

PROJECT LOCATION PROJECT

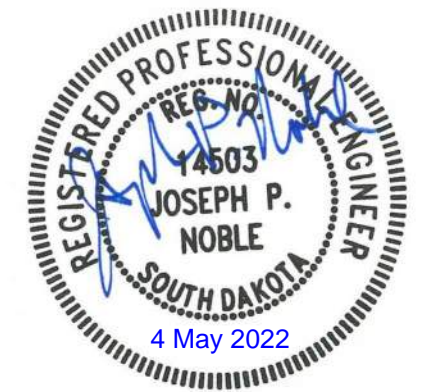
STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED

PROJECT PH 8041(20)  
NEMO ROAD, NORRIS PEAK ROAD  
AND BOGUS JIM ROAD  
MEADE COUNTY AND PENNINGTON  
COUNTY

GRADING, ASPHALT CONCRETE SURFACING, PAVEMENT MARKING  
STORM SEWER  
PCN 05F8

STATE OF SOUTH DAKOTA	PROJECT PH 8041(20)	SHEET 1	TOTAL SHEETS 75
-----------------------	------------------------	------------	--------------------

Plotting Date: January 19, 2022 Revised: May 4, 2022



INDEX OF SHEETS

1	TITLE SHEET
2-4	ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS
5-18	PLAN NOTES
19-21	TYPICAL SECTIONS
22	HORIZONTAL ALIGNMENT DATA
23	CONTROL DATA
24	FIXED LOCATION SIGN LAYOUT
25-27	DEMOLITION PLANS
28-33	PLAN AND PROFILES
34-36	EROSION CONTROL PLANS
37-39	PAVEMENT MARKING PLANS
40-57	STANDARD DETAILS
58-75	CROSS SECTIONS

DESIGN DESIGNATION - (NORRIS PEAK ROAD)

AADT (2020)	410
AADT (2040)	647
DHV	97
D	50%
DHV T%	3.5%
AADT T%	7.7%
V	45

DESIGN DESIGNATION - (NEMO ROAD)

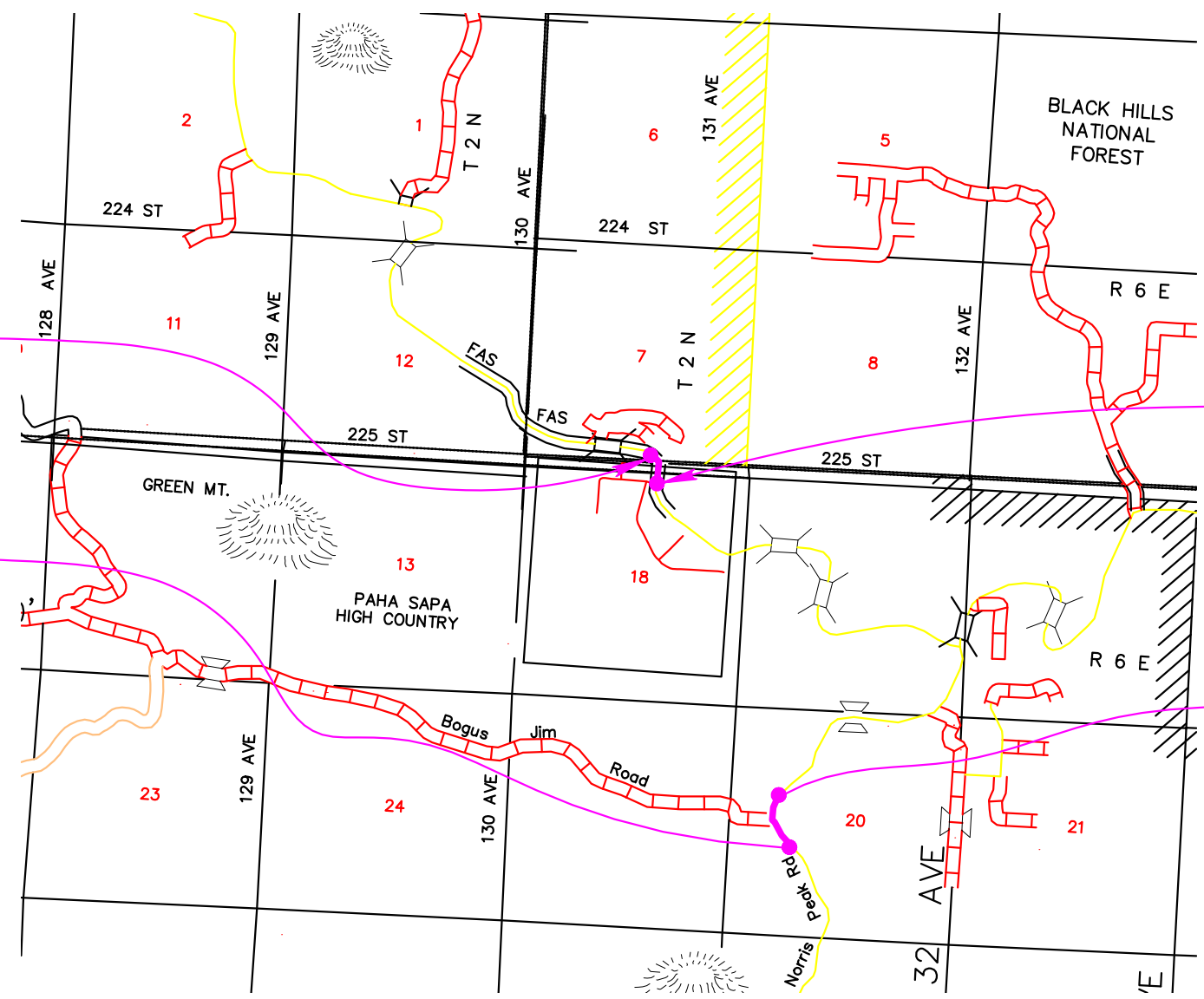
AADT (2020)	805
AADT (2040)	1270
DHV	190
D	50%
DHV T%	3.5%
AADT T%	7.7%
V	50

BEGIN PH 8041(20)  
STA 6+00.00  
EAST OF BRIDGE ABUTMENT  
NEMO ROAD @ BOX ELDER CR.

BEGIN PH 8041(20)  
STA 165+25.00  
SOUTH OF INTERSECTION OF  
NORRIS PEAK ROAD AND BOGUS JIM ROAD

END PH 8041(20)  
STA 13+81.03  
WEST OF INTERSECTION OF  
NEMO ROAD AND PINE DRIVE

END PH 8041(20)  
STA 169+80.00  
NORTH OF INTERSECTION OF  
NORRIS PEAK ROAD AND BOGUS JIM ROAD



STORM WATER PERMIT  
Major Receiving  
Body of Water: Box Elder Creek  
Area Disturbed: 2.65 Acres  
Total Project Area: 2.65 Acres  
Approx. Begin Lat,Long: 44°08'29" N 103°26'40" W



## ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	12	Each
009E3230	Grade Staking	0.256	Mile
009E3250	Miscellaneous Staking	0.256	Mile
009E3280	Slope Staking	0.256	Mile
009E3290	Structure Staking	3	Each
100E0020	Clear and Grub Tree	40	Each
100E0100	Clearing	Lump Sum	LS
110E0130	Remove Traffic Sign	1	Each
110E0135	Remove Delineator	13	Each
110E0600	Remove Fence	1,479	Ft
110E0730	Remove Beam Guardrail	440.0	Ft
110E0800	Remove W Beam Guardrail End Terminal	2	Each
110E1010	Remove Asphalt Concrete Pavement	3,935.0	SqYd
110E7150	Remove Sign for Reset	15	Each
120E0010	Unclassified Excavation	7,247	CuYd
120E0600	Contractor Furnished Borrow Excavation	1,233	CuYd
120E2000	Undercutting	2,000	CuYd
120E6000	Water for Dust Control	100.0	Mgal
120E6100	Water for Embankment	72.5	MGal
230E0010	Placing Topsoil	1,105	CuYd
260E1010	Base Course	2,440.0	Ton
320E1200	Asphalt Concrete Composite	1,035.0	Ton
450E4768	24" CMP 14 Gauge, Furnish	56	Ft
450E4770	24" CMP, Install	56	Ft
450E5215	24" CMP Flared End, Furnish	1	Each
450E5216	24" CMP Flared End, Install	1	Each
450E5310	24" CMP Sloped End, Furnish	1	Each
450E5311	24" CMP Sloped End, Install	1	Each
600E0100	Type 1 Field Laboratory	1	Each
620E0010	Type 1 Right-Of-Way Fence	1,479	Ft
620E1020	2 Post Panel	21	Each
632E1320	2.0"x2.0" Perforated Tube Post	20.0	Ft
632E2020	4"x4" White Delineator with 1.12 Lb/Ft Post	23	Each
632E2510	Type 2 Object Marker Back to Back	2	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	20.3	SqFt
632E3500	Reset Sign	15	Each
633E1220	High Build Waterborne Pavement Marking Paint, 4" White	2,364	Ft
633E1222	High Build Waterborne Pavement Marking Paint, 4" Yellow	2,442	Ft
634E0010	Flagging	120.0	Hour
634E0110	Traffic Control Signs	243.0	SqFt
634E0120	Traffic Control, Misc	Lump Sum	LS
634E0310	Temporary Flexible Vertical Markers (Tabs)	9,612	Ft
634E1215	Contractor Furnished Portable Changeable Message Sign	4	Each
670E4200	Type M Median Drain	1	Each
670E4205	Type M Frame and Grate Assembly	1	Each
720E1015	Bank & Channel Protection Gabion	6.0	CuYd
730E0208	Type E Permanent Seed Mixture	46	Lb
731E0100	Fertilizing	4,600	Lb
732E0350	Bonded Fiber Matrix	6,750	Lb
734E0104	Type 4 Erosion Control Blanket	5,005	SqYd
734E0151	9" Diameter Erosion Control Wattle	2,231	Ft
734E0325	Surface Roughening	0.4	Acre
734E0510	Shaping for Erosion Control Blanket	1,880	Ft
734E5010	Sweeping	30	Hour
831E0110	Type B Drainage Fabric	12	SqYd

## SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

## 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/media/documents/EnvironmentalProceduresManual.pdf>

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: WETLANDS

All efforts to avoid and minimize wetland impacts from the project have resulted in approximately 0.025 acres of wetlands (includes temporary and permanent) becoming impacted. Refer the plan sheets for location and boundaries of the impacted wetlands.

### Table of Impacted Wetlands

Wetland No.	Station	Perm. Impact Left (Acres)	Perm. Impact Right (Acres)	Temp. Impact Left (Acres)	Temp. Impact Right (Acres)	Total Impact (Acres)
1	7+00 to 11+50	0.025	0.00	0.00	0.00	0.025

## Action Taken/Required:

Mitigation is required in accordance with the "Statewide Finding Regarding Wetlands for South Dakota Federal-Aid Highway Projects (February 2018)". Replacement of 0.025 acres of permanent wetland impacts will be completed through another wetland mitigation opportunity in a manner which considers FHWA's program-wide goal of 'net gain' of wetlands through enhancement, creation, and preservation.

Temporary impacts identified in the Table of Impacted Wetlands will not be mitigated as original contours and elevations will be re-established as designated in plan sheets. Prior to initiating temporary work in wetlands, the Contractor will submit a plan to the Project Engineer in accordance with Section 7.21 D of the SDDOT Standard Specifications for Roads and Bridges.

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.

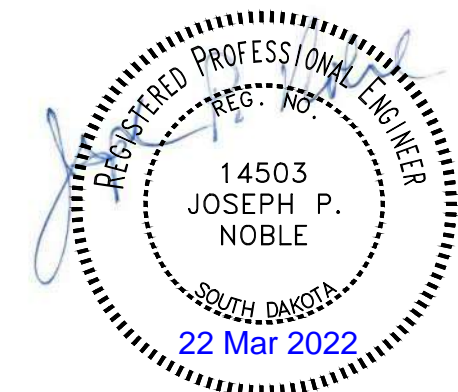
## COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

### 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 C: WATER SOURCE**

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 Environment and Natural Resources (DANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

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

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

**COMMITMENT D: WATER QUALITY STANDARDS**

**COMMITMENT D1: SURFACE WATER QUALITY**

Box Elder Creek is classified as a cold water permanent fishery with a total suspended solids standard of less than 30 mg/L 30-day average, less than 53 mg/L daily maximum.

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 Environment 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 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 cold water permanent fish life propagation waters according to the ARSD 74:51:01:45. For discharges to waters of the state classified as cold water

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 SDDANR using the following form:

< <http://DANR.sd.gov/des/sw/eforms/AddTempInfoFillable.pdf> >

The Contractor will provide a copy of the approved permit or the submitted dewatering information to the Project Engineer prior to proceeding with any dewatering activities. The approved permit or submitted dewatering information must be kept on-site and as part of the project records.

Effluent monitoring, as a result of dewatering activities, will be summarized for each month and recorded on a separate Discharge Monitoring Report (DMR) and submitted to DANR monthly. Additional information can be found at:  
< <http://DANR.sd.gov/des/sw/WhatisaDMR.aspx> >

**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/des/sw/eforms/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.

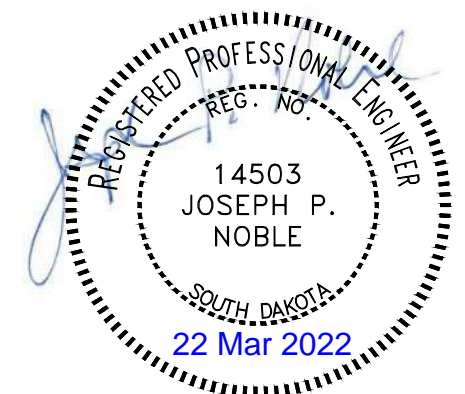
The inspection will include disturbed areas of the construction site that have not been finally stabilized, areas used for storage materials, structural control measures, and locations where vehicles enter or exit the site. These areas will be inspected for evidence of, or the potential for, pollutants 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: < <http://DANR.sd.gov/des/sw/stormwater.aspx> >

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





STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	4	75

**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 Environment 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 or THPO) 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 100 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/THPO 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 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.

**COMMITMENT S: FIRE PREVENTION IN THE BLACK HILLS AREA**

This project is located within the Black Hills Forest Fire Protection Boundary.

**Action Taken/Required:**

The Contractor will adhere to the "Special Provision for Fire Plan".

**GRADING OPERATIONS**

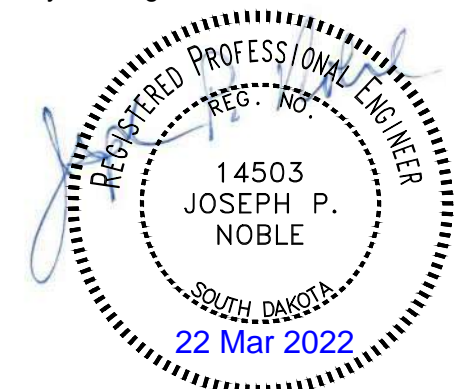
Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste.

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.





**UTILITIES**

The Contractor will contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It will be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

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 AND DISPOSAL OF TIMBER**

**B. Landowner Property**

Merchantable timber will be defined as any species of tree with an inside bark diameter of 8 inches or greater and length greater than 8 feet. All merchantable timber will be limbed and decked outside the right-of-way on the Owners property as directed by the Engineer and will become the property of the Landowner.

Slash and non-merchantable timber will be disposed of by chipping, burning, or burying. All residue from chipping or burning will be buried. Burial pits will be at locations approved by the Engineer. The Contractor will follow the prescribed burning provisions of the Fire Plan in his/her preparation for and conduction of all burning operations. Location of slash piles and all other aspects of slash disposal by burning must be approved in advance by the Engineer.

Stumps from right-of-way clearing will be buried at locations approved by the Engineer.

**TABLE OF EXCAVATION QUANTITIES BY BALANCES – NEMO ROAD**

Station to	Station	Excavation (CuYd)	Strip Topsoil (CuYd)	* Undercut (CuYd)	* Placing Topsoil (CuYd)	Total Excavation (CuYd)	** Waste (CuYd)
6+00	13+81	3767	690	1251	690	5708	664
Totals:		3767	690	1251	690	5708	664

- \* 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 – NEMO ROAD**

	(CuYd)
Excavation	3767
Undercut	1251
Topsoil	690
Total	5708

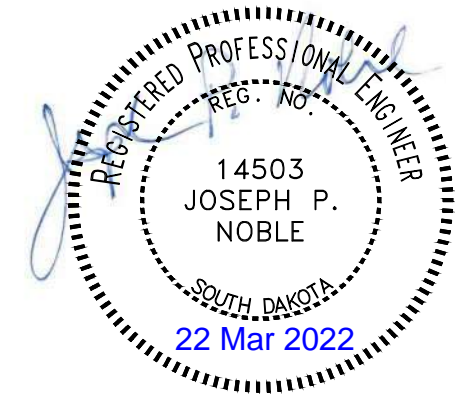
**TABLE OF EXCAVATION QUANTITIES BY BALANCES – NORRIS PEAK ROAD AND BOGUS JIM ROAD**

Station to	Station	Excavation (CuYd)	Strip Topsoil (CuYd)	* Undercut (CuYd)	* Unstable Material Exc. (CuYd)	* Contractor Furnished Borrow Exc. (CuYd)	* Placing Topsoil (CuYd)	Total Excavation (CuYd)
165+25	169+80	0	415	749	375	1233	415	1539
Totals:		0	415	749	375	1233	415	1539

- \* 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 – NORRIS PEAK ROAD AND BOGUS JIM ROAD**

	(CuYd)
Excavation	0
Undercut	749
Unstable Material Excavation	375
Topsoil	415
Total	1539



**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.

**UNDERCUTTING**

In all cut sections the earthen subgrade will be undercut 1 foot 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 1 foot in height measured at the finished subgrade shoulders, will be undercut to ensure a minimum 1 foot height of earth embankment for the entire width of roadbed. The upper 4 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 4 inches) will then be replaced and compacted to the density specified for the section being constructed.

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

**TABLE OF UNDERCUTTING**

Station	to	Station	Quantity (CuYd)
Nemo Road			
6+00		13+81	1251
Norris Peak			
165+25		169+80	749
Total:			2000

**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 375 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	L/R	Depth (Ft)	Quantity (CuYd)
Norris Peak					
165+75		167+25	L	2	200
168+00		169+80	L	2	175
Total:					375

**CONTRACTOR FURNISHED BORROW EXCAVATION**

The Contractor will provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site.

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

**SALVAGED ITEMS**

All salvaged items noted on the plans will be salvaged for future highway use and hauled to the Department of Transportation's Rapid City Yard as directed by the Engineer. Care will be taken not to damage the structural properties of the items during dismantling and transporting. All broken concrete and materials not salvaged will be disposed of in accordance with the Specifications. All costs for salvaging and transporting the items will be incidental to the various other contract items. Before preparing his/her bid, the Contractor will make a visual inspection of the project to verify the extent of the work and material involved.

**TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL**

Station	to	Station	L/R	Quantity (SqYd)
Nemo Road				
6+00		13+81	L & R	2587
Norris Peak				
165+25		169+80	L & R	1348
Total:				3935

**CORRUGATED METAL PIPE**

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

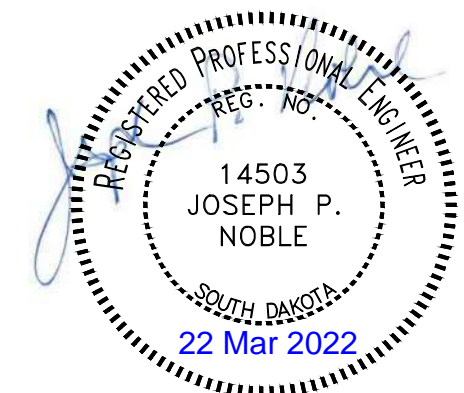
The gauge of the corrugated metal pipe and ends will match the thickest gauge of corrugated metal pipe it is connected to.

**TABLE OF TYPE M MEDIAN DRAINS**

Station	L/R	Type M Frame and Grate Assembly (Each)	Type M Median Drain (Each)
167+84.64	R	1	1
Totals:		1	1

**TABLE OF BANK AND CHANNEL PROTECTION GABIONS AND DRAINAGE FABRIC**

Station	L/R	Bank and Channel Protection Gabion (CuYd)	Type B Drainage Fabric (SqYd)
Norris Peak			
168+18.56	L	6	12
Totals:		6	12



**BRACE PANELS FOR ROW FENCE**

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

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

Dennis Mack  
E-Z Brace  
108 118<sup>th</sup> St. NE  
Watertown, SD 57201  
605-881-4990

**TABLE OF SUPERELEVATION – NEMO ROAD**

Station	to	Station	
6+00			- Match Existing
6+00	9+15.30		- 5% Right Superelevation
9+15.30	9+86.29		- Superelevation Transition From 5% Right to 6% Right
9+86.29	12+62.57		- 6% Right Superelevation
12+62.57	13+01.24		- Superelevation Transition from 6% Right to 2% Right
13+01.24	13+39.90		- Superelevation Transition from 2% Right to 0%/2% Right
13+39.90	13+65.00		- Transition from 0%/2% Right to 2% Normal Crown
13+65.00	13+81.00		- 2% Normal Crown
13+81.00			- Match Existing

**TABLE OF SUPERELEVATION – NORRIS PEAK ROAD**

Station	to	Station	
165+25			- Match Existing
165+25	166+87		- Transition from Normal Crown 5% Left/4% Right to Superelevation 4% Right
166+87	167+25		- Superelevation Transition from 4% Right to 6% Right
167+25	168+50		- Superelevation 6% Right
168+50	169+25		- Superelevation 6% Right to 1.75% Right
169+25	169+80		- Transition from Superelevation 1.75% Right to Normal Crown 2.7% Left/1.75% Right
169+80			- Match Existing

**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 0 PLSS corners and 12 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> >

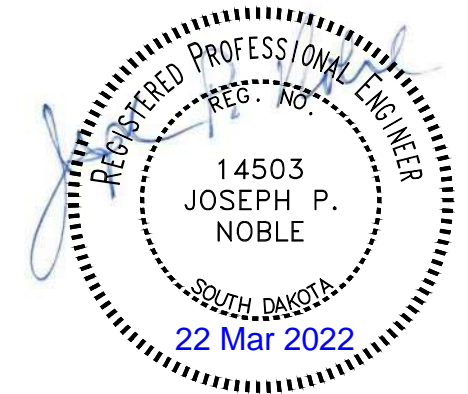
All costs associated with furnishing and installing PLSS caps, rebar, and all other materials associated with setting, reestablishing, or verifying PLSS, ROW corners, and property corners in accordance with the SDDOT Survey Manual will be incidental to the contract unit price per each for "Reestablish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

**RIGHT OF WAY MARKER**

The Right of Way Marker and installation locations will conform to the details on standard plate 900.15.

**TABLE OF RIGHT OF WAY MARKER**

Station	L/R	Quantity (Each)
Nemo Road		
3+40	R	1
8+93	R	1
12+24	R	1
13+77	R	1
Norris Peak Road		
165+25	L	1
165+82	L	1
165+45	L	1
167+57	L	1
168+07	L	1
168+08	L	1
168+32	L	1
168+33	L	1
Total:		12



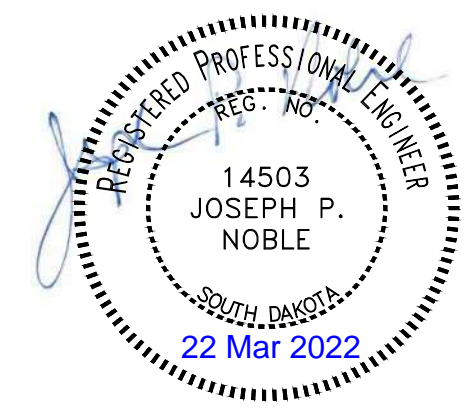


**TABLE OF CONSTRUCTION STAKING – NEMO ROAD**

Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Grade Staking			Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Structure Staking Quantity (Each)
					Length (Mile)	Lane Factor	*Sets of Stakes			
Nemo Road (2 Lanes AC Pavement)	6+00	13+81	2	781	0.148	1	1	0.148	0.148	1
							Totals:	0.148	0.148	1

\* 1 = Blue Top Stakes Only (Asphalt Concrete Pavement)  
 2 = Blue Top and Paving Hub Stakes (PCC Pavement)

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



**TABLE OF CONSTRUCTION STAKING – NORRIS PEAK ROAD**

Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Grade Staking			Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Structure Staking Quantity (Each)
					Length (Mile)	Lane Factor	*Sets of Stakes			
Norris Peak Road (2 Lanes AC Pavement)	165+25	169+80	2	455	0.086	1	1	0.086	0.086	2
Bogus Jim Road (2 Lanes AC Pavement)	0+70	1+84	2	114	0.022	1	1	0.022	0.022	0
							Totals:	0.108	0.108	2

\* 1 = Blue Top Stakes Only (Asphalt Concrete Pavement)  
 2 = Blue Top and Paving Hub Stakes (PCC Pavement)

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

**SEQUENCE OF OPERATIONS**

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the 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.

**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 construction operations will be conducted in the general direction of traffic movement.

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".

**FLAGGING**

Operations will be conducted so that the traveling public will not have to wait longer than 15 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.

**TEMPORARY PAVEMENT MARKING**

Temporary Flexible Vertical Markers (Tabs) will be used on the top lift of asphalt surfacing for centerline delineation, lane lines, skips, and as directed by the Engineer. Tabs will be offset 6-inches from the location shown for permanent pavement markings. Centerline will be double yellow lines with tabs spaced at 5' the entire project length.

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 at no additional cost to the State.

Two applications of temporary pavement marking are included in the estimate of quantities for completion of the first asphalt concrete lift and the final asphalt concrete lift.

No adjustment in the contract unit price for "Temporary Flexible Vertical Markers" 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.

Prior to nightfall, tabs will be required to mark centerline on segments of roadway where existing centerline markings have been removed and new markings have not been installed.

**TABLE OF TRAFFIC CONTROL SIGNS**

Description	Sign	Number	Quantity (SqFt)
End Road Work	G20-2	6	27.0
Road Work Ahead	W20-1	6	54.0
One Lane Road Ahead	W20-4	6	54.0
Flagger Symbol	W20-7	6	54.0
Shoulder Work	W21-5	6	54.0
	Total	30	243.0

**PERMANENT PAVEMENT MARKING**

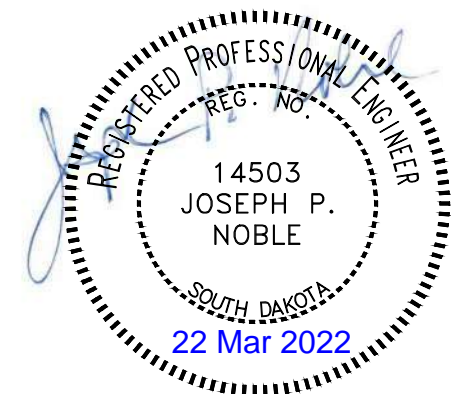
All No Passing Zones will be reviewed prior to the application of any new centerline markings. The Contractor will advise the Engineer a minimum of 3 weeks prior to the application of permanent pavement markings to allow the State to mark the locations of No Pass Zones. State forces will not be available to mark the No Pass Zones from 07-22-22 to 8-15-22.

**CONTACTOR FURNISHED PORTABLE CHANGEABLE MESSAGE SIGN**

One week prior to starting work affecting the traveling public, portable changeable message signs (PCMS) will be installed at locations detailed in the plans to notify drivers of the upcoming construction. The Contractor will program the portable changeable message signs with the following message:

ROAD WORK  
STARTS (Date)

When work begins that will affect traffic patterns, the Contractor will re-program the PCMS with the messages as detailed in the plans.



**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 Meade and Pennington 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.

**PLACING TOPSOIL**

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

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

Station	to	Station	Topsoil (CuYd)
Nemo Road			
6+00		13+81	690
Norris Peak			
165+25		169+80	415
Total:			1105

**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 will be as shown below or an approved equal:

<u>Product</u>	<u>Manufacturer</u>
MycApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 <a href="http://www.mycorrhizae.com">www.mycorrhizae.com</a>
AM 120 Multi Species Blend	Reforestation Technologies Int. Gilroy, CA Phone: 1-800-784-4769 <a href="http://www.reforest.com">www.reforest.com</a>

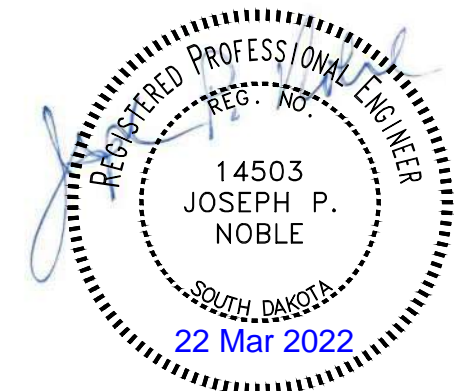
**FERTILIZING**

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 2,000 pounds per acre in accordance with the manufacturer's recommended method of application.

The all-natural slow release fertilizer will be as shown below or an approved equal:

<u>Product</u>	<u>Manufacturer</u>
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 <a href="http://www.sustane.com">www.sustane.com</a>
Perfect Blend	Perfect Blend, LLC Bellevue, WA Phone: 1-866-456-8890 <a href="http://www.perfect-blend.com">www.perfect-blend.com</a>





**PERMANENT SEEDING**

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways.

Type E Permanent Seed Mixture will consist of the following:

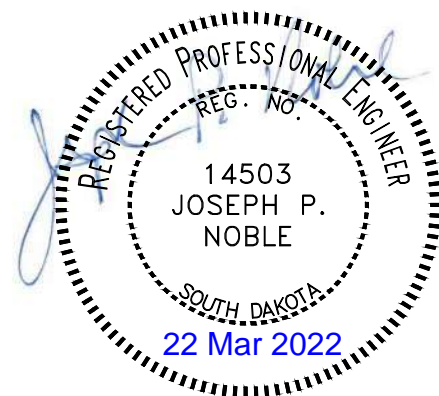
Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Green Needlegrass	Lodorm, AC Mallard Ecovar	4
Sideoats Grama	Butte, Pierre	3
Blue Grama	Bad River	2
Canada Wildrye	Mandan	2
Wildflowers		
Dotted Gayfeather ( <i>Liatis punctata</i> )		0.5
Black-eyed Susan ( <i>Rudbeckia hirta</i> )		0.5
Blue Flax ( <i>Linum lewisii</i> )		0.5
Pale Purple Coneflower ( <i>Echinacea angustifolia</i> )		0.5
Total:		20

**SURFACE ROUGHENING**

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

**TABLE OF SURFACE ROUGHENING**

Station	Location	Area (Acre)
Nemo Road		
6+00 to 13+81 L/R	Backslope and Ditch	0.25
Norris Peak		
165+25 to 169+80 L/R	Backslope and Ditch	0.52
Total:		0.77



**BONDED FIBER MATRIX**

Bonded fiber matrix will be hydraulically applied to the areas listed in the table and any other areas deemed necessary by the Engineer.

The Contractor will use a bonded fiber matrix from the approved products list, or an approved equal. The approved product list for bonded fiber matrix may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

**TABLE OF BONDED FIBER MATRIX**

Station	Location	Quantity (Lb)
Nemo Road		
6+00 to 13+81	Backslope and Ditch	2190
Norris Peak		
165+25 to 169+80 L/R	Backslope and Ditch	4560
Total:		6750

**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 to decompose.

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:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

**TABLE OF EROSION CONTROL WATTLE**

Station	Location	Diameter (Inch)	Quantity (Ft)
Nemo Road			
5+50 to 13+65	L	9	915
6+00 to 12+25	R	9	586
9+22	R	9	30
Norris Peak			
165+25 to 165+75	L	9	50
165+25 to 167+65	L	9	340
167+95 to 169+80	L	9	250
167+00	R	9	30
168+24	L	9	30
Total:			2231

**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:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

**TABLE OF EROSION CONTROL BLANKET**

Station	Location	Type	Quantity (SqYd)
Nemo Road			
5+50 to 13+65 L	Backslope	4	3,510
6+00 to 12+25 R	Backslope	4	1,075
Norris Peak			
165+25 to 168+00	Ditch	4	178
168+00 to 169+80	Ditch	4	118
168+23 L	Culvert Outlet	4	62
168+90 to 169+40	Ditch	4	62

Total Type 4 Erosion Control Blanket: 5,005

**SHAPING FOR EROSION CONTROL BLANKET**

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

**STREET SWEEPING**

Vehicle tracking of sediment from the construction site will be minimized. Street sweeping will be used if erosion and sediment control best management practices are not adequate to prevent sediment from being tracked onto the street.

The Contractor will use a pickup broom having integral self-contained storage to clean the roadway. The pickup broom used will be a minimum of 6 feet wide and have working gutter brooms.

At a minimum, sweeping will be required:

1. Prior to opening any segment or roadway to traffic.

All costs for cleaning the roadway with a pickup broom will be incidental to the contract unit price per hour for "Sweeping".

**STORMWATER POLLUTION PREVENTION PLAN CHECKLIST**

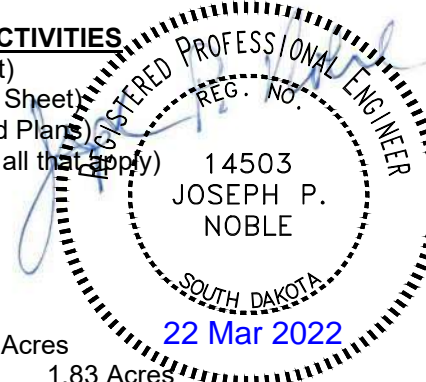
(The numbers left of the title headings are reference numbers to the GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES (Stormwater Permit))

**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** 2.65 Acres
- **5.3 (3b): Total Area to be Disturbed** 1.83 Acres
- **5.3 (3c): Maximum Area Disturbed at One Time**
- **5.3 (3d): Existing Vegetative Cover (%)**
- **5.3 (3d): Description of Vegetative Cover**
- **5.3 (3e): Soil Properties:** AASHTO Soil or USDA-NRCS Soil Series Classification
- **5.3 (3f): Name of Receiving Water Body/Bodies**
- **5.3 (3g): Location of Construction Support Activity Areas**



**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
<input type="checkbox"/> Natural Buffers (within 50 ft of Waters of State)	
<input type="checkbox"/> Silt Fence	
<input checked="" type="checkbox"/> Erosion Control Wattles	
<input type="checkbox"/> Temporary Berm / Windrow	
<input type="checkbox"/> Floating Silt Curtain	
<input type="checkbox"/> Stabilized Construction Entrances	
<input type="checkbox"/> Entrance/Exit Equipment Tire Wash	
<input type="checkbox"/> Other:	

**Structural Erosion and Sediment Controls**

Description	Estimated Start Date
<input type="checkbox"/> Silt Fence	
<input type="checkbox"/> Temporary Berm/Windrow	
<input type="checkbox"/> Erosion Control Wattles	
<input type="checkbox"/> Temporary Sediment Barriers	
<input type="checkbox"/> Erosion Bales	
<input type="checkbox"/> Temporary Slope Drain	
<input type="checkbox"/> Turf Reinforcement Mat	
<input type="checkbox"/> Riprap	
<input checked="" type="checkbox"/> Gabions	
<input type="checkbox"/> Rock Check Dams	
<input type="checkbox"/> Sediment Traps/Basins	
<input checked="" type="checkbox"/> Culvert Inlet Protection	
<input type="checkbox"/> Transition Mats	
<input checked="" type="checkbox"/> Median/Area Drain Inlet Protection	
<input type="checkbox"/> Curb Inlet Protection	
<input type="checkbox"/> Interceptor Ditch	
<input type="checkbox"/> Concrete Washout Facility	
<input type="checkbox"/> Work Platform	
<input type="checkbox"/> Temporary Water Barrier	
<input type="checkbox"/> Temporary Water Crossing	
<input type="checkbox"/> Permanent Stormwater Ponds	
<input type="checkbox"/> Permanent Open Vegetated Swales	
<input type="checkbox"/> Natural Depressions to allow for Infiltration	
<input type="checkbox"/> Sequential Systems that combine several practices	
<input type="checkbox"/> Other:	

**Dust Controls**

Description	Estimated Start Date
<input type="checkbox"/> Tarps & Wind impervious fabrics	
<input checked="" type="checkbox"/> Watering	
<input type="checkbox"/> Stockpile location/orientation	
<input type="checkbox"/> Dust Control Chlorides	
<input type="checkbox"/> Other	

**Dewatering BMPs**

Description	Estimated Start Date
<input type="checkbox"/> Sediment Basins	
<input type="checkbox"/> Dewatering bags	
<input type="checkbox"/> Weir tanks	
<input type="checkbox"/> Temporary Diversion Channel	
<input type="checkbox"/> Other:	

**Stabilization Practices (See Detail Plan Sheets)**

(Stabilization measures will begin the following work day whenever earth disturbing activity on any portion of the site has temporarily or permanently ceased. Temporary stabilization will be completed as soon as practicable but no later than 14 days after initiating soil stabilization activities (3.18))

Description	Estimated Start Date
<input type="checkbox"/> Vegetation Buffer Strips	
<input type="checkbox"/> Temporary Seeding (Cover Crop Seeding)	
<input checked="" type="checkbox"/> Permanent Seeding	
<input type="checkbox"/> Sodding	
<input type="checkbox"/> Planting (Woody Vegetation for Soil Stabilization)	
<input type="checkbox"/> Mulching (Grass Hay or Straw)	
<input type="checkbox"/> Fiber Mulching (Wood Fiber Mulch)	
<input type="checkbox"/> Soil Stabilizer	
<input checked="" type="checkbox"/> Bonded Fiber Matrix	
<input type="checkbox"/> Fiber Reinforced Matrix	
<input checked="" type="checkbox"/> Erosion Control Blankets	
<input checked="" type="checkbox"/> Surface Roughening (e.g. tracking)	
<input type="checkbox"/> 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 (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 (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 1/2 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, degreasing 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 SDDANR.
- 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

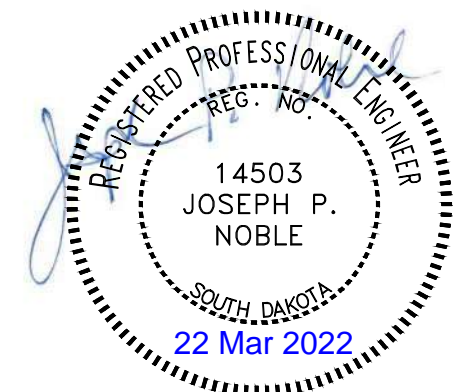
- All liquid waste materials will be collected and stored in approved sealed containers. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. 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.

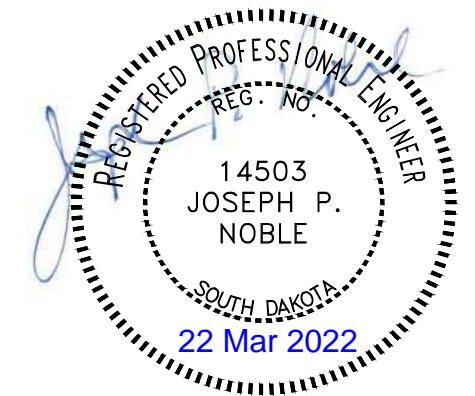
### 5.3 (11): INFEASIBILITY DOCUMENTATION

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 SDDANR 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 SDDANR 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 SDDANR 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 will be sent to SDDANR within 14 days of the discharge.



**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: \_\_\_\_\_

➤ **SDDANR Contact Spill Reporting**

- Business Hours Monday-Friday (605) 773-3296
- Nights and Weekends (605) 773-3231

➤ **SDDANR Contact for Hazardous Materials.**

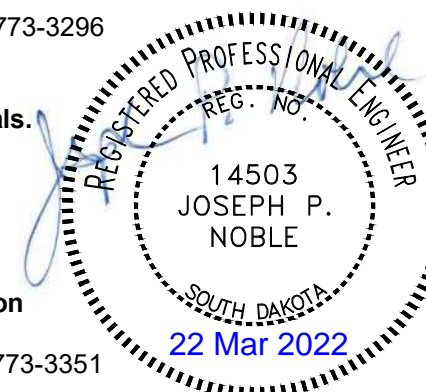
- (605) 773-3153

➤ **National Response Center Hotline**

- (800) 424-8802.

➤ **SDDANR Stormwater Contact Information**

- SDDANR 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, SDDANR, 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.

**WATER FOR COMPACTION**

The cost of water for compaction of the granular material will be incidental to the various other contract items. A minimum of 4% moisture will be required at the time of compaction unless otherwise directed by the Engineer.

**GRAVEL SURFACING**

The gravel surfacing will be placed on the project as closely following completion of grading the roadbed as feasible. At no time will grading operations be permitted to proceed into the third mile of any three-mile section unless gravel surfacing placing operations have been started in the first mile of such three-mile section.

**ASPHALT CONCRETE COMPOSITE**

Asphalt Concrete Composite will include MC-70 Asphalt for Prime placed at the rate of 0.30 gallons per square yard. The Asphalt for Prime will be applied to the Base Course for the full width of the bottom layer of Asphalt Concrete Composite plus one foot additional on the outside shoulder.

Asphalt for tack SS-1h or CSS-1h will be applied prior to each lift of Asphalt Concrete Composite. Asphalt for tack will be applied at a rate of 0.09 gallons per square yard on existing pavement or milled asphalt concrete surfaces and at a rate of 0.06 gallons per square yard on primed base course or new asphalt concrete pavement. The Asphalt for tack will be applied for the full width of the bottom layer of Asphalt Concrete Composite plus one-half foot additional on the outside shoulder.

**WATER FOR DUST CONTROL**

Included in the Estimate of Quantities is 100 MGal of Water for Dust Control and will be applied as ordered by the Engineer.

**HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT**

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

This material will consist of a durable high build, low VOC, fast drying, waterborne traffic paint with a 100% acrylic polymer (Arkema DT-400, Dow HD-21A, or equivalent). The Contractor will provide certification that the material is one of the following products or an equivalent as approved by the Operations Traffic Engineer:

Diamond Vogel's Waterborne High Build Polymer Marking Paint  
Ennis-Flint's High Build Polymer Marking Paint

No further testing of this material will be required. Reflective media will consist of glass beads.

High Build Waterborne Pavement Marking Paint applied after October 15 must be formulated as cold-weather waterborne paint. Cold weather waterborne paint will meet the requirements of Section 980.1 B.

**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 = 5.3 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.

**RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT**

The Department may take retroreflectivity readings on the pavement marking lines after 2 days and within 30 days of the line application using either a portable or mobile retroreflectometer that conforms to 30-meter geometry. If the Department chooses to take retroreflectivity readings, three retroreflectivity readings will be taken on each line at each test location. The three readings will be averaged and become the reading for that test location.

If the Department chooses to take retroreflectivity readings, three readings will be taken on the edge lines and lane lines in the direction of application. For combination solid yellow and skip yellow lines for turn lanes and for centerline markings on two-way roadways, three readings will be taken in one direction, the reflectometer will be turned 180 degrees and three more readings will be taken. The six readings for the centerline markings will be averaged and become the test reading for that test location.

If the Department chooses to take readings, the minimum retroreflectivity values will be 275 mc/m<sup>2</sup>/lux for white and 170 mc/m<sup>2</sup>/lux for yellow.

**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.

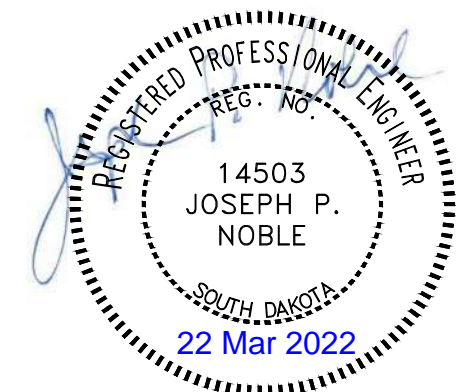
All costs associated with the removal of existing signs, posts, hardware, and backfilled holes will be incidental to the contract unit price per each for "Remove Traffic Sign". Quantities will be per assembly at the contract unit price per each.

**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"





**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 overlamine 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.

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.

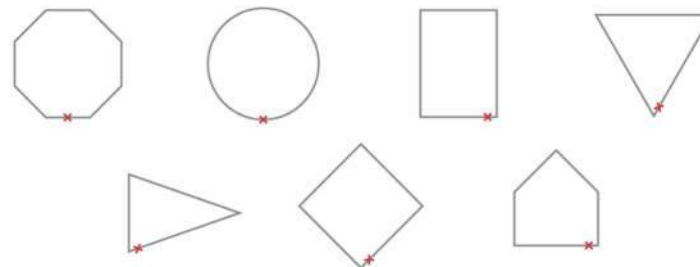
**CERTIFIED DIGITAL SIGN FABRICATOR**

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.



**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.

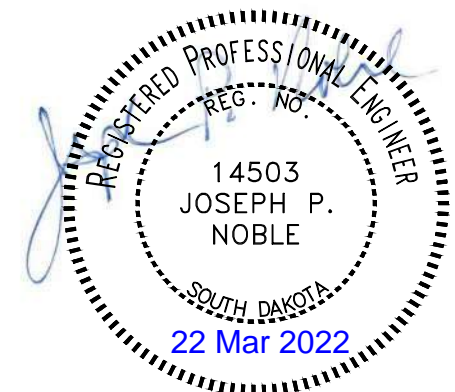
Any 911 Emergency Number signs within the project work limits will not be stockpiled but temporarily repositioned at a location outside the work limits but within the immediate proximity of the existing location. To complete the project sign work, the 911 Emergency Number signs will be permanently installed 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".

**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.

**MILEAGE REFERENCE MARKERS**

Mileage Reference Markers (MRMs) are not to be disturbed. If an MRM is attached to a sign listed for replacement it will be salvaged and reattached to the new sign in the same location. Payment for this work will be incidental to the various signing contract items.

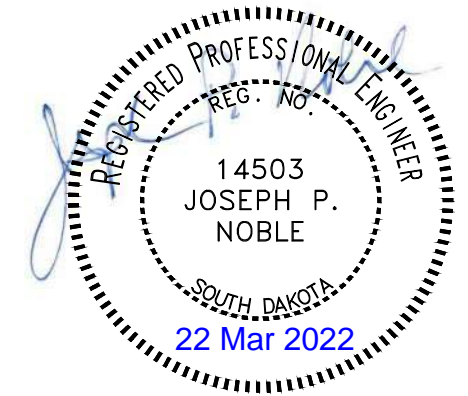


**TABLE OF PERMANENT SIGNS – NEMO ROAD**

Station	Remove Traffic Sign  (Each)	Remove Sign for Reset  (Each)	Reset Sign  (Each)	Flat Aluminum Sign, Non Removable Copy (SqFt)	2.0"x2.0" Perforated Tube Post  (Ft)
6+01		1	1		
6+74		1	1		
6+94		1	1		
6+94		1	1		
7+76		1	1		
7+85	1			9	10
7+85				2.3	
8+41		1	1		
8+73		1	1		
9+05		1	1		
9+65		1	1		
10+11		1	1		
10+77		1	1		
11+50		1	1		
12+65				9	10
	1	12	12	20.3	20

**TABLE OF PERMANENT SIGNS – NORRIS PEAK ROAD**

Station	Remove Sign for Reset (Each)	Reset Sign  (Each)
167+58	1	1
167+75	1	1
167+94	1	1
	3	3

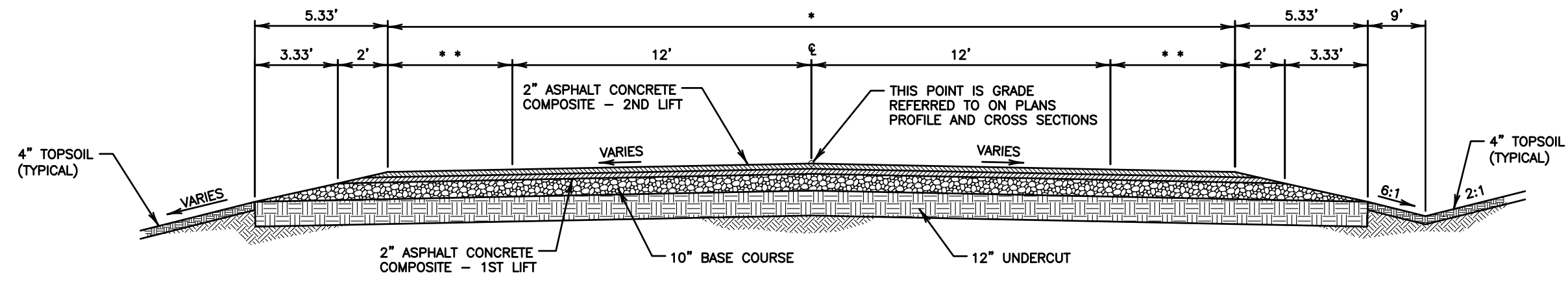
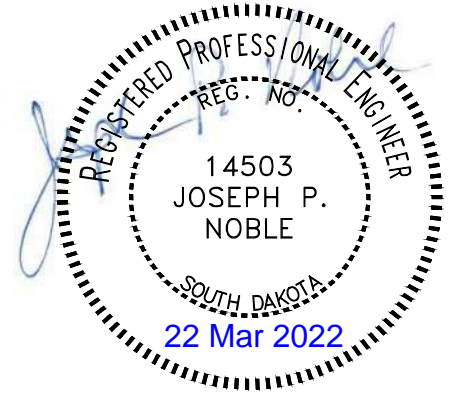


Layer: 10 TYPICAL SECTION  
 File: W:\SS\DOT\12403-2015-09\CAD Drawings\01-CompPlan Sheets\TYPICAL.dwg

STATE OF SOUTH DAKOTA	PROJECT PH 8041(20)	SHEET 19	TOTAL SHEETS 75
-----------------------	------------------------	-------------	--------------------

Plotting Date: January 19, 2022

# TYPICAL GRADING SECTION



NEMO ROAD TYPICAL SECTION (STA 6+00 TO 13+81)

\* ROADWAY WIDTH  
 6+00  
 6+00 TO 6+78.59  
 6+78.59 TO 12+65  
 12+65 TO 13+81.03

MATCH ROADWAY (29'±)  
 TRANSITION EXISTING TO 34'  
 34'  
 TRANSITION 34' TO EXISTING (29'±)

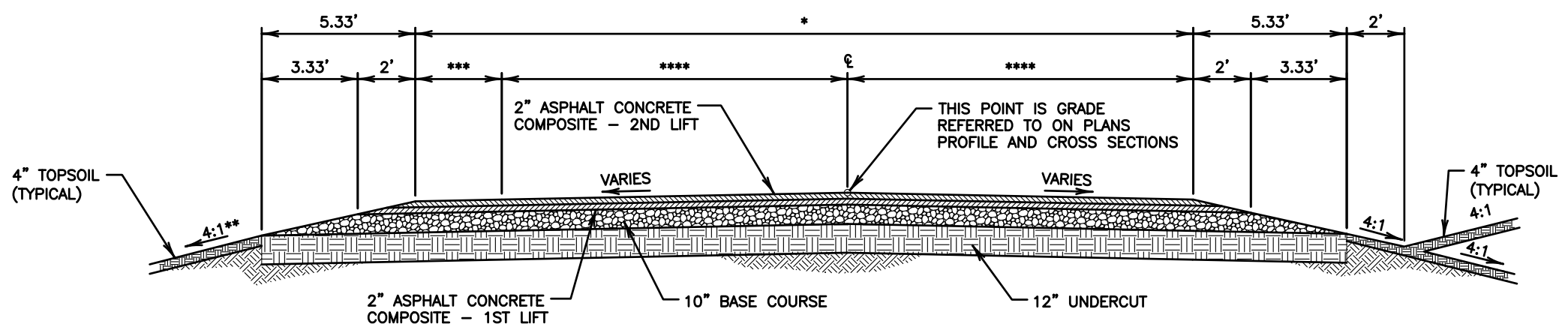
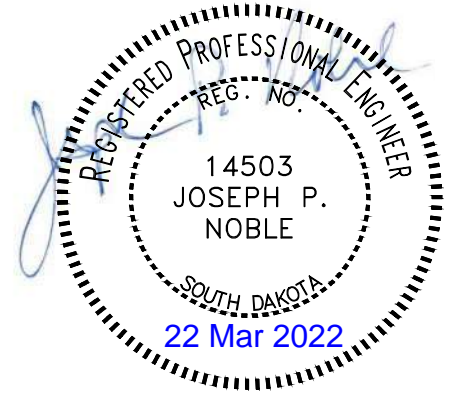
\*\* TRANSITION  
 6+00 TO 6+78.59 LT & RT 2.5' TO 5'  
 6+78.59 TO 12+65 LT & RT 5'  
 12+65 TO 13+81.03 LT 5' TO 1.7'  
 12+65 TO 13+81.03 RT 5' TO 3.4'

Plotted By: Erik Beers Date: Monday, March 21, 2022 10:54:29 AM  
 Last Saved By: Erik Beers Date: Monday, February 14, 2022 10:54:29 AM



Plotting Date: January 19, 2022

# TYPICAL GRADING SECTION



NORRIS PEAK ROAD TYPICAL SECTION (STA 165+25 TO 169+80)

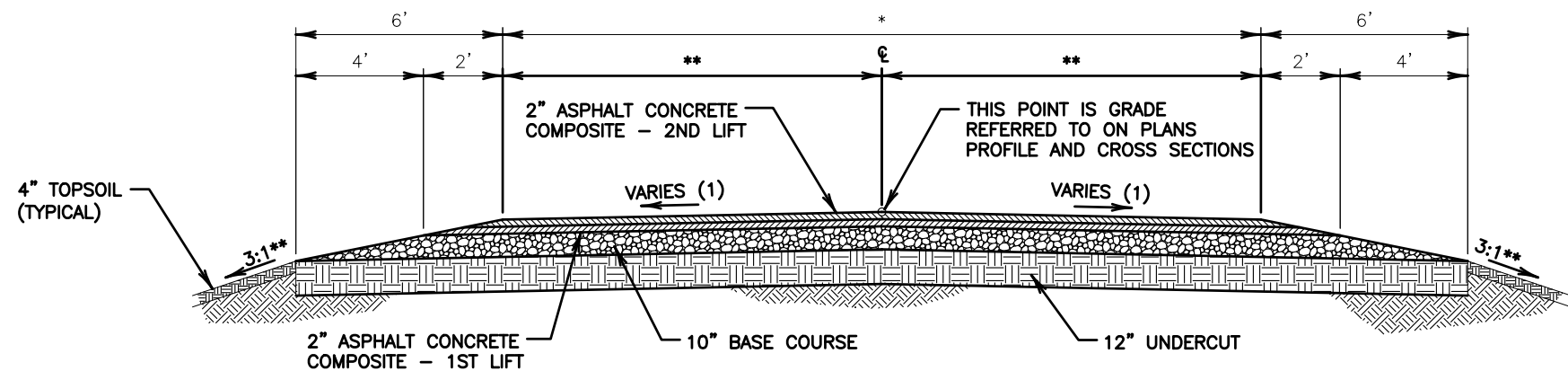
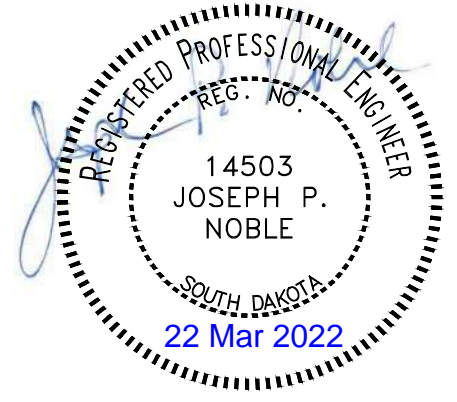
<b>* ROADWAY WIDTH</b>		
165+25	MATCH ROADWAY (20'±)	
165+25 TO 165+65	TRANSITION EXISTING TO 27'	
165+65 TO 169+20	27'	
169+20 TO 169+80	TRANSITION 27' TO EXISTING (20'±)	
<b>** GRADING TRANSITIONS</b>		
165+25 TO 169+80	GRADE SLOPE AT 4:1 UP TO 45' FROM CL	
	GRADE SLOPE AT 3:1 BEYOND 45' FROM CL	
<b>TRANSITION</b>	<b>***</b>	<b>****</b>
165+25 TO 165+65	0' TO 3'	10' TO 12'
165+65 TO 169+20	3'	12'
169+20 TO 169+80	3' TO 0'	12' TO 10'

Layer: 21 TYPICAL SECTION  
 File: W:\SS\DOT\12403-20\15-00\CAD Drawings\01-CompPlan Sheets\TYPICAL.dwg

STATE OF SOUTH DAKOTA	PROJECT PH 8041(20)	SHEET 21	TOTAL SHEETS 75
-----------------------	------------------------	-------------	--------------------

Plotting Date: January 19, 2022

# TYPICAL GRADING SECTION



BOGUS JIM ROAD TYPICAL SECTION (STA 0+70 TO 1+58)

\* ROADWAY WIDTH  
 0+70 MATCH ROADWAY (21'±)  
 0+70 TO 1+10 TRANSITION EXISTING TO 22'  
 1+10 TO 1+58 22'

\*\* TRANSITION  
 0+70 TO 1+10 10.5' TO 11'  
 1+10 TO 1+58 11'

Plotted By: Erik Beers Date: Monday, March 21, 2022 10:54:29 AM  
 Last Saved By: Erik Beers Date: Monday, February 14, 2022 10:54:29 AM

Plotting Date: January 19, 2022

# HORIZONTAL ALIGNMENT DATA

## NEMO ROAD

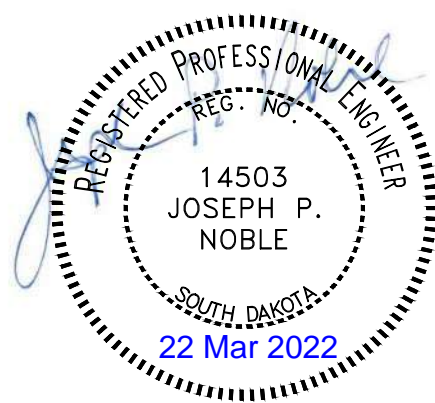
Type	Station			Northing	Easting
POB	0+00			674365.15	1152189.26
		TL = 103.45	N87°27'55"E		
PC	1+03.45			674369.73	1152292.61
PI	5+85.42	R = 700.00'	Delta = 69.10 R	674391.04	1152774.10
PT	9+47.63			673948.84	1152965.81
		TL = 0.00	S23°26'16"E		
PC	9+47.63			673948.84	1152965.81
PI	10+93.41	R = 350.00'	Delta = 45.23	673815.08	1153023.76
PT	12+23.90			673679.71	1152969.68
		TL = 157.13	S21°47'19"W		
PC	13+81.03			673533.81	1152911.36
PI	14+31.46	R = 315.00'	Delta = 18.19	673486.98	1152892.64
PT	14+81.03			673436.66	1152889.47

## NORRIS PEAK ROAD

Type	Station			Northing	Easting
POB	163+49.49			665403.87	1156024.94
		TL = 2.02'	N43°00'42"W		
PC	163+51.51			665405.35	1156024.56
PI	164+17.41	R = 1200.00'	Delta = 06°17'10" R	665453.53	1155979.61
PT	164+83.17			665506.35	1155940.20
		TL = 2.73'	N36°43'31"W		
PC	164+85.90			665508.54	1155938.57
PI	165+83.08	R = 1750.00'	Delta = 06°21'24" R	665586.42	1155880.46
PT	166+80.06			665670.27	1155831.33
		TL = 1.91'	N30°22'07"W		
PC	166+81.97			665671.92	1155830.37
PI	167+72.69	R = 340.00'	Delta = 29°52'46" R	665750.19	1155784.5
PT	168+59.28			665840.91	1155783.73
		TL = 2.05'	N00°29'21"W		
PC	168+61.32			665842.95	1155783.71
PI	169+81.59	R = 1370.00'	Delta = 10°02'02"W	665963.21	1155782.68
PT	171+01.24			666081.82	1155802.62

## BOGUS JIM ROAD

Type	Station			Northing	Easting
POB	0+00			665742.81	1155601.71
		TL = 120.85'	N88°40'07"E		
PC	1+20.85			665745.62	1155722.53
PI	1+50.13	R = 250.00'	Delta = 13°21'36"	665746.30	1155751.80
PT	1+79.15			665753.73	1155780.13
		TL = 56.67'	N75°18'32"E		
POE	2+35.81			665768.10	1155834.94



The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System, South Zone  
 United States ITRF to NAD 1983 (2011) GEOID 12A

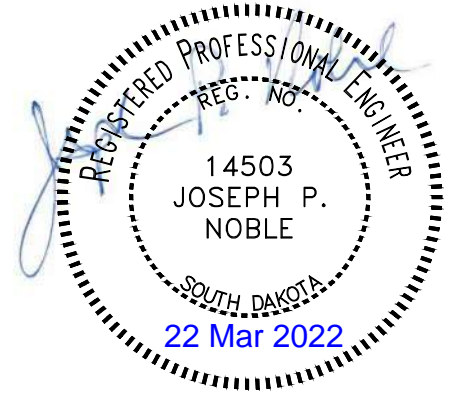


STATE OF SOUTH DAKOTA	PROJECT PH 8041(20)	SHEET 23	TOTAL SHEETS 75
-----------------------	------------------------	-------------	--------------------

Plotting Date: January 19, 2022

# CONTROL DATA

HORIZONTAL AND VERTICAL CONTROL POINTS				
Point	Description	Northing	Easting	Elevation
1	Rebar with Plastic Cap	659004.59	1154446.91	4733.23
2	Rebar with Plastic Cap	668269.13	1159467.85	4211.06
3	Rebar with Plastic Cap	672648.51	1153415.91	4302.64
4	Rebar with Plastic Cap	670989.89	1156839.35	4227.56
105	Rebar with Plastic Cap	673377.74	1152870.04	4303.09
106	Rebar with Plastic Cap	673904.66	1153025.96	4302.46
107	Rebar with Plastic Cap	674274.61	1152724.18	4305.76
108	Rebar with Plastic Cap	674385.43	1152165.55	4312.63



The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System, South Zone  
 United States ITRF to NAD 1983 (2011) GEOID 12A  
 The elevations shown on this sheet are based on NAVD 88

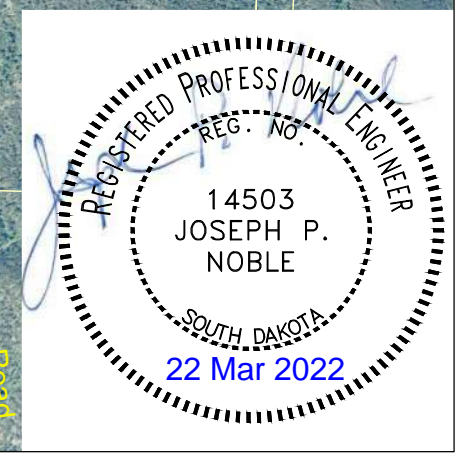
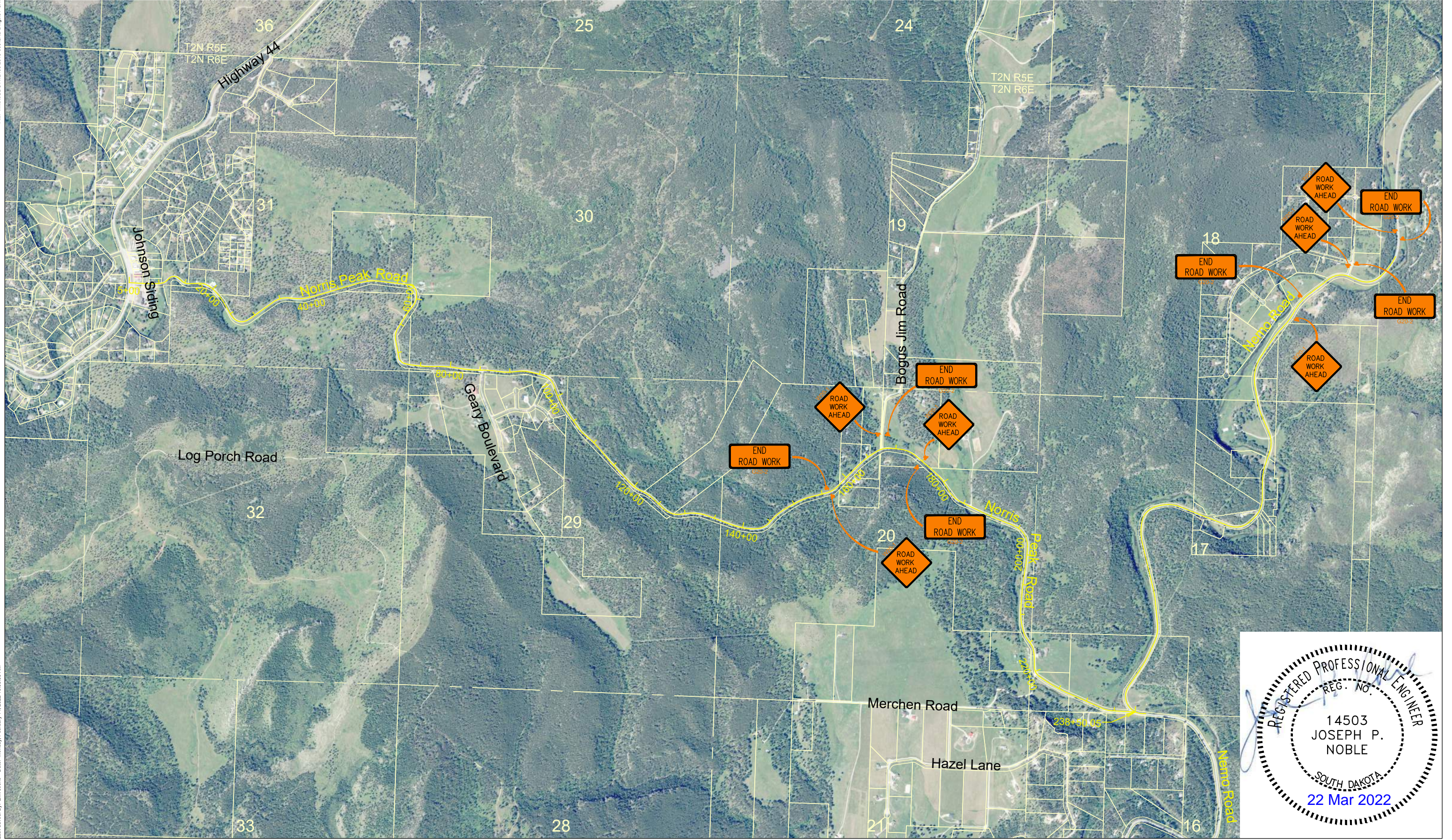


Layout: 24 FIXED SIGN LAYOUT  
File: W:\SIS\DD\0112403-2015-005\CA\0 Dwg\01-Civil\Plan Sheets\FIXED SIGN LAYOUT.dwg  
Plotted By: Erik Johns Date: Monday, March 21, 2022 10:53:59 AM  
Last Saved By: Erik Johns Date: Monday, February 14, 2022 10:53:59 AM

NOTE:  
SIGN LOCATIONS ON THIS PLAN ARE DIAGRAMMATIC. FINAL LOCATIONS  
WILL BE COORDINATED WITH THE ENGINEER IN THE FIELD

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	24	75

Plotting Date: January 19, 2022





Layer: 25 DEMOLITION AND REMOVALS PLAN  
File: W:\S\SDDOT\1403-2015-09\CAD Dwg\01-Civil\Plan Sheet\DEMOLITION and REMOVALS.dwg  
Plotted By: Erik Beers Date: Monday, March 21, 2022 12:01:17 PM  
Last Saved By: Erik Beers Date: Monday, March 21, 2022 12:01:17 PM

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	25	75

Plotting Date: January 19, 2022 Revised: March 22, 2022

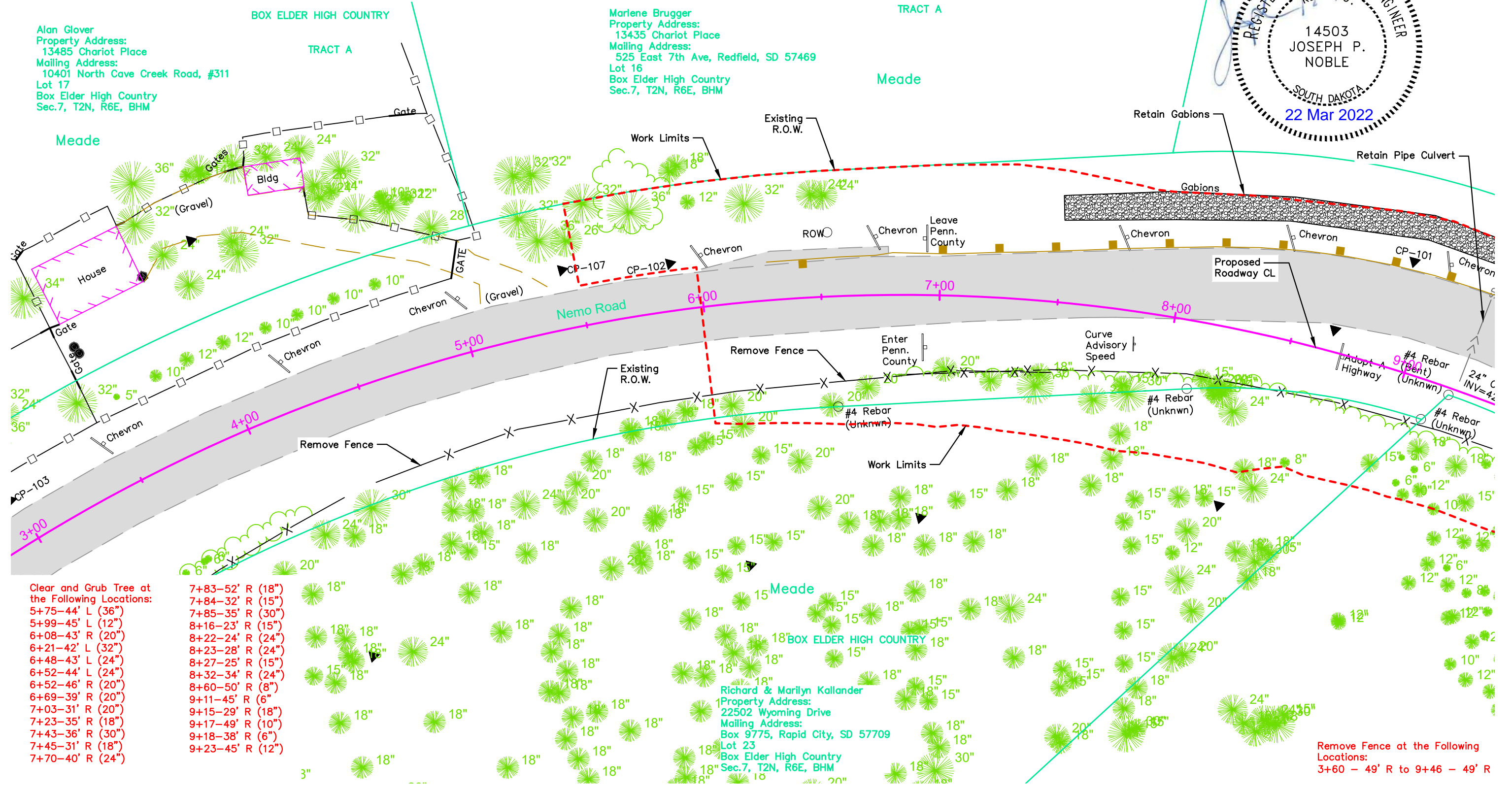
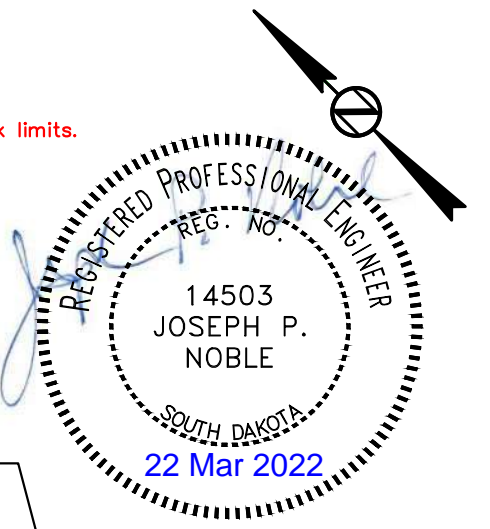
# DEMOLITION and REMOVALS PLAN

Remove Sign for Reset at the Following Locations:  
6+01 - L (Chevron)  
6+74 - L (Chevron)  
6+94 - L (Enter Penn. County)  
6+94 - R (Leave Penn. County)  
7+76 - L (Chevron)  
7+85 - R (Curve/Advisory Speed)  
8+41 - L (Chevron)  
8+73 - R (Adopt A Highway)  
9+05 - L (Chevron)

Remove Sign at the Following Locations:  
7+85 - R (Curve/Advisory Speed)

Remove Beam Guardrail:  
6+28 L to 10+43 L

Note:  
All vegetation to be removed within work limits.  
(Clearing, Lump Sum)



Clear and Grub Tree at the Following Locations:  
7+83-52' R (18")  
7+84-32' R (15")  
5+75-44' L (36")  
7+85-35' R (30")  
5+99-45' L (12")  
8+16-23' R (15")  
6+08-43' R (20")  
8+22-24' R (24")  
6+21-42' L (32")  
8+23-28' R (24")  
6+48-43' L (24")  
8+27-25' R (15")  
6+52-44' L (24")  
8+32-34' R (24")  
6+52-46' R (20")  
8+60-50' R (8")  
6+69-39' R (20")  
9+11-45' R (6")  
7+03-31' R (20")  
9+15-29' R (18")  
7+23-35' R (18")  
9+17-49' R (10")  
7+43-36' R (30")  
9+18-38' R (6")  
7+45-31' R (18")  
9+23-45' R (12")  
7+70-40' R (24")

Remove Fence at the Following Locations:  
3+60 - 49' R to 9+46 - 49' R

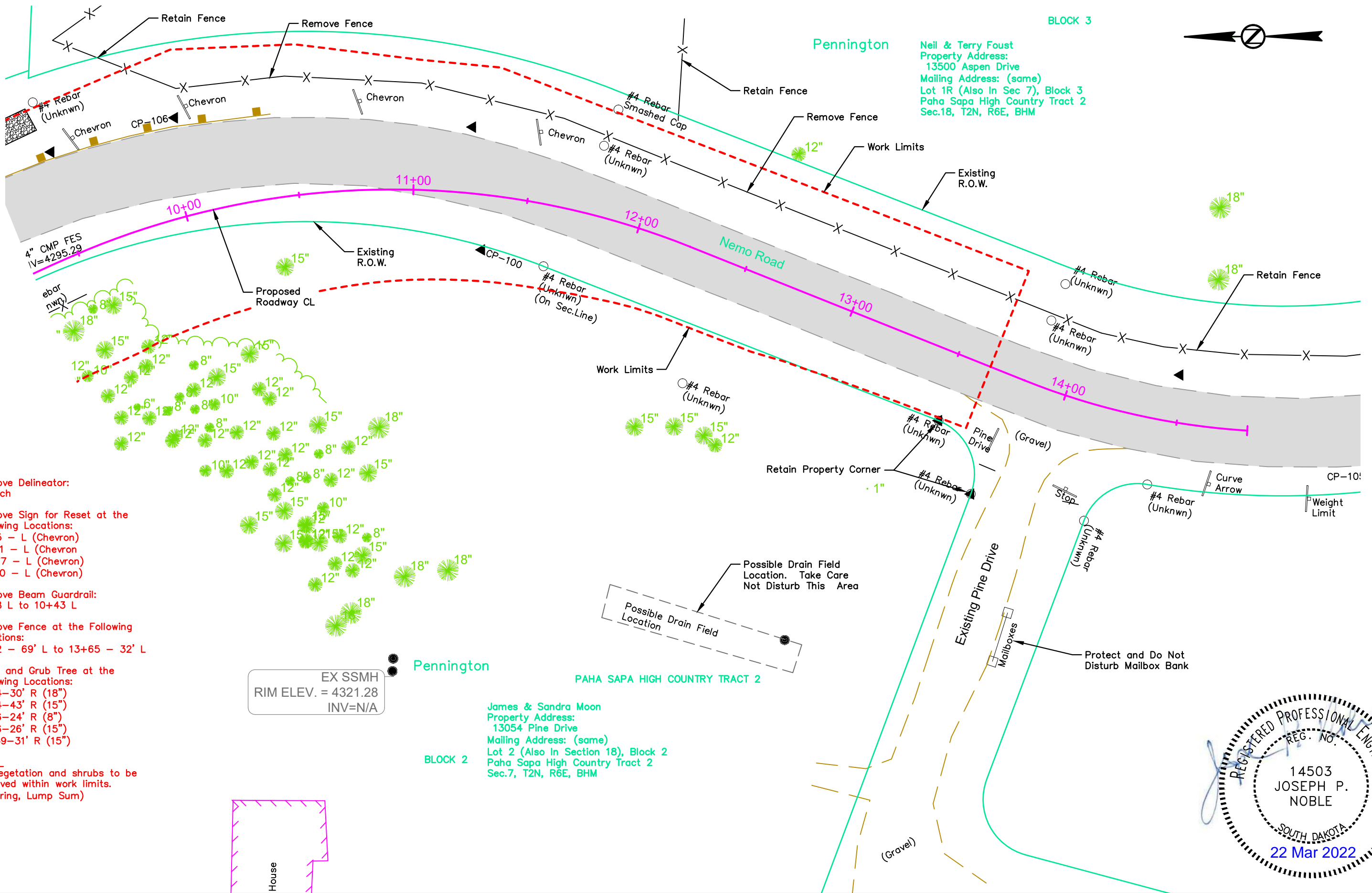


# DEMOLITION and REMOVALS PLAN

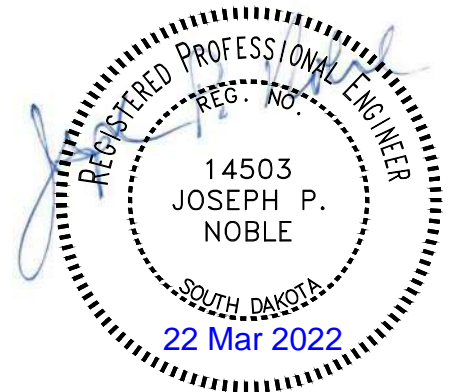
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	26	75

Plotting Date: January 19, 2022      Revised: March 22, 2022

Plotted By: Erik Beers    Date: Monday, March 21, 2022, 12:01:17 PM  
 Last Saved By: Erik Beers    Date: Monday, March 21, 2022, 12:01:17 PM  
 File: W:\S\SDDOT\1403-2015-06\CAD Drawings\1-Civil\Plan Sheets\DEMOLITION and REMOVALS.dwg



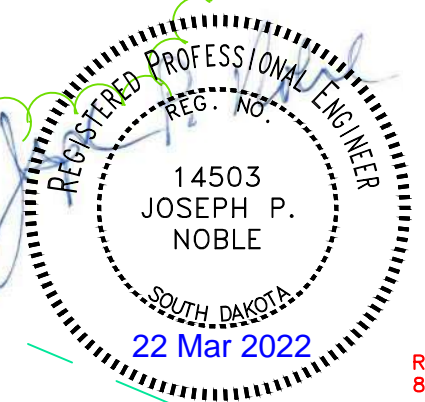
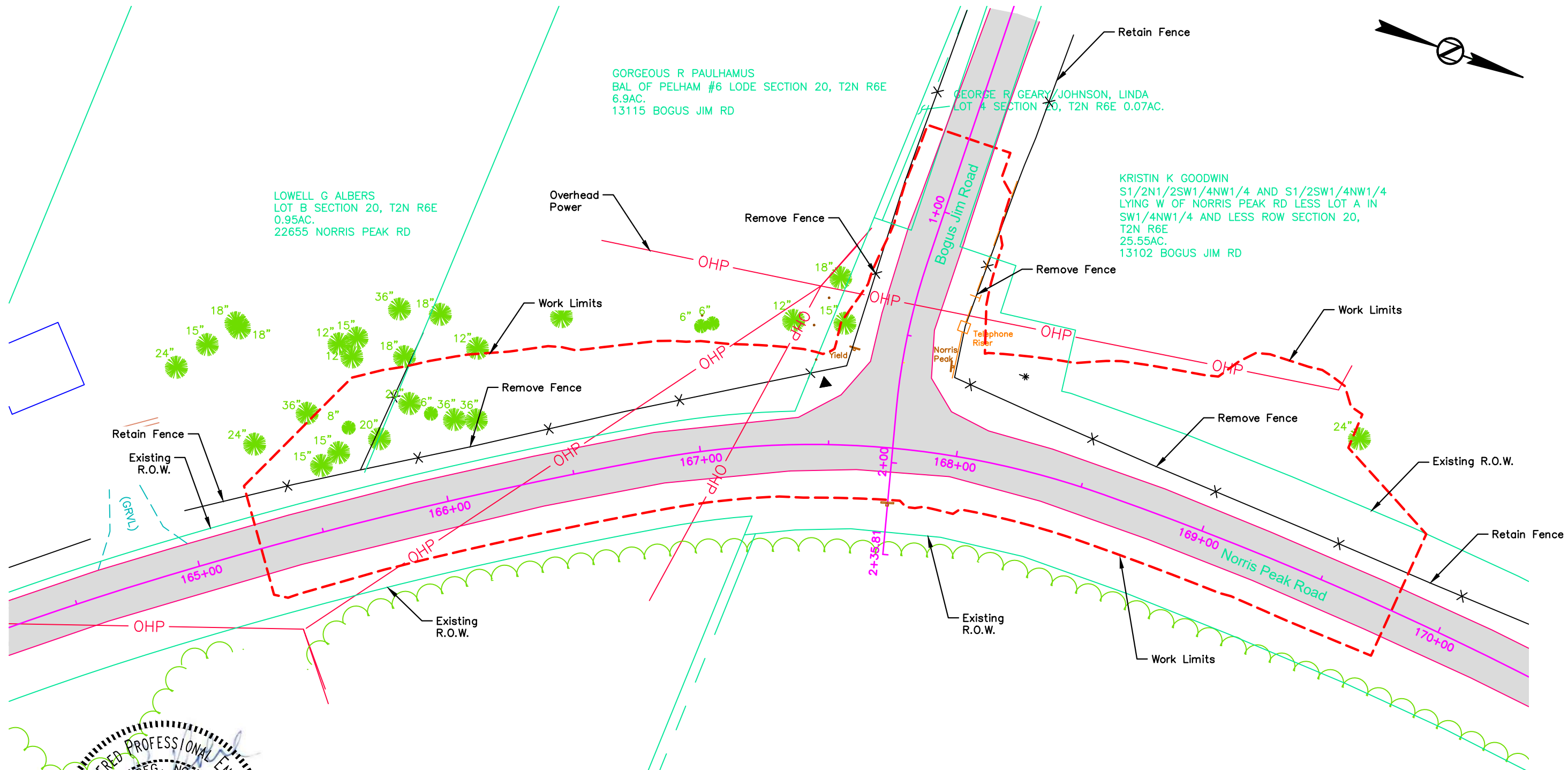
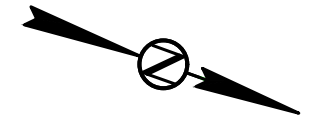
- Remove Delineator:  
5 Each
- Remove Sign for Reset at the Following Locations:  
 9+65 - L (Chevron)  
 10+11 - L (Chevron)  
 10+77 - L (Chevron)  
 11+50 - L (Chevron)
- Remove Beam Guardrail:  
6+28 L to 10+43 L
- Remove Fence at the Following Locations:  
 9+92 - 69' L to 13+65 - 32' L
- Clear and Grub Tree at the Following Locations:  
 9+34-30' R (18")  
 9+44-43' R (15")  
 9+46-24' R (8")  
 9+56-26' R (15")  
 10+39-31' R (15")
- Note:**  
 All vegetation and shrubs to be removed within work limits.  
 (Clearing, Lump Sum)



# DEMOLITION and REMOVALS PLAN

STATE OF SOUTH DAKOTA	PROJECT PH 8041(20)	SHEET 27	TOTAL SHEETS 75
-----------------------	------------------------	-------------	--------------------

Plotting Date: January 19, 2022      Revised: March 22, 2022



Remove Delineator:  
8 Each

- Clear and Grub Tree at the Following Locations:
- 165+56-25' L (15")
  - 165+63-28' L (15")
  - 165+69-37' L (8")
  - 165+80-30' L (20")
  - 165+94-40' L (20")
  - 166+01-35' L (6")
  - 166+09-30' L (36")
  - 166+17-28' L (36")

- Remove Sign for Reset at the Following Locations:
- 167+58 - L (Yield)
  - 167+75 - R (Two Direction Large Arrow)
  - 167+94 - L (Street)

- Remove Fence at the Following Locations:
- 165+25 - 22' L to 167+75 - 126' L
  - 168+03 - 103' L to 169+73 - 16' L

**Note:**  
All vegetation and shrubs to be removed within work limits. (Clearing, Lump Sum)

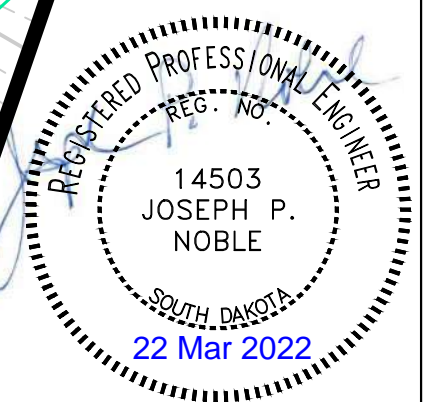
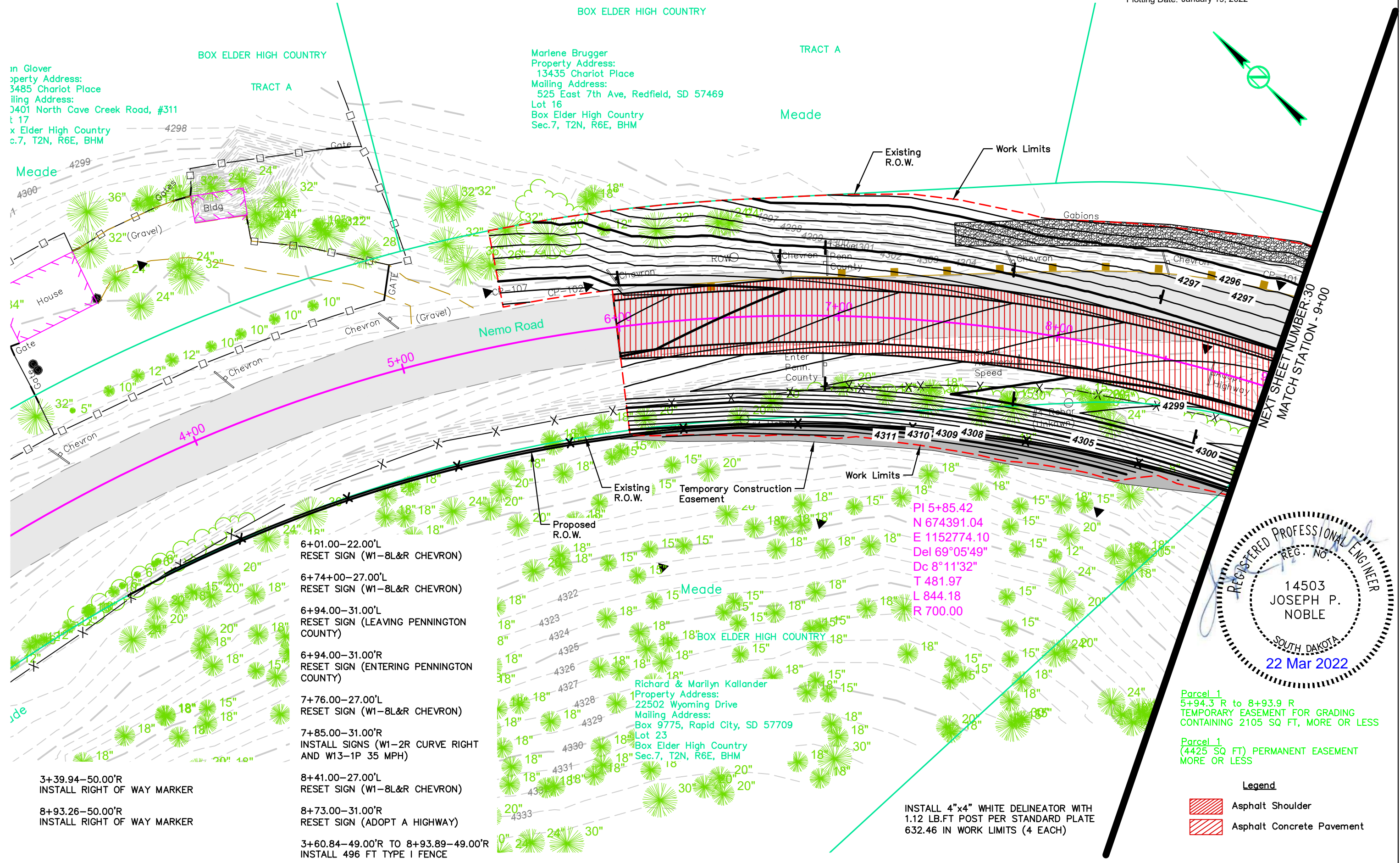
Plotted By: Erik Beers    Date: Monday, March 21, 2022, 12:01:17 PM  
 Last Saved By: Erik Beers    Date: Monday, March 21, 2022, 12:01:17 PM  
 File: W:\SIS\DDOT\1403-2015-06\CAD Draw\01-Civil\Plan Sheet\DEMOLITION and REMOVALS.dwg  
 Layer: 27 DEMOLITION AND REMOVALS PLAN



Layout: 28 NEMO ROAD PLAN  
File: W:\SIS\DDM\12403-2015-06\CAD Drawings\1-Civil\Plan Sheets\PLAN and PROFILE.dwg

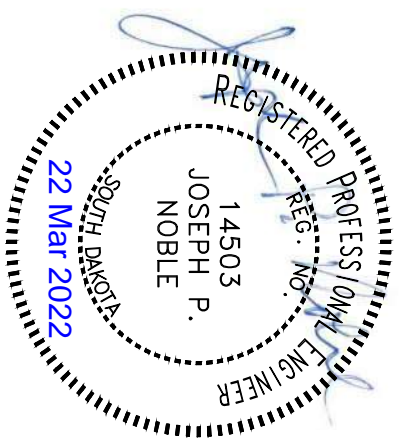
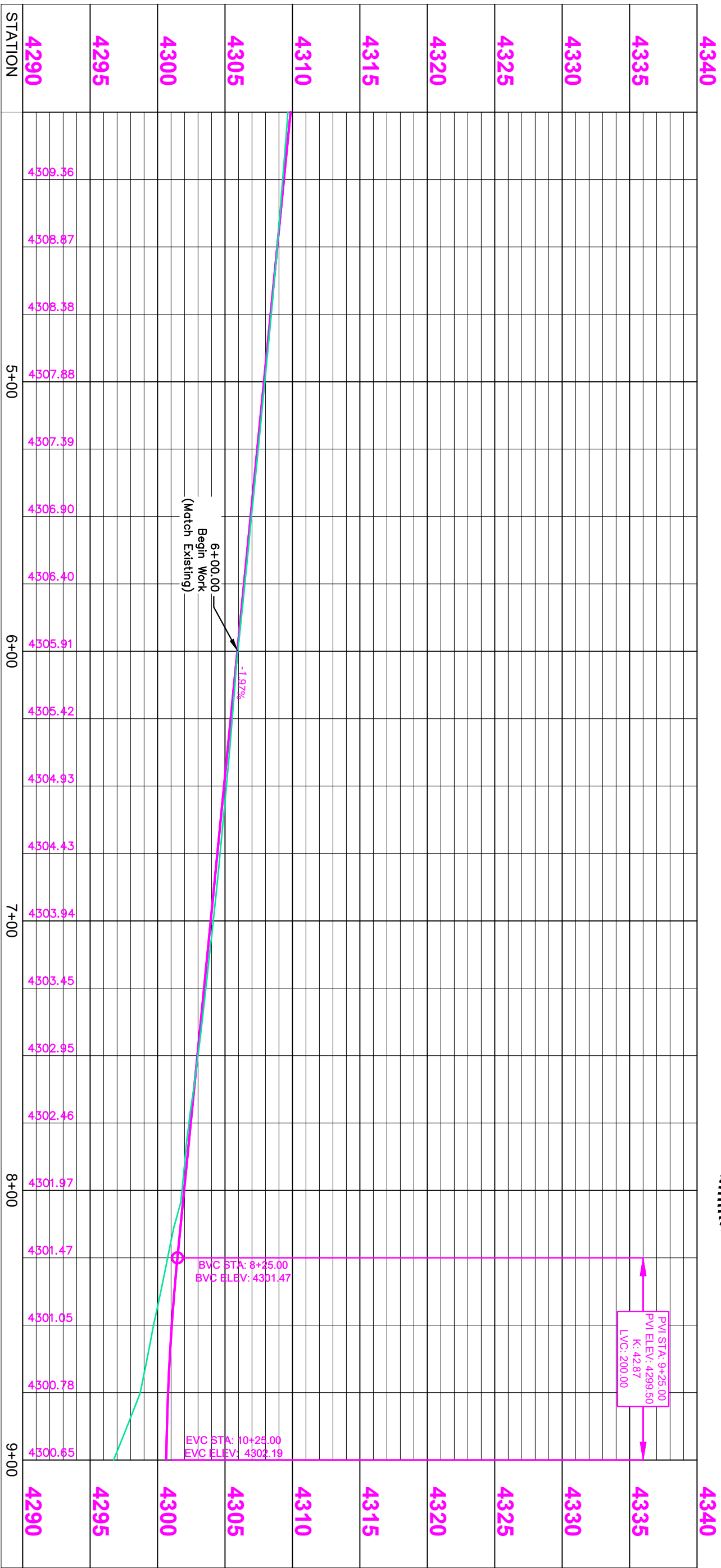
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	28	75

Plotting Date: January 19, 2022



Plotted By: Erik Johns Date: Monday, March 21, 2022 10:54:48 AM  
Last Saved By: Erik Johns Date: Monday, February 14, 2022 10:54:48 AM

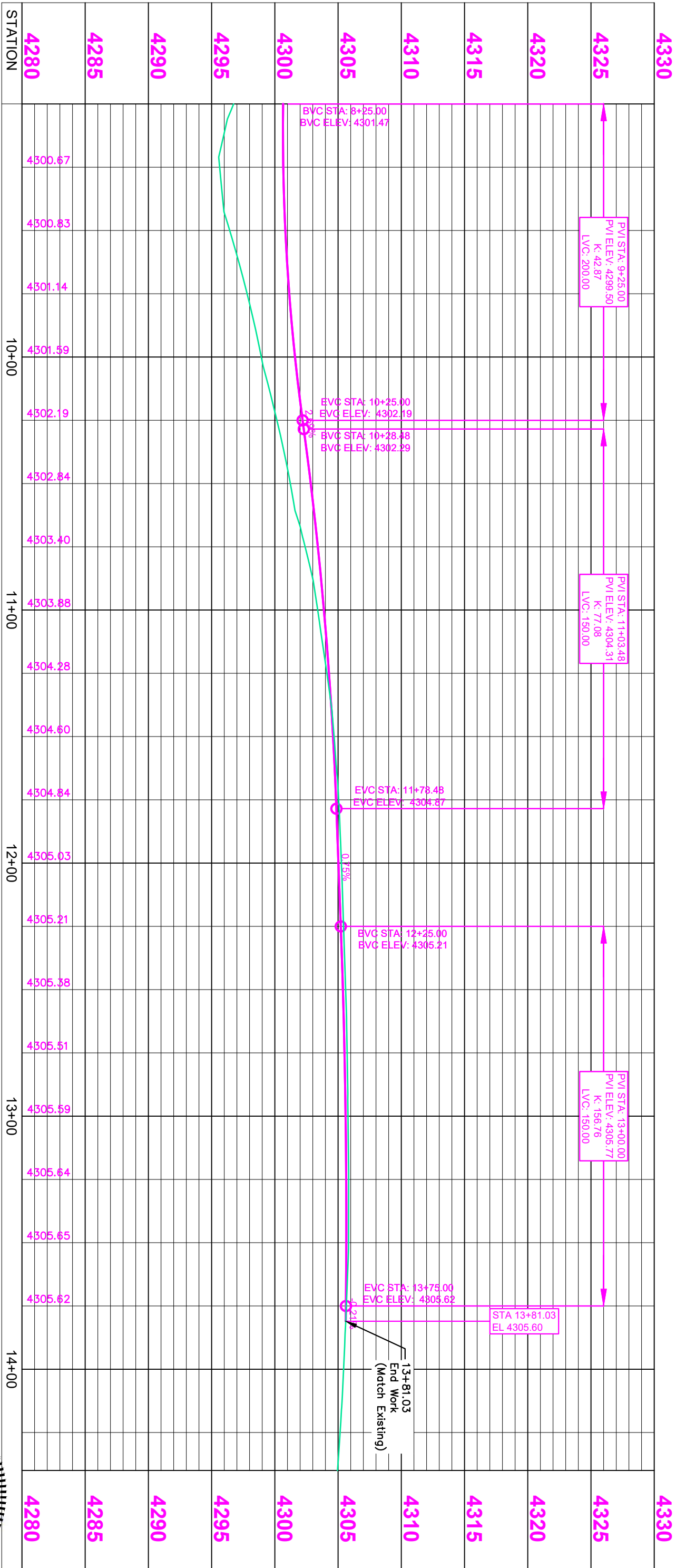




Plotting Date: January 19, 2022

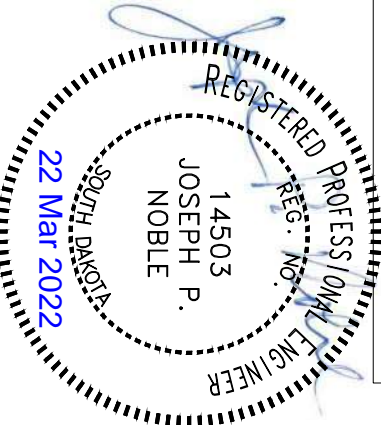
STATE OF SOUTH DAKOTA	PROJECT PH 804(120)	SHEET 29	TOTAL SHEETS 75
-----------------------	---------------------	----------	-----------------





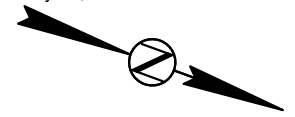
STATE OF SOUTH DAKOTA	PROJECT PH 8041(20)	SHEET 31	TOTAL SHEETS 75
-----------------------	---------------------	----------	-----------------

Plotting Date: January 19, 2022





Plotting Date: January 19, 2022



167+84.64-19.75'R TO  
167+87.08-13.71'R  
INSTALL 24"-8' CMP  
(BETWEEN INLET AND EXISTING CMP)

168+09.89-23.14'L TO  
168+18.56-39.90'L  
INSTALL 24"-20' CMP AND 1-24"  
CMP SLOPED END AND TYPE II  
OBJECT MARKER BACK TO BACK

INSTALL TYPE M MEDIAN DRAIN AT  
THE FOLLOWING LOCATION:

167+84.64-19.74'R

168+18.56-39.90'L  
INSTALL 6 CY BANK AND CHANNEL  
PROTECTION GABIONS

**Parcel 2**  
165+25.0 to 165+81.7 L  
TEMPORARY EASEMENT FOR GRADING  
CONTAINING 1527 SQ FT, MORE OR LESS

**Parcel 2**  
(1005 SQ FT) PERMANENT EASEMENT  
MORE OR LESS

LOWELL G ALBERS  
LOT B SECTION 20, T2N R6E  
0.95AC.  
22655 NORRIS PEAK RD

GORGEOUS R PAULHAMUS  
BAL OF PELHAM #6 LODGE SECTION 20, T2N R6E  
6.9AC.  
13115 BOGUS JIM RD

167+58.00-37.00'L  
RESET SIGN (YIELD)

167-75.00-22.00'R  
RESET SIGN (TWO DIRECTION LARGE ARROW)

167+94.00-34.00'L  
RESET SIGN (STREET)

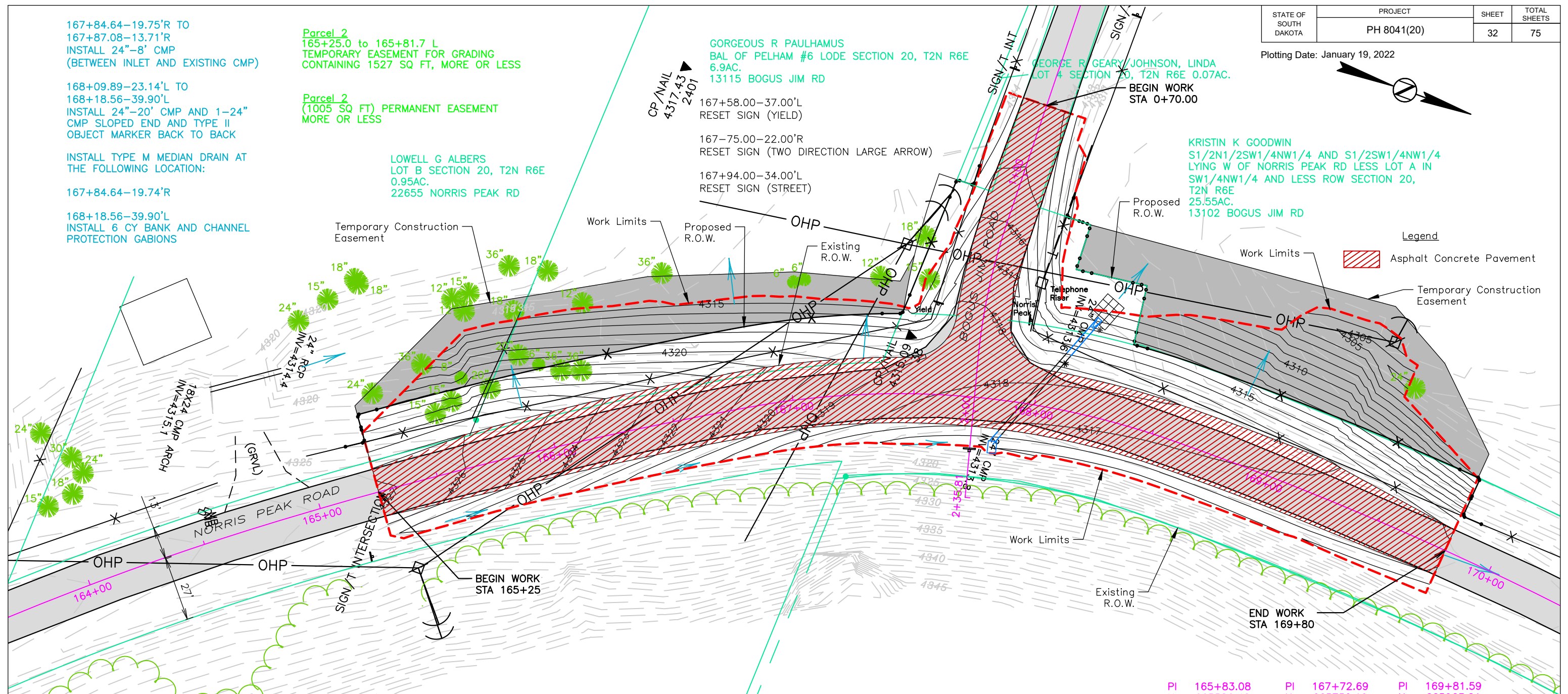
GEORGE R GEARY/JOHNSON, LINDA  
LOT 4 SECTION 20, T2N R6E 0.07AC.

BEGIN WORK  
STA 0+70.00

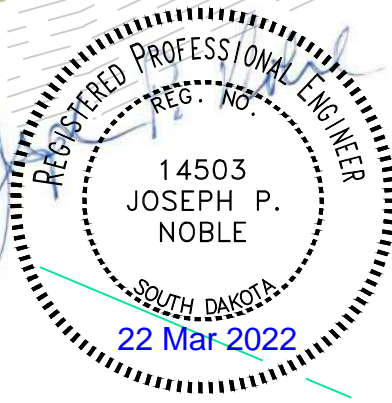
KRISTIN K GOODWIN  
S1/2N1/2SW1/4NW1/4 AND S1/2SW1/4NW1/4  
LYING W OF NORRIS PEAK RD LESS LOT A IN  
SW1/4NW1/4 AND LESS ROW SECTION 20,  
T2N R6E  
25.55AC.  
13102 BOGUS JIM RD

**Legend**  
Asphalt Concrete Pavement

Temporary Construction Easement



- 165+25.00-33.00'L  
INSTALL RIGHT OF WAY MARKER
- 165+81.68-33.00'L  
INSTALL RIGHT OF WAY MARKER
- 167+45.31-33.00'L  
INSTALL RIGHT OF WAY MARKER
- 167+56.83-90.98'L  
INSTALL RIGHT OF WAY MARKER
- 168+06.59-57.98'L  
INSTALL RIGHT OF WAY MARKER
- 168+08.62-77.15'L  
INSTALL RIGHT OF WAY MARKER
- 168+32.18-57.91'L  
INSTALL RIGHT OF WAY MARKER
- 168+33.03-33.00'L  
INSTALL RIGHT OF WAY MARKER



INSTALL 4"x4" WHITE DELINEATOR WITH  
1.12 LB.FT POST PER STANDARD PLATE  
632.46 (10 EACH)

CP/NAIL  
4367.20  
2400

CP/NAIL  
4380.09  
2399

LAWRENCE M PAINTER  
LOT C SECTION 20, T2N R6E  
2.13AC.  
22652 NORRIS PEAK RD

TIMOTHY K JACOBS  
THAT PT OF SW1/4NW1/4 LYING E OF NORRIS PEAK RD  
SECTION 20, T2N R6E  
3.25AC.  
22640 NORRIS PEAK RD

GEORGE R GEARY/JOHNSON, LINDA  
LOT 4 SECTION 20, T2N R6E 0.07AC.

**Parcel 3**  
165+81.7 to 167+45.0 L  
TEMPORARY EASEMENT FOR GRADING  
CONTAINING 3852 SQ FT, MORE OR LESS

**Parcel 3**  
(3723 SQ FT) PERMANENT EASEMENT  
MORE OR LESS

**Parcel 4**  
(279 SQ FT) PERMANENT EASEMENT  
MORE OR LESS

PI 165+83.08	PI 167+72.69	PI 169+81.59
N 665586.42	N 665750.19	N 665963.21
E 115880.46	E 1155784.50	E 1155782.68
Del 06°21'24"	Del 29°52'45"	Del 10°02'02"
Dc 03°16'26"	Dc 16°51'06"	Dc 04°10'56"
T 97.18'	T 90.72'	T 120.27'
L 194.06'	L 175.31'	L 239.61'
R 1750.00'	R 340.00'	R 1370.00'

165+16.88-21.64'L TO  
167+69.73-95.10'L  
INSTALL 325 FT TYPE I FENCE WITH 9  
2-POST PANELS ON CORNERS.

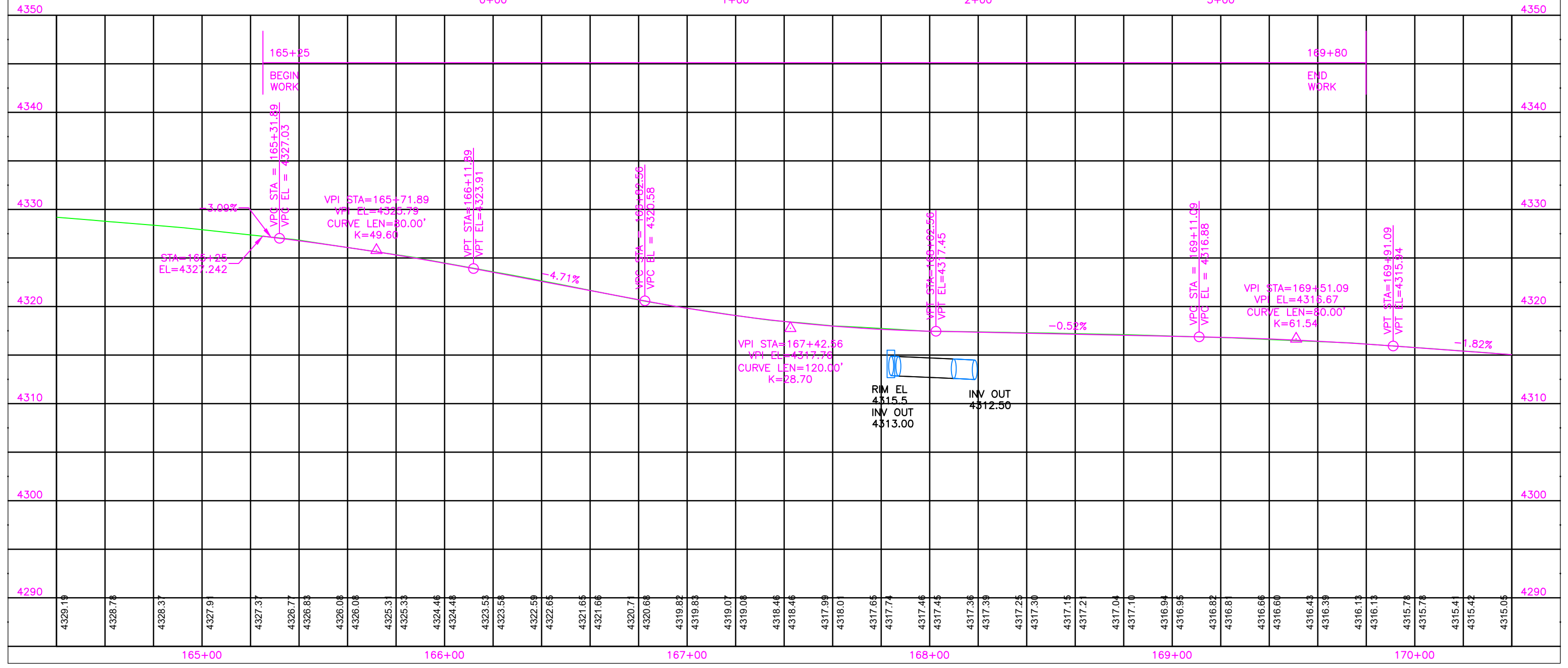
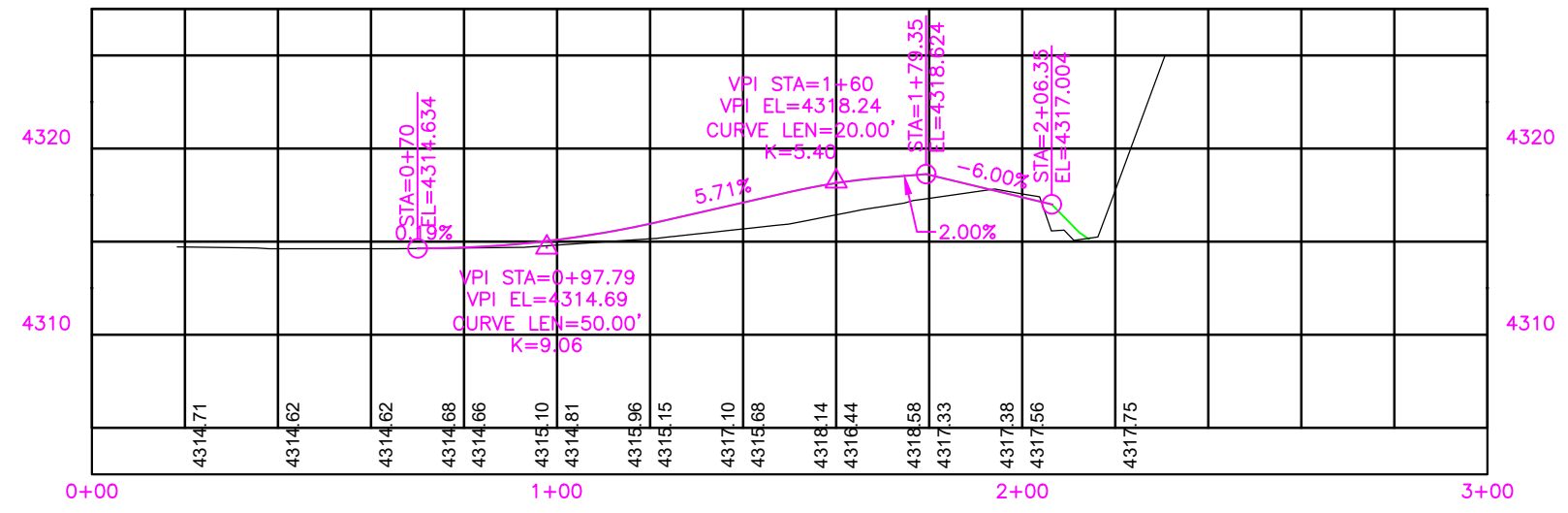
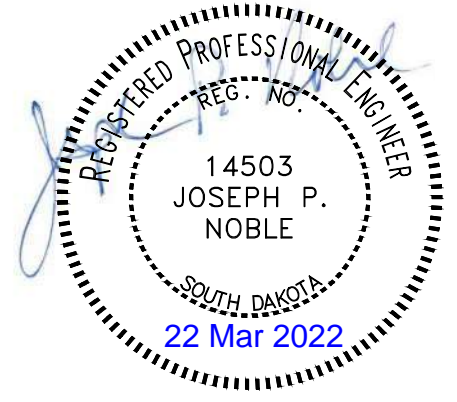
168+01.43-86.84'L TO  
169+88.98-16.08'L  
INSTALL 250 FT TYPE I FENCE WITH 10  
2-POST PANELS ON CORNERS.

**Parcel 5**  
168+06.6 to 169+80.0 L  
TEMPORARY EASEMENT FOR GRADING  
CONTAINING 7044 SQ FT, MORE OR LESS

**Parcel 5**  
(2625 SQ FT) PERMANENT EASEMENT  
MORE OR LESS

Plotting Date: January 19, 2022

STA 167+75 L  
BOGUS JIM ROAD



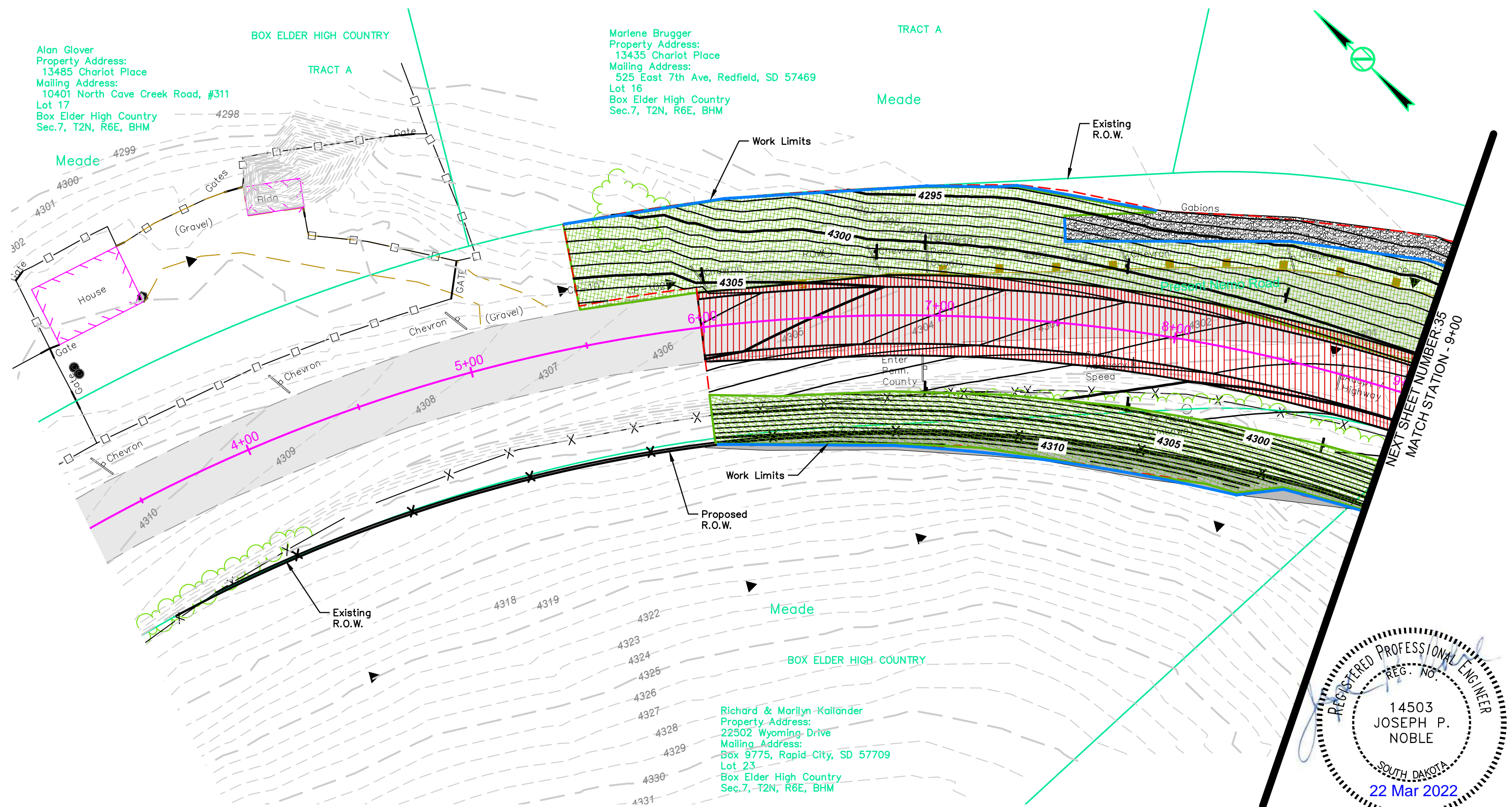


Plotted By: Erik Beards Date: Monday, March 21, 2022 10:47:42 AM  
 Last Saved By: Erik Beards Date: Monday, February 14, 2022 10:47:42 AM  
 File: W:\SSD\00112403-2015-005\CAD Drawings\01-Civil\Plan Sheets\EROSION CONTROL.dwg

STATE OF SOUTH DAKOTA	PROJECT PH 8041(20)	SHEET 34	TOTAL SHEETS 75
-----------------------	------------------------	-------------	--------------------

Plotting Date: January 19, 2022

# EROSION CONTROL PLAN



Alan Glover  
 Property Address:  
 13485 Chariot Place  
 Mailing Address:  
 10401 North Cave Creek Road, #311  
 Lot 17  
 Box Elder High Country  
 Sec.7, T2N, R6E, BHM

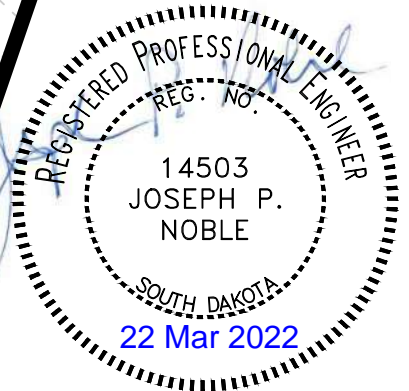
Marlene Brugger  
 Property Address:  
 13435 Chariot Place  
 Mailing Address:  
 525 East 7th Ave, Redfield, SD 57469  
 Lot 16  
 Box Elder High Country  
 Sec.7, T2N, R6E, BHM

Richard & Marilyn Kallander  
 Property Address:  
 22502 Wyoming Drive  
 Mailing Address:  
 Box 9775, Rapid City, SD 57709  
 Lot 23  
 Box Elder High Country  
 Sec.7, T2N, R6E, BHM

**Perimeter Stabilization**  
 Install 9" Diameter Fiber Roll at the Following Locations:  
 5+50 L to 13+65 L, Just outside work limits (915 LF)  
 6+00 R to 12+25 R, Just outside work limits (586 LF)

**Final Stabilization**  
 Install Type 4 Erosion Control Blanket at the disturbed slopes at the Following Locations:  
 5+50 L to 13+65 L, (3,510 SY)  
 6+00 R to 12+25 R, (1,075 SY)

Note: Seed, Fertilize, and Bonded Fiver Matrix disturbed area less roadway, 0.25 Acres.



**Legend**  
 Type 4 Erosion Control Blanket  
 9" Erosion Control Wattle



Plot: 35 EROSION CONTROL PLAN  
File: W:\SSM\DOT12403-2015-005\CAD Dwg\01-Civil\Plan Sheets\EROSION CONTROL.dwg

STATE OF SOUTH DAKOTA	PROJECT PH 8041(20)	SHEET 35	TOTAL SHEETS 75
-----------------------	------------------------	-------------	--------------------

Plotting Date: January 19, 2022

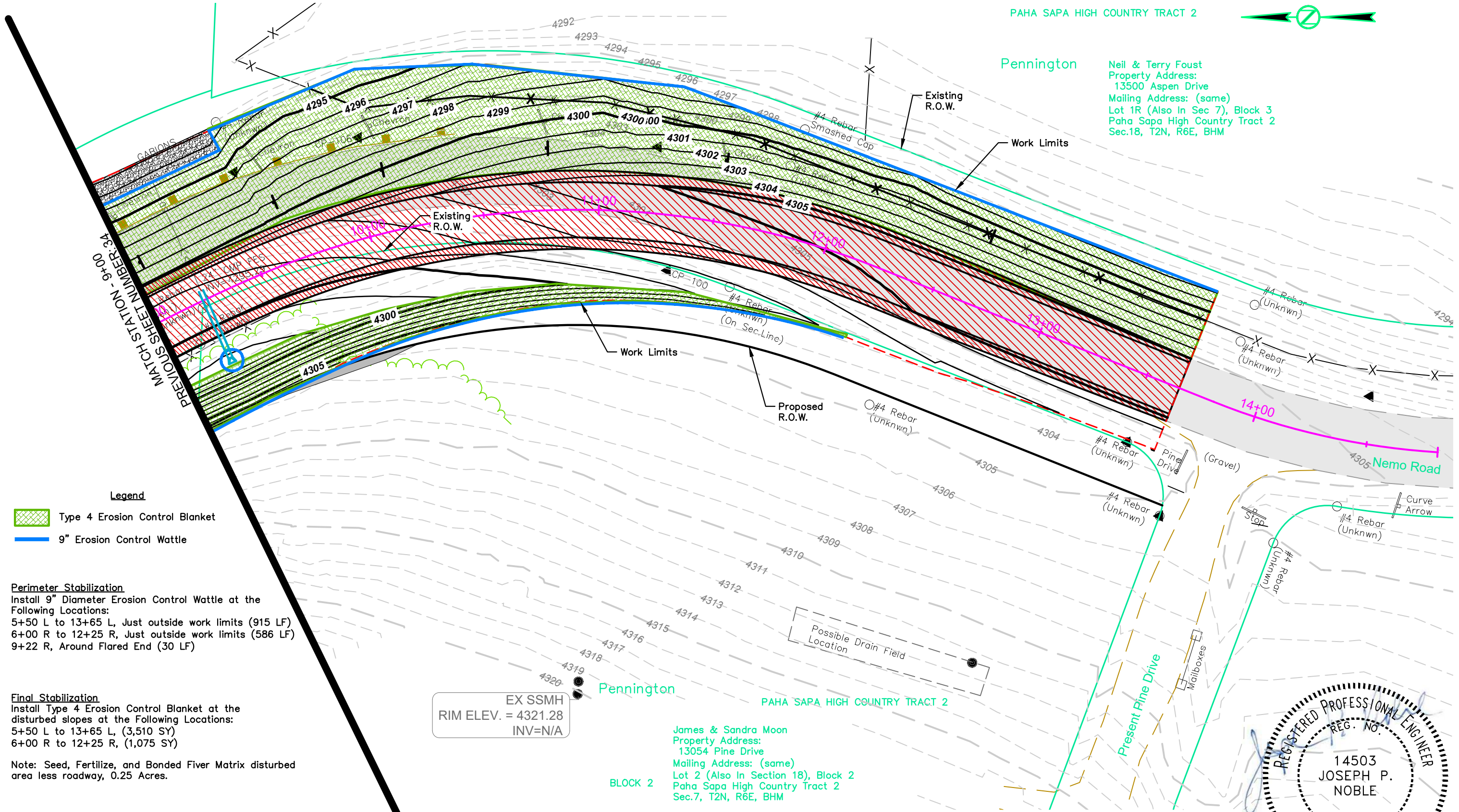
# EROSION CONTROL PLAN

PAHA SAPA HIGH COUNTRY TRACT 2



Pennington

Neil & Terry Foust  
 Property Address:  
 13500 Aspen Drive  
 Mailing Address: (same)  
 Lot 1R (Also In Sec 7), Block 3  
 Paha Sapa High Country Tract 2  
 Sec.18, T2N, R6E, BHM



### Legend

- Type 4 Erosion Control Blanket
- 9" Erosion Control Wattle

### Perimeter Stabilization

Install 9" Diameter Erosion Control Wattle at the Following Locations:  
 5+50 L to 13+65 L, Just outside work limits (915 LF)  
 6+00 R to 12+25 R, Just outside work limits (586 LF)  
 9+22 R, Around Flared End (30 LF)

### Final Stabilization

Install Type 4 Erosion Control Blanket at the disturbed slopes at the Following Locations:  
 5+50 L to 13+65 L, (3,510 SY)  
 6+00 R to 12+25 R, (1,075 SY)

Note: Seed, Fertilize, and Bonded Fiver Matrix disturbed area less roadway, 0.25 Acres.

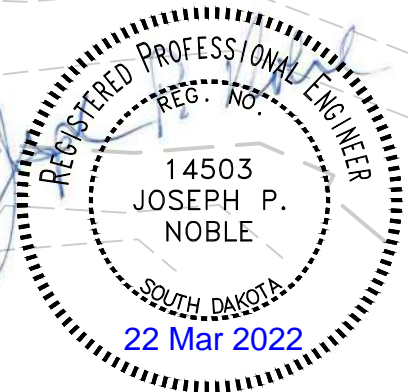
EX SSMH  
 RIM ELEV. = 4321.28  
 INV=N/A

Pennington

PAHA SAPA HIGH COUNTRY TRACT 2

BLOCK 2

James & Sandra Moon  
 Property Address:  
 13054 Pine Drive  
 Mailing Address: (same)  
 Lot 2 (Also In Section 18), Block 2  
 Paha Sapa High Country Tract 2  
 Sec.7, T2N, R6E, BHM



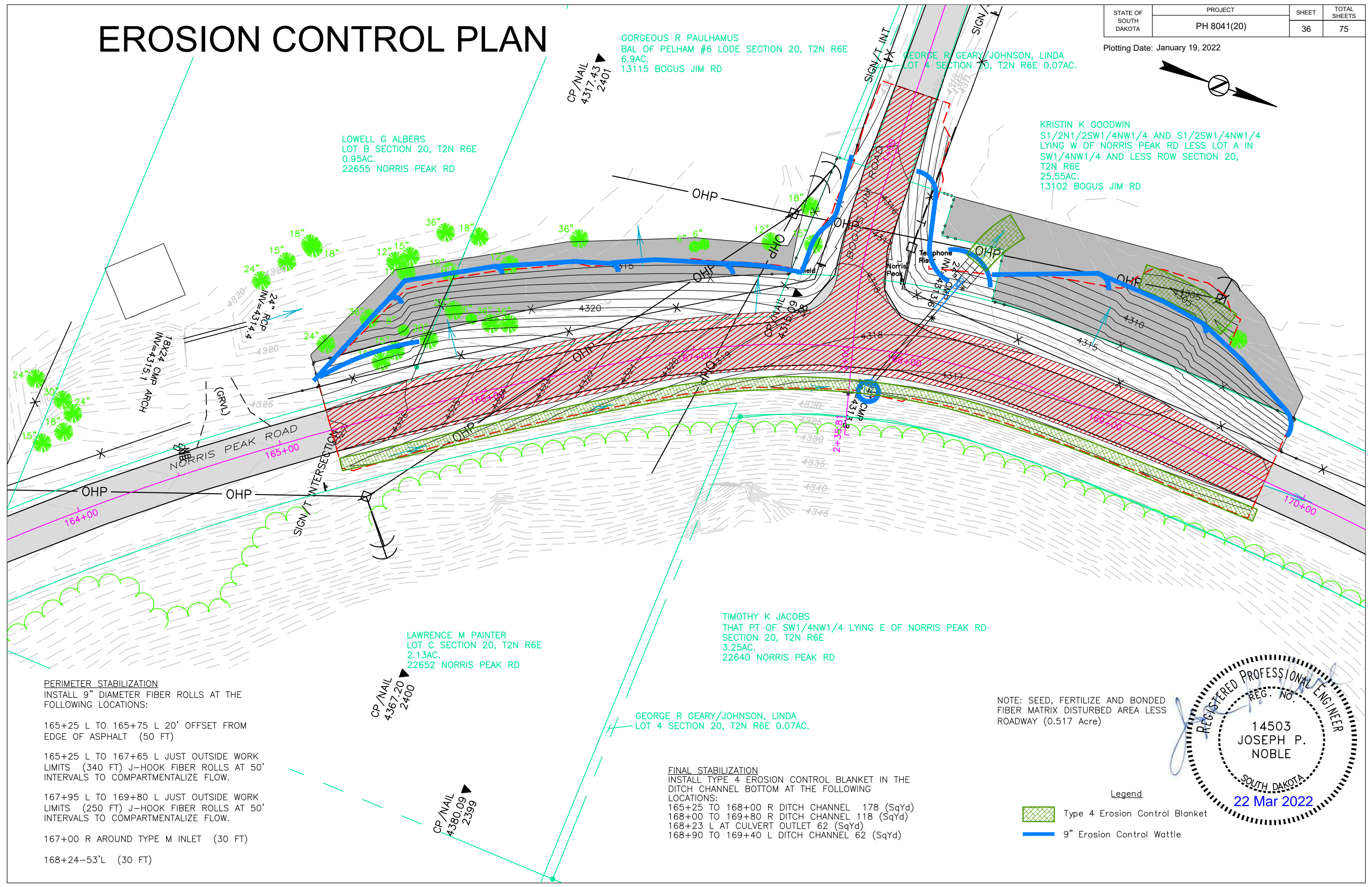
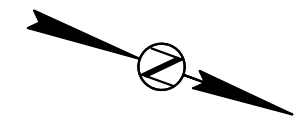
Plotted By: Erik Beane Date: Monday, February 14, 2022 10:47:42 AM  
Last Saved By: Erik Beane Date: Monday, February 14, 2022 10:47:42 AM



# EROSION CONTROL PLAN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	36	75

Plotting Date: January 19, 2022



**PERIMETER STABILIZATION**  
 INSTALL 9" DIAMETER FIBER ROLLS AT THE FOLLOWING LOCATIONS:

- 165+25 L TO 165+75 L 20' OFFSET FROM EDGE OF ASPHALT (50 FT)
- 165+25 L TO 167+65 L JUST OUTSIDE WORK LIMITS (340 FT) J-HOOK FIBER ROLLS AT 50' INTERVALS TO COMPARTMENTALIZE FLOW.
- 167+95 L TO 169+80 L JUST OUTSIDE WORK LIMITS (250 FT) J-HOOK FIBER ROLLS AT 50' INTERVALS TO COMPARTMENTALIZE FLOW.
- 167+00 R AROUND TYPE M INLET (30 FT)
- 168+24-53'L (30 FT)

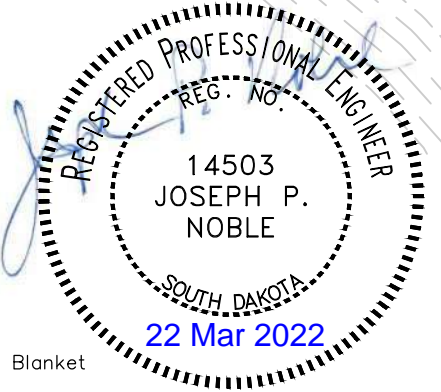
**FINAL STABILIZATION**  
 INSTALL TYPE 4 EROSION CONTROL BLANKET IN THE DITCH CHANNEL BOTTOM AT THE FOLLOWING LOCATIONS:

- 165+25 TO 168+00 R DITCH CHANNEL 178 (SqYd)
- 168+00 TO 169+80 R DITCH CHANNEL 118 (SqYd)
- 168+23 L AT CULVERT OUTLET 62 (SqYd)
- 168+90 TO 169+40 L DITCH CHANNEL 62 (SqYd)

NOTE: SEED, FERTILIZE AND BONDED FIBER MATRIX DISTURBED AREA LESS ROADWAY (0.517 Acre)

**Legend**

- Type 4 Erosion Control Blanket
- 9" Erosion Control Wattle



LOWELL G ALBERS  
 LOT B SECTION 20, T2N R6E  
 0.95AC.  
 22655 NORRIS PEAK RD

GORGEOUS R PAULHAMUS  
 BAL OF PELHAM #6 LODE SECTION 20, T2N R6E  
 6.9AC.  
 13115 BOGUS JIM RD

GEORGE R GEARY/JOHNSON, LINDA  
 LOT 4 SECTION 20, T2N R6E 0.07AC.

KRISTIN K GOODWIN  
 S1/2N1/2SW1/4NW1/4 AND S1/2SW1/4NW1/4  
 LYING W OF NORRIS PEAK RD LESS LOT A IN  
 SW1/4NW1/4 AND LESS ROW SECTION 20,  
 T2N R6E  
 25.55AC.  
 13102 BOGUS JIM RD

LAWRENCE M PAINTER  
 LOT C SECTION 20, T2N R6E  
 2.13AC.  
 22652 NORRIS PEAK RD

TIMOTHY K JACOBS  
 THAT PT OF SW1/4NW1/4 LYING E OF NORRIS PEAK RD  
 SECTION 20, T2N R6E  
 3.25AC.  
 22640 NORRIS PEAK RD

GEORGE R GEARY/JOHNSON, LINDA  
 LOT 4 SECTION 20, T2N R6E 0.07AC.

CP/NAIL  
 4367.20  
 2400

CP/NAIL  
 4380.09  
 2399

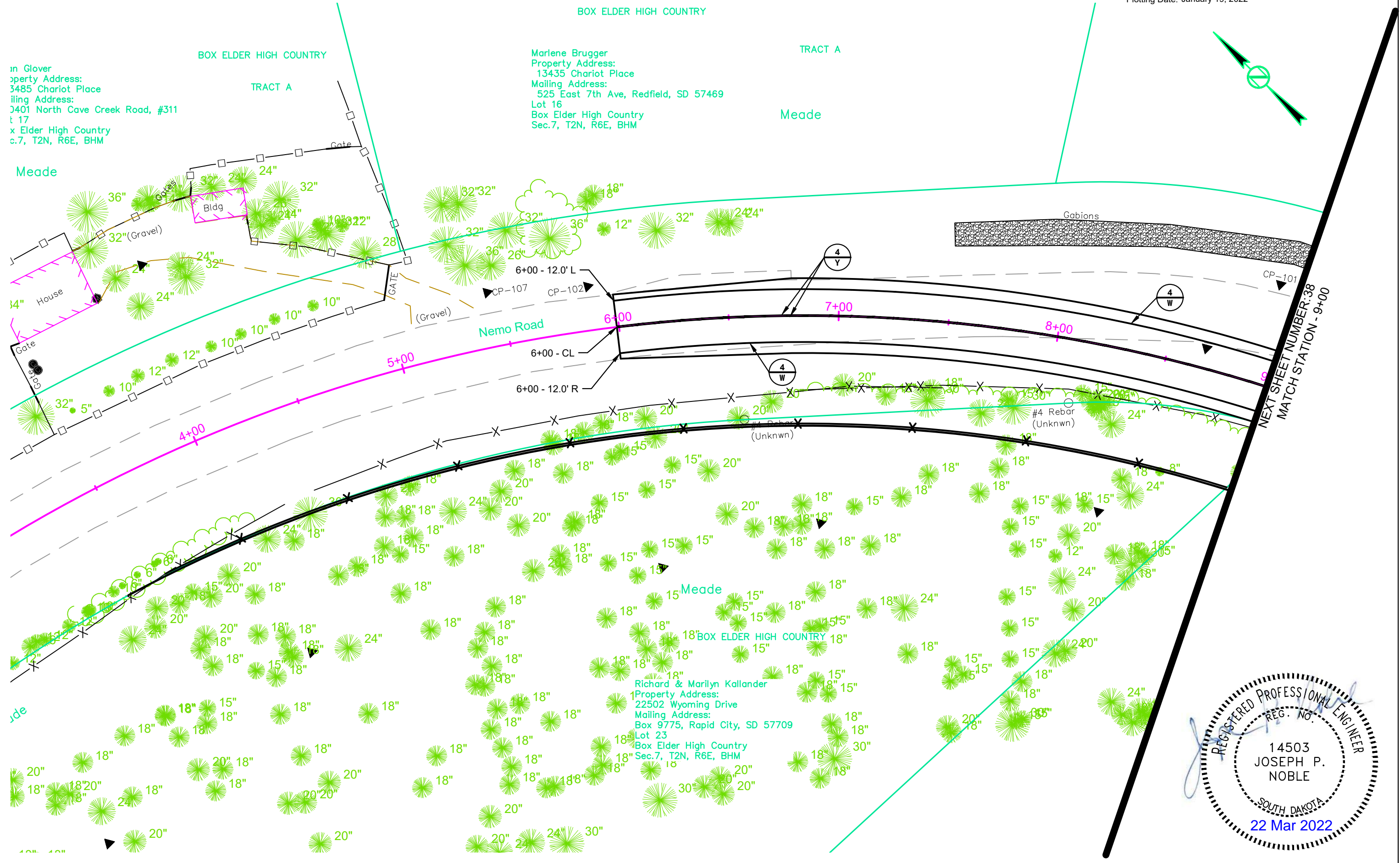
CP/NAIL  
 4317.43  
 2401



Plot: 37 NEMO ROAD PAVEMENT MARKING  
File: W:\SIS\SDDOT\12403-2015-06\CAD Drawings\Plan Sheets\PAVEMENT MARKING.dwg  
Plotted By: Erik Johns Date: Monday, March 21, 2022 10:41:22 AM  
Last Saved By: Erik Johns Date: Monday, February 14, 2022 10:41:22 AM

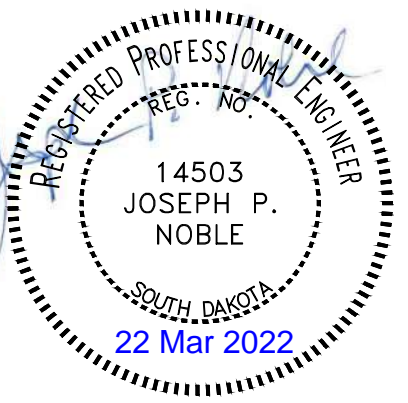
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	37	75

Plotting Date: January 19, 2022



Marlene Brugger  
Property Address:  
13435 Chariot Place  
Mailing Address:  
525 East 7th Ave, Redfield, SD 57469  
Lot 16  
Box Elder High Country  
Sec.7, T2N, R6E, BHM

Richard & Marilyn Kallander  
Property Address:  
22502 Wyoming Drive  
Mailing Address:  
Box 9775, Rapid City, SD 57709  
Lot 23  
Box Elder High Country  
Sec.7, T2N, R6E, BHM



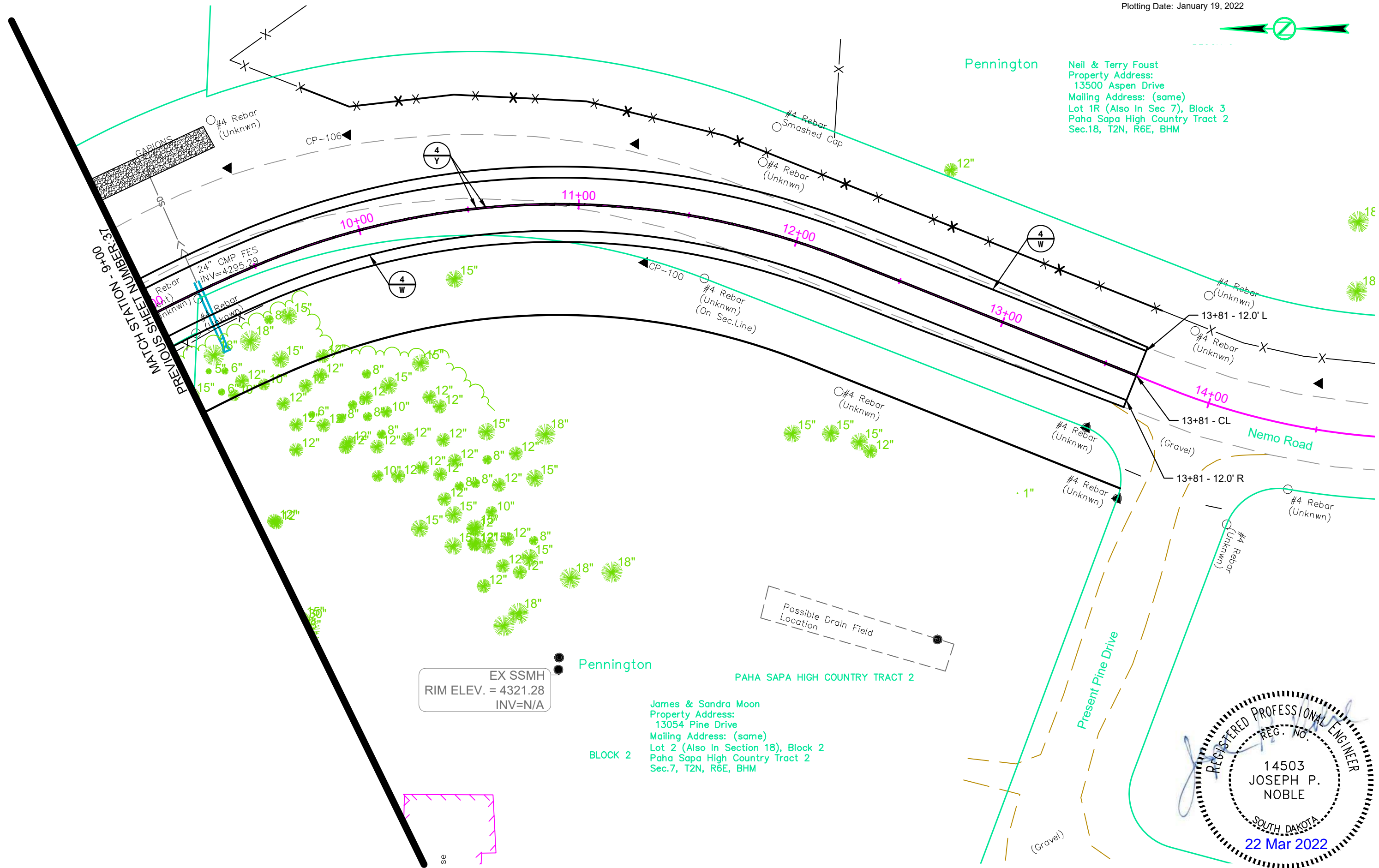
NEXT SHEET NUMBER: 38  
MATCH STATION - 9+00

STATE OF SOUTH DAKOTA	PROJECT PH 8041(20)	SHEET 38	TOTAL SHEETS 75
-----------------------	------------------------	-------------	--------------------

Plotting Date: January 19, 2022



Pennington  
 Neil & Terry Foust  
 Property Address:  
 13500 Aspen Drive  
 Mailing Address: (same)  
 Lot 1R (Also In Sec 7), Block 3  
 Paha Sapa High Country Tract 2  
 Sec.18, T2N, R6E, BHM

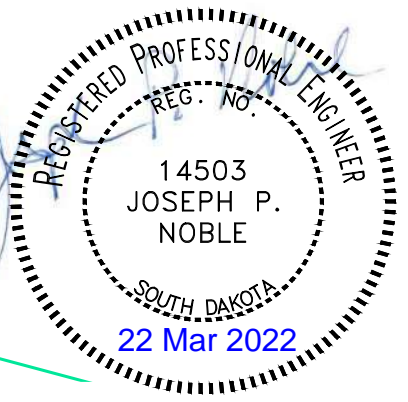


MATCH STATION - 9+00  
 PREVIOUS SHEET NUMBER: 37

24" CMP FES  
 INV=4295.29

EX SSMH  
 RIM ELEV. = 4321.28  
 INV=N/A

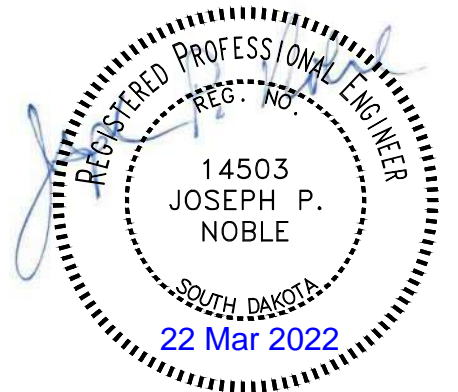
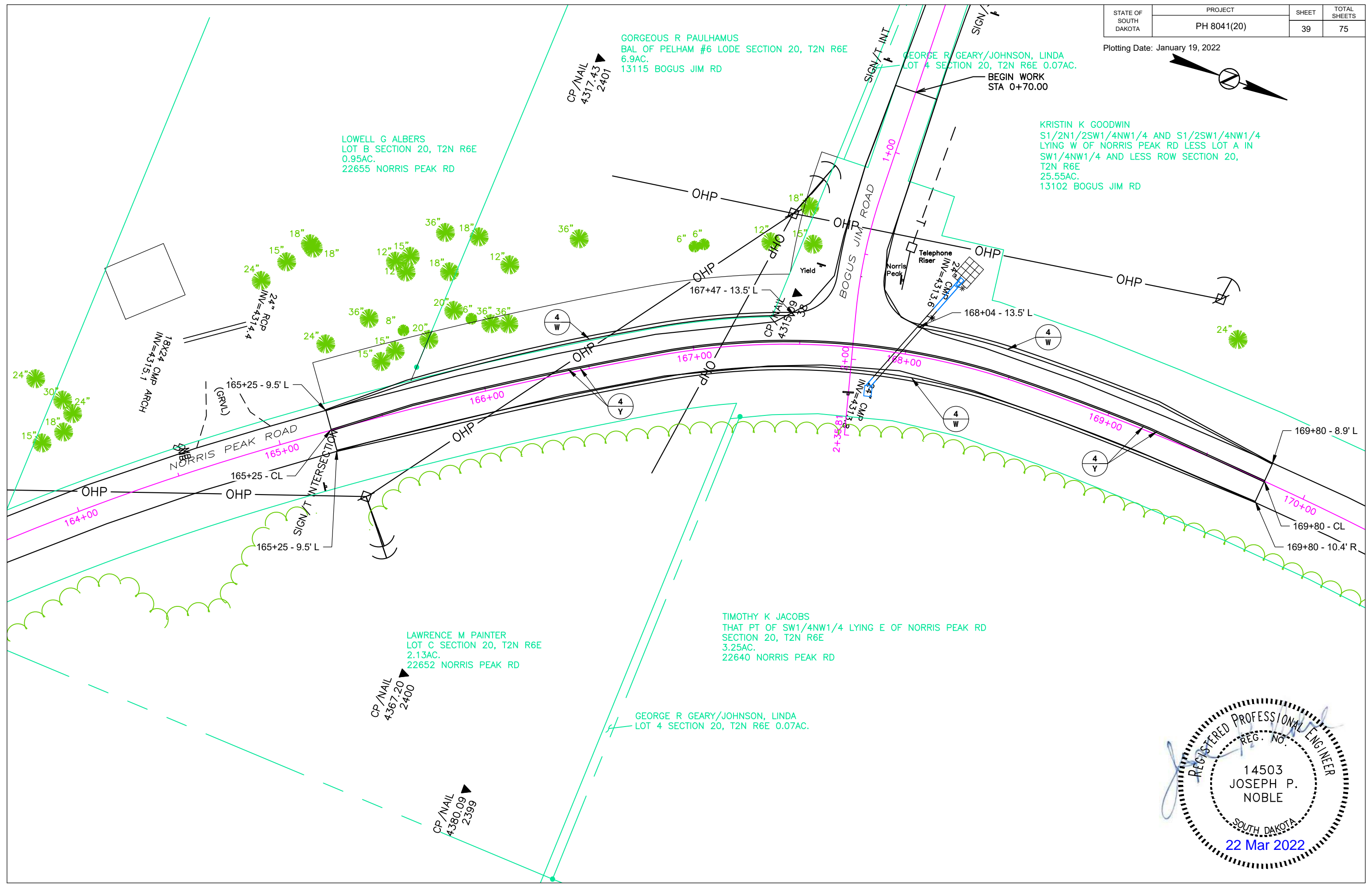
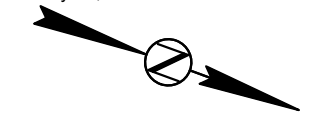
James & Sandra Moon  
 Property Address:  
 13054 Pine Drive  
 Mailing Address: (same)  
 Lot 2 (Also In Section 18), Block 2  
 Paha Sapa High Country Tract 2  
 Sec.7, T2N, R6E, BHM

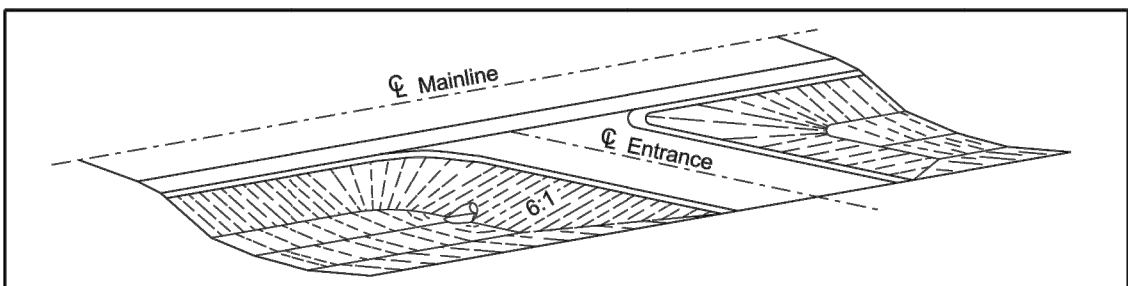




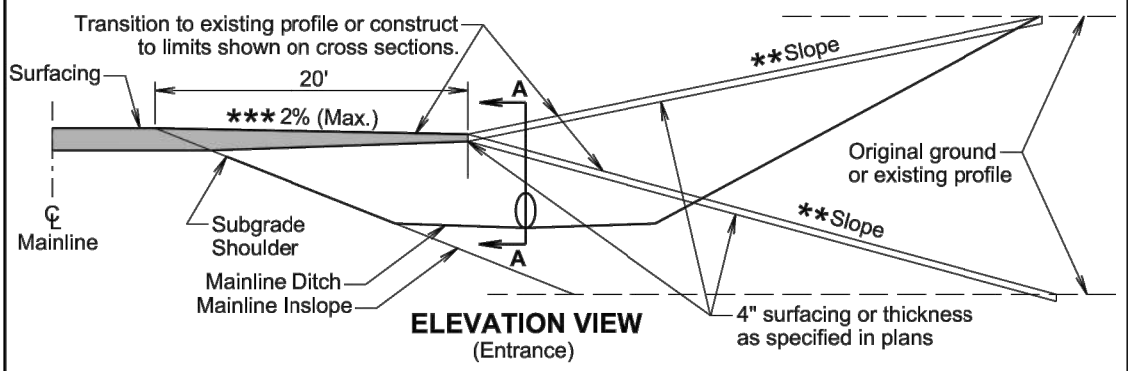
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	39	75

Plotting Date: January 19, 2022



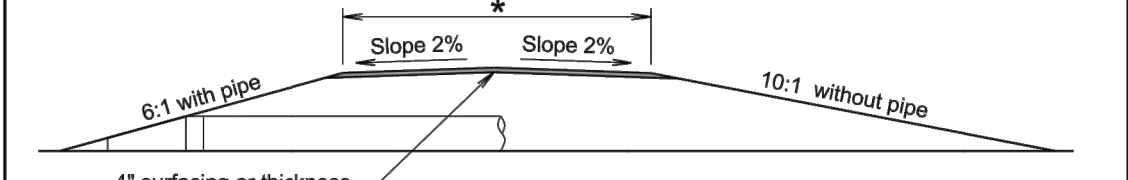


**PERSPECTIVE OF ENTRANCE**



**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.



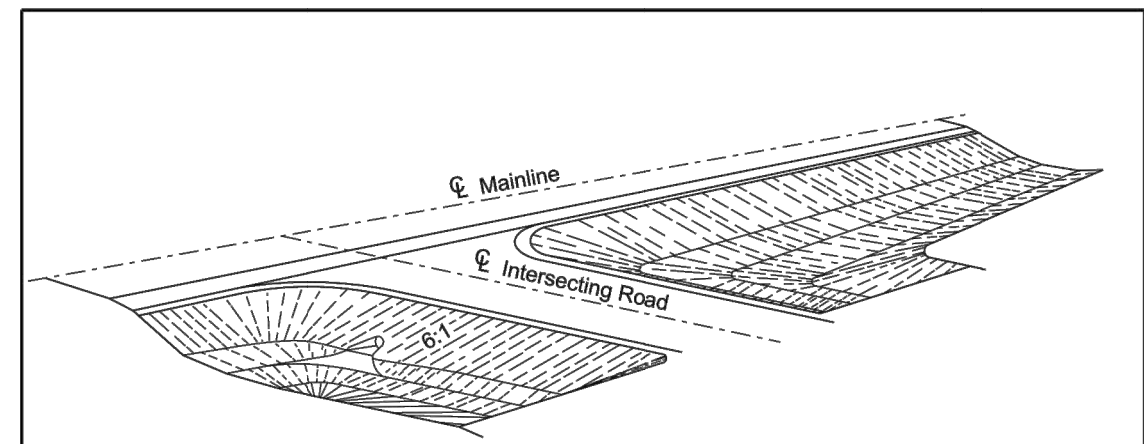
**SECTION A-A (Entrance and Intersecting Road)**

**GENERAL NOTES:**

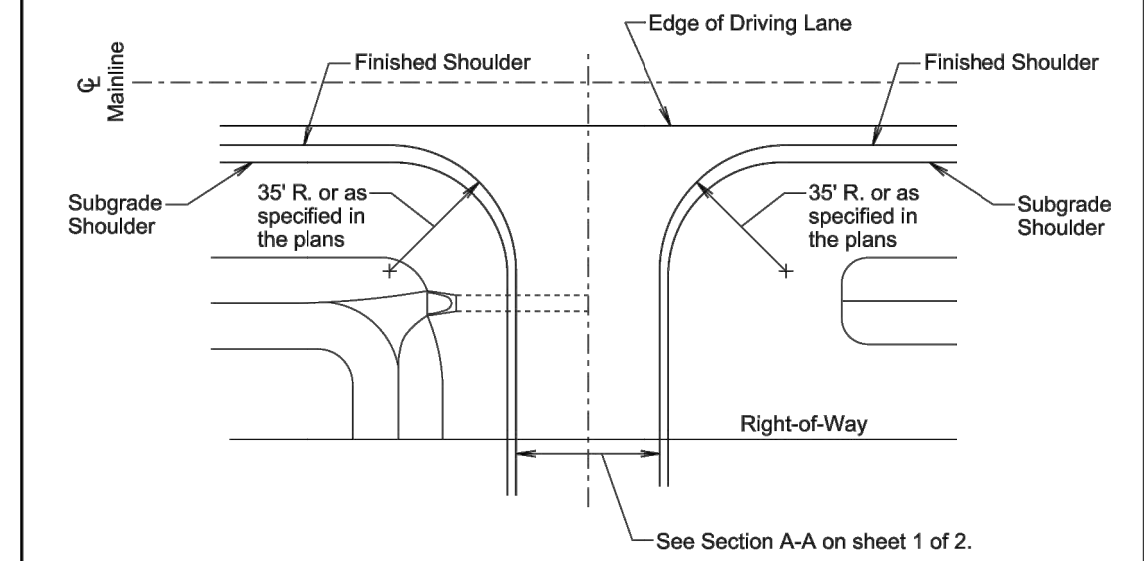
- The ditch section shown above in the perspective view is only for illustrative purpose.
- The elevation view above is typical for either a ditch cut or fill section. Entrances that vary from above should be specified in the plans.
- Pipe length will be adjusted if necessary during construction to obtain 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: 1st Qtr. 2022	SD D D O T	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 1 of 2



**PERSPECTIVE OF INTERSECTING ROAD**



**PLAN VIEW**

**GENERAL NOTES:**

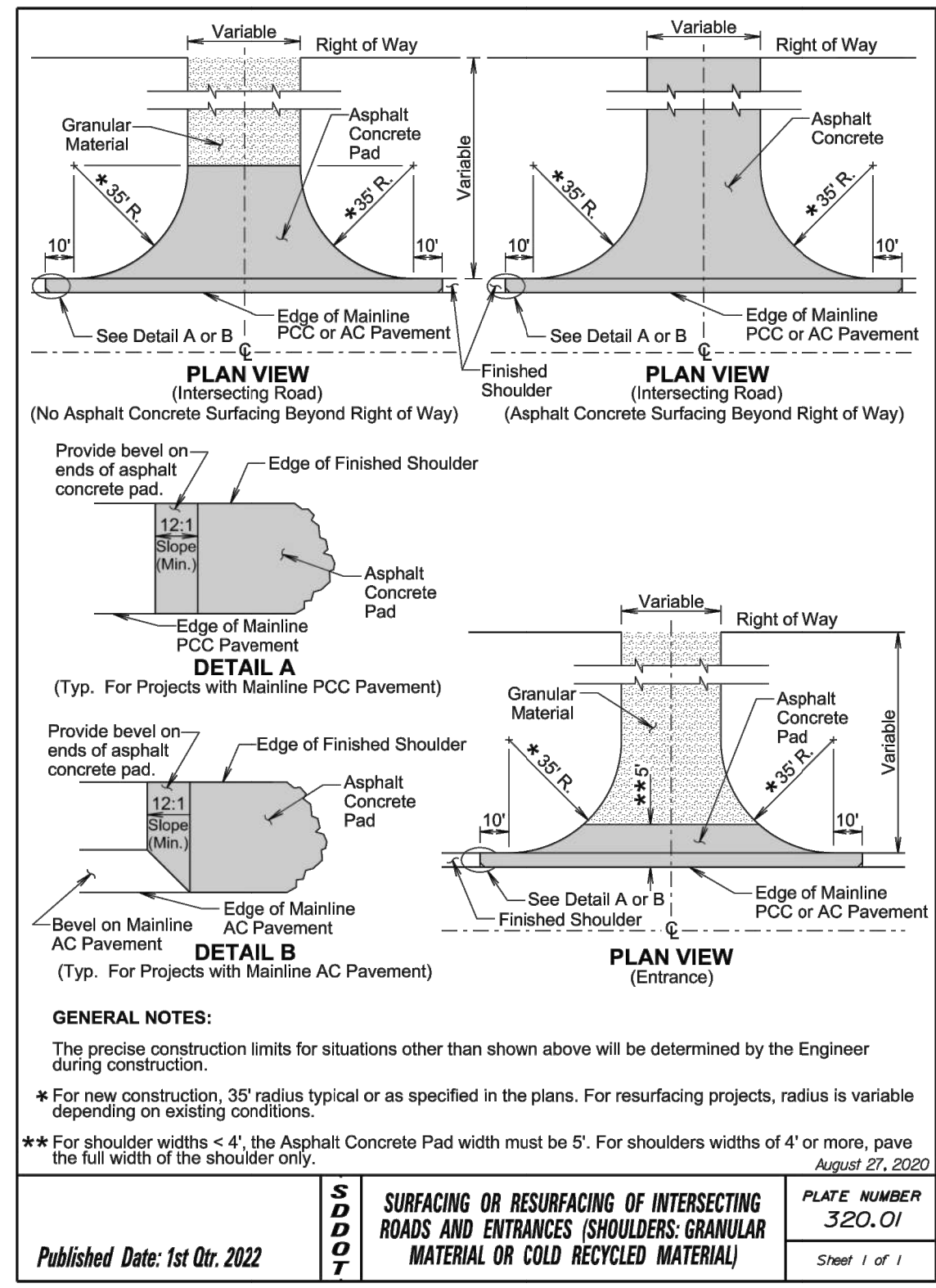
- The 6:1 or 10:1 intersecting road inslope will transition to the existing intersecting road inslope near the right-of-way or at a location as determined by the Engineer.

November 19, 2021

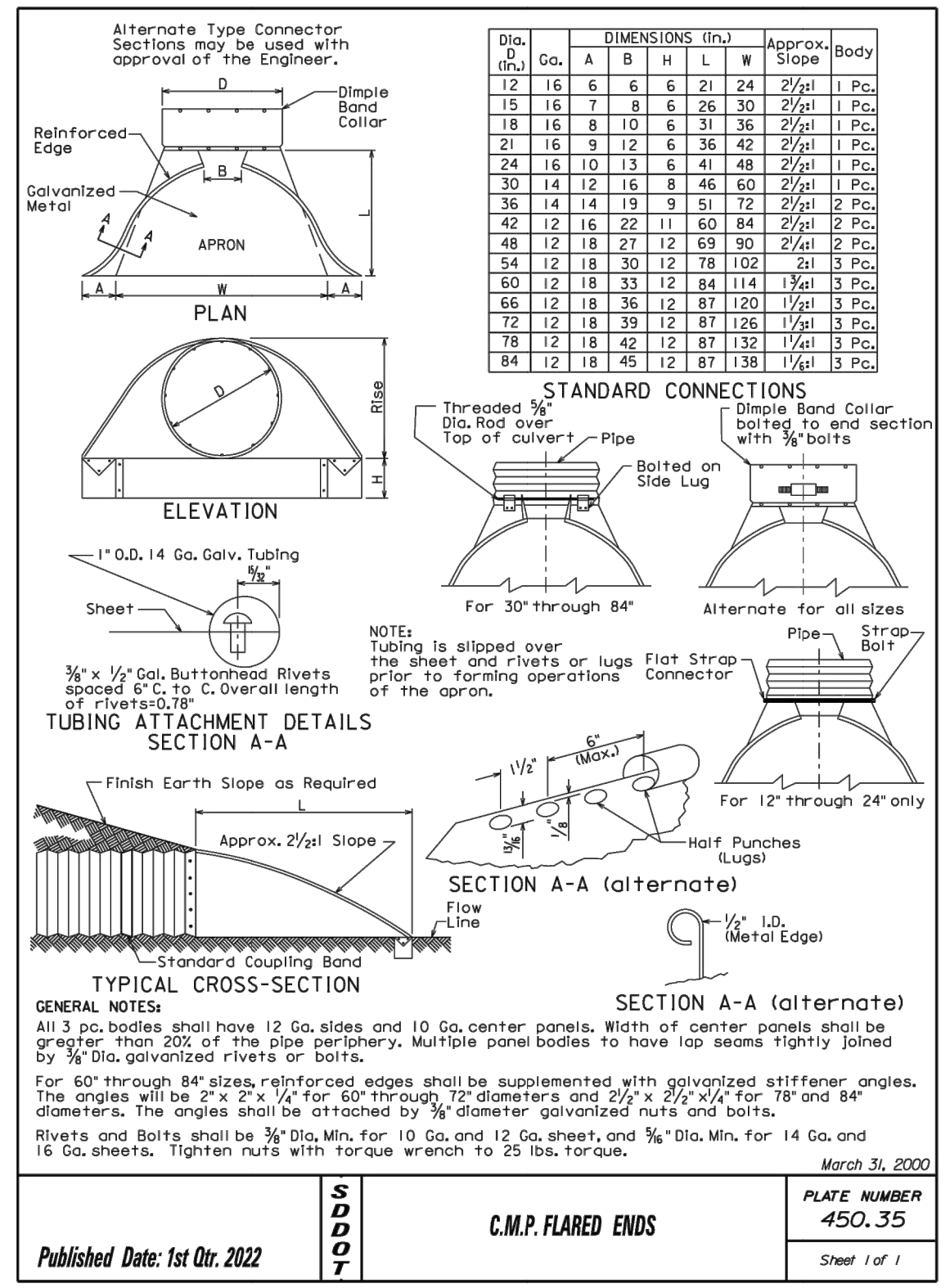
Published Date: 1st Qtr. 2022	SD D D O T	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 2 of 2



Plotting Date: January 19, 2022

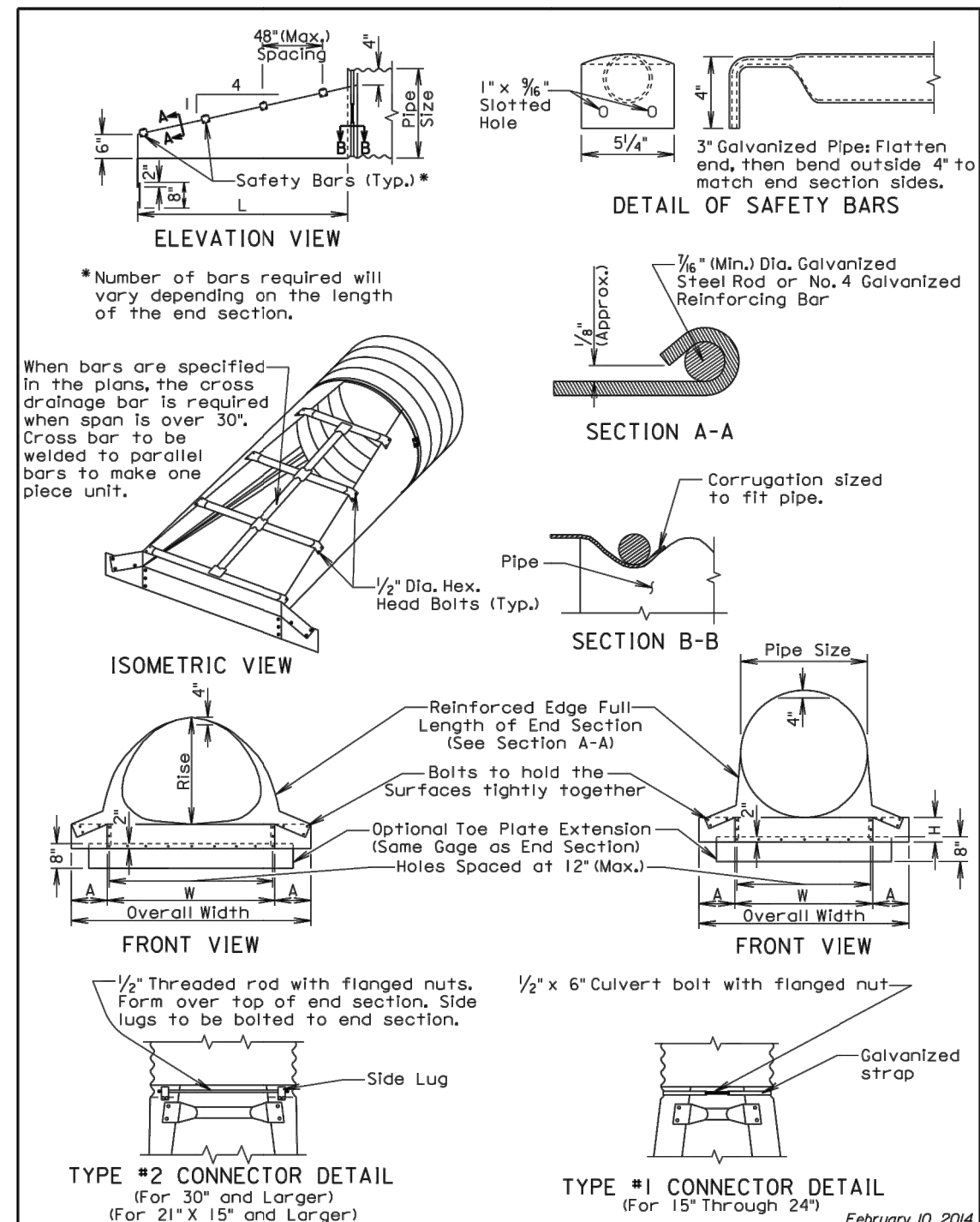


**S D D O T**  
**SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (SHOULDERS: GRANULAR MATERIAL OR COLD RECYCLED MATERIAL)**  
 PLATE NUMBER 320.01  
 Sheet 1 of 1  
 Published Date: 1st Qtr. 2022



**S D D O T**  
**C.M.P. FLARED ENDS**  
 PLATE NUMBER 450.35  
 Sheet 1 of 1  
 Published Date: 1st Qtr. 2022

Plotting Date: January 19, 2022



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

February 10, 2014

Published Date: 1st Qtr. 2022	S D D O T	C. M. P. SLOPED ENDS	PLATE NUMBER 450.37
			Sheet 1 of 2

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

CIRCULAR C.M.P. SLOPED ENDS									
Pipe Dia. (Inch)	Min. Thick. Inch	Dimensions (Inches)				L Dimensions			
		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 shall be attached to sloped ends over 30" in diameter only when specified in the plans.

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

Safety bars shall be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5X.216 in conformance with ASTM A500, grade B.

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

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

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

Installation shall be performed in accordance with the Specifications.

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

February 10, 2014

Published Date: 1st Qtr. 2022	S D D O T	C. M. P. SLOPED ENDS	PLATE NUMBER 450.37
			Sheet 2 of 2



Plotting Date: January 19, 2022

**ALL WOOD POSTS**

**ALTERNATE WOOD AND STEEL POSTS**

**TYPE 1**  
(3 Barbed Wires)

**TYPE 2**  
(4 Barbed Wires)

**TYPE 3**  
(5 Barbed Wires)

**TYPE 4**  
(26" Woven Wire with 2 Barbed Wires)

**TYPE 5**  
(26" Woven Wire with 4 Barbed Wires)

**TYPE 6**  
(32" Woven Wire with 3 Barbed Wires)

TYPE OF FENCE		LINE POST SPACING	WIRE GAGE	BARBED WIRE		WOVEN WIRE
				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	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	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	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 degrees of curvature stated for fence are at centerline of roadway.

June 26, 2019

**S  
D  
D  
O  
T**

Published Date: 1st Qtr. 2022

**RIGHT-OF-WAY FENCE**

PLATE NUMBER  
**620.01**

Sheet 1 of 1

Staples will not be driven parallel to side of post

Wire will be loose in staple

### 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.

**S  
D  
D  
O  
T**

Published Date: 1st Qtr. 2022

**STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES**

PLATE NUMBER  
**620.02**

Sheet 1 of 1

**ELEVATION VIEW (2 Post Panel)**  
 5" Dia. x 8'-0" Wood Posts (Typ.)  
 Horizontal Wood Brace  
 2 turns of 11 Ga. wire or 3 turns of 12½ Ga. wire to stop splitting  
 Diagonal Brace Wires  
 4'-0" x 4'-0" x 4'-0" x 8'-3" x 12"

**DETAIL A**  
 Place diagonal brace wire that corresponds to direction of fence pull.  
 Direction of Fence Pull  
 Place ½" Dia. x 4" steel dowel at center of end of horizontal wood brace. Drill ½" Dia. hole in post and in horizontal brace for steel dowel placement.  
 Provide shallow notch in brace post to accept horizontal wood brace.

**ELEVATION VIEW (3 Post Panel)**  
 5" Dia. x 8'-0" Wood Posts (Typ.)  
 Horizontal Wood Brace  
 2 turns of 11 Ga. wire or 3 turns of 12½ Ga. wire to stop splitting  
 Diagonal Brace Wires  
 4'-0" x 4'-0" x 4'-0" x 8'-3" x 8'-3" x 12"

**DETAIL B**  
 3 loops of 11 Ga. wire tightly wrapped, tied, and stapled around posts  
 4" to 6" Space Between Posts  
 Staple (Typ.)

**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.

June 26, 2019

<b>S D D O T</b>	<b>BRACE PANELS AND APPLICATIONS OF BRACE PANELS</b>	PLATE NUMBER <b>620.03</b>
	Published Date: 1st Qtr. 2022	Sheet 1 of 3

<b>SPACING OF 2 POST PANELS WITHIN CURVES</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DEGREE OF CURVE</th> <th>SPACING OF 2 POST PANEL</th> </tr> </thead> <tbody> <tr> <td>less than 3°15'</td> <td>** 1320'</td> </tr> <tr> <td>3°15' and greater</td> <td>** At P.C., P.T., and at every 1320' between P.C. and P.T.</td> </tr> </tbody> </table>	DEGREE OF CURVE	SPACING OF 2 POST PANEL	less than 3°15'	** 1320'	3°15' and greater	** At P.C., P.T., and at every 1320' between P.C. and P.T.	<b>GENERAL NOTE:</b> All degrees of curvature stated for fence are at centerline of roadway.  * If fence length is less than 600' to next corner use a 2 post panel. If fence length is greater than 600' to next corner use a 3 post panel.  ** Fence lengths greater than 1320' and less than 2640' place 2 Post Panel approximately at midpoint.  ① See Detail B on Sheet 1 of 3.
DEGREE OF CURVE	SPACING OF 2 POST PANEL						
less than 3°15'	** 1320'						
3°15' and greater	** At P.C., P.T., and at every 1320' between P.C. and P.T.						

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

**SHORT JOGS IN FENCE**

**CROSS FENCE**  
 Mainline Post  
 Corner Post (Typ.)  
 Intersecting Road

**SHARP ANGLES IN CROSS FENCE**  
 10° and less  
 Greater than 10°

**ANGLES IN MAINLINE 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°.

June 26, 2019

<b>S D D O T</b>	<b>BRACE PANELS AND APPLICATIONS OF BRACE PANELS</b>	PLATE NUMBER <b>620.03</b>
	Published Date: 1st Qtr. 2022	Sheet 2 of 3



Plotting Date: January 19, 2022

**ENTRANCE**  
(Not on corner)

Fence type will be same as adjacent fence type or as directed by the Engineer.

**DOUBLE ENTRANCES**

Fence type will be same as adjacent fence type or as directed by the Engineer.

**ENTRANCES AT CORNERS**

**GATES**

\* If fence length is less than 600' to next corner use a 2 post panel.  
 \* If fence length is greater than 600' to next corner use a 3 post panel.  
 ① See Detail B on Sheet 1 of 3.

June 26, 2019

<b>S D D O T</b>	<b>BRACE PANELS AND APPLICATIONS OF BRACE PANELS</b>	PLATE NUMBER <b>620.03</b>
	Published Date: 1st Qtr. 2022	Sheet 3 of 3

**PLAN VIEW**  
(Type 2 Object Marker Details and Post Orientation)

\*\*\* DIVIDED HIGHWAYS EXCEPT MEDIANS      UNDIVIDED HIGHWAYS AND DIVIDED HIGHWAYS MEDIANS

1.12 lb/ft Flanged Channel Steel Post

Type 2 Object Marker

Outside Edge of Shoulder

Outside Edge of Traveled Way or Front Face of Curb

Slope

**ELEVATION VIEW**  
(Type 2 Object Marker Detail)  
 (Pipe culvert shown for illustrative purpose.)

1 1/2" Radius (Typ.)

5/16" Diameter Hole (Typ.)

6" (Typ.)

12" (Typ.)

2" (Typ.)

3"

**TYPE 2 OBJECT MARKER POST LENGTHS**

OFFSET (*)	1'	2'	3'	4'	5'	6'	7'	8'	Greater Than 8'	
<b>POST LENGTH (L)</b>										
<b>SLOPE</b>	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 crossslope 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.

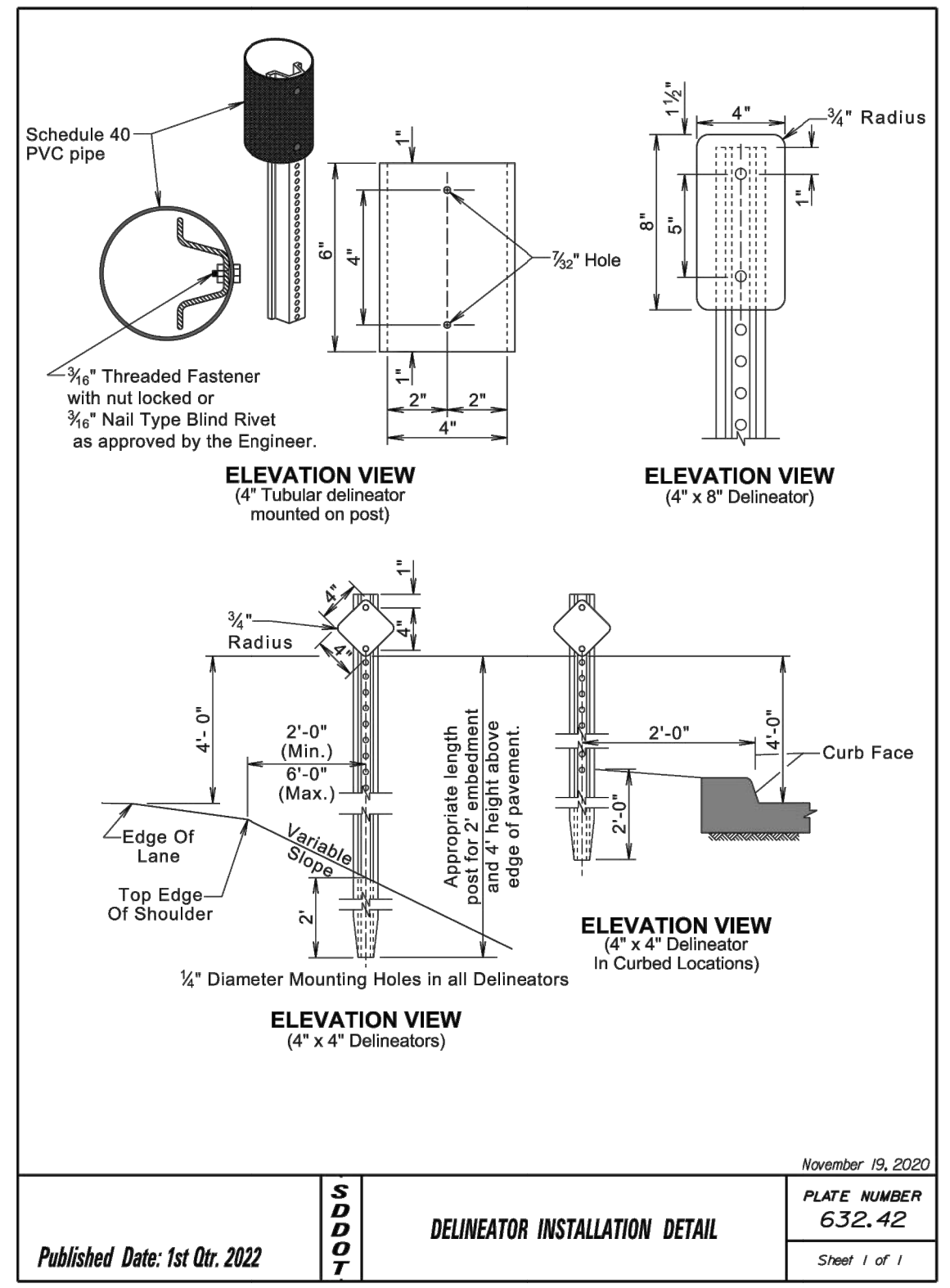
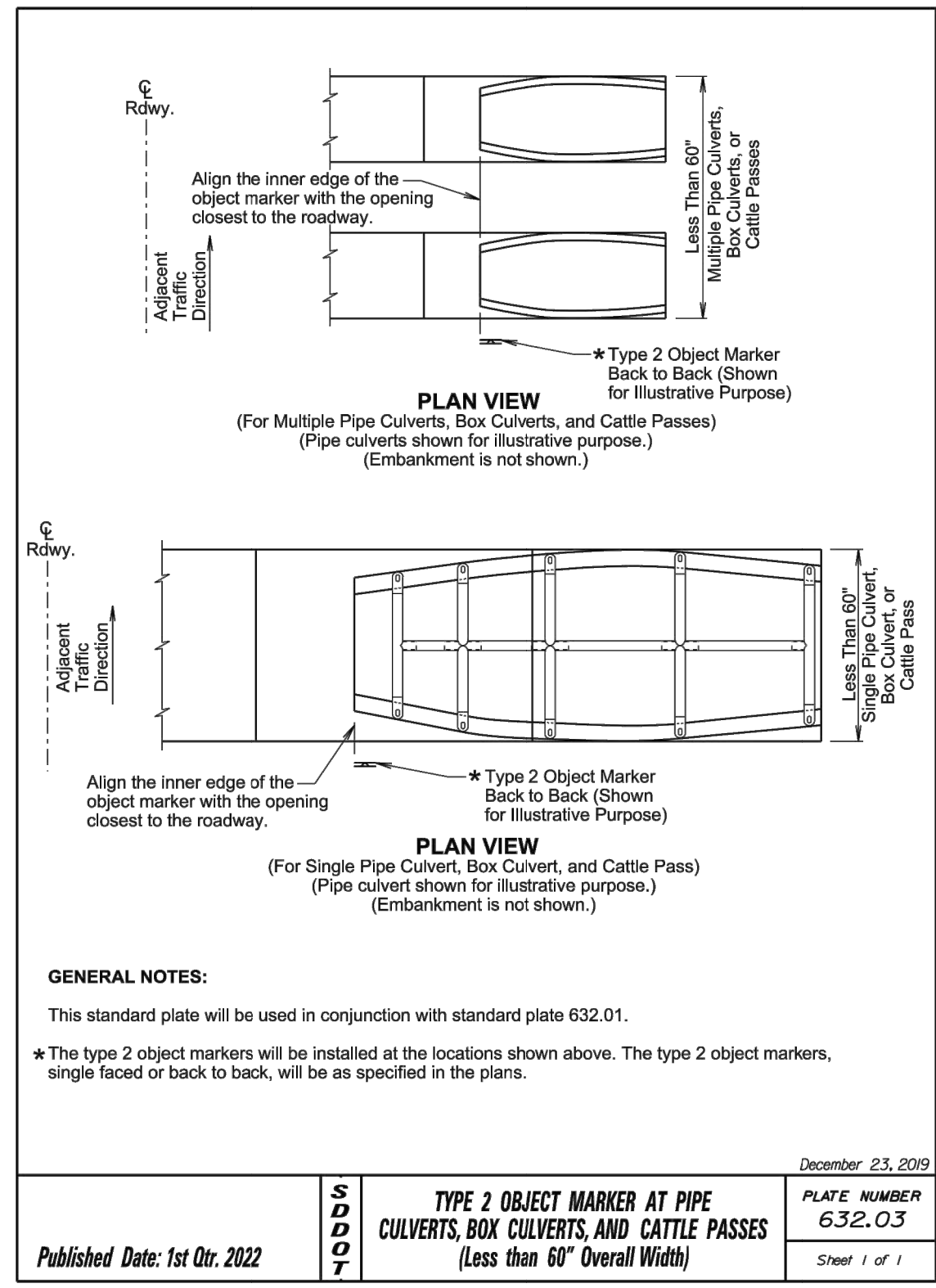
The type 2 object marker and the 1.12 lb/ft flanged channel steel post will be in conformance with Specifications Section 982.2 J.

Payment for the type 2 object marker will be in conformance with Specification Section 632.5 B.

December 23, 2019

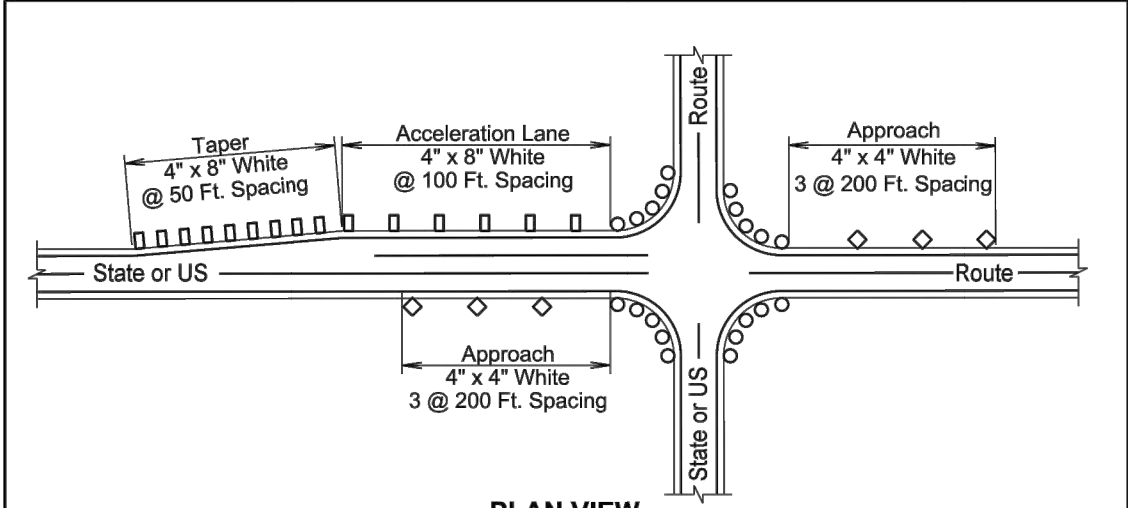
<b>S D D O T</b>	<b>TYPE 2 OBJECT MARKER (DIRECT DRIVE)</b>	PLATE NUMBER <b>632.01</b>
	Published Date: 1st Qtr. 2022	Sheet 1 of 1

Plotting Date: January 19, 2022



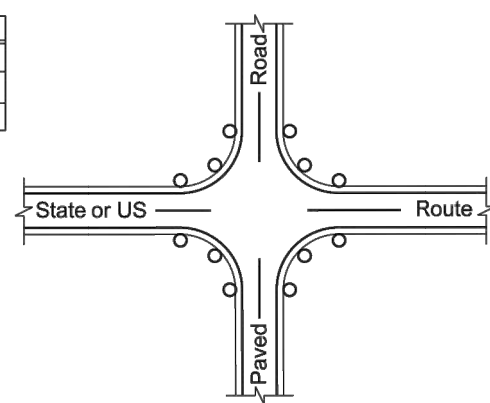


Plotting Date: January 19, 2022



**PLAN VIEW**  
(State or US Highway Intersection)

LEGEND	
◇	4" x 4" White Delineator
□	4" x 8" White Delineator
○	4" x 6" White Tubular Delineator



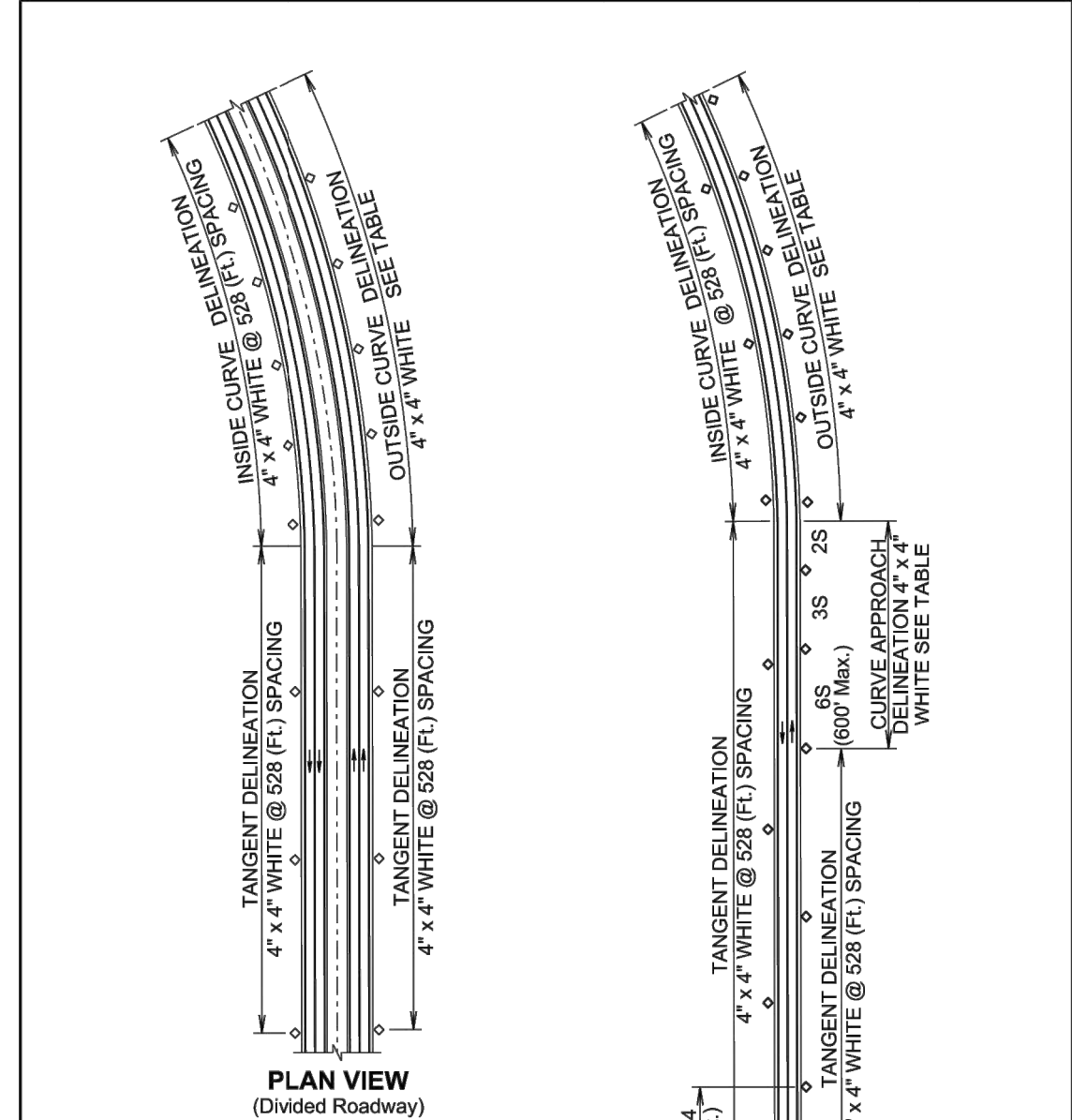
**PLAN VIEW**  
(Paved County Crossroad)

**GENERAL NOTES:**

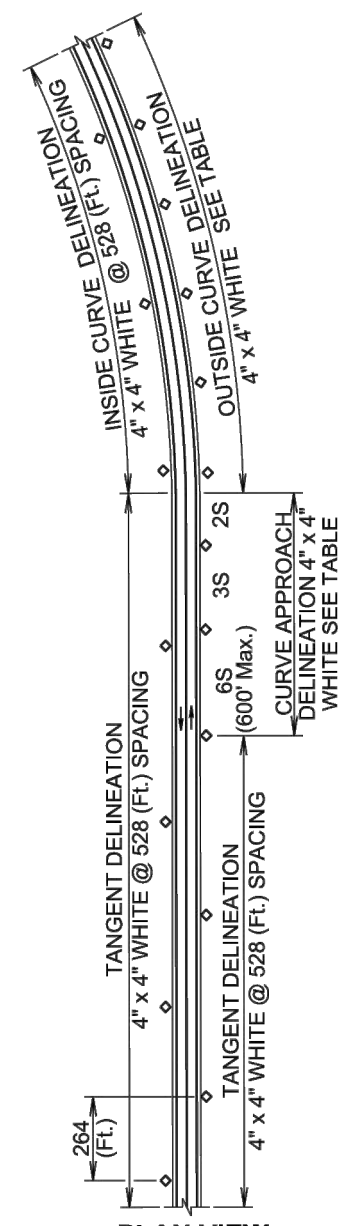
- At all intersections with State or US highways and paved county roads:
- For radii greater than 100 feet, place 5 tubular white delineators on equally spaced posts around the turning radius.
- For radii greater than 50 feet up to 100 feet, place 4 tubular white delineators on equally spaced posts around 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: 1st Qtr. 2022	S D D O T	DELINEATOR AT INTERSECTIONS	PLATE NUMBER 632.44
			Sheet 1 of 1



**PLAN VIEW**  
(Divided Roadway)



**PLAN VIEW**  
(Undivided Roadway)

November 19, 2020

Published Date: 1st Qtr. 2022	S D D O T	DELINEATOR INSTALLATION SPACING	PLATE NUMBER 632.46
			Sheet 1 of 2

Plotting Date: January 19, 2022

**GENERAL NOTES:**

Delineators will be located 8 feet outside 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.

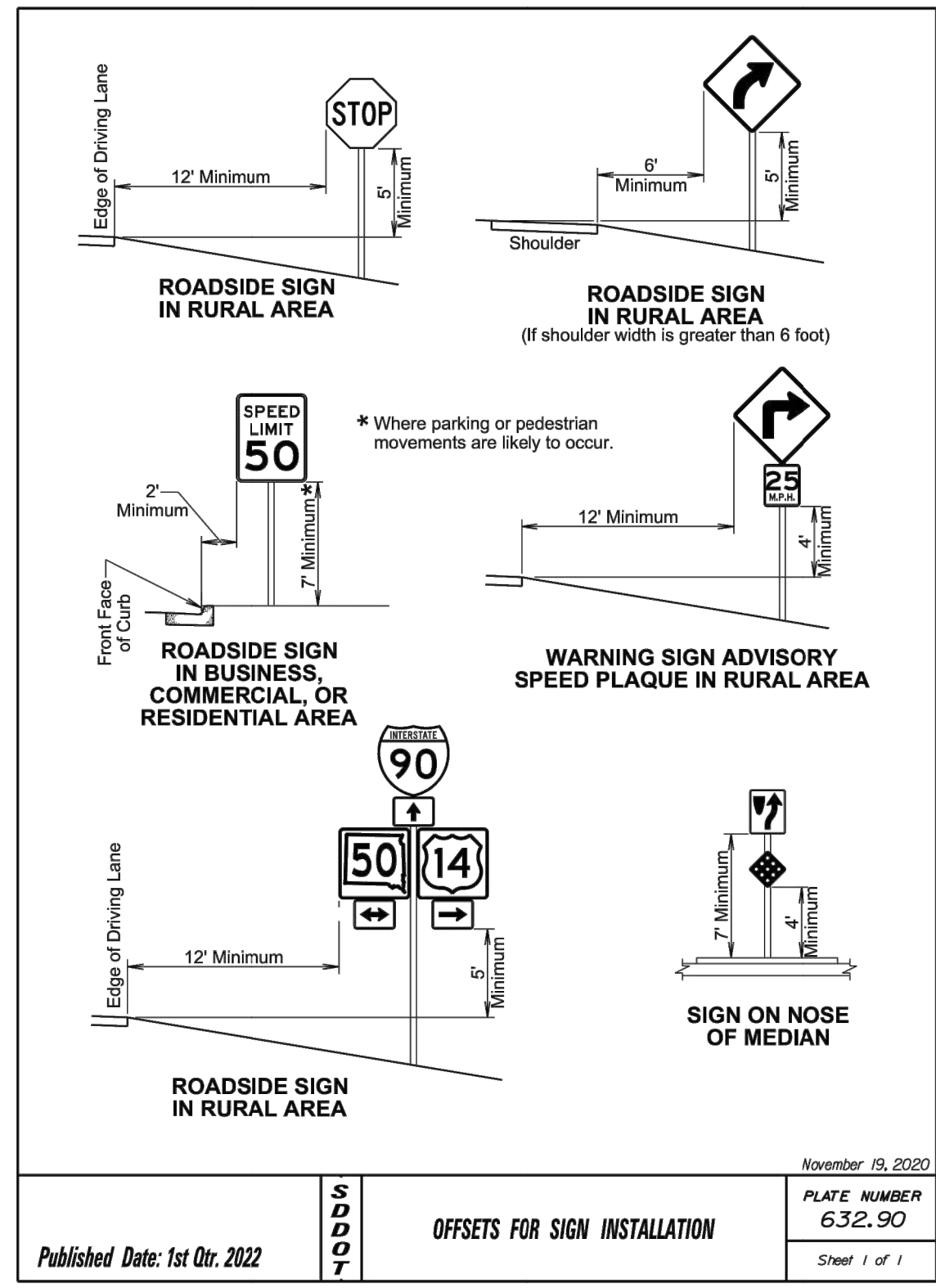
The spacing for specific radii may be interpolated from the table. The minimum spacing should be 200 feet. The spacing on curves should not exceed 300 feet. In advance of or beyond a curve, and proceeding away from the end of the curve, the spacing of the first delineator is 2S, the second 3S, and the 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.

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	50	110	170	300
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

November 19, 2020

Published Date: 1st Qtr. 2022	S D D O T	DELINEATOR INSTALLATION SPACING	PLATE NUMBER 632.46
			Sheet 2 of 2



November 19, 2020

Published Date: 1st Qtr. 2022	S D D O T	OFFSETS FOR SIGN INSTALLATION	PLATE NUMBER 632.90
			Sheet 1 of 1



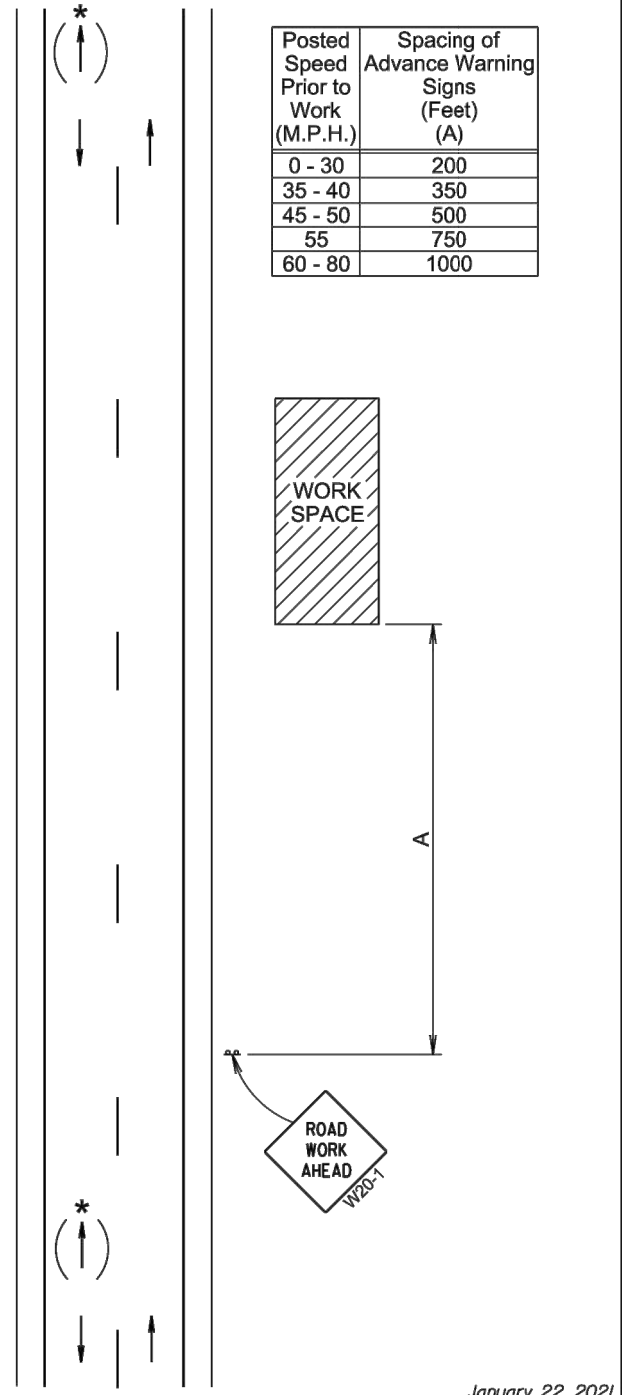
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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.

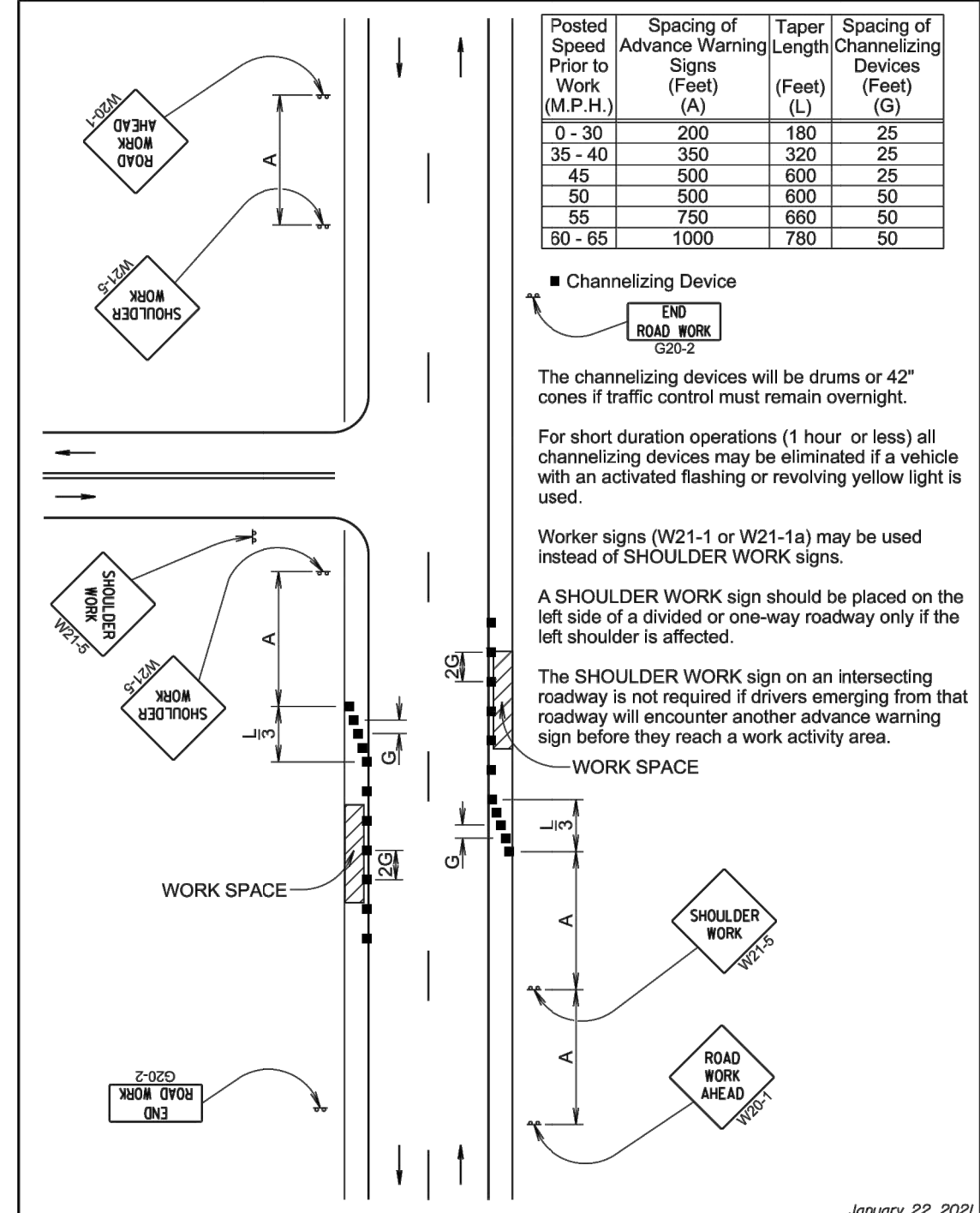
For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



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

<b>S D D O T</b>	<b>WORK BEYOND THE SHOULDER</b>	PLATE NUMBER <b>634.01</b>
	Published Date: 1st Qtr. 2022	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

<b>S D D O T</b>	<b>WORK ON SHOULDERS</b>	PLATE NUMBER <b>634.03</b>
	Published Date: 1st Qtr. 2022	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.

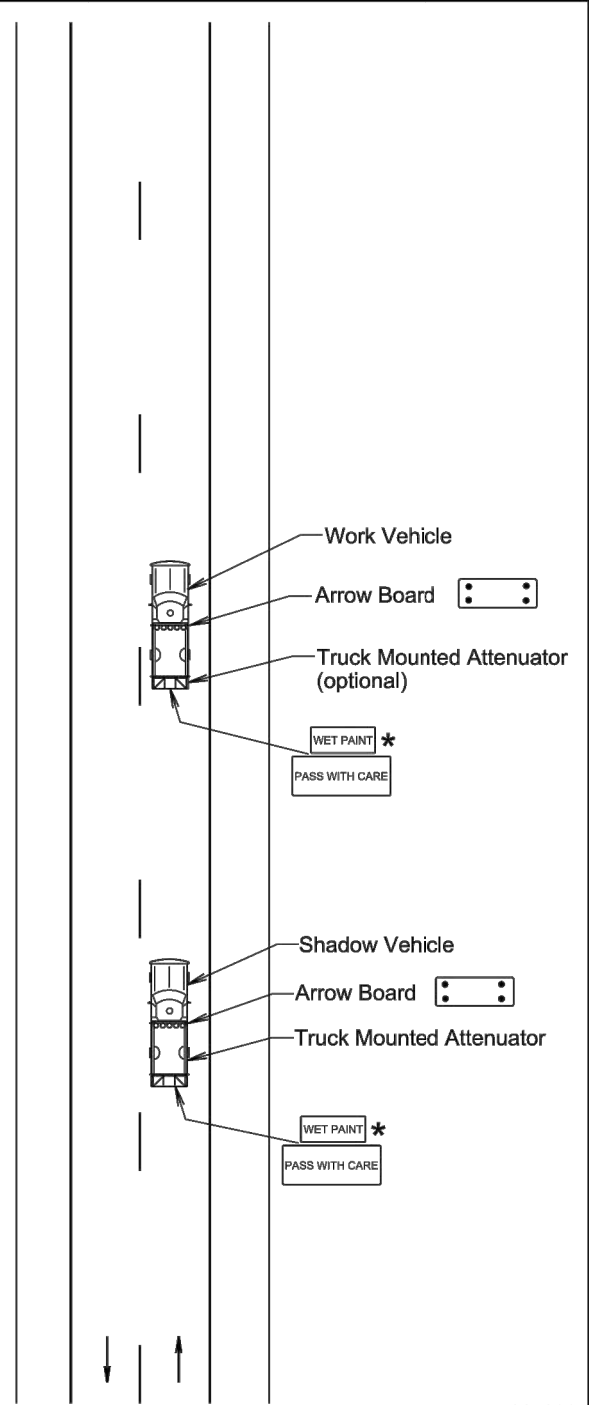
Shadow and Work vehicles will display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow boards.

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: 1st Qtr. 2022	S D D O T	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)	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.

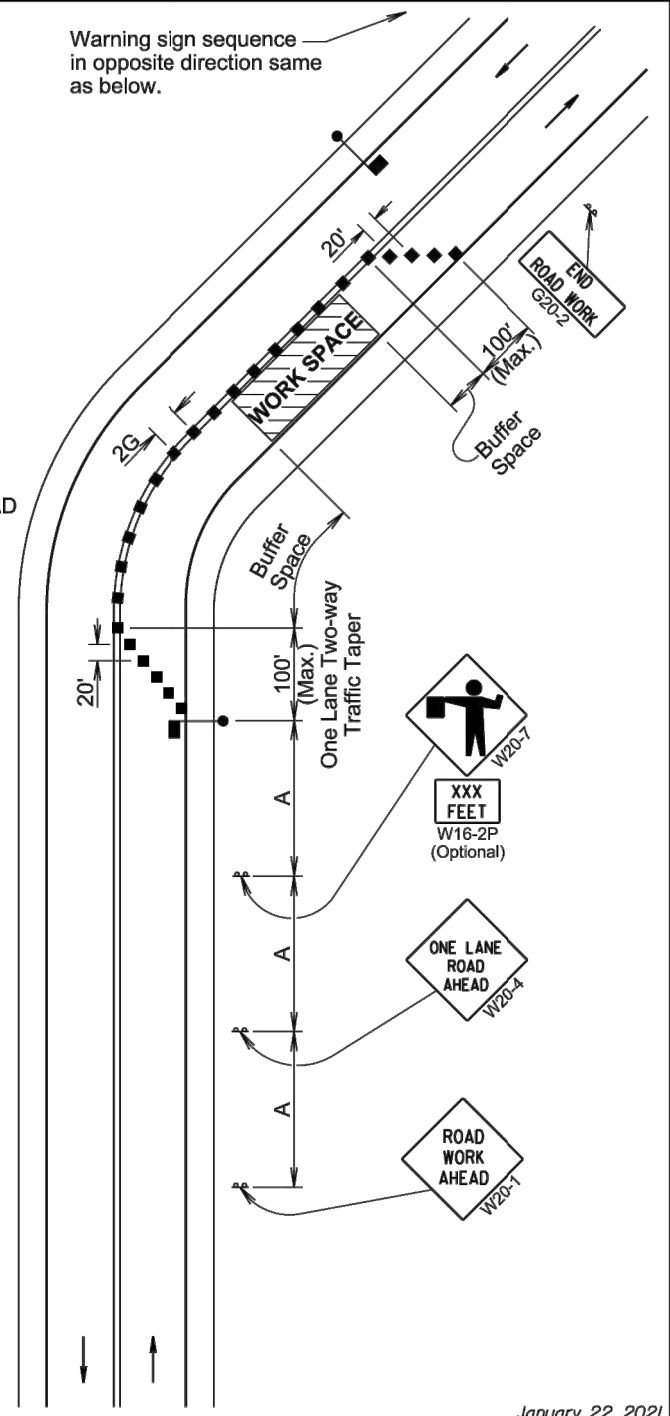
The channelizing devices will be drums or 42" cones.

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.

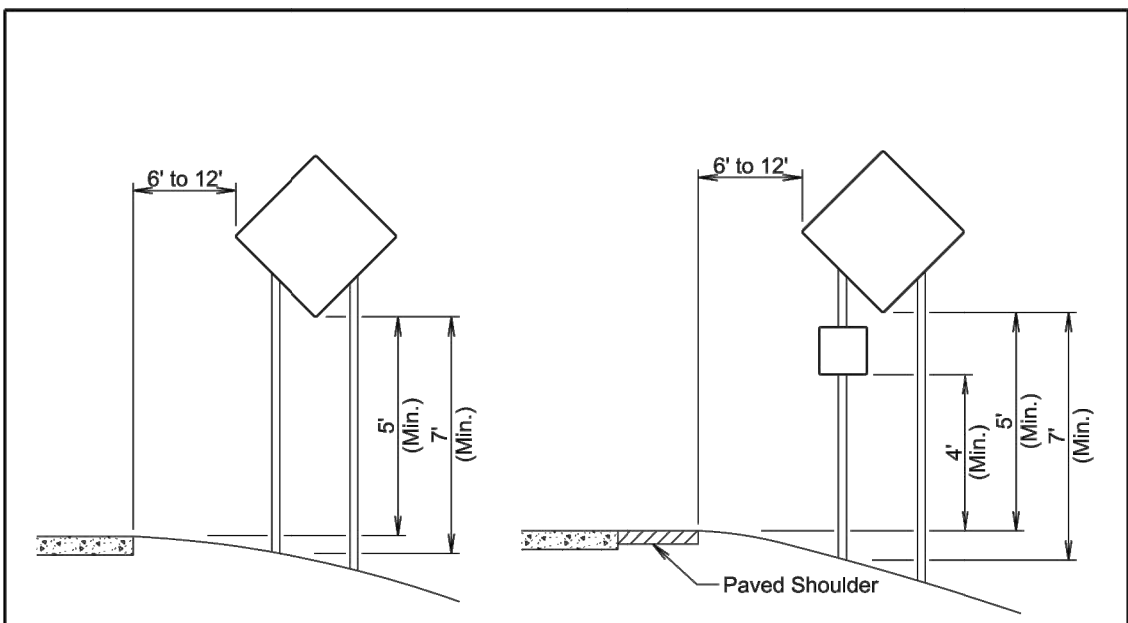


January 22, 2021

Published Date: 1st Qtr. 2022	S D D O T	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
			Sheet 1 of 1

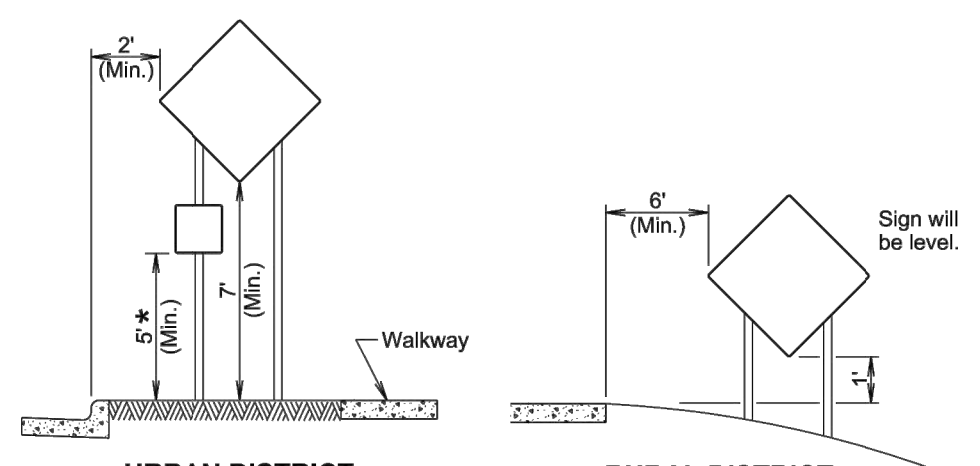


Plotting Date: January 19, 2022



**RURAL DISTRICT**

**RURAL DISTRICT WITH SUPPLEMENTAL PLATE**



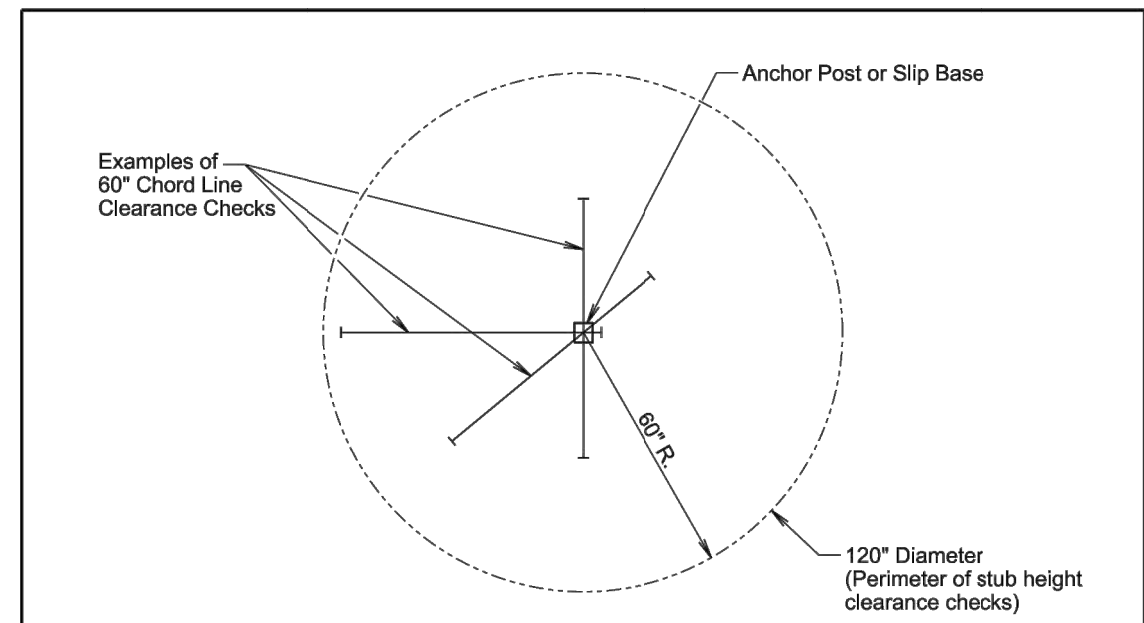
**URBAN DISTRICT**

**RURAL DISTRICT 3 DAY MAXIMUM**  
 (Not applicable to regulatory signs)

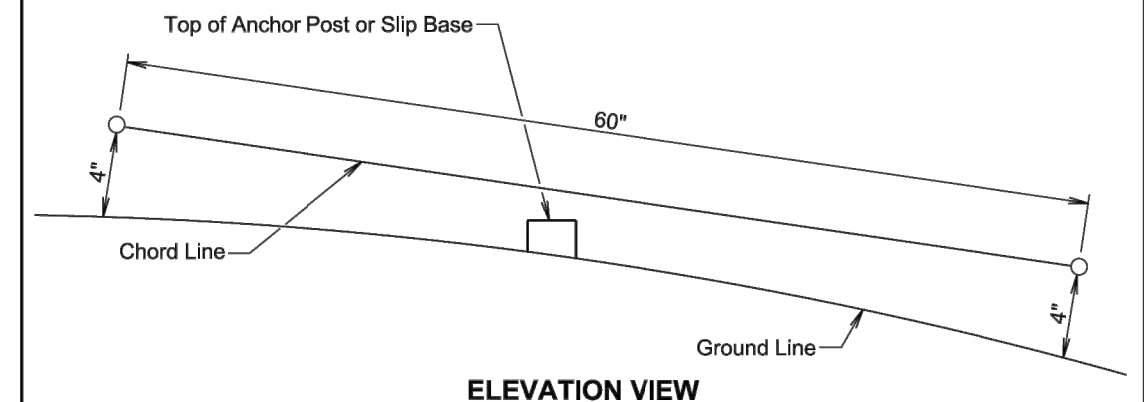
\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 1st Qtr. 2022	S D D O T	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:**

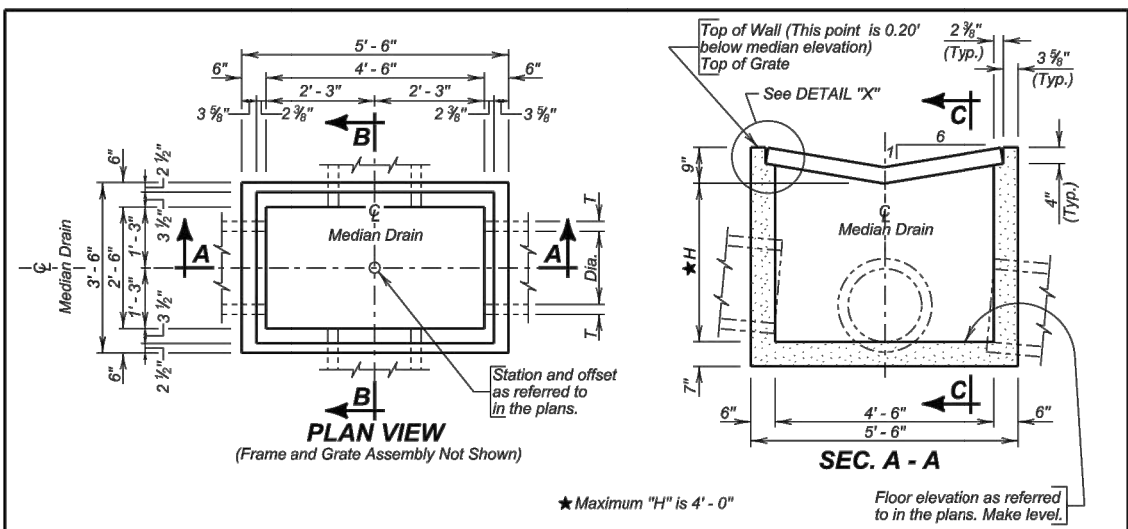
- The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.
- At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line 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: 1st Qtr. 2022	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER
			634.99
			Sheet 1 of 1

Plotted By: Erik Joens Date: Monday, March 21, 2022 10:45:46 AM  
 Last Saved By: Erik Joens Date: Monday, February 14, 2022 10:45:46 AM  
 File: W:\SIS\DOT\12403-2015-005\CAD Drawings\01-Civil\Plan Sheets\DETAILS.dwg  
 Layout: 52 STANDARD DETAILS

Plotting Date: January 19, 2022



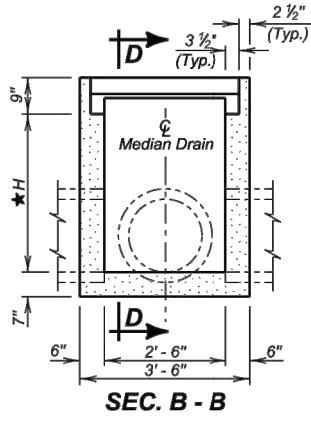
ESTIMATED QUANTITIES			
ITEM	UNIT	CONSTANT QUANTITY	VARIABLE QUANTITY
* Class M6 Concrete	Cu. Yd.	0.59	0.30H
Reinforcing Steel	Lb.	72.01	33.87H
Type M Frame and Grate Assembly	Each	1	

**SPECIFICATIONS**

Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.  
 Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

**GENERAL NOTES:**

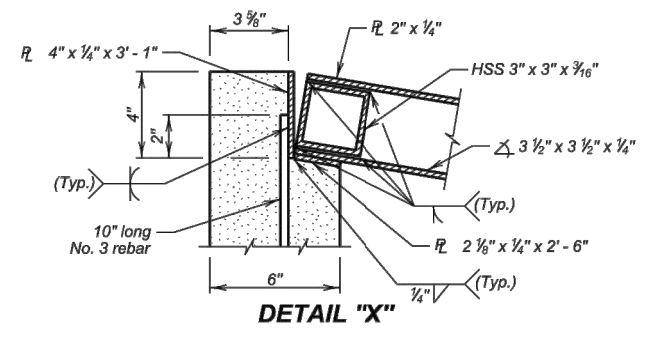
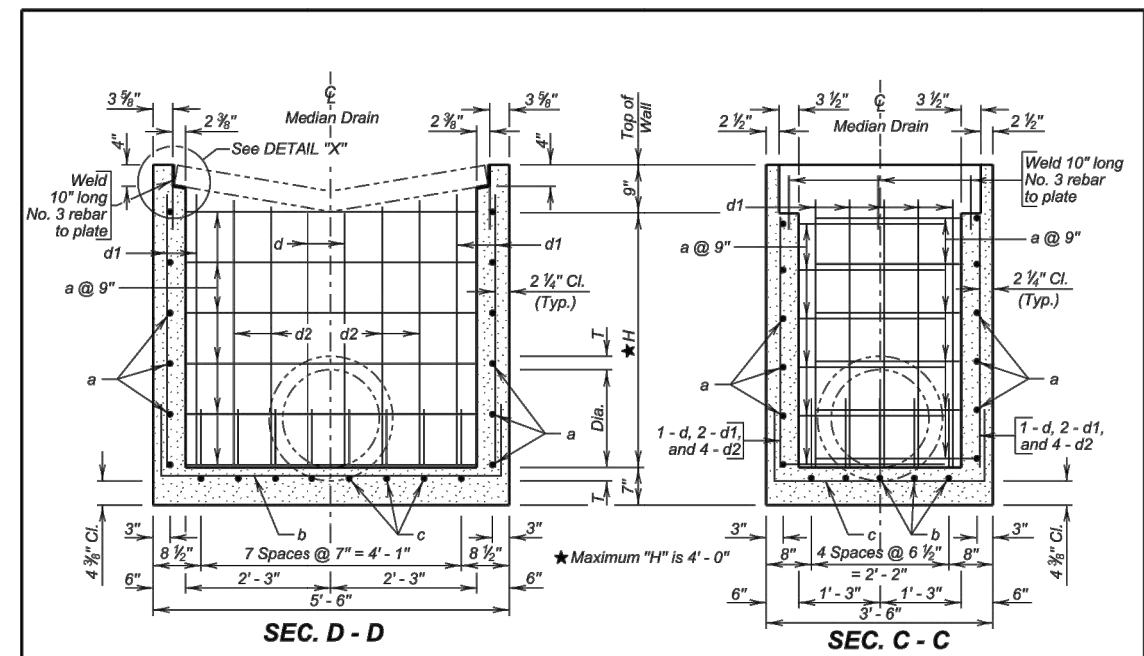
- Design Live Load: HL-93. No construction loading in excess of legal load was considered.
- Reinforcing steel shall conform to ASTM A615 grade 60. The d bars shall be lapped 12 inches with the b and c bars. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.
- Median drain may be precast. If precast median drain details differ from this standard plate, submit a checked design done by a SD registered P.E. and shop plans to the Office of Bridge Design for approval.
- \* Reduce total quantities of concrete by the amount of concrete displaced by the pipe(s). The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard. The total quantity of reinforcing steel shall be computed to the nearest pound.
- Median drain shown may be modified by the addition or omission of connecting pipes as noted elsewhere in the plans. All pipes entering median drain must fit between the inside face of walls and shall not enter through the corners.
- Structural steel for angles and plates shall conform to ASTM A36.
- Structural steel for rectangular HSS shall conform to ASTM A500 grade B.
- For informational purpose, the approximate weight of the frame is 100 pounds and the approximate weight of the grate is 254 pounds.
- Maximum R.C.P. diameter shall not exceed 30 inches (18 inches R. C. arch) on the 3-foot 6-inch wide side and shall not exceed 42 inches (36 inches for R. C. arch) on the 5-foot 6-inch wide side of the median drain.
- The dimension of H is in feet. Maximum H is 4 feet.



PIPE DISPLACEMENT REDUCTIONS			
Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)	
12	2	0.03	
15	2 1/4	0.04	
18	2 1/2	0.05	
24	3	0.09	
30	3 1/2	0.14	
36	4	0.20	
42	4 1/2	0.26	
R.C.P.			
18	2 1/2	0.05	
24	3 1/2	0.09	
30	4	0.14	
36	4 1/2	0.19	
R.C. ARCH			

August 27, 2020

<b>S D D O T</b>	<b>TYPE M MEDIAN DRAIN</b>	<b>PLATE NUMBER</b> 670.65
	Published Date: 1st Qtr. 2022	Sheet 1 of 3



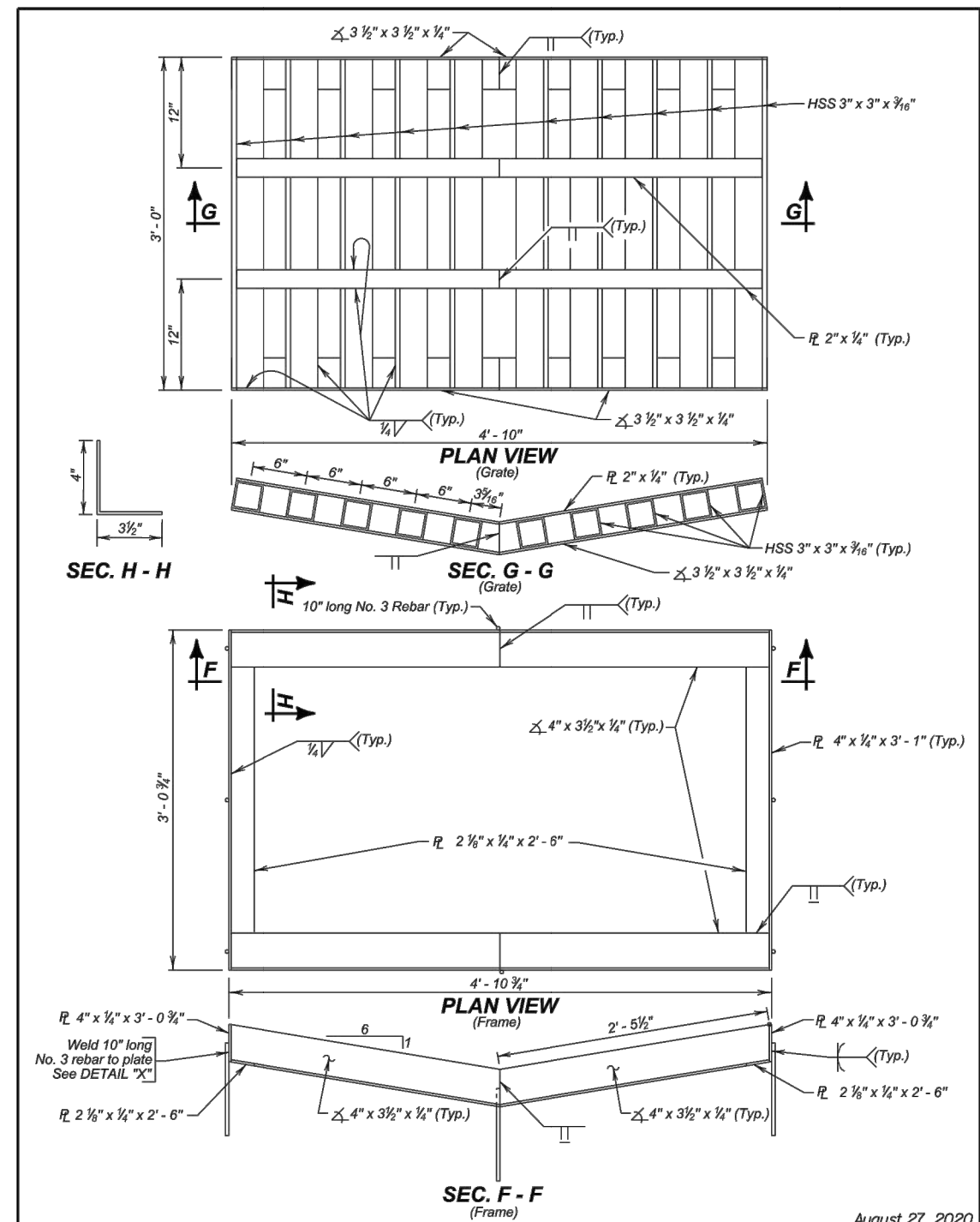
REINFORCING SCHEDULE					
Mk.	No.	Size	Length	Type	Bending Details
a	2.67H	4	10'-0"	17	
b	5	5	7'-6"	17	
c	8	4	5'-9"	17	
d	2	4	H - 1 1/2"	Str.	
d1	14	4	H + 3"	Str.	
d2	8	4	H	Str.	

NOTE: All dimensions are out to out of bars.

August 27, 2020

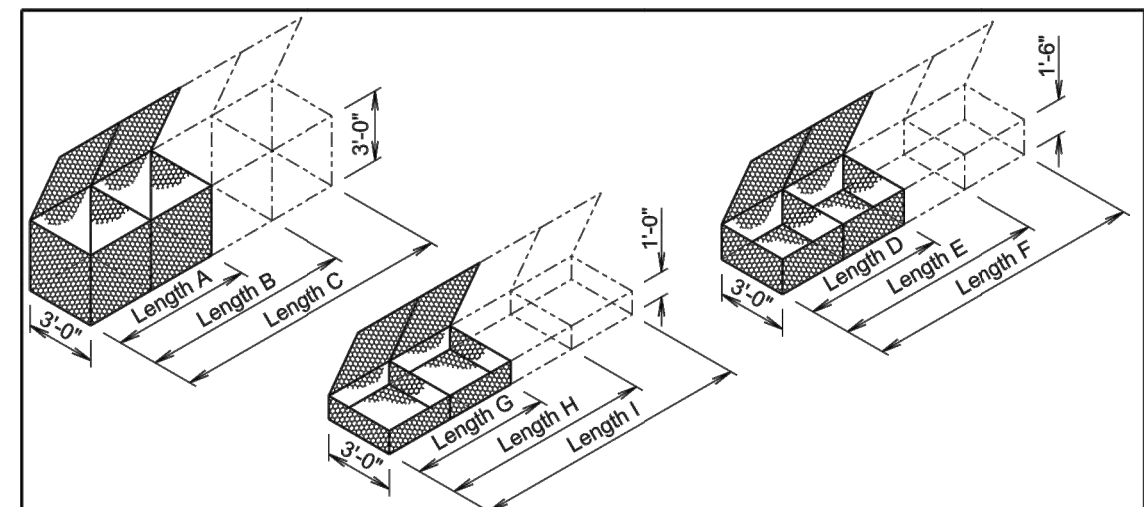
<b>S D D O T</b>	<b>TYPE M MEDIAN DRAIN</b>	<b>PLATE NUMBER</b> 670.65
	Published Date: 1st Qtr. 2022	Sheet 2 of 3

Plotting Date: January 19, 2022



August 27, 2020

<b>S D D O T</b>	<b>TYPE M MEDIAN DRAIN</b>	PLATE NUMBER <b>670.65</b>
	Published Date: 1st Qtr. 2022	Sheet 3 of 3



**GABION DETAILS**

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

Above dimensions subject to mill tolerances.

**GENERAL NOTES:**

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

The lacing procedure is as follows:

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

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

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

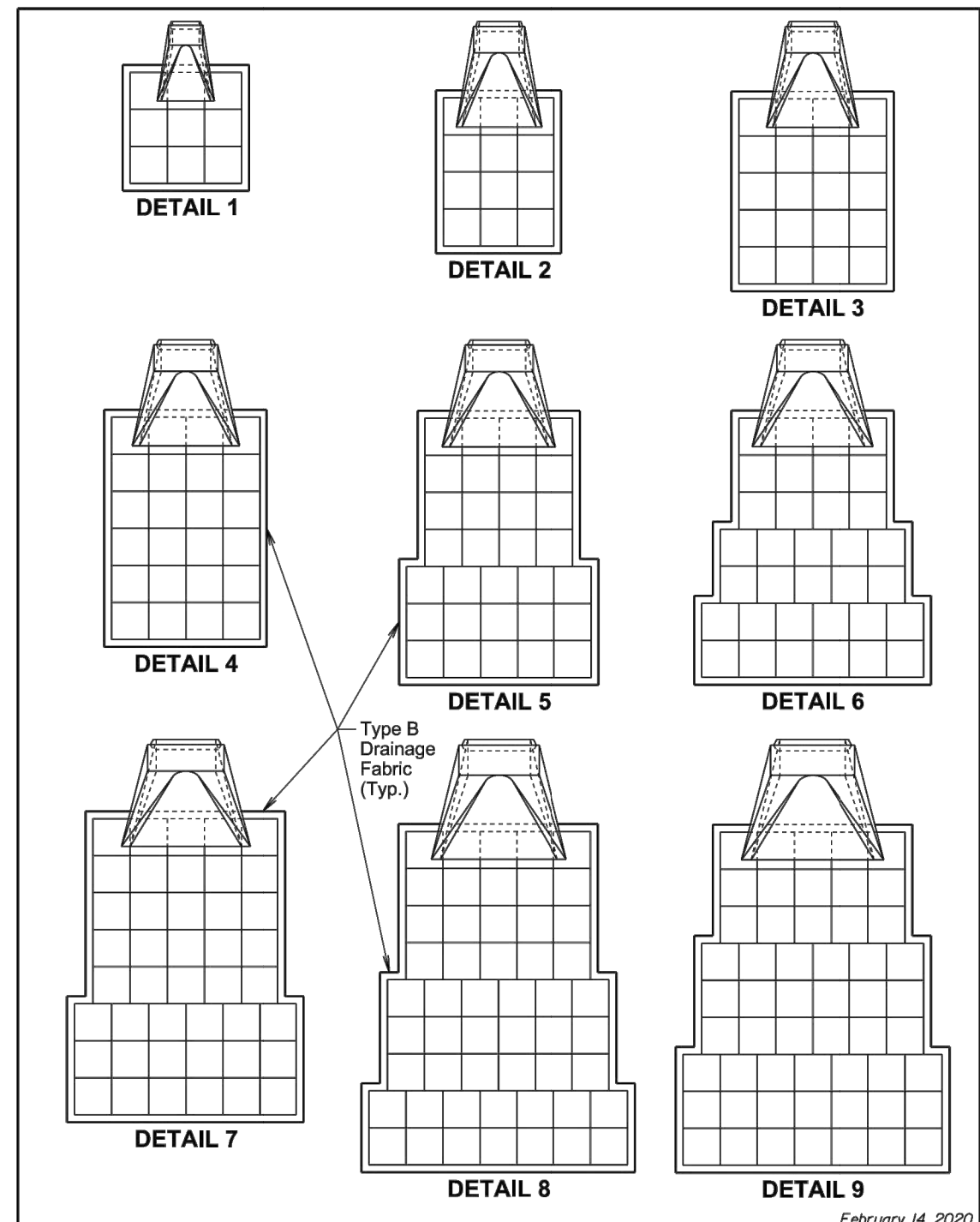
All fasteners will be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

February 14, 2020

<b>S D D O T</b>	<b>BANK AND CHANNEL PROTECTION GABIONS</b>	PLATE NUMBER <b>720.01</b>
	Published Date: 1st Qtr. 2022	Sheet 1 of 1



Plotting Date: January 19, 2022



February 14, 2020

Published Date: 1st Qtr. 2022	SD D D O T	BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS	PLATE NUMBER 720.03
			Sheet 1 of 2

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

**GENERAL NOTES:**

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

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

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

February 14, 2020

Published Date: 1st Qtr. 2022	SD D D O T	BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS	PLATE NUMBER 720.03
			Sheet 2 of 2

**STANDARD DITCH SECTION**

20' (Min.)  
10' 10'  
20:1 20:1  
Erosion Control Blanket

**MEDIAN SECTION**

Median  
20' (Min.)  
15' 15'  
6:1 6:1  
20:1 20:1  
Area will be excavated  
Erosion Control Blanket

The median will be shaped to the limits shown in this detail where the erosion control blanket will be placed.

**SLOPED DITCH SECTION**

Sloped Ditch Section  
12' (Min.)  
20:1  
Variable or Typically 5:1  
Erosion Control Blanket  
6" (Min.)

This ditch section will be constructed when installing erosion control blanket.

**TRENCH DETAIL**

Bury upslope end of erosion control blanket in a trench 6" deep by 6" wide. The trench will be backfilled and compacted to the appropriate elevation.  
T-Pin or Staple  
6" 6"

**PIPE END DETAIL**

Bury upslope end of erosion control blanket in a trench 6" deep by 6" wide. The trench will be backfilled and compacted to the appropriate elevation.  
Pipe  
T-Pin or Staple  
6" 6"

**OVERLAP DETAIL**

\* 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.

**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

<b>S D D O T</b>	<b>EROSION CONTROL BLANKET</b>	PLATE NUMBER <b>734.01</b>
	Published Date: 1st Qtr. 2022	Sheet 1 of 1

**ELEVATION VIEW**  
(Cut or Fill Slope Installation)

Spacing Varies (See Table)  
Flow  
See Detail B

Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40

**DETAIL B**  
(Typical of All Installations)

Excavated Material from Trench  
Flow  
2" to 3"  
3" to 5" Trench  
Wood Stake  
9" (Min.)

**DETAIL C**  
(See General Notes)

6" 6"  
Ends of Erosion Control Wattles  
Wood Stake

**ISOMETRIC VIEW**  
(Ditch Installation)

Point A  
Point B  
Flow  
Point A

**PLAN VIEW**  
(Ditch Installation)

Point A  
Flow  
Point A  
Point B  
Wood Stake (Typ.)

**SECTION A-A**

Point A  
Point B  
Point A  
Wood Stake

Grade	Spacing (Ft.)
2%	150
3%	100
4%	75
5%	50

February 14, 2020

<b>S D D O T</b>	<b>EROSION CONTROL WATTLE</b>	PLATE NUMBER <b>734.06</b>
	Published Date: 1st Qtr. 2022	Sheet 1 of 2

Plotting Date: January 19, 2022

**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.

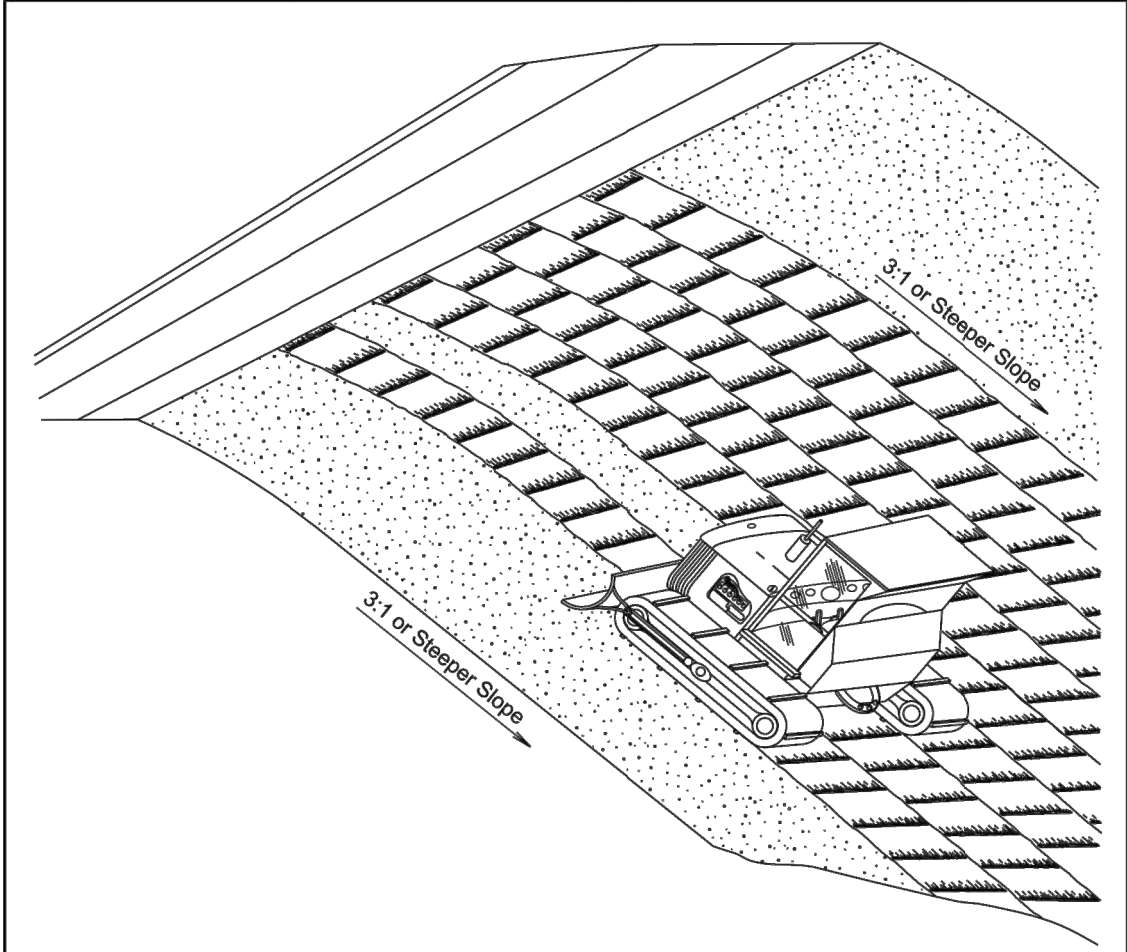
Sediment removal, disposal, or necessary shaping will be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping will be incidental to the contract unit price per cubic yard for "Remove Sediment".

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

<b>Published Date: 1st Qtr. 2022</b>	<b>S D D O T</b>	<b>EROSION CONTROL WATTLE</b>	PLATE NUMBER <b>734.06</b>
			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.

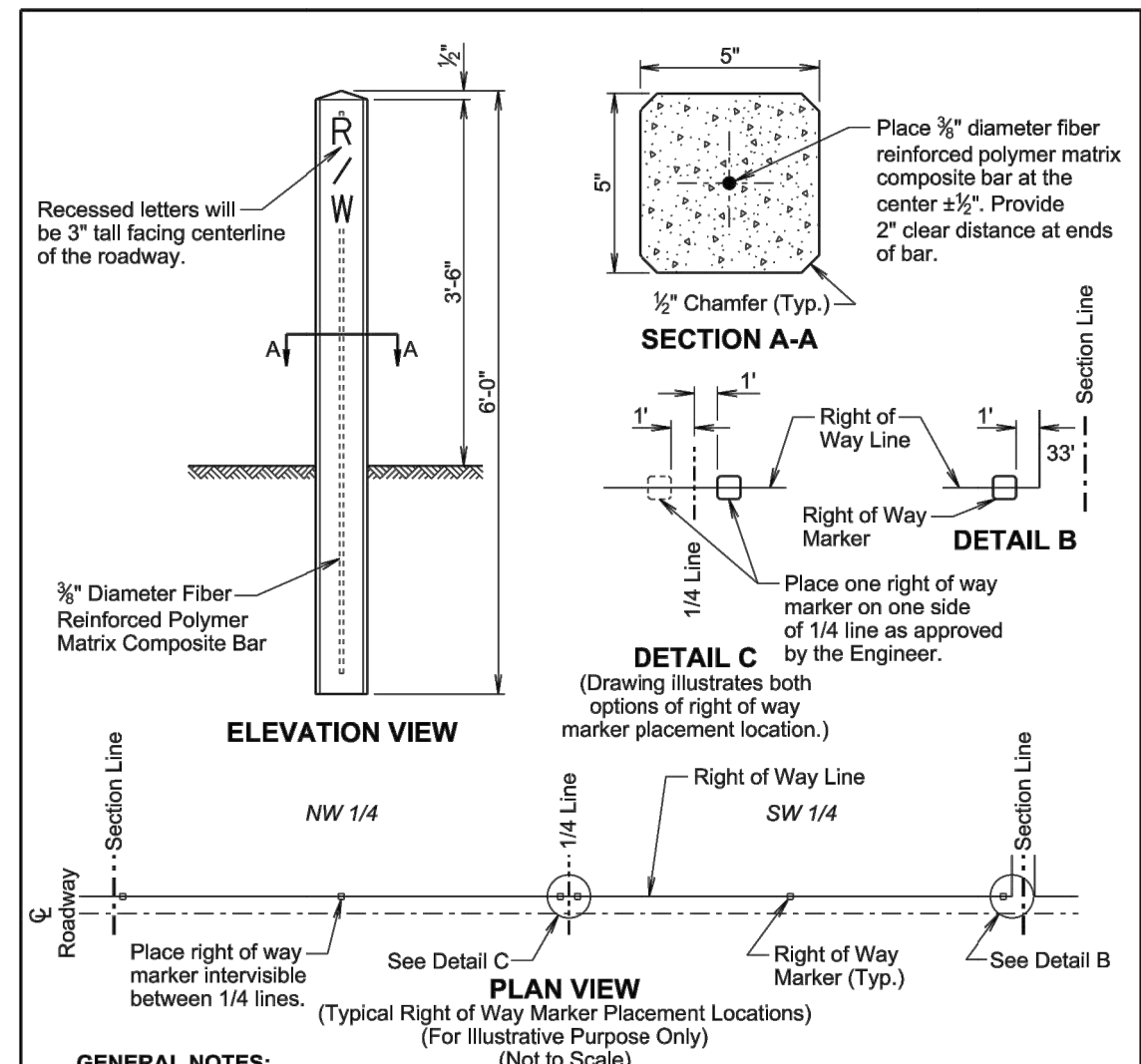
All costs associated with surface roughening including labor, equipment, and materials will be incidental to the contract unit price per acre for "Surface Roughening".

February 14, 2020

<b>Published Date: 1st Qtr. 2022</b>	<b>S D D O T</b>	<b>SURFACE ROUGHENING</b>	PLATE NUMBER <b>734.25</b>
			Sheet 1 of 1



Plotting Date: January 19, 2022



**GENERAL NOTES:**

The right of way markers will be set plumb and backfilled as approved by the Engineer.

Additional right of way markers may need to be installed due to the terrain. Placement of additional right of way markers must be approved by the Engineer prior to installation.

The concrete will be Class M6 in accordance with specifications Section 462.

The fiber reinforced polymer matrix composite bar will have a minimum of 130 ksi tensile strength, a minimum ultimate tensile load of 19,675 lbs, and a minimum tensile modulus of elasticity of  $6.7 \times 10^6$  psi in accordance with ASTM D7205. Bond strength will be a minimum of 2,047 psi in accordance with ACI 440.3R Part 2 B3. Minimum shear capacity will be 25.1 ksi in accordance with ASTM D7617.

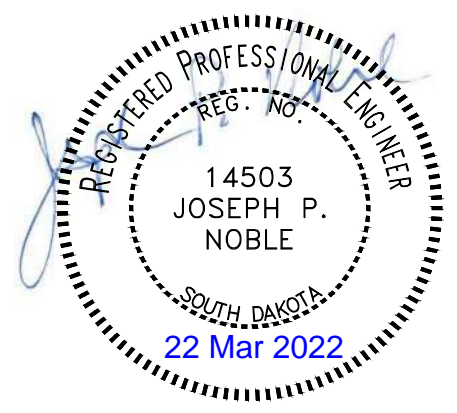
All costs for furnishing and installing the right of way marker including materials, labor, and equipment will be incidental to the contract unit price per each for "Right of Way Marker".

June 26, 2019

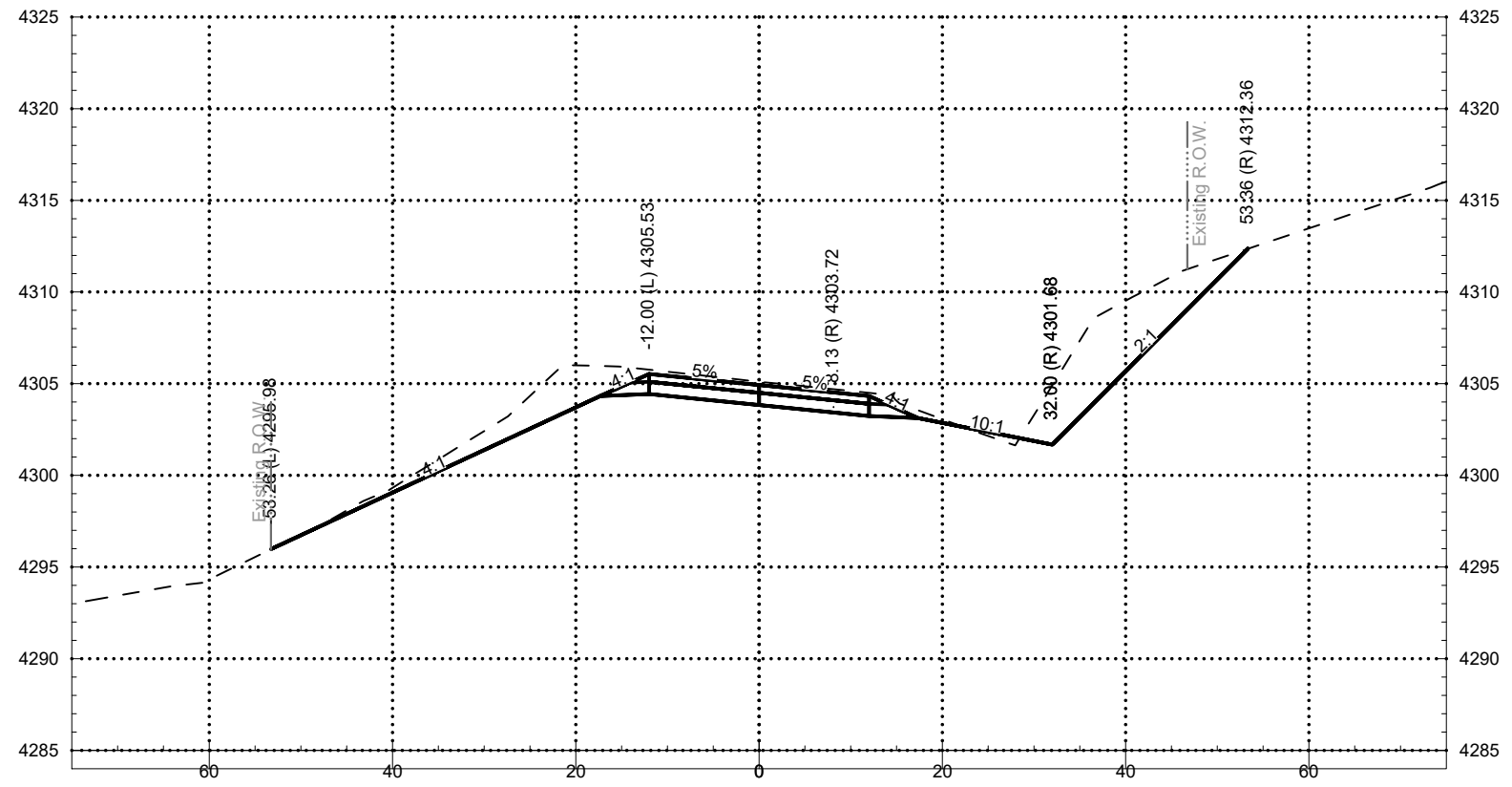
<b>Published Date: 1st Qtr. 2022</b>	<b>S D D O T</b>	<b>RIGHT OF WAY MARKER</b>	<b>PLATE NUMBER</b> 900.15
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	58	75

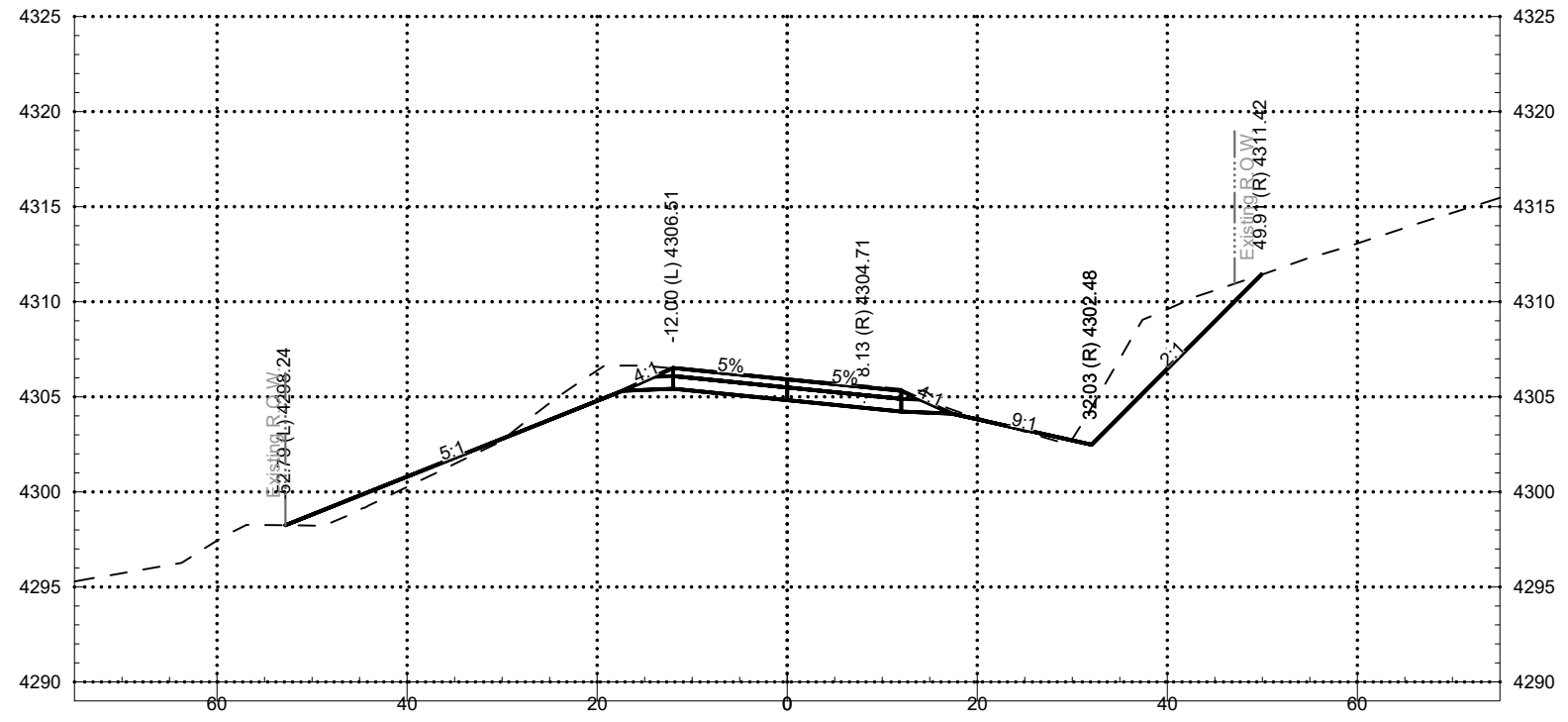
Plotting Date: January 19, 2022



### 6+50 NEMO ROAD



### 6+00 NEMO ROAD

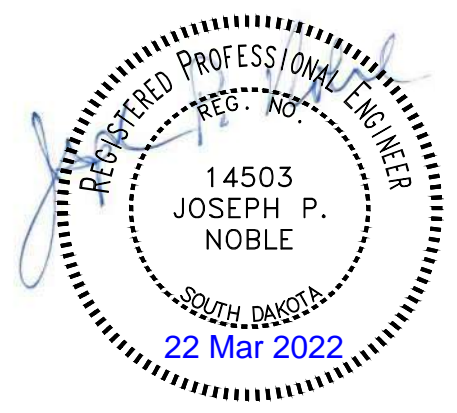




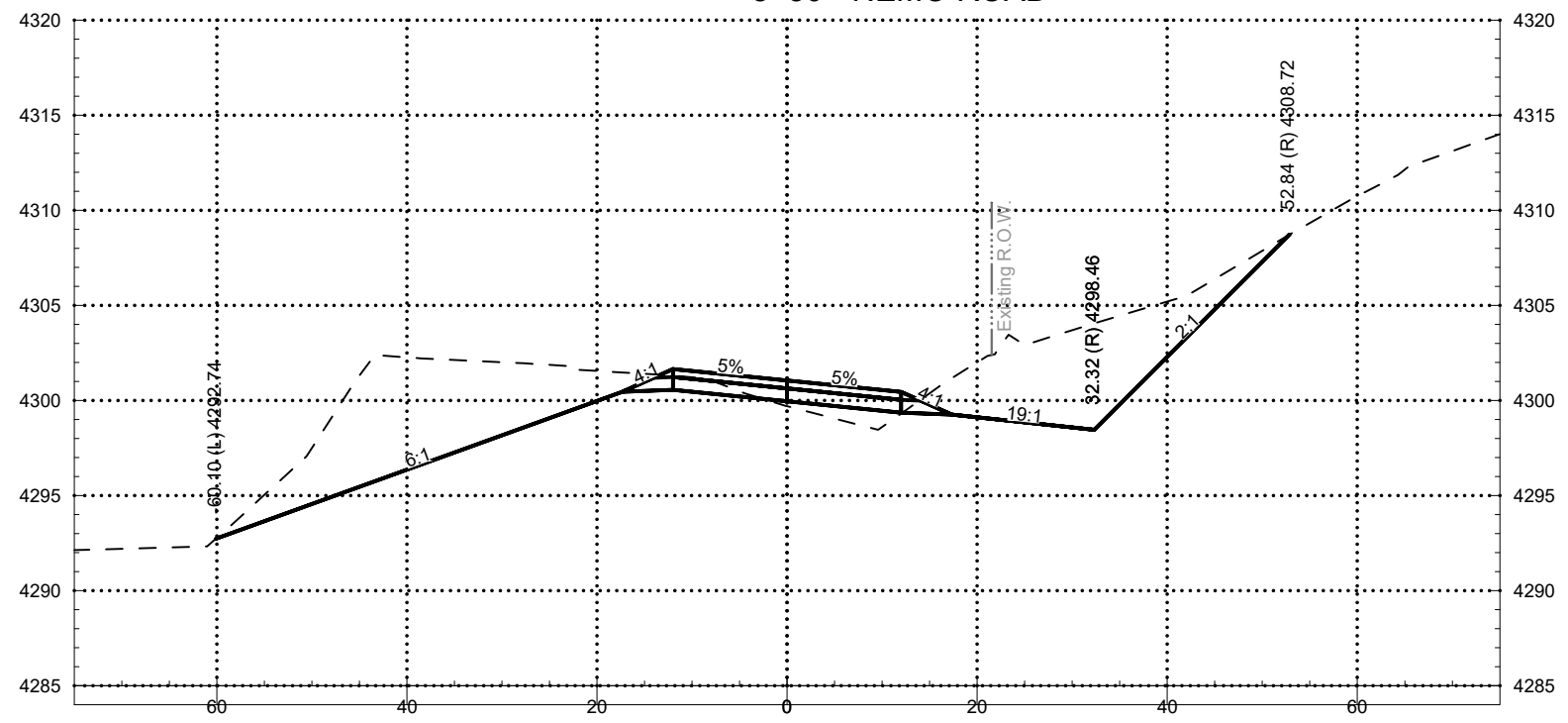


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	60	75

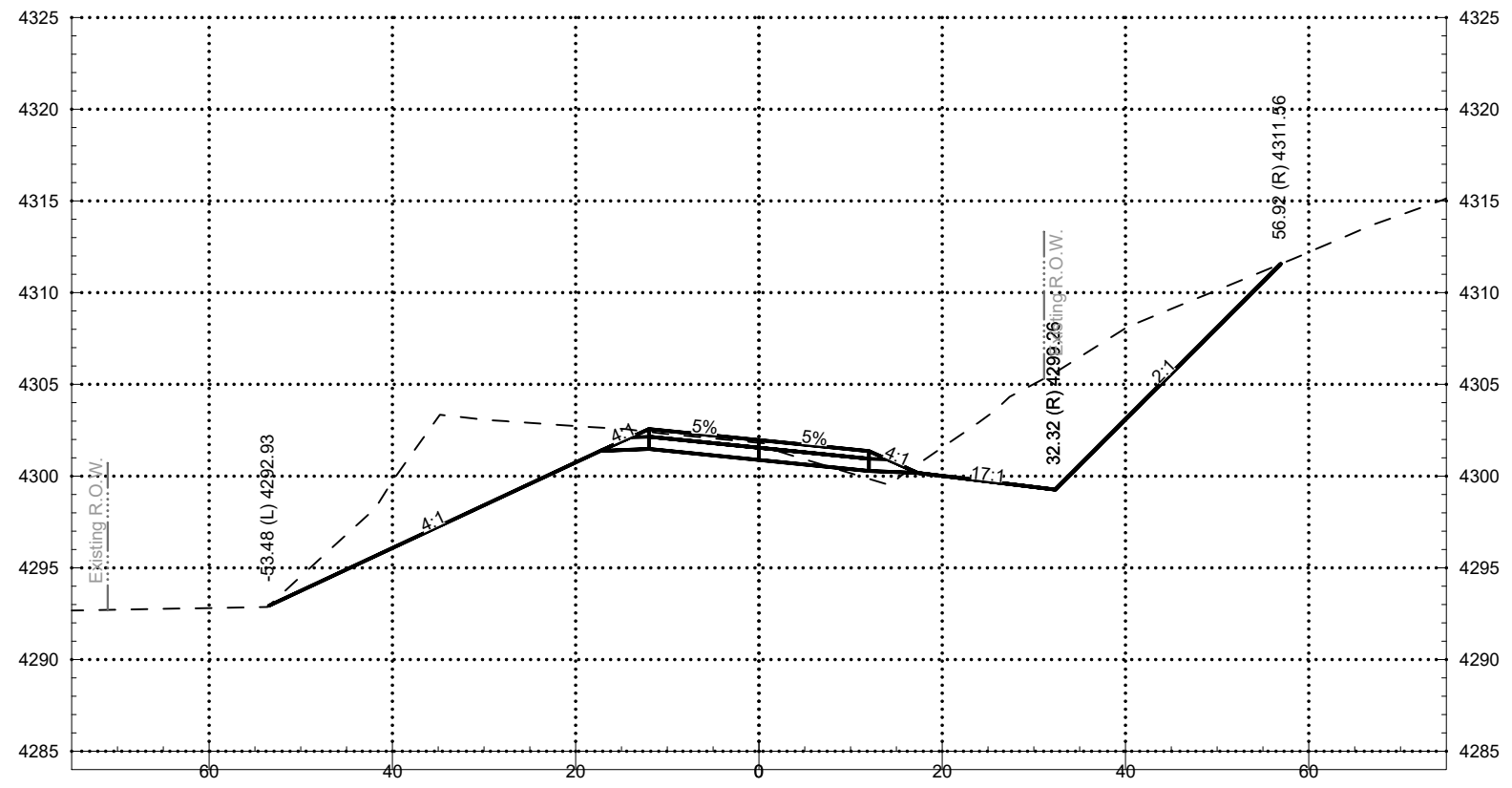
Plotting Date: January 19, 2022



8+50 NEMO ROAD

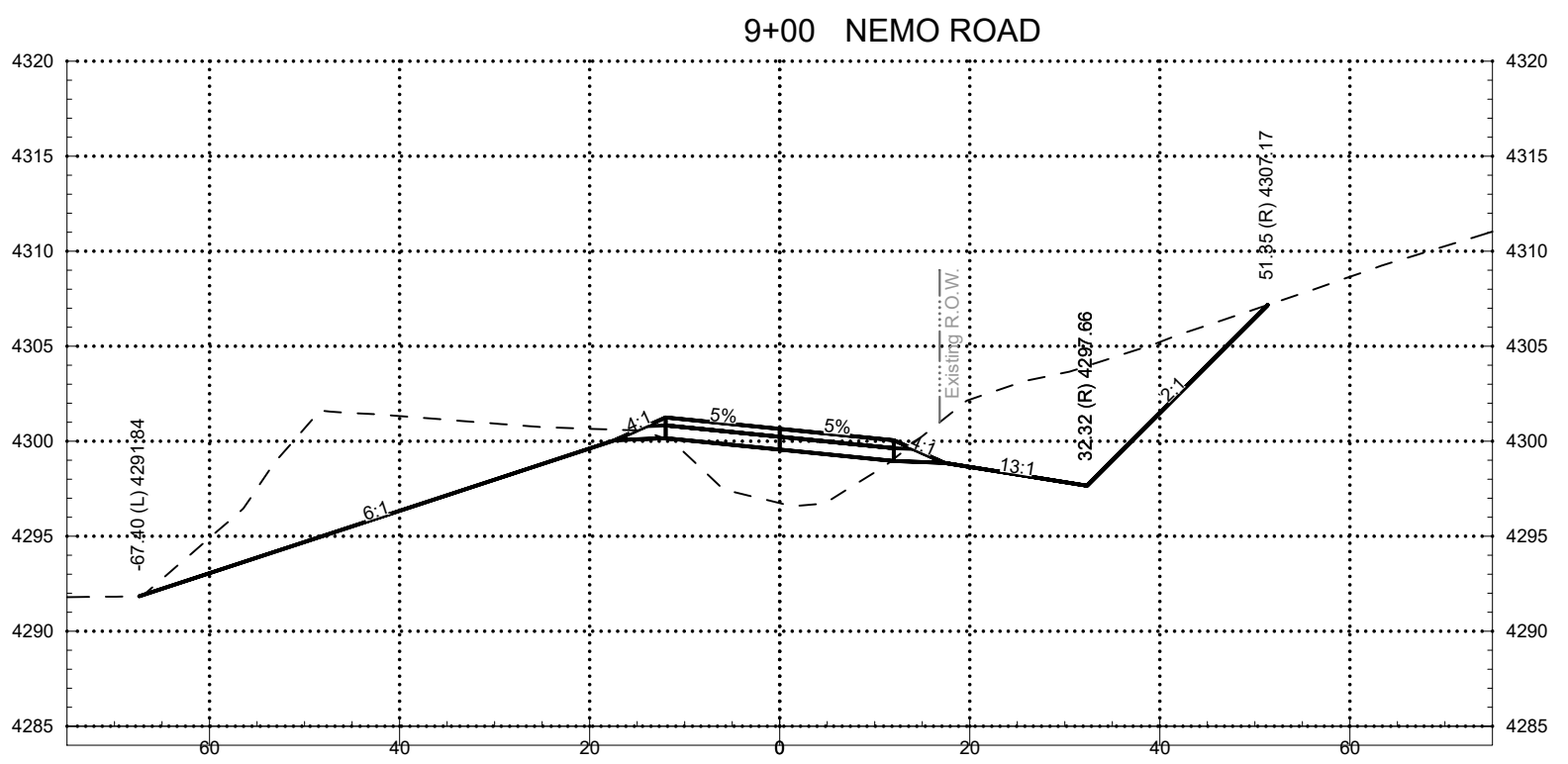
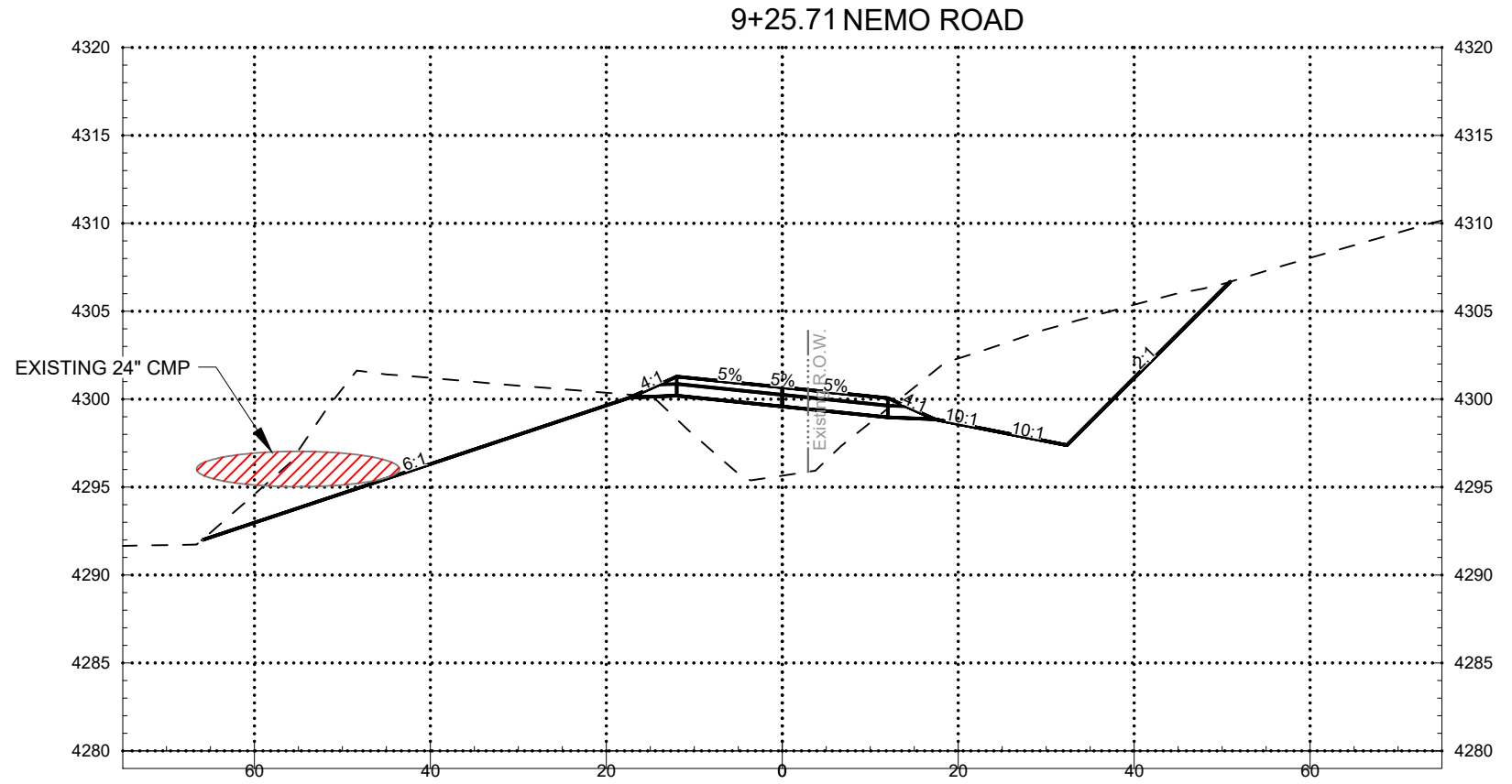
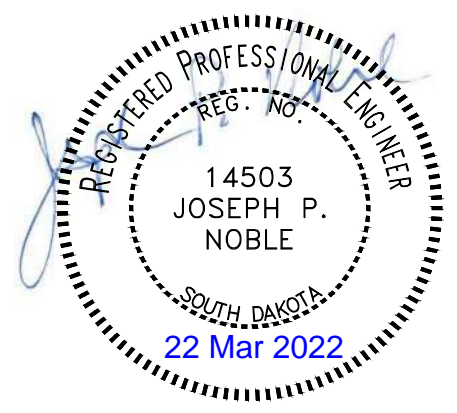


8+00 NEMO ROAD



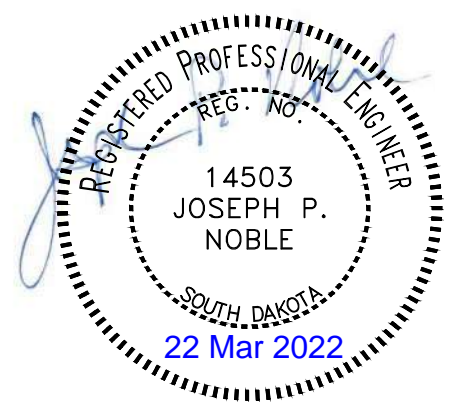
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	61	75

Plotting Date: January 19, 2022

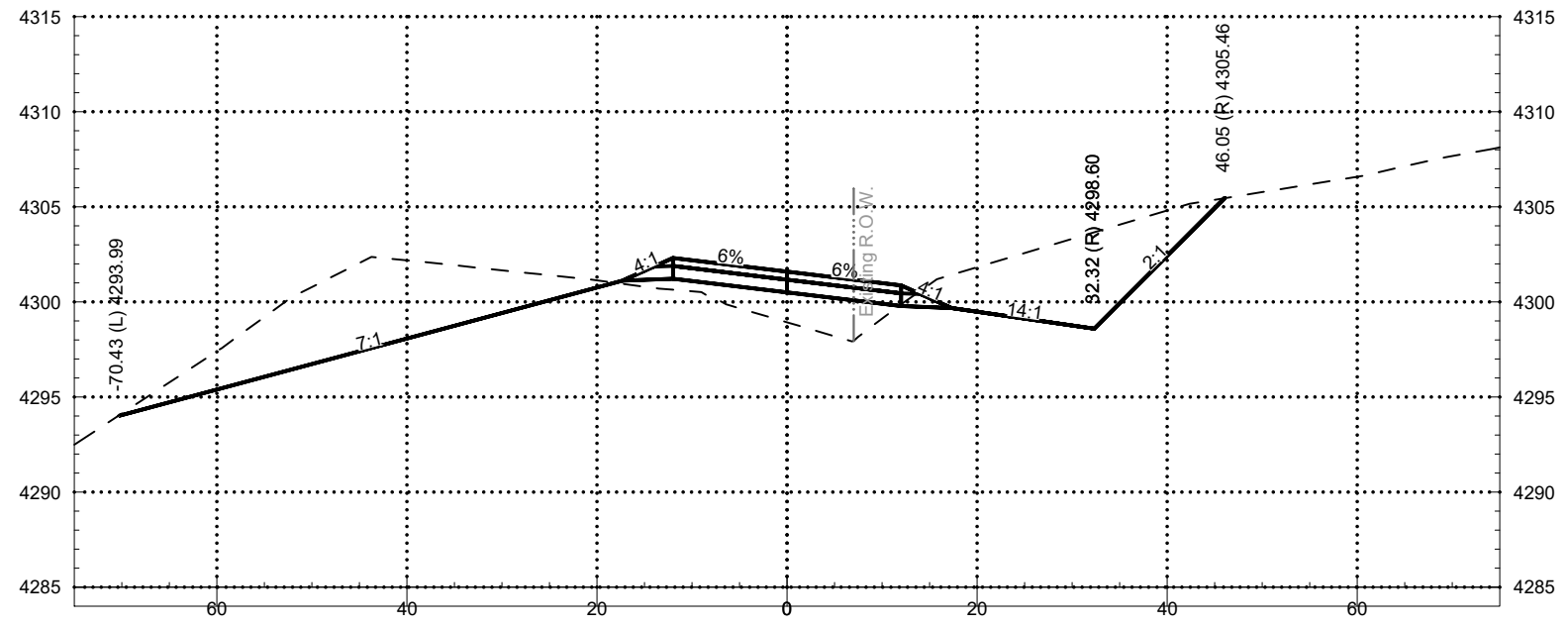


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	62	75

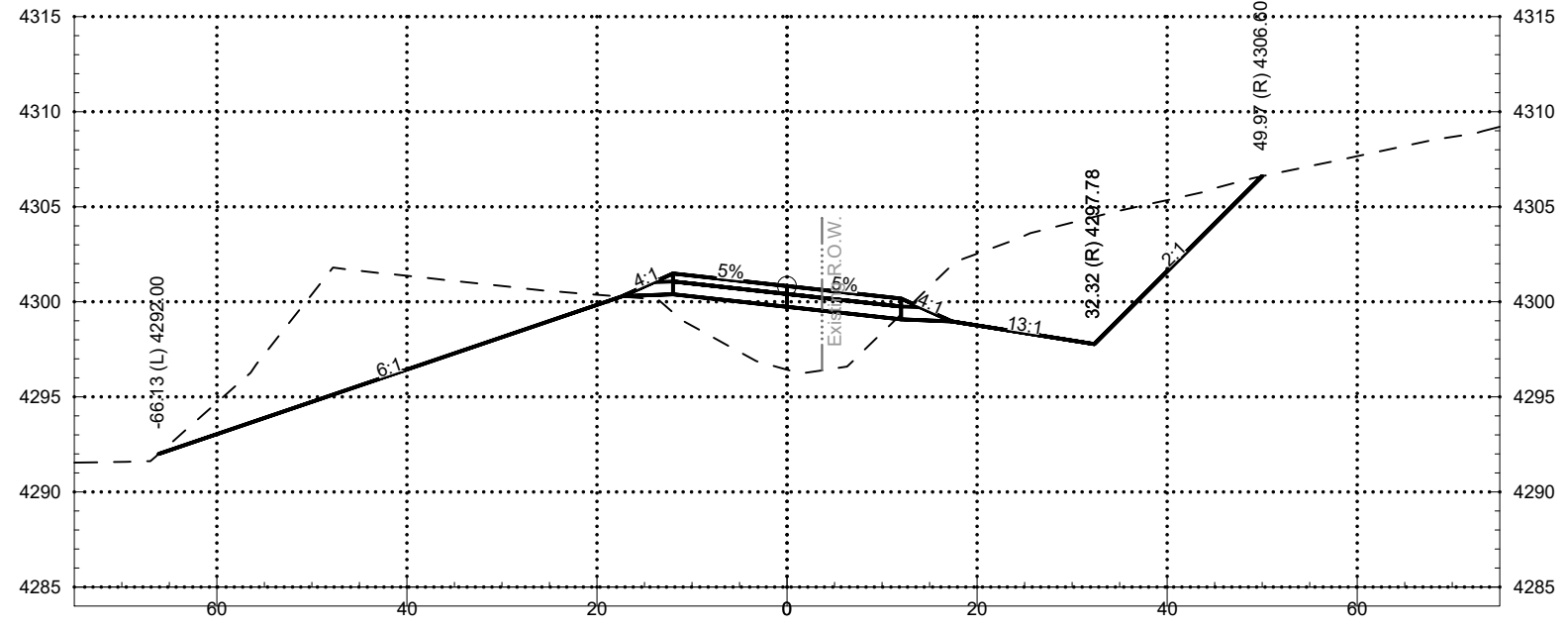
Plotting Date: January 19, 2022



### 10+00 NEMO ROAD



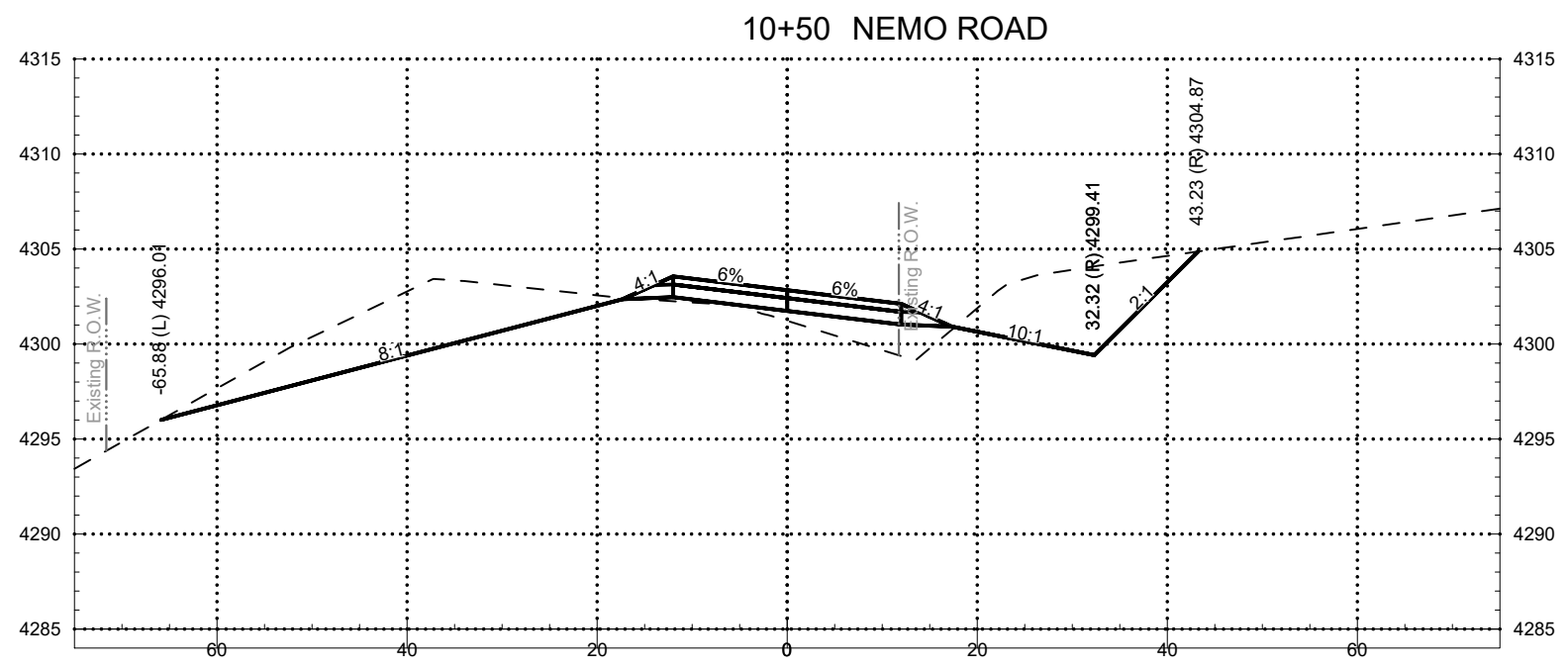
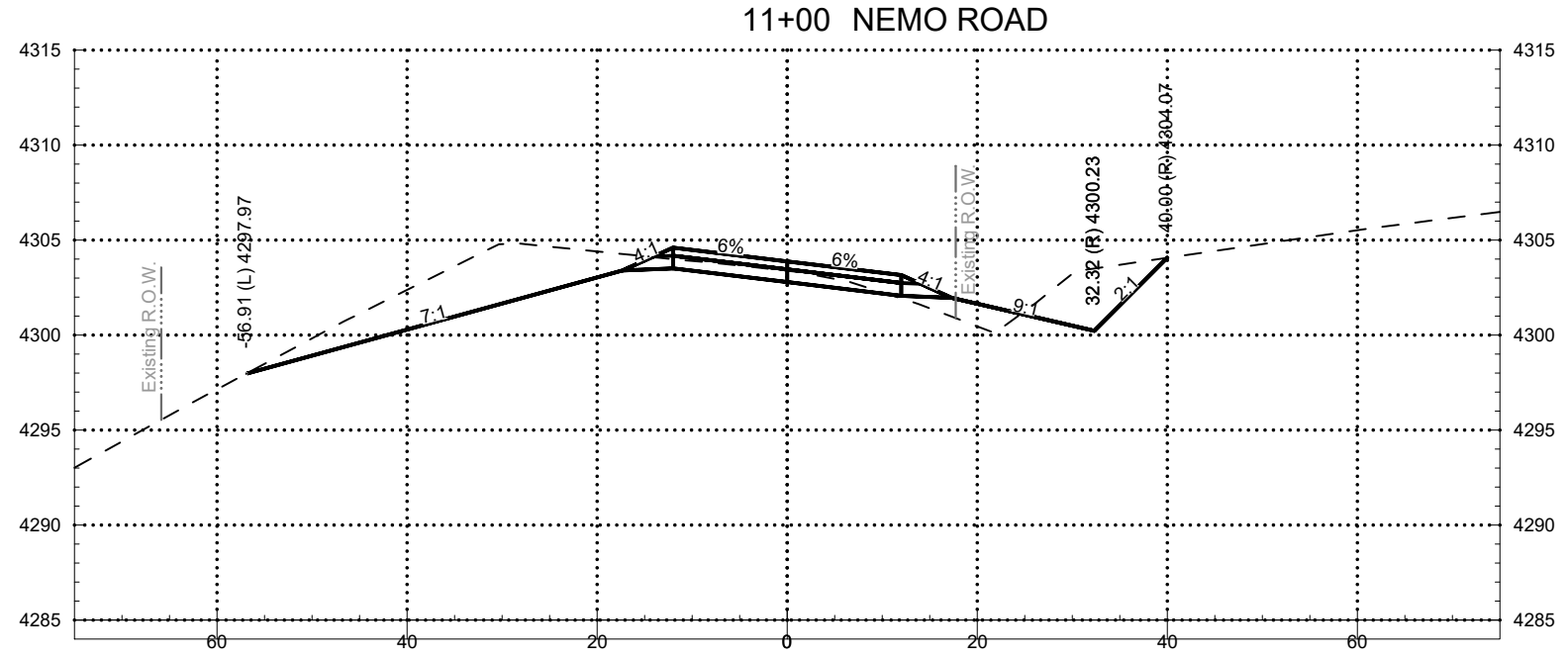
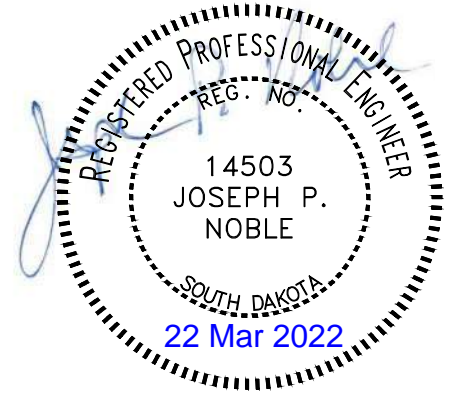
### 9+50 NEMO ROAD





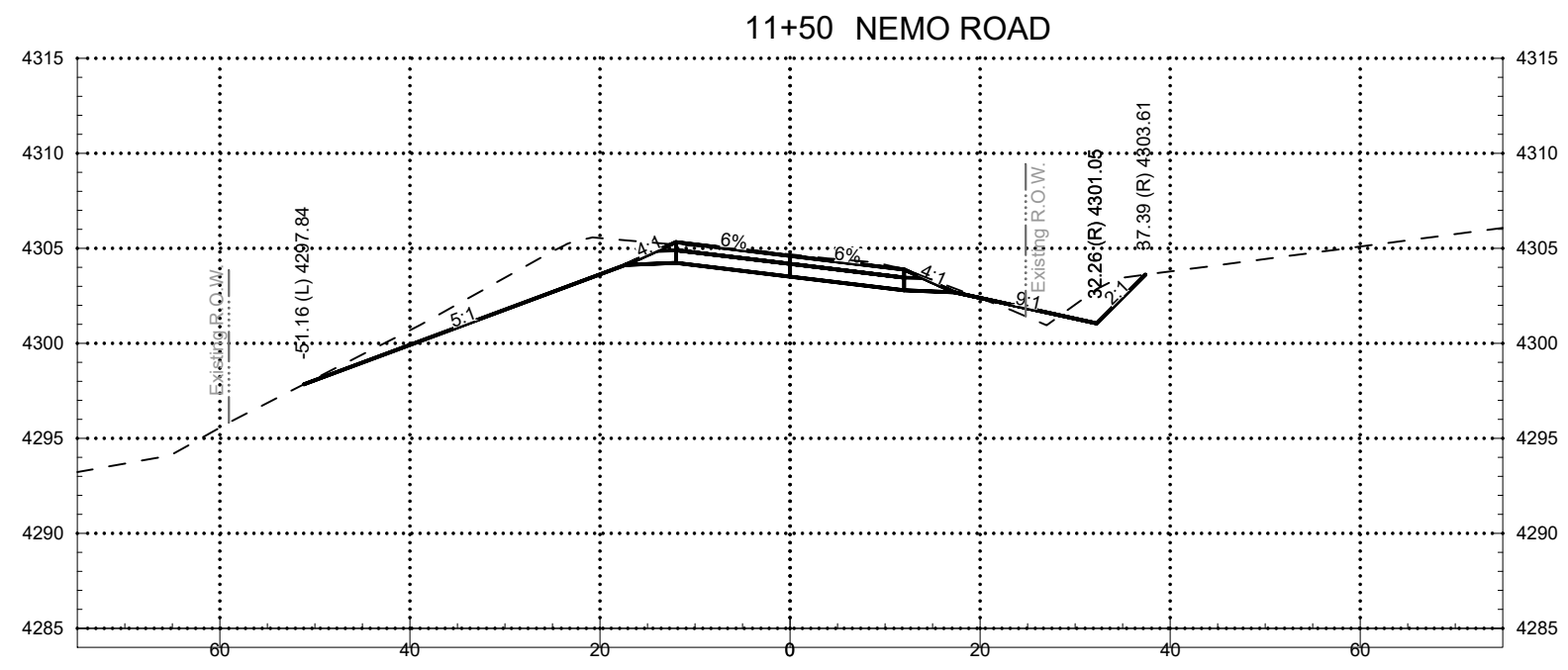
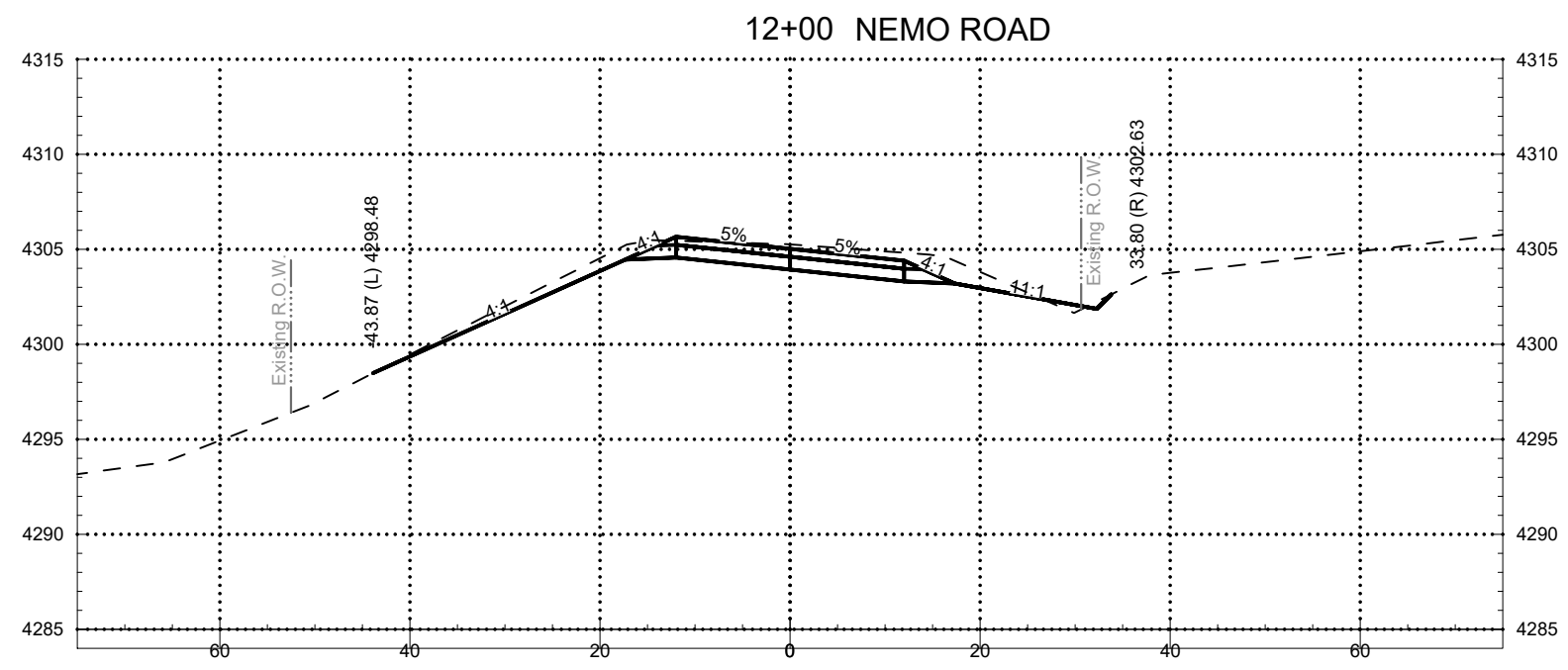
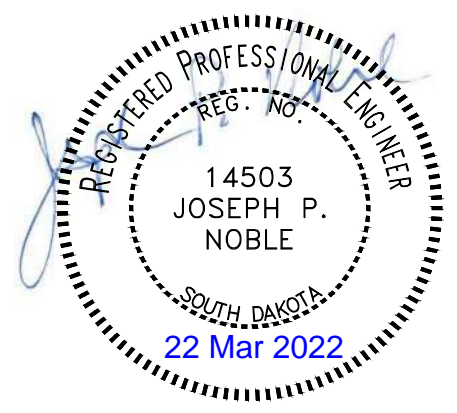
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	63	75

Plotting Date: January 19, 2022



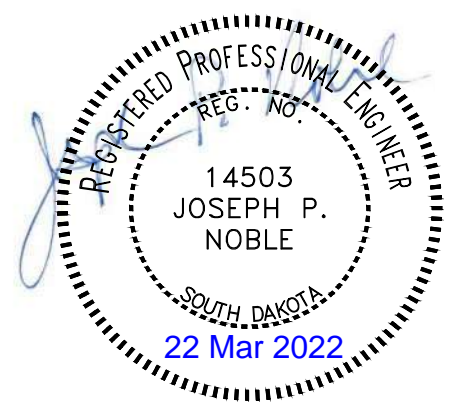
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	64	75

Plotting Date: January 19, 2022

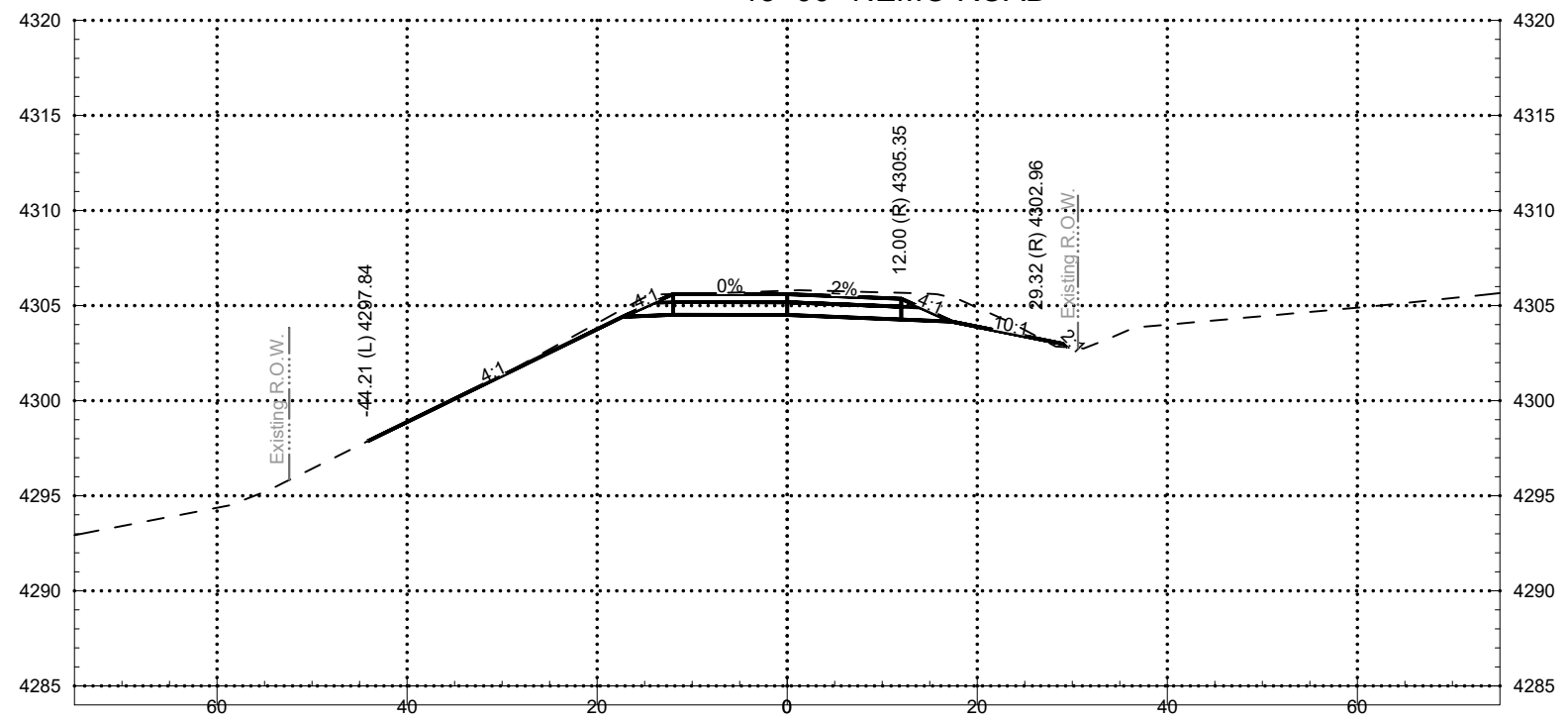


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	65	75

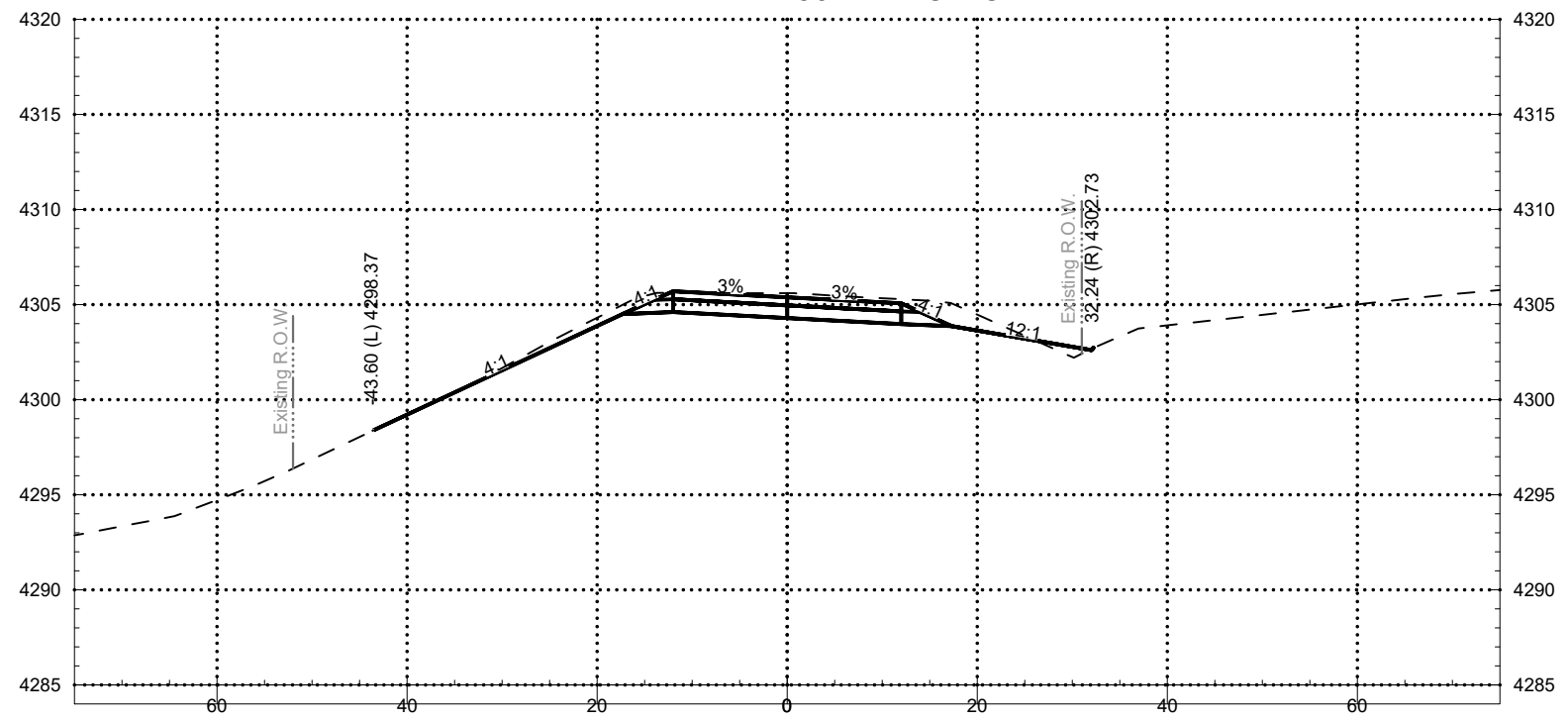
Plotting Date: January 19, 2022



### 13+00 NEMO ROAD



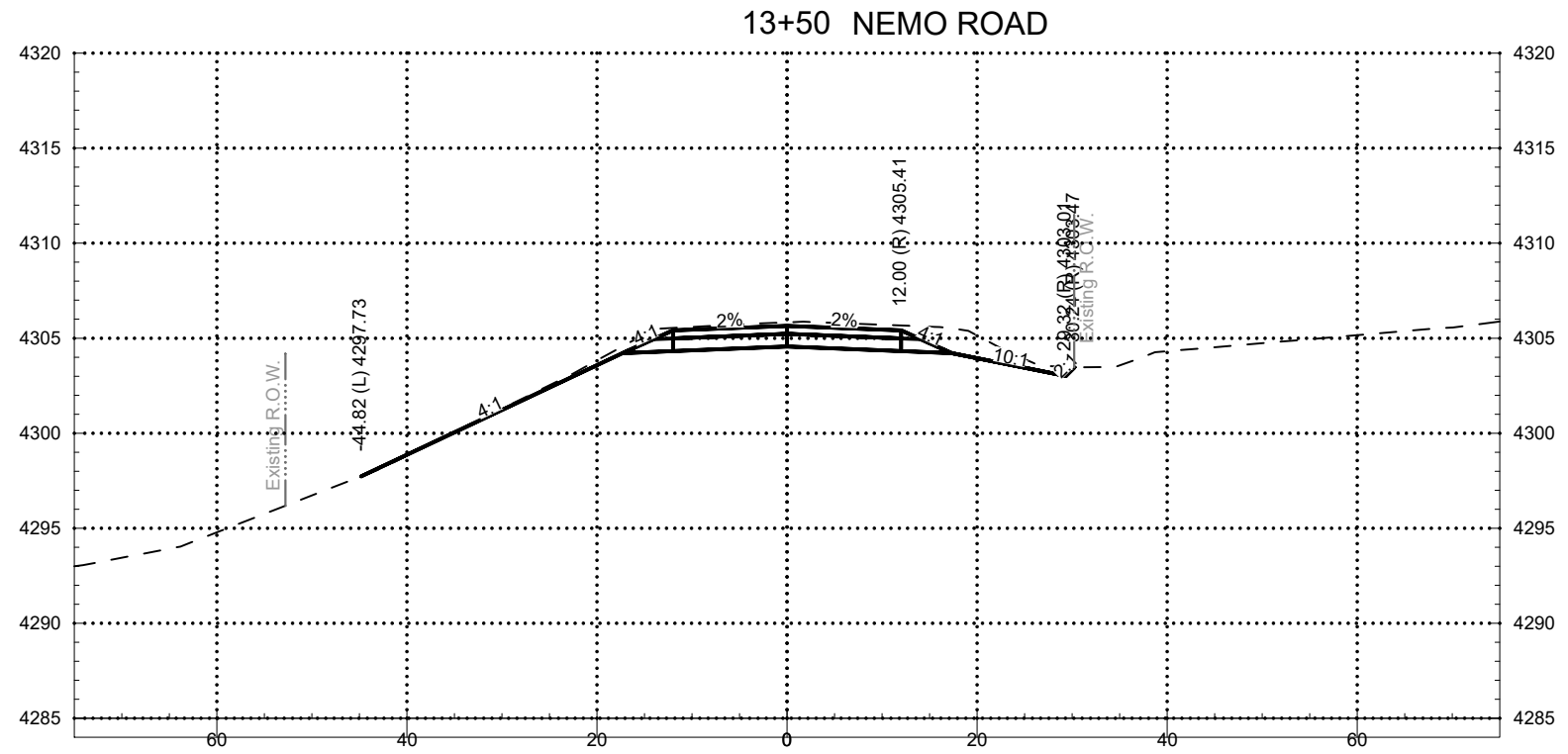
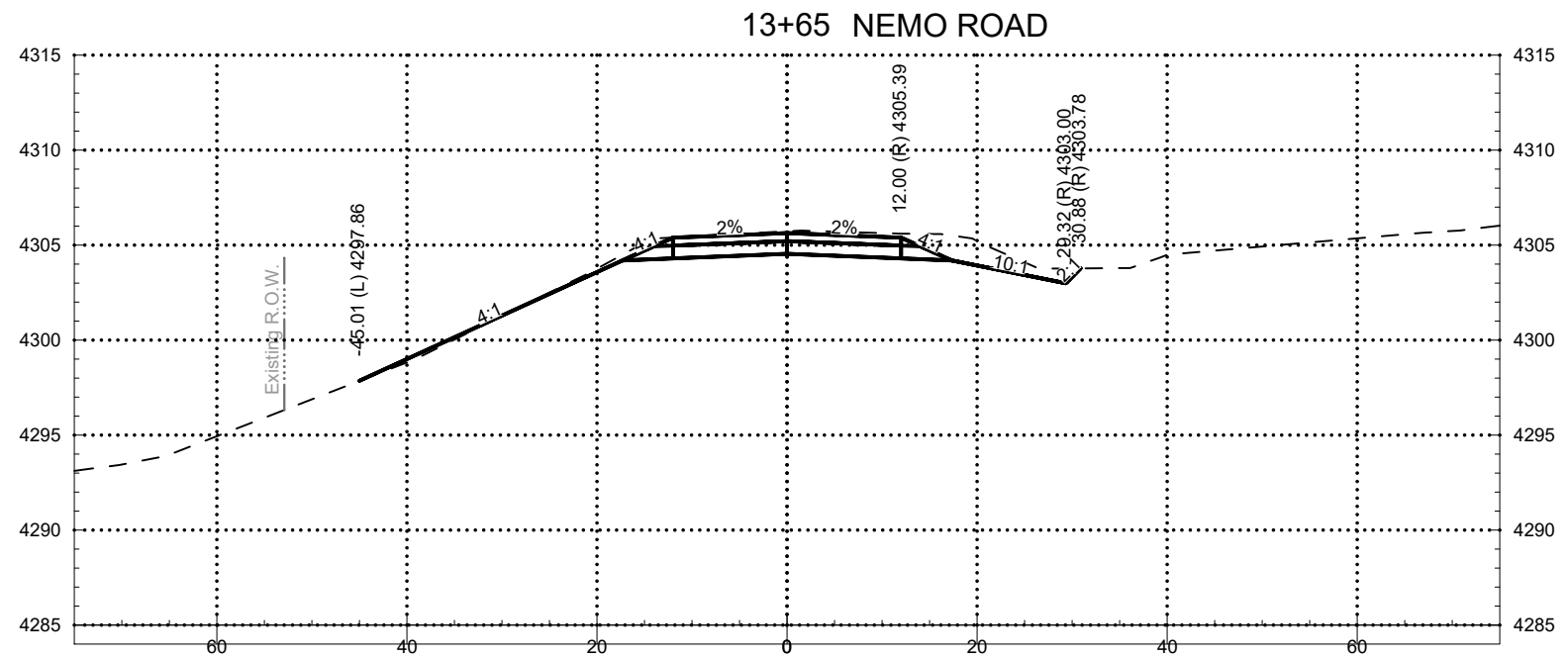
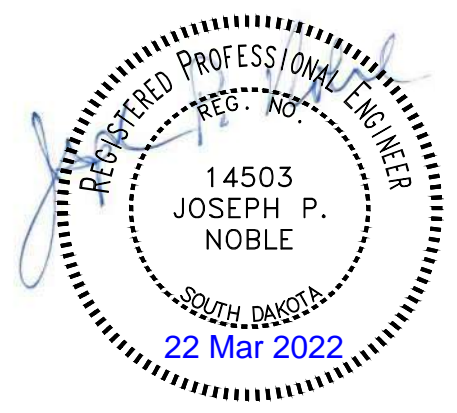
### 12+50 NEMO ROAD





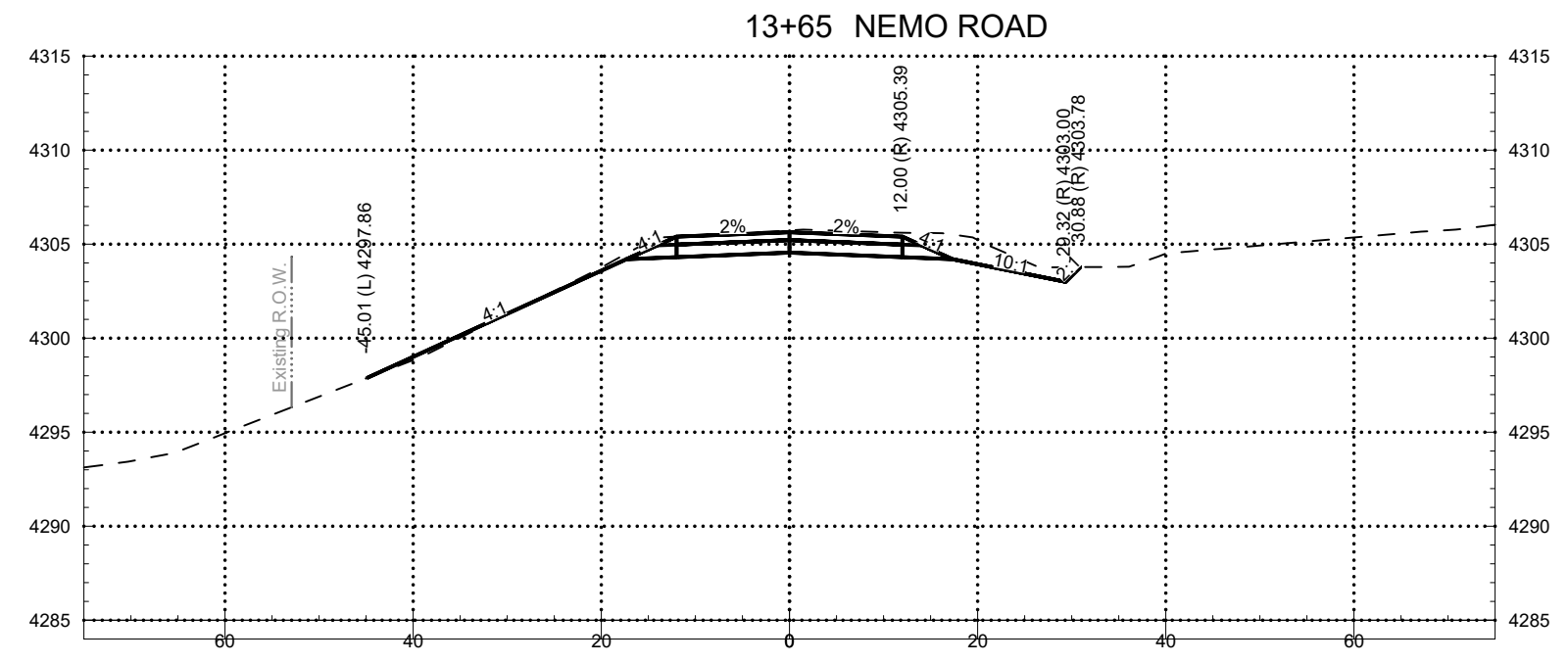
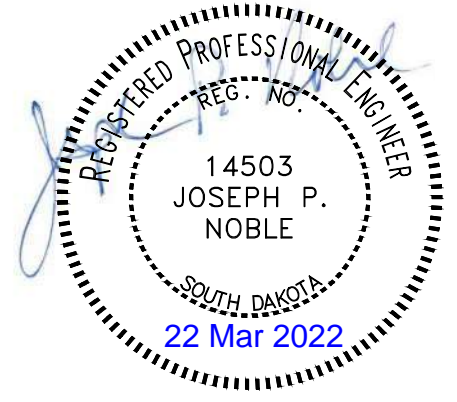
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	66	75

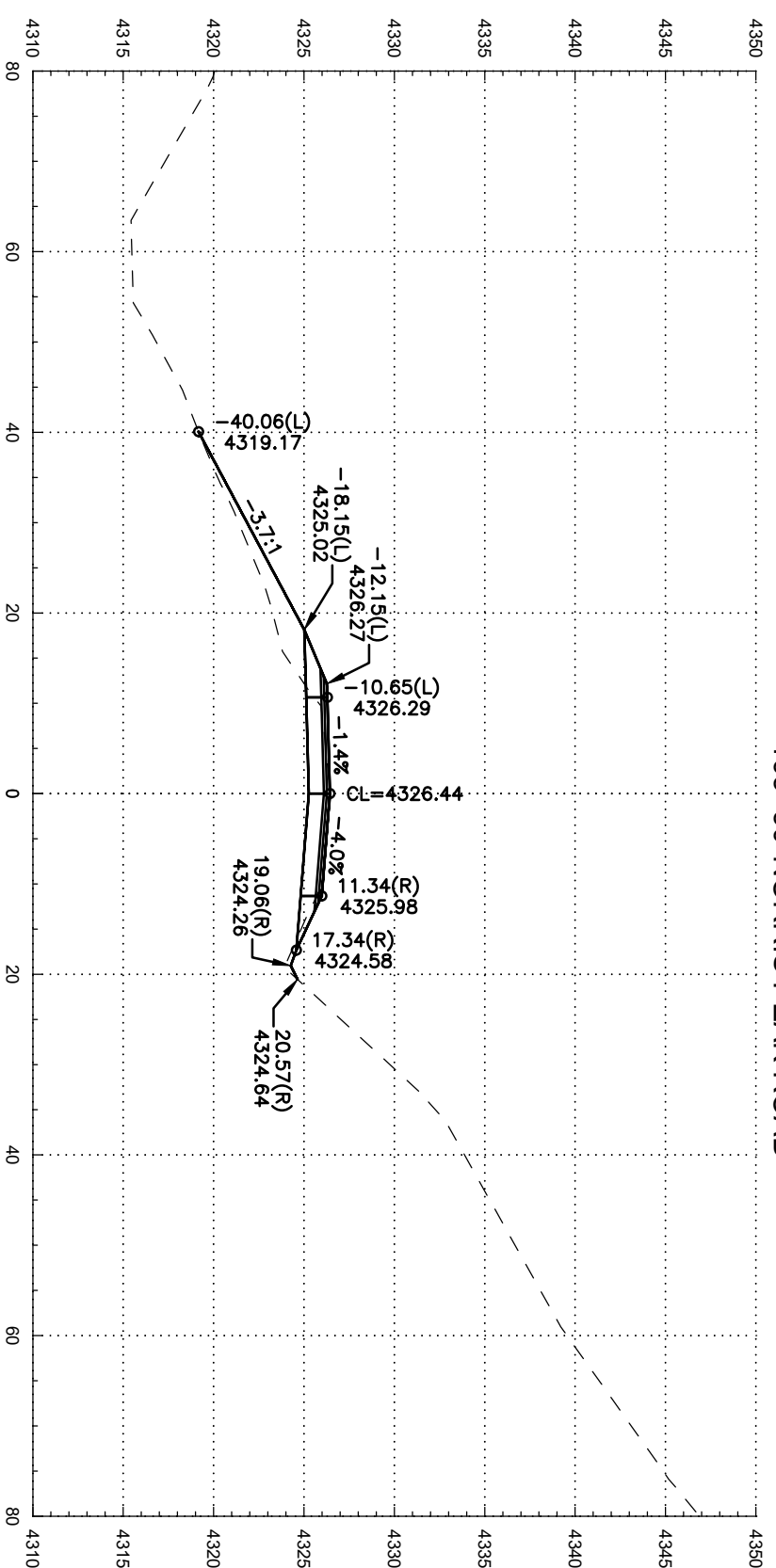
Plotting Date: January 19, 2022



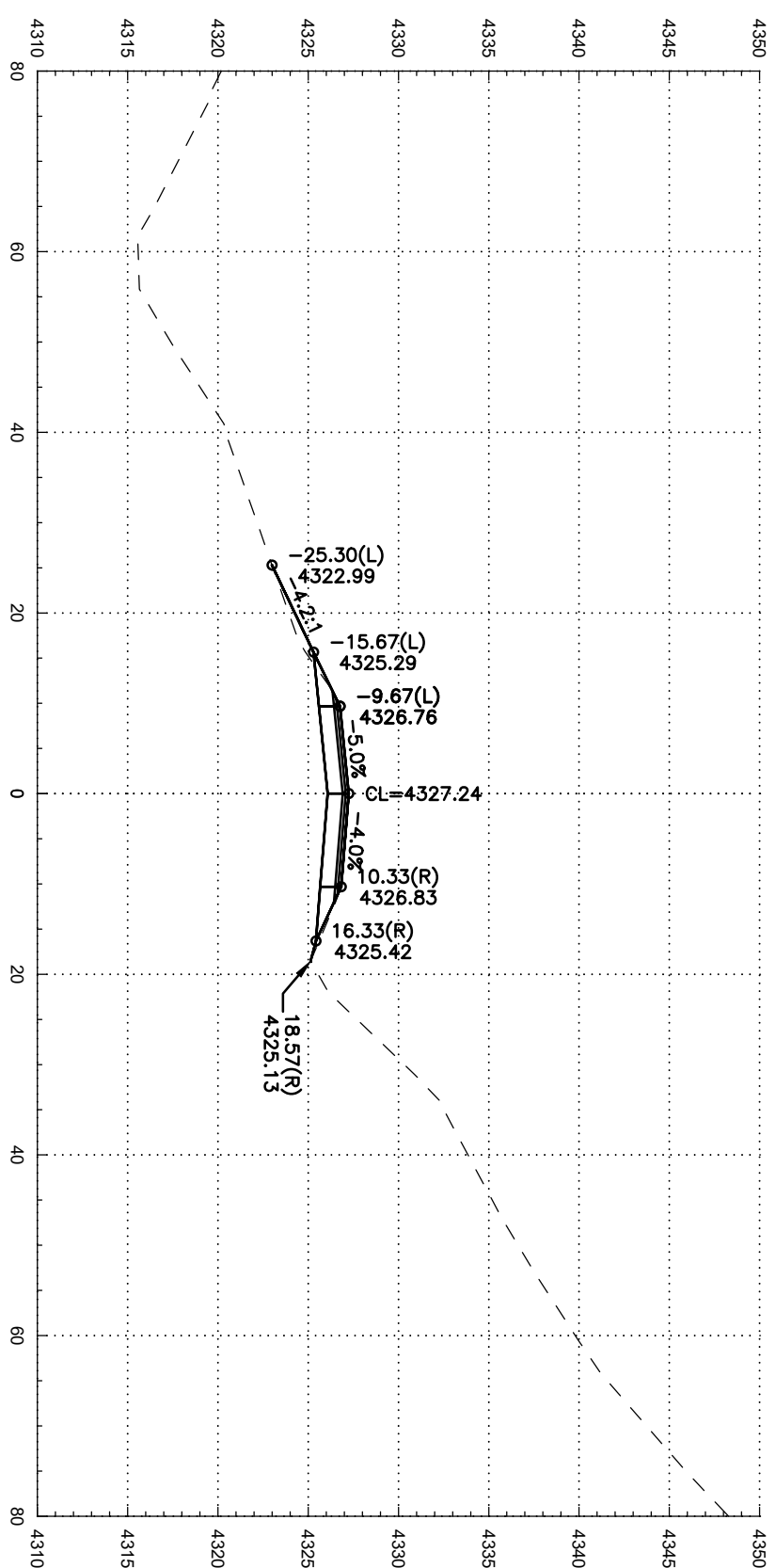
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	67	75

Plotting Date: January 19, 2022





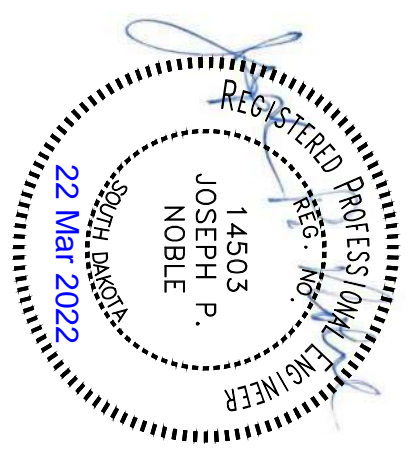
165+50 NORRIS PEAK ROAD



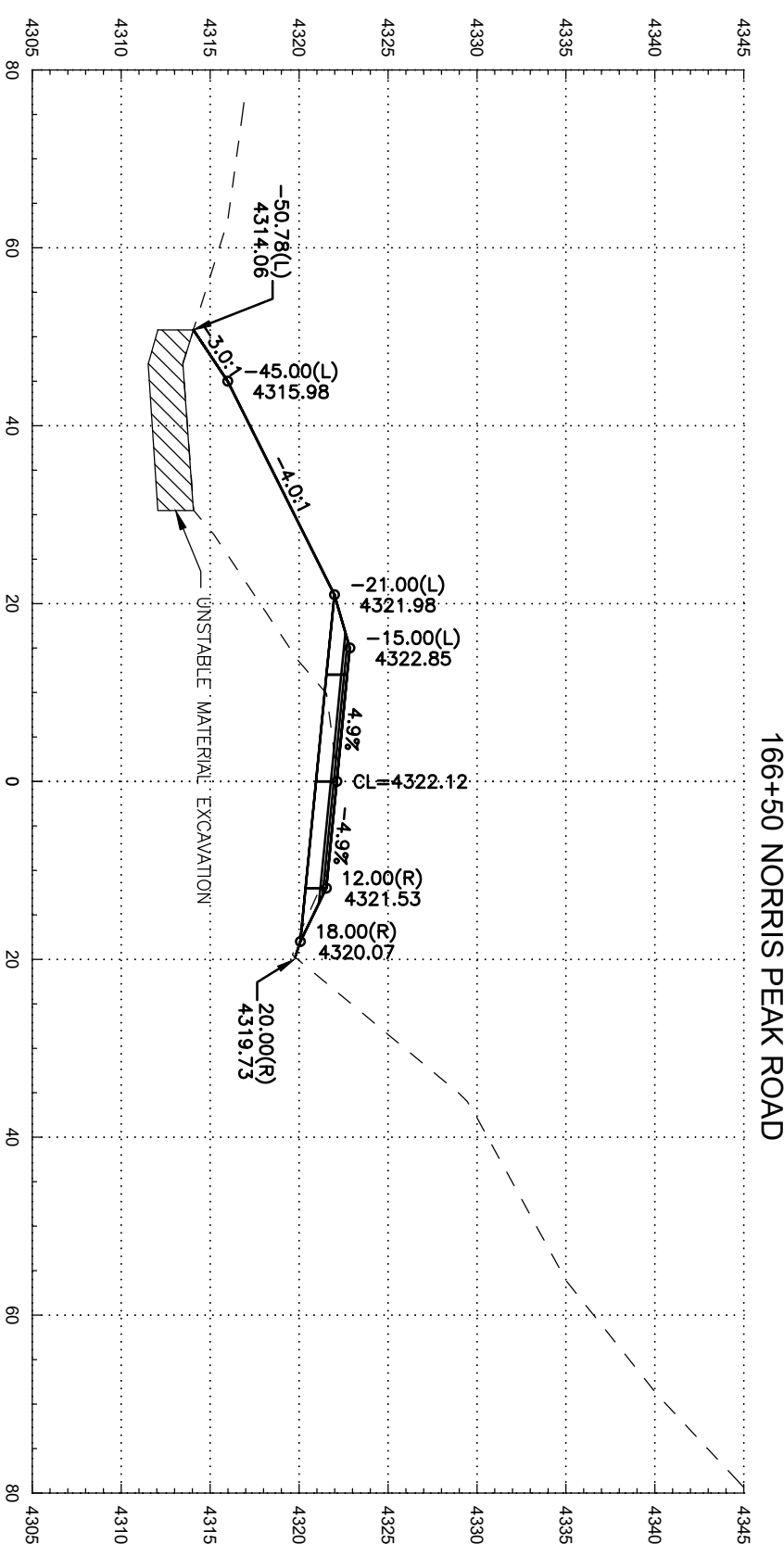
165+25 NORRIS PEAK ROAD

STATE OF SOUTH DAKOTA	PROJECT PH 804(120)	SHEET 68	TOTAL SHEETS 75
-----------------------	---------------------	----------	-----------------

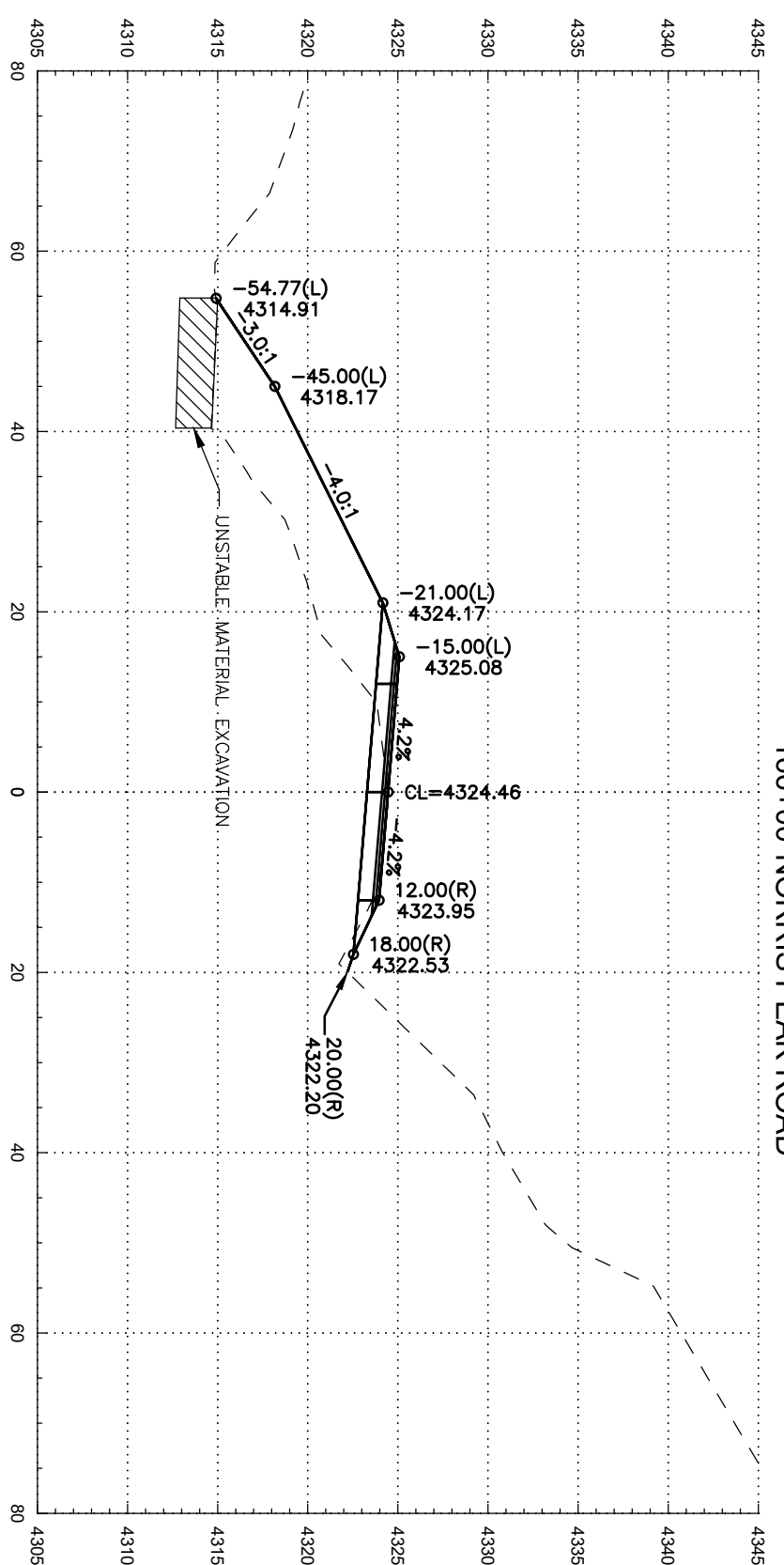
Plotting Date: January 19, 2022







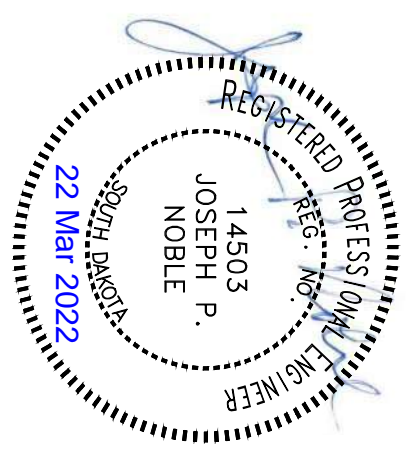
166+50 NORRIS PEAK ROAD



166+00 NORRIS PEAK ROAD

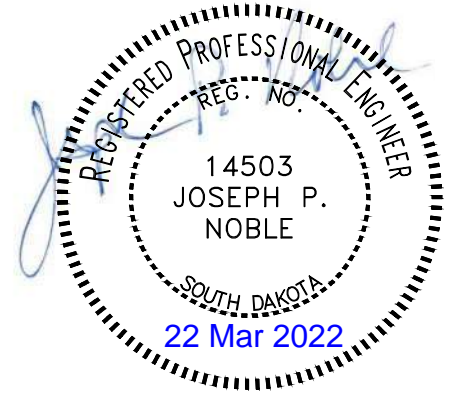
STATE OF SOUTH DAKOTA	PROJECT PH 804(120)	SHEET 69	TOTAL SHEETS 75
-----------------------	---------------------	----------	-----------------

Plotting Date: January 19, 2022

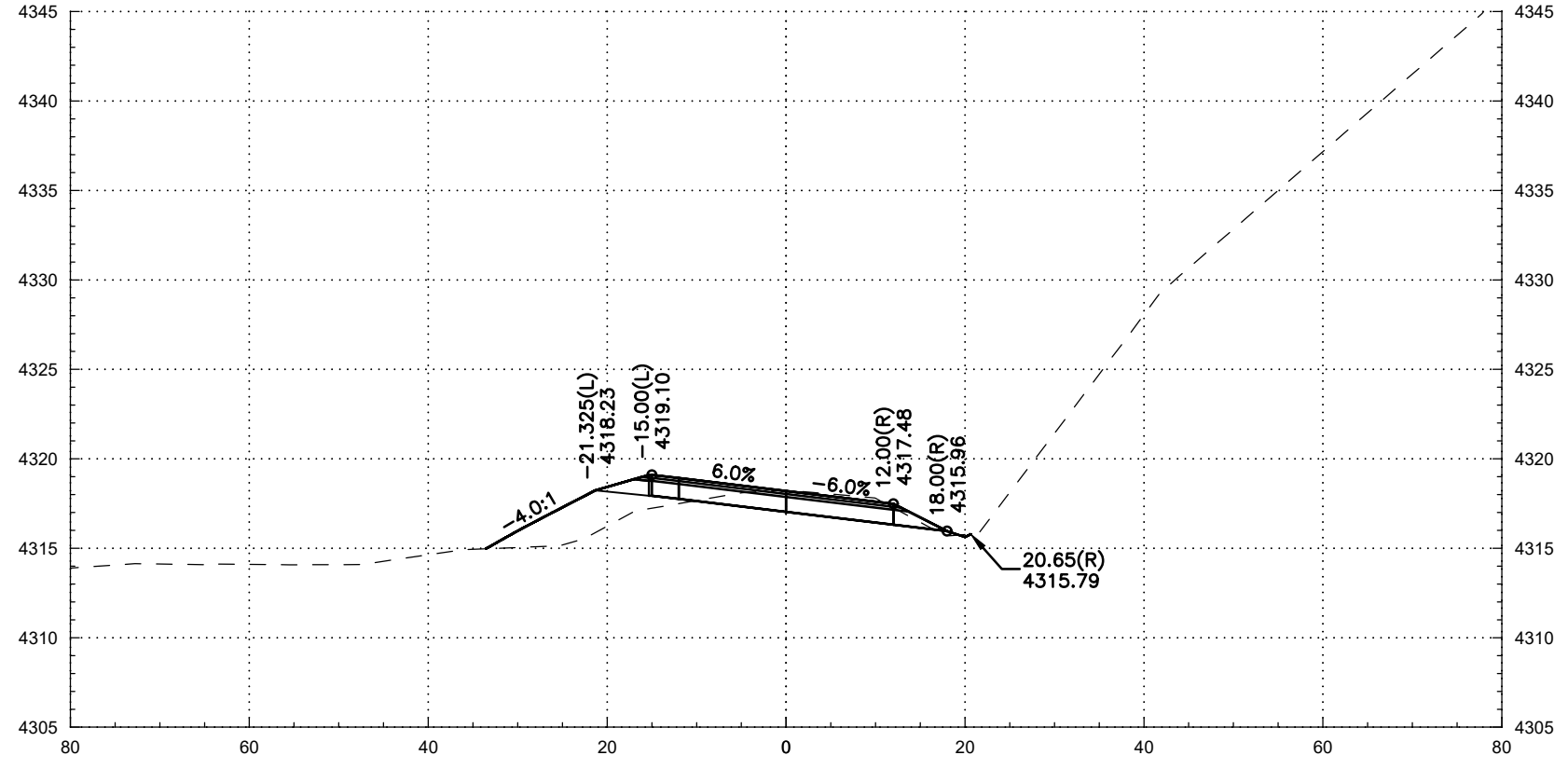


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	70	75

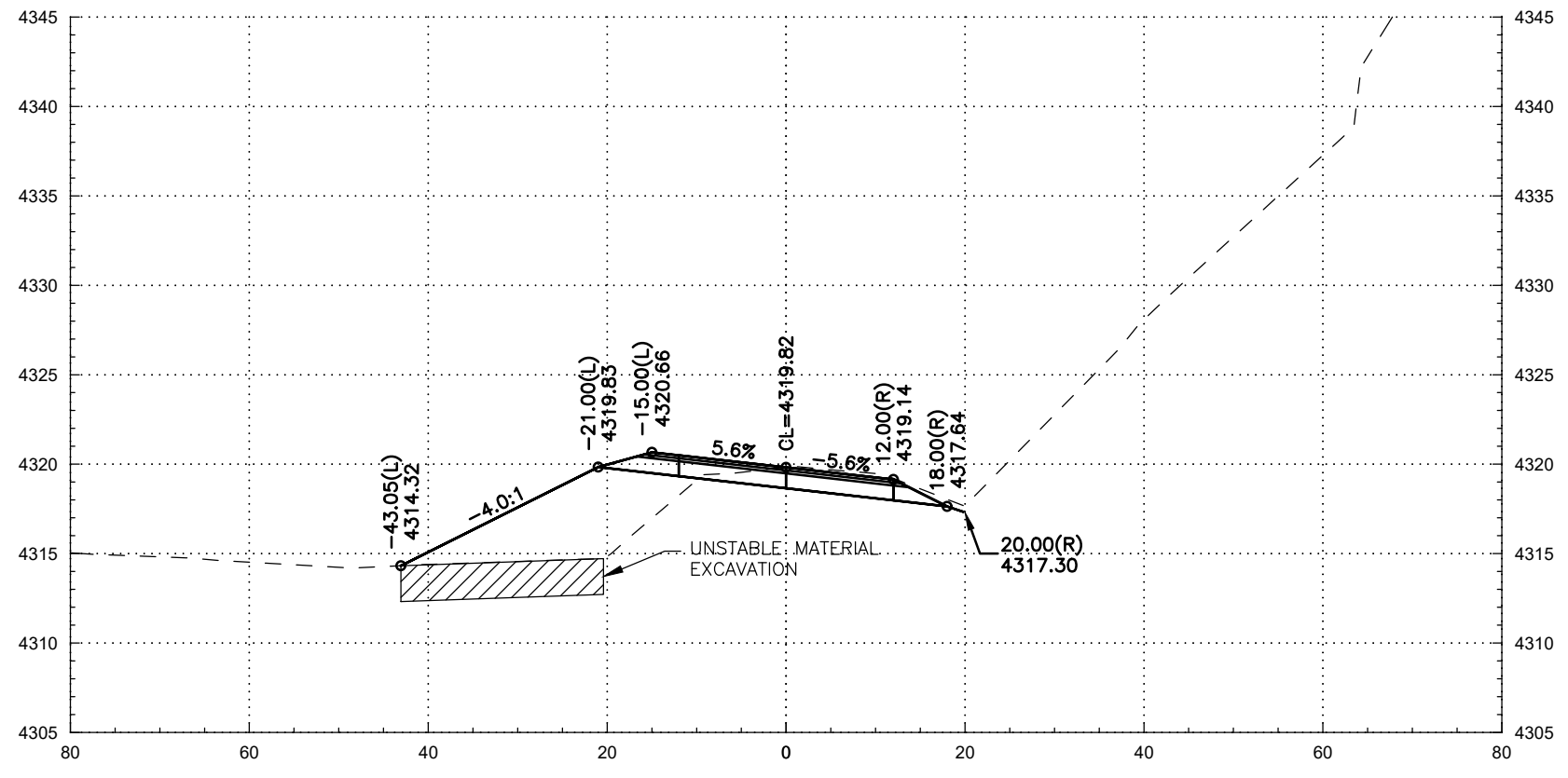
Plotting Date: January 19, 2022



### 167+50 NORRIS PEAK ROAD

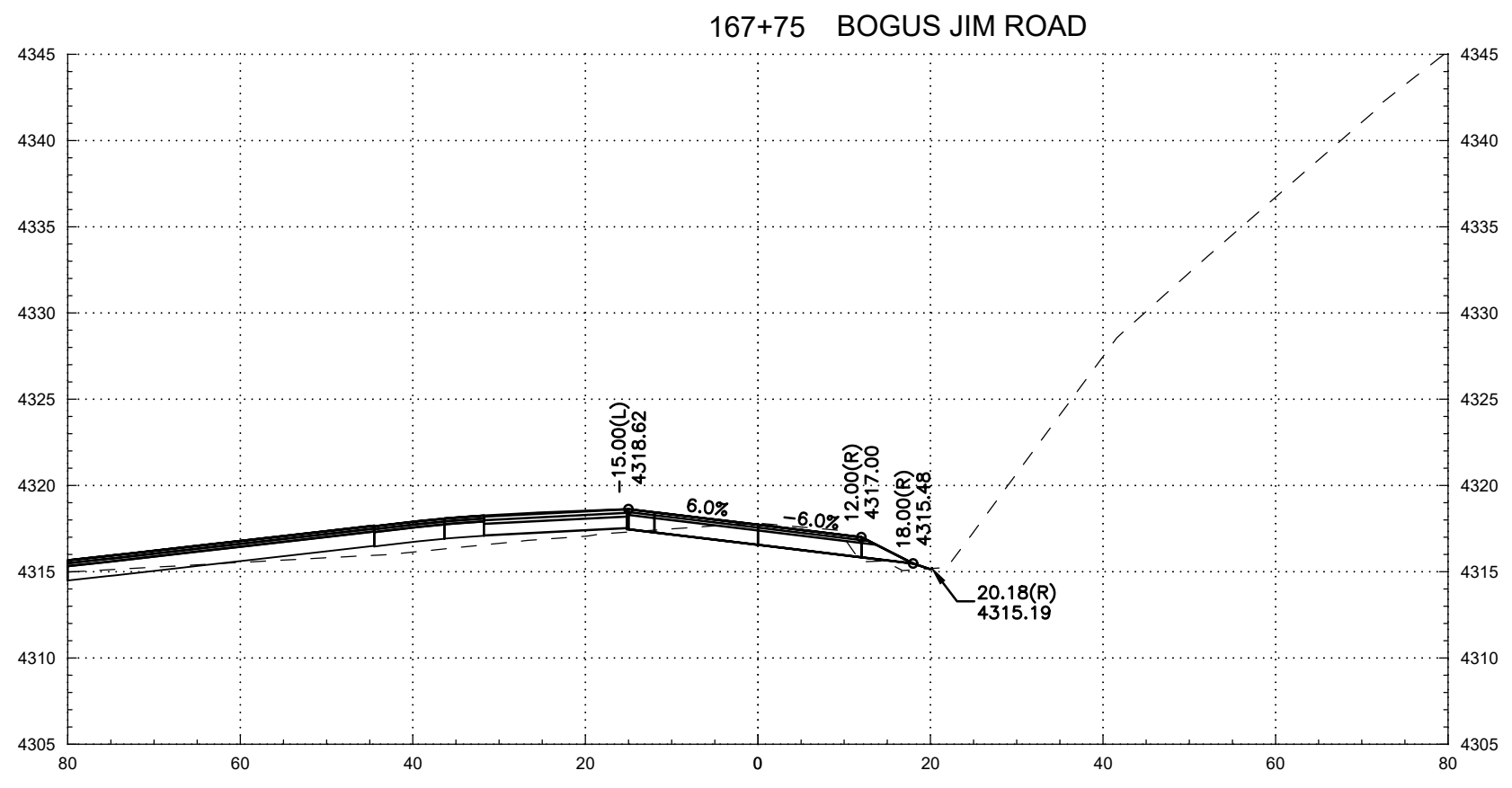
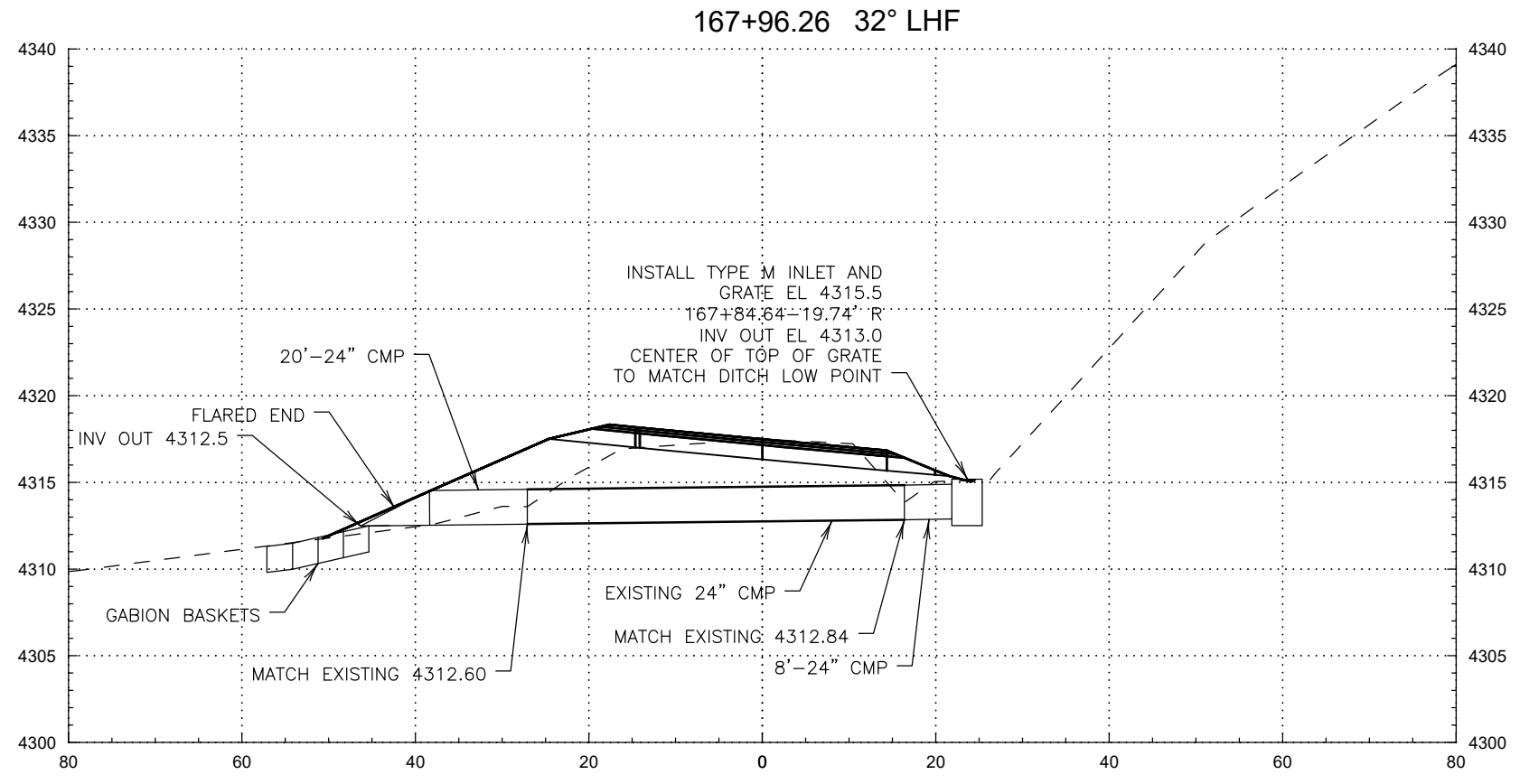
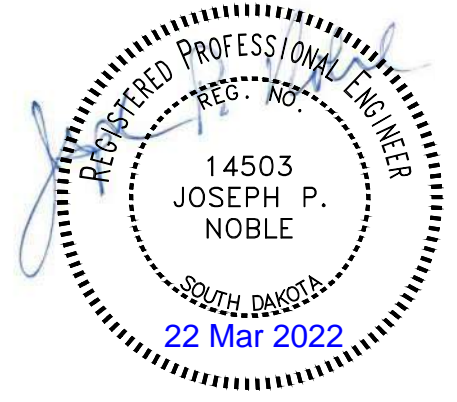


### 167+00 NORRIS PEAK ROAD



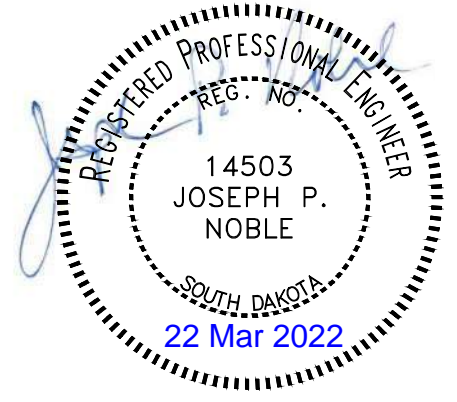
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	71	75

Plotting Date: January 19, 2022

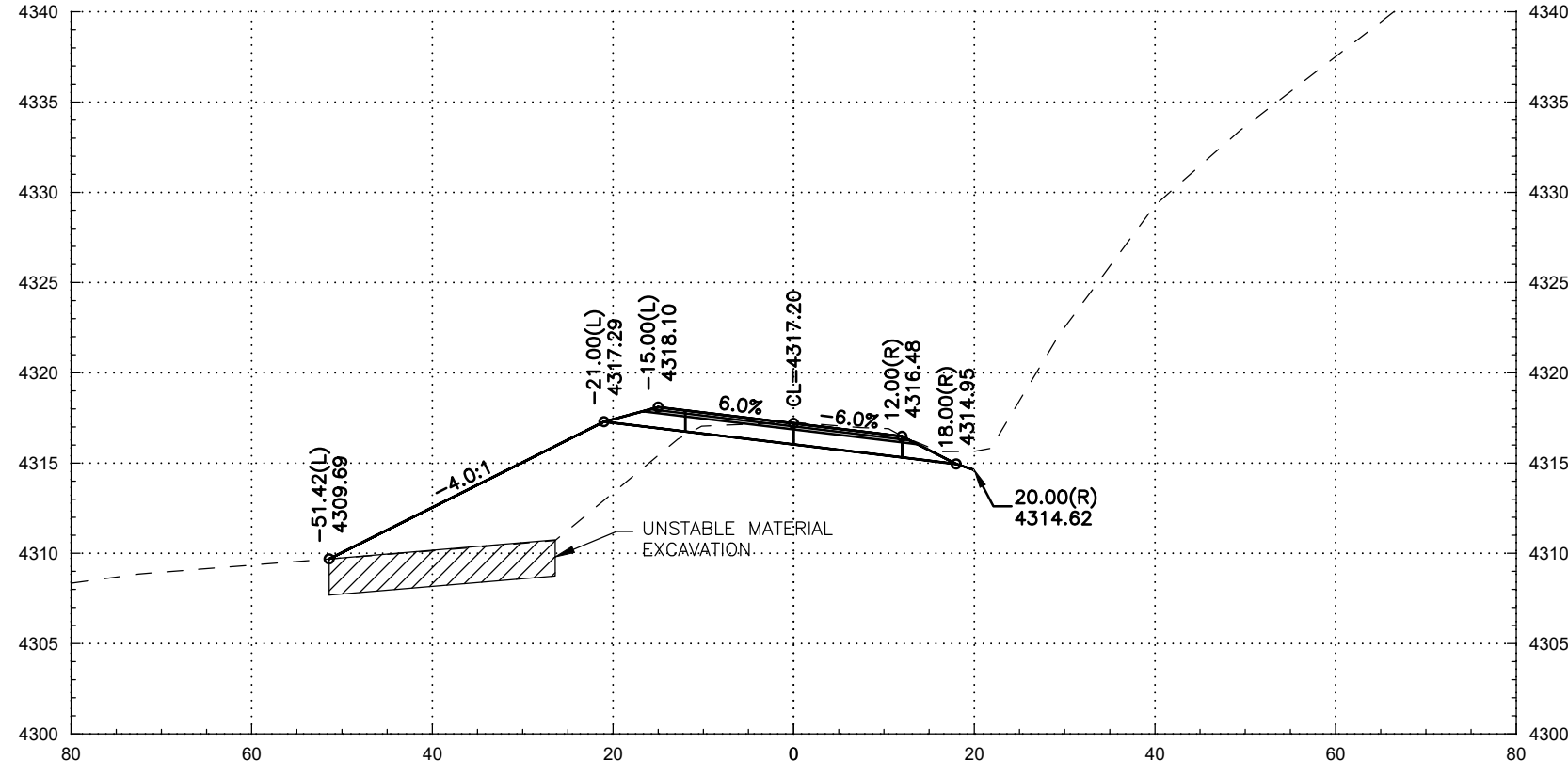


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	72	75

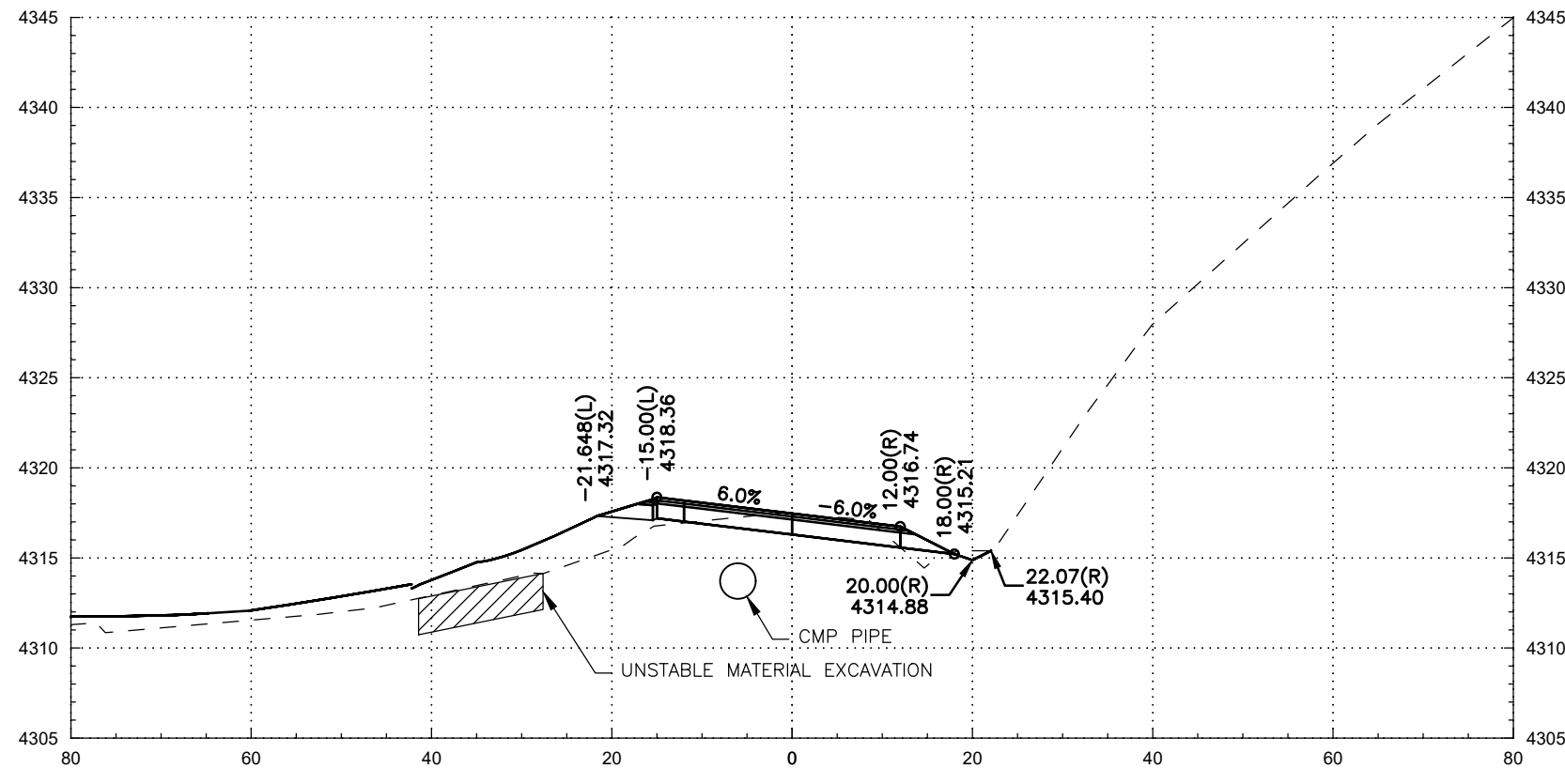
Plotting Date: January 19, 2022



### 168+50 NORRIS PEAK ROAD



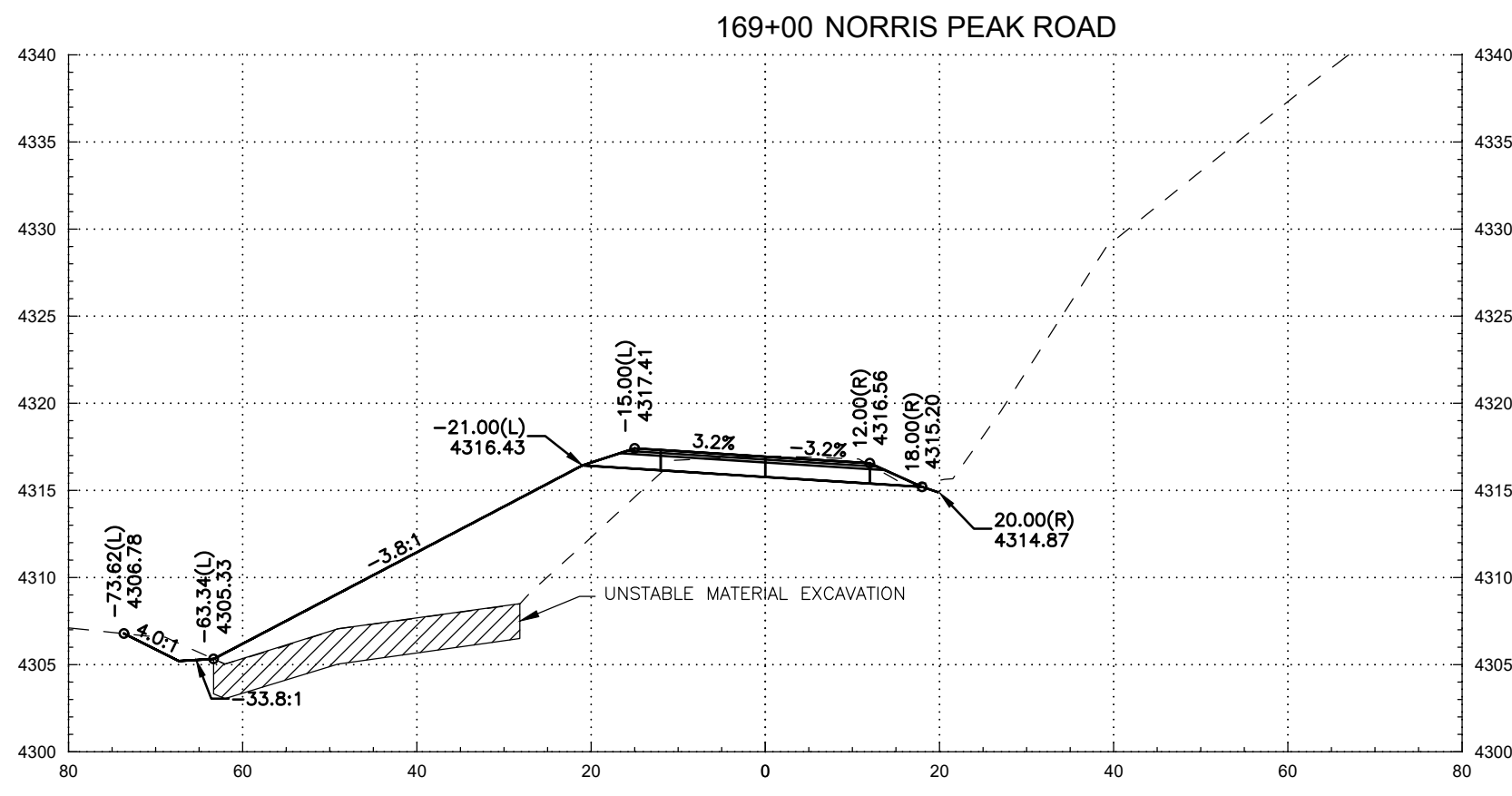
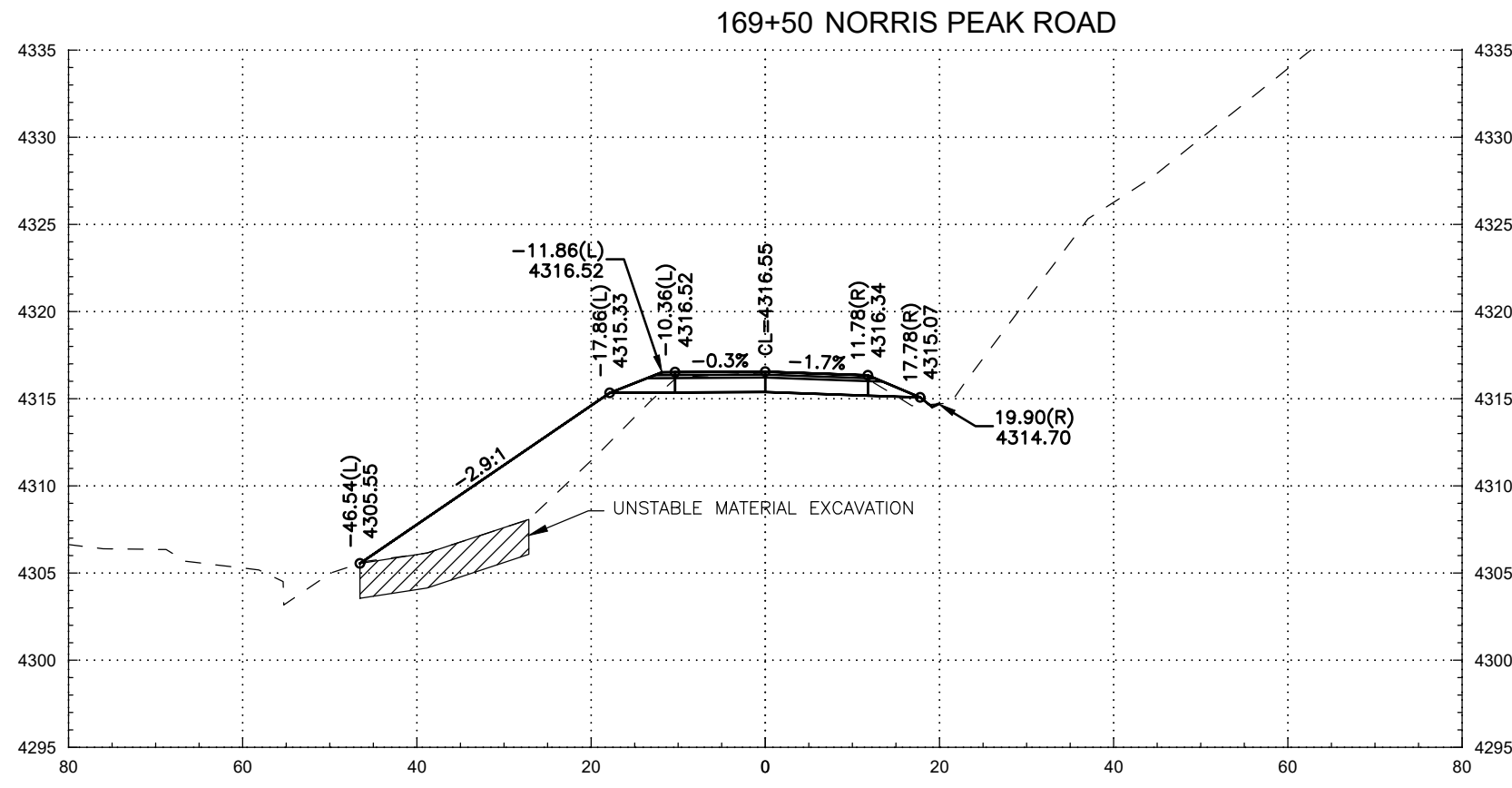
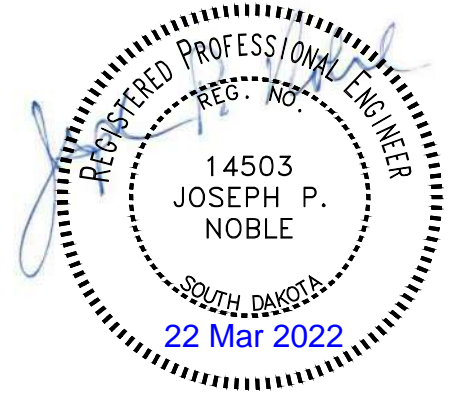
### 168+00 NORRIS PEAK ROAD





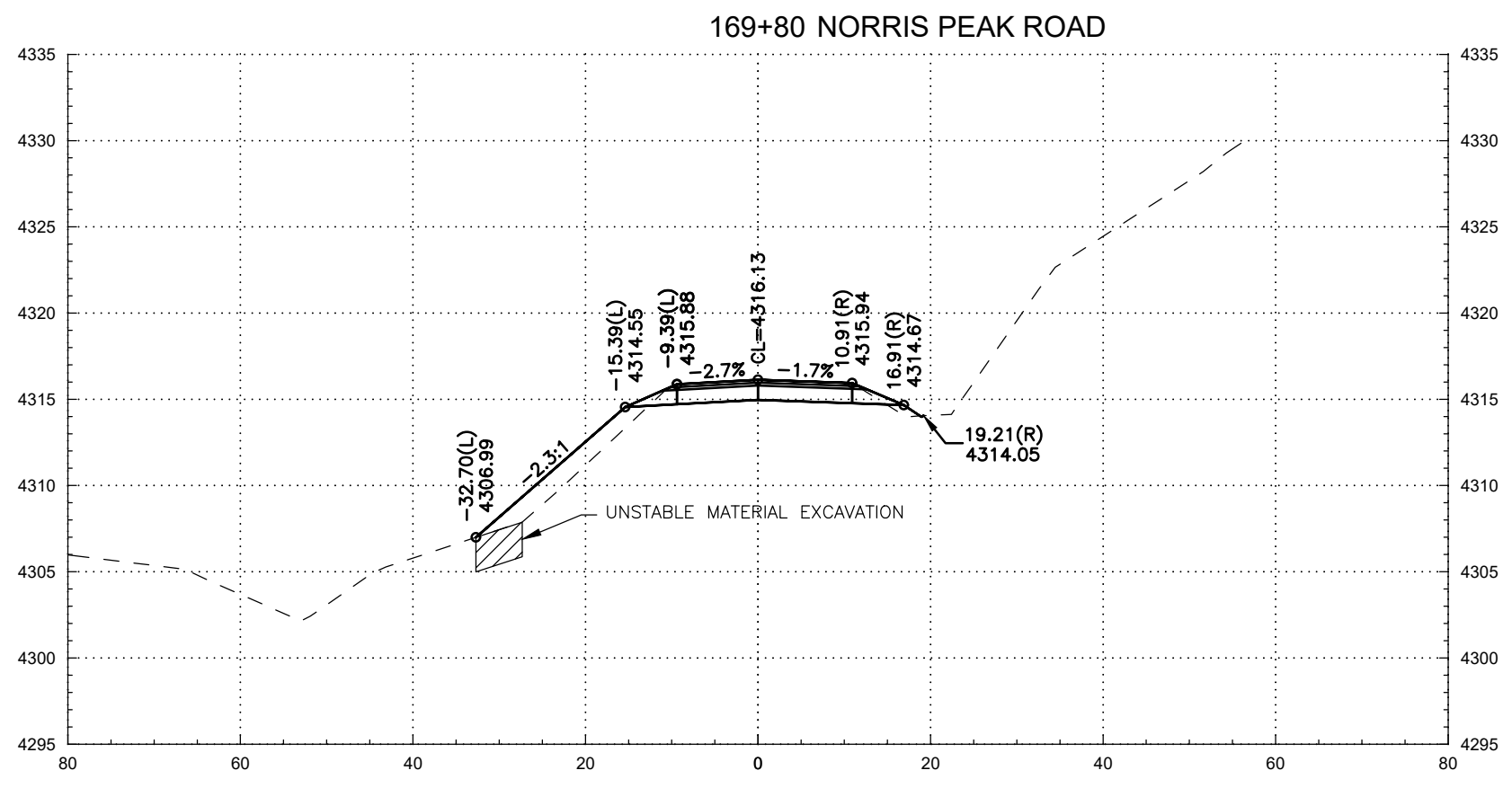
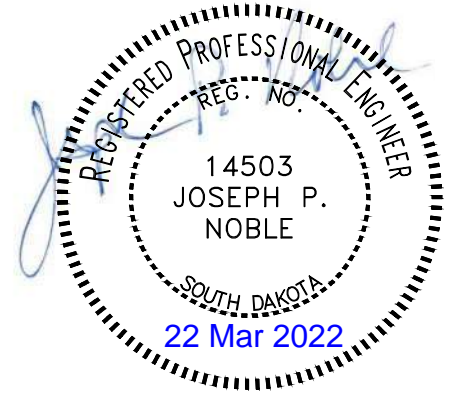
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	73	75

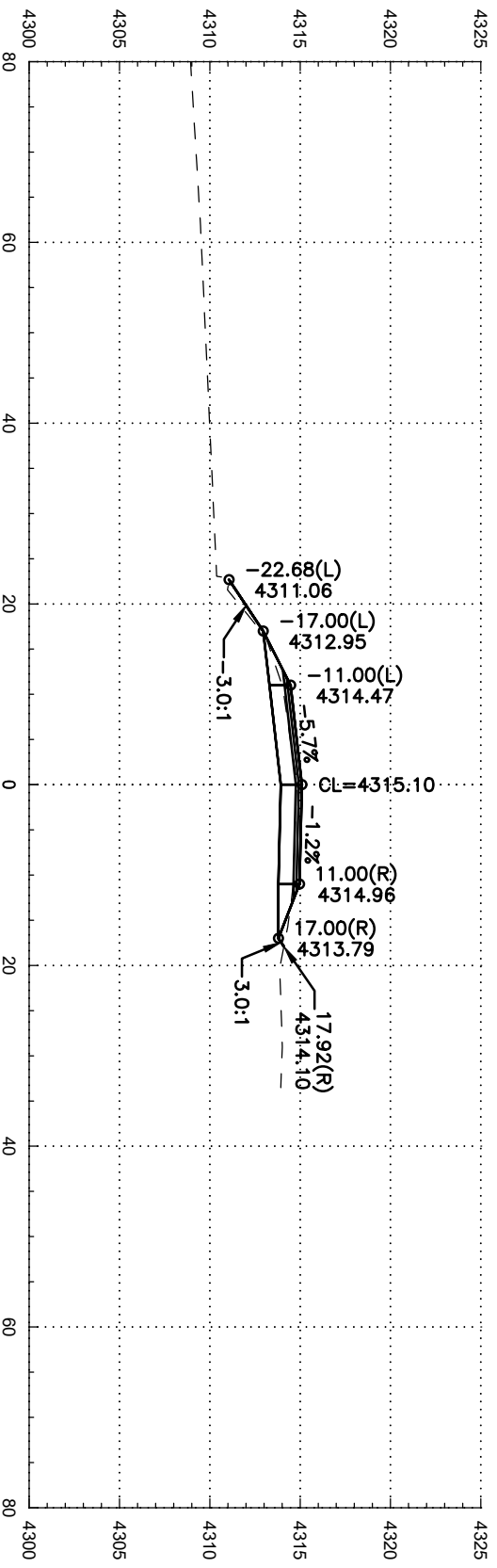
Plotting Date: January 19, 2022



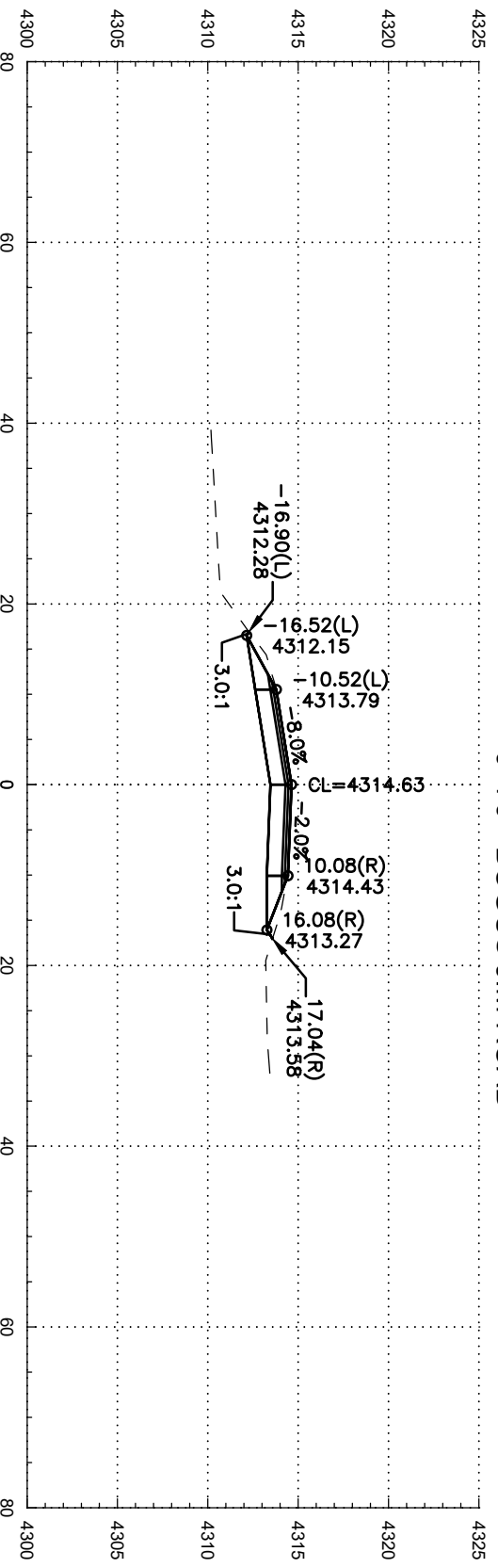
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 8041(20)	74	75

Plotting Date: January 19, 2022





1+00 BOGUS JIM ROAD



0+70 BOGUS JIM ROAD

STATE OF SOUTH DAKOTA	PROJECT PH 8041(20)	SHEET 75	TOTAL SHEETS 75
-----------------------	---------------------	----------	-----------------

Plotting Date: January 19, 2022

