

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT P 0079(90)203
SD HIGHWAY 79
HARDING COUNTY
MILL, AC RESURFACING, PIPE WORK
PCN 06RR

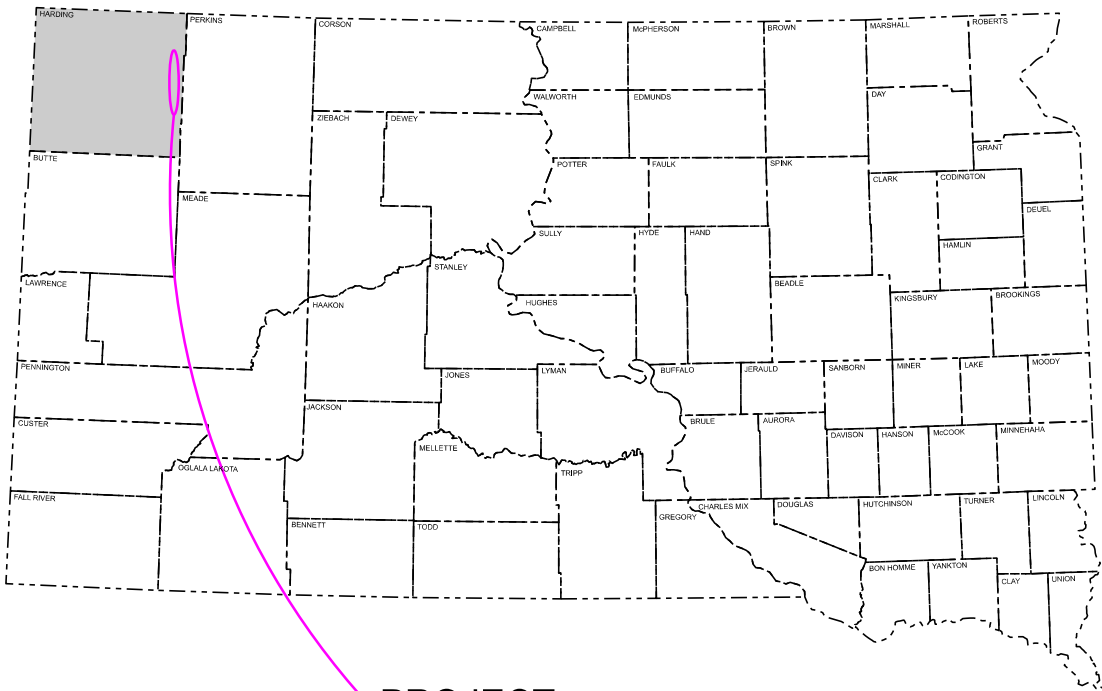
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Plotting Date: 06/24/2024

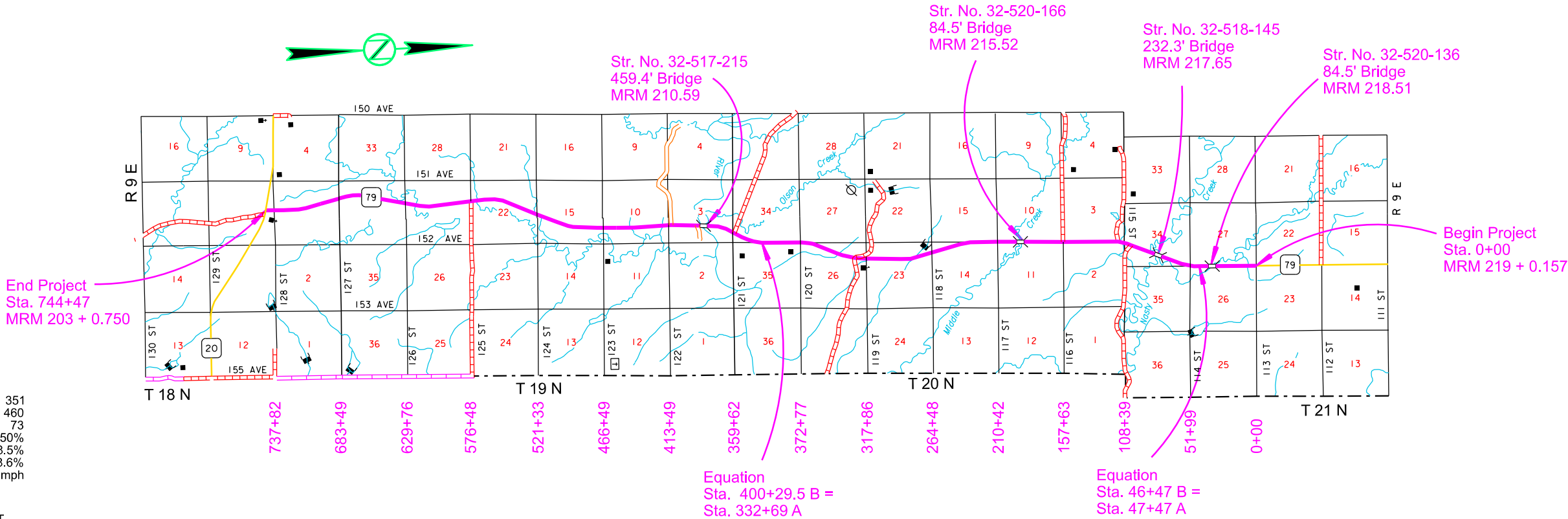
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Plot Scale - 1:200



PROJECT
SD Highway 79
MRM 203.75+0.000 to MRM 219.00+0.157



DESIGN DESIGNATION

AADT (2021)	351
AADT (2041)	460
DHV	73
D	50%
DHV T%	8.5%
AADT T%	18.6%
V	65 mph

STORM WATER PERMIT
None Required

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

8

November 20, 2024

Plotted From - TRRC12608

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



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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](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.



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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 ±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.

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Cold milling asphalt is estimated to produce11600.5 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:	
	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} Gytratory 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.



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Geotextile Installation Procedure

Prior to placing the reinforcement fabric (MSE), the upper 6 inches of subgrade will be scarified and recompactd. 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

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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.

Table of Material Quantities																							
													Alternate A			Alternate B							
Section	Sta.	to	Sta.	Net Length	Net Length	Cold Milling Asphalt Concrete	Unclassified Excavation, Digouts	Remove Asphalt Concrete Pavement	Base Course	Reinforcement Fabric (MSE)	Asphalt Concrete Composite	Water for Granular Material	Base 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	SS-1h or CSS-1h Asphalt for Flush Seal	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		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	9.6		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	151.8	33.3	3438.2	126.9	33.3		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		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	15.4		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	411.8	108.0		66.2	23.0	348.3
Additional Quantities									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

Table of Additional Quantities																
						Alternate A			Alternate B							
						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	Sta.	to	Sta.	Net Length (Ft)	Net Length (Miles)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(SqYd)
Repair and Levelling																
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			
Intersecting Roads																
Bridge Approach Work Str. 32-517-215)													1	120.0	488.2	516.8
Guardrail Installations						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									
					Alternate A		Alternate B		
					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	
Section	Sta.	to	Sta.	Net Length (Ft)	Net Length (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									
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



Table of Pipe Work Quantities

MRM	Disp	Type	Shape	Pipe Size	Pipe Width/Dia.	Pipe Height	Number of Pipe Culverts	Tube Lengths	Materials	Notes	Remove Pipe End Section	Remove Pipe End Section for Reset	Reset Pipe End Section	Remove Pipe for Reset	Reset Pipe
				(In)	(In)	(In)		(Ft)			(Each)	(Each)	(Each)	(Each)	(Ft)
203.75 + 0.021		Pipe	Round	18	18	18		68	Metal	Replace (LT) end section. Install Gabions(RT)		1	1		
204 + 0.414		Pipe	Round	24	24	24		110	Concrete	Replace (LT) end section.	1				
204 + 0.963		Pipe	Round	18	18	18		86	Concrete	Replace (LT) end section.	1				
205 + 0.288		Pipe	Round	24	24	24		96	Concrete	Remove and reset end sections, Install Gabion baskets (RT).		2	2		
205 + 0.801		Pipe	Round	24	24	24			Concrete	Remove and Reset End Section - Rt		1	1		
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		Pipe	Round	18	18	18		68	Concrete	Replace end sections (LT & RT).	2				
206 + 0.577		Pipe	Round	42	42	42		114	Concrete	CIPP. Replace end sections.		2	2		
207 + 0.307		Pipe	Round	24	24	24		78	Concrete	Reset (RT) end section, Install Gabions (RT), 6'x8'x2' scour.		1	1		
207 + 0.942		Pipe	Arch		73	45	2	56	Concrete	CIPP					
208 + 0.069		Pipe	Round	18	18	18		52	Concrete	Replace end sections (LT & RT). Repair erosion control (RT)	2				
208 + 0.199		Pipe	Round	18	18	18		82	Concrete	Replace end sections (LT & RT).	2				
208 + 0.596		Pipe	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	1	1		
209 + 0.169		Pipe	Round	24	24	24		108	Concrete	CIPP. Remove and reset RT end section plus first joint.		1	1	8	8
209 + 0.312		Pipe	Round	18	18	18		44	Concrete	Replace LT end section. Remove and reset RT end section	1	1	1		
209 + 0.446		Pipe	Round	42	42	42		86	Concrete	Replace end sections (LT & RT). Install Gabion baskets. (9'x 9'x2') scour.	2				
209 + 0.727		Pipe	Round	30	30	30			Concrete	Remove and reset end sections. Install Gabions RT (9'x 9'x1') scour.		2	2		
209 + 0.957		Pipe	Round	48	48	48		120	Concrete	Remove and reset RT end section, Shape to drain.		1	1		
210 + 0.281		Pipe	Round	24	24	24		96	Concrete	Remove and reset LT end section.		1	1		
211 + 0.292		Pipe	Round	36	36	36		124	Concrete	Replace RT end section,	1				
212 + 0.251		Pipe	Round	60	60	60		242	Concrete	Repair piping, remove tree (LT)					
212 + 0.946		Pipe	Round	30	30	30		30	Concrete	Extend (LT) 6 - 8'.		1	1		
213 + 0.182		Pipe	Round	42	42	42		108	Concrete	Replace RT end section, Add additional Riprap	1				
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		1	1		
215 + 0.258		Pipe	Round	24	24	24			Concrete	Remove and reset RT end section. Install gabion baskets. (9'x9'x2') scour		1	1		
216 + 0.270		Pipe	Round	24	24	24		46	Concrete	Replace RT end section, Remove and reset LT end section, Extend LT culvert 6-8'.	2				
216 + 0.467		Pipe	Arch	30	30	30		34	Concrete	Remove and reset end sections. Extend culvert 6-8' per side.		2	2		
217 + 0.068		Pipe	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		Pipe	Arch	36	36	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
Total											22	23	23	24	24



Table of Pipe Work Quantities (Continued)																							
MRM	Disp	18" RCP Class 2, Furnish	18" RCP, Install	24" RCP Class 2, Furnish	24" RCP, Install	30" RCP Class 2, Furnish	30" RCP, Install	36" RCP Arch Class 2, Furnish	36" RCP Arch , Install	48" RCP Class 2, Furnish	48" RCP, Install	18" RCP Safety End, Furnish	18" RCP Safety End, Install	24" RCP Sloped End, Furnish	24" RCP Sloped End, Install	30" RCP Sloped End, Furnish	30" RCP Sloped End, Install	36" RCP Sloped End, Furnish	36" RCP Sloped End, Install	42" RCP Flared End, Furnish	42" RCP Flared End, Install	60" RCP Flared End, Furnish	60" RCP Flared End, Install
		(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Each)	(Each)	(Each)	(Each)	(Each)	(Each)	(Each)	(Each)	(Each)	(Each)	(Each)	(Each)
203.8	+ 0.021																						
204	+ 0.414			4	4									1	1								
204	+ 0.963	4	4									1	1										
205	+ 0.288																						
205	+ 0.801																						
206	+ 0.092																						
206	+ 0.158																						
206	+ 0.281	8	8									2	2										
206	+ 0.577																						
207	+ 0.307																						
207	+ 0.942																						
208	+ 0.069	8	8									2	2										
208	+ 0.199	8	8									2	2										
208	+ 0.596			8	8									2	2								
208	+ 0.850																						
209	+ 0.018			4	4									1	1								
209	+ 0.169																						
209	+ 0.312											1	1										
209	+ 0.446																			2	2		
209	+ 0.727																						
209	+ 0.957																						
210	+ 0.281																						
211	+ 0.292																	1	1				
212	+ 0.251																					2	2
212	+ 0.946					6	6																
213	+ 0.182																			1	1		
213	+ 0.742					14	14									2	2						
215	+ 0.071																						
215	+ 0.258																						
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														
219	+ 0.046									12	12												
Total		28	28	32	32	32	32	12	12	12	12	10	10	6	6	2	2	1	1	3	3	2	2



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Table of Pipe Work Quantities (Continued)																	
MRM	Disp	84" RCP Flared End, Furnish	84" RCP Flared End, Install	H	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	Class C 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																	20
204 + 0.963																	20
205 + 0.288									2.7				12				
205 + 0.801																	
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									6				19				
209 + 0.727									6				19				
209 + 0.957																	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																20	20
215 + 0.071									3.6				16	1			
215 + 0.258									6				19				
216 + 0.270																30	20
216 + 0.467														1		20	20
217 + 0.068	2	2															20
217.65 + 0.062														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.

Mycorrhizal Inoculum

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

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

Product	Manufacturer
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 www.sustane.com
Perfect Blend	Perfect Blend, LLC Bellevue, WA Phone: 1-866-456-8890 www.perfect-blend.com
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; Winter Wheat: August through November		10
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.

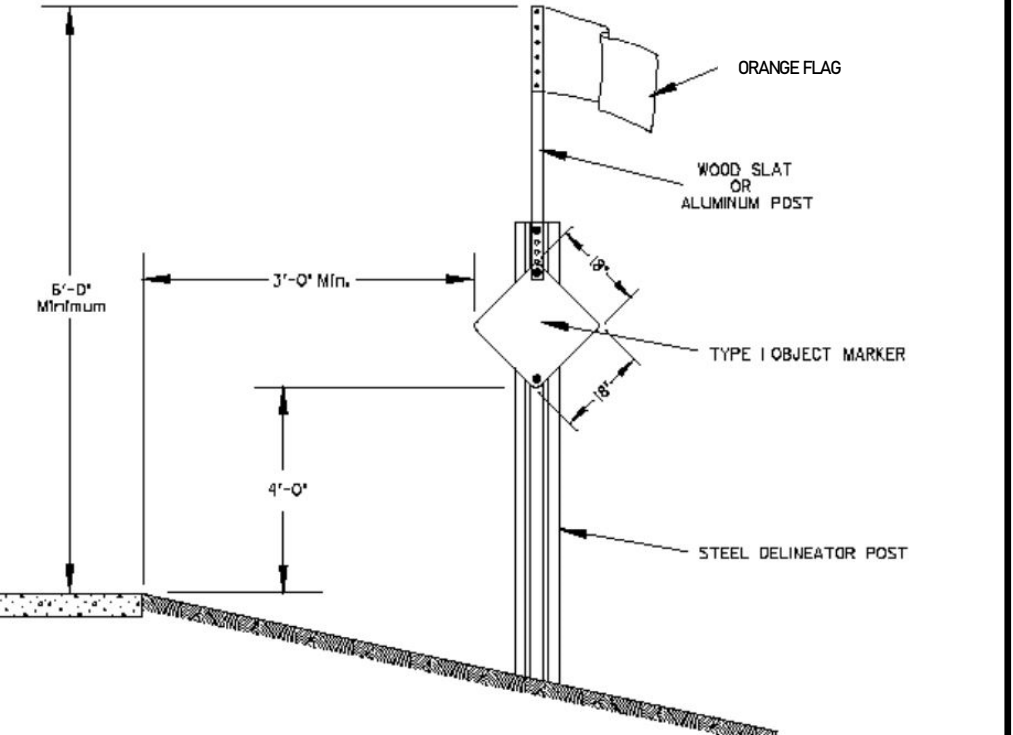
A mobile work operation will be allowed provided the rumble strip or rumble stripe grooving, flush sealing, and pavement marking can be completed satisfactorily by a continuously moving work operation. A mobile work operation will require approval by the Engineer

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

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	3	48" x 48"	16.0	48.0
W8-1	BUMP	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
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT 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
Section	Sta. to	Sta.	(Ft)	(Miles)	Gal	Gal	Grind 8" Rumble Strip or Stripe in Asphalt Concrete
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
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
	3rd 332+69.00	3rd 383+55.25	5086.25	0.96	43.2	33.5	1.92
3	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 Single Mailbox	Refurbish Double 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.

Table of Guardrail												
		Remove Rubrail	Remove Beam Guardrail	Remove W Beam Guardrail End Terminal	Type 1 MGS	MGS Tangent End Terminal	W Beam Guardrail to MGS Transition	Type 2A Guardrail Transition	Straight Class B W Beam Guardrail with Wood Posts	Straight Double Class B W Beam Guardrail with Wood Posts	Straight Class A W Beam Guardrail with Wood Posts	Rubrail
Str. No.	MRM	Ft	Ft	Each	Ft	Each	Each	Each	Ft	Fy	Ft	Ft
32-517-215	210.59		168.75	1	25	1		1				
			118.75	1	25	1		1				
			168.75	1	25	1		1				
			118.75	1	25	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	8.2
		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	8.2
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	8.2
		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	8.2
	Total	65.6	1925	16	400	16	8	8	100	100	212.5	65.6

TYPICAL SURFACING SECTIONS



Plotting Date: 06/24/2024

PROJECT

P 0079(90)203

SECTION SHEET

Non 16/74

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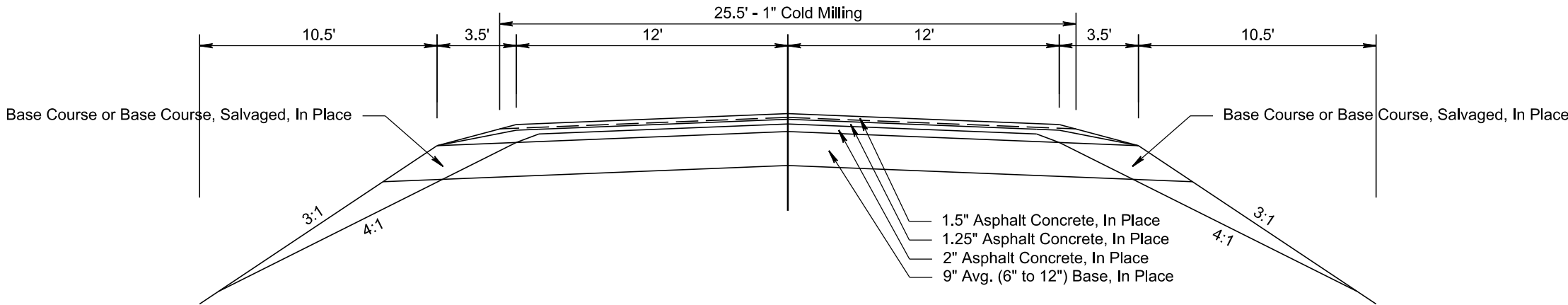
Plot Scale -

TRRC12608

Plotted From -

Section 1

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



Equation:

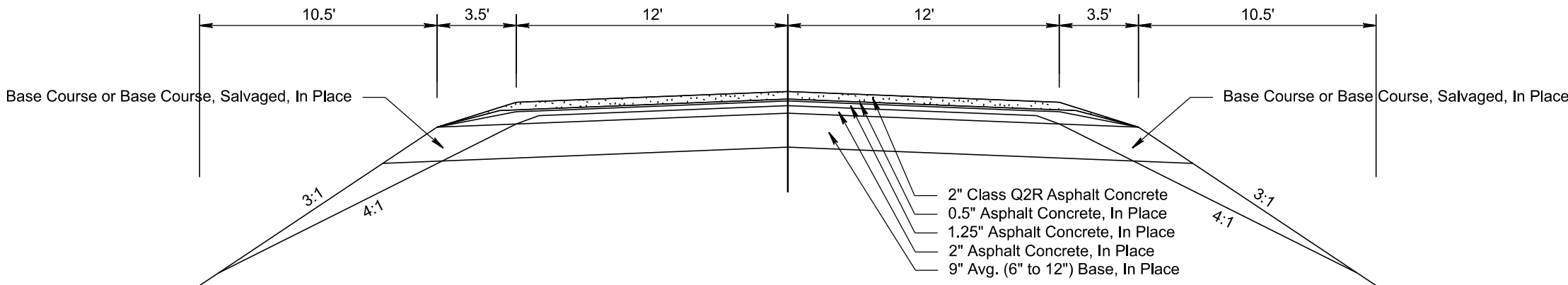
Sta. b 46+47 = Sta. a 47+47

Bridge Exceptions:

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

Section 1

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



TYPICAL SURFACING SECTION

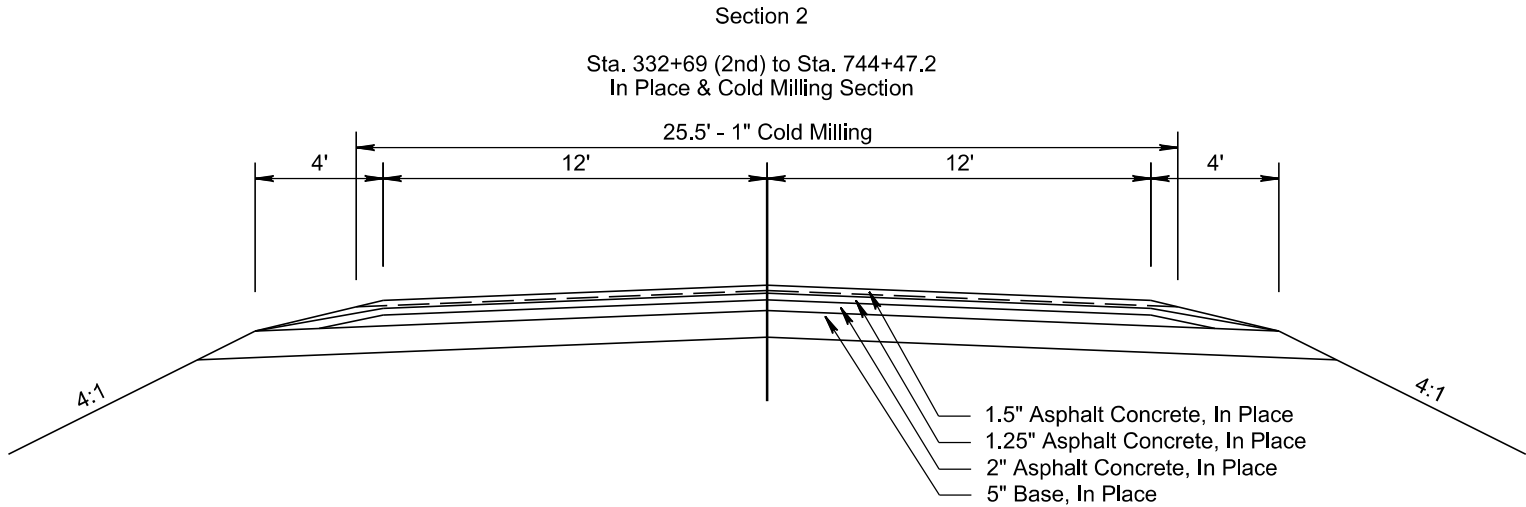


Plotting Date: 06/24/2024

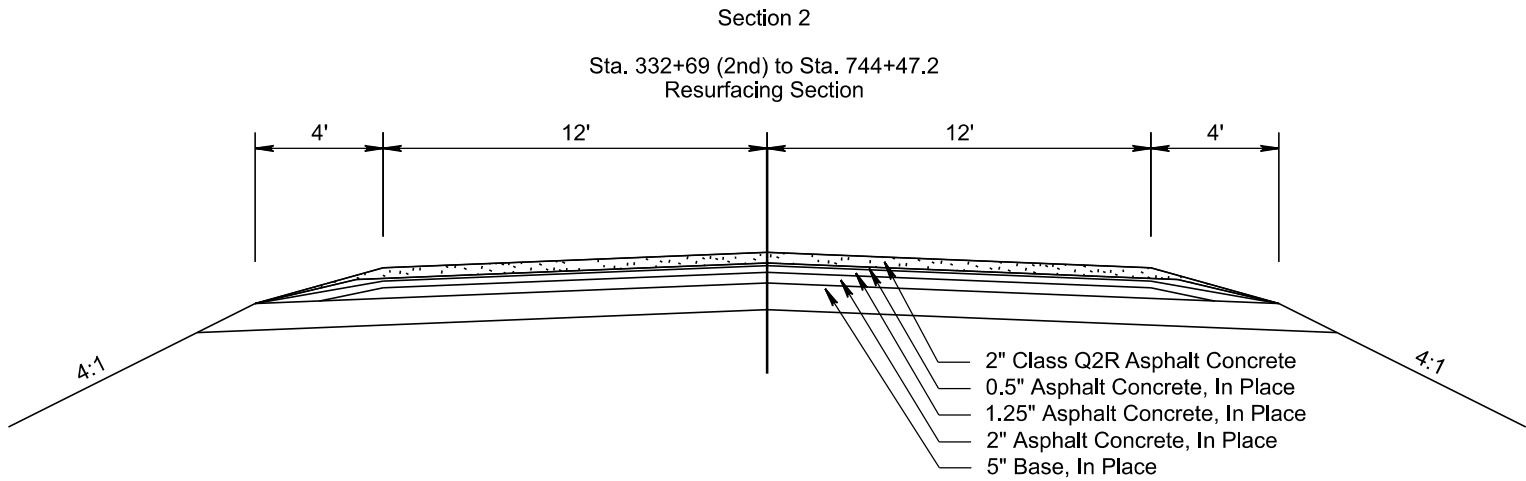
PROJECT	SECTION	SHEET
P 0079(90)203	Non	17/74

1:6.00001
Plot Scale -

Plotted From -
TRRC12608




Bridge Exceptions:
MRM 210.59 - 459.4'












































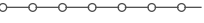













































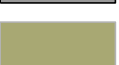






























































































File - ...06RR_Typical Sections 3D.dgn
File - ...06RR_Typical Sections 3D.dgn

LEGEND

	PROJECT	SECTION	SHEET
	P 0079(90)203	Non	18/74

Plotting Date: 06/24/2024

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



a 314+50 - L
MRM 213+0.182 - R
Remove 42" RCP End Section

a 314+50 - L
MRM 213+0.182 - R
Install 42" RCP Flared End
Section

a 314+50 - L
MRM 213+0.182 - R
Install Class C Riprap (20 Ton)
16'x8'x3'
Type B Drainage Fabric (32 SqYd)

a 326+03 - R
MRM - 212+0.946 - L
Remove 30" RCP End
Section for Reset

a 326+03 - R
MRM - 212+0.946 - L
Reset End Ection

a 326+03 - R
MRM - 212+0.946 - L
Install 6' - 30" RCP

a 326+03 - R
MRM - 212+0.946 - L
Install Contractor
Furnished Borrow,
Excavation (40 CuYd)

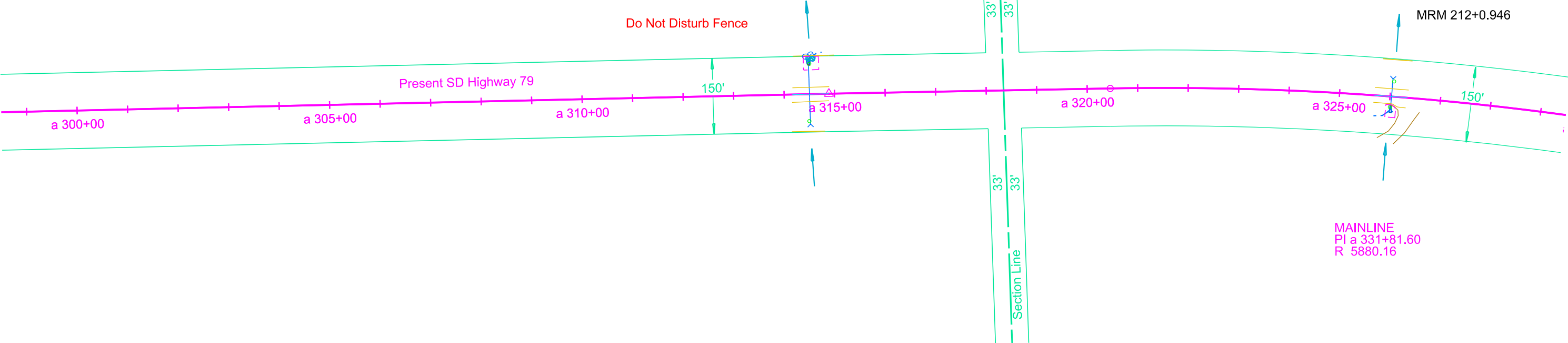
Sec. 26 - T20N - R9E

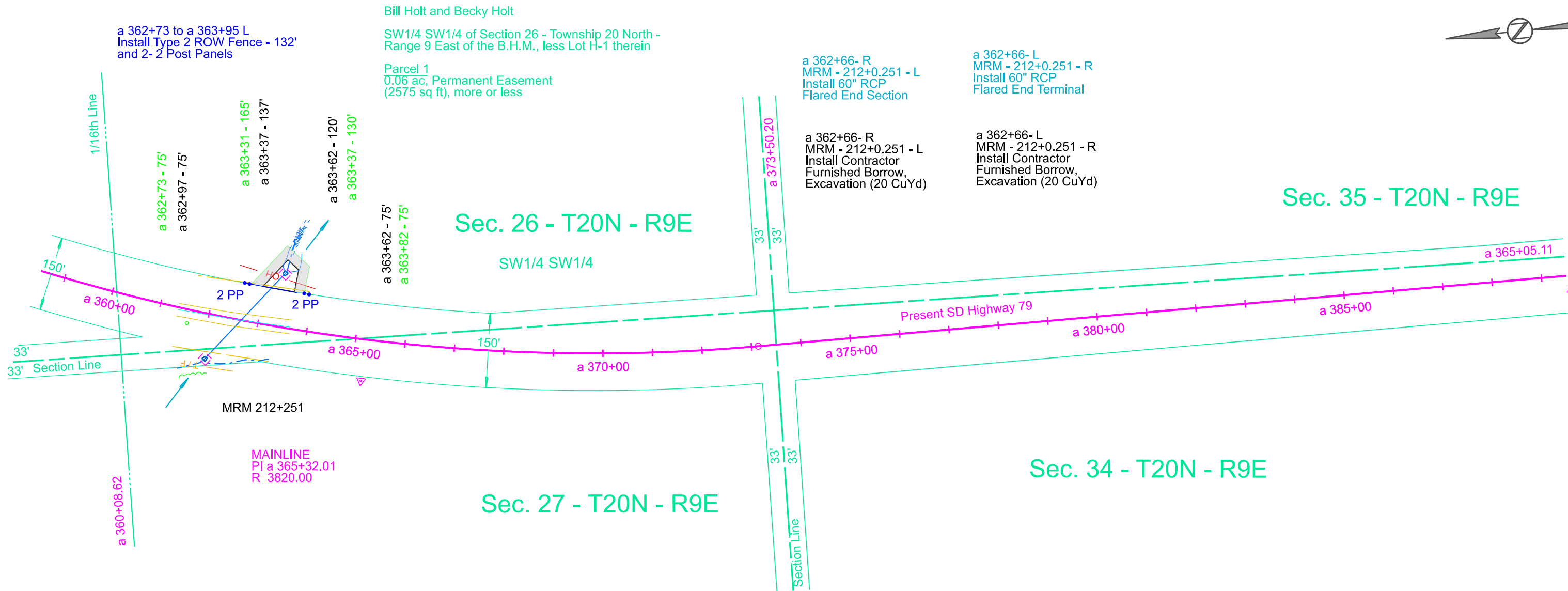
Sec. 23 - T20N - R9E

MRM 213+0.182

Do Not Disturb Fence

MRM 212+0.946





a 362+73 to a 363+95 L
Install Type 2 ROW Fence - 132'
and 2- 2 Post Panels

Bill Holt and Becky Holt

SW1/4 SW1/4 of Section 26 - Township 20 North -
Range 9 East of the B.H.M., less Lot H-1 therein

Parcel 1
0.06 ac, Permanent Easement
(2575 sq ft), more or less

a 362+66- R
MRM - 212+0.251 - L
Install 60" RCP
Flared End Section

a 362+66- L
MRM - 212+0.251 - R
Install 60" RCP
Flared End Terminal

a 362+66- R
MRM - 212+0.251 - L
Install Contractor
Furnished Borrow,
Excavation (20 CuYd)

a 362+66- L
MRM - 212+0.251 - R
Install Contractor
Furnished Borrow,
Excavation (20 CuYd)

Sec. 26 - T20N - R9E

SW1/4 SW1/4

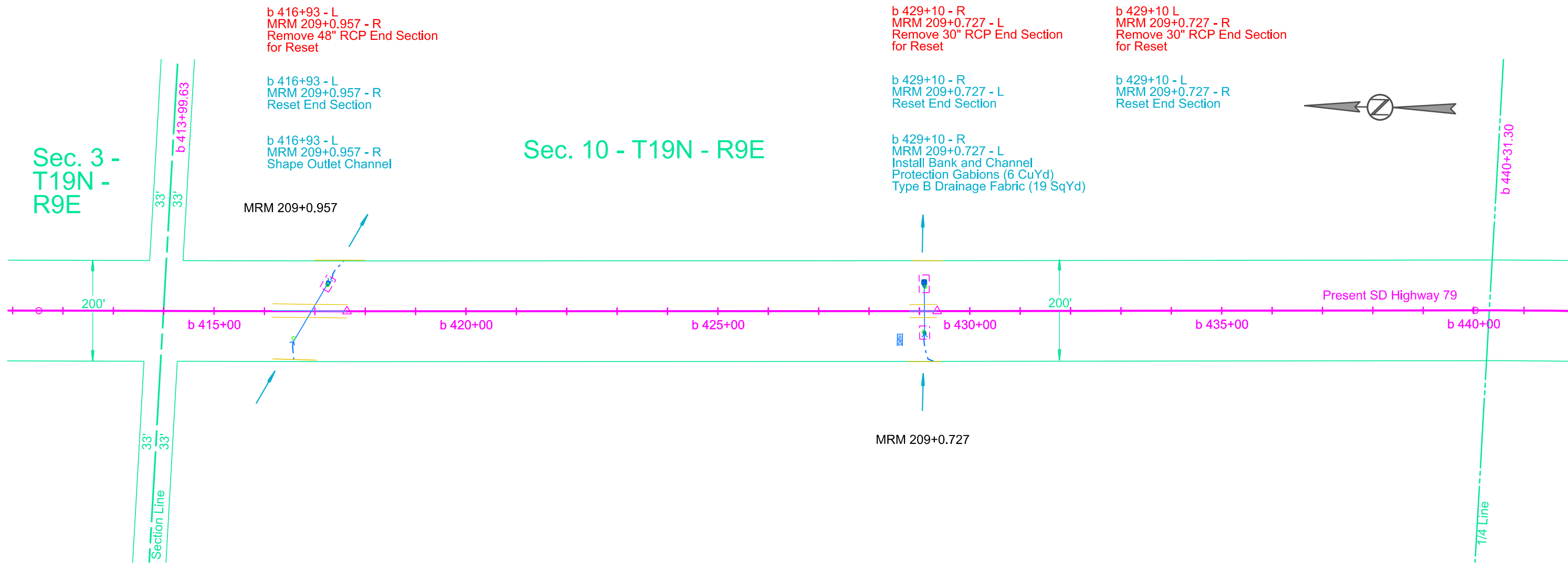
Sec. 35 - T20N - R9E

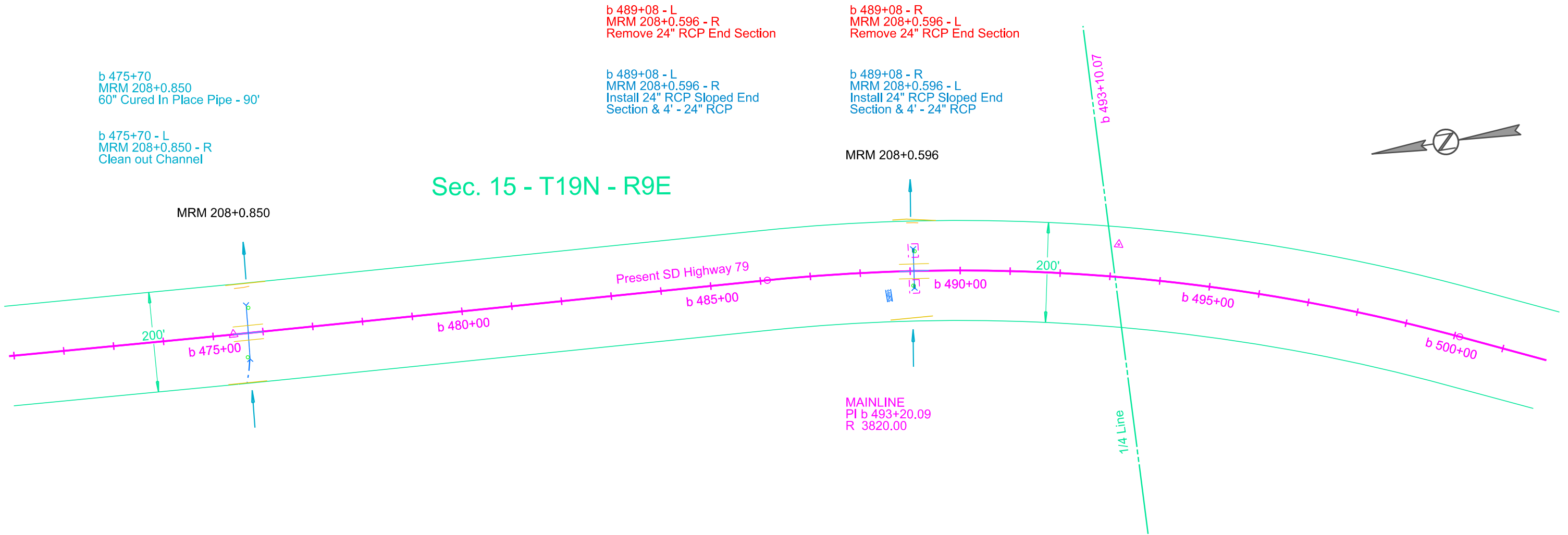
Sec. 34 - T20N - R9E

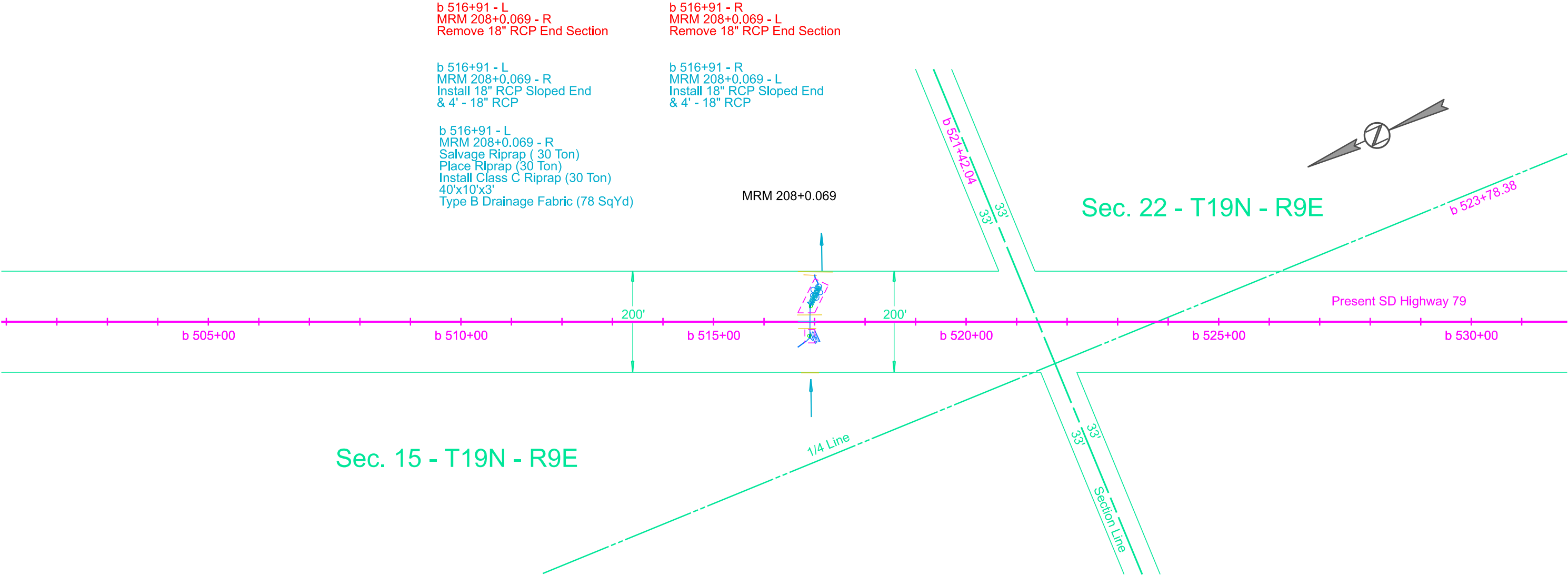
Sec. 27 - T20N - R9E

MAINLINE
PI a 365+32.01
R 3820.00

Parcel 1
a 362+73 to a 363+90 L
Temporary Easement Containing
0.1 ac, more or less



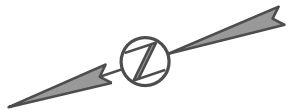




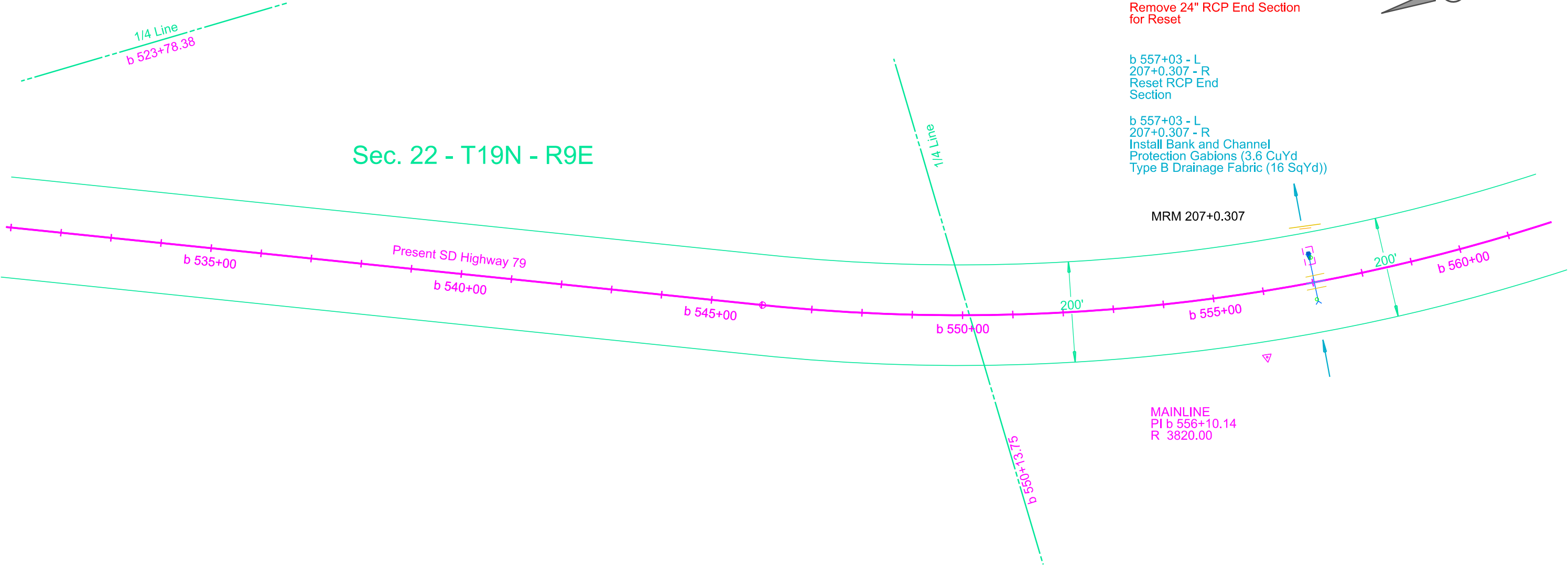


PROJECT	SECTION	SHEET
P 0079(90)203	Non	31/74

Plotting Date: 06/24/2024

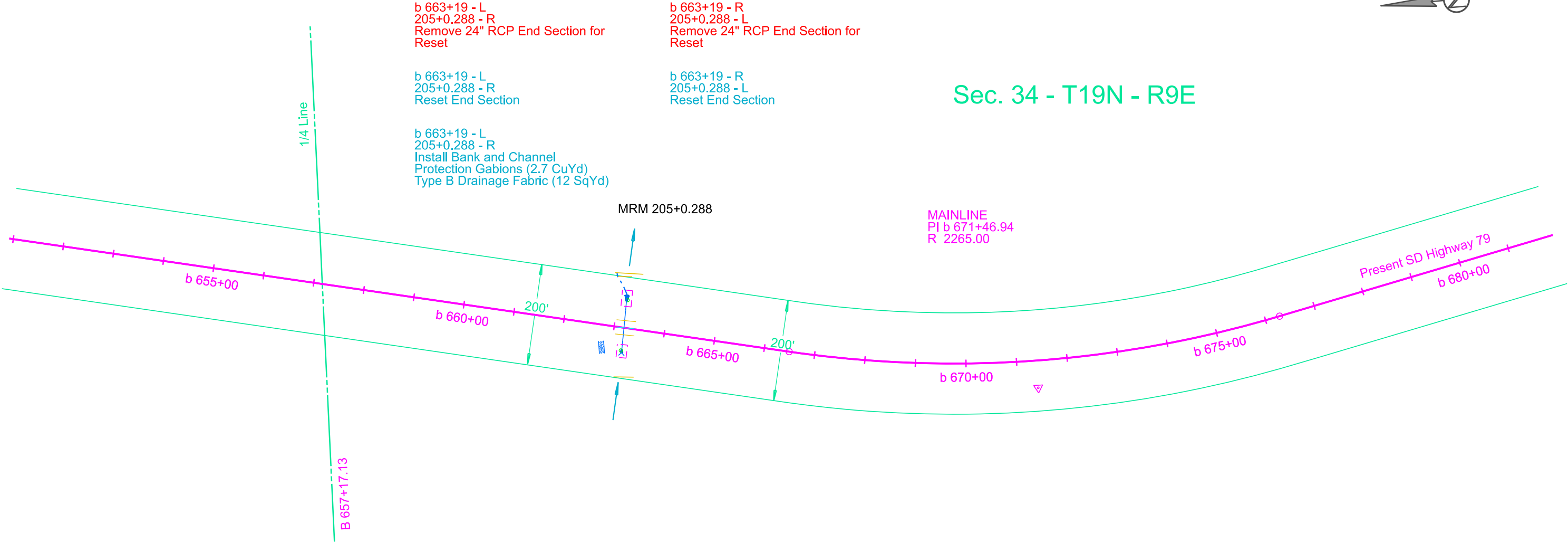


Sec. 22 - T19N - R9E





Sec. 34 - T19N - R9E



1:40
Plot Scale -

Plotted From - TRRC12608

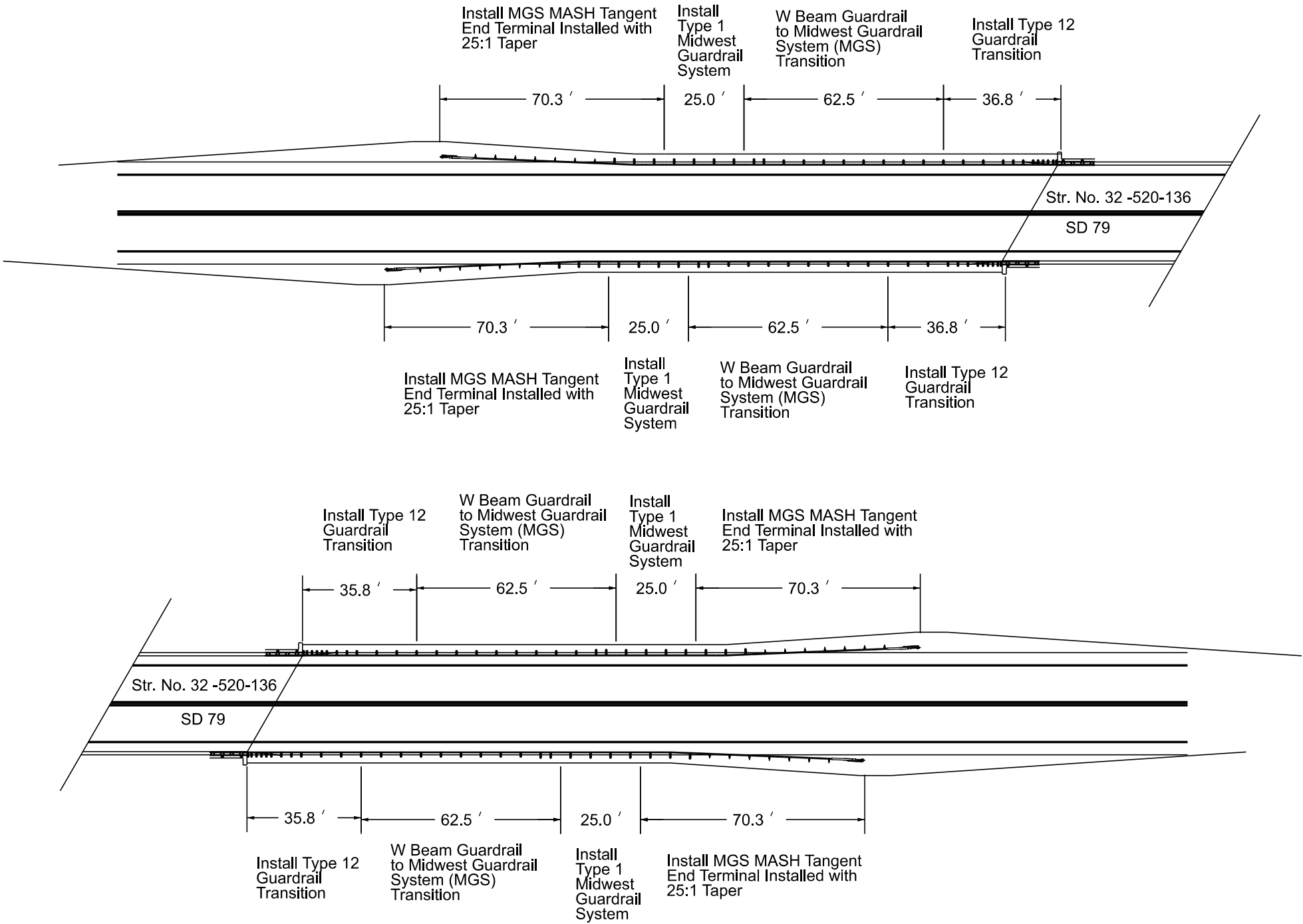
GUARDRAIL LAYOUTS

Str. No. 32-520-136



Plotting Date: 06/24/2024

PROJECT	SECTION	SHEET
P 0079(90)203	Non	34/74



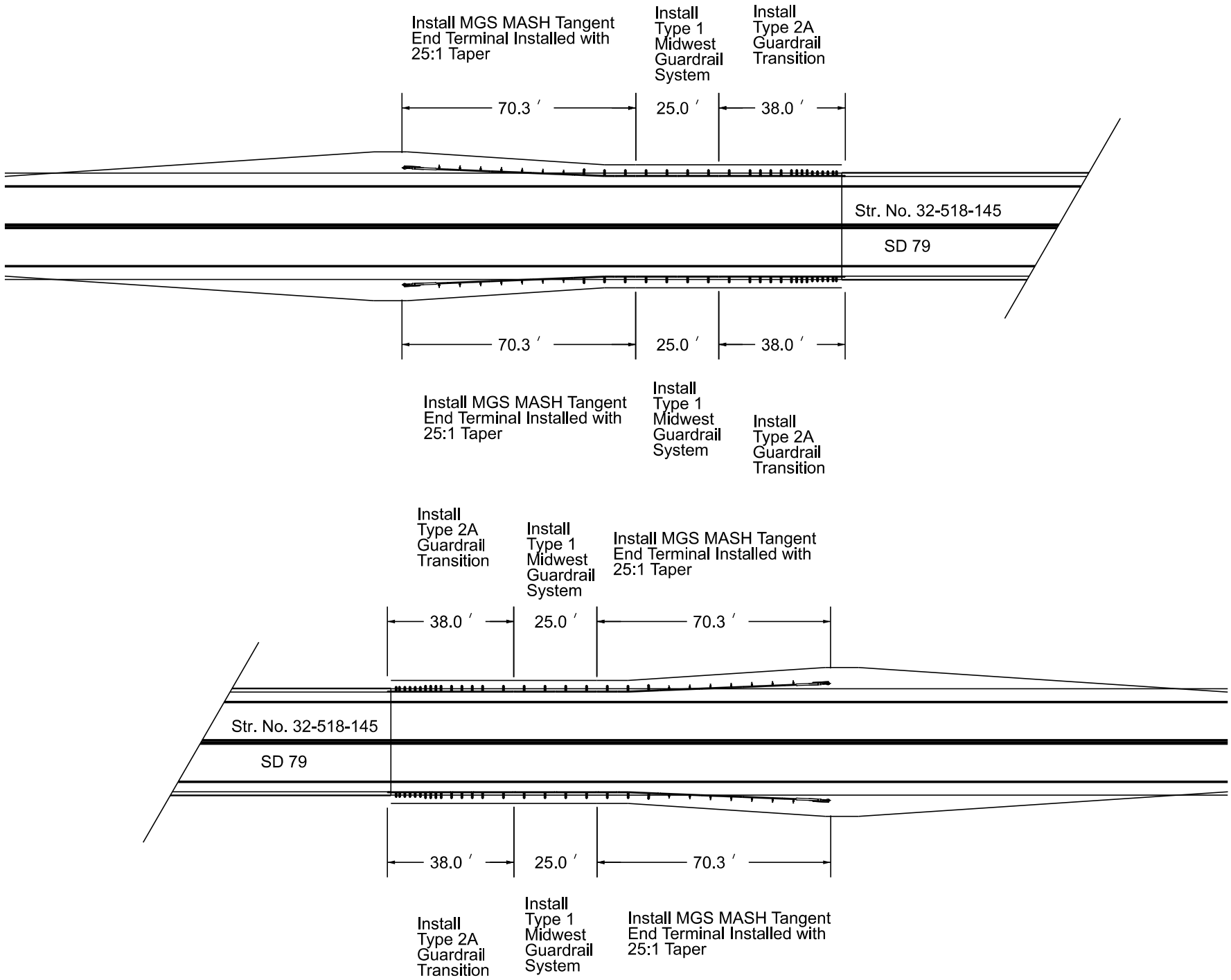
GUARDRAIL LAYOUTS

Str. No. 32-518-145



Plotting Date: 06/24/2024

PROJECT	SECTION	SHEET
P 0079(90)203	Non	35/74



1:40
Plot Scale -

Plotted From - TRRC12608



PROJECT	SECTION	SHEET
P 0079(90)203	Non	36/74

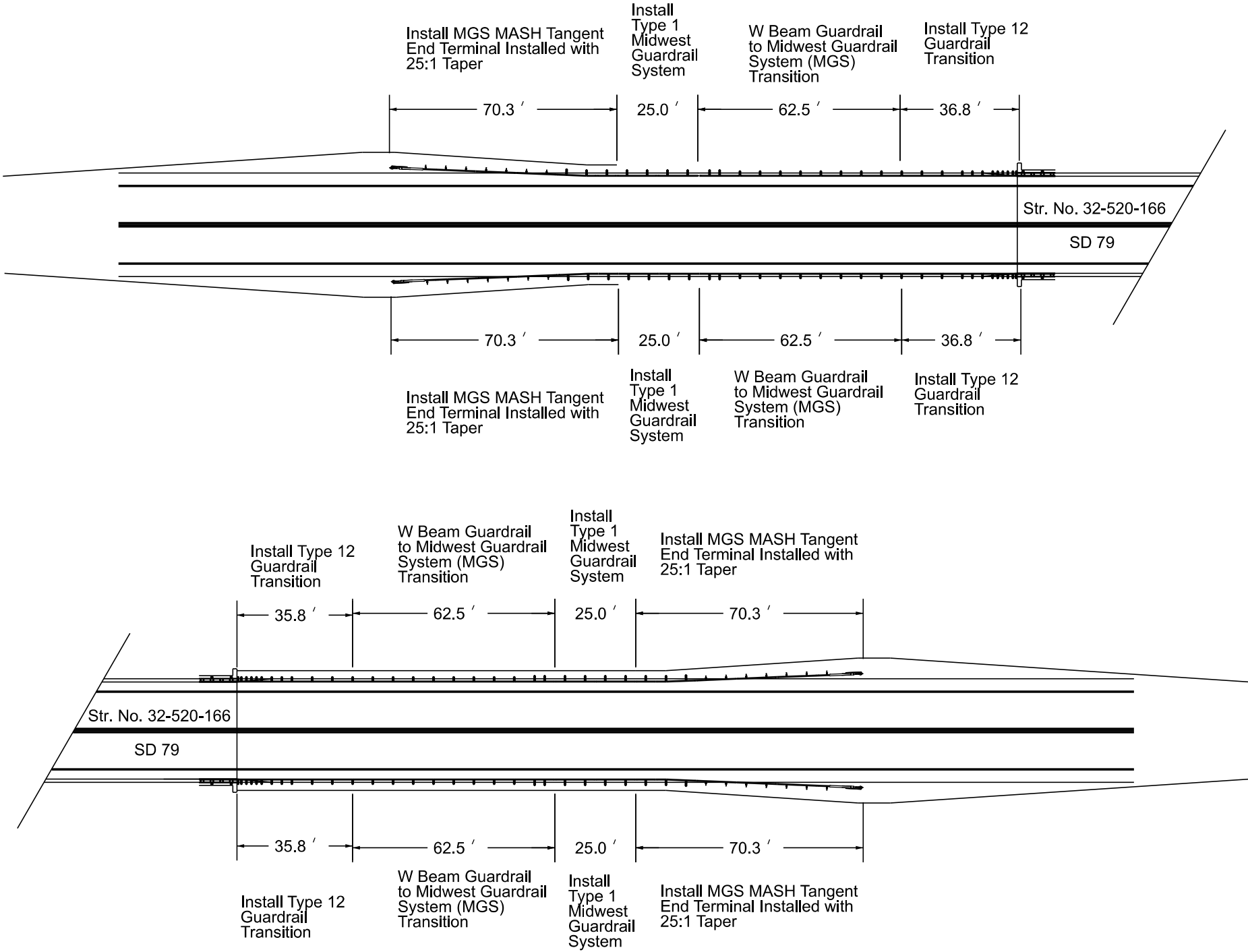
Plotting Date: 06/24/2024

GUARDRAIL LAYOUTS

Str. No. 32-520-166

1:40

Plot Scale -



TRRC12608

Plotted From -

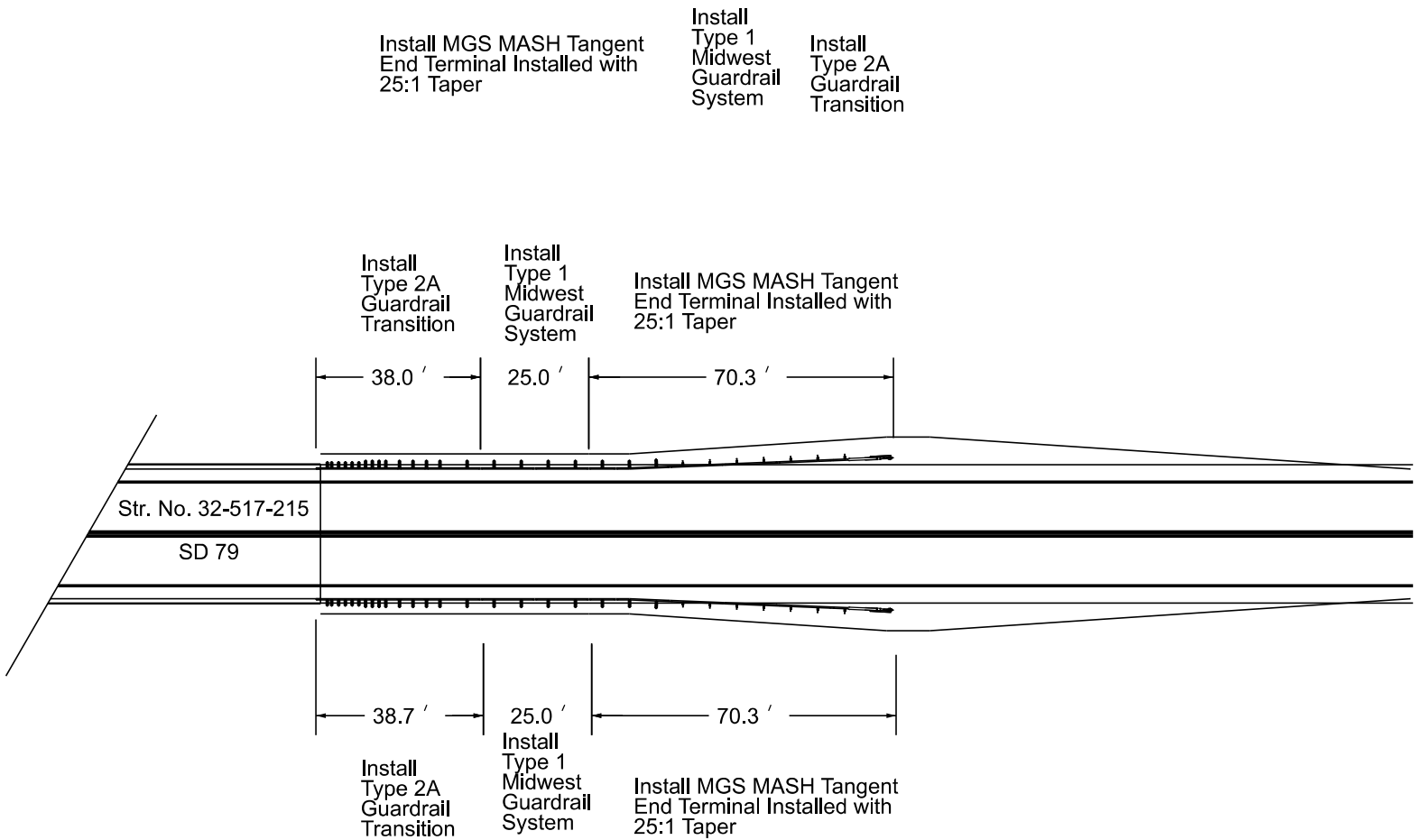
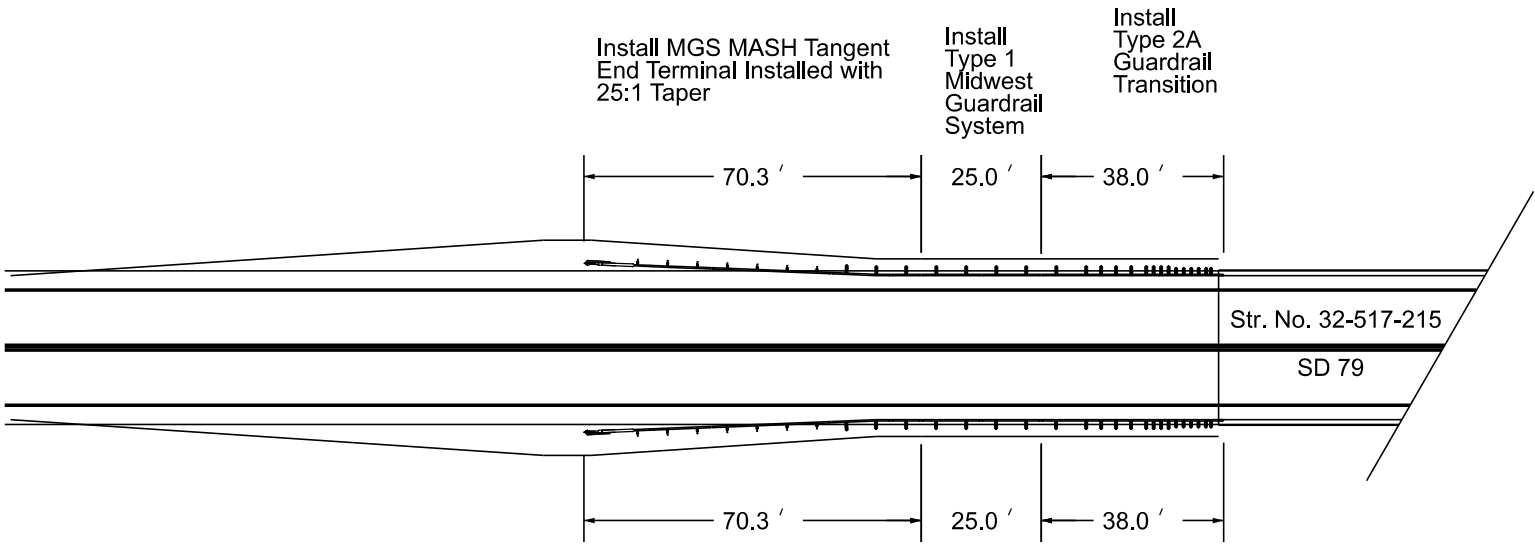
GUARDRAIL LAYOUTS

Str. No. 32-517-215



Plotting Date: 06/24/2024

PROJECT	SECTION	SHEET
P 0079(90)203	Non	37/74



Plot Scale - 1:40

Plotted From - TRRC12608

TYPICAL PAVEMENT MARKING LAYOUT



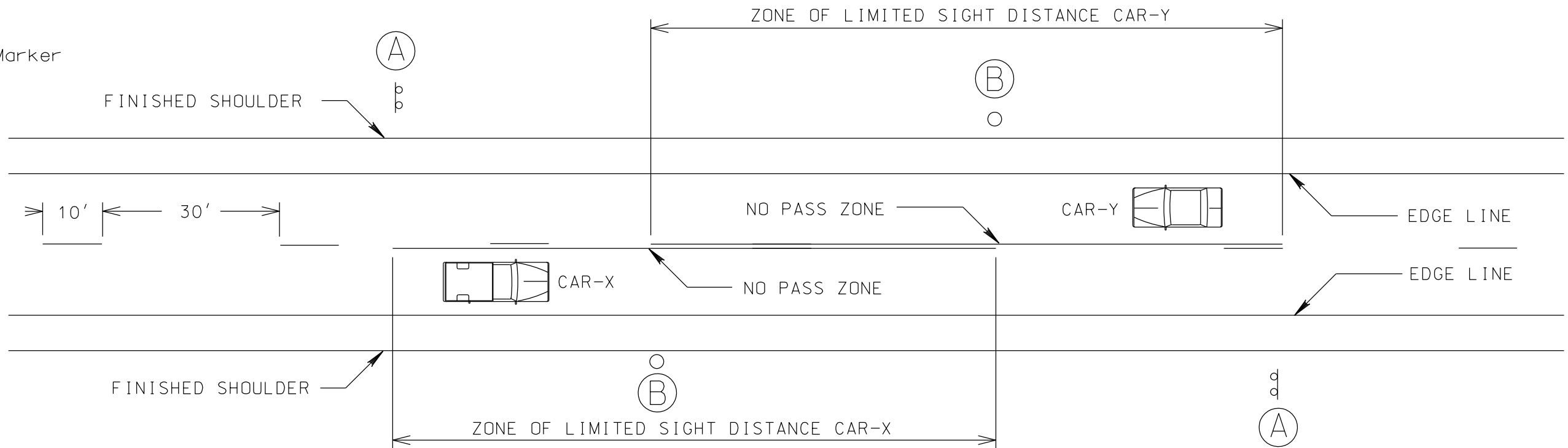
PROJECT
P 0079(90)203

SECTION SHEET
Non 38/74

Plotting Date: 06/24/2024



(B) End of Zone Marker



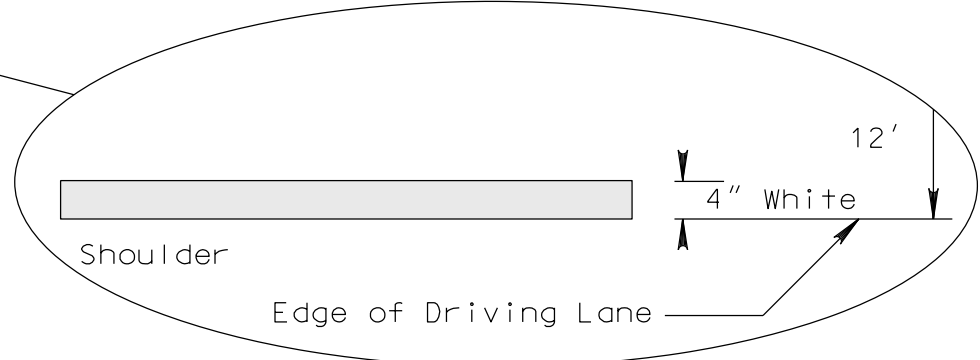
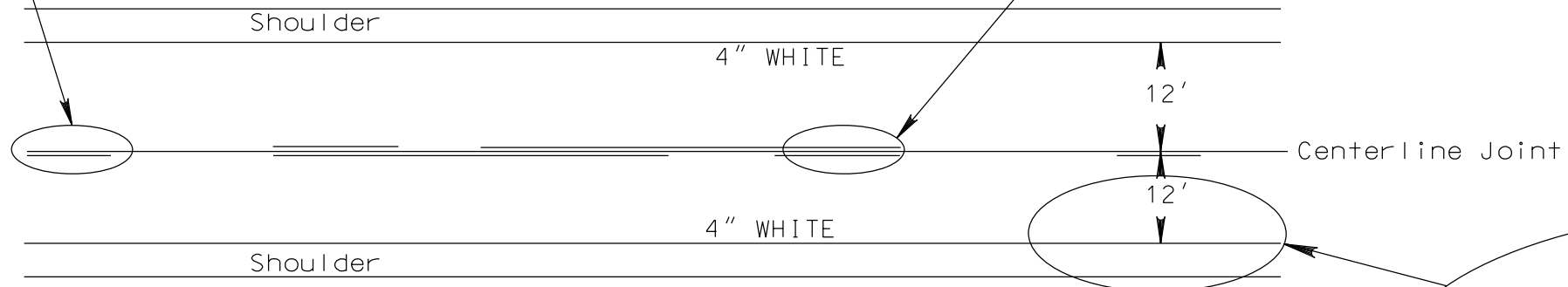
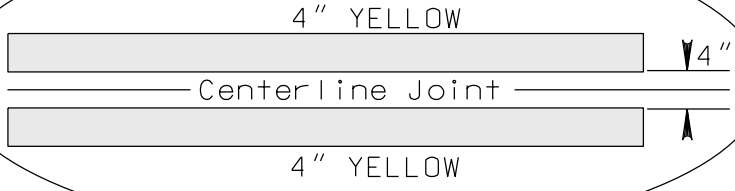
Centerline Detail



NOTE: A TWO "GUN" SYSTEM WILL BE USED TO OBTAIN THIS PATTERN.

WHEN A SINGLE SKIP LINE EXISTS, THE SKIP WILL BE PLACED TO THE SOUTH OR EAST OF THE CENTERLINE JOINT.

Centerline Detail

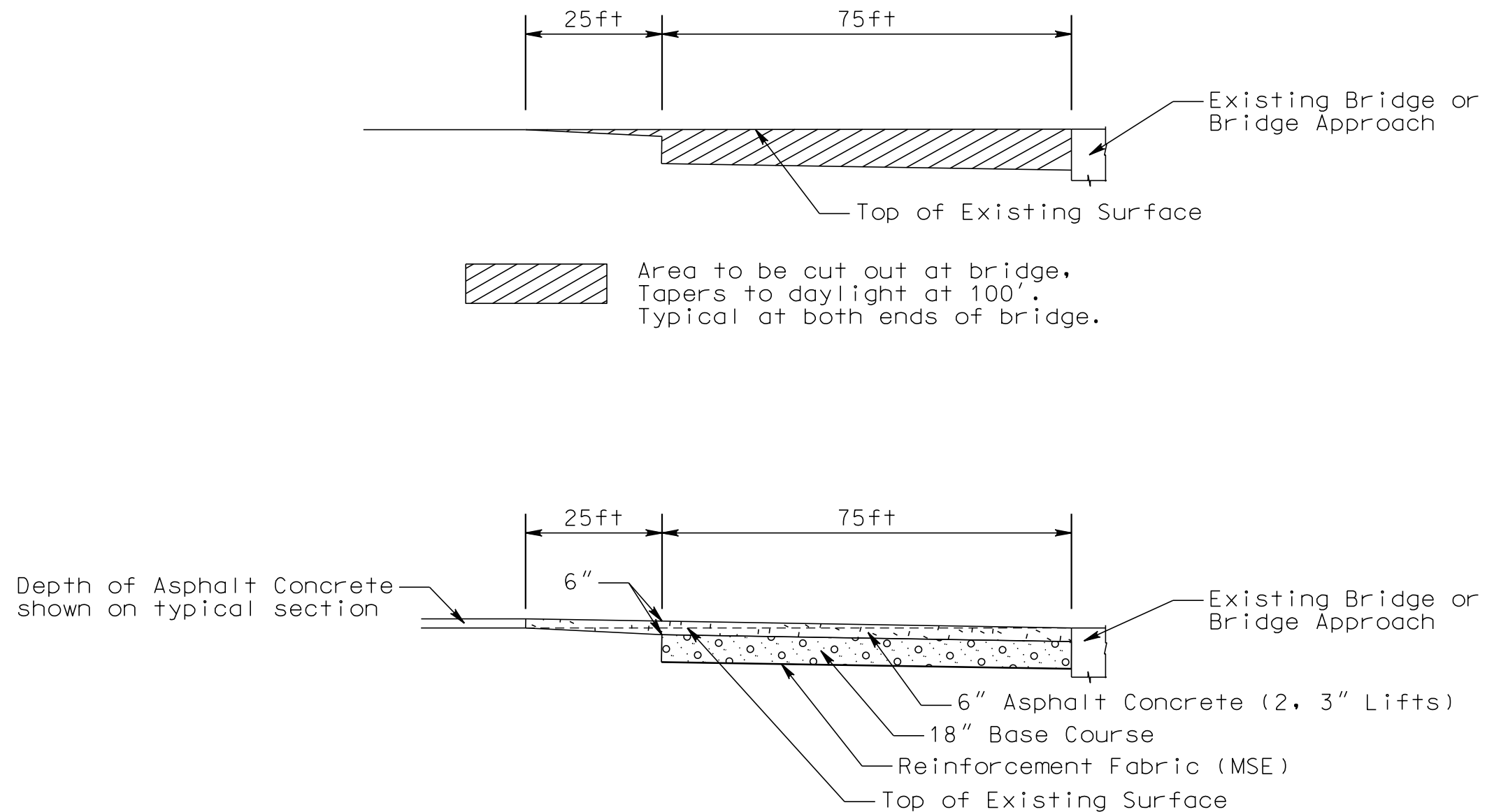


Plot Scale - 1:24.58

Plotted From - TRRC12608

DETAIL FOR BRIDGE APPROACH Strucure Number 32-517-215

SD DOT	PROJECT	SECTION	SHEET
	P 0079(90)203	Non	39/74
Plotting Date:		06/24/2024	



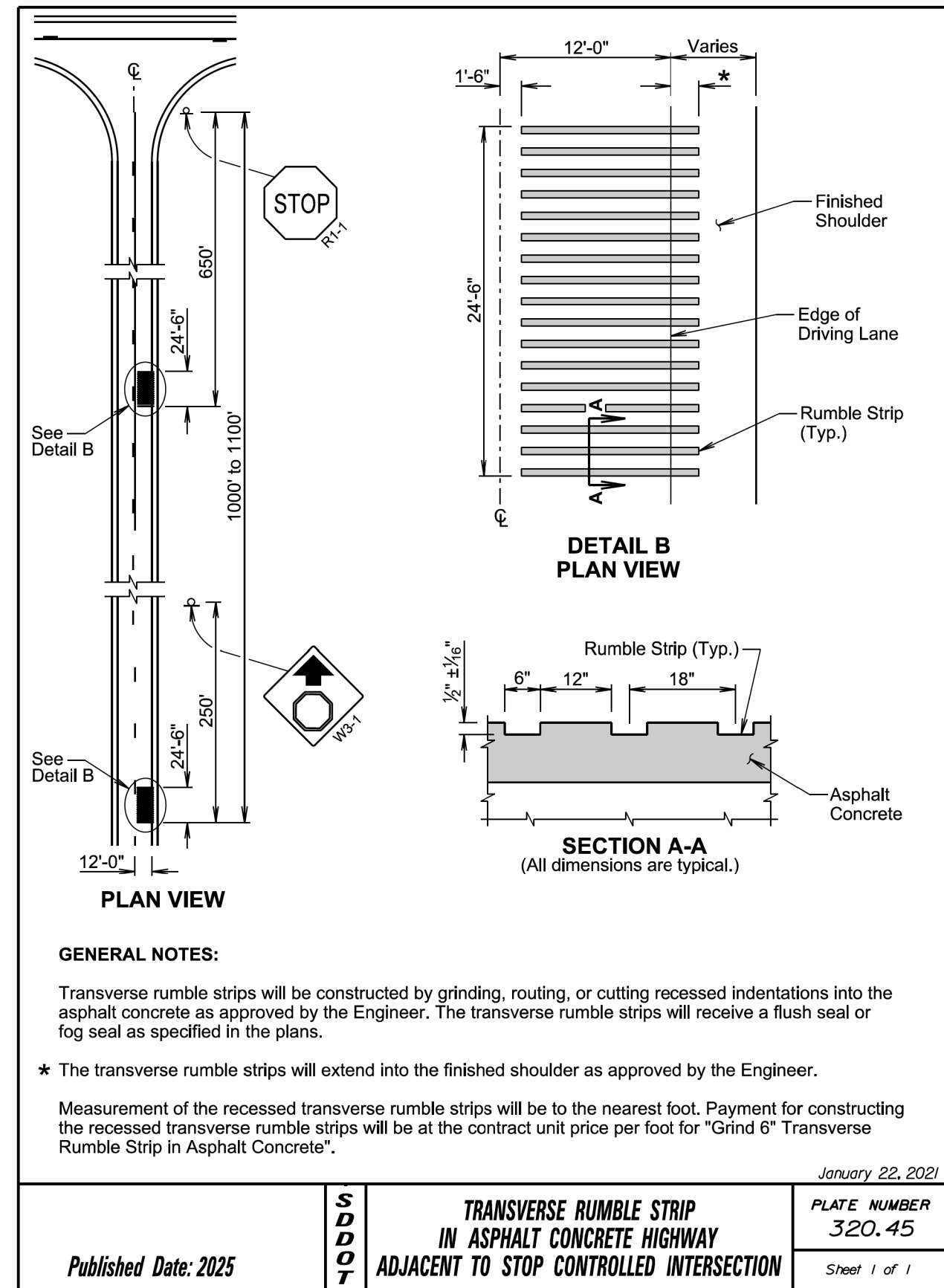
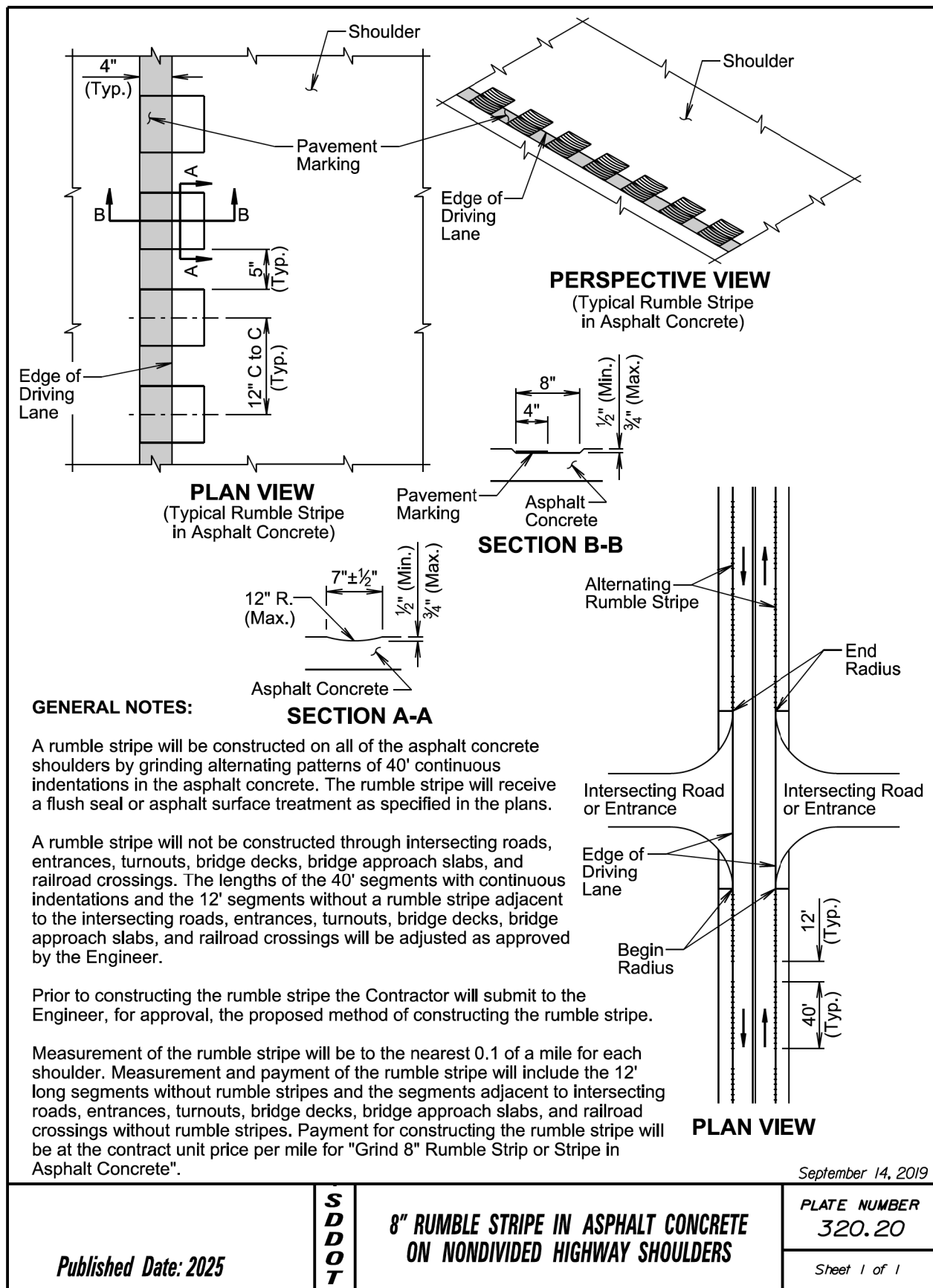
NOTES REGARDING BRIDGE APPROACHES

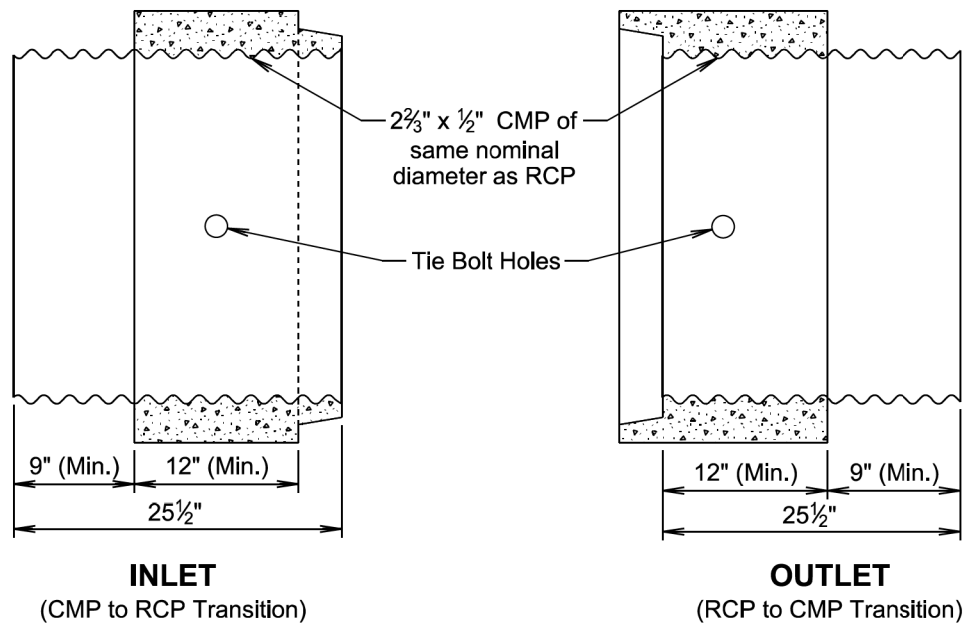
In order to construct the new surface flush with the top of the bridge and to provide depth for additional asphalt concrete, it will be necessary to cut out the existing base course and excavate a portion of the subgrade to the limits shown on the layout above. The excavated material will be wasted as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

File - ...Bridge Approach Detail.dgn





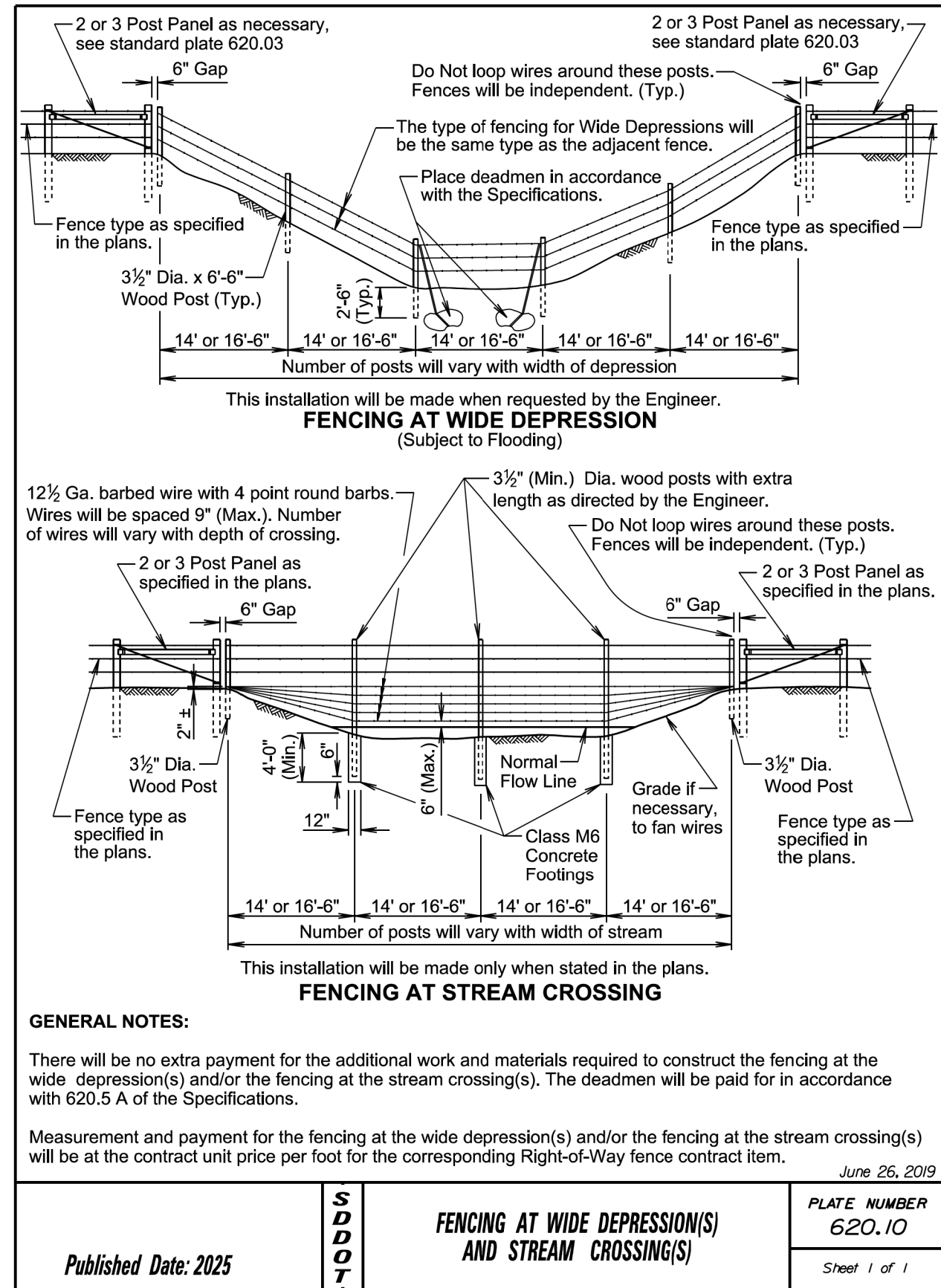
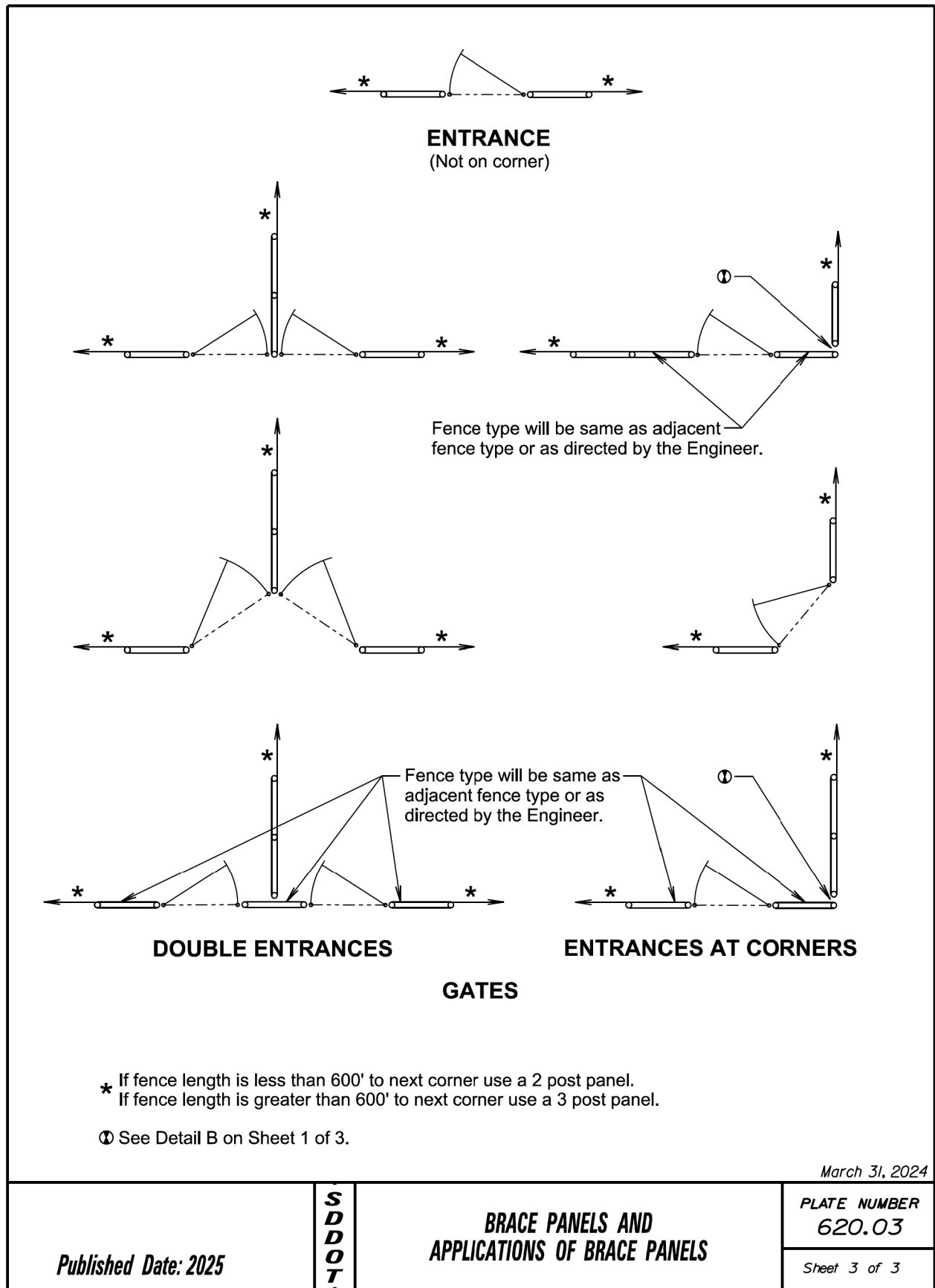
GENERAL NOTE:

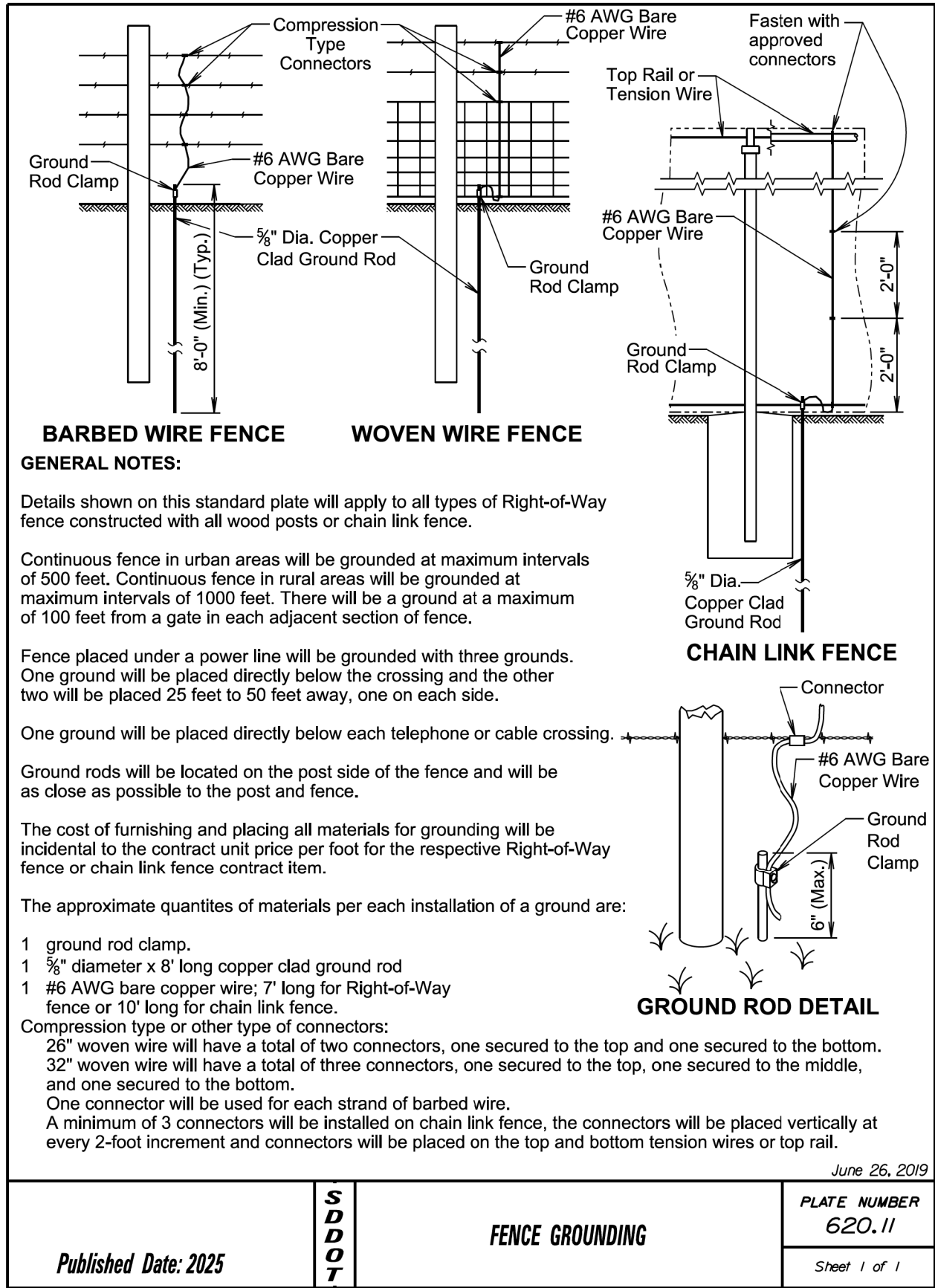
Arch pipe transitions will be fabricated similar to the round transition shown above.

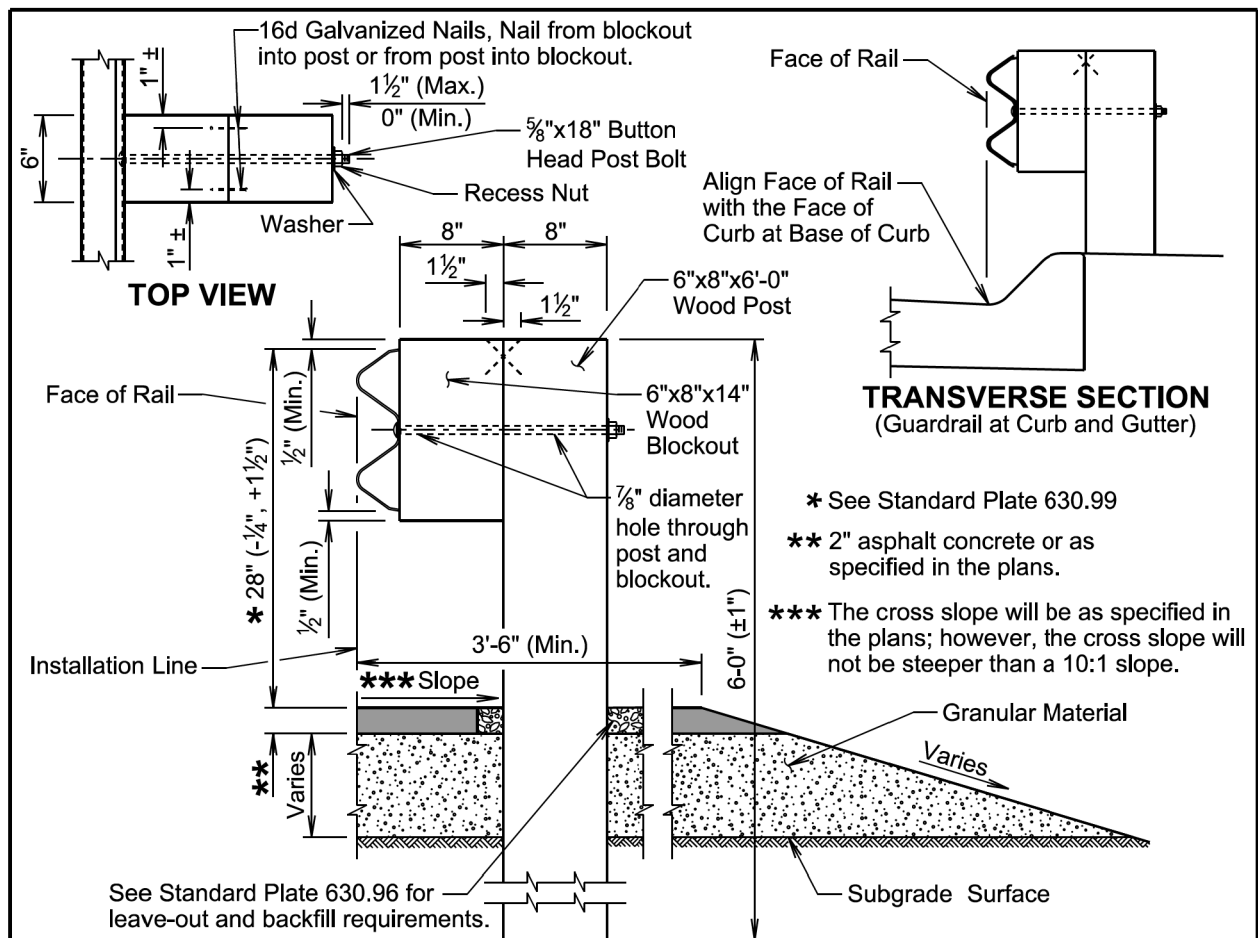
All pipe transitions will be precast as shown. Alternate designs other than shown will need to be approved by the Engineer.

November 19, 2022

<i>Published Date: 2025</i>	SD DOT	C.M.P. TO R.C.P. TRANSITION AND R.C.P. TO C.M.P. TRANSITION	PLATE NUMBER 450.50
			Sheet 1 of 1







GENERAL NOTES:

TRANSVERSE SECTION

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

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

Topsoil is not shown in the transverse section drawing.

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

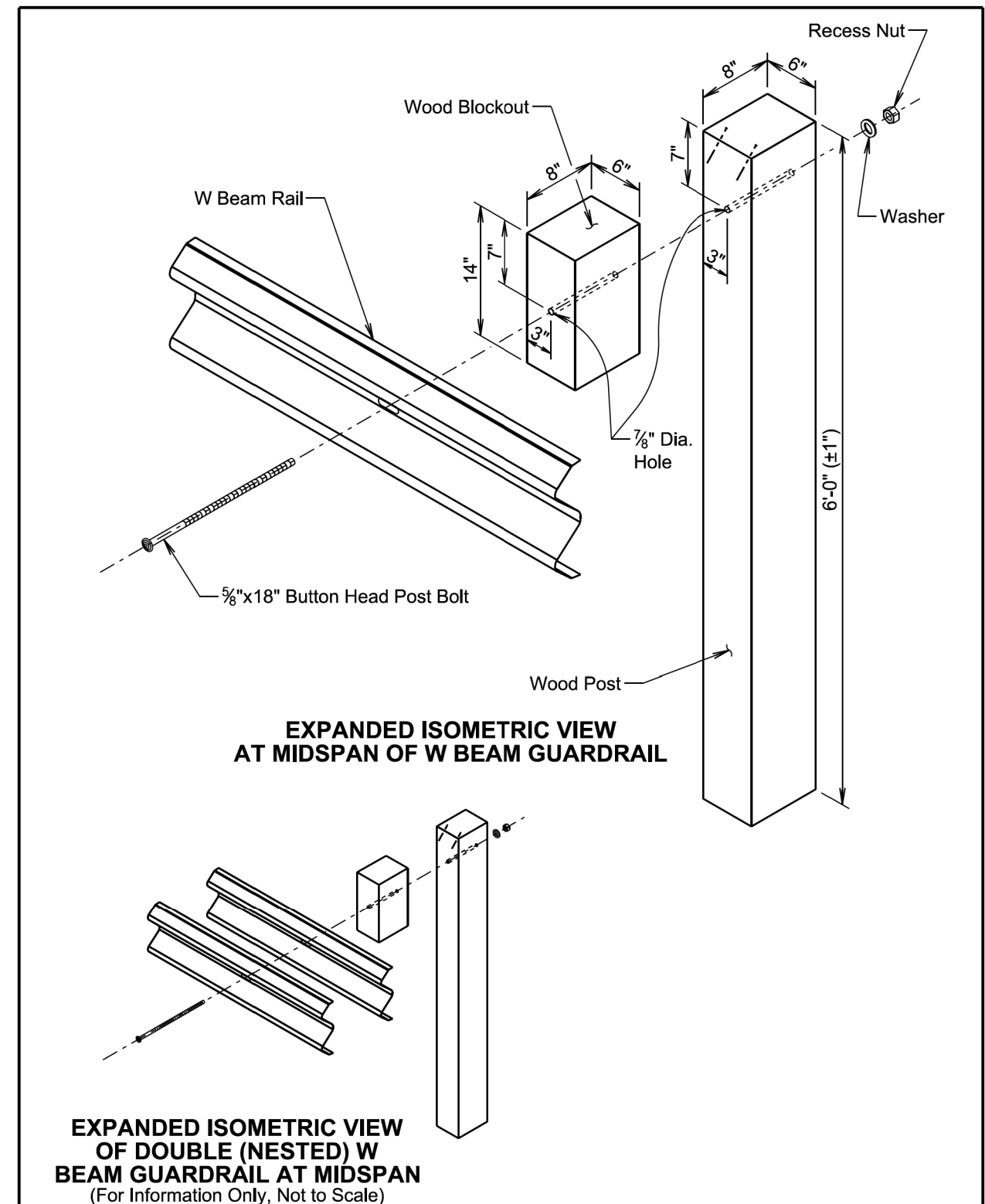
W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used will be compatible with the total length of rail per site as shown in the plans.

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

The top of post and top of block will have a true square cut. The top of block will be a maximum of ± 1/2 inch from the top of the post.

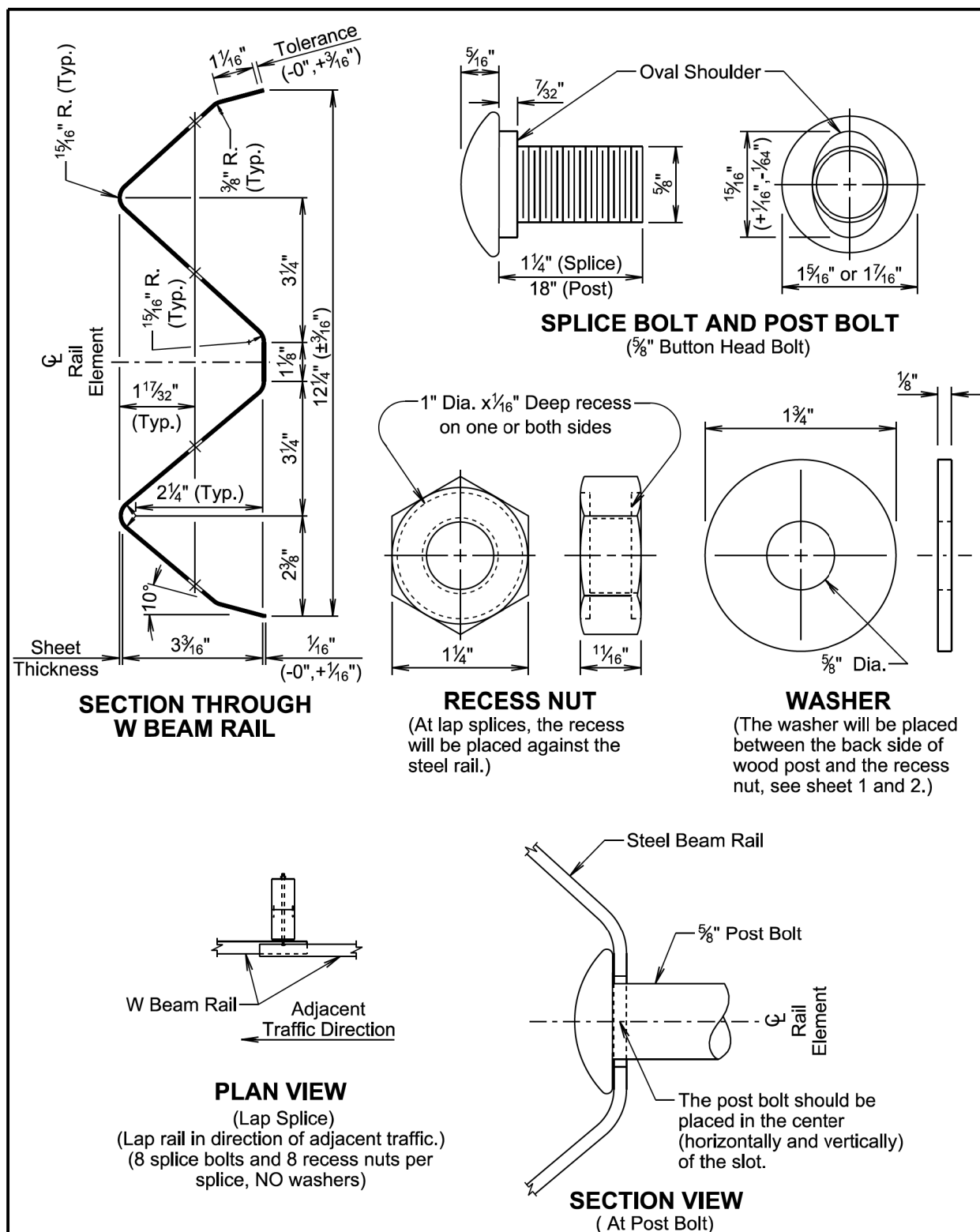
September 14, 2019

Published Date: 2025	SD DOT	W BEAM GUARDRAIL	PLATE NUMBER
			630.10
			Sheet 1 of 5



September 14, 2019

Published Date: 2025	SD DOT	W BEAM GUARDRAIL	PLATE NUMBER
			630.10
			Sheet 2 of 5



TYPE AND DETAILS OF MGS						
Type of MGS	W Beam Rail Single or Double (Nested)	Blockout Size	Blockout Material	Post Size	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"

STANDARD 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

GENERAL NOTES:

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.

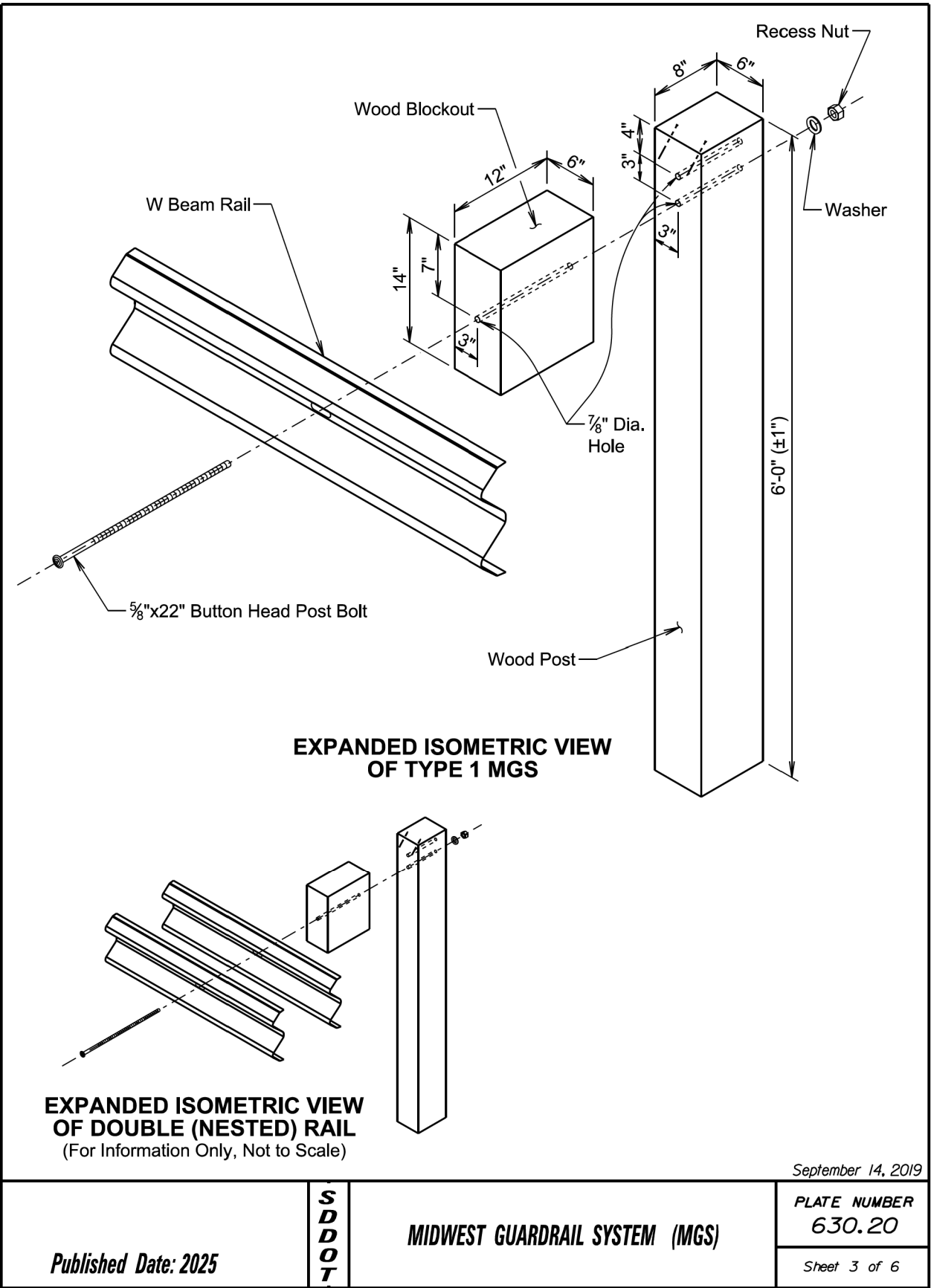
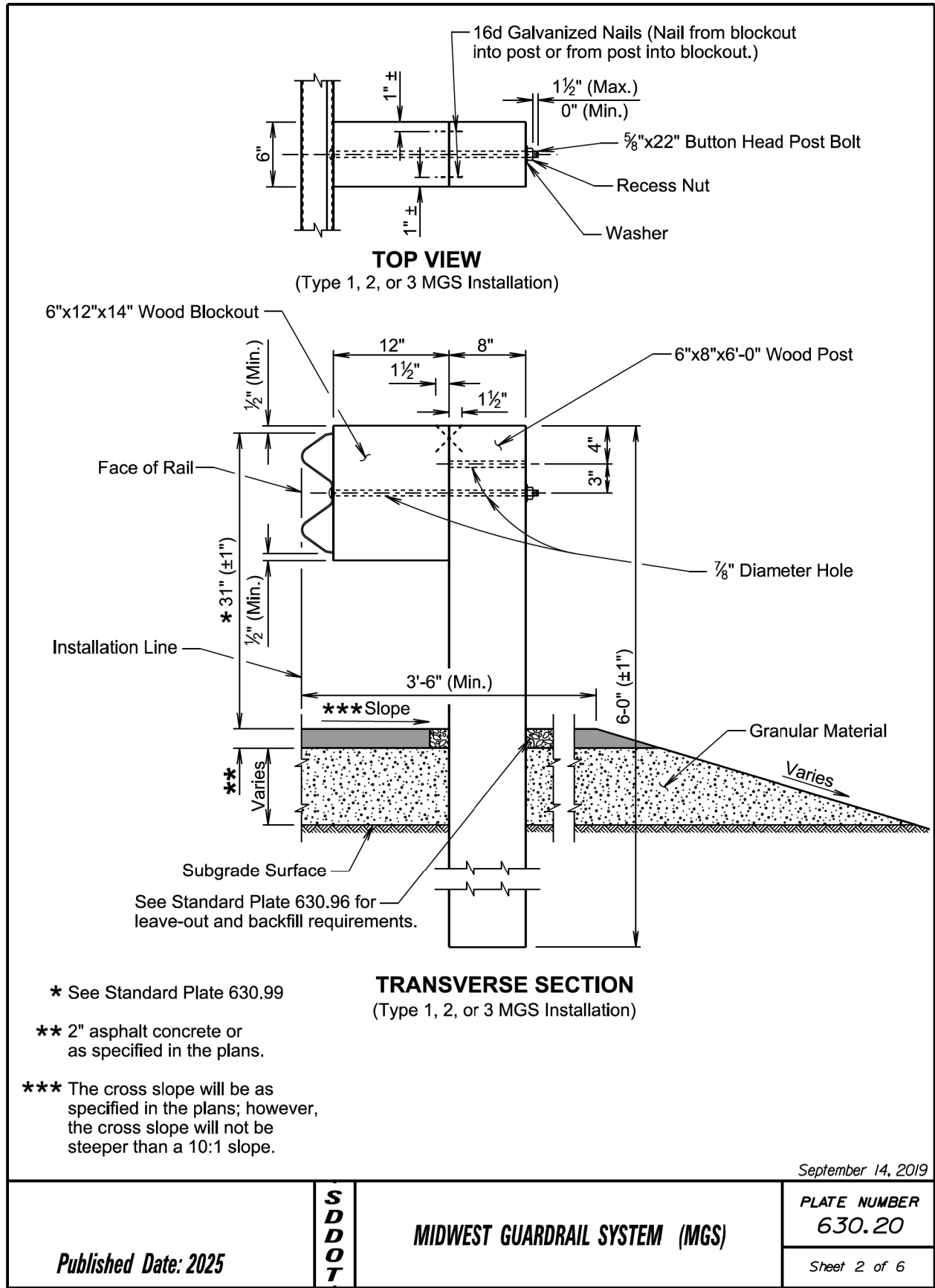
W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used will be compatible with the total length of rail per site as shown in the plans.

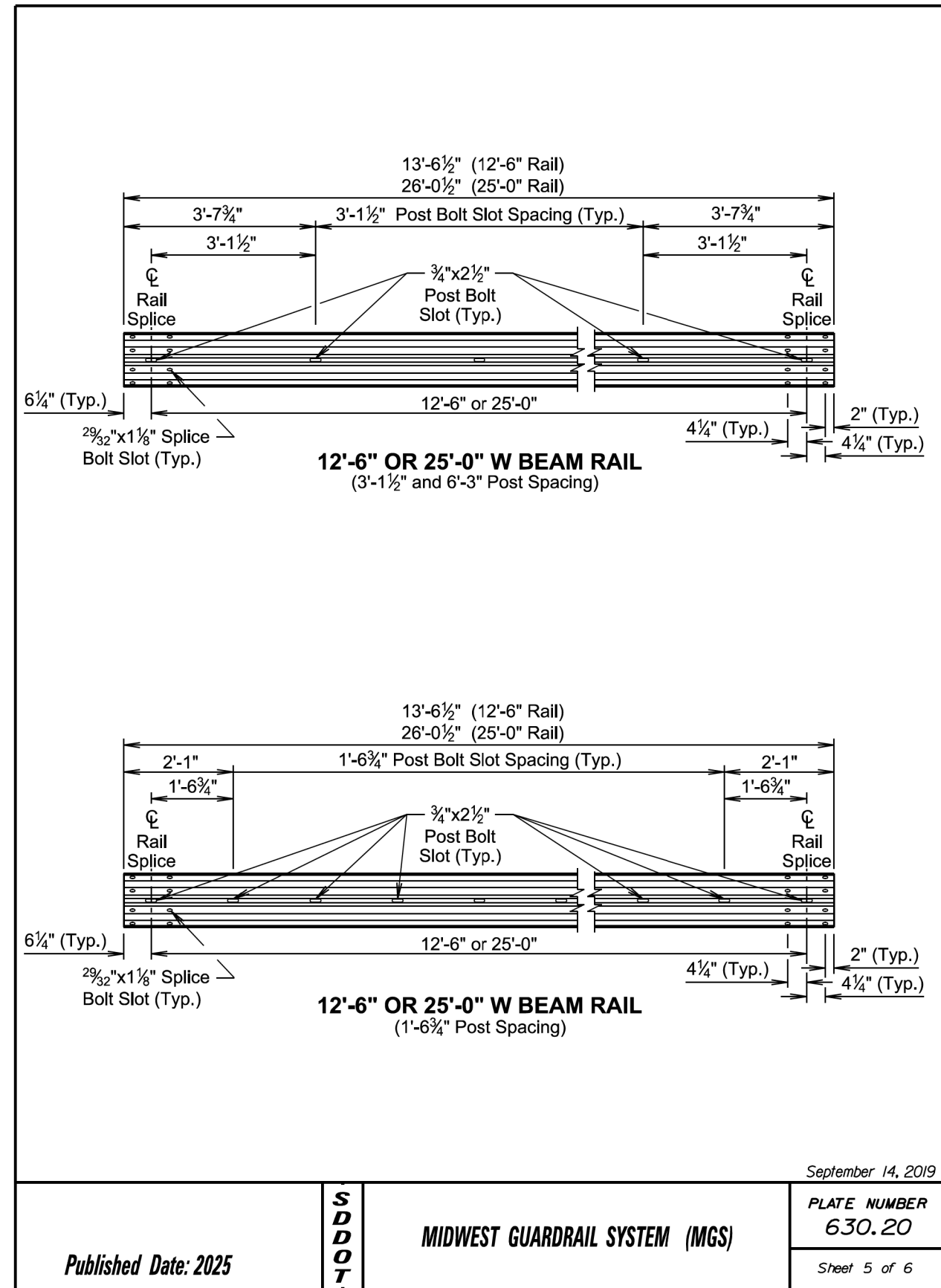
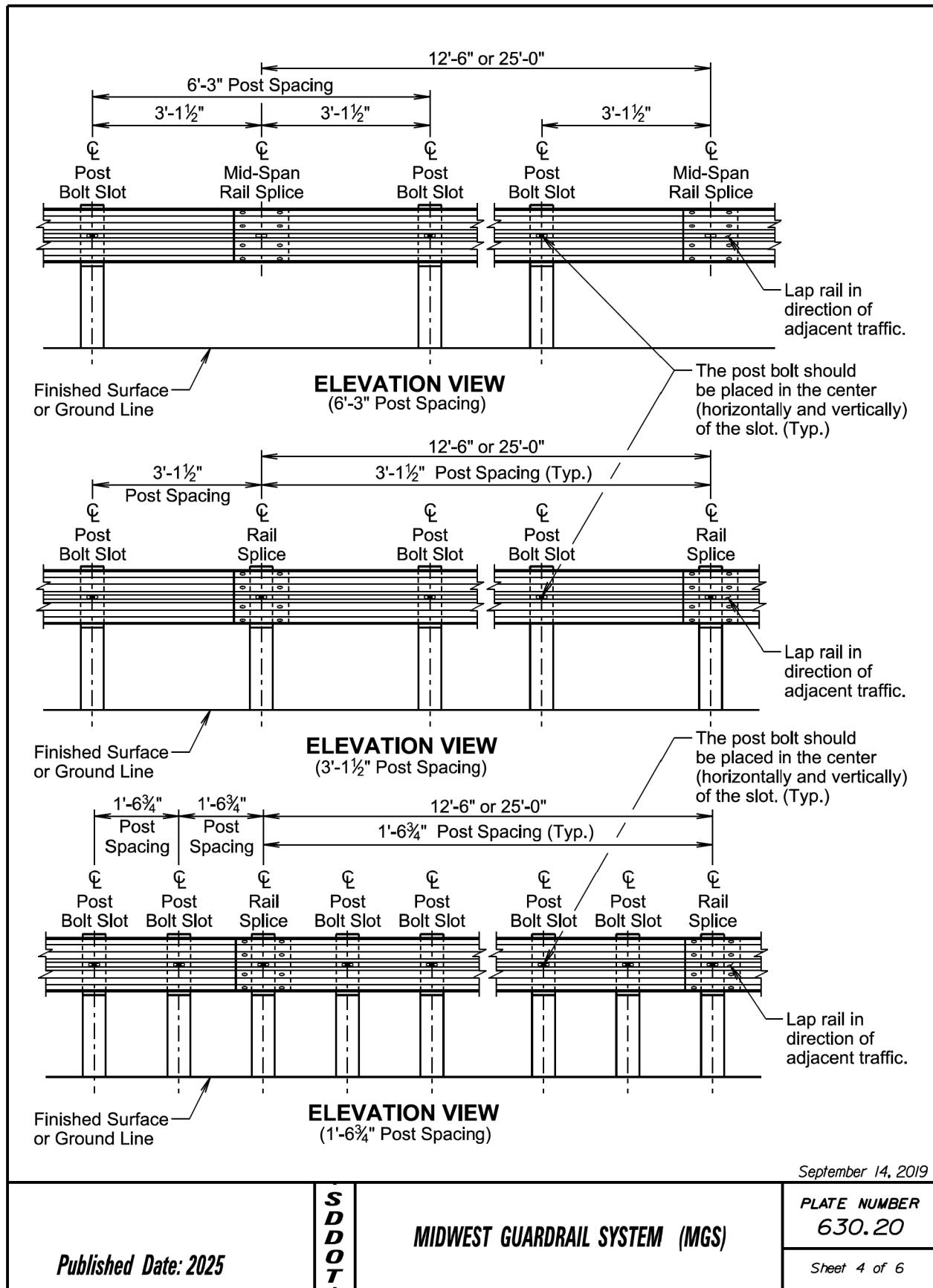
Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or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

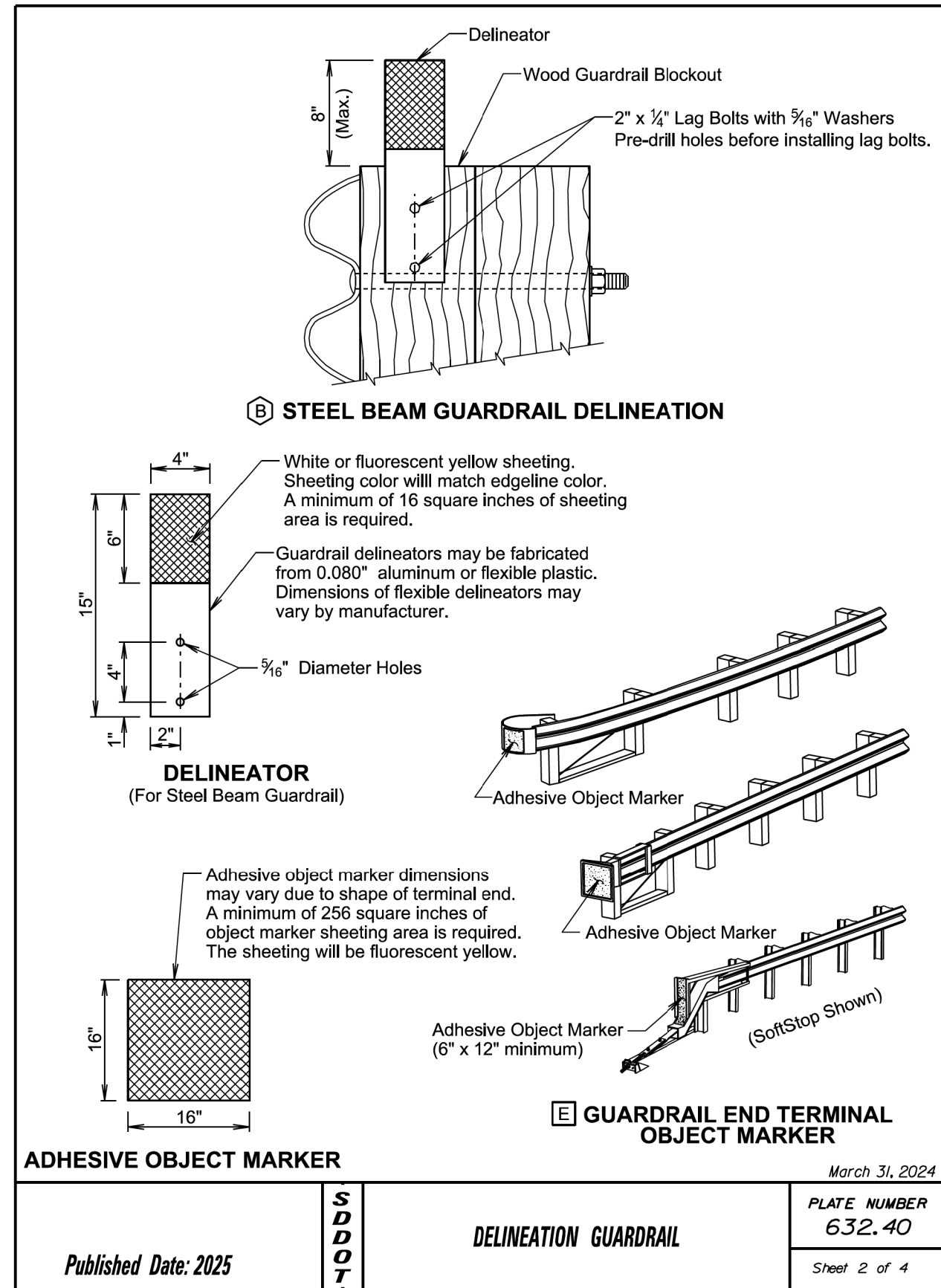
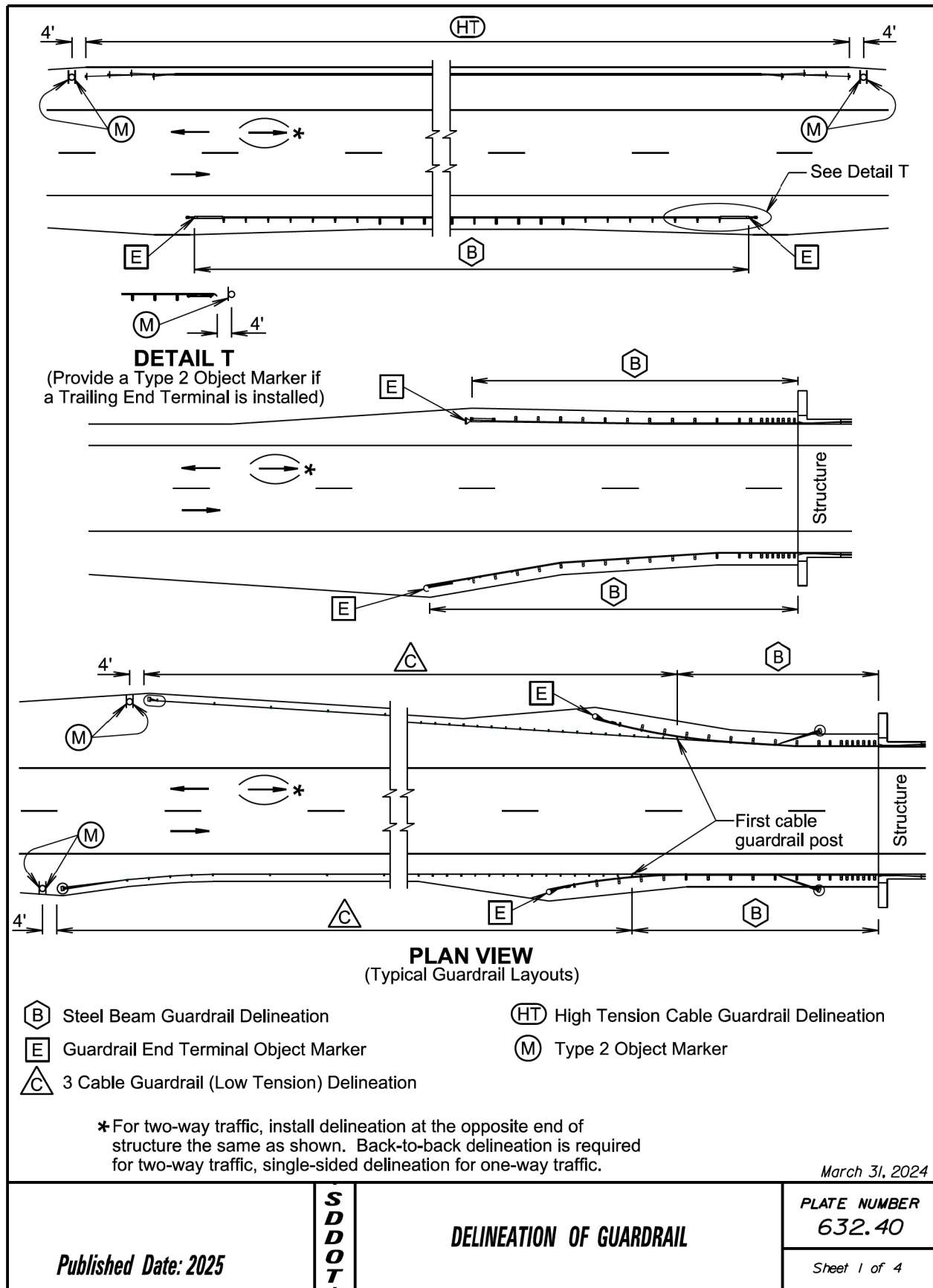
All costs for constructing the MGS including labor, equipment, and materials including all posts, blockouts, steel beam rail, and hardware will be incidental to the contract unit price per foot for the respective MGS contract item.

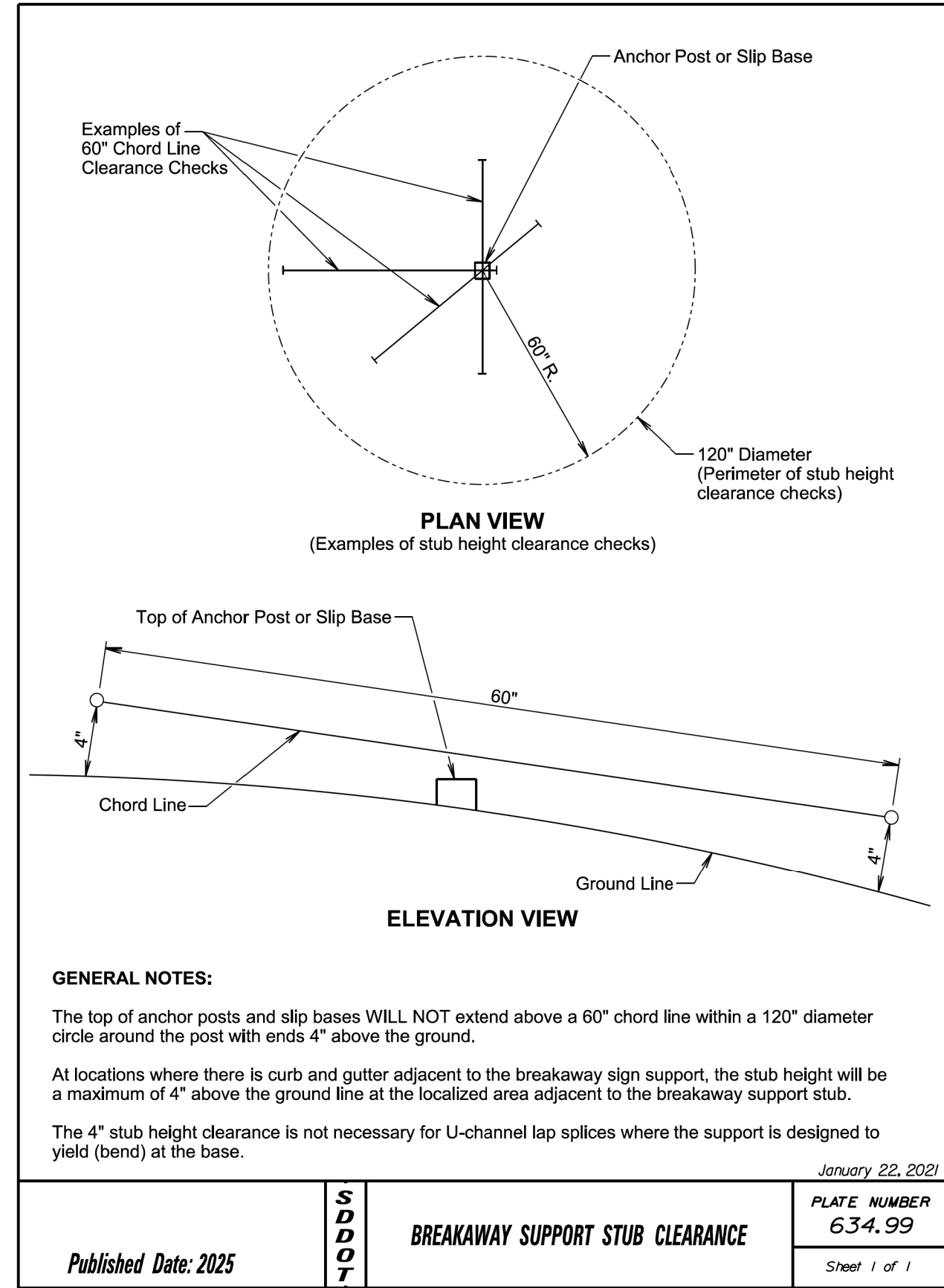
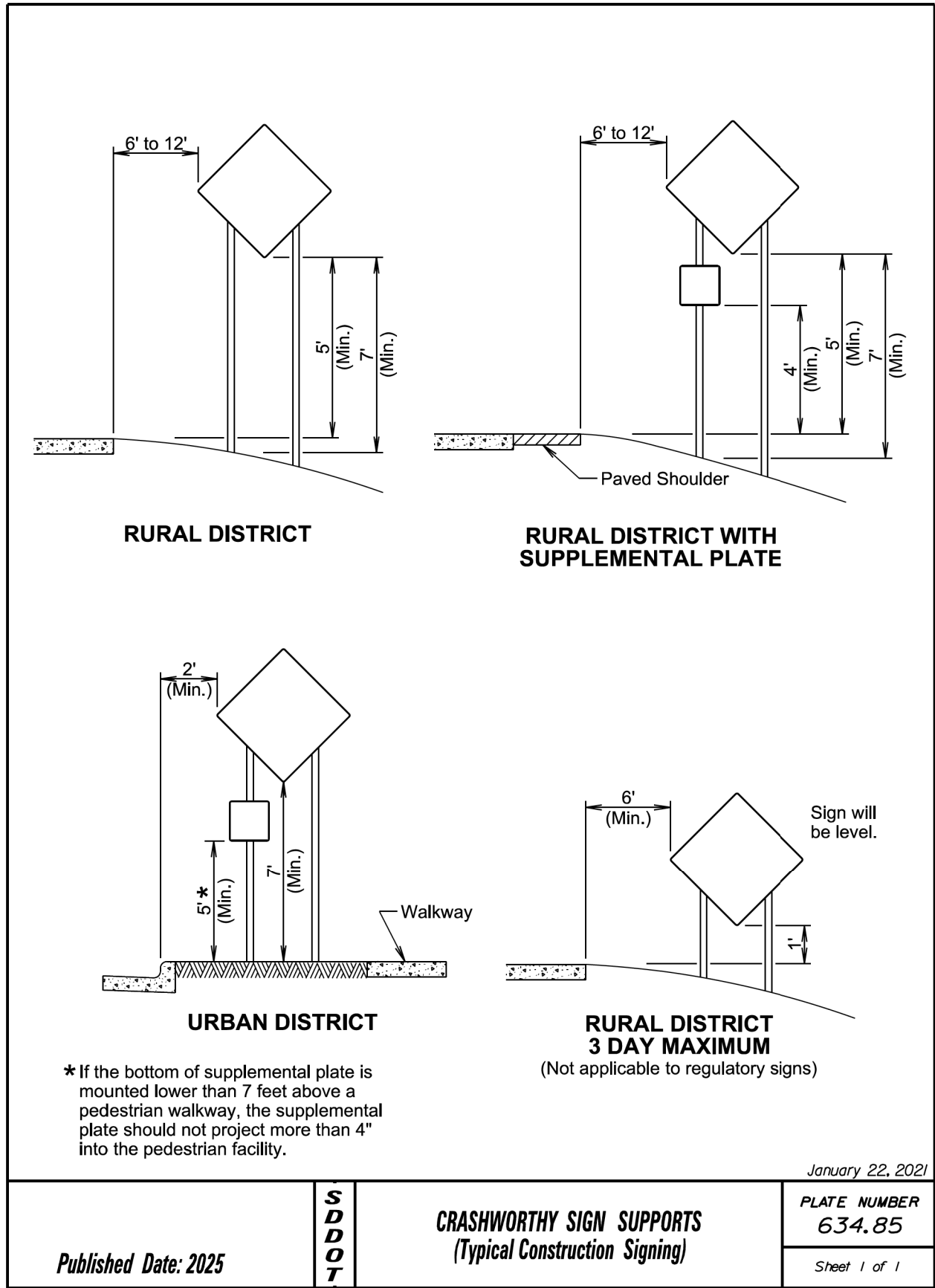
			September 14, 2015
Published Date: 2025	S D D O T	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 5 of 5

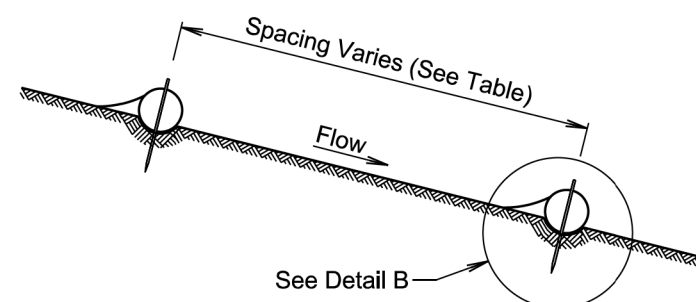
Contract Item.		September 14, 2019	
Published Date: 2025	S D D O T	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 1 of 6





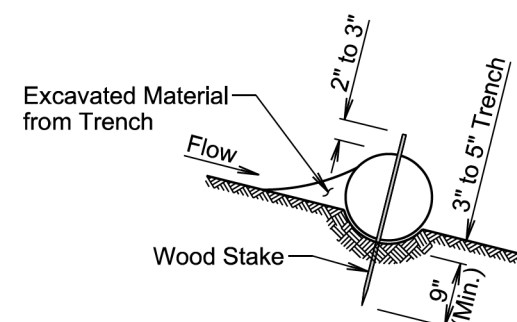




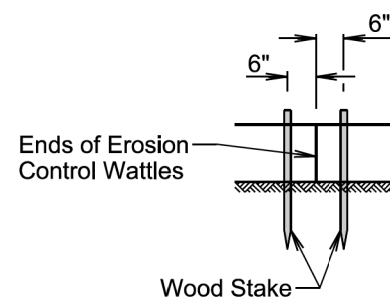


ELEVATION VIEW (Cut or Fill Slope Installation)

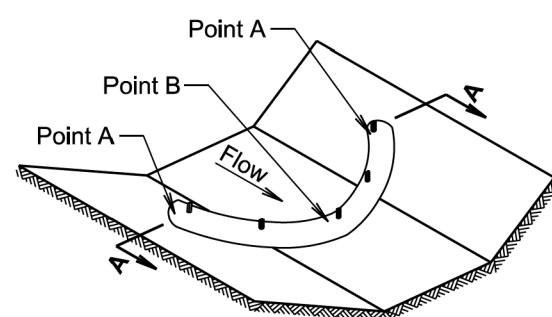
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40



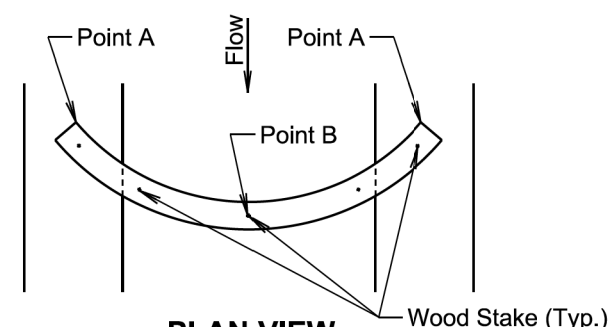
DETAIL B
(Typical of All Installations)



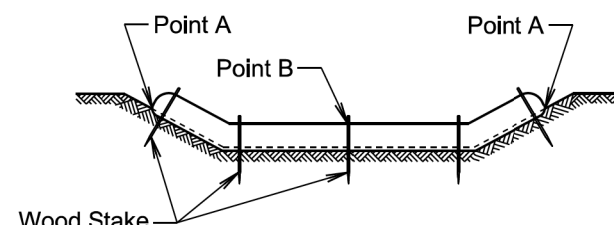
DETAIL C
(See General Notes)



ISOMETRIC VIEW (Ditch Installation)



PLAN VIEW (Ditch Installation)



SECTION A-A

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

February 14, 2020

Published Date: 2025

SDDOT

EROSION CONTROL WATTLE

PLATE NUMBER
734.06

Sheet 1 of 2

February 14, 2020

Published Date: 2025

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EROSION CONTROL WATTLE

PLATE NUMBER
734.06

Sheet 2 of 2

Plotting Date: 06/24/2024

