

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0042(69)333	1	48

Plotting Date: 09/27/2016

PLANS FOR PROPOSED
PROJECT P 0042(69)333

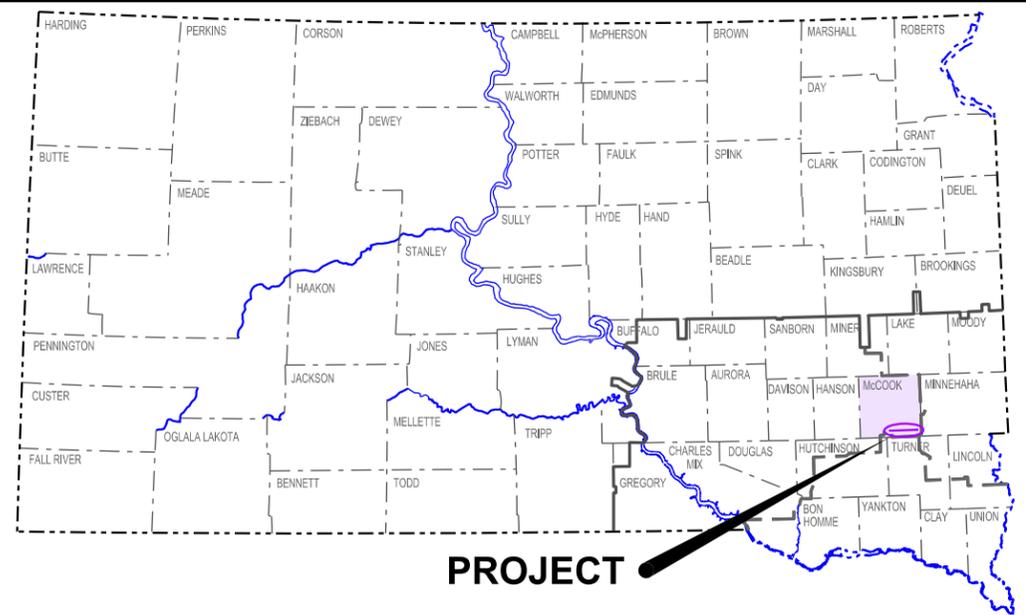
SD HIGHWAY 42
McCOOK COUNTY

COLD MILLING ASPHALT CONCRETE AND
PLACING COLD MILLED MATERIAL,
ASPHALT CONCRETE RESURFACING
& GUARDRAIL
PCN 05Q5

INDEX OF SHEETS

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PLOT SCALE - 1" = 7000'



PROJECT



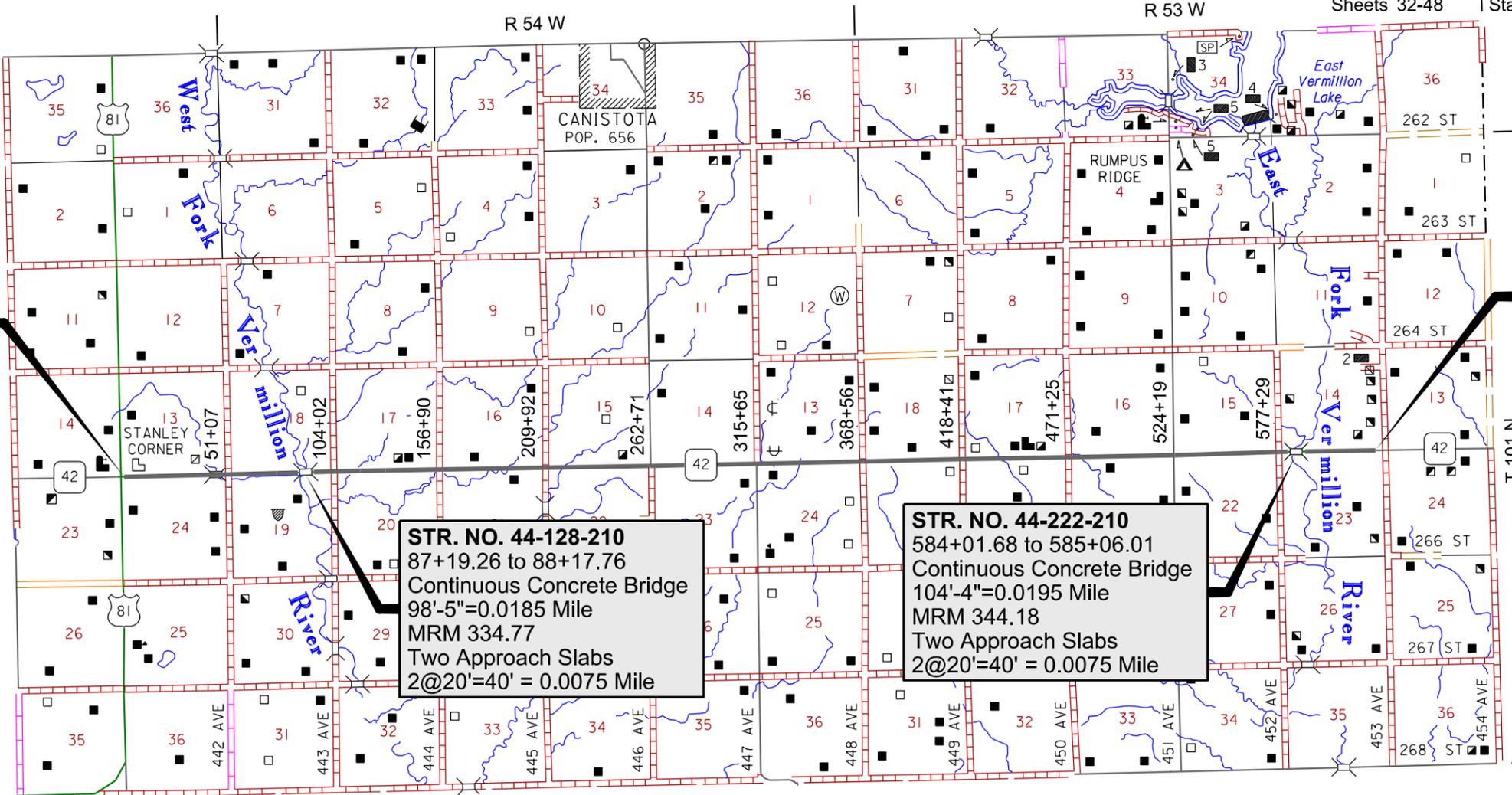
BEGIN PROJECT
STA. 0+00
MRM 333.05 +0.023
At End Concrete 120' E
of Centerline Jct US81

END PROJECT
STA. 630+20
MRM 344.18 +0.830
220' W of Centerline
Jct 453rd Avenue

DESIGN DESIGNATION

ADT(2015)	1,428
ADT(2035)	1,856
DHV	243
D	52%
T DHV	4.8%
T ADT	10.6%
V	65 MPH

STORM WATER PERMIT
(None required)



STR. NO. 44-128-210
87+19.26 to 88+17.76
Continuous Concrete Bridge
98'-5"=0.0185 Mile
MRM 334.77
Two Approach Slabs
2@20'=40' = 0.0075 Mile

STR. NO. 44-222-210
584+01.68 to 585+06.01
Continuous Concrete Bridge
104'-4"=0.0195 Mile
MRM 344.18
Two Approach Slabs
2@20'=40' = 0.0075 Mile

PROJECT LENGTH

Gross Length:	630,20.00'	11.936 Miles
Bridge/Apprs Length:	282.83'	0.054 Mile
Net Length:	62737.17	11.882 Miles

5

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ESTIMATE OF QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0042(69)333	2	48

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0730	Remove Beam Guardrail	600.0	Ft
110E0800	Remove W Beam Guardrail End Terminal	8	Each
110E7150	Remove Sign for Reset	4	Each
120E0010	Unclassified Excavation	566	CuYd
120E0100	Unclassified Excavation, Digouts	594	CuYd
120E0600	Contractor Furnished Borrow Excavation	1,285	CuYd
120E6100	Water for Embankment	19.0	MGal
120E6200	Water for Granular Material	110.0	MGal
260E1010	Base Course	4,047.0	Ton
320E0007	PG 64-28 Asphalt Binder	2,518.9	Ton
320E1002	Class Q2 Hot Mixed Asphalt Concrete	43,861.0	Ton
320E4000	Hydrated Lime	434.4	Ton
320E7008	Grind 8" Rumble Strip or Stripe in Asphalt Concrete	3.2	Mile
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	20.6	Mile
330E0010	MC-70 Asphalt for Prime	99.7	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	176.7	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	56.4	Ton
330E2000	Sand for Flush Seal	681.0	Ton
332E0100	Cold Milling Asphalt Concrete and Placing Cold Milled Material	193,922	SqYd
380E6500	Planing PCC Pavement	283.4	SqYd
600E0300	Type III Field Laboratory	1	Each
629E0100	3 Cable Guardrail	295	Ft
629E0300	3 Cable Guardrail Slip Base Anchor Assembly	1	Each
629E0400	3 Cable Guardrail Anchor Assembly	1	Each
630E1010	Straight Class A W Beam Guardrail with Wood Posts	125.0	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
630E2015	W Beam Guardrail Flared End Terminal	7	Each
630E2030	W Beam Guardrail Breakaway Cable Terminal	1	Each
632E2220	Guardrail Delineator	35	Each
632E2510	Type 2 Object Marker Back to Back	1	Each
632E2520	Type 2 Object Marker	37	Each
632E3500	Reset Sign	4	Each
633E1300	Pavement Marking Paint, White	407	Gal
633E1305	Pavement Marking Paint, Yellow	101	Gal
634E0010	Flagging	740.0	Hour
634E0020	Pilot Car	380.0	Hour
634E0110	Traffic Control Signs	760.8	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0630	Temporary Pavement Marking	47.5	Mile
734E0010	Erosion Control	Lump Sum	LS
831E0300	Reinforcement Fabric (MSE)	1,352	SqYd
900E0010	Refurbish Single Mailbox	2	Each

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
900E0012	Refurbish Double Mailbox	1	Each
900E1980	Storage Unit	1	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

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0042(69)333	3	48

ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived 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. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

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 pit, or staging site associated with the project, cease construction activities in the affected area until the Whooping Crane departs and contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

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 C: WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

Action Taken/Required:

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor shall 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) shall be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall 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 Project Engineer.

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the Public ROW through the use of 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 of time not to exceed the duration of the project. Prior to project completion, the waste shall 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.

Cost 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) shall be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical 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 review of cultural resources impacts. 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 shall arrange and pay for a cultural resource survey and/or records search. 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; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on 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 shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). 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.

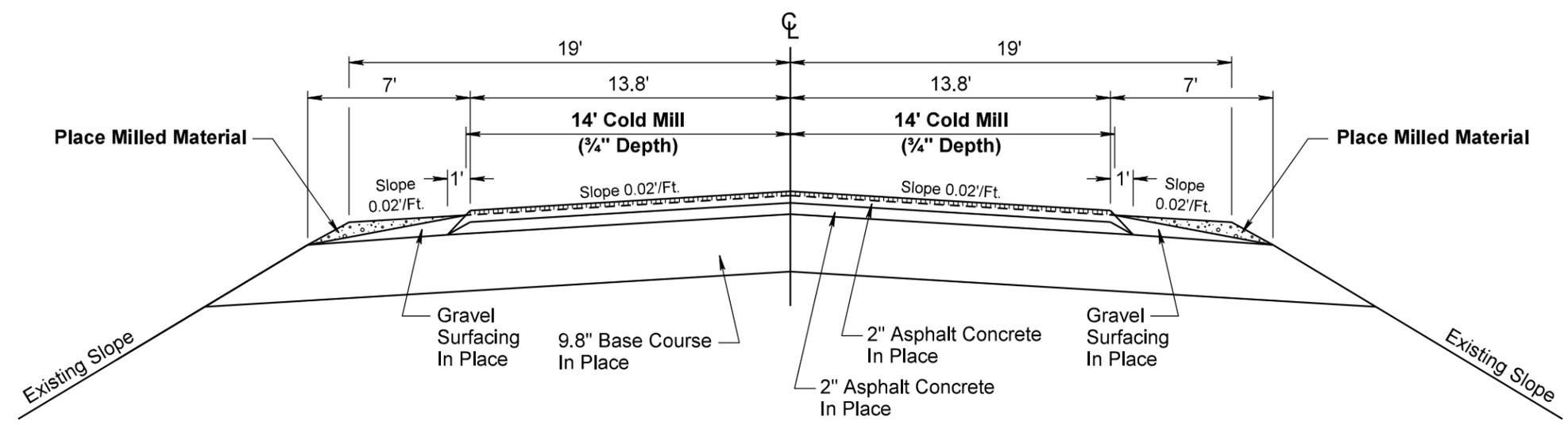
If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

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 shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

TYPICAL COLD MILLING SECTION

SECTION 1

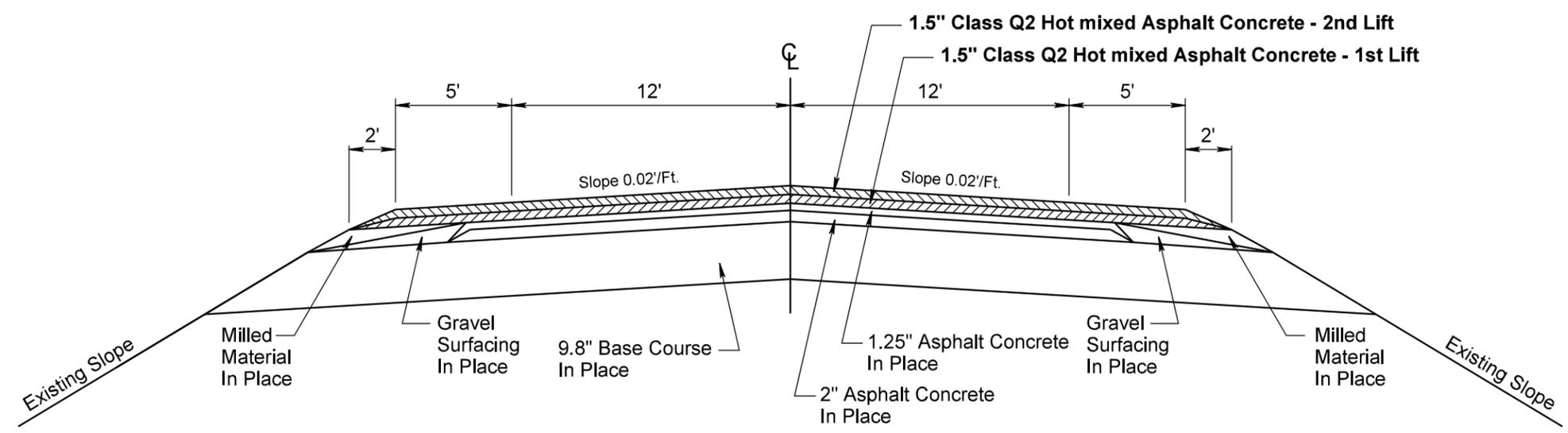
0+00 to 87+19.26
118+27.83 to 574+31.50



TYPICAL RESURFACING SECTION

SECTION 1

0+00 to 87+19.26
118+27.83 to 574+31.50



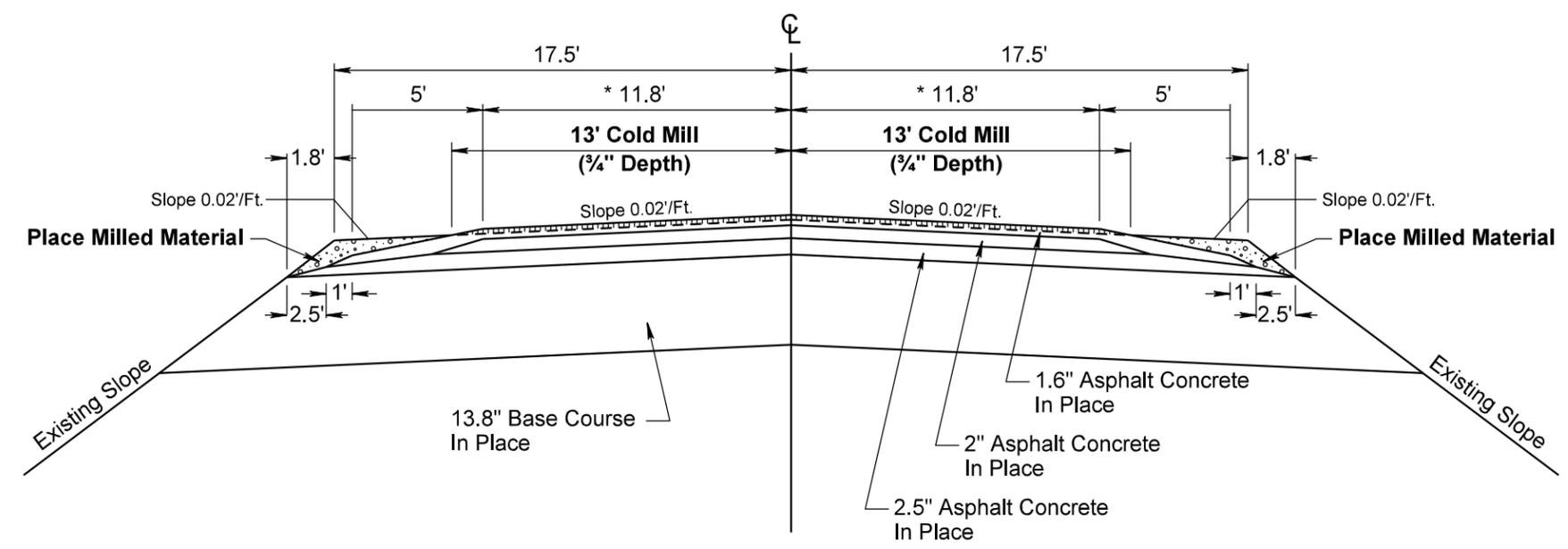
TYPICAL COLD MILLING SECTION

SECTION 2

87+19.26 to 118+27.83

TRANSITIONS

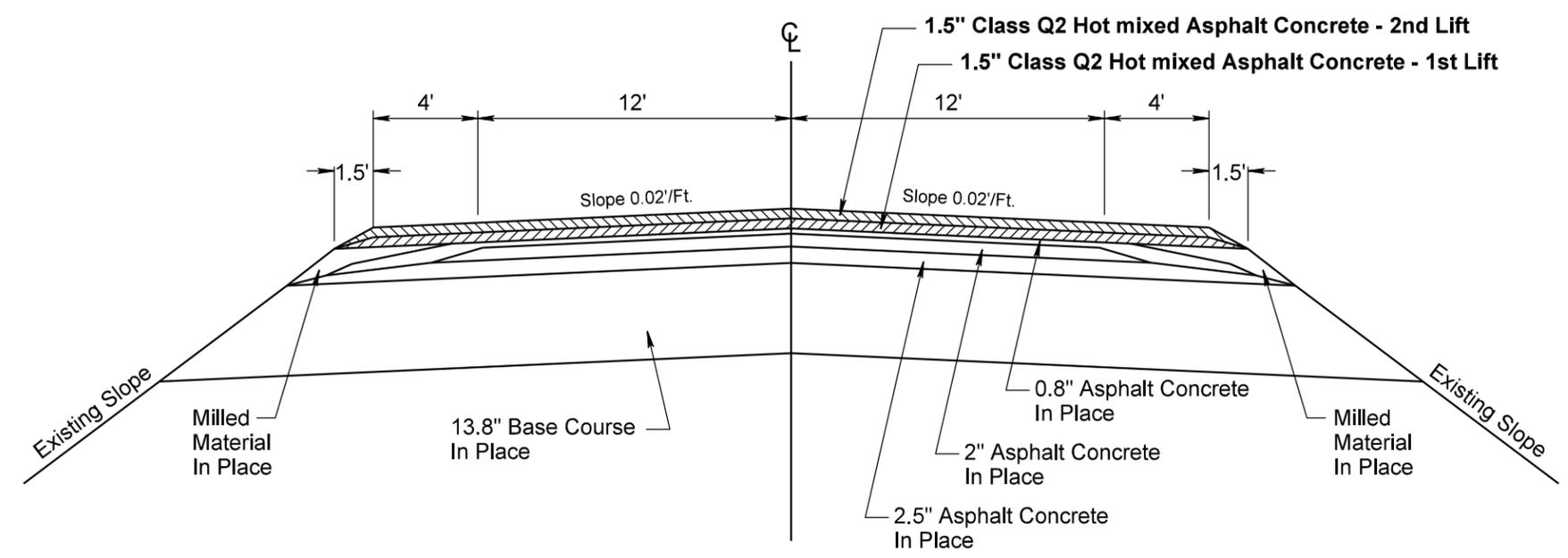
* 117+29.40 to 118+27.83 - 11.8' to 13.8'



TYPICAL RESURFACING SECTION

SECTION 2

87+19.29 to 118+27.83



PLOT SCALE - 1:6.25

PLOT NAME - 3

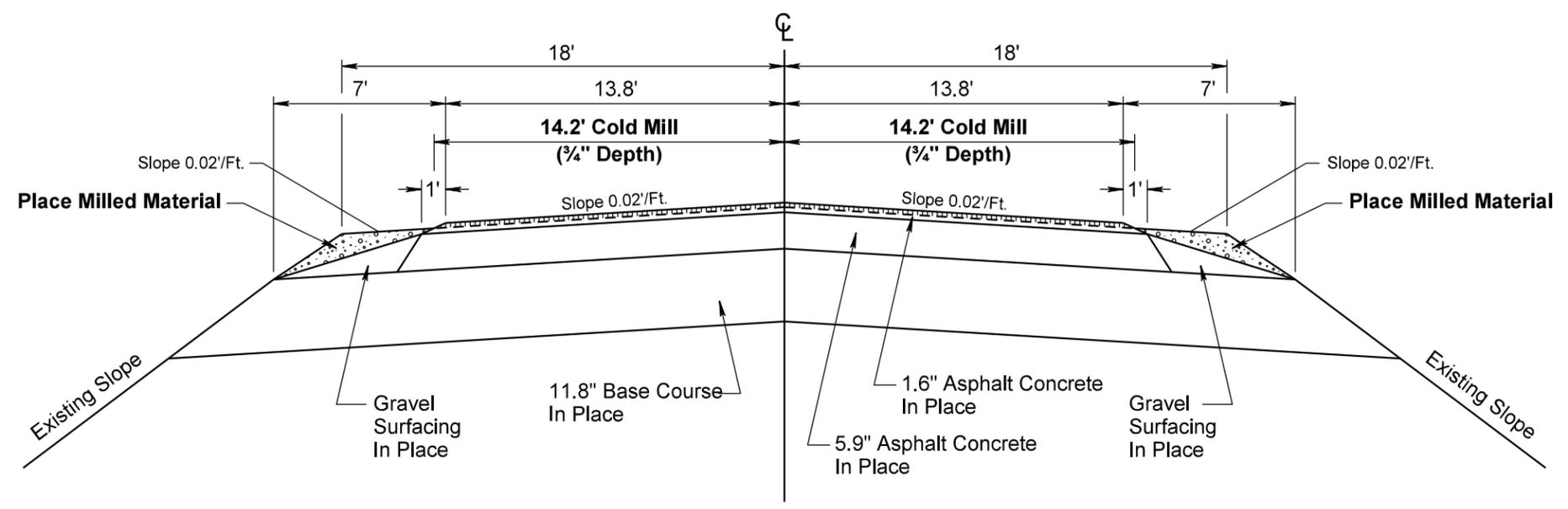
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TYPICAL COLD MILLING SECTION

SECTION 3

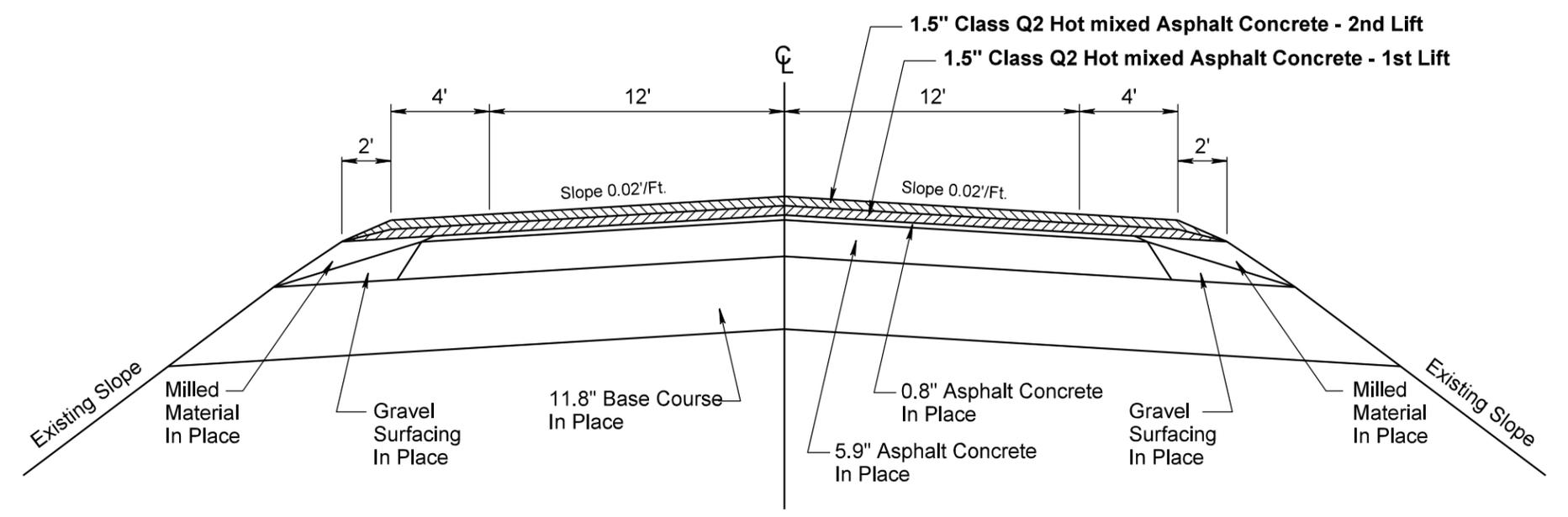
574+31.50 to 588+95



TYPICAL RESURFACING SECTION

SECTION 3

574+31.50 to 588+95



PLOT SCALE - 1:6.25

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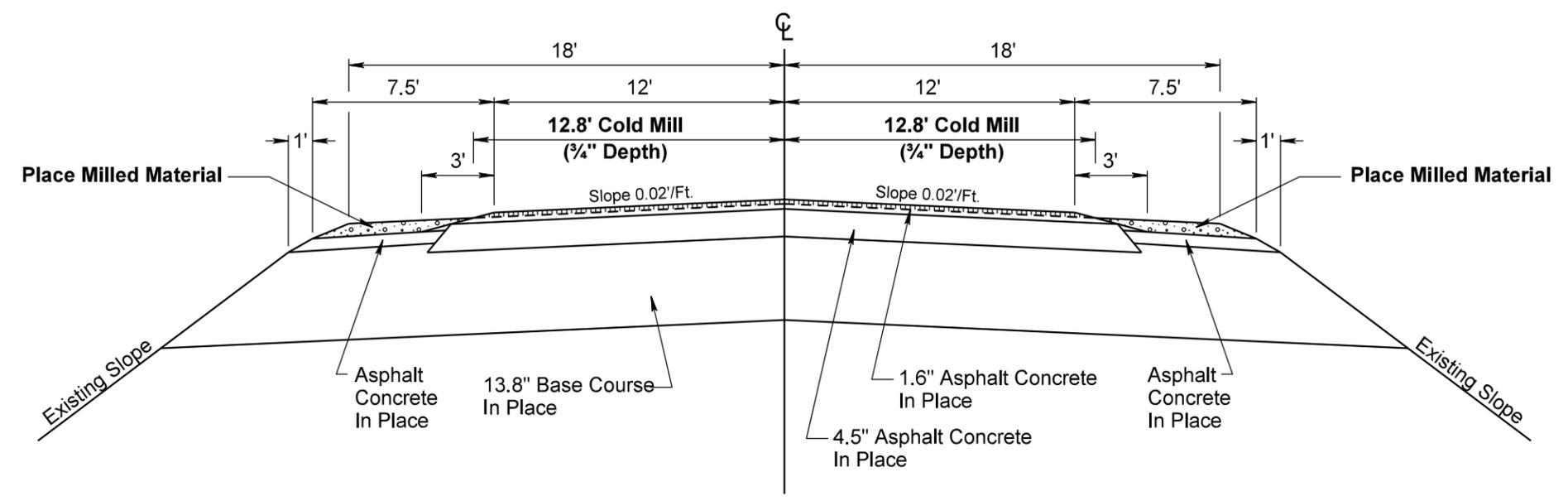
PLOT NAME - 4

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TYPICAL COLD MILLING SECTION

SECTION 4

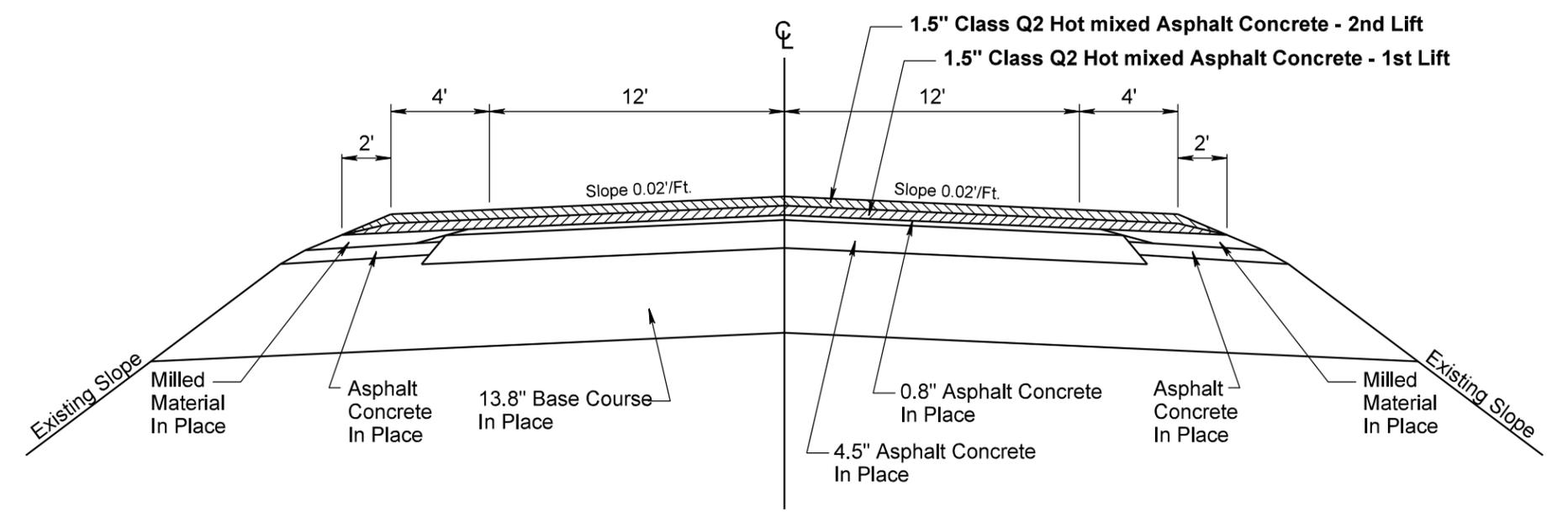
588+95 to 630+20



TYPICAL RESURFACING SECTION

SECTION 4

588+95 to 629+50.86



PLOT SCALE - 1:6.25

PLOTTED FROM - TRMLINT16

PLOT NAME - 5

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RATES OF MATERIALS

Section 1
2 Lane Rural
0+00.00 to 87+19.26 (less 20' for one bridge approach slab)
118+27.83 to 574+31.50

* Includes West Approach Slab

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

PLACING COLD MILLED MATERIAL

Water for Granular Material 5.2 MGals

1.5" CLASS Q2 HOT MIXED ASPHALT CONCRETE 1ST LIFT

Crushed Aggregate 1656 Tons
PG 64-28 Asphalt Binder 102 Tons

TOTAL: 1758 Tons

Hydrated Lime 18 Tons

TOTAL: 1776 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 8.8 tons applied 39 feet wide (Rate = 0.09 gallon per square yard).

MC-70 Asphalt for Prime at the rate of 8.4 tons applied 12 feet wide (6 feet wide each shoulder) (Rate = 0.3 gallon per square yard).

1.5" CLASS Q2 HOT MIXED ASPHALT CONCRETE 2ND LIFT

Crushed Aggregate 1656 Tons
PG 64-28 Asphalt Binder 102 Tons

TOTAL: 1758 Tons

Hydrated Lime 18 Tons

TOTAL: 1776 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 5.8 tons applied 39 feet wide (Rate = 0.06 gallon per square yard).

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 4.7 tons applied 38 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 56 tons applied 24 feet wide (Rate = 8 pounds per square yard).

Section 2
2 Lane Rural
87+19.26 to 118+27.83 (less 118.5' for one bridge)
* Includes East Approach Slab

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

PLACING COLD MILLED MATERIAL

Water for Granular Material 0.11 MGal

1.5" CLASS Q2 HOT MIXED ASPHALT CONCRETE 1ST LIFT

Crushed Aggregate 29.19 Tons
PG 64-28 Asphalt Binder 1.80 Tons

TOTAL: 30.99 Tons

Hydrated Lime 0.31 Ton

TOTAL: 31.30 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.15 ton applied 36 feet wide (Rate = 0.09 gallon per square yard).

MC-70 Asphalt for Prime at the rate of 0.18 ton applied 13 feet wide (6.5 feet wide each shoulder) (Rate = 0.3 gallon per square yard).

1.5" CLASS Q2 HOT MIXED ASPHALT CONCRETE 2ND LIFT

Crushed Aggregate 29.19 Tons
PG 64-28 Asphalt Binder 1.80 Tons

TOTAL: 30.99 Tons

Hydrated Lime 0.31 Ton

TOTAL: 31.30 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.1 ton applied 36 feet wide (Rate = 0.06 gallon per square yard).

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.08 ton applied 35 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 1.07 tons applied 24 feet wide (Rate = 8 pounds per square yard).

RATES OF MATERIALS

Section 3
2 Lane Rural
574+31.50 to 588+95.00 (less 144.33' for one bridge)
* Includes Approach Slabs

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

PLACING COLD MILLED MATERIAL

Water for Granular Material 0.15 MGal

1.5" CLASS Q2 HOT MIXED ASPHALT CONCRETE 1ST LIFT

Crushed Aggregate 29.63 Tons
PG 64-28 Asphalt Binder 1.82 Tons

TOTAL: 31.45 Tons

Hydrated Lime 0.31 Ton

TOTAL: 31.76 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.16 ton applied 37 feet wide (Rate = 0.09 gallon per square yard).

MC-70 Asphalt for Prime at the rate of 0.1 ton applied 8 feet wide (4 feet wide each shoulder) (Rate = 0.3 gallon per square yard).

1.5" CLASS Q2 HOT MIXED ASPHALT CONCRETE 2ND LIFT

Crushed Aggregate 29.63 Tons
PG 64-28 Asphalt Binder 1.82 Tons

TOTAL: 31.45 Tons

Hydrated Lime 0.31 Ton

TOTAL: 31.76 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.1 ton applied 37 feet wide (Rate = 0.06 gallon per square yard).

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.09 ton applied 36 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 1.07 tons applied 24 feet wide (Rate = 8 pounds per square yard).

Section 4
588+95.00 to 630+20.00

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

PLACING COLD MILLED MATERIAL

Water for Granular Material 0.11 MGal

1.5" CLASS Q2 HOT MIXED ASPHALT CONCRETE 1ST LIFT

Crushed Aggregate 29.63 Tons
PG 64-28 Asphalt Binder 1.82 Tons

TOTAL: 31.45 Tons

Hydrated Lime 0.31 Ton

TOTAL: 31.76 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.16 ton applied 37 feet wide (Rate = 0.09 gallon per square yard).

MC-70 Asphalt for Prime at the rate of 0.16 ton applied 12 feet wide (6 feet wide each shoulder) (Rate = 0.3 gallon per square yard).

1.5" CLASS Q2 HOT MIXED ASPHALT CONCRETE 2ND LIFT

Crushed Aggregate 29.63 Tons
PG 64-28 Asphalt Binder 1.82 Tons

TOTAL: 31.45 Tons

Hydrated Lime 0.31 Ton

TOTAL: 31.76 Tons

The exact proportions of these materials will be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.1 ton applied 37 feet wide (Rate = 0.06 gallon per square yard).

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.09 ton applied 36 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 1.07 tons applied 24 feet wide (Rate = 8 pounds per square yard).

TABLE OF PROJECT STATIONING

SECTION	STATION TO	STATION	DESCRIPTION	LENGTH	GROSS SECTION LENGTHS	BRIDGE LENGTHS		NET SECTION LENGTHS		
						Includes Approach Slabs				
1	0+00.00 to	87+19.26	2 Lane Rural	8719.26'	54322.93'	20.00'		54302.93'	10.285 mi.	
	118+27.83 to	574+31.50		45603.67'						
2	87+19.26 to	118+27.83	2 Lane Rural	3108.57'	3108.57'	118.50'		2990.07'	0.566 mi.	
3	574+31.50 to	588+95.00	2 Lane Rural	1463.50'	1463.50'	144.33'		1319.17'	0.250 mi.	
4	588+95.00 to	630+20.00	Description	4125.00'	4125.00'			4125.00'	0.781 mi.	
Grand Totals					63020.00'	11.936 mi.	282.83'	0.054 mi.	62737.17'	11.882 mi.

TABLE OF MATERIALS QUANTITIES

SECTION	PROJECT NO.	UNCL. EXC.	UNCL. EXC. DIG- OUTS	CONTRACTOR FURNISHED BORROW EXCAVATION	WATER FOR EMB.	BASE COURSE	WATER FOR GRAN. MATER.	PLANING PCC PAVEMENT	COLD MILLING ASPHALT CONCRETE AND PLACING COLD MILLED MATERIAL	CLASS Q2 HOT MIXED ASPHALT CONCRETE	PG 64-28 ASPHALT BINDER	HYDRATED LIME	MC-70 ASPH. FOR PRIME	SS-1h/ CSS-1h FOR TACK	SS-1h/ CSS-1h FOR FLUSH SEAL	SAND FOR FLUSH SEAL
		CuYd	CuYd	CuYd	MGal	Ton	MGal	SqYd	SqYd	Ton	Ton	Ton	Ton	Ton	Ton	Ton
1	P 0042(69)333	-	514	-	-	1029	65	-	168520	36532	2097.8	361.8	86.4	150.2	48.3	576
2	P 0042(69)333	-	28	-	-	57	4	-	8638	1872	107.6	18.6	5.4	7.5	2.4	32
3	P 0042(69)333	-	13	-	-	25	2	-	4163	838	48.2	8.2	1.3	3.4	1.2	14
4	P 0042(69)333	-	39	-	-	78	6	-	11733	2620	150.4	26.0	6.6	10.7	3.7	44
Subtotals:		-	594	-	-	1189	77	-	193054	41862	2404	414.6	99.7	171.8	55.6	666
Additional Quantities:		566	-	1285	19	2858	33	283.4	868	1999	114.9	19.8	-	4.9	0.8	15
Totals:		566	594	1285	19	4047	110	283.4	193922	43861	2518.9	434.4	99.7	176.7	56.4	681

TABLE OF ADDITIONAL QUANTITIES

LOCATION	UNCL. EXC.	CONTRACTOR FURNISHED BORROW EXCAVATION	WATER FOR EMB.	BASE COURSE	WATER FOR GRAN. MATER.	PLANING PCC PAVEMENT	COLD MILLING ASPHALT CONCRETE AND PLACING COLD MILLED MATERIAL	CLASS Q2 HOT MIXED ASPHALT CONCRETE	PG 64-28 ASPHALT BINDER	HYDRATED LIME	SS-1h/ CSS-1h ASPH. FOR FLUSH SEAL	SAND FOR FLUSH SEAL
	CuYd	CuYd	MGal	Ton	MGal	SqYd	SqYd	Ton	Ton	Ton	Ton	Ton
Bridge Ends	566	-	6	1204	14	283.4	-	183	10.6	1.8	-	-
Guardrail Locations See Guardrail Table	-	1285	13	335	4	-	736	142	8.2	1.4	-	-
7 Mailbox Turnouts	-	-	-	35	-	-	-	17	1.0	0.2	-	-
Resurface to ROW 4 Intersecting Roads	-	-	-	-	-	-	132	124	7.1	1.2	0.21	4
Resurface to End of Radius 18 Intersecting Roads	-	-	-	324	3	-	-	344	19.8	3.4	0.58	11
Pads												
7 Double Approaches	-	-	-	168	2	-	-	-	-	-	-	-
2 Commercial Entrances	-	-	-	72	1	-	-	-	-	-	-	-
15 Farm Entrances	-	-	-	180	2	-	-	-	-	-	-	-
45 Field Entrances	-	-	-	540	7	-	-	-	-	-	-	-
TOTALS:	566	1285	19	2858	33	283.4	868	810	46.7	8.0	0.8	15

NOTES: 1.9 ton(s) of SS-1h or CSS-1h Asphalt for Tack is(are) included in the Estimate of Quantities and shall be applied at the rate shown on the plans as directed by the Engineer.

The tonnage shown above for Base Course is based on a compacted depth of 12 inches for Bridge Ends; 4 inches for Guardrail Locations; 6 inches for the 3 Cable Location; 4 inches for Mailbox Turnouts; and 2.25 inches for other locations.

The tonnage shown above for Class Q2 Hot Mixed Asphalt Concrete is based on a compacted depth of 3 inches for Bridge Ends; 2 inches for Guardrail Locations; and 2.25" for Intersecting Roads.

The above quantities are included in the Estimate of Quantities.

SUMMARY OF ASPHALT CONCRETE

	CLASS Q2 HOT MIXED ASPHALT CONCRETE 1ST LIFT COMPACTION WITH SPECIFIED DENSITY TONS	CLASS Q2 HOT MIXED ASPHALT CONCRETE 1ST LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	CLASS Q2 HOT MIXED ASPHALT CONCRETE 2ND LIFT COMPACTION WITH SPECIFIED DENSITY TONS	CLASS Q2 HOT MIXED ASPHALT CONCRETE 2ND LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS
Section 1				
24' Finished Roadway Surface	12177	-	12177	-
Shoulders	-	6089	-	6089
Section 1 Totals:	12177	6089	12177	6089
Additional Quantities for spot leveling	-	1029	-	-
Section 2				
24' Finished Roadway Surface	670	-	670	-
Shoulders	-	266	-	266
Section 2 Totals:	670	266	670	266
Additional Quantities for spot leveling	-	57	-	-
Section 3				
24' Finished Roadway Surface	296	-	296	-
Shoulders	-	123	-	123
Section 3 Totals:	296	123	296	123
Additional Quantities for spot leveling	-	25	-	-
Section 4				
24' Finished Roadway Surface	925	-	925	-
Shoulders	-	385	-	385
Section 4 Totals:	925	385	925	385
Additional Quantities for spot leveling	-	78	-	-
Table of Additional Quantities				
Bridge Ends	-	-	183	-
Table of Additional Quantities except items listed above	-	-	-	627
Additional Totals:	-	-	183	627
P 0042(69)333 Totals:	14068	8052	14251	7490

P 0042(69)333	28319	TONS ASPHALT CONCRETE WITH SPECIFIED DENSITY COMPACTION
	15542	TONS ASPHALT CONCRETE WITHOUT SPECIFIED DENSITY COMPACTION
	43861	TONS TOTAL

TABLE FOR REMOVAL AND INSTALLATION OF GUARDRAIL AND RELATED ITEMS

LOCATION	REMOVE BEAM GUARDRAIL	REMOVE W BEAM GUARDRAIL END TERMINAL	CONTRACTOR FURNISHED BORROW EXCAVATION	BASE COURSE	CLASS Q2 HOT MIXED ASPHALT CONCRETE 2ND LIFT	3 CABLE GUARDRAIL	3 CABLE GUARDRAIL SLIP BASE ANCHOR ASSEMBLY	3 CABLE GUARDRAIL ANCHOR ASSEMBLY	STRAIGHT CLASS A W BEAM GUARDRAIL WITH WOOD POSTS	STRAIGHT CLASS B W BEAM GUARDRAIL WITH WOOD POSTS	STRAIGHT DOUBLE CLASS B W BEAM GUARDRAIL WITH WOOD POSTS	W BEAM GUARDRAIL FLARED END TERMINAL	W BEAM GUARDRAIL BREAKAWAY CABLE TERMINAL					
														Ft	Each	CuYd	Ton	Ton
STR.NO. 44-128-210 STA. 87+19.26 to 88+17.76 MRM 334.77																		
Begin Bridge L	WBL								12.5	12.5	12.5	1	-					
Begin Bridge R	EBL								25	12.5	12.5	1	-					
End Bridge L	WBL								25	12.5	12.5	1	-					
End Bridge R	EBL								12.5	12.5	12.5	1	-					
STR.NO. 44-222-210 STA. 584+01.68 to 585+06.01 MRM 344.18																		
Begin Bridge L	WBL								12.5	12.5	12.5	1	-					
Begin Bridge R	EBL					295	1	1	12.5	12.5	12.5	-	1					
End Bridge L	WBL								12.5	12.5	12.5	1	-					
End Bridge R	EBL								12.5	12.5	12.5	1	-					
TOTALS:						600	8	1285	335	142	295	1	1	125	100	100	7	1

TABLE OF GUARDRAIL DELINEATORS & OBJECT MARKERS

TABLE FOR MAINLINE CULVERT REQUIRING TYPE 2 OBJECT MARKERS

LOCATION	TYPE 2 OBJECT MARKER BACK TO BACK	TYPE 2 OBJECT MARKER	GUARDRAIL TERMINAL END OBJECT MARKER (ADHESIVE)	GUARDRAIL DELINEATOR			
				BEAM		CABLE	
				N.A.B.I.		N.A.B.I.	
				(M) #	(M) #	(E) #	(B) #
BRIDGE CORNER	LANE			Yellow	White	Yellow	White
STR.NO. 44-128-210 STA. 87+19.26 to 88+17.76 MRM 334.77							
Begin Bridge L	WBL		1		4		
Begin Bridge R	EBL		1		4		
End Bridge L	WBL		1		4		
End Bridge R	EBL		1		4		
STR.NO. 44-222-210 STA. 584+01.68 to 585+06.01 MRM 344.18							
Begin Bridge L	WBL		1		4		
Begin Bridge R	EBL	1	1		2		5
End Bridge L	WBL		1		4		
End Bridge R	EBL		1		4		
STR.NO. Pipe Culvert Ends							
			37				
TOTALS	1	37	8	-	30	-	5

Station	CULVERT	TYPE 2 OBJECT MARKERS (SINGLE)
		EACH
22+67	TWIN 36" x 80' RCP 2 FE	1 Rt.
45+84	2-9' x 4' x 139' RC Box Culvert	4
155+34	36" x 150' RCP 2 FE 26° LHF Skew	4
181+86	10' x 5' x 144' RC Box Culvert	4
218+05	2-9' x 4' x 139' RC Box Culvert	4
323+86	TRIPLE 48" x 84' RCP 2 FE	4
337+11	TWIN 42" x 84' RCP 4 FE	4
382+19	42" x 84' RCP 2 FE	4
438+68	60" x 84' RCP 2 FE	4
477+73	2 - 7' x 4' x 98' RC Box Culvert	4
TOTALS:		37

- For KEY, Refer to Standard Plate 632.40 - Sheet 1 of 4.

N.A.B.I. = Not A Bid Item - Cost is incidental to the contract unit prices for the various items.

UTILITIES

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

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area, the Contractor shall contact the Project Engineer to determine modifications that will be necessary to avoid utility impacts.

SURFACING/SUBGRADE INVESTIGATION

A copy of the surfacing/subgrade investigation for this project is available from the Mitchell Area and the Mitchell Region Offices.

SURFACING THICKNESS DIMENSIONS

Plans tonnage will be applied even though the thickness may vary from that shown on the plans.

At those locations where material must be placed to achieve a required elevation, plans tonnage may be varied to achieve the required elevation.

TYPE III FIELD LABORATORY

The lab shall be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection shall be provided with a multi-port wireless router. The internet connection shall be a minimum speed of 512 Kb unless limited by job location and approved by the DOT. Prior to installing the wireless router the Contractor shall submit the wireless router's technical data to the Area Office to check for compatibility with the state's computer equipment. The internet connection is intended for state personnel usage only. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer.

The Contractor shall submit a copy of each monthly bill for calls charged to this phone at the end of each month. The Project Engineer will then audit the bills to ensure all calls are legitimate and then initiate a Construction Change Order (CCO) to reimburse the Contractor for the actual phone calls made, including local and long distance calls. 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 shall be incidental to the contract unit price per each for Type III Field Laboratory.

INTERSECTING ROADS AND ENTRANCES

Intersecting roads and entrances shall be satisfactorily cleared of vegetation, shaped and compacted prior to placement of mainline surfacing. This work will be considered incidental to other contract items. Separate measurement and payment will not be made.

SHOULDER WORK

Prior to construction, Department of Transportation Maintenance Forces will spray the shoulders to kill existing vegetation. It is the Contractor's responsibility to notify the State a minimum of thirty days prior to starting work on the surface of the highway. The State assumes no responsibility for the effectiveness of the herbicide applied.

Vegetation and accumulated material on or adjacent to the existing roadway edge shall be removed to the satisfaction of the Engineer prior to asphalt concrete resurfacing. Any remaining windrow of accumulated material shall be spread evenly on the inslope adjacent to the asphalt shoulder, to the satisfaction of the Engineer, following application of the flush seal.

Shoulder work shall be incidental to other contract items. Separate measurement and payment will not be made.

STORAGE UNIT

The Contractor shall provide a storage unit such as a portable storage container or a semi-trailer meeting the minimum size requirements from the table below:

Project Total Asphalt Concrete Tonnage	Minimum Internal Size (Cu Ft)	Minimum External Size (L x W x H)
Less than 50,000 ton	1,166	20' x 8' x 8.6' std
More than 50,000 ton	2,360	40' x 8' x 8.6' std
All Gyrotory Controlled QC/QA Projects	2,360	40' x 8' x 8.6' std

The storage unit is intended for use only by the Engineer for the duration of the project. The QC lab personnel or the Contractor will not be allowed to use the storage container while it is on the project, without permission of the Engineer.

The storage unit shall be on site and operational prior to asphalt concrete production. Upon completion of asphalt concrete production, the Engineer will notify the Contractor when the storage unit can be removed from the project. The storage unit use will not exceed 30 calendar days from the completion of asphalt concrete production. The storage unit will remain the property of the Contractor.

The storage unit shall be weather proof and shall be set in a level position. The storage unit shall be able to be locked with a padlock.

The storage unit shall be placed adjacent to the QA lab, as approved by the Engineer.

The following shall apply when the storage unit provided on the project is a portable storage container:

1. The portable storage container shall be constructed of steel.
2. The portable storage container shall be set such that it is raised above the surrounding ground level to keep water from ponding under or around the storage container.

The following shall apply when the storage unit provided on the project is a semi-trailer:

1. A set of steps and hand railings shall be provided at the exterior door.
2. If the floor of the semi-trailer is 18 inches or more above the ground, a landing shall be constructed at the exterior door. The minimum dimensions for the landing shall be 4 feet by 5 feet. The top of the landing shall be level with the threshold or opening of the doorway.
3. The semi-trailer may be connected to the QA lab by a stable elevated walkway. The walkway shall be a minimum of 48 inches wide and contain handrails installed at 32 inches above the deck of the walkway. The walkway shall be constructed such that it is stable and the deck does not deform during use and allows for proper door operation. Walkway construction shall be approved by the Engineer.

All cost for furnishing, maintaining, and removing the storage unit including labor, equipment, and materials including any necessary walkways, landings, stairways, and handrails shall be included in the contract unit price per each for "Storage Unit".

CONTRACTOR FURNISHED BORROW EXCAVATION

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

Prior to placement or removal of fill material, the Contractor will be required to remove four inches of topsoil and replace it following the placement of the new fill material. Removing and replacing topsoil will not be measured for payment but shall be incidental to the contract unit price per cubic yard for Contractor Furnished Borrow Excavation.

The Contractor will be allowed to place topsoil in lieu of fill material if the fill depth is one foot or less. By doing this the Contractor will not be required to remove and replace the four inches of in place topsoil.

Compaction of the fill material shall be to the satisfaction of the Engineer.

Cost for water shall be included in the contract unit price per MGal for Water for Embankment.

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

UNCLASSIFIED EXCAVATION

Compaction of the material reused from Unclassified Excavation shall be to the satisfaction of the Engineer.

EXCAVATION OF UNSTABLE MATERIAL

Included in the Estimate of Quantities are 50 cubic yards per mile of Unclassified Excavation, Dugouts for the necessary removal of unstable material.

Backfill shall be paid for at the contract unit price per ton for Base Course.

BASE COURSE

Material obtained from Cold Milling Asphalt Concrete and Placing Cold Milled Material operations may be used as Base Course except at Bridge Ends. However, if milled material is placed at intersecting roads and approaches/entrances, it must first be blended 50/50 with virgin Base Course at no additional cost for the blending.

Included in the Estimate of Quantities are 100 tons per mile of Base Course and 1.2 MGals per mile of Water for Granular Material for backfill of the Unclassified Excavation, Dugouts.

To ensure water can drain from the digout, the Base Course shall be placed so that it is daylighted to the inslope. If the material cannot be daylighted to the inslope, a drain tube shall be placed at the bottom of the digout and an outlet provided to the closest available point. Cost for the drain tube and associated work shall be incidental to the contract unit price per ton for Base Course.

WATER FOR COMPACTION

The moisture content for compaction of the Base Course shall be approximately optimum moisture of the material. The quantity for Water for Granular Material is based on 5% of the quantity of Base Course.

COLD MILLING ASPHALT CONCRETE AND PLACING COLD MILLED MATERIAL

The milled material shall meet the requirements of Section 884.

The Los Angeles Abrasion Loss value of the aggregate used for the in place asphalt concrete was 27 percent. This value was obtained from testing during construction of the in place asphalt concrete.

Cold Milling is estimated to produce 8034 tons of salvaged asphalt concrete material. An estimated 6556 tons of salvaged asphalt concrete will be placed on the shoulder with the Cold Milling Asphalt Concrete and Placing Cold Milled Material item. Of the remaining salvaged asphalt concrete, 1478 tons shall become the property of the Contractor. Estimated quantities are for information purposes only and the exact quantity will be determined upon construction. No allowance will be made for loss of expected reimbursement or loss of anticipated profit.

Cold Milling Asphalt Concrete and Placing Cold Milled Material may begin at either end of the project. Work may be extended beyond the adjacent driving lane by as much as one day's run. All milling equipment shall be moved back the following workday to mill the adjoining lane(s). The work shall be performed only during daylight hours.

Cold Milling Asphalt Concrete and Placing Cold Milled Material operations ahead of asphalt concrete laydown will be limited by particular job conditions and will be subject to approval of the Engineer. In no case shall cold milling and placing operations ahead of asphalt concrete laydown operations exceed seven calendar days.

Milled material achieved for project use and/or other uses is based on the dimensions given in the typical section. Field conditions will vary from that given in the typical section. Therefore, the Contractor will be required to adjust the mill depth, as necessary, to provide the quantity of milled material specified by the plans.

If resurfacing as per the typical section cannot be placed immediately after cold milling at project ends, bridge approaches, etc, then temporary asphalt mix ramps shall be placed as directed by the Engineer. Cost for placing and removing the temporary ramps shall be incidental to the contract unit prices for the various items.

Full width maintenance patches exist on SD42. At these locations, the Contractor will be required to mill a 40' long taper at both ends of the maintenance patch. Milling depth on the maintenance patch (between the tapers) will remain at the same depth shown on the typical section. Cost for milling these transitions shall be incidental to the contract unit price per square yard for Cold Milling Asphalt Concrete and Placing Cold Milled Material.

Asphalt concrete intersecting roads shall be milled in for approximately ten feet at the ROW line so that additional surfacing may be placed at these locations.

COLD MILLING TAPERS

In order to construct the new surfacing flush with the asphalt concrete, it will be necessary to taper the depth of milling according to the details for Cold Milling Tapers.

The surface shall be milled full roadway width.

Cost for this work shall be incidental to the contract unit price per square yard for Cold Milling Asphalt Concrete and Placing Cold Milled Material.

Taper depth of Cold Milling at locations shown below:

<u>SD42 STA</u>	<u>LOCATION</u>	<u>SIZE</u>
0+00	Begin Project	90' long X 30' wide
86+99.26	Begin Bridge Approach	229' long X 30' wide
88+37.76	End Bridge Approach	229' long X 38' wide
583+81.68	Begin Bridge Approach	229' long X 32' wide
585+26.01	End Bridge Approach	229' long X 32' wide
630+20	End Project	130' long X 30' wide

FLUSH SEAL

Application of the flush seal shall be completed within 10 working days following completion of the asphalt concrete resurfacing.

ADDITIONAL QUANTITIES

Included in the Estimate of Quantities are 100 tons of Class Q2 Hot Mixed Asphalt Concrete, 5.7 tons of PG 64-28 Asphalt Binder and 1.0 tons of Hydrated Lime per mile for spot leveling, strengthening and repair of the existing surface.

Included in the Estimate of Quantities are 3 tons of SS-1h or CSS-1h Asphalt for Tack for surface repair and leveling areas throughout the project. (Rate = 0.09 gallon per square yard).

RUMBLE STRIPS AND STRIPES

INSTALLATION:

Rumble strips and stripes shall be constructed according to the details of Standard Plate 320.20. and 320.24.

Rumble strips and stripes shall be installed in rural areas with posted speeds greater than 50 mph and are not required in urban areas. The rumble strips and stripes shall begin at the location of the Speed Limit 65 sign as traffic is departing the built up area of a community, unless otherwise specified in the plans. The Engineer shall provide the exact start and stop locations.

Rumble strips and stripes shall not be installed on bridge decks, through curb & gutter sections, through mailbox turnouts, through intersecting roads or through approaches. They also shall not be placed within 50 feet of any railroad crossing.

Gaps for rumble strips and stripes installation as detailed on the standard plates are included with the measurement and payment.

Cost for asphalt concrete rumble strips and stripes shall be included in the contract unit price per mile for Grind 8" and 12" Rumble Strip or Stripe in Asphalt Concrete.

ROADWAY CLEANING:

The Contractor shall be required to remove loose material from the driving surface and/or asphalt shoulders of the roadway. Loose material may be broomed to the edge of shoulders. It shall be the Contractor's responsibility to ensure the loose material does not enter any vegetated areas or waterways.

Cost for this work shall be incidental to the contract unit price per mile for Grind 8" and 12" Rumble Strip or Stripe in Asphalt Concrete.

RESETTING AND REFURBISH SINGLE AND DOUBLE MAILBOXES

Existing mailboxes shall be removed, turnouts constructed and mailboxes reset using existing posts and hardware or on new posts with the necessary support hardware for single or double mailbox assemblies. The table below shows which locations shall be reset or refurbished. The local Postmaster will determine the recommended mounting height of the mailboxes. The Contractor shall 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 each mailbox.

<u>STATION</u>	<u>BASE COURSE TON</u>	<u>CLASS Q2 HOT MIXED ASPHALT CONCRETE TONS</u>	<u>REFURBISH SINGLE MAILBOX EACH</u>	<u>REFURBISH DOUBLE MAILBOX EACH</u>	<u>REMOVE & RESET MAILBOX EACH</u>
39+88 L	5	2	-	-	1
84+59 R	-	-	-	-	-
152+90 R	5	3	-	-	1
169+80 R	5	3	-	-	1
193+37 R	5	2	1	-	-
396+87 L	-	-	-	-	-
456+53 L	5	2	-	-	1
491+45 L	5	3	-	1	-
558+94 R	5	2	1	-	-
TOTALS:	35	17	2	1	4

The Contractor will be responsible for maintaining a temporary mailbox assembly until the reset/refurbished mailbox assembly is complete in place.

Cost for removing existing mailboxes, providing temporary mailbox assemblies, and resetting mailboxes with new posts and necessary support hardware shall be incidental to the contract unit price per each for Refurbish Single Mailbox and Refurbish Double Mailbox.

Cost for removing existing mailboxes, providing temporary mailbox assemblies, and resetting mailboxes with existing posts and hardware shall be incidental to the contract unit prices for the various items.

EROSION CONTROL

The estimated area requiring erosion control is 0.7 acres. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, and mulching shall 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.

Permanent Seeding

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

Type C Permanent Seed Mixture shall consist of the following:

<u>Grass Species</u>	<u>Variety</u>	<u>Pure Live Seed (PLS) (Pounds/Acre)</u>
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana	16
Canada Wildrye	Mandan	2
Total:		18

MAINTENANCE OF TRAFFIC

Unless otherwise stated in these plans, no work will be allowed during hours of darkness. Traffic shall be returned to normal travel lanes at the end of each work day.

W8-15 Grooved Pavement signs with W8-15P Motorcycle supplemental plates are required in advance of areas that have been cold-milled and are not resurfaced the same day. The Grooved Pavement sign assemblies shall be installed a minimum 1000 ft. in advance of cold milled sections and remain in place until the sections have been resurfaced.

Sufficient traffic control devices have been included in these plans to sign one workspace. If the Contractor elects to work on additional sites simultaneously, the cost for additional traffic control devices shall be incidental to the contract unit price per square foot for Traffic Control.

Flagger and a pilot car shall be required when traffic must be routed out of the normal travel lane for a distance greater than the two flaggers are able to communicate with each other.

TEMPORARY PAVEMENT MARKING

The total length of no passing zone on this project is estimated to be 2.8 miles.

It is estimated that 13 DO NOT PASS and 12 PASS WITH CARE signs will be required to mark the no passing zones, should the Contractor elect to use these signs.

Temporary Flexible Vertical Markers (tabs) shall be required on the top lift of asphalt surfacing.

Four applications of temporary pavement marking are included in the estimate of quantities for completion of the milling, the first asphalt lift, the final asphalt lift, and uncovering the temporary flexible vertical markers (tabs) after application of the seal.

The Contractor shall remove and dispose of temporary flexible vertical markers (tabs) after Permanent Pavement Marking is applied. Removal shall be accomplished within one week of completion of the Permanent Pavement Marking.

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

PERMANENT PAVEMENT MARKING

The Contractor shall advise the Engineer a minimum of 3 weeks prior to the application of the permanent pavement marking to allow the State to check and mark the location of no passing zones.

The application of permanent pavement marking may not begin until 2 calendar days following completion of the flush seal and shall be completed within 14 calendar days following completion of the flush seal. If the flush seal is eliminated, the Contractor shall complete the application of permanent pavement marking paint no sooner than two calendar days, but within 14 calendar days following completion of final surfacing.

STOP AHEAD and STOP pavement marking messages shall be placed on the westbound leg of SD42 at the junction of US81, in accordance with the details in these plans. Rumble Strips shown on the same detail shall not be installed.

COLD WEATHER WATERBORNE PAINT

Waterborne paint applied after October 15 shall be formulated as cold-weather waterborne paint and shall be applied in accordance with the manufacturer's recommendations, including minimum temperature requirements.

Cold weather waterborne paint shall conform to Section 980 of the Specifications except for the following:

980.1: Resin Binder shall be FASTRACK™ XSRTM manufactured by Dow, or an approved equal.

980.1 A. Quantitative Requirements:

Pigment, percent by weight: 60.0 to 63.0 for white and 58.5 to 61.5 for yellow.

Pigment, percent by weight; tested in accordance with ASTM D3723: 60.0 to 63.0 for white and 56.1 to 59.2 for yellow.

Non-volatile Vehicle, percent by weight; tested in accordance with NIST 141C (Method 4051.1): 41.5 minimum for white and 41.5 minimum for yellow.

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	2	48" x 48"	16.0	32.0
W8-1	BUMP	6	48" x 48"	16.0	96.0
W8-11	UNEVEN LANES	6	48" x 48"	16.0	96.0
W8-15	GROOVED PAVEMENT	2	48" x 48"	16.0	32.0
W8-15P	MOTORCYCLE (plaque)	2	24" x 18"	3.0	6.0
W13-1P	ADVISORY SPEED (plaque)	6	30" x 30"	6.3	37.8
W20-1	ROAD WORK AHEAD	10	48" x 48"	16.0	160.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	10	48" x 48"	16.0	160.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
G20-1	ROAD WORK NEXT 12 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	8	36" x 18"	4.5	36.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					760.8

PAVEMENT MARKING

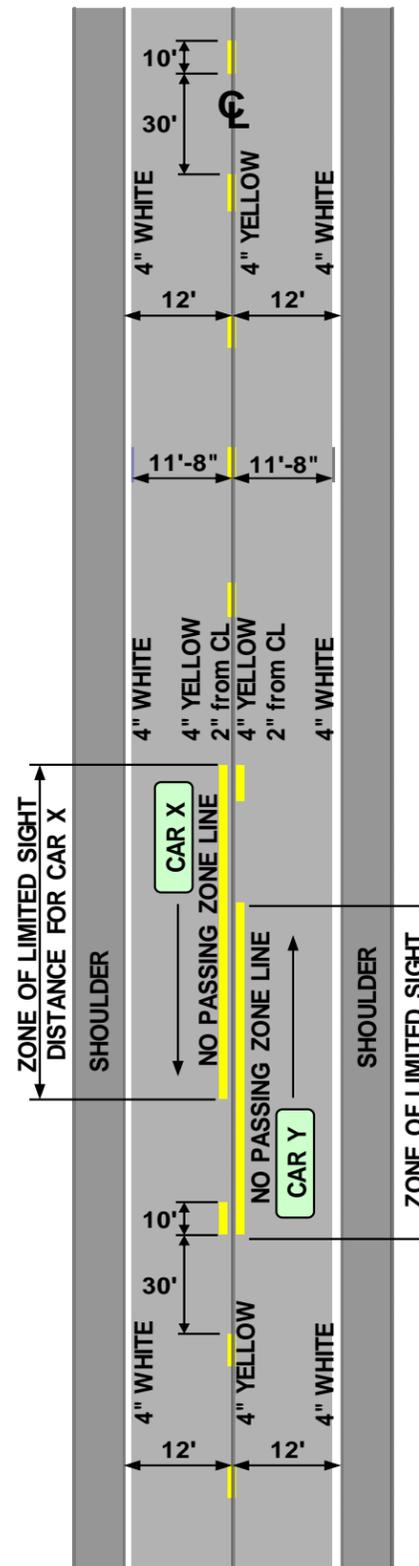
Typical pavement marking as shown on this sheet shall be applied throughout the entire length of two lane roadway.

Traffic Control shall be incidental to the cost of application. The striper and advance or trailing warning vehicle shall be equipped with flashing amber lights and advance warning arrow board.

Application rates shall be as follows:

Two Lane Roadway (Rates for one line)	
Dashed Yellow Centerline	Rate = 4.6 Gals./Pass-Mile
Solid Yellow Centerline	Rate = 16.9 Gals./Pass-Mile
Solid White Edgeline	Rate = 16.9 Gals./Pass-Mile

TWO LANE ROADWAY



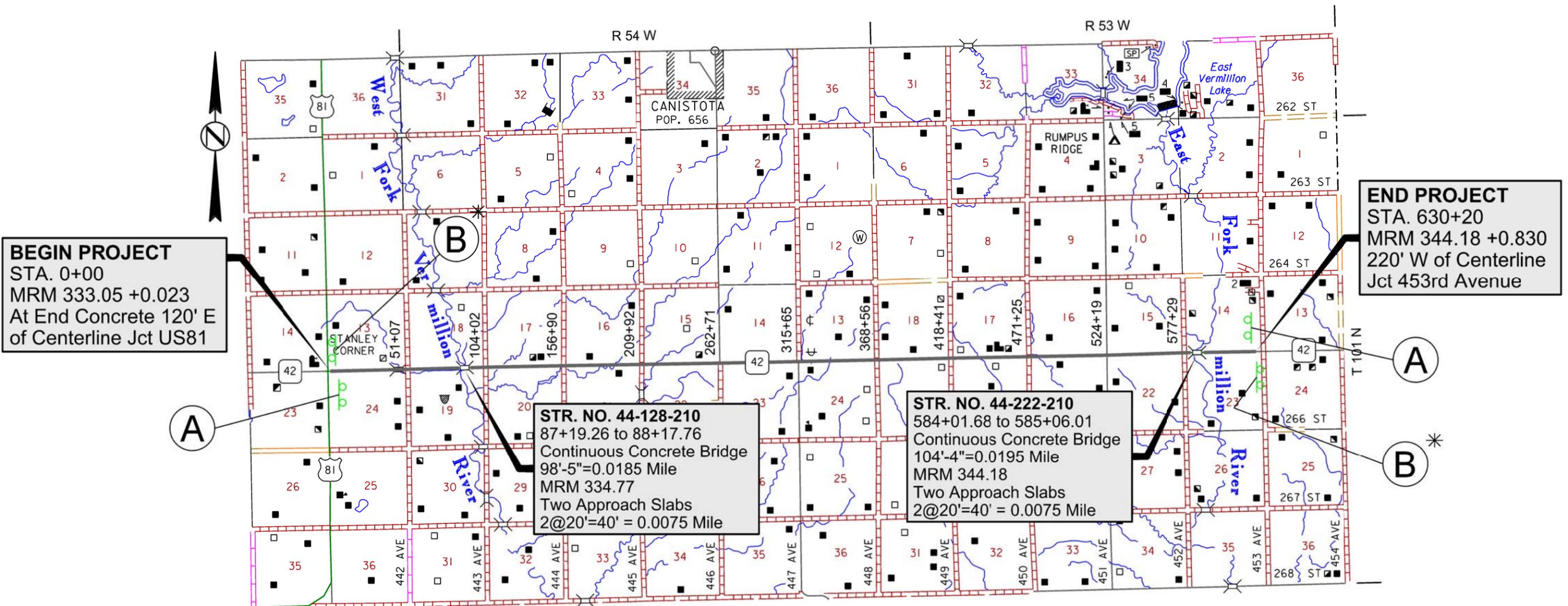
ESTIMATED QUANTITIES	
PAINT	QUANTITY
WHITE	407 GALLONS
YELLOW	101 GALLONS

Included in the above quantities are:			
Additional White		Additional Yellow	
Description	Gallons	Description	Gallons
4" Lines	-	Transitions	-
8" Lines	-	4" Skip Lines	-
12" Gore Lines	-	8" Lines	-
Crosswalks	-	12" Lines	-
24" Stop Line	30'	24" Hatches	-
24" Hatches	-	Solid Areas	-
Solid Areas	-	Additional Yellow:	-
Arrows			
Left Arrows	-	Additional Quantities	
Right Arrows	-	Rates of Coverage: SqFt/Gal	
Straight Arrows	-	4", 8" and 12" Lines - 80	
Combo Arrows	-	24" Lines and Bars - 50	
Lane Drop Arrows	-	Arrows, Messages	
Messages		and Solid Areas - 30	
STOP	1 Ea	1	
STOP AHEAD	1 Ea	2	
R X R with Bars	-	-	
SCHOOL X-ING	-	-	
Additional White:	4		

NOTE: All pavement marking dimensions are based on 12' driving lanes.

TRAFFIC CONTROL

FIXED LOCATION SIGNS (GROUND MOUNTED SUPPORTS)



BEGIN PROJECT
 STA. 0+00
 MRM 333.05 +0.023
 At End Concrete 120' E
 of Centerline Jct US81

END PROJECT
 STA. 630+20
 MRM 344.18 +0.830
 220' W of Centerline
 Jct 453rd Avenue

STR. NO. 44-128-210
 87+19.26 to 88+17.76
 Continuous Concrete Bridge
 98'-5"=0.0185 Mile
 MRM 334.77
 Two Approach Slabs
 2@20'=40' = 0.0075 Mile

STR. NO. 44-222-210
 584+01.68 to 585+06.01
 Continuous Concrete Bridge
 104'-4"=0.0195 Mile
 MRM 344.18
 Two Approach Slabs
 2@20'=40' = 0.0075 Mile

A
 ROAD WORK
 NEXT 12 MILES

B*
 END
 ROAD WORK

NOTES-

- All Ground Mounted Support signs shall remain in place until permanent pavement marking is complete.
- Construction signs shall not block the view of existing signs.
- Fixed Location signs shall be installed a minimum of 200' from any existing sign.

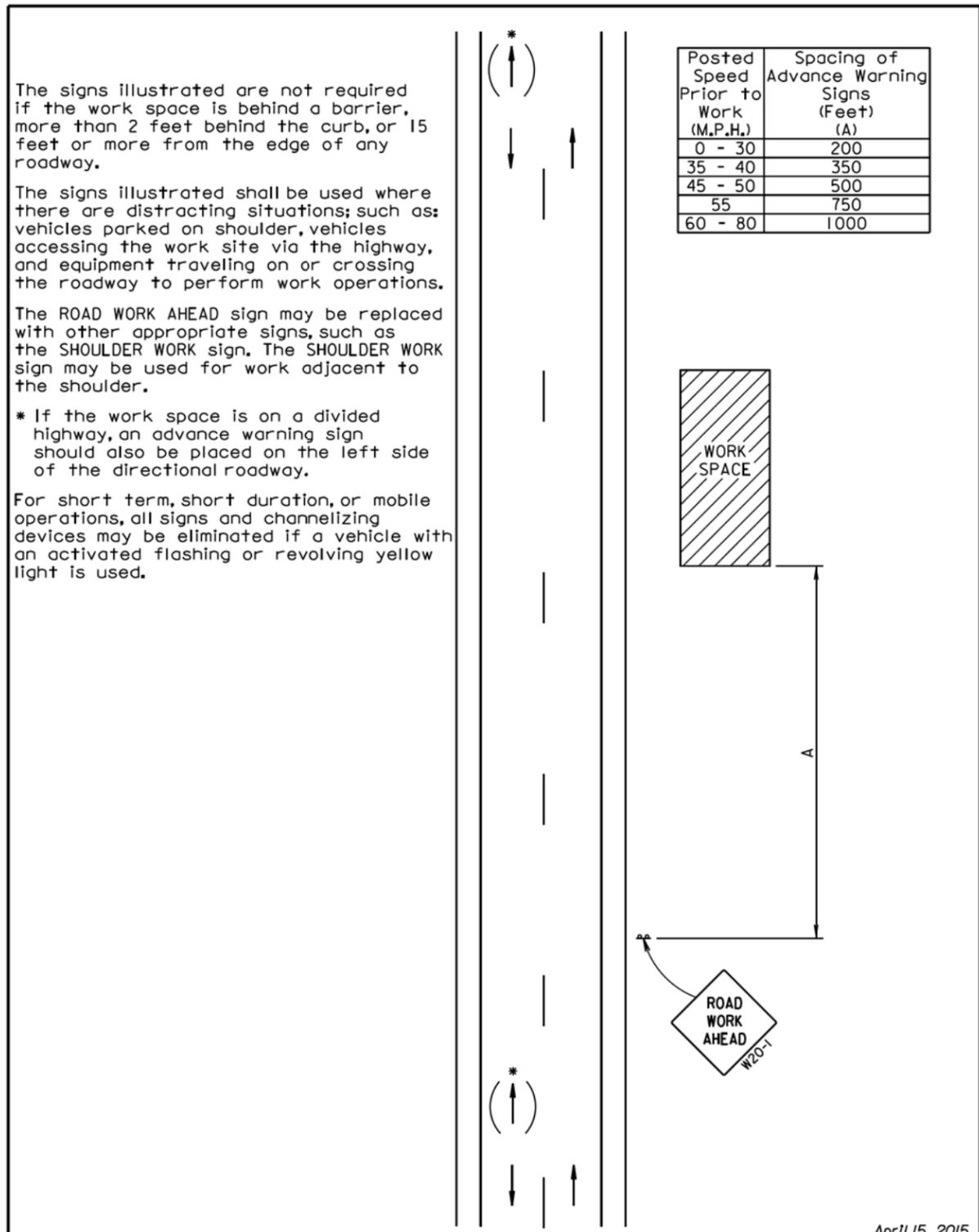
* 25' - 100' FROM THE END OF THE PROJECT

PLOT SCALE - 1"=7000'

PLOTTED FROM - TRM111119

FILE - ... \PRJ2017\MCK0505\TC\FLS.DGN

Plotting Date: 09/23/2016



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

The signs illustrated shall be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

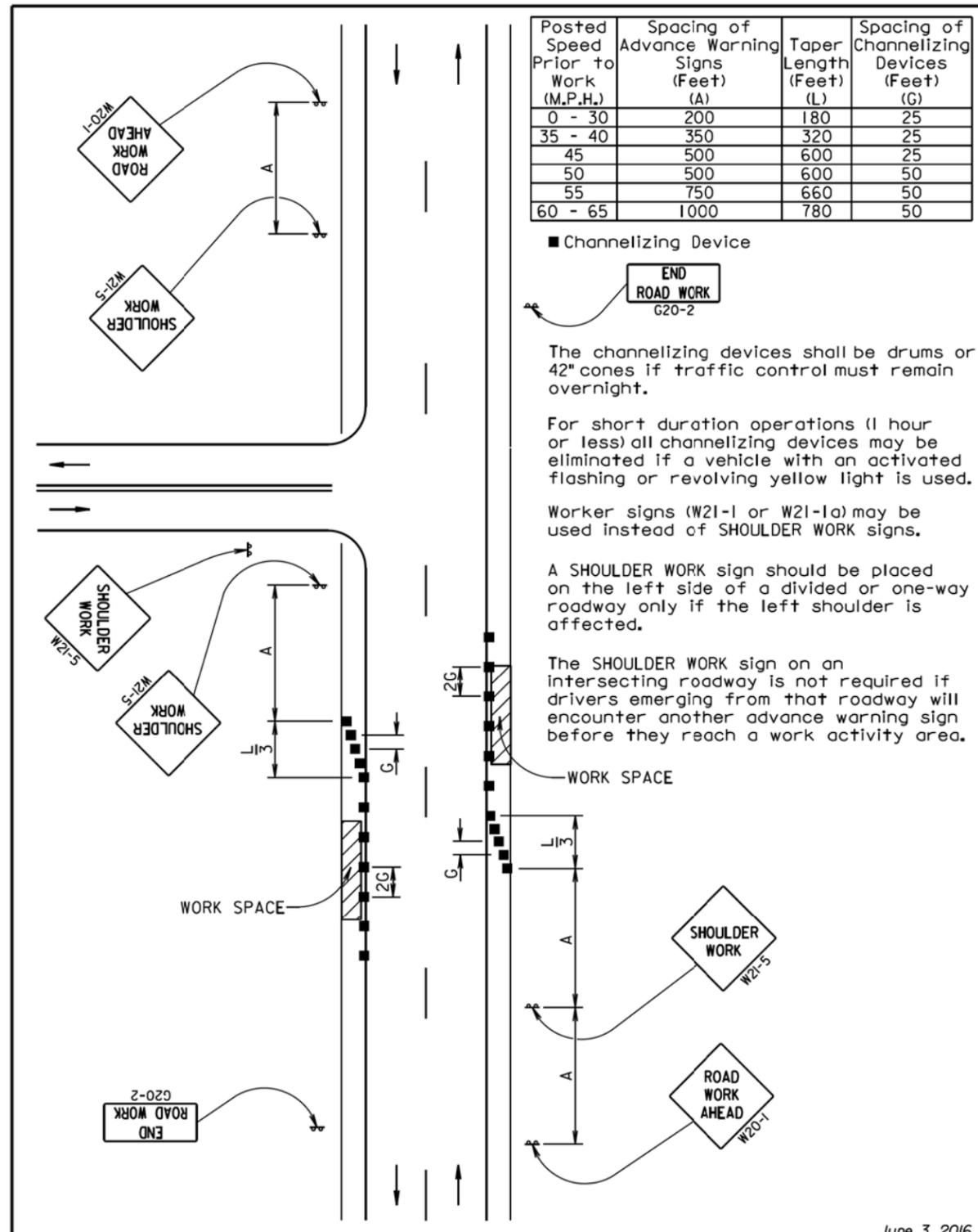
The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

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

April 15, 2015

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES WORK BEYOND THE SHOULDER	PLATE NUMBER 634.01
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1



■ Channelizing Device



The channelizing devices shall be drums or 42" cones if traffic control must remain overnight.

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

June 3, 2016

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES WORK ON SHOULDERS	PLATE NUMBER 634.03
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1

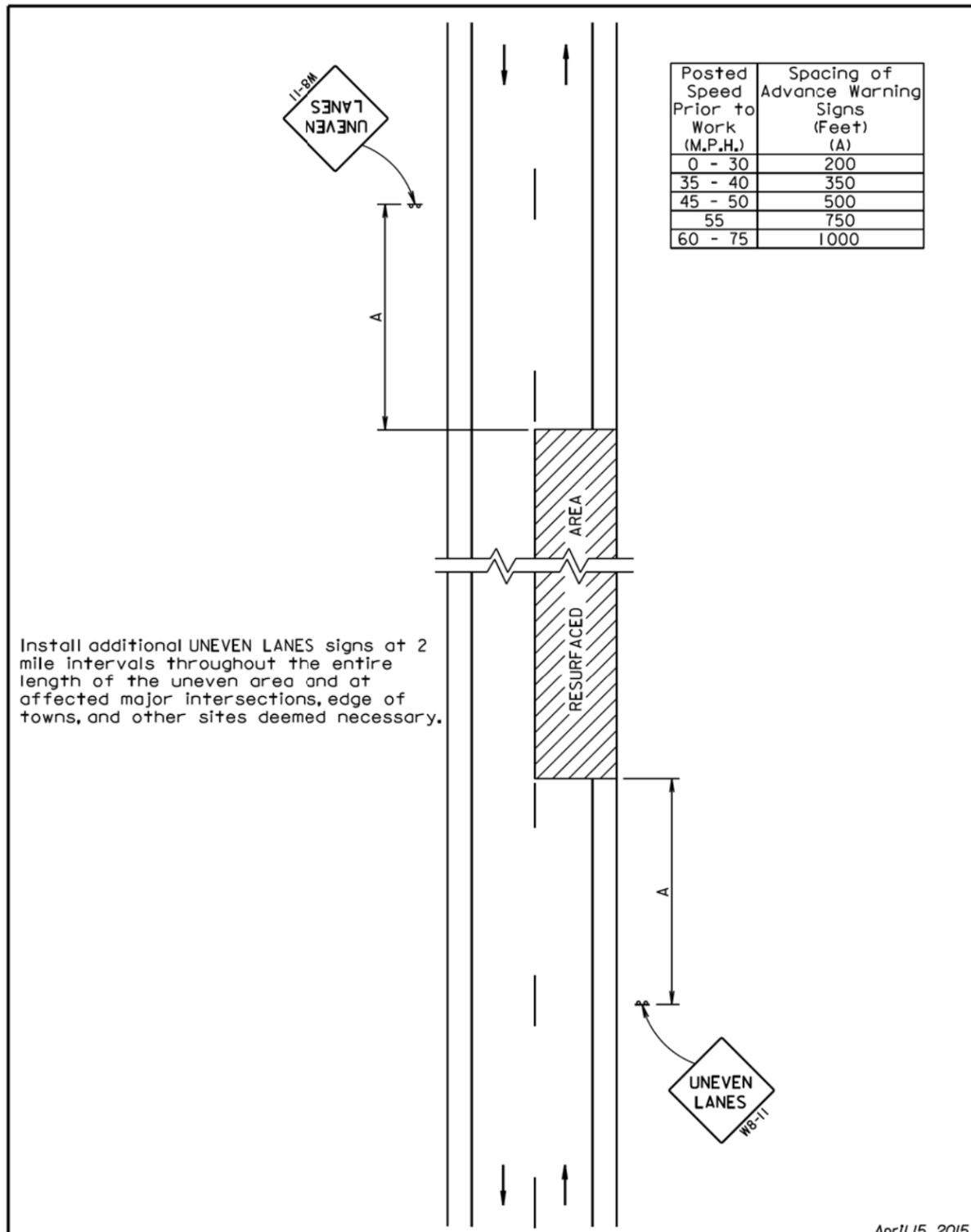
PLOT SCALE - 1:200

PLOTTED FROM - TRM111119

PLOT NAME - 2

FILE - ... \MCK0505\TC\STANDARDPLATES.DGN

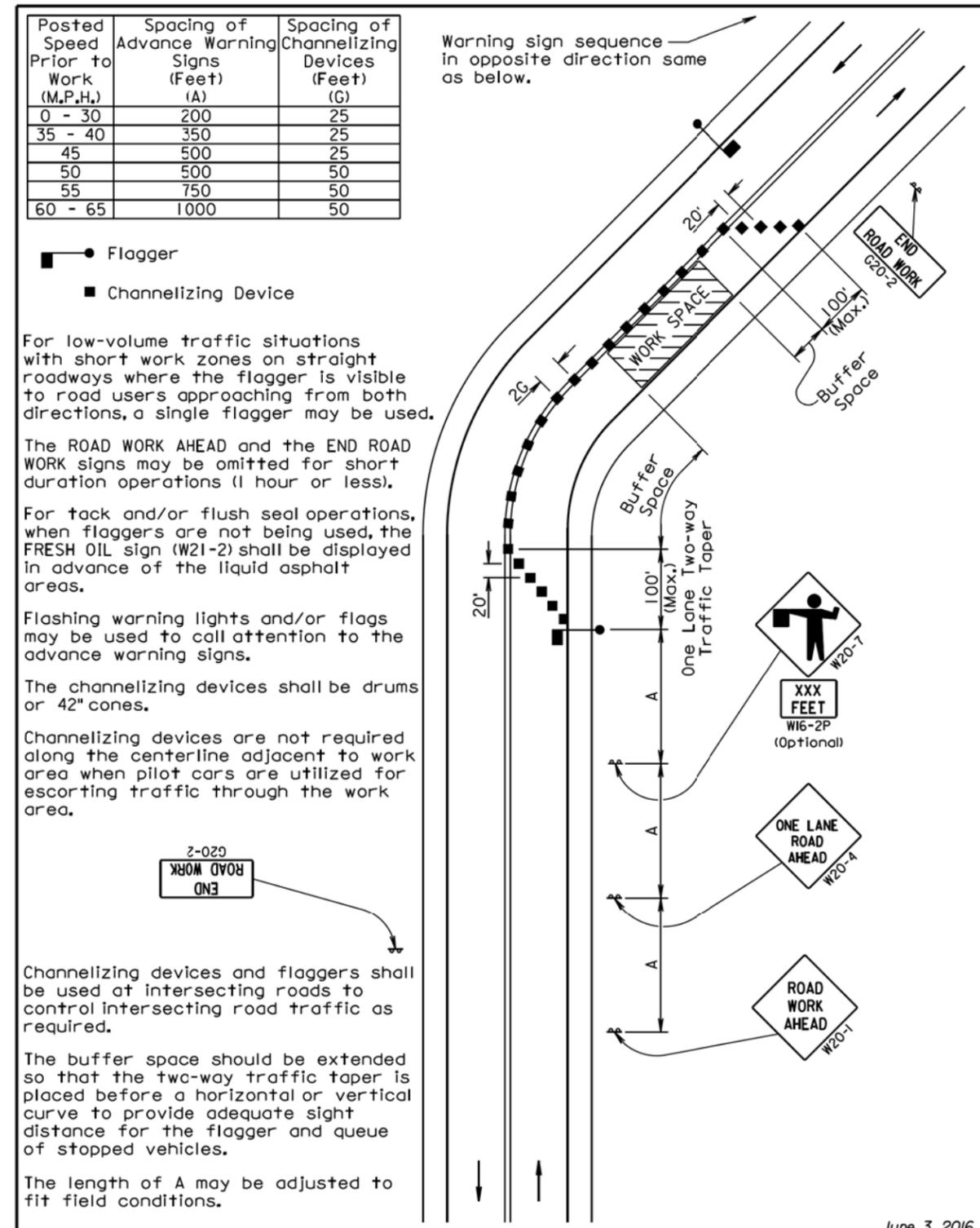
Plotting Date: 09/23/2016



Install additional UNEVEN LANE signs at 2 mile intervals throughout the entire length of the uneven area and at affected major intersections, edge of towns, and other sites deemed necessary.

April 15, 2015

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES UNEVEN ROAD SURFACE	PLATE NUMBER 634.22
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1



- Flagger
- Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices shall be drums or 42" cones.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.

Warning sign sequence in opposite direction same as below.

June 3, 2016

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1

PLOT SCALE - 1:200

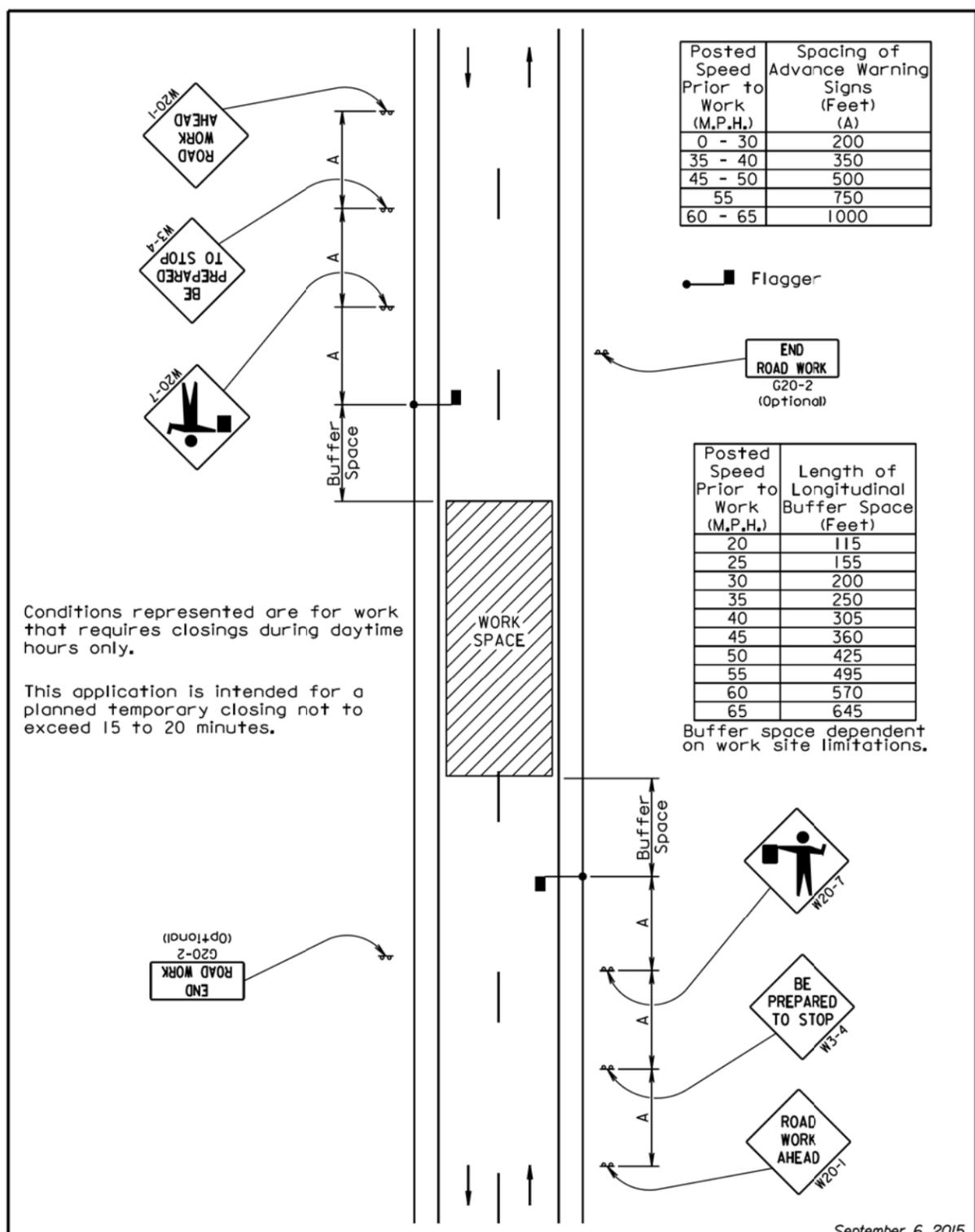
PLOTTED FROM - TRM111119

PLOT NAME - 3

FILE - ... \MCK0505\TC\STANDARDPLATES.DGN

Plotting Date: 09/23/2016

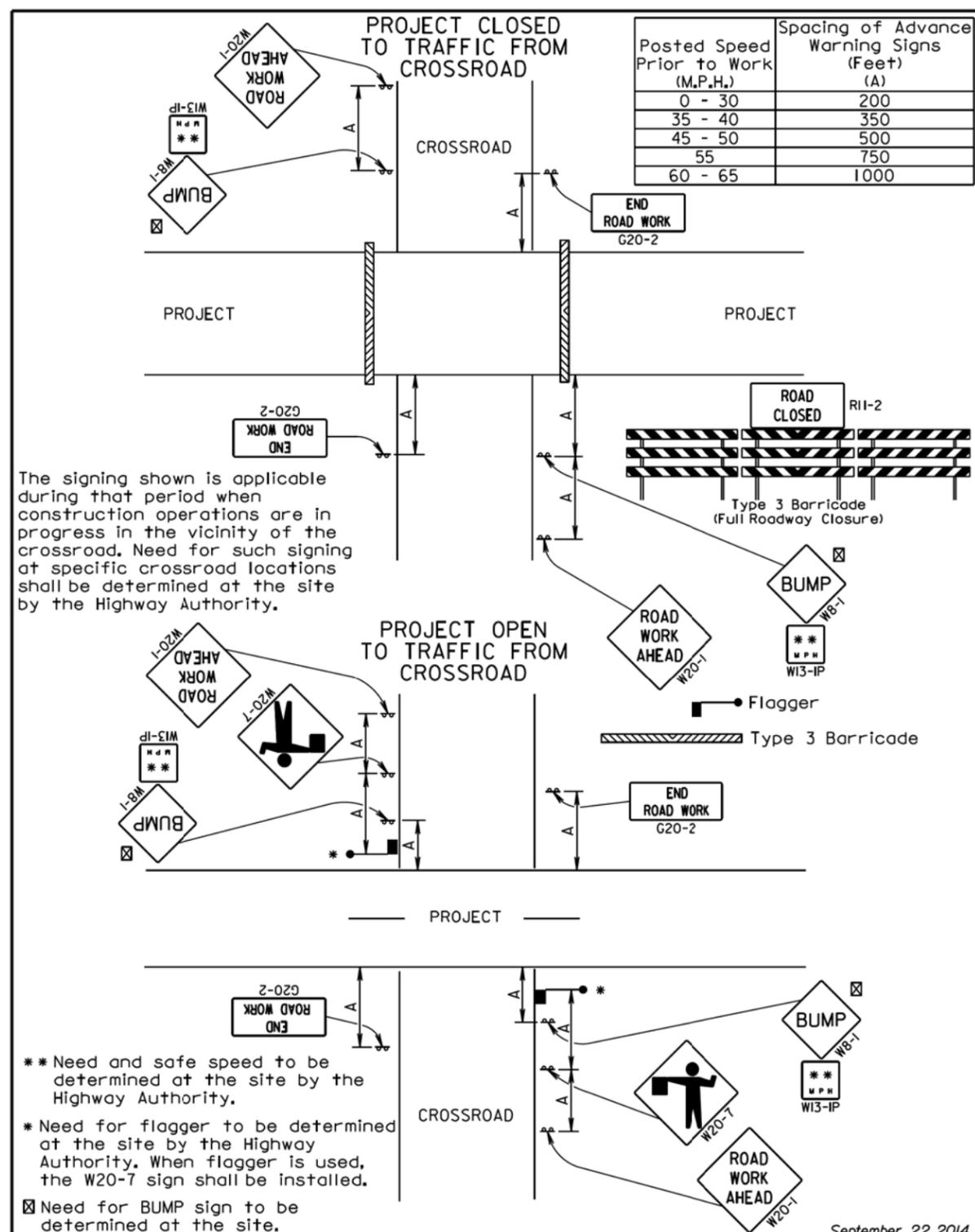
PLOT SCALE - 1:200



September 6, 2015

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES TEMPORARY ROAD WORK	PLATE NUMBER 634.30
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1

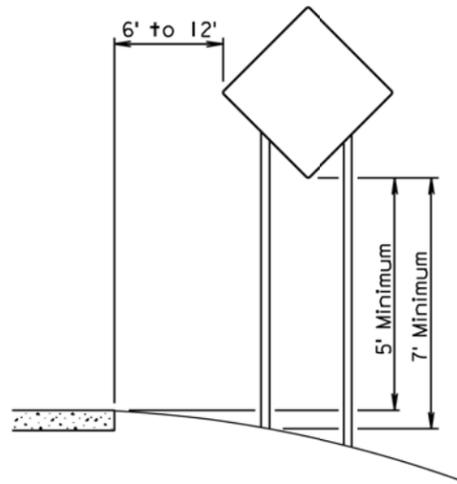
FILE - ... \MCK0505\TC\STANDARDPLATES.DGN PLOT NAME - 4



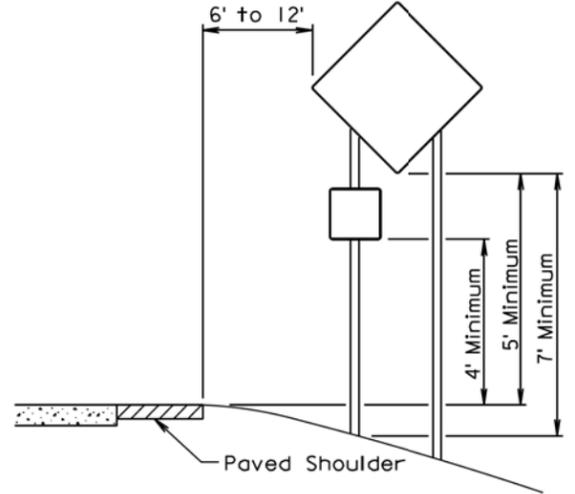
September 22, 2014

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES CROSSROAD SIGNING	PLATE NUMBER 634.32
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1

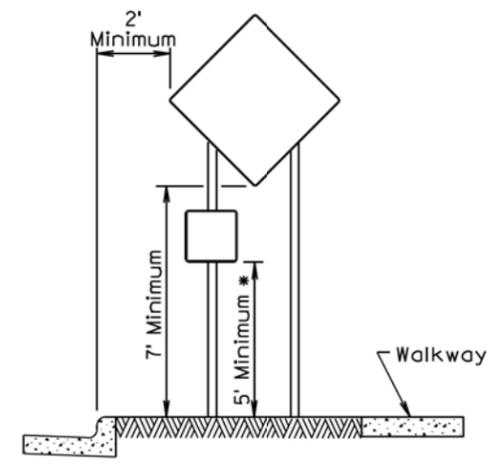
Plotting Date: 09/23/2016



RURAL DISTRICT

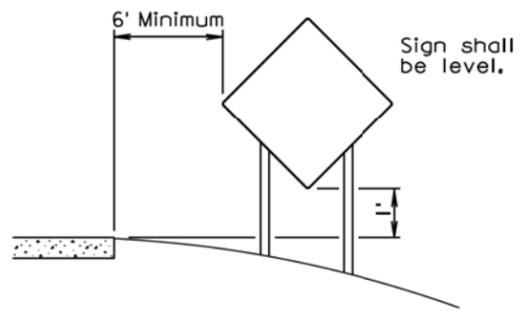


RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

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

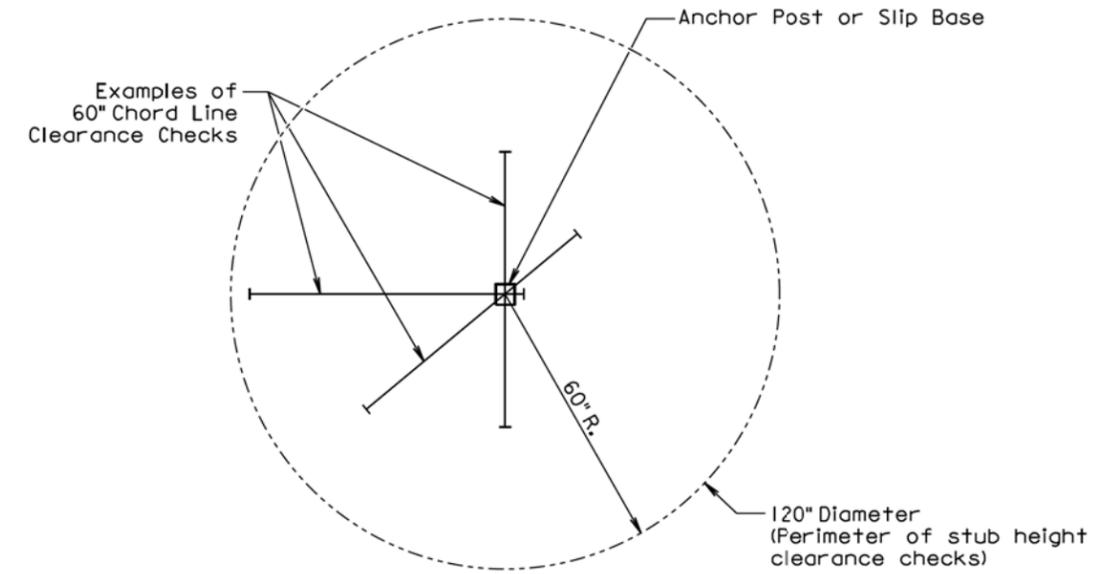


RURAL DISTRICT 3 DAY MAXIMUM

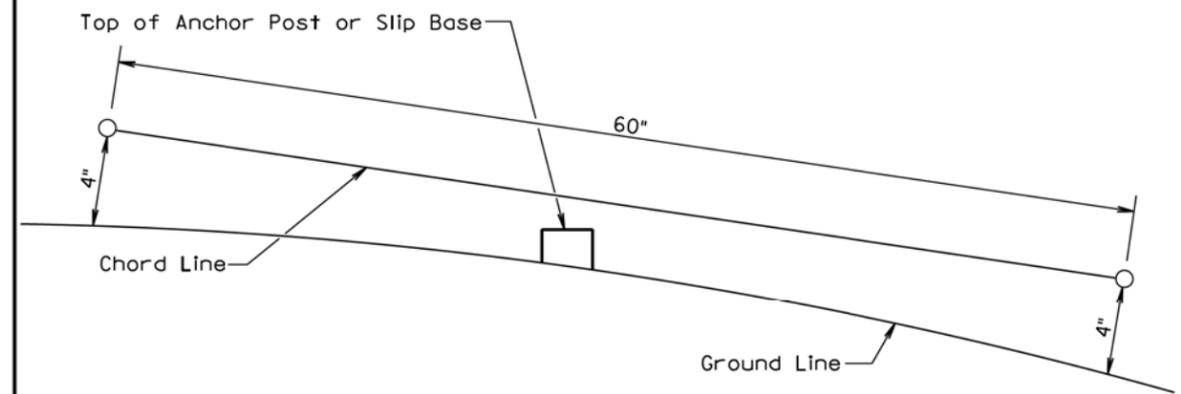
(Not applicable to regulatory signs)

September 22, 2014

Published Date: 3rd Qtr. 2016	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.
 At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.
 The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

Published Date: 3rd Qtr. 2016	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

PLOT SCALE - 1:200

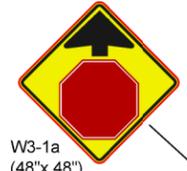
PLOTTED FROM - JRM111119

PLOT NAME - 5

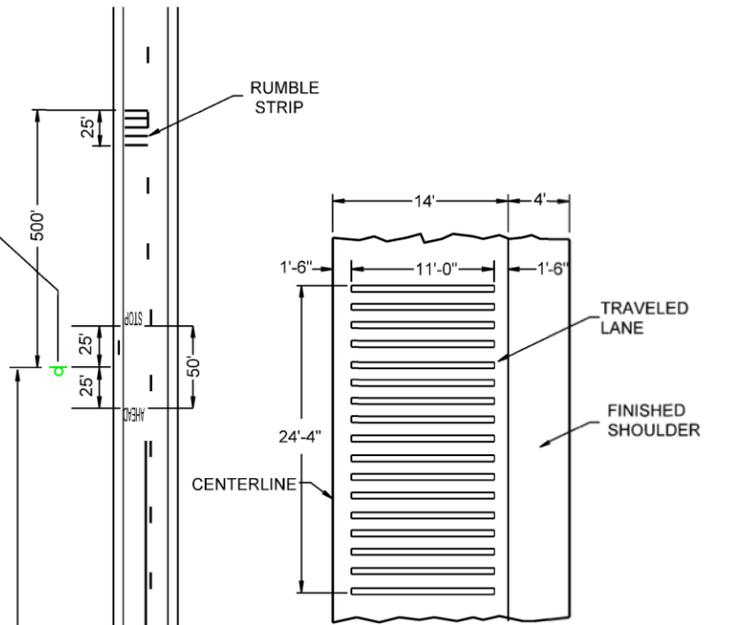
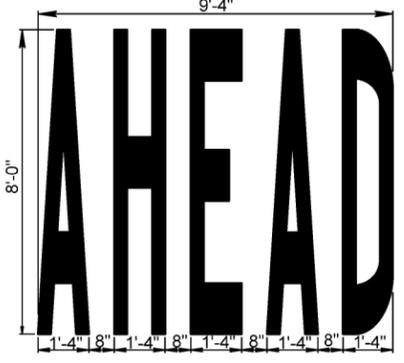
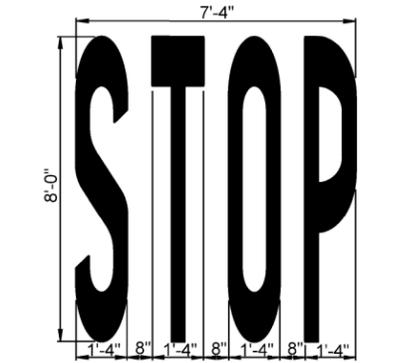
FILE - ... \MCKK0505\TC\STANDARDPLATES.DGN

Plotting Date: 09/23/2016

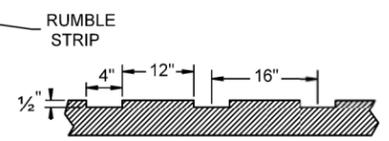
INTERSECTION APPROACH PAVEMENT MARKING AND RUMBLE STRIPS (Typical)



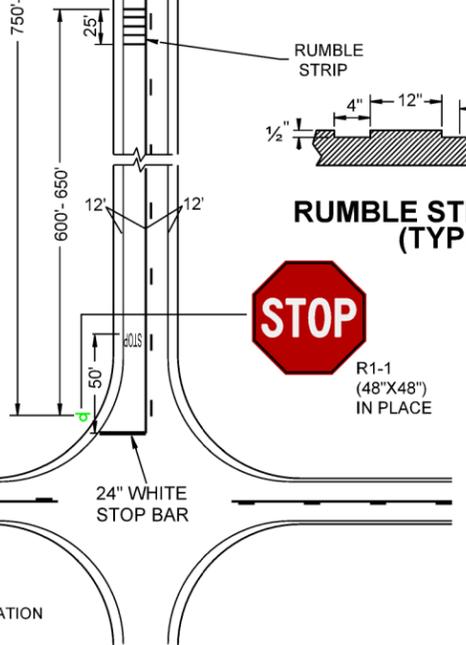
W3-1a
(48"x 48")
Sign to be relocated to this location by State DOT Maintenance. Shown for reference only.



RUMBLE STRIP PLAN VIEW
RUMBLE STRIPS IN WHEEL PATHS ONLY MAY BE CONSIDERED BY THE HIGHWAY AUTHORITY

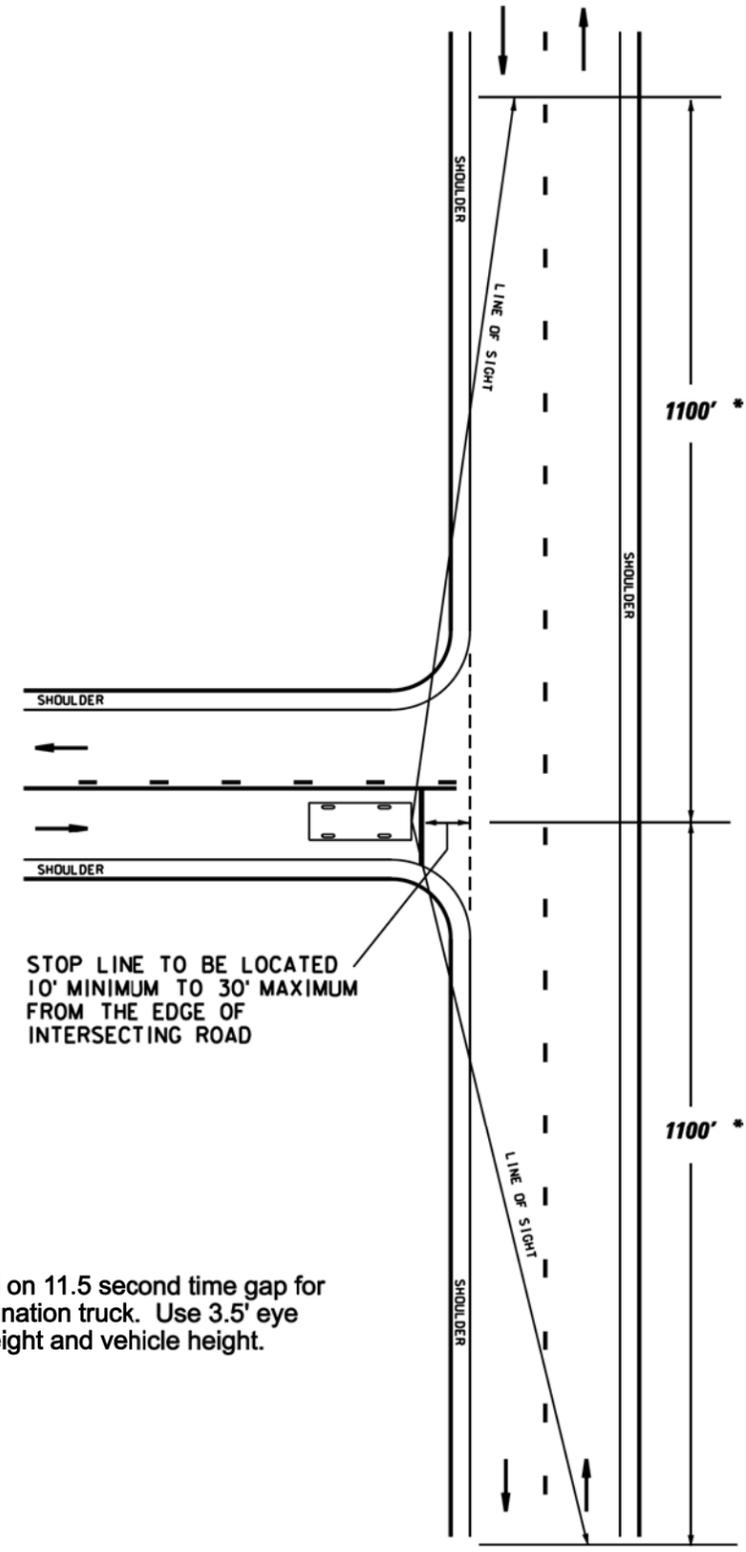


RUMBLE STRIP PROFILE (TYPICAL)



NOTE:
THE HIGHWAY AUTHORITY SHALL DETERMINE THE LOCATION OF THE STOP LINE.
THE STOP SIGN AND THE STOP LINE MAY NOT BE LOCATED THE SAME DISTANCE BACK FROM THE INTERSECTION.

Revised 7-24-09.



STOP LINE TO BE LOCATED 10' MINIMUM TO 30' MAXIMUM FROM THE EDGE OF INTERSECTING ROAD

INSTALL STOP LINE AT LOCATION TO OBTAIN THE BEST SIGHT DISTANCE TO VIEW INTERSECTING TRAFFIC

* - Based on 11.5 second time gap for combination truck. Use 3.5' eye height and vehicle height.

STOP LINE PAVEMENT MARKING INSTALLATION

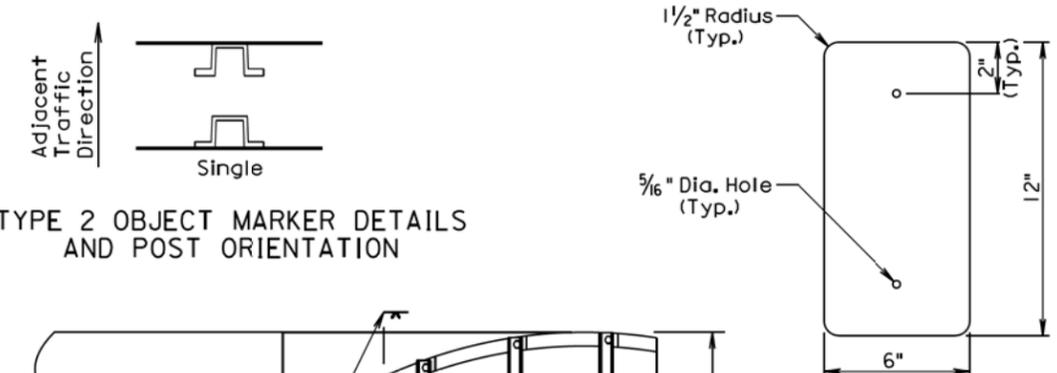
PLOT SCALE - 1:200

PLOTTED FROM - TRM111119

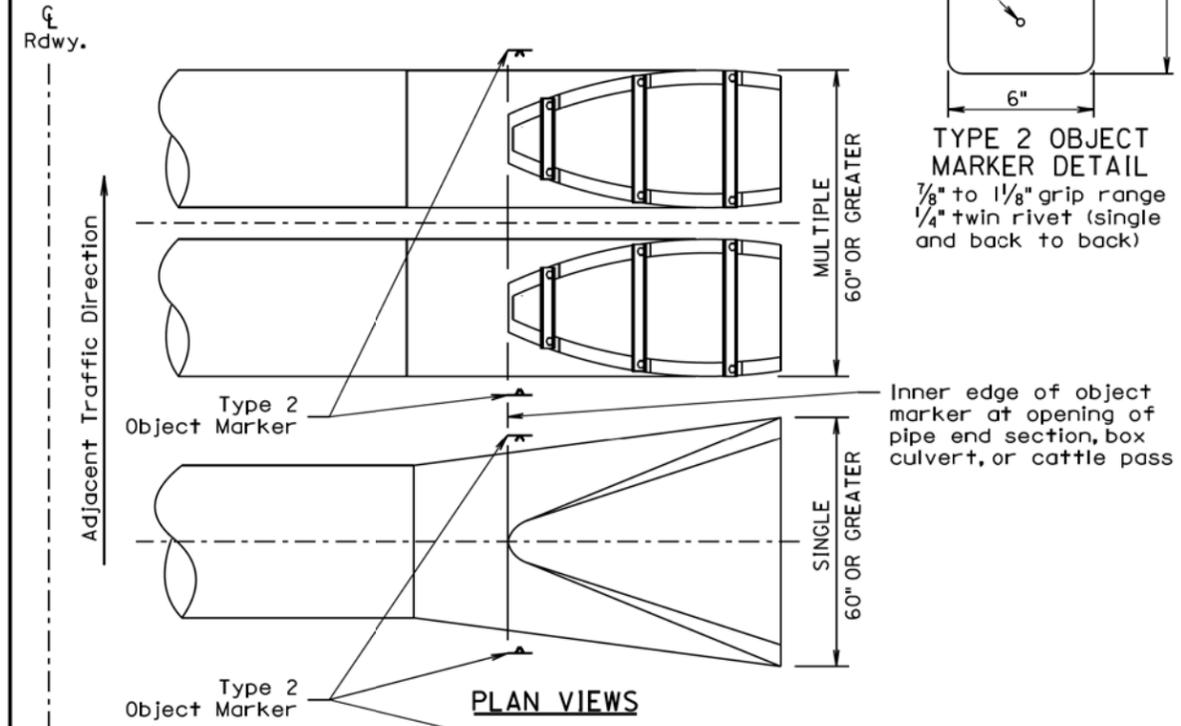
PLOT NAME - 6

FILE - ... \MCC0505\TC\STANDARDPLATES.DGN

TYPE 2 OBJECT MARKER INSTALLATION AT PIPE CULVERTS, BOX CULVERTS, & CATTLE PASSES - 60" OR GREATER WIDTH



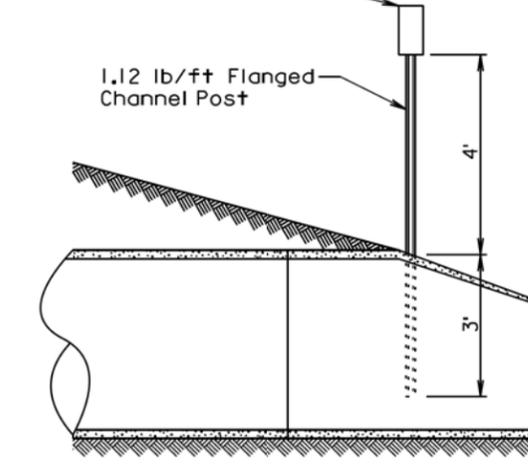
TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION



TYPE 2 OBJECT MARKER DETAIL
 7/8" to 1 1/8" grip range
 1/4" twin rivet (single and back to back)

Inner edge of object marker at opening of pipe end section, box culvert, or cattle pass

PLAN VIEWS

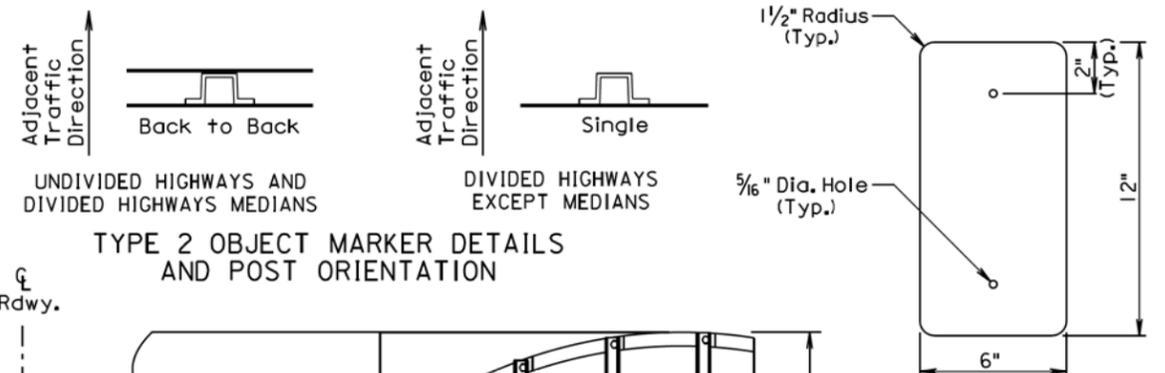


GENERAL NOTES:

The type 2 object markers shall conform to Standard Specifications Section 982.2 I.
 The 1.12 lb/ft flanged channel post shall conform to Standard Specifications Section 982.2 I.6.
 Payment for the type 2 object markers shall be in conformance with Standard Specification Section 632.5 C.

ELEVATION

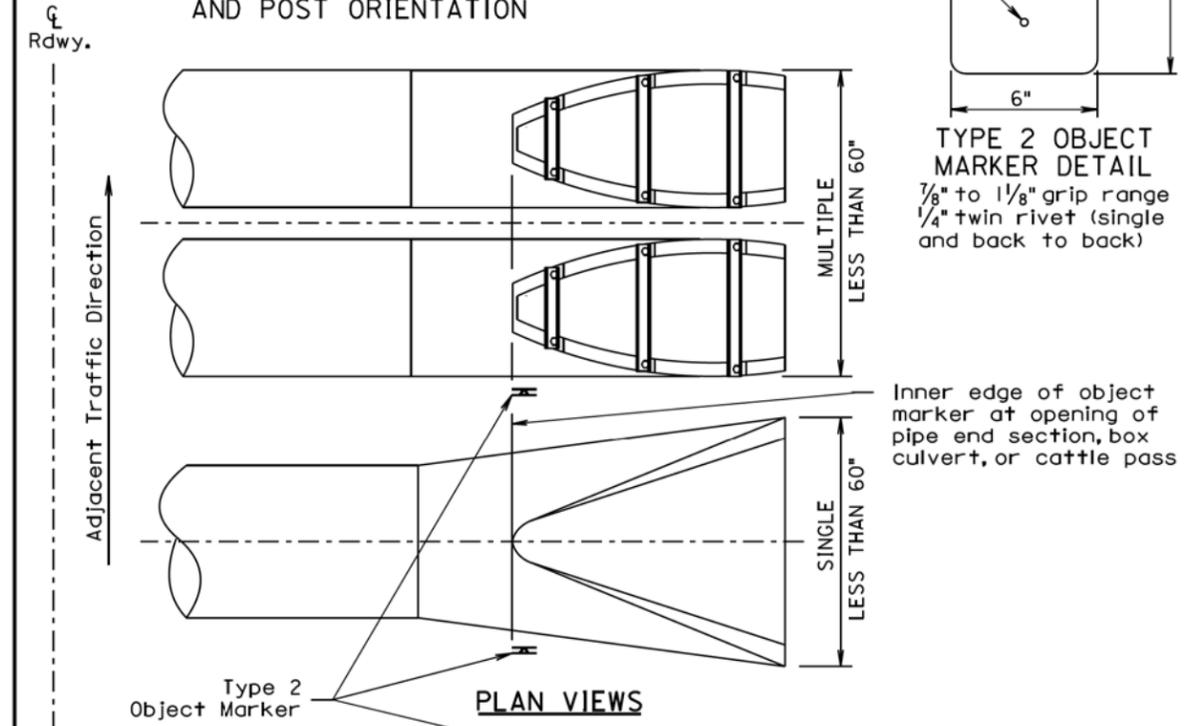
TYPE 2 OBJECT MARKER INSTALLATION AT PIPE CULVERTS, BOX CULVERTS, & CATTLE PASSES - LESS THAN 60" WIDTH



UNDIVIDED HIGHWAYS AND DIVIDED HIGHWAYS MEDIANS

DIVIDED HIGHWAYS EXCEPT MEDIANS

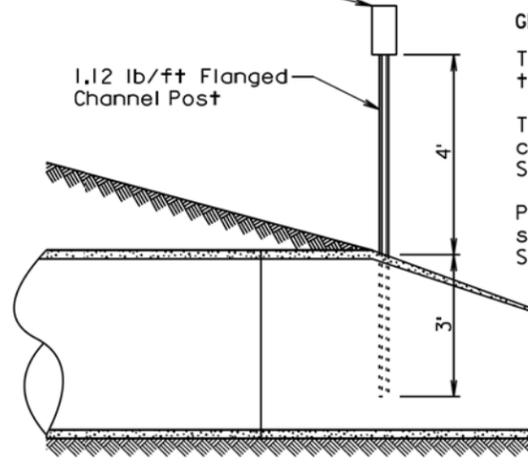
TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION



TYPE 2 OBJECT MARKER DETAIL
 7/8" to 1 1/8" grip range
 1/4" twin rivet (single and back to back)

Inner edge of object marker at opening of pipe end section, box culvert, or cattle pass

PLAN VIEWS



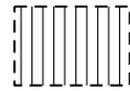
GENERAL NOTES:

The type 2 object markers shall conform to Standard Specifications Section 982.2 I.
 The 1.12 lb/ft flanged channel post shall conform to Standard Specifications Section 982.2 I.6.
 Payment for the type 2 object markers shall be in conformance with Standard Specification Section 632.5 C.

ELEVATION

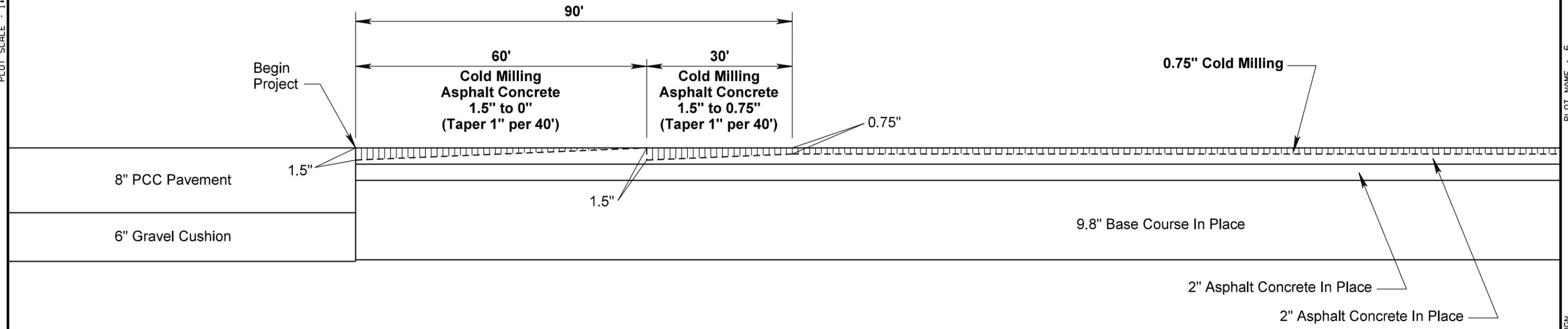
LAYOUT FOR COLD MILLING TAPERS

AT BEGIN PROJECT



Cold Milling Asphalt Concrete

PLOT SCALE - 1:1

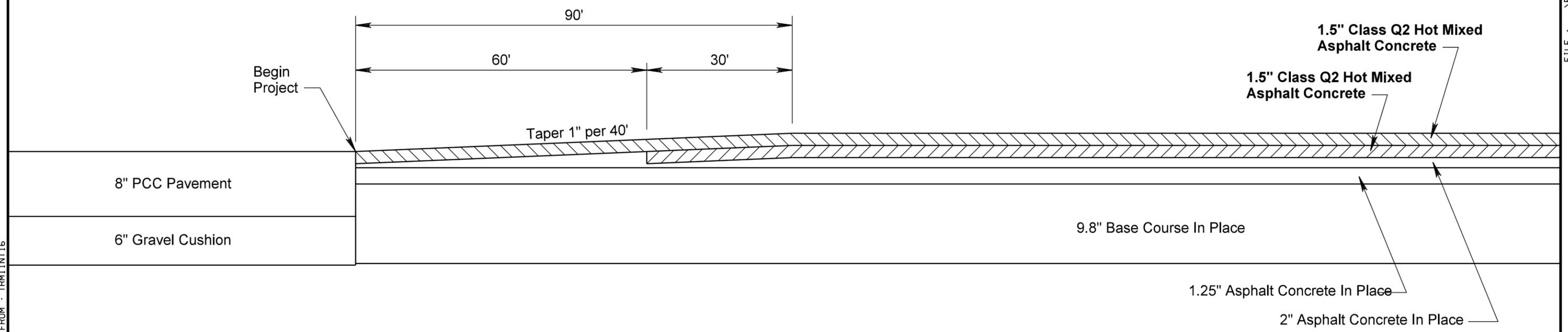


PLOT NAME - 6

LAYOUT FOR RESURFACING TAPERS

AT BEGIN PROJECT

PLOTTED FROM - TRMLINT16



FILE - ... \PRJ2017\MCK0505\MILL0505.DGN

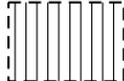
Plotting Date: 09/27/2016

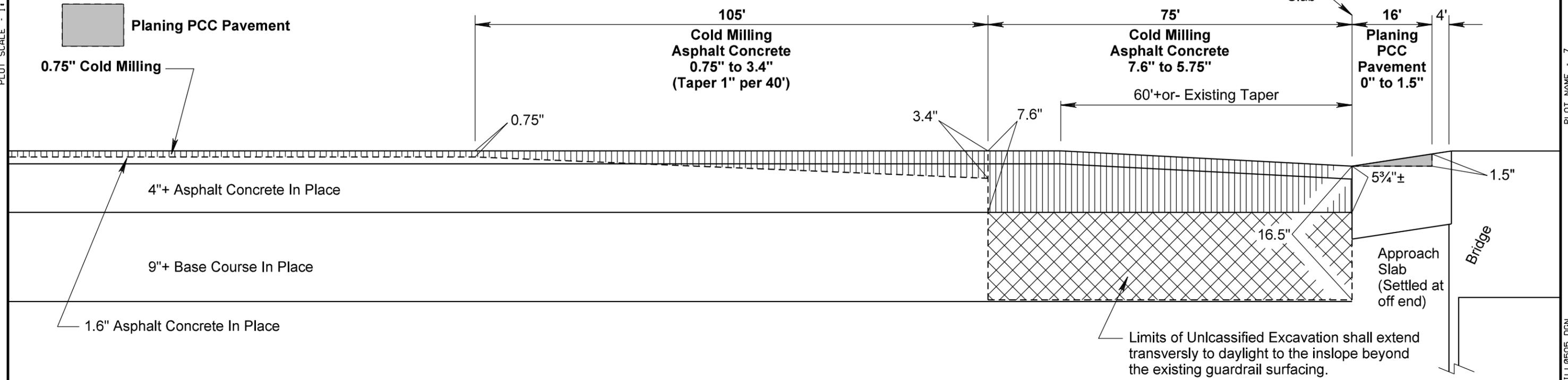
LAYOUT FOR COLD MILLING TAPERS

AT BEGIN AND END BRIDGE

PLOT SCALE - 1:1

PLOT NAME - 7

-  Cold Milling Asphalt Concrete
-  Unclassified Excavation
-  Planing PCC Pavement

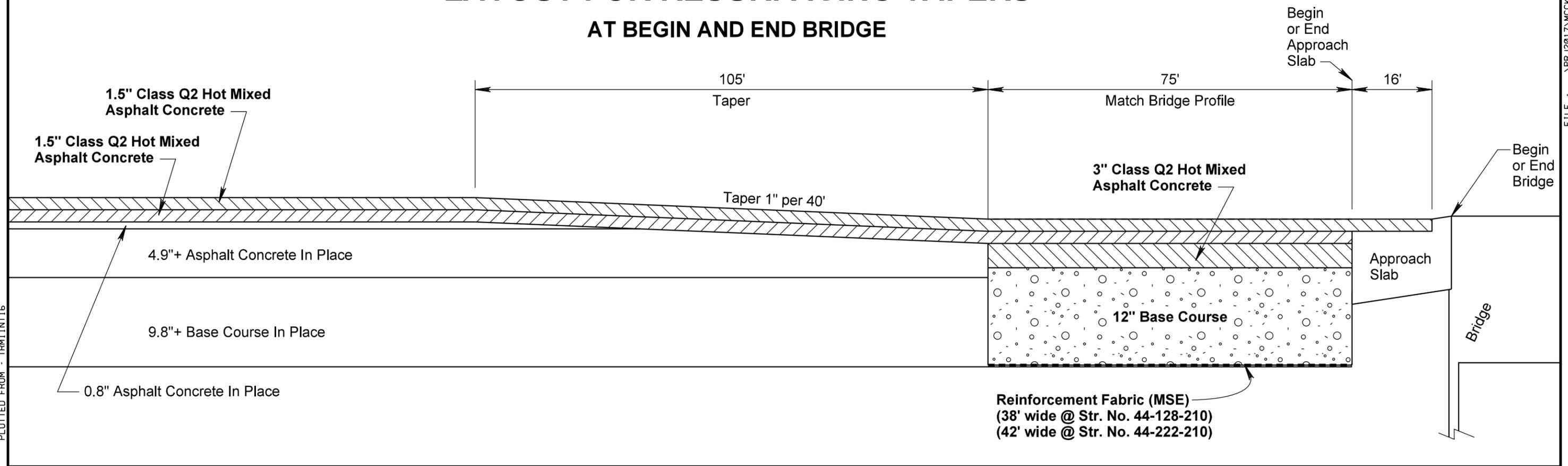


LAYOUT FOR RESURFACING TAPERS

AT BEGIN AND END BRIDGE

PLOTTED FROM - TRMLINT16

FILE - ... \PRJ2017\MCK0505\MTLL0505.DGN

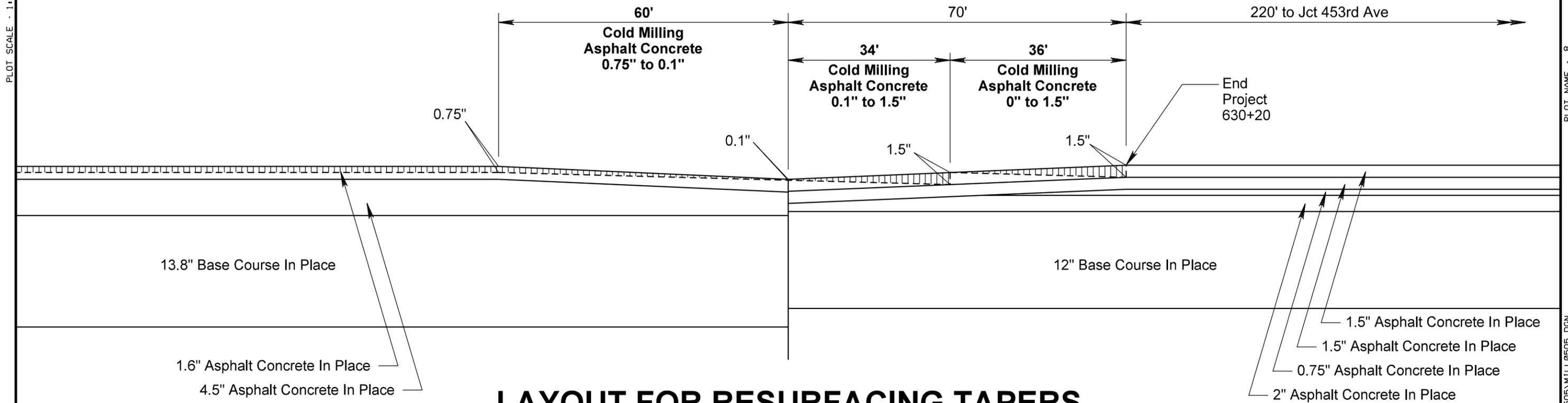


Reinforcement Fabric (MSE)
 (38' wide @ Str. No. 44-128-210)
 (42' wide @ Str. No. 44-222-210)

LAYOUT FOR COLD MILLING TAPERS

AT END PROJECT

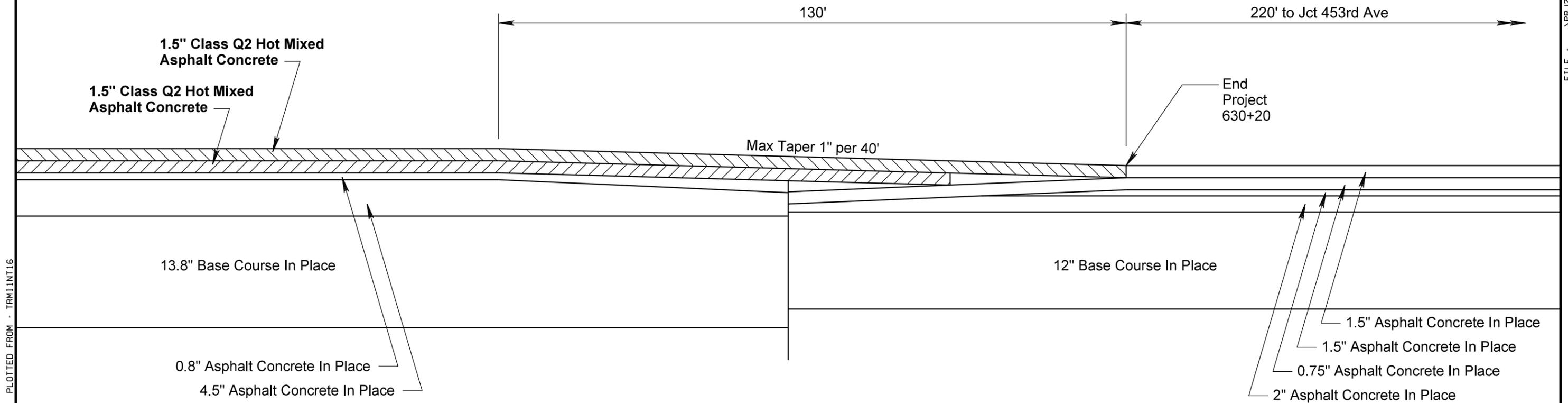
PLOT SCALE - 1:1



PLOT NAME - 8

LAYOUT FOR RESURFACING TAPERS

AT END PROJECT



PLOTTED FROM - TRMLINT16

FILE - ... \PRJ2017\MCK0505\WILL0505.DGN

INSTALLATION OF GUARDRAIL

STR. NO. 44-128-210 SD42 MRM 334.77
BEGIN BRIDGE

STATE OF SOUTH DAKOTA	PROJECT P 0042(69)333	SHEET 28	TOTAL SHEETS 48
-----------------------	--------------------------	-------------	--------------------

Plotting Date: 09/27/2016



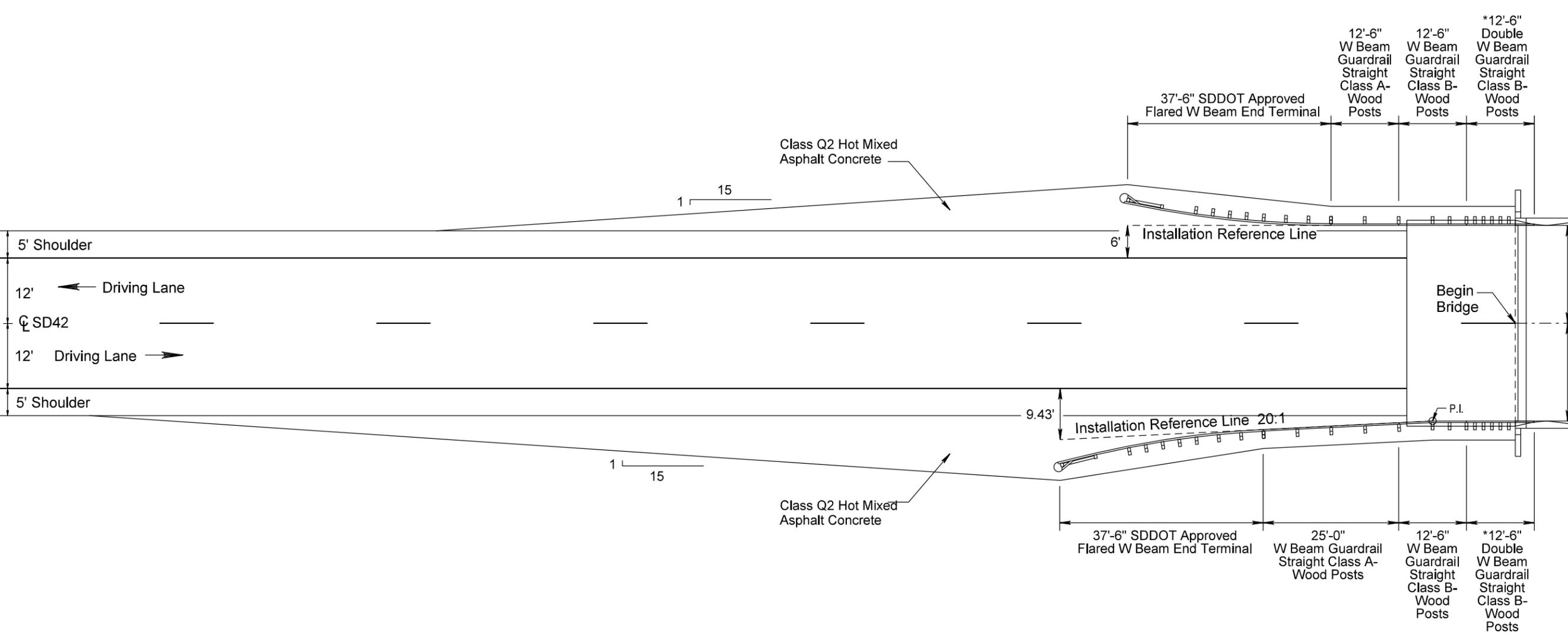
Fence is located near the bridge.
Do not disturb.

PLOT SCALE - 1:20

PLOT NAME - 9

PLOTTED FROM - TRMLINT16

FILE - ... \PRJ2017\MCK0505\T10R0505.DGN



* 3'-6" of guardrail overlaps onto end block.

Included in the Estimate of Quantities is one sign to be removed and reset so that embankment and base course excavation may be accomplished.

INSTALLATION OF GUARDRAIL

STATE OF SOUTH DAKOTA	PROJECT P 0042(69)333	SHEET 29	TOTAL SHEETS 48
-----------------------	--------------------------	-------------	--------------------

Plotting Date: 09/27/2016

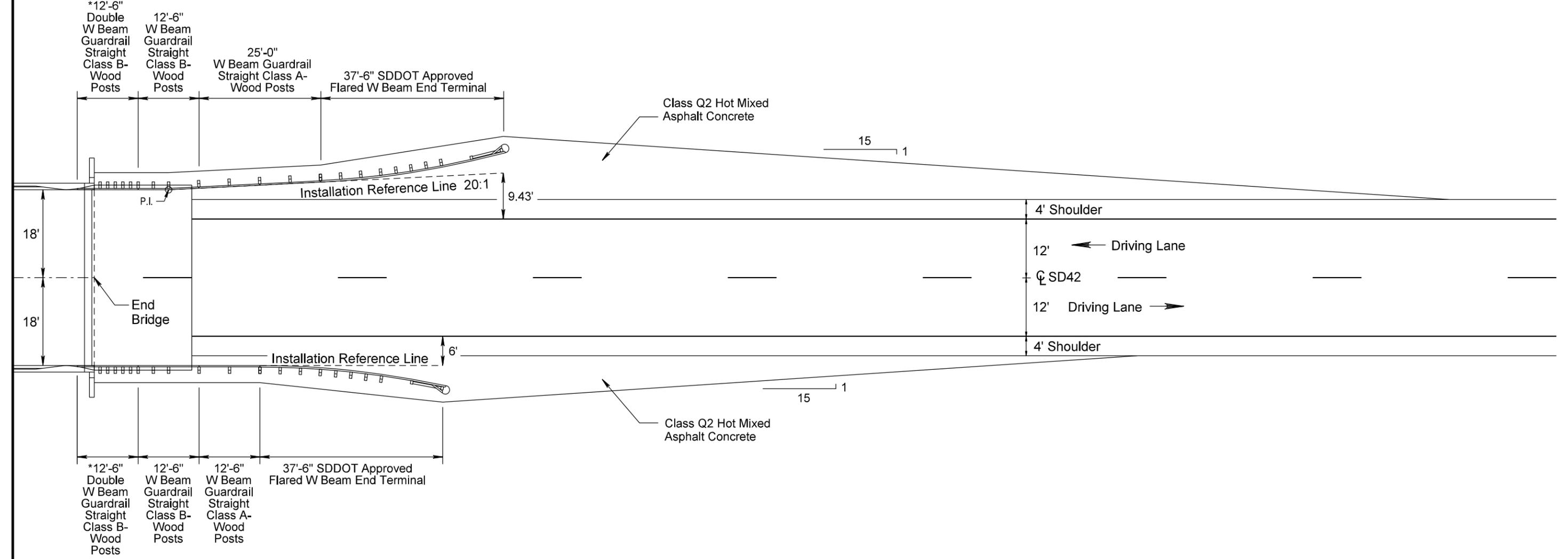
STR. NO. 44-128-210 SD42 MRM 334.77 END BRIDGE

Included in the Estimate of Quantities is one sign to be removed and reset so that embankment and base course excavation may be accomplished.



PLOT SCALE - 1:120

PLOT NAME - 10



* 3'-6" of guardrail overlaps onto end block.

Fence is located near the bridge.
Do not disturb.

PLOTTED FROM - TRMLINT16

FILE - ... \PRJ2017\MCK0505\T10R0505.DGN

INSTALLATION OF GUARDRAIL

STR. NO. 44-222-210 SD42 MRM 344.18
BEGIN BRIDGE

STATE OF SOUTH DAKOTA	PROJECT P 0042(69)333	SHEET 30	TOTAL SHEETS 48
-----------------------	--------------------------	-------------	--------------------

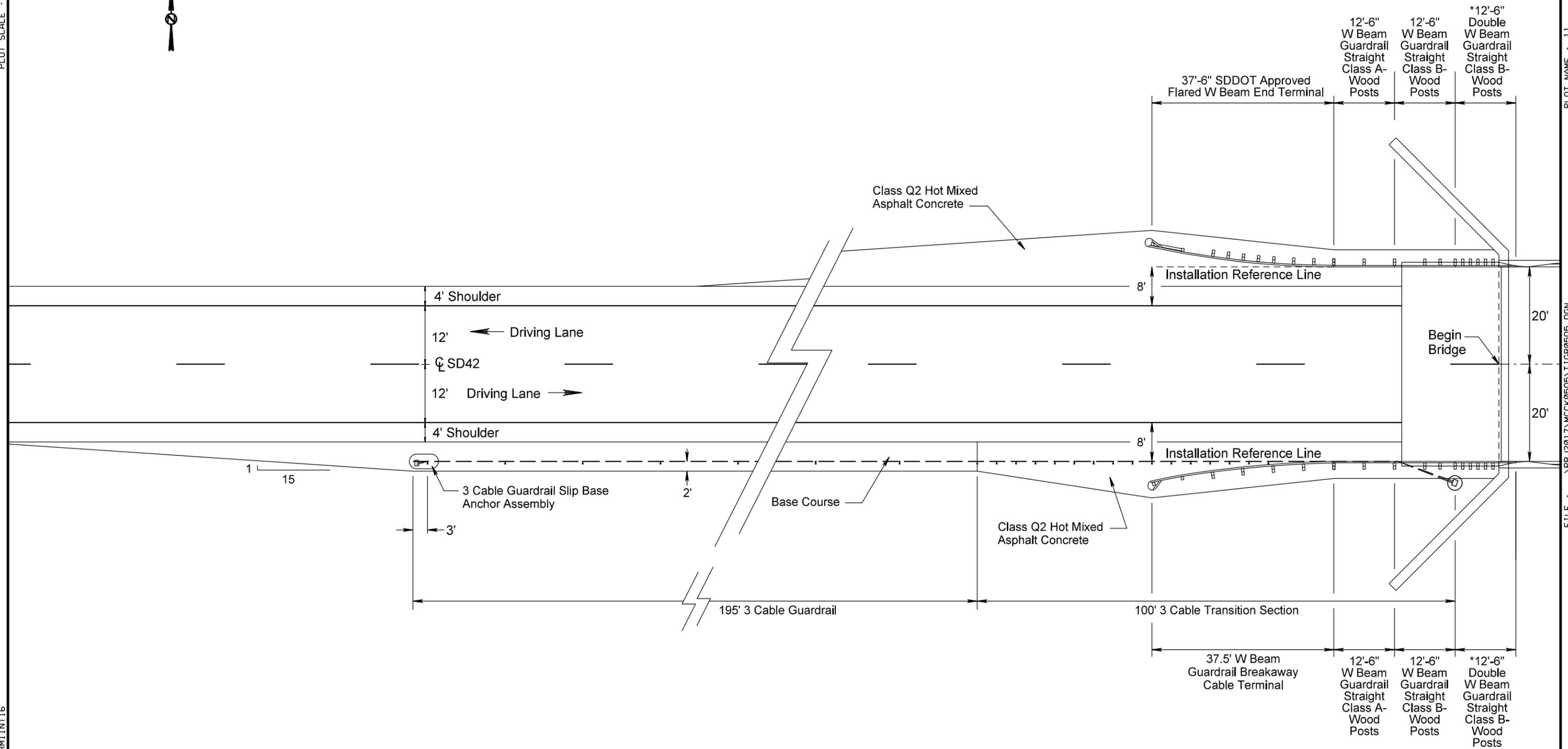
Plotting Date: 09/27/2016

PLOT SCALE - 1:120



PLOTTED FROM - TRMLINT16

PLOT NAME - 11
FILE - ... \PRJ2017\MCK0505\T10R0505.DGN



Included in the Estimate of Quantities is one sign to be removed and reset so that embankment and base course excavation may be accomplished.

* 3'-6" of guardrail overlaps onto end block.

INSTALLATION OF GUARDRAIL

STATE OF SOUTH DAKOTA	PROJECT P 0042(69)333	SHEET 31	TOTAL SHEETS 48
-----------------------	--------------------------	-------------	--------------------

Plotting Date: 09/27/2016

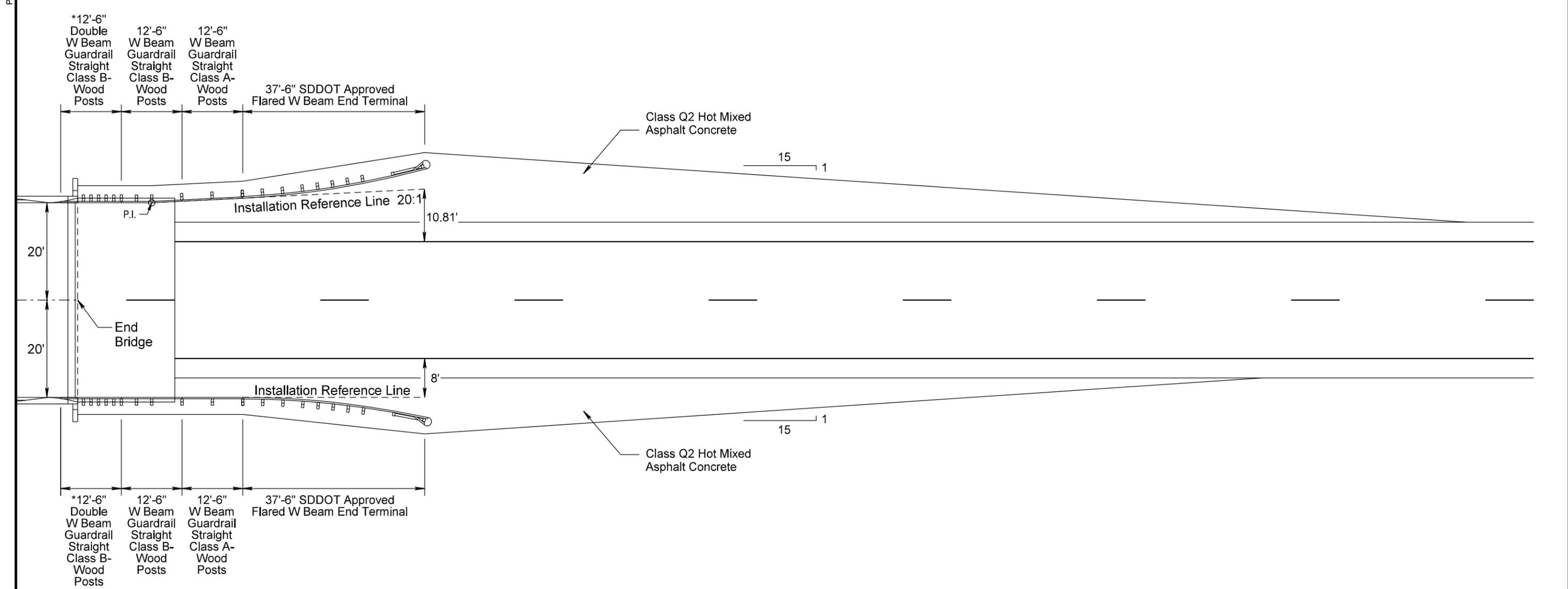
STR. NO. 44-222-210 SD42 MRM 344.18 END BRIDGE

Included in the Estimate of Quantities is one sign to be removed and reset so that embankment and base course excavation may be accomplished.



PLOT SCALE - 1:20

PLOT NAME - 12



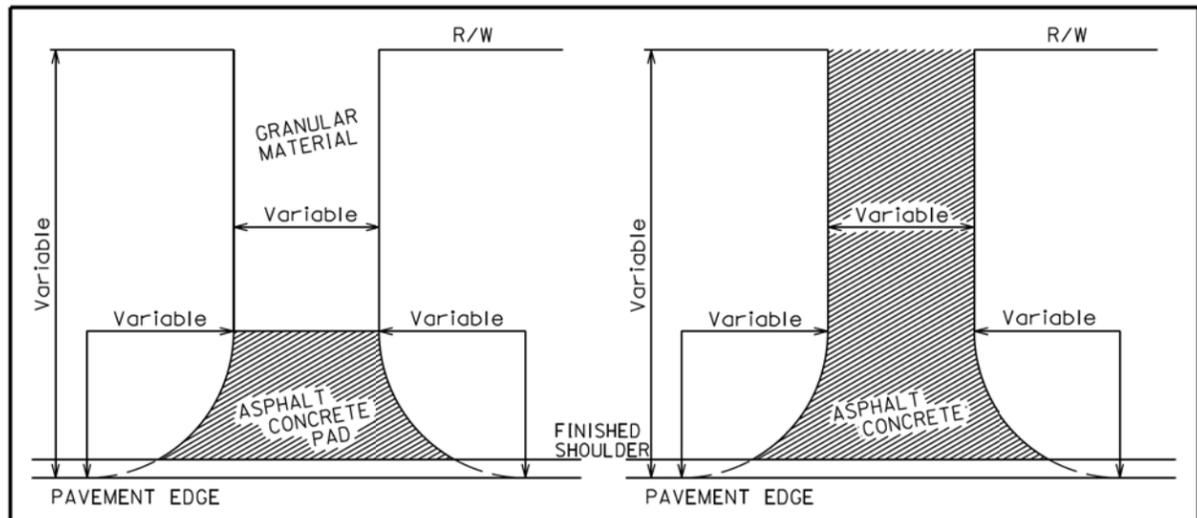
Fence is located near the bridge.
Do not disturb.

* 3'-6" of guardrail overlaps onto end block.

PLOTTED FROM - TRMLINT16

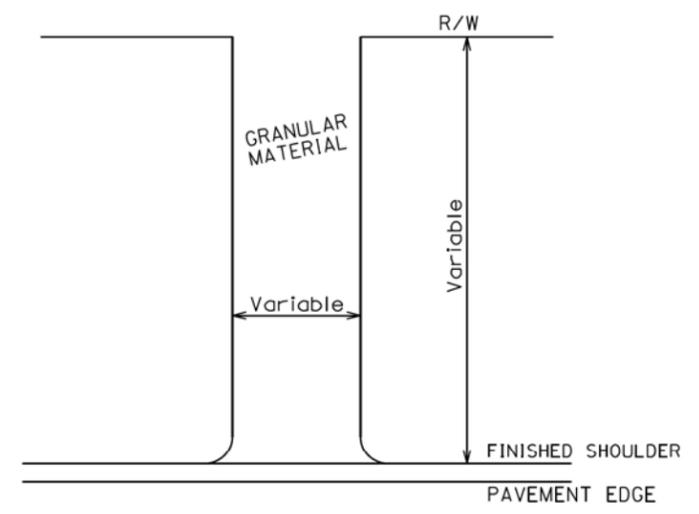
FILE - ... \PRJ2017\MCK0505\T10R0505.DGN

Plotting Date: 09/23/2016



INTERSECTING ROAD
NO ASPHALT CONCRETE SURFACING
BEYOND R/W

INTERSECTING ROAD
ASPHALT CONCRETE SURFACING
BEYOND R/W



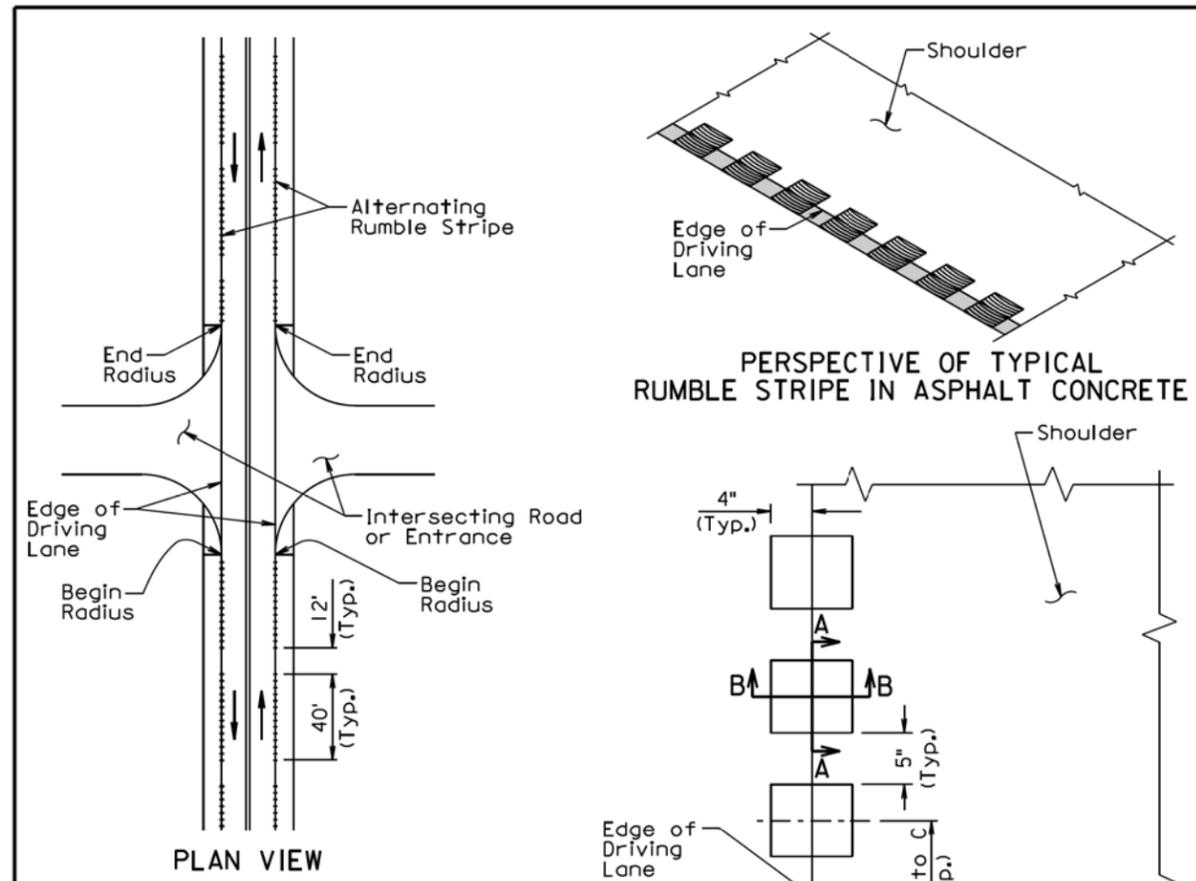
ENTRANCE

The surfacing details shown on this sheet are provided as a guide for surfacing these facilities. The precise construction limits for situations other than the standards shown will be determined by the Engineer, at the time of construction.

ROADWAY WITH SHOULDER

March 31, 2000

Published Date: 3rd Qtr. 2016	S D D O T	RESURFACING OF INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 320.11
			Sheet 1 of 1



GENERAL NOTES:

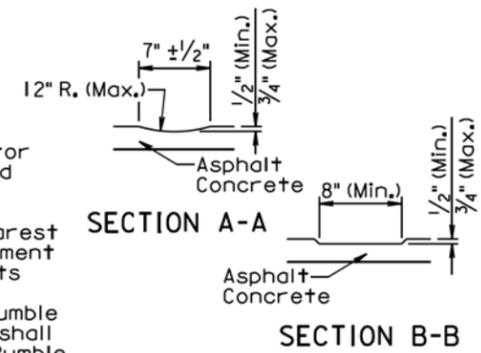
A rumble stripe shall be constructed on all of the asphalt concrete shoulders by grinding alternating patterns of 40' continuous indentations in the asphalt concrete. The rumble stripe shall receive a flush seal with the shoulder flush sealing or asphalt surface treatment.

A rumble stripe shall not be constructed through intersecting roads, entrances, and turnouts. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble stripe adjacent to the intersecting roads, entrances, and turnouts shall be adjusted as approved by the Engineer.

Prior to constructing the rumble stripe the Contractor shall submit to the Engineer, for approval, the proposed method of constructing the rumble stripe.

Measurement of the rumble stripe shall be to the nearest 0.1 of a mile for each shoulder. Measurement and payment of the rumble stripe shall include the 12' long segments without rumble stripes and the segments adjacent to intersecting roads, entrances, and turnouts without rumble stripes. Payment for constructing the rumble stripe shall be at the contract unit price per mile for "Grind 8" Rumble Strip or Stripe in Asphalt Concrete".

**PLAN VIEW
TYPICAL RUMBLE STRIPE
IN ASPHALT CONCRETE**



June 26, 2011

Published Date: 3rd Qtr. 2016	S D D O T	8" RUMBLE STRIPE IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.20
			Sheet 1 of 1

PLOT SCALE - 1:200

PLOTTED FROM - TRMLINT16

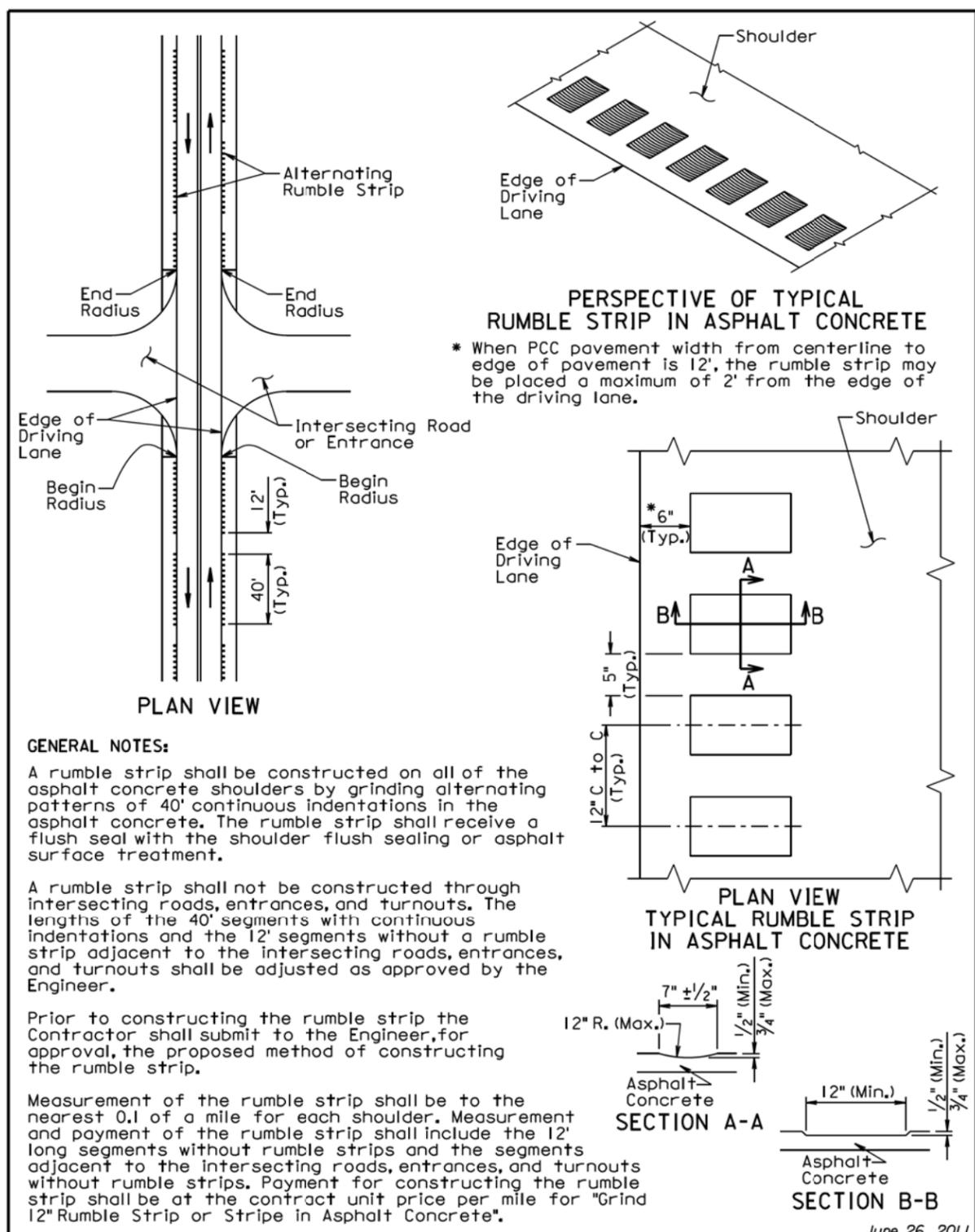
PLOT NAME - 1

FILE - ... \STANDARDPLATES_0505.DGN

Plotting Date: 09/23/2016

PLOT SCALE - 1:200

PLOT NAME - 2



June 26, 2011

S D D O T	12" RUMBLE STRIP IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.24
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1

PLOTTED FROM - IRMLINT16

FILE - ... \STANDARDPLATES_0505.DGN

Plotting Date: 09/23/2016

GENERAL NOTES:

Either flanged channel steel posts or S3x5.7 steel I beam posts shall be used, but post type shall be consistent throughout the project. The S3x5.7 Steel I Beam post shall be used for the end posts.

All costs associated with furnishing and constructing the 3 cable guardrail anchor assembly including the concrete anchor, cable anchor bracket, compensating device, steel turnbuckle cable assembly, and necessary hardware shall be incidental to the contract unit price per each for "3 Cable Guardrail Anchor Assembly".

All costs associated with furnishing and constructing the 3 cable guardrail including posts, cable, cable splices, and hardware shall be incidental to the contract unit price per foot for "3 Cable Guardrail".

The following table and criteria shall apply to the arrangement of the Spring Cable End Assemblies (Compensation Devices) and Turnbuckle Cable End Assemblies:

LENGTH OF CABLE RUN	CRITERIA FOR ARRANGEMENT OF THE SPRING CABLE END ASSEMBLIES (COMPENSATION DEVICES) AND TURNBUCKLE CABLE END ASSEMBLIES
Less than 500'	Use turnbuckle on the approaching traffic end and compensating device on the other end of each individual cable, except in the W Beam to 3 Cable Transition where all compensating devices shall be provided at the bridge ends.
Greater than 500' to 1000'	Use compensating device on each end of each individual cable.
Greater than 1000'	Start new run by interlacing at last parallel post as shown on sheet 2 of 6.

All Compensating Devices shall be attached to the cable anchor bracket when one end of the run is attached to a bridge.

Compensating Devices must have a spring rate of 450 ± 50 pounds per inch and shall have a total available travel of 6 inches minimum.

The cable shall be retensioned after the initial 2 week pretension period in accordance with the following table:

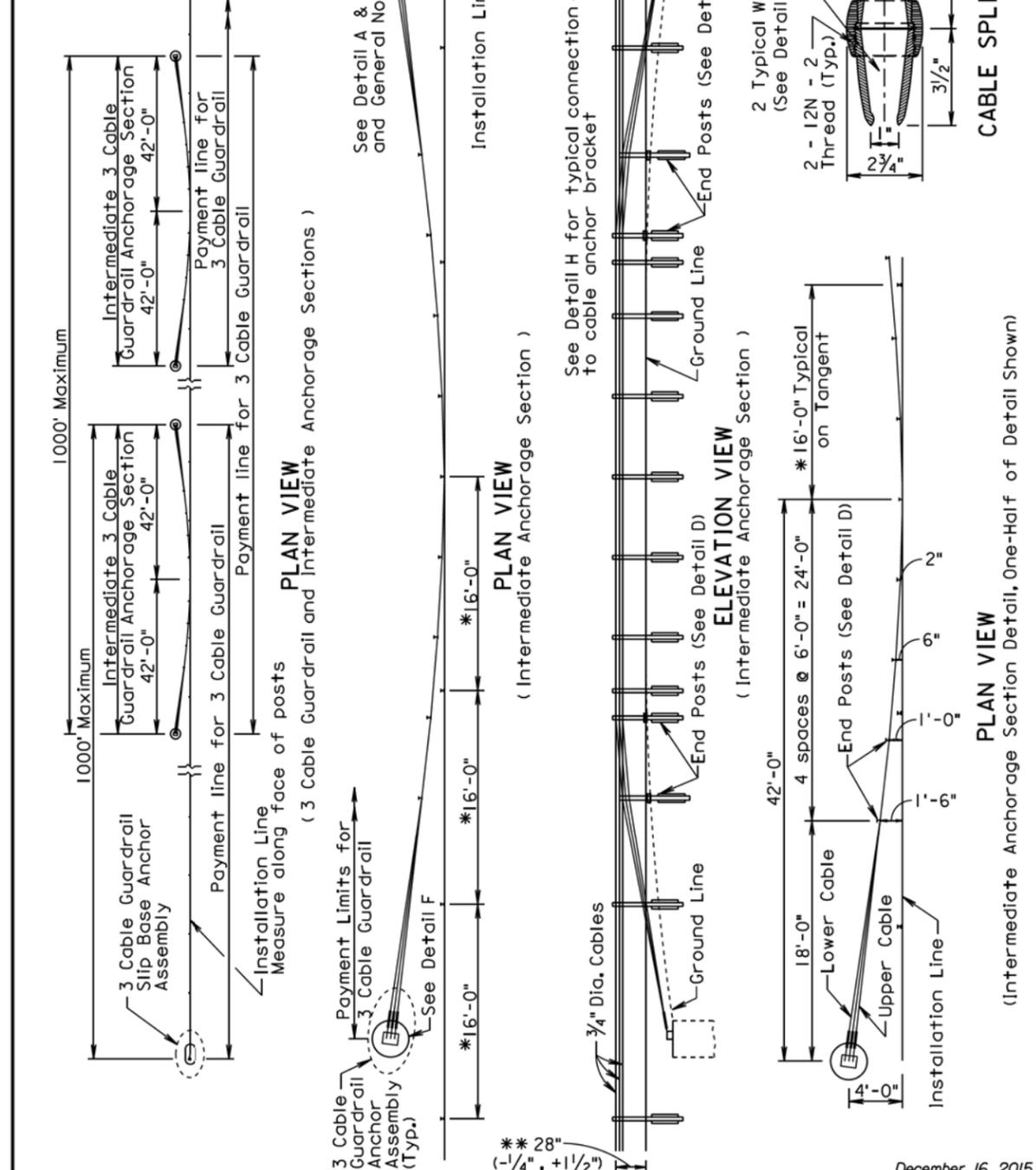
CABLE TENSIONING SPECIFICATIONS														
Temperature Range (Degree F)	-20 to -11	-10 to -1	0 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 to 89	90 to 99	100 to 109	110 to 120
Spring Compression (Inch)	4 1/4	4	3 3/4	3 1/2	3 1/4	3	2 3/4	2 1/2	2 1/4	2	1 3/4	1 1/2	1 1/4	1

POST SPACING FOR HORIZONTAL CURVES	
Roadway $\frac{1}{4}$ Curvature	Maximum Post Spacing (Ft)
1° and Less	16'
Greater than 1° to 8°	12'
Greater than 8° to 13°	8'
Greater than 13°	NOT ALLOWED

December 16, 2015

S D D O T	3 CABLE GUARDRAIL (LOW TENSION)	PLATE NUMBER 629.01
	Published Date: 3rd Qtr. 2016	Sheet 1 of 6

* See Table on Sheet 1 for post spacing on horizontal curves.
 ** See Standard Plate 630.98



December 16, 2015

S D D O T	3 CABLE GUARDRAIL (LOW TENSION)	PLATE NUMBER 629.01
	Published Date: 3rd Qtr. 2016	Sheet 2 of 6

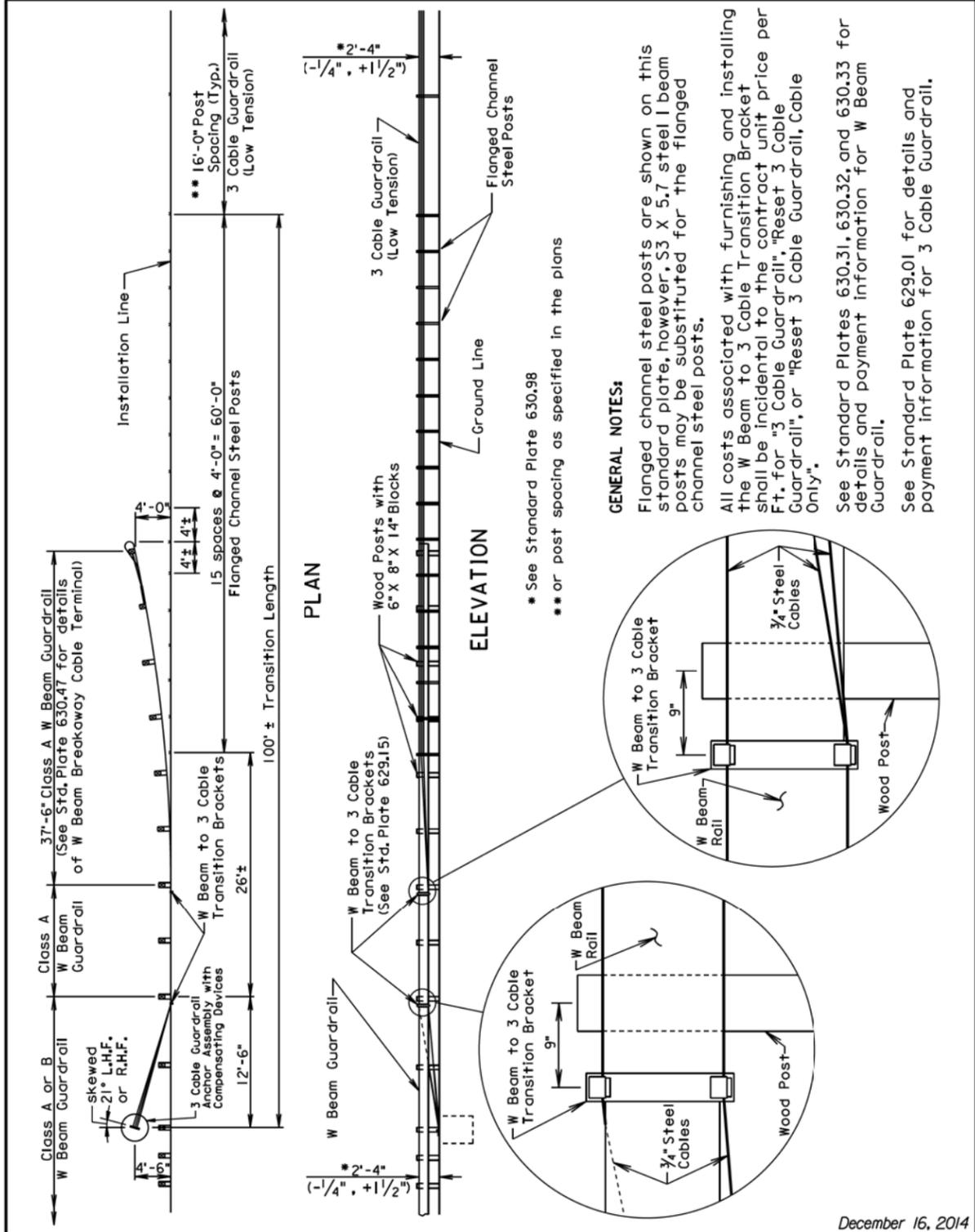
PLOT SCALE - 1:200

PLOTTED FROM - TRMLINT16

PLOT NAME - 3

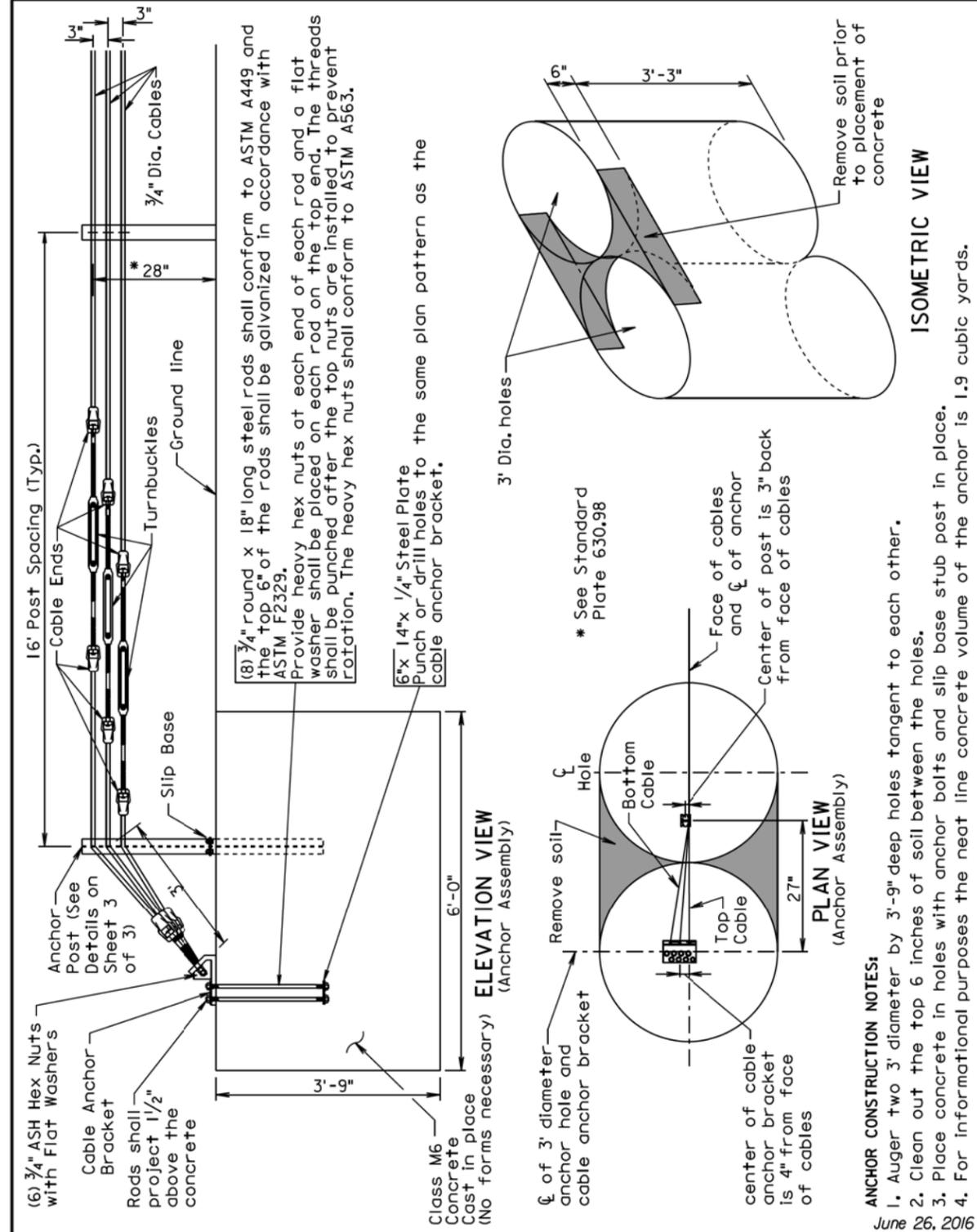
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Plotting Date: 09/23/2016



December 16, 2014

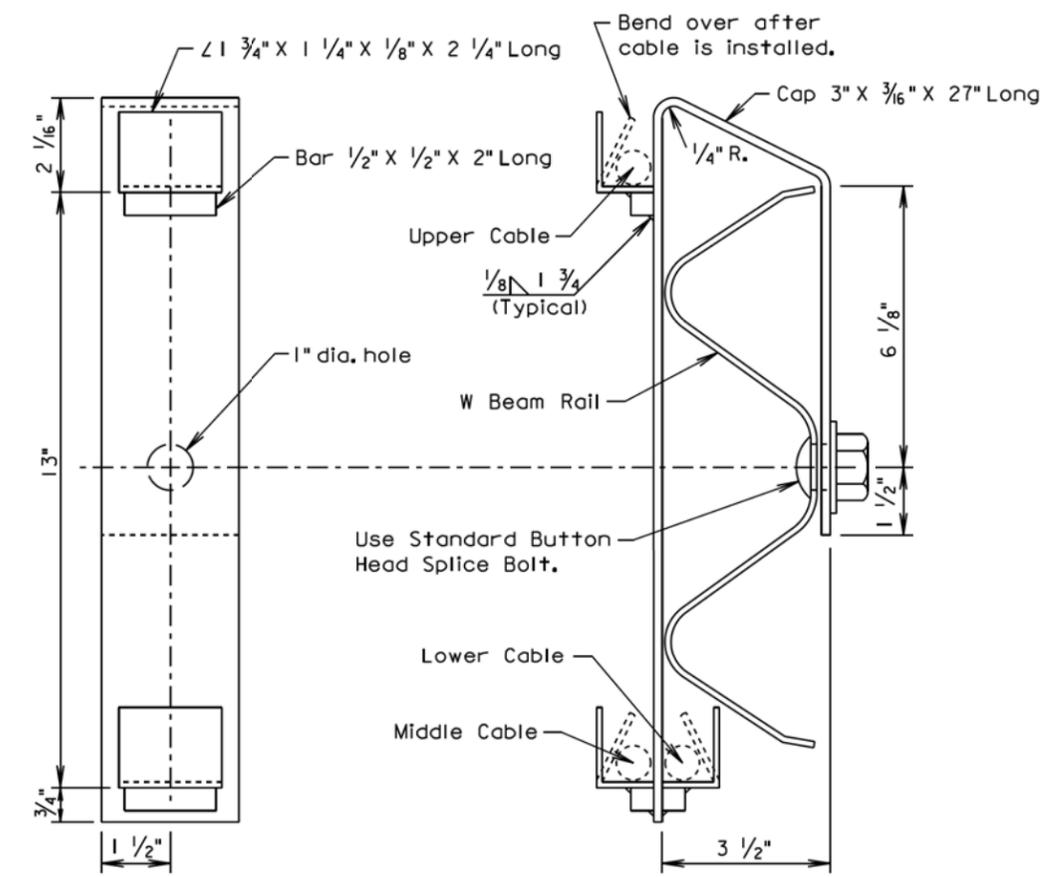
S D D O T	W BEAM TO 3 CABLE TRANSITION	PLATE NUMBER 629.05
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1



June 26, 2016

S D D O T	3 CABLE GUARDRAIL SLIP BASE ANCHOR ASSEMBLY	PLATE NUMBER 629.10
	Published Date: 3rd Qtr. 2016	Sheet 1 of 3

Plotting Date: 09/23/2016



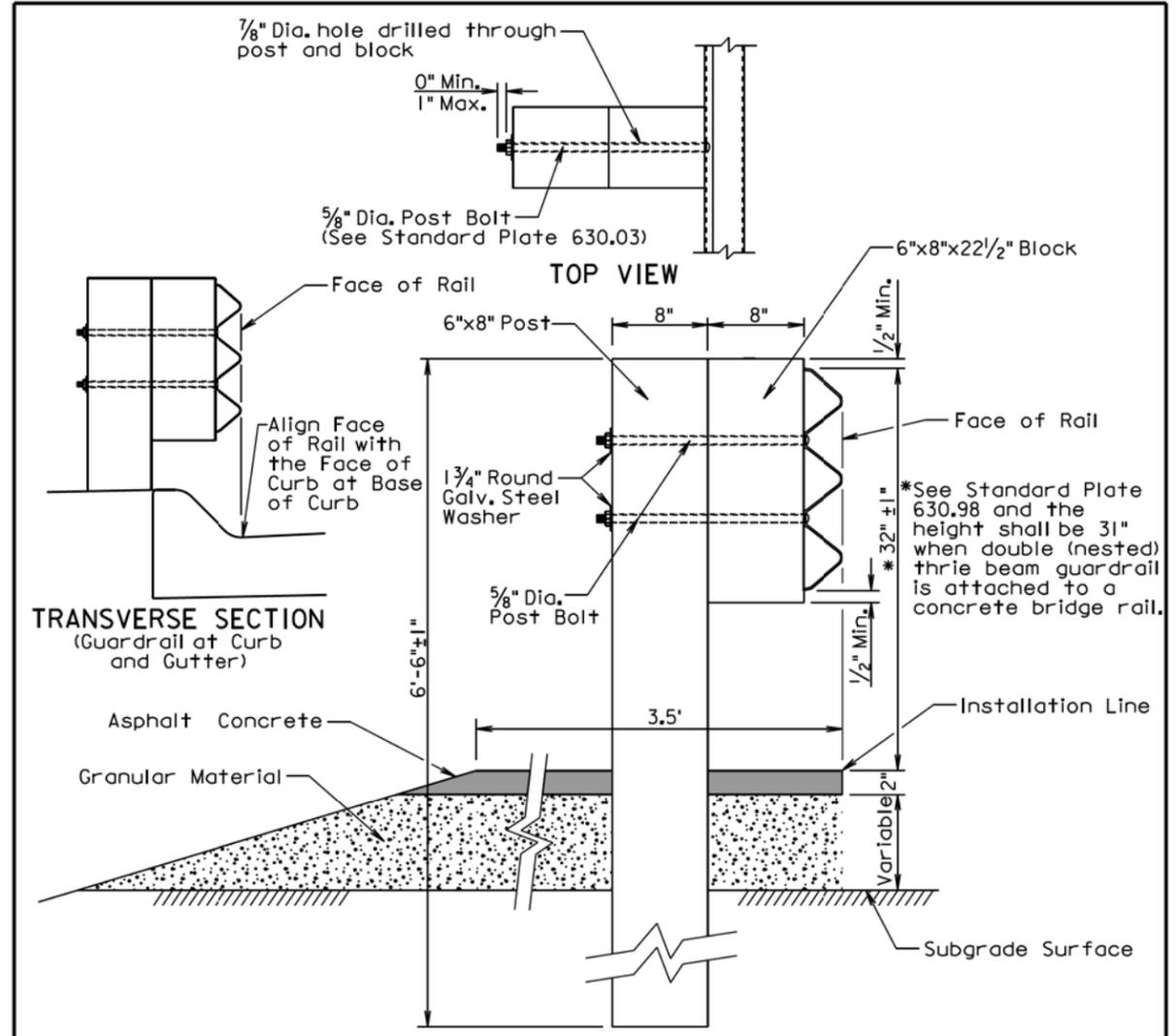
ELEVATION (TRANSITION BRACKET)
END VIEW (W BEAM RAIL AND TRANSITION BRACKET)

GENERAL NOTES:
Steel used in the fabrication of the bracket shall conform to ASTM A36 and the bracket shall be galvanized after fabrication in accordance with ASTM A123.

March 31, 2000

S D D O T	W BEAM TO 3 CABLE TRANSITION BRACKET	PLATE NUMBER 629.15
		Sheet 1 of 1

Published Date: 3rd Qtr. 2016



GENERAL NOTES:
Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the Specifications for "Asphalt Concrete Composite." For informational purposes, the Rate of Materials for the 3.5' wide section of asphalt concrete as shown above shall be 4.80 Tons per Station.
Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.
The cross slope for the surfacing and subgrade surface shall be as specified in the plans (See Typical Sections and/or Cross Sections).
The top of post and top of block shall have a true square cut. The top of block shall be ±1 inch from the top of the post.

June 26, 2015

S D D O T	THRIE BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.01
		Sheet 1 of 1

Published Date: 3rd Qtr. 2016

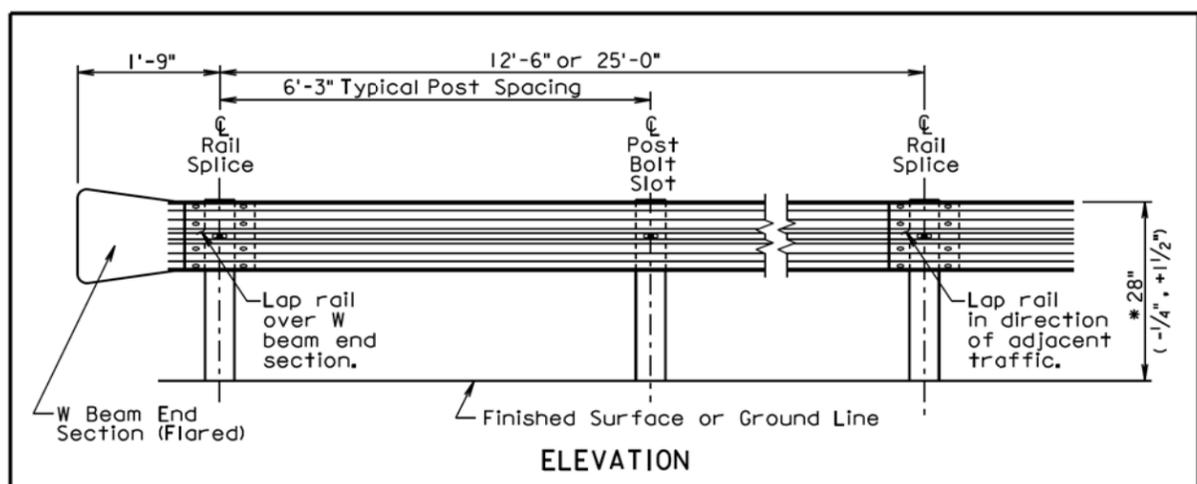
PLOT SCALE - 1:200

PLOTTED FROM - TRMLINT16

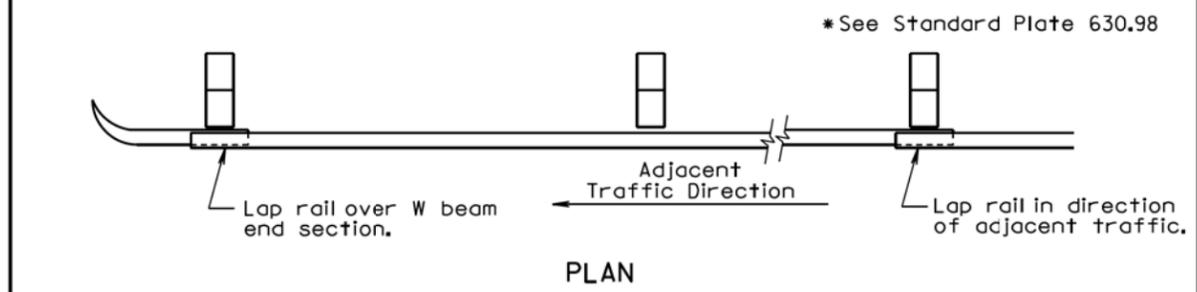
PLOT NAME - 8

FILE - ... \STANDARDPLATES_0505.DGN

Plotting Date: 09/23/2016



ELEVATION



PLAN

W BEAM GUARDRAIL DEFLECTION CRITERIA	
POST SPACING	MAXIMUM DEFLECTION
6'-3"	5'-0"
3'-1 1/2"	3'-9"

For Informational Purposes Only

GENERAL NOTES:

All W beam rail shall be Type I.

There will be no separate payment for furnishing and installing W Beam End Sections (Flared) and W Beam Terminal Connectors. All costs for the W Beam End Sections (Flared) and W Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

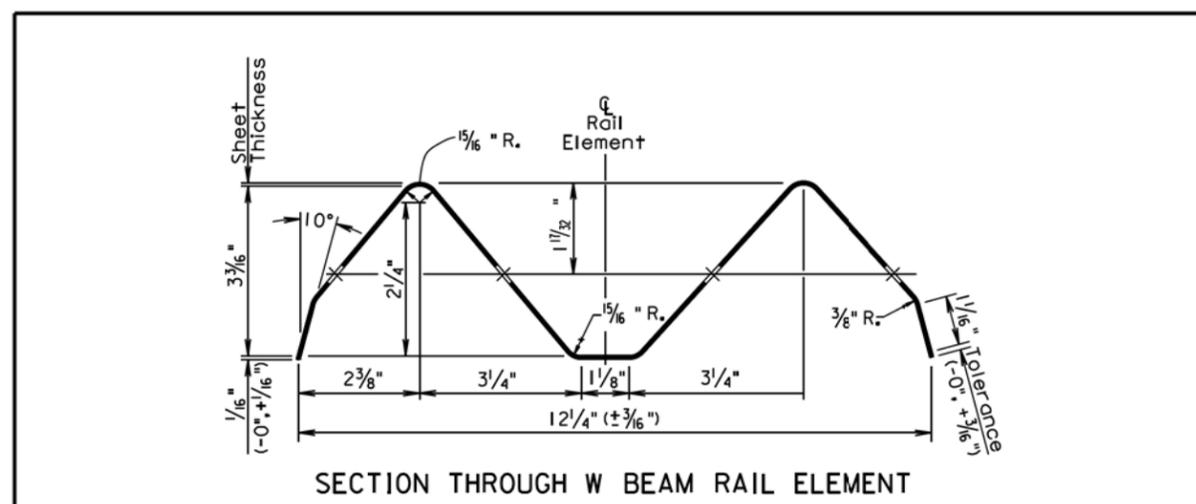
W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used shall be compatible with the total length of rail per site as shown in the plans.

W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

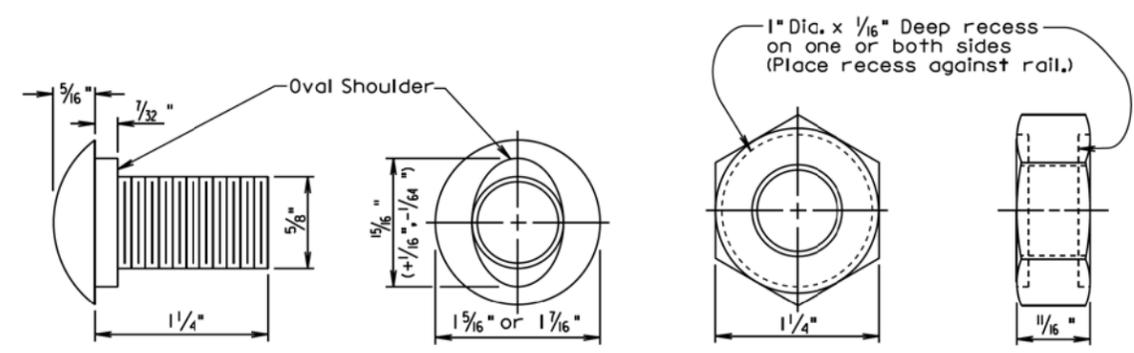
All costs for constructing W beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

June 26, 2015

S D D O T	W BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.32
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1

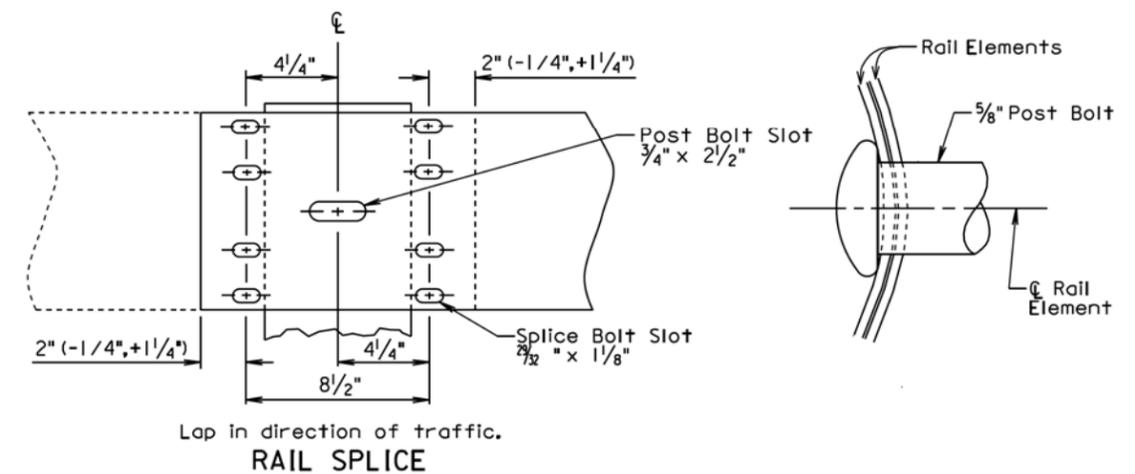


SECTION THROUGH W BEAM RAIL ELEMENT



The Post Bolt is similar except the post bolt is 18" long.

SPLICE BOLT
(5/8" BUTTON HEAD BOLT AND RECESS NUT)



RAIL SPLICE

December 23, 2004

S D D O T	W BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.33
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1

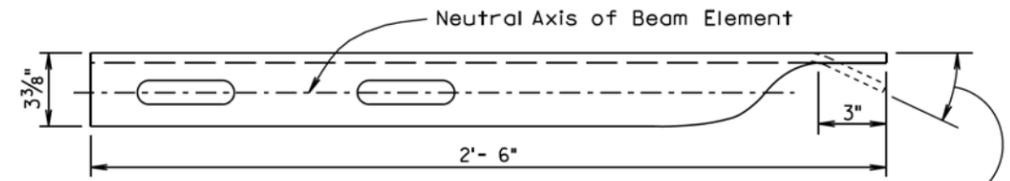
PLOT SCALE - 1:200

PLOTTED FROM - TRMLINT16

PLOT NAME - 9

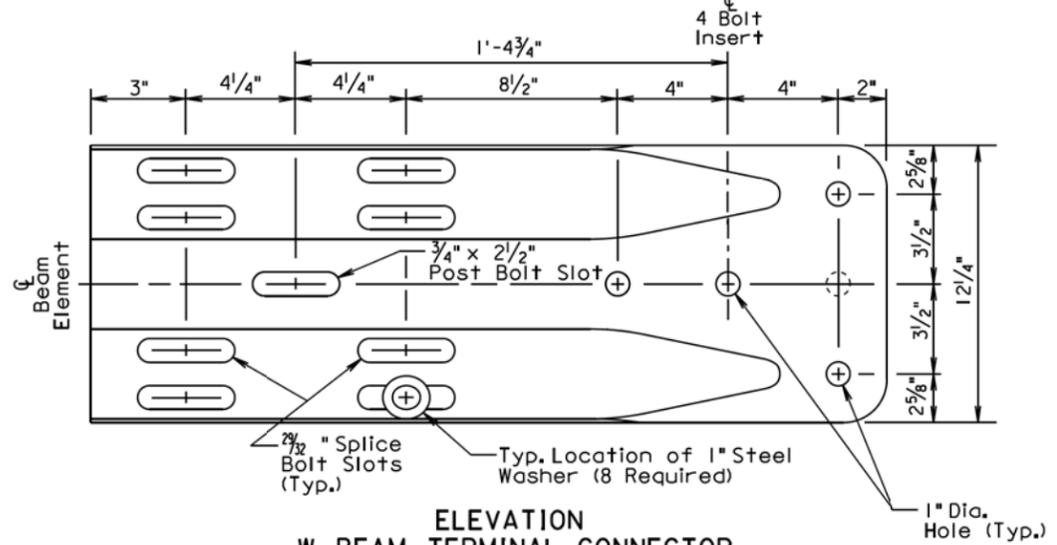
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Plotting Date: 09/23/2016

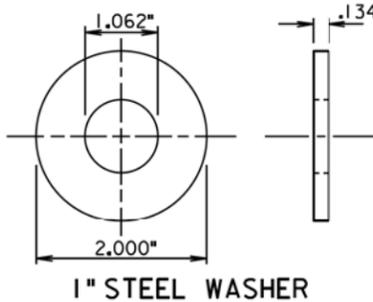


An extra hole and an approximate 26° bend shall be required only for the Breakaway Cable Terminal. The Modified W Beam Terminal Connector placement detail is shown on Standard Plate 630.47.

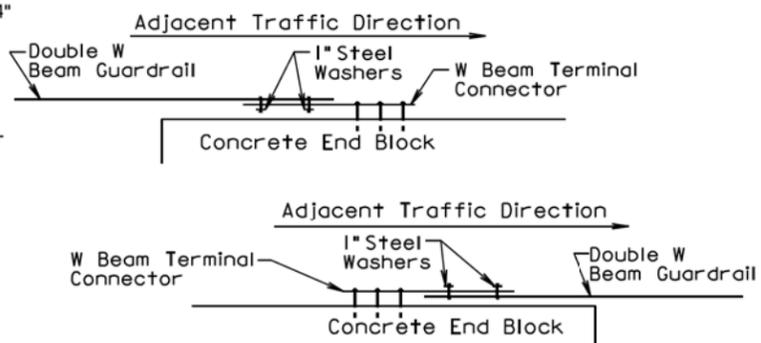
TOP VIEW



ELEVATION
W BEAM TERMINAL CONNECTOR



1" STEEL WASHER

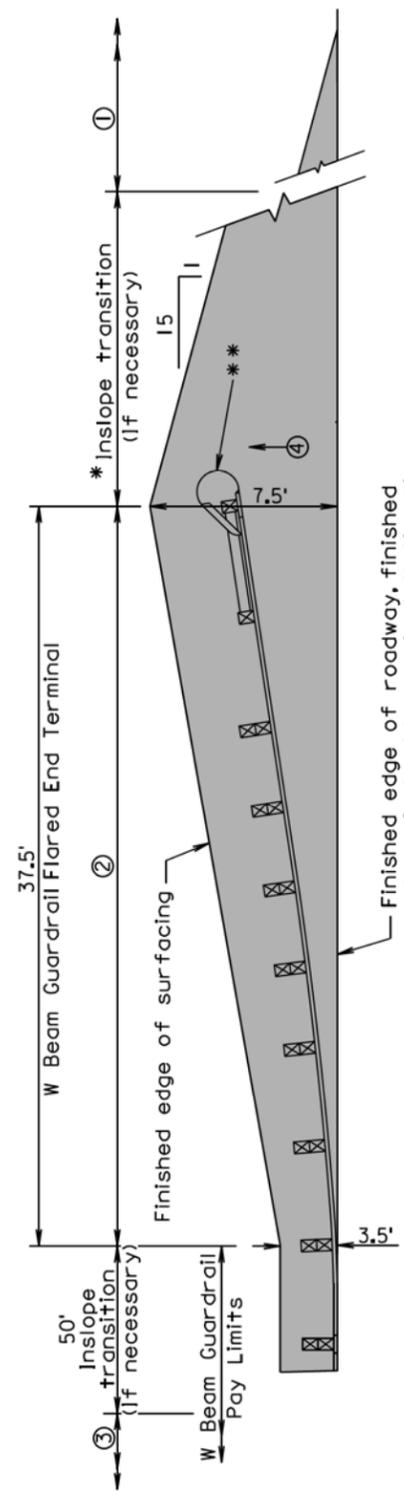


GENERAL NOTES:

W Beam Terminal Connectors shall be 10 gauge.
 When the W beam terminal connector is used to connect the rail to the bridge, 1" steel washers shall be used at the lap splice and the washers shall be in direct contact with the 3" slots of the W beam terminal connector. See the drawings above for the typical locations of the 1" steel washers.
 There will be no separate payment for furnishing and installing the W Beam Terminal Connector. All costs for the W Beam Terminal Connector shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

September 14, 2001

S D D O T	W BEAM TERMINAL CONNECTOR AND 1" STEEL WASHER	PLATE NUMBER 630.35
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1



* The length of inslope transition varies with the amount of change between inslopes. The length of the transition shall 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'.

- PLAN**
- ① 2" Asphalt concrete surfacing with variable thickness granular material
 - ② Same inslope as mainline inslope
 - ③ 4:1 inslope
 - ④ 2:1 inslope or flatter, or inslope as specified in plans
 - ⑤ Same slope as roadway cross slope

GENERAL NOTES:

The W beam guardrail flared end terminal shall be installed according to the manufacturer's installation instructions.
 ** An adhesive object marker shall be placed on the end section buffer or extruder after placement of the end section buffer or extruder. The adhesive object marker dimensions may be 16" x 16" or other variation due to the shape of the end section buffer or extruder. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.
 Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the Specifications for "Asphalt Concrete Composite".
 Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.

December 16, 2014

S D D O T	EMBANKMENT AND SURFACING FOR W BEAM GUARDRAIL FLARED END TERMINAL	PLATE NUMBER 630.45
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1

PLAN

2:1 or flatter inslope, or inslope as specified in the plans.

37.5'

7.5'

Cross Slope

Finished edge of roadway, finished shoulder line, or installation line

37'-6" Parabolic Curve

Payment Limits for Class A W Beam Guardrail

Wood posts with 6"x8"x1/4" blocks (Typ.)

Required wood breakaway post shall be inserted into steel tube.

3.5'

2" thickness of compacted asphalt concrete with granular material.

See Detail A (Sheet 2 of 3)

Class A W Beam Guardrail

Wood Breakaway Posts

28" (Typ.)

See Standard Plate 630.98

ELEVATION

Offsets shall be measured from the installation line to the face of the W beam guardrail.

OFFSETS FOR BREAKAWAY CABLE TERMINAL	
POST	OFFSET
A	4.00'
B	2.79'
C	1.79'
D	1.01'
E	0.45'
F	0.11'

GENERAL NOTES:

The finished embankment surfacing cross slope shall match the roadway cross slope; however, if a steeper cross slope is necessary the steepest allowable cross slope is 10:1.

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

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

**An adhesive object marker shall be placed on the end section buffer after placement of the end section buffer. The adhesive object marker dimensions may be 16" x 16" or other variation due to the shape of the end section buffer. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.

Costs for constructing the W Beam Guardrail Breakaway Cable Terminal including labor, equipment, and materials including the anchor bracket, cable assembly, steel tubes, soil plates, bearing plate, pipe sleeve, W beam end section (buffer), modified W beam terminal connector, and all necessary hardware shall be incidental to the contract unit price per each for "W Beam Guardrail Breakaway Cable Terminal".

December 16, 2014

SD DOT

W BEAM GUARDRAIL BREAKAWAY CABLE TERMINAL

PLATE NUMBER
630.47

Sheet 1 of 3

Published Date: 3rd Qtr. 2016

PLAN DETAIL A
6'-3"

1 3/4" Round Washer

Required wood breakaway post shall be inserted into steel tube.

1 3/4" Round Washer

Soil Plate

1 3/4" Rectangular Plate Washer

1 3/4" Rectangular Plate Washer

Soil Plate

4 1/4" x 4 1/4"

18"

See Standard Plate 630.98

ELEVATION DETAIL A
6'-3"

Post Bolt shall be 5/8" x 9/2" Button Head Bolt.

Splice Bolt shall be 5/8" x 1 1/4" Button Head Bolt.

3/4" Bolt Hole (Typ.)

Anchor Bracket

W Beam Rail

5/8" Dia. Machine Bolts with Washers on Front Face (8 Required)

5/8" Dia. Bolts

5'-0"

13 5/8" to bottom of post

Soil Plate

Finished Surface or Ground Line

5'-0"

5/8" Dia. Bolts

Soil Plate

See Detail D

See Detail C

Cable Assembly (Taut)

5'-0"

13 5/8" to bottom of post

Soil Plate

5'-0"

5/8" Dia. Bolts

Soil Plate

See Detail D

VIEW B-B

W Beam Guardrail End Section (Buffer) 11" ± Radius

Trim Post as Required

Modified W Beam Terminal Connector (See Std. Plate 630.35)

1 3/4" Round Washer

1 3/4" Round Washer

1 3/4" x 3" Rectangular Plate Washers

18"

26° Bend

42 1/2"

5 1/2"

7 1/2"

7"

17 3/4"

15 1/2"

S4S (Finish Four Sides)

* 3/4" Dia. Holes

* 2 3/8" Dia. Hole

* All holes shall be centered on respective sides.

GENERAL NOTES:

All hardware shall be galvanized in accordance with ASTM A153.

The steel tubes shall meet the requirements of ASTM Specification A500, Grade B, and shall be galvanized after fabrication in accordance with the requirements of AASHTO Specification M111.

The anchor bracket, soil plate, and bearing plate shall be fabricated from steel that meets ASTM A36 Specifications. They shall be galvanized after fabrication in accordance with ASTM A123.

The W Beam End Section (Buffer) shall be 12 gage galvanized steel.

The cable shall be 3/4", Type II, with Class A coating in conformance with AASHTO M30.

December 16, 2014

SD DOT

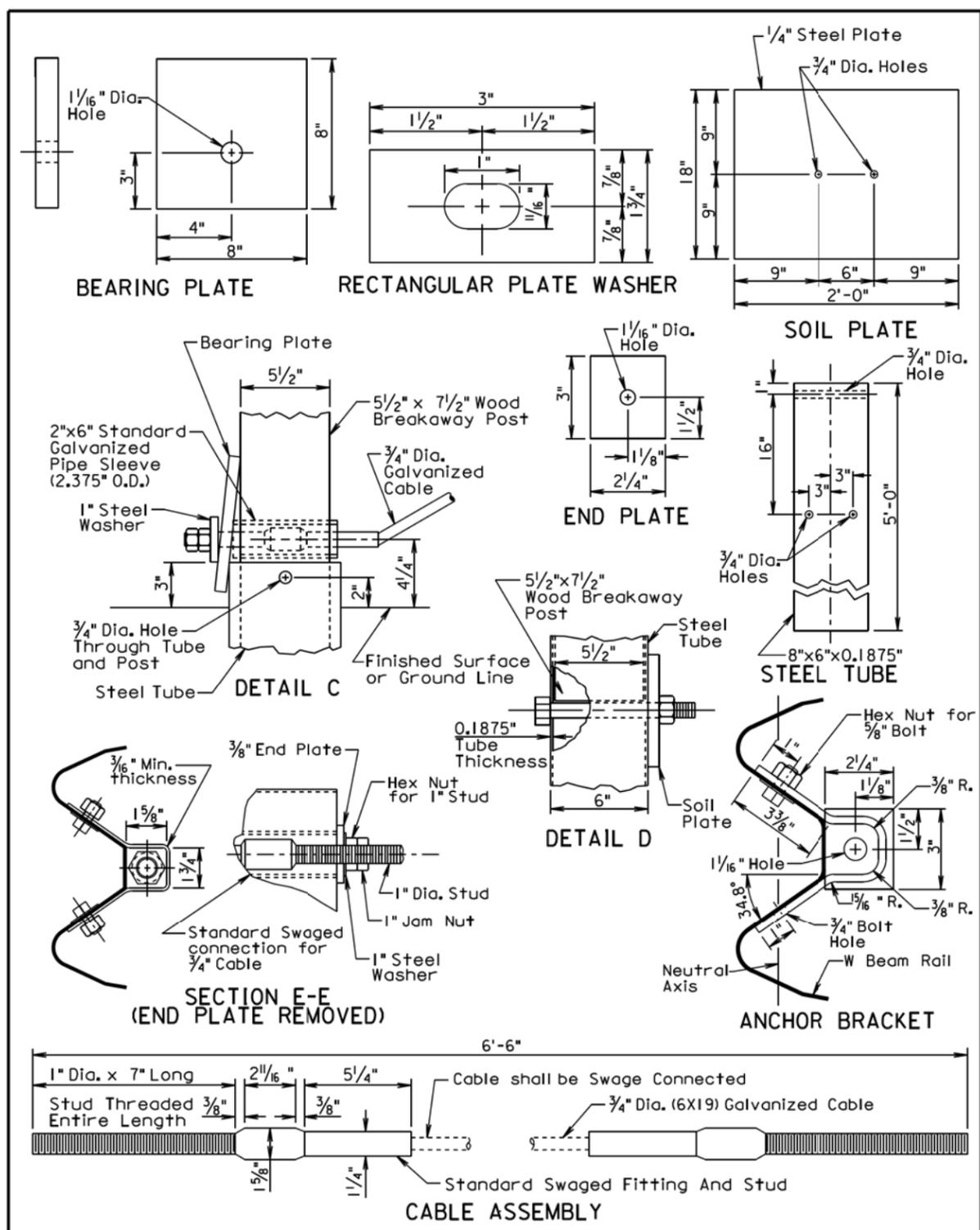
W BEAM GUARDRAIL BREAKAWAY CABLE TERMINAL

PLATE NUMBER
630.47

Sheet 2 of 3

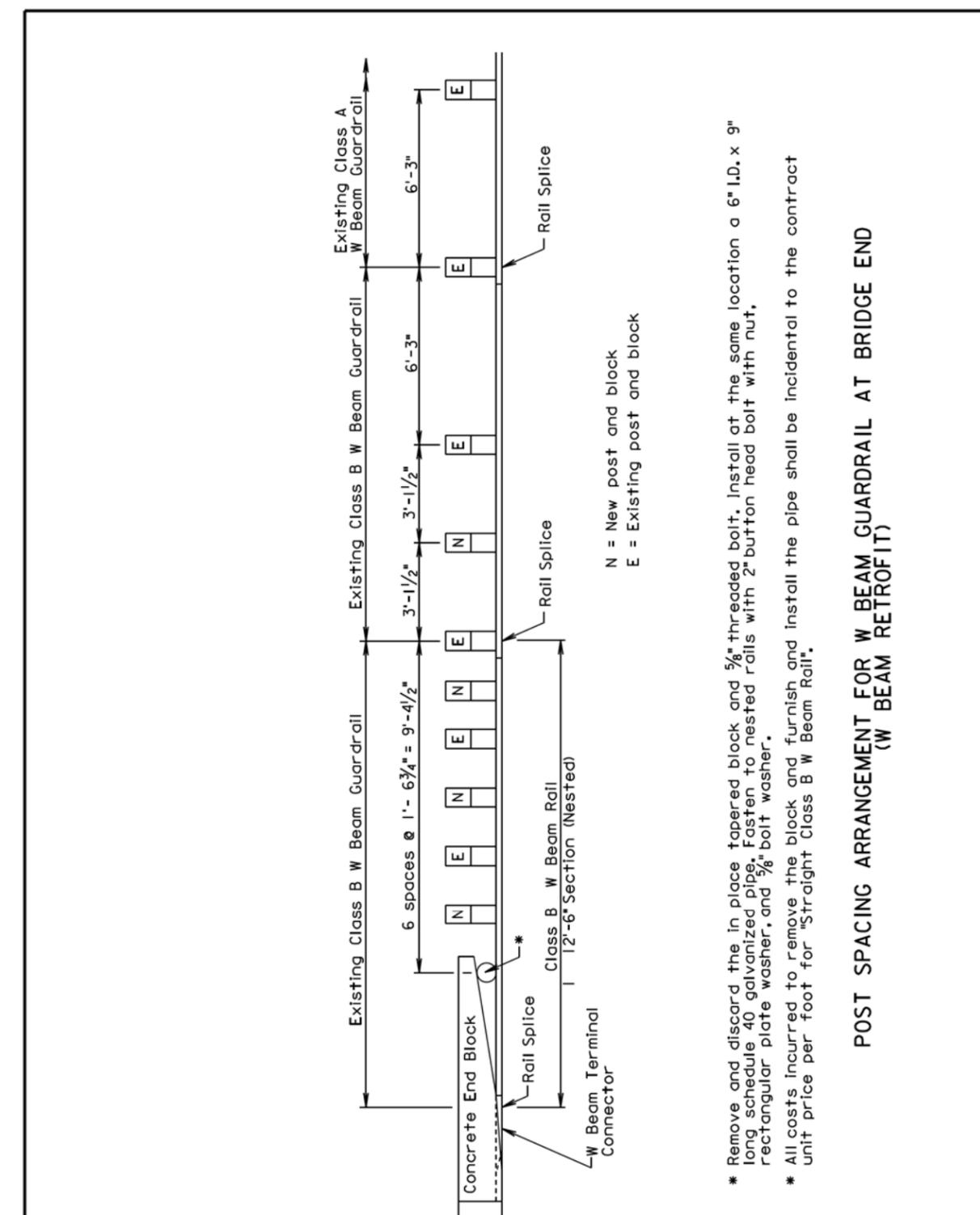
Published Date: 3rd Qtr. 2016

Plotting Date: 09/23/2016



December 16, 2014

S D D O T	W BEAM GUARDRAIL BREAKAWAY CABLE TERMINAL	PLATE NUMBER 630.47
	Published Date: 3rd Qtr. 2016	Sheet 3 of 3



N = New post and block
E = Existing post and block

* Remove and discard the in place tapered block and 5/8" threaded bolt. Install at the same location a 6" I.D. x 9" long schedule 40 galvanized pipe. Fasten to nested rails with 2" button head bolt with nut, rectangular plate washer, and 5/8" bolt washer.

* All costs incurred to remove the block and furnish and install the pipe shall be incidental to the contract unit price per foot for "Straight Class B W Beam Rail".

**POST SPACING ARRANGEMENT FOR W BEAM GUARDRAIL AT BRIDGE END
(W BEAM RETROFIT)**

March 31, 2000

S D D O T	POST SPACING ARRANGEMENT FOR W BEAM GUARDRAIL AT BRIDGE END (W BEAM RETROFIT)	PLATE NUMBER 630.55
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1

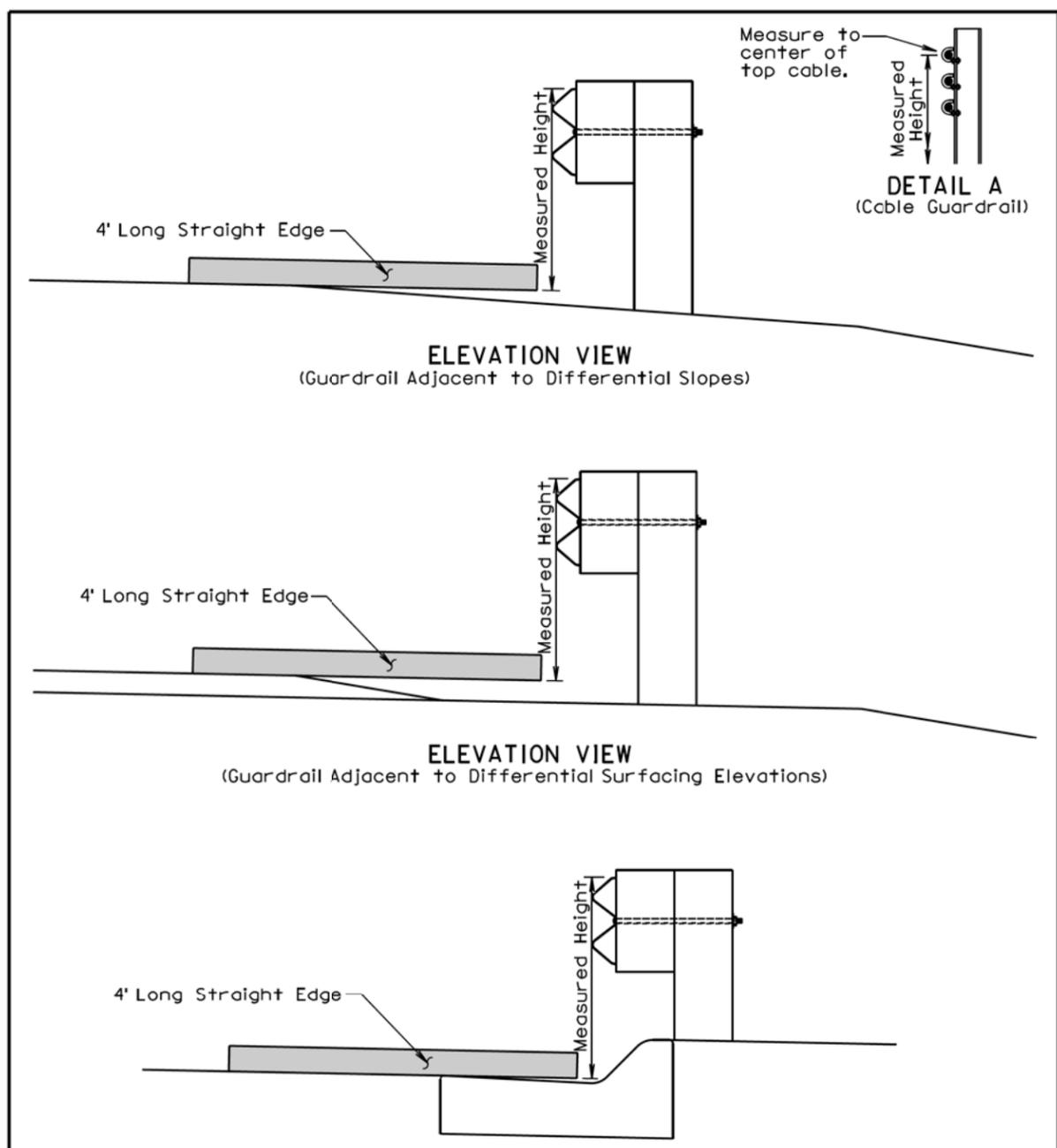
PLOT SCALE - 1:200

PLOTTED FROM - TRMLINT16

PLOT NAME -

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Plotting Date: 09/23/2016



ELEVATION VIEW
(Guardrail Adjacent to Differential Slopes)

ELEVATION VIEW
(Guardrail Adjacent to Differential Surfacing Elevations)

ELEVATION VIEW
(Guardrail at Curb and Gutter)

GENERAL NOTES:

The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems shall be measured in accordance with this standard plate.

When measuring height of cable guardrail or cable barrier the height shall be measured to the center of the top cable. See Detail A.

June 26, 2010

S D D O T	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.98
	Published Date: 3rd Qtr. 2016	Sheet 1 of 1

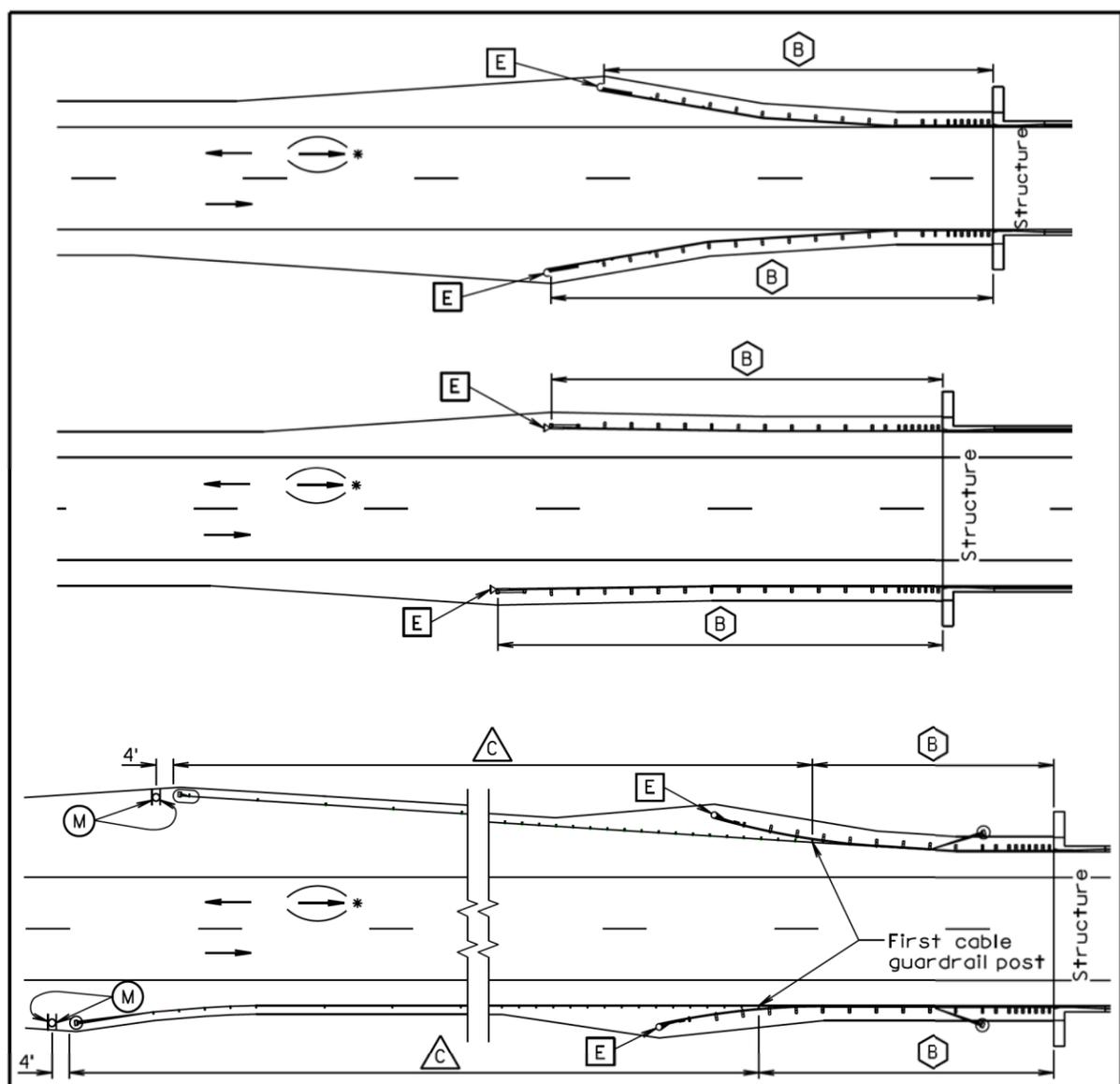
PLOT SCALE - 1:200

PLOTTED FROM - TRMLINT16

PLOT NAME - 13

FILE - ... \STANDARDPLATES_0505.DGN

PLOT SCALE - 1:200



TYPICAL GUARDRAIL LAYOUTS

- Steel Beam Guardrail Delineation
- Guardrail Terminal End Object Marker
- 3 Cable Guardrail Delineation
- Type 2 Object Marker

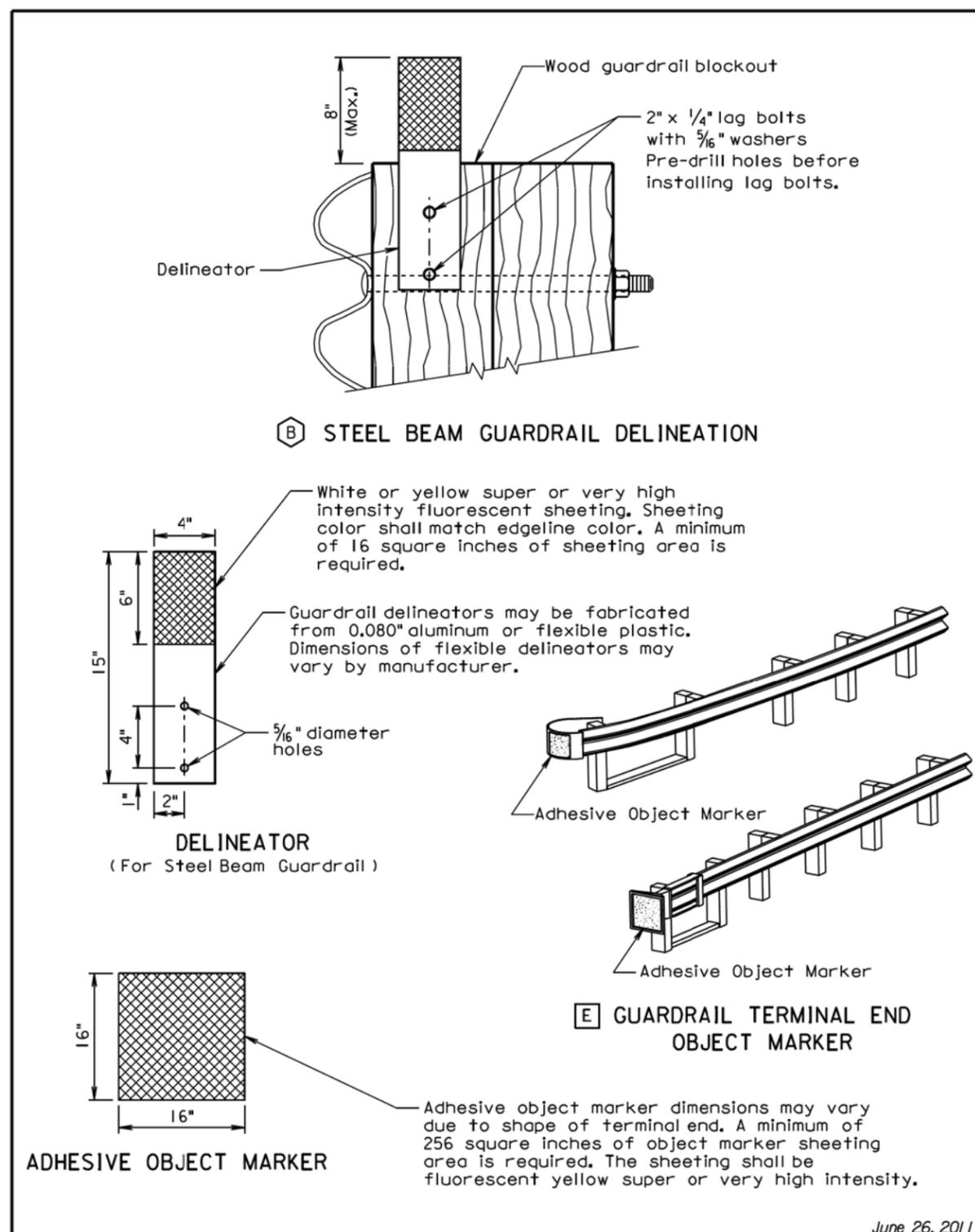
*For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

June 26, 2011

S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
	Published Date: 3rd Qtr. 2016	Sheet 1 of 4

PLOT NAME - 14

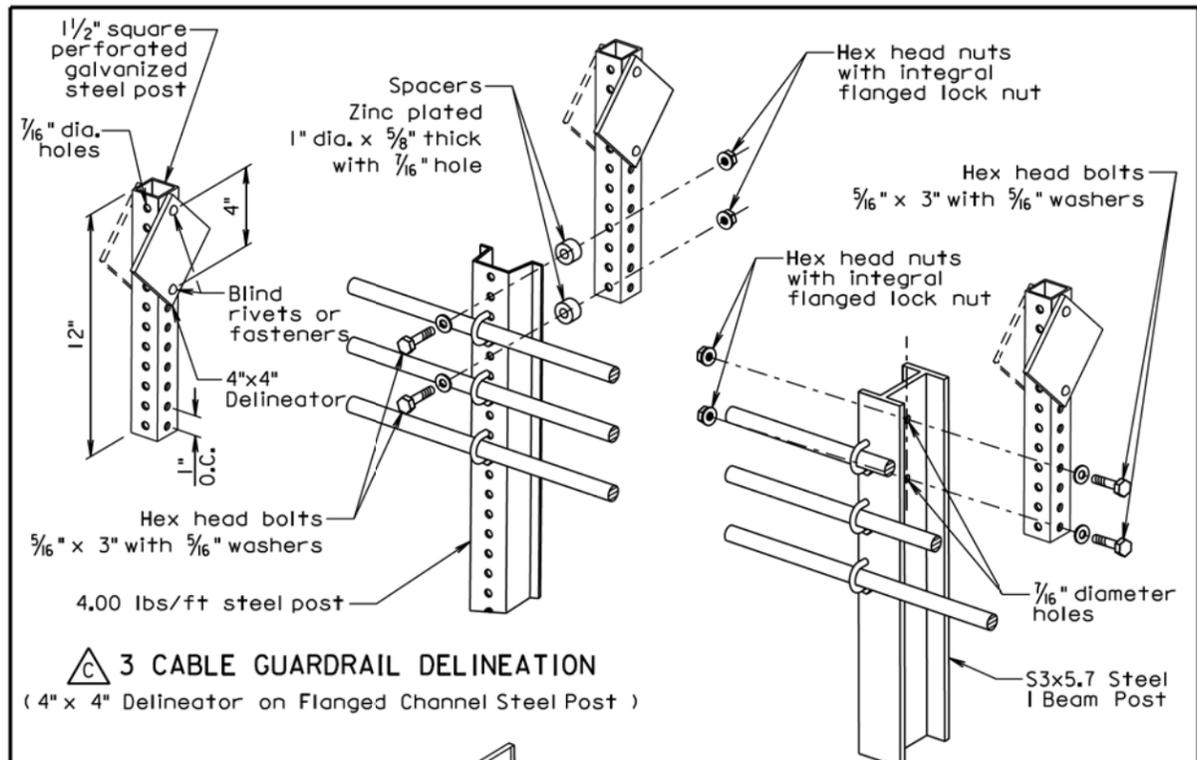
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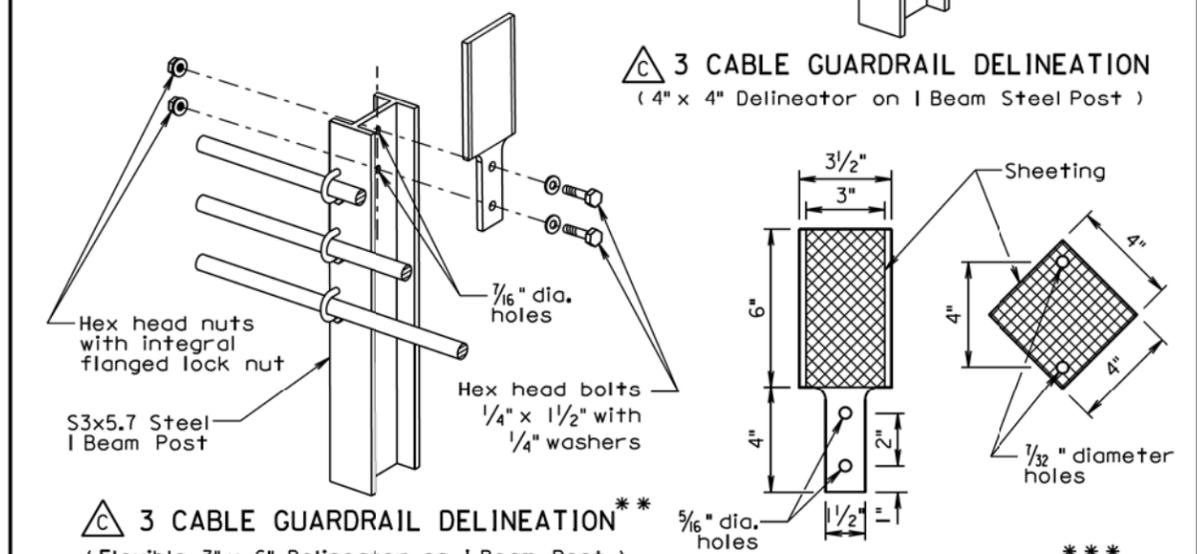
S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
	Published Date: 3rd Qtr. 2016	Sheet 2 of 4

PLOTTED FROM - TRMLINT16

Plotting Date: 09/23/2016

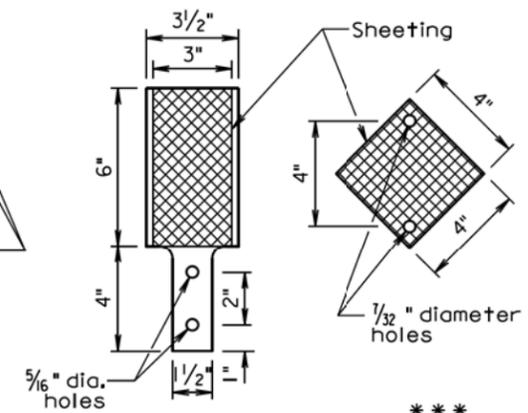


C 3 CABLE GUARDRAIL DELINEATION
(4" x 4" Delineator on Flanged Channel Steel Post)



C 3 CABLE GUARDRAIL DELINEATION
(4" x 4" Delineator on I Beam Steel Post)

C 3 CABLE GUARDRAIL DELINEATION**
(Flexible 3" x 6" Delineator on I Beam Post)



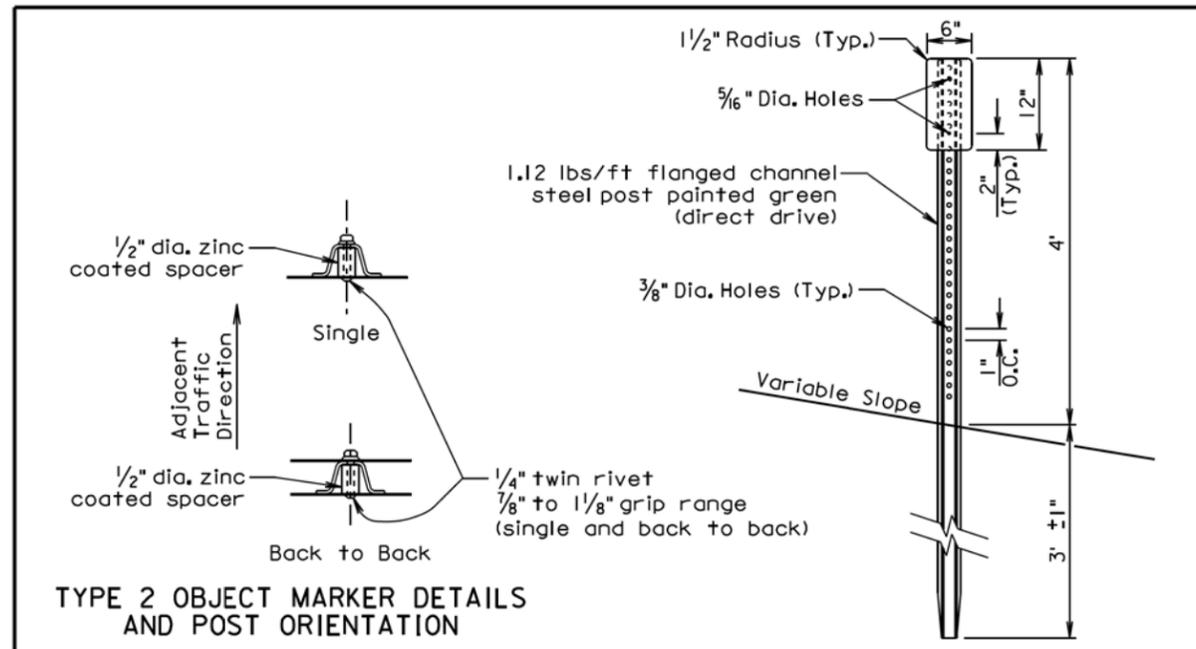
DELINEATORS***
(For 3 Cable Guardrail)

** Flexible delineators may be attached to post with manufacturer approved adhesive instead of bolts.
*** Dimensions of flexible delineators may vary by manufacturer. A minimum of 16 square inches of sheeting area is required. The sheeting shall be white or yellow super or very high intensity fluorescent sheeting. The sheeting color shall match the edgeline color.

June 26, 2011

S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
		Sheet 3 of 4

Published Date: 3rd Qtr. 2016



M TYPE 2 OBJECT MARKER
(For Marking 3 Cable Guardrail Anchor)

TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION

GENERAL NOTES:

The delineators shall be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting shall be of either very high intensity or super high intensity material. For bridges along two-way roadways the sheeting shall be on both sides of the delineator and shall 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.

The first delineator shall be attached to the post nearest the bridge with additional delineators spaced in advance of the bridge at approximately 50 foot intervals. At bridges with short lengths of guardrail, less than 200 feet, a minimum of 4 delineators shall be placed in addition to the yellow object marker. The spacing between the delineators shall be approximately one third of the length of the guardrail. This will provide for a shorter spacing. At bridges with longer lengths of guardrail, greater than 200 feet, including bridges that have cable guardrail transitioning into the steel beam guardrail, the delineators will be placed at a spacing of approximately 50 feet. Delineation shall extend throughout the length of the guardrail system.

All costs for furnishing and installing single or back to back guardrail delineation shall be included in the contract unit price per each for "Guardrail Delineator".

An adhesive object marker shall be placed on the end of the W beam guardrail 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. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.

A type 2 object marker shall be placed adjacent to the 3 cable guardrail anchor at the location noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") shall have a fluorescent yellow very high or super high intensity reflective sheeting. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware shall 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.

June 26, 2011

S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
		Sheet 4 of 4

Published Date: 3rd Qtr. 2016

PLOT SCALE - 1:200

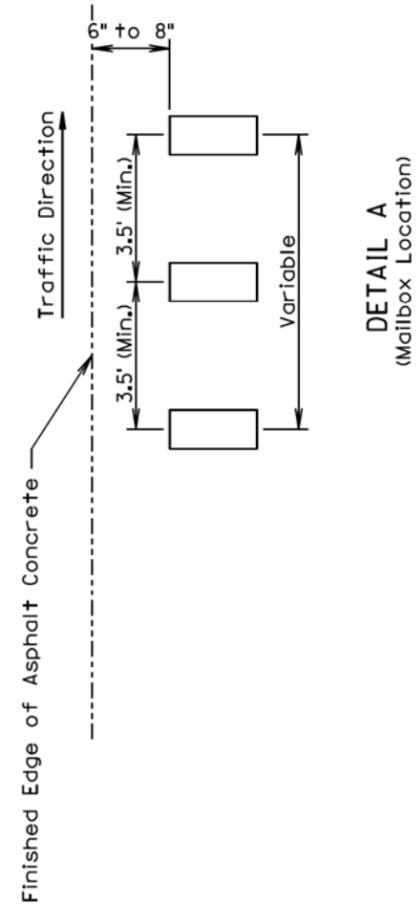
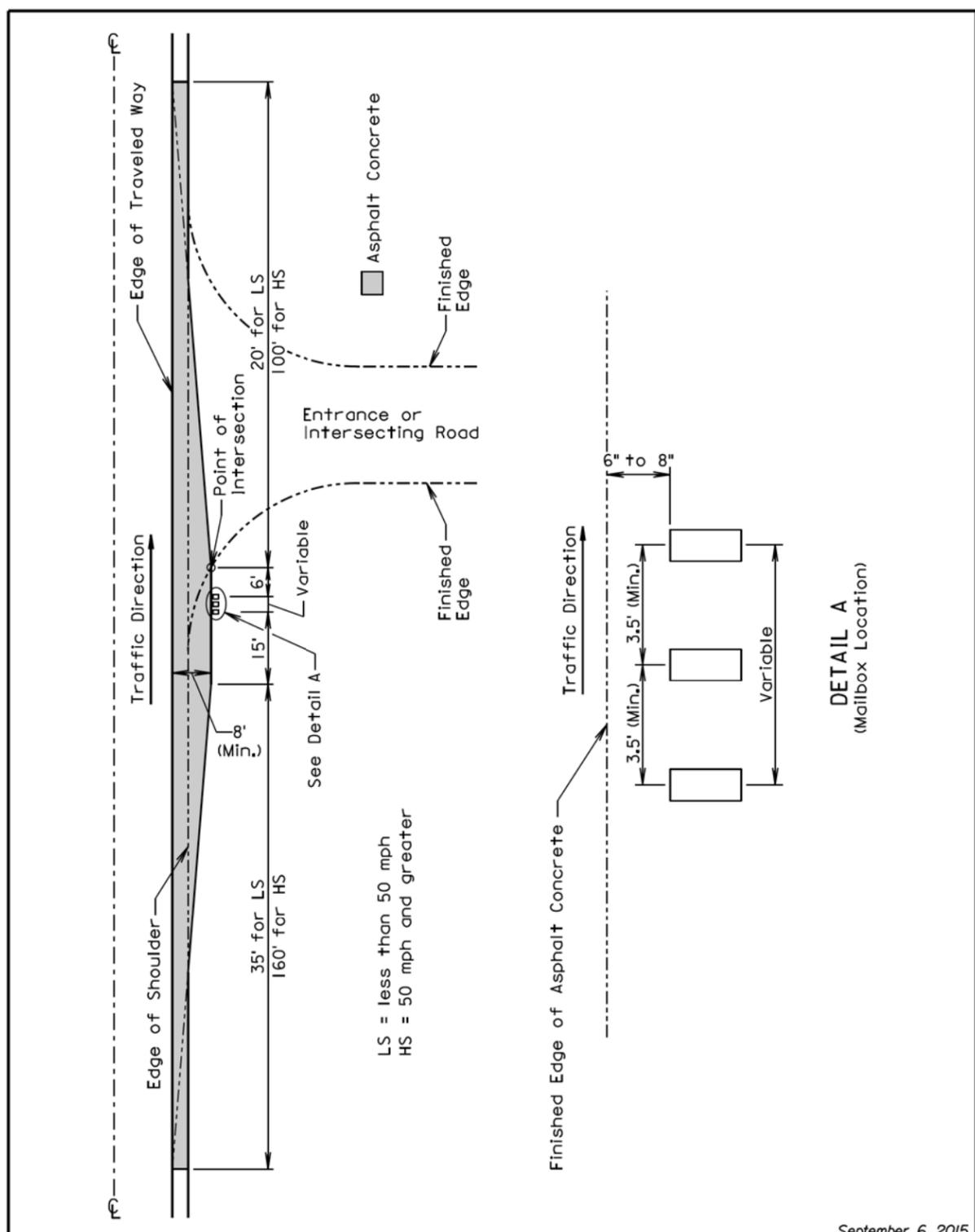
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PLOT NAME - 15

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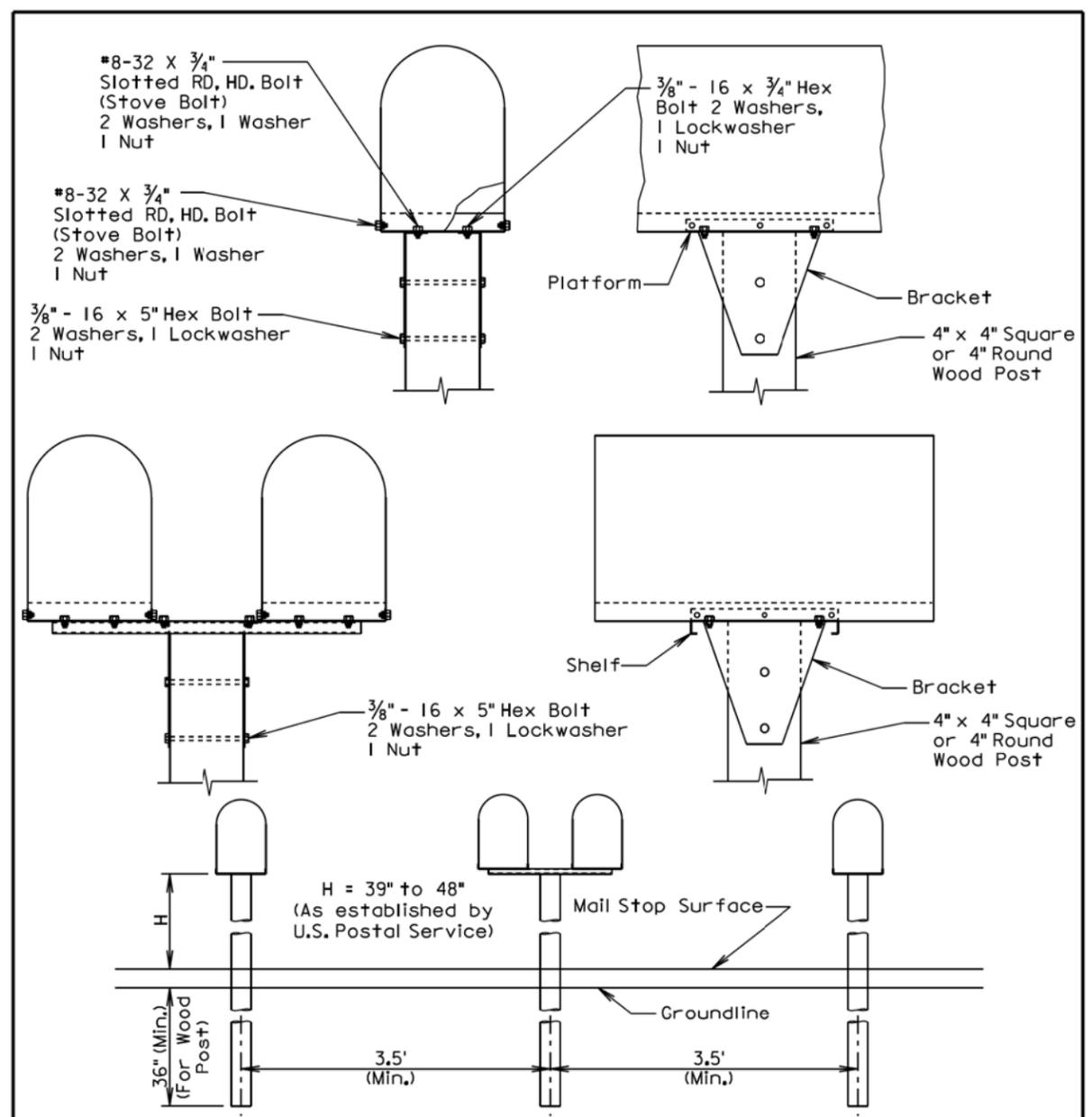
Plotting Date: 09/23/2016

PLOT SCALE - 1:200



September 6, 2015

Published Date: 3rd Qtr. 2016	S D D O T	MAILBOX TURNOUT	PLATE NUMBER 900.01
			Sheet 1 of 1



GENERAL NOTES: SPACING FOR MULTIPLE POST INSTALLATION

The post support assemblies provided should be consistent throughout the project. Single and double mailboxes may be in any sequence.

Post support assemblies shall be one from the approved products list, a 4"x4" or 4" round wood post, or an alternate post support assembly that meets the test level 3 crash testing requirements of NCHRP 350 or MASH.

Alternate mailbox support assemblies shall be approved by the Engineer prior to installation. The Contractor shall provide the Engineer written certification that the mailbox support assembly has met the crash testing requirements and will be installed in accordance with the manufacturer's installation instructions.

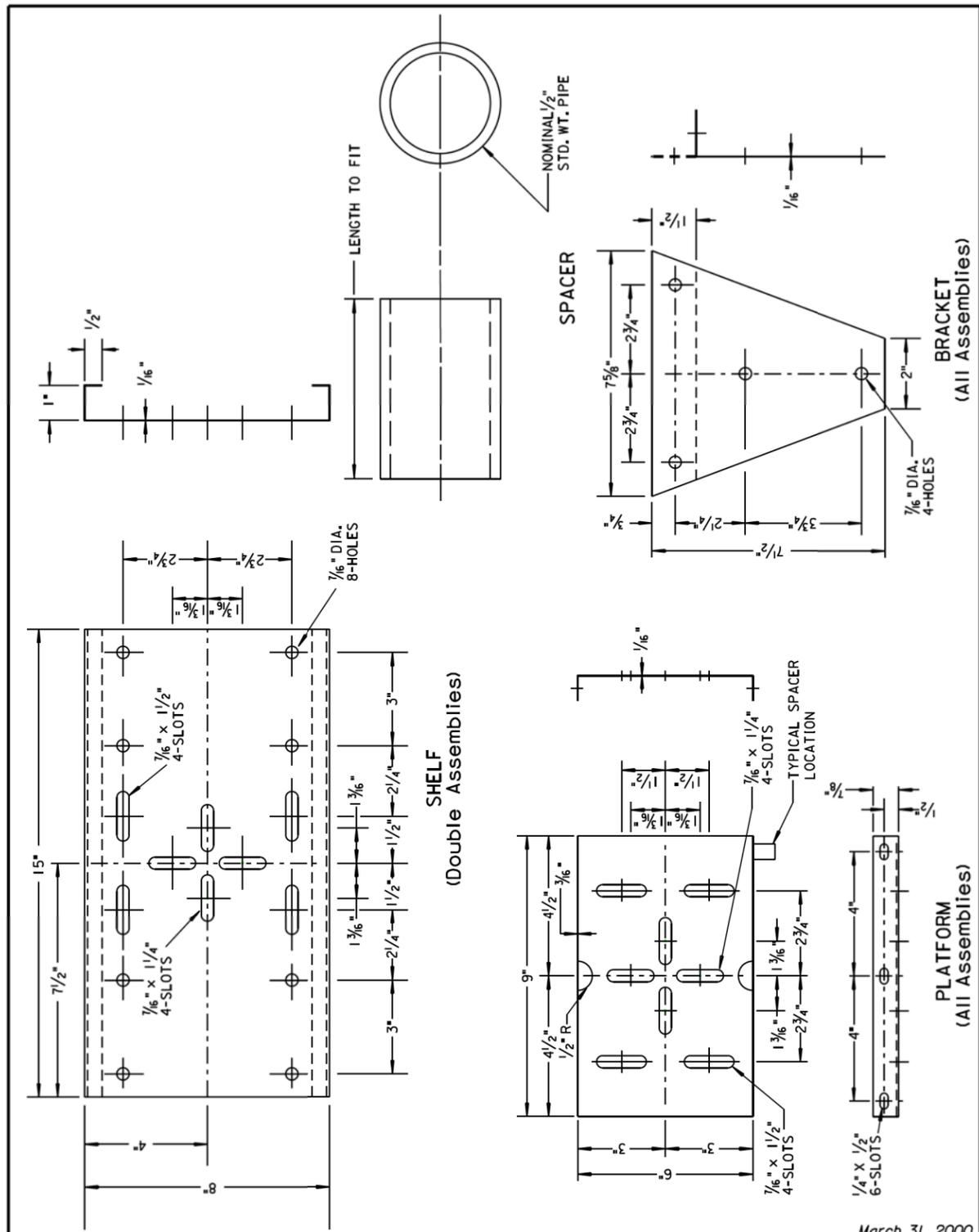
September 6, 2013

Published Date: 3rd Qtr. 2016	S D D O T	SINGLE AND DOUBLE MAILBOX ASSEMBLIES	PLATE NUMBER 900.02
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PLOTTED FROM - TRMLINT16

PLOT NAME - 16

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March 31, 2000

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