0	0.04	0.8	0.30	4.0	0.04
Sec. 2 3+70 (3rd) to 5+20 (3rd)	-	-	243	2	-	-	-	-	-	61	2.8	0.6	12	-	41	1.9	0.4	8	0.43	1.8	0.08	1.5	0.54	7.3	0.08
Sec. 2 5+20 (3rd) to 12+25 (3rd)	-	-	1253	12	-	-	-	-	-	316	14.7	3.1	60	-	211	9.8	2.1	40	2.23	9.4	0.40	7.5	2.80	37.6	0.40
Sec. 3 49+99 to 51+19	-	-	53	1	-	-	-	-	-	13	0.6	0.1	2	-	9	0.4	0.1	2	0.09	0.4	0.02	0.3	0.12	1.6	0.02
Sec. 3 51+19 to 51+69	-	-	44	-	-	-	-	-	-	11	0.5	0.1	2	-	7	0.3	0.1	1	0.08	0.3	0.01	0.3	0.10	1.3	0.01
Sec. 3 51+69 to 52+72	-	-	103	1	-	-	-	-	-	26	1.2	0.3	5	-	17	0.8	0.2	3	0.18	0.8	0.03	0.6	0.23	3.1	0.03
Sec. 3 -0+75 (3rd) to 0+45 (3rd)	-	-	53	1	-	-	-	-	-	13	0.6	0.1	2	-	9	0.4	0.1	2	0.09	0.4	0.02	0.3	0.12	1.6	0.02
Sec. 3 0+45 (3rd) to 1+00 (3rd)	-	-	49	-	-	-	-	-	-	12	0.6	0.1	2	-	8	0.4	0.1	2	0.09	0.4	0.02	0.3	0.11	1.5	0.02
Sec. 3 1+00 (3rd) to 3+70 (3rd)	-	-	318	3	-	-	-	-	-	80	3.7	0.8	15	-	53	2.5	0.5	10	0.57	2.4	0.10	1.9	0.71	9.5	0.10
Sec. 3 12+25 (3rd) to 13+10 (3rd)	-	-	151	1	-	-	-	-	-	38	1.8	0.4	7	-	25	1.2	0.2	5	0.27	1.1	0.05	0.9	0.34	4.5	0.05
Sec. 3 13+10 (3rd) to 17+30 (3rd)	-	-	560	5	-	-	-	-	-	141	6.6	1.4	27	-	94	4.4	0.9	18	1.00	4.2	0.18	3.4	1.25	16.8	0.18
Sec. 3 17+30 (3rd) to 20+00 (3rd)	-	-	240	2	-	-	-	-	-	61	2.8	0.6	12	-	40	1.9	0.4	8	0.43	1.8	0.08	1.4	0.54	7.2	0.08
Sec. 3 20+00 (3rd) to 23+00 (3rd)	-	-	133	1	-	-	-	-	-	34	1.6	0.3	6	-	22	1.0	0.2	4	0.24	1.0	0.04	0.8	0.30	4.0	0.04
Other Locations																										
Ent12 w/2 Approaches	-	-	450	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transverse Rumble Strip	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03	0.5	-	-	-	-
Mainline Cross Pipe Replacement	723	1439	-	17	-	-	-	-	111	-	-	-	-	106	-	-	-	-	-	-	-	-	-	-	-	-
Radii at SD43/US281	-	-	445	4	-	-	-	-	-	112	5.2	1.1	21	-	75	3.5	0.7	14	0.79	3.3	-	-	-	-	-	-
Salvage Asphalt Mix & Granular Material Sections A-H	-	-	-	-	-	73026	10512	62514	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turnouts																										
5 Mailbox Turnouts	-	-	-	-	170	-	-	-	-	18	0.8	0.2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
1 Mailbox Turnouts (Multiple)	-	-	-	-	36	-	-	-	-	4	0.2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Resurface to ROW																										
1 Intersecting Road	-	-	-	-	120	-	-	-	-	31	1.4	0.3	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Resurface to End of Radius																										
12 Intersecting Roads	-	-	180	1	804	-	-	-	-	170	7.9	1.7	32	-	34	1.6	0.3	6	-	-	-	-	-	-	-	-
3 Commercial Entrances	-	-	30	-	214	-	-	-	-	56	2.6	0.6	11	-	-	-	-	-	-	-	-	-	-	-	-	-
Pads																										
5 Double Approaches	-	-	100	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19 Farm Entrances	-	-	190	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44 Field Entrances	-	-	440	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14 New Entrances	-	-	490	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1 New Double Entra	-	-	70	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTALS:	**723**	**1439**	**8602**	**94**	**1344**	**73026**	**10512**	**62514**	**111**	**1955**	**91.0**	**19.2**	**370**	**106**	**1150**	**53.6**	**11.3**	**219**	**11.85**	**49.8**	**2.02**	**37.7**	**13.87**	**186.2**	**1.99**

NOTES: 6.2 tons of SS-1h or CSS-1h Asphalt for Tack are included in the Estimate of Quantities and will be applied at the rate shown on the plans as directed by the Engineer.

The tonnage shown above for Class Q3R Hot Mixed Asphalt Concrete - 1st Lift is based on a compacted depth of 3 inches for Typical Sections 2 & 3 and a compacted depth of 2 inches for the remaining Typical Sections.
The tonnage shown above for Class Q3R Hot Mixed Asphalt Concrete - 2nd Lift is based on a compacted depth of 2 inches.
The tonnage shown above for Asphalt Concrete Composite - 1st Lift is based on a compacted depth of 2.5 inches.
The tonnage shown above for Asphalt Concrete Composite - 2nd Lift is based on a compacted depth of 2.5 inches.

The above quantities are included in the Estimate of Quantities.

SUMMARY OF ASPHALT CONCRETE

NH-PT 0018(222)311	ASPHALT CONCRETE BLADE LAID COMPACTION WITHOUT SPECIFIED DENSITY TONS	ASPHALT CONCRETE COMPOSITE 1ST LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT COMPACTION WITH SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	ASPHALT CONCRETE COMPOSITE 2ND LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT COMPACTION WITH SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS
Section 1							
24' Finished Roadway Surface	-	-	508	-	-	-	-
Shoulders	-	-	-	244	-	-	-
Backfilling Digouts	-	8	-	-	-	-	-
Add Quans for spot leveling and tight blading	48	-	-	32	-	-	-
Section 2							
24' Finished Roadway Surface	-	-	1550	-	-	1033	-
Shoulders	-	-	-	780	-	-	603
Section 3							
24' Finished Roadway Surface	-	-	3073	-	-	2049	-
Shoulders	-	-	-	1794	-	-	1196
Section 4							
24' Finished Roadway Surface	-	-	12298	-	-	-	-
Shoulders	-	-	-	4640	-	-	-
Backfilling Digouts	-	195	-	-	-	-	-
Add Quans for spot leveling and tight blading	1169	-	-	779	-	-	-
Table of Additional Quantities							
Mainline Transitions	-	-	1564	-	-	1041	-
Other Locations	-	111	-	-	106	-	-
Miscellaneous Nondensity Locations	-	-	-	112	-	-	75
Turnouts, Int Roads, Ents & Pads	-	-	-	279	-	-	-
NH-PT 0018(222)311 Additional Totals:	**-**	**111**	**1564**	**391**	**106**	**1041**	**75**
NH-PT 0018(222)311 Totals:	**1217**	**314**	**18993**	**8660**	**106**	**4123**	**1874**

NH-PT 0018(222)311	**23116**	**TONS ASPHALT CONCRETE COMPACTION WITH SPECIFIED DENSITY**
	12171	**TONS ASPHALT CONCRETE COMPACTION WITHOUT SPECIFIED DENSITY**
	35287	**TONS TOTAL**

SUMMARY OF ASPHALT CONCRETE

NH 0281(122)0	CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT COMPACTION WITH SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT COMPACTION WITH SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS
Section 2				
24' Finished Roadway Surface	371	-	247	-
Shoulders	-	188	-	144
Section 3				
24' Finished Roadway Surface	883	-	589	-
Shoulders	-	515	-	344
Section 5				
24' Finished Roadway Surface	368	-	245	-
Shoulders	-	214	-	143

Table of Additional Quantities				
Turnouts, Int Roads, Ents & Pads	-	-	-	34
NH 0281(122)0 Additional Totals:	**-**	**-**	**-**	**34**
NH 0281(122)0 Totals:	**1622**	**917**	**1081**	**665**

NH 0281(122)0	2703	TONS ASPHALT CONCRETE COMPACTION WITH SPECIFIED DENSITY
	1582	TONS ASPHALT CONCRETE COMPACTION WITHOUT SPECIFIED DENSITY
	4285	TONS TOTAL

SUMMARY OF ASPHALT CONCRETE

P 0043(26)0	ASPHALT CONCRETE BLADE LAID COMPACTION WITHOUT SPECIFIED DENSITY TONS	ASPHALT CONCRETE COMPOSITE 1ST LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT COMPACTION WITH SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT COMPACTION WITH SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS
Section 2						
24' Finished Roadway Surface	-	-	432	-	288	-
Shoulders	-	-	-	219	-	168
Section 5						
24' Finished Roadway Surface	-	-	812	-	542	-
Shoulders	-	-	-	474	-	316
Section 6						
24' Finished Roadway Surface	-	-	637	-	-	-
Shoulders	-	-	-	182	-	-
Backfilling Digouts	-	10	-	-	-	-
Add Quans for spot leveling and tight blading	61	-	-	40	-	-
P 0043(26)0 Totals:	**61**	**10**	**1881**	**915**	**830**	**484**

P 0043(26)0	2711	TONS ASPHALT CONCRETE COMPACTION WITH SPECIFIED DENSITY
	1470	TONS ASPHALT CONCRETE COMPACTION WITHOUT SPECIFIED DENSITY
	4181	TONS TOTAL

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Table of Pipe Replacement - RCP

Station	Offset (L/R)	Reinforced Concrete Pipe									
		Circular				Circular Flared End		Circular Sloped End		Arch	Arch Sloped End
		24" Cl. 3	30" Cl. 3	42" Cl. 3	48" Cl. 3	42"	48"	24"	30"	30" Cl. 3	30"
		Ft	Ft	Ft	Ft	Each	Each	Each	Each	Ft	Each
PCN 067V											
US 18 West											
37+50					108		2				
US 18 Non-Grading Pipe Improvements											
127+48		74						2			
195+00		132						4			
210+00			192						6		
443+23			148						4		
US 18 East											
4+84			90						2		
18+30										104	2
30+51				112		2					
PCN 06D8											
SD 43											
37+91		104						2			
46+87			74						2		
PCN 06D1											
US 281											
29+00		80						2			
Total PCN 067V:		206	430	112	108	2	2	6	12	104	2
Total PCN 06D8:		104	74	0	0	0	0	2	2	0	0
Total PCN 06D1:		80	0	0	0	0	0	2	0	0	0
Total:		390	504	112	108	2	2	10	14	104	2

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WYOMING
BLASIUS
03/25/2021

FOR BIDDING PURPOSES ONLY

Table of Pipe Replacement - CMP

Station	Offset (L/R)	Corrugated Metal Pipe											
		Circular			Circular Flared End		Circular Sloped End	Circular Safety End		Circular Elbow			Bore and Jack Steel Pipe
		18" 16 Ga	18" 14 Ga	24" 16 Ga	60"		18"	18"	24"	18" 5°	18" 10°	18" 15°	60"
		Ft	Ft	Ft	Each		Each	Each	Each	Each	Each	Each	Ft
PCN 067V													
US 18 West													
13+59-54'	R			90					2				
39+80-60'	L			96					2				
48+09-49'	L			60					2				
XR 30													
6+73-28'	L			58					2				
US 18 Non-Grading													
162+55					2								188
US 18 East													
15+03-53'	L	58						2					
XR 23													
11+83-35'	R			70					2				
20+02		72					4						
PCN 06D8													
SD 43													
36+30-53'	L			86					2				
36+30-49'	R	82						2					
PCN 06D1													
US 281													
17+35-49'	L			80					2				
22+00-54'	L			72					2				
22+00-55'	R	86						2					
Ent12													
3+10-60'	R	96						2					
Total PCN 067V:		130	0	374	2		4	2	10	0	0	0	188
Total PCN 06D8:		82	0	86	0		0	2	2	0	0	0	0
Total PCN 06D1:		182	0	152	0		0	4	4	0	0	0	0
Total:		394	0	612	2		4	8	16	0	0	0	188

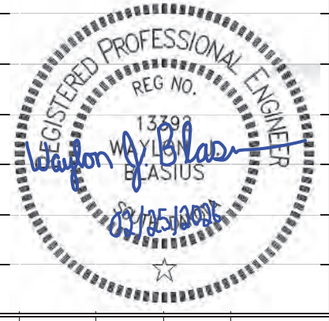
Table of Pipe Repairs - 067V

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190-10 | STATE OF SOUTH DAKOTA | PROJECT: NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0 | SHEET: 40 | TOTAL SHEETS: 267

Plotting Date: 10/01/2025 Rev:

PCN / Highway/Description / Station	MRM	+ Disp	Material	Shape	Size (Inches)	Length (Ft)	Side	Circular 18" Cl. 3 Ft		RCP Flared End 18" Each	24" Each	60" Each	84" Each	Remove (Incidental Work, Grading) Pipe Ft	End Section Each	Remove for Reset Pipe Ft	End Section Each	Delineator Each	Reset Pipe Ft	End Section Each	Delineator Each	Reprofiling Ditch Sta	Culvert Joint Cleaning Ft	Repair Culvert Joint Ft	Tie Bolts for RCP Each	Cleanout Pipe Culvert Each	Cleanout for Culvert Treatment Each	Slipline Pipe 60" Ft	72" Ft	84" Ft	Option Borrow Excavation CuYd	Comments
PCN 067V																																
US18 Non-Grading																																
45+90	312.00	0.553	RCP	Round	24	86	L																								10	Add fill to this plugged cattle pass as holes are present. Add new Type 2 Object Marker right. Clean 50' ditch bottom left between ends.
							R															0.5										
61+00	312.00	0.839	CM Plate	Round	90	100	L																									Place riprap & drainage fabric left and right within ROW as directed by Engineer. Refer to Section B Notes. Max apron dimensions 13.5' x 12' x 2.75' (LxWxH)
							R																									
65+00	312.00	0.917	RCP	Round	18	56	L	6		1				6	1			1			1										10	Replace end section + 6' left.
							R																									
75+00	313.00	0.125	RCP	Round	24	88	L									8	1	1	8	1	1										10	Remove and reset end section + 8' left.
							R																									
82+42	313.00	0.247	RCP	Round	60	122	L					1			1			2			2						1				10	Replace both end sections. Cleanout for culvert treatment and slipline. Add riprap per pipe section.
							R					1			1			2			2							122				
131+00	314.00	0.169	RCP	Round	18	58	L											1			1										10	Remove and reset end section and 6' right.
							R									6	1		6	1											
134+65	314.00	0.242	RCP	Round	72	168	L									12	1	2	12	1	2		357.2	357.2	38						10	Remove and reset end section + 12' left. Repair Joints.
							R																									
143+80	314.00	0.411	CMP	Round	18	154	L																			1					Cleanout pipe culvert.
							R																									
155+52	314.00	0.632	RCP	Round	18	92	L									12	1	1	12	1	1										10	Remove and reset end section + 12' left.
							R																									
162+37	314.00	0.761	RCP	Round	84	186	L						1		1			2			2										10	Replace both end sections. Cleanout for culvert treatment and slipline. Add riprap per pipe section.
							R						1		1			2			2									186		
185+65	315.00	0.194	RCP	Cattle Pass	4'x6'	52	L																109.8	109.8	12							Repair Joints.
							R																									
230+00	316.00	0.036	RCP	Cattle Pass	4'x6'	88	L																183	183	20							Repair Joints.
							R																									
248+00	316.00	0.377	RCP	Round	18	52	L									8	1	2	8	1	1										10	Remove and reset end section + 8' left. Replace end section + 8' right.
							R	8		1				8	1		1				1											
255+00	316.00	0.509	RCP	Cattle Pass	4'x6'	54	L									6	1	2	6	1	2		91.5	91.5	10						10	Remove and reset end section + 6' left. Repair Joints.
							R																									
268+40	316.00	0.763	RCP	Round	42	104	L																									Place riprap & drainage fabric left within ROW as directed by Engineer. Refer to Section B Notes. Max apron dimensions 12' x 9.5' x 2.75' (LxWxH)
							R																									
282+14	317.00	0.02	RCP	Round	84	120	L									18	1	2	18	1	2		242	242	22						10	Remove and reset end section + 6' right. Remove and reset end section +18' left. Repair Joints.
							R									6	1	2	6	1	2											
317+00	317.00	0.682	RCP	Round	18	54	L			1					1	6		1	6		1										10	Replace both end sections + 6' right. Remove and reset 6' left.
							R	6		1				6	1			1			1											
323+60	317.00	0.807	RCP	Round	18	56	L																								10	Remove and reset end section right.
							R										1	1		1	1											
337+69	318.00	0.074	RCP	Round	18	90	L									4	1	1	4	1	1										10	Remove and reset end section + 4' left.
							R																									
376+45	318.00	0.807	RCP	Round	24	80	L															1.0									10	Add fill to this plugged cattle pass as holes are present. Clean 100' ditch bottom left and right.
							R															1.0										
384+00	318.00	0.949	RCP	Round	72	102	L									24	1	2	24	1	2								102		10	Remove and reset end section + 24' left.. Cleanout for culvert treatment and slipline. Place riprap per pipe section.
							R																									
395+00	319.00	0.162	RCP	Round	18	58	L																									Clean 130' ditch bottom right.
							R															1.3										
419+68	319.00	0.628	RCP	Round	24	90	L																								10	Add fill to this plugged cattle pass as holes are present. Repair washout erosion. Place riprap & drainage fabric left within ROW as directed by Engineer. Refer to Section B Notes. Max apron dimensions 28' x 8' x 2.75' (LxWxH)
							R																									
424+25	319.00	0.713	RCP	Round	24	122	L				1				1			1			1										10	Replace end section left.
							R																									
432+20	319.00	0.866	RCP	Round	18	66	L			1					1			1			1										10	Replace end section left and right.
							R			1					1			1			1											
443+00	320.00	0.073	RCP	Round	30	74	L																									Clean 80' ditch bottom right.
							R															0.8										
Total:								20		6	1	2	2	20	11	110	12	31	110	11	31	4.6	983.5	983.5	102	1	1	122	102	186	190	



FENCE QUANTITIES

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA | PROJECT: NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0 | SHEET: 41 | TOTAL SHEETS: 267

Station to Station		Side (L/R)	Right-of-Way Fence: Type 2 (Ft)					Temporary Fence: Type 1 (Ft)	Type 2 (Ft)		Post Panels: 2 Post Panel (Each)	3 Post Panel (Each)		Gates: Barbed Wire: 24' Wire Gate (Each)	32' (Each)	40' (Each)	Remove Gate for Reset (Each)	Reset Gate (Each)		Remove Fence (Ft)
PCN 067V																				
US 18 West																				
13+27	31+42	R																		2024
13+27	31+42	R	2018								4	7		1	1					
13+27	31+42	R						2018												
17+00	76+08	L																		5856
17+00	76+08	L	5764								5	8		2						
18+81	31+45	R																		1470
57+13	76+08	L						1897												
57+20	76+08	R	1889								1	3								
57+66	62+79	R																		513
64+44	69+63	R																		519
70+33	76+92	R																		659
US 18 Non-Grading																				
81+90	82+90	L/R	200					200			4									200
134+38	135+38	L/R	200					200			4									200
161+52	163+52	L/R	400					400			4									400
281+56	282+56	L	100					100			2									100
281+59	281+59	R	100					100			2									100
382+95	384+95	L/R	400					400			4									400
US 18 Eest & XR 23																				
- 0+75	6+66	R																		749
- 0+75	20+85	L																		2146
- 0+75	4+95	R	579					579			2	1								
- 0+75	22+63	L	2316					2316			3	4		1						
6+45	21+50	R	1519					1950			2	1								
6+93	22+13	R																		1542
24+73	43+26	L	1828								4	2								
25+61	41+67	L																		1600
27+10	43+26	R	1678								2	3		1						
27+14	43+26	R						1654												1654
42+44	43+26	L																		83
6+39	8+11	R																		250
6+39	8+50	R	203					203			4									
6+51	10+21	L																		450
6+51	9+46	L	325								2									
9+33	19+21	R	1238								16	2		2						
10+65	19+21	R																		1225
15+16	19+21	L	480								1	1								
15+24	19+21	L						368												368
Option Borrow Pits																				
Clocker Pit #1									3500		4	4								200
TOTALS 067V:			21237					12385	3500		70	36		7	1	0		0		22708

Post Type and Sequence:

Right-of-way fence will be constructed using alternate wood and steel posts except as noted.

FENCE QUANTITIES

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	42	267

Station to Station		Side (L/R)	Right-of-Way Fence Type 2 (Ft)					Temporary Fence Type 1 (Ft)			Post Panels 2 Post Panel (Each)	Post Panels 3 Post Panel (Each)		Gates Barbed Wire 24' Wire Gate (Each)	Gates Barbed Wire 32' (Each)	Gates Barbed Wire 40' (Each)	Gates Remove Gate for Reset (Each)	Gates Reset Gate (Each)		Remove Fence (Ft)
PCN 06D8																				
SD 43																				
21+30	30+90	R																		954
21+30	36+80	L	2069								7	3		2						
21+30	48+60	R	2675					2675			4	3				1				
30+38	30+58	L																		22
30+38	36+80	L						1009												
31+08	36+80	L																		720
31+17	32+13	L																		102
32+63	47+50	R																		1487
36+09	36+54	L																		296
TOTALS PCN 06D8:			4744					3684			11	6		2		1				3581
PCN 06D1																				
US 281																				
0+33	8+00	R																		818
0+33 L	33+73 R	L/R																		3772
0+33	36+05	L	3540					3540			7	4		3						
0+33	36+05	R	4589								18	6		3			2	2		
8+78	28+39	R																		2862
11+87	33+05	R						2940												
14+40	17+56	R																		540
14+50	33+32	R	2168								1	2								485
15+44	16+91	R																		
TOTALS PCN 06D1:			10297					6480			26	12		6			2	2		8477

Post Type and Sequence:

Right-of-way fence will be constructed using alternate wood and steel posts except as noted.

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON BLASIUS
03/25/2026

CONDUIT AND CABLE QUANTITIES

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311	43	267

Plotting Date: 07/21/2025

		Rigid Conduit Schedule 40	Rigid Conduit Schedule 80		Copper Wire		Pole and Bracket Cable
Location to Location		2" Ft	2" Ft	1.5" Ft	1/C #8 AWG Ft	1/C #10 AWG Ft	2/C #10 AWG Ft
LIGHTING							
US18 & SD43							
Elec. Service	JL1	45			140	140	
JL1	L1		90		280		
L1	L3	235			730		
JL1	JL2	90			280	280	
JL2	L2	15			50		
JL2	Stop Sign Beacon			70		220	
US18 & US281							
Elec. Service	JL3	70			220	220	
JL3	L4	100			310		
JL3	L6	100			310		
JL3	JL4		145		450	450	
JL4	Stop Sign Beacon			65		200	
JL4	L5	25			80		
LUMINAIRE POLES							
L1							60
L2							60
L3							60
L4							60
L5							60
L6							60
Total:		680	235	135	2,850	1,510	360

Plot Scale - 1:200

Plotted From - TRPR17199

File - ...\prj\greg067\V\TableConduit.dgn

FOR BIDDING PURPOSES ONLY

TABLE OF CONSTRUCTION STAKING

(See Special Provision for Contractor Staking)

					Grade Staking								
US18 Regrading (067V)	Begin Station	End Station	Number of Lanes	Length (Ft)	Length (Mile)	Lane Factor	*Sets of Stakes	**Grade Staking Quantity (Mile)	Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Final Cross Section Survey Quantity (Mile)	Graded Centerline Staking Quantity (Mile)	Structure Staking Quantity (Each)
US18 West													
US 18 (2 Lanes AC Pavement)	17+00	76+08	2	5,908	1.119	1	1	1.119	1.119	1.119	1.119		
US18 East													
US 18 (2 Lanes AC Pavement)	-0+75	43+26	2	4,401	0.834	1	1	0.834	0.834	0.834	0.834		
							Totals:	1.953	1.953	1.953	1.953		

					Grade Staking								
SD43 Regrading (06D8)	Begin Station	End Station	Number of Lanes	Length (Ft)	Length (Mile)	Lane Factor	*Sets of Stakes	**Grade Staking Quantity (Mile)	Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Final Cross Section Survey Quantity (Mile)	Graded Centerline Staking Quantity (Mile)	Structure Staking Quantity (Each)
SD 43 (2 Lanes AC Pavement)	21+30	49+42	2	2812	0.533	1	1	0.533	0.533	0.533	0.533		
							Totals:	0.533	0.533	0.533	0.533		

					Grade Staking								
US281 Regrading (06D1)	Begin Station	End Station	Number of Lanes	Length (Ft)	Length (Mile)	Lane Factor	*Sets of Stakes	**Grade Staking Quantity (Mile)	Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Final Cross Section Survey Quantity (Mile)	Graded Centerline Staking Quantity (Mile)	Structure Staking Quantity (Each)
SD 43 (2 Lanes AC Pavement)	0+33	36+86	2	3653	0.692	1	1	0.692	0.692	0.692	0.692		1
							Totals:	0.692	0.692	0.692	0.692		1

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

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

FOR BIDDING PURPOSES ONLY

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 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.

Generally, all shallow inlet and outlet ditches as noted on the plan sheets will be cut with a 10-foot wide bottom with 5:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

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

GENERAL SOILS RECOMMENDATIONS

A copy of the surfacing/subgrade investigation for these projects is available from the Mitchell Region and Mitchell Area offices.

TYPE III FIELD LABORATORY

The lab will be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection will be provided with a multi-port wireless router. The internet connection will be a minimum speed of 5 Mbps unless limited by job location and approved by the DOT. Prior to installing the wireless router, the Contractor will submit the wireless router's technical data to the Area Office to check for compatibility with the state's computer equipment. The internet connection is intended for state personnel usage only. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer. These items will be incidental to the contract unit price per each for "Type III Field Laboratory".

UTILITIES

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

CLEARING

Before clearing activities begin, the Contractor will contact the Engineer to determine the limits of clearing for the project. If the trees or shrubs that are supposed to remain within the limits of work are damaged or destroyed by the Contractor, the Contractor will replace them with the same size and type at the Contractor's expense.

All trees removed will become the property of the Contractor.

OBLITERATING OLD ROAD

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

The surfacing material of the existing roadway will be salvaged. Refer to the Salvage and Stockpile Asphalt Mix and Granular Base Material note for quantities and payment information.

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

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

TABLE OF OBLITERATING OLD ROAD

067V – US18

Station	to	Station	L/R	Length (Sta)
8+00 (XR30)		24+30 (067V)	L/R	6.9
0+00 (XR30)		50+05 (067V)	R/R	12.1
15+00 – 200'L' (XR23)		17+80 (XR23)	L/L	3.2
			Total:	**22.2**

06D8 – SD43

Station	to	Station	L/R	Length (Sta)
30+60 (06D8)		41+40 (067V)	L/R	25.7
			Total:	**25.7**

06D1 – US281

Station	to	Station	L/R	Length (Sta)
10+40 – 175' (06D1)		13+30 – 140' (XR23)	R/R	27.4
			Total:	**27.4**

INSLOPE TRANSITIONS

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

TABLE OF INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

Station (067V)	L/R	Type
US18W		
37+50	L/R	1

GENERAL GEOLOGY

The project alignment traverses the formations of the Ogallala Group. At some locations Ogallala Group is covered by a varying thickness of Quaternary Eolian deposits. The Pierre Shale may be encountered in deeper excavations and in drainages associated with culvert replacement locations. The South Dakota Geologic Survey describes these deposits/formations as outlined below:

Quaternary Eolian Deposits consist of silt to medium-grained sand deposited as sand sheet; barchan, linear, and dome-like dunes; and as a veneer on uplands.

The Ogallala Group is comprised of the Ash Hollow, Valentine and Fort Randall Formations. The upper formation consists of white, tan, and gray well cemented sandstone and silty limestone "mortar beds". Gray unconsolidated, fine to coarse grained siltstone, sandstone, and gravel; and pink and gray claystone with interbedded sandstone, including green to gray orthoquartzite, bentonitic clay, and conglomerate make up the lower formations of the group.

The Pierre Shale consists of blue gray to dark gray, fissile to blocky shale with persistent beds of bentonite, black organic shale, and light-brown chalky shale. Contains minor sandstone, conglomerate, and abundant carbonate and ferruginous concretions.

CLASSIFICATION OF EXCAVATION

Most of the material encountered should be able to be excavated using conventional methods associated with normal Unclassified Excavation. Excavation of in-place ledge rock is not anticipated. Muck Excavation will be required at the areas shown in the plans or as directed by the Engineer.

FOR BIDDING PURPOSES ONLY

REVISION 4/6/2026 WJB

SHRINKAGE FACTOR: Embankment +35%

TABLE OF EXCAVATION QUANTITIES BY BALANCES (067V)

US18 West

Station to	Station	Excavation (CuYd)	* Undercut (CuYd)	* Muck Exc. (CuYd)	Total Excavation (CuYd)	**Out-of-Balance Exc. (CuYd)	** Waste (CuYd)
17+00	57+00	30548	3737	2053	36338	39153	2053
57+00	76+08	44976	9721	0	54697	0	40357
	Totals:	75524	13458	2053	91035	39153	42410

XR30 (364th Ave)

Station to	Station	Excavation (CuYd)	* Option Borrow Exc. (CuYd)	Total Excavation (CuYd)	**Out-of-Balance Exc. (CuYd)
5+00	11+08	40	5022	5062	5808
	Totals:	40	5022	5062	5808

US18 East

Station to	Station	Excavation (CuYd)	* Undercut (CuYd)	* Muck Exc. (CuYd)	* Option Borrow Exc. (CuYd)	Total Excavation (CuYd)	**Out-of-Balance Exc. (CuYd)	** Waste (CuYd)
-0+75	43+26	19128	9432	7688	53039	89287	17500	7688
	Totals:	19128	9432	7688	53039	89287	17500	7688

XR23 (303rd St)

Station to	Station	Excavation (CuYd)	* Option Borrow Exc. (CuYd)	Total Excavation (CuYd)
6+51	19+21	5467	3990	9457
	Totals:	5467	3990	9457

* 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.

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON J. BLASIUS
SOUTH DAKOTA
04/06/2026

TABLE OF OPTION BORROW EXCAVATION (067V)

	(CuYd)
Option Borrow Excavation (067V)	62241
Option Borrow Pit Topsoil (067V)	12400
Total:	74641

TABLE OF OPTION BORROW EXCAVATION (06D1)

	(CuYd)
Option Borrow Excavation (06D1)	34688
Option Borrow Pit Topsoil (06D1)	6910
Total:	41598

OPTION BORROW PIT

Clocker Pit #1

General:

The Contractor's borrow material excavation/transport operations will be limited to designated haul routes and will minimize the amount of non-stripped topsoil that will be compacted. Prior to placement of the previously stripped topsoil, the Contractor will scarify (to the satisfaction of the Engineer) the finish graded material excavation areas to a minimum depth of 12" and material haul route locations to a minimum depth of 18". The Contractor will scarify any compacted topsoil outside of the material excavation areas to the depth of the topsoil and to the satisfaction of the Engineer.

Do not disturb trees on the south side of the borrow pit.

Access:

Access to the option borrow pit is on the south side of the pit on US 18.
Any additional work to the access point of the option borrow pit will be incidental to the contract unit bid price for Option Borrow.

Sediment Control:

Included in the estimate of quantities is 2,000' of Low Flow Silt Fence for Sediment Control along the south and east edges of the borrow pit.

Fence:

If borrow pit operation continue into fall season, temporary fence may be required. The Contractor and the states engineer will meet with the landowner to determine placement of temporary fence. Included in the estimate of quantities is 3,500' of Type 2 Temporary Fence, (4) 3 Post Panels, and (4) 2 Post Panels.

Topsoil:

A minimum of 10 inches of topsoil will be removed and stockpiled from the borrow pit and any area of the borrow pit that will be disturbed by hauling. At the completion of the borrow operations, the topsoil will be evenly spread to a depth of 10" on the pit.

Remove Fence:

Included in the estimate of quantities is 200' of fence removal for miscellaneous locations at the borrow pit.

FOR BIDDING PURPOSES ONLY

TABLE OF UNCLASSIFIED EXCAVATION (067V)

US18 West

	(CuYd)
Excavation	75524
Excavation for Intersecting Road (XR30 – 364th Ave)	40
Undercut	13458
Topsoil (For Informational Purposes Only)	11364
Salvaged Asphalt Mix Material (For Informational Purposes Only)	7487
Salvaged Granular Base Material (For Informational Purposes Only)	7561
Salvaged Granular Base Material (from off-alignment roadways or from obliterated roads)	396
Total	115830

US18 East

	(CuYd)
Excavation	19128
Excavation for Intersecting Road (XR23 – 303rd St)	5467
Undercut	9432
Topsoil (For Informational Purposes Only)	7482
Salvaged Asphalt Mix Material (For Informational Purposes Only)	3612
Salvaged Granular Base Material (For Informational Purposes Only)	5474
Salvaged Granular Base Material (from off-alignment roadways or from obliterated roads)	300
Total	50895

TABLE OF EXCAVATION QUANTITIES BY BALANCES (06D8 – SD43)

Station to	Station	Excavation (CuYd)	* Undercut (CuYd)	Total Excavation (CuYd)	**Out-of-Balance Exc. (CuYd)
21+30	49+12	12130	3696	10949	22429
	Totals:	12130	3696	10949	22429

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

TABLE OF UNCLASSIFIED EXCAVATION (06D8 – SD43)

	(CuYd)
Excavation	12130
Undercut	3696
Topsoil (For Informational Purposes Only)	4737
Salvaged Asphalt Mix Material (For Informational Purposes Only)	2740
Salvaged Granular Base Material (For Informational Purposes Only)	3079
Salvaged Granular Base Material (from off-alignment roadways or from obliterated roads)	766
Salvaged Asphalt Mix Material (from off-alignment roadways or from obliterated roads)	266
Total	27414

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON BLASIUS

FOR BIDDING PURPOSES ONLY

TABLE OF EXCAVATION QUANTITIES BY BALANCES (06D1 – US281)

Station to	Station	Excavation (CuYd)	* Undercut (CuYd)	* Muck Exc. (CuYd)	* Option Borrow Exc. (CuYd)	Total Excavation (CuYd)	** Waste (CuYd)
0+33	36+86	13706	2405	514	34688	51313	514
	Totals:	13706	2405	514	34688	51313	514

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

TABLE OF UNCLASSIFIED EXCAVATION (06D1 – US281)

		(CuYd)
Excavation		13706
Exc. For RCBC Installation		1410
Undercut		2405
Topsoil (For Informational Purposes Only)		5837
Salvaged Asphalt Mix Material (For Informational Purposes Only)		3767
Salvaged Asphalt Mix and Granular Base Material (For Informational Purposes Only)		3190
	Total	30315

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON
BLASIUS

FOR BIDDING PURPOSES ONLY

PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY

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

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

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

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

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

Salvaged Asphalt Mix and Granular Base Material will be paid for at the contract unit price per ton and is also included in and paid for once as Unclassified Excavation. As shown in the Table of Unclassified Excavation, the estimated quantity of 36910 cubic yards of Salvaged Asphalt Mix and Granular Base Material from fill sections and 1728 cubic yards of Salvaged Asphalt Mix and Granular Base Material from off-alignment roadways or obliterated old roads will be added to the Excavation quantity to determine the Unclassified Excavation quantity. When finaling a project, the quantities of Salvaged Asphalt Mix and Granular Base Material from fill sections and off-alignment roadways or obliterated old roads will not be adjusted according to field measurements. The quantity of Salvaged Asphalt Mix and Granular Base Material from cut sections will not be added to the Excavation quantity as it is already in the cuts on the final cross sections.

UNDERCUTTING

In all cut sections the earthen subgrade will be undercut 2 feet below the earthen subgrade surface. The undercut material or other suitable material, as directed by the Engineer, will then be replaced and compacted to the density specified for the section being constructed.

Shallow embankment sections, fills less than 2 feet in height measured at the finished subgrade shoulders, will be undercut to ensure a minimum 2 foot height of earth embankment for the entire width of roadbed. The upper 6 inches of undercut material that consists of topsoil with a high humus content will be used as topsoil, placed in the fill slopes outside the shoulders of the earthen subgrade, or placed in the lower portion (below 4 foot depth) in fills which are greater than 4 feet in height. The remaining undercut soil and soil obtained from adjacent excavation (excluding the upper 6 inches) will then be replaced and compacted to the density specified for the section being constructed.

UNSTABLE MATERIAL EXCAVATION

The areas of unstable material excavation are drawn on the cross sections with a normal depth of 2 feet. The estimated quantity of 14265 cubic yards of unstable material excavation will be paid for at the contract unit price per cubic yard for “Unclassified Excavation”.

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

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

TABLE OF UNSTABLE MATERIAL EXCAVATION

Station	to	Station (067V W)	L/R	Depth (Ft)	Quantity (CuYd)
27+00		30+00	L	2	718
40+00		45+00	R	2	2655
55+50		56+50	R	2	1348
				Total:	4721

Station	to	Station (06D8)	L/R	Depth (Ft)	Quantity (CuYd)
37+00		39+60	L/R	2	2062
43+00		44+00	L/R	2	1259
46+50		48+90	L/R	2	1254
				Total:	4574

Station	to	Station (067V E)	L/R	Depth (Ft)	Quantity (CuYd)
4+50		5+50	L	2	287
4+50		6+00	R	2	1053
18+00		19+50	L	2	441
26+00		28+00	L/R	2	1110
				Total:	2891

Station	to	Station (06D1)	L/R	Depth (Ft)	Quantity (CuYd)
6+50		10+00	R	2	1286
35+00		36+40	L/R	2	793
				Total:	2079

MUCK EXCAVATION

The areas of muck excavation are drawn on the cross sections with a normal depth of 3 feet. The estimated quantity of 10255 cubic yards of muck excavation will be paid for at the contract unit price per cubic yard for “Muck Excavation”.

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

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

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

TABLE OF MUCK EXCAVATION

Station	to	Station (067V W)	L/R	Depth (Ft)	Quantity (CuYd)
36+00		40+00	L/R	3	2053
				Total:	2053

Station	to	Station (067V E)	L/R	Depth (Ft)	Quantity (CuYd)
28+00		36+00	L	3	7688
				Total:	7688

Station	to	Station (06D1)	L/R	Depth (Ft)	Quantity (CuYd)
5+00		6+50	L	3	514
				Total:	514

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SALVAGE AND STOCKPILE ASPHALT MIX MATERIAL AND GRANULAR MATERIAL

The estimated quantities of both “Salvage and Stockpile Asphalt Mix Material” and “Salvage and Stockpile Granular Material” are shown on Sheet 59 of the plans. These items will be stockpiled at a site furnished by the Contractor and satisfactory to the Engineer.

The quantity of both “Salvage and Stockpile Asphalt Mix Material” and “Salvage and Stockpile Granular Material” may vary from the plans. No adjustment will be made to the contract unit price for variations in the quantity of either item.

The following tables are furnished for information only.

MRM (067V)	Distance from Centerline (Feet) Lt.	Rt.	Thickness of Asphalt Mix Material (Inches)	Thickness of Granular Material (Inches)
311.50	5.8		8.0	10.0
312.00		17.8	8.0	8.0
312.50	6.0		9.0	7.0
313.00		6.0	8.0	8.0
313.50	7.0		10.0	6.0
314.00		6.0	10.0	8.0
314.50	5.8		7.0	12.0
315.00		6.2	8.0	7.0
315.50	6.0		7.0	10.0
316.00		5.6	8.0	9.0
316.50	6.8		7.0	12.0
317.00		6.6	8.0	9.0
317.50	5.4		8.0	8.0
318.00		6.2	8.0	8.0
318.50	6.4		8.0	9.0
319.00		5.0	9.0	8.0
319.50	6.0		7.0	10.0
320.00		5.6	8.0	9.0
320.50	6.4		8.0	8.0
320.70		18.2	6.0	10.0
321.00		6.2	8.0	9.0
Average Thickness:			8.0	8.8

MRM (06D1)	Distance from Centerline (Feet) Lt.	Rt.	Thickness of Asphalt Mix Material (Inches)	Thickness of Granular Material (Inches)
0.00		6.4	9.0	8.0
0.25		5.4	8.0	7.0
0.50		6.6	8.0	7.0
0.70		6.2	9.0	7.0
Average Thickness:			8.5	7.3

MRM (06D8)	Distance from Centerline (Feet) Lt.	Rt.	Thickness of Asphalt Mix Material (Inches)	Thickness of Granular Material (Inches)
0.25		6.4	7.0	7.0
0.50		6.4	6.0	9.0
0.75		5.4	7.0	8.0
1.00		6.0	7.0	8.0
1.09		5.6	8.0	7.0
Average Thickness:			7.0	7.8

EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION

Included in the quantity of “Unclassified Excavation” are 1410 cubic yards of excavation for installation of reinforced concrete box culverts.

All work necessary to excavate a trench for installation of reinforced concrete box culverts including labor, equipment, and incidentals will be incidental to the contract unit price per cubic yard for “Unclassified Excavation”. Payment for excavation of reinforced concrete box culverts will be based only on plans quantity and measurement of these excavation quantities during construction will not be performed.

The excavation quantities for installation of reinforced concrete box culverts are not included with the earthwork balance quantities on the plans profile sheets. The quantities computed for excavation of the reinforced concrete box culverts are based on the limits shown in the drawing below.

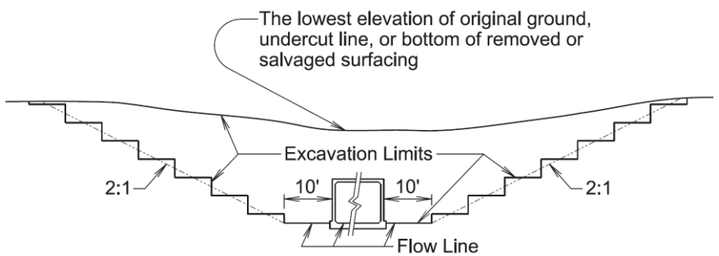

TABLE OF EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION

Station	Quantity (CuYd)
5+25 (06D1)	1410
Total:	1410

PIPE CULVERT UNDERCUT

The table includes undercut for 36 inch and larger pipe culverts. 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 (067V – US18 W)	Undercut Depth (Ft)	Pipe Culvert Undercut (CuYd)
37+50	2	38.8
	Total:	38.8

Station (067V – US18 E)	Undercut Depth (Ft)	Pipe Culvert Undercut (CuYd)
30+51	1	42.3
	Total:	42.3

Granular material may be required for backfilling the pipe culvert undercut areas where site conditions warrant. Granular material will conform to the gradation requirements in Section 421.2.A of the Specifications and will be paid for at the contract unit price per ton for “Granular Material”. A quantity of 100 tons of granular material is included in the estimate of quantities for use where it is determined to be needed. The quantity will be adjusted or eliminated by construction change order, depending on field conditions.

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.

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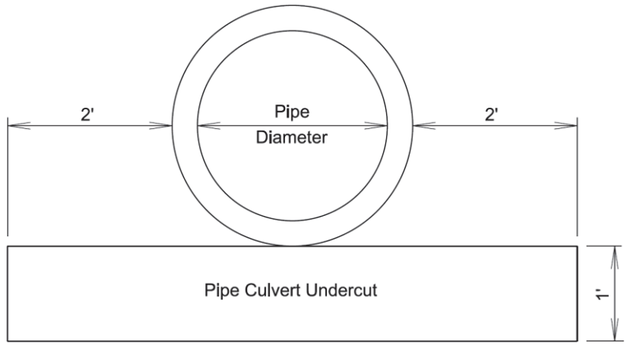
REVISION 4/6/2026 WJB

PIPE CULVERT UNDERCUT (Cont.)

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

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



INCIDENTAL WORK, GRADING

Station	L/R	Remarks
US18 West (067V)		
13+17	54'R	Take Out 18" – 60' CMP & 2 End Sections
27+51		Take Out 24" – 68' RCP & 2 End Sections
36+13	67' R	Take Out 18" - 51' CMP & 2 End Sections
38+14		Take Out 24" – 92' RCP & 2 End Sections
39+67	50' L	Take Out 18" – 70' CMP & 2 End Sections
41+10	292' R	Take Out 18" – 29' CMP & 2 End Sections
43+29	193' R	Take Out 18" – 131' CMP & 2 End Sections
44+09	310' R	Take Out 18" – 64' RCP & 2 End Sections
48+08	14' L	Take Out 18" – 53' CMP & 2 End Sections
57+13	50' L	Take Out 18" – 53' CMP & 2 End Sections
SD43 (06D8)		
37+72	447' L	Take out 66" – 70' RCP Arch & 2 End Sections
US18 East (067V)		
4+84		Take Out 18" – 68' RCP & 2 End Sections
18+30		Take Out 4' x 6' – 76' Cattle Pass & 2 Ends
30+60		Take Out 30" – 58' RCP & 2 End Sections
30+50	84' R	Take Out 18" – 50' RCP & 2 End Sections
XR23 (303rd St – 067V)		
10+00	140' L	Take Out 24" – 83' CMP & 2 End Sections
20+02		Take out 18" – 35' CMP & 2 End Sections
US281 (06D1)		
3+73	54' R	Take Out 18" – 66' RCP & 2 End Sections
5+25		Take Out Twin 36" – 170' RCP & 4 End Sections
16+83	662'R	Take Out 54" – 188' RCP & 2 End Sections
18+68	804'R	Take Out 18" – 65' RCP & 2 End Sections
21+70	1170'R	Take Out 24" – 92'
27+13	1636'R	Take Out 18" – 62' CMP & 2 End Sections
XR30		
10+35	465' L	Take Out 12" – 34' CMP & 2 End Sections
Intermediate US18 (067V)		
82+42	L&R	Take Out 2 End Sections
127+48		Take Out 18" RCP & 2 End Sections
162+37	L&R	Take Out 2 End Sections
195+00		Take Out 18" – 56' RCP & 2 End Sections
210+00		Take Out 18" – 56' RCP & 2 End Sections

TABLE OF ASPHALT CONCRETE APPROACH PAVEMENT REMOVAL

Station (067V – US18)	L/R	Quantity (SqYd)
US18 West		
25+00	R	946.7
US18E		
25+30	L	179.7
26+20	R	253.0
	Total:	1379.4

DRAIN TILE

There are no known drain tiles within the project limits. However, due to the lack of good records, the Contractor may encounter other drain tile that were not located.

The Contractor will repair any damaged drain tile to the extent that the functionality of the drainage system is retained after the project. Where replacement is necessary, the existing drain tile will be replaced with the appropriate diameter of corrugated polyethylene drainage tubing. The corrugated polyethylene drainage tubing will be in conformance with Section 990 of the Specifications.

A quantity of 10 feet of "Repair Drain Tile" is included in the estimate of quantities for use where it is determined to be needed. All costs associated with the repair and or replacement of the drainage tile will be incidental to the contract unit price per foot for "Repair Drain Tile". The quantity will be adjusted or eliminated by construction change order, depending on field conditions.

CORRUGATED METAL PIPE

Corrugated metal pipes will have 2 ⅔-inch x ½-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.

The gauge of the corrugated metal elbows and ends will match the thickest gauge of corrugated metal pipe it is connected to.

PIPE FOR APPROACHES AND INTERSECTING ROADS

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

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

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

PIPE FOR DOWNSPOUTS

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

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DITCH RESTORATION

The ditches will be excavated for approximately 50 feet in each direction (or as directed by the Engineer) from the new/reset pipe ends to obtain proper water flow through the pipe. The excavated material may be used as fill material for flattening slopes on approaches, culvert work, etc. as approved by the Engineer

BORE AND JACK STEEL PIPE

The Contractor will install steel pipe at station 162+55 (Intermediate US18) 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 A53 Grade B, ASTM A139 Grade B or ASTM A252 Grade 2. Hydrostatic testing will not be required for this application. The pipe will be required to have the minimum wall thickness as shown in the following table:

Pipe Diameter	Wall Thickness
48" & below	1/2"
54"	5/8"
60"	5/8"
66"	3/4"
72"	3/4"

The exterior of the steel pipe will be coated with a fusion bonded epoxy coating and an abrasion resistant overcoat or a two-component coal tar epoxy. The coal tar will meet the requirements of Sherwin-Williams Targuard, Tnemec Hi-Build Tneme-Tar, or an approved equal. Applications of the coatings will be 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, the exposed area will be coated with 3M Scotchkote Liquid Epoxy 328 or a two-component coal tar epoxy meeting the requirements of Sherwin-Williams Targuard, Tnemec Hi-Build Tneme-Tar, or an approved equal.

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.

BORE AND JACK STEEL PIPE (Cont.)

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.

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 188' +/- of embankment. The pipe will be installed through an approximate 35' vertical depth of silt clay fill material. The parent formation from which the embankment material was excavated includes windblown sand and silt as well as thin beds of claystone, siltstone, 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.

PIPE COVER

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

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.

MAINLINE CROSS PIPE REPLACEMENT

Pipe culverts in non-regrading portions of the project will be installed in accordance with the following notes and as shown on the Pipe Installation Detail.

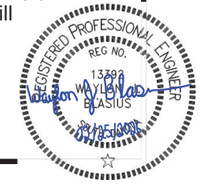
This work will be completed prior to beginning cold milling on the project.

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.



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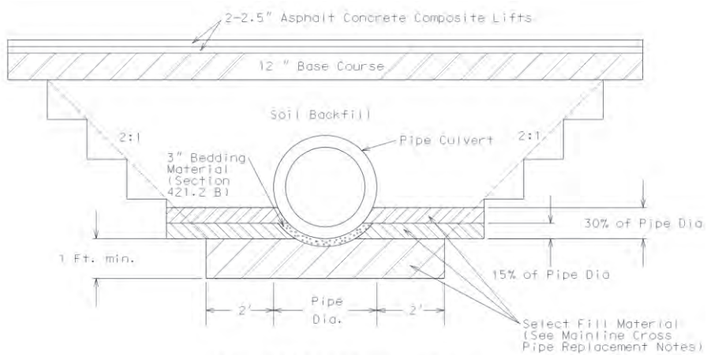
MAINLINE CROSS PIPE REPLACEMENT (Cont.)

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 Remove Asphalt Concrete Pavement. All excavation necessary for Class B Bedding and the pipe installation will be incidental to the contract unit price per foot for the corresponding pipe installation contract items. 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 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.



Pipe Installation Detail

TABLE OF RIPRAP AND DRAINAGE FABRIC

Station (067V W)	L/R	Class B Riprap (Ton)	Type B Drainage Fabric (SqYd)
37+79	R	20.0	30.2
	Totals:	20.0	30.2

Station (067V E)	L/R	Class B Riprap (Ton)	Type B Drainage Fabric (SqYd)
4+84	L	14.5	23.9
18+30	L	15.4	23.9
30+51	R	29.8	42.5
	Totals:	59.7	91.2

Station (067V)	L/R	Class B Riprap (Ton)	Type B Drainage Fabric (SqYd)
61+00	L	23.1	33.6
61+00	R	23.1	33.6
127+48	L	13.7	22.9
195+00	R	27.4	45.8
210+00	R	43.6	71.6
268+40	L	16.3	25.8
419+68	L	31.9	46.9
443+00	L	21.4	31.6
	Totals:	200.5	311.8

Station (067V)	L/R	Class C Riprap (Ton)	Type B Drainage Fabric (SqYd)
162+37	R	87.3	88.1
162+55	R	77.9	80.7
	Totals:	165.1	168.8

Station (067V)	L/R	Class D Riprap (Ton)	Type B Drainage Fabric (SqYd)
82+42	L	33.4	39.9
82+42	R	66.7	68.8
282+14	L	48.5	52.1
282+14	R	97.1	88.2
384+00	L	72.8	72.7
	Totals:	318.5	321.7

Station (06D1)	L/R	Class C Riprap (Ton)	Type B Drainage Fabric (SqYd)
5+25	R	75.9	86.0
	Totals:	75.9	86.0

REINFORCED CONCRETE PIPE JOINT REPAIR AND VOID GROUTING

The Contractor will provide a notarized statement, from the Manufacturer, that the products used for culvert joint repair meet the specified requirements, along with the Manufacturer's current product specification and installation instructions.

The Contractor will be an Approved Contractor of the Manufacturer of the specified product and will provide written certification from the Manufacturer attesting to their Approved Contractor status.

All product documentation and Contractor submittals must be submitted to the Engineer prior to or at the preconstruction conference. The Contractor must have the Engineer's approval prior to commencing any of this work.

The Contractor will follow the Manufacturer's installation instructions and specifications throughout the repair process

Temperature of the specified products is critical from the point of pumping to the point of injection. All polyurethanes react faster at higher temperatures. Drum heaters and heated hoses are required when ambient or ground temperatures are below 70 degrees Fahrenheit. The optimum hose temperature will vary with the weather conditions and the particular job site conditions with the minimum hose temperature being 75 degrees Fahrenheit and the maximum hose temperature being 95 degrees Fahrenheit and the drum temperature not to exceed 90 degrees Fahrenheit.

The Contractor will provide worker and inspector safety protective gear in accordance with the manufacturer, including but not limited to chemical goggles, face shields, eye wash system and NBR gloves.

The Contractor will provide safe storage and handling of materials prior to delivery and at the project site. All material installation, handling and storage will be in accordance with the Manufacturer's recommendations.

The Contractor will visit the project to determine the extent of culvert joints to be cleaned and filled, prior to bidding.

Culvert Joint Cleaning and Repair Culvert Joint quantities will be based upon the following table showing circumference of joints based upon culvert size and shape.

Pipe Diameter (In)	Round Pipe Circumference per Joint (Ft)
36	9.4
42	11.0
48	12.6
54	14.1
60	15.7
66	17.3
72	18.8
78	20.4
84	22.0
4’x6’ Cattle Pass	18.3
5’x7’ Cattle Pass	21.9

FOR BIDDING PURPOSES ONLY

CULVERT JOINT CLEANING

This work will consist of cleaning of the culvert joints, washing the entire culvert and joints with a high-pressure washer, and if needed, wire brush cleaning of each joint to be repaired as directed by the Engineer. The entire culvert will be clean and dry and most notably the specified joints will be thoroughly cleaned to the satisfaction of the Engineer using a power washer with water pressure of at least 2500 psi. The culvert must be in a clean condition so that no deleterious material is trapped in the joints that are being repaired. The Contractor will dispose of all debris removed from the culverts during the cleaning operation as approved by the Engineer.

All costs for equipment, material and labor for the culvert joint cleaning work will be incidental to the contract unit price per foot for Culvert Joint Cleaning. Culvert Pipe Cleaning will be measured to the nearest 0.1 foot of joint which is cleaned for joint repair.

REPAIR CULVERT JOINT

The culvert joints will be repaired in accordance with the Chemical Grout Manufacturer's directions to prevent future infiltration/exfiltration of soils and water and to keep the chemical grout from expanding back into the structure during injection.

The culvert joint will be repaired with a sealant comprised of water reactive hydrophilic polyurethane resin and dry oil free oakum. All grout will be injected under such pressure so as not to damage the existing drainage structure or roadway structure.

The Contractor will submit to the Engineer for approval a detailed procedure for the installation of the polyurethane grout.

The work will include, but is not limited to sealing each pipe joint with a hydrophilic polyurethane grout meeting the following specifications:

GEL FOAM II (Saturated Oakum Rope Joint Packing) as manufactured by Green Mountain International, LLC or equal.

ULTRA (Single Component Grout for Joint Injection) as manufactured by Green Mountain International, LLC or equal.

Excess grout and oakum will be trimmed from the interior face of the joint prior to applying the UV Protection (Gel Coat). The epoxy gel coat compound will be as recommended by the Manufacturer for both surface sealing and protecting the hydrophilic grout from UV exposure. The epoxy gel compound will be mixed and handled in accordance with the Manufacturer's recommendations and will meet the following requirements:

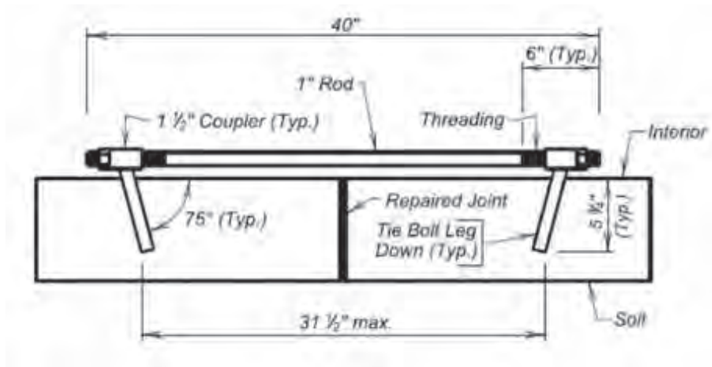
Epoxy gel sealant compounds manufactured by Green Mountain Grouts, LLC or equal.

All costs for all equipment, material and labor required to complete the work will be incidental to the contract unit price per foot for Repair Culvert Joint. Completion of the work includes initial saturated oakum rope packing of each joint, follow up injection of grout into the back side of each joint, trimming the excess grout and oakum from the interior face of the joint, application of the epoxy gel coat and site clean-up. Payment will be made per 0.1 foot of culvert joint repaired.

The quantity of joint cleaning, joint repair, and tie bolts was estimated based on an assumed eight-foot pipe segment length and repairing each joint. Actual conditions and quantity may vary, and the Engineer shall determine which joints will be repaired.

All repaired culvert joints will have tie bolts installed on the inside of the culvert. The contractor will drill holes at an angle as to cause the legs of the tie bolt to bind against the outside face of the hole upon tie bolt tightening. Bending of the tie bolt legs may need to be done in order to achieve this. Prior to inserting the tie bolt the Contractor will fill the hole with epoxy resin. The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, (Equivalent to ASTM C881, Type IV). The Contractor will allow the resin to properly set-up prior to the final tightening of the tie bolts.

Cost for drilling tie bolt holes, epoxy resin, connections, and furnishing and installing the tie bolts for reinforced concrete pipe and cattle pass will be incidental to the contract unit price per each for Tie Bolts for RCP.



DUAL COMPONENT CHEMICAL GROUT FOR VOID FILLING

The external voids surrounding the culvert will be filled with an injected high expansion chemical grout compound. Holes will be strategically drilled as required and grout injected throughout the structure to effectively fill all voids that have developed outside of the structure due to the infiltration of external soils and materials into the culvert and "piping" (water running outside and under the structure due to separated joints). It is the Contractor's responsibility to locate reinforcing bars and conduit prior to drilling any grout holes. All grout will be injected under such pressure so as not to damage the existing drainage structure or roadway structure. All joints will be appropriately cleaned and sealed, with appropriate recommended cure time, prior to the injection of the void grouting. After completion of the void filling, all holes will be properly sealed.

The typical method consists of placing a layer of chemical grout behind or around the structure. The Contractor will submit for approval by the Engineer a detailed grouting plan showing the spacing, orientation and depth of the grout holes, as well as type of polyurethane grout to be used, range of gel times, equipment, mixing procedures, recommended injection pressure, technique for monitoring grout travel and any other pertinent information. The grouting plan should address the prevention of overfilling and prevention of damage to structures or roadway. The Contractor will submit this detailed procedure for the installation of the expansion grout to the Engineer for approval. The holes are drilled with a rotary percussion hammer drill using a sharp masonry bit with a minimum diameter of 3/8 inch to a maximum diameter of 5/8 inch. Care must be taken to prevent holes from causing damage to reinforcing bars or utility conduits. Drilled holes should be vacuumed and flushed. Use injection grout and methods as recommended by Manufacturer.

Injection can be monitored by either applicator's visual inspection or by pumping a specific amount of injection grout into each hole. The work will start at the inlet end of the pipe and proceed downstream to the outlet. Inject bottom row every other hole. When material appears at the adjacent port, discontinue injection at entry port and begin injection at the adjacent port. Continue injection process section by section from bottom of pipe to top of pipe in a continuous manner to next pipe section. Injection pressure will vary from 200 psi to 3000 psi depending on the width of the joint, thickness of the structure, and condition of the concrete.

The Contractor must supply the Engineer with three (3) prior job references of projects where they have successfully injected urethane resin for subgrade void filling applications, or soil stabilization.

In lieu of three (3) prior job references the Contractor will:
a) Obtain hands on training from the supplier on the installation procedures,
and
b) Have the supplier on site to provide training to Contractor's staff. Supplier will be present for at least two complete pipe culvert repairs and until the Engineer is satisfied that Contractor's staff is competent in performing this work.

The chemical grout will be a dual component hydrophobic polyurethane grout compound which is non-flammable and non-toxic when cured.

The chemical grout mixture will have expansion properties listed in the

data sheets of greater than eighteen (18) times its original volume and cure to rigid closed cell polyurethane foam. The grout will expand to fill any voids and must bond to the exterior surface of the structure. The chemical grout will be Mountain Grout U 4.0 dual component polyurethane grouts as manufactured by Green Mountain International LLC or equal.

All costs for equipment, material, and labor required to fill external voids surrounding the culvert will be incidental to the contract unit price per gallon for Chemical Grout Void Fill. Any overfilling of voids that results in damage to overlying pavement, highway user ride quality, or drainage structure integrity will be corrected and paid for by the Contractor. All corrections will be approved by the Engineer. Payment will be to the 0.1 gallon of chemical grout used, prior to expansion of the material.

A calibrated metering device will be used to measure the chemical grout and to assure proper mixing ratio of components.

After the grout cures, excess material will be removed flush with the pipe interior wall and the pipe left clean.

FOR BIDDING PURPOSES ONLY

CLEANOUT PIPE CULVERT

Cleanout of pipe culvert will be done in advance, to allow for inspection of the culvert and determine if culvert lining is feasible. The inspection will determine any deviations in the vertical and horizontal alignments, location, and size of any gaps in joints, and location of any damage.

The pipe culvert cleaning and inspection will be scheduled such that there is adequate time to evaluate what repairs are required and allow for ordering and delivery of pipe culvert repair materials.

Material in existing pipe culvert will be cleaned out by water flushing or other approved methods.

Material removed from the pipe culvert will become property of the Contractor for disposal.

The Contractor will implement appropriate sediment control measures prior to water flushing to prevent discharges from the project boundaries.

The pipe culvert will be cleaned to the satisfaction of the Engineer and the cleaning will be adequate to determine pipe condition and potential repair techniques.

All costs to dewater, clean pipe, and dispose of removed materials will be incidental to the contract unit price per each for “Cleanout Pipe Culvert”.

The contact item, “Cleanout Pipe Culvert” will be paid for a maximum of one time.

The SDDOT will not be responsible for any materials that were ordered prior to the culvert being cleaned and inspected.

CLEANOUT FOR CULVERT TREATMENT

Cleanout of pipe culvert will be done in advance of the culvert lining.

Material in existing pipe culvert will be cleaned out by water flushing or other approved methods.

Material removed from the pipe culvert will become property of the Contractor for disposal.

The Contractor will implement appropriate sediment control measures prior to water flushing to prevent discharges from the project boundaries.

The pipe culvert will be cleaned to the satisfaction of the Engineer.

All costs to dewater, clean pipe, and dispose of removed materials will be incidental to the contract unit price per each for “Cleanout Pipe Culvert”.

REMOVE & RESET PIPE

The Contractor will tie each section of pipe to the adjacent sections with tie bolts conforming to Standard Plate 450.18. All costs for drilling holes, furnishing, and installing the tie bolt assembly will be incidental to the corresponding pipe bid item.

Existing tie bolts, if any, may be salvaged and reused if condition is acceptable to the Engineer.

CULVERT LINING

Pipe culvert lengths shown in the Table of Mainline Culvert Work were obtained from the original grading plans and were not verified in the field.

The Contractor will submit to the Area Engineer a minimum of 2 week prior to the Preconstruction Meeting a detailed plan of how the pipe culvert cleaning and inspection will be staged. The plan will show how the Contractor is going to maintain traffic at each pipe culvert site, where equipment is going to be stored, the total length of the workspace if a lane of traffic needs to be closed to traffic, and the methods used to prevent material removed from the pipe culverts from entering the waterway. These plans will be approved by the Area Engineer prior to starting work on the pipe culvert cleaning and lining.

Sediment control may be required if water is flowing through the pipe culvert at the time of cleaning. Otherwise, sediment control is not anticipated.

The Contractor will implement appropriate sediment control measures prior to water flushing to prevent discharges beyond the project boundaries.

Wattles have been provided in the Estimate of Quantities and will be used to capture pipe cleanout material. Placement of the wattles will be as directed by the Engineer.

ENGINEER DRAWING AND DESIGN CALCULATION SUBMITTALS

The Contractor will submit the engineering drawing and design calculations for the culvert liners, as required by the various culvert lining Special Provision in Adobe PDF format.

Adobe PDF submittals will be sent to the following email addresses:

Glenn.Walz@state.sd.us

SLIPLINE PIPE

The Contractor will furnish and install slipliner pipe at locations specified in the Table of Slipline Pipe. This work consists of slipping a pipe liner inside existing pipe and grouting the void between the liner and the existing pipe.

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

Slipliner pipe will conform to one of the following types:

1. Closed Profile HDPE:
   Closed profile HDPE pipe will meet the requirements of ASTM F894 and will have a cell classification of 345464C in accordance with ASTM D3350. The pipe will have a minimum Ring Stiffness Constant (RSC) classification of 160 lb/ft as defined in ASTM F894. Pipe joints will be in accordance with the pipe manufacturer’s recommendations and as approved by the Engineer.

2. Solid Wall HDPE:
   Solid wall HDPE pipe will meet the requirements of ASTM F714 (SDR 32.5) and will have a cell classification of 445574C in accordance with ASTM D3350. Pipe joints may be grooved press-on joints or heat fused as approved by the Engineer. Heat fused joints will be fused in accordance with the pipe manufacturer’s recommendations by an experienced operator of the heat fusion equipment.

3. PVC:
   PVC pipe will meet the requirements of ASTM F949 or ASTM D1784 with a cell classification of 12454. Pipe joints will be elastomeric seals (gaskets) in accordance with the requirements of ASTM F477.

4. Spirally Wound PVC:
   Spirally wound PVC slipliner will meet the requirements of ASTM F949 with minimum pipe stiffness of 46 psi. Pipe joints will be in accordance with the pipe manufacturer’s recommendations and as approved by the Engineer.

5. Polypropylene Pipe (PP):
   Polypropylene pipe will meet or exceed the requirements of ASTM F2736 (12 inch to 30 inch diameter) or will meet or exceed the requirements of ASTM F2764 (30 inch to 60 inch diameter) with minimum pipe stiffness of 46 psi. Pipe joints will be in conformance with ASTM D3212.

6. Steel Reinforced Polyethylene:
   Steel reinforced polyethylene pipe will meet the requirements of ASTM F2562. Pipe joints will be in accordance with the pipe manufacturer’s recommendations and as approved by the Engineer.

The diameter specified in the bid item description is the diameter of the existing pipe to be sliplined. The Contractor will provide the largest diameter slipliner pipe that will fit into the existing pipe to maximize flow capacity.

Slipliner pipe will have a smooth interior surface.

Slipliner pipe will be joined into a continuous length with joints that are adequate for pushing, pulling, or winding the liner pipe through the existing pipe. The joints will not allow seepage during pressure grouting. To allow for unrestricted insertion of the liner, the outside diameter of the liner pipe will not be increased at the joints.

Prior to sliplining, the Contractor will clean the existing pipe of all debris, silt, and obstructions to ensure that the slipliner pipe can be inserted, the grout will flow to all voids, and the inserted slipliner pipe will not be set upon or irregularly supported by such material. Cleaning will be accomplished by the use of jet rodding equipment or other approved methods.

The slipliner pipe will be inserted into the existing pipe by pushing, pulling, or winding methods that do not damage the slipliner pipe. The slipliner pipe will be clean and substantially dry before insertion.

FOR BIDDING PURPOSES ONLY

SLIPLINE PIPE (Continued)

To minimize the change in flowline, slipliner pipe will be held down during the grouting operation. This may be accomplished by attaching fasteners or blocks at the top of the pipe, adding weight to the inside of the slipliner pipe, placing multiple grout lifts, or other means as approved by the Engineer.

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. The bulkhead will be free from leaks and the exterior surface will be given a smooth trowel finish. The bulkhead at the inlet end will be finished with a 45 degree mitered bevel transition between the existing pipe and the inside of the slipliner pipe with the slipliner pipe face pushed inside the existing pipe face.

Pressure grouting will be done to ensure all the voids are filled between the slipliner pipe and the existing pipe including all breaks or holes in and around the existing pipe. Grouting pressures used will ensure all voids are filled, but do not collapse or deform the slipliner pipe more than 5 percent of the diameter. Multiple grout lifts may be necessary to minimize pipe deflection for 60-inch diameter and larger pipe in accordance with the pipe manufacturer's recommendations.

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 slipliined 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 or keep water out of the annular space during grouting, 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 void quantity between the slipliner pipe and the existing pipe, and an additional quantity for the void volume 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 slipliner pipe, including work area excavation, backfilling, and incidentals necessary to satisfactorily complete the work will be included in the contract unit price per foot for the corresponding contract item for "Slipline Pipe". Cost to clean the culvert for sliplining will be paid for at the contract unit price per each for "Cleanout for Culvert Treatment".

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 SLIPLINE PIPE

Station (**067V**)	Slipliner Minimum Inside Dia. (In)	Slipline 60" Pipe (Ft)	Slipline 72" Pipe (Ft)	Slipline 84" Pipe (Ft)	*Cellular Grout (CuYd)
82+42	50.68	122			29.2
162+37	70.9			186	87.7
384+00	65.0		102		22.7
	Totals:	122	102	186	139.6

* Estimated quantity is based on use of a closed profile HDPE. The quantity at each location includes an additional 15% to account for void volume outside the existing pipe.

OBJECT MARKERS

At locations shown in the Table of Pipe Repairs, where Object Markers will be removed for reset, cost for removing the existing Object Markers will be included in the contract unit price per each for Remove Delineator for Reset.

Cost for resetting the existing Object Markers will be included in the contract unit price per each for Reset Delineator.

REPROFILING DITCH

The existing ditch will be cleaned out as shown in the Table of Pipe Repairs.

The total estimated length of ditch cleanout is 660 feet.

These locations will be restored to the existing typical ditch section

Areas to be cleaned out will be staked by the Engineer prior to clean out.

Excess material in the ditch will be removed and disposed of by the Contractor, to a site off the project and approved by the Engineer.

Disturbed areas will be restored to the satisfaction of the Engineer. Disturbed areas will be seeded by the Contractor.

Cost for this work, including labor and equipment necessary to remove and dispose of the silt and vegetation and reshape the ditch will be included in the contract unit price per station for Reprofiling Ditch.

Cost for seeding and mulching will be included in the contract unit prices for the respective items.

TEMPORARY FENCE

The Contractor will verify the location of the temporary fence with the landowner prior to installation of the 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 is the contact regarding the E-Z Brace:

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

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON
BLASIUS

FOR BIDDING PURPOSES ONLY

TABLE OF SUPERELEVATION

067V – US18 West

Station	to	Station		
17+00		17+20.32	-	Normal Crown Section
17+20.32		19+60.32	-	Superelevation Transition
19+60.32		50+31.99	-	2040’ Radius Curve Left 0.06’/’ Superelevation Rate Point of Rotation at Centerline
50+31.99		52+71.99	-	Superelevation Transition
52+71.99		76+08.34	-	Normal Crown Section

067V-US18 East

-0+75		-	Match Existing (M.E) Superelevation ≈0.056’/’ Lt, 0.036’/’ Rt
-0+75	1+70	-	Superelevation Transition M.E. to 0.05’/’ Superelevation Rate 2800’ Radius Curve Left Point of Rotation at Centerline
1+70	3+70	-	Superelevation Transition
3+70	12+24.82	-	Normal Crown Section
12+24.82	14+04.82	-	Superelevation Transition
14+04.82	39+01.68	-	4550’ Radius Curve Left 0.04’/’ Superelevation Rate Point of Rotation at Centerline
39+01.68	40+81.68	-	Superelevation Transition
40+81.68	43+26	-	Normal Crown Section

06D8 – SD43

21+30.10	23+38.10	-	Normal Crown Section
23+38.10	25+78.10	-	Superelevation Transition
25+78.10	39+09.74	-	2040’ Radius Curve Right 0.06’/’ Superelevation Rate Point of Rotation at Centerline
39+09.74	41+49.74	-	Superelevation Transition
41+49.74	49+42.14	-	Normal Crown Section

06D1 – US281

0+33	2+73.00	-	Superelevation Transition
2+73.00	17+62.71	-	2040’ Radius Curve Left 0.06’/’ Superelevation Rate Point of Rotation at Centerline
17+62.71	20+02.71	-	Superelevation Transition
20+02.71	26+79.29	-	Normal Crown Section
26+79.29	29+19.29	-	Superelevation Transition
29+19.29	32+59.07	-	2040’ Radius Curve Right 0.06’/’ Superelevation Rate Point of Rotation at Centerline
32+59.07	34+99.07	-	Superelevation Transition
34+99.07	36+85.99	-	Normal Crown Section

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 8 PLSS corners and 82 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”.

FOR BIDDING PURPOSES ONLY

SUPPLYING AS BUILT PLANS

If the roadway lighting system is constructed differently than what is stated in the plans, the Contractor will supply as built plans to the Engineer and a copy will be sent to the Traffic Design Engineer. The as built plans may include conduit layouts, wiring diagrams, or other drawings depicting the changes from the original plans.

SHOP DRAWING AND CATALOG CUTS SUBMITTALS

The Contractor will submit shop drawings and catalog cuts in accordance with Section 985 of the Specifications.

PDF submittals will be sent to the following email addresses:

Ryley.Rapp@state.sd.us
Stacy.Bartlett@state.sd.us

REMOVE LUMINAIRE POLE FOOTING

The footings of existing luminaire poles EL1-EL2 will be removed by the Contractor to a minimum of 2' below the ground surface. Restoration of the disturbed area will be to the satisfaction of the Engineer.

All costs for removing the footings of the existing luminaire poles will be incidental to the contract unit price per each for Remove Luminaire Pole Footing".

LUMINAIRE POLES

Luminaire poles L1 to L6 will have a mounting height of 45-feet with 8-feet arms.

The pole fabricator will be responsible for the determining the diameter, length, and number of anchor bolts.

LUMINAIRES

The lighting design used the following parameters and provides 0.6 and greater average maintained foot-candles and uniformity ratios of 3:1 (average maintained to minimum maintained foot-candles) and 6:1 (maximum to minimum maintained foot candles):

Pole Setback:	8 Ft.
Lamp Loss Factor (LLF):	0.8
Width of Lighted Area:	Varies Ft.
Luminaire Cycle Length:	NA
Configuration:	Staggered
Mounting Height:	45 Ft.
Arm Length	8 Ft.
Light Source:	LED

The following LED luminaires meet the requirements for this design:

a.) AEL: ATB0-P303-MVOLT-R3-P7

b.) GE Evolve: ERLH-0-15-C3-A-GRAY

TABLE OF FOOTING DATA

Site Designation	Footing Diameter	* Footing Depth	**Spiral Diameter	**Spiral Length	Vertical Reinforcement
L1-L6	2' - 0"	8' - 0"	1' - 8"	54' - 9"	8-#7 x 7' - 6"

* Footing depth will be below ground level.
** The size of all spirals will be #3.

SUBSURFACE

Subsurface conditions along the length of the corridor primarily consist of brown clay and clay-sand.

During construction of the cylindrical footings, concrete placement operations should closely follow excavation procedures. The longer the excavations are left open, the more likely that caving may occur.

WIRE SPLICING FOR LIGHTING

All wire splices for lighting will be made using TE Connectivity GTAP connectors, NSI Industries Polaris Blue connectors, or an approved equal.

FLASHING BEACON FOR STOP SIGNS

Each beacon will consist of a red 1 Section Vehicle Signal Head with cap flasher. The head will be configured to mount on a 2.5-inch perforated square tube steel poss. All costs associated with making the beacon operational, including but not limited to, the cap flasher, rigid steel conduit, and mounting hardware will be incidental to the contract unit price for each "1 Section Vehicle Signal Head".

SURFACING THICKNESS DIMENSIONS

The plans shown spread rates will be applied even though the thickness may vary from that shown on the plans.

At those locations where material must be placed to achieve a required elevation, the depth/quantity may be varied to achieve the required elevation.

FLEXIBLE PAVEMENT SMOOTHNESS SPECIAL PROVISION

All sections, not excluded by the Special Provision for Flexible Pavement Smoothness, will be evaluated as two opportunities.

STORAGE UNIT

The Contractor will provide a storage unit such as a portable storage container or a semi-trailer meeting the minimum size requirements from the table below:

Project Total Asphalt Concrete Tonnage	Minimum Internal Size (Cu Ft)	Minimum External Size (L x W x H)
Less than 50,000 ton	1,166	20' x 8' x 8.6' std
More than 50,000 ton	2,360	40' x 8' x 8.6' std
All Gyratory Controlled QC/QA Projects	2,360	40' x 8' x 8.6' std

The storage unit is intended for use only by the Engineer for the duration of the project. The QC lab personnel or the Contractor will not be allowed to use the storage container while it is on the project, without permission of the Engineer.

The storage unit will be on site and operational prior to asphalt concrete production. Upon completion of asphalt concrete production, the Engineer will notify the Contractor when the storage unit can be removed from the project. The storage unit use will not exceed 30 calendar days from the completion of asphalt concrete production. The storage unit will remain the property of the Contractor.

The storage unit will be weather proof and will be set in a level position. The storage unit will be able to be locked with a padlock.

The storage unit will be placed adjacent to the QA lab, as approved by the Engineer.

STORAGE UNIT (CONTINUED)

The following will apply when the storage unit provided on the project is a portable storage container:

1. The portable storage container will be constructed of steel.
2. The portable storage container will be set such that it is raised above the surrounding ground level to keep water from ponding under or around the storage container.

The following will apply when the storage unit provided on the project is a semi-trailer:

1. A set of steps and hand railings will be provided at the exterior door.
2. If the floor of the semi-trailer is 18 inches or more above the ground, a landing will be constructed at the exterior door. The minimum dimensions for the landing will be 4 feet by 5 feet. The top of the landing will be level with the threshold or opening of the doorway.
3. The semi-trailer may be connected to the QA lab by a stable elevated walkway. The walkway will be a minimum of 48 inches wide and contain handrails installed at 32 inches above the deck of the walkway. The walkway will be constructed such that it is stable and the deck does not deform during use and allows for proper door operation. Walkway construction will be approved by the Engineer.

All cost for furnishing, maintaining, and removing the storage unit including labor, equipment, and materials including any necessary walkways, landings, stairways, and handrails will be included in the contract unit price per each for Storage Unit.

INTERSECTING ROADS AND ENTRANCES

Intersecting roads and entrances will be satisfactorily cleared of vegetation, shaped and compacted prior to placement of mainline surfacing. This work will be considered incidental to other contract items. Separate measurement and payment will not be made.

SHOULDER WORK

Prior to construction, Department of Transportation maintenance forces will spray the shoulders to kill existing vegetation. It is the Contractor's responsibility to notify the State a minimum of 30 days prior to starting work on the surface of the highway. The State assumes no responsibility for the effectiveness of the herbicide applied.

Vegetation and accumulated material on or adjacent to the existing roadway edge will be removed by the Contractor, to the satisfaction of the Engineer, prior to asphalt concrete resurfacing. Any remaining windrow of accumulated material will be spread evenly on the inslope adjacent to the asphalt shoulder, to the satisfaction of the Engineer, following application of the flush seal.

Cost for shoulder work including removal and replacement of topsoil will be incidental to the contract unit prices for the various items. Separate measurement and payment will not be made.

TEMPORARY GRAVEL SURFACING (TRAVEL GRAVEL)

An estimated 300 tons of Temporary Gravel Surfacing is provided for this project and may be used as determined necessary and at locations approved by the Engineer. The Temporary Gravel Surfacing is provided to protect completed subgrade work from damage by traffic or equipment during wet weather. Temporary Gravel Surfacing may be used on the finished subgrade prior to Base Course, Salvaged installation and/or to protect exposed subgrade prior to the completion of the finished subgrade surface. The Engineer will direct the Contractor to place Temporary Gravel Surfacing if adverse weather is imminent and/or the usage of the material will help prevent road closures.

The Temporary Gravel Surfacing will be obtained from the stockpile site(s) provided by the Contractor from the blended and salvaged granular material produced on this project and may be used without further gradation testing.

Compaction to a specified density is not required.

The Contractor will be required to salvage as much of the Temporary Gravel Surfacing as possible prior to resuming construction of the subgrade. The salvaged Temporary Gravel Surfacing may be used again on the project.

Temporary gravel surfacing will be paid for at the contract unit price per ton for Temporary Gravel Surfacing. Measurement of the Temporary Gravel Surfacing will be by use of scale, loader scale, or as approved by the Engineer. The contract unit price will include all costs associated with hauling, placing, compacting, maintaining, salvaging and stockpiling the material. For Temporary Gravel Surfacing salvaged after use on the subgrade and used again on the project, the amount used again will be measured and paid for again at the contract unit price per ton.

TABLE FOR MAINLINE CROSS PIPE REPLACEMENT

LOCATION	REMOVE ASPHALT CONCRETE (Sq.Yds)	SELECT FILL MATERIAL (Tons)	BASE COURSE (Tons)	1ST LIFT ASPHALT CONCRETE COMPOSITE (Tons)	2ND LIFT ASPHALT CONCRETE COMPOSITE (Tons)
NH-PT-PT 0018(222)311 – PCN 067V					
127+48	104	65	89	16	15
195+00	196	193	169	30	29
210+00	281	478	243	43	41
443+23	142	79	123	22	21
Totals:	**723**	**815**	**624**	**111**	**106**

Quantities are included in the Table of Additional Quantities for Mainline Cross Pipe Replacement. The quantity for Select Fill Material will be added/included in the quantity for Base Course.

SURFACE PREPARATION

Prior to placement of the Class Q3R Hot Mixed Asphalt Concrete on Sections 2, 3, and 5, the Contractor may be required to prepare the existing surface according to the Surface Preparation specifications provided in Section 210, at locations determined by the Engineer.

The locations provided on the typical sections for Asphalt Surface Treatment, In Place, represent the locations where an asphalt surface treatment is anticipated to be in place at the time of construction. The Contractor is advised that locations and dimensions of actual Asphalt Surface Treatment, In Place, may vary from that given on the typical sections. There will be no increase in the payment for Surface Preparation based on the actual surface treatment in place at the time of construction.

SURFACE PREPARATION (CONTINUED)

Quantities for Surface Preparation, MC-70 Asphalt for Prime, and Blotting Sand for Prime have been provided for 0.80 miles of the grading segments. Actual limits to receive Surface Preparation, MC-70 Asphalt for Prime, and Blotting Sand for Prime ahead of Class Q3R Hot Mixed Asphalt Concrete placement will be limited to particular project conditions and will be subject to approval by the Engineer. In no case will Surface Preparation operations ahead of Class Q3R Hot Mixed Asphalt Concrete placement operations exceed fourteen calendar days.

The Contractor will ensure excess in place granular material is removed at locations (end of project, bridges, intersecting roads and entrances) to achieve the required elevation for the placement of the asphalt concrete. Payment for the removal of excess in place granular material will be incidental to the contract unit price per mile for Surface Preparation. This material may be reused as Base Course, Salvaged at the discretion of the Engineer.

UNCLASSIFIED EXCAVATION, DIGOUTS

The locations and extent of digout areas will be determined in the field by the Engineer. The backfilling material for the digouts will be Asphalt Concrete Composite and Base Course. The depth of asphalt will match the in-place thickness.

Included in the Estimate of Quantities are 50 cubic yards of Unclassified Excavation, Digouts and 75 square yards of Remove Asphalt Concrete Pavement per mile for the removal of asphalt and unstable material for Sections 1, 4 and 6.

Included in the Estimate of Quantities are 100 tons of Base Course and 25 tons of Asphalt Concrete Composite per mile for backfill of Unclassified Excavation, Digouts of Sections 1, 4 and 6.

Included in the Estimate of Quantities are 50 cubic yards of Unclassified Excavation, Digouts per mile for the removal of unstable material for Sections 2, 3 and 5.

Included in the Estimate of Quantities are 100 tons of Base Course per mile for backfill of Unclassified Excavation, Digouts of Sections 2, 3 and 5.

The digouts will be extended to the shoulder and backfilled with granular material that will daylight to the inslope to allow water to escape the subsurface.

BASE COURSE, SALVAGED

Base Course, Salvaged will be obtained from the stockpile site provided by the Contractor 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 (salvaged or virgin). Blended material will be to the satisfaction of the Engineer.

All other requirements for Base Course, Salvaged will apply.

GRAVEL CUSHION, SALVAGED

Gravel Cushion, Salvaged will be obtained from the stockpile site provided by the Contractor and may be used without further gradation testing.

The Contractor will ensure the Gravel Cushion, Salvaged material contains no more than 50% salvaged asphalt mix material and at least 50% granular material (salvaged or virgin). Blended material will be to the satisfaction of the Engineer.

All other requirements for Gravel Cushion, Salvaged will apply.

WATER FOR COMPACTION

The moisture content for compaction of the Base Course, Salvaged will be approximately optimum moisture of the material. The quantity for Water for Granular Material is based on 4% of the quantity of Base Course, Salvaged.

SALVAGE ASPHALT MIX AND GRANULAR BASE MATERIAL

The Los Angeles Abrasion Loss value on the aggregate used for the in-place asphalt concrete was 24 for US18 and 27 for US281 and SD43. This value was obtained from testing during construction of the in-place asphalt concrete.

An estimated 33779 tons (17872 Cubic Yards) of asphalt mix material will be salvaged from the existing highway according to the in-place surfacing typical sections.

An estimated 39247 tons (20766 Cubic Yards) of granular base material will be salvaged from the existing highway according to the in-place surfacing typical sections.

The Contractor will ensure that no vegetation, topsoil, subgrade, or other foreign material is incorporated into the salvaged asphalt mix material.

The salvaged material not used on the project will be blended and stockpiled according to the Blend, Haul, and Stockpile Granular Material plan note.

The quantity of salvaged asphalt mix and granular base material may vary from the plans.

The quantity of salvageable material is estimated from the in-place surfacing typical sections. This estimated quantity was included in the unclassified excavation quantities.

COLD MILLING ASPHALT CONCRETE

The Los Angeles Abrasion Loss value on the aggregate used for the in-place asphalt concrete was 24 for US18 and 27 for US281 and SD43. This value was obtained from testing during construction of the in-place asphalt concrete.

Cold milling will be done according to the typical sections. At intersecting roads, entrances, turnouts, pads and in areas where maintenance patches have raised and/or widened the road, additional milling will be done to provide a uniform typical section. Milling will be daylighted to the outside edge of the roadway. Quantities for milling additional width are included in the Table of Additional Quantities.

The initial/final lift of asphalt paving will be completed within 14 days after the pavement has been cold milled. The blade laid asphalt will be considered the initial lift of asphalt. If any pavement repairs or digouts are required by the Engineer after that time frame they will be repaired by the Contractor at their own expense.

Cold milling is estimated to produce 12721 tons of cold milled asphalt concrete material. An estimated 7932 tons of cold milled asphalt concrete material will be used on these projects as RAP in the Class Q3R Hot Mixed Asphalt Concrete mixture. The Contractor is responsible to assure that enough cold milled asphalt concrete material is available for use as RAP in the Class Q3R Hot Mixed Asphalt Concrete.

RAP not reused on the project (estimated at 4789 tons) will be blended, hauled and stockpiled.

If resurfacing as per the typical section cannot be placed immediately after cold milling at project ends, etc., then temporary asphalt mix ramps will be placed as directed by the Engineer. Cost for placing and removing the temporary ramps will be incidental to the contract unit prices for the various items.

COLD MILLING ASPHALT CONCRETE (CONTINUED)

Intersecting roads and entrances will be milled back for approximately ten feet from the shoulder edge so that additional surfacing may be placed at these locations.

Asphalt concrete intersecting roads will be milled-in for approximately ten feet at the ROW line so that additional surfacing may be placed at these locations.

COLD MILLING TAPERS

In order to construct the new surfacing flush with the asphalt concrete, it will be necessary to taper the depth of milling according to the details for Cold Milling Tapers.

The surface will be milled full roadway width.

Cost for this work will be incidental to the contract unit price per square yard for Cold Milling Asphalt Concrete.

Taper depth of Cold Milling at locations shown below:

US18 STA	LOCATION	SIZE
0+00	Begin Project	40’ long X 37’ wide
17+00	Begin Section 2	50’ long X 33’ wide
40+88 (2nd)	Begin Section 4	50’ long X 32’ wide
452+23 (2nd)	End Section 4	20’ long X 34’ wide

SD43 STA	LOCATION	SIZE
0+00	Begin Project	80’ long X 32’ wide
21+30.1	End Section 6	50’ long X 32’ wide

GRANULAR MATERIAL, FURNISH

Granular Material for blending stockpile material will be Base Course meeting the requirements of Section 882 of the specifications except that if ledge rock is used, the Plastic Index will be between 2 and 6.

BLEND AND STOCKPILE GRANULAR MATERIAL

An Estimated 31257 tons (for informational purposes only) of salvaged asphalt mix material will be blended with 31257 tons of salvaged granular material 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 salvaged granular material.

The blended asphalt mix and granular material stockpile will meet the requirements of Section 884.2 D.2.

Salvaged asphalt mix material will be blended with salvaged granular material at a rate of 50% salvaged asphalt mix material and 50% salvaged granular material to obtain stockpile material. Material will be uniformly blended to the satisfaction of the Engineer.

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.

BLEND, HAUL AND STOCKPILE GRANULAR MATERIAL

Excess salvaged asphalt concrete material produced from this project estimated at 2522 tons (for informational purposes only) will be blended with 7990 tons of excess salvaged granular material and will be hauled, blended and stockpiled at the State stockpile site located on the south side of US18 west of the US183 North Jct, in the northwest quarter of Section 23, Township 99 North, Range 78 West of the 5th P.M, Tripp County.

Excess salvaged asphalt concrete material produced from cold milling estimated at 4789 tons (for informational purposes only) will be blended with 4789 tons of Granular Material, Furnish and will be hauled, blended and stockpiled at the State stockpile site located on the south side of US18 west of the US183 North Jct, in the northwest quarter of Section 23, Township 99 North, Range 78 West of the 5th P.M, Tripp County.

The Contractor will have approval from the Engineer of the stockpile location prior to stockpiling the material within the aforementioned site.

A computerized scale, portable platform scale, stationary commercial scale, stationary commercial plant, portable plant scale, or a belt scale along with a scale operator will be provided by the Contractor at the stockpile site to weigh the milled material prior to blending.

The blended asphalt mix and granular base material stockpile will meet the requirements of Section 884.2 D.6.

Salvaged asphalt concrete material will be blended with salvaged granular material or Granular Material, Furnish at a rate of no more than 50% salvaged asphalt mix material to obtain stockpile material. Material will be uniformly blended to the satisfaction of the Engineer.

All other costs for crushing, hauling, stockpiling, and blending salvaged asphalt concrete material and salvaged granular material or Granular Material, Furnish will be incidental to the contract unit price per ton for Blend, Haul and Stockpile Granular Material.

BLOTTING SAND FOR PRIME

Included in the Estimate of Quantities are 10 tons of Blotting Sand for Prime to be used where necessary for maintenance of traffic as directed by the Engineer. (Rate = 10 pounds per square yard)

COVER AGGREGATE

Cover Aggregate will conform to the requirements of the Specifications for Type 3 and will be furnished by the Contractor.

FOG SEAL

The fog seal will be placed following the completion of the asphalt surface treatment. Prior to the application of the fog seal, the Contractor will be required to broom the asphalt surface treatment. A CSS-1h or SS-1h emulsion will be used for the fog seal application. A water-to-emulsion rate of 1:1 should be used for the Fog Seal application.

The Contractor will fog seal the entire asphalt surface treatment surface.

The Contractor will plan the fog seal operation to allow adequate cure time for the fog seal and to minimize/eliminate the need to apply Sand for Fog Seal.

If adequate cure time for the Fog Seal is not available, to facilitate traffic, the Contractor will be allowed to place a minimum sufficient amount of blotting sand on the fog seal to allow traffic to cross the uncured portion of the fog seal, as permitted by the Engineer.

FOG SEAL (CONTINUED)

Sand for Fog Seal is only intended to be placed for accesses to businesses, intersection crossings, and as determined by the Engineer to facilitate traffic movements. Sand for Fog Seal will not be placed to accelerate the Contractor’s schedule.

Sand that is applied will be broomed off the surface of the roadway once the fog seal has sufficiently cured as determined by the Engineer.

Sand for Fog Seal will conform to Section 879.1.B.

Prior to hauling, Sand for Fog Seal will be screened to minimize segregation, eliminate oversize, and effectively breakup or discard material bonded into chunks. All costs for supplying, hauling, placing, and brooming the blotting sand will be incidental to the contract unit price per ton for Sand for Fog Seal.

SAND FOR FOG SEAL

Included in the Estimate of Quantities are 5 tons of Sand for Fog Seal to be used where necessary for maintenance of traffic as directed by the Engineer. (Rate = 8 pounds per square yard)

ASPHALT CONCRETE COMPOSITE

Section 324 will apply except that Class Q3R Hot Mixed Asphalt Concrete as specified elsewhere in the plans may be used as Asphalt Concrete Composite.

Plans specified locations for Asphalt Concrete Composite will be paid for at the contract unit price per ton for Asphalt Concrete Composite regardless of the class of asphalt concrete used at such locations.

The asphalt binder used in the mixture can be PG 58H-34 or PG 58V-34 Asphalt Binder.

ASPHALT CONCRETE BLADE LAID

Included in the Estimate of Quantities are 150 tons of Asphalt Concrete Blade Laid, 11.1 tons of PG 58H-34 Asphalt Binder, 1.5 tons of Hydrated Lime and 5.4 tons of SS-1h or CSS-1h Emulsified Asphalt for Tack (Rate = 0.09 gallon per square yard) per mile and will be tight bladed on the existing surface 24’ wide prior to the overlay of Sections 1, 4 and 6. Gaps at centerline will not be permitted.

A sufficient amount of material will be kept in front of the blade to fill and level all joints, cracks and other surface irregularities.

Mineral Aggregate for tight bladed material will use only the fine aggregate components combined in the same proportions as the Class Q3R Hot Mixed Asphalt Concrete mix. Mineral Aggregate for tight bladed material will meet the gradation requirements of the Job Mix Formula. Fine Aggregate Angularity and Sand Equivalent requirements will be the same as the Class Q3R Hot Mixed Asphalt Concrete mix. Quality testing is not required on the coarse aggregate (+No. 4 sieve) in this mixture.

The Asphalt Concrete Blade Laid Lift will be designed using an N_{design} Gyratory Compactive Effort of 65. The asphalt binder content will be determined so that the air voids of Asphalt Concrete Blade Laid Lift are between 3.0% and 5.0%.

CLASS Q3R HOT MIXED ASPHALT CONCRETE

Mineral Aggregate:

Asphalt concrete aggregate will consist of reclaimed asphalt pavement (RAP) and virgin aggregate.

Virgin mineral aggregate for Class Q3R Hot Mixed Asphalt Concrete will conform to the requirements of Class Q3.

The Class Q3R Hot Mixed Asphalt Concrete will include 20% percent RAP in the mixture. RAP will be obtained from the material produced by cold milling.

Mix Design Criteria:

Gyratory Controlled QC/QA Mix Design requirements for the Class Q3R Hot Mixed Asphalt Concrete will conform to the requirements of Class Q3 except as modified by the following:

Gyratory Compactive Effort:

	$N_{initial}$	N_{design}	$N_{maximum}$
Class Q3R	6	50	75

All remaining requirements for Class Q3 will apply.

PERFORMANCE GRADED ASPHALT BINDER

Performance Graded Asphalt Binder will conform to Section 890, AASHTO M 332, and the Combined State Binder Group Method of Acceptance for Asphalt Binders, available from the Department's Bituminous Engineer.

ADDITIONAL QUANTITIES

Included in the Estimate of Quantities are 100 tons of Class Q3R Hot Mixed Asphalt Concrete, 4.7 tons of PG 58H-34 Asphalt Binder and 1.0 tons of Hydrated Lime per mile for spot leveling, strengthening and repair of the existing surface throughout the project.

Included in the Estimate of Quantities are 2.12 tons of SS-1h or CSS-1h Asphalt for Tack for surface repair and leveling areas throughout the project. (Rate = 0.09 gallon per square yard).

EDGELINE RUMBLE STRIPS AND STRIPES

INSTALLATION:

Edgeline rumble strips and stripes will be constructed according to Standard Plates 320.20 (Sections: 4 & 6) & 320.24 (Sections: 1, 2, 3 & 5).

Rumble strips and stripes will be completed prior to application of the flush seal and permanent pavement marking.

Rumble strips and stripes will be installed in rural areas with posted speeds greater than 50 mph and are not required in urban areas. The rumble strips and stripes will begin at the location of the Speed Limit 65 sign as traffic is departing the built up area of a community, unless otherwise specified in the plans. The Engineer will provide the exact start and stop locations.

ROADWAY CLEANING:

The Contractor will be required to remove loose material from the driving surface and/or asphalt shoulders of the roadway. Loose material may be broomed to the edge of shoulders. It will be the Contractor's responsibility to ensure the loose material does not enter any vegetated areas or waterways.

Cost for this work will be incidental to the contract unit price per mile for Grind 8" and 12" Rumble Strip or Stripe in Asphalt Concrete.

REFURBISH SINGLE AND DOUBLE MAILBOXES

Existing mailboxes will be removed, turnouts constructed, and mailboxes reset on new posts with the necessary support hardware for single or double mailbox assemblies. The local Postmaster will determine the recommended mounting height. The Contractor will coordinate with the Engineer on the proper postal representative to contact.

If large mailboxes are located at double mailbox installations, a single post may need to be used for each mailbox.

STATION	CLASS Q3R HOT MIXED ASPHALT CONCRETE TONS	REFURBISH SINGLE MAILBOX EACH	REFURBISH DOUBLE MAILBOX EACH
NH-PT 0018(222)311 – 067V			
12+80 Lt	2	1	-
121+80 (2nd) Rt	4	1	1
138+60 (2nd) Rt	4	1	-
243+10 (2nd) Rt	4	1	-
304+50 (2nd) Rt	4	1	-
348+50 (2nd) Rt	4	1	-
TOTALS:	**22**	**6**	**1**

The Contractor will be responsible for maintaining a temporary mailbox assembly until the refurbished mailbox assembly is complete in place.

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

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REVISION 4/6/2026 WJB

PLACING TOPSOIL

The thickness will be approximately 4 inches within the right-of-way and 6 inches on temporary easements and obliterated road sections.

The estimated amount of topsoil to be placed is as follows:

067V – US18

Station	to	Station	Alignment	Topsoil (CuYd)
17+00		76+08	US18W/XR30	11,364
-0+75		43+26	US18E/XR23	7,482
Option Borrow Pit				12,400
			Total:	31,246

06D8 – SD43

Station	to	Station	Alignment	Topsoil (CuYd)
21+30		49+42	SD43	4,737
			Total:	4,737

06D1 – US281

Station	to	Station	Alignment	Topsoil (CuYd)
0+33		36+86	US281	5,837
Option Borrow Pit				6,910
			Total:	12,747

CONTRACTOR FURNISHED TOPSOIL

It is anticipated that sufficient topsoil to complete the project will be generated from grading operations. In the event that additional topsoil is necessary, a quantity has been included in the bid to establish a unit price.

Contractor furnished topsoil will be free from clay lumps, stones, coarse gravel, or similar objects larger than 1/2 inch in diameter. Brush, stumps, roots, wood, objectionable weeds, litter, or any other material which may be harmful to plant growth will not be allowed. Organic material will be decomposed.

All costs to furnish and place the Contractor furnished topsoil will be incidental to the contract unit price per cubic yard for “Contractor Furnished Topsoil”.

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum will consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier will provide certification of the fungal species claimed and the live propagule count. The inoculum will include the following fungal species:

25% *Glomus intraradices*
25% *Glomus aggregatum or deserticola*
25% *Glomus mosseae*
25% *Glomus etunicatum*

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed will be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

The Mycorrhizal Inoculum provided will be from the approved product list. The approved product list may be viewed at the following internet site:

https://apps.sd.gov/HC60ApprovedProducts/main.aspx

FERTILIZING

The Contractor will apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer will have a minimum guaranteed analysis of 4-4-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 2.07%, a minimum of 4% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer will be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The fertilizer will have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer will also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The fertilizer will be applied at a rate of 1,000 pounds per acre in accordance with the manufacturer’s recommended method of application.

The Fertilizer provided will be from the approved product list. The approved product list may be viewed at the following internet site:

https://apps.sd.gov/HC60ApprovedProducts/main.aspx

PERMANENT SEEDING

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways and temporary easements under cultivation.

Type F Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Green Needlegrass	Lodorm, AC Mallard Ecovar	4
Sideoats Grama	Butte, Pierre	3
Blue Grama	Bad River	2
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
	Total:	26

COVER CROP SEEDING

An additional quantity of Cover Crop Seeding has been added to the Estimate of Quantities and may be used on this project as a temporary erosion control measure. The actual limits and use of cover crop seeding will be determined by the Engineer during construction. It is anticipated that areas of obliterated roadway that will be phased into cropland will require cover crop seeding prior to being incorporated by the landowner. In these instances, it will be required that the cover crop be planted within 14 days of roadway obliteration completion.

SURFACE ROUGHENING

An additional quantity of Surface Roughening has been added to the Estimate of Quantities and may be used on this project as a temporary erosion control measure. The actual limits and use of Surface Roughening will be determined by the Engineer during construction.

Surface roughening will be done after topsoil placement and before permanent seeding, fertilizing, and mulching applications. Refer to Standard Plate 734.25 for details.

Suggested uses for Surface Roughening for temporary stabilization include:

- Disturbed areas that have been finish graded and topsoil has been placed but cannot be permanent seeded at this time
- Temporary erosion control on slopes where grading activities have ceased
- Actively graded slopes prior to an impending rain event

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13392
WAYLON B. CASIUS
04/06/2026
SOUTH DAKOTA

FOR BIDDING PURPOSES ONLY

MULCHING (GRASS HAY OR STRAW)

An additional 10 tons of Grass Hay or Straw Mulch has been added to the Estimate of Quantities for temporary erosion control on areas determined by the Engineer during construction.

If the Contractor uses a no-till drill, mulch may be applied prior to seeding and the mulch can then be punched into the soil by the no-till drill. If the Contractor uses this process, the no-till drill seeding will be completed immediately following the mulch application and the mulch will be punched into the soil at a 3-inch depth.

Suggested uses for Mulching for temporary stabilization includes:

- Stabilization of sensitive areas adjacent to creeks, pipe replacements, detention ponds, etc.
- Disturbed areas that have been finish graded and topsoil has been placed but cannot be permanent seeded at the time because of seeding limitations
- Soil Stockpiles
- Actively graded areas for winter stabilization

TABLE OF MULCHING (GRASS HAY OR STRAW -- 067V – US 18)

Station	Location	Quantity (Ton)
7+00 to 10+50 L/R	Inslope (XR 30)	0.9
58+50 to 66+50 L/R	Backslope (US 18 West)	4.6
28+00 to 32+50 L	Backslope (US 18 East)	0.6
11+00 to 15+00 L/R	Inslope (XR 23)	0.7
	Additional Quantity:	10.0
	Total Quantity for Permanent Stabilization:	16.8

SOIL STABILIZER

An estimated quantity of 10 acres of soil stabilizer has been included in the Estimate of Quantities. The soil stabilizer will be applied on permanently seeded areas and areas deemed necessary by the Engineer.

The Contractor will apply soil stabilizer in accordance with the manufacturer's application instructions and at the rate specified in the list of approved soil stabilizers.

Wood fiber mulch that contains a green dye will be mixed with the soil stabilizer to be used as a tracer when the soil stabilizer is applied hydraulically. Wood fiber mulch will be added at a rate of 300 pounds per acre to all of the approved soil stabilizers listed in the table except for the Pam-12 Plus product. The wood fiber mulch will be a 100% wood fiber product and does not need to contain a tackifier.

All costs for furnishing and applying the soil stabilizer including wood fiber mulch, hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per Acre for "Soil Stabilizer".

Suggested use for Soil Stabilizer for temporary stabilization includes:

- Stabilization of sensitive areas adjacent to creeks, pipe replacements, detention ponds, etc.
- Disturbed areas that have been finish graded and topsoil has been placed but cannot be permanent seeded at the time because of seeding limitations
- Soil stockpiles
- Actively graded areas for winter stabilization

The Soil Stabilizer provided will be from the approved product list. The approved product list may be viewed at the following internet site:

https://apps.sd.gov/HC60ApprovedProducts/main.aspx

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment will be installed at locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details.

The Contractor will provide certification that the erosion control wattles do not contain noxious weed seeds.

Erosion control wattles will remain on the project until vegetation has been established and then they will be removed in accordance with the Engineer.

An additional quantity of 12" Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels and as an alternative to low flow or high flow silt fence at wetland areas adjacent to the highway.

The erosion control wattle provided will be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

https://apps.sd.gov/HC60ApprovedProducts/main.aspx

TABLE OF EROSION CONTROL WATTLE (067V – US18)

Station	L/R	Diameter (Inch)	Location	Quantity (Ft)
23+00 (US18W)	L	12	Ditch Bottom	50
26+00 (US18W)	L	12	Ditch Bottom	50
29+00 (US18W)	L	12	Ditch Bottom	50
32+00 (US18W)	L	12	Ditch Bottom	50
35+00 (US18W)	L	12	Ditch Bottom	50
42+00 (US18W)	L	12	Ditch Bottom	50
44+00 (US18W)	L	12	Ditch Bottom	50
46+00 (US18W)	L	12	Ditch Bottom	50
			Additional Quantity:	250
			Total:	650

TABLE OF EROSION CONTROL WATTLE (06D1 – US281)

Station	L/R	Diameter (Inch)	Location	Quantity (Ft)
5+25	L/R	12	Box Culvert	200
			Additional Quantity:	100
			Total:	300

HIGH FLOW SILT FENCE

The high flow silt fence fabric provided will be from the approved product list. The approved product list for high flow silt fence may be viewed at the following internet site:

https://apps.sd.gov/HC60ApprovedProducts/main.aspx

High flow silt fence will be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.05 for details.

An additional quantity of high flow silt fence has been added to the Estimate of Quantities for temporary sediment control.

TABLE OF HIGH FLOW SILT FENCE (067V – US18)

Station	L/R	Location	Quantity (Ft)
37+50 (US18W)	L/R	Across Ditch at Inlet and Outlet Ends of Pipe (60 Ft Each End)	120
39+80 (US18W)	60' L	Inlet End of Pipe	18
48+09 (US18W)	49'L	Inlet End of Pipe	18
6+73 (XR30)	28' L	Inlet End of Pipe	18
4+84 (US18E)	R	Across Ditch at Inlet End of Pipe (30 Ft Each Side)	60
15+03 (US18E)	53' L	Inlet End of Pipe	18
18+30 (US18E)	R	Across Ditch at Inlet End of Pipe (30 Ft Each Side)	60
30+51 (US18E)	L	Across Ditch at Inlet End of Pipe (30 Ft Each Side)	60
11+83 (XR23)	35' R	Inlet End of Pipe	18
13+06 (XR23)	132' R	Inlet End of Pipe	18
20+02 (XR23)	L	Inlet End of each Pipe	36
		Additional Quantity:	100
		Total:	544

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TABLE OF HIGH FLOW SILT FENCE (06D8 – SD43)

Station	L/R	Location	Quantity (Ft)
36+30	49' R	Inlet End of Pipe	18
36+30	53' L	Inlet End of Pipe	18
37+91	R	Inlet End of Pipe	18
46+87	R	Across Ditch at Inlet End of Pipe (30 Ft Each Side)	60
		Additional Quantity:	100
		Total:	214

TABLE OF HIGH FLOW SILT FENCE (06D1 – US281)

Station	L/R	Location	Quantity (Ft)
3+10 (Ent12)	60' R	Inlet End of Pipe	18
4+66 (Ent 12)	L/R	Across Ditch at Inlet and Outlet Ends of Pipe (100 Ft Each End)	200
17+35	49' L	Inlet End of Pipe	18
22+00	54' L	Inlet End of Pipe	18
22+00	55' R	Inlet End of Pipe	18
29+00	L	Inlet End of Pipe	18
		Additional Quantity:	100
		Total:	390

EROSION CONTROL BLANKET

Erosion control blanket will be installed 16 feet wide at the locations noted in the table and at locations determined by the Engineer during construction.

The erosion control blanket provided will be from the approved product list. The approved product list for erosion control blanket may be viewed at the following internet site:

https://apps.sd.gov/HC60ApprovedProducts/main.aspx

An additional quantity of Type 3 Erosion Control Blanket has been added to the Estimate of Quantities for temporary erosion control.

TABLE OF EROSION CONTROL BLANKET (067V – US18)

Station to	Station	L/R	Location	Type	Quantity (SqYd)
US18W					
66+00	76+00	L	Ditch Channel	3	1780
66+00	67+00	R	Ditch Channel	3	180
71+00	76+00	R	Ditch Channel	3	890
US18E					
28+00	30+25	L	Ditch Channel	3	400
			Additional Quantity:		500
			Total Type 3 Erosion Control Blanket:		3750

TABLE OF EROSION CONTROL BLANKET (06D1 – US281)

Station to	Station	L/R	Location	Type	Quantity (SqYd)
3+50	4+50	L/R	Ditch Channel	3	360
5+50	7+00	L/R	Ditch Channel	3	360
			Additional Quantity:		250
			Total Type 3 Erosion Control Blanket:		970

SHAPING FOR EROSION CONTROL BLANKET

The ditches will be shaped for the erosion control blanket as specified on Standard Plate 734.01.

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DEWATERING AND SEDIMENT COLLECTING

The Contactor has the option to treat sediment laden water trapped within the project limits or the Contractor may elect to transport sediment laden water off the project. Refer to the OPTIONS FOR DEWATERING AND SEDIMENT COLLECTING detail sheet for more information.

Water transported off the project limits will not be disposed of in an area where it can enter a waterway. The disposal site must be approved by the Engineer.

Separate payment will not be made for any Dewatering and Sediment Collection efforts. All costs involved with necessary Dewatering and Sediment Collection efforts will be incidental to other contract items.

CONSTRUCTION ENTRANCE

The Contractor will install a Construction Entrance at locations where there is a potential for mud tracking and sediment flow from the construction site and work area onto a paved public roadway.

It is the Contractor's option to use the SDDOT Construction Entrance (See SDDOT Construction Entrance notes and details), a product from the list provided in these notes, or other products or processes as approved by the Engineer during construction.

If the Contractor elects to use one of the products listed in the table, then the Contractor will install the construction entrance product in accordance with the manufacturer's installation instructions or as directed by the Engineer.

The Contractor will maintain the construction entrance such that mud tracking and sediment flow will not enter the roadway or adjacent drainage areas. The construction entrance will be routinely inspected, and the Contractor will repair or replace material as deemed necessary by the Engineer.

All costs for furnishing, installing, maintaining, and removal of the construction entrance including equipment, labor, materials, and incidentals will be included in the contract unit price per each for "Construction Entrance".

The Construction Entrance provided will be from the approved product list. The approved product list may be viewed at the following internet site:

https://apps.sd.gov/HC60ApprovedProducts/main.aspx

SDDOT CONSTRUCTION ENTRANCE

If the SDDOT Construction Entrance is utilized, then the Contractor will install the SDDOT Construction Entrance in accordance with these notes and the detail drawings.

Pit run material will be obtained from a granular source and will conform to the following gradation:

Sieve Size	Percent Passing
6"	100%
#4	0-60%
#200	0-20%

The pit run material will be compacted to the satisfaction of the Engineer.

The aggregate for the granular material will conform to the following gradation requirements:

Sieve Size	Percent Passing
3"	100%
2 ½"	90-100%
1 ½"	25-60%
¾"	0-10%
½"	0-5%

The granular material will be placed in 6" maximum lifts.

It is anticipated that the granular material will need to be periodically removed and replaced as it becomes inundated with mud and sediment.

The Reinforcement Fabric (MSE) will be in conformance with Section 831 of the Specifications. The Reinforcement Fabric (MSE) will be on the Approved Products List for this material or will be certified by the supplier to meet this specification prior to installation.

The Reinforcement Fabric (MSE) should be kept as taut as possible prior to placing.

Equipment will not be allowed on the Reinforcement Fabric (MSE) until the first lift of granular material is in place.

All seams in the Reinforcement Fabric (MSE) will be overlapped at least 2' and shingled.

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SEQUENCE OF OPERATIONS

The details in the traffic control plans are based on the following sequence of operations for construction of the project. Details depict an anticipated order for construction to align with the available borrow material. Contractor requests to deviate from the sequence of operations will be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation. The Contractor will not be allowed to work on both intersection improvement locations at the same time.

If the Contractor proposes an alternate sequence of operations from what is shown in these plans, the following requirements must be met:

- Contractor will submit a complete construction schedule for the duration of the project. A startup schedule will not be allowed.
- The construction schedule will be submitted a minimum of 2 weeks prior to the preconstruction meeting.

The work will proceed in the following order:

Phase 1: Begin: US18 W Alignment 55+00
End: US18 W Alignment 76+08

Phase 1 work will consist of regrading and constructing the new gradeline for US18 from approximately STA 55+00 to approximately STA 76+08. Phase 1 will generate excess embankment material that shall be stockpiled for use in Phase 2 of the project. Phase 1 may require shoulder closures and single lane closures with flagging and pilot car operations. Traffic shall be maintained with maximum que times of 10 minutes during all operations.

1. Installation of Fixed Signing
2. Contractor Surveying
3. Salvage Existing Surfacing Material from Phase 1 area.
4. Topsoil Removal
5. Unstable or Muck Excavation, as needed.
6. Regrading and construction of the new gradeline for US18 W from STA 55+00 to STA 76+08.
7. Construct the intersection of the new SD43 intersection with US18 W to approximately STA 48+50 on the new SD43 alignment.
8. Installation of temporary traffic control signage and use of flagging and pilot car to maintain traffic on US18 through the duration of the phase.
9. Installing Base Course or Base Course, Salvaged
10. Installation of Asphalt for Prime and blotting aggregate
11. Installation of temporary pavement markings.

Phase 2: Begin: SD43 New Alignment 21+30
End: SD43 New Alignment 48+50

Phase 2 work will consist of constructing the new alignment for SD43 from approximately STA 21+30.10 to approximately STA 48+50.00 and obliterating the present-day SD43 alignment. Embankment material that was stockpiled as excess during Phase 1 shall be utilized for building the embankment in Phase 2. The Contractor is not allowed to begin work on Phase 2 until temporary surfacing is in place of Phase 1. Phase 2 will consist of transitioning traffic from the present-day SD43 alignment to the newly built SD43 alignment, with complete connection to US18 W. Phase 2 may require shoulder closures and single lane closures with flagging and pilot car operations. Traffic shall be maintained with maximum que times of 10 minutes during all operations.

1. Installation of Fixed Signing
2. Contractor Surveying
3. Topsoil Removal
4. Unstable or Muck Excavation, as needed.
5. Construction of the proposed SD43 embankment using excess embankment material generated in Phase 1.
6. Installation of temporary traffic control signage and use of flagging and pilot car to construct connection to present-day SD43 and newly constructed US18 W.
7. Installing Base Course or Base Course, Salvaged
8. Installation of Asphalt for Prime and blotting aggregate
9. Installation of temporary pavement markings.
10. Switch traffic to proposed SD43 alignment and barricade off present-day SD43 alignment.
11. Install temporary signage to direct traffic to new SD43 intersection.
12. Salvage asphalt and base course surfacing from present-day SD43 alignment.
13. Obliterate present-day SD43 alignment to limits shown in plans, place topsoil, and seed cover crop.

Phase 3: Begin: US18 W 17+00
End: US18 W 55+00

Phase 3 work will consist of regrading and constructing the slight re-alignment of the US18 W curve from approximately STA 17+00 to approximately STA 55+00 and obliterating County Road 46/303rd Street. The Contractor is not allowed to begin work on Phase 3 until temporary surfacing is in place and traffic is utilizing the SD43 new alignment. Phase 3 work can commence concurrently with Obliterating the present-day SD43 alignment in order to transport and deposit unclassified excavation material to suit proposed embankment needs. Phase 3 may require shoulder closures and single lane closures with flagging and pilot car operations. Traffic shall be maintained with maximum que times of 10 minutes during all operations.

1. Installation of Fixed Signing
2. Contractor Surveying
3. Salvage asphalt and base course surfacing from present-day US18W alignment.
4. Regrading and construction of the proposed US18W embankment using material generated from Phase 1 and Phase 2.
5. Installation of temporary traffic control signage and use of flagging and pilot car to construct connection to present-day SD43 and present-day US-18W.
6. Installing Base Course or Base Course, Salvaged
7. Installation of Asphalt for Prime and blotting aggregate
8. Installation of temporary pavement markings.
9. Obliterate present-day County Road 46/303rd Street to limits shown in plans, place topsoil, and seed cover crop.

Phase 4: Begin: 364th Avenue 5+00
End: 364th Avenue 11+00

Phase 4 work will consist of constructing the new alignment for 364th Avenue and obliterating the present-day 364th Avenue alignment. Phase 4 will consist of transitioning traffic from the present-day 364th Avenue to the newly built 364th Avenue alignment, with complete connection to US18 W. Phase 4 work may be completed in concurrence with Phase 3 work. Phase 4 may require single lane closures with flagging and pilot car operations. Traffic shall be maintained with maximum que times of 10 minutes during all operations.

1. Installation of Fixed Signing
2. Contractor Surveying
3. Salvage gravel surfacing from present-day 364th Avenue
4. Regrading and construction of the proposed 364th Avenue embankment using option borrow material.
5. Installation of temporary traffic control signage and use of flagging and pilot car to construct connection to present-day US-18W.
6. Installation of Gravel Surfacing or Gravel Surfacing, Salvaged
7. Switch traffic to proposed 364th Avenue alignment and barricade off present-day 364th Avenue alignment.
8. Obliterate present-day 364th Avenue alignment and return excess material to borrow pit OR haul excess to Phase 5.
9. Place topsoil and seed obliterated 364th Avenue.

Phase 5: Begin: US281 New Alignment 0+33
End: US281 New Alignment 36+50

Phase 5 work will consist of constructing the new alignment for US281 from approximately STA 0+33 to approximately STA 36+50 and obliterating the present-day US281 alignment. The Contractor is not allowed to start on Phase 5 until Phases 1-4 are complete and traffic is utilizing the new US18 / SD43 intersection and grades. Phase 5 will consist of transitioning traffic from the present-day US281 alignment to the newly built US281 alignment, with complete connection to US18. Phase 5 may require shoulder closures and single lane closures with flagging and pilot car operations. Traffic shall be maintained with maximum que times of 10 minutes during all operations.

1. Installation of Fixed Signing
2. Contractor Surveying
3. Topsoil Removal
4. Unstable or Muck Excavation, as needed.
5. Construction of the proposed US281 embankment using borrow sources.
6. Installation of temporary traffic control signage and use of flagging and pilot car to construct connection to present-day US281 and present Day US18.
7. Installing Base Course or Base Course, Salvaged
8. Installation of Asphalt for Prime and blotting aggregate
9. Installation of temporary pavement markings.
10. Switch traffic to proposed US281 alignment and barricade off present-day US281 alignment.
11. Install temporary signage to direct traffic to new US281 intersection.
12. Salvage asphalt and base course surfacing from present-day US281 alignment.
13. Obliterate present-day US281 alignment, place topsoil, and seed cover crop.

Phase 6: Begin: US18 E -0+75
End: US18 E 43+26

Phase 6 work will consist of regrading and constructing the slight re-alignment of the US18 E curve from approximately STA 1+00 to approximately STA 43+26. The Contractor is not allowed to begin work on Phase 6 until temporary surfacing is in place and traffic is utilizing the US281 new alignment. Phase 6 work can commence concurrently with Obliterating the present-day US281 alignment in order to transport and deposit unclassified excavation material to suit proposed embankment needs. Phase 6 may require shoulder closures and single lane closures with flagging and pilot car operations. Traffic shall be maintained with maximum que times of 10 minutes during all operations.

1. Installation of Fixed Signing
2. Contractor Surveying
3. Salvage asphalt and base course surfacing from present-day US18E alignment.
4. Regrading and construction of the proposed US18E embankment using material generated from the present-day US281 roadway obliteration
5. Installation of temporary traffic control signage and use of flagging and pilot car to construct connection to present-day US281 and present-day US18 E.
6. Installing Base Course or Base Course, Salvaged
7. Installation of Asphalt for Prime and blotting aggregate
8. Installation of temporary pavement markings.

Phase 7: Begin: 303rd Street 6+51
End: 303rd Street 19+21

Phase 7 work will consist of constructing the new alignment for 303rd Street and obliterating the present-day 303rd Street alignment. Phase 7 will consist of transitioning traffic from the present-day 303rd Street to the newly built 303rd Street alignment, with complete connection to US18 E. Phase 7 work may be completed in concurrence with Phase 6 work. Phase 7 may require single lane closures with flagging and pilot car operations. Traffic shall be maintained with maximum que times of 10 minutes during all operations.

1. Installation of Fixed Signing
2. Contractor Surveying
3. Salvage gravel surfacing from present-day 303rd Street
4. Regrading and construction of the proposed 303rd Street embankment using material generated from the present-day SD43 roadway obliteration
5. Installation of temporary traffic control signage and use of flagging and pilot car to construct connection to present-day US18 E.
6. Installation of Gravel Surfacing or Gravel Surfacing, Salvaged
7. Switch traffic to proposed 303rd Street alignment and barricade off present-day 303rd Street alignment.
8. Obliterate present-day 303rd Street alignment and return excess material to borrow pit.
9. Place topsoil and seed obliterated 303rd Street.

Phase 8: US18 W, US18 E, SD43, & US281

Phase 8 work will consist of installing the asphalt concrete pavement surfacing to all segments of US18, SD43, and US281 requiring such. Phase 8 may require single lane closures with flagging and pilot car operations, or a rolling paving operation. Traffic shall be maintained with maximum que times of 10 minutes during all operations

1. Install final surfacing.
2. Install permanent pavement markings.
3. Install permanent signage.

GENERAL TRAFFIC CONTROL

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

All temporary speed limit signs will have a minimum mounting height of 5 feet in rural locations, even when mounted on portable supports.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract items.

At no time will a vertical drop-off of greater than 3 inches be left overnight adjacent to the traveled way. The Contractor will utilize embankment material to ensure a 3-inch vertical drop-off is not exceeded. The slope of the embankment material will not be steeper than a 4:1 within 30 feet of the traveled way.

Traffic will be maintained on the driving lanes. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment will be repaired at no expense to the Department.

The Contractor will furnish, install, maintain, and remove TRUCK CROSSING (W8-6) signs daily. The TRUCK CROSSING signs will be displayed always when haul vehicles are hauling material. When hauling conditions no longer exist, the signs will be covered or removed from view. The exact number and location will be determined during construction. Payment for additional signs will be based on the contract unit price per square foot for "Traffic Control Signs".

GROOVED PAVEMENT (W8-15) signs with MOTORCYCLE (W8-15P) plaques are required in advance of areas that have been cold milled and are not resurfaced the same day. The GROOVED PAVEMENT sign assemblies will be installed a minimum of 1000 feet in advance of cold milled sections and remain in place until the sections have been resurfaced.

The Contractor will notify businesses/homeowners a minimum of two weeks prior to construction to inform them of upcoming construction and again a minimum of 48 hours prior to any blocked access to make appropriate arrangements.

TUBULAR MARKERS AND DRUMS

Tubular markers and traffic control drums will be necessary to achieve adequate traffic control during all operations on the project. The necessary number of each item will greatly depend on the operation initiated by the Contractor. An arbitrary number of Tubular Markers has been included in the Estimate of Quantities to establish a unit price. Traffic Control Drums shall be incidental to the lump sum price for "Traffic Control, Miscellaneous" bid item. Payment will be made for the actual number of Tubular Markers used on the project.

TRAFFIC CONTROL SIGNS

Traffic control signs have been included in a table for each route. Payment will only be for those signs used on each route.

FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 10 minutes at the flagger station.

Additional flagger warning signs and flagger hours have been included in the Estimate of Quantities for use on intersecting roads. These flaggers will be used as directed by the Engineer and will be used primarily during daytime hours. Also included in the Estimate of Quantities are WAIT FOLLOW PILOT CAR signs for use on low volume intersecting roads as determined by the Engineer. WAIT FOLLOW PILOT CAR signs will not block the view of the stop sign.

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON J. BASIUS
SOUTH DAKOTA
04/06/2026

FOR BIDDING PURPOSES ONLY

FLAGGING (Continued)

It is required that the flaggers and pilot car operators be able to communicate with one another. If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. All costs associated with this will be incidental to the contract unit price per hour for "Flagging".

WORK ZONE SPEED REDUCTION

The Department is required to obtain a speed reduction resolution prior to the installation of any SPEED LIMIT (R2-1) signs shown on standard plate 634.63 or as shown in the plans. To provide adequate time for the resolution to be enacted, the Contractor will inform the Engineer a minimum of 3 weeks prior to the scheduled installation of any work zone speed reduction signs on the project. The information provided by the Contractor will include the anticipated date of sign installation, the newly reduced speed limit, the location of the work zone, and the anticipated completion date of work requiring the speed reduction.

TEMPORARY PAVEMENT MARKING

The total length of no passing zone on this project is estimated to be 1.9 miles.

It is estimated that DO NOT PASS (R4-1) and PASS WITH CARE (R4-2) signs will be required to mark the no passing zones, should the Contractor elect to use these signs. An arbitrary number of these signs has been included in the sign table. The Contractor will be responsible for determining the total number based on no passing zones present on the project.

Temporary flexible vertical markers (tabs) will be used to mark dashed centerline, No Passing Zones, and applicable lane lines. Paint will not be allowed for temporary pavement marking on the asphalt concrete wear course or after application of the flush seal. Paint will be allowed for temporary pavement marking on the prime coat surface to serve as pavement markings until final surfacing in placed.

TEMPORARY PAVEMENT MARKING (Cont.)

Temporary pavement marking paint will not be allowed on the final lift of asphalt surfacing. Temporary pavement marking paint will not be allowed on the chip seal, fog seal, or flush seal. Temporary flexible vertical markers (tabs) must be used on the final lift of asphalt surfacing. The Contractor may use tabs with covers, uncovering them for the chip seal, fog seal, or flush seal. As an alternative, the Contractor may install new tabs for the fog seal or flush seal.

Covers on the tabs will be sufficiently secured to prevent traffic from dislodging the cover and when removed, the covers will be properly disposed of. The Contractor will remove and properly dispose of the tabs after permanent pavement marking is applied. Method of removal will be nondestructive to the road surface and will be accomplished within one week of completion of the permanent pavement marking.

Full reflectivity of all temporary flexible vertical markers (tabs) is required at all times. The Contractor will be required to replace any missing or non-reflective tabs after each installation as detailed below at no additional cost to the State.

Quantities of Temporary Pavement Markings consist of:

One pass on top of interim surfacing = 3.16 mi
One pass on top of the milled surface = 17.66 mi
One pass on the first list of asphalt concrete = 3.16 mi
One pass on top of the final lift of asphalt concrete = 20.81 mi

If a flush seal is included in the project, an additional set of temporary pavement markings may be required on top of the flush seal.

No adjustment in the contract unit price for "Temporary Pavement Marking" will be made because of a variation in quantities.

In the absence of a signed lane closure or pilot car operation, FLAGGER (W20-7) symbol signs and flaggers, or a shadow vehicle with rotating yellow lights or strobe lights will be positioned on the shoulder in advance of workers for both directions of traffic during the installation and removal of the temporary flexible vertical markers (tabs). The traffic control device used will be moved intermittently to provide proper warning of the work operation. A ROAD WORK AHEAD (W20-1) sign, a WORKER (W21-1) symbol sign or a BE PREPARED TO STOP (W3-4) sign will be mounted on the rear of the shadow vehicle. The method of traffic control used by the Contractor for this work must be approved by the Engineer.

TEMPORARY RAISED PAVEMENT MARKERS

Temporary raised pavement markers will be used for marking edge lines, lane lines, and centerlines. Temporary raised pavement markers will be used on all new permanent surfacing sections of roadway and on existing surfacing where temporary marking locations are different than existing marking locations, unless noted or as directed by the Engineer.

Temporary raised pavement markers will be attached to the roadway surface with a flexible non-permanent bituminous adhesive capable of being removed from the roadway surface or with an adhesive approved by the Engineer.

This item is not identified for use on plan sheets, as it will depend on the operations of the Contractor. A quantity is being provided to establish a unit price for if this bid item is necessary. All costs to furnish, install, replace if necessary, and remove the markers will be incidental to the contract unit price per mile for "Temporary Raised Pavement Markers".

INCIDENTS

An incident is an emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic such as a crash, hazardous materials spill, or other event.

The Contractor will set up a meeting prior to start of work to plan and coordinate responses to an incident. The Contractor will invite the Department of Transportation, the South Dakota Highway Patrol, the Gregory County Sheriff and local emergency response entities to the meeting.

The Contractor will assist to maintain traffic as required by these plan notes and as agreed to at that meeting.

Emergency vehicle access through the project will be considered and discussed at the meeting.

The Contractor may be required to modify messages on portable changeable message signs or relocate portable changeable message signs, and to provide flaggers to direct or detour traffic. The Contractor should be prepared to relocate advance warning signs if determined to be necessary for a major traffic incident lasting more than two hours. Fixed location ground mounted signs may be covered and additional portable signs provided.

No additional payment will be made for the modification of portable changeable message sign messages or the relocation of portable changeable message signs. Cost for the relocation of an advance warning sign due to an incident will be 50% of the designated sign rate. Flaggers will be paid for at the contract unit price per hour for "Flagging".

PRESS RELEASE ANNOUNCEMENTS

The SDDOT will prepare a press release to be released 5 days prior to any phase change or any other major change that affects traffic flow. The SDDOT will be responsible to keep law enforcement, emergency services, and the traveling public notified of changes in project access. The Contractor will provide the Engineer with pertinent information 7 days prior to any phase change or any other major change that affects traffic flow.

INCLEMENT WEATHER PREPAREDNESS

The Contractor shall have advanced warning traffic control signs placed at the following intersection locations that can be erected for use in the event that the roadway is under construction and inclement weather creates conditions in which safe passage is not feasible. The Contractor shall coordinate with the Nebraska Department of Transportation to obtain any permits necessary to place the signs within their highway right-of-way. Additionally, the Contractor shall be prepared to erect barricades and road closure signs at the termination points of the project should the conditions described above necessitate.

- NE State Highway 11 & 905th Road near Anoka, NE
  - Type III Barricade w/ Road Closed 5 Miles Ahead Local Traffic Only
- NE State Highway 11 & NE State Highway 12 near Butte, NE
  - Type III Barricade w/ Road Closed 7 Miles Ahead Local Traffic Only
- NE State Highway 12 & US Highway 281 near Spencer, NE
  - Type III Barricade w/ Road Closed 9 Miles Ahead Local Traffic Only
- US Highway 281 & 905th Road near Butte, NE
  - Type III Barricade w/ Road Closed 5 Miles Ahead Local Traffic Only
- SD Highway 18 & 362nd Avenue near Bonesteel, SD
  - Type III Barricade w/ Road Closed 5 Miles Ahead Local Traffic Only

FOR BIDDING PURPOSES ONLY

REVISION 4/6/2026 WJB

PAVEMENT MARKING PAINT

All materials will be applied as per the manufacturer's recommendations.

The application of permanent pavement marking will begin no sooner than 7 calendar days following completion of the fog or flush seal. Application of permanent pavement marking will be completed within 14 calendar days following completion of the final surfacing.

No Passing Zone Inspection

The Contractor will advise the Engineer a minimum of 3 weeks prior to the application of the permanent pavement marking to allow the State to check and mark the location of no passing zones.

COLD APPLIED PLASTIC PAVEMENT MARKING

All materials will be applied as per the manufacturer's recommendations.

Cold Applied Plastic Pavement Markings will be 3M Series 380 AW or an approved equal.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

All materials will be applied as per manufacturer's recommendations. High build waterborne pavement marking paint will conform to the supplemental specifications for Section 980.1 B.

Reflective media will consist of glass beads. Reflective media will require a Certificate of Compliance for Certification for each source and lot. Acceptance sampling will not be required.

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Solid 4" line = 22.5 Gals/Mile
Dashed 4" line = 6.2 Gal/Mile
Glass Beads = 8 Lbs/Gal.

All cost for materials, labor and equipment necessary to furnish and install the pavement markings will be incidental to the contract unit price for the respective High Build Waterborne Pavement Marking Paint items.

GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING

The Contractor will establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving will be vacuumed. Solid residue will be removed from the pavement surfaces before being blown by traffic action or wind. The Contractor will conduct this work to control and minimize airborne dust and similar debris that may become a hazard to motor vehicle operation or nuisance to property owners. Residue from wet grooving will not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, will be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state. The cleaning of the residue for grooving will be to the satisfaction of the Engineer and may require more than one pass to adequately remove material. All costs for removal of grinding and/or grooving residue will be included in the contract unit price per each for "Grooving for Cold Applied Plastic Pavement Marking" contract items.

PREFORMED THERMOPLASTIC PAVEMENT MARKING

General

- Made of prefabricated retroreflective, resilient thermoplastic material;
- Contains glass beads uniformly distributed through the entire cross-sectional area;
- Capable of being affixed to bituminous or concrete pavement by heating;
- Resistant to deterioration due to exposure to sunlight, water, salt, and adverse weather conditions;
- Under traffic wear, shows no appreciable fading in accordance with the color requirements, lifting, or shrinkage throughout the life of the marking;
- Capable of conforming to pavement contours, breaks, and faults through the action of traffic at normal pavement temperatures;
- Possesses resealing characteristics, such that it is capable of fusing with itself and previous thermoplastic markings when heated; and
- Protected during shipment and in storage.

Apply the preformed thermoplastic pavement marking as recommended by the manufacturer to provide a neat, durable marking that will not flow, distort, or crack due to temperature if the pavement surface remains stable. Use equipment and application methods specified by the manufacturer. Primer as required by the manufacturer will be provided with the material.

Application of the markings will include the use of any manufacturer recommended sealers. Sealers may be required on concrete pavements, inside grooves, or on older asphalt pavements. Prior to placing any markings on new concrete, the Contractor will remove any curing compounds. Removal will be by sandblasting or other standard industry methods.

Any required primers or sealers will be included in the contract unit price for the various preformed thermoplastic pavement marking items.

Provide precut messages and symbols meeting the requirements of the MUTCD and the Standard Signs Manual in custom kits. Use separate pieces or segments to form individual letters or symbols only to the extent supplied by the manufacturer. Provide shapes, sizes, and colors as required by the contract.

Color

- Will meet the color specification limits and luminance factors for Cold Applied Plastic Pavement Marking and Legends (Section 983.2 D, Tables 1 and 2).

Glass Beads

- Ensure the preformed thermoplastic pavement marking contains a minimum 30% intermixed glass beads by weight and a minimum 80% true spheres.
- Ensure preformed thermoplastic pavement markings contain only clear beads.

Skid Resistance

- Ensure the surface of the preformed thermoplastic pavement marking provides a skid resistance value of at least 45 British Pendulum Number (BPN) when tested in accordance with ASTM E303.

Retroreflectivity

- Provide preformed thermoplastic pavement marking meeting the minimum initial pavement marking retroreflectivity values using 30 m geometry and meeting the testing procedures of ASTM E1710:

Minimum Initial Pavement Marking Retroreflectivity		
	White	**Yellow**
Thermoplastic	400 mcd/sq. ft./ft.	250 mcd/sq. ft./ft.
Thermoplastic, enhanced skid resistance (ESR)	250 d/sq. ft./ft.	150 d/sq. ft./ft.

Thickness

- A longitudinal marking is a minimum 90 mils thick at the edges, and a maximum 125 mils thick at the center of the stripe.
- Transverse markings and symbols are a minimum 125 mils thick at the edges, and a maximum 160 mils thick at the center.

Sample

- Prior to application, the Contractor will provide a 4"x4" sample of the preformed thermoplastic pavement marking to be used on the project to the Region Traffic Engineer for inspection and approval.
- Do not begin application of the preformed thermoplastic pavement marking prior to obtaining the Region Traffic Engineer's approval of the preformed thermoplastic pavement marking material. The Region Traffic Engineer's approval of the preformed thermoplastic pavement marking does not void other preformed thermoplastic pavement marking requirements specified.

FOR BIDDING PURPOSES ONLY

DATA LOGGING SYSTEM

The Contractor will provide striper computerized data logging system files as described below. The pavement marking device will have an onboard monitoring system for the purpose of managing the amount of pavement marking materials being applied to the pavement surface.

The following will be included in the documentation from the data logging system:

- State project number and PCN
- Highway number
- Beginning and end MRMs of the section marked rounded to the nearest hundredth of a mile, including direction of travel
- Beginning and ending coordinates determined by a Global Positioning System receiver with 3-meter accuracy, including direction of travel
- Date and beginning and ending time of application
- Product applied
- Lot number(s) of product (binder and reflective material) applied
- Striping Contractor (striper code)
- Designation of the marking being applied (LEL – Left Edgeline, REL – Right Edgeline, CL – Centerline, LL – Lane Line Broken or Dotted, 1LL – leftmost LL in multilane, 2LL – second to leftmost LL in multilane, etc.)
- Width of marking being applied
- Presence of recess or rumble strip
- Presence of contrast
- Average material application rate and film thickness calculated for the section striped

The following data will be included in the documentation from the data logging system reported as an average for each drive mile (or other segment approved by the Engineer) installed:

- Application vehicle speed rounded to the nearest tenth of a mile per hour
- Weight (Lbs) and/or volume (Gal) as measured through a positive displacement pump (mechanism or flow meter) of liquid material used by color
- Weight (Lbs) of reflective material used
- Ratio of reflective material used (weight) per liquid material used (volume) reported as Lbs/Gal
- Ambient air temperature (in degrees Fahrenheit)
- Road surface temperature (in degrees Fahrenheit)
- Humidity (percent)
- Dew point (in degrees Fahrenheit)

Provide the measurement report in the form of an electronic database file, or delimited text file, containing raw data collected. Provide the Engineer with a printed summary and submit the electronic data to the Region Traffic Engineer at the e-mail below and copy the Engineer.

Corey.Pinkley@state.sd.us

The data logging system equipment will be operational, calibrated, and in use during pavement marking operations. Pavement marking installation without the use of a data logging system may not be accepted.

Upon request, provide to the Engineer the data logging system manufacturer's recommendations for equipment calibration frequency and provide certification that the equipment meets manufacturer's recommended calibration.

Verify that the physical and electronic measurement of distance traveled is consistent by travelling a 100-foot distance prior to the start of pavement marking operations.

All cost for materials, labor, and equipment necessary to provide the pavement marking data as described will be incidental to the contract unit price for the respective pavement marking items.

GENERAL PERMANENT SIGNING

New sign installations will be staked in the field by the Contractor and checked by the Engineer. The Contractor will give the Engineer a minimum of one week to check staked locations prior to signpost installation. Lateral offset of signs will be as shown in the plans or as directed by the Engineer.

The Contractor will be responsible for contacting South Dakota One Call to locate the utilities at the staked sign installation locations.

When signs are mounted in an assembly, they will be 1-2 inches apart vertically and horizontally.

The height of the post must not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign will be cut off. No separate payment will be made for cutting the post or for that length cut off.

Aluminum U-Channel stiffeners will be used on all signs 36 inches or greater in width and will conform to ASTM B221 Alloy 6063-T6 or 6061-T6. The U-Channel will be 2 inches in width and free of holes. The U-Channel stiffeners will also be used to connect various signs together so that an entire sign assembly can be erected on a single installation. Stiffeners may be fastened to signs by use of 1/4-inch diameter drive rivets.

The Contractor will use 3/8-inch diameter rust proof machine sign bolts, flat metal washers, neoprene washers (against the sign sheeting), lock washers, and nuts to fasten the sign to the channel aluminum and posts. A minimum of two bolts will extend through each post.

Prior to ordering signs, the Contractor will verify dimensions, background, border, and legend of the signs.

Prior to use, the Contractor will provide documentation for the sign support devices showing they meet the applicable NCHRP 350 or MASH requirements.

REMOVE TRAFFIC SIGN

Existing signs that are shown as being removed in the Permanent Signing Table will become the property of the Contractor. Existing signposts and bases will be removed in their entirety. All existing signs, posts, and/or hardware removed will not be reused. Holes remaining from the removal of wood posts will be backfilled and compacted with material placed in layers not to exceed 6 inches in depth.

All costs associated with the removal of existing signs, posts, hardware, and backfilled holes will be incidental to the contract unit price per each for “Remove Traffic Sign”. Quantities will be per assembly at the contract unit price per each.

REMOVE SIGN FOR RESET AND RESET SIGN

Signs that are scheduled for reset will be dismantled and reassembled to the extent needed by the Contractor to properly reset the sign. Signs will be handled with care so that the existing signs, posts, and bases are not damaged during the relocation process. The Contractor will replace and pay for any reset signs damaged in their care. The Contractor will remove and dispose of any existing posts for all reset signs that require use of new posts as shown in the Table of Permanent Signing.

All costs for removing, dismantling, and disposing of any existing posts will be incidental to the contract unit price per each for “Remove Sign for Reset”. All costs for resetting the existing signs will be incidental to the contract unit price per each for “Reset Sign”. All quantities for Remove Sign for Reset and Reset Sign will be per assembly at the contract unit price per each.

REMOVE SIGN FOR RESET AND RESET SIGN (CONTINUED)

Any 911 Emergency Number signs within the project work limits will not be stockpiled but temporarily repositioned at a location outside the work limits but within the immediate proximity of the existing location. To complete the project sign work, the 911 Emergency Number signs will be permanently installed at their original locations, or as near as practicable where entrances have been reconfigured by the project. The existing supports will be reused. Cost for removing, temporarily repositioning, and permanently resetting 911 Emergency Number signs will be included in the contract unit price per each for “Remove Sign for Reset” and “Reset Sign”.

NEW PERMANENT SIGNING

All signs will be manufactured in accordance with the sheeting manufacturer’s recommendations utilizing a matched component system, including inks, electronic cuttable films, and protective overlay films.

All Flat Aluminum Signs, Nonremovable Copy High Intensity will have sheeting in conformance with the requirements of ASTM D4956 Type IV. All Flat Aluminum Signs, Nonremovable Copy Super/Very High Intensity will have sheeting in conformance with the requirements of ASTM D4956 Type XI.

All costs associated with furnishing and installing the new permanent signs, and with furnishing and installing stiffeners and hardware will be incidental to the contract unit price per square foot for “Flat Aluminum Sign, Nonremovable Copy High Intensity” or “Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity”.

DIGITALLY PRINTED SIGNS

Digitally printed signs will be allowed on this project. If the Contractor elects to provide digitally printed signs, such signs will adhere to the following specifications.

PROTECTIVE OVERLAY FILM

Permanent traffic signs printed with digital ink systems will be fabricated with a full sign protective overlay film designed to provide a smooth surface needed for retroreflectivity, and to protect the sign from fading and UV degradation. The overlaminate will comply with the retroreflective sheeting manufacturer’s recommendations to ensure proper adhesion and transparency and will also meet the reflective film durability as identified in Table 1.

Table 1: Retroreflective Film Minimum Durability Requirements

ASTM D4956 Type	Full Sign Replacement Term (years)	Sheeting Replacement Term (years)
I	0	7
III	7	10
IV	7	10
VIII	7	10
IX	7	12
XI	7	12

FABRICATION

Retroreflective sheeting will be applied to a properly cleaned and prepared aluminum sign blank in accordance with the retroreflective sheeting manufacturer’s recommendations. Sign legend will be applied using digital print technologies and systems in accordance with the retroreflective sheeting manufacturer’s recommendations and the requirements of these plans.

DIGITALLY PRINTED SIGNS (CONTINUED)

Finished signs will be free of ragged edges and must be supplied clean and free of scratches, grease, oil, lubricants or other contaminants. Minor blemishes (dirt speck, dust, etc.) may settle on the fresh ink surface or become entrapped between the sheeting surface and transparent overlay film due to static charge within the sign shop environment. Any blemish must be minor and not interfere with the communication of the sign message to the motorist. The blemish must not be visible to the naked eye when viewed from 30 feet or greater.

After application of the retroreflective sheeting, sign blanks will be stacked and packaged face to face, back to back, and protected in accordance with the sheeting manufacturer’s recommendations. Finished signs will be securely packaged to prevent damage during transit or storage according to the sheeting manufacturer’s recommendations.

TRAFFIC SIGN PERFORMANCE WARRANTY PROVISIONS

Based on the ASTM Type of sheeting specified, traffic control signs will be warranted for the duration shown in Table 1. Full product terms and conditions are as established by each sheeting manufacturer and may contain certain limitations based on sheeting and ink colors, and geographic exposure of the sign. A copy of the warranty document with complete details of terms and conditions will be supplied if requested by the Engineer.

CERTIFIED DIGITAL SIGN FABRICATOR

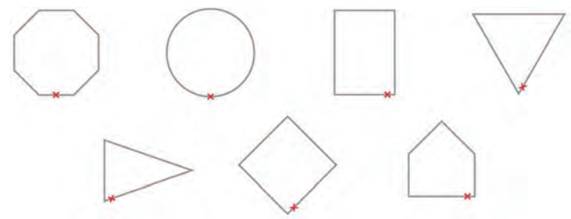
Sign fabricators using digital imaging methods to produce regulated traffic signs must be certified by the reflective sheeting manufacturer whose materials are used to produce the delivered signs.

DATE TAGGING SIGNS WITH PERTINENT INFORMATION

All digitally printed signs are required to be date-tagged with the following 2 components:

1. Date tags on the back of signs
   Tags will have the following information and be fabricated with material and printing system that are as durable as the warranted sign.
   - Name of Sign Fabricator
   - Date the sign was fabricated (month and year)
   - Process that was used for sign fabrication (digitally printed)
   - Supplier of sheeting that was used for fabricating the sign.
2. Border date

The month and year (mm/yyyy) of sign fabrication will be printed in the border of the sign in 3/8” sans serif font. Border date will be printed with the same warranted printed system as the sign face. The date should be printed in the locations indicated below.



SQUARE TUBE ANCHOR SLEEVE

The Contractor will furnish and install new 2.5” x 2.5” x 18”, 12 Gauge square tube anchor sleeve or equivalent components as approved by the Engineer for 2.0” x 2.0” perforated tube posts. A 2.25” x 2.25” x 4’, 12 Gauge perforated tube post will be used as the anchor post for installation with the square tube anchor sleeve.

SQUARE TUBE POST SLEEVE

All 2.5” x 2.5”, 12 Gauge perforated tube post will be sleeved with a 2-3/16” x 2-3/16” x 4’, 12 Gauge perforated tube post.

WINGED SLIP BASE ANCHOR

The Contractor will furnish and install new winged slip base anchors for 2.5” x 2.5” perforated tube posts as required in the Permanent Signing Table. Winged slip base anchors will be installed using the direct drive method. Winged slip base anchors will consist of a slip base (upper), a 48-inch long winged anchor (lower), and a hardware kit.

GRIND SINUSOIDAL TRANSVERSE RUMBLE STRIP IN ASPHALT CONCRETE

Advance intersection warning sinusoidal transverse rumble strips will be constructed on the mainline pavement, as detailed in the plan set. Sinusoidal transverse rumble strips will be paid for at the contract unit price square foot for Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete. It is estimated that 392.0 square feet of sinusoidal transverse rumble strips will be required.

Sinusoidal transverse rumble strip installation will be completed prior to application of the flush seal and permanent pavement markings. A flush seal will be applied to the newly installed 10.0’ sinusoidal transverse rumble strips at a width of 11’ and a rate of 0.10 Gal/SqYd. All costs associated with placing the flush seal will be incidental to the contract unit price per ton for “SS-1h or CSS-1h Asphalt for Flush Seal”.

GRIND 6” TRANSVERSE RUMBLE STRIP IN ASPHALT CONCRETE

Advance intersection warning transverse rumble strips will be constructed on the mainline pavement, as detailed in the plan set. Transverse rumble strips will be paid for at the contract unit price per foot for “Grind 6” Transverse Rumble Strip in Asphalt Concrete”. It is estimated that 748.0 feet of transverse rumble strips will be required.

Transverse rumble strip installation will be completed prior to application of the flush seal and permanent pavement markings. A flush seal will be applied to the newly installed transverse rumble strips at a width that extends 3” beyond the perimeter of the total area of the transverse rumble strips at a width of 11’ and at a rate of 0.10 Gal/SqYd. All costs associated with placing the flush seal will be incidental to the contract unit price per ton for “SS-1h or CSS-1h Asphalt for Flush Seal”.

ROADWAY CLEANING:

The Contractor will be required to remove loose material from the driving surface and/or asphalt shoulders of the roadway. Loose material may be broomed to the edge of shoulders. It will be the Contractor’s responsibility to ensure the loose material does not enter any vegetated areas or waterways.

Cost for this work will be incidental to the contract unit price per square foot for “Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete” or “Grind 6” Transverse Rumble Strip in Asphalt Concrete”.

FLUSH SEAL

Application of the flush seal will be completed within 14 working days following completion of the grinding rumble strips.

STORMWATER POLLUTION PREVENTION PLAN CHECKLIST

*(The numbers left of the title headings are **reference numbers** to the GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES (Stormwater Permit))*

5.3 (2): STAFF TRAINING/SWPPP IMPLEMENTATION

To promote stormwater management awareness specific for this project, the Contractor's Erosion Control Supervisor should provide correspondence of how the SWPPP will be implemented. The Contractor's Erosion Control Supervisor is responsible for providing this information at the preconstruction meeting, and subsequently completing an attendance log, which should identify site-specific implementation of the SWPPP and the names of the personnel who attended the preconstruction meeting. Documentation of the preconstruction meeting will be filed with the SWPPP documents.

5.3 (3): DESCRIPTION OF CONSTRUCTION ACTIVITIES

- **5.3 (3a): Project Limits** (See Title Sheet)
- **5.3 (3a): Project Description** (See Title Sheet)
- **5.3 (4): Site Map(s)** (See Title Sheet and Plans)
- **Major Soil Disturbing Activities** (check all that apply)
  - ☒ Clearing and grubbing
  - ☒ Excavation/borrow
  - ☒ Grading and shaping
  - ☒ Filling
  - ☐ Other (describe):
- **5.3 (3b): Total Project Area** 91 Acres
- **5.3 (3b): Total Area to be Disturbed** 80 Acres
- **5.3 (3c): Maximum Area Disturbed at One Time**26 Acres
- **5.3 (3d): Existing Vegetative Cover (%)** 75%
- **5.3 (3d): Description of Vegetative Cover** Native grasses

- **5.3 (3e): Soil Properties:** USDA-NRCS Soil Series Classification Silty Loam, Silty Clay Loam, Fine Sandy Loam
- **5.3 (3f): Name of Receiving Water Body/Bodies** Tributary to the Missouri River
- **5.3 (3g): Location of Construction Support Activity Areas**

5.3 (3h): ORDER OF CONSTRUCTION ACTIVITIES

- **Special sequencing requirements (**see sheet).

The Contractor will enter the Estimated Start Date.

Description	Estimated Start Date
Install stabilized construction entrance(s).	
Install perimeter protection where runoff may exit site.	
Install perimeter protection around stockpiles.	
Install channel and ditch bottom protection.	
Clearing and grubbing.	
Remove and stockpile topsoil.	
Stabilize disturbed areas.	
Install utilities, storm sewers, curb and gutter.	
Install inlet and culvert protection after completing storm drainage and other utility installations.	
Final grading.	
Final paving.	
Removal of protection devices.	
Reseed areas disturbed by removal activities.	

5.3 (5): DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES

All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report. Include the technical reasoning for selecting each control. (check all that apply)

Perimeter Controls (See Detail Plan Sheets)

Description	Estimated Start Date
☐ Natural Buffers (within 50 ft of Waters of State)	
☐ Silt Fence	
☐ Erosion Control Wattles	
☐ Temporary Berm / Windrow	
☐ Floating Silt Curtain	
☒ Stabilized Construction Entrances	
☐ Entrance/Exit Equipment Tire Wash	
☐ Other:	

Structural Erosion and Sediment Controls

Description	Estimated Start Date
☒ Silt Fence	
☐ Temporary Berm/Windrow	
☒ Erosion Control Wattles	
☐ Temporary Sediment Barriers	
☐ Erosion Bales	
☐ Temporary Slope Drain	
☐ Turf Reinforcement Mat	
☒ Riprap	
☐ Gabions	
☐ Rock Check Dams	
☐ Sediment Traps/Basins	
☒ Culvert Inlet Protection	
☐ Transition Mats	
☐ Median/Area Drain Inlet Protection	
☐ Curb Inlet Protection	
☐ Interceptor Ditch	
☐ Concrete Washout Facility	
☐ Work Platform	
☐ Temporary Water Barrier	
☐ Temporary Water Crossing	
☐ Permanent Stormwater Ponds	
☐ Permanent Open Vegetated Swales	
☐ Natural Depressions to allow for Infiltration	
☐ Sequential Systems that combine several practices	
☐ Other:	

Dust Controls

Description	Estimated Start Date
☐ Tarps & Wind impervious fabrics	
☐ Watering	
☐ Stockpile location/orientation	
☐ Dust Control Chlorides	
☐ Other	

Dewatering BMPs

Description	Estimated Start Date
☐ Sediment Basins	
☐ Dewatering bags	
☐ Weir tanks	
☐ Temporary Diversion Channel	
☐ Other:	

Stabilization Practices (See Detail Plan Sheets)

(Stabilization measures shall begin the following work day whenever earth disturbing activity on any portion of the site has temporarily or permanently ceased. Temporary stabilization shall be completed as soon as practicable but no later than 14 days after initiating soil stabilization activities (**3.18**))

Description	Estimated Start Date
☐ Vegetation Buffer Strips	
☒ Temporary Seeding (Cover Crop Seeding)	
☒ Permanent Seeding	
☐ Sodding	
☐ Planting (Woody Vegetation for Soil Stabilization)	
☒ Mulching (Grass Hay or Straw)	
☐ Fiber Mulching (Wood Fiber Mulch)	
☒ Soil Stabilizer	
☐ Bonded Fiber Matrix	
☐ Fiber Reinforced Matrix	
☒ Erosion Control Blankets	
☒ Surface Roughening (e.g. tracking)	
☐ Other:	

Wetland Avoidance

Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes ☒ No ☐ If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.

5.3 (6): PROCEDURES FOR INSPECTIONS

- Inspections will be conducted at least once every 7 days.
- All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
- Silt fence will be inspected for depth of sediment and for tears to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches 1/3 of the height of the silt fence.
- Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
- Check dams will be inspected for stability. Sediment will be removed when depth reaches ½ the height of the dam.
- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
- Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
- The SDDOT Project Engineer and Contractor's Erosion Control Supervisor are responsible for inspections. Maintenance and repair activities are the responsibility of the Contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

5.3 (7): POST CONSTRUCTION STORMWATER MANAGEMENT

Stormwater management will be handled by temporary controls outlined in "DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES" above, and any permanent controls needed to meet permanent stormwater management needs in the post construction period will be shown in the plans and noted as permanent.

5.3 (8): POLLUTION PREVENTION PROCEDURES

5.3 (8a): Spill Prevention and Response Procedures

➢ **Material Management**

- Housekeeping
  - Only needed products will be stored on-site by the Contractor.
  - Except for bulk materials the contractor will store all materials under cover and/or in appropriate containers.
  - Products must be stored in original containers and labeled.
  - Material mixing will be conducted in accordance with the manufacturer's recommendations.
  - When possible, all products will be completely used before properly disposing of the container off-site.
  - The manufacturer's directions for disposal of materials and containers will be followed.
  - The Contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
  - Dust generated will be controlled in an environmentally safe manner.

- Hazardous Materials
  - Products will be kept in original containers unless the container is not resealable and provide secondary containment as applicable.
  - Original labels and material safety data sheets will be retained in a safe place to relay important product information.
  - If surplus product must be disposed of, manufacturer's label directions for disposal will be followed.
  - Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
  - Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any stormwater system or stormwater treatment system.
  - Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, residuals from concrete saw cutting (either wet or dry), and mixer washout waters will be collected on site and managed to prevent contamination of stormwater runoff.

➢ **Spill Control Practices**

In addition to the previous housekeeping and management practices, the following practices will be followed for spill prevention and cleanup if needed.

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill cleanup will be clearly posted. Site personnel will be made aware of the procedures and the locations of the information and cleanup supplies.
- Appropriate cleanup materials and equipment will be maintained by the Contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for cleanup purposes.
- All spills will be cleaned immediately after discovery and the materials disposed of properly.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- After a spill a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
- The Contractor's site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator.

➢ **Spill Response**

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into stormwater runoff and conveyance systems. If the release has impacted on-site stormwater, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens stormwater or surface water at the site, the spill response procedures outlined below must be implemented in a timely manner to prevent the release of pollutants.

- The Contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the Contractor at the site.
- If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately to remove the material causing the sheen. The Contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.
- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to SDDENR.
- Personnel with primary responsibility for spill response and cleanup will receive training by the Contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

5.3 (8b): WASTE MANAGEMENT PROCEDURES

➢ **Waste Disposal**

- All liquid waste materials will be collected and stored in approved sealed containers. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal and notices stating proper practices will be posted. The Contractor is responsible for ensuring waste disposal procedures are followed.

➢ **Hazardous Waste**

- All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the Contractor will be responsible for seeing that these practices are followed.

➢ **Sanitary Waste**

- Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units which must be secured to prevent tipping and serviced in a timely manner by a licensed waste management Contractor or as required by any local regulations.

5.3 (9): CONSTRUCTION SITE POLLUTANTS

The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the heading "POLLUTION PREVENTION PROCEDURES" (check all that apply).

- ☒ Concrete and Portland Cement
- ☐ Detergents
- ☒ Paints
- ☒ Metals
- ☒ Bituminous Materials
- ☒ Petroleum Based Products
- ☒ Diesel Exhaust Fluid
- ☐ Cleaning Solvents
- ☒ Wood
- ☐ Cure
- ☐ Texture
- ☐ Chemical Fertilizers
- ☐ Other:

Product Specific Practices

- **Petroleum Products**
  All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled.

- **Fertilizers**
  Fertilizers will be applied only in the amounts specified by the SDDOT. Once applied, fertilizers will be worked into the soil to limit the exposure to stormwater. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.

- **Paints**
  All containers will be tightly sealed and stored when not required for use. The excess will be disposed of according to the manufacturer's instructions and any applicable state and local regulations.

- **Concrete Trucks**
  Contractors will provide designated truck washout facilities on the site. These areas must be self-contained and not connected to any stormwater outlet of the site. Upon completion of construction, the area at the washout facility will be properly stabilized.

5.3 (10): NON-STORMWATER DISCHARGES

The following non-stormwater discharges are anticipated during the course of this project (check all that apply).

- ☐ Discharges from water line flushing.
- ☐ Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
- ☒ Uncontaminated ground water associated with dewatering activities.

5.3 (11): INFEASIBILITY DOCUMENTATION

If it is determined to be infeasible to comply with any of the requirements of the Stormwater Permit, the infeasibility determination must be thoroughly documented in the SWPPP.

7.0: SPILL NOTIFICATION

In the event of a spill, the Contractor's site superintendent will make the appropriate notification(s), consistent with the following procedures:

- A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to SDDENR immediately **if any one of the following** conditions exists:
  - The release or spill threatens or is able to threaten waters of the state (surface water or ground water)
  - The release or spill causes an immediate danger to human health or safety
  - The release or spill exceeds 25 gallons
  - The release or spill causes a sheen on surface water
  - The release or spill of any substance that exceeds the ground water quality standards of ARSD Chapter 74:54:01
  - The release or spill of any substance that exceeds the surface water quality standards of ARSD Chapter 74:51:01
  - The release or spill of any substance that harms or threatens to harm wildlife or aquatic life
  - The release or spill is required to be reported according to Superfund Amendments and Reauthorization Act (SARA) Title III List of Lists, Consolidated List of Chemicals Subject to Reporting Under the Emergency Planning and Community Right to Know Act, US Environmental Protection Agency.

- To report a release or spill, call SDDENR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central Standard Time). To report the release after hours, on weekends or holidays, call South Dakota Emergency Management at 605-773-3231. Reporting the release to SDDENR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, you must also contact local authorities to determine the local reporting requirements for releases. A written report of the unauthorized release of any regulated substance, including quantity discharged, and the location of the discharge shall be sent to SDDENR within 14 days of the discharge.

FOR BIDDING PURPOSES ONLY

5.4: SWPPP CERTIFICATIONS

➢ **Certification of Compliance with Federal, State, and Local Regulations**

The Storm Water Pollution Prevention Plan (SWPPP) for this project reflects the requirements of all local municipal jurisdictions for storm water management and sediment and erosion control as established by ordinance, as well as other state and federal requirements for sediment and erosion control plans, permits, notices or documentation as appropriate.

➢ **South Dakota Department of Transportation**

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

_____

Authorized Signature (See the General Permit, Section 7.4 (1))

➢ **Prime Contractor**

This section is to be executed by the General Contractor after the award of the contract. This section may be executed any time there is a change in the Prime Contractor of the project.

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

_____

Authorized Signature

CONTACT INFORMATION

The following personnel are duly authorized representatives and have signatory authority for modifications made to the SWPPP:

➢ **Contractor Information**:

- Prime Contractor Name: _____
- Contractor Contact Name: _____
- Address: _____
- _____
- City: _____State: _____Zip: _____
- Office Phone: _____Field: _____
- Cell Phone: _____Fax: _____

➢ **Erosion Control Supervisor**

- Name: _____
- Address: _____
- _____
- City: _____State: _____Zip: _____
- Office Phone: _____Field: _____
- Cell Phone: _____Fax: _____

➢ **SDDOT Project Engineer**

- Name: _____
- Business Address: _____
- Job Office Location: _____
- City: _____State: _____Zip: _____
- Office Phone: _____Field: _____
- Cell Phone: _____Fax: _____

➢ **SDDENR Contact Spill Reporting**
- Business Hours Monday-Friday (605) 773-3296
- Nights and Weekends (605) 773-3231

➢ **SDDENR Contact for Hazardous Materials.**
- (605) 773-3153

➢ **National Response Center Hotline**
- (800) 424-8802.

➢ **SDDENR Stormwater Contact Information**
- SDDENR Stormwater (800) 737-8676
- Surface Water Quality Program (605) 773-3351

5.5: REQUIRED SWPPP MODIFICATIONS

➢ **5.5 (1): Conditions Requiring SWPPP Modification**

The SWPPP must be modified, including the site map(s), in response to any of the following conditions:

- When a new operator responsible for implementation of any part the SWPPP begins work on the site.
- When changes to the construction plans, sediment and erosion control measures, or any best management practices on site that are no longer accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered by inspections.
- To reflect areas on the site map where operational control has been transferred (including the date of the transfer) or has been covered under a new permit since initiating coverage under this general permit.
- If inspections by site staff, local officials, SDDENR, or U.S. EPA determine that SWPPP modifications are necessary for compliance with the Stormwater Permit.
- To reflect any revisions to applicable federal, state, or local requirements that affect the control measures implemented at the site.
- If approved by the Secretary, to reflect any changes in chemical water treatment systems or controls, including the use of a different water treatment chemical, age rates, different areas, or methods of application.

➢ **5.5 (2): Deadlines for SWPPP Modification**

Any required revisions to the SWPPP must be completed within 7 calendar days following any of the items listed above.

➢ **5.5 (3): Documentation of Modifications to the Plan**

All SWPPP modification records are required to be maintained showing the dates of when the modification occurred. The records must include the name of the person authorizing each change and a brief summary of all changes.

➢ **5.5 (4): Certification Requirements**

All modifications made to the SWPPP must be signed and certified as required in Section 7.4.

➢ **5.5 (5): Required Notice to Other Operators**

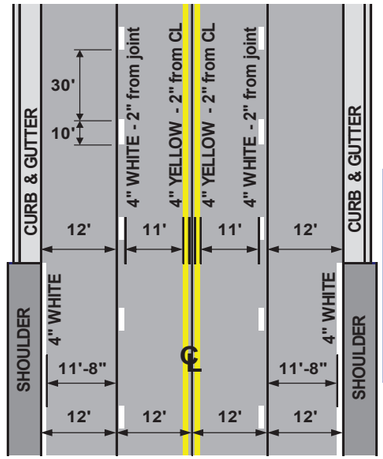
If there are multiple operators at the site, the Contractor's Erosion Control Supervisor must notify each operator that may be impacted by the change to the SWPPP within 24 hours.

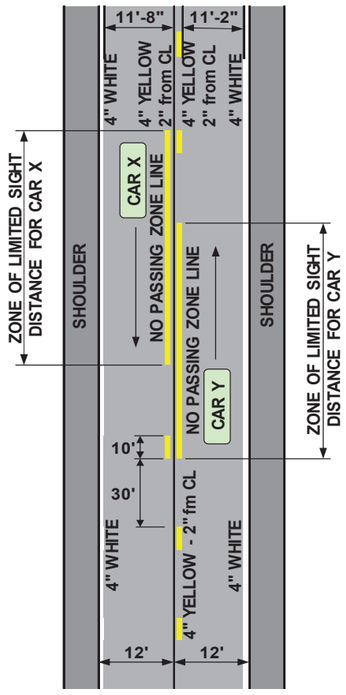
When modifications as described above occur, the SWPPP will be modified to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP using the DOT 298 form and drawings on the plan will be modified to reflect the needed changes. Copies of the DOT 298 forms and the SWPPP will be retained on site in a designated place for review throughout the course of the project. A copy of the DOT 298 form will be given to the Contractor Erosion Control Supervisor and a copy will be emailed to the SDDOT Environmental Section in accordance with the DOT 298 Form.

TABLE OF QUANTITIES
TRANSVERSE RUMBLE STRIPS

Site No. [PCN]	Route	Cross Road	Direction of Traffic	County	Location Comments	Pavement Type	Sinusoidal Transverse Segment Length per Standard Plate 320.46	Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete (Sq.Ft.)	Grind 6" Transverse Rumble Strip in Asphalt Concrete (Ft.)	SS-1h or CSS-1h Asphalt for Flush Seal (lbs.)
Gregory County							Bid Item	320E7035	320E7040	320E0210
G2 [06D8]	SD43	US18	NB	Gregory	1.2 miles south of the center of Fairfax	Asphalt	1,000 ft.		374.0	17.7
G3 [06D1]	US281	US18	NB	Gregory	8.0 miles east and 1.3 miles south of Fairfax	Asphalt	1,000 ft.	392.0		18.6
						Total	2,000 ft.	392.0 Sq.Ft.	374.0 ft.	36.3 lbs.
										0.1 Ton

UNDIVIDED ROADWAY





PAVEMENT MARKING

Typical pavement marking as shown on this sheet will be applied throughout the entire length of undivided roadway.

Traffic Control will be incidental to the cost of application. The striper and advance or trailing warning vehicle will be equipped with flashing amber lights and advance warning arrow board.

Application rates will be as follows:

Four Lane Roadway (Rates for one line)	Two Lane Roadway (Rates for one line)
Solid Yellow Centerline Rate = 27.8 Gals./Pass-Mile	Dashed Yellow Centerline Rate = 7.6 Gals./Pass-Mile
Dashed White Laneline Rate = 7.6 Gals./Pass-Mile	Solid Yellow Centerline Rate = 27.8 Gals./Pass-Mile
Solid White Edgeline (Not applicable in curb and gutter) Rate = 27.8 Gals./Pass-Mile	Solid White Edgeline Rate = 27.8 Gals./Pass-Mile

4" Yellow Skip Centerline (when not adjacent to a 4" Yellow No Passing Zone) will be placed consistently to the south or east side of centerline.

ESTIMATED QUANTITIES (BASED ON ONE APPLICATION)	
HIGH BUILD WITH REFLECTIVE ELEMENTS	QUANTITY
WHITE	644 GALLONS
YELLOW	452 GALLONS

Included in the above quantities are:

Additional White (1 Application)		Additional Yellow (1 Application)	
Description	Gallons	Description	Gallons
4" Lines -	-	Transitions -	-
8" Lines -	-	4" Skip Lines -	-
12" Gore Lines -	-	8" Lines -	-
Crosswalks -	-	12" Lines -	-
24" Stop Lines -	-	24" Hatches -	-
24" Hatches -	-	Solid Areas -	-
Solid Areas -	-	Additional Yellow:	-
Arrows			
Left Arrows -	-		
Right Arrows -	-		
Straight Arrows -	-		
Combo Arrows -	-		
Lane Drop Arrows -	-		
Messages			
STOP -	-		
STOP AHEAD -	-		
R X R w/ Stop Lines -	-		
SCHOOL X-ING -	-		
Additional White:	-		

Additional Quantities

Rates of Coverage:	SqFt/Gal
4", 8" & 12" Lines -	50
24" Lines & Hatches -	30
Arrows, Messages and Solid Areas -	20

All pavement marking dimensions are based on 12' driving lanes.

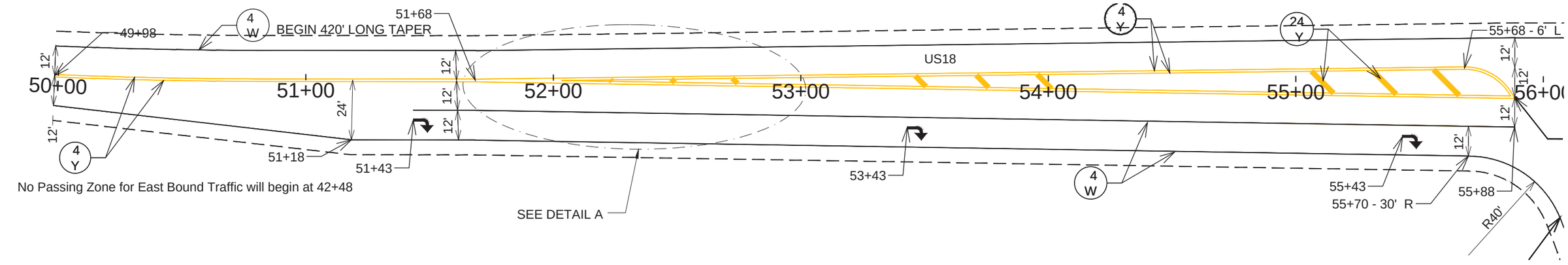
BAI JOB # 23190-10 | STATE OF SOUTH DAKOTA | PROJECT: NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0 | SHEET: 78 | TOTAL SHEETS: 267
Plotting Date: 10/01/2025 Rev:

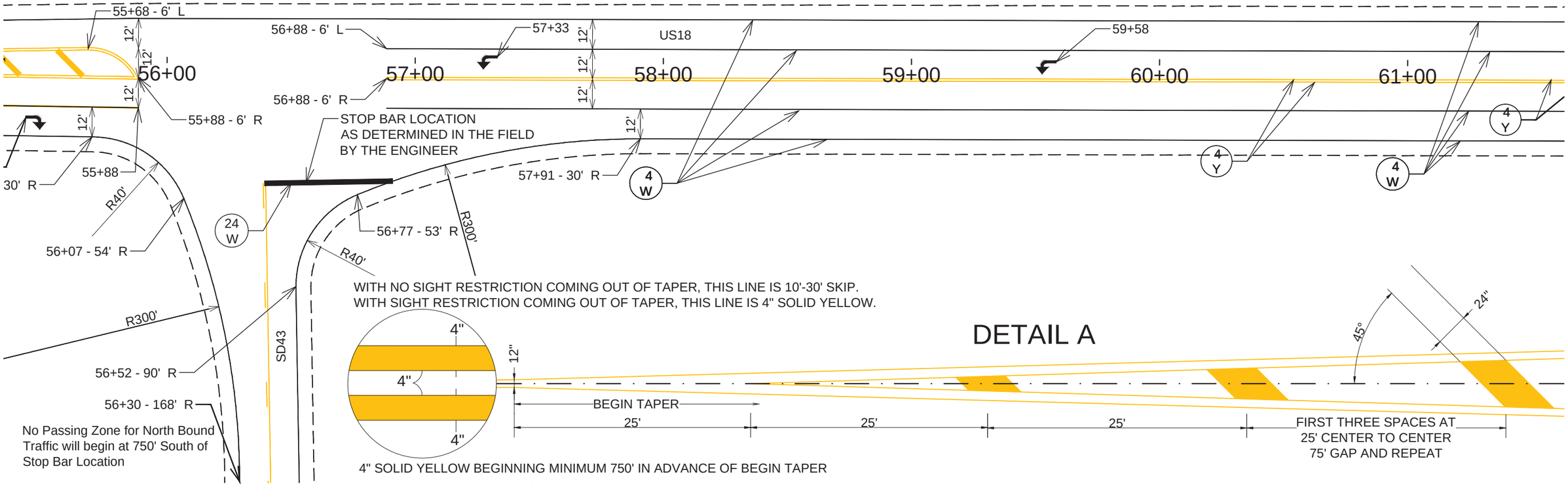
FOR BIDDING PURPOSES ONLY

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13392
WAYLON BLASIUS
10/25/2025

PAVEMENT MARKING LAYOUT

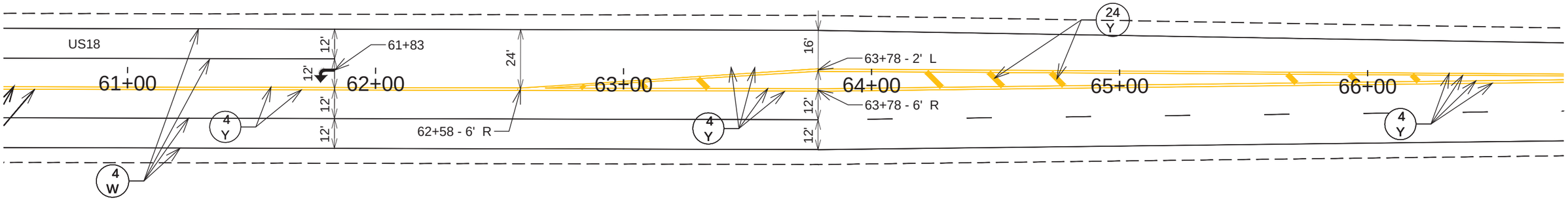
US18-SD43 INTERSECTION

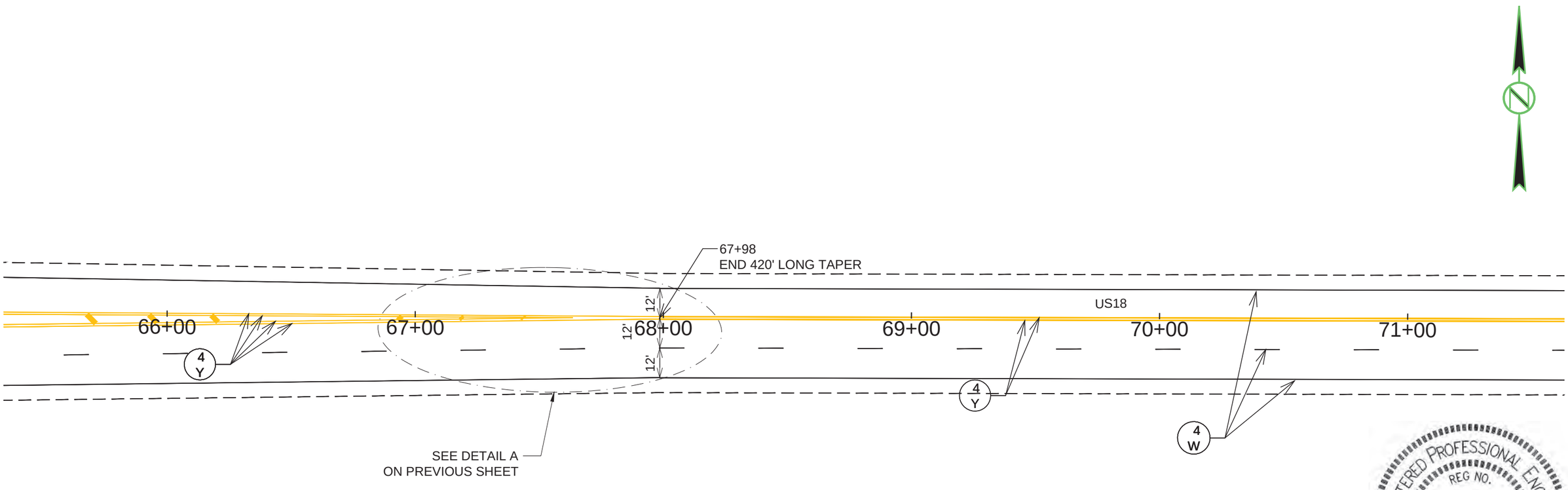




BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
FOR BIDDING PURPOSES ONLY		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	79	267

Plotting Date: 10/01/2025 Rev:

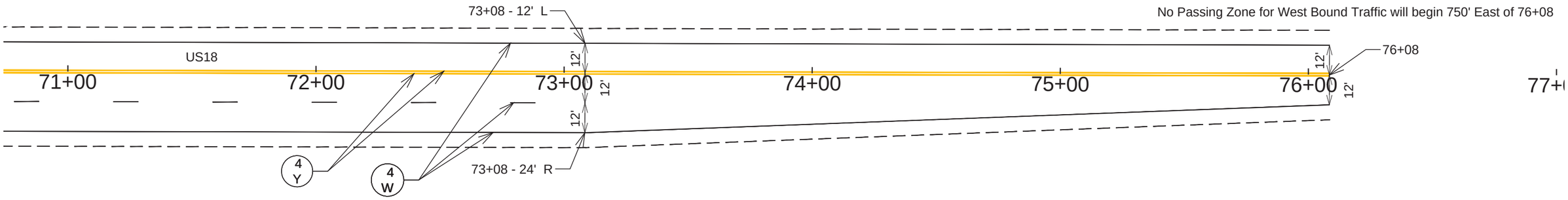




REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON B. BASIUS
10/25/2025

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
FOR BIDDING PURPOSES ONLY		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	80	267

Plotting Date: 10/01/2025 Rev:



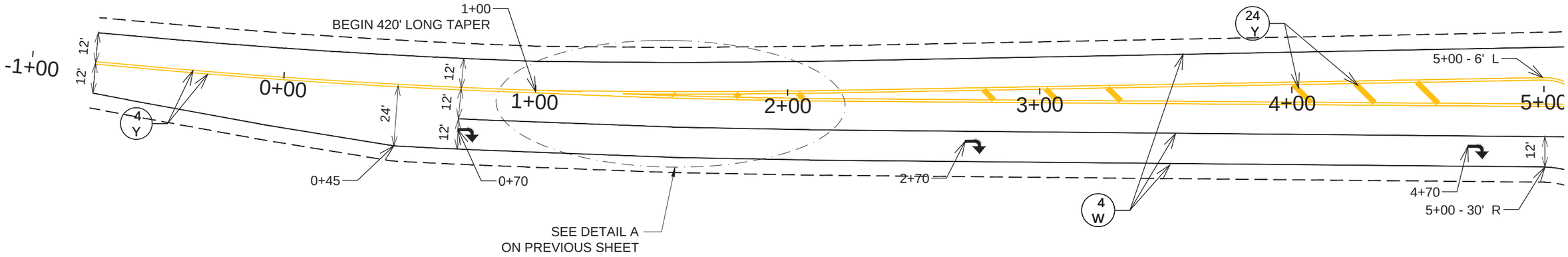
BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	81	267

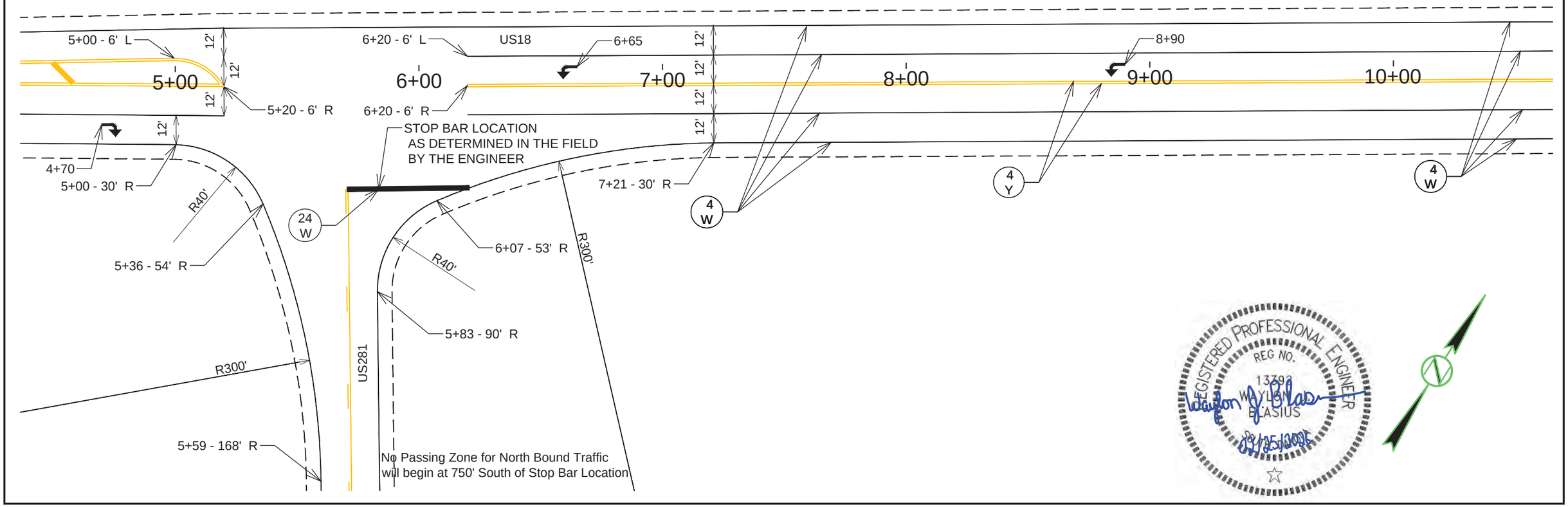
FOR BIDDING PURPOSES ONLY

Plotting Date: 10/01/2025 Rev:

PAVEMENT MARKING LAYOUT

US18-US281 INTERSECTION





BAI JOB # 23190-10

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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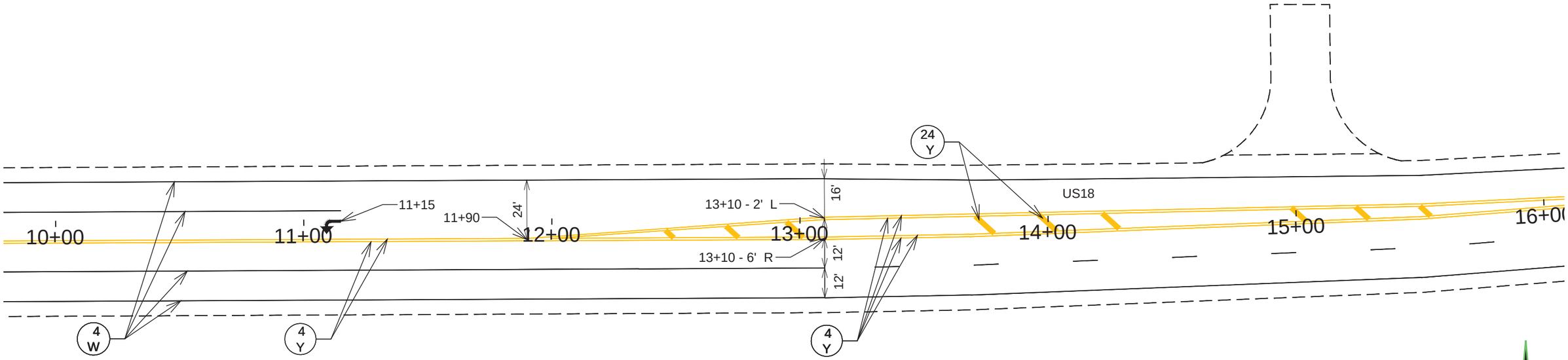
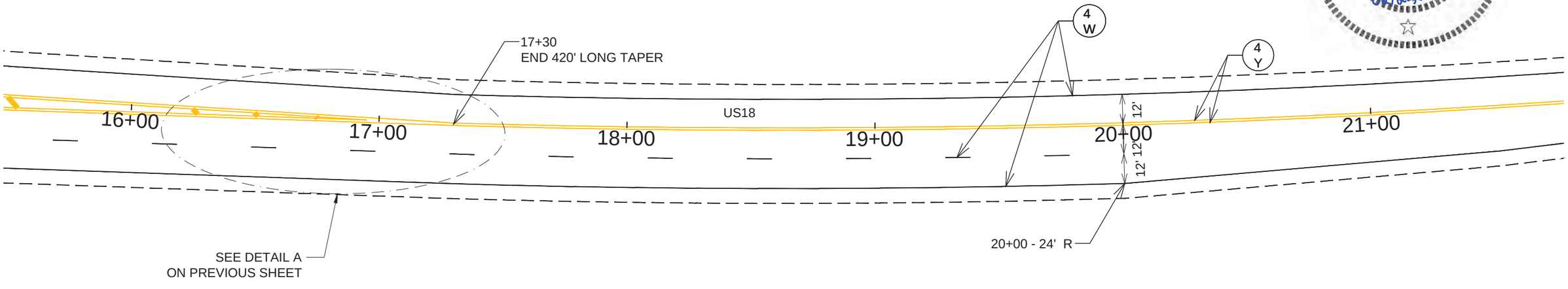
Plotting Date: 10/01/2025 Rev:





REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON J. BLASIUS
03/25/2026

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
FOR BIDDING PURPOSES ONLY		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	83	267

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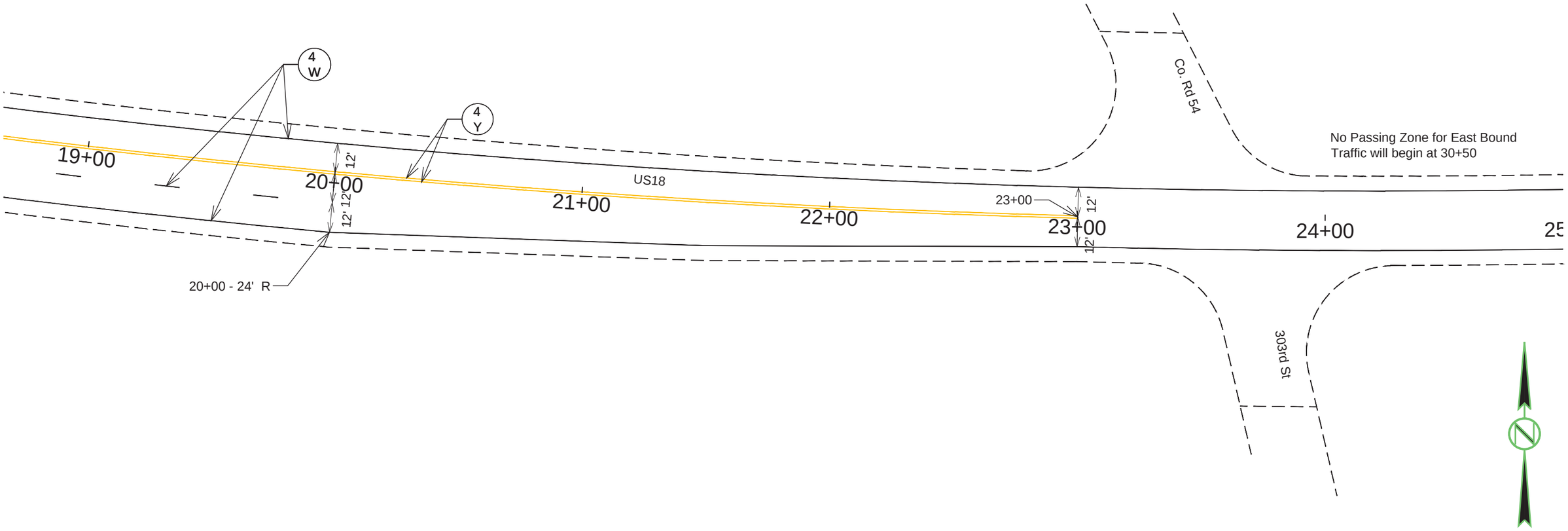
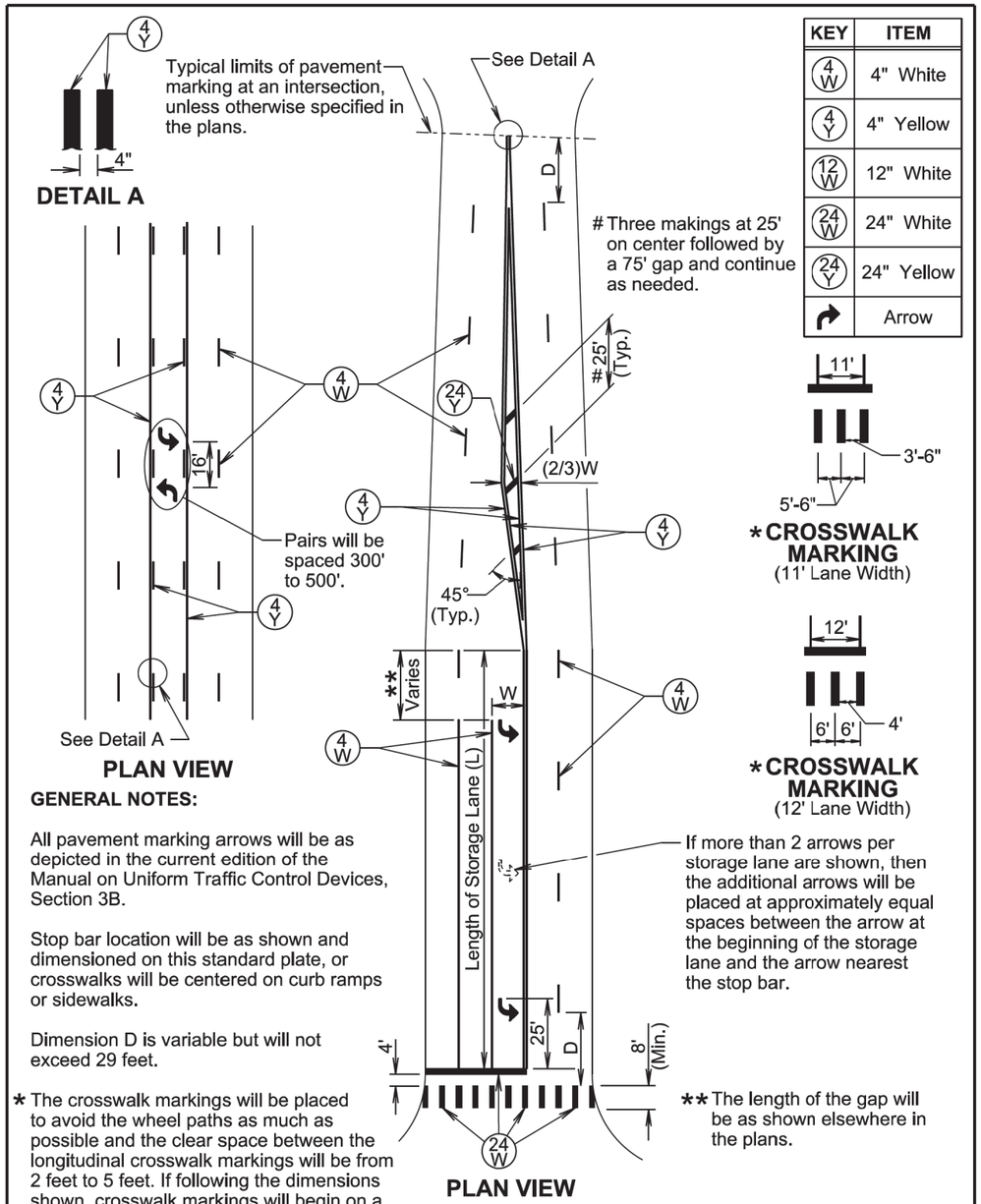




GENERAL NOTES:

All pavement marking arrows will be as depicted in the current edition of the Manual on Uniform Traffic Control Devices, Section 3B.

Stop bar location will be as shown and dimensioned on this standard plate, or crosswalks will be centered on curb ramps or sidewalks.

Dimension D is variable but will not exceed 29 feet.

* The crosswalk markings will be placed to avoid the wheel paths as much as possible and the clear space between the longitudinal crosswalk markings will be from 2 feet to 5 feet. If following the dimensions shown, crosswalk markings will begin on a lane line or centerline.

March 31, 2024

Published Date: 2026	SDDOT	PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE	PLATE NUMBER 633.01
			Sheet 1 of 1

TRAFFIC CONTROL TABLE BREAKDOWN BY PHASE

				Phase 1, 2, & 5		Phase 3 & 6		Phase 4 & 7		Phase 8		Total at Once	
SIGN CODE	SIGN DESCRIPTION	SIGN SIZE	SQFT PER SIGN	Number of Signs	Total Square Ft	Number of Signs	Total Square Ft	Number of Signs	Total Square Ft	Number of Signs	Total Square Ft	Number of Signs	Total Square Ft
R2-1	SPEED LIMIT (XX)	24" x 30"	5.0	2	10.0	2	10.0		0.0	2	10.0	6	30.0
R4-7	KEEP RIGHT (symbol)	24" X 30"	5.0	2	10.0	2	10.0		0.0		0.0	2	10.0
R11-2	ROAD CLOSED	48" x 30"	10.0	3	30.0	3	30.0	2	20.0		0.0	3	30.0
R11-3a	ROAD CLOSED (5 or 7 or 9) MILES AHEAD LOCAL TRAFFIC ONLY	60" x 30"	12.5	2	25.0	2	25.0		0.0		0.0	4	50.0
W3-4	BE PREPARED TO STOP	48" x 48"	16.0	2	32.0	2	32.0		0.0		0.0	2	32.0
W3-5	SPEED REDUCTION AHEAD (XX MPH)	48" x 48"	16.0	2	32.0	2	32.0		0.0	2	32.0	6	96.0
W8-1	BUMP	48" x 48"	16.0	3	48.0	3	48.0	2	32.0		0.0	3	48.0
W8-6	TRUCK CROSSING	48" x 48"	16.0	2	32.0	2	32.0	2	32.0	2	32.0	2	32.0
W8-7	LOOSE GRAVEL	48" x 48"	16.0	2	32.0	2	32.0	2	32.0		0.0	6	96.0
W8-11	UNEVEN LANES	48" x 48"	16.0	2	32.0	2	32.0	2	32.0	4	64.0	4	64.0
W8-15	GROOVED PAVEMENT	48" x 48"	16.0		0.0		0.0		0.0	4	64.0	4	64.0
W8-15P	MOTORCYCLE (plaque)	24" x 18"	3.0		0.0		0.0		0.0	4	12.0	4	12.0
W13-1P	ADVISORY SPEED (plaque)	30" x 30"	6.3	2	12.6	2	12.6	2	12.6	2	12.6	8	50.4
W20-1	ROAD WORK AHEAD	48" x 48"	16.0	4	64.0	4	64.0	4	64.0	2	32.0	14	224.0
W20-4	ONE LANE ROAD AHEAD	48" x 48"	16.0	2	32.0	2	32.0	2	32.0	2	32.0	4	64.0
W20-7	FLAGGER (symbol)	48" x 48"	16.0	2	32.0	2	32.0	2	32.0	2	32.0	4	64.0
W21-2	FRESH OIL	48" x 48"	16.0	2	32.0	2	32.0		0.0	2	32.0	2	32.0
W21-3	ROAD MACHINERY AHEAD	48" x 48"	16.0	2	32.0	2	32.0		0.0		0.0	2	32.0
W21-5	SHOULDER WORK	48" x 48"	16.0	2	32.0	2	32.0		0.0		0.0	2	32.0
W21-6	SURVEY CREW	48" x 48"	16.0	2	32.0	2	32.0	2	32.0	2	32.0	2	32.0
W21-5a	LEFT or RIGHT SHOULDER CLOSED	48" x 48"	16.0	2	32.0	2	32.0		0.0		0.0	2	32.0
W21-5b	LEFT or RIGHT SHOULDER CLOSED AHEAD	48" x 48"	16.0	2	32.0	2	32.0		0.0		0.0	2	32.0
SPECIAL	WAIT FOLLOW PILOT CAR	30" x 18"	3.8	2	7.6	2	7.6		0.0	2	7.6	2	7.6
SPECIAL	WINDROW	48" x 48"	16.0	2	32.0	2	32.0		0.0		0.0	2	32.0
G20-2	END ROAD WORK	36" x 18"	4.5	2	9.0	2	9.0	2	9.0	2	9.0	8	36.0
M1-4	US ROUTE MARKER (1 or 2 digits)	24" x 24"	4.0	2	8.0	2	8.0		0.0		0.0	4	16.0
M1-4	US ROUTE MARKER (3 digits)	30" x 24"	5.0	2	10.0	2	10.0	2	10.0		0.0	4	20.0
M1-5	SD ROUTE MARKER (1 or 2 digits)	24" x 24"	4.0	2	8.0	2	8.0	2	8.0		0.0	4	16.0
M3-1	DIRECTION MARKER - NORTH	24" x 12"	2.0	1	2.0		0.0	2	4.0		0.0	3	6.0
M3-2	DIRECTION MARKER - EAST	24" x 12"	2.0	1	2.0		0.0	2	4.0		0.0	3	6.0
M3-3	DIRECTION MARKER - SOUTH	24" x 12"	2.0	2	4.0		0.0	2	4.0		0.0	4	8.0
M3-4	DIRECTION MARKER - WEST	24" x 12"	2.0	1	2.0		0.0	2	4.0		0.0	3	6.0
M6-1	DIRECTION ARROW - Horizontal Single Head (L or R)	21" x 15"	2.2	1	2.2		0.0	2	4.4		0.0	3	6.6
			Total		702.4		690.2		368.0		403.2		1318.6

BARRICADES AND ARROW BOARDS TABLE BREAKDOWN BY PHASE

Bid Item Number	SIGN DESCRIPTION	UNITS	Phase 1, 2 & 5	Phase 3 & 6	Phase 4 & 7	Phase 8	Total at Once
634E0275	TYPE 3 BARRICADE	Each	12	12	12	0	20
634E0420	TYPE C ADVANCE WARNING ARROW BOARD	Each	2	2	2	2	4

TRAFFIC CONTROL TABLE BREAKDOWN BY PCN

PCN	Project Phase		Total Square Ft	Total Type 3 Barricade	Total Type C Advance Warning Arrow Board
PCN 067V	PHASE 1		702.4	12	2
PCN 067V	PHASE 3		690.2	12	2
PCN 067V	PHASE 4		268.0	12	2
PCN 067V	PHASE 6		690.2	12	2
PCN 067V	PHASE 7		368.0	12	2
PCN 067V	PHASE 8		403.2	0	2
PCN 067V PAY QUANTITY			**831.2**	**10**	**1**
PCN 06D8	PHASE 2		702.4	12	2
PCN 06D8	PHASE 8		403.2	0	2
PCN 06D8 PAY QUANTITY			**243.7**	**4**	**1**
PCN 06D1	PHASE 5		702.4	12	2
PCN 06D1	PHASE 8		403.2	0	2
PCN 06D1 PAY QUANTITY			**243.7**	**4**	**1**

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON J. BLASIUS
09/25/2025

US18 West Intersection Sign Removal Table (067V)

MRM	Displacement	Side of Road	Description	Sign Code	Remove Traffic Sign (Each)
311	0.484	R	Arrow Left	W1-6	1
311	0.484	R	Stop	R1-1	1
311	0.054	R	Jct	M2-1B	1
			SD43	M1-5	
311	0.582	R	Lewis and Clark Trail Marker	I-4B	1
			Direction Arrow	M6-1A	
311	0.61	L	No Passing Zone	W14	1
311	0.61	R	Destination Board (Butte, NE/Lake Andes)	D1-2	1
311	0.655	R	Left Curve Arrow	W1-2	1
			Advisory Curve Speed (60)	W13-5	
311	0.662	L	Right Curve Arrow	W1-2R	1
311	0.667	R	Distance Board (Fairfax 2, Burke 26)	D2-2	1
311	0.682	L	West	M3-4A	1
			US18	M1-4	
311	0.701	R	US18	M1-4	1
			Direction Arrow	M6-3B	
			SD43	M1-5	
			Direction Arrow	M6-2LA	
311.71	0	R	MRM 311.71	D10-3A	1
311.72	0.058	R	US18	M1-4	1
311.72	0.058		Direction Arrow	M6-2LA	
311.72	0.058		East	M3-2A	
311.72	0.058	R	Chevron	W1-8	1
			Chevron	W1-8	
311.72	0.082	R	Chevron	W1-8	1
			Chevron	W1-8	
311.72	0.096	R	Chevron	W1-8	1
			Chevron	W1-8	
311.72	0.096	R	Merge	W4-1	1
311.72	0.098	R	Merge	W4-1	1
311.72	0.099	R	US18	M1-4	1
			Direction Arrow	M6-2RA	
			SD43	M1-5	
			Direction Arrow	M6-3B	
311.89	0.042	L	US18	M1-4	1
			Direction Arrow	M5-2RA	
			SD43	M1-5	
			Direction Arrow	M5-1LB	
311.89	0.077	R	East	M3-2A	1
			US18	M1-4	
311.89	0.09	R	MRM 312	D10-3	1
312	0.034	L	Destination Board (Butte, NE/Burke)	D1-2	1
312	0.039	R	Lane Ends Right	W4-2R	1
312	0.059	L	No Passing Zone	W14-3	1
312	0.064	R	No Passing Zone	W14-3	1
312	0.064	L	Lewis and Clark Trail Marker	I-4B	1
			Direction Arrow	M6-2RA	
312	0.12	L	Right Curve Arrow	W1-2R	1
			Advisory Curve Speed (60)	W13-1P	
312	0.191	L	Jct	M2-1B	1
			SD43	M1-5	
312	0.212	R	Distance Board (Jct US281 9, Lake Andes 27)	D2-2	1
312	0.445	R	Deer Crossing	W11-3	1
			Next 21 Mile/s	W7-3AP	

US18 East Intersection Sign Removal Table (067V)

MRM	Displacement	Side of Road	Description	Sign Code	Remove Traffic Sign (Each)
320	0.441	L	Right Curve Arrow	W1-2R	1
320	0.523	R	Jct	M2-1A	1
			US281	M1-4	
320	0.526	L	Route Marker (Ovate Trail)	M1-5	1
320	0.58	L	No Passing Zone	W14-3	
320	0.582	R	Lewis and Clark Trail Marker	I-4B	1
320	0.582	R	Direction Arrow	M6-1A	
320	0.592	L	Deer Crossing	W11-3	1
320	0.592	L	Next 18 Mile/s	W7-3AP	
320	0.619	R	Destination Board (Lake Andes, O'Neill, NE)	D1-3	1
320	0.621	L	Distance Board (Jct SD43 9, Burke 35)	D2-2	1
320.72	0.003	R	US18	M1-4	1
320.72	0.003	R	Direction Arrow	M5-2LA	
320.72	0.003	R	US281	M1-4	
320.72	0.003	R	Direction Arrow	M6-6RA	
320.72	0.003	R	MRM 320.72	D10-3A	
320.72	0.004	L	West	M3-41	1
320.72	0.004	L	US18	M1-4	
320.72	0.024	L	Destination Board (Burke, Lake Andes)	D1-2	1
320.78	0	L	Stop	R1-1	1
320.78	0.004	L	Double Head Arrow	W1-7	1
320.78	0.004	L	US18	M1-4	
320.78	0.004	L	Direction Arrow	M6-4A	
320.78	0.004	L	US281	M1-4	
320.78	0.004	L	Direction Arrow	M6-1A	
320.78	0.026	L	US281	M1-4	1
320.78	0.026	L	Direction Arrow	M6-1A	
320.78	0.026	L	US18	M1-4	
320.78	0.026	L	Turn 45 Degree Right	M6-2RA	
320.78	0.039	R	Stop	R1-1	1
320.78	0.047	R	East	M3-2A	1
320.78	0.047	R	US18	M1-4	
320.78	0.047	R	North	M3-1A	
320.78	0.047	R	US281	M1-4	
320.78	0.093	R	Oyate Trail	I-4A	1
320.78	0.13	R	Distance Board (Ft. Randall Dam 9, Lake Andes 18)	D2-2	1
320.78	0.131	L	Destination Board (Burke, O'Neill, NE)	D1-3	1
320.78	0.148	L	No Passing Zone	W14-3	1
320.78	0.165	R	No Passing Zone	W14-3	1
320.78	0.2	L	US281	M1-4	1
320.78	0.2	L	Turn 90 Degree Left	M5-1LA	
320.78	0.2	L	US18	M1-4	
320.78	0.2	L	Turn 45 Degree Right	M5-2RA	
320.78	0.207	R	Deer Crossing	W11-3	1
320.78	0.207	R	Next 13 Miles	W7-3AP	
320.78	0.261	R	No Driving On Shoulder	R4-17	1

FOR BIDDING PURPOSES ONLY

US18 West Intersection Permanent Sign Installation Table (067V)

Sta	Side	Description	Sign Code	Width (in)	Height (in)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I. 48" Winged Slip Base Anchor (Each)	Direction Sign Faces	Remarks
30+34	L	Double Head Arrow	W1-7	72	36		25.0		2.0	SW	Install New Sign
30+50	R	Stop	R1-1	30	30	10.5		1.0		SW	Install New Sign with 4" x 60" red retroreflective strip on post
32+00	R	Lewis and Clark Trail Marker	I-4B	24	30	12.5		1.0		NW	Install New Sign
		Direction Arrow	M6-1A	21	15						
33+00	L	Fairfax 2, Burke 26	D2-2	76	36	25.0		2.0		SE	Install New Sign
38+00	R	Jct	M2-1B	21	15	12.5		1.0		W	Install New Sign
		SD43	M1-5	24	24						
40+00	R	Butte NE → Lake Andes ↑	D1-2	102	36		25.0		2.0	NW	Install New Sign
53+00	R	Right Lane Must Turn Right	R3-7R	30	30	10.5		1.0		SW	Install New Sign
55+30	L	Lewis and Clark Trail Marker	I-4B	24	30	10.5		1.0		E	Install New Sign
56+38	L	Double Head Arrow	W1-7	72	36		25.0		2.0	S	Install New Sign
56+65	R	Stop (LED Border)	R1-1	48	48		11.0		1.0	S	Install New Sign with 4" x 60" red retroreflective strip on post
62+00	L	SD43	M1-5	24	24		25.0		2.0	E	Install New Sign
		Left Turn Arrow	M5-1	21	15						
		US18	M1-4	36	36						
		Vertical Direction Arrow	M6-3	21	15						
63+00	R	Jct US281 9, Lake Andes 27	D2-2	114	36		25.0		2.0	W	Install New Sign
70+00	L	Burke ↑ Butte NE ←	D1-2	90	36		25.0		2.0	E	Install New Sign
70+00	R	Right Lane Ends	W4-2R	36	36	11.0		1.0		W	Install New Sign
76+00	L	Jct	M2-1B	21	15	12.5		1.0		E	Install New Sign
		SD43	M1-5	24	24						

US18 East Intersection Permanent Sign Installation Table (067V)

Sta	Side	Description	Sign Code	Width (in)	Height (in)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I. 48" Winged Slip Base Anchor (Each)	Direction Sign Faces	Remarks
MRM 320+0.10	R	Jct	M2-1A	21	15	12.5		1.0		W	Install New Sign
		US281	M1-4	30	24						
MRM 320+0.20	R	↑Lake Andes Spencer NE → O'Neill NE →	D1-3	108	48		25.0		2.0	W	Install New Sign
3+00	R	Right Lane Must Turn Right	R3-7R	30	30	10.5		1.0		SW	Install New Sign
5+65	L	←Burke Lake Andes→	D1-2	108	36		25.0		2.0	SE	Install New Sign
5+75	L	Double Head Arrow	W1-7	72	36		25.0		2.0	SE	Install New Sign
6+00	R	Stop (LED Border)	R1-1	48	48		11.0		1.0	SE	Install New Sign with 4" x 60" red retroreflective strip on post
13+80	L	Oyate Trail	I-4A	18	30	10.5		1.0		NE	Install New Sign
16+80	R	Lewis & Clark Trail	I-4B	24	30	12.5		1.0		SW	Install New Sign
		Direction Arrow	M6-1A	21	15						
17+40	L	Deer Crossing	W11-3	36	36	13.0		1.0		NE	Install New Sign
		Next 18 Mile/s	W7-3AP	24	24						
18+00	R	Right Lane Ends	W4-2R	36	36	11.0		1.0		SW	Install New Sign
18+70	L	Jct SD43 9, Burke 35	D2-2	78	36		25.0		2.0	NE	Install New Sign
20+00	L	US18	M1-4	24	24		25.0		2.0	NE	Install New Sign
		Direction Arrow	M5-2LA	21	15						
		US281	M1-4	30	24						
		Direction Arrow	M6-6RA	21	15						
23+00	L	Stop	R1-1	30	30	10.5		1.0		NW	Install New Sign with 4" x 60" red retroreflective strip on post
24+00	R	Stop	R1-1	30	30	10.5		1.0		SE	Install New Sign with 4" x 60" red retroreflective strip on post
29+40	R	Oyate Trail	I-4A	18	30	10.5		1.0		SW	Install New Sign
31+25	R	Ft Randall Dam 9, Lake Andes 18	D2-2	132	36		25.0		2.0	SW	Install New Sign
34+80	L	US281	M1-4	30	24		25.0		2.0		Install New Sign
		Direction Arrow	M5-1LA	21	15						
		US18	M1-4	24	24						
		Direction Arrow	M5-2RA	21	15						
35+40	R	Deer Crossing	W11-3	36	36	13.0		1.0		SW	Install New Sign
		Next 13 Mile/s	W7-3AP	24	24						
38+10	R	No Driving On Shoulder	R4-17	24	30	10.5		1.0		SW	Install New Sign

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON BASIUS
10/25/2025

FOR BIDDING PURPOSES ONLY

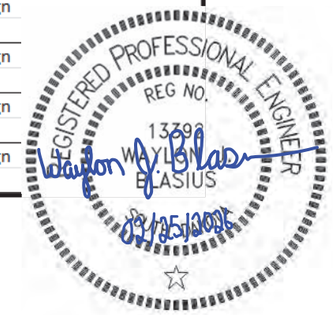
Plotting Date: 10/01/2025 Rev:

XR30 - 364th Avenue Permanent Sign Installation Table (067V)

Sta	Side of Road	Description	Sign Code	Width (in)	Height (in)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I. 48" Winged Slip Base Anchor (Each)	Direction Sign Faces	Remove Sign for Reset	Reset Sign	Remarks
5+00	R	Curve Right	I7-4B	30	30	13.0		1.0		S			Install New Sign
		25 MPH Advisory Speed	W13-1P	18	18					S			
6+00	R	Stop Ahead	W3-1	30	30	11.5		1.0		S			Install New Sign
6+73	L	Chevron	W1-8	18	24	8.0		1.0		N			Install New Sign
		Chevron	W1-8	18	24					S			
7+50	L	Chevron	W1-8	18	24	8.0		1.0		N			Install New Sign
		Chevron	W1-8	18	24					S			
8+30	L	Chevron	W1-8	18	24	8.0		1.0		NE			Install New Sign
		Chevron	W1-8	18	24					SW			
9+07	L	Chevron	W1-8	18	24	8.0		1.0		NE			Install New Sign
		Chevron	W1-8	18	24					SW			
10+75	R	SD18/364th Ave Intersection									1	1	Move sign to new intersection location

XR23 - 303rd Street Permanent Sign Installation Table (067V)

Sta	Side of Road	Description	Sign Code	Width (in)	Height (in)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I. 48" Winged Slip Base Anchor (Each)	Direction Sign Faces	Remove Sign for Reset	Reset Sign	Remarks
4+50	R	Curve Right	I7-4B	30	30	13.0		1.0		W			Install New Sign
		25 MPH Advisory Speed	W13-1P	18	18					W			
6+51	R	Stop Ahead	W3-1	30	30	11.5		1.0		W			Install New Sign
6+51	L	Chevron	W1-8	18	24	8.0		1.0		W			Install New Sign
		Chevron	W1-8	18	24					E			
6+89	L	Chevron	W1-8	18	24	8.0		1.0		W			Install New Sign
		Chevron	W1-8	18	24					E			
7+26	L	Chevron	W1-8	18	24	8.0		1.0		W			Install New Sign
		Chevron	W1-8	18	24					E			
10+50	L	SD18/303rd St Intersection									1	1	Remove and Reset Sign in New Location
11+83	R	Chevron	W1-8	18	24	8.0		1.0		W			Install New Sign
		Chevron	W1-8	18	24					E			
12+60	R	Chevron	W1-8	18	24	8.0		1.0		W			Install New Sign
		Chevron	W1-8	18	24					E			
13+50	R	Chevron	W1-8	18	24	8.0		1.0		W			Install New Sign
		Chevron	W1-8	18	24					E			
14+30	R	Chevron	W1-8	18	24	8.0		1.0		W			Install New Sign
		Chevron	W1-8	18	24					E			
14+30	L	Stop Ahead	W3-1	30	30	11.5		1.0		E			Install New Sign
18+03	L	Chevron	W1-8	18	24	8.0		1.0		W			Install New Sign
		Chevron	W1-8	18	24					E			
18+62	L	Chevron	W1-8	18	24	8.0		1.0		W			Install New Sign
		Chevron	W1-8	18	24					E			
19+21	L	Chevron	W1-8	18	24	8.0		1.0		W			Install New Sign
		Chevron	W1-8	18	24					E			
21+20	L	Reverse Curve L&R	W1-4	30	30	13.0		1.0		E			Install New Sign
		25 MPH Advisory Speed	W13-1P	18	18					E			



SD43 Sign Removal Table (06D8)

MRM	Displacement	Side of Road	Description	Sign Code	Remove Traffic Sign (Each)
0	0.867	R	Jct	M2-1A	1
			US18	M1-4	
0	0.916	R	Stop Ahead	W3-1	1
0	0.922	L	No Passing Zone	W14-3	1
0	0.931	L	Distance Board (Butte NE 8)	D1-1A	1
0	0.953	R	Destination Board (↑ Burke, Lake Andes →)	D1-2	1
1	0	R	MRM (1)	D10-1	1
1	0.021	R	US18	M1-4	1
			Direction Marker	M6-6RA	
			SD43	M1-5	
			End	R3-9DPB	
1	0.062	L	South	M3-3B	1
			SD43	M1-5	
1	0.07	L	SD43	M1-5	1
			Direction Arrow	M6-1B	
1	0.073	L	Double Head Arrow	W1-7	1
1.08	0.002	L	Stop	R1-1	1
1.08	0.024	R	Stop	R1-1	1
1.14	0.007	L	SD43	M1-5	1
			Direction Arrow	M6-3B	
1.19	0	R	No Passing Zone	W14-3	1

US281 Sign Removal Table (06D1)

MRM	Displacement	Side of Road	Description	Sign Code	Remove Traffic Sign (Each)
0	0.016	R	Welcome To South Dakota	I7-4B	1
0	0.43	R	North	M3-1A	1
			US281	M1-4	
			MRM 0.02	D10-1A	
0.02	0.034	R	Livestock Inspection (Enter)	SR8-8	1
0.02	0.041	L	Livestock Inspection (Exit)	SR8-8	1
0.02	0.059	R	Speed Limit (65)	R2-1K	1
0.02	0.075	R	Commercial Vehicles Telecopter	D8-1F	1
0.02	0.131	R	State Law - Seat Belt Use Required	R16-1A	1
0.02	0.317	R	Lewis & Clark Trail Marker	I-4B	1
			Direction Arrow	M6-1A	
0.02	0.368	R	Gregory County	I-1	1
0.02	0.518	R	Left Turn Arrow	W1-1L	1
0.02	0.518		30 MPH	W13-1P	
0.02	0.518	L	Left Turn Arrow	W1-1L	1
0.02	0.518		30 MPH	W13-1P	
0.02	0.567	R	Jct	M2-1A	1
			US18	M1-4	
0.02	0.58	L	No Passing Zone	W14-3	1
0.02	0.608	R	Stop Ahead	W3-1	1
			650 Feet Ahead	W16-2P	
0.02	0.65	L	Distance Board (Spencer NE 9, O'Neill NE 41)	D2-2	1
0.02	0.677	R	Chevron	W1-8	1
0.02	0.684	R	Chevron	W1-8	1
0.02	0.69	R	Direction Arrow	W1-6	1
0.02	0.634	L	South	M3-3A	1
			US281	M1-4	
0.02	0.697	R	Chevron	W1-8	1

SD43 Permanent Sign Installation Table (06D8)

Sta	Side	Description	Sign Code	Width (in)	Height (in)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I. 48" Winged Slip Base Anchor (Each)	Direction Sign Faces	Remarks
39+00	R	Jct	M2-1A	21	15	12.5		1.0		S	Install New Sign
		US18	M1-4								
44+50	L	Destination Board (Butte NE 8)	D1-1A	60	18		25.0		2.0	N	Install New Sign
45+50	R	Destination Board (↑ Burke, Lake Andes →)	D1-2	108	36		25.0		2.0	S	Install New Sign
46+50	L	South	M3-3B	24	12	13.5		1.0		N	Install New Sign
		SD43	M1-5	24	24						
47+00	R	US18	M1-4	24	24		25.0		2.0	S	Install New Sign
		Direction Marker	M6-2	21	15						
		SD43	M1-5	24	24						
		End	R3-9DPB	24	12						

US281 Permanent Sign Installation Table (06D1)

Sta	Side of Road	Description	Sign Code	Width (in)	Height (in)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 10 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I. 48" Winged Slip Base Anchor (Each)	Direction Sign Faces	Remarks
1+00	R	Welcome To South Dakota	I7-4B	96	48		25.0		2.0	S	Install New Sign
1+20	R	North	M3-1A							S	Install New Sign
		US281	M1-4								
		MRM 0.02	D10-1A								
4+25	R	Livestock Inspection (Enter)	SR8-8	96	48		25.0		2.0	S	Install New Sign
4+25	L	Livestock Inspection (Exit)	SR8-8	96	48		25.0		2.0	N	Install New Sign
5+50	R	Speed Limit (65)	R2-1K	24	30	11.5		1.0		S	Install New Sign
6+25	R	Commercial Vehicles Telecopter	D8-1F	108	48		25.0		2.0	S	Install New Sign
8+00	R	State Law - Seat Belt Use Required	R16-1A	72	36		25.0		2.0	S	Install New Sign
19+00	R	Lewis & Clark Trail Marker	I-4B	24	30	12.5		1.0		SE	Install New Sign
		Direction Arrow	M6-1A	21	15					SE	
20+00	R	Gregory County	I-1	30	24	11.5		1.0		SE	Install New Sign
25+00	R	Jct	M2-1A	21	15	12.5		1.0		SE	Install New Sign
		US18	M1-4	24	24						
30+00	L	Distance Board (Spencer NE 9, O'Neill NE 41)	D2-2				25.0		2.0	NW	Install New Sign
32+00	L	South	M3-3A	24	12	12.5		1.0		NW	Install New Sign
		US281	M1-4	30	24						

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLAN BLASIUS
10/25/2025

SIGN TABLE

US18						632E3203	632E3205	632E1320	632E1340	N.A.	N.A.	110E0130				DOT USE	
Station Centerline (2nd Stationing)	Distance from Center-line to Left Edge of Sign	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 12 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks		
41+60	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
41+72	25' L	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
48+05	52' L	STOP	R1-1	36	36		7.5	11.2		1		1	NORTH	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
48+59	53' R	STOP	R1-1	30	30		5.2	10.6		1		1	SOUTH	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
53+59	25' L	Fairfax	SPECIAL	30	12	2.5		11.7		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location. See Special Sign Detail.		
		TRUCK ROUTE	M4-4P	24	12	2.0											
		(Vertical Arrow) Symbol	M6-3a	21	15	2.2											
56+46	25' L	Fairfax 1 (Right Arrow)	SPECIAL	90	24	15.0			21.5'		1	1	EAST	Perforated Tube Posts	Remove and replace existing sign assembly with new sign assembly at existing location. See Special Sign Detail. New inside post is 10.2 ft. and 11.3 ft..		
61+43	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
62+20	25' L	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
69+54	25' R	MRM 313	D10-3										EAST & WEST	Perforated Tube Post	Do not disturb existing MRM sign assembly.		
81+54	25' L	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
83+40	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
100+83	50' l	STOP	R1-1	30	30		5.2	10.6		1		1	NORTH	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
101+23	50' R	STOP	R1-1	30	30		5.2	10.6		1		1	SOUTH	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
111+30	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
111+99	25' L	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
122+10	25' R	MRM 314	D10-3										EAST & WEST	Perforated Tube Post	Do not disturb existing MRM sign assembly.		
134+85	25' L	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
135+10	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
161+62	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
163+07	25' L	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		

SIGN TABLE

US18						632E3203	632E3205	632E1320	632E1340	N.A.	N.A.	110E0130				DOT USE	
Station Centerline (2nd Stationing)	Distance from Center-line to Left Edge of Sign	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 12 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks		
175+32	25' R	MRM 315	D10-3										EAST & WEST	Perforated Tube Post	Do not disturb existing MRM sign assembly.		
187+92	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
188+51	25' L	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
206+58	50' L	STOP	R1-1	30	30		5.2	10.6		1		1	NORTH	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
206+97	50' R	STOP	R1-1	30	30		5.2	10.6		1		1	SOUTH	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
207+48	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
228+05	25' R	MRM 316	D10-3										EAST & WEST	Perforated Tube Post	Do not disturb existing MRM sign assembly.		
234+36	25' L	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
243+27	25' R	HISTORIC MARKER 1000 FT	SPECIAL	24	24	4.0		10.0		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at new location. See Special Sign Detail.		
251+07	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
252+54	25' R	Star Valley Lakeside Use Area (Left) Arrow 7 MILES	SPECIAL										WEST	Perforated Tube Posts	Do not disturb existing sign assembly.		
		BOAT RAMP CLOSED	SPECIAL														
260+08	50' L	STOP	R1-1	30	30		5.2	10.6		1		1	NORTH	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
260+57	50' R	STOP	R1-1	30	30		5.2	10.6		1		1	SOUTH	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
264+76	25' L	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
270+17	25' L	Star Valley Lakeside Use Area 7 MILES (Right) Arrow	SPECIAL										EAST	Perforated Tube Posts	Do not disturb existing sign assembly.		
		BOAT RAMP CLOSED	SPECIAL														
271+96	25' L	HISTORIC MARKER 1000 FT	SPECIAL	24	24	4.0		10.0		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at new location. See Special Sign Detail.		
280+97	25' R	MRM 317	D10-3										EAST & WEST	Perforated Tube Post	Do not disturb existing MRM sign assembly.		
281+14	25' L	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
282+97	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
304+30	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
322+46	25' L	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
325+95	50' L	STOP	R1-1	30	30		5.2	10.6		1		1	NORTH	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		

SIGN TABLE

US18						632E3203	632E3205	632E1320	632E1340	N.A.	N.A.	110E0130				DOT USE	
Station Centerline (2nd Stationing)	Distance from Center-line to Left Edge of Sign	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	2.5"x2.5" Perforated Tube Post 12 Ga. (Ft)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	(N.A.B.I.) 48" Winged Slip Base Anchor (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks		
333+86	25' R	MRM 318	D10-3										EAST & WEST	Perforated Tube Post	Do not disturb existing MRM sign assembly.		
342+66	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
357+12	25' R	(RIGHT) CURVE ARROW	W1-2 R	30	30		6.3	11.7		1		1	WEST	Perforated Tube Post	Remove existing sign assembly at 351+12 R. Install new sign at 357+12 R, or approximately 100 ft. from the beginning of the curve.		
360+16	25' L	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	WEST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
365+84	50' L	STOP	R1-1	30	30		5.2	10.6		1		1	NORTH	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
366+54	50' R	STOP	R1-1	30	30		5.2	10.6		1		1	SOUTH	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
376+67	25' R	NO PASSING ZONE	W14-3	48	36		5.6	10.2		1		1	EAST	Perforated Tube Post	Remove and replace existing sign assembly with new sign assembly at existing location.		
377+91	25' L	(LEFT) CURVE ARROW	W1-2 L	30	30		6.3	11.7		1		1	EAST	Perforated Tube Post	Remove existing sign assembly at 381+21 L. Install new sign at 377+91 L, or approximately 100 ft. from the beginning of the curve.		
385+17	25' R	(LEFT) CURVE ARROW	W1-2 R	30	30		6.3	11.7		1		1	WEST	Perforated Tube Post	Remove existing sign assembly at 380+97 R. Install new sign at 385+17 R, or approximately 100 ft. from the beginning of the curve.		
386+53	25' R	MRM 319	D10-3										EAST & WEST	Perforated Tube Post	Do not disturb existing MRM sign assembly.		
399+04	25' L	(RIGHT) CURVE ARROW	W1-2 R	30	30		6.3	11.7		1		1	EAST	Perforated Tube Post	Remove existing sign assembly at 405+74 L. Install new sign at 399+04 L, or approximately 100 ft. from the beginning of the curve.		
415+29	25' R	(LEFT) CURVE ARROW	W1-2 L	30	30		6.3	11.7		1		1	WEST	Perforated Tube Post	Remove existing sign assembly at 410+29 R. Install new sign at 415+29 R, or approximately 100 ft. from the beginning of the curve.		
425+89	25' L	(RIGHT) CURVE ARROW	W1-2 R	30	30		6.3	11.7		1		1	EAST	Perforated Tube Post	Remove existing sign assembly at 434+19 L. Install new sign at 425+89 L, or approximately 100 ft. from the beginning of the curve.		
438+24	25' R	(LEFT) CURVE ARROW	W1-2 L	30	30		6.3	11.7		1		1	WEST	Perforated Tube Post	Remove existing sign assembly at 435+04 R. Install new sign at 438+24 R, or approximately 100 ft. from the beginning of the curve.		
439+25	25' R	MRM 320	D10-3										EAST & WEST	Perforated Tube Post	Do not disturb existing MRM sign assembly.		
					TOTAL	**29.7**	**238.0**	**475.6**	**21.5**			**46**					

FOR BIDDING PURPOSES ONLY

Tables of Object Marker Quantities

067V Object Marker Table

Station	Type 2 Object Marker Back to Back (Each)	Description
US18 West		
37+50	2	1 Each Side of Road
US18 East		
4+84	2	1 Each Side of Road
18+30	2	1 Each Side of Road
30+51	2	1 Each Side of Road
Non-grading US18		
127+48	2	1 Each Side of Road
162+55	4	2 Each Side of Road
195+00	2	1 Each Side of Road
210+00	4	2 Each Side of Road
443+23	2	1 Each Side of Road
Total	22	

06D8 Object Marker Table

Station	Type 2 Object Marker Back to Back (Each)	Description
SD43		
37+91	2	1 Each Side of Road
46+87	2	1 Each Side of Road
Total	4	

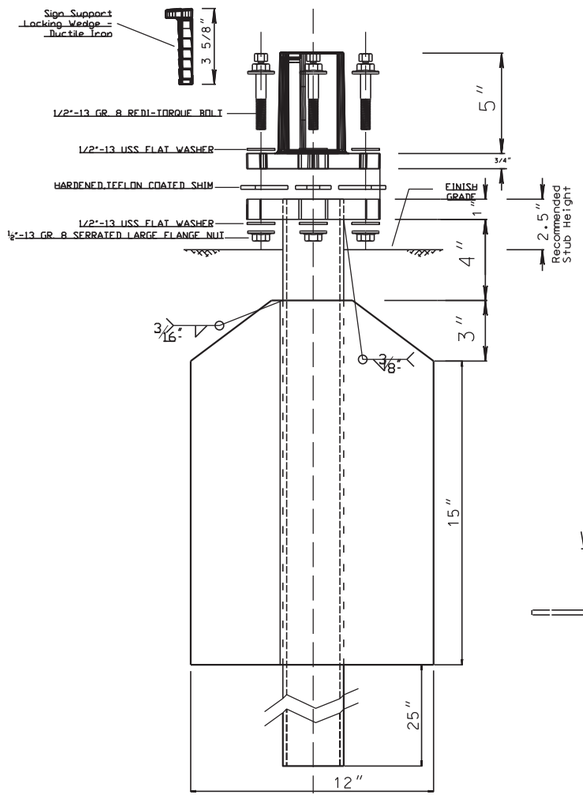
06D1 Object Marker Table

Station	Type 2 Object Marker Back to Back (Each)	Description
US281		
5+25	4	2 Each Side of Road
29+00	2	1 Each Side of Road
Total	6	

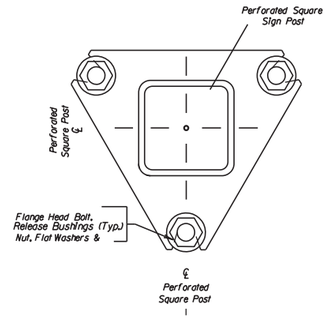
Table of Delineation Quantities

PCN	Station	To	Station	Distance	Spacing	4"x4" White Delineator Back to Back with 1.12 Lb/Ft Post (Each)	Description
067V (West)	17+00		76+08	5908	528	23	Both Sides of Road/Staggered Spacing
067V (East)	-0+75		43+26	4401	528	17	Both Sides of Road/Staggered Spacing
06D8 (SD43)	21+30		49+42	2812	528	11	Both Sides of Road/Staggered Spacing
06D1 (US281)	0+33		36+86	3653	528	14	Both Sides of Road/Staggered Spacing
					Total	65	

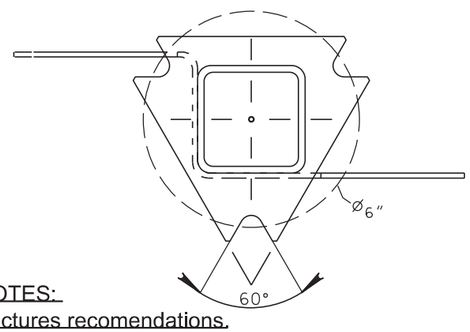
2 1/2" SQUARE STEEL PERFORATED TUBE POST WINGED BREAKAWAY ANCHOR DETAILS FOR SOIL INSTALLATIONS (Typical)



TOP POST RECEIVER for 2-1/2" SQUARE POST



WINGED BOTTOM SOIL STUB



Dimensions shown may vary by Manufacturer. The Contractor will use Manufacturer recommended assembly parts and procedures. Sign installations must meet MASH NCHRP 350 breakaway requirements.

NOTES:

1. Install per manufactures recomendations.
2. Bolt system used will supply proper torque.

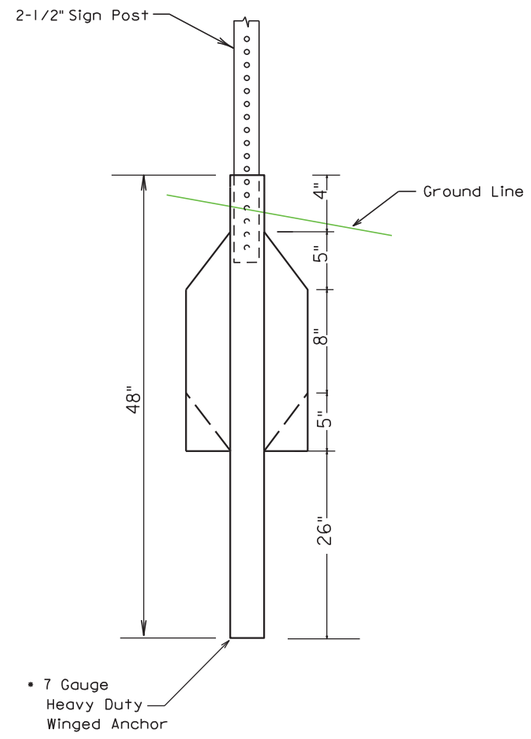
GENERAL NOTES-

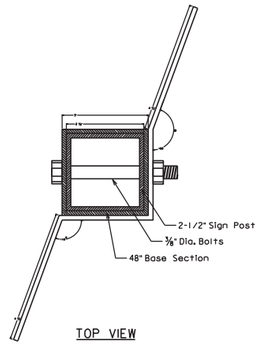
1. The manufacturer must provide certification that the breakaway system furnished will develop the full shear and bending yield strength of the sign post section being spliced.

2. All posts must be galvanized in accordance with ASTM A653, Des. G-90.

3. All hardware must be galvanized in accordance with ASTM A153.

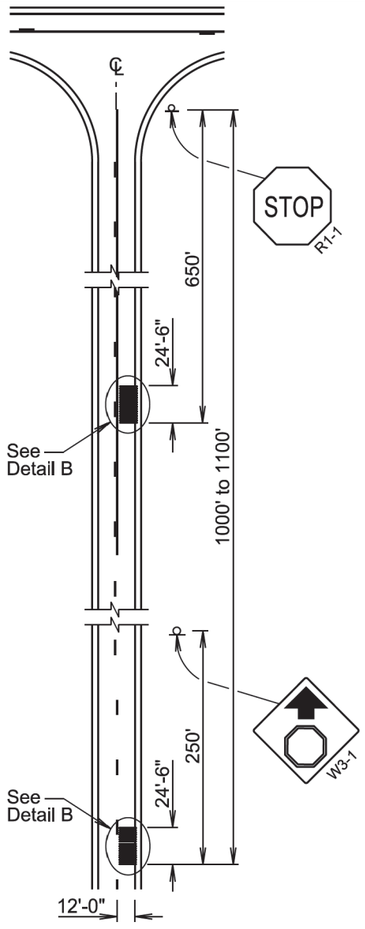
2 1/2" SQUARE STEEL PERFORATED TUBE POST WINGED BREAKAWAY NON-SLIP BASE ANCHOR DETAILS FOR SOIL INSTALLATIONS (Typical)



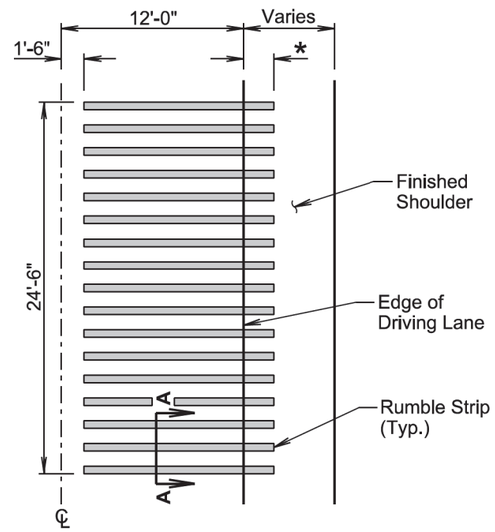


TOP VIEW

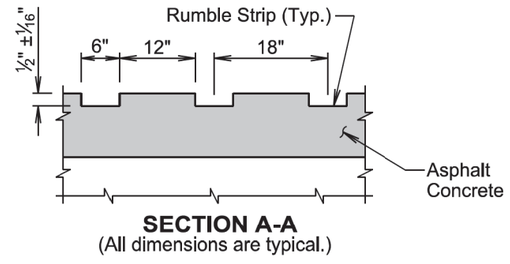
Dimensions shown may vary by Manufacturer. The Contractor shall use Manufacturer recommended assembly parts and procedures. Sign installations must meet MASH NCHRP 350 breakaway requirements.



PLAN VIEW



DETAIL B
PLAN VIEW



SECTION A-A
(All dimensions are typical.)

GENERAL NOTES:

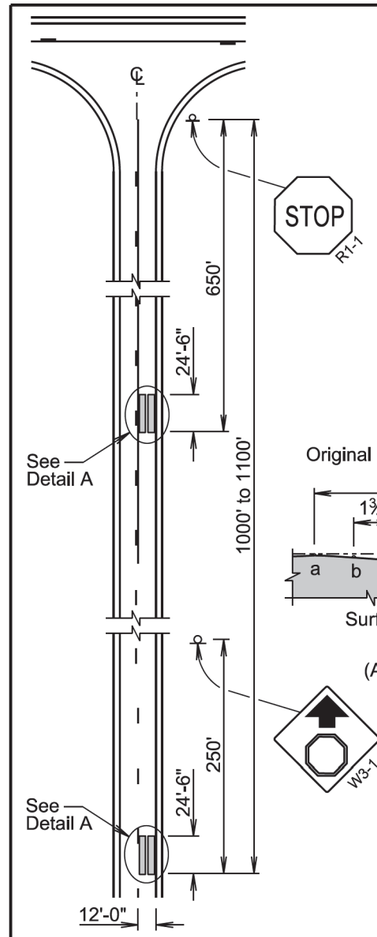
Transverse rumble strips will be constructed by grinding, routing, or cutting recessed indentations into the asphalt concrete as approved by the Engineer. The transverse rumble strips will receive a flush seal or fog seal as specified in the plans.

* The transverse rumble strips will extend into the finished shoulder as approved by the Engineer.

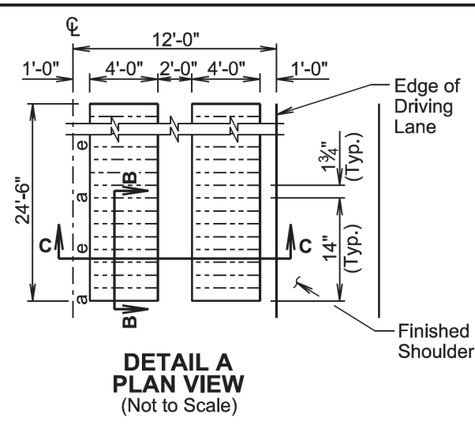
Measurement of the recessed transverse rumble strips will be to the nearest foot. Payment for constructing the recessed transverse rumble strips will be at the contract unit price per foot for "Grind 6" Transverse Rumble Strip in Asphalt Concrete".

January 22, 2021

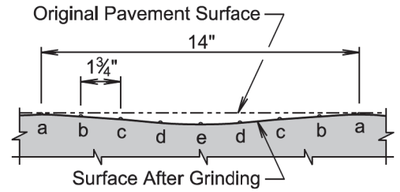
Published Date: 2026	SDDOT	TRANSVERSE RUMBLE STRIP IN ASPHALT CONCRETE HIGHWAY ADJACENT TO STOP CONTROLLED INTERSECTION	PLATE NUMBER 320.45
			Sheet 1 of 1



PLAN VIEW

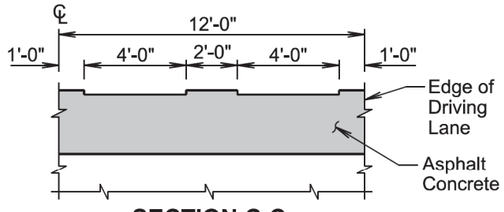


DETAIL A
PLAN VIEW
(Not to Scale)



SECTION B-B
(All dimensions are typical.)

SINUSOIDAL GRINDING	
Location	☑ Depth (In.)
a	1/16
b	5/32
c	9/32
d	7/16
e	½



SECTION C-C
(All dimensions are typical.)

GENERAL NOTES:

Transverse rumble strips will be constructed by grinding continuous sinusoidal indentations in the asphalt concrete pavement as approved by the Engineer. The transverse rumble strips will receive a flush seal or fog seal as specified in the plans.

☑ The sinusoidal transverse rumble strips construction grinding tolerance will be ± 1/16 inch.

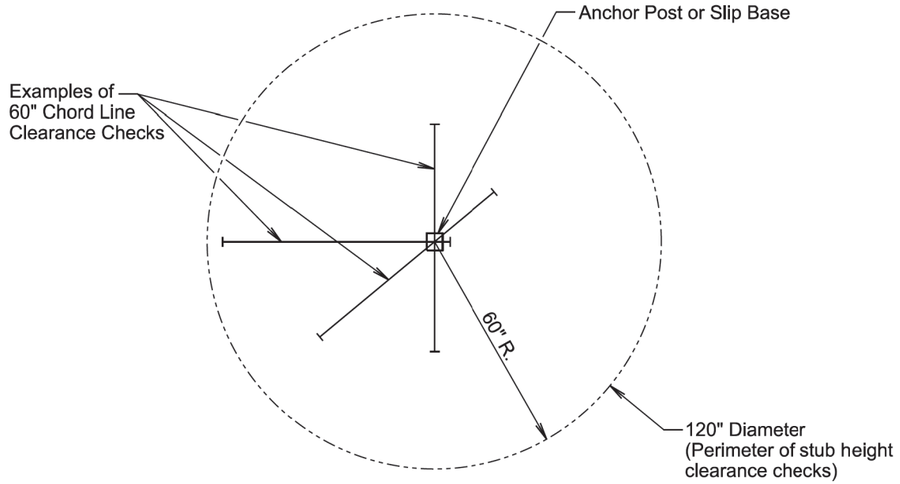
Measurement of the sinusoidal transverse rumble strips will be to the nearest square foot. Payment for constructing the sinusoidal transverse rumble strips will be at the contract unit price per square foot for "Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete Pavement".

January 22, 2021

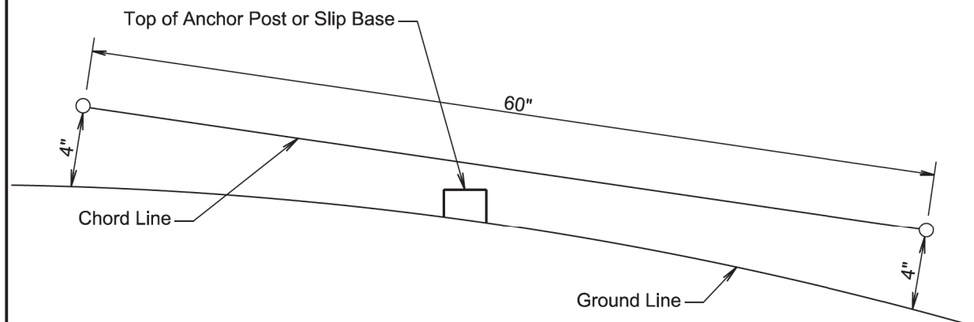
Published Date: 2026	SDDOT	SINUSOIDAL TRANSVERSE RUMBLE STRIP IN ASPHALT CONCRETE HIGHWAY ADJACENT TO STOP CONTROLLED INTERSECTION	PLATE NUMBER 320.46
			Sheet 1 of 1

FOR BIDDING PURPOSES ONLY

Plotting Date: 1/5/2026



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

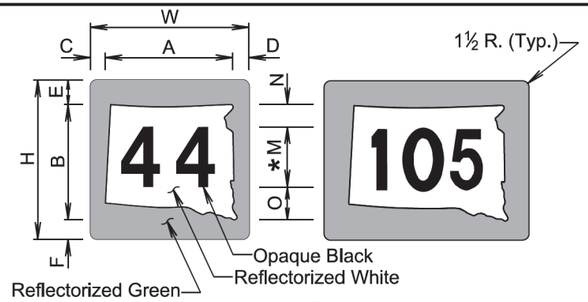
GENERAL NOTES:

The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

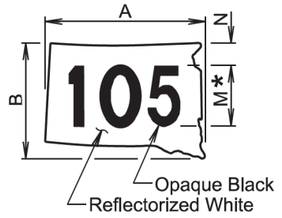
January 22, 2021

Published Date: 2026	SDDOT	**BREAKAWAY SUPPORT STUB CLEARANCE**	PLATE NUMBER 632.18 Sheet 1 of 1



M1-5

SIGN CODE	WxH	A	B	C	D	E	F	M*	N	O
M1-5	24x24	20½	18	2	1½	3½	2½	12D	2	4
M1-5 **	30x24	24	18	2¼	1¾	3½	2½	12D	2	4
M1-5	30x30	25⅝	22½	2½	1⅞	4⅜	3⅛	15D	2½	5
M1-5	36x36	30¾	27	3	2¼	5¼	3¾	18D	3	6

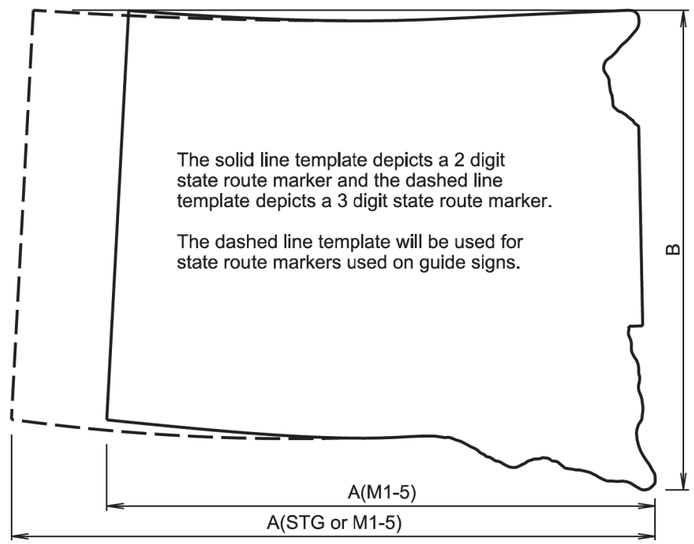


STG

SIGN CODE	AxB	M*	N
STG-24	24x18	10D	4
STG-32	32x24	12D	4¾
STG-48	48x36	18D	7
STG-64	64x48	24D	9½

* In the few cases where there is not enough space for the numerals, the standard D series font may be replaced with C series font if approved by the Engineer.

** 3 Digits



TEMPLATE FOR STATE ROUTE MARKER

GENERAL NOTES:

The unit for all dimensions shown is inches.

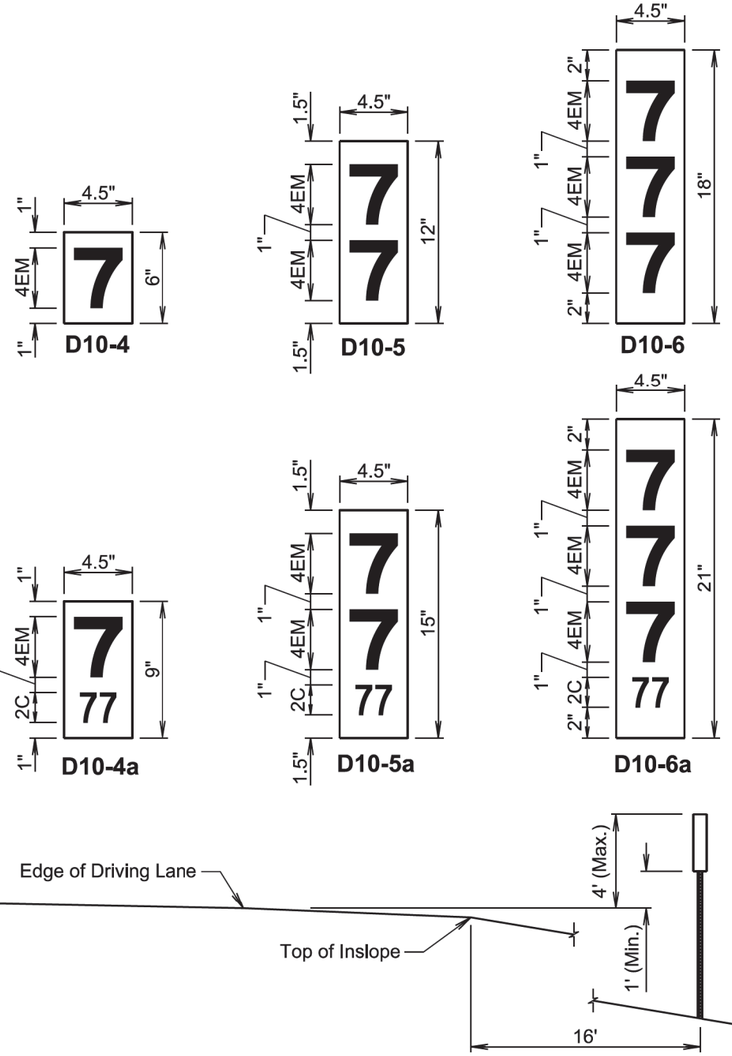
Numerals will be D series font for all state route markers except as noted above.

December 23, 2019

Published Date: 2026	SDDOT	**STATE ROUTE MARKERS**	PLATE NUMBER 632.20 Sheet 1 of 1

FOR BIDDING PURPOSES ONLY

Plotting Date: 02/26/2026



ELEVATION VIEW

GENERAL NOTES:

Background will be high intensity green.

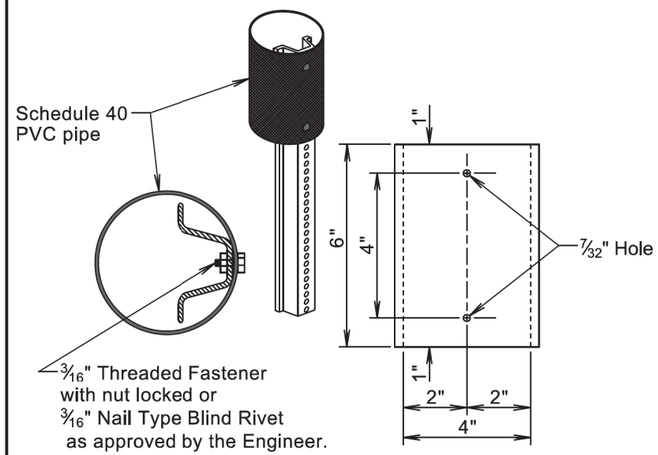
Legend will be high intensity white.

Signs will have squared corners with no border.

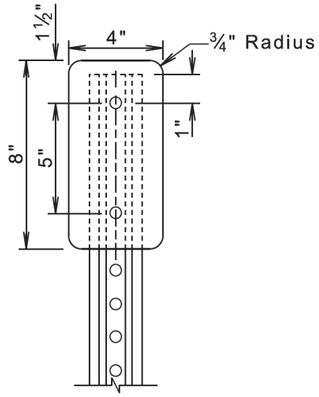
Sign locations will be staked by the Engineer.

December 23, 2019

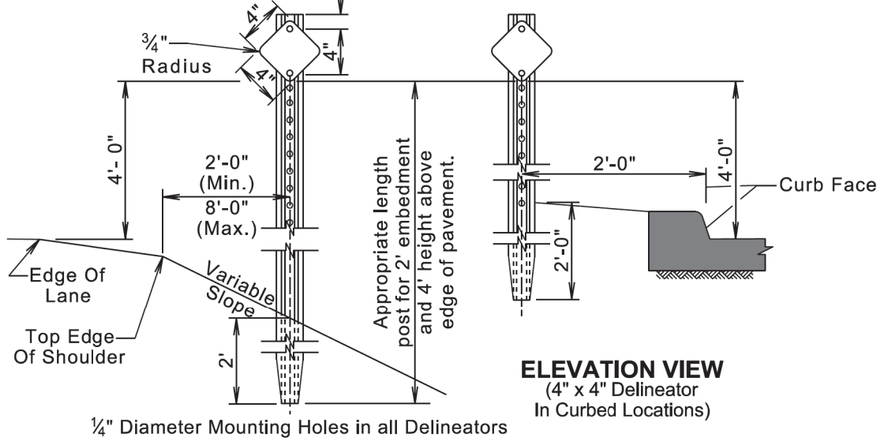
Published Date: 2026	SDDOT	NON–INTERSTATE MILEAGE REFERENCE MARKERS	PLATE NUMBER 632.30
			Sheet 1 of 1



ELEVATION VIEW
(4" Tubular delineator mounted on post)



ELEVATION VIEW
(4" x 8" Delineator)



¼" Diameter Mounting Holes in all Delineators

ELEVATION VIEW
(4" x 4" Delineator In Curbed Locations)

ELEVATION VIEW
(4" x 4" Delineators)

GENERAL NOTES:

Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

March 31, 2024

Published Date: 2026	SDDOT	DELINEATOR INSTALLATION DETAIL	PLATE NUMBER 632.42
			Sheet 1 of 1

PLOT SCALE - 1:200

PLOT NAME - 1

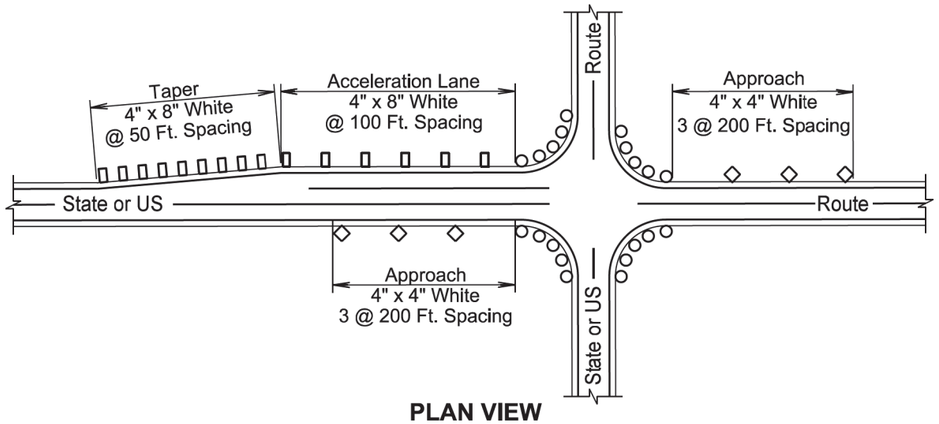
.PLOTTED FROM - TRM111118

FILE - ...\STANDARDPLATES_067V.DGN

FOR BIDDING PURPOSES ONLY

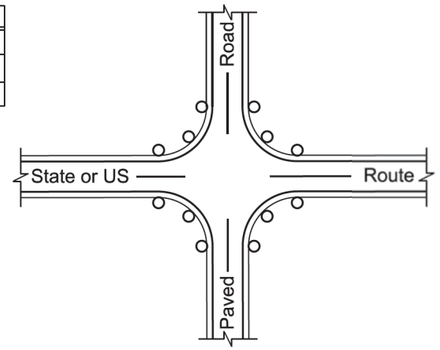
Plotting Date: 02/26/2026

PLOT SCALE - 1:200



PLAN VIEW
(State or US Highway Intersection)

LEGEND
◇ 4" x 4" White Delineator
▯ 4" x 8" White Delineator
○ 4" x 6" White Tubular Delineator



PLAN VIEW
(Paved County Crossroad)

GENERAL NOTES:

At all intersections with State or US highways and paved county roads:

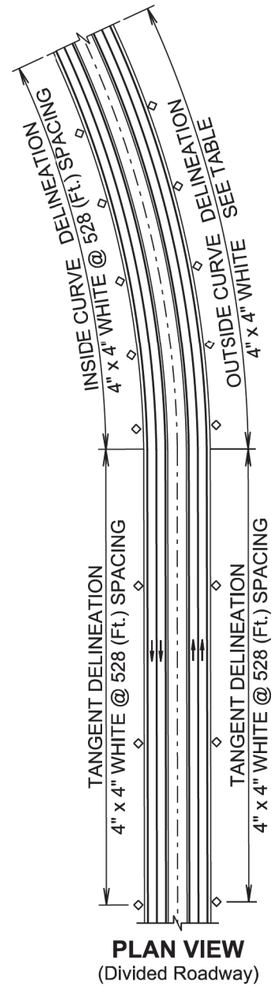
For radii greater than 100 feet, place 5 tubular white delineators on equally spaced posts around the turning radius.

For radii greater than 50 feet up to 100 feet, place 4 tubular white delineators on equally spaced posts around the turning radius.

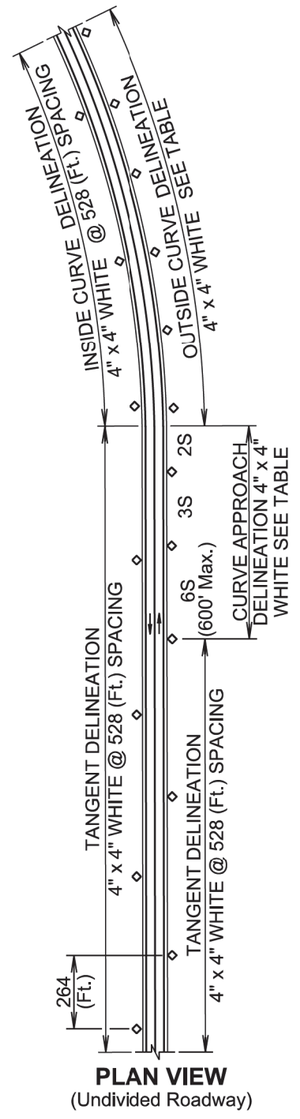
For radii of 50 feet or less, place 3 tubular white delineators on equally spaced posts around the turning radius.

November 19, 2020

Published Date: 2026	SDDOT	DELINEATOR AT INTERSECTIONS	PLATE NUMBER 632.44
			Sheet 1 of 1



PLAN VIEW
(Divided Roadway)



PLAN VIEW
(Undivided Roadway)

March 31, 2024

Published Date: 2026	SDDOT	DELINEATOR INSTALLATION SPACING	PLATE NUMBER 632.46
			Sheet 1 of 2

PLOT NAME - 2
FILE - ...\STANDARDPLATES_067V.DGN
.PLOTTED FROM - TRMI11118

FOR BIDDING PURPOSES ONLY

GENERAL NOTES:

Delineators will be located from 2 to 8 feet outside of the outer edge of shoulder. When a roadside barrier or other obstruction intrudes into the space between the pavement edge and the extension of the line of delineators, the delineators should be in line with the barrier or in line with the innermost edge of the obstruction.

When normal spacing is interrupted by driveways, crossroads, or approaches, delineators falling within such areas may be moved in either direction a distance not exceeding one-quarter of the standard spacing. Delineators still falling within such areas should be eliminated.

The spacing for specific radii may be interpolated from the table. The minimum spacing should be 20 feet. The spacing on curves should not exceed 300 feet. In advance of or beyond a curve, and proceeding away form the end of the curve, the spacing of the first delineator is 2S, the second 3S, and the third 6S, but not to exceed 300 feet. S refers to the delineator spacing for specific radii computed from the formula $S = 3\sqrt{R - 50}$. The distances for S shown in the table were rounded to the nearest 5 feet.

Curve approach delineation is not required if curve delineation spacing exceeds 100 ft.

Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

DELINEATOR SPACING OUTSIDE CURVE				
Radius of Curve (Ft.)	Curve Delineator Spacing (Ft.)	Curve Approach Spacing (Ft.)		
		A	B	C
50	20	40	65	125
115	25	50	75	150
150	30	60	90	180
180	35	70	110	215
250	40	85	125	250
300	45	95	140	285
400	55	110	170	300
500	65	125	190	300
600	70	140	210	300
700	75	150	230	300
800	80	165	245	300
900	85	175	260	300
1000	90	185	275	300

March 31, 2024

Published Date: 2026

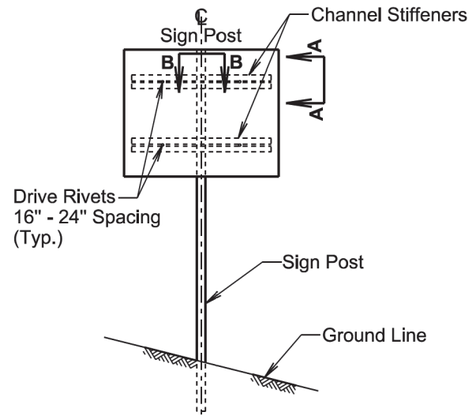
SDDOT

DELINEATOR INSTALLATION SPACING

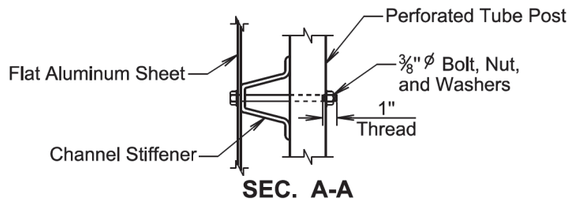
PLATE NUMBER 632.46

Sheet 2 of 2

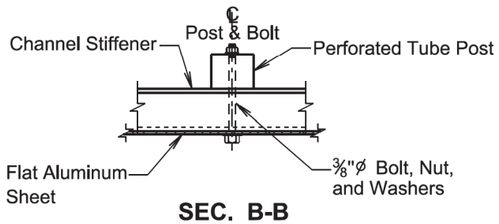
PLOT SCALE - 1:200
PLOT NAME - 3
FILE - ...\STANDARDPLATES_067V.DGN
PLOTTED FROM - TRMI11118



ELEVATION VIEW
(One post breakaway sign supports.)



SEC. A-A

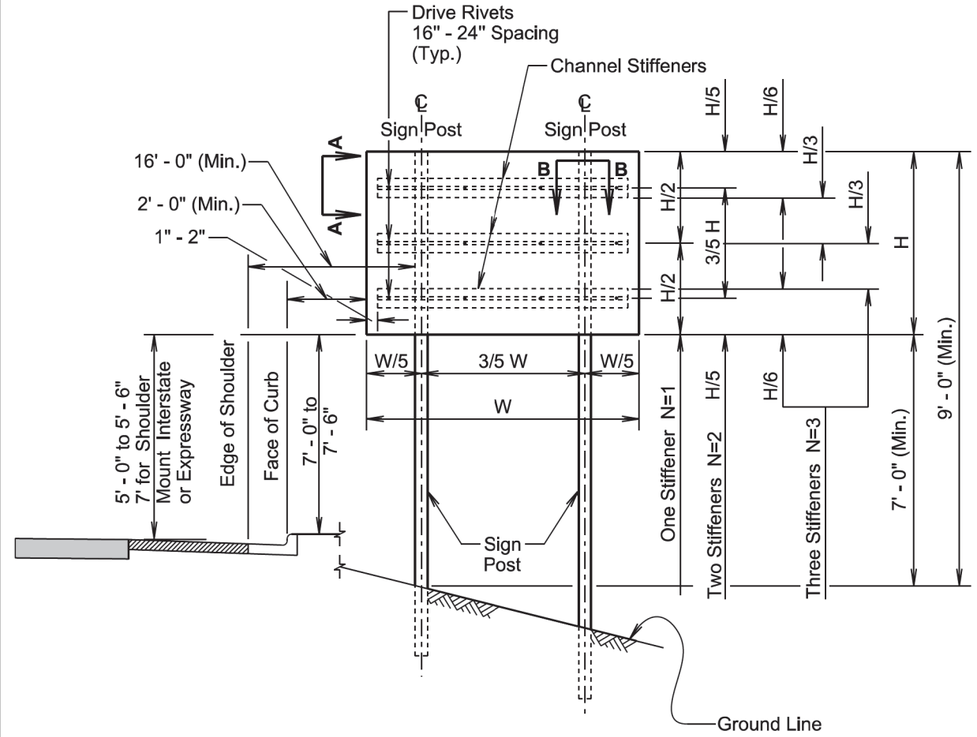


SEC. B-B
(Typical sign and stiffener details.)

ø A plastic washer, as recommended by the sheeting manufacturer, will be installed between the sign face and the metal washer shown.

November 19, 2020

Published Date: 2026	SDDOT	*SIGN STIFFENER DETAILS*	*PLATE NUMBER* 632.60
			Sheet 1 of 2



TWO POST BREAKAWAY SIGN SUPPORTS

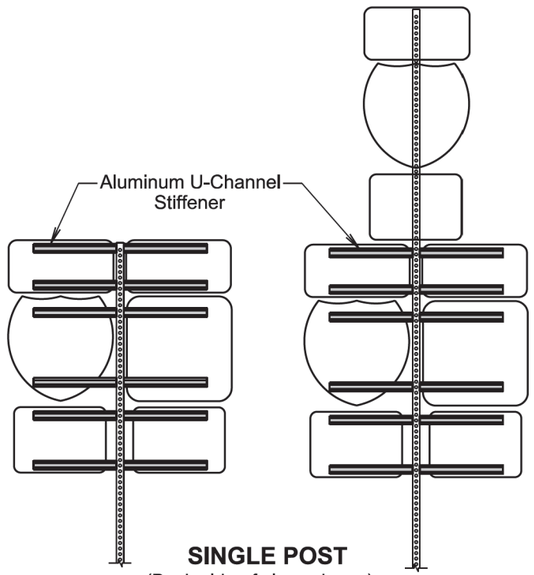
GENERAL NOTES:

The number of stiffeners used (N) will be as follows:
If H < = 2' - 0" then N = 1
if 2' - 0" < H < = 8' - 0" then N = 2
if 8' - 0" < H < = 15' - 0" then N = 3
where H is the vertical dimension of the sign.

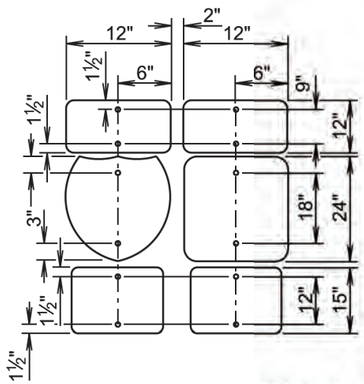
A minimum of two bolts will be required to fasten the sign to each post.

November 19, 2020

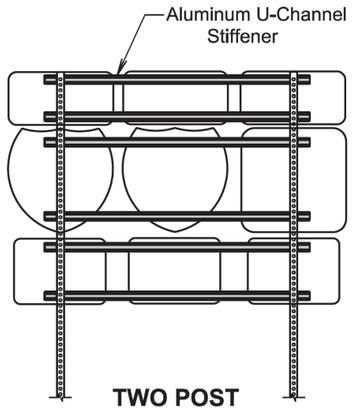
Published Date: 2026	SDDOT	*SIGN STIFFENER DETAILS*	*PLATE NUMBER* 632.60
			Sheet 2 of 2



SINGLE POST
(Back-side of signs shown)



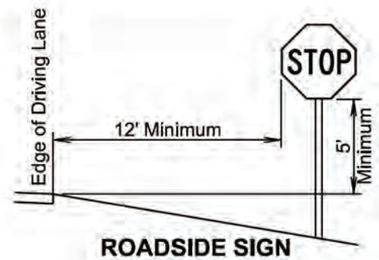
TYPICAL ROUTE MARKER BOLT HOLE LOCATIONS



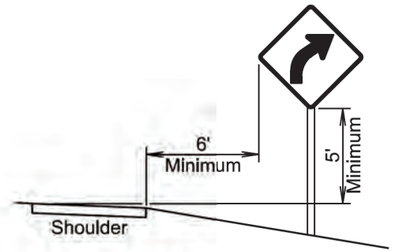
TWO POST
(Back-side of signs shown)

November 19, 2020

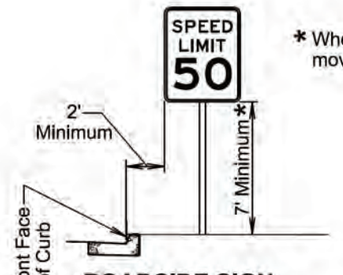
Published Date: 2026	SDDOT	MULTIPLE ROUTE MARKER SIGN STIFFENER INSTALLATION DETAILS	PLATE NUMBER 632.62
			Sheet 1 of 1



ROADSIDE SIGN IN RURAL AREA

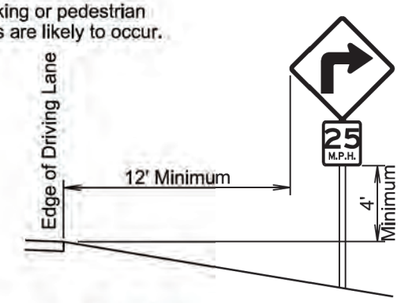


ROADSIDE SIGN IN RURAL AREA
(If shoulder width is greater than 6 foot)

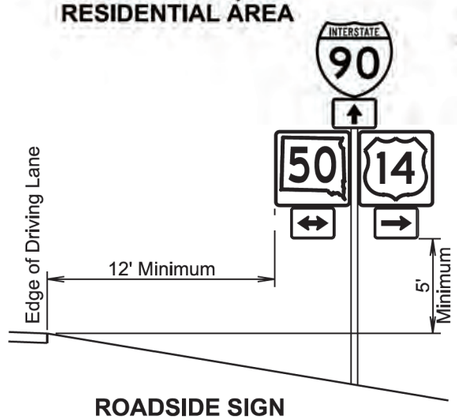


ROADSIDE SIGN IN BUSINESS, COMMERCIAL, OR RESIDENTIAL AREA

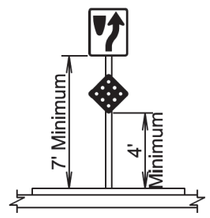
* Where parking or pedestrian movements are likely to occur.



WARNING SIGN ADVISORY SPEED PLAQUE IN RURAL AREA



ROADSIDE SIGN IN RURAL AREA



SIGN ON NOSE OF MEDIAN

April 8, 2025

Published Date: 2026	SDDOT	OFFSETS FOR SIGN INSTALLATION	PLATE NUMBER 632.90
			Sheet 1 of 1

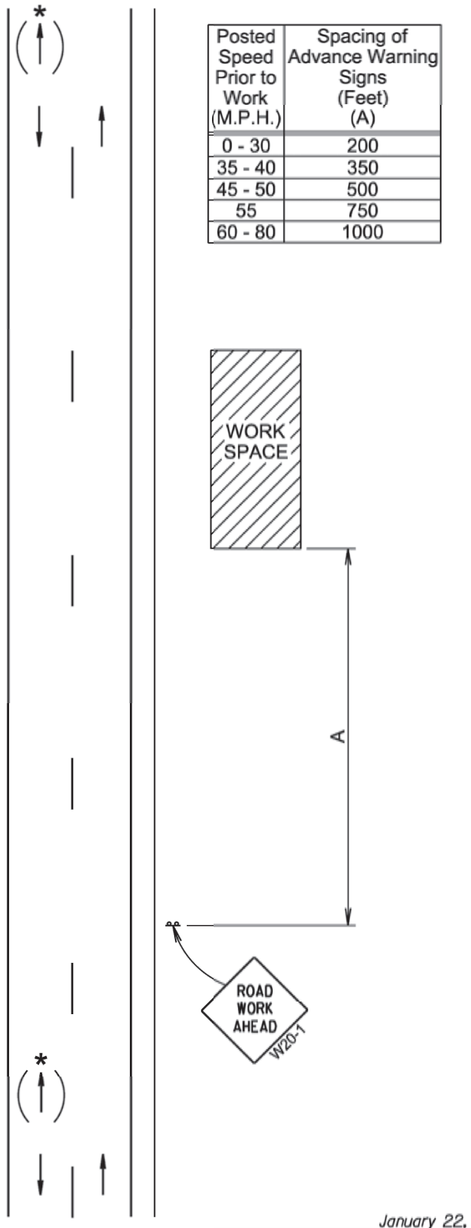
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated will be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

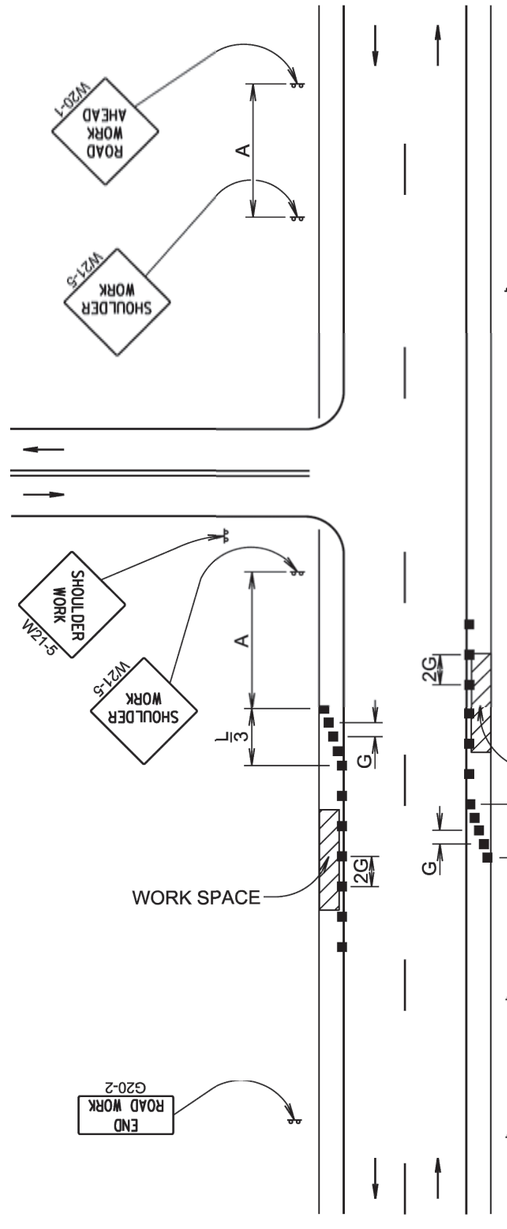
For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 80	1000

January 22, 2021

Published Date: 2026	SDDOT	WORK BEYOND THE SHOULDER	PLATE NUMBER 634.01
			Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45	500	600	25
50	500	600	50
55	750	660	50
60 - 65	1000	780	50

■ Channelizing Device

END ROAD WORK
G20-2

The channelizing devices will be drums or 42" cones if traffic control must remain overnight.

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

January 22, 2021

Published Date: 2026	SDDOT	WORK ON SHOULDERS	PLATE NUMBER 634.03
			Sheet 1 of 1

* Messages on signs will vary depending on the operation being conducted.

Vehicle-mounted signs will be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs will be covered or turned from view when work is not in progress.

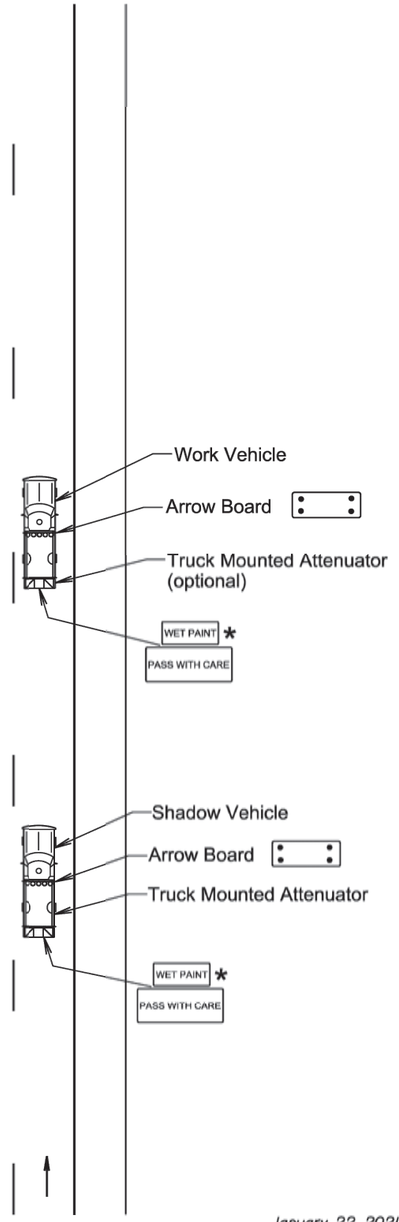
Shadow and Work vehicles will display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow boards.

Vehicle hazard warning signals will not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

When an arrow board is used, it will be used in the caution mode. Marching Diamonds are acceptable.

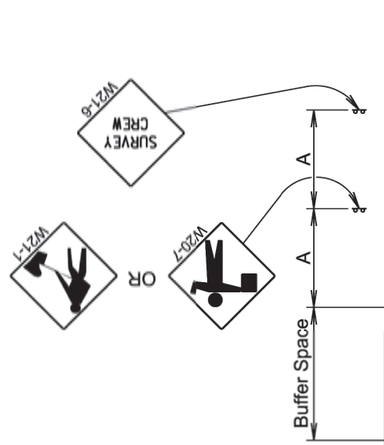
Arrow boards will, as a minimum, be Type B, with a size of 60" x 30".

All costs associated with the traffic control for mobile operation including signs, arrow boards and equipment will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".



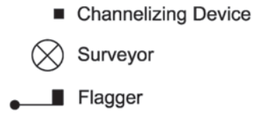
January 22, 2021

Published Date: 2026 | SDDOT | MOBILE OPERATIONS ON 2-LANE ROAD | PLATE NUMBER 634.06 | Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 45	25
≥ 50	50



Cones should be placed 6 to 12 inches on either side of center line.

Maximum spacing between cones is 100 feet.

Flags may be used to call attention to the advance warning signs.

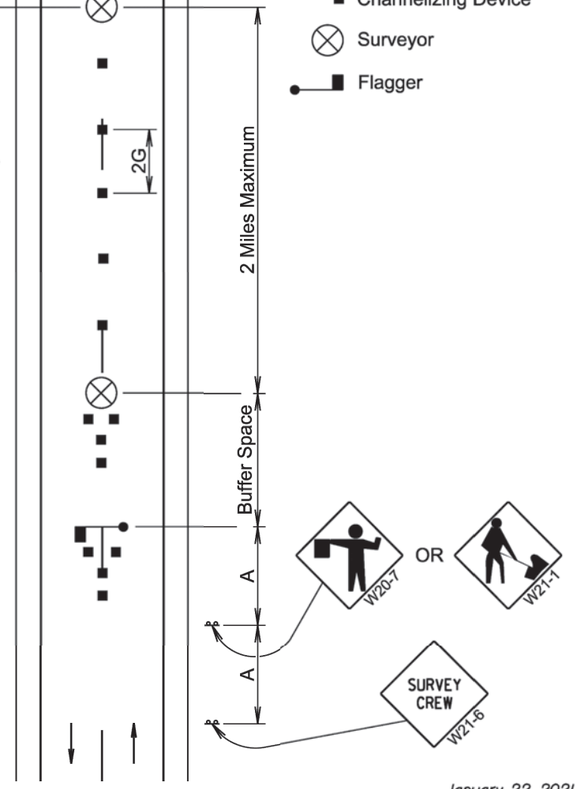
For a survey along the edge of the road or along the shoulder, the advance signing remains the same. For this situation, place cones along the edge line. A flagger is not required for work along the shoulder.

Cones may be omitted for a cross section survey.

For surveying on the center line of a high-volume road, close one lane, using the lane closure procedure. Refer to Standard Plate 634.23 for details.

A flagger should be used to protect people who must work with their backs to traffic.

A high-level warning device may be used to protect a surveying device, such as a target on a tripod.



January 22, 2021

Published Date: 2026 | SDDOT | SURVEYING ALONG CENTER LINE | PLATE NUMBER 634.21 | Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45	500	25
50	500	50
55	750	50
60 - 65	1000	50

Flagger

Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

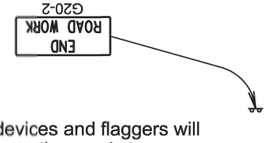
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) will be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices will be drums or 42" cones.

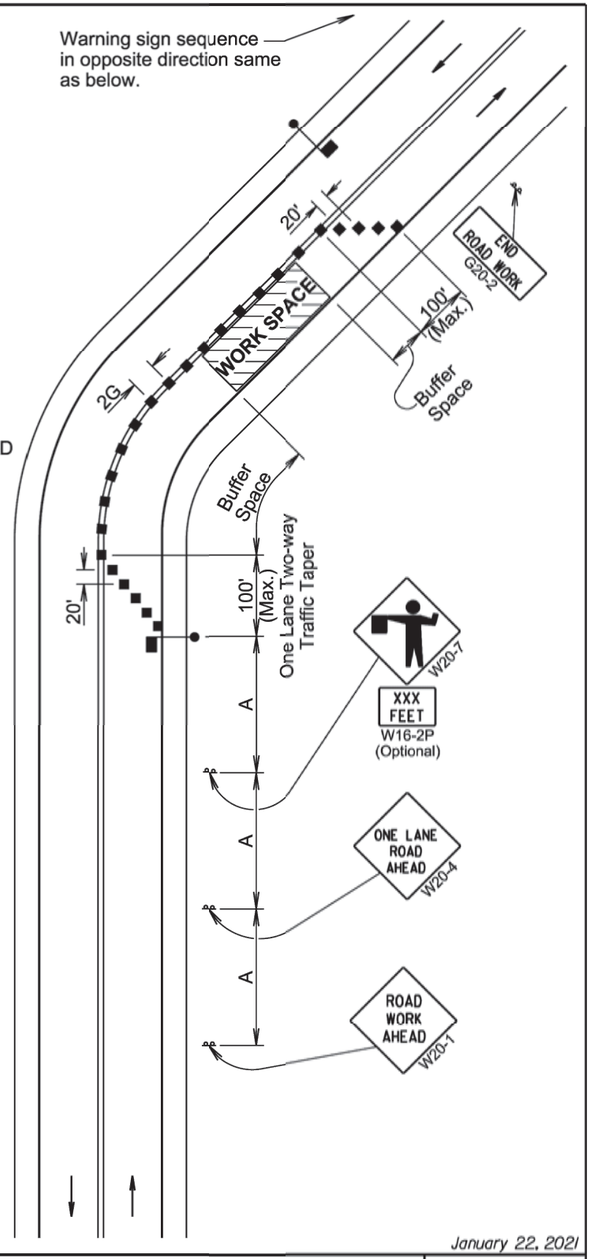
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



Channelizing devices and flaggers will be used at intersecting roads to control intersecting road traffic as required.

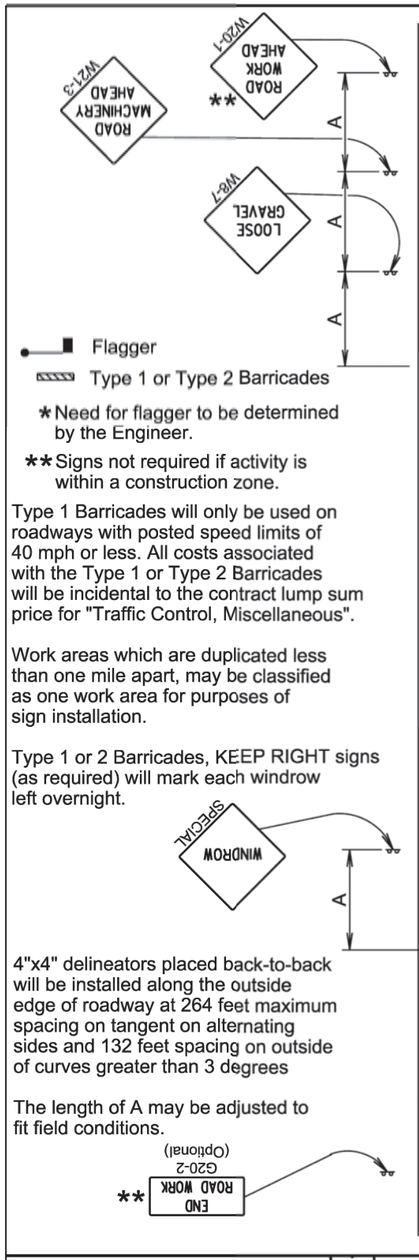
The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.



January 22, 2021

Published Date: 2026	SDDOT	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23	Sheet 1 of 1



Flagger

Type 1 or Type 2 Barricades

* Need for flagger to be determined by the Engineer.

** Signs not required if activity is within a construction zone.

Type 1 Barricades will only be used on roadways with posted speed limits of 40 mph or less. All costs associated with the Type 1 or Type 2 Barricades will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

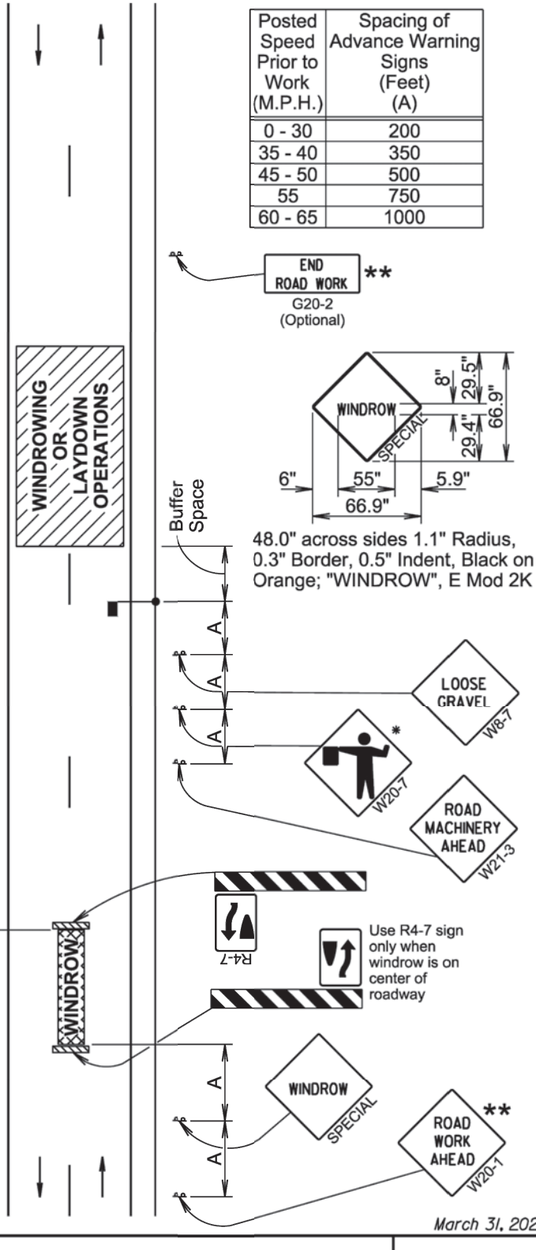
Work areas which are duplicated less than one mile apart, may be classified as one work area for purposes of sign installation.

Type 1 or 2 Barricades, KEEP RIGHT signs (as required) will mark each windrow left overnight.

4"x4" delineators placed back-to-back will be installed along the outside edge of roadway at 264 feet maximum spacing on tangent on alternating sides and 132 feet spacing on outside of curves greater than 3 degrees

The length of A may be adjusted to fit field conditions.

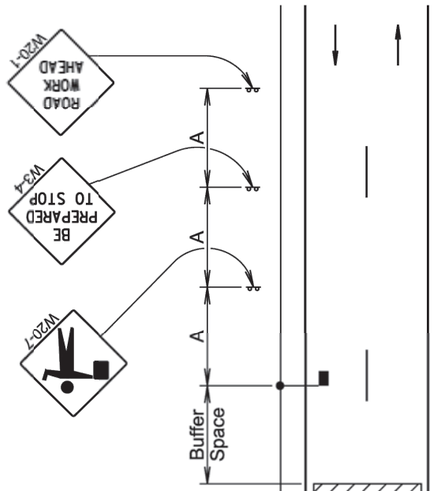
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000



48.0" across sides 1.1" Radius, 0.3" Border, 0.5" Indent, Black on Orange; "WINDROW", E Mod 2K

March 31, 2024

Published Date: 2026	SDDOT	WINDROWING OR LAYDOWN OPERATION	PLATE NUMBER 634.27	Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000

Flagger

END ROAD WORK
G20-2
(Optional)

Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645

Buffer space dependent on work site limitations.

A changeable message sign may be used in addition to the initial warning sign.

Flagger station to be lighted at night.

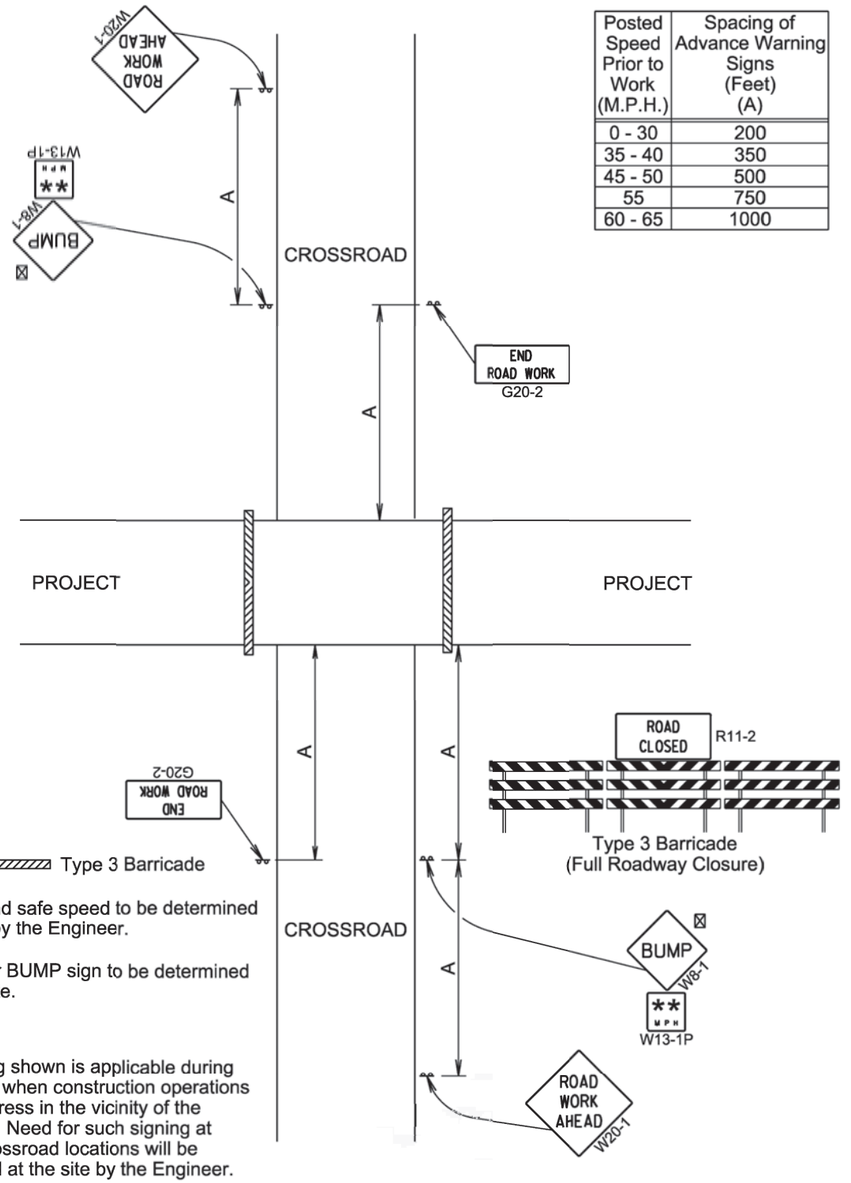
On unfinished grades, until gravel is in place, reflectorized devices (cones, tubular markers, drums, or vertical panels back-to-back) defining the outside edge of the road will be placed at 264 feet maximum spacing on tangent and at 132 feet maximum spacing on curves (greater than 3 degrees) during night time hours and during daytime hours at inactive locations where grading work is being performed. During daytime hours at active locations, a well defined path of adequate width will be provided by motor grader, normally in conjunction with flagging operations either with or without pilot car. Minimum width for one-way operations is 12 feet for two-way operations is 24 feet.

END ROAD WORK
G20-2
(Optional)

Work areas which are duplicated less than one mile apart, may be classified as one work area for purposes of sign installation unless otherwise directed by the Engineer.
PAVEMENT ENDS signs (W8-3) to be used as appropriate to warn of existing surfacing being removed.

January 22, 2021

Published Date: 2026	SDDOT	LONG TERM ROAD WORK	PLATE NUMBER 634.31	Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000

Type 3 Barricade

** Need and safe speed to be determined on site by the Engineer.

☒ Need for BUMP sign to be determined at the site.

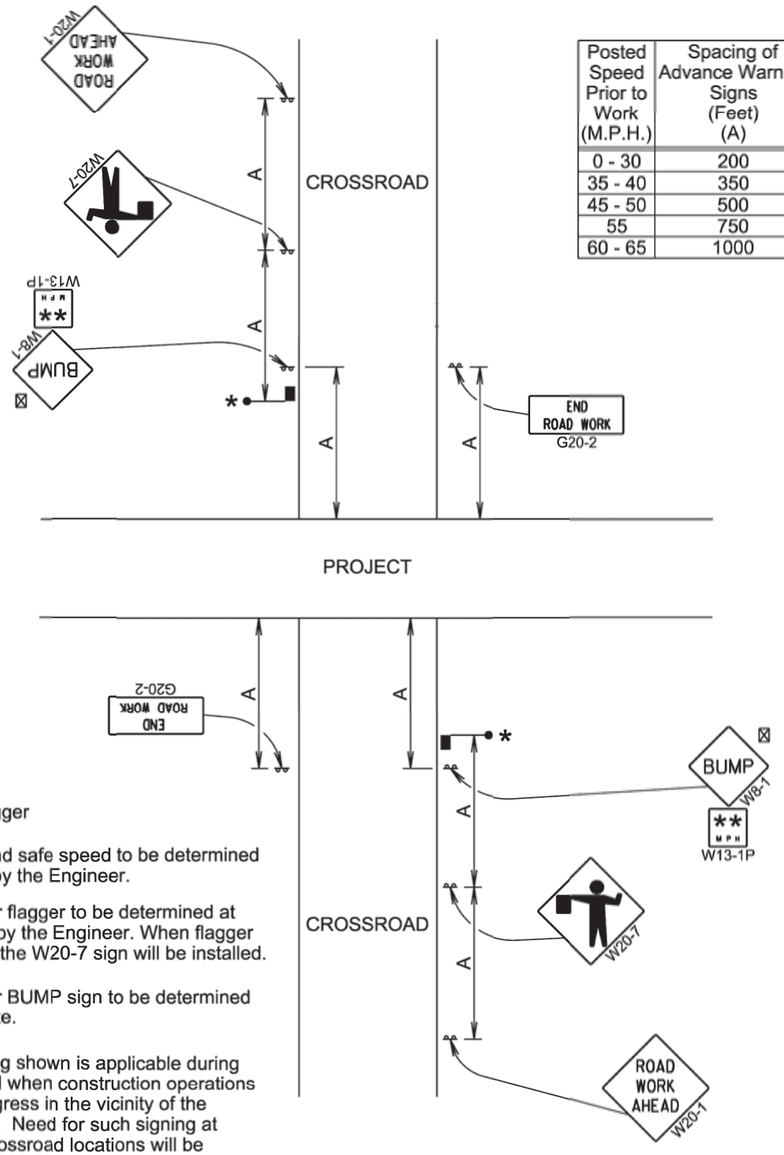
The signing shown is applicable during that period when construction operations are in progress in the vicinity of the crossroad. Need for such signing at specific crossroad locations will be determined at the site by the Engineer.

January 22, 2021

Published Date: 2026	SDDOT	PROJECT CLOSED TO TRAFFIC FROM CROSSROAD	PLATE NUMBER 634.37	Sheet 1 of 1

FOR BIDDING PURPOSES ONLY

Plotting Date: Rev:



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000

** Need and safe speed to be determined on site by the Engineer.

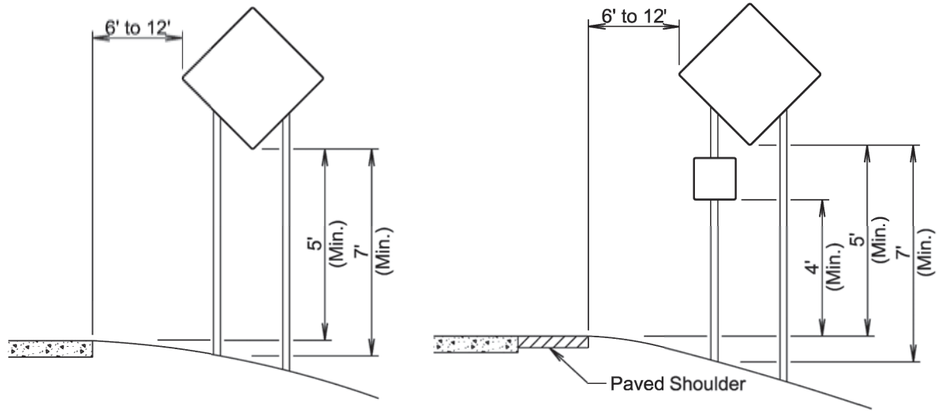
* Need for flagger to be determined at the site by the Engineer. When flagger is used, the W20-7 sign will be installed.

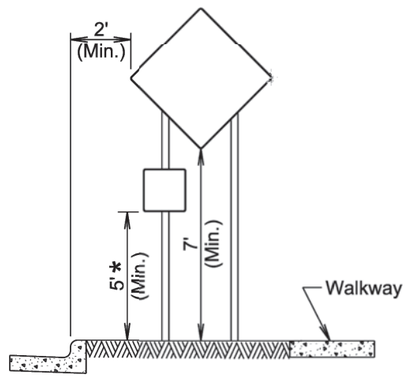
☒ Need for BUMP sign to be determined at the site.

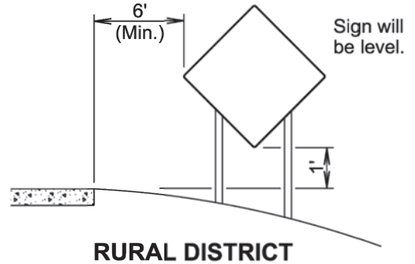
The signing shown is applicable during that period when construction operations are in progress in the vicinity of the crossroad. Need for such signing at specific crossroad locations will be determined at the site by the Engineer.

January 22, 2021

Published Date: 2026	SDDOT	PROJECT OPEN TO TRAFFIC FROM CROSSROAD	PLATE NUMBER 634.38 Sheet 1 of 1



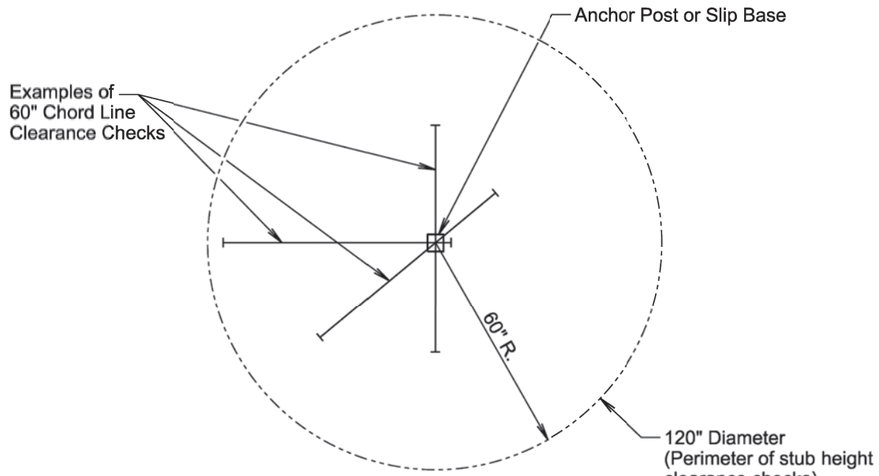




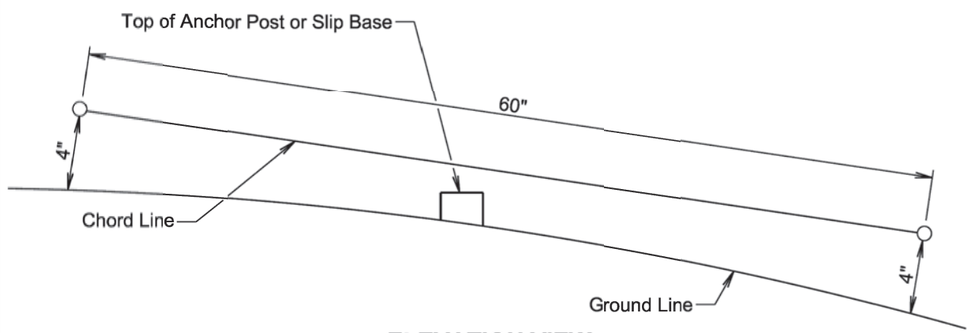
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2026	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85 Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

January 22, 2021

Published Date: 2026	SDDOT	**BREAKAWAY SUPPORT STUB CLEARANCE**	PLATE NUMBER 634.99
			Sheet 1 of 1

CONTROL DATA

FOR BIDDING PURPOSES ONLY

HORIZONTAL AND VERTICAL CONTROL POINTS

POINT	HIGHWAY	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	US 18	39+37.42	447.4' Rt.	CP REFMRK	249865.466	2351709.593	1933.82
2	US 18	121+66.74	20.3' Rt.	CP REFMRK	250051.399	2363636.952	1912.24
100	US 18	260+76.36	188.9' Lt.	CP	250530.718	2377539.882	1868.02
101	US 18	365+94.50	90.7' Lt.	CP	250488.978	2388018.303	1845.15
102	US 18	178+84.24	32.2' Rt.	CP	250150.552	2369353.606	1897.57
103	303RD STREET	8+51.24	8.3' Lt.	CP	250701.213	2398193.670	1818.81
104	US 18	101+31.15	15.6' Rt.	CP	250016.522	2361601.655	1929.86
106	US 18	58+50.00	69.2' Rt.	CP	249859.907	2353801.090	1951.82
800	US 281			CP SOUTH	246414.501	2398749.216	1820.94
801	US 18	42+60.63	70.0' Rt.	CP NE	252207.794	2399396.582	1816.52
802	US 18			CP NW	249425.529	2396465.701	1825.28
803	US 18	75+57.50	66.7' Lt.	CP NE	249993.390	2355508.783	1910.61
804	SD 43	21+30.86	72.0' Lt.	CP S	247290.920	2354314.723	1946.27
805	US 18	13+32.92	66.8' Rt.	CP NW	252515.629	2350918.954	1954.88

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/11); epoch 2010.00; Geoid 18; SF = 0.999770786
The elevations shown on this sheet are based on NAVD 88.

FOR BIDDING PURPOSES ONLY

HORIZONTAL ALIGNMENT DATA

WEST US18 MAINLINE

Type	Station			Northing	Easting
POB	0+00.00			253849.461	2350964.141
		TL= 1912.32	S 00°55'43" E		
PC	19+12.32			251937.393	2350995.137
PI	39+15.89	R= 2040.00	Delta= 88°58'04" L	249934.082	2351027.612
PT	50+79.99			249930.462	2353031.183
		TL= 558.47	S 89°53'47" E		
PI	56+38.46			249929.453	2353589.650
		TL= 2005.98	S 89°51'25" E		
PI	76+44.44			249924.441	2355595.628
		TL=138.29	S 89°51'25" E		
POE	77+82.73			249924.095	2355733.919

SD43

Type	Station			Northing	Easting
POB	0+00.00			245730.999	2355768.137
		TL= 2530.11	N 41°02'24" W		
PC	25+30.11			247639.339	2354106.906
PI	32+74.56	R= 2040.00	Delta= 40°05'48" R	248200.840	2353618.112
PT	39+57.74			248945.188	2353605.856
		TL= 984.40	N 00°56'36" W		
POE	49+42.14			249929.453	2353589.650

XR30

Type	Station			Northing	Easting
POB	0+00			249884.592	2351026.700
		TL= 672.81	N 00°50'06" W		
PC	6+72.81			250557.330	2351016.896
PI	8+01.62	R= 231.00	Delta= 58°17'18" R	250686.122	2351015.019
PT	9+07.81			250755.418	2351123.598
		TL= 224.79	N 57°27'13" E		
POE	11+32.60			250876.352	2351313.087

EAST US18 MAINLINE

Type	Station			Northing	Easting
POB	-1+00			249252.023	2396288.812
		TL= 39.65	N 62°43'48" E		
PC	-0+60.35			249270.190	2396324.056
PI	0+74.20	R= 2800.00	Delta= 5°30'09" L	249331.840	2396443.655
PT	2+08.55			249404.674	2396556.791
		TL= 1160.27	N 57°13'40" E		

EAST US18 MAINLINE (Cont.)

PC	13+68.82			250032.731	2397532.379
PI	26+88.49	R= 4550.00	Delta= 32°20'54" L	250747.071	2398641.993
PT	39+37.68			251944.269	2399197.191
		TL= 499.98	N 24°52'46" E		
POE	44+37.65			252397.846	2399407.536

XR23

Type	Station			Northing	Easting
POB	1+00.00			250728.888	2397446.809
		TL= 551.44	N 88°45'17" E		
PC	6+51.44			250740.872	2397998.118
PI	6+89.14	R= 231.00	Delta= 18°32'25" R	250741.691	2398035.813
PT	7+26.19			250730.482	2398071.812
		TL= 242.97	S 72°42'18" E		
PI	9+69.16			250658.249	2398303.796
		TL= 213.60	S 58°52'47" E		
PC	11+82.75			250547.854	2398486.653
PI	13+19.16	R= 231.00	Delta= 61°07'21" L	250477.356	2398603.425
PT	14+29.18			250545.562	2398721.550
		TL= 373.79	N 59°59'52" E		
PC	18+02.97			250732.467	2399045.252
PI	18+63.39	R= 231.00	Delta= 29°18'54" R	250762.678	2399097.575
PT	19+21.16			250763.403	2399157.989
		TL= 241.84	N 89°18'46" E		
POE	21+63.00			250766.303	2399399.810

US281

Type	Station			Northing	Easting
POB	0+00			246554.201	2398707.942
		TL= 225.00	N 00°50'16" W		
PC	2+25.00			246779.177	2398704.652
PI	10+60.35	R= 2040.00	Delta= 44°32'12" L	247614.434	2398692.436
PT	18+10.71			248201.240	2398097.909
		TL= 1060.58	N 45°22'28" W		
PC	28+71.29			248946.218	2397343.035
PI	30+90.01	R= 2040.00	Delta= 12°14'21" R	249099.852	2397187.360
PT	33+07.07			249282.997	2397067.792
		TL= 378.92	N 33°08'20" W		
POE	36+85.99			249600.295	2396860.657

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/11); epoch 2010.00; Geoid 18; SF = 0.9998770786

BAI JOB #: 23190.10

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	111	267

Plotting Date:

FOR BIDDING PURPOSES ONLY

HORIZONTAL ALIGNMENT DATA

Intermediate US18 Mainline

Type	Station			Northing	Easting
POB	48+28.00			249926.075	2356298.968
		TL= 2639.62	N 87°44'46" E		
PI	74+67.62			250029.887	2358936.550
		TL= 2637.94	N 88°47'13" E		
PI	101+05.56			250085.736	2361573.896
		TL= 2651.70	N 88°55'57" E		
PI	127+57.26			250135.133	2364225.139
		TL= 2635.11	N 89°00'47" E		
PI	153+92.37			250180.528	2366859.854
		TL= 2641.27	N 88°59'27" E		
PI	180+33.64			250227.051	2369500.712
		TL= 2641.27	N 88°59'27" E		
PI	206+74.91			250273.573	2372141.570
		TL= 5354.96	N 89°34'29" E		
PI	260+29.87			250313.328	2377496.386
		TL= 2643.42	N 88°09'50" E		
PI	286+73.29			250398.019	2380138.448
		TL= 2643.08	N 88°58'00" E		
PI	313+16.37			250445.691	2382781.102
		TL= 2647.47	N 88°58'14" E		
PI	339+63.85			250493.252	2385428.148
		TL= 1918.83	N 88°52'51" E		
PC	358+82.67			250530.735	2387346.610
PI	365+68.84	R=2818.34	Delta= 27°22'00" R	250544.138	2388032.647
PT	372+28.82			250240.683	2388648.066
		TL=1505.40	S 62°14'54" E		
PC	387+34.22			249539.711	2389980.304
PI	393+03.56	R= 3808.71	Delta= 17°00'14" L	249273.038	2390483.333
PT	398+64.53			249165.125	2391042.357
		TL= 1916.03	S 79°10'12" E		
PC	417+80.56			248805.108	2392924.258
PI	422+28.35	R= 2865.00	Delta= 17°45'59" L	248720.970	2393364.065
PT	426+68.94			248775.046	2393808.570
		TL= 1513.45	N 83°03'50" E		
PC	441+82.40			248957.814	2395310.948
PI	445+98.37	R= 2827.07	Delta= 16°44'27" L	248999.521	2395724.830
POE	450+08.42			249158.677	2396109.156

Ent12

Type	Station			Northing	Easting
POB	1+00.00			247699.694	2398485.462
		TL= 82.63	N 63°10'57" E		
PC	1+82.63			247706.971	2398559.201
PI	3+27.28	R= 231.00	Delta= 64°06'43" L	247772.234	2398688.302
PT	4+41.11			247916.873	2398685.955
		TL= 2431.43	N 00°58'32" E		
POE	28+72.53			250347.946	2398644.552

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON BLASIUS
03/25/2022

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/11); epoch 2010.00; Geoid 18; SF = 0.9998770786

LEGEND

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	112	267

Plotting Date: 10/01/2025 Rev:

- 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
- Electric Transformer/Power Junction Box
- Fence Barbwire
- Fence Chainlink
- Fence Electric
- Fence Miscellaneous
- 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 Miscellaneous
- Manhole Sanitary Sewer
- Manhole Storm Sewer
- Manhole Telephone
- Manhole Water
- Merry-Go-Round
- Microwave Radio Tower
- Miscellaneous Line
- Miscellaneous Property Corner
- Miscellaneous Post
- Overhang Or Encroachment
- Overhead Utility Line — OH —
- Parking Meter
- Pedestrian Push Button Pole
- 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
- Proposed Riprap
- Public Telephone
- Railroad Crossing Signal
- Railroad Milepost Marker
- Railroad Profile
- Railroad ROW 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 — T/F —
- 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 — P —
- Underground Gas Line — G —
- Underground High Pressure Gas Line — HG —
- Underground Sanitary Sewer — S —
- Underground Storm Sewer — S —
- Underground Tank
- Underground Telephone Line — T —
- Underground Television Cable — TV —
- Underground Water Line — W —
- 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

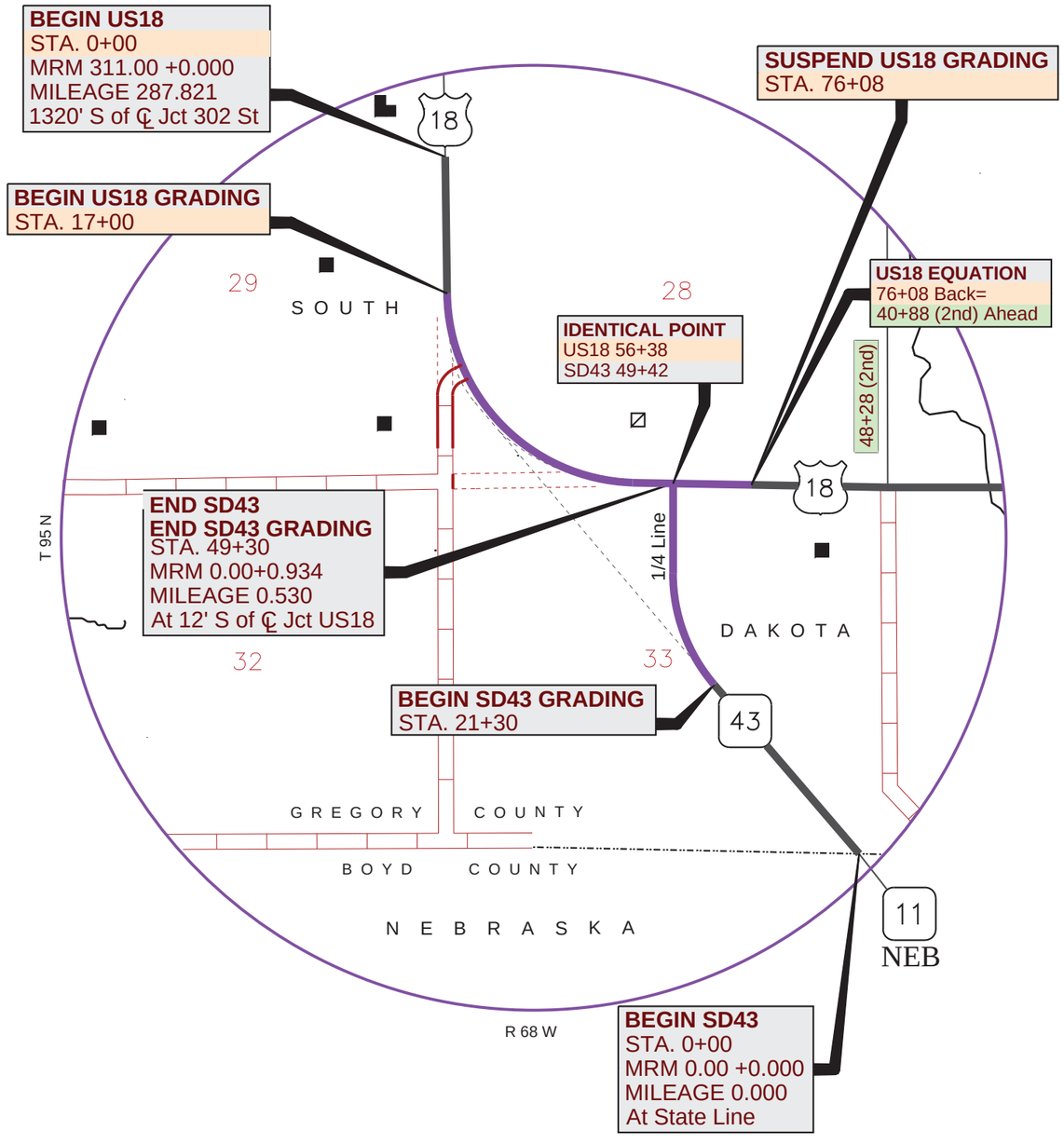
- State and National Line
- County Line
- Section Line
- Quarter Line
- Sixteenth Line
- Property Line
- Construction Line
- R. O. W. Line
- New R. O. W. Line
- Cut and Fill Limits
- Control of Access
- New Control of Access
- Proposed ROW (After Property Disposal)

- Drainage Arrow

- Remove Concrete Pavement
- Remove Concrete Driveway Pavement
- Remove Asphalt Concrete Pavement
- Remove Concrete Sidewalk
- Remove Concrete Median Pavement
- Remove Concrete Curb and/or Gutter

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

US18 & SD43


BEGIN US18
STA. 0+00
MRM 311.00 +0.000
MILEAGE 287.821
1320' S of ℄ Jct 302 St
BEGIN US18 GRADING
STA. 17+00
SUSPEND US18 GRADING
STA. 76+08
US18 EQUATION
76+08 Back=
40+88 (2nd) Ahead
48+28 (2nd)
IDENTICAL POINT
US18 56+38
SD43 49+42
END SD43
END SD43 GRADING
STA. 49+30
MRM 0.00+0.934
MILEAGE 0.530
At 12' S of ℄ Jct US18
BEGIN SD43 GRADING
STA. 21+30
BEGIN SD43
STA. 0+00
MRM 0.00 +0.000
MILEAGE 0.000
At State Line
18
18
43
11
NEB
29
28
32
33
SOUTH
DAKOTA
GREGORY COUNTY
BOYD COUNTY
NEBRASKA
T 95 N
R 68 W
1/4 Line

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13392
WAYLON
BLASIUS
03/25/2025

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190-10

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	114	267

Plotting Date: 10/01/2025 Rev: 04/17/2024 NJF

13+17 - 54' R
Take Out 18" - 60' CMP
& 2 End Sections
(Incidental Work, Grading)

27+51
Take Out 24" - 68' RCP
& 2 End Sections
(Incidental Work, Grading)

36+13 - 67' R
Take Out 18" - 51' CMP
& 2 Sloped Ends
(Incidental Work, Grading)

38+14
Take out 24" - 92' RCP
& 2 End Sections
(Incidental Work, Grading)

39+67 - 70' L
Take Out 18" - 70' CMP
& 2 End Sections
(Incidental Work, Grading)

13+59 - 54' R
Install 24" - 90' CMP
& 2 Safety Ends

6+73 - 28' L (XR30)
Install 24" - 58' CMP
& 2 Safety Ends

10+35 - 465' L (XR30)
Take Out 12" - 34' CMP
& 2 End Sections
(Incidental Work, Grading)

37+50 (102 ac)
Install 48" - 108' RCP
Skewed 25° RHF
& 2 Flared Ends

39+80 - 60' L
Install 24" - 96' CMP
& 2 Safety Ends

37+79 R
Install Class B Riprap (20.2 tons) and
Type B Drainage Fabric (30.2 SqYd)

NW1/4

Jeanne H Nelson
(INFORMATION ONLY)

1/4 LINE

SW1/4

Selle, LLLP.
Parcel 1

13+24.68

16+76.21-75.00' & 81'

S00°55'43"E

15+00

13+27 R
Begin Type 2 fence

NE1/4

2-3 PP

E1/2 SE1/4

Bradley V. Warnke &
Kimberly K. Warnke
Parcel A1

Mark E. & Ona W. Ebsen
(INFORMATION ONLY)

13+57 R
1-24' Barbed Wire Gate

16+74.98-75.00' & 95

SW1/4

Selle, LLLP.
Parcel 1

Sec. 28 - T95N - R68W

US Hwy 18
PI 39+15.89
N 249934.08
E 2351027.61
Del 88°58'04" L
Dc 2°48'32"
T 2003.57'
L 3167.67'
R 2040.00'

3 PP

30+61.41-97.22'

2 PP

39+47-134'

38+30-103'

33+51-109'

38+37.78-82.56'

40+00

150'

35+00

36+13 R
Eliminate Entrance

SW1/4

Selle, LLLP.
Parcel 1

36+00.00-86.45' & 100'

30+34 L
Eliminate Entrance

11+32.60 (XR30) =
30+34.05 (mainline)

30+96.80-78.66'
30+65.96-80.24'
31+78-85'
31+12-184'

XR30 Block Out Stations L
8+74.51-77.57'
8+58.33-33.00'
10+49.33-33.00'

XR30 Block Out Stations R
6+28.61-33.00'
7+44.07-33.00'
7+80.73-67.32'
8+18.49-33.00'
10+52.56-33.00'

BEGIN NH 0018(222)311
BEGIN GRADING
Station 17+00

17+00 L
Begin Type 2 fence

3 PP

2 PP

16+76.21-75.00' & 81'

18+98-96'

19+12.32-75.00'

21+75-89'

27+11-93'

30+00

N57°27'13"E

66

XR30

10+00

29+30.23-87.09'

31+13.94-311.99'

30+76.08-299.86'

31+41-331'

31+91-373'

34+90.37-438.38'

25+00

20+00

15+00

S00°55'43"E

Present U.S. Hwy 18

19+12.32

Present 364th Ave.

6+72.81 (XR30)

5+00

Section Line

N00°50'06"W

0+00

County Rd 46

Section Line

0+00.00 (XR30)

8+00 (XR30) to 24+30 (Mainline)
Obliterate Roadway (6.9 Sta)

2-3 PP

3 PP

2 PP

3 PP 2 PP

3 PP
2 PP

29+68.84-270.44'

8+10.75-88.47'

6+73-67'

5+50.65-32.94'

19+80.53-76.23'

16+74.98-75.00' & 95

10+34 - 465' L (XR30)
Eliminate Entrance

Sec. 29 - T95N - R68W

E1/2 SE1/4

Bradley V. Warnke &
Kimberly K. Warnke
Parcel A1

5+00 to 7+00 L (XR30)
Do Not Disturb trees

6+73 L (XR30)
1-32' Barbed Wire Gate

31+45 - 480' R
End Type 2 fence

Sec. 33 - T95N - R68W

N1/2 NW1/4

Revocable Living Trust Agreement for Viola
H. Wittmuss, UDT April 24, 2014 Viola H.
Wittmuss, Trustee
Parcel 2

0+00-33' Rt (XR30) to 43+87 (Mainline)
Obliterate Roadway (12.1 Sta)

E1/2 NE1/4

Bradley V. Warnke & Kimberly K. Warnke

(INFORMATION ONLY)

Sec. 32 - T95N - R68W

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON
BLASIUS
10/25/2024

Parcel 1
16+76.21 to 57+12.00 L
Temporary Easement Containing
2.3 ac, more or less

Parcel 1
29+30.23 to 10+49.33 R (XR30)
Temporary Easement Containing
0.3 ac, more or less

Parcel 1
30+65.96 to 36+00.00 R
Temporary Easement Containing
0.5 ac, more or less

Parcel A1
16+74.98 to 19+80.53 R
Temporary Easement Containing
0.1 ac, more or less

Parcel A1
5+50.65 to 8+10.75 L (XR30)
Temporary Easement Containing
0.1 ac, more or less

BAI JOB # 23190-10 | STATE OF SOUTH DAKOTA | PROJECT: NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0 | SHEET 115 | TOTAL SHEETS 267

Plotting Date: 10/01/2025 Rev: 03/19/2024 NJF

FOR BIDDING PURPOSES ONLY

17928 CuYd of the below Out-of-Balance Excavation is from the waste generated from the second balance on US18 West (067V).
The remaining 19172 CuYd of the below Out-of-Balande Excavation is generated from the Obliteration of the existing SD43/CoRd 46.

Waste is muck excavation to be disposed of at a site approved by the Engineer.

Exc=	30548	Emb=	50661		
Out-of-Balance Exc	39153	+35.00%=	17732	68393	
Undercut=	3737	Undercut=	3737		
Muck	2053	+35.00%=	1308	5045	
Total=	75491	Waste=		2053	
		Total=		75491	

17+00
Begin Work

13+59 R
24' Ent

30+34 R
28' Int Road

39+80 L
24' Ent

L 600.00'
G1 -0.6748%
G2 -1.4305%
K 794

L 1400.00'
G1 -1.4305%
G2 0.7413%
K 645

PVI 17+00
ELEV 1954.17

PVI 22+00
Elev 1950.80

PVI 32+43
Elev 1935.87

-0.6748%

-1.4305%

LDG -1.4687%

LDG -1.3692%

LDG -1.3696%

LDG -0.6088%

LDG -0.3000%

LDG 0.3000%

LDGPI 19+00
Elev 1947.57

LDGPI 22+00
Elev 1943.17

LDGPI 25+00
Elev 1939.06

LDGPI 27+53
Elev 1935.59

LDGPI 30+25
Elev 1933.94

LDGPI 36+50
Elev 1932.06

LDGPI 37+53
Elev 1931.70

LDGPI 39+00
Elev 1932.14

US18 West

FLL 1930.55
FLR 1929.26

Q_{100} = 134 cfs
El 1937.7

CP 805
13+33.67' R
5/8" Iron Rod w/cap
Elev 1954.88

CP 1
39+37.447' R
5/8" Iron Rod w/cap
Elev 1933.82

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13398
WAYLON J BLASIUS
10/25/2024

1954.17 1953.50 1952.82 1952.08 1951.22 1950.23 1949.11 1947.87 1946.50 1945.10 1943.83 1942.72 1941.77 1940.97 1940.33 1939.84 1939.50 1939.32 1939.30 1939.43 1939.72 1940.16 1940.76 1941.48

10+00 15+00 20+00 25+00 30+00 35+00 40+00

2040 2030 2020 2010 2000 1990 1980 1970 1960 1950 1940 1930 1920 1910 1900 1890 1880 1870 1860 1850 1840

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	116	267

Plotting Date: 10/01/2025 Rev:

The below Out-of-Balance Excavation is generated from the Obliteration of the existing SD43/CoRd 46.

Exc=	40	Emb=	8052	
Out-of-Balance Exc=	5808	+35.00%=	2818	10870
Option Borrow=	5022	Total=		10870
Total=	10870			

5+00
Begin Work

11+08
End Work

0+00 R
40' Ent.

6+73 L
24' Ent.

6+50 R
24' Ent.

L 200.00'
G1 1.0124%
G2 4.6253%
K 55

L 200.00'
G1 4.6253%
G2 -2.0000%
K 30

PVI 11+08
ELEV 1942.23

PVI 9+96
Elev 1944.47

-2.0000%

4.6253%

PVI 6+00
Elev 1926.15

PVI 5+00
ELEV 1925.14

LDG 0.5333%

LDG 2.5787%

LDGPI 7+50
Elev 1927.99

LDGPI 7+00
Elev 1926.70

LDGPI 6+25
Elev 1926.30

xr30

1925.14 1927.05 1930.77 1935.40 1940.02 1942.86 1942.39

2040 2030 2020 2010 2000 1990 1980 1970 1960 1950 1940 1930 1920 1910 1900 1890 1880 1870 1860 1850 1840

0+00 5+00 10+00 15+00 20+00 25+00 30+00

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13392
WAYLON J. BLASIUS
03/25/2026

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	117	267

FOR BIDDING PURPOSES ONLY

Plotting Date: 10/01/2025 Rev: 4/17/2024 NJF

41+10 - 292' R
Take Out 18" - 29' CMP
& 2 End Sections
(Incidental Work, Grading)

43+29 - 193' R
Take Out 18" - 131' CMP
& 2 End Sections
(Incidental Work, Grading)

44+09 - 310' R
Take Out 18" - 64' RCP
& 2 End Sections
(Incidental Work, Grading)

48+08 - 14' L
Take Out 18" - 53' CMP
& 2 End Sections
(Incidental Work, Grading)

48+09 - 49' L
Install 24" - 60' CMP
& 2 Safety Ends

57+13 - 50' L
Take Out 18" - 53' CMP
& 2 End Sections
(Incidental Work, Grading)

Sec. 28 - T95N - R68W

SW 1/4

SE1/4

1/4 Line

39+47-134'

39+80 L
1 - 24' Barbed
Wire Gate

2-3 PP

Selle, LLLP.,
Parcel 1

Jared M. Koeing
Parcel A2

44+26-125'

46+92-117'

48+09 L
1 - 24' Barbed
Wire Gate

2-3 PP

50+00-98'

52+43.81-66.38'

END P 0043(22)0
END GRADING
Station 49+42.14

57+13.43

56+56-90'

57+11.28-112.86'

57+12.00-75.26'

57+12 L
Eliminate Entrance

60+16-149'

63+00-246'

67+04-96'

2 PP

2 PP
3 PP

Type 2 Fence

S89°53'47"E

Present U.S. Hwy 18

40+00

45+00

50+00

55+00

60+00

65+00

70+00

150'

Section Line

56+99.57

48+65.90-75.00'

54+67.27-79.43'

55+67.86-243.47'

Proposed S.D. Hwy 43

N00°56'36"W

57+16.47-160.09'

57+83-112'

2-3 PP

48+65.99-74.96'

57+15 R
Begin Type 2 Fence

57+12 R
Eliminate Entrance

63+90-154'

69+47-96'

3 PP
2 PP

Type 2 Fence

70+32.60-103.00'

70+32.02-73.19'

70+30.64

1/16 Line

42+99.18-75.00'

42+77.36-74.97' & 88'

150'

Present SD Hwy 43

N1/2 NW1/4

Revocable Living Trust Agreement for
Viaola H. Wittmuss, UDT April 24, 2014
Viola H. Wittmuss, Trustee
Parcel 2

NW1/4 NE1/4

Anna Marie Cahoy Living Trust, Anna
Marie Cahoy and Elmer J. Cahoy
Trustees
Parcel 3

Sec. 33 - T95N - R68W

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON
BLASIUS
10/15/2025

Parcel 2
54+67.27 to 55+67.86 R (US18 Mainline)
Temporary Easement Containing
0.1 ac, more or less

Parcel A2
57+11.28 to 77+00.15 L (US18 Mainline)
Temporary Easement Containing
2.6 ac, more or less

Parcel 3
57+16.47 to 70+32.60 R (US18 Mainline)
Temporary Easement Containing
1.6 ac, more or less

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	118	267

FOR BIDDING PURPOSES ONLY

Plotting Date: 10/01/2025 Rev:

US18 West

Waste is excess excavation to be used as embankment in Proposed SD43 and the previous balance of US18 West.

Exc=	44976	Emb=	901	
Undercut=	9721	+35.00%=	315	1216
	54697	Undercut=	9721	
		+35.00%=	3403	13124
		Waste=		40357
		Total=		54697

48+09 L
24' Ent

56+38 R
50' Int. Road

L 2000.00'
G1 0.7413%
G2 -3.8158%
K 439

PVI 63+28
Elev 1958.74

0.7413%

LDG 1.0953%

LDG 1.2426%

LDGPI 41+75
Elev 1935.15

LDGPI 46+00
Elev 1940.43

LDGPI 69+00
Elev 1930.31

CP 106
58+50-69' R
5/8" Iron Rod w/cap
Elev 1951.82

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON BASIUS
03/25/2026

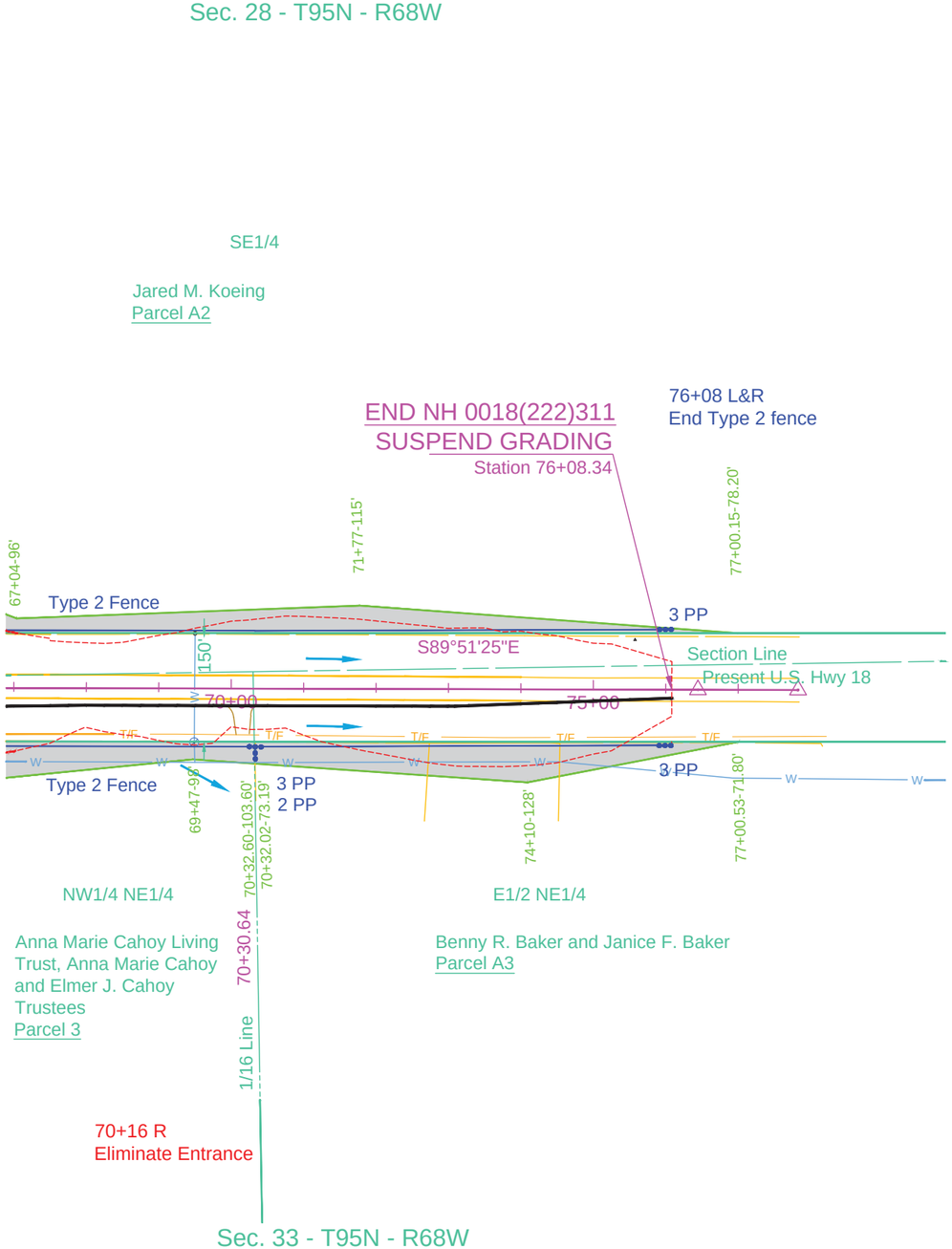
2050 2040 2030 2020 2010 2000 1990 1980 1970 1960 1950 1940 1930 1920 1910 1900 1890 1880 1870 1860 1850

1941.48 1942.22 1942.96 1943.71 1944.45 1945.19 1945.93 1946.67 1947.41 1948.15 1948.89 1949.64 1950.38 1951.12 1951.80 1952.26 1952.50 1952.50 1952.28 1951.83 1951.16 1950.25 1949.12 1947.76 1946.17 1944.35 1942.31 1940.04 1937.54 1934.81 1931.86

40+00 45+00 50+00 55+00 60+00 65+00 70+00

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
FOR BIDDING PURPOSES ONLY		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	119	267

Plotting Date: 10/01/2025 Rev:



Parcel A3
70+32.02 to 77+00.53 R (US18 Mainline)
Temporary Easement Containing
0.6 ac, more or less

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13292
WAYLON D. BLASIUS
10/15/2025

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	120	267

FOR BIDDING PURPOSES ONLY

Plotting Date: 10/01/2025 Rev:

US18 West

76+08
End Work

L 2000.00'
G1 0.7413%
G2 -3.8158%
K 439

LDG -3.2674%

-3.8158%

RDG -3.3831%

PVI 76+08
ELEV 1909.86

RDGPI 72+00
Elev 1920.52

LDGPI 76+08
Elev 1907.17

RDGPI 76+09
Elev 1906.70

CP 803
75+58.67' L
5/8" Iron Rod w/cap
Elev 1910.61

2050 2040 2030 2020 2010 2000 1990 1980 1970 1960 1950 1940 1930 1920 1910 1900 1890 1880 1870 1860 1850

1931.86 1928.67 1925.26 1921.62 1917.81 1914.00 1910.18

70+00 75+00 80+00 85+00 90+00 95+00 100+00

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13792
WAYLON J. BLASIUS
03/25/2026

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	121	267

FOR BIDDING PURPOSES ONLY

Plotting Date: 10/01/2025 Rev:

36+30 - 49' R
Install 18" - 82' CMP
& 2 Safety Ends

36+30 - 53' L
Install 24" - 86' CMP
& 2 Safety Ends

37+72 - 447' L
Take Out 66" - 70' RCP Arch
& 2 End Sections
(Incidental Work, Grading)

37+91 (4 ac)
Install 24" - 104' RCP
Skewed 35° LHF
& 2 Sloped Ends

46+87 (8 ac)
Install 30" - 74' RCP
Skewed 25° LHF
& 2 Sloped Ends

Sec. 33 - T95N - R68W

S1/2 NW1/4

The Weller Foundation, Inc.
Parcel 4

SD Hwy 43
PI 32+74.56
N 248200.84
E 2353618.11
Del 40°05'48" R
Dc 2°48'32"
T 744.45'
L 1427.63'
R 2040.00'

36+80 L
End Type 2 fence

36+25 L
1 - 24' Barbed
Wire Gate

30+60 (SD43) to 41+40 (US18)
Obliterate Roadway (25.7 Sta)

N1/2 NW1/4

Revocable Living Trust
Agreement for Viola H.
Wittmuss, UDT April 24, 2014
Viola H. Wittmuss, Trustee
Parcel 2

31+10 - 120' L
Eliminate Entrance

31+27 - 23' L
Eliminate Entrance

1/4 Line

Present S.D. Hwy 43

Proposed S.D. Hwy 43

Present U.S. Hwy 18

2 PP

3 PP

1-2 PP

1-3 PP

2-3 PP

24+00 L
1 - 24' Barbed
Wire Gate

21+30 L&R
Begin Type 2 fence

36+25 R
1 - 40' Barbed
Wire Gate

48+60 R
End Type 2 fence

W1/2 NE1/4

Anna Marie Cahoy Living Trust,
Anna Marie Cahoy and Elmer J.
Cahoy Trustees
Parcel 3

END P 0043(26)0
END GRADING
Station 49+42.14

BEGIN P 0043(26)0
BEGIN GRADING
Station 21+30.10

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON J. BLASIUS
10/25/2025

Sec. 33 - T95N - R68W

Parcel 2
36+33.82 to 37+00.00 L (SD43)
Temporary Easement Containing
0.1 ac, more or less

Parcel 2
39+57.74 to 42+99.18 L (SD43)
Temporary Easement Containing
0.1 ac, more or less

Parcel 3
23+00.19 to 25+00.00 L (SD43)
Temporary Easement Containing
0.1 ac, more or less

Parcel 3
21+10.10 to 42+77.36 R (SD43)
Temporary Easement Containing
1.4 ac, more or less

Parcel 4
33+07.36 to 36+30.13 L (SD43)
Temporary Easement Containing
0.2 ac, more or less

SD43

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	122	267

Plotting Date: 10/01/2025 Rev:

The be ow Out-of-Balance Excavation is from the Waste generated from the second balance on US18 West (067V).

Exc=	12130	Emb=	24641		
Out-of-Balance Exc=	22429	+35.00%=	8624	33265	
Undercut=	3696	Undercut=	3696		
	38255	+35.00%=	1294	4990	
		Total=		38255	

21+30
Begin Work

49+12
End Work

24+00 L
24' Ent

36+30 R
40' Ent

36+30 L
40' Ent

41+50 L
24' Ent

42+00 R
Ditch Block
Elev 1848.0

L 800.00'
G1 1.4149%
G2 -0.3000%
K 467

L 800.00'
G1 -0.3000%
G2 0.0640%
K 2198

L 200.00'
G1 0.0640%
G2 -0.5429%
K 330

L 100.00'
G1 -0.5429%
G2 1.0000%
K 65

PVI 21+30
ELEV 1948.47

PVI 25+76
Elev 1954.79

PVI 37+72
Elev 1951.20

PVI 45+00
Elev 1951.67

PVI 49+12
ELEV 1951.93

PVI 47+50
Elev 1950.31

1.4149%

-0.3000%

0.0640%

-0.5429%

1.0000%

LDG 0.5000%

LDG -1.0059%

LDG -0.2930%

RDG -0.3130%

LDGPI 40+00
Elev 1947.51

LDGPI 41+50
Elev 1948.26

RDGPI 42+00
Elev 1946.97

LDGPI 43+75
Elev 1946.00

RDGPI 46+00
Elev 1945.72

LDGPI 47+16
Elev 1945.00

FLL 1944.91
FLR 1945.25

FLL 1945.21
FLR 1945.49

Q_{32} = 19.4 cfs
El 1948.00

CP 804
21+31.72' L
5/8" Iron Rod w/cap
Elev 1946.27

1949.46 1950.71 1951.76 1952.58 1953.20 1953.60 1953.78 1953.75 1953.52 1953.22 1952.92 1952.62 1952.32 1952.05 1951.83 1951.66 1951.53 1951.45 1951.41 1951.42 1951.47 1951.54 1951.60 1951.51 1951.12 1950.58 1950.81 1951.81

20+00 25+00 30+00 35+00 40+00 45+00 50+00

2050 2040 2030 2020 2010 2000 1990 1980 1970 1960 1950 1940 1930 1920 1910 1900 1890 1880 1870 1860

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WYLON BASIUS
03/25/2026

US18

BEGIN US18
STA. 48+28 (2nd)
MRM 312.00 +0.610
MILEAGE 0.000
at the ℄ Jct 365 Ave

END US18
STA. 452+11 (2nd)
MRM 320.00 +0.00
MILEAGE 450.00'
2550' SSW of existing entrance of US281

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON J.
BLASIUS
10/25/2025

US Highway 18

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	124	267

Plotting Date: 10/01/2025 Rev:

82+42
Take Out 2 End Sections
(Incidental Work, Grading)

82+42 (362 ac)
Slipline 60" - 122' RCP
Install 2 Flared Ends

82+42 - R
Install Class D Riprap (66.7 tons) & Type B Drainage Fabric (68.8 Sq. Yd)

82+42 - L
Install Class D Riprap (33.4 tons) & Type B Drainage Fabric (39.9 Sq. Yd)

Sec 27 - T95N - R68W

W1/2 SE1/4

E1/2 SE1/4

The Weller Foundation, Inc.

Parcel 12

Marvin L. Frasch and JoAnn J. Frasch, Trustees of the Marvin L. Frasch and JoAnn J. Frasch Joint Revocable Living Trust

(INFORMATION ONLY)

81+90 L&R
Begin Type 2 fence

82+90 L&R
End Type 2 fence

1/4 Line

1/16 Line

81+89.95-75.00'
81+91-161'
82+91-161'
82+89.95-75.00'

2-2 PP

TIF

87+84.99

Present U.S. Hwy 18

N87°44'46"E

70+00
75+00
80+00
85+00
90+00
95+00
150'
150'

74+67.62

81+88.67-75.00'
81+88.169'
82+23.63-75.00'
82+23.60-100.45'
82+53.60-100.66'
82+53.63-75.00'
82+88-169'
82+88.65-75.00'

2-2 PP

TIF

N1/2 NE1/4

Kelly J. Reiser

Parcel 13

Sec 34 - T95N - R68W

Parcel 12
81+89.95 to 82+89.95 L
Temporary Easement containing
0.2 ac, more or less

Parcel 13
81+88.67 to 82+88.65 R
Temporary Easement containing
0.2 ac, more or less

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON BLASIUS
10/25/2025

US Highway 18

BAI JOB # 23190-10

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	125	267

Plotting Date: 10/01/2025 Rev:

127+48
Take Out 18" RCP - 58'
& 2 End Sections
(Incidental Work, Grading)

127+48 (4 ac)
Install 24" - 74' RCP
Skewed 30° LHF
& 2 Sloped Ends

127+48 - L
Install Class B Riprap (13.7 tons) & Type B Drainage Fabric (22.9 Sq. Yd.)

134+65 - L
Remove Pipe for Reset 72" - 12' RCP
Remove Pipe End Section for Reset

134+65 - L
Reset Pipe 72" - 12' RCP
Reset Pipe End Section

134+65 (378 ac)
Repair Culvert Joint - 357.2'

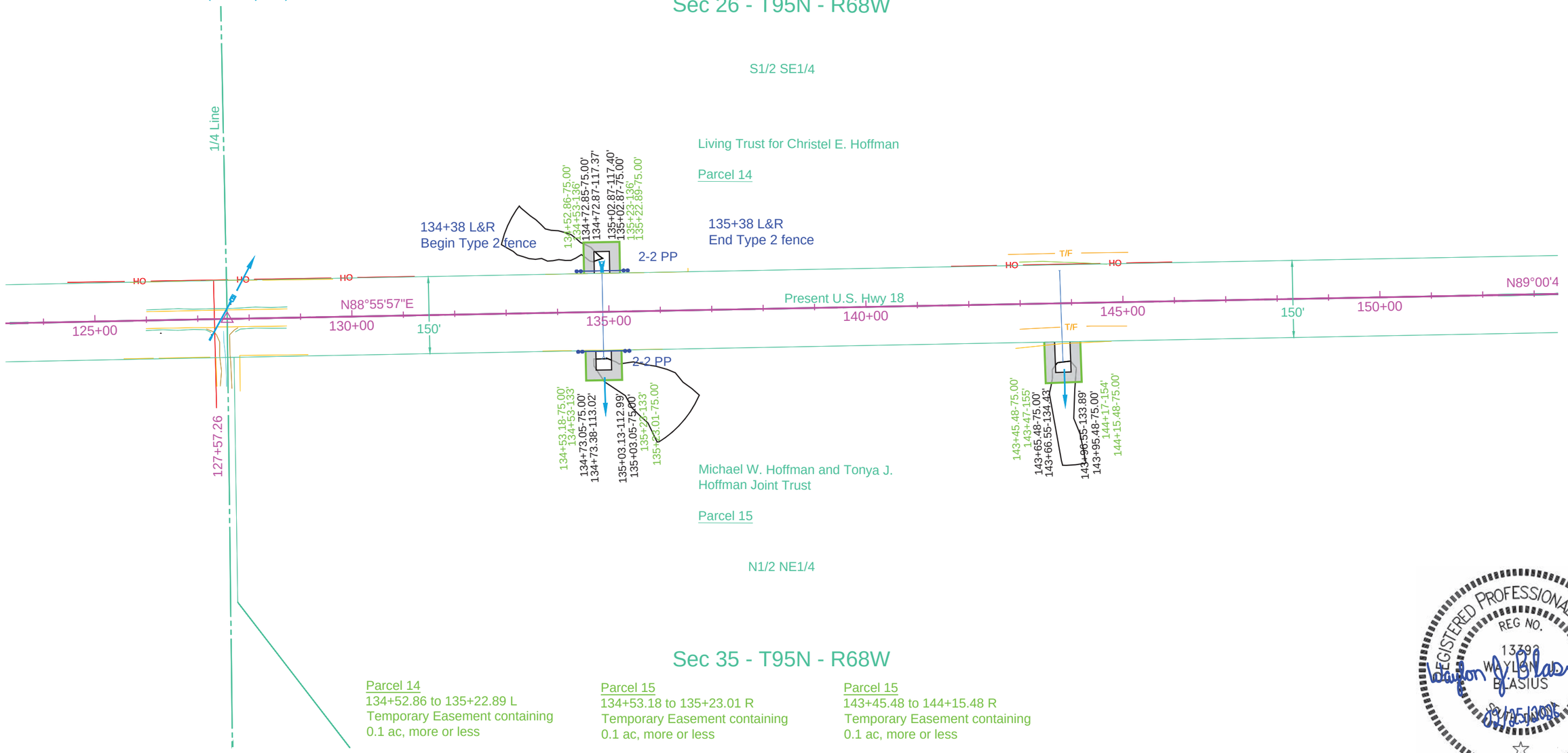
143+80 (13 ac)
1 Each - Clean-out Pipe Culvert

Sec 26 - T95N - R68W

S1/2 SE1/4

Living Trust for Christel E. Hoffman

Parcel 14



Michael W. Hoffman and Tonya J. Hoffman Joint Trust

Parcel 15

N1/2 NE1/4

Sec 35 - T95N - R68W

Parcel 14
134+52.86 to 135+22.89 L
Temporary Easement containing
0.1 ac, more or less

Parcel 15
134+53.18 to 135+23.01 R
Temporary Easement containing
0.1 ac, more or less

Parcel 15
143+45.48 to 144+15.48 R
Temporary Easement containing
0.1 ac, more or less

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON D. BASIUS
10/15/2025

FOR BIDDING PURPOSES ONLY

US Highway 18

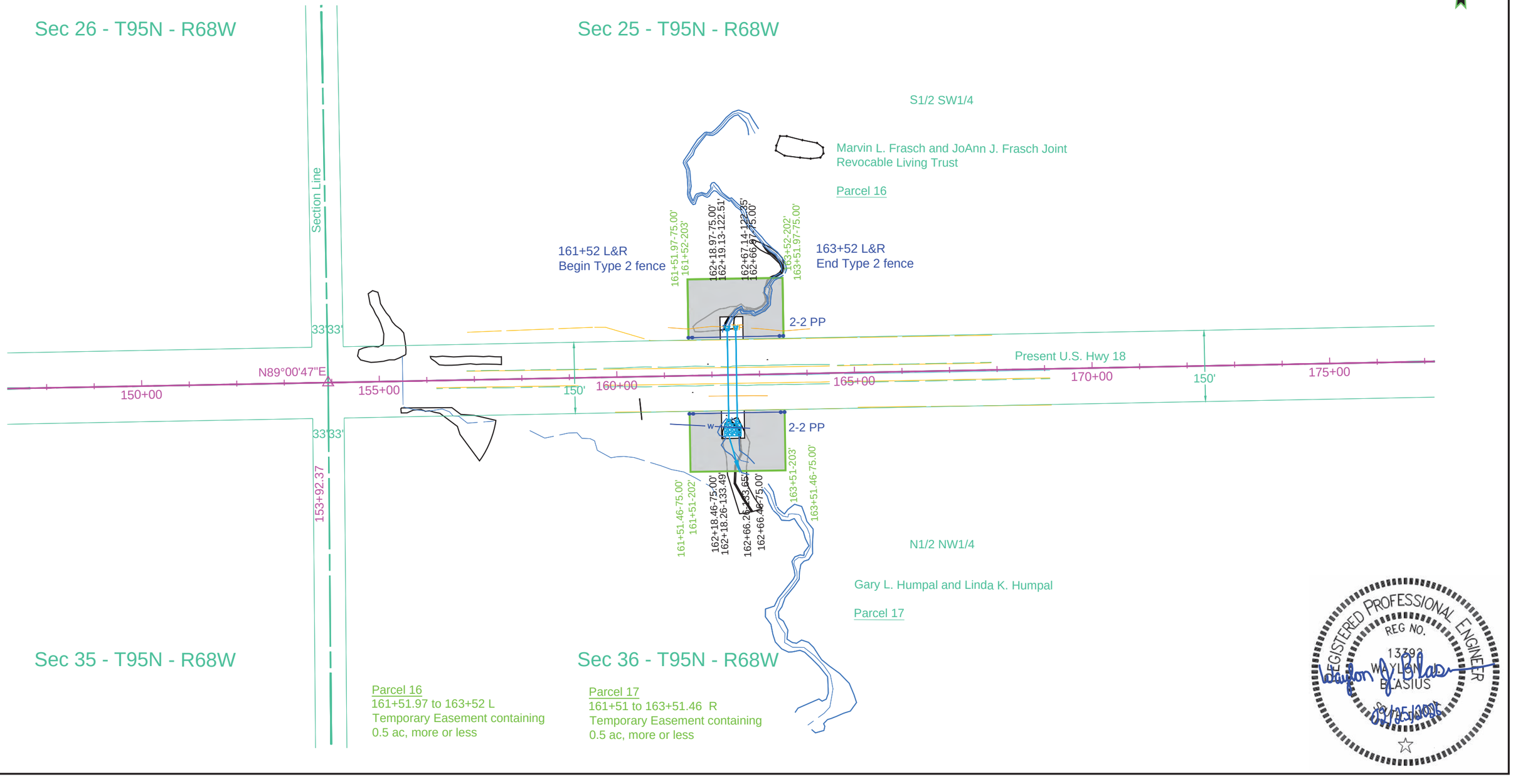
162+37 (L&R)
Take Out 2 End Sections
(Incidental Work, Grading)

162+37 (1365 ac)
Slipline 84" - 186' RCP
Install 2 Flared Ends

162+37 R
Install Class C Riprap (87.3 tons) &
Type B Drainage Fabric (88.1 Sq. Yd.)

162+55 (1285 ac)
Bore and Jack 60" - 188' Steel Pipe
Install 2 Flared Ends

162+55 R
Install Class C Riprap (77.9 tons) &
Type B Drainage Fabric (80.7 Sq. Yd.)



REGISTERED PROFESSIONAL ENGINEER
REG NO. 13392
WAYLON D. BLASIUS
10/15/2025

US Highway 18

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
FOR BIDDING PURPOSES ONLY		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	127	267

Plotting Date: 10/01/2025 Rev:

195+00
Take Out 18" - 56' RCP & 2 End Sections
(Incidental Work, Grading)

195+00 (20 ac)
Install Twin 24" - 66' RCP & 4 Sloped Ends
(Spaced 23 ft C to C)

195+00 - R
Install Class B Riprap (27.4 tons) & Type B Drainage Fabric (45.8 Sq. Yd.)

210+00
Take Out 18" RCP - 56' & 2 Flared Ends
(Incidental Work, Grading)

210+00 (86 ac)
Install Triple 30" - 64' RCP & 6 Sloped Ends
(Spaced 23 ft C to C)

210+00 - R
Install Class B Riprap (43.6 tons) & Type B Drainage Fabric (71.6 Sq. Yd.)

Sec 25 - T95N - R68W

Sec 30 - T95N - R67W

SE1/4

Revocable Living Trust of Christel Hoffman
(INFORMATION ONLY)

Section Line

SW1/4

Renneker Revocable Living Trust
(INFORMATION ONLY)

Present U.S. Hwy 18

T/F

190+00

195+00

150'

Section Line

200+00

N88°59'27"E

205+00

33'33'

206+74.91

33'33'

T/F

210+00

HO

HO

N89°34'29"E

215+00

150'

NE1/4

Michael Hoffman
(INFORMATION ONLY)

NW1/4

Anthony J. and Mary Ann Koenig
(INFORMATION ONLY)

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13792
WAYLAND BLASIUS
09/25/2025

Sec 36 - T95N - R68W

Sec 31 - T95N - R67W

BAI JOB # 23190-10

STATE OF SOUTH DAKOTA

PROJECT	SHEET	TOTAL SHEETS
NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	128	267

FOR BIDDING PURPOSES ONLY

Plotting Date: 10/01/2025 Rev:

US Highway 18

282+14 - L & R
Remove Pipe End Sections for Reset
282+14 - L
Remove Pipe for Reset 18' - 84" RCP
282+14 - R
Remove Pipe for Reset 6' - 84" RCP

282+14 (1828 ac)
Reset Pipe 84" - 24' RCP (18' L, 6' R)
& 2 End Sections
& Repair Culvert Joint - 242'

282+14 - R
Install Class D Riprap
(97.1 tons) &
Type B Drainage Fabric
(88.2 Sq. Yd.)

282+14 - L
Install Class D Riprap
(48.5 tons) &
Type B Drainage Fabric
(52.1 Sq. Yd.)

Sec. 29 - T95N - R67W

1/64 Line

SE1/4 SW1/4 SW1/4

Lakeview Hutterian Brethren, Inc.

(INFORMATION ONLY)

1/64 Line

273+56.17

S 1/2 SW 1/4

Dustin Janousek, Joshua Janousek, and
Dillon Janousek

Parcel 18

281+56 L
Begin Type 2 fence

282+56 L
End Type 2 fence

281+71.23-75.00'
281+71-106'
281+91.14-75.00'
281+91.22-87.16'
282+21.21-87.68'
282+21.23-75.00'
282+41-106'
282+41.23-75.00'

2-2 PP

T/F

Present U.S. Hwy 18

N88°09'50"E

270+00
275+00
150'
280+00
285+00
290+00
295+00

T/F

2-2 PP

281+59 R
Begin Type 2 fence

282+59 R
End Type 2 fence

268+00.03-75.00'
268+00-102'
268+70-102'
268+70.03-75.00'

281+74.14-75.00'
281+74-113'
281+94.14-75.00'
281+93.94-93.69'
282+23.94-93.18'
282+24.13-75.00'
282+44-106'
282+44.14-75.00'

1/4 Line

286+73.29

SW1/4 SE1/4

Douglas J. and Marilee Janousek

(INFORMATION ONLY)

N 1/2 NW 1/4

NW 1/4 NE 1/4

Dustin Janousek, Joshua Janousek, and
Dillon Janousek

Parcel 19

Howard H. Hogrefe and Frances A. Hogrefe

(INFORMATION ONLY)

Parcel 18
281+71.23 to 282+41.23 L
Temporary Easement containing
0.1 ac, more or less

Parcel 19
268+00.03 to 268+70.03 R
Temporary Easement containing
0.1 ac, more or less

Parcel 19
281+74.14 to 282+44.14 R
Temporary Easement containing
0.1 ac, more or less

Sec. 32 - T95N - R67W

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON J.
BLASIUS
09/25/2025

BAI JOB # 23190-10

STATE OF SOUTH DAKOTA

PROJECT: NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0

SHEET: 129

TOTAL SHEETS: 267

FOR BIDDING PURPOSES ONLY

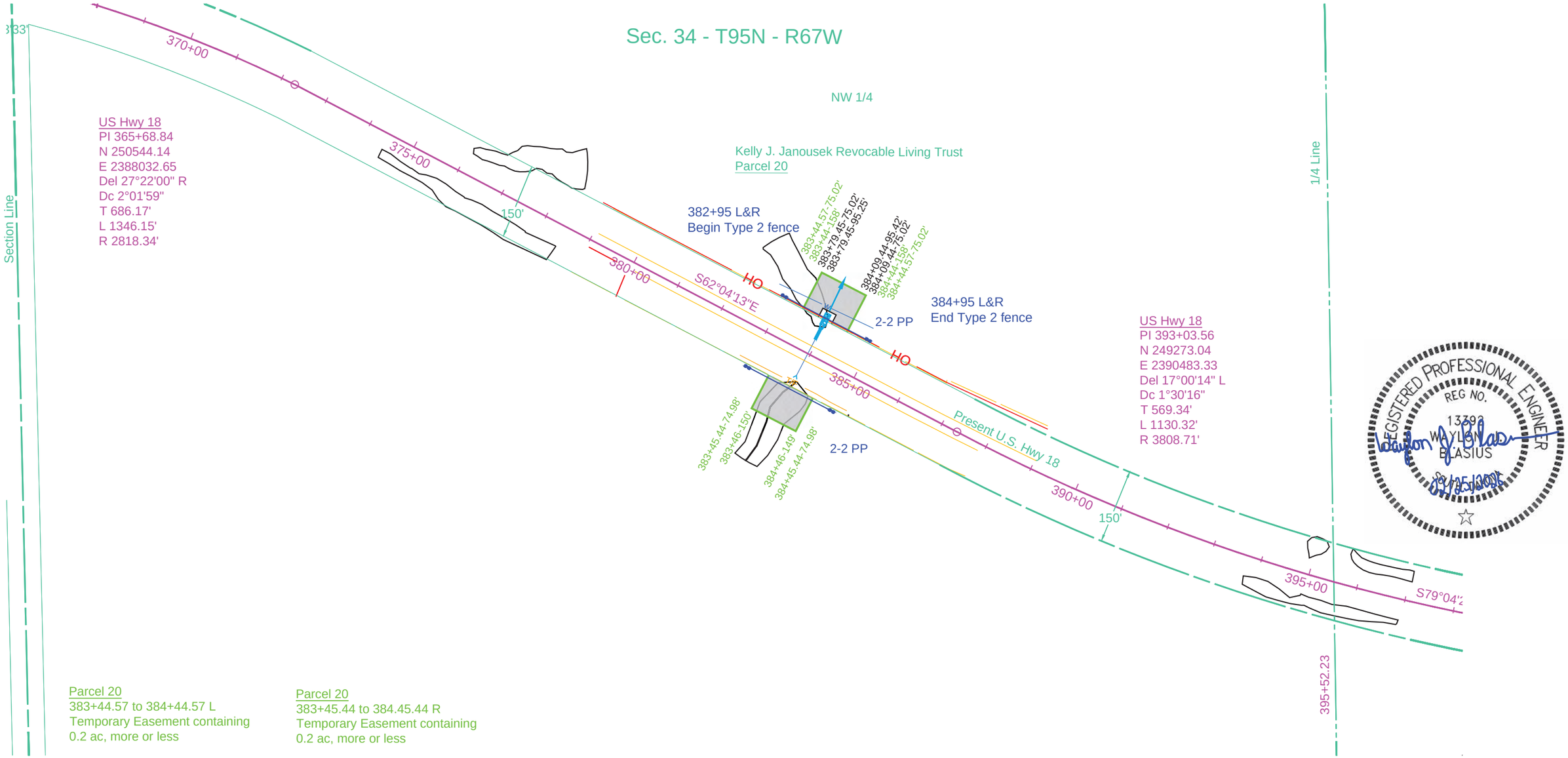
Plotting Date: 10/01/2025 Rev:

US Highway 18

384+00 L
Remove Pipe for Reset 72" - 24' RCP (L)
Remove Pipe End Section for Reset

384+00 (1318 ac)
Reset 72" - 24' RCP (L)
& End Section (L)
& Slipline 72" - 102' RCP

384+00 - L
Install Class D Riprap (72.8 tons) & Type B Drainage Fabric (72.7 Sq. Yd.)



Parcel 20
383+44.57 to 384+44.57 L
Temporary Easement containing
0.2 ac, more or less

Parcel 20
383+45.44 to 384.45.44 R
Temporary Easement containing
0.2 ac, more or less

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13392
WAYLON BLASIUS

BAI JOB # 23190-10

STATE OF SOUTH DAKOTA

PROJECT: NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0

SHEET: 130

TOTAL SHEETS: 267

FOR BIDDING PURPOSES ONLY

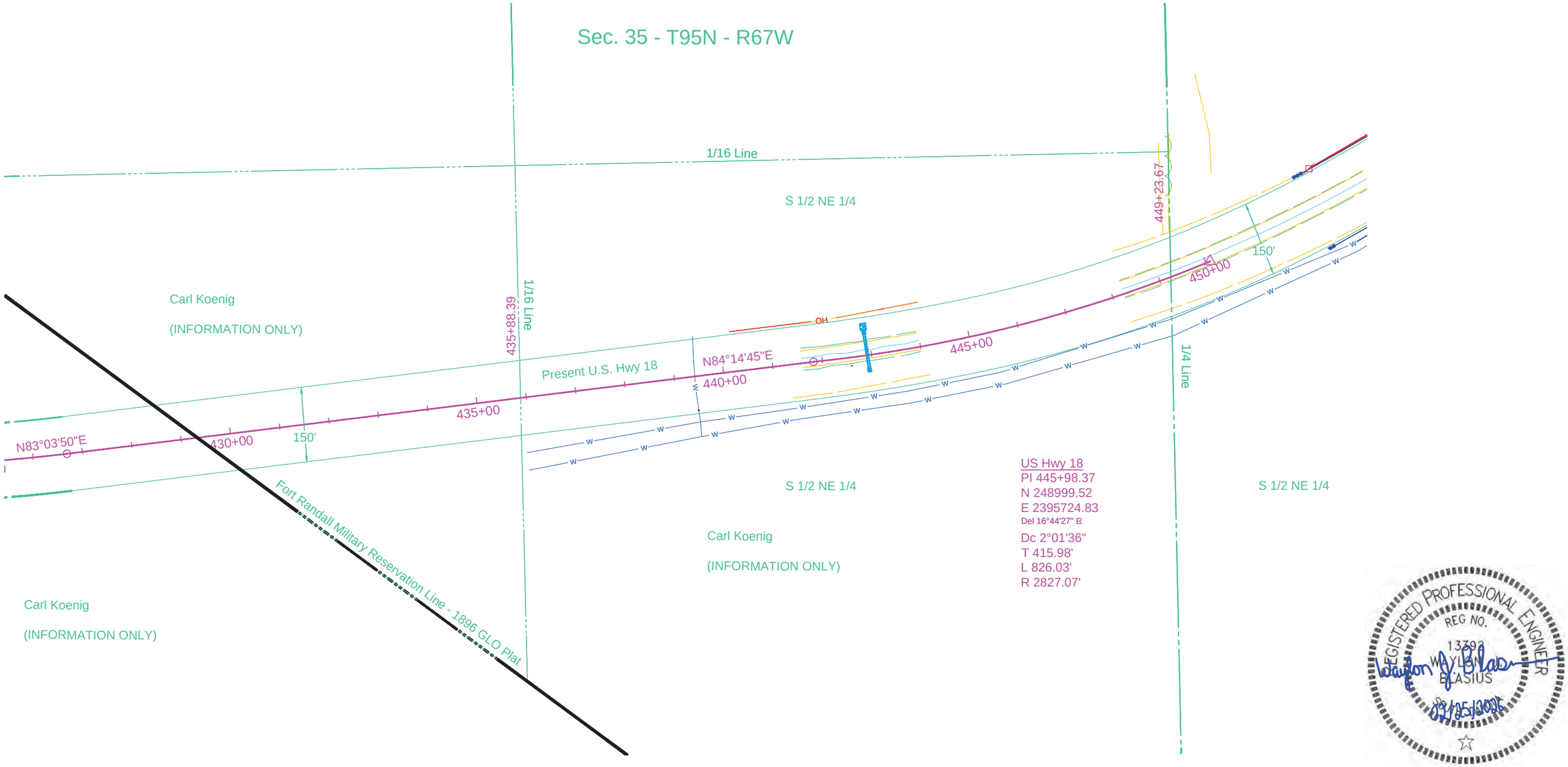
Plotting Date: 10/01/2025 Rev:

US Highway 18

443+00
Take Out Existing 30" - 74' CMP
& 2 End Sections
(Incidental Work, Grading)

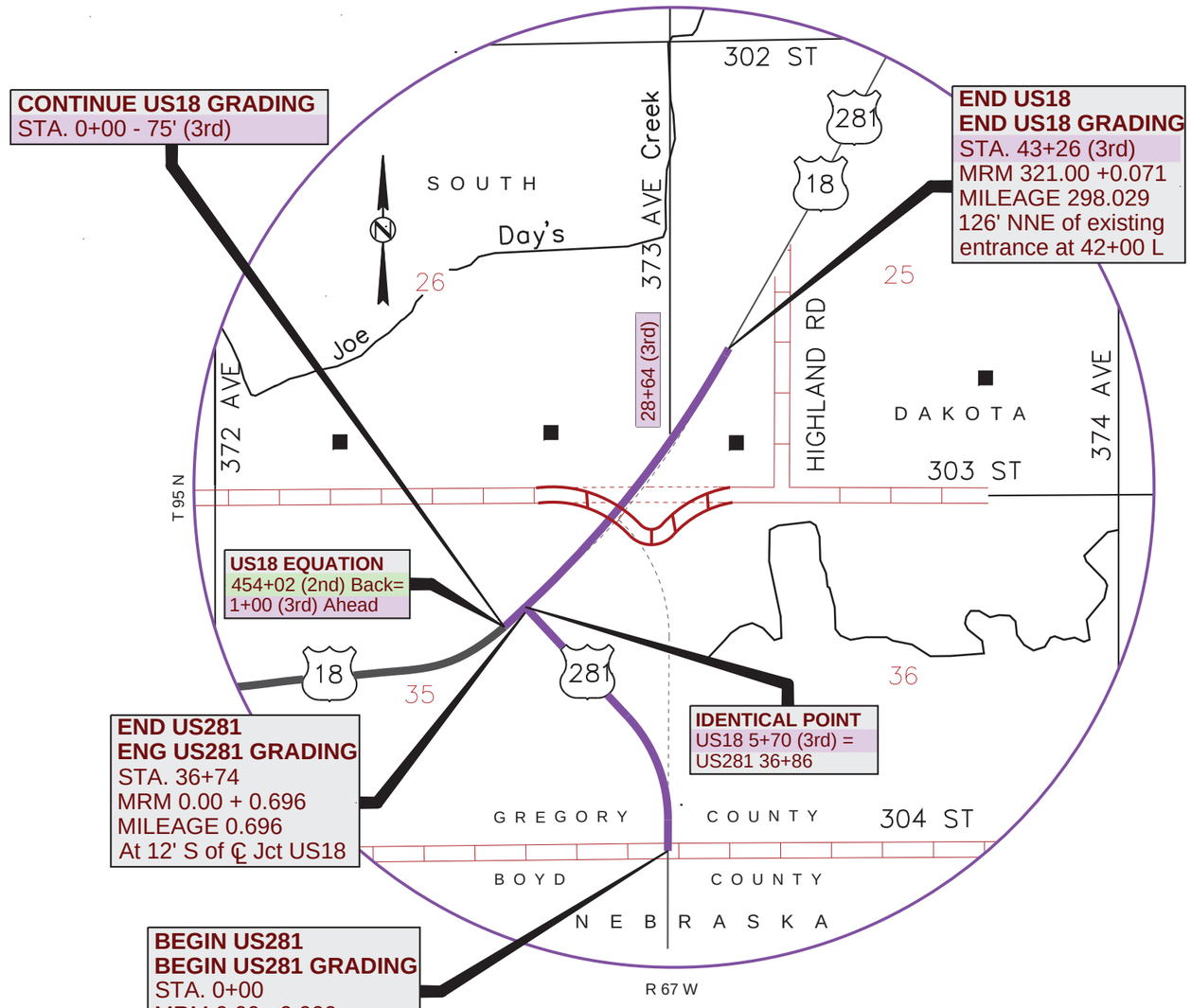
443+00 (65 ac)
Install Twin 30" - 74' RCP
& 2 Sloped Ends

443+00 L
Install Class B Riprap (21.4 tons) &
Type B Drainage Fabric (31.6 SqYd)



REGISTERED PROFESSIONAL ENGINEER
REG NO. 13792
WAYLON J. BLASIUS
03/25/2026

US18 & US281



CONTINUE US18 GRADING
STA. 0+00 - 75' (3rd)

END US18
END US18 GRADING
STA. 43+26 (3rd)
MRM 321.00 +0.071
MILEAGE 298.029
126' NNE of existing entrance at 42+00 L

US18 EQUATION
454+02 (2nd) Back=
1+00 (3rd) Ahead

END US281
ENG US281 GRADING
STA. 36+74
MRM 0.00 + 0.696
MILEAGE 0.696
At 12' S of ℄ Jct US18

IDENTICAL POINT
US18 5+70 (3rd) =
US281 36+86

BEGIN US281
BEGIN US281 GRADING
STA. 0+00
MRM 0.00 +0.000
MILEAGE 0.000
At State Line

BAI JOB # 23190-10 | STATE OF SOUTH DAKOTA | PROJECT: NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0 | SHEET: 132 | TOTAL SHEETS: 267

FOR BIDDING PURPOSES ONLY

Plotting Date: 10/01/2025 Rev: 03/28/2025 EJK

REGISTERED PROFESSIONAL ENGINEER REG NO. 13392 WAYLON BLASIUS SOUTH DAKOTA 03/25/2025

4+84
Take Out 18" - 68" RCP
& 2 End Sections
(Incidental Work, Grading)

4+84 (12 ac)
Install 30" - 90' RCP
& 2 Sloped Ends

4+84 L
Install Class B Riprap (14.5 tons) and Type B Drainage Fabric (23.9 SqYd)

15+03 - 53' L
Install 18" - 58' CMP
& 2 Safety Ends

18+30
Take Out 4'x6' - 76' Cattle Pass & 2 Ends
(Incidental Work, Grading)

18+30 (7 ac)
Install 30" - 104' RCP Arch
& 2 Sloped Ends

18+30 L
Install Class B Riprap (15.4 tons) and Type B Drainage Fabric (24.8 SqYd)

Outlot "M"
Dave Shipman & Deb Shipman
Parcel 6

Marla M. Frankenstein, Trustee of the Barbara J. Olson, Irrevocable Family Legacy Trust
Parcel 8

US Hwy 18
PI 26+88.49
N 250747.07
E 2398641.99
Del 32°20'54" L
Dc 1°15'33"
T 1319.67'
L 2568.85'
R 4550.00'

Sec. 35 - T95N - R67W

US Hwy 18
PI 0+74.20
N 249331.84
E 2396443.65
Del 5°30'09" L
Dc 2°02'47"
T 134.55'
L 268.90'
R 2800.00'

NH 0018 (222) 311
RESUME GRADING
Station 0+00.00 - 75

END NH 0281(122)0
END GRADING
Station 36+85.99

Shawn Paulson and Keri Paulson
Parcel 5

Curb Stop
- Install water service, contractor shall contact landowner to facilitate installation.

NE1/4

22+63 L
End Type 2 fence

15+03 L
1 - 24' Barbed Wire Gate

XR23
PI 6+89.14
N 250741.69
E 2398035.81
Del 18°32'25" R
Dc 25°00'04"
T 37.70'
L 74.75'
R 231.00'

24+73 L
Begin Type 2 fence

9+69.14 (XR23) = 23+63.95 (mainline)

E1/2

Sec.26 - T95N - R67W

33' County Road 54 / 303rd Street

N88°45'17"E

Proposed U.S. Hwy 18

N41°03'13"E

Present U.S. Hwy 18

N62°13'48"E

N57°13'40"E

S72°42'18"E

S58°52'47"E

N59°59'52"E

Type 2 Fence

2 PP

3 PP

2-2 PP

2-3 PP

4 PP

8-2 PP

-0+75 L&R
Begin Type 2 fence

4+95 R
End Type 2 fence

2+00 R
Curb Stop
- Install water service, contractor shall contact landowner to facilitate installation.

6+45 R
Begin Type 2 fence

21+75 - 35' R
Eliminate Entrance

21+68 - 87' R
Eliminate Entrance

21+50 R
End Type 2 fence

Outlot "O"
Dave Shipman & Deb Shipman
Parcel A4

Outlot "N"
South Dakota Department of Transportation
Parcel 7

XR23
PI 13+19.16
N 250477.36
E 2398603.43
Del 61°07'21" L
Dc 25°00'04"
T 136.40'
L 246.43'
R 231.00'

Shawn Paulson and Keri Paulson
Parcel 5

NE1/4

Shawn Paulson and Keri Paulson
Parcel 5

Sec. 35 - T95N - R67W

NW1/4 NW1/4

Janice L. Roeder, Trustee of the Janice L. Roeder Irrevocable Real Estate Trust
Parcel 9

Janice L. Roeder, Trustee of the Janice L. Roeder Irrevocable Real Estate Trust
Parcel 11

W1/2 SW1/4

Sec. 36 - T95N - R67W

Parcel 5
2+19.31 to 3+60.00 L (US18 Mainline)
Temporary Easement Containing
0.1 ac, more or less

Parcel 5
4+38.05 to 17+85.40 L (US18 Mainline)
Temporary Easement Containing
0.7 ac, more or less

Parcel 5
19+95.19 to 21+16.89 L (US18 Mainline)
Temporary Easement Containing
0.1 ac, more or less

Parcel 5
4+34 (US18 Mainline) R to 25+87.47 L (US281)
Temporary Easement Containing
0.5 ac, more or less

Parcel 5
30+59.06 (US281) to 20+60 R (US18 Mainline)
Temporary Easement Containing
1.1 ac, more or less

Parcel A4
20+32 to 22+38.59 R (US18 Mainline)
Temporary Easement Containing
0.1 ac, more or less

Parcel 8
6+31.44 (xr23) to 29+87.89 L (US18 Mainline)
Temporary Easement Containing
0.5 ac, more or less

The below 17500 CuYd Out-of-Balance Excavation is generated from the Obliteration of the existing US281 (06D1).

Waste is muck excavation to be disposed of at a site approved by the Engineer.

Exc=	19128	Emb=	63975	
Undercut=	9432	+35.00%=	22391	86366
Muck=	7688	Undercut=	9432	
Option Borrow=	53039	+35.00%=	3301	12733
Out-of-Balance Exc=	17500	Waste=		7688
Total=	106787	Total=		106787

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	133	267

Plotting Date: 10/01/2025 Rev:

K
-0+75
Begin Work

5+70 R
50' Int Road

15+03 L
24' Ent

23+64 L
28' Int Road

23+64 R
28' Int Road

L 460.28'
G1 -0.2686%
G2 -0.5000%
K 1989

PVI -0+75
ELEV 1830.27

PVI 10+89
Elev 1827.15

L 800.00'
G1 -0.6708%
G2 0.5706%
K 644

PVI 27+33
Elev 1818.93

-0.2686%

-0.5000%

RDG -0.3045%

LDG -0.3575%

RDG -1.0530%

RDG -1.9051%

RDG 0.3001%

RDG -0.3006%

LDG -1.2163%

LDG -1.7988%

LDG -1.0632%

RDGPI -0+75
Elev 1828.75

LDGPI -0+75
Elev 1826.10

RDGPI 2+19
Elev 1827.86

RDGPI 3+00
Elev 1827.00

LDGPI 3+75
Elev 1824.49

RDGPI 4+84
Elev 1823.50

RDGPI 5+00
Elev 1823.55

FLL 1823.34
FLR 1823.54

Q_{52} = 30.4 cfs
El 1827.00

RDGPI 12+25
Elev 1821.59

RDGPI 17+52
Elev 1820.00

FLL 1815.95
FLR 1816.92

FLL 1815.95
FLR 1816.82

Q_{38} = 19.5 cfs
El 1818.92

LDGPI 21+75
Elev 1816.72

LDGPI 22+75
Elev 1815.50

LDGPI 25+00
Elev 1815.10

LDGPI 27+00
Elev 1811.50

LDGPI 29+00
Elev 1809.37

US18 East

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13792
WAYNE A. BLASIUS
03/25/2026

1920 1910 1900 1890 1880 1870 1860 1850 1840 1830 1820 1810 1800 1790 1780 1770 1760 1750 1740 1730 1720

1830.07 1829.80 1829.53 1829.27 1829.00 1828.73 1828.46 1828.19 1827.92 1827.65 1827.34 1826.97 1826.56 1826.09 1825.59 1825.09 1824.59 1824.09 1828.59 1823.09 1822.59 1822.09 1821.59 1821.09 1820.59 1820.10 1819.72 1819.50 1819.43 1819.52

-1+00 0+00 5+00 10+00 15+00 20+00 25+00 29+00

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
FOR BIDDING PURPOSES ONLY		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	134	267

Plotting Date: 10/01/2025 Rev:

30+51 (48 ac)
Install 42" - 112' RCP
& 2 Flared Ends

30+51 R
Install Class B Riprap (29.8 tons) and
Type B Drainage Fabric (42.5 SqYd)

30+60
Take Out 30" - 91' RCP
& 2 End Sections
(Incidental Work, Grading)

33+77 - 10' L
Take Out 18" - 50' RCP
& 2 End Sections
(Incidental Work, Grading)

Sec. 26 - T95N - R67W

US Hwy 18
PI 26+88.49
N 250747.07
E 2398641.99
Del 32°20'54" L
Dc 1°15'33"
T 1319.67'
L 2568.85'
R 4550.00'

E1/2
Marla M. Frankenstein, Trustee of the Barbara J. Olson, Irrevocable Family Legacy Trust
Parcel 8

Section Line
33'
33'

43+26 L&R
End Type 2 fence

42+00 L
1 - 24' Barbed Wire Gate

END NH 0018(222)311
END GRADING
Station 43+26

Sec. 25 - T95N - R67W

W1/2 SW1/4

N41°03'13"E Proposed U.S. Hwy 18

Present U.S. Hwy 18

N24°52'46"E

27+10 R
Begin Type 2 fence

N59°59'52"E XR23

W1/2 SW1/4

Janice L. Roeder, Trustee of the Janice L. Roeder Irrevocable Real Estate Trust
Parcel 9

1/16 Line

Janice L. Roeder, Trustee of the Janice L. Roeder Irrevocable Real Estate Trust
Parcel 11

N89°13'46"E 33'

20+00.33

County Road 54 / 303rd St.

Section Line

XR23
PI 18+63.39
N 250762.68
E 2399097.58
Del 29°18'54" R
Dc 25°00'04"
T 60.42'
L 118.19'
R 231.00'

NW1/4 NW1/4

Sec. 36 - T95N - R67W

Sec. 25 - T95N - R67W

Parcel 9
30+12.60 to 36+91.68 L
Temporary Easement Containing
0.5 ac, more or less

Parcel 9
41+33.31 to 43+46.45 L
Temporary Easement Containing
0.1 ac, more or less

Parcel 9
34+74.42 to 43+46.45 R
Temporary Easement Containing
0.5 ac, more or less

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13392
WAYLON BLASIUS
10/15/2025

US18 East

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	135	267

Plotting Date: 10/01/2025 Rev:

42+00 L
24' Ent

43+26
End Work

L 800.00'
G1 -0.6708%
G2 0.5706%
K 644

L 800.00'
G1 0.3114%
G2 -0.7226%
K 774

PVI 38+16
Elev 1822.30

PVI 43+26
ELEV 1818.61

0.3114%

-0.7226%

LDG -0.1913%

RDG -0.0532%

LDGPI 30+50
Elev 1806.26

LDG -2.0767%

LDG 0.2966%

RDGPI 33+24
Elev 1810.08

LDGPI 33+00
Elev 1807.00

RDG 1.1445%

RDGPI 39+25
Elev 1816.96

LDGPI 42+25
Elev 1814.84

RDGPI 42+25
Elev 1814.84

RDGPI 43+26
Elev 1814.78

LDGPI 43+26
Elev 1814.65

FLL 1806.26
FLR 1806.13

Q_{100} = 87.5
El 1811.99

CP 801
42+61-70' R
5/8" Iron Rod w/cap
Elev 1816.52

1819.52 1819.76 1820.07 1820.38 1820.69 1821.01 1821.27 1821.41 1821.42 1821.30 1821.05 1820.67 1820.16 1819.52 1818.80

29+00 30+00 35+00 40+00 45+00 50+00 55+00 59+00

1920 1910 1900 1890 1880 1870 1860 1850 1840 1830 1820 1810 1800 1790 1780 1770 1760 1750 1740 1730 1720

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13392
WYOMING
BLASIUS
09/25/2025

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	136	267

Plotting Date: 10/01/2025 Rev: 03/19/2024 NJF

3+73 - 54' R
Take Out 18" - 66' RCP
& 2 End Sections
(Incidental Work, Grading)

5+25
Take Out Twin 36" - 170' RCP
& 4 End Sections
(Incidental Work, Grading)

5+25 (1157 ac)
Install 2 - 12' x 4' x 94'-0" Box Culvert (Precast)
(See Structure Sheets)

Ent12
3+10 - 60' R
Install 18" - 96' CMP
& 2 Safety Ends

17+35 - 49' L
Install 24" - 80' CMP
& 2 Safety Ends

22+00 - 54' L
Install 24" - 72' CMP
& 2 Safety Ends

22+00 - 55' R
Install 18" - 86' CMP
& 2 Safety Ends

Sec. 35 - T95N - R67W

Government Lot 5

South Dakota/Nebraska State Line

0+33 L&R
Begin type 2 fence

BEGIN NH 0281(122)0
BEGIN GRADING
Station 0+33

Lorin Dean Olson, Karen G. Olson and
Shane R. Olson
Parcel 10

1+00.00 (ent12) =
11+50.00 (mainline)

17+35 L 3 PP
2 - 24' Barbed
Wire Gates

Proposed U.S. Hwy 281

Present U.S. Hwy 281

Present 304th Street

NE1/4

Shawn Paulson &
Keri Paulson
Parcel 5

16+83 - 662'R
Take Out 54" - 188' RCP
& 2 End Sections
(Incidental Work, Grading)

18+68 - 804'R
Take Out 18" - 65' RCP
& 2 End Sections
(Incidental Work, Grading)

21+70 - 1170'R
Take Out 24" - 92' RCP
& 2 End Sections
(Incidental Work, Grading)

10+40-175'R (US281) to 13+30-140'R (XR23)
Obliterate Roadway (27.4 Sta)

3+73 - 70' R
Remove for Reset 2-12'
Tubular Steel Gates

3+73 R
Eliminate Entrance

Government Lot 4

Sec. 36 - T95N - R67W

La Nyce Whittemore, et al.
Parcel A5

11+15 - 250' R
Reset 2-12' Tubular Steel
Gates from 3+73 - 70' R

13+88 - 425' R
2 - 24' Barbed
Wire Gates

4+66 (ent12)
Retain 60" - 156' CMP
& 2 End Sections

1/4 Line

S1/2 NW1/4

Janice L. Roeder,
Trustee of the Janice L. Roeder
Irrevocable Real Estate Trust
Parcel 11

US Hwy 281
PI 10+60.35
N 247614.43
E 2398692.44
Del 44°32'12" L
Dc 2°48'32"
T 835.35'
L 1585.71'
R 2040.00'

Section Line

Parcel 10
0+32.42 to 1+93.53 L
Temporary Easement Containing
0.1 ac, more or less

Parcel 10
2+58.73 to 17+66.69 L
Temporary Easement Containing
1.0 ac, more or less

Parcel A5
0+33.54 to 1+15.75 R
Temporary Easement Containing
0.1 ac, more or less

Parcel A5
3+42.43 to 5+33.42 R
Temporary Easement Containing
0.1 ac, more or less

Parcel A5
10+52.66 to 11+43.07 R
Temporary Easement Containing
0.1 ac, more or less

Parcel A5
13+35.57 to 13+70.91 R
Temporary Easement Containing
0.1 ac, more or less

Parcel 11
13+62.29 to 14+03.05 R
Temporary Easement Containing
0.1 ac, more or less

Parcel 5
17+36.88 to 22+54.61 L
Temporary Easement Containing
0.2 ac, more or less

Parcel 5
17+43.55 to 18+88.52 R
Temporary Easement Containing
0.1 ac, more or less

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON B. CASIUS
10/1/2025

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	137	267

FOR BIDDING PURPOSES ONLY

Plotting Date: 10/01/2025 Rev:

Waste is muck excavation to be disposed of at a site approved by the Engineer.

Exc=	13706	Emb=	35224	
Undercut=	2405	+35.00%=	12328	47552
Option Borrow=	34688	Undercut=	2405	
Muck=	514	+35.00%=	842	3247
Total=	51313	Waste=		514
		Total=		51313

US281

K
0+33
Begin Work

11+50 R
28' Int. Road

17+35 L
40' Ent.

22+00 R
24' Ent

22+00 L
24' Ent

8+00 R
Ditch Block
Elev 1818.5

L 800.00'
G1 -0.5872%
G2 0.8814%
K 545

L 800.00'
G1 0.8814%
G2 -0.3150%
K 659

PVI 0+00
ELEV 1821.00

-0.5872%

RDG -0.8815%

RDG -0.5102%

RDGPI 1+00
Elev 1816.18

RDGPI 2+00
Elev 1815.30

LDG -0.0698%

LDG 0.2980%

PVI 5+30
Elev 1817.89

0.8814%

PVI 21+93
Elev 1832.55

-0.3150%

LDG -0.7389%

RDGPI 17+25
Elev 1824.67

LDGPI 19+00
Elev 1824.95

LDG 0.2301%
RDG 0.1450%

LDGPI 23+00
Elev 1825.87

RDGPI 23+00
Elev 1825.50

LDGPI 25+75
Elev 1826.90

LDG 0.8945%

LDGPI 29+00
Elev 1824.50

RDGPI 29+75
Elev 1823.50

RDG -0.7796%

RDGPI 4+00
Elev 1814.28

LDGPI 3+00
Elev 1813.66

RDGPI 5+00
Elev 1813.50

LDGPI 5+24
Elev 1813.50

LDGPI 7+00
Elev 1814.02

FLL 1812.00
FLR 1811.80
Q_{100} = 524
El = 1818.7
Q_{25} = 287
El = 1816.1
Q_{OT} > Q100

FLL 1824.44
FLR 1824.00

Q_{70} = 12.51 cfs
El 1826.46

ent12

L 200.00'
G1 -1.4957%
G2 -0.0664%
K 140

PVI 1+25
ELEV 1824.85

PVI 1+49
ELEV 1824.85

0.0000%

-1.4957%

PVI 7+00
ELEV 1820.33

-0.0664%

1824.09 1822.59 1821.23 1820.52 1820.39 1820.33

5+00

1821.00 1820.41 1819.87 1819.50 1819.32 1819.32 1819.50 1819.87 1820.42 1821.16 1822.03 1822.91 1823.79 1824.67 1825.56 1826.44 1827.32 1828.20 1829.08 1829.88 1830.52 1831.02 1831.37 1831.57 1831.62 1831.52 1831.27 1830.95 1830.64 1830.32 1830.01

0+00 5+00 10+00 15+00 20+00 25+00 30+00

1920 1910 1900 1890 1880 1870 1860 1850 1840 1830 1820 1810 1800 1790 1780 1770 1760 1750 1740 1730 1720

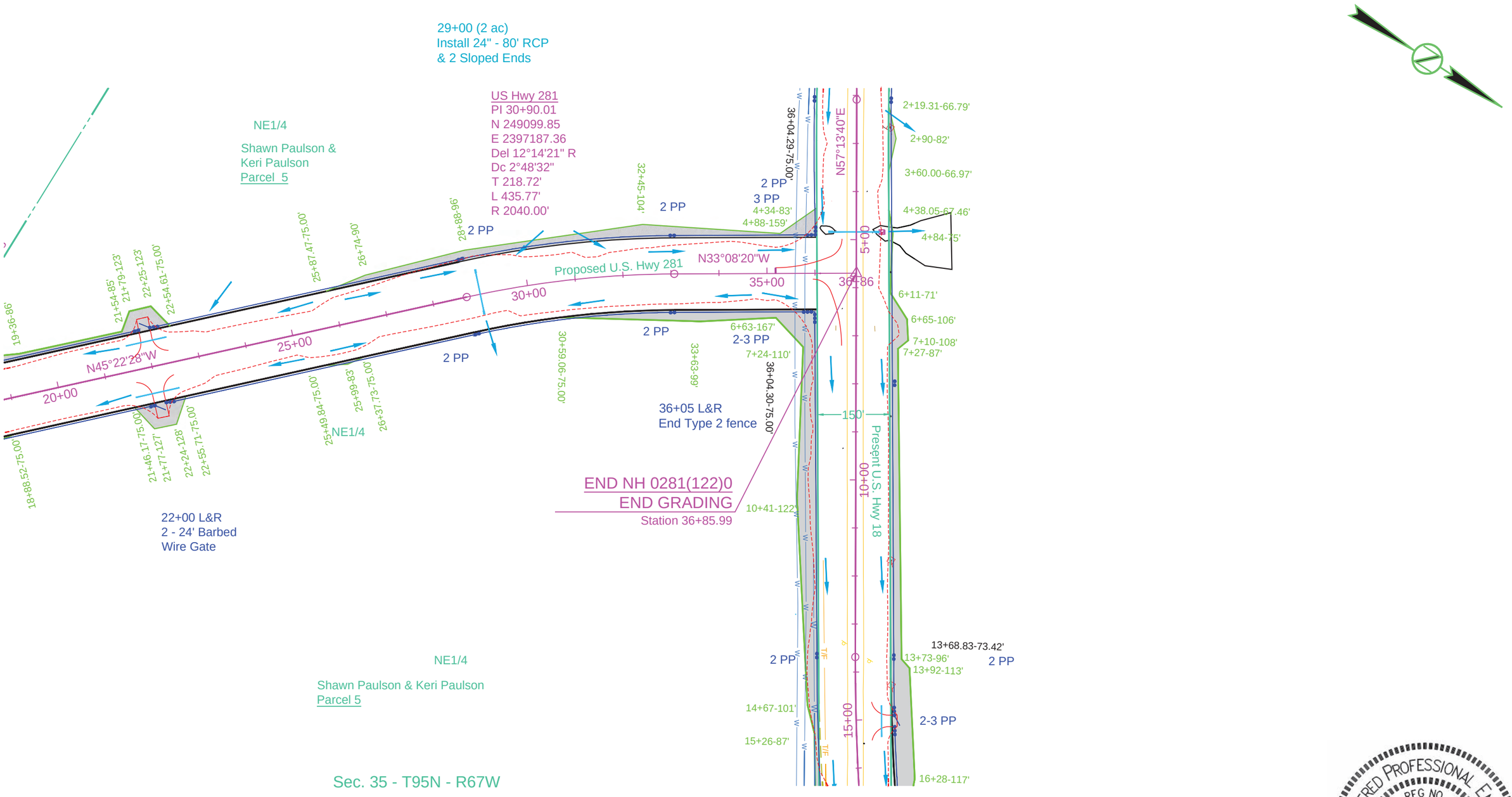
REGISTERED PROFESSIONAL ENGINEER
REG NO.
13392
WAYLON J.
BLASIUS
10/25/2024

BAI JOB # 23190-10

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	138	267

Plotting Date: 10/01/2025 Rev:



Parcel 5
21+46.17 to 22+55.71 R
Temporary Easement Containing
0.1 ac, more or less

Parcel 5
25+49.84 to 26+37.73 R
Temporary Easement Containing
0.1 ac, more or less

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13392
WAYLAND D. BLASIUS
10/15/2025

BAI JOB # 23190-10 | STATE OF SOUTH DAKOTA | PROJECT: NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0 | SHEET 139 | TOTAL SHEETS 267

FOR BIDDING PURPOSES ONLY

Plotting Date: 10/01/2025 Rev:

US281

36+56
End Work

L 200.00'
G1 -0.8150%
G2 -0.8726%
K 359

L 100.00'
G1 -0.8726%
G2 1.0000%
K 53

36+56
Int Road

PVI 36+56
ELEV 1827.94

0.8726%

1.0000%

LDG 0.8945%

RDG 0.2952%

RDG -2.7446%

RDG -0.3047%

LDG -0.2884%

LDGPI 31+00
Elev 1826.29

LDGPI 34+25
Elev 1824.09

RDGPI 34+75
Elev 1824.98

RDGPI 35+00
Elev 1824.29

RDGPI 35+96
Elev 1824.00

LDGPI 36+29
Elev 1823.50

1830.01 1829.69 1829.38 1828.92 1828.19 1827.32 1827.38

1920 1910 1900 1890 1880 1870 1860 1850 1840 1830 1820 1810 1800 1790 1780 1770 1760 1750 1740 1730 1720

30+00 35+00 40+00 45+00 50+00 55+00 60+00

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON B. PLASIUS
10/25/2024

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	140	267

Plotting Date: 10/01/2025 Rev: 03/19/2024 NJF

FOR BIDDING PURPOSES ONLY

10+00 - 140' L
Take Out 24" - 83' CMP
& 2 End Sections
(Incidental Work, Grading)

11+83 - 35' R
Install 24" - 70' CMP
& 2 Safety Ends

13+06 - 130' R
Retain 18" - 60' CMP
& 2 End Sections

20+02
Take Out 18" - 95' CMP
& 2 End Sections
(Incidental Work, Grading)

20+02 (15 ac)
Install Twin 18" - 36' CMP
& 4 Sloped Ends
(Spaced 15' C to C)

15+00-200'L to 17+80-40'L
Obliterate Roadway (3.2 Sta)

Sec. 26 - T95N - R67W

Sec. 25 - T95N - R67W

E1/2

Outlot "M"
Dave Shipman & Deb Shipman
Parcel 6

Marla M. Frankenstein,
Trustee of the Barbara J. Olson
Irrevocable Family Legacy Trust
Parcel 8

US Hwy 18
PI 26+88.49
N 250747.07
E 2398641.99
Del 32°20'54" L
Dc 1°15'33"
T 1319.67'
L 2568.85'
R 4550.00'

9+46 L
End type 2 fence

6+39 R
Begin type 2 fence

6+51 L
Begin type 2 fence

Present Co Hwy 54 / 303rd Street
Section Line

County Road 54 / 303rd Street
N88°45'17"E

Proposed U.S. Hwy 18

Present U.S. Hwy 18

Present U.S. Hwy 281

15+16 L
Begin type 2 fence

N89°18'46"E

County Road 54 / 303rd St.

19+21 L&R
End type 2 fence

XR23
PI 18+63.39
N 250762.68
E 2399097.58
Del 29°18'54" R
Dc 25°00'04"
T 60.42'
L 118.19'
R 231.00'

XR23
PI 6+89.14
N 250741.69
E 2398035.81
Del 18°32'25" R
Dc 25°00'04"
T 37.76'
L 74.75'
R 231.00

8+50 R
End type 2 fence

NE1/4

Shawn Paulson &
Keri Paulson
Parcel 5

Outlot "O"
Dave Shipman & Deb Shipman

Parcel A4

9+33 R
Begin type 2 fence

11+83 R
1 - 24' Barbed
Wire Gate

12+80 R
1 - 24' Barbed
Wire Gate

13+80 R
1 - 24' Barbed
Wire Gate

Outlot "N"
South Dakota
Department of
Transportation

Parcel 7

W1/2 SW1/4

Janice L. Roeder,
Trustee of the Janice L. Roeder
Irrevocable Real Estate Trust
Parcel 9

E1/2 SW1/4

Kenneth E. Koenig &
Jessica J. Koenig

(INFORMATION
ONLY)

NW1/4 NW1/4

Janice L. Roeder,
Trustee of the Janice L. Roeder
Irrevocable Real Estate Trust
Parcel 11

NW1/4 NW1/4

Marla M. Frankenstein,
Trustee of the Barbara J.
Olson Irrevocable Family
Legacy Trust

(INFORMATION
ONLY)

Sec. 35 - T95N - R67W

Sec. 36 - T95N - R67W

27+13 - 1636'R (US281)
Take Out 18" - 62' CMP
& 2 End Sections
(Incidental Work, Grading)

Parcel A4
12+46.43 to 12+86.56 R (xr23)
Temporary Easement Containing
0.1 ac, more or less

Parcel 9
17+29.58 to 19+41.16 L (xr23)
Temporary Easement Containing
0.2 ac, more or less

Parcel 11
13+76.69 to 19+41.16 R (xr23)
Temporary Easement Containing
0.3 ac, more or less

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON D. BLASIUS
10/1/2025

BAI JOB # 23190-10 | STATE OF SOUTH DAKOTA | PROJECT: NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0 | SHEET 141 | TOTAL SHEETS 267

FOR BIDDING PURPOSES ONLY

Plotting Date: 10/01/2025 Rev. 03/19/2024 NJF

xr23

	Exc=	5467	Emb=	7005	
	Option Borrow=	3990	+35.00%=	2452	9457
	Total=	9457	Total=		9457

6+51 Begin Work

19+21 End Work

9+69 Int. Road

11+83 R 24' Ent.

11+83 R 24' Ent.

13+06 R 24' Ent.

L 100.00'
G1 1.0495%
G2 2.5557%
K 66

L 200.00'
G1 1.0000%
G2 -2.9811%
K 50

L 320.07'
G1 -2.9811%
G2 0.3716%
K 95

PVI 6+51
ELEV 1814.60

PVI 9+41
ELEV 1819.84

PVI 9+95
ELEV 1820.96

PVI 11+98
Elev 1823.77

PVI 19+21
ELEV 1807.58

1.0495%
2.5557%
3.5548%
1.0000%
-2.9811%
0.3716%

RDG 0.5791%
LDG 0.7316%

LDGPI 6+51
Elev 1812.00

RDGPI 6+51
Elev 1812.00

RDGPI 7+26
Elev 1812.43

PVI 7+95
Elev 1816.10

LDGPI 8+56
Elev 1813.50

RDGP -17+00
Elev 1806.25

RDG -0.4522%

PVI 17+61
Elev 1806.99

RDGPI 19+21
Elev 1805.25

FLL 1805.03
FLR 1804.93

CP 103
8+51.24-8' L
5/8" Iron Rod w/cap
Elev 1818.81

1815.11 1816.39 1818.79 1821.79 1822.79 1822.76 1820.74 1817.75 1814.77 1811.79 1809.32 1807.90 1807.53

0+00 5+00 10+00 15+00 20+00 25+00 30+00

1920 1910 1900 1890 1880 1870 1860 1850 1840 1830 1820 1810 1800 1790 1780 1770 1760 1750 1740 1730 1720

REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON J. BLASIUS
03/25/2024

BORROW PIT INFORMATION LAYOUT
Option Borrow Pit #1 (Sheet 1 of 2)

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	142	267

Plotting Date: 04/24/2024

PIT NO. Pit 1

PROJECT NO. NH 0018(222)311 PCN 067V COUNTY GREGORY

LOCATION Lot One (1), Two (2), Three (3), and Four (4) and the East Half of the Southwest Quarter (E1/2 SW1/4), less 1.91 acre highway, of Section Eighteen (18) all in Township Ninety-five (95) North, Range Sixty-six (66) West of the 5th P.M., Gregory County, South Dakota

PIT OWNER Wayne J. Clocker ADDRESS 37479 Highway 18 Fairfax, SD 57335

AVERAGE DEPTH OF MATERIAL 4.3' AVERAGE DEPTH OF TOPSOIL 10"

MATERIAL AVAILABLE 100,000 CU.YDS.

ESTIMATED CU. YDS. OF TOPSOIL 19,310 CU.YDS.

11,775' DEADHAUL TO STATION 43+26

Sec. 18-T95N-R66W

Pit Area
14.36 acres

Hole #3
Hole #2
Hole #1

A
B
C
D
E

Haul Route

Present US Hwy 281 & US Hwy 18

Haul Route

PIT DATA			
LAB. SAMPLE #	24-0445	24-0446	24-0447
PIT NUMBER/NAME	Clocker	Clocker	Clocker
HOLE#	1	2	3
FIELD SAMPLE #	1	2	3
DEPTH	1'-20'	1'-20'	1'-20'
FIELD MOISTURE	#N/A	#N/A	#N/A
DRY LOOSE WT.	73.6	74.9	75.2
% passing 3/8	100.0	100.0	100.0
% passing # 4	100.0	100.0	100.0
% passing # 10	100.0	100.0	100.0
% coarse sand	0.2	0.4	0.7
% fine sand	6.1	9.8	12.9
% silt	55.5	52.6	49.2
% clay	38.2	37.2	37.2
% passing # 40	99.8	99.6	99.3
% passing # 200	93.7	89.8	86.4
% coarse & fine sand	6.3	10.2	13.6
liquid limit	41	40	40
liquid plastic limit	19	20	18
P. I.	22	20	22
TEX. CLASSIFICATION	SILT CLAY	SILT CLAY	SILT CLAY
AASHTO CLASS.	A-7-6	A-6	A-6
GP Index	13	12	13
Field Color	Brown	Brown	Brown
DEPTH TO GROUNDWATER	Dry Hole	Dry Hole	Dry Hole
Drilling Date	11/17/2023	11/17/2023	11/17/2023
DEPTH OF TOPSOIL	6"	6"	6"

SCALE:
200 ft = 1"

STANDARD PIT INFORMATION SHEET
SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

PLOT SCALE - 1:200

PLOTTED FROM - TRM11NT16

PLOT NAME - 1

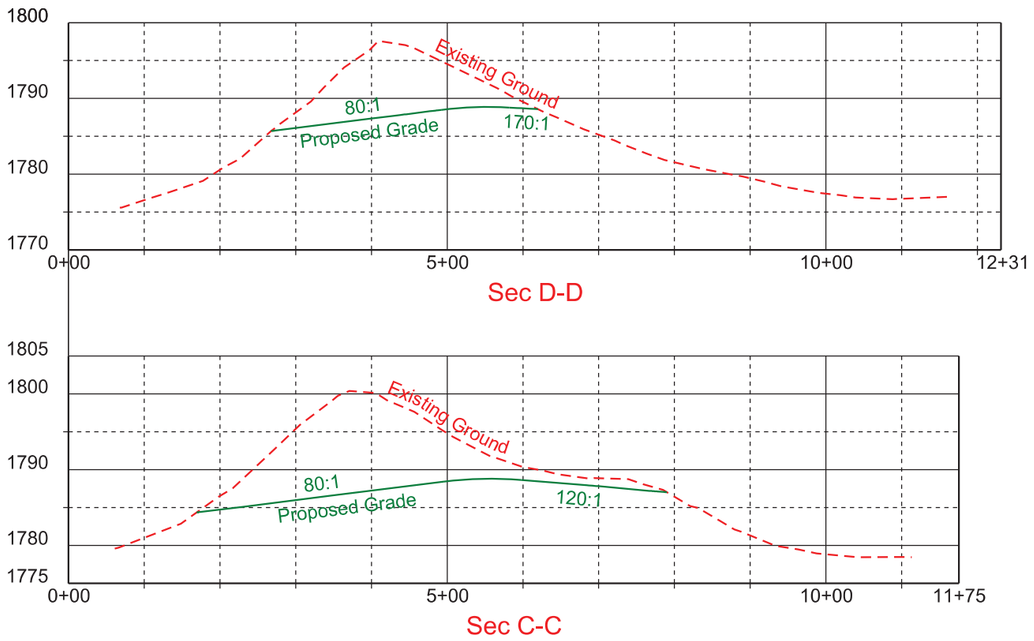
FILE - ...\PITS\GREG067V\BP067V.DGN

BORROW PIT INFORMATION LAYOUT
Option Borrow Pit #1 (Sheet 2 of 2)

FOR BIDDING PURPOSES ONLY

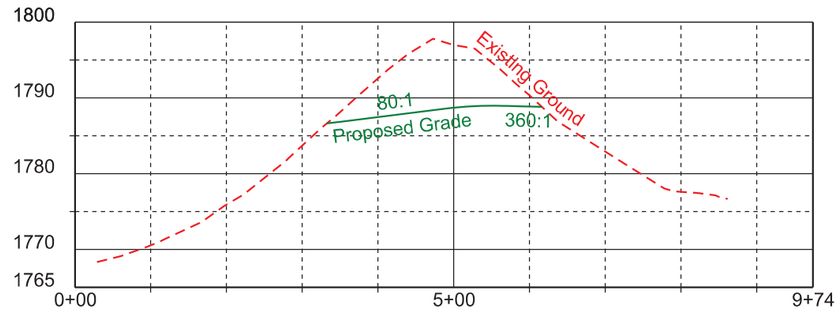
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0018(222)311, NH 0281(122)0, P 0043(26)0, & P 1806(21)15	143	267

Plotting Date: 04/24/2024



Sec D-D

Sec C-C



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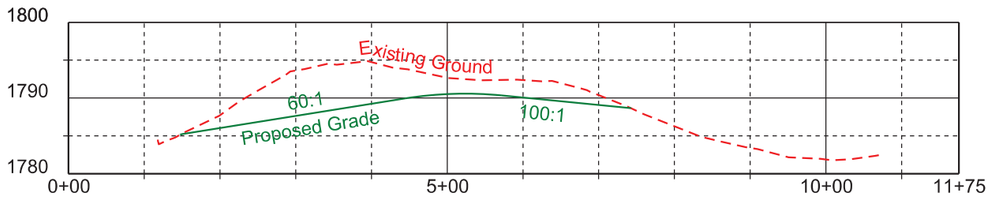

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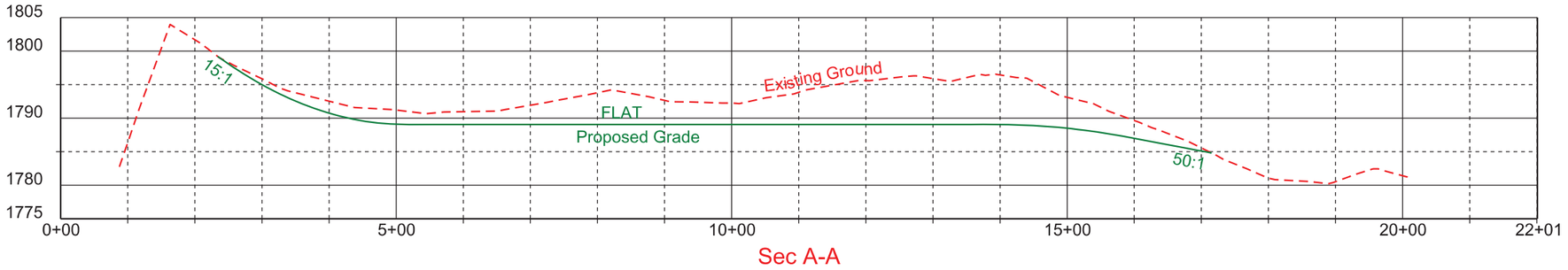


Sec A-A

PLOT SCALE - 1:200

PLOTTED FROM - TRM1INT16

PLOT NAME - 2

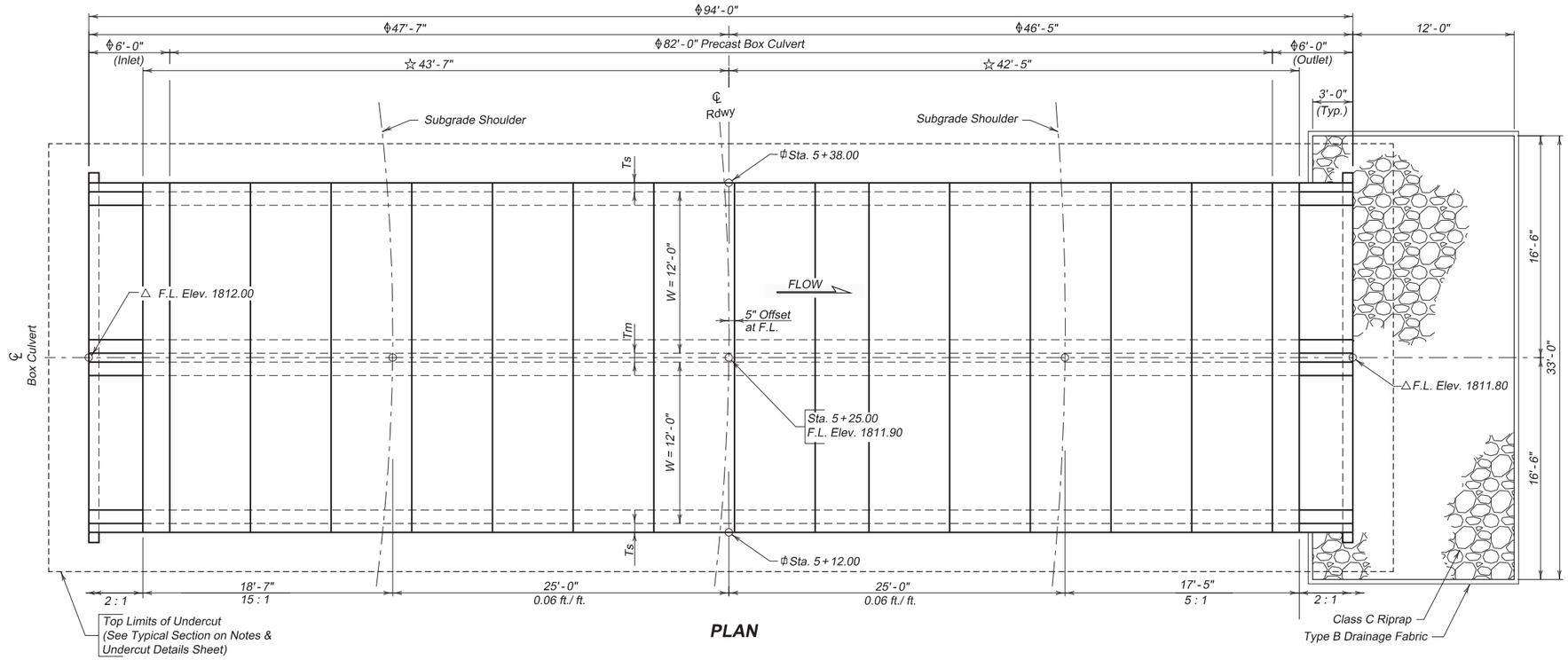
FILE - ...\PITS\GREG067V\BP067V.DGN

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum 1988 (NAVD88).

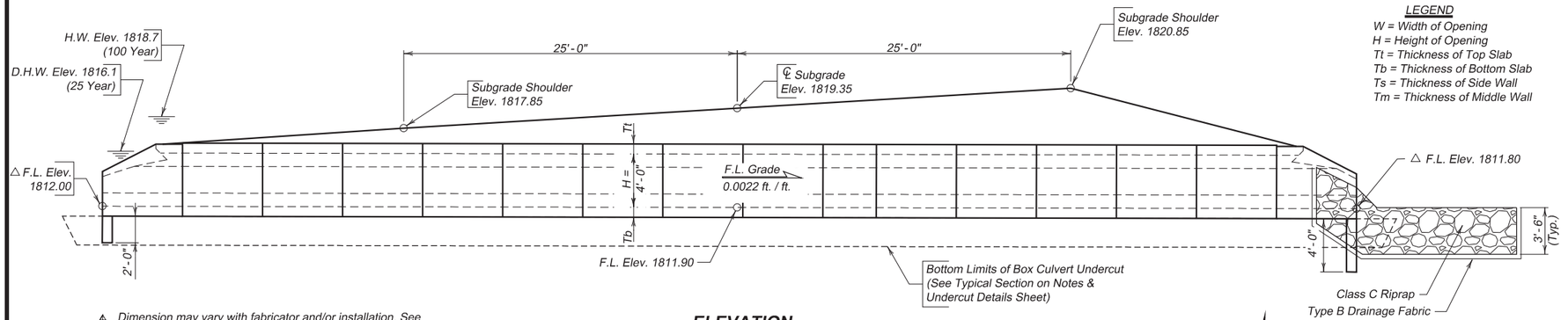
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0281(122)0	144	267

Plotting Date: 2/7/2025



PLAN

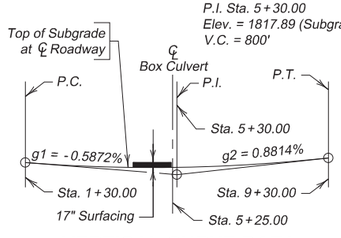


ELEVATION

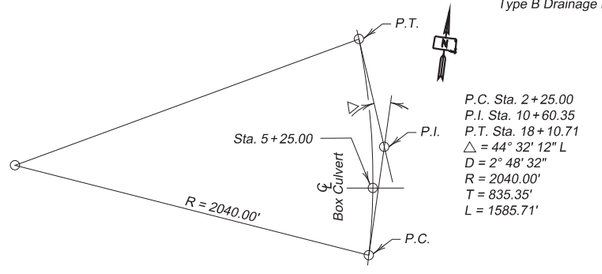
LEGEND
W = Width of Opening
H = Height of Opening
Tt = Thickness of Top Slab
Tb = Thickness of Bottom Slab
Ts = Thickness of Side Wall
Tm = Thickness of Middle Wall

- Dimension may vary with fabricator and/or installation. See Shop Plans for actual installation length.
☆ Minimum distance to satisfy fill slope.
△ Based on dimensions shown.
℄ Based on 8" walls.

NOTE:
Box culvert flow line has been depressed 1'-0" below channel flow line to accommodate aquatic organisms. The 1'-0" depression will be allowed to fill in naturally over time.



VERTICAL CURVE DATA



P.C. Sta. 2+25.00
P.I. Sta. 10+60.35
P.T. Sta. 18+10.71
△ = 44° 32' 12" L
D = 2° 48' 32"
R = 2040.00'
T = 835.35'
L = 1585.71'

HORIZONTAL CURVE DATA

- X028 -

INDEX OF CULVERT SHEETS

Sheet No. 1 - General Drawing and Quantities
Sheet No. 2 - Notes & Undercut Details
Sheet No. 3 - Standard Plate No. 460.02 & No. 560.01
Sheet No. 4 - Standard Plate No. 560.20 & No. 560.21
Sheet No. 5 - Standard Plate No. 620.16

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
≠	Structure Excavation, Box Culvert	Cu. Yd.	74
	Box Culvert Undercut	Cu. Yd.	228
	2 - 12' x 4' Precast Concrete Box Culvert, Furnish	Ft.	82
	2 - 12' x 4' Precast Concrete Box Culvert, Install	Ft.	82
	2 - 12' x 4' Precast Concrete Box Culvert End Section, Furnish	Ea.	2
	2 - 12' x 4' Precast Concrete Box Culvert End Section, Install	Ea.	2
≠	Class C Riprap	Ton	75.9
	Type B Drainage Fabric	Sq. Yd.	86
	Reinforcement Fabric (MSE)	Sq. Yd.	327

≠ Quantity is based on 9" bottom slab, 9" top slab and 8" walls.
≠ For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yd. to Tons.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9061
LUCAS A. JOHNSON
SOUTH DAKOTA

HYDRAULIC DATA

Qd	287 cfs
Ad	40.4 sq. ft.
Vd	7.1 fps
Qf	287 cfs
Q_{100}	524 cfs
$Q_{O.T.fr.}$	175 cfs
V_{MAX}	13.1 fps

Qd = Design discharge for the proposed culvert based on 25 year frequency. Elev. = 1816.1.
$Q_{O.T.fr.}$ = Overtopping discharge and frequency 175 - year recurrence interval, Elev. = 1820.7. Location: at the structure
Qf = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.
Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency Elev. = 1818.7
V_{MAX} = Maximum computed outlet velocity for the proposed culvert, based on a 100 year frequency.

The hydraulic data contained in these plans is valid only if the overflow section is maintained. Alteration of the overflow section will require re - analysis of the hydraulics at the site to determine its effect on public safety.

GENERAL DRAWING AND QUANTITIES

FOR

2 - 12' x 4' BOX CULVERT (PRECAST)

UNNAMED CREEK — 0° SKEW
STA. 5+25.00 — SEC. 35/36-T95N-R67W
STR. NO. 27-410-349 — NH 0281(122)0
PCN 06D1 — HL-93

GREGORY COUNTY

S. D. DEPT. OF TRANSPORTATION

AUGUST 2025

-X028-

1 OF 5

Plans By: BANNER engineering a better community

DESIGNED BY	CK. DES. BY	DRAFTED BY	
LAJ	CWZ	LAJ	BRIDGE ENGINEER

23190.10

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0281(122)0	145	267

FOR BIDDING PURPOSES ONLY

SPECIFICATIONS

Use South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required Provisions, Supplemental Specifications, and/or Special Provisions as included in the Proposal.

GENERAL NOTES

Design will be in accordance with Section 560 of the Construction Specifications with the following criteria:

1. *Box culvert and box culvert end section design will conform to the AASHTO LRFD Bridge Design Specifications, 9th Edition.*
2. *Design Live Load: HL-93 and construction loading consisting of one 7'-6" gage axle with gross weight = 95,850 lbs. The construction load will not be applied until a minimum of 4 ft. of fill has been placed over the Box Culvert. If other construction loads in excess of legal load are anticipated by the Contractor, the Contractor will submit a proposal including a design analysis for the anticipated construction loading, through the proper channels, to Banner Associates for approval. Upon approval, the construction load shall not be applied until the depth of fill over the box culvert as required by analysis has been placed. All costs associated with accommodating any construction loads will be borne by the Contractor.*
3. *The box culvert will be load rated in accordance with the AASHTO Manual for Bridge Evaluation, 2018 Edition with latest Interim Revisions using the LRFR method. The rating will include evaluation of the Design HL-93 truck at both Inventory and Operating levels and a Legal Load rating for the three SD legal trucks (Type 3, 3S2, and 3-2) as well as the notional rating load and four specialized hauling vehicles. The structure will also be evaluated for the emergency vehicles, EV2 and EV3, at the legal load rating level. All sections of the box culvert will rate at HL-93 or better (Inventory Level). The three SD Legal Loads, the notional rating load, the four specialized hauling vehicles, and two emergency vehicles will rate greater than 1.0 at legal load rating level. AASHTOWare Bridge Rating (BrR) is required to be used to rate the box culvert. Include the BrR rating model and a load rating summary table with load rating calculations. Submit load rating calculations with the design and independent check design calculations or shop plans, as appropriate.*
4. *The design of the barrel sections will be based on a minimum fill height of 0 feet and include all subsequent fill heights up to and including the maximum fill height of 5 feet over the box culvert.*
5. *Minimum inside corner fillet will be 6-inch.*
6. *Minimum precast barrel section length will be 6-foot sections; however, no more than two 4-foot sections are allowed in any one length of precast barrel.*
7. *Lift holes will be plugged with an approved non-shrinkable grout.*
8. *The fabricator will imprint on the structure the date of construction as specified and detailed on Standard Plate 460.02.*
9. *Alternate end section details will be allowed, subject to the approval of the Bridge Construction Engineer. No additional payment will be made for any change in the barrel/end section configuration.*
10. *Installation of the precast sections will be in accordance with the final approved shop plans.*
11. *Care will be taken when placing sections. Sections will only be moved using the lifting holes by approved equipment. If other means are used to assist in seating the precast units into adjacent units, the Contractor will ensure the precast units are properly protected from damage. Under no means should steel construction equipment be in direct contact with the precast units.*
12. *The fabricator will install fence anchors on the wingwalls as shown on Standard Plate No. 620.16.*
13. *Compaction of earth embankment and box culvert backfill material will be governed by the Specified Density Method.*

SUBSURFACE CONDITIONS

1. *Soils below the bottom of the proposed box culvert consist of soft brown clay silt.*
2. *Groundwater was encountered in the borings at an elevation of 1814.0 feet during the subsurface investigation conducted in October 2023. Dewatering will be required for construction of the box culvert. All costs incurred for dewatering will be incidental to other contract items.*

DESIGN MIX OF CONCRETE

Mix will be as per fabricator's design; however, a minimum compressive strength shall not be less than 4,500 psi at 28 days.

SHOP PLANS

The fabricator will submit shop plans in accordance with the Construction Specifications to Banner Associates, 409 22nd Avenue South, Brookings, SD 57006 (lukej@bannerassociates.com). After review, corrections (if necessary), and approval by Banner Associates, the Office of Bridge Design will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

REINFORCEMENT FABRIC (MSE)

A layer of Reinforcement Fabric (MSE) will be placed at the bottom of the undercut prior to backfilling with backfill material.

Geotextile Specification:

Reinforcement Fabric (MSE) will conform to Section 831. The Reinforcement Fabric (MSE) provided will be on the Approved Products List or will be certified by the supplier to meet this specification prior to installation.

Reinforcement Fabric (MSE) will be paid for at the contract unit price per sq. yd. for Reinforcement Fabric (MSE). Payment will be full compensation for furnishing and installing the Reinforcement Fabric (MSE) only. Backfill materials will be paid for as part of the Box Culvert Undercut bid item.

Geotextile Installation Procedure:

Place the Reinforcement Fabric (MSE) on as level and smooth of surface as possible. Any protrusions that might damage the geotextile will be removed prior to placing the geotextile. All seams in the geotextile will be stitched in accordance with the seaming procedure and as shown on the detail labeled "Seam Types". No equipment will be allowed on the geotextile until the backfill material is in place. The geotextile will be kept as taut as possible prior to backfilling. Backfill material will be dumped behind the leading edge of the fill and pushed into place with a loader or dozer.

Geotextile Seaming Procedure:

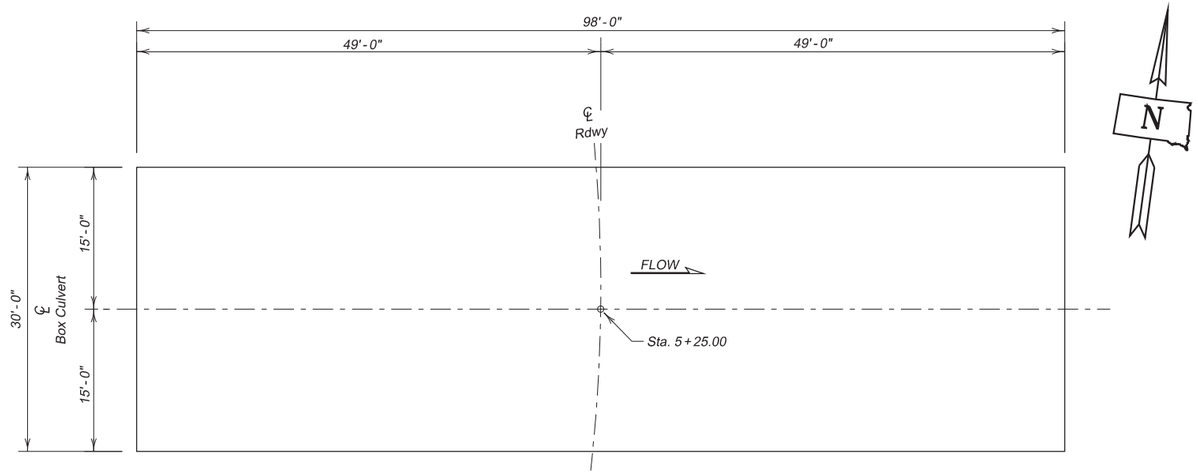
The sewn seams will consist of two parallel rows of stitching ("prayer" seam, Type SSa-2), or a J-seam (Type SSn-1), using a single row of stitching. The stitching will be a lock type stitch.

If the Type SSa-2 seam is used, the two rows of stitching will be 1" apart with a tolerance of plus or minus 0.5" and will not cross, except for restitching. The minimum seam allowance, i.e., minimum distance from the geotextile edge to the stitch line nearest to that edge, will be 1.5".

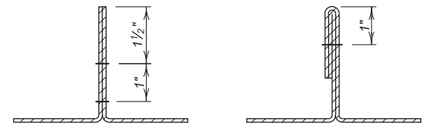
If the J seam (Type SSn-1) is used, the minimum seam allowance will be 1".

The seam, stitch type, and the equipment used to perform the stitching will be as recommended by the manufacturer of the geotextile and approved by the Engineer. The seams will be sewn in such a manner that the seam can be readily inspected by the Engineer.

The thread used will be high strength polypropylene, polyester, or Kevlar thread. Nylon threads will not be allowed.



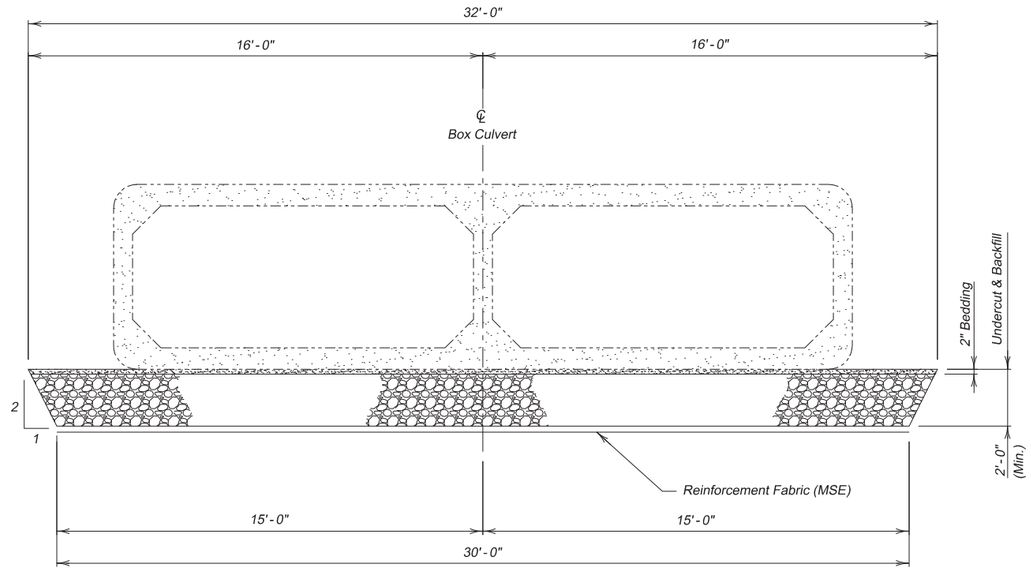
UNDERCUT LAYOUT
(Bottom Dimensions)



Flat or "prayer" seam Type SSa-2

J seam Type SSn-1

GEOTEXTILE SEAM TYPES



TYPICAL SECTION
(For Limits of Undercut)

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
ф	Box Culvert Undercut	Cu. Yd.	228
	Reinforcement Fabric (MSE)	Sq. Yd.	327

ф *For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.*

NOTES & UNDERCUT DETAILS

FOR

2 - 12' x 4' BOX CULVERT (PRECAST)

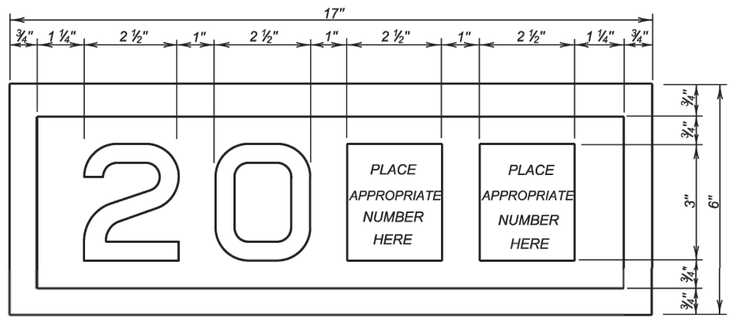
UNNAMED CREEK
STA. 5+25.00
STR. NO. 27-410-349

0° SKEW
SEC. 35/36-T95N-R67W
NH 0281(122)0
HL-93

GREGORY COUNTY
S. D. DEPT. OF TRANSPORTATION
AUGUST 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
LAJ	CWZ	LAJ	BRIDGE ENGINEER

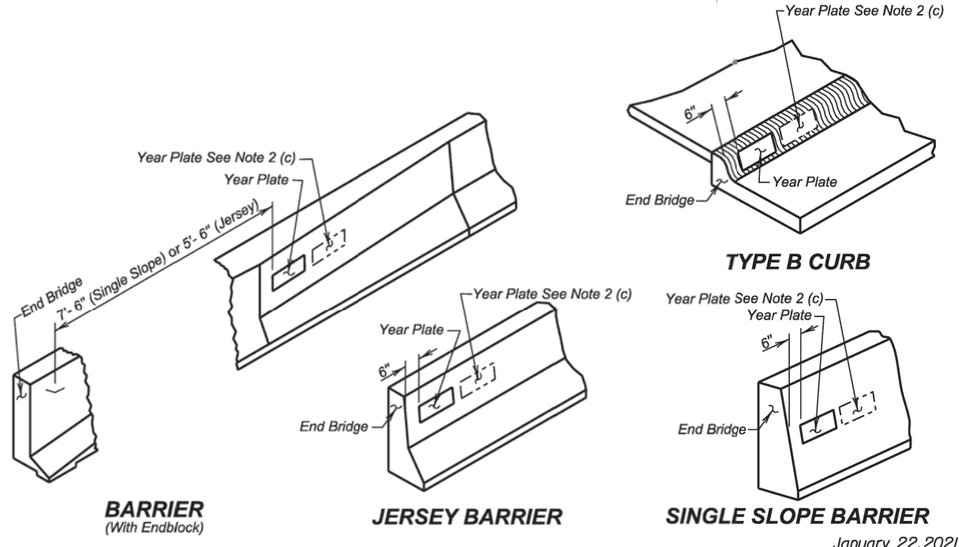
FOR BIDDING PURPOSES ONLY



YEAR PLATE DETAILS

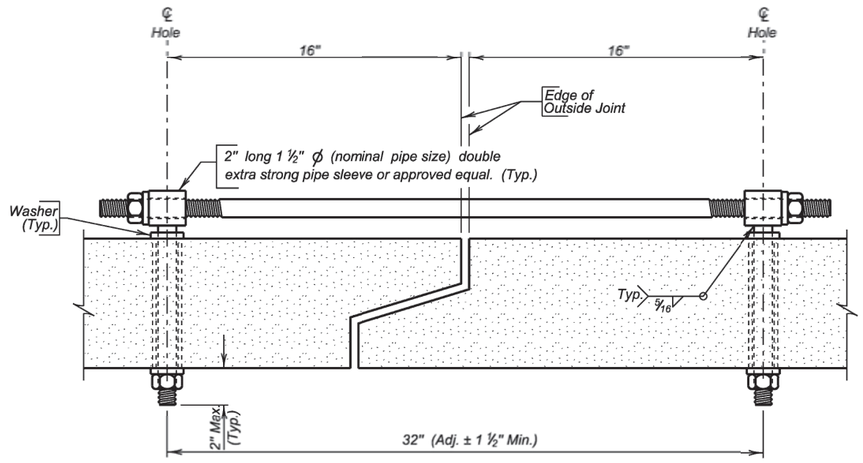
GENERAL NOTES:

1. Year plates of the general dimensions shown will be constructed on all box culverts and bridges. The year plates will be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.
2. Year plates will be located on structure(s) as follows:
   a. On cast-in-place box culverts the year plates will be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate will be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate will be centered in an adjacent barrel.
   b. On bridges with six (6) inch curbs, "Jersey" shaped barriers with no endblocks, or "Single Slope" shaped barriers with no endblocks, the year plate will be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with barrier endblocks, the year plate will be centered on the upper sloped portion of the barrier approximately 5'- 6" for "Jersey" shaped barriers from the end of the bridge and 7'-6" for "Single Slope" shaped barriers from the end of bridge, or as designated by the Engineer. There will be one year plate at each end of the bridge on opposite sides.
   c. When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.
3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.



January 22,2021

Published Date: 2026	SDDOT	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 Of 1



TIE BOLT ASSEMBLY

GENERAL NOTES:

1. All holes for tie bolts shall be cast-in-place,16 inches from outside edge of joint. Cast in inserts or sleeves, if used, shall be made of a corrosion resistant material.
2. Ties shall be 1 inch Ø and conform to the requirements of ASTM A36, ASTM A307, or ASTM F1554, Gr. 36. Nuts shall be heavy hex in conformance with ASTM A563. Washers shall conform to ASTM F436, Type 1. The welded pipe sleeve shall conform to ASTM A53, Grade B.
3. Welding and weld inspection shall be in conformance with AWS/ANSI D1.1 - (Current Year) Structural Welding Code - Steel.
4. Tie Bolt Assembly shall be galvanized in accordance with ASTM A153 or ASTM F2329 as applicable.
5. Tie Bolt Assembly details may vary from that shown, but alternate tie bolt assemblies are subject to testing to demonstrate equal strength. Submit details, through proper channels, to the Office of Bridge Design for approval.
6. All costs for furnishing and installing the precast box culvert tie bolt assembly shall be incidental to the contract unit price per Foot for "Precast Concrete Box Culvert, Furnish".

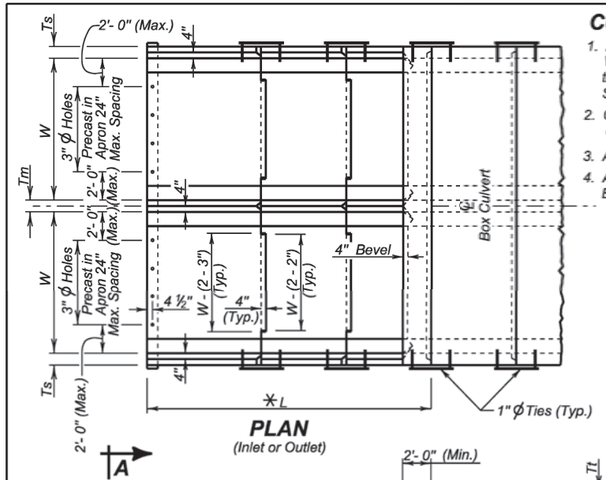
March 21, 2016

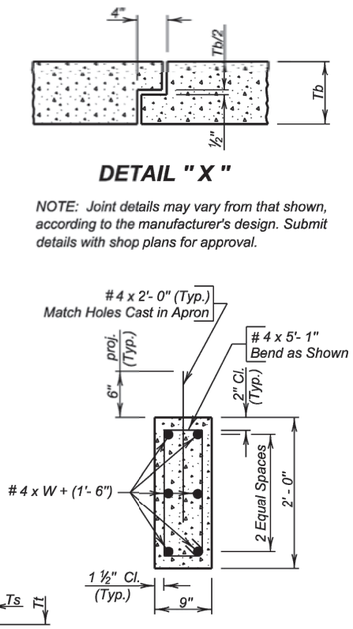
Published Date: 2026	SDDOT	PRECAST BOX CULVERT TIE BOLT ASSEMBLY DETAILS	PLATE NUMBER 560.01
			Sheet 1 of 1

FOR BIDDING PURPOSES ONLY

CUTOFF WALL

1. All costs associated with furnishing and installing the Cutoff Wall, whether precast or cast-in-place, shall be incidental to the contract unit price per each for "Precast Box Culvert End Section, Furnish".
2. Concrete for cast-in-place cutoff wall shall be Class M6 concrete in accordance with Section 462 of the Specifications.
3. All reinforcing steel shall conform to ASTM A615 Grade 60.
4. Alternate details will be allowed, subject to the approval of the Bridge Construction Engineer.





NOTE: Joint details may vary from that shown, according to the manufacturer's design. Submit details with shop plans for approval.

LEGEND

W = Width of Opening
H = Height of Opening
Tt = Thickness of Top Slab
Tb = Thickness of Bottom Slab
Ts = Thickness of Side Wall
Tm = Thickness of Middle Wall
L = Length of End Section

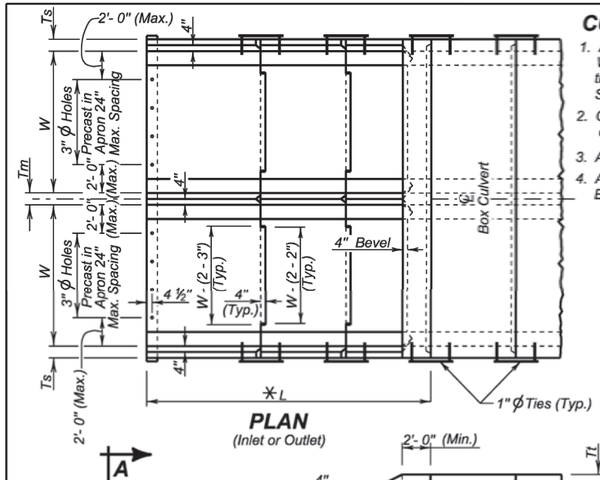
NOTES:
See GENERAL DRAWING for W and H dimensions.
Tt, Tb, Tm, L, and Ts dimensions shall be furnished by the Contractor.
✳ Length and number of units may vary from that shown.

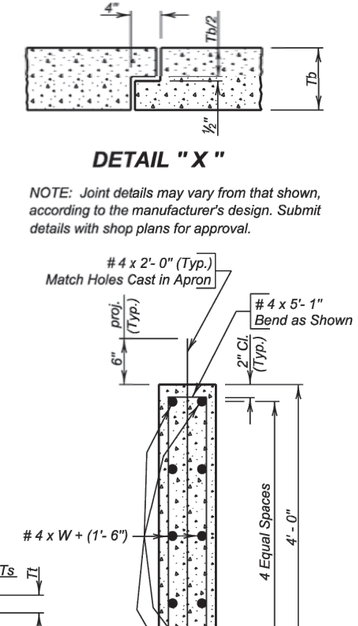
June 26, 2015

Published Date: 2026	SDDOT	PRECAST DOUBLE BOX CULVERT SLOPED END SECTION DETAILS WITH 2'–0" CUTOFF WALL	PLATE NUMBER 560.20
			Sheet 1 of 1

CUTOFF WALL

1. All costs associated with furnishing and installing the Cutoff Wall, whether precast or cast-in-place, shall be incidental to the contract unit price per each for "Precast Box Culvert End Section, Furnish".
2. Concrete for cast-in-place cutoff wall shall be Class M6 concrete in accordance with Section 462 of the Specifications.
3. All reinforcing steel shall conform to ASTM A615 Grade 60.
4. Alternate details will be allowed, subject to the approval of the Bridge Construction Engineer.





NOTE: Joint details may vary from that shown, according to the manufacturer's design. Submit details with shop plans for approval.

LEGEND

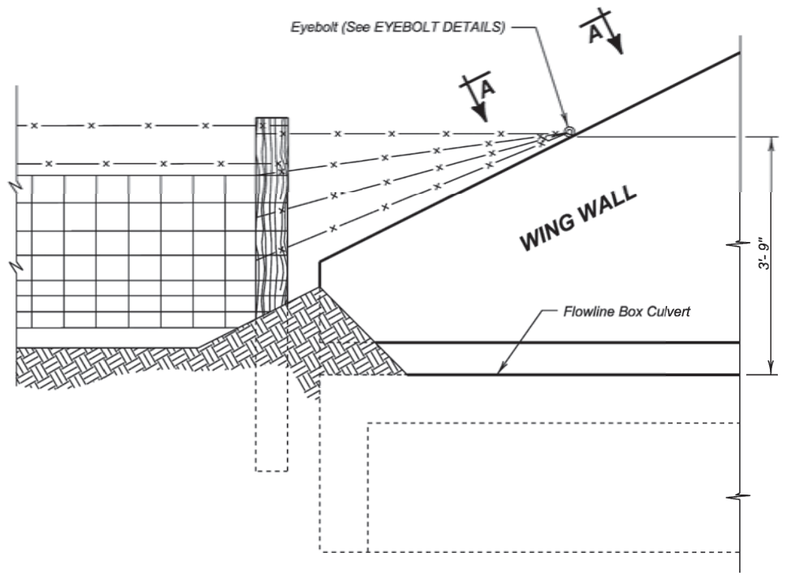
W = Width of Opening
H = Height of Opening
Tt = Thickness of Top Slab
Tb = Thickness of Bottom Slab
Ts = Thickness of Side Wall
Tm = Thickness of Middle Wall
L = Length of End Section

NOTES:
See GENERAL DRAWING for W and H dimensions.
Tt, Tb, Tm, L, and Ts dimensions shall be furnished by the Contractor.
✳ Length and number of units may vary from that shown.

June 26, 2015

Published Date: 2026	SDDOT	PRECAST DOUBLE BOX CULVERT SLOPED END SECTION DETAILS WITH 4'–0" CUTOFF WALL	PLATE NUMBER 560.21
			Sheet 1 of 1

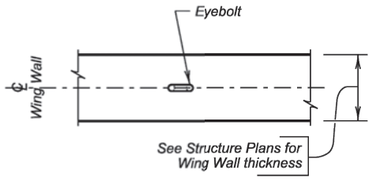
FOR BIDDING PURPOSES ONLY



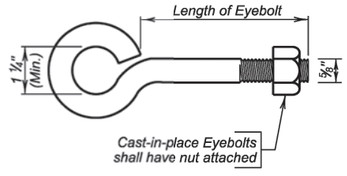
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the box culvert wing walls.
3. Eyebolts shall be ⅝ inch diameter and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be 4 ½ inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the ⅝ inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



VIEW A - A



EYEBOLT DETAILS

December 23, 2012

Published Date: 2026	SDDOT	FENCE ANCHORS FOR BOX CULVERT WING WALLS	PLATE NUMBER 620.16 Sheet 1 of 1

CONDUIT LAYOUT
US HWY 18 & SD HWY 43

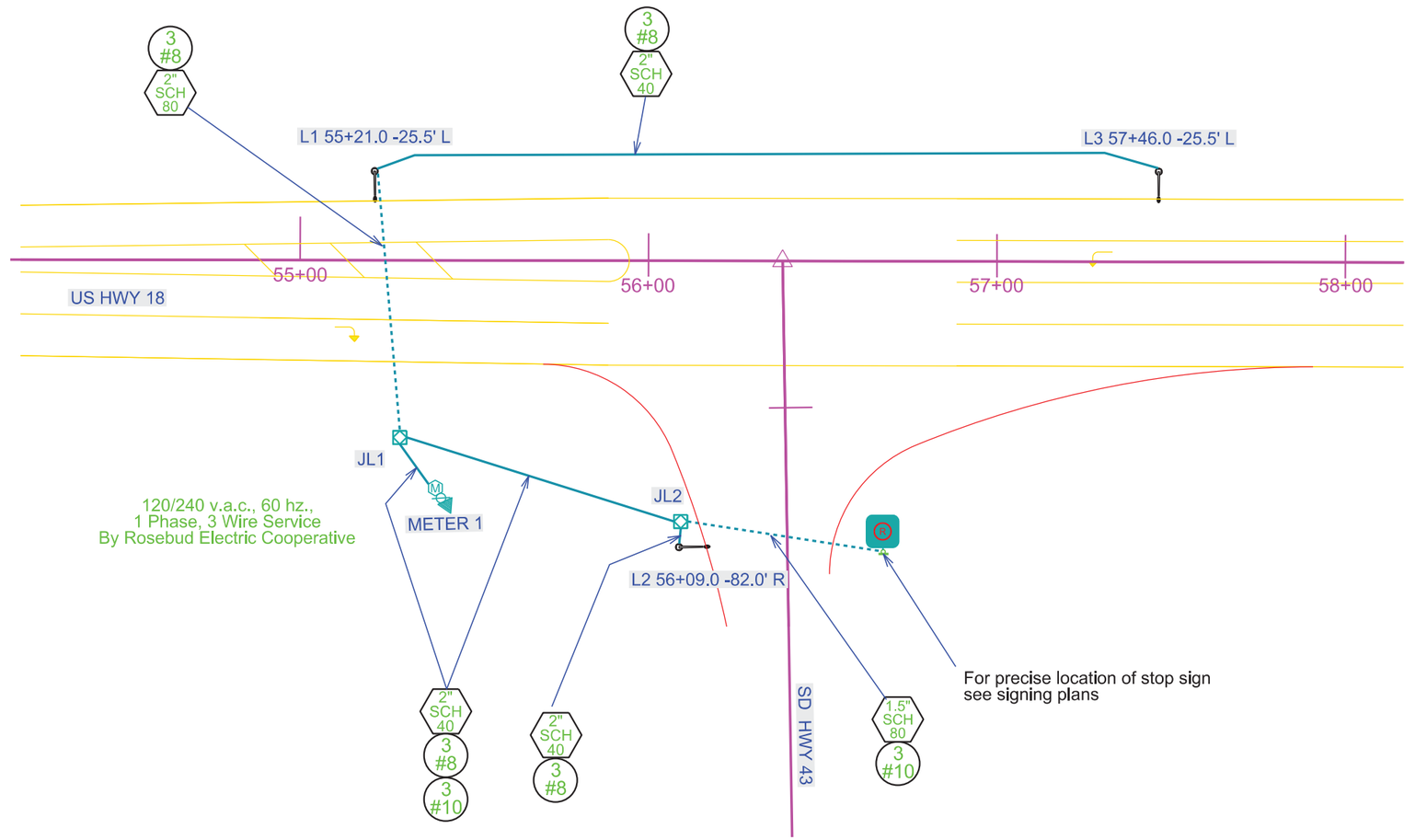
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311	149	267

Plotting Date: 07/21/2025

ESTIMATE OF QUANTITIES

KEY	ITEM	EST QUANT	UNIT
	Remove Luminaire Pole (EL1-EL2)	2	EACH
	Remove Luminaire Pole Footing (EL1-EL2)	2	EACH
	Breakaway Base Luminaire Pole w/8' Arm 45' Mounting Height (L1-L6)	6	EACH
	Roadway Luminaire, LED with P.E. (L1-L6)	6	EACH
	2' Diameter Footing (L1-L6)	48	FT
	Type 1 Electrical Junction Box (JL1-JL4)	4	EACH
	Electrical Service Cabinet	2	EACH
	Galvanized Steel Utility Pole Not a Bid Item	2	EACH
M	Meter Socket Not a Bid Item	2	EACH
2" SCH 40	2" Rigid Conduit, Schedule 40	680	FT
1.5" SCH 80	1.5" Rigid Conduit, Schedule 80	135	FT
2" SCH 80	2" Rigid Conduit, Schedule 80	235	FT
#10	1/C #10 AWG Copper Wire	1510	FT
#8	1/C #8 AWG Copper Wire	2850	FT
	2/C #10 AWG Copper Pole & Bracket Cable	360	FT
	1 Section Vehicle Signal Head	2	EACH



Plot Scale - 1:40

Plotted From - TRPR17199

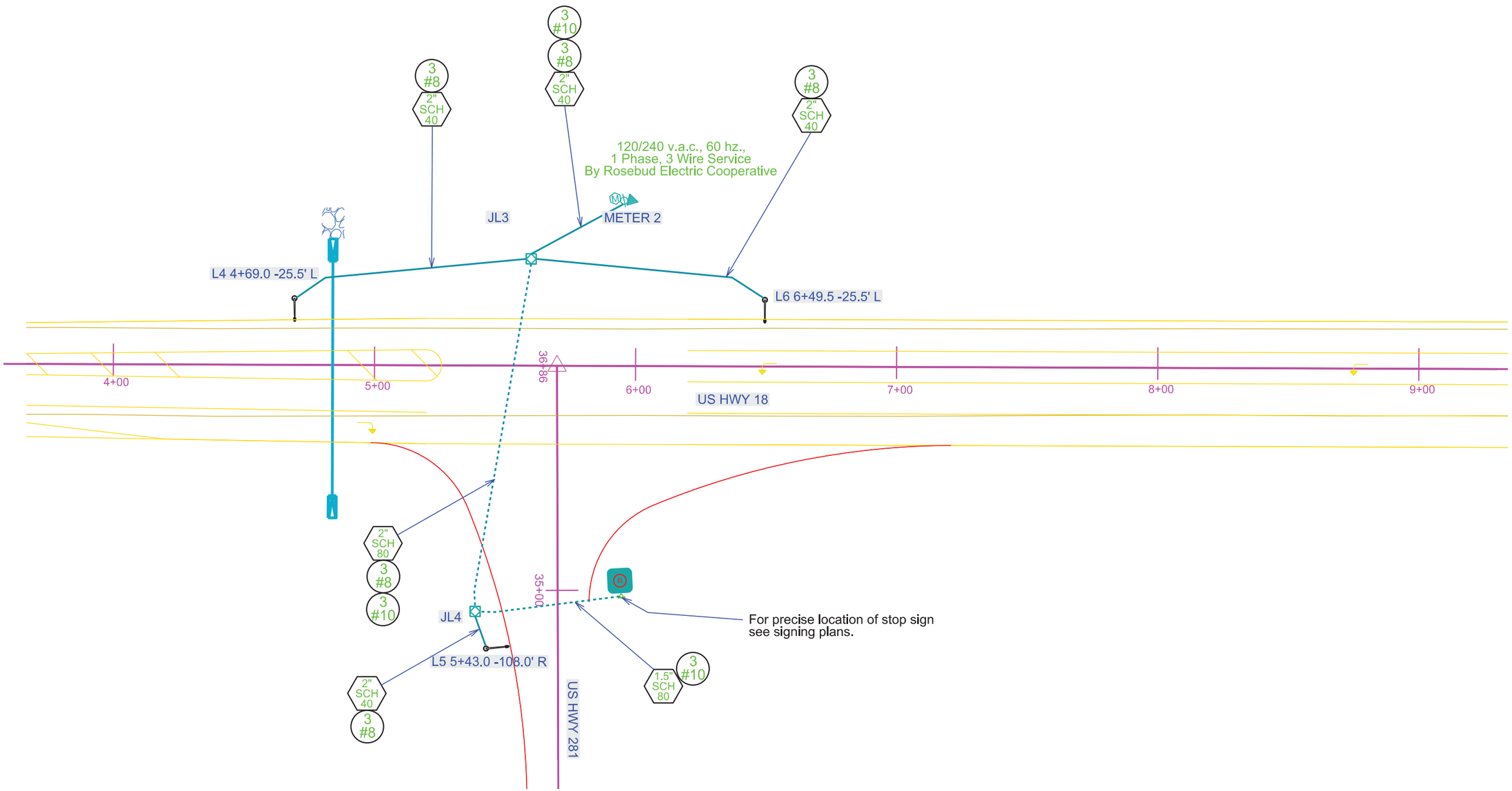
File - U:\rdpr\jlgreg06\7V065c.dgn

CONDUIT LAYOUT
US HWY 18 & US HWY 281

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311	150	267

Plotting Date: 07/21/2025



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Plotted From - TRPR17199

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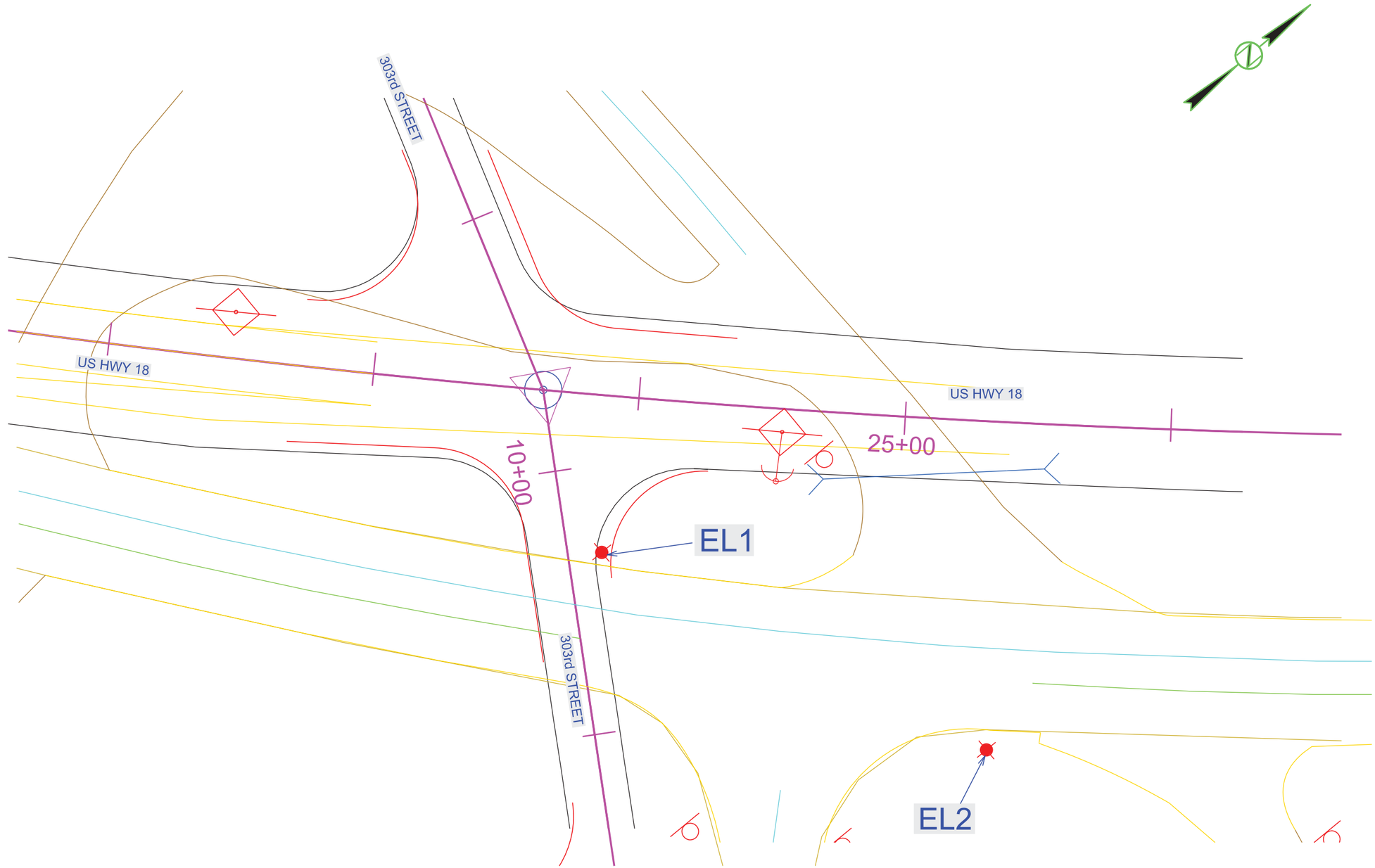
CONDUIT LAYOUT
US HWY 18 & 303rd STREET

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311	151	267

Plotting Date: 07/21/2025



Plot Scale - 1:40

Plotted From - TRPR17199

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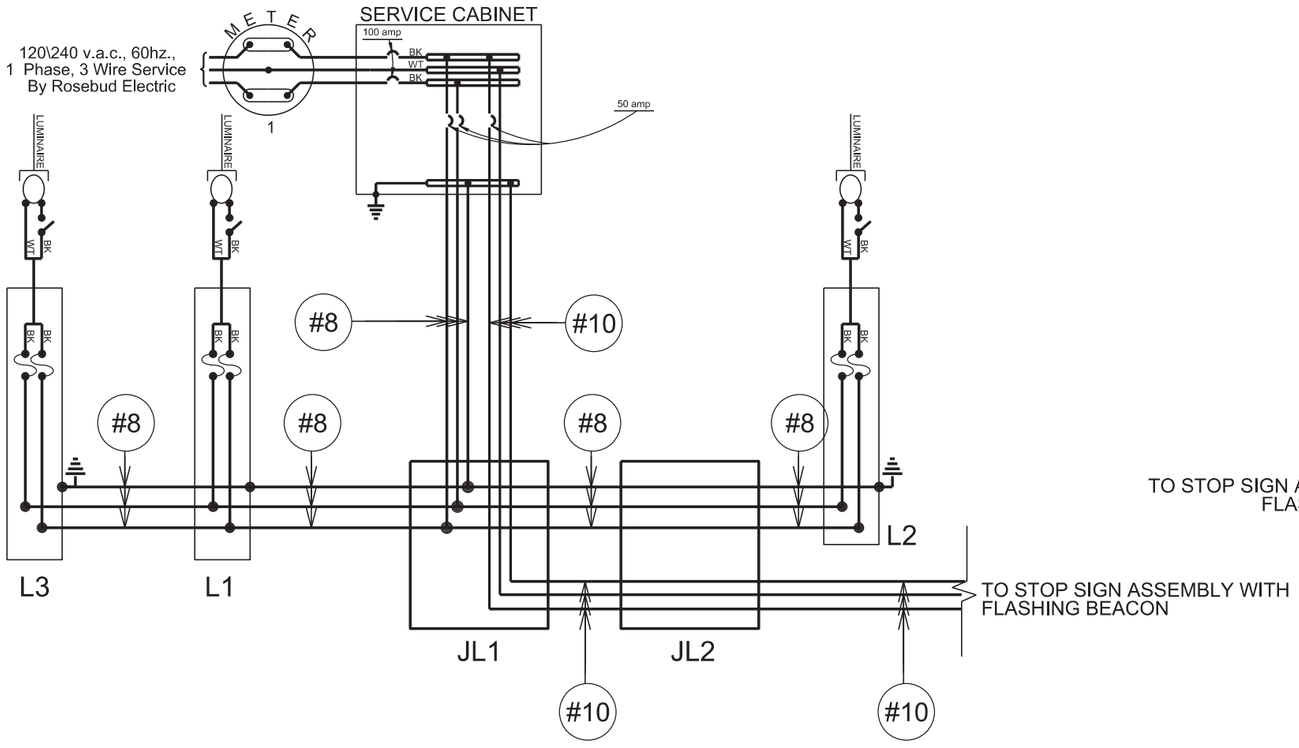
NOTE:
All circuits will be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.

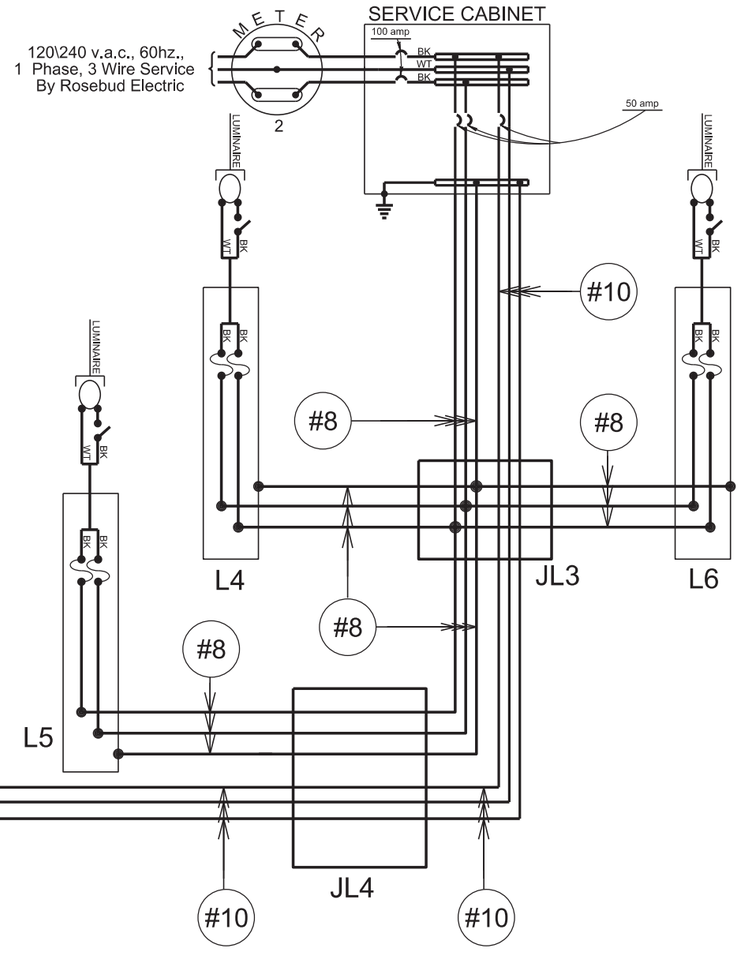
WIRING DIAGRAM

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311	152	267

Plotting Date: 07/21/2025





LEGEND:

FUSE: 10 amp.

LUMINAIRE: LED

PHOTOCELL (TYPICAL OF ALL)

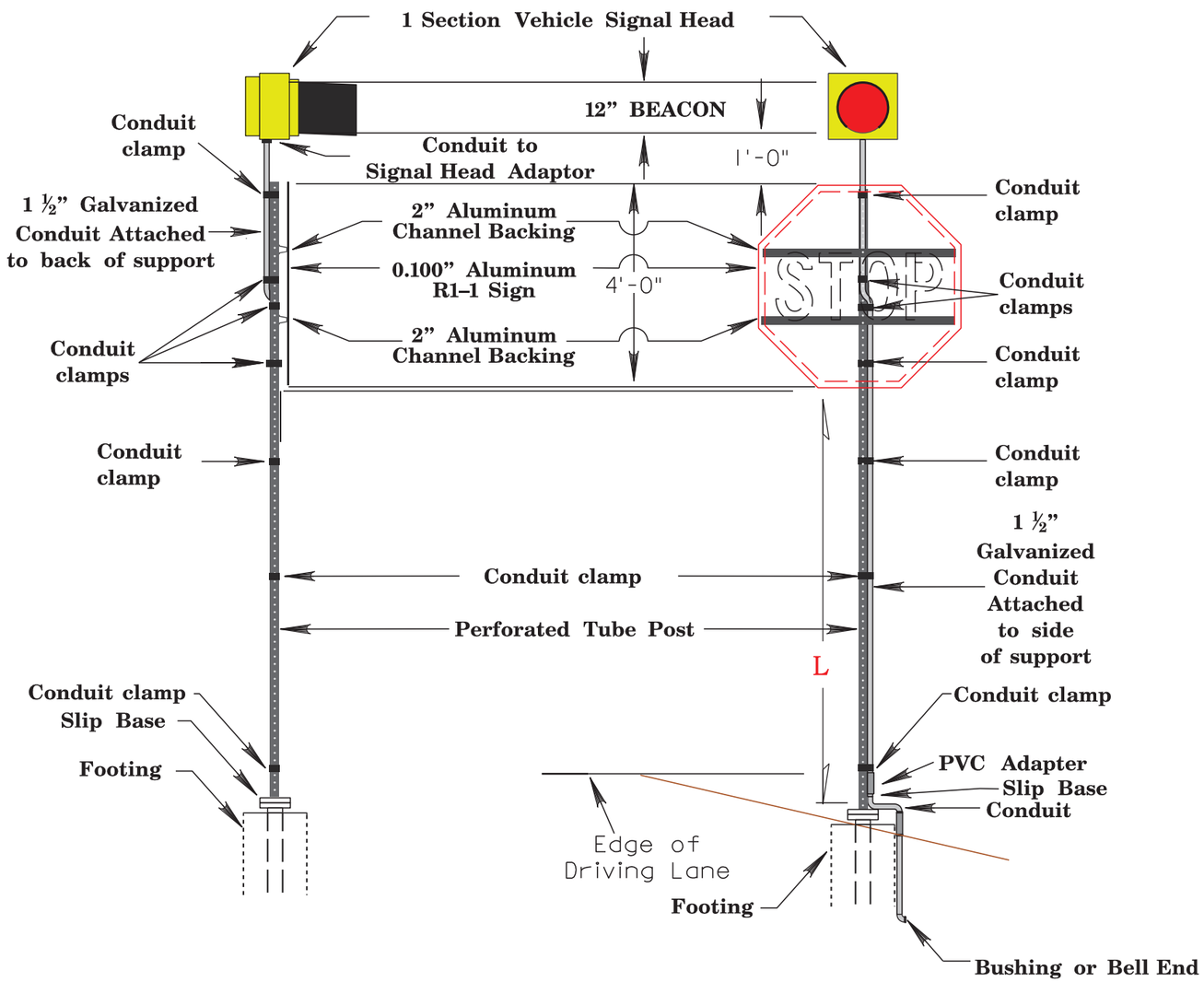
Plot Scale - 1:40

Plotted From - TRPR17199

File - U:\rdp\jgreg0677\V055004w.dgn

FOR BIDDING PURPOSES ONLY

BEACON AND ELECTRICAL CONDUCTOR CONDUIT INSTALLATION



LENGTH (L) TO BOTTOM OF SIGN
VARIES WITH INSLOPE-
SEE STD. PLATE 632.90

STOP SIGN ASSEMBLY WITH BEACON

(Typical)

PLOT SCALE - 1:2.74882
PLOTTED FROM - TRPR17199
PLOT NAME - 7
FILE - ...\BEACON WITH CONDUIT (STOP SIGN, AND WARNING SIGN).DGN

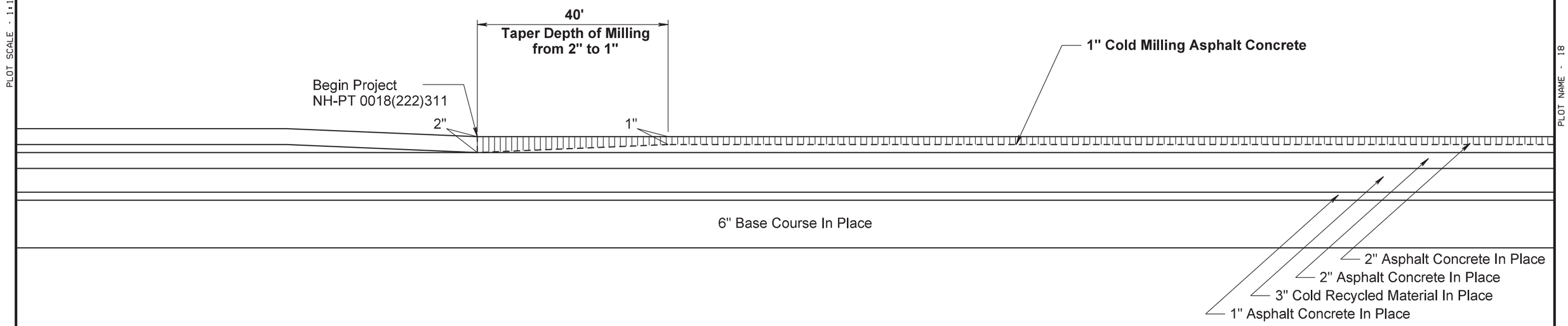
FOR BIDDING PURPOSES ONLY

Plotting Date: 12/29/2025

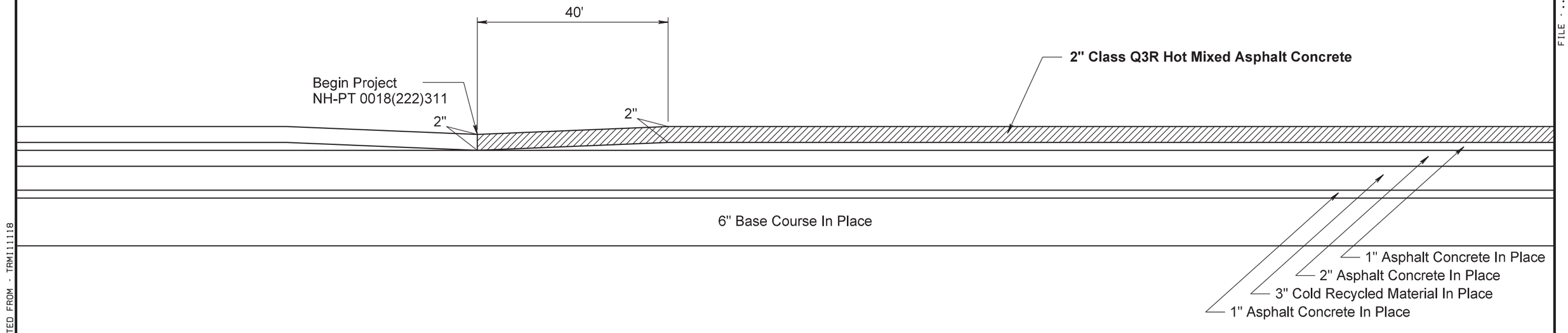
PLOT SCALE - 1:1.008

PLOT NAME - 18

DETAIL FOR COLD MILLING TAPER
AT BEGIN PROJECT NH-PT 0018(222)311



DETAIL FOR RESURFACING TAPER
AT BEGIN PROJECT NH-PT 0018(222)311



PLOTTED FROM - TRMI11118

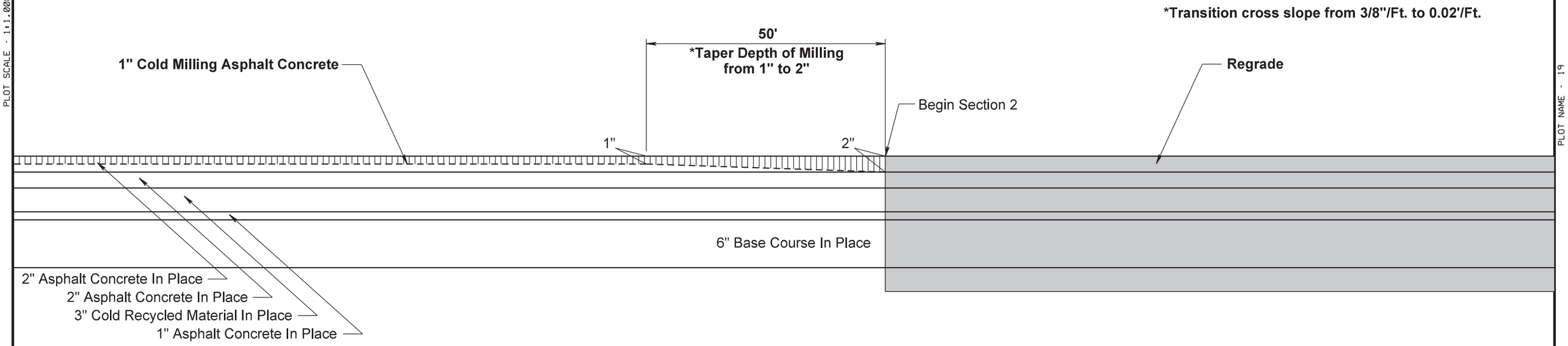
FILE - ...\MILL067V.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	155	267

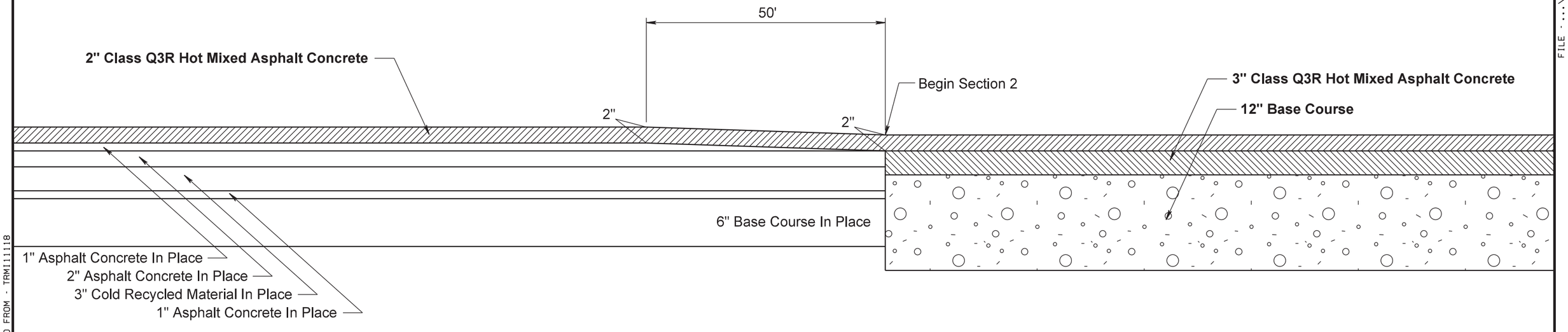
FOR BIDDING PURPOSES ONLY

Plotting Date: 12/29/2025

DETAIL FOR COLD MILLING TAPER
AT BEGIN SECTION 2 NH-PT 0018(222)311



DETAIL FOR RESURFACING TAPER
AT BEGIN SECTION 2 NH-PT 0018(222)311



PLOT SCALE - 1:1.008

PLOT NAME - 19

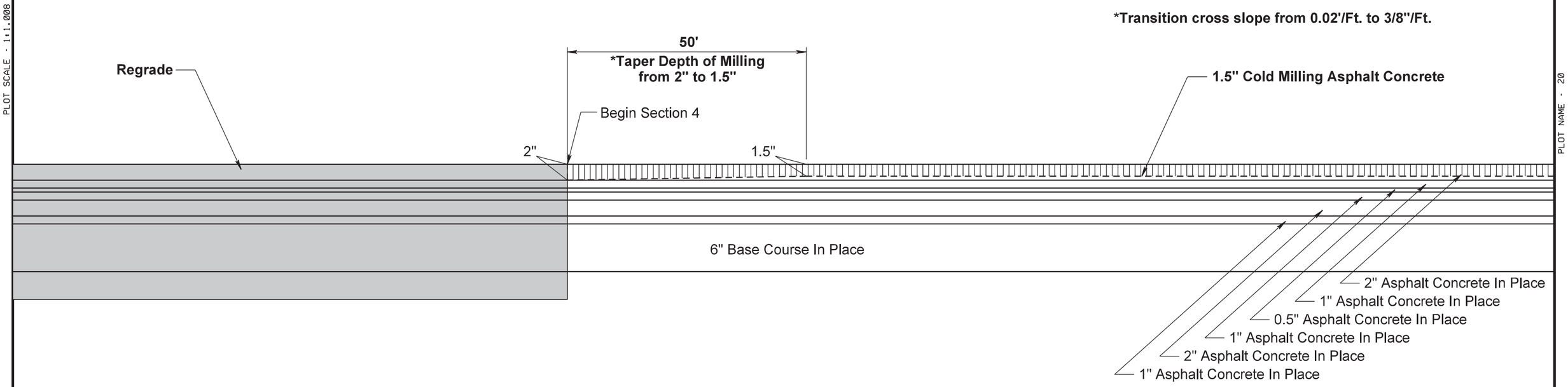
PLOTTED FROM - TRMI11118

FILE - ...\MILL067V.DGN

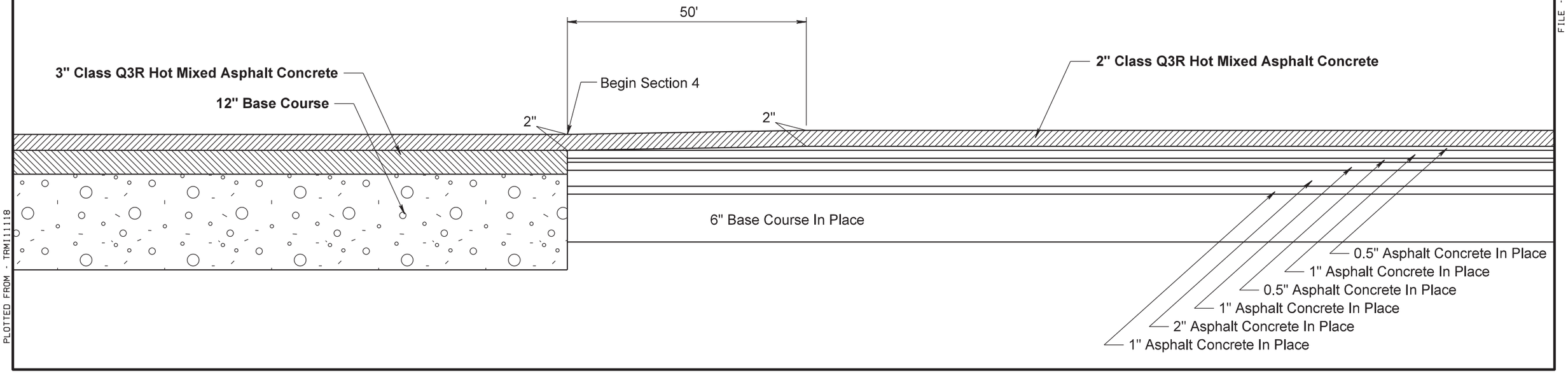
FOR BIDDING PURPOSES ONLY

Plotting Date: 12/29/2025

DETAIL FOR COLD MILLING TAPER
AT BEGIN SECTION 4 NH-PT 0018(222)311



DETAIL FOR RESURFACING TAPER
AT BEGIN SECTION 4 NH-PT 0018(222)311



PLOT SCALE - 1:1.008

PLOT NAME - 20

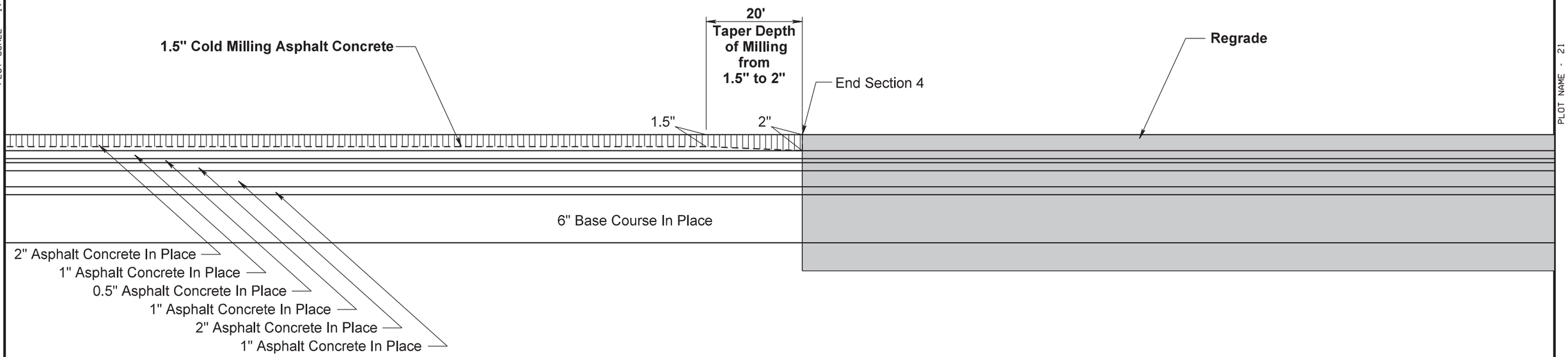
PLOTTED FROM - TRM111118

FILE - ...\MILL067V.DGN

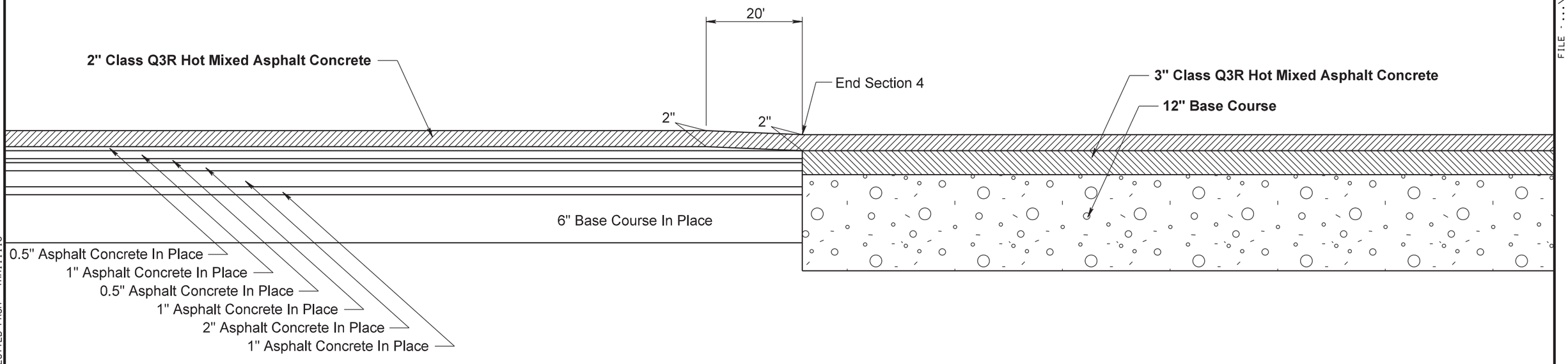
FOR BIDDING PURPOSES ONLY

Plotting Date: 12/29/2025

DETAIL FOR COLD MILLING TAPER
AT END SECTION 4 NH-PT 0018(222)311



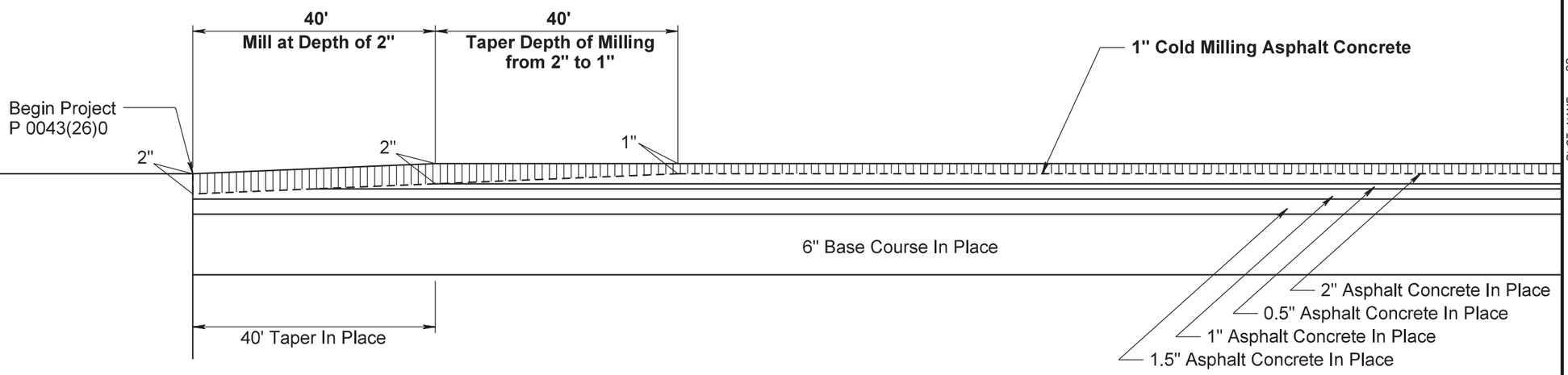
DETAIL FOR RESURFACING TAPER
AT END SECTION 4 NH-PT 0018(222)311



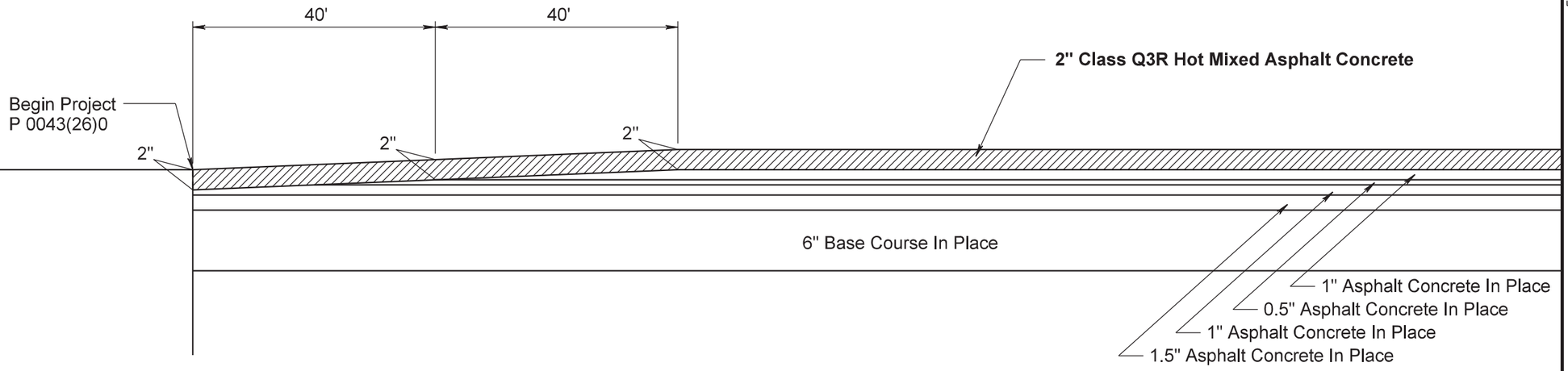
PLOT SCALE - 1:1.008
PLOTTED FROM - TRM111118
PLOT NAME - 21
FILE - ...\MILL067V.DGN

FOR BIDDING PURPOSES ONLY

DETAIL FOR COLD MILLING TAPER
AT BEGIN PROJECT P 0043(26)0



DETAIL FOR RESURFACING TAPER
AT BEGIN PROJECT P 0043(26)0



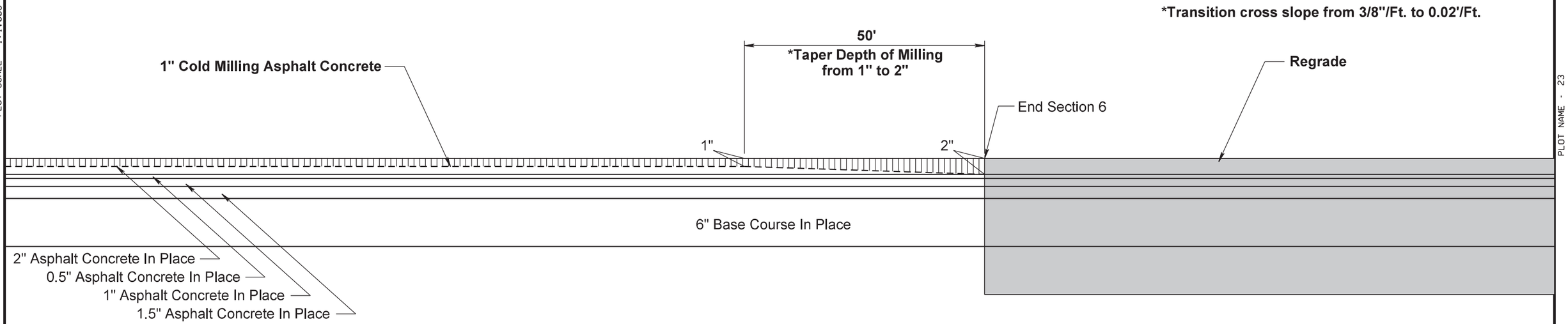
PLOT SCALE - 1:1.008
PLOT NAME - 22
PLOTTED FROM - TRM111118
FILE - ...\MILL067V.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	159	267

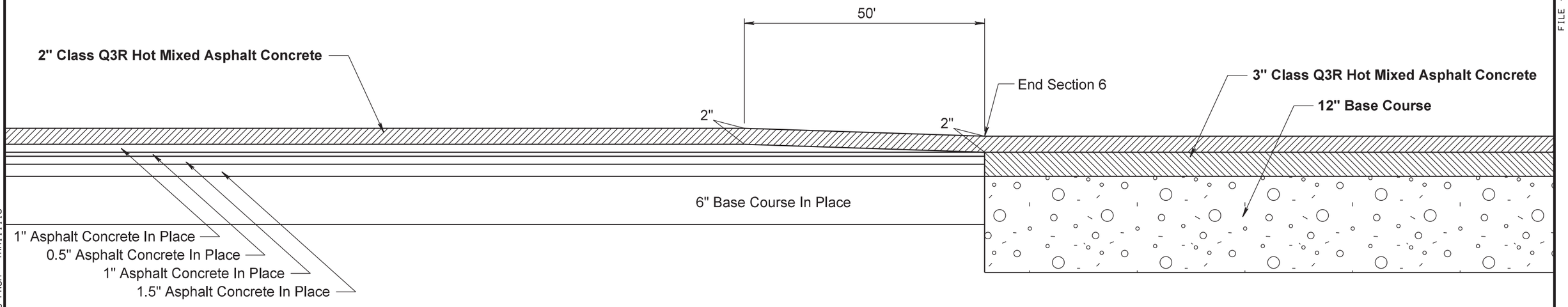
FOR BIDDING PURPOSES ONLY

Plotting Date: 12/29/2025

DETAIL FOR COLD MILLING TAPER
AT END SECTION 6 P 0043(26)0



DETAIL FOR RESURFACING TAPER
AT END SECTION 6 P 0043(26)0



PLOT SCALE - 1:1.008

PLOT NAME - 23

PLOTTED FROM - TRM111118

FILE - ...\MILL067V.DGN

EROSION AND SEDIMENT CONTROL LEGEND

- Low Flow Silt Fence
- High Flow Silt Fence
- High Flow Silt Fence at Pipe
- Sediment Control at Inlet After Placement of Surfacing
- Sediment Control at Inlet Before Placement of Surfacing
- Temporary Sediment Barriers
- Temporary Water Barriers
- Floating Silt Curtain
- Sediment Filter Bags
- Triangular Silt Barriers
- Erosion Control Wattles on Slopes
- Erosion Control Wattles at Inlets
- Erosion Control Wattles in Ditches
- Erosion Bales
- Surfacing Roughening
- Temporary Grass Hay or Straw Mulch/ Soil Stabilizer
- Cut Interceptor Ditch
- Temporary Slope Drain
- Bonded Fiber Matrix/ Fiber Reinforced Matrix
- Riprap
- Rock Check Dam
- Type 1 Erosion Control Blanket
- Type 2 Erosion Control Blanket
- Type 3 Erosion Control Blanket
- Type 4 Erosion Control Blanket
- Type 1 Turf Reinforcement Mat
- Type 2 Turf Reinforcement Mat
- Type 3 Turf Reinforcement Mat
- Transition Mat
- Silt Trap (See Standard Plate 734.04)

BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) are split into three categories and are to be used throughout construction.

INITIAL PHASE

BMPs from the Legend shown as Orange Symbols on the Erosion and Sediment Control Plan Sheets are to be installed in the Initial Phase prior to earth disturbing activitles and remain in place for the Intermediate Phase for temporary stabilization and in the Final Phase to achieve final stabilization.

INTERMEDIATE PHASE

BMPs from the Legend shown as Blue Symbols on the Erosion and Sediment Control Plan Sheets are to be installed in the Intermediate Phase for temporary stabilization and remain in place in the Final Phase to achieve final stabilization.

FINAL PHASE

BMPs from the Legend shown as Green Symbols on the Erosion and Sediment Control Plan Sheets are to be installed in the Final Phase to achieve final stabilization.

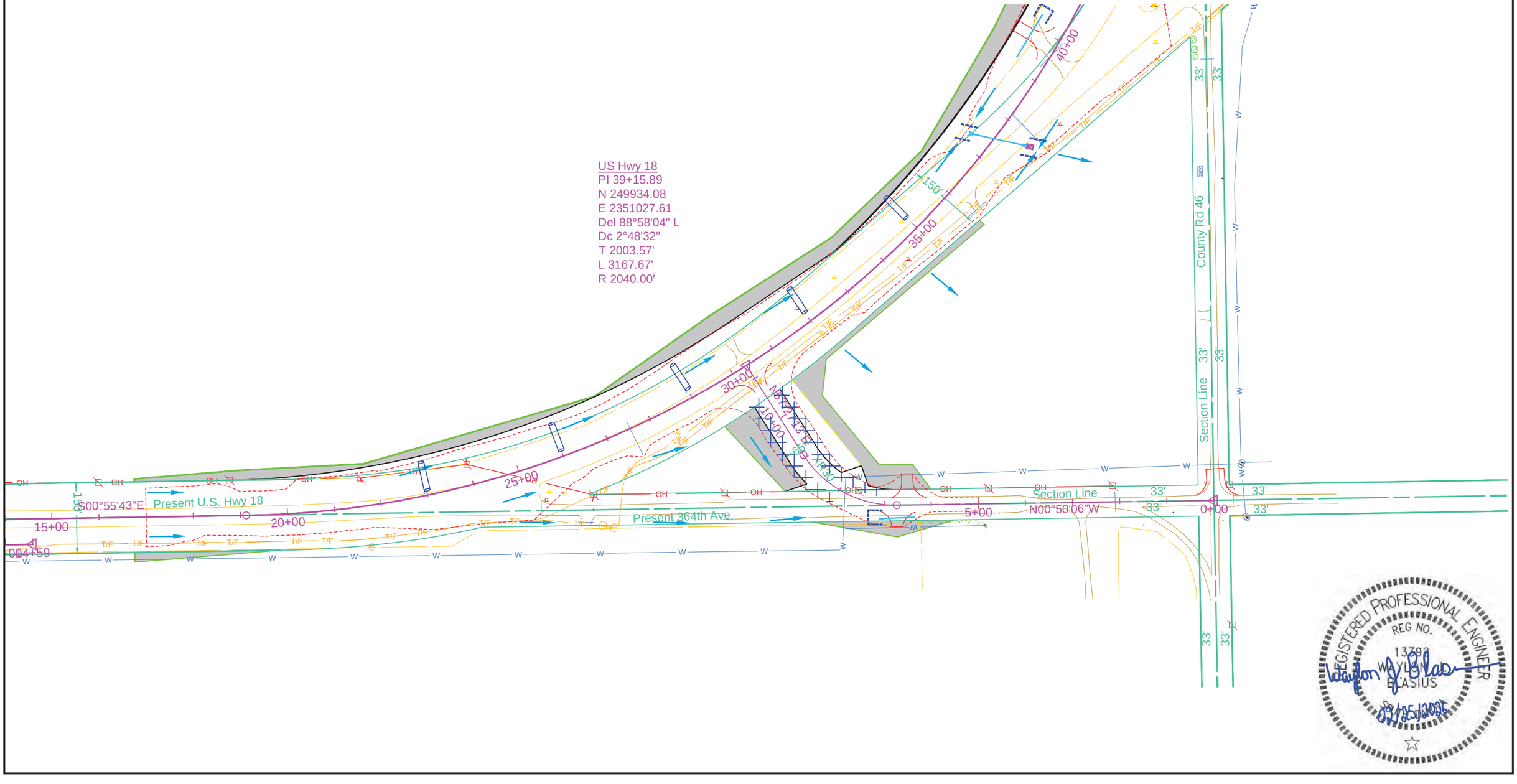
If these items are applicable they are to be shown in the updated SWPPP using the Symbols given.

- TS — Topsoil Stockpile
- M — On-Site Construction Material Storage Area
- B — Borrow Area
- SK — Spill Kit
- CE — Stabilized Construction Entrance
- WP — Work Platform
- VB — Vegetated Buffer Strip
- CC — Cover Crop Seeding
- CW — Concrete Washout
- PT — Portable Toilet
- AP — Asphalt Plant Site
- CP — Concrete Plant Site
- V — Vehicle and Equipment Parking Area, Fueling Area, or Maintenance Area
- D — Dumpster or other Trash and Debris Containers

Install High Flow Silt Fence at the following locations:
37+50 L/R Across Ditch at Inlet and Outlet Ends of Pipe (60 Ft Each End) 120 Ft
6+73 - 28' L (XR30) Inlet End of Pipe 18 Ft

Install 12" Diameter Erosion Control Wattles at the following locations:
23+00 L Ditch Bottom 50 Ft
26+00 L Ditch Bottom 50 Ft
29+00 L Ditch Bottom 50 Ft
32+00 L Ditch Bottom 50 Ft
35+00 L Ditch Bottom 50 Ft

Apply Grass Hay or Straw Mulch at 2 Tons/Acre after Placing Topsoil on disturbed areas until Permanent Seeding can be completed at the following locations:
7+00 to 10+50 (XR30) L/R Inslope 0.9 Tons



REGISTERED PROFESSIONAL ENGINEER
REG NO.
13793
WAYLON
BLASIUS
SOUTH DAKOTA
10/25/2025

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	162	267

FOR BIDDING PURPOSES ONLY

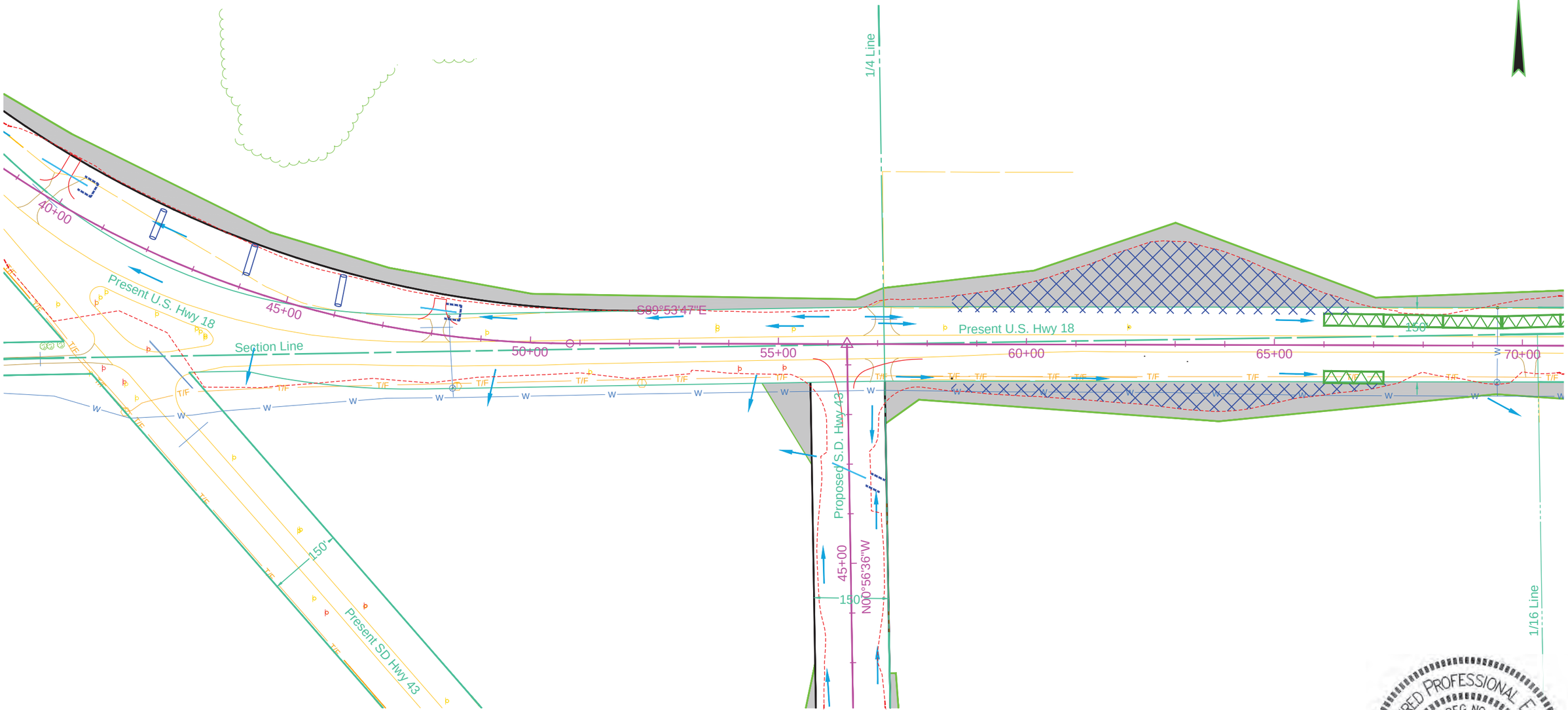
Plotting Date: 10/01/2025 Rev:

Install High Flow Silt Fence at the following locations:
39+80 - 60' L Inlet End of Pipe 18 Ft
48+09 - 49' L Inlet End of Pipe 18 Ft

Install 12" Diameter Erosion Control Wattles at the following locations:
42+00 L Ditch Bottom 50 Ft
44+00 L Ditch Bottom 50 Ft
46+00 L Ditch Bottom 50 Ft

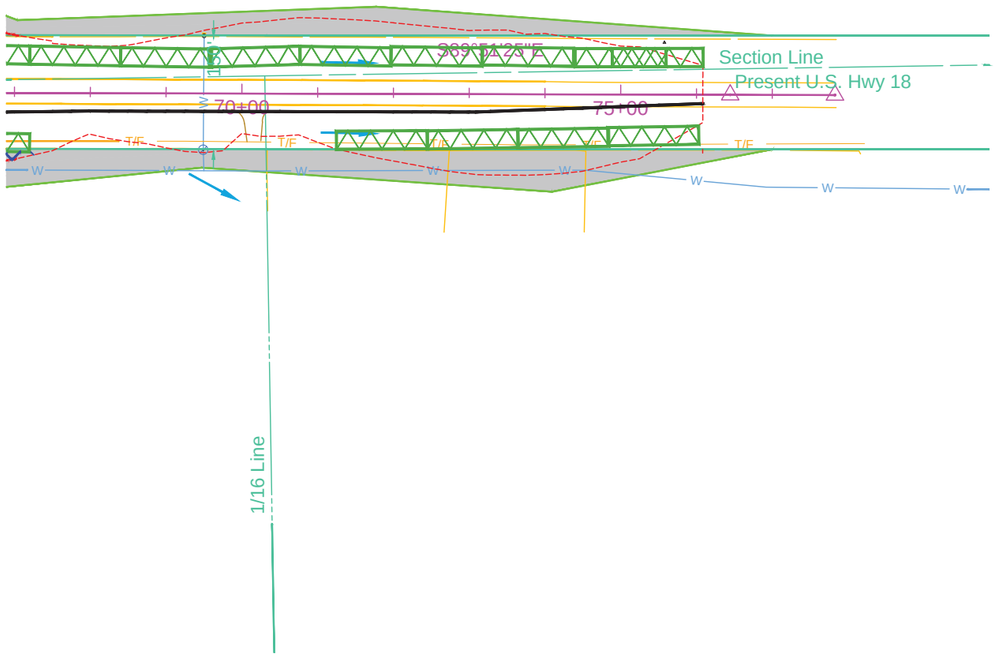
Apply Grass Hay or Straw Mulch at 2 Tons/Acre after Placing Topsoil on disturbed areas until Permanent Seeding can be completed at the following locations:
58+50 to 66+50 L/R Backslope 4.6 Tons

Install Type 3 Erosion Control Blanket at the following locations:
66+00 to 70+00 L Ditch bottom 710 SqYd
66+00 to 67+00 R Ditch bottom 180 SqYd



REGISTERED PROFESSIONAL ENGINEER
REG NO. 13792
WAYLON BLASIUS
10/25/2025

Install Type 3 Erosion Control Blanket
at the following locations:
70+00 to 76+00 L Ditch bottom 1070 SqYd
71+00 to 76+00 R Ditch bottom 890 SqYd



BAI JOB # 23190-10

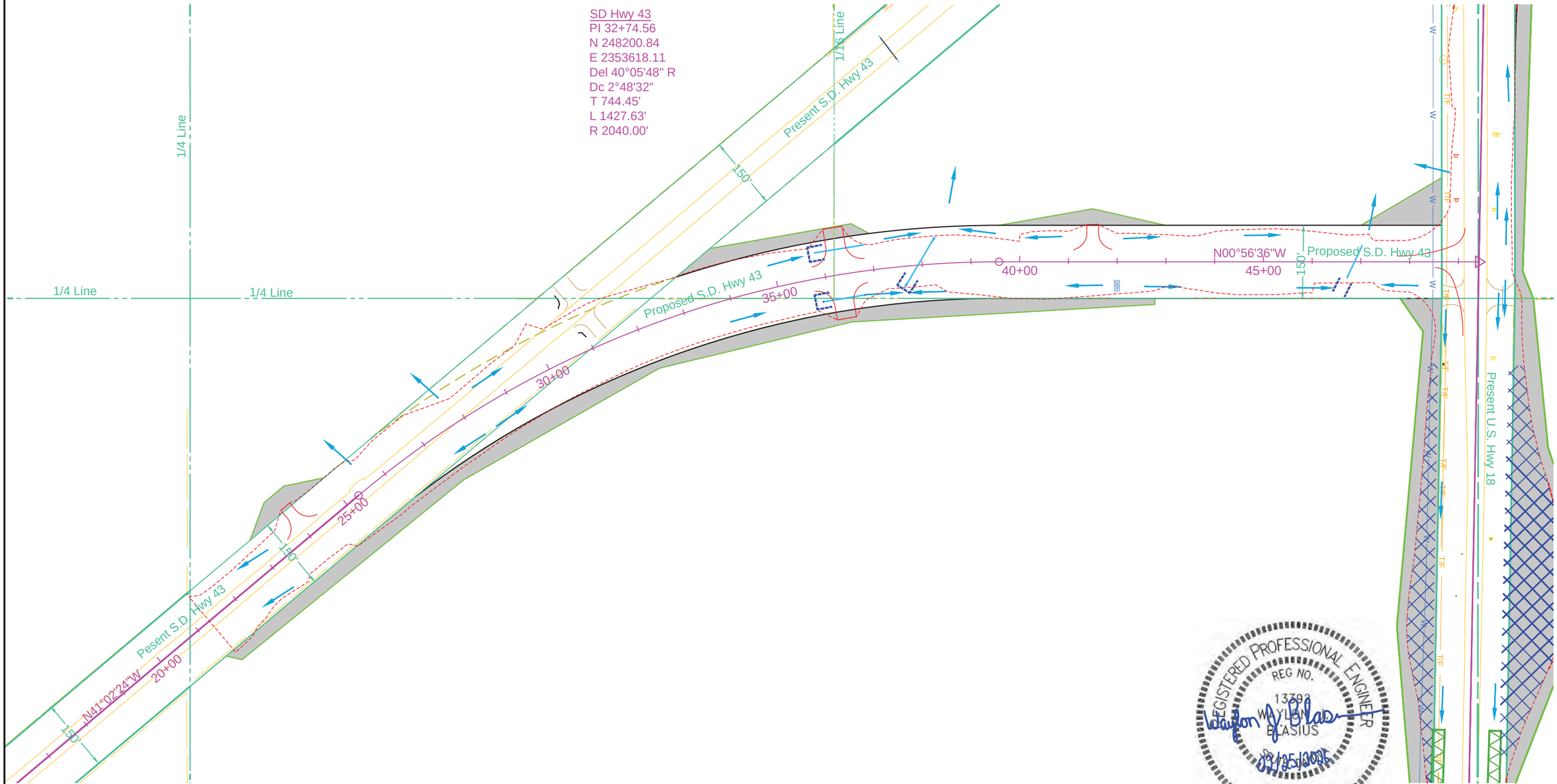
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	164	267

Plotting Date: 10/01/2025 Rev:

Install High Flow Silt Fence at the following locations:
36+30 - 49' R Inlet End of Pipe 18 Ft
36+30 - 53' L Inlet End of Pipe 18 Ft
37+91 R Inlet End of Pipe 18 Ft
46+87 R Across Ditch at Inlet End of Pipe (30 Ft Each Side) 60 Ft

SD Hwy 43
PI 32+74.56
N 248200.84
E 2353618.11
Del 40°05'48" R
Dc 2°48'32"
T 744.45'
L 1427.63'
R 2040.00'



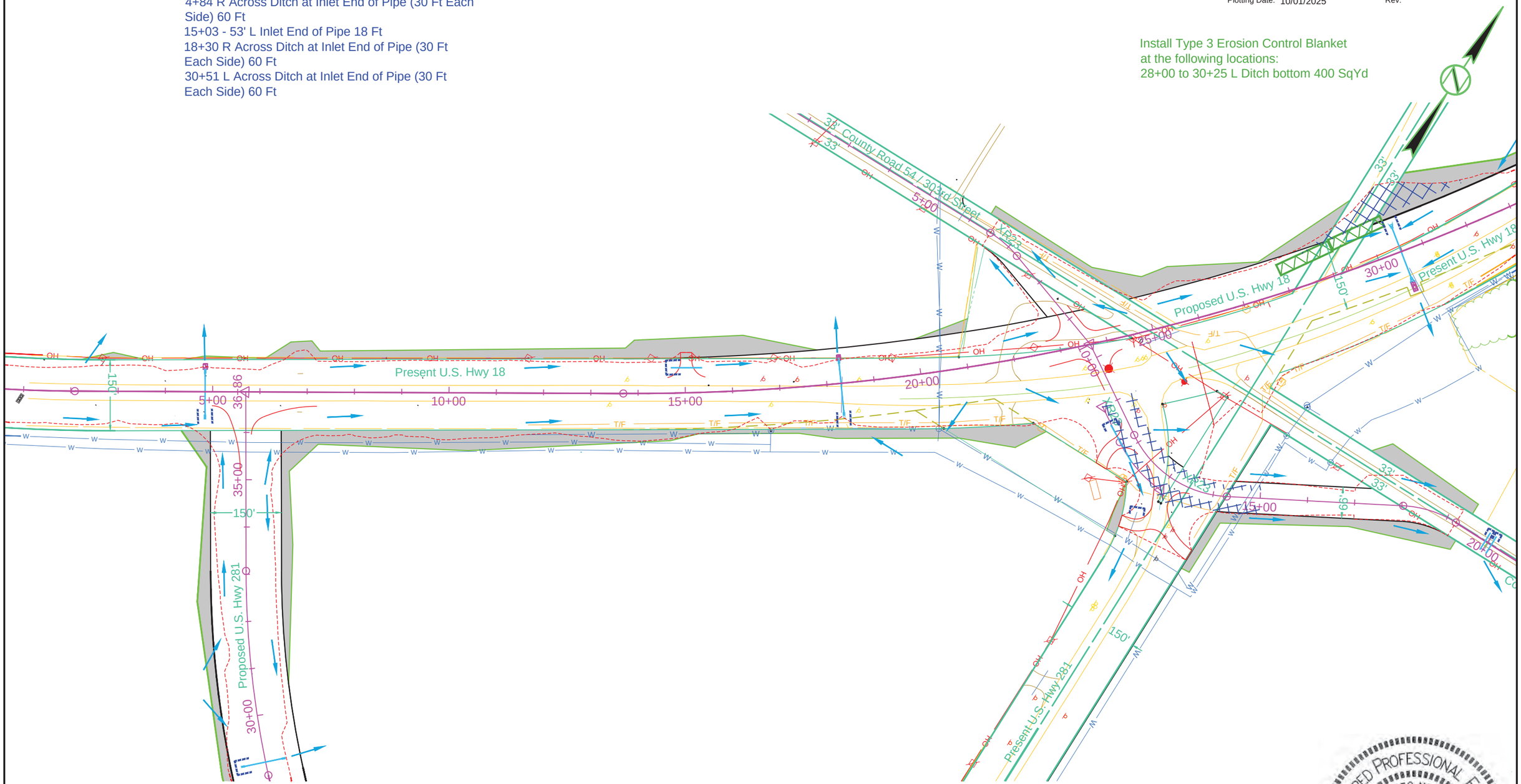
REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WYLAN
BLASIUS
10/25/2025

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
FOR BIDDING PURPOSES ONLY		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	165	267

Plotting Date: 10/01/2025 Rev:

Install High Flow Silt Fence at the following locations:
4+84 R Across Ditch at Inlet End of Pipe (30 Ft Each Side) 60 Ft
15+03 - 53' L Inlet End of Pipe 18 Ft
18+30 R Across Ditch at Inlet End of Pipe (30 Ft Each Side) 60 Ft
30+51 L Across Ditch at Inlet End of Pipe (30 Ft Each Side) 60 Ft

Install Type 3 Erosion Control Blanket at the following locations:
28+00 to 30+25 L Ditch bottom 400 SqYd



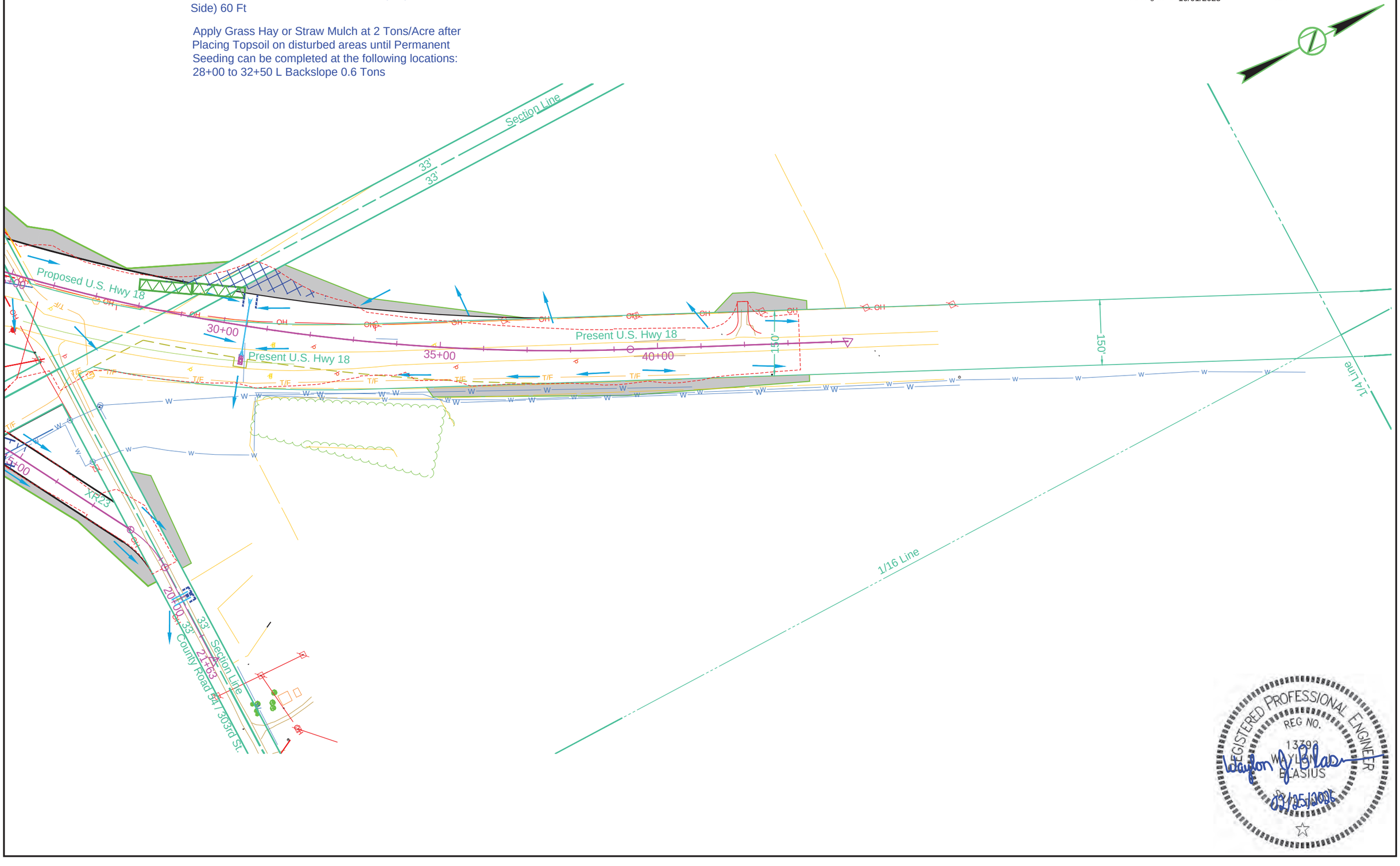
REGISTERED PROFESSIONAL ENGINEER
REG NO. 13792
WAYLON BLASIUS
03/25/2026

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
FOR BIDDING PURPOSES ONLY		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	166	267

Plotting Date: 10/01/2025 Rev:

Install High Flow Silt Fence at the following locations:
30+51 L Across Ditch at Inlet End of Pipe (30 Ft Each Side) 60 Ft

Apply Grass Hay or Straw Mulch at 2 Tons/Acre after Placing Topsoil on disturbed areas until Permanent Seeding can be completed at the following locations:
28+00 to 32+50 L Backslope 0.6 Tons



REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON D. BASIUS
10/25/2025

Install Type 3 Erosion Control Blanket
at the following locations:
3+50 to 4+50 L Ditch bottom 180 SqYd
3+50 to 4+50 R Ditch bottom 180 SqYd
5+50 to 7+00 L Ditch bottom 180 SqYd
5+50 to 7+00 R Ditch bottom 180 SqYd

Install High Flow Silt Fence at the following locations:
3+10 (ent12) - 60' R Inlet End of Pipe 18 Ft
4+66 (ent12) L/R Across Ditch at Inlet and Outlet
Ends of Pipe (100 Ft Each End) 200 Ft
17+35 - 49' L Inlet End of Pipe 18 Ft

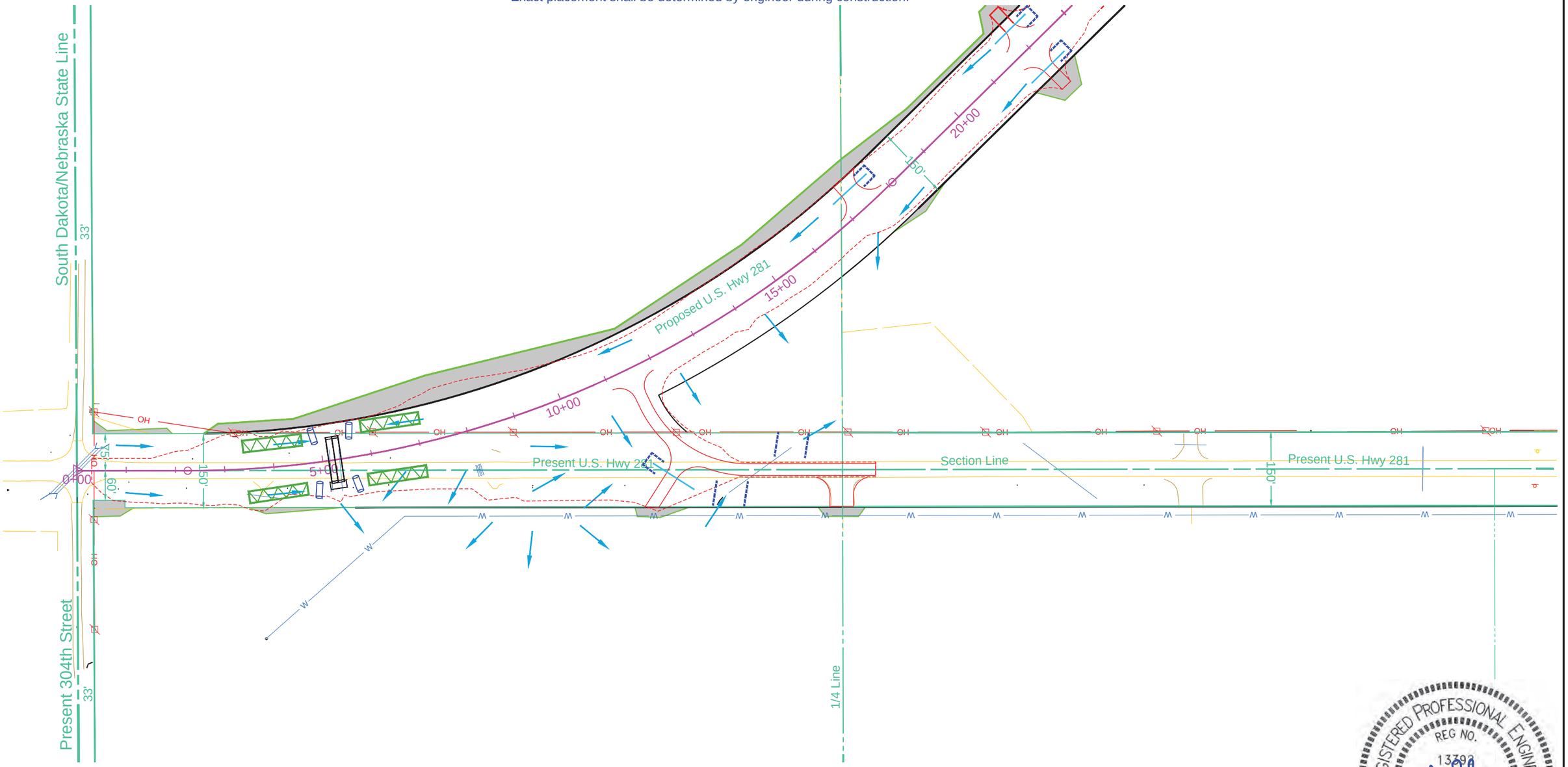
Install 12" Diameter Erosion Control Wattles at the following locations:
5+25 L/R Box Culvert 200 Ft
*Exact placement shall be determined by engineer during construction.

BAI JOB # 23190-10

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	167	267

Plotting Date: 10/01/2025 Rev:



REGISTERED PROFESSIONAL ENGINEER
REG NO. 13792
WAYLON D. BLASIUS
03/25/2026

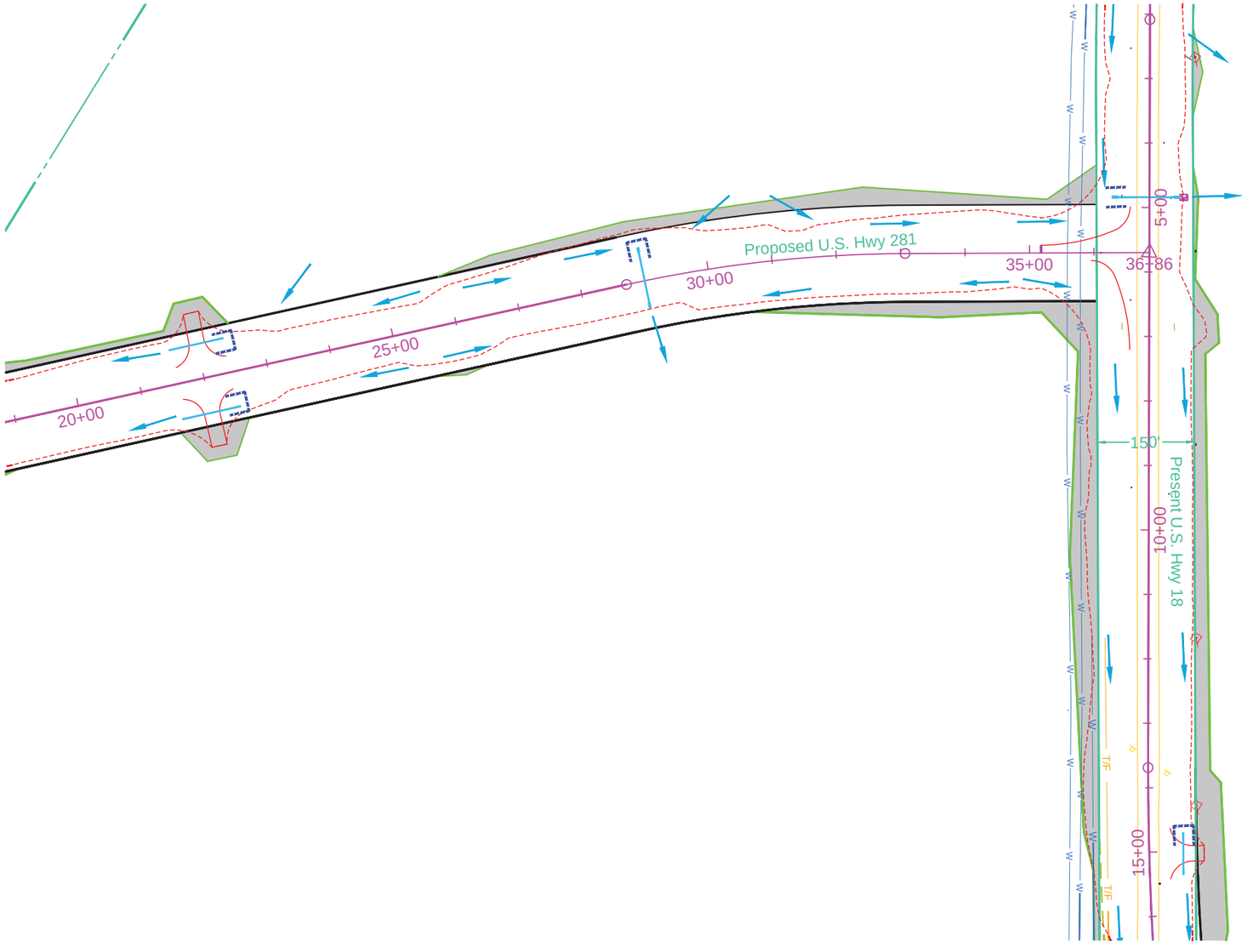
BAI JOB # 23190-10

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	168	267

Plotting Date: 10/01/2025 Rev:

Install High Flow Silt Fence at the following locations:
22+00 - 54' L Inlet End of Pipe 18 Ft
22+00 - 55' R Inlet End of Pipe 18 Ft
29+00 L Inlet End of Pipe 18 Ft



REGISTERED PROFESSIONAL ENGINEER
REG NO.
13792
WAYLON D.
BLASIUS
03/25/2026

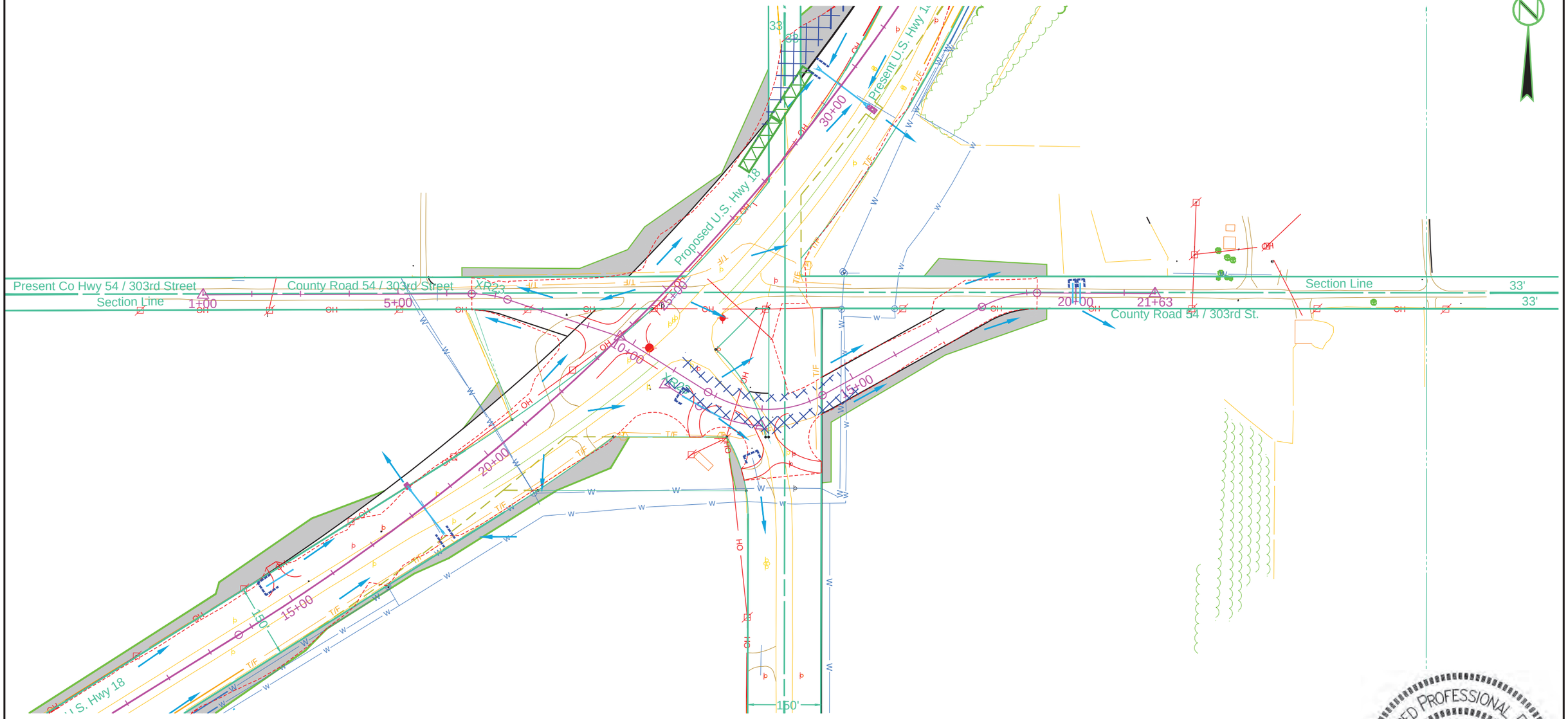
BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	169	267

FOR BIDDING PURPOSES ONLY

Plotting Date: 10/01/2025 Rev:

Apply Grass Hay or Straw Mulch at 2 Tons/Acre after Placing Topsoil on disturbed areas until Permanent Seeding can be completed at the following locations:
11+00 to 15+00 L/R Inslope 0.7 Tons

Install High Flow Silt Fence at the following locations:
11+83 - 35' R Inlet End of Pipe 18 Ft
13+06 - 132' R Inlet End of Pipe 18 Ft
20+02 L Inlet End of Each Pipe 36 Ft



REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON BASIUS
10/25/2025

OPTIONS FOR DEWATERING AND SEDIMENT COLLECTING

OPTIONS ARE NOT LIMITED TO WHAT IS SHOWN ON THIS SHEET

Various systems, devices, and products are shown on this sheet to give the Contractor ideas of what may be used for water treatment. Other systems, devices, and products are available and can be used with approval from the Engineer. Minnesota DOT also has options and practices available at: ftp://ftp2.dot.state.mn.us/pub/outbound/erosion/CSM2017

The Contractor may elect to block a portion of storm sewer near the outfall with sand bags and pump the water out to be treated with a flocculent or allow the water to set in a lined dumpster until sediment to falls out of suspension before discharging the water. Drop inlet protection devices could also be used as part of a treatment train. The Contractor may pump dirty water into a hydroseeder and mix it with a flocculent, and spray the mixture back onto a sediment pond. No matter the system or method used, the Contractor must meet the terms of the Temporary Discharge Permit and the Stormwater Permit for Construction Activities.

PURPOSE

The purpose of a dewatering and sediment collection system is to collect turbid storm water on the project, treat it with flocculents as needed, and capture the sediment that falls out of suspension before the water is discharged into “Waters of the US” or “Waters of the State”. Refer to the Environmental Commitments for the specific requirements for each body of water on this project.

The Contractor will need to create a Pollution Prevention Plan (PPP) for dewatering and sediment collection if the Contractor choses to discharge the water into "Waters of the US" or "Waters of the State" instead of disposing of the water off-site, using it for irrigation, or using it for hydroseeding. The Contractor will also need to obtain a Temporary Discharge Permit from the South Dakota Department of Environment & Natural Resources (DENR) on all projects outside of Indian Reservation boundaries.

Suggestions for dewatering and sediment collection may be shown on the plan sheets. It is ultimately the Contractor's responsibility to dewater and collect sediment. The Contractor will have to intercept and treat the stormwater before storm sewer outfalls into "Waters of the US" or "Waters of the State". The Contractor may need more than one dewatering and sediment collection system to capture and treat stormwater at multiple outfalls and/or locations simultaneously during each phase of the project.

PAYMENT

No additional payment will be made for Dewatering and Sediment Collecting. Dewatering and Sediment Collecting will be incidental to other items on the project.

DEWATERING BAGS AND SOCKS capture sediment and should be placed on pavement, vegetated areas, or gravel.

Dandy Dewatering Bag
Dandy Products, Inc.
Powell, OH
Phone: 1.800.591.2284
www.dandyproducts.com

Ultra-Dewatering Bag
UltraTech International, Inc
Jacksonville, FL
Phone: 1.800.764.9563
www.spillcontainment.com

Non-woven Sediment Filter Bags
Indian Valley Industries, Inc.
Johnson City, NY
Phone: 1.800.659.5111
www.iviindustries.com

Heavy Duty Dirtbag 55
ACF Environmental
Richmond, VA
Phone: 1.800.223.9021
www.acfenvironmental.com

Taurus Dewatering Bags/Socks
SolHuTec Group, Inc.
Sebastian, FL
Phone: 1.888.703.9889
www.solhutec.com

Pump-It Tube
Flo-Water, LLC
West Des Moines, IA
Phone: 1.515.577.6763
www.flo-water.net

FLOCCULENTS listed below are considered to be safe for the environment, if used as directed:

APS 700 Series Floc Logs
Applied Polymer Systems, Inc.
Woodstock, GA
Phone: 1.866.200.9868
http://www.siltstop.com

Terra-Tubes
ACF Environmental
Buffalo Grove, IL
Phone: 1.800.366.1180
www.terratubes.com

Floc, Floc Soc, Floc Bag
Innovative Turf Solutions Products
Cincinnati, OH
Phone: 1.513.317.8311
http://www.innovativeturfsolutions.com

FI-3500 Tablets
JRM Chemical, Inc.
Cleveland, OH
Phone: 1.216.475.8488
http://www.soilmoist.com

Biostar CH
Hild & Associates, Inc.
Stillwater, MN
Phone: 1.715.426.5131
www.biostar-ch.com

Tigerfloc
Floc Systems Inc.
Surrey, British Columbia
Phone: 1.604.343.2046
www.flocsystems.com

PORTABLE FLOCCULENT SYSTEMS

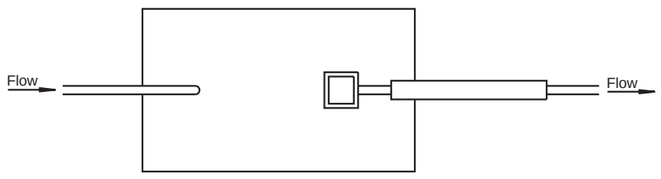
Eco Pond Rescue Water Wagon
Eco Pond Rescue LLC
Seminole, Florida
Phone: 1.727.412.4323
www.ecopondrescue.com

WTS2000 Portable Sediment Tank
Aqualete Industries, LLC
Ocean, New Jersey
Phone: 1.732.695.6336
http://aqualeteindustries.com

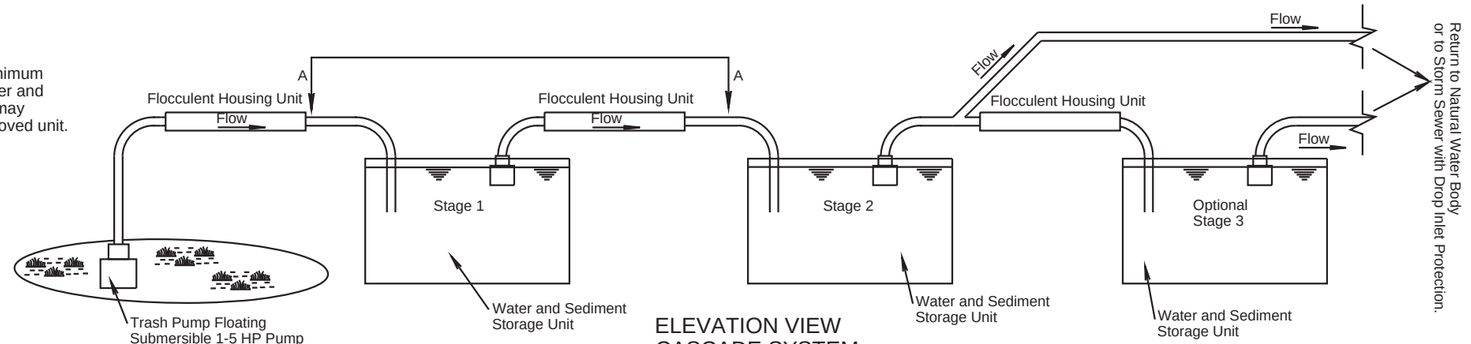
Dry Flocculent Mixing System
Innovative Equipment Solutions
Hot Springs, Arkansas
Phone: 1.501.525.8484
http://www.neptunewash.com

THE CASCADE SYSTEM

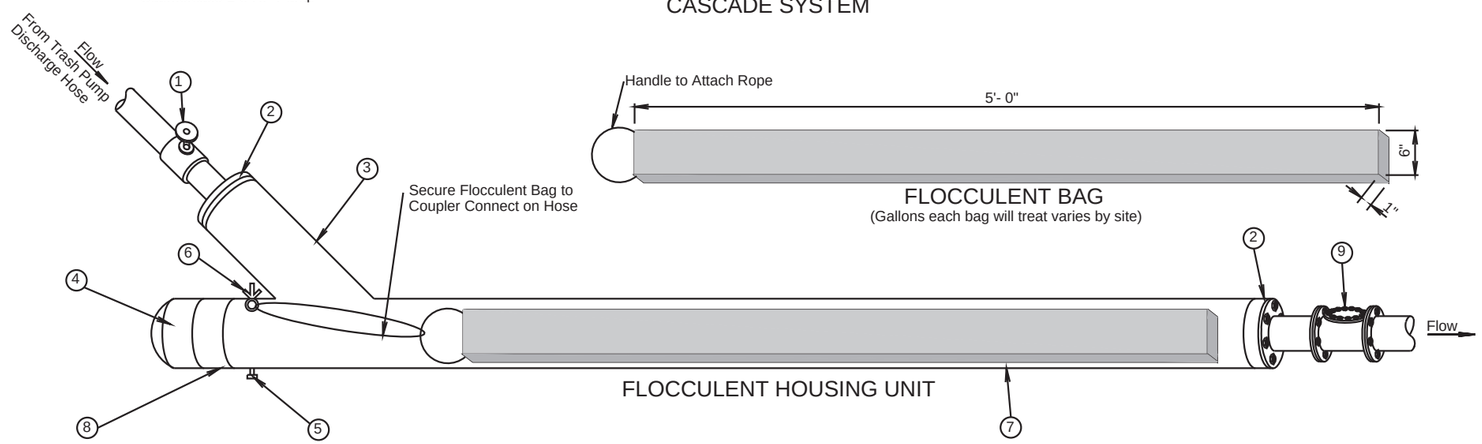
The cascade system is shown below and to the right for conceptual purposes only; however, the cascade system will at a minimum incorporate the use of 2 flocculent housing units and 2 water and sediment storage units. Design and construction of the water and sediment storage units are project site specific and will be the Contractor's responsibility. A water and sediment storage unit may consist of a storage bin lined with plastic, the bed of a dump truck lined with plastic, a sediment basin, or other Engineer approved unit. The treatment flocculent bag may be from the list or an approved equal.



VIEW A-A



ELEVATION VIEW
CASCADE SYSTEM



FLOCCULENT BAG
(Gallons each bag will treat varies by site)

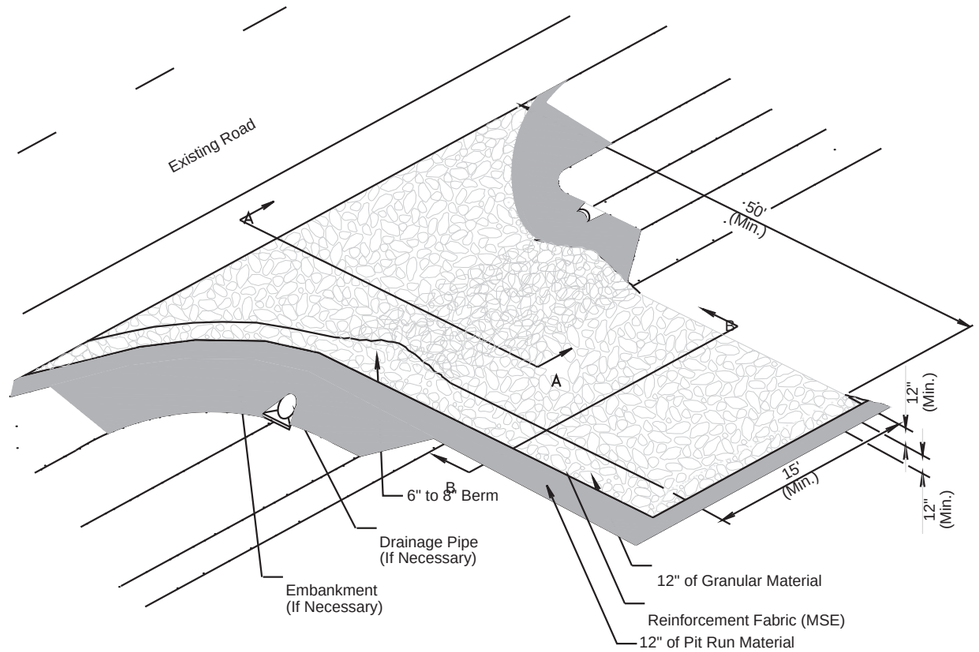
FLOCCULENT HOUSING UNIT

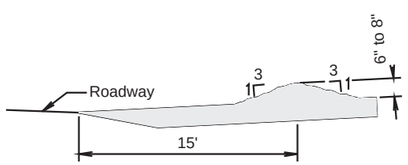
FLOCCULENT HOUSING UNIT (estimated quantities for information only)			
NO.	DESCRIPTION	QUANTITY	UNIT
1	4" or 6" Dia. Sch. 40 Gate Valve	1	Each
2	4" X 6" or 6" X 8" Sch. 40 PVC Bushing	2	Each
3	6" or 8" Dia. Sch. 40 PVC "Y"	1	Each
4	6" or 8" Dia. Sch. 40 PVC Female Threaded Cap	1	Each
5	1" Dia. Sch. 80 PVC Drain Valve	1	Each
6	1/2" Eye Bolt with Wing Nut and Rubber Gromets	1	Each
7	6" or 8" Dia. Sch. 40 PVC Pipe	10	Ft.
8	6" or 8" Dia. Sch. 40 PVC Male Adapter	1	Each
9	4" or 6" Dia. Sch. 40 PVC Swing Check Valve	1	Each

FLOW RATE ESTIMATE	
Pump Type	Flow Rate (gpm)
2"	50-250
3" Gas	250-350
4" Diesel	500-750
6" Diesel	750-1000

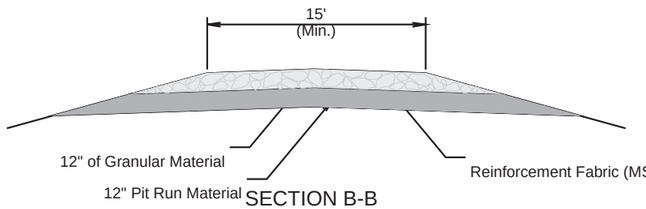
FOR BIDDING PURPOSES ONLY

SDDOT CONSTRUCTION ENTRANCE





SECTION A-A



SECTION B-B

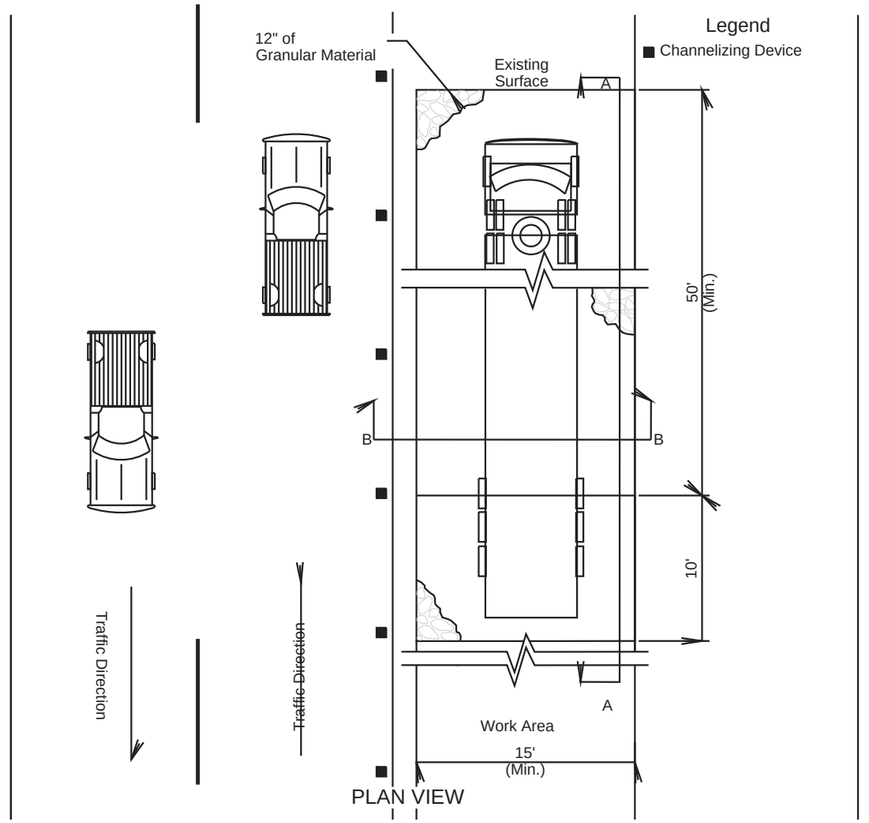
GENERAL NOTES:

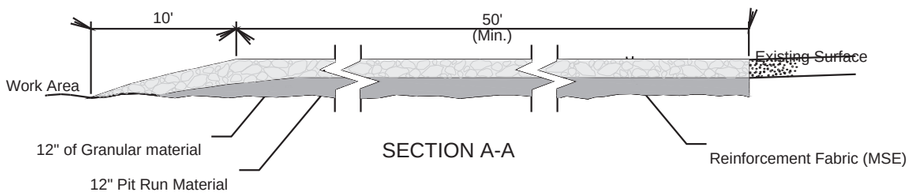
If the grade of the entrance slopes down to the roadway, a berm of extra rock shall be used to prevent sediment or mud from being deposited on the roadway. See SECTION A-A.

If a drainage pipe is necessary the size and type shall be determined by the Contractor to meet field conditions. All cost shall be incidental to the various contract items.

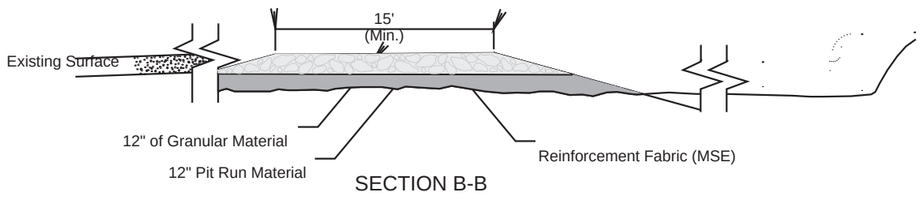
If embankment is necessary it shall be pit run material.

TRANSVERSE TO ROADWAY





SECTION A-A



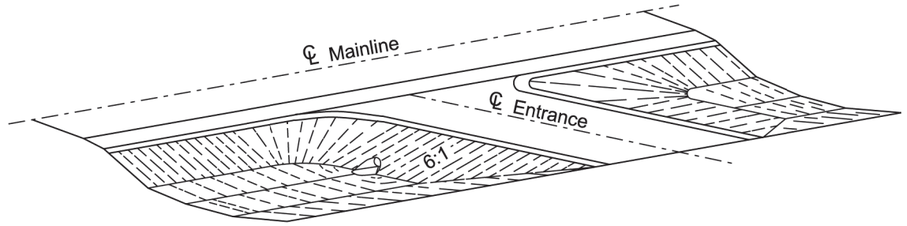
SECTION B-B

PARALLEL TO ROADWAY

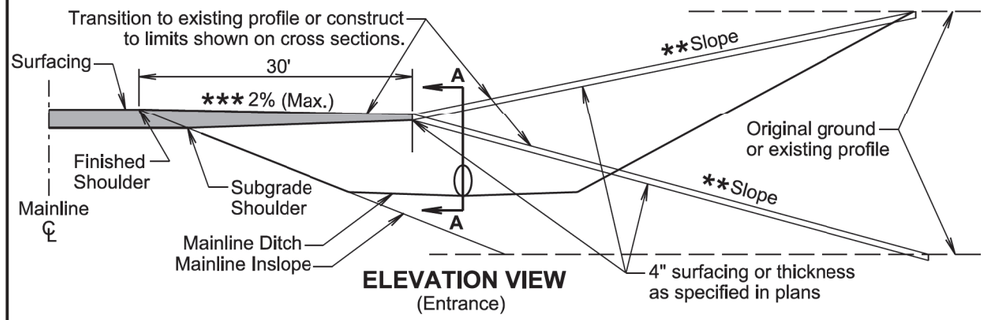
FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026

PLOT SCALE - 1:200



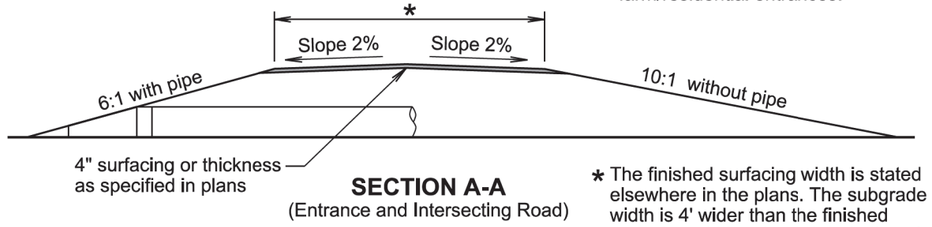
PERSPECTIVE OF ENTRANCE



ELEVATION VIEW
(Entrance)

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

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



SECTION A-A
(Entrance and Intersecting Road)

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

GENERAL NOTES:

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

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

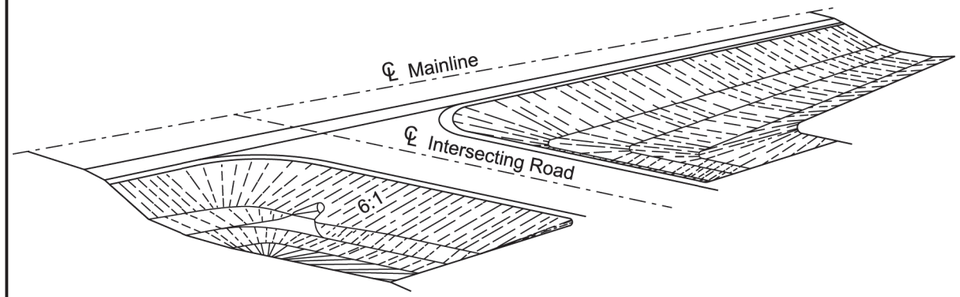
Pipe length will be adjusted if necessary during construction to obtain the 6:1 slope. For grading projects, the pipe length is estimated typically using a 4" thickness of surfacing directly over the subgrade above the pipe.

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

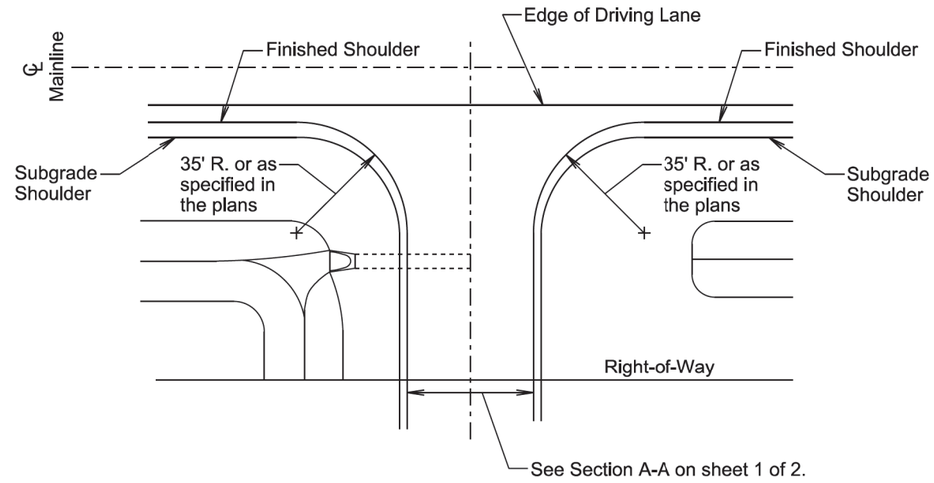
The turning radii will be 35' for intersecting roads and entrances unless stated otherwise in the plans.

November 19, 2021

Published Date: 2026	SDDOT	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 1 of 2



PERSPECTIVE OF INTERSECTING ROAD



PLAN VIEW

GENERAL NOTES:

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

November 19, 2021

Published Date: 2026	SDDOT	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 2 of 2

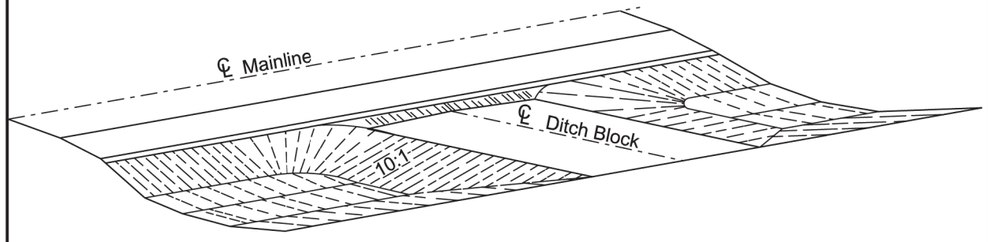
PLOT NAME - 1

FILE - ...\STANDARDPLATES_067V.DGN

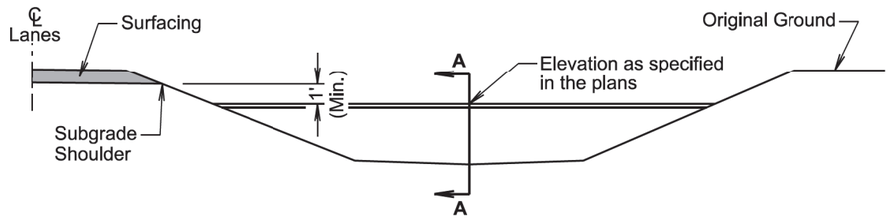
_PLOTTED FROM - TRM111118

FOR BIDDING PURPOSES ONLY

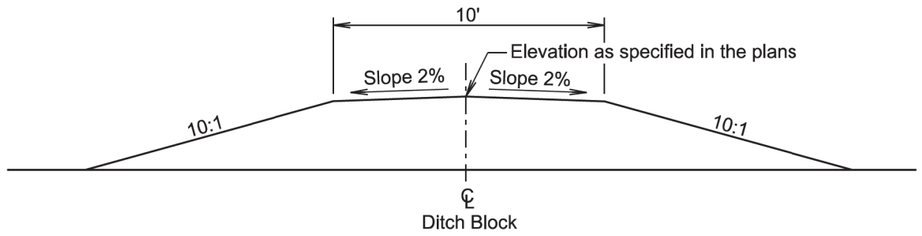
Plotting Date: 01/12/2026



PERSPECTIVE OF DITCH BLOCK



ELEVATION VIEW



SECTION A-A

GENERAL NOTES:

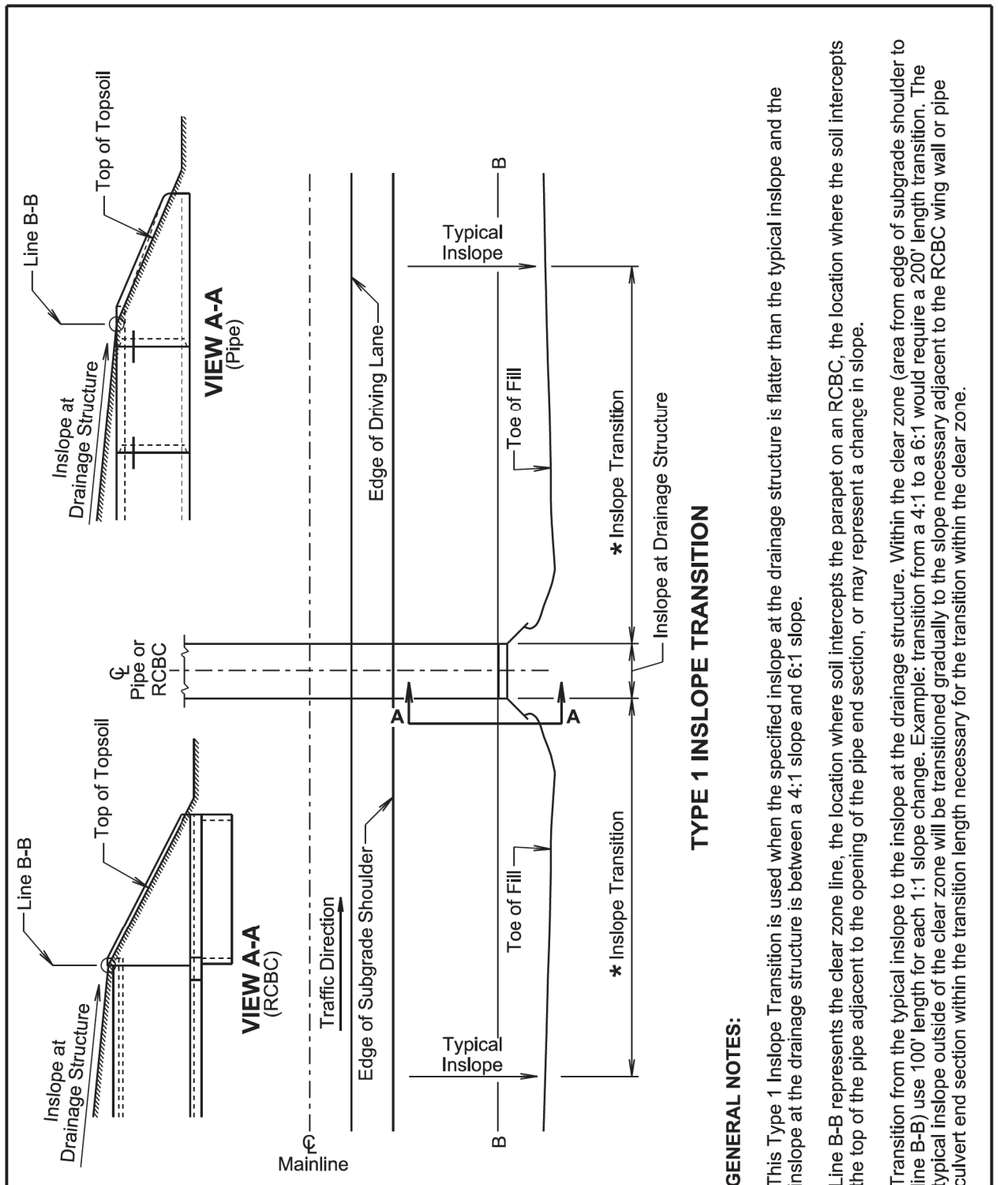
The ditch section shown above in the perspective and elevation view is only for illustrative purpose.

The inslopes of the ditch block will be 10:1 or as specified in the plans.

The transition area between the mainline inslope and the ditch block inslope will be rounded to eliminate an abrupt transition.

September 14, 2018

Published Date: 2026	SDDOT	DITCH BLOCK	PLATE NUMBER 120.02
			Sheet 1 of 1



TYPE 1 INSLOPE TRANSITION

GENERAL NOTES:

This Type 1 Inslope Transition is used when the specified inslope at the drainage structure is flatter than the typical inslope and the inslope at the drainage structure is between a 4:1 slope and 6:1 slope at the drainage structure is flatter than the typical inslope and the inslope at the drainage structure is between a 4:1 slope and 6:1 slope.

Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

* Transition from the typical inslope to the inslope at the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned gradually to the slope necessary adjacent to the RCBC wing wall or pipe culvert end section within the transition length necessary for the transition within the clear zone.

September 14, 2018

Published Date: 2026	SDDOT	INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS	PLATE NUMBER 120.05
			Sheet 1 of 2

PLOT SCALE - 1:200
PLOT NAME - 2
FILE ...\STANDARDPLATES_067V.DGN
.PLOTTED FROM - TRM111118

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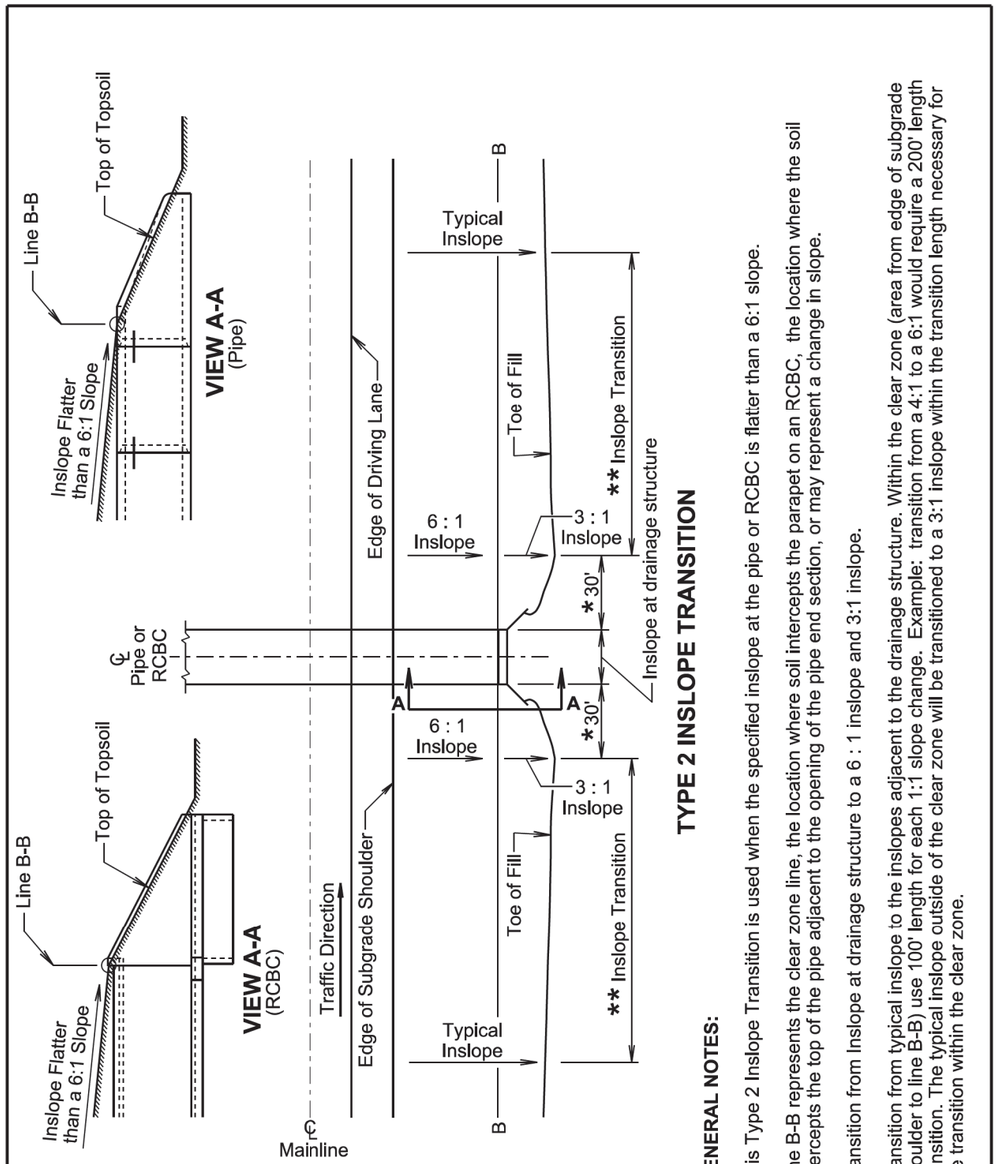
Plotting Date: 01/12/2026

PLOT SCALE - 1:200

PLOT NAME - 3

FILE - ...\STANDARDPLATES_067V.DGN



TYPE 2 INSLOPE TRANSITION

GENERAL NOTES:

This Type 2 Inslope Transition is used when the specified inslope at the pipe or RCBC is flatter than a 6:1 slope.

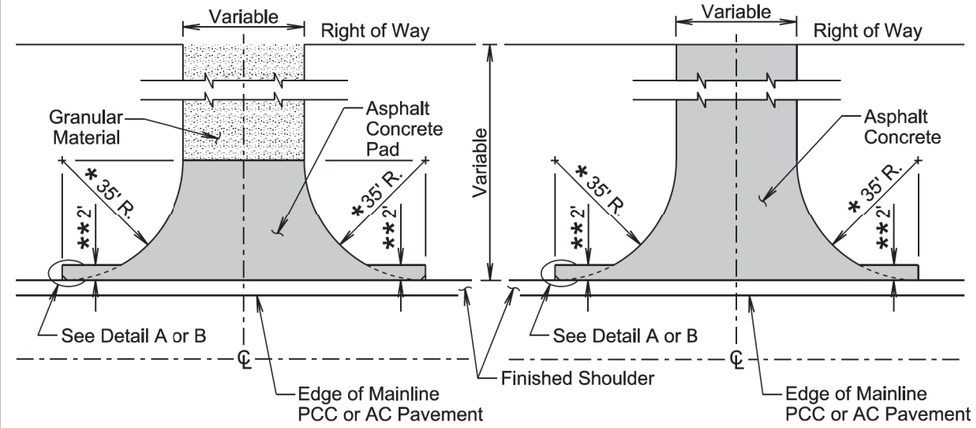
Line B-B represents the clear zone line, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

* Transition from Inslope at drainage structure to a 6 : 1 inslope and 3:1 inslope.

** Transition from typical inslope to the inslopes adjacent to the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned to a 3:1 inslope within the transition length necessary for the transition within the clear zone.

September 14, 2018

Published Date: 2026	SDDOT	INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS	PLATE NUMBER 120.05	Sheet 2 of 2



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.

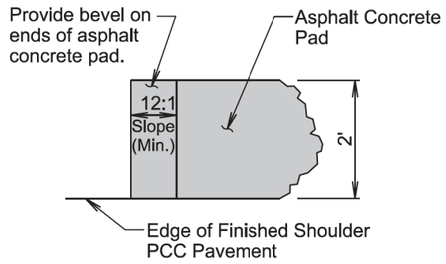
* For new construction, 35' radius typical or as specified in the plans. For resurfacing projects, radius is variable depending on existing conditions.

** 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.

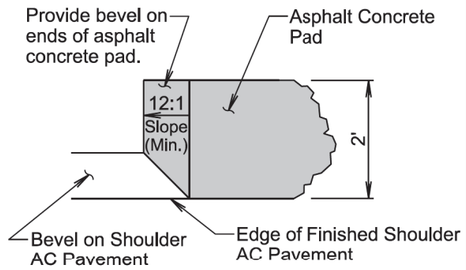
August 27, 2020

Published Date: 2026	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04	Sheet 1 of 2

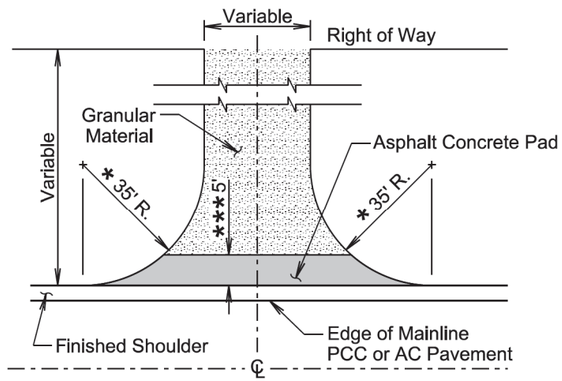
.PLOTTED FROM - TRM111118



DETAIL A
(Typ. for Projects with PCC Pavement on Shoulder)



DETAIL B
(Typ. for Projects with AC Pavement on Shoulder)

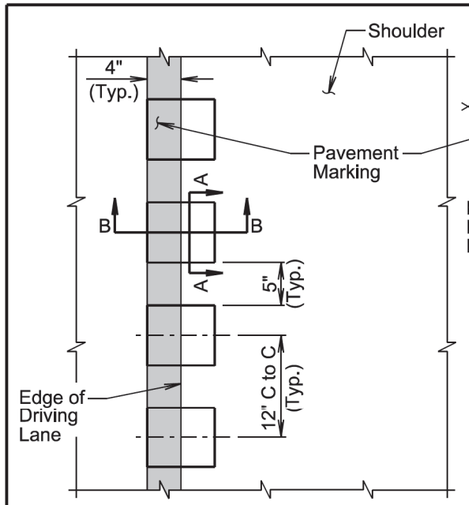


PLAN VIEW
(Entrance)

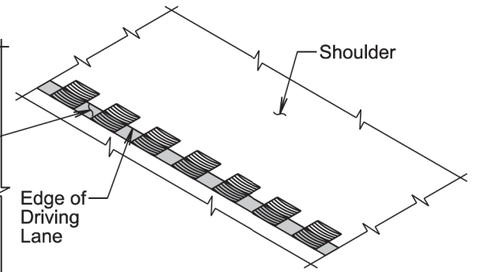
*** Not required if finished shoulder width is 4' or greater.

August 27, 2020

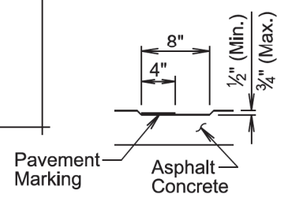
Published Date: 2026	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04
			Sheet 2 of 2



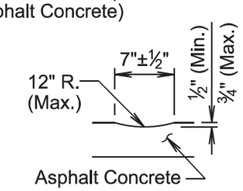
PLAN VIEW
(Typical Rumble Stripe in Asphalt Concrete)



PERSPECTIVE VIEW
(Typical Rumble Stripe in Asphalt Concrete)



SECTION B-B



SECTION A-A

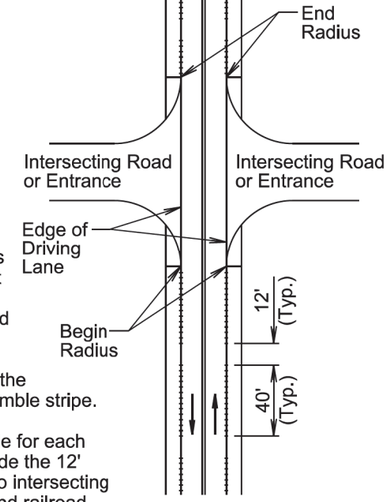
GENERAL NOTES:

A rumble stripe will be constructed on all of the asphalt concrete shoulders by grinding alternating patterns of 40' continuous indentations in the asphalt concrete. The rumble stripe will receive a flush seal or asphalt surface treatment as specified in the plans.

A rumble stripe will not be constructed through intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble stripe adjacent to the intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings will be adjusted as approved by the Engineer.

Prior to constructing the rumble stripe the Contractor will submit to the Engineer, for approval, the proposed method of constructing the rumble stripe.

Measurement of the rumble stripe will be to the nearest 0.1 of a mile for each shoulder. Measurement and payment of the rumble stripe will include the 12' long segments without rumble stripes and the segments adjacent to intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings without rumble stripes. Payment for constructing the rumble stripe will be at the contract unit price per mile for "Grind 8" Rumble Strip or Stripe in Asphalt Concrete".



PLAN VIEW

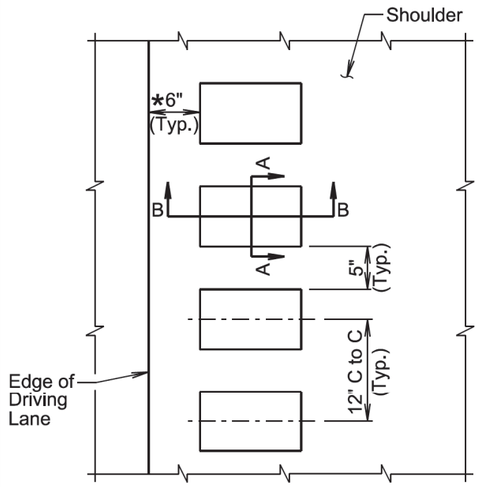
September 14, 2019

Published Date: 2026	SDDOT	8" RUMBLE STRIPE IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.20
			Sheet 1 of 1

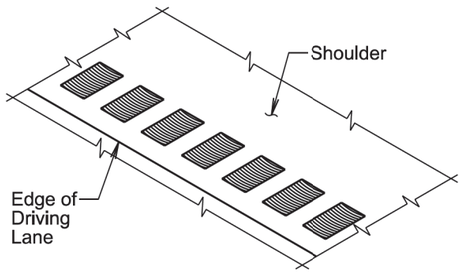
PLOT SCALE - 1:200
PLOT NAME - 4
FILE - ...\STANDARDPLATES_067V.DGN
.PLOTTED FROM - TRM111118

FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026

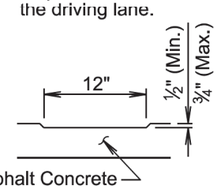


PLAN VIEW
(Typical Rumble Strip in Asphalt Concrete)

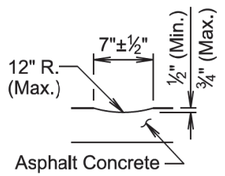


PERSPECTIVE VIEW
(Typical Rumble Strip in Asphalt Concrete)

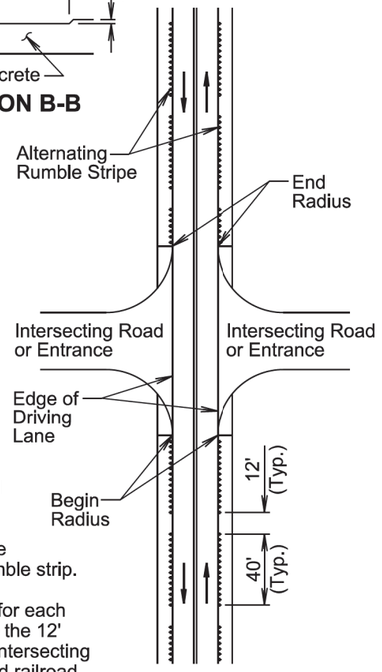
*When PCC pavement width from centerline to edge of pavement is 12', the rumble strip may be placed a maximum of 2' from the edge of the driving lane.



SECTION B-B



SECTION A-A



PLAN VIEW

GENERAL NOTES:

A rumble strip will be constructed on all of the asphalt concrete shoulders by grinding alternating patterns of 40' continuous indentations in the asphalt concrete. The rumble strip will receive a flush seal or asphalt surface treatment as specified in the plans.

A rumble strip will not be constructed through intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble strip adjacent to the intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings will be adjusted as approved by the Engineer.

Prior to constructing the rumble strip the Contractor will submit to the Engineer, for approval, the proposed method of constructing the rumble strip.

Measurement of the rumble strip will be to the nearest 0.1 of a mile for each shoulder. Measurement and payment of the rumble strip will include the 12' long segments without rumble strips and the segments adjacent to intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings without rumble strips. Payment for constructing the rumble strip will be at the contract unit price per mile for "Grind 12" Rumble Strip or Stripe in Asphalt Concrete".

September 14, 2019

Published Date: 2026

SDDOT

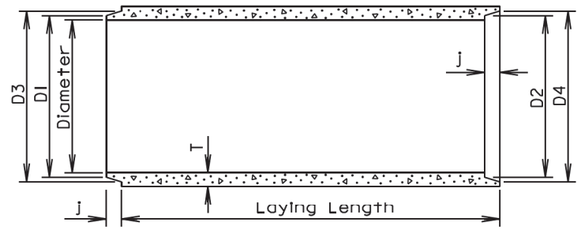
12" RUMBLE STRIP IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS

PLATE NUMBER 320.24

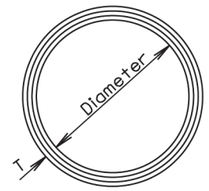
Sheet 1 of 1

TOLERANCES IN DIMENSIONS

Diameter: ±1.5% for 24" Dia. or less and ±1% or ⅜" whichever is more for 27" Dia. or greater.
Diameters at joints: ± 3/16" for 30" Dia. or less and ± ¼" for 36" or greater.
Length of joint (j): ± ¼".
Wall thickness (T): not less than design T by more than 5% or 3/16", whichever is greater.
Laying length: shall not underrun by more than ½".



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	1¾	13¼	13⅝	13⅞	14¼
15	127	2¼	2	16½	16⅞	17¼	17⅝
18	168	2½	2¼	19⅝	20	20⅜	20¾
21	214	2¾	2½	22⅞	23¼	23¾	24⅛
24	265	3	2¾	26	26⅜	27	27⅜
27	322	3¼	3	29¼	29⅝	30¼	30⅝
30	384	3½	3¼	32⅜	32¾	33½	33⅞
36	524	4	3¾	38¾	39¼	40	40½
42	685	4½	4	45⅛	45⅝	46½	47
48	867	5	4½	51½	52	53	53½
54	1070	5½	4½	57⅞	58⅜	59⅜	59⅞
60	1296	6	5	64¼	64¾	66	66½
66	1542	6½	5½	70⅝	71⅛	72½	73
72	1810	7	6	77	77½	79	79½
78	2098	7½	6½	83⅜	83⅞	85⅝	86⅛
84	2410	8	7	89¾	90¼	92⅛	92⅝
90	2740	8½	7	95¾	96¼	98⅛	98⅝
96	2950	9	7	102⅛	102⅝	104½	105
102	3075	9½	7½	109	109½	111½	112
108	3870	10	7½	115½	116	118	118½

June 26, 2015

Published Date: 2026

SDDOT

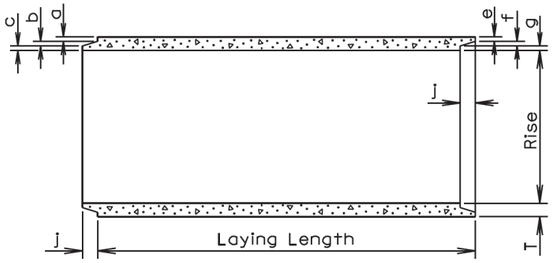
REINFORCED CONCRETE PIPE

PLATE NUMBER 450.01

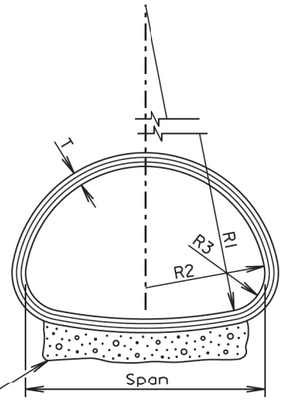
Sheet 1 of 1

PLOT SCALE - 1:200
PLOT NAME - 5
FILE - ...\STANDARDPLATES_067V.DGN
.PLOTTED FROM - TRM111118

FOR BIDDING PURPOSES ONLY



LONGITUDINAL SECTION



END VIEW

TOLERANCES IN DIMENSIONS

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

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 11/16	14 3/4	4 5/8
30	450	22 1/2	36 1/4	4	1 13/16	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 13/16	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

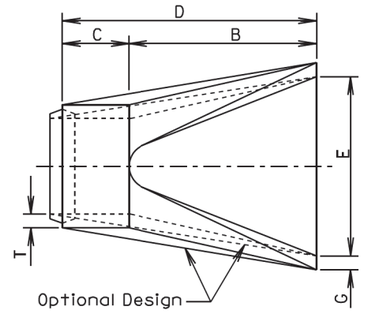
* Equivalent Diameter of Circular R. C. P.

GENERAL NOTES:

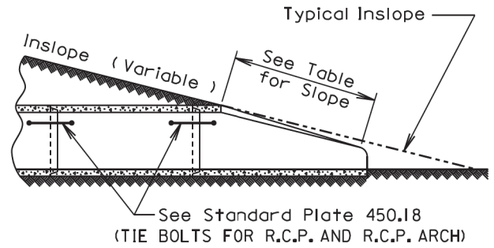
Construction of R.C.P. Arch shall conform to the requirements of Section 990 of the Specifications. Not more than 2 four-foot sections shall be permitted near the ends of any culvert. Four-foot lengths shall be used only to secure the required length of culvert.

June 26, 2015

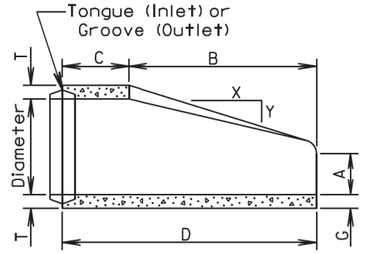
Published Date: 2026	SDDOT	REINFORCED CONCRETE PIPE ARCH	PLATE NUMBER 450.02
			Sheet 1 of 1



TOP VIEW



SLOPE DETAIL

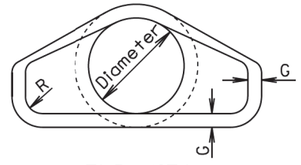


LONGITUDINAL SECTION

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	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

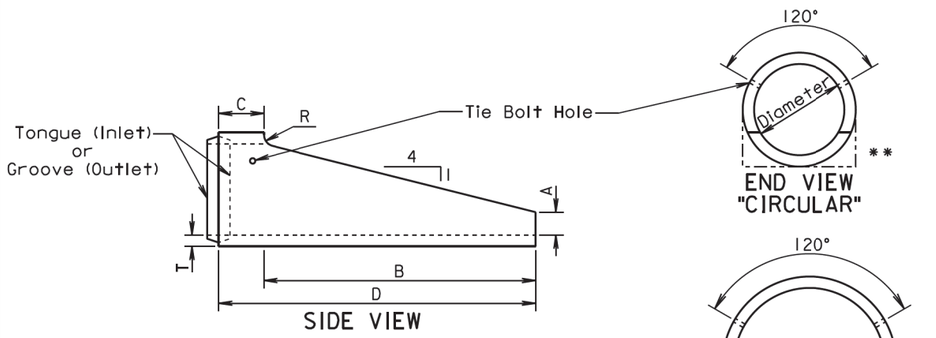
June 26, 2015

Published Date: 2026	SDDOT	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
			Sheet 1 of 1

PLOT SCALE - 1:200
PLOT NAME - 6
FILE - ...\STANDARDPLATES_0677V.DGN
.PLOTTED FROM - TRMI11118

FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026



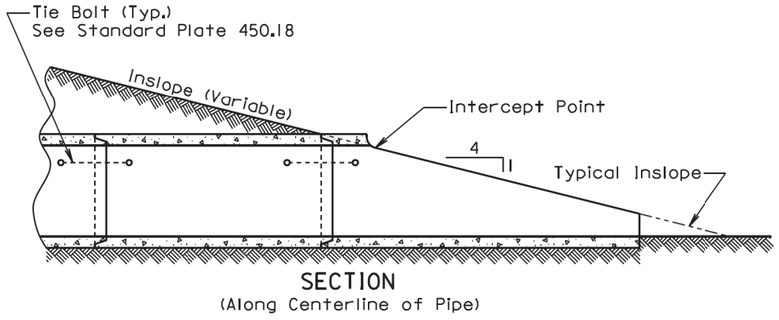
Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	R (in.)
FOR CIRCULAR PIPE						
24	3	6	72	12	84	3
30	3½	7½	90	12	102	3½
FOR ARCH PIPE						
* 24	3	6	48	12	60	3
* 30	3½	7½	60	12	72	3½
* 36	4½	8⅝	66	30	96	0
* 42	4½	10	77¼	18¾	96	0

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	3½	11	90	12	102	0
FOR ARCH PIPE						
* 24	3	9	48	12	60	0
* 30	3½	11	60	12	72	0

* Equivalent Diameter of Circular R.C.P.

** Acceptable Flat Bottom Alternate.



SECTION
(Along Centerline of Pipe)

GENERAL NOTE:

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

September 22, 2006

Published Date: 2026	SDDOT	R. C. P. SLOPED ENDS	PLATE NUMBER 450.13
			Sheet 1 of 1

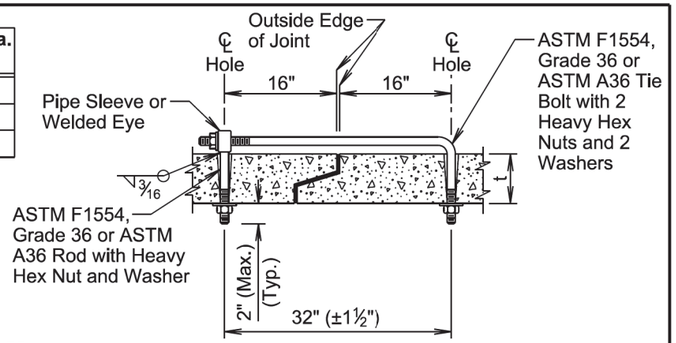
Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3¼	⅝	¾
3½-6½	¾	1
≥ 7	1	1¼

GENERAL NOTES:

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

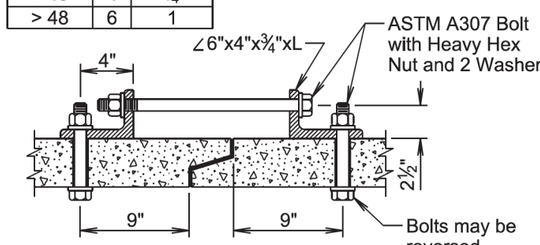
Pipe Sleeve will conform to ASTM A53, Grade B or ASTM A500, Grade B or C.

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



ADJUSTABLE EYE BOLT TIE

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



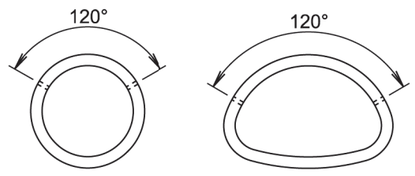
ANGLE AND BOLT TIE

GENERAL NOTES:

Angles will conform to ASTM A36.

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

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



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

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

April 8, 2025

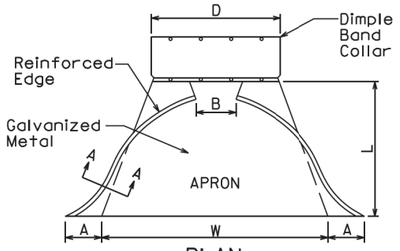
Published Date: 2026	SDDOT	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	PLATE NUMBER 450.18
			Sheet 1 of 1

PLOT SCALE - 1:200
PLOT NAME - 7
FILE - ...\STANDARDPLATES_067V.DGN
.PLOTTED FROM - TRM111118

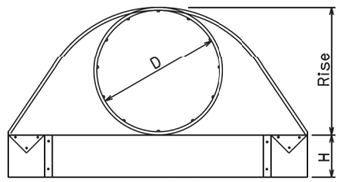
FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026

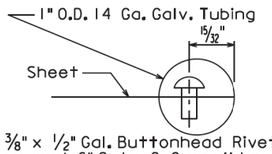
Alternate Type Connector Sections may be used with approval of the Engineer.



PLAN

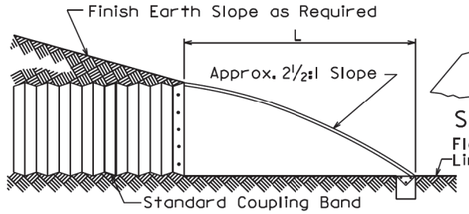


ELEVATION



3/8" x 1/2" Gal. Buttonhead Rivets spaced 6" C. to C. Overall length of rivets=0.78"

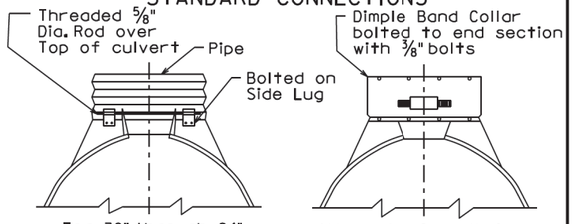
TUBING ATTACHMENT DETAILS
SECTION A-A



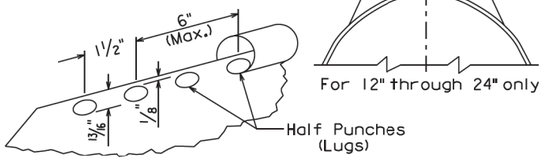
TYPICAL CROSS-SECTION

Dia. D (in.)	Ga.	DIMENSIONS (in.) A	B	H	L	W	Approx. Slope	Body
12	16	6	6	6	21	24	2½:1	1 Pc.
15	16	7	8	6	26	30	2½:1	1 Pc.
18	16	8	10	6	31	36	2½:1	1 Pc.
21	16	9	12	6	36	42	2½:1	1 Pc.
24	16	10	13	6	41	48	2½:1	1 Pc.
30	14	12	16	8	46	60	2½:1	1 Pc.
36	14	14	19	9	51	72	2½:1	2 Pc.
42	12	16	22	11	60	84	2½:1	2 Pc.
48	12	18	27	12	69	90	2¼:1	2 Pc.
54	12	18	30	12	78	102	2:1	3 Pc.
60	12	18	33	12	84	114	1¾:1	3 Pc.
66	12	18	36	12	87	120	1½:1	3 Pc.
72	12	18	39	12	87	126	1⅓:1	3 Pc.
78	12	18	42	12	87	132	1¼:1	3 Pc.
84	12	18	45	12	87	138	1⅙:1	3 Pc.

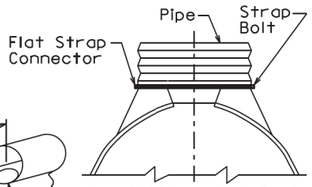
STANDARD CONNECTIONS

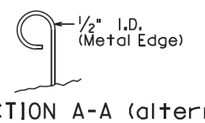


NOTE:
Tubing is slipped over the sheet and rivets or lugs prior to forming operations of the apron.



SECTION A-A (alternate)





SECTION A-A (alternate)

GENERAL NOTES:

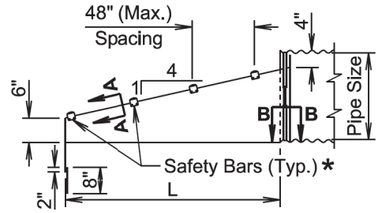
All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by 3/8" Dia. galvanized rivets or bolts.

For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x ¼" for 60" through 72" diameters and 2½" x 2½" x¼" 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

Published Date: 2026	SDDOT	C.M.P. FLARED ENDS	PLATE NUMBER 450.35 Sheet 1 of 1

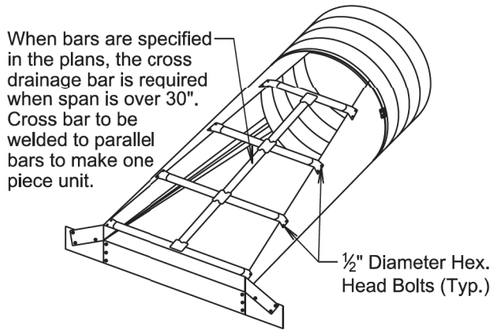


*Number of bars required will vary depending on the length of the end section.

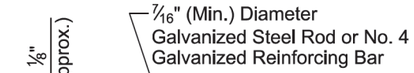
ELEVATION VIEW

3" Galvanized Pipe: Flatten end, then bend outside 4" to match end section sides.

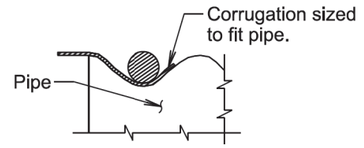
DETAIL OF SAFETY BARS



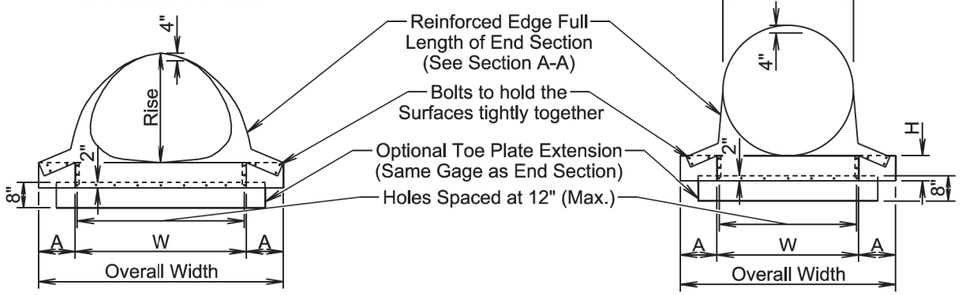
ISOMETRIC VIEW



SECTION A-A

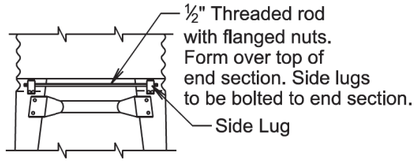


SECTION B-B

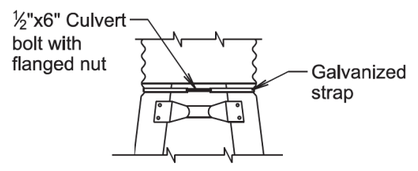


FRONT VIEW

FRONT VIEW



TYPE #2 CONNECTOR DETAIL
(For 30" and Larger)
(For 21"x15" and Larger)



TYPE #1 CONNECTOR DETAIL
(For 15" Through 24")

April 8, 2025

Published Date: 2026	SDDOT	C.M.P. SLOPED ENDS	PLATE NUMBER 450.37 Sheet 1 of 2

PLOT SCALE - 1:200

PLOT NAME - 8

FILE - ...\STANDARDPLATES_067V.DGN

.PLOTTED FROM - TRM111118

FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026

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

GENERAL NOTES:

Safety bars will be provided when specified in the plans.

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

Safety bars will be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5x.216 in conformance with ASTM A500, grade B or C.

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

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

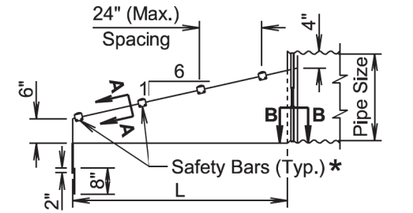
When stated in the plans, optional toe plate extension will be punched and bolted to end section apron lip with ⅜" diameter galvanized bolts. Steel for toe plate extension will be same gauge as end section. Dimensions will be overall width less 6" by 8" high.

Installation will be performed in accordance with the Specifications.

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

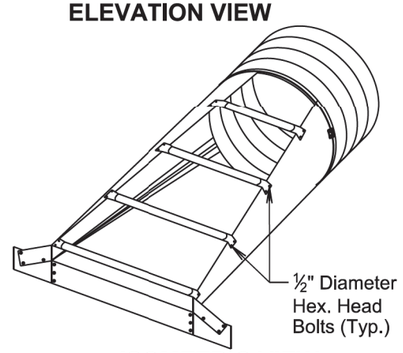
April 8, 2025

Published Date: 2026	SDDOT	C.M.P. SLOPED ENDS	PLATE NUMBER 450.37 Sheet 2 of 2

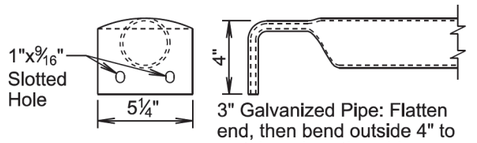


* Number of bars required will vary depending on the length of the end section.

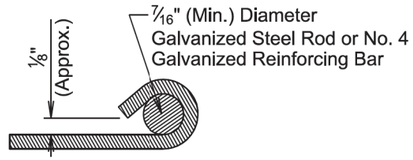
ELEVATION VIEW



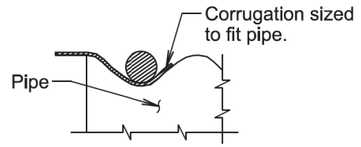
ISOMETRIC VIEW



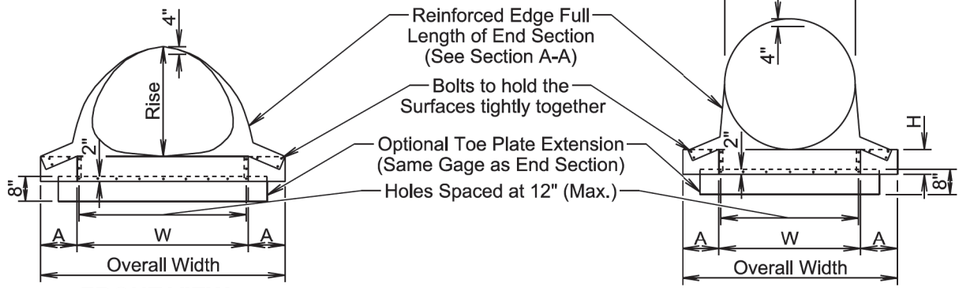
DETAIL OF SAFETY BARS



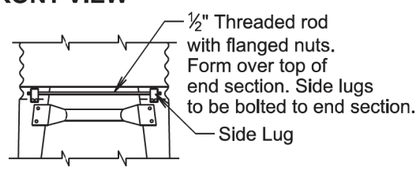
SECTION A-A



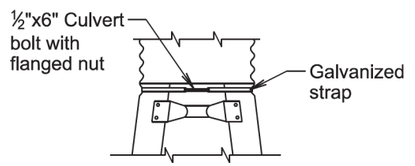
SECTION B-B



FRONT VIEW **FRONT VIEW**



TYPE #2 CONNECTOR DETAIL
(For 30" and Larger)
(For 21"x15" and Larger)



TYPE #1 CONNECTOR DETAIL
(For 15" Through 24")

April 8, 2025

Published Date: 2026	SDDOT	C.M.P. SAFETY ENDS	PLATE NUMBER 450.38 Sheet 1 of 2

PLOT SCALE - 1:200
PLOT NAME - 9
FILE - ...\STANDARDPLATES_067V.DGN
.PLOTTED FROM - TRM111118

ARCH C.M.P. SAFETY ENDS										
Equlv. 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	6:1	30
21	24	18	.064	16	8	6	30	46	6:1	48
24	28	20	.064	16	8	6	34	50	6:1	60
30	35	24	.079	14	12	9	41	65	6:1	84
36	42	29	.109	12	12	9	48	72	6:1	114
42	49	33	.109	12	16	12	55	87	6:1	138
48	57	38	.109	12	16	12	63	95	6:1	168
54	64	43	.109	12	16	12	70	102	6:1	198
60	71	47	.109	12	16	12	77	109	6:1	222
72	83	57	.109	12	16	12	89	121	6:1	282

CIRCULAR C.M.P. SAFETY 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	6:1	30
18	.064	16	8	6	24	40	6:1	48
21	.064	16	8	6	27	43	6:1	66
24	.064	16	8	6	30	46	6:1	84
30	.109	12	12	9	36	60	6:1	120
36	.109	12	12	9	42	66	6:1	156
42	.109	12	16	12	48	80	6:1	192
48	.109	12	16	12	54	86	6:1	228
54	.109	12	16	12	60	92	6:1	264
60	.109	12	16	12	66	98	6:1	300

GENERAL NOTES:

Safety bars will be provided when specified in the plans.

Safety ends will be fabricated from galvanized steel conforming to the requirements of the Specifications.

Safety bars will be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5x.216 in conformance with ASTM A500, grade B or C.

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

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

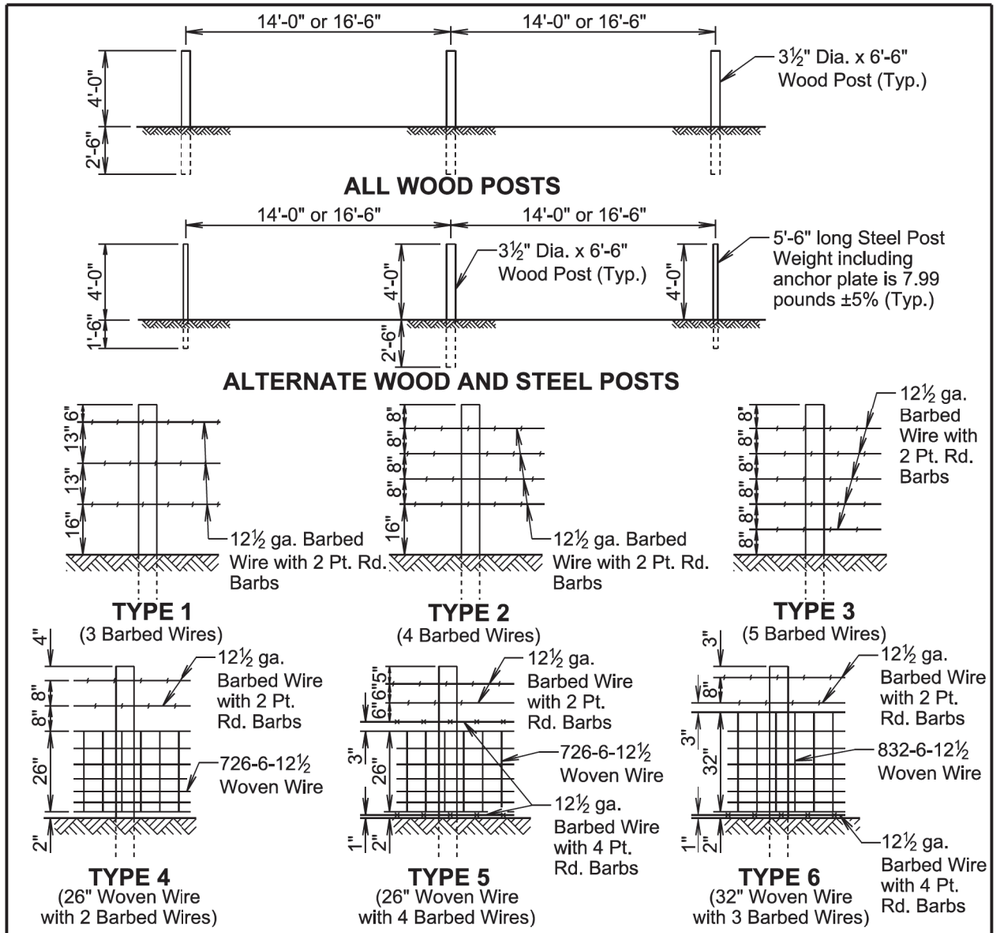
When stated in the plans, optional toe plate extension will be punched and bolted to end section apron lip with ⅜" diameter galvanized bolts. Steel for toe plate extension will be same gauge as end section. Dimensions will be overall width less 6" by 8" high.

Installation will be performed in accordance with the Specifications.

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

April 8, 2025

Published Date: 2026	SDDOT	C.M.P. SAFETY ENDS	PLATE NUMBER 450.38
			Sheet 2 of 2



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

GENERAL NOTES:

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

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

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

April 8, 2025

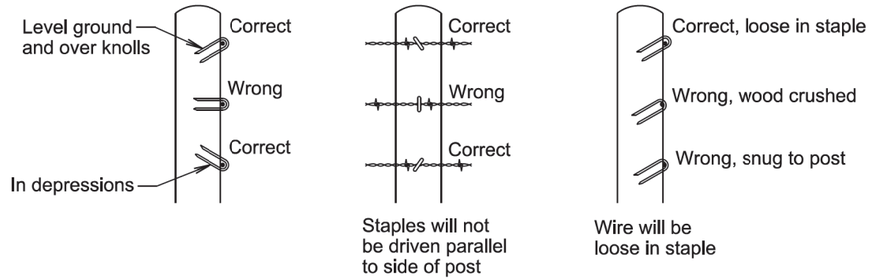
Published Date: 2026	SDDOT	RIGHT-OF-WAY FENCE	PLATE NUMBER 620.01
			Sheet 1 of 1

PLOT SCALE - 1:200
PLOT NAME - 10
.PLOTTED FROM - TRM111118
FILE - ...\STANDARDPLATES_067V.DGN

FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026

PLOT SCALE - 1:200



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.

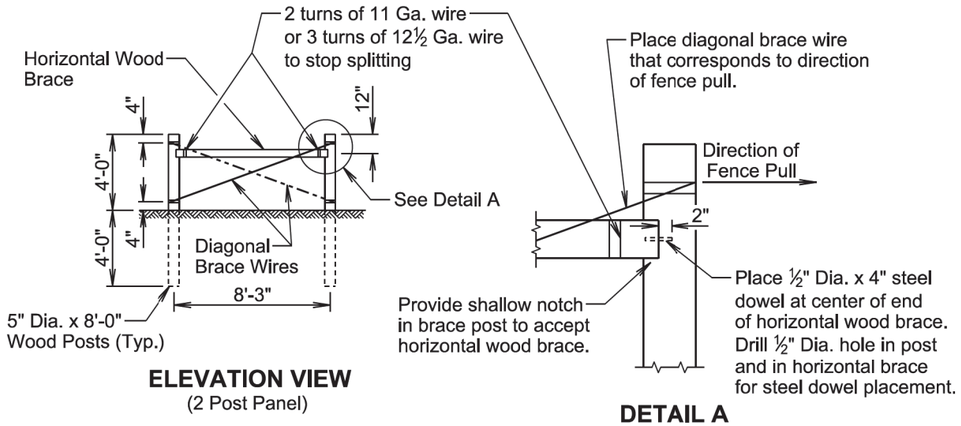
Right-of-Way fence other than on Interstate Projects will be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

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.

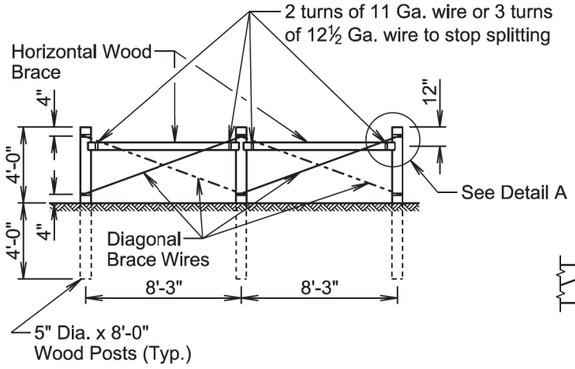
June 26, 2019

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

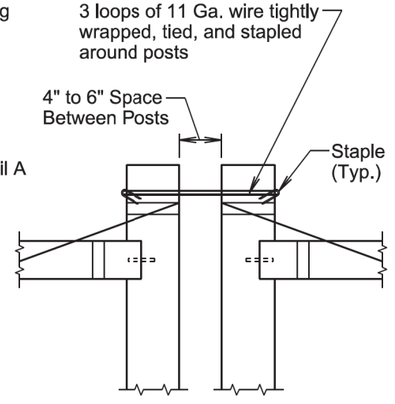


ELEVATION VIEW
(2 Post Panel)

DETAIL A



ELEVATION VIEW
(3 Post Panel)



DETAIL B

GENERAL NOTES:

Two Post Panels will be installed at least every 1320' between corners.

Two Post Panels will be installed at any sharp vertical angle crest points and as directed by the Engineer.

Horizontal wood braces will consist of 4" dia. x 8' wood posts or rough 4" x 4" x 8' timbers.

Diagonal brace wires will be fabricated with 4 strands of 9 Ga. galvanized wire twisted tight. The diagonal brace wires will be installed in accordance with the direction of the fence pull. Two diagonal brace wires are required if fence pull is in both directions.

March 31, 2024

Published Date: 2026	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03 Sheet 1 of 3

PLOT NAME - 11

FILE - ...\STANDARDPLATES_067V.DGN

.PLOTTED FROM - TRM111118

FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026

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

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

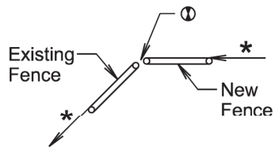
① See Detail B on Sheet 1 of 3.

GENERAL NOTE:

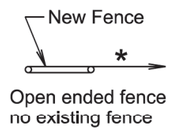
All radius of curvature stated for fence are at centerline of roadway.

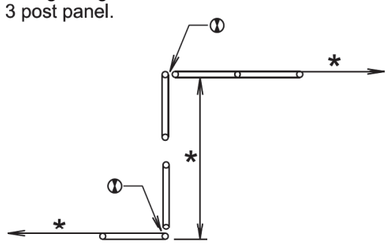
If fence length is less than 600' to next corner use a 2 post panel.

* If fence length is greater than 600' to next corner use a 3 post panel.

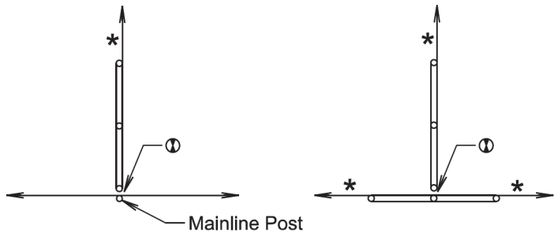


BEGIN OR END FENCE
(Where new fence ties into existing fence)

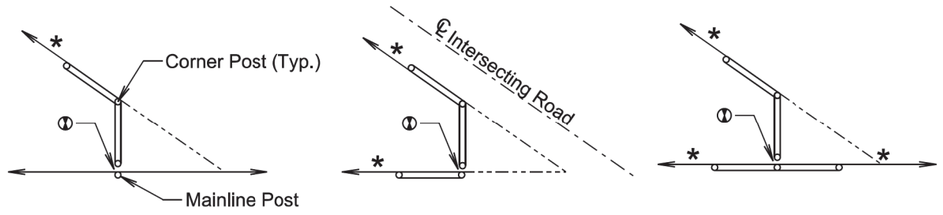




SHORT JOGS IN FENCE



CROSS FENCE



SHARP ANGLES IN CROSS FENCE

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

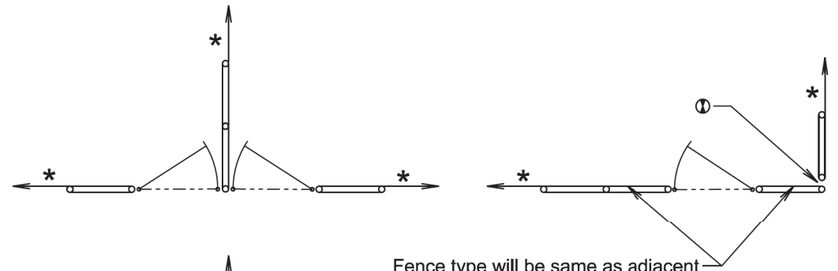
Additional fence panel is required when an angle in the mainline fence is greater than 10°.

ANGLES IN MAINLINE FENCE

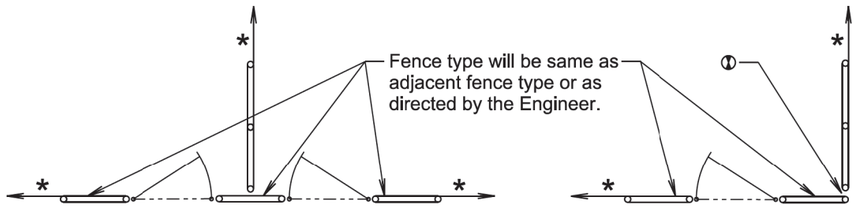
March 31, 2024

Published Date: 2026	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03 Sheet 2 of 3

ENTRANCE
(Not on corner)



Fence type will be same as adjacent fence type or as directed by the Engineer.



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.

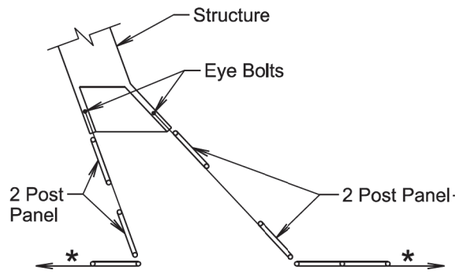
March 31, 2024

Published Date: 2026	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03 Sheet 3 of 3

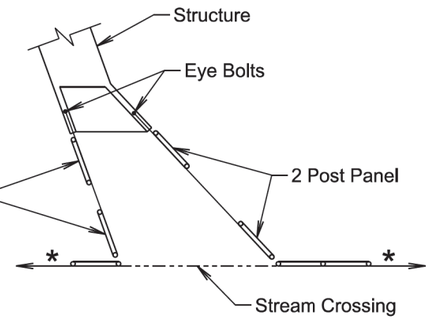
PLOT SCALE - 1:200
PLOT NAME - 12
FILE - ...\STANDARDPLATES_067V.DGN
.PLOTTED FROM - TRM111118

FOR BIDDING PURPOSES ONLY

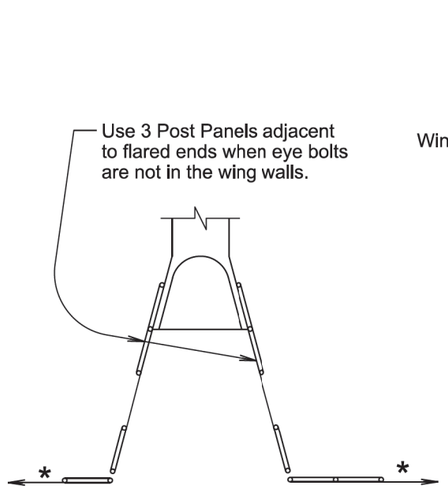
Plotting Date: 01/12/2026



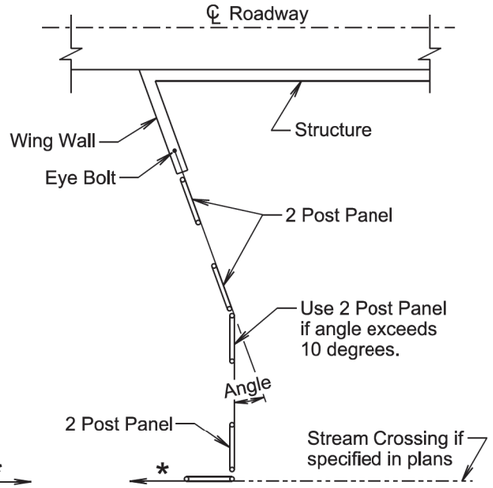
R.C. BOX CULVERT OR CATTLE PASS



STRUCTURE WITH STREAM CROSSING FENCE



R.C. BOX CULVERT OR CATTLE PASS

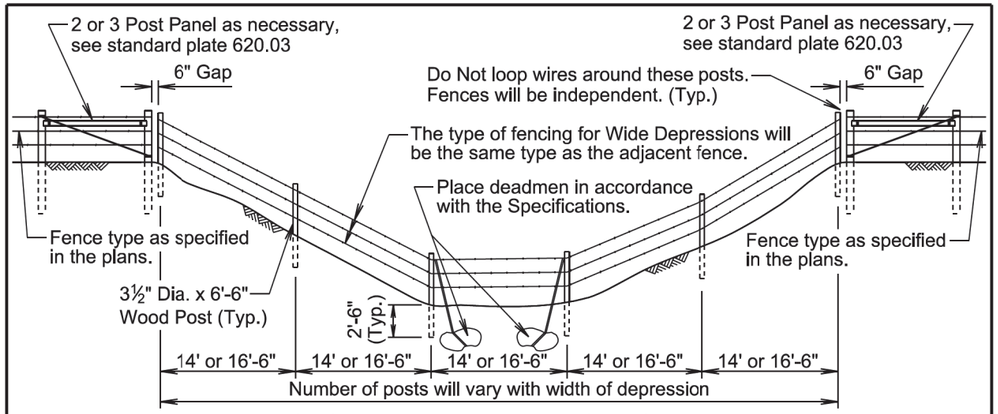


BRIDGE

* If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' use a 3 post panel.

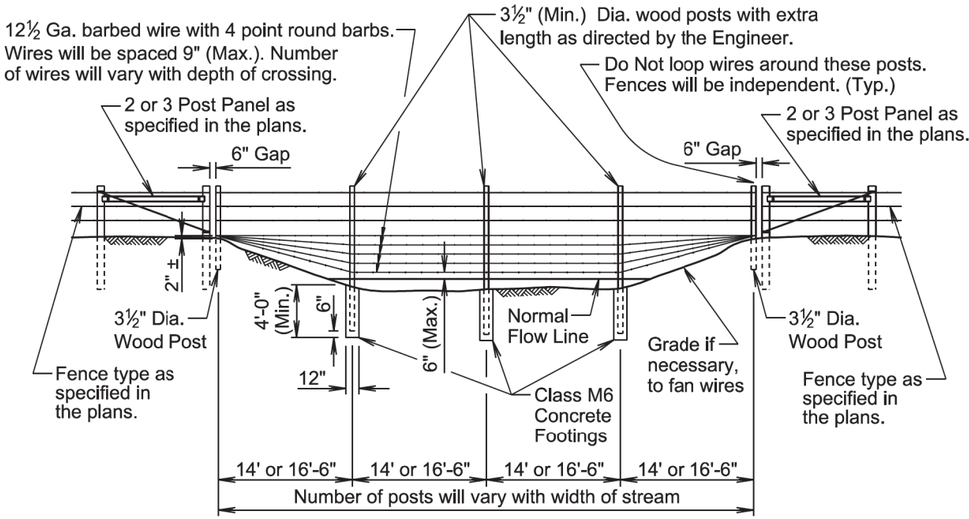
June 26, 2019

Published Date: 2026	SDDOT	BRACE PANEL APPLICATIONS AT STRUCTURES	PLATE NUMBER 620.04
			Sheet 1 of 1



This installation will be made when requested by the Engineer.

FENCING AT WIDE DEPRESSION
(Subject to Flooding)



This installation will be made only when stated in the plans.

FENCING AT STREAM CROSSING

GENERAL NOTES:

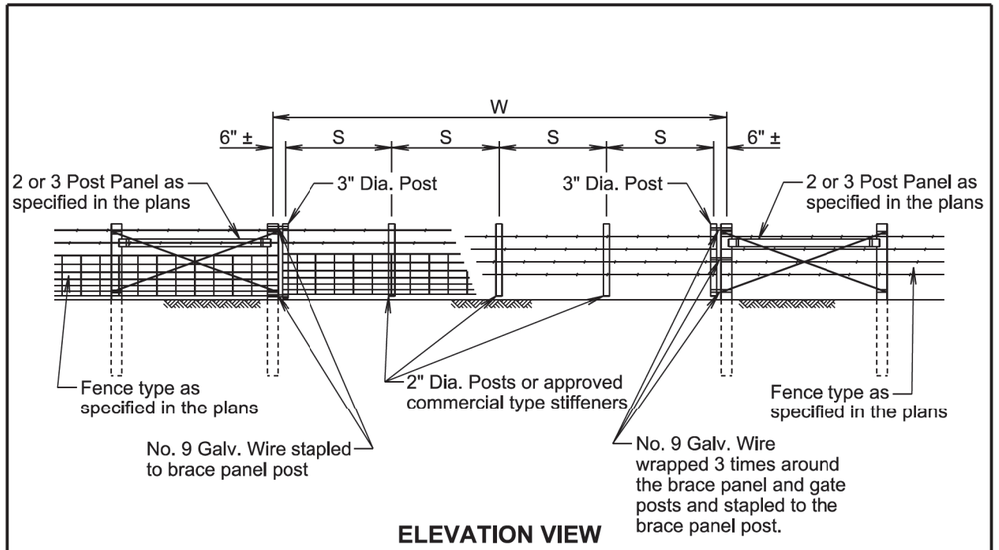
There will be no extra payment for the additional work and materials required to construct the fencing at the wide depression(s) and/or the fencing at the stream crossing(s). The deadmen will be paid for in accordance with 620.5 A of the Specifications.

Measurement and payment for the fencing at the wide depression(s) and/or the fencing at the stream crossing(s) will be at the contract unit price per foot for the corresponding Right-of-Way fence contract item.

June 26, 2019

Published Date: 2026	SDDOT	FENCING AT WIDE DEPRESSION(S) AND STREAM CROSSING(S)	PLATE NUMBER 620.10
			Sheet 1 of 1

PLOT SCALE - 1:200
PLOT NAME - 13
FILE - ...\STANDARDPLATES_067V.DGN
.PLOTTED FROM - TRM111118



ELEVATION VIEW

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

GENERAL NOTES:

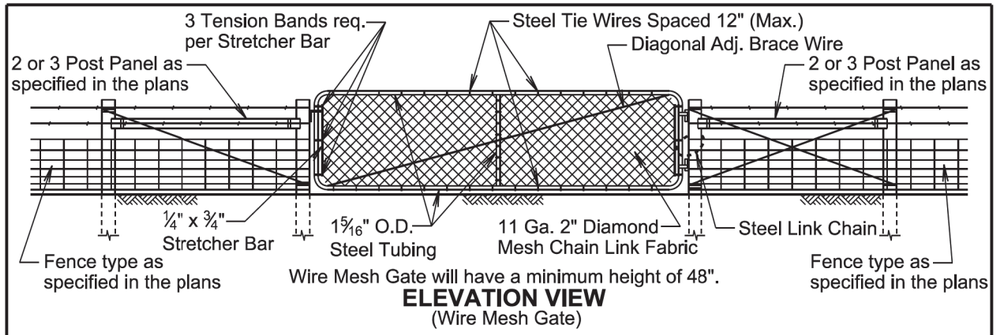
Creosote treatment of the gate posts will not be accepted.

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

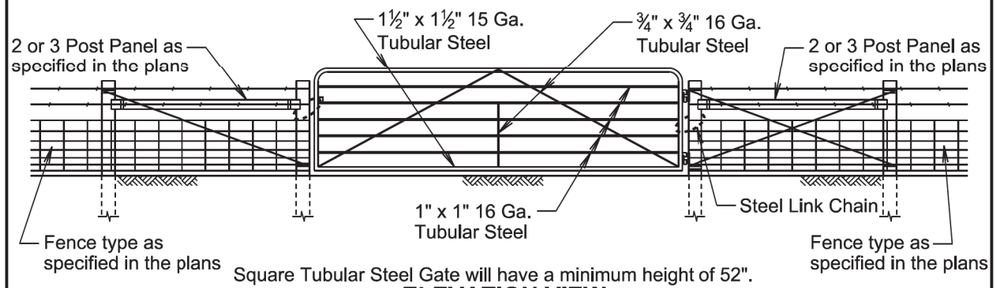
All costs for furnishing and constructing the wire gate(s) will be incidental to the contract unit price per foot for the respective Right-of-Way fence contract item.

June 26, 2019

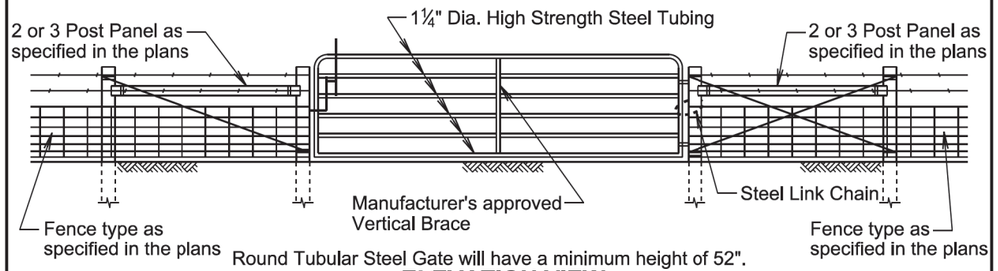
Published Date: 2026	SDDOT	WIRE GATES	PLATE NUMBER 620.20
			Sheet 1 of 1



ELEVATION VIEW
(Wire Mesh Gate)



ELEVATION VIEW
(Square Tubular Steel Gate)



ELEVATION VIEW
(Round Tubular Steel Gate)

GENERAL NOTES:

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

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

The Steel Link Chain will be a minimum of ¼", 4' long, rust resistant, and have electrically welded links. The chain will be wrapped around the gate hinge post and gate frame and the ends of the chain will be welded together with enough slack in the chain to provide free operation of the gate.

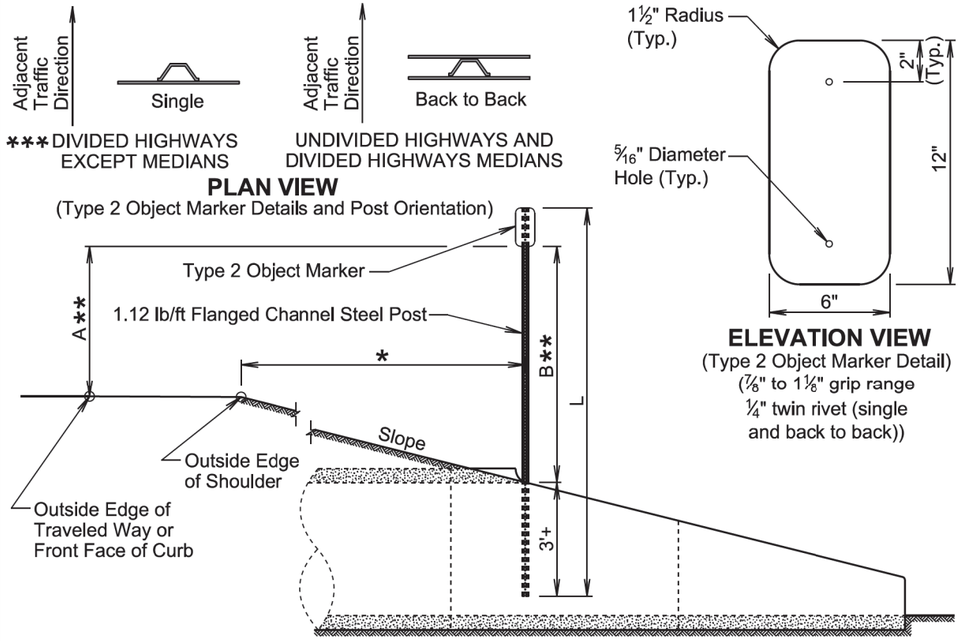
June 26, 2019

Published Date: 2026	SDDOT	TUBULAR FRAME GATES	PLATE NUMBER 620.21
			Sheet 1 of 1

PLOT SCALE - 1:200
PLOT NAME - 14
FILE - ...\STANDARDPLATES_067V.DGN
_PLOTTED FROM - TRM111118

FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026



ELEVATION VIEW
(Pipe culvert shown for illustrative purpose.)

TYPE 2 OBJECT MARKER POST LENGTHS									
OFFSET (*)		1'	2'	3'	4'	5'	6'	7'	8'	Greater Than 8'
		POST LENGTH (L)								
SLOPE	3:1	8'-6"	8'-9"	9'-3"	9'-6"	9'-9"	10'-3"	10'-6"	10'-9"	8'-0"
	4:1	8'-6"	8'-9"	9'-0"	9'-3"	9'-9"	9'-9"	10'-0"	10'-3"	8'-0"
	5:1	8'-3"	8'-6"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	9'-9"	8'-0"
	6:1	8'-3"	8'-6"	8'-9"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	8'-0"

GENERAL NOTES:

*** The type 2 object marker may be installed back to back when specified in the plans.

Post Length L was calculated based on a shoulder width of 6 feet at a crosslope of 4 percent and L was rounded up to the nearest 3 inches.

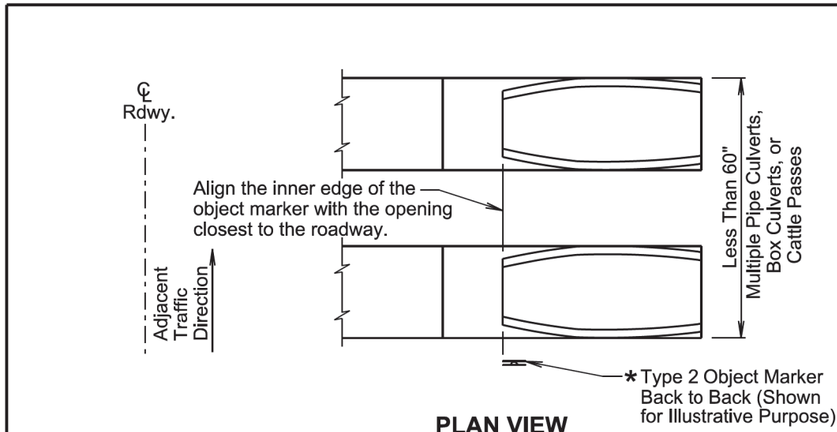
** Dimension A is 4 feet when the Offset * is 8 feet and less. Dimension B is 4 feet when Offset * is greater than 8 feet.

The type 2 object marker and the 1.12 lb/ft flanged channel steel post will be in conformance with Specifications Section 982.2 J.

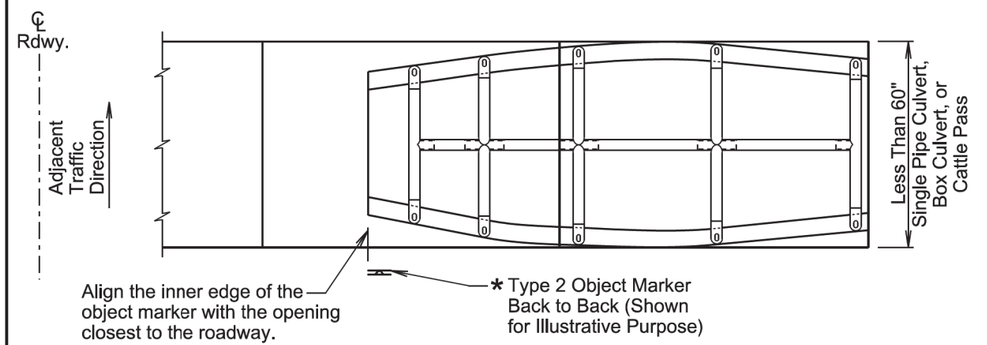
Payment for the type 2 object marker will be in conformance with Specification Section 632.5 B.

December 23, 2019

Published Date: 2026	SDDOT	TYPE 2 OBJECT MARKER (DIRECT DRIVE)	PLATE NUMBER 632.01 Sheet 1 of 1



PLAN VIEW
(For Multiple Pipe Culverts, Box Culverts, and Cattle Passes)
(Pipe culverts shown for illustrative purpose.)
(Embankment is not shown.)



PLAN VIEW
(For Single Pipe Culvert, Box Culvert, and Cattle Pass)
(Pipe culvert shown for illustrative purpose.)
(Embankment is not shown.)

GENERAL NOTES:

This standard plate will be used in conjunction with standard plate 632.01.

* The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

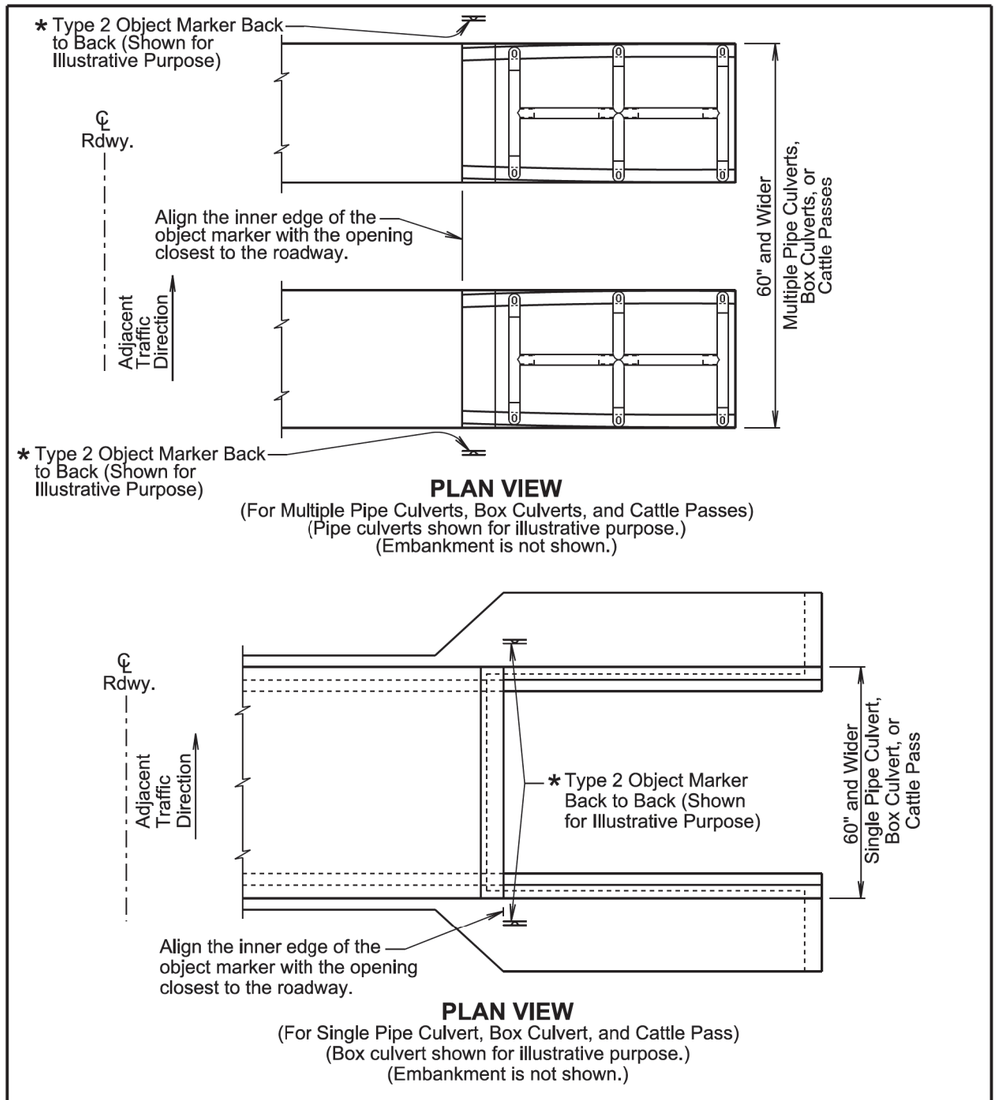
December 23, 2019

Published Date: 2026	SDDOT	TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (Less than 60" Overall Width)	PLATE NUMBER 632.03 Sheet 1 of 1

PLOT SCALE - 1:200
PLOT NAME - 15
FILE - ...\STANDARDPLATES_067V.DGN
.PLOTTED FROM - TRM111118

FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026



PLAN VIEW
(For Multiple Pipe Culverts, Box Culverts, and Cattle Passes)
(Pipe culverts shown for illustrative purpose.)
(Embankment is not shown.)

PLAN VIEW
(For Single Pipe Culvert, Box Culvert, and Cattle Pass)
(Box culvert shown for illustrative purpose.)
(Embankment is not shown.)

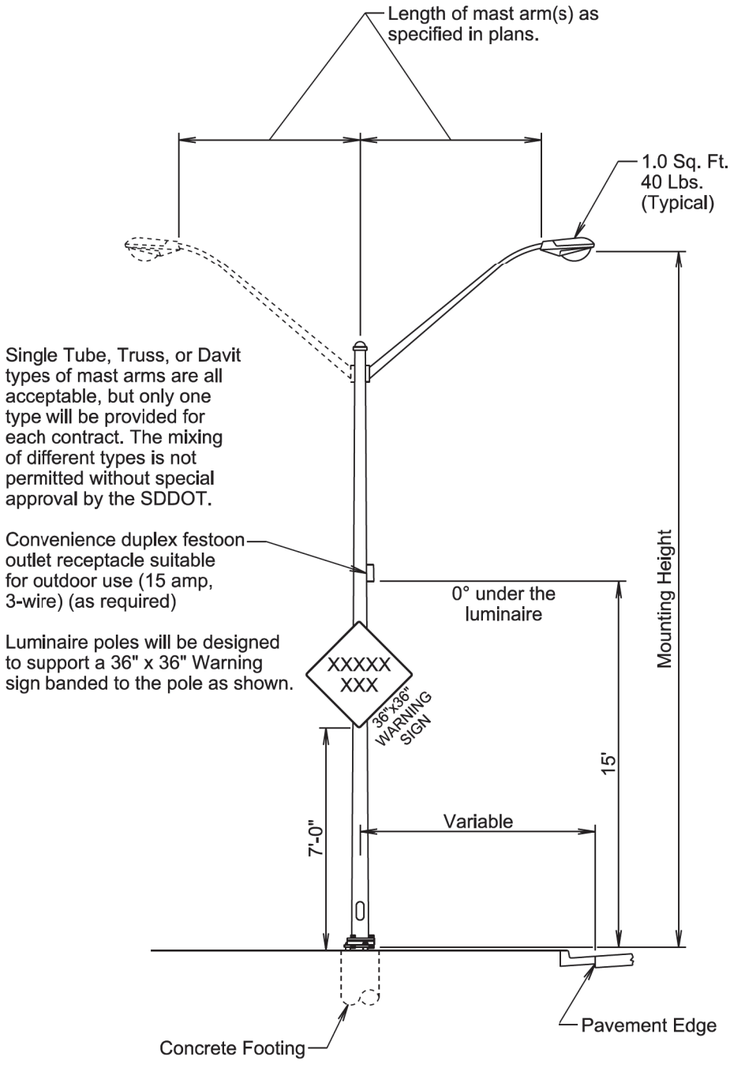
GENERAL NOTES:

This standard plate will be used in conjunction with standard plate 632.01.

* The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

December 23, 2019

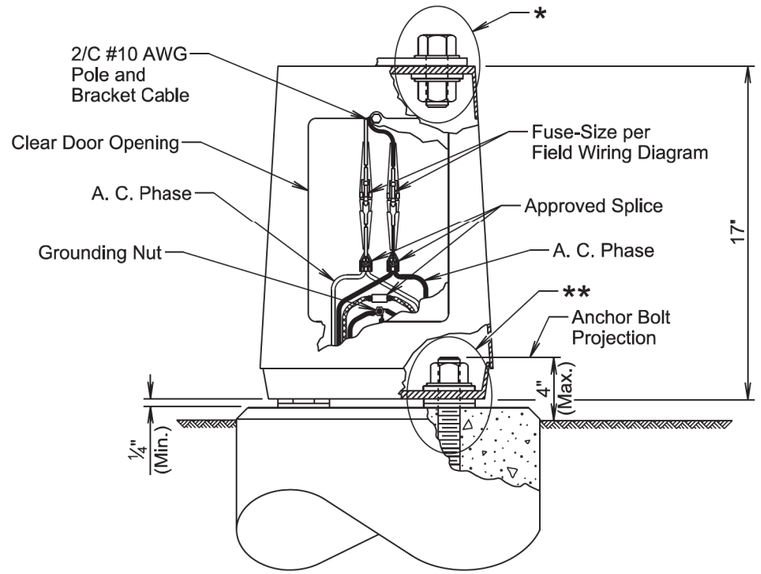
Published Date: 2026	SDDOT	TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (60" and Greater Overall Width)	PLATE NUMBER 632.04 Sheet 1 of 1



November 19, 2022

Published Date: 2026	SDDOT	STEEL ROADWAY LUMINAIRE POLE WITH MAST ARM(S)	PLATE NUMBER 635.01 Sheet 1 of 1

PLOT SCALE - 1:200
PLOT NAME - 16
FILE - ...\STANDARDPLATES_067V.DGN
.PLOTTED FROM - TRM111118



GENERAL NOTES:

Base details are provided for example only and are not intended to be a complete design.

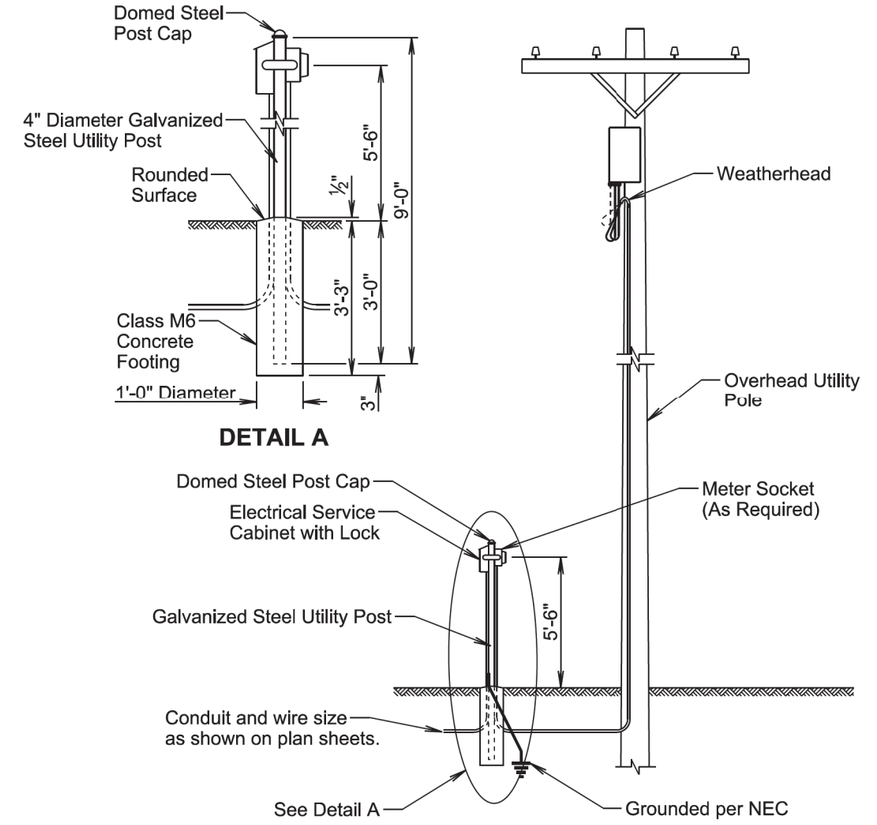
Fused connectors will be breakaway type.

* Hardware connecting the pole to the base will be installed in accordance with the manufacturer's recommendation.

** Hardware connecting the base to the footing will be installed in accordance with the manufacturer's recommendation. The Contractor will install leveling devices in accordance with the manufacturer's recommendation if shimming is necessary to install the light poles plumb and level. The washers and shims will be installed around the anchor bolts.

November 19, 2022

Published Date: 2026	SDDOT	ROADWAY LUMINAIRE POLE BREAKAWAY TRANSFORMER BASE	PLATE NUMBER 635.21 Sheet 1 of 1



DETAIL A

ELEVATION VIEW

GENERAL NOTES:

The concrete for the post footing will be class M6 concrete.

The 4" diameter galvanized steel utility post will be 9' long and will be in conformance with AASHTO Standard Specifications M181. The post will be Type 1 and either Grade 1 or Grade 2. The domed steel post cap will be in conformance with AASHTO Standard Specifications M181 and will be Type 1.

The Contractor will contact and coordinate his/her work with the Utility Companies regarding hookup requirements, fees, materials, and equipment necessary.

All costs for furnishing and installing all materials from the electrical service cabinet to the transformer including labor, equipment, hookup fees, all items within the cabinet, lockable enclosure with receptacle outlet, lock and keys, post, concrete footing, post cap, meter socket if required, conduit, and incidentals will be incidental to the contract unit price per each for "Electrical Service Cabinet".

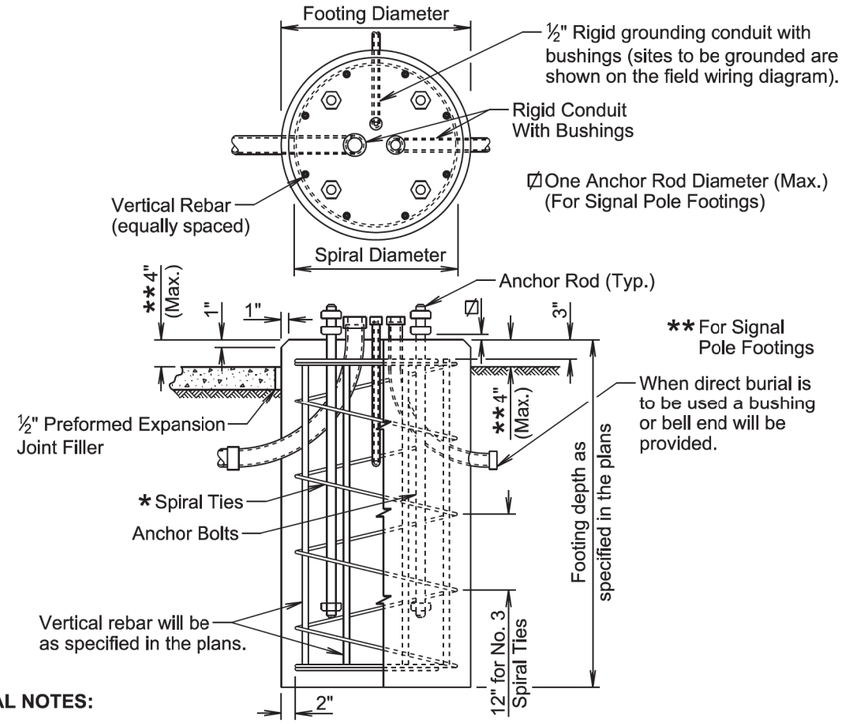
March 31, 2024

Published Date: 2026	SDDOT	GALVANIZED STEEL UTILITY POST WITH OVERHEAD UTILITY POLE	PLATE NUMBER 635.35 Sheet 1 of 1

PLOT SCALE - 1:200
PLOT NAME - 17
FILE - ...\STANDARDPLATES_067V.DGN
.PLOTTED FROM - TRM111118

FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026



GENERAL NOTES:

* Circular ties may be used in lieu of the spiral ties. The No. 3 ties will be spaced 12 inches apart except for the top two which will be spaced 6 inches apart. The ties will be lapped 18 inches and the laps will be staggered around the cage.

Spiral ties will have 1-1/2 extra turns at each end.

See Section 985 of the Specifications for footing materials.

Conduits and bushings may project 2½ inches to 6 inches above footing for fixed base poles but will not project above the slip plane or fracture plane for breakaway poles.

Conduits will be sealed water-tight during all phases of construction until poles are in place.

The anchor rods will fit inside the reinforcing steel cage. If the anchor rods designed by the Pole Manufacturer do not fit, contact the Office of Bridge Design for footing redesign. No additional payment will be made for the redesigned footing.

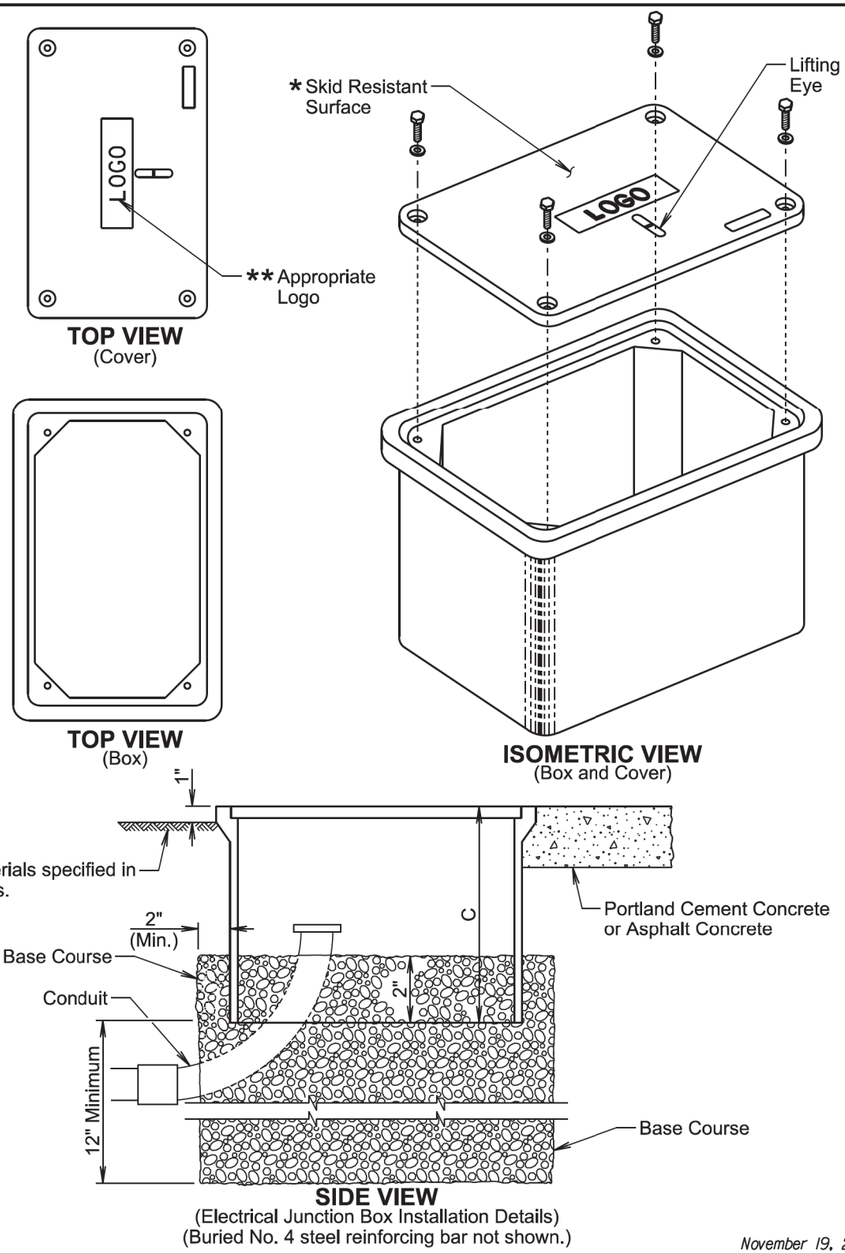
Costs of conduit and conduit bushings shown on footing detail will be incidental to the footing bid item(s).

The pole will not be installed until the concrete has attained design strength (4000 psi).

The contour of the area surrounding the breakaway pole will be flat, though not necessarily level for a distance of 5 feet in all directions. The Contractor may be required to provide finish grading at some breakaway pole locations.

November 19, 2022

Published Date: 2026	SDDOT	POLE FOOTING	PLATE NUMBER 635.55
			Sheet 1 of 1



November 19, 2020

Published Date: 2026	SDDOT	ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4	PLATE NUMBER 635.65
			Sheet 1 of 2

PLOT SCALE - 1:200

PLOTTED FROM - TRM111118

PLOT NAME - 18

FILE - ...\STANDARDPLATES_067V.DGN

FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026

PLOT SCALE - 1:200

ELECTRICAL JUNCTION BOX			
TYPE	DESCRIPTION	APPROXIMATE COVER SIZE	MINIMUM DEPTH (C)
1	Open Bottom with Gasket	11"x18"	18"
2	Open Bottom with Gasket	13"x24"	18"
3	Open Bottom with Gasket	17"x30"	18"
3A	Open Bottom with Gasket	24"x36"***	24"
4	Open Bottom with Gasket	30"x48"***	24"

GENERAL NOTES:

The cover will be gasketed with a minimum of two stainless steel bolts and washers.

The cover will have a lifting eye.

* The surface of the cover will have a minimum wet and dry coefficient of friction value of 0.5 as determined by ASTM F609.

** The cover of the junction box will have the appropriate logo in one inch size letters and will be recessed. When the junction box contains cables or wires for a traffic signal then the logo will be "Signal". When the junction box contains lighting conductors then the logo will be "Lighting".

*** Two piece covers will be used for Type 3A and Type 4 junction boxes.

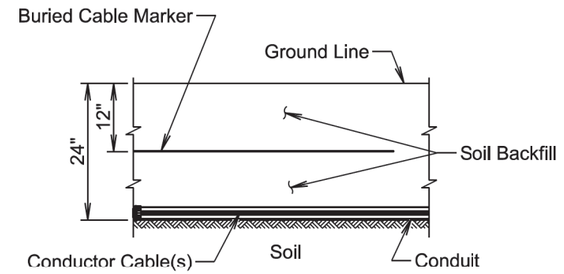
The electrical junction boxes will comply with the American National Standards Institute (ANSI)/Society of Cable Telecommunications Engineers (SCTE) 77 2007 Specification for Underground Enclosure Integrity. The loading requirement for all electrical junction boxes and covers will be Tier 22 of ANSI/SCTE 77 2007.

The electrical junction boxes will be UL listed.

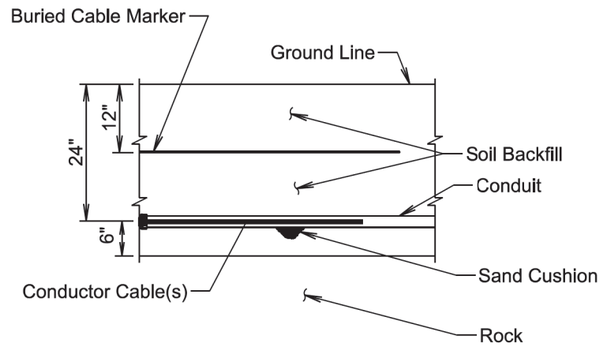
For junction boxes located outside of pavement, a No. 4 steel reinforcing bar with a minimum length of 18" will be buried adjacent to the long side of the junction box. All costs associated with furnishing and placing the steel reinforcing bar will be incidental to the contract unit price per each for "Type _ Electrical Junction Box".

November 19, 2020

Published Date: 2026 | SDDOT | ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4 | PLATE NUMBER 635.65 | Sheet 2 of 2



SECTION VIEW



SECTION VIEW

GENERAL NOTE:

The Buried Cable Marker will be plastic, approximately 6" wide, and will be capable of sustaining a minimum of a 350% tolerance of elongation without tearing. The Buried Cable Marker will have a life expectancy approximately equal to that of the conductor(s) beneath it. A phrase indicating the presence of a buried electric circuit below will be printed in a contrasting color on the cable marker. The Buried Cable Marker will be subject to approval by the Engineer. All costs associated with furnishing and installing the Buried Cable Marker will be incidental to the contract unit price per foot for the bid item used for the electrical conductor.

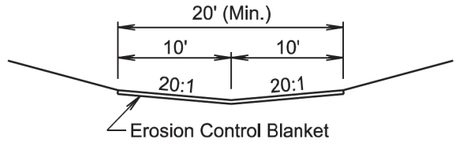
November 19, 2022

Published Date: 2026 | SDDOT | CONDUIT INSTALLATION | PLATE NUMBER 635.76 | Sheet 1 of 1

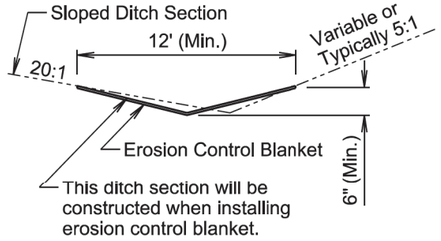
PLOTTED FROM - TRMI11118

PLOT NAME - 19

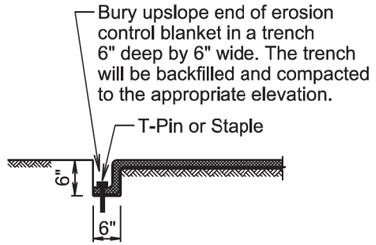
FILE - ...\STANDARDPLATES_067V.DGN



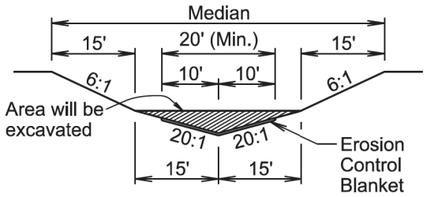
STANDARD DITCH SECTION



SLOPED DITCH SECTION

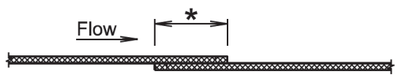


TRENCH DETAIL



The median will be shaped to the limits shown in this detail where the erosion control blanket will be placed.

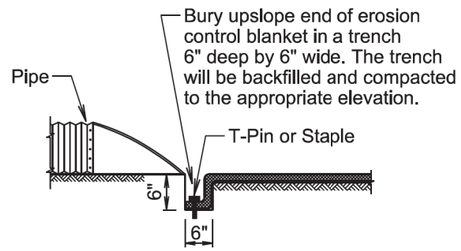
MEDIAN SECTION



* Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.

* Use a 6" (Min.) overlap wherever one roll of erosion control blanket ends and another begins.

OVERLAP DETAIL



PIPE END DETAIL

GENERAL NOTES:

Prior to placement of the erosion control blanket, the areas will be properly prepared, shaped, seeded, and fertilized.

Erosion control blanket will be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket will be buried in a trench 6" wide by 6" deep. There will be at least a 6" overlap wherever one roll of erosion control blanket ends and another begins, with the upslope erosion control blanket placed on top of the downslope erosion control blanket.

The erosion control blanket will be pinned to the ground according to the manufacturer's installation recommendations.

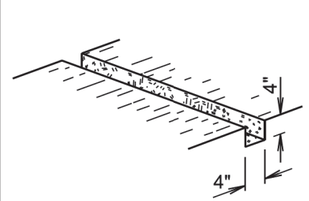
After the placement of the erosion control blanket, the Contractor will fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

All ditch sections will be shaped when installing the erosion control blanket. All costs for shaping the ditches will be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

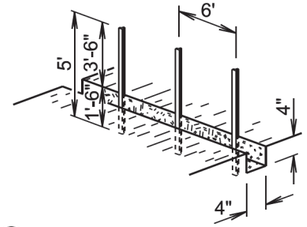
February 14, 2020

Published Date: 2026	SDDOT	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
			Sheet 1 of 1

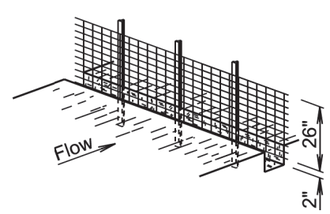
MANUAL LOW FLOW SILT FENCE INSTALLATION



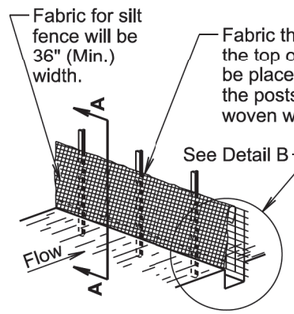
① EXCAVATE TRENCH



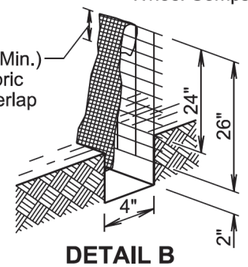
② DRIVE STEEL T FENCE POSTS



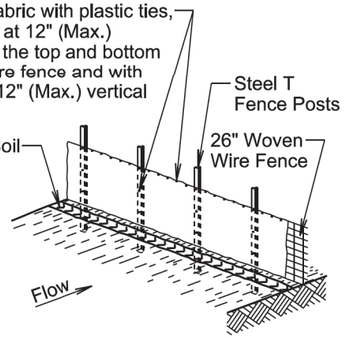
③ ATTACH 26" WOVEN WIRE FENCE TO POSTS



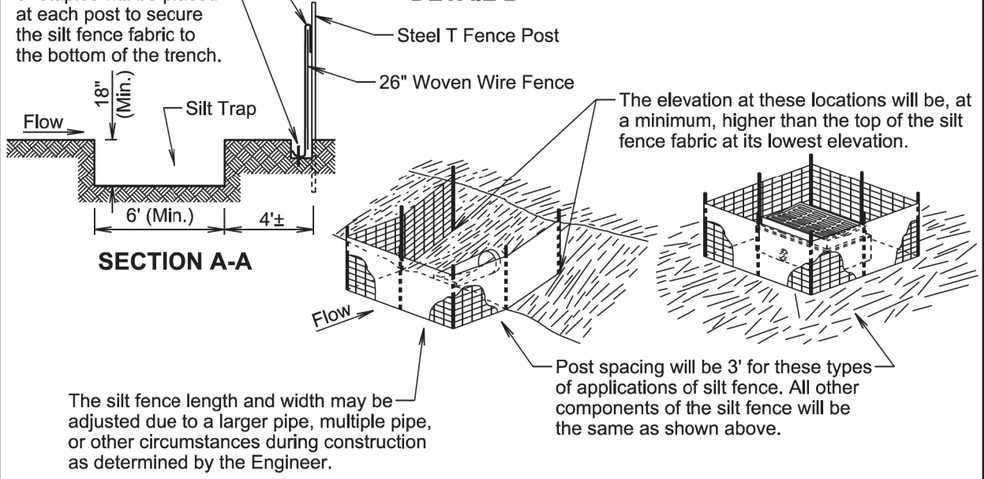
④ ATTACH SILT FENCE FABRIC



DETAIL B



⑤ BACKFILL TRENCH AND WHEEL COMPACT SOIL



SECTION A-A

February 14, 2020

Published Date: 2026	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 1 of 2

PLOT SCALE - 1:200
PLOTTED FROM - TRM111118
PLOT NAME - 20
FILE - ...\STANDARDPLATES_067V.DGN

FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026

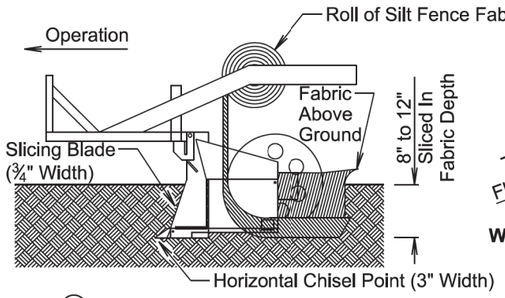
PLOT SCALE - 1:200

PLOT NAME - 21

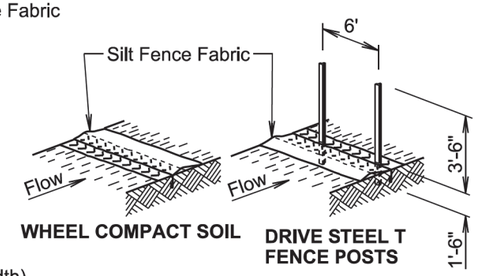
FILE - ...\STANDARDPLATES_067V.DGN

.PLOTTED FROM - TRM111118

MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION



(1) INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.

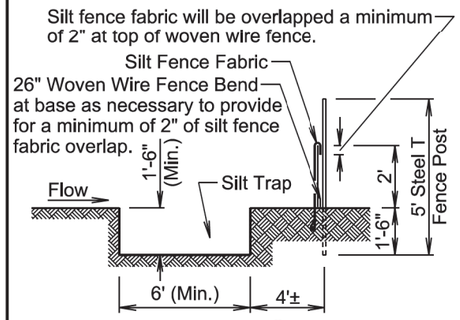


WHEEL COMPACT SOIL

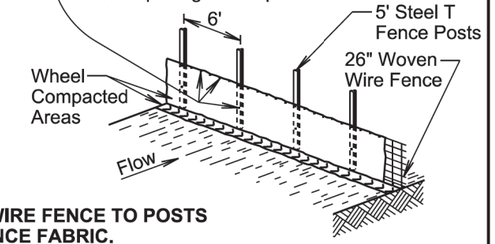
DRIVE STEEL T FENCE POSTS

(2) WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.

Silt fence fabric will be overlapped a minimum of 2" at top of woven wire fence.

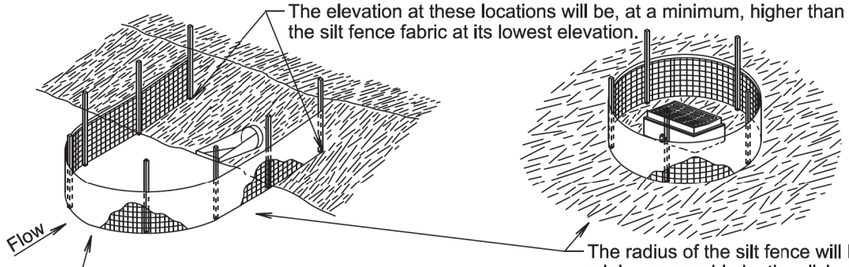


Attach the silt fence fabric with plastic ties, wire ties, or hog rings at 12" (Max.) horizontal spacing on the top and bottom wires of the woven wire fence and with plastic or wire ties at 12" (Max.) vertical spacing on the posts.



(3) ATTACH 26" WOVEN WIRE FENCE TO POSTS AND ATTACH SILT FENCE FABRIC.

The elevation at these locations will be, at a minimum, higher than the top of the silt fence fabric at its lowest elevation.



The silt fence length and width may be adjusted due to a larger pipe, multiple pipe, or other circumstances during construction as determined by the Engineer.

The radius of the silt fence will be the minimum capable by the slicing machine. The post spacing will be 3' for these types of applications of silt fence. All the other components of the silt fence will be the same as shown above.

GENERAL NOTES:

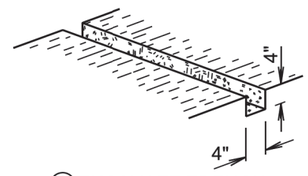
A silt trap will be provided when specified by a plan note. All costs for constructing the silt trap will be incidental to the contract unit price per cubic yard for "Silt Trap".

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end will be provided on top of the extra length of silt fence fabric to prevent underflow.

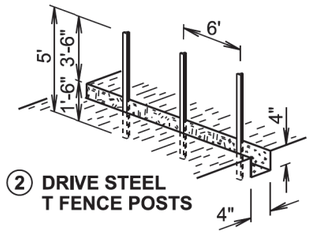
February 14, 2020

Published Date: 2026	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 2 of 2

MANUAL HIGH FLOW SILT FENCE INSTALLATION



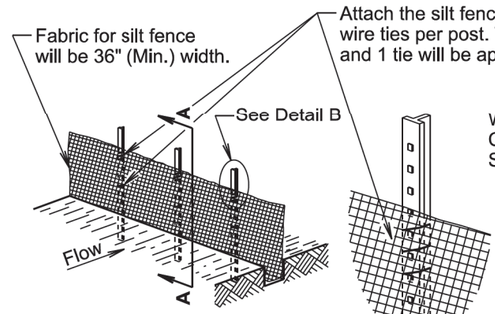
(1) EXCAVATE TRENCH



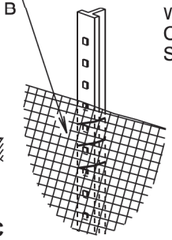
(2) DRIVE STEEL T FENCE POSTS

Fabric for silt fence will be 36" (Min.) width.

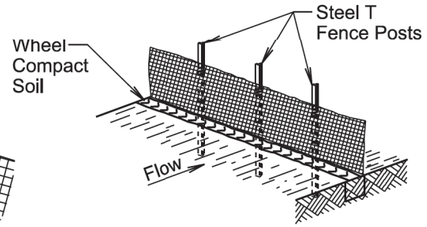
Attach the silt fence fabric with a total of 4 plastic or wire ties per post. Three ties will be used at the top and 1 tie will be approximately at mid-point of the post.



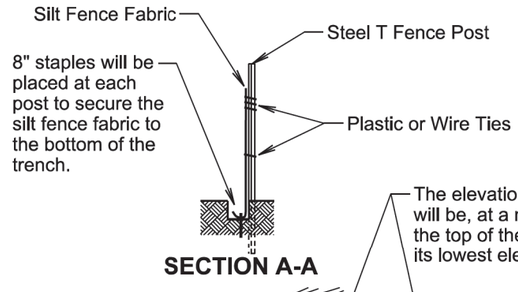
(3) ATTACH SILT FENCE FABRIC



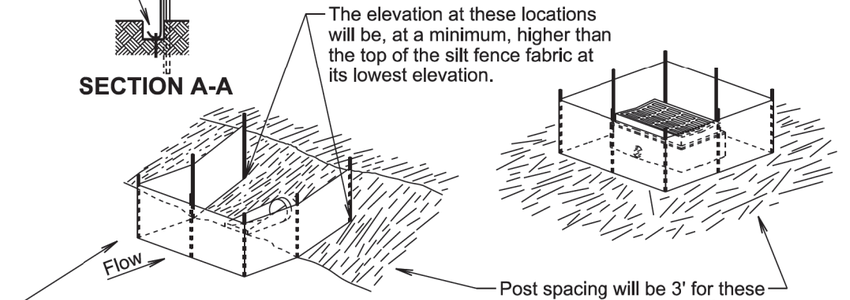
DETAIL B



(4) BACKFILL TRENCH AND WHEEL COMPACT SOIL



SECTION A-A



The silt fence length and width may be adjusted due to a larger pipe, multiple pipe, or other circumstances during construction as determined by the Engineer.

Post spacing will be 3' for these types of applications of silt fence. All other components of the silt fence will be the same as shown above.

February 14, 2020

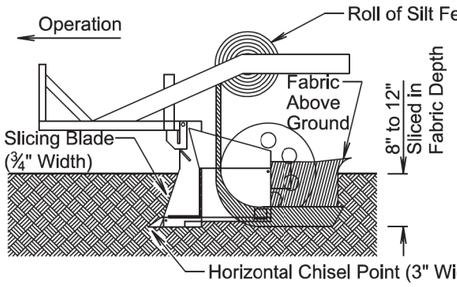
Published Date: 2026	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 1 of 2

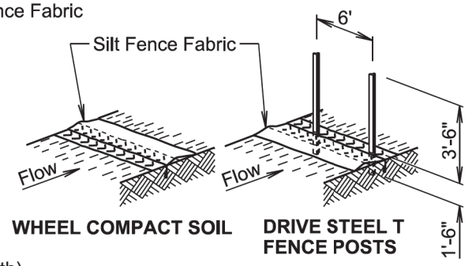
FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026

PLOT SCALE - 1:200

MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



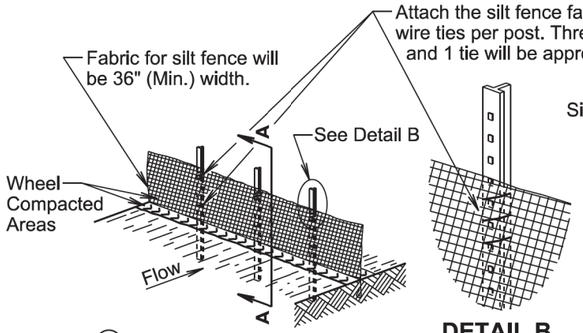


WHEEL COMPACT SOIL

DRIVE STEEL T FENCE POSTS

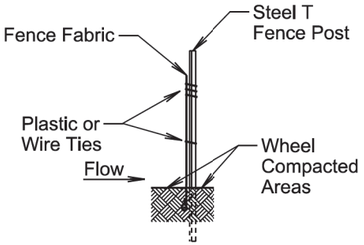
① **INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.**

② **WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.**

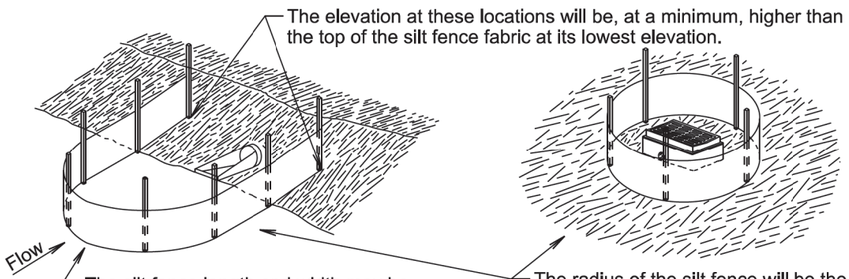


③ **ATTACH SILT FENCE FABRIC**

DETAIL B



SECTION A-A

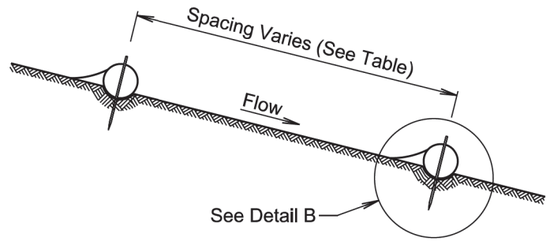


GENERAL NOTE:

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end will be provided on top of the extra length of silt fence fabric to prevent underflow.

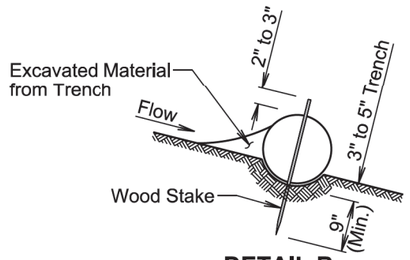
February 14, 2020

Published Date: 2026	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 2 of 2

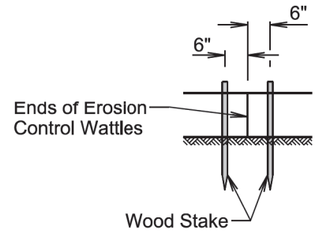


ELEVATION VIEW
(Cut or Fill Slope Installation)

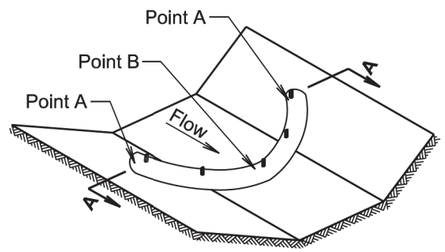
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40



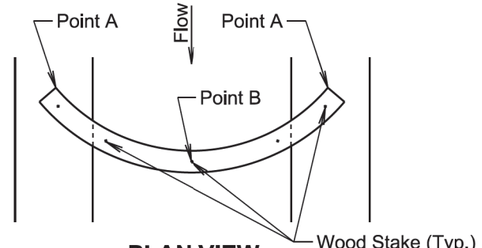
DETAIL B
(Typical of All Installations)



DETAIL C
(See General Notes)

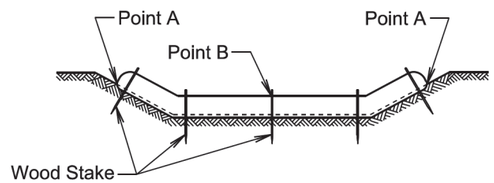


ISOMETRIC VIEW
(Ditch Installation)



PLAN VIEW
(Ditch Installation)

DITCH INSTALLATION	
Grade	Spacing (Ft.)
2%	150
3%	100
4%	75
5%	50



SECTION A-A

February 14, 2020

Published Date: 2026	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

PLOTTED FROM - TRM111118

PLOT NAME - 22

FILE - ...\STANDARDPLATES_067V.DGN

FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026

PLOT SCALE - 1:200

GENERAL NOTES:

At cut or fill slope installations, wattles will be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor will dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes will be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes will be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles will be 3' to 4'.

Where installing running lengths of wattles, the Contractor will butt the second wattle tightly against the first and will not overlap the ends. See Detail C.

The Contractor and Engineer will inspect the erosion control wattles in accordance with the storm water permit. The Contractor will remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

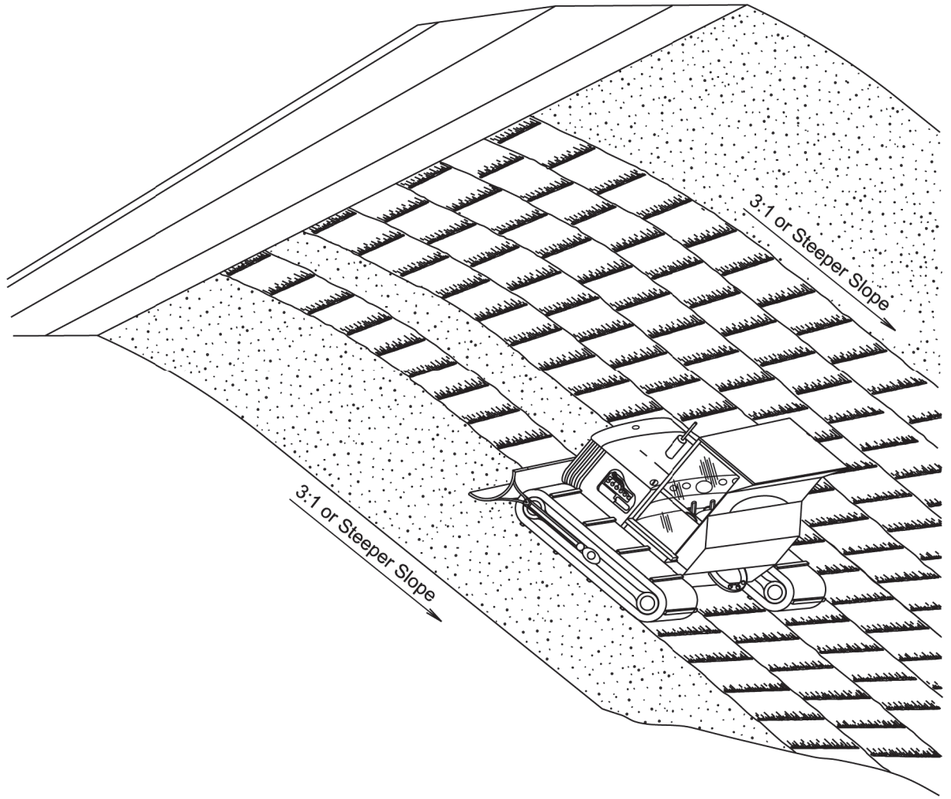
Sediment removal, disposal, or necessary shaping will be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping will be incidental to the contract unit price per cubic yard for "Remove Sediment".

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials will be incidental to the contract unit price per foot for the corresponding erosion control wattle contract item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials will be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

February 14, 2020

Published Date: 2026	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06 Sheet 2 of 2



GENERAL NOTES:

Where practical, surface roughening will be done on slopes 3:1 and steeper and on slopes deemed necessary by the Engineer.

The equipment used for surface roughening will be equipped with tracks that are capable of creating ridges in the soil that are perpendicular to the slope. The final condition of the surface roughening will be approved by the Engineer.

Measurement for surface roughening will be to the nearest tenth of an acre.

All costs associated with surface roughening including labor, equipment, and materials will be incidental to the contract unit price per acre for "Surface Roughening".

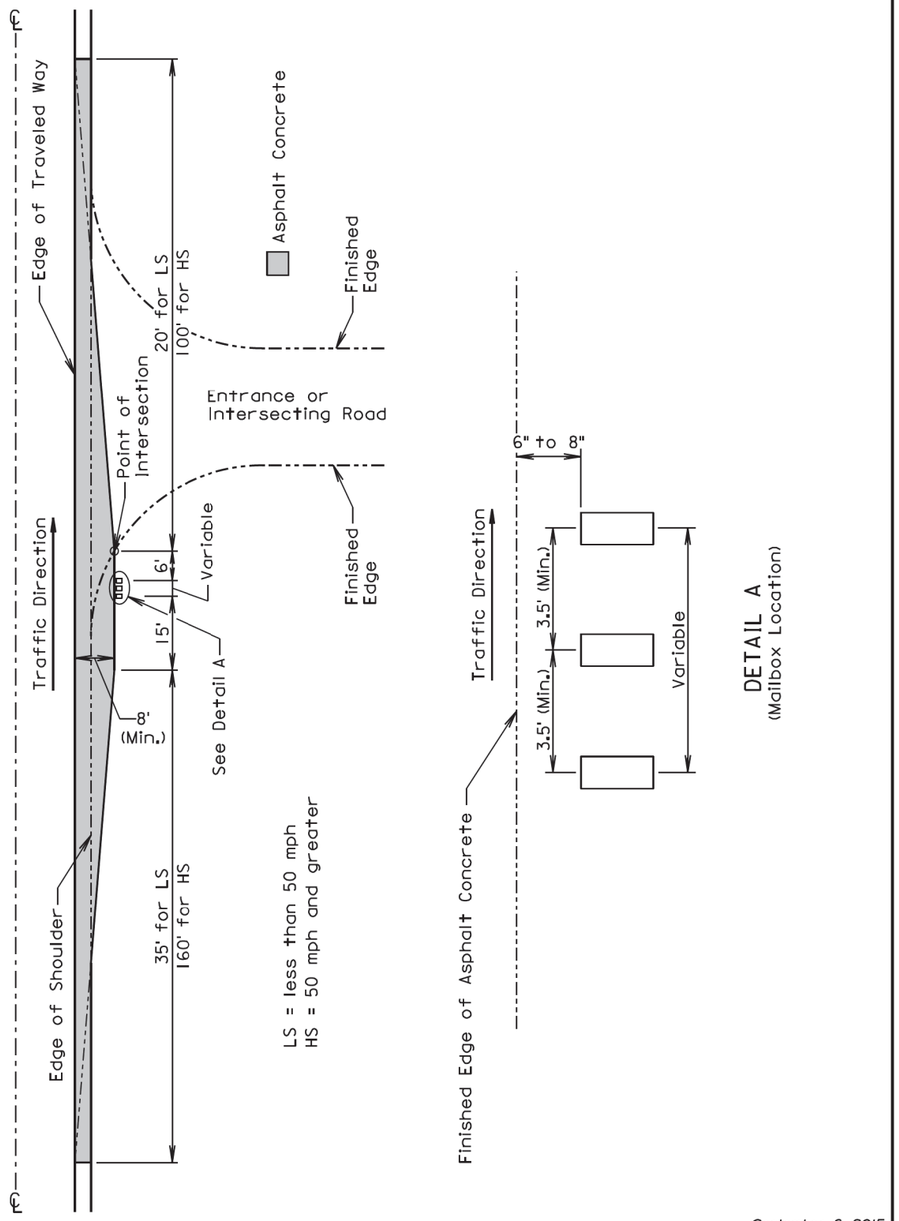
February 14, 2020

Published Date: 2026	SDDOT	SURFACE ROUGHENING	PLATE NUMBER 734.25 Sheet 1 of 1

PLOT NAME - 23
FILE - ...\STANDARDPLATES_067V.DGN
_PLOTTED FROM - TRM111118

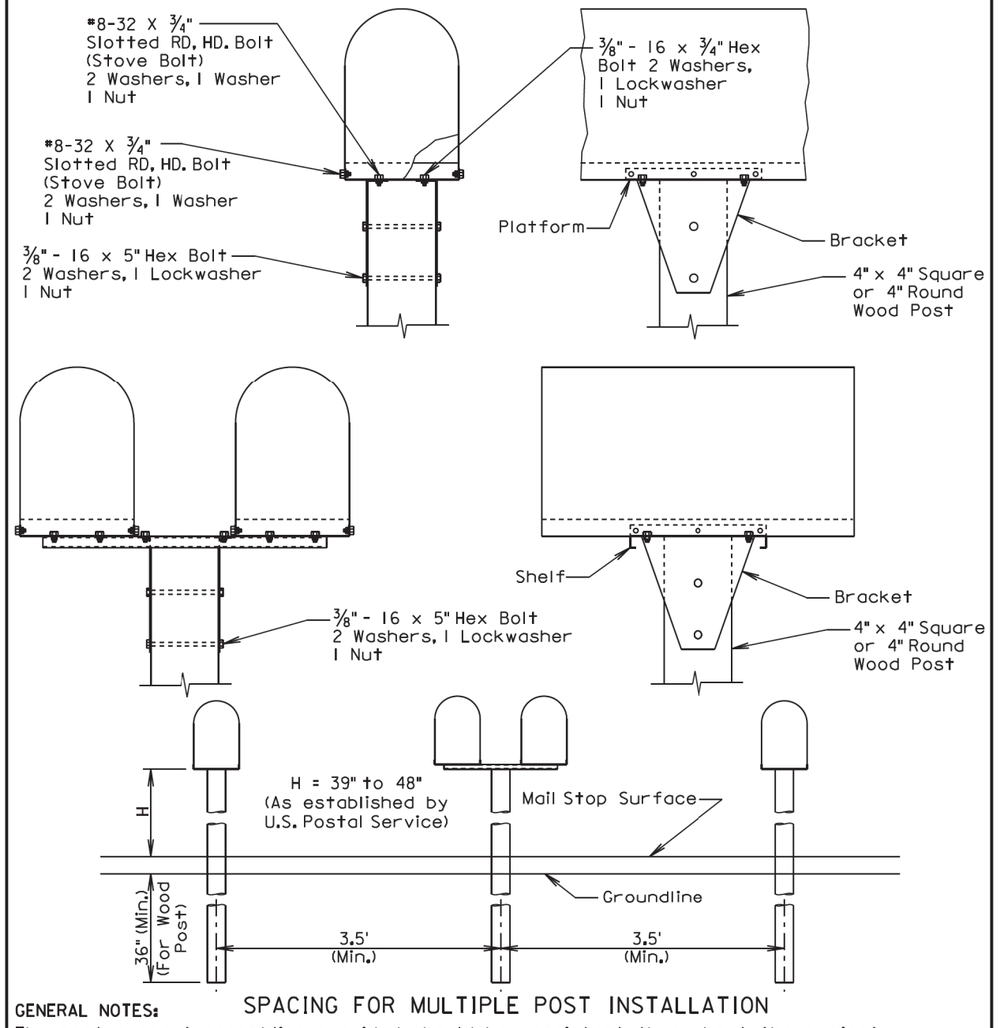
FOR BIDDING PURPOSES ONLY

Plotting Date: 01/12/2026



September 6, 2015

Published Date: 2026	SDDOT	MAILBOX TURNOUT	PLATE NUMBER 900.01
			Sheet 1 of 1



SPACING FOR MULTIPLE POST INSTALLATION

GENERAL NOTES:

The post support assemblies provided should be consistant throughout the project.

Single and double mailboxes may be in any sequence.

Post support assemblies shall be one from the approved products list, a 4"x4" or 4" round wood post, or an alternate post support assembly that meets the test level 3 crash testing requirements of NCHRP 350 or MASH.

Alternate mailbox support assemblies shall be approved by the Engineer prior to installation. The Contractor shall provide the Engineer written certification that the mailbox support assembly has met the crash testing requirements and will be installed in accordance with the manufacturer's installation instructions.

September 6, 2013

Published Date: 2026	SDDOT	SINGLE AND DOUBLE MAILBOX ASSEMBLIES	PLATE NUMBER 900.02
			Sheet 1 of 1

PLOT SCALE - 1:200

PLOT NAME - 24

FILE - ...\STANDARDPLATES_067V.DGN

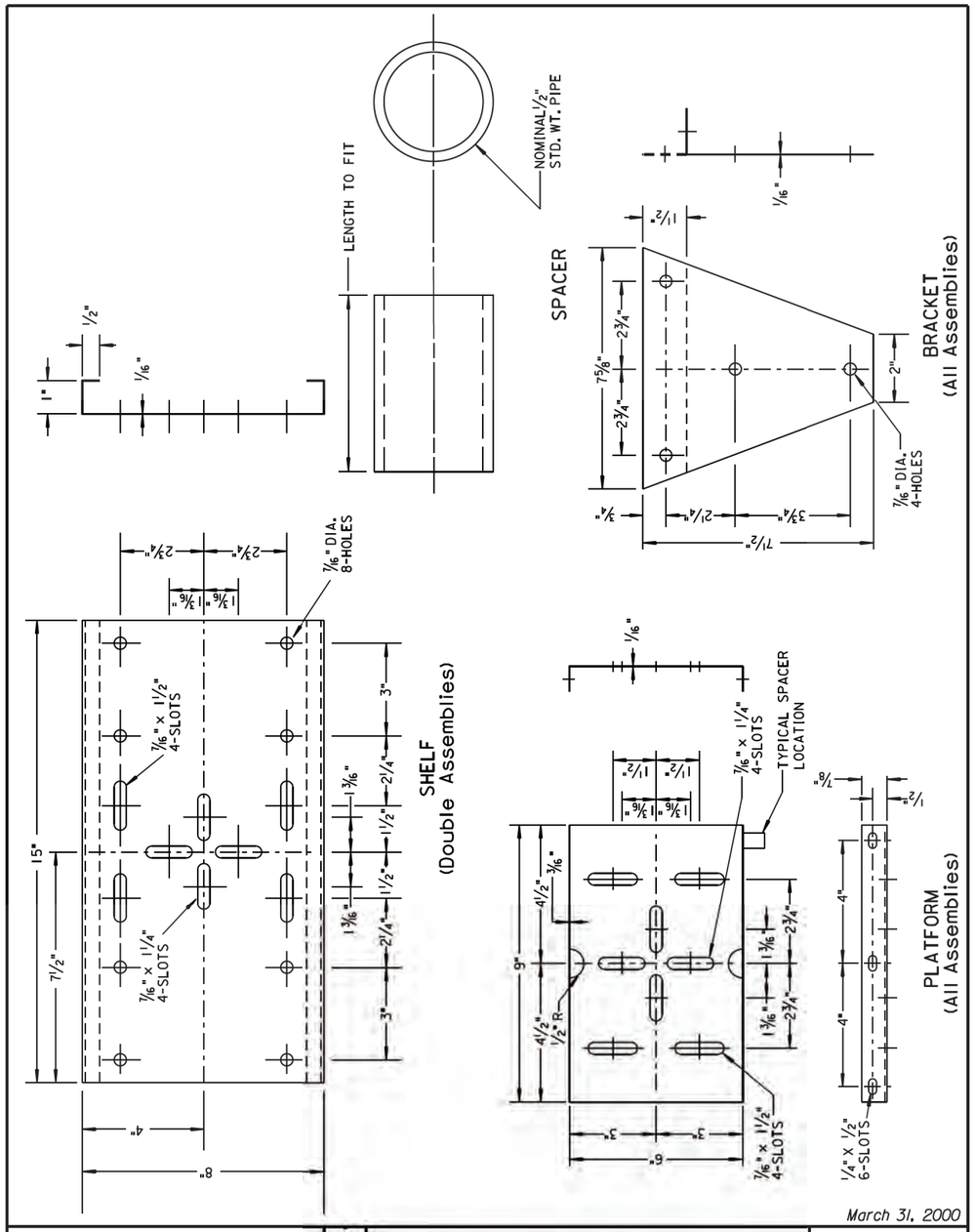
PLOTTED FROM - TRMI11118

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	196	267

Plotting Date: 01/12/2026

PLOT SCALE - 1:200



March 31, 2000

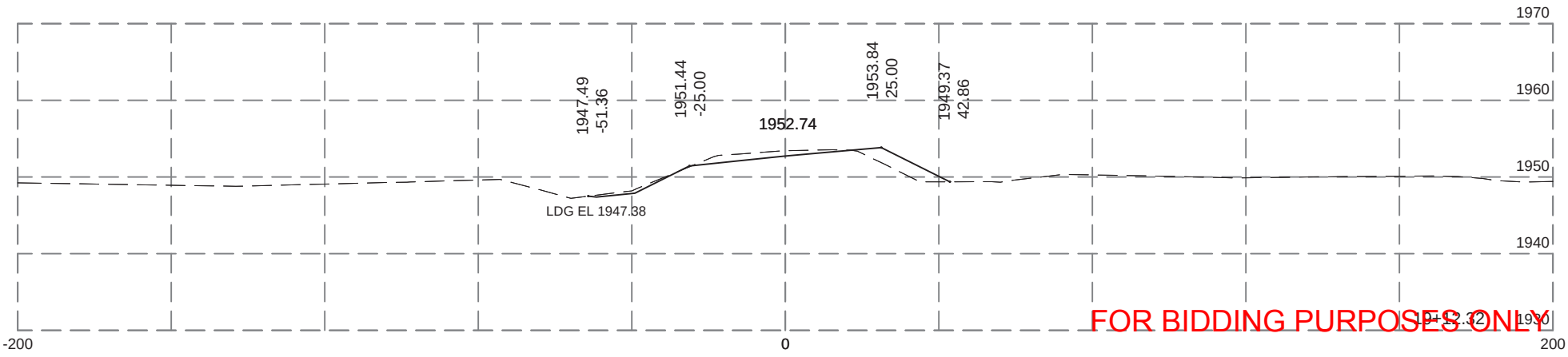
Published Date: 2026	SDDOT	MAILBOX SUPPORT HARDWARE	PLATE NUMBER 900.03
			Sheet 1 of 1

PLOTTED FROM - TRM111118

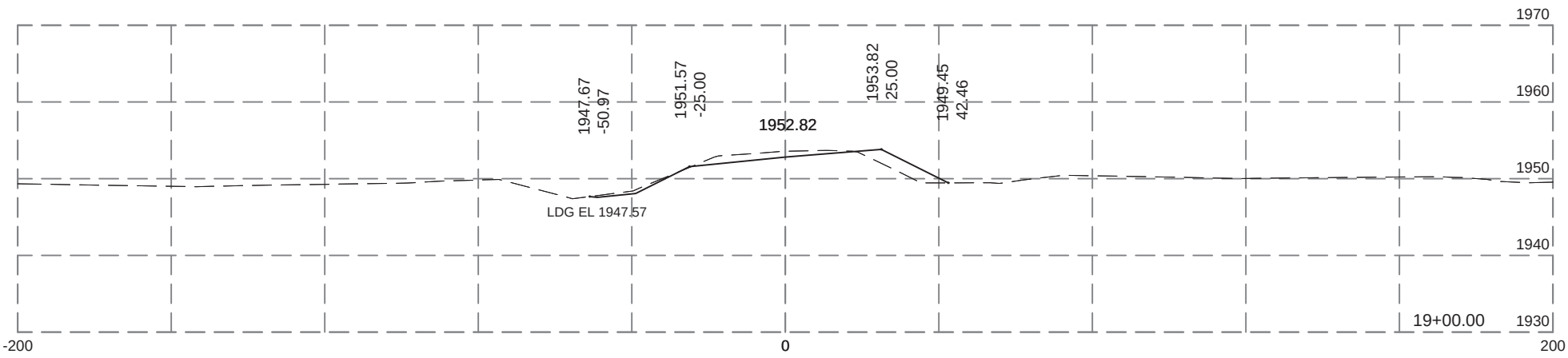
PLOT NAME - 25

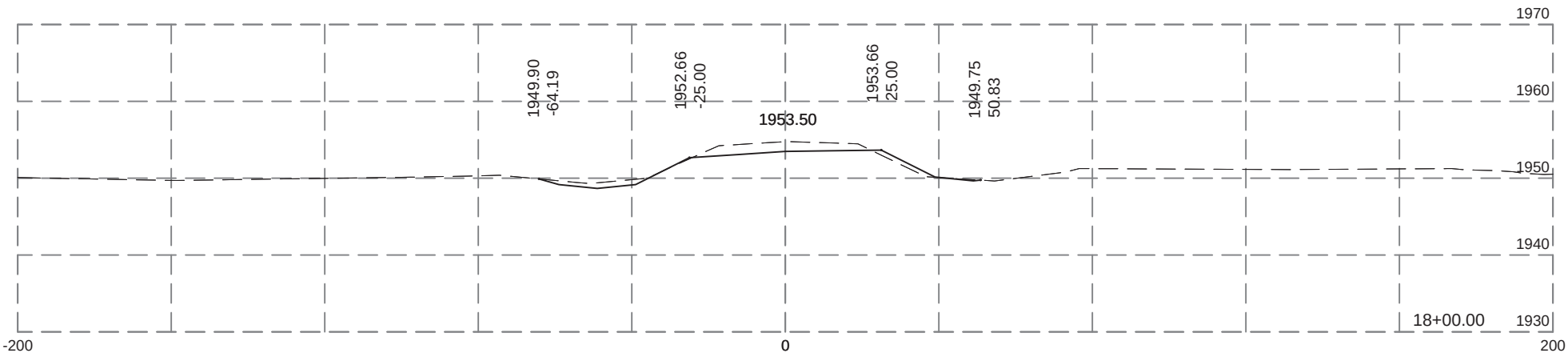
FILE - ...\STANDARDPLATES_0617V.DGN

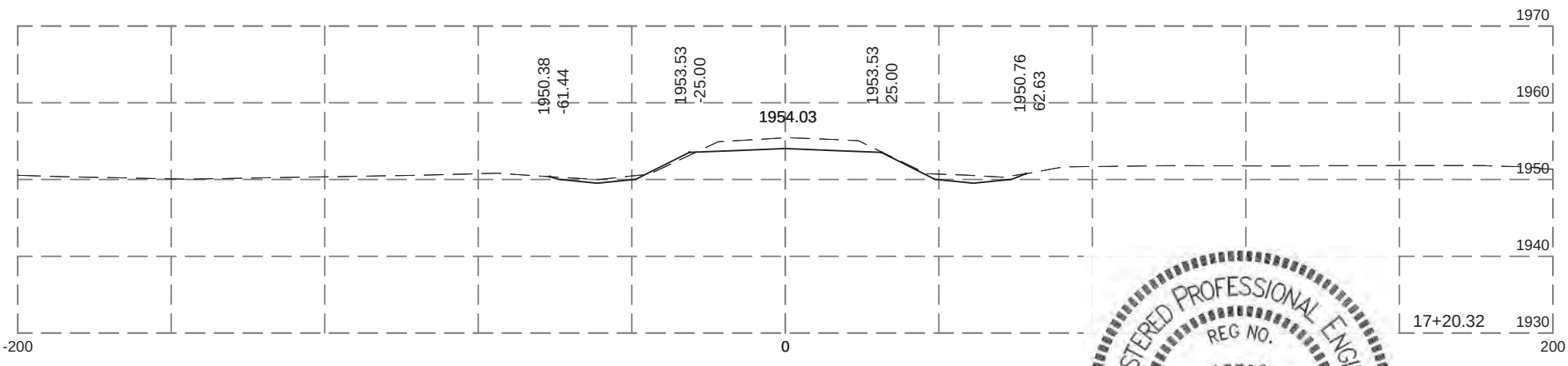
US HIGHWAY 18 WEST

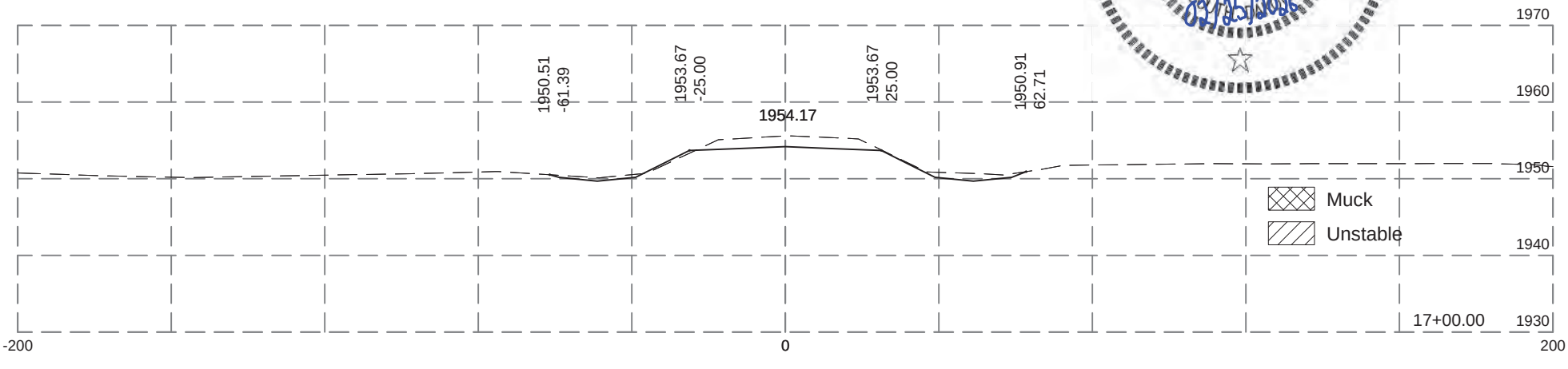


FOR BIDDING PURPOSES ONLY







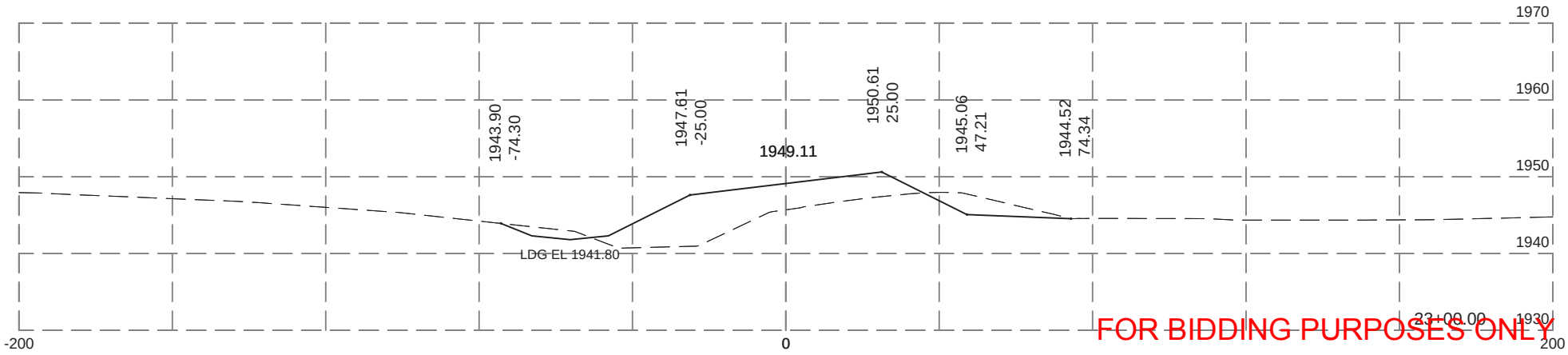


BAI JOB # 23190-10

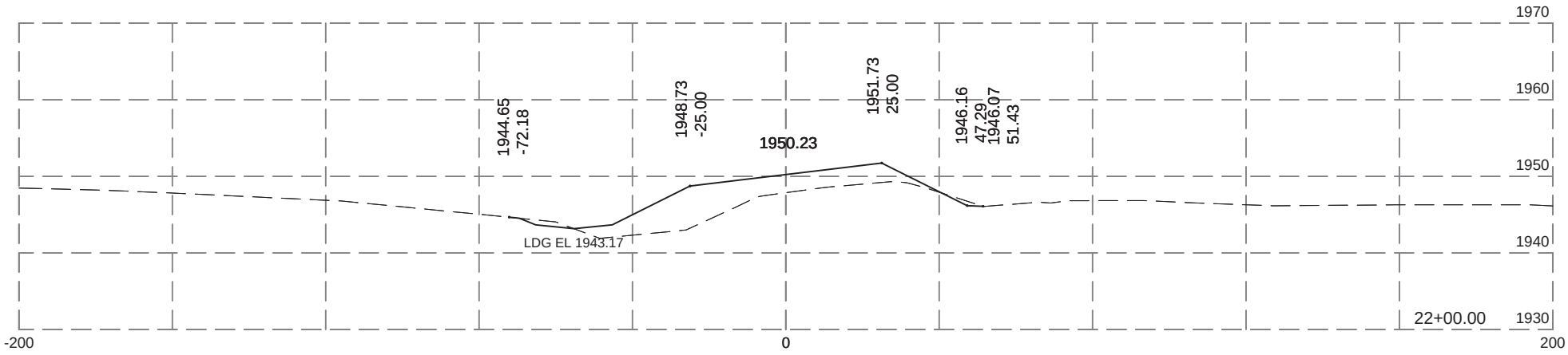
Plotting Date: 10/01/2025 Rev:

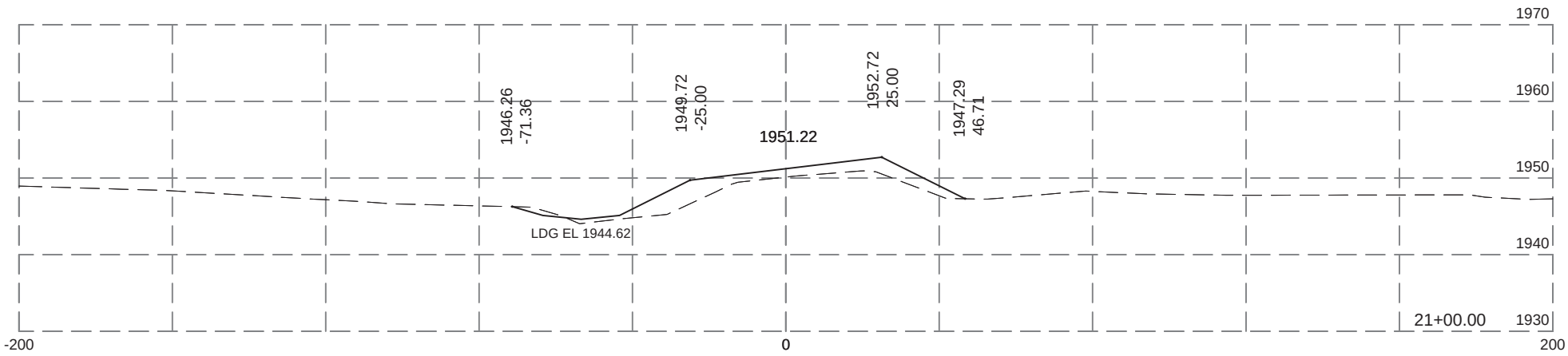
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	197	267

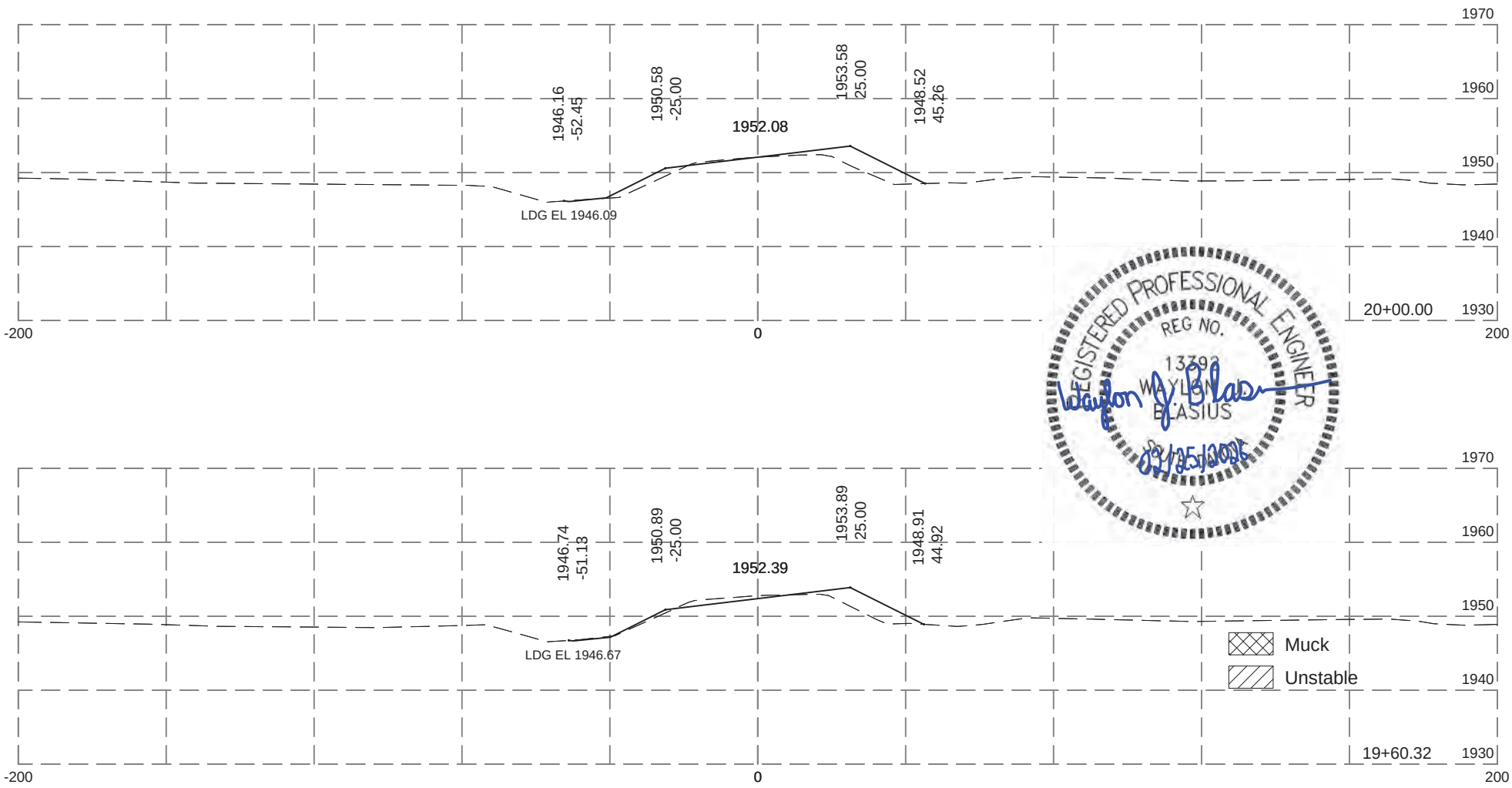
US HIGHWAY 18 WEST



FOR BIDDING PURPOSES ONLY





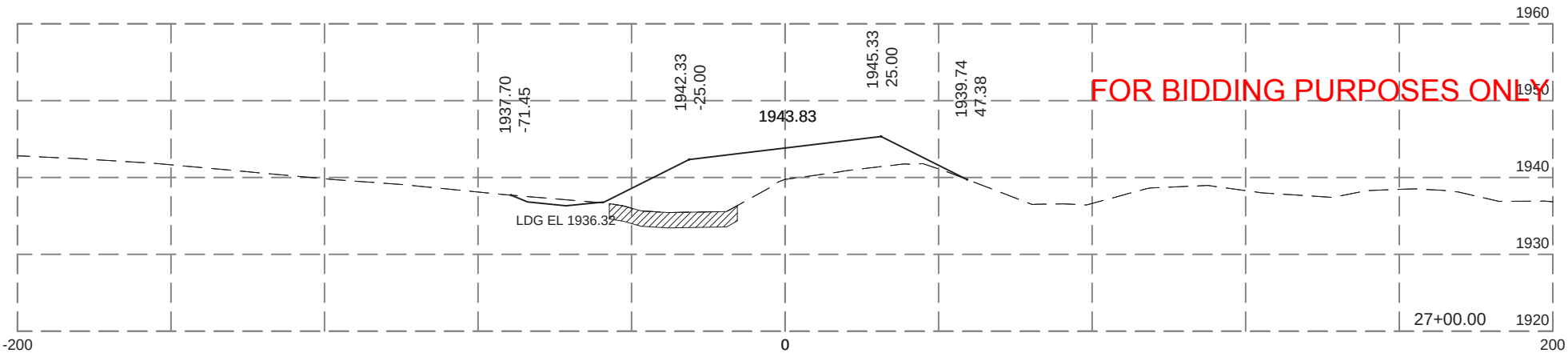


BAI JOB # 23190-10

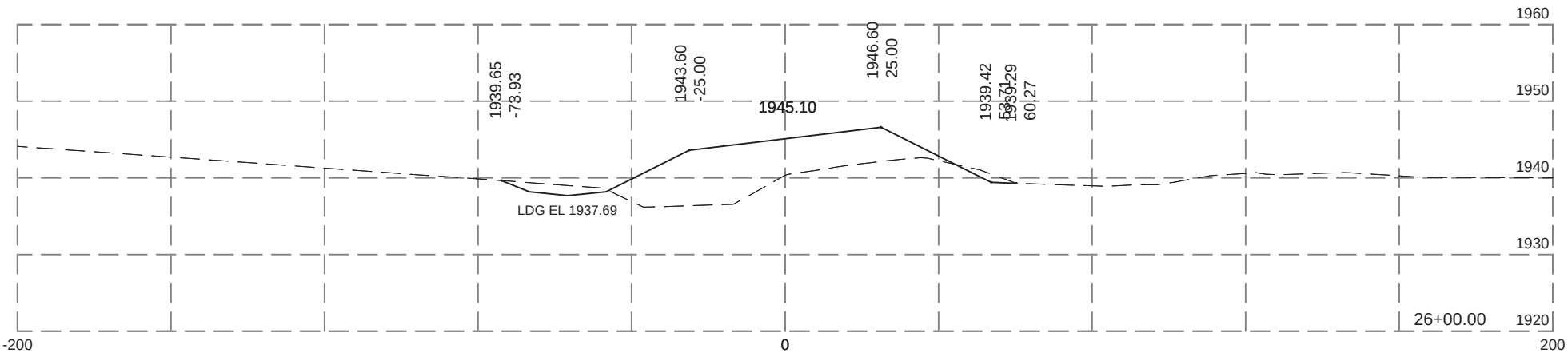
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	198	267

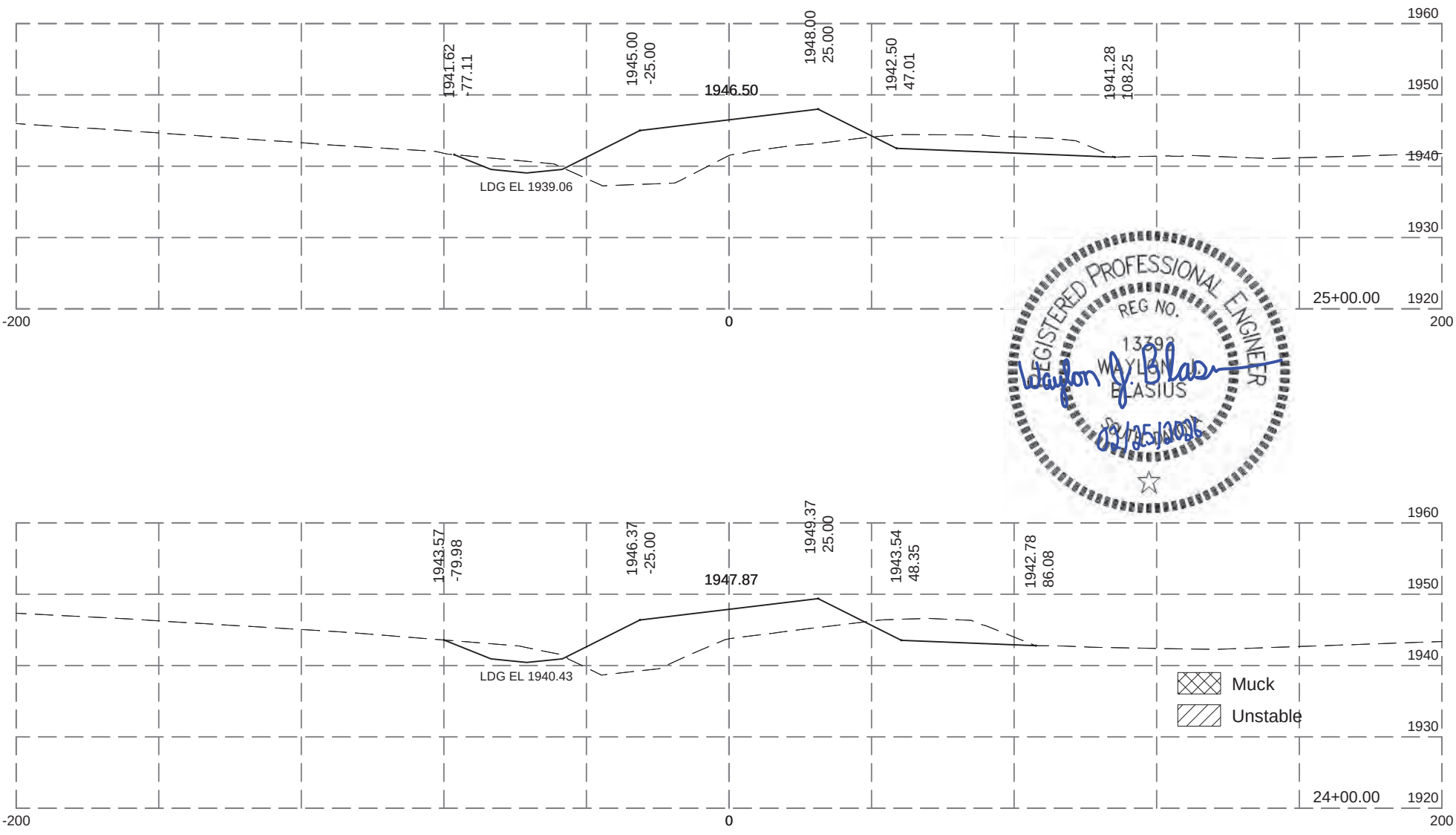
Plotting Date: 10/01/2025 Rev:

US HIGHWAY 18 WEST



FOR BIDDING PURPOSES ONLY



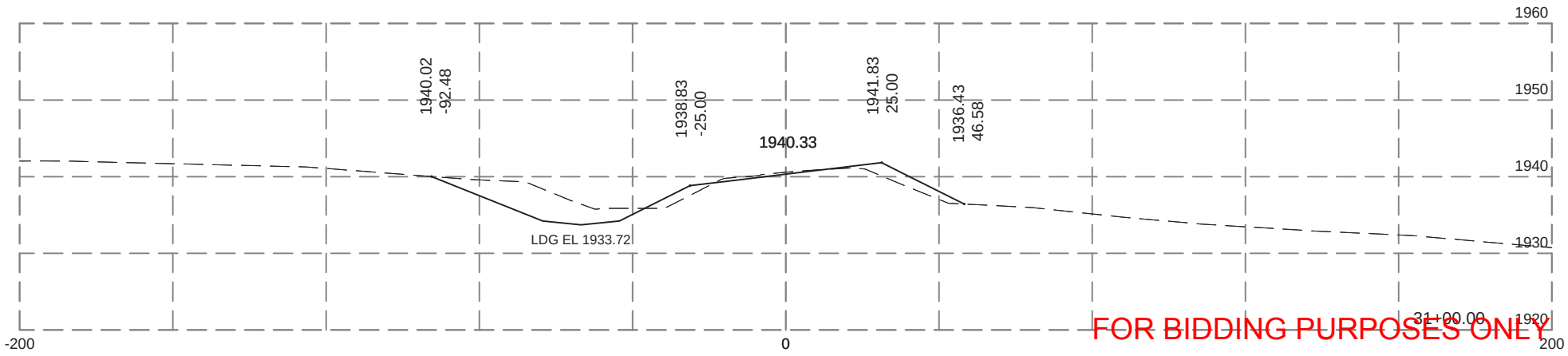


BAI JOB # 23190-10

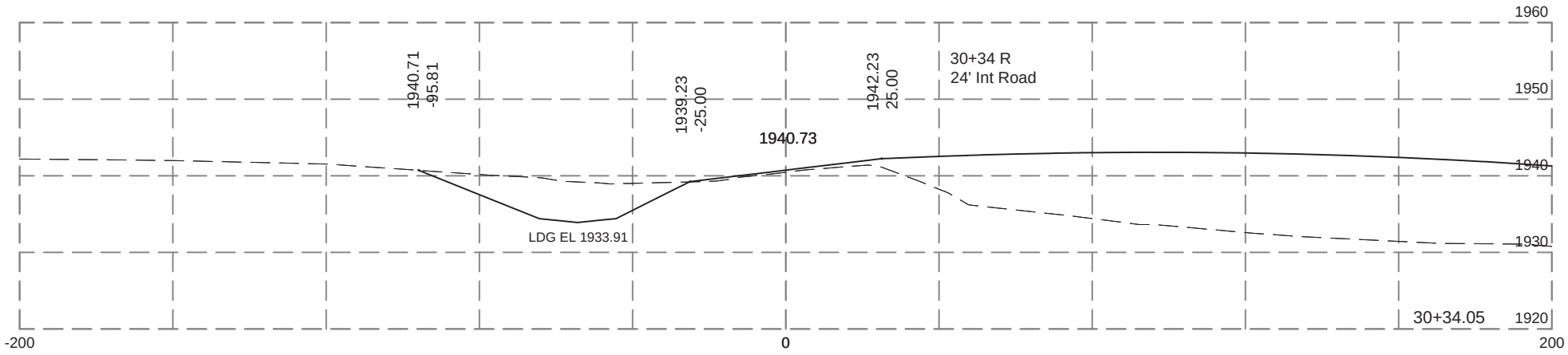
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	199	267

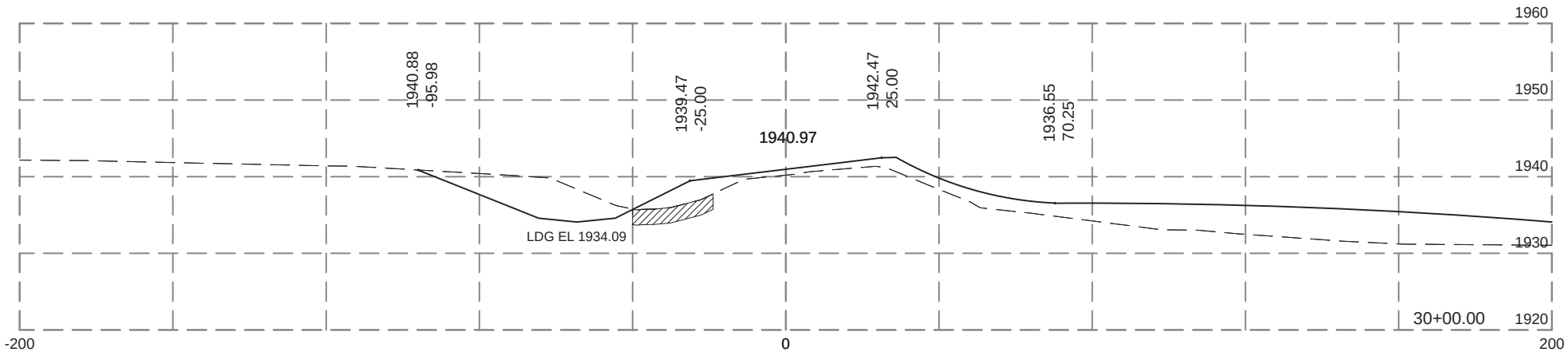
Plotting Date: 10/01/2025 Rev:

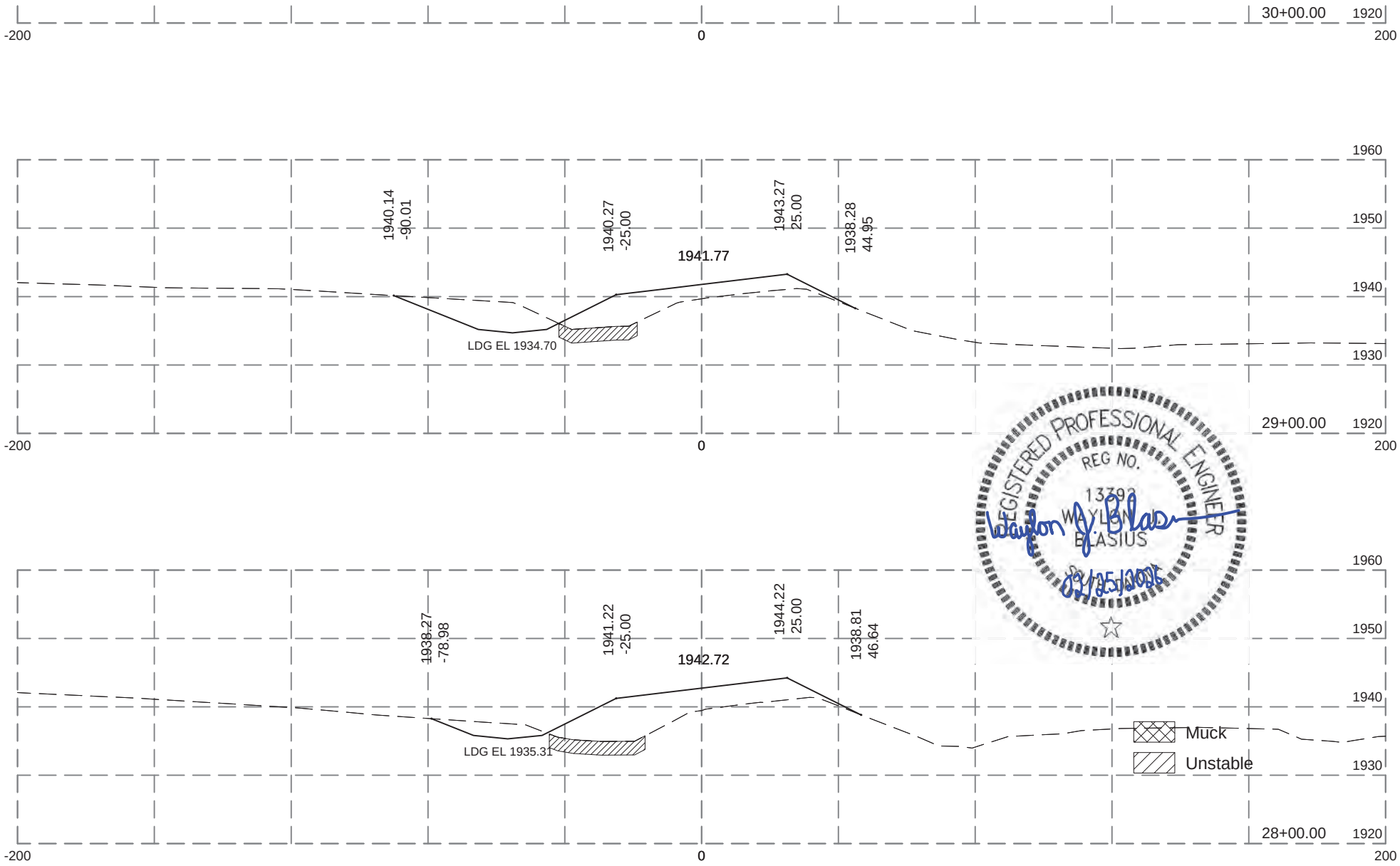
US HIGHWAY 18 WEST



FOR BIDDING PURPOSES ONLY







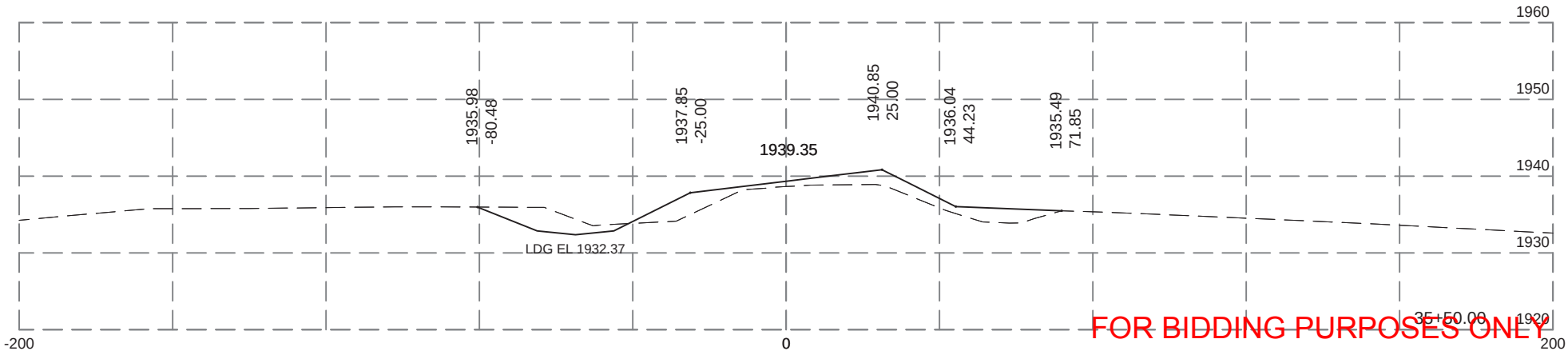
REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON D.
BLASIUS
02/25/2026

BAI JOB # 23190-10

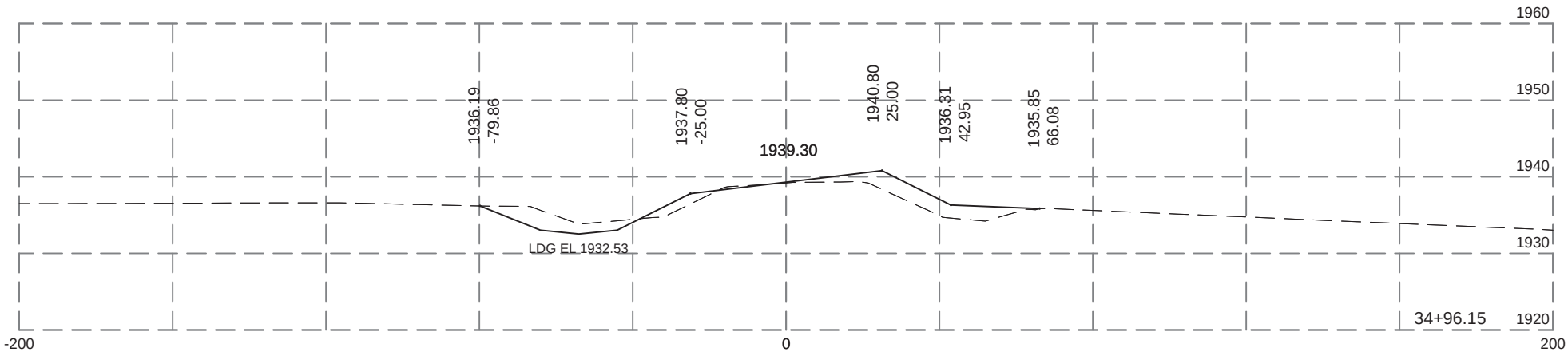
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	200	267

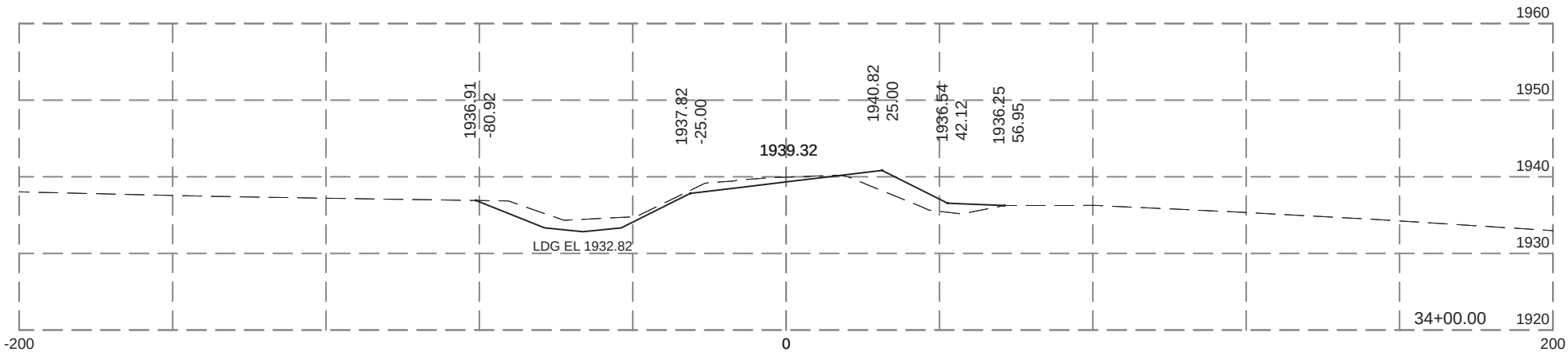
Plotting Date: 10/01/2025 Rev:

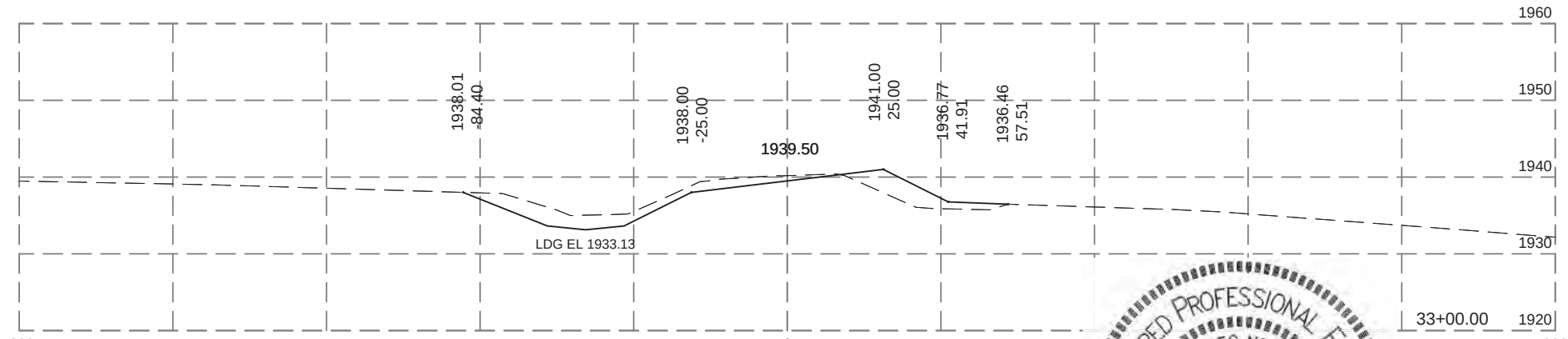
US HIGHWAY 18 WEST

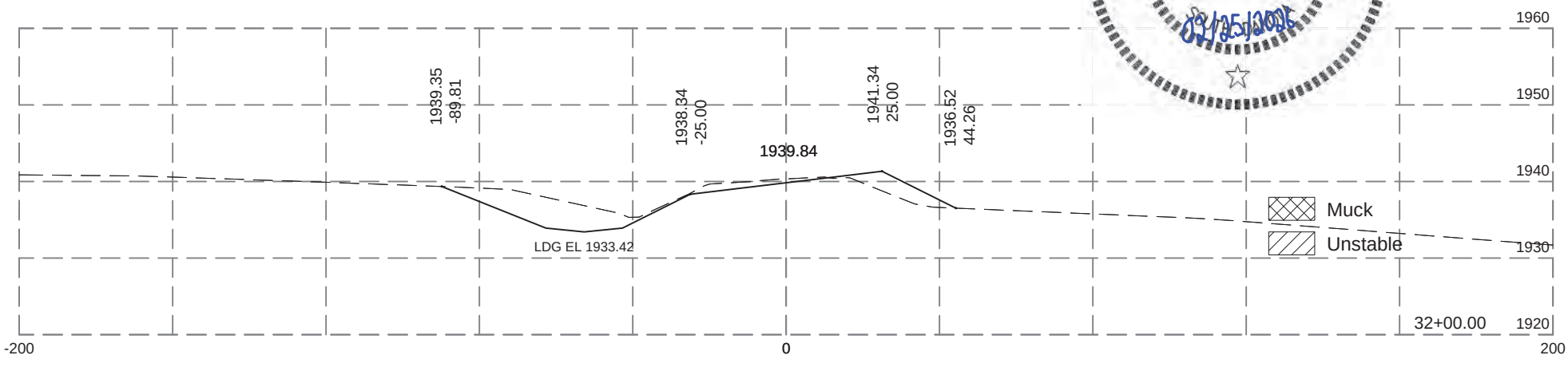


FOR BIDDING PURPOSES ONLY









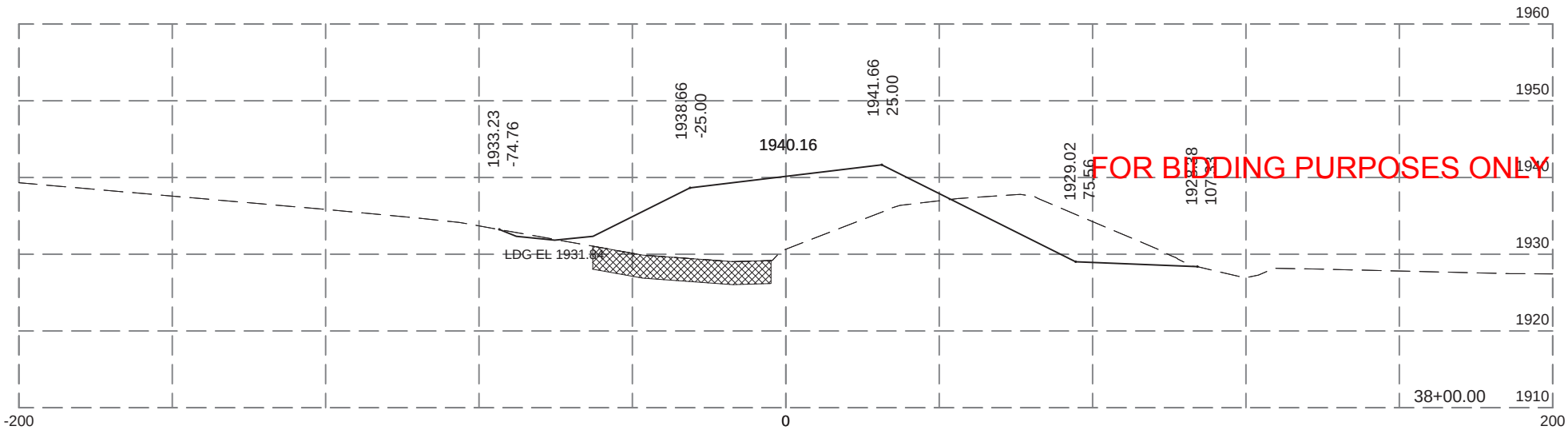
REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON J. BLASIUS
10/25/2006

BAI JOB # 23190-10

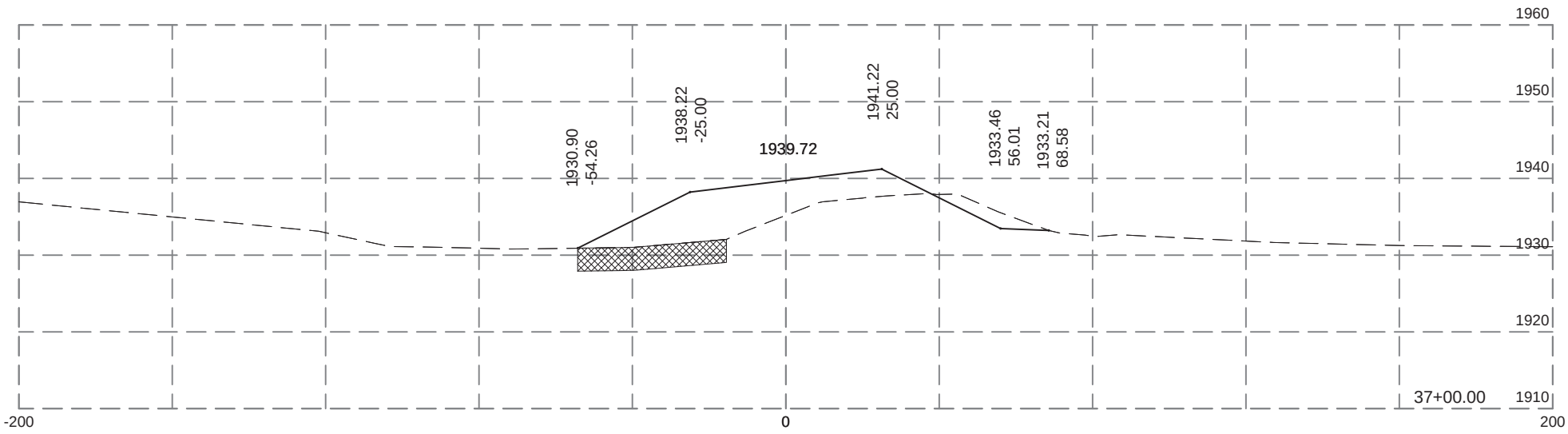
Plotting Date: 10/01/2025 Rev:

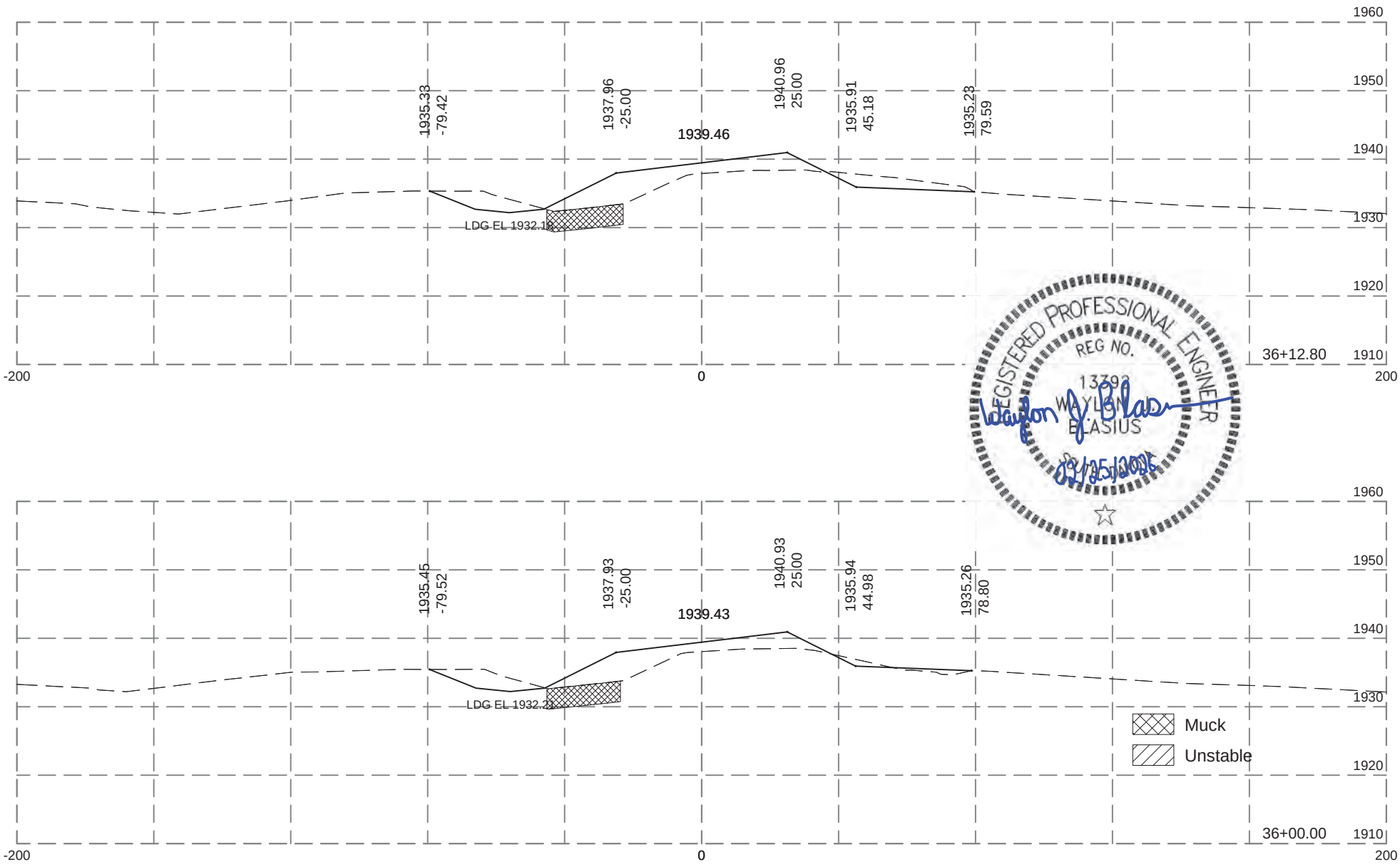
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	201	267

US HIGHWAY 18 WEST



FOR BIDDING PURPOSES ONLY





REGISTERED PROFESSIONAL ENGINEER
REG NO.
13392
WYLIE J.
BLASIUS
10/25/2025

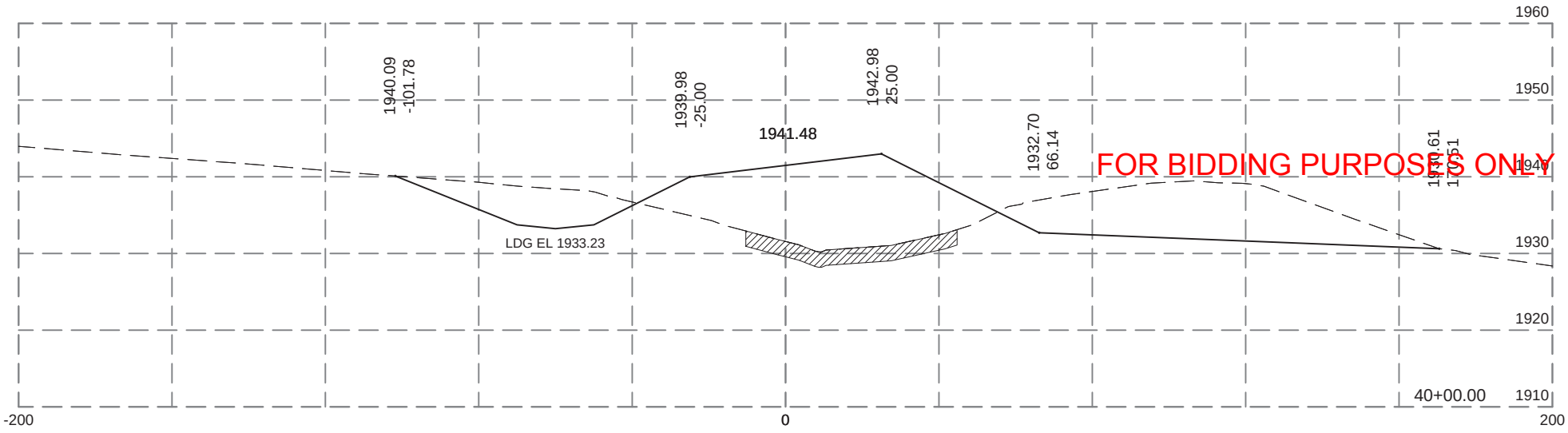
BAI JOB # 23190-10

Plotting Date: 10/01/2025

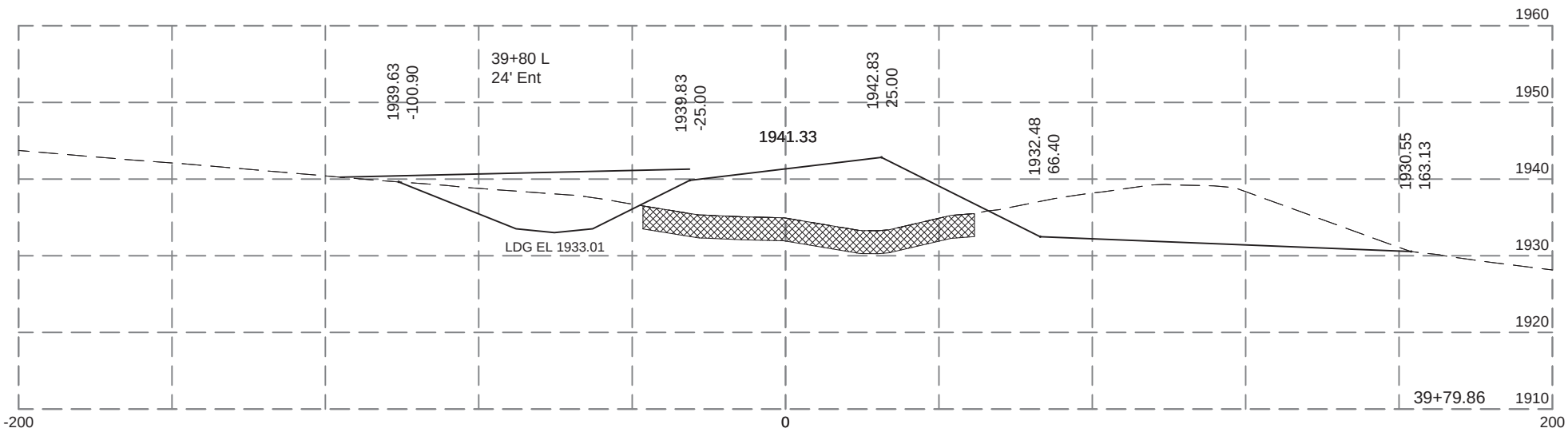
Rev:

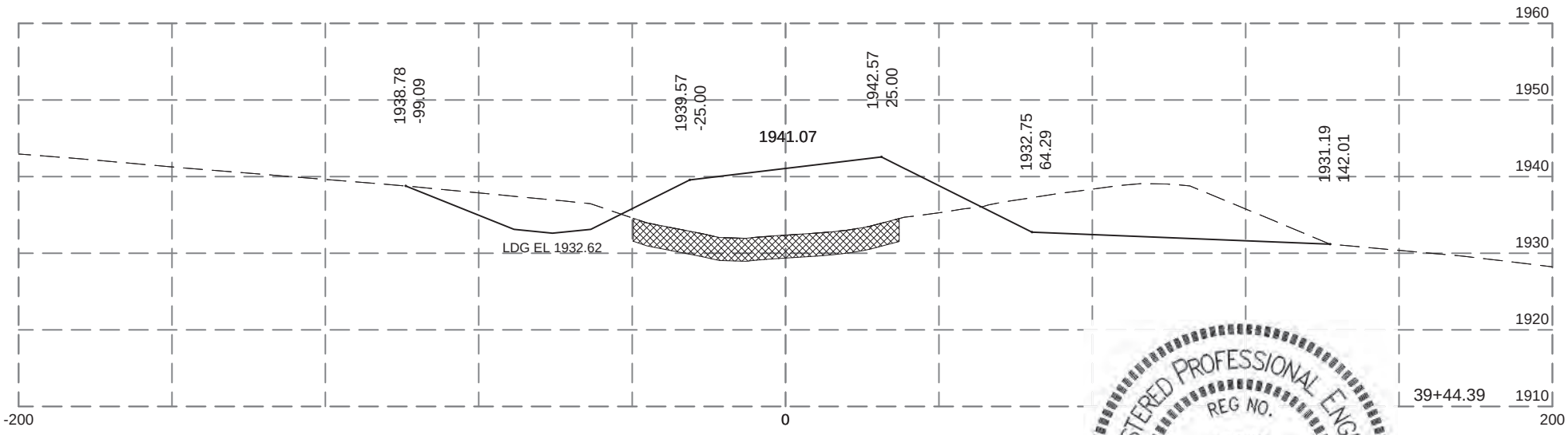
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	202	267

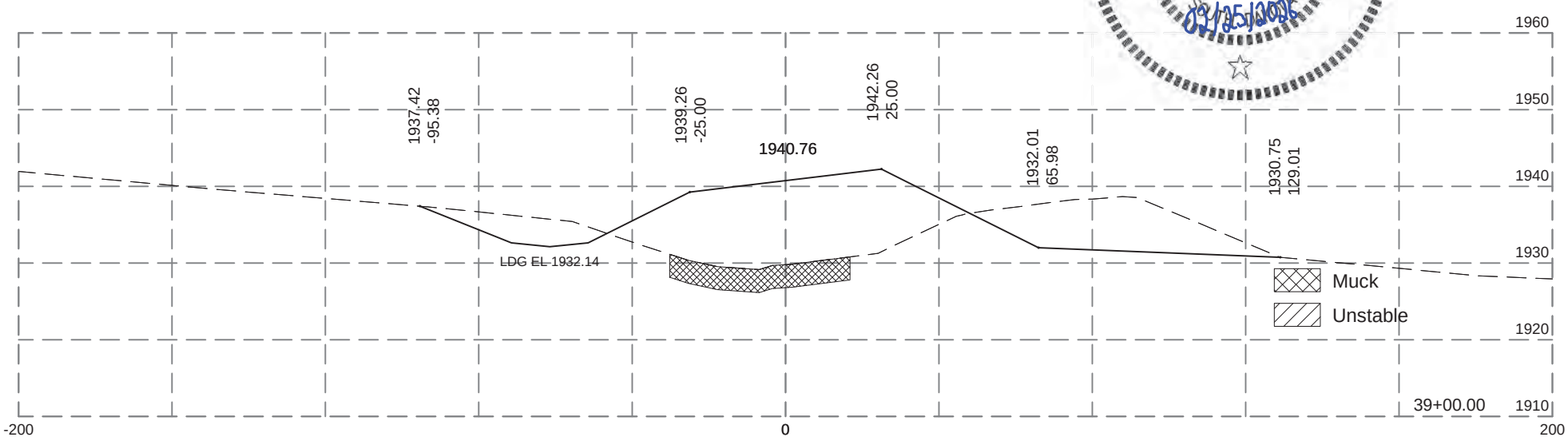
US HIGHWAY 18 WEST



FOR BIDDING PURPOSES ONLY







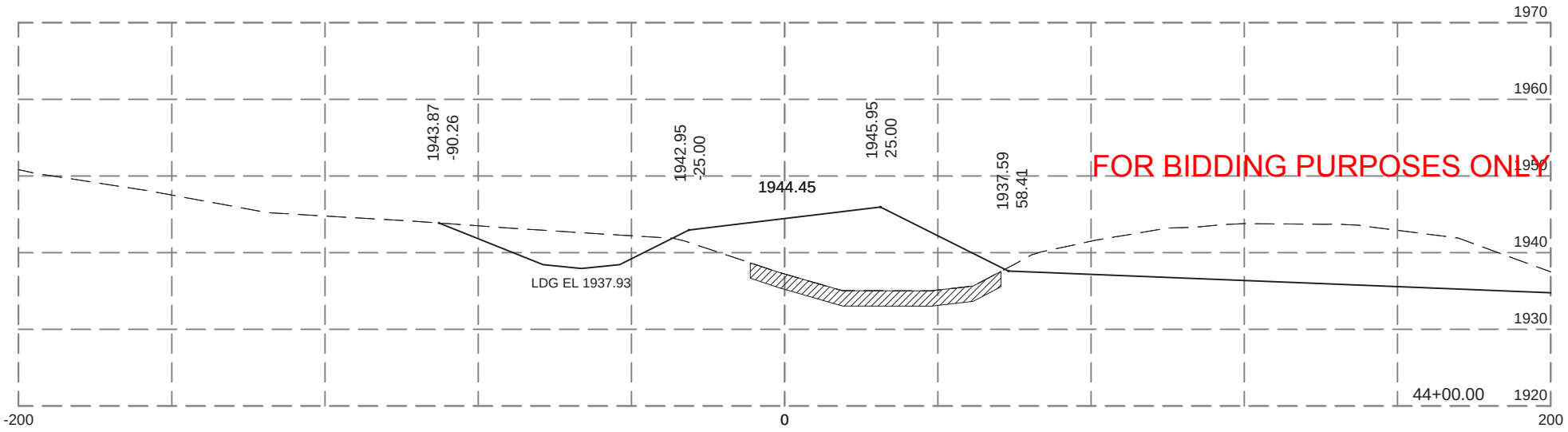
REGISTERED PROFESSIONAL ENGINEER
REG NO.
13792
WAYLON
B. ASIUS
03/25/2025

BAI JOB # 23190-10

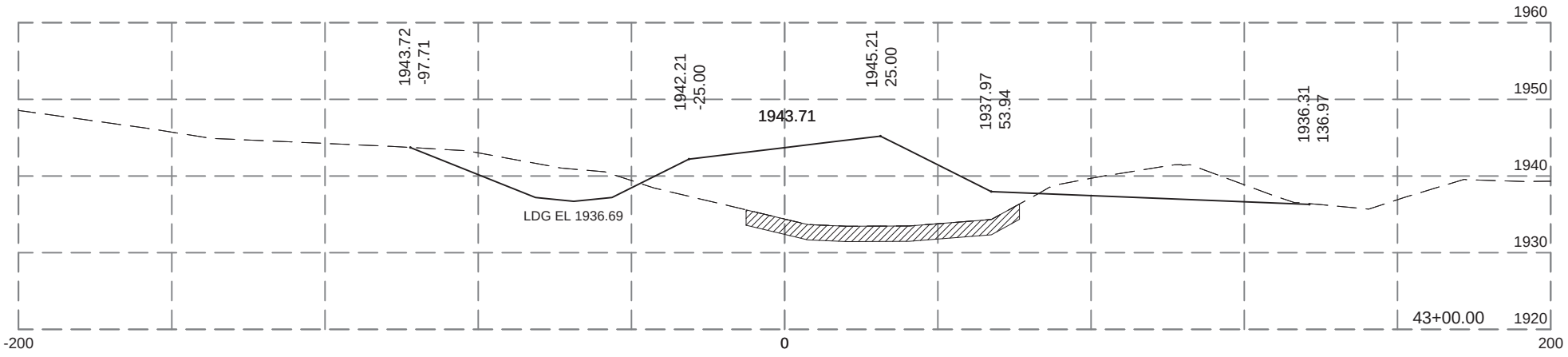
STATE OF SOUTH DAKOTA	PROJECT NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	SHEET 203	TOTAL SHEETS 267

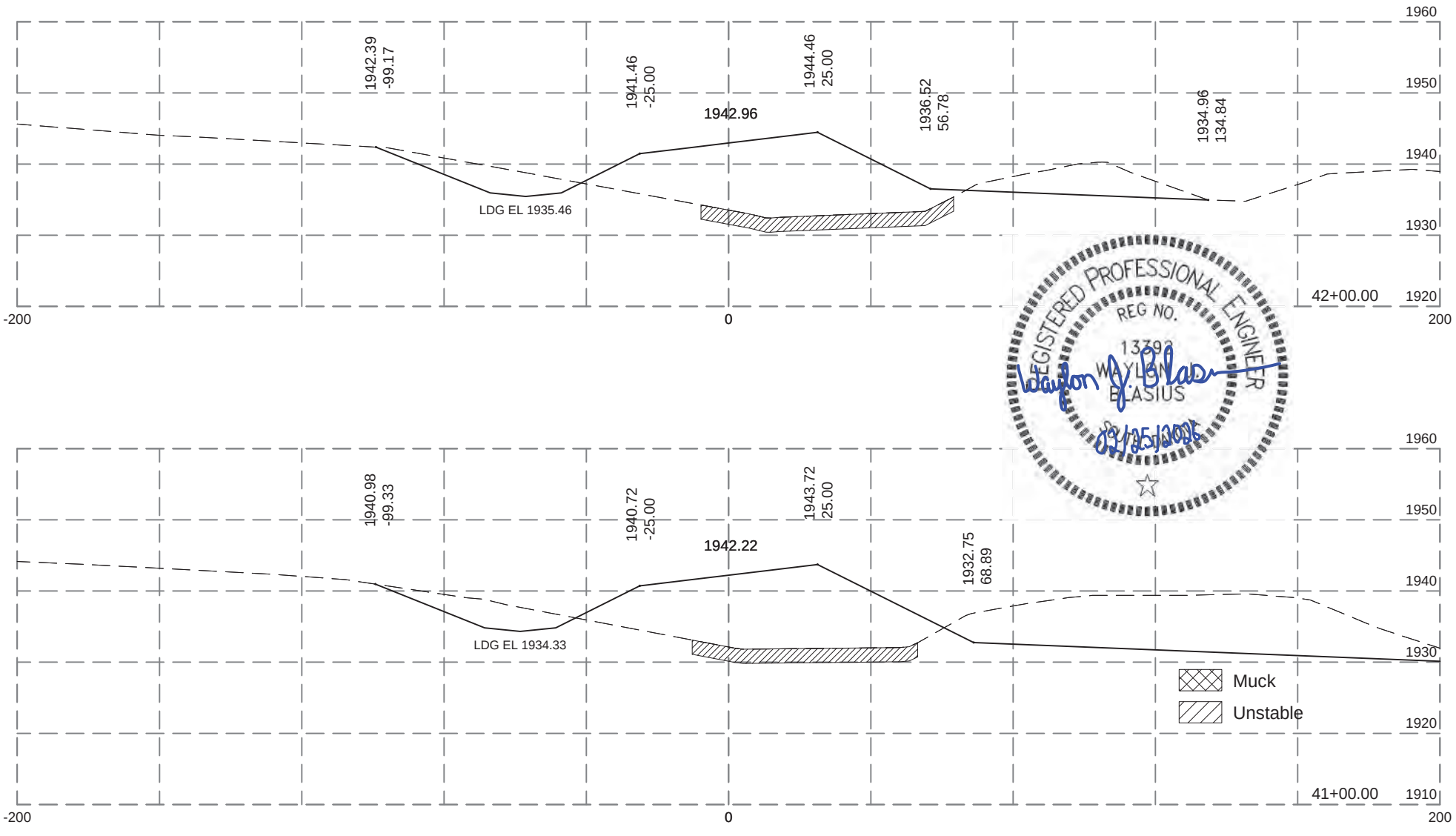
Plotting Date: 10/01/2025 Rev:

US HIGHWAY 18 WEST



FOR BIDDING PURPOSES ONLY





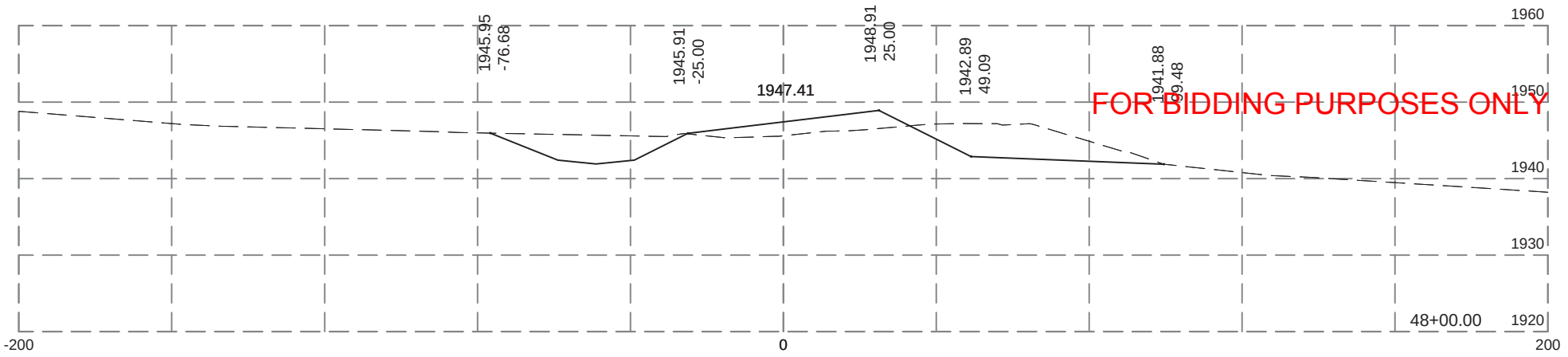
REGISTERED PROFESSIONAL ENGINEER
REG NO. 13392
WAYLON J. BLASIUS
03/25/2026

BAI JOB # 23190-10

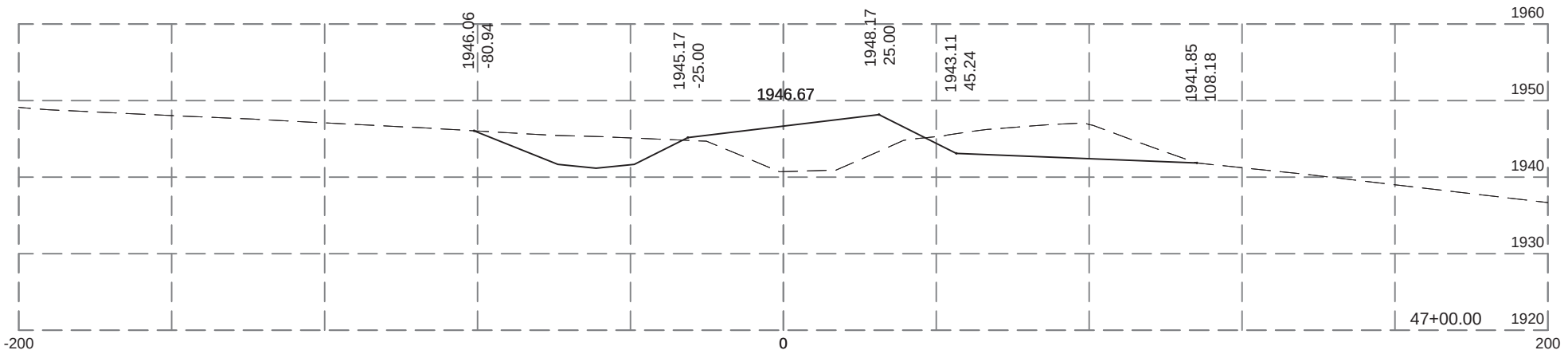
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	204	267

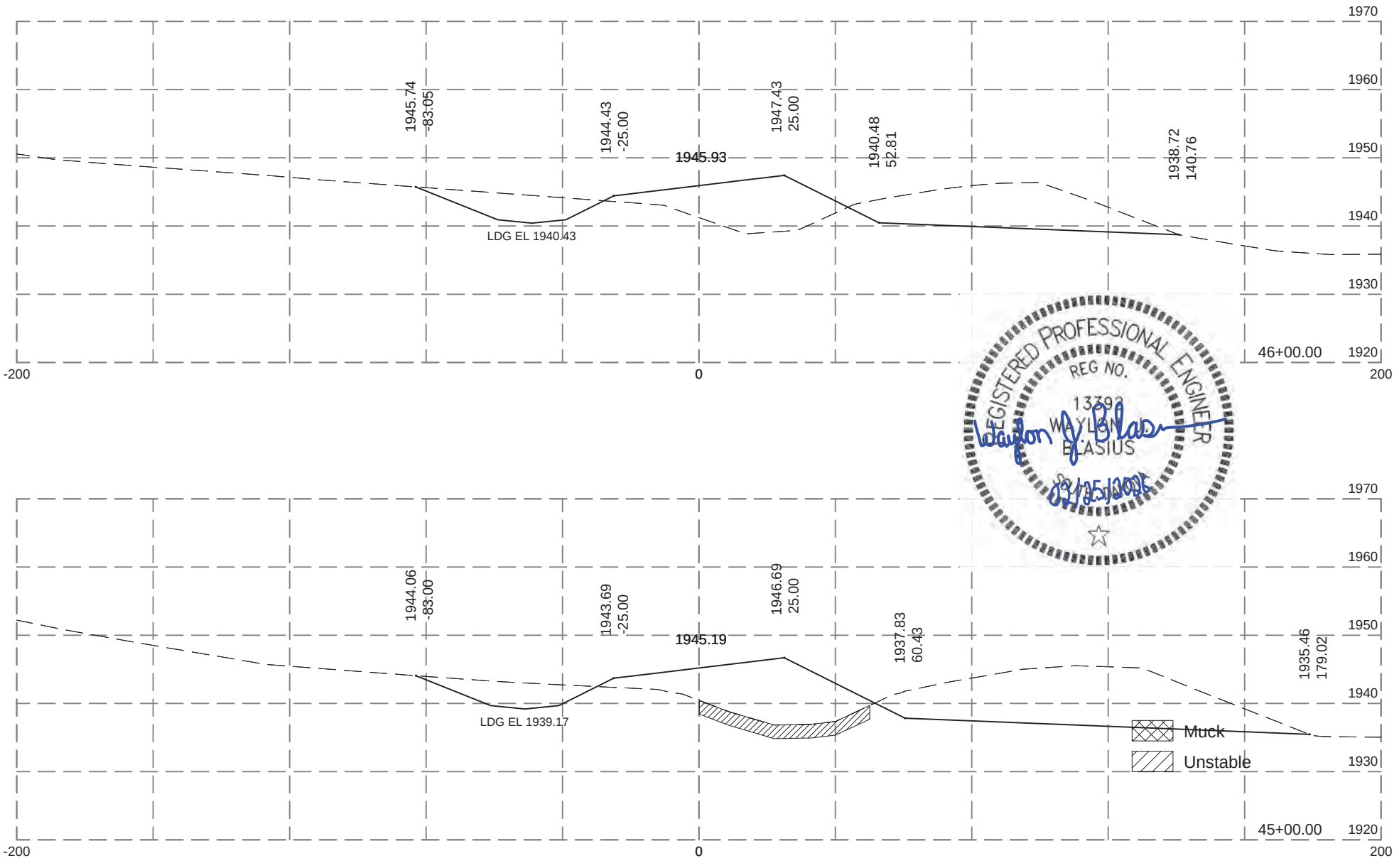
Plotting Date: 10/01/2025 Rev:

US HIGHWAY 18 WEST



FOR BIDDING PURPOSES ONLY





REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON J. BLASIUS
03/25/2026

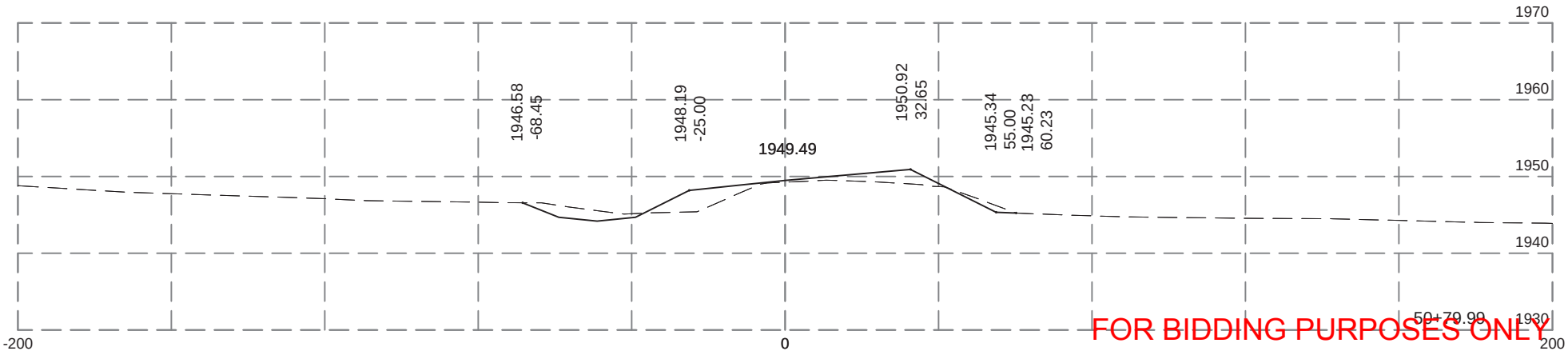
BAI JOB # 23190-10

Plotting Date: 10/01/2025

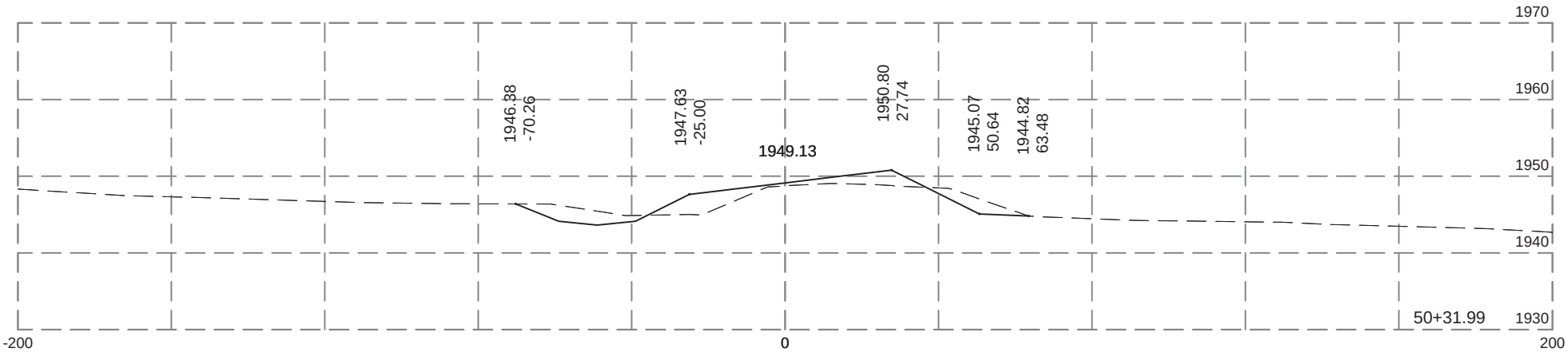
Rev:

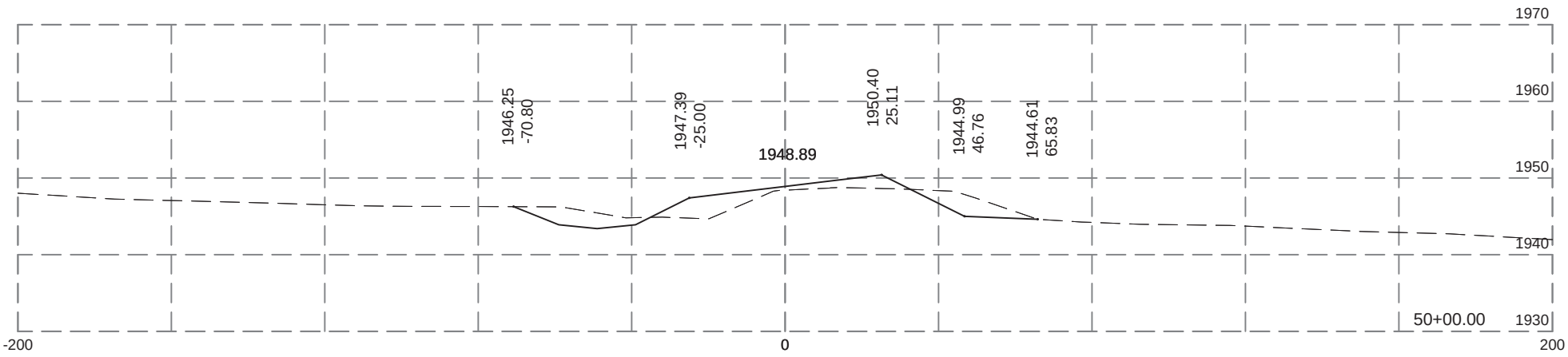
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	205	267

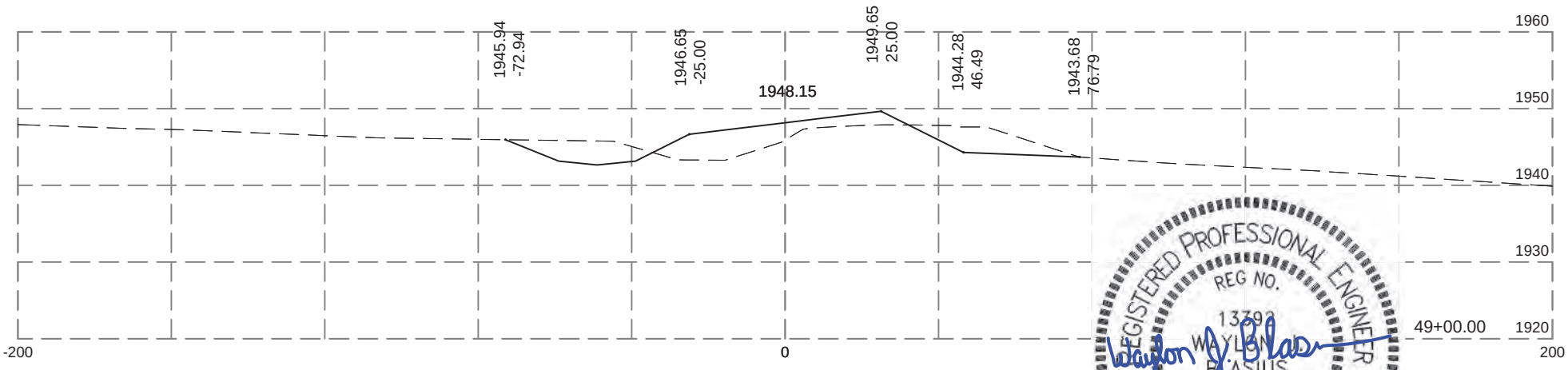
US HIGHWAY 18 WEST

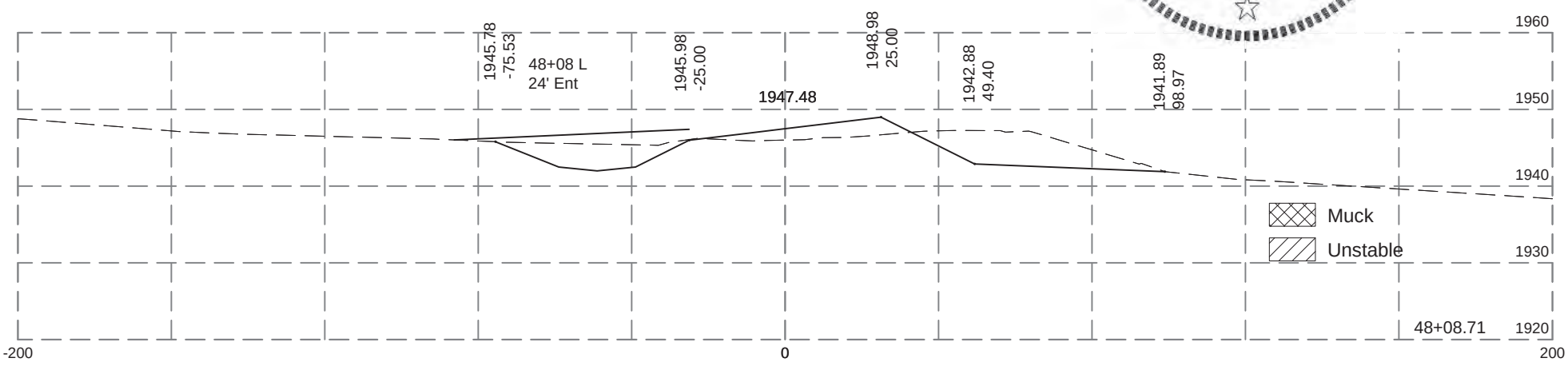


FOR BIDDING PURPOSES ONLY









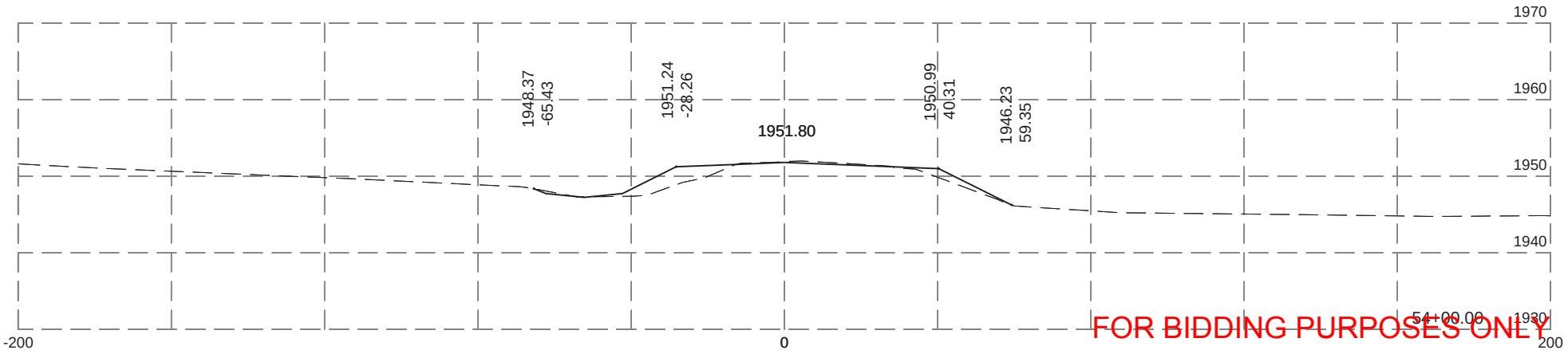
BAI JOB # 23190-10

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	206	267

Plotting Date: 10/01/2025

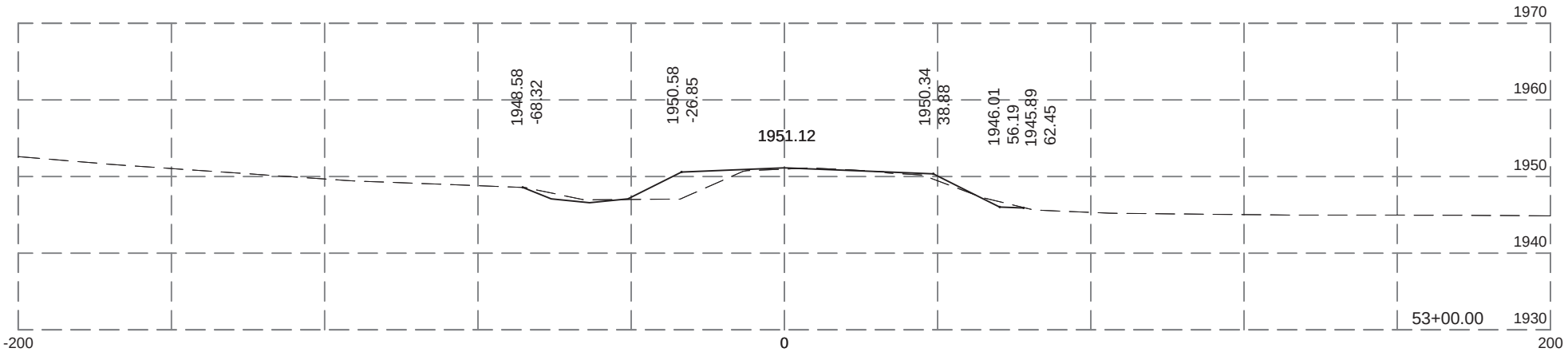
Rev:

US HIGHWAY 18 WEST



FOR BIDDING PURPOSES ONLY

54+00.00



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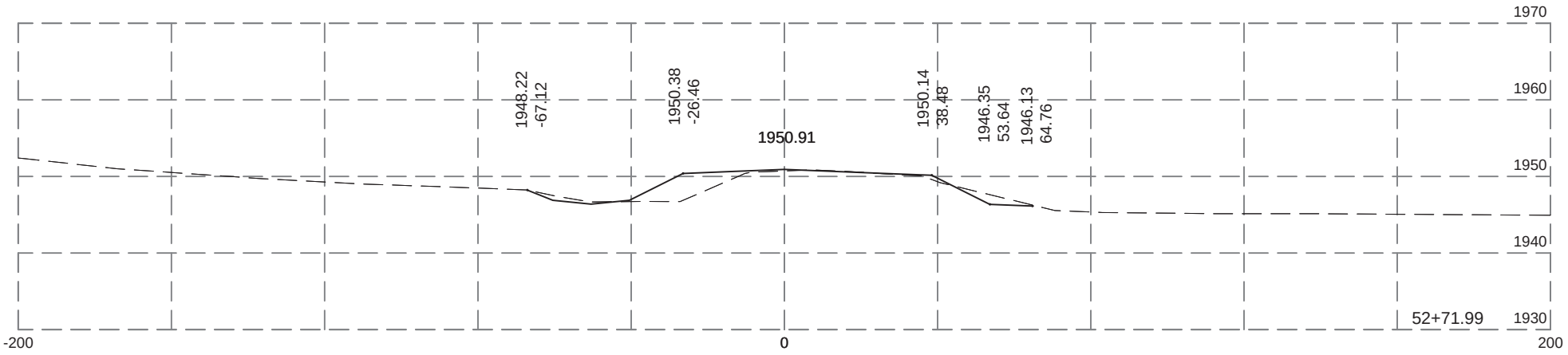

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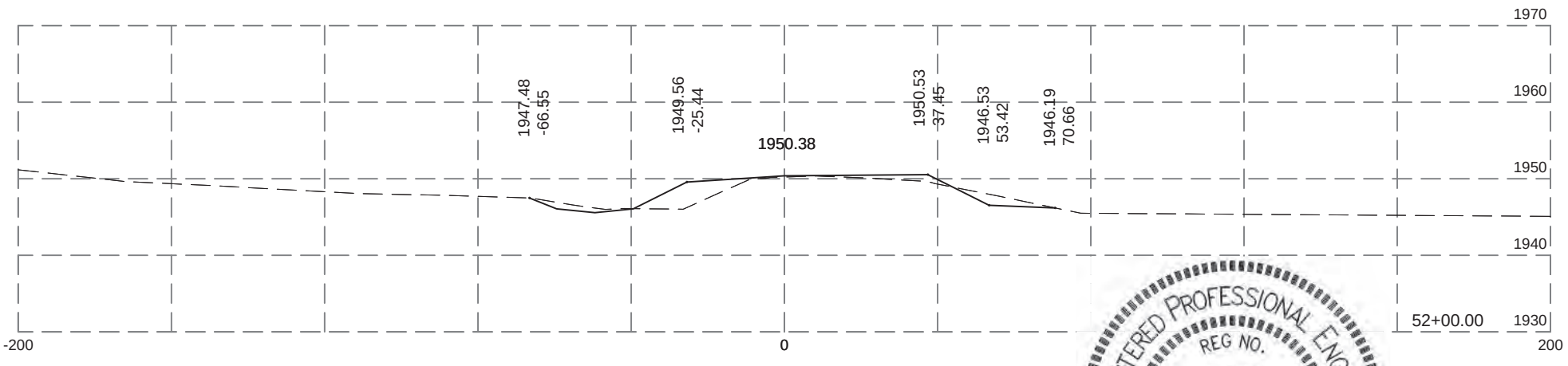

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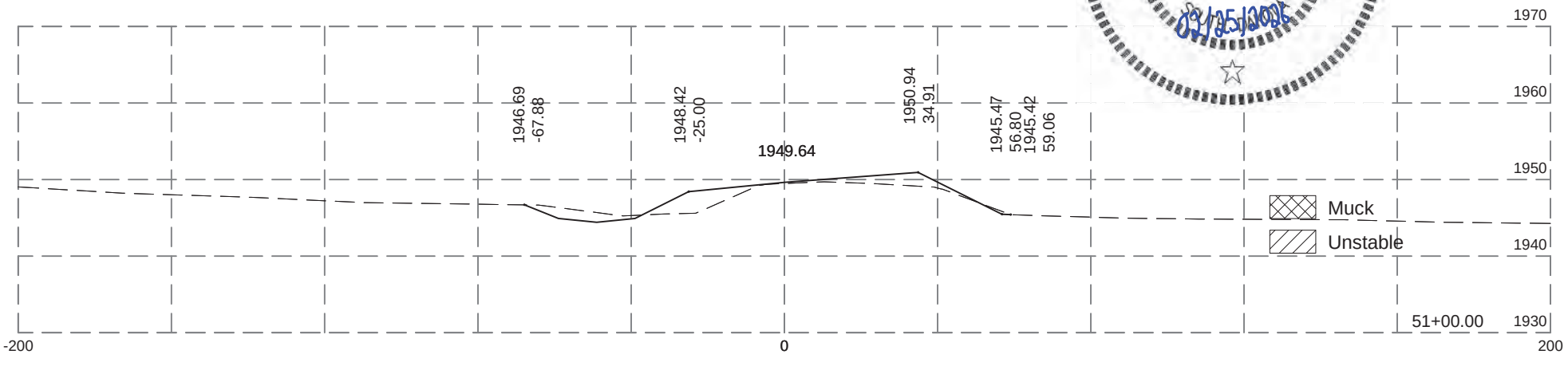

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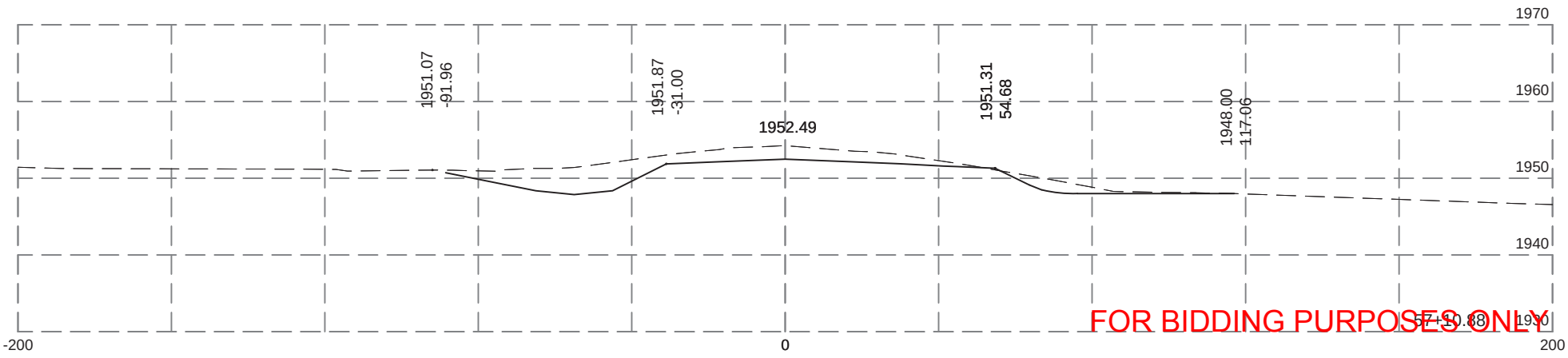
BAI JOB # 23190-10

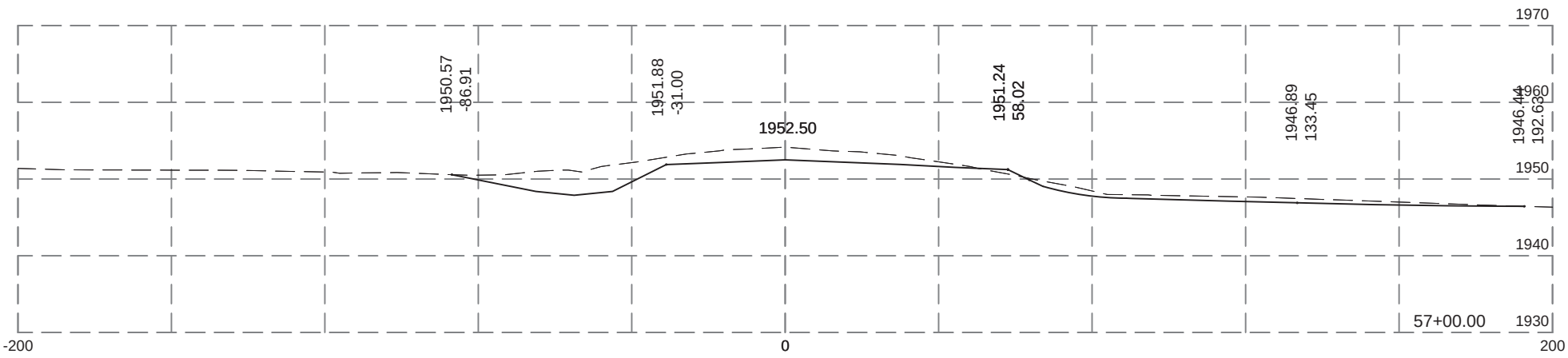
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	207	267

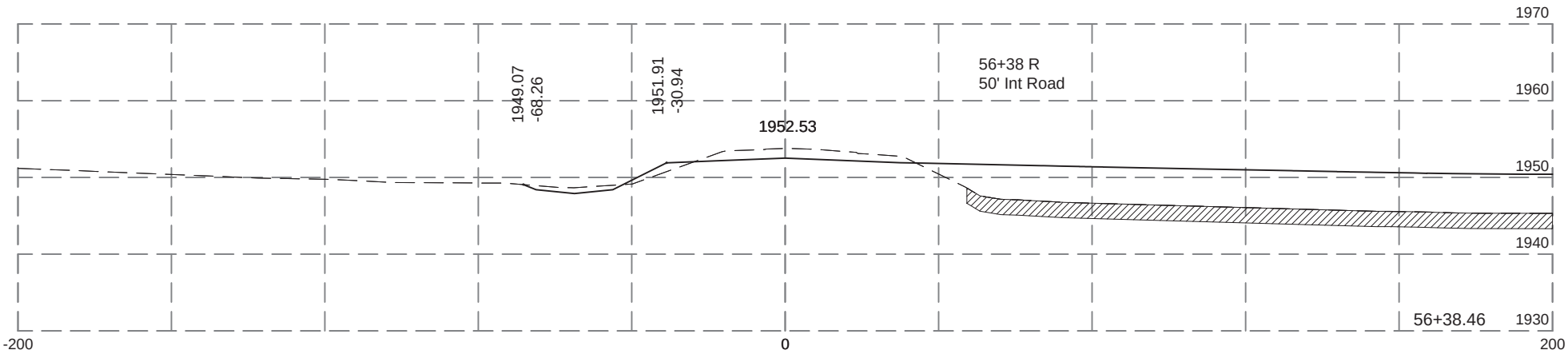
Plotting Date: 10/01/2025 Rev:

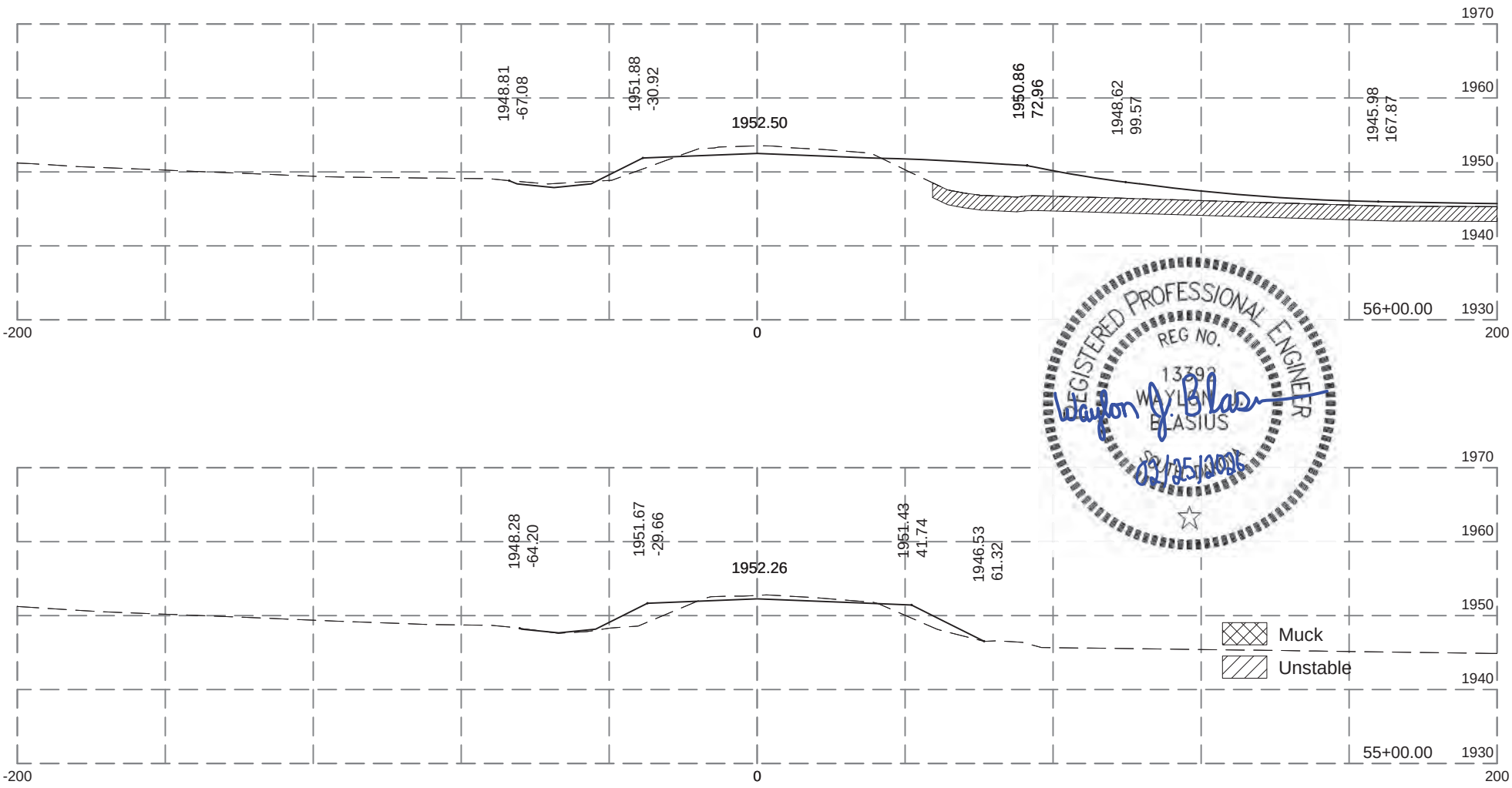
US HIGHWAY 18 WEST



FOR BIDDING PURPOSES ONLY







REGISTERED PROFESSIONAL ENGINEER
REG NO.
13392
WAYLON
BLASIUS
03/25/2026

Muck
Unstable

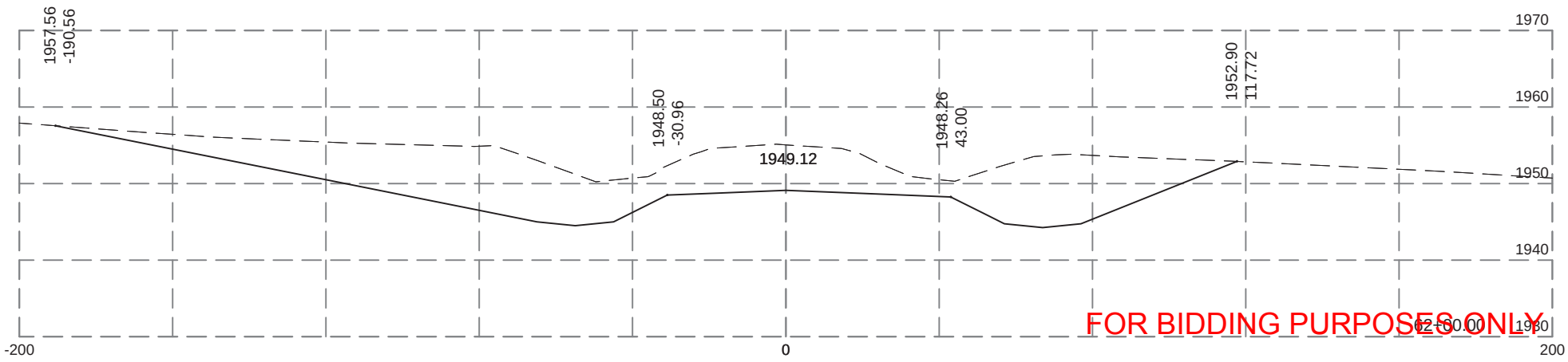
BAI JOB # 23190-10

Plotting Date: 10/01/2025

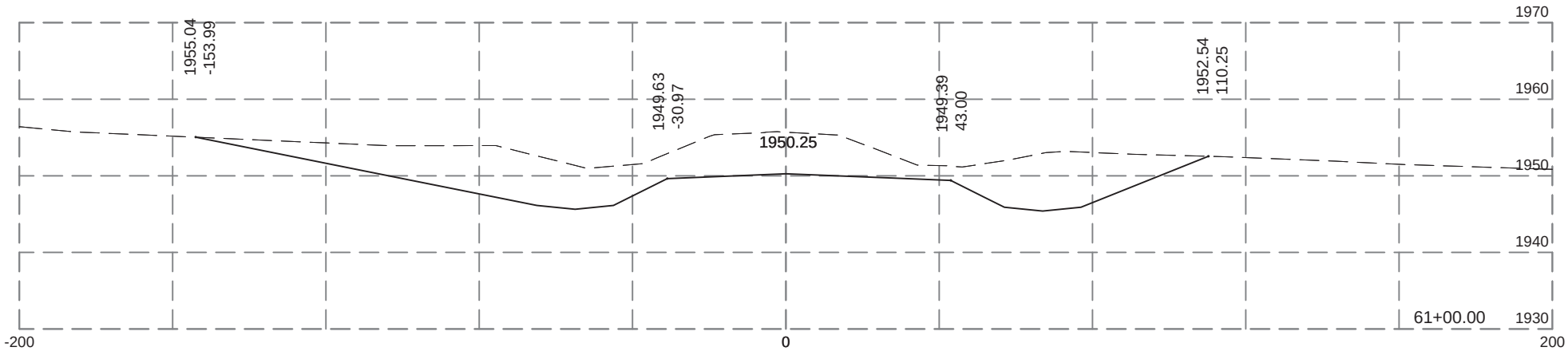
Rev:

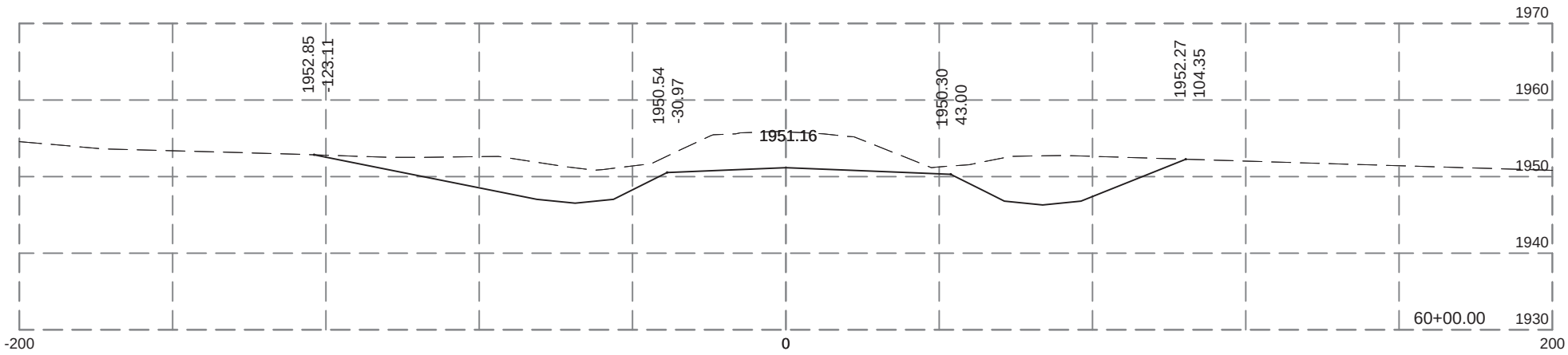
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	208	267

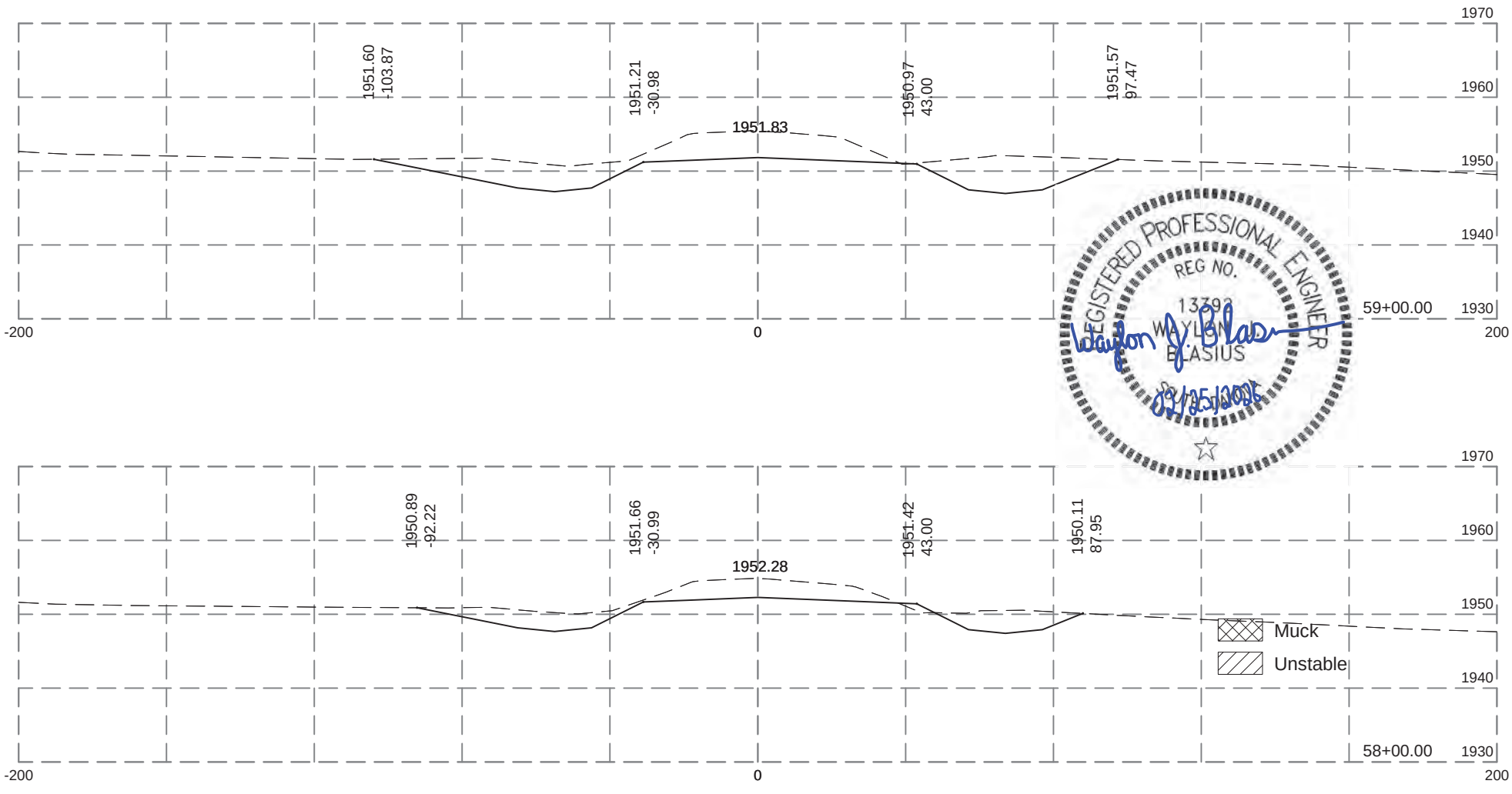
US HIGHWAY 18 WEST



FOR BIDDING PURPOSES ONLY







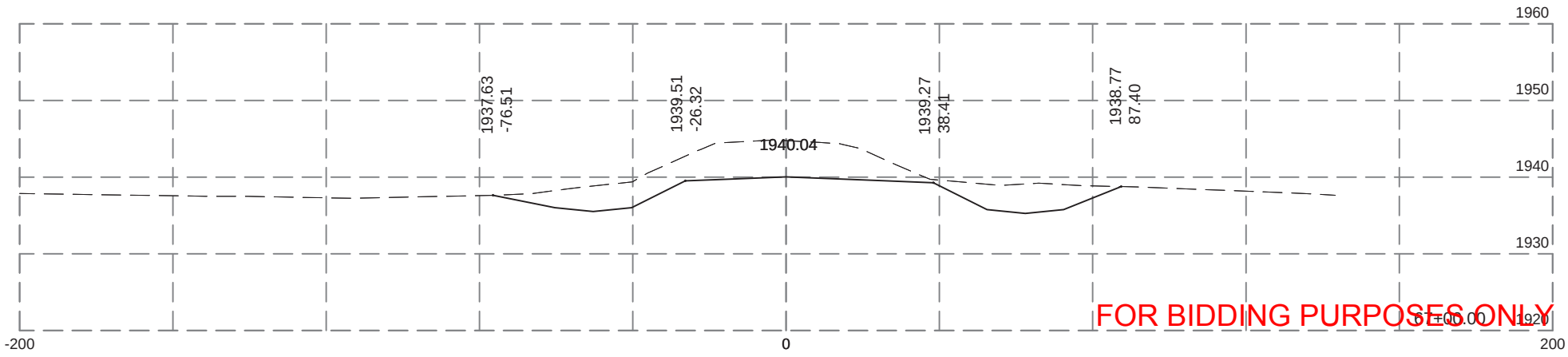
REGISTERED PROFESSIONAL ENGINEER
REG NO.
13792
WAYLON
BLASIUS
10/25/2025

BAI JOB # 23190-10

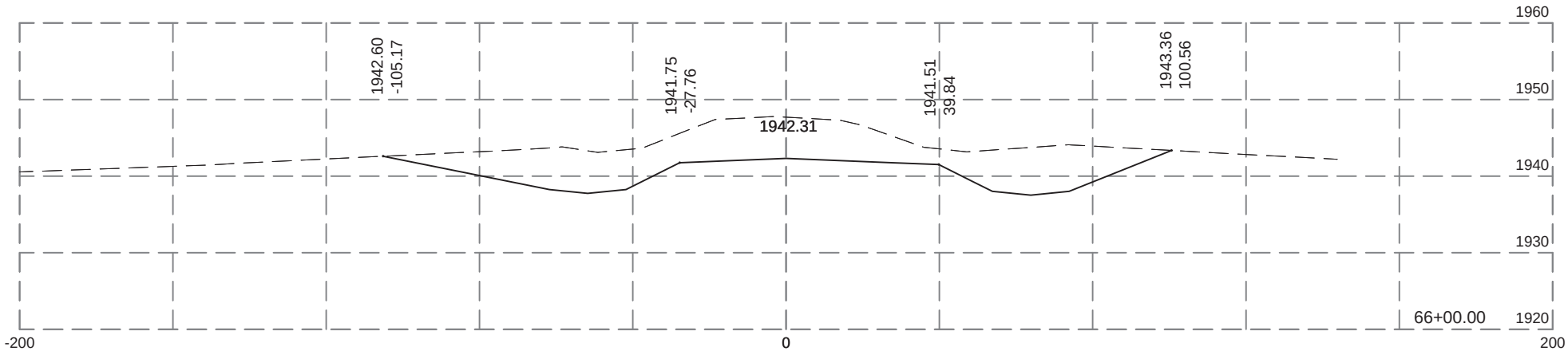
Plotting Date: 10/01/2025 Rev:

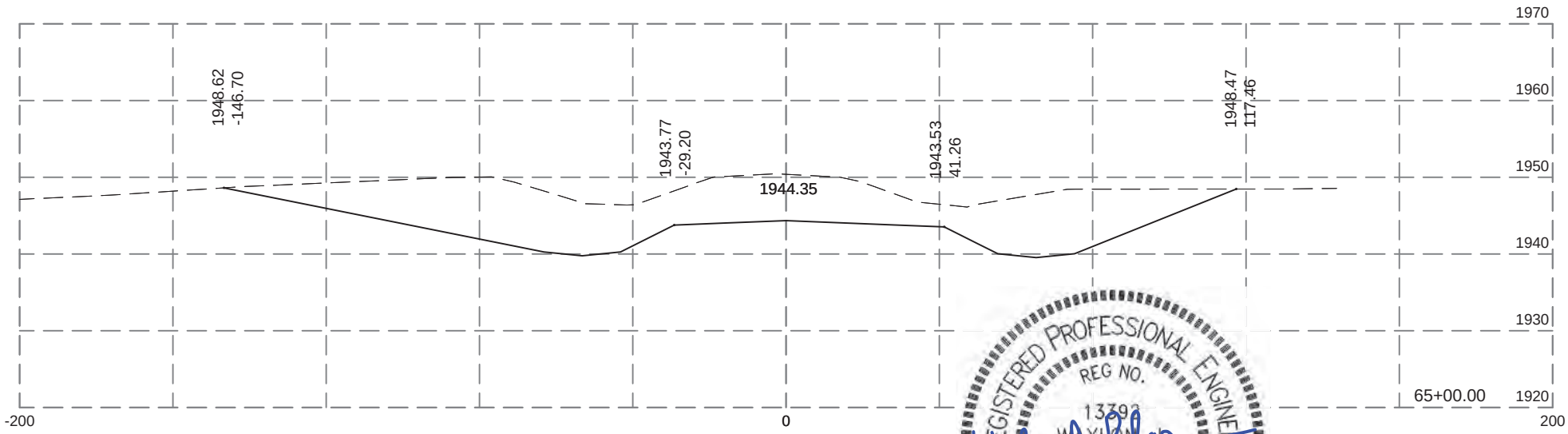
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	209	267

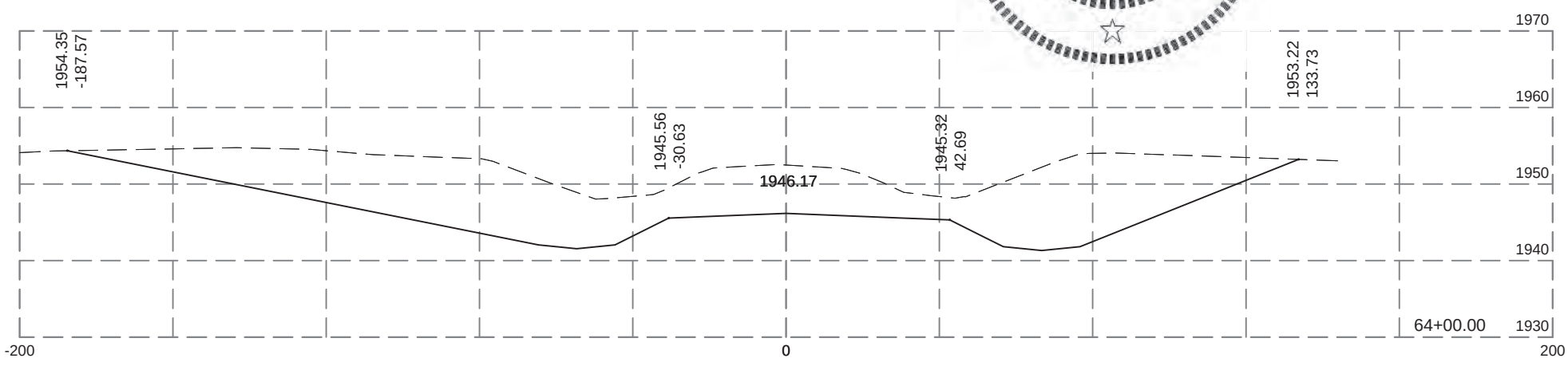
US HIGHWAY 18 WEST

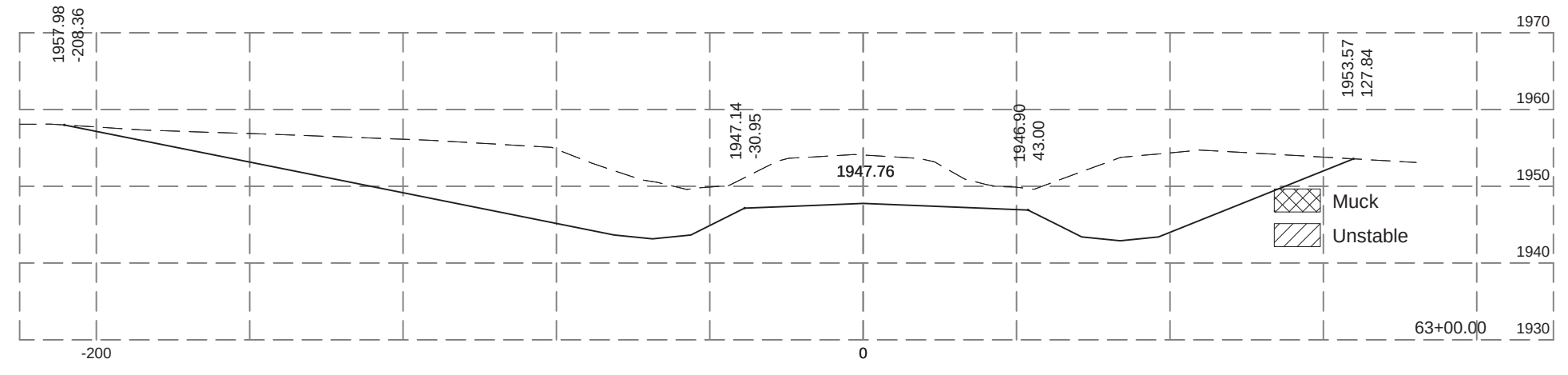


FOR BIDDING PURPOSES ONLY







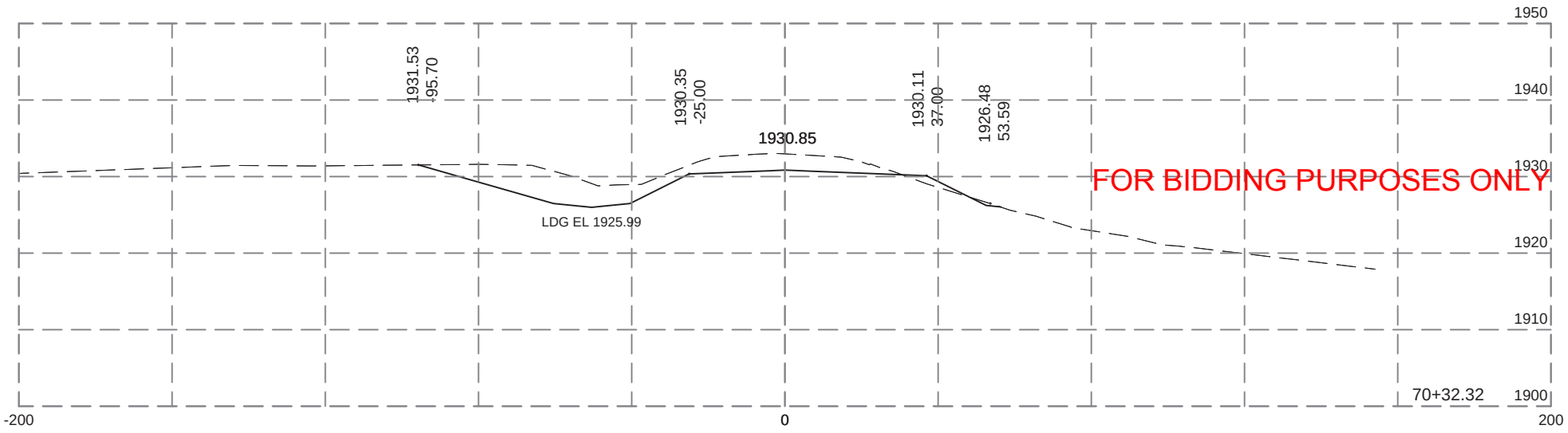


BAI JOB # 23190-10

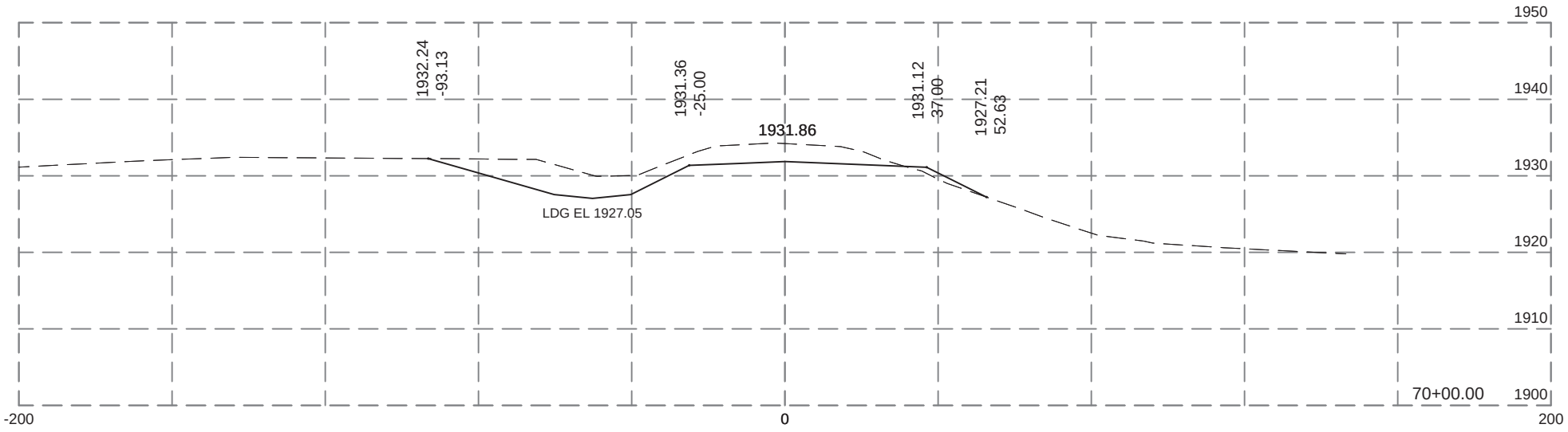
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	210	267

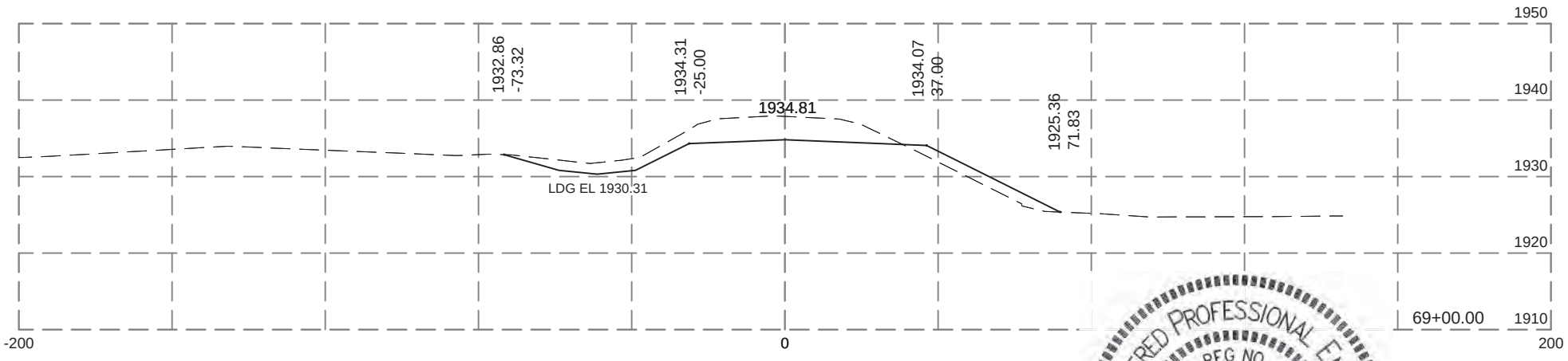
Plotting Date: 10/01/2025 Rev:

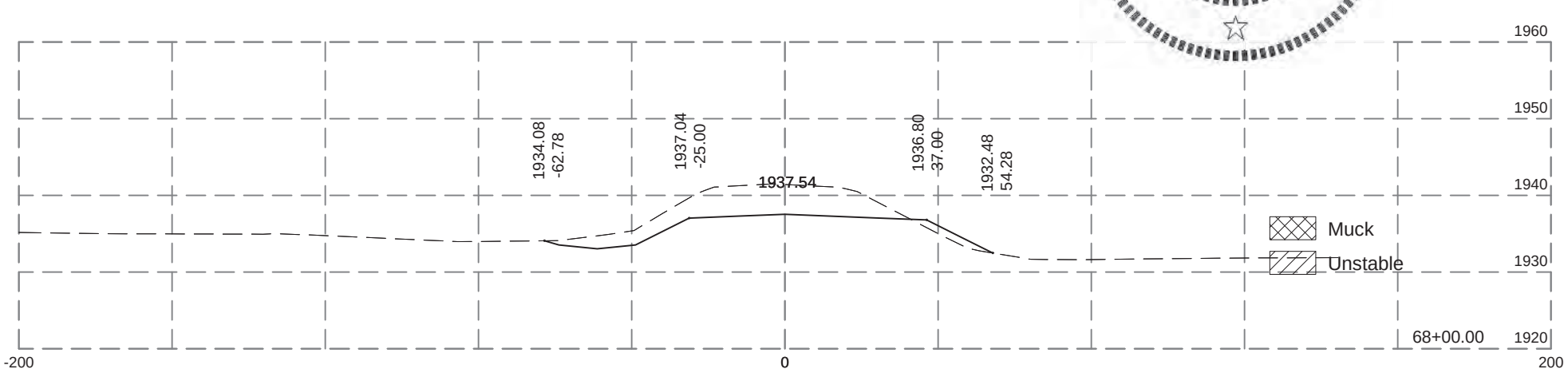
US HIGHWAY 18 WEST



FOR BIDDING PURPOSES ONLY





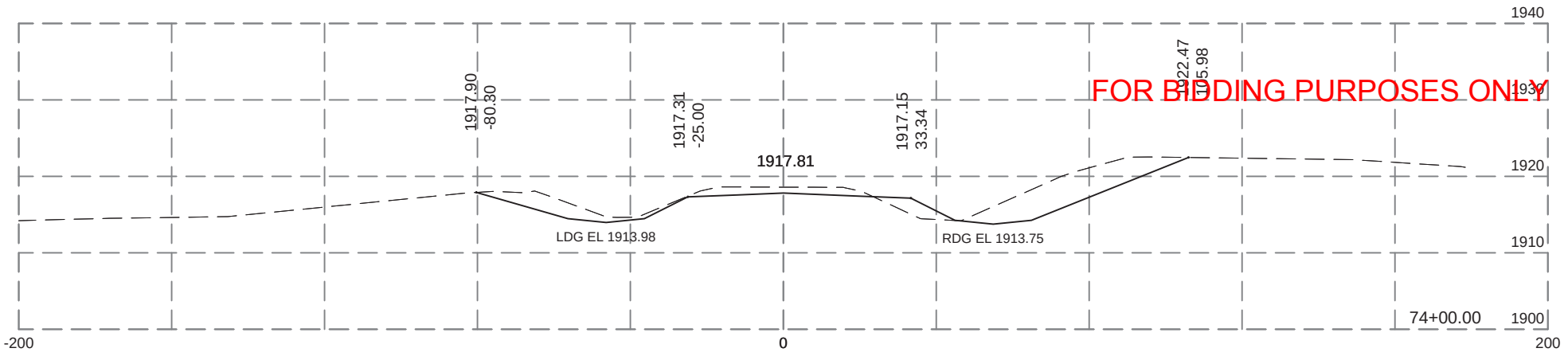


BAI JOB # 23190-10

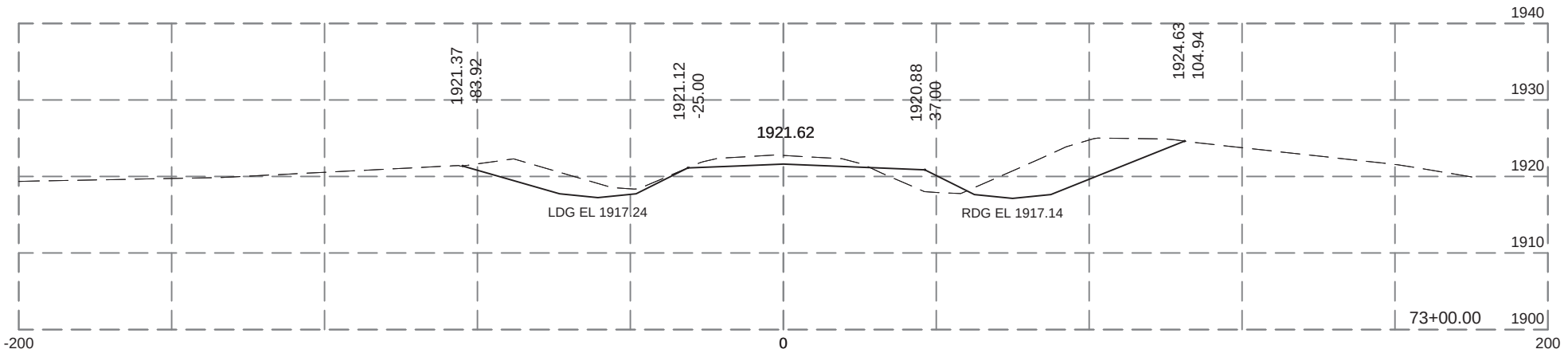
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	211	267

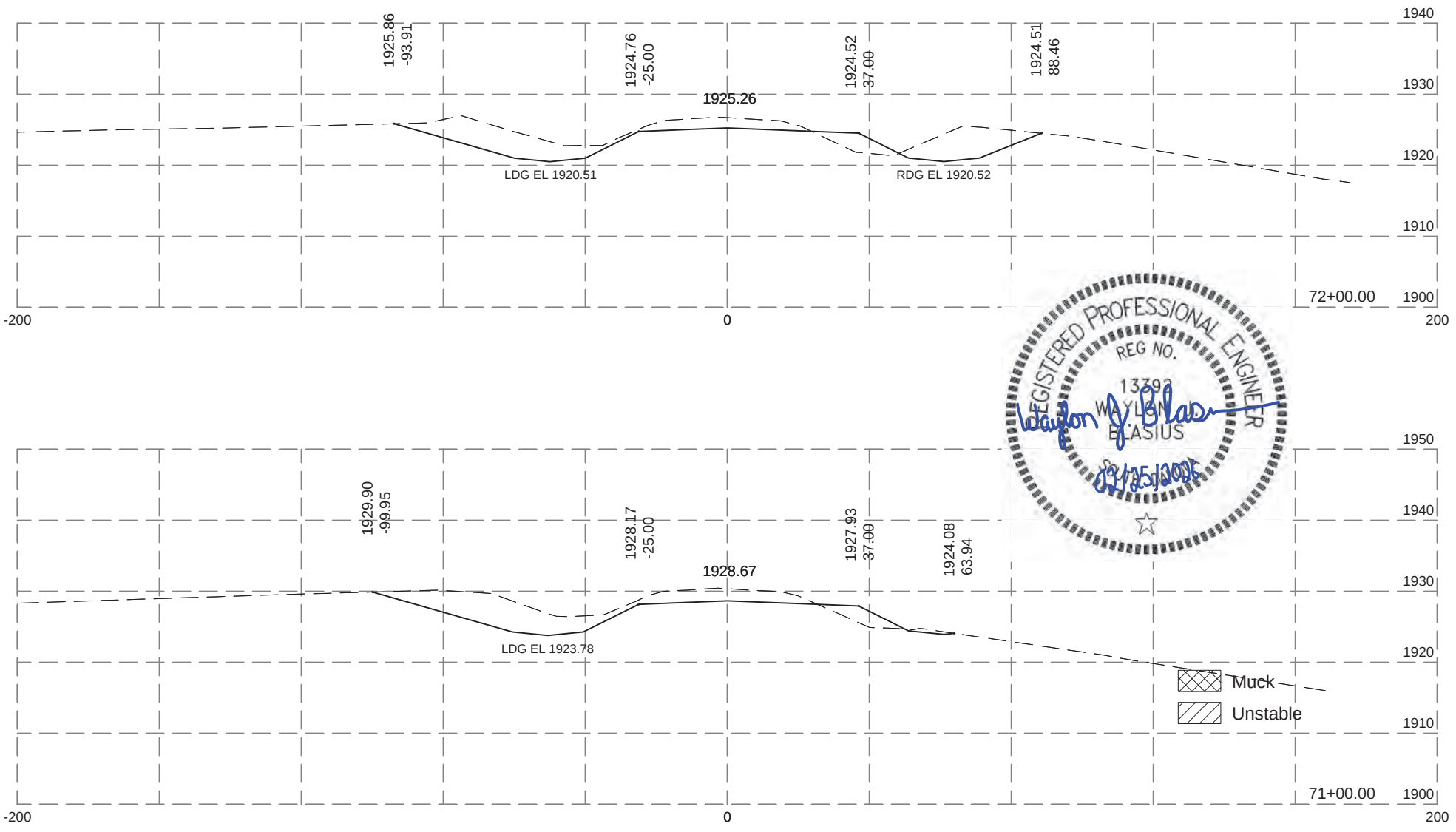
Plotting Date: 10/01/2025 Rev:

US HIGHWAY 18 WEST



FOR BIDDING PURPOSES ONLY





REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON J. BLASIUS
03/25/2026

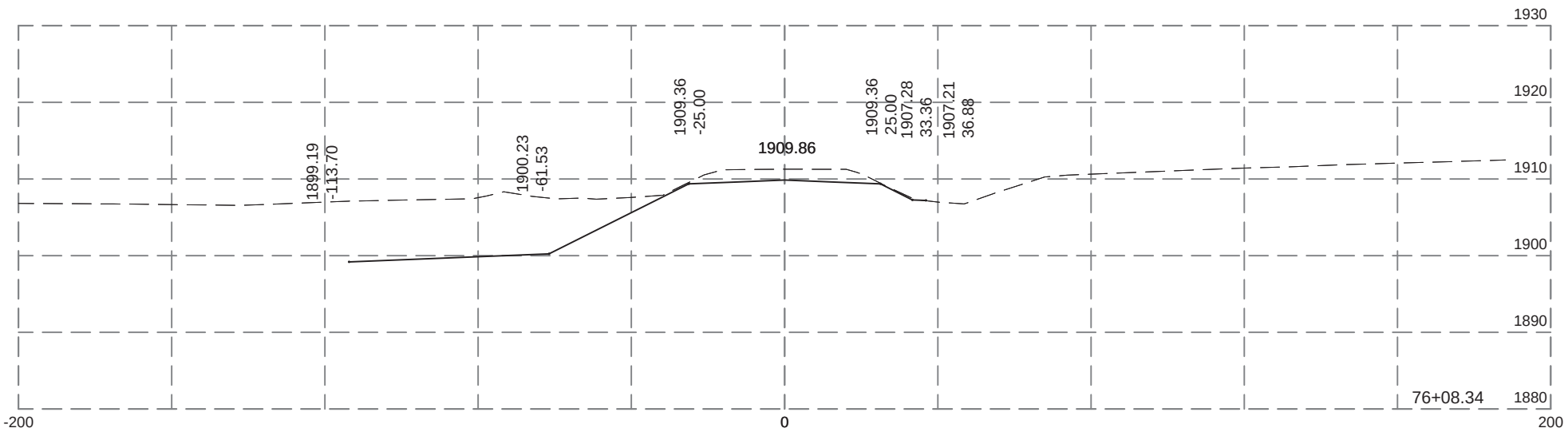
BAI JOB # 23190-10

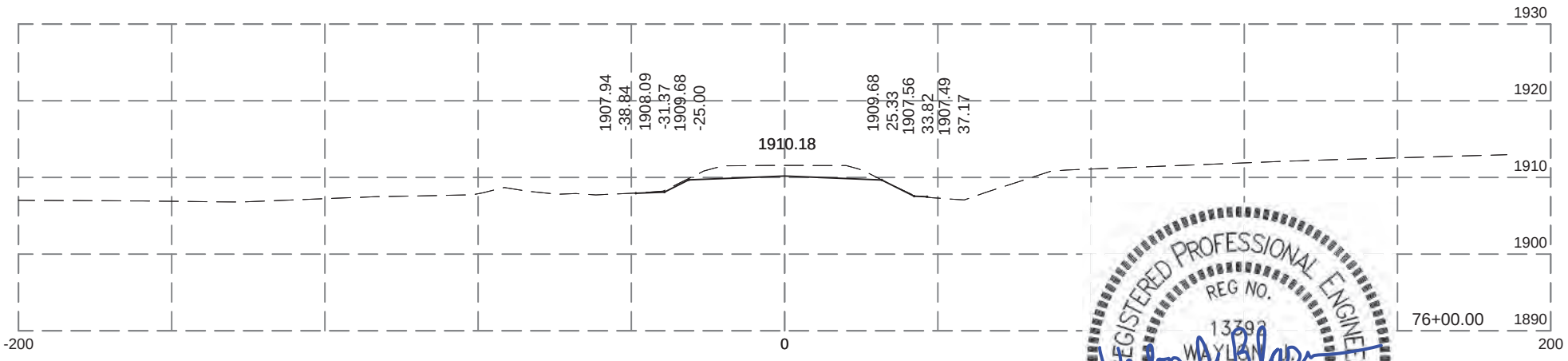
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	212	267

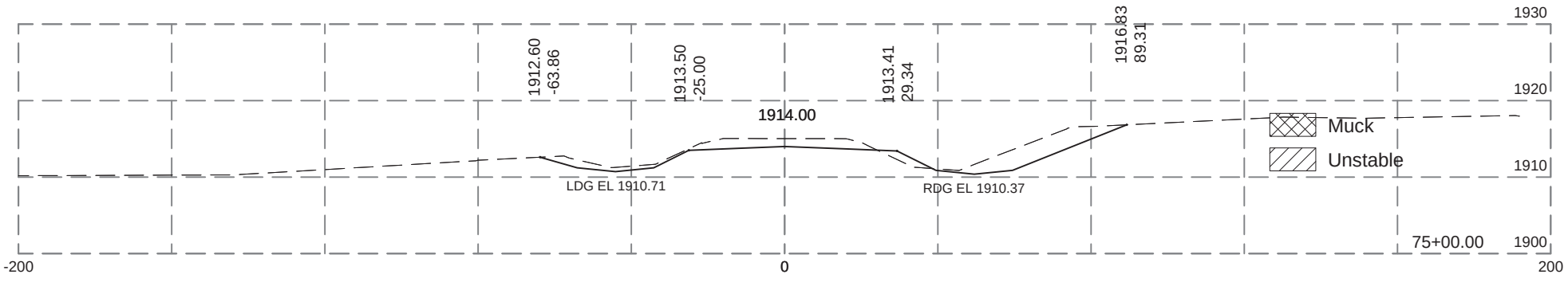
Plotting Date: 10/01/2025 Rev:

US HIGHWAY 18 WEST

FOR BIDDING PURPOSES ONLY





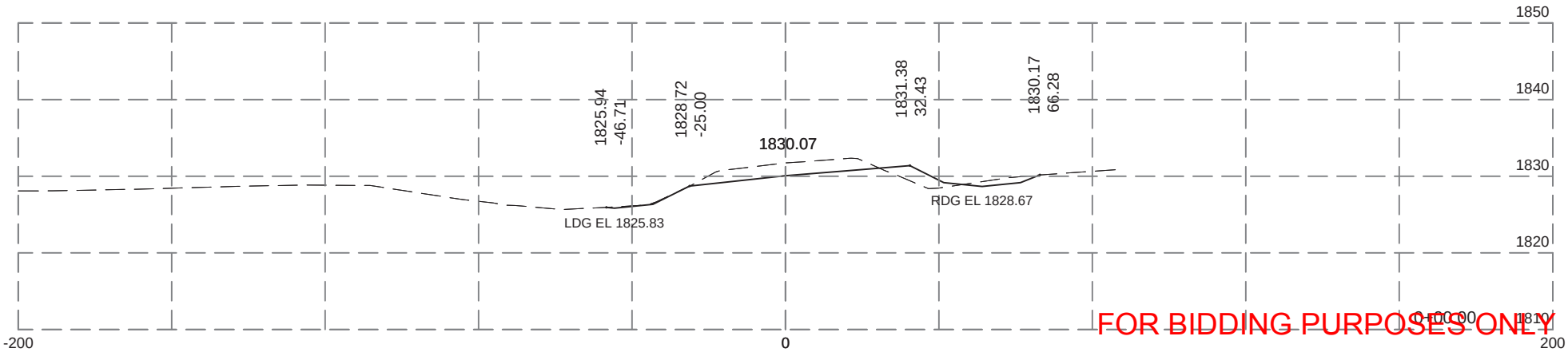


BAI JOB # 23190-10

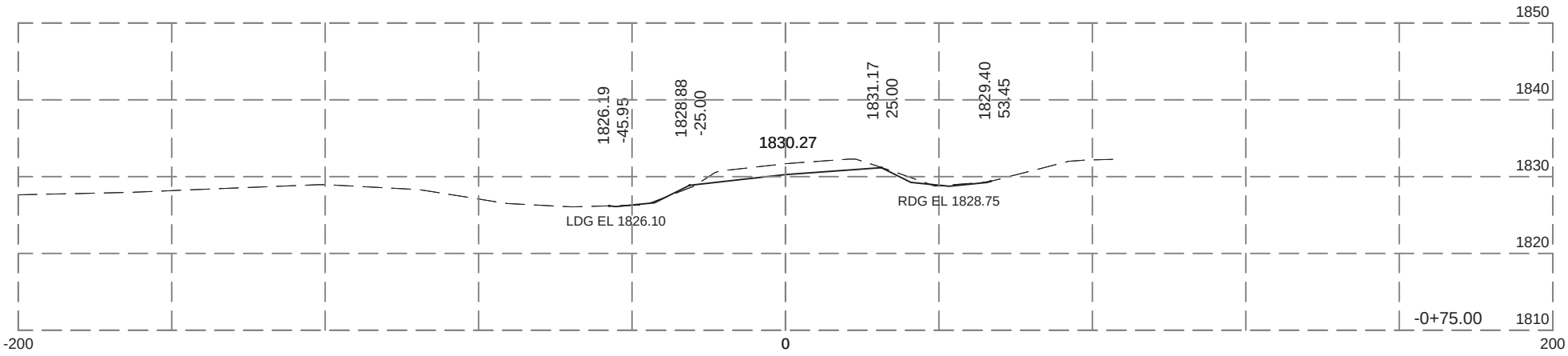
Plotting Date: 10/01/2025 Rev:

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	213	267

US HIGHWAY 18 EAST



FOR BIDDING PURPOSES ONLY



Muck

Unstable

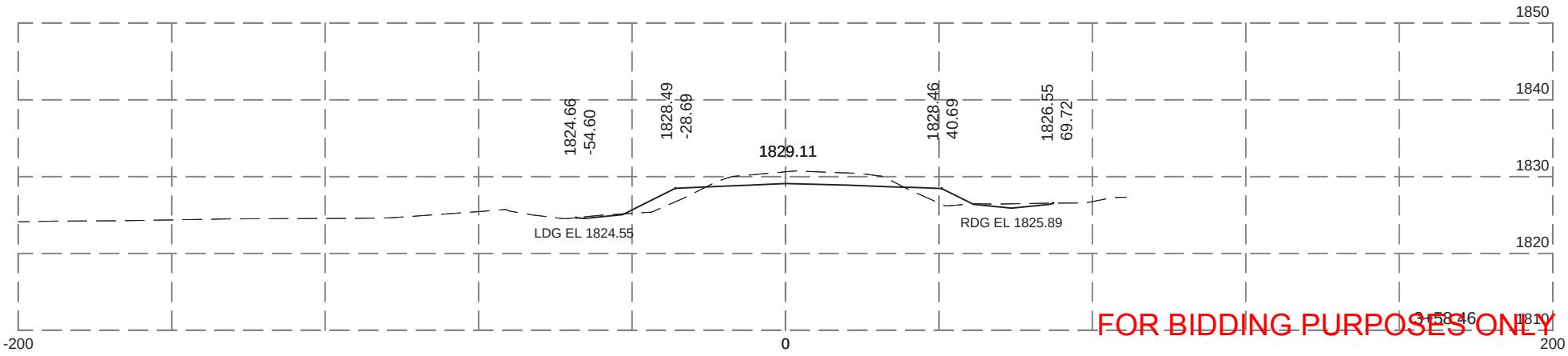
BAI JOB # 23190-10

Plotting Date: 10/01/2025

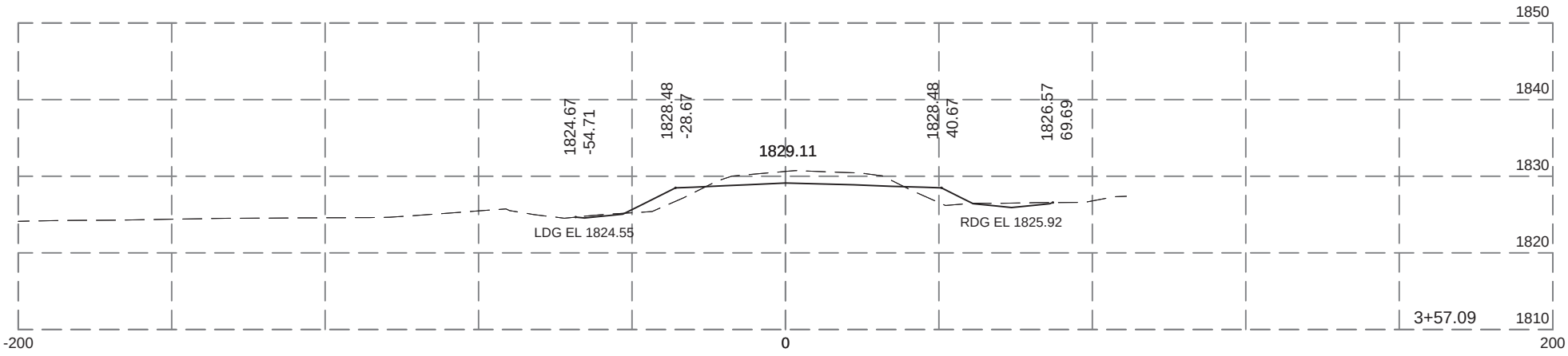
Rev:

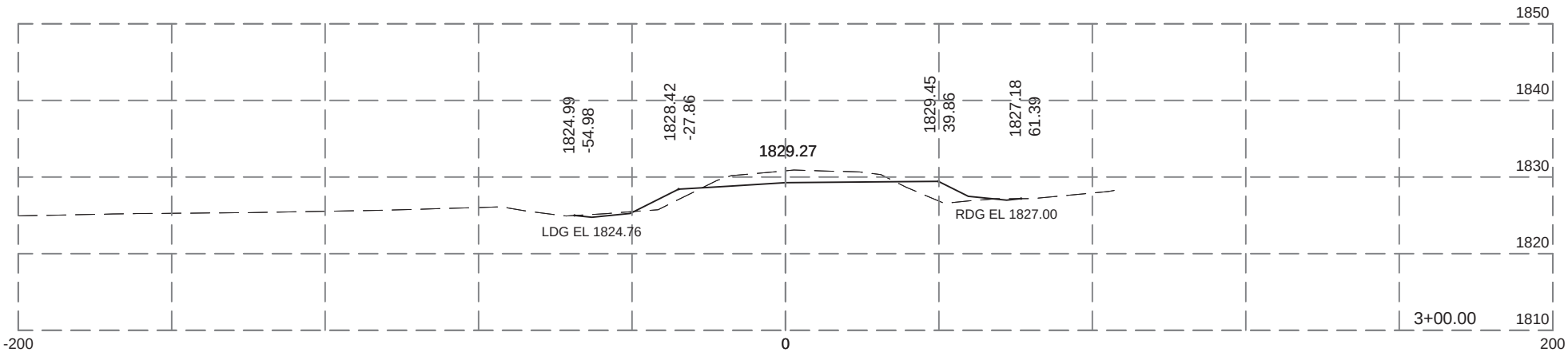
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	214	267

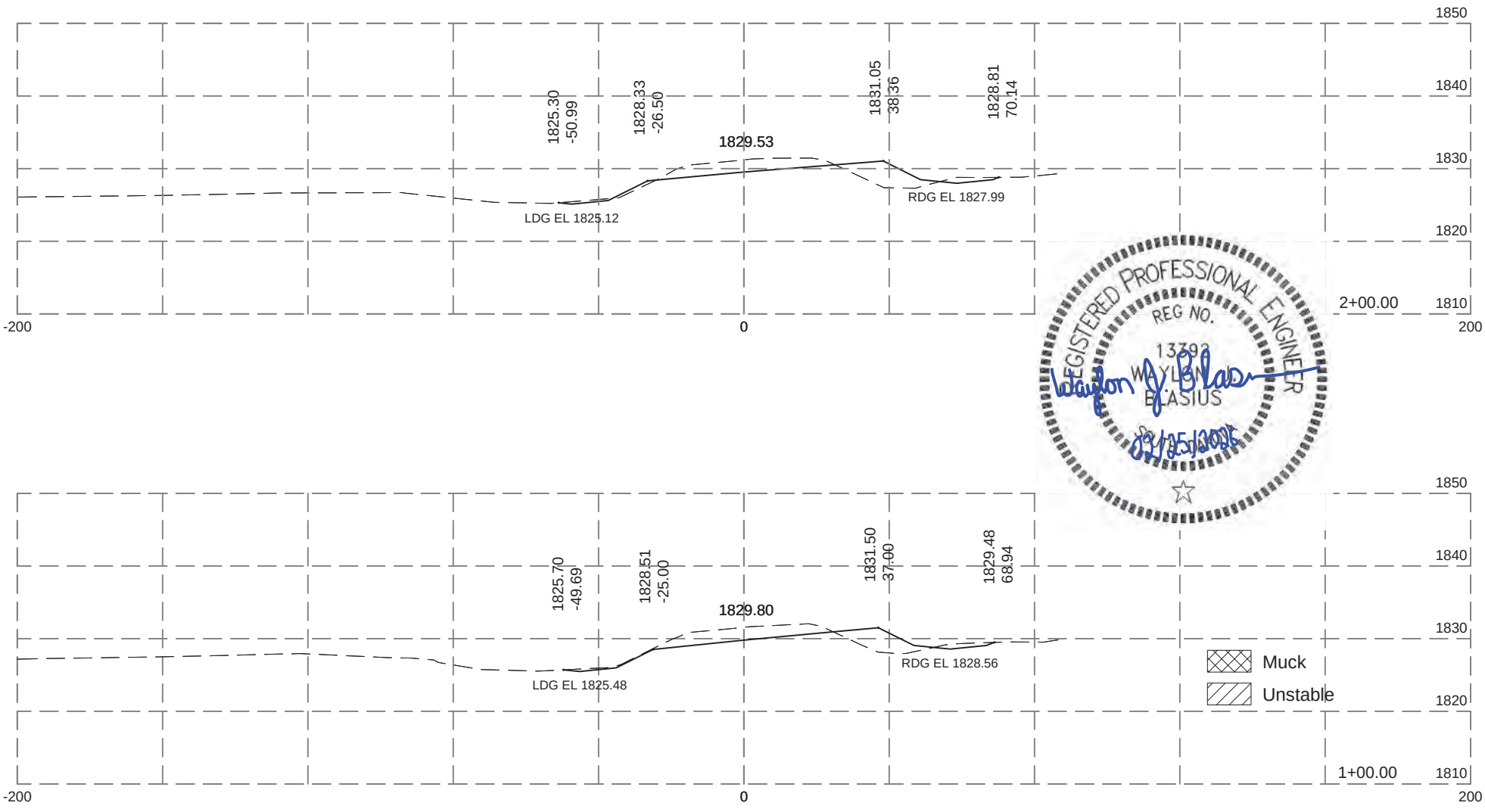
US HIGHWAY 18 EAST



FOR BIDDING PURPOSES ONLY







REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON BLASIUS
Waylon J. Blas
09/25/2025

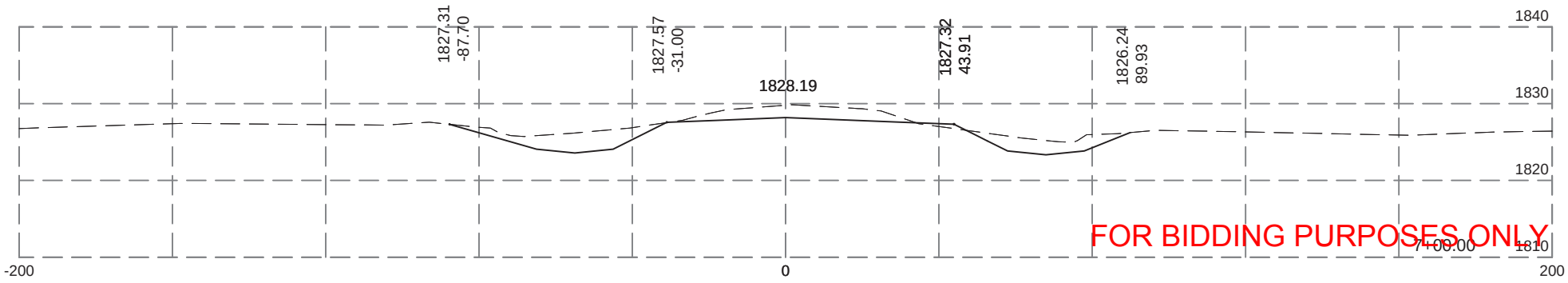
BAI JOB # 23190-10

Plotting Date: 10/01/2025

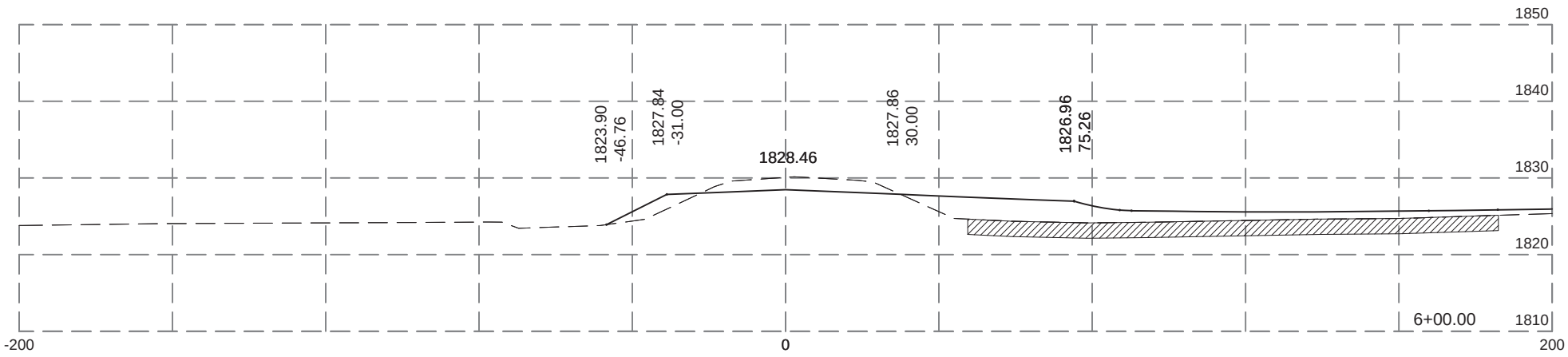
Rev:

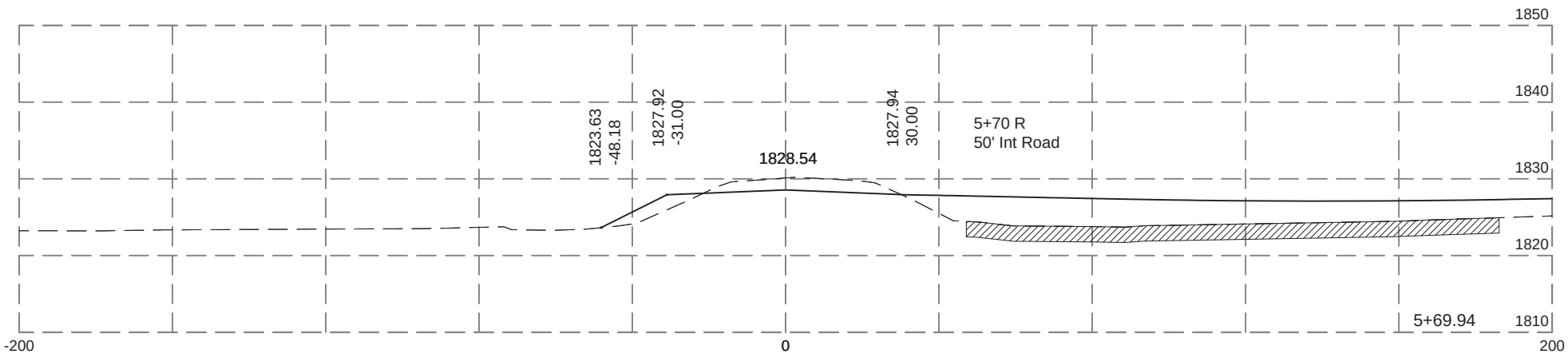
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	215	267

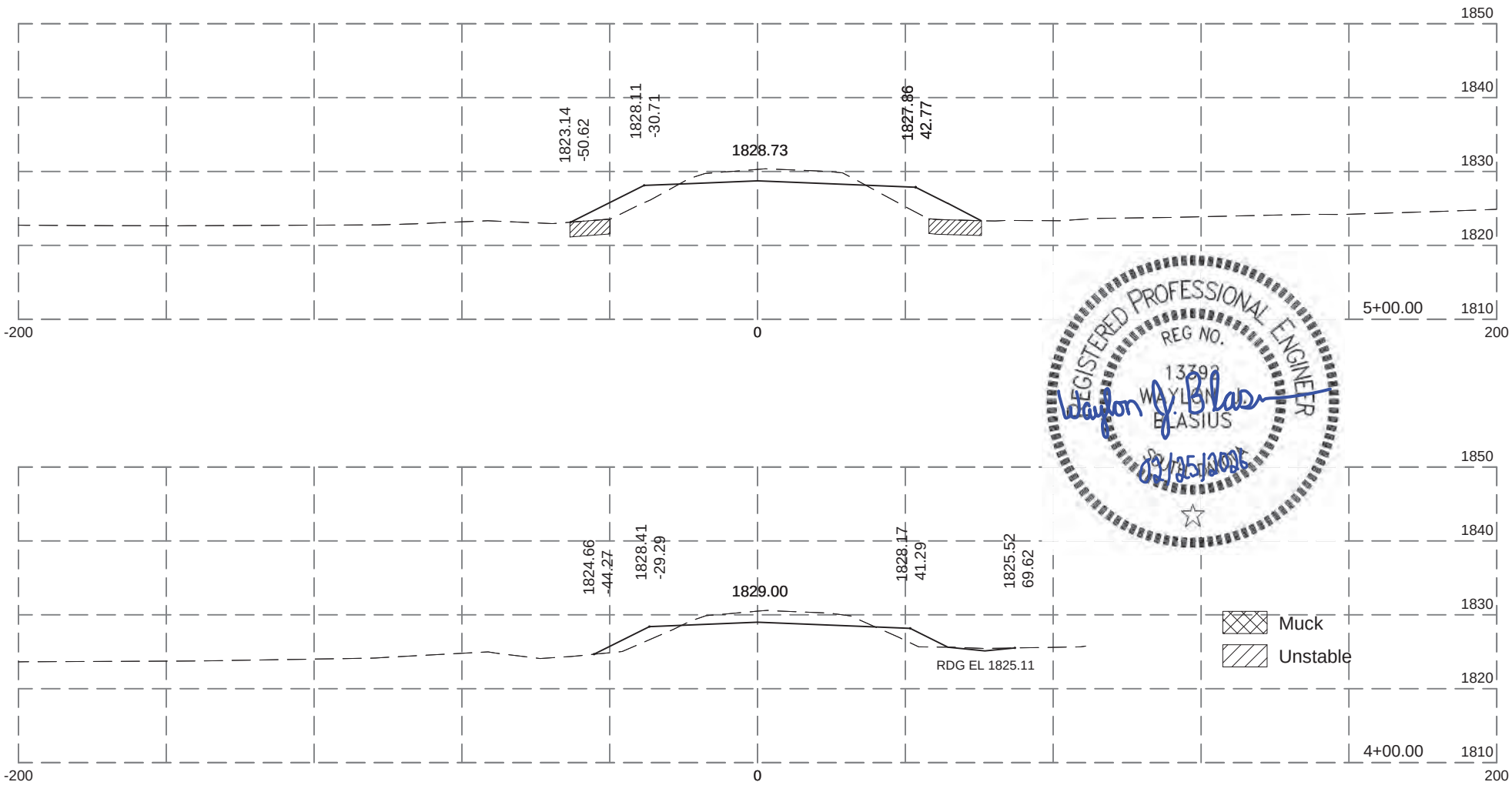
US HIGHWAY 18 EAST



FOR BIDDING PURPOSES ONLY





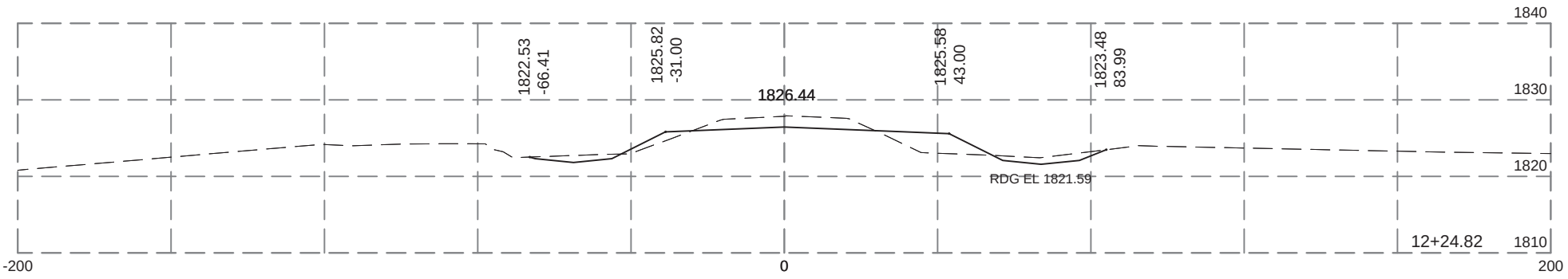


BAI JOB # 23190-10

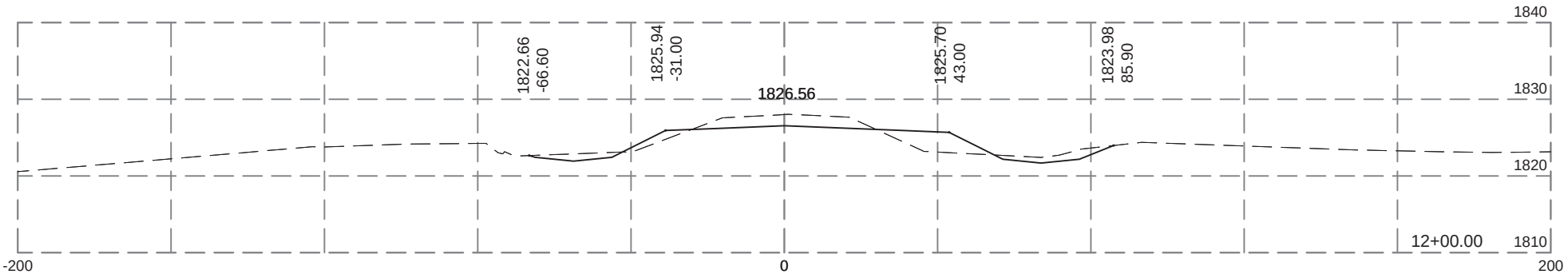
Plotting Date: 10/01/2025 Rev:

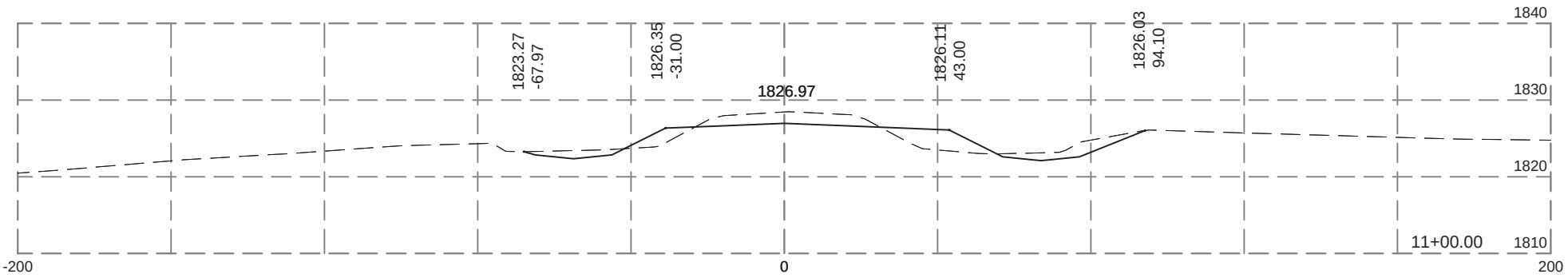
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	216	267

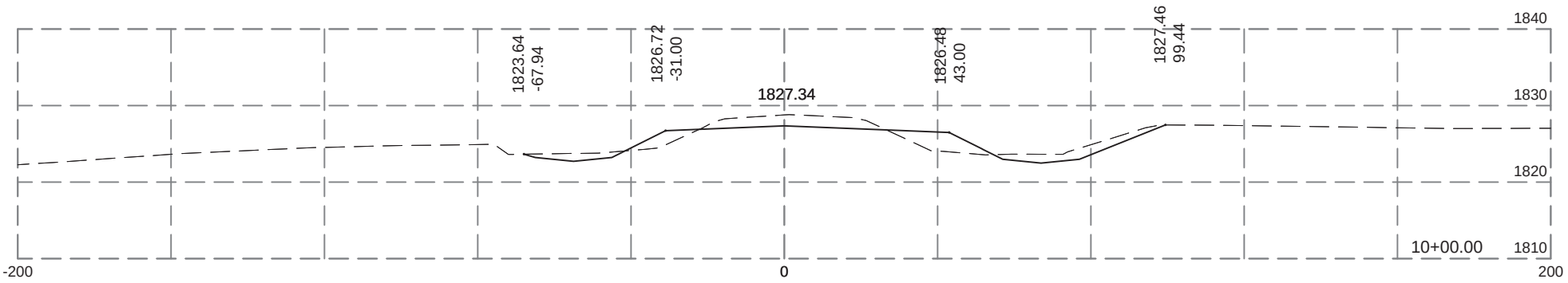
US HIGHWAY 18 EAST

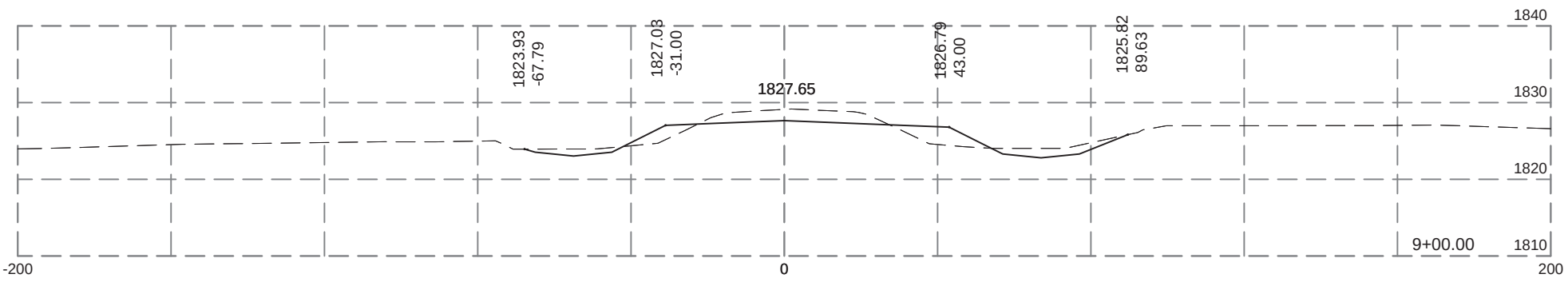


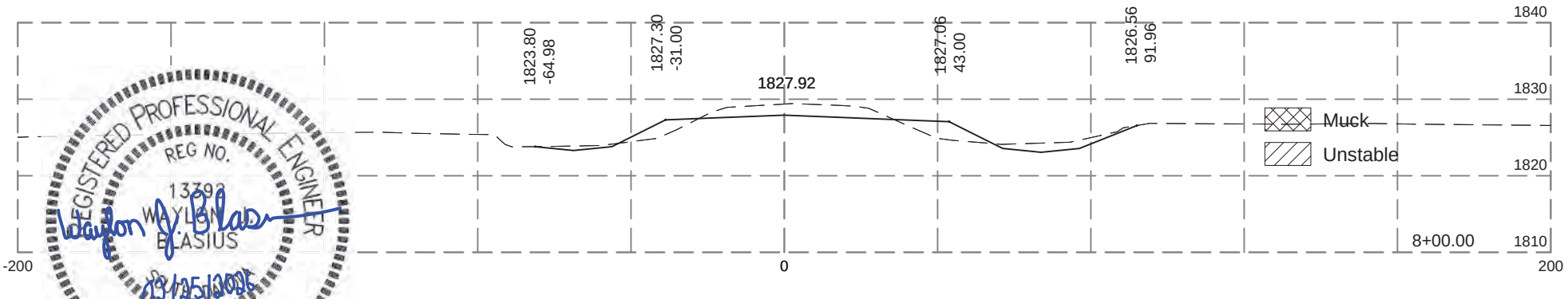
FOR BIDDING PURPOSES ONLY











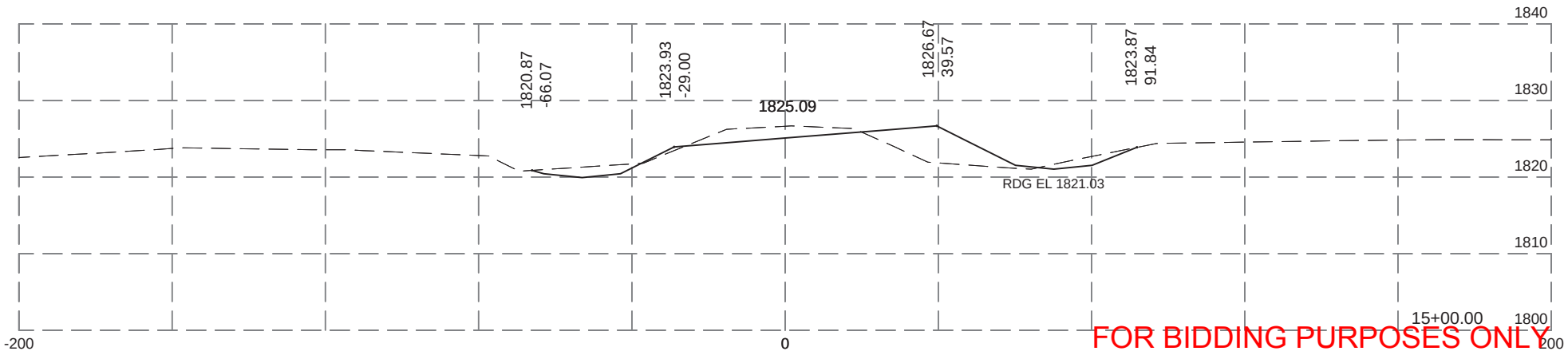
REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON
BASIUS
10/1/2025

BAI JOB # 23190-10

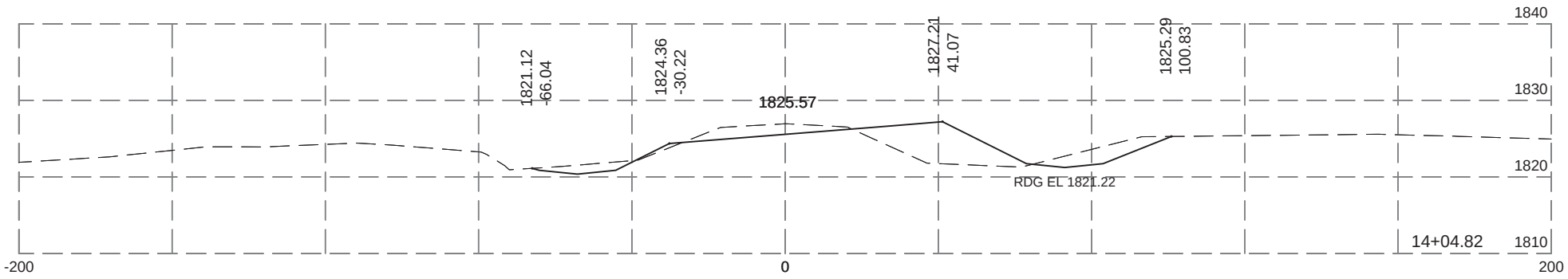
Plotting Date: 10/01/2025 Rev:

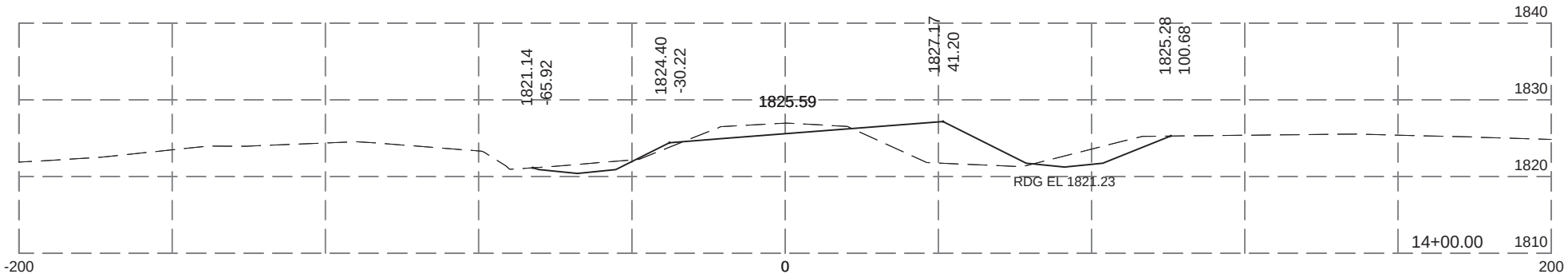
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	217	267

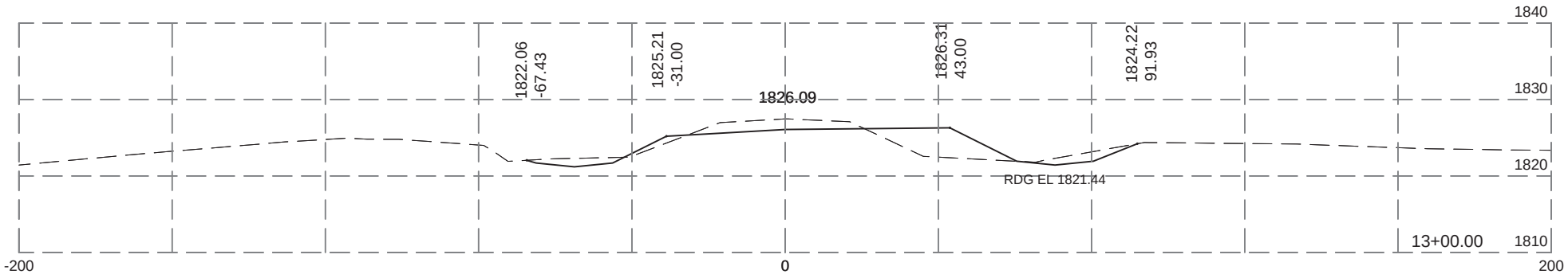
US HIGHWAY 18 EAST

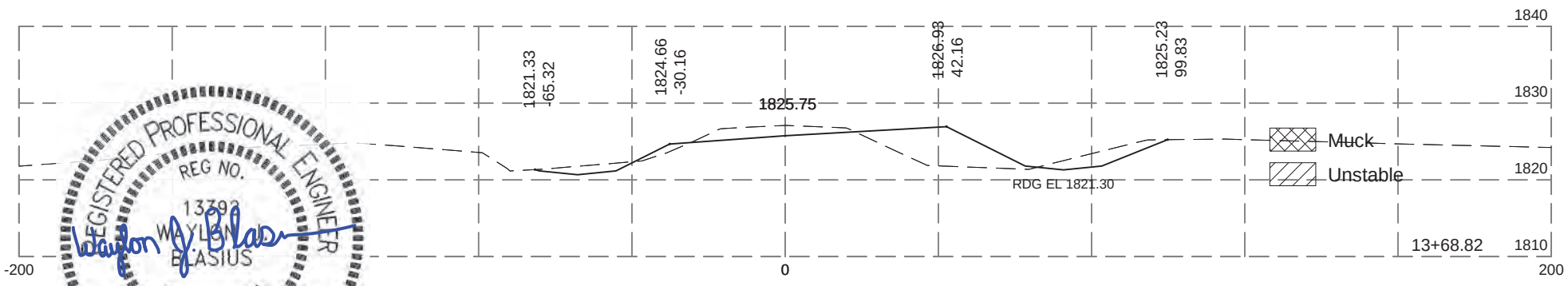


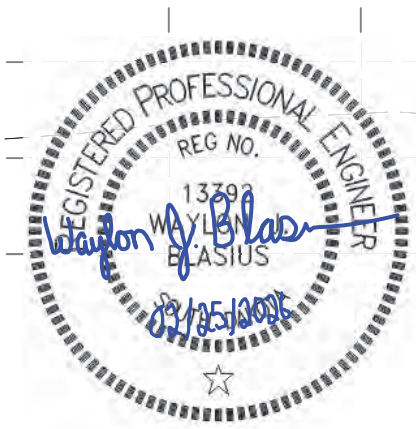
FOR BIDDING PURPOSES ONLY











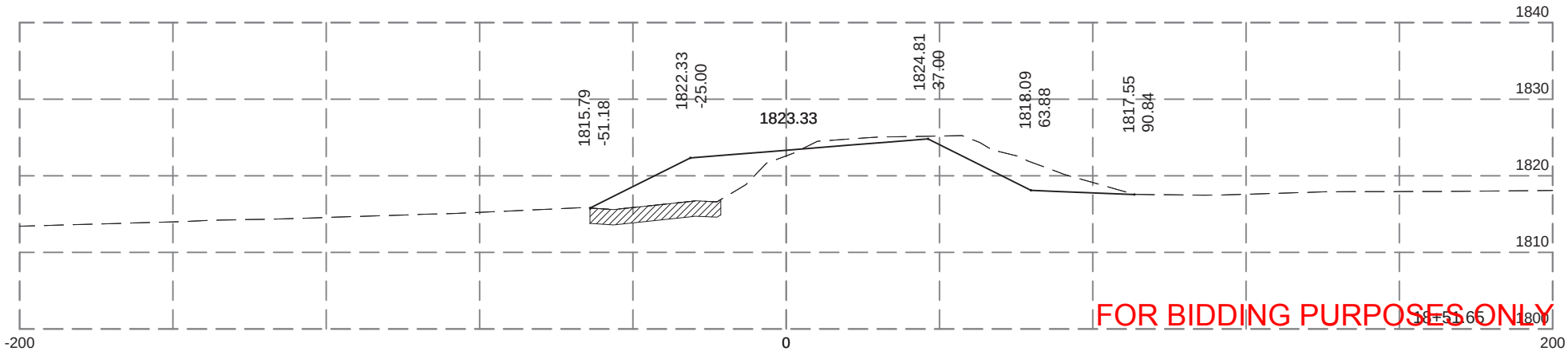
BAI JOB # 23190-10

Plotting Date: 10/01/2025

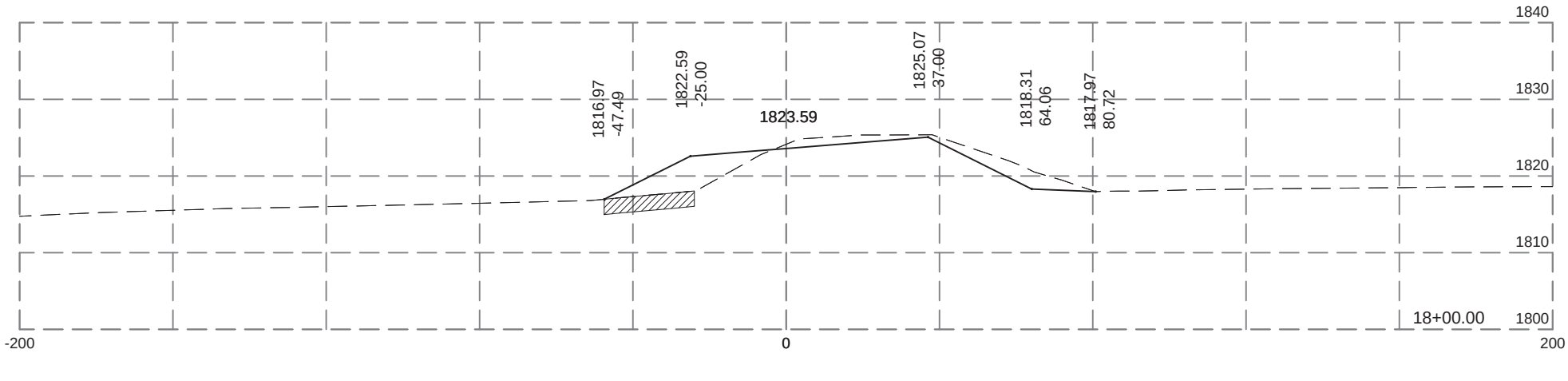
Rev:

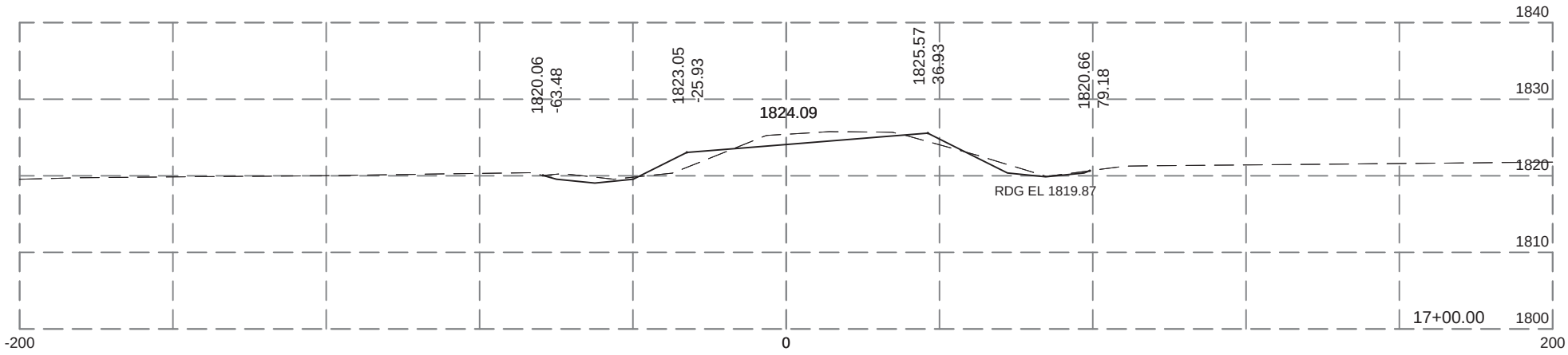
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	218	267

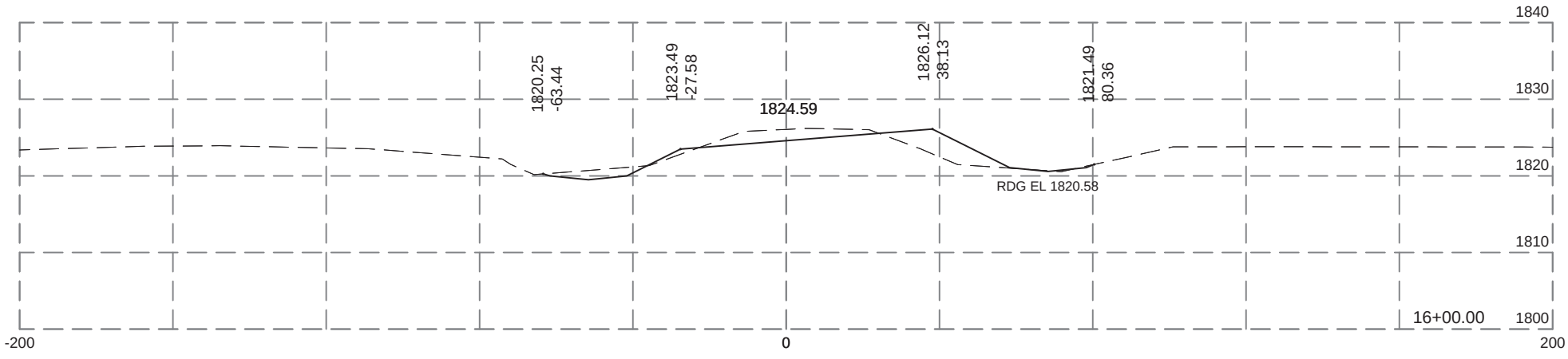
US HIGHWAY 18 EAST

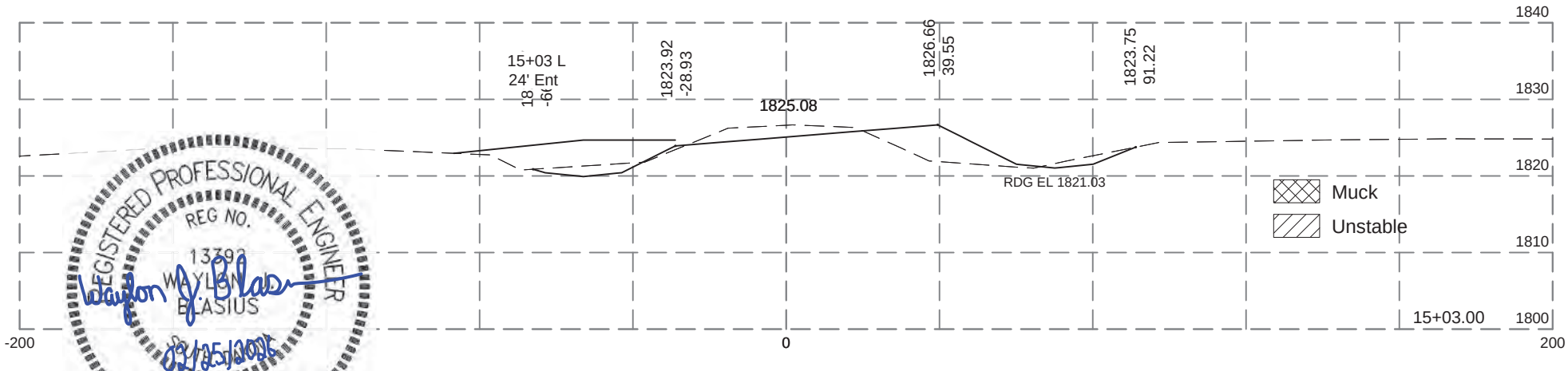


FOR BIDDING PURPOSES ONLY









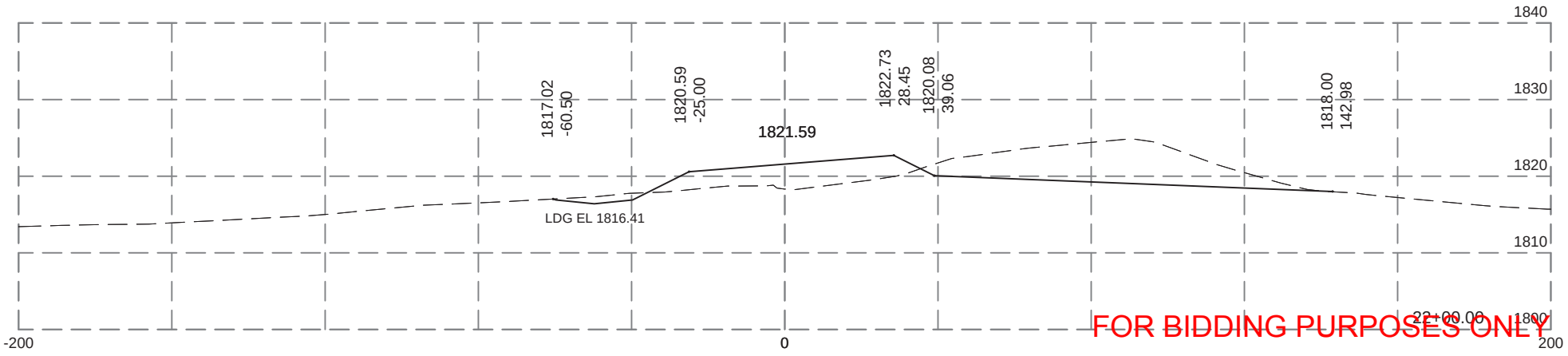
REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLAND B. BLASIUS
03/25/2026

BAI JOB # 23190-10

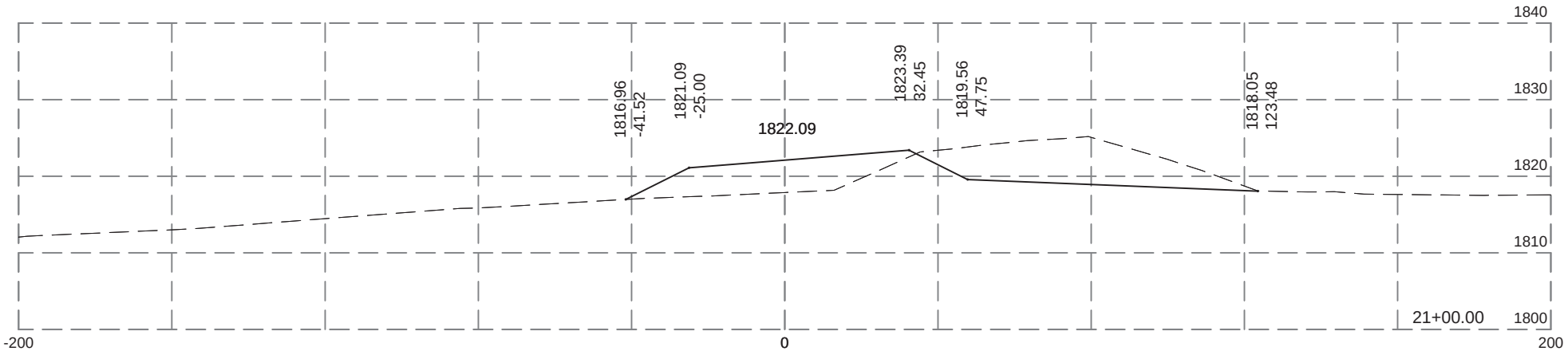
Plotting Date: 10/01/2025 Rev:

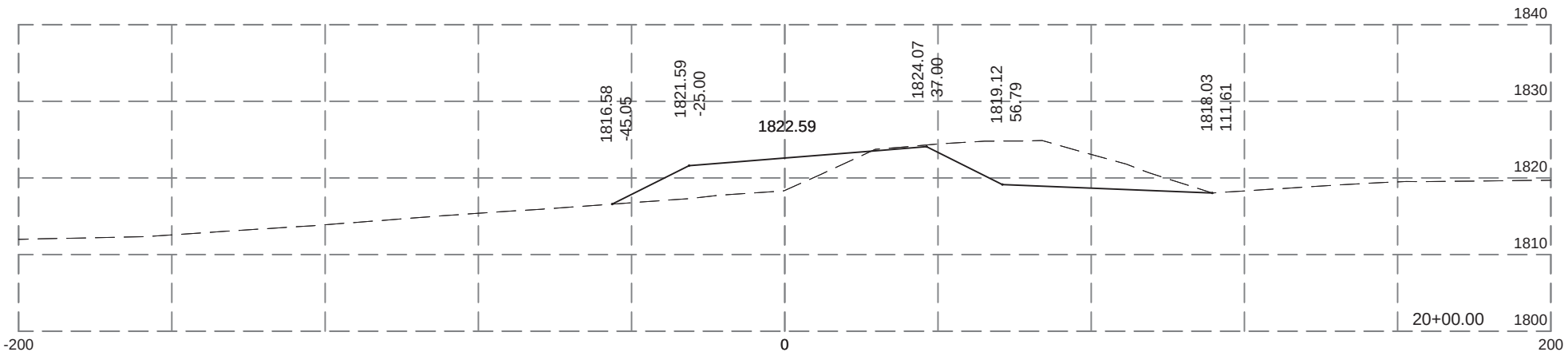
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	219	267

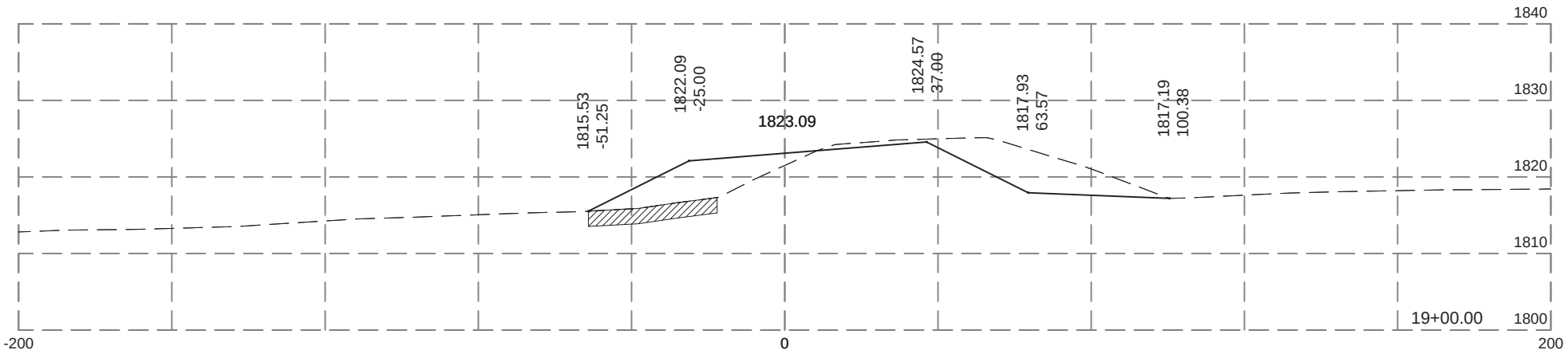
US HIGHWAY 18 EAST

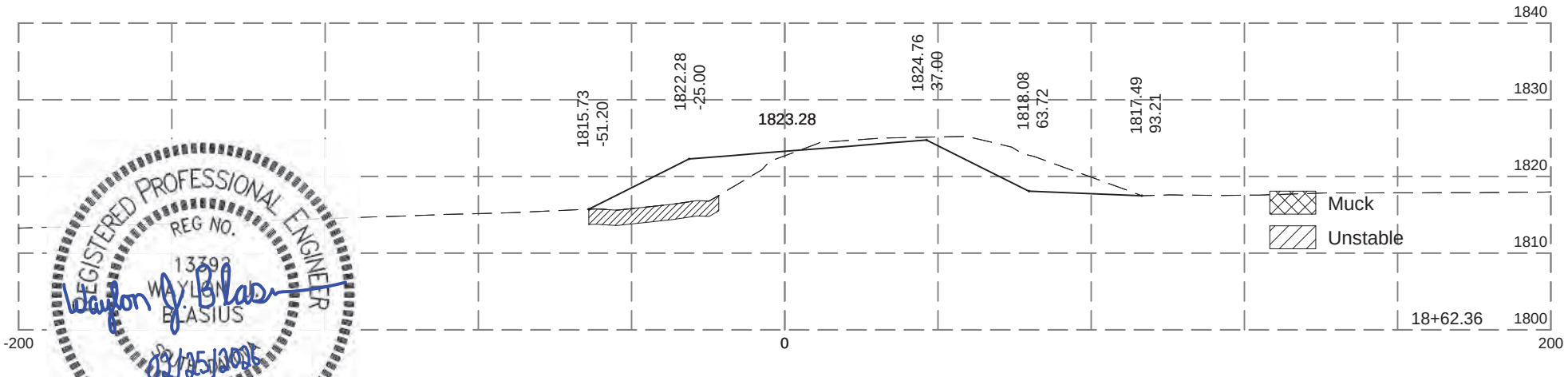


FOR BIDDING PURPOSES ONLY









REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLAND
BASIUS
03/25/2026

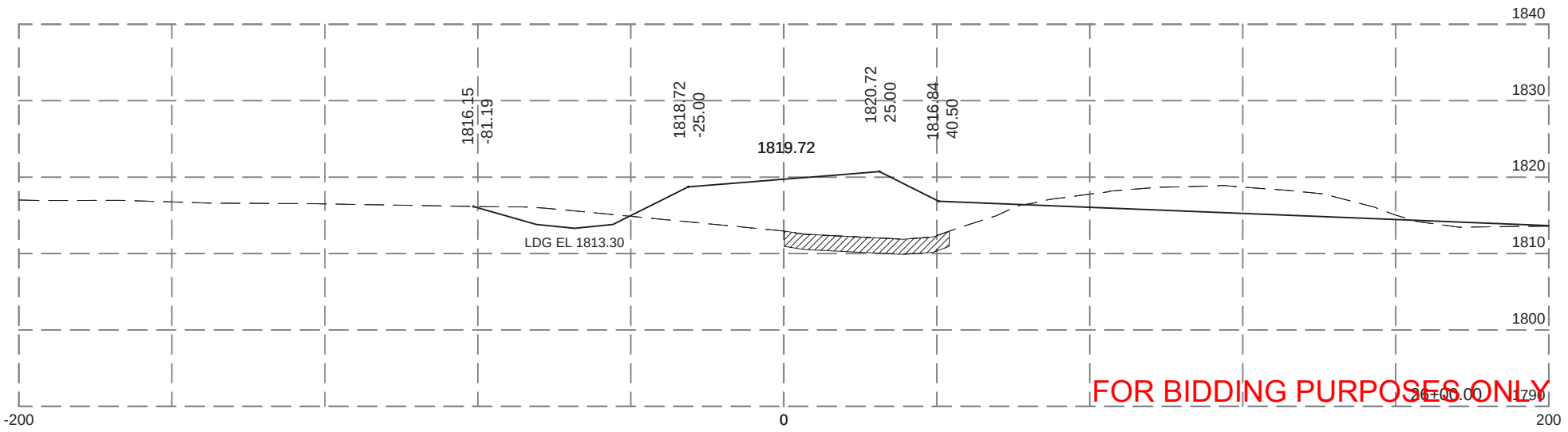
BAI JOB # 23190-10

Plotting Date: 10/01/2025

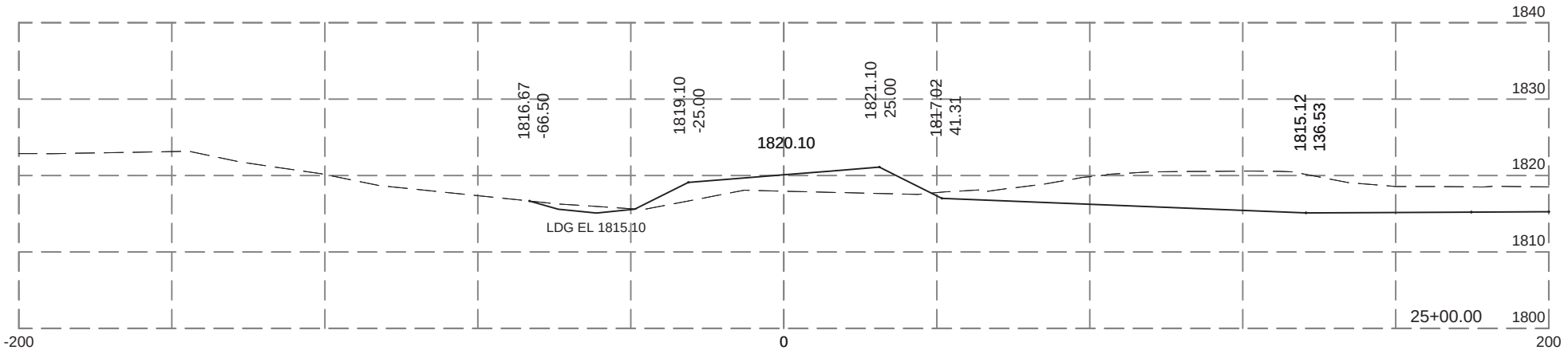
Rev:

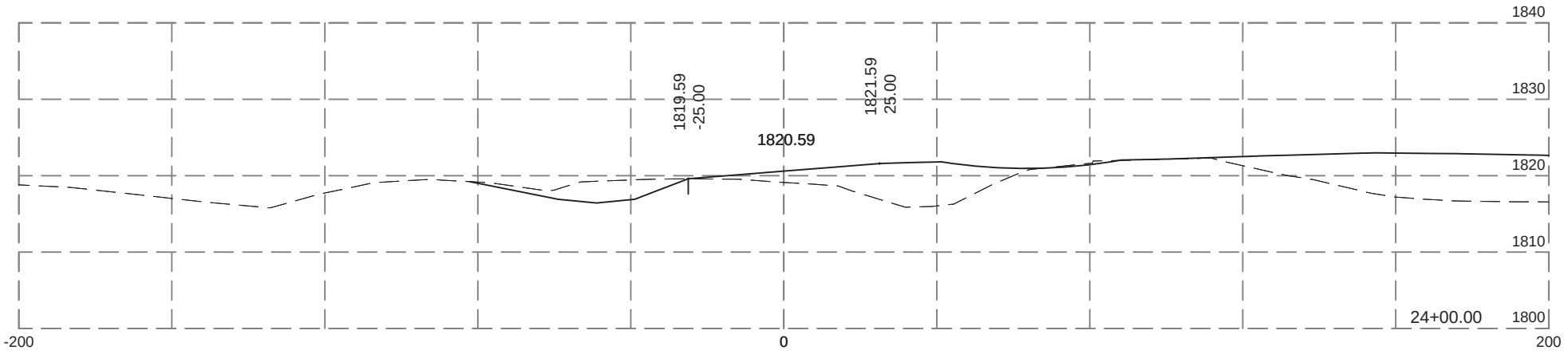
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	220	267

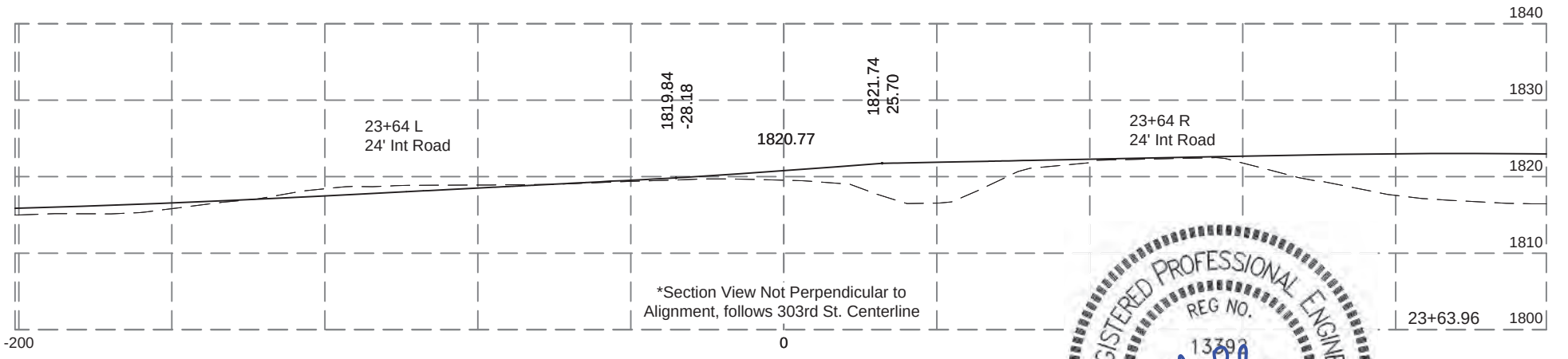
US HIGHWAY 18 EAST

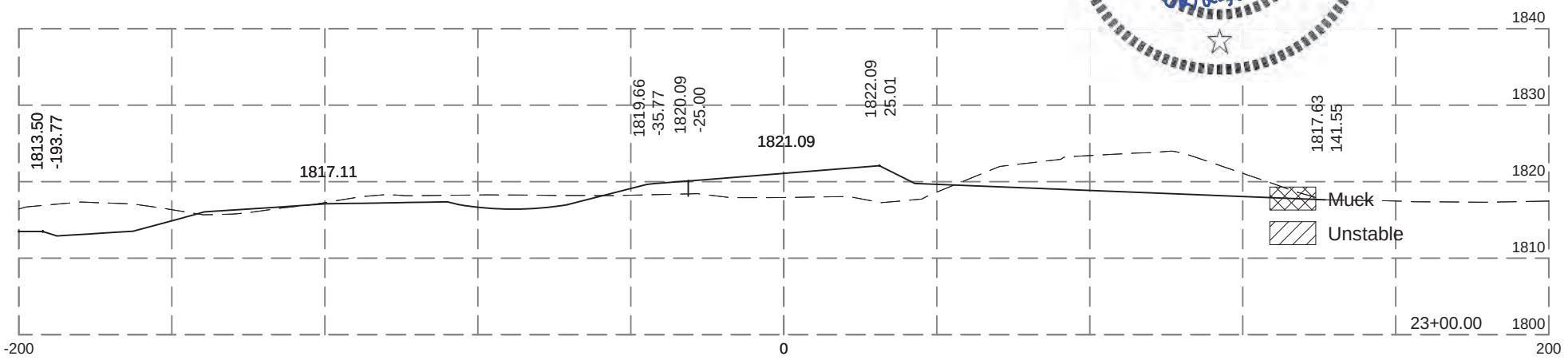


FOR BIDDING PURPOSES ONLY









REGISTERED PROFESSIONAL ENGINEER
REG NO.
13392
WAYLON
BLASIUS
Waylon J Blas
03/25/2026

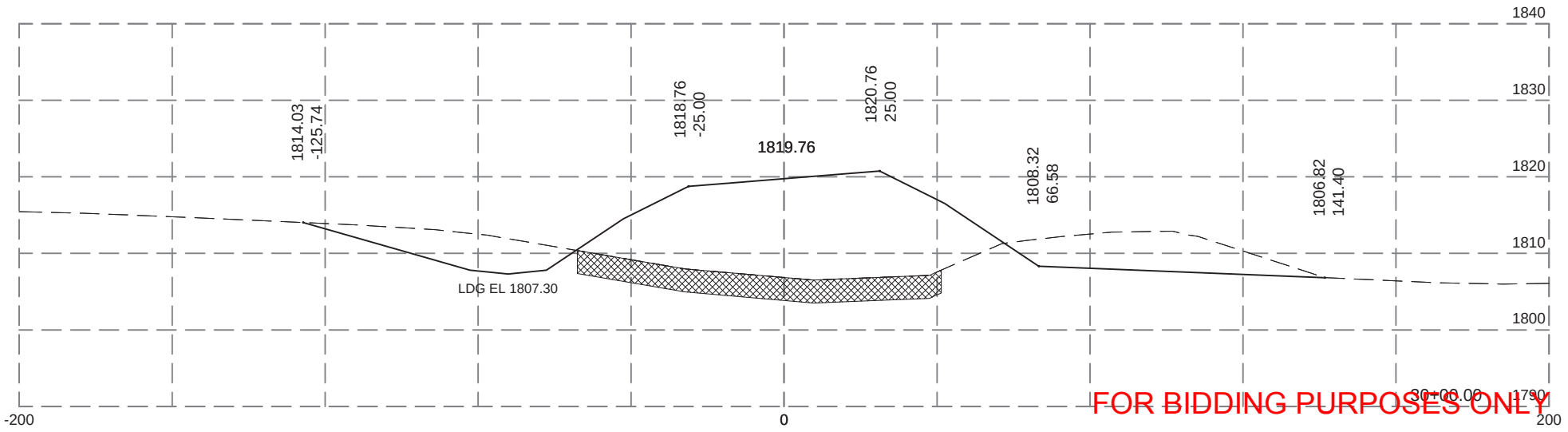
BAI JOB # 23190-10

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	221	267

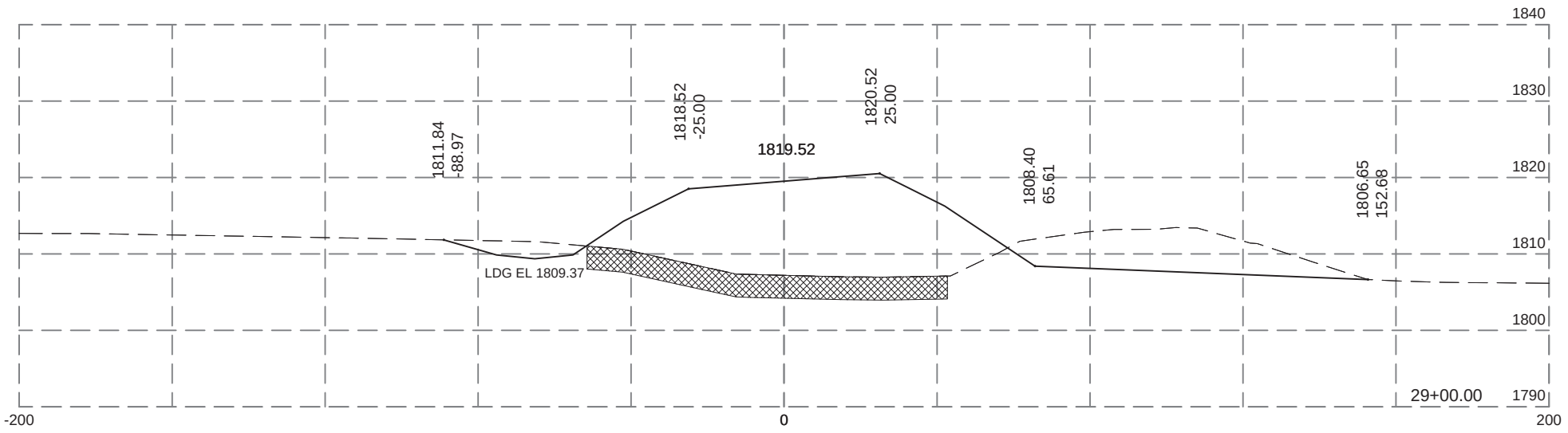
Plotting Date: 10/01/2025

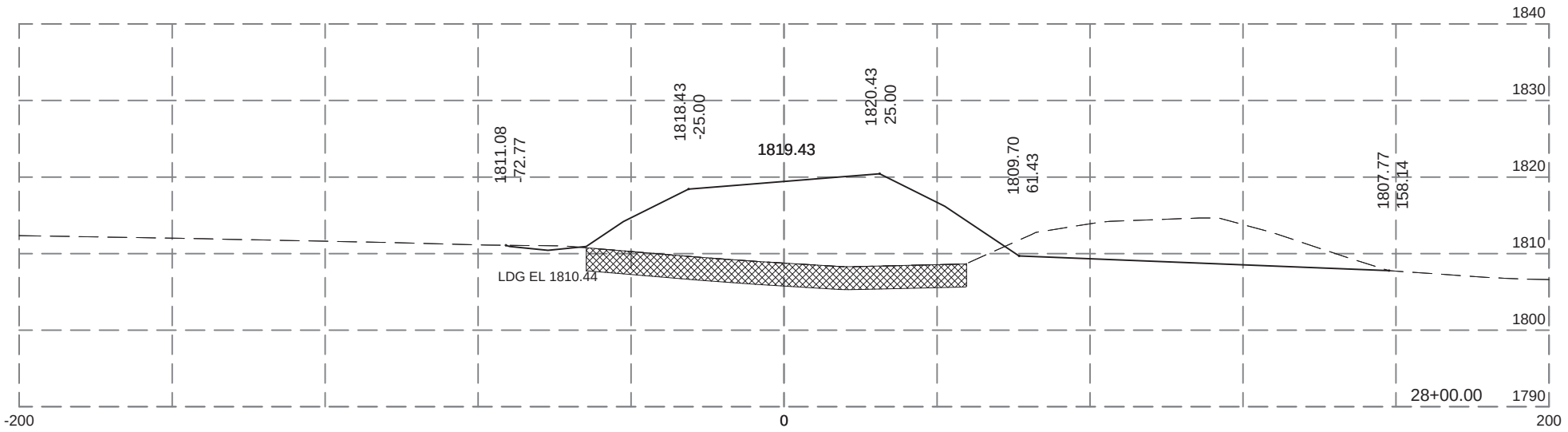
Rev:

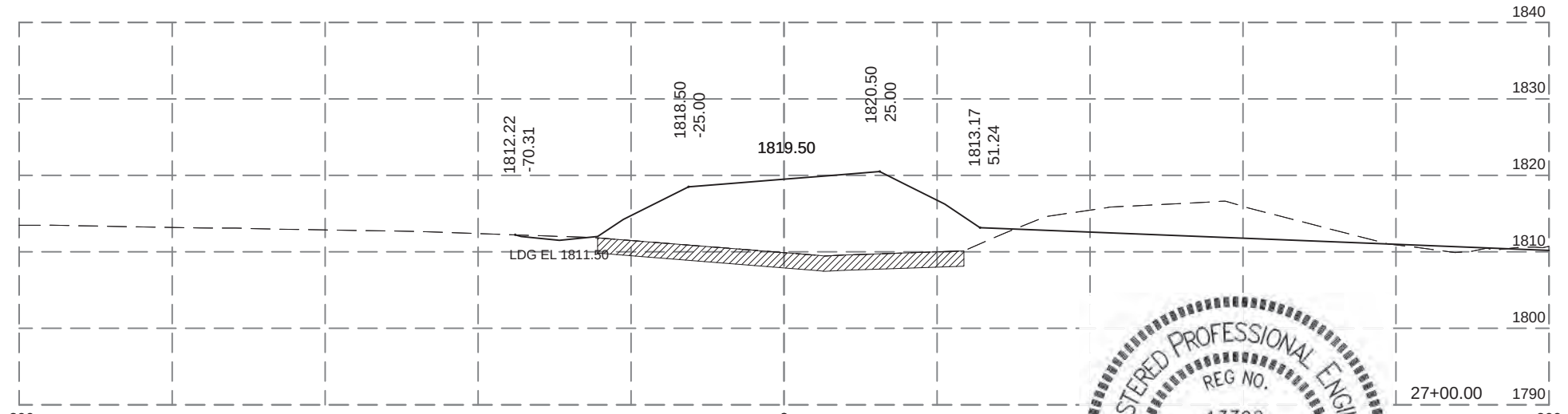
US HIGHWAY 18 EAST

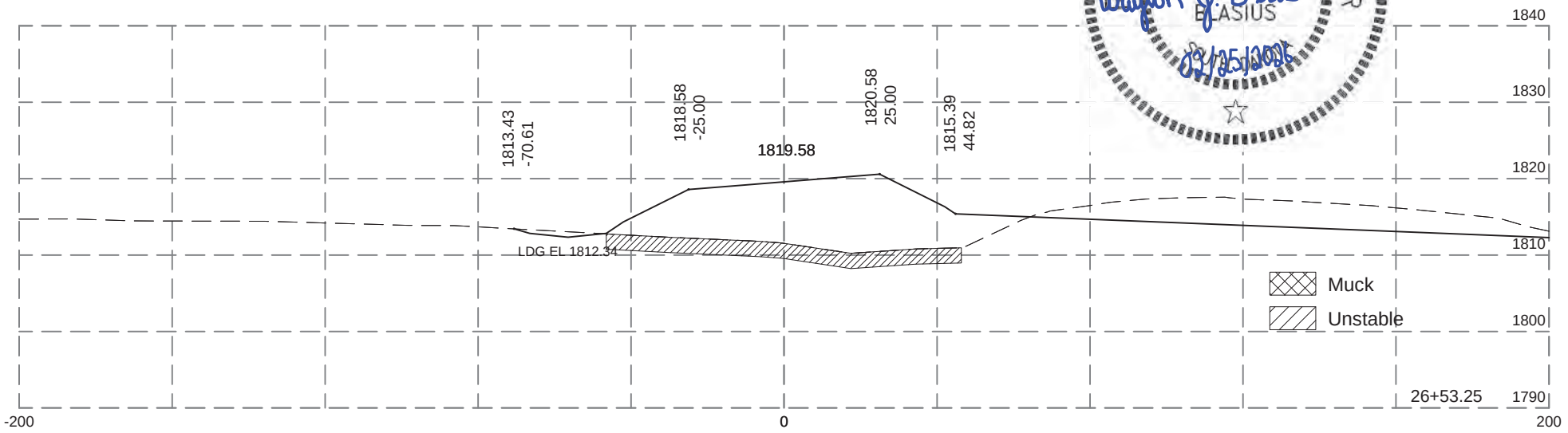


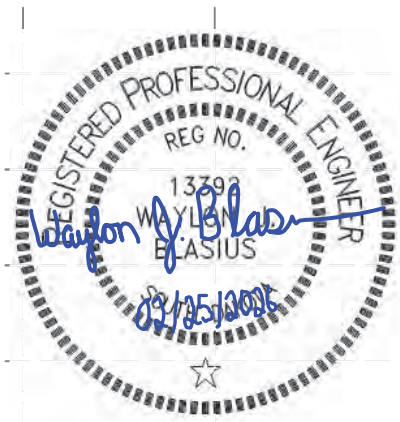
FOR BIDDING PURPOSES ONLY











BAI JOB # 23190-10

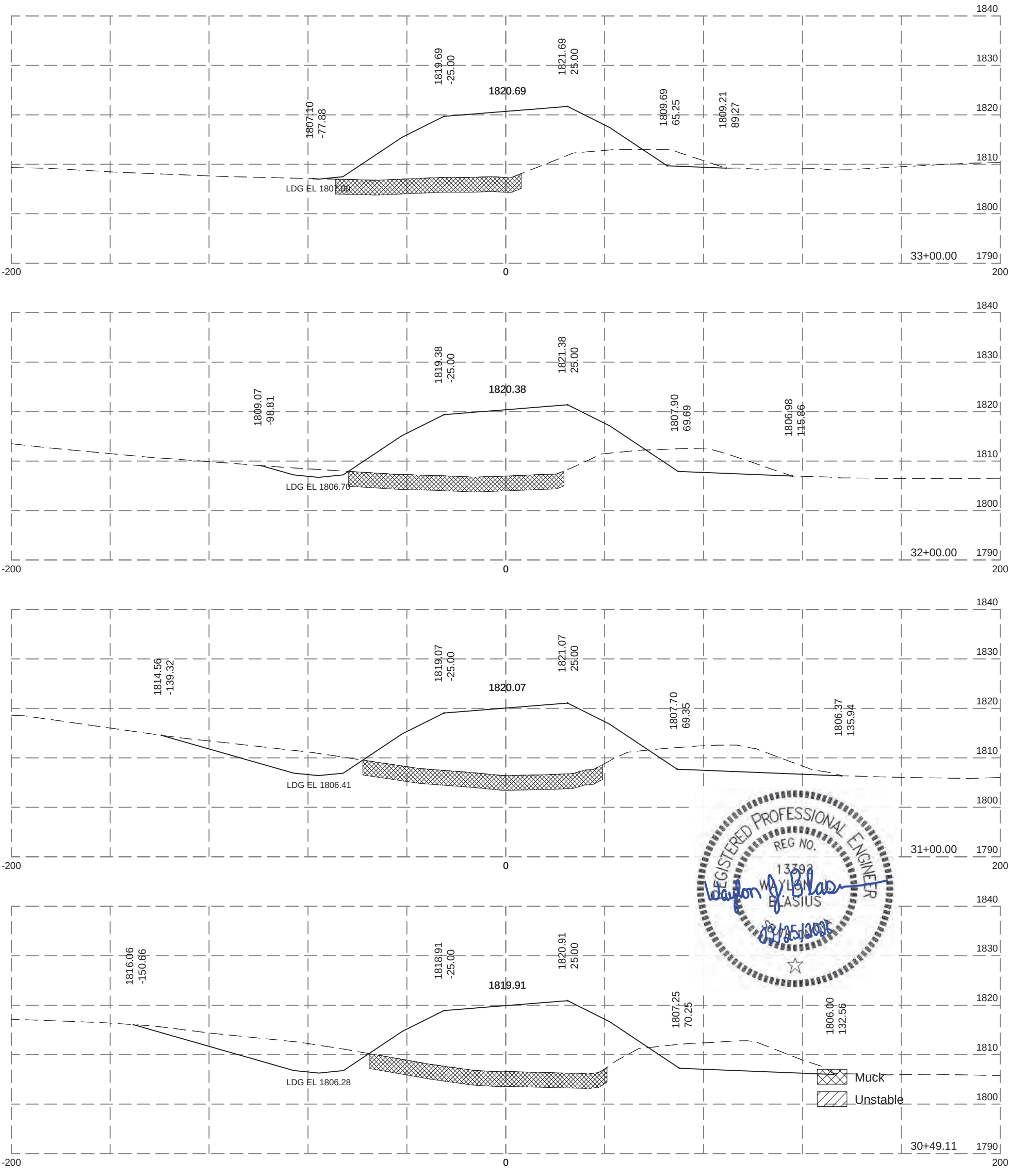
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	222	267

Plotting Date: 10/01/2025

Rev:

US HIGHWAY 18 EAST

FOR BIDDING PURPOSES ONLY



REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON J. BLASIUS
03/25/2026

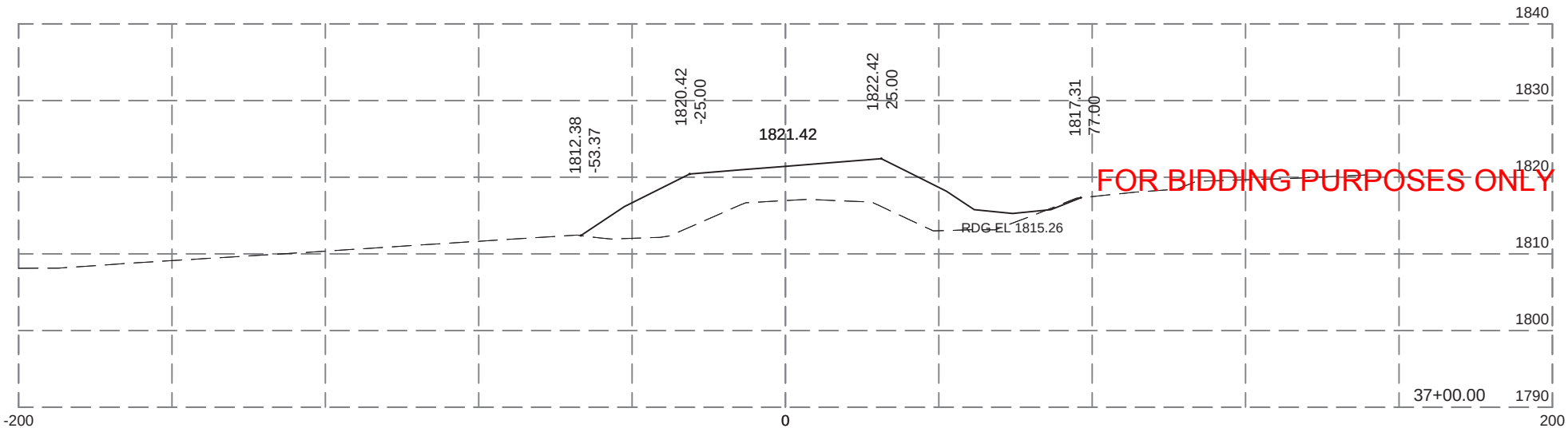
BAI JOB # 23190-10

Plotting Date: 10/01/2025

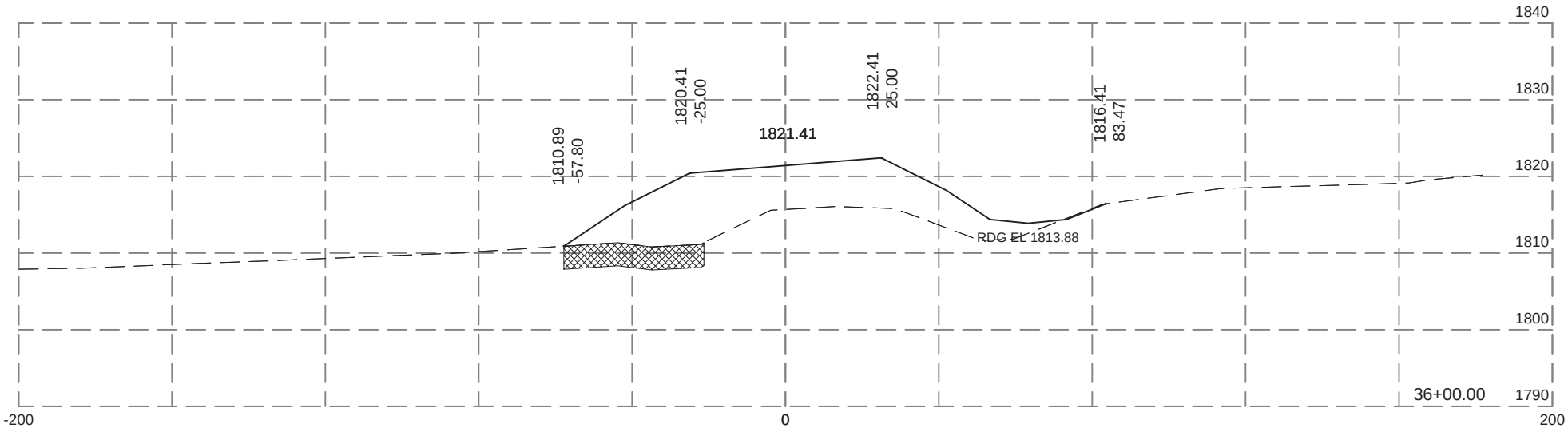
Rev:

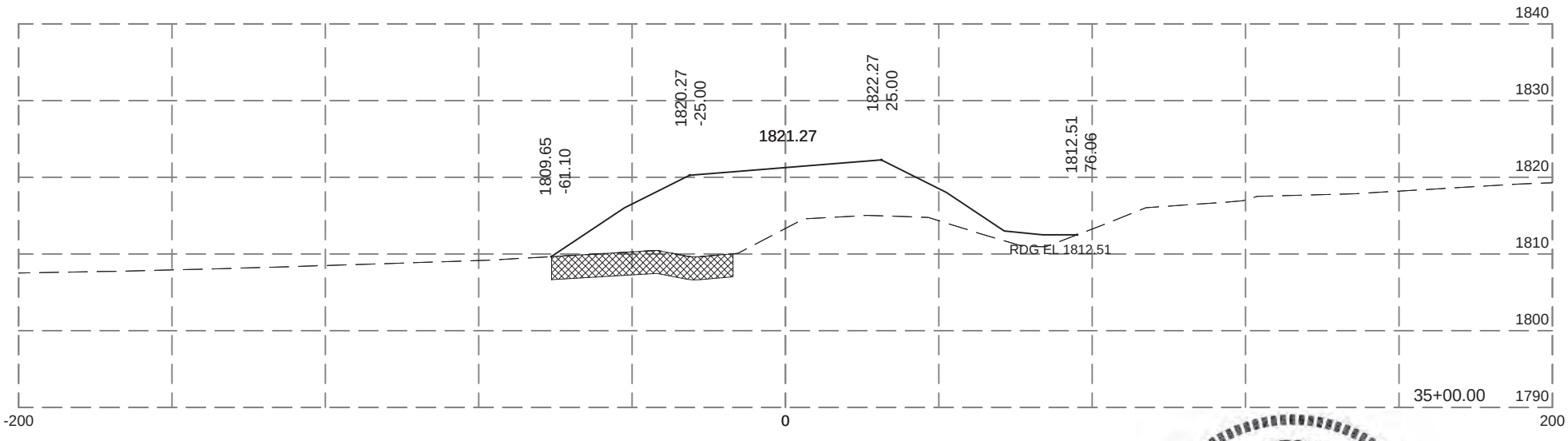
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	223	267

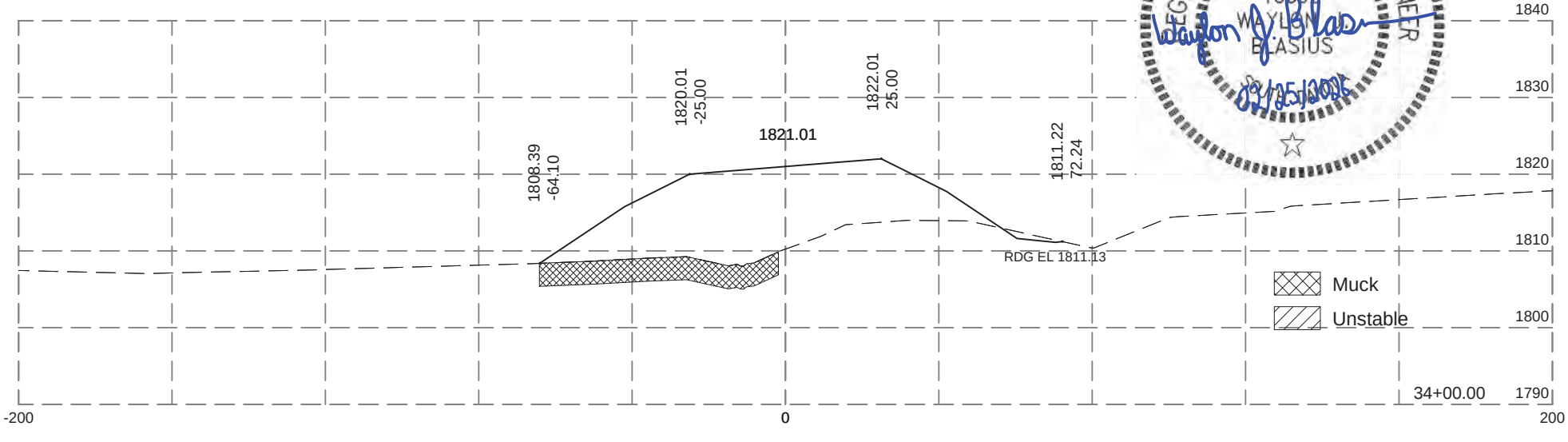
US HIGHWAY 18 EAST

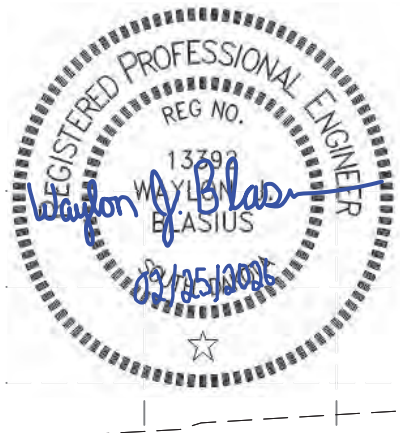


FOR BIDDING PURPOSES ONLY









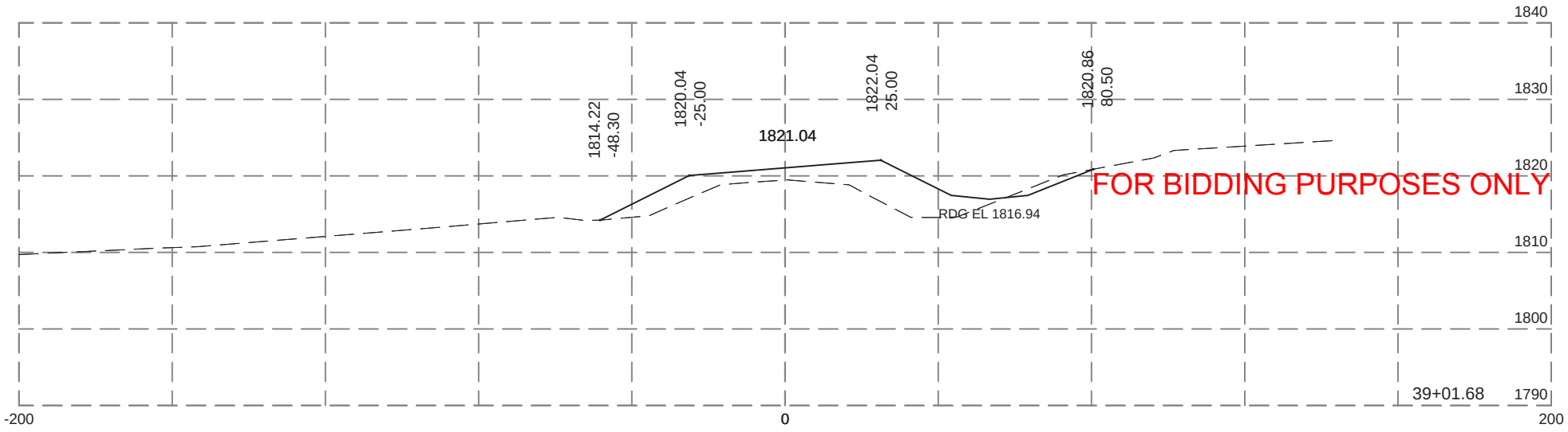
BAI JOB # 23190-10

Plotting Date: 10/01/2025

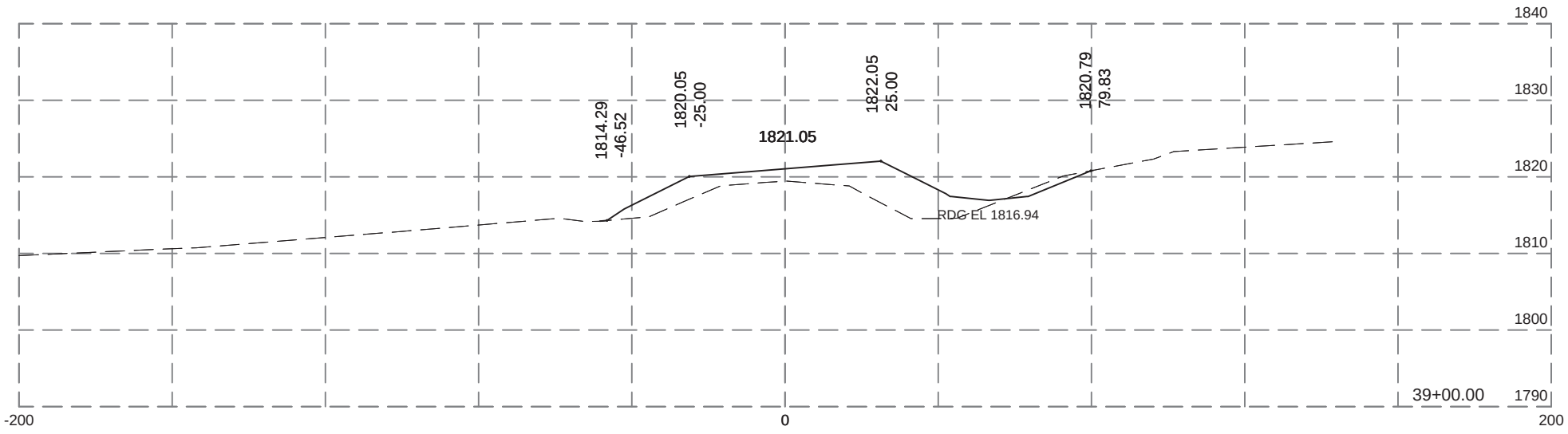
Rev:

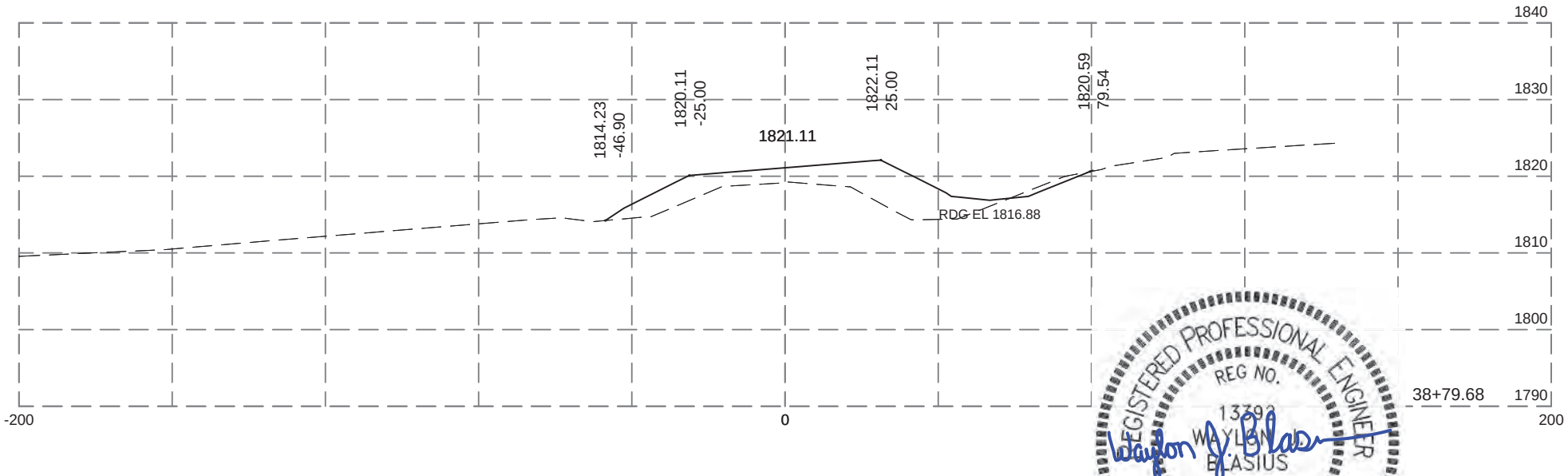
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	224	267

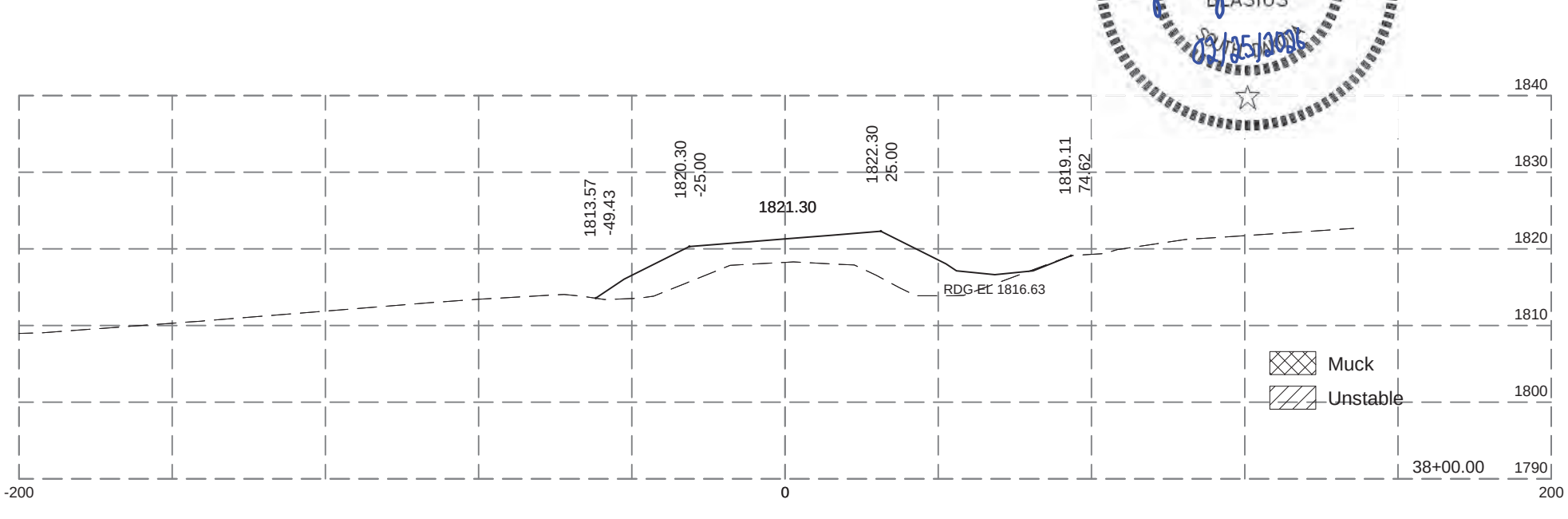
US HIGHWAY 18 EAST



FOR BIDDING PURPOSES ONLY







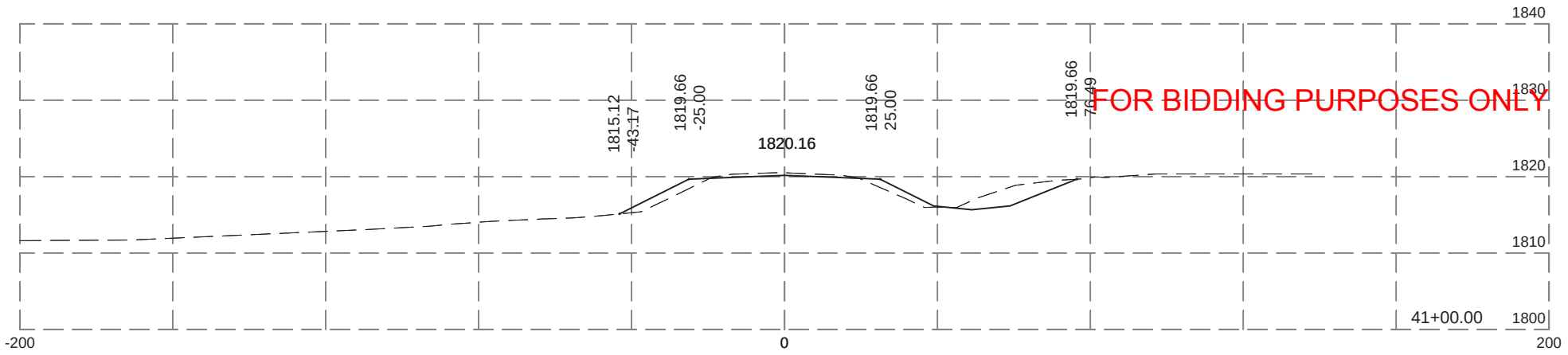
REGISTERED PROFESSIONAL ENGINEER
REG NO. 13390
WAYLON J. BLASIUS
10/25/2025

BAI JOB # 23190-10

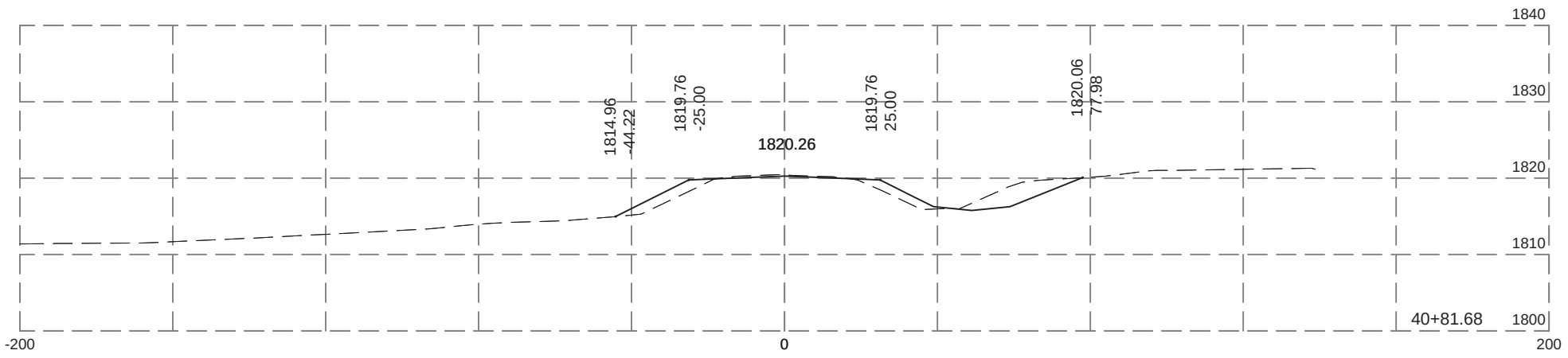
Plotting Date: 10/01/2025 Rev:

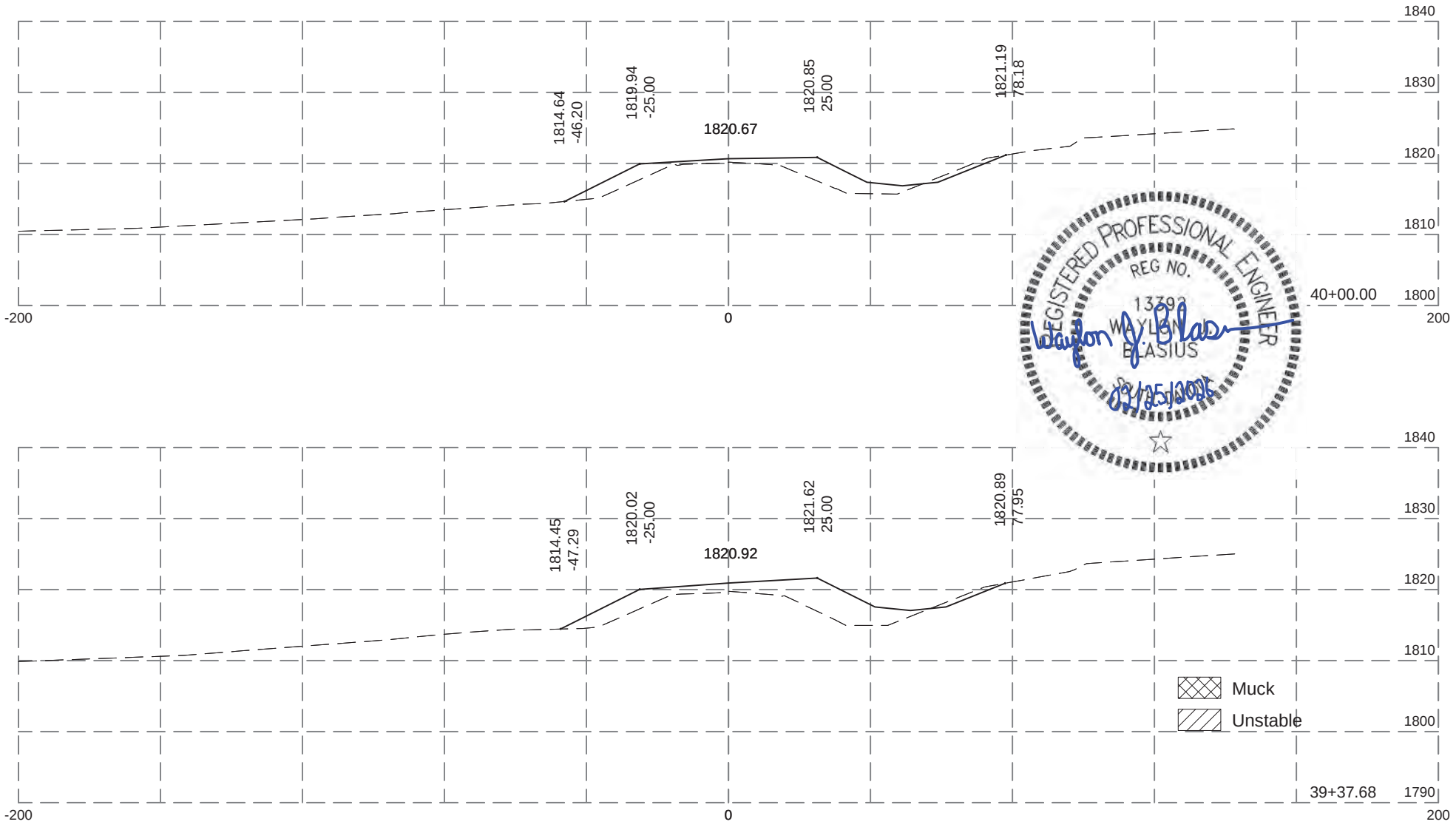
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	225	267

US HIGHWAY 18 EAST



FOR BIDDING PURPOSES ONLY





REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON J.
BLASIUS
SOUTH DAKOTA
10/15/2025

Muck
Unstable

BAI JOB # 23190-10

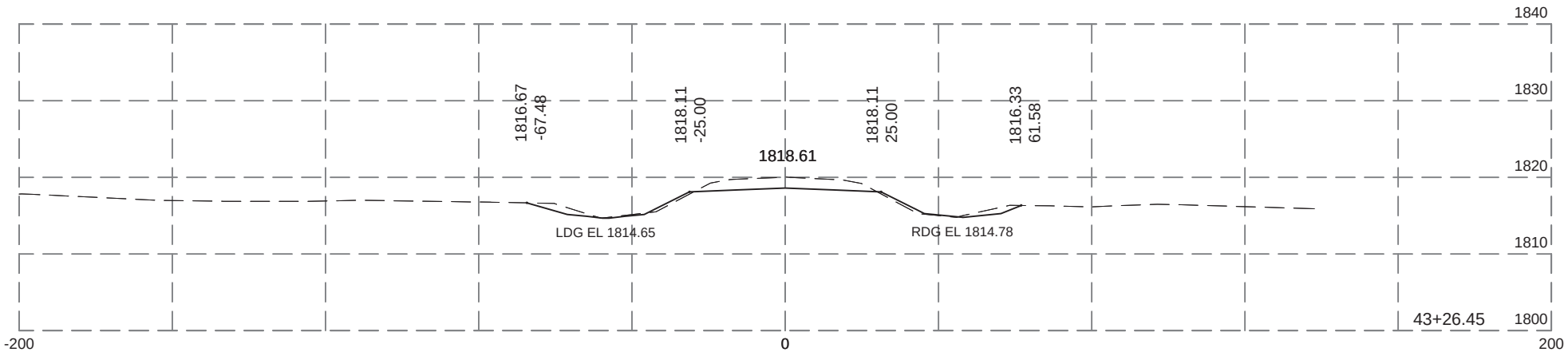
Plotting Date: 10/01/2025

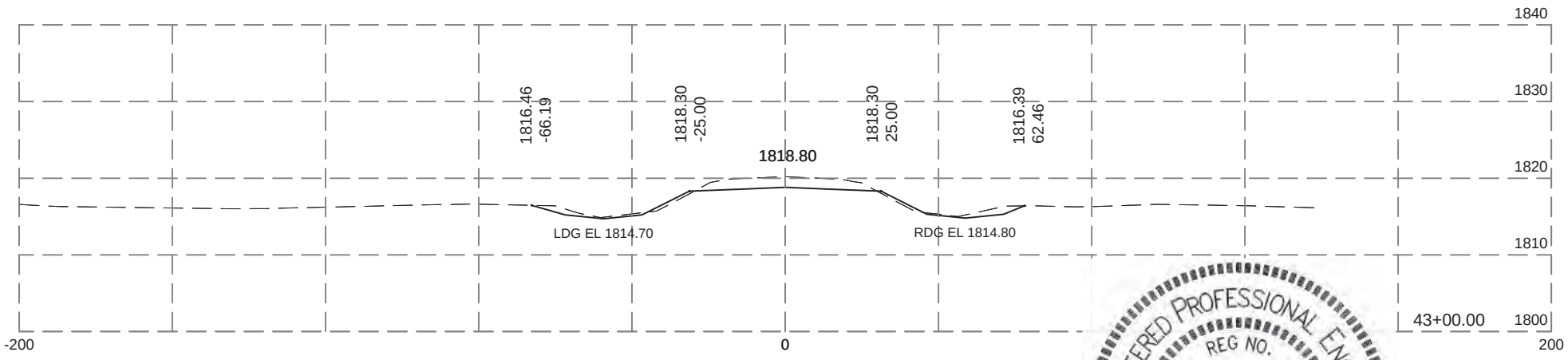
Rev:

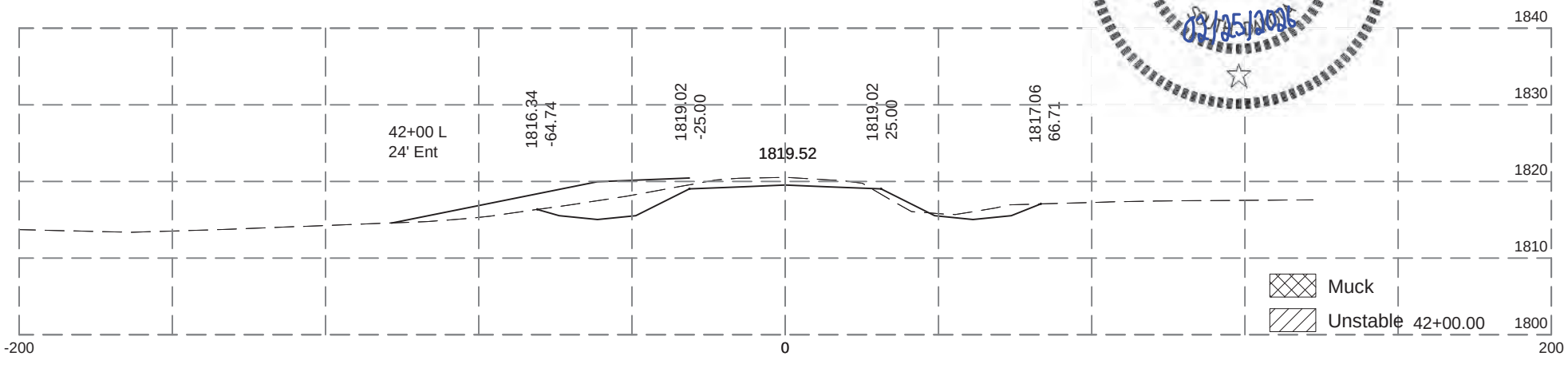
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	226	267

US HIGHWAY 18 EAST

FOR BIDDING PURPOSES ONLY







REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON J. BLASIUS
03/25/2026

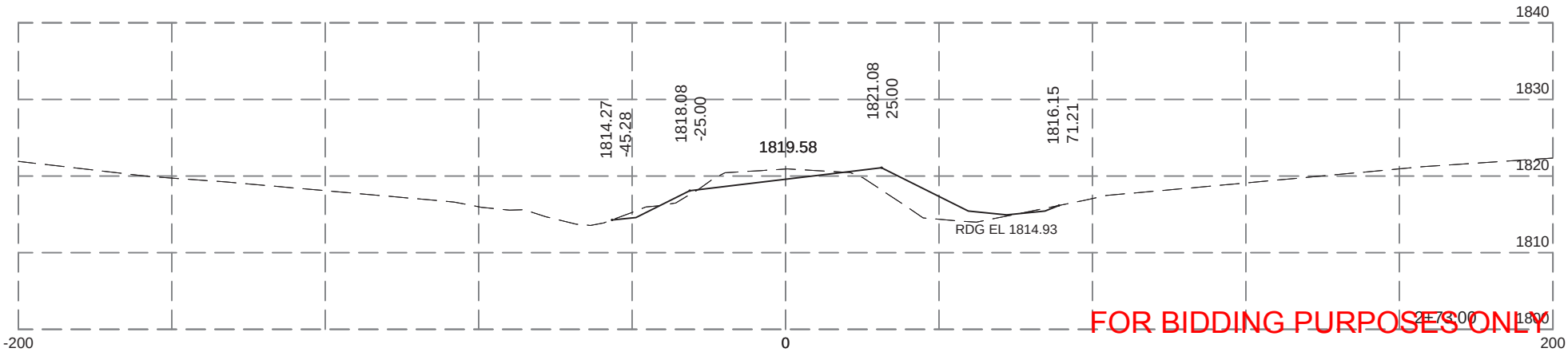
BAI JOB # 23190-10

Plotting Date: 10/01/2025

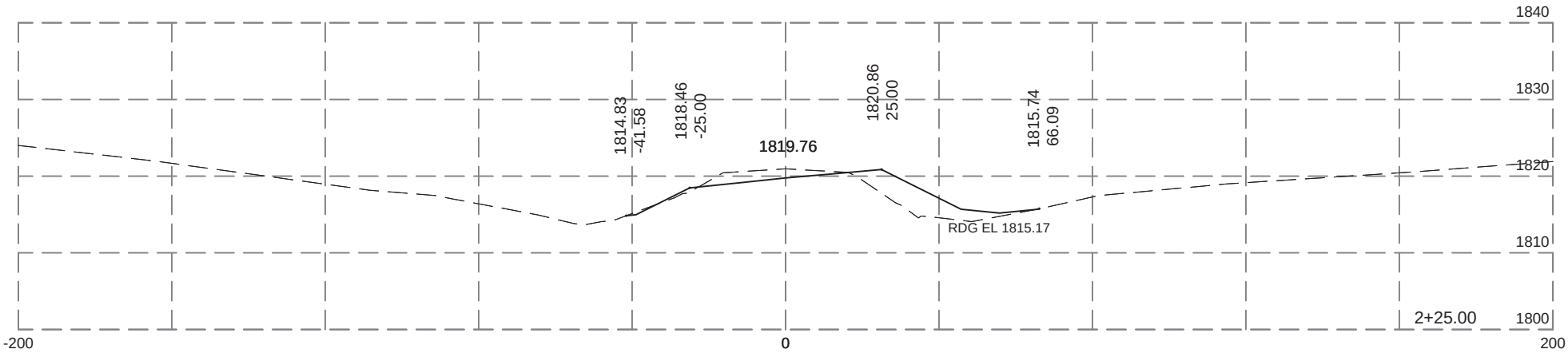
Rev:

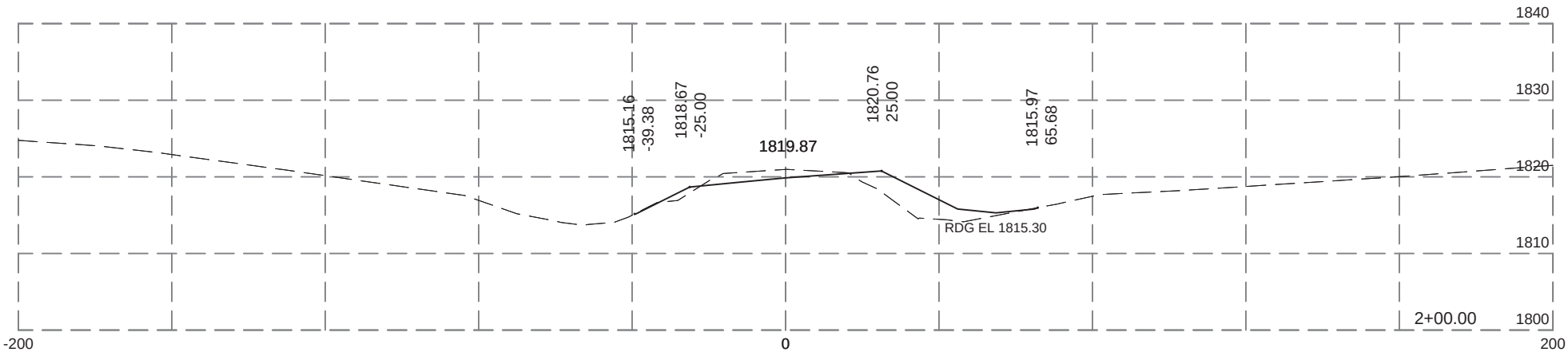
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	227	267

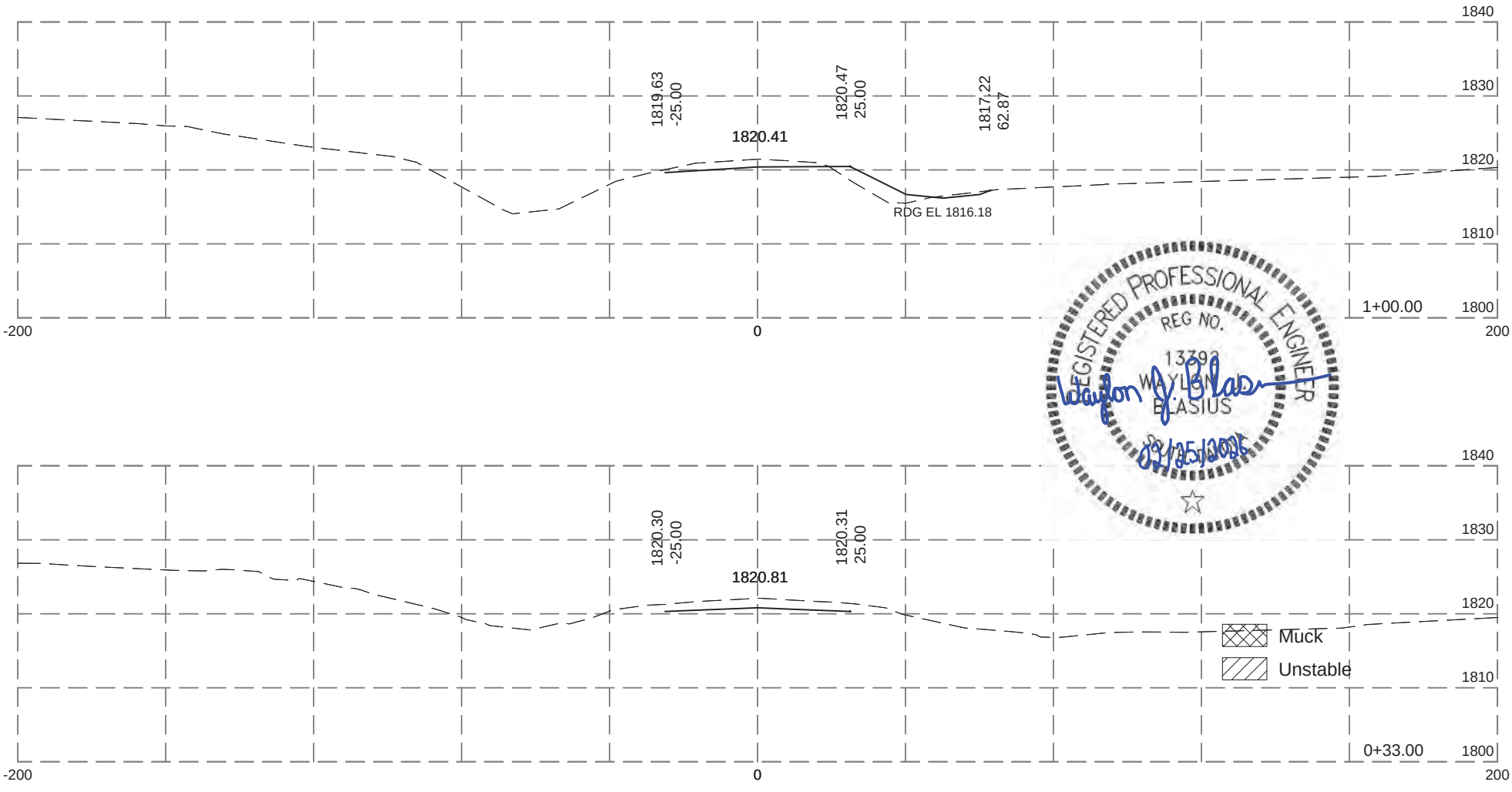
US HIGHWAY 281



FOR BIDDING PURPOSES ONLY







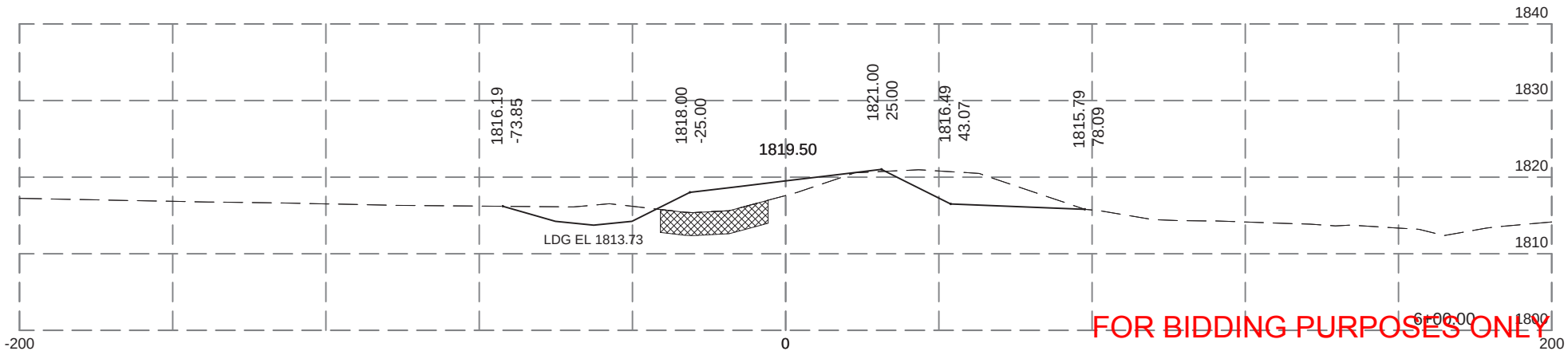
REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON J.
BLASIUS
10/1/2025

BAI JOB # 23190-10

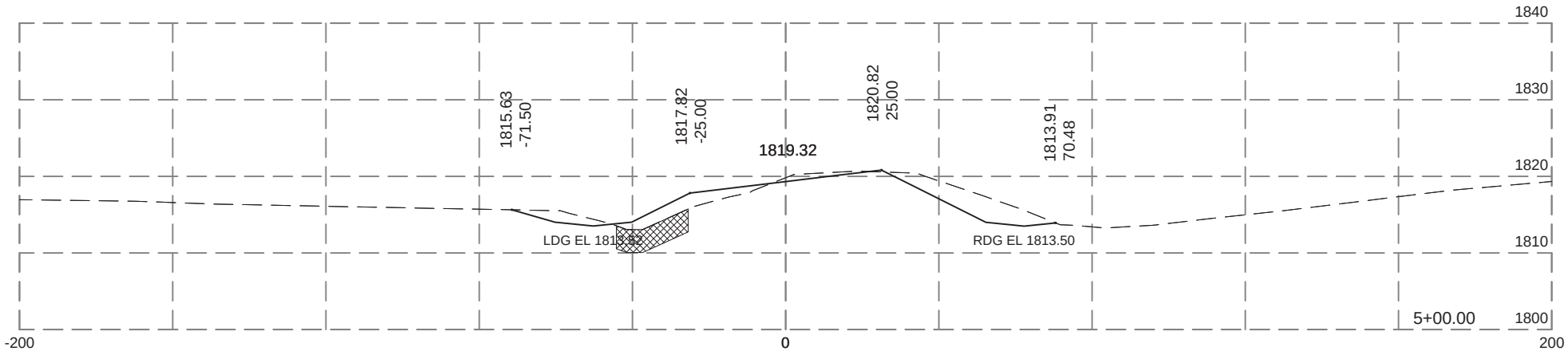
Plotting Date: 10/01/2025 Rev:

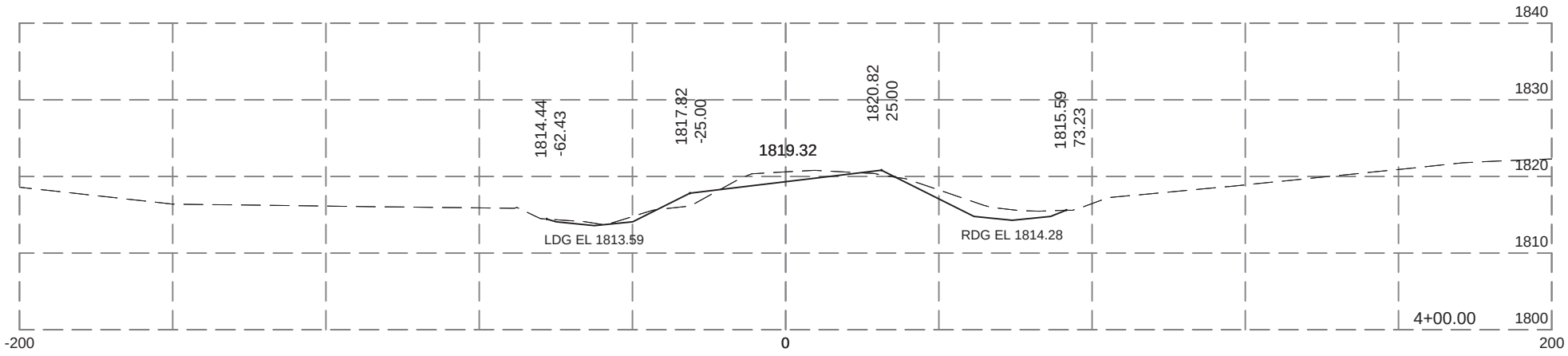
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	228	267

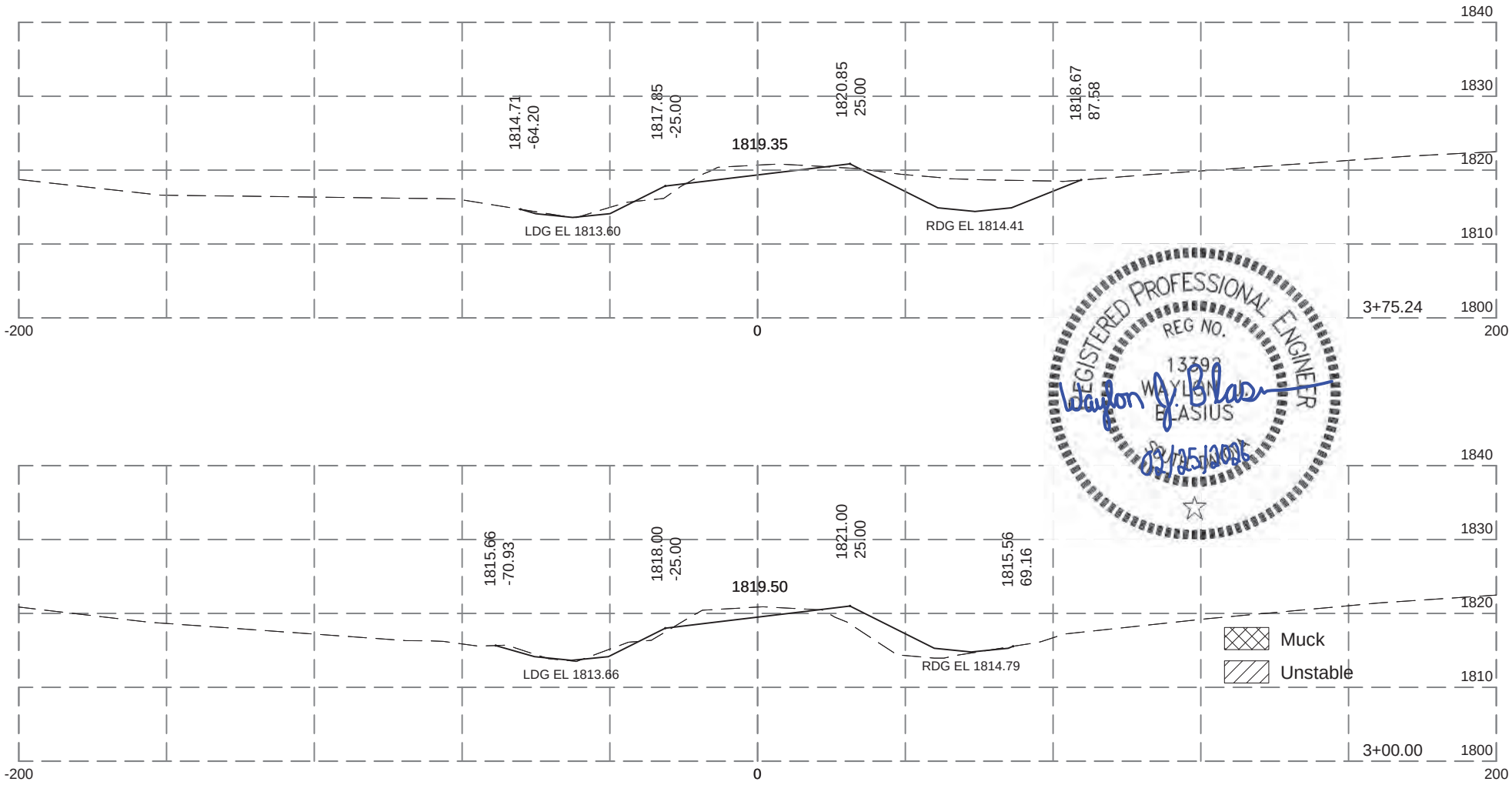
US HIGHWAY 281



FOR BIDDING PURPOSES ONLY







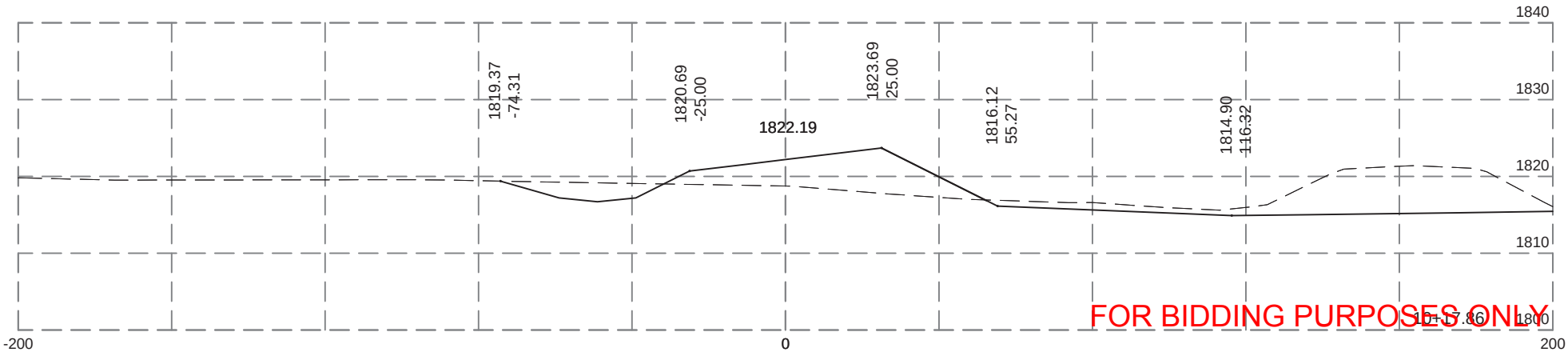
BAI JOB # 23190-10

Plotting Date: 10/01/2025

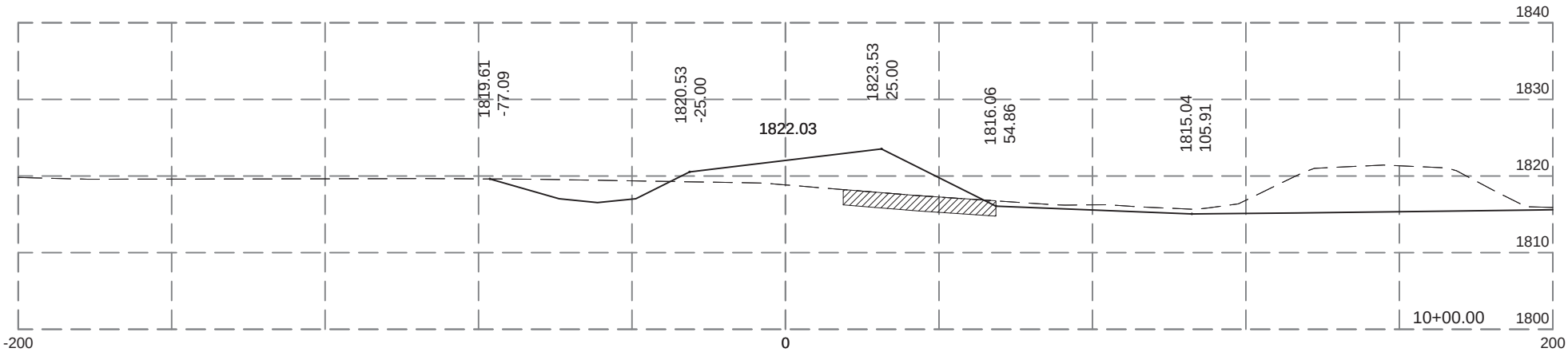
Rev:

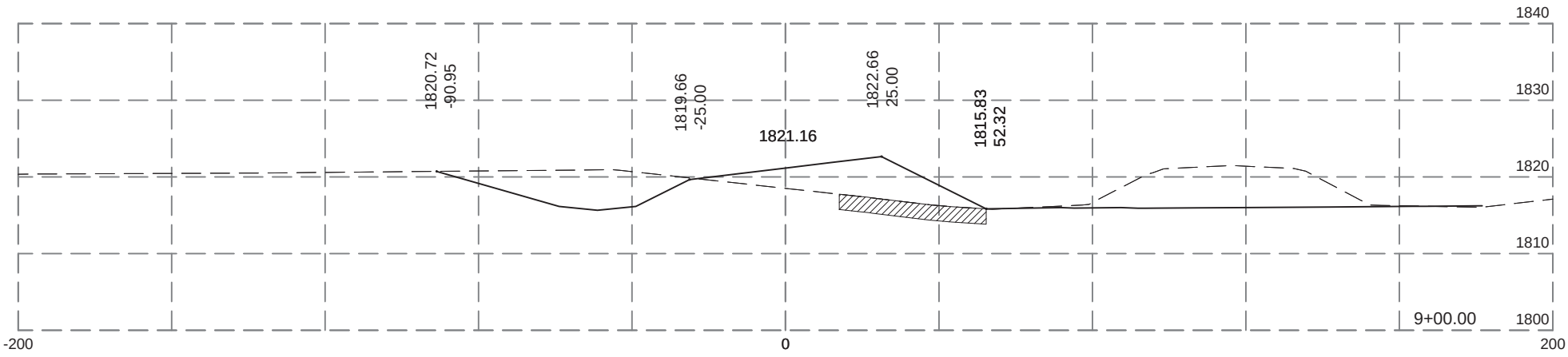
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	229	267

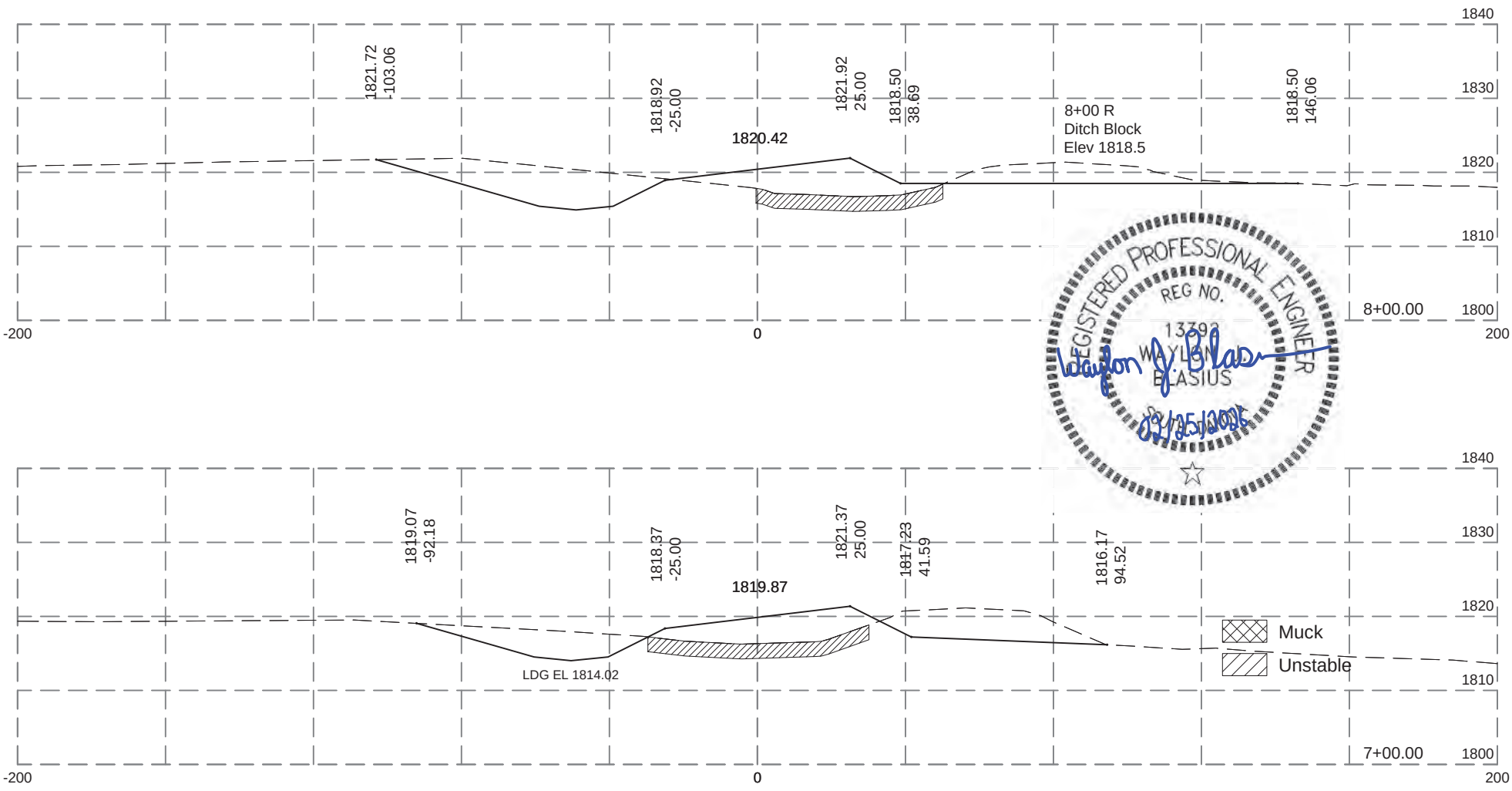
US HIGHWAY 281



FOR BIDDING PURPOSES ONLY







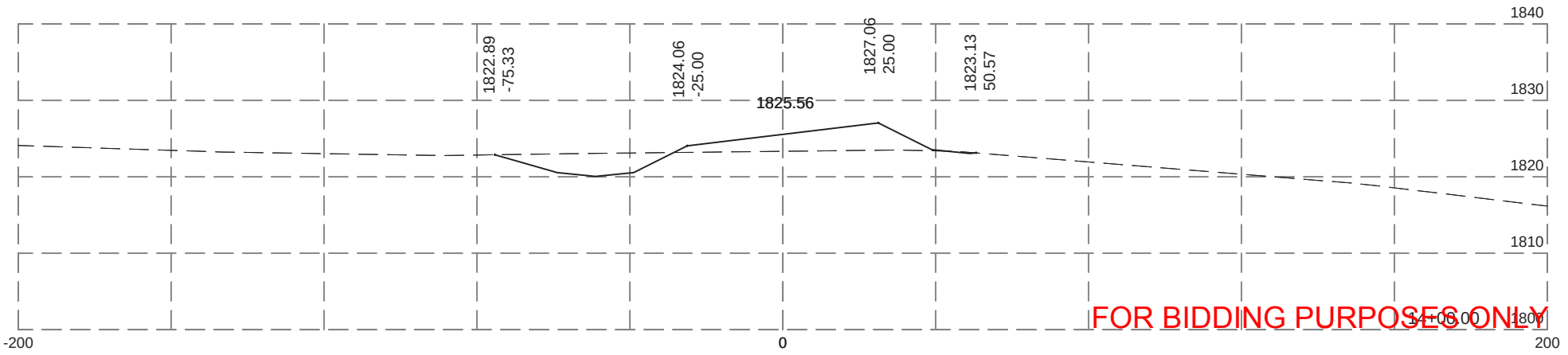
REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON J. BLASIUS
10/25/2025

BAI JOB # 23190-10

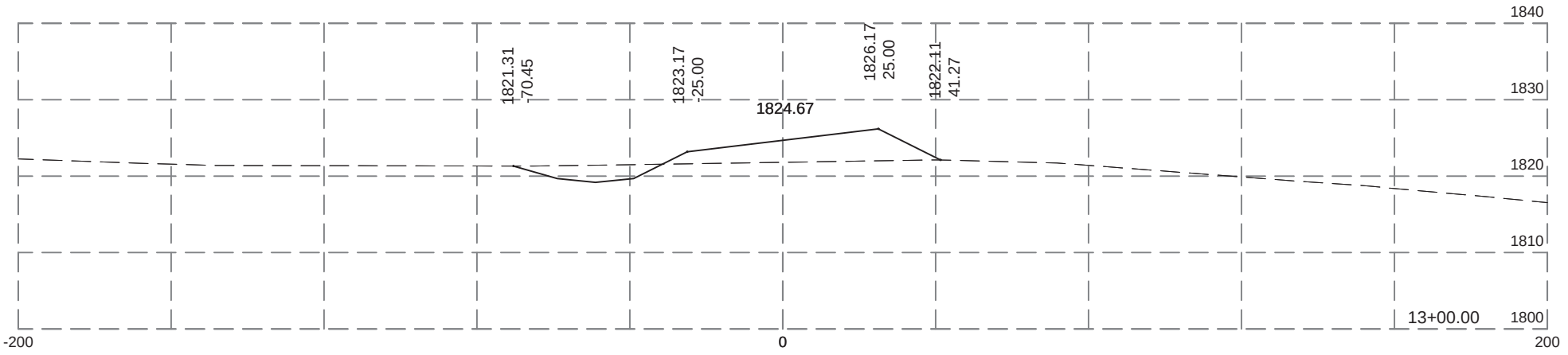
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	230	267

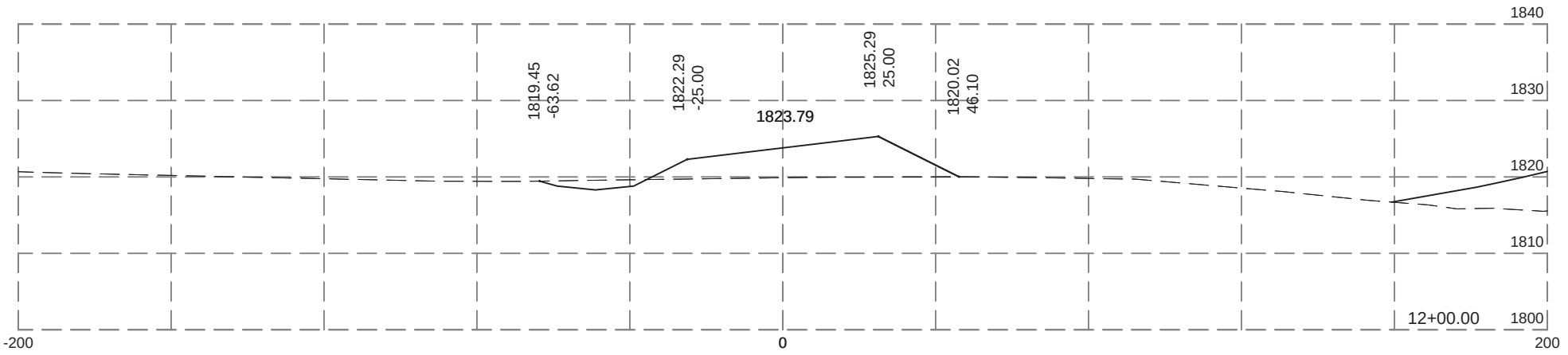
Plotting Date: 10/01/2025 Rev:

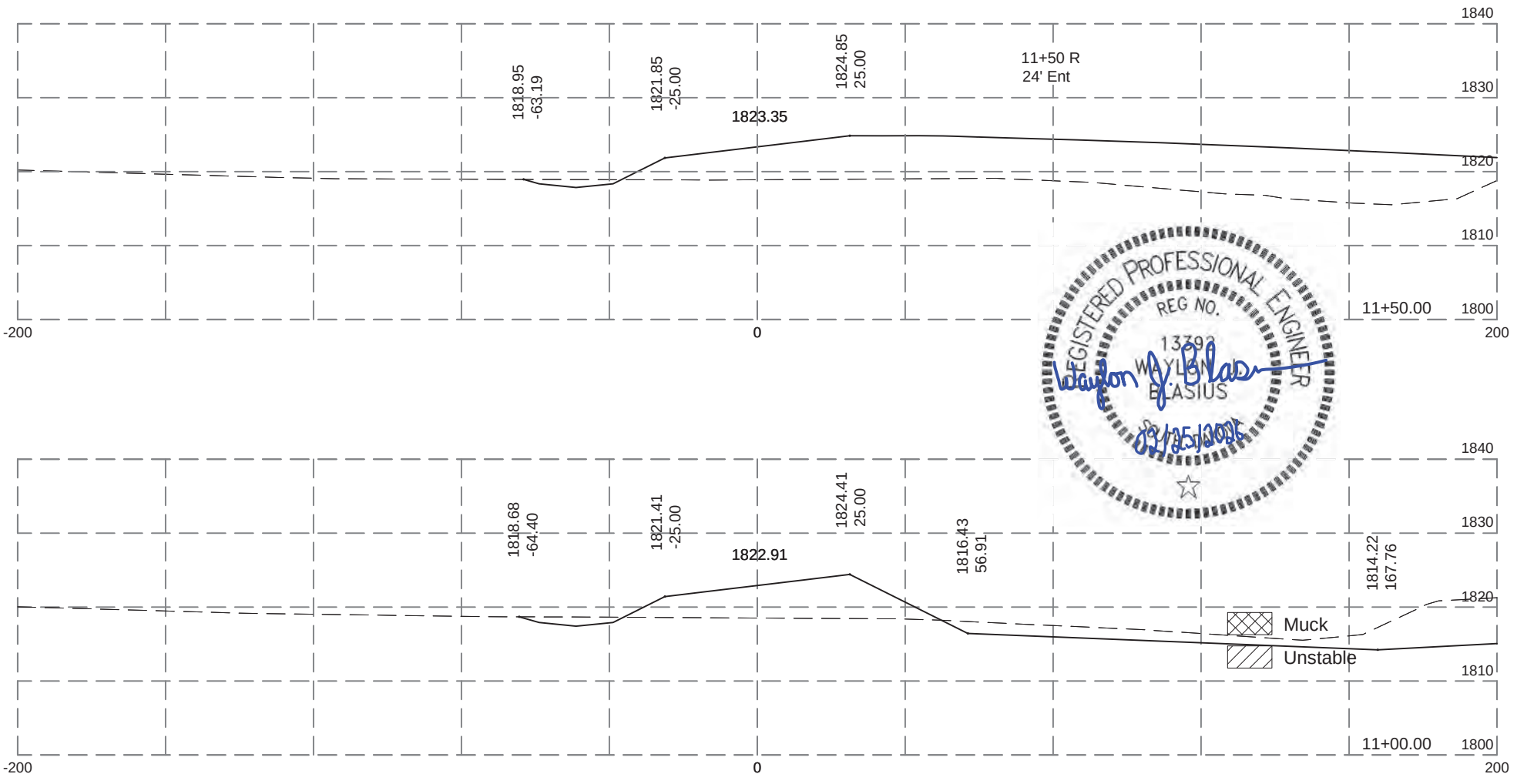
US HIGHWAY 281



FOR BIDDING PURPOSES ONLY







REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON J. BLASIUS
10/25/2025

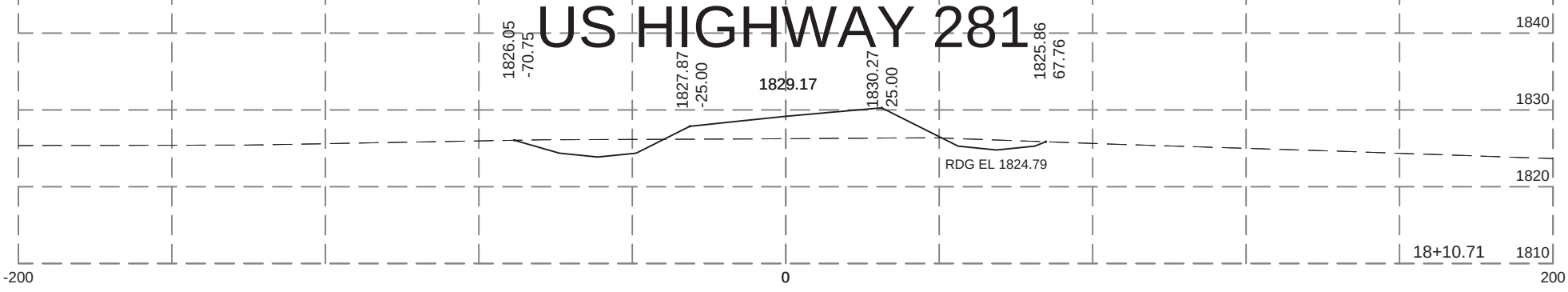
BAI JOB # 23190-10

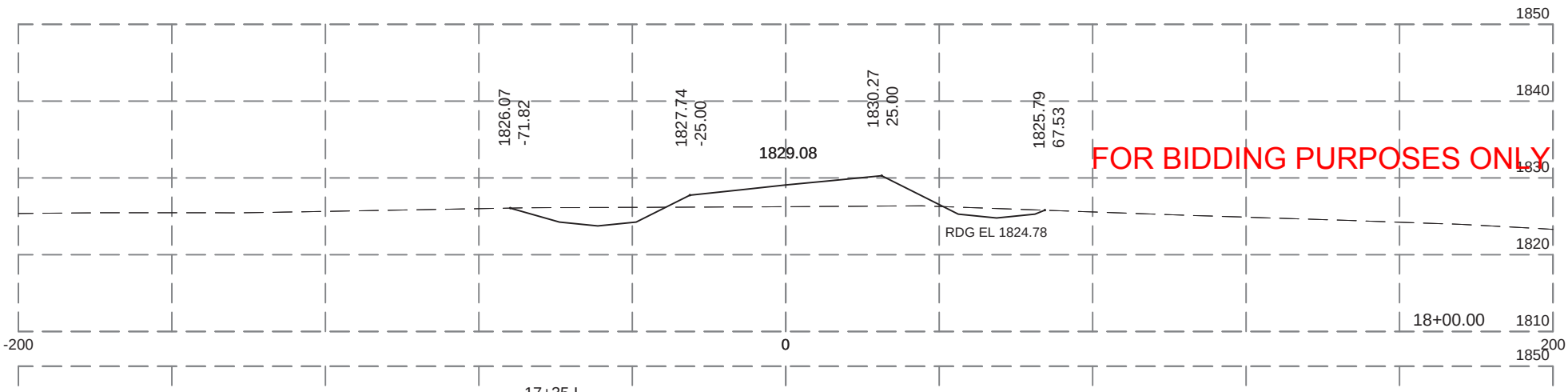
Plotting Date: 10/01/2025

Rev:

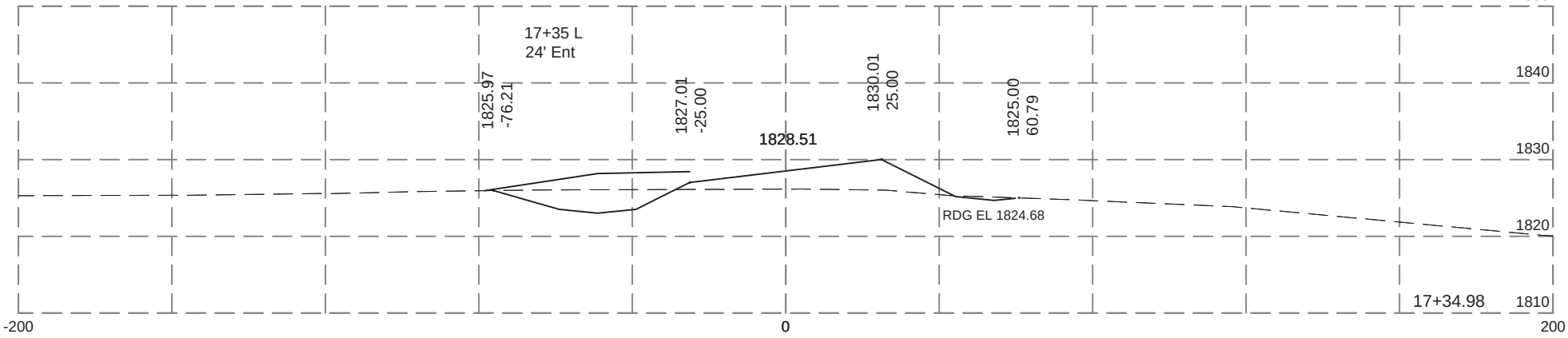
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	231	267

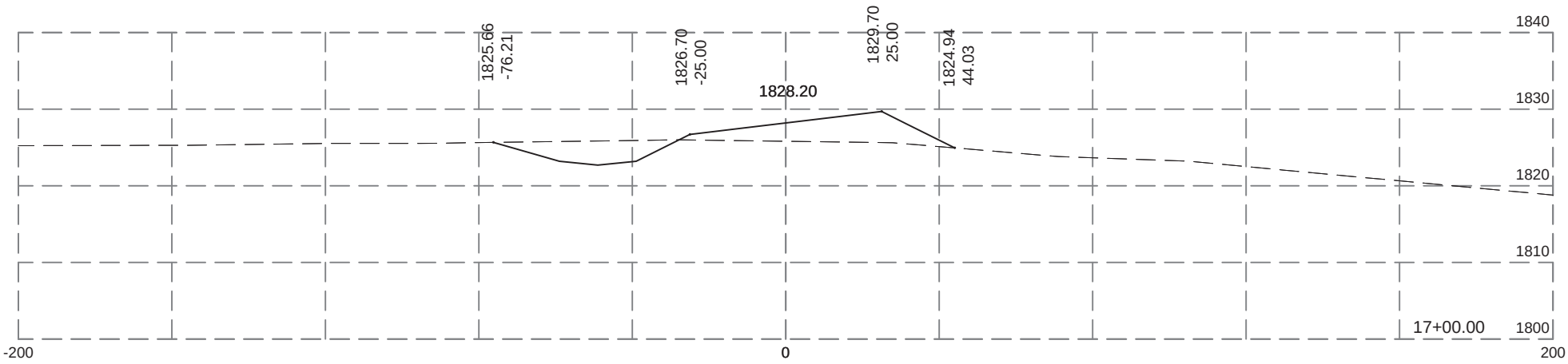
US HIGHWAY 281

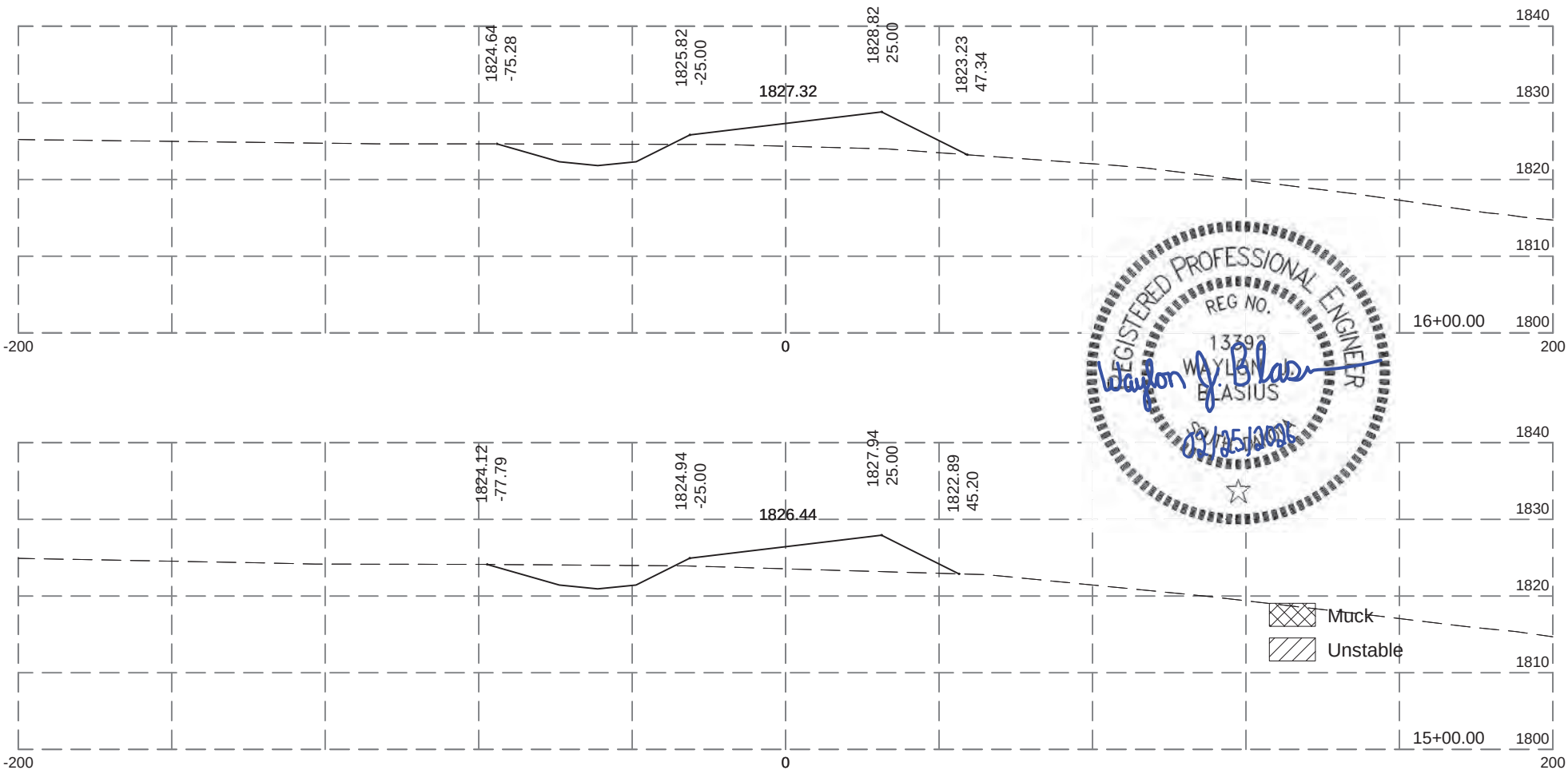




FOR BIDDING PURPOSES ONLY





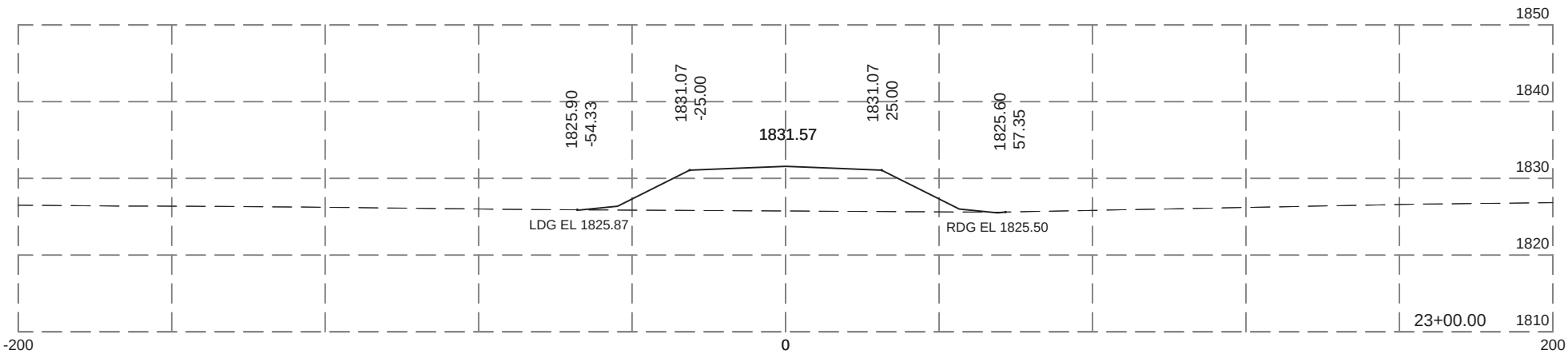


BAI JOB # 23190-10

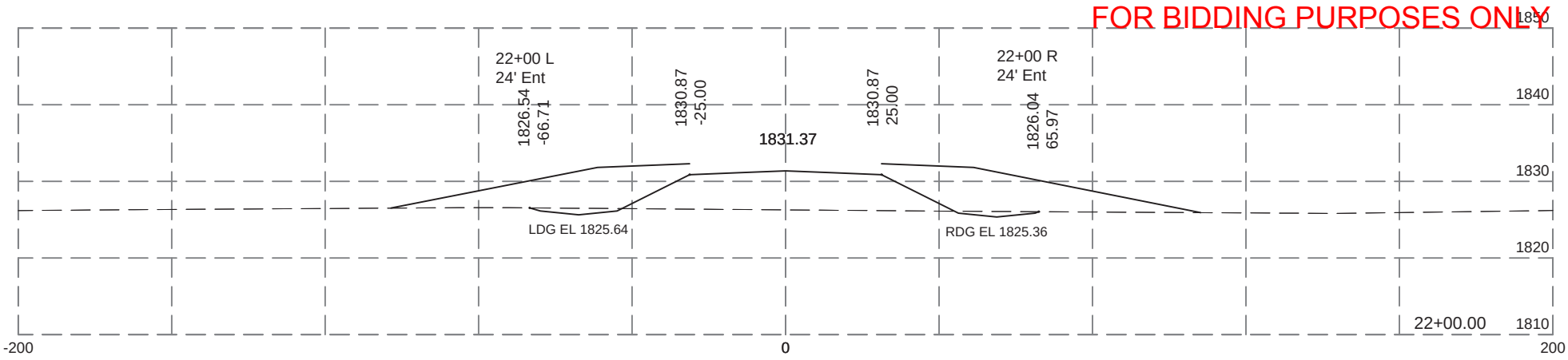
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	232	267

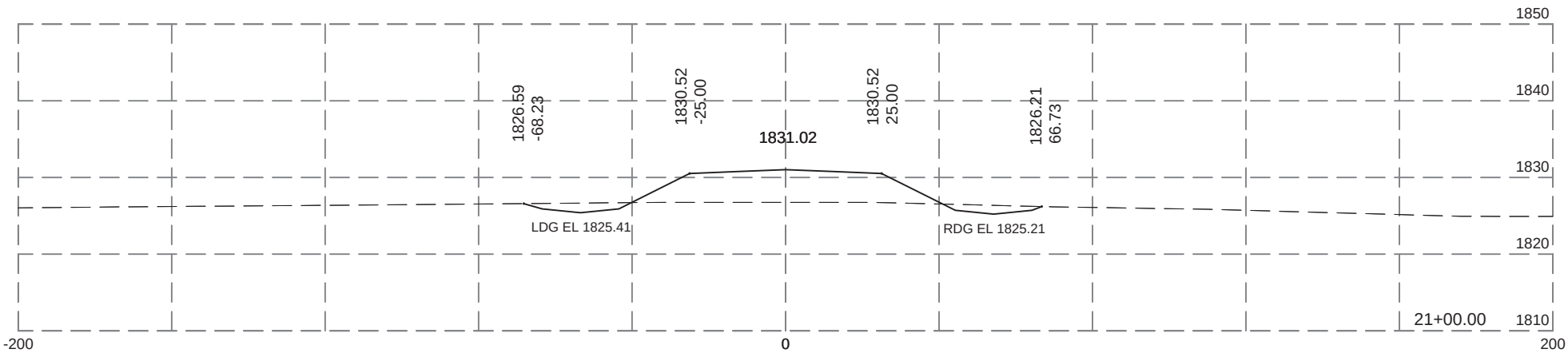
Plotting Date: 10/01/2025 Rev:

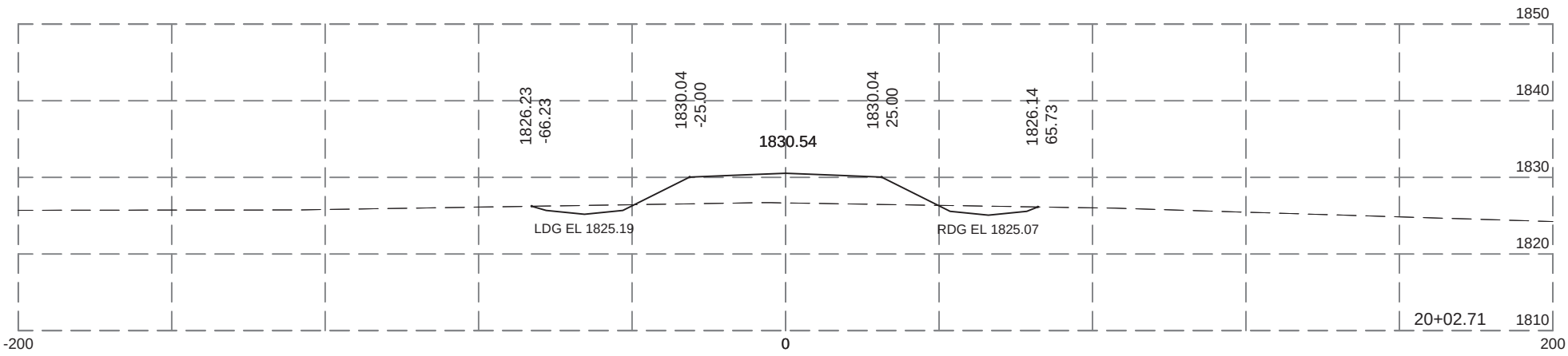
US HIGHWAY 281

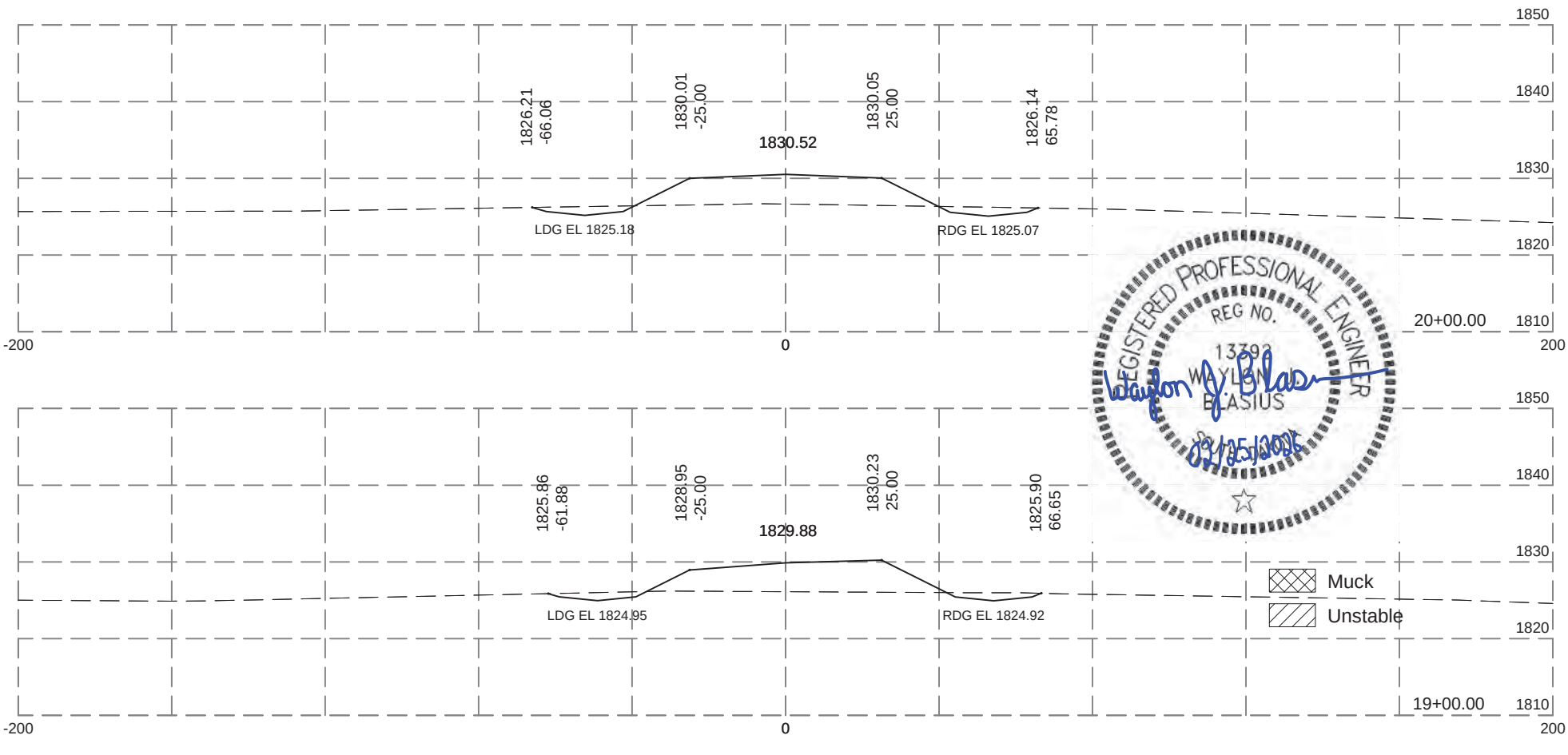


FOR BIDDING PURPOSES ONLY









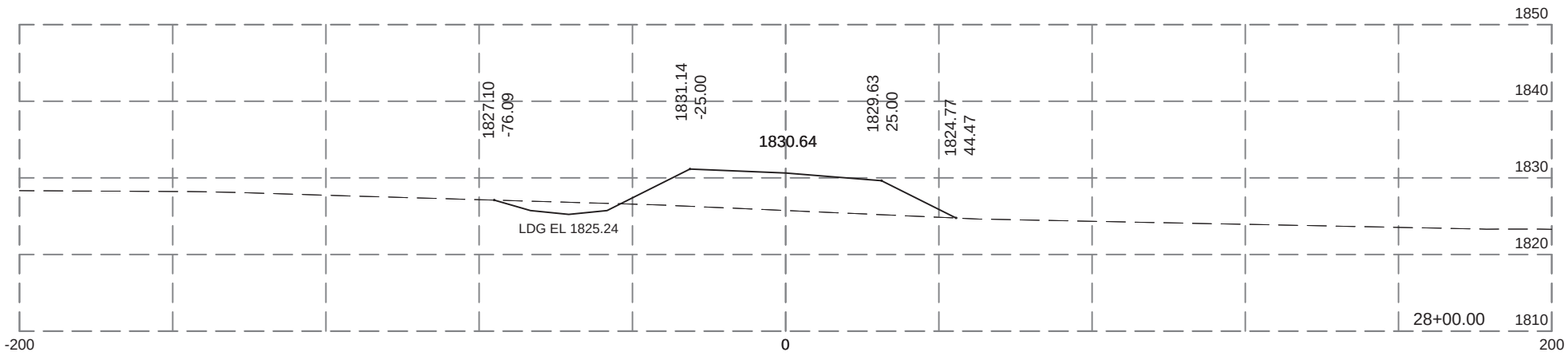
REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON
BLASIUS
10/25/2025

BAI JOB # 23190-10

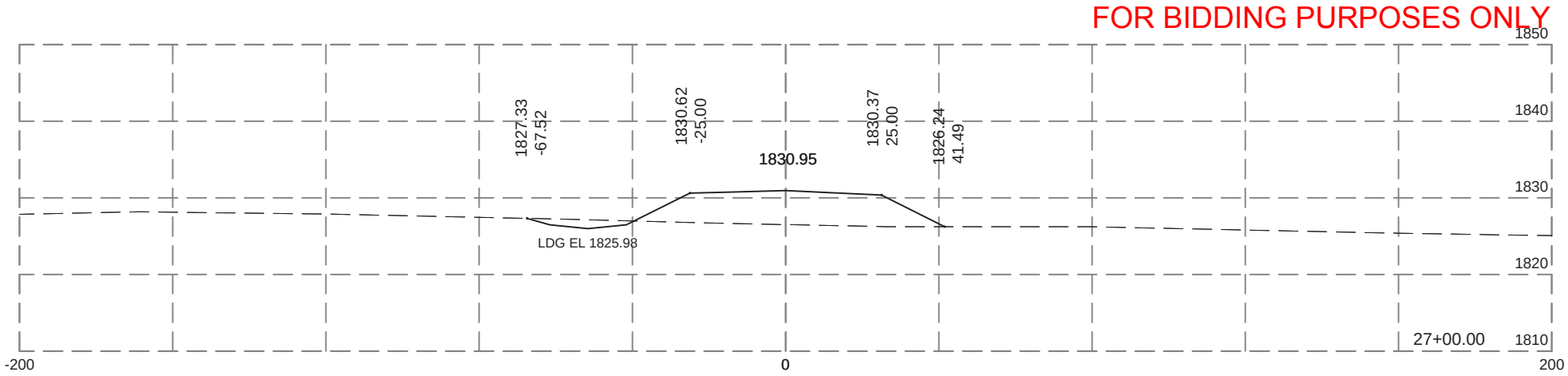
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	233	267

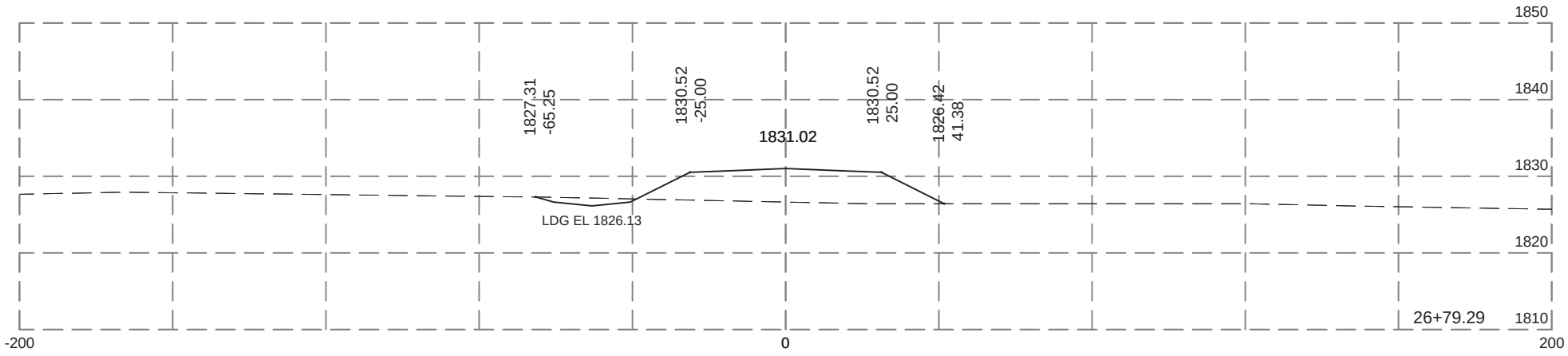
Plotting Date: 10/01/2025 Rev:

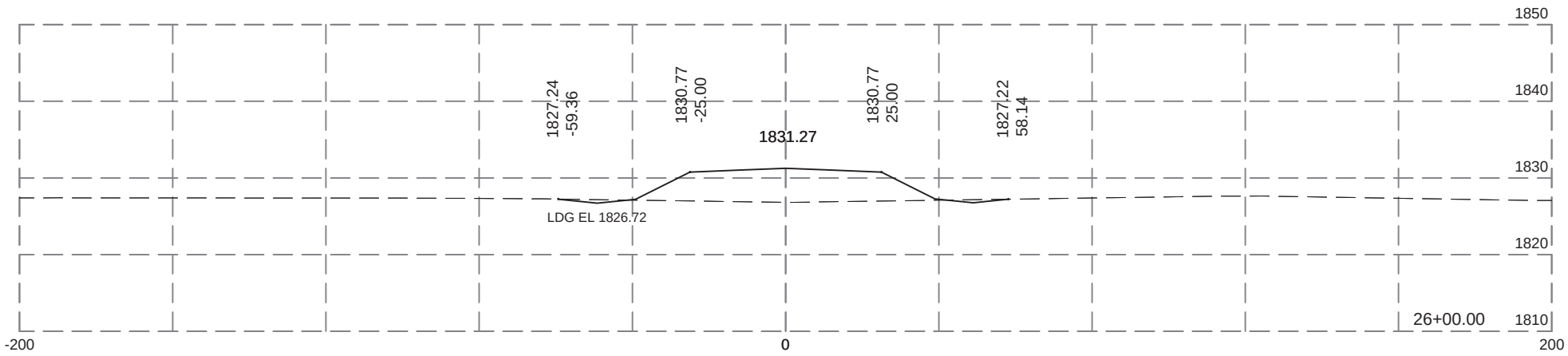
US HIGHWAY 281

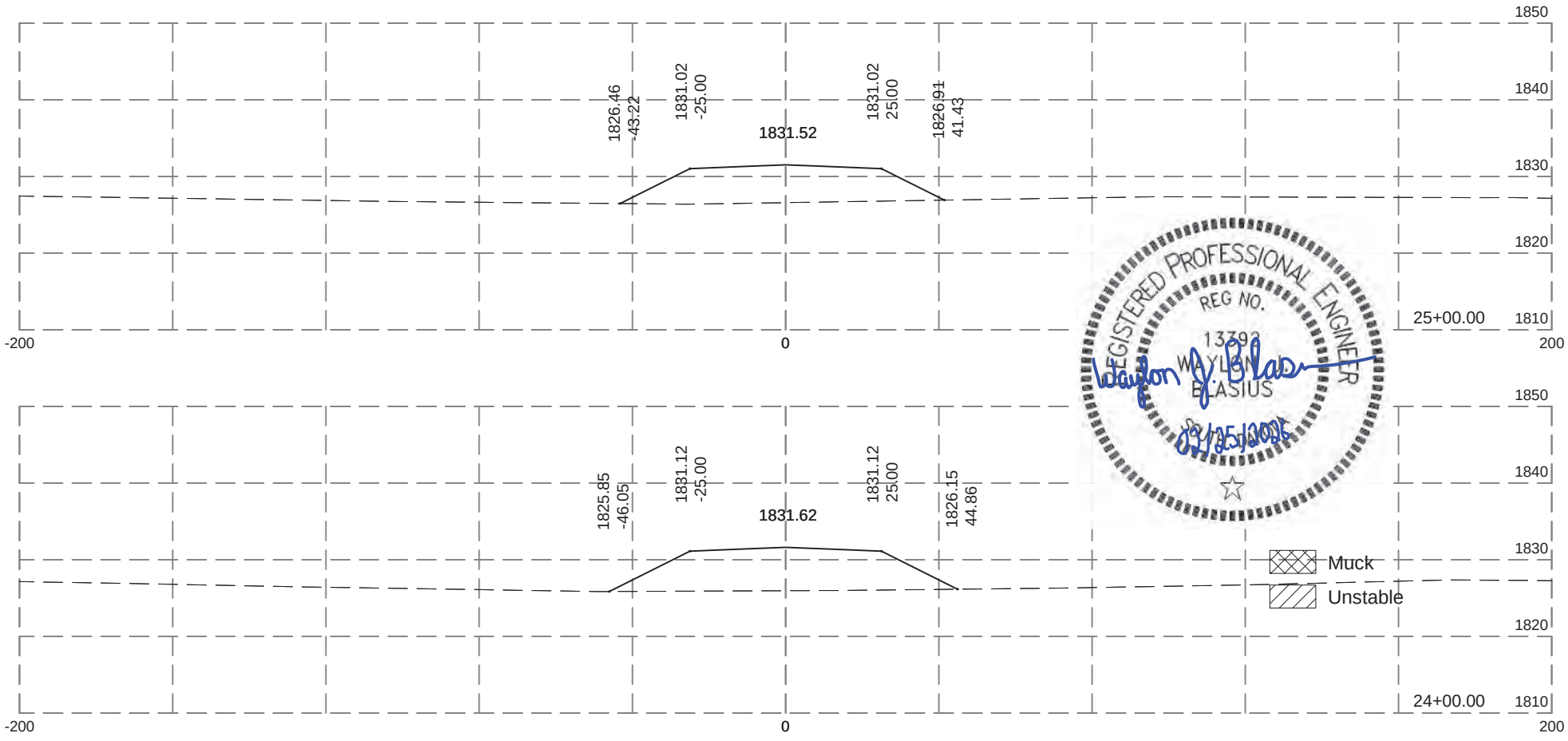


FOR BIDDING PURPOSES ONLY









REGISTERED PROFESSIONAL ENGINEER
REG NO. 13392
WAYLON D. BLASIUS
10/01/2025

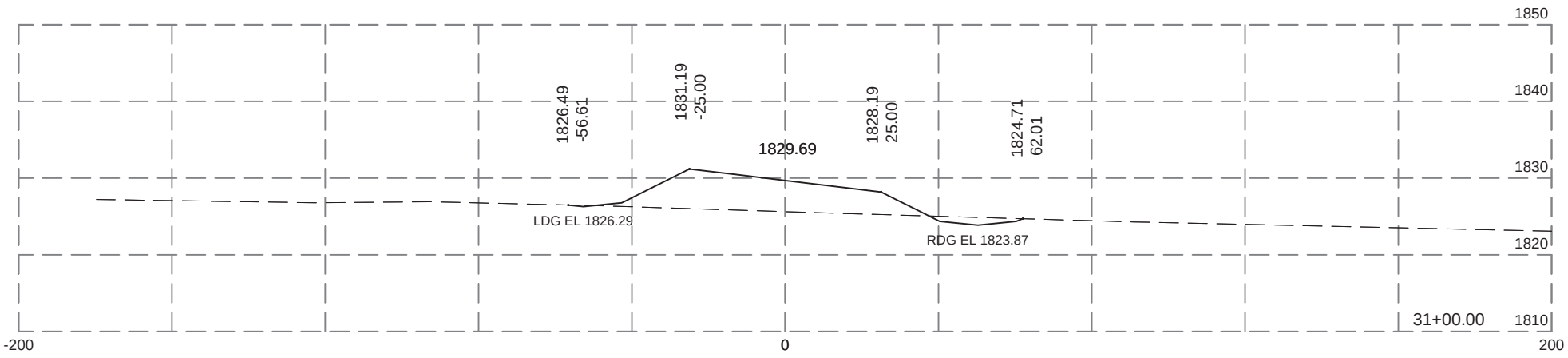
Muck
Unstable

BAI JOB # 23190-10

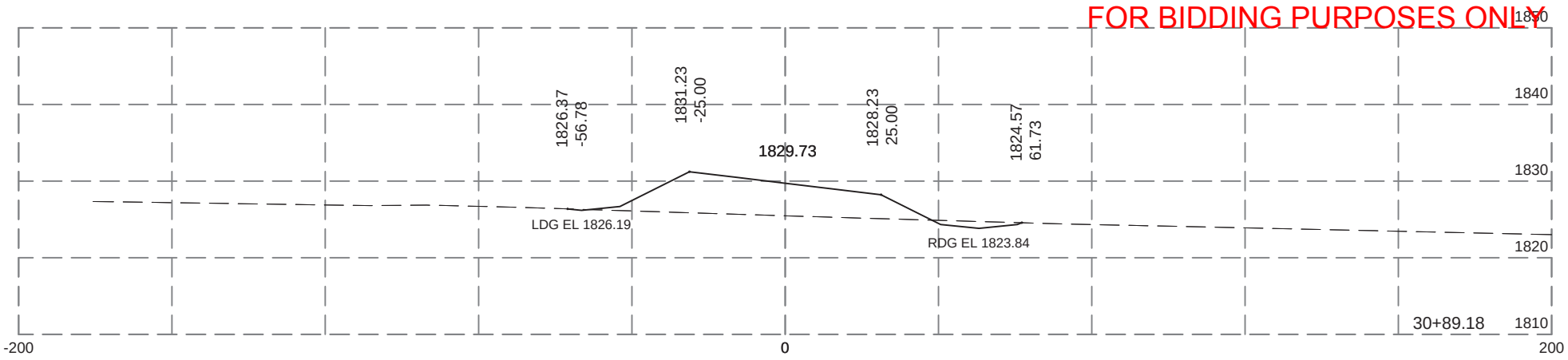
Plotting Date: 10/01/2025 Rev:

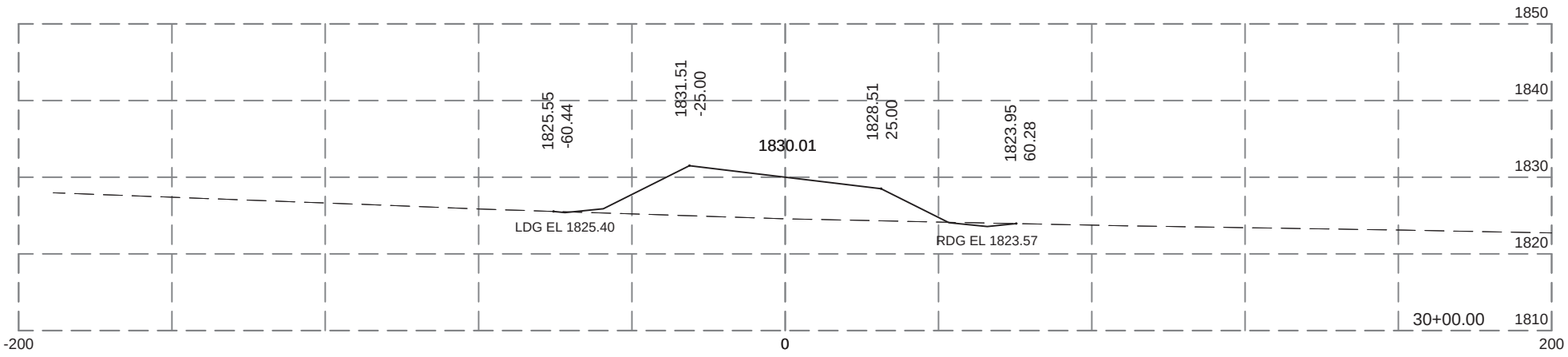
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	234	267

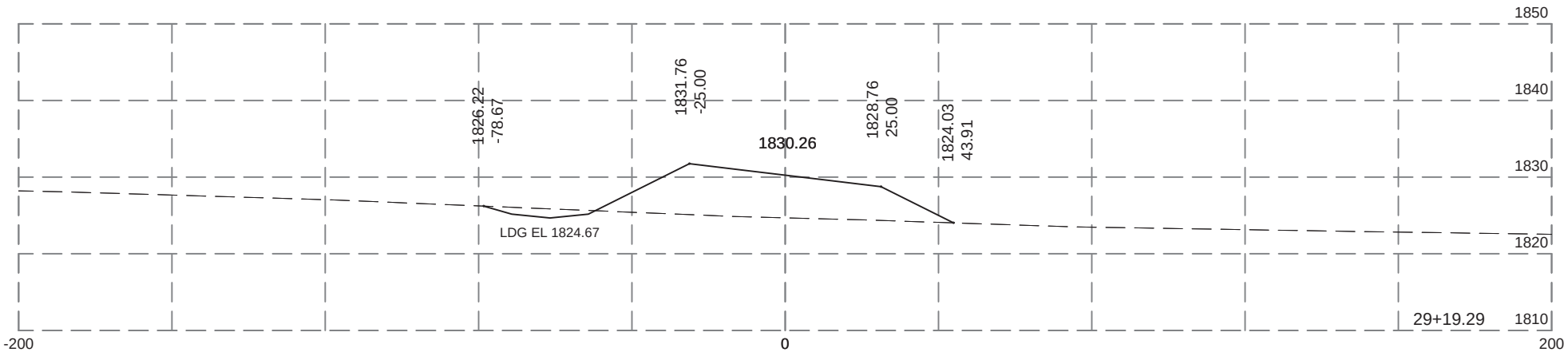
US HIGHWAY 281

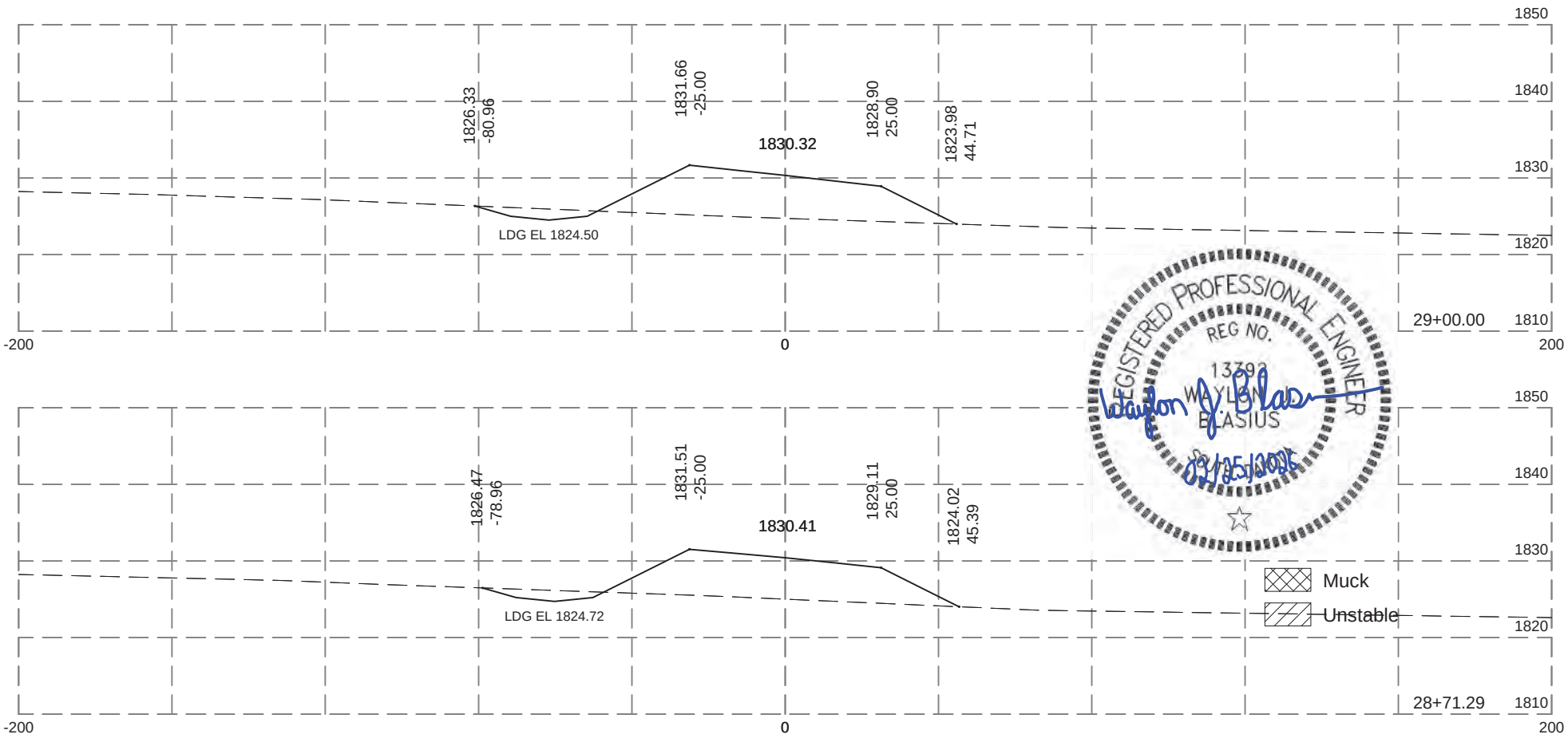


FOR BIDDING PURPOSES ONLY









REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON D. BLASIUS
02/25/2026

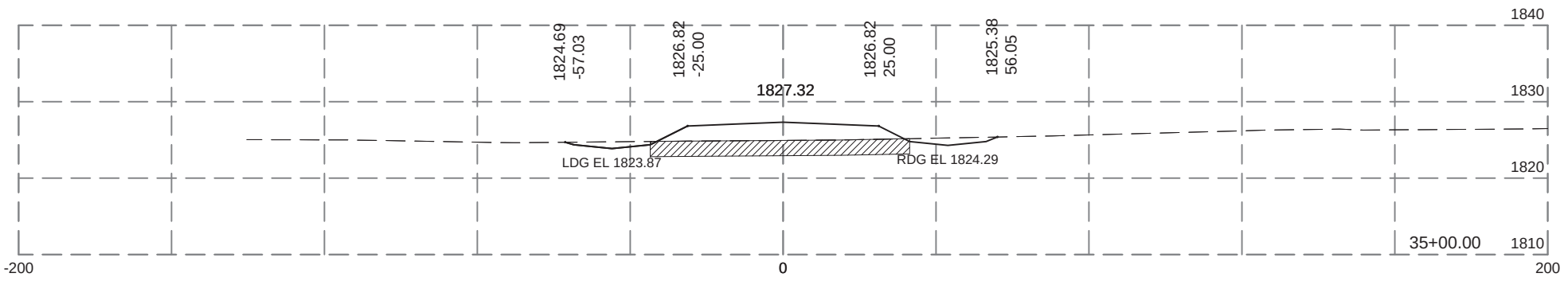
Muck
Unstable

BAI JOB # 23190-10

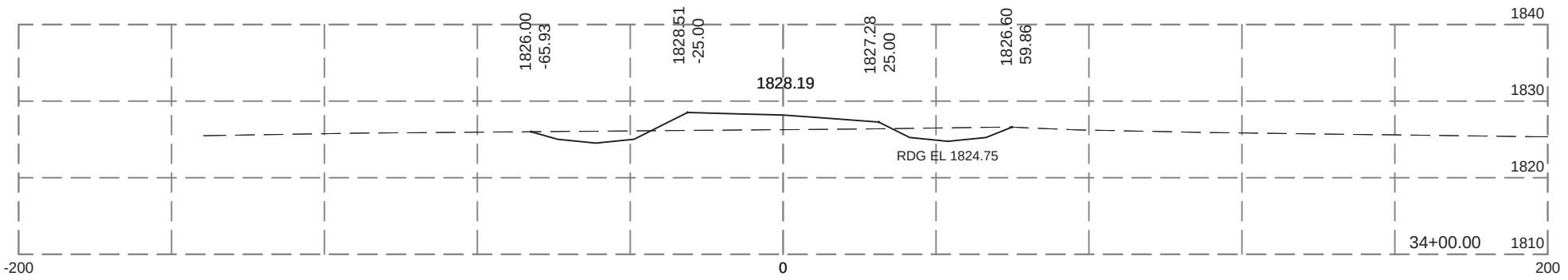
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	235	267

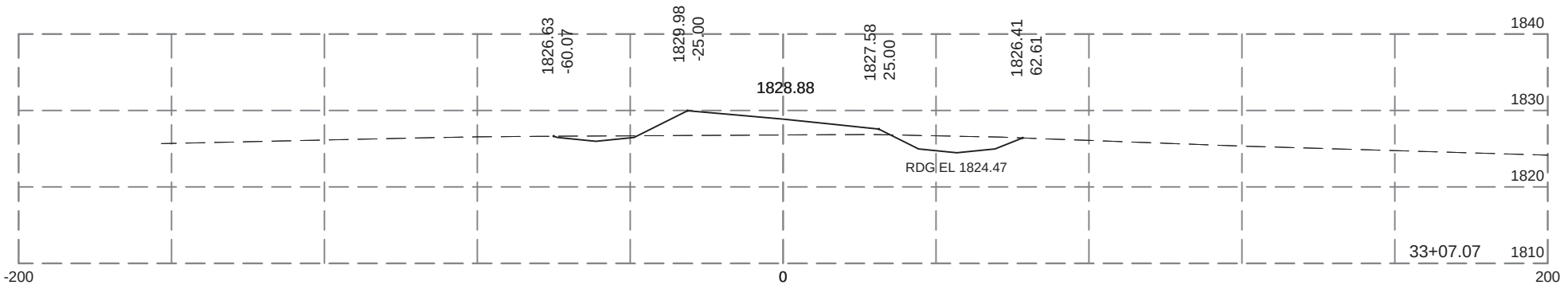
Plotting Date: 10/01/2025 Rev:

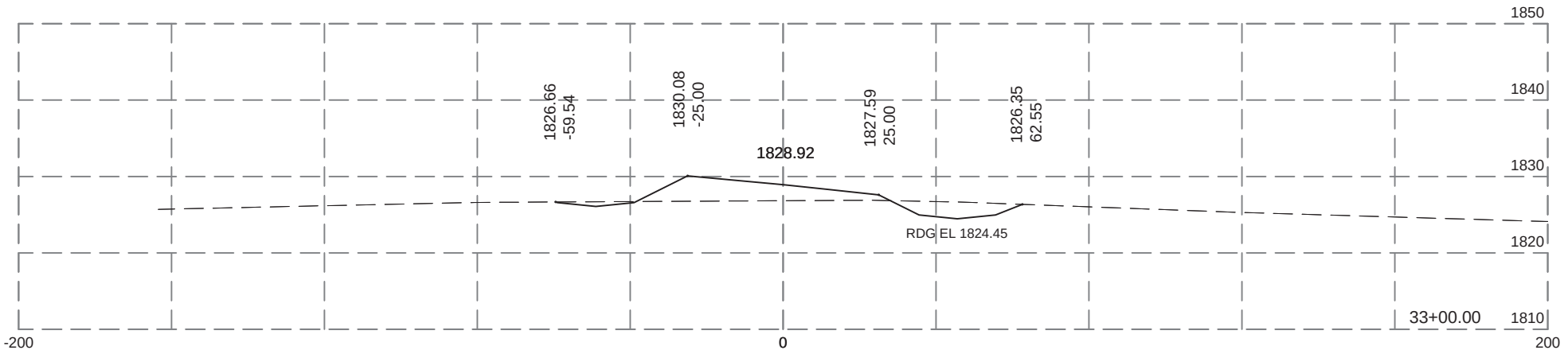
US HIGHWAY 281

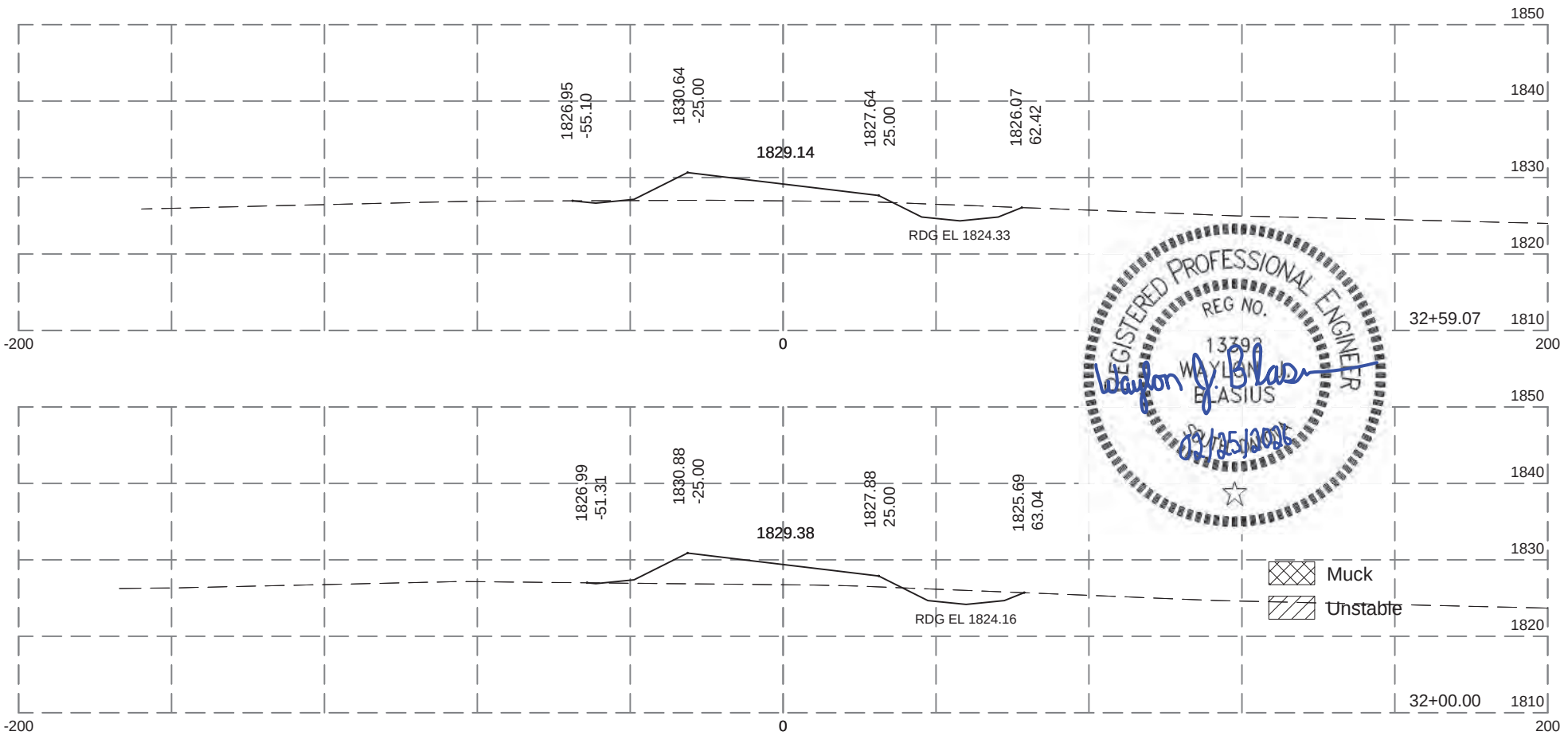


FOR BIDDING PURPOSES ONLY









REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
WAYLON J. BLASIUS
10/25/2025

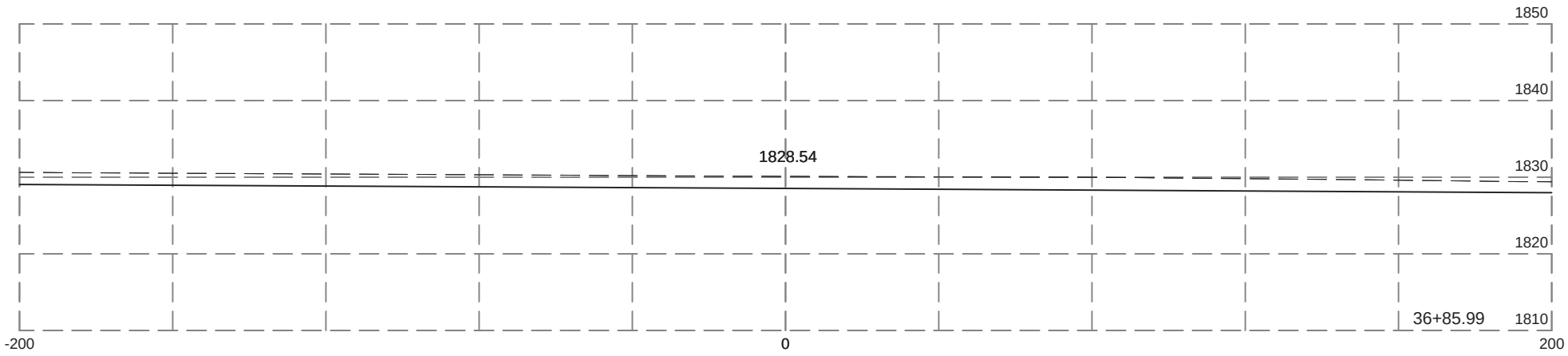
BAI JOB # 23190-10

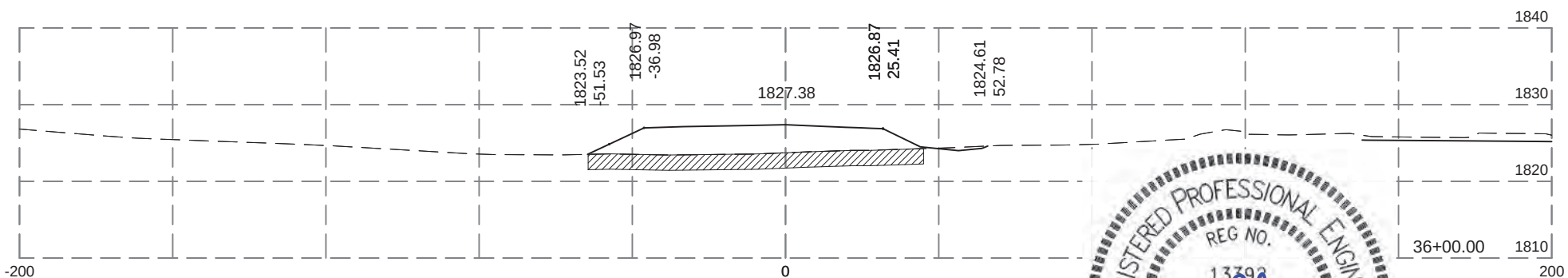
STATE OF SOUTH DAKOTA	PROJECT: NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	SHEET: 236	TOTAL SHEETS: 267

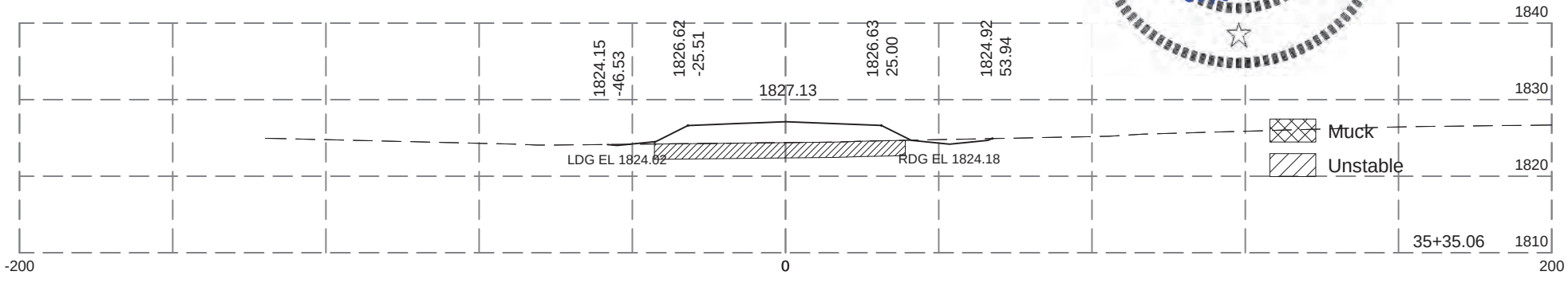
Plotting Date: 10/01/2025 Rev:

US HIGHWAY 281

FOR BIDDING PURPOSES ONLY







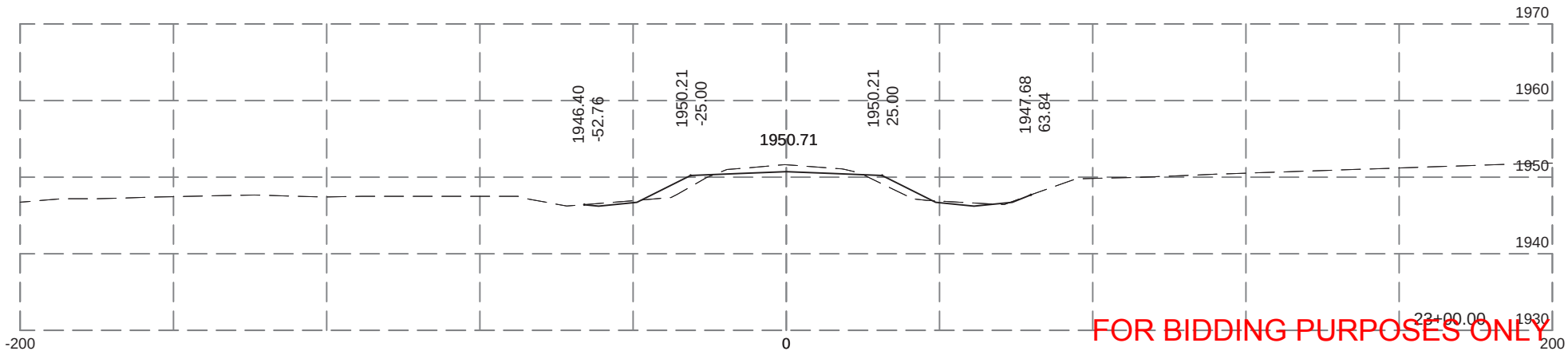
REGISTERED PROFESSIONAL ENGINEER
REG NO.
13392
WAYLON
BLASIUS
10/25/2025

BAI JOB # 23190-10

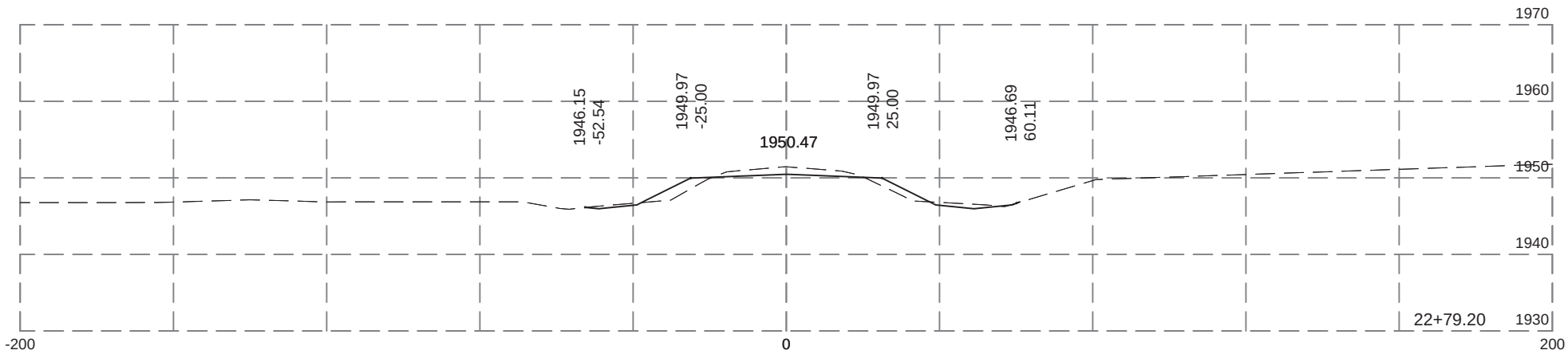
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	237	267

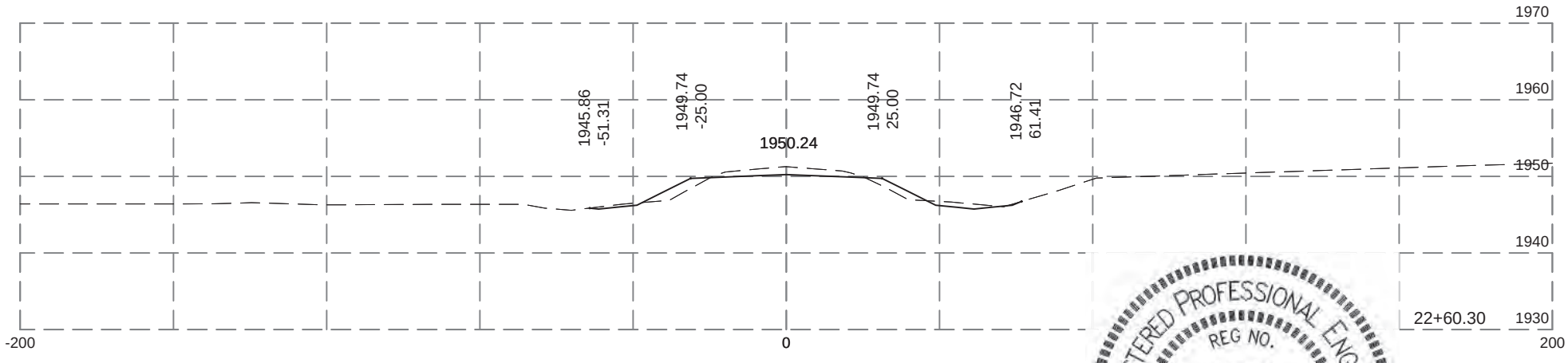
Plotting Date: 10/01/2025 Rev:

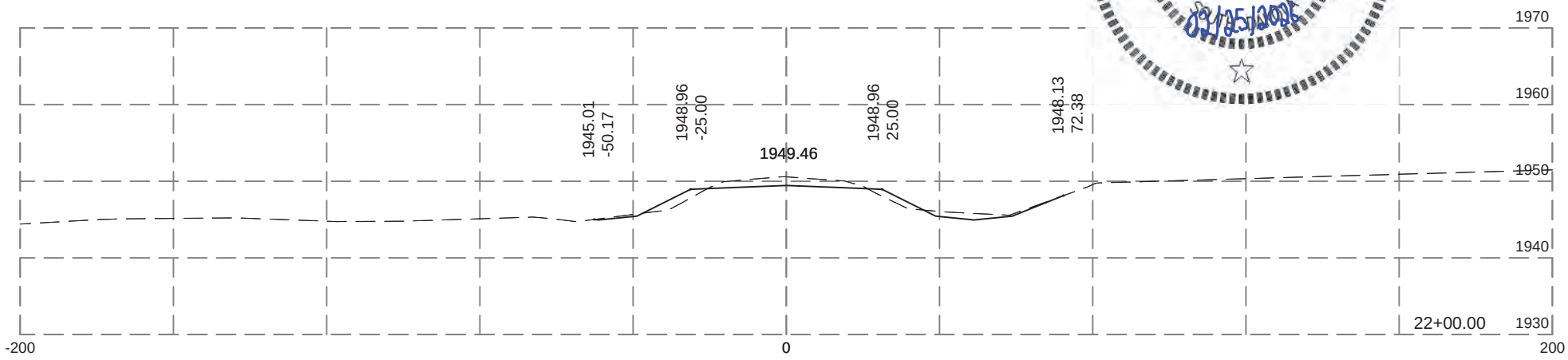
SD HIGHWAY 43

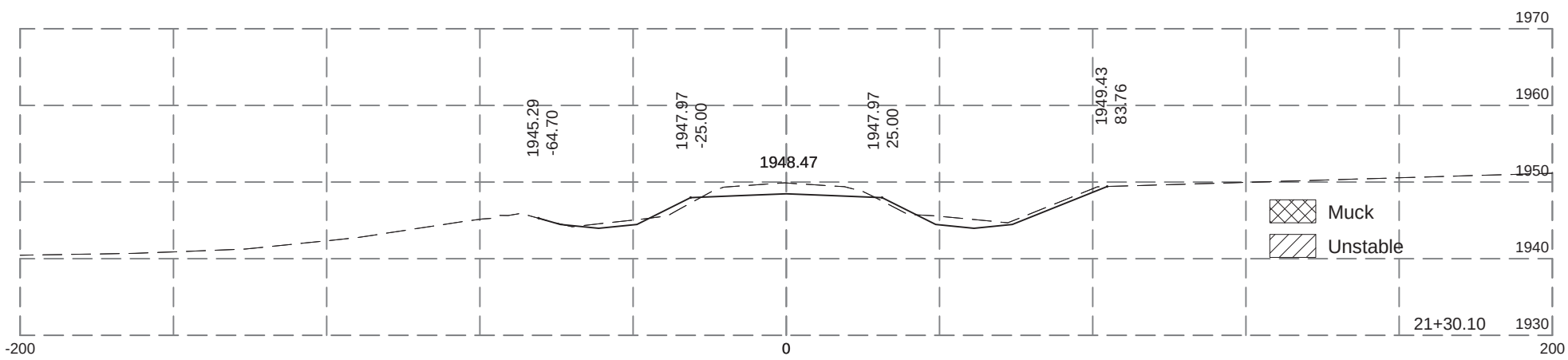


FOR BIDDING PURPOSES ONLY







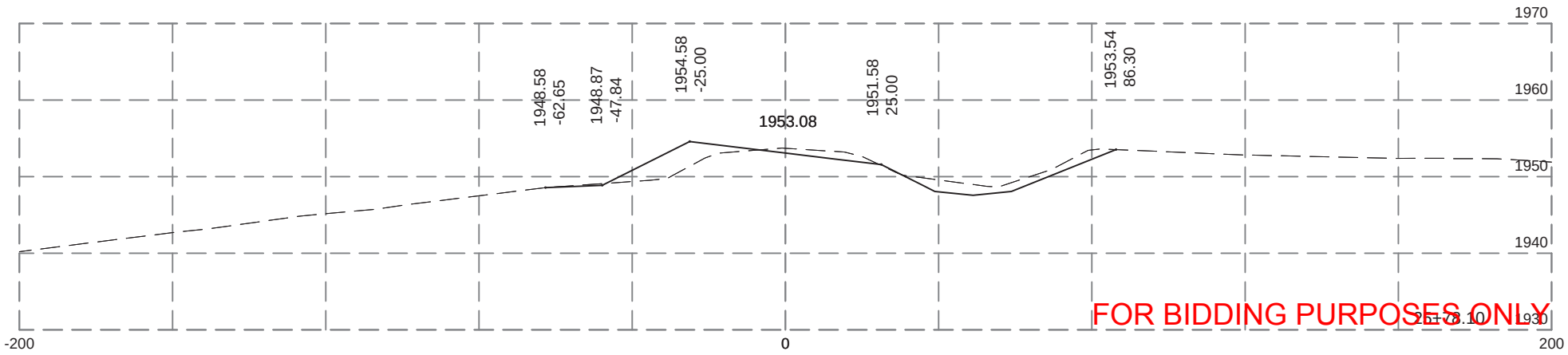


BAI JOB # 23190-10

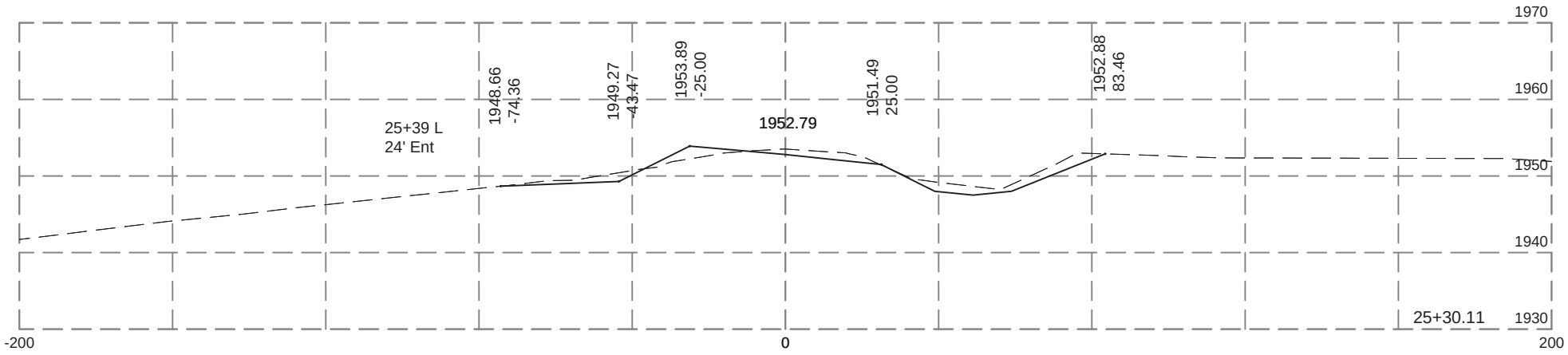
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	238	267

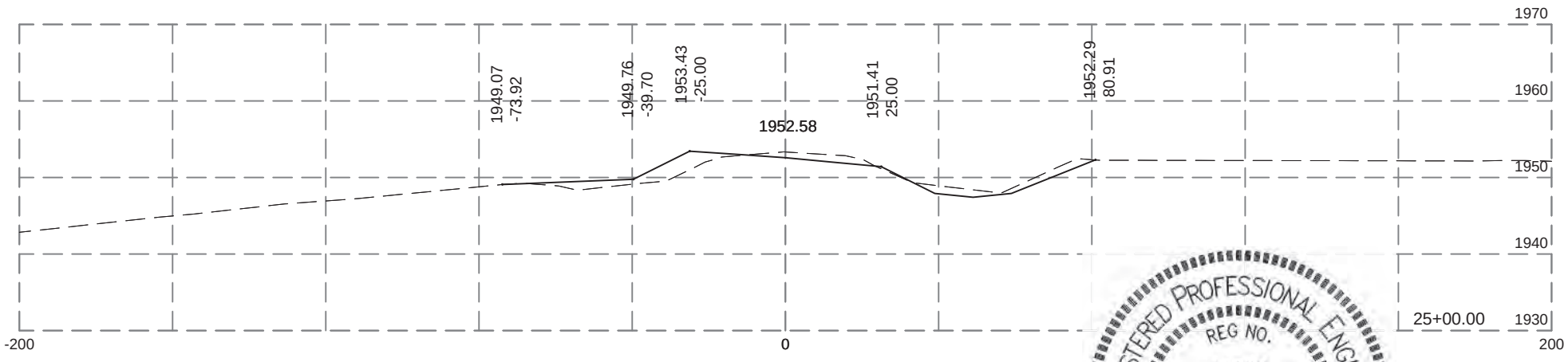
Plotting Date: 10/01/2025 Rev:

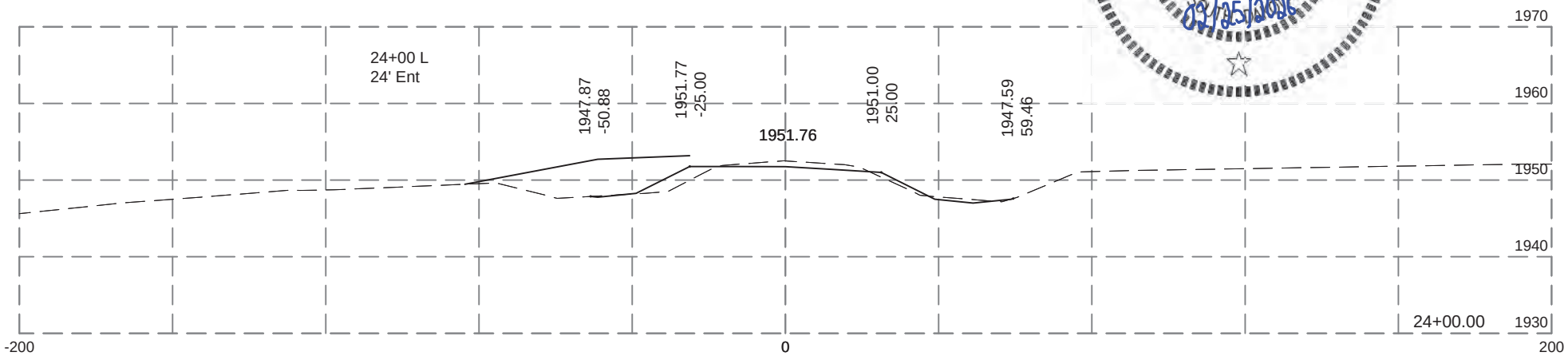
SD HIGHWAY 43

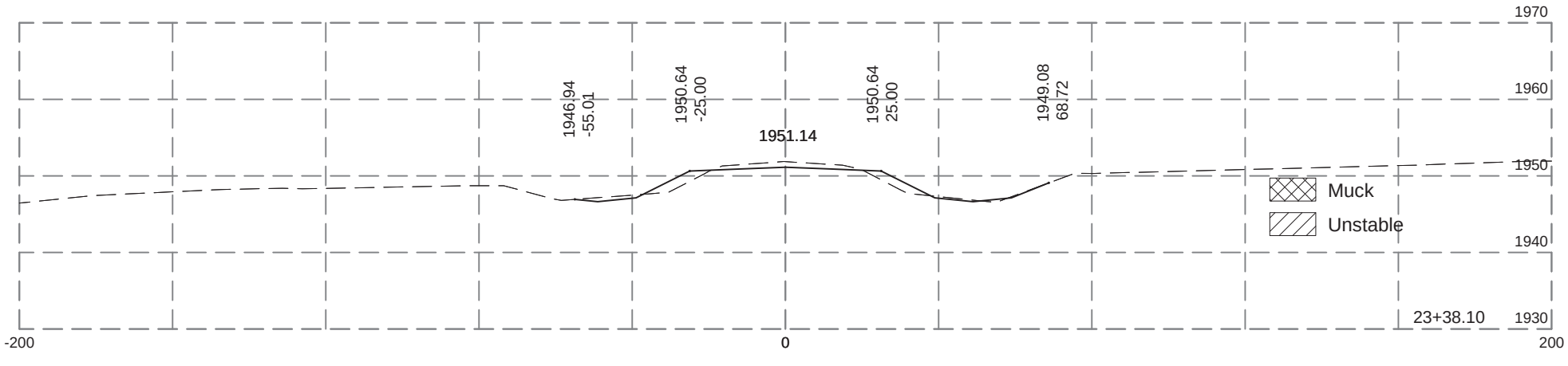


FOR BIDDING PURPOSES ONLY







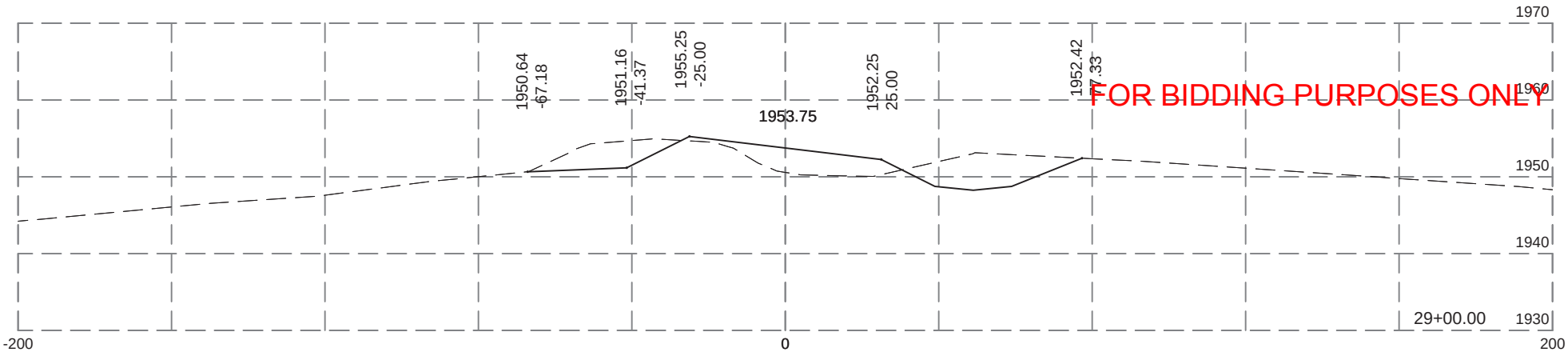


BAI JOB # 23190-10

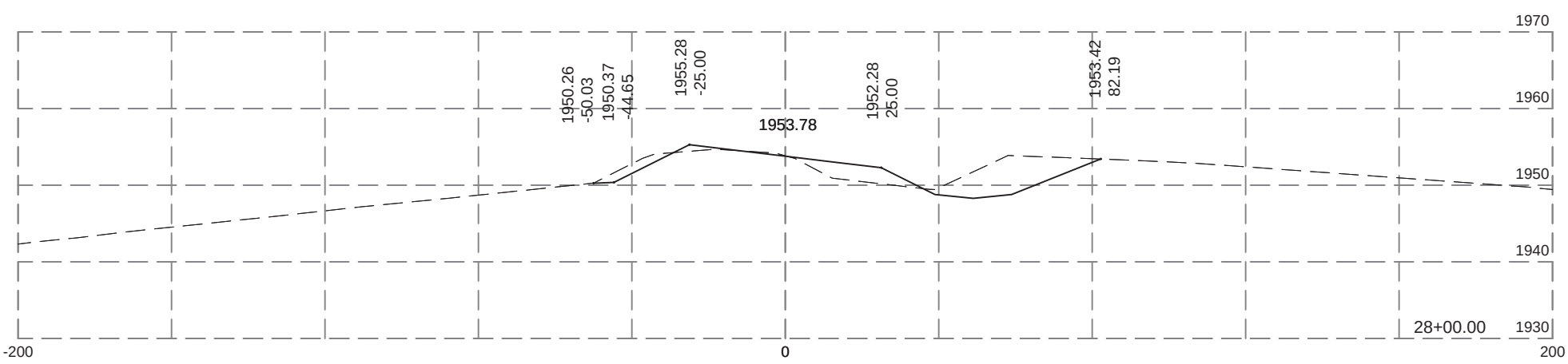
Plotting Date: 10/01/2025 Rev:

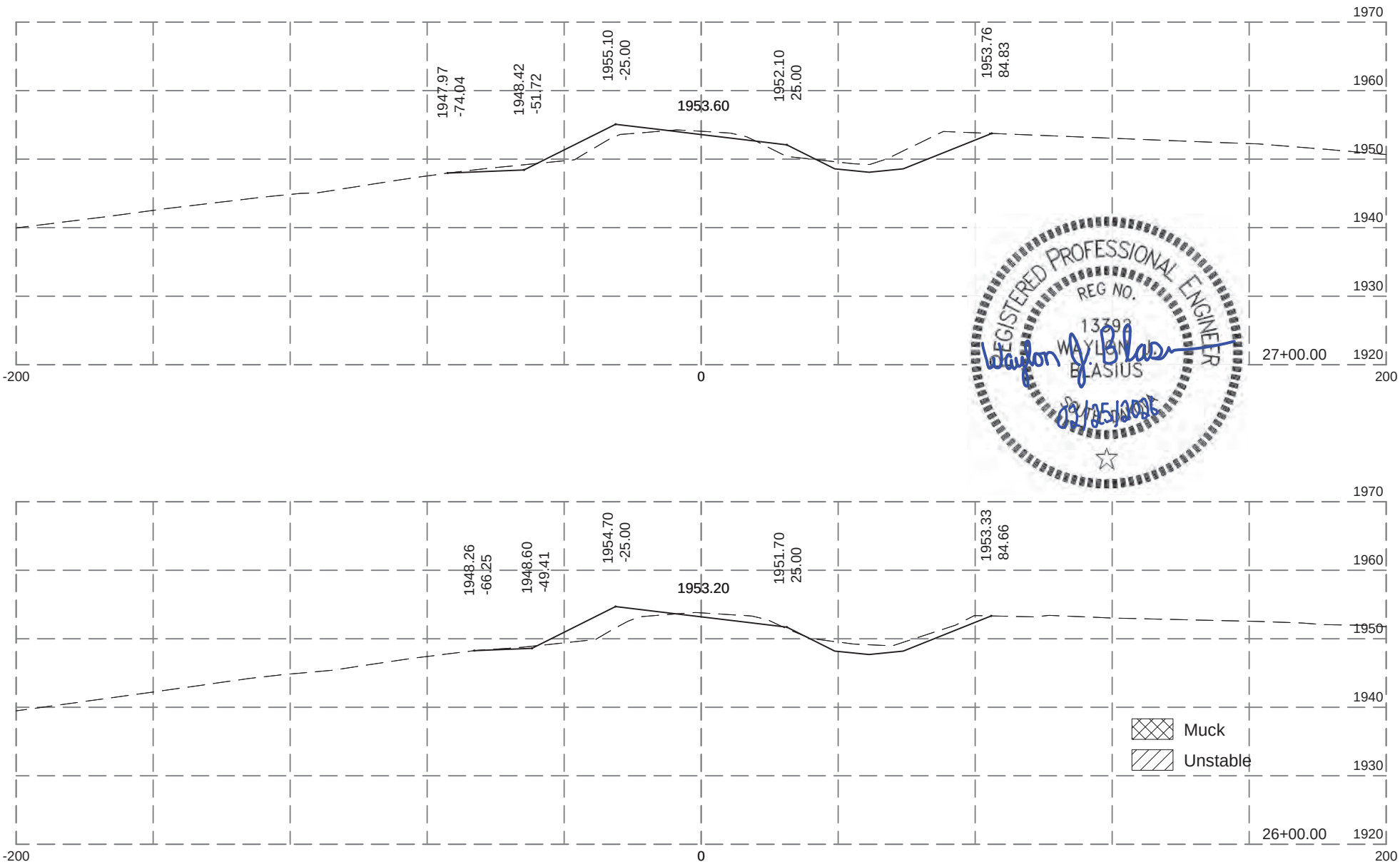
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	239	267

SD HIGHWAY 43



FOR BIDDING PURPOSES ONLY





REGISTERED PROFESSIONAL ENGINEER
REG NO.
13392
WAYLON
BLASIUS
10/25/2025

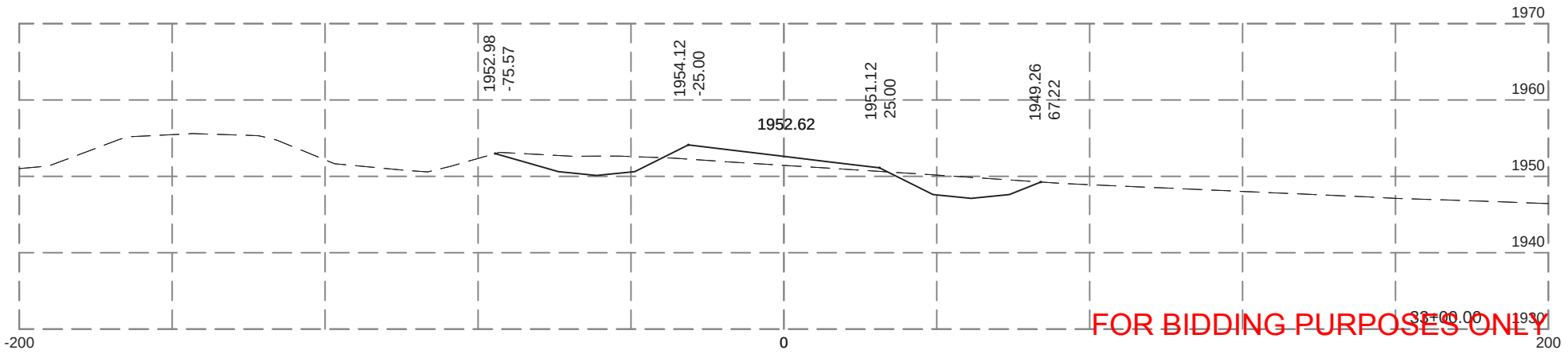
BAI JOB # 23190-10

Plotting Date: 10/01/2025

Rev:

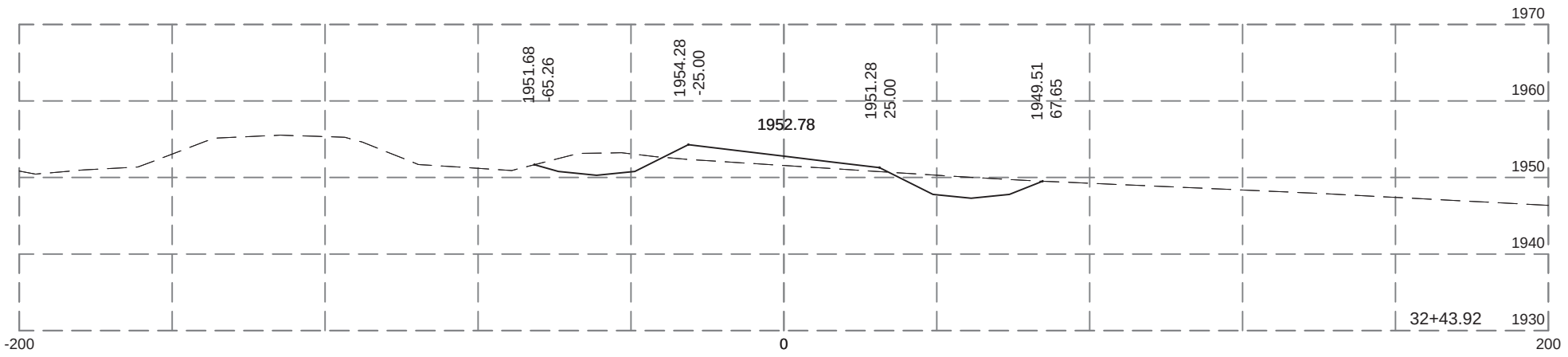
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	240	267

SD HIGHWAY 43

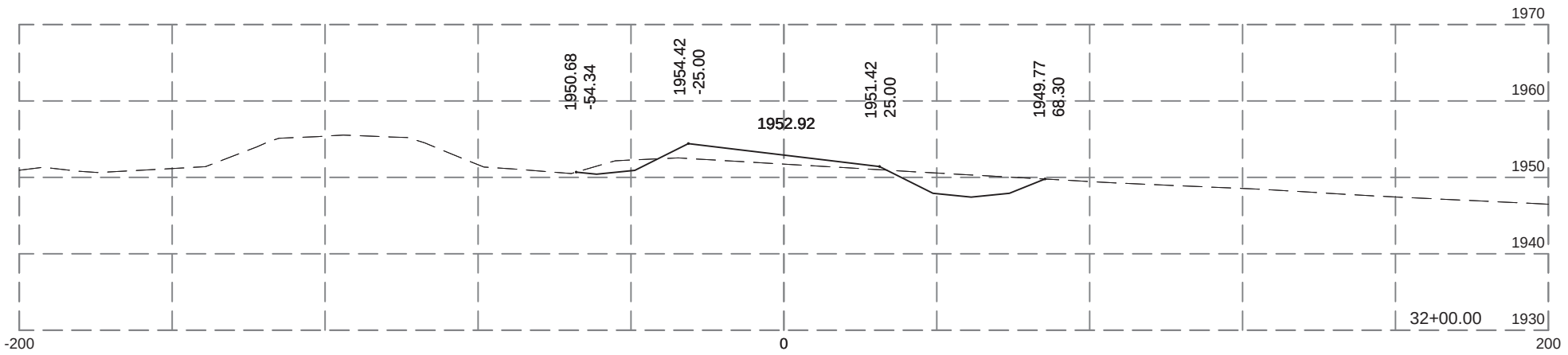


FOR BIDDING PURPOSES ONLY

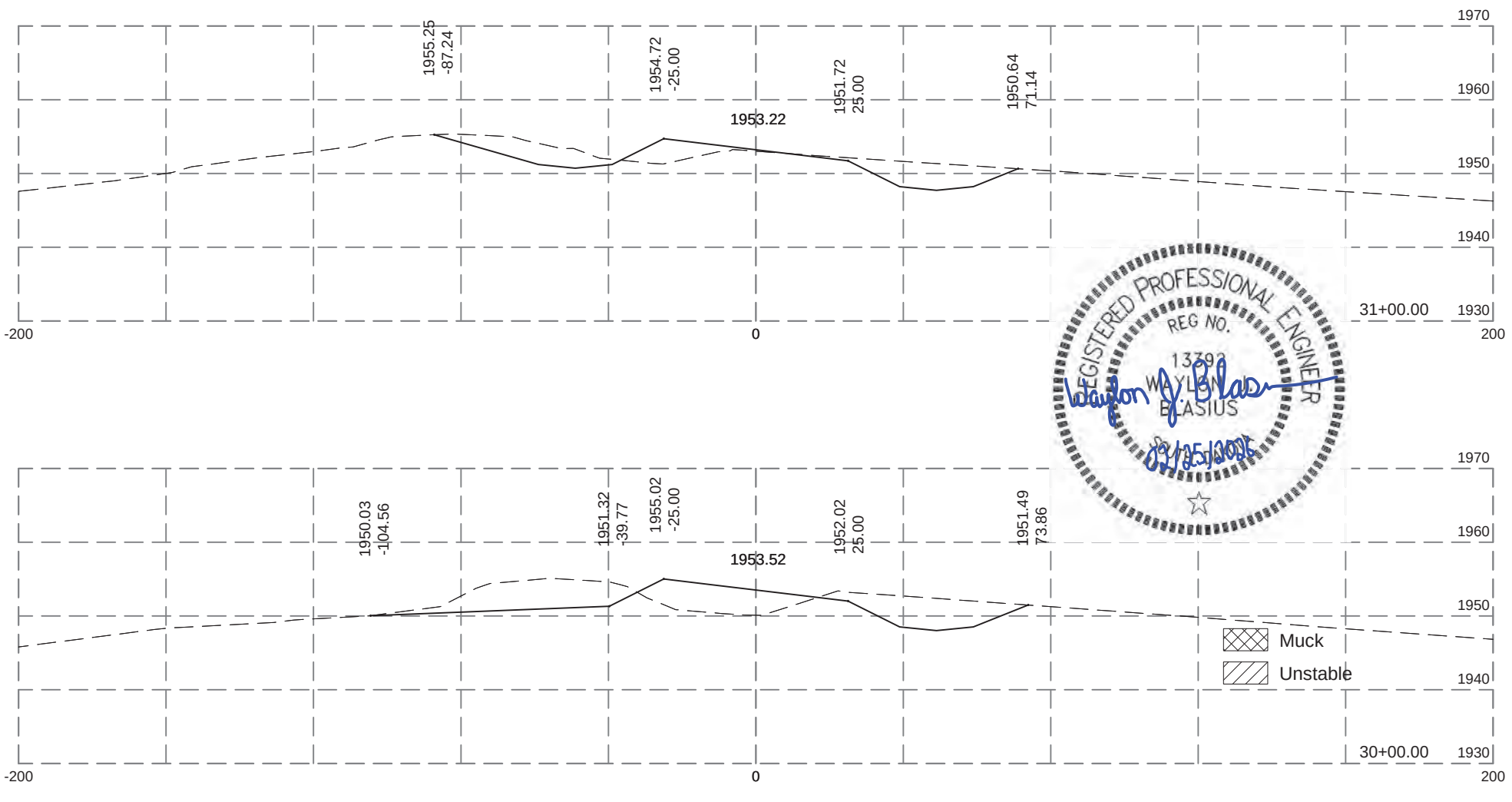
33+00.00



32+43.92



32+00.00



31+00.00

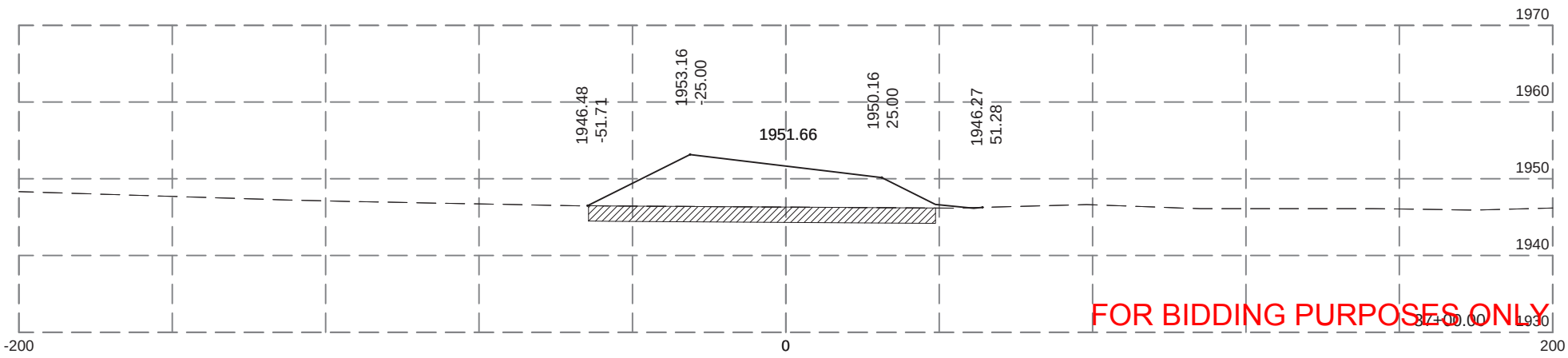
30+00.00

BAI JOB # 23190-10

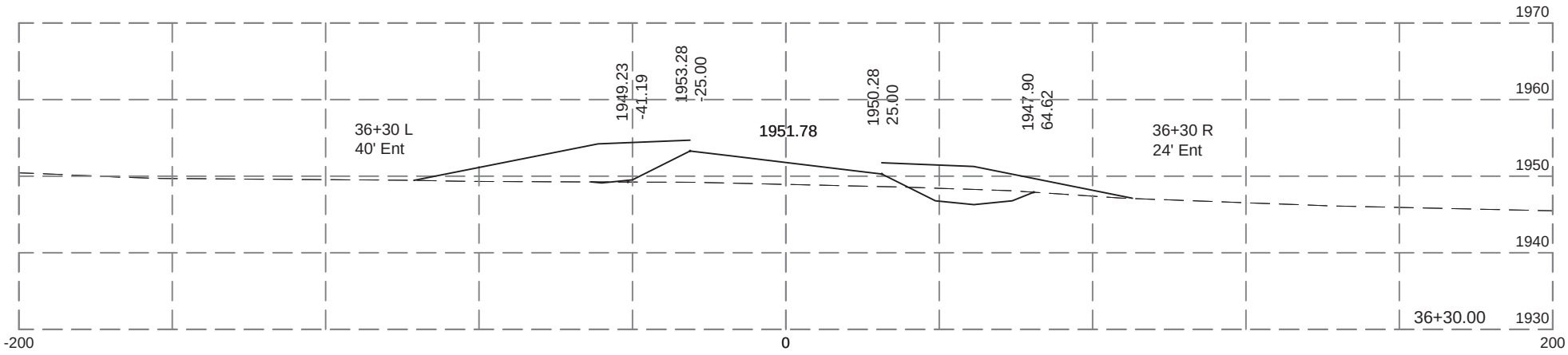
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	241	267

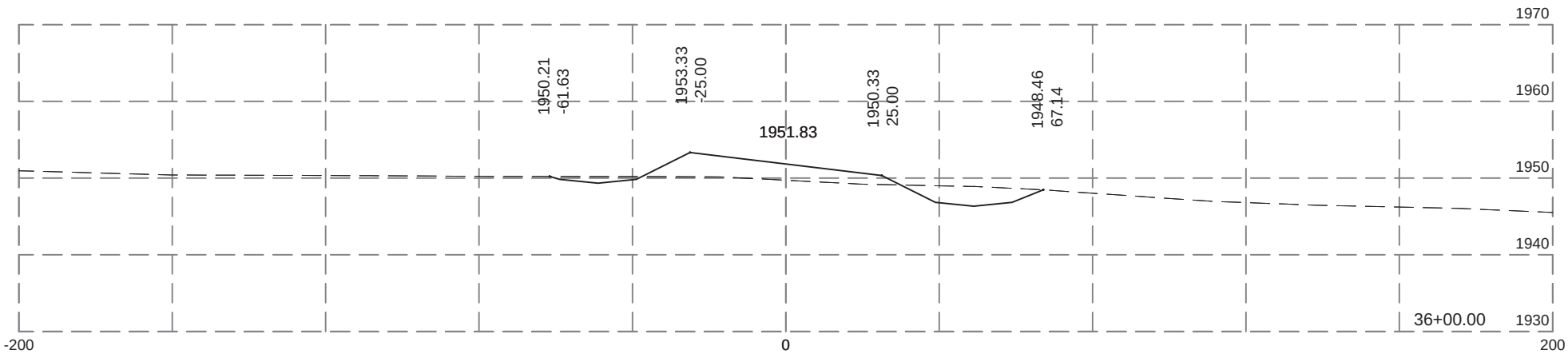
Plotting Date: 10/01/2025 Rev:

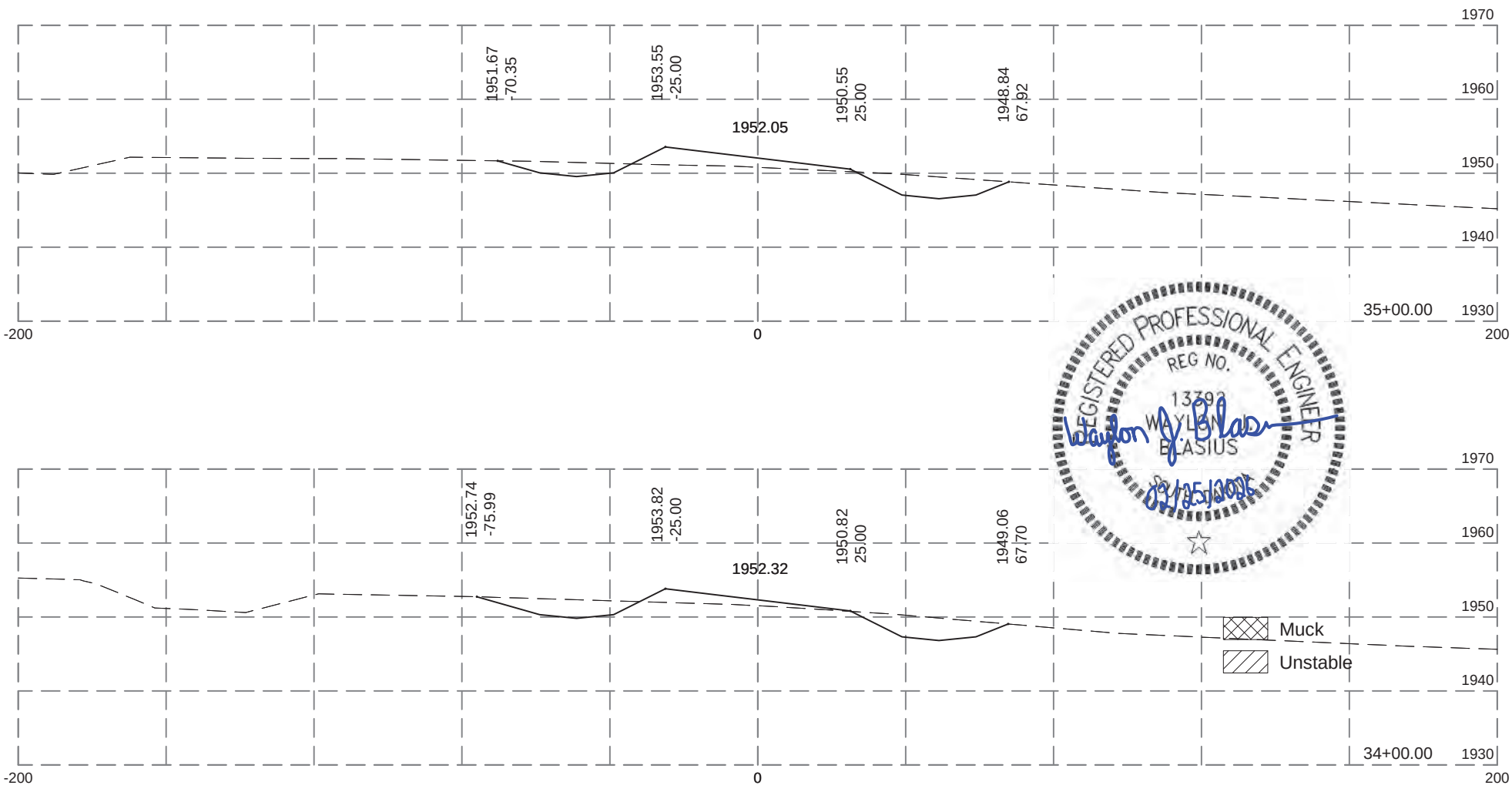
SD HIGHWAY 43



FOR BIDDING PURPOSES ONLY







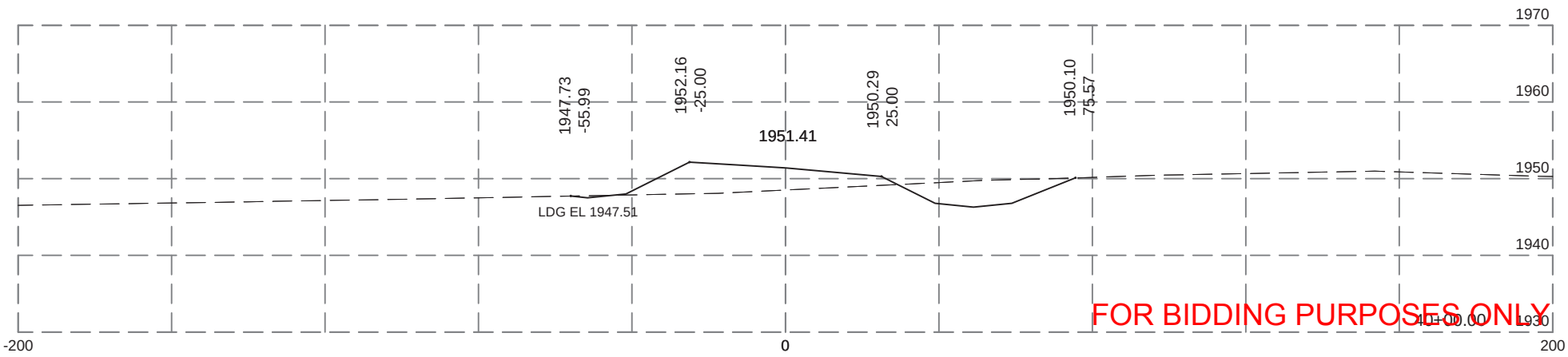
BAI JOB # 23190-10

Plotting Date: 10/01/2025

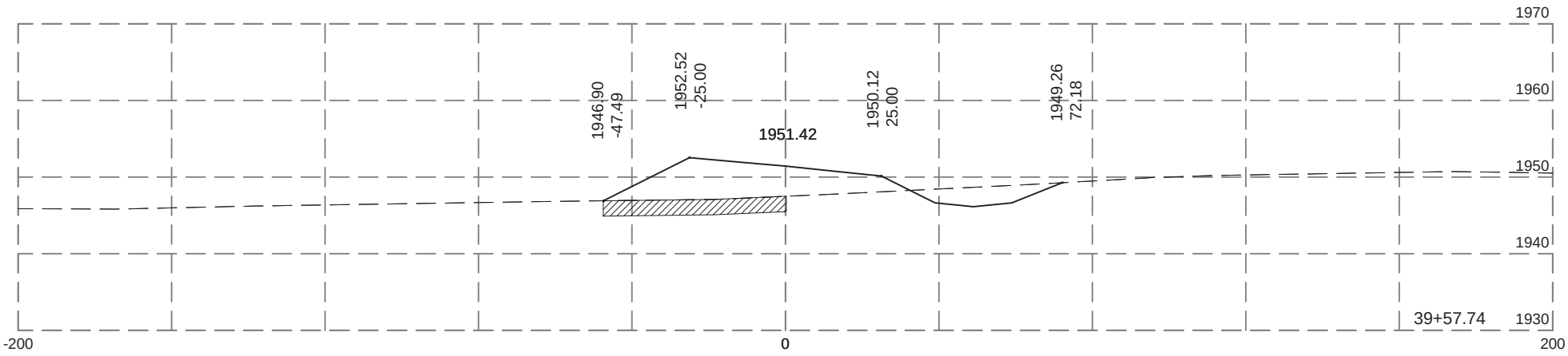
Rev:

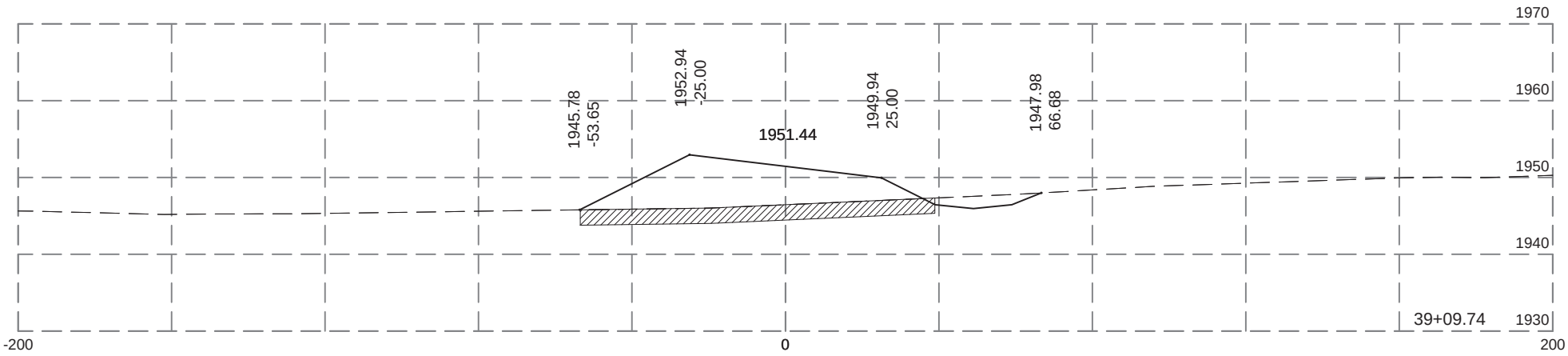
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	242	267

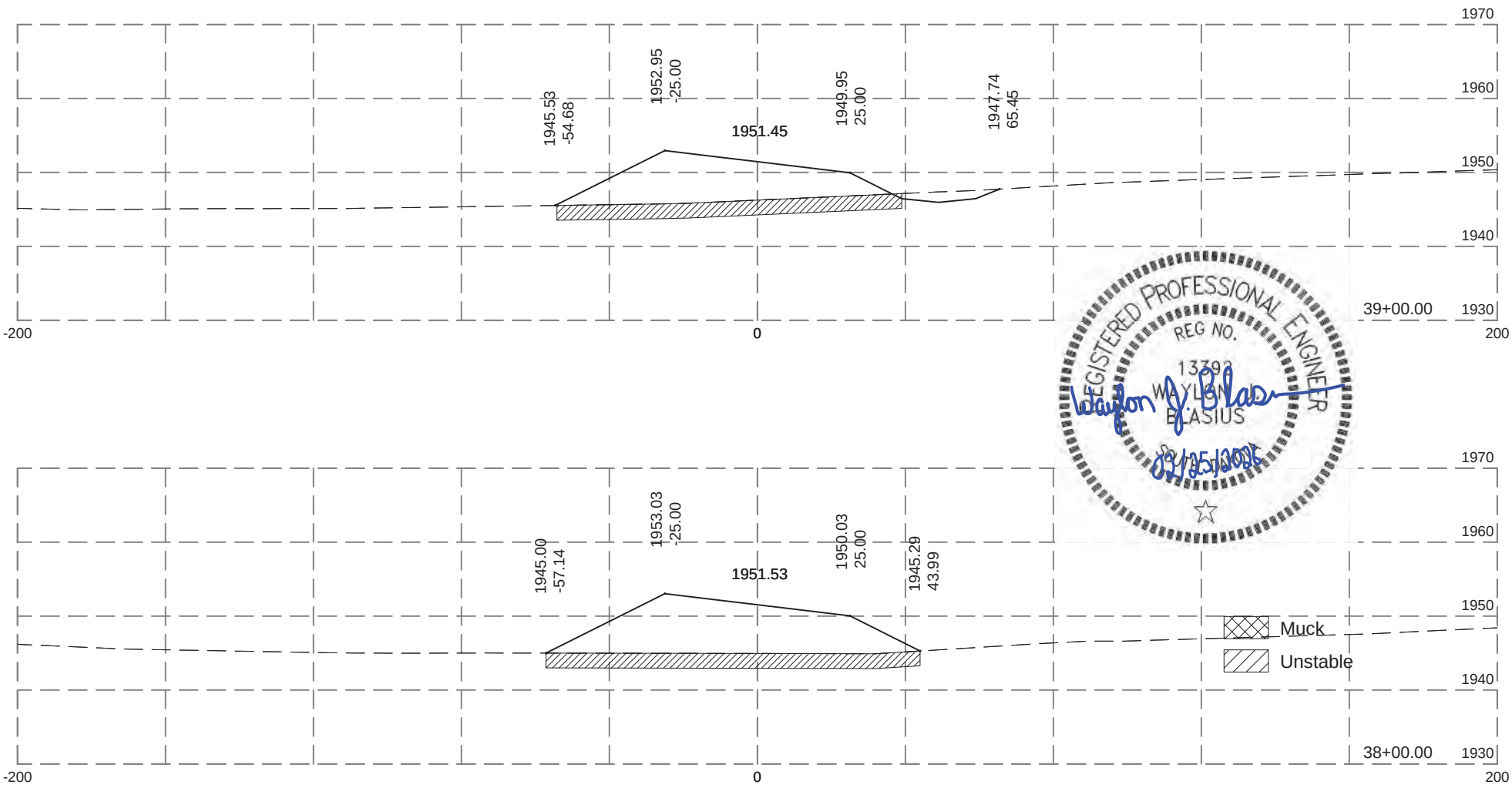
SD HIGHWAY 43



FOR BIDDING PURPOSES ONLY







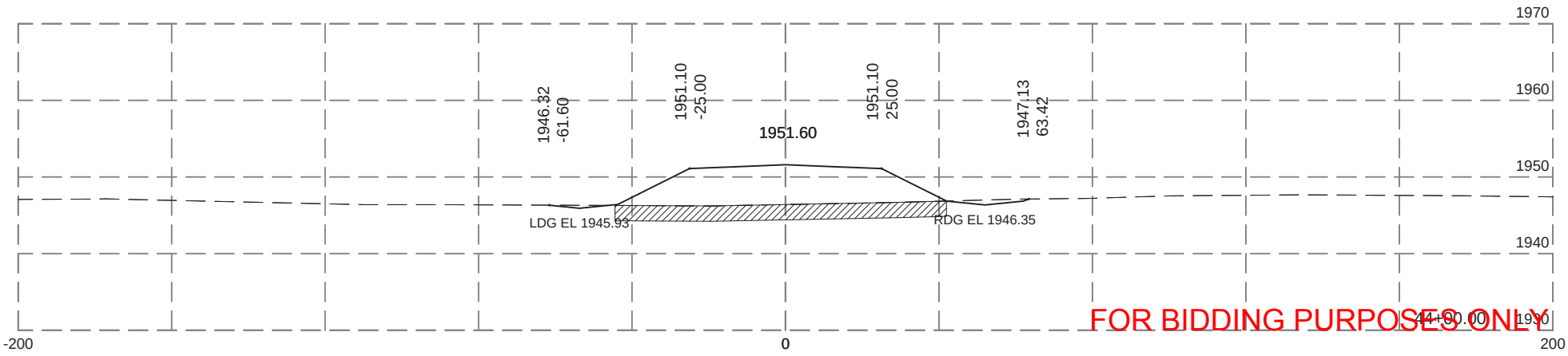
BAI JOB # 23190-10

Plotting Date: 10/01/2025

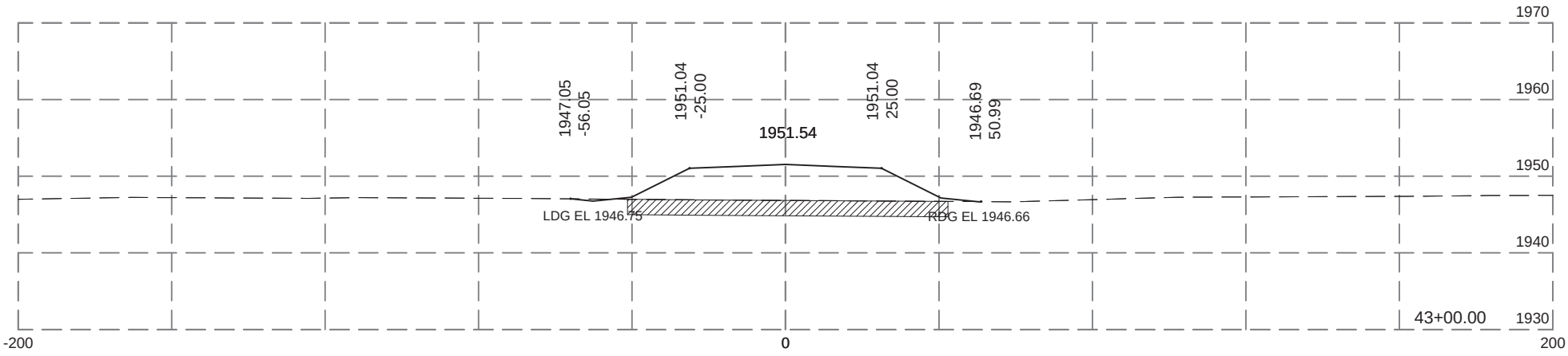
Rev:

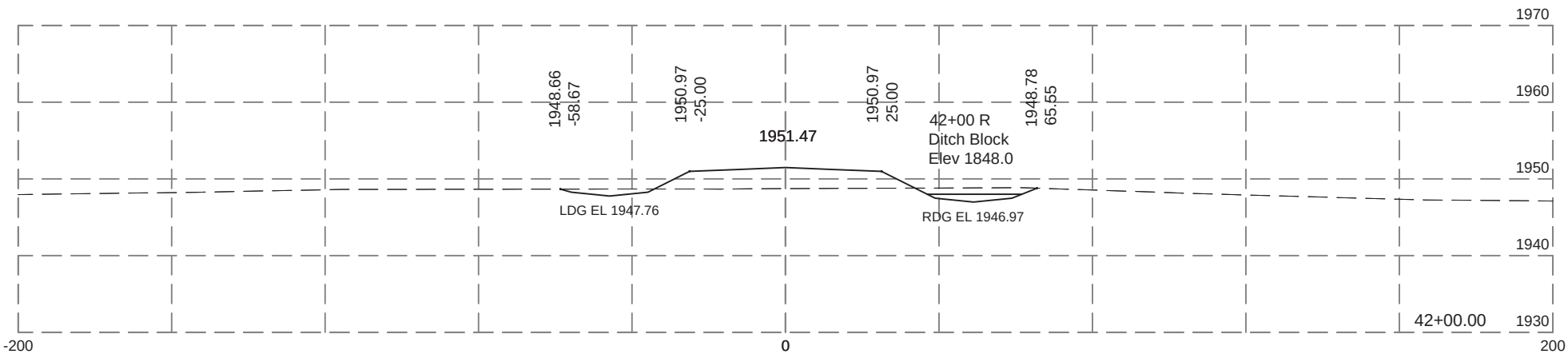
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	243	267

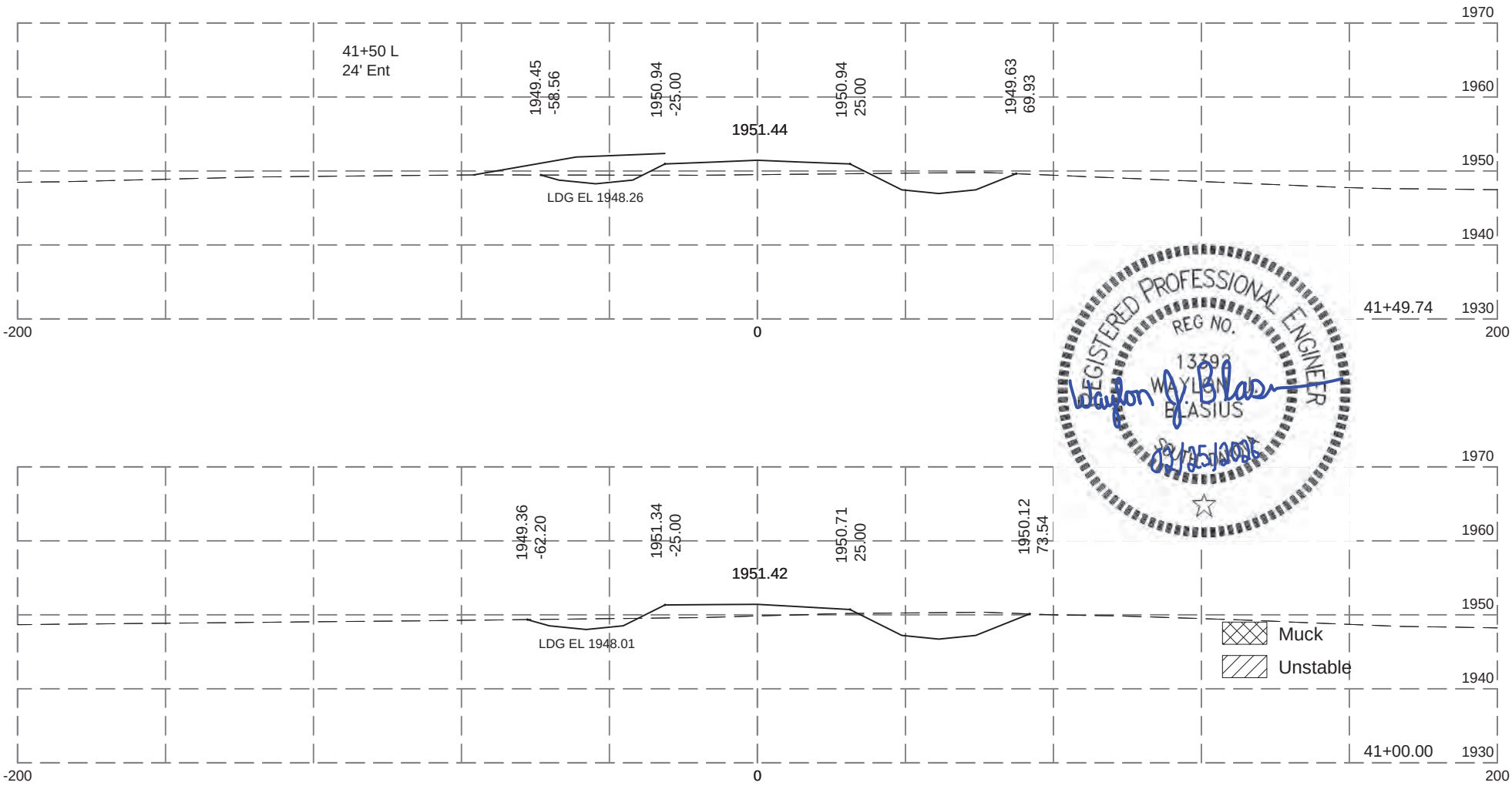
SD HIGHWAY 43



FOR BIDDING PURPOSES ONLY





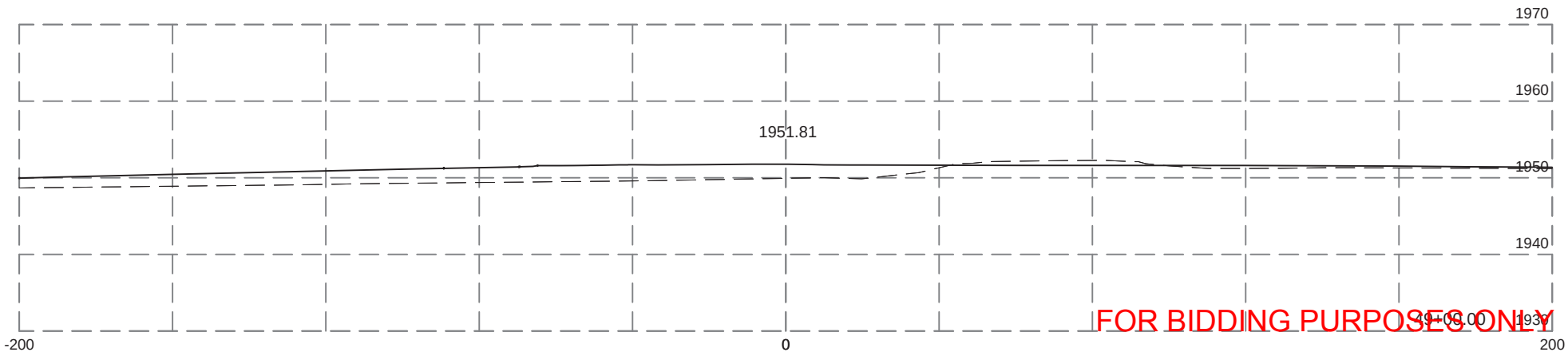


BAI JOB # 23190-10

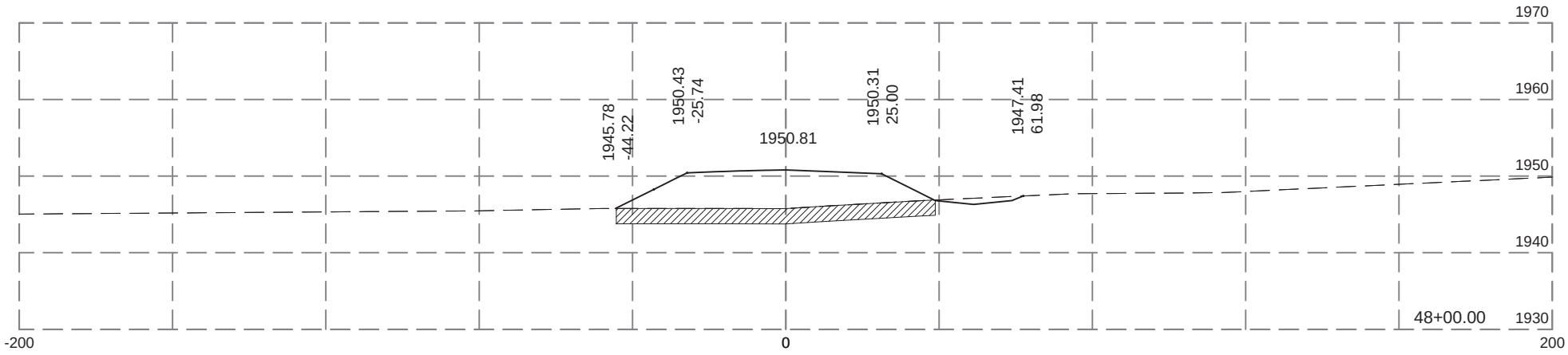
Plotting Date: 10/01/2025 Rev:

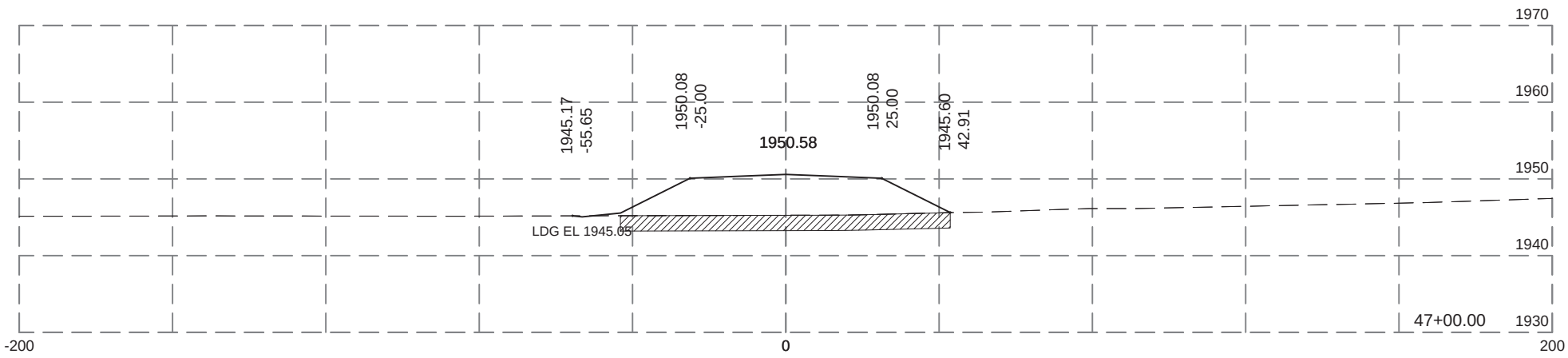
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	244	267

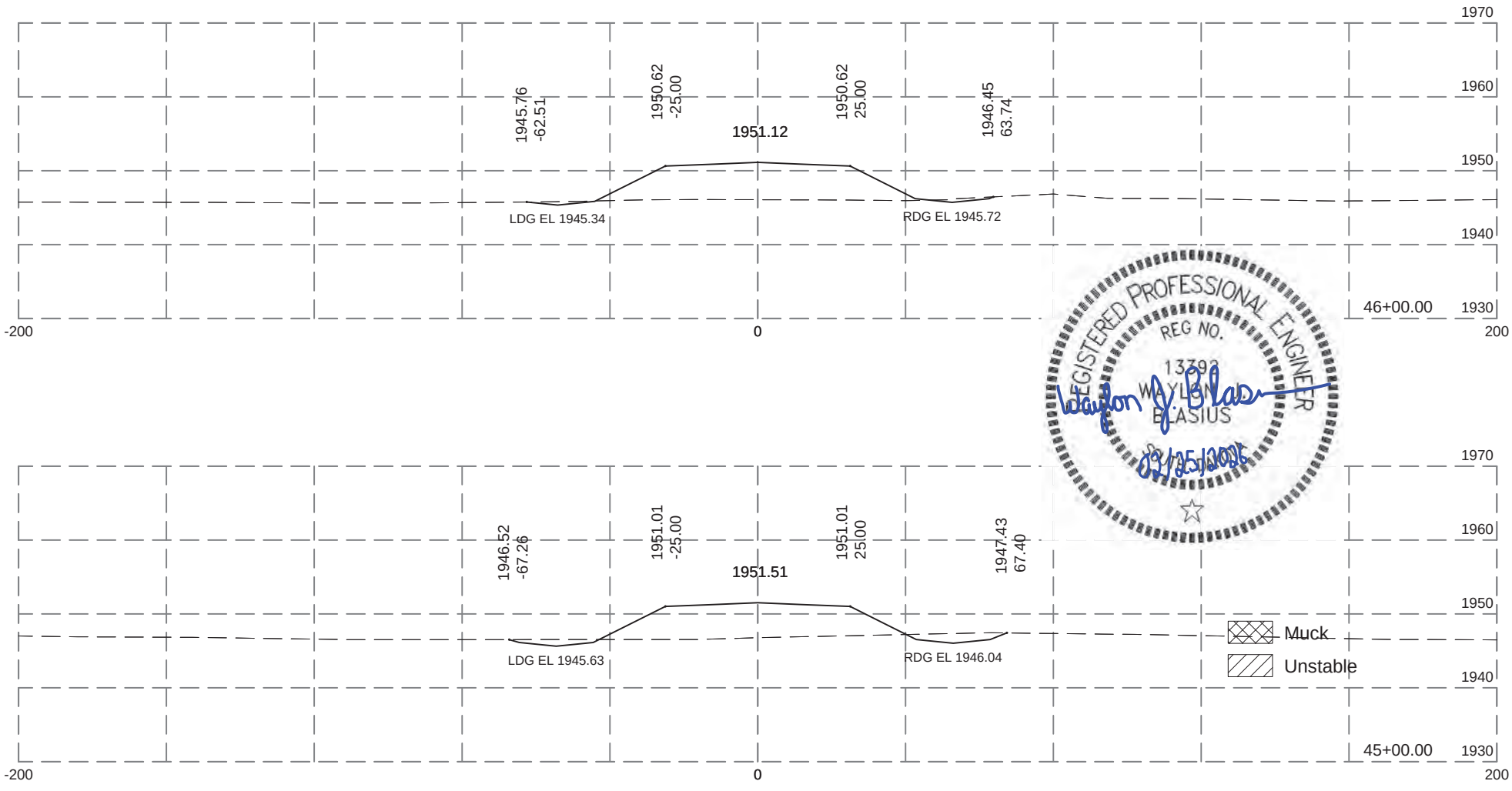
SD HIGHWAY 43



FOR BIDDING PURPOSES ONLY







REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON J.
BLASIUS
03/25/2026

BAI JOB # 23190-10

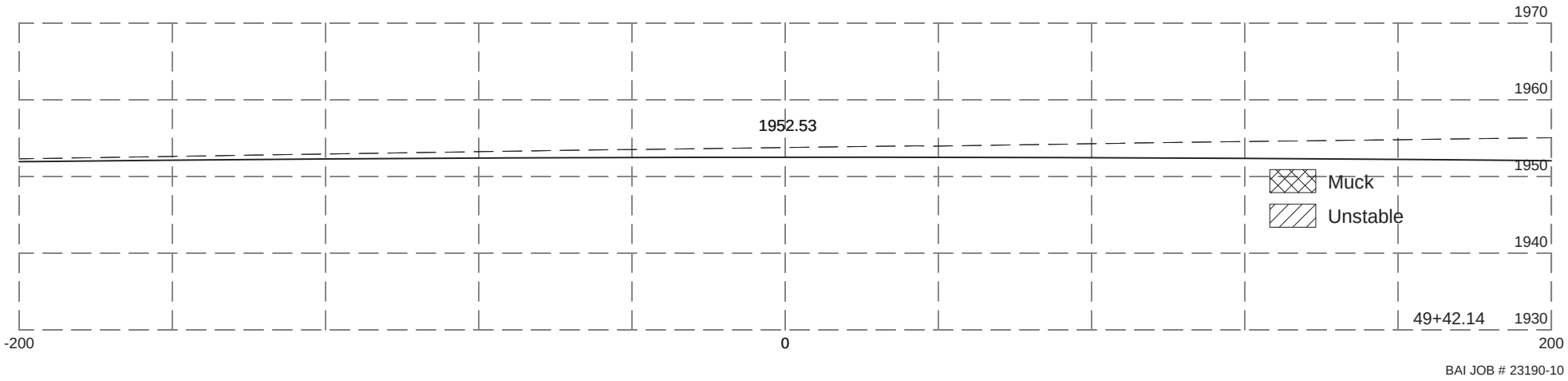
Plotting Date: 10/01/2025

Rev:

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	245	267

SD HIGHWAY 43

FOR BIDDING PURPOSES ONLY



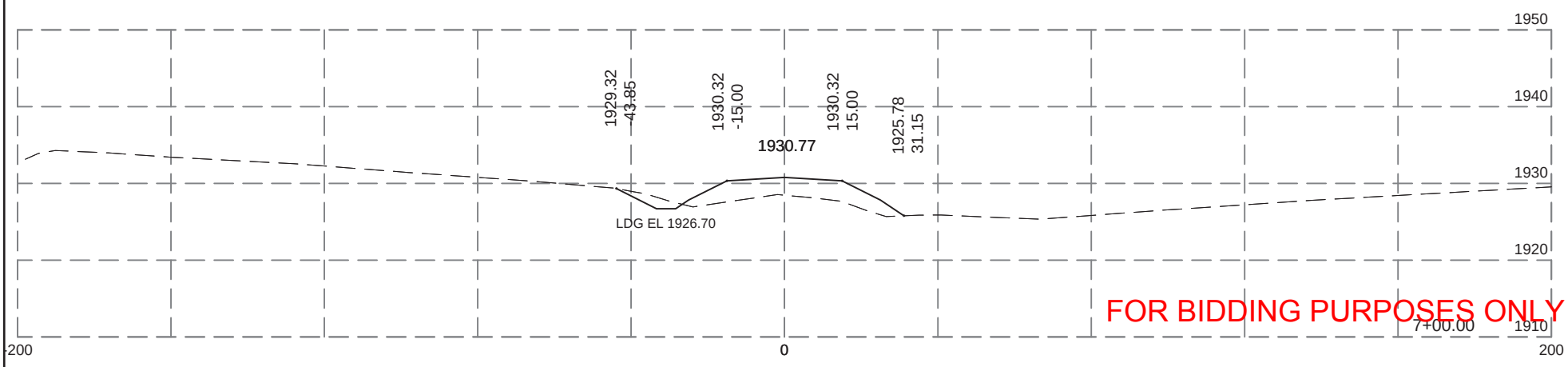
BAI JOB # 23190-10

Plotting Date: 10/01/2025

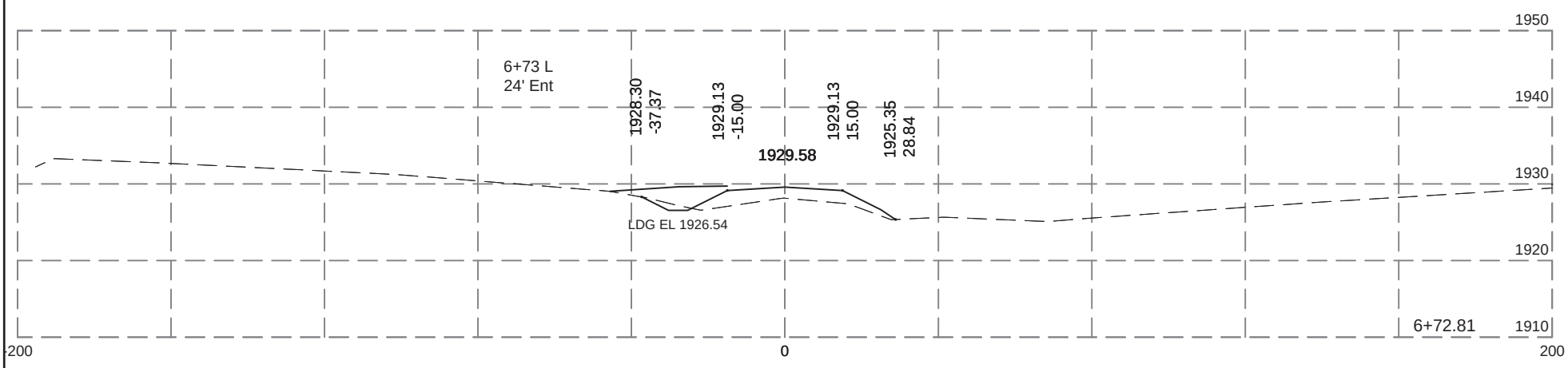
Rev:

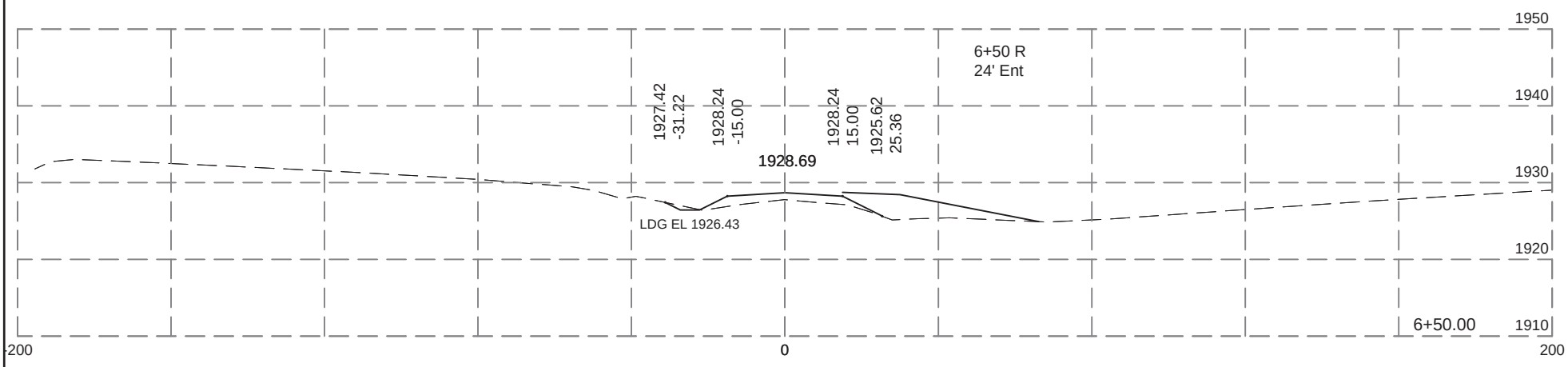
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	246	267

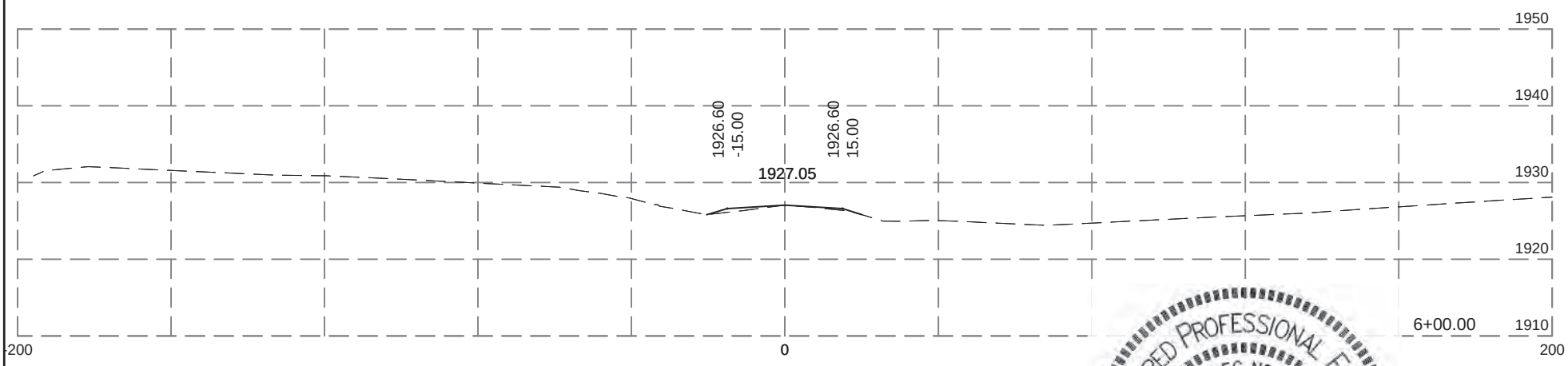
364TH AVENUE

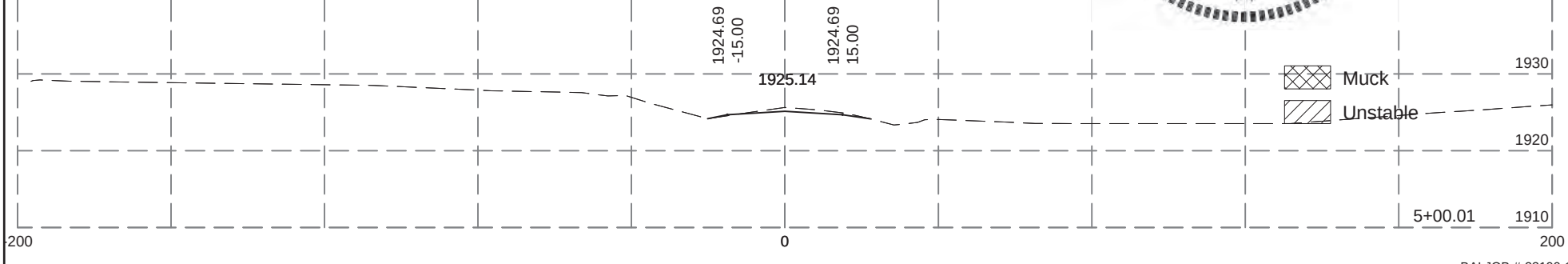


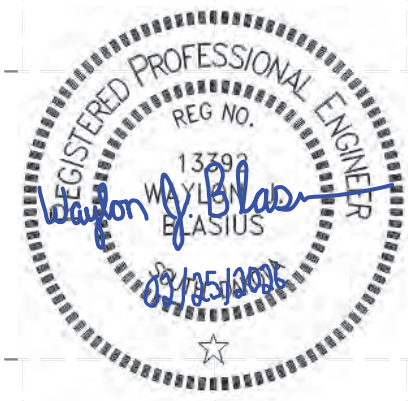
FOR BIDDING PURPOSES ONLY











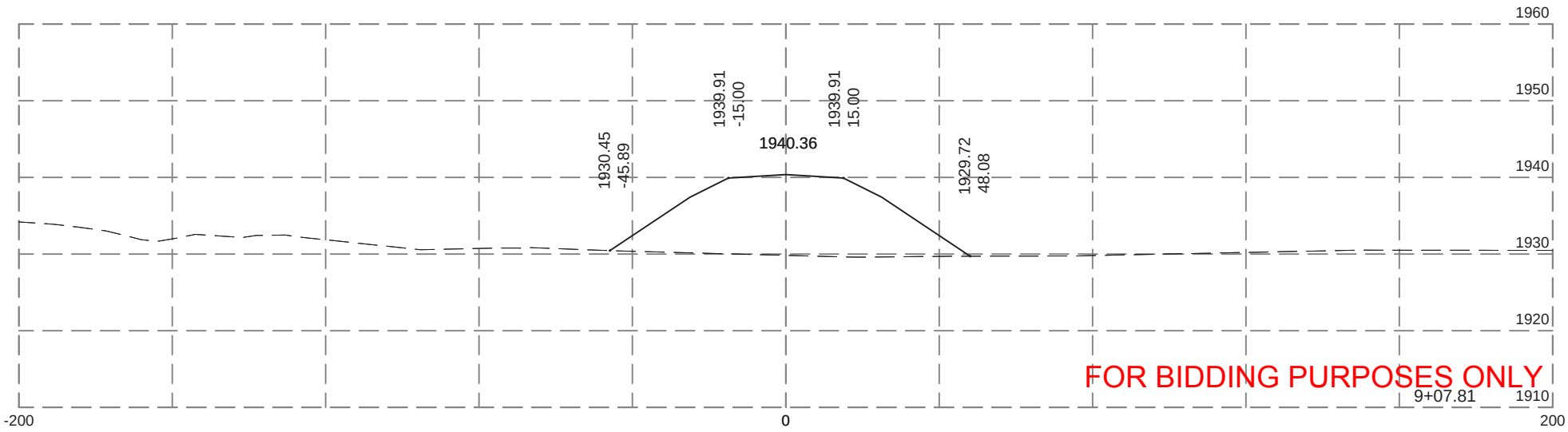
BAI JOB # 23190-10

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	247	267

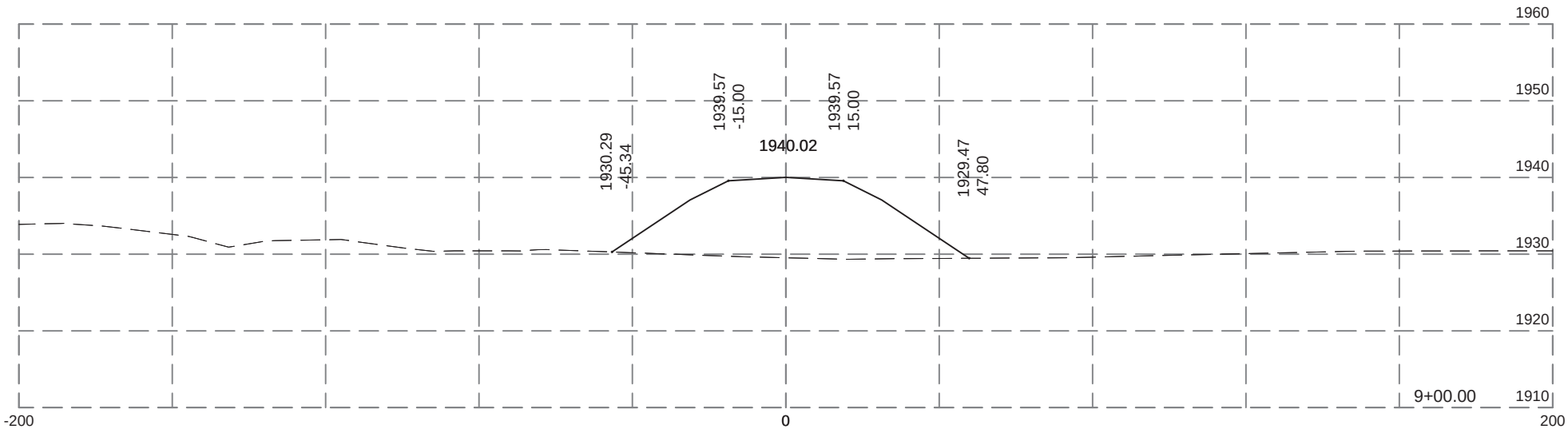
Plotting Date: 10/01/2025

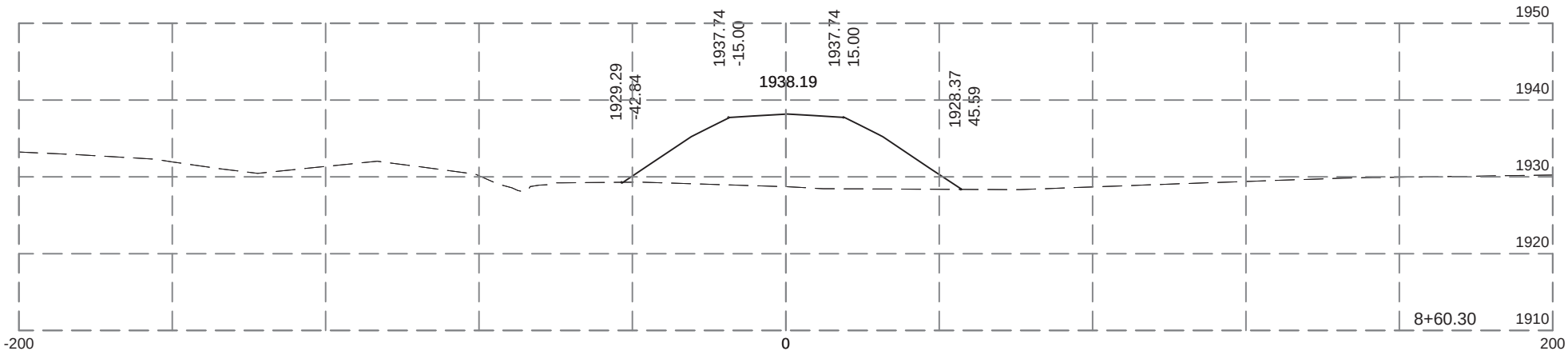
Rev:

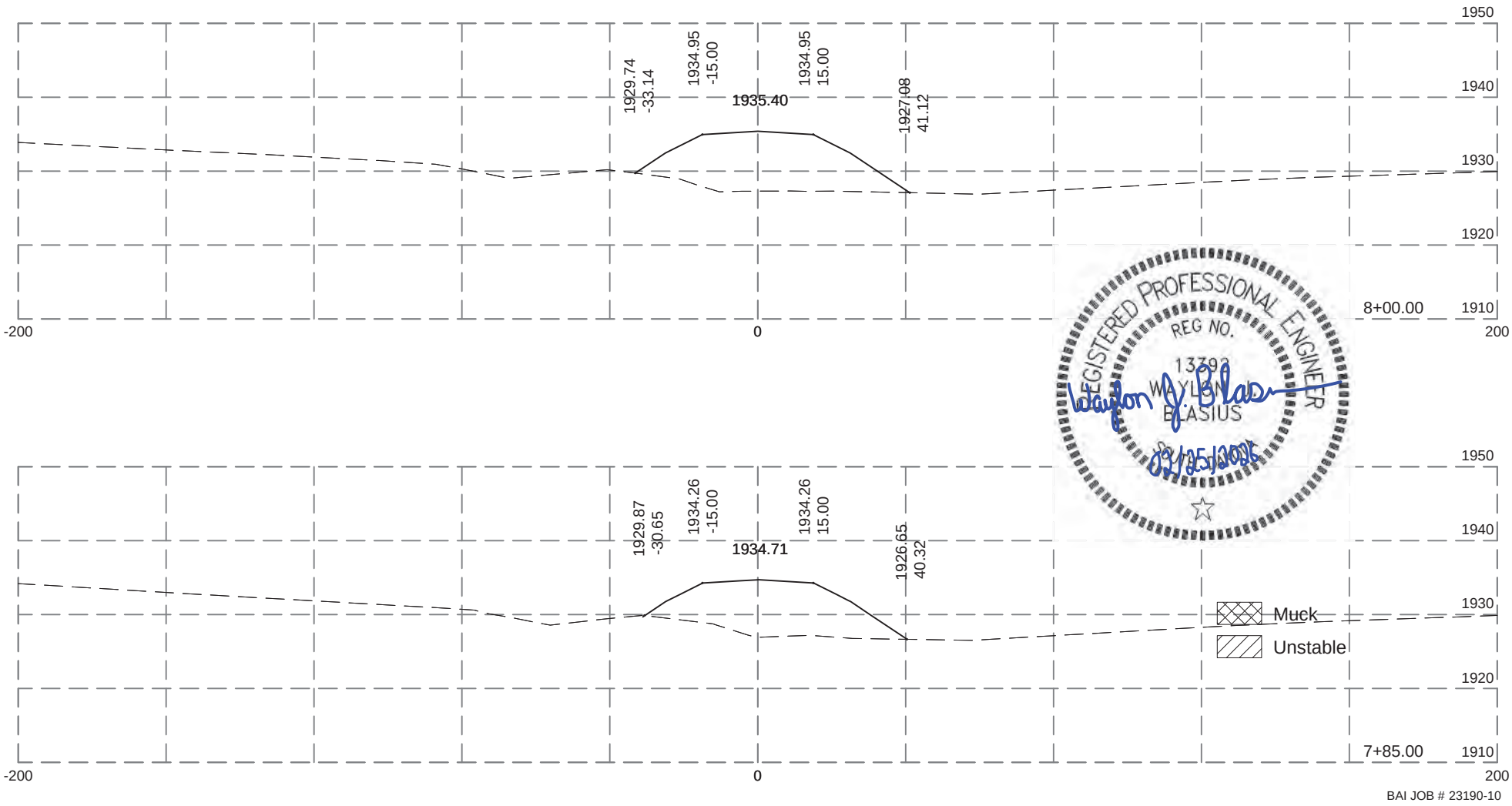
364TH AVENUE



FOR BIDDING PURPOSES ONLY







REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON
BLASIUS
03/25/2026

BAI JOB # 23190-10

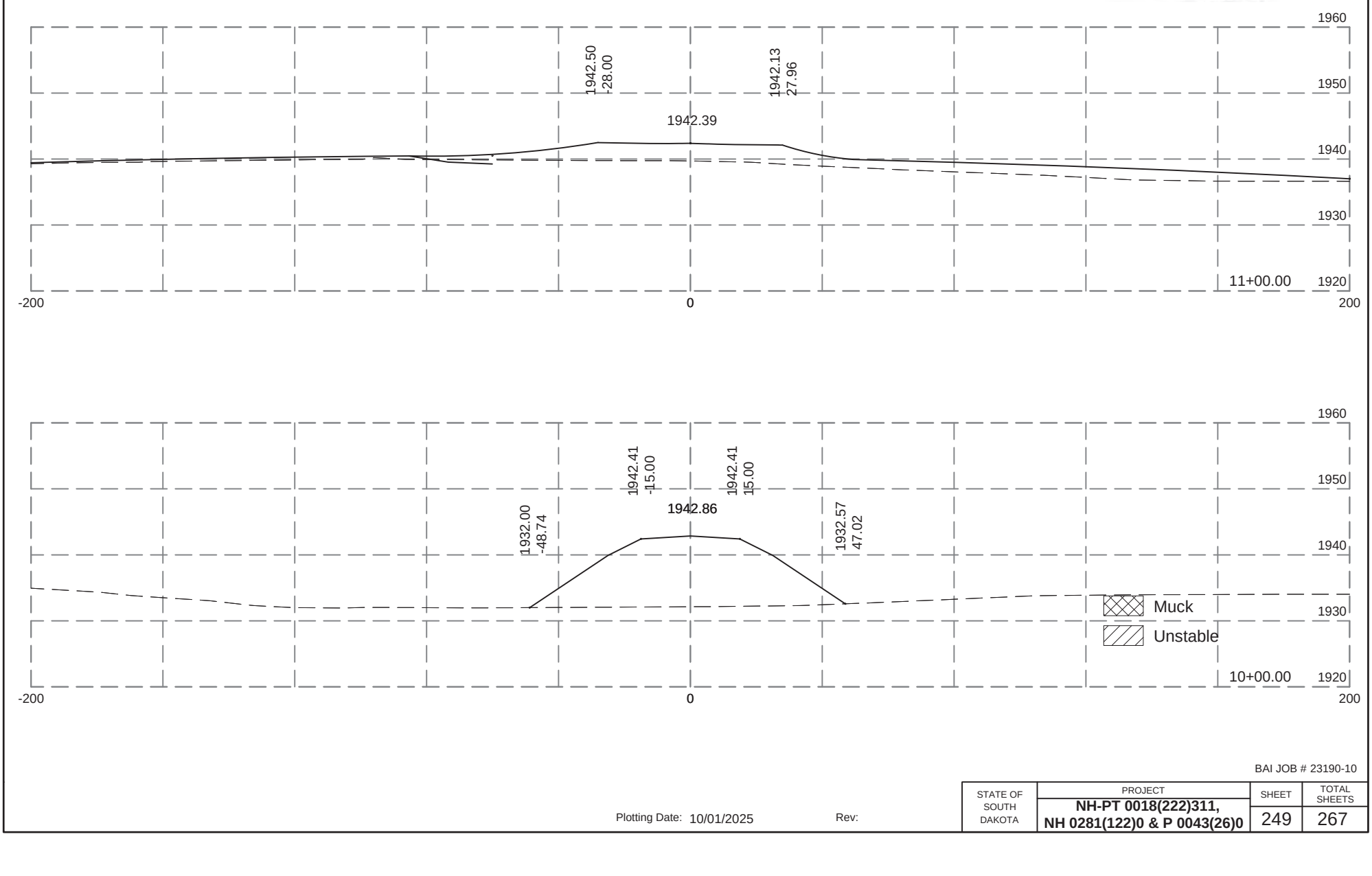
Plotting Date: 10/01/2025 Rev:

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	248	267

364TH AVENUE

FOR BIDDING PURPOSES ONLY

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13392
WAYLON
BLASIUS
SOUTH DAKOTA
09/25/2025

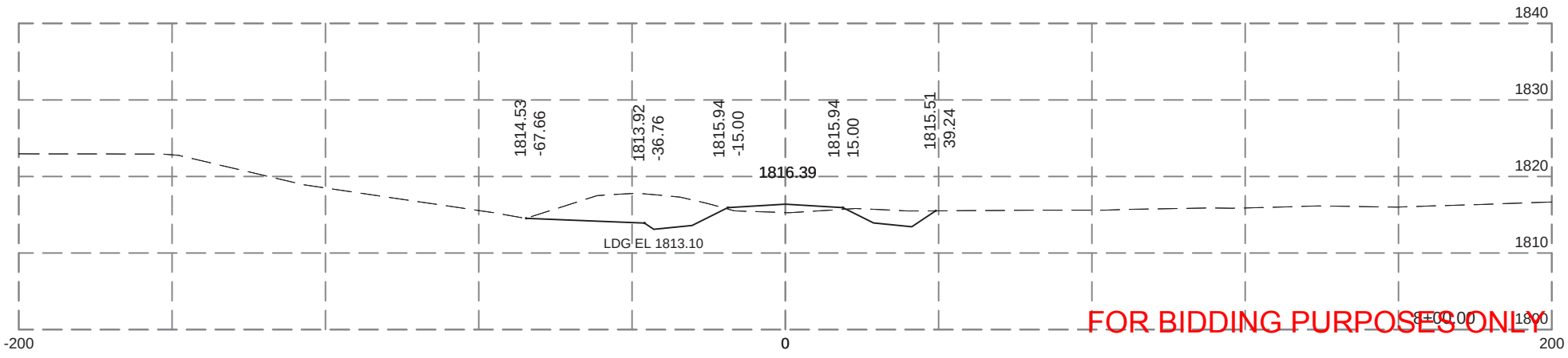


BAI JOB # 23190-10

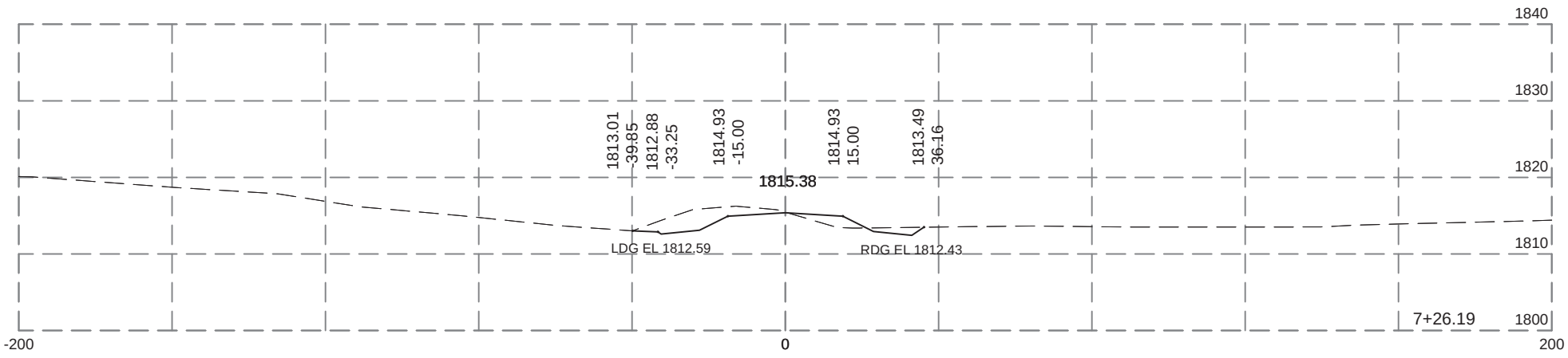
Plotting Date: 10/01/2025 Rev:

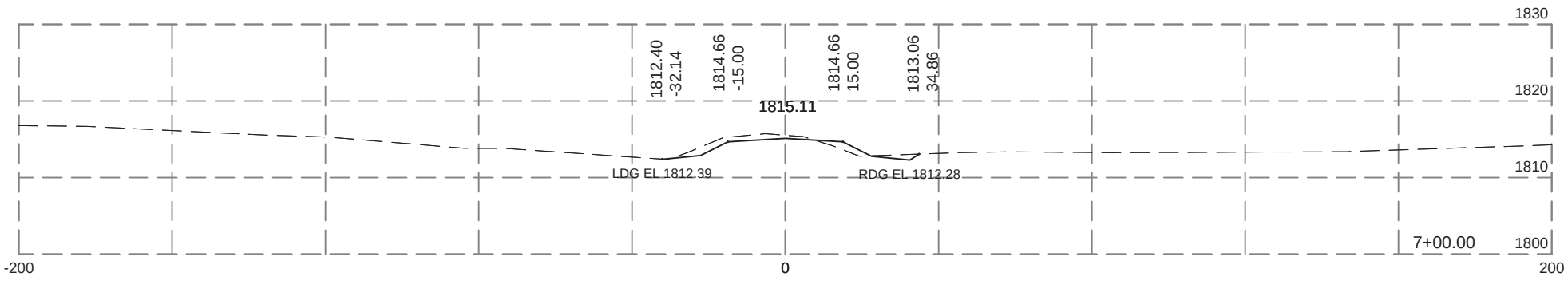
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	249	267

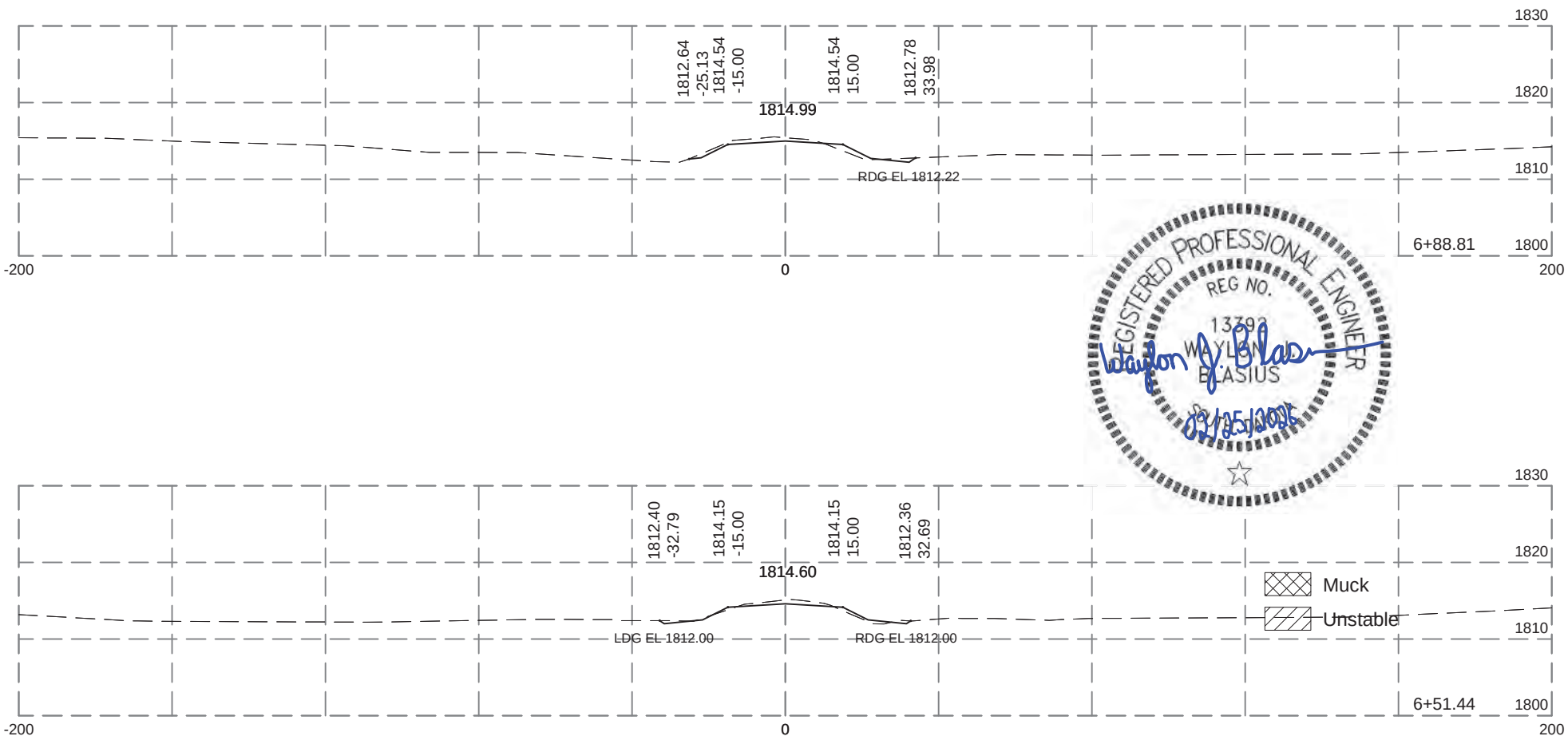
303RD STREET



FOR BIDDING PURPOSES ONLY







REGISTERED PROFESSIONAL ENGINEER
REG NO. 13393
DAWSON WAYLON BLASIUS
10/25/2025

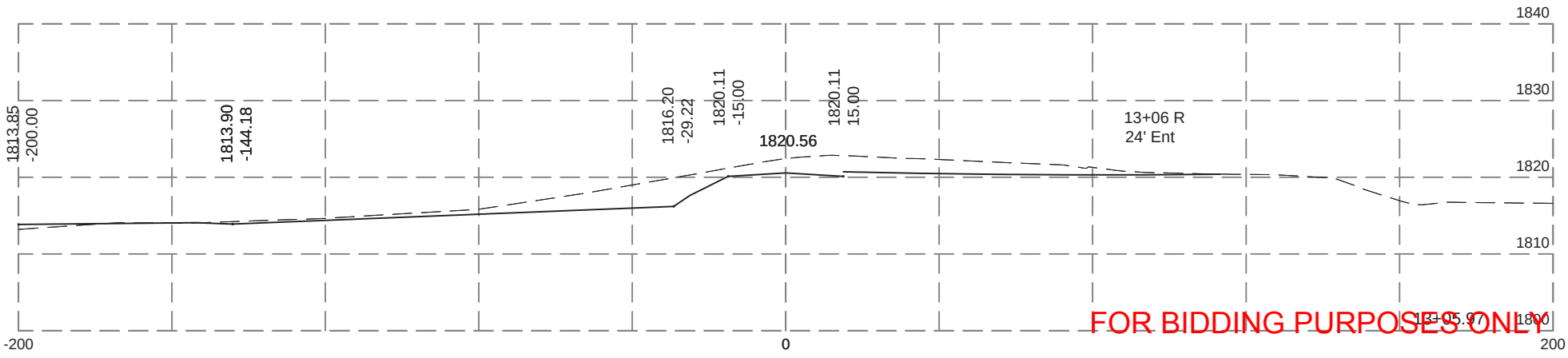
BAI JOB # 23190-10

Plotting Date: 10/01/2025

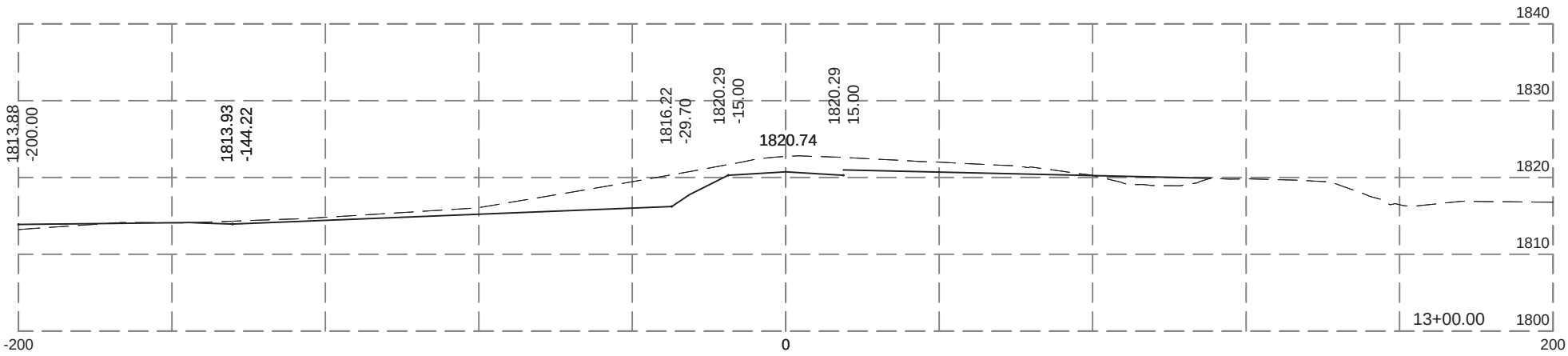
Rev:

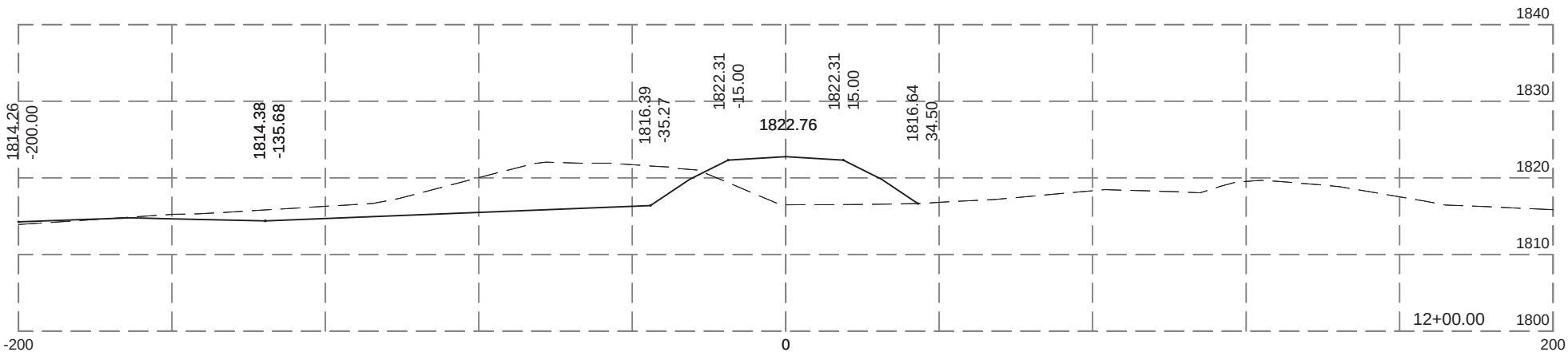
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	250	267

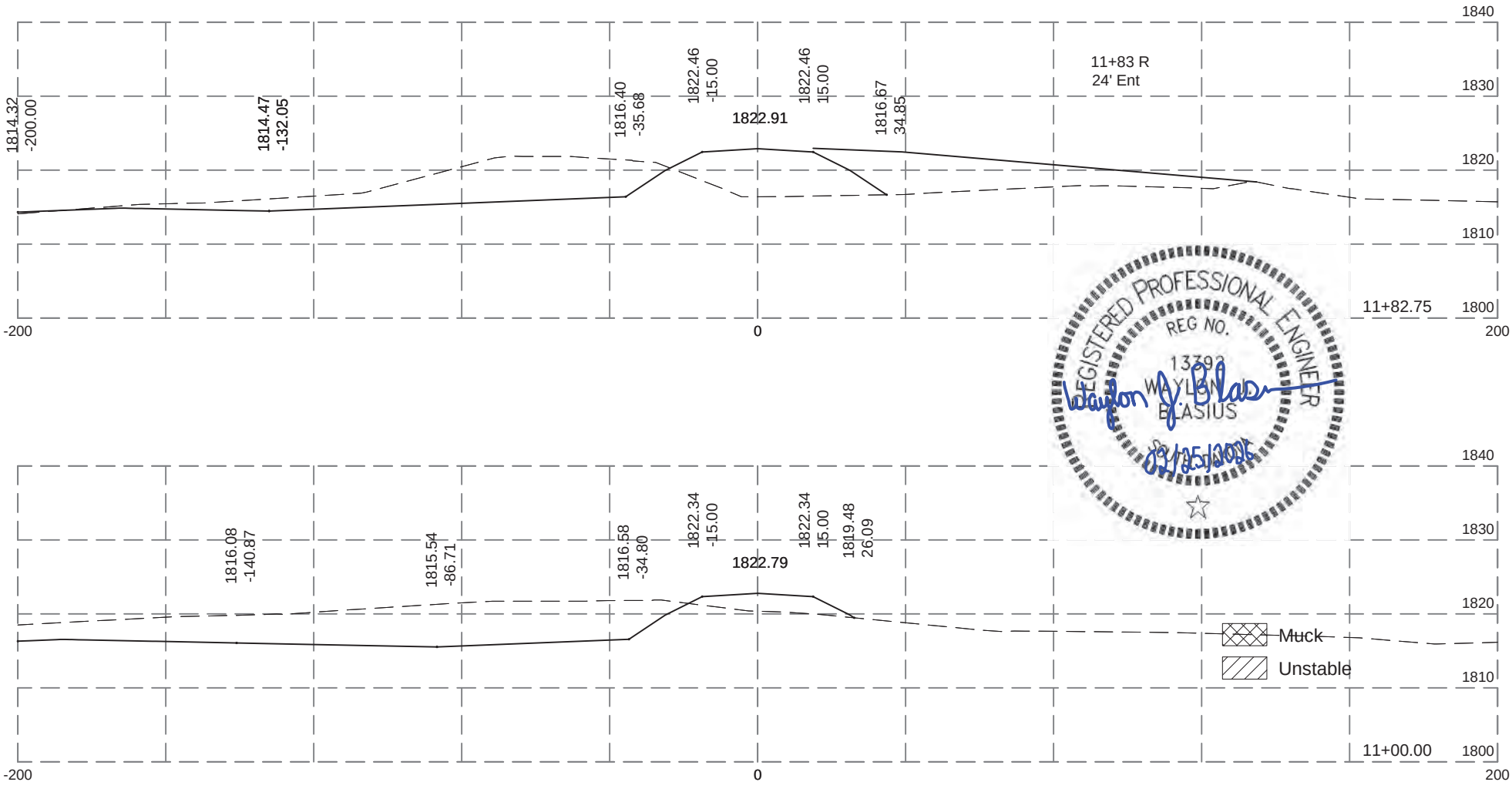
303RD STREET



FOR BIDDING PURPOSES ONLY





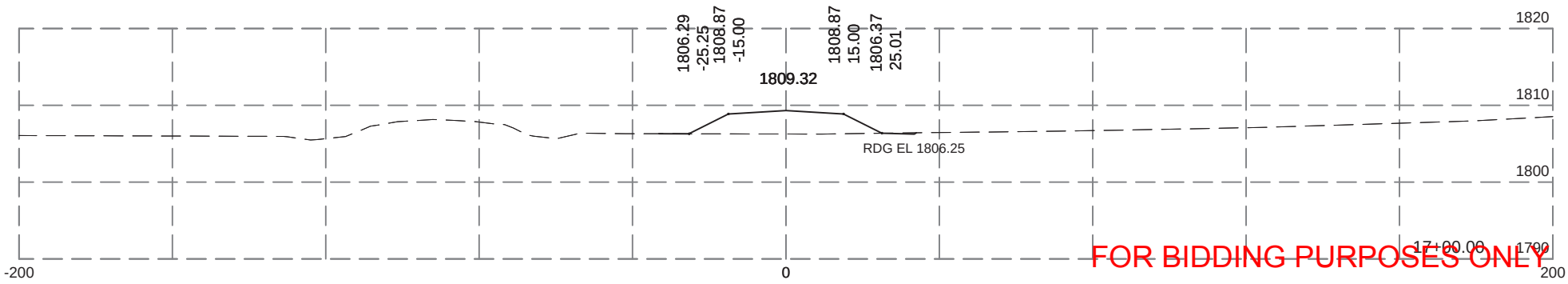


BAI JOB # 23190-10

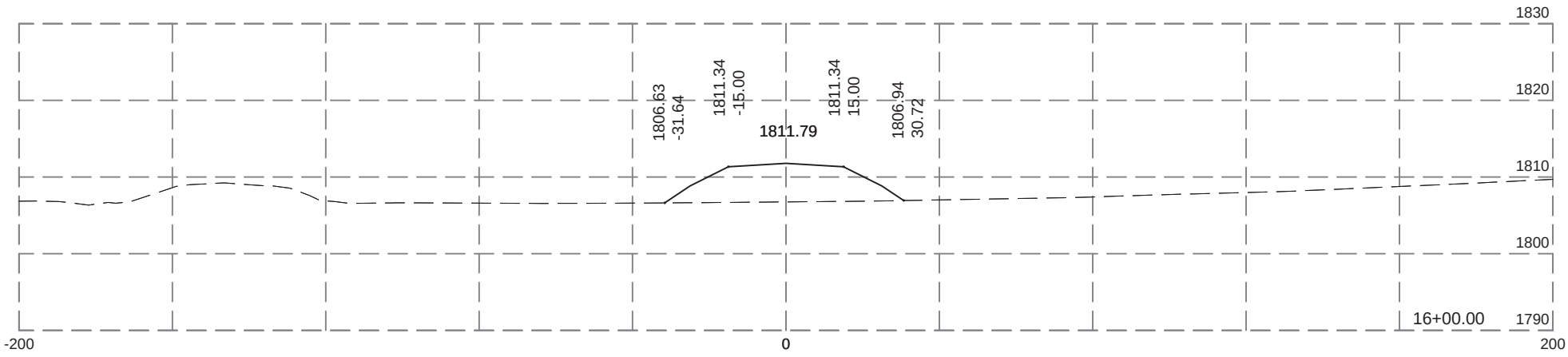
Plotting Date: 10/01/2025 Rev:

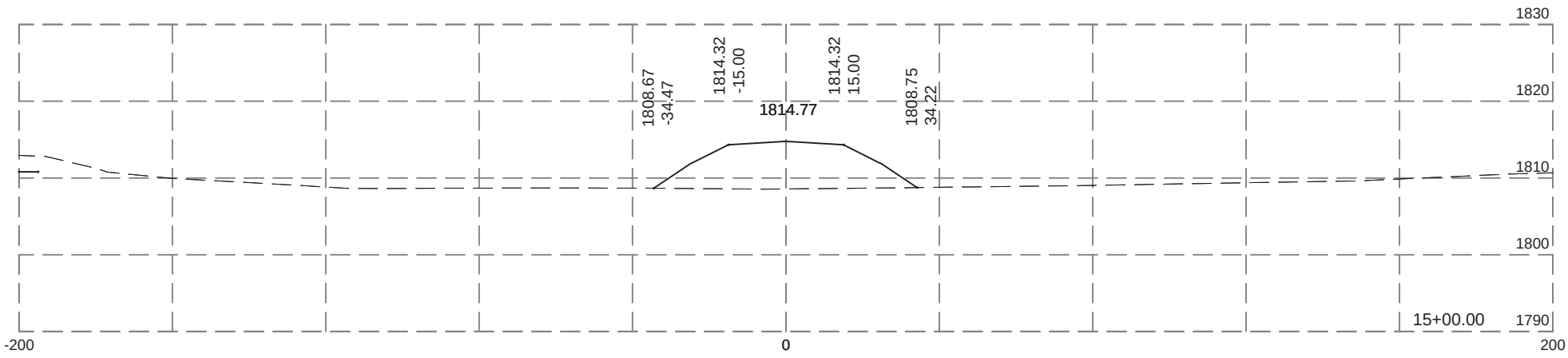
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	251	267

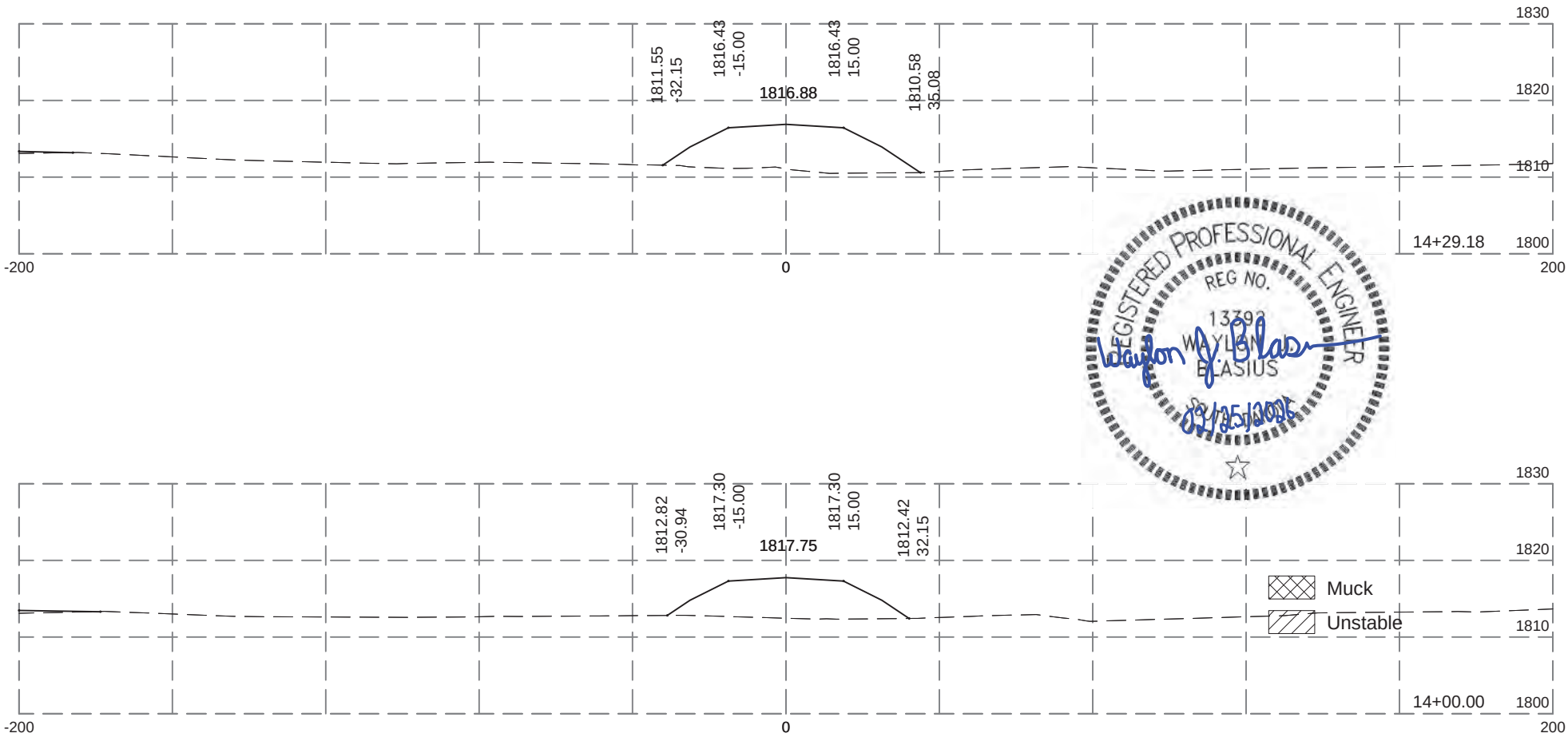
303RD STREET



FOR BIDDING PURPOSES ONLY







BAI JOB # 23190-10

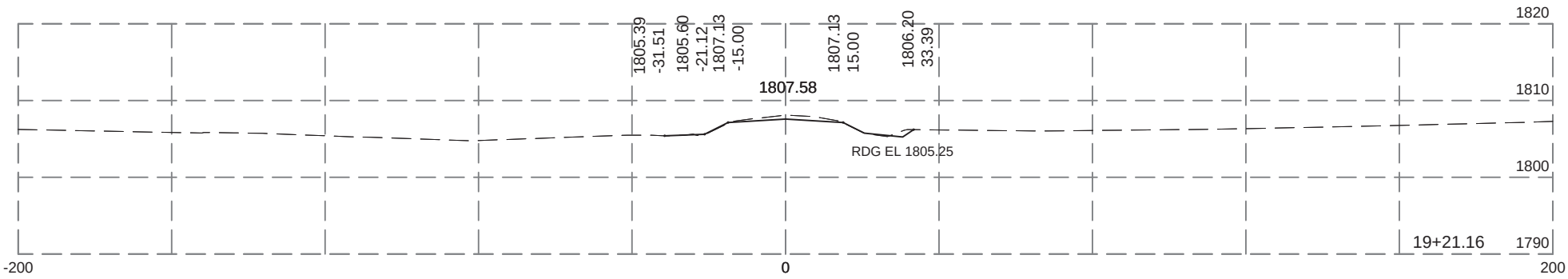
Plotting Date: 10/01/2025

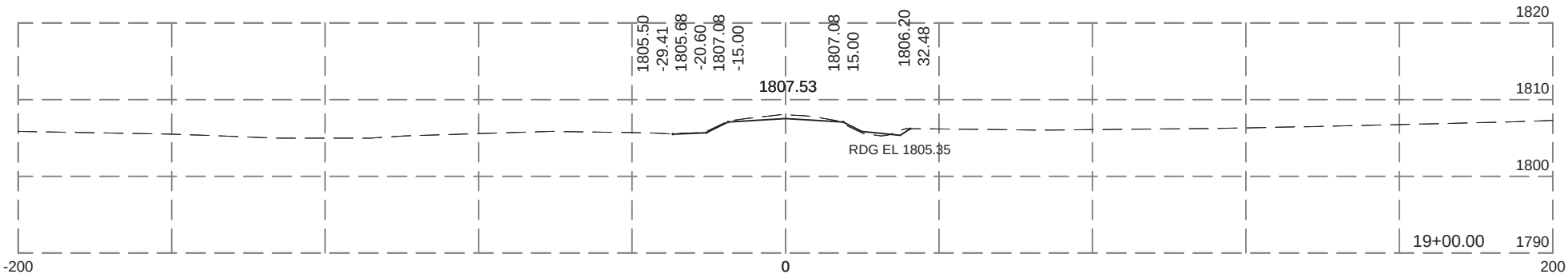
Rev:

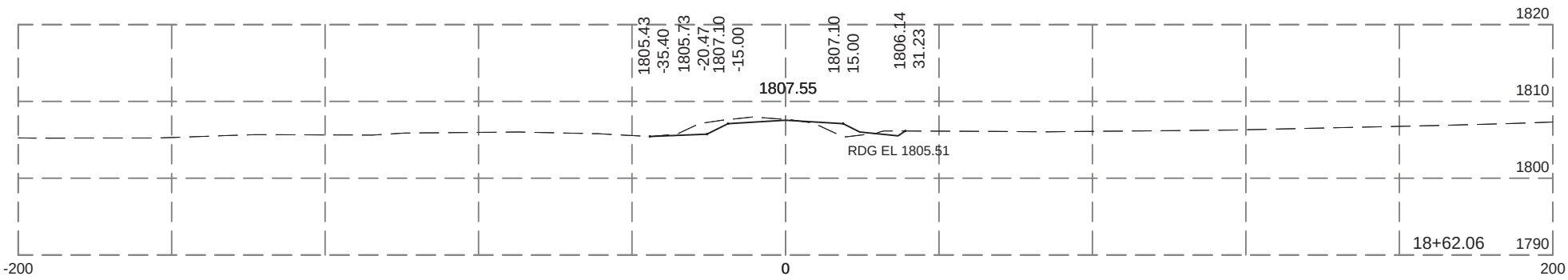
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	252	267

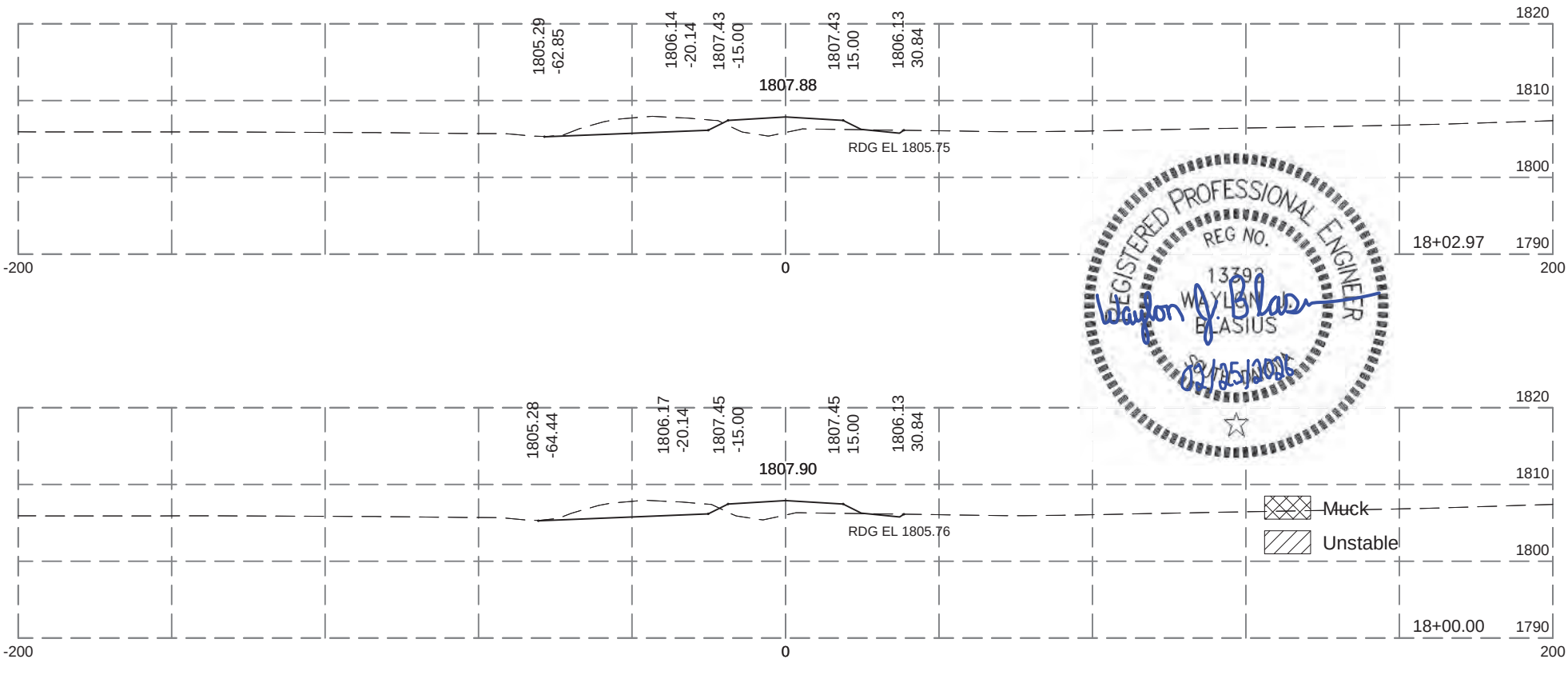
303RD STREET

FOR BIDDING PURPOSES ONLY









REGISTERED PROFESSIONAL ENGINEER
REG NO.
13392
WAYLON
BLASIUS

BAI JOB # 23190-10

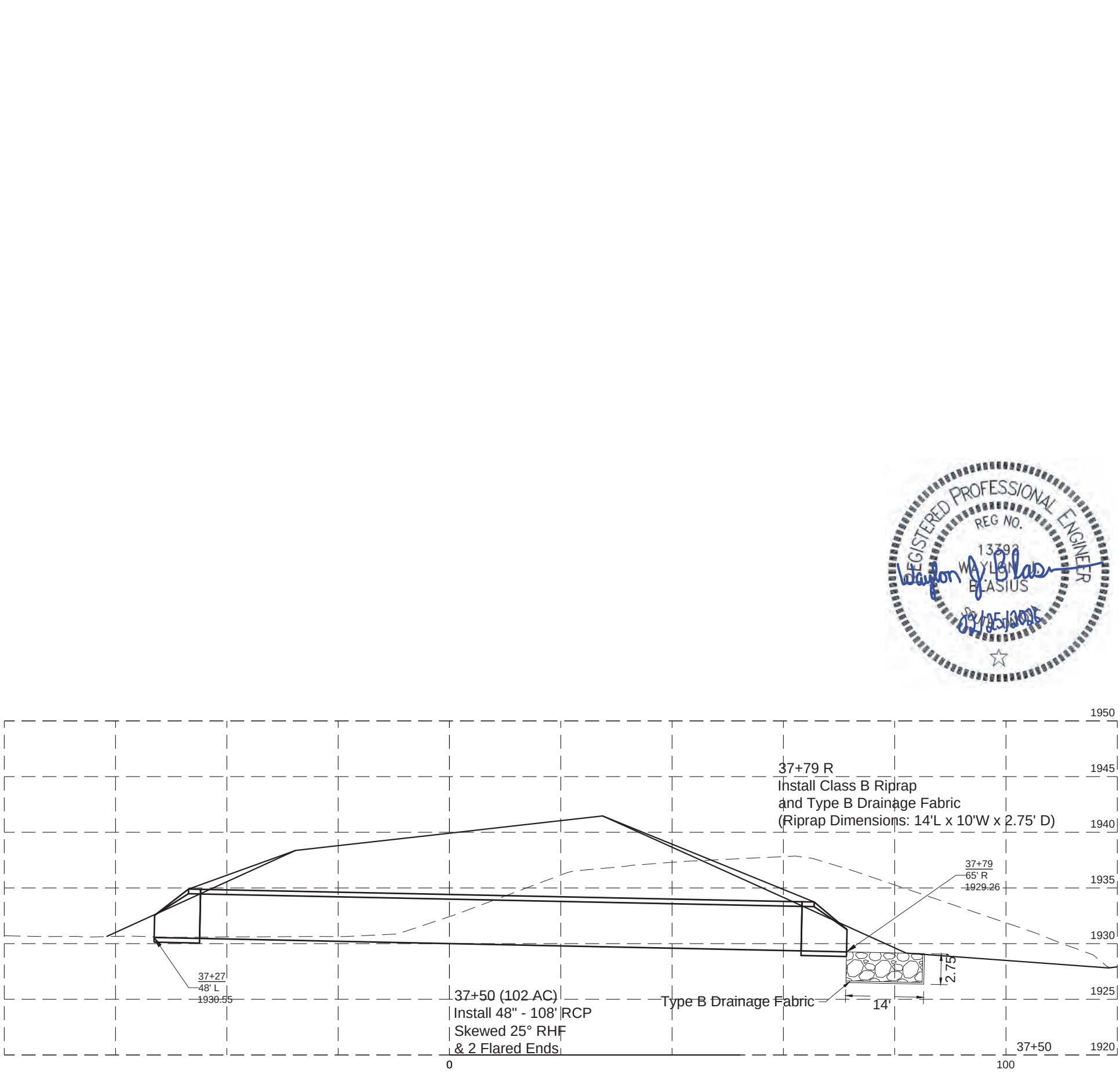
Plotting Date: 10/01/2025 Rev:

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	253	267

US HIGHWAY 18 WEST

FOR BIDDING PURPOSES ONLY

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON
BLASIUS
03/25/2026



BAI JOB # 23190-10

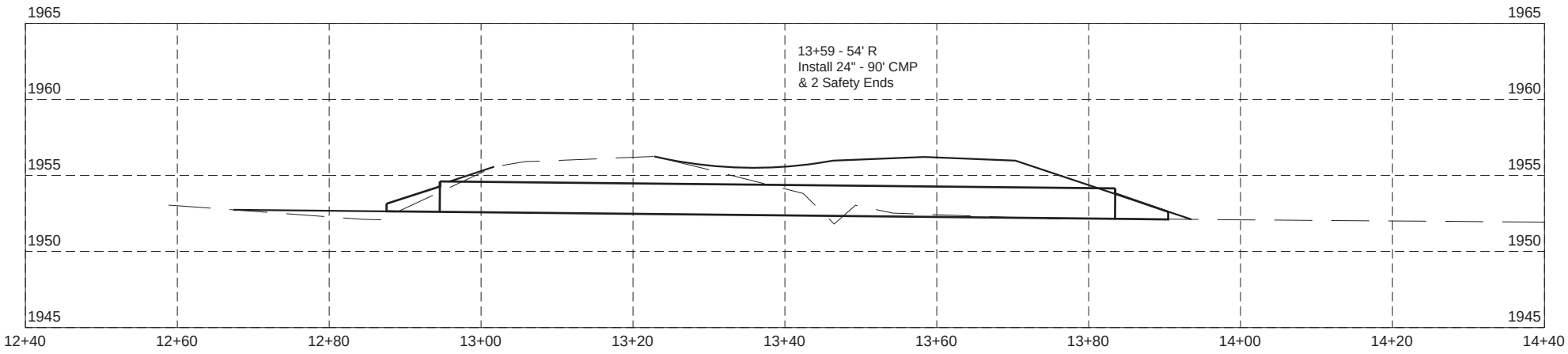
Plotting Date: 10/01/2025 Rev:

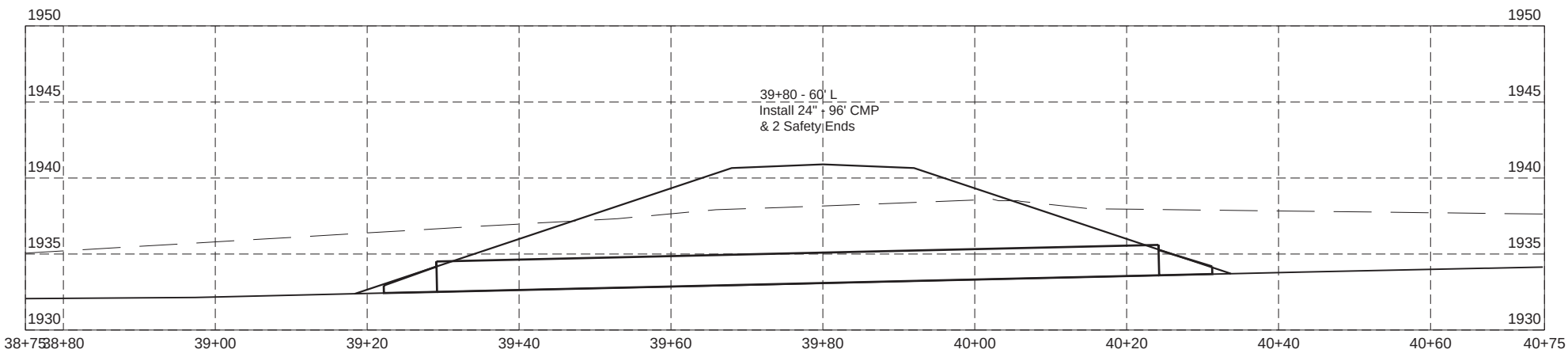
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	254	267

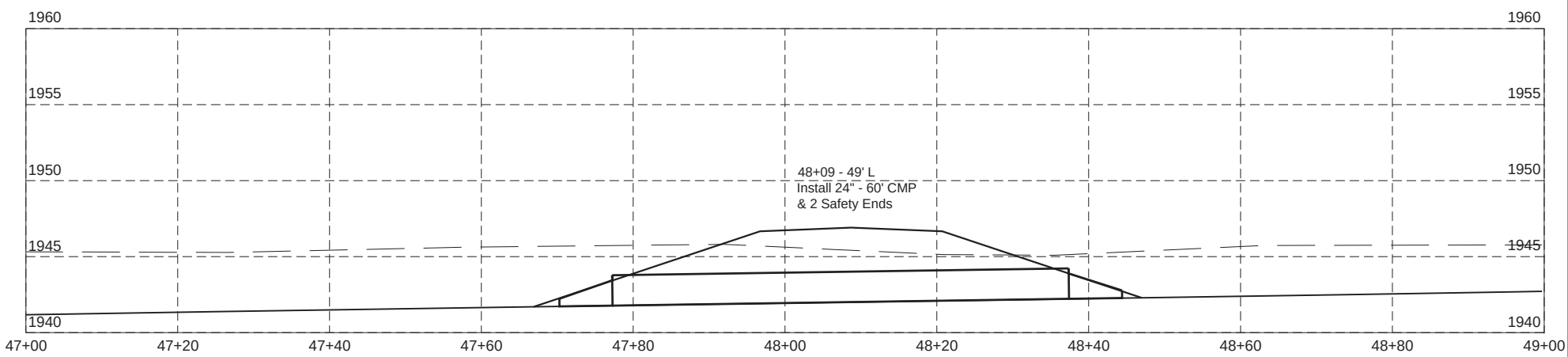
US HIGHWAY 18 WEST

FOR BIDDING PURPOSES ONLY

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13392
WAYLON J.
BLASIUS
10/25/2025







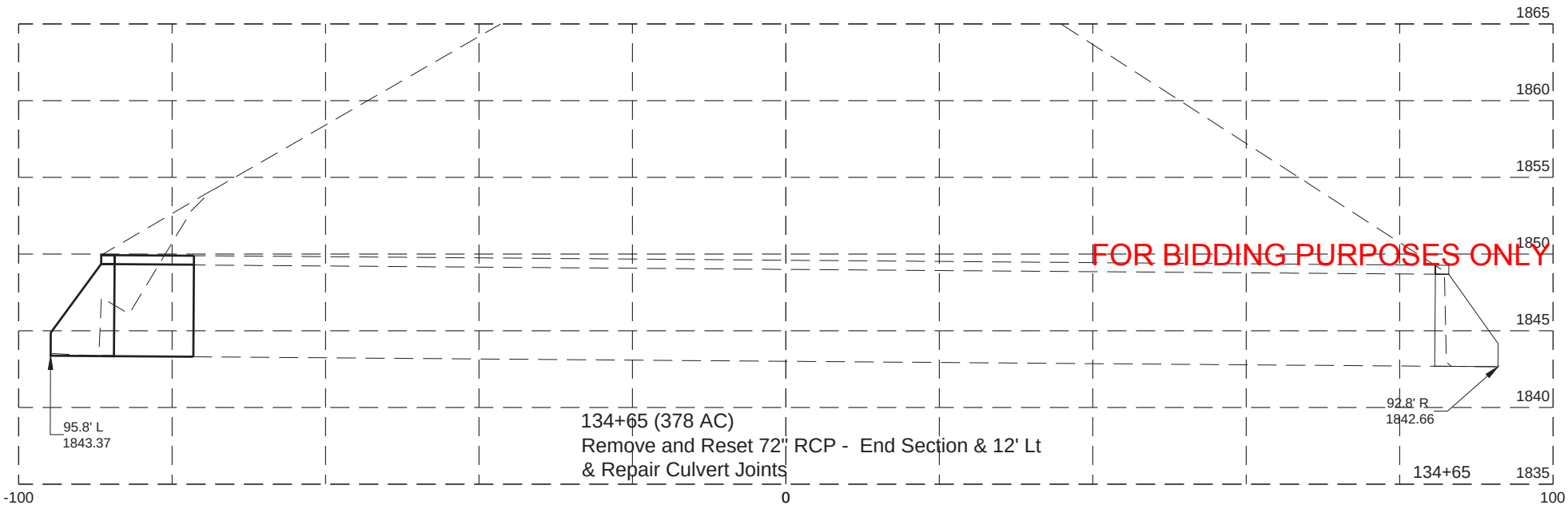
BAI JOB # 23190-10

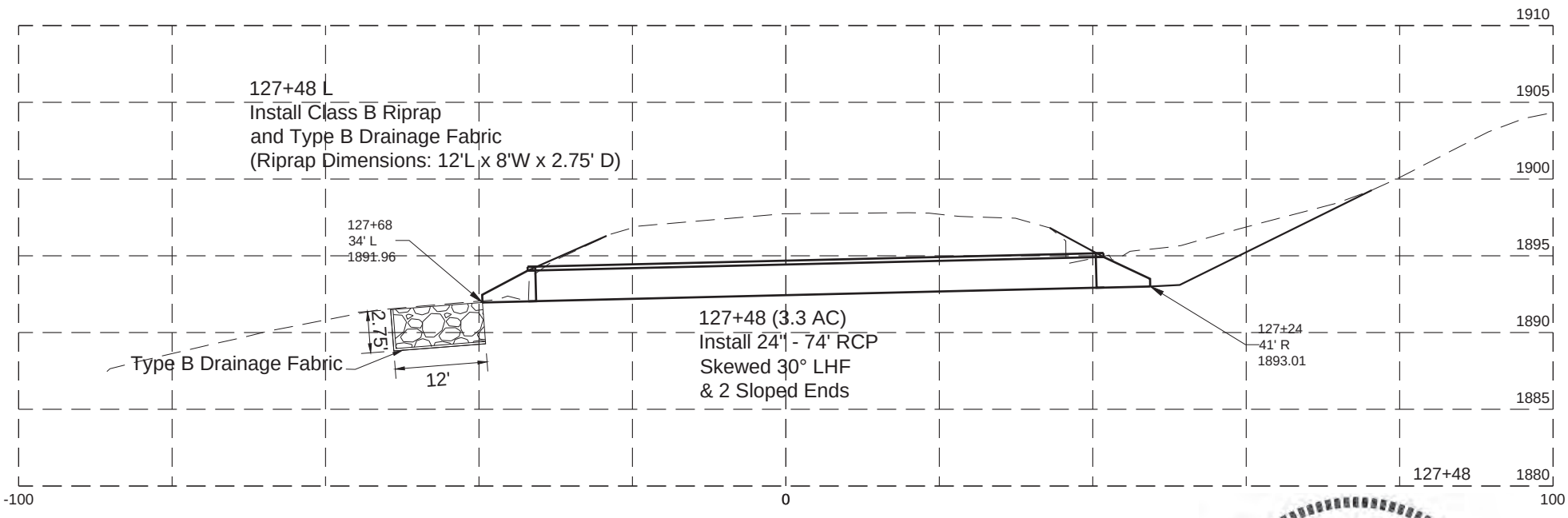
Plotting Date: 10/01/2025

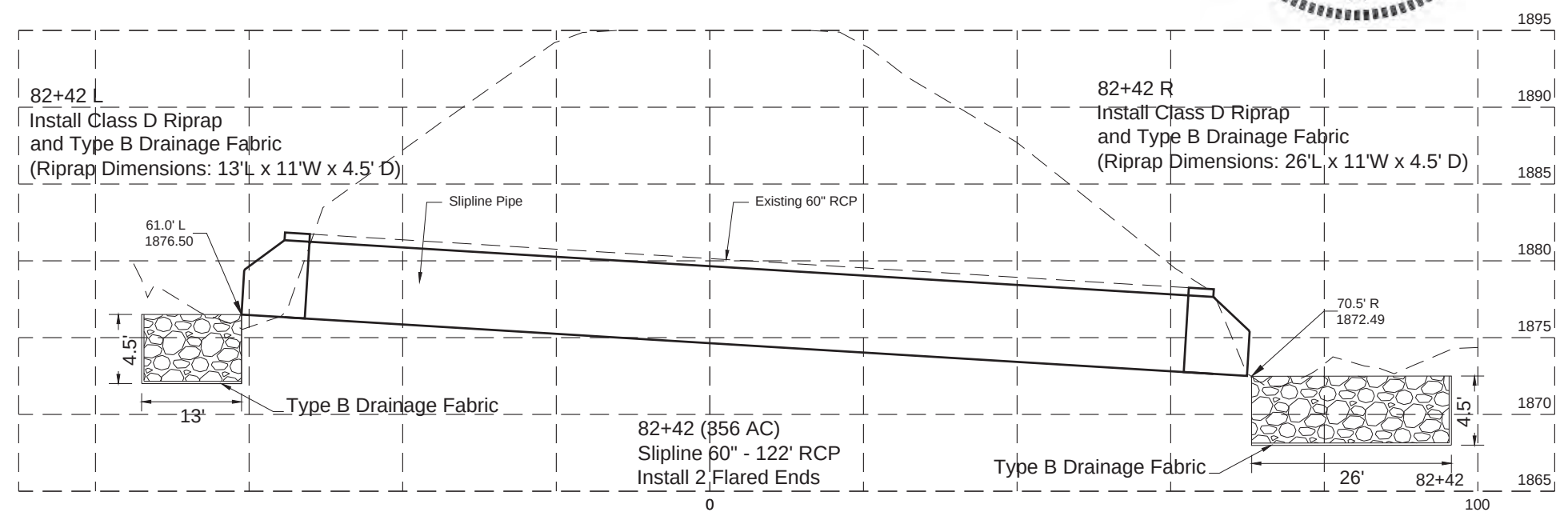
Rev:

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	255	267

US HIGHWAY 18







BAI JOB # 23190-10

Plotting Date: 10/01/2025 Rev:

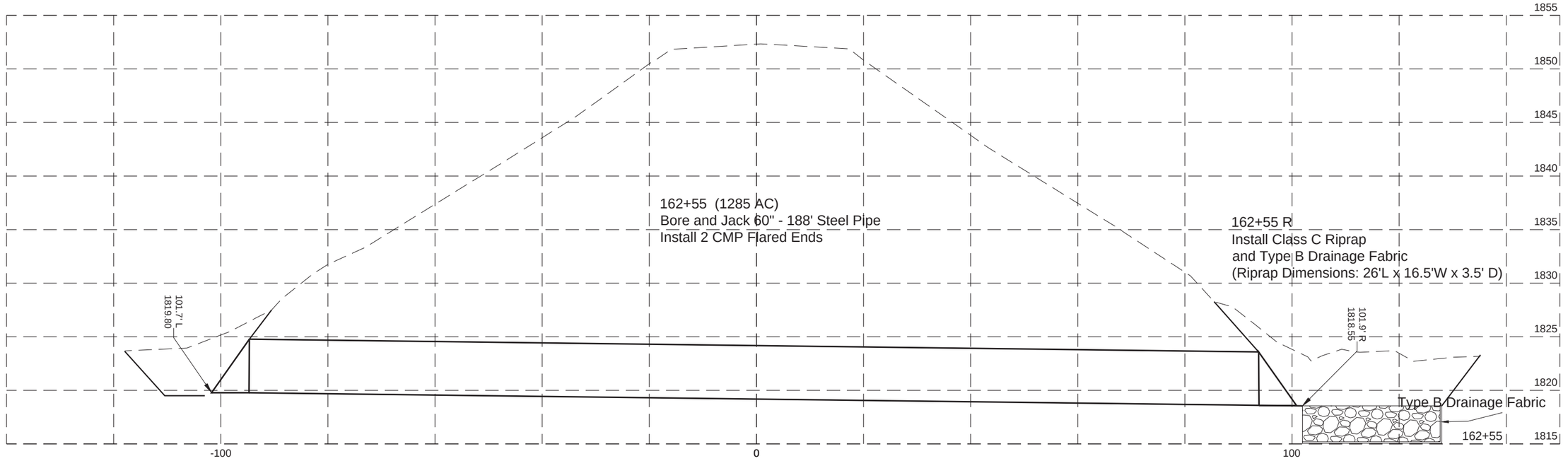
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	256	267

BAI JOB # 23190-10	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	257	267

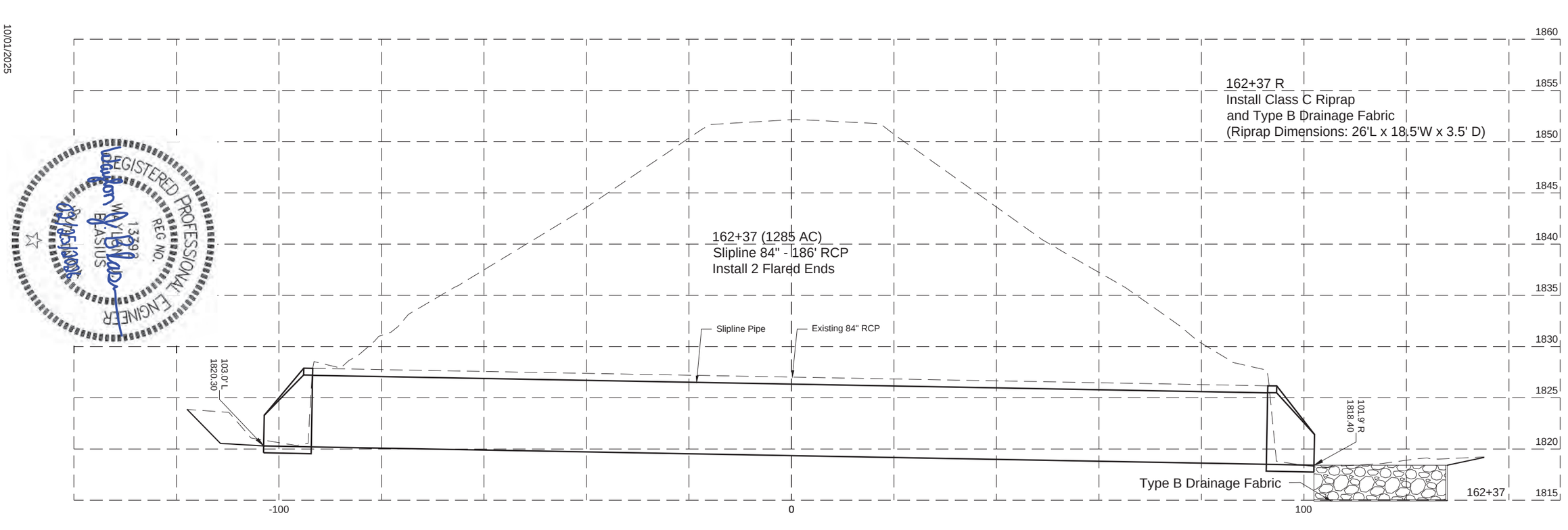
FOR BIDDING PURPOSES ONLY

Plotting Date: 09/16/2025 Rev:

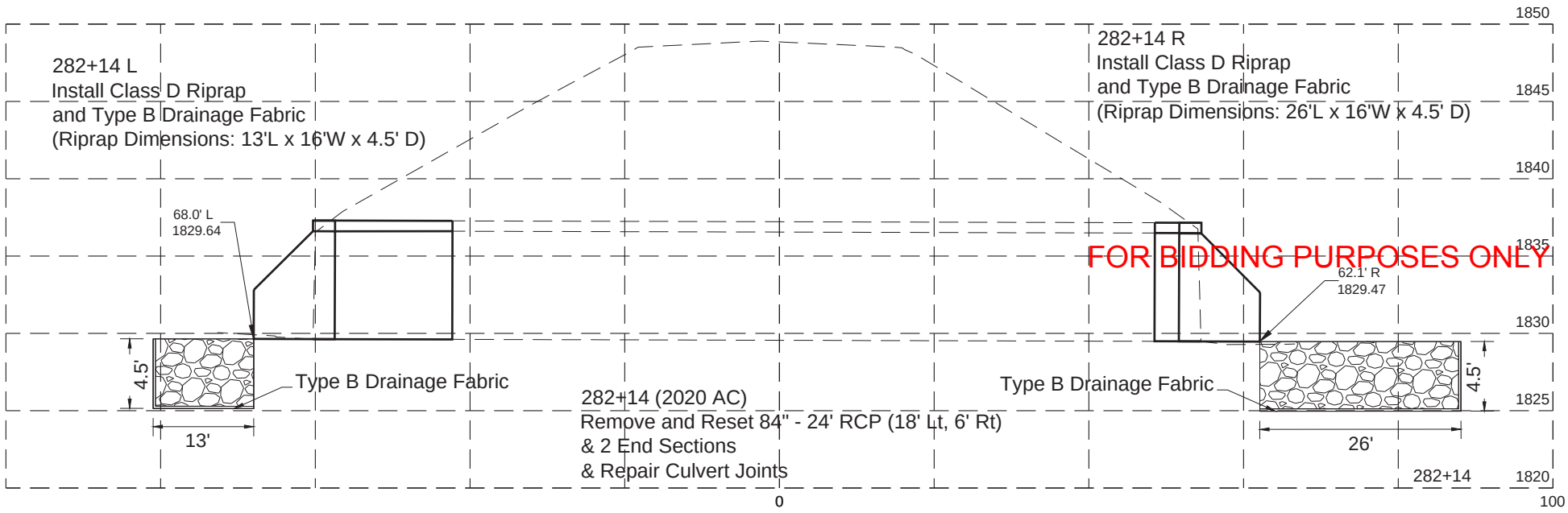
US HIGHWAY 18

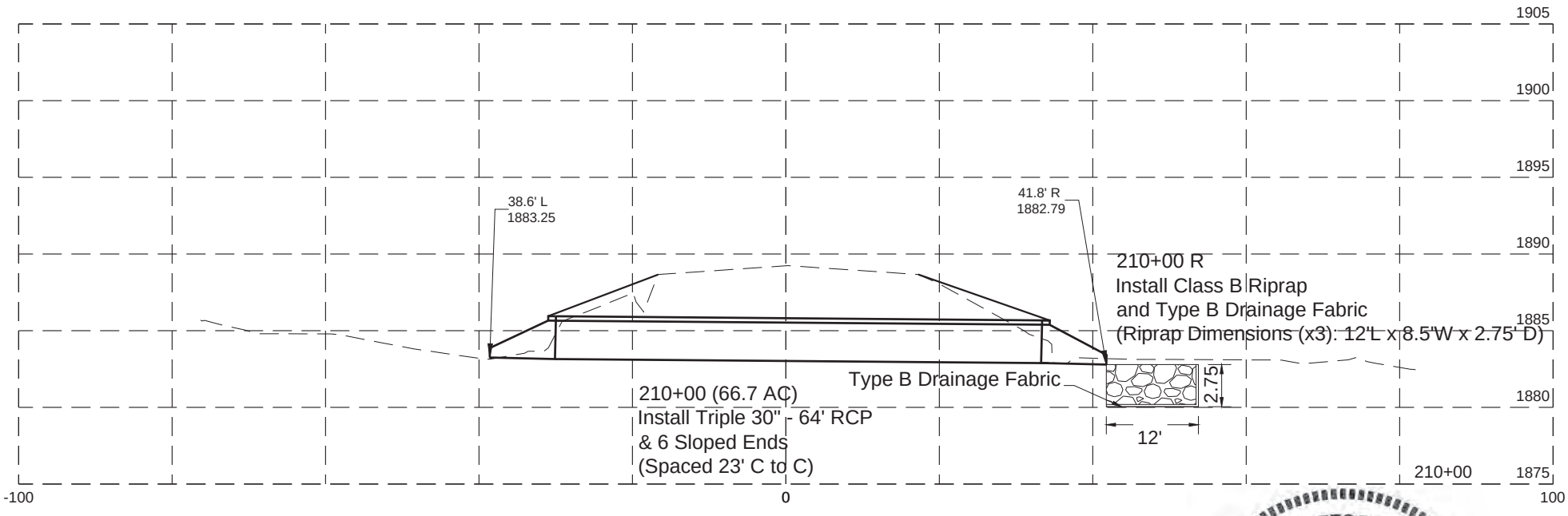


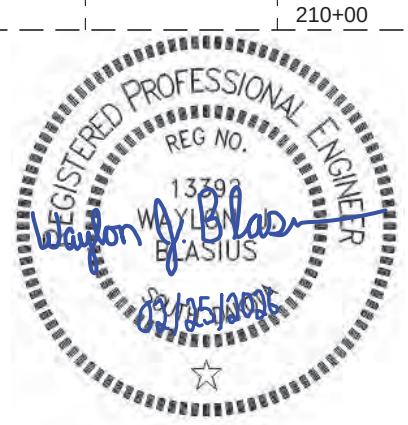
10/01/2025

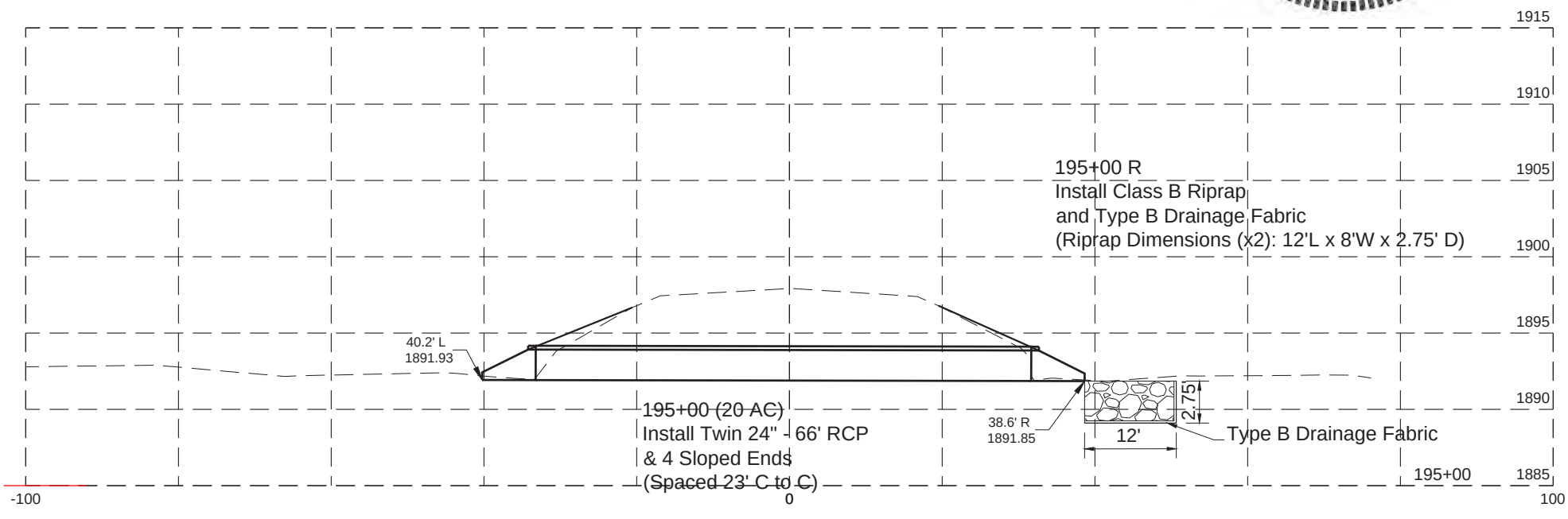


US HIGHWAY 18









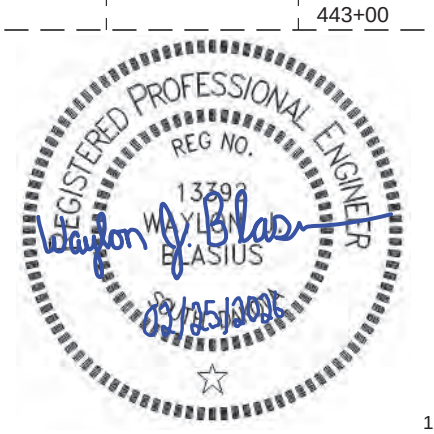
BAI JOB # 23190-10

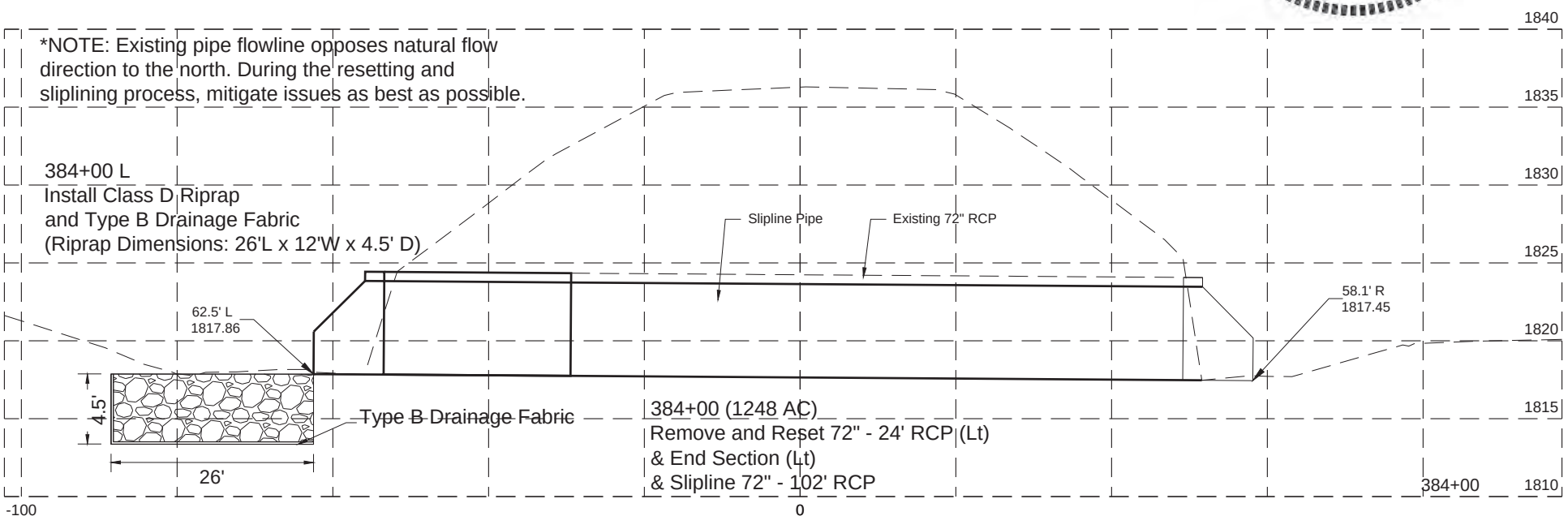
Plotting Date: 10/01/2025 Rev:

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	258	267

US HIGHWAY 18

FOR BIDDING PURPOSES ONLY



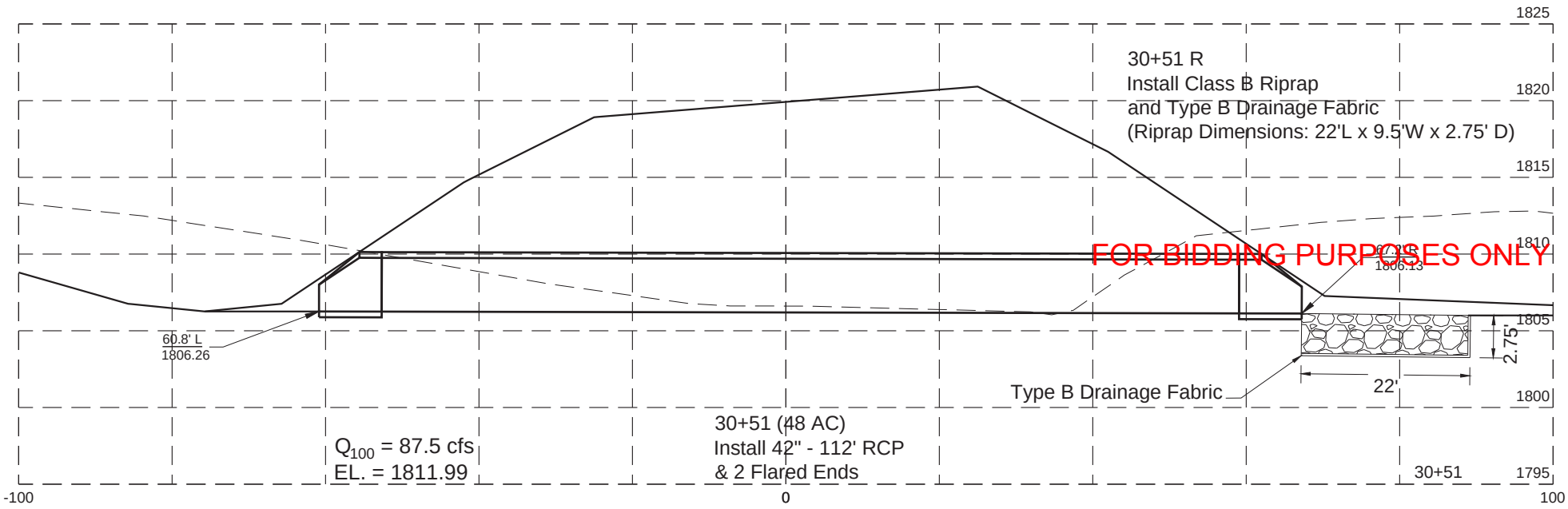


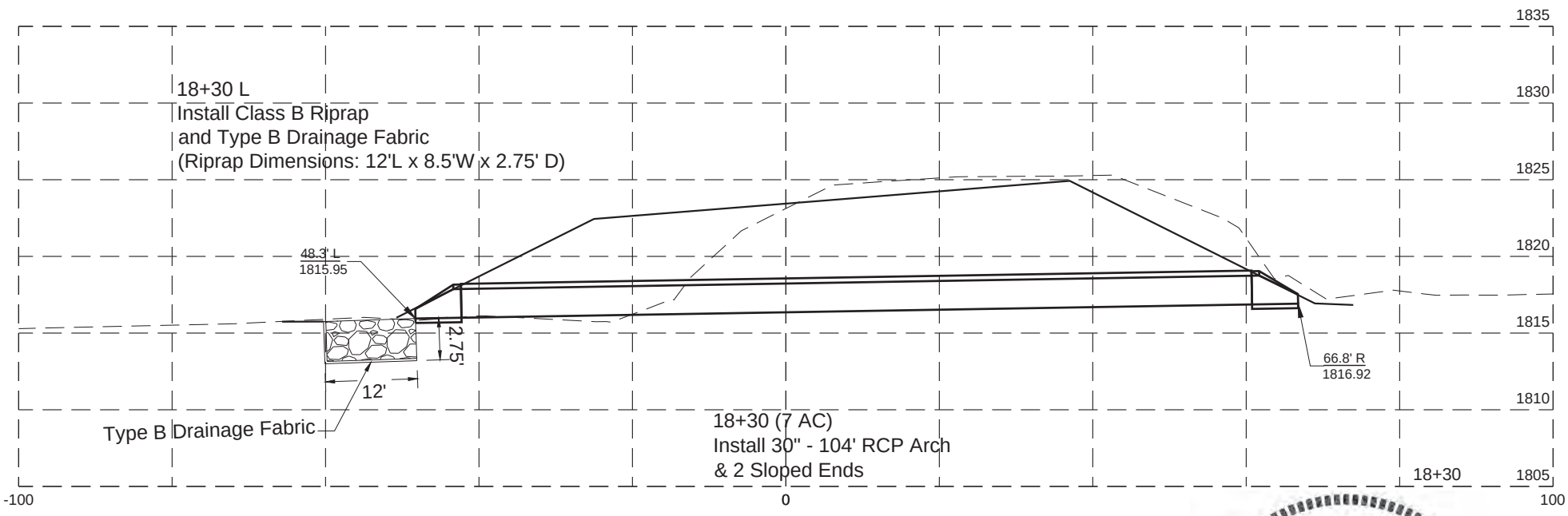
BAI JOB # 23190-10

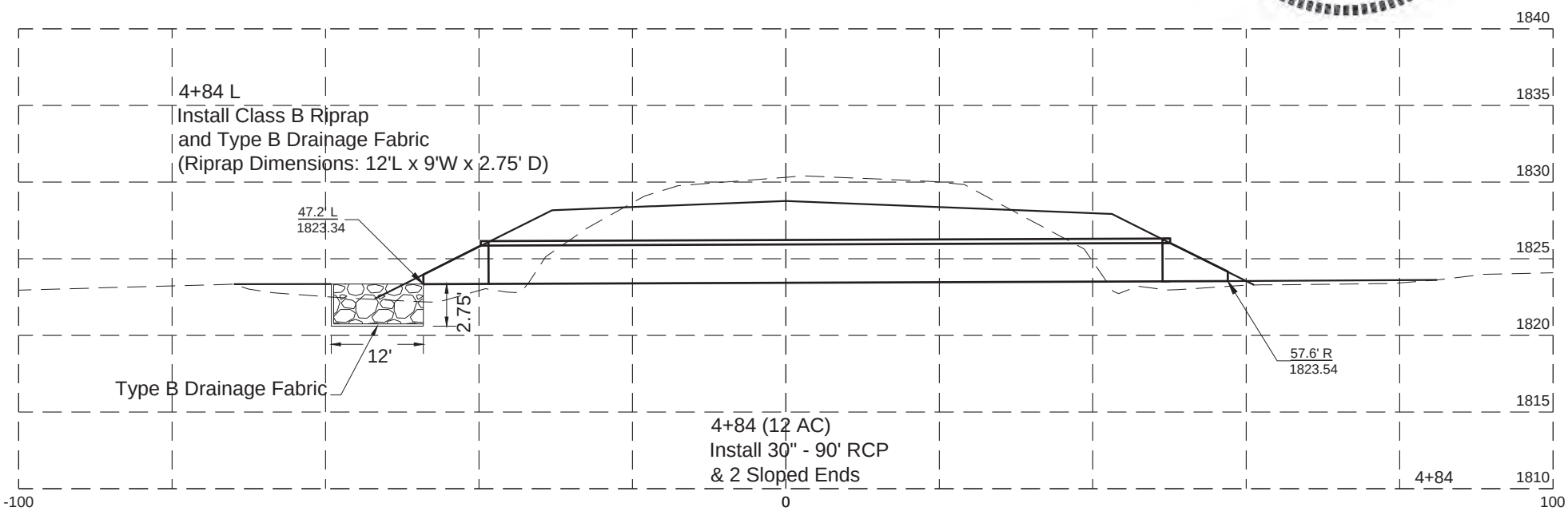
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	259	267

Plotting Date: 10/01/2025 Rev:

US HIGHWAY 18 EAST







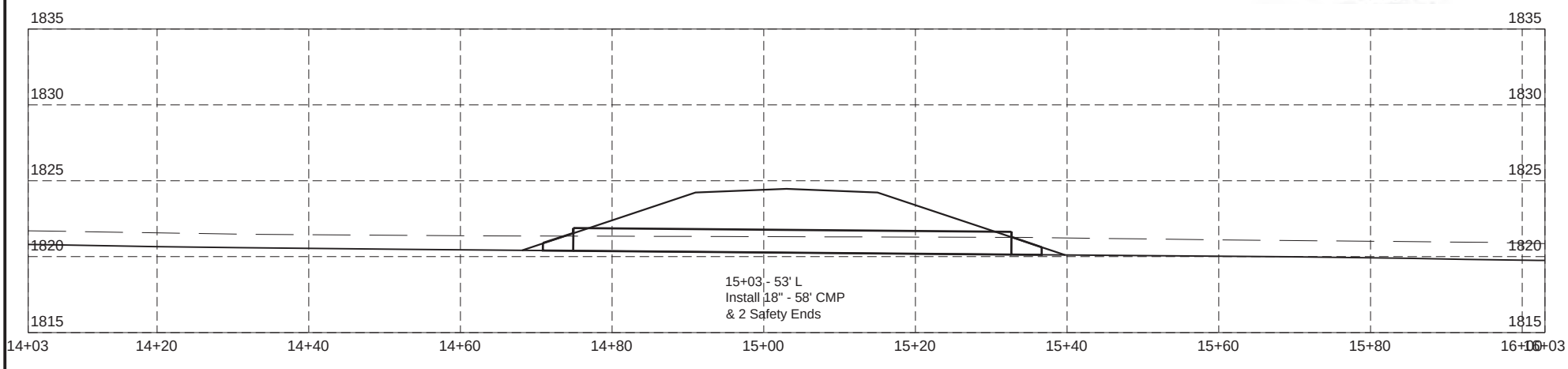
BAI JOB # 23190-10

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	260	267

Plotting Date: 10/01/2025 Rev:

US HIGHWAY 18 EAST

FOR BIDDING PURPOSES ONLY



BAI JOB # 23190-10

Plotting Date: 10/01/2025

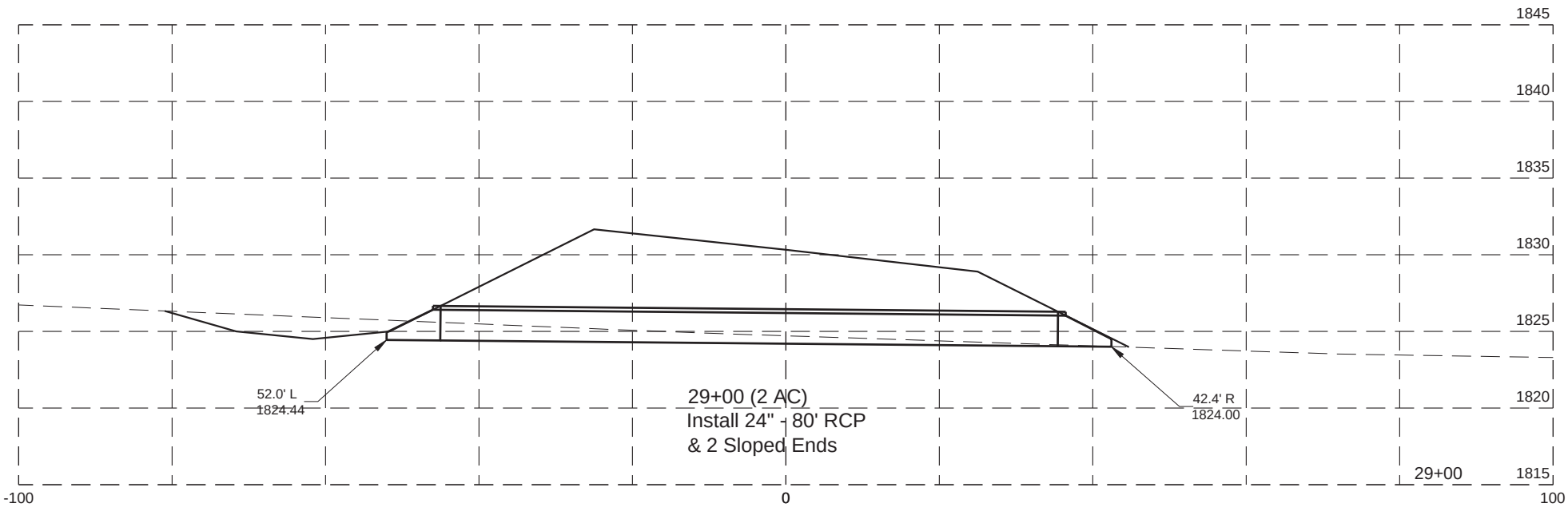
Rev:

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	261	267

US HIGHWAY 281

FOR BIDDING PURPOSES ONLY

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLAN
BLASIUS
02/25/2026



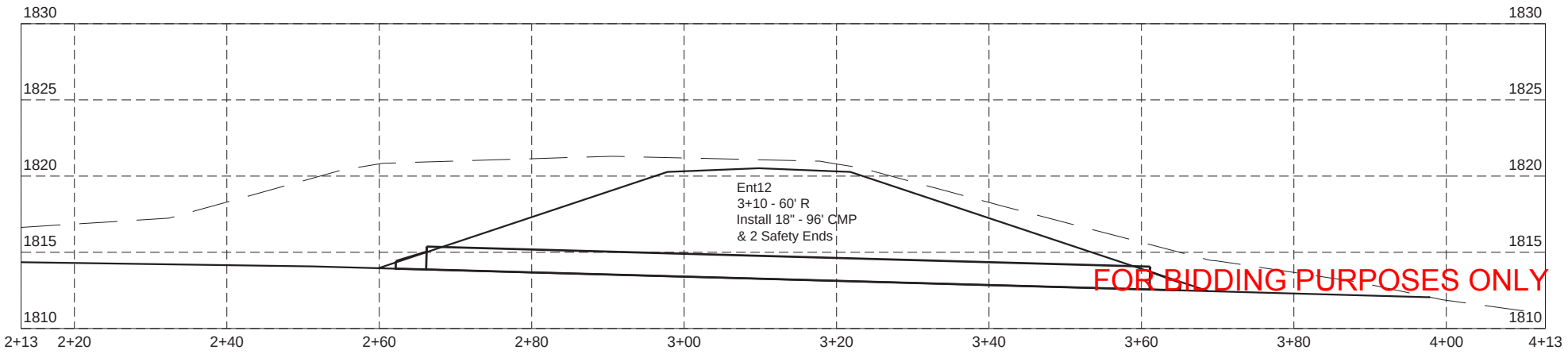
BAI JOB # 23190-10

Plotting Date: 10/01/2025

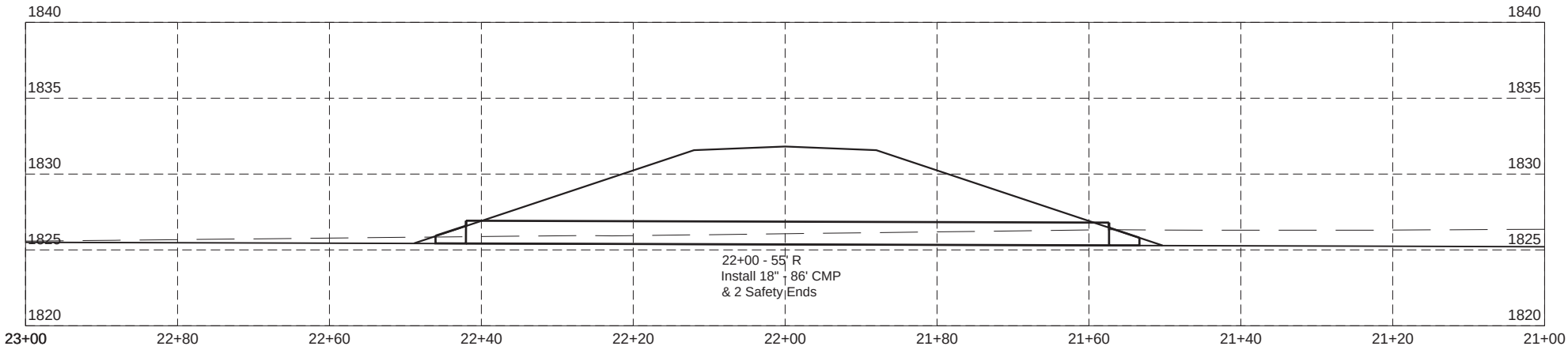
Rev:

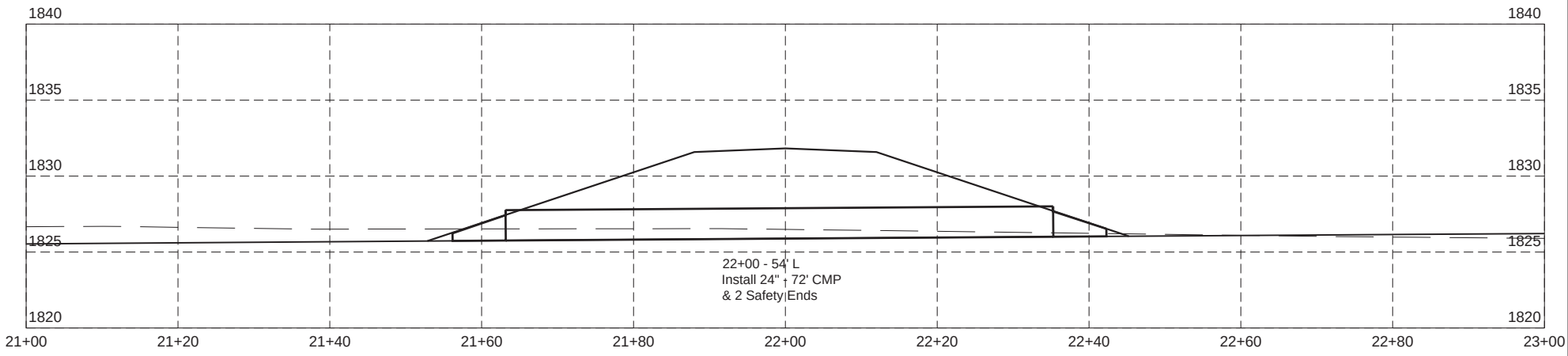
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	262	267

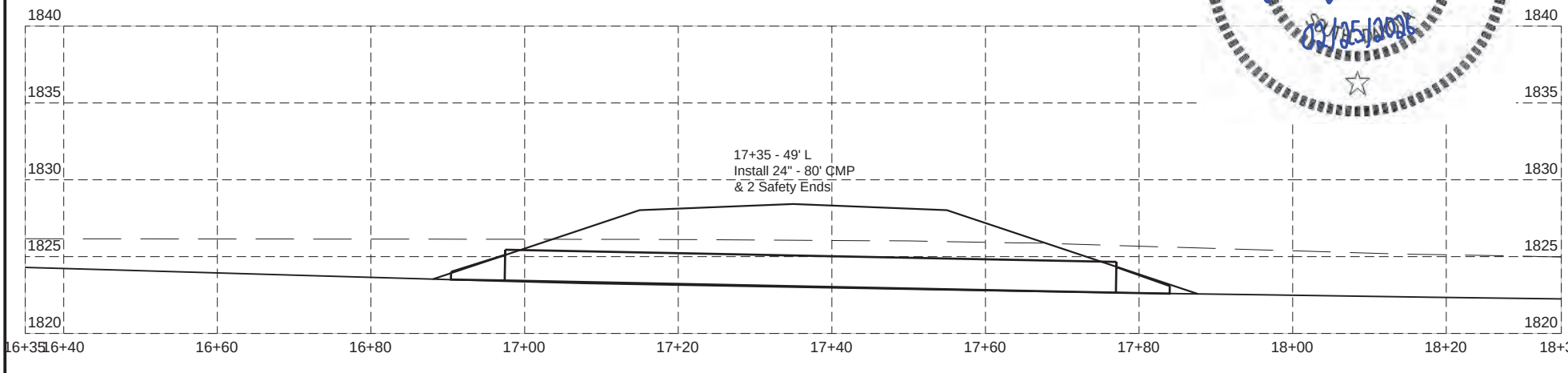
US HIGHWAY 281

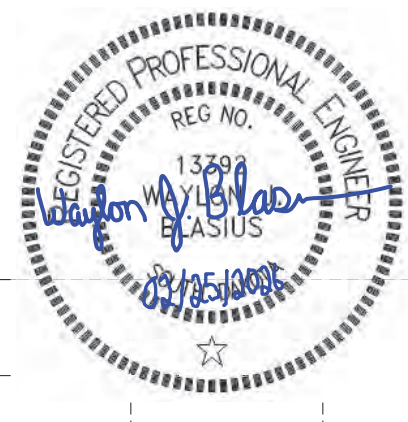


FOR BIDDING PURPOSES ONLY









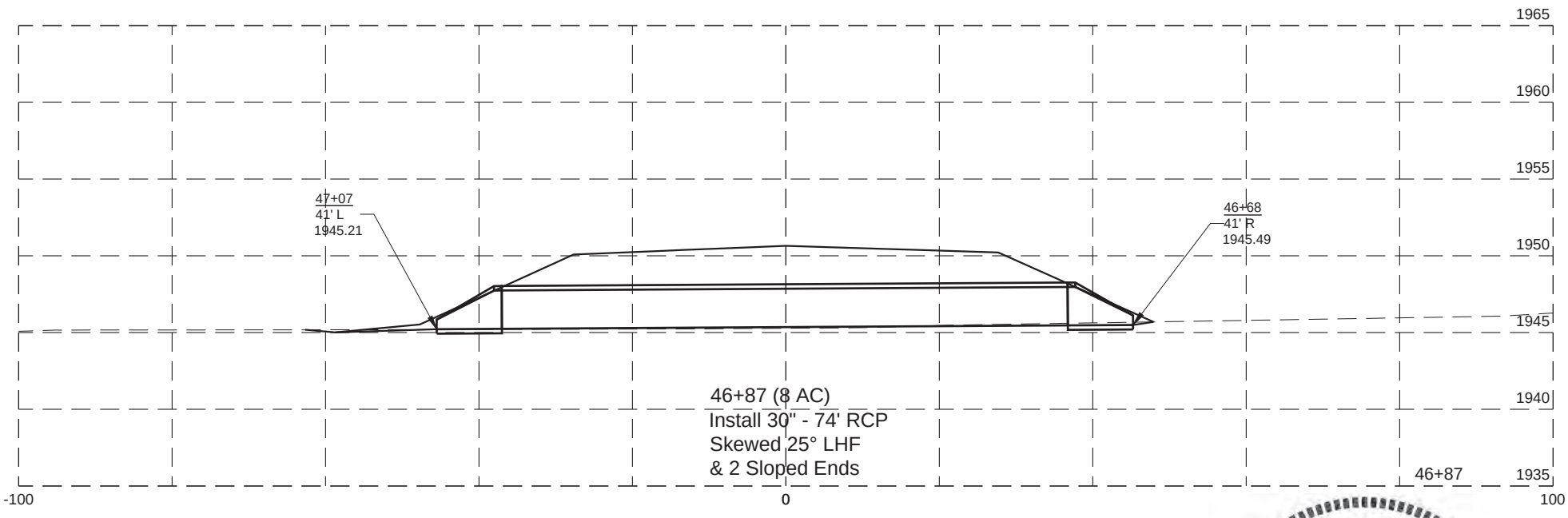
BAI JOB # 23190-10

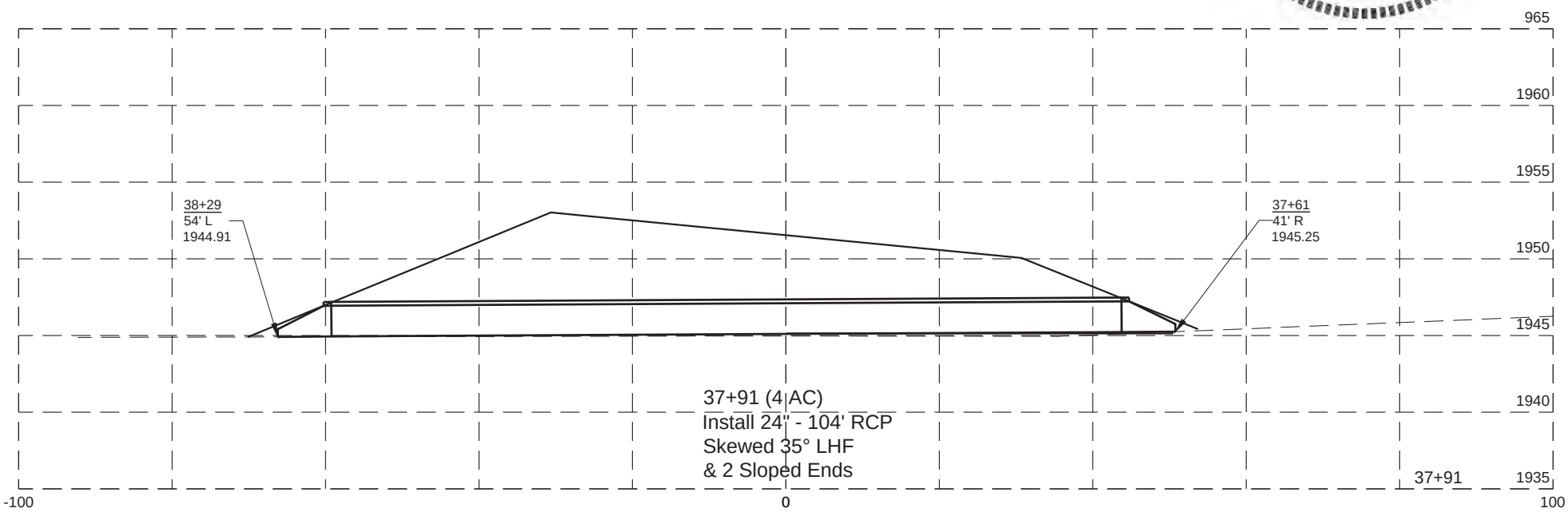
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	263	267

Plotting Date: 10/01/2025 Rev:

FOR BIDDING PURPOSES ONLY

SD HIGHWAY 43





BAI JOB # 23190-10

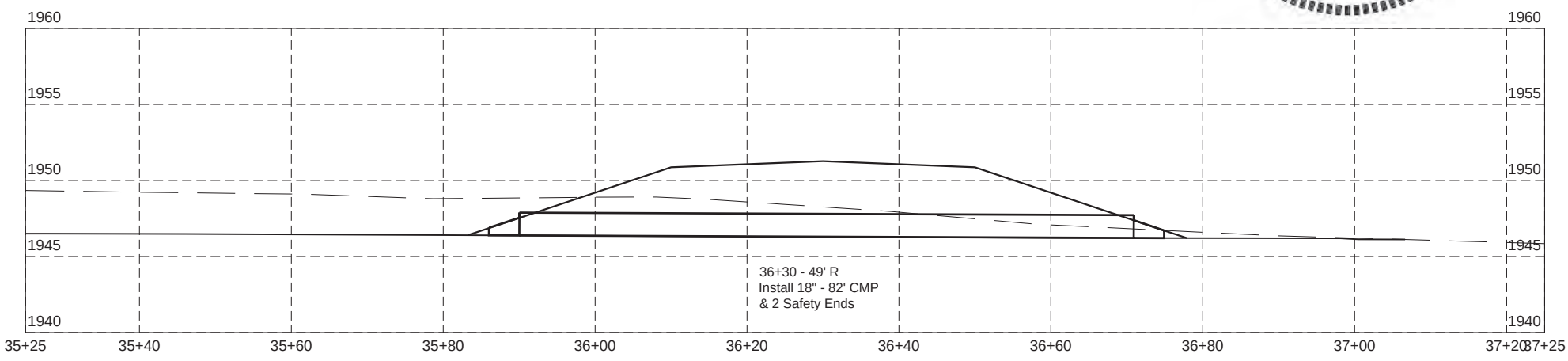
Plotting Date: 10/01/2025 Rev:

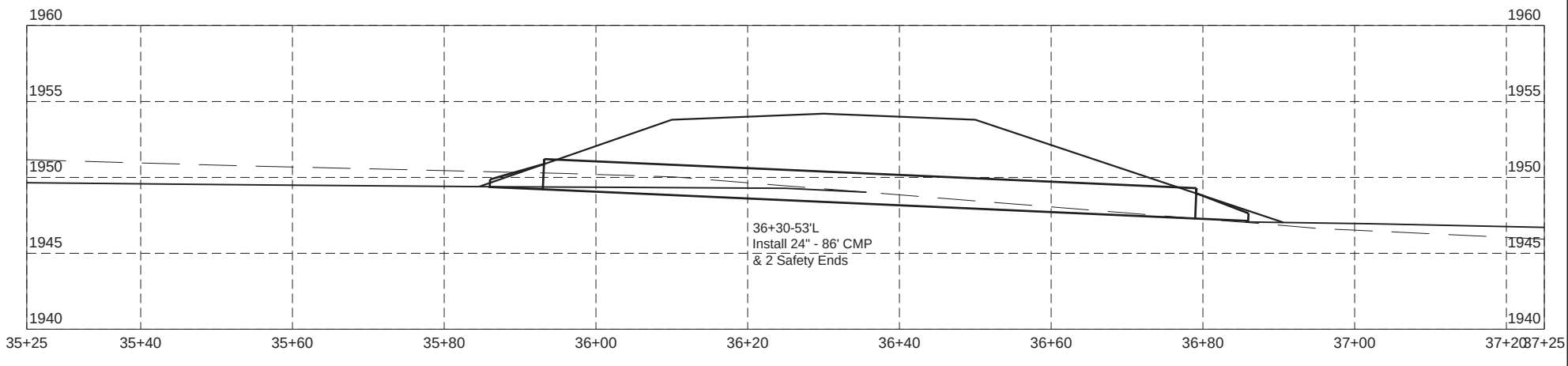
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	264	267

SD HIGHWAY 43

FOR BIDDING PURPOSES ONLY

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13392
WAYLON J.
BLASIUS
02/25/2026





BAI JOB # 23190-10

Plotting Date: 10/01/2025

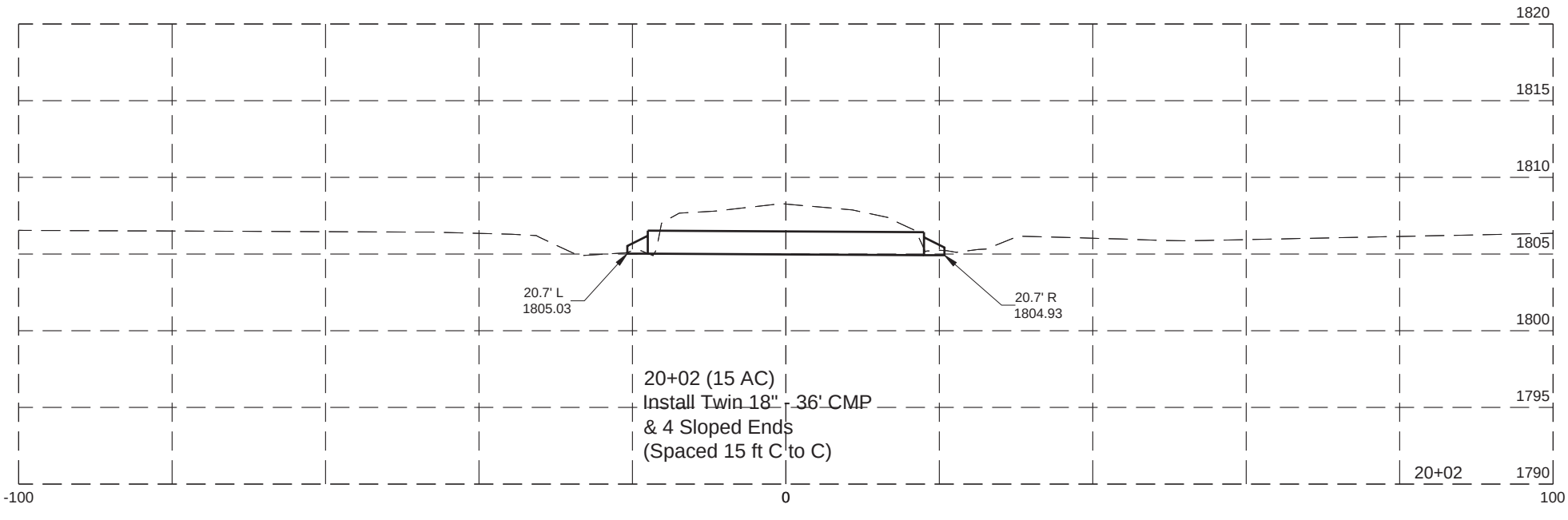
Rev:

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	265	267

303RD STREET

FOR BIDDING PURPOSES ONLY

REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON
BLASIUS
03/25/2026

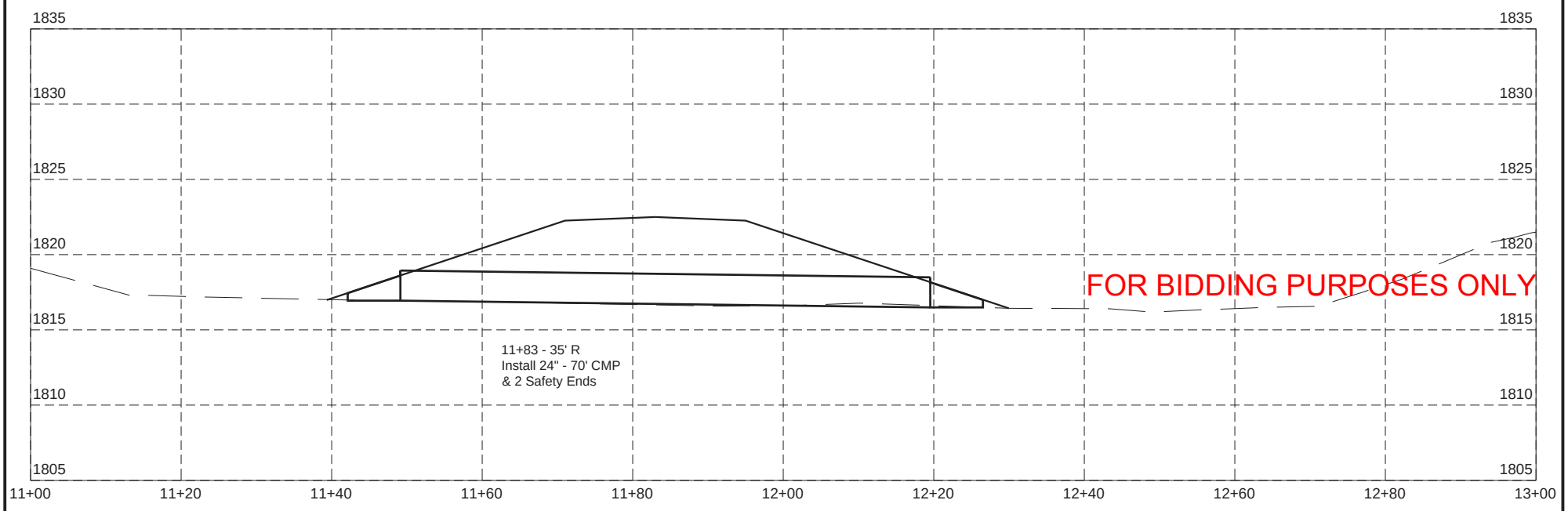


BAI JOB # 23190-10

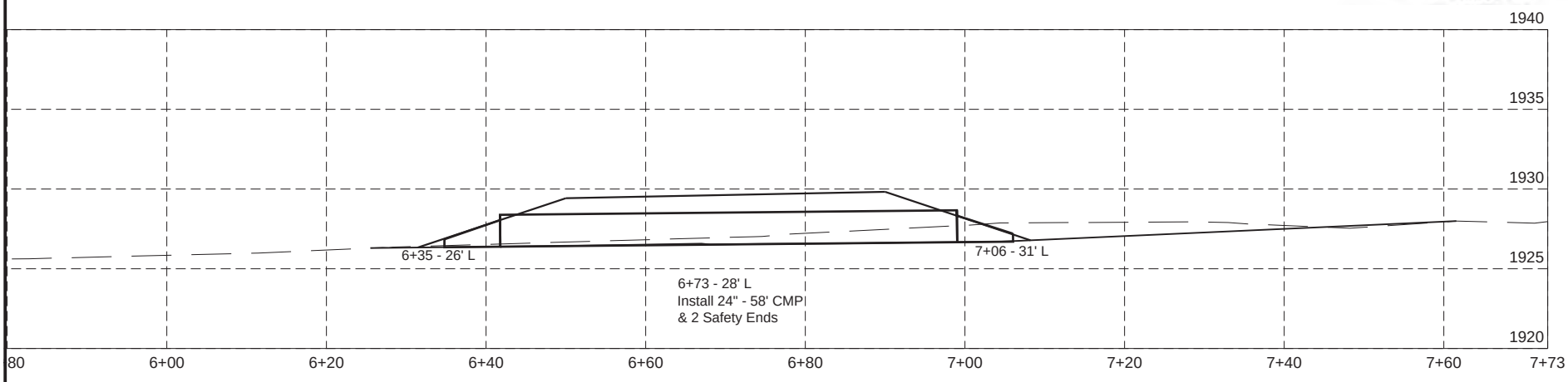
Plotting Date: 10/01/2025 Rev:

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	266	267

303RD STREET



364TH AVENUE



REGISTERED PROFESSIONAL ENGINEER
REG NO.
13393
WAYLON
BLASIUS
10/25/2025

BAI JOB # 23190-10

Plotting Date: 10/01/2025

Rev:

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PT 0018(222)311, NH 0281(122)0 & P 0043(26)0	267	267