

PROJECT NH 0085(120)44 SECTION SHEET Non 1/33

## INDEX OF SECTIONS

Title and Index

Sheet 2-10: Estimate of Quantities, Notes, & Tables

Traffic Control Sheet 12-13: Typical Sections Guardrail Layout Special Detail

February 5, 2025

## **ESTIMATE OF QUANTITIES**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3320	Checker	Lump Sum	LS
110E0135	Remove Delineator	193	Each
110E0700	Remove 3 Cable Guardrail	164	Ft
110E0730	Remove Beam Guardrail	272.0	Ft
110E0740	Remove 3 Cable Guardrail Anchor Assembly	1	Each
110E0760	Remove Beam Guardrail Trailing End Terminal	2	Each
110E1010	Remove Asphalt Concrete Pavement	17,738.1	SqYd
120E0010	Unclassified Excavation	2,542	CuYd
120E6200	Water for Granular Material	22.0	MGal
210E1000	Shoulder Preparation	13.885	Mile
260E1050	Base Course, Salvaged Asphalt Mix	1,978.2	Ton
270E0020	Salvage and Stockpile Asphalt Mix Material	5,083.7	Ton
320E0005	PG 58-34 Asphalt Binder	267.4	Ton
320E1070	Class HR Asphalt Concrete	8,031.9	Ton
320E3000	Compaction Sample	6	Each
320E5010	Saw and Seal Shoulder Joint	73,313	Ft
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	10.3	Mile
330E0010	MC-70 Asphalt for Prime	81.3	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	15.4	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	12.1	Ton
330E1000	Blotting Sand for Prime	10.0	Ton
330E2000	Sand for Flush Seal	138.9	Ton
380E6550	Grind 16" Rumble Strip in PCC Pavement	6.4	Mile
630E0500	Type 1 MGS	362.5	Ft
630E1501	Type 1 Retrofit Guardrail Transition	2	Each
630E2018	MGS MASH Tangent End Terminal	2	Each
632E2008	4" Tubular Amber Delineator with 1.12 Lb/Ft Post	43	Each
632E2020	4"x4" White Delineator with 1.12 Lb/Ft Post	150	Each
632E2220	Guardrail Delineator	13	Each
633E1200	High Build Waterborne Pavement Marking Paint, White	323	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	183	Gal
634E0010	Flagging	305.0	Hour
634E0110	Traffic Control Signs	608.6	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	6	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0630	Temporary Pavement Marking	22.5	Mile
900E0010	Refurbish Single Mailbox	17	Each
900E0012	Refurbish Double Mailbox	7	Each

## **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: <a href="https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf">https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf</a> >

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

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Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

## **COMMITMENT B4:**

### **BALD EAGLE**

Bald eagles are known to occur in this area.

## **Action Taken/Required:**

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

## **COMMITMENT C: WATER SOURCE**

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

## Action Taken/Required:

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

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:

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

## **COMMITMENT E: STORM WATER**

Construction activities constitute less than 1 acre of disturbance.

## **Action Taken/Required:**

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

## **COMMITMENT H: WASTE DISPOSAL SITE**

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

### **Action Taken/Required:**

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

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

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

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

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

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

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

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

## **COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES**

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

## Action Taken/Required:

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

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.

## **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.

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## **CHECKING SPREAD RATES**

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

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

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

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

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

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

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

## **SURFACING THICKNESS DIMENSIONS**

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

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

## **INTERSECTING ROADS AND ENTRANCES**

In areas where granular material has been placed adjacent to the existing asphalt concrete, the Contractor will be required to remove the granular material to a depth below the existing asphalt concrete to allow for the placement of the new asphalt concrete. New asphalt concrete will be placed flush with the existing asphalt concrete. The existing granular material removed will be placed on the entrances, intersecting roads or other locations as directed by the Engineer.

All costs to remove and place the granular material including labor, equipment and incidentals will be incidental to the various related contract items.

## SHOULDER CLEARING

Prior to shoulder paving, the shoulders will be bladed and brimmed of all vegetation and loose/accumulated material to the satisfaction of the Engineer. Shoulder Clearing will not be measured for payment, and all costs associated with Shoulder Clearing will be incidental to the various contract items.

Vegetation and accumulated material adjacent to the existing surface edge will be removed to the satisfaction of the Engineer prior to placement of shoulder surfacing. Any remaining windrow of accumulated material will be re-spread evenly on the in-slope adjacent to the asphalt shoulder to the satisfaction of the Engineer prior to the application of the flush seal.

All clumps of dirt and vegetation will be eliminated to produce a smooth and uniform in-slope.

## **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 12" Rumble Strip or Stripe in Asphalt Concrete.

Asphalt Concrete rumble strips to be constructed at the following designated locations:

	Description	Sta to	Sta	Length (FT)	Length (MI)	
	Median	7+00	201+70.63	19,470.6	3.69	
US HWY 85 North	Median	201+54.48	251+62.2	5,007.7	0.95	
Bound	Median	251+62.2	260+22.98	10,860.8	2.06	
	Median	260+43.62	303+20	4,276.4	0.81	
	Median	303+20	367+78.34	6,458.3	1.22	
	Median	367+64.95	396+56	2,891.1	0.55	
US HWY 85 South Bound	Median	251+62.2	303+20	5,157.8	0.98	
			Total	54,122.7	10.25	

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 RUMBLE STRIPS IN PCC Pavement**

The Contractor shall grind in rumble strips in the PCC Pavement at the locations and as per the dimensions provided in these plans. The Contractor shall demonstrate to the Engineer on an initial 500-foot test section that the equipment and method will provide the desired ground rumble strip and surface inside each depression without damaging the adjacent pavement. If the desired results are not being provided, as determined by the Engineer, the Contractor shall provide different equipment or methods until satisfactory installation is completed. Damaged PCC Pavement shall be replaced by the Contractor at no additional cost to the State.

PCC Pavement rumble strips to be constructed at the following designated locations:

	Description	Sta to	Sta	Length (FT)	Length (MI)
	Outside Shoulder	7+00	201+70.63	19470.6	3.69
US HWY	Outside Shoulder	201+54.48	251+62.2	5007.7	0.95
85 South Bound	Outside Shoulder	303+20	367+78.34	6458.3	1.22
	Outside Shoulder	367+64.95	396+56	2891.1	0.55
			Total	33827.7	6.41

## REMOVE ASPHALT CONCRETE PAVEMENT

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.

An estimated 17,738.1 Square Yards of the in-place asphalt concrete surfacing will be removed from the existing highway according to the in-place surfacing typical sections. The asphalt removed from this project will become the property of the Contractor for disposal. Care will be taken not to waste the in-place granular material. The in-place granular material will be reshaped and compacted according to the Shoulder Preparation plan note.

The quantity of removed asphalt material is estimated from the in-place surfacing typical sections. This estimated quantity is not included in the unclassified excavation quantities.

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## **UNCLASSIFIED EXCAVATION**

The unclassified Excavation on this project is provided for the removal of asphalt concrete needed for the Salvage and Stockpile Asphalt Mix Material. It is estimated that 2,542 Cubic Yards of the in-place asphalt concrete surfacing will be removed as Unclassified Excavation for Salvage and Stockpile Asphalt Mix Material. It is estimated that 35,982.8 ft. of the Right Shoulder and 4,531.7 ft. of the Left Shoulder will be removed as Unclassified Excavation. The remaining length will be removed as Remove Asphalt Concrete Pavement.

Add	itional Tab	le of Qua	ntities - PCI	N 09TL - US	Highway 8	5 N - Remov	als
		Width	Length	Unclassified Excavation		Remove Asphalt Concrete Pavement	
Section	Side	(Ft)	(Ft)	(CuYd)	(FT)	(SqYd)	(FT)
1 NBL							
	R	7	35982.8	2332.2	35982.8	0.0	0.0
	L	5	31692.7	209.8	4531.7	15089.5	27161.0
2 NBL							
	L	4	4834.2	0.0	0.0	2148.5	4834.2
Guardrail F	lairs NBL						
	R		345	0	0	149.3	
	L		458	0	0	350.8	
		Total	73312.7	2542.0	40514.5	17738.1	31995.2

## WATER FOR GRANULAR MATERIAL

Water for Granular Material will be placed at a rate of 10 gallons per ton.

Included in the Estimate of Quantities are 22 MGal of Water for Granular Material for compaction.

### **SHOULDER PREPARATION**

Prior to paving the shoulders, it is anticipated that the Contractor will be required to add approximately 125 tons of Base Course, Salvaged Asphalt Mix per mile to the 4 ft shoulder and 150 tons of Base Course, Salvaged Asphalt Mix per mile to the 6 ft shoulder to meet the cross slope and inslope requirements shown in the typical sections. The Contractor will scarify, rework, shape, and blend the upper 4 inches of existing granular material with the Base Course, Salvaged Asphalt Mix material. The blended granular material will be shaped and compacted with 4% moisture or as directed by the Engineer, to the typical sections, and in accordance with Section 260.3 D.

All costs associated with blending, scarifying, reworking, shaping, and compacting the granular material and Base Course, Salvaged Asphalt Mix will be incidental to the contract unit price per mile for "Shoulder Preparation".

## SHOULDER PREPARATION, CONTINUED

The SDDOT Office of Inventory Management & Research has a weigh-inmotion installation located on US 085, MRM 50.15 + 0.761.

The Contractor will field verify the depth and location of the weigh-in-motion utilities prior to Should Preparation.

The Contractor will not damage the existing loops, bending plates, pull boxes, conduit, or electronics cabinet. Any loops, bending plates, pull boxes, conduit, or electronics cabinet damaged during the construction project will be replaced by the Contractor at the Contractors expense. The weigh-inmotion site is visible on the roadway. SDDOT Office of Inventory Management & Research will aide in locating the traffic counter installation. Contact 605-773-6644, or 605-773-3278 to notify office of request to locate ATR.

#### BASE COURSE, SALVAGED ASPHALT MIX

Base Course, Salvaged Asphalt Mix estimated at 1,978.2 tons will be obtained from the Contractor furnished stockpile site.

All costs to place the Base Course, Salvaged Asphalt Mix material on the shoulder prior to Shoulder Preparation will be incidental to the contract unit price per ton for "Base Course, Salvaged Asphalt Mix".

The shaping and compaction of the Base Course, Salvaged Asphalt Mix material will be incidental to the contract unit price per mile for "Shoulder Preparation".

### SALVAGE AND STOCKPILE ASPHALT MIX MATERIAL

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.

An estimated 5,083.7 tons of asphalt mix material will be salvaged from the existing highway according to the in-place surfacing typical sections and stockpiled at a site furnished by the Contractor and satisfactory to the Engineer. An estimated 1,978.2 tons of salvaged asphalt concrete material will be used on this project as Base Course, Salvaged Asphalt Mix below the proposed asphalt concrete shoulders. An estimated 3,105.5 tons of salvaged asphalt concrete material will be used on this project as RAP in the Class HR Hot Mixed Asphalt Concrete salvage is available for the Class HR Hot Mixed Asphalt Concrete.

Salvaged material will be processed to meet the requirements of Section 884.2 C.1 prior to stockpiling. The Contractor will ensure that no vegetation, topsoil, subgrade, or other foreign material is incorporated into the salvaged asphalt mix material.

The salvaged material not used on the project will be become the property of the Contractor for disposal.

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

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

### CLASS HR ASPHALT CONCRETE

Virgin mineral aggregate for Class HR Asphalt Concrete will conform to the requirements for Class E, Type 1. If the virgin mineral aggregate is limestone it will consist of a minimum of 80 percent crushed limestone ledge rock.

An estimated 3,105.5 tons of RAP is needed for the Class HR mixture. The Class HR Asphalt Concrete will include 40 percent RAP in the mixture.

RAP will be obtained from the material produced from the salvaged asphalt on this project.

When directed by the Engineer, the Contractor will saw and remove a total of three undamaged compaction cores per asphalt concrete lift from designated area(s) and repair the hole(s) to the satisfaction of the Engineer. All costs associated with the compaction cores will be incidental to the contract unit price per each for "Compaction Sample".

All other requirements for Class HR Asphalt Concrete will apply.

## **BLOTTING SAND FOR PRIME**

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

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## **RATE OF MATERIALS**

Sections are named with the abbreviation "L" (Left) or "R" (Right) to describe which shoulder the following rates apply to.

A. Asphalt for Prime

1. Type: MC-70

2. Rate: 0.30 gal./sq.yd.

3. Application Width: Section 1L: 7 feet

Section 1R: 9 feet Section 2L: 5 feet

B. Asphalt for Tack.

1. Type: SS-1h or CSS-1h 2. Rate: 0.06 gal./sq.yd.

3. Application Width: Section 1L: 6.5 feet

Section 1R: 8.5 feet Section 2L: 4.5 feet

Section 1L: 4 ft shoulder

- C. Asphalt Concrete.
  - 1. Type: Class HR Hot Mixed Asphalt Concrete

2. Basic Quantity of Aggregate: 60% furnished by the Contractor 283 3. Salvaged Asphalt Concrete: 40% 189 4. PG 58-34 Asphalt Binder at 3.3% of Total Mix. 16 Total Mix (148 lb/ft $^3$ ) = 488

7. Laid 3 inches compacted depth; 6' bottom, 4' top.

## Section 1R: 6 ft shoulder

- D. Asphalt Concrete.
  - 1. Type: Class HR Hot Mixed Asphalt Concrete
  - 2. Basic Quantity of Aggregate: 60% furnished by the Contractor 397 Ton/mile 3. Salvaged Asphalt Concrete: 40% 264 Ton/mile 4. PG 58-34 Asphalt Binder at 3.3% of Total Mix. 23 Ton/mile Total Mix (148 lb/ft $^3$ ) = 684 Ton/mile
  - 7. Laid 3 inches compacted depth; 8' bottom, 6' top.

## Section 2L: 4 ft shoulder

- E. Asphalt Concrete.
  - 1. Type: Class HR Hot Mixed Asphalt Concrete
  - 2. Basic Quantity of Aggregate: 60% furnished by the Contractor Ton/mile 3. Salvaged Asphalt Concrete: 40% 151 Ton/mile 4. PG 58-34 Asphalt Binder at 3.3% of Total Mix. 13 Ton/mile Total Mix (148 lb/ft $^3$ ) = 391 Ton/mile
  - 7. Laid 3 inches compacted depth; 4' bottom, 4' top.

## **FLUSH SEAL**

- A. Asphalt for Flush Seal
  - Type SS-1h or CSS-1h
  - 2. Rate: 0.05 gal./sg.vd
  - 3.
  - В.

Rate: 0.05 gal./sq B. Application Width:	Section 1L: 6 feet Section 1R: 8 feet Section 2L: 4 feet
Sand for Flush Seal 1. Source: Furnisl 2. Rate: 8 lbs./sq.y 3. Application Width:	•
Ton/mile Ton/mile Ton/mile Ton/mile	

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			1			Tab	le of Quantiti	es - PCN 09TL	- US Highwa	ay 85 N						
			Exception	Length	Length	Shoulder Preparation	Base Course, Salvaged Asphalt Mix	Salvage & Stockpile Asphalt Concrete Pavement	PG 58-34 Asphalt Binder	Class HR Asphalt Concrete	Saw and Seal Shoulder Joint	MC-70 Asphalt for Prime	SS-1h or CSS-1h Asphalt for Tack	SS-1h or CSS-1h Asphalt for Flush Seal	Blotting Sand for Prime	Sand for Flush Seal
Section	Sta to	Sta	(Ft)	(Miles)	(Ft)	(Mile)	(Ton)	(Ton)	(Ton)	(Ton)	(Ft)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)
1 NBL																
1	7+00 R	201+70.63 R	306	3.630	19164.6	3.630	544.4	1502.7	83.5	2482.7	19164.6	24.40	4.6	3.6		38.3
1	201+54.48 R	253+50 R	386	0.911	4811.5	0.911	136.7	377.3	21.0	623.3	4811.5	6.10	1.2	0.9		9.6
1	7+00 L	201+70.63 L	1145	3.471	18325.6	3.471	433.8	1089.8	55.5	1693.7	18325.6	18.20	3.4	2.6		32.6
1	201+54.48 L	251+62.2 L	360	0.880	4647.7	0.880	110.0	276.4	14.1	429.6	4647.7	4.60	0.9	0.7		8.3
2 NBL																
2	251+62.2 L	260+22.98 L	116	0.141	744.8	0.141	17.6	38.9	1.8	55.2	744.8	0.50	0.1	0.1		1.3
2	260+43.62 L	303+20 L	187	0.775	4089.4	0.775	96.8	213.8	10.1	302.8	4089.4	2.90	0.5	0.4		7.3
1 NBL																
1	293+00 R	367+78.34 R	70	1.403	7408.3	1.403	210.5	580.9	32.3	959.7	7408.3	9.40	1.8	1.4		14.8
1	367+64.95 R	414+31.3 R	68	0.871	4598.4	0.871	130.6	360.6	20.0	595.7	4598.4	5.90	1.1	0.9		9.2
1	303+20 L	367+78.34 L	418	1.144	6040.3	1.144	143.0	359.2	18.3	558.3	6040.3	6.00	1.1	0.9		10.7
1	367+64.95 L	396+56 L	212	0.507	2679.1	0.507	63.4	159.3	8.1	247.6	2679.1	2.70	0.5	0.4		4.8
Guardra	il Flairs NBL															
	221+88.83	225+33.83 R	0	0.065	345.0	0.065	8.2	25.4	0.8	24.9	345.0	0.19	0.1	0.1		0.6
	220+75.83	225+33.83 L	0	0.087	458.0	0.087	13.0	29.4	1.9	58.4	458.0	0.45	0.1	0.1		1.4
Intersec	ting Gravel Roads		0	0	0	0	70.0	70.0	0	0	0	0	0.0	0.0		0
		ngth Right Side	830	6.880	36327.8											
	Total L	ength Left Side	2438	7.005	36984.9											
					Total	13.885	1978.2	5083.7	267.4	8031.9	73312.7	81.34	15.4	12.1	10.0	138.9

	Table of US 85 Exce	ptions		
Direction	Description	MRM	Disp.	Length
NB - Section 1				(Ft)
R	Bradford Ln	46	+ 0.110	90
L	Median Crossover	46	+ 0.110	128
L	Median Crossover	46	+ 0.590	130
R	Johnson Ln	47	+ 0.115	80
L	Median Crossover	47	+ 0.115	120
L	Median Crossover	47	+ 0.337	146
L	Median Crossover	47	+ 0.621	134
R	Kallam Ln	48	+ 0.118	70
L	Median Crossover	48	+ 0.118	130
L	Median Crossover	48	+ 0.532	135
L	Median Crossover	49	+ 0.142	122
R	Hardin Rd	49	+ 0.635	66
L	Median Crossover	49	+ 0.635	100
R	Amiotte PI	49	+ 0.889	60
L	Median Crossover	49	+ 0.889	110
R&L	Str. No. 41-095-010	50	+ 0.150	250
R	Redwater Rd	50	+ 0.607	76
NB - Section 2				
L	Median Crossover	50	+ 0.617	116
L	Median Crossover	50	+ 0.931	35
L	Median Crossover	51	+ 0.191	56
L	Median Crossover	51	+ 0.450	40
L	Median Crossover	51	+ 0.579	56
NB - Section 1				
L	Median Crossover	51	+ 0.888	100
R	Hat Ranch Dr	52	+ 0.068	70
L	Median Crossover	52	+ 0.068	106
L	Median Crossover	52	+ 0.247	112
L	Median Crossover	52	+ 0.805	100
L	Median Crossover	52	+ 0.944	112
R	Sandstone Rd	53	+ 0.250	68
L	Median Crossover	53	+ 0.250	100
		Total	Right Side	830
		Total	Left Side	2,438

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Additional Table of Quantities - PCN 09TL - US Highway 85 N - Guardrail									
		Remove 3-Cable Guardrail	Remove 3-Cable Guardrail Anchor Assembly	Remove Beam Guardrail	Remove Beam Guardrail Trailing End Terminal	Type 1 Retrofit Guardrail Transition	Type 1 MGS	MGS MASH Tangent End Terminal	
Location	Side	(Ft)	(Each)	(Ft)	(Each)	(Each)	(FT)	(Each)	
Structure No. 41-095-010									
	Begin Bridge Lt.	164	1	80.0	1	1	200	1	
	Begin Bridge Rt.			192.0	1	1	162.5	1	
	Total	164	1	272	2	2	362.5	2	

## **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.

#### **COORDINATION BETWEEN CONTRACTORS**

A separate contract for Project NH-P 0042(99) – PCN 09KW will be (or has been) awarded to another Contractor Asphalt Surface Treatment on US85 South Bound Shoulders adjacent to this project (PCN 09TL). The Asphalt Surface Treatment for PCN 09KW will begin at MRM 44+0.69 and end at MRM 53+0.69.

The Contractor will schedule work so as not to interfere with or hinder the progress of the work performed by the other Contractor on PCN 09KW. Conflicting traffic control devices may need to be temporarily adjusted or removed as directed by the Engineer and at no additional cost to the contract.

## **GENERAL TRAFFIC CONTROL**

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

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

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

Portable sign supports will not be located on sidewalks, bicycle facilities, or other areas designated for pedestrian or bicycle traffic.

Signs mounted on portable supports will conform with minimum mounting height as per Standard Plate 634.85 and will not be used for a duration of more then 3 days.

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 available material to ensure a 3-inch vertical drop-off is not exceeded. The slope of the 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".

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, and pavement marking can be completed satisfactorily by a continuously moving work operation. A mobile work operation will require approval by the Engineer.

A Type 3 Barricade will be installed at the end of a lane closure taper as detailed in these plans. Additional Type 3 Barricades will be installed facing traffic within the closed lane at a spacing of  $\frac{1}{4}$  mile.

Construction vehicles will exit or enter the construction work zone at locations identified by the Engineer.

The Contractor will adjust traffic control items to accommodate over width vehicles when necessary, up to 16' wide.

The shoulder work areas will be marked with channelizing devices prior to opening the adjacent lane to traffic as per Standard Plate 634.03. Cost is incidental to Traffic Control Miscellaneous.

## **LANE CLOSURES**

Lane closures shorter than 5 miles will be used if 5 miles is greater than the length of work that can be accomplished in one day's production. More than one lane closure may be permitted; however, there will be a minimum of a three-mile section between lane closures, excluding the tapers.

Lane closures will be removed when work will not be occurring for a period of 3 or more calendar days. Activities that do not involve workers being present,

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such as curing time for concrete, constitute work. Lane closures will not be set up on a Friday if no work will be occurring on Saturday or Sunday. In these cases, the lane closure will be installed on Monday.

#### ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 45	2	24" x 30"	5.0	10.0
R2-1	SPEED LIMIT 65	1	24" x 30"	5.0	5.0
R2-6aP	FINES DOUBLE (plaque)	1	24" x 18"	3.0	3.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	1	48" x 48"	16.0	16.0
W4-2R	RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W4-2L	LEFT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W8-1	BUMP	2	48" x 48"	16.0	32.0
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W13-1P	ADVISORY SPEED (plaque)	2	30" x 30"	6.3	12.6
W20-1	ROAD WORK AHEAD	17	48" x 48"	16.0	272.0
W20-5	RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
W20-5	LEFT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	1	48" x 48"	16.0	16.0
W21-5a	SHOULDER CLOSED	4	48" x 48"	16.0	64.0
G20-1	ROAD WORK NEXT 8 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT		608.6	

## **TABLE OF FIXED TRAFFIC CONTROL SIGNS**

Location	MRM	L/R	Description
US85	45.41	R	Road Work Next 8 Miles (1)
US85	45.41	L	End Road Work (1)
Kerwin Ln	45.17(US85)	R	Road Work Ahead (1)
Brook View Rd	45.17(US85)	L	Road Work Ahead (1)
Camp Comfort Rd	46.59(US85)	L	Road Work Ahead (1)
Johnson Ln	47.10(US85)	R	Road Work Ahead (1)
Side Road	47.33(US85)	L	Road Work Ahead (1)
Kellam Ln	48.11(US85)	R	Road Work Ahead (1)
Hardin Rd	49.62(US85)	R	Road Work Ahead (1)
Old Belle Rd	50.62(US85)	L	Road Work Ahead (1)
Minnesota Rd	51.19(US85)	R	Road Work Ahead (1)
Hat Ranch Dr	52.06(US85)	R	Road Work Ahead (1)
Stage Coach Rd	52.90(US85)	L	Road Work Ahead (1)
Ridge Rd	52.94(US85)	R	Road Work Ahead (1)
Sand Stone Rd	53.24(US85)	R	Road Work Ahead (1)
West Wood Rd	53.24(US85)	L	Road Work Ahead (1)
Country Club Rd	53.71(US85)	L	Road Work Ahead (1)
US85	53.69	L	Road Work Next 8 Miles (1)
US85	53.69	R	End Road Work (1)

## **WORK ZONE SPEED REDUCTION**

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

## PRESS RELEASE ANNOUNCEMENTS

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

## PERMANENT PAVEMENT MARKING

The Contractor will be required to repaint all existing Edge Lines for US 85 N, and Outside Shoulder Edge Line on US 85 S. This list is approximate. The Contractor will be required to document and be able to relocate for replacement of the existing word messages, turn arrows, stop bars, railroad crossings, pedestrian crossings, etc. before the markings are obliterated. Additional quantities are included in the estimate of quantities to paint the additional pavement marking.

## **PAVEMENT MARKING PAINT**

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

## HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

All materials will be applied as per manufacturer's recommendations. 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 = 22.5Gals/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.

## **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.

The new posts will be wood.

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.

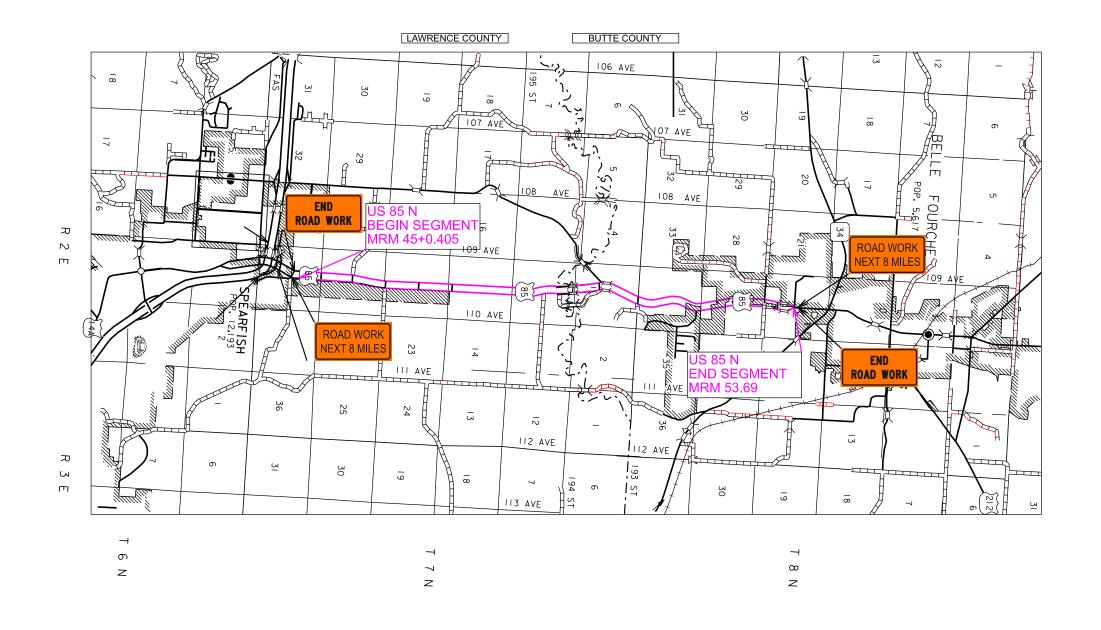
Table of Mailboxes - US 85					
			Refurbish Single Mailbox	Refurbish Double Mailbox	
Direction	MRM	Disp.	(Each)	(Each)	
NB					
	46	+ 0.097	1		
SB					
	53	+ 0.394	3		
	53	+ 0.101	1		
	52	+ 0.776	2		
	52	+ 0.393		1	
	52	+ 0.214	1		
	52	+ 0.149	1		
	51	+ 0.564		1	
	50	+ 0.933	1	1	
	49	+ 0.872		1	
	49	+ 0.618	1	3	
	49	+ 0.136	1		
	48	+ 0.523	1		
	48	+ 0.100	3		
	47	+ 0.604	1		
Total			17	7	

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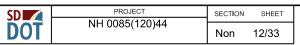
Revised - 1/07/2025 - TJL

## FIXED LOCATION SIGNS





## TYPICAL SURFACING SECTION



Asphalt Concrete, In Place

-Base Course, In Place

Salvage and Stockpile Asphalt Concrete Pavement or Remove Asphalt Concrete Pavement



Base Course, Salvaged Asphalt Mix



4" Shoulder Preparation

Sta. 201+70.63 Bk. =

Sta. 201+54.48 Ah. Sta. 260+22.98 Bk. =

Sta. 260+43.62 Ah.

Sta. 367+78.34 Bk. = Sta. 367+64.95 Ah.

Equation:

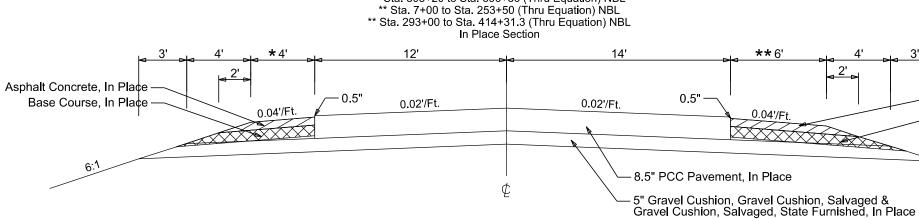
#### Section 1

US HWY 85

\* Sta. 7+00 to Sta. 251+62.2 (Thru Eqation) NBL

\* Sta. 303+20 to Sta. 396+56 (Thru Equation) NBL

\*\* Sta. 7+00 to Sta. 253+50 (Thru Equation) NBL



Bridge Exception: Sta. 225+33.83 to Sta. 227+37.17

## Section 1

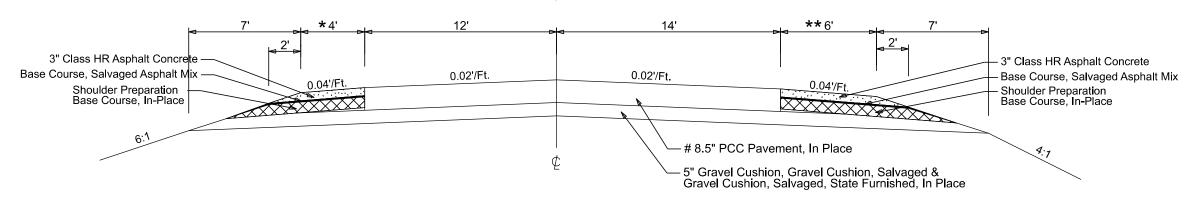
US HWY 85

\* Sta. 7+00 to Sta. 251+62.2 (Thru Eqation) NBL

\* Sta. 303+20 to Sta. 396+56 (Thru Equation) NBL

\*\* Sta. 7+00 to Sta. 253+50 (Thru Equation) NBL

\*\* Sta. 293+00 to Sta. 414+31.3 (Thru Equation) NBL Resurfacing Section



## TYPICAL SURFACING SECTION



Salvage and Stockpile Asphalt Concrete Pavement or Remove Asphalt Concrete Pavement



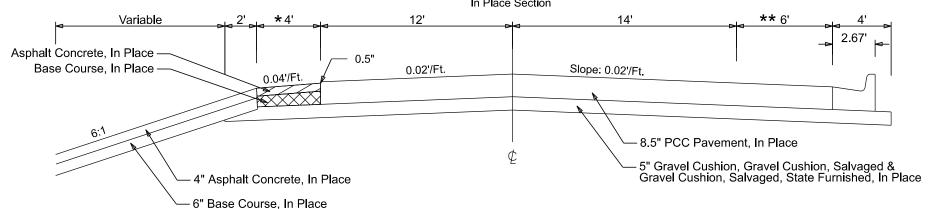
Base Course, Salvaged Asphalt Mix



4" Shoulder Preparation

Section 2

US HWY 85
\* Sta. 251+62.2 to Sta. 303+20 (Thru Equation) NBL
\*\* Sta. 253+50 to Sta. 293+00 (Thru Equation) NBL
In Place Section



### Equation:

Sta. 201+70.63 Bk. = Sta. 201+54.48 Ah.

Sta. 260+22.98 Bk. = Sta. 260+43.62 Ah.

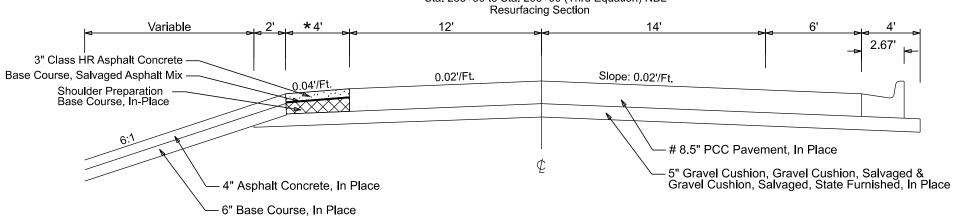
Sta. 367+78.34 Bk. = Sta. 367+64.95 Ah.

## Section 2

US HWY 85

\* Sta. 251+62.2 to Sta. 303+20 (Thru Equation) NBL

\*\* Sta. 253+50 to Sta. 293+00 (Thru Equation) NBL

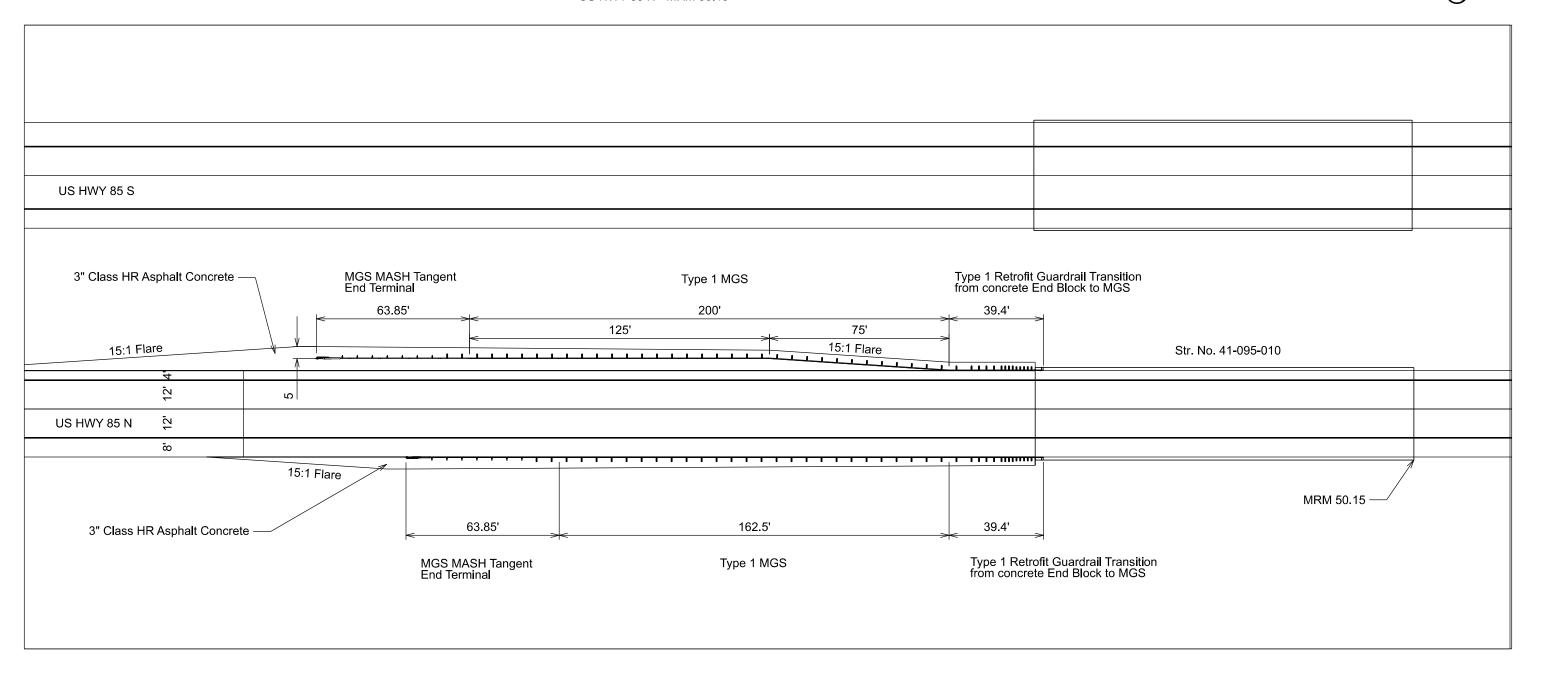


## **GUARDRAIL LAYOUT**

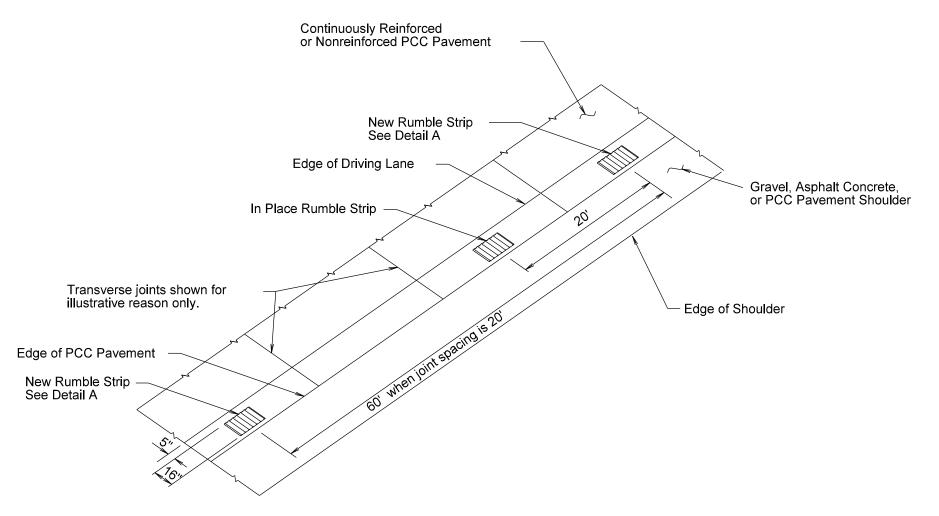
Plotting Date: 1/7/2025

Non 14/33

Str. No. 41-095-010 US HWY 85 N - MRM 50.15



# GRIND RUMBLE STRIP ON PCC PAVEMENT SHOULDER



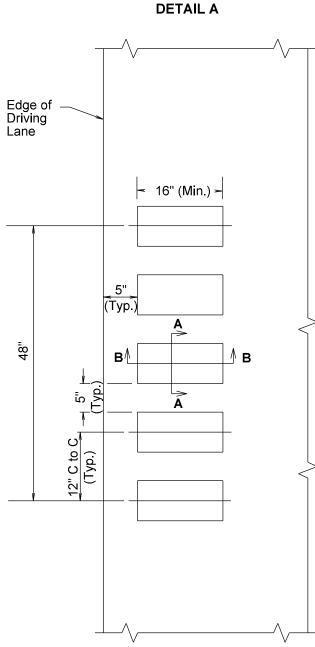
PERSPECTIVE OF TYPICAL RUMBLE STRIPS ON PCC PAVEMENT SHOULDER

A rumble strip shall be constructed on the portland cement concrete shoulders by grinding rumble strips between the in place rumble strips as per these details. The in place spacing of rumble strips is 60'. The final rumble strip pattern shall alternate between 40' and 20' spacing. Rumble strips shall not be installed across transverse pavement joints.

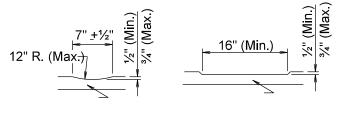
A rumble strip shall not be constructed through intersecting roads, entrances, and turnouts. The locations shall be adjusted as approved by the Engineer.

Prior to constructing the rumble strip the Contractor shall demonstrate a 500 foot test section that the equipment and method will provide satisfactory results.

Measurement of the rumble strip shall be to the nearest 0.1 of a mile for each shoulder. Measurement and payment of the rumble strip shall include the gaps without rumble strips and the segments adjacent to the intersecting roads, entrances, and turnouts without rumble strips. Payment for constructing the rumble strip shall be at the contract unit price per mile for "Grind 16" Rumble Strip or Stripe in PCC Pavement".

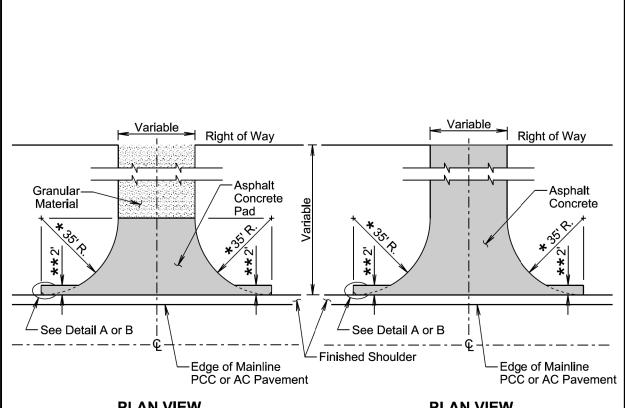


PLAN VIEW TO GRIND RUMBLE STRIP IN PCC PAVEMENT



SECTION A-A

**SECTION B-B** 



## **PLAN VIEW**

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

## **PLAN VIEW**

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

## **GENERAL NOTES:**

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

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

August 27, 2020

Published Date: 2025

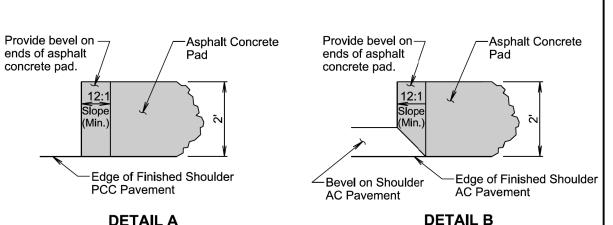
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O

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

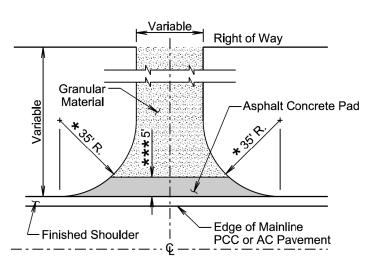
PLATE NUMBER 320.04

Sheet I of 2



**DETAIL A** (Typ. for Projects with PCC Pavement on Shoulder)

(Typ. for Projects with AC Pavement on Shoulder)



## **PLAN VIEW** (Entrance)

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

Published Date: 2025

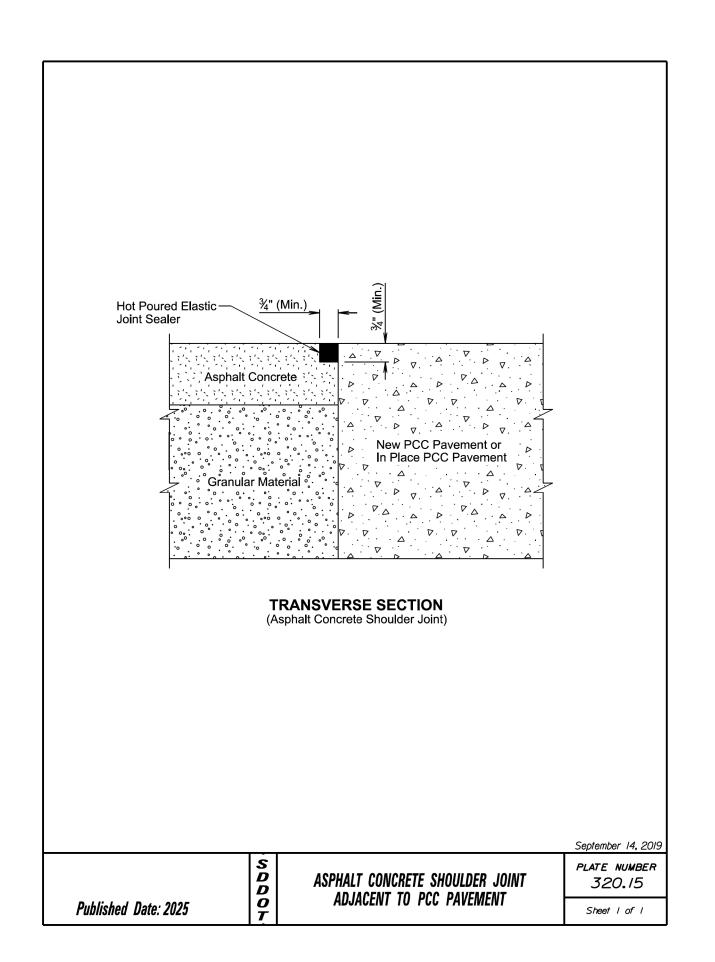
August 27, 2020

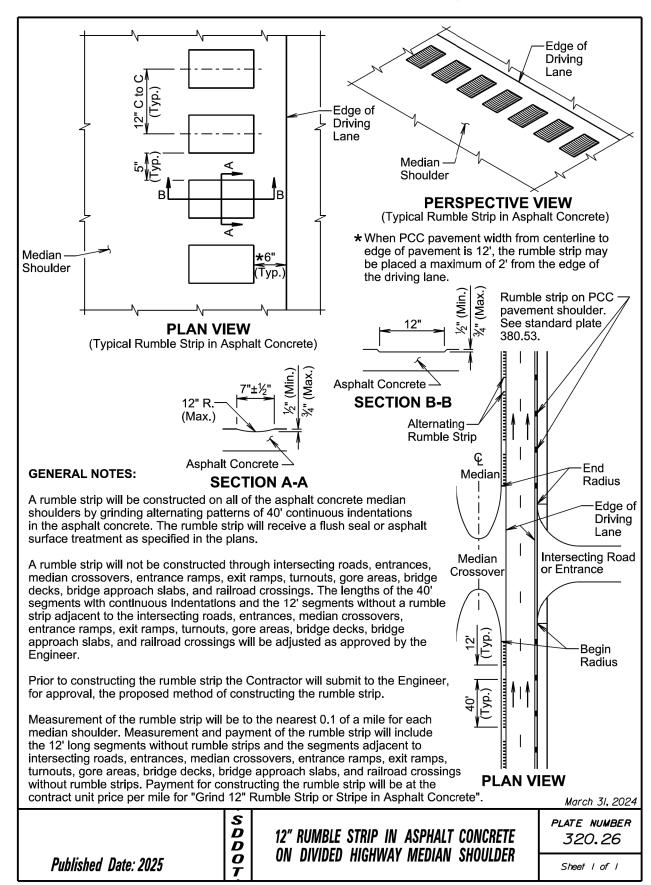
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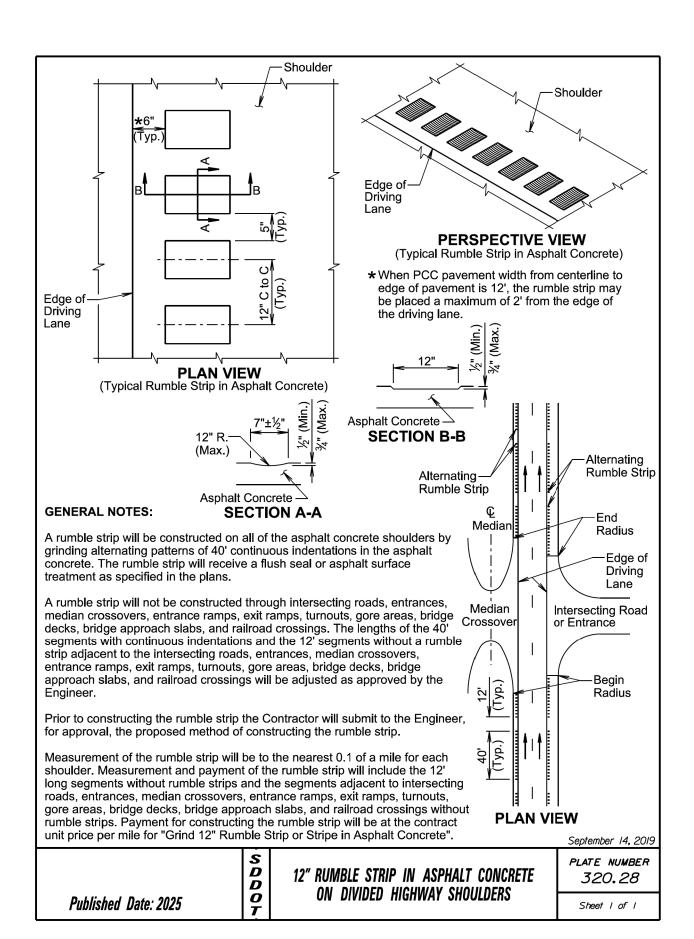
SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)

PLATE NUMBER 320.04

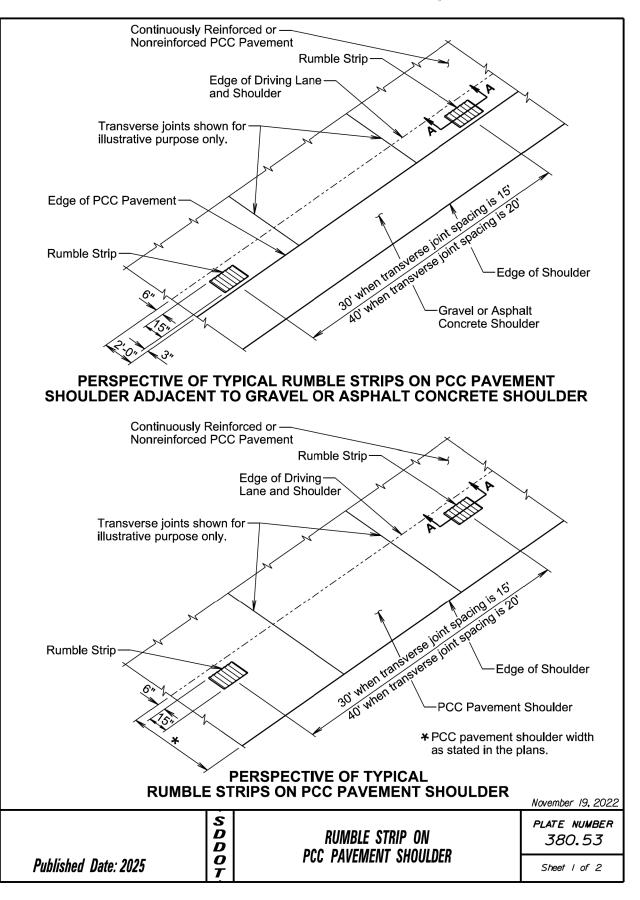
Sheet 2 of 2

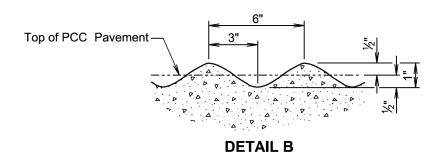


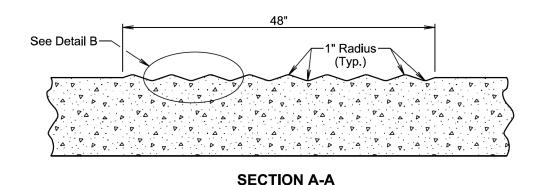












#### **GENERAL NOTES:**

The rumble strips will be evenly spaced and will not coincide with any transverse contraction joints.

The rumble strips will NOT be placed along areas adjacent to entrance ramps, exit ramps, and gore areas.

Payment for constructing the PCC Pavement Rumble Strips will be incidental to the contract unit price per square yard for the corresponding PCC Pavement contract item.

November 19, 2022

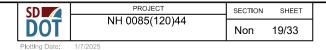
Published Date: 2025

RUMBLE STRIP ON 380.53

PCC PAVEMENT SHOULDER

PLATE NUMBER 380.53

Sheet 2 of 2



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

S	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, 2019

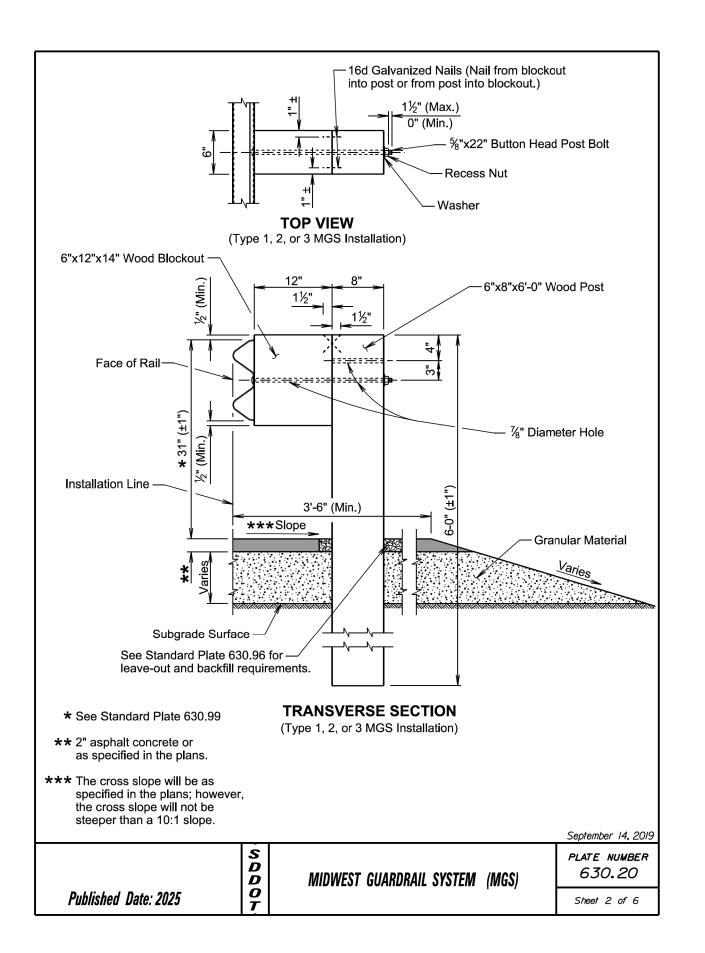
Published Date: 2025

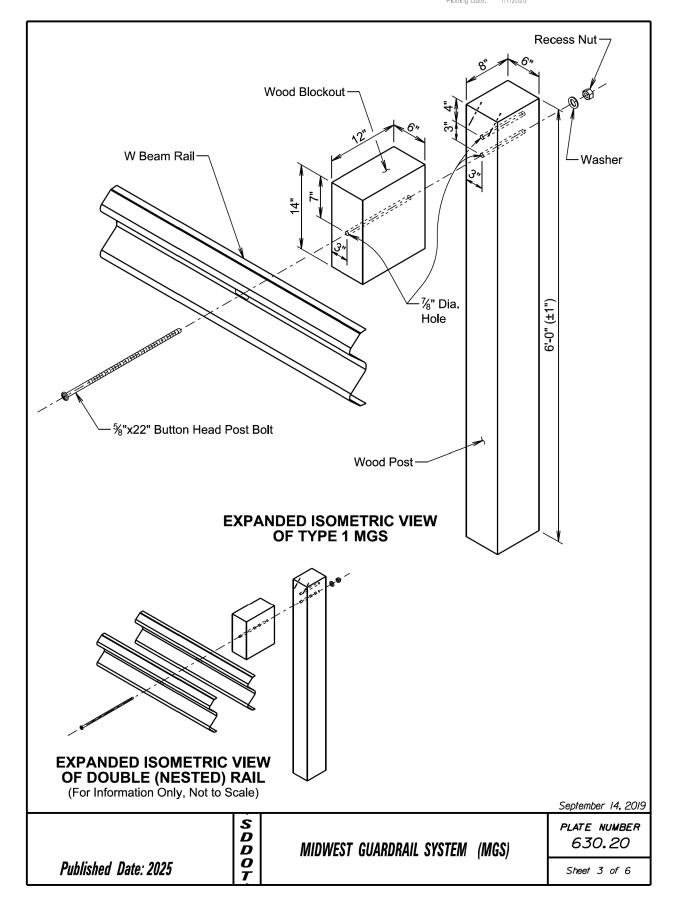
MIDWEST GUARDRAIL SYSTEM (MGS)

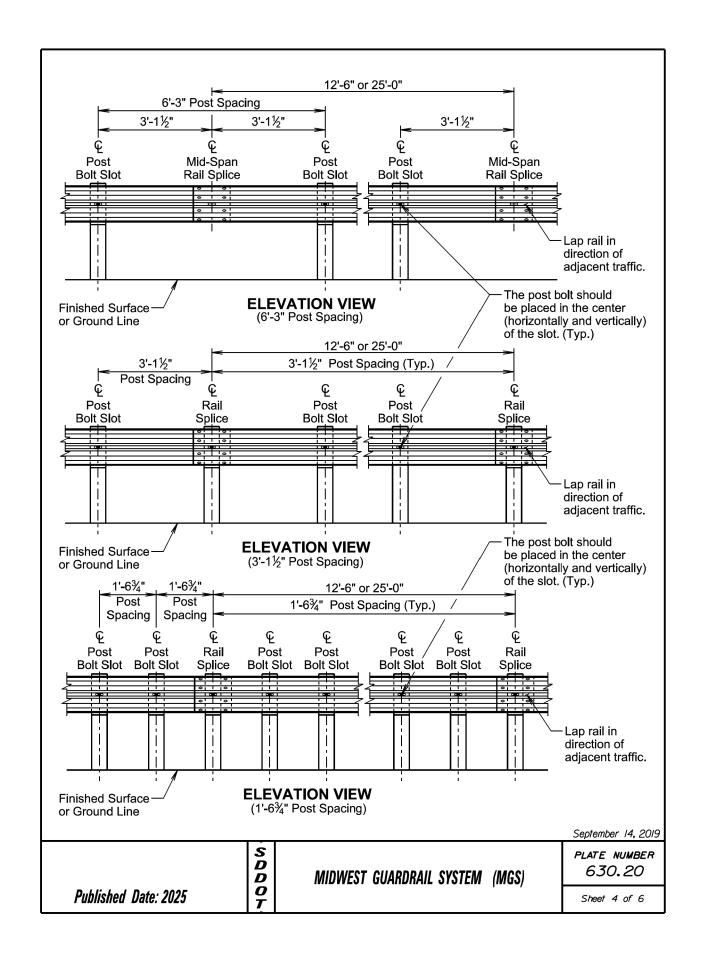
Plate Number 630.20

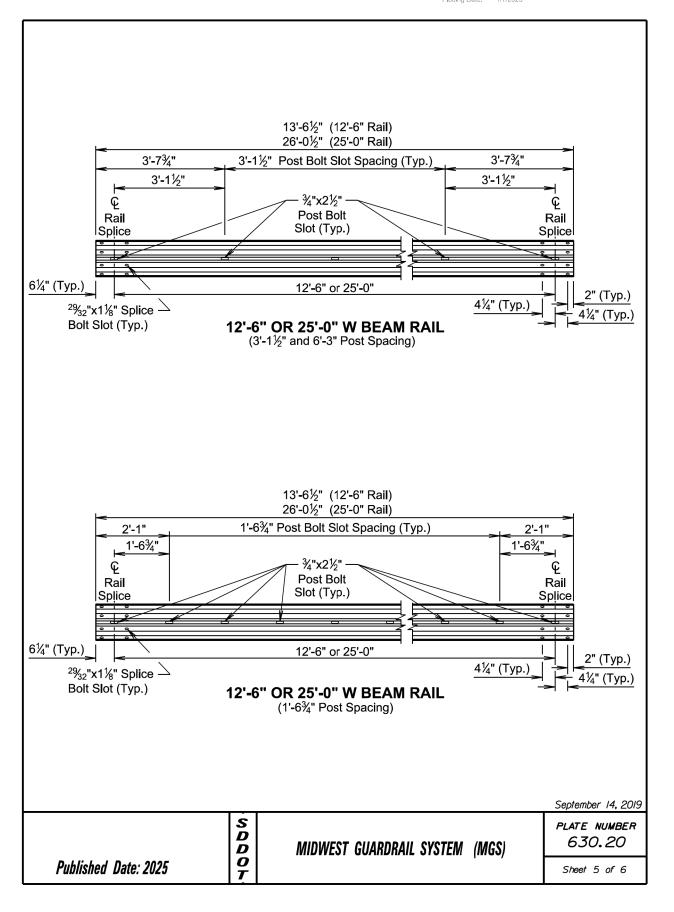
Sheet I of 6

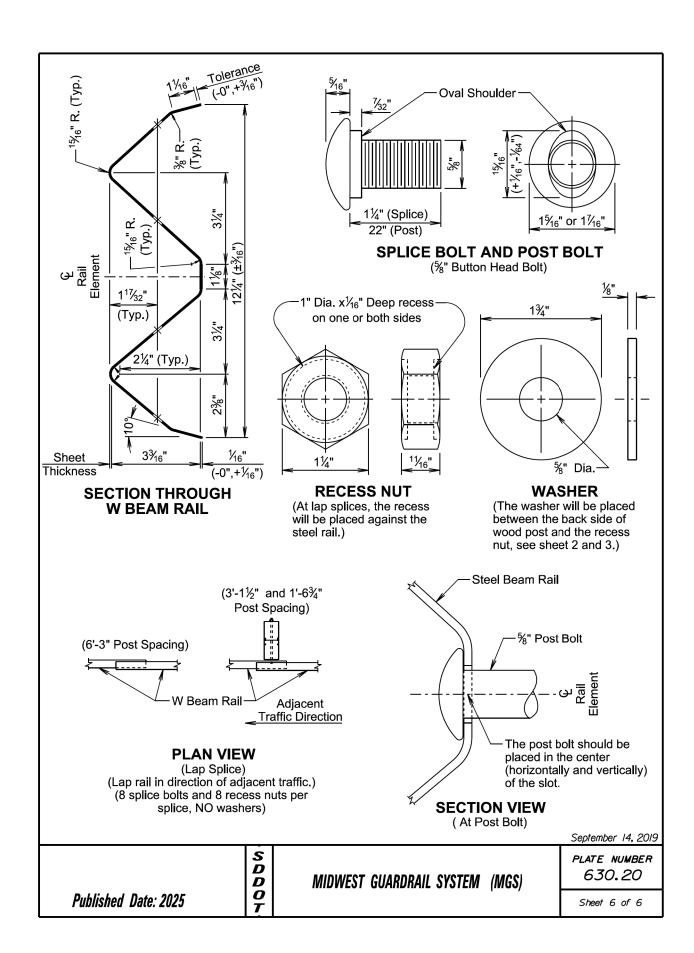
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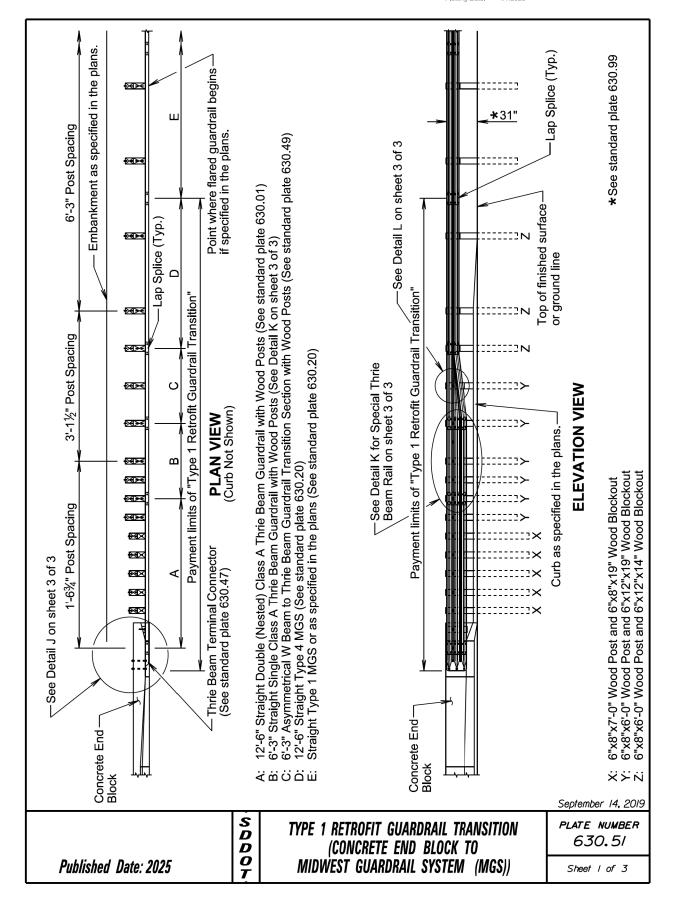


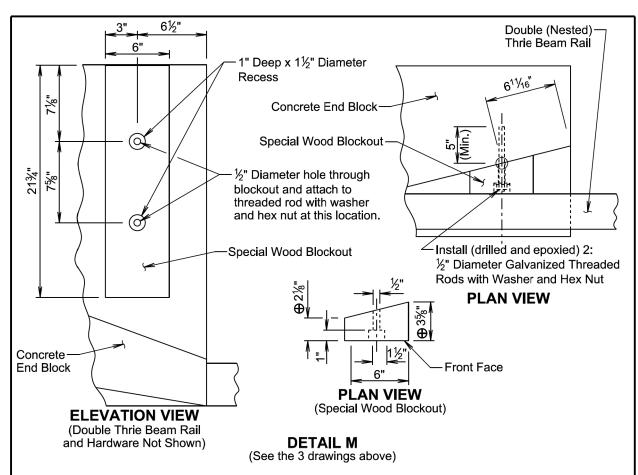












#### GENERAL NOTES FOR INSTALLING THREADED RODS INTO CONCRETE:

⊕ The dimensions shown are estimated based on original construction plans of the concrete end block. The special wood blockout will be cut as necessary such that the front face of the special wood blockout will align with the vertical front face of the concrete end block  $\pm \frac{1}{2}$ ".

The threaded rods will be \%" diameter and conform to ASTM F1554, Grade 55. The threaded rods will be embedded a minimum of 5" into the concrete.

The diameter of the drilled holes will not be less than 1/8" greater or more than 1/8" greater than the diameter of the threaded rods or as per the Manufacturer's recommendations. The holes will not be drilled using core bits. The drilled holes will be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to the epoxy injection.

The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3).

Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel rod. Rotate the steel rod during installation to eliminate voids and ensure complete bonding of the rod. Insertion of the rods by the dipping or painting methods will not be

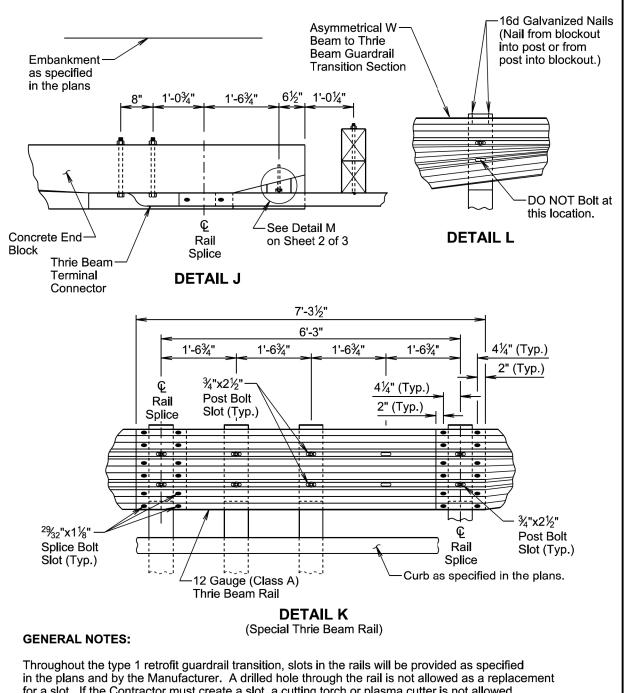
Loads will not be applied to the epoxy grouted threaded rods until the epoxy resin has had sufficient time to cure as specified by the epoxy resin Manufacturer.

September 14, 2019 S D D PLATE NUMBER TYPE 1 RETROFIT GUARDRAIL TRANSITION 630.51 (CONCRETE END BLOCK TO O

MIDWEST GUARDRAIL SYSTEM (MGS))

Sheet 2 of 3

PROJECT SECTION SHEET NH 0085(120)44 DOT 23/33 Non



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 furnishing and installing the type 1 retrofit guardrail transition including labor, equipment, and materials which includes all rail sections, posts and blockouts, special blockout, hardware, and incidentals will be included in the contract unit price per each for "Type 1 Retrofit Guardrail Transition".

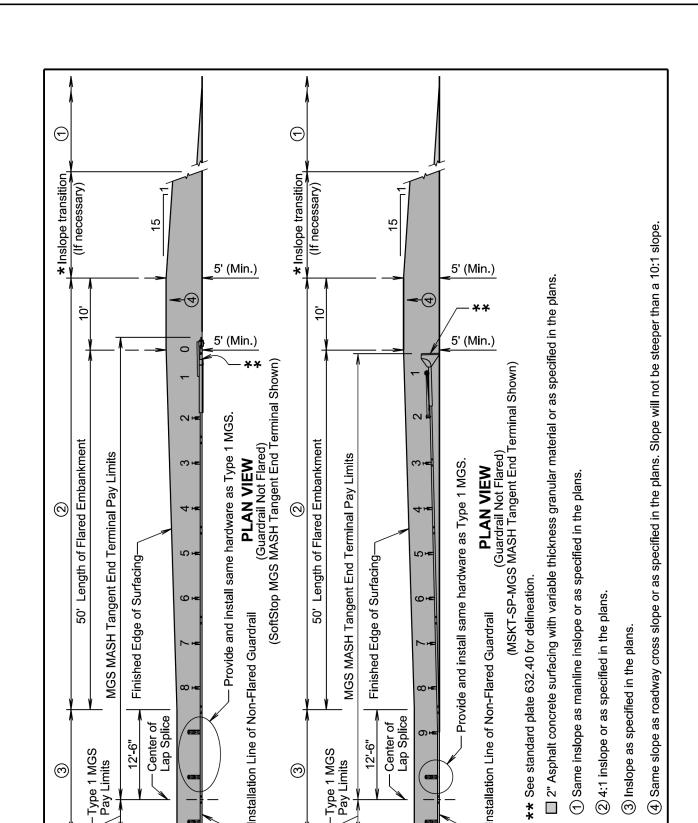
> September 14, 2019 PLATE NUMBER

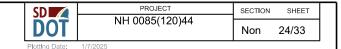
> > 630.51

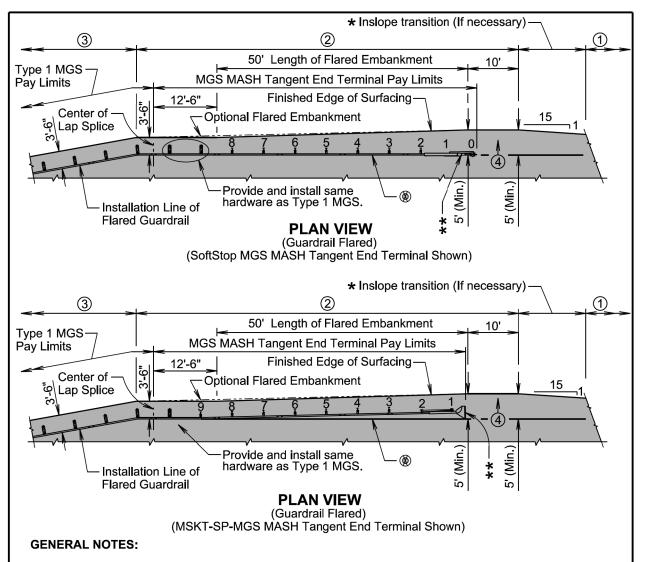
S TYPE 1 RETROFIT GUARDRAIL TRANSITION D (CONCRETE END BLOCK TO 0 MIDWEST GUARDRAIL SYSTEM (MGS)) Published Date: 2025

Sheet 3 of 3

Published Date: 2025







The MGS MASH tangent end terminals above are for illustrative purpose only. Pay limit length of the MGS MASH tangent end terminal is 62'-6".

- ★ The length of inslope transition varies with the amount of change between inslopes. The length of the transition will change 100' for every whole number change in the inslope. For Example: If the inslope changes from a 5:1 to a 4:1 the length of the inslope transition would be 100'. If the inslope changes from a 6:1 to a 4:1 the length of the inslope transition would be 200'.
- The installation reference line for MGS MASH tangent end terminals will always be parallel to the roadway.

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.

\*\*November 19\*\*

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November 19, 2021

Published Date: 2025

November 19, 2021

PLATE NUMBER

630.89

Sheet I of 2

EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR MGS MASH TANGENT END TERMINAL PLATE NUMBER 630.89

Sheet 2 of 2

3'-6"

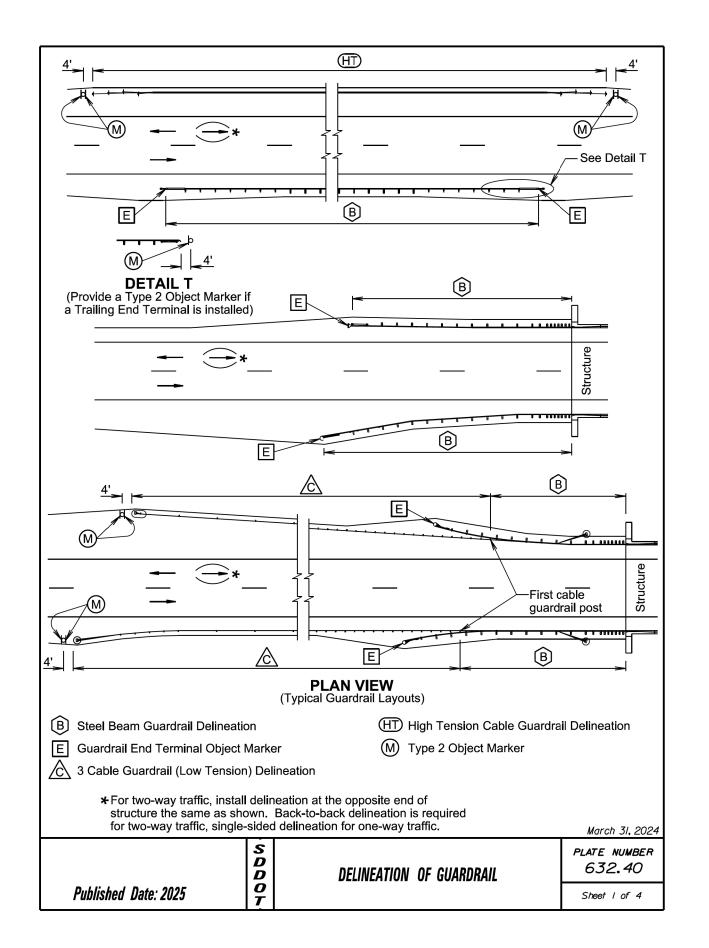
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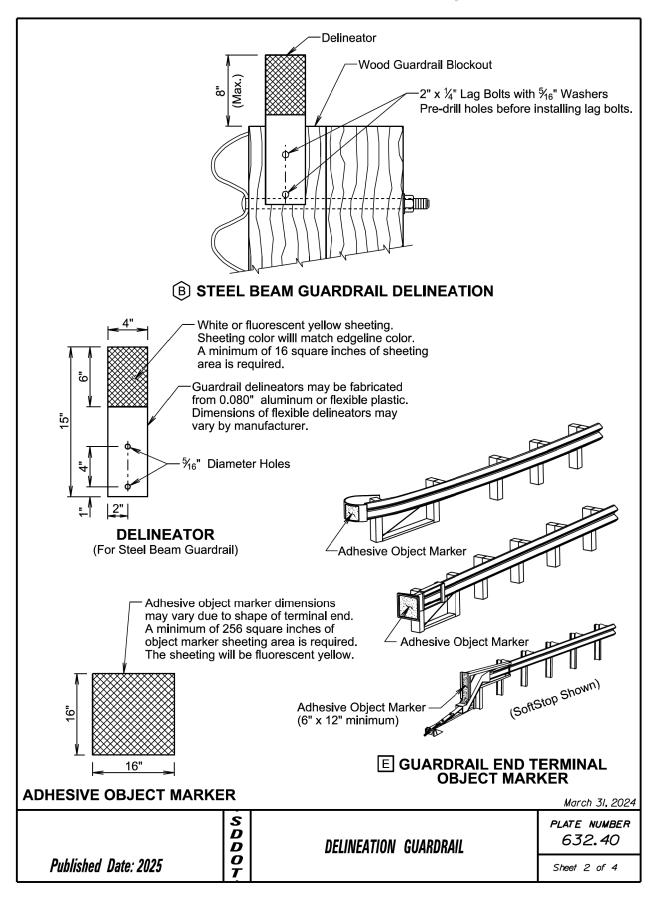
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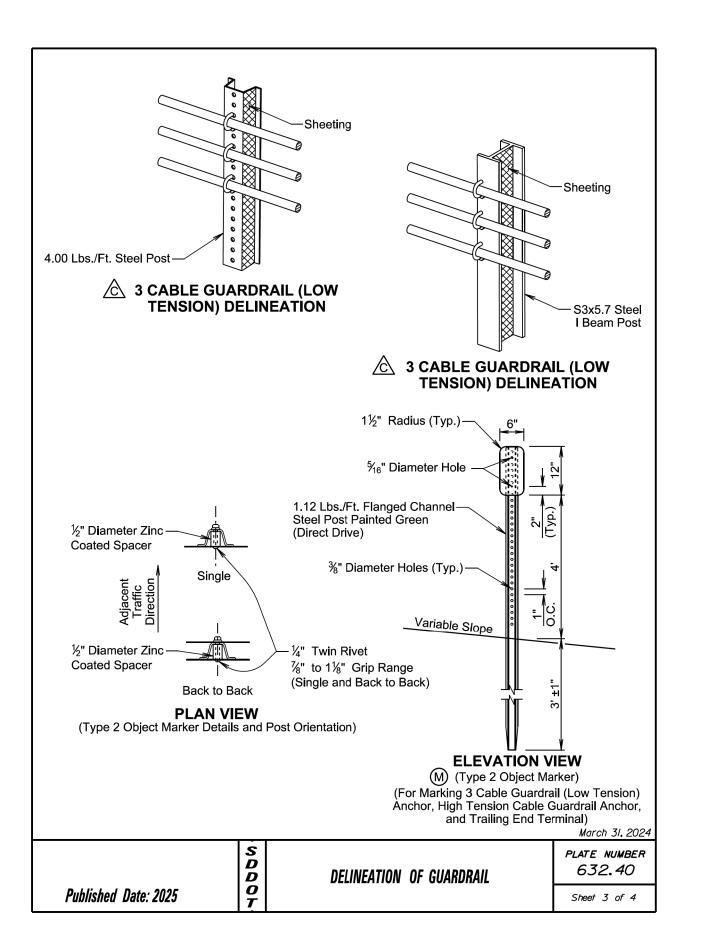
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EMBANKMENT, SURFACING, AND PAYMENT

IMITS FOR MGS MASH TANGENT END TERMINAL









#### **GENERAL NOTES:**

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

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

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

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

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

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

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

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

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

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

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

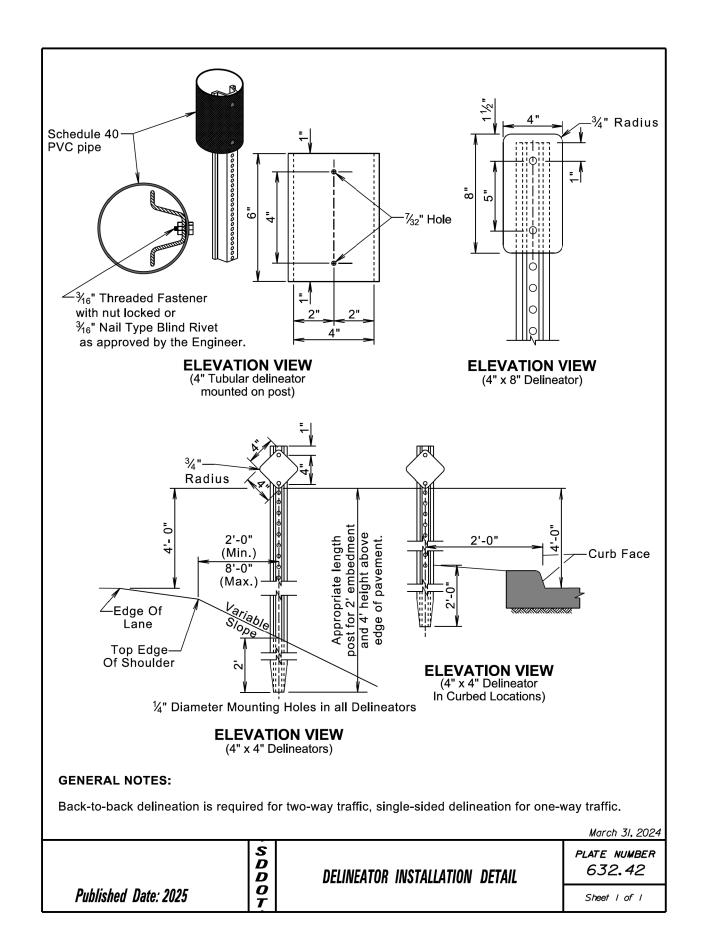
March 31, 2024

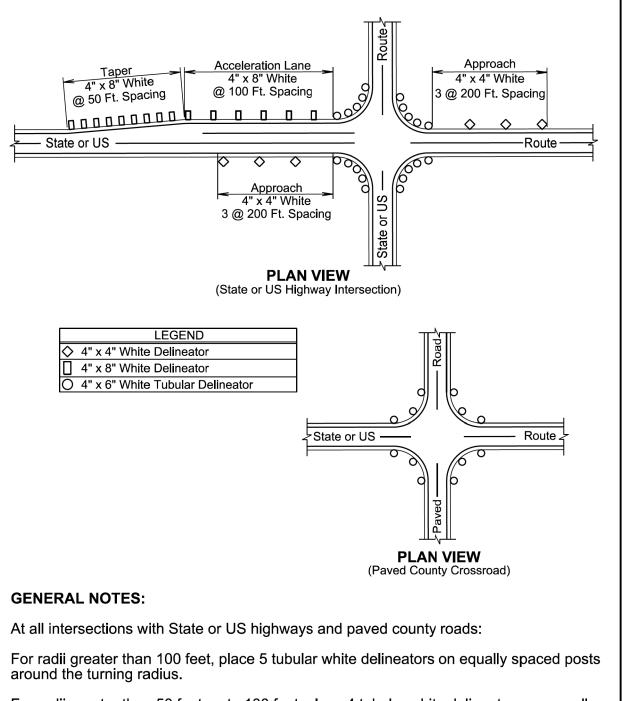
Published Date: 2025

DELINEATION OF GUARDRAIL

Plate Number 632.40

Sheet 4 of 4





For radii greater than 50 feet up to 100 feet, place 4 tubular white delineators on equally spaced posts around the turning radius.

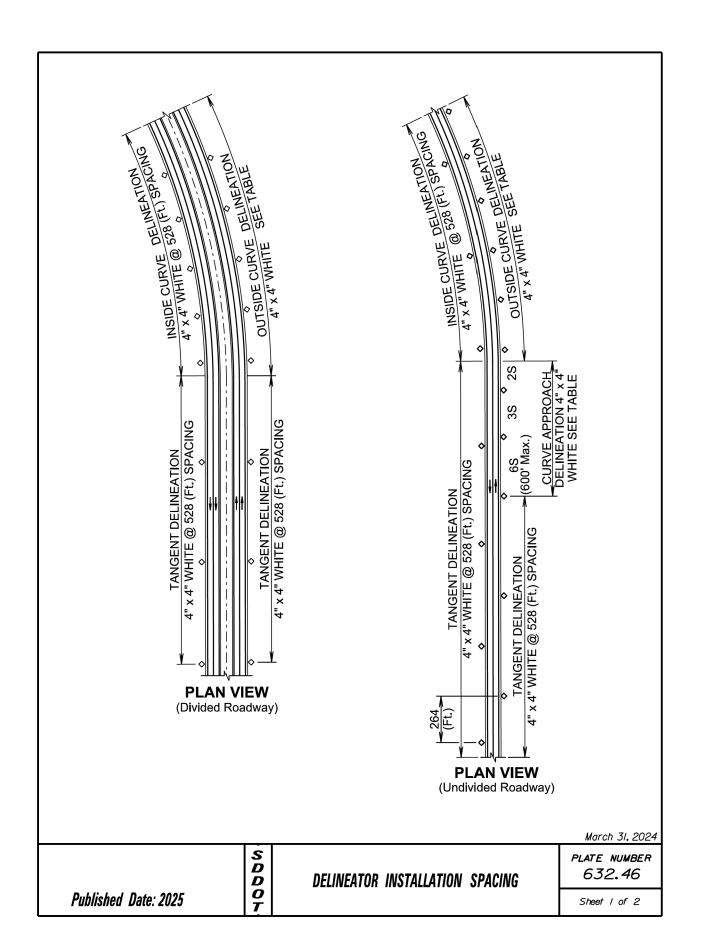
For radii of 50 feet or less, place 3 tubular white delineators on equally spaced posts around the turning radius.

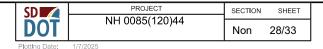
November 19, 2020 PLATE NUMBER

SDDO Published Date: 2025

DELINEATOR AT INTERSECTIONS

632.44 Sheet I of I





### **GENERAL NOTES:**

Delineators will be located from 2 to 8 feet outside of the outer edge of shoulder. When a roadside barrier or other obstruction intrudes into the space between the pavement edge and the extension of the line of delineators, the delineators should be in line with the barrier or in line with the innermost edge of the obstruction.

When normal spacing is interrupted by driveways, crossroads, or approaches, delineators falling within such areas may be moved in either direction a distance not exceeding one-quarter of the standard spacing. Delineators still falling within such areas should be eliminated

The spacing for specific radii may be interpolated from the table. The minimum spacing should be 20 feet. The spacing on curves should not exceed 300 feet. In advance of or beyond a curve, and proceeding away form the end of the curve, the spacing of the first delineator is 2S, the second 3S, and the third 6S, but not to exceed 300 feet. S refers to the delineator spacing for specific radii computed from the formula  $S = 3\sqrt{R - 50}$ . The distances for S shown in the table were rounded to the nearest 5 feet.

Curve approach delineation is not required if curve delineation spacing exceeds 100 ft.

Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

DELINEATOR SPACING							
OUTSIDE CURVE							
Radius	Curve	Curve	App	roach			
of	Delineator	Spa	icing (	(Ft.)			
Curve (Ft.)	Spacing (Ft.)	Α	В	С			
50	20	40	65	125			
115	25	50	75	150			
150	30	60	90	180			
180	35	70	110	215			
250	40	85	125	250			
300	45	95	140	285			
400	55	110	170	300			
500	65	125	190	300			
600	70	140	210	300			
700	75	150	230	300			
800	80	165	245	300			
900	85	175	260	300			
1000	90	185	275	300			

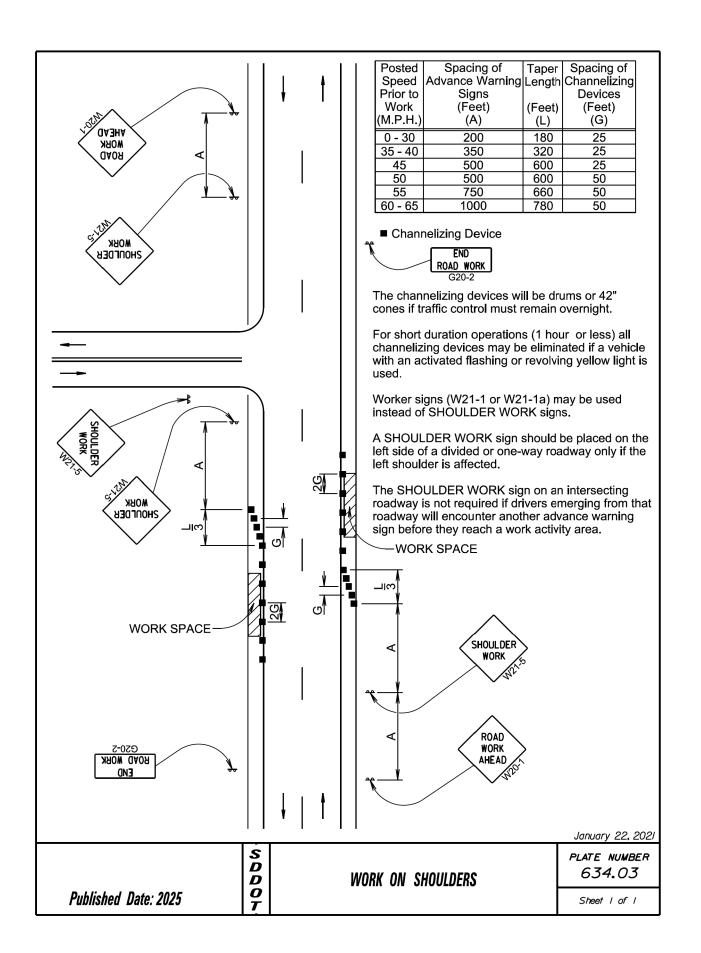
March 31, 2024

Published Date: 2025

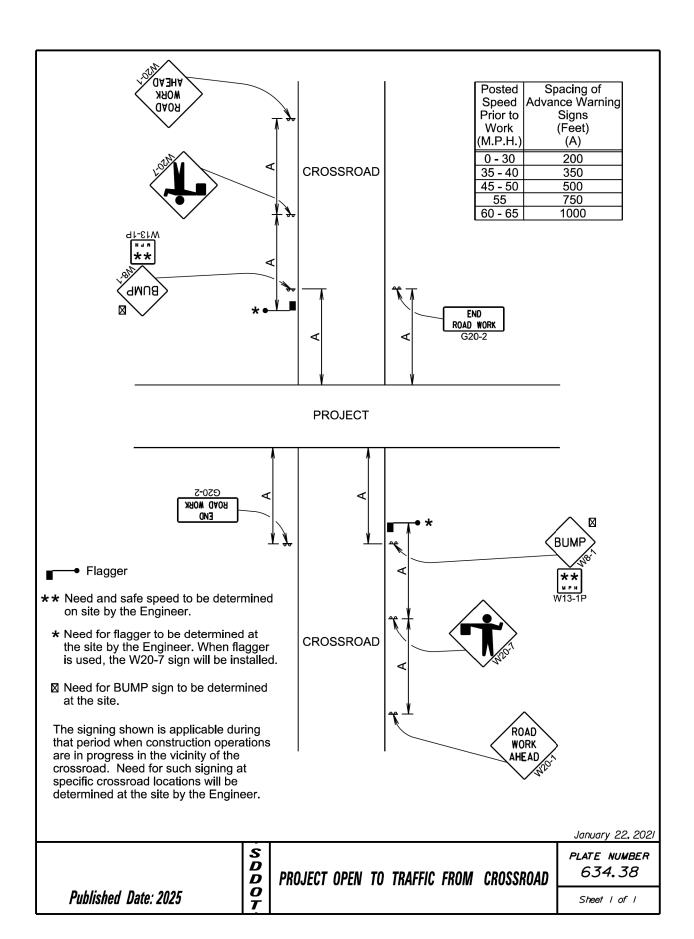
DELINEATOR INSTALLATION SPACING

PLATE NUMBER 632.46

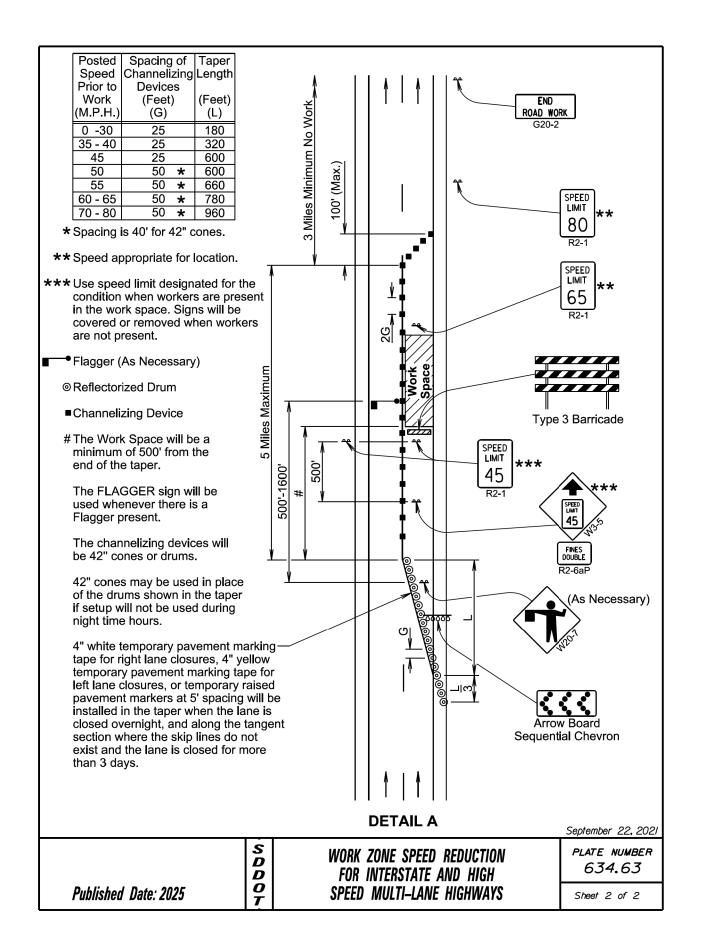
Sheet 2 of 2

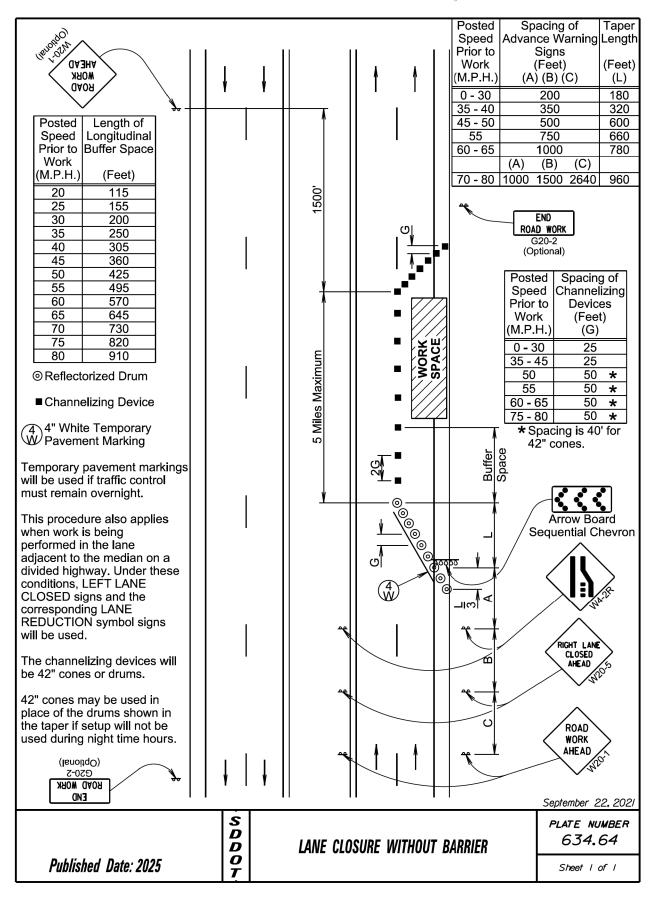


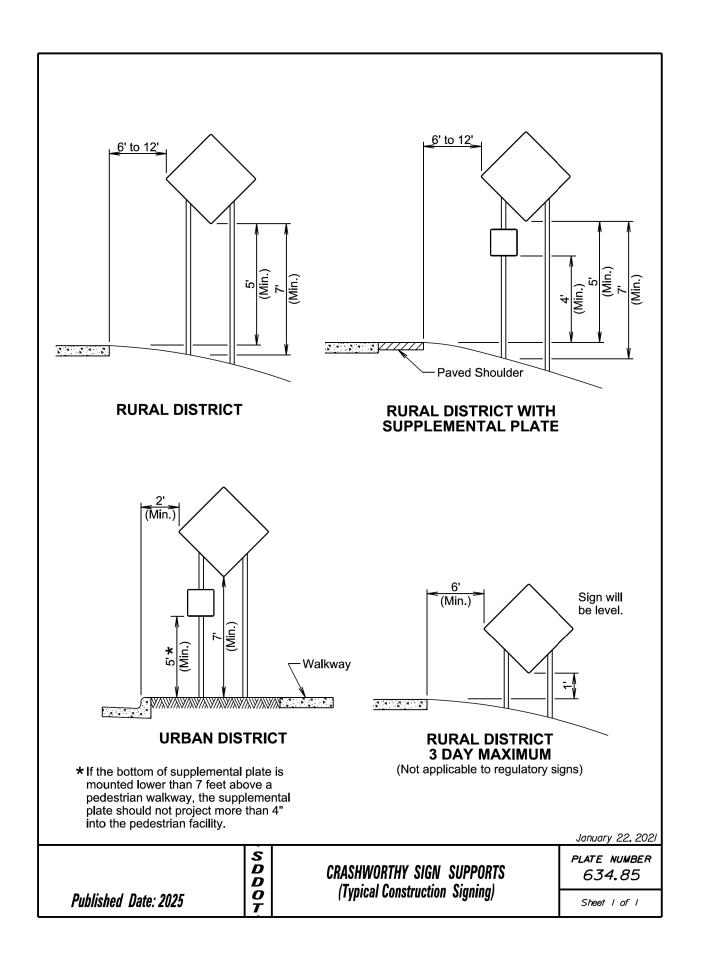
\* Messages on signs will vary -Work Vehicle depending on the operation being conducted. Arrow Board <<< Vehicle-mounted signs will be mounted in a manner such that they -Truck Mounted Attenuator are not obscured by (Optional) equipment or supplies. Sign legends on vehiclemounted signs will be WET PAINT 🛨 covered or turned from view when work is not PASS WITH CARE in progress. Shadow and Work vehicles -Shadow Vehicle will display high-intensity -Arrow Board rotating, flashing, oscillating, < < < or strobe lights, flags, signs, or arrow boards. Truck Mounted Attenuator Vehicle hazard warning signals will not be used instead of the vehicle's high-intensity rotating, WET PAINT flashing, oscillating, PASS WITH CAR or strobe lights. Arrow boards will, as a minimum, be Type B, with a size of 60" x 30". -Shadow Vehicle All costs associated with Arrow Board < < < the traffic control for mobile operation including signs, arrow boards and equipment Truck Mounted Attenuator will be incidental to the contract (Optional) lump sum price for "Traffic Control, Miscellaneous". WET PAINT 🖈 PASS WITH CARE January 22, 2021 S D D PLATE NUMBER **MOBILE OPERATIONS ON** 634.08 **MULTI-LANE HIGHWAYS** 0 Published Date: 2025 Sheet I of I

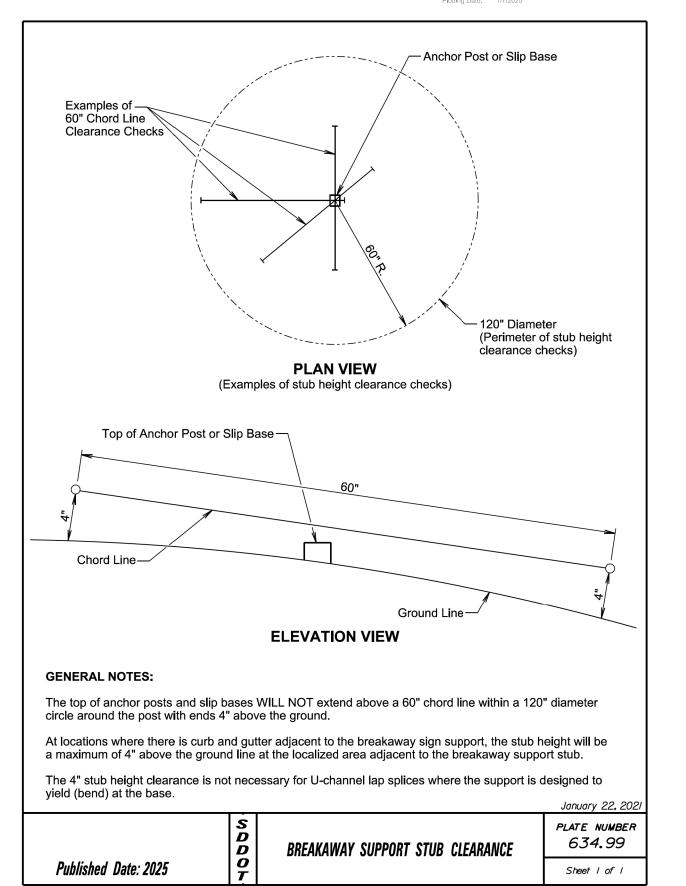


Posted Spacing of Advance Warning Prior to Work (Feet) (M.P.H.) (A) (B) (C)  0 - 30		MIC RICH CL AI	EED **  T LANE OSED SED SED SED SED SED SED SED SED SED
Published Date: 2025	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63  Sheet I of 2



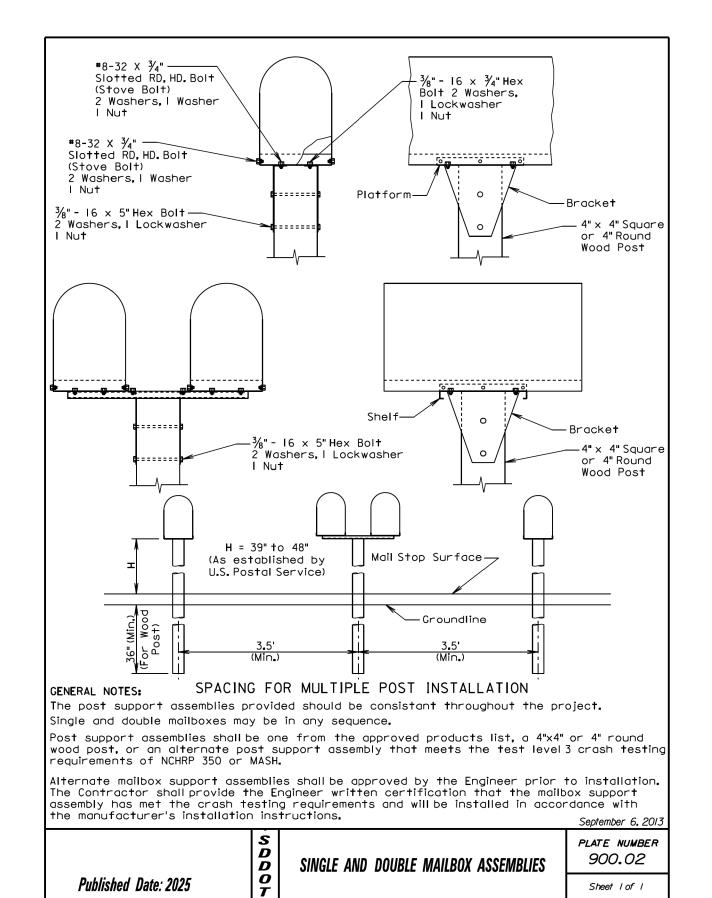




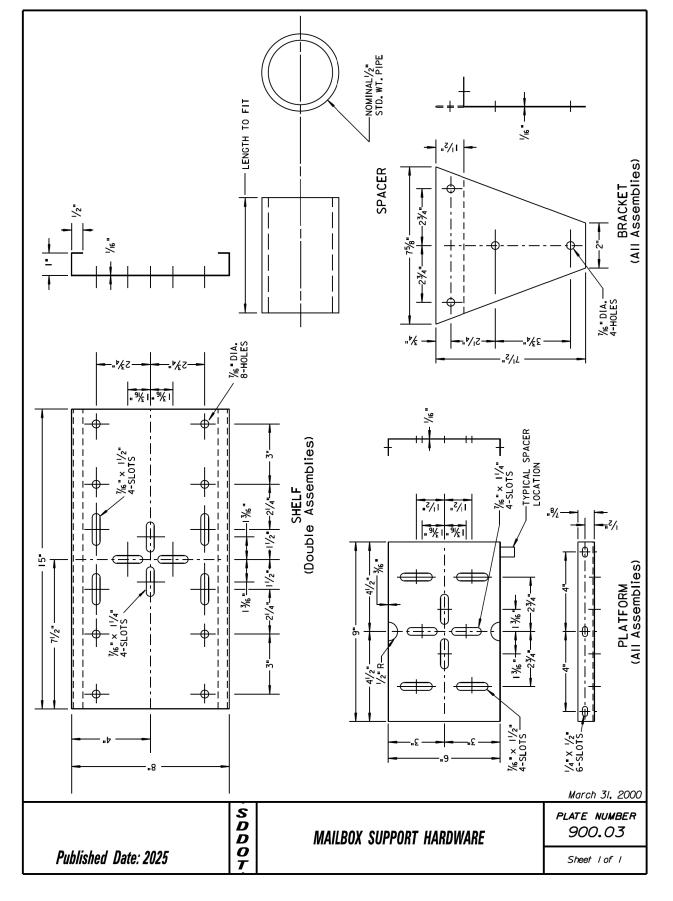


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Published Date: 2025