PLOT SCALE - 1:7000

PLOTTED FROM - TRAB17882

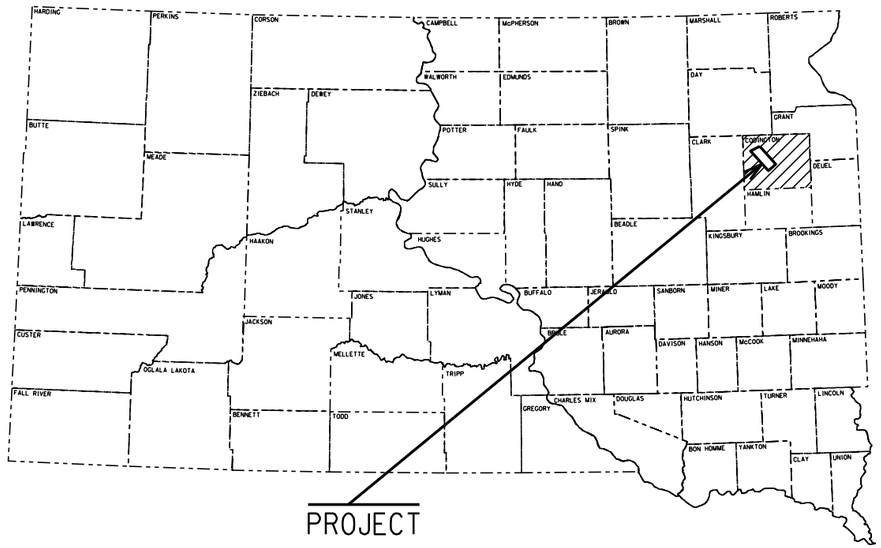
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	1	73
Plotting Date: 01/11/2016		Rev. 1-11-16 SLS	

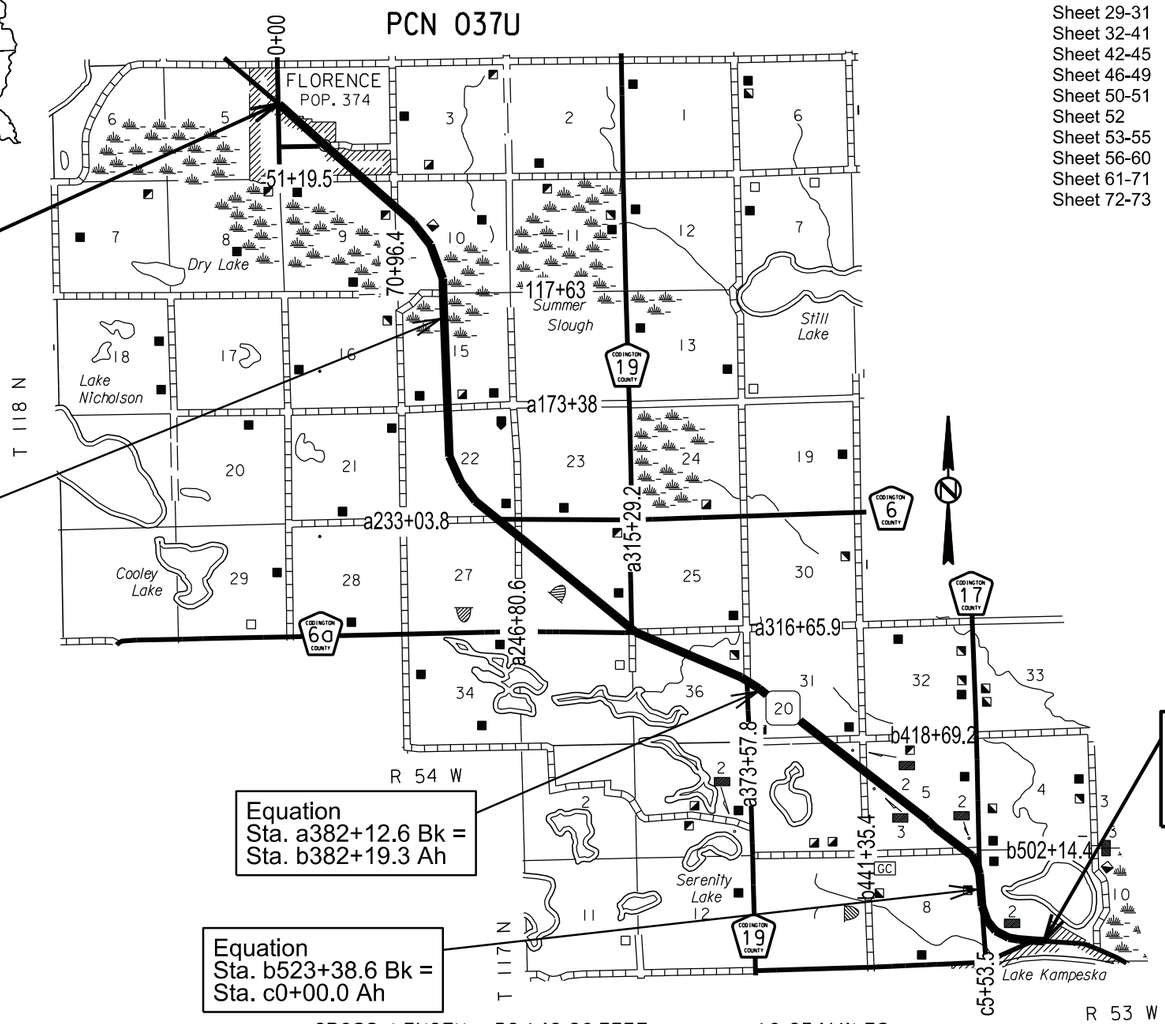
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT P 0020(122)383
S.D. HIGHWAY 20
CODINGTON COUNTY

COLD MILLING ASPHALT CONCRETE,
ASPHALT CONCRETE RESURFACING AND CULVERT REPAIR

PCN 037U





Begin Project
Sta 0+75
MRM 383.00+0.749

Equation
Sta.121+66.2 Bk =
Sta. a124+41.2 Ah

Equation
Sta. a382+12.6 Bk =
Sta. b382+19.3 Ah

Equation
Sta. b523+38.6 Bk =
Sta. c0+00.0 Ah

End Project
Sta c41+65.00
MRM 394.26 +0.122

GROSS LENGTH	56,146.90 FEET	10.634 MILES
LENGTH OF EXCEPTIONS	0.00 FEET	0.000 MILES
NET LENGTH	56,146.90 FEET	10.634 MILES

INDEX OF SHEETS

DESIGN DESIGNATION

ADT (2014)	1965
ADT (2034)	2611
DHV	292.4
D	53%
T DHV	3.8%
T ADT	8.3%
V	65 MPH Rural 45 & 55 MPH Urban

STORM WATER PERMIT
Major Recieving
Body of Water: Lake Kampeska, Smith Lake, Dry Lake, Summer Slough, Chain of Lakes-Richland 3
Area Disturbed: 2 Acres
Total Project Area: 193 Acres
Approx. Begin Lat/Long: 45.059579°, -97.330690°

13

PLOT NAME - 1

FILE - ...\CODN037U037U_TITLE SHEET.DGN

ESTIMATE OF QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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	BID ITEM NUMBER	ITEM	QUANTITY	UNIT
	004E0020	Construction and Maintenance of Detour(s)	Lump Sum	LS
	009E0010	Mobilization	Lump Sum	LS
	100E0100	Clearing	Lump Sum	LS
	110E0130	Remove Traffic Sign	74	Each
	110E0510	Remove Pipe End Section	3	Each
	110E1690	Remove Sediment	1.0	CuYd
	110E1700	Remove Silt Fence	40	Ft
	110E7500	Remove Pipe for Reset	54	Ft
	110E7510	Remove Pipe End Section for Reset	17	Each
	110E7530	Remove Cattle Pass for Reset	6	Ft
	110E7540	Remove Cattle Pass End Section for Reset	2	Each
	120E0010	Unclassified Excavation	1,396	CuYd
	120E0100	Unclassified Excavation, Digouts	532	CuYd
	120E0600	Contractor Furnished Borrow Excavation	1,150	CuYd
	250E0020	Incidental Work, Grading	Lump Sum	LS
	260E1010	Base Course	2,526.4	Ton
*	270E0220	Blend and Stockpile Granular Material	3,500.0	Ton
*	270E0300	Haul Material	2,275.0	CuYd
	320E0005	PG 58-34 Asphalt Binder	1,567.2	Ton
	320E1200	Asphalt Concrete Composite	150.0	Ton
	320E1202	Class Q2R Hot Mixed Asphalt Concrete	28,309.6	Ton
	320E1810	Asphalt Concrete Leveling Lift	4,242.9	Ton
	320E4000	Hydrated Lime	279.2	Ton
	320E7008	Grind 8" Rumble Strip or Stripe in Asphalt Concrete	18.8	Mile
	320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	18.8	Mile
	330E0100	SS-1h or CSS-1h Asphalt for Tack	126.7	Ton
	330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	49.6	Ton
	330E2000	Sand for Flush Seal	565.8	Ton
	332E0010	Cold Milling Asphalt Concrete	179,525	SqYd
	421E0100	Pipe Culvert Undercut	30	CuYd
	450E0142	24" RCP Class 2, Furnish	84	Ft
	450E0150	24" RCP, Install	84	Ft
	450E0162	30" RCP Class 2, Furnish	198	Ft
	450E0170	30" RCP, Install	198	Ft
	450E0192	42" RCP Class 2, Furnish	82	Ft
	450E0200	42" RCP, Install	82	Ft
	450E2016	24" RCP Flared End, Furnish	1	Each
	450E2017	24" RCP Flared End, Install	1	Each
	450E2024	30" RCP Flared End, Furnish	1	Each
	450E2025	30" RCP Flared End, Install	1	Each
	450E2032	42" RCP Flared End, Furnish	3	Each
	450E2033	42" RCP Flared End, Install	3	Each
	450E2200	24" RCP Sloped End, Furnish	2	Each
	450E2201	24" RCP Sloped End, Install	2	Each
	450E2204	30" RCP Sloped End, Furnish	4	Each
	450E2205	30" RCP Sloped End, Install	4	Each
	450E5215	24" CMP Flared End, Furnish	1	Each
	450E5216	24" CMP Flared End, Install	1	Each
*	450E8900	Cleanout Pipe Culvert	4	Each
	450E9000	Reset Pipe	54	Ft
	450E9001	Reset Pipe End Section	17	Each
	464E0100	Controlled Density Fill	108.5	CuYd
	560E5001	4'x6' Reinforced Concrete Cattle Pass, Furnish	4.0	Ft
	560E5002	4'x6' Reinforced Concrete Cattle Pass, Install	4.0	Ft
	560E5100	Reset Reinforced Concrete Cattle Pass	6.0	Ft
	560E5101	Reset Reinforced Concrete Cattle Pass End Section	2	Each
	600E0300	Type III Field Laboratory	1	Each
	632E1320	2.0"x2.0" Perforated Tube Post	878.0	Ft
	632E2510	Type 2 Object Marker Back to Back	4	Each
	632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	293.9	SqFt
	632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	287.8	SqFt
	633E0030	Cold Applied Plastic Pavement Marking, 24"	230	Ft
	633E0040	Cold Applied Plastic Pavement Marking, Arrow	6	Each
	633E1300	Pavement Marking Paint, White	360	Gal
	633E1305	Pavement Marking Paint, Yellow	101	Gal
	633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	230	Ft
	633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	6	Each
	634E0010	Flagging	500.0	Hour
	634E0020	Pilot Car	200.0	Hour
	634E0110	Traffic Control Signs	946	SqFt
	634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
	634E0285	Type 3 Barricade, 8' Double Sided	4	Each
	634E0600	4" Temporary Pavement Marking Tape Type I	2,350	Ft
	634E0630	Temporary Pavement Marking	41.2	Mile
	634E1002	Detour Signing	228.7	SqFt
	730E0204	Type C Permanent Seed Mixture	32	Lb
	732E0100	Mulching	4.5	Ton
	734E0154	12" Diameter Erosion Control Wattle	150	Ft
	734E0165	Remove and Reset Erosion Control Wattle	40	Ft
	734E0604	High Flow Silt Fence	150	Ft
	734E0610	Mucking Silt Fence	10	CuYd
	734E0620	Repair Silt Fence	40	Ft
	831E1010	Geogrid Reinforcement	361	SqYd
	900E0010	Refurbish Single Mailbox	2	Each
	900E0012	Refurbish Double Mailbox	1	Each
	900E1980	Storage Unit	1	Each

*** - Denotes Non-Participating**

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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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 A: WETLANDS

Approximately 0.01 acres of wetlands will be temporarily impacted by the project. Refer to Section B – Grading Plans for location and boundaries of the impacted wetlands. For wetland impacts less than 0.1 acres: These unavoidable impacts to wetlands are less than 0.1 acres and the "*Statewide Wetland Finding for South Dakota Federal-Aid Highway Projects"* will apply.

Table of Impacted Wetlands

Wetland No.	Type	Station	Impact Left (Acres)	Impact Right (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
1	PEMC	C21+22	0.0	0.0	0.01	0.01

Action Taken/Required:

Temporary impacts will not be mitigated as original grades will be re-established.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pit, or staging site associated with the project, cease construction activities in the affected area until the Whooping Crane departs and contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

COMMITMENT 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

Lake Kampeska, Dry Lake, Summer Slough, Smith Lake, and Chain of Lakes - Richland 3 are classified as warm water, marginal fisheries with a total suspended solids standard of 150 milligrams/liter.

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

Lake Kampeska, Dry Lake, Summer Slough, Smith Lake, and Chain of Lakes - Richland 3 are classified as warm water, marginal fisheries with a Surface Water Discharge standard of 150 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://www.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 Environmental 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 public ROW.

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

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

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the 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 department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor shall arrange and pay for a cultural resource survey and/or records search. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on which the proposed 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 historic or cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

COMMITMENT N: SECTION 404 PERMIT

The SDDOT has obtained a Section 404 Permit from the US Army Corps of Engineers for the permanent actions associated with this project.

Action Taken/Required:

The Contractor shall comply with all requirements contained in the Section 404 permit.

The Contractor shall also be responsible for obtaining a Section 404 permit for any dredge, excavation, or fill activities associated with staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands or waters of the United States.

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0020(122)383	5	73

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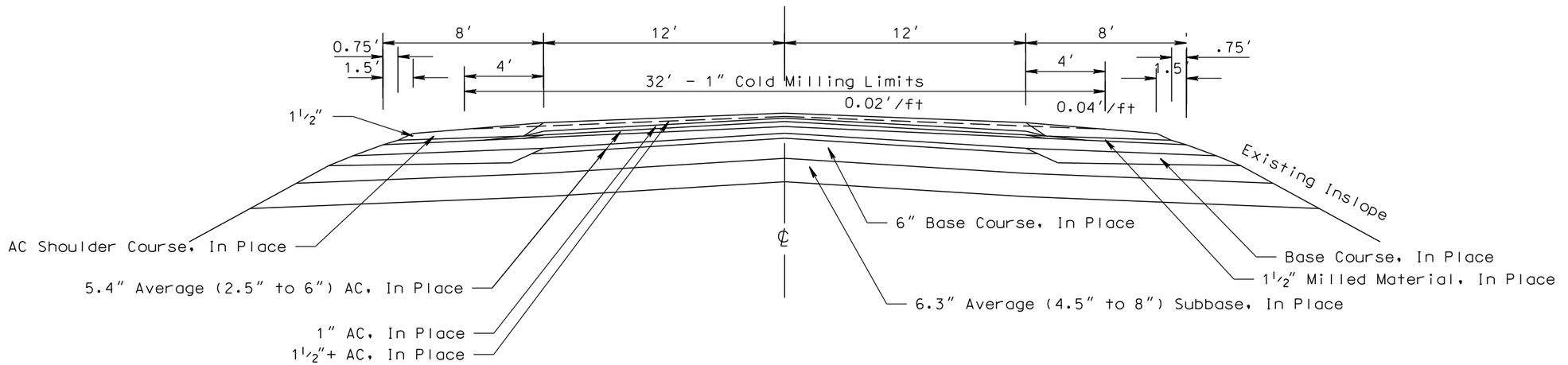
SECTION 1

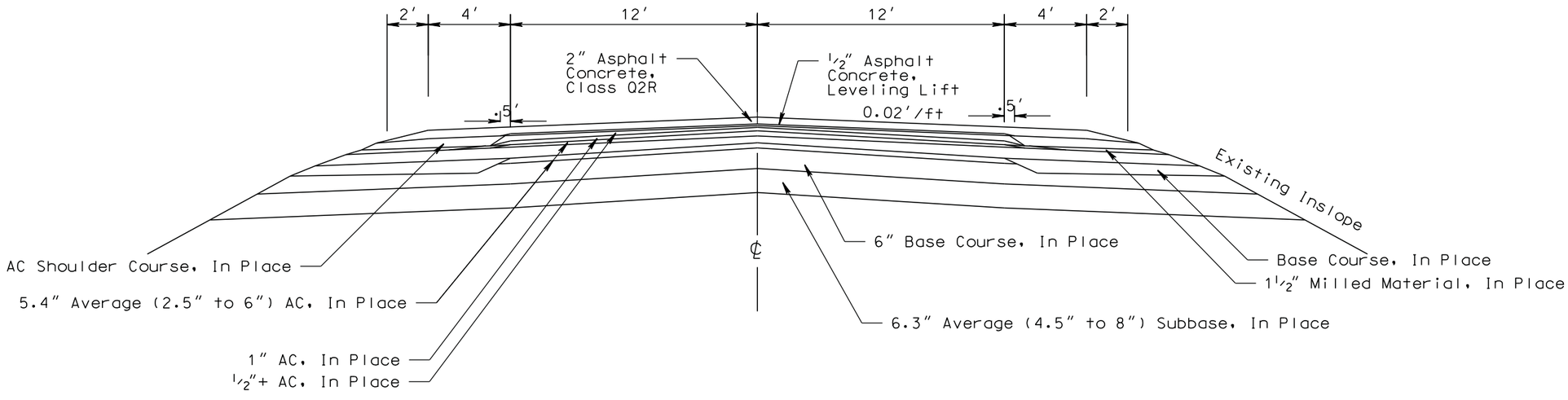
Sta. 0+75 to Sta. 83+26.39

Sta a154+00 to Sta c6+00

EXISTING TYPICAL SECTION AND DETAIL
FOR COLD MILLING ASHPALT CONCRETE



TYPICAL SURFACING SECTION



PLOT SCALE - 1:6.00001

PLOT NAME - 2

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PLOTTED FROM - TRAB17982

TYPICAL SURFACING SECTIONS

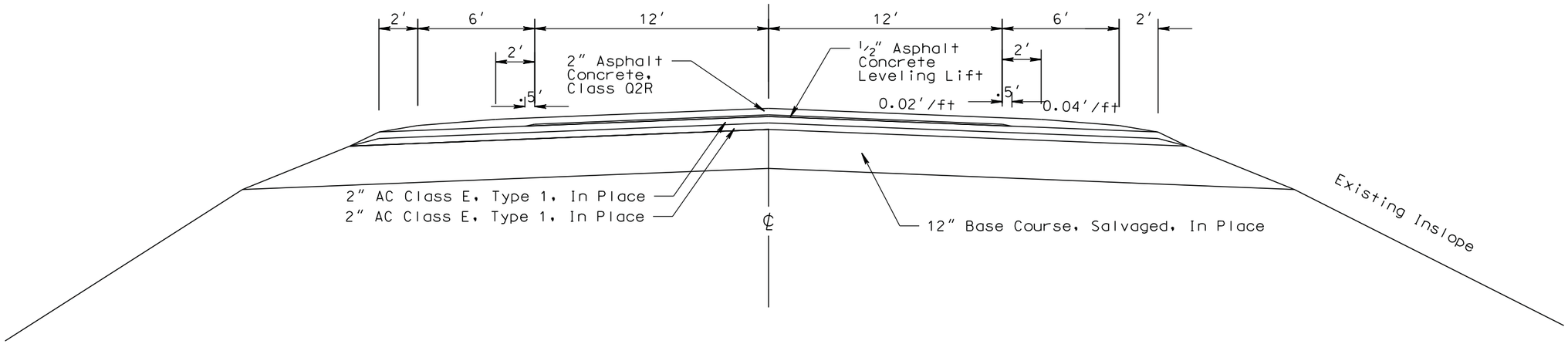
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0020(122)383	6	73

Plotting Date: 12/14/2015

SECTION 2

Sta. 83+26.39 to Sta. a154+00

TYPICAL SURFACING SECTION



PLOT SCALE - 1:6.00001

PLOT NAME - 3

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PLOTTED FROM - TRAB17892

PLOT SCALE - 1:6.00001

TYPICAL SURFACING SECTIONS

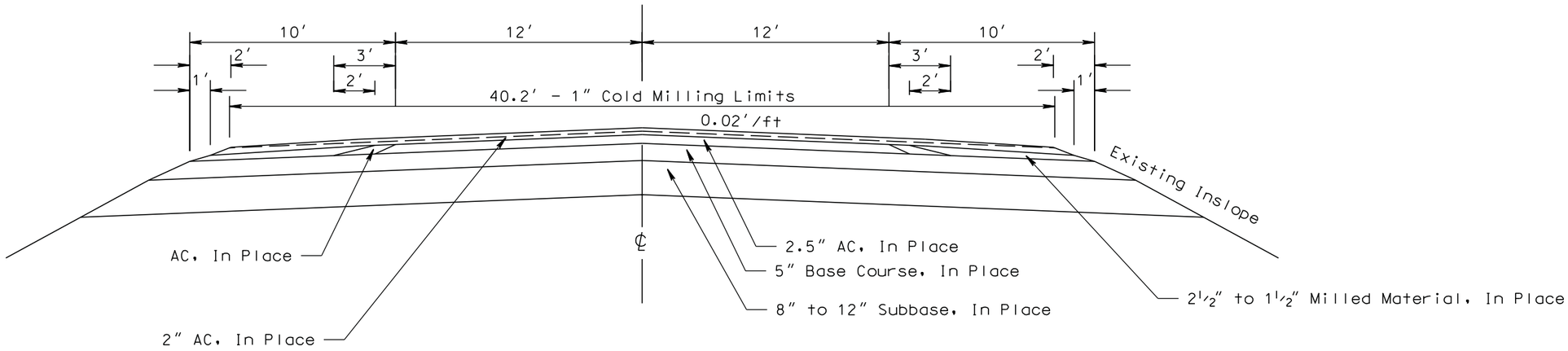
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0020(122)383	7	73

Plotting Date: 12/14/2015

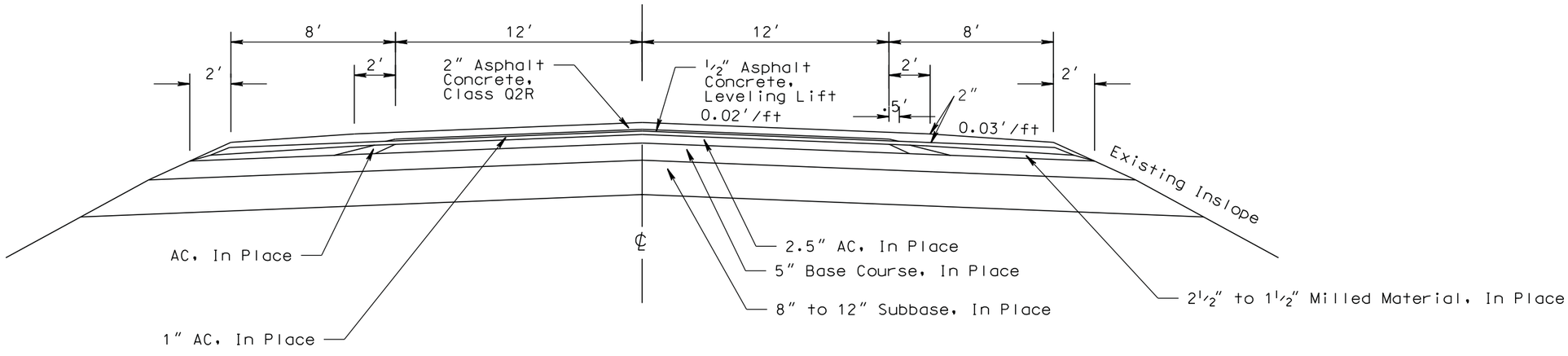
SECTION 3

Sta. c6+00 to Sta. c41+65

EXISTING TYPICAL SECTION AND DETAIL
FOR COLD MILLING ASHPALT CONCRETE



TYPICAL SURFACING SECTION



PLOTTED FROM - TRAB17982

PLOT NAME - 4

FILE -...\PRJ\CDN\037U\037UTYP.DGN

RATES OF MATERIALS

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

Section 1 Sta. 0+75 to Sta. 83+26.39
Sta. a154+00 to Sta. c6+00 (Thru Equation)

ASPHALT CONCRETE LEVELING LIFT – ½" LIFT

Crushed Aggregate.....	376 Tons
PG 58-34 Asphalt Binder.....	23 Tons
Total	**399 Tons**

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

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **5.7** tons applied **26** feet wide.
(Rate = 0.09 Gal./Sq.Yd.)

CLASS Q2R HOT MIXED ASPHALT CONCRETE – 2" FINAL LIFT

Crushed Aggregate.....	1841 Tons
Salvaged Asphalt Concrete	460 Tons
PG 58-34 Asphalt Binder.....	114 Tons
Total without Lime	**2415 Tons**
Hydrated Lime.....	24 Tons
Total with Lime	**2439 Tons**

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

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **5.5** tons applied **37** feet wide.
(Rate = 0.06 Gal./Sq.Yd.)

FLUSH SEAL

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of **4.5** tons applied **36** feet wide.
(Rate = 0.05 Gal./Sq.Yd.).

Sand for Flush Seal at the rate of **52** tons applied **22** feet wide. (Rate = 8 Lb./Sq.Yd.).

Section 2 Sta. 83+26.39 to Sta. a154+00 (Thru Equation)

ASPHALT CONCRETE LEVELING LIFT – ½" LIFT

Crushed Aggregate.....	376 Tons
PG 58-34 Asphalt Binder.....	23 Tons
Total	**399 Tons**

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

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **5.7** tons applied **26** feet wide.
(Rate = 0.09 Gal./Sq.Yd.)

CLASS Q2R HOT MIXED ASPHALT CONCRETE – 2" FINAL LIFT

Crushed Aggregate.....	1911 Tons
Salvaged Asphalt Concrete	478 Tons
PG 58-34 Asphalt Binder.....	118 Tons
Total without Lime	**2507 Tons**
Hydrated Lime.....	25 Tons
Total with Lime	**2532 Tons**

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

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **6.0** tons applied **41** feet wide.
(Rate = 0.06 Gal./Sq.Yd.)

FLUSH SEAL

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of **4.9** tons applied **40** feet wide.
(Rate = 0.05 Gal./Sq.Yd.).

Sand for Flush Seal at the rate of **52** tons applied **22** feet wide. (Rate = 8 Lb./Sq.Yd.).

Section 3 Sta. c6+00 to Sta. c41+65

ASPHALT CONCRETE LEVELING LIFT – ½" LIFT

Crushed Aggregate.....	376 Tons
PG 58-34 Asphalt Binder.....	23 Tons
Total	**399 Tons**

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

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **5.7** tons applied **26** feet wide.
(Rate = 0.09 Gal./Sq.Yd.)

CLASS Q2R HOT MIXED ASPHALT CONCRETE – 2" FINAL LIFT

Crushed Aggregate.....	2117 Tons
Salvaged Asphalt Concrete	529 Tons
PG 58-34 Asphalt Binder.....	130 Tons
Total without Lime	**2776 Tons**
Hydrated Lime.....	28 Tons
Total with Lime	**2804 Tons**

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

SS-1h or CSS-1h Emulsified Asphalt for Tack at the rate of **6.6** tons applied **45** feet wide.
(Rate = 0.06 Gal./Sq.Yd.)

FLUSH SEAL

SS-1h or CSS-1h Emulsified Asphalt for Flush Seal at the rate of **4.9** tons applied **40** feet wide.
(Rate = 0.05 Gal./Sq.Yd.).

Sand for Flush Seal at the rate of **52** tons applied **22** feet wide. (Rate = 8 Lb./Sq.Yd.).

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	9	73

TABLE OF ADDITIONAL QUANTITIES

	BASE COURSE	CLASS Q2R HOT MIXED ASPHALT CONCRETE (w/out Specified Density)	CLASS Q2R HOT MIXED ASPHALT CONCRETE (w/Specified Density)	PG 58-34 ASPHALT BINDER	HYDRATED LIME	SALVAGED ASPHALT CONCRETE (RAP)	Virgin Aggregate N.A.B.I.	SS-1h/ CSS-1h ASPH. FOR TACK	SS-1h/ CSS-1h ASPH. FOR FLUSH SEAL	SAND FOR FLUSH SEAL	COLD MILLING ASPHALT CONCRETE
LOCATIONS:	**TON**	**TON**	**TON**	**TON**	**TON**	**TON**	**TON**	**TON**	**TON**	**TON**	**SQ YD**
MRM 384.00 +0.018L - Residential Drive - Asphalt to end of Radius	15	10	-	0.47	0.10	1.9	7.5	0.04	-	-	-
MRM 384.13 +0.000R - Second Street in Florence - Asphalt to near ROW Line	15	43	-	2.02	0.43	8.1	32.4	0.15	-	-	-
MRM 384.24 +0.000L - Kline Avenue in Florence - Asphalt to end of Radius	15	23	-	1.08	0.23	4.3	17.4	0.08	-	-	-
MRM 384.24 +0.000R - Main Avenue in Florence - Asphalt to ROW Line	-	30	-	1.41	0.30	5.7	22.6	0.11	0.06	0.90	106
MRM 384.24 +0.455L - 161St Street - Asphalt to end of Radius	30	18	-	0.85	0.18	3.4	13.6	0.06	-	-	-
MRM 384.24 +0.455R - 161St Street - Asphalt to end of Radius	30	17	-	0.80	0.17	3.2	12.8	0.06	-	-	-
MRM 385.00 +0.103R - Residential Drive - Asphalt to end of Radius	15	13	-	0.61	0.13	2.5	9.8	0.05	-	-	-
MRM 385.00 +0.103L - 445th Avenue - Asphalt to near ROW Line	30	25	-	1.18	0.25	4.7	18.9	0.09	-	-	-
MRM 385.00 +0.457L - Residential Driveway - Base Course Only	30	-	-	-	-	-	-	-	-	-	-
MRM 385.56 +0.127R - Intersecting Road - Base Course Only	30	-	-	-	-	-	-	-	-	-	-
MRM 385.56 +0.426R - 162nd Street - Asphalt to end of Radius	30	20	-	0.94	0.20	3.8	15.1	0.07	-	-	-
MRM 386.00 +0.991L - 163rd Street - Asphalt to end of Radius	30	13	-	0.61	0.13	2.5	9.8	0.05	-	-	-
MRM 386.00 +0.991R - 163rd Street - Asphalt to end of Radius	30	20	-	0.94	0.20	3.8	15.1	0.07	-	-	-
MRM 388.00 +0.122L - 164th Street - Asphalt to ROW Line	-	45	-	2.12	0.45	8.5	33.9	0.16	0.09	1.35	73
MRM 388.00 +0.122R - 164th Street - Asphalt to end of Radius	30	16	-	0.75	0.16	3.0	12.1	0.06	-	-	-
MRM 388.00 +0.392L - 164th Street - Asphalt to end of Radius	30	18	-	0.85	0.18	3.4	13.6	0.06	-	-	-
MRM 388.00 +0.392R - 164th Street - Asphalt to end of Radius	30	15	-	0.71	0.15	2.8	11.3	0.05	-	-	-
MRM 389.00 +0.687L - 447th Avenue - Asphalt to ROW Line	-	29	-	1.36	0.29	5.5	21.9	0.10	0.06	0.87	73
MRM 389.00 +0.704R - 447th Avenue/165th Street - Asphalt to ROW Line	-	61	-	2.87	0.61	11.5	46.0	0.21	0.12	1.83	73
MRM 389.00 +0.714L - 165th Street - Asphalt to end of Radius	30	10	-	0.47	0.10	1.9	7.5	0.04	-	-	-
MRM 390.00 +0.784L - 448th Avenue - Asphalt to end of Radius	30	17	-	0.80	0.17	3.2	12.8	0.06	-	-	-
MRM 390.00 +0.784L - 448th Avenue - Asphalt to ROW Line	-	31	-	1.46	0.31	5.8	23.4	0.11	0.06	0.93	84
MRM 391.00 +0.617L - 166th Street - Asphalt to end of Radius	30	12	-	0.56	0.12	2.3	9.1	0.04	-	-	-
MRM 391.00 +0.617R - 166th Street - Asphalt to end of Radius	30	15	-	0.71	0.15	2.8	11.3	0.05	-	-	-
MRM 392.00 +0.043L - 449th Avenue - Asphalt to end of Radius	30	23	-	1.08	0.23	4.3	17.4	0.08	-	-	-
MRM 392.00 +0.043R - 449th Avenue - Asphalt to end of Radius	30	25	-	1.18	0.25	4.7	18.9	0.09	-	-	-
MRM 393.00 +0.168L - 167th Street - Asphalt to end of Radius	30	20	-	0.94	0.20	3.8	15.1	0.07	-	-	-
MRM 393.00 +0.168R - 167th Street - Asphalt to end of Radius	30	17	-	0.80	0.17	3.2	12.8	0.06	-	-	-
MRM 393.00 +0.340L - 450th Avenue - Asphalt to ROW Line	-	35	-	1.65	0.35	6.6	26.4	0.12	0.07	1.05	67
MRM 393.00 +0.604R - Residential Drive - Asphalt to end of Radius	15	14	-	0.66	0.14	2.6	10.6	0.05	-	-	-
MRM 393.00 +0.686L - Residential Drive - Asphalt to end of Radius	15	12	-	0.56	0.12	2.3	9.1	0.04	-	-	-
MRM 389.69 +0.000R - SD 20P - Asphalt to Stop Sign on SD 20 P	-	47	-	2.21	0.47	8.9	35.5	0.16	0.09	1.41	62
MRM 393.69 +0.125R - Residential Drive - Asphalt to end of Radius	15	12	-	0.56	0.12	2.3	9.1	0.04	-	-	-
MRM 394.00 +0.116L - Residential Drive - Asphalt to end of Radius	15	14	-	0.66	0.14	2.6	10.6	0.05	-	-	-
MRM 394.25 +0.000R - Former SD 139 - Asphalt to north edge of North Lake Drive	-	150	-	7.05	1.50	28.3	113.2	0.53	0.30	4.50	278
25 Field Entrances - Base Course Only	375	-	-	-	-	-	-	-	-	-	-
Extra Roadway Width to Resurface											
Sta b511+75 L to b515+30 L - Right Hand Turn Lane	-	-	53	2.49	0.53	10.0	40.0	0.19	0.11	-	-
Sta c30+20 to c 41+65 L and R - Left Turn Lane	-	-	19	0.89	0.19	3.6	14.3	-	-	-	-
MRM 393.00 +0.601 R - Mailbox Pullout	-	2	-	0.09	0.02	0.4	1.5	0.01	-	-	-
TOTALS	**1065**	**872**	**72**	**44.4**	**9.4**	**178.0**	**712.2**	**3.2**	**1.0**	**12.8**	**816**

The tonnage shown in the Table of Additional Quantities for Class Q2R Hot Mix Asphalt Concrete is based on an average compacted thickness of 2 inches, unless otherwise indicated.

Application shall be at the rate shown on the plans or as directed by the Engineer.

The above quantities are included in the Estimate of Quantities.

SUMMARY OF ASPHALT CONCRETE

LOCATIONS:	Class Q2R Hot Mixed Asphalt Concrete with Specified Density Compaction TONS	Class Q2R Hot Mixed Asphalt Concrete without Specified Density Compaction TONS
Section 1 - 24' Top	13701.1	-
Section 1 - 6' Shoulder and 2' Sluff	-	7447.7
Section 2 - 24' Top	2034.5	-
Section 2 - 6' Shoulder and 2' Sluff		1225.7
Section 3 - 24' Top	1066.9	-
Section 2 - 8' Shoulder and 2' Sluff	-	826.4
Spot leveling, strengthening, and repair of existing surface	-	1063.4
Table of Additional Quantities	72.0	872.0
TOTAL	**16874.5**	**11435.1**

Total Class Q2R Hot Mixed Asphalt Concrete: 28309.6 *Tons*

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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TABLE OF PROJECT STATIONING

SECTION		STATION	TO		STATION	LENGTH (Ft)	GROSS SECTION LENGTH (Ft)	GROSS SECTION LENGTH (Miles)
1		+75.00	to		83+26.39	8251.39	45783.29	8.671
	a	154+00.00	to	a	382+12.60	22812.60		
	b	382+19.30	to	b	523+38.60	14119.30		
	c	+0.00	to	c	6+00.00	600.00		
2		83+26.39			121+66.20	3839.81	6798.61	1.288
	a	124+41.20	to	a	154+00.00	2958.8		
3	c	6+00.00	to	c	41+65.00	3565.00	3565.00	0.675
TOTAL:							56146.90	10.634

TABLE OF MATERIAL QUANTITIES

	UNCLASSIFIED EXCAVATION, DIG OUTS	BASE COURSE	COLD MILLING ASPHALT CONCRETE	Estimated Cold Milled Material Produced	CLASS Q2R HOT MIXED ASPHALT CONCRETE	HYDRATED LIME	PG 58-34 ASPHALT BINDER	SALVAGED ASPHALT CONCRETE (RAP)	VIRG.. AGGR. (NABI.)	ASPHALT CONCRETE LEVELING LIFT	PG 58-34 ASPHALT BINDER	VIRG.. AGGR. (NABI.)	CLASS Q2R HOT MIXED ASPHALT CONCRETE	HYDRATED LIME	PG 58-34 ASPHALT BINDER	SALVAGED ASPHALT CONCRETE (RAP)	VIRG.. AGGR. (NABI.)	ASPHALT CONCRETE COMPOSITE	SS-1h/ CSS-1h ASPH. FOR TACK	SS-1h/ CSS-1h ASPH. FOR FLUSH SEAL	SAND FOR FLUSH SEAL
	50.0				<----------Spot Leveling---------->					<--------Leveling Lift---------->			<----------Final Lift---------->								
SECTION	CuYd	Ton	SqYd	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton		Ton	Ton	Ton	Ton	Ton
1	433.6	867.1	162785	7900	867.1	8.7	40.8	163.5	654.1	3459.8	199.4	3260.3	21148.8	208.1	988.5	3988.7	15963.5	-	97.1	39.0	450.9
2	64.4	128.8	-	-	128.8	1.3	6.1	24.3	97.1	513.8	29.6	484.1	3260.2	32.2	151.9	615.5	2460.6	-	15.1	6.3	67.0
3	33.8	67.5	15924	764	67.5	0.7	3.2	12.7	50.9	269.4	15.5	253.9	1893.2	18.9	87.8	357.2	1429.4	-	8.3	3.3	35.1
Sub totals	531.7	1063.4	178709	8663	1063.4	10.6	50.0	200.6	802.2	4242.9	244.6	3998.3	26302.2	259.2	1228.2	4961.4	19853.5	0.0	120.5	48.6	553.0
Additional Quantities	-	1065	816	45	-	-	-	-		-	-	-	944.0	9.4	44.4	178.0	712.2	-	6.2	1.0	12.8
Culvert Replacment	-	398	-		-	-	-	-		-	-	-	-	-	-		-	110.0	-	-	-
Totals	531.7	2526.4	179525	8709	1063.4	10.6	50.0	200.6	802.2	4242.9	244.6	3998.3	27246.2	268.6	1272.6	5139.4	20565.6	110.0	126.7	49.6	565.8

PLOTTED FROM - TRAB17882

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	12	73

TABLE OF MAINLINE CULVERT WORK

Culvert #	MRM	+ Disp	Station	Side	In Place Culvert Size and Type		Per Original Plans: Culvert Length (Ft)	Per Original Plans: Direction of Flow	Contractor Furnished Borrow Excavation (CuYd)	Controlled Density Fill (CuYd)	Remove Pipe for Reset (Ft)	Remove Cattle Pass for Reset (Ft)	Remove Pipe End Section (Each)	Remove Pipe End Section for Reset (Each)	Remove Cattle Pass End Section for Reset (Each)	Furnish and Install: 24" RCP (Ft)	30" RCP (Ft)	42" RCP (Ft)	24" RCP Flared End (Each)	30" RCP Flared End (Each)	42" RCP Flared End (Each)	24" RCP Sloped End (Each)	30" RCP Sloped End (Each)	24" CMP Flared End (Each)	4'x6' Reinforced Concrete Cattle Pass (Ft)	Reset Pipe (Ft)	Reset Pipe End Section (Each)	Reset Reinforced Concrete Cattle Pass (Ft)	Reset Reinforced Concrete Cattle Pass End Section (Each)	Clean-out Pipe Culvert (Each)	Comments
444 Ave		0.000	0+00																													Begin Project Codington Co. Hwy 23 Junction
1	384.00	0.08	17+52	Lt	24" Lt 18" Rt	CMP Lt RCP Rt	82	Right	5															1								NW of 2nd St in Florence
				Rt										1													1					
2	384.24	0.373	46+50	Lt	18"	RCP	80	Right						1													1					NW of 161st St
				Rt							8			1												8	1				
3	384.70	0.178	59+00	Lt	18"	RCP	82	Right			4			1												4	1				Between 161st St and 445th Ave
				Rt										1													1				
4	385.00	0.556	95+70	Lt	10' x 10' RCBC																											Installed during the 2003 Grade Raise. No Work Anticipated.
				Rt																												
5			108+00	Lt	24"	CMP	150	Equalizer																								Installed during the 2003 Grade Raise. No Work Anticipated.
				Rt																												
6			128+50	Lt	2 - 36"	CMP	164	Equalizer																								Installed during the 2003 Grade Raise. No Work Anticipated.
			a	Rt																												
7	386.00	0.534	149+77	Lt	18"	RCP	?	Left																								Culvert was extended and Flared Ends added during the 2003 Grade Raise. No Work Anticipated.
			a	Rt																												
163 St	387.00	0.000	173+38																													
8			186+00	Lt	18"	CMP	100	Equalizer																								Could not locate this culvert.
			a	Rt																												
9			195+00	Lt	18"	CMP	74	Left																								No Work Anticipated.
			a	Rt																												
10	387.00	0.563	203+00	Lt	18"	CMP	94	Equalizer																								No Work Anticipated.
			a	Rt																												
11			212+00	Lt	18"	CMP	126	Equalizer																							1	Unable to find the left end of the culvert.
			a	Rt																												
12	388.00	0.088	231+00	Lt	18"	RCP	76	Left																								NW of Codington County Hwy 6
			a	Rt										1													1				

PLOTTED FROM - TRAR17882

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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TABLE OF MAINLINE CULVERT WORK

Culvert #	MRM	+ Disp		Station	Side	In Place Culvert Size and Type		Per Original Plans: Culvert Length (Ft)	Per Original Plans: Direction of Flow	Contractor Furnished Borrow Excavation (CuYd)	Controlled Density Fill (CuYd)	Remove Pipe for Reset (Ft)	Remove Cattle Pass for Reset (Ft)	Remove Pipe End Section (Each)	Remove Pipe End Section for Reset (Each)	Remove Cattle Pass End Section for Reset (Each)	Furnish and Install: 24" RCP (Ft)	30" RCP (Ft)	42" RCP (Ft)	24" RCP Flared End (Each)	30" RCP Flared End (Each)	42" RCP Flared End (Each)	24" RCP Sloped End (Each)	30" RCP Sloped End (Each)	24" CMP Flared End (Each)	4'x6' Reinforced Concrete Cattle Pass (Ft)	Reset Pipe (Ft)	Reset Pipe End Section (Each)	Reset Reinforced Concrete Cattle Pass (Ft)	Reset Reinforced Concrete Cattle Pass End Section (Each)	Clean-out Pipe Culvert (Each)	Comments
164 St	388.14	0.000		233+04																												
13	388.14	0.594	a	264+00	Lt	18"	CMP	88	Equalizer																							No Work Required.
					Rt																											
14	389.00	0.577	a	308+30	Lt	4' x 6' RC Cattle Pass		54	Right				6			1									4			6	1		Remove in place fence in the left ditch (Incidental Work, Grading)
					Rt											1													1		
165 St	389.72	0.000		316+66																												
15	390.00	0.168	a	340+35	Lt	36"	RCP	76	Right			6			1											6	1				
					Rt																											
16	390.00	0.258	a	344+25	Lt	48"	RCP	?	Right			6			1											6	1				
					Rt							6			1											6	1				
17	390.00	0.561	a	360+00	Lt	36"	RCP	62	Right			12			1											12	1				
					Rt																											
18	390.00	0.796	a	373+58	Lt	2 - 42"	RCP	56	Right					1								1									Diagonally thru the 448 Ave Intersection. Replace the far east end section.
					Rt																											
19	391.00	0.024	b	386+00	Lt	4' x 6' RC Cattle Pass		64	Right																							No Work Required.
					Rt																											
20	391.00	0.133	b	391+75	Lt	18"	RCP	94	Right						1												1					
					Rt										1												1					
21	391.00	0.229	b	397+25	Lt	36"	RCP	136	Right						1												1				Skewed
					Rt							6			1											6	1				
22	391.00	0.400	b	406+50	Lt	24"	RCP	?	Right						1												1					
					Rt										1												1					
23	391.00	0.533	b	412+00	Lt	4' x 6' RC Cattle Pass		46	Right	75	26.80							78						1						1	Remove Flared End Sections Lt and Rt (Incidental Work, Grading). Install 30"RCP and Controlled Density Fill to plug cattle pass. Left-place Contractor Furnished Borrow Excavation material from Sta b411+75 to b412+75 for 4:1 Inslope. Right-place Contractor Furnished Borrow Excavation material from Sta b411+75 to b412+50 for 4:1 Inslope.
					Rt					80													1									

PLOTTED FROM - TRAB17882

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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TABLE OF MAINLINE CULVERT WORK

Culvert #	MRM	+ Disp	Station	Side	In Place Culvert Size and Type	Per Original Plans: Culvert Length (Ft)	Per Original Plans: Direction of Flow	Contractor Furnished Borrow Excavation (CuYd)	Controlled Density Fill (CuYd)	Remove Pipe for Reset (Ft)	Remove Cattle Pass for Reset (Ft)	Remove Pipe End Section (Each)	Remove Pipe End Section for Reset (Each)	Remove Cattle Pass End Section for Reset (Each)	Furnish and Install: 24" RCP (Ft)	30" RCP (Ft)	42" RCP (Ft)	24" RCP Flared End (Each)	30" RCP Flared End (Each)	42" RCP Flared End (Each)	24" RCP Sloped End (Each)	30" RCP Sloped End (Each)	24" CMP Flared End (Each)	4'x6' Reinforced Concrete Cattle Pass (Ft)	Reset Pipe (Ft)	Reset Pipe End Section (Each)	Reset Reinforced Concrete Cattle Pass (Ft)	Reset Reinforced Concrete Cattle Pass End Section (Each)	Clean-out Pipe Culvert (Each)	Comments
166 St			b 418+69																											
24			b 419+70	Lt	18" RCP	64	Right						1													1					
				Rt																											
25	391.00	0.763	b 422+55	Lt	4' x 6' RC Cattle Pass	46	Right	80	30.46						84						1									1	Remove Flared End Sections Lt and Rt (Incidental Work, Grading). Install 24"RCP and Controlled Density Fill to plug cattle pass. Left-place Contractor Furnished Borrow Excavation material from Sta b422+00 to b423+00 for 4:1 Inslope. Right-place Contractor Furnished Borrow Excavation material from Sta b421+25 to b423+50 for 4:1 Inslope.
				Rt				290													1									
26	392.00	0.141	b 447+00	Lt	30" RCP	58	Right																							
				Rt						6		1							1						6					
27	392.00	0.470	b 462+00	Lt	18" RCP	60	Right																							No Work Anticipated.
				Rt																										
28	392.00	0.902	b 487+00	Lt	4' x 6' RC Cattle Pass	54	Right	140									82			1										Remove RC Cattle Pass (Incidental Work, Grading) and Install 42" RCP. Left-place Contractor Furnished Borrow Excavation material from Sta b486+50 to b488+00 for 4:1 Inslope. Right-place Contractor Furnished Borrow Excavation material from Sta b486+50 to b487+75 for 4:1 Inslope.
				Rt				125												1										
29	393.00	0.339	b 510+00	Lt	24" RCP	72	Right																							
				Rt								1						1												
30			b 517+00	Lt	2- 36" RCP	221	Right																							No Work Anticipated.
				Rt																										
31	393.00	0.533	b 520+75	Lt	5' x 7' RC Cattle Pass	84	NA																							No Work Required. Installed in the mid 1980's.
				Rt																										
32	394.00	0.031	c 21+22	Lt	4' x 6' RC Cattle Pass	88	Right	105	51.27							120						1								Remove Flared End Sections Lt and Rt (Incidental Work, Grading). Remove fence on Rt as necessary to complete work (Incidental Work, Grading). Install 30"RCP and Controlled Density Fill to plug cattle pass. Left-place Contractor Furnished Borrow Excavation material from Sta c20+25 to c21+50 for 4:1 Inslope. Right-place Contractor Furnished Borrow Excavation material from Sta c21+00 to c21+50 for 4:1 Inslope.
				Rt				50														1								
							TOTAL	**950**	**108.53**	**54**	**6**	**3**	**17**	**2**	**84**	**198**	**82**	**1**	**1**	**3**	**2**	**4**	**1**	**4**	**54**	**17**	**6**	**2**	**4**	

Culvert type and size obtained from a combination of visual inspection and original construction plans. Additional repair may be required at time of construction.

In place Culvert Markers shall be removed and reset when performing Culvert Work. Cost to remove and reset Culvert Markers shall be incidental to the various culvert contract items.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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SD20 Permanent Sign Installation Table

MRM + Displacement	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
384.00 + 0.011	Rt.	Florence Pop. 374	D1-1D	60	24	10.0		24	2	1	NW	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
384.00 + 0.074	Rt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	SE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
384.00 + 0.134	Rt.	Stop	R1-1	30	30		5.2	9	1	1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
384.00 + 0.262	Lt.	Stop	R1-1	36	36		7.5	10	1	1	E	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
384.00 + 0.298	Rt.	Stop	R1-1	30	30		5.2	9	1	1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
384.00 + 0.362	Lt.	Florence Pop. 374	D1-1D	60	24	10.0		24	2	1	SE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
384.00 + 0.397	Rt.	East	M3-2	24	12	2.0		11	1	1	NW	4" X 6" Wood	Replace Existing Sign Assembly with New Sign Assembly on New Post
		SD 20	M1-5	24	24	4.0					NW		
384.00 + 0.450	Rt.	Speed Limit 65 MPH	R2-1	30	24	5.0		9	1	1	NW	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
384.00 + 0.454	Lt.	Speed Limit 55 MPH	R2-1	30	24	5.0		9	1	1	SE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
384.00 + 0.640	Lt.	Speed Reduction 55 MPH	W3-5	36	36		9.0	11	1	1	SE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
384.00 + 0.720	Rt.	Stop	R1-1	30	30		5.2	9	1	1	W	U-Channel	Replace Existing Sign with New Sign on New Post
384.00 + 0.729	Lt.	Stop	R1-1	30	30		5.2	9	1	1	E	U-Channel	Replace Existing Sign with New Sign on New Post
384.00 + 0.999	Lt.	Adopt A Highway	ADO-5	36	36	9.0		11	1	1	SE	4" X 6" Wood	Replace Existing Sign Assembly with New Sign Assembly on New Post
		Norco 4-H Club	ADO-1	36	12	3.0					SE		
		Litter Crew Ahead	ADO-6	30	30	6.3					SE		
385.00 + 0.082	Lt.	Stop	R1-1	30	30		5.2	9	1	1	N	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
385.00 + 0.429	Rt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	SE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
385.56 + 0.325	Rt.	Dry Lake Lake Access --->		72	36	18.0		24	2	1	N	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
385.56 + 0.434	Rt.	Stop	R1-1	30	30		5.2	9	1	1	W	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
386.00 + 0.091	Lt.	Dry Lake Lake Access <---		72	36	18.0		24	2	1	E	4" X 6" Wood	Replace Existing Sign with New Sign on New Post

SD20 Permanent Sign Installation Table

MRM + Displacement	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
386.00 + 0.608	Lt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	N	U-Channel	Replace Existing Sign with New Sign on New Post
386.00 + 0.941	Rt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
386.00 + 0.989	Lt.	Stop	R1-1	30	30		5.2	9	1	1	E	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
387.00 + 0.003	Rt.	Stop	R1-1	30	30		5.2	9	1	1	W	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
388.00 + 0.132	Lt.	Stop	R1-1	30	30		5.2	9	1	1	N	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
388.00 + 0.141	Rt.	Stop	R1-1	30	30		5.2	9	1	1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
388.00 + 0.385	Lt.	Stop	R1-1	30	30		5.2	9	1	1	N	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
388.00 + 0.410	Rt.	Stop	R1-1	30	30		5.2	9	1	1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
389.00 + 0.596	Rt.	<--- Waubay 24	D1-1AL	102	24	17.0		20	2	1	NW	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
389.00 + 0.672	Lt.	West	M3-4	24	12	2.0		11	1	1	SE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
		SD 20	M1-5	24	24	4.0					SE		
389.00 + 0.685	Lt.	Stop	R1-1	30	30		5.2	9	1	1	N	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
389.00 + 0.718	Rt.	Stop	R1-1	30	30		5.2	9	1	1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
389.00 + 0.732	Lt.	Stop	R1-1	30	30		5.2	9	1	1	NE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
389.00 + 0.756	Rt.	East	M3-2	24	12	2.0		11	1	1	NW	U-Channel	Replace Existing Sign Assembly with New Sign Assembly on New Post
		SD 20	M1-5	24	24	4.0					NW		
389.00 + 0.804	Lt.	Waubay 24 --->	D1-1AR	102	24	17.0		20	2	1	SE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
390.00 + 0.017	Rt.	Adopt A Highway	ADO-5	36	36	9.0		11	1	1	NW	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
		Lutheran Church of Our Redeemer	ADO-1	36	18	4.5					NW		
		Litter Crew Ahead	ADO-6	30	30	6.3					NW		

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SD20 Permanent Sign Installation Table

MRM + Displacement	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
390.00 + 0.131	Lt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	NW	U-Channel	Replace Existing Sign with New Sign on New Post
390.00 + 0.525	Rt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	SE	U-Channel	Replace Existing Sign with New Sign on New Post
390.00 + 0.615	Rt.	Joy Ranch 1/2 Mile --->		60	36	15.0		24	2	1	NW	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
390.00 + 0.784	Lt.	Stop	R1-1	30	30		5.2	9	1	1	N	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
390.00 + 0.803	Lt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	NW	U-Channel	Replace Existing Sign with New Sign on New Post
390.00 + 0.807	Rt.	Stop	R1-1	30	30		5.2	9	1	1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
390.00 + 0.986	Lt.	Joy Ranch 1/2 Mile <---		60	36	15.0		24	2	1	SE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
391.00 + 0.232	Rt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	SE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
391.00 + 0.621	Lt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	NW	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
391.00 + 0.630	Rt.	Stop	R1-1	30	30		5.2	9	1	1	SW	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
391.00 + 0.645	Lt.	Stop	R1-1	30	30		5.2	9	1	1	NE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
391.00 + 0.881	Rt.	Cross Road Symbol	W2-1	30	30		6.3	10	1	1	NW	U-Channel	Replace Existing Sign with New Sign on New Post at MRM 391.00 + 0.899
392.00 + 0.023	Rt.	Adopt A Highway	ADO-5	36	36	9.0		11	1	1	NW	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
		Watertown Key Club	ADO-1	36	12	3.0					NW		
		Litter Crew Ahead	ADO-6	30	30	6.3					NW		
392.00 + 0.023	Lt.	Adopt A Highway	ADO-5	36	36	9.0		11	1	1	SE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
		Lutheran Church of Our Redeemer	ADO-1	36	18	4.5					SE		
		Litter Crew Ahead	ADO-6	30	30	6.3					SE		

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MRM + Displacement	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
392.00 + 0.051	Lt.	Stop	R1-1	30	30		5.2	9	1	1	N	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
392.00 + 0.077	Rt.	Stop	R1-1	30	30		5.2	9	1	1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
392.00 + 0.203	Rt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	SE	U-Channel	Replace Existing Sign with New Sign on New Post
392.00 + 0.772	Lt.	West	M3-4	24	12	2.0		11	1	1	SE	U-Channel	Replace Existing Sign with New Sign on New Post
		SD 20	M1-5	24	24	4.0					SE		
393.00 + 0.094	Rt.	Right Curve Arrow	W1-2R	30	30		6.3	10	1	1	NW	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
393.00 + 0.193	Lt.	Stop	R1-1	30	30		5.2	9	1	1	E	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
393.00 + 0.195	Rt.	Stop	R1-1	30	30		5.2	9	1	1	W	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
393.00 + 0.244	Lt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	NW	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
393.00 + 0.360	Lt.	Stop	R1-1	30	30		5.2	9	1	1	NE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
393.00 + 0.547	Lt.	Left Curve Arrow	W1-2L	30	30		6.3	10	1	1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post. (This Sign Should be on the Left Side of the Road Facing South 475 Ft. From the Start of Curve).
393.00 + 0.601	Rt.	Left Curve Arrow	W1-2L	30	30		6.3	10	1		N		New Sign Install.
393.00 + 0.611	Lt.	Left Curve Arrow								1	S	4" X 6" Wood	Remove Do Not Replace
393.00 + 0.779	Rt.	Stop	R1-1	30	30		5.2	9	1	1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
393.00 + 0.869	Rt.	Stop	R1-1	30	30		5.2	9	1	1	W	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
393.00 + 0.937	Rt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	SE	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
		Speed Reduction 45 MPH	W3-5	36	36		9.0	11	1		Nw		Replace Existing Sign with New Sign on New Post at MRM 393.00 + 0.935

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SD20 Permanent Sign Installation Table

MRM + Displacement	Side of Road	Description	Sign Code	Width (Inches)	Height (Inches)	Flat Aluminum sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity (SQFT)	2.0"x2.0" Perforated Tube Post 12 ga. (FT)	(N.A.B.I.) Square Tube Anchor Sleeve (Each)	Remove Traffic Sign (Each)	Direction Sign Faces	Current Type of Post	Remarks
394.00 + 0.064	Lt.	No Passing Zone	W14-3	48X48X36			5.6	11	1	1	NW	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
394.00 + 0.109	Lt.	Adopt A Highway	ADO-5	36	36	9.0		11	1	1	E	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
		Watertown Key Club	ADO-1	36	12	3.0					E		
		Litter Crew Ahead	ADO-6	30	30	6.3					E		
394.00 + 0.127	Rt.	Dynamic Engine Braking Prohibited		30	30	6.3		10	1	1	W	4" X 6" Wood	Replace Existing Sign Assembly with New Sign Assembly on New Post
		By City Ordinance		30	12	2.5					W		
394.00 + 0.161	Lt.	Speed Limit 65 MPH	R2-1	30	24	5.0		9	1	1	E	U-Channel	Replace Existing Sign with New Sign on New Post
394.00 + 0.161	Rt.	Speed Limit 45 MPH	R2-1	30	24	5.0		9	1	1	W	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
394.00 + 0.240	Lt.	Right Curve Arrow	W1-2R	30	30		6.3	10	1	1	E	4" X 6" Wood	Replace Existing Sign with New Sign on New Post
394.00 + 0.255	Lt.	Double Horizontal Arrow	W1-7	48	24		8.0	26	2	1	S	4" X 6" Wood	Replace Existing Sign with New Sign on New Post. Reset Existing Street Sign on Top of Stop Sign at 394.00 + 0.259
		SD 20	M1-5	24	24	4.0					S		New Sign Install.
		Double Horizontal Arrow	M6-4	21	15	2.2					S		New Sign Install.
394.00 + 0.259	Rt.	Stop	R1-1	36	36		7.5	11	1	1	S	Telespar	Replace Existing Sign with New Sign on New Post
394.00 + 0.262	Rt.	Stop	R1-1	36	36		7.5	11	1	1	SW	Telespar	Replace Existing Sign with New Sign on New Post
394.00 + 0.277	Rt.	Speed Limit 45 MPH	R2-1	30	24	5.0		9	1	1	W	U-Channel	Replace Existing Sign with New Sign on New Post
394.00 + 0.324	Rt.	East	M3-2	24	12	2.0		11	1	1	W	U-Channel	Replace Existing Sign Assembly with New Sign Assembly on New Post
		SD 20	M1-5	24	24	4.0					W		
395.00 + 0.350	Lt.	Florence 10	D1-1 A	78	18	9.8		22	2	1	E	4" X 6" Wood	Replace Existing Sign with New Sign on New Post (This Sign Will Replace the Existing Sign Which has Florence and JCT US 212 on it)
					TOTAL	293.9	287.8	878.0	85	74			

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Sign Summary SD 20

Sign Code	Description	Width (Inches)	Height (Inches)	Sq. Ft.	No.	Flat Aluminum Sign, Nonremovable Copy High Intensity (SQFT)	Flat Aluminum Sign, Nonremovable Copy Super or Very High Intensity (SQFT)	Text / Background
	Dry Lake Lake Access --->	72	36	18.0	1	18.0		White on Brown
	Dry Lake Lake Access <---	72	36	18.0	1	18.0		White on Brown
	Joy Ranch 1/2 Mile --->	60	36	15.0	1	15.0		White on Brown
	Joy Ranch 1/2 Mile <---	60	36	15.0	1	15.0		White on Brown
	Dynamic Engine Braking Prohibited	30	30	6.3	1	6.3		Black on White
	By City Ordinance	30	12	2.5	1	2.5		Black on White
ADO-1	Norco 4-H Club	36	12	3.0	1	3.0		Blue Legend, White Background, Red Border
ADO-1	Lutheran Church of Our Redeemer	36	18	4.5	2	9.0		Blue Legend, White Background, Red Border
ADO-1	Watertown Key Club	36	12	3.0	2	6.0		Blue Legend, White Background, Red Border
ADO-5	Adopt-A-Highway	36	36	9.0	5	45.0		Blue Legend, White Background, Red Border
ADO-6	Liter Crew Ahead	30	30	6.3	5	31.3		Black on Orange
D1-1AL	<--- Waubay 24	102	24	17.0	1	17.0		White on Green
D1-1AR	Waubay 24 --->	102	24	17.0	1	17.0		White on Green
D1-1A	Florence 10	78	18	9.8	1	9.8		White on Green
D1-1D	Florence Pop. 374	60	24	10.0	2	20.0		White on Green
M1-5	SD 20	24	24	4.0	6	24.0		See Standard Plate 632.20
M3-2	East	24	12	2.0	3	6.0		Black on White/Green Border
M3-4	West	24	12	2.0	2	4.0		Black on White/Green Border
M6-4	Horizontal Double Arrow	21	15	2.2	1	2.2		Black on White/Green Border
R1-1	Stop	30	30	5.2	26		135.2	White on Red
R1-1	Stop	36	36	7.5	3		22.5	White on Red
R2-1	Speed Limit 45 MPH	30	24	5.0	2	10.0		Black on White
R2-1	Speed Limit 55 MPH	30	24	5.0	1	5.0		Black on White
R2-1	Speed Limit 65 MPH	30	24	5.0	2	10.0		Black on White
W1-2L	Left Curve Arrow	30	30	6.3	2		12.5	Black on Fluorescent Yellow
W1-2R	Right Curve Arrow	30	30	6.3	2		12.5	Black on Fluorescent Yellow
W14-3	No Passing Zone	48X48X36		5.6	13		72.8	Black on Fluorescent Yellow
W1-7	Double Horizontal Arrow	48	24	8.0	1		8.0	Black on Fluorescent Yellow
W2-1	Cross Road Symbol	30	30	6.3	1		6.3	Black on Fluorescent Yellow
W3-5	Speed Reduction 45 MPH	36	36	9.0	1		9.0	Black on Fluorescent Yellow
W3-5	Speed Reduction 55 MPH	36	36	9.0	1		9.0	Black on Fluorescent Yellow
					Totals	**293.9**	**287.8**	

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.

SCOPE OF WORK

Work on this project involves cold milling asphalt concrete, placement of asphalt concrete pavement, culvert repair and replacement, rumble stripes, pavement markings and sign replacement.

SEQUENCE OF OPERATIONS

The Contractor shall submit to the Area Engineer a minimum of 2 weeks prior to the Preconstruction Meeting a detailed plan of how the culvert replacement will be staged. The plans shall show how the Contractor is going to maintain traffic, where equipment and materials are going to be stored on the project site and the total length of the work space. These plans shall be approved by the Area Engineer prior to starting work on the culvert replacement.

The following general Sequence of Operations shall be adhered to. Any changes must be approved in writing by the Area Engineer prior to changes being made.

1. Install fixed location construction signing prior to start of work.
2. Install temporary erosion measures.
3. Complete culvert repairs and replacement.
4. Complete erosion control.
5. Complete cold milling operations.
6. Excavate digouts and complete backfill operations.
7. Complete all asphalt concrete strengthening and leveling.
8. Complete gravel placement operations on rural approaches and intersecting roads.
9. Knockdown gravel to allow access on approaches and intersecting roads.
10. Complete asphalt paving operations.
11. Final shape gravel on approaches and intersecting roads.
12. Grind rumble stripes.
13. Place flush seal.
14. Install permanent pavement markings.
15. Install new permanent signing.
16. Refurbish mailboxes.
17. Remove fixed location construction project signing.
18. Mow project inslopes and complete any remaining project cleanup.

Mainline culvert replacement shall be done approximately half width at a time such that one lane of traffic can be maintained at all times. A minimum roadway width of 13’ shall be maintained at all times. The following shall be the sequence of operations for replacing a mainline culvert:

1. Place erosion control.
2. Widen shoulder with fill and granular material (Construction and Maintenance of Detours).
3. Saw-cut and remove asphalt surfacing one half roadway width.
4. Excavate to remove in place culvert.
5. Undercut for new culvert sections.
6. Install new culvert sections.
7. Place backfill and base course to allow traffic to return to roadway.
8. Repeat Steps 1 thru 7 for the 2nd half of the roadway.
9. Place asphalt concrete composite to repair the roadway surface.

Completion of culvert repair and replacement may be done at any time prior to resurfacing operations, however the placement of Class Q2 Hot Mixed Asphalt Concrete over the culvert replacement site cannot begin until the asphalt concrete repairs over the culvert replacement have been exposed to normal traffic for a period of at least 14 calendar days.

TRAFFIC CONTROL

SD20 shall remain open to traffic at all times.

Work activities during non-daylight hours are subject to prior approval.

Work zones for the various construction operations that utilize a pilot car shall not exceed 3 miles in length.

“Grooved Pavement” signs shall be placed at each end of the project until all cold milled areas are covered with asphalt concrete. Additional “Grooved Pavement” signs shall be placed as indicated on the Fixed Location Ground Mounted Breakaway Support Signs layout until all cold milled areas are covered with asphalt concrete. Attached to each sign shall be a “Next xx Miles” sign. These signs are included in the Itemized List for Traffic Control Signs.

The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days the signs shall be on fixed location, ground mounted, breakaway supports.

Traffic Control signs, as shown in the Itemized List for Traffic Control Signs, are estimates. Contractor’s operation may require adjustments in quantities, either more or less. Payment will be for those signs actually ordered by the Engineer and used.

Traffic Control for culvert repair work shall be as follows:

For signing purposes, a work area shall be no longer than two miles for culvert repair operations.

Flaggers and FLAGGER symbol signs shall be in place when work activities or equipment present a hazard to workers, through traffic, or encroaches into driving lanes open to traffic.

When installing a RCP through the existing 4’ x 6’ RC Cattle Pass, traffic control shall be as per standard plate 634.03 during nighttime and non-working hours. In addition, a Type 3 Barricade shall be placed on the shoulder in advance of the work space as directed by the Engineer.

Traffic Control for mainline culvert replacement shall be as follows:

Flaggers shall be used to control traffic during working hours as depicted on Standard Plate 634.23.

During nonworking hours traffic shall be controlled by the use of STOP signs as depicted on Standard Plate 634.25.

Type 3 Barricades shall be placed on each side of the open cut and also in front of any equipment and material on the roadway.

Maximum spacing of channelizing devices along the work space shall be 20 feet.

Loose Gravel signs shall be placed when appropriate at the culvert replacement sites.

During the culvert replacement the Contractor shall be required to widen the shoulders with fill material and granular material to accommodate traffic through the project. All costs to temporarily widen the roadway at the culvert replacement site shall be incidental to the contract lump sum price for CONSTRUCTION AND MAINTENANCE OF DETOUR(S). At a minimum the widening shall be constructed so that no part of the inslope is steeper than 3:1 and that a minimum of 12” of granular material is placed to accommodate traffic, providing for a minimum of 13’ of roadway width. In order to construct the aforementioned, plugging of the cattle pass end and a temporary drainage structure may be required.

Upon completion of the installation of the new culvert installation any excess materials used for temporary widening no longer required shall be removed from the project. All costs to remove the temporary widening shall be incidental to the contract lump sum price for CONSTRUCTION AND MAINTENANCE OF DETOUR(S).

4” TEMPORARY PAVEMENT MARKING TAPE TYPE I

The 4” Temporary Pavement Marking Tape Type I shall be used to mark the No Passing Zones and Stop Bars as indicated by the Standard Plate 634.25.

Temporary Raised Pavement Markers may be used in place of the temporary pavement marking tape to mark the No Passing Zones.

A quantity of 2,350 feet of temporary pavement marking tape has been provided for in the Estimate of Quantities for each culvert replacement location.

OVERWIDTH SIGNING

The Contractor shall furnish and install over width signing as illustrated in the signing details and as required by the Engineer, during the culvert replacement phase of the project.

The posts used for installing the signs shall yield upon impact and be as designated in the plans.

When the overwidth signing is not required, the installed signs shall be covered or deactivated by an alternate method approved by the Engineer. If the signs are covered, the covering shall completely prevent viewing of the sign. The signs shall be removed during long periods of deactivation greater than 30 days.

Upon completion of the work the signs, posts, and hardware shall remain the property of the Contractor.

All costs associated with furnishing, installing, maintaining, and removing the signs shall be incidental to the contract unit price per square foot for DETOUR SIGNING.

GENERAL NOTES

The Contractor shall be required to mow the inslopes with a rotary mower to a height of 6 inches for a distance of 14 feet from the edge of the roadway (or shoulder) for the length of the project. This work will be completed to the satisfaction of the Engineer after all construction activities are completed. All costs associated with this work shall be incidental to the various contract items.

UTILITIES

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.

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. 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 Gyratory Controlled QC/QA Projects	2,360	40' x 8' x 8.6' std

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

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

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

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

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

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

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

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

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

INSTALLING RCP IN EXISTING RC CATTLE PASS

The Contractor shall install RCP through the existing 4' x 6' RC Cattle Pass at the locations noted in the Table of Mainline Culvert Work. Prior to installing the RCP, the end section of the existing cattle pass shall be removed.

An all-weather roof cement shall be used to fill the gaps in the joints between the RCP section where the joints will be encased by Controlled Density Fill. The roof cement shall be allowed to cure prior to encasing with Controlled Density Fill. All costs associated with the all-weather roof cement shall be incidental to the contract unit price for the various RCP contract items.

The quantities for RCP, Controlled Density Fill and Contractor Furnished Borrow are shown in the Table of Mainline Culvert Work.

Contractor Furnished Borrow Excavation shall be placed and compacted to eliminate settlement and voids at the ends of the existing RC Cattle Pass End Section. The Contractor Furnished Borrow Excavation shall be placed to create a 4:1 inslope in the vicinity of the RC Cattle Pass as noted in the Table of Mainline Culvert Work.

CONTROLLED DENSITY FILL

Controlled density fill shall be in conformance with Section 464 of the Specifications.

Controlled density fill shall be contained within the required limits with sandbags or other methods approved by the Engineer.

The Contractor shall prevent the floatation, uplift or movement of the culvert due to the buoyant force from the controlled density fill until the controlled density fill hardens.

The Contractor shall be responsible for removing any controlled density fill from within the barrel of the newly installed RCP.

Cost for furnishing and installing the controlled density fill, including sandbags, labor, material, equipment and incidentals necessary to complete the work shall be included in the contract unit price per cubic yard for CONTROLLED DENSITY FILL.

Plans quantity will be the basis of payment unless otherwise ordered by the Engineer.

CLEARING

Two trees shall be removed at approximately Sta b419+50 Lt. All downed tree limbs in this area shall also be removed from this location.

CLEANOUT PIPE CULVERTS

At those culvert locations where Cleanout Pipe Culvert is required, as indicated on the Table of Mainline Culvert Work, the ditches at the inlet and outlet shall also be cleaned.

Cleanout of pipe culverts shall be done in advance of culvert repair operations. At those locations where further evaluation of culvert repairs are required, the culvert cleaning shall be scheduled such that there is adequate time to evaluate what repairs are required and allow for ordering and delivery of culvert materials.

Material in all existing culverts shall be cleaned out by water flushing or other approved methods.

Material removed from the culverts shall become the property of the Contractor for disposal.

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

GENERAL MAINLINE TRANSVERSE CULVERT REPAIR AND REPLACEMENT

Prior to beginning culvert repair and replacement operations it may be necessary to dewater the work area. The area around the pipe inlet and outlets shall be blocked with sandbags wrapped in 6 mil polyethylene sheeting and dewatered. All costs associated with sandbagging and dewatering shall be incidental to the contract unit prices for the various pipe contract items. The pipe shall be installed in dry bedding.

The Contractor is encouraged to thoroughly investigate the culvert repair sites prior to bidding. Prior to working on the sites that are inundated with water, a complete dewatering plan shall be submitted for approval to the Engineer. No separate payment for dewatering will be made.

Prior to beginning culvert work at all work locations, the Contractor shall remove and stockpile 3 inches of in place topsoil from the construction areas. On completion of construction operations this salvaged topsoil shall be spread evenly over the embankment at the work sites. No separate payment for removal and replacement of topsoil will be made.

Fill material shall be obtained from Contractor furnished sources and approved by the Engineer.

Compaction of inslope embankments 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. All costs for any added water shall be incidental to the contract unit price per cubic yard for CONTRACTOR FURNISHED BORROW EXCAVATION.

Haul of embankment material on established traveled roadways shall be limited to trucks hauling legal loads and which do not sustain damage to the roadway, as approved by the Engineer. Hauling of material in the roadway ditches will not be allowed.

Additional excavation may be required to ensure positive drainage into and out of extended culverts. Excavated material shall be incorporated into the embankment slope.

The Contractor shall be responsible for restoration of any areas disturbed outside the limits of the work area.

RCP AND CMP CULVERT REPAIRS FOR MAINLINE CULVERTS

All pipe and end treatments designated for removal shall become the property of the Contractor for his disposal.

Tie bolts shall be installed at all joint locations where existing pipe sections and end treatments are being reset or installed new. This may require drilling holes into the existing pipe sections and end treatments. Tie bolts shall be installed in accordance with Standard Plate No. 450.18. New RCP culvert installations shall have all the joint locations tied together with tie bolts.

When necessary to remove end sections of CMP culverts, they may be cut with a torch. If the culvert is cut the damaged area shall be painted with a galvanizing paint approved by the Engineer. All costs associated with cutting and painting shall be incidental to the various contract items.

The Contractor is advised of the risk of lead exposure when cutting galvanized paint. The Contractor should plan his/her operations accordingly, and inform employees of hazards of lead exposure.

Joints between concrete pipe culvert sections shall be protected against infiltration as indicated in Section 450.3 A of the Specifications. If an existing concrete pipe culvert section has a damaged joint or there is poor alignment of the joints, 2 layers of drainage fabric shall be placed over the joint.

Culvert barrel and culvert end treatments that are to be removed and reset shall be cleaned prior to resetting. There will be no payment of the contract item Cleanout Pipe Culvert to clean sections of culverts that are removed and reset.

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

MAINLINE CROSS PIPE REPLACEMENT

After the existing pipe has been removed, the new pipe culvert shall be undercut to a minimum depth of 1 foot and backfilled with base course. The depth of undercut is an estimate and the actual depth necessary shall be determined during construction. The Engineer will determine how much undercut shall be done in accordance with Section 421 of the Specifications, but will not reduce the undercut to less than 1 foot in depth. Compaction of the undercut backfill will be in accordance with Section 421.3 A.

The culvert will be bedded in accordance with Section 450.3 F.2, Class B Bedding with the following exception. The undercut area shall extend 2 feet from the outermost diameter on both sides of the pipe with the back of the excavated area being sloped 3:1 upward to the top of the roadway surface. The Select Granular Backfill for the Class B Bedding will conform to the specification for Base Course. See Culvert Replacement Detail.

The remainder of the pipe culvert excavation shall be backfilled with soils taken from the pipe removal excavation or other suitable material as approved by the Engineer. The backfill will be benched into 3:1 excavation slope. Compaction of the backfill material shall be governed by the Specified Density Method.

The minimum testing as shown in M.S.T.R Section 4.1.E.3.a.1 will be required.

After the new pipe has been backfilled to the top of the subgrade, a 12"" depth of base course and 5" depth (2- 2.5" lifts) of asphalt concrete composite shall be placed as a patch matching the existing asphalt concrete.

All costs to saw cut asphalt, remove and dispose of asphalt, excavate and backfill the material to the bottom of the pipe and slope the excavating limits at a 3:1 backslope shall be paid for at the contract unit price per cubic yard for UNCLASSIFIED EXCAVATION. Pipe Culvert Undercut shall be paid for at the contract unit price per cubic yard for PIPE CULVERT UNDERCUT. No additional payment will be made for asphalt removal, excavation, or disposal of material to accommodate temporary channel diversions or pipes. Base course for the undercut backfill will be paid for at the contract unit price per ton for BASE COURSE.

The cost for asphalt concrete composite installed over the pipe replacement shall be paid for at the contract unit price per ton for ASPHALT CONCRETE COMPOSITE

Pipe flowline shall match that of existing pipe. This may require that ditches be excavated in each direction from the pipe ends to maintain proper water flow through the pipe. The excavated material shall become the property of the Contractor for his disposal. All costs associated with this work shall be incidental to the contract lump sum price for INCIDENTAL WORK, GRADING.

Ditch cleanout at the replaced culverts shall extend from the end of the culvert to within 1 foot of the Right-of-Way (ROW) Line. The bottom of the ditch cleanout shall be a minimum of 10 feet wide and the side slopes on the channel shall be 20:1 or flatter. For those locations where there is no channel from the inlet/out let of the culvert to the ROW Line ditch cleanout shall be completed such that there is a flat area of 100 Square Feet created at the inlet/outlet and the sides slopes around the flat area shall be 20:1 or flatter. Ditch cleanout material may be incorporated into the inslope, subject to approval by the Engineer. Ditch cleanout shall be included in the contract unit prices for the various culvert contract items.

TABLE OF MAINLINE CULVERT REPLACEMENT EXCAVATION AND SURFACING QUANTITIES

Station	Unclassified Excavation (CuYd)	Base Course for Culvert Undercut & Bedding (Ton)	Base Course for Surfacing (12" Depth) (Ton)	Asphalt Concrete Composite (5" Depth) (Ton)
b487+00	1396	108	290	110

ASPHALT CONCRETE COMPOSITE

An additional quantity of 40 tons of Asphalt Concrete Composite has been included in the Estimate of Quantities to allow for additional surfacing placement at the culvert replacement loation.

TABLE OF PIPE CULVERT UNDERCUT

The Table of Pipe Culvert Undercut is intended to be used to establish an estimated quantity of Pipe Culvert Undercut for bidding purposes only. The depth of undercut is an estimate and the actual depth necessary shall be determined during construction. The Engineer will determine undercut in accordance with Section 421 of the Specifications.

Station	Undercut Depth (Ft)	Quantity (CuYd)
b487+00	1	30.1

The table contains the rate of pipe culvert undercut per foot of pipe length and should be used as an aid in determining the actual amount of undercut to be performed during construction. The table is derived from the Culvert Replacement Detail and conforms to the Specifications. When calculating pipe culvert undercut, the length of pipe ends should be included in the overall pipe length.

Storm sewer and approach pipes do not require undercutting unless specified otherwise in these plans.

Pipe Diameter (In)	Round Pipe Undercut Rate for 1' Depth (CuYd/Ft)	Arch Pipe Undercut Rate for 1' Depth (CuYd/Ft)
24	0.2407	0.2577
30	0.2623	0.2847
36	0.2840	0.3110
42	0.3056	0.3337
48	0.3272	0.3596
54	0.3488	0.3827
60	0.3704	0.4105
66	0.3920	---
72	0.4136	0.4630
78	0.4352	---

CONTRACTOR FURNISHED BORROW EXCAVATION

The Contractor shall provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. A quantity of 200 cubic yards of Contractor Furnished Borrow Excavation has been included in the Estimate of Quantities for use at the culvert replacement site, should the excavated material be determined not suitable for reuse.

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

GEOGRID REINFORCEMENT

Geogrid reinforcement shall be placed between the first and second lifts of the Base Course. 361 sq. yds of geogrid reinforcement have been included in the Estimate of Quantities. This quantity is assumed to cover 344 sq. yds. The geogrid reinforcement quantity has been increased by 5% to account for overlaps.

Station	Width of Geogrid Reinforcement Placement (Ft)	Length of Geogrid Reinforcement Placement (Ft)	Quantity of Geogrid Reinforcement (SqYd)
b487+00	36	86	361

Geogrid Reinforcement Specification:

The geogrid reinforcement will be a biaxial grid of single layer construction. Vibratory welded, integrally formed or woven and coated geogrids will be acceptable. Grids with laser welded grid junctions will not be allowed. The geogrid reinforcement will be certified by the supplier to meet the following specification prior to installation:

Property	Test	MARV
Wide Width Strip Tensile Strength (Ultimate)	ASTM6637 Method B	850lb/ft MD and XD

Geogrid reinforcement will be paid for at the contract unit price per sq. yd. To account for overlaps the payment quantities will be based on area covered plus 5%. Payment will be full compensation for furnishing and installing the geogrid reinforcement only.

Installation Procedure:

- The geogrid reinforcement should be kept as taut as possible.
- Base Course will be dumped at least 20 feet behind the leading edge of the fill and pushed into place with a loader or dozer.
- No equipment shall be allowed to operate directly on the geogrid reinforcement.
- All seams in the geogrid reinforcement will be overlapped at least 1 foot and in a manner that prevents Base Course being pushed under the geogrid reinforcement.
- Geogrid reinforcement will be unrolled parallel to centerline.

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 PREPARATION

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

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

Prior to construction, State Maintenance Forces will spray the shoulders to kill existing vegetation. It will be the Contractor's responsibility to notify the State at least 30 days in advance of when he plans to begin work on the surface of the highway. The State assumes no responsibility for the effectiveness of the herbicide applied.

COLD MILLING ASPHALT CONCRETE

The Los Angeles Abrasion Loss value on the aggregate used for the in place asphalt concrete could not be determined.

The placement of asphalt concrete shall begin within **5** working days after completion of cold milling of mainline asphalt concrete.

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

Cold Milling of Asphalt shall consist of removing the in place asphalt to an average depth of 1". This material is to be removed at a constant slope of 0.02 FT/FT. from the in place shoulder elevation to centerline of the roadway.

Cold milling asphalt is estimated to produce 8,709 tons of salvaged asphalt concrete material. An estimated 5,340 tons of salvaged asphalt concrete will be used on this project in the Class Q2R Hot Mixed Asphalt Concrete mixture. The Contractor is responsible to assure enough asphalt concrete salvage is available for the Class Q2R Hot Mixed Asphalt Concrete. 2,275 tons of salvaged asphalt concrete material shall be hauled to the SDDOT Watertown Area Maintenance Yard and blended with state furnished virgin gravel. The remainder of the salvaged asphalt concrete material shall be disposed of as directed by the Engineer.

The milled asphalt concrete material shall be hauled to and stockpiled at the SDDOT Watertown Area Maintenance Yard located along US212, approximately 1 miles east of I-29, located in the NW 1/4 of Sec 2, T116N, R52W. Exact stockpile location to be determined by the Engineer. The Contractor shall be responsible for stockpile site preparation costs. Site preparation may include such items as stripping topsoil and shaping the stockpile site.

The Contractor shall supply a scale and operator as specified in section 9.1 of the specifications to weigh the material before it is blended with the other granular material.

STATE FURNISHED MATERIAL AT THE WATERTOWN AREA MAINTENANCE YARD

The SDDOT has approximately 1,788 tons of granular material available at the SDDOT Watertown Area Maintenance Yard. A portion of this material shall be blended with the cold milled asphalt concrete material that is hauled to the SDDOT Watertown Area Maintenance Yard.

BLEND AND STOCKPILE GRANULAR MATERIAL

The 2,275 tons of excess asphalt mix material shall be blended with 1,225 tons of state furnished granular material and shall be hauled, blended and stockpiled at SDDOT Watertown Area Maintenance Yard. The Contractor shall use a portable platform scale, stationary commercial scale, stationary commercial plant, portable plant scale, or a belt scale to control the blending and weighing of the salvage material with Contractor furnished granular material.

Asphalt mix material shall be blended with state furnished granular material at a rate of 65% salvaged asphalt mix material and 35% state furnished granular material, to obtain stockpile material. The use of a pugmill to blend the materials will be accepted.

The RAP shall be crushed to meet the requirements of Section 884.2 C.1 prior to blending into the stockpile. Screening or scalping of the RAP stockpile(s) will not be allowed.

Calibrated conveyor(s) shall be used to provide a uniform blending of the materials. Material shall be blended prior to incorporation into the pile.

All other costs with blending and stockpiling asphalt mix material and granular material shall be incidental to the contract unit price per ton for BLEND AND STOCKPILE GRANULAR MATERIAL.

EXCAVATION OF UNSTABLE MATERIAL

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

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

The digout shall be extended to the shoulder and the granular material backfill shall daylight to the inslope to allow water to escape the subgrade.

A copy of the surfacing/subgrade investigation for this project is available from the Watertown Area and the Aberdeen Region offices.

BASE COURSE

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

WATER FOR COMPACTION OF GRANULAR MATERIALS

Cost of water for compaction of the granular material shall be incidental to the contract unit price for the various contract items. Six percent, plus or minus, moisture will be required at the time of compaction unless otherwise directed by the Engineer.

ASPHALT FOR TACK

Included in the Estimate of Quantities are **3** tons of SS-1h or CSS-1h Asphalt for Tack for surface repair, strengthening, and spot leveling areas throughout the project. (Rate = 0.05 Gal./ Sq.Yd.).

ASPHALT CONCRETE LEVELING LIFT

Mineral aggregate shall be furnished by the Contractor.

The Asphalt Concrete Leveling Lift shall conform to the requirements of a Class Q2 except the gradation shall be as follows:

Passing 1/2” sieve	100%
Passing 3/8” sieve	97-100%
Passing No. 4 sieve	75-95%
Passing No. 8 sieve	45-65%
Passing No. 16 sieve	28-48%
Passing No. 40 sieve	14-30%
Passing No. 200 sieve	4.0-10.0%

The Asphalt Concrete Leveling Lift shall be compacted by the Specified Roller Coverage Method.

All remaining requirements for Class Q2 Hot Mixed Asphalt Concrete shall apply.

The Asphalt Concrete Leveling Lift shall be completed in its entirety before beginning placement of the Class Q2R Hot Mix Asphalt Concrete.

CLASS Q2R HOT MIXED ASPHALT CONCRETE

Mineral Aggregate:

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

Virgin mineral aggregate for Class Q2R Hot Mixed Asphalt Concrete shall conform to the requirements of Class Q2.

The Class Q2R Hot Mixed Asphalt Concrete shall include 20 percent RAP in the mixture.

RAP shall be obtained from the material produced by cold milling on this project and may be used without further quality testing. RAP in the cold feed shall be crushed to meet the requirements specified in Section 884.2 C.1.

Screening or scalping of the RAP stockpile(s) will not be allowed.

Mix Design Criteria:

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

	$N_{initial}$	N_{design}	$N_{maximum}$
Class Q2R	6	50	75

All remaining requirements for Class Q2 shall apply.

ADDITIONAL QUANTITIES:

Included in the Estimate of Quantities are 100 tons of Class Q2R Hot Mixed Asphalt Concrete and, 1.0 tons of Hydrated Lime of Asphalt concrete and 4.7 tons of PG 58-34 Asphalt Binder, per mile for spot leveling, strengthening, and repair of the existing surface. This material shall be placed where and as directed by the Engineer.

FLEXIBLE PAVEMENT SMOOTHNESS PROVISION

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

RUMBLE STRIPES

Rumble Stripe installation shall be completed prior to application of the Flush Seal and Permanent Pavement Markings. In the event the Flush Seal is eliminated from the contract, the Contractor will still be required to apply a Flush Seal to the newly installed 8” Rumble Stripes at a width of 1.0’ and at the same rate as specified in this plan set. No adjustment in the contract unit price will be made and SS-1h or CSS-1h will be paid at the contract unit price per ton.

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 and it shall be the Contractor’s responsibility to ensure the loose material does not enter any vegetated areas and/or waterways.

All costs associated with the work shall be incidental to the contract unit price per mile for GRIND 8" RUMBLE STRIP OR STRIPE IN ASPHALT CONCRETE.

TABLE OF 8” RUMBLE STRIPES

Station to Station	Length (Ft)	Length (Miles)
51+50 to 121+66.2 (Both Shoulder)	14032.4	2.658
a124+41.2 to a382+12.6 (Both Shoulder)	51542.8	9.762
b382+19.3 to b523+38.6 (Both Shoulder)	28238.6	5.348
c0+00 to c28+00 (Both Shoulder)	5600	1.061
Total	99413.8	18.83

FLUSH SEAL

Application of Flush Seal shall be completed within 10 working days following completion of the asphalt concrete surfacing.

For each working day that the Flush Seal remains uncompleted after the 10 working day limitation, the Contractor will be assessed liquidated damages at the rate of $250.00 per day.

The liquidated damages shall apply only up to the Substantial Completion Date, as extended. After the Substantial Completion Date, liquidated damages will be assessed in accordance with the schedule set forth in Section 8.8 of the specifications.

Application of Flush Seal may be eliminated by the Engineer. If the paved surface remains tight, the Engineer shall notify the Contractor as soon as possible that the Flush Seal is unnecessary.

SAND FOR FLUSH SEAL

The sand application shall be placed 11' wide in each lane, leaving 12" on center line and 6" on each edge line free of sand.

REFURBISH 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 (See Standard Plate No's. 900.01, 900.02 and 900.03). The local Postmaster will determine the recommended mounting height of the mailboxes throughout the project. The Contractor shall coordinate with the Engineer on the proper postal representative to contact.

TABLE OF REFURBISH MAILBOXES

Location MRM	SIDE	SINGLE MAILBOX EACH	DOUBLE MAILBOX EACH
385.00 +0.098	R	1	-
385.00 +0.458	L	-	1
393.00 +0.601	R	1	
TOTALS		2	1

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

All costs for removing existing mailboxes, providing temporary mailboxes, and resetting mailboxes with new posts and necessary support hardware shall be incidental to the contract unit price per each for REFURBISH SINGLE MAILBOX or REFURBISH DOUBLE MAILBOX.

TEMPORARY AND PERMANENT PAVEMENT MARKINGS

Maintaining size, shape, and dimension of existing pavement markings shall be the responsibility of the Contractor for both temporary and permanent pavement marking applications. The diagonal markings within channelizing islands may be omitted from the temporary markings but shall be provided with the permanent markings.

Temporary Flexible Vertical Markers (Tabs) shall be used to mark dashed centerline, No Passing Zones and applicable lane lines. Paint will not be allowed for Temporary Pavement Marking on the Asphalt Concrete Class Q2R Hot Mixed Asphalt Concrete wear course or after application of the Flush Seal.

TEMPORARY PAVEMENT MARKINGS

The total length of no passing zone on this project is estimated to be **3.6** miles. The total number of no passing zones is 16.

Quantities of Temporary Pavement Markings consist of:

One pass on top of the Cold Milled Surface (Sections 1 and 3).
One pass on top of the Leveling Lift of Asphalt Concrete.
One pass on top of the Final Lift of Asphalt Concrete.
One pass on top of the Flush Seal.

If the Flush Seal is eliminated, the application of the Temporary Pavement Marking on top of the Flush Seal will be eliminated. No adjustment in the contract unit price for Temporary Pavement Marking will be made because of a variation in quantities.

Temporary Flexible Vertical Markers (Tabs) may be used as detailed in the specifications. Covers on the tabs shall be sufficiently secured to prevent traffic from dislodging the cover and when removed, the covers shall be properly disposed. The Contractor shall remove and properly dispose of the tabs 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.

Any Temporary Flexible Vertical Markers (Tabs) with covers removed before the flush seal shall be replaced prior to Flush Seal application.

Cost for furnishing, applying, removing and disposing of the Temporary Flexible Vertical Markers (Tabs) shall be included in the contract unit price per mile for TEMPORARY PAVEMENT MARKING.

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 for both directions of traffic during the installation of Temporary Flexible Vertical Markers (Tabs). The traffic control device used shall be moved to provide proper warning of the work operation. 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.

PERMANENT PAVEMENT MARKING

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 or advance warning arrow panel.

All materials shall be applied as per manufacturer's recommendations.

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

The application of Permanent Pavement Marking paint may not begin until 7 calendar days following completion of final surfacing (including Flush Seal if applied) and shall be completed within 14 calendar days following completion of the final surfacing.

For each working day the application of permanent pavement marking paint remains uncompleted beyond the time limits described in the preceding paragraph, the Contractor will be assessed liquidated damages at the rate of $250.00 per day.

The liquidated damages shall apply up to the Substantial Completion Date, as extended. After the Substantial Completion Date, liquidated damages will be assessed in accordance with Section 8.8 of the specifications, until the permanent pavement marking is completed, even though the project may be open to traffic.

COLD WEATHER, WATERBORNE PAINT

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

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

980.1: Resin Binder shall be Fastrack^{TM} XSR manufactured by Dow, or approved equal.

980.1 A. Quantitative Requirements:

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

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

Non-volatile Vehicle, percent by weight; tested in accordance with NIST 141C (Method 4051.1): 41.5 minimum for white and 51.5 minimum for yellow.

GROOVE FOR PAVEMENT MARKING

The work shall generally consist of grooving the asphalt surface and subsequent application of cold applied plastic tape.

All surfaces receiving cold applied plastic pavement markings shall be grooved prior to application of the cold applied plastic pavement markings.

Groove cleaning: Grooves must be cleaned by using high pressure compressed air (90 psi minimum).

The cold applied plastic pavement marking tape shall be installed in accordance with the manufacturer's recommendations.

GENERAL PERMANENT SIGNING NOTES

Signs that are to be moved shall be staked in the field by the Contractor and checked by the Engineer. The Contractor shall give the Engineer a minimum of one week to check staked locations prior to sign/post installation.

The Contractor shall be responsible for contacting South Dakota One Call to locate the utilities at the staked sign installation locations.

Prior to ordering sign posts, the Contractor shall verify post lengths. The height of the post shall not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign shall be cut off. No separate payment will be made for cutting the post or for that length cut off.

Prior to ordering signs, the Contractor shall physically verify dimensions, background, border, and legend of the signs.

REMOVE EXISTING SIGNS

Existing signs within the project limits are summarized in the Sign Table. This table provides the approximate MRM location for each sign. Existing signs in the table are indicated to be removed and not reused.

All existing signs and hardware listed to be removed shall become the property of the Contractor

Holes remaining from the removal of 4”x6” wood posts shall be backfilled and compacted with material placed in layers not to exceed 6 inches in depth.

All costs associated with the removal of existing signs, posts, hardware, and backfilled holes shall be incidental to the contract unit price per each for Remove Traffic Sign.

All existing sign posts and/or sign bases shall be removed in their entirety.

NEW PERMANENT SIGNING

New signs for installation are summarized in the Sign Table.

Sign Design

Signs shall be constructed as required per the Manual on Uniform Traffic Control Devices (MUTCD), the latest edition of "Standard Highway Signs", and as specified on the Special Sign Design sheets.

All upper/lower case letters and numerals shall be as required per the MUTCD, the latest edition of "Standard Highway Signs”, and as illustrated on the Special Sign Design sheets.

The Contractor shall furnish the Aberdeen Region Traffic Engineer (P.O. Box 1767; Aberdeen, SD 57402) with a detailed sign layout sheet for each sign shown. These detailed sign layouts shall be approved by the Region Traffic Engineer prior to ordering the signs.

Sign Sheeting

All signs shall be manufactured in accordance with the sheeting manufacturer’s recommendations utilizing a matched component system, including inks, electronic cuttable films, and protective overlay films. Digitally printed signs will not be accepted.

Sign Installation Hardware

Aluminum U-Channel stiffeners shall be used on all standard highway signs greater than 36 inches in width and shall conform to Alloy 6063-T6 or 6061-T6. The U-Channel shall be 2 inches in width and free of holes. The U-Channel stiffeners shall also be used to connect various signs together so that an entire sign assembly can be erected on a single installation.

Stiffeners may be fastened to signs by use of ¼ inch diameter drive rivets.

Refer to the Breakaway Sign Supports diagram for typical sign and stiffener details.

The Contractor shall use 3/8 inch diameter rust proof machine sign bolts, flat metal washers, neoprene washers (against the sign sheeting), lock washers, and nuts to fasten the sign to the channel aluminum and posts. A minimum of two bolts shall extend through each post.

All costs associated with furnishing and installing the new permanent signs, and with furnishing and installing stiffeners and hardware shall be incidental to the contract unit price per square foot for Flat Aluminum Sign, Nonremovable Copy High Intensity, or Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity.

SQUARE TUBE ANCHOR SLEEVE

The Contractor shall furnish and install new square tube anchor sleeve as follows:

2.5” x 18”, 12 Gauge square tube anchor sleeve, (or equivalent components as approved by the Engineer).

A 2.25” x 2.25” x 4’ perforated tube post (12 Gauge) shall be used as the anchor post for installation with the square tube anchor sleeve.

MILEAGE REFERENCE MARKERS

MRMs (Mileage Reference Markers) are not to be disturbed. If an MRM is attached to a sign listed for replacement it shall be salvaged and reattached to the new sign in the same location. Payment for this work shall be incidental to the various signing contract items.

TYPE 2 OBJECT MARKERS

New back to back object markers with new posts shall be installed on each side of the roadway on the upstream traffic-flow side of the pipe as per Standard Plate 632.10.

TYPE 2 OBJECT MARKER INSTALLATION

Sta	Pipe Size
108+00	24” RCP
b 419+70	18” RCP

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.

The mycorrhizal inoculum shall be as shown below or an approved equal:

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 http://www.mycorrhizae.com/

FERTILIZING

Application of fertilizer will not be required on this project.

PERMANENT SEEDING

The areas to be seeded consist of disturbed inslope and ditch areas within the project limits except for the top of roadway.

The estimated area to seed is 1 ¾ acres. Type C Permanent Seed Mixture will not be measured for payment. Basis of payment will be plans quantity.

Type C Permanent Seed Mixture shall consist of the following:

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

MULCHING (GRASS HAY OR STRAW)

An additional 1 tons of Grass Hay or Straw Mulch has been added to the Estimate of Quantities for temporary erosion control on areas determined by the Engineer during construction.

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment shall be installed at locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details.

The Contractor shall provide certification that the erosion control wattles do not contain noxious weed seeds.

Erosion control wattles shall remain on the project to decompose.

An additional quantity of 12” Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels and as an alternative to low flow or high flow silt fence at wetland areas adjacent to the highway.

The erosion control wattle provided shall be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

http://sddot.com/business/certification/products/Default.aspx

TABLE OF EROSION CONTROL WATTLE

Station	L/R	Diameter (Inch)	Location	Quantity (Ft)
b412+00	L	12	Culvert Inlet	20
b422+55	L	12	Culvert Inlet	20
b487+00	L	12	Culvert Inlet	20
c21+22	L	12	Culvert Inlet	20
			Additional Quantity:	70
			Total:	150

HIGH FLOW SILT FENCE

The high flow silt fence fabric provided shall be from the approved product list. The approved product list for high flow silt fence may be viewed at the following internet site:

http://sddot.com/business/certification/products/Default.aspx

High flow silt fence shall be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.05 for details.

A quantity of 150 ft of high flow silt fence has been added to the Estimate of Quantities for temporary sediment control.

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** 193 Acres **(4.2 1.b.)**
- **Total Area To Be Disturbed** 2 Acres **(4.2 1.b.)**
- **Existing Vegetative Cover (%)**
- **Soil Properties:** AASHTO Soil Series Classification A6 & A7 **(4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Lake Kampeska, Smith Lake, Dry Lake, Summer Slough, Chain of Lakes-Richland 3 **(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.)

- **Special sequencing requirements (**see sheet).
- **Install stabilized construction entrance(s).**
- **Install perimeter protection where runoff sheets from the site.**
- **Install channel and ditch bottom protection.**
- **Clearing and grubbing.**
- **Remove and store topsoil.**
- **Stabilize disturbed areas.**
- **Install and repair culverts.**
- **Install inlet and culvert protection after completing storm drainage installations.**
- **Complete final grading.**
- **Complete final paving of concrete.**
- **Complete traffic control installation and protection devices.**
- **Reseed areas disturbed by removal activities**.

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 ½ 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.

CERTIFICATIONS

- **Certification of Compliance with Federal, State, and Local Regulations**

The Storm Water Pollution Prevention Plan (SWPPP) for this project reflects the requirements of all local municipal jurisdictions for storm water management and sediment and erosion control as established by ordinance, as well as other state and federal requirements for sediment and erosion control plans, permits, notices or documentation as appropriate.

- **South Dakota Department of Transportation**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Tom Kahlhamer

_____

Authorized Signature (See the General Permit, Section 6.7.1.C.)

- **Prime Contractor**

This section is to be executed by the General Contractor after the award of the contract. This section may be executed any time there is a change in the Prime Contractor of the project.

I certify under penalty of law that this document and all attachments will be revised or maintained under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____

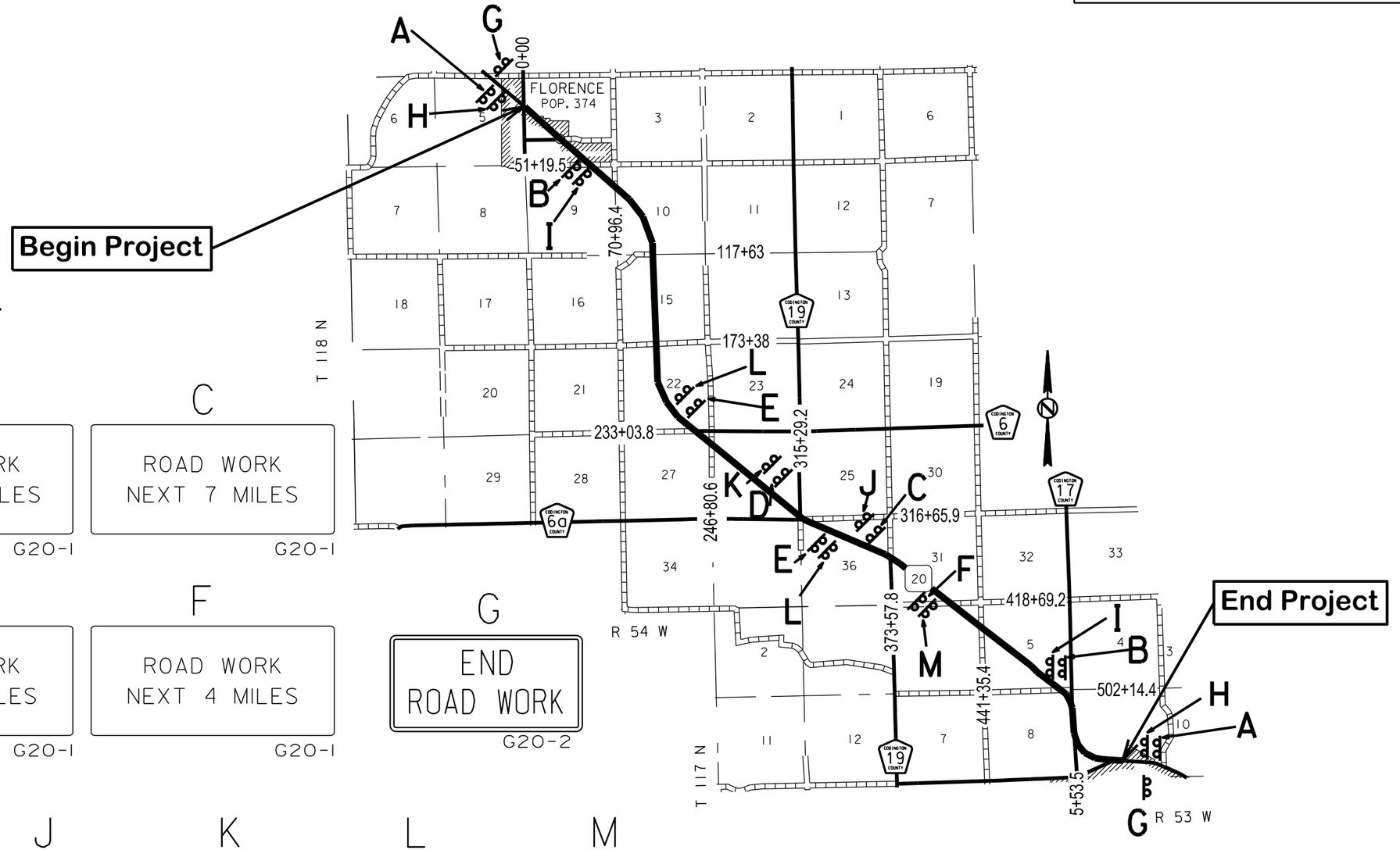
Authorized Signature

CONTACT INFORMATION

- **Contractor Information**:
  - Prime Contractor Name: _____
  - Contractor Contact Name: _____
  - Address: _____
  - _____
  - City: _____State: _____Zip: _____
  - Office Phone: _____Field: _____
  - Cell Phone: _____Fax: _____
- **Erosion Control Supervisor**
  - Name: _____
  - Address: _____
  - _____
  - City: _____State: _____Zip: _____
  - Office Phone: _____Field: _____
  - Cell Phone: _____Fax: _____
- **SDDOT Project Engineer**
  - Name: _____
  - Business Address: _____
  - Job Office Location: _____
  - City: _____State: _____Zip: _____
  - Office Phone: _____Field: _____
  - Cell Phone: _____Fax: _____
- **SD DENR Contact Spill Reporting**
  - Business Hours Monday-Friday (605) 773-3296
  - Nights and Weekends (605) 773-3231
- **SD DENR Contact for Hazardous Materials.**
  - (605) 773-3153
- **National Response Center Hotline**
  - (800) 424-8802.

FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

W20-1 ROAD WORK AHEAD signs along rural SD 20 shall be mounted on portable supports, and shall be placed on intersecting roadways as directed by the Engineer. ROAD WORK AHEAD signs shall be moved as necessary to keep current with the work activities.



A

G20-1

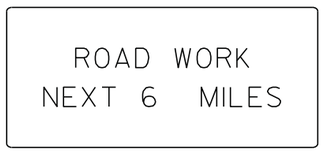
B

G20-1

C

G20-1

D



G20-1

E

G20-1

F

G20-1

G

G20-2

H

I

J

K

L

M

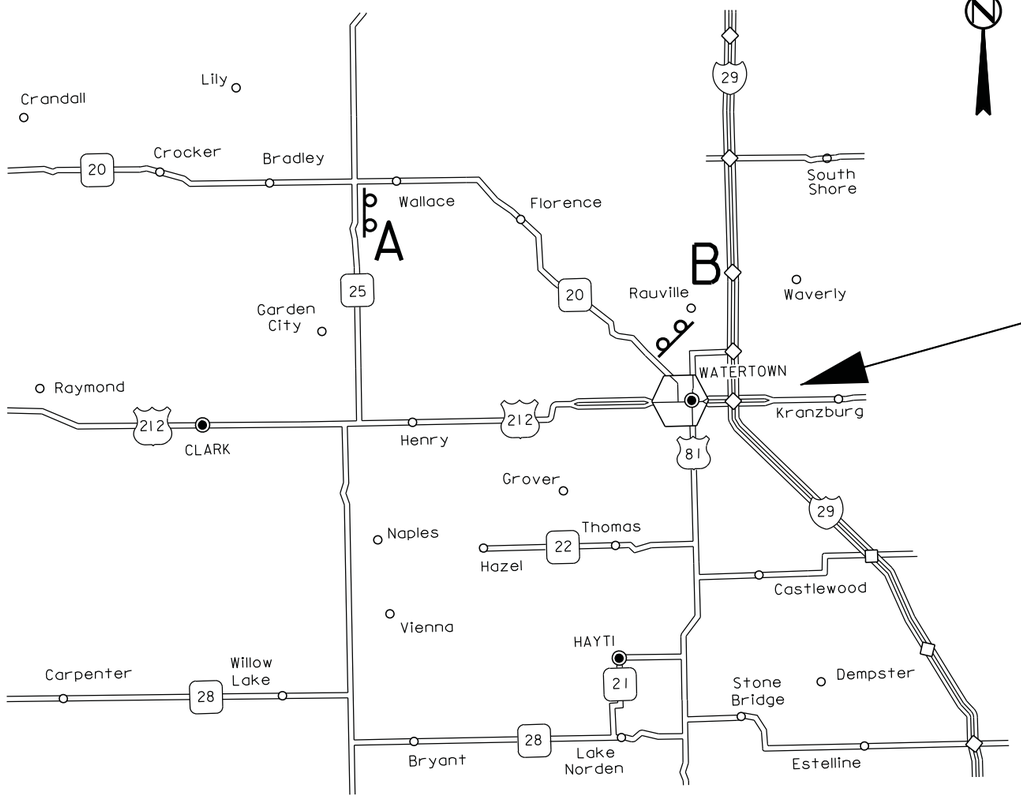
* GROOVED PAVEMENT signs shall only be visible when the condition exists. Signs shall be covered or removed when the grooved road condition is not present.

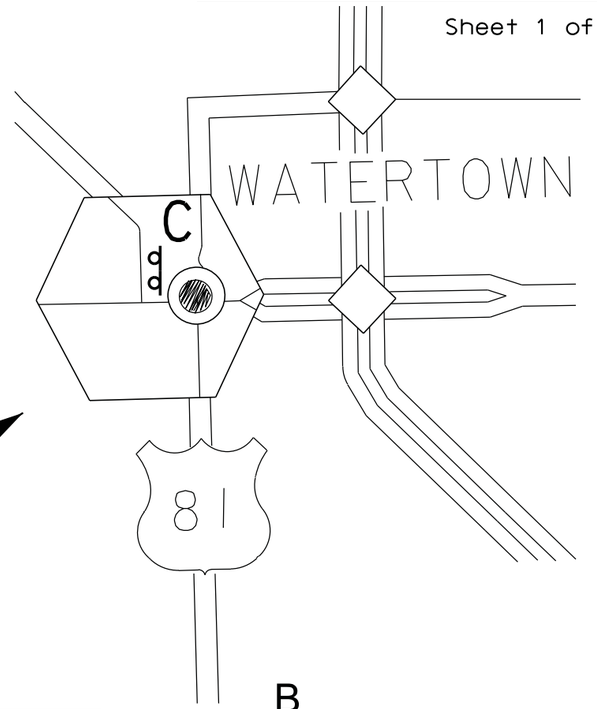
EXACT LOCATION OF SIGNS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

WIDTH RESTRICTION SIGN LOCATIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	33	73

Plotting Date: 12/10/2015





A

WIDTH RESTRICTION
12 FT. MAXIMUM
20 19 MILES AHEAD
USE ALT. ROUTE

B

WIDTH RESTRICTION
12 FT. MAXIMUM
20 4 MILES AHEAD
USE ALT. ROUTE

C

WIDTH RESTRICTION
12 FT. MAXIMUM
20 7 MILES AHEAD
USE ALT. ROUTE

Sign B shall be placed approximately 200' NW of Airport Drive.
Sign C shall be placed approximately 900' East of the SD20/US212 Jct.

NO VEHICLES OVER 12 FT. WIDE

No Vehicles Over 12 Ft Wide sign shall be placed at nearest crossroads prior to culvert replacement site at MRM 392.00 +0.902 (Sta b487+00).

PLOT SCALE - 1:50000

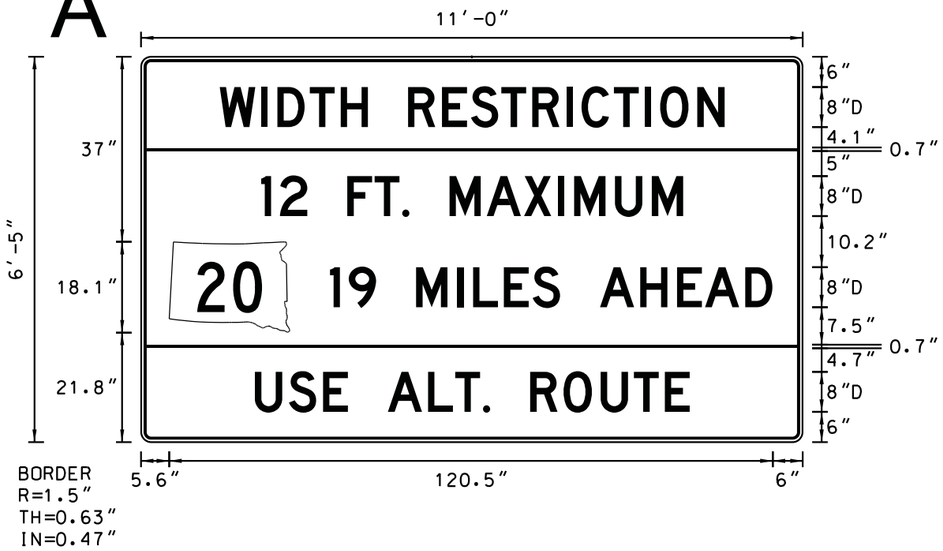
PLOTTED FROM - TRAB17982

PLOT NAME - 6

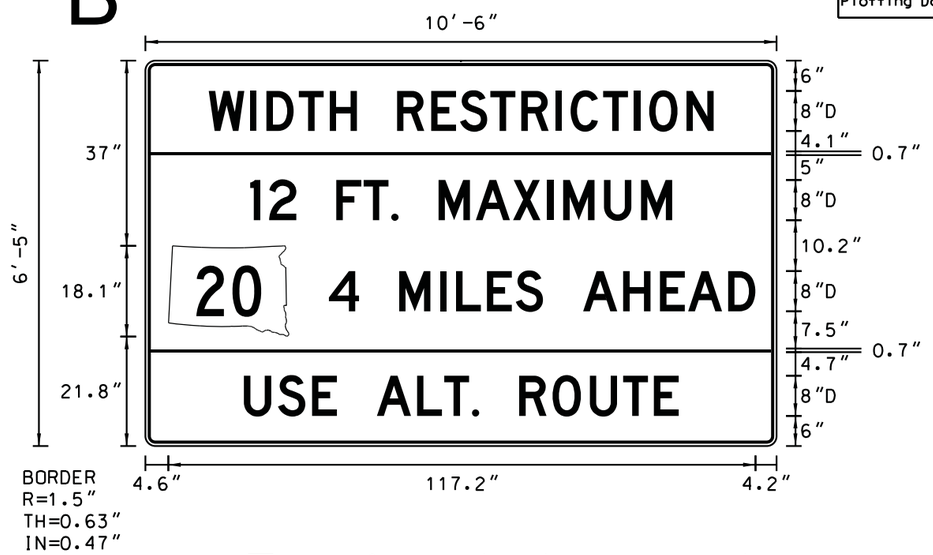
FILE - ...\0370_WIDTH RESTRICTION SIGNING.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	34	73
Plotting Date: 12/10/2015			

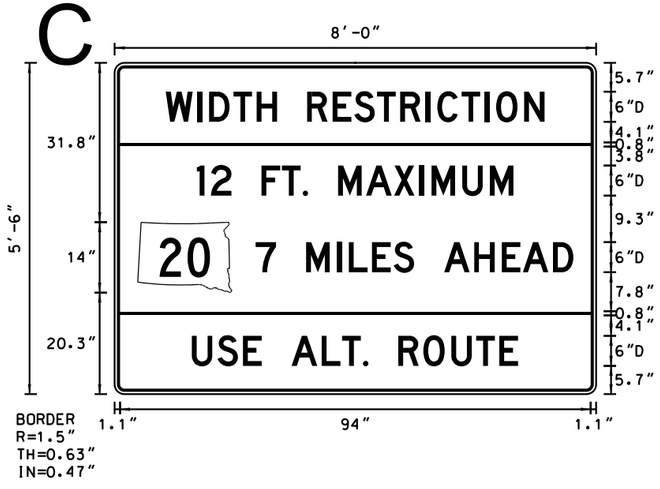
A



B



C

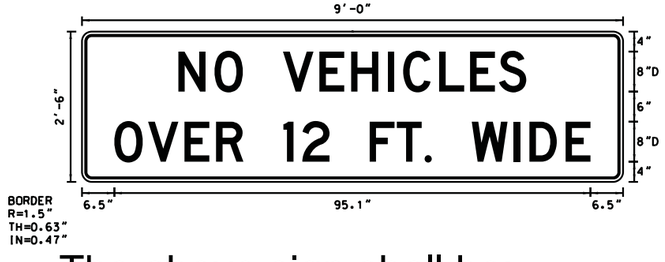


Typical Layout

Background - Orange, Legend and Border - Black

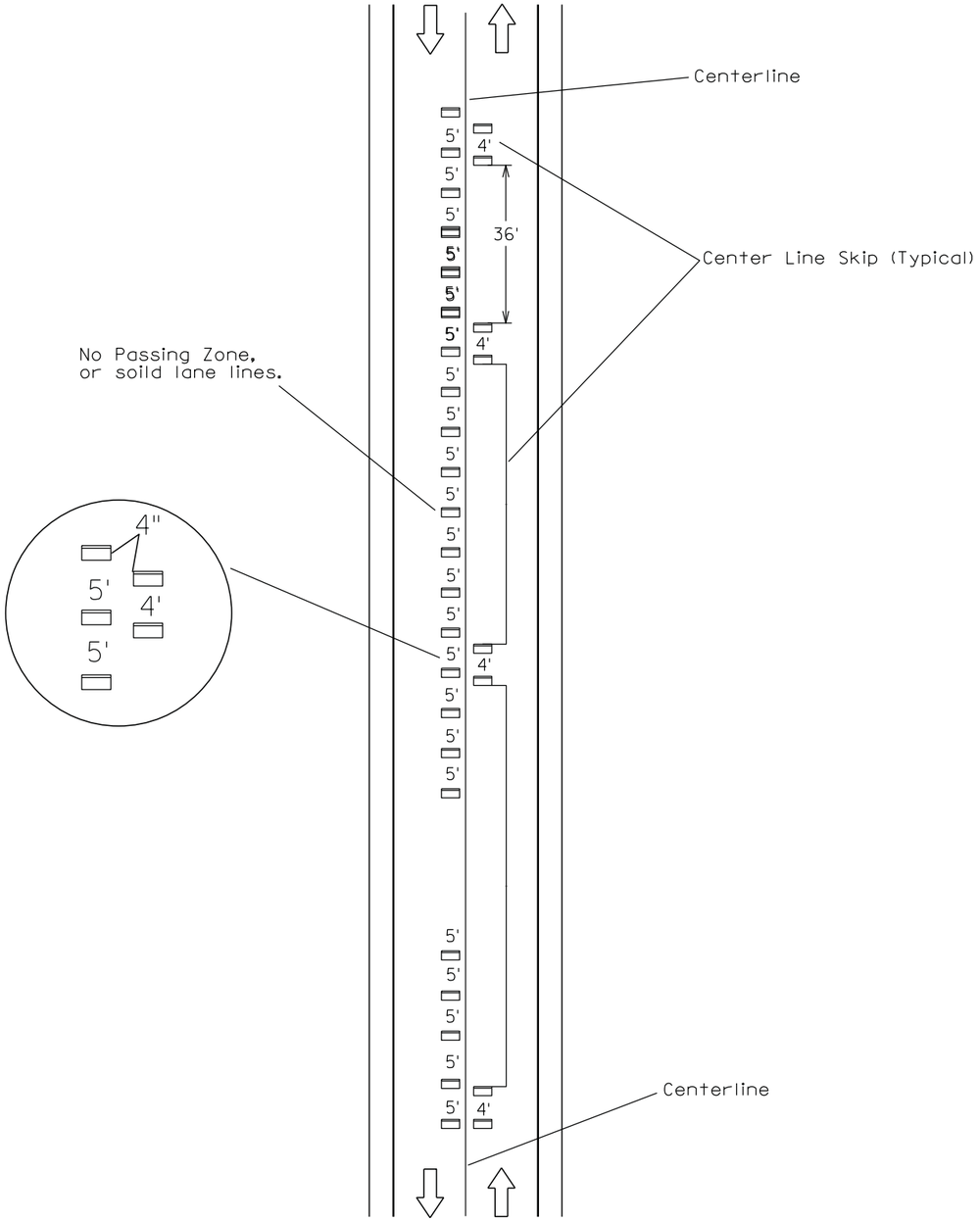
Background - White, Legend and Border - Black
Shield as per Standard Highway Sign Catalog

Background - White, Legend and Border - Black

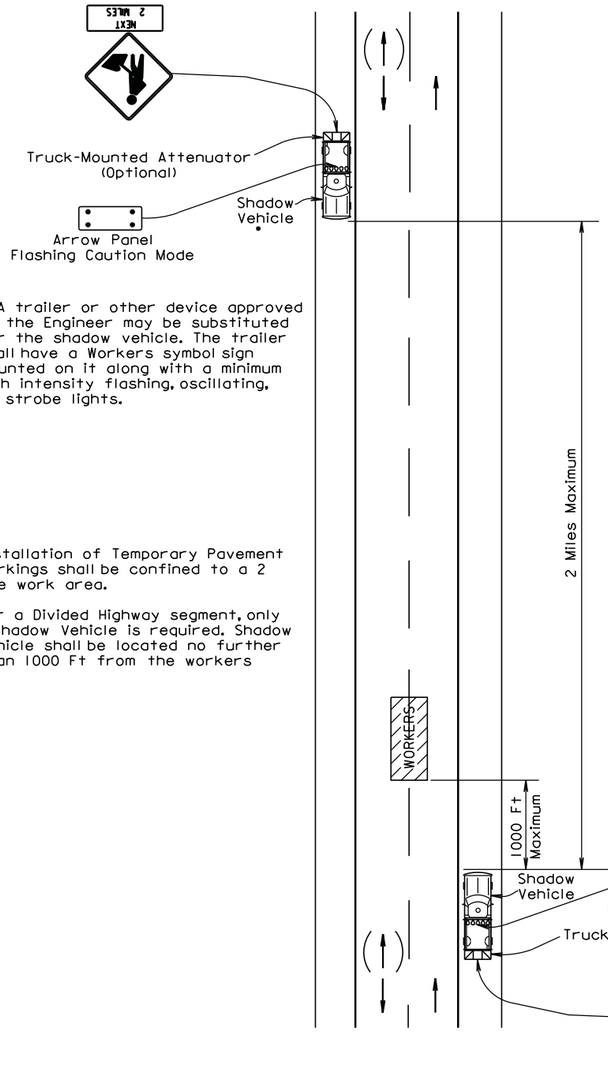


The above sign shall be:
White Background with Black Text and Border

GUIDES FOR TRAFFIC CONTROL DEVICES TEMPORARY ROAD MARKER INSTALLATION



GUIDES FOR TRAFFIC CONTROL DEVICES APPLICATION OF TEMPORARY PAVEMENT MARKING TABS



* A trailer or other device approved by the Engineer may be substituted for the shadow vehicle. The trailer shall have a Workers symbol sign mounted on it along with a minimum high intensity flashing, oscillating, or strobe lights.

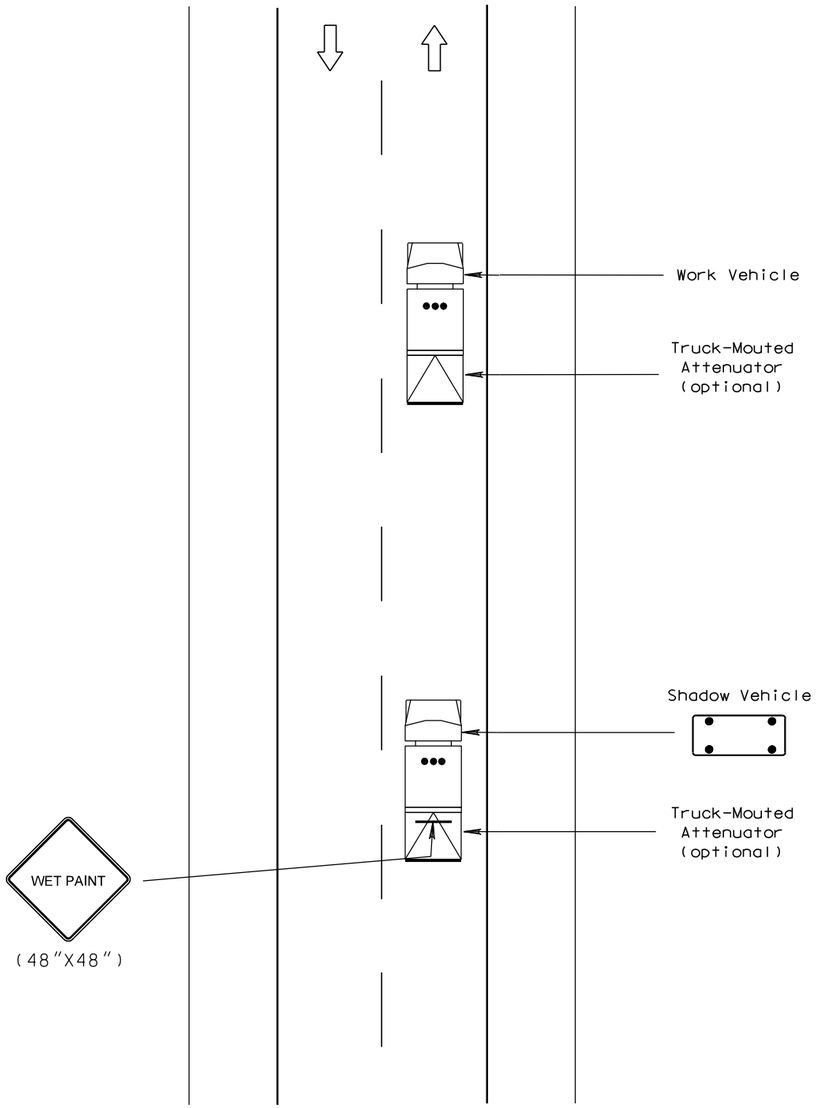
Installation of Temporary Pavement Markings shall be confined to a 2 Mile work area.

For a Divided Highway segment, only 1 Shadow Vehicle is required. Shadow Vehicle shall be located no further than 1000 Ft from the workers

PLOT SCALE - 1:200

MOBILE OPERATIONS ON TWO-LANE ROAD
(TYPICAL PAINT APPLICATION)

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	36	73
Plotting Date: 12/10/2015			



GUIDES FOR TRAFFIC CONTROL DEVICES
MOBILE OPERATIONS ON TWO-LANE ROAD

Notes for Mobile Operations on 2-Lane Road (Typical)

Standard:

1. Vehicle-mounted signs shall be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs shall be covered or turned from view when work is not in progress.
2. Shadow and work vehicles shall display high-intensity rotating, flashing, oscillating, or strobe lights.
3. If an arrow board is used, it shall be used in the caution mode.

Guidance:

4. Where practical and when needed, the work and shadow vehicles should pull over periodically to allow vehicular traffic to pass.
5. Whenever adequate stopping sight distance exists to the rear, the shadow vehicle should maintain the minimum distance from the work vehicle and proceed at the same speed. The shadow vehicle should slow down in advance of vertical or horizontal curves that restrict sight distance.
6. The shadow vehicles should also be equipped with two high-intensity flashing lights mounted on the rear, adjacent to the sign.

Option:

7. The distance between the work and shadow vehicles may vary according to terrain, paint drying time, and other factors.
8. Additional shadow vehicles to warn and reduce the speed of oncoming or opposing vehicular traffic may be used. Law enforcement vehicles may be used for this purpose.
9. A truck-mounted attenuator may be used on the work vehicle and the shadow vehicle.
10. If the work and shadow vehicles cannot pull over to allow vehicular traffic to pass frequently, a DO NOT PASS sign may be placed on the rear of the vehicle blocking the lane.

Support:

11. Shadow vehicles are used to warn motor vehicle traffic of the operation ahead.

Standard:

12. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

PLOTTED FROM - TRAB17892

PLOT NAME - 9
FILE - ...\CODN037U\MOB OP ABERDEEN.DGN

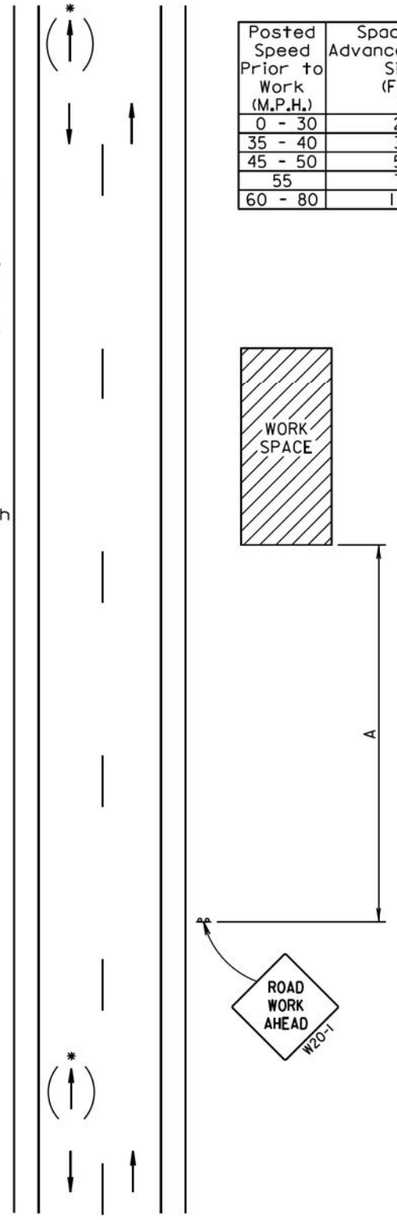
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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

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

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

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



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 - 80	1000

April 15, 2015

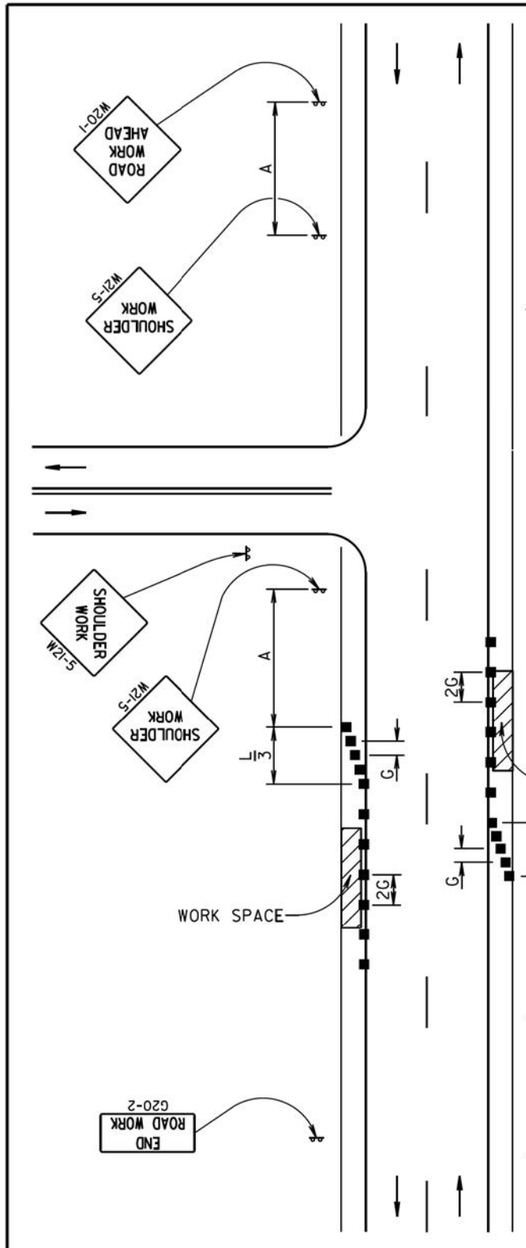
Published Date: 4th Qtr. 2015

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
WORK BEYOND THE SHOULDER

PLATE NUMBER 634.01

Sheet 1 Of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45 - 50	500	600	50
55	750	660	50
60 - 65	1000	780	50

■ Channelizing Device

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

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

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

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

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

September 22, 2014

Published Date: 4th Qtr. 2015

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
WORK ON SHOULDERS

PLATE NUMBER 634.03

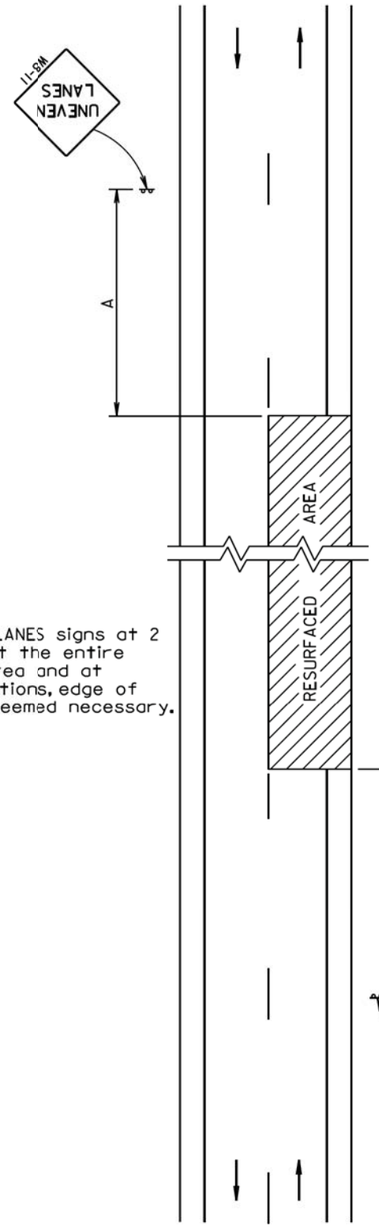
Sheet 1 of 1

PLOT SCALE - 1:200

PLOT NAME - 1

FILE - ...\63401_&_63403.DGN

-PLOTTED FROM - TRAB17982



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.

April 15, 2015

Published Date: 4th Qtr. 2015

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
UNEVEN ROAD SURFACE

PLATE NUMBER 634.22

Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45 - 50	500	50
55	750	50
60 - 65	1000	50

Flagger

Channelizing Device

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

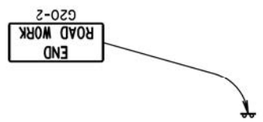
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

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

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

The channelizing devices shall be drums or 42" cones.

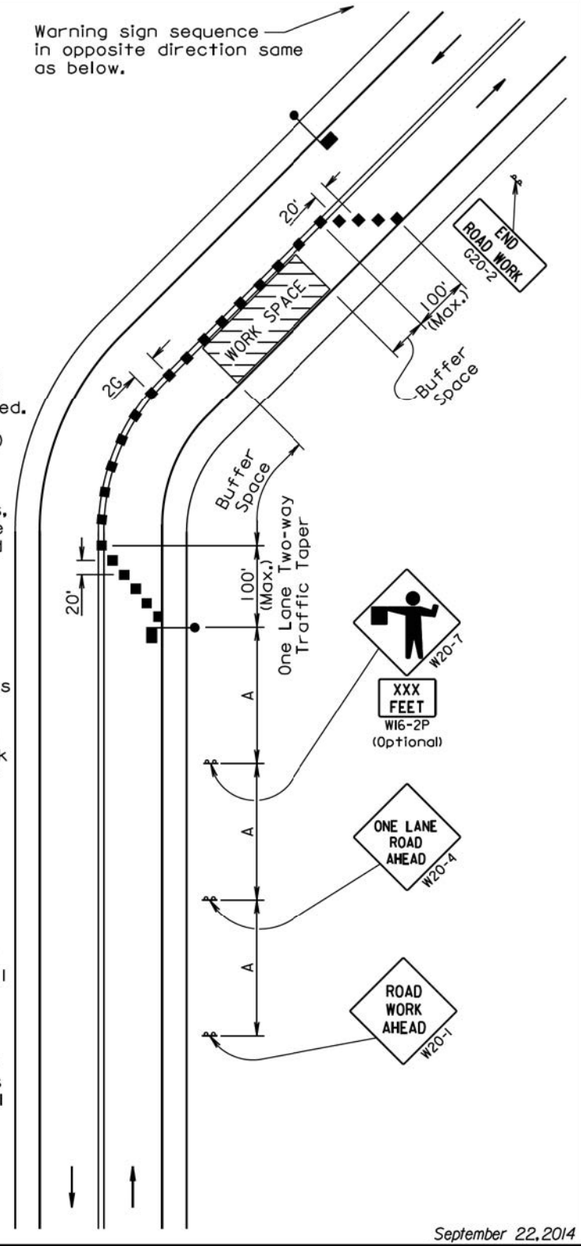
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



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

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

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



September 22, 2014

Published Date: 4th Qtr. 2015

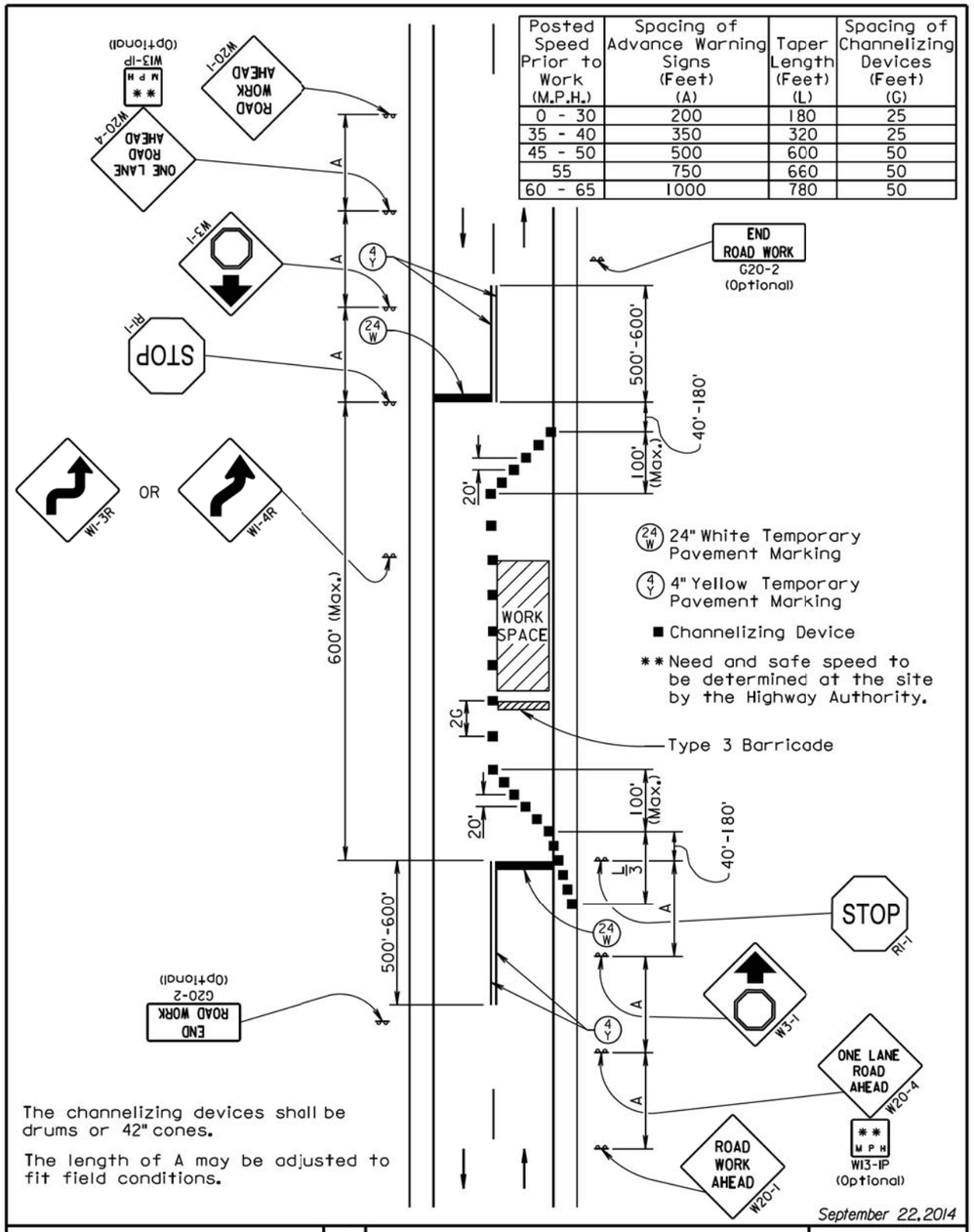
SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
LANE CLOSURE WITH FLAGGER PROVIDED

PLATE NUMBER 634.23

Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45 - 50	500	600	50
55	750	660	50
60 - 65	1000	780	50



The channelizing devices shall be drums or 42" cones.

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

September 22,2014

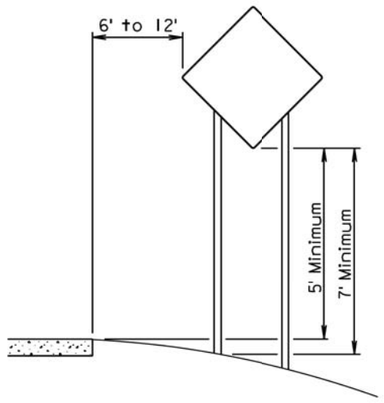
Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE USING STOP SIGNS	PLATE NUMBER 634.25 Sheet 1 of 1

PLOT SCALE - 1:200

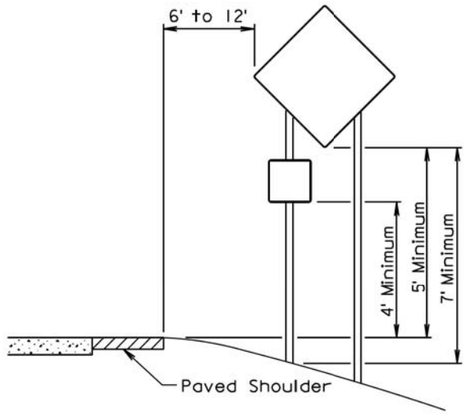
PLOTTED FROM - TRAB17882

PLOT NAME - 3

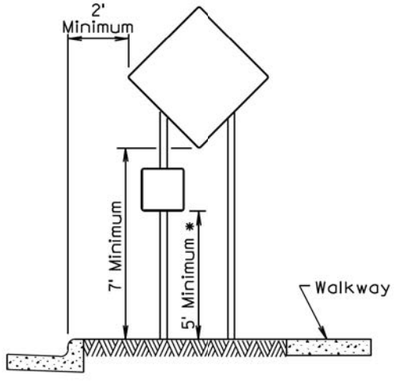
FILE - ...\63425_8_BLANK.DGN



RURAL DISTRICT

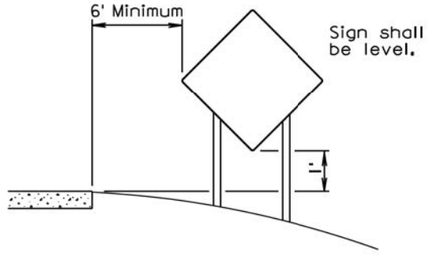


RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

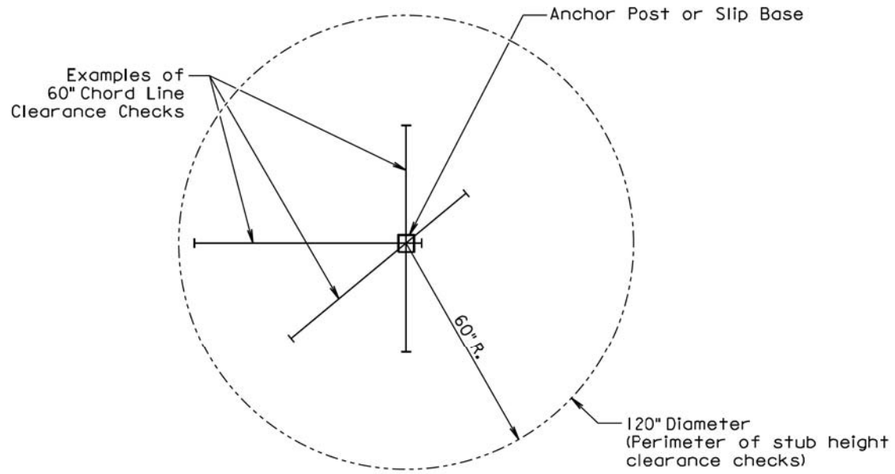
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.



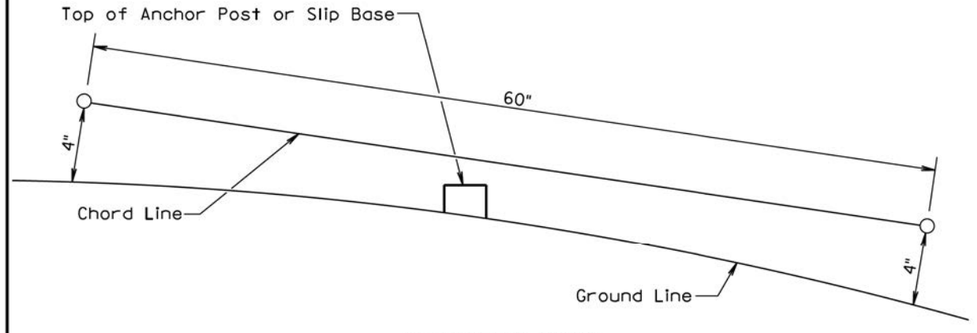
RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

September 22,2014

Published Date: 4th Qtr. 2015	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85 Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

Published Date: 4th Qtr. 2015	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99 Sheet 1 of 1

PLOT SCALE - 1:200

PLOT NAME - 4

FILE - ...\63485_&_63489.DGN

-PLOTTED FROM - TRAB17882

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	41	73

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30" x 30"	6	12
W1-3	REVERSE TURN (L or R)	1	48" x 48"	16	16
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16	32
W7-3aP	NEXT __ MILES (plaque)	9	36" x 30"	8	72
W8-1	BUMP	8	48" x 48"	16	128
W8-6	TRUCK CROSSING	4	48" x 48"	16	64
W8-7	LOOSE GRAVEL	2	48" x 48"	16	32
W8-11	UNEVEN LANES	4	48" x 48"	16	64
W8-15	GROOVED PAVEMENT	9	48" x 48"	16	144
W8-15P	MOTORCYCLE (plaque)	9	24" x 18"	3	27
W13-1P	ADVISORY SPEED (plaque)	2	30" x 30"	6	12
W20-1	ROAD WORK AHEAD	6	48" x 48"	16	96
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16	64
W20-7	FLAGGER (symbol)	4	48" x 48"	16	64
W21-5	SHOULDER WORK	4	48" x 48"	16	64
G20-1	ROAD WORK NEXT __ MILES	9	36" x 18"	5	45
G20-2	END ROAD WORK	2	36" x 18"	5	10
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			946

TYPE 3 BARRICADES

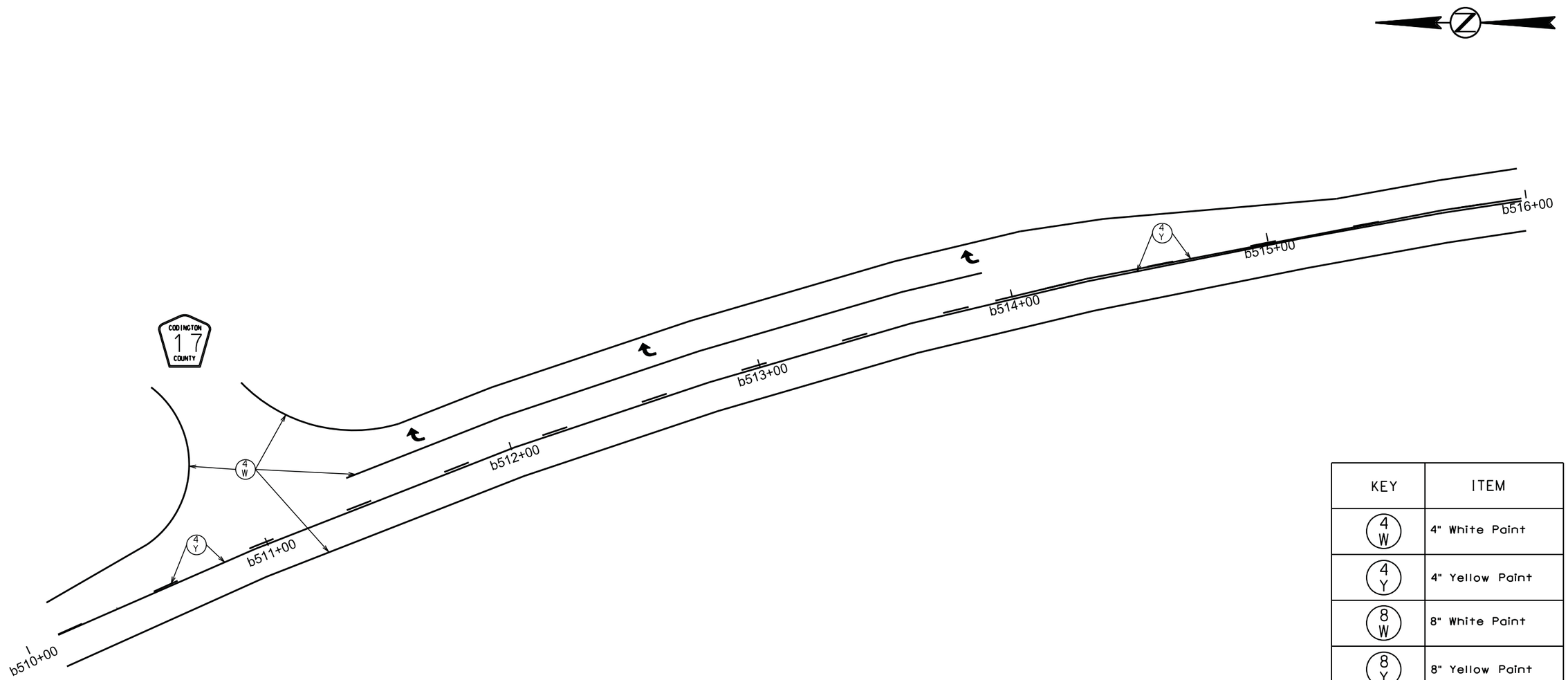
ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	4 Each

TABLE OF OVERWIDTH SIGNING (Detour Signing)

Quantity	Code	Sign Description	Sign Width (Ft)	Sign Height (Ft)	Total (Sq Ft)
1	A	Width Restriction -SD20 12 FT Maximum 4 Miles Ahead - Use Alternate Route	11.0	6.5	71.5
1	B	Width Restriction -SD20 12 FT Maximum 7 Miles Ahead - Use Alternate Route	10.5	6.5	68.25
1	C	Width Restriction -SD20 12 FT Maximum 19 Miles Ahead - Use Alternate Route	8.0	5.5	44
2		No Vehicles over 12 Ft Wide	9.0	2.5	45
			TOTAL		228.75

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	42	73
Plotting Date: 12/10/2015			

PAVEMENT MARKING LAYOUT
AT CODINGTON COUNTY HWY 17



Match Existing Turn Lane Characteristics

KEY	ITEM
4 W	4" White Paint
4 Y	4" Yellow Paint
8 W	8" White Paint
8 Y	8" Yellow Paint
24 Y	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
24 W	Cold Applied Plastic Pavement Marking Tape, 24" White
or or	Cold Applied Plastic Pavement Marking Tape, White Arrow

All lane widths are 12 ft

PLOT SCALE - 1:40

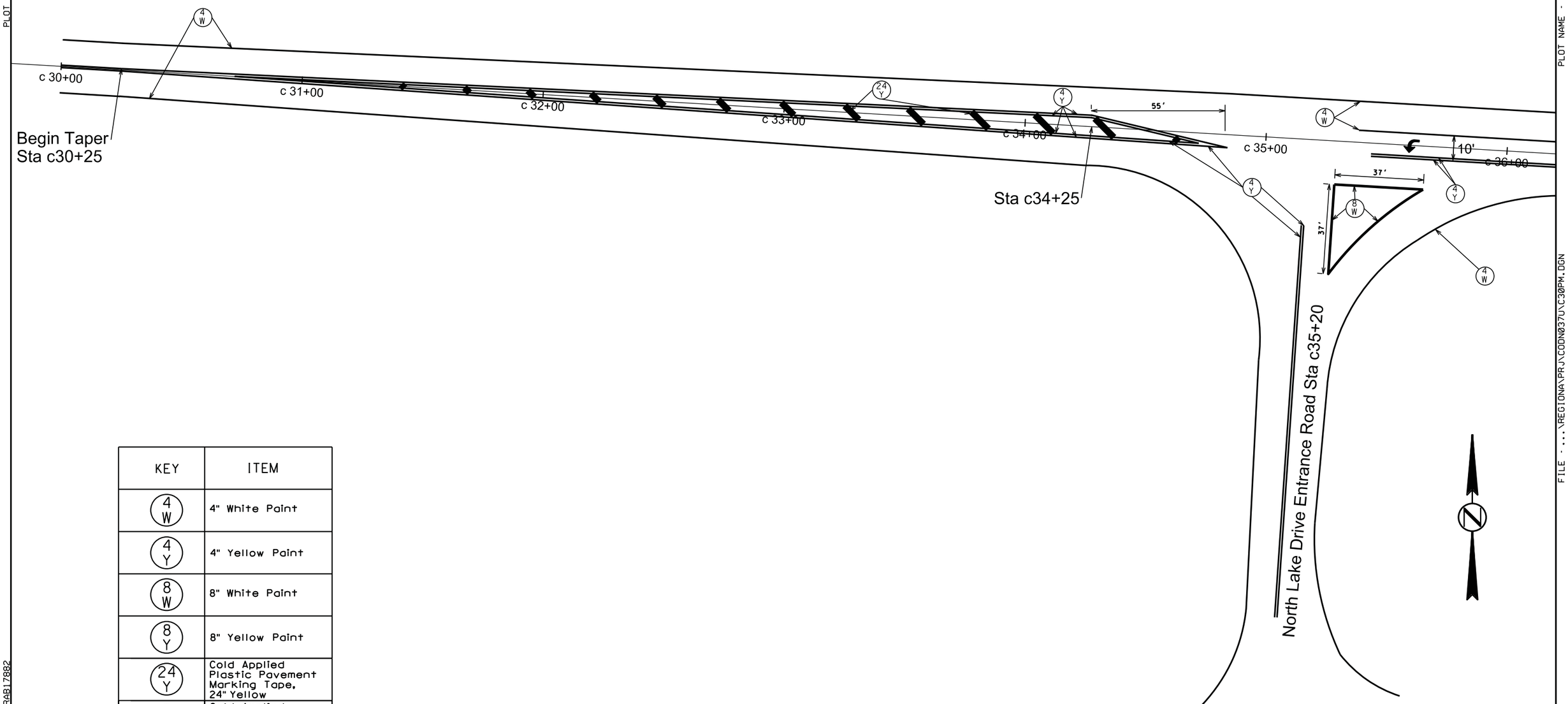
PLOTTED FROM - TRAB17882

PLOT NAME - 11

FILE - ...\REGIONAL\PRJ\CODN037U\510PM.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	43	73
Plotting Date: 12/10/2015			

PAVEMENT MARKING LAYOUT AT NORTH LAKE DRIVE



KEY	ITEM
4 W	4" White Paint
4 Y	4" Yellow Paint
8 W	8" White Paint
8 Y	8" Yellow Paint
24 Y	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
24 W	Cold Applied Plastic Pavement Marking Tape, 24" White
↰ or ↱ or ↑	Cold Applied Plastic Pavement Marking Tape, White Arrow

All lane widths are 12 ft, unless otherwise indicated.

PLOT SCALE - 1:40

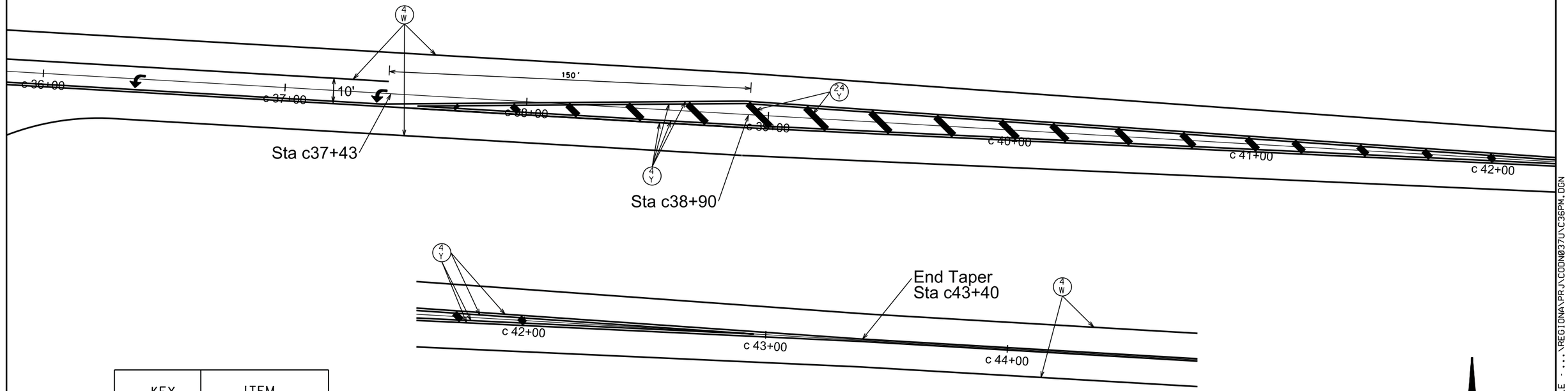
PLOT NAME - 12

FILE ...\REGIONA\PRJ\CODN037U\C30PM.DGN

PLOTTED FROM - TRAB17882

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	44	73
Plotting Date: 12/10/2015			

PAVEMENT MARKING LAYOUT
AT NORTH LAKE DRIVE



KEY	ITEM
4 W	4" White Paint
4 Y	4" Yellow Paint
8 W	8" White Paint
8 Y	8" Yellow Paint
24 Y	Cold Applied Plastic Pavement Marking Tape, 24" Yellow
24 W	Cold Applied Plastic Pavement Marking Tape, 24" White
↰ or ↱ or ↑	Cold Applied Plastic Pavement Marking Tape, White Arrow

All lane widths are 12 ft,
unless otherwise indicated

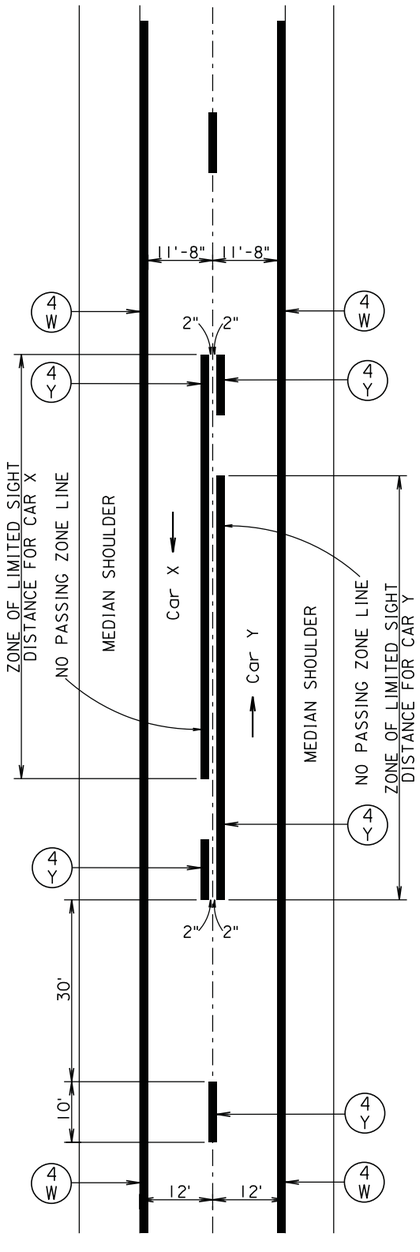
PLOT SCALE - 1:40

PLOT NAME - 13

FILE - ...\REGIONA\PRJ\CODN037U\C36PM.DGN

PLOTTED FROM - TRAB17882

TWO LANE UNDIVIDED ROADWAY



KEY	ITEM
4 W	4" White
4 Y	4" Yellow

FURNISHING AND APPLYING PAVEMENT MARKING PAINT

1. The approximate paint application rates shall be as follows:

Undivided Roadway	Divided Roadway
Yellow Centerline 12± Gallons/Pass-Mile (Includes No-passing lines)	White Centerline 4.60 Gallons/Pass-Mile
White Edgeline 16.90 Gallons/Pass-Mile (Solid Line)	Yellow or White Edgeline 16.90 Gallons/Pass-Mile (Solid Line)

2. The typical pavement markings as shown on this sheet shall be applied throughout the entire length of the project.

3. Exact location of the NO PASSING ZONE lines will be determined in the field by the Engineer. A dash of white paint will mark the beginning and end of all no passing zones. NO PASSING ZONE signs and the ending post in fence lines, if present, shall not be used as the beginning and ending NO PASSING ZONE lines.

4. 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 or advance warning arrow panel.

EXISTING TOPOGRAPHY SYMBOLOGY AND LEGEND

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	46	73
Plotting Date: 12/10/2015			

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

- State and National Line
- County Line
- Section Line
- Quarter Line
- Sixteenth Line
- Property Line
- Construction Line
- R. O. W. Line
- New R. O. W. Line
- Cut and Fill Limits
- Control of Access
- New Control of Access
- Proposed ROW (After Property Disposal)

PLOT SCALE - 1:200

PLOTTED FROM - TRAB17882

PLOT NAME - 10

FILE - ...\PRJ\CDN\037U\TOPOSYMB (2).DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	47	73
Plotting Date: 12/10/2015			

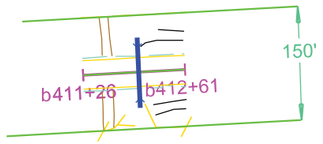
b412+00
Take Out 4' x 6' RC Cattle Pass
Flared Ends
(Incidental Work, Grading)

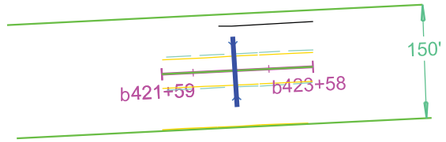
b412+00
Install 30" - 78' RCP
with Controlled Density Fill
and 2 Sloped Ends

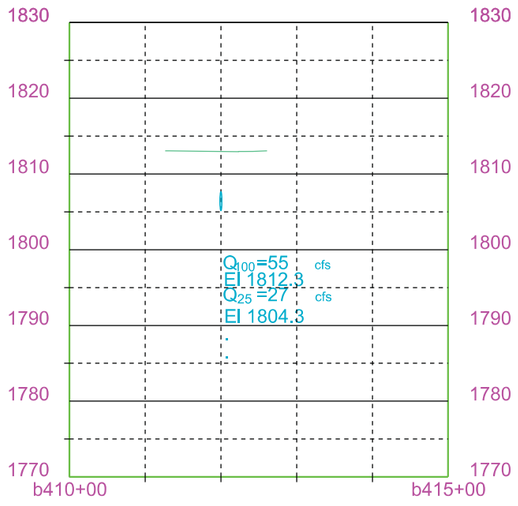
b422+55
Take Out 4' x 6' RC Cattle Pass
Flared Ends
(Incidental Work, Grading)

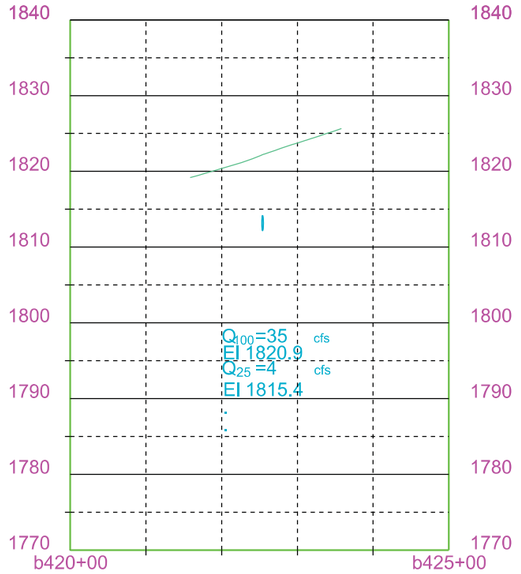
b422+55
Install 24" - 84' RCP
with Controlled Density Fill
and 2 Sloped Ends

SEC. 31 - T118N - R53W







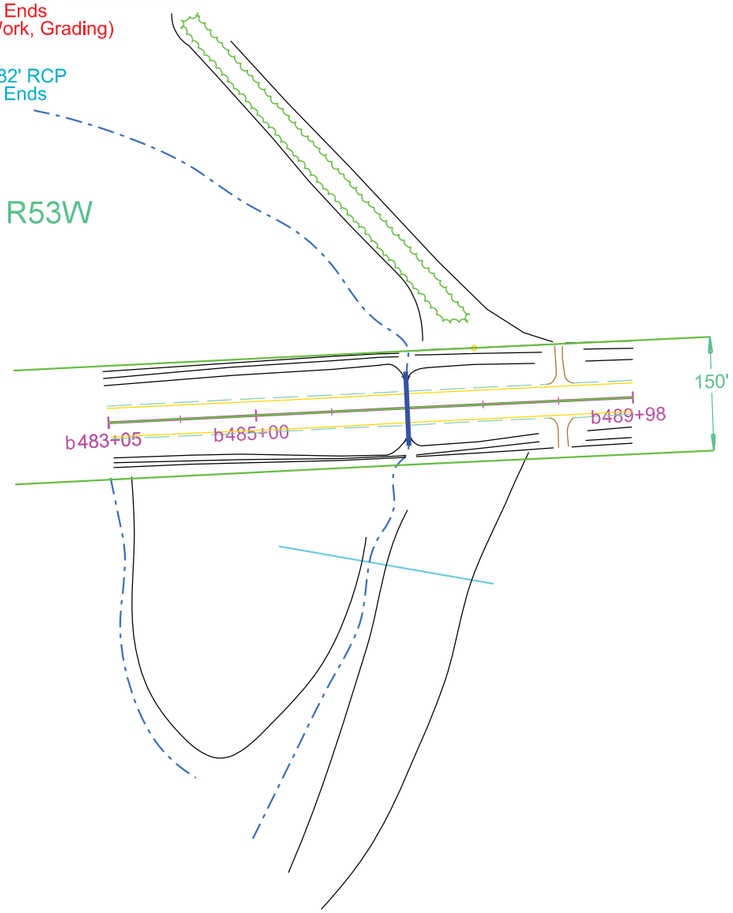


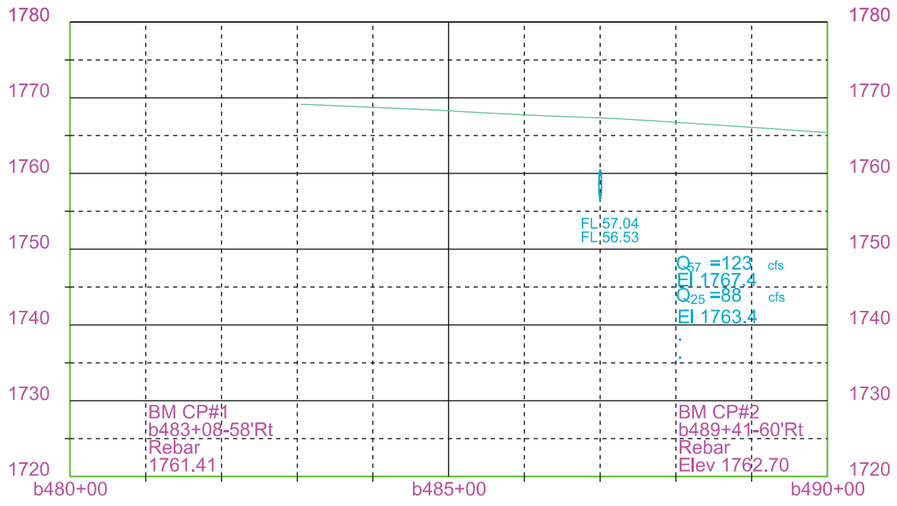
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	48	73
Plotting Date: 12/10/2015			

b487+00
Take Out 4' x 6' -54' RC Cattle Pass
and 2 Flared Ends
(Incidental Work, Grading)

b487+00
Install 42" - 82' RCP
and 2 Flared Ends

SEC. 5 - T117N - R53W





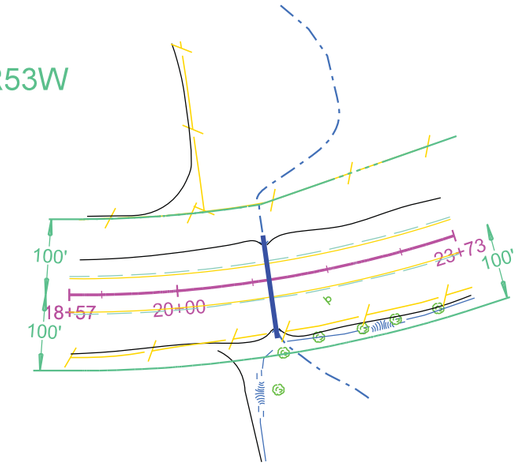
PLOT SCALE - 1:200
PLOT NAME - 16
FILE - ...\REGIONA\PRJ\CODN037U\B487.DGN
PLOTTED FROM - TRAB17882

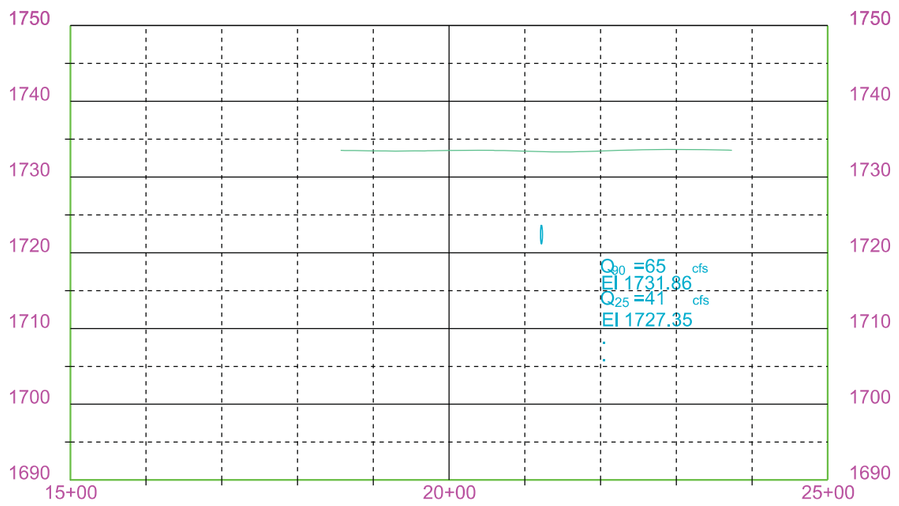
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	49	73
Plotting Date: 12/10/2015			

c21+22
Take Out 4' x 6' RC Cattle Pass
Flared Ends
(Incidental Work, Grading)

c21+22
Install 30" - 120' RCP
with Controlled Density Fill
and 2 Sloped Ends

SEC. 9 - T117N - R53W





PLOT SCALE - 1:200

PLOTTED FROM - TRAB17882

PLOT NAME - 17

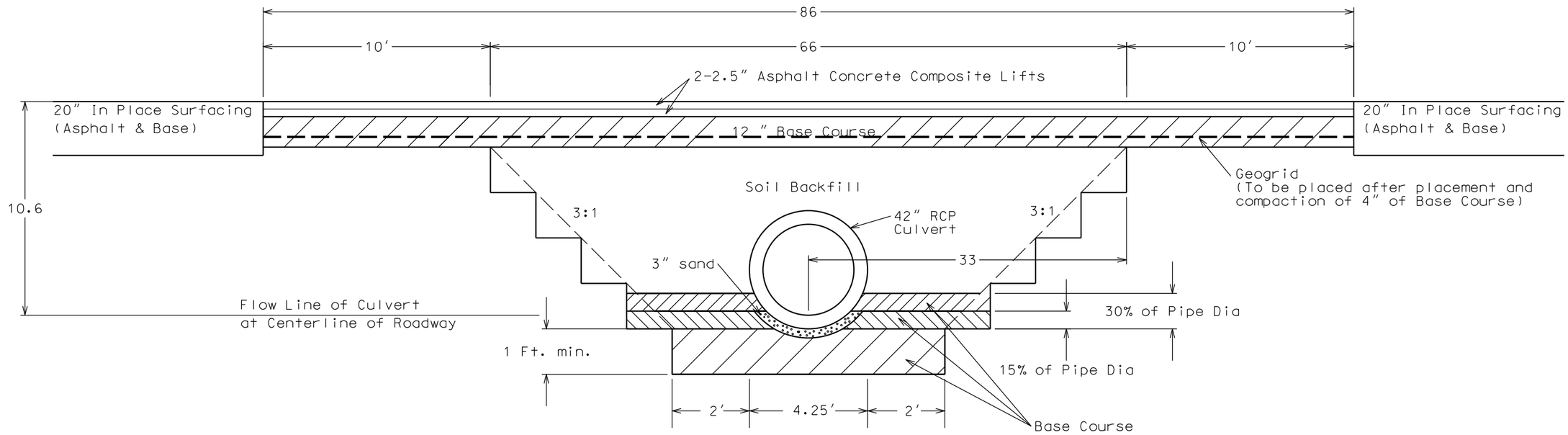
FILE - U:\REGIONA\PRJ\CODN0037\C21.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	50	73
Plotting Date: 12/10/2015			

CULVERT REPLACEMENT DETAIL

Station b487+00

DRAWING
NOT TO SCALE



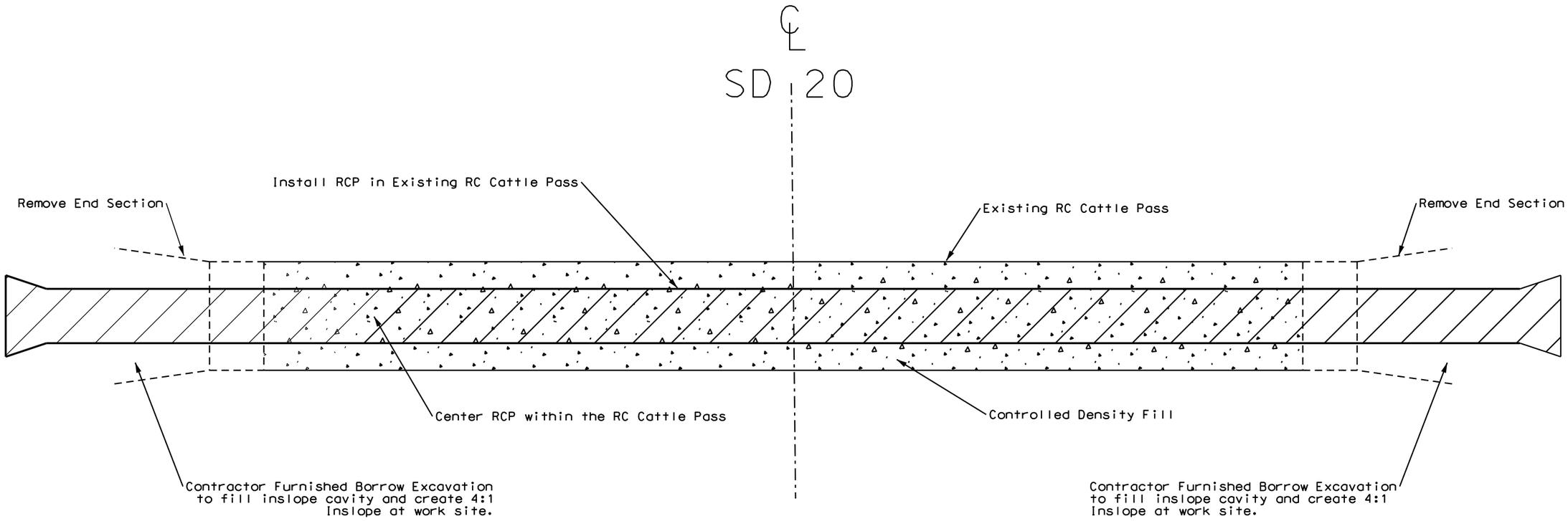
PLOT SCALE - 1:1.2

PLOT NAME - 18

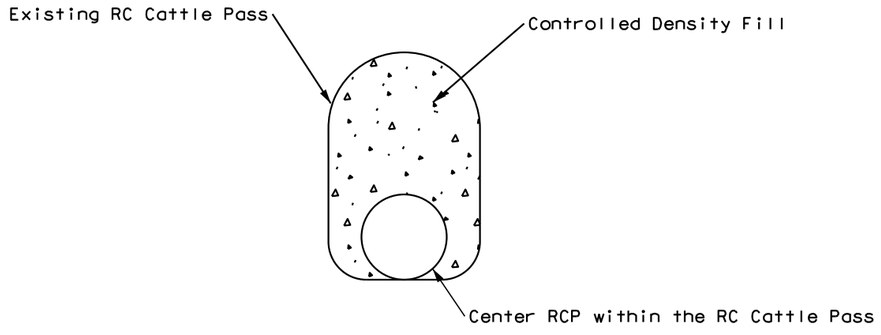
FILE ...\037U_CULVERT REPLACEMENT.DGN

PLOTTED FROM - TRAB17882

INSTALLING RCP IN EXISTING RC CATTLE PASS



Plan View



Elevation View

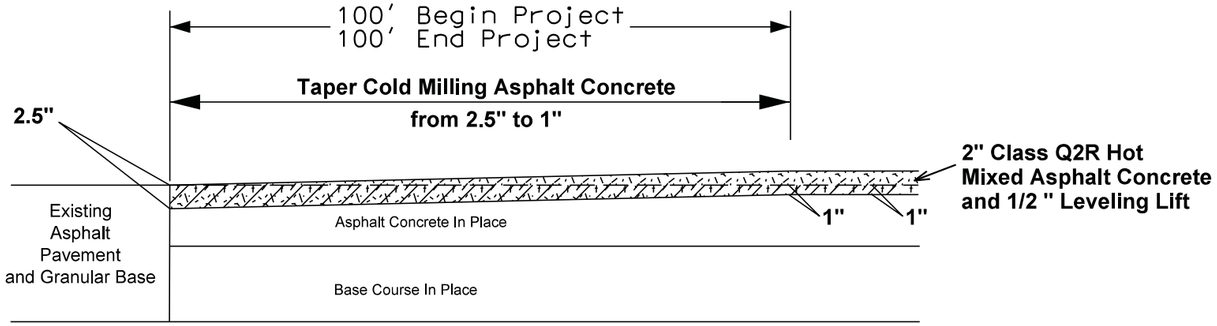
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	52	73

Plotting Date: 12/10/2015

TRANSITION DETAILS FOR PROJECT LIMITS

Begin and End of Project

Detail shown in direction of increasing station



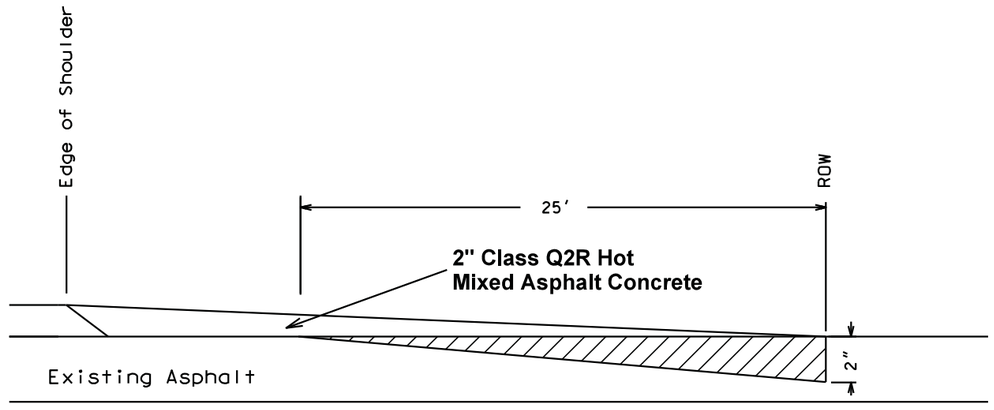
Cold Milling Asphalt Concrete

Asphalt Concrete

Note: Width of Cold Milling Asphalt Concrete at Project Limits shall match adjacent surfacing width.

TRANSITION SECTION FOR INTERSECTING ROADS

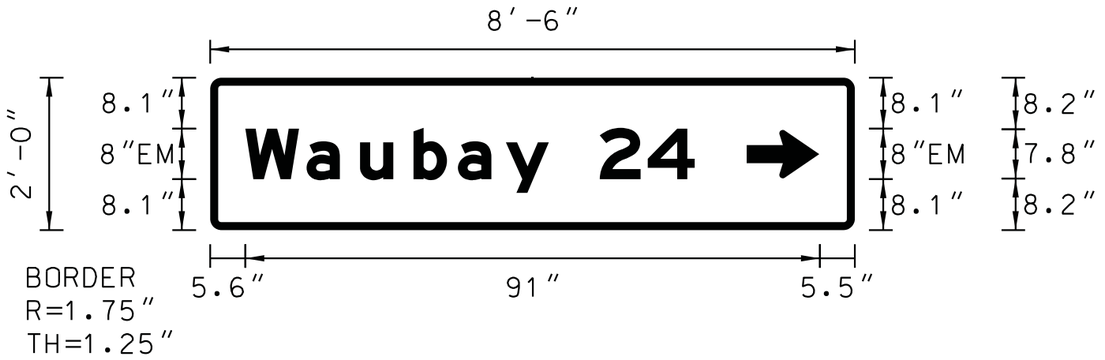
See Table of Additional Quantites for Locations and Quantities

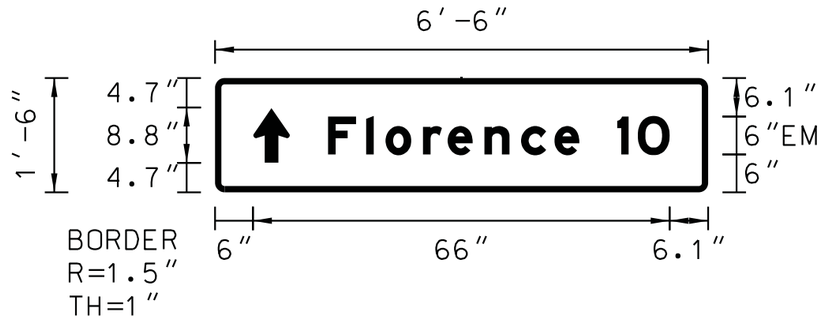


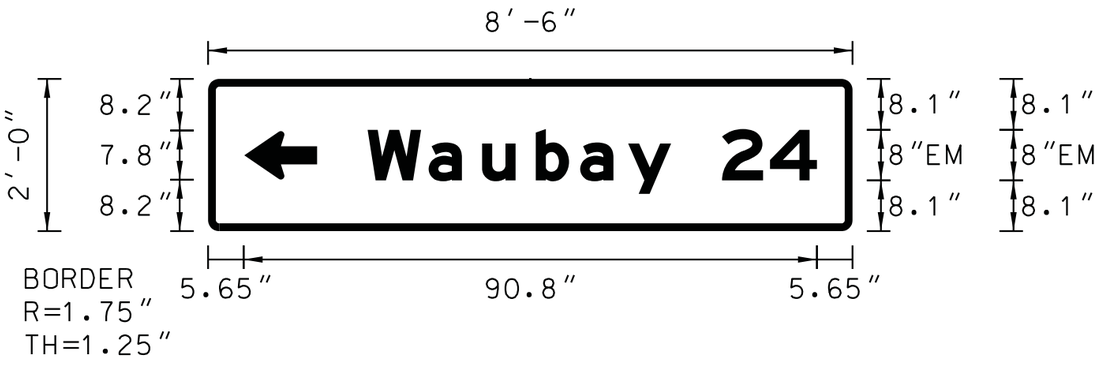
Cold Milling Asphalt Concrete

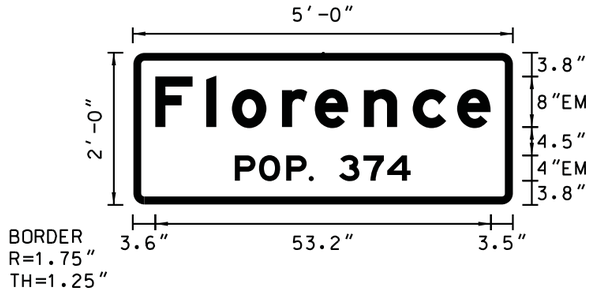
Note: Width of Cold Milling Asphalt Concrete at Intersecting Roads shall match adjacent surfacing width.

SPECIAL SIGN DESIGN







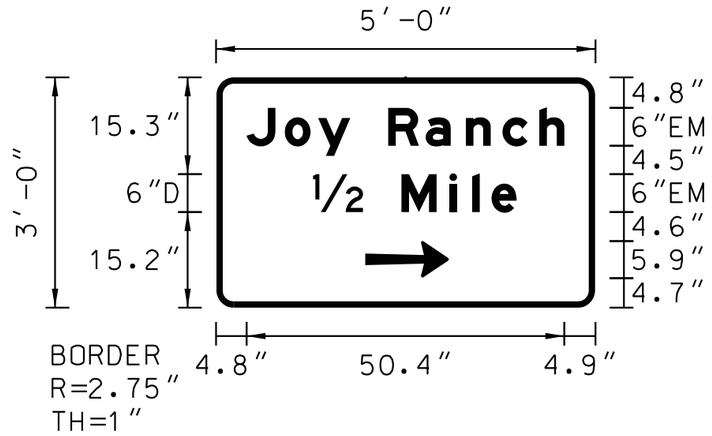


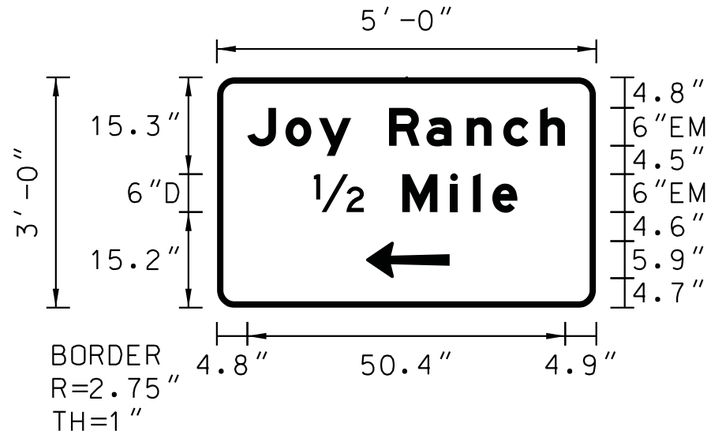
All signs on this sheet shall have a green background with white legend and border

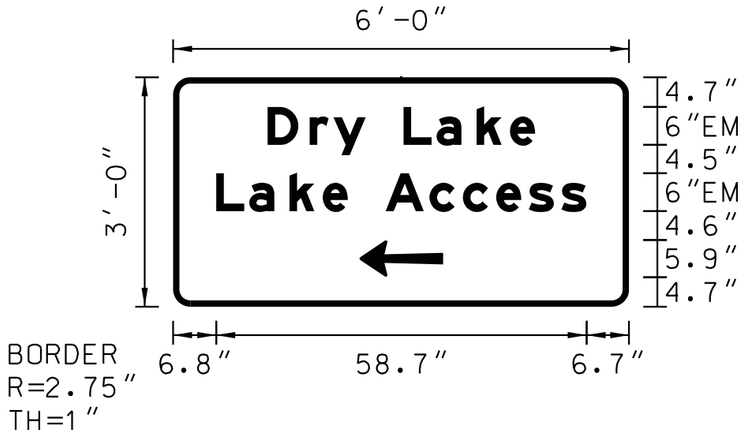
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	54	73

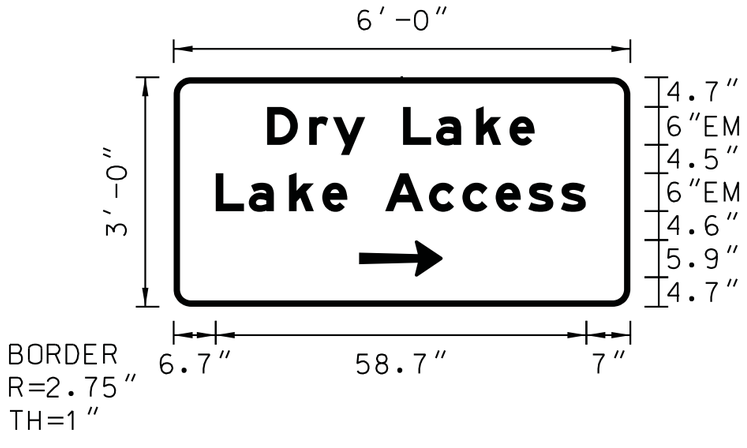
Plotting Date: 12/10/2015

SPECIAL SIGN DESIGN







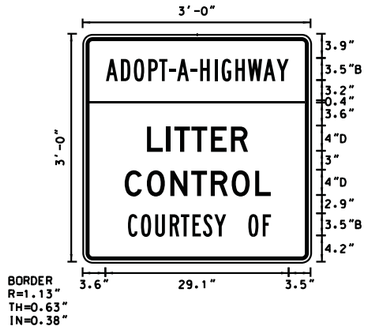


All signs on this sheet shall have a brown background with white legend and border

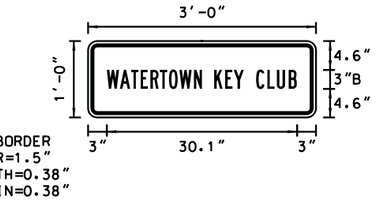
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	55	73
Plotting Date: 12/10/2015			

SPECIAL SIGN DESIGN

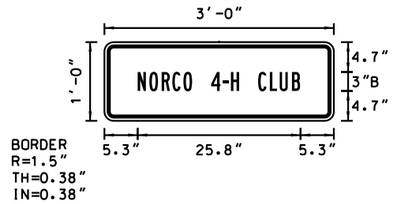
Border - Red
Background - White
Legend - Blue



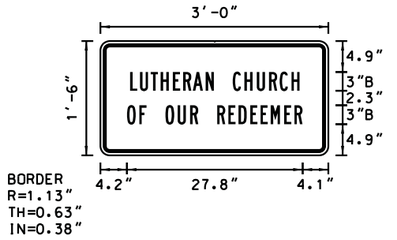
Border - Red
Background - White
Legend - Blue



Border - Red
Background - White
Legend - Blue

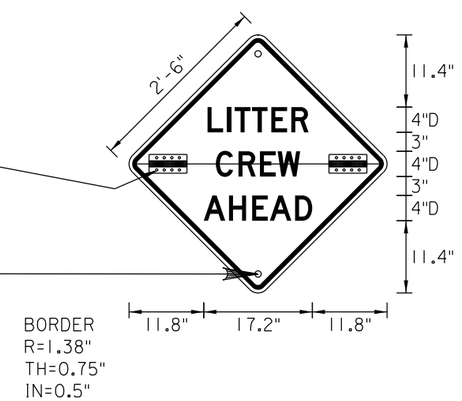


Border - Red
Background - White
Legend - Blue



Stainless Steel
Piano Hinge
3" H x 6" L

$\frac{3}{8}$" x 3"
Stainless Steel
Bolt with Wing
Nut. (secure folded
sign in place)



Border - Black
Background - Orange
Legend - Black

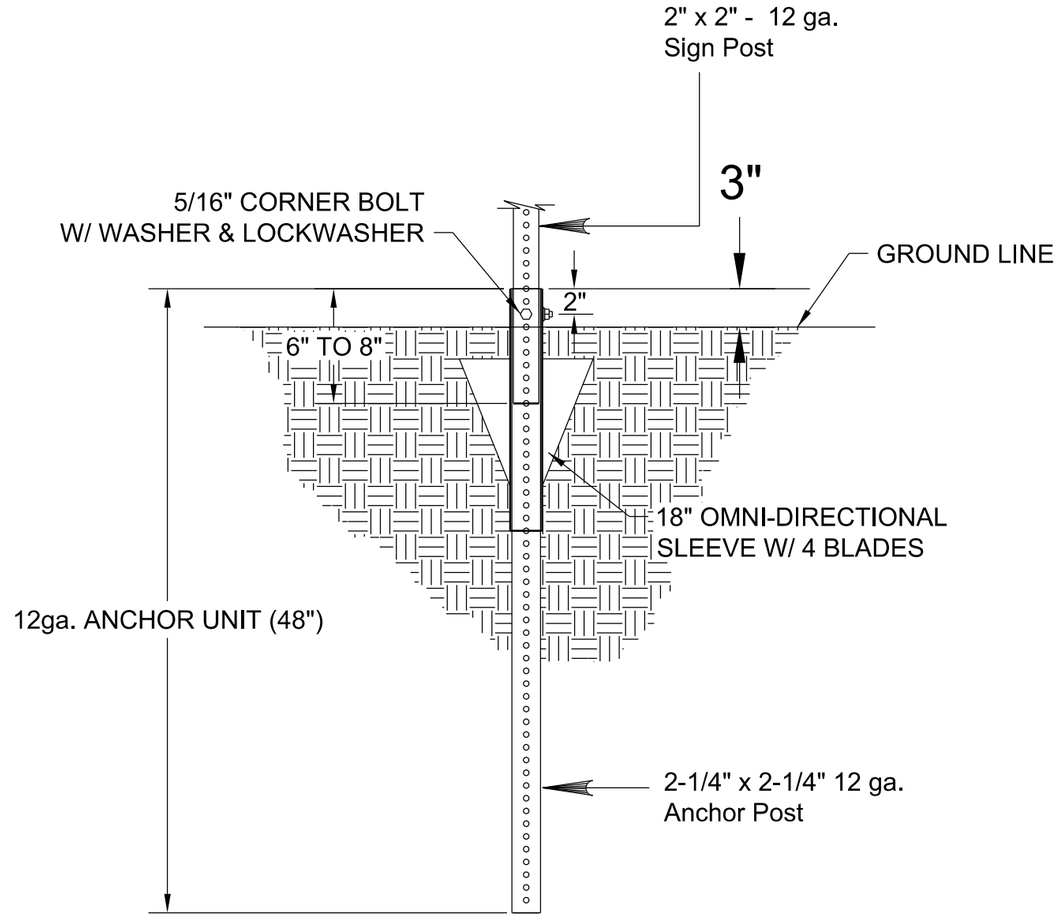
PLOT SCALE - 1:2

PLOTTED FROM - TRAB10100

PLOT NAME - 3

FILE - ...\SPECIAL SIGN DESIGN.DGN

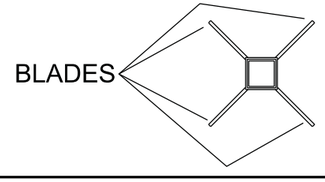
SQUARE TUBE
4 BLADE ANCHOR DETAIL



2-1/2" x 18" OMNI-ANCHOR SLEEVE
FOR SOIL STABILIZATION.

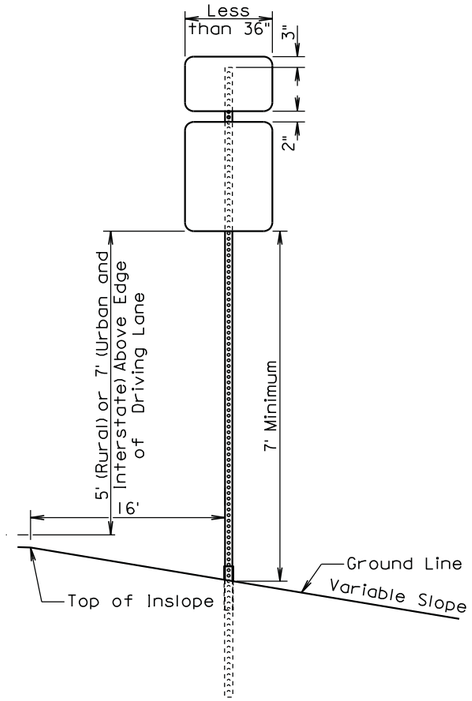
2-1/2" x 18" 12 ga. Omni-Sleeve

ANCHOR SLEEVE
TOP VIEW

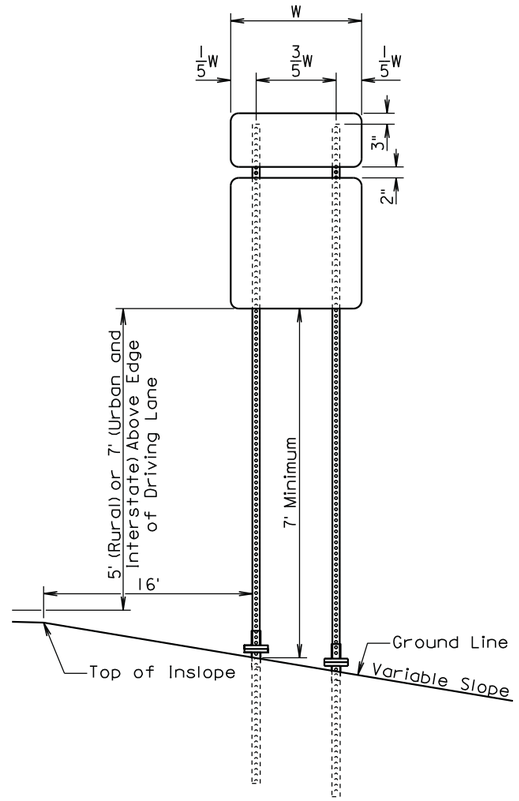


STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	57	73
Plotting Date: 07/07/2015			

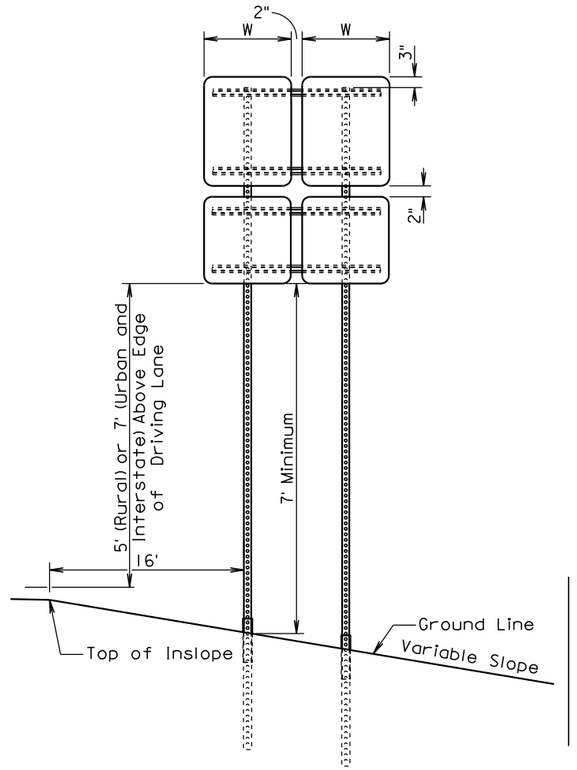
INSTALLATION DETAILS FOR MULTIPLE SIGN ASSEMBLIES



ELEVATION VIEW
(Single post assembly)



ELEVATION VIEW
(Double post assembly)



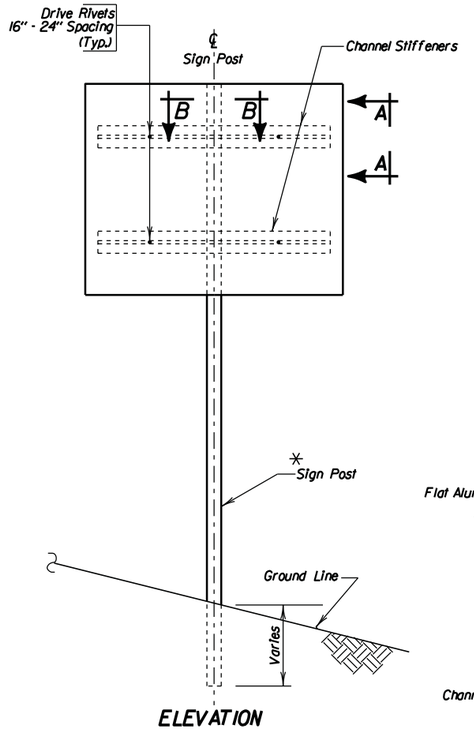
ELEVATION VIEW
(Double post assembly)

GENERAL NOTES:

The sign posts and bases shown are for illustrative purpose. The post type required shall be the type specified in the plans.

All breakaway sign supports shall comply with NCHRP 350 or MASH crash testing requirements and FHWA requirements. The Contractor shall provide post installation details at the preconstruction meeting for all breakaway sign support assemblies.

ONE POST BREAKAWAY SIGN SUPPORTS



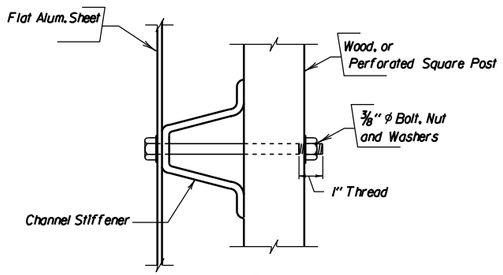
ELEVATION

Ø A plastic washer, as recommended by the sheeting manufacturer, shall be installed between the sign face and the metal washer shown.

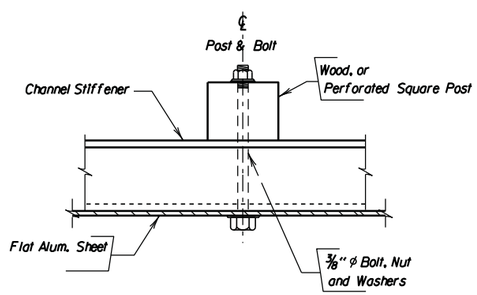
Height and lateral distance as recommended by latest edition of MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

* Single post installation shown. (See applicable Details or Standard Plates shown in these plans for multiple post spacing requirements.)

(Typical Sign and Stiffener Details)

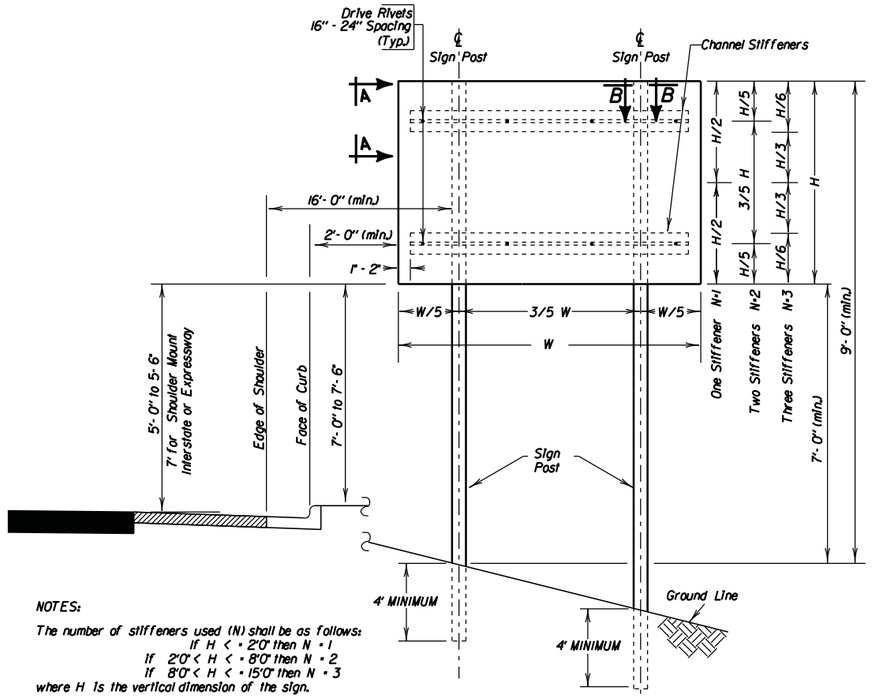


SEC. A-A



SEC. B - B

TWO POST BREAKAWAY SIGN SUPPORTS



NOTES:

The number of stiffeners used (N) shall be as follows:

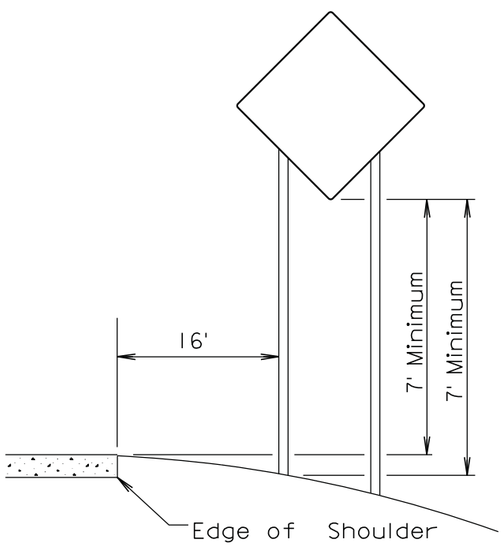
If H ≤ 2'0" then N = 1
If 2'0" < H ≤ 8'0" then N = 2
If 8'0" < H ≤ 15'0" then N = 3

where H is the vertical dimension of the sign.

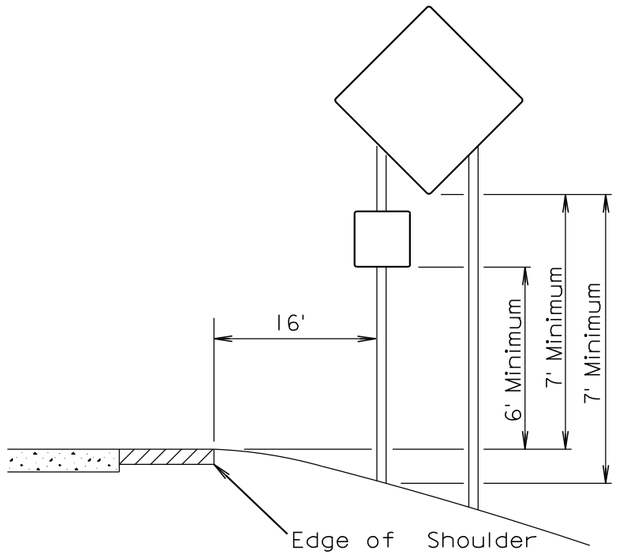
A minimum of two bolts shall be required to fasten the sign to each post.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	59	73
Plotting Date: 07/07/2015			

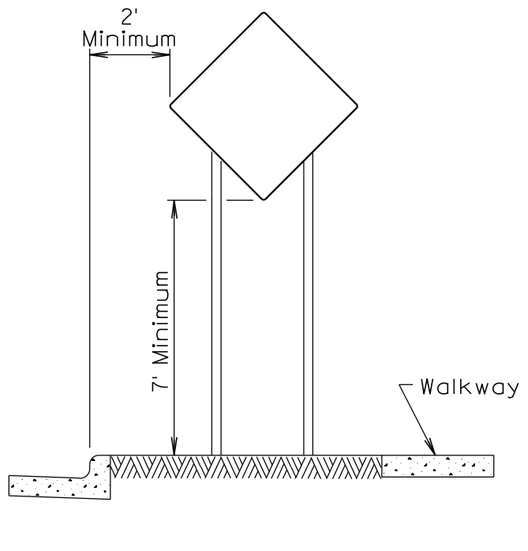
SIGN SUPPORTS
(Lateral Off–Sets)



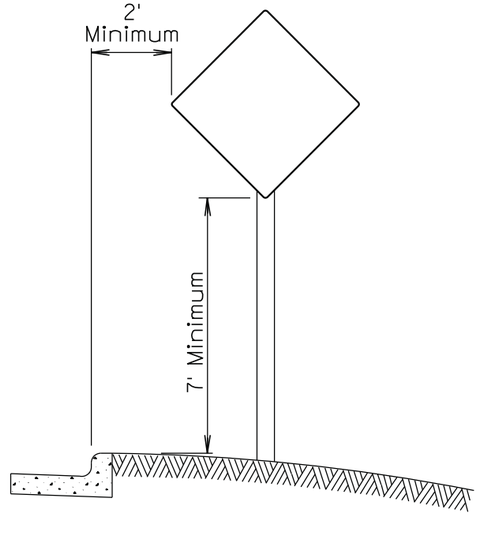
RURAL DISTRICT



RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



URBAN DISTRICT



URBAN DISTRICT

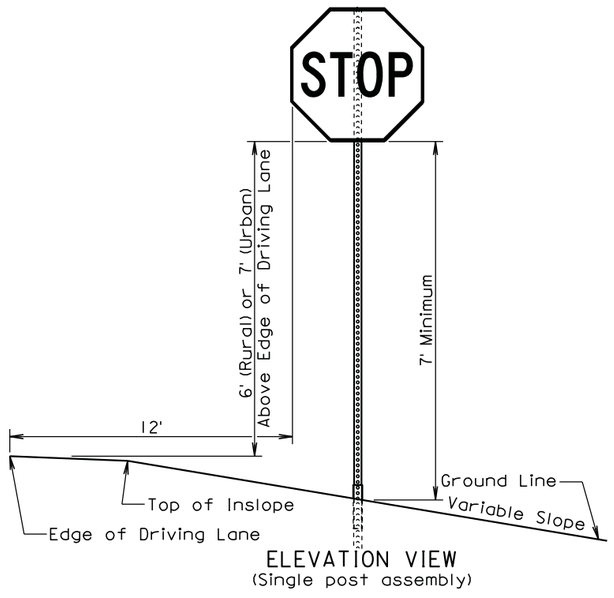
PLOT SCALE - 1:200

PLOTTED FROM - TRAB1@100

PLOT NAME - 4

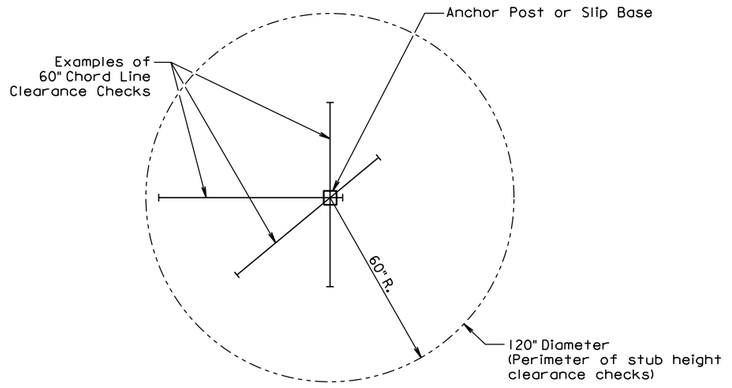
FILE - ...\SIGN POST INSTALL DETAILS.DGN

INSTALLATION DETAILS FOR STOP SIGNS

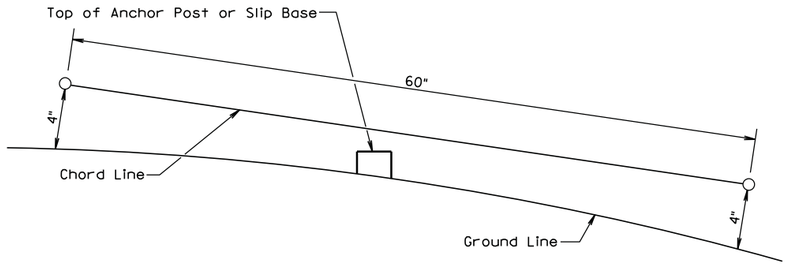


ELEVATION VIEW
(Single post assembly)

BREAKAWAY SUPPORT STUB CLEARANCE



PLAN VIEW
(Examples of stub height clearance checks)

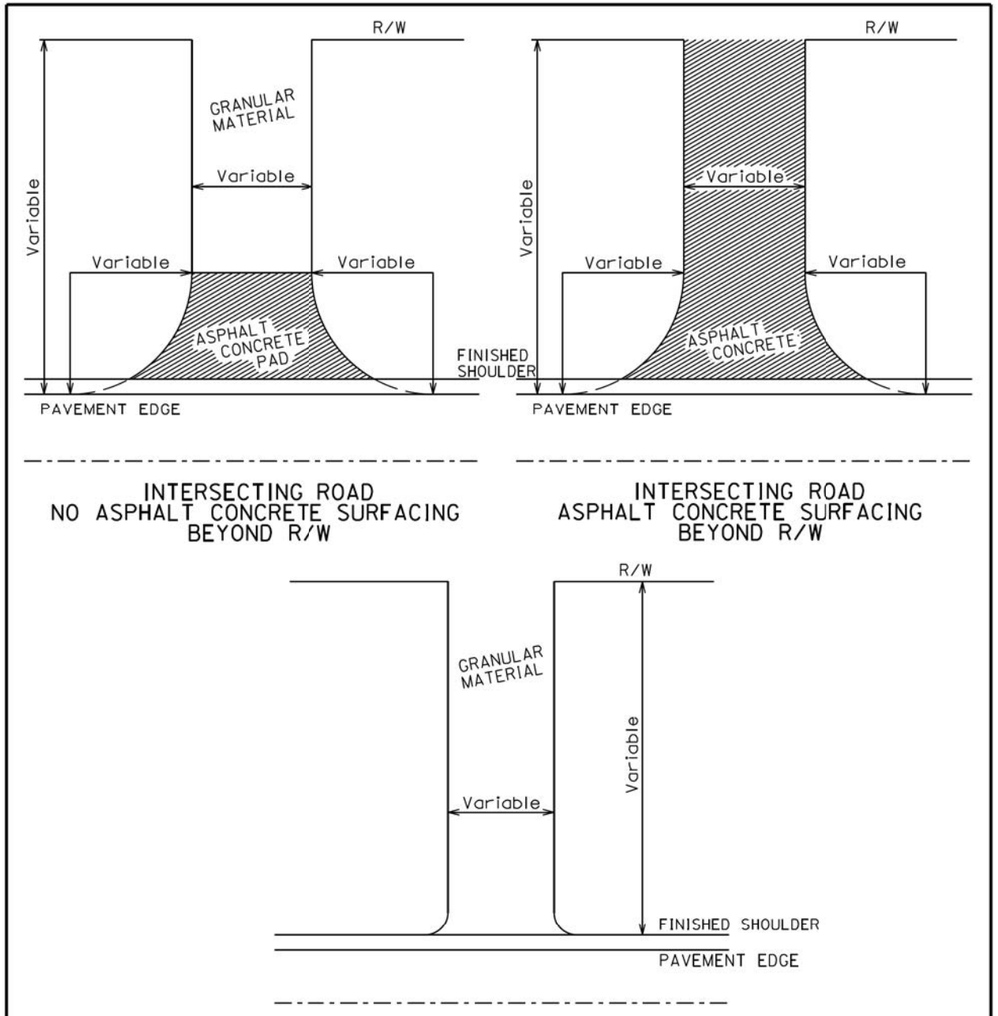


ELEVATION VIEW

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.



INTERSECTING ROAD
NO ASPHALT CONCRETE SURFACING
BEYOND R/W

INTERSECTING ROAD
ASPHALT CONCRETE SURFACING
BEYOND R/W

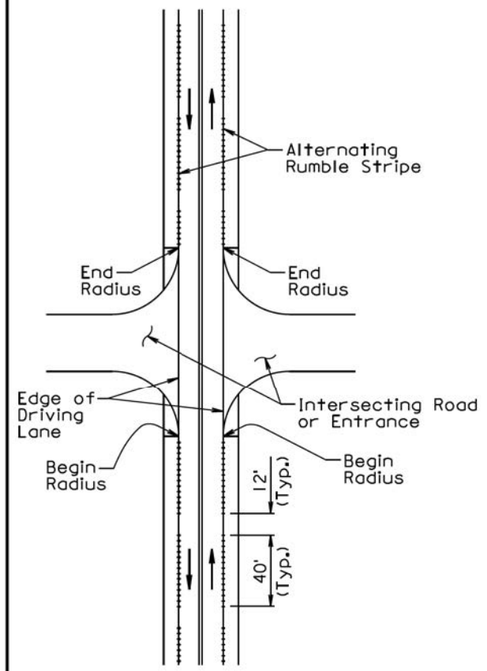
ENTRANCE

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

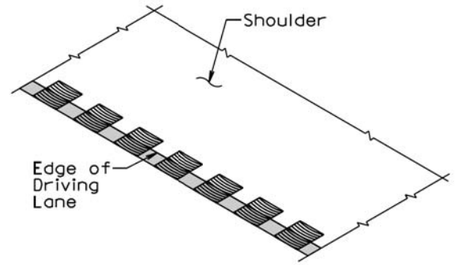
ROADWAY WITH SHOULDER

March 31, 2000

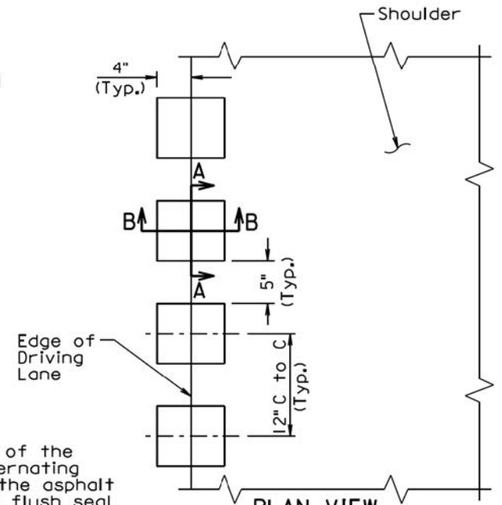
Published Date: 4th Qtr. 2015	SDDOT	RESURFACING OF INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 320.11
			Sheet 1 of 1



PLAN VIEW



PERSPECTIVE OF TYPICAL
RUMBLE STRIPE IN ASPHALT CONCRETE



PLAN VIEW
TYPICAL RUMBLE STRIPE
IN ASPHALT CONCRETE

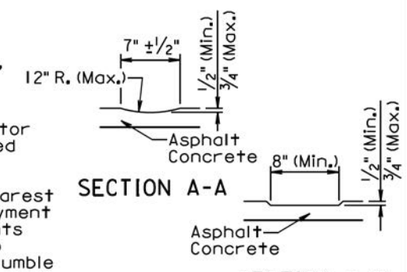
GENERAL NOTES:

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

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

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

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



SECTION A-A

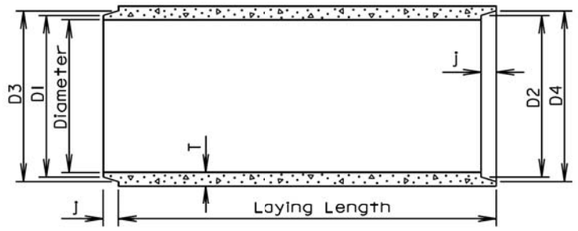
SECTION B-B

June 26, 2011

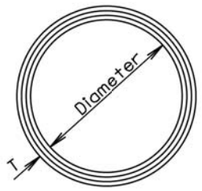
Published Date: 4th Qtr. 2015	SDDOT	8" RUMBLE STRIPE IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.20
			Sheet 1 of 1

TOLERANCES IN DIMENSIONS

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



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

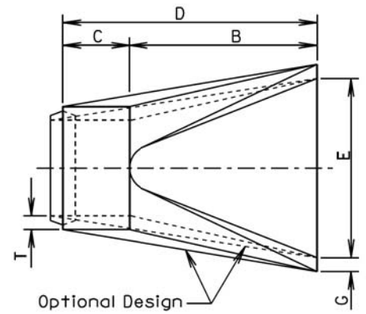
Construction of R. C. P. shall conform to the requirements of Section 990 of the Specifications.

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

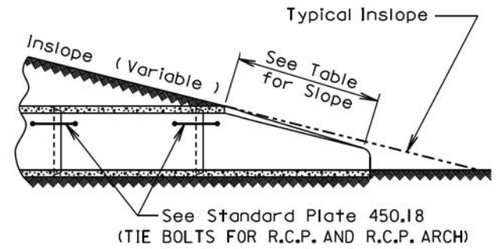
Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 7/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 7/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322	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 7/8
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 7/8	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 7/8	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

June 26, 2015

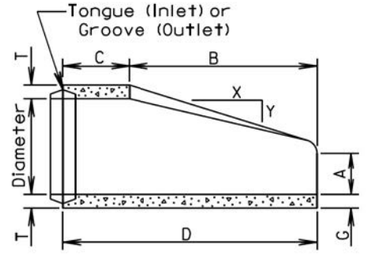
Published Date: 4th Qtr. 2015	SDDOT	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01
			Sheet 1 of 1



TOP VIEW



SLOPE DETAIL

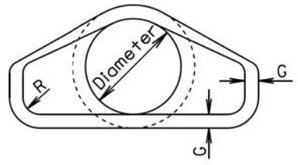


LONGITUDINAL SECTION

GENERAL NOTES:

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

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

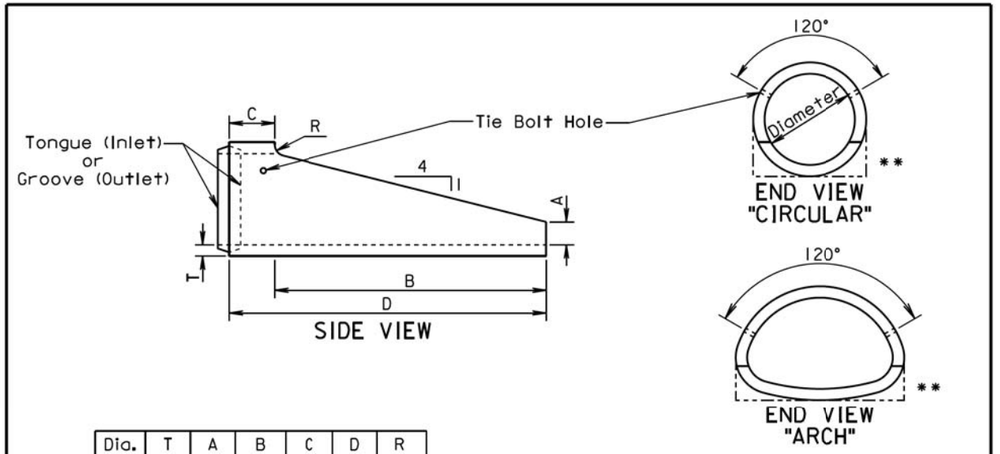


END VIEW

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 7/8	72 7/8	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

June 26, 2015

Published Date: 4th Qtr. 2015	SDDOT	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
			Sheet 1 of 1



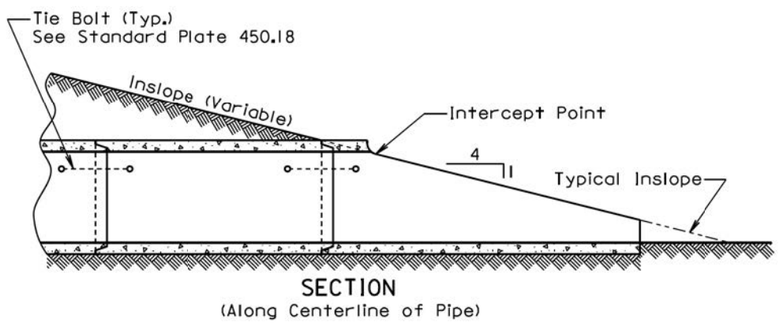
Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	R (in.)
FOR CIRCULAR PIPE						
24	3	6	72	12	84	3
30	3½	7½	90	12	102	3½
FOR ARCH PIPE						
* 24	3	6	48	12	60	3
* 30	3½	7½	60	12	72	3½
* 36	4½	8⅝	66	30	96	0
* 42	4½	10	77¼	18¾	96	0

ALTERNATE

Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	R (in.)
FOR CIRCULAR PIPE						
24	3	9	72	12	84	0
30	3½	11	90	12	102	0
FOR ARCH PIPE						
* 24	3	9	48	12	60	0
* 30	3½	11	60	12	72	0

* Equivalent Diameter of Circular R.C.P.

** Acceptable Flat Bottom Alternate.

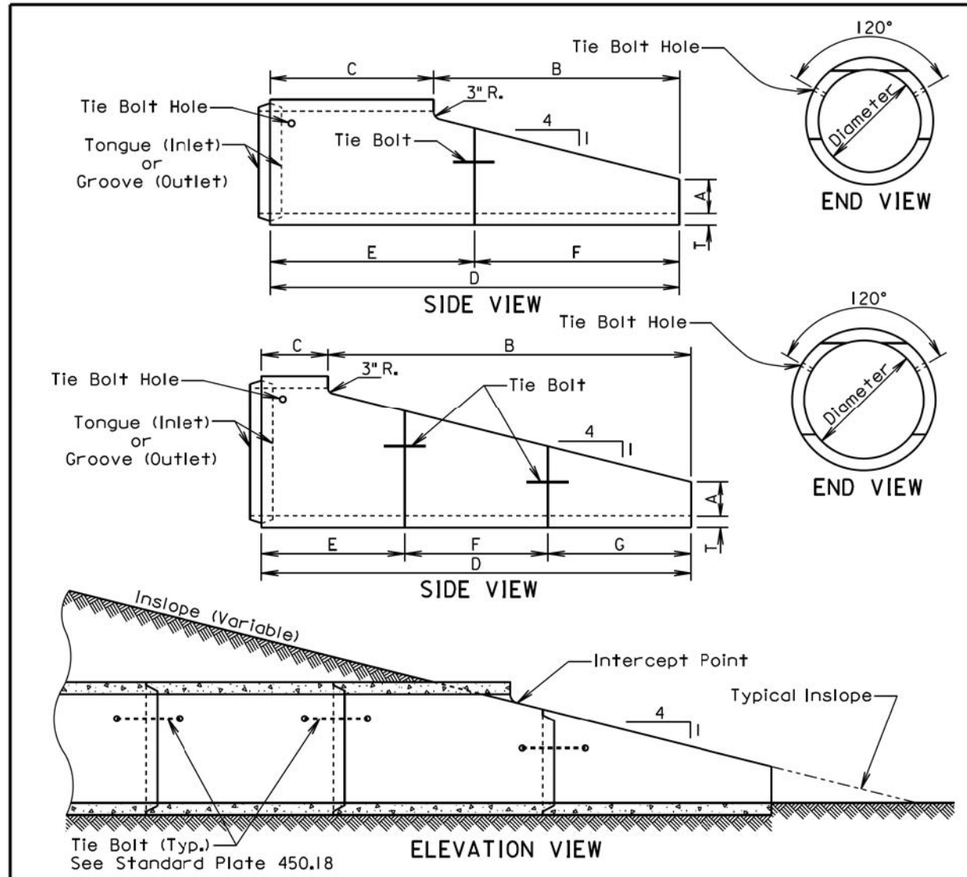


GENERAL NOTE:

The length of concrete pipe shown in the construction plans is between sloped ends.

September 22, 2006

Published Date: 4th Qtr. 2015	SDDOT	R. C. P. SLOPED ENDS	PLATE NUMBER 450.13 Sheet 1 of 1



Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	G (in.)
36	4	12	86.5	57.5	144	72	72	
42	4.5	12	110.5	33.5	144	72	72	
48	5	12	134.5	33.5	168	96	72	
54	5.5	12	158.5	33.5	192	96	96	
60	6	12	182.5	33.5	216	72	72	72

GENERAL NOTE:

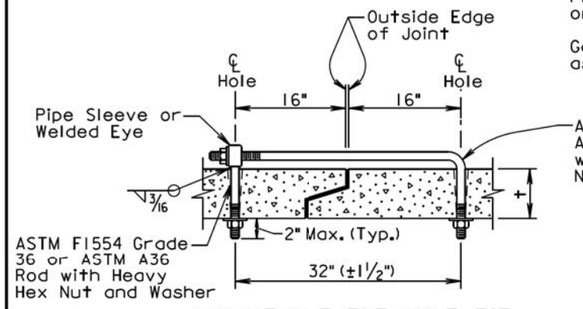
The length of concrete pipe shown in the construction plans is between sloped ends.

If bars are specified in the plans, then the bar assemblies shall be constructed in accordance with Standard Plate 450.15.

August 31, 2013

Published Date: 4th Qtr. 2015	SDDOT	R. C. P. SLOPED ENDS WITH OR WITHOUT BARS	PLATE NUMBER 450.14 Sheet 1 of 1

Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3¼	⅝	¾
3½-6½	¾	1
≥ 7	1	1¼



ADJUSTABLE EYE BOLT TIE

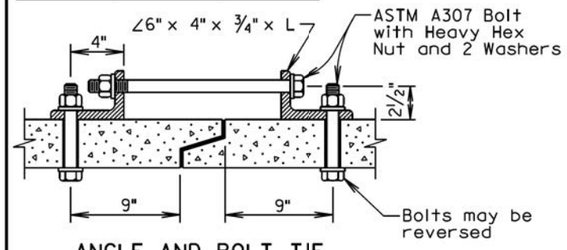
GENERAL NOTES:

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

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

Galvanize adjustible eye bolt tie assembly in accordance with ASTM A153.

Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	¾
> 48	6	1



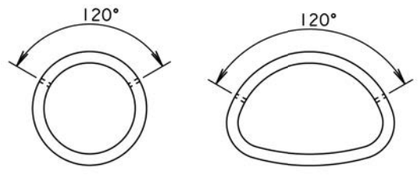
ANGLE AND BOLT TIE

GENERAL NOTES:

Angles shall conform to ASTM A36.

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

Galvanize angles, bolts, nuts, and washers in accordance with ASTM A153.



END VIEW "CIRCULAR"

END VIEW "ARCH"

GENERAL NOTES:

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

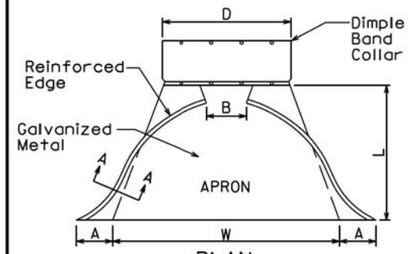
All pipe sections of R.C.P. and R.C.P. Arch shall be tied with tie bolts except for pipe located between drop inlets, manholes, and junction boxes. All pipe sections of pipes that only enter or exit drop inlets, manhole, and junction boxes shall be tied with tie bolts.

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

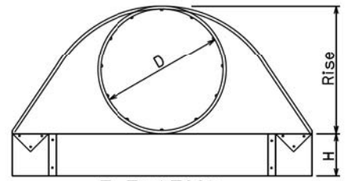
February 28, 2013

Published Date: 4th Qtr. 2015	SDDOT	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	PLATE NUMBER 450.18
			Sheet 1 of 1

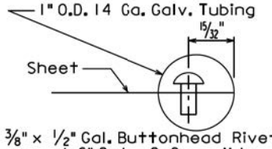
Alternate Type Connector Sections may be used with approval of the Engineer.



PLAN



ELEVATION

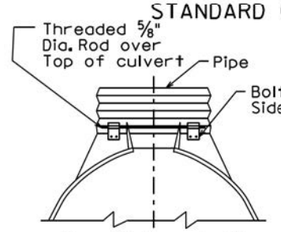


⅜" x ½" Gal. Buttonhead Rivets spaced 6" C. to C. Overall length of rivets=0.78"

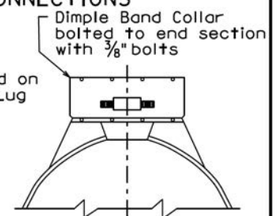
TUBING ATTACHMENT DETAILS SECTION A-A

Dia. D (in.)	Ga.	DIMENSIONS (in.) A	B	H	L	W	Approx. Slope	Body
12	16	6	6	6	21	24	2½:1	1 Pc.
15	16	7	8	6	26	30	2½:1	1 Pc.
18	16	8	10	6	31	36	2½:1	1 Pc.
21	16	9	12	6	36	42	2½:1	1 Pc.
24	16	10	13	6	41	48	2½:1	1 Pc.
30	14	12	16	8	46	60	2½:1	1 Pc.
36	14	14	19	9	51	72	2½:1	2 Pc.
42	12	16	22	11	60	84	2½:1	2 Pc.
48	12	18	27	12	69	90	2¼:1	2 Pc.
54	12	18	30	12	78	102	2:1	3 Pc.
60	12	18	33	12	84	114	1¾:1	3 Pc.
66	12	18	36	12	87	120	1½:1	3 Pc.
72	12	18	39	12	87	126	1⅓:1	3 Pc.
78	12	18	42	12	87	132	1¼:1	3 Pc.
84	12	18	45	12	87	138	1⅛:1	3 Pc.

STANDARD CONNECTIONS

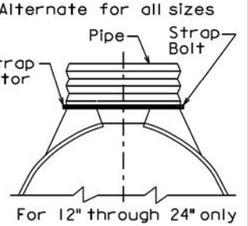


For 30" through 84"

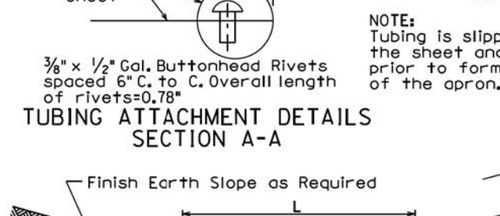


Alternate for all sizes

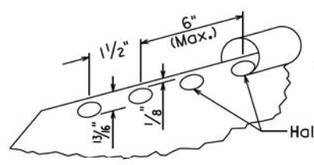
NOTE:
Tubing is slipped over the sheet and rivets or lugs prior to forming operations of the apron.



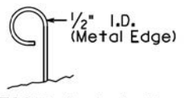
For 12" through 24" only



TYPICAL CROSS-SECTION



SECTION A-A (alternate)



SECTION A-A (alternate)

GENERAL NOTES:

All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be gregter than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by ⅜" Dia. galvanized rivets or bolts.

For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x ¼" for 60" through 72" diameters and 2½" x 2½" x¼" for 78" and 84" diameters. The angles shall be attached by ⅜" diameter galvanized nuts and bolts.

Rivets and Bolts shall be ⅜" Dia. Min. for 10 Ga. and 12 Ga. sheet, and ⅝" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

March 31, 2000

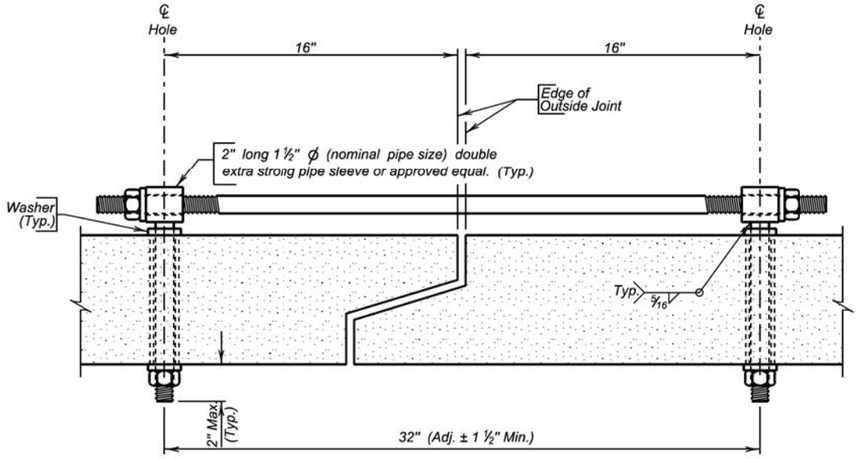
Published Date: 4th Qtr. 2015	SDDOT	C.M.P. FLARED ENDS	PLATE NUMBER 450.35
			Sheet 1 of 1

PLOT SCALE - 1:200

PLOT NAME - 8

FILE - ...\45018_8_45035.DGN

-PLOTTED FROM - TRAB17882



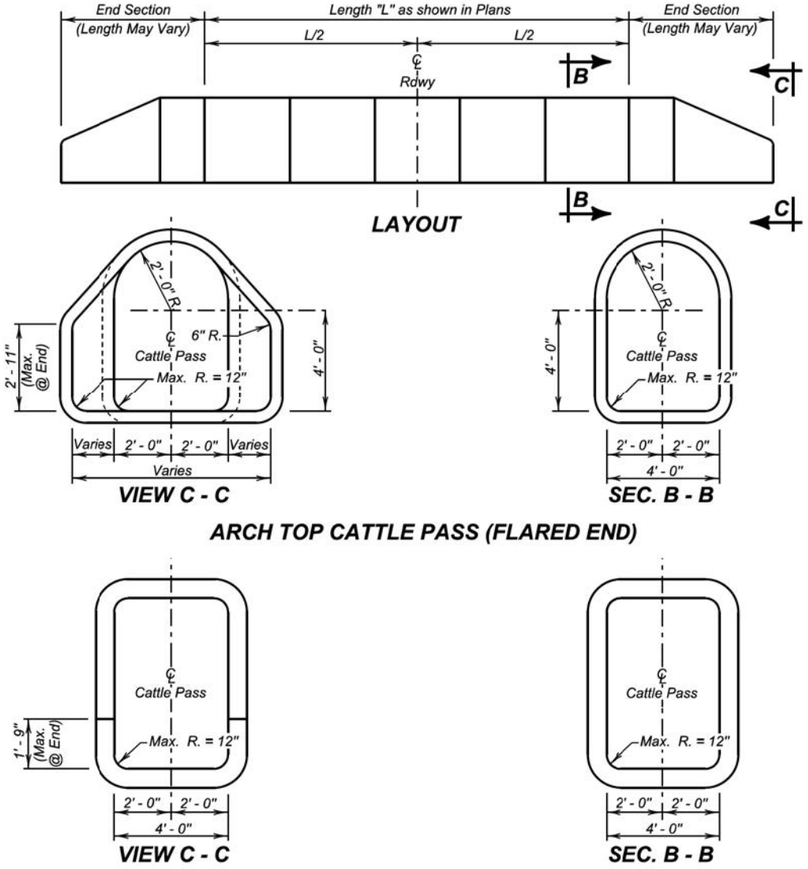
TIE BOLT ASSEMBLY

GENERAL NOTES:

1. All holes for tie bolts shall be cast-in-place,16 inches from outside edge of joint. Cast in inserts or sleeves, if used, shall be made of a corrosion resistant material.
2. Ties shall be 1 inch Ø and conform to the requirements of ASTM A36. Nuts shall be heavy hex in conformance with ASTM A563. Washers shall conform to ASTM F436, Type 1. The welded pipe sleeve shall conform to ASTM A53, Grade B.
3. Welding and weld inspection shall be in conformance with AWS/ANSI D1.1 - (Current Year) Structural Welding Code - Steel.
4. Tie Bolt Assembly shall be galvanized in accordance with ASTM A153.
5. Tie Bolt Assembly details may vary from that shown, but alternate tie bolt assemblies are subject to testing to demonstrate equal strength. Submit details, through proper channels, to the Office of Bridge Design for approval.
6. All costs for furnishing and installing the precast box culvert tie bolt assembly shall be incidental to the contract unit price per Foot for "Precast Concrete Box Culvert, Furnish".

December 23,2012

Published Date: 4th Qtr. 2015	SDDOT	PRECAST BOX CULVERT TIE BOLT ASSEMBLY DETAILS	PLATE NUMBER 560.01
			Sheet 1 of 1



ARCH TOP CATTLE PASS (FLARED END)

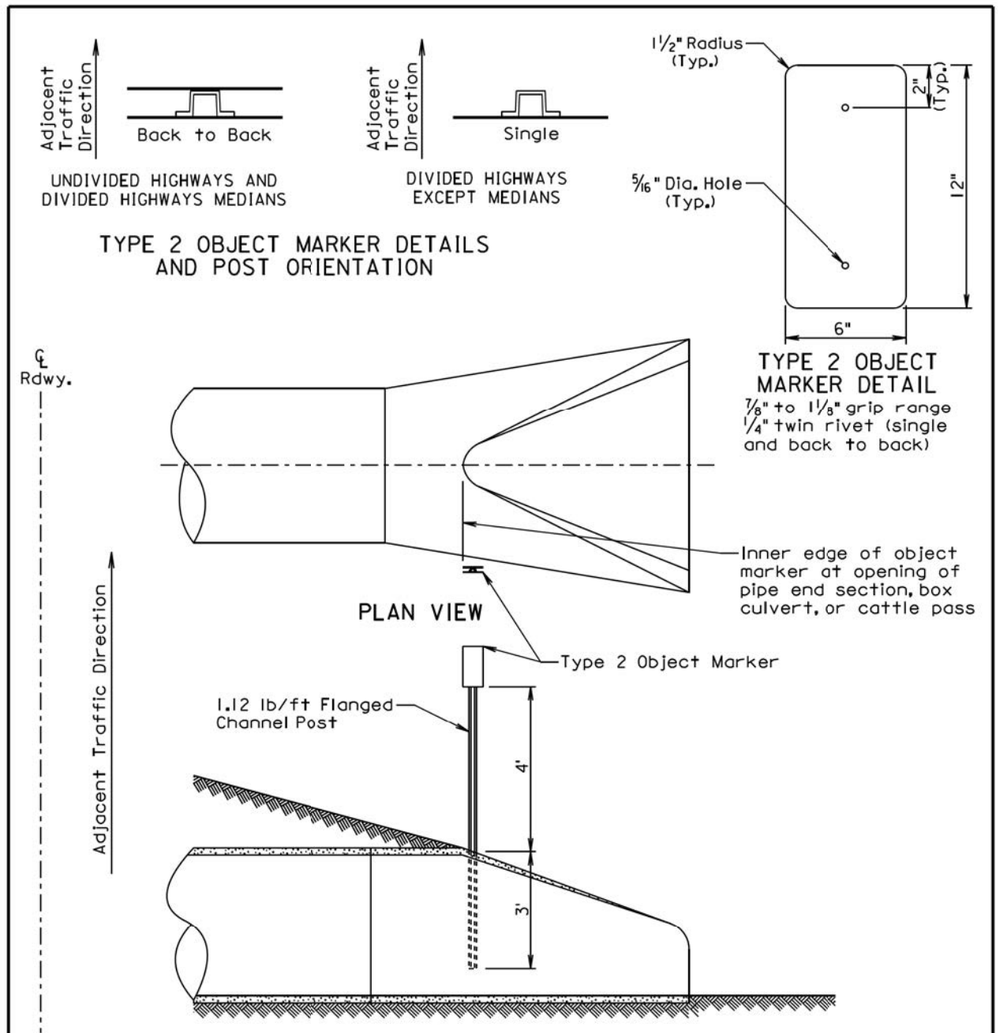
FLAT TOP CATTLE PASS (STRAIGHT END)

GENERAL NOTES:

1. Unless otherwise specified elsewhere in the plans, cattle pass may be either cast-in-place or precast. For cast-in-place cattle pass details, see Standard Plate 560.32.
2. Precast cattle pass shall be on the current approved list available through proper channels from the SDDOT Office Of Bridge Design. To qualify for addition to the approved list, submit a checked design, done by South Dakota Registered Professional Engineers, and shop plans to the Office of Bridge Design for approval. Design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications.
3. The provisions of Sections 450 and 990 of the Specifications pertaining to Reinforced Concrete Pipe shall apply to the furnishing and installing of the precast cattle pass.
4. Shapes other than that shown will be allowed. Submit details to the Office of Bridge Design for approval.
5. Minimum section length shall be 4 feet.
6. Lift holes shall be plugged with a grout in conformance with Section 460.2 K. of the Specifications.
7. Each section shall be tied to adjacent sections with tie bolts conforming to Standard Plate 560.01.
8. All costs associated with furnishing and installing the cattle pass, whether cast-in-place or precast, shall be incidental to the corresponding furnish and install bid items for "4' x 6' Reinforced Concrete Cattle Pass" and "4' x 6' Reinforced Concrete Cattle Pass End Section".

June 26, 2015

Published Date: 4th Qtr. 2015	SDDOT	PRECAST 4' X 6' CATTLE PASS	PLATE NUMBER 560.30
			Sheet 1 of 1



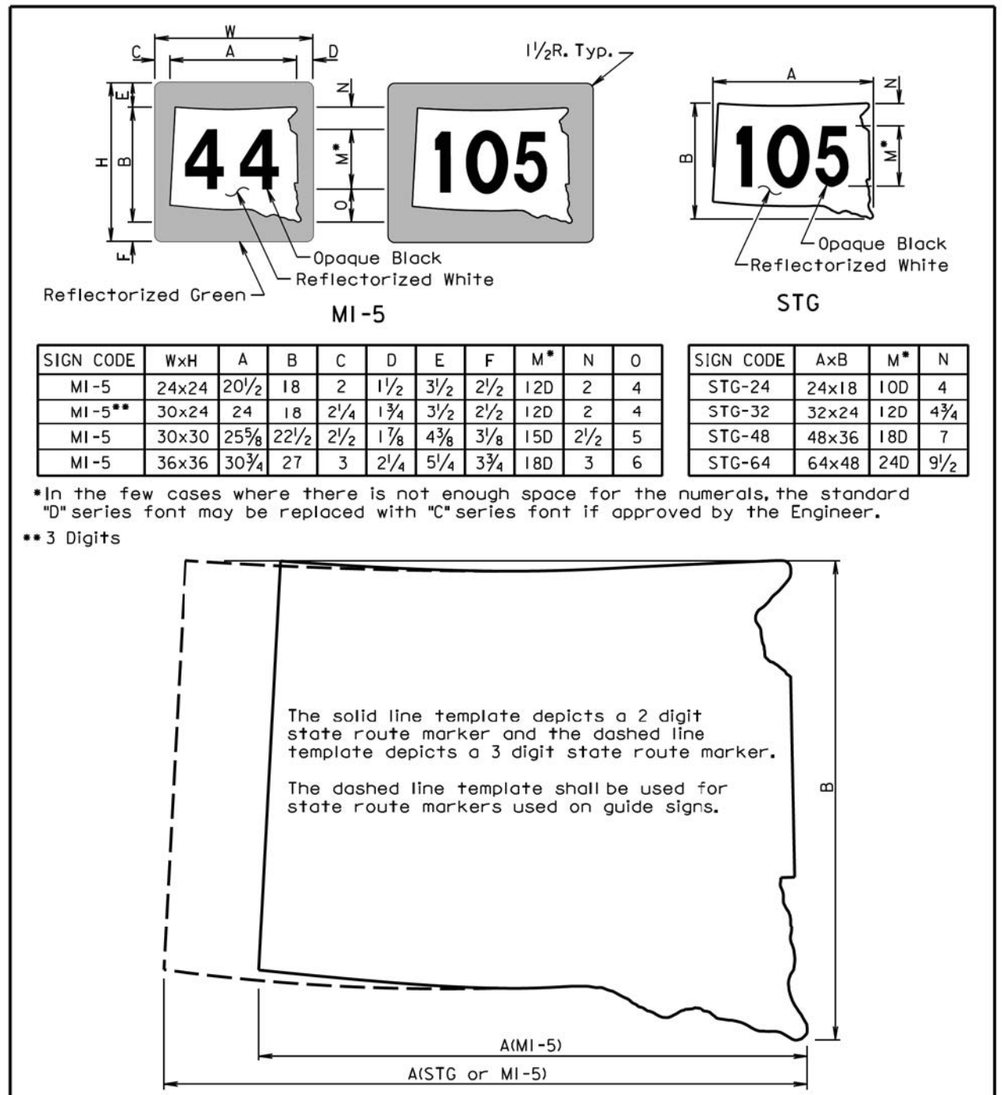
GENERAL NOTES:

The type 2 object markers and the 1.12 lb/ft flanged channel posts shall be in conformance with Specifications Section 982.2 J.

Payment for the type 2 object markers shall be in conformance with Specification Section 632.5 B.

June 26, 2015

Published Date: 4th Qtr. 2015	SDDOT	TYPE 2 OBJECT MARKER INSTALLATION AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES	PLATE NUMBER 632.10 Sheet 1 of 1



SIGN CODE	WxH	A	B	C	D	E	F	M*	N	O
MI-5	24x24	20½	18	2	1½	3½	2½	12D	2	4
MI-5**	30x24	24	18	2¼	1¾	3½	2½	12D	2	4
MI-5	30x30	25⅝	22½	2½	1⅞	4⅜	3⅛	15D	2½	5
MI-5	36x36	30¾	27	3	2¼	5¼	3¾	18D	3	6

SIGN CODE	AxB	M*	N
STG-24	24x18	10D	4
STG-32	32x24	12D	4¾
STG-48	48x36	18D	7
STG-64	64x48	24D	9½

*In the few cases where there is not enough space for the numerals, the standard "D" series font may be replaced with "C" series font if approved by the Engineer.

** 3 Digits

TEMPLATE FOR STATE ROUTE MARKER

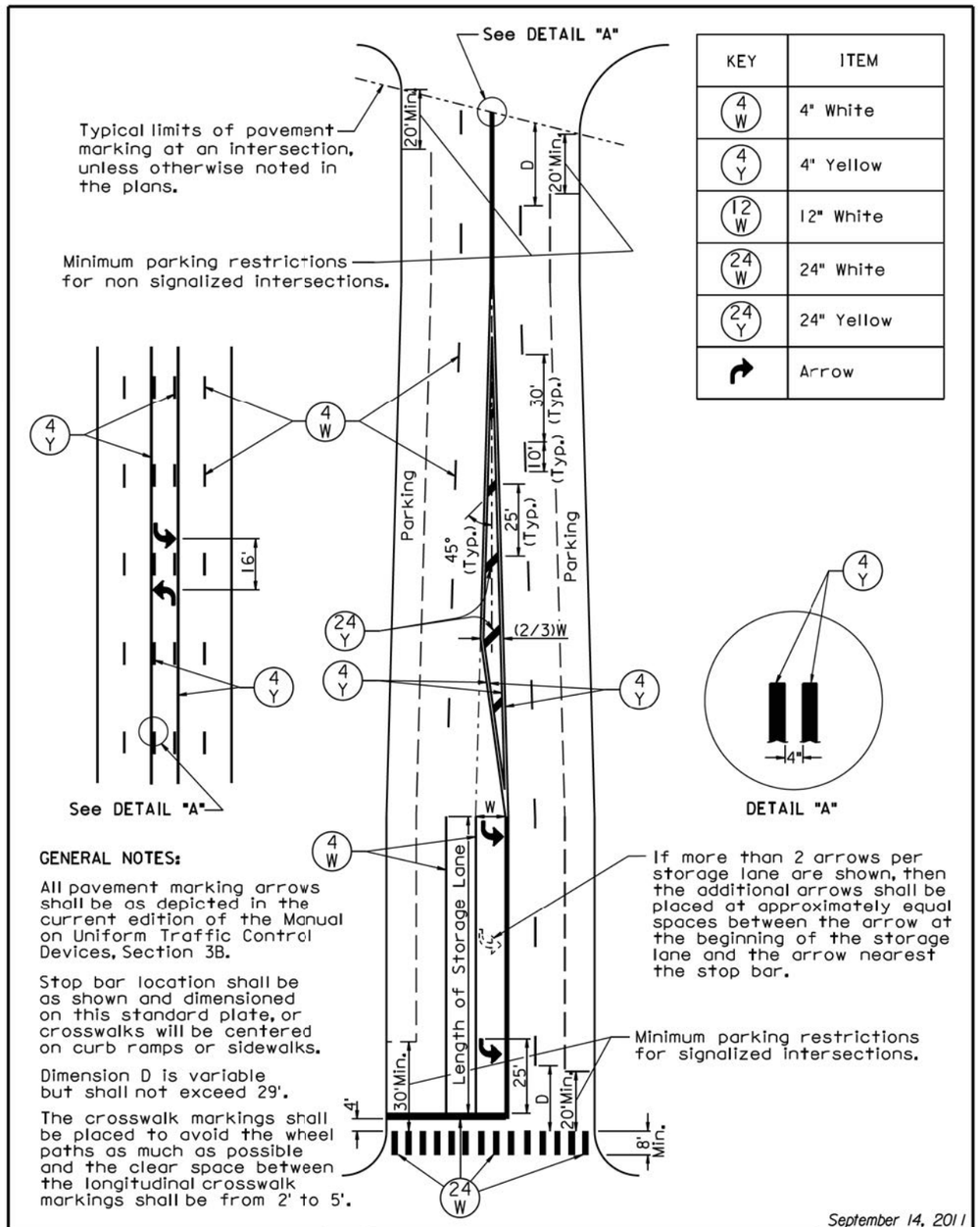
GENERAL NOTES:

The unit for all dimensions shown is inches.

Numerals shall be "D" series font for all state route markers except as noted above.

December 23, 2003

Published Date: 4th Qtr. 2015	SDDOT	STATE ROUTE MARKERS	PLATE NUMBER 632.20 Sheet 1 of 1



KEY	ITEM
4 W	4" White
4 Y	4" Yellow
12 W	12" White
24 W	24" White
24 Y	24" Yellow
↱	Arrow

GENERAL NOTES:

All pavement marking arrows shall be as depicted in the current edition of the Manual on Uniform Traffic Control Devices, Section 3B.

Stop bar location shall be as shown and dimensioned on this standard plate, or crosswalks will be centered on curb ramps or sidewalks.

Dimension D is variable but shall not exceed 29'.

The crosswalk markings shall be placed to avoid the wheel paths as much as possible and the clear space between the longitudinal crosswalk markings shall be from 2' to 5'.

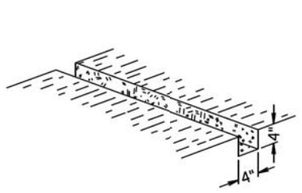
If more than 2 arrows per storage lane are shown, then the additional arrows shall be placed at approximately equal spaces between the arrow at the beginning of the storage lane and the arrow nearest the stop bar.

Minimum parking restrictions for signalized intersections.

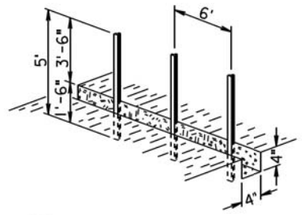
September 14, 2011

Published Date: 4th Qtr. 2015	SDDOT	**PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE**	PLATE NUMBER 633.01 Sheet 1 of 1

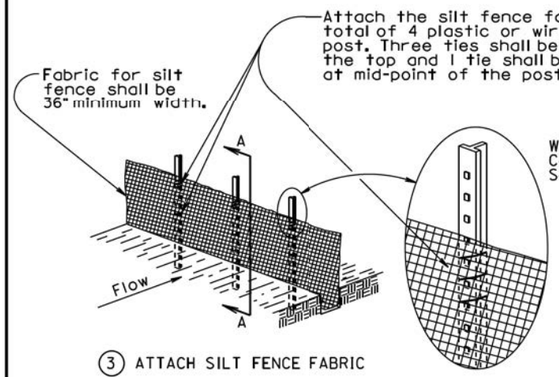
MANUAL HIGH FLOW SILT FENCE INSTALLATION



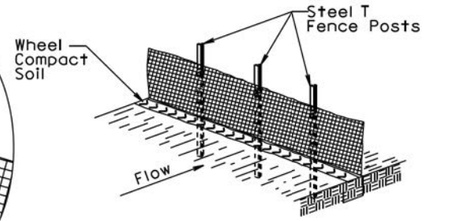
① EXCAVATE TRENCH



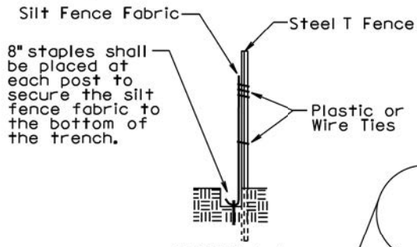
② DRIVE STEEL T FENCE POSTS



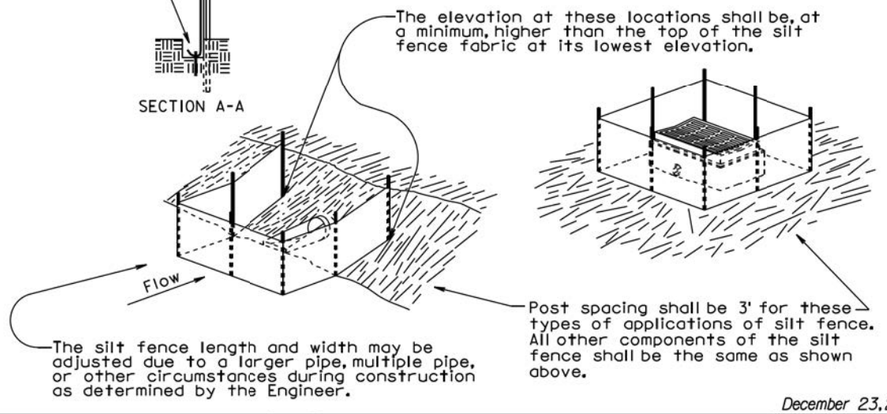
③ ATTACH SILT FENCE FABRIC



④ BACKFILL TRENCH AND WHEEL COMPACT SOIL



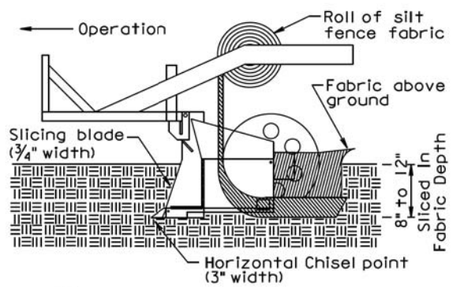
SECTION A-A



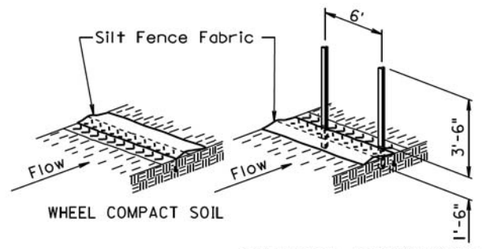
December 23,2003

Published Date: 4th Qtr. 2015	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 1 of 2

MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION

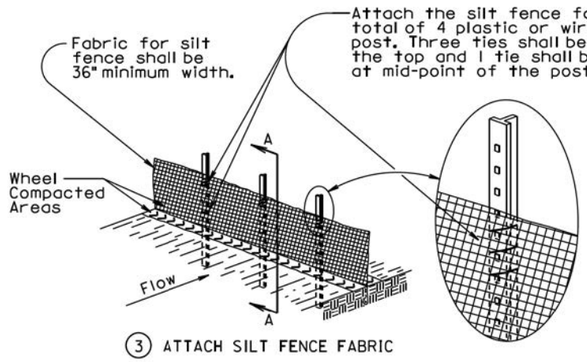


① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.

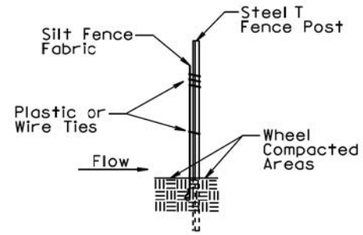


DRIVE STEEL T FENCE POSTS

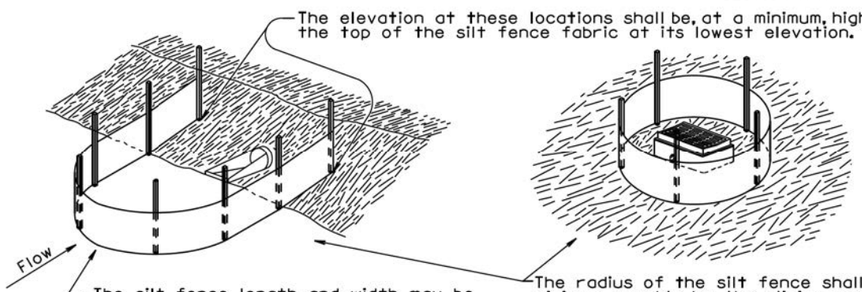
② WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



③ ATTACH SILT FENCE FABRIC



SECTION A-A

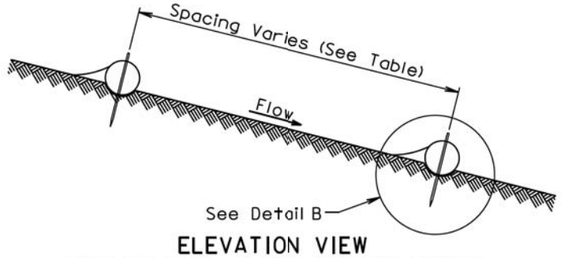


GENERAL NOTE:

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end shall be provided on top of the extra length of silt fence fabric to prevent underflow.

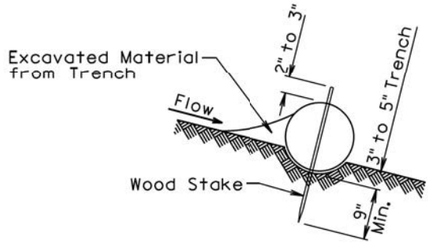
December 23,2003

Published Date: 4th Qtr. 2015	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 2 of 2

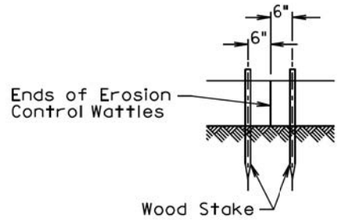


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

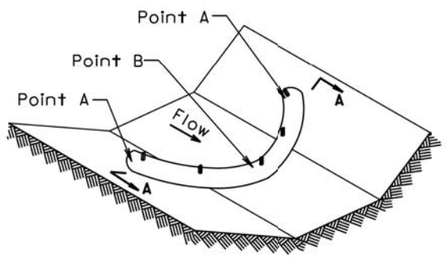
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



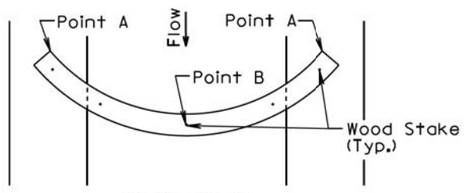
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

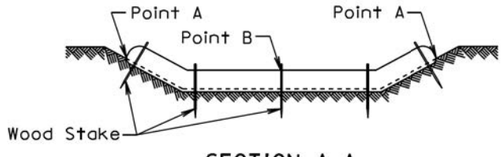


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

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



SECTION A-A

December 23, 2004

Published Date: 4th Qtr. 2015	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

GENERAL NOTES:

At cut or fill slope installations, wattles shall be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor shall dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes shall be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes shall be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles shall be 3' to 4'.

Where installing running lengths of wattles, the Contractor shall butt the second wattle tightly against the first and shall not overlap the ends. See Detail C.

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than ½". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

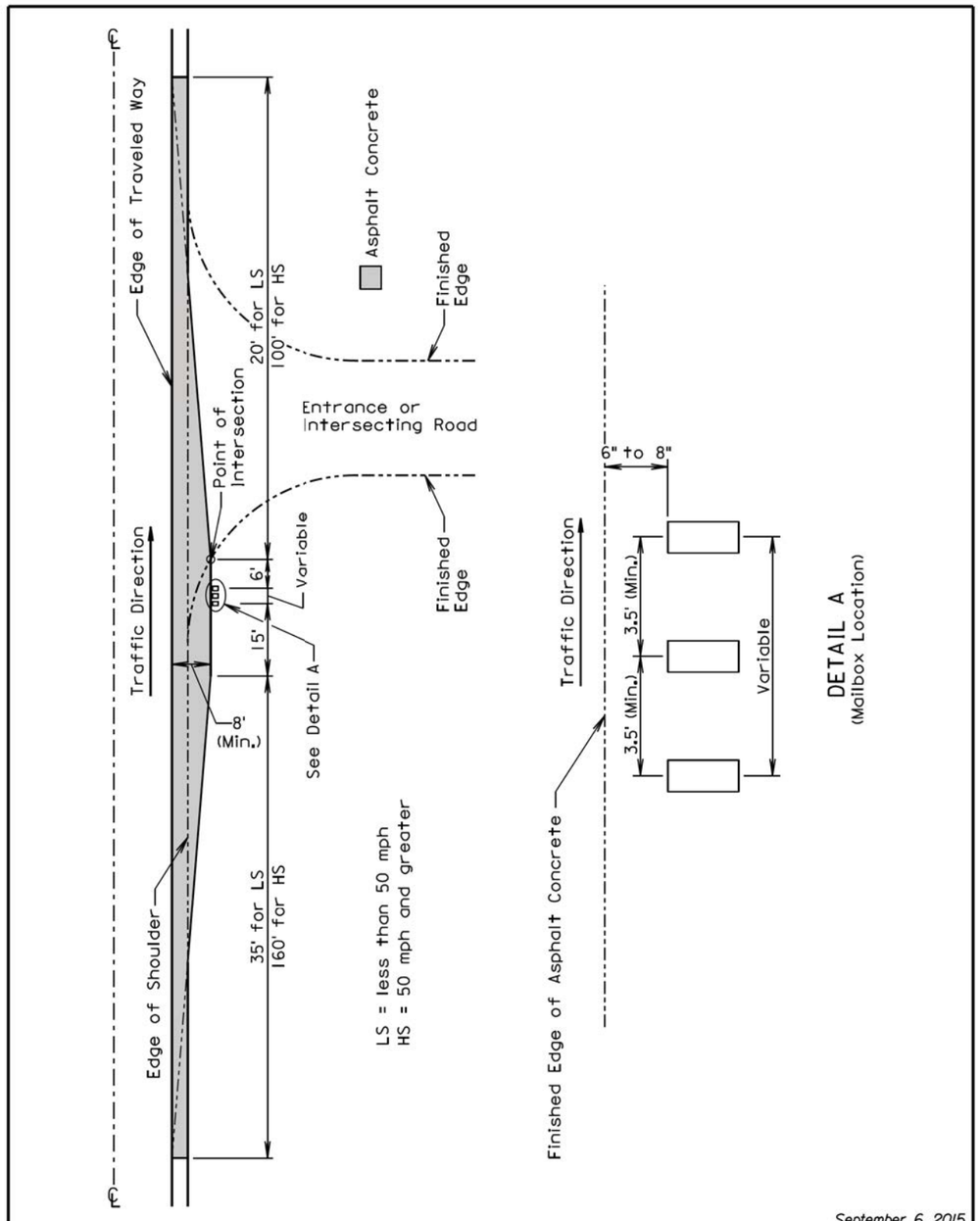
Sediment removal, disposal, or necessary shaping shall be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials shall be incidental to the contract unit price per foot for the corresponding erosion control wattle bid item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

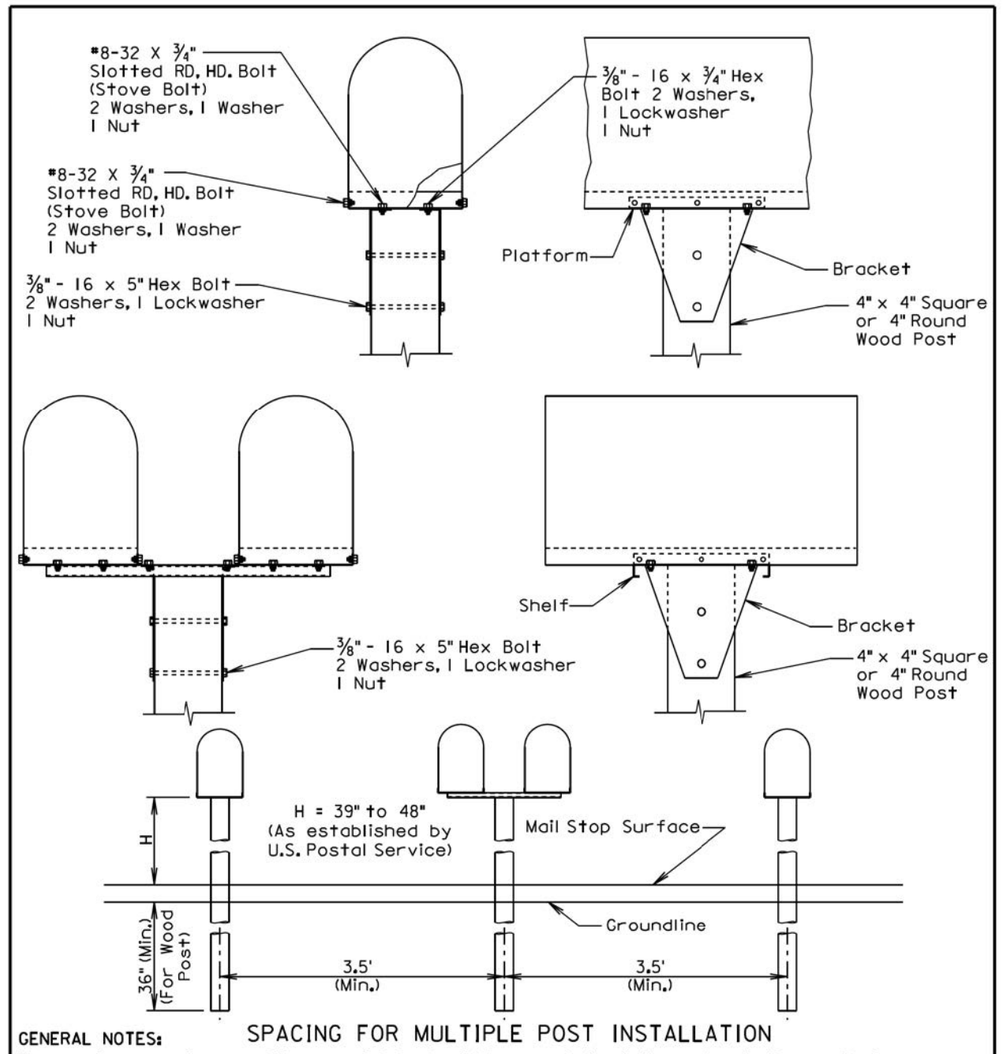
December 23, 2004

Published Date: 4th Qtr. 2015	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2



September 6, 2015

Published Date: 4th Qtr. 2015	SDDOT	MAILBOX TURNOUT	PLATE NUMBER 900.01
			Sheet 1 of 1



SPACING FOR MULTIPLE POST INSTALLATION

GENERAL NOTES:

The post support assemblies provided should be consistant throughout the project.

Single and double mailboxes may be in any sequence.

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

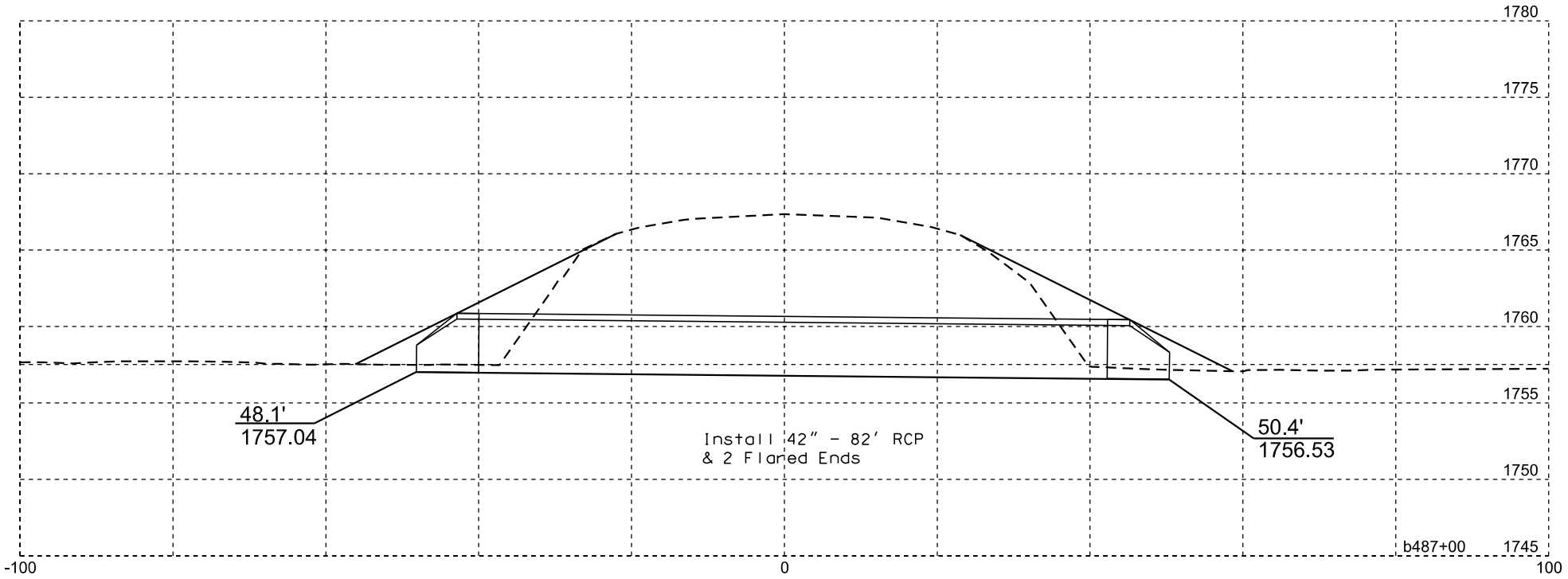
Alternate mailbox support assemblies shall be approved by the Engineer prior to installation. The Contractor shall provide the Engineer written certification that the mailbox support assembly has met the crash testing requirements and will be installed in accordance with the manufacturer's installation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

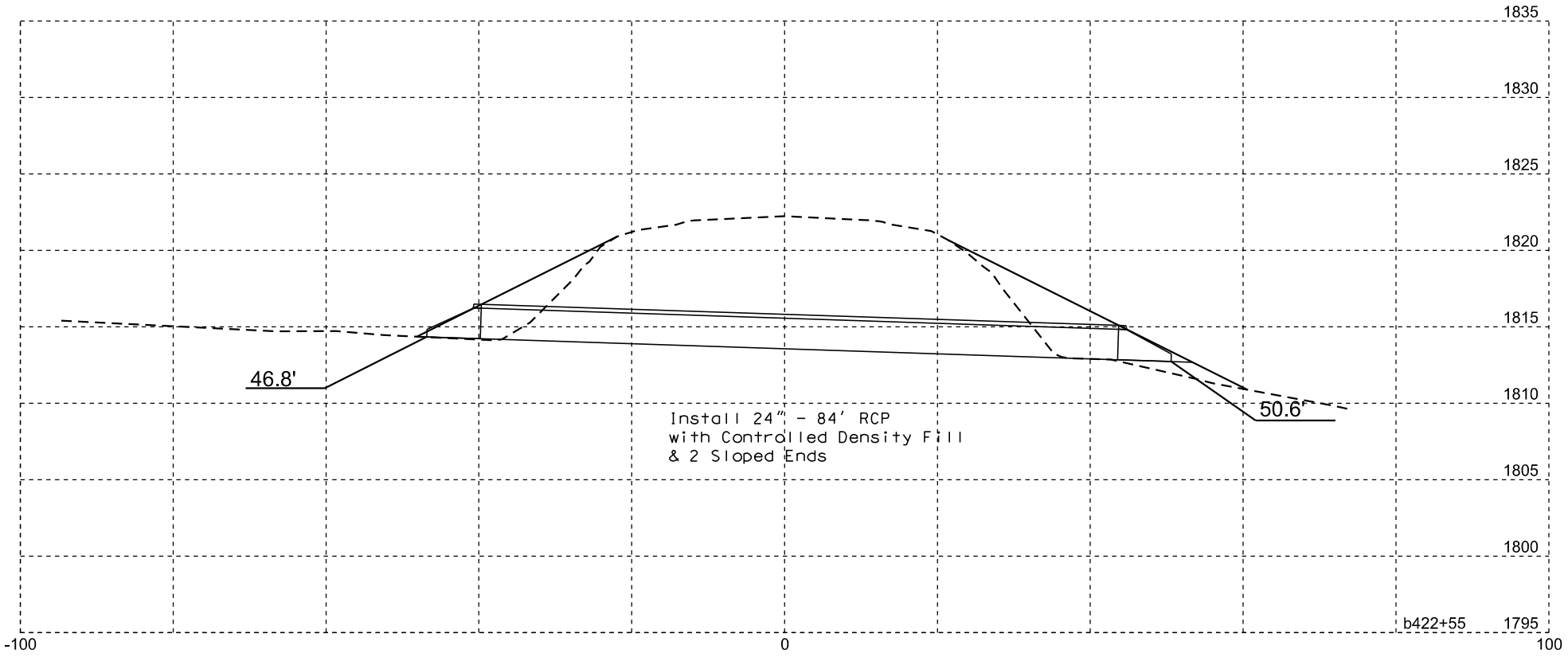
September 6, 2013

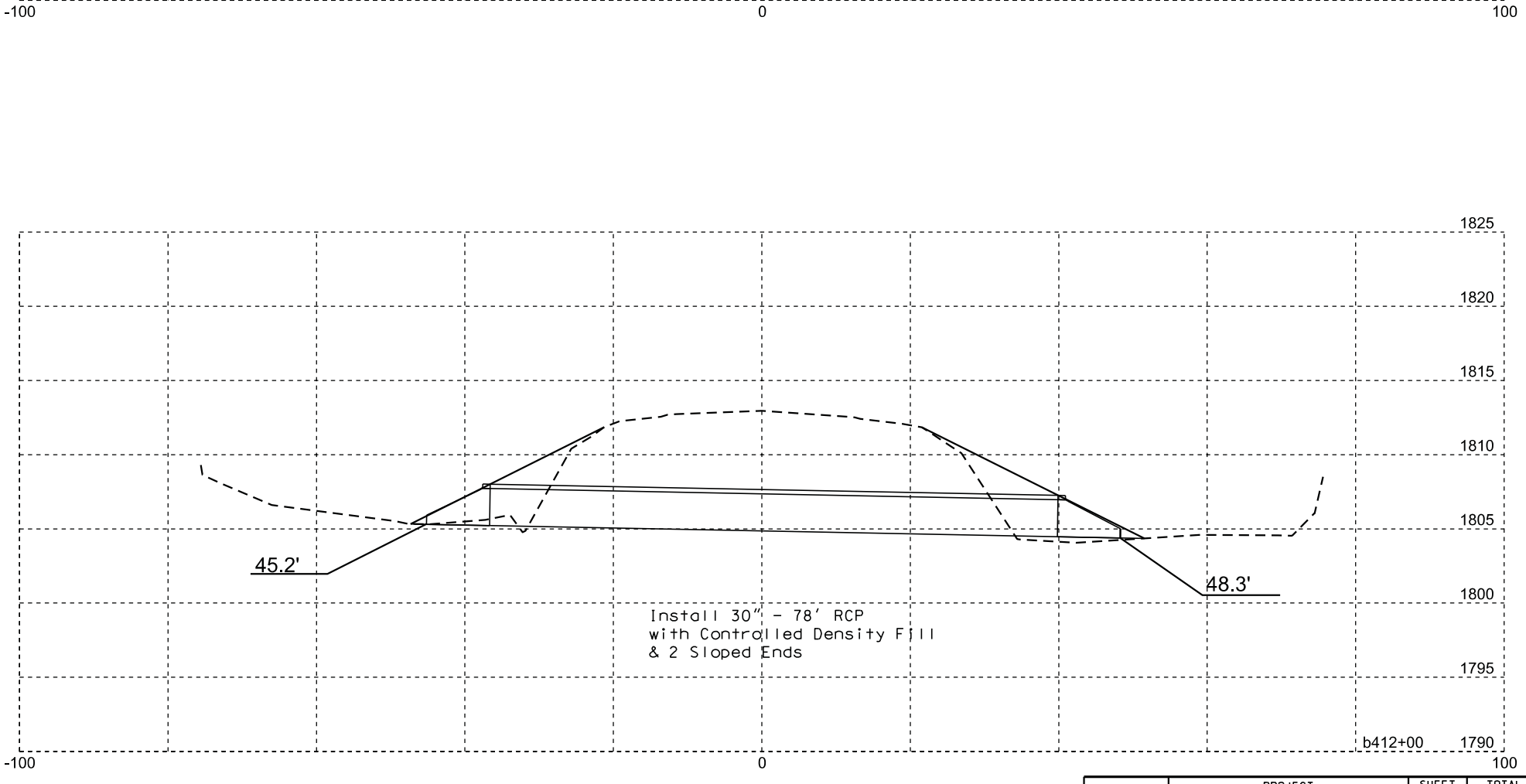
Published Date: 4th Qtr. 2015	SDDOT	SINGLE AND DOUBLE MAILBOX ASSEMBLIES	PLATE NUMBER 900.02
			Sheet 1 of 1

March 31, 2000

Published Date: 4th Qtr. 2015	SDDOT	MAILBOX SUPPORT HARDWARE	PLATE NUMBER 900.03 Sheet 1 of 1

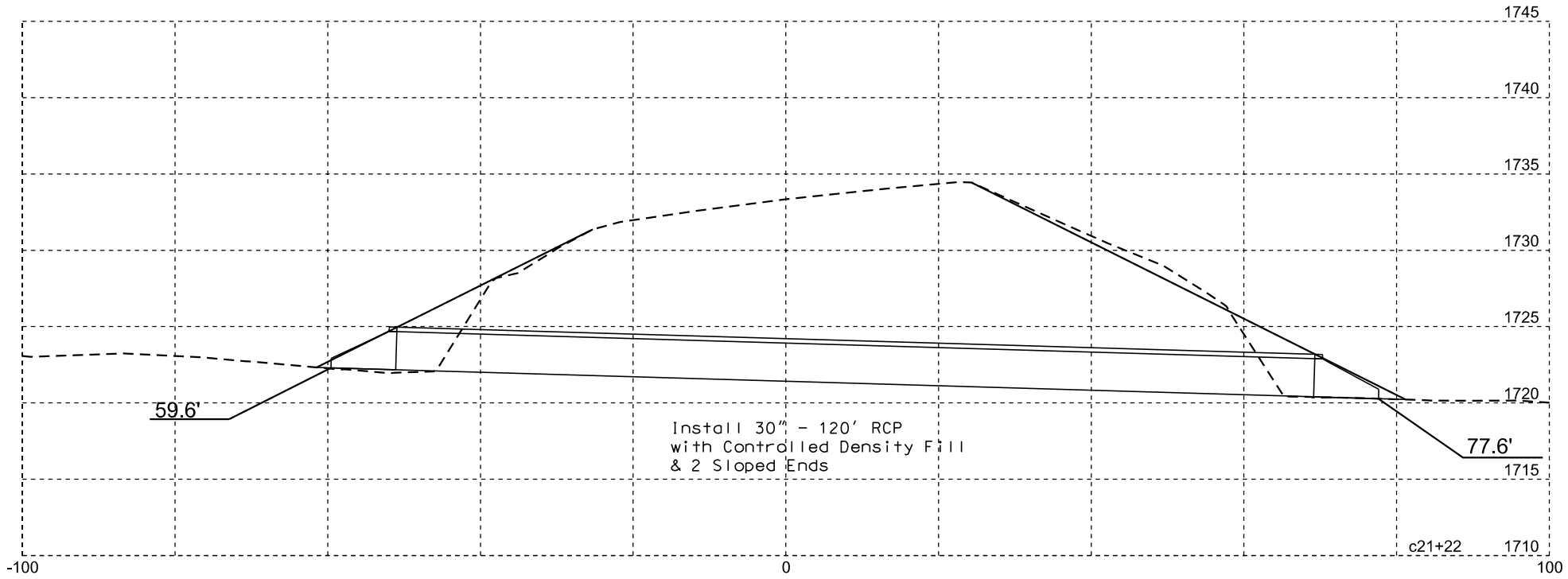






Plotting Date: 12/10/2015

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	72	73



Plotting Date: 12/10/2015

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0020(122)383	73	73