

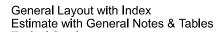
STATE OF SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION PLANS FOR PROPOSED

PROJECT SECTION SHEET DOT 1/74 P 0079(90)203 Non

PROJECT P 0079(90)203 SD HIGHWAY 79 HARDING COUNTY

> MILL, AC RESURFACING, PIPE WORK PCN 06RR

INDEX OF SHEETS



2-15 **Typical Sections**

16-17 Legend

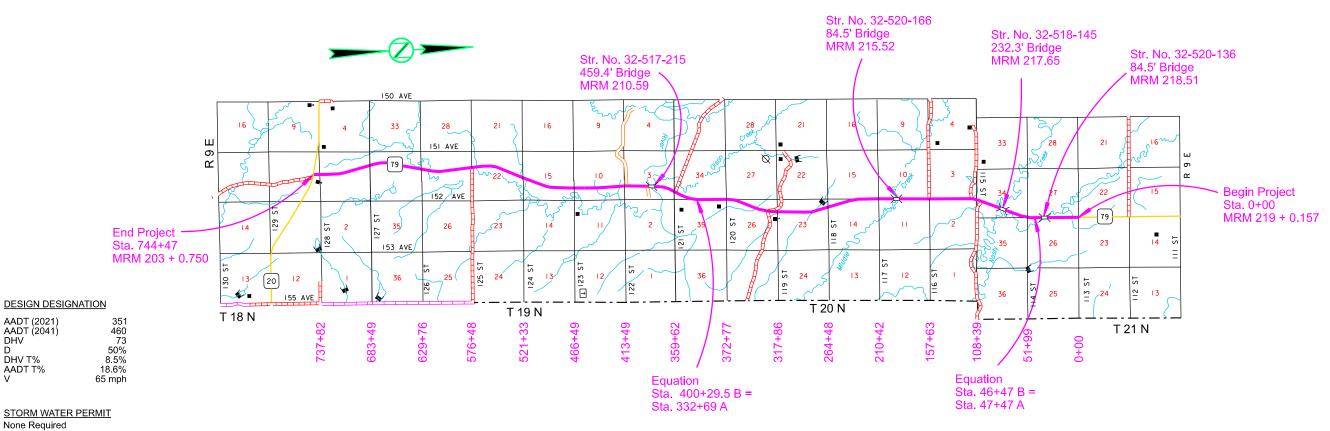
18 19-33 Plan Sheets

34-37 Guardrail Layouts

38-39 Special Details

40-69 Standard Plates

Cross Sections



81290.88 Feet 15.396 Miles Gross Length 0.163 Miles Length of Exceptions 860.70 Feet Net Length 80430.18 Feet 15.233 Miles

November 20, 2024

AADT (2021) AADT (2041) DHV

AADT T%

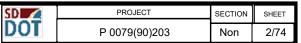
ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3320	Checker	Lump Sum	LS
100E0020	Clear and Grub Tree	1	Each
110E0510	Remove Pipe End Section	22	Each
110E0600	Remove Fence	210	Ft
110E0730	Remove Beam Guardrail	1,925.0	Ft
110E0800	Remove W Beam Guardrail End Terminal	16	Each
110E0810	Remove Rubrail	65.6	Ft
110E1010	Remove Asphalt Concrete Pavement	1,142.4	SqYd
110E5451	Salvage Riprap	75.0	Ton
110E7500	Remove Pipe for Reset	24	Ft
110E7510	Remove Pipe End Section for Reset	23	Each
120E0100	Unclassified Excavation, Digouts	762	CuYd
120E0600	Contractor Furnished Borrow	190	CuYd
120E6200	Water for Granular Material	30.5	MGal
210E0100	Shoulder Clearing	30.5	Mile
230E0100	Remove and Replace Topsoil	Lump Sum	LS
250E0020	Incidental Work, Grading	Lump Sum	LS
260E1010	Base Course	2,011.2	Ton
260E1050	Base Course, Salvaged Asphalt Mix	1,523.0	Ton
320E1200	Asphalt Concrete Composite	500.9	Ton
320E1800	Asphalt Concrete Blade Laid	2,284.5	Ton
320E7008	Grind 8" Rumble Strip or Stripe in Asphalt Concrete	30.5	Mile
320E7040	Grind 6" Transverse Rumble Strip in Asphalt Concrete	442.0	Ft
330E0100	SS-1h or CSS-1h Asphalt for Tack	162.1	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	51.8	Ton
330E2000	Sand for Flush Seal	785.8	Ton
332E0010	Cold Milling Asphalt Concrete	227,936	SqYd
450E0122	18" RCP Class 2, Furnish	28	Ft
450E0130	18" RCP, Install	28	Ft
450E0142	24" RCP Class 2, Furnish	32	Ft
450E0150	24" RCP, Install	32	Ft
450E0162	30" RCP Class 2, Furnish	32	Ft
450E0170	30" RCP, Install	32	Ft
450E0202	48" RCP Class 2, Furnish	12	Ft
450E0210	48" RCP, Install	12	Ft
450E2032	42" RCP Flared End, Furnish	3	Each
450E2033	42" RCP Flared End, Install	3	Each
450E2044	60" RCP Flared End, Furnish	2	Each
450E2045	60" RCP Flared End, Install	2	Each
450E2060	84" RCP Flared End, Furnish	2	Each
450E2061	84" RCP Flared End, Install	2	Each
450E2200	24" RCP Sloped End, Furnish	6	Each

BID ITEM NUMBER	ITEM	QUANTITY	UNIT	
450E2201	24" RCP Sloped End, Install	6	Each	
450E2204	30" RCP Sloped End, Furnish	2	Each	
450E2205	30" RCP Sloped End, Install	2	Each	
450E2208	36" RCP Sloped End, Furnish	1	Each	
450E2209	36" RCP Sloped End, Install	1	Each	
450E2304	18" RCP Safety End, Furnish	10	Each	
450E2307	18" RCP Safety End, Install	10	Each	
450E3032	36" RCP Arch Class 2, Furnish	12	Ft	
450E3040	36" RCP Arch, Install	12	Ft	
* 450E8900	Cleanout Pipe Culvert	4	Each	
450E8910	Cleanout for Culvert Treatment	6	Each	
450E9000	Reset Pipe	24	Ft	
450E9001	Reset Pipe End Section	23	Each	
450E9524	24" Cured in Place Pipe	192	Ft	
450E9530	42" Cured in Place Pipe	115	Ft	
450E9536	60" Cured in Place Pipe	90	Ft	
450E9636	60" Cured in Place Arch Pipe	112	Ft	
600E0300	Type III Field Laboratory	1	Each	
620E0020	Type 2 Right-of-Way Fence	210	Ft	
620E0510	Type 1 Temporary Fence	420	Ft	
620E1020	2 Post Panel	4	Each	
630E0500	Type 1 MGS	400.0	Ft	
630E1010	Straight Class A W Beam Guardrail with Wood Posts	212.5	Ft	
630E1050	Straight Class B W Beam Guardrail with Wood Posts	100.0	Ft	
630E1150	Straight Double Class B W Beam Guardrail with Wood Posts	100.0	Ft	
630E1505	Type 2A Guardrail Transition	8	Each	
630E2005	W Beam Guardrail to MGS Transition	8	Each	
630E2018	MGS MASH Tangent End Terminal	16	Each	
630E2300	Rubrail	65.6	Ft	
633E1200	High Build Waterborne Pavement Marking Paint, White	686	Gal	
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	532	Gal	
634E0010	Flagging	2,000.0	Hour	
634E0020	Pilot Car	1,000.0	Hour	
634E0110	Traffic Control Signs	1,396.1	SqFt	
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS	
634E0630	Temporary Pavement Marking	60.9	Mile	
700E0310	Class C Riprap	249.0	Ton	
700E2010	Place Riprap	75.0	Ton	
720E1010	PVC Coated Bank and Channel Protection Gabion	31.5	CuYd	
734E0010	Erosion Control	Lump Sum	LS	
734E0154	12" Diameter Erosion Control Wattle	520	Ft	
831E0110	Type B Drainage Fabric	506	SqYd	
831E0300	Reinforcement Fabric (MSE)	517	SqYd	

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
900E0010	Refurbish Single Mailbox	5	Each
900E0012	Refurbish Double Mailbox	1	Each

^{* -} Denotes Non-Participating



Revised 7/9/24 GDS

Alternate A

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
320E0005	PG 58-34 Asphalt Binder	1,276.1	Ton
320E1202	CLASS Q2R HOT MIXED ASPHALT CONCRETE	28,093.3	Ton
320E4000	Hydrated Lime	279.5	Ton

Alternate B

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
320E0005	PG 58-34 Asphalt Binder	1,061.6	Ton
320E1202	CLASS Q2R HOT MIXED ASPHALT CONCRETE	28,752.3	Ton
320E4000	Hydrated Lime	279.5	Ton

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.

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 Agriculture 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:

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

COMMITMENT 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.

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

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

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

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

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historic Preservation Office (SHPO 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.

SD	PROJECT	SECTION	SHEET
DOT	P 0079(90)203	Non	3/74

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.

TYPE III FIELD LABORATORY

Substitution of a cellular telephone for the hard-wired touch-tone telephone is not allowed, as state personnel need the ability to download information over direct phone lines. The phone is intended for state personnel usage only. Contractor personnel are prohibited from using this phone unless pre-approved by the Project Engineer. Reimbursement will not be made for fees associated with the purchase, installation, disconnection, monthly line charges, and incidentals involved in the installation, maintenance, and disconnection of the phone (including attachments). These items will be incidental to the contract unit price per each for Type III Field Laboratory

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 Engineer to determine modifications that will be necessary to avoid utility impacts.

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.

SHOULDER CLEARING

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

Each shoulder will be measured for payment. Costs associated with this work will be included in the contract unit price per mile for Shoulder Clearing.

CHECKING SPREAD RATES

The Contractor will be responsible for checking the spread rates and taking the weigh delivery tickets as the surfacing material arrives on the project and is placed onto the roadway.

The Contractor will compute the required spread rates for each typical surfacing section and create a spread chart prior to the start of material delivery and placement. The Engineer will review and check the Contractor's calculations and spread charts. The station to station spread will be written on each ticket as the surfacing material is delivered to the roadway.

At the end of each day's shift, the Contractor will verify the following:

- All tickets are present and accounted for,
- The quantity summary for each item is calculated,
- The amount of material wasted if any,
- Each day's ticket summary is marked with the corresponding 'computed by',
- The ticket summary is initialed and certified that the delivered and placed quantity is correct.

All daily tickets and the summary by item will be given to the Engineer no later than the following morning.

If the checker is not properly and accurately performing the required duties, the Contractor will correct the problem or replace the checker with an individual capable of performing the duties to the satisfaction of the Engineer. Failure to do so will result in suspension of the work.

The Department will perform depth checks. The Contractor will be responsible for placement of material to the correct depth unless otherwise directed by the Engineer. If the placed material is not within a tolerance of $\pm 1/2$ inch of the plan shown depth, the Contractor will correct the problem at no additional cost to the Department. Excess material above the tolerance will not be paid for. Achieving the correct depth may require picking up and moving material or other action as required by the Engineer. All costs for providing the Contractor furnished checker and performing all related duties will be incidental to the contract lump sum price for the "Checker". No allowances will be made to the contract lump sum price for Checker due to authorized quantity variations unless the quantities for the material being checked vary above or below the estimated quantities by more than 25 percent. Payment for the Checker will then be increased or decreased by the same proportion as the placed material quantity bears to the estimated material quantity.

CONTRACTOR FURNISHED BORROW

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

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

COLD MILLING ASPHALT CONCRETE

The Los Angeles Abrasion Loss value on the aggregate used for the in-place asphalt concrete was 25. This value was obtained from testing during construction of the in-place asphalt concrete.

Cold milling asphalt concrete will be done according to the typical section(s). In areas where maintenance patches have raised and/or widened the road, additional asphalt concrete will be milled to provide a uniform typical section from centerline to the edge of the finished shoulder. These areas also include farm, residential, field entrances and intersecting roads. Milling will be daylighted to the outside edge of the roadway. Any additional costs associated with this additional cold milling will be incidental to the contract unit price per square yard for Cold Milling Asphalt Concrete.



Revised 7/9/24 GDS

Cold milling asphalt is estimated to produce 11600.5 tons of cold milled asphalt concrete material. An estimated 1523 tons of cold milled asphalt concrete material will be used on this project as Base Course, Salvaged Asphalt Mix outside the asphalt sluff to prevent a drop off. An estimated 5367.4 tons for Alternate A and 5536.6 tons for Alternate B of cold milled asphalt concrete material will be used on this project as RAP in the Class Q2R Hot Mixed Asphalt Concrete mixture. The Contractor is responsible to assure enough asphalt concrete salvage is available for the Class Q2R Hot Mixed Asphalt Concrete.

The remainder of the salvaged asphalt concrete material will be become the property of the Contractor for disposal.

RAP achieved for project use and/or other uses is based on the dimensions given in the typical section(s). Field conditions will vary from that given in the typical section(s). Therefore, the Contractor may be required to adjust the mill depth, as necessary, to provide the quantity of RAP specified by the plans, if approved by the Engineer.

CLASS Q2R HOT MIXED ASPHALT CONCRETE

Mineral Aggregate:

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

Virgin mineral aggregate for Class Q2R Hot Mixed Asphalt Concrete-Alternate A will conform to the requirements of Class Q2.

Virgin mineral aggregate for Class Q2R Hot Mixed Asphalt Concrete-Alternate B will consist of a minimum of 80 percent crushed limestone ledge rock and will conform to the requirements of Class Q2.

The Class Q2R Hot Mixed Asphalt Concrete will include 20 percent RAP in the mixture. RAP will be obtained from the material produced by cold milling on this project.

Mix Design Criteria – Alternate B:

Gyratory Controlled QC/QA Mix Design requirements for the Class Q2R Hot Mixed Asphalt Concrete will conform to the requirements of Class Q2 except as modified by the following:

Voids in Mineral Aggregate (VMA):

	Minimum VMA (%):
Class Q2R	13.0

Pay Factor Attributes – Alternate B:

Air Voids:

•	ii voido.	
		Air Voids (%):
	Class Q2R	3.5 ± 1.0

All remaining requirements for Class Q2 will apply.

ADDITIONAL QUANTITIES

Included in the Estimate of Quantities are 200 tons of Class Q2R Hot Mixed Asphalt Concrete, 2.0 ton of Hydrated Lime, and 9.2 tons of PG 58-34 Asphalt Binder per mile for Alt A, and 200 tons of Class Q2R Hot Mixed Asphalt Concrete, 2.0 ton of Hydrated Lime, and 7.4 tons of PG 58-34 Asphalt Binder per mile for Alt. B and 7.7 tons of SS-1h or CSS-1h Asphalt for Tack for spot leveling, strengthening, and repair of the existing surface throughout the project.

ASPHALT CONCRETE BLADE LAID

Included in the Estimate of Surfacing Quantities are 150 tons of Asphalt Concrete Blade Laid, 1.5 tons of Hydrated Lime, and 11.1 tons of PG 58-34 Asphalt Binder per mile and will be tight bladed on the existing surface 24 feet wide prior to the overlay.

Mineral Aggregate for tight bladed material will use only the fine aggregate components combined in the same proportions as the Class Q2R Hot Mixed Asphalt Concrete mix. Quality testing is not required on the coarse aggregate (+No. 4 sieve) in this mixture.

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

Included in the Estimate of Surfacing Quantities are 5.6 tons of SS-1h or CSS-1h Asphalt for Tack for use prior to the application of the Blade Laid lift. (Rate = 0.09 Gal./Sq.Yd.)

UNCLASSIFIED EXCAVATION, DIGOUTS

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

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

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

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

A copy of the surfacing/subgrade investigation for this project is available from the Rapid City Region and Belle Fourche Area offices.

BASE COURSE, SALVAGED ASPHALT MIX

Base Course, Salvaged Asphalt Mix estimated at a rate of 50 tons per mile per shoulder will be obtained from the cold milled material produced on this project and placed at locations identified by the Engineer to prevent a shoulder drop off. The gravel sluff will be shaped and flattened as needed to ensure the slopes shown on the typical section are met. Base Course, Salvaged Asphalt Mix will also be placed on entrances at locations shown in the Table of Additional Quantities.

The Base Course, Salvaged Asphalt Mix will be crushed to meet the requirements of Section 884.2 D.3 prior to placement.

Base Course, Salvaged Asphalt Mix will be compacted to the satisfaction of the Engineer.

ASPHALT CONCRETE COMPOSITE

Section 324 will apply except that Class Q2R Hot Mixed Asphalt Concrete as specified elsewhere in the plans may be used as Asphalt Concrete Composite.

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

RATES OF MATERIALS

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

Section 1

Sta. 0+00 to Sta. 400+29.5 (Thru Equations)

Section 2

Sta. 332+69 (2nd) to Sta. 744+47.2

Type: Class Q2R Hot Mixed Asphalt Concrete		Alt. A	Alt B.	
Basic Quantity of Aggregate	=	1217	1261	Ton/mile
Salvaged Asphalt Concrete	=	304	315	Ton/mile
PG 58-34 Asphalt Binder	=	73	61	Ton/mile
Total Mix	=	1594	1637	Ton/mile
Hydrated Lime: 1.0 %	=	16	16	Ton/mile
Total Mix With Hydrated Lime	=	1610	1653	Ton/mile
Laid 2 inches compacted depth; 27' bottom, 24' top.				

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of 1.2 tons applied 28 feet wide

(Rate = 0.06 gallon per square yard).

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of 3.4 tons/mile applied 27 feet wide

(Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 51.6 ton applied 22 feet wide (Rate = 8 lbs. per square yard).

THICKENED SURFACING SECTION (AT STR. NO. 32-517-215)

Geotextile Specification

Reinforcement Fabric (MSE) will conform to Section 831. The Reinforcement Fabric (MSE) provided will be on the Approved Products List or will be certified by the supplier to meet this specification prior to installation.

Reinforcement Fabric (MSE) will be paid for at the contract unit price per square yard for Reinforcement Fabric (MSE). Payment quantities will be based on area covered plus 15%. Overlaps are accounted for by the additional 15%. Payment will be full compensation for furnishing and installing the Reinforcement Fabric (MSE) only. Granular backfill materials will be paid for under a separate bid item.



Revised 7/15/24 GDS

Geotextile Installation Procedure

Prior to placing the reinforcement fabric (MSE), the upper 6 inches of subgrade will be scarified and recompacted. Payment for scarifying and recompacting will be incidental to the contract unit price per SqYd for Reinforcement Fabric (MSE).

Place the Reinforcement Fabric (MSE) on as level and smooth of surface as possible. Any protrusions that might damage the geotextile will be removed prior to placing the geotextile. No equipment will be allowed on the geotextile until the granular backfill material is in place. The geotextile will be kept as taut as possible prior to backfilling. Placement will be done so that subsequent granular cover material does not shove, wrinkle or distort the in-place geotextile.

The geotextile will be overlapped a minimum of 2 feet. The overlaps will be shingled in a manner that assures granular material will not be forced under the geotextile during backfilling operations.

Granular backfill material will be dumped behind the leading edge of the fill and pushed into place with a loader or dozer. The geotextile may be held in place with small piles of granular material or staples. Granular material will be dumped at least 20 feet behind the leading edge of the backfill and pushed into place with a loader or dozer from the covered areas to the uncovered areas. The granular material will conform to the requirements of Base Course and will be compacted to 97% of the maximum dry density.

TEMPORARY EXCAVATION

Temporary 1:1 excavation slope is required for remove and reset pipe sections at Station 5+80. The temporary slope will become unstable over the long-term. However, the slope should remain globally stable over the short-term during construction if measures are taken to divert runoff away from the slope and construction activities are sequenced to minimize the amount of time the temporary slope is left exposed and unsupported. Regular monitoring of the temporary slope is required during construction. If the temporary slope becomes unstable, excavation will cease, and the slope will be evaluated by the Engineer.

GRIND RUMBLE STRIPS/STRIPES IN ASPHALT CONCRETE

Asphalt concrete rumble strips/stripes will be constructed on the shoulders. Rumble strips/stripes will be paid for at the contract unit price per mile for Grind 8" Rumble Strip or Stripe in Asphalt Concrete. It is estimated that 30.5 miles of asphalt concrete rumble strips/stripes will be required.

Rumble strip/stripe installation will be completed prior to application of the flush seal and permanent pavement markings. In the event the flush seal is eliminated from the contract, the Contractor will still be required to apply a flush seal to the newly installed 12" rumble strips/stripes at a width of 18" and at the same rate as specified in this plan set. No adjustment in payment will be made and SS-1h or CSS-1h Asphalt for Flush Seal will be paid at the contract unit price per ton.

GRIND 6" TRANSVERSE RUMBLE STRIP IN ASPHALT CONCRETE

Advance intersection warning transverse rumble strips will be constructed on the mainline pavement, as detailed in the plan set. Transverse rumble strips will be paid for at the contract unit price per foot for Grind 6" Transverse Rumble Strip in Asphalt Concrete. It is estimated that 442 feet of transverse rumble strips will be required.

Transverse rumble strips will be completed prior to application of the flush seal and permanent pavement markings. In the event the flush seal is eliminated from the contract, the Contractor will still be required to apply a flush seal to the newly installed transverse rumble strips at a width that extends 3" beyond the perimeter of the total area of the transverse rumble strips and at the same rate as specified in this plan set. No adjustment in payment will be made and SS-1h or CSS-1h Asphalt for Flush Seal will be paid at the contract unit price per ton.

SD 🔏	PROJECT	SECTION	SHEET
DOT	P 0079(90)203	Non	6/74

Revised 7/9/24 GDS

											Table of	Material Quar	ntities											
																Alternate A Alternate B								
Section	ı	Sta.	to	Sta.	Net Length	Net Length	Asphalt	Unclassified Excavation, Digouts	Remove Asphalt Concrete Pavement	Base Course	Reinforcement Fabric (MSE)	Asphalt Concrete Composite	Water for Granular Material	Course, Salvaged Asphalt Mix	Class Q2R Asphalt Concrete	PG 58-34 Asphalt Binder	Hydrated Lime	Class Q2R Asphalt Concrete	PG 58-34 Asphalt Binder	Hydrated Lime	Asphalt Concrete Blade Laid	SS-1h or CSS-1h Asphalt for Tack		Sand for Flush Seal
					(Ft)	(Miles)	(Sq Yd)	(CuYd)	(Sq Yd)	(Ton)	(SqYd)	(Ton)	(Mgal)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)
1		0+00.00		34+08.34	3408.34	0.65	9657.0	32.5	48.8	65.0		16.3	1.3	65.0	1046.5	47.5	10.4	1074.5	39.7	10.4		6.4	2.2	33.5
		34+91.66		47+47.00	1255.34	0.24	3556.8	12.0	18.0	24.0		6.0	0.5	24.0	386.4	17.5	3.8	396.7	14.6	3.8	<u></u>	2.4	0.8	12.4
	2nd	46+47.00	2nd	78+28.00	3181.00	0.60	9012.8	30.0	45.0	60.0		15.0	1.2	60.0	966.0	43.8	9.6	991.8	36.6		ļ	5.9	2.0	31.0
	2nd	80+62.00	2nd	190+64.75	11002.75	2.08	31174.4	104.0	156.0	208.0		52.0	4.2	208.0	3348.8		33.3	3438.2	126.9	33.3	ļ	20.4	7.1	107.3
	2nd	191+47.75	2nd	400+29.50	20881.75	3.95	59165.0	197.5	296.3	395.0		98.8	7.9	395.0	6359.5	288.4	63.2	6529.4	241.0	63.2	ļ	38.7	13.4	203.8
2	3rd	332+69.00	3rd	383+55.25	5086.25	0.96	14411.0	48.0	72.0	96.0		24.0	1.9	96.0	1545.6	70.1	15.4	1586.9	58.6		<u> </u>	9.4	3.3	49.5
	3rd	388+14.42	3rd	744+47.00	35632.58	6.75	100959.0	337.5	506.3	675.0		168.8	13.5	675.0	10867.5	492.8	108.0	11157.8			 	66.2	23.0	
Addition	ıal Quan	itities				<u> </u>	<u> </u>			488.2	516.8	120.0	,		3573.0	164.2	35.8	3577.0	132.4	35.8	2284.5	12.7		
						Total	227936.0	761.5	1142.4	2011.2	516.8	500.9	30.5	1523.0	28093.3	1276.1	279.5	28752.3	1061.6	279.5	2284.5	162.1	51.8	785.8



PROJECT SECTION SHEET
P 0079(90)203 Non 7/74

							Ta	ble of Add	ditional Qu	antities							
								Alternate /	4		Alternate I	3					
					Net Length	Net Length	Class Q2R Asphalt Concrete	PG 58-34 Asphalt Binder	Hydrated Lime	Class Q2R Asphalt Concrete	PG 58-34 Asphalt Binder	Hydrated Lime	Asphalt Concrete Blade Laid	SS-1h or CSS-1h Asphalt for Tack	Asphalt Concrete Composite	Base Course	Reinforcing Fabric (MSE)
Section	n	Sta.	to	Sta.	(Ft)	(Miles)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(SqYd)
Repair	and Lev	elling/															
1		0+00.00		34+08.34	3408.344	0.65	130.0	6.0	1.3	130.0	4.8	1.3	97.5				
		34+91.66		47+47.00	1255.344	0.24	48.0	2.2	0.5	48.0	1.8	0.5	36.0				
	2nd	46+47.00	2nd	78+28.00	3181	0.6	120.0	5.5	1.2	120.0	4.4	1.2	90.0				
	2nd	80+62.00	2nd	190+64.75	11002.745	2.08	416.0	19.1	4.2	416.0	15.4	4.2	312.0				
	2nd	191+47.75	2nd	400+29.50	20881.75	3.95	790.0	36.3	7.9	790.0	29.2	7.9	592.5				
2	3rd	332+69.00	3rd	383+55.25	5086.25	0.96	192.0	8.8	1.9	192.0	7.1	1.9	144.0				
	3rd	388+14.42	3rd	744+47.00	35632.58	6.75	1350.0	62.1	13.5	1350.0	50.0	13.5	1012.5				
														7.7			
Pads,	Maibox	Turnouts, &	54				350	16.1	3.5	350	13	3.5		3			
Inter	secting	Roads															
Bridge	Approa	ch Work Str.	32-517-21	.5)										1	120.0	488.2	2 516.8
Guardı	ail Insta	allations					177	8.1	1.8	181	6.7	1.8		1			
						Total	3573.0	164.2	35.8	3577.0	132.4	35.8	2284.5	12.7	120.0	488.2	516.8

	Table of Specified Compaction									
							Alter	nate A	Alter	nate B
Section		Sta.	to	Sta.	Net Length	Net Length	Class Q2R Asphalt Concrete with Specified Compaction	Class Q2R Asphalt Concrete without Specified Compaction	Class Q2R Asphalt Concrete with Specified Compaction	Class Q2R Asphalt Concrete without Specified Compaction
					(Ft)	(Miles)	Ton	Ton	Ton	Ton
1		0+00.00		34+08.34	3408.34	0.65	1008.9	37.6	1036.1	38.4
		34+91.66		47+47.00	1255.34	0.24	371.6	14.8	381.6	15.1
	2nd	46+47.00	2nd	78+28.00	3181.00	0.60	941.6	24.4	967	24.8
	2nd	80+62.00	2nd	190+64.75	11002.75	2.08	3256.8	92.0	3344.8	93.4
	2nd	191+47.75	2nd	400+29.50	20881.75	3.95	6181	178.5	6348.1	181.3
2	3rd	332+69.00	3rd	383+55.25	5086.25	0.96	1505.5	40.1	1546.2	40.7
	3rd	388+14.42	3rd	744+47.00	35632.58	6.75	10547.2	320.3	10832.3	325.5
Additional Quantities								3573.0		3577.0
						Total	23812.6	4280.7	24456.1	4296.2

CLASS Q2R ASPHALT CONCRETE COMPACTION

The shoulders, surfacing lifts 1" or less and all items in the Table of Additional quantities will be compacted without specified density. The driving lanes greater than 1" lift thickness will be compacted to specified density.

REINFORCED CONCRETE PIPE

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

CLEANOUT PIPE CULVERT

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

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

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

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

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

CLEANOUT FOR CULVERT TREATMENT

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

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

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

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

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

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

CURED IN PLACE PIPE (CIPP) LINER

See Special Provision for Glass Reinforced Plastic (GRP) Ultraviolet Light (UV) Cured in Place Pipe (CIPP) Liner. If cross sections are not provided in the plans, the height of the fill will be determined by the Contractor. An on-site inspection will be required prior to preparing the bid.

REMOVE & RESET PIPE

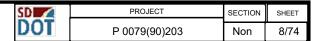
The Contractor will tie each section of pipe to the adjacent sections with tie bolts conforming to Standard Plate 450.18. All costs for drilling holes, furnishing, and installing the tie bolt assembly will be incidental to the corresponding pipe bid item.

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

CLEAR AND GRUB TREE

One tree will be removed at MRM 212+0.251 – Lt. All costs for removal of the tree will be paid for at the unot price per each for Clear and Grub Tree,

	Table of Incidental Work, Grading								
MRM	Disp	L/R	Notes						
205	0.801	L	Channel Shaping as directed by the Engineer						
206	0.092	R	Channel Shaping as directed by the Engineer						
207	0.026	L	Channel Shaping as directed by the Engineer						
207	0.307	R	Channel Shaping as directed by the Engineer						
208	0.069	R	Channel Shaping as directed by the Engineer						
209	0.018	R	Channel Shaping as directed by the Engineer						
209	0.272	R	Channel Shaping as directed by the Engineer						
209	0.957	R	Channel Shaping as directed by the Engineer						
210	0.281	R	Channel Shaping as directed by the Engineer						
212	0.251	L	Channel Shaping as directed by the Engineer						





PROJECT SECTION SHEET
P 0079(90)203 Non 9/74

Table of Pipe Work Quantities Remove Number of Remove | Pipe End Reset Remove Pipe Pipe Pipe End | Section | Pipe End | Pipe for Reset Pipe Tube MRM Type Shape Pipe Size Width/Dia. Disp Height Culvrts Lengths Materials Notes Section for Reset Section Reset Pipe (ln) (ln) (Ft) (Each) (Each) (Each) (Each) (Ft) (ln) 203.75 + 0.021 Pipe Round 18 18 18 68 Replace (LT) end section. Install Gabions (RT) 24 204 + 0.414 Pipe Round 24 24 110 Concrete Replace (LT) end section. 1 18 204 + 0.963Pipe Round 18 18 86 Concrete Replace (LT) end section. 1 205 + 0.288 24 24 24 Concrete Remove and reset end sections. Install Gabion baskets (RT). 2 2 Pipe Round 96 24 24 Concrete Remove and Reset End Section - Rt 205 + 0.801Pipe Round 24 206 + 0.092 Pipe Round 96 96 96 2 160 Metal Install end treatments (RT), 2 206 + 0.158 CP 48 72 Concrete Inslope cavity at old CP ends, need to be backfilled. (LT & RT) 206 + 0.281 18 18 2 Pipe Round 18 68 Concrete Replace end sections (LT & RT). 206 + 0.577 Round 42 42 42 114 Concrete CIPP. Replace end sections. Pipe 207 + 0.307 Pipe Round 24 24 24 Concrete Reset (RT) end section, Install Gabions (RT), 6'x8'x2' scour. 78 207 + 0.942 73 45 Concrete CIPP Pipe Arch 2 56 208 + 0.069 18 18 18 52 Concrete Replace end sections (LT & RT). Repair erosion control (RT) Pipe Round 2 18 18 18 2 208 + 0.199 Pipe Round 82 Concrete Replace end sections (LT & RT). 208 + 0.596Pipe Round 24 24 24 64 Concrete Replace RT end section, 2 208 + 0.850 Pipe Round 60 60 60 90 Concrete CIPP 209 + 0.018 Pipe Round 24 24 24 80 Concrete CIPP. Replace end sections. 1 24 Concrete CIPP. Remove and reset RT end section plus first joint. 209 + 0.169 Pipe Round 24 24 108 8 8 209 + 0.312 18 18 44 Concrete Replace LT end section. Remove and reset RT end section Pipe Round 18 1 1 209 + 0.446 42 42 2 Pipe Round 42 86 Concrete Replace end sections (LT & RT). Install Gabion baskets. (9'x 9'x2') scour. 30 209 + 0.727 Pipe Round 30 30 Concrete Remove and reset end sections. Install Gabions RT (9'x 9'x1') scour. 2 2 209 + 0.957 48 48 48 Pipe Round Concrete Remove and reset RT end section, Shape to drain. 120 210 + 0.281 Pipe Round 24 24 24 96 Concrete Remove and reset LT end section. 1 211 + 0.292 Pipe Round 36 36 36 124 Concrete Replace RT end section, 1 212 + 0.251Pipe Round 60 60 60 242 Concrete Repair piping, remove tree (LT) 212 + 0.946Pipe Round 30 30 30 30 Concrete Extend (LT) 6 - 8'. 213 + 0.182 Pipe Round 42 42 42 108 Concrete Replace RT end section, Add additional Riprap 213 + 0.742 Pipe Round 30 30 30 36 Concrete Remove and reset end sections. Extend culvert 6-8' per side. 2 215 + 0.071 Pipe Round 18 18 18 80 Concrete Remove and reset RT end section. Install gabion baskets. (6'x8'x2') scour 24 24 215 + 0.258 24 Concrete Remove and reset RT end section. Install gabion baskets. (9'x9'x2') scour Pipe Round 216 + 0.270 24 24 Concrete Replace RT end section, Remove and reset LT end section, Extend LT culvert 6-8'. Pipe Round 24 46 216 + 0.467 30 30 34 Concrete Remove and reset end sections. Extend culvert 6-8' per side. Pipe Arch 30 2 2 217 + 0.068Pipe Round 84 84 84 150 Concrete Install end sections LT & RT. 217.65 + 0.062 Pipe Round 18 18 18 Metal Install end sections LT & RT. 217.65 + 0.213 36 36 Pipe Arch 36 36 Concrete Remove and reset end sections. Extend culvert 6-8' per side. 2 2 219 + 0.046 Pipe Round 48 48 48 88 Concrete Extend pipe both sides 6' each. 2 sections seperated on RT. Fix riprap. 2 2 16 16 22 23 23 24 24 Total



PROJECT SECTION
P 0079(90)203 Non

SHEET

10/74

Table of Pipe Work Quantities (Continued) 36" RCP 18" RCP 18" RCP 24" RCP 24" RCP 30" RCP 30" RCP 36" RCP 36" RCP 42" RCP 42" RCP 60" RCP 60" RCP 36" RCP 48" RCP 18" RCP 18" 24" RCP 30" RCP Arch Safety Safety | Sloped | Sloped | Sloped | Sloped | Sloped | Flared | Flared | Flared | Flared Class 2, | RCP, | Class 2, | 24" RCP, | Class 2, | 30" RCP, Class 2, Arch, Class 2, 48" RCP, End, MRM Furnish Disp Furnish Install Furnish Install Furnish Install Furnish Install Furnish Install Install Furnish Install Furnish Install Furnish Install Furnish Install Furnish Install (Ft) (Each) (Ft) (Ft) (Ft) (Ft) (Ft) (Ft) (Ft) (Ft) (Ft) 203.8 + 0.021 204 + 0.414 4 4 1 204 + 0.963 4 1 + 0.288 205 + 0.801 205 206 + 0.092 + 0.158 206 206 + 0.281 2 206 + 0.577 207 + 0.307 207 + 0.942 208 + 0.069 8 2 2 208 + 0.199 8 2 + 0.596 208 8 2 8 2 208 + 0.850 209 + 0.018 4 4 1 209 + 0.169 209 + 0.312 209 + 0.446 2 2 + 0.727 209 209 + 0.957 210 + 0.281 + 0.292 1 + 0.251 212 2 2 212 + 0.946 6 6 213 + 0.182 213 + 0.742 14 14 2 2 215 + 0.071 + 0.258 215 216 + 0.270 16 16 2 2 216 + 0.467 12 12 217 + 0.068 217.7 + 0.062 2 2 217.7 + 0.213 12 12 + 0.046 12 12 Total 28 28 32 32 32 32 12 12 12 12 10 10 6 6 2 2 3

 PROJECT
 SECTION
 SHEET

 P 0079(90)203
 Non
 11/74

Revised 7/9/24 GDS

						Table	of Pipe Wo	rk Quantitie	s (Continu	ed)						
MRM Disp	84" RCP Flared End, Furnish	84" RCP Flared End, Install	Н	24" Cured in Place Pipe	42" Cured in Place Pipe	60" Cured in Place Pipe	60" Cured in Place Arch Pipe	PVC Coated Bank and Channel Protection Gabion	Salvage Riprap		Place Riprap	Type B Drainage Fabric	Cleanout Pipe Culvert	Cleanout for Culvert Treatment	Contractor Furnished Borrow Excavation	12" Diameter Erosion Control Wattle
	(Each)	(Each)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(CuYd)	(Ton)	(Ton)	(Ton)	(SqYd)	(Each)	(Each)	(CuYd)	(Ft)
203.75 + 0.021								3.6				16				
204 + 0.414	 	T			I						I		1			20
204 + 0.963																20
205 + 0.288]							2.7				12				
205 + 0.801	l	T			1								1			
206 + 0.092										154		172				20
206 + 0.158											[20
206 + 0.281]															20
206 + 0.577			14		115									1		20
207 + 0.307								3.6				16				20
207 + 0.942			8				112							2		20
208 + 0.069									30	30	30	78				
208 + 0.199																20
208 + 0.596																20
208 + 0.850			12.5			90								1		20
209 + 0.018			8	84										1		20
209 + 0.169			8	108										1		20
209 + 0.312																20
209 + 0.446		T			1			6				19	1			
209 + 0.727		T			I			6			I	19	l			
209 + 0.957	 	T			I						I		1			20
210 + 0.281																20
211 + 0.292																20
212 + 0.251															40	20
212 + 0.946															40	20
213 + 0.182										20		32				
213 + 0.742											<u> </u>				20	20
215 + 0.071								3.6				16	1			
215 + 0.258								6				19				
216 + 0.270															30	20
216 + 0.467	<u></u>										<u> </u>		1		20	20
217 + 0.068	2	2									[20
217.65 + 0.062]										I		1			20
217.65 + 0.213													1			20
219 + 0.046									45	45	45	107			40	20
Total	2	2		192	115	90	112	31.5	75	249	75	506	4	6	190	520

REMOVE AND REPLACE TOPSOIL

Topsoil will also be salvaged and stockpiled prior to constructing the following: culvert work and guardrail embankment 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 along areas to be resurfaced will be incidental to the contract lump sum price for Remove and Replace Topsoil.

EROSION CONTROL

All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding and fertilizing 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.

Mycorrihizal 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 a minimum 25% the fungal species *Rhizophagus intraradices*. The remaining 75% may include other endomycorrhizal fungal species.

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>
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
LALRISE Prime and Max WP	Lallemand Specialties Inc. Milwaukee, WI Phone: 1-844-590-7781 www.lallemandplantcare.com

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:

<u>Product</u>	<u>Manufacturer</u>
Sustane	Sustane Corporate Headquarte 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
Nature Safe	Nature Safe Fertilizers Irving, TX Phone: 1-605-759-5622

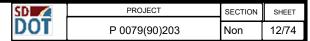
www.naturesafe.com

Permanent Seeding

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

Type F Permanent Seed Mixture will consist of the following:

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



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.

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 Wattles

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

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

TABLE OF FIXED TRAFFIC CONTROL SIGNS

Location	MRM	L/R	Description
SD20	55.64	R	Road Work Ahead (1)
SD20	55.64	L	End Road Work (1)
SD20	56.76	L	Road Work Ahead (1)
SD20	56.76	R	End Road Work (1)
SD79	203.77	R	Road Work Next 16 Miles (1)
Side Street	206.94(SD79)	R	Road Work Ahead (1)
Olson Road	212.94(SD79)	R	Road Work Ahead (1)
Wagner Road	216.15(SD79)	L	Road Work Ahead (1)
Abelseth Road	217.20(SD79)	R	Road Work Ahead (1)
SD79	219.16	L	Road Work Next 16 Miles (1)
SD79	219.73	L	Road Work Ahead (1)
SD79	219.73	R	End Road Work (1)

All signs will be spaced according to the posted speed or as directed by the Engineer.

TABLE OF FIXED TRAFFIC CONTROL SIGNS AT STR. NO. 32-517-215

Location	MRM	Description
SD79	210.59	Road Work Ahead (2)
		Pavement Ends (45 MPH Plaque) (2)
		Loose Gravel (25 MPH Plaque) (2)
		Bump (2)
		Bump Markers (4)

All signs will be spaced according to the posted speed or as directed by the Engineer.

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".

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

The Contractor will need to install LOOSE GRAVEL (W8-7) signs with advisory speed plaques (W13-1P) in areas where loose sand is present during the flush seal operation. LOOSE GRAVEL signs have been included in these plans for this.

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

A mobile work operation will be allowed provided the rumble strip or rumble stripe grooving, flush sealing, and pavement marking can be completed satisfactorily by a continuously moving work operation. A mobile work operation will require approval by the Engineer



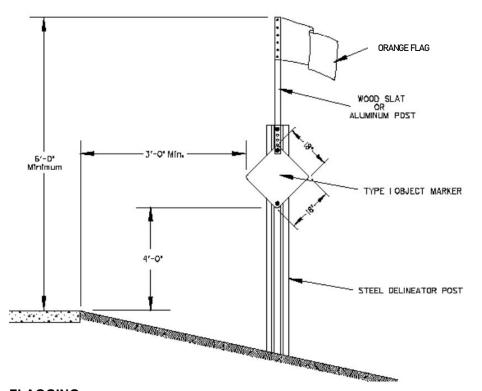
Revised 7/9/24 GDS

BUMP MARKERS

Orange bump markers will be placed adjacent to the bump location. The bump marker details are shown in the following drawing. The steel delineator post will be a 1.12 lb/ft flanged channel steel post for ground mounted installation. If the duration is less than 3 days, the Type 1 Object Marker can be installed on temporary supports. Type 1 Object Markers need to be back-to-back for two-way traffic operations.

BUMP (W8-1) signs with appropriate ADVISORY SPEED (W13-1P) plaques will be placed 500 feet in advance of the bump or as approved by the Engineer for adequate sight distance.

All costs for bump markers, bump signs, and advisory speed plaques will be incidental to 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.

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

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

		CONVENTIONAL ROAD				
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT	
W3-4	BE PREPARED TO STOP	3	48" x 48"	16.0	48.0	
W8-1	ВИМР	12	48" x 48"	16.0	192.0	
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0	
W8-7	LOOSE GRAVEL	10	48" x 48"	16.0	160.0	
W8-11	UNEVEN LANES	2	48" x 48"	16.0	32.0	
W8-15	GROOVED PAVEMENT	8	48" x 48"	16.0	128.0	
W8-15P	MOTORCYCLE (plaque)	8	24" x 18"	3.0	24.0	
W8-2	PAVEMENT ENDS	2	48" x 48"	16.0	32.0	
W13-1P	ADVISORY SPEED (plaque)	24	30" x 30"	6.3	151.2	
W20-1	ROAD WORK AHEAD	9	48" x 48"	16.0	144.0	
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	
W21-1	WORKERS (symbol)	2	48" x 48"	16.0	32.0	
W21-2	FRESH OIL	8	48" x 48"	16.0	128.0	
W21-5	SHOULDER WORK	2	48" x 48"	16.0	32.0	
G20-1	ROAD WORK NEXT 16 MILES	2	36" x 18"	4.5	9.0	
G20-2	END ROAD WORK	3	36" x 18"	4.5	13.5	
-	TYPE 1 ORANGE OBJECT MARKER	48	18" x 18"	2.3	110.4	
			VENTIONAL CONTROL SI		1396.1	

TEMPORARY PAVEMENT MARKING

The total length of no passing zone on this project is estimated to be 5.0 miles.

It is estimated that 42 DO NOT PASS (R4-1) and 42 PASS WITH CARE (R4-2) signs will be required to mark the no passing zones, should the Contractor elect to use these signs.

Temporary flexible vertical markers (tabs) may be used as detailed in the specifications.

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

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

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

Quantities of Temporary Pavement Markings consist of:

One pass on top of the milled surface
One pass on top of the final lift of asphalt concrete
One pass prior to the flush seal, length as determined by the Engineer
One pass after the flush seal

If the Engineer determines that an additional pass prior to the flush seal is not required, this application of the temporary pavement marking will be eliminated. If the flush seal is eliminated for the project, the application of the temporary pavement marking on top of the flush seal as well as the additional pass prior to 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.

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.

PERMANENT PAVEMENT MARKING

The Contractor will be required to repaint all existing pavement markings including centerline, edge line, lane lines. This list is approximate. The Contractor will be required to document and be able to relocate for replacement of the existing pavement marking before the markings are obliterated. The cost to duplicate the existing marking locations will be incidental to the contract unit prices for the various contract items.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

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

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

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

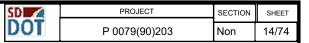


	Table of Pavement Marking								
					Net Length	Net Length	High Build Waterborne Pavement Marking Paint, White	High Build Waterborne Pavement Marking Paint, Yellow	Grind 8" Rumble Strip or Stripe in Asphalt Concrete
Section		Sta.	to	Sta.	(Ft)	(Miles)	Gal	Gal	Mile
1		0+00.00		34+08.34	3408.34	0.65	29.3	22.7	1.3
		34+91.66		47+47.00	1255.34	0.24	10.8	8.4	0.48
	2nd	46+47.00	2nd	78+28.00	3181.00	0.60	27	20.9	1.2
	2nd	80+62.00	2nd	190+64.75	11002.75	2.08	93.6	72.6	4.16
	2nd	191+47.75	2nd	400+29.50	20881.75	3.95	177.8	137.9	7.9
2	3rd	332+69.00	3rd	383+55.25	5086.25	0.96	43.2	33.5	1.92
	3rd	388+14.42	3rd	744+47.00	35632.58	6.75	303.8	235.6	13.5
	,	•			•	Total	685.5	531.6	30.46

TEMPORARY FENCE

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

	Table of Fence Quantities								
				Remove Fence	Type 2 Right-of- Way Fence	Type 1 Temporary Fence	2 Post Panel		
	Sta.	to	Sta.	Ft	Ft	Ft	Each		
Parcel 1	a362+73		a363+95	110	110	220	2		
Parcel 2	b620+50	 	b62150	100	100	200	2		
			Total	210	210	420	4		

MAILBOXES

The Contractor will reset the existing mailboxes on new posts with the necessary support hardware for single or double mailbox assemblies. The local Postmaster will determine the recommended mounting height of the mailboxes throughout the project. The Contractor will coordinate with the Engineer on the proper postal representative to contact.

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

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

Table of Mailboxes					
Refurbish	Refurbish				
Single	Double				
Mailbox	Mailbox				
Each	Each				
5	1				

GRADING ADJACENT TO GUARDRAIL

As per the AASHTO Roadside Design Guide, 4th Edition 2011, Page 8-5, Section 8.3.3.2 Adjacent Grading:

Major reconstruction projects often can include this grading (as shown in Standard Plate 630.88) with minimal impact; however, smaller project may only involve installation of guardrails. And it may not be cost-effective or practical to provide the grading. In these locations, the area immediately behind the terminal should be at least similar in nature to the roadside immediately upstream of the terminal.

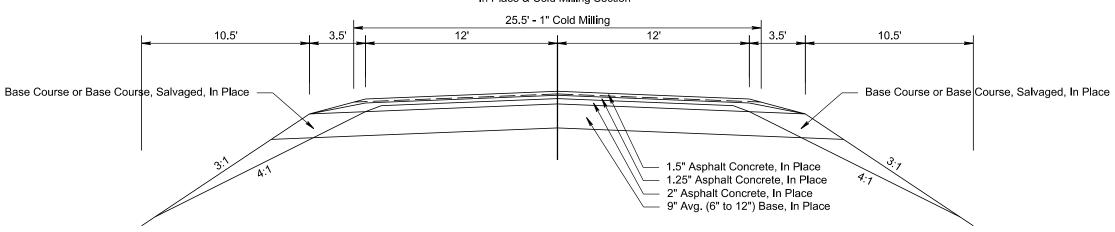
					Tak	ole of Gua	rdrail					
		Remove Rubrail	Beam	Remove W Beam Guardrail End Terminal	Type 1		W Beam Guardrail to MGS Transition	Type 2A Guardrail Transition	with Wood	Straight Double Class B W Beam Guardrail with Wood Posts	Straight Class A W Beam Guardrail with Wood Posts	Rubrai
Str. No.	MRM	Ft	Ft	Each	Ft	Each	Each	Each	Ft	Fy	Ft	Ft
32-517-215	210.59		168.75 118.75	1	25 25	1		1				
			168.75	1	25	1		1				
			118.75	1		1		1				
32 -520-166	215.52	8.2	125	1	25	1	1		12.5	12.5	12.5	8.2
		8.2	62.5	1	25	1	1		12.5	12.5	12.5	8.3
		8.2	125	1	25	1	1		12.5	12.5	12.5	8.3
		8.2	62.5	1	25	1	1		12.5	12.5	12.5	8.2
32-518-145	217.65		181.25	1	25	1		1				
			118.75	1	25	1		1				
			181.25	1	25	1		1				
			118.75	1	25	1		1				
32-520-136	218.51	8.2	125	1	25	1	1		12.5	12.5	12.5	8.2
		8.2	62.5	1	25	1	1		12.5	12.5	12.5	8.3
		8.2	125	1	25	1	1		12.5	12.5	125	8.2
		8.2	62.5	1	25	1	1		12.5	12.5	12.5	8.3
	Total	65.6	1925	16	400	16	8	8	100	100	212.5	65.6

SD	PROJECT	SECTION	SHEET	
DOT	P 0079(90)203	Non	15/74	

Base Course or Base Course, Salvaged, In Place

Section 1

Sta. 0+00 to Sta. 400+29.5 (Thru Equations) In Place & Cold Milling Section



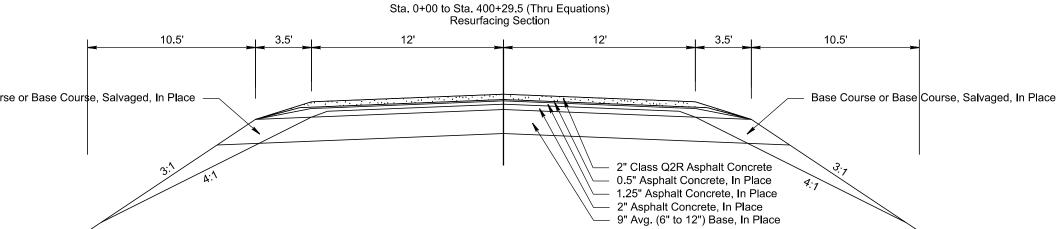
Equation:

Sta. b 46+47 = Sta. a 47+47

Bridge Exceptions:

MRM 215.52 - 84.5' MRM 217.65 - 232.3' MRM 218.51 - 84.5'

Section 1

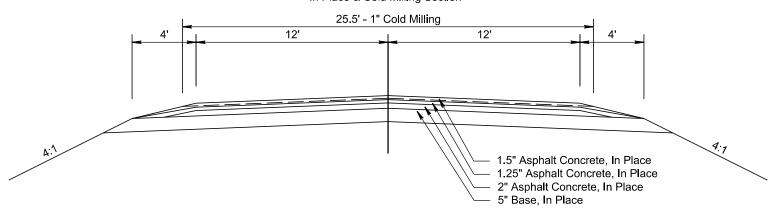


TYPICAL SURFACING SECTION

SDEADOT PROJECT SECTION SHEET P 0079(90)203 Non 17/74 Plotting Date: 06/24/2024

Section 2

Sta. 332+69 (2nd) to Sta. 744+47.2 In Place & Cold Milling Section

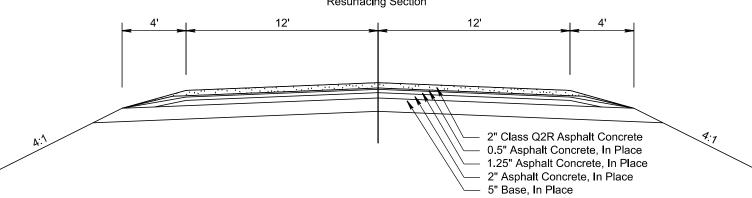


Bridge Exceptions:

MRM 210.59 - 459.4'

Section 2

Sta. 332+69 (2nd) to Sta. 744+47.2 Resurfacing Section



TRRC12608 File - ...\06RR_Typical Sections 3D.dgn

LEGEND

_ exercise

⊙

— он —

Ø

-****-\

⊙

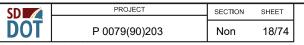
(9)

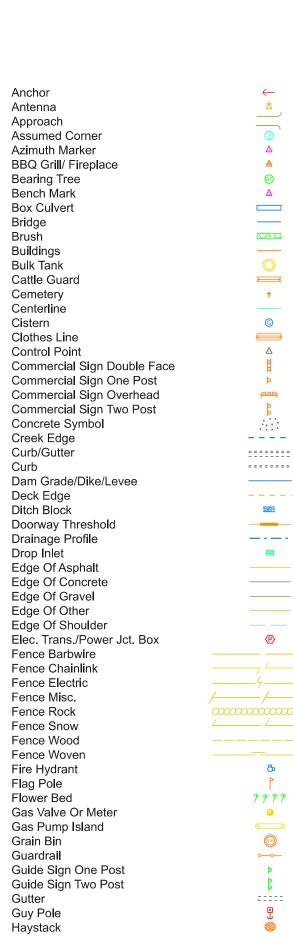
PS

-04

0000000

028a





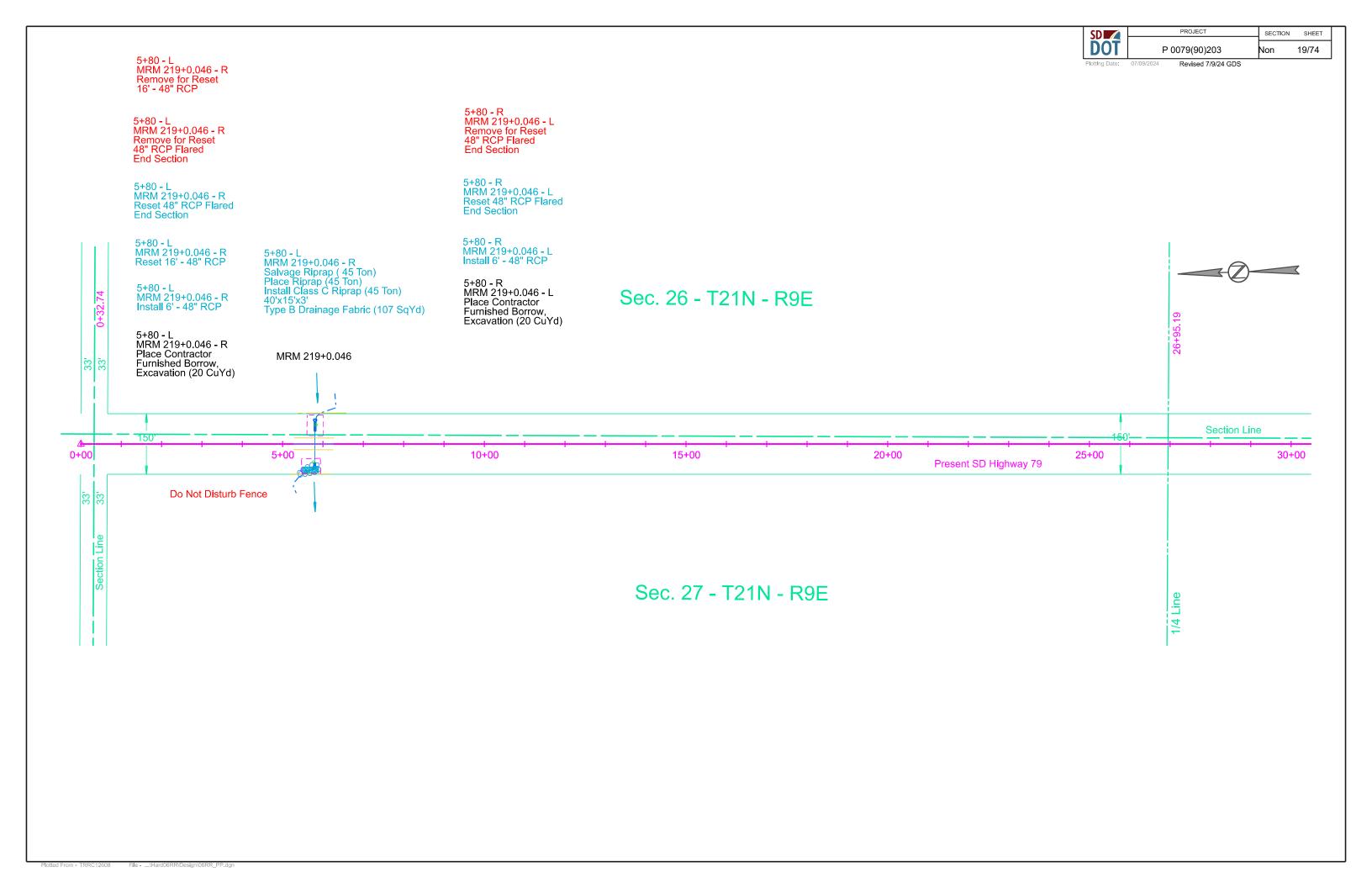
Hedge	
Highway ROW Marker	
Interstate Close Gate	
Iron Pin	
Irrigation Ditch	
Lake Edge	
Lawn Sprinkler	
Mailbox Manhole Electric	
Manhole Gas	
Manhole Misc	
Manhole Sanitary Sewer	
Manhole Storm Sewer	
Manhole Telephone	
Manhole Water	
Merry-Go-Round Microwave Radio Tower	
Misc. Line	
Misc. Property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

Rockpiles Satellite Dish

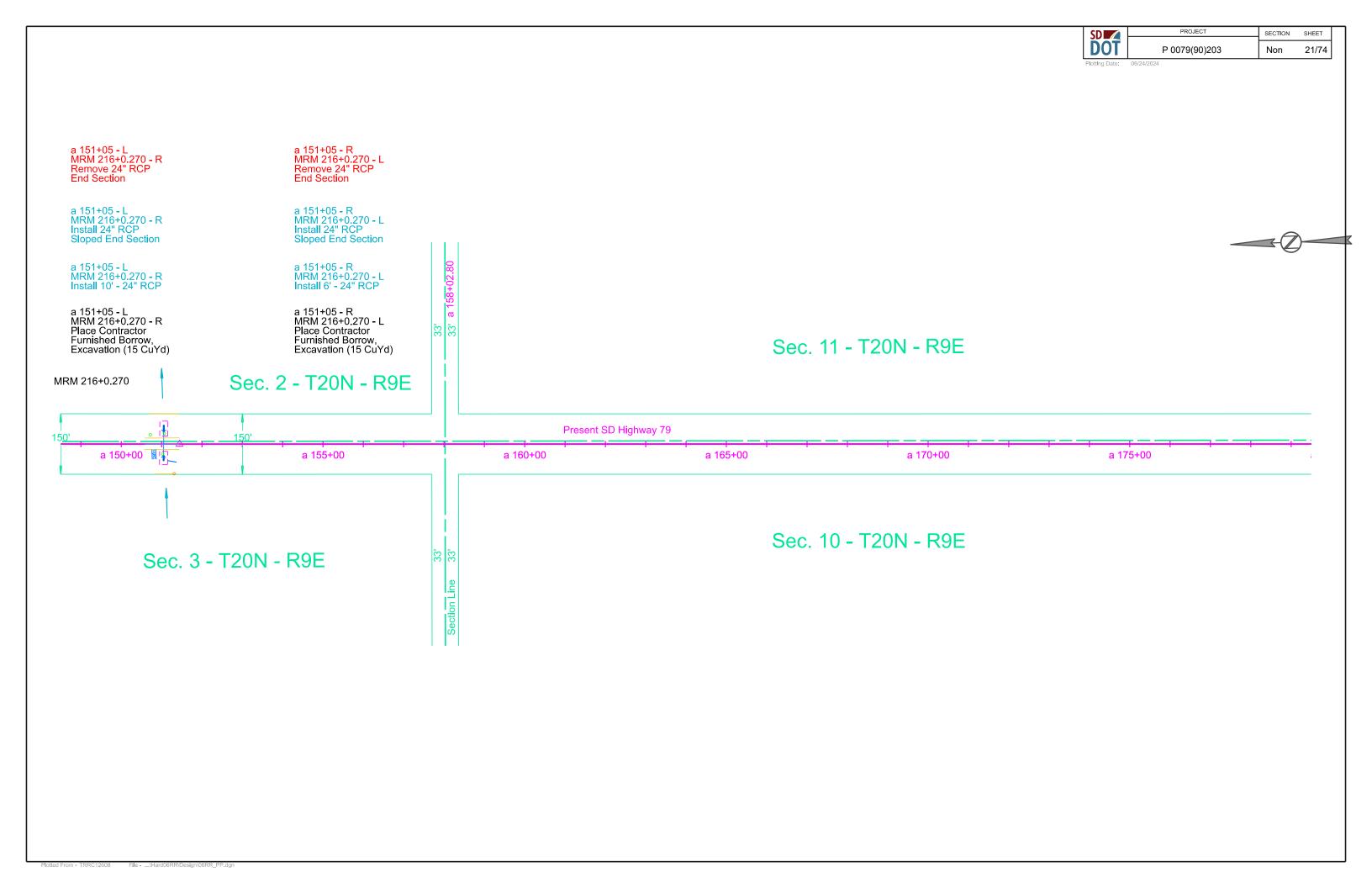
O and a Taula	
Septic Tank	
Shrub Tree	
Sidewalk	
Sign Face	
Sign Post	
Slough Or Marsh	
Spring	
Stream Gauge	
Street Marker	
Subsurface Utility Exploration Te	et Hole
Telephone Fiber Optics	3t Hole
Telephone Junction Box	
Telephone Pole	
Television Cable Jct Box	
Television Tower	
Test Wells/Bore Holes	
Traffic Signal	
Trash Barrel	
Tree Belt	
Tree Coniferous	
Tree Deciduous	
Tree Stumps	
Triangulation Station	
Underground Electric Line	
Underground Gas Line	
Underground High Pressure Gas	s Line
Underground Sanitary Sewer	
Underground Storm Sewer	
Underground Tank	
Underground Telephone Line	
Underground Television Cable	
Underground Water Line	
Warning Sign One Post	
Warning Sign Two Post	
Water Fountain	
Water Hydrant	
Water Meter	
Water Tower	
Water Valve	
Water Well	
Weir Rock	
Windmill	
Wingwall	
Witness Corner	

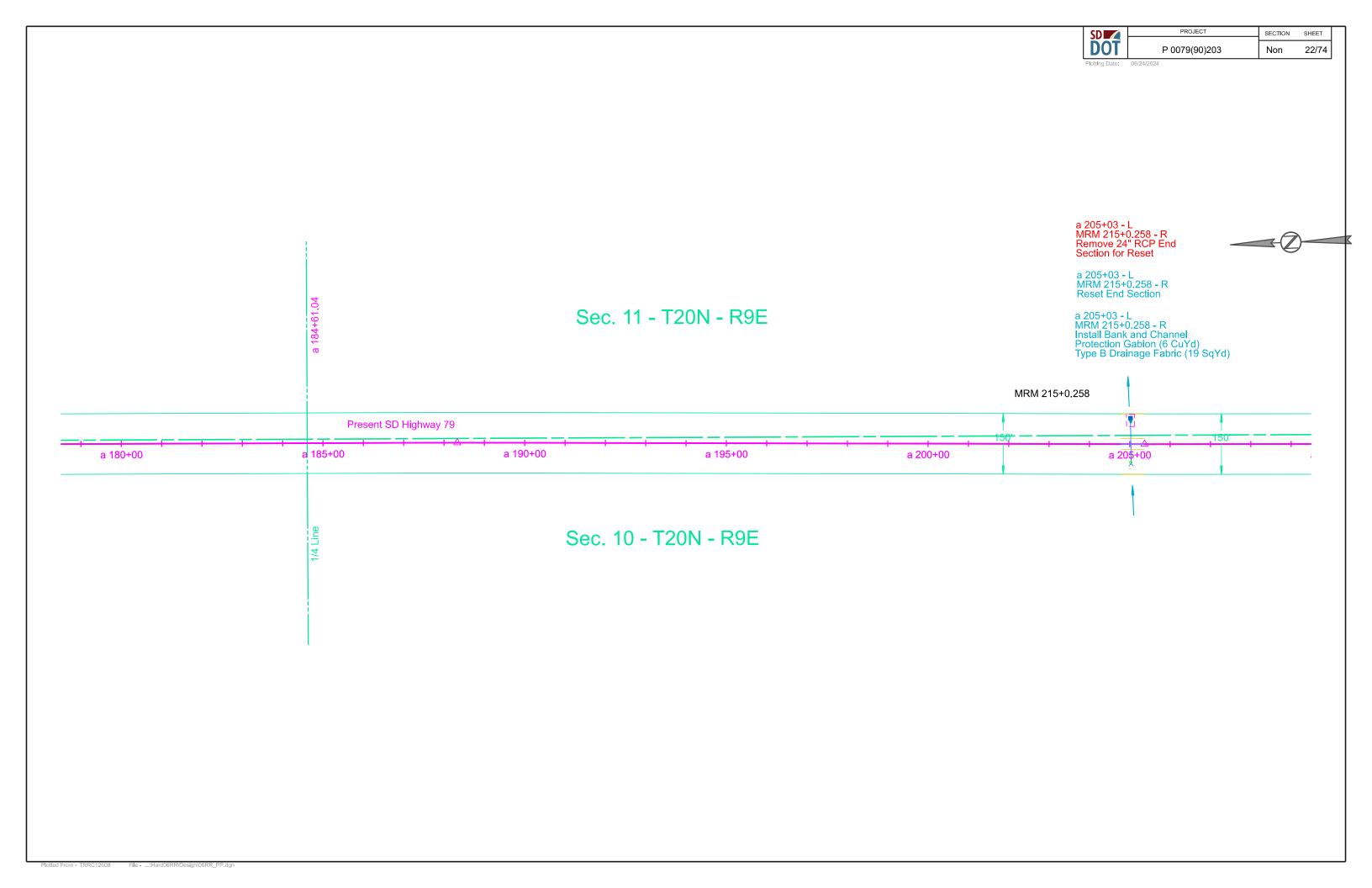
(WC)

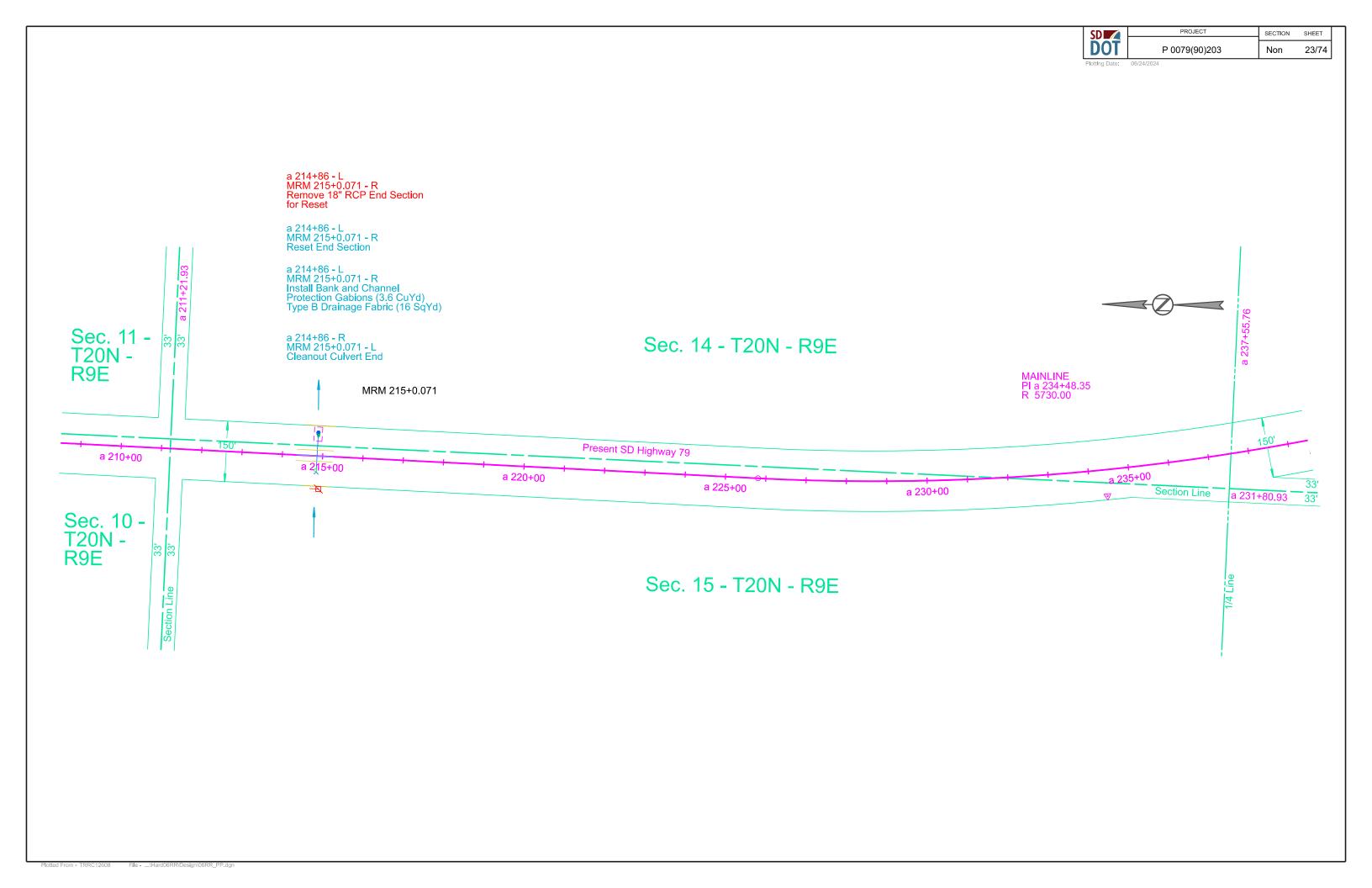
	Ψ	State and National Line	
	8	County Line —	
		Section Line —	
		Quarter Line —	
	0	Sixteenth Line —	
		Property Line —	
	$\sqrt{2}$	Construction Line —	
	ø	ROW Line —	
		New ROW Line —	
n Test Hole		Cut and Fill Limits	
1 1001 11010	— T/F —	Control of Access	
	⊕	New Control of Access ——————————————————————————————————	-0000
	Ø	Proposed ROW —	
	©	(After Property Disposal)	
	☆	(
	☆		
		Drainage Arrow	
	☆ ®	Drainage / trew	
	U		
	~~~~		
	*	Remove Concrete Pavement	
	<b>©</b>	Remove Concrete Pavement	
	A		XXXXXXX
	<u> </u>	Remove Concrete Driveway Pavement	(XXXXXXX)
	— P —		MAXAXA
	— G —	Remove Asphalt Concrete Pavement	
Gas Line	— HG —	rtemeve repnate contrate r avenient	KOKOKOKO
•	— s —	D 0 1 01 1	
	= s =	Remove Concrete Sidewalk	
	_		
	— T —	Remove Concrete Median Pavement	
е	— TV —		
	- w $-$	Remove Concrete Curb and/or Gutter	
	þ	Nemove Concrete Carb and/or Catter	
	þ Þ		
	Ţ		
	0		
	<b>(</b>	Detectable Warning	
	$\triangle$	Pedestrian Push Button Pole	<del>-</del>
	<b>Ø</b>	and 30" x 48" Clear Space	
	•	with 1.5% slope	Ф
	<u> </u>		

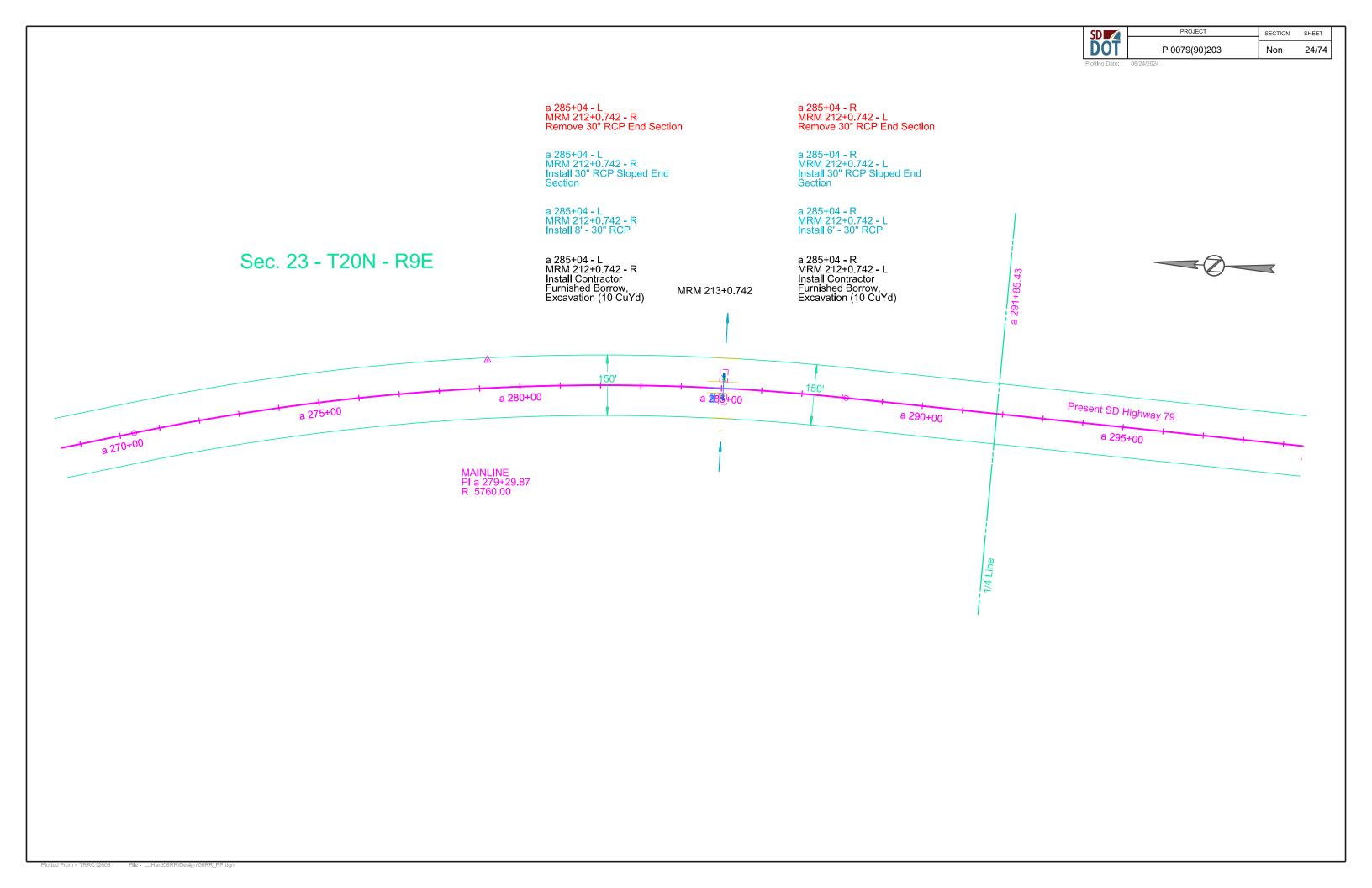


DOT PROJECT SECTION SHEET Non 20/74 P 0079(90)203 Plotting Date: 06/24/2024 a 144+66 - R MRM 216+0.467 - L Remove 30" RCP End Section for Reset a 144+66 - L MRM 216+0.467 - R Remove 30" RCP End Section for Reset a 144+66 - R MRM 216+0.467 - L Reset End Section a 144+66 - L MRM 216+0.467 - R Reset End Section a 144+66 - R MRM 216+0.467 - L Install 6' - 30" RCP a 144+66 - L MRM 216+0.467 - R Install 6' - 30" RCP a 144+66 - R MRM 216+0.467 - L Place Contractor Furnished Borrow, Excavation (10 CuYd) a 144+66 - L MRM 216+0.467 - R Place Contractor Furnished Borrow, Excavation (10 CuYd) Sec. 2 - T20N - R9E MRM 216+0.467 Present SD Highway 79 a 120+00 a 125+00 a 130+00 a 135+00 a 140+00 a 145+00 Sec. 3 - T20N - R9E

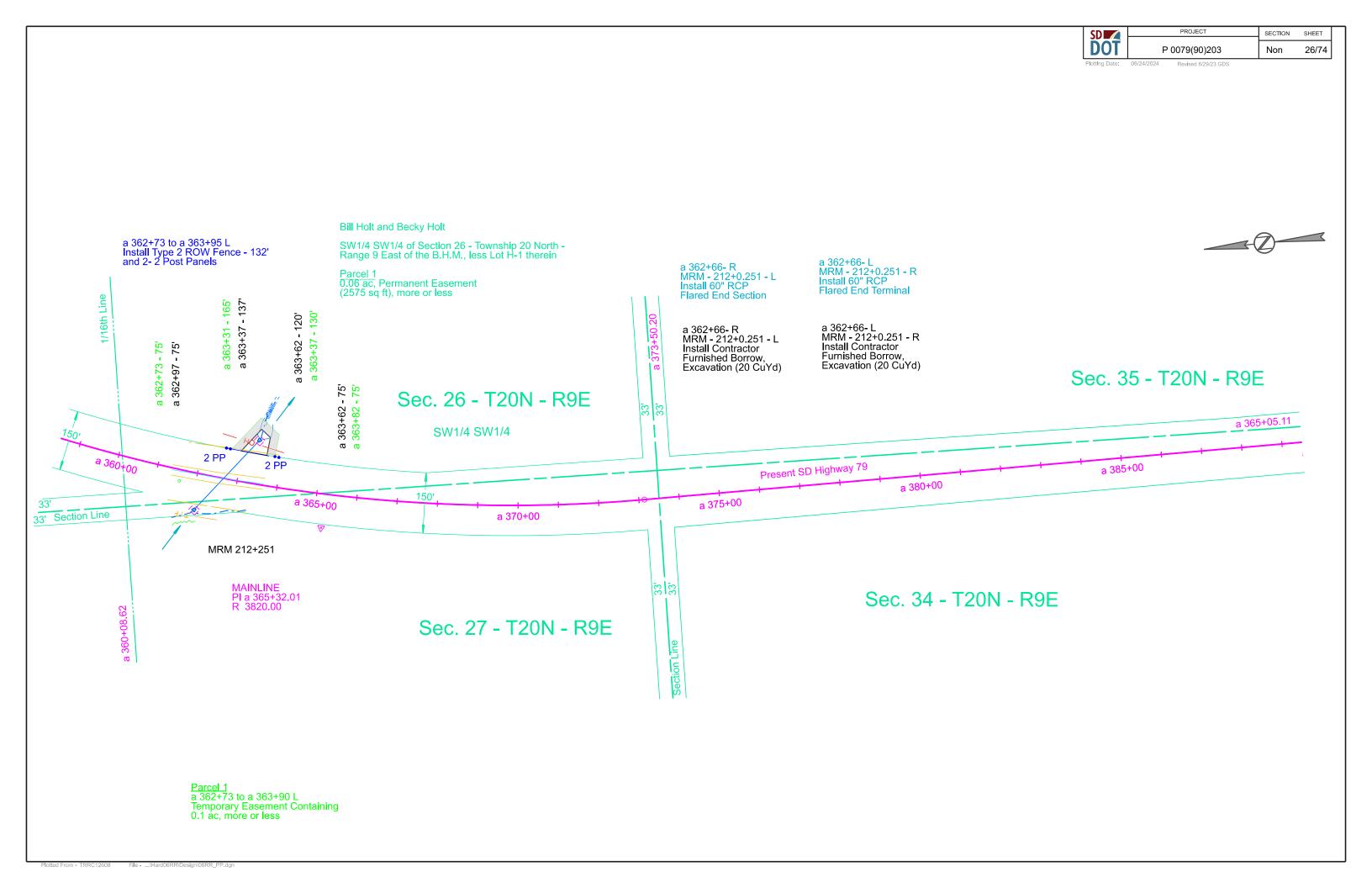


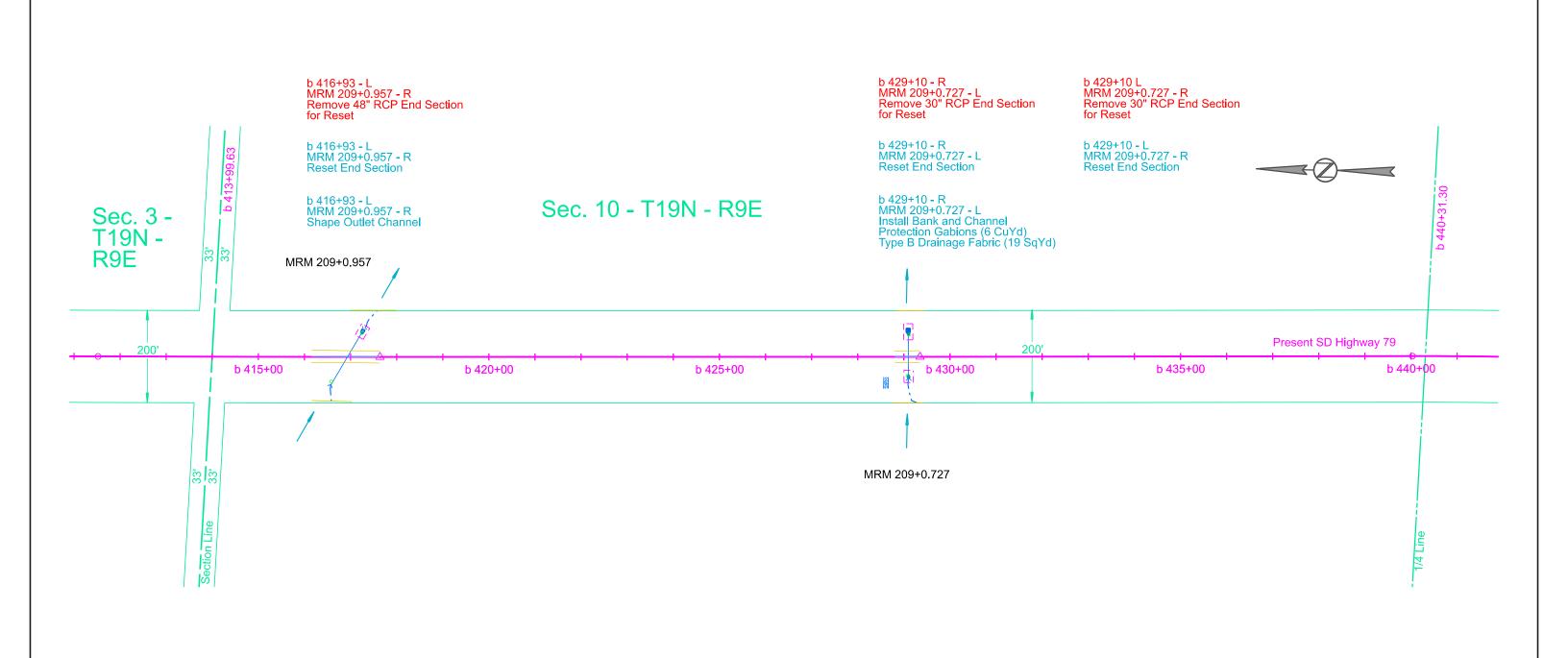






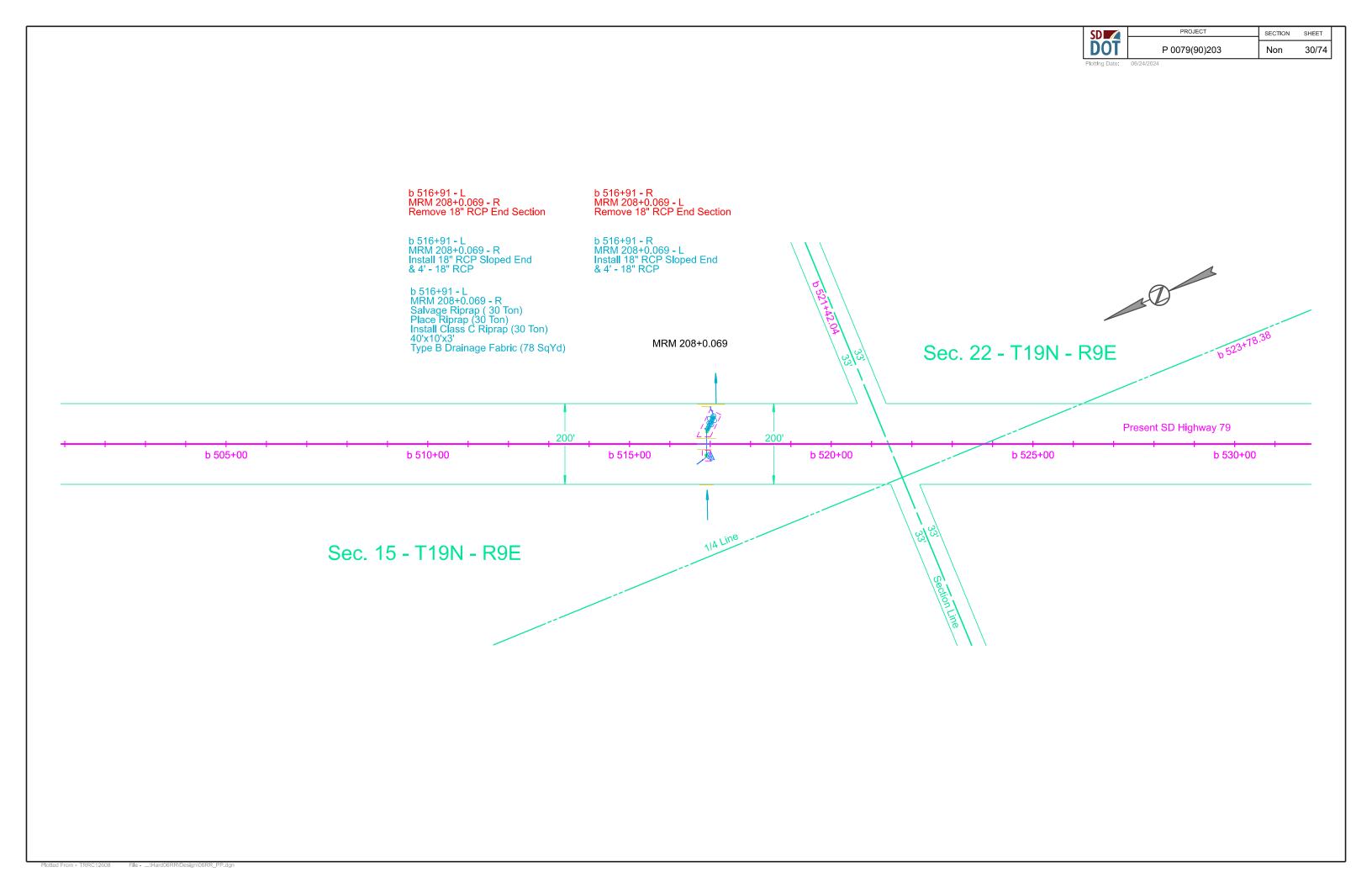
DOT PROJECT SECTION SHEET 25/74 P 0079(90)203 Non Plotting Date: 06/24/2024 a 314+50 - L MRM 213+0.182 - R Rermove 42" RCP End Section a 326+03 - R MRM - 212+0.946 - L Remove 30" RCP End Section for Reset a 314+50 - L MRM 213+0.182 - R Install 42" RCP Flared End Section a 326+03 - R MRM - 212+0.946 - L Reset End Ection a 314+50 - L MRM 213+0.182 - R Install Class C Riprap (20 Ton) 16'x8'x3' a 326+03 - R MRM - 212+0.946 - L Install 6' - 30" RCP Type B Drainage Fabric (32 SqYd) Sec. 26 - T20N - R9E a 326+03 - R MRM - 212+0.946 - L Install Contractor Furnished Borrow, Excavation (40 CuYd) Sec. 23 - T20N - R9E MRM 213+0.182 MRM 212+0.946 Do Not Disturb Fence Present SD Highway 79 150' a 320+00 315+00 a 325+00 a 310+00 a 305+00 a 300+00 MAINLINE PI a 331+81.60 R 5880.16

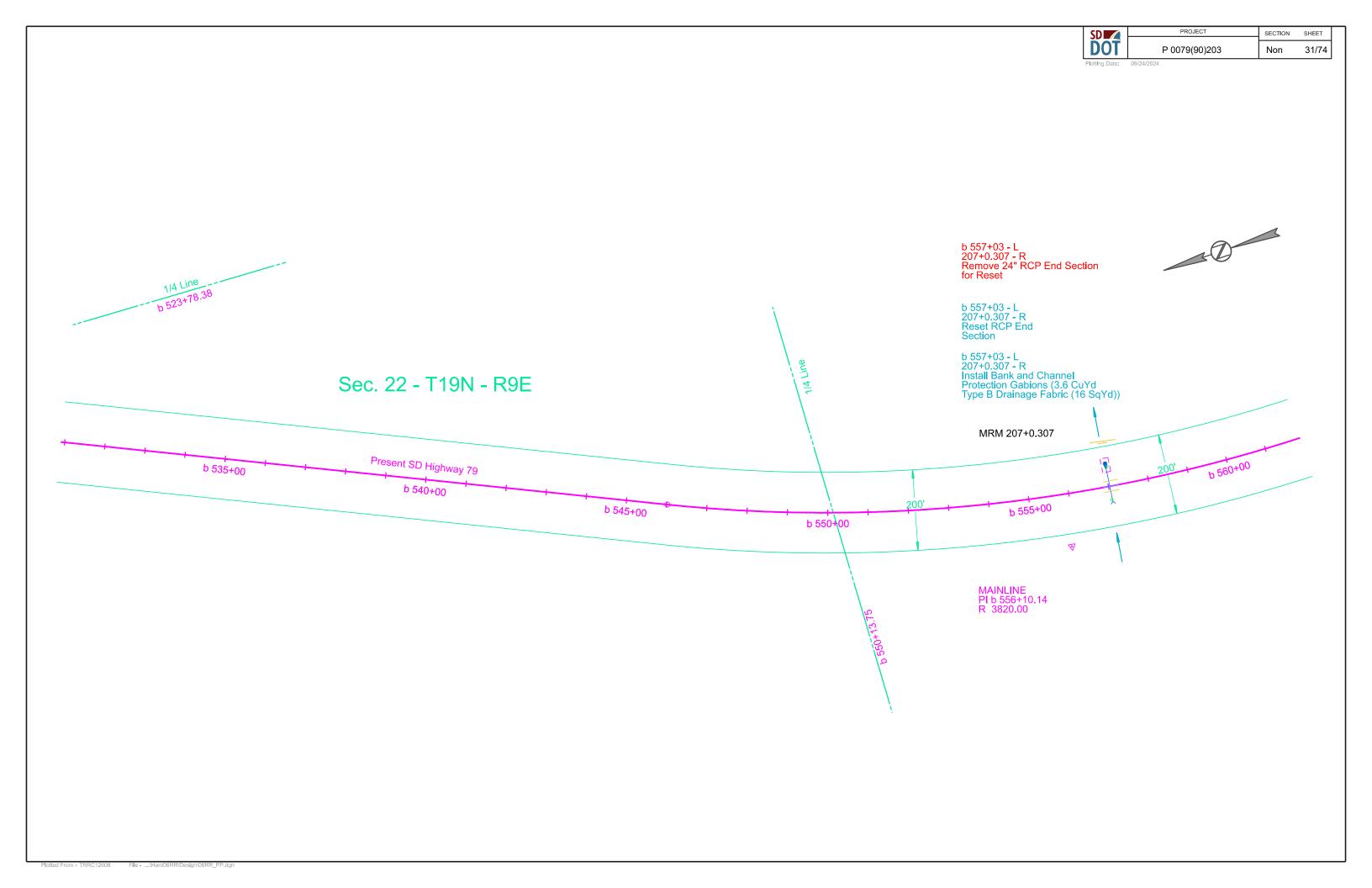




DOT PROJECT SECTION SHEET P 0079(90)203 Non 28/74 Plotting Date: 06/24/2024 b 443+96 - L MRM 209+0.446 - R Remove 42" RCP End Section b 443+96 - R MRM 209+0.446 - L Remove 42" RCP End Section b 443+96 - L MRM 209+0.446 - R Install 42" RCP Flared End Section b 443+96 - R MRM 209+0.446 - L Install 42" RCP Flared End Section b 443+96 - L MRM 209+0.446 - R Install Bank and Channel Protection Gabions (6 CuYd) Type B Drainage Fabric (19 SqYd) Sec. 10 - T19N - R9E Sec. 15 - T19N - R9E MRM 209+0.446 Present SD Highway 79 200' b 450+00 b 445+00 b 455+00 b 460+00 b 465+00 b 470+00 MAINLINE PI b 445+07.40 R 11460.00

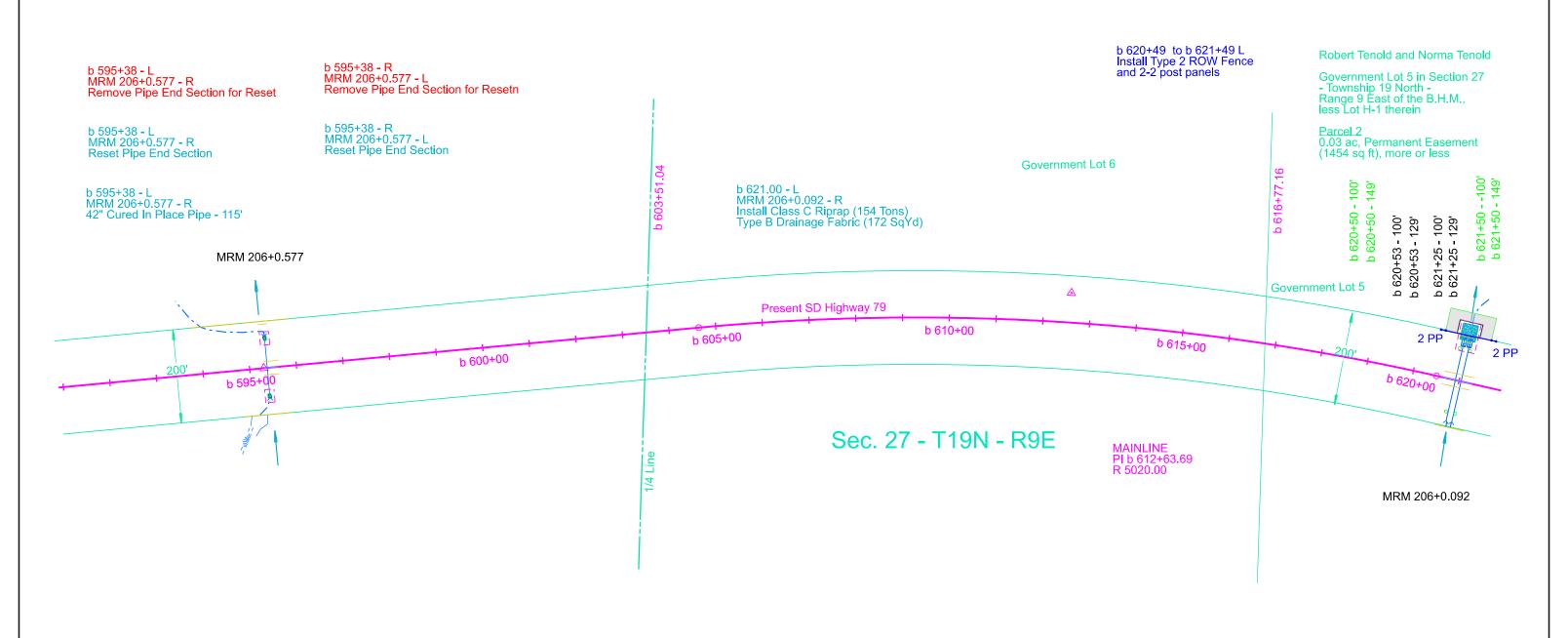
DOT PROJECT SECTION SHEET P 0079(90)203 Non 29/74 Plotting Date: 06/24/2024 b 489+08 - L MRM 208+0.596 - R Remove 24" RCP End Section b 489+08 - R MRM 208+0.596 - L Remove 24" RCP End Section b 489+08 - R MRM 208+0.596 - L Install 24" RCP Sloped End Section & 4' - 24" RCP b 489+08 - L MRM 208+0.596 - R Install 24" RCP Sloped End Section & 4' - 24" RCP b 475+70 MRM 208+0.850 60" Cured In Place Pipe - 90' b 475+70 - L MRM 208+0.850 - R Clean out Channel MRM 208+0.596 Sec. 15 - T19N - R9E MRM 208+0.850 Present SD Highway 79 b 490+00 b 485+00 b 495+00 b 480+00 b 500+00 b 475+00 MAINLINE PI b 493+20.09 R 3820.00



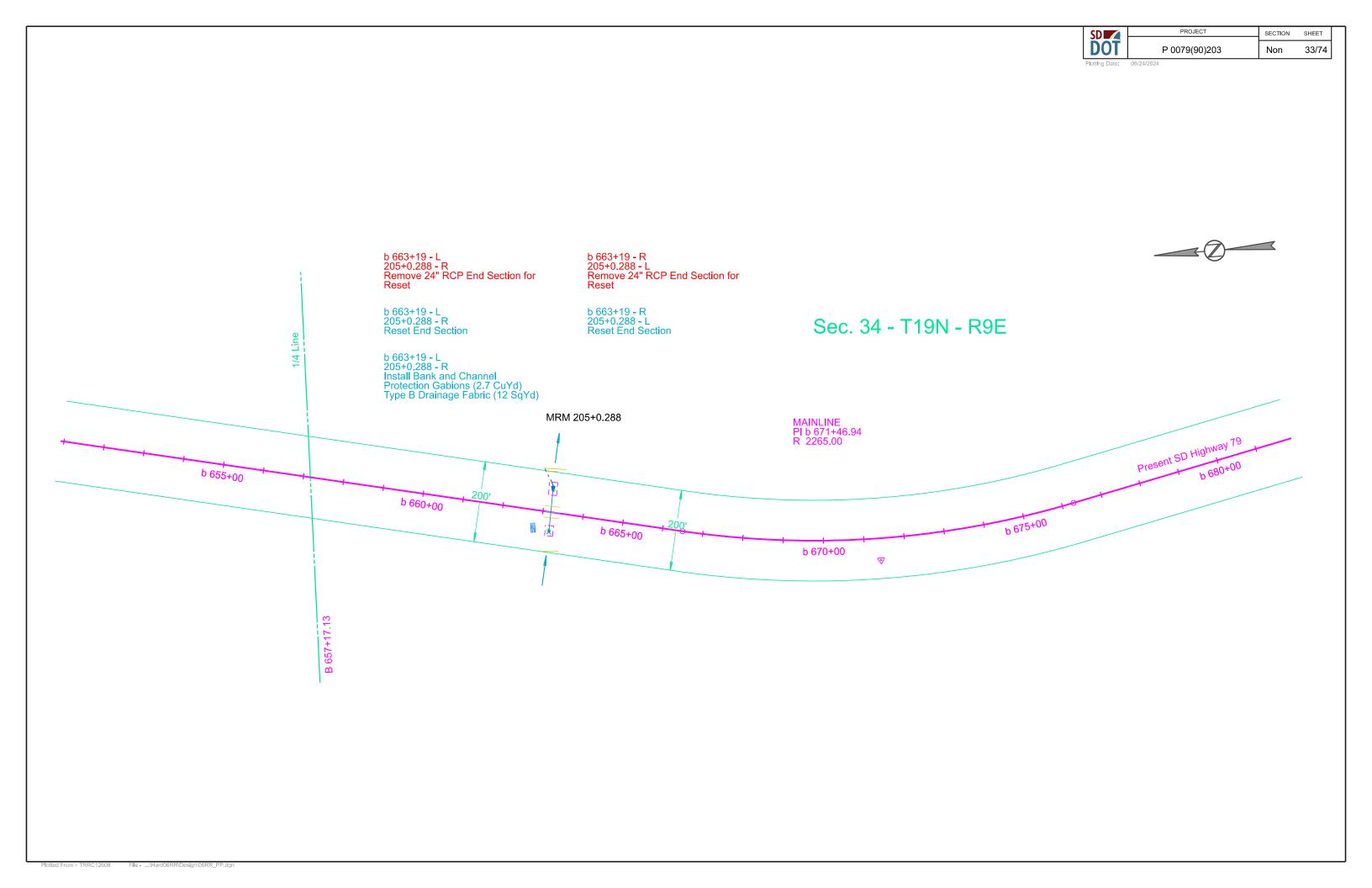






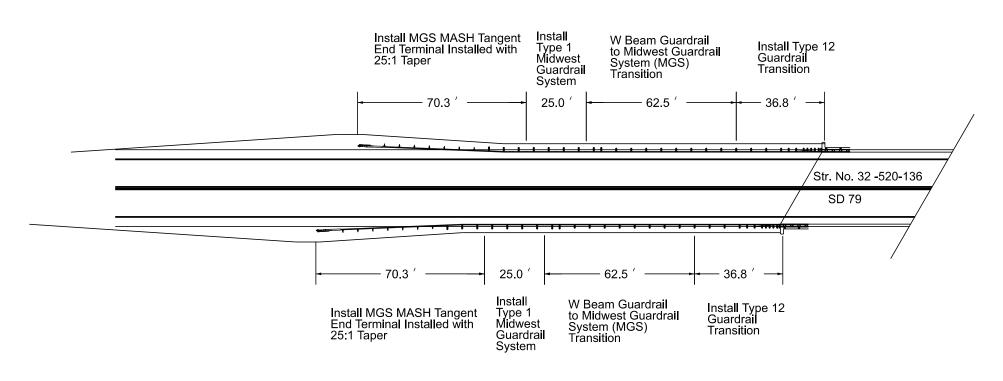


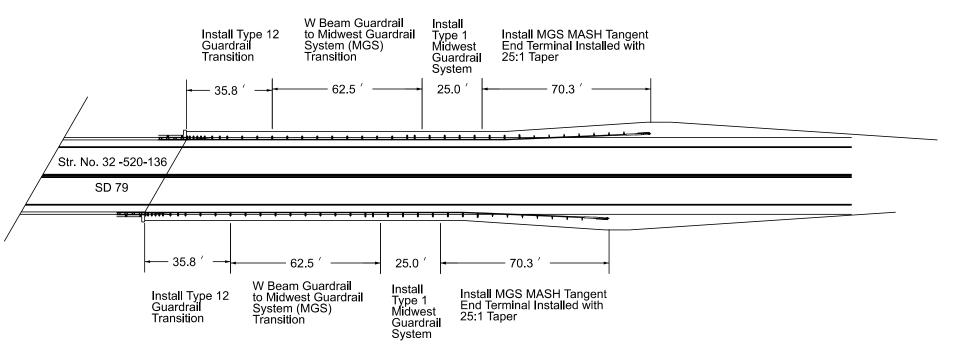
Parcel 2 b 620+49 to b 621+49 L Temporary Easement Containing 0.08 ac, more or less



# GUARDRAIL LAYOUTS







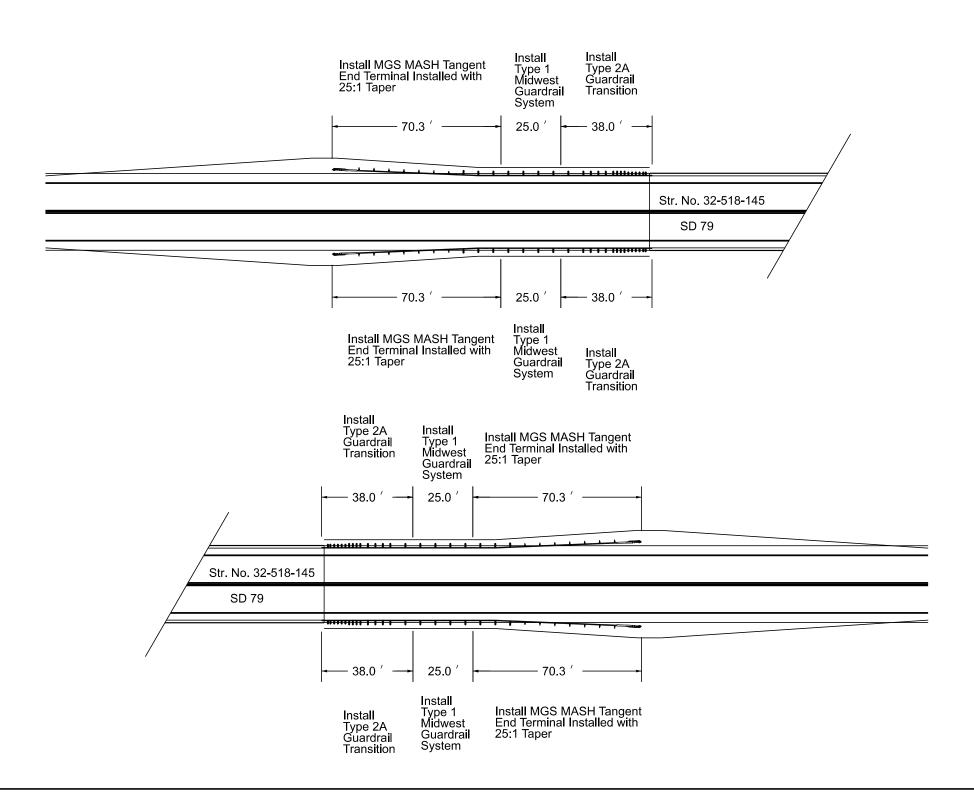
Plotting Date: 06/24/2024 SECTION SHEET

PROJECT SECTION SHEET

Non 35/74

## GUARDRAIL LAYOUTS

Str. No. 32-518-145



ü

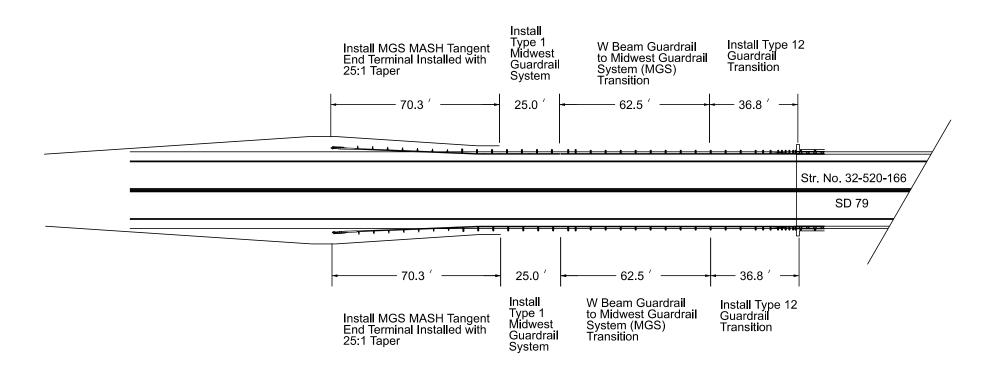
Dietted From TDDC12000

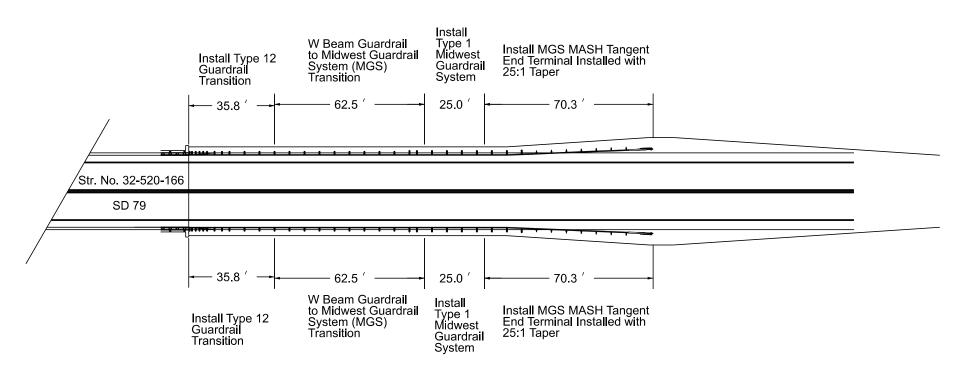
File \mshHord06BB\Dooise\CBoil

Project Section Sheet
Project Project Section Sheet
Potiting Date: 06/24/2024

## GUARDRAIL LAYOUTS

Str. No. 32-520-166



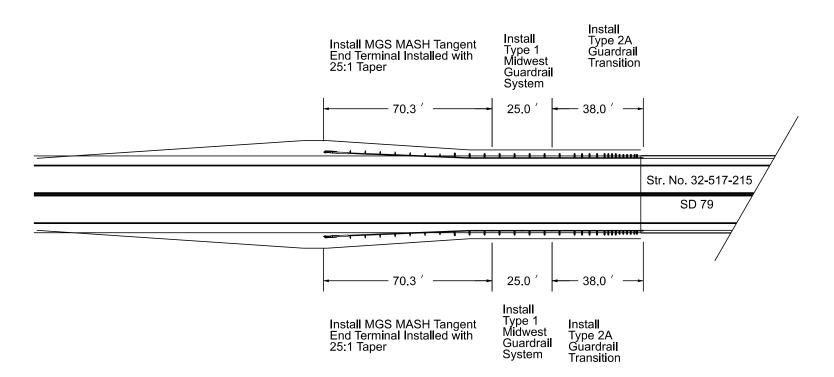


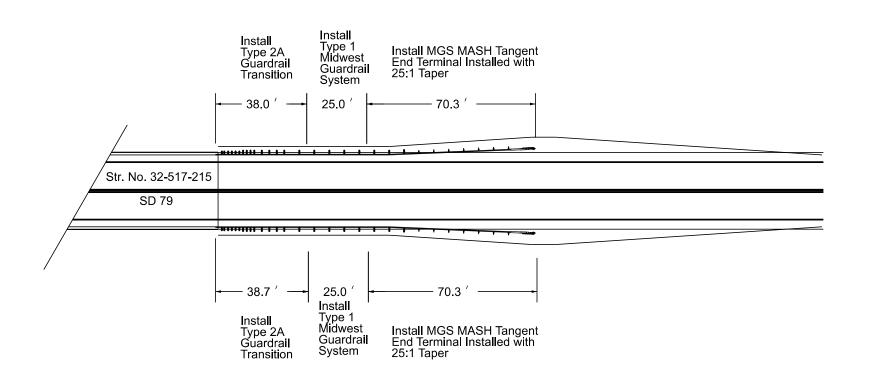
IRRCIZEDA

lotted From -

Dietted France TDDC42600 File \ne\Uard06BD\Dagign\

# GUARDRAIL LAYOUTS Str. No. 32-517-215





...\prj\Hard06RR\Design\

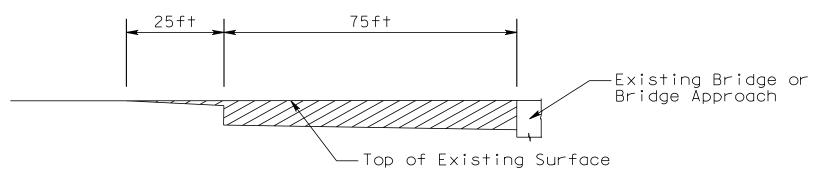
17

ואאטוע

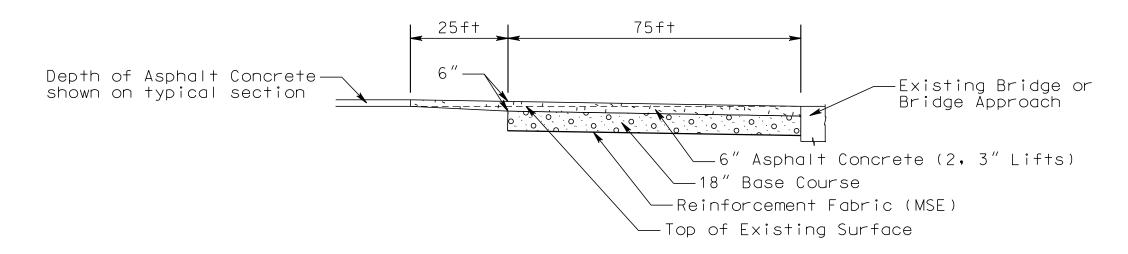
Dietted From TDDC42600

File - ...\pri\Hard06RR\Design\GRail.dg

## DOT TYPICAL PAVEMENT MARKING LAYOUT P 0079(90)203 38/74 ZONE OF LIMITED SIGHT DISTANCE CAR-Y End of Zone Marker FINISHED SHOULDER -CAR-Y NO PASS ZONE -EDGE LINE EDGE LINE CAR-X- NO PASS ZONE FINISHED SHOULDER -ZONE OF LIMITED SIGHT DISTANCE CAR-X NOTE: A TWO "GUN" SYSTEM WILL BE Centerline Detail Centerline Detail USED TO OBTAIN THIS PATTERN. 4" YELLOW WHEN A SINGLE SKIP LINE EXISTS, -Centerline Joint-Centerline Joint -THE SKIP WILL BE PLACED TO THE SOUTH OR EAST OF THE CENTERLINE 4" YELLOW 4" YELLOW JOINT. Shoulder 4" WHITE 12′ -Centerline Joint 4" WHITE Shoulder 12′ 4" White Shoulder Edge of Driving Lane



Area to be cut out at bridge, Tapers to daylight at 100'. Typical at both ends of bridge.

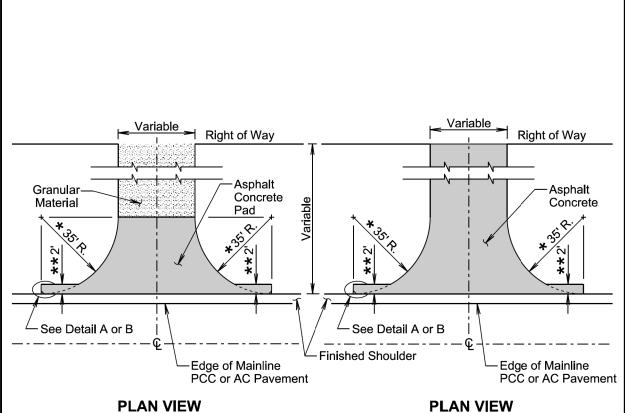


### NOTES REGARDING BRIDGE APPROACHES

In order to construct the new surface flush with the top of the bridge and to provide depth for additional asphalt concrete, it will be necessary to cut out the existing base course and excavate a portion of the subgrade to the limits shown on the layout above. The excavated material will be wasted as directed by the Engineer.

Any damage to the bridges will be repaired at the Contractor's expense. Contact the Bridge Construction Engineer for repair details.

See Table of Additional Quantities.



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

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

#### **GENERAL NOTES:**

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

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

August 27, 2020

Published Date: 2025

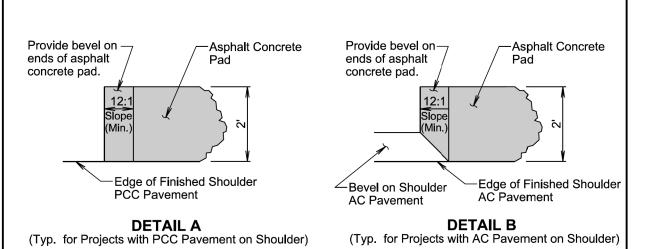
S D D

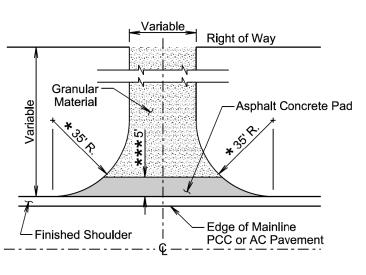
O

SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)

PLATE NUMBER 320.04

Sheet I of 2





**PLAN VIEW** (Entrance)

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

Published Date: 2025

August 27, 2020

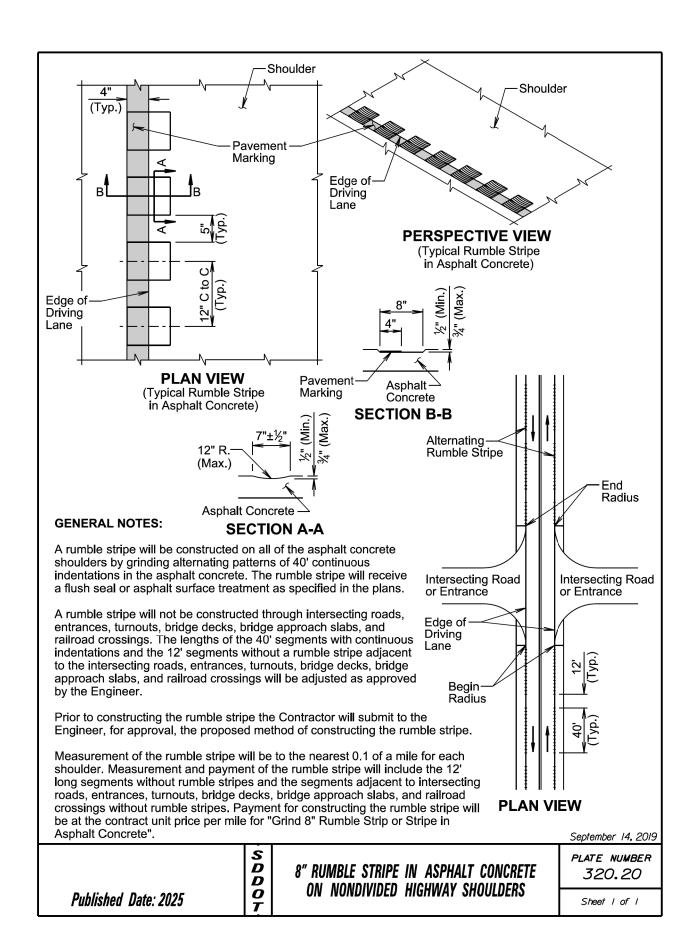
S D 0

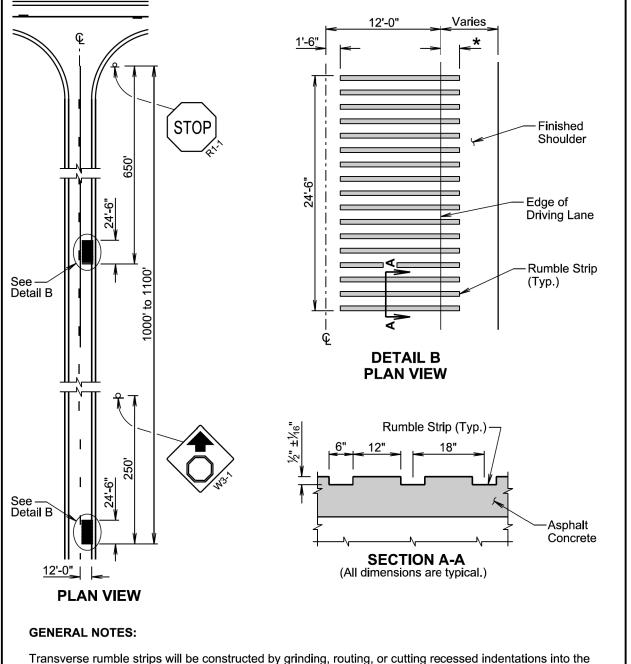
SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)

PLATE NUMBER 320.04

Sheet 2 of 2







Transverse rumble strips will be constructed by grinding, routing, or cutting recessed indentations into the asphalt concrete as approved by the Engineer. The transverse rumble strips will receive a flush seal or fog seal as specified in the plans.

* The transverse rumble strips will extend into the finished shoulder as approved by the Engineer.

S

D

Measurement of the recessed transverse rumble strips will be to the nearest foot. Payment for constructing the recessed transverse rumble strips will be at the contract unit price per foot for "Grind 6" Transverse Rumble Strip in Asphalt Concrete".

January 22, 2021

PLATE NUMBER

Published Date: 2025

TRANSVERSE RUMBLE STRIP
IN ASPHALT CONCRETE HIGHWAY
ADJACENT TO STOP CONTROLLED INTERSECTION

*320.45* 

Sheet I of I

## DOT

P 0079(90)203

PROJECT

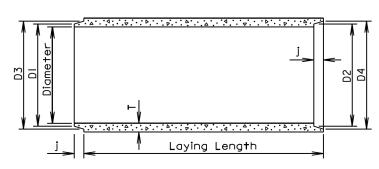
SECTION SHEET 42/74

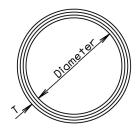
Non

#### TOLERANCES IN DIMENSIONS

Diameter:  $\pm 1.5\%$  for 24" Dia. or less and  $\pm 1\%$  or  $\frac{3}{8}$ " whichever is more for 27" Dia. or greater. Diameters at joints:  $\pm$   $\frac{3}{6}$ " for 30" Dia. or less and  $\pm$   $\frac{1}{4}$ " for 36" or greater. Length of joint (j):  $\pm \frac{1}{4}$ ".

Wall thickness (T): not less than design T by more than 5% or  $\frac{1}{16}$ ", whichever is greater. Laying length: shall not underrun by more than  $\frac{1}{2}$ ".





LONGITUDINAL SECTION

END VIEW

#### GENERAL NOTES:

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

S

D D

O

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

Diam. (in.)	Approx. Wt./Ft. (Ib.)		J (in•)	DI (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	13/4	13 ¹ / ₄	13%	137/8	14 ¹ / ₄
15	127	21/4	2	161/2	16%	17 ¹ / ₄	175/8
18	168	21/2	21/4	195/8	20	20¾	20¾
21	214	23/4	21/2	22 1/8	231/4	23¾	241/8
24	265	3	23/4	26	26¾	27	27¾
27	322	31/4	3	291/4	295/8	30 ¹ / ₄	30%
30	384	31/2	3 ¹ / ₄	323/8	32¾	331/2	33%
36	524	4	3¾	38¾	39 ¹ / ₄	40	401/2
42	685	41/2	4	451/8	45 1/8	46 ¹ / ₂	47
48	867	5	41/2	511/2	52	53	531/2
54	1070	51/2	41/2	57%	58¾	59¾	59%
60	1296	6	5	64 ¹ / ₄	64¾	66	661/2
66	1542	61/2	51/2	705/8	711/8	$72^{1}/_{2}$	73
72	1810	7	6	77	771/2	79	79 ¹ / ₂
78	2098	71/2	61/2	83%	83%	85%	861/8
84	2410	8	7	89¾	901/4	921/8	925/8
90	2740	81/2	7	95¾	96 ¹ / ₄	981/8	985/8
96	2950	91	7	1021/8	1025/8	1041/2	105
102	3075	91/2	71/2	109	1091/2	1111/2	112
108	3870	10	71/2	1151/2	116	118	1181/2

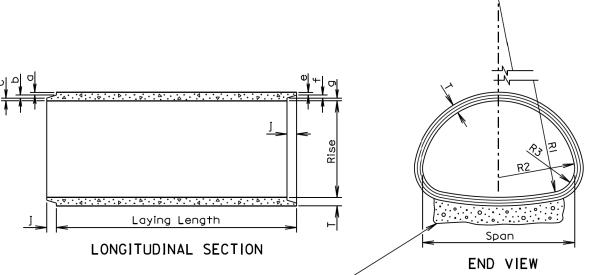
June 26, 2015

Published Date: 2025

REINFORCED CONCRETE PIPE

PLATE NUMBER 450.01

Sheet | of |



#### TOLERANCES IN DIMENSIONS

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

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

* Size (in.)	Approx. Wt./Ft. (Ib.)	Rise (in.)	Span (in.)	T (in.)	a (in•)	b (in.)	c (in•)	j (in <b>.</b> )	e (in <b>,</b> )	f (in.)	g (in <b>.</b> )	RI (in.)	R2 (in.)	R3 (in.)
18	170	13 ¹ / ₂	22	21/2	13/8	3/8	3/4	2	11/8	3/8	ı	271/2	133/4	5 ¹ / ₄
24	320	18	281/2	31/2	15/8	1/2	13/8	3	13/8	1/2	15/8	401/16	143/4	45/8
30	450	221/2	36 ¹ / ₄	4	I 13/16	5/8	1 %	31/2	1 %	5/8	I 13/16	51	18¾	61/8
36	600	26%	43¾	41/2	2	3/4	13/4	4	13/4	3/4	2	62	221/2	61/2
42	740	31 5/6	511/8	41/2	2	3/4	13/4	4	13/4	3/4	2	73	26 ¹ / ₄	73/4
48	890	36	581/2	5	21/4	3/4	2	5	2	3/4	21/4	84	30	8 1/8
54	1100	40	65	51/2	21/2	3/4	21/4	5	21/4	3/4	21/2	921/2	33%	10
60	1400	45	731/2	6	35/6	3/4	I 15/16	5	23/4	3/4	21/2	105	371/2	Ш
72	1900	54	88	7	313/16		23/16	6	31/4		23/4	126	45	135/6
84	2500	62	102	8	41/8		2 1/8	6	31/2	I	31/2	1621/2	52	141/2
96	3300	78	1223/8	9	41/2	Ī	31/2	7	4	Ī	4	218	62	20
108	4200	88	1381/2	10	5	Ī	4	7	41/2	I	41/2	269	70	22
120	5100	967/8	154	11	51/2	I	41/2	7	5	1	5	3013/8	78	24
132	5100	1061/2	168¾	10			4	7	41/2		41/2	329	855/8	26 7/8

^{*} Equivalent Diameter of Circular R.C.P.

#### GENERAL NOTES:

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

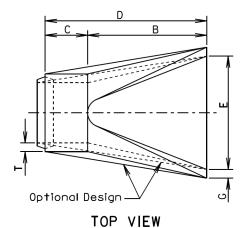
June 26, 2015

S D D 0 Published Date: 2025

REINFORCED CONCRETE PIPE ARCH

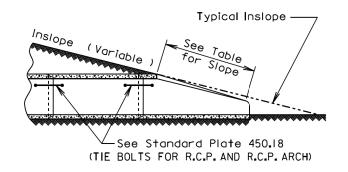
PLATE NUMBER 450.02

Sheet | of |



-Tongue (Inlet) or

Groove (Outlet)

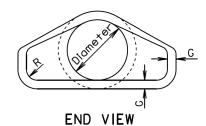


SLOPE DETAIL

### GENERAL NOTES:

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

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



ı	'
LONGITUDINAL	SECTION

Dia. (in.)	Approx. Wt. of Section (Ibs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4: I	2	4	24	48 1/8	721/8	24	2	11/2
15	740	2.4: I	21/4	6	27	46	73	30	21/4	11/2
18	990	2.3: I	21/2	9	27	46	73	36	21/2	11/2
21	1280	2.4: I	23/4	9	36	371/2	731/2	42	23/4	11/2
24	1520	2 <b>.</b> 5: I	3	91/2	431/2	30	731/2	48	3	11/2
27	1930	2 <b>.</b> 5: I	31/4	101/2	491/2	24	731/2	54	31/4	11/2
30	2190	2.5: I	31/2	12	54	19¾	73¾	60	31/2	11/2
36	4100	2.5: I	4	15	63	343/4	973/4	72	4	11/2
42	5380	2.5: I	41/2	21	63	35	98	78	41/2	11/2
48	6550	2 <b>.</b> 5: I	5	24	72	26	98	84	5	11/2
54	8240	2: 1	51/2	27	65	33 ¹ / ₄	98 ¹ / ₄	90	51/2	11/2
60	8730	1.9:1	6	35	60	39	99	96	5	11/2
66	10710	1.7:1	61/2	30	72	27	99	102	51/2	11/2
72	12520	1.8:1	7	36	78	21	99	108	6	11/2
78	14770	1.8:1	71/2	36	90	21	111	<b>I</b> 14	61/2	11/2
84	18160	1 <b>.</b> 6: 1	8	36	901/2	21	1111/2	120	61/2	11/2
90	20900	1 <b>.</b> 5: 1	81/2	41	871/2	24	1111/2	I 32	61/2	6

June 26, 2015

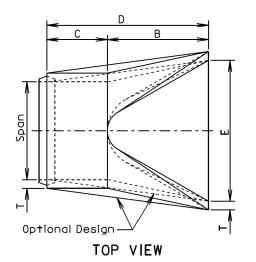
Published Date: 2025

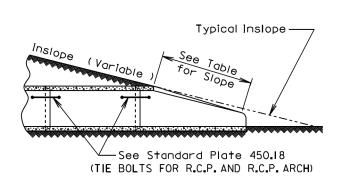
S D D O T

R. C. P. FLARED ENDS

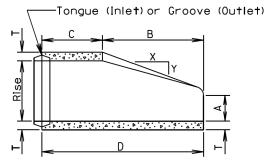
plate number 450.10

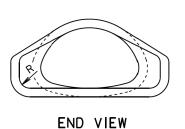
Sheet I of I





SLOPE DETAIL





LONGITUDINAL SECTION

#### GENERAL NOTES:

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

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

* Size (in.)	Approximate Weight of Section (lbs.)	Rise (in.)	Span (in.)	Slope (X:Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	R (in.)
18	1100	131/2	22	3 <b>:</b> I	21/2	7	27	45	72	36	2
24	1750	18	28 ¹ / ₂	3 <b>:</b> I	31/2	81/2	39	33	72	48	3
30	3300	221/2	36 ¹ / ₄	3 <b>:</b> I	4	91/2	50	46	96	60	3
36	4350	265/8	43¾	3 <b>:</b> I	41/2	I 11/8	60	36	96	72	6
42	5250	315/6	511/8	3 <b>:</b> I	41/2	15 ¹³ / ₆	60	36	96	78	6
48	6400	36	581/2	3 <b>:</b> I	5	21	60	36	96	84	6
54	7850	40	65	3 <b>:</b> I	51/2	251/2	60	36	96	90	6
60	9500	45	731/2	3 <b>:</b> I	6	31	60	36	96	96	6
72	13550	54	88	2 <b>:</b> I	7	31	60	39	99	120	6
84	I 7950	62	102	2 <b>:</b> I	8	281/2	83	19	102	144	6

*Equivalent Diameter of Circular R.C.P.

June 26, 2015

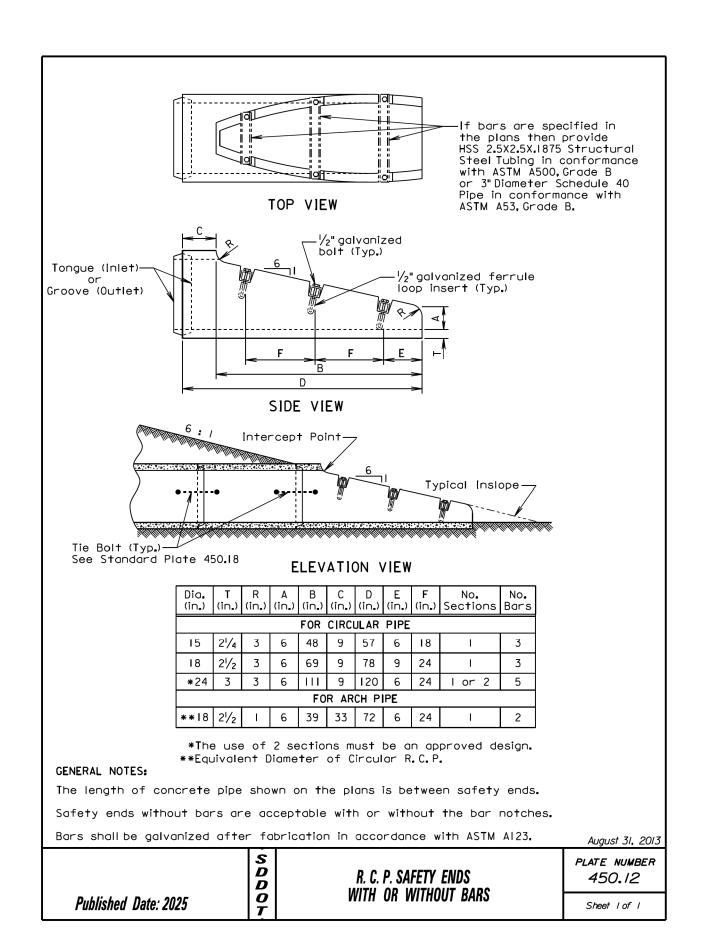
Published Date: 2025

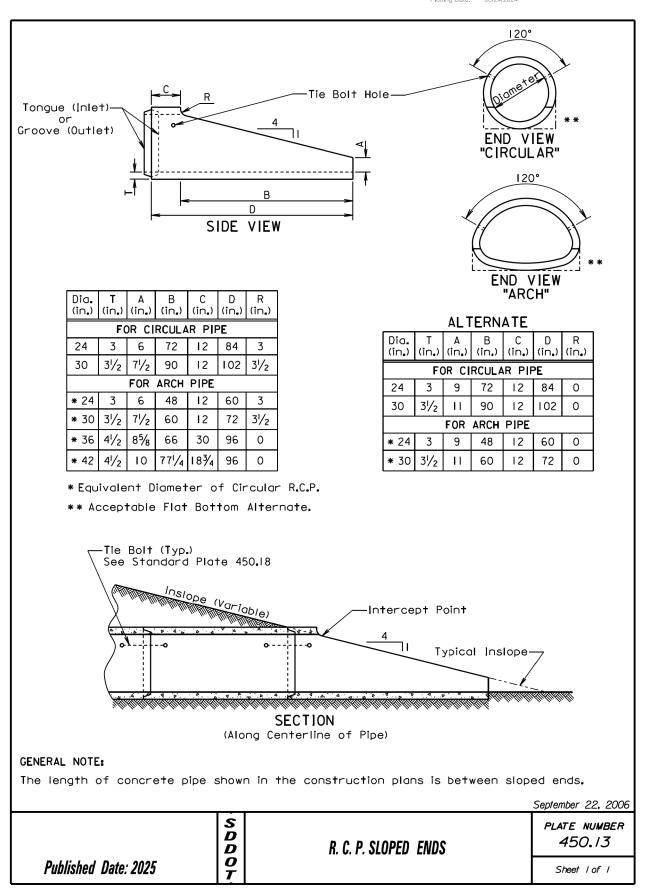
R. C. P. ARCH FLARED ENDS

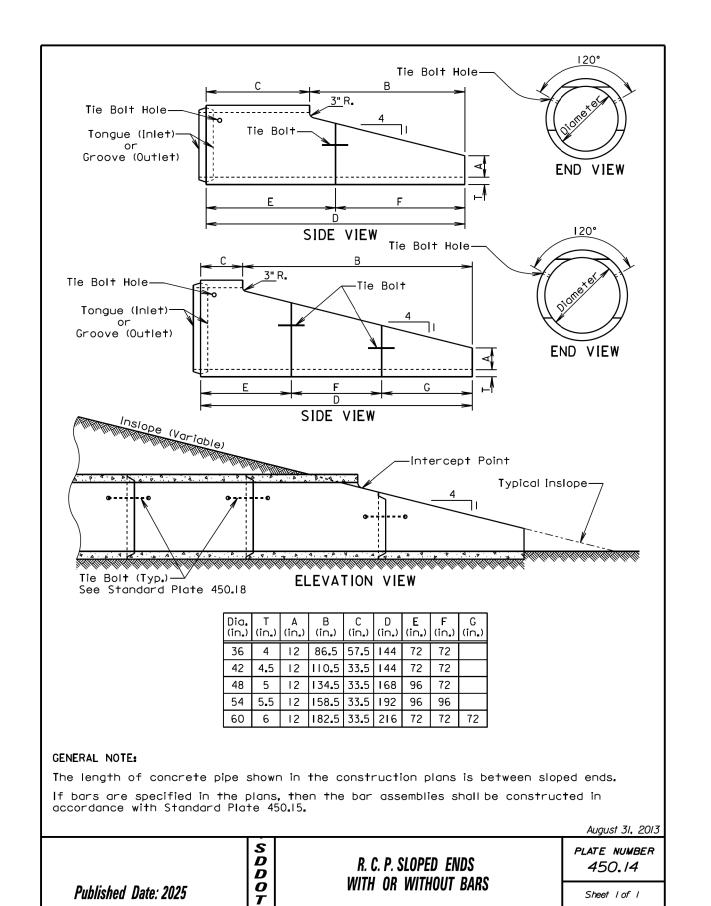
PLATE NUMBER
450.//

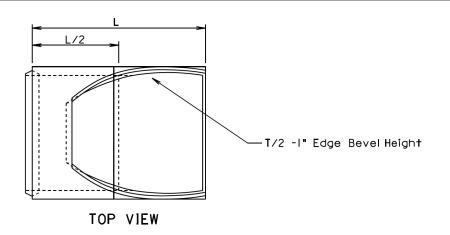
Sheet I of I

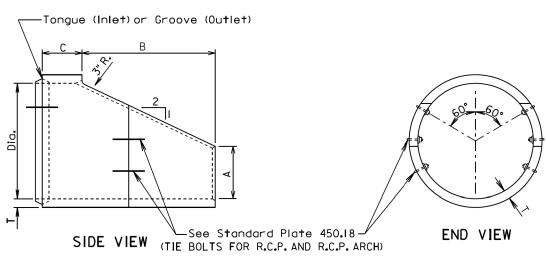












Dia.	т	_	1	NLET EN	D	OUTLET END			
ы <b>а.</b>	'	_	Α	В	С	Α	В	С	
(in.)	(in.)	(f <b>†</b> .)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	
96	9	12	42	104	40	44	99	45	
108	10	16	42	128	64	44	123	69	
120	11	16	42	152	40	44	147	45	

Sheet I of I

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

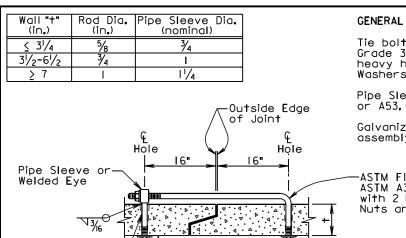
Reinforcement per Class 2 RCP with double reinforcement in the upper I20 degrees of the full barrel portion.

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

June 26, 2015

S PLATE NUMBER D D 450.16 R. C. P. SECTIONAL ENDS 0 Published Date: 2025 Sheet I of I

Published Date: 2025



**J___**2" Max. (Typ.)

ASTM FI554 Grade -36 or ASTM A36

Rod with Heavy Hex Nut and Washer

#### GENERAL NOTES:

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

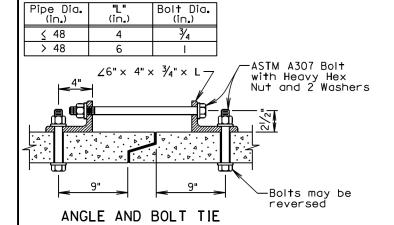
Pipe Sleeve shall conform to ASTM A500 or A53, Grade B.

Galvanize adjustible eye bolt tie assembly in accordance with ASTM AI53.

ASTM F1554 Grade 36 or ASTM A36 Tie Bolt with 2 Heavy Hex Nuts and 2 Washers

#### ADJUSTABLE EYE BOLT TIE

32" (±1½")



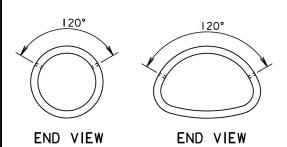
#### GENERAL NOTES:

Angles shall conform to ASTM A36.

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

Galvanize angles, bolts, nuts, and washers in accordance with ASTM AI53.

#### GENERAL NOTES:



"ARCH"

D D

O

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

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

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

February 28, 2013

Published Date: 2025

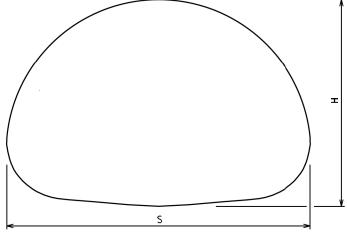
TIE BOLTS FOR R.C.P. AND R.C.P. ARCH

PLATE NUMBER 450.18 Sheet | of |



	2 ² / ₃ "× ¹ /	CORRU	GATIONS	3" X 1'	' CORRUG	ATIONS		
* Dia. (in.)	S Span (in.)	H Rise (in.)	Area (Sq.Ft.)	S Span (in.)	H Rise (in.)	Area (Sq. Ft.)		
15	17	13	1.1					
18	21	15	I <b>.</b> 6					
21	24	18	2.2					
24	28	20	2.8					
30	35	24	4.4					
36	42	29	6.4	40	31	7.0		
42	49	33	8.7	46	36	9.4		
48	57	38	11.4	53	41	12.3		
54	64	43	14.3	60	46	15.6		
60	71	47	17.6	66	51	19.3		
66	77	52	21.3	73	55	23.2		
72	83	57	25.3	81	59	27.4		
78				87	63	32 <b>.</b> I		
84				95	67	37.0		
90				103	71	42.4		
96				112	75	48.0		
102				117	79	54.2		
108				128	83	60.8		
114				137	87	67.4		
120				142	91	74.5		

* Equivalent diameter of circular C.M.P.



GENERAL NOTE:

All dimensions measured from inside crest.

S

March 31, 2000

D D 0 Published Date: 2025

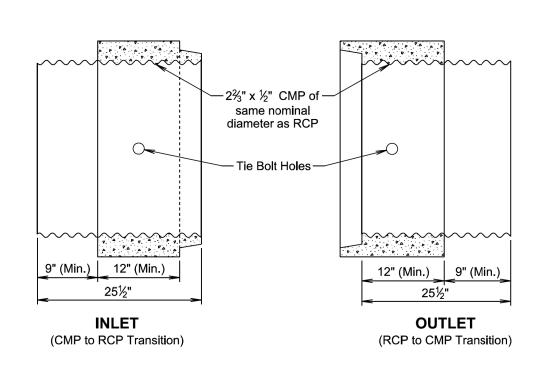
CORRUGATED METAL PIPE ARCH CULVERT

PLATE NUMBER 450.30

Sheet I of I

"CIRCULAR"





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

S D D O T

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

November 19, 2022

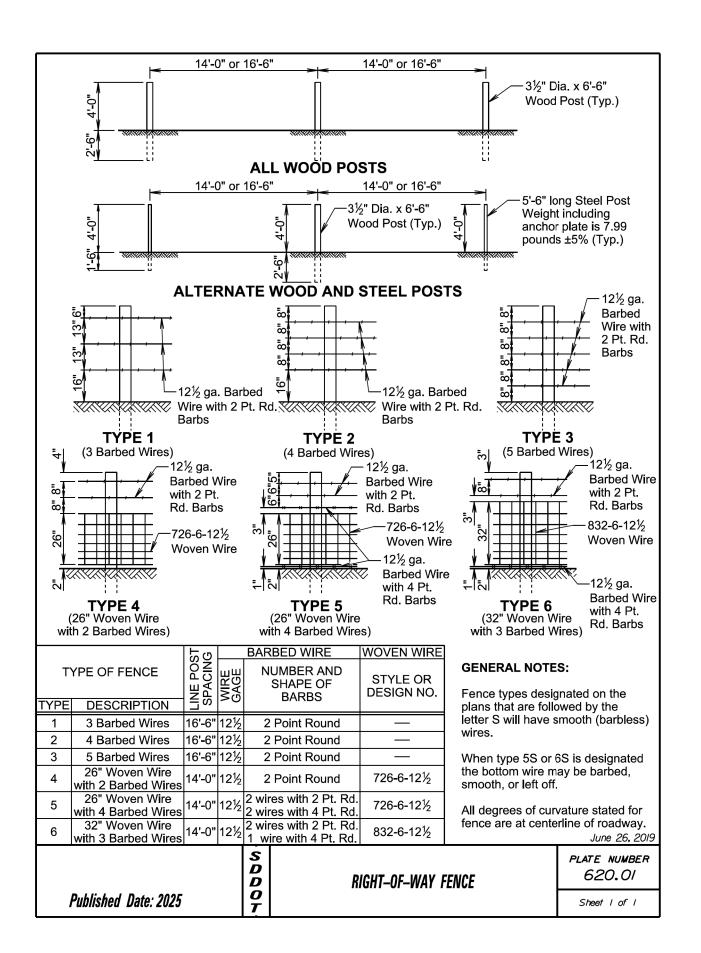
Published Date: 2025

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

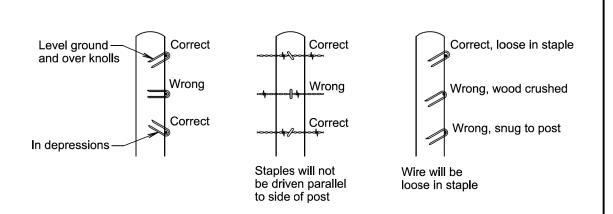
PLATE NUMBER 450.50

Sheet I of I

Plotted From - TRRC12608 File - ...\Hard06RR\Design\StdPlates.c







#### STAPLE INSTALLATION

#### **GENERAL NOTES:**

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

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

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

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

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

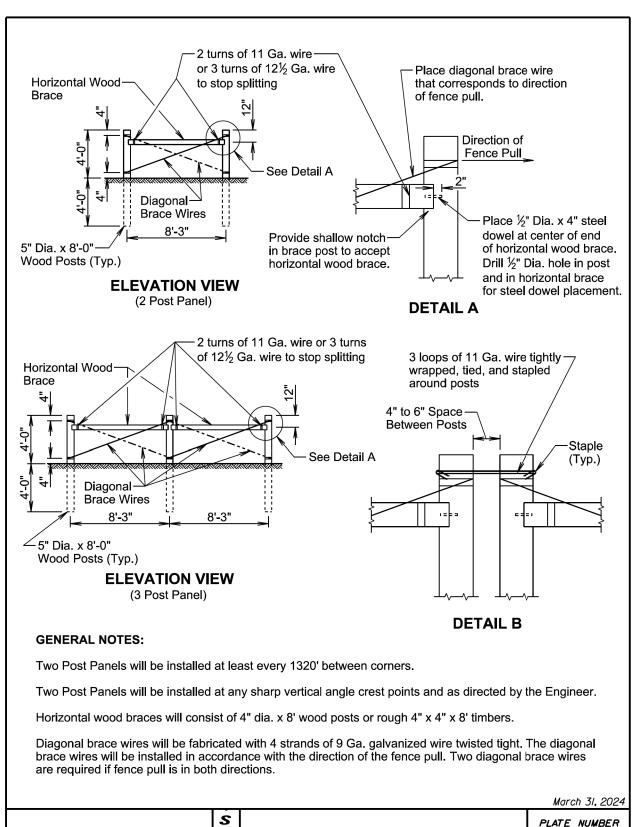
June 26, 2019

Published Date: 2025

STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES

PLATE NUMBER 620.02

Sheet I of I



PROJECT SECTION SHEET DOT 49/74 P 0079(90)203 Non

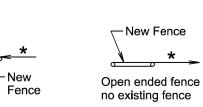
SPACING OF 2 POST PANELS WITHIN CURVES RADIUS OF CURVE SPACING OF 2 POST PANEL Greater than 1800 Ft. ****** 1320' **At P.C., P.T., and at every Less than 1800 Ft. 1320' between P.C. and P.T.

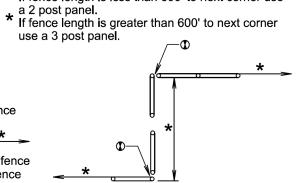
**Fence lengths greater than 1320' and less than 2640' place 2 Post Panel approximately at midpoint.

① See Detail B on Sheet 1 of 3.

Existing

Fence





SHORT JOGS IN FENCE

All radius of curvature stated for fence are at

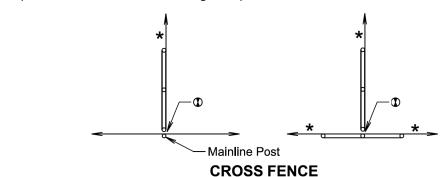
If fence length is less than 600' to next corner use

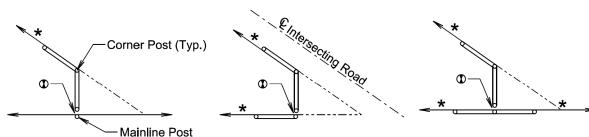
**GENERAL NOTE:** 

centerline of roadway.

#### **BEGIN OR END FENCE**

(Where new fence ties into existing fence)

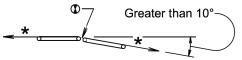




### SHARP ANGLES IN CROSS FENCE



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



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

#### **ANGLES IN MAINLINE FENCE**

March 31, 2024

S D D 0

BRACE PANELS AND APPLICATIONS OF BRACE PANELS PLATE NUMBER 620.03

Sheet 2 of 3

S D D O T

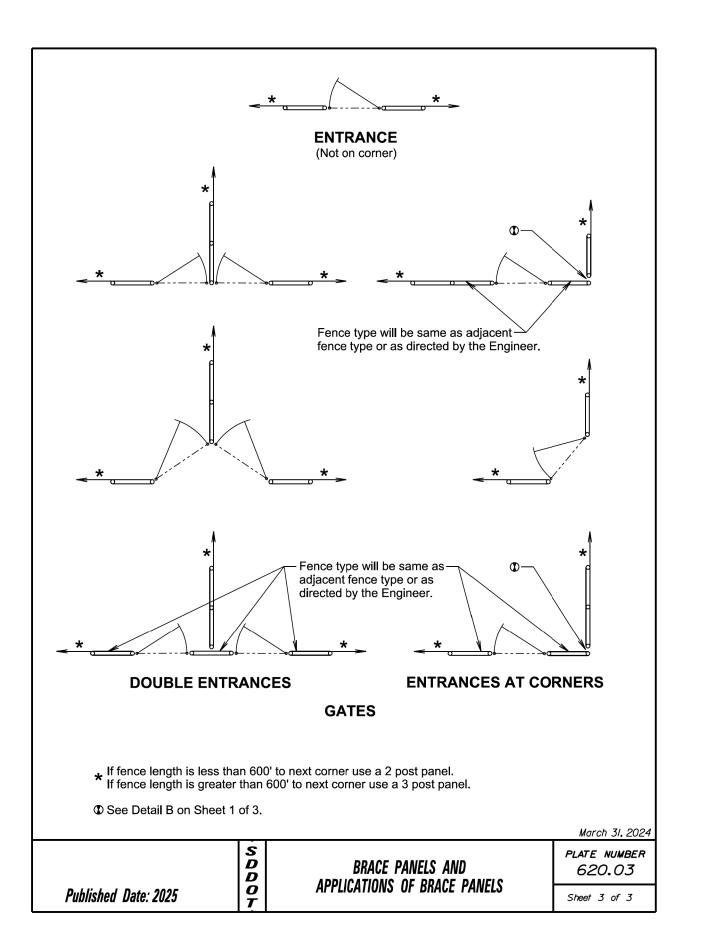
BRACE PANELS AND APPLICATIONS OF BRACE PANELS

620.03

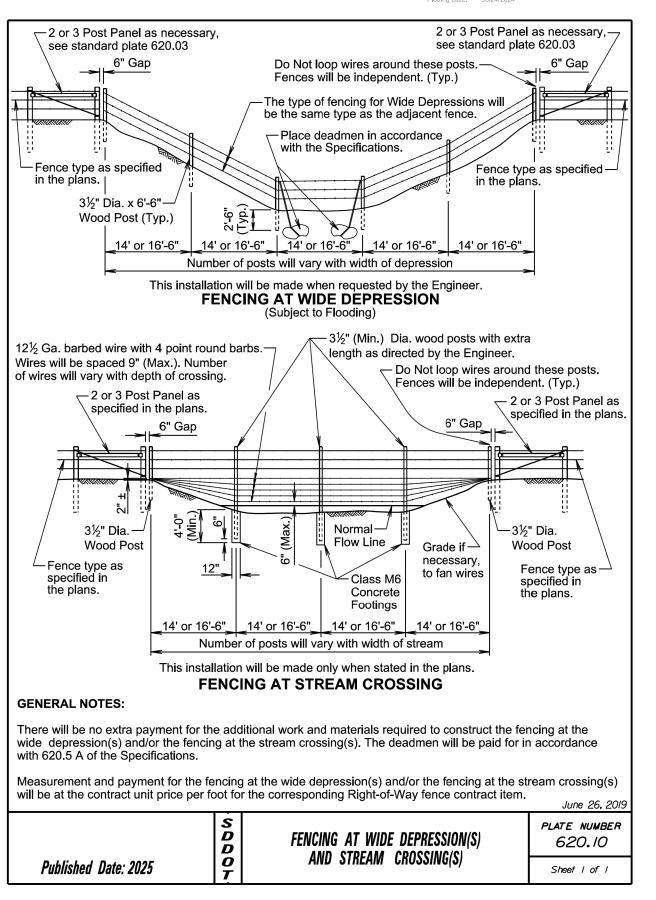
Sheet I of 3

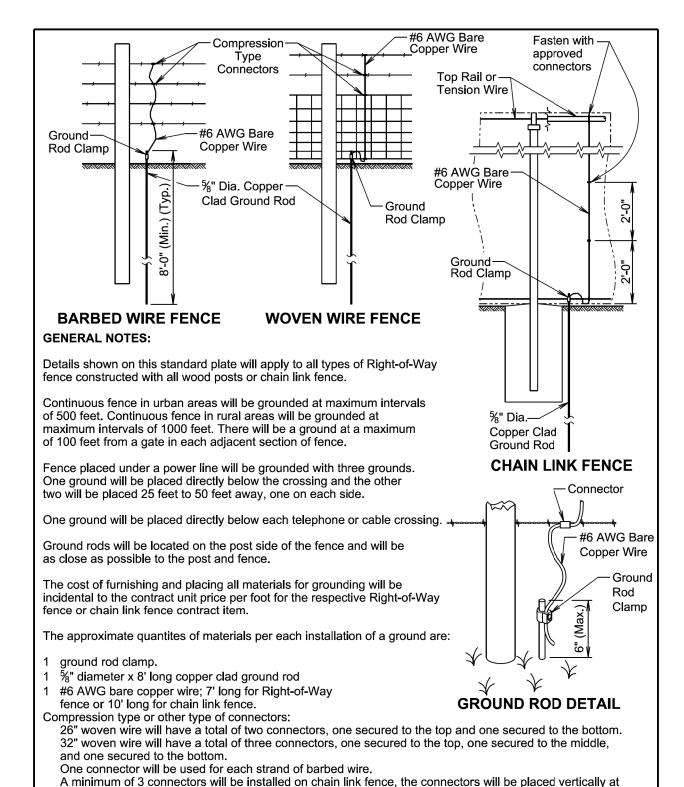
Published Date: 2025

Published Date: 2025









every 2-foot increment and connectors will be placed on the top and bottom tension wires or top rail.

FENCE GROUNDING

S D D O T

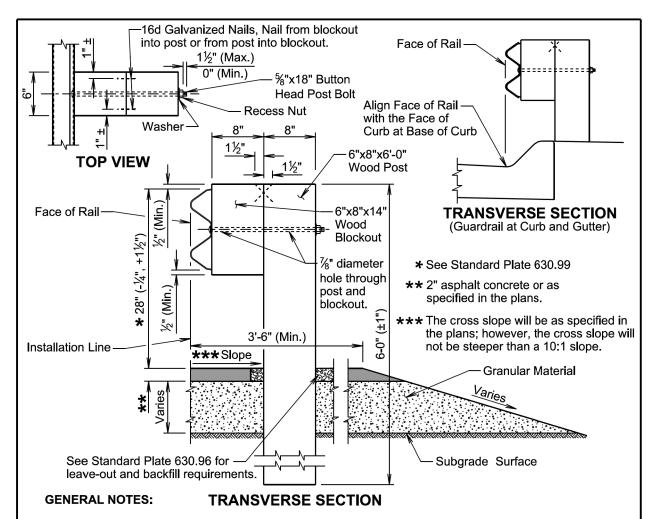
Published Date: 2025

SD	PROJECT	SECTION	SHEET
DOT	P 0079(90)203	Non	51/74
Plotting Date:	06/24/2024		

June 26, 2019

PLATE NUMBER
620.11

Sheet 1 of 1



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.

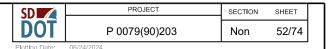
The top of post and top of block will have a true square cut. The top of block will be a maximum of  $\pm \frac{1}{2}$  inch from the top of the post.

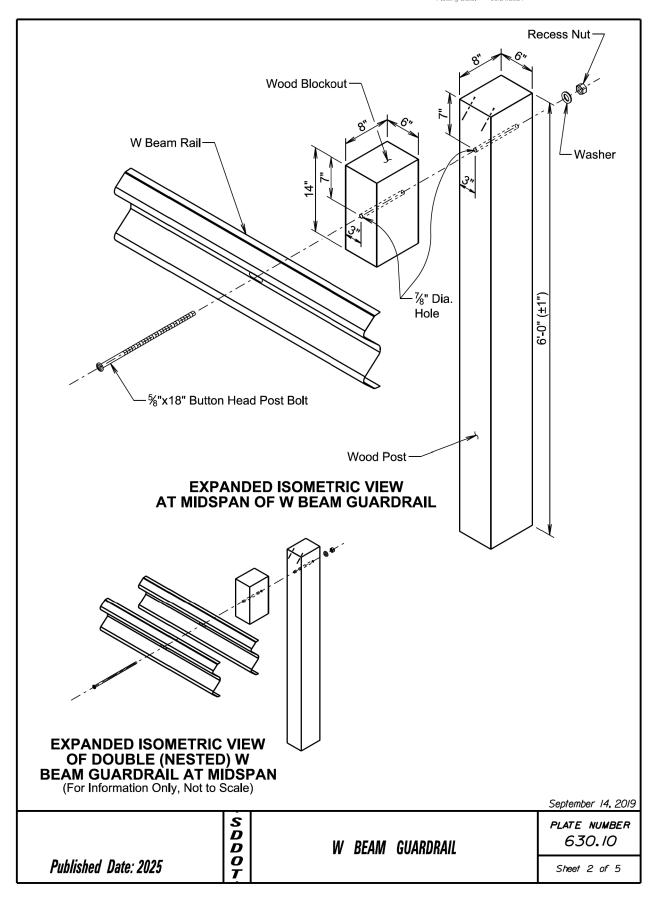
PLATE NUMBER 630.10

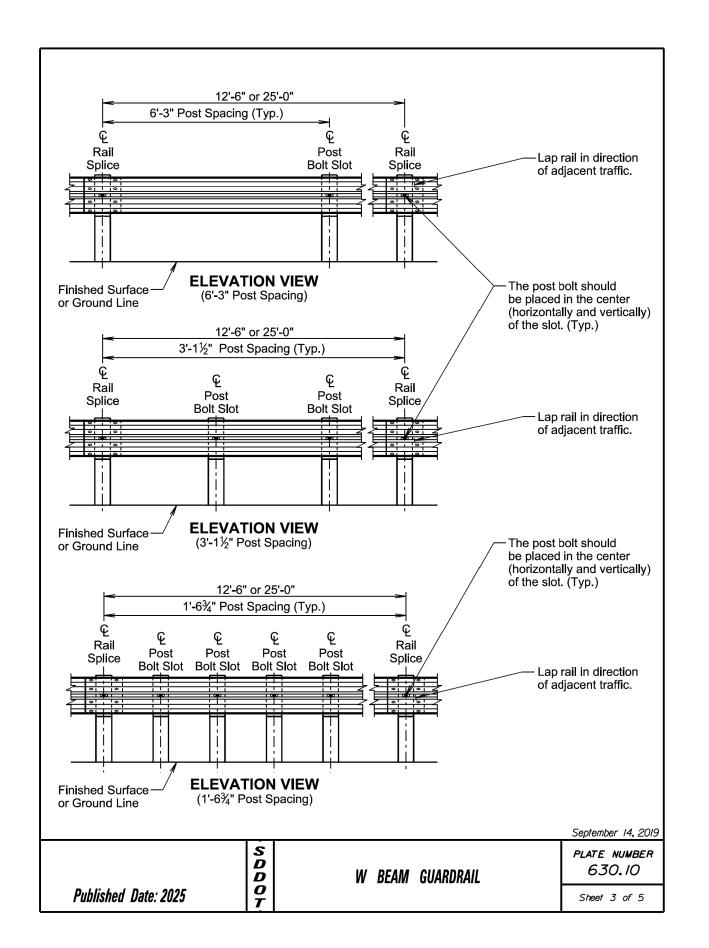
Published Date: 2025

W BEAM GUARDRAIL

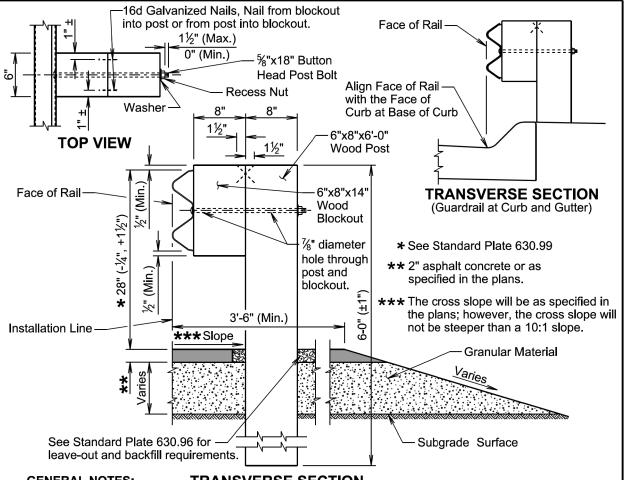
Sheet 1 of 5











#### 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.

S

D D

0

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.

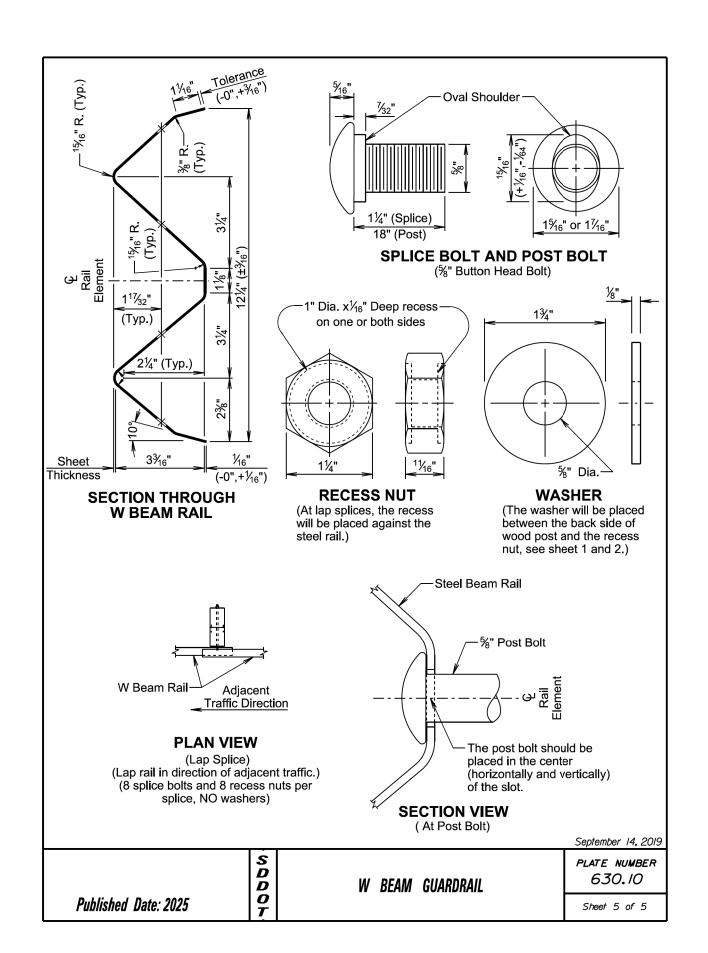
The top of post and top of block will have a true square cut. The top of block will be a maximum of  $\pm \frac{1}{2}$  inch from the top of the post.

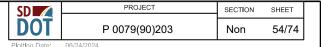
PLATE NUMBER
630.10

Published Date: 2025

W BEAM GUARDRAIL

Sheet I of 5





	TYPE AND DETAILS OF MGS										
Type of MGS	W Beam Rail Single or Double (Nested)	Blockout Size	Blockout Material		Post Material	Post Spacing					
1	Single	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	6'-3"					
1C	Single	6"x12"x14"	Wood	6"x8"x7'-6"	Wood	6'-3"					
2	Single	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	3'-1½"					
3	Single	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	1'-6¾"					
4	Double	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	6'-3"					

	TANDARD PLATE REFERENCE
Type of MGS	See Standard Plate(s)
1	630.20, 630.22
1C	630.20, 630.25
2	630.20
3	630.20
4	630.20

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 on sheet 2 of 6.

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.

All costs for constructing the MGS including labor, equipment, and materials including all posts, blockouts, steel beam rail, and hardware will be incidental to the contract unit price per foot for the respective MGS contract item.

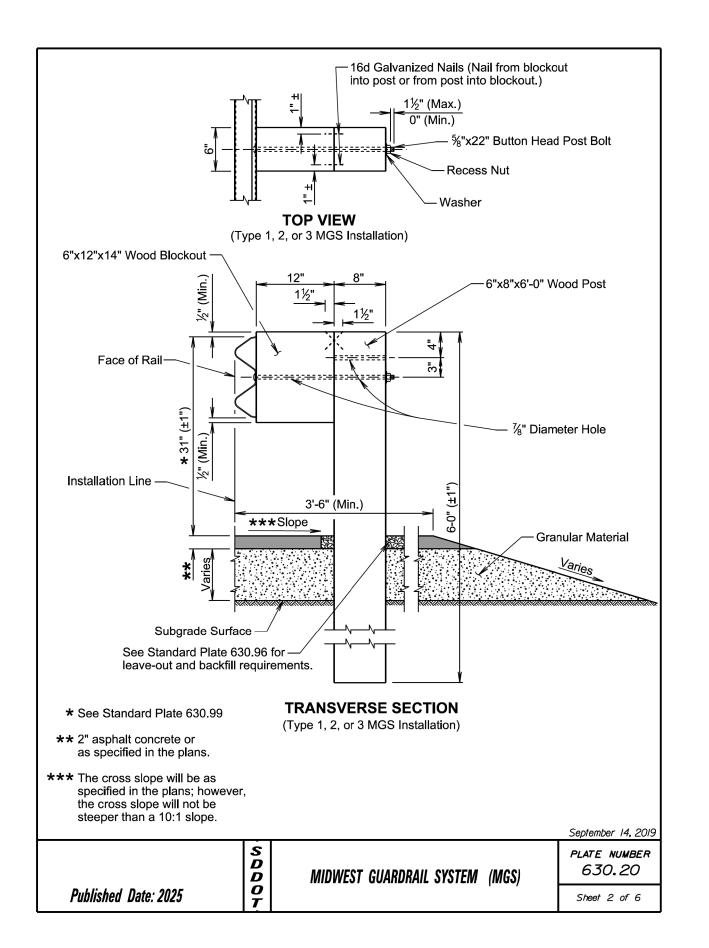
September 14, 2019

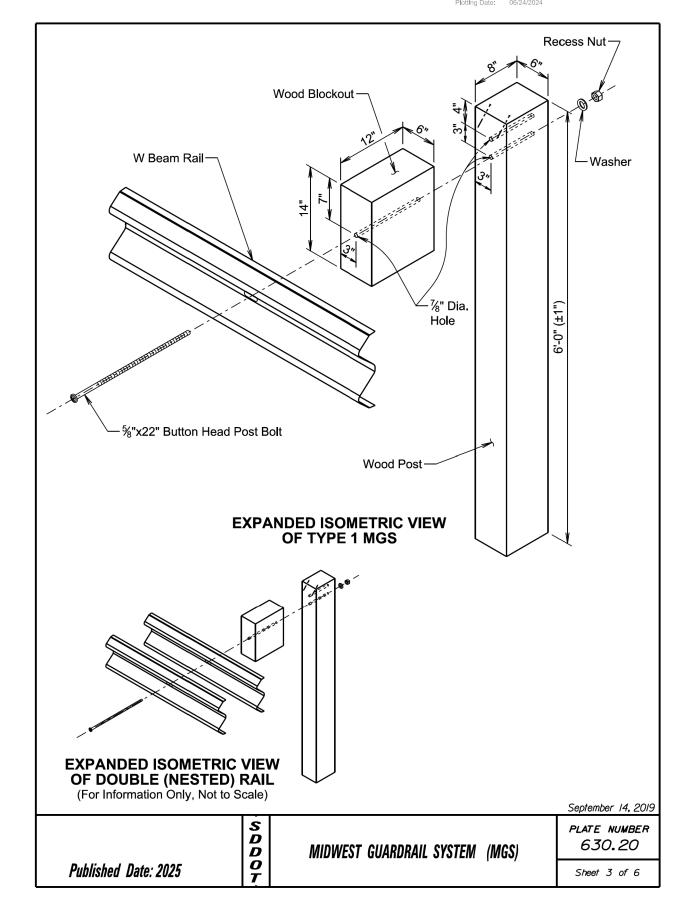
PLATE NUMBER 630.20

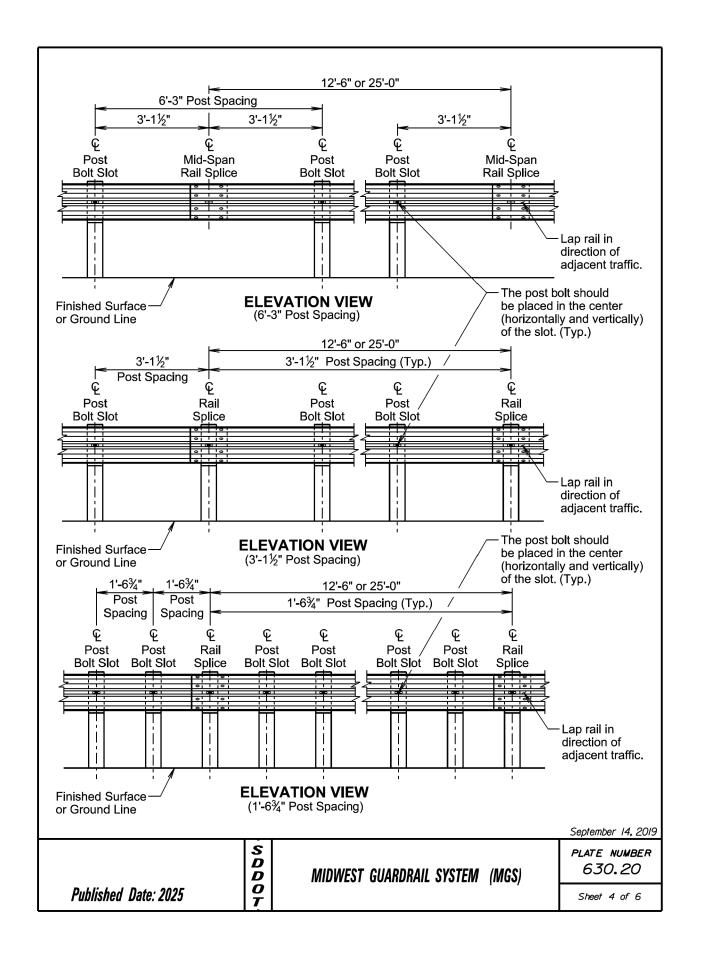
Published Date: 2025

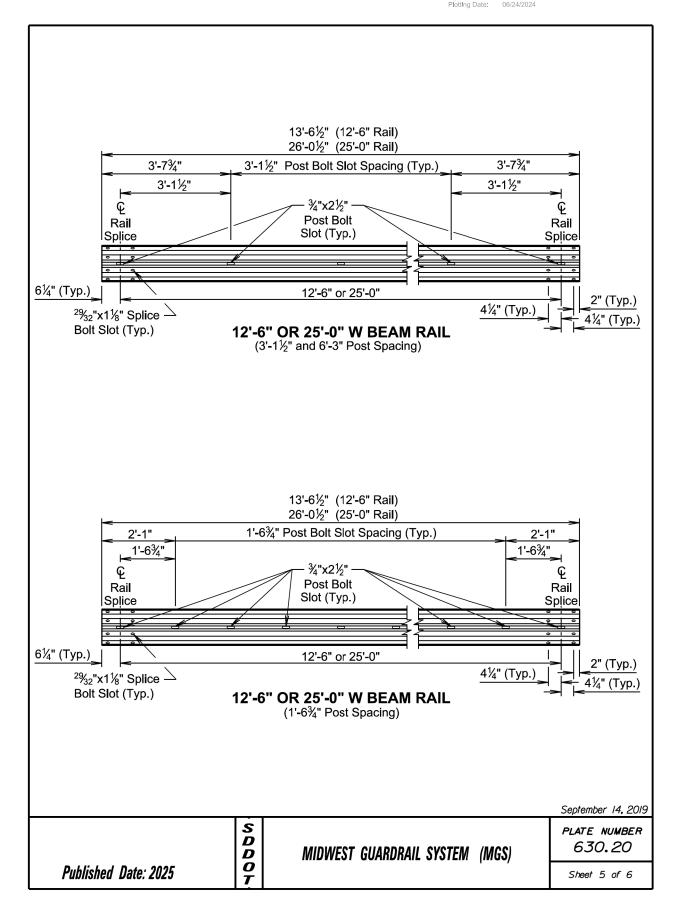
MIDWEST GUARDRAIL SYSTEM (MGS)

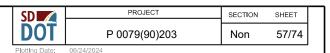
Sheet 1 of 6

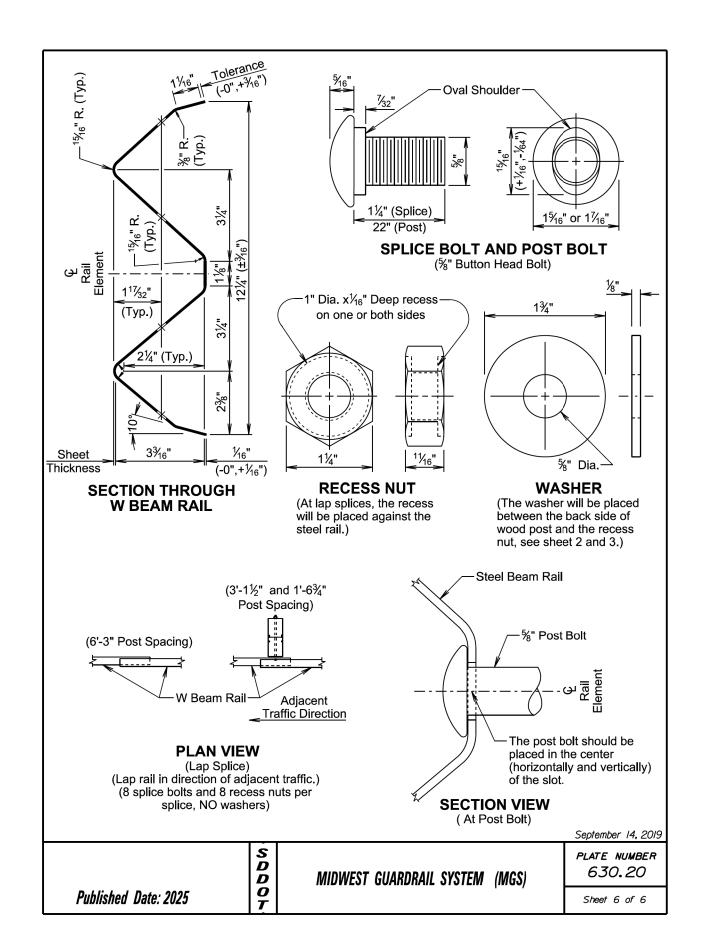


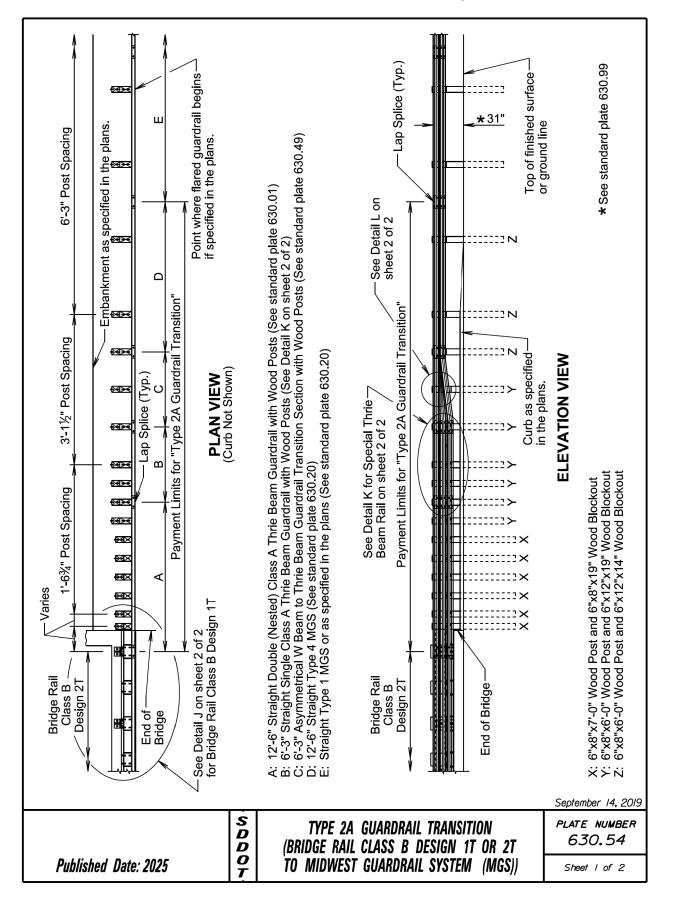


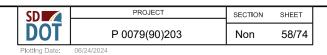


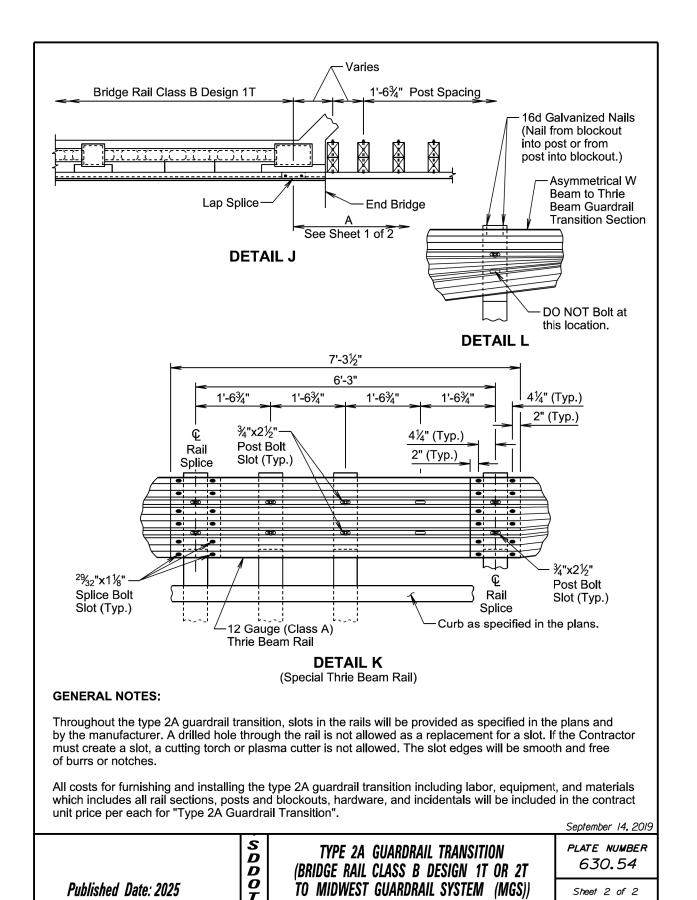


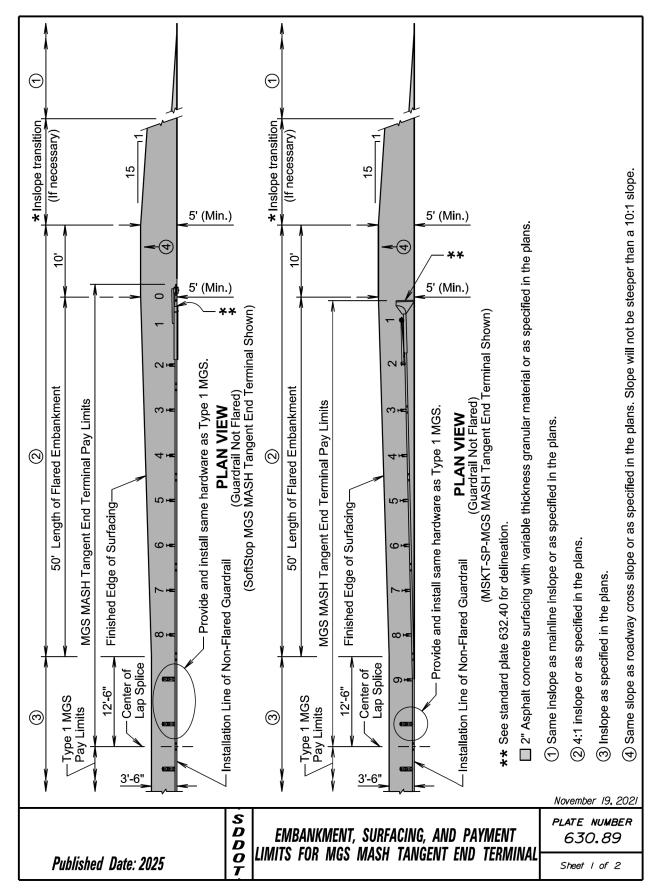


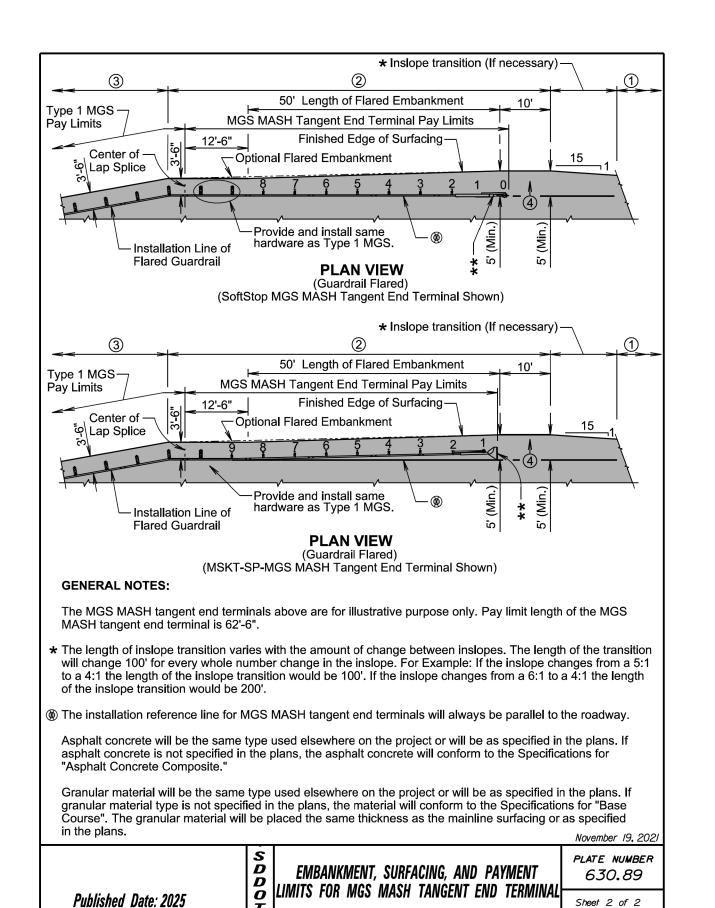






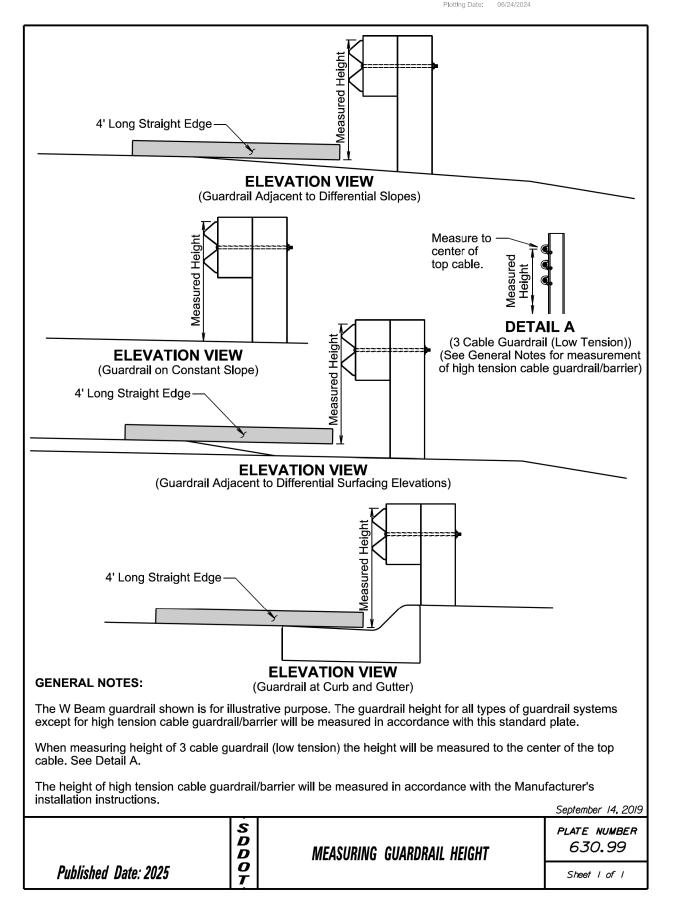


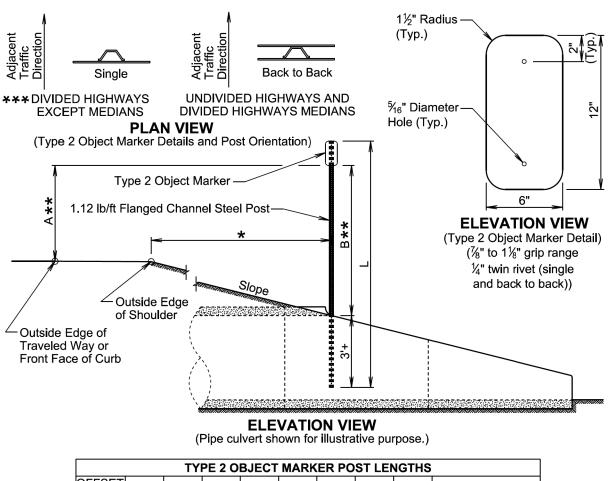




PROJECT SECTION SHEET

P 0079(90)203 Non 59/74





	TYPE 2 OBJECT MARKER POST LENGTHS											
OFFSET (*)		1'	2'	3'	4'	5'	6	7'	8'	Greater Than 8'		
						POST	LENG	ΓΗ (L)				
	3:1	8'-6"	8'-9"	9'-3"	9'-6"	9'-9"	10'-3"	10'-6"	10'-9"	8'-0"		
SLOPE	4:1	8'-6"	8'-9"	9'-0"	9'-3"	9'-9"	9'-9"	10'-0"	10'-3"	8'-0"		
SEC	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"		

*** The type 2 object marker may be installed back to back when specified in the plans.

S D D O T

Post Length L was calculated based on a shoulder width of 6 feet at a crosslope of 4 percent and L was rounded up to the nearest 3 inches.

** Dimension A is 4 feet when the Offset * is 8 feet and less. Dimension B is 4 feet when Offset * is greater than 8 feet.

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

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

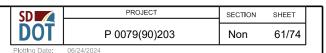
December 23, 2019

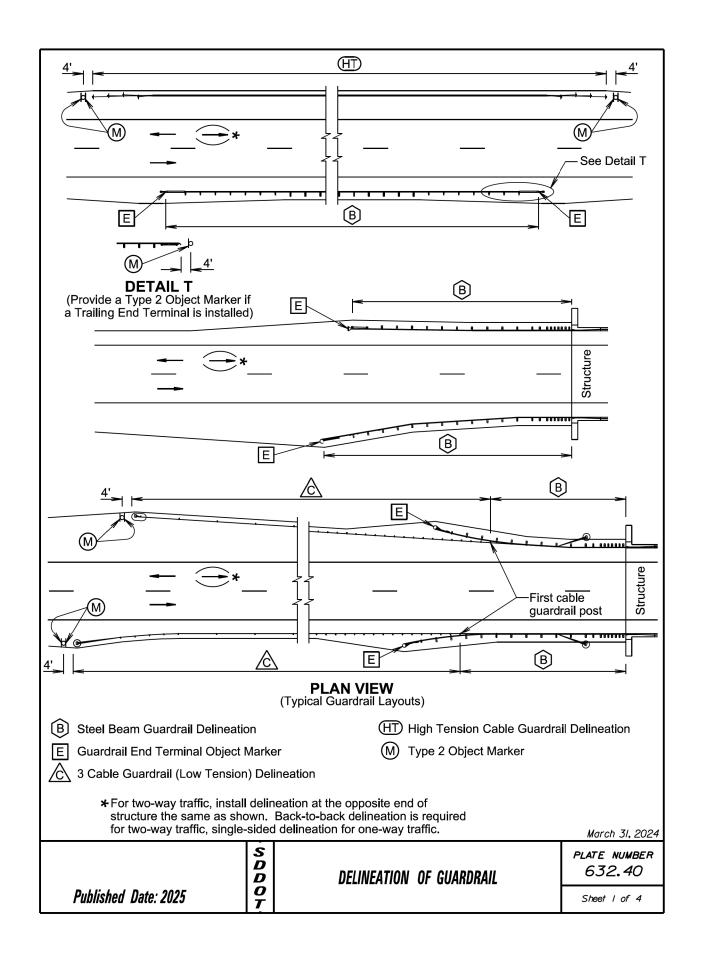
Published Date: 2025

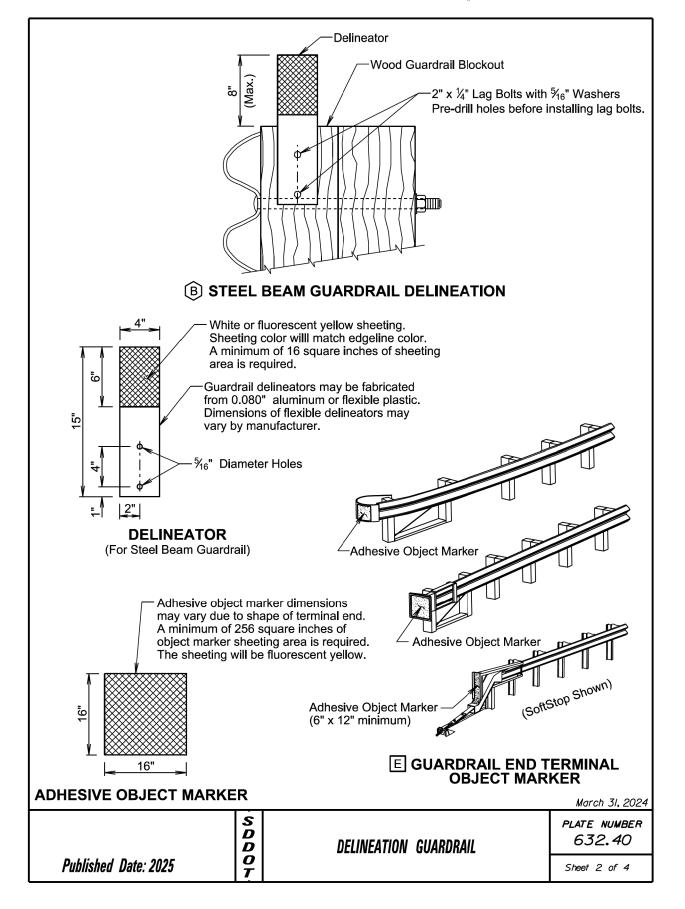
TYPE 2 OBJECT MARKER (DIRECT DRIVE) PLATE NUMBER 632.01

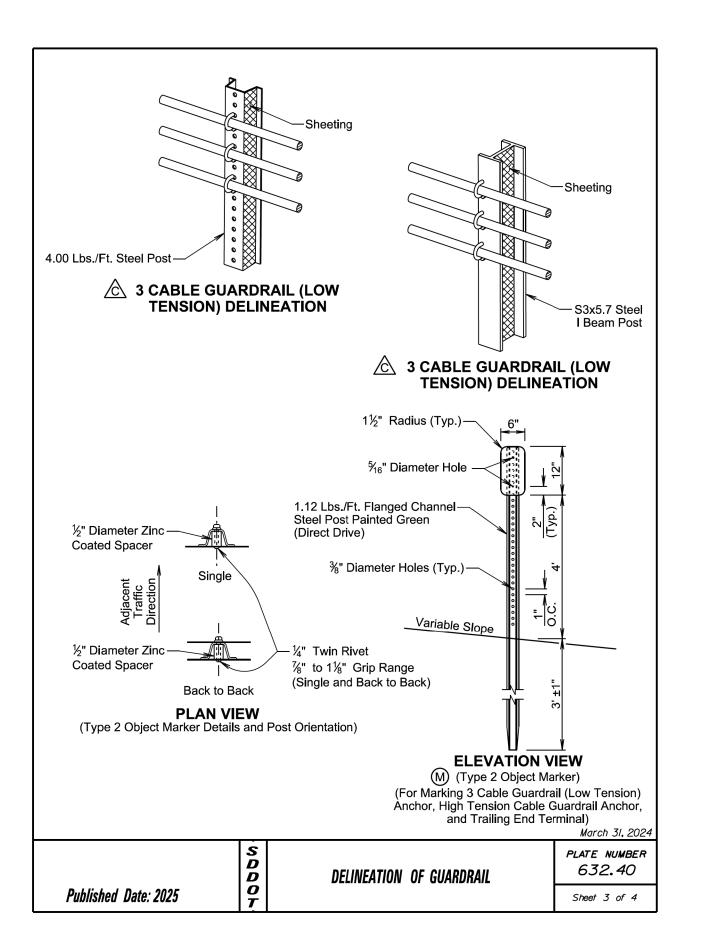
Plotting Date: 06/24/2024 SECTION SHEET

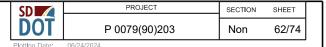
P 0079(90)203 Non 60/74











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

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

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

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

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

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

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

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

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

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

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

March 31, 2024

Published Date: 2025

S D D DELINEATION OF GUARDRAIL

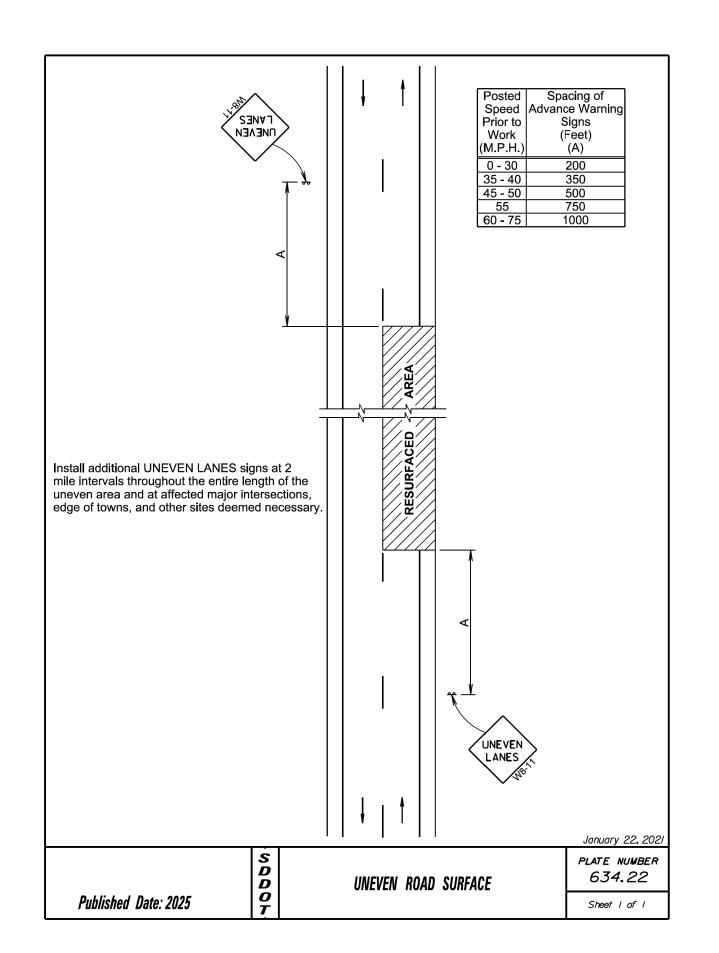
PLATE NUMBER 632.40

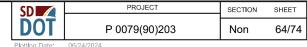
Sheet 4 of 4

SD	PROJECT	SECTION	SHEET
DOT	P 0079(90)203	Non	63/74
Plotting Date:	06/24/2024		

Spacing of Advance Warning The signs illustrated are not required Posted if the work space is behind a barrier, Speed more than 2 feet behind the curb, or 15 Prior to Signs feet or more from the edge of any (Feet) Work (M.P.H.) (A) roadway. 0 - 30 200 The signs illustrated will be used where there are distracting situations; such as: 35 - 40 350 45 - 50 500 vehicles parked on shoulder, vehicles 55 750 accessing the work site via the highway, and equipment traveling on or crossing 60 - 80 1000 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 WORK SPACE 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. January 22, 2021 S D D O T PLATE NUMBER 634.01 WORK BEYOND THE SHOULDER Published Date: 2025 Sheet I of I

WORK WORK STORY ST		Posted Spacing of Speed Advance Warning Leng Prior to Signs Work (Feet) (Feet) (M.P.H.) (A) (L) 0 - 30 200 180 35 - 40 350 320 45 500 600 50 50 500 600 600 60 60 - 65 1000 780  Channelizing Device  END  ROAD WORK  G20-2  The channelizing devices will be a cones if traffic control must remain For short duration operations (1 h channelizing devices may be elim with an activated flashing or revolutions.	th Channelizing Devices t) (Feet) (G)  25  25  25  50  50  50  50  drums or 42" n overnight.  our or less) all inated if a vehicle
SHOULDER HARDWASHOULDER HARDWASHOULD		used.  Worker signs (W21-1 or W21-1a) instead of SHOULDER WORK sign should left side of a divided or one-way releft shoulder is affected.  The SHOULDER WORK sign on a roadway is not required if drivers or roadway will encounter another as sign before they reach a work acti	d be placed on the padway only if the an intersecting emerging from that dvance warning
WORK SPACE		SHOULDER WORK	
Published Date: 2025		WORK ON SHOULDERS	January 22, 2021  PLATE NUMBER 634.03  Sheet I of I

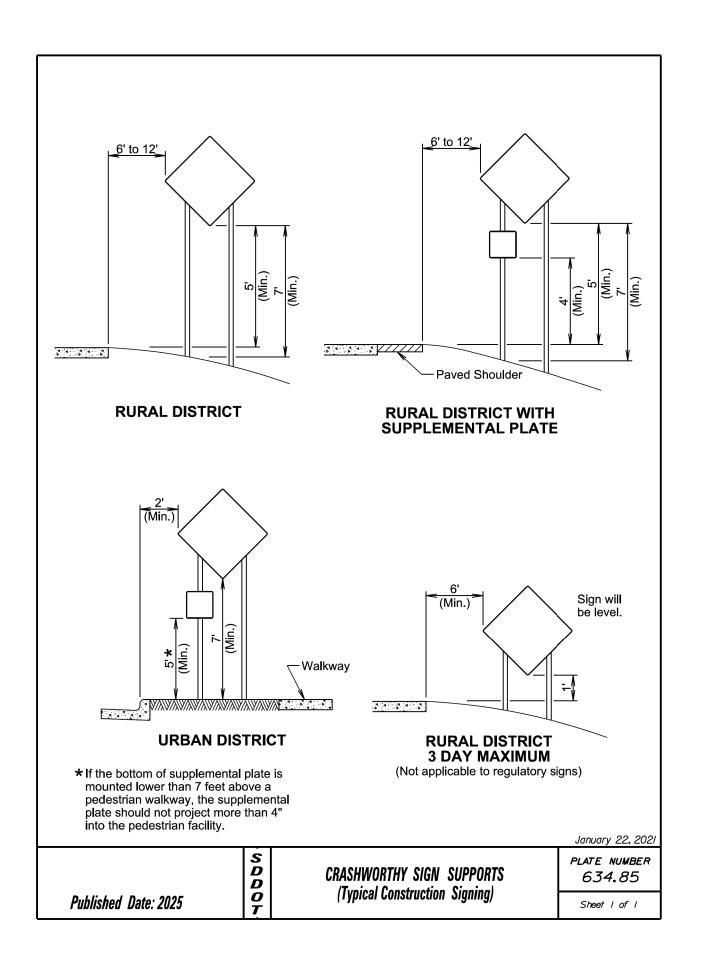


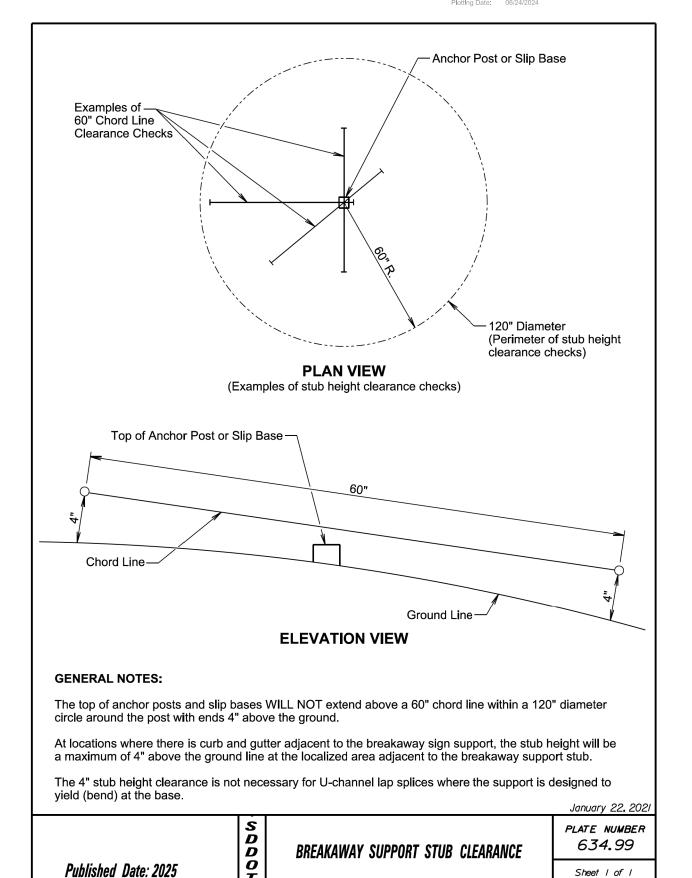


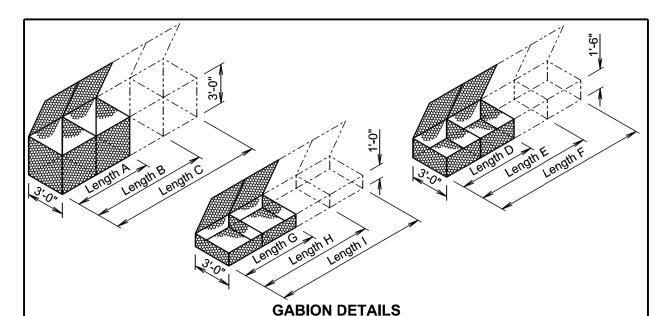
						L	Plotting Date: 06/24/2024	0070(00)200
Posted	Spacing of	Spacing of					<b>1</b> .	
Speed	Advance Warning	Channelizing				n sequence	////	/ , //
Prior to	Signs	Devices				direction san	ne //	
Work (M.P.H.)	(Feet) (A)	(Feet) (G)		as b	elow.			// 1/
0 - 30	200	25						/////
35 - 40	350	25					//	
45	500	25					/ / * //	
50	500	50					/ <b>*</b> //	/
55	750	50					%/ <b>///////////</b>	
60 - 65	1000	50						( 10 m)
	Flagger				/	// ,		10 to
•	<ul><li>Channelizing De</li></ul>	vice				/ 1		101 / V
	volume traffic situa			,	//			Mar
	ort work zones on st				/ /	MORY		
	s where the flagge users approaching			//	$\langle \alpha \lambda \rangle$			ther co
	ns, a single flagger				V/	$^{\prime}$		estret co
		•	2045	/ /	<b>#</b>			-
	AD WORK AHEAD signs may be omitte		KOAD /	/	<b>7</b>	//.	<b>*</b>	
	operations (1 hour		/	1	<b>1</b>		<b>D</b> /	
		•	- 1	1	<b>17</b>	🕉 🕉	, 	
	and/or flush seal o				17	1 1	Z Wa	
	aggers are not bein OIL sign (W21 <b>-</b> 2) v		,	<u> </u>	<b></b>	<b>                                     </b>	No.	
	nce of the liquid asp		•	1 7	╫ [▔] ■ <b></b>	100,	ane Ty	
				70,	║ ▔■▃		One Lane Two-way Traffic Taper	<b>→</b>
	warning lights and					<del></del>		
	used to call attentice warning signs.	on to the					š \	1120.
auvanos	warning oigno.						XXX	٦
	nnelizing devices v	vill be drums					/ FEE1	
or 42" c	ones.						W16-2 (Option	
	lizing devices are n					<del>*    </del>	. / ` ` '	•
	e centerline adjace						$\nearrow$	
	en pilot cars are ut g traffic through the						ONE LA	ME
area.	7-079	WOIR						
	ROAD WORK	ו					AHEAI	) (O.A.
	END					🏎 🔻	. / 🗸	4.
			<i>J</i>					
	lizing devices and f						$\wedge$	
	at intersecting road						ROAD WORK	
required	ntersecting road tra L	illic as				<u></u>	<b>∠</b> ΔHFΔſ	) 🔨
· .								10°
I ne buff	fer space should be he two-way traffic t	e extended aner is					·	
placed b	pefore a horizontal	or vertical						
curve to	provide adequate	sight						
	e for the flagger and ed vehicles.	1 queue		.				
					1			
The leng	gth of A may be adj conditions.	usted to		'	'			
iii iiela d	onulions.		'	•		• '		January 22, 202
		S						PLATE NUMBER
1			11	NF CI	SIIRE I	NITH FLACO	ER PROVIDED	<i>634.23</i>
ם	hlichad Nota: 2025		<i>"</i>	INL ULU	OUIL I	WIIII I LAUU	LII I IIVYIDED	<b>-</b>

 $\left| egin{array}{c} oldsymbol{o} \ oldsymbol{T} \end{array} \right|$ Published Date: 2025

Sheet I of I







	STANDARD SIZES						
SIZE LENGTH	WIDTH	HEIGHT	NUMBER OF	CAPACITY			
		HLIGHT	CELLS	(Cu. Yd.)			
Α	6'-0"	3'-0"	3'-0"	2	2.0		
В	9'-0"	3'-0"	3'-0"	3	3.0		
С	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		
Н	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.

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

The lacing procedure is as follows:

- 1. Cut a length of lacing wire approximately 1½ times the distance to be laced but not exceeding 5 feet.
- 2. Secure the wire terminal at the corner by looping and twisting.

S D D O T

- 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

Published Date: 2025

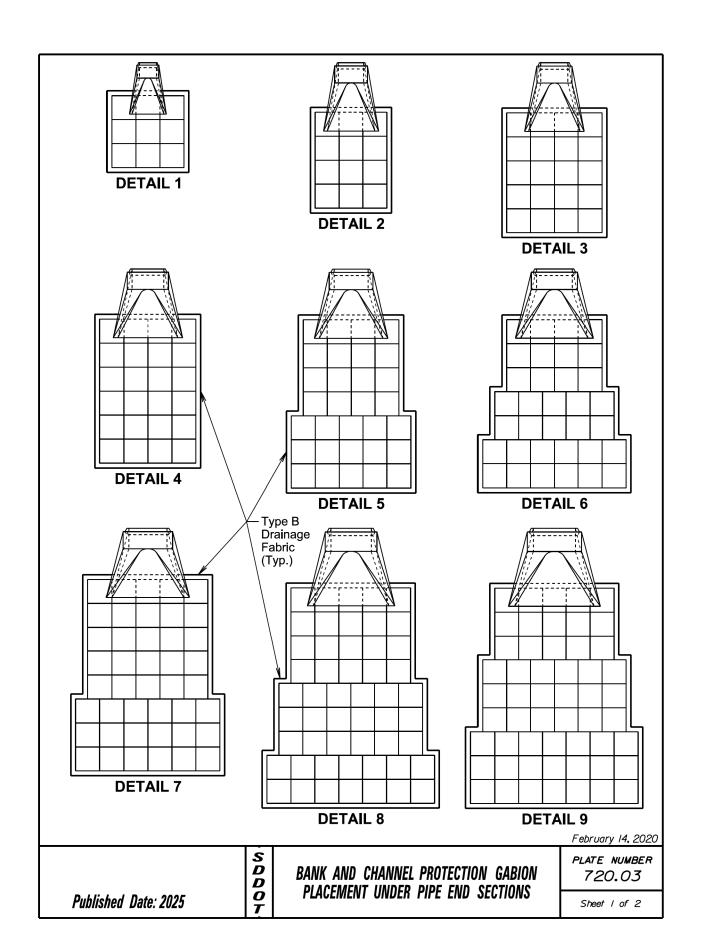
BANK AND CHANNEL PROTECTION GABIONS

PLATE NUMBER 720.01

Sheet I of I

PROJECT SECTION SHEET

P 0079(90)203 Non 66/74



	* ESTIMATED QUANTITIES					
		Pipe	Gabion	Type B		
	D-4-:I	Diameter		Drainage		
	Detail			Fabric		
		(Inches)	(Cu. Yd.)	(Sq. Yd.)		
	1	12, 18, and 24	4.5	15		
_ 호 2		30 and 36	6.0	19		
rct A	3	42	10.0	29		
Ϋ́	4	48 and 54	12.0	34		
	5	60	15.5	43		
an,	6	66	17.0	47		
RCP, RCP Arch, MP, and CMP Arch	7	72	21.5	57		
RCF CMP,	8	78	26.0	68		
oxdot	9	84	27.0	70		

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.

S D D O

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

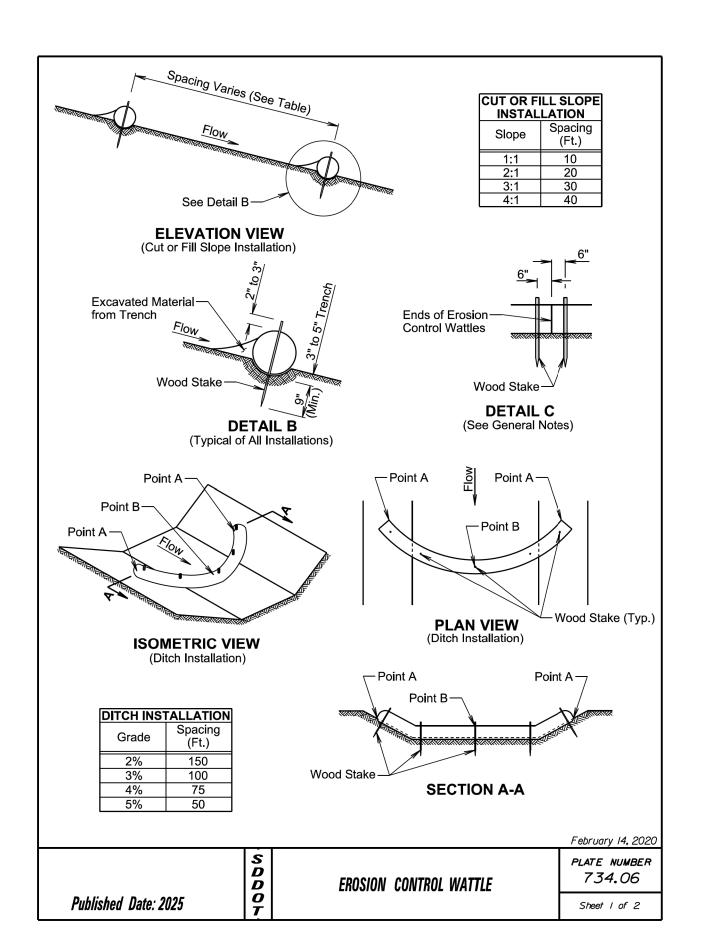
BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS

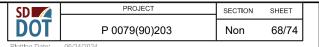
PLATE NUMBER 720.03

Sheet 2 of 2

Published Date: 2025

ottod From TDDC12600 File \Hard06DD\Dooign\StdDiston do





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".

S D D

0

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".

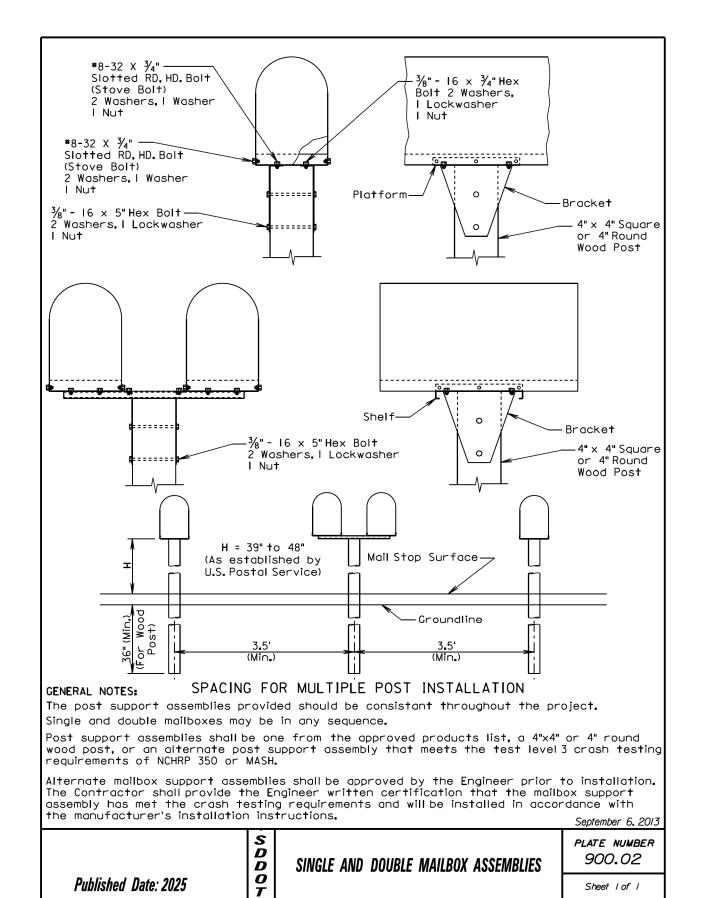
February 14, 2020

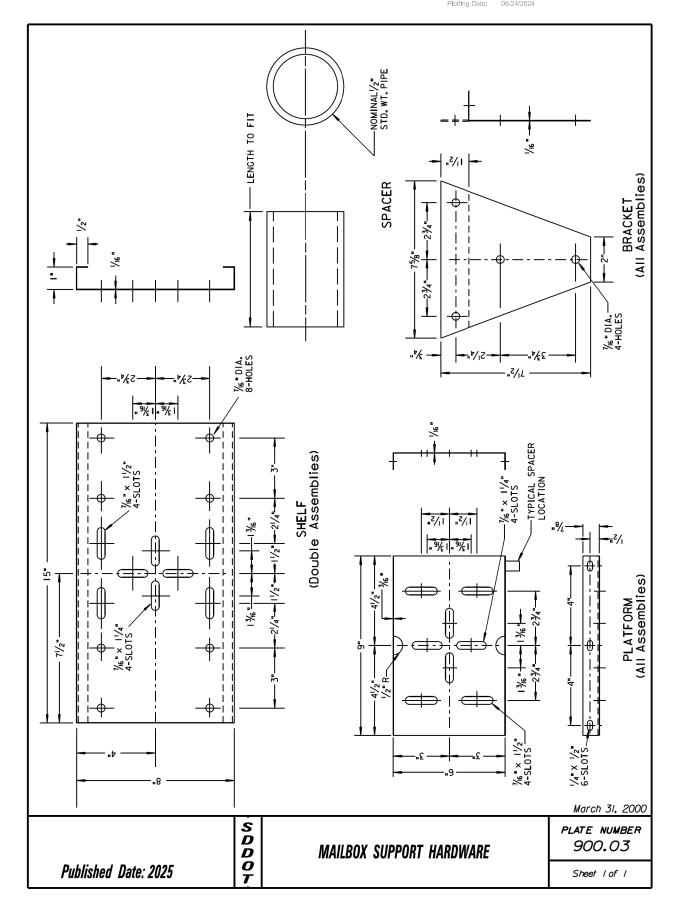
EROSION CONTROL WATTLE

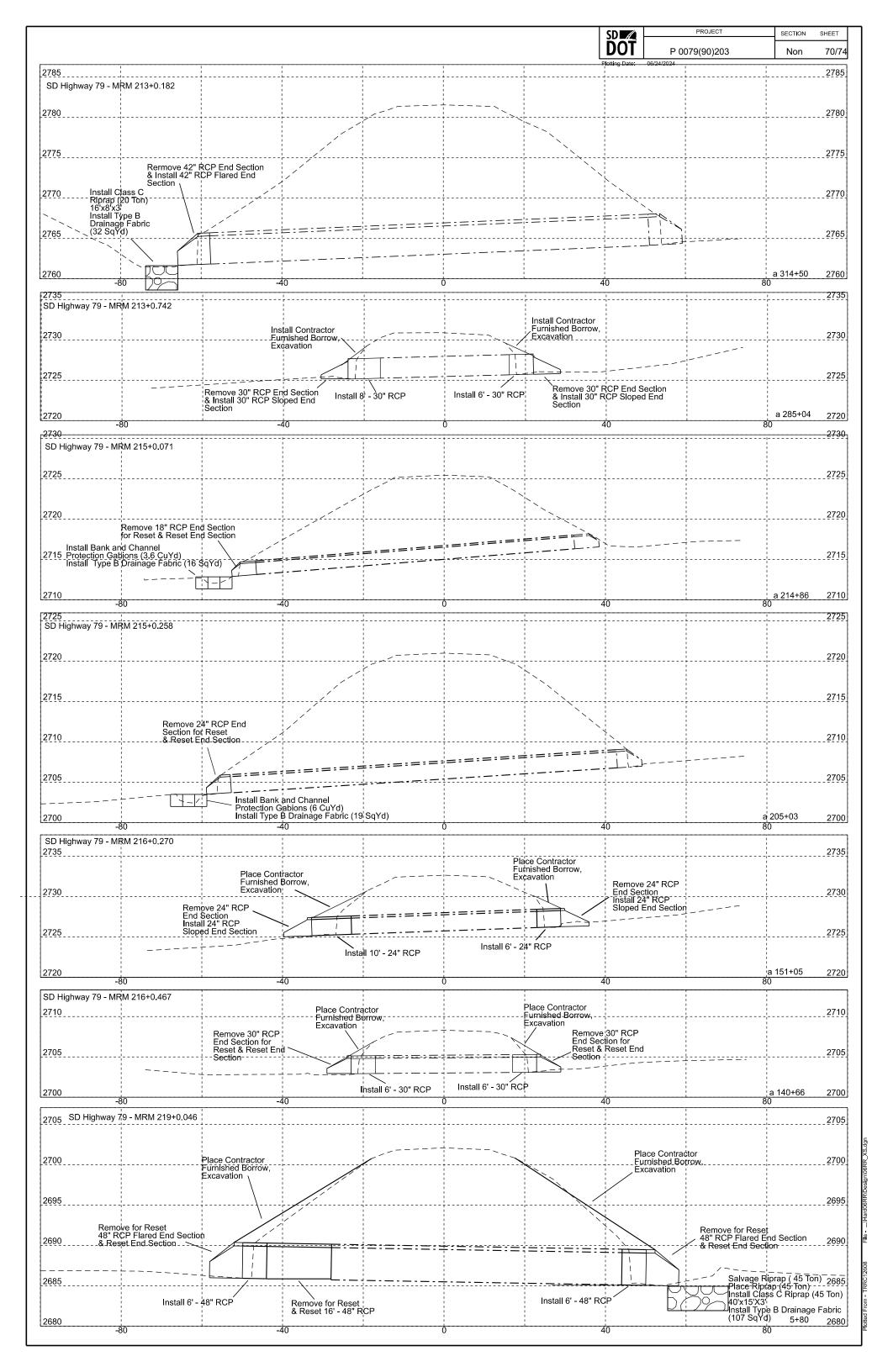
PLATE NUMBER
734.06

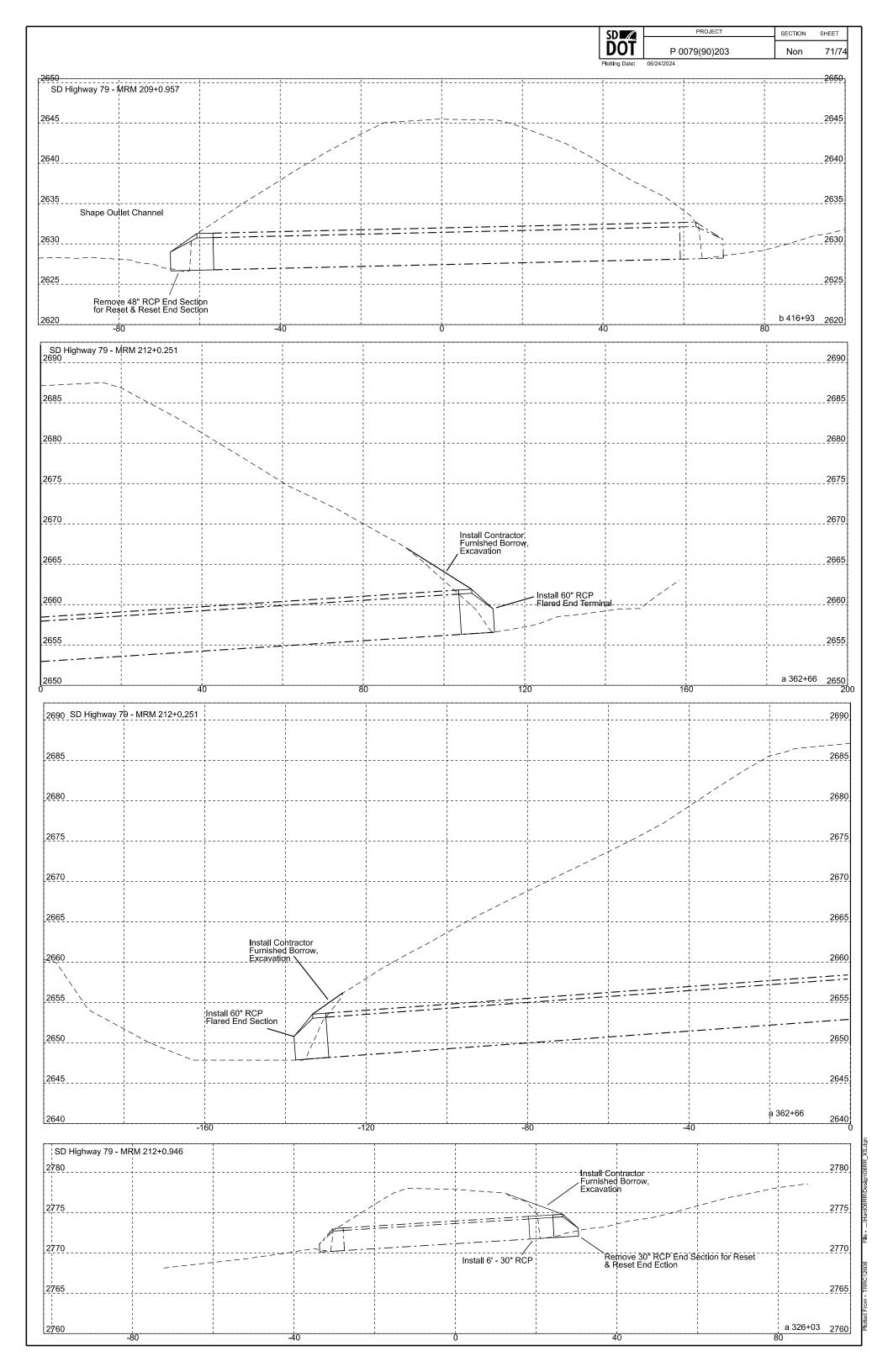
Sheet 2 of 2

Published Date: 2025

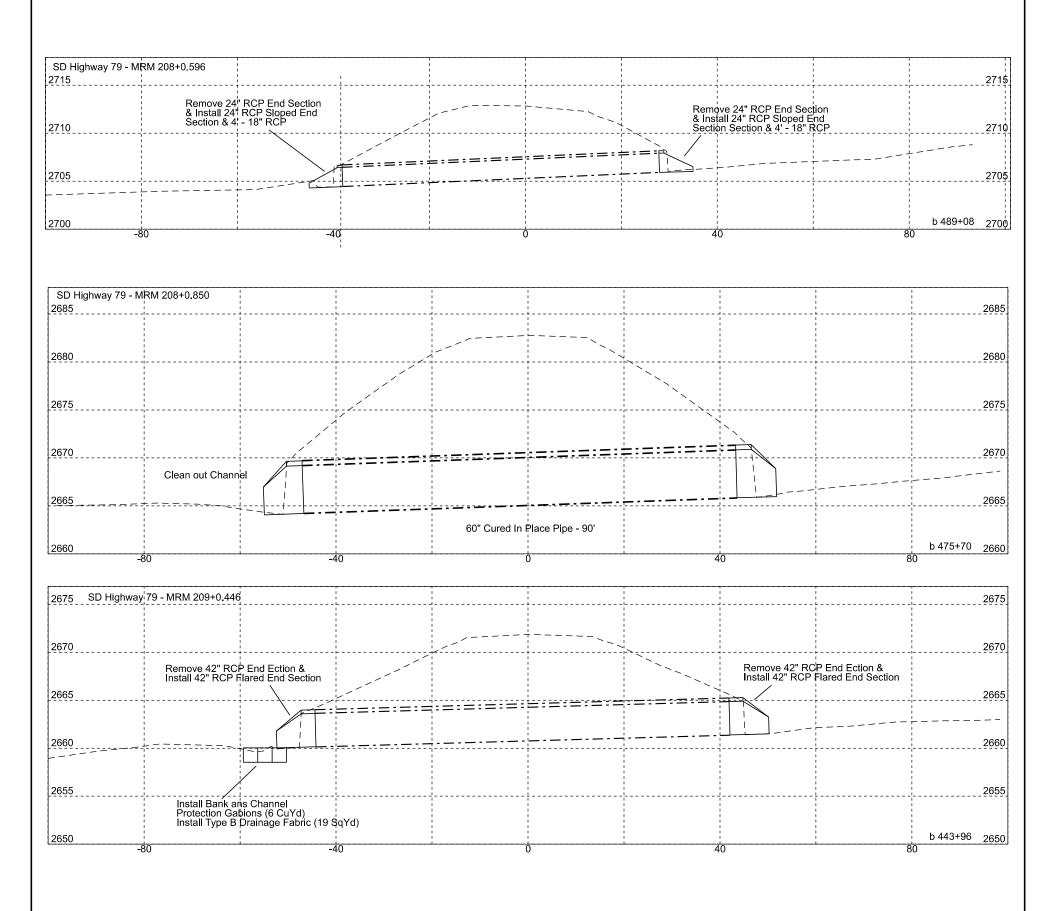


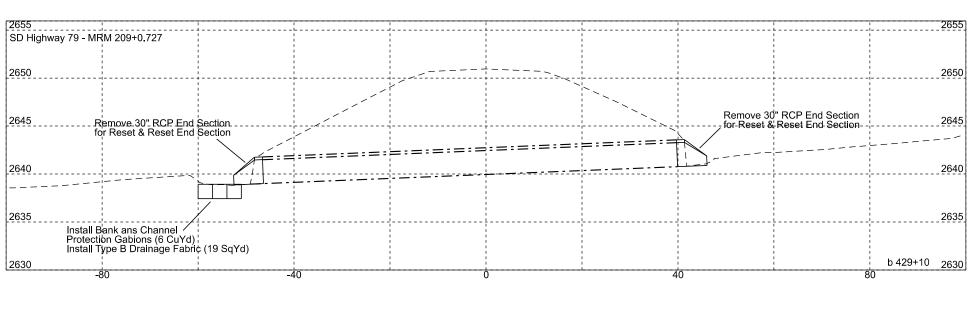












FRC12608 File ...\Hard06RR\Design\06RR XS.dgn

