

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	1	31

Plotting Date: 05/11/2021

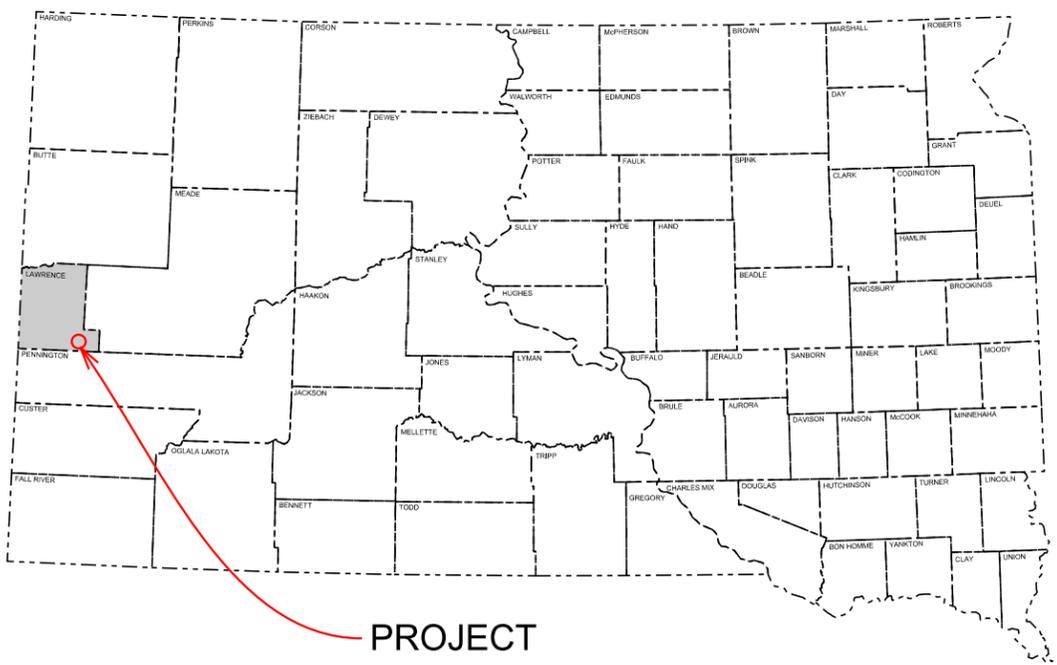
PROJECT 385-451
US HIGHWAY 385
LAWRENCE COUNTY

EROSION REPAIR
PCN i6ae

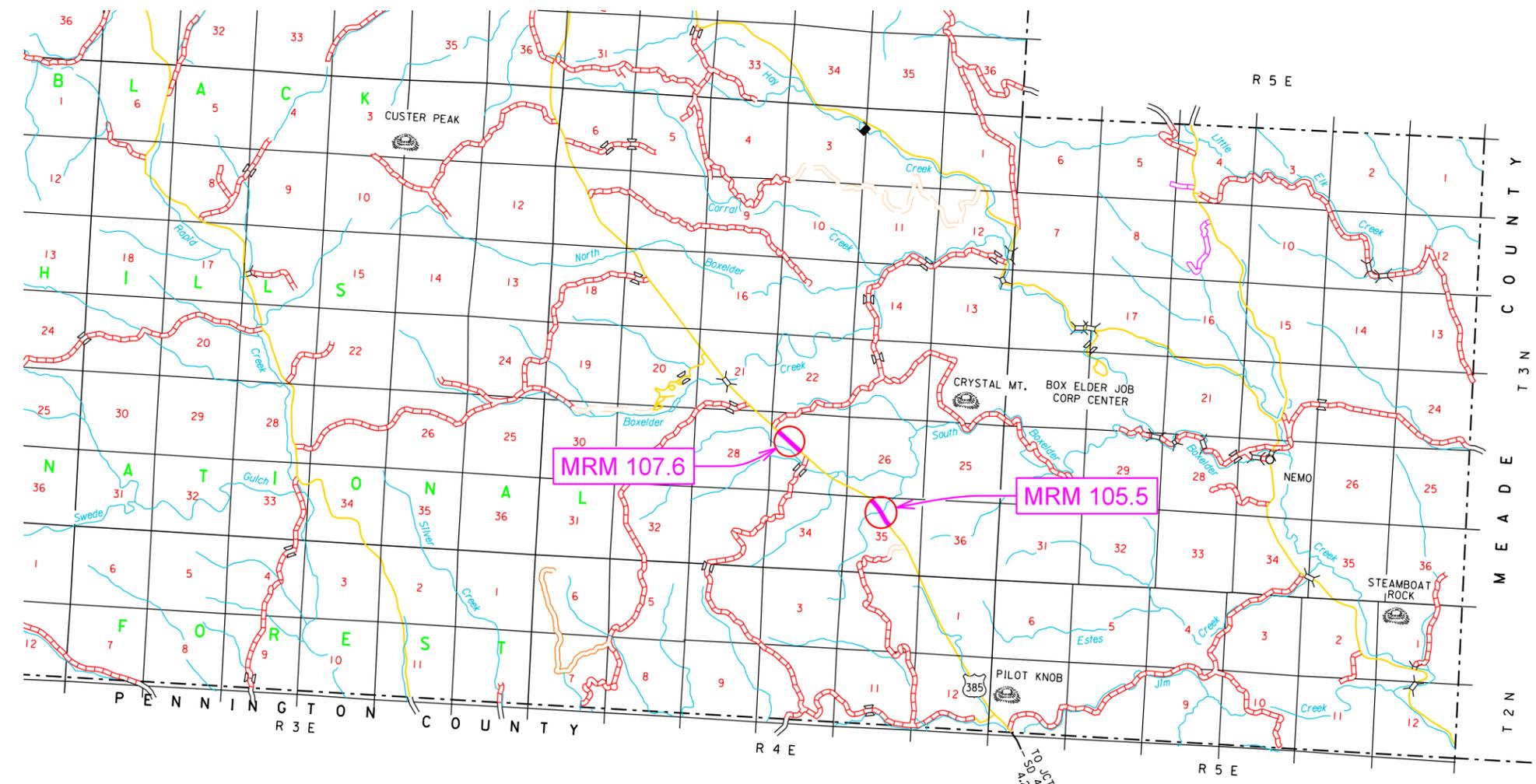
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Plot Scale - 1:200



PROJECT



DESIGN DESIGNATION

AADT (2020)	2053
AADT (2040)	2778
DHV	455
D	51 %
DHV T%	2.8 %
AADT T%	6.2 %
V	55 mph

STORM WATER PERMIT
No Required

Plotted From - TRR011610

File - ...Hwy 385_erosion1Title.dgn

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	321.3	SqYd
110E6230	Remove W Beam Guardrail for Reset	337.5	Ft
120E0010	Unclassified Excavation	489	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1010	Base Course	280.0	Ton
320E1200	Asphalt Concrete Composite	102.6	Ton
630E2110	Beam Guardrail Post and Block	108	Each
630E5160	Reset W Beam Rail	337.5	Ft
633E1220	High Build Waterborne Pavement Marking Paint, 4" White	200	Ft
633E1222	High Build Waterborne Pavement Marking Paint, 4" Yellow	125	Ft
634E0010	Flagging	100.0	Hour
634E0110	Traffic Control Signs	459.6	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	1	Each
634E0600	4" Temporary Pavement Marking Tape Type I	144	Ft
634E0640	Temporary Pavement Marking	2,400	Ft
634E0900	Portable Temporary Traffic Control Signal	2	Unit
700E0310	Class C Riprap	690.3	Ton
720E1015	Bank and Channel Protection Gabion	99.0	CuYd
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	260	Ft
831E0110	Type B Drainage Fabric	482	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 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.

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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 (DENR) 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 E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

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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

State Historic Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

Action Taken/Required:

All earth disturbing activities 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.

The Contractor is responsible 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 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 quantity of Water for Embankment is 6 MGal. No separate payment will be made for the Water for Embankment and all costs associated will be incidental to the contract unit price per cubic yard of "Unclassified Excavation".

CLEARING - MRM 107.6

The Contractor is encouraged to visit the project location.

Before clearing activities begin, the Contractor will contact the Engineer to identify what trees are to be cleared on the project.

Trees will be cut to a maximum height of 3" above the ground. The Contractor will dispose of the timber.

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.

If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor will contact the Project Engineer to determine modifications that will be necessary to avoid utility impacts.

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL – MRM 105.5

Station	to	Station	L/R	Quantity (SqYd)
187+04		187+94		321.3
Total:				321.3

UNCLASSIFIED EXCAVATION

The plans quantity for "Unclassified Excavation" as shown in the Estimate of Quantities will be the basis of payment for this item.

Waste material will be incorporated into the inslopes around the Bank and Channel Protection Gabions and the Riprap.

Embankment/Undercut compaction will be to the satisfaction of the Engineer.

TABLE OF UNCLASSIFIED EXCAVATION

MRM	L/R	Quantity (CuYd)
105.5		359
107.6	L	130
Total:		489.

TABLE OF SURFACING - MRM 105.5

Station to Station	Base Course (Ton)	Asphalt Concrete Composite (Ton)
287+04	240	102.6
gabion undercut	40	
Total:		280 102.6

Base Course compaction will be to the satisfaction of the Engineer.

TABLE OF BANK AND CHANNEL PROTECTION GABIONS AND DRAINAGE FABRIC – MRM 105.5

Station to Station	L/R	Bank and Channel Protection Gabion (CuYd)	Type B Drainage Fabric (SqYd)
187+24 to 187+74	L	37	46
187+24 to 187+74	R	62	56
Totals:		99.0	102

TABLE OF RIPRAP AND DRAINAGE FABRIC - MRM 107.6

Station to Station	L/R	Class C Riprap (Ton)	Type B Drainage Fabric (SqYd)
278+88 to 279+47	L	690.3	380
Totals:		690.3	380

TABLE OF GUARDRAIL

Location	L/R	Remove W Beam Guardrail for Reset (Ft)	Reset W Beam Guardrail (Ft)	Beam Guardrail Post & Block (Each)
MRM 105.5	L	125	125	40
MRM 105.5	R	125	125	40
MRM 107.6	L	87.5	87.5	28
Totals:		337.5	337.5	108

The guardrail posts will be 7' long with 3.125' post spacing. The guardrail post will be placed at the break point of the inslope.

REMOVE AND REPLACE TOPSOIL

Topsoil will be salvaged and stockpiled prior to constructing the following: Bank and Channel Protection Gabion and Riprap areas. Limits of this work, depth of salvage, and stockpile location will be directed by the Engineer. Following completion of construction, topsoil will be spread evenly over the disturbed areas.

All costs associated with removing and replacing the topsoil will be incidental to the contract lump sum price for "Remove and Replace Topsoil".

EROSION CONTROL

The estimated area requiring erosion control is 3,085 square feet. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, mycorrhizal inoculum, fertilizing, and fiber mulching will be incidental to the contract lump sum price for "Erosion Control".

The limits of erosion control work will be determined by the Engineer during construction.

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 lump sum price for "Erosion Control".

The mycorrhizal inoculum will be as shown below or an approved equal:

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 www.mycorrhizae.com
AM 120 Multi Species Blend	Reforestation Technologies Int. Gilroy, CA Phone: 1-800-784-4769 www.reforest.com

EROSION CONTROL (Cont.)

Fertilizing

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

The fertilizer will be applied at a rate of 1,500 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:

Product	Manufacturer
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 www.sustane.com
Perfect Blend	Perfect Blend, LLC Bellevue, WA Phone: 1-866-456-8890 www.perfect-blend.com

Permanent Seeding

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

Type F Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	28
Green Needlegrass	Lodorm, AC Mallard Ecovar	16
Sideoats Grama	Butte, Pierre	12
Blue Grama	Bad River	8
Oats or Spring Wheat: April through May; Winter Wheat: August through November		40
Total:		104

EROSION CONTROL (Cont.)

Fiber Mulching

Fiber mulch will be applied in a separate operation following permanent seeding.

An additional 2% by weight of tackifier will be added to the fiber mulch product selected from the approved product list. If the product selected has guar gum tackifier included, then the additional 2% of tackifier will be guar gum. If the product selected has synthetic tackifier included, then the additional 2% of tackifier will be synthetic.

Fiber mulch will be applied at the rate of 3,000 pounds per acre.

The Contractor will allow the fiber mulch to cure a minimum of 18 hours prior to watering or any storm event to ensure proper cohesion between the soil and fiber particles.

All costs for the additional tackifier added to the fiber mulch including labor, equipment, and materials will be incidental to the contract lump sum price for "Erosion Control".

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

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

EROSION CONTROL WATTLE

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

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

Erosion control wattles will remain on the project to decompose.

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

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

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

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TABLE OF EROSION CONTROL WATTLE

Station	L/R	Diameter (Inch)	Location	Quantity (Ft)
187+07 to 187+36	L	12	slope	30
187+61 to 187+90	L	12	slope	30
187+11 to 187+41	R	12	slope	30
187+60 to 187+89	R	12	slope	30
278+76 to 279+64	L	12	slope	90
Additional Quantity:				50
Total:				260

SEQUENCE OF OPERATIONS

MRM 105.5

1. Set up traffic control with the following requirements/restrictions (Std. Plate 634.26):
2. Place erosion controls wattles

Phase 1

3. Remove guardrail.
4. Excavate for placement of bank & channel protection gabions.
5. Place bank & channel protection gabions.
6. Excavate material above the bank & channel protection gabions 10' wide. Reconstruct 2:1 slope above gabions by benching.

Phase 2

7. Remove the remaining surfacing and undercut 1' to centerline.
8. Place base course Add temp ramps to transition from pavement to gravel and back to pavement.
9. Switch traffic and complete steps 3 – 8.

Phase 3. (Std. Plate 634.30)

10. Complete asphalt surfacing
11. Complete guardrail.
12. Complete erosion control.
13. Complete pavement marking.
14. Remove traffic control.

MRM 107.6

Work to be started on a Monday and completed by Friday. 5 working days.

1. Set up traffic control with the following requirements/restrictions (Std. Plate 634.25) for overnight lane closer (Std. Plate 634.23) for daytime lane closure.
2. Place erosion controls wattles
3. Clear trees for placement of riprap.
4. Remove guardrail.
5. Excavate for placement of riprap
6. Place drainage fabric and riprap.
7. Complete guardrail.
8. Complete erosion control.
9. Remove traffic control.

Work areas may be worked on simultaneously. Contractor needs to place Barrels at 10' spacing where guardrail has been removed during non-working hours.

Contractor requests to deviate from the sequence of operations will be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation.

GENERAL TRAFFIC CONTROL

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

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

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

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.

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TEMPORARY PAVEMENT MARKING

Temporary flexible vertical markers (tabs) will be required on the top lift of asphalt concrete surfacing.

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.

Any temporary flexible vertical markers (tabs) with covers removed before the flush seal will be replaced prior to application of the flush seal. 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 (90' each) of temporary pavement marking are included in the estimate of quantities for completion the final asphalt concrete lift and uncovering the temporary flexible vertical markers (tabs) after application of the flush seal.

If the flush seal is eliminated, the application of the temporary pavement marking on top of the flush seal will be eliminated. No adjustment in the contract unit price for "Temporary Pavement Marking" will be made because of a variation in quantities.

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

Temporary pavement marking for stop lines will consist of 4" Temporary Pavement Marking Tape Type I. Placement of each 24" white stop line will be accomplished by placing six pieces of 4" x 12' tape adjacent to one another. Each workspace requires two stop lines which is an equivalent of approximately 144' of 4" tape (2 workspaces at 144' = 288'). Temporary pavement marking on centerline will consist of temporary flexible vertical markers (tabs) and will be used as depicted on standard plates 634.25 and 634.26 when the stop condition must remain in place during nighttime hours, 9:00 pm to 6:00 am (Estimate 2 workspaces remaining during nighttime hours x 2,200' per workspace = 4,400').

PORTABLE TEMPORARY TRAFFIC CONTROL SIGNAL

The Contractor will furnish, install, operate, and maintain a portable temporary traffic control signal during construction phases as determined by the Engineer. There will be one controller and one slave unit per location.

The portable temporary traffic control signal will be set up to dwell in red. Detection will be video, microwave, or radar. The green time may be adjusted as needed. The Engineer will contact the Region Traffic Engineer one week prior to activation to obtain the appropriate signal timings.

All vehicle signal heads will have backplates with retroreflective border. The vehicle signal head backplates will have a factory applied 3-inch wide yellow retroreflective border. Sheeting for the border will be Type IX or Type XI in conformance with ASTM D4956.

Signal backplates will be polycarbonate, aluminum, or aluminum-composite. Minimum material thicknesses are:

- Polycarbonate, 0.10-inch
- Aluminum, 0.06-inch
- Aluminum-Composite, 0.08-inch

Signal backplates will extend not less than 5 inches from the edge of the signal head at the top, bottom, and sides.

All traffic signal equipment and materials will meet the requirements of Sections 635 and 985 of the Specifications except the controller requirements.

All costs involved with constructing the portable temporary traffic control signal as specified above and on the plans, will be included in the contract unit price per unit for "Portable Temporary Traffic Control Signal".

TABLE OF TRAFFIC CONTROL DEVICES

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30"	5.2	10.4
R10-6	STOP HERE ON RED	2	24" x 36"	6.0	12.0
W1-4	REVERSE CURVE (L or R)	2	48" x 48"	16.0	32.0
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16.0	32.0
W3-3	SIGNAL AHEAD (symbol)	2	48" x 48"	16.0	32.0
W3-4	BE PREPARED TO STOP	4	48" x 48"	16.0	64.0
W8-1	BUMP	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	2	48" x 48"	16.0	32.0
W8-11	UNEVEN LANES	2	48" x 48"	16.0	32.0
W13-1P	ADVISORY SPEED (plaque)	4	30" x 30"	6.3	25.2
W16-2P	___ FEET (supplemental distance plaque)	4	30" x 24"	5.0	20.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			533.6

PAVEMENT MARKING PAINT

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

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

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 = 27.8 Gals/Mile
- Dashed 4" line = 7.6 Gal/Mile
- Glass Beads = 8 Lbs/Gal.

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

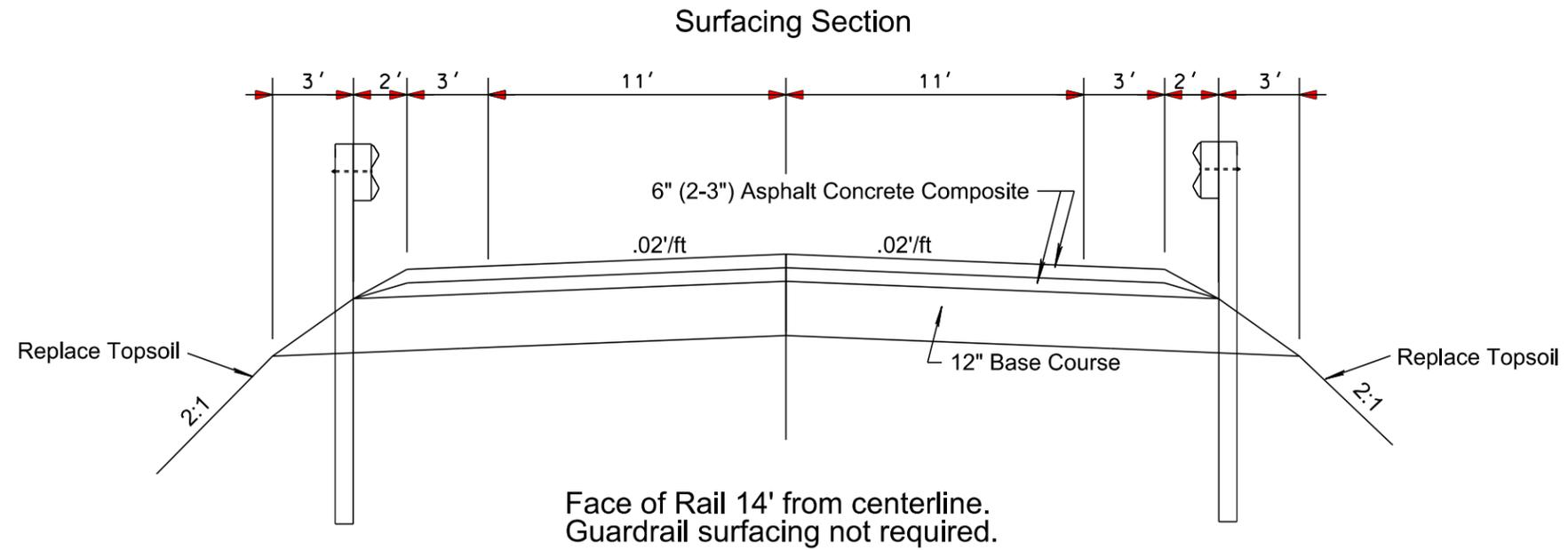
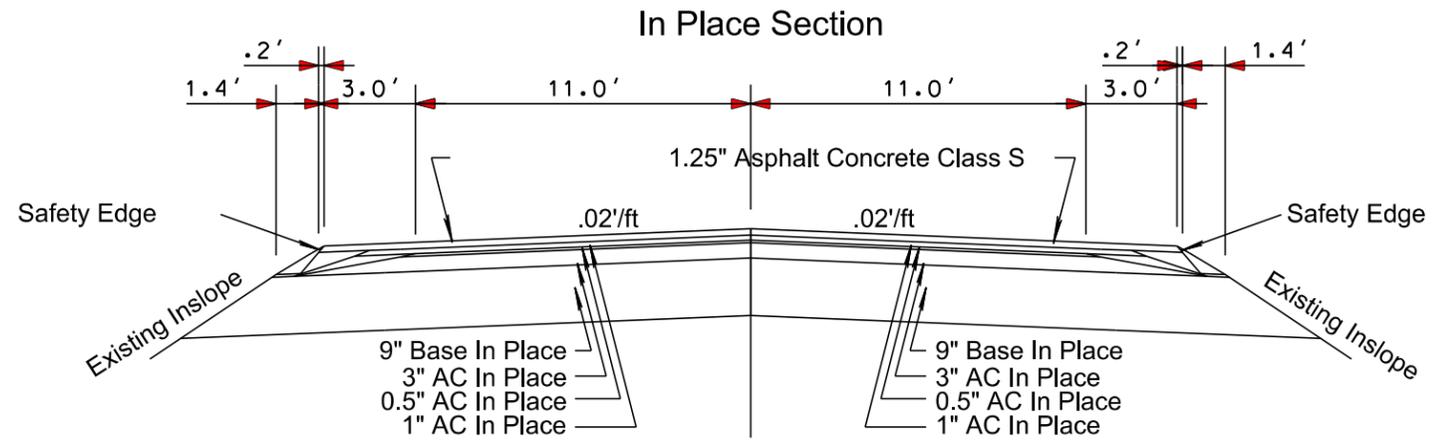
TABLE OF PAVEMENT MARKING

Location	Temporary Pavement Marking	Pavement Marking Tape, Type 1	High Build Waterborne Pavement Marking Paint (White)	High Build Waterborne Pavement Marking Paint (Yellow)
	Ft	Ft	Ft	Ft
MRM 105.5	2,580	144	200	130
MRM 105.6	2,400	144		
Totals:	4,980	288	200	130

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	8	31
Plotting Date: 05/11/2021			

Sta 278+04 to Sta 278+94



Plot Scale - 1:6

Plotted From - TRRC11610

Plotted From -

File - ...US385 erosion\fsae typ.dgn

TYPICAL SECTION MRM 107.6

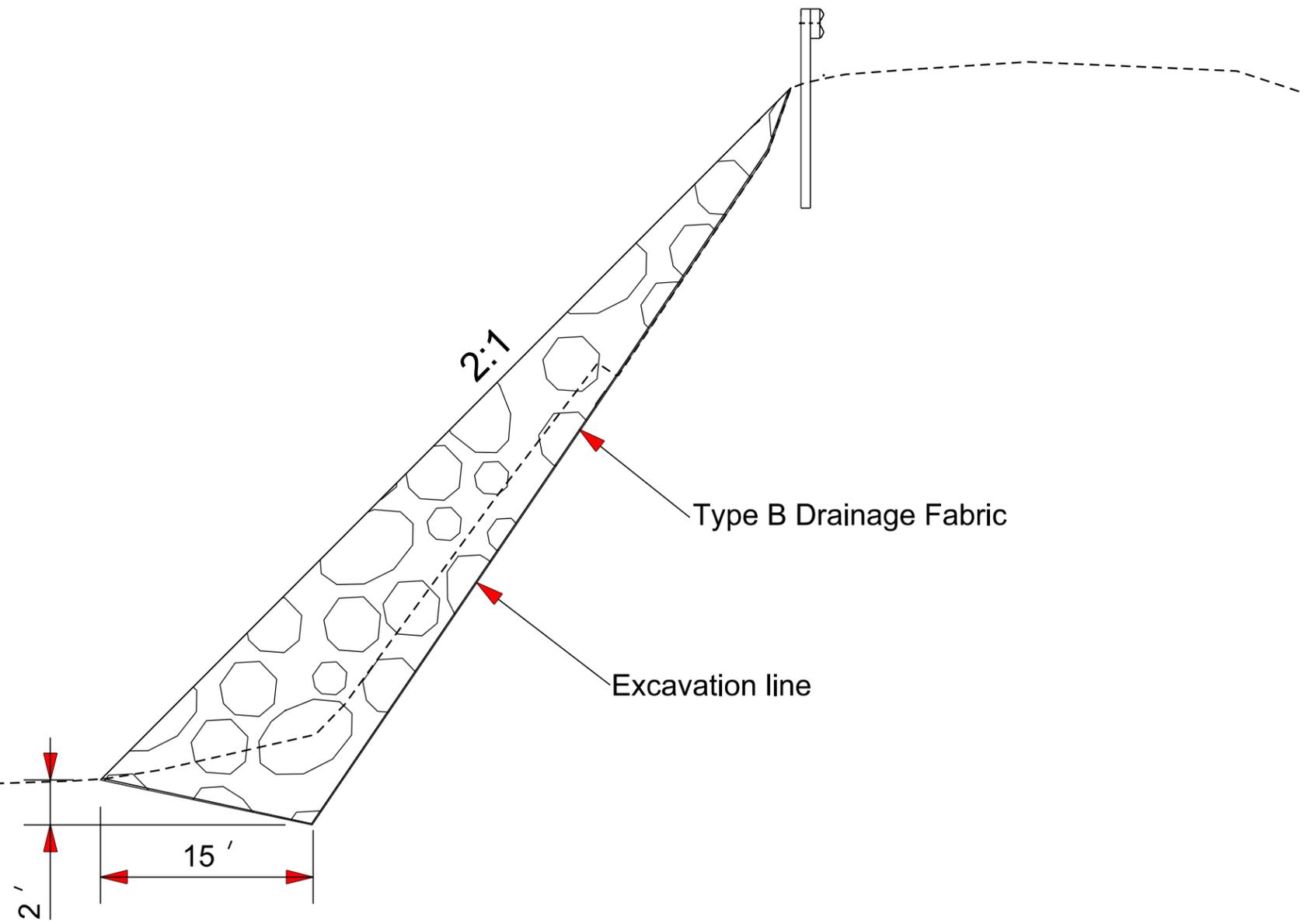
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	9	31
Plotting Date: 05/11/2021			

Plot Scale - 1:10

Plotted From - TRRC11610

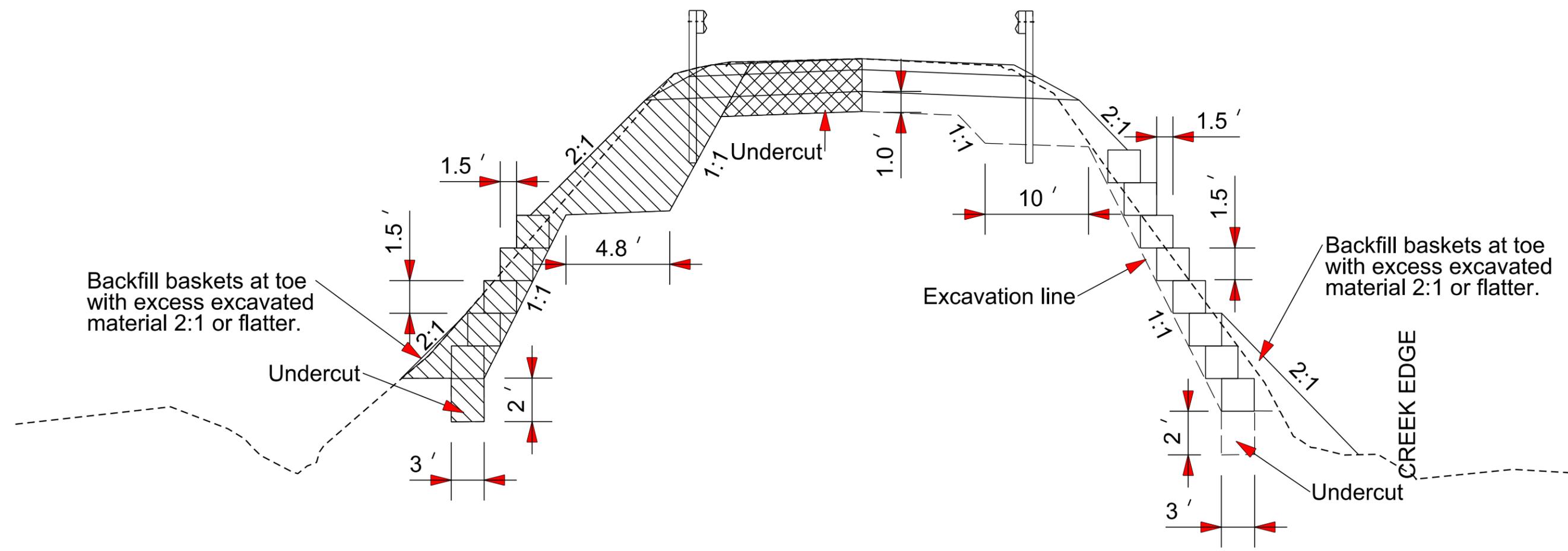
File - ...US385_erosion\esae typ.dgn

ROW



TYPICAL SECTION MRM 105.5

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	10	31
Plotting Date: 05/11/2021			



Backfill baskets at toe with excess excavated material 2:1 or flatter.

Undercut

Excavation line

Backfill baskets at toe with excess excavated material 2:1 or flatter.

CREEK EDGE

Undercut

-  Phase 1
-  Phase 2

Plot Scale - 1:10

Plotted From - TRRC11610

File - ...US885_erosion16ae typ.dgn

HORIZONTAL ALIGNMENT DATA

MAINLINE (MRM 105.5)

Type	Station		Northing	Easting
POB	186+58.71		147524.798	1022944.832
		TL= 21.08	N 28°03'28" W	
PI	186+79.79		147543.402	1022934.916
		TL= 62.08	N 28°33'05" W	
PI	187+41.88		147597.936	1022905.243
		TL= 62.44	N 28°55'14" W	
PI	188+04.31		147652.586	1022875.049
		TL= 30.40	N 28°49'19" W	
POE	188+34.71		147679.221	1022860.393

MAINLINE (MRM 107.6)

Type	Station		Northing	Easting
POB	278+28.97		153036.554	1015751.781
		TL= 45.42	N 48°53'48" W	
PI	278+74.39		153066.414	1015717.556
		TL= 80.81	N 48°30'43" W	
PI	279+55.20		153119.949	1015657.020
		TL= 78.44	N 48°25'35" W	
POE	280+33.65		153172.003	1015598.336

CONTROL DATA (MRM 105.5)

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
42			SPIKE, EAST SIDE APPROACH, END OF GRAIL	147802.938	1022816.270	5336.32
KE200			REBAR END OF GRAIL	147247.529	1023066.185	5330.68

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
Point	Station	Offset	Description	Northing	Easting	Elevation
36			SPIKE, EAST SIDE 50' SOUTH OF BENCHMARK RD	153291.833	1015496.566	5438.97
KE100			REBAR END OF G RAIL	152944.180	1015826.853	5438.57

LEGEND

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	12	31

Plotting Date: 05/11/2021

Plot Scale - 1:200

Plotted From - TRR011610

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

File - ...Hwy 385 erosionlegend.dgn

MRM 105.5

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	13	31

Plotting Date: 05/11/2021

187+04 to 187+94
Remove Asphalt Concrete

Remove W Beam Guardrail for Reset
Reset W Beam Guardrail
at the following locations:
187+21 to 187+77 L - 125'
187+21 to 187+77 R - 125'

Install Bank and Channel Protection Gabion
187+24 to 187+74 L - 37 CuYd
187+24 to 187+74 R - 62 CuYd

Install Type B Drainage Fabric
187+24 to 187+74 L - 46 SqYd
187+24 to 187+74 R - 56 SqYd

Install (12") Diameter Erosion Control Wattles
at the following locations:
187+07 L to 187+36 L 30 Ft
187+61 L to 187+90 L 30 Ft
187+11 R to 187+41 R 30 Ft
187+60 R to 187+89 R 30 Ft

Sec. 35 - T3N - R4E

Government Lot 6

R.O.W. Line

186+59 187+00 188+00 188+35

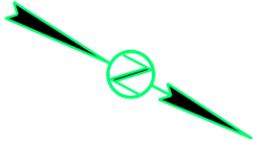
R.O.W. Line

1/4 Line
183+32.30

1/16 line

Government Lot 6

 Remove Asphalt Concrete Pavement



Plot Scale - 1"=40'

Plotted From - TTRC11610

File - ...Hwy 385 erosion105plan.dgn

MRM 107.6

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	14	31

Plotting Date: 05/11/2021

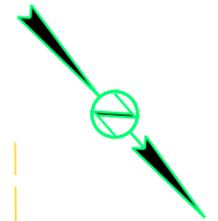
278+88 to 279+47
Remove W Beam Guardrail for Reset - 87.5'
Reset W Beam Guardrail - 87.5'

Install (12") Diameter Erosion Control Wattles
278+76 L to 279+64 L - 90 Ft

278+88 to 279+47
Install Class C RipRap (690.3 Ton)
Install Type B Drainage Fabric (380 SqYd)

Government Lot 7

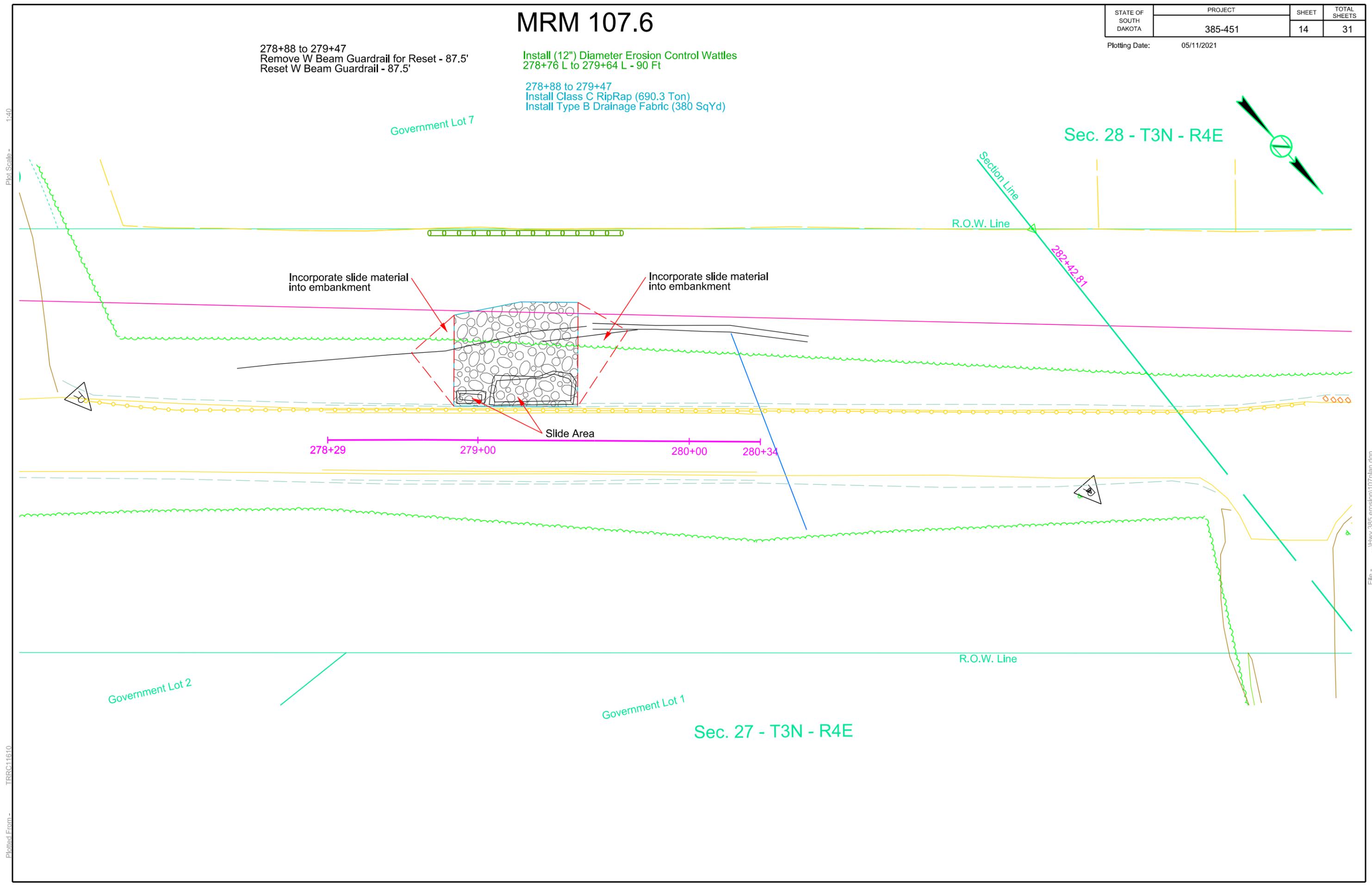
Sec. 28 - T3N - R4E

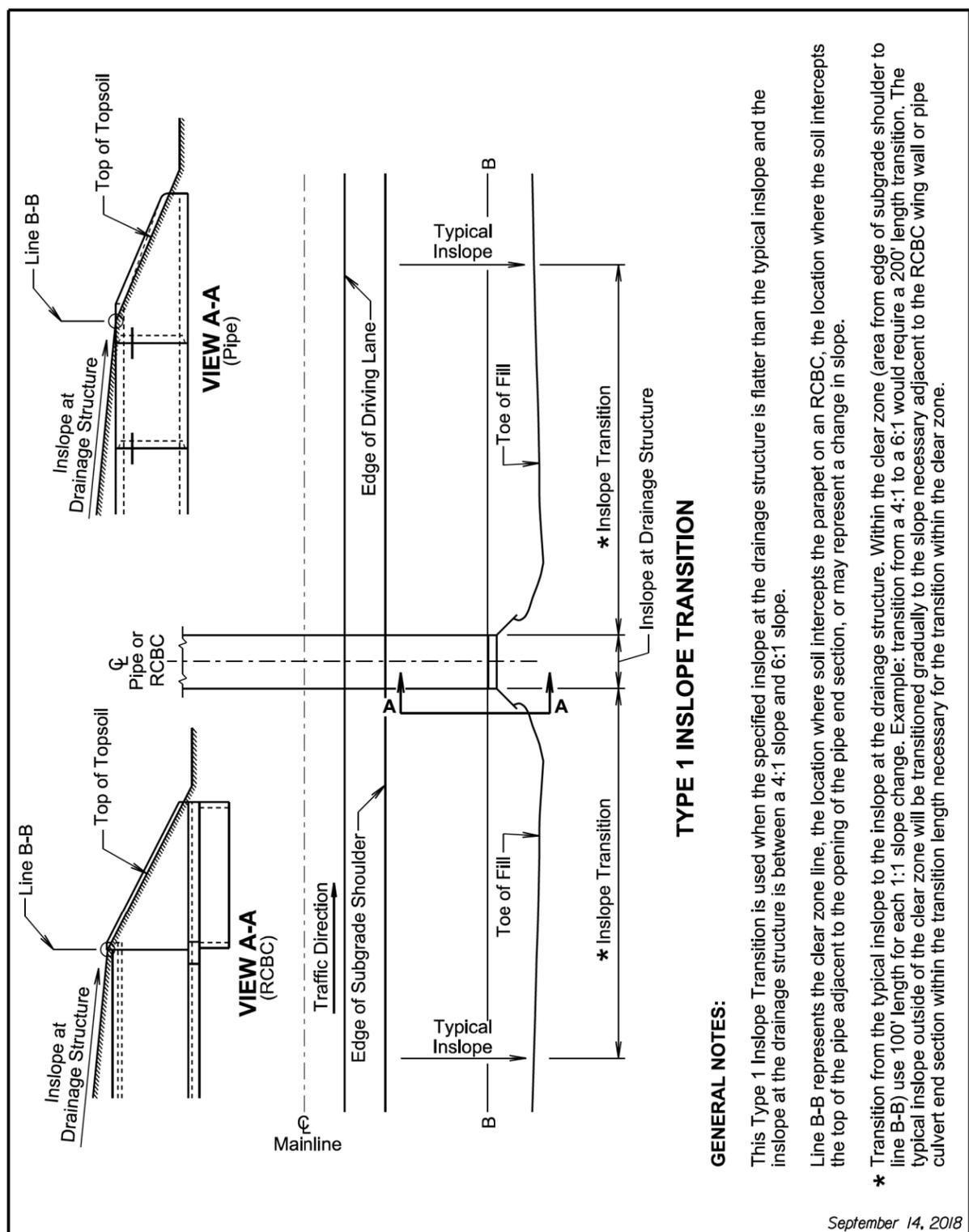


Plot Scale - 1:40

Plotted From - TRRC11610

File - ...Hwy 385 erosion107plan.dgn





TYPE 1 INSLOPE TRANSITION

GENERAL NOTES:

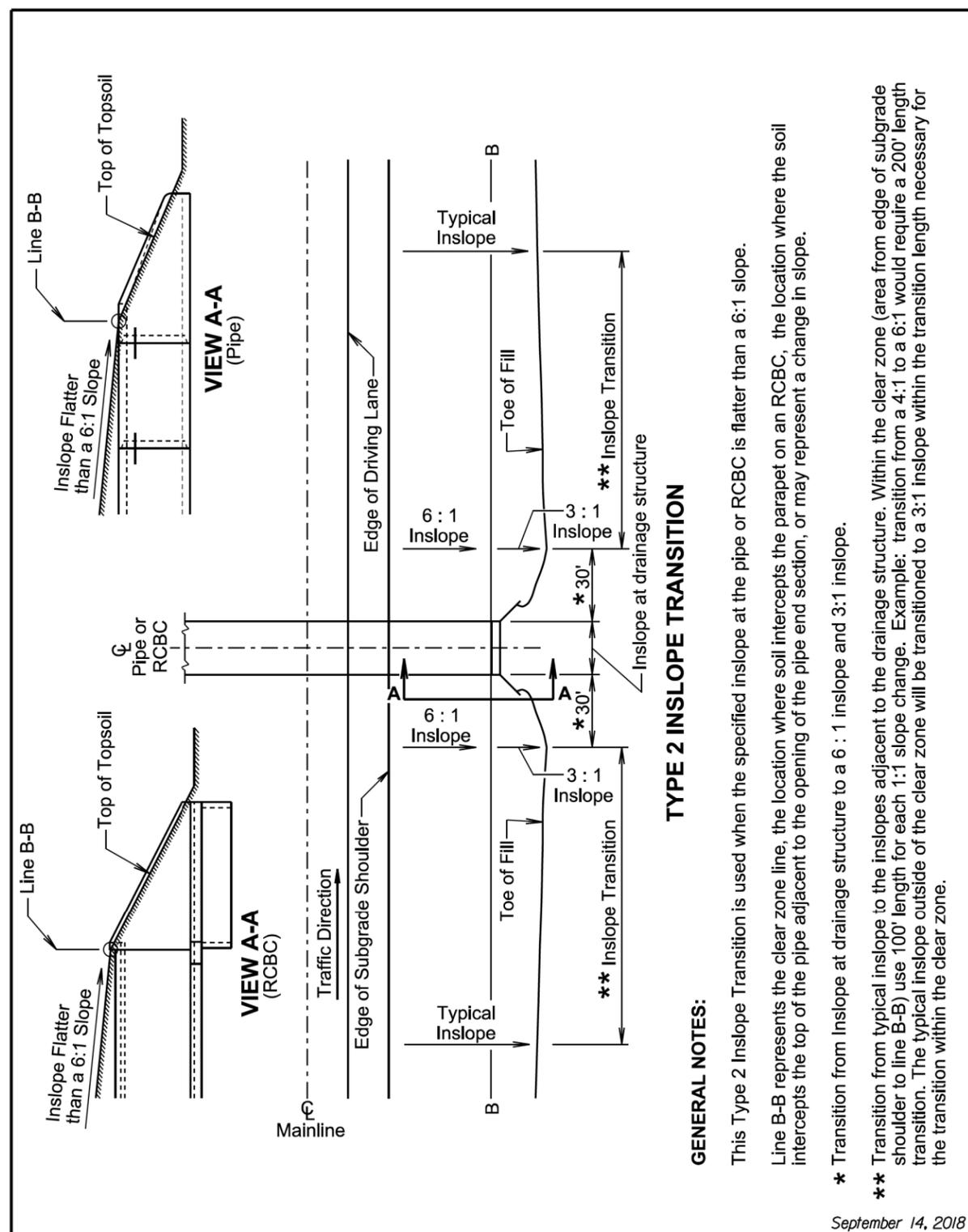
This Type 1 Inslope Transition is used when the specified inslope at the drainage structure is flatter than the typical inslope and the inslope at the drainage structure is between a 4:1 slope and 6:1 slope.

Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

* Transition from the typical inslope to the inslope at the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned gradually to the slope necessary adjacent to the RCBC wing wall or pipe culvert end section within the transition length necessary for the transition within the clear zone.

September 14, 2018

Published Date: 2nd Qtr. 2021	SDOT	INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS	PLATE NUMBER 120.05
			Sheet 1 of 2



TYPE 2 INSLOPE TRANSITION

GENERAL NOTES:

This Type 2 Inslope Transition is used when the specified inslope at the pipe or RCBC is flatter than a 6:1 slope.

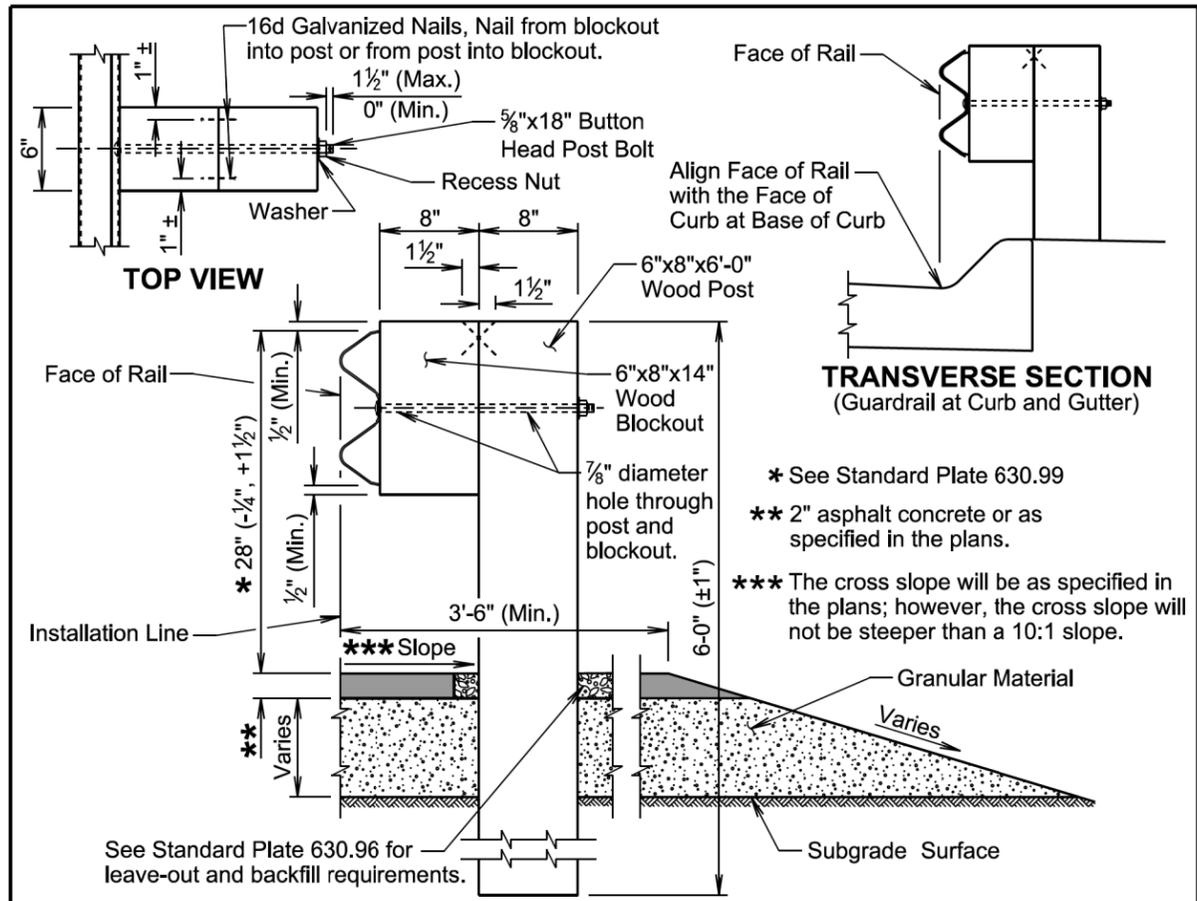
Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

* Transition from inslope at drainage structure to a 6 : 1 inslope and 3:1 inslope.

** Transition from typical inslope to the inslopes adjacent to the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned to a 3:1 inslope within the transition length necessary for the transition within the clear zone.

September 14, 2018

Published Date: 2nd Qtr. 2021	SDOT	INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS	PLATE NUMBER 120.05
			Sheet 2 of 2



GENERAL NOTES:

TRANSVERSE SECTION

Asphalt concrete will be the same type used elsewhere on the project or will be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete will conform to the Specifications for "Asphalt Concrete Composite".

Granular material will be the same type used elsewhere on the project or will be as specified in the plans. If granular material type is not specified in the plans, the material will conform to the Specifications for "Base Course". The granular material will be placed the same thickness as the mainline surfacing or as specified in the plans.

Topsoil is not shown in the transverse section drawing.

All W beam rail will be Type 1 and Class A (12 Ga.) unless specified otherwise in the plans.

W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used will be compatible with the total length of rail per site as shown in the plans.

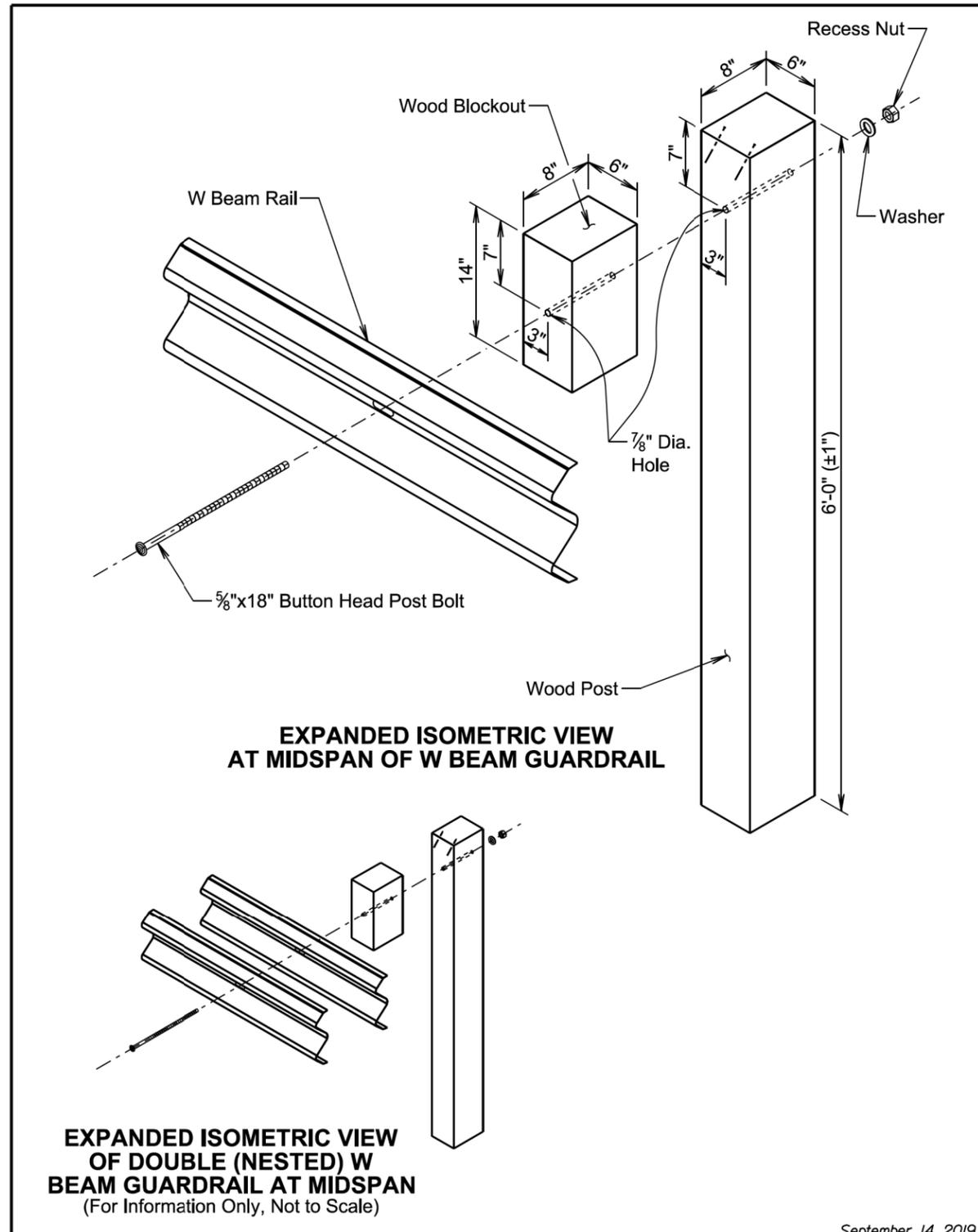
Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or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

The top of post and top of block will have a true square cut. The top of block will be a maximum of $\pm \frac{1}{2}$ inch from the top of the post.

September 14, 2019

S D D O T	W BEAM GUARDRAIL	PLATE NUMBER 630.10
		Sheet 1 of 5

Published Date: 2nd Qtr. 2021



September 14, 2019

S D D O T	W BEAM GUARDRAIL	PLATE NUMBER 630.10
		Sheet 2 of 5

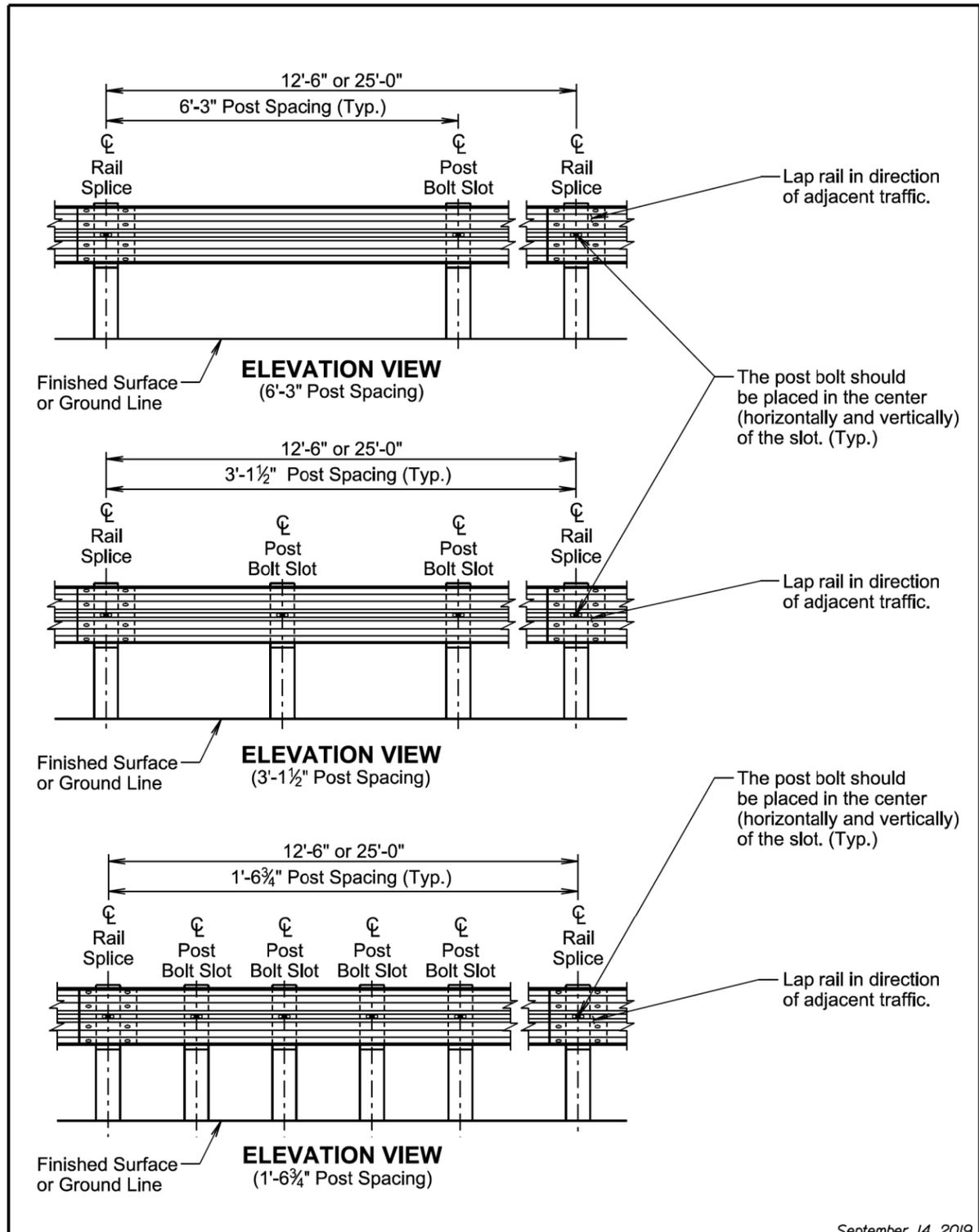
Published Date: 2nd Qtr. 2021

Plot Scale - 1:200

Plotted From - TRRC11610

File - ...lfcae StdPlates.dgn

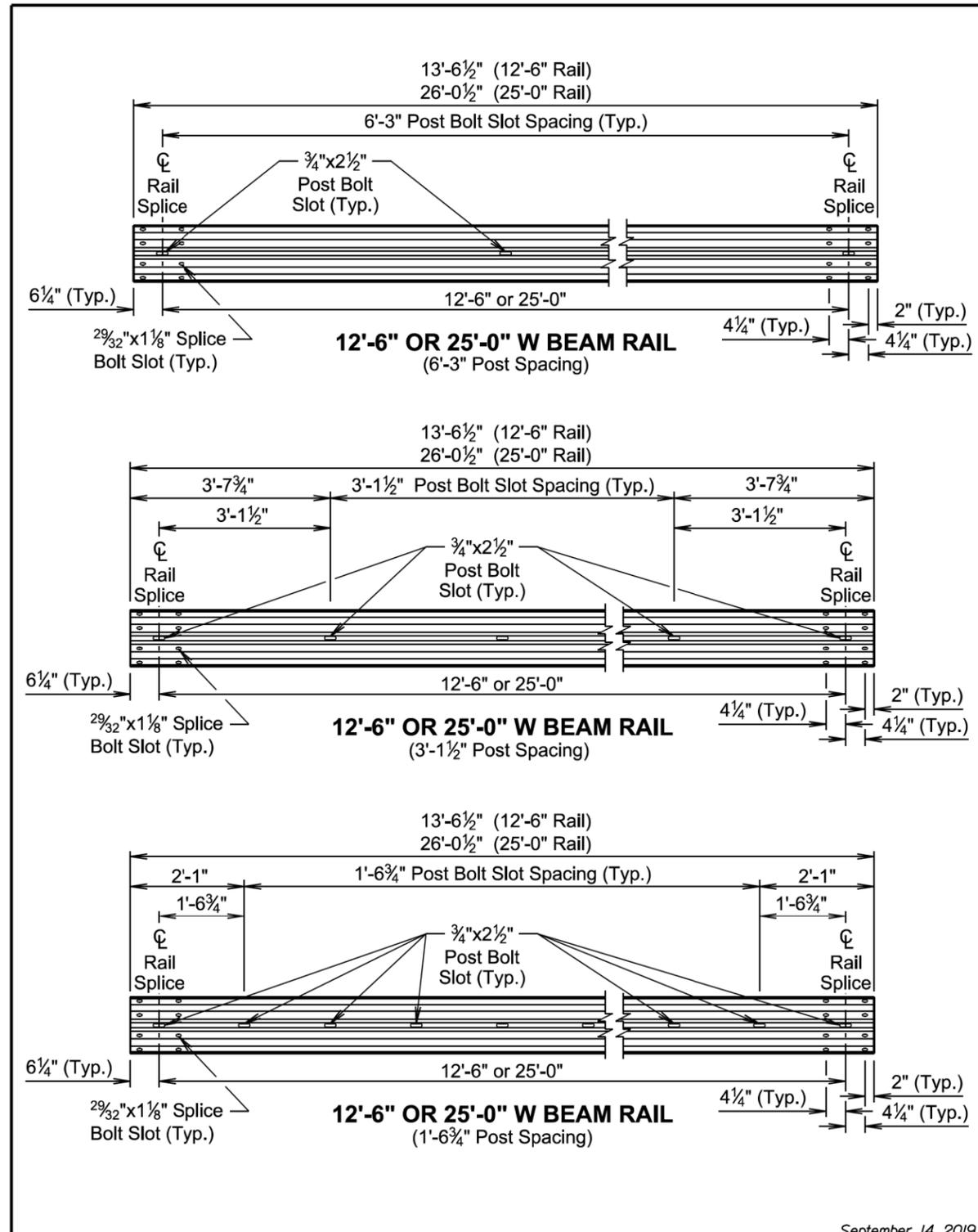
Plot Scale - 1:200



September 14, 2019

S D D O T	W BEAM GUARDRAIL	PLATE NUMBER 630.10
		Sheet 3 of 5

Published Date: 2nd Qtr. 2021



September 14, 2019

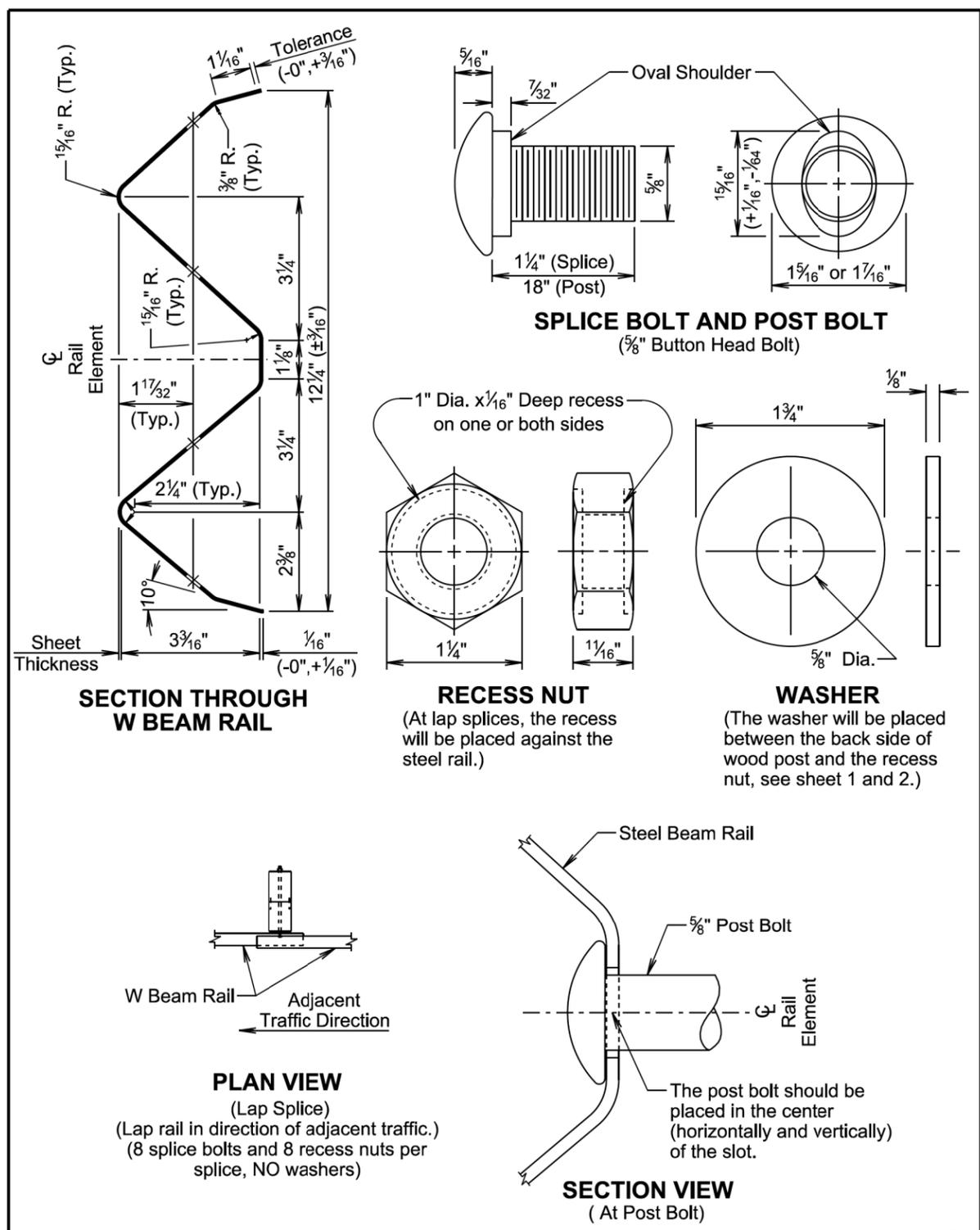
S D D O T	W BEAM GUARDRAIL	PLATE NUMBER 630.10
		Sheet 4 of 5

Published Date: 2nd Qtr. 2021

Plotted From - TRRC11610

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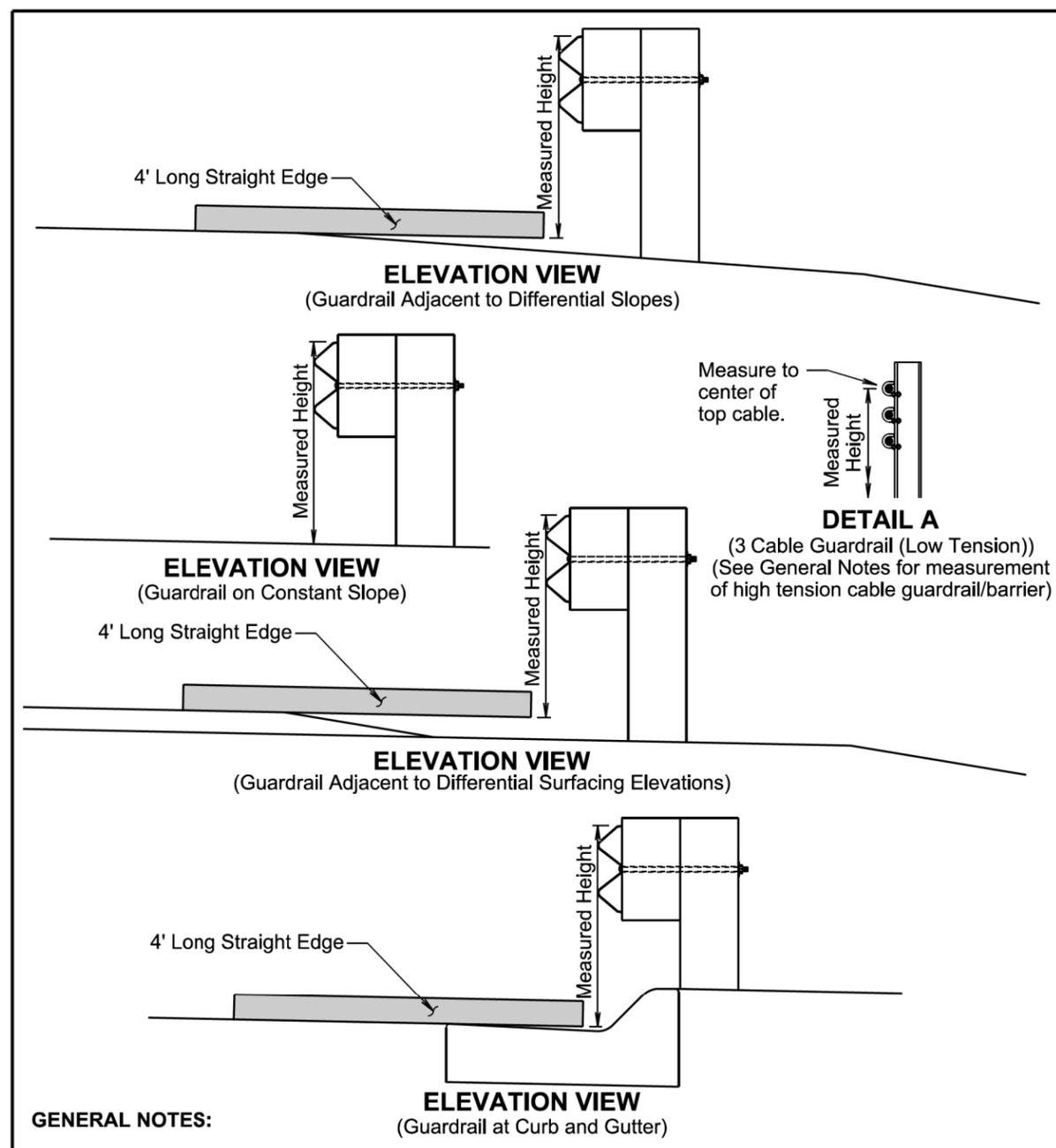
Plot Scale - 1:200



September 14, 2019

S D D O T	W BEAM GUARDRAIL	PLATE NUMBER 630.10
		Sheet 5 of 5

Published Date: 2nd Qtr. 2021



GENERAL NOTES:

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

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

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

September 14, 2019

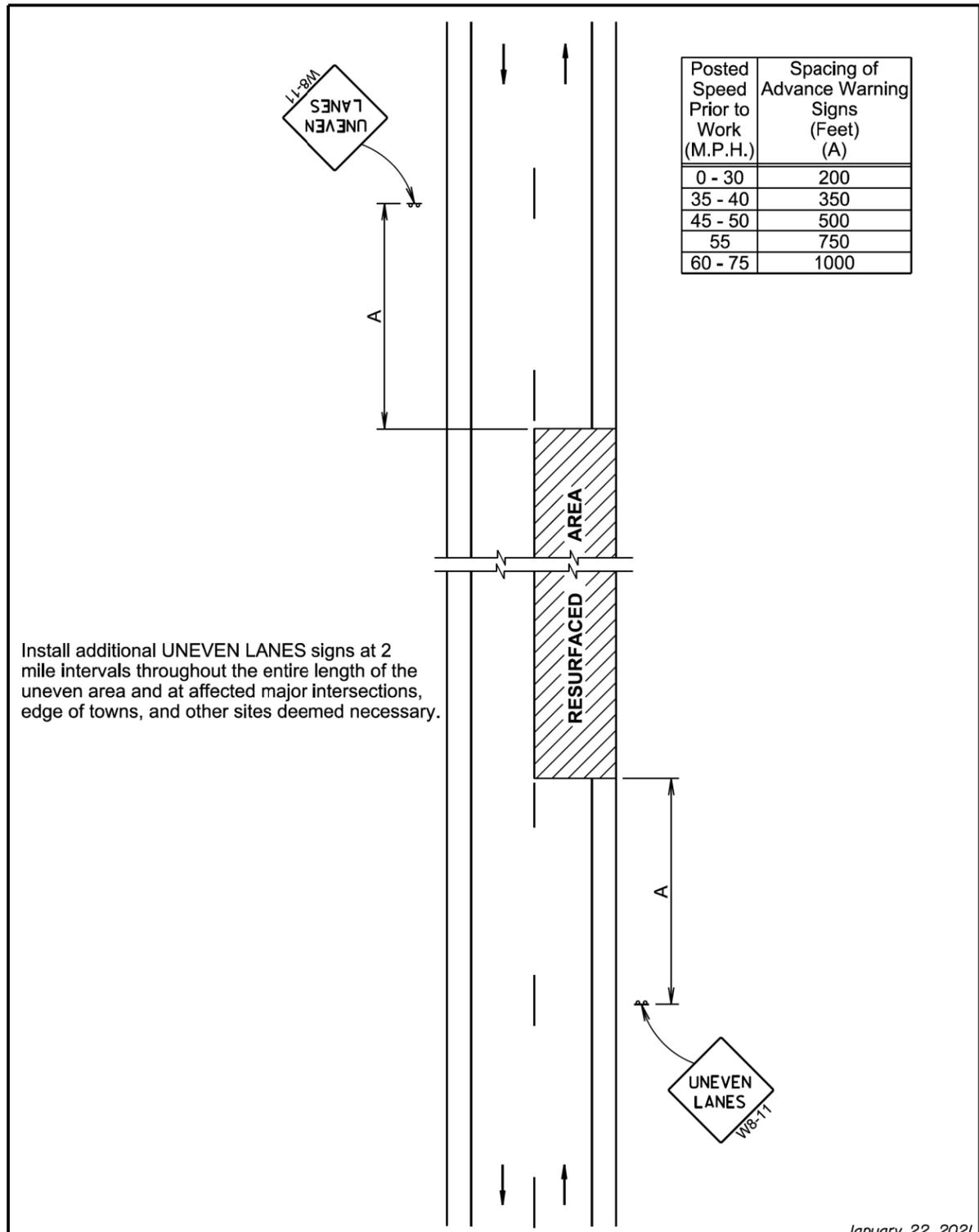
S D D O T	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.99
		Sheet 1 of 1

Published Date: 2nd Qtr. 2021

Plotted From: TRRC11610

File: ...lfcae StdPlates.dgn

Plot Scale - 1:200



S D D O T	UNEVEN ROAD SURFACE	PLATE NUMBER 634.22
		Sheet 1 of 1

January 22, 2021

Published Date: 2nd Qtr. 2021

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.

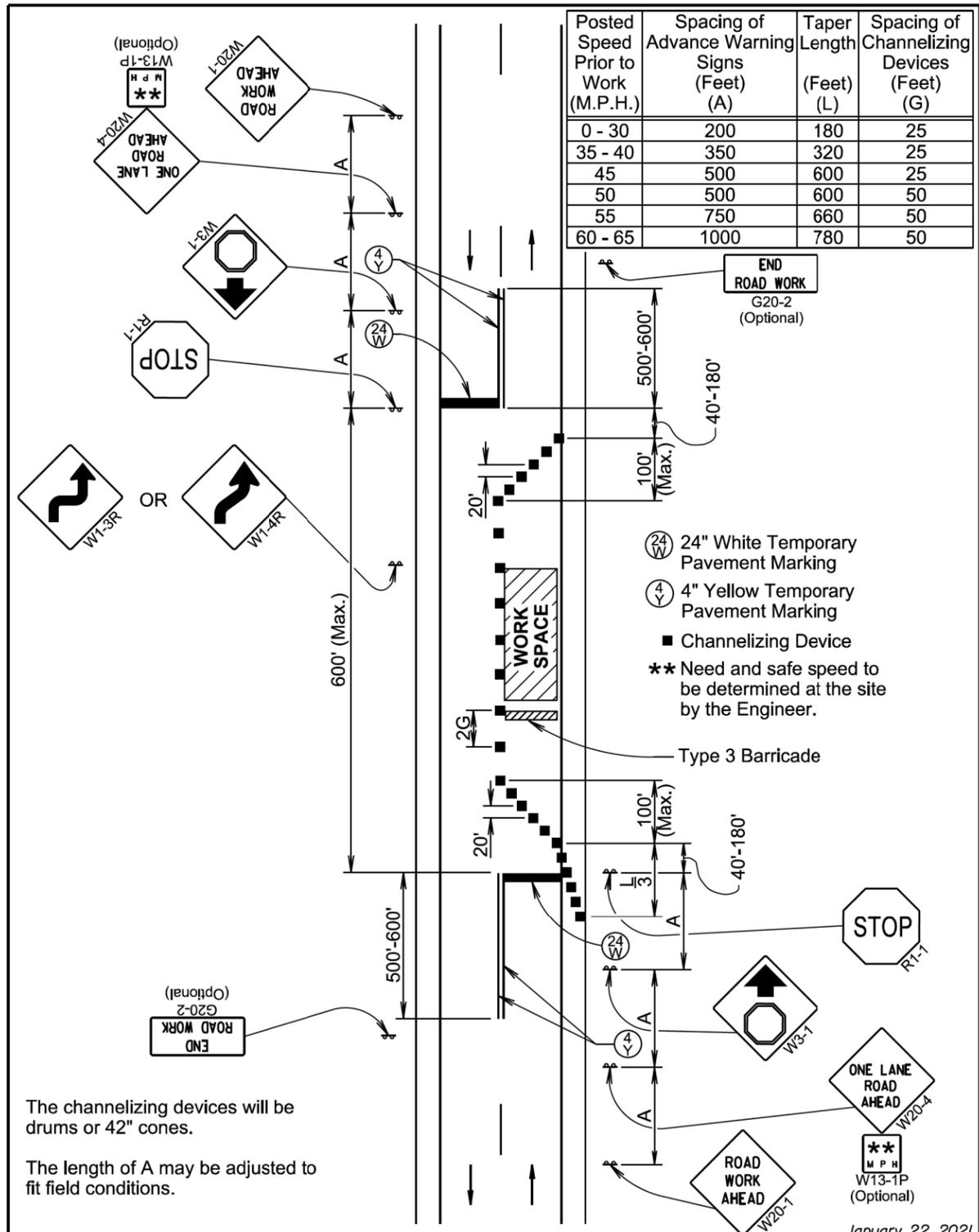
S D D O T	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
		Sheet 1 of 1

January 22, 2021

Published Date: 2nd Qtr. 2021

File - ...lfcae StdPlates.dgn

Plot Scale - 1:200

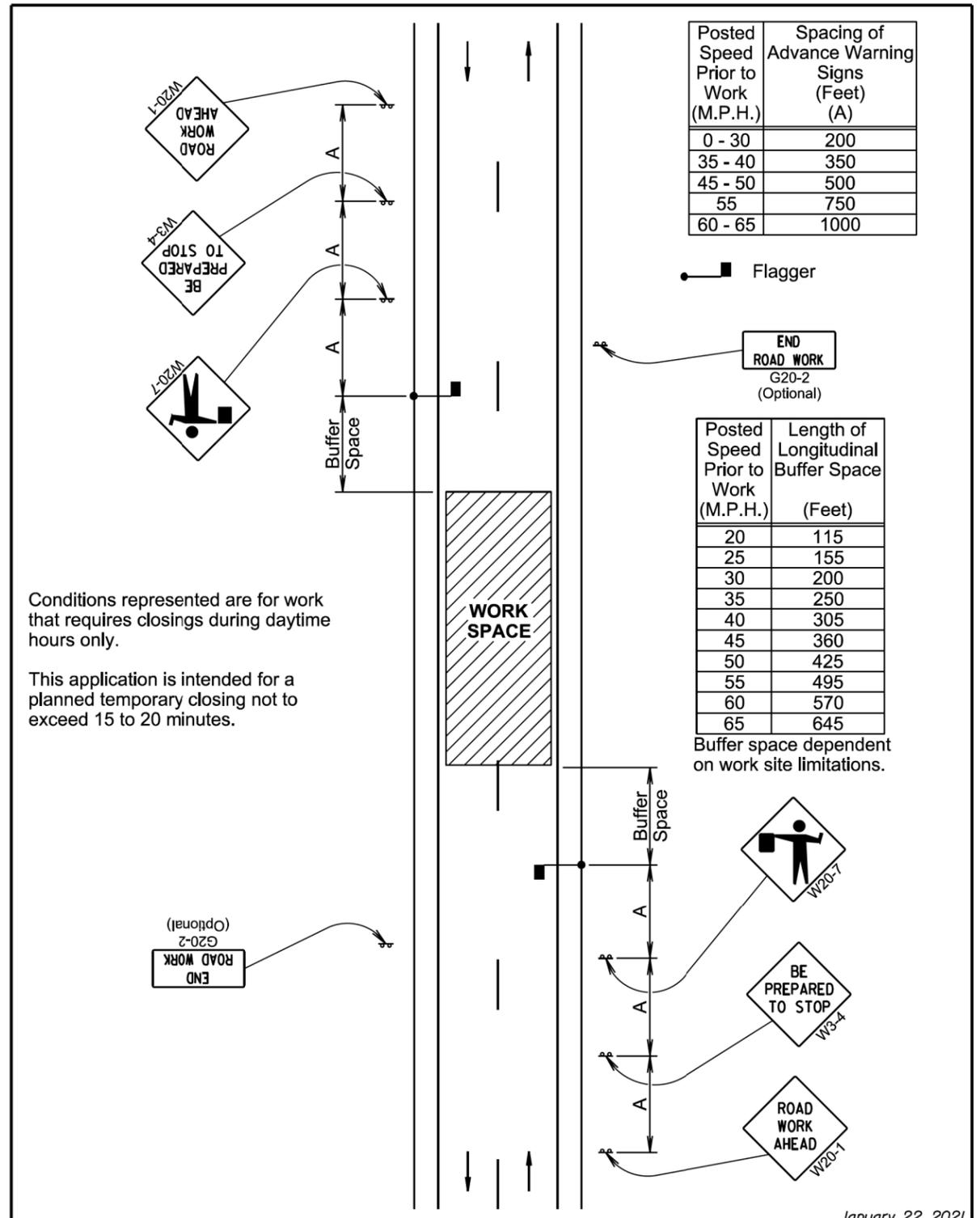


The channelizing devices will be drums or 42" cones.
 The length of A may be adjusted to fit field conditions.

January 22, 2021

S D D O T	LANE CLOSURE USING STOP SIGNS	PLATE NUMBER 634.25
	Sheet 1 of 1	

Published Date: 2nd Qtr. 2021



Conditions represented are for work that requires closings during daytime hours only.
 This application is intended for a planned temporary closing not to exceed 15 to 20 minutes.

January 22, 2021

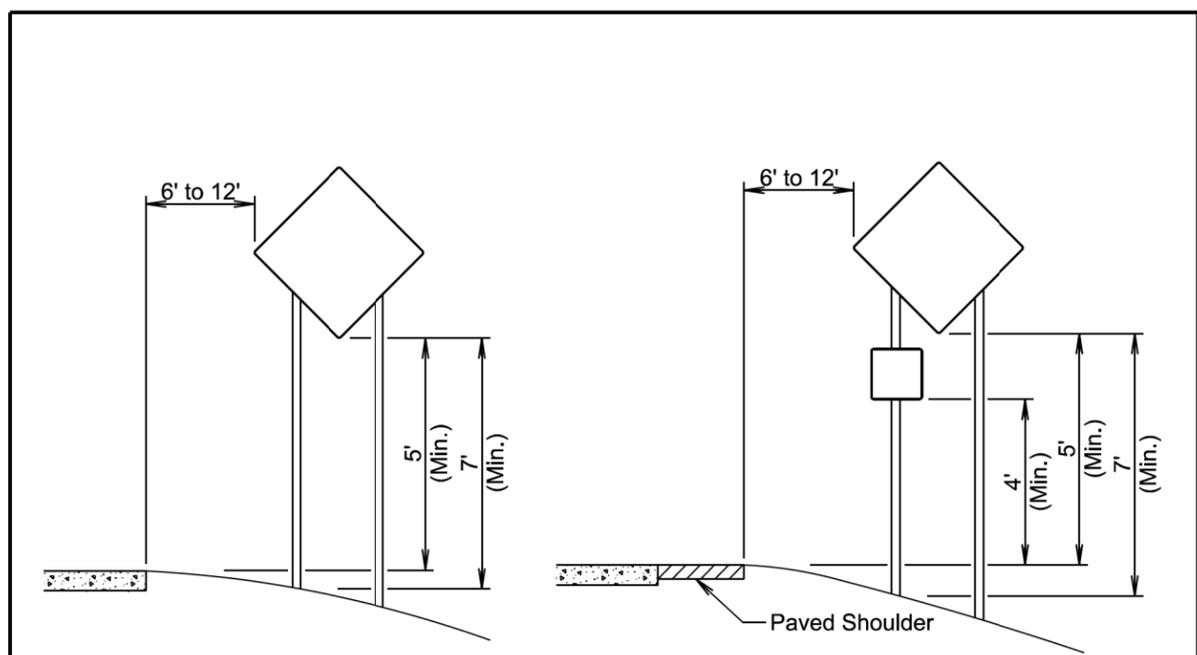
S D D O T	TEMPORARY ROAD WORK	PLATE NUMBER 634.30
	Sheet 1 of 1	

Published Date: 2nd Qtr. 2021

Plotted From - TRRC11610

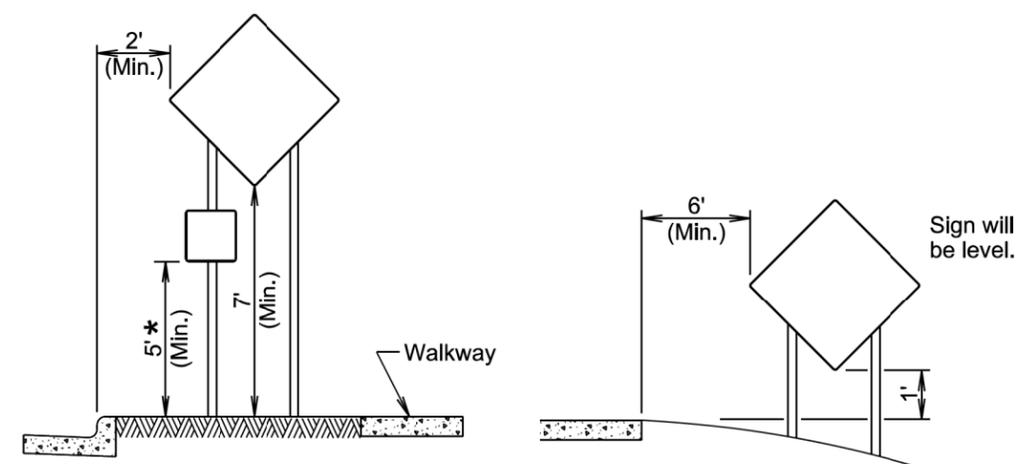
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Plot Scale - 1:200



RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

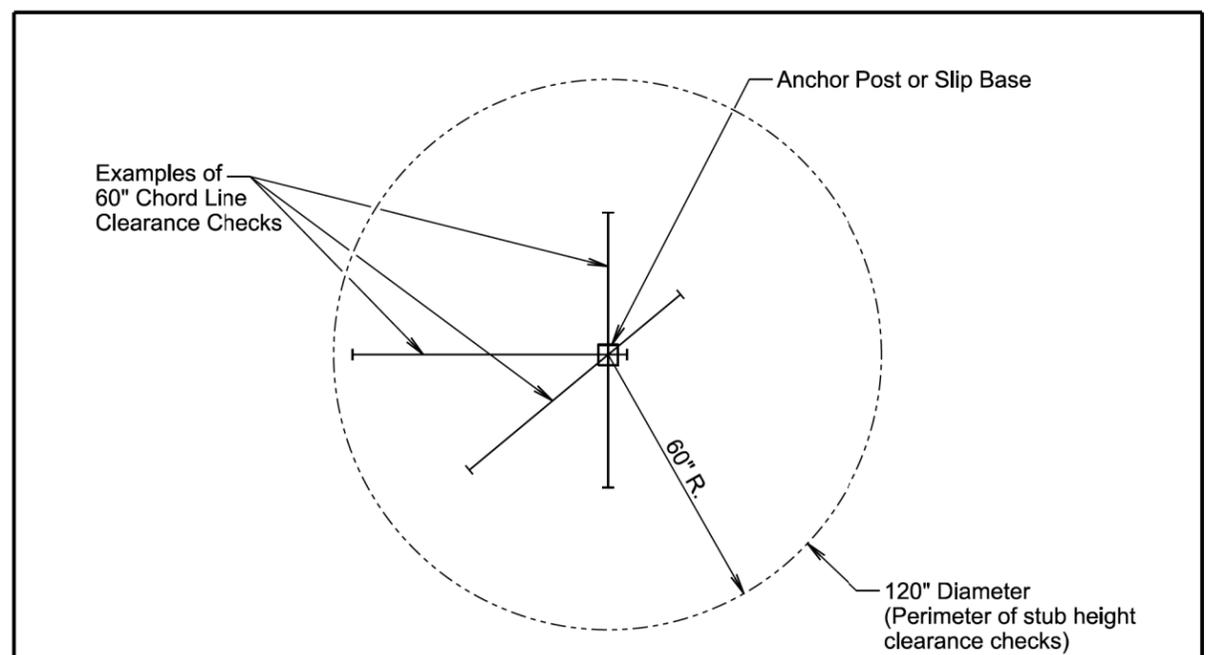
RURAL DISTRICT 3 DAY MAXIMUM
(Not applicable to regulatory signs)

* 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.

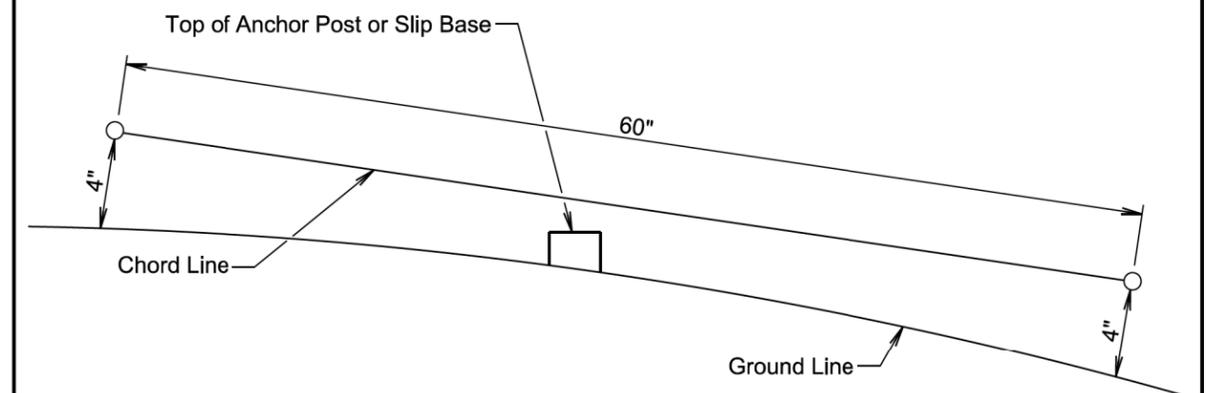
January 22, 2021

S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
		Sheet 1 of 1

Published Date: 2nd Qtr. 2021



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.

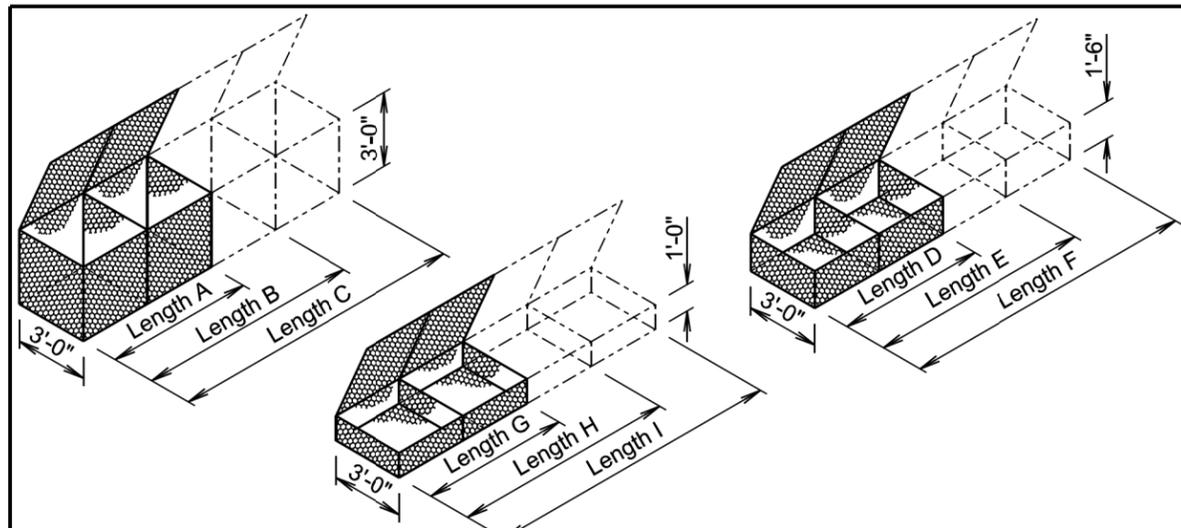
January 22, 2021

S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
		Sheet 1 of 1

Published Date: 2nd Qtr. 2021

Plotted From: TRRC11610

File: ...lfcae StdPlates.dgn


GABION DETAILS

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

GENERAL NOTES:

Above dimensions subject to mill tolerances.

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

The lacing procedure is as follows:

1. Cut a length of lacing wire approximately $1\frac{1}{2}$ 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.

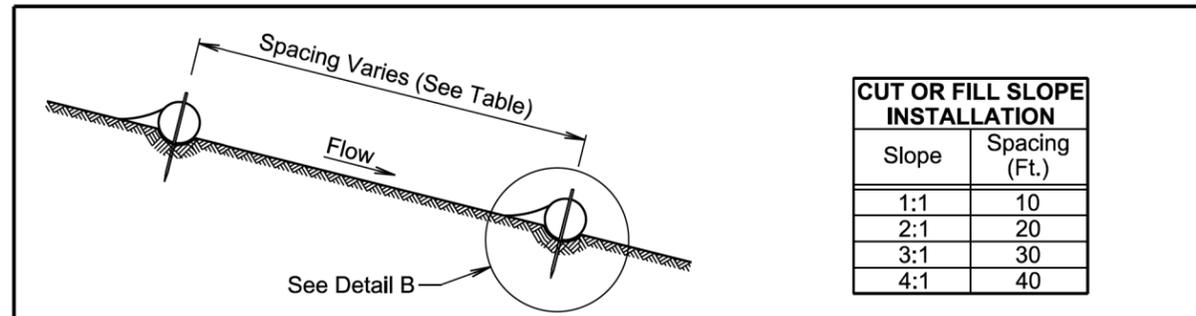
Wire lacing or interlocking type fasteners will be used for gabion assembly and final construction of gabion structures. Interlocking fasteners for galvanized gabions will be high tensile 0.120 inch diameter galvanized steel wire measured after galvanizing. The galvanizing will conform to ASTM A641-92, 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.

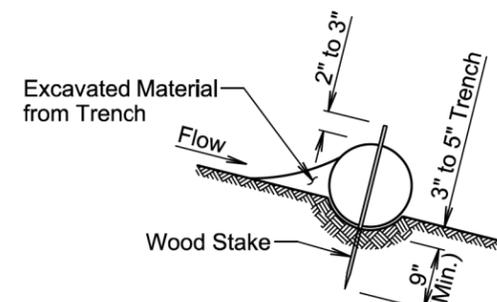
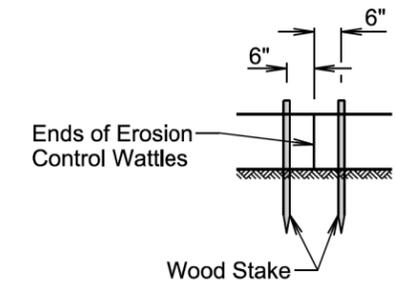
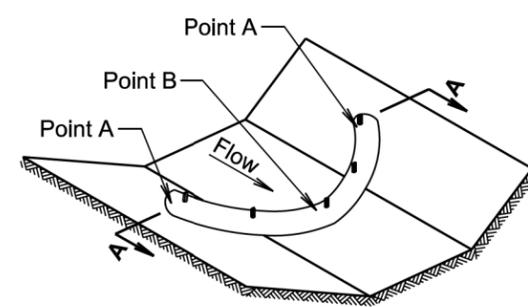
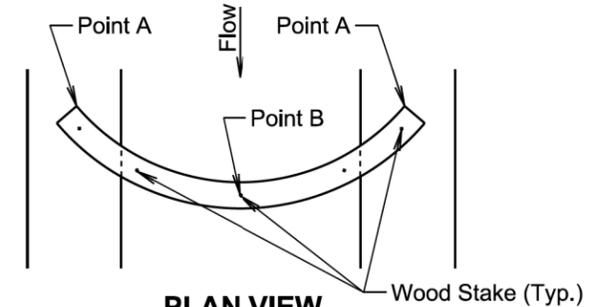
All fasteners will be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

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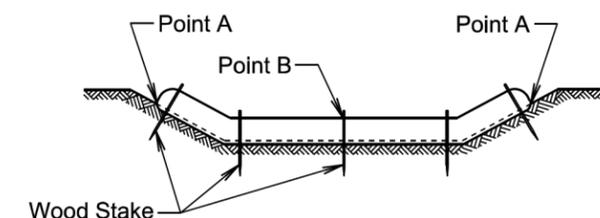
S D D O T	BANK AND CHANNEL PROTECTION GABIONS	PLATE NUMBER 720.01
	Published Date: 2nd Qtr. 2021	Sheet 1 of 1


ELEVATION VIEW
(Cut or Fill Slope Installation)

CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40


DETAIL B
(Typical of All Installations)

DETAIL C
(See General Notes)

ISOMETRIC VIEW
(Ditch Installation)

PLAN VIEW
(Ditch Installation)

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


SECTION A-A

S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
	Published Date: 2nd Qtr. 2021	Sheet 1 of 2

February 14, 2020

STATE OF SOUTH DAKOTA	PROJECT 385-451	SHEET 23	TOTAL SHEETS 31
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Plotting Date: 05/11/2021

Plot Scale - 1:200

GENERAL NOTES:

At cut or fill slope installations, wattles will be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor will dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes will be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes will be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles will be 3' to 4'.

Where installing running lengths of wattles, the Contractor will butt the second wattle tightly against the first and will not overlap the ends. See Detail C.

The Contractor and Engineer will inspect the erosion control wattles in accordance with the storm water permit. The Contractor will remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

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

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials will be incidental to the contract unit price per foot for the corresponding erosion control wattle contract item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials will be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

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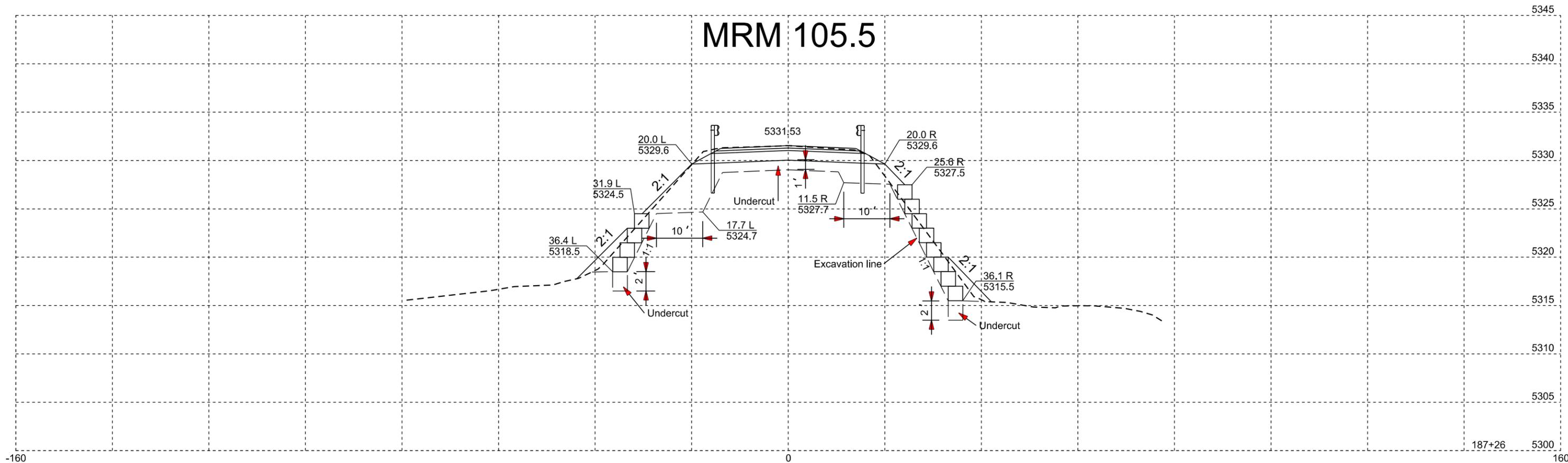
<i>Published Date: 2nd Qtr. 2021</i>	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2

Plotted From: - TRRC11610

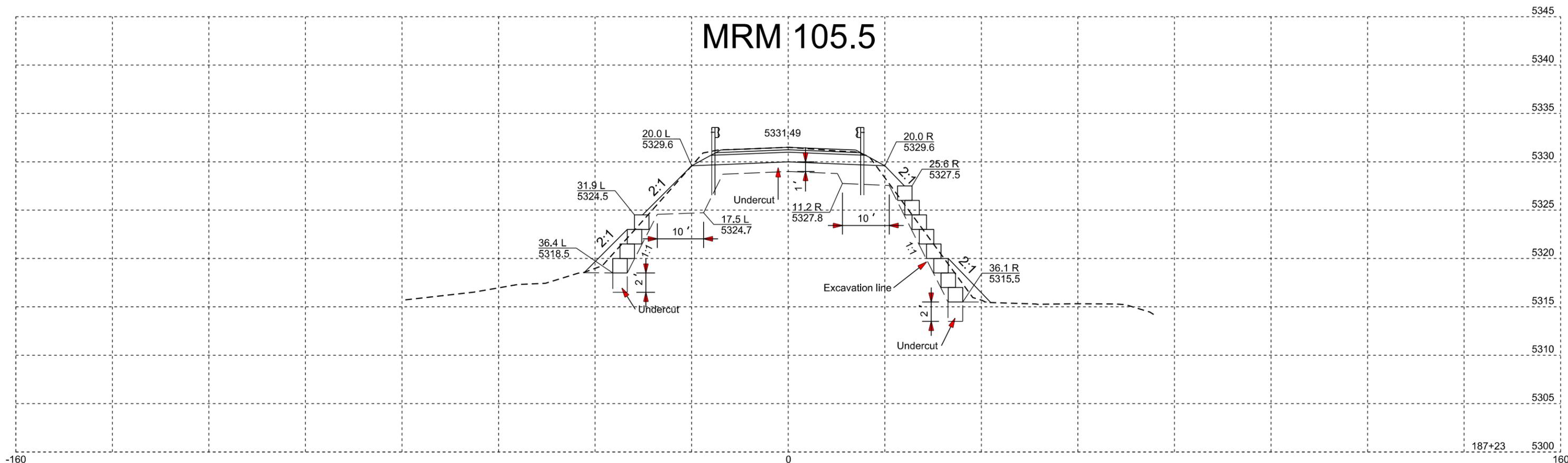
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	24	31

MRM 105.5

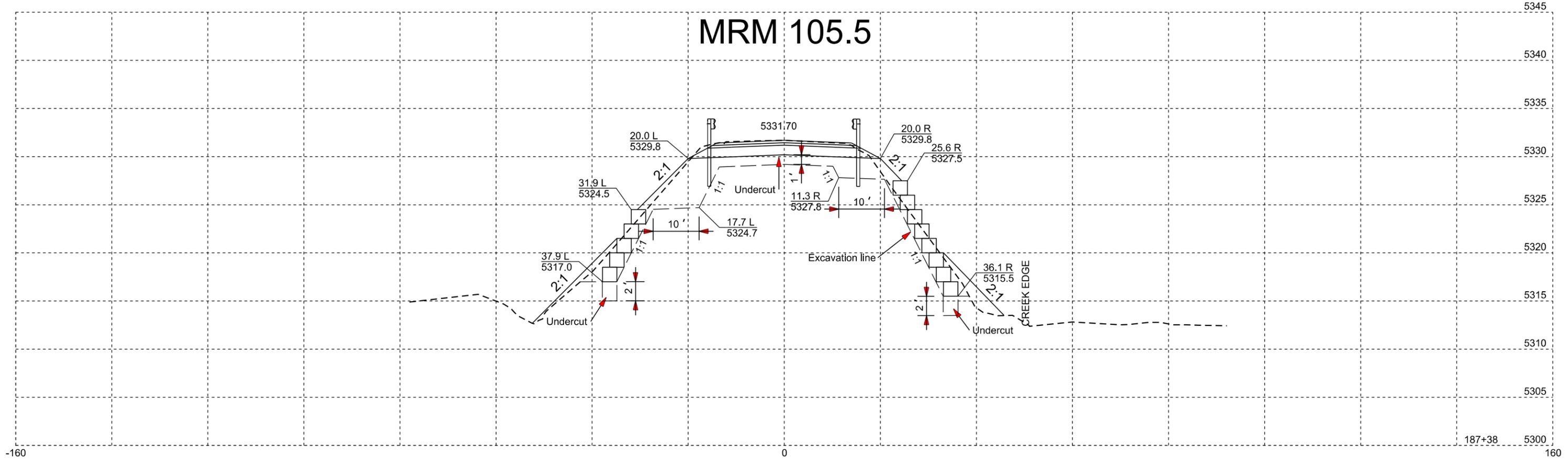


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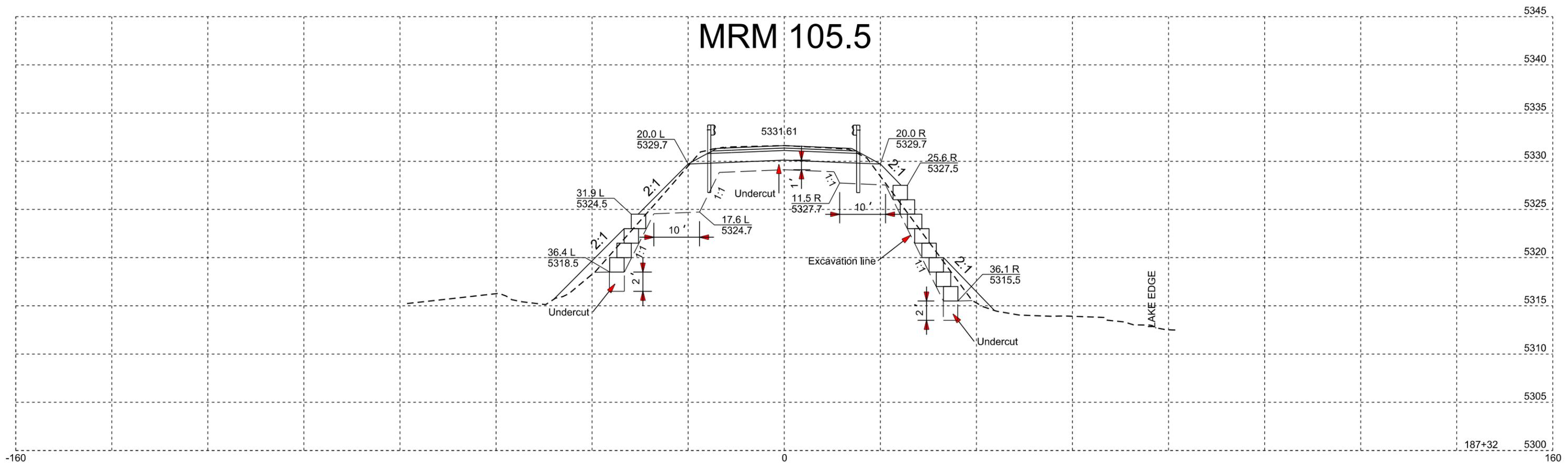


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	25	31

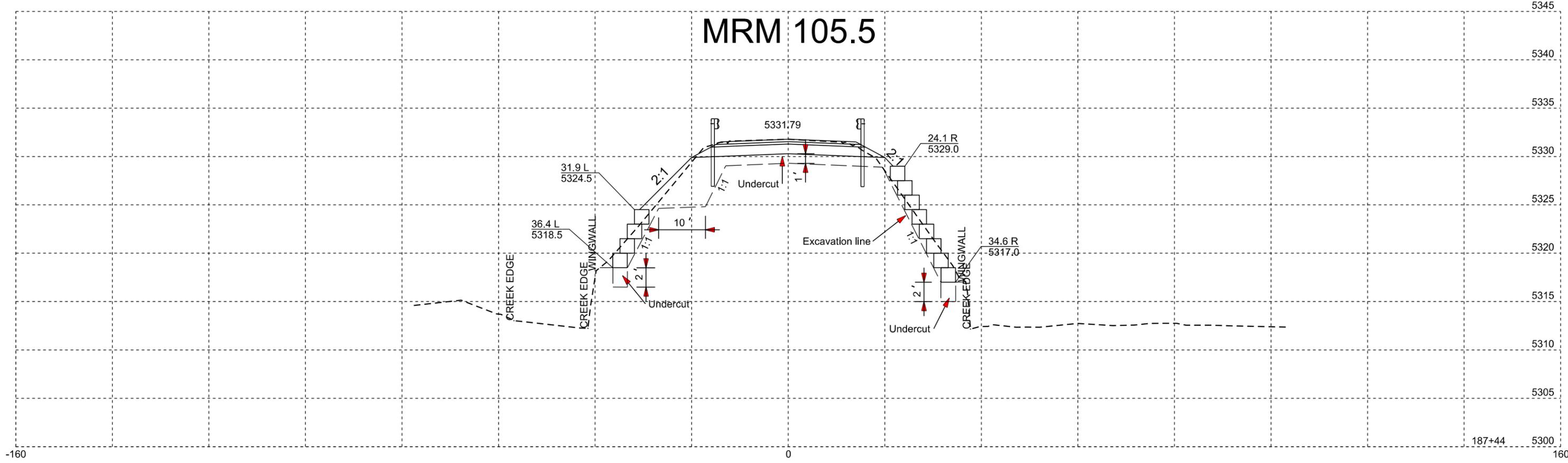
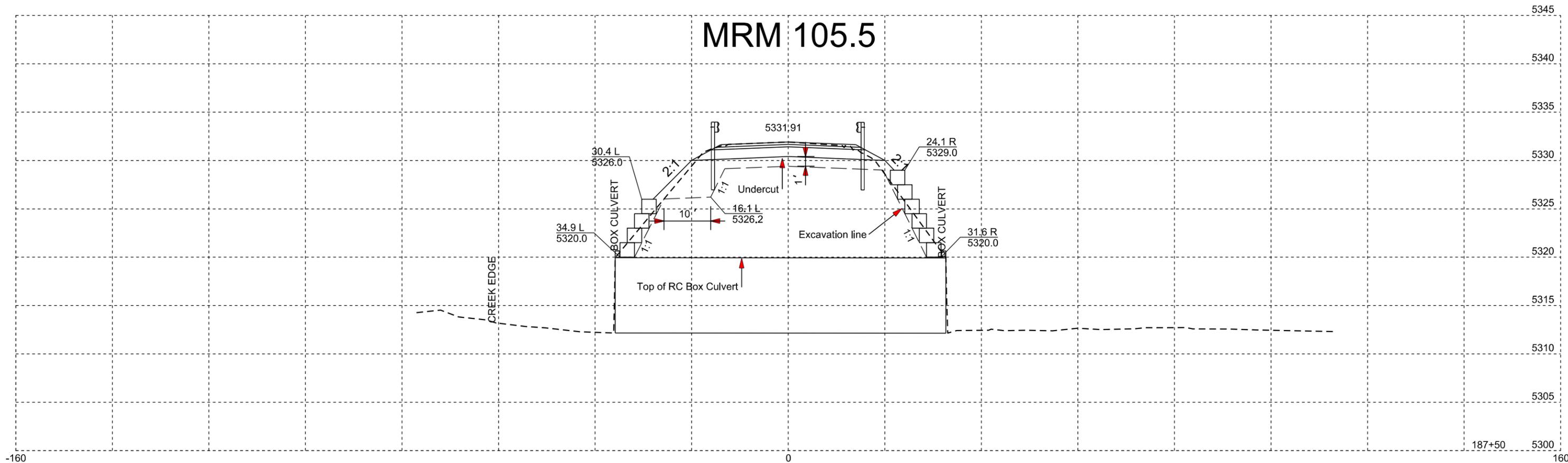
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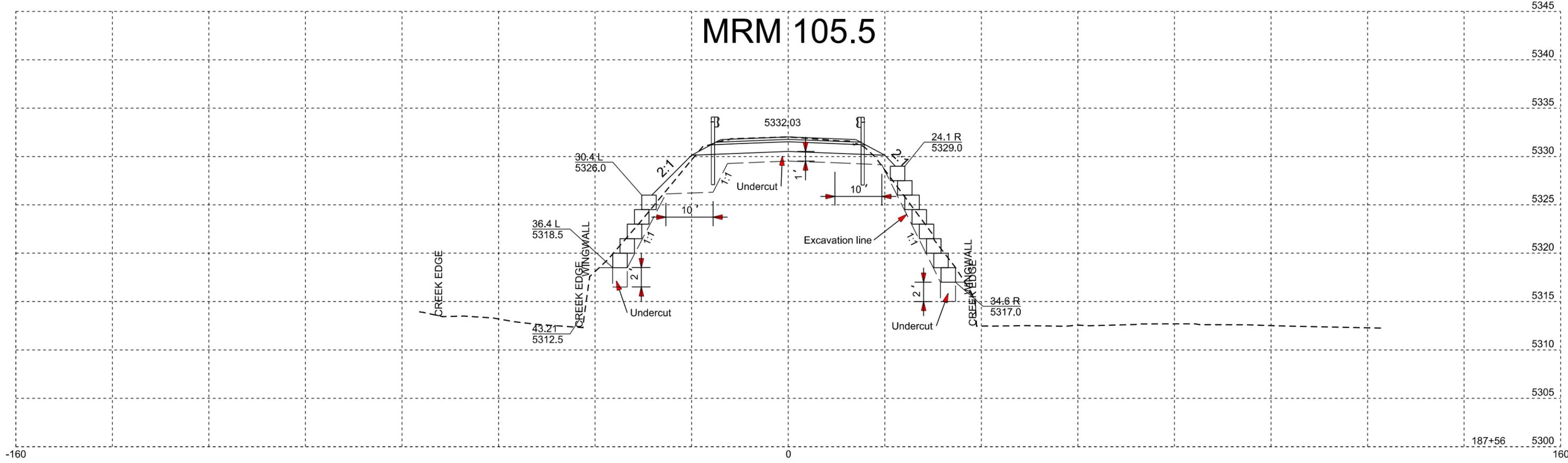
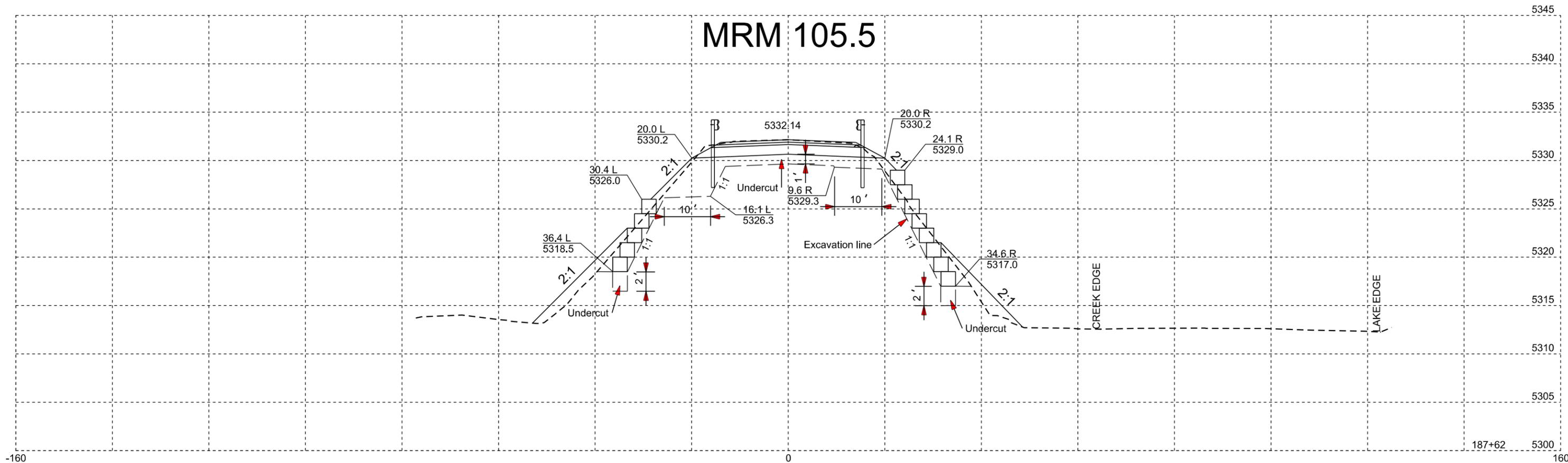
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	26	31

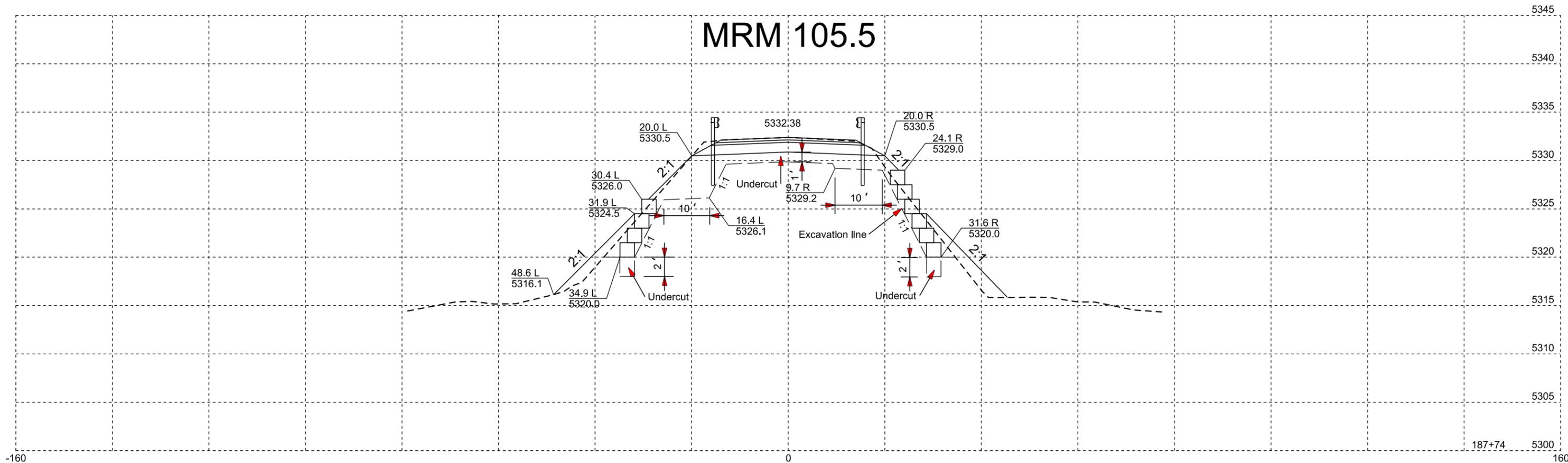


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	27	31

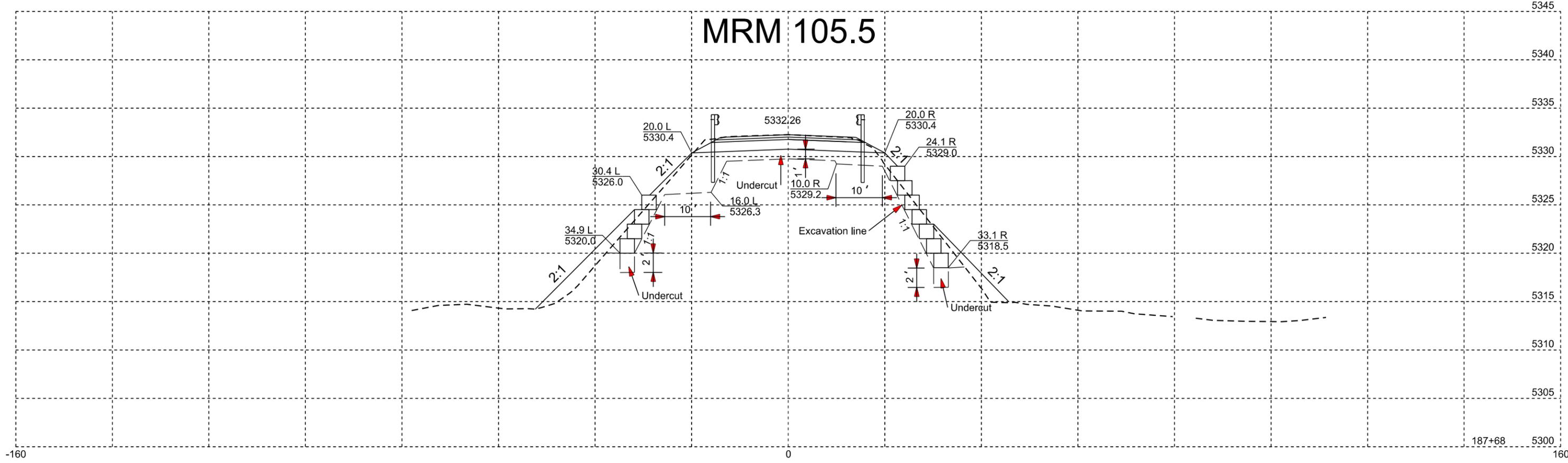


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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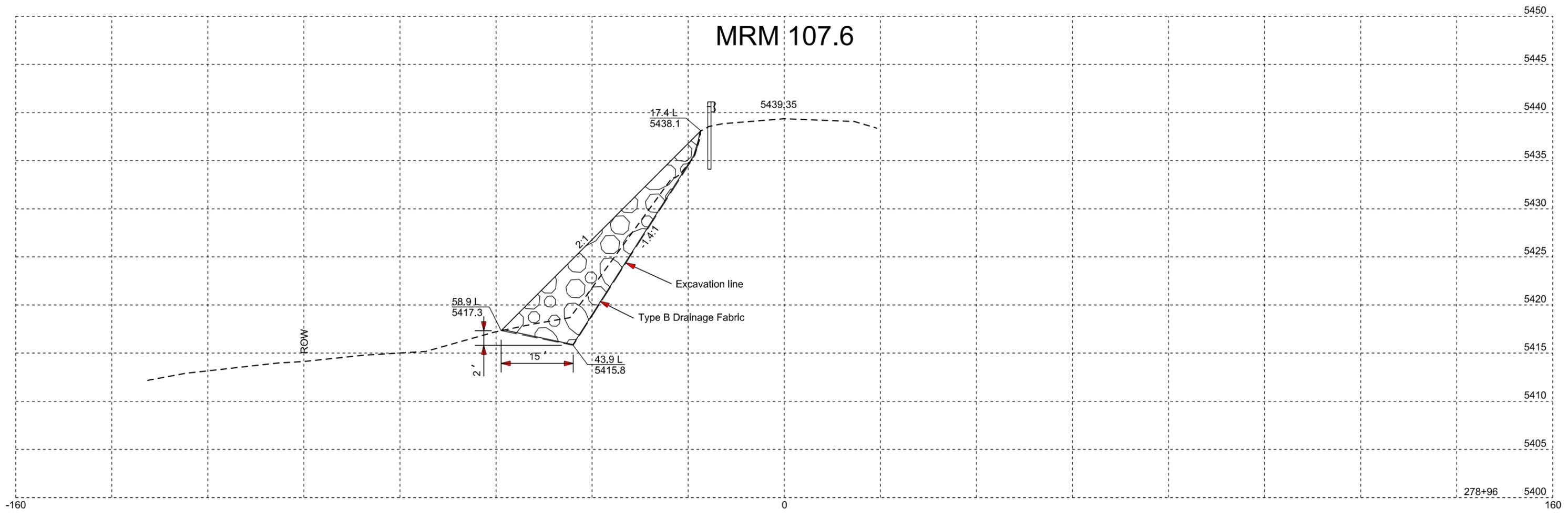
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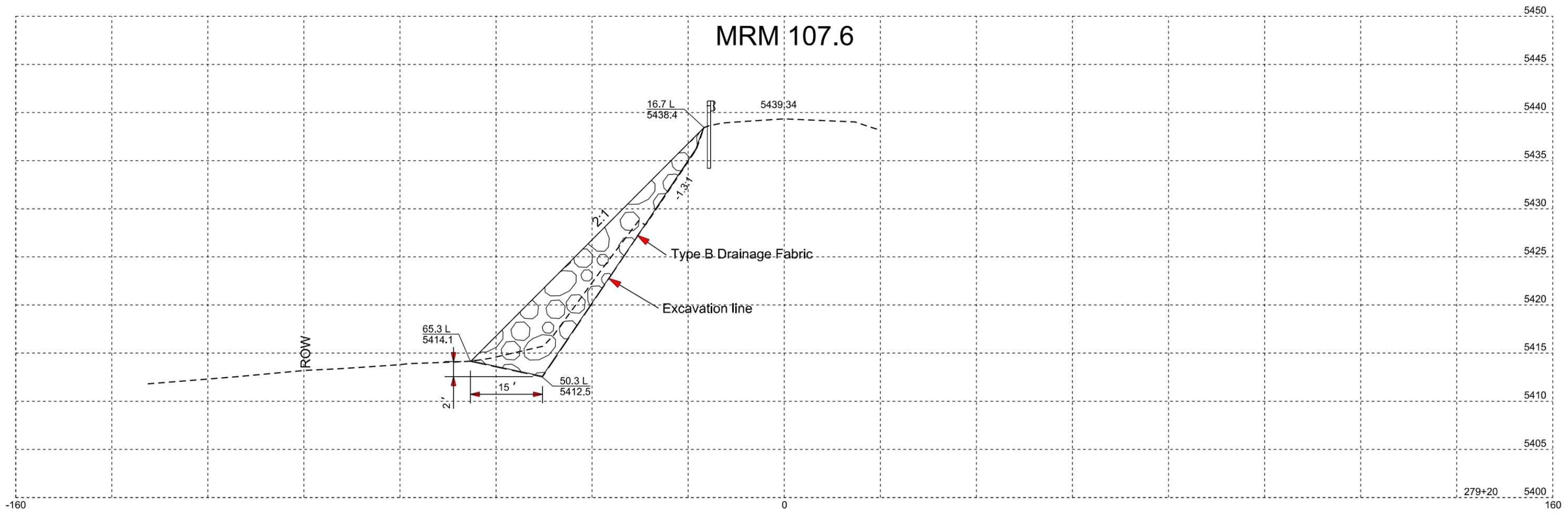
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	29	31



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	30	31



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	385-451	31	31

