

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0050(112)396	1	36

Plotting Date: 01/07/2015

PLANS FOR PROPOSED
PROJECT NH 0050(112)396
SD HIGHWAY 50 EBL
CLAY COUNTY

ASPHALT CONCRETE RESURFACING
& CULVERT WORK

PCN 04E2

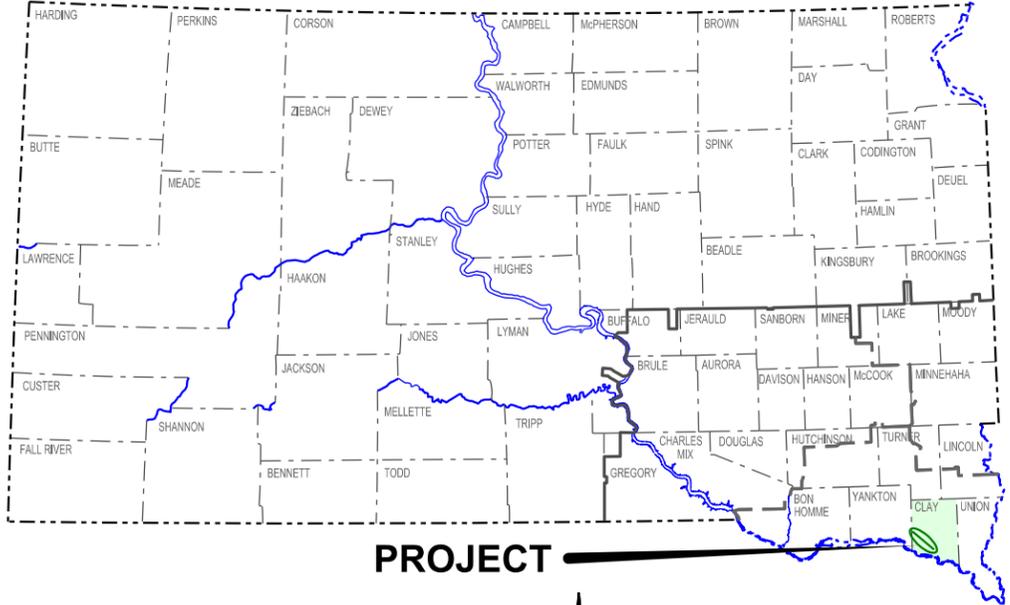
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PLOT SCALE - 1:8750

PLOT NAME - 1

FILE - ... \PRJ2015\CLAY04E2\TTL04E2.DGN



PROJECT

BEGIN PROJECT
STA. 31+80 - EBL
MRM 396.00 +0.643

EQUATION
Sta. 503+71.24 Back=
Sta. 503+65.52 Ahead

EQUATION
Sta. 548+79.79 Back=
Sta. 80+74.76 Ahead

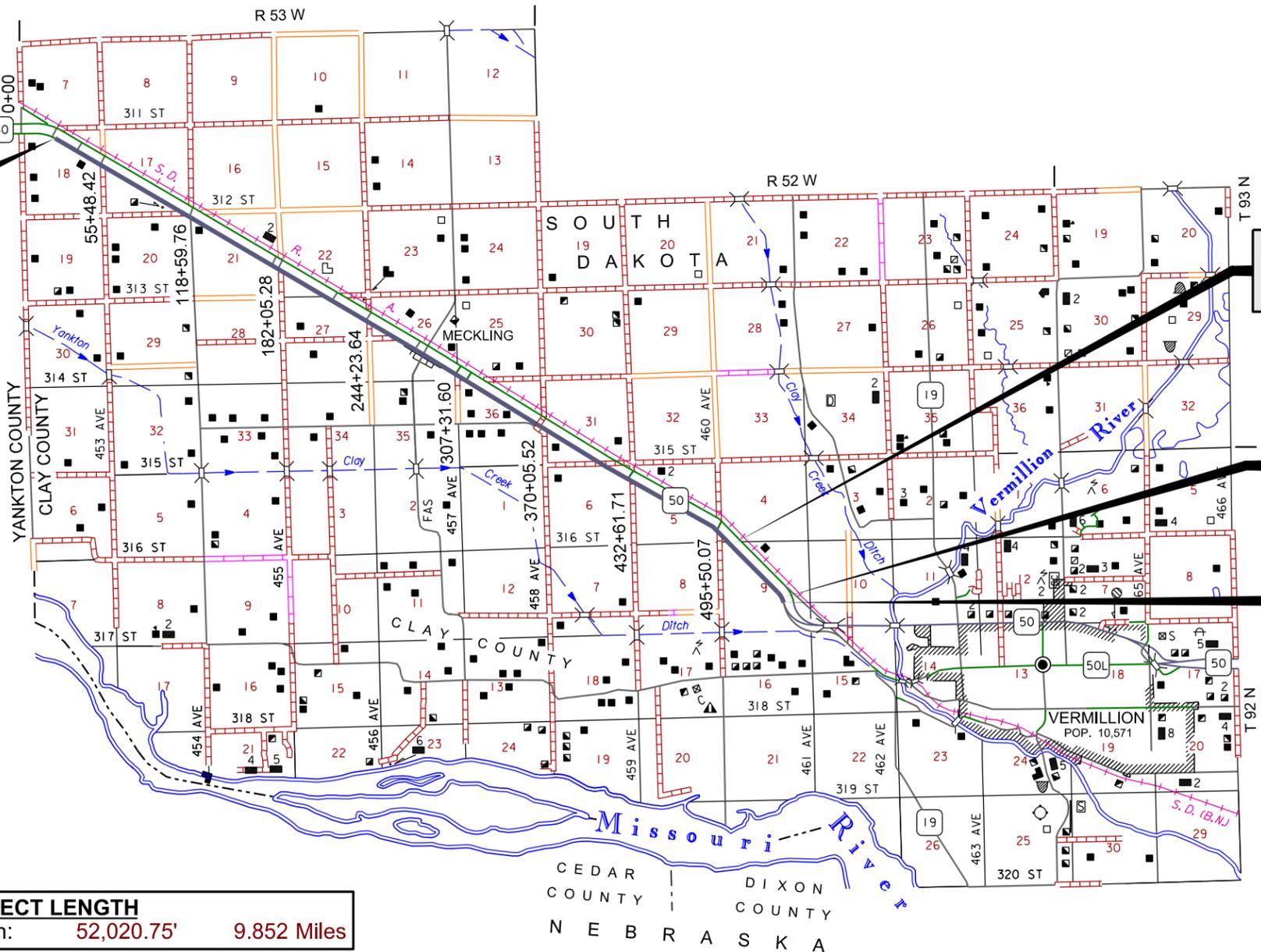
END PROJECT
STA. 83+90 - EBL
MRM 406.00 +0.545

DESIGN DESIGNATION

ADT(2013)	2,290
ADT(2033)	3,077
DHV	400
D	100%
T DHV	7.7%
T ADT	16.8%
V (rural)	70 MPH
V (at Meckling)	55 MPH

STORM WATER PERMIT
Receiving Waters:
Tributaries to Yankton Clay Creek
Ditch & Vermillion River
Area Disturbed: 3.4 Acres
Total Project Area: 275 Acres
Latitude: 42.8789 (Google Maps)
Longitude: -97.1495 (Google Maps)

PROJECT LENGTH
Length: **52,020.75'** **9.852 Miles**



8

PLOTTED FROM - TRM11118

ESTIMATE OF QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0500	Remove Pipe Culvert	6	Ft
110E0510	Remove Pipe End Section	4	Each
110E1100	Remove Concrete Pavement	300.0	SqYd
110E7510	Remove Pipe End Section for Reset	1	Each
120E0100	Unclassified Excavation, Digouts	513	CuYd
120E0600	Contractor Furnished Borrow	525	CuYd
260E1010	Base Course	1,275.0	Ton
320E0007	PG 64-28 Asphalt Binder	2,242.5	Ton
320E1003	Class Q3 Hot Mixed Asphalt Concrete	40,446.0	Ton
320E1200	Asphalt Concrete Composite	192.0	Ton
320E4000	Hydrated Lime	400.4	Ton
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	19.2	Mile
330E0100	SS-1h or CSS-1h Asphalt for Tack	100.0	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	51.4	Ton
330E2000	Sand for Flush Seal	595.9	Ton
332E0010	Cold Milling Asphalt Concrete	34,367	SqYd
450E0122	18" RCP Class 2, Furnish	6	Ft
450E0130	18" RCP, Install	6	Ft
450E2008	18" RCP Flared End, Furnish	4	Each
450E2009	18" RCP Flared End, Install	4	Each
* 450E8900	Cleanout Pipe Culvert	27	Each
450E9001	Reset Pipe End Section	1	Each
600E0300	Type III Field Laboratory	1	Each
632E2510	Type 2 Object Marker Back to Back	3	Each
632E2520	Type 2 Object Marker	4	Each
632E3520	Remove, Salvage, Relocate, and Reset Traffic Sign	5	Each
633E1300	Pavement Marking Paint, White	235.0	Gal
633E1305	Pavement Marking Paint, Yellow	168.0	Gal
634E0010	Flagging	380	Hour
634E0100	Traffic Control	2,062	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	2	Each
634E0630	Temporary Pavement Marking	33.9	Mile
730E0212	Type G Permanent Seed Mixture	88	Lb
732E0100	Mulching	6.8	Ton
900E0010	Refurbish Single Mailbox	3	Each
900E0012	Refurbish Double Mailbox	1	Each
900E1980	Storage Unit	1	Each
900E5840	Permanent Vehicle Classification System	1	Each

* - Denotes Non-Participating

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2004 Edition
and Required Provisions, Supplemental Specifications and
Special Provisions as included in the Proposal.

ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0050(112)396	3	36

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 B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

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

COMMITMENT C: WATER SOURCE

The Contractor 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.

The Contractor shall not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

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 D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

The Yankton Clay Creek Ditch is classified as warm water, marginal fishery with a Surface Water Discharge standard of 150 milligrams/liter total suspended solids.

The Vermillion River is classified as a warm water semi-permanent fishery with a Surface Water Discharge standard of 90 milligrams/liter total suspended solids.

Action Taken/Required:

The Contractor is advised the South Dakota Surface Water Quality Standards, administered by the Department of Environment and Natural Resources (DENR), apply to this project. Special construction measures shall be taken to ensure the above standard(s) of the surface waters are maintained and protected.

COMMITMENT D2: SURFACE WATER DISCHARGE

The Yankton Clay Creek Ditch is classified as warm water, marginal fishery with a Surface Water Discharge standard of 150 milligrams/liter total suspended solids.

The Vermillion River is classified as a warm water semi-permanent fishery with a Surface Water Discharge standard of 90 milligrams/liter total suspended solids.

Action Taken/Required:

If construction dewatering is required, the Contractor shall obtain a Temporary Discharge Permit from the DENR and provide a copy to the Project Engineer. Contact the DENR Surface Water Program at 605-773-3351 to apply for a permit.

COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance.

Action Taken/Required:

The DENR and the US Environmental Protection Agency (EPA) have issued separate general permits for the discharge of storm water runoff. The DENR permit applies to discharges on state land and the EPA permit applies to discharges on federal or reservation land. The Contractor is advised this project is regulated under the Phase II Storm Water Regulations and must receive coverage under the General Permit for Construction Activities. A Notice of Intent (NOI) will be submitted to DENR a minimum of 15 days prior to project start by the DOT Environmental Office. A letter must be received from DENR that acknowledges project coverage under this general permit before project start. The Contractor is advised that permit coverage may also be required by off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

The Contractor shall adhere to the Special Provision Regarding Storm Water Discharges to Waters of the State.

A major component of the storm water construction permits is development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which is a joint effort and responsibility of the SDDOT and the Contractor. Erosion control measures and best management practices will be implemented in accordance with the SWPPP. The SWPPP is a dynamic document and is to be available on-site at all times.

Information on storm water permits and SWPPPs are available on the following websites:

SDDOT:

<http://sddot.com/business/environmental/stormwater/Default.aspx>

DENR: <http://www.denr.sd.gov/des/sw/stormwater.aspx>

EPA: http://cfpub.epa.gov/npdes/home.cfm?program_id=6

Contractor Certification Form:

The "Department of Environment and Natural Resources – Contractor Certification Form" (SD EForm – 2110LDV1-ContractorCertification.pdf) shall be completed by the Contractor or their certified Erosion Control Supervisor after the award of the contract. Work may not begin on the project until this form is signed.

The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the Surface Water Discharge General Permit for Storm Water Discharges Associated with Construction Activities for the Project.

The online form can be found at:

<http://denr.sd.gov/des/sw/eforms/E2110LDV1-ContractorCertification.pdf>

ENVIRONMENTAL COMMITMENTS

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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 State ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway 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 State 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 State 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.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) 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 designated option borrow 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: staging areas, borrow sites, waste disposal sites, and all material processing sites.

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 staging areas, borrow sites, waste disposal sites, or material processing sites 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 RESURFACING SECTION

SECTION 1

31+80 to 459+00
469+50 to 83+90 (2nd) (Thru Equations)

Eastbound Lanes

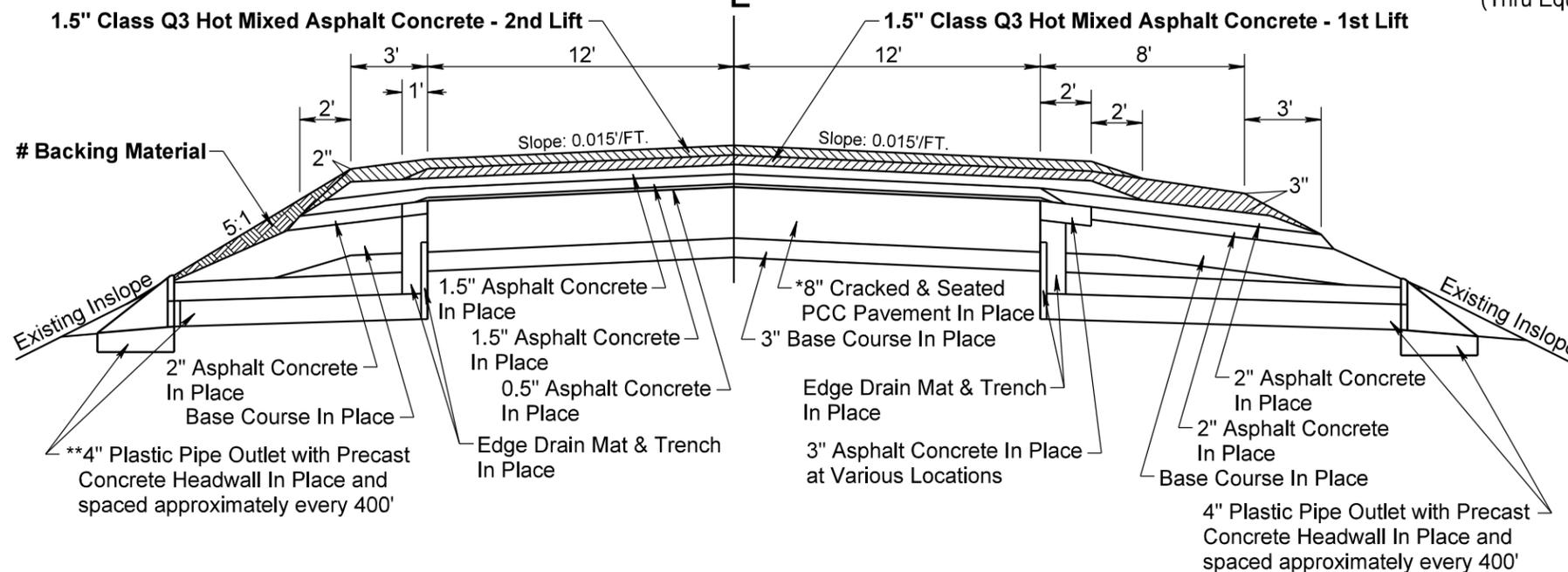
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Plotting Date: 01/06/2015

*7" PCC Pavement from 255+00 to 83+90 (Thru Equations)

**At locations where the Backing Material will interfere with the edge drain outlets, the 4" Plastic Pipe shall be extended and the Precast Concrete Headwall shall be reset. Cost shall be incidental to the contract unit price per cubic yard for Contractor Furnished Borrow.

Backing Material shall be placed at locations identified by the Engineer. Backing Material shall be paid for as Contractor Furnished Borrow.



TYPICAL RESURFACING SECTION

SECTION 2

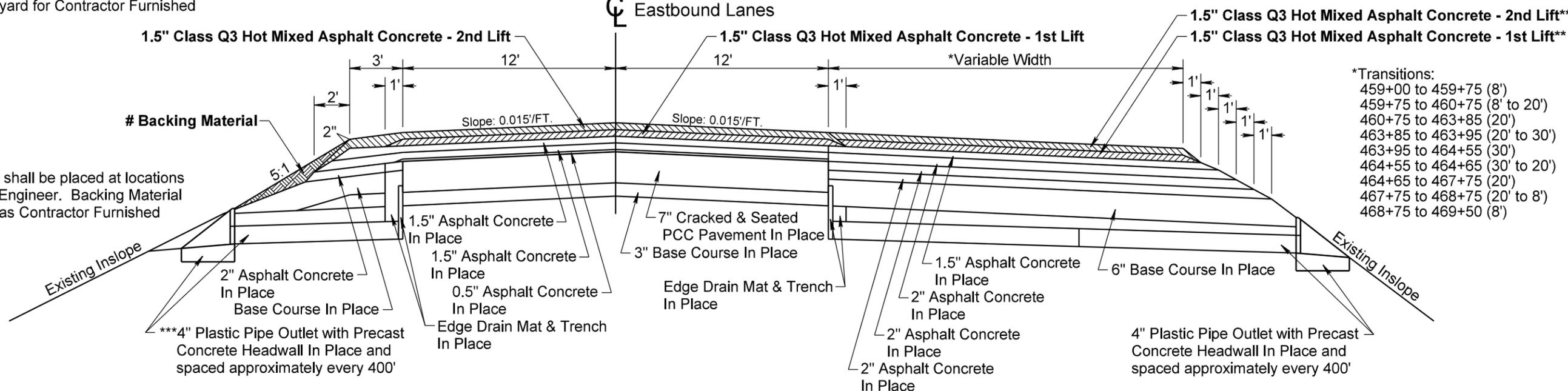
459+00 to 469+50

Eastbound Lanes

**Quantities are included in the Table of Additional Quantities.

***At locations where the Backing Material will interfere with the edge drain outlets, the 4" Plastic Pipe shall be extended and the Precast Concrete Headwall shall be reset. Cost shall be incidental to the contract unit price per cubic yard for Contractor Furnished Borrow.

Backing Material shall be placed at locations identified by the Engineer. Backing Material shall be paid for as Contractor Furnished Borrow.



- *Transitions:
- 459+00 to 459+75 (8')
 - 459+75 to 460+75 (8' to 20')
 - 460+75 to 463+85 (20')
 - 463+85 to 463+95 (20' to 30')
 - 463+95 to 464+55 (30')
 - 464+55 to 464+65 (30' to 20')
 - 464+65 to 467+75 (20')
 - 467+75 to 468+75 (20' to 8')
 - 468+75 to 469+50 (8')

PLOT SCALE - 1:6.25

PLOTTED FROM - TRW11118

PLOT NAME - 2

FILE - ... \PRJ2015\CLAY04E2\TSEC04E2.DGN

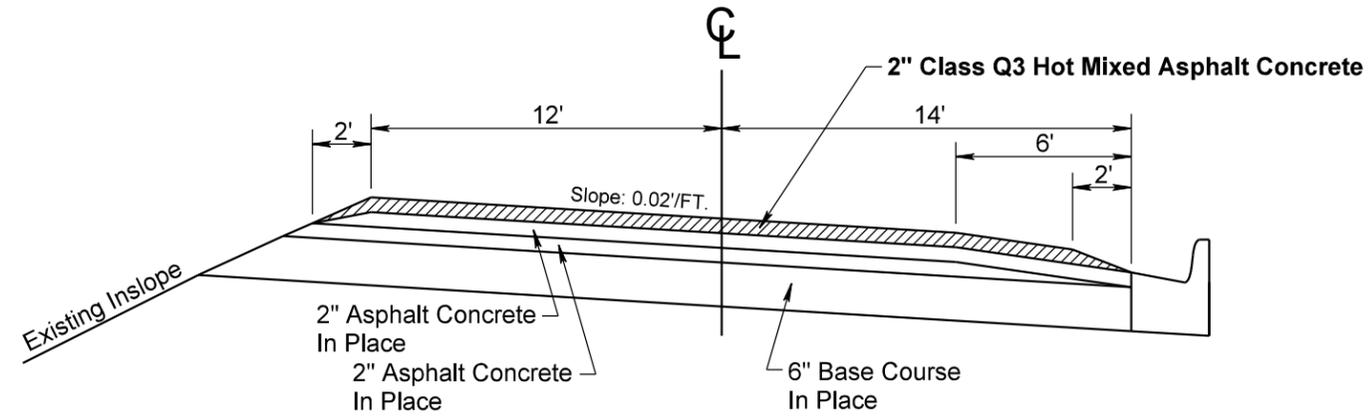
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0050(112)396	6	36

Plotting Date: 01/06/2015

TYPICAL RESURFACING SECTION

SECTION 3

Service Road in Meckling Right of 273+72 to 295+00



PLOT SCALE - 1:6.25

PLOT NAME - 3

PLOTTED FROM - TRM11118

FILE - ... \PRJ2015\CLAY04E2\TSEC04E2.DGN

RATES OF MATERIALS

Section 1 EBL

31+80.00 to 459+00.00
 469+50.00 to 503+71.24
 503+65.52 to 548+79.79
 80+74.76 to 83+90.00

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

1.5" CLASS Q3 HOT MIXED ASPHALT CONCRETE 1ST LIFT

Crushed Aggregate	1874 Tons
PG 64-28 Asphalt Binder	111 Tons
	TOTAL: 1985 Tons
Hydrated Lime	20 Tons
	TOTAL: 2005 Tons

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

SS-1h or CSS-1h Asphalt for Tack at the rate of 4.6 tons applied 37 feet wide (Rate = 0.05 gallon per square yard).

1.5" CLASS Q3 HOT MIXED ASPHALT CONCRETE 2ND LIFT

Crushed Aggregate	1520 Tons
PG 64-28 Asphalt Binder	90 Tons
	TOTAL: 1610 Tons
Hydrated Lime	16 Tons
	TOTAL: 1626 Tons

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

SS-1h or CSS-1h Asphalt for Tack at the rate of 4.2 tons applied 34 feet wide (Rate = 0.05 gallon per square yard).

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 5 tons applied 40 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).

RATES OF MATERIALS

Section 2 Portable Weigh Scale Pullout 459+00.00 to 469+50.00

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

1.5" CLASS Q3 HOT MIXED ASPHALT CONCRETE 1ST LIFT

Crushed Aggregate	21.83 Tons
PG 64-28 Asphalt Binder	1.30 Tons
	TOTAL: 23.13 Tons
Hydrated Lime	0.23 Ton
	TOTAL: 23.36 Tons

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

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.06 ton applied 27 feet wide (Rate = 0.05 gallon per square yard).

1.5" CLASS Q3 HOT MIXED ASPHALT CONCRETE 2ND LIFT

Crushed Aggregate	26.6 Tons
PG 64-28 Asphalt Binder	1.58 Tons
	TOTAL: 28.18 Tons
Hydrated Lime	0.28 Ton
	TOTAL: 28.46 Tons

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

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.07 ton applied 31 feet wide (Rate = 0.05 gallon per square yard).

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.07 ton applied 29 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 Service Road 273+72.00 to 295+00.00

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

2" CLASS Q3 HOT MIXED ASPHALT CONCRETE

Crushed Aggregate	30.27 Tons
PG 64-28 Asphalt Binder	1.80 Tons
	TOTAL: 32.07 Tons
Hydrated Lime	0.32 Ton
	TOTAL: 32.39 Tons

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

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.07 ton applied 29 feet wide (Rate = 0.05 gallon per square yard).

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.07 ton applied 28 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	EXCEPTION LENGTHS	BRIDGE LENGTHS	NET SECTION LENGTHS				
1	31+80.00 to	459+00.00	EBL	42720.00'	50970.75'			50970.75' 9.654 mi.				
	469+50.00 to	503+71.24		3421.24'								
	503+65.52 to	548+79.79		4514.27'								
	80+74.76 to	83+90.00		315.24'								
2	459+00.00 to	469+50.00	Portable Weigh Scale Pullout	1050.00'	1050.00'			1050.00' 0.199 mi.				
3	273+72.00 Rt to	295+00.00 Rt	Service Road	2128.00'	2128.00'			2128.00' 0.403 mi.				
Grand Totals					54148.75'	10.255 mi.	0.00'	0.000 mi.	0.00'	0.000 mi.	54148.75'	10.255 mi.

TABLE OF MATERIALS QUANTITIES

SECTION	UNCL. EXC. DIG-OUTS	CONTRACTOR FURNISHED BORROW	BASE COURSE	COLD MILLING ASPHALT CONCRETE	CLASS Q3 HOT MIXED ASPHALT CONCRETE	PG 64-28 ASPHALT BINDER	HYDRATED ASPHALT LIME	ASPHALT CONCRETE COMPOSITE	SS-1h/ CSS-1h ASPH. FOR TACK	SS-1h/ CSS-1h ASPH. FOR FLUSH SEAL	SAND FOR FLUSH SEAL
	CuYd	CuYd	Ton	SqYd	Ton	Ton	Ton	Ton	Ton	Ton	Ton
1	483	25	965	-	35053	1943.5	347.0	-	84.9	48.3	541
2	10	-	20	-	544	30.2	5.4	-	1.3	0.7	11
3	20	-	40	-	689	38.2	6.8	-	1.5	1.5	23
Subtotals:	513	25	1025	-	36286	2011.9	359.2	-	87.7	50.5	575
Additional Quantities:	-	500	250	34367	4160	230.6	41.2	192	12.3	0.9	20.9
Totals:	513	525	1275	34367	40446	2242.5	400.4	192	100.0	51.4	595.9

TABLE OF ADDITIONAL QUANTITIES

LOCATION	CONTRACTOR FURNISHED BORROW	BASE COURSE	COLD MILLING ASPHALT CONCRETE	CLASS Q3 HOT MIXED ASPHALT CONCRETE 1ST LIFT	<--- 1ST LIFT --->		<--- 2ND LIFT --->		ASPHALT CONCRETE COMPOSITE	SS-1h/ CSS-1h ASPH. FOR FLUSH SEAL	SAND FOR FLUSH SEAL	
					PG 64-28 ASPHALT BINDER	HYDRATED LIME	CLASS Q3 HOT MIXED ASPHALT CONCRETE 2ND LIFT	PG 64-28 ASPHALT BINDER				HYDRATED LIME
					Ton	Ton	Ton	Ton				Ton
Mainline Transitions												
Sec. 2 459+00 to 459+75	-	-	-	6	0.3	0.1	6	0.3	0.1	-	-	-
Sec. 2 459+75 to 460+75	-	-	-	13	0.7	0.1	13	0.7	0.1	-	-	1
Sec. 2 460+75 to 463+85	-	-	-	58	3.2	0.6	58	3.2	0.6	-	0.1	3
Sec. 2 463+85 to 463+95	-	-	-	2	0.1	-	2	0.1	-	-	-	-
Sec. 2 463+95 to 464+55	-	-	-	17	0.9	0.2	17	0.9	0.2	-	-	1
Sec. 2 464+55 to 464+65	-	-	-	2	0.1	-	2	0.1	-	-	-	-
Sec. 2 464+65 to 467+75	-	-	-	58	3.2	0.6	58	3.2	0.6	-	0.1	3
Sec. 2 467+75 to 468+75	-	-	-	13	0.7	0.1	13	0.7	0.1	-	-	1
Sec. 2 468+75 to 469+50	-	-	-	6	0.3	0.1	6	0.3	0.1	-	-	-
Begin/End Project	-	-	1066	-	-	-	-	-	-	-	-	-
Existing Maintenance Patches	-	-	31020	-	-	-	-	-	-	-	-	-
Other (Nondensity) Locations												
Backing Material	500	-	-	-	-	-	-	-	-	-	-	-
PCC Pavement Repair	-	-	-	-	-	-	-	-	-	192	-	-
4 Mailbox Turnouts	-	-	-	-	-	-	25	1.4	0.2	-	-	-
Resurface to ROW												
2 Intersecting Roads	-	-	72	-	-	-	87	4.8	0.9	-	0.1	3
1 Intersecting Streets	-	-	69	-	-	-	16	0.9	0.2	-	-	-
3 Service Rd. Entrances	-	-	-	-	-	-	73	4.0	0.7	-	0.1	2.1
1 Farm Entrances	-	-	28	-	-	-	29	1.6	0.3	-	0.0	0.8
Resurface to End of Radius												
8 Intersecting Roads	-	120	-	-	-	-	170	9.4	1.7	-	0.3	5
4 Intersecting Streets	-	40	-	-	-	-	34	1.9	0.3	-	0.1	1
Pads												
7 Field Entrances	-	70	-	-	-	-	39	2.2	0.4	-	-	-
19 Asphalt Crossovers Entrances	-	-	2112	-	-	-	238	13.2	2.4	-	-	-
4 Gravel Crossovers Entrances	-	20	-	-	-	-	22	1.2	0.2	-	-	-
TOTALS:	500	250	34367	175	9.5	1.8	908	50.1	9.1	192	0.9	20.9

NOTES: 2.3 tons of SS-1h or CSS-1h Asphalt for Tack 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 2 inches. Guardrail Locations and Mailbox Turnouts and 2 inches for other locations.

The tonnage shown above for Class Q3 Asphalt Concrete - 1st Lift is based on a compacted depth of 1.5 inches. The tonnage shown above for Class Q3 Asphalt Concrete - 2nd Lift is based on a compacted depth of 1.5 inches for Mainline Transitions and Mailbox Turnouts and average 2.5 inches for other locations.

The above quantities are included in the Estimate of Quantities.

SUMMARY OF ASPHALT CONCRETE

	CLASS Q3 HOT MIXED ASPHALT CONCRETE 1ST LIFT WITH SPECIFIED DENSITY COMPACTION TONS	CLASS Q3 HOT MIXED ASPHALT CONCRETE 1ST LIFT WITHOUT SPECIFIED DENSITY COMPACTION TONS	CLASS Q3 HOT MIXED ASPHALT CONCRETE 2ND LIFT WITH SPECIFIED DENSITY COMPACTION TONS	CLASS Q3 HOT MIXED ASPHALT CONCRETE 2ND LIFT WITHOUT SPECIFIED DENSITY COMPACTION TONS	ASPHALT CONCRETE COMPOSITE WITHOUT SPECIFIED DENSITY COMPACTION TONS
Section 1					
24' Finished Roadway Surface	11429	-	11429	-	-
Shoulders	-	7927	-	4268	-
Section 1 Totals:	11429	7927	11429	4268	-
Section 1 Additional Quantities for spot leveling and/or tight blading	-	2896	-	-	-
Section 2					
24' Finished Roadway Surface	235	-	235	-	-
Shoulders	-	10	-	64	-
Section 2 Totals:	235	10	235	64	-
Section 2 Additional Quantities for spot leveling and/or tight blading	-	60	-	-	-
Section 3					
24' Finished Roadway Surface	636	-	-	-	-
Shoulders	53	-	-	-	-
Section 3 Totals:	689	-	-	-	-
Section 3 Additional Quantities for spot leveling and/or tight blading	-	121	-	-	-
Table of Additional Quantities					
Mainline Transitions	175	-	175	-	-
Table of Additional Quantities except items listed above	-	-	-	733	192
Additional Totals:	175	-	175	733	192
Totals:	12528	11014	11839	5065	192

24367 TONS ASPHALT CONCRETE WITH SPECIFIED DENSITY COMPACTION
16271 TONS ASPHALT CONCRETE WITHOUT SPECIFIED DENSITY COMPACTION
40638 TONS TOTAL

TABLE FOR MAINLINE CULVERT WORK

STATION	CULVERT	CONTRACTOR FURNISHED BORROW		RCP EXTENSION		RCP FLARED END		REMOVE PIPE CULVERT		REMOVE PIPE END SECTION		REM & RESET PIPE END SECTION		TYPE 2 OBJECT MARKERS (SINGLE) EACH	TYPE 2 OBJECT MARKERS BACK TO BACK EACH	REM & RESET TYPE 2 OBJECT MARKERS BACK TO BACK EACH	CLEANOUT PIPE CULVERT EACH	DITCH RESTORATION
		CUYD		18" FT		18" EACH		FT		FT		EACH						
		L	R	L	R	L	R	L	R	L	R	L	R					
320+80	18"x165' RCP w/Median Drain,	No Work																
135' ROW	1 Safety End & 1 FE																	
330+00	18"x170' RCP w/Median Drain,																1	Rt. Side
	1 Safety End & 1 FE																	
342+00	18"x167' RCP w/Median Drain,																1	Rt. Side
	1 Safety End & 1 FE																	
352+17	18"x176' RCP w/Median Drain,																1	Rt. Side
	1 Safety End & 1 FE																	
367+95	18"x172' RCP w/Median Drain,																	Rt. Side
	1 Safety End, 1 FE																	
380+00	18"x171' RCP w/Median Drain,																1	Rt. Side
	1 Safety End & 1 FE																	
392+38	18"x184' RCP w/Median Drain,																1	Rt. Side
	1 Safety End & 1 FE																	
406+00	18"x173' RCP w/Median Drian,		5				1				1					1 Rt.		Rt. Side
	1 Safety End & 1 FE																	
420+45	18"x178' RCP w/Median Drain,																1	Rt. Side
	1 Safety End & 1 FE																	
422+45	18"x172' RCP w/Median Drain,																1	Rt. Side
	1 Safety End & 1 FE																	
433+50	18"x176' RCP w/Median Drain,	No Work																
	1 Safety End & 1 FE																	
443+73	18"x178' RCP w/Median Drain,																1	Rt. Side
	1 Safety End & 1 FE																	
454+00	18"x178' RCP w/Median Drain,	No Work																
	1 Safety End & 1 FE																	
475+00	18"x177' RCP w/Median Drain,																	
	1 Safety End & 1 FE																	
485+00	18"x191' RCP w/Median Drain,	No Work																
	1 Safety End & 1 FE																	
494+00	18"x192' RCP w/22.5° Bend,	No Work																
135' ROW	Median Drain, 1 Safety End & 1 FE																	
Equation 503+71.24 Back = 503+65.52 Ahead																		
513+20	18"x186' RCP w/Median Drain,	No Work																
	1 Safety End & 1 FE																	
519+41	18"x182' RCP w/Median Drain,																1	Rt. Side
	1 Safety End & 1 FE																	
524+77	18"x184' RCP w/Median Drain,	No Work																
135' ROW	1 Safety End & 1 FE																	
536+00	18"x189' RCP w/Median Drain,	No Work																
135' ROW	1 Safety End & 1 FE																	
Equation 548+79.79 Back = 80+74.76 Ahead																		
81+00 (2nd)	18" x 12' Slot RCP & 98' RCP 1 FE														1 Rt.		1	Rt. Side
TOTALS:		25	6	4	6	4	1	4	3	5	27							

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

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.

FLEXIBLE PAVEMENT SMOOTHNESS PROVISION

All sections, not excluded by the Special Provision for Flexible Pavement Smoothness, will be profiled as 2 opportunity.

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.

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

STORAGE UNIT (CONTINUED)

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.

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.

SHOULDER WORK (CONTINUED)

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.

PCC PAVEMENT REPAIR WITH ASPHALT CONCRETE

An estimated 300 square yards of in place crack & seated PCC pavement shall be replaced with Asphalt Concrete.

New pavement thickness shall be that of the adjacent pavement. The new Asphalt Concrete Composite shall be placed in in equal lifts not to exceed 3 inches.

Pavement replacement locations and size will be determined by the Engineer. Payment will be based on actual area replaced.

The existing pavement shall be sawed full depth at the beginning and end of the repair area.

Existing pavement in the replacement areas shall be removed by means that minimize damage to the base, sides of remaining in place concrete and in place edge drains. Any damage to the adjacent base, concrete or edge drain caused by the Contractor's operations shall be removed and replaced at the Contractor's expense.

Cost to remove the crack & seated PCC pavement and asphalt concrete pavement in the repair areas shall be included in the contract unit price per square yard for Remove Concrete Pavement.

Cost to fill the repair areas with asphalt concrete shall be included in the contract unit price per ton for Asphalt Concrete Composite.

CONTRACTOR FURNISHED BORROW

The Contractor shall provide a suitable site for Contractor furnished borrow material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material shall be approved by the Engineer. The plans quantity for Contractor Furnished Borrow 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.

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.

It is not anticipated that water for compaction will be required; however, if in the opinion of the Engineer the fill material is extremely dry, water may be ordered and placed to the satisfaction of the Engineer. Cost for water shall be incidental to the contract unit price per cubic yard for Contractor Furnished Borrow.

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

EXCAVATION OF UNSTABLE MATERIAL

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

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

BASE COURSE

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

WATER FOR COMPACTION

Cost for water for compaction of the Base Course shall be incidental to the contract unit prices for the various contract items. The moisture required at the time of compaction will be 6%± unless otherwise directed by the Engineer.

COLD MILLING ASPHALT CONCRETE

The Los Angeles Abrasion Loss value of the aggregate used for the in place asphalt concrete was 23 percent. This value was obtained from testing during construction of the in place asphalt concrete.

Cold Milling is estimated to produce 1018 tons of salvaged asphalt concrete material and shall become the property of the Contractor.

Cold Milling Asphalt Concrete operations ahead of asphalt concrete laydown will be limited by particular job conditions and be subject to approval of the Engineer.

The requirement for a traveling stringline shall be waived.

If resurfacing as per the typical section cannot be placed immediately after cold milling at project ends, 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.

In areas where maintenance patches have raised and/or widened the road, asphalt concrete shall be milled to provide a uniform typical section from centerline to the edge of the finished shoulder. Milling shall be daylighted to the outside edge of the roadway. The maintenance patches range in length from 30' to 4530' and range in width from 6' to 12' with an average depth of 0.5". The Cold Milling locations, lengths and widths shall be determined by the Engineer.

Cost for cold milling to remove the maintenance patches shall be included in the contract unit price per square yard for Cold Milling Asphalt Concrete.

Intersecting roads and entrances shall be milled back for approximately ten feet so that additional surfacing may be placed at these locations.

Asphalt concrete surfaced median crossovers shall be milled back for approximately ten feet from the edge of the median shoulder so that additional surfacing may be placed at these locations.

Asphalt concrete intersecting roads, streets and entrances shall be milled back for approximately ten feet at the right of way 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 detail for Cold Milling Taper.

The surface shall be milled full roadway width.

Cost for this work shall be included in the contract unit price per square yard for Cold Milling Asphalt Concrete.

Taper depth of Cold Milling at locations shown below:

<u>STA</u>	<u>LOCATION</u>	<u>SIZE</u>
31+80	Begin Project	120' long X 40' wide
83+90 (2 nd)	End Project	120' long X 40' wide

SAWING IN EXISTING SURFACING

Where new asphalt concrete is placed adjacent to existing asphalt concrete or concrete pavement, the existing asphalt concrete or concrete pavement shall be sawed full depth to a true line with a vertical face. No separate payment will be made for sawing.

CLASS Q3 HOT MIXED ASPHALT CONCRETE

Mineral aggregate for Class Q3 Hot Mixed Asphalt Concrete shall conform to the requirements of the Special Provision for Gyrotory Controlled Quality Control/Quality Assurance Specifications for Hot Mixed Asphalt Concrete Pavement.

Asphalt concrete placed on the shoulders will not be compacted to a specified density. The shoulders shall be compacted using the same rolling pattern used on the adjacent mainline asphalt concrete or as directed by the Engineer.

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 300 tons of Class Q3 Hot Mixed Asphalt Concrete, 16.6 tons of PG 64-28 Asphalt Binder and 3 tons of Hydrated Lime per mile for spot leveling, strengthening and repair of the existing surface.

Included in the Estimate of Quantities are 10 tons of SS-1h or CSS-1h Asphalt for Tack for surface repair and leveling areas throughout the project. (Rate = 0.05 gallon per square yard).

ASPHALT CONCRETE COMPOSITE

Virgin mineral aggregate for the Asphalt Concrete Composite shall conform to the requirements for Class E, Type 1.

The asphalt binder used in the mixture shall be PG 58-28, PG 58-34, PG 64-22, PG 64-28 or PG 64-34 Asphalt Binder.

All other requirements in the specifications for Asphalt Concrete Composite shall apply.

RUMBLE STRIPS

INSTALLATION:

Rumble strips shall be constructed according to the details of Standard Plate 320.28.

Rumble strips shall be installed in rural areas with posted speeds greater than 55 mph and are not required in urban areas. The rumble strips shall begin at the location of the Speed Limit 70 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 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 installation as detailed on the standard plates are included with the measurement and payment.

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

CULVERT CLEANOUT

Material in existing culverts as listed in the Table for Mainline Culvert Work shall be cleaned out by water flushing or other approved methods.

It is the responsibility of the Contractor to visit the site to determine the extent of culvert cleaning work required.

The Contractor shall implement appropriate sediment control measures prior to water flushing in order to prevent discharges from project boundaries, and to comply with the Storm Water Permit.

Cost for this work shall be included in the contract unit price per each for Cleanout Pipe Culvert.

DITCH RESTORATION

The ditches shall be excavated for approximately 50 feet in each direction (or as directed by the Engineer) from the new/reset pipe ends to obtain proper water flow through the pipe. The excavated material may be used as fill material for culvert work, etc as approved by the Engineer.

Cost for this work shall be incidental to the contract unit price per cubic yard for Contractor Furnished Borrow.

TIE BOLTS FOR RCP/RCP ARCH CULVERTS

Tie Bolts shall be installed on new/reset culvert and on new/reset culvert ends (requires connection from existing culvert to new end section).

For informational purposes:

Field drilling will be required to install the tie bolts on reset culvert, on reset culvert ends and on existing culvert when installing a new/reset end section.

Cost for removing tie bolts, drilling tie bolt holes and furnishing and installing tie bolts shall be incidental to the contract unit prices for installing or resetting RCP Culverts and End Sections. Existing tie bolts may be salvaged and reused if condition is acceptable to the Engineer.

EMBANKMENT ADJACENT TO CULVERTS

Earth embankment adjacent to the existing culverts/end sections shown in the Table of Mainline Culvert Extension shall be removed prior to removing the culverts/end sections. Upon installation/reset of the culvert/end sections, the earth embankment shall be replaced and compacted adjacent to the culvert/end sections.

Cost for removing, replacing and compacting the earth embankment is included in the contract unit price per cubic yard for Contractor Furnished Borrow.

REFURBISH SINGLE AND DOUBLE MAILBOXES

Existing mailboxes shall be removed, turnouts constructed and mailboxes reset on new posts with the necessary support hardware for single or double mailbox assemblies. The local Postmaster will determine the recommended mounting height of the mailboxes. 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.

STATION	CLASS Q3 HOT MIXED ASPHALT CONCRETE TONS	REFURBISH SINGLE MAILBOX EACH	REFURBISH DOUBLE MAILBOX EACH
301+97 Rt.	7	1	-
307+29 Rt.	6	-	1
494+99 Rt.	6	1	-
514+50 Rt.	6	1	-
TOTALS:	25	3	1

The Contractor will be responsible for maintaining a temporary mailbox until the mailbox is reset.

Cost for removing existing mailboxes, providing temporary mailboxes, 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/or Refurbish Double Mailbox.

INSTALLATION OF TYPE 2 OBJECT MARKERS AT ROADSIDE OBSTACLES

Type 2 Object Markers and posts shall be furnished and installed by the Contractor at the locations shown in the Table for Mainline Culvert Work.

At locations where culvert end marker posts are in place, the Contractor shall remove the culvert end marker posts and haul and stockpile the posts to the Department of Transportation Maintenance Yard at Yankton.

Costs for salvaging and hauling existing end markers shall be incidental to the contract unit price per each for Type 2 Object Marker Back to Back or Type 2 Object Marker.

INSTALLATION OF TYPE 2 OBJECT MARKERS AT ROADSIDE OBSTACLES (CONTINUED)

At locations where Type 2 Object Markers are in place and culvert work will be performed, the Contractor shall remove and reset the existing Type 2 Object Marker.

Costs for removing and resetting existing Type 2 Object Markers shall be included in the contract unit price per each for Remove, Salvage, Relocate and Reset Traffic Sign.

UPDATES TO THE PERMANENT VEHICLE CLASSIFICATION SYSTEM (PEEK TRAFFIC INC MODEL ADR 6000)

The Contractor shall install on SD 50 East Bound Lanes at Approximate MRM 396.04 + .899 (286' West of MRM 397) (Station 47+25) loops for updating the permanent vehicle axle classification system (Peek Traffic Inc Model ADR 6000).

The updates shall include:

- A. 4 (2 per lane) standard inductive traffic loops which must meet NEMA TS-2 Environmental Specifications installed by sawing or routing them into the top of the roadway surface after surfacing is completed. A representative of the SDDOT Office of Inventory Management - Traffic Section will be on site and direct the installation of the inductive loops. The Contractor shall provide all supplies necessary for complete installation of the loops including wire, sealant, numbering loops by location, etc.
- B. 4 (2 per lane) advanced IRDIS inductive axle detection loops installed by sawing or routing them into the top of the roadway surface after surfacing is completed. A representative of the supplier of the IRDIS inductive axle detection loops (ACT Traffic Solutions Inc. 1-952-288-4830 or equal) shall be on site and direct the installation of the IRDIS inductive axle detection loops and the Contractor shall complete this installation in a continuous manner (no time delays). The Contractor shall provide the supplier at least a two week notice of the dates of this installation. Layout A on the Permanent Vehicle Classification Systems Detail shows the general layout for a lane of inductive and IRDIS loops. Layout B on the Permanent Vehicle Classification Systems Detail shows some general details of the installation of the IRDIS inductive axle detection loops.
- C. The Contractor will run loop wire (from the new loops) into the existing pull boxes on the side of the roadway and then through existing conduit into the existing electronics cabinet. Layout C on the Permanent Vehicle Classification Systems Detail shows a general layout and specifications of how to connect the loops to the conduit. The Contractor will not damage the existing pull boxes or conduit in the East Bound lanes, as well as the pull boxes, conduit or loops in the West Bound Lanes during this construction project. Any pull boxes, conduit or loops damaged during the construction project will be replaced by the Contractor at his expense.
- D. The basis of payment for the Permanent Vehicle Classification System shall be the contract item Permanent Vehicle Classification System. All costs associated with furnishing and installing a working vehicle classification system shall be incidental to the contract unit price per each for Permanent Vehicle Classification System.

PERMANENT SEEDING AND MULCHING

The areas to be seeded and mulched include all disturbed areas within the right-of-way resulting from the work required by this contract.

All permanent seed shall be planted in the topsoil at a depth of ¼" to ½".

All seed broadcast must be raked or dragged in (incorporated) within the top ¼" to ½" of topsoil when possible. This requirement may be waived by the Engineer during construction when raking or dragging is deemed not feasible by conventional methods.

The varieties listed for seed mixtures are preferred varieties.

Native harvest seed will be allowed.

Type G Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk	3
Big Bluestem	Bison, Bonilla, Champ, Pawnee, Sunnyview	3
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
Total:		26

Bales with noxious weed contamination will be rejected and the Contractor will be required to remove the contaminated bales from the project.

The areas to be seeded and mulched are estimated at 3.4 acres.

DRILLS

In addition to the drills specified in Section 730 of the Specifications, other types of drills including no-till drills will be allowed as long as they have baffles, partitions, agitators, or augers which keep the seed distributed throughout the seed box and the seed is planted at a depth of ¼" to ½".

MYCORRHIZAL INOCULUM

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

- Glomus intraradices* 25%
- Glomus aggregatu* 25%
- Glomus mosseae* 25%
- Glomus etunicatum* 25%

All seed shall be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed shall be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

*(The numbers right of the title headings are **reference numbers** to the GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES)*

❖ **SITE DESCRIPTION (4.2 1)**

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
 - Clearing and grubbing
 - Excavation/borrow
 - Grading and shaping
 - Filling
 - Cutting and filling
 - Other (describe):
- **Total Project Area 275 Acres (4.2 1.b.)**
- **Total Area To Be Disturbed 3.4 Acres (4.2 1.b.)**
- **Existing Vegetative Cover (%)**
- **Soil Properties:** AASHTO Soil or USDA-NRCS Soil Series Classification **(4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Tributaries to Yankton Clay Creek Ditch and Vermillion River **(4.2 1.e.)**

❖ **ORDER OF CONSTRUCTION ACTIVITIES (4.2 1.c.)**

- (Stabilization measures shall be initiated as soon as possible, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Initiation of final or temporary stabilization may exceed the 14-day limit if earth disturbing activities will be resumed within 21 days.)
- Reseed disturbed areas.

❖ **EROSION AND SEDIMENT CONTROLS (4.2 2.a.(1)(a)-(f))**

- (Check all that apply)
- **Stabilization Practices (See Detail Plan Sheets)**
 - Temporary Seeding (Cover Crop Seeding)
 - Permanent Seeding
 - Sodding
 - Planting (Woody Vegetation for Soil Stabilization)
 - Mulching (Grass Hay or Straw)
 - Hydraulic Mulch (Wood Fiber Mulch)
 - Soil Stabilizer
 - Bonded Fiber Matrix
 - Erosion Control Blankets or Mats
 - Vegetation Buffer Strips
 - Roughened Surface (e.g. tracking)
 - Dust Control
 - Other:

➤ **Structural Temporary Erosion and Sediment Controls**

- Silt Fence
- Floating Silt Curtain
- Straw Bale Check
- Temporary Berm
- Temporary Slope Drain
- Straw Wattles or Rolls
- Turf Reinforcement Mat
- Rip Rap
- Gabions
- Rock Check Dams
- Sediment Traps/Basins
- Inlet Protection
- Outlet Protection
- Surface Inlet Protection (Area Drain)
- Curb Inlet Protection
- Stabilized Construction Entrances
- Entrance/Exit Equipment Tire Wash
- Interceptor Ditch
- Concrete Washout Area
- Temporary Diversion Channel
- Work Platform
- Temporary Water Barrier
- Temporary Water Crossing
- Other:

➤ **Wetland Avoidance**

Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes No If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.

➤ **Storm Water Management (4.2 2.b., (1) and (2))**

Storm water management will be handled by temporary controls outlined in "EROSION AND SEDIMENT CONTROLS" above, and any permanent controls needed to meet permanent storm water management needs in the post construction period. Permanent controls will be shown on the plans and noted as permanent.

➤ **Other Storm Water Controls (4.2 2.c., (1) and (2))**

- **Waste Disposal**
All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.
- **Hazardous Waste**
All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the individual designated as the contractor's on-site representative will be responsible for seeing that these practices are followed.

▪ **Sanitary Waste**

Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units in a timely manner by a licensed waste management contractor or as required by any local regulations.

❖ **Maintenance and Inspection (4.2 3. and 4.2 4.)**

➤ **Maintenance and Inspection Practices**

- Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
- All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
- Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches 1/3 of the height of the silt fence.
- Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
- Check dams will be inspected for stability. Sediment will be removed when depth reaches 1/2 the height of the dam.
- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
- Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
- The SDDOT Project Engineer and contractor's site superintendent are responsible for inspections. Maintenance, repair activities are the responsibility of the contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

❖ **Non-Storm Water Discharges (3.0)**

The following non-storm water discharges are anticipated during the course of this project (check all that apply).

- Discharges from water line flushing.
- Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
- Uncontaminated ground water associated with dewatering activities.

❖ **Materials Inventory (4.2. 2.c.(2))**

The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the headings "EROSION AND SEDIMENT CONTROLS" and "SPILL PREVENTION" (check all that apply).

- Concrete and Portland Cement
- Detergents
- Paints
- Metals
- Bituminous Materials
- Petroleum Based Products
- Cleaning Solvents
- Wood
- Cure
- Texture
- Chemical Fertilizers
- Other:

❖ **Spill Prevention (4.2 2.c.(2))**

➤ **Material Management**

▪ **Housekeeping**

- Only needed products will be stored on-site by the contractor.
- Except for bulk materials the contractor will store all materials under cover and in appropriate containers.
- Products must be stored in original containers and labeled.
- Material mixing will be conducted in accordance with the manufacturer's recommendations.
- When possible, all products will be completely used before properly disposing of the container off site.
- The manufacturer's directions for disposal of materials and containers will be followed.
- The contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
- Dust generated will be controlled in an environmentally safe manner.
- Vegetation areas not essential to the construction project will be preserved and maintained as noted on the plans.

▪ **Hazardous Materials**

- Products will be kept in original containers unless the container is not resealable.
- Original labels and material safety data sheets will be retained in a safe place to relay important product information.
- If surplus product must be disposed of, manufacturer's label directions for disposal will be followed.
- Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
- Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any storm water system or storm water treatment system.
- Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, residuals from concrete saw cutting (either wet or dry), and mixer washout waters will be collected on site and managed to prevent contamination of storm water runoff.

➤ **Product Specific Practices (6.8)**

▪ **Petroleum Products**

All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled.

▪ **Fertilizers**

Fertilizers will be applied only in the amounts specified by the SDDOT. Once applied, fertilizers will be worked into the soil to limit the exposure to storm water. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.

▪ **Paints**

All containers will be tightly sealed and stored when not required for use. The excess will be disposed of according to the manufacturer's instructions and any applicable state and local regulations.

▪ **Concrete Trucks**

Contractors will provide designated truck washout areas on the site. These areas must be self contained and not connected to any storm water outlet of the site. Upon completion of construction washout areas will be properly stabilized.

➤ **Spill Control Practices (4.2 2 c.(2))**

In addition to the previous housekeeping and management practices, the following practices will be followed for spill prevention and cleanup if needed.

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill clean up will be clearly posted. Site personnel will be made aware of the procedures and the locations of the information and cleanup supplies.
- Appropriate cleanup materials and equipment will be maintained by the contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for clean up purposes.
- All spills will be cleaned immediately after discovery and the materials disposed of properly.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- After a spill a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
- The contractor's site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator. The contractor is responsible for ensuring that the site superintendent has had appropriate training for hazardous materials handling, spill management, and cleanup.

➤ **Spill Response (4.2 2 c.(2))**

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into storm water runoff and conveyance systems. If the release has impacted on-site storm water, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens storm water or surface water at the site, the spill response procedures outlined below must be implemented in a timely manner to prevent the release of pollutants.

- The contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the contractor at the site.

- If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately to remove the material causing the sheen. The contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.

- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to SD DENR.

- Personnel with primary responsibility for spill response and clean up will receive training by the contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.

- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

❖ **Spill Notification**

In the event of a spill, the contractor's site superintendent will make the appropriate notification(s), consistent with the following procedures:

- A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to DENR immediately **if any one of the following** conditions exists:

- The discharge threatens or is in a position to threaten the waters of the state (surface water or ground water).
- The discharge causes an immediate danger to human health or safety.
- The discharge exceeds 25 gallons.
- The discharge causes a sheen on surface water.
- The discharge of any substance that exceeds the ground water quality standards of ARSD (Administrative Rules of South Dakota) chapter 74:51:01.
- The discharge of any substance that exceeds the surface water quality standards of ARSD chapter 74:51:01.
- The discharge of any substance that harms or threatens to harm wildlife or aquatic life.
- The discharge of crude oil in field activities under SDCL (South Dakota Codified Laws) chapter 45-9 is greater than 1 barrel (42 gallons).

To report a release or spill, call DENR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central time). To report the release after hours, on weekends or holidays, call State Radio Communications at 605-773-3231. Reporting the release to DENR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, the responsible person must also contact local authorities to determine the local reporting requirements for releases. DENR recommends that spills also be reported to the National Response Center at (800) 424-8802.

❖ **Construction Changes (4.4)**

When changes are made to the construction project that will require alterations in the temporary erosion controls of the site, the Storm Water Pollution Prevention Plan (SWPPP) will be amended to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP plan (DOT 298) and drawings to reflect the needed changes. Copies of changes will be routed per DOT 298. Copies of forms and the SWPPP will be retained in a designated place for review over the course of the project.

MAINTENANCE OF TRAFFIC

Removing, relocating, covering, salvaging and resetting of permanent traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Storage of vehicles and equipment shall be outside the clear zone and as near as possible to the right-of-way line. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

Sufficient signs have been included in these plans to sign two work spaces. If the Contractor elects to work in additional workspaces no additional payment will be made.

The Contractor shall provide the same type of channelizing devices on the shoulder adjacent to the open traffic lane as used on centerline at a spacing of 8G per the table provided on Standard Plate 634.64 to minimize damage to the shoulders. The cost of these devices shall be included in the contract lump sum price for Traffic Control, Miscellaneous.

Lane closures and devices on the adjacent shoulder shall remain in place where an uneven lane condition exists. This will require overnight lane closures if the lanes are not even at the end of the working day. Uneven lanes will be allowed to be open to traffic on the Meckling service road.

TEMPORARY PAVEMENT MARKING

Temporary road markers may be used. If used, the Contractor shall remove and dispose of them after Permanent Pavement Marking is applied. Method of removal shall be nondestructive to the road surface and shall be accomplished within one week of completion of the Permanent Pavement Marking.

Temporary road markers shall be required on the top lift of asphalt surfacing.

Cost for furnishing, applying, uncovering, removing and disposing of the Temporary Road Markers shall be included in the contract unit price per mile for Temporary Pavement Marking.

Temporary road markers or 4 inch temporary pavement marking tape for overnight closures shall be included in the contract unit price per mile for Temporary Pavement Marking.

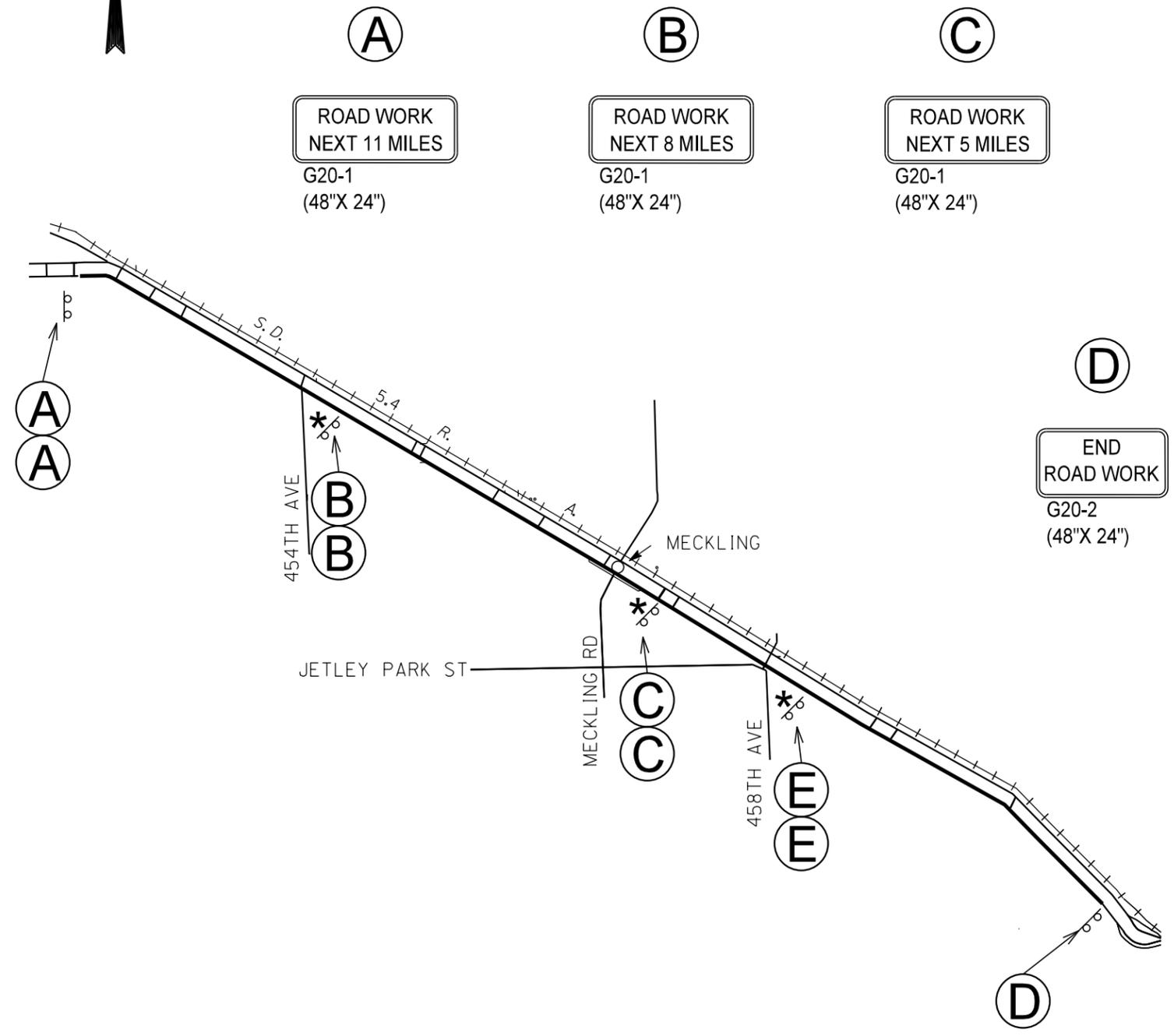
In the absence of a signed lane closure or pilot car operation, Flagger symbol signs (W20-7) and flaggers, or a shadow vehicle with rotating yellow lights or strobe lights shall be positioned on the roadway shoulder in advance of workers during the installation and removal of temporary road markers. The traffic control device used shall be moved intermittently to provide proper warning of the work operation. A ROAD WORK AHEAD (W20-1), or a Workers symbol sign (W21-1) 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.

Cost for the traffic control to install and remove the Temporary Road Markers shall be incidental to the contract unit price per mile for Temporary Pavement Marking.

ITEMIZED LIST FOR TRAFFIC CONTROL

SIGN CODE	DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	UNITS PER SIGN	UNITS
R2-1	SPEED LIMIT 45	4	36" x 48"	29	116
R2-1	SPEED LIMIT 55	4	36" x 48"	29	116
R2-1	SPEED LIMIT 70	2	36" x 48"	29	58
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	20	40
W3-5	SPEED REDUCTION AHEAD (__ MPH)	6	48" x 48"	34	204
W4-2	LEFT or RIGHT LANE ENDS (symbol)	4	48" x 48"	34	136
W8-1	BUMP	4	48" x 48"	34	136
W8-6	TRUCK CROSSING	5	48" x 48"	34	170
W8-11	UNEVEN LANES	2	48" x 48"	34	68
W8-15	GROOVED PAVEMENT	2	48" x 48"	34	68
W8-17	SHOULDER DROP-OFF (symbol)	2	48" x 48"	34	68
W13-1P	ADVISORY SPEED (plaque)	2	30" x 30"	21	42
W20-1	ROAD WORK AHEAD	6	48" x 48"	34	204
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	4	48" x 48"	34	136
W20-7	FLAGGER (symbol)	2	48" x 48"	34	68
W21-1	WORKERS (symbol)	2	48" x 48"	34	68
W21-5	SHOULDER WORK	2	48" x 48"	34	68
G20-1	ROAD WORK NEXT 11 MILES	2	48" x 24"	24	48
G20-1	ROAD WORK NEXT 8 MILES	2	48" x 24"	24	48
G20-1	ROAD WORK NEXT 5 MILES	2	48" x 24"	24	48
G20-1	ROAD WORK NEXT 4 MILES	2	48" x 24"	24	48
G20-2	END ROAD WORK	1	48" x 24"	24	24
-	TYPE 3 BARRICADE - 8' single sided	2		40	80
TOTAL UNITS		2062			

FIXED LOCATION SIGNS
(GROUND MOUNTED SUPPORTS)
(TYPICAL)



NOTES:

All fixed location signs shall remain in place until permanent pavement marking is complete.

* - Road Work Next XX Miles signs shall be placed 150' to 200' from intersection. Exact location to be approved by the Engineer.

Construction signs shall not obscure existing signs and must be located a minimum of 200' from an existing sign.

○ Fixed location signs listed in this manner shall be placed one sign on each side of the highway.

MOBILE OPERATIONS ON MULTI-LANE ROAD (TYPICAL)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0050(112)396	21	36

Notes for Mobile Operation on Multi-lane Road (Typical)

Standard:

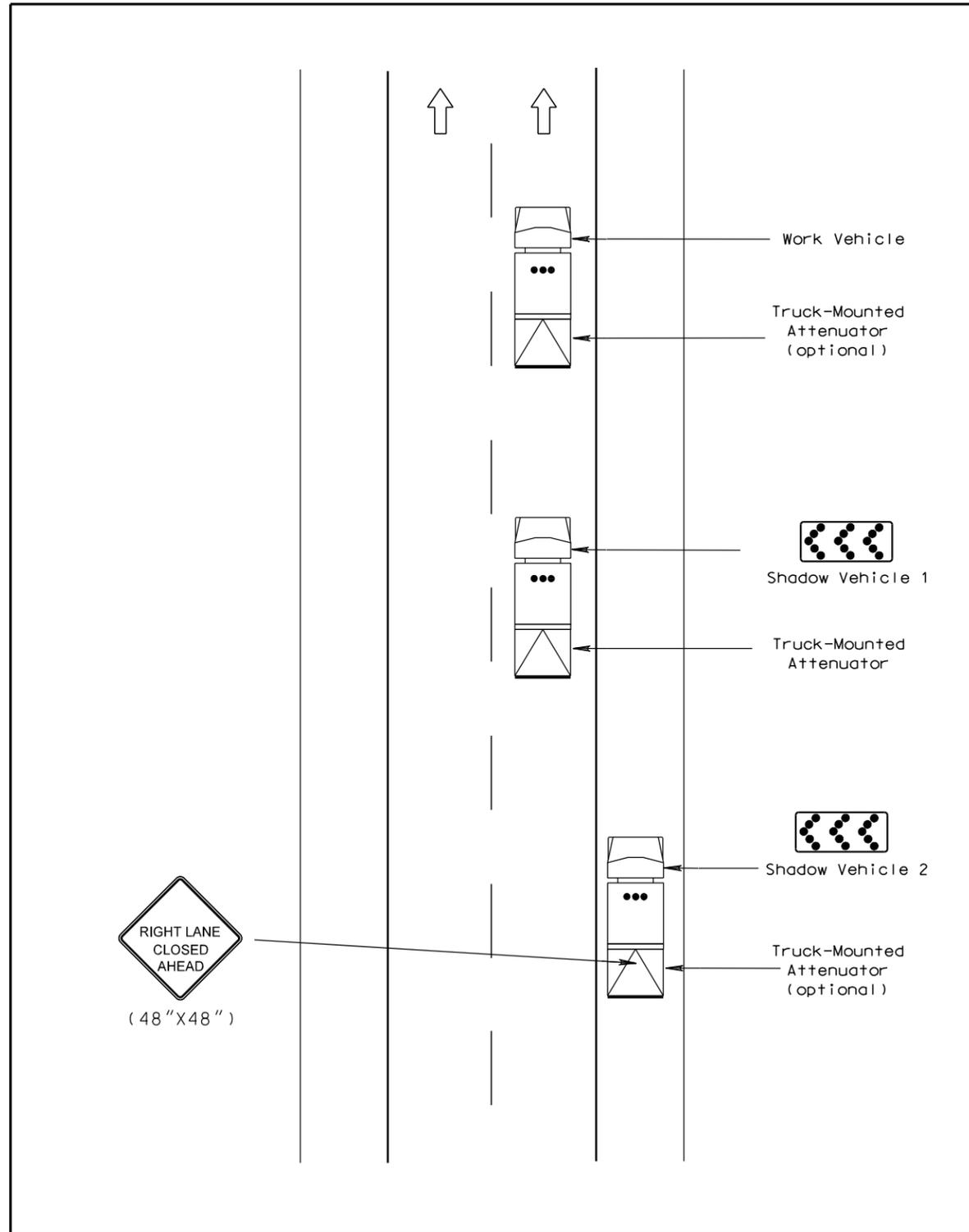
1. Arrow panels shall, as a minimum, be Type B, with a size of 1500 x 750 mm (60 x 30 in).

Guidance:

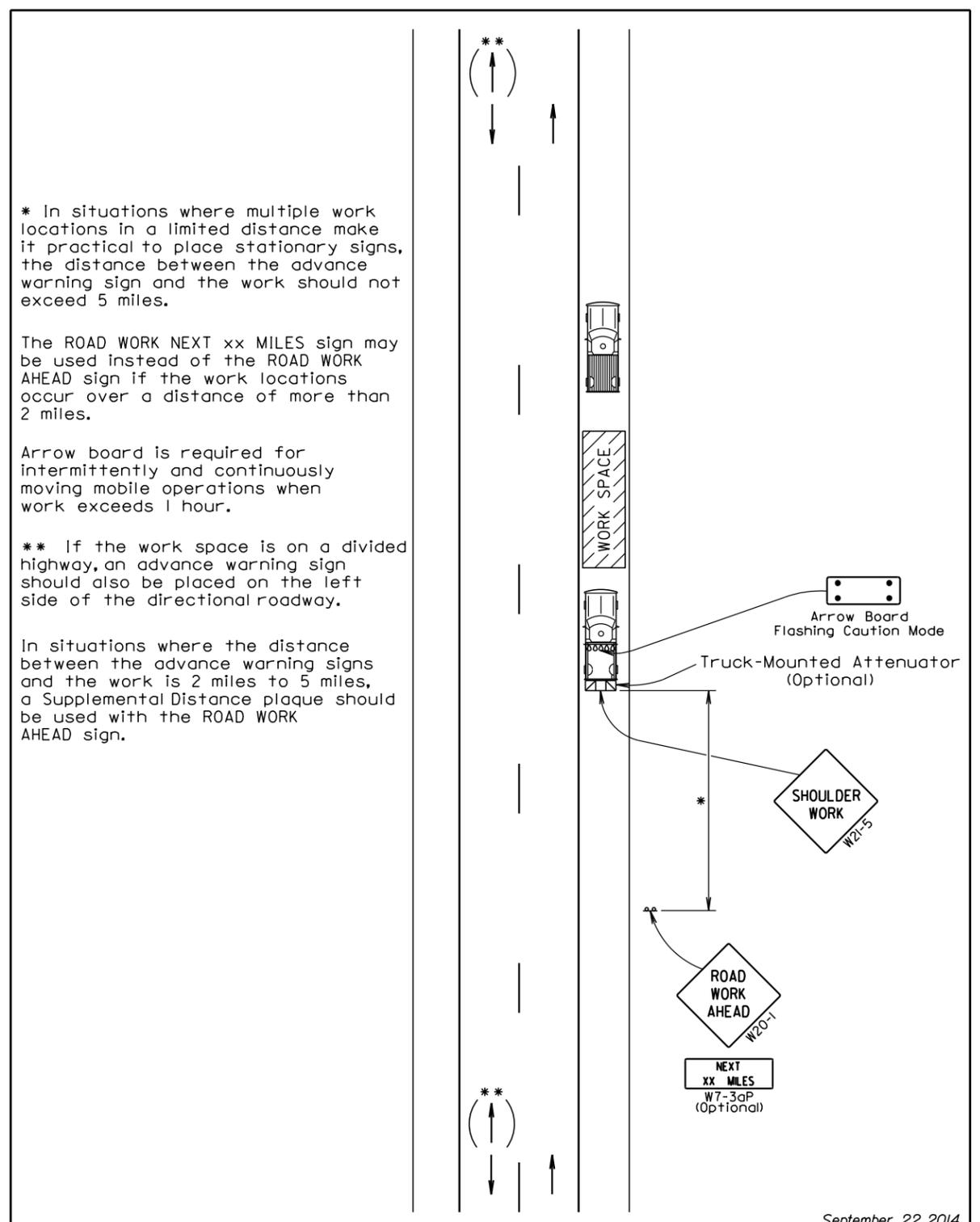
2. Vehicles used for these operations should be made highly visible with appropriate equipment, such as: high-intensity rotating, flashing, oscillating, or strobe lights, signs, and arrow panels.
3. Shadow Vehicle 1 shall be equipped with an arrow panel and truck-mounted attenuator.
4. Shadow Vehicle 2 shall be equipped with an arrow panel. An appropriate lane closure sign should be placed on Shadow Vehicle 2 so as not to obscure the arrow panel.
5. Shadow Vehicle 2 should travel at a varying distance from the work operation so as to provide adequate sight distance for vehicular traffic approaching from the rear.
6. The spacing between the work vehicles and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between.
7. Work should normally be accomplished during off-peak hours.
8. The advanced warning sign shall read LEFT LANE CLOSED and the chevron direction shall be changed when working within the left passing lane.

Option:

9. A truck-mounted attenuator may be used on Shadow Vehicle 2.
10. On high-speed roadways, a third shadow vehicle (not shown) may be used with Shadow Vehicle 1 in the closed lane, Shadow Vehicle 2 straddling the edge line, and Shadow Vehicle 3 on the shoulder.
11. Where adequate shoulder width is not available, Shadow Vehicle 3 may drive partially in the lane.



MOBILE OPERATIONS ON MULTI-LANE ROAD



* In situations where multiple work locations in a limited distance make it practical to place stationary signs, the distance between the advance warning sign and the work should not exceed 5 miles.

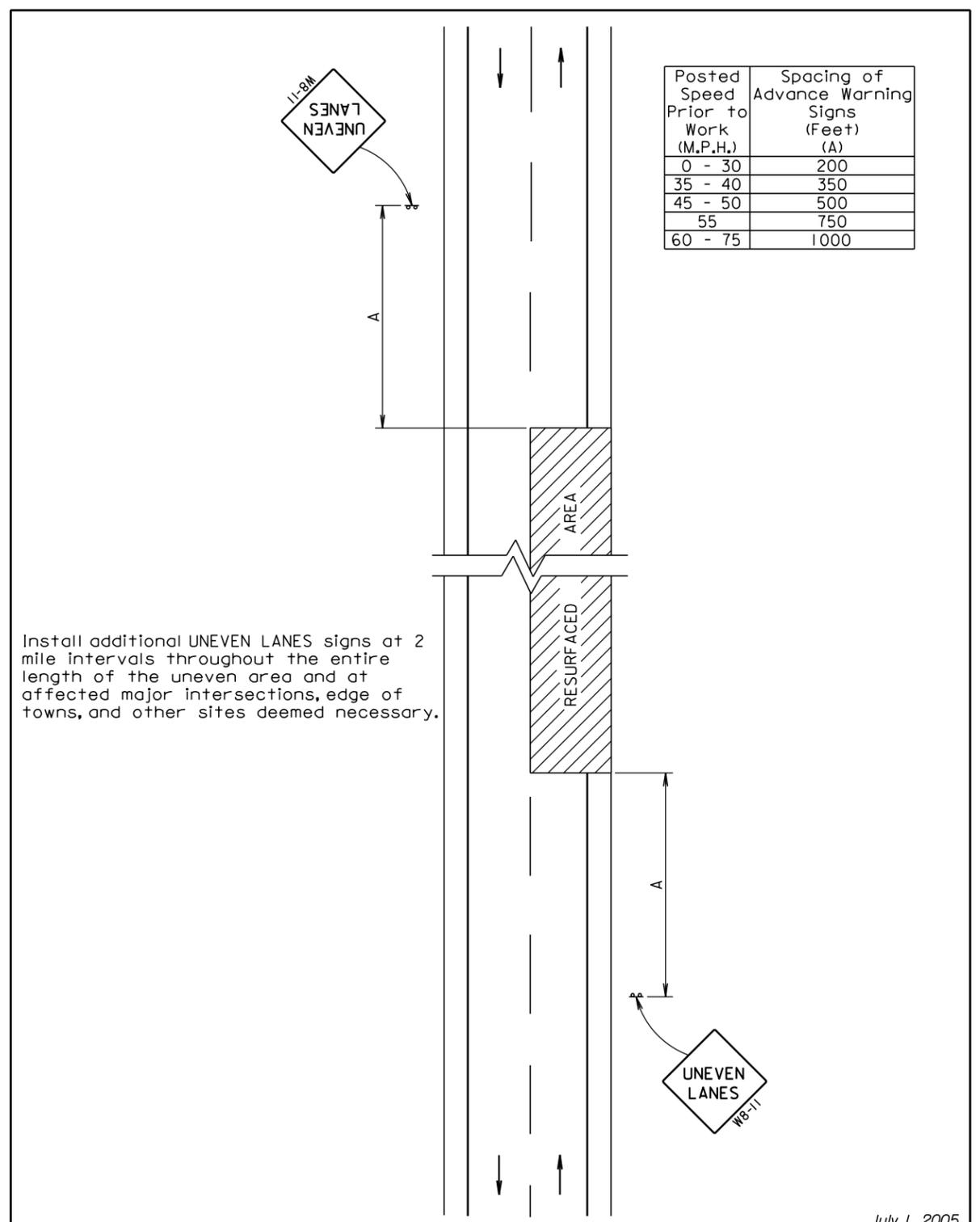
The ROAD WORK NEXT xx MILES sign may be used instead of the ROAD WORK AHEAD sign if the work locations occur over a distance of more than 2 miles.

Arrow board is required for intermittently and continuously moving mobile operations when work exceeds 1 hour.

** 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.

In situations where the distance between the advance warning signs and the work is 2 miles to 5 miles, a Supplemental Distance plaque should be used with the ROAD WORK AHEAD sign.

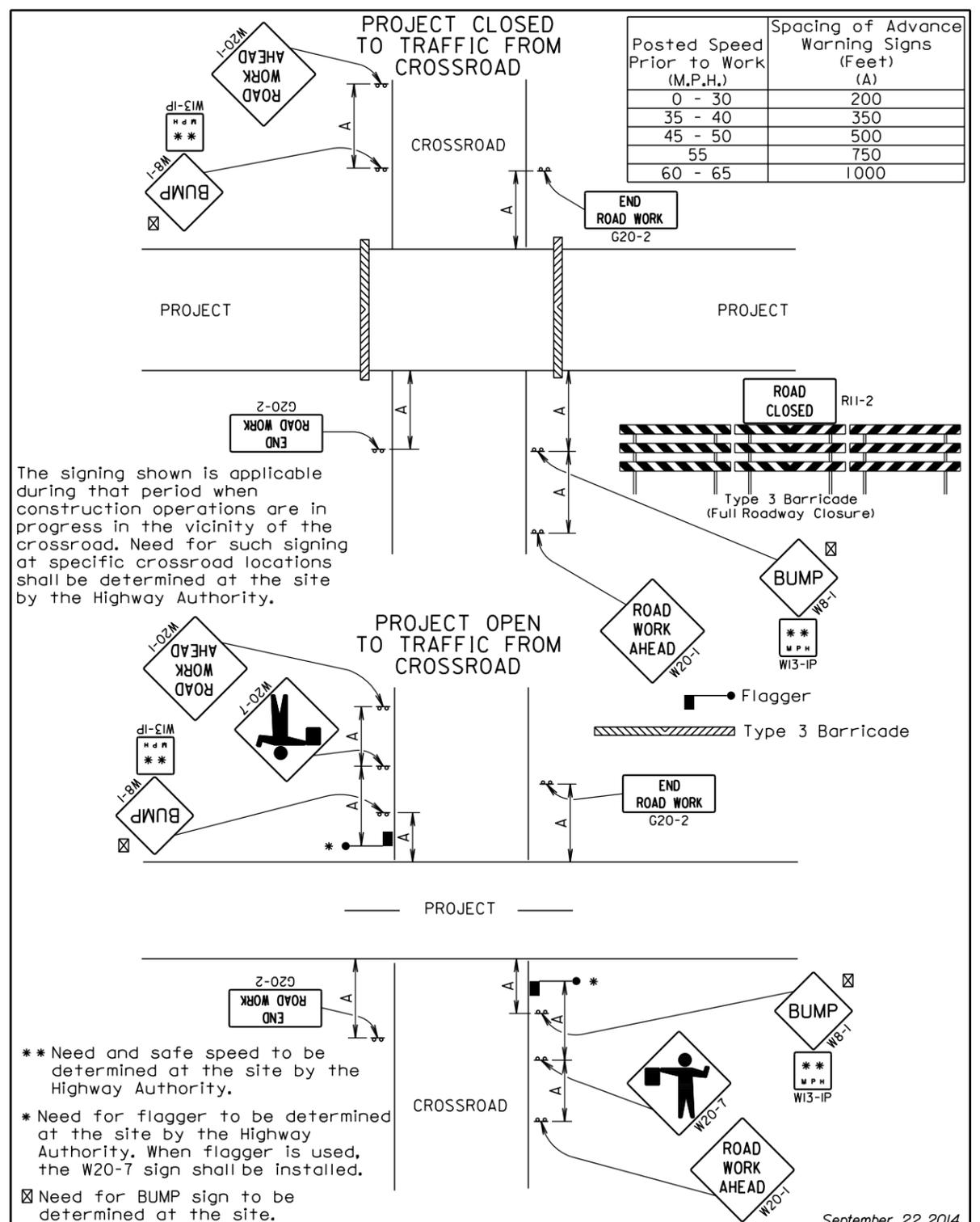
September 22, 2014



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000

Install additional UNEVEN LANES 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.

July 1, 2005



** Need and safe speed to be determined at the site by the Highway Authority.

* Need for flagger to be determined at the site by the Highway Authority. When flagger is used, the W20-7 sign shall be installed.

☒ Need for BUMP sign to be determined at the site.

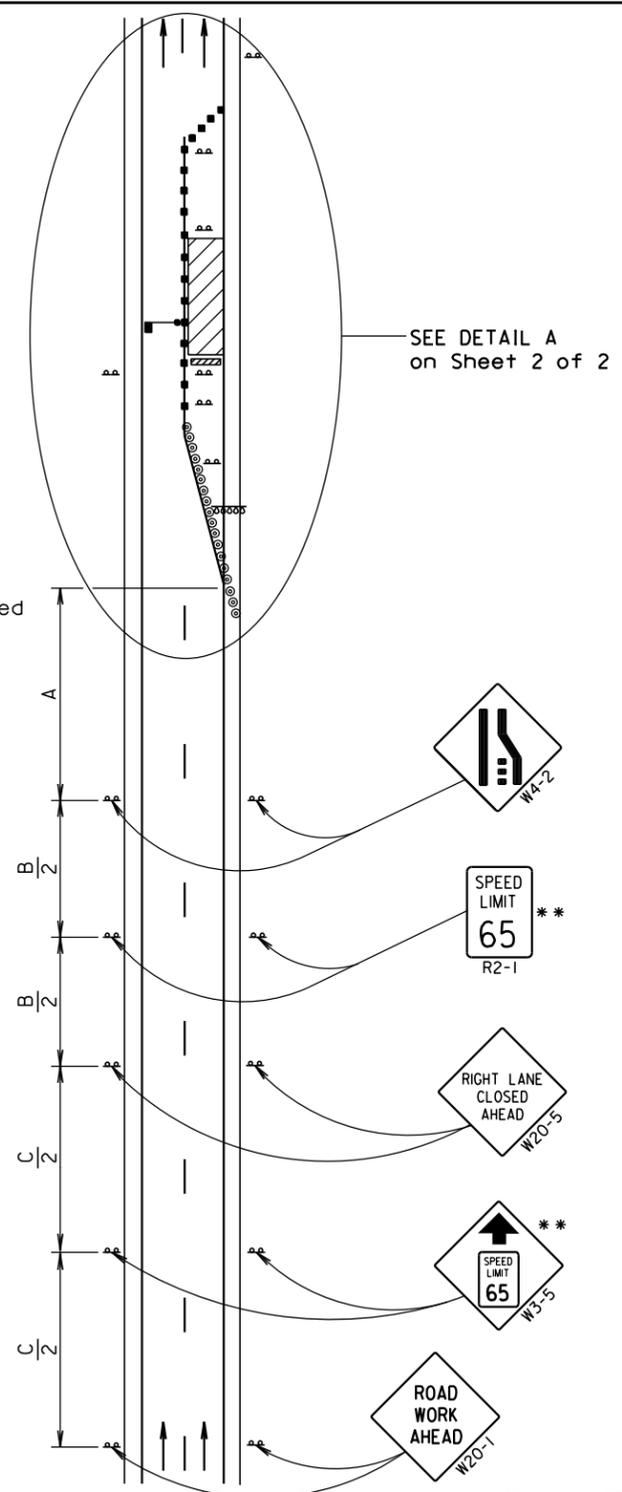
September 22, 2014

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)		
	(A)	(B)	(C)
0 - 30	200		
35 - 40	350		
45 - 50	500		
55	750		
60 - 65	1000		
	(A)	(B)	(C)
70 - 75	1000	1500	2640

- ** Speed appropriate for location.
- ⊙ Reflectorized Drum
- Channelizing Device

ROAD WORK AHEAD sign is only required in advance of the first lane closure.

High speed is defined as having a posted speed limit greater than 45 mph.



September 22, 2014

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet)	Taper Length (Feet)
0 - 30	25	180
35 - 40	25	320
45 - 50	50 *	600
55	50 *	660
60 - 65	50 *	780
70 - 75	50 *	1125

- * Spacing is 40' for 42" cones.
- ** Speed appropriate for location.
- *** Use speed limit designated for the condition when workers are present in the work space. Signs shall be covered or removed when workers are not present.

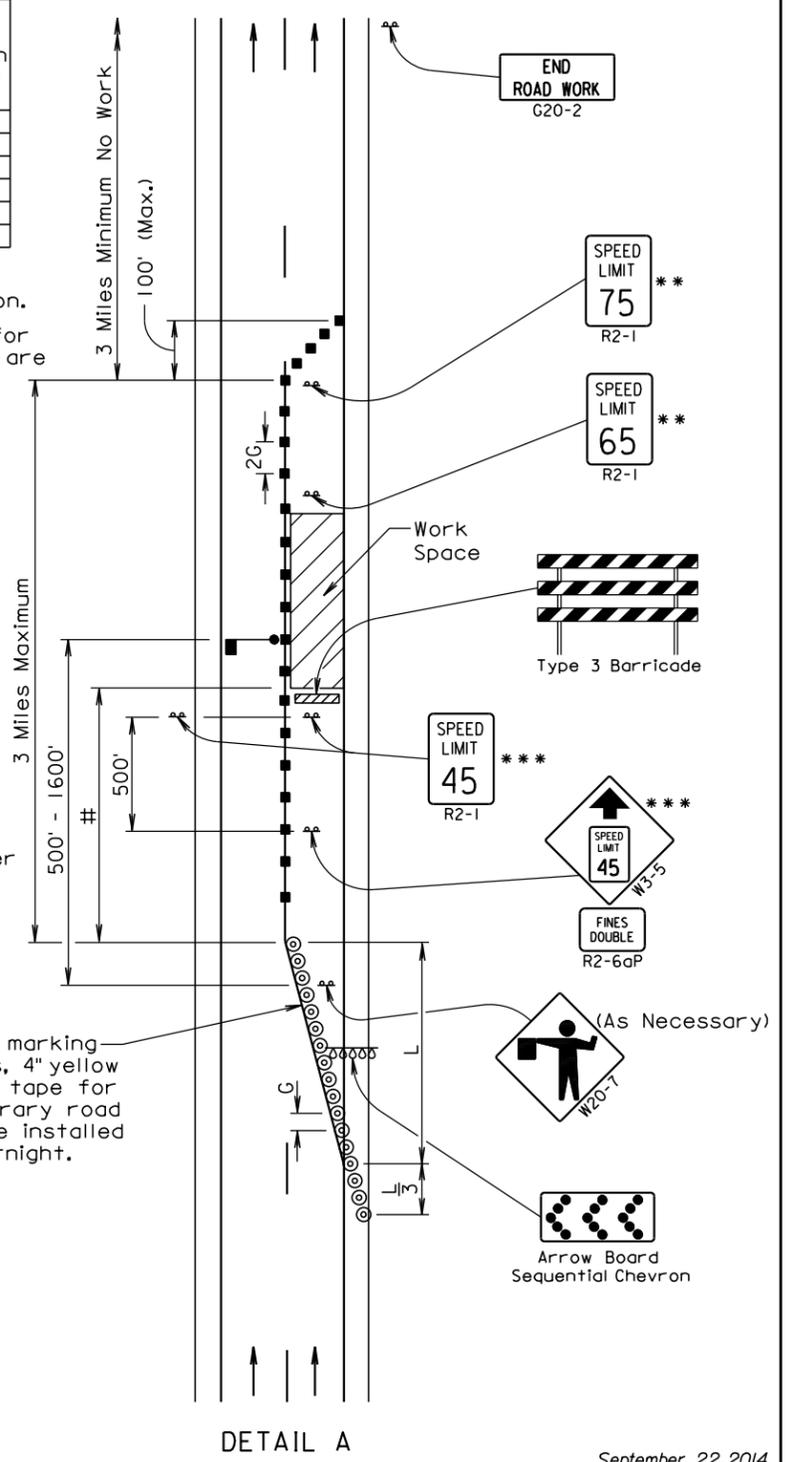
- Flagger (As Necessary)
- ⊙ Reflectorized Drum
- Channelizing Device
- # The Work Space shall be a minimum of 500' from the end of the taper.

The FLAGGER sign shall be used whenever there is a Flagger present.

The channelizing devices shall be 42" cones or drums.

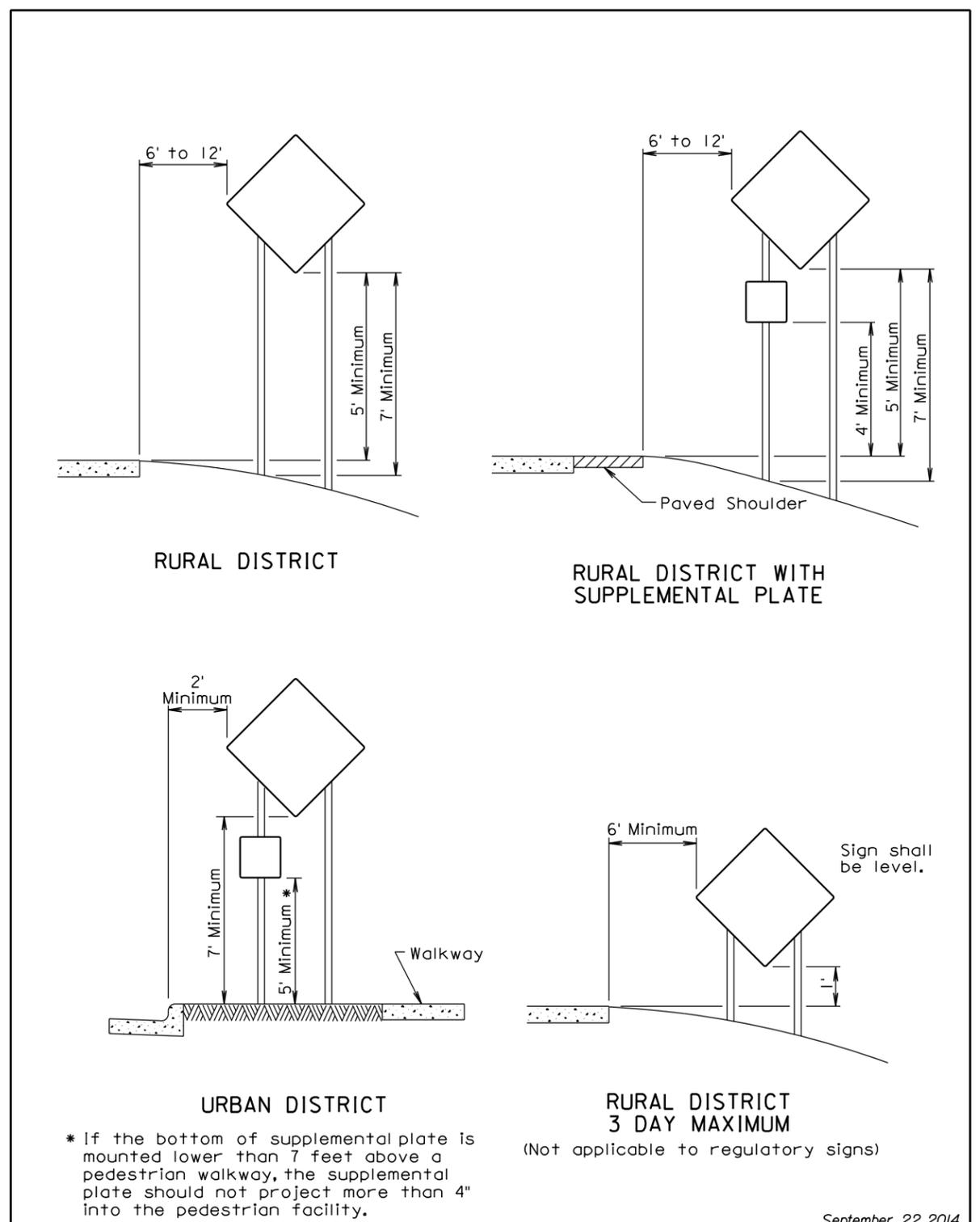
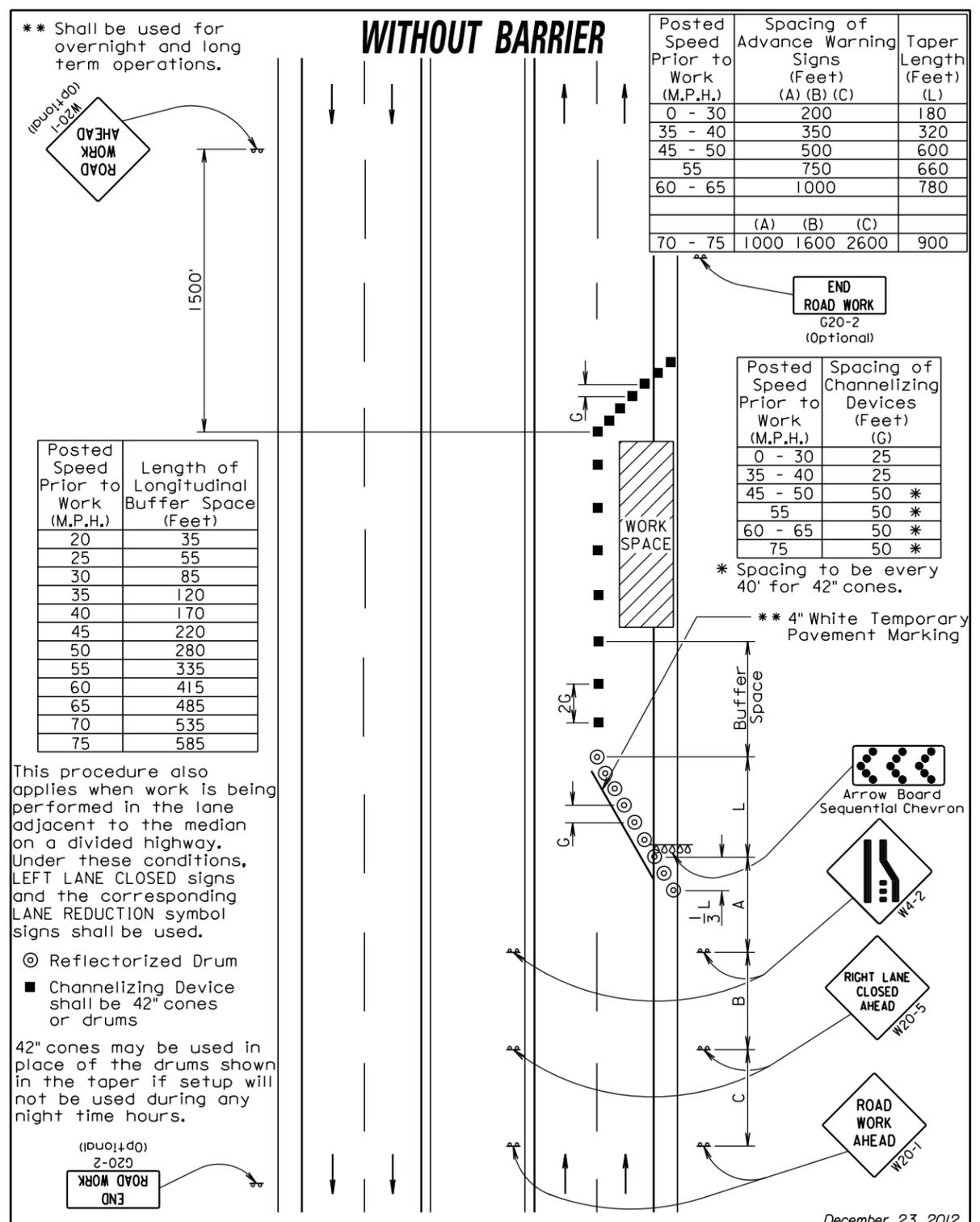
42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

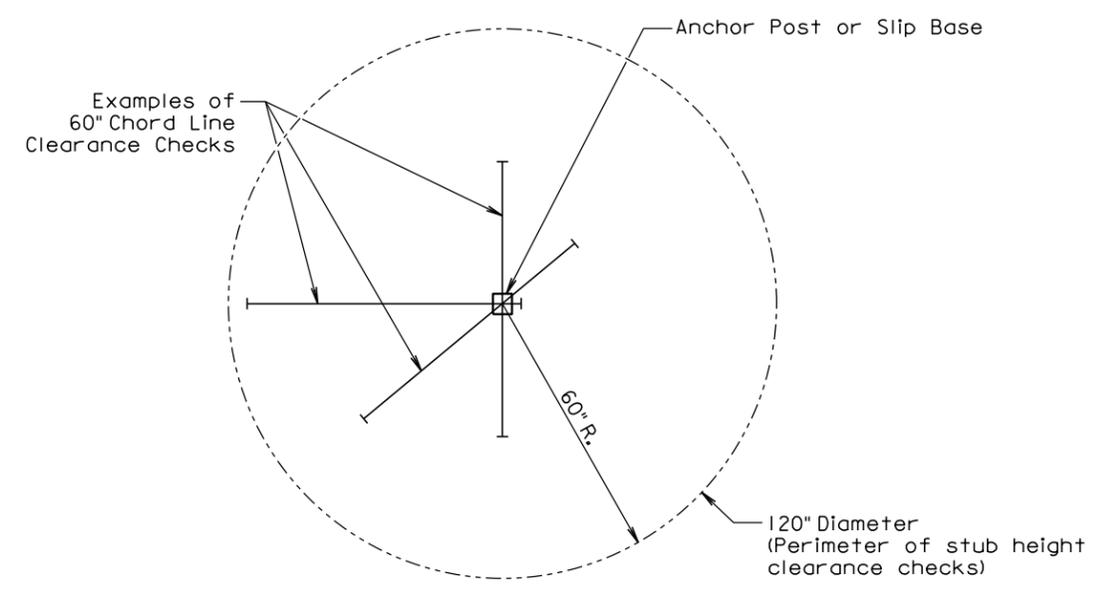
4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary road markers at 5' spacing shall be installed when the lane is closed overnight.



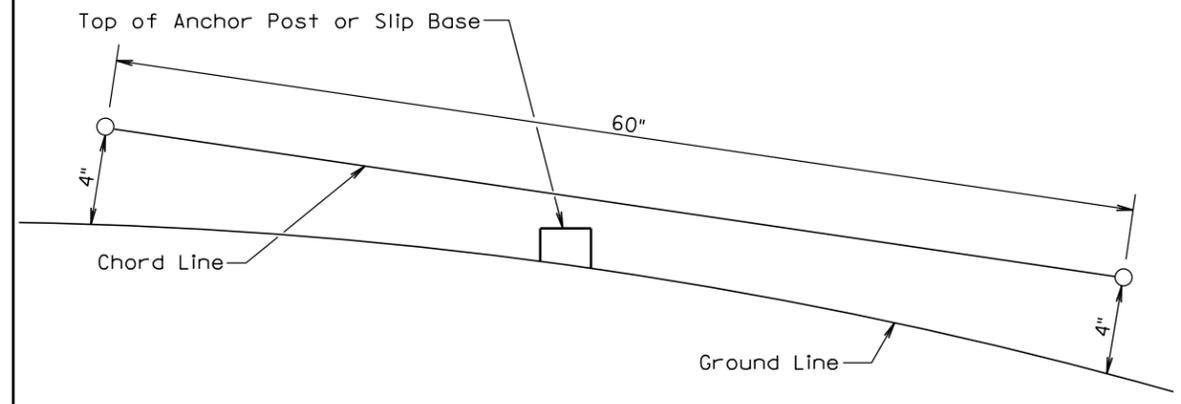
DETAIL A

September 22, 2014





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

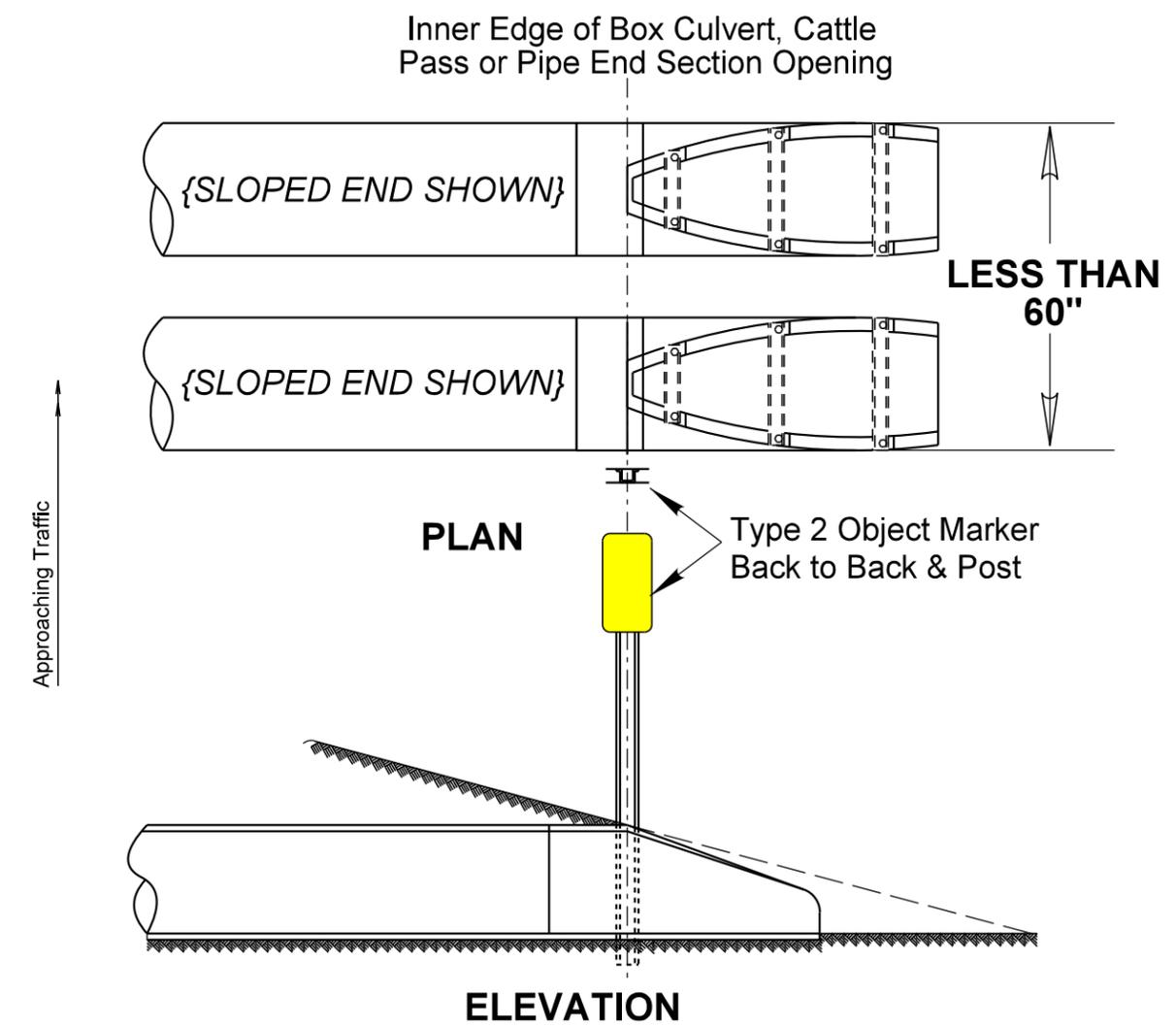
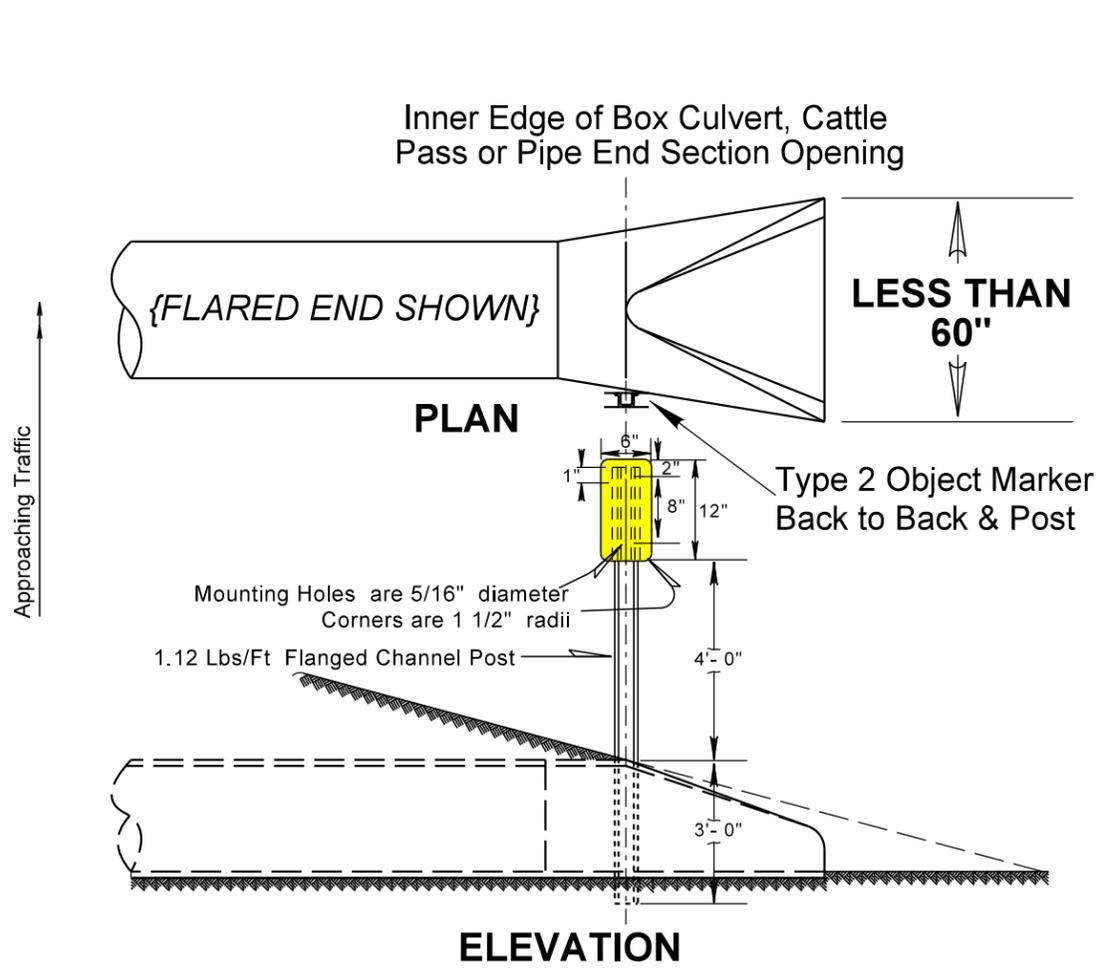
<i>Published Date: 4th Qtr. 2014</i>	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

OBJECT MARKER ERECTION DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0050(112)396	27	36

Plotting Date: 01/06/2015

TYPICAL AT CULVERT, CATTLE PASS END, OR MULTIPLE PIPES WITH OUTSIDE DIMENSION OR A COMBINED WIDTH OF LESS THAN 60"



PLOT SCALE - 1:6.39999

PLOTTED FROM - TRM11118

PLOT NAME - 4

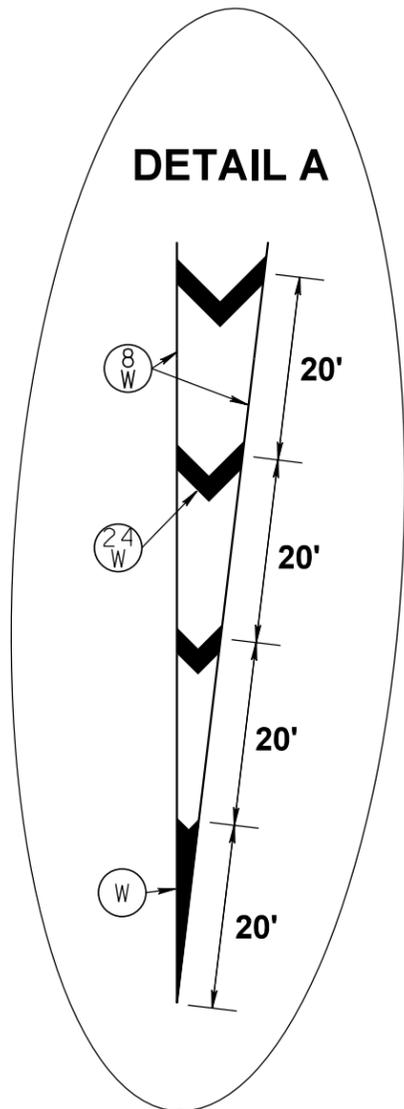
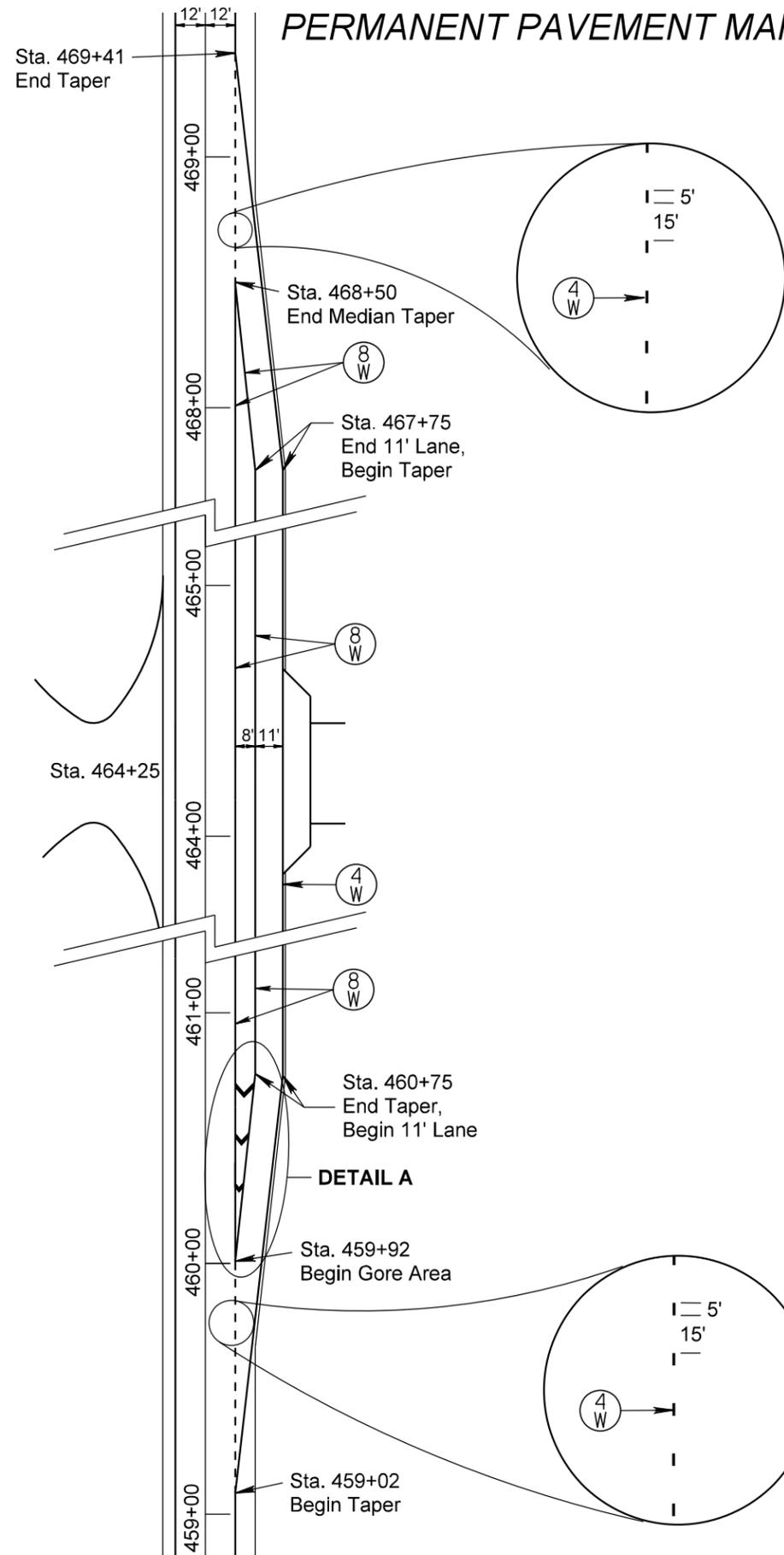
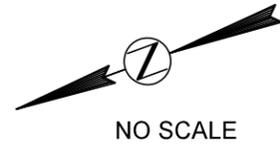
FILE - ... \PRJ2015\CLAY04E2\TYPE2.DGN

PORTABLE WEIGH SCALE PULLOUT

PERMANENT PAVEMENT MARKINGS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0050(112)396	29	36

Plotting Date: 01/06/2015



KEY

- (4 W) - 4" WHITE
- (8 W) - 8" WHITE
- (24 W) - 24" WHITE
- (W) - SOLID WHITE AREA

PLOT SCALE - 1:62.5

PLOTTED FROM - TRW11118

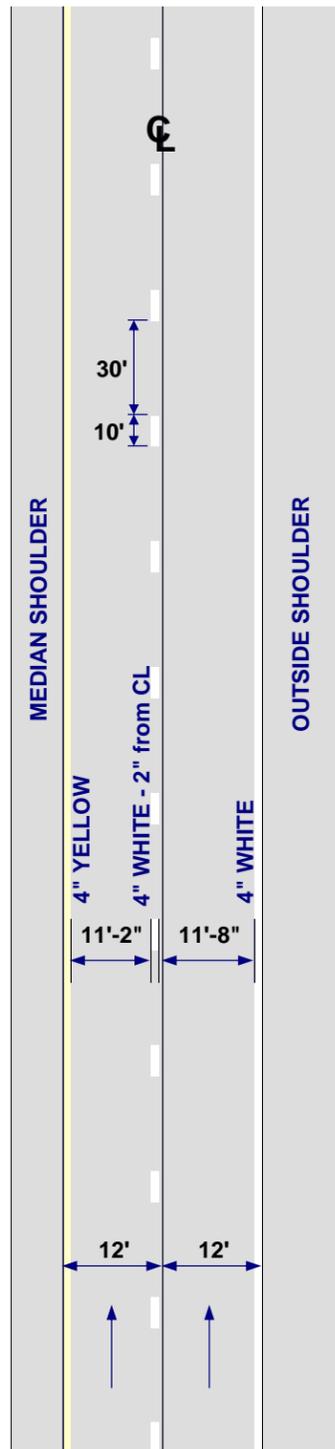
PLOT NAME - 6

FILE - ... \PRJ2015\CLAY04E2\SCALEMARK.DGN

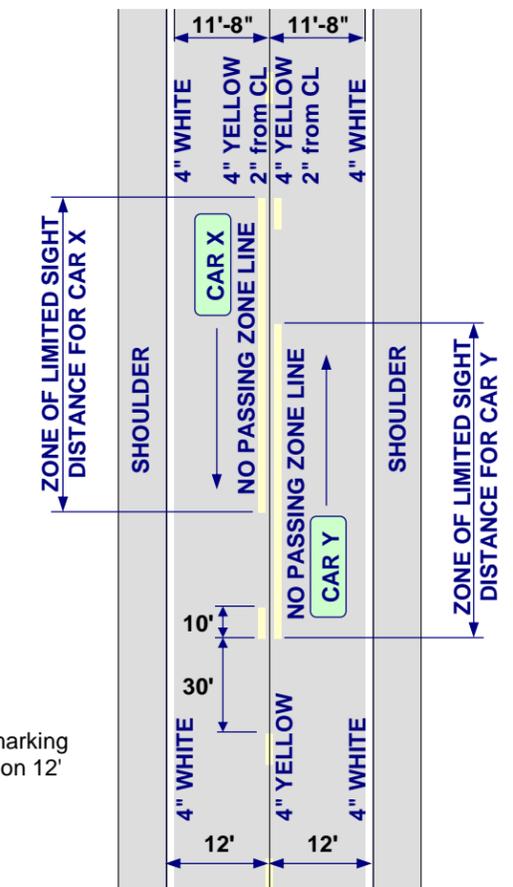
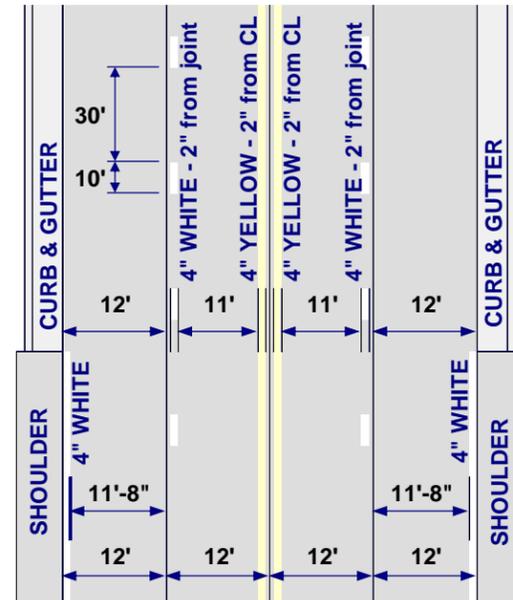
PAVEMENT MARKING

PAVEMENT MARKING

**DIVIDED ROADWAY
(ONE DIRECTION SHOWN)**



UNDIVIDED ROADWAY



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

Typical pavement marking shall be applied throughout the applicable sections of 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 panel.

Application rates shall be as follows:

DIVIDED ROADWAY (Rates for one line)	UNDIVIDED ROADWAY	
	Four Lane Roadway (Rates for one line)	Two Lane Roadway (Rates for one line)
Solid Yellow Edgeline Rate = 16.9 Gals./Pass-Mile	Solid Yellow Centerline Rate = 16.9 Gals./Pass-Mile	Dashed Yellow Centerline Rate = 4.6 Gals./Pass-Mile
Dashed White Centerline Rate = 4.6 Gals./Pass-Mile	Dashed White Laneline Rate = 4.6 Gals./Pass-Mile	Solid Yellow Centerline Rate = 16.9 Gals./Pass-Mile
Solid White Edgeline Rate = 16.9 Gals./Pass-Mile	Solid White Edgeline (Not applicable in curb and gutter) Rate = 16.9 Gals./Pass-Mile	Solid White Edgeline Rate = 16.9 Gals./Pass-Mile
Glass Beads = 8 Lbs./Gal.	Glass Beads = 8 Lbs./Gal.	Glass Beads = 8 Lbs./Gal.

ESTIMATED QUANTITIES	
PAINT	QUANTITY
WHITE	235 GALLONS
YELLOW	168 GALLONS

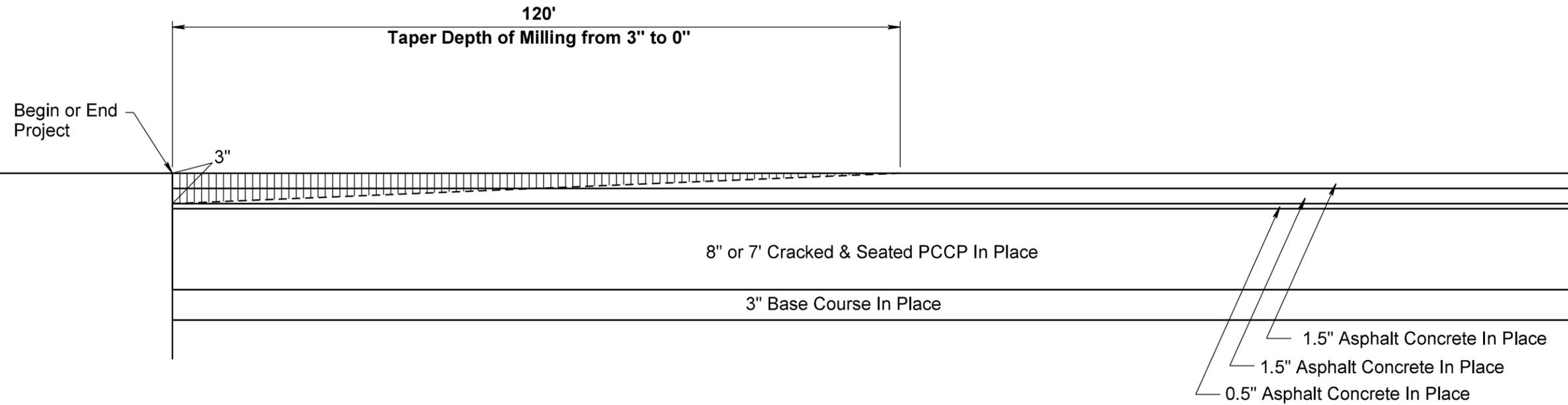
Included in the above quantities are:				
Additional White		Additional Yellow		
Description	Gallons	Description	Gallons	
4" Lines	50' 0	Transitions	0 Ea	0
8" Lines	1800' 15	4" Skip Lines	0'	0
12" Gore Lines	0' 0	8" Lines	0'	0
Crosswalks	0 Ea	12" Lines	0'	0
24" Stop Lines	0' 0	24" Hatches	0'	0
24" Hatches	24' 1	Solid Areas	0sf	0
Solid Area	20sf 1	Additional Yellow: 0		
Arrows				
Left Arrows	0 Ea	Additional Quantities		
Right Arrows	0 Ea	<u>Rates of Coverage: SqFt/Gal</u>		
Straight Arrows	0 Ea	4", 8" and 12" Lines - 80		
Combo Arrows	0 Ea	24" Lines and Bars - 50		
Lane Drop Arrows	0 Ea	Arrows, Messages and Solid Areas - 30		
Messages				
STOP	0 Ea			
STOP AHEAD	0 Ea			
R X R with Bars	0 Ea			
SCHOOL X-ING	0 Ea			
Additional White: 17				

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

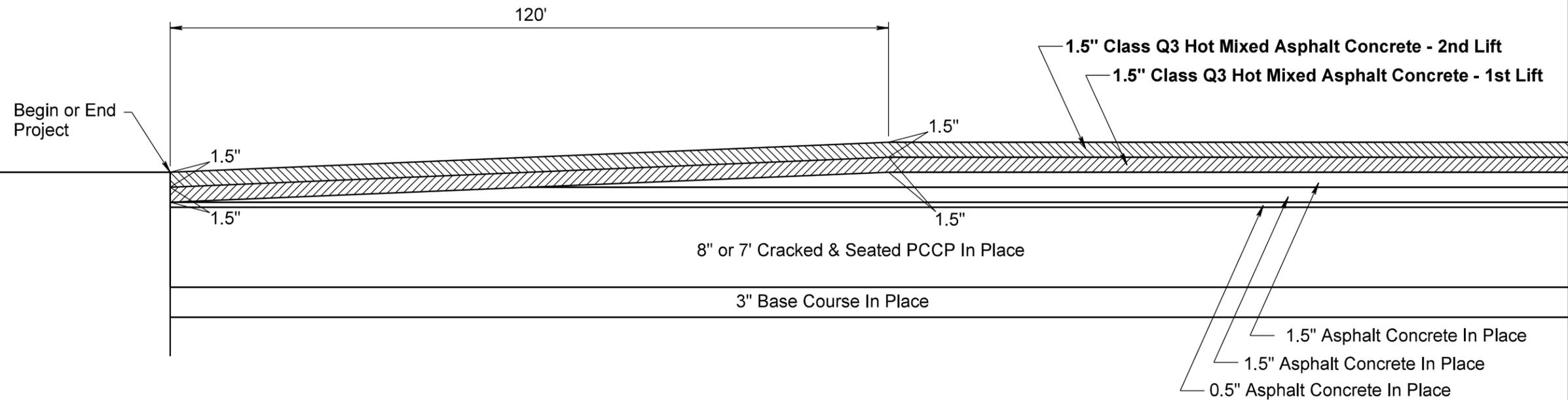
DETAIL FOR COLD MILLING TAPER AT BEGIN AND END PROJECT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0050(112)396	31	36

Plotting Date: 01/06/2015



DETAIL FOR RESURFACING TAPER AT BEGIN AND END PROJECT



PLOT SCALE - 1:1

PLOT NAME - 7

FILE - ... \PRJ2015\CLAY04E2\MILL04E2.DGN

PLOTTED FROM - TRM11118

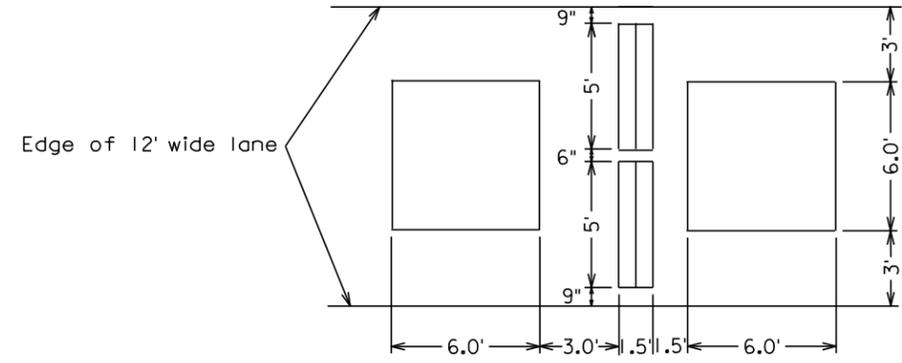
PERMANENT VEHICLE CLASSIFICATION SYSTEMS DETAIL

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0050(112)396	32	36

Plotting Date: 01/06/2015

PLOT SCALE - 1:8

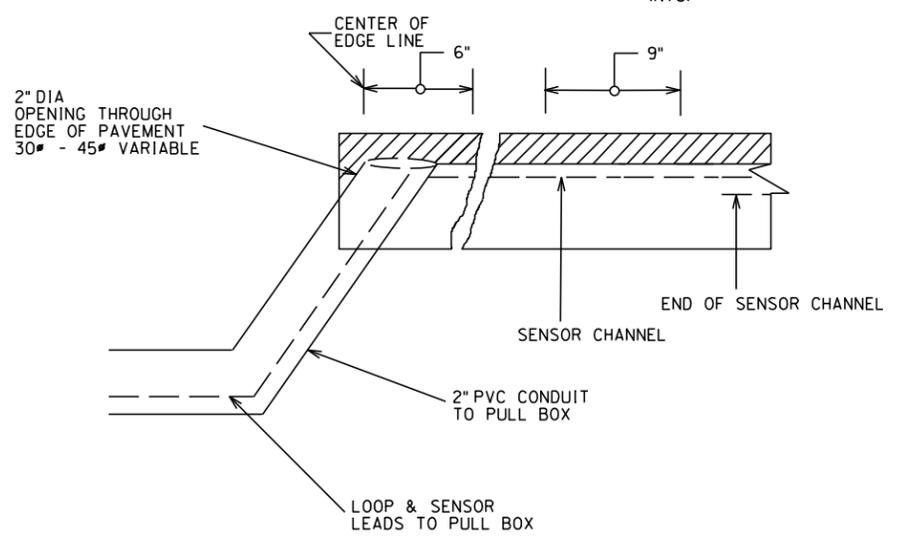
Layout A
GENERAL LAYOUT



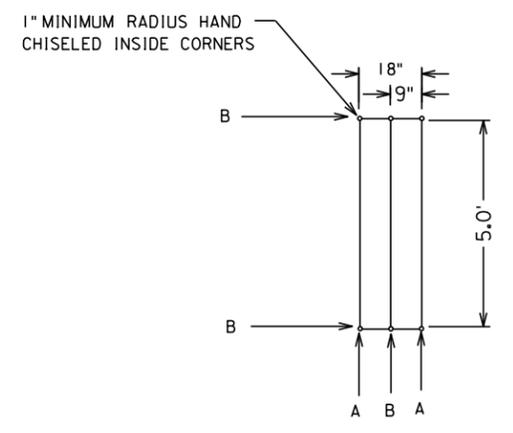
- NOTES:
1. SAW CUT DEPTH A-1.25", B-1.75" DEEP. DEPTH FOR LOOPS ARE 1.75".
 2. SAW CUTS ARE TYPICALLY 0.25" WIDE.
 3. WIRE LENGTH NEEDED FOR A 5' AXLE LOOP IS 96', AND FOR A 6.0' MAIN LOOP IS 69'. ALL LOOPS ALSO NEED THE TWISTED LEAD-IN (2 WIRES-IN A LEAD IN).

Layout C

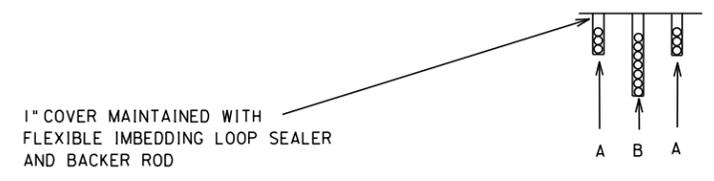
CURB LEAD-IN ROUTING DETAIL
(NTS)



Layout B
PLAN VIEW



CROSS SECTION VIEW



PLOTTED FROM - TRM11118

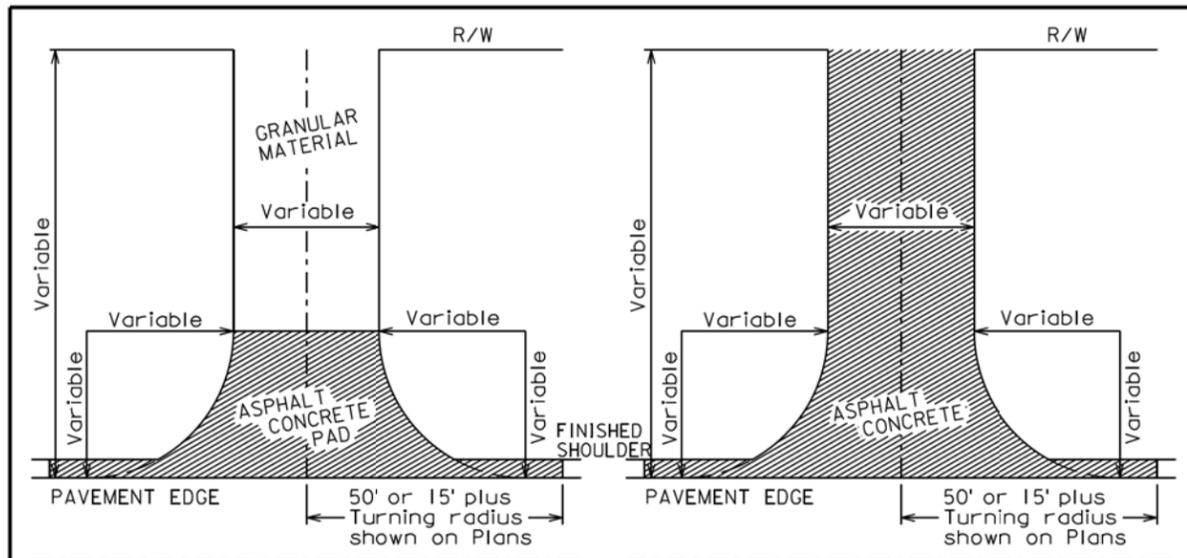
PLOT NAME - 8

FILE - ... \CLAY04E2\TRAFFIC COUNTER.DGN

Plotting Date: 01/06/2015

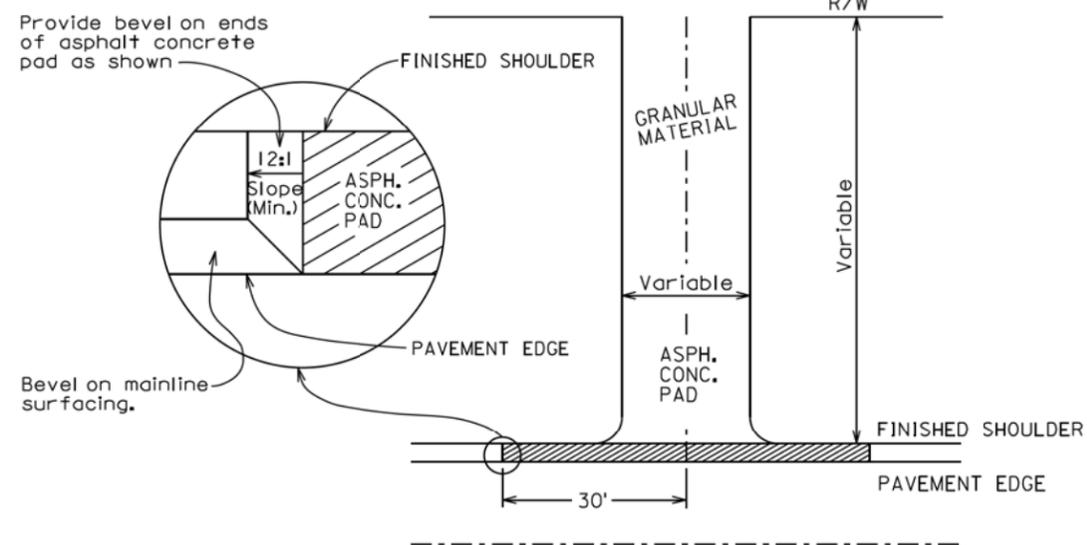
PLOT SCALE - 1:200

PLOT NAME - 1



INTERSECTING ROAD NO ASPHALT CONCRETE SURFACING BEYOND R/W

INTERSECTING ROAD ASPHALT CONCRETE SURFACING BEYOND R/W



ENTRANCE

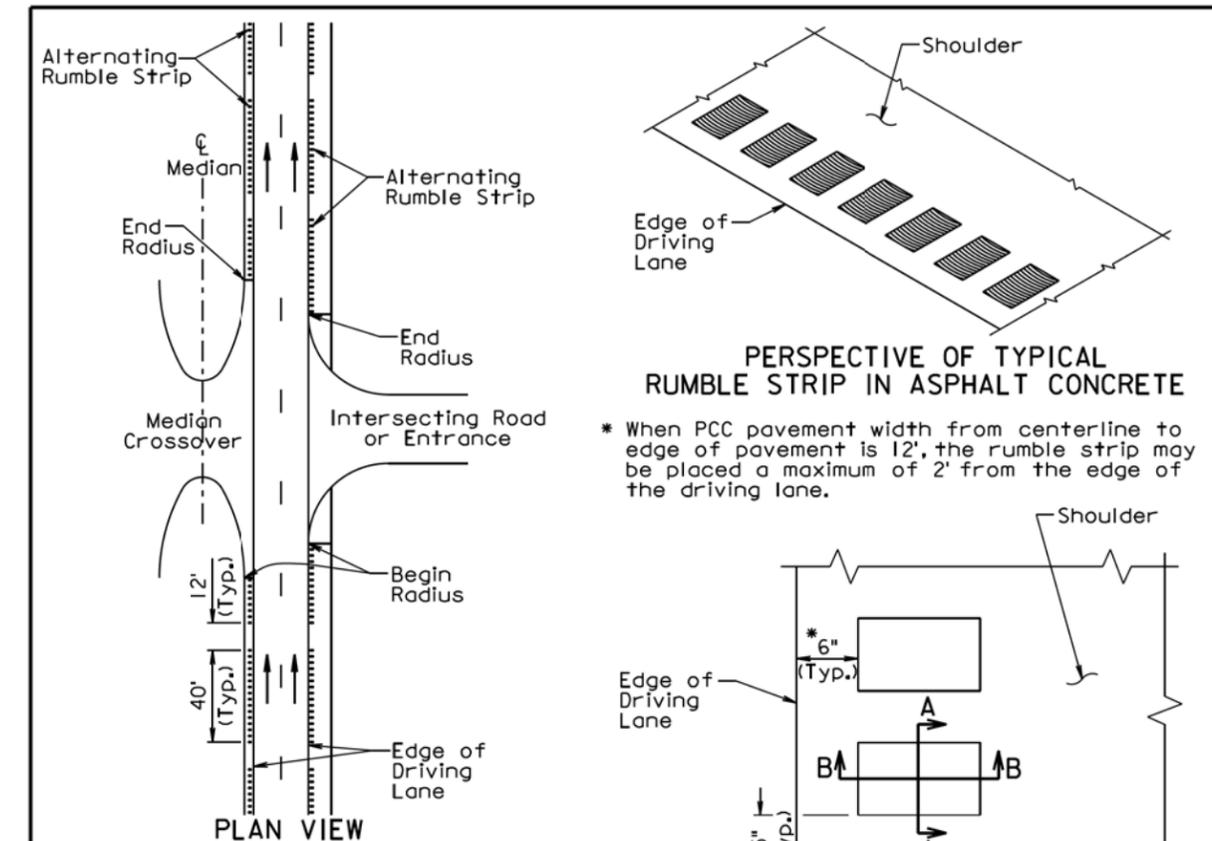
The surfacing details shown on this sheet are provided as a guide for surfacing these facilities. The precise construction limits for situations other than the standards shown will be determined by the Engineer, at the time of construction.

ROADWAY WITH SHOULDER

March 31, 2000

S D D O T	RESURFACING OF INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 320.13
		Sheet 1 of 1

Published Date: 4th Qtr. 2014



PERSPECTIVE OF TYPICAL RUMBLE STRIP IN ASPHALT CONCRETE

* When PCC pavement width from centerline to edge of pavement is 12', the rumble strip may be placed a maximum of 2' from the edge of the driving lane.

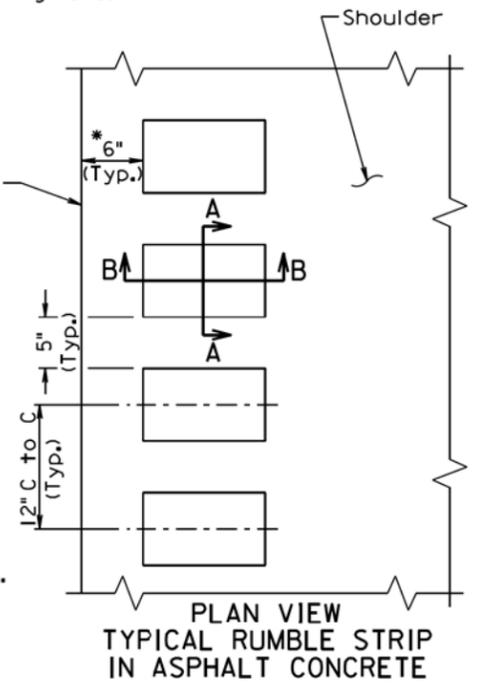
GENERAL NOTES:

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

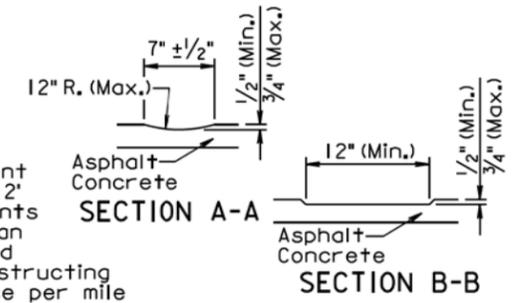
A rumble strip shall not be constructed through intersecting roads, entrances, median crossovers, entrance ramps, exit ramps, turnouts, and gore areas. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble strip adjacent to the intersecting roads, entrances, median crossovers, entrance ramps, exit ramps, turnouts, and gore areas shall be adjusted as approved by the Engineer.

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

Measurement of the rumble strip shall be to the nearest 0.1 of a mile for each shoulder. Measurement and payment of the rumble strip shall include the 12' long segments without rumble strips and the segments adjacent to the intersecting roads, entrances, median crossovers, entrance ramps, exit ramps, turnouts, and gore areas without rumble strips. Payment for constructing the rumble strip shall be at the contract unit price per mile for "Grind 12" Rumble Strip or Stripe in Asphalt Concrete".



PLAN VIEW TYPICAL RUMBLE STRIP IN ASPHALT CONCRETE



SECTION A-A

SECTION B-B

June 26, 2011

S D D O T	12" RUMBLE STRIP IN ASPHALT CONCRETE ON DIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.28
		Sheet 1 of 1

Published Date: 4th Qtr. 2014

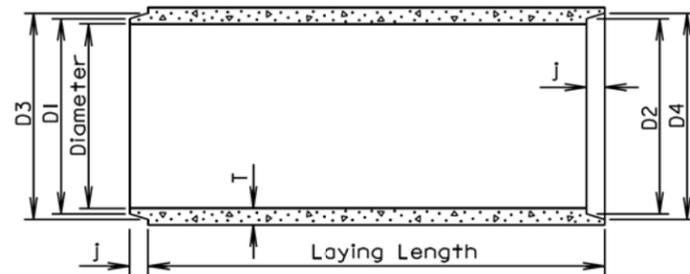
PLOTTED FROM - TRW11118

FILE - ... \STANDARDPLATES_04E2.DGN

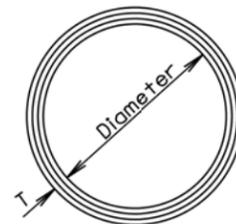
Plotting Date: 01/06/2015

TOLERANCES IN DIMENSIONS

Diameter: $\pm 1.5\%$ for 24" Dia. or less and $\pm 1\%$ or $\frac{3}{8}$ " whichever is more for 27" Dia. or greater.
 Diameters at Joints: $\pm 3/16$ " for 30" Dia. or less and $\pm 1/4$ " for 36" or greater.
 Length of joint (j): $\pm 1/4$ ".
 Wall thickness (T): not less than design T by more than 5% or $\frac{3}{16}$ ", whichever is greater.
 Laying length: shall not underrun by more than $\frac{1}{2}$ ".



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

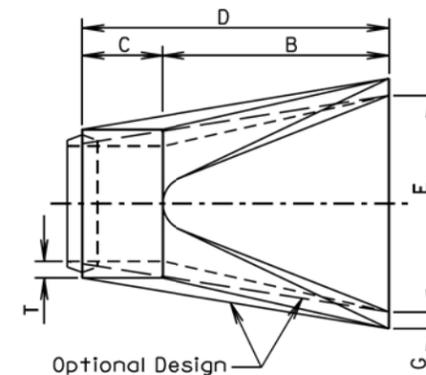
Construction of R.C.P. shall conform to the requirements of Section 990 of the Standard Specifications for Roads and Bridges.

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

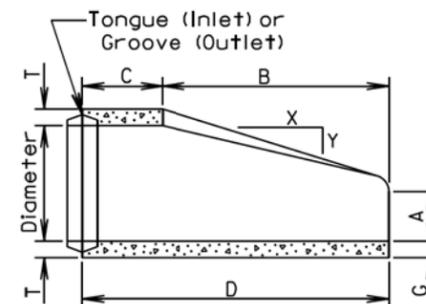
Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 3/8	14 1/4
15	127	2 1/4	2	16 1/2	16 3/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 1/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322	3 1/4	3	29 1/4	29 5/8	30 1/4	30 5/8
30	384	3 1/2	3 1/4	32 3/8	32 3/4	33 1/2	33 3/8
36	524	4	3 3/4	38 3/4	39 1/4	40	40 1/2
42	685	4 1/2	4	45 1/8	45 5/8	46 1/2	47
48	867	5	4 1/2	51 1/2	52	53	53 1/2
54	1070	5 1/2	4 1/2	57 1/8	58 3/8	59 3/8	59 7/8
60	1296	6	5	64 1/4	64 3/4	66	66 1/2
66	1542	6 1/2	5 1/2	70 5/8	71 1/8	72 1/2	73
72	1810	7	6	77	77 1/2	79	79 1/2
78	2098	7 1/2	6 1/2	83 3/8	83 3/8	85 5/8	86 1/8
84	2410	8	7	89 3/4	90 1/4	92 1/8	92 5/8
90	2740	8 1/2	7	95 3/4	96 1/4	98 1/8	98 5/8
96	2950	9	7	102 1/8	102 5/8	104 1/2	105
102	3075	9 1/2	7 1/2	109	109 1/2	111 1/2	112
108	3870	10	7 1/2	115 1/2	116	118	118 1/2

March 31, 2000

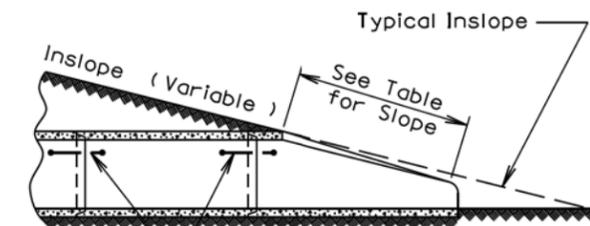
S D D O T	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01
	Published Date: 4th Qtr. 2014	Sheet 1 of 1



TOP VIEW



LONGITUDINAL SECTION



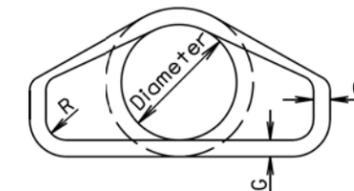
See Plate Number 450.18
(TIE BOLTS FOR R.C.P. END SECTIONS)

SLOPE DETAIL

GENERAL NOTES:

Lengths of concrete pipe shown on Plan Sheets are between flared Ends only.

Construction of R.C.P. Flared End shall conform to the requirements of Section 990 of the Standard Specifications for Roads and Bridges.



END VIEW

Dia. (in.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4:1	2	4	24	48 1/8	72 1/8	24	2	1 1/2
15	740	2.4:1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3:1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4:1	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	1 1/2
24	1520	2.5:1	3	9 1/2	43 1/2	30	73 1/2	48	3	1 1/2
27	1930	2.5:1	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	1 1/2
30	2190	2.5:1	3 1/2	12	54	19 3/4	73 3/4	60	3 1/2	1 1/2
36	4100	2.5:1	4	15	63	34 3/4	97 3/4	72	4	1 1/2
42	5380	2.5:1	4 1/2	21	63	35	98	78	4 1/2	1 1/2
48	6550	2.5:1	5	24	72	26	98	84	5	1 1/2
54	8240	2:1	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	1 1/2
60	8730	1.9:1	6	35	60	39	99	96	5	1 1/2
66	10710	1.7:1	6 1/2	30	72	27	99	102	5 1/2	1 1/2
72	12520	1.8:1	7	36	78	21	99	108	6	1 1/2
78	14770	1.8:1	7 1/2	36	90	21	111	114	6 1/2	1 1/2
84	18160	1.6:1	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2
90	20900	1.5:1	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	6

March 31, 2000

S D D O T	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
	Published Date: 4th Qtr. 2014	Sheet 1 of 1

PLOT SCALE - 1:200

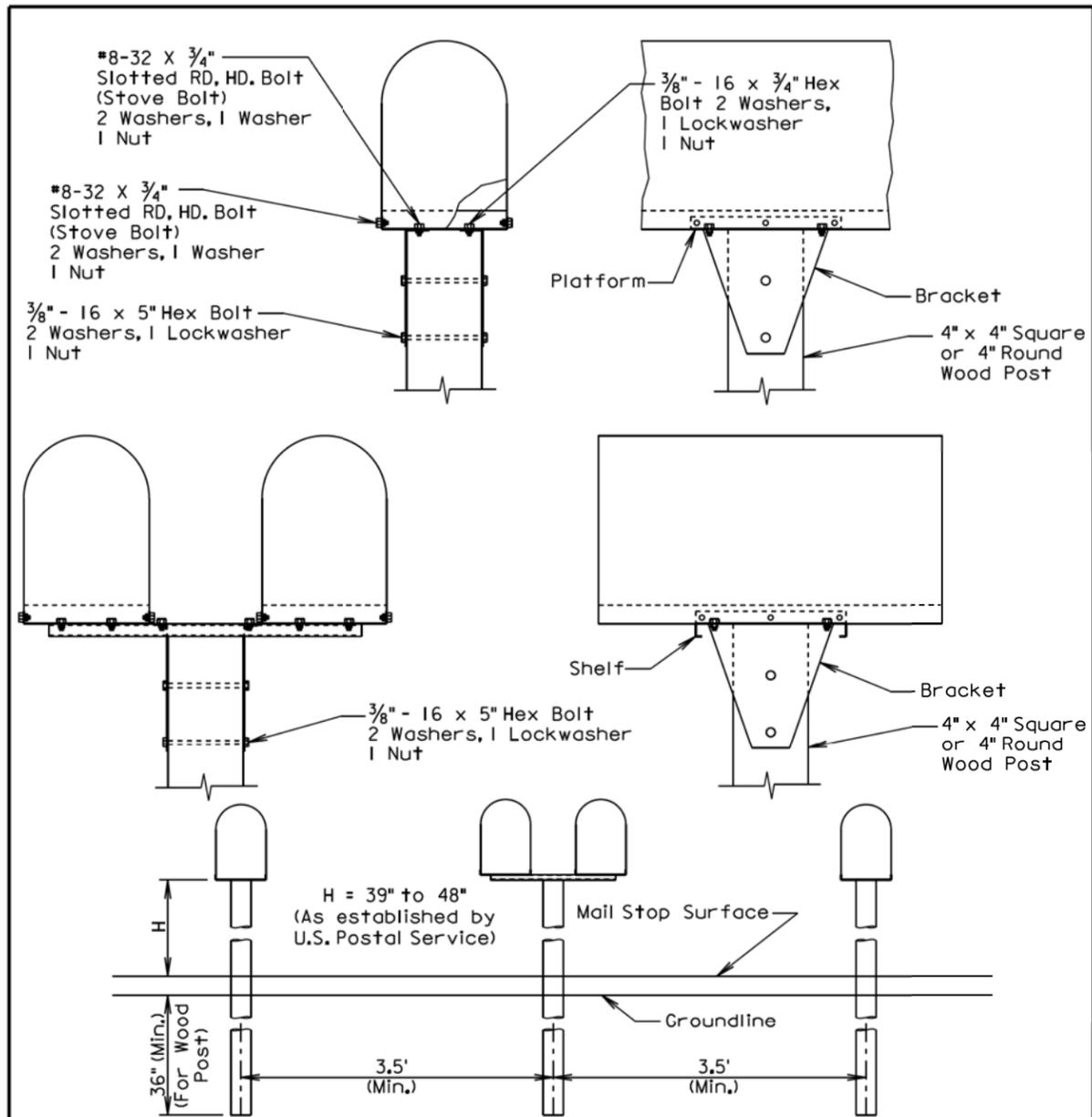
PLOTTED FROM - TRM11118

PLOT NAME - 2

FILE - ... \STANDARDPLATES_04E2.DGN

Plotting Date: 01/06/2015

PLOT SCALE - 1:200



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.

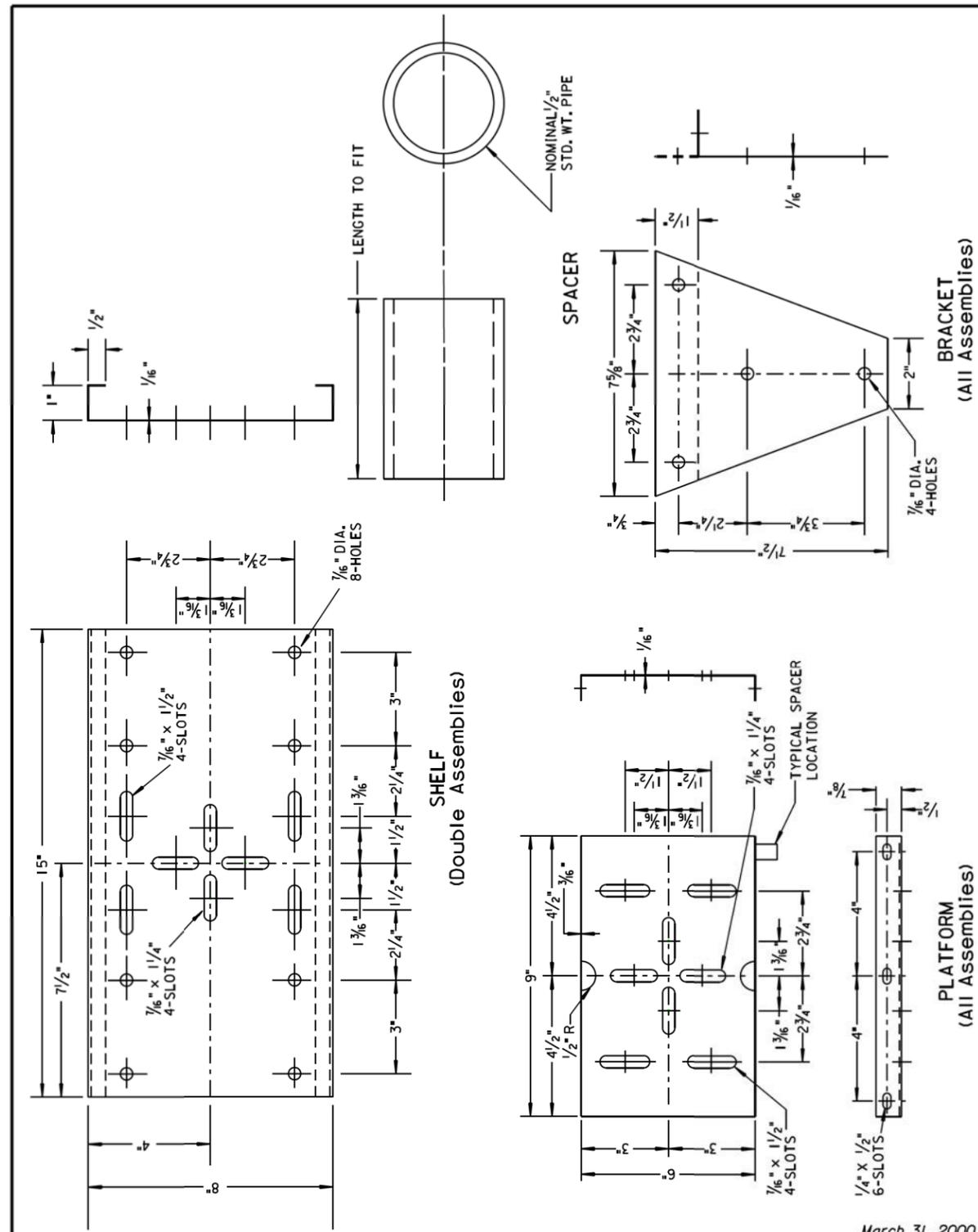
September 6, 2013

S D D O T	SINGLE AND DOUBLE MAILBOX ASSEMBLIES	PLATE NUMBER 900.02
	Published Date: 4th Qtr. 2014	Sheet 1 of 1

PLOT NAME - 4

FILE - ... \STANDARDPLATES_04E2.DGN

PLOTTED FROM - TRW11118



March 31, 2000

S D D O T	MAILBOX SUPPORT HARDWARE	PLATE NUMBER 900.03
	Published Date: 4th Qtr. 2014	Sheet 1 of 1