



Planning & Engineering
Office of Project Development
700 East Broadway Avenue
Pierre, South Dakota 57501-2586
O: 605.773.3275
dot.sd.gov

September 11, 2026

To Whom it May Concern,

Beginning with the 10/7/2026 letting, the SDDOT will be using the new Electronic Standard Specifications for Roads and Bridges, 10-7-26 Version. The Standard Specifications for Roads and Bridges is available for download and viewing at <https://dot.sd.gov/doing-business/contractors/standard-specifications> . A printed version of the Standard Specifications for Roads and Bridges will not be provided.

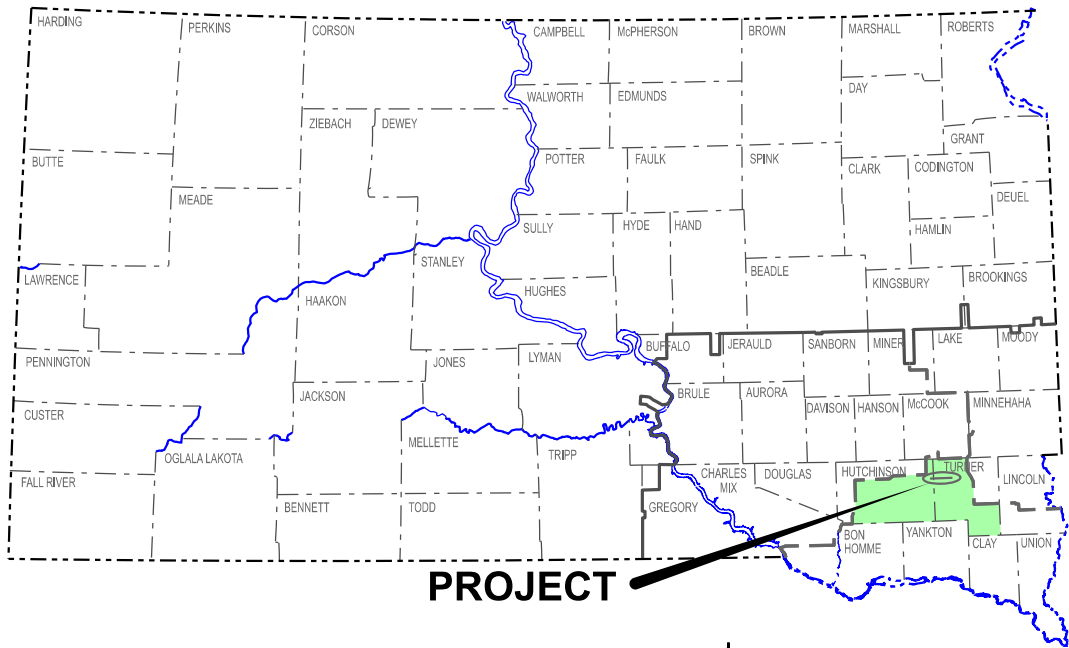
A revised Buy America specification is in effect beginning with the 10/7/26 letting, which aligns with the expiration of the Federal Manufactured Products General Waiver. Contractors should be aware that new provisions for manufactured products, along with updates to material classifications, documentation requirements, and compliance procedures, are included in Section 6.9 of the Standard Specifications (10/07/2026 version). All contractors and suppliers are strongly encouraged to review the updated specification in full. Contractors are encouraged to attend the Buy America Informational Webinar being put on by the SDDOT and AGC. Information on the webinar can be found at:

<https://dot.sd.gov/doing-business/contractors/webinars/>

FHWA has updated the FHWA-1273 commonly known as the "Pink Sheets". The new FHWA-1273 will be incorporated into all contracts awarded after 10/7/26. Additional information regarding the updated FHWA-1273 can be found at:

<https://www.fhwa.dot.gov/construction/cqit/form1273.cfm>

Sincerely,
SDDOT – Bid Letting Office



PROJECT

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED
PROJECT NH-P 0044(232)377
SD HIGHWAY 44
HUTCHINSON &
TURNER COUNTIES

COLD MILLING ASPHALT CONCRETE,
ASPHALT CONCRETE RESURFACING,
GRADING FOR TURN LANES,
CULVERT REPLACEMENTS, C.I.P.P. LINER,
BOX CULVERT & PAVEMENT MARKING

PCN 06R5



Plotting Date: 3/17/2026

PROJECT	SHEET	TOTAL SHEETS
NH-P 0044(232)377	1	83

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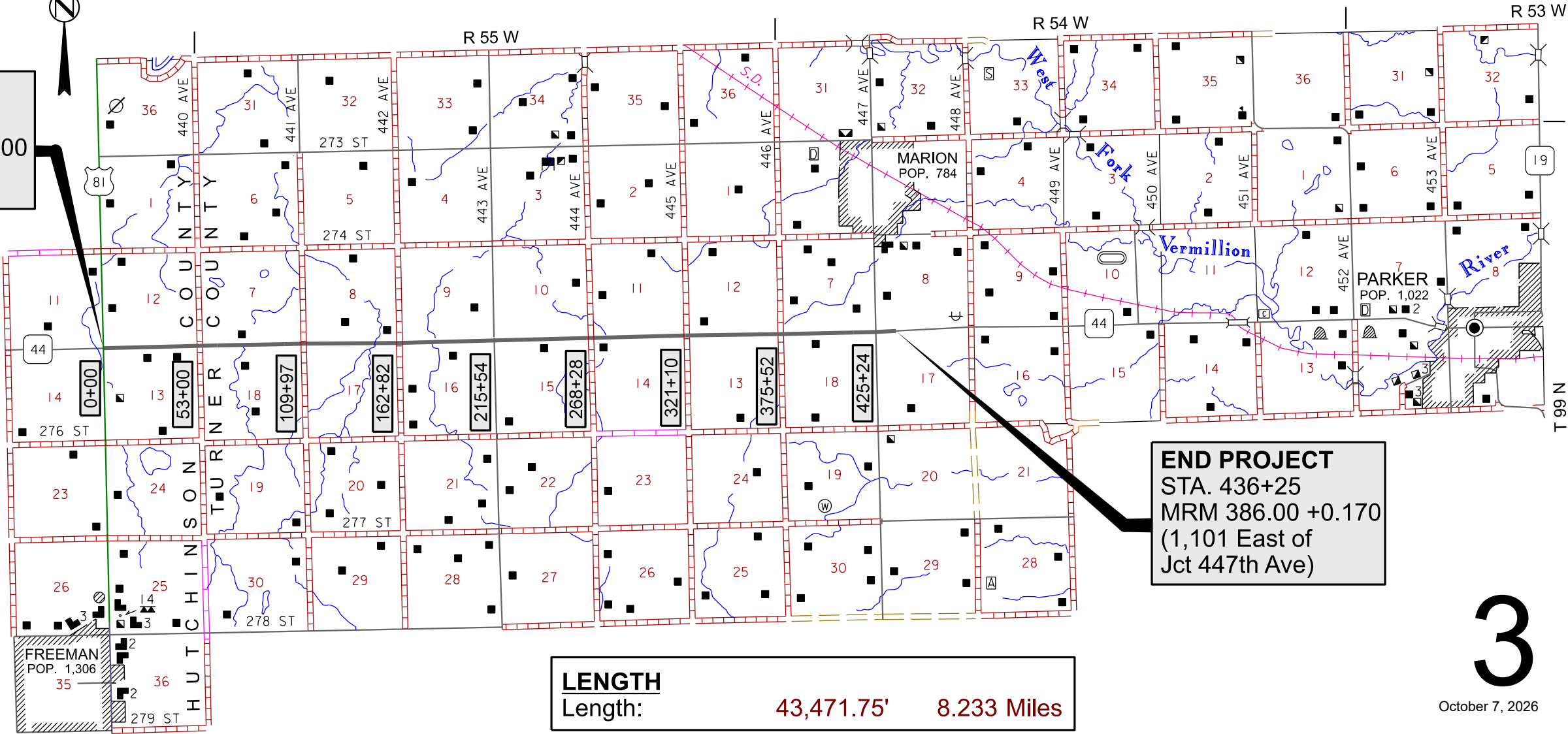
BEGIN PROJECT
STA. 0+00
MRM 377.89 + 0.000
(At Jct with US81)

DESIGN DESIGNATION

ADT(2024)	1,858
ADT(2044)	2,974
DHV	343
D	51%
T DHV	8.3%
T ADT	18.2%
V	65 MPH

STORM WATER PERMIT

Receiving Waters:
Unnamed Creeks
Area Disturbed: 3 Acres
Total Project Area: 200 Acres
Latitude: 43.4009
Longitude: -97.4208



END PROJECT
STA. 436+25
MRM 386.00 +0.170
(1,101 East of
Jct 447th Ave)

LENGTH

Length: 43,471.75' 8.233 Miles

3

October 7, 2026

ESTIMATE OF QUANTITIES

REV. 09/04/2026 SBS

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3210	Construction Staking	0.253	Mile
009E3230	Grade Staking	0.380	Mile
009E3260	Miscellaneous Staking	Lump Sum	LS
009E3280	Slope Staking	0.253	Mile
009E3290	Structure Staking	1	Each
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
009E3320	Checker	Lump Sum	LS
009E4200	Construction Schedule, Category II	Lump Sum	LS
110E0130	Remove Traffic Sign	8	Each
110E0135	Remove Delineator	16	Each
110E0500	Remove Pipe Culvert	594	Ft
110E0510	Remove Pipe End Section	14	Each
110E1010	Remove Asphalt Concrete Pavement	1,716.0	SqYd
110E1020	Remove Asphalt Concrete Pavement	373.0	CuYd
110E1700	Remove Silt Fence	33	Ft
110E7150	Remove Sign for Reset	1	Each
120E0010	Unclassified Excavation	6,636	CuYd
120E0100	Unclassified Excavation, Digouts	388	CuYd
120E0600	Contractor Furnished Borrow Excavation	3,124	CuYd
120E2000	Undercutting	3,149	CuYd
120E6100	Water for Embankment	40.0	MGal
120E6200	Water for Granular Material	56.0	MGal
210E0100	Shoulder Clearing	16.5	Mile
210E1000	Shoulder Preparation	0.100	Mile
230E0010	Placing Topsoil	1,005	CuYd
260E1010	Base Course	4,910.0	Ton
* 260E6000	Granular Material, Furnish	3,089.0	Ton
* 270E0200	Blend, Haul, and Stockpile Granular Material	6,178.0	Ton
320E0032	PG 58H-34 Asphalt Binder	1,022.4	Ton
320E1200	Asphalt Concrete Composite	403.0	Ton
320E1203	CLASS Q3R HOT MIXED ASPHALT CONCRETE	20,014.0	Ton
320E1800	Asphalt Concrete Blade Laid	1,235.0	Ton
320E4000	Hydrated Lime	211.0	Ton
320E7008	Grind 8" Rumble Strip or Stripe in Asphalt Concrete	16.5	Mile
320E7030	Grind Sinusoidal Centerline Rumble Stripe in Asphalt Concrete	8.3	Mile
320E7035	Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete	196.0	SqFt
330E0100	SS-1h or CSS-1h Asphalt for Tack	138.6	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	7.2	Ton
332E0010	Cold Milling Asphalt Concrete	148,316	SqYd
421E0100	Pipe Culvert Undercut	182	CuYd
450E0142	24" RCP Class 2, Furnish	68	Ft

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E0150	24" RCP, Install	68	Ft
450E0162	30" RCP Class 2, Furnish	68	Ft
450E0170	30" RCP, Install	68	Ft
450E0182	36" RCP Class 2, Furnish	160	Ft
450E0190	36" RCP, Install	160	Ft
450E0202	48" RCP Class 2, Furnish	100	Ft
450E0210	48" RCP, Install	100	Ft
450E2028	36" RCP Flared End, Furnish	4	Each
450E2029	36" RCP Flared End, Install	4	Each
450E2036	48" RCP Flared End, Furnish	2	Each
450E2037	48" RCP Flared End, Install	2	Each
450E2200	24" RCP Sloped End, Furnish	2	Each
450E2201	24" RCP Sloped End, Install	2	Each
450E2204	30" RCP Sloped End, Furnish	2	Each
450E2205	30" RCP Sloped End, Install	2	Each
450E3032	36" RCP Arch Class 2, Furnish	84	Ft
450E3040	36" RCP Arch, Install	84	Ft
450E4512	36" RCP Arch Flared End, Furnish	2	Each
450E4513	36" RCP Arch Flared End, Install	2	Each
455E0010	Cleanout for Culvert Treatment	1	Each
455E0124	24" Cured in Place Pipe	76	Ft
600E0300	Type III Field Laboratory	1	Each
632E1320	2.0"x2.0" Perforated Tube Post	117.0	Ft
632E2510	Type 2 Object Marker Back to Back	28	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	38.3	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	33.7	SqFt
632E3500	Reset Sign	1	Each
633E0040	Cold Applied Plastic Pavement Marking, Arrow	10	Each
633E0050	Cold Applied Plastic Pavement Marking, Message	3	Word
633E1200	High Build Waterborne Pavement Marking Paint, White	374	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	146	Gal
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	10	Each
633E5035	Grooving for Cold Applied Plastic Pavement Marking, Message	3	Word
634E0010	Flagging	500.0	Hour
634E0020	Pilot Car	240.0	Hour
634E0110	Traffic Control Signs	708.5	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	9	Each
634E0630	Temporary Pavement Marking	33.0	Mile
720E1015	Bank and Channel Protection Gabion	40.5	CuYd
730E0204	Type C Permanent Seed Mixture	54	Lb
731E0200	Fertilizing	1.50	Ton

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
732E0100	Mulching	6.0	Ton
734E0154	12" Diameter Erosion Control Wattle	130	Ft
734E0604	High Flow Silt Fence	130	Ft
734E0610	Mucking Silt Fence	9	CuYd
734E0620	Repair Silt Fence	33	Ft
831E0110	Type B Drainage Fabric	125	SqYd
900E0010	Refurbish Single Mailbox	6	Each
900E0012	Refurbish Double Mailbox	2	Each
900E1980	Storage Unit	1	Each

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0200	Structure Excavation, Box Culvert	36	CuYd
421E0200	Box Culvert Undercut	163	CuYd
560E0130	10'x4' Precast Concrete Box Culvert, Furnish	116.0	Ft
560E0131	10'x4' Precast Concrete Box Culvert, Install	116.0	Ft
560E1130	10'x4' Precast Concrete Box Culvert End Section, Furnish	2	Each
560E1131	10'x4' Precast Concrete Box Culvert End Section, Install	2	Each
700E0210	Class B Riprap	27.4	Ton
831E0110	Type B Drainage Fabric	39	SqYd
831E0300	Reinforcement Fabric (MSE)	223	SqYd

* - Denotes Non-Participating

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <<https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf>>

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT A: AQUATIC RESOURCES

COMMITMENT A1: WETLANDS

All efforts to avoid and minimize wetland impacts from the project have resulted in approximately 0.002 acres of wetlands (includes temporary and permanent) becoming impacted.

Table of Impacted Wetlands

Wetland No.	Station	Perm. Impact Left (Acres)	Perm. Impact Right (Acres)	Temp. Impact Left (Acres)	Temp. Impact Right (Acres)	Total Impact (Acres)
1	218+00 L&R	0.00	0.00	0.001	0.001	0.002

Action Taken/Required:

Temporary impacts identified in the Table of Impacted Wetlands will not be mitigated as original contours and elevations will be re-established as designated in the plans. Prior to initiating temporary work in wetlands, the Contractor will submit a plan to the Project Engineer in accordance with Section 7.18 D of the Specifications.

COMMITMENT C: WATER SOURCE

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of

invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

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

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at: <<https://sdleastwanted.sd.gov/maps/default.aspx>>

< [South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species: https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04](https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04) >

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

This project may be in the vicinity of multiple streams and wetlands. These waters are considered waters of the state and are protected under Administrative Rules of South Dakota (ARSD) Chapter 74:51. Special construction measures may have to be taken to ensure that this water body is not impacted.

Action Taken/Required:

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

COMMITMENT E: STORM WATER

Construction activities constitute 3 acres or more of earth disturbance and/or work in a waterway.

Action Taken/Required:

The DANR General Permit for Stormwater Discharges Associated with Construction Activities is required for construction activity disturbing one or more acres of earth and work in a waterway. The SDDOT is the owner of this permit and will submit the NOI to DANR 15 days prior to project start in order to obtain coverage under the General Permit. Work can begin once the DANR letter of approval is received.

The Contractor must adhere to the “Special Provision Regarding Storm Water Discharges to Waters of the State.”

The Contractor will complete the DANR Contractor Authorization Form prior to the pre-construction meeting. The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the permit for this project. Work may not begin on this project until this form is signed and submitted to DANR.

The form can be found at: <
https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_CGPAAppendixCCA2023Fillable.pdf>

The Contractor is advised that permit coverage may also be required for off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

Storm Water Pollution Prevention Plan

The Storm Water Pollution Prevention Plan (SWPPP) will be developed prior to the submittal of the NOI and will be implemented for all construction activities for compliance with the permit. The SWPPP must be kept on-site and updated as site conditions change. Erosion control measures and best management practices will be implemented in accordance with the SWPPP.

The DOT 298 Form will be used for site inspections and to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents and retained for a minimum of three years.

The inspection will include disturbed areas of the construction site that have not been finally stabilized, areas used for storage materials, structural control measures, and locations where vehicles enter or exit the site. These areas will be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWPPP will be observed to ensure that they are operating correctly, and sediment is not tracked off the site.

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

SDDOT: < <https://dot.sd.gov/doing-business/environmental/stormwater> >

DANR:<
<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/stormwater/default.aspx> >

EPA: < <https://www.epa.gov/npdes> >

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period not to exceed the duration of the project. Prior to project completion, the waste will be removed from view of the ROW or buried, and the waste disposal site reclaimed as noted above.

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

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

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

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

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

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

The Contractor will provide ARC with the following: a topographical map or aerial view in which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 150 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

SHPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

COMMITMENT M: SECTION 4(f)/6(f) RESOURCES

COMMITMENT M1: SECTION 4(f) PROPERTY

Table of Adjacent Section 4(f) Property

Station	Section 4(f) Property
265+40 – 269+78 L/R	ESS 1 – Railroad Grade

Action Taken/Required:

The following measures are required to minimize harm to the above Section 4(f) property:

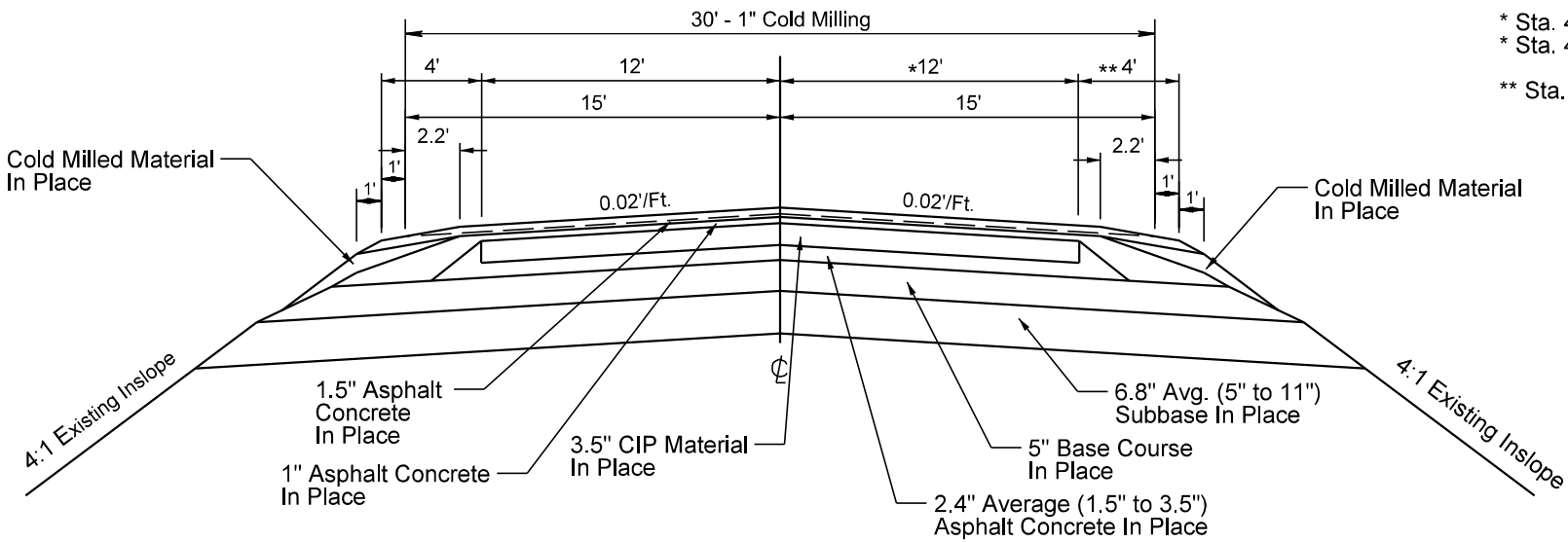
The Contractor will notify the Project Engineer if additional temporary or permanent easement is necessary to construct the project. Temporary occupancy and permanent incorporation of, and restriction of access to, the Section 4(f) property must be avoided unless there are no feasible or prudent alternatives to use of the land and the action includes all possible planning to minimize harm to the property. The Project Engineer will notify the Environmental Office as Section 4(f) use must be approved by the Federal Highway Administration.

TYPICAL SURFACING SECTIONS

 Plotting Date: 3/17/2026	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	5	83

SECTION 1 COLD MILLING

Sta. 1+53.25 to Sta. 208+80
Sta. 222+10 to Sta. 424+09



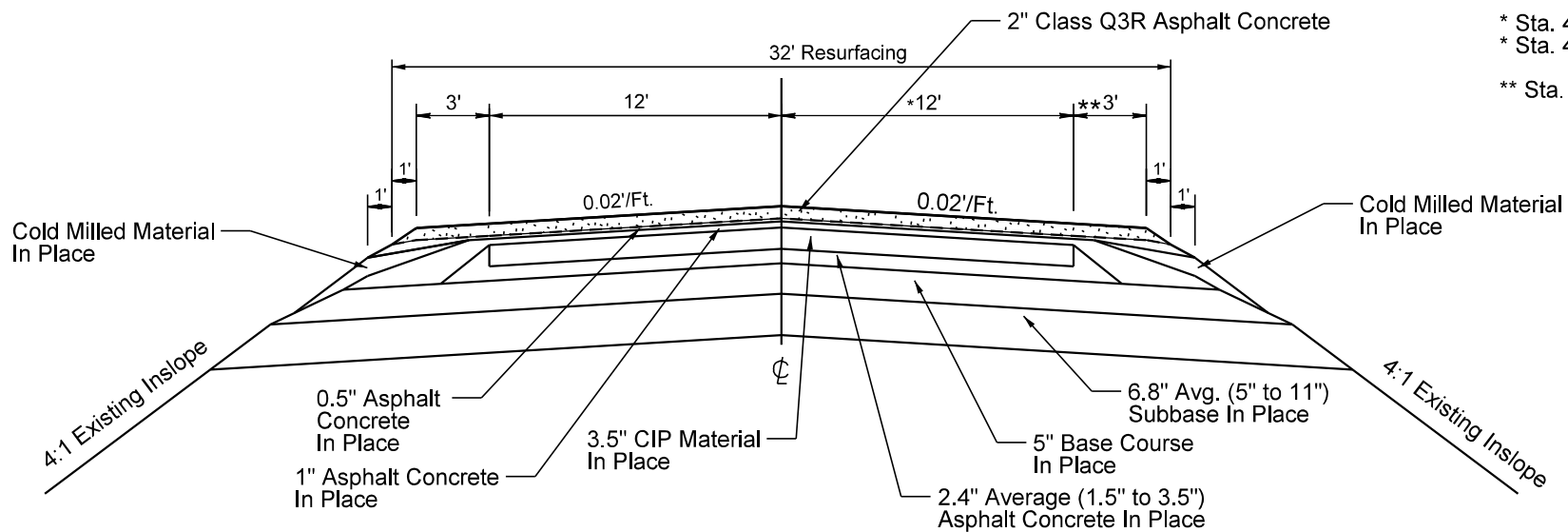
Transitions:

* Sta. 414+20.01 to Sta. 422+60.10 - 12' to 26'
* Sta. 422+60.10 to Sta. 424+09 - 26'

** Sta. 414+20.01 to Sta. 424+09 - 6'

SECTION 1 RESURFACING

Sta. 1+53.25 to Sta. 208+80
Sta. 222+10 to Sta. 424+09



Transitions:

* Sta. 414+20.01 to Sta. 422+60.10 - 12' to 26'
* Sta. 422+60.10 to Sta. 424+09 - 26'

** Sta. 414+20.01 to Sta. 424+09 - 5'

TYPICAL SURFACING SECTIONS



PROJECT		SHEET	TOTAL SHEETS
NH-P 0044(232)377		6	83

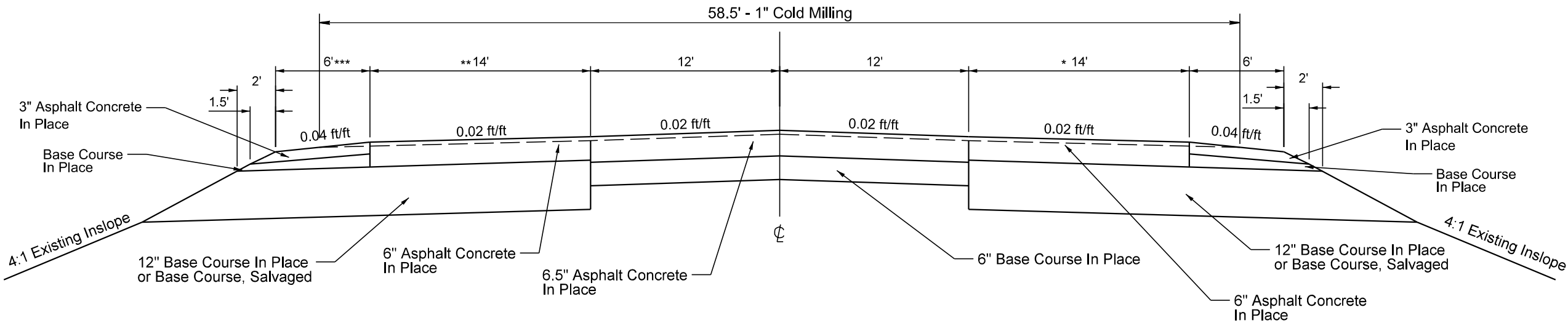
Plotting Date: 3/17/2026

SECTION 2 COLD MILLING

Sta. 424+09 to Sta. 434+05.01

Transitions:

- *** Sta. 424+09 to Sta. 425+41.47 - 4'
- *** Sta. 428+61.43 to Sta. 434+05.01 - 4'
- ** Sta. 424+09 to Sta. 425+41.47 - 0'
- ** Sta. 427+41.43 to 428+61.43 - 14' to 0'
- * Sta 425+65.10 to 434+05.01 - 14' to 0'

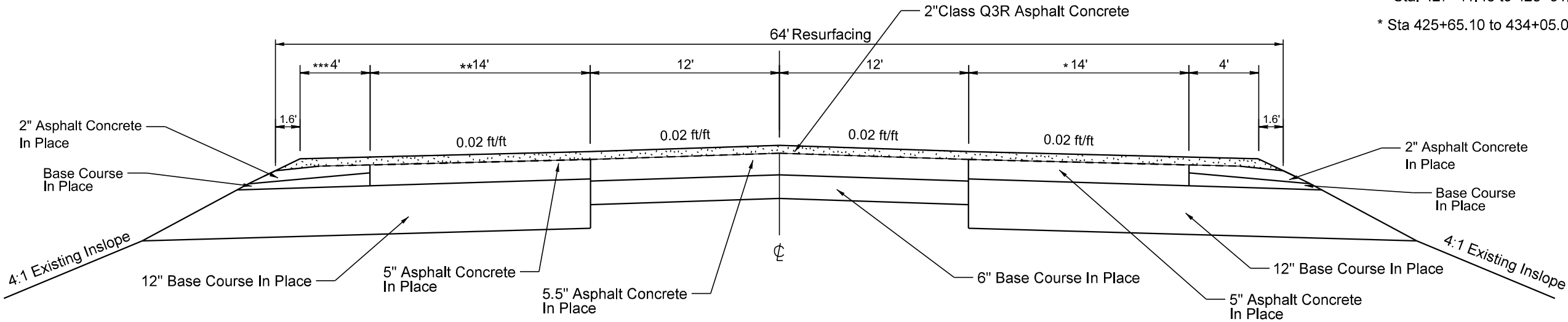


SECTION 2 RESURFACING

Sta. 424+09 to Sta. 434+05.01

Transitions:

- *** Sta. 424+09 to Sta. 425+41.47 - 4'
- *** Sta. 428+61.43 to Sta. 434+05.01 - 4'
- ** Sta. 424+09 to Sta. 425+41.47 - 0'
- ** Sta. 427+41.43 to 428+61.43 - 14' to 0'
- * Sta 425+65.10 to 434+05.01 - 14' to 0'



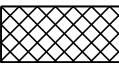
	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	7	83

Plotting Date: 3/17/2026

Plotted From - TRSF11977 File - ...turn06R5 Typical Sheets.dgn

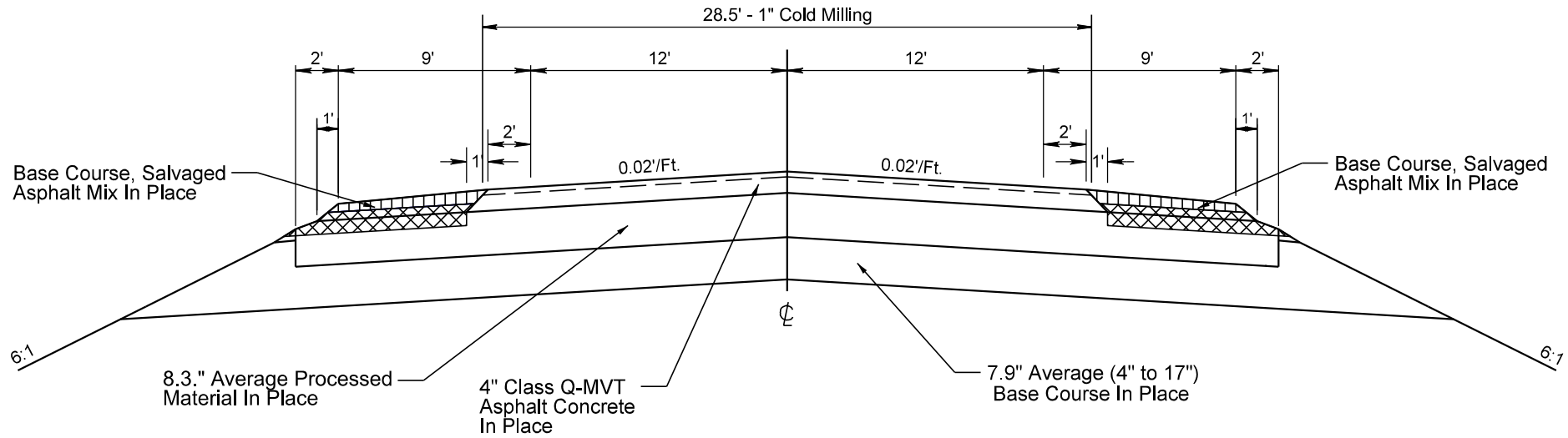
TYPICAL SURFACING SECTIONS

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	8	83
Plotting Date: 3/17/2026			

-  Remove Asphalt Concrete Pavement
-  Shoulder Preparation

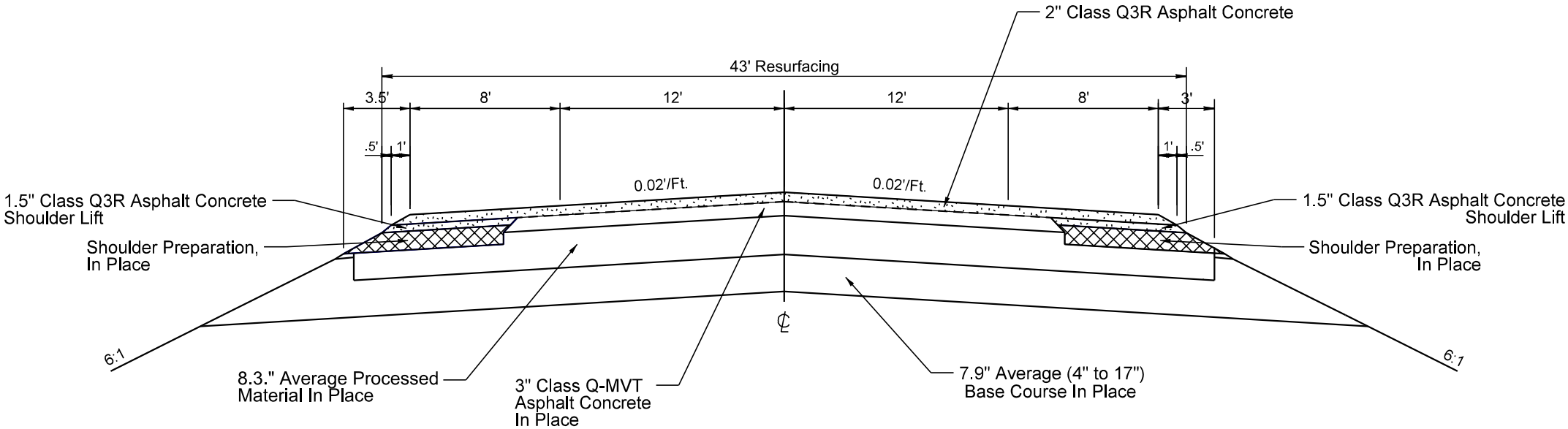
SECTION 4 COLD MILLING

Sta. 434+05.01 to Sta 436+25



RESURFACING SECTION

Sta. 434+05.01 to Sta 436+25



RATES OF MATERIALS

 Plotting Date: 3/17/2026	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	9	83

RATES OF MATERIALS

Section 1
SD 44 West
1+53.25 to 208+80.00
222+10.00 to 424+09.00

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

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT

Salvaged Asphalt Concrete	386 Tons
Crushed Aggregate	1544 Tons
PG 58H-34 Asphalt Binder	95 Tons
TOTAL: 2025 Tons	
Hydrated Lime	20 Tons
TOTAL: 2045 Tons	

The exact proportions of these materials w ill be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 4.9 tons applied 33 feet w ide (Rate = 0.06 gallon per square yard).

FLUSH SEAL (Centered over Centerline Rumble Stripes)

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.5 ton applied 2 feet w ide (Rate = 0.1 gallon per square yard).

FLUSH SEAL (Centered over Outside Shoulder Rumble Stripes)

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.4 ton applied 3 feet w ide (1.5 feet w ide each shoulder) (Rate = 0.05 gallon per square yard).

RATES OF MATERIALS

Section 3
Turn Lane 443rd Ave
208+80.00 to 222+10.00

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

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT MAINLINE

Salvaged Asphalt Concrete	5.57 Tons
Crushed Aggregate	22.29 Tons
PG 58H-34 Asphalt Binder	1.37 Tons
TOTAL: 29.23 Tons	
Hydrated Lime	0.29 Ton
TOTAL: 29.52 Tons	

The exact proportions of these materials w ill be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.07 ton applied 25 feet w ide (Rate = 0.06 gallon per square yard).

FLUSH SEAL (Centered over Centerline Rumble Stripes)

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.01 ton applied 2 feet w ide (Rate = 0.1 gallon per square yard).

RATES OF MATERIALS

Section 2
Int Marion rd
424+09.00 to 434+05.01

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

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT

Salvaged Asphalt Concrete	7.31 Tons
Crushed Aggregate	29.24 Tons
PG 58H-34 Asphalt Binder	1.8 Tons
TOTAL: 38.35 Tons	
Hydrated Lime	0.38 Ton
TOTAL: 38.73 Tons	

The exact proportions of these materials w ill be determined on construction.

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.09 ton applied 33 feet w ide (Rate = 0.06 gallon per square yard).

FLUSH SEAL (Centered over Centerline Rumble Stripes)

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.01 ton applied 2 feet w ide (Rate = 0.1 gallon per square yard).

RATES OF MATERIALS

	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	10	83

Plotting Date: 3/17/2026

RATES OF MATERIALS

Section 4
SD 44 2nd East
434+05.01 to 436+25.00

Asphaltic Quantities for Section 4 are included in the Table of Materials Quantities

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT		MAINLINE
Salvaged Asphalt Concrete		6.71 Tons
Crushed Aggregate		26.85 Tons
PG 58H-34 Asphalt Binder		1.66 Tons
		TOTAL: 35.22 Tons
Hydrated Lime		0.35 Ton
		TOTAL: 35.57 Tons

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

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.08 ton applied 29.5 feet wide (Rate = 0.06 gallon per square yard).

FLUSH SEAL (Centered over Centerline Rumble Stripes)

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.01 ton applied 2 feet wide (Rate = 0.1 gallon per square yard).

1.5" CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT		OUTSIDE SHOULDER LIFT	
		WB SHOULDER	EB SHOULDER
Salvaged Asphalt Concrete		1.2 Tons	1.2 Tons
Crushed Aggregate		4.81 Tons	4.81 Tons
PG 58H-34 Asphalt Binder		0.3 Ton	0.3 Ton
		TOTAL: 6.31 Tons	6.31 Tons
Hydrated Lime		0.06 Ton	0.06 Ton
		TOTAL: 6.37 Tons	6.37 Tons

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

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.08 ton applied 16.5 feet wide (8.25 feet wide each shoulder) (Rate = 0.09 gallon per square yard).

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT		OUTSIDE SHOULDER LIFT	
		WB SHOULDER	EB SHOULDER
Salvaged Asphalt Concrete		1.47 Tons	1.47 Tons
Crushed Aggregate		5.87 Tons	5.87 Tons
PG 58H-34 Asphalt Binder		0.36 Ton	0.36 Ton
		TOTAL: 7.7 Tons	7.7 Tons
Hydrated Lime		0.08 Ton	0.08 Ton
		TOTAL: 7.78 Tons	7.78 Tons

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

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.04 ton applied 16.5 feet wide (8.25 feet wide each shoulder) (Rate = 0.06 gallon per square yard).

TABLE OF PROJECT STATIONING

SECTION	PROJECT NUMBER	STATION TO	STATION	DESCRIPTION	LENGTH	GROSS SECTION LENGTHS		NET SECTION LENGTHS
1	NH-P 0044(232)377	1+53.25 to 222+10.00	208+80.00 to 424+09.00	SD 44 West	20726.75' 20199.00'	40925.75'		40925.75' 7.751 mi.
2	NH-P 0044(232)377	424+09.00 to	434+05.01	Int Marion rd	996.01'	996.01'		996.01' 0.189 mi.
3	NH-P 0044(232)377	208+80.00 to	222+10.00	Turn Lane 443rd Ave	1330.00'	1330.00'		1330.00' 0.252 mi.
4	NH-P 0044(232)377	434+05.01 to	436+25.00	SD 44 2nd East	219.99'	219.99'		219.99' 0.042 mi.
Grand Totals						43471.75'	8.233 mi.	43471.75' 8.233 mi.

TABLE OF MATERIALS QUANTITIES

N.A.B.I. = Not A Bid Item

											UNCL. EXC.	UNCL. EXC. DIG- OUTS	REMOVE ASPHALT CONCRETE PAVEMENT	CONTRACTOR FURNISHED BORROW EXCAVATION	WATER FOR EMB.	BASE COURSE	WATER FOR GRAN. MATER.	COLD MILLING ASPHALT CONCRETE	GRANULAR MATERIAL, FURNISH	MILLED MATERIAL TO BE REUSED IN BLENDING	BLEND, HAUL AND STOCKPILE GRANULAR MATERIAL	
																				N.A.B.I.		
SECTION	PROJECT	DESCRIPTION	CuYd	CuYd	SqYd	CuYd	MGal	Ton	MGal	SqYd	Ton	Ton	Ton									
1	NH-P 0044(232)377	SD 44 West	-	388	581	25	-	775	9	136419	3156.0	3156.0	6312.0									
2	NH-P 0044(232)377	Int Marion rd	-	-	-	-	-	-	-	3320	132.0	132.0	264.0									
3	NH-P 0044(232)377	Turn Lane 443rd Ave	882	-	-	3039	39	-	-	3547	7.0	7.0	14.0									
4	NH-P 0044(232)377	SD 44 2nd East	-	-	-	-	-	-	-	697	8.0	8.0	16.0									
Subtotals:			882	388	581	3064	39	775	9	143983	3089.0	3089.0	6178.0									
Add Quans for spot leveling and tight blading in Section 1																						
Add Quans for spot leveling and tight blading in Section 2																						
Add Quans for spot leveling and tight blading in Section 3																						
Add Quans for spot leveling and tight blading in Section 4																						
Add Quans for spot leveling and tight blading			-	-	-	-	-	-	-	-	-	-	-									
Table of Additional Quantities:			-	-	1135	60	1	4135	47	4333	-	-	-									
Totals:			882	388	1716	3124	40	4910	56	148316	3089.0	3089.0	6178.0									

TABLE OF MATERIALS QUANTITIES (CONTINUED)

N.A.B.I. = Not A Bid Item

			CLASS Q3R HOT MIXED ASPHALT CONCRETE	PG 58H-34 ASPHALT BINDER	HYDRATED LIME	VIRG. AGGR.	SALV. MAT'L. N.A.B.I.	ASPHALT CONCRETE BLADE LAID	PG 58H-34 ASPHALT BINDER	HYDRATED LIME	ASPHALT CONCRETE COMPOSITE	SS-1h/ CSS-1h ASPH. FOR TACK	SS-1h/ CSS-1h ASPH. FOR FLUSH SEAL
SECTION	PROJECT	DESCRIPTION	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton
1	NH-P 0044(232)377	SD 44 West	15851.0	737.6	156.9	11966.0	2991.0	-	-	-	194.0	81.4	7.0
2	NH-P 0044(232)377	Int Marion rd	386.0	18.0	3.8	291.0	73.0	-	-	-	-	2.0	0.1
3	NH-P 0044(232)377	Turn Lane 443rd Ave	393.0	18.3	3.9	297.0	74.0	-	-	-	-	2.4	0.1
4	NH-P 0044(232)377	SD 44 2nd East	140.0	6.5	1.3	106.0	26.0	-	-	-	-	0.8	-
Subtotals:			16770.0	780.4	165.9	12660.0	3164.0	-	-	-	194.0	86.6	7.2
Add Quans for spot leveling and tight blading in Section 1			1550.0	72.1	15.3	1170.0	293.0	1163.0	86.4	11.5	-	45.6	-
Add Quans for spot leveling and tight blading in Section 2			38.0	1.8	0.4	29.0	7.0	28.0	2.1	0.3	-	1.1	-
Add Quans for spot leveling and tight blading in Section 3			50.0	2.3	0.5	38.0	9.0	38.0	2.8	0.4	-	1.5	-
Add Quans for spot leveling and tight blading in Section 4			8.0	0.4	0.1	6.0	2.0	6.0	0.4	0.1	-	0.2	-
Add Quans for spot leveling and tight blading			1646.0	76.6	16.3	1243.0	311.0	1235.0	91.7	12.3	-	48.4	-
Table of Additional Quantities:			1598.0	73.7	16.5	1210.0	299.0	-	-	-	209.0	3.6	-
Totals:			20014.0	930.7	198.7	15113.0	3774.0	1235.0	91.7	12.3	403.0	138.6	7.2

TABLE OF ADDITIONAL QUANTITIES

							REMOVE ASPHALT CONCRETE PAVEMENT	CONTRACTOR FURNISHED BORROW EXCAVATION	WATER FOR EMB.	BASE COURSE	WATER FOR GRAN. MATER.	COLD MILLING ASPHALT CONCRETE	CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT	PG 58H-34 ASPHALT BINDER	HYDRATED LIME	VIRG. AGGR.	SALV. MAT'L. N.A.B.I.	CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT	PG 58H-34 ASPHALT BINDER	HYDRATED LIME	VIRG. AGGR.	SALV. MAT'L. N.A.B.I.	CLASS Q3R HOT MIXED ASPHALT CONCRETE 3RD LIFT	PG 58H-34 ASPHALT BINDER	HYDRATED LIME	VIRG. AGGR.	SALV. MAT'L. N.A.B.I.	ASPHALT CONCRETE COMPOSITE		
														<---- 1ST LIFT ---->					<---- 2ND LIFT ---->					<---- 3RD LIFT ---->						
LOCATION							SqYd	CuYd	MGal	Ton	MGal	SqYd	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton
Mainline Transitions																														
		Width																												
		Mill Depth																												
Sec. 1	414+20 to 422+60	2' to 16'	1"	-	-	-	-	-	-	-	-	840	94	4.4	0.9	71	18	-	-	-	-	-	-	-	-	-	-	-	-	
Sec. 1	422+60 to 424+09	16'	1"	-	-	-	-	-	-	-	-	265	30	1.4	0.3	22	6	-	-	-	-	-	-	-	-	-	-	-	-	
Sec. 2	425+41 to 427+41	16'	1"	-	-	-	-	-	-	-	-	355	40	1.9	0.4	30	8	-	-	-	-	-	-	-	-	-	-	-	-	
Sec. 2	427+41 to 428+61	16' to 2'	1"	-	-	-	-	-	-	-	-	120	13	0.6	0.1	10	2	-	-	-	-	-	-	-	-	-	-	-	-	
Sec. 2	424+09 to 425+65	16'	1"	-	-	-	-	-	-	-	-	278	31	1.4	0.3	23	6	-	-	-	-	-	-	-	-	-	-	-	-	
Sec. 2	425+65 to 434+05	16' to 2'	1"	-	-	-	-	-	-	-	-	840	94	4.4	0.9	71	18	-	-	-	-	-	-	-	-	-	-	-	-	
Sec. 3	208+80 to 213+00	0' to 6'	0"	-	-	-	110	1	-	-	-	-	16	0.7	0.2	12	3	16	0.7	0.2	12	3	16	0.7	0.2	12	3	-	-	
Sec. 3	213+00 to 217+90	6'	0"	-	-	-	257	3	-	-	-	-	37	1.7	0.4	28	7	37	1.7	0.4	28	7	37	1.7	0.4	28	7	-	-	
Sec. 3	217+90 to 222+10	6' to 0'	0"	-	-	-	110	1	-	-	-	-	16	0.7	0.2	12	3	16	0.7	0.2	12	3	16	0.7	0.2	12	3	-	-	
Sec. 3	208+80 to 213+00	0' to 6'	0"	-	-	-	110	1	-	-	-	-	16	0.7	0.2	12	3	16	0.7	0.2	12	3	16	0.7	0.2	12	3	-	-	
Sec. 3	213+00 to 217+90	6'	0"	-	-	-	257	3	-	-	-	-	37	1.7	0.4	28	7	37	1.7	0.4	28	7	37	1.7	0.4	28	7	-	-	
Sec. 3	217+90 to 222+10	6' to 0'	0"	-	-	-	110	1	-	-	-	-	16	0.7	0.2	12	3	16	0.7	0.2	12	3	16	0.7	0.2	12	3	-	-	
Other Locations (Density)																														
Mainline Cross Pipe Replacement							1135	60	1	1331	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	209	
Shoulder Transitions - Outside																														
		Width																												
		Mill Depth																												
Sec. 3	208+80 to 213+00	0' to 8'	0"	-	-	-	276	3	-	-	-	-	39	1.8	0.4	30	7	39	1.8	0.4	30	7	39	1.8	0.4	30	7	-	-	
Sec. 3	213+00 to 217+90	8'	0"	-	-	-	643	8	-	-	-	-	92	4.3	0.9	70	17	92	4.3	0.9	70	17	92	4.3	0.9	70	17	-	-	
Sec. 3	217+90 to 222+10	8' to 0'	0"	-	-	-	276	3	-	-	-	-	39	1.8	0.4	30	7	39	1.8	0.4	30	7	39	1.8	0.4	30	7	-	-	
Turnouts																														
8	Mailbox Turnouts		-	-	-	-	-	-	-	-	-	298	32	1.5	0.3	24	6	-	-	-	-	-	-	-	-	-	-	-	-	
Resurface to ROW																														
3	Intersecting Roads		-	-	-	-	-	-	-	-	-	492	127	5.9	1.3	96	24	-	-	-	-	-	-	-	-	-	-	-	-	
Resurface to End of Radius																														
13	Intersecting Roads		-	-	-	-	195	2	-	-	-	845	213	9.9	2.1	161	40	-	-	-	-	-	-	-	-	-	-	-	-	
Pads																														
1	Commercial Entrance		-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
13	Farm Entrances		-	-	-	-	130	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
30	Field Entrances		-	-	-	-	300	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOTALS:							1135	60	1	4135	47	4333	982	45.5	9.9	742	185	308	14.1	3.3	234	57	308	14.1	3.3	234	57	209		

NOTES: 3.6 tons of SS-1h or CSS-1h Asphalt for Tack are included in the Estimate of Quantities and will be applied at the rate shown on the plans as directed by the Engineer.

The above quantities are included in the Estimate of Quantities.

SUMMARY OF ASPHALT CONCRETE

	CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT COMPACTION WITH SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 1ST LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT COMPACTION WITH SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 2ND LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 3RD LIFT COMPACTION WITH SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE 3RD LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	ASPHALT CONCRETE BLADE LAID 4TH LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	ASPHALT CONCRETE COMPOSITE 5TH LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS
Section 1								
24' Finished Roadway Surface	12234	-	-	-	-	-	-	-
Shoulders	-	3616	-	-	-	-	-	-
Backfilling Digouts	-	-	-	-	-	-	-	194
Add Quans for spot leveling and tight blading	-	1550	-	-	-	-	1163	-
Section 2								
24' Finished Roadway Surface	298	-	-	-	-	-	-	-
Shoulders	-	88	-	-	-	-	-	-
Add Quans for spot leveling and tight blading	-	38	-	-	-	-	28	-
Section 3								
24' Finished Roadway Surface	398	-	-	-	-	-	-	-
Add Quans for spot leveling and tight blading	-	-	-	-	-	50	38	-
Section 4								
24' Finished Roadway Surface	66	-	-	-	-	-	-	-
8' Shoulders	-	41	-	34	-	-	-	-
Add Quans for spot leveling and tight blading	-	-	-	8	-	-	6	-
Table of Additional Quantities								
Mainline Transitions	440	-	138	-	138	-	-	-
Other Locations (Density)	-	-	-	-	-	-	-	209
Shoulder Transitions - Outside	-	170	-	170	-	170	-	-
Turnouts, Int Roads, Ents & Pads	-	372	-	-	-	-	-	-
Additional Totals:	440	542	138	170	138	170	-	209
Totals:	13436	5870	138	212	138	220	1235	403

13712 TONS ASPHALT CONCRETE COMPACTION WITH SPECIFIED DENSITY
7940 TONS ASPHALT CONCRETE COMPACTION WITHOUT SPECIFIED DENSITY
21652 TONS TOTAL

TABLE FOR MAINLINE CULVERT WORK

CULVERT														CULVERT ENDS										DITCH SLOPE/CHANNEL				OBJ MARKER												
LOCATION				PIPE DATA								REMOVE				NEW				CIPP LINER		TYPE		REMOVE		NEW				PIPE UNDERCUT	DITCH PROTECTION				OM-2 & POST					
SITE NO	CUL- VERT ID	MRM	STATION	No of PIPE SIZE(DIA or W x H)	LENGTH	TYPE	DRAINAGE AREA ACRES	DRAINAGE DIRECTION	CLEAR ZONE 15 FT**			WORK DESCRIPTION	REMOVE PIPE	RCP					PRECAST RCBC BOX CULVERT	CMP	EXISTING	NEW	REM PIPE END	RCP			CHANNEL PROTECT AREA W x L	DITCH RESTORATION	DRAINAGE FABRIC		GABION	EXISTING**	REMOVE	BK-BK						
									SIDE OF ROAD	ROW*	CLEAR ZONE**			CIRCULAR			ARCH	FLARED						FLARED ARCH	SL															
														24"	30"	36"										48"									36"	10x4	24"	36"	48"	36"
US 281				NH-P 0044(232)377 PCN 06R5																																				
E1	11116	377.91	1+03	1 - 24	DIA	76	CMP	22	S	N	100	Install CIPP Liner									76	FE											50			1B	1	1		
									S		100	Install CIPP Liner										FE										50			1B	1	1			
E2	11117	378.85	50+44	1 - 30	DIA	72	CMP	88	N	N	100	Replace Pipe	36			40						FE	FE	1	1						12	9 x 12	50	19	6	1B	1	2		
									S		100	Replace Pipe	36			40						FE	FE	1	1						12		50			1B	1	2		
E3	11118	379.34	76+40	2 - 96 x 48	52 x 2	RCP	2,866	N	N	100	No Work											FE													1B					
									S		100	No Work										FE													1B					
E4	11119	380.71	148+75	2 - 96 x 60	51 x 2	RCP	2,824	N	N	100	No Work											FE													1B					
									S		100	No Work										FE													1B					
E5	11120	381.32	181+03	3 - 96 x 48	56 x 3	RCP	2,844	N	N	100	No Work											FE													1B					
									S		100	No Work										FE													1B					
E6	11121	382.02	218+00	1 - 24	DIA	72	CMP ARCH	81	N	N	100	Replace Pipe	36					42				FE	FE	1				1			14	9 x 12	50	19	6	1B	1	2		
									S		100	Replace Pipe	36					42				FE	FE	1				1			14		50			1B	1	2		
E7	11122	382.55	245+68	1 - 42	DIA	56	CMP ARCH	178	N	N	100	No Work										FE													1B					
									S		100	No Work										FE													1B					
E8	11123	383.13	276+80	2 - 96 x 60	51.5 x 2	RCP	3,524	N	N	100	No Work											FE													1B					
									S		100	No Work										FE													1B					
E9	11124	383.45	294+00	1 - 18	DIA	66	CMP	59	N	N	100	Replace Pipe	33			34						FE	SL	1					1	9	9 x 12	50	19	6	1B	1	2			
									S		100	Replace Pipe	33			34						FE	SL	1					1	9		50			1B	1	2			
E10	11125	383.89	316+35	2 - 42	DIA	56 x 2	CMP ARCH	526	N	N	100	No Work										FE													1B					
									S		100	No Work										FE													1B					
E11	11126	384.05	324+68	1 - 18	DIA	66	CMP	34	N	N	100	Replace Pipe	33	34								FE	SL	1				1	9	9 x 9	50	15	4.5	1B	1	1				
									S		100	Replace Pipe	33	34								FE	SL	1				1	9		50			1B	1	1				
E12	11127	384.59	353+00	1 - 48	DIA	76	CMP ARCH	94	N	N	100	Replace Pipe	38			40						FE	FE	1	1						12	9 x 12	50	19	6	1B	1	2		
									S		100	Replace Pipe	38			40						FE	FE	1	1						12		50			1B	1	2		
E13	11128	384.98	373+52	1 - 60	DIA	146	CMP ARCH	1,664	N	N	100	Install RCBC	73						58			FE		1											1B	1	2			
									S		100	Install RCBC	73						58			FE		1											1B	1	2			
E14	11129	385.79	416+32	1 - 42	DIA	96	CMP ARCH	425	N	N	100	Replace Pipe	48				50					FE	FE	1		1					35	12 x 18	50	34	12	1B	1	2		
									S		100	Replace Pipe	48				50					FE	FE	1		1					35		50			1B	1	2		
E15	11130	386.00	427+35	1 - 36	DIA	84	RCP	-	-	N	100	No Work										FE													1B					
									S		100	No Work										FE													1B					
NH-P 0044(232)377 PCN 06R5 - TOTALS														594	68	68	160	100	84	116	76			14	4	2	2	2	2	2	182		-		700	125	40.5		16	28

Δ - END TYPES: FE = FLARED END SL = SLOPED END SB = SAFETY END (w/BARS) SE = SAFETY END (NO BARS) DI = DROP INLET WW = WINGWALLS HW = HEADWALLS
* - RIGHT-OF-WAY MEASURED FROM ** - CLEARZONE FROM EDGE LINE. *** - B= BACK-TO-BACK S=SINGLE

MACHINE CONTROL GRADING & MODEL INFORMATION

Electronic design files are made available by the SDDOT Bid Letting Office through the SDDOT's SharePoint Directory for Contractors. The roadway subgrade model xml file provided for this project includes the following highway features: road and shoulder widening and undercutting.

Highway features not included in the roadway subgrade model xml file are the following: intersecting roads and entrances, inslope transitions at pipes and box culverts, mailbox turnouts and ditch blocks.

These files are provided for informational purposes only. The information shown in the plans will govern over the provided electronic information. The Contractor assumes the risk of error if the information is used for any purposes for which the information was not intended. The Contractor assumes all risk of any assumptions or manipulations made of the electronic information.

GRADING OPERATIONS

Estimated application rate of water for compaction is 10 gallons per cubic yard of embankment.

Refer to Standard Plates 120.01 and 120.02 for more information regarding intersecting roads, entrances and ditch blocks.

Special ditch grades and other sections of the roadway different than the typical sections will be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer will contact the Designer for the proposed change.

Generally, all shallow inlet and outlet ditches as noted on the plan sheets will be cut with a 10-foot wide bottom with 5:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

UTILITIES

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

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

Contact List: Listed below are the utilities & contacts for the project.

B-Y Water District
PO Box 248
Tabor, SD, 57063-0248
CONTACT: Mr. Terry Wootton TELE: #605-463-2531 EMAIL: byh2o@hcinet.net

Golden West Telecommunications Coop
525 E 4th Street
Dell Rapids, SD, 57022
CONTACT: Mr. Ryan Cuny TELE: #605-428-1125 EMAIL: RyanCuny@GoldenWest.com

Midcontinent Communications Investors LLC
1305 N Terry Avenue
Sioux Falls, SD, 57107
CONTACT: Mr. Al Mullinix TELE: #605-274-8546 EMAIL: Al.Mullinix@Midco.com

Northwestern Energy Corporation
3210 Douglas Avenue
Yankton, SD, 57078
CONTACT: Mr. Robert Gehm TELE: #605-668-4602 EMAIL: Robert.gehm@northwestern.com

NOTE: Utility has a 4" high-pressure steel line running along North side of SD-44 from US-81 to 44rd Avenue. Contractor and utility should coordinate before/during construction to protect in place. A Northwestern technician will need to be on standby while work is happening in this area.

Southeastern Electric Cooperative, Inc.
47077 276th Street
Lennox, SD, 57039
CONTACT: Mr. John Euchner TELE: #605-310-2684 EMAIL: johne@southeastern.coop

Lumen Technologies
125 S Dakota Avenue
Sioux Falls, SD, 57104
CONTACT: Mr. Andrew Wixon TELE: #605-681-2049 EMAIL: andrew.wixon@lumen.com

TM Rural Water District
PO Box 445
Parker, SD, 57053
CONTACT: Mr. Jay Jorgensen TELE: #605-297-3334 EMAIL: jay.jorgensen@tmruralwater.com

NOTE: Utility has facilities running North to South either side of 446th Avenue, one (1) pipe East side, one (1) pipe West side crossing SD 44. Approximately 20ft from Right of Way line. Facilities are 12" and believed to be 6ft depth. Contractor and utility should coordinate before/during construction to protect in place.

SURFACING/SUBGRADE INVESTIGATION

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

SURFACING THICKNESS DIMENSIONS

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

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

TYPE III FIELD LABORATORY

The Contractor will provide high-speed broadband internet connection to the field lab. The multiport internet connection may be hardwired, through a cellular method, or other approved service that allows Wi-Fi connection. Prior to obtaining the internet connection, the Contractor will submit the internet connection's technical data to the Area Office to check for compatibility with the state's computer equipment. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer. The internet service will be incidental to the contract unit price per each for "Type III Field Laboratory".

STORAGE UNIT

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

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

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

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

ASPHALT CONCRETE BLADE LAID (CONT.)

The Asphalt Concrete Blade Laid Lift will be designed using an N_{design} Gyratory Compactive Effort of 65. The asphalt binder content will be determined so that the air voids of Asphalt Concrete Blade Laid Lift are between 3.0% and 5.0%.

Included in the Estimate of Surfacing Quantities are 138.6 tons of SS-1h or CSS-1h Asphalt for Tack for use prior to the application of the Blade Laid lift. (Rate = 0.09 Gal./SqYd)

CLASS Q3R HOT MIXED ASPHALT CONCRETE

Mineral Aggregate:

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

Virgin mineral aggregate for Class Q3R Hot Mixed Asphalt Concrete will conform to the requirements of Class Q3.

The Class Q3R Hot Mixed Asphalt Concrete will include 20 percent RAP in the mixture.

RAP will be obtained from the material produced by cold milling on this project. An estimated 4,079 tons will be required for use as RAP.

Mix Design Criteria:

Gyratory Controlled QC/QA Mix Design requirements for the Class Q3R Hot Mixed Asphalt Concrete will conform to the requirements of Class Q3 except as modified by the following:

Gyratory Compactive Effort:

	N _{initial}	N _{design}	N _{maximum}
Class Q3R	6	50	75

All remaining requirements for Class Q3 will apply.

PERFORMANCE GRADED ASPHALT BINDER

Performance Graded Asphalt Binder will conform to Section 890, AASHTO M 332, and the Combined State Binder Group Method of Acceptance for Asphalt Binders, available from the Department's Bituminous Engineer.

ASPHALT CONCRETE COMPOSITE

Section 324 will apply except that Class Q3R Hot Mixed Asphalt Concrete as specified elsewhere in the plans may be used as Asphalt Concrete Composite.

Plans specified locations for Asphalt Concrete Composite will be paid for at the contract unit price per ton for "Asphalt Concrete Composite" regardless of the class of asphalt concrete used at such locations.

Asphalt for Prime and SS-1h or CSS-1h Asphalt for Tack will not be needed prior to the placement of the bottom lift of Asphalt Concrete Composite placed on a granular surface. The asphalt for tack will be applied for the full width of the subsequent layers of Asphalt Concrete Composite plus one-half foot additional on the outside shoulder or the width of the Asphalt Concrete Composite lift for digouts. SS-1h or CSS-1h Asphalt for Tack will be applied

at a rate of 0.09 gallons per square yard on existing pavement or milled asphalt concrete surfaces and at a rate of 0.06 gallons per square yard on new asphalt concrete pavement.

The binder used in the Asphalt Concrete Composite can be PG 58H-34 Asphalt Binder.

ADDITIONAL QUANTITIES

Included in the Estimate of Quantities are 200 tons of Class Q3R Hot Mixed Asphalt Concrete, 2.0 tons of Hydrated Lime, and 9.4 tons of PG 58H-34 Asphalt Binder per mile for spot leveling, strengthening, and repair of the existing surface throughout the project.

Included in the Estimate of Quantities are 4.1 tons of SS-1h or CSS-1h Emulsified Asphalt for Tack for repair and leveling areas throughout the project.

GRIND RUMBLE STRIPE IN ASPHALT CONCRETE

Asphalt concrete rumble stripes will be constructed on the shoulders. Rumble stripes will be paid for at the contract unit price per mile for "Grind 8" Rumble Strip or Stripe in Asphalt Concrete". It is estimated that 16.5 miles of asphalt concrete rumble stripes will be required.

Rumble stripe installation will be completed prior to application of the flush seal and permanent pavement markings. A flush seal will be applied to the newly installed 8" rumble stripes at a width of 14" and a rate of 0.10 Gal/SqYd. All costs associated with placing the flush seal will be incidental to the contract unit price per ton for "SS-1h or CSS-1h Asphalt for Flush Seal".

IRI ASPHALT PAVEMENT SMOOTHNESS

All sections, not excluded by the Section 320.3 H will be evaluated as two opportunities.

GRIND SINUSOIDAL CENTERLINE RUMBLE STRIPE IN ASPHALT CONCRETE

Sinusoidal rumble stripes will be constructed on the centerline, as detailed in the plans. Sinusoidal centerline rumble stripe installation will be completed prior to application of the flush seal and permanent pavement markings. Sinusoidal centerline rumble stripes will be paid for at the contract unit price per mile for "Grind Sinusoidal Centerline Rumble Stripe in Asphalt Concrete".

It is estimated that 8.3 miles of sinusoidal centerline rumble stripes will be required.

This sinusoidal centerline rumble stripes will be constructed according to the details of Standard Plate 320.40.

CENTERLINE RUMBLE STRIPES – ASPHALT FOR FLUSH SEAL

Asphalt for Flush Seal will be applied after the centerline rumble stripes have been installed and prior to the application of permanent pavement markings. The asphalt for flush seal will be applied at a width of 24" and a rate of 0.10 Gal/SqYd. All costs associated with placing the flush seal will be incidental to the contract unit price per ton for "SS-1h or CSS-1h Asphalt for Flush Seal".

REV. 09/11/2026 SBS

PROJECT	SHEET	TOTAL SHEETS
NH-P 0044(232)377	19	83

GRIND SINUSOIDAL TRANSVERSE RUMBLE STRIP IN ASPHALT CONCRETE

Advance intersection warning sinusoidal transverse rumble strips will be constructed on the mainline pavement, as detailed in the plan set. Sinusoidal transverse rumble strips will be paid for at the contract unit price square foot for "Grind Sinusoidal Transverse Rumble Strip in Asphalt Concrete". It is estimated that 196 square feet of sinusoidal transverse rumble strips will be required.

Sinusoidal transverse rumble strip will be installed on the westbound lane approaching US81 stop sign.

Sinusoidal transverse rumble strip installation will be completed prior to application of the flush seal and permanent pavement markings. A flush seal will be applied to the newly installed 10.5' sinusoidal transverse rumble strips at a width of 11' and a rate of 0.10 Gal/SqYd. All costs associated with placing the flush seal will be incidental to the contract unit price per ton for "SS-1h or CSS-1h Asphalt for Flush Seal".

EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION

Included in the quantity of "Unclassified Excavation" are 1,600 cubic yards of excavation for installation of reinforced concrete box culverts.

All work necessary to excavate a trench for installation of reinforced concrete box culverts including labor, equipment, and incidentals will be incidental to the contract unit price per cubic yard for "Unclassified Excavation". Payment for excavation of reinforced concrete box culverts will be based only on plans quantity and measurement of these excavation quantities during construction will not be performed.

The excavation quantities for installation of reinforced concrete box culverts are not included with the earthwork balance quantities on the plans profile sheets. The quantities computed for excavation of the reinforced concrete box culverts are based on the limits shown in the drawing below.

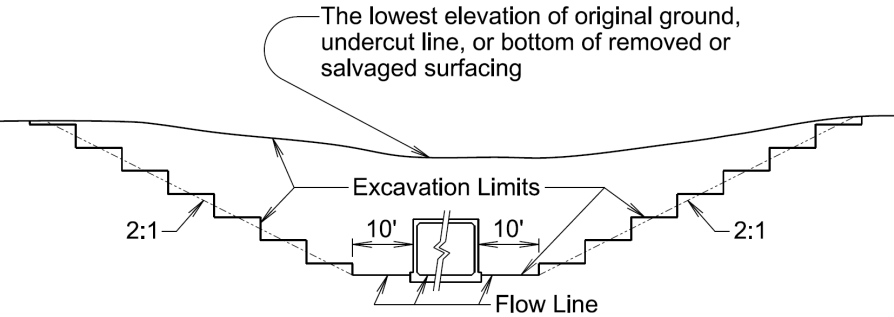


TABLE OF EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION

Station	Quantity (CuYd)
373+32.25	1,600
Total:	1,600

MAINLINE CROSS PIPE REPLACEMENT

Pipe culverts at Stations 50+44, 218+00, 294+00, 324+68, 353+00, and 416+32 will be installed in accordance with the following notes and as shown on the Pipe Installation Detail.

This work will be completed prior to beginning cold milling on the project.

After the existing pipe has been removed, the new pipe culvert will be undercut to a minimum depth of 1 foot at Stations 50+44, 218+00, 294+00, 324+68, 353+00 and 2 feet at Station 416+32. The depth of undercut is an estimate and the actual depth necessary will be determined during construction. The Engineer will determine how much undercut will be done in accordance with Section 421 of the specifications but will not reduce the undercut to less than the depth specified.

Select fill material for backfilling the undercut area will conform to the gradation requirements of Base Course in Section 882. If groundwater is encountered during construction, the select fill material for backfilling the undercut area and Class B Bedding will conform to the gradation requirements of Section 421.2 A. until backfill placement is above the groundwater level. The Engineer will process a CCO to provide for compensation to the Contractor for the added cost of the changed material. All other requirements of Section 421 will apply.

Pipe culverts will be bedded in accordance with Section 450.3 F.2, Class B Bedding with the following exceptions. The excavated area will extend 2 feet from the outermost diameter on both sides of the pipe with the back of the excavated area being sloped 2:1 upward to the top of the roadway surface. Select fill material for Class B Bedding will conform to the gradation requirements of Base Course in Section 882.

After the minimum testing requirements of M.S.T.R Section 4.1.F.3.a.1 (SDDOT Materials Manual) have been met, the minimum density testing requirements will be one test per zone. Each zone from the top of the pipe to the top of the subgrade will be 2 feet in depth. Moisture testing will remain as per M.S.T.R.

The remainder of the pipe culvert excavation will 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 2:1 excavation slope. Compaction of the backfill material will be governed by the Specified Density Method.

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

All costs to remove and dispose of asphalt concrete pavement, including full depth saw cutting of the asphalt concrete pavement, will be incidental to the contract unit price per square yard to Remove Asphalt Concrete Pavement. All excavation necessary for Class B Bedding and the pipe installation will be incidental to the contract unit price per foot for the corresponding pipe installation contract items. The excavation of material for pipe culvert undercut will be paid for at the contract unit price per cubic yard for Pipe Culvert Undercut.

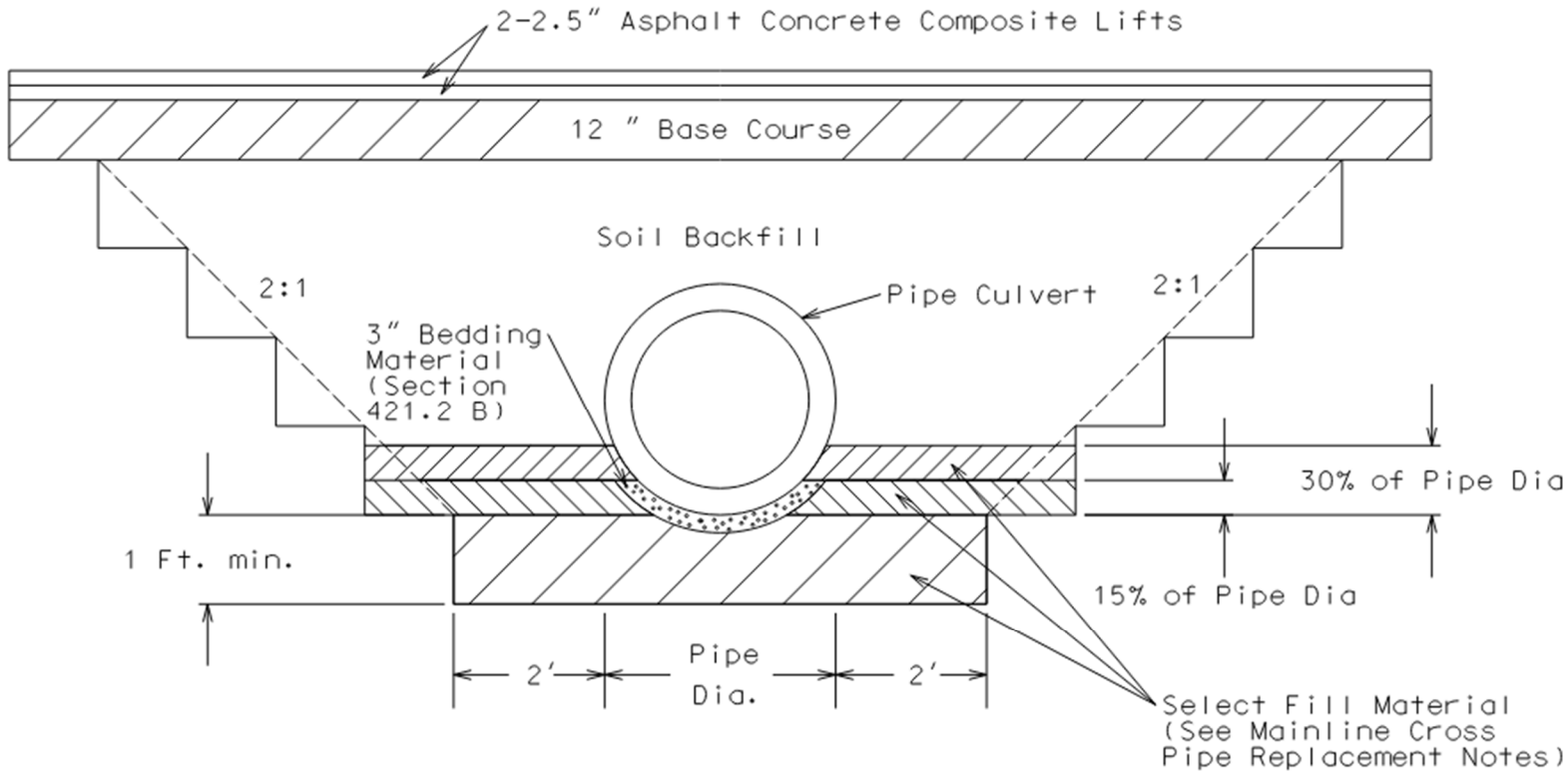
The select fill material used for backfilling the pipe culvert undercut and Class B Bedding will be paid for at the contract unit price per ton for Base Course. The 3" layer of bedding material to form the cradle in the pipe foundation will be incidental to the corresponding pipe installation contract items. The cost for asphalt concrete composite installed over the pipe replacement will be paid for at the contract unit price per ton for Asphalt Concrete Composite.

The table below describes the material types and groundwater elevations at the pipe locations based on the pipe culvert subsurface investigation.

Station	Soil Below Flowline	Groundwater Elevation (ft.)	Flowline of Pipe	
		Sep-24	Inlet Elevation (ft.)	Outlet Elevation (ft.)
353+00	Brown silt clay at inlet, brown to tan clay silt at outlet	1457.1	1460.3	1459.55
416+32	Dark brown to gray silt clay	1452.2	1455.12	1455.04

TABLE FOR PIPE CULVERT UNDERCUT

Station	Undercut Depth (ft)	Pipe Culvert Undercut (CuYd)
50+44	1	24
218+00	1	28
294+00	1	18
324+68	1	18
353+00	1	24
416+32	2	70
TOTAL		182



Pipe Installation Detail



PROJECT		SHEET	TOTAL SHEETS
NH-P 0044(232)377		21	83

TABLE FOR MAINLINE CROSS PIPE REPLACEMENT

LOCATION	REMOVE ASPHALT CONCRETE (Sq. Yds)	SELECT FILL MATERIAL (Tons)	BASE COURSE (Tons)	1ST AND 2ND LIFT ASPHALT COMPOSITE (Tons)
50+44	128	107	100	34.83
218+00	128	136	100	34.83
294+00	128	75	100	34.83
324+68	128	66	100	34.83
353+00	128	107	100	34.83
373+52	367	-	-	-
416+32	128	240	100	34.83
TOTALS	1135	731	600	209

Removal of any Material underneath asphalt is incidental to Remove Pipe Culvert.

Quantities are included in the Table of Additional Quantities for Mainline Cross Pipe Replacement. The quantity for Select Fill Material will be added/included in the quantity for Base Course.

REMOVING CORRUGATED METAL PIPE

When it is necessary to remove a damaged culvert end, the culvert may be cut with a torch. If the culvert is cut with a torch, it will be painted with a galvanizing paint approved by the Engineer.

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.

Cost for removing damaged portions of culverts will be included in the contract unit price per foot for Remove Pipe Culvert.

INSLOPE TRANSITIONS

Inslope transitions will be required at various pipe locations. Refer to standard plate 120.05 for details.

TABLE OF INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

Station	L/R	Type
50+44	L&R	2
218+00	L&R	2
294+00	L&R	2
324+68	L&R	2
353+00	L&R	2
416+32	L&R	2

Total Type 2 Inslope Transition: 12

DITCH RESTORATION

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

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

CLEANOUT FOR CULVERT TREATMENT

Cleanout of pipe culvert will be done in advance of the culvert lining at Sta. 1+03.

Material in existing pipe culvert will be cleaned out by water flushing or other approved methods.

Material removed from the pipe culvert will become property of the Contractor for disposal.

The Contractor will implement appropriate sediment control measures prior to water flushing to prevent discharges from the project boundaries.

The pipe culvert will be cleaned to the satisfaction of the Engineer.

All costs to dewater, clean pipe, and dispose of removed materials will be incidental to the contract unit price per each for "Cleanout Pipe Culvert for Treatment".

CULVERT LINING

Pipe culvert lengths shown in the Table of Mainline Culvert Work were obtained from the original grading plans and were not verified in the field.

The Contractor will submit to the Area Engineer a minimum of 2 weeks prior to the Preconstruction Meeting a detailed plan of how the pipe culvert cleaning and inspection will be staged. The plan will show how the Contractor is going to maintain traffic at each pipe culvert site, where equipment is going to be stored, the total length of the workspace if a lane of traffic needs to be closed to traffic, and the methods used to prevent material removed from the pipe culverts from entering the waterway. These plans will be approved by the Area Engineer prior to starting work on the pipe culvert cleaning and lining.

Sediment control may be required if water is flowing through the pipe culvert at the time of cleaning. Otherwise, sediment control is not anticipated.

The Contractor will implement appropriate sediment control measures prior to water flushing to prevent discharges beyond the project boundaries.

Wattles have been provided in the Estimate of Quantities and will be used to capture pipe cleanout material. Placement of the wattles will be as directed by the Engineer.

CURED IN PLACE PIPE (CIPP) LINER

This work consists of rehabilitating existing drainage culvert at Sta 1+03 by furnishing and installing Glass Reinforced Thermosetting Plastic (GRP) Cured-in-Place Pipe (CIPP) liner using Ultraviolet (UV) cure methods. The height of the fill over the culvert is 3 ft.

OBJECT MARKERS

At locations shown in the Table for Mainline Culvert Work, where Object Markers will be removed, cost for removing the existing Object Markers will be included in the contract unit price per each for "Remove Delineator".

New Type 2 Object Markers Back to Back and posts will be furnished and installed according to the details of Standard Plates 632.01, 632.03, and 632.04 by the Contractor at the locations shown in the Table for Mainline Culvert Work. Cost for new Type 2 Object Marker Back-to-Back and post installation is included in the contract unit price per each for Type 2 Object Marker Back to Back.

MAILBOXES

Existing mailboxes will be removed, turnouts constructed, and mailboxes reset on new posts with the necessary support hardware for single or double mailbox assemblies. The local Postmaster will determine the recommended mounting height. The Contractor will coordinate with the Engineer on the proper postal representative to contact.

If large mailboxes are located at double mailbox installations, a single post may need to be used for the large mailbox. The Contractor will be responsible for maintaining a temporary mailbox assembly until the refurbished mailbox assembly is complete in place.

All costs for removing existing mailboxes, providing temporary mailboxes, and resetting mailboxes with new posts and necessary support hardware will be incidental to the contract unit price per each for "Refurbish Single Mailbox" or "Refurbish Double Mailbox".

TABLE OF MAILBOXES

STATION	SIDE	CLASS Q3R HOT MIXED ASPHALT CONCRETE (Tons)	REFURBISH SINGLE MAILBOX (Each)	REFURBISH DOUBLE MAILBOX (Each)
23+23	L	4	1	-
41+52	L	4	-	1
73+26	L	4	-	1
77+00	L	4	1	-
131+30	R	4	1	-
191+80	R	4	1	-
246+75	R	4	1	-
331+95	R	4	1	-
TOTALS		32	6	2

TABLE OF CONSTRUCTION STAKING
(See Special Provision for Contractor Staking)

Grade Staking											
Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Length (Mile)	Lane Factor	*Sets of Stakes	**Grade Staking Quantity (Mile)	Construction Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Structure Staking Quantity (Each)
SD 44 (Transition from 2 Lanes to 3 Lanes AC Pavement)	208+80	213+00	3	420	0.080	1.5	1	0.120	0.080	0.080	
SD 44 (3 Lanes AC Pavement)	213+00	217+90	3	490	0.093	1.5	1	0.140	0.093	0.093	
SD 44 (Transition from 3 Lanes to 2 Lanes AC Pavement)	217+90	222+10	3	420	0.080	1.5	1	0.120	0.080	0.080	
SD 44 (RCBC Construction)	373+32.25										1
Totals:								0.380	0.253	0.253	1

* 1 = Top of Subgrade Blue Top Stakes Only (AC Pavement)

** Grade Staking Quantity = (Length) x (Lane Factor) x (Sets of Stakes)

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment will 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 will provide certification that the erosion control wattles do not contain noxious weed seeds.

Erosion control wattles will 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 will be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

<https://apps.sd.gov/HC60ApprovedProducts/main.aspx>

TABLE OF EROSION CONTROL WATTLE

Station	Location	Diameter (Inch)	Quantity (Ft)
1+03 38'L	Culvert Inlet	12	30
	Additional Quantity:	12	100
Total:			130

HIGH FLOW SILT FENCE

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

<https://apps.sd.gov/HC60ApprovedProducts/main.aspx>

High flow silt fence will 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.

An additional quantity of high flow silt fence has been added to the Estimate of Quantities for temporary sediment control.

TABLE OF HIGH FLOW SILT FENCE

Station	Location	Quantity (Ft)
218+00 42' L	Culvert Inlet	30
	Additional Quantity:	100
Total:		130

FERTILIZING

The Contractor will apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer will have a minimum guaranteed analysis of 4-4-4 and be USDA Certified BioBased.

It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 2.07%, a minimum of 4% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer will be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology.

The fertilizer will have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer will also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The fertilizer will be applied at a rate of 1,500 pounds per acre in accordance with the manufacturer's recommended method of application.

The Fertilizer provided will be from the approved product list. The approved product list may be viewed at the following internet site:

<https://apps.sd.gov/HC60ApprovedProducts/main.aspx>

PERMANENT SEEDING AND MULCHING

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

Type C Permanent Seed Mixture will consist of the following:

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

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum will consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier will provide certification of the fungal species claimed and the live propagule count. The inoculum will include a minimum 25% the fungal species *Rhizophagus intraradices*. The remaining 75% may include other endomycorrhizal fungal species.

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

The Mycorrhizal Inoculum provided will be from the approved product list. The approved product list may be viewed at the following internet site:

<https://apps.sd.gov/HC60ApprovedProducts/main.aspx>

STORMWATER POLLUTION PREVENTION PLAN CHECKLIST
*(The numbers left of the title headings are **reference numbers** to the **GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES** (Stormwater Permit))*

5.3 (2): STAFF TRAINING/SWPPP IMPLEMENTATION

To promote stormwater management awareness specific for this project, the Contractor's Erosion Control Supervisor should provide correspondence of how the SWPPP will be implemented. The Contractor's Erosion Control Supervisor is responsible for providing this information at the preconstruction meeting, and subsequently completing an attendance log, which should identify site-specific implementation of the SWPPP and the names of the personnel who attended the preconstruction meeting. Documentation of the preconstruction meeting will be filed with the SWPPP documents.

5.3 (3): DESCRIPTION OF CONSTRUCTION ACTIVITIES

- **5.3 (3a): Project Limits** (See Title Sheet)

➤ **5.3 (3a): Project Description** (See Title Sheet)

➤ **5.3 (4): Site Map(s)** (See Title Sheet and Plans)

➤ **Major Soil Disturbing Activities** (check all that apply)

☐ Clearing and grubbing

☒ Excavation/borrow

☒ Grading and shaping

☒ Filling

☐ Other (describe):

➤ **5.3 (3b): Total Project Area** See Title Sheet

➤ **5.3 (3b): Total Area to be Disturbed** See Title Sheet

➤ **5.3 (3c): Maximum Area Disturbed at One Time**

➤ **5.3 (3d): Existing Vegetative Cover (%)**

➤ **5.3 (3d): Description of Vegetative Cover**
- **5.3 (3e): Soil Properties:**

➤ **5.3 (3f): Name of Receiving Water Body/Bodies** See Title Sheet

➤ **5.3 (3g): Location of Construction Support Activity Areas**

5.3 (3h): ORDER OF CONSTRUCTION ACTIVITIES

The Contractor will enter the Estimated Start Date.

Description	Estimated Start Date
Install stabilized construction entrance(s).	
Install perimeter protection where runoff may exit site.	
Install perimeter protection around stockpiles.	
Install channel and ditch bottom protection.	
Clearing and grubbing.	
Remove and stockpile topsoil.	
Stabilize disturbed areas.	
Install utilities, storm sewers, curb and gutter.	
Install inlet and culvert protection after completing storm drainage and other utility installations.	
Final grading.	
Final paving.	
Removal of protection devices.	
Reseed areas disturbed by removal activities.	

5.3 (5): DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES
All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report. Include the technical reasoning for selecting each control. (check all that apply)

Perimeter Controls (See Detail Plan Sheets)	
Description	Estimated Start Date
☐ Natural Buffers (within 50 ft of Waters of State)	
☐ Silt Fence	
☐ Erosion Control Wattles	
☐ Temporary Berm / Windrow	
☐ Floating Silt Curtain	
☐ Stabilized Construction Entrances	
☐ Entrance/Exit Equipment Tire Wash	
☐ Other:	

Structural Erosion and Sediment Controls	
Description	Estimated Start Date
☒ Silt Fence	
☐ Temporary Berm/Windrow	
☒ Erosion Control Wattles	
☐ Temporary Sediment Barriers	
☐ Erosion Bales	
☐ Temporary Slope Drain	
☐ Turf Reinforcement Mat	
☐ Riprap	
☐ Gabions	
☐ Rock Check Dams	
☐ Sediment Traps/Basins	
☒ Culvert Inlet Protection	
☐ Transition Mats	
☐ Median/Area Drain Inlet Protection	
☐ Curb Inlet Protection	
☒ Interceptor Ditch	
☐ Concrete Washout Facility	
☐ Work Platform	
☐ Temporary Water Barrier	
☐ Temporary Water Crossing	
☐ Permanent Stormwater Ponds	
☐ Permanent Open Vegetated Swales	
☐ Natural Depressions to allow for Infiltration	
☐ Sequential Systems that combine several practices	
☐ Other:	

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Dust Controls

Description	Estimated Start Date
☐ Tarps & Wind impervious fabrics	
☐ Watering	
☐ Stockpile location/orientation	
☐ Dust Control Chlorides	
☐ Other	

Dewatering BMPs

Description	Estimated Start Date
☐ Sediment Basins	
☐ Dewatering bags	
☐ Weir tanks	
☐ Temporary Diversion Channel	
☐ Other:	

Stabilization Practices (See Detail Plan Sheets)

(Stabilization measures will begin the following work day whenever earth disturbing activity on any portion of the site has temporarily or permanently ceased. Temporary stabilization will be completed as soon as practicable but no later than 14 days after initiating soil stabilization activities **(3.18)**)

Description	Estimated Start Date
☐ Vegetation Buffer Strips	
☐ Temporary Seeding (Cover Crop Seeding)	
☒ Permanent Seeding	
☐ Sodding	
☐ Planting (Woody Vegetation for Soil Stabilization)	
☒ Mulching (Grass Hay or Straw)	
☐ Fiber Mulching (Wood Fiber Mulch)	
☐ Soil Stabilizer	
☐ Bonded Fiber Matrix	
☐ Fiber Reinforced Matrix	
☐ Erosion Control Blankets	
☐ Surface Roughening (e.g. tracking)	
☐ 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.

5.3 (6): PROCEDURES FOR INSPECTIONS

- Inspections will be conducted at least once every 7 days.
- 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 to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches 1/3 of the height of the silt fence.
- Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
- Check dams will be inspected for stability. Sediment will be removed when depth reaches 1/2 the height of the dam.
- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
- Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
- The SDDOT Project Engineer and Contractor's Erosion Control Supervisor are responsible for inspections. Maintenance and 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.

5.3 (7): POST CONSTRUCTION STORMWATER MANAGEMENT

Stormwater management will be handled by temporary controls outlined in "DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES" above, and any permanent controls needed to meet permanent stormwater management needs in the post construction period will be shown in the plans and noted as permanent.

5.3 (8): POLLUTION PREVENTION PROCEDURES

5.3 (8a): Spill Prevention and Response Procedures

- **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/or 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.
 - Hazardous Materials
 - Products will be kept in original containers unless the container is not resealable and provide secondary containment as applicable.
 - 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 stormwater system or stormwater 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 stormwater runoff.

➤ **Spill Control Practices**

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 cleanup 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 cleanup 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.

➤ **Spill Response**

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into stormwater runoff and conveyance systems. If the release has impacted on-site stormwater, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens stormwater 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 SDDANR.
- Personnel with primary responsibility for spill response and cleanup 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.

5.3 (8b): WASTE MANAGEMENT PROCEDURES

➤ **Waste Disposal**

- All liquid waste materials will be collected and stored in approved sealed containers. 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. The Contractor is responsible for ensuring 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 Contractor 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 which must be secured to prevent tipping and serviced in a timely manner by a licensed waste management Contractor or as required by any local regulations.

5.3 (9): CONSTRUCTION SITE POLLUTANTS

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 heading “POLLUTION PREVENTION PROCEDURES” (check all that apply).

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

Product Specific Practices

- **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 stormwater. 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 facilities on the site. These areas must be self-contained and not connected to any stormwater outlet of the site. Upon completion of construction, the area at the washout facility will be properly stabilized.

5.3 (10): NON-STORMWATER DISCHARGES

The following non-stormwater 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.

5.3 (11): INFEASIBILITY DOCUMENTATION

If it is determined to be infeasible to comply with any of the requirements of the Stormwater Permit, the infeasibility determination must be thoroughly documented in the SWPPP.

7.0: 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 SDDANR immediately **if any one of the following** conditions exists:

•

The release or spill threatens or is able to threaten waters of the state (surface water or ground water)

•

The release or spill causes an immediate danger to human health or safety

•

The release or spill exceeds 25 gallons

•

The release or spill causes a sheen on surface water

•

The release or spill of any substance that exceeds the ground water quality standards of ARSD Chapter 74:54:01

•

The release or spill of any substance that exceeds the surface water quality standards of ARSD Chapter 74:51:01

•

The release or spill of any substance that harms or threatens to harm wildlife or aquatic life

•

The release or spill is required to be reported according to Superfund Amendments and Reauthorization Act (SARA) Title III List of Lists, Consolidated List of Chemicals Subject to Reporting Under the Emergency Planning and Community Right to Know Act, US Environmental Protection Agency.
- To report a release or spill, call SDDANR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central Standard Time). To report the release after hours, on weekends or holidays, call South Dakota Emergency Management at 605-773-3231. Reporting the release to SDDANR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, you must also contact local authorities to determine the local reporting requirements for releases. A written report of the unauthorized release of any regulated substance, including quantity discharged, and the location of the discharge will be sent to SDDANR within 14 days of the discharge.

5.4: SWPPP 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.



Authorized Signature (See the General Permit, Section 7.4 (1))

➤ 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

The following personnel are duly authorized representatives and have signatory authority for modifications made to the SWPPP:

➤ 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: _____

➤ SDDANR Contact Spill Reporting

- Business Hours Monday-Friday (605) 773-3296
- Nights and Weekends (605) 773-3231

➤ SDDANR Contact for Hazardous Materials.

- (605) 773-3153

➤ National Response Center Hotline

- (800) 424-8802.

➤ SDDANR Stormwater Contact Information

- SDDANR Stormwater (800) 737-8676
- Surface Water Quality Program (605) 773-3351

5.5: REQUIRED SWPPP MODIFICATIONS

➤ 5.5 (1): Conditions Requiring SWPPP Modification

The SWPPP must be modified, including the site map(s), in response to any of the following conditions:

- When a new operator responsible for implementation of any part the SWPPP begins work on the site.
- When changes to the construction plans, sediment and erosion control measures, or any best management practices on site that are no longer accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered by inspections.
- To reflect areas on the site map where operational control has been transferred (including the date of the transfer) or has been covered under a new permit since initiating coverage under this general permit.
- If inspections by site staff, local officials, SDDANR, or U.S. EPA determine that SWPPP modifications are necessary for compliance with the Stormwater Permit.
- To reflect any revisions to applicable federal, state, or local requirements that affect the control measures implemented at the site.
- If approved by the Secretary, to reflect any changes in chemical water treatment systems or controls, including the use of a different water treatment chemical, age rates, different areas, or methods of application.

➤ 5.5 (2): Deadlines for SWPPP Modification

Any required revisions to the SWPPP must be completed within 7 calendar days following any of the items listed above.

➤ 5.5 (3): Documentation of Modifications to the Plan

All SWPPP modification records are required to be maintained showing the dates of when the modification occurred. The records must include the name of the person authorizing each change and a brief summary of all changes.

➤ 5.5 (4): Certification Requirements

All modifications made to the SWPPP must be signed and certified as required in Section 7.4.

➤ 5.5 (5): Required Notice to Other Operators

If there are multiple operators at the site, the Contractor's Erosion Control Supervisor must notify each operator that may be impacted by the change to the SWPPP within 24 hours.

When modifications as described above occur, the SWPPP will be modified to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP using the DOT 298 form and drawings on the plan will be modified to reflect the needed changes. Copies of the DOT 298 forms and the SWPPP will be retained on site in a designated place for review throughout the course of the project. A copy of the DOT 298 form will be given to the Contractor Erosion Control Supervisor and a copy will be emailed to the SDDOT Environmental Section in accordance with the DOT 298 Form.

1286
Plot Scale -
Plotted From -
TRM113315
Plot Name -
..Turn Lanes.dgn
\$Subname\$.d

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SEQUENCE OF OPERATIONS

The following Sequence of Operations shall be followed unless an alternate Sequence of Operations is submitted in writing a minimum of two weeks prior to the preconstruction meeting and approved by the Engineer.

1. Install fixed location signs
2. Install sediment and erosion control
3. Install lane closure traffic control per standard plate 634.25 at pipe location
4. Place new pipe ½ width at a time while maintaining one lane of traffic. Each pipe location will be surfaced with asphalt before moving to the next location.
5. Repeat steps 3 and 4 at all pipe replacement locations
6. Install lane closure traffic control per standard plate 634.25 at new box culvert location sta. 373+32.35
7. Close 446th Ave intersection to the north and south when necessary while box is being installed.
8. Construct box culvert ½ width at a time while maintaining one lane of traffic on SD 44. The box culvert location will be surfaced with asphalt immediately after the full box culvert length has been placed.
9. Install lane closure traffic control per standard plate 634.23 at turn lane to be constructed
10. Do all work involved in construction of turn lane. Channelizing devices will be placed and maintained at the new joint between the shoulder widening section and the in place
11. Repeat steps 9 and 10 at the other 2 turn lanes to be constructed.
12. Install signing and permanent pavement markings
13. Remove sediment and erosion control devices
14. Remove all traffic control devices

GENERAL TRAFFIC CONTROL

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

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

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, signposts, and breakaway bases will be removed within 7 calendar days following pavement marking.

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract items.

GENERAL TRAFFIC CONTROL Continued

At no time will a vertical drop-off of greater than 3 inches be left overnight adjacent to the traveled way. The Contractor will utilize embankment material to ensure a 3-inch vertical drop-off is not exceeded. The slope of the embankment material will not be steeper than a 4:1 within 30 feet of the traveled way.

Traffic will be maintained on the driving lanes. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment will be repaired at no expense to the Department.

The Contractor will furnish, install, maintain, and remove TRUCK CROSSING (W8-6) signs daily. The TRUCK CROSSING signs will be displayed always when haul vehicles are hauling material. When hauling conditions no longer exist, the signs will be covered or removed from view. The exact number and location will be determined during construction. Payment for additional signs will be based on the contract unit price per square foot for "Traffic Control Signs".

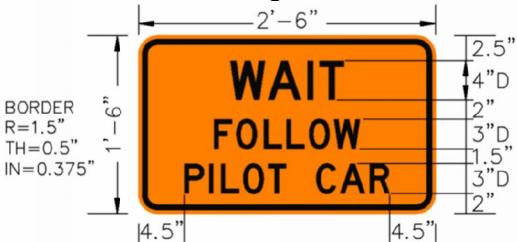
GROOVED PAVEMENT (W8-15) signs with MOTORCYCLE (W8-15P) plaques are required in advance of areas that have been cold milled and are not resurfaced the same day. The GROOVED PAVEMENT sign assemblies will be installed a minimum of 1000 feet in advance of cold milled sections and remain in place until the sections have been resurfaced.

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

FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.

Additional flagger warning signs and flagger hours have been included in the Estimate of Quantities for use on intersecting roads. These flaggers will be used as directed by the Engineer and will be used primarily during daytime hours. Also included in the Estimate of Quantities are WAIT FOLLOW PILOT CAR signs for use on low volume intersecting roads as determined by the Engineer. WAIT FOLLOW PILOT CAR signs will not block the view of the stop sign.



It is required that the flaggers and pilot car operators be able to communicate with one another. If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. All costs associated with this will be incidental to the contract unit price per hour for "Flagging".

TEMPORARY PAVEMENT MARKING

The total length of no passing zone on this project is estimated to be 2.3 miles.

It is estimated that 6 DO NOT PASS (R4-1) and 6 PASS WITH CARE (R4-2) signs will be required to mark the no passing zones, should the Contractor elect to use these signs.

Quantities of Temporary Pavement Markings consist of:
One pass on top of the milled surface
One pass after blade laid asphalt
One pass on top of the final lift of asphalt concrete
One pass after the flush seal

TEMPORARY PAVEMENT MARKING Continued

If the flush seal is eliminated for the project, the application of the temporary pavement marking on top of the flush seal as well as the additional pass prior to the flush seal will be eliminated.

No adjustment in the contract unit price for "Temporary Pavement Marking" will be made because of a variation in quantities.

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

PAVEMENT MARKING PAINT

The Contractor will advise the Engineer prior to the application of the permanent pavement marking to allow the State adequate time to check and mark the location of no passing zones.

Cold weather waterborne paint will not be required after October 15th per Section 633.3 B.

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

COLD APPLIED PLASTIC PAVEMENT MARKING

All materials will be applied as per the manufacturer's recommendations.

Cold Applied Plastic Pavement Markings will be 3M Series 380 AW or an approved equal.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

All materials will be applied as per manufacturer's recommendations. High build waterborne pavement marking paint will conform to Section 980.1 B.

Reflective media will consist of glass beads. Reflective media will require a Certificate of Compliance for Certification for each source and lot. Acceptance sampling will not be required.

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Solid 4" line = 22.5 Gals/Mile
Dashed 4" line = 6.2 Gal/Mile
Glass Beads = 8 Lbs/Gal.

All cost for materials, labor, and equipment necessary to furnish and install the pavement markings will be incidental to the contract unit price for the respective High Build Waterborne Pavement Marking Paint items.

RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT

The Department may take retroreflectivity readings on the pavement marking lines after 14 days and within 42 days of the line application using either a portable or mobile retroreflectometer that conforms to 30-meter geometry. If the Department chooses to take retroreflectivity readings, three retroreflectivity readings will be taken on each line at each test location. The three readings will be averaged and become the reading for that test location.

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RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT Continued

If the Department chooses to take retroreflectivity readings, three readings will be taken on the edge lines and lane lines in the direction of application. For combination solid yellow and skip yellow lines for turn lanes and for centerline markings on two-way roadways, three readings will be taken in one direction, the reflectometer will be turned 180 degrees and three more readings will be taken.

The six readings for the centerline markings will be averaged and become the test reading for that test location.

If the Department chooses to take readings, the minimum retroreflectivity values will be 275 mc/m²/lux for white and 170 mc/m²/lux for yellow.

GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING

The Contractor will establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving will be vacuumed. Solid residue will be removed from the pavement surfaces before being blown by traffic action or wind. The Contractor will conduct this work to control and minimize airborne dust and similar debris that may become a hazard to motor vehicle operation or nuisance to property owners. Residue from wet grooving will not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, will be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state. The cleaning of the residue for grooving will be to the satisfaction of the Engineer and may require more than one pass to adequately remove material. All costs for removal of grinding and/or grooving residue will be included in the contract unit price per each, or word for “Grooving for Cold Applied Plastic Pavement Marking” contract items.

GENERAL PERMANENT SIGNING

New sign installations will be staked in the field by the Contractor and checked by the Engineer. The Contractor will give the Engineer a minimum of one week to check staked locations prior to signpost installation. Lateral offset of signs will be as shown in the plans or as directed by the Engineer.

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

When signs are mounted in an assembly, they will be 1-2 inches apart vertically and horizontally.

The height of the post must not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign will be cut off. No separate payment will be made for cutting the post or for that length cut off.

Aluminum U-Channel stiffeners will be used on all signs 36 inches or greater in width and will conform to ASTM B221 Alloy 6063-T6 or 6061-T6. The U-Channel will be 2 inches in width and free of holes. The U-Channel stiffeners will 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 1/4-inch diameter drive rivets.

The Contractor will 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 will extend through each post.

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

Prior to use, the Contractor will provide documentation for the sign support devices showing they meet the applicable NCHRP 350 or MASH requirements.

REMOVE TRAFFIC SIGN

Existing signs that are shown as being removed in the Permanent Signing Table will become the property of the Contractor. Existing signposts and bases will be removed in their entirety. All existing signs, posts, and/or hardware removed will not be reused. Holes remaining from the removal of wood posts will 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 will be incidental to the contract unit price per each for “Remove Traffic Sign”. Quantities will be per assembly at the contract unit price per each.

REMOVE SIGN FOR RESET AND RESET SIGN

Signs that are scheduled for reset will be dismantled and reassembled to the extent needed by the Contractor to properly reset the sign. Signs will be handled with care so that the existing signs, posts, and bases are not damaged during the relocation process. The Contractor will replace and pay for any reset signs damaged in their care.

The Contractor will remove and dispose of any existing posts for all reset signs that require use of new posts as shown in the Table of Permanent Signing.

All costs for removing, dismantling, and disposing of any existing posts will be incidental to the contract unit price per each for “Remove Sign for Reset”. All costs for resetting the existing signs will be incidental to the contract unit price per each for “Reset Sign”. All quantities for Remove Sign for Reset and Reset Sign will be per assembly at the contract unit price per each.

SQUARE TUBE ANCHOR SLEEVE

The Contractor will furnish and install new 2.5” x 2.5” x 18”, 12 Gauge square tube anchor sleeve or equivalent components as approved by the Engineer for 2.0” x 2.0” perforated tube posts. A 2.25” x 2.25” x 4’, 12 Gauge perforated tube post will be used as the anchor post for installation with the square tube anchor sleeve.

NEW PERMANENT SIGNING

All signs will be manufactured in accordance with the sheeting manufacturer's recommendations utilizing a matched component system, including inks, electronic cuttable films, and protective overlay films.

All Flat Aluminum Signs, Nonremovable Copy High Intensity will have sheeting in conformance with the requirements of ASTM D4956 Type IV. All Flat Aluminum Signs, Nonremovable Copy Super/Very High Intensity will have sheeting in conformance with the requirements of ASTM D4956 Type XI.

All costs associated with furnishing and installing the new permanent signs, and with furnishing and installing stiffeners and hardware will 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”.

DIGITALLY PRINTED SIGNS

Digitally printed signs will be allowed on this project. If the Contractor elects to provide digitally printed signs, such signs will adhere to the following specifications.

PROTECTIVE OVERLAY FILM

Permanent traffic signs printed with digital ink systems will be fabricated with a full sign protective overlay film designed to provide a smooth surface needed for retroreflectivity, and to protect the sign from fading and UV degradation. The overlamine will comply with the retroreflective sheeting manufacturer's

DIGITALLY PRINTED SIGNS Continued

recommendations to ensure proper adhesion and transparency and will also meet the reflective film durability as identified in Table 1.

Table 1: Retroreflective Film Minimum Durability Requirements

ASTM D4956 Type	Full Sign Replacement Term (years)	Sheeting Replacement Term (years)
I	0	7
III	7	10
IV	7	10
VIII	7	10
IX	7	12
XI	7	12

FABRICATION

Retroreflective sheeting will be applied to a properly cleaned and prepared aluminum sign blank in accordance with the retroreflective sheeting manufacturer's recommendations. Sign legend will be applied using digital print technologies and systems in accordance with the retroreflective sheeting manufacturer's recommendations and the requirements of these plans.

Finished signs will be free of ragged edges and must be supplied clean and free of scratches, grease, oil, lubricants or other contaminants. Minor blemishes (dirt speck, dust, etc.) may settle on the fresh ink surface or become entrapped between the sheeting surface and transparent overlay film due to static charge within the sign shop environment. Any blemish must be minor and not interfere with the communication of the sign message to the motorist. The blemish must not be visible to the naked eye when viewed from 30 feet or greater.

After application of the retroreflective sheeting, sign blanks will be stacked and packaged face to face, back to back, and protected in accordance with the sheeting manufacturer's recommendations. Finished signs will be securely packaged to prevent damage during transit or storage according to the sheeting manufacturer's recommendations.

TRAFFIC SIGN PERFORMANCE WARRANTY PROVISIONS

Based on the ASTM Type of sheeting specified, traffic control signs will be warranted for the duration shown in Table 1. Full product terms and conditions are as established by each sheeting manufacturer and may contain certain limitations based on sheeting and ink colors, and geographic exposure of the sign. A copy of the warranty document with complete details of terms and conditions will be supplied if requested by the Engineer.

CERTIFIED DIGITAL SIGN FABRICATOR

Sign fabricators using digital imaging methods to produce regulated traffic signs must be certified by the reflective sheeting manufacturer whose materials are used to produce the delivered signs.

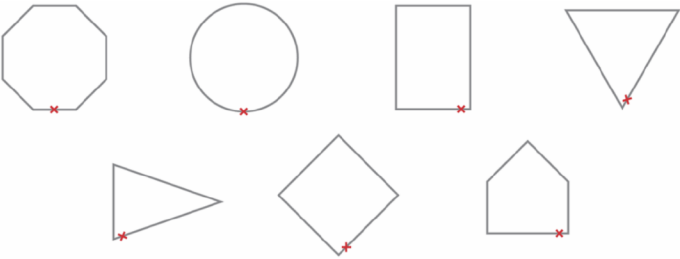
DATE TAGGING SIGNS WITH PERTINENT INFORMATION

All digitally printed signs are required to be date-tagged with the following 2 components:

1. Date tags on the back of signs
Tags will have the following information and be fabricated with material and printing system that are as durable as the warranted sign.
 - Name of Sign Fabricator
 - Date the sign was fabricated (month and year)
 - Process that was used for sign fabrication (digitally printed)
 - Supplier of sheeting that was used for fabricating the sign.

DIGITALLY PRINTED SIGNS Continued

2. Border date
The month and year (mm/yyyy) of sign fabrication will be printed in the border of the sign in 3/8" sans serif font. Border date will be printed with the same warranted printed system as the sign face. The date should be printed in the locations indicated below.



MILEAGE REFERENCE MARKERS

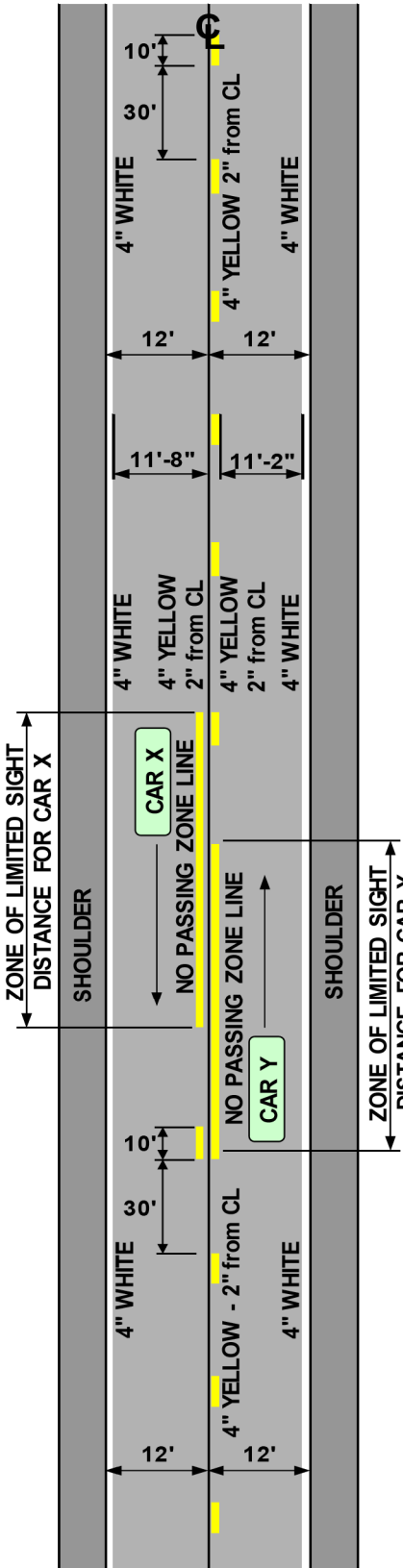
Mileage Reference Markers (MRMs) are not to be disturbed. If an MRM is attached to a sign listed for replacement it will be salvaged and reattached to the new sign in the same location. Payment for this work will be incidental to the various signing contract items.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30"	5.2	10.4
R11-2	ROAD CLOSED	2	48" x 30"	10.0	20.0
R11-3a	ROAD CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY	2	60" x 30"	12.5	25.0
W1-3	REVERSE TURN (L or R)	2	48" x 48"	16.0	32.0
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16.0	32.0
W8-1	BUMP	2	48" x 48"	16.0	32.0
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-11	UNEVEN LANES	2	48" x 48"	16.0	32.0
W8-15	GROOVED PAVEMENT	2	48" x 48"	16.0	32.0
W8-15P	MOTORCYCLE (plaque)	2	24" x 18"	3.0	6.0
W8-17	SHOULDER DROP-OFF (symbol)	2	48" x 48"	16.0	32.0
W13-1P	ADVISORY SPEED (plaque)	2	30" x 30"	6.3	12.6
W20-1	ROAD WORK AHEAD	5	48" x 48"	16.0	80.0
W20-3	ROAD CLOSED AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	5	48" x 48"	16.0	80.0
W21-2	FRESH OIL	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 4 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 8 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	9	36" x 18"	4.5	40.5
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT		708.5			

Included in the Estimate of Quantities as separate items are:		
Cold Applied Plastic Pavement Marking, Left Arrow	8 Ea	-
Cold Applied Plastic Pavement Marking, Right Arrow	2 Ea	-
Cold Applied Plastic Pavement Marking, Message	3 Words	-
		-
		-

TWO LANE ROADWAY



PAVEMENT MARKING

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

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

Application rates will be as follows:

Two Lane Roadway
(Rates for one line)
Dashed Yellow Centerline
Rate = 6.2 Gals./Pass-Mile
Solid Yellow Centerline
Rate = 22.5 Gals./Pass-Mile
Solid White Edgeline
Rate = 22.5 Gals./Pass-Mile

4" Yellow Skip Centerline (when not adjacent to a 4" Yellow No Passing Zone) will be placed consistently to the south or east side of centerline.

ESTIMATED QUANTITIES (BASED ON ONE APPLICATION)	
HIGH BUILD	QUANTITY
WHITE	374 GALLONS
YELLOW	146 GALLONS

Included in the above quantities are:			
Additional White (1 Application)		Additional Yellow (1 Application)	
Description	Gallons	Description	Gallons
4" Lines	580'	Transitions 6 Ea 9060'	50
8" Lines	-	4" Skip Lines	-
12" Gore Lines	-	8" Lines	-
Crosswalks	-	12" Lines	-
24" Stop Lines	-	24" Hatches	392'
24" Hatches	-	Solid Areas	-
Solid Areas	-	Additional Yellow:	71
Arrows			
Left Arrows	-	Additional Quantities	
Right Arrows	-	Rates of Coverage:	SqFt/Gal
Straight Arrows	-	4", 8" & 12" Lines	60
Combo Arrows	-	24" Lines & Hatches	40
Lane Drop Arrows	-	Arrows, Messages and Solid Areas	25
Messages			
STOP	-		
STOP AHEAD	-	All pavement marking dimensions are based on 12' driving lanes.	
R X R w/ Stop Lines	-		
SCHOOL X-ING	-		
Additional White:	3		

1286
Plot Scale -

Plotting Date: 2/17/2026

NH 0044(232)377, PCN 06R5, Sign Installation SD44															
Station	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)	Remove Sign for Reset	Reset Sign	Direction Sign Faces	Current Type of Post	Remarks
212+59	L	605 Sires	D9-10	72	18								West	Perforated Tube	Do Not Remove
215+30	L	Stop	R1-1	36	36		7.5	10	1	1			North	Wood	Remove and Replace Existing Sign with New Sign on New Posts
215+78	R	Stop	R1-1	36	36		7.5	10	1	1			South	Wood	Remove and Replace Existing Sign with New Sign on New Posts
218+47	R	605 Sires	D9-10	72	18								East	Perforated Tube	Do Not Remove
229+60	R	No Passing Zone	W14-3	48	36		5.6	9	1				East	None	New Sign on New Post
406+48	L	No Passing Zone	W14-3	48	36		5.6	9	1	1			West	Perforated Tube	Remove and Replace Existing Sign with New Sign on New Posts
417+69	R	(Left Arrow) Marion 1/ (Left Arrow) Monroe 8	D1-2	72	36	18.0		20	2	1			West	Perforated Tube	Remove and Replace Existing Sign with New Sign on New Posts See Special Sign Detail Sheet
422+79	L	West	M3-4	24	12	2.0		10	1	1			East	Perforated Tube	Remove and Replace Existing Sign with New Sign on New Posts
		Hwy 44	M1-5	24	24	4.0									
425+00	L	Stop	R1-1	36	36								North	Perforated Tube	Do Not Remove
425+48	R	Stop	R1-1	36	36		7.5	10	1	1			South	Perforated Tube	Remove and Replace Existing Sign with New Sign on New Posts
426+62	R	West	M3-4	24	12	2.0		10	1	1			West	Wood	Remove and Replace Existing Sign with New Sign on New Posts
		Hwy 44	M1-5	24	24	4.0									
427+95	R	Chad Mechels Memorial Highway	Special	60	24			20	2		1	1	West	Wood	Remove Sign and Reset Sign on New Posts
432+80	L	Marion 1 (Right Arrow)	D1-1	66	18	8.3		9	1	1			East	Perforated Tube	Remove and Replace Existing Sign with New Sign on New Posts
					TOTAL	38.3	33.7	117.0	12.0	8.0	1.0	1.0			

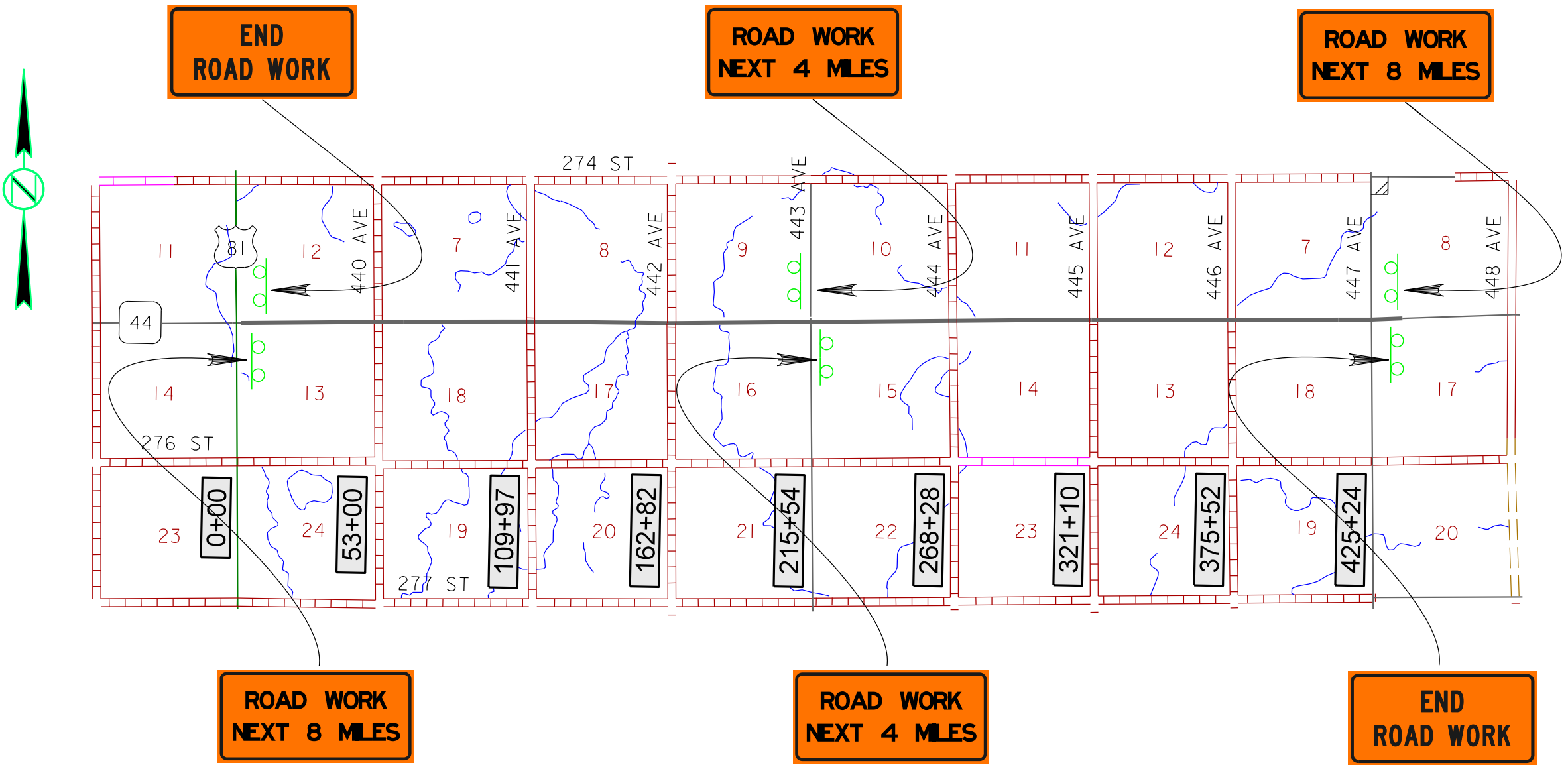
TRM12315
Plotted From -

NH 0044(232)377, PCN 06R5, Sign Summary SD44								
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
R1-1	Stop	36	36	7.5	3		22.5	White on Red
M1-5	SD 44	24	24	4.0	2	8.0		Black / Green on White
M3-4	West	24	12	2.0	2	4.0		Black / Green on White
W14-3	No Passing Zone	48	36	5.6	2		11.2	Black on Fluorescent Yellow
Special	(Left Arrow) Marion 1/ (Left Arrow) Monroe 8	72	36	18.0	1	18.0		White on Green
Special	Marion 1 (Right Arrow)	66	18	8.3	1	8.3		White on Green
						38.3	33.7	

\$Subname\$\$
Plot Name -
...Turn Lanes.dgn
File -

TRAFFIC CONTROL
FIXED LOCATION SIGNS

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	31	83
Plotting Date: 2/17/2026			



All fixed location signs will remain in place until permanent pavement marking is completed.

Signs will be placed 200' to 300' from intersections. Exact location to be determined by engineer.

Construction signs cannot obscure existing signs and must be installed a minimum of 200' from existing signs.

Construction signs will not be installed on the same post as an existing highway sign or light pole.

W20-1 signs are also to be used per the applicable standard plates.

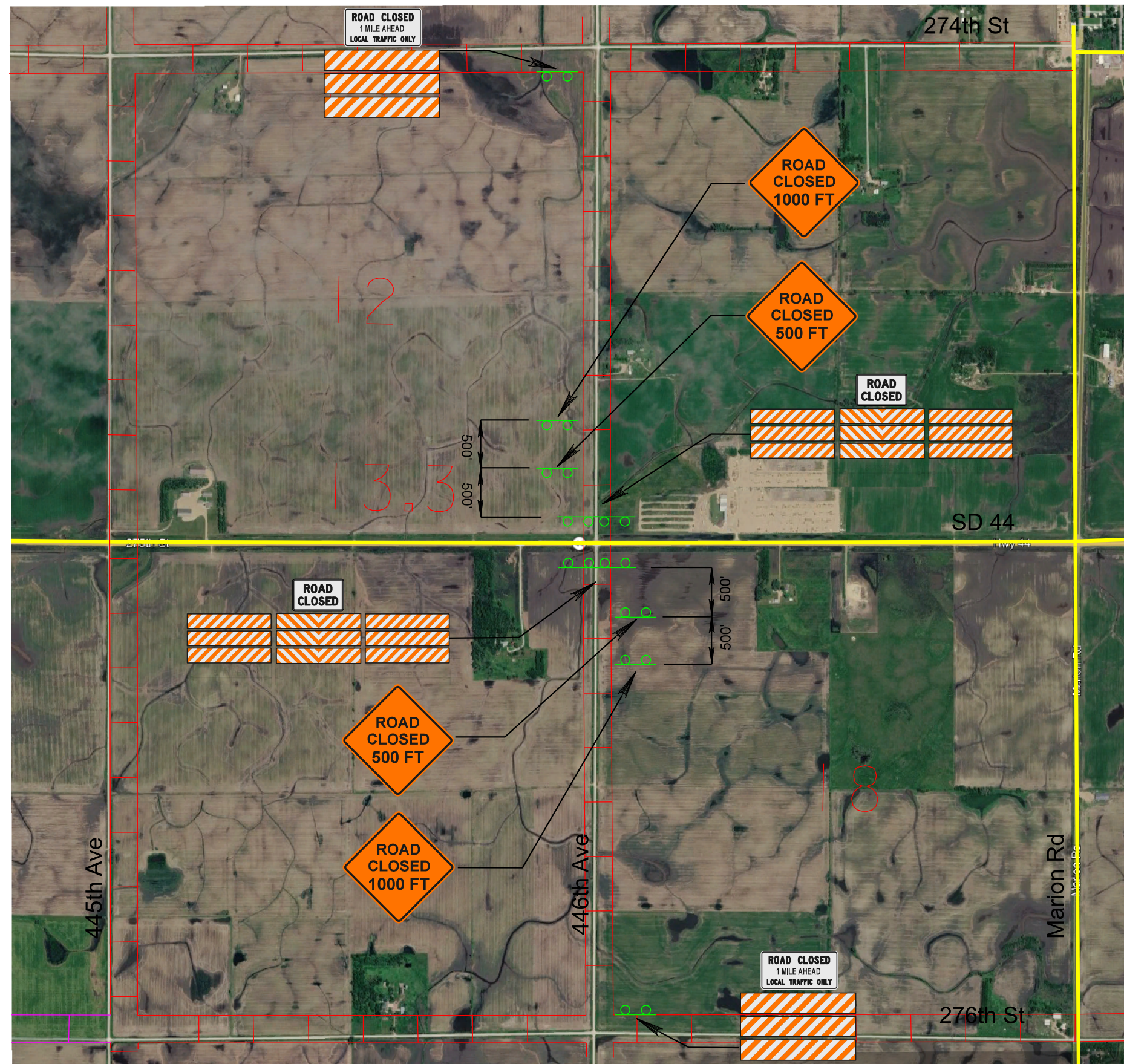
ROAD CLOSURE

446th Ave

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	32	83

Plotting Date: 2/17/2026

Note:
Road Closure signing
on 446th Ave is only
to be used during the
construction of the
box culvert on SD44
and removed upon
completion.



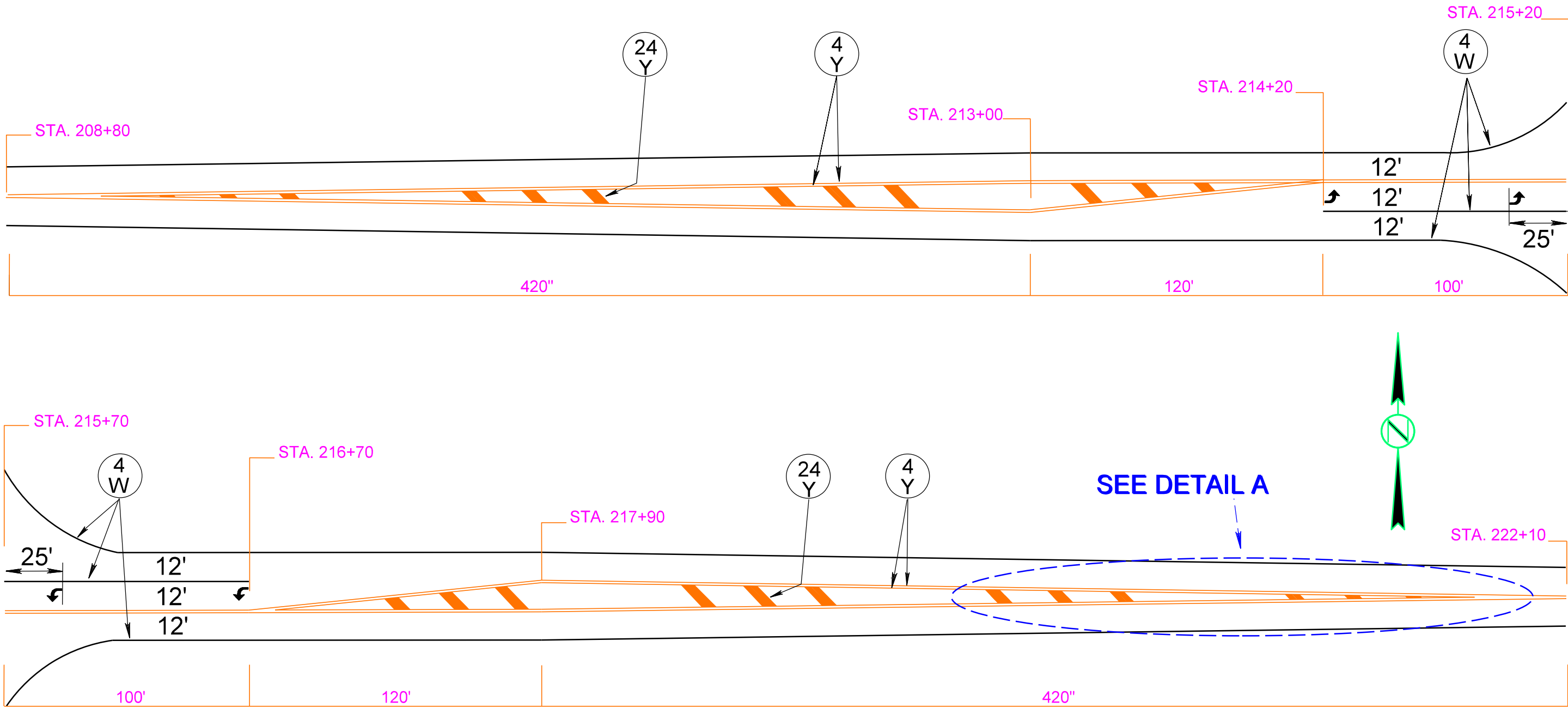
Plot Scale - 1"=80'

Plotted From - TRM13315

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	33	83

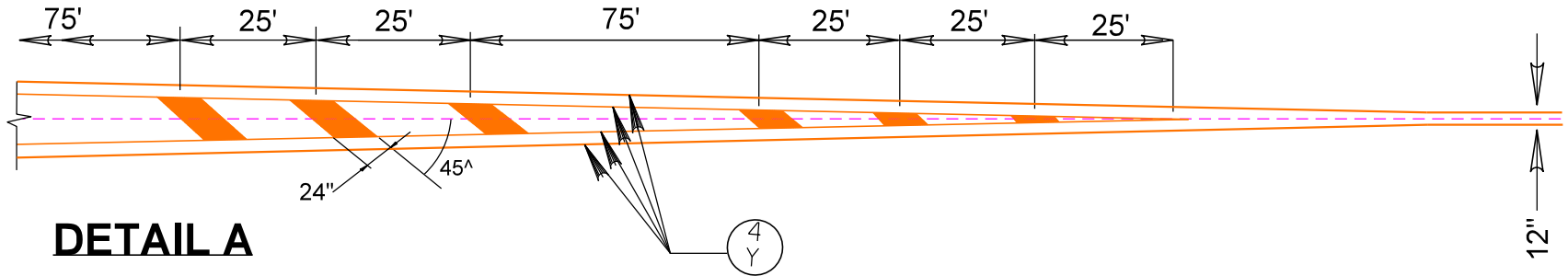
Plotting Date: 2/17/2026

PERMANENT PAVEMENT MARKINGS
SD44 & 443rd AVE



LEGEND

- ④ W - 4" WHITE PAINTED PAVEMENT MARKING
- ④ Y - 4" YELLOW PAINTED PAVEMENT MARKING
- ②④ Y - 24" YELLOW PAINTED PAVEMENT MARKING
- ↩ - WHITE PAVEMENT MARKING, ARROW



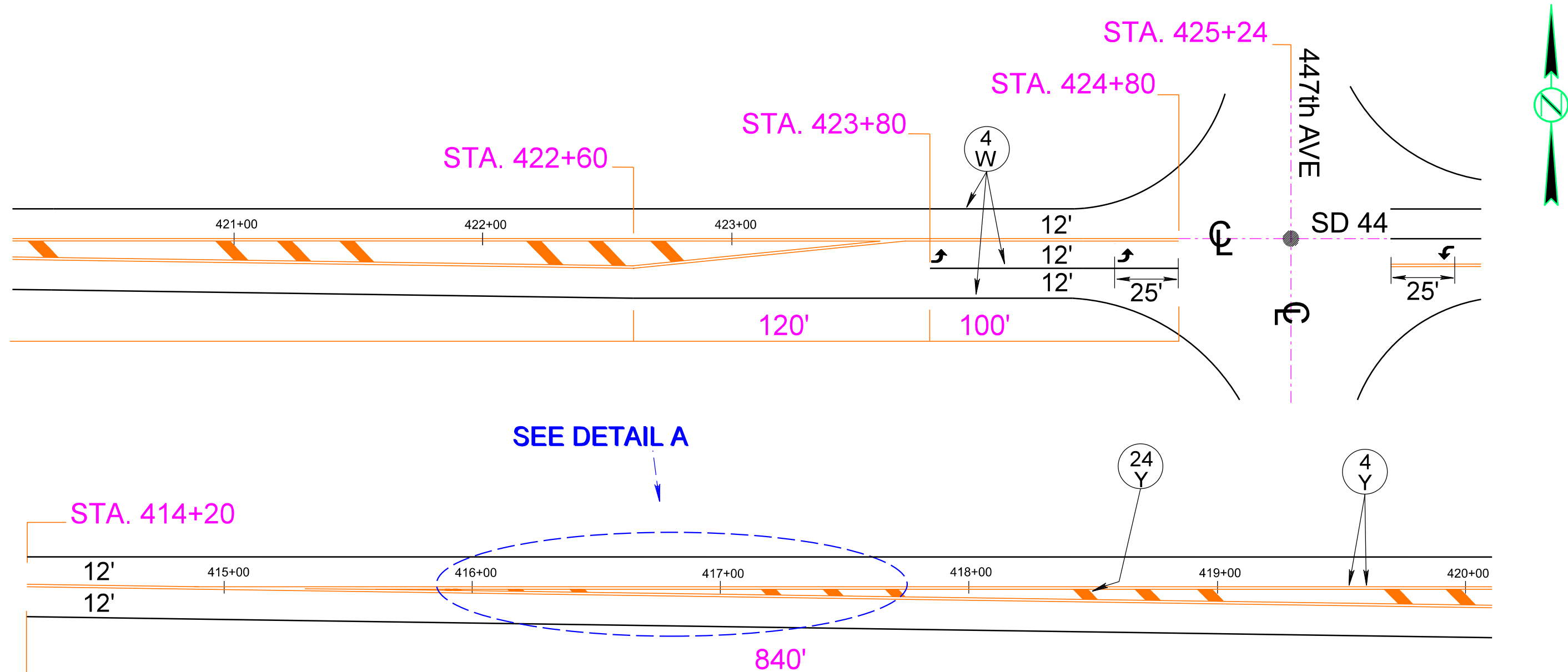
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126
Plot Scale -

Plotted From - TRM12315

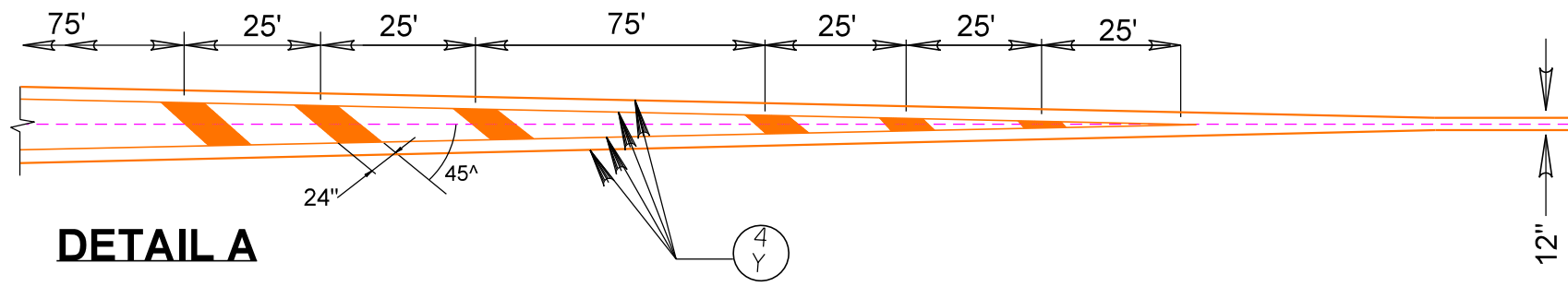
PERMANENT PAVEMENT MARKINGS
SD 44 & 447th AVE

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	34	83
Plotting Date: 2/17/2026			



LEGEND

- (4 W) - 4" WHITE PAINTED PAVEMENT MARKING
- (4 Y) - 4" YELLOW PAINTED PAVEMENT MARKING
- (24 Y) - 24" YELLOW PAINTED PAVEMENT MARKING
- ↩ - WHITE PAVEMENT MARKING, ARROW



Plot Name - \$Subname\$.dgn
File - ...Turn Lanes.dgn

126
Plot Scale -

Plotted From - TRM12315



PROJECT
NH-P 0044(232)377

SHEET
35

TOTAL
SHEETS
83

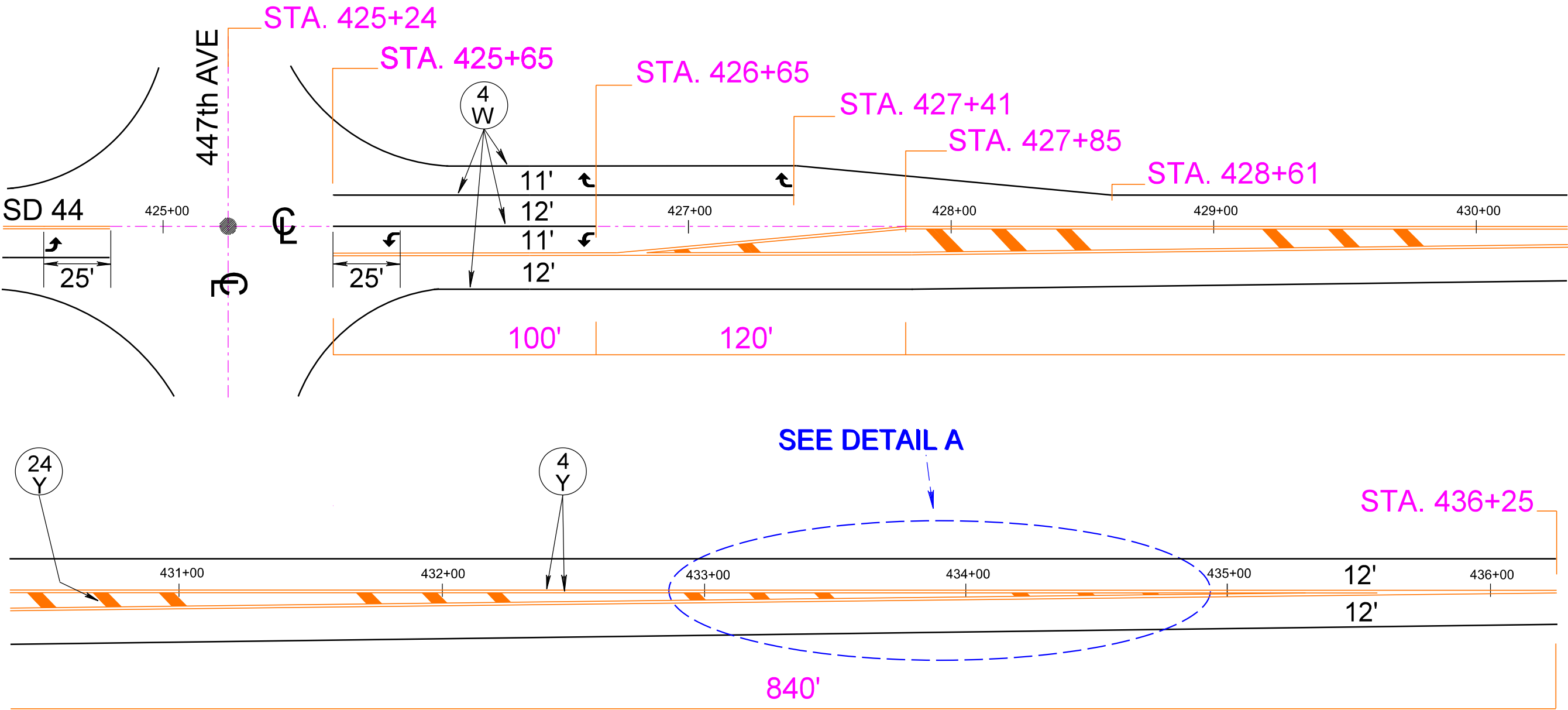
Plotting Date: 2/17/2026

PERMANENT PAVEMENT MARKINGS SD 44 & 447th AVE

\$Subname\$\$

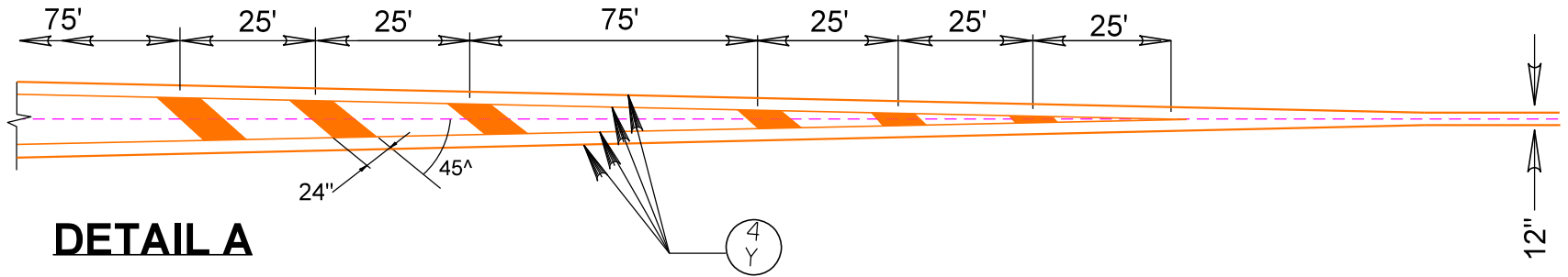
Plot Name -

File - ...Turn Lanes.dgn



LEGEND

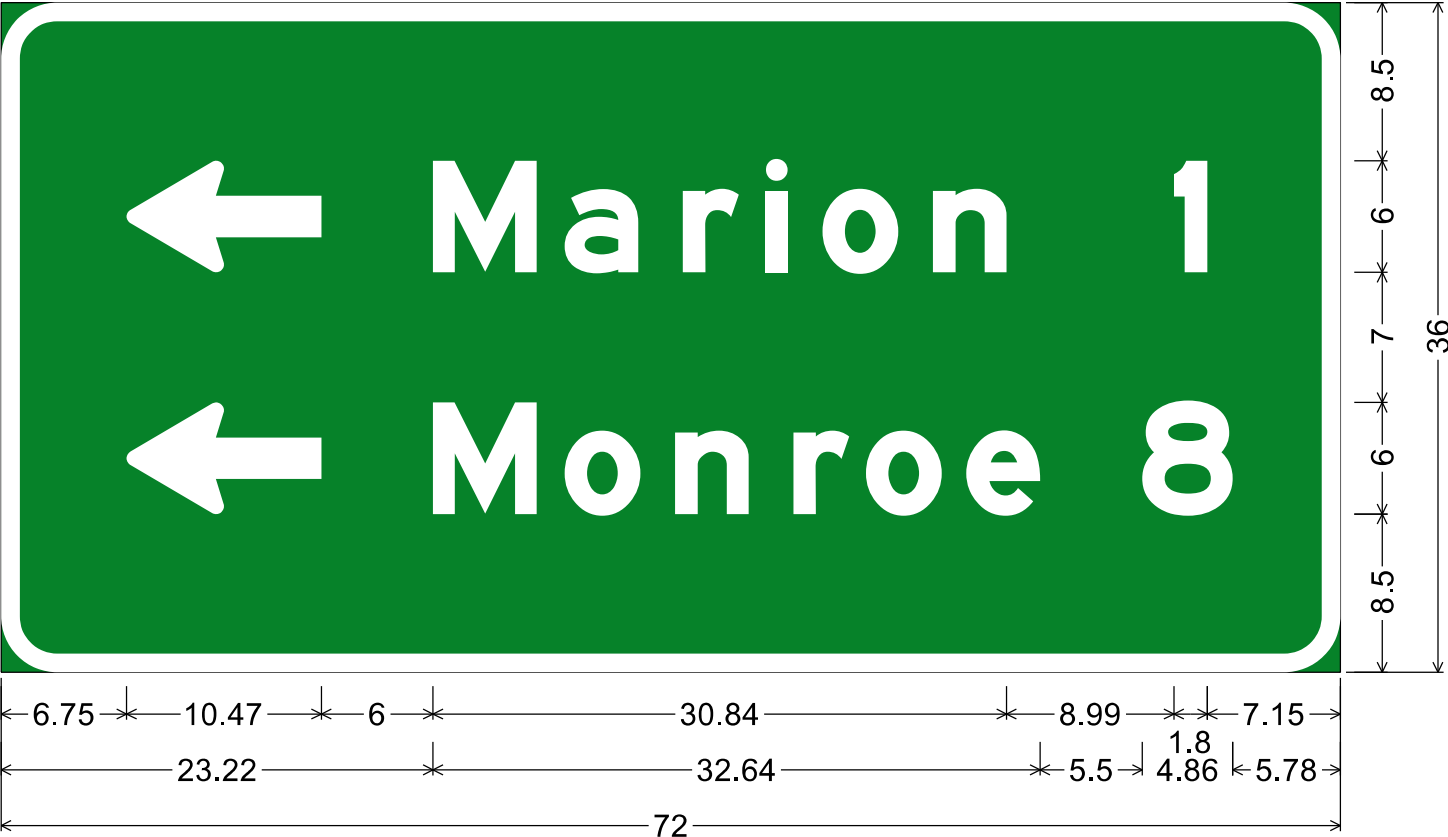
- 4" WHITE PAINTED PAVEMENT MARKING
- 4" YELLOW PAINTED PAVEMENT MARKING
- 24" YELLOW PAINTED PAVEMENT MARKING
- WHITE PAVEMENT MARKING, ARROW



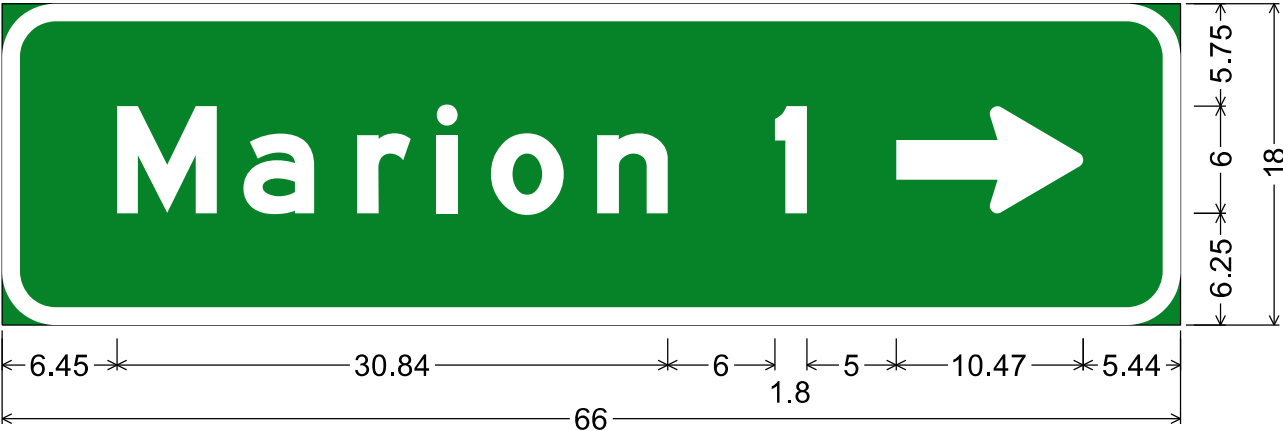
Plotted From: TRM113315
Plot Scale: 1/8" = 1'-0"
File: ...Turn Lanes.dgn
Plot Name: \$Subname\$.dgn

SPECIAL SIGN DETAILS
FLAT ALUMINUM SIGNS WITH NONREMOVABLE COPY-HIGH INTENSITY

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	36	83
Plotting Date:		2/17/2026	

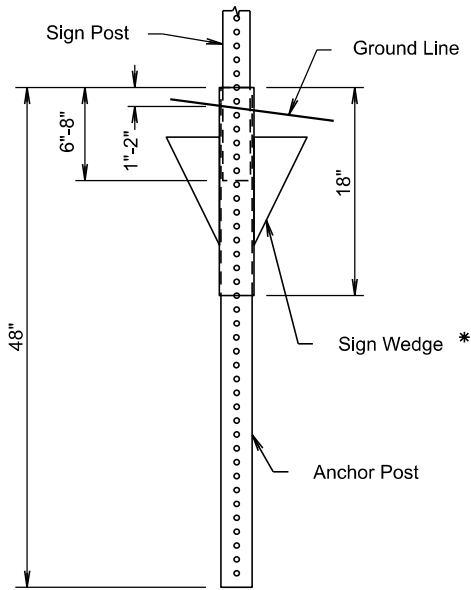


3.00" Radius, 1.00" Border, White on Green;
Arrow Custom - 10.47" 180°; "Marion", E Mod 2K; "1", E Mod 2K;
Arrow Custom - 10.47" 180°; "Monroe", E Mod 2K; "8", E Mod 2K;



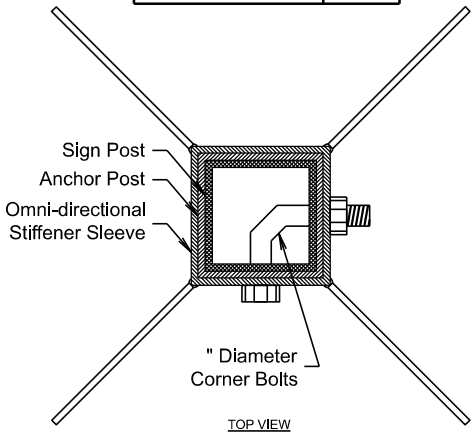
3.00" Radius, 1.00" Border, White on Green;
"Marion", E Mod 2K; "1", E Mod 2K; Arrow Custom - 10.47" 360°;

2" SQUARE STEEL PERFORATED TUBE POST
WINGED SLEEVE ANCHOR BASE DETAILS
(Typical)

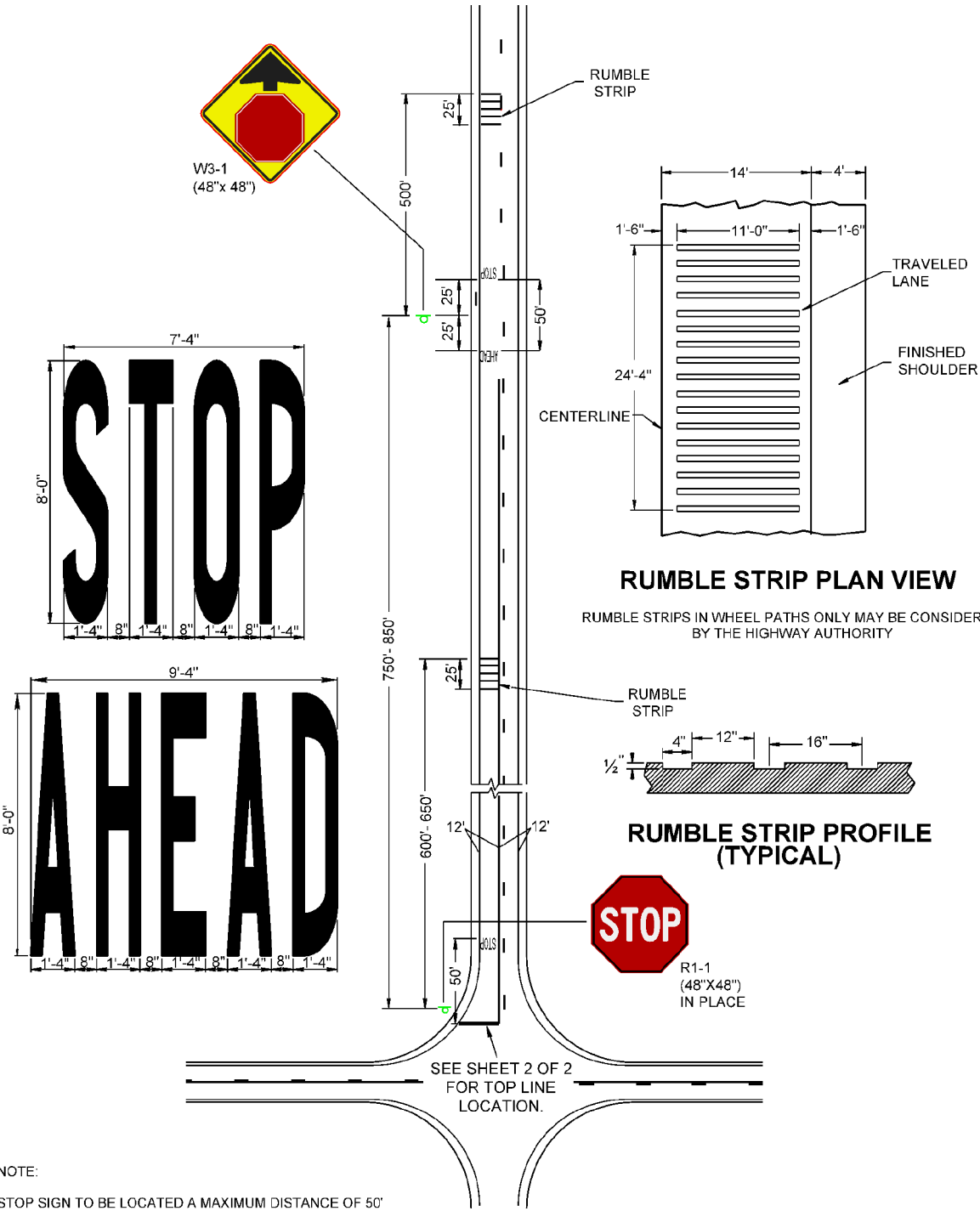


* - 18" Multi-directional Sleeve w/4 Blades, or Equivalent.
Manufacturer Recommended Dimensions and Installation.

POST SIZE	
Sign Post	2"
Anchor Post	2 1/4"
Stiffener Sleeve	2 1/2"

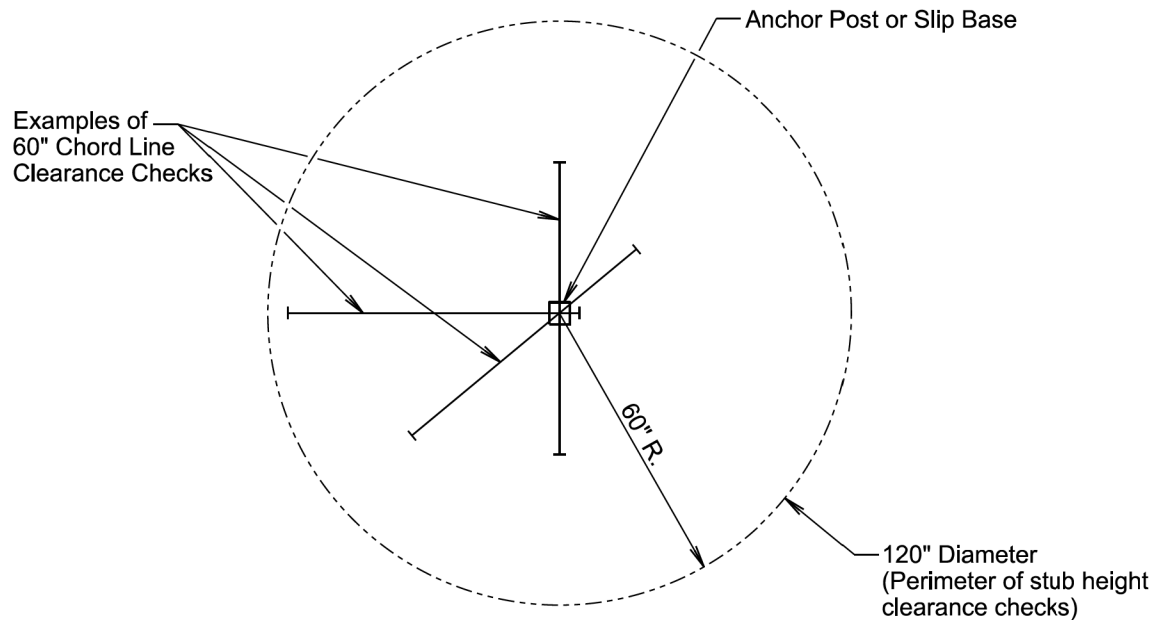


INTERSECTION APPROACH
PAVEMENT MARKING AND RUMBLE STRIPS
(Typical)

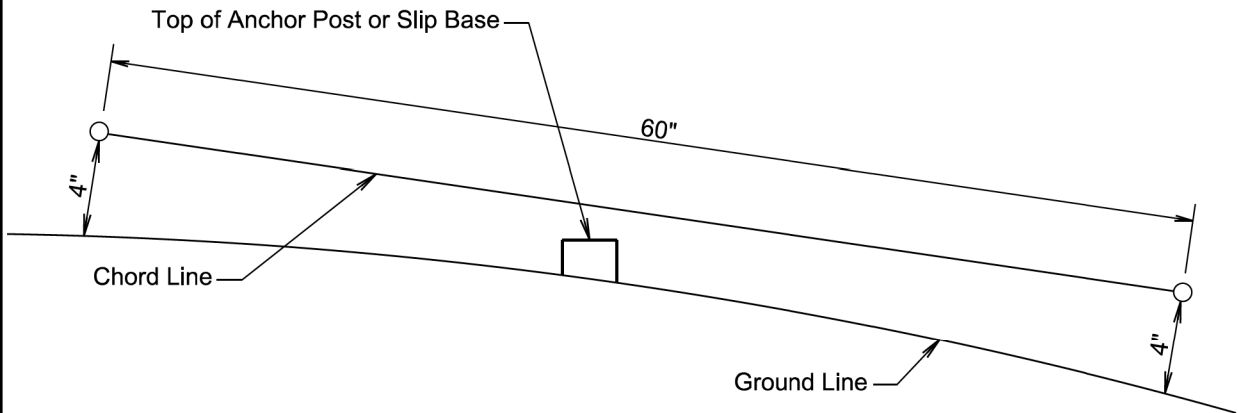


NOTE:
STOP SIGN TO BE LOCATED A MAXIMUM DISTANCE OF 50'
FROM THE EDGE LINE OF THE INTERSECTING ROAD.

Revised 9-21-17, SJ



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases WILL 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 will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

January 22, 2021

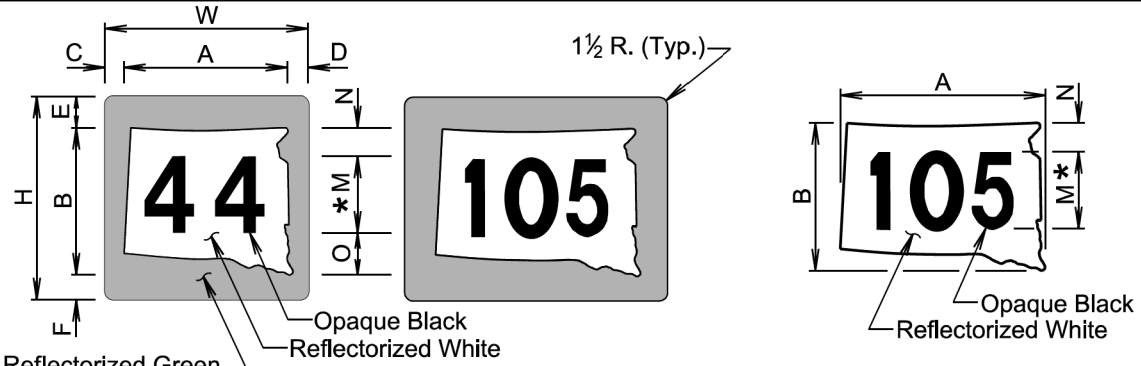
Published Date: 2026

SD
DOT

BREAKAWAY SUPPORT STUB CLEARANCE

PLATE NUMBER
632.18

Sheet 1 of 1



M1-5

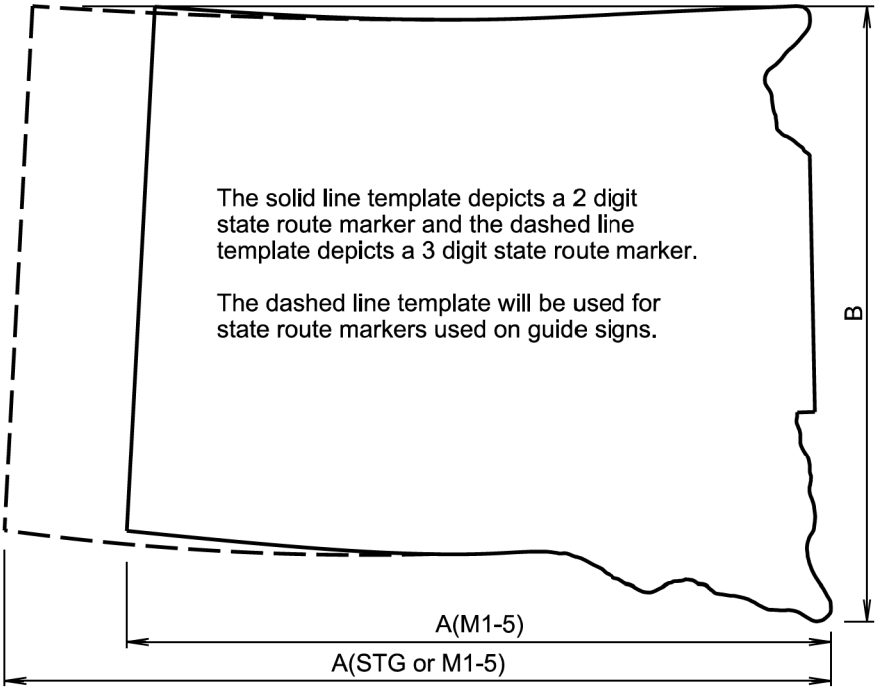
SIGN CODE	WxH	A	B	C	D	E	F	M*	N	O
M1-5	24x24	20½	18	2	1½	3½	2½	12D	2	4
M1-5 **	30x24	24	18	2¼	1¾	3½	2½	12D	2	4
M1-5	30x30	25⅝	22½	2½	1⅞	4⅞	3⅞	15D	2½	5
M1-5	36x36	30¾	27	3	2¼	5¼	3¾	18D	3	6

STG

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 will be D series font for all state route markers except as noted above.

December 23, 2019

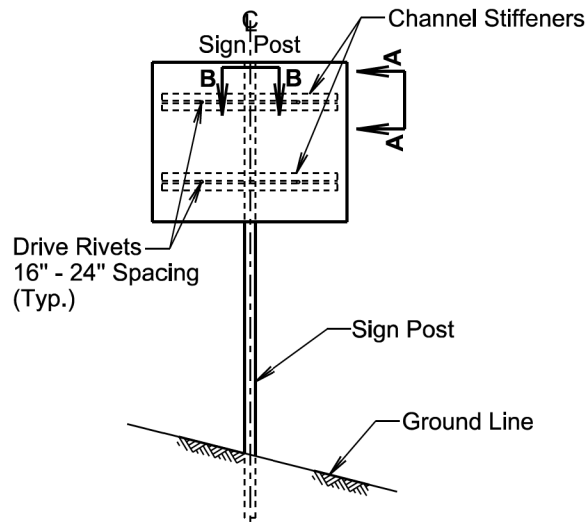
Published Date: 2026

SD
DOT

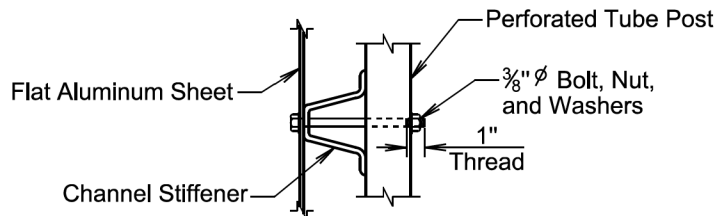
STATE ROUTE MARKERS

PLATE NUMBER
632.20

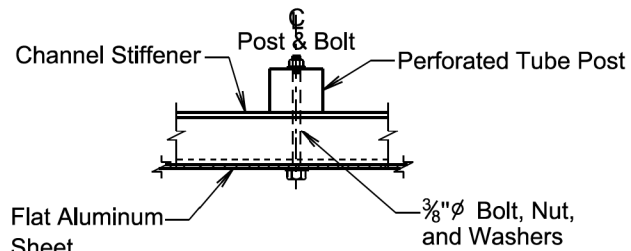
Sheet 1 of 1



ELEVATION VIEW
(One post breakaway sign supports.)



SEC. A-A



SEC. B-B
(Typical sign and stiffener details.)

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

November 19, 2020

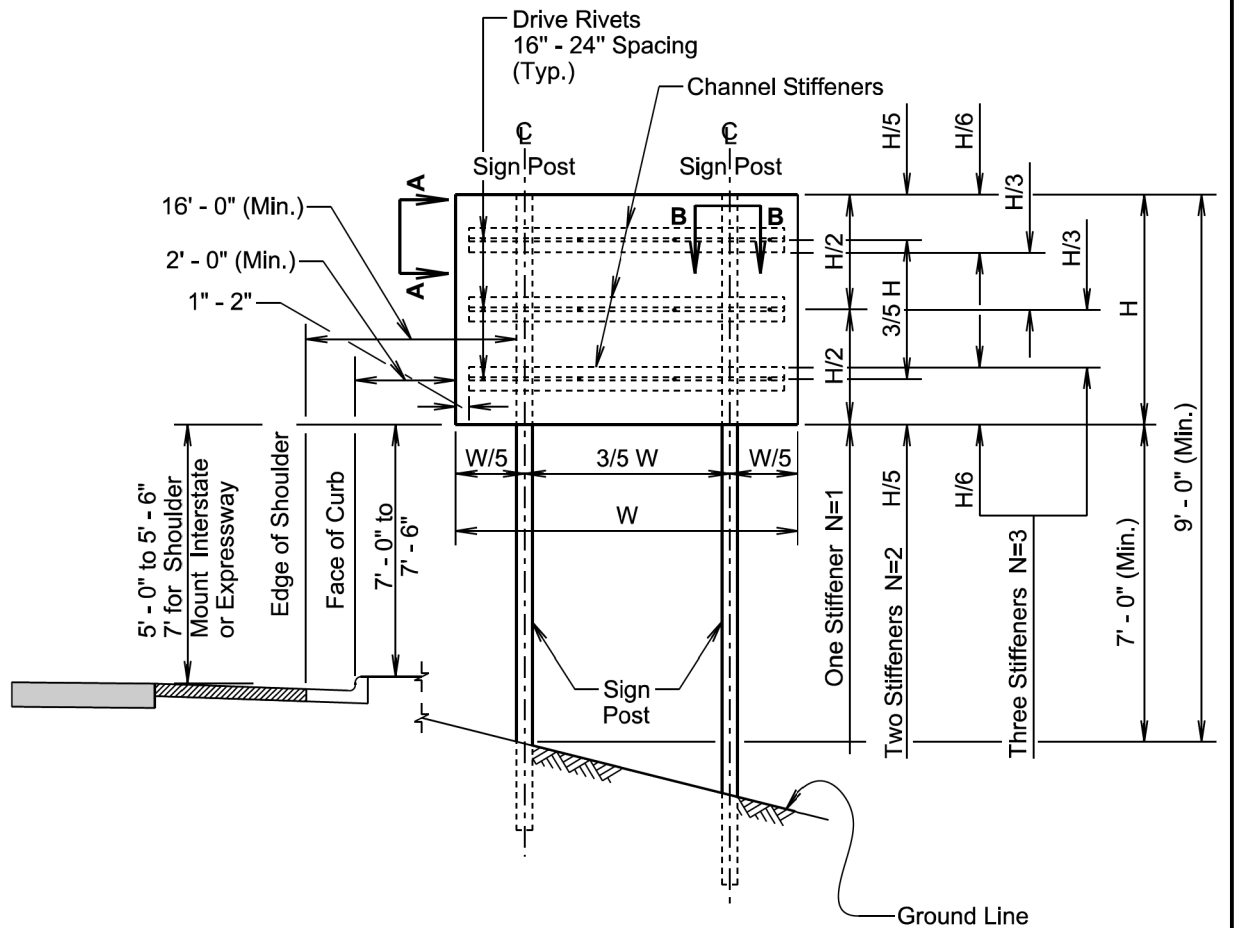
Published Date: 2026

**SD
DOT**

SIGN STIFFENER DETAILS

PLATE NUMBER
632.60

Sheet 1 of 2



TWO POST BREAKAWAY SIGN SUPPORTS

GENERAL NOTES:

The number of stiffeners used (N) will be as follows:
If $H \leq 2' - 0''$ then $N = 1$
if $2' - 0'' < H \leq 8' - 0''$ then $N = 2$
if $8' - 0'' < H \leq 15' - 0''$ then $N = 3$
where H is the vertical dimension of the sign.

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

November 19, 2020

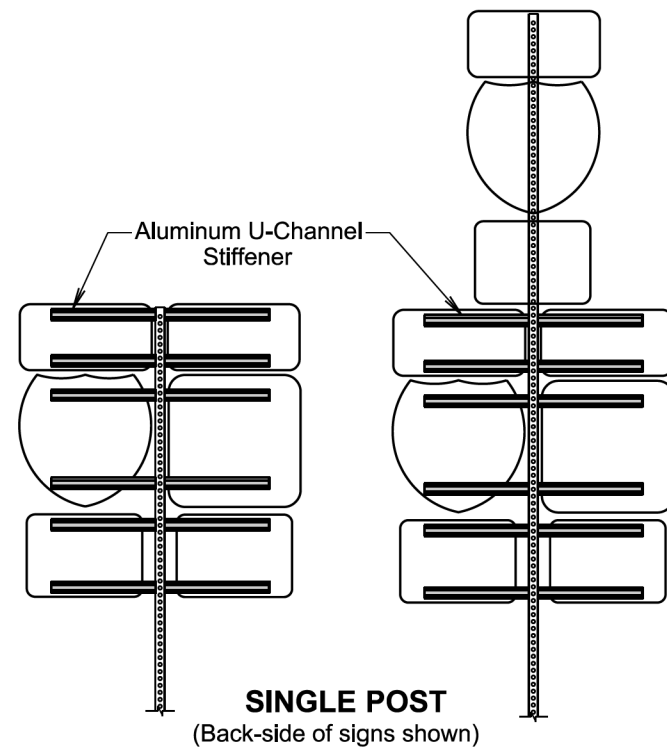
Published Date: 2026

**SD
DOT**

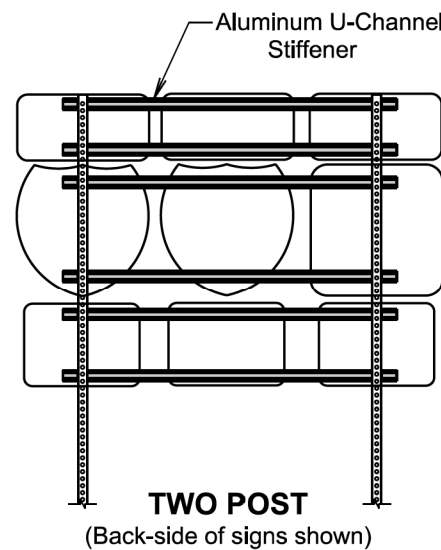
SIGN STIFFENER DETAILS

PLATE NUMBER
632.60

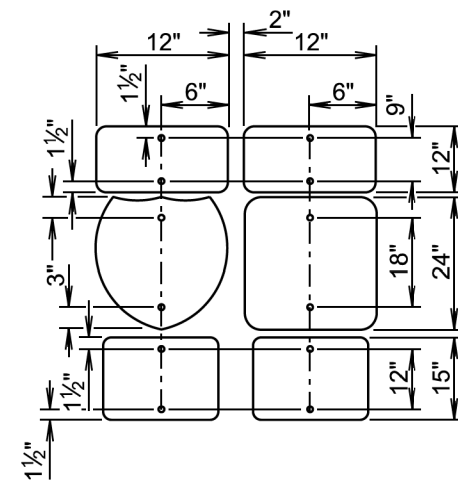
Sheet 2 of 2



SINGLE POST
(Back-side of signs shown)



TWO POST
(Back-side of signs shown)



**TYPICAL ROUTE MARKER
BOLT HOLE LOCATIONS**

November 19, 2020

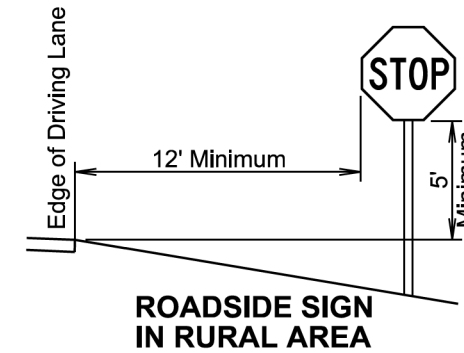
Published Date: 2026

SD
DOT

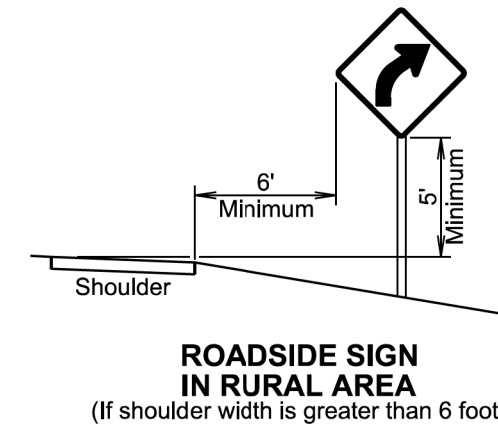
**MULTIPLE ROUTE MARKER
SIGN STIFFENER INSTALLATION DETAILS**

PLATE NUMBER
632.62

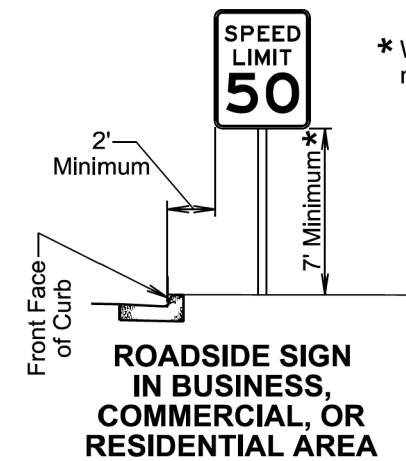
Sheet 1 of 1



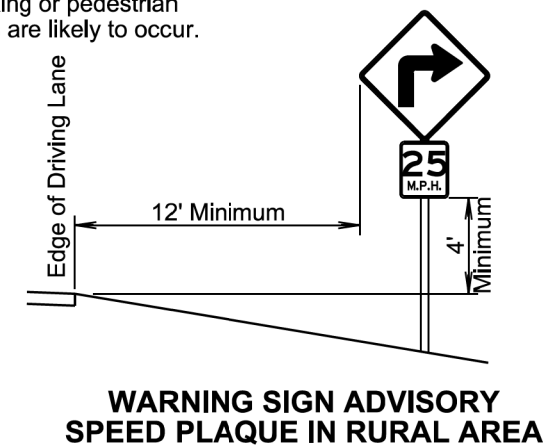
**ROADSIDE SIGN
IN RURAL AREA**



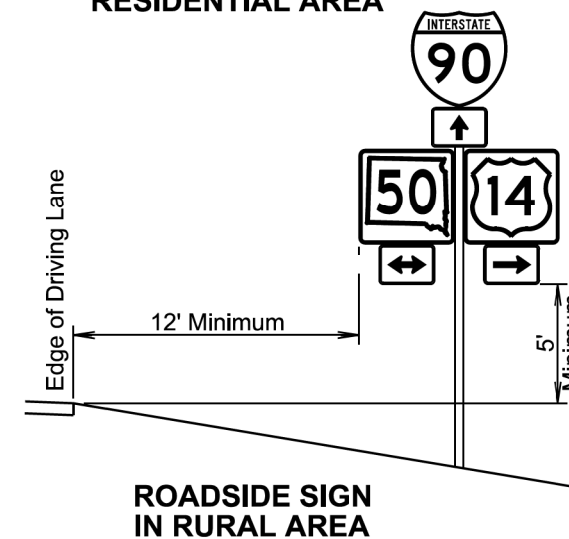
**ROADSIDE SIGN
IN RURAL AREA**
(If shoulder width is greater than 6 foot)



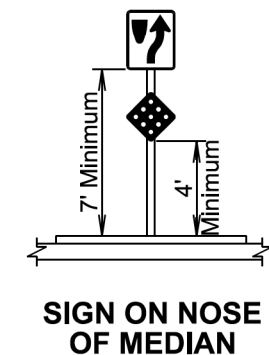
**ROADSIDE SIGN
IN BUSINESS,
COMMERCIAL, OR
RESIDENTIAL AREA**



**WARNING SIGN ADVISORY
SPEED PLAQUE IN RURAL AREA**



**ROADSIDE SIGN
IN RURAL AREA**



**SIGN ON NOSE
OF MEDIAN**

April 8, 2025

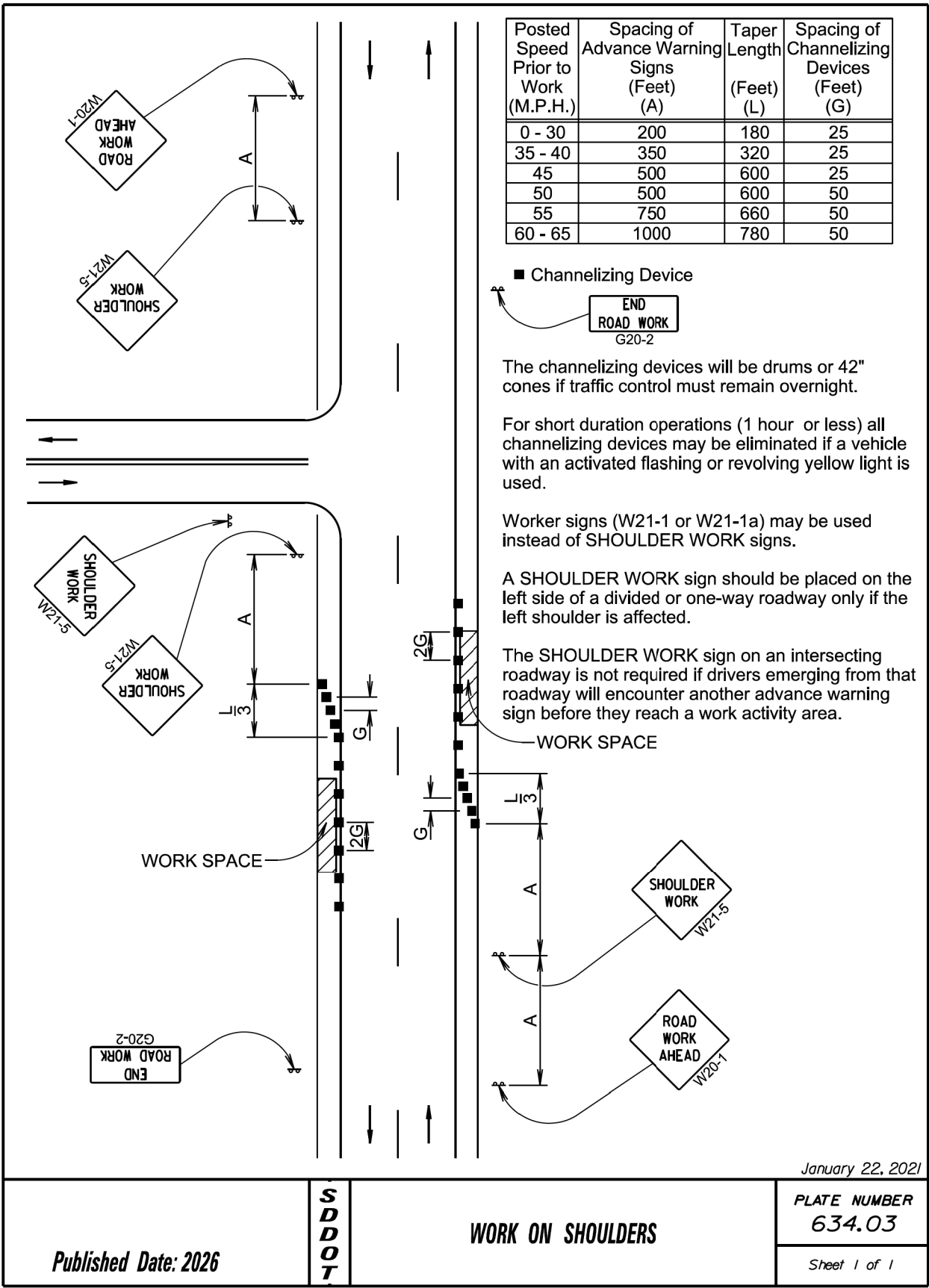
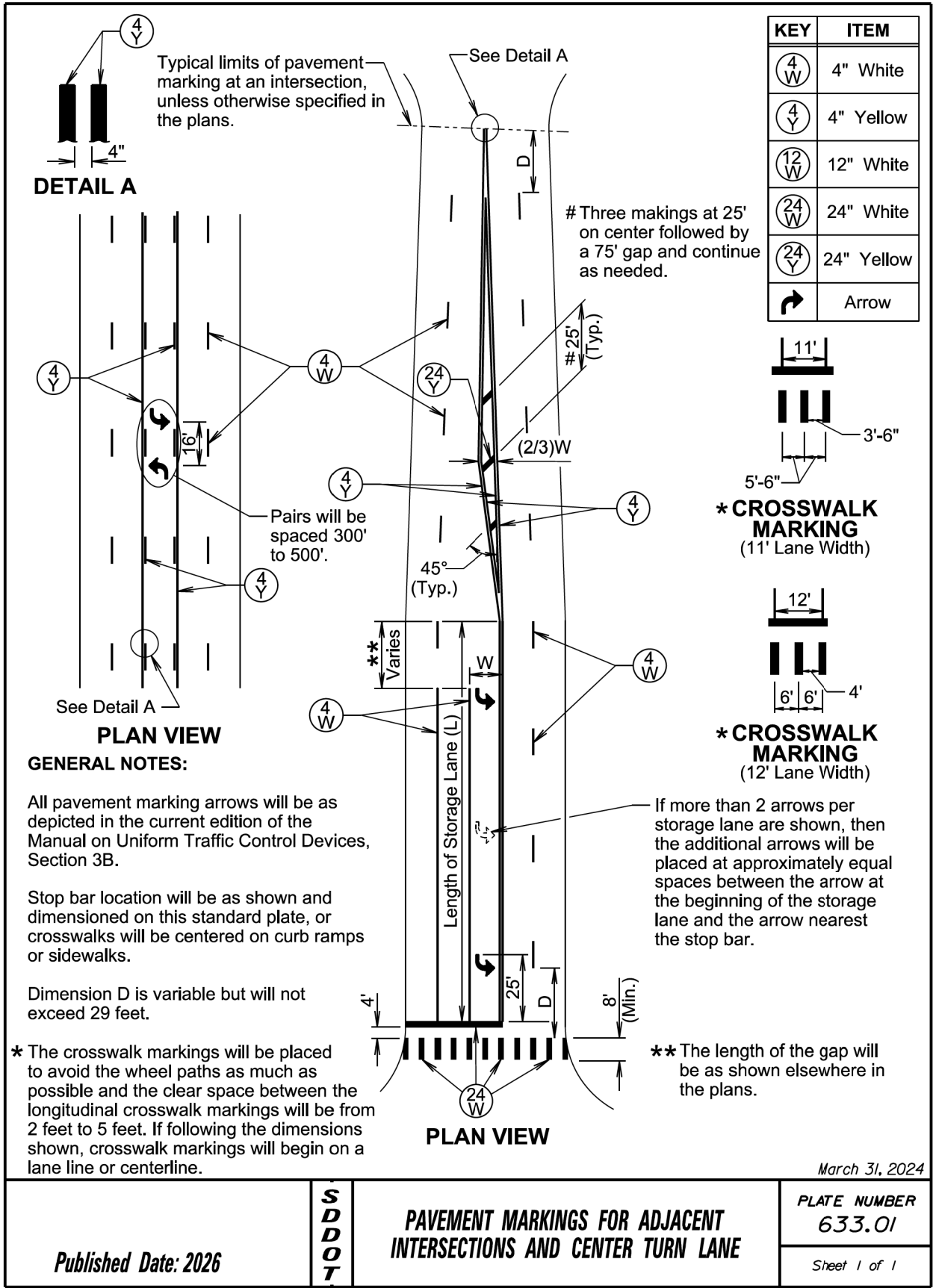
Published Date: 2026

SD
DOT

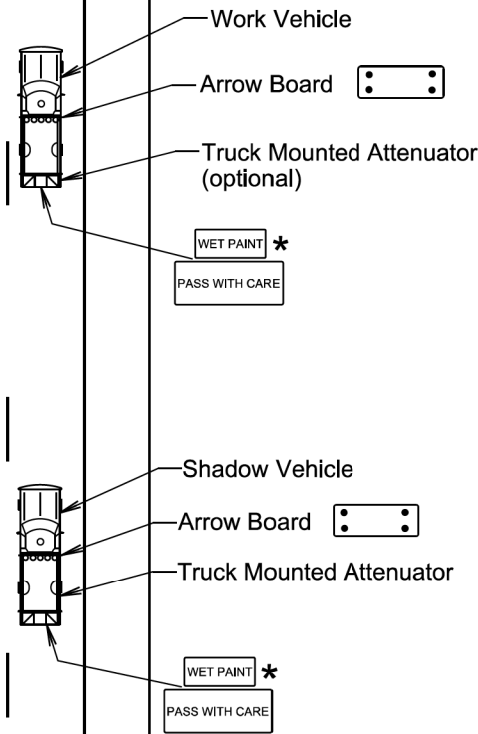
OFFSETS FOR SIGN INSTALLATION

PLATE NUMBER
632.90

Sheet 1 of 1



- * Messages on signs will vary depending on the operation being conducted.
- Vehicle-mounted signs will be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs will be covered or turned from view when work is not in progress.
- Shadow and Work vehicles will display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow boards.
- Vehicle hazard warning signals will not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.
- When an arrow board is used, it will be used in the caution mode. Marching Diamonds are acceptable.
- Arrow boards will, as a minimum, be Type B, with a size of 60" x 30".
- All costs associated with the traffic control for mobile operation including signs, arrow boards and equipment will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".



January 22, 2021

Published Date: 2026

SD
DOT

MOBILE OPERATIONS ON 2-LANE ROAD

PLATE NUMBER
634.06

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	500	25
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) will 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 will be drums or 42" cones.

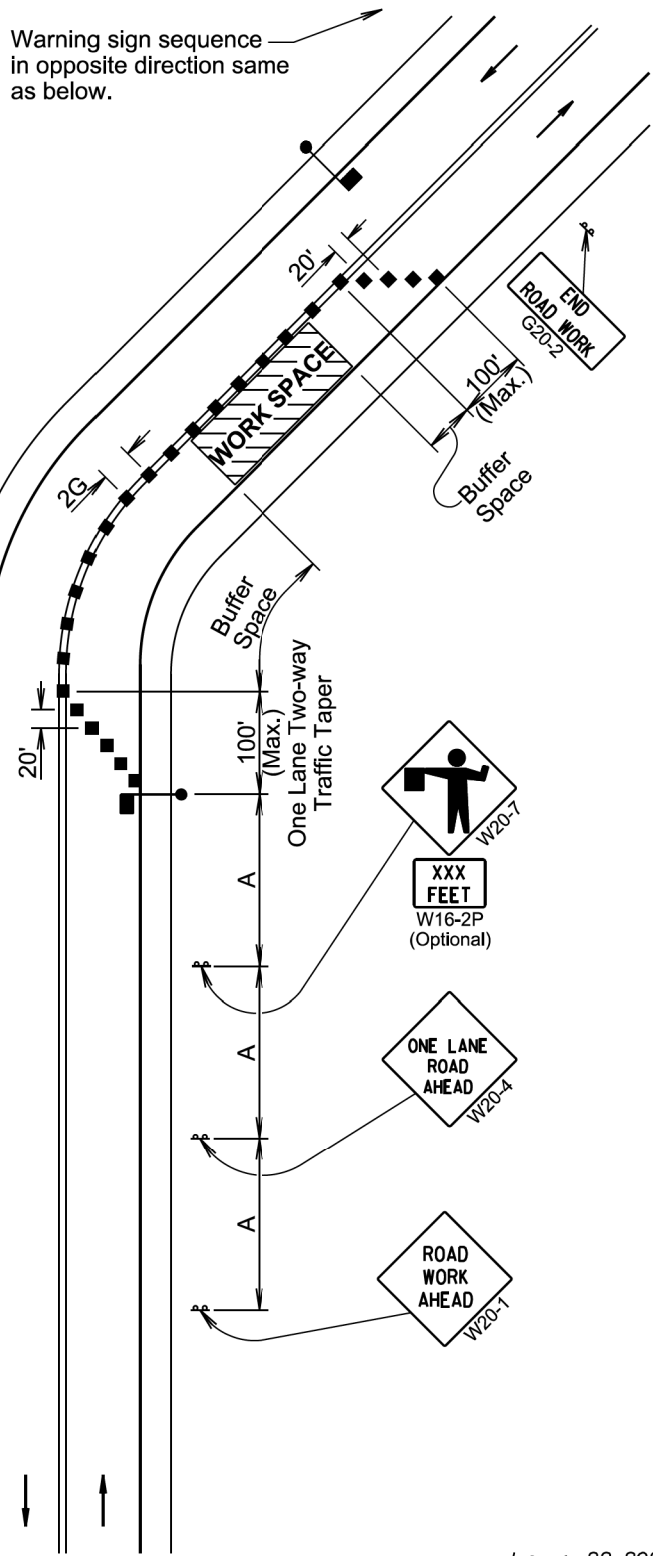
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

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

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

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

Warning sign sequence in opposite direction same as below.



January 22, 2021

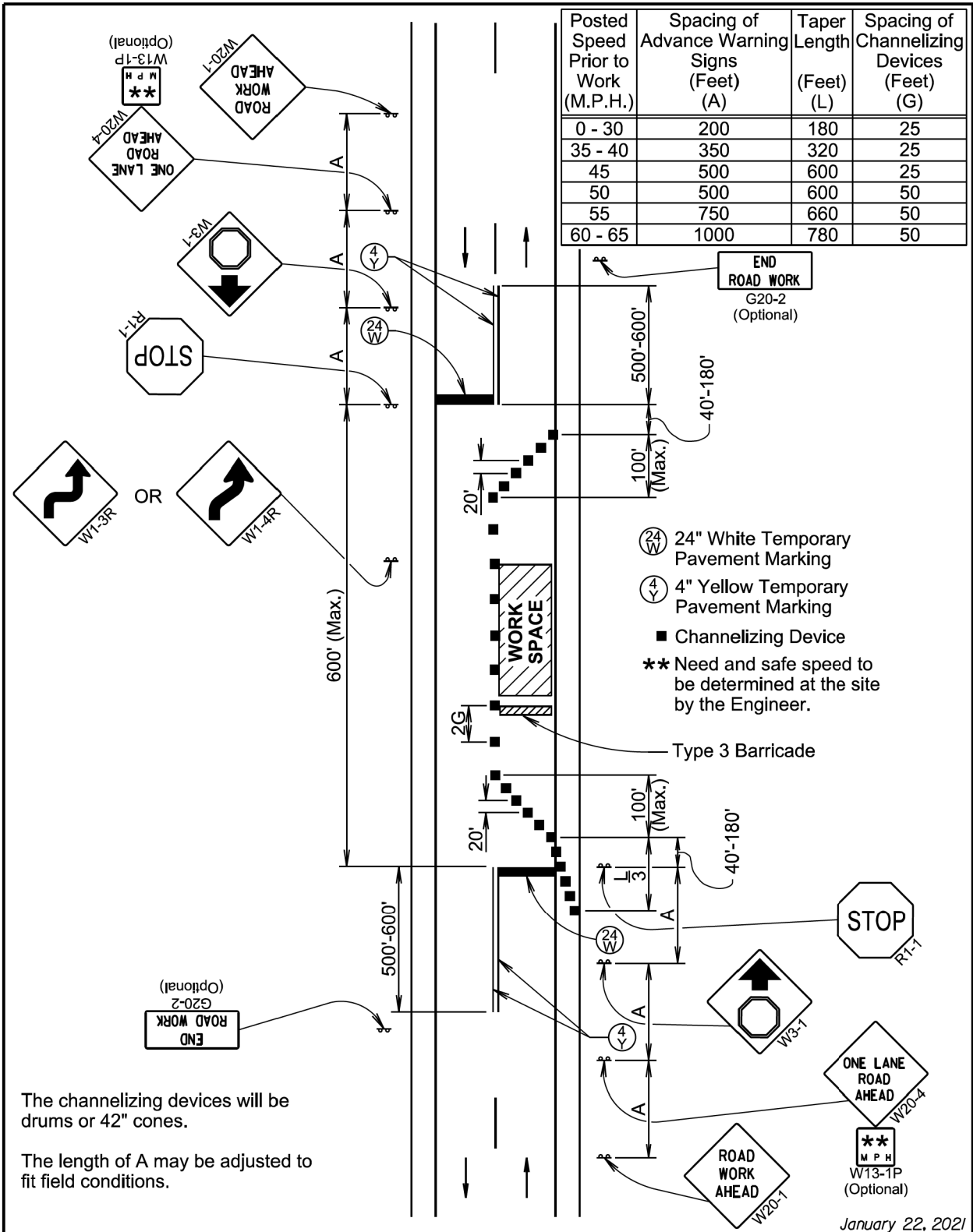
Published Date: 2026

SD
DOT

LANE CLOSURE WITH FLAGGER PROVIDED

PLATE NUMBER
634.23

Sheet 1 of 1



January 22, 2021

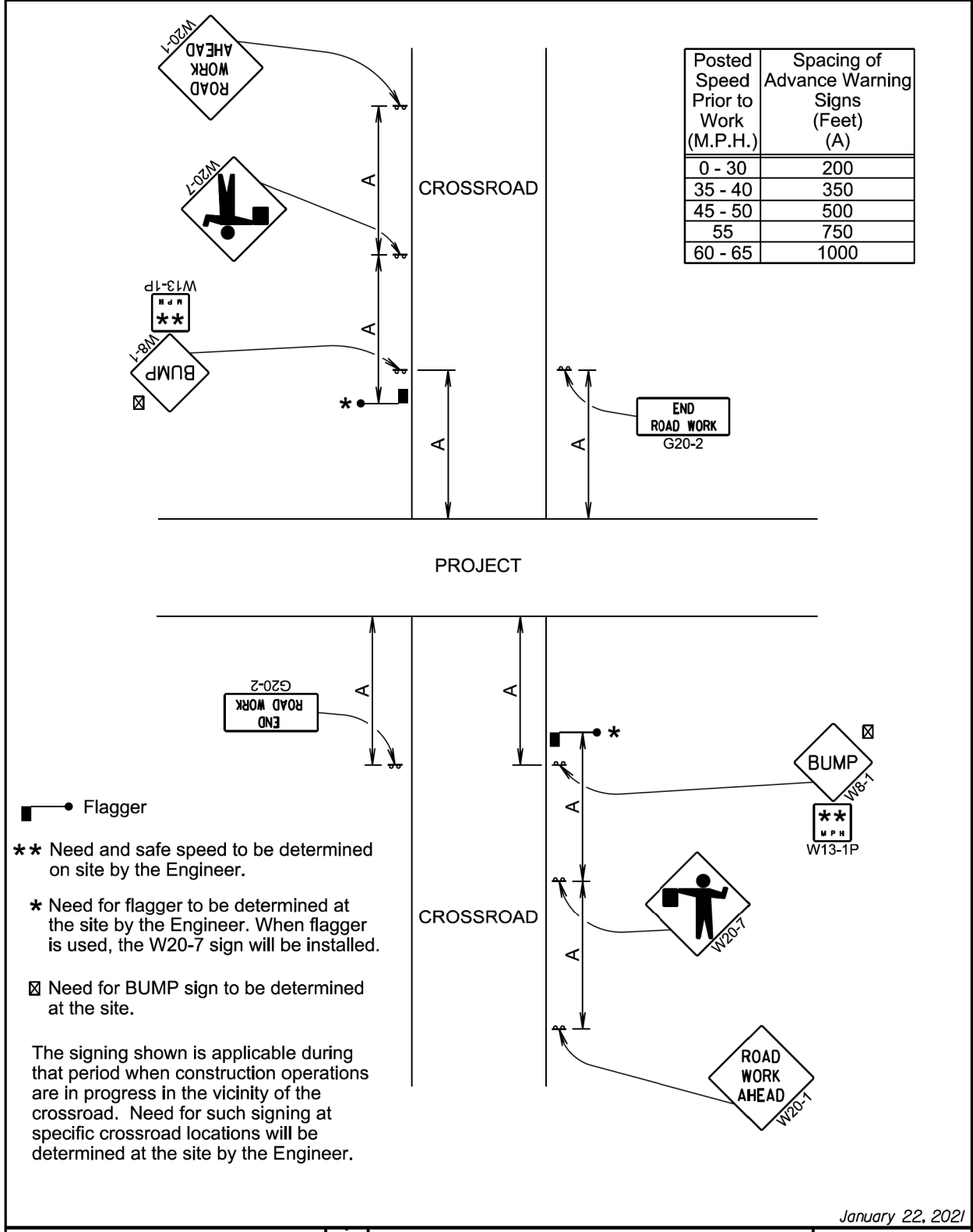
Published Date: 2026

SD
DOT

LANE CLOSURE USING STOP SIGNS

PLATE NUMBER
634.25

Sheet 1 of 1



January 22, 2021

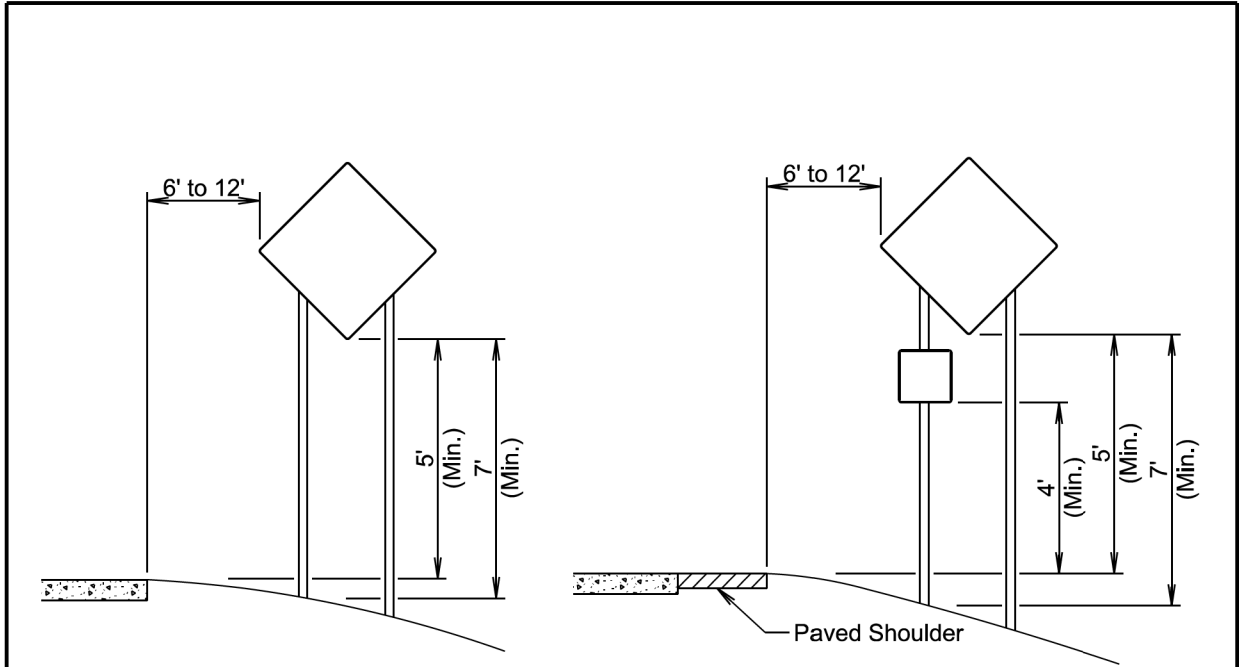
Published Date: 2026

SD
DOT

PROJECT OPEN TO TRAFFIC FROM CROSSROAD

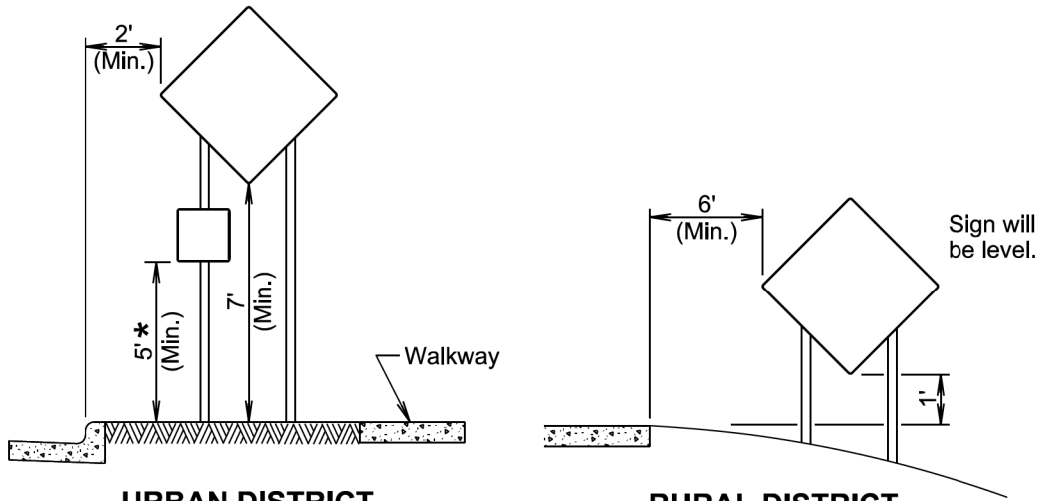
PLATE NUMBER
634.38

Sheet 1 of 1



RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

RURAL DISTRICT 3 DAY MAXIMUM

* 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.

(Not applicable to regulatory signs)

January 22, 2021

Published Date: 2026	SD DOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1

HORIZONTAL ALIGNMENT DATA

Mainline

Type	Station			Northing	Easting
POB	0+0.00			402652.550	2742353.173
		TL= 2654.438	N88.041°E		
PI	26+54.43	TL= 2645.757	N88.218°E	402743.313	2745006.059
PI	53+00.19	TL= 3056.869	N88.143°E	402825.584	2747650.537
PI	83+57.06	TL= 2632.845	N88.218°E	402924.644	2750705.800
PI	109+89.91	TL= 2641.579	N87.925°E	403006.527	2753337.372
PI	136+31.49	TL= 2646.982	N87.615°E	403102.163	2755977.219
PI	162+78.47	TL= 2635.239	N87.395°E	403212.320	2758621.909
PI	189+13.71	TL= 2640.856	N87.433°E	403332.106	2761254.424
PI	215+54.57	TL= 2627.081	N87.363°E	403450.403	2763892.628
PI	241+81.65	TL= 2640.926	N87.828°E	403571.274	2766516.928
PI	268+22.57	TL= 2646.112	N88.605°E	403671.370	2769155.956
PI	294+68.68	TL= 2639.027	N88.313°E	403735.766	2771801.284
PI	321+07.71	TL= 2636.810	N87.720°E	403813.469	2774439.167
PI	347+44.52	TL= 2602.265	N87.583°E	403918.348	2777073.890
PI	373+46.79	TL= 2518.019	N87.537°E	404028.098	2779673.840
PI	398+64.80	TL= 4335.162	N87.581°E	404136.300	2782189.534
POE	441+99.97			404319.240	2786520.834

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone NAD 83(2011); epoch 2010.00; Geoid 12A; CSF = 0.99985031; U.S. Survey Feet

LEGEND

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

Drainage Arrow



Remove Concrete Pavement



Remove Concrete Driveway Pavement



Remove Asphalt Concrete Pavement



Remove Concrete Sidewalk



Remove Concrete Median Pavement



Remove Concrete Curb and/or Gutter



Detectable Warning
Pedestrian Push Button Pole
and 30" x 48" Clear Space
with 1.5% slope



SD 44 - Pipe Replacements

 Plotting Date: 3/17/2026	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	47	83

00+00 L
Retain 24"-98' RCP

1+03
Retain 24"-76' CMP

1+03 (22 ac)
Install 24"-76' C.I.P.P. Liner

1+03
Cleanout for Culvert Treatment

TURNER COUNTY
SEC 12 - T99N - R56W



SD 44 - Pipe Replacements

	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	48	83

Plotting Date: 3/17/2026

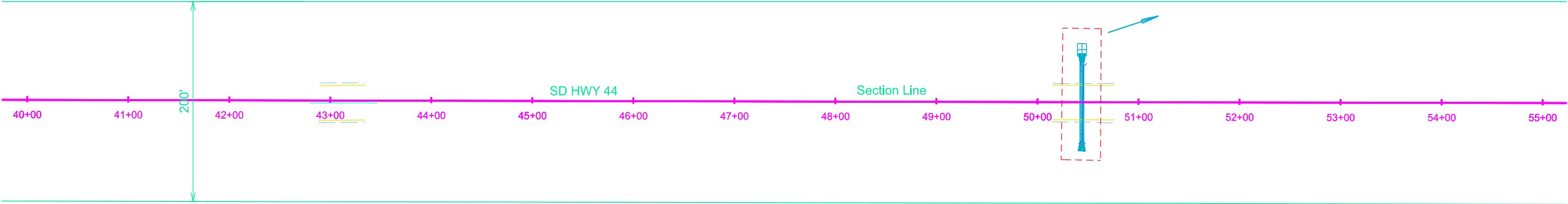
50+44
Take Out 30"- 72' CMP
& 2 End Sections

50+44 (88 ac)
Install 36"-80' RCP
& 2 Flared Ends

50+44 L
Install Bank and Channel
Protection Gabions (6.0 CuYr)
and Type B Drainage Fabric
(19 SqYd)



TURNER COUNTY
SEC 12 - T99N - R56W



SEC 13 - T99N - R56W

SD 44 - 443th Ave - Turn Lane

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	49	83

Plotting Date: 3/18/2026

TURNER COUNTY
SEC 9 - T99N - R55W

TURNER COUNTY
SEC 10 - T99N - R55W

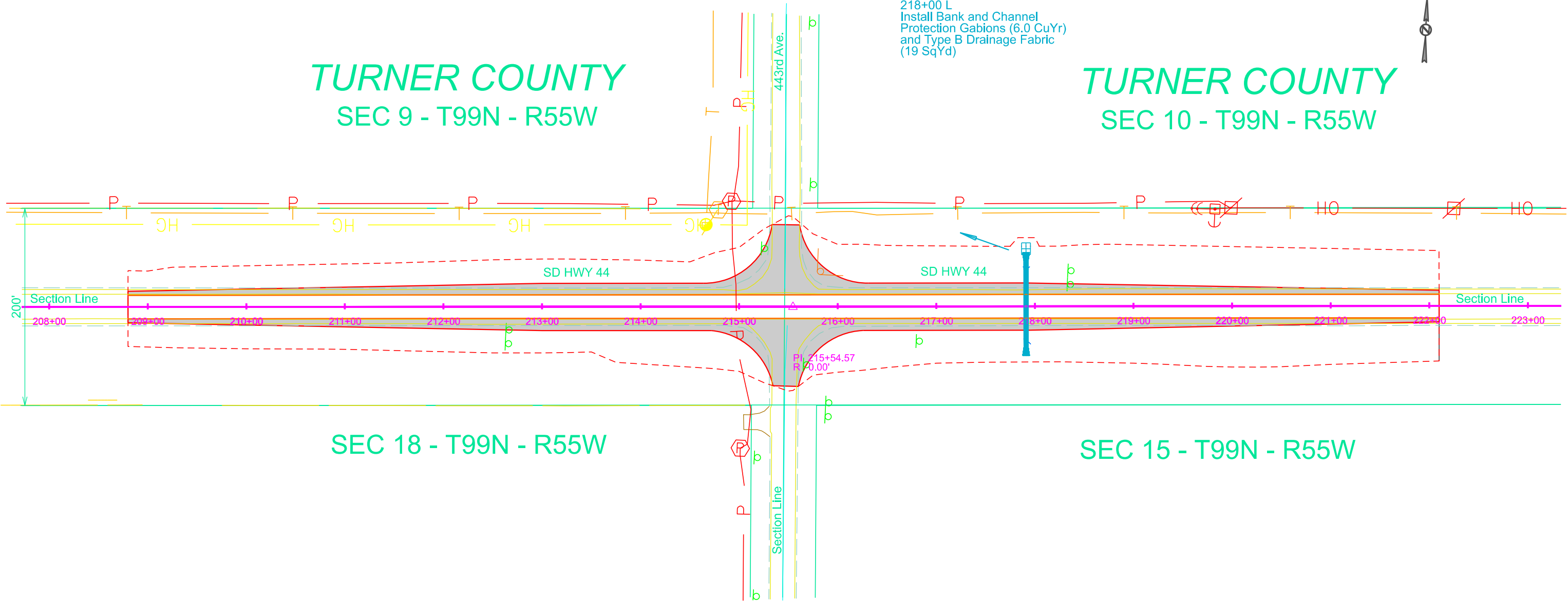
SEC 18 - T99N - R55W

SEC 15 - T99N - R55W

218+00
Take Out 24"- 72' CMP Arch
& 2 End Sections

218+00 (81 ac)
Install 36"-84' RCP Arch
& 2 Flared Ends

218+00 L
Install Bank and Channel
Protection Gabions (6.0 CuYr)
and Type B Drainage Fabric
(19 SqYd)



SD 44 - Pipe Replacements

	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	50	83

Plotting Date: 3/17/2026

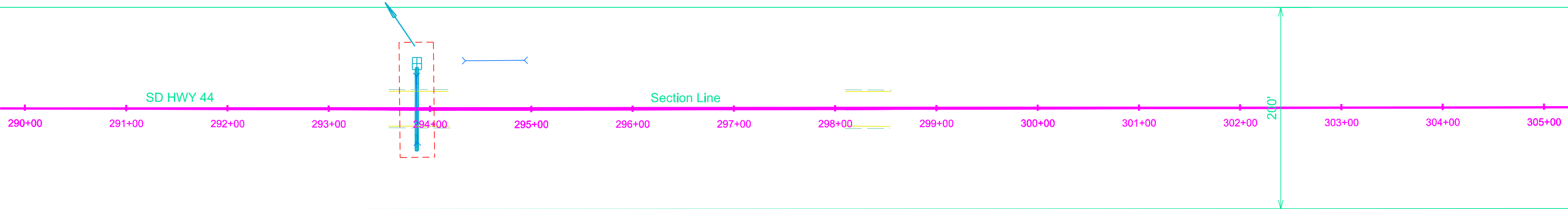
294+00
Take Out 18"- 66' CMP
& 2 End Sections

294+64 L
Retain 18"-58' CMP

294+00 (59 ac)
Install 30"- 66' RCP
& 2 Slope Ends

294+00 L
Install Bank and Channel
Protection Gabions (6.0 CuYr)
and Type B Drainage Fabric
(19 SqYd)

TURNER COUNTY
SEC 11 - T99N - R55W



SEC 14 - T99N - R55W

SD 44 - Pipe Replacements

 Plotting Date: 3/17/2026	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	51	83

316+35 L
Retain 2- 42"-56' Arch CMP

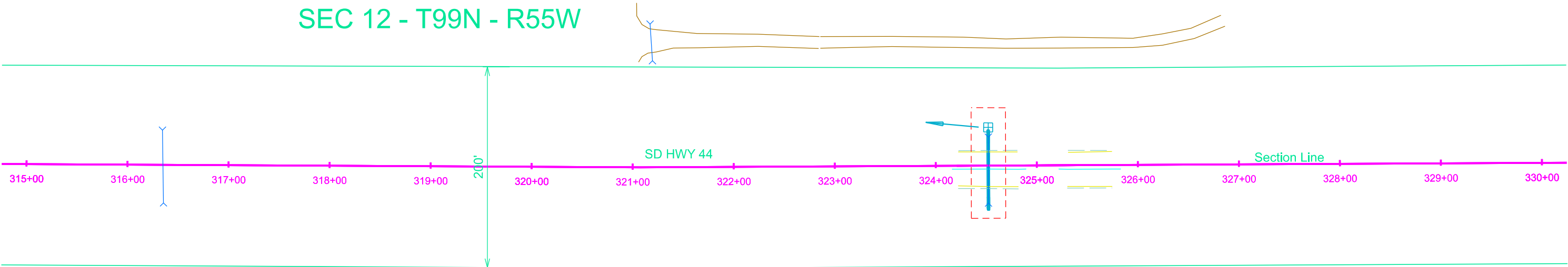
321+18 L
Retain 18"-37' CMP

324+68
Take Out 18"- 66' CMP
& 2 End Sections

324+68 (34 ac)
Install 24"- 66' RCP
& 2 Sloped Ends

324+68 L
Install Bank and Channel
Protection Gabions (4.5 CuYr)
and Type B Drainage Fabric
(15 SqYd)

TURNER COUNTY
SEC 12 - T99N - R55W



SEC 13 - T99N - R55W

SD 44 - Pipe Replacements

	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	52	83

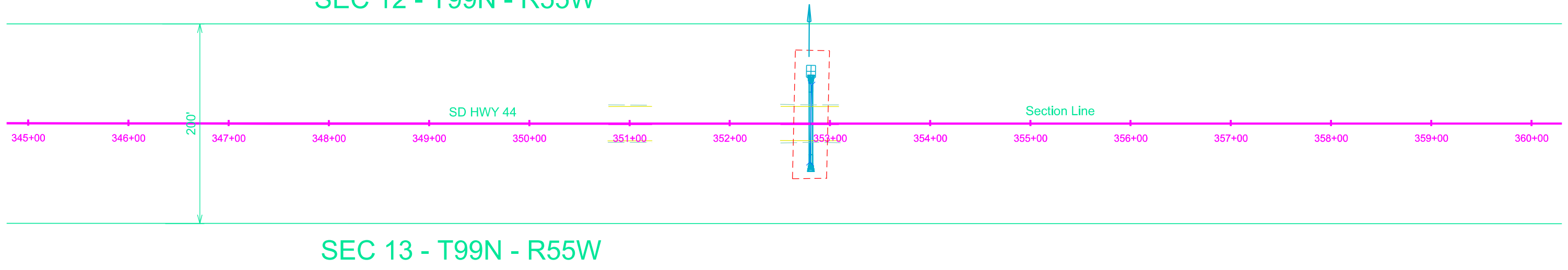
Plotting Date: 3/17/2026

TURNER COUNTY
SEC 12 - T99N - R55W

353+00
Take Out 48"- 76' CMP Arch
& 2 End Sections

353+00 (94 ac)
Install 36"-80' RCP
& 2 Flared Ends

353+00 L
Install Bank and Channel
Protection Gabions (6.0 CuYr)
and Type B Drainage Fabric
(19 SqYd)



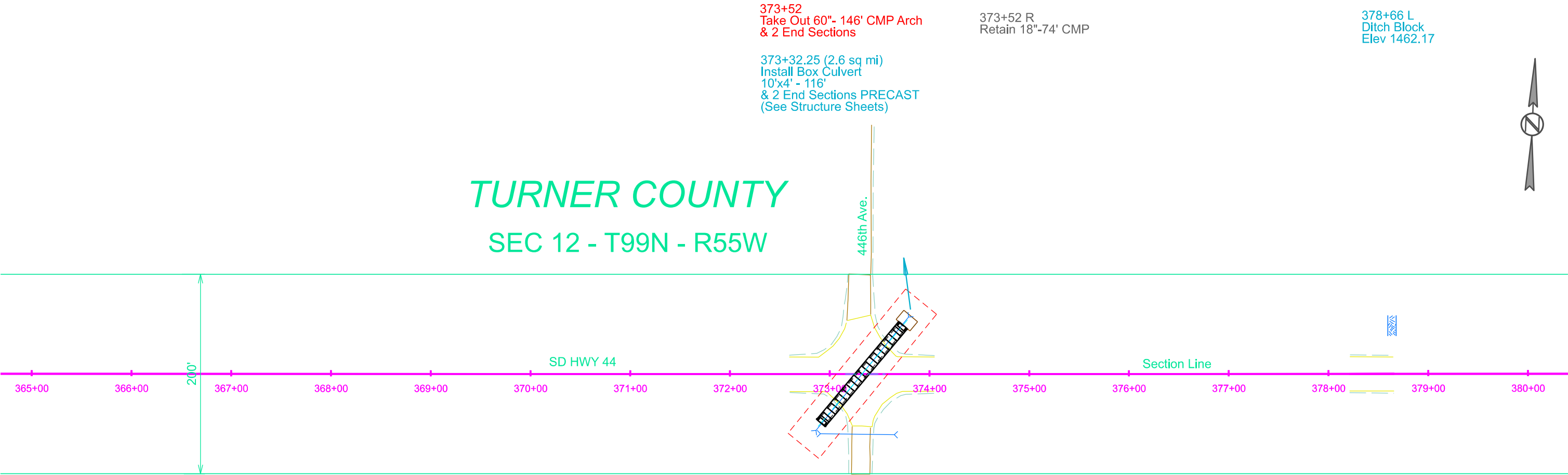
SD 44 - Pipe Replacements

	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	53	83

Plotting Date: 3/17/2026

TURNER COUNTY
SEC 12 - T99N - R55W

SEC 13 - T99N - R55W



SD 44 - Pipe Replacements

 Plotting Date: 3/17/2026	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0044(232)377	54	83

416+32
Take Out 42"- 96' CMP Arch
& 2 End Sections

416+32 (425 ac)
Install 48"-98' RCP
& 2 Flared Ends

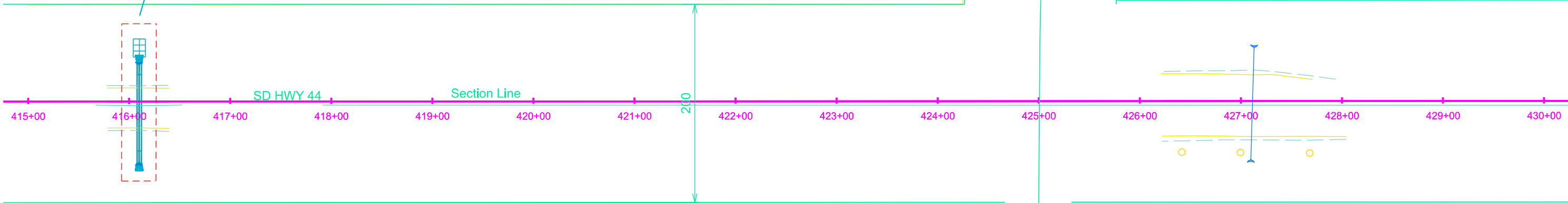
416+32 L
Install Bank and Channel
Protection Gabions (12.0 CuYr)
and Type B Drainage Fabric
(34 SqYd)

427+35
Retain 36"-84' RCP



TURNER COUNTY
SEC 7 - T99N - R54W

SEC 8 - T99N - R54W

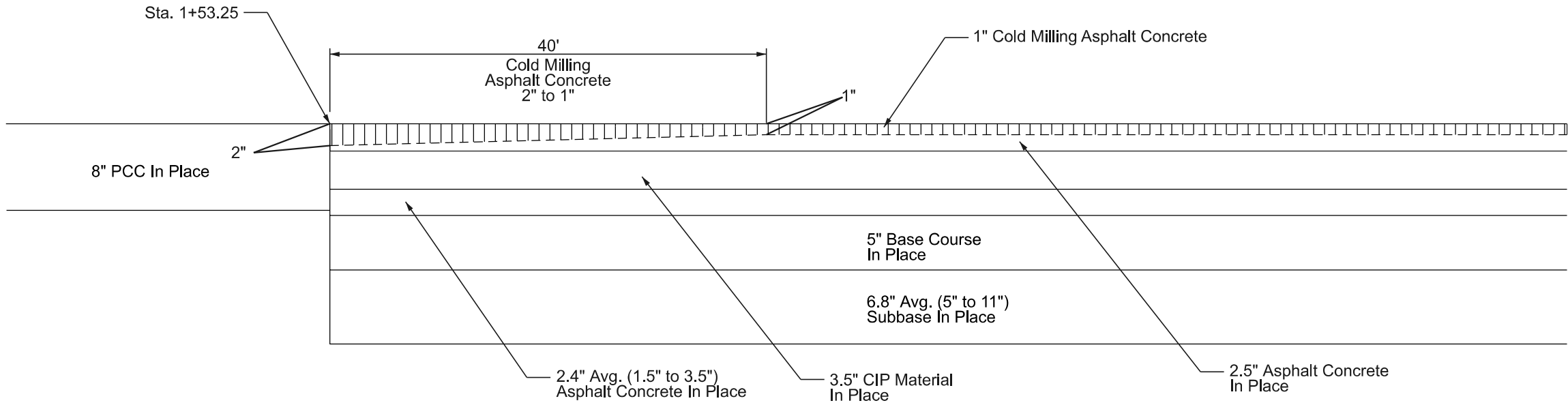


SEC 18 - T99N - R54W

SEC 17 - T99N - R54W

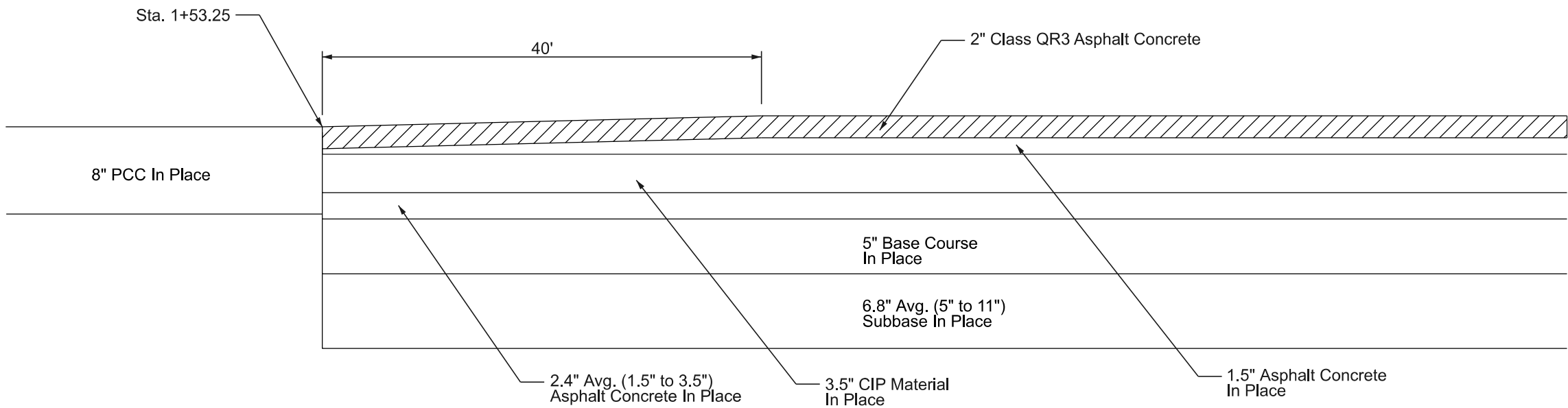
DETAIL FOR COLD MILLING TAPER

AT STA. 1+53.25



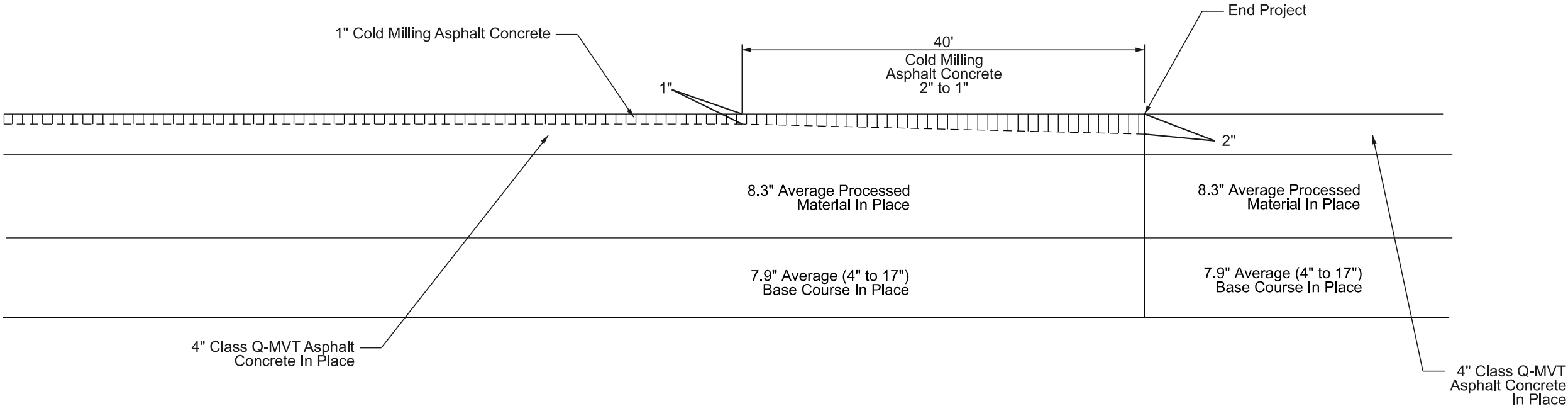
DETAIL FOR RESURFACING TAPER

AT STA. 1+53.25



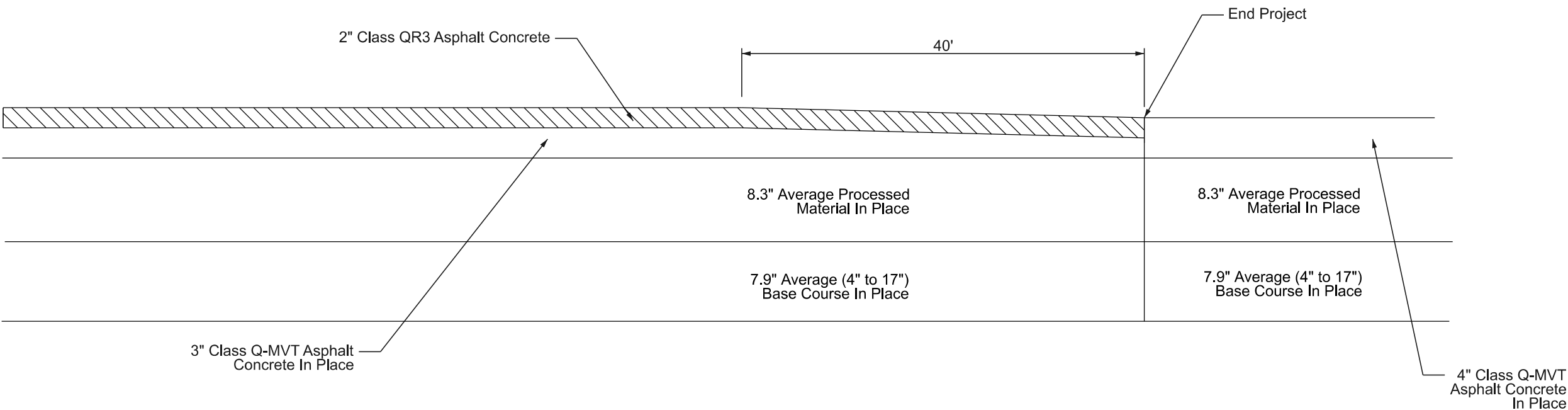
DETAIL FOR COLD MILLING TAPER

AT END PROJECT
STA. 436+25



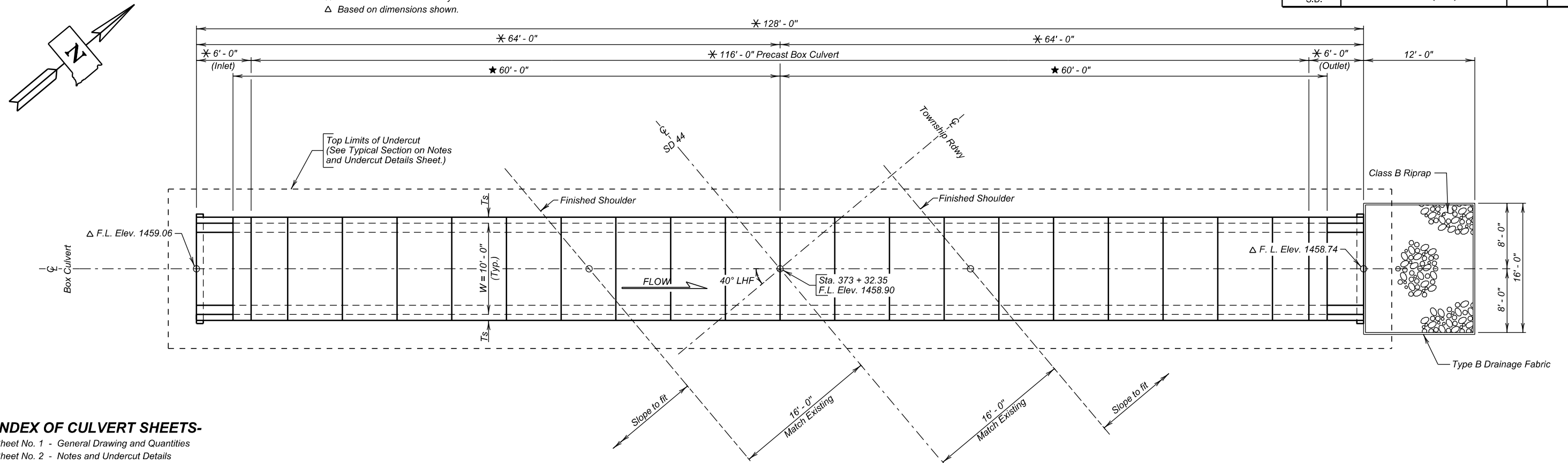
DETAIL FOR RESURFACING TAPER

AT END PROJECT
STA. 436+25



✕ Dimension may vary with fabricator and/or installation. See Shop Plans for actual installation length.
 ★ Minimum distance to satisfy clear zone.
 △ Based on dimensions shown.

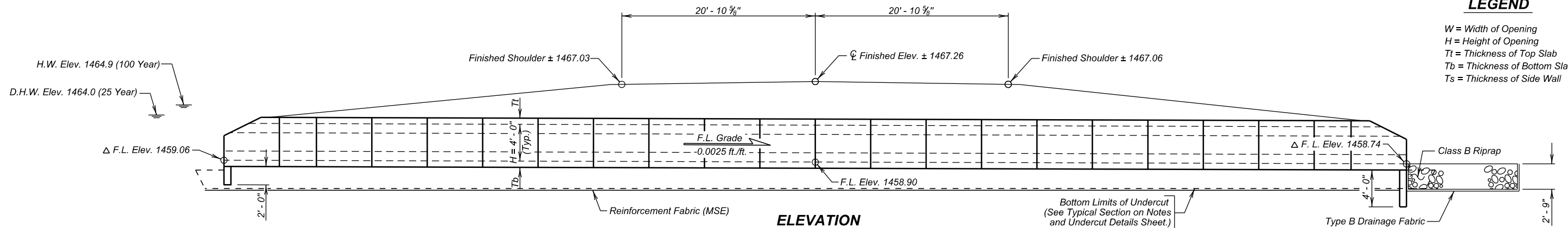
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0044(232)377	57	83



INDEX OF CULVERT SHEETS-

Sheet No. 1 - General Drawing and Quantities
 Sheet No. 2 - Notes and Undercut Details
 Sheet No. 3 - Details of Standard Plate No.'s 460.02 & 560.01
 Sheet No. 4 - Details of Standard Plate No.'s 560.10 & 560.11
 Sheet No. 5 - Details of Standard Plate No. 620.16

W = Width of Opening
 H = Height of Opening
 T_t = Thickness of Top Slab
 T_b = Thickness of Bottom Slab
 T_s = Thickness of Side Wall



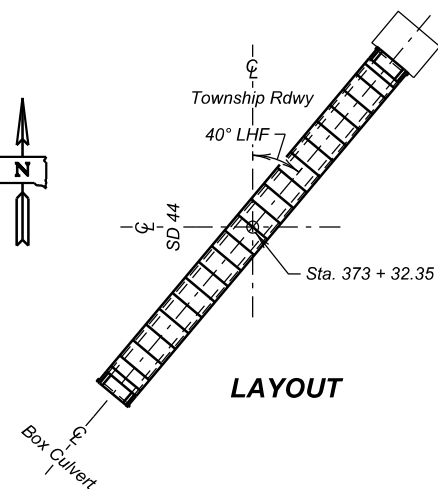
HYDRAULIC DATA

Q_d	279 cfs
A_d	34 sq ft
V_d	8.1 fps
Q_F	279 cfs
Q_{100}	540 cfs
Q_{OT}	$>Q_{100}$
V_{max}	9.5 fps

Q_d = Design discharge for the proposed culvert based on 25 year frequency. El. 1464.0.
 Q_{OT} = Overtopping discharge and frequency $> Q_{100}$ year recurrence interval. El. 1467.1 @ Sta. 373 + 32.
 Q_p = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.
 Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1464.9.
 V_{max} = Maximum computed outlet velocity for the proposed culvert, based on 100 year frequency.

	ITEM	UNIT	QUANTITY
	Structure Excavation, Box Culvert	Cu. Yd.	36
	Box Culvert Undercut	Cu. Yd.	163
	Class B Riprap	Ton	27.4
	Type B Drainage Fabric	Sq. Yd.	39
	Reinforcement Fabric (MSE)	Sq. Yd.	223
	10' X 4' Precast Concrete Culvert, Furnish	Ft.	116
	10' X 4' Precast Concrete Culvert, Install	Ft.	116
	10' X 4' Precast Concrete Culvert End Section, Furnish	Each	2
	10' X 4' Precast Concrete Culvert End Section, Install	Each	2

✱ For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yd. to Tons.



FOR

◇ OVER TRIBUTARY	40° LHF SKEW
STA. 373 + 32.35	SEC. 13/7-T99N-R55/54W
STR. NO. 63-060-070	NH 0044(232)377
PCN 06R5	HL-93

◆ *Topeka Shiner Stream*

TURNER COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2024

1 OF 5

DESIGNED BY JH	CK. DES. BY AH	DRAFTED BY BT	 BRIDGE ENGINEER
TURN06R5	06R5TA01		

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIFICATIONS

Use South Dakota Standard Specifications for Roads and Bridges, 10-7-26 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges are available for download and viewing at: <https://dot.sd.gov/doingbusiness/contractors/standard-specifications>

GENERAL NOTES

Design will be in accordance with Section 560 of the Specifications with the following criteria:

- Box culvert and box culvert end section design will conform to the AASHTO LRFD Bridge Design Specifications, 9th Edition.
- Design Live Load: HL-93. No construction loading in excess of legal load is anticipated. If construction loading in excess of legal load is anticipated by the Contractor, the Contractor will submit a proposal including a design analysis for the anticipated construction loading, through the proper channels, to the Office of Bridge Design for approval. Upon approval, the construction load will not be applied until the depth of fill over the box culvert as required by analysis has been placed. At a minimum, 4 feet of fill will be placed over the box culvert prior to applying the construction load. All costs associated with accommodating any construction loads will be borne by the Contractor.
- The box culvert will be load rated in accordance with the AASHTO Manual for Bridge Evaluation, 2018 Edition with the latest Interim Revisions using the LRFR method. The rating will include evaluation of the Design HL-93 truck at both Inventory and Operating levels and a Legal Load rating for three SD legal trucks (Type 3, 3S2 and 3-2) as well as the notional rating load and four specialized hauling vehicles. The structure will also be evaluated for the emergency vehicles, EV2 and EV3, at the legal load rating level. All sections of the box culvert will rate at HL-93 or better (Inventory Level). The three SD legal loads, the notional rating load, the four specialized hauling vehicles, and two emergency vehicles will rate greater than 1.0 at legal load rating level. AASHTOWare Bridge Rating (BrR) is required to be used to rate the box culvert. Include the BrR rating model and a load rating summary table with load rating calculations. Submit load rating calculations with the design and independent check design calculations or shop plans, as appropriate.
- The design of the barrel sections will be based on a minimum fill height of 1 foot and include all subsequent fill heights up to and including the maximum fill height of 5 ft. over the box culvert.
- Minimum inside corner fillet will be 6 in.
- Minimum precast barrel section length will be 6 - foot sections; however, no more than two 4 - foot sections are allowed in any one length of precast barrel.
- Lift holes will be plugged with an approved nonshrinkable grout.
- The Fabricator will imprint on the structure the date of construction as specified and detailed on Standard Plate No. 460.02.
- Alternate end section details will be allowed, subject to the approval of the Bridge Construction Engineer. No additional payment will be made for any change in the barrel/end section configuration.
- Installation of the precast sections will be in accordance with the final approved shop plans.
- Care will be taken when placing sections. Sections will be only moved using the lifting holes by approved equipment.
- Soils below the bottom of the proposed RCBC consist of soft brown clay silt. Groundwater was encountered in the borings at an elevation of 1456.8 feet during the subsurface investigation conducted in September 2024. Dewatering will be required during construction.

DESIGN MIX OF CONCRETE

- Mix will be as per fabricator's design, however minimum compressive strength will not be less than 4500 p.s.i. at 28 days.
- Type II cement is required.

SHOP PLANS

The fabricator will submit shop plans in accordance with the Construction Specifications. Include design and independent check design, if applicable, with initial submittal.

GEOTEXTILE SPECIFICATION

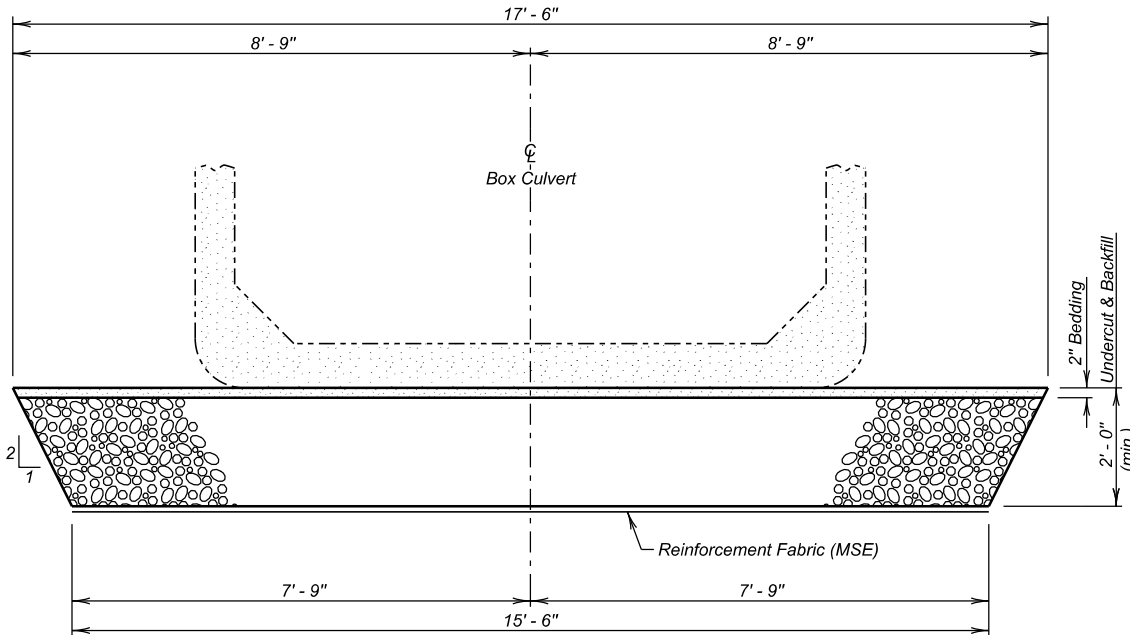
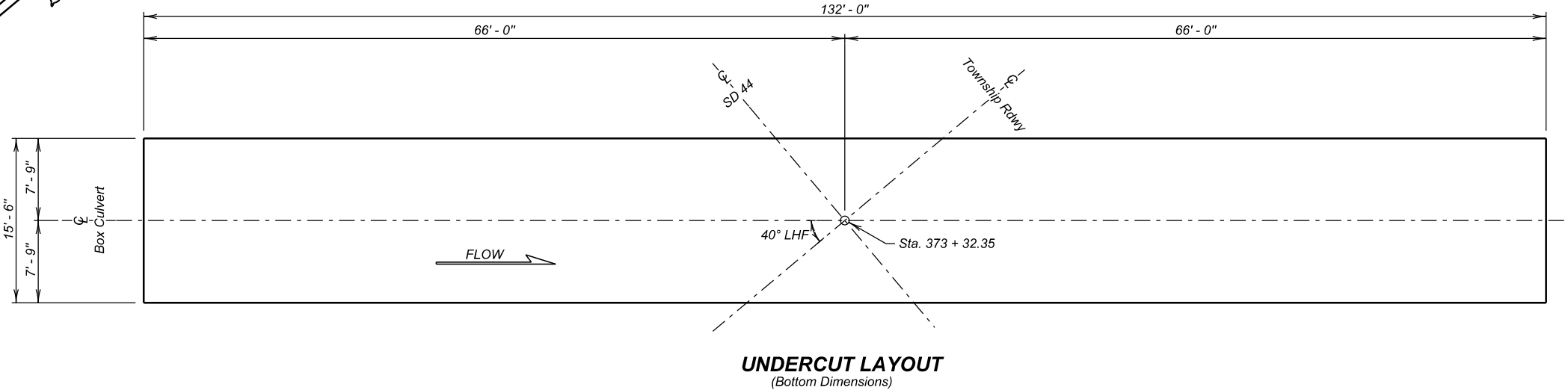
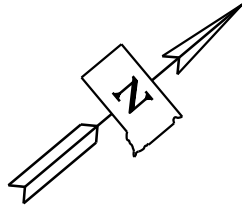
- The geotextile will conform to specification for Geotextiles and Impermeable Plastic Membrane, Reinforcement Fabric (MSE) (Section 831 of the Standard Specifications). The geotextile will be on the Approved Products List for this material or will be certified by the supplier to meet this specification prior to installation.
- Geotextile will be paid for at the contract unit price per sq. yd. for Reinforcement Fabric (MSE). Payment will be full compensation for furnishing and installing the fabric only. Granular backfill materials will be incidental to the contract unit price per cubic yard for Box Culvert Undercut.

INSTALLATION PROCEDURE - GEOTEXTILE

Place the Reinforcement Fabric (MSE) on as level and smooth of a surface as possible. Any protrusions that might damage the geotextile will be removed prior to placing the geotextile. All seams in the geotextile will be stitched in accordance with the seaming procedure and as shown on the detail labeled "Seam Types." No equipment will be allowed on the geotextile until the granular backfill material is in place. The geotextile will be kept as taut as possible prior to backfilling. Granular backfill material will be dumped behind the leading edge of the fill and pushed into place with a loader or dozer.

SEAMING PROCEDURE

- The sewn seams will consist of two parallel rows of stitching ("prayer" seam, TypeSSa-2), or will consist of a J-seam, (Type SSn-1), using a single row of stitching. The stitching will be lock type stitch.
- If the Type SSa-2 seam is used, the two rows of stitching will be 1" apart with a tolerance of plus or minus ½" and will not cross, except for restitching. The minimum seam allowance, i.e., the minimum distance from the geotextile edge to the stitch line nearest to that edge, will be 1 ½".
- If the J-seam (Type SSn-1), is used, the minimum seam allowance will be 1".
- The seam, stitch type, and the equipment used to perform the stitching will be as recommended by the manufacturer of the geotextile and approved by the Engineer.
- Thread used will be high strength polypropylene, polyester, or Kevlar thread. Nylon threads will not be allowed.



TYPICAL SECTION

(For Limits of Undercut)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Box Culvert Undercut	Cu. Yd.	163
Reinforcement Fabric (MSE)	Sq. Yd.	223

For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.

NOTES AND UNDERCUT DETAILS

FOR

10' X 4' BOX CULVERT (PRECAST)

OVER TRIBUTARY 40° LHF SKEW
STA. 373 + 32.35 SEC. 13/7-T99N-R55/54W
STR. NO. 63-060-070 NH 0044(232)377
HL-93

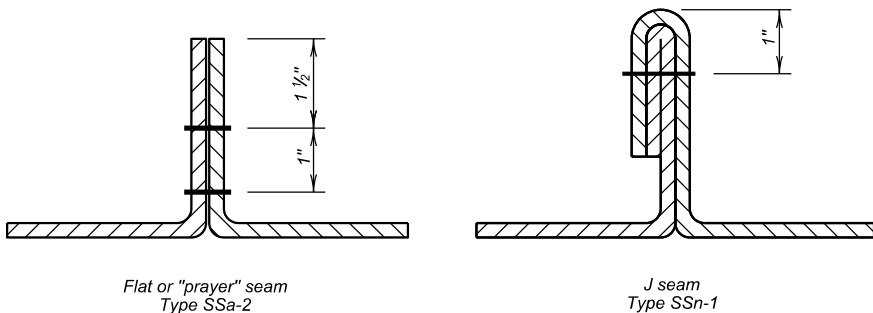
TURNER COUNTY

S. D. DEPT. OF TRANSPORTATION

DECEMBER 2024

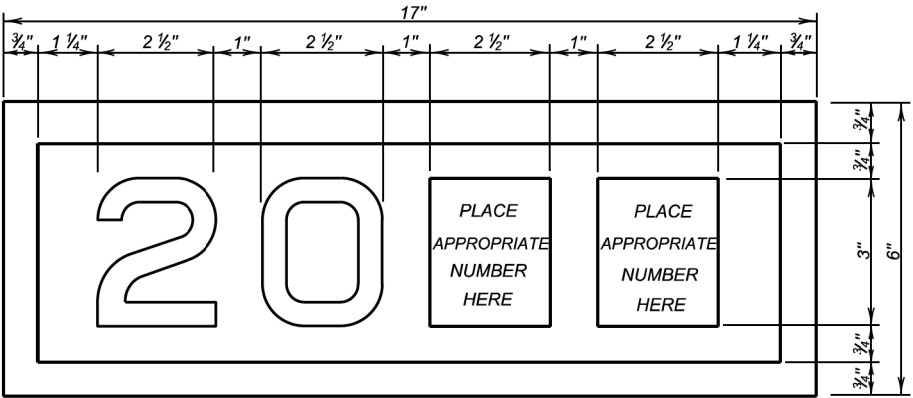
2 OF 5

GEOTEXTILE SEAM TYPES



DESIGNED BY JH TURN06R5	CK. DES. BY AH 06R5TA02	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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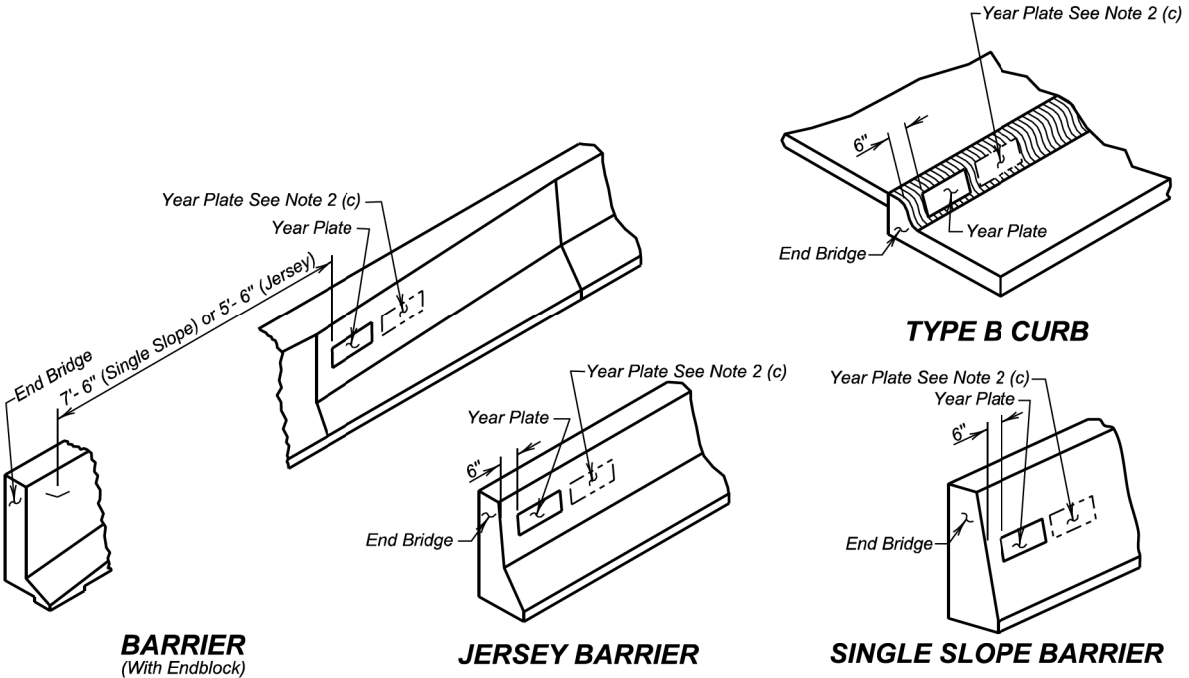
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0044(232)377	59	83



YEAR PLATE DETAILS

GENERAL NOTES:

- Year plates of the general dimensions shown will be constructed on all box culverts and bridges. The year plates will be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.
- Year plates will be located on structure(s) as follows:
 - On cast-in-place box culverts the year plates will be four and one - half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate will be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate will be centered in an adjacent barrel.
 - On bridges with six (6) inch curbs, "Jersey" shaped barriers with no endblocks, or "Single Slope" shaped barriers with no endblocks, the year plate will be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with barrier endblocks, the year plate will be centered on the upper sloped portion of the barrier approximately 5'-6" for "Jersey" shaped barriers from the end of the bridge and 7'-6" for "Single Slope" shaped barriers from the end of bridge, or as designated by the Engineer. There will be one year plate at each end of the bridge on opposite sides.
 - When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.
- There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.



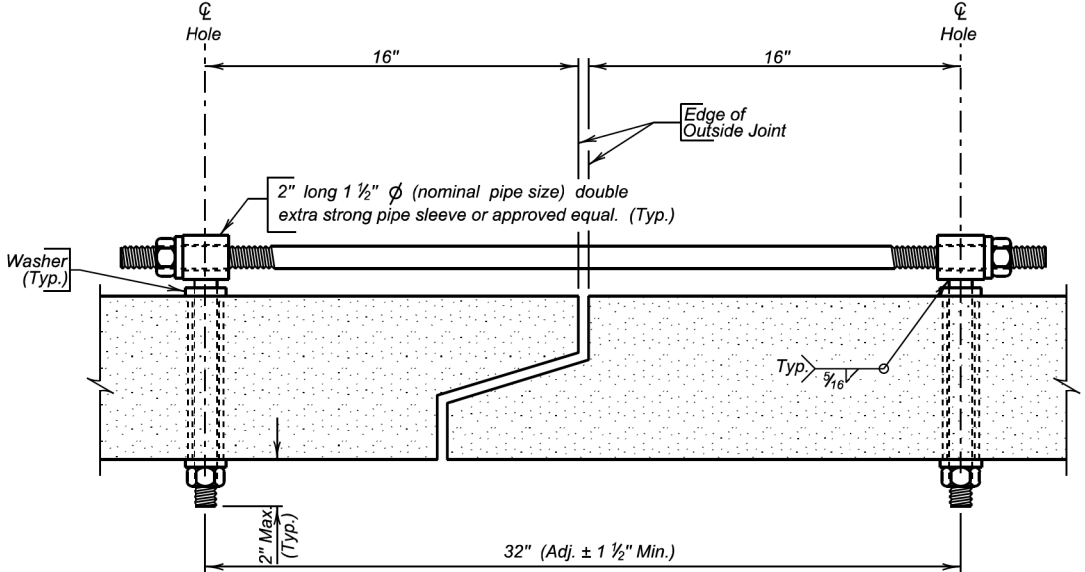
BARRIER
(With Endblock)

JERSEY BARRIER

SINGLE SLOPE BARRIER

January 22, 2021

Published Date: 2026	S D D O T	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 Of 1



TIE BOLT ASSEMBLY

GENERAL NOTES:

- 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.
- Ties shall be 1 inch ϕ and conform to the requirements of ASTM A36, ASTM A307, or ASTM F1554, Gr. 36. 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.
- Welding and weld inspection shall be in conformance with AWS/ANSI D1.1 - (Current Year) Structural Welding Code - Steel.
- Tie Bolt Assembly shall be galvanized in accordance with ASTM A153 or ASTM F2329 as applicable.
- 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.
- 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".

March 21, 2016

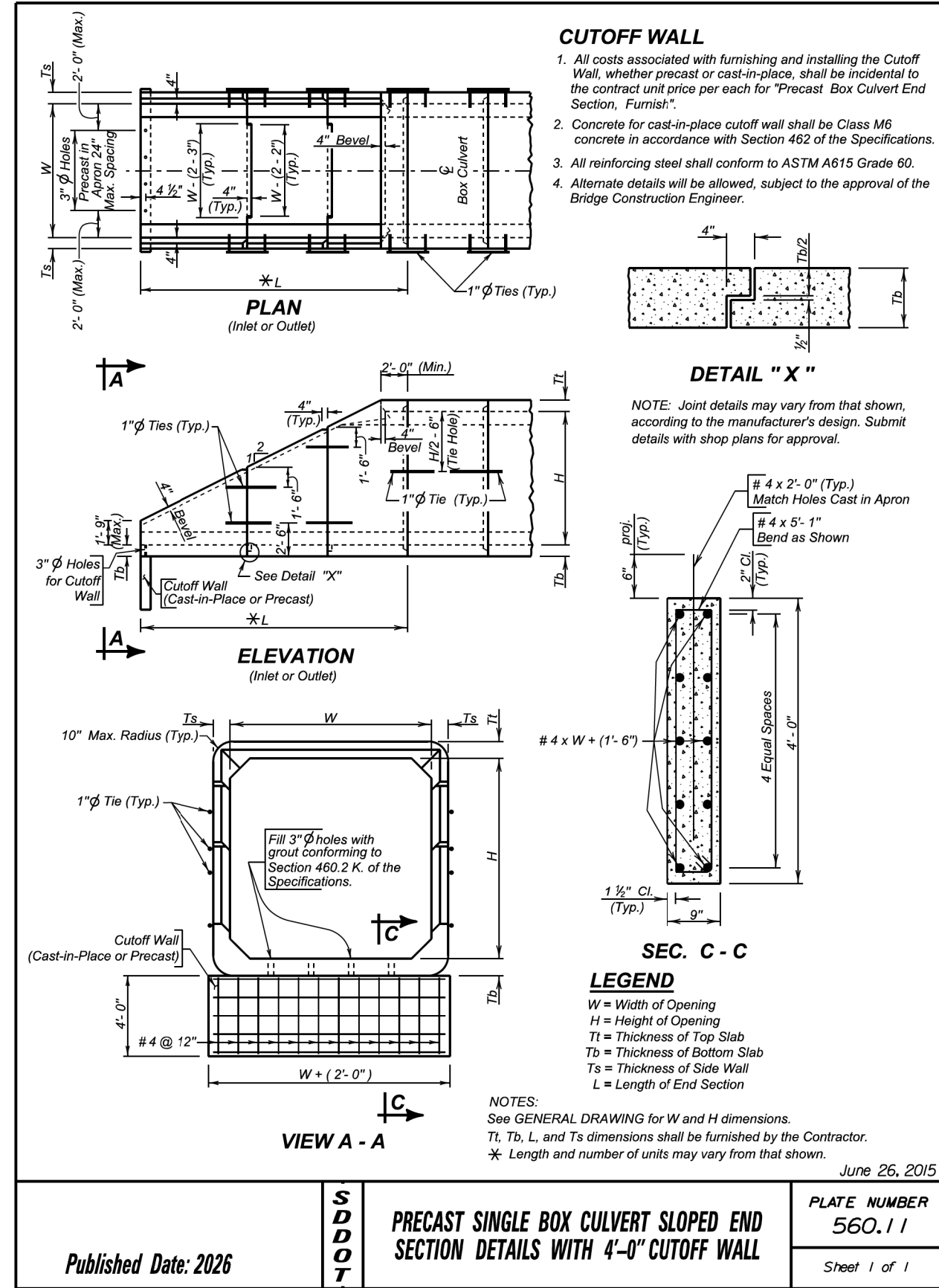
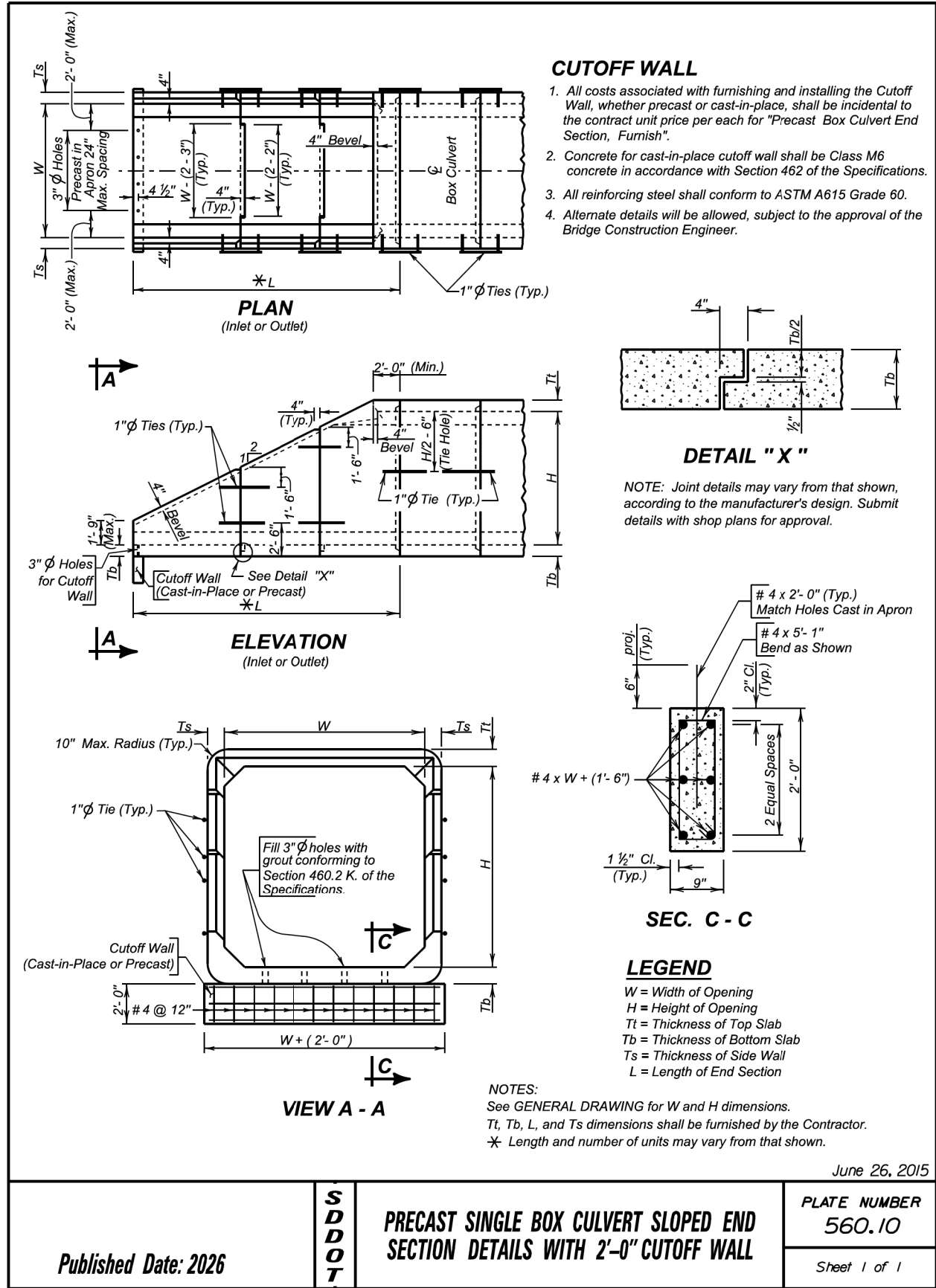
Published Date: 2026	S D D O T	PRECAST BOX CULVERT TIE BOLT ASSEMBLY DETAILS	PLATE NUMBER 560.01
			Sheet 1 of 1

10' X 4' BOX CULVERT (PRECAST)

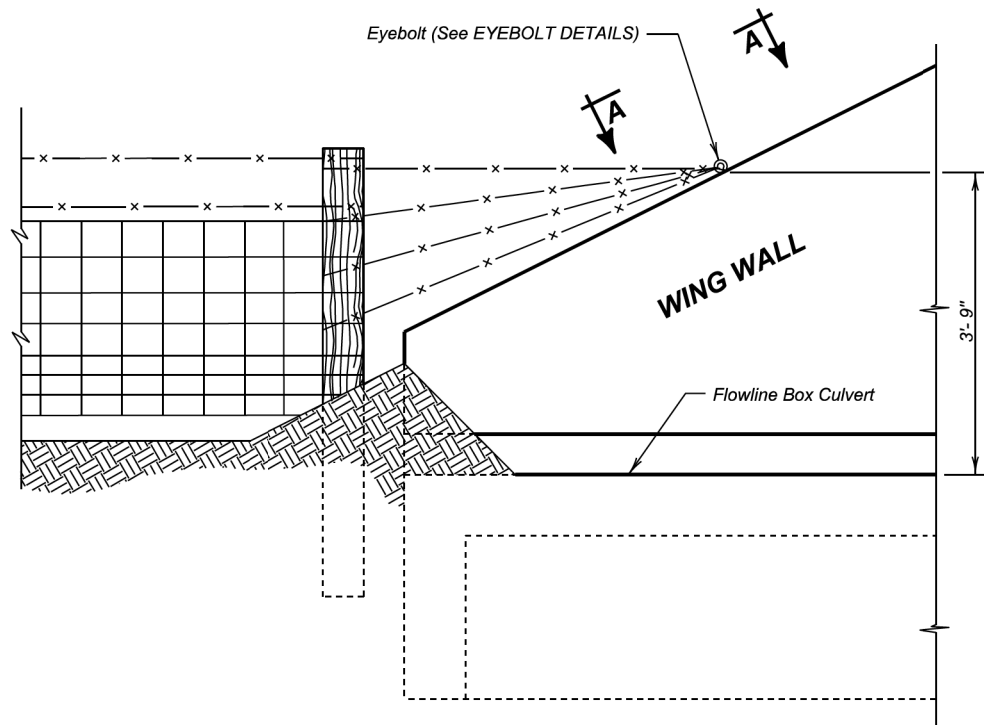
STR. NO. 63-060-070
DECEMBER 2024

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
		60	83

NH-P 0044(232)377



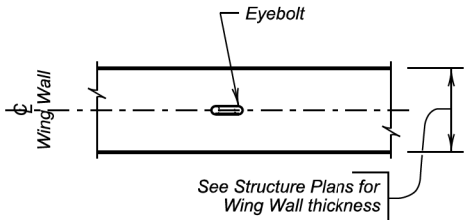
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH-P 0044(232)377	61	83



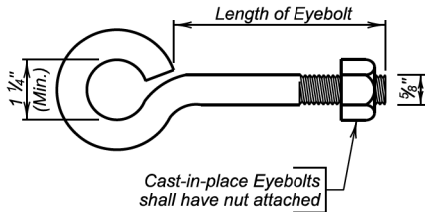
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

- 1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
- 2. Eyebolts shall be placed on all of the box culvert wing walls.
- 3. Eyebolts shall be 5/8 inch diameter and shall conform to ASTM A307.
- 4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
- 5. Cast-in-place eyebolts shall have a nut attached, be 4 1/2 inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the 5/8 inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
- 6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



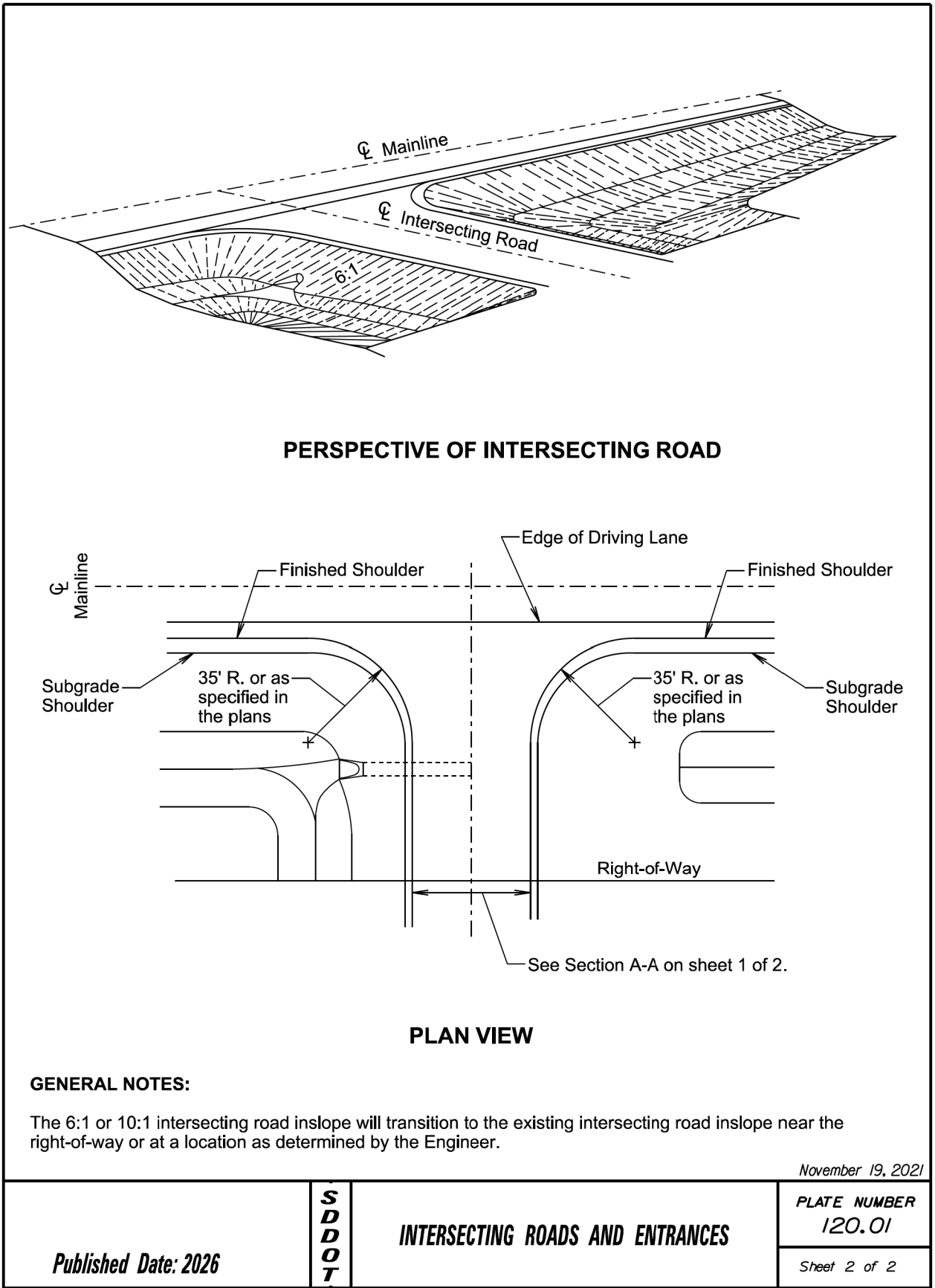
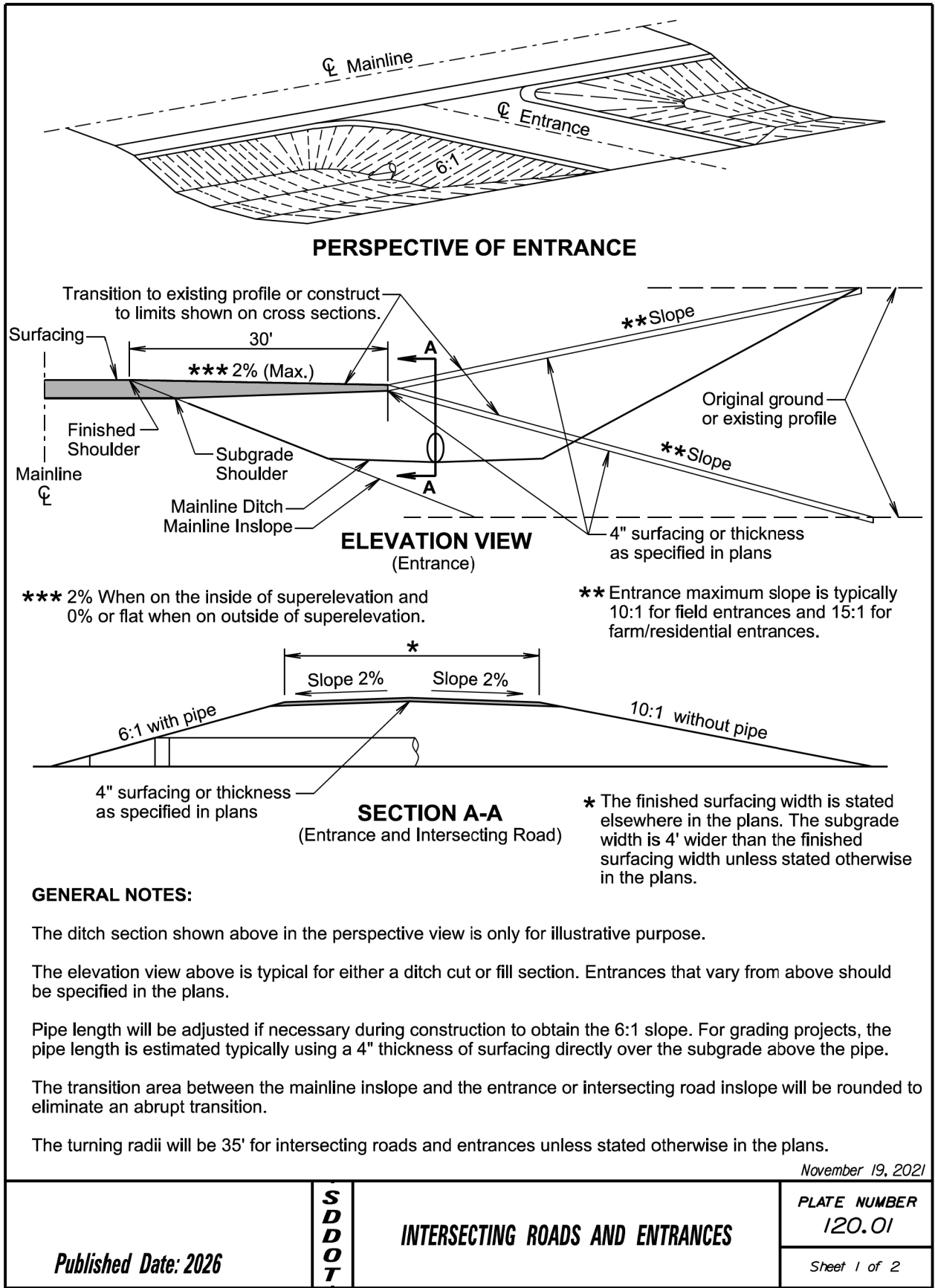
VIEW A - A

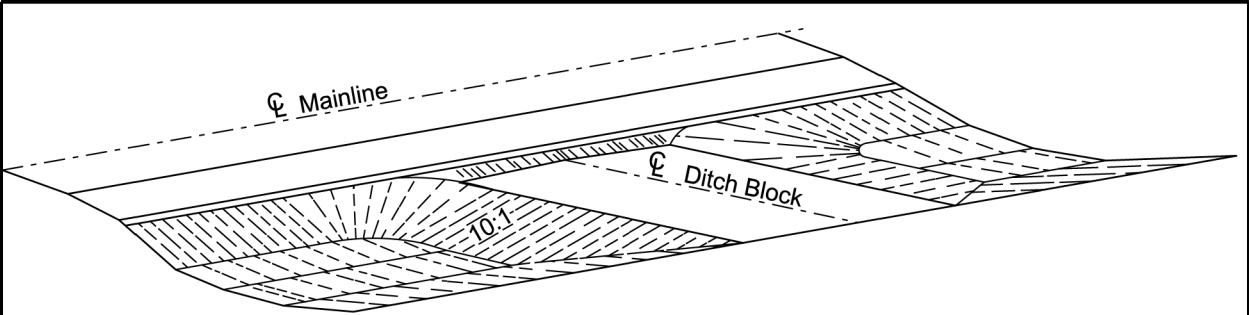


EYEBOLT DETAILS

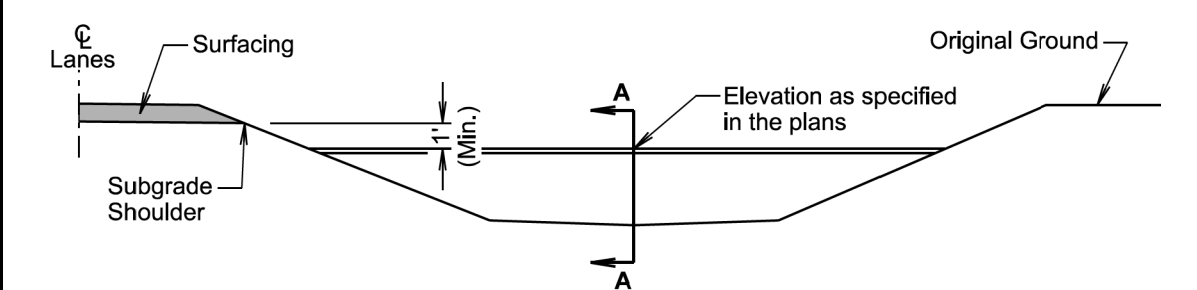
December 23, 2012

Published Date: 2026	S D D O T	FENCE ANCHORS FOR BOX CULVERT WING WALLS	PLATE NUMBER 620.16
			Sheet 1 of 1

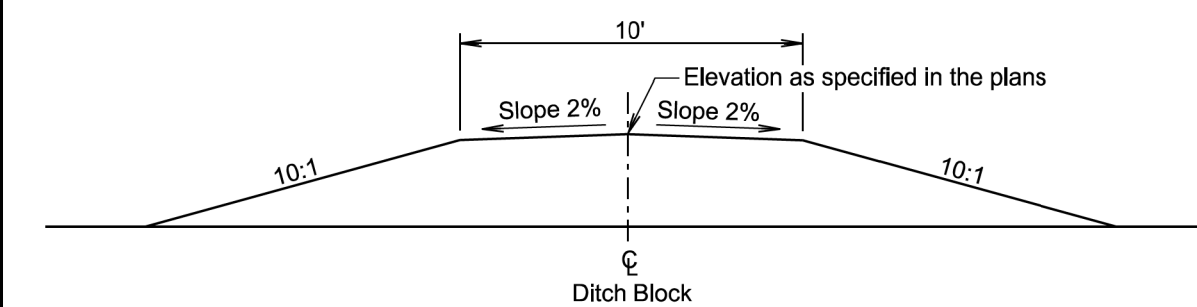




PERSPECTIVE OF DITCH BLOCK



ELEVATION VIEW



SECTION A-A

GENERAL NOTES:

- The ditch section shown above in the perspective and elevation view is only for illustrative purpose.
- The inslopes of the ditch block will be 10:1 or as specified in the plans.
- The transition area between the mainline inslope and the ditch block inslope will be rounded to eliminate an abrupt transition.

September 14, 2018

Published Date: 2026	SD DOT	DITCH BLOCK	PLATE NUMBER 120.02
			Sheet 1 of 1

Published Date: 2026

SD
DOT

INSLOPE TRANSITIONS AT PIPE CULVERTS
OR REINFORCED CONCRETE BOX CULVERTS

PLATE NUMBER
120.05

Sheet 1 of 2

Line B-B

Top of Topsoil

Inslope at Drainage Structure

VIEW A-A
(RCBC)

Line B-B

Top of Topsoil

Inslope at Drainage Structure

VIEW A-A
(Pipe)

Mainline

Traffic Direction

Edge of Subgrade Shoulder

Edge of Driving Lane

Typical Inslope

Toe of Fill

Inslope Transition

Inslope at Drainage Structure

Inslope Transition

Inslope at Drainage Structure

Pipe or RCBC

Line B-B

Top of Topsoil

Inslope at Drainage Structure

TYPE 1 INSLOPE TRANSITION

GENERAL NOTES:

This Type 1 Inslope Transition is used when the specified inslope at the drainage structure is flatter than the typical inslope and the inslope at the drainage structure is between a 4:1 slope and 6:1 slope.

Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

Transition from the typical inslope to the inslope at the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned gradually to the slope necessary adjacent to the RCBC wing wall or pipe culvert end section within the transition length necessary for the transition within the clear zone.

September 14, 2018

Published Date: 2026

SD
DOT

INSLOPE TRANSITIONS AT PIPE CULVERTS
OR REINFORCED CONCRETE BOX CULVERTS

PLATE NUMBER
120.05

Sheet 2 of 2

Line B-B

Top of Topsoil

Inslope Flatter than a 6:1 Slope

VIEW A-A
(RCBC)

Line B-B

Top of Topsoil

Inslope Flatter than a 6:1 Slope

VIEW A-A
(Pipe)

Mainline

Traffic Direction

Edge of Subgrade Shoulder

Edge of Driving Lane

Typical Inslope

Toe of Fill

Inslope Transition

Inslope at drainage structure

Inslope Transition

Inslope at drainage structure

Pipe or RCBC

Line B-B

Top of Topsoil

Inslope Flatter than a 6:1 Slope

TYPE 2 INSLOPE TRANSITION

GENERAL NOTES:

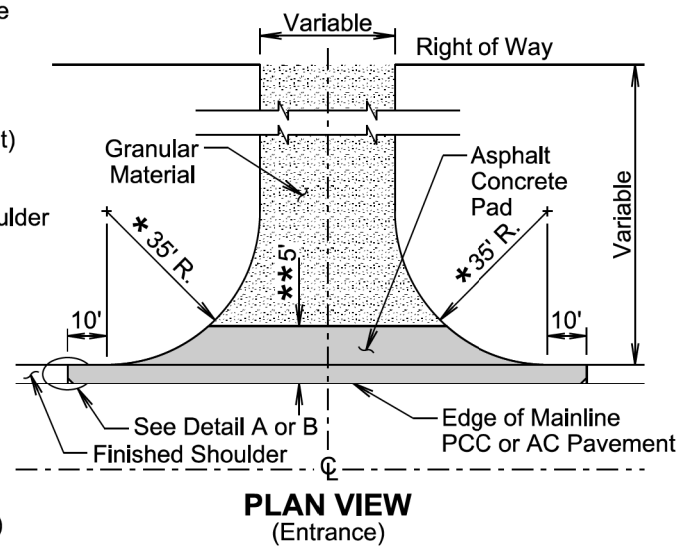
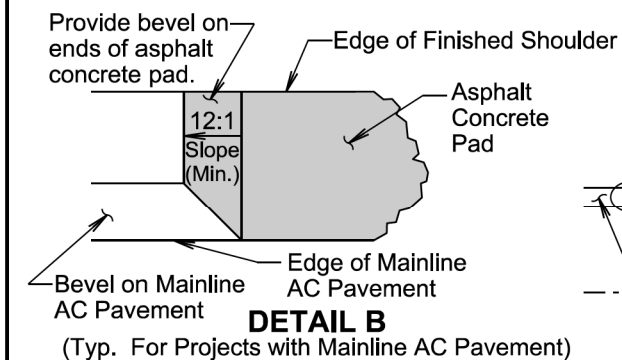
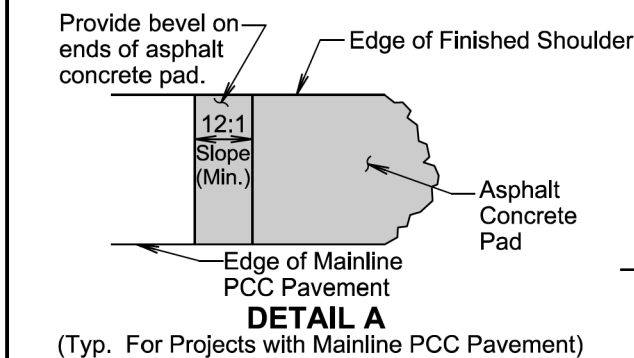
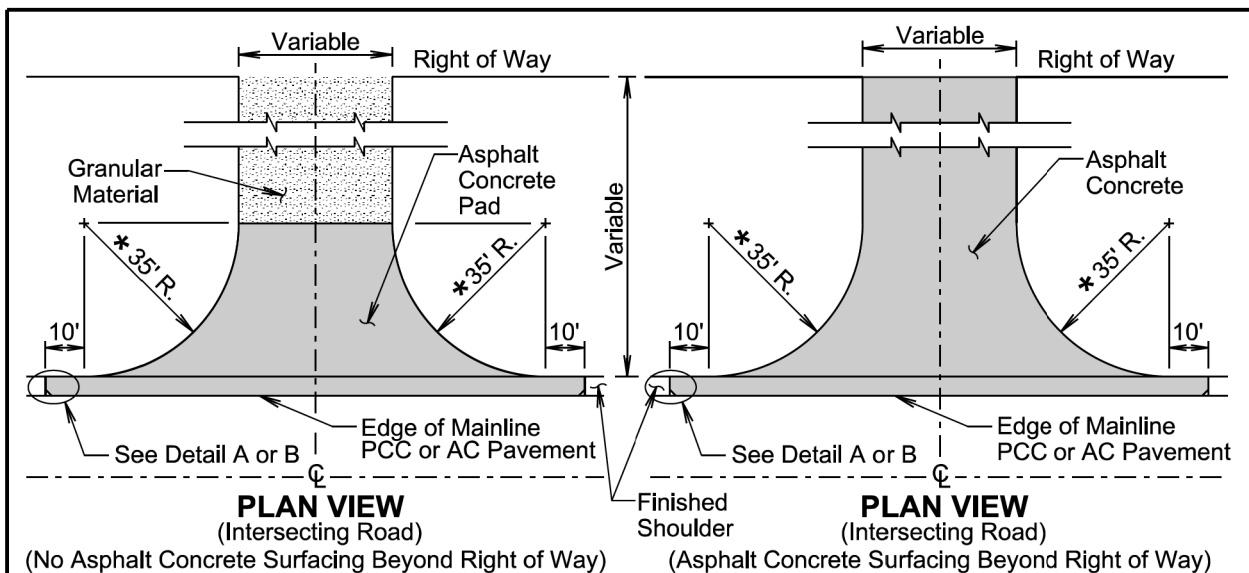
This Type 2 Inslope Transition is used when the specified inslope at the pipe or RCBC is flatter than a 6:1 slope.

Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

Transition from Inslope at drainage structure to a 6 : 1 Inslope and 3:1 inslope.

Transition from typical inslope to the inslopes adjacent to the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned to a 3:1 inslope within the transition length necessary for the transition within the clear zone.

September 14, 2018



GENERAL NOTES:

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

* For new construction, 35' radius typical or as specified in the plans. For resurfacing projects, radius is variable depending on existing conditions.

** For shoulder widths < 4', the Asphalt Concrete Pad width must be 5'. For shoulders widths of 4' or more, pave the full width of the shoulder only.

August 27, 2020

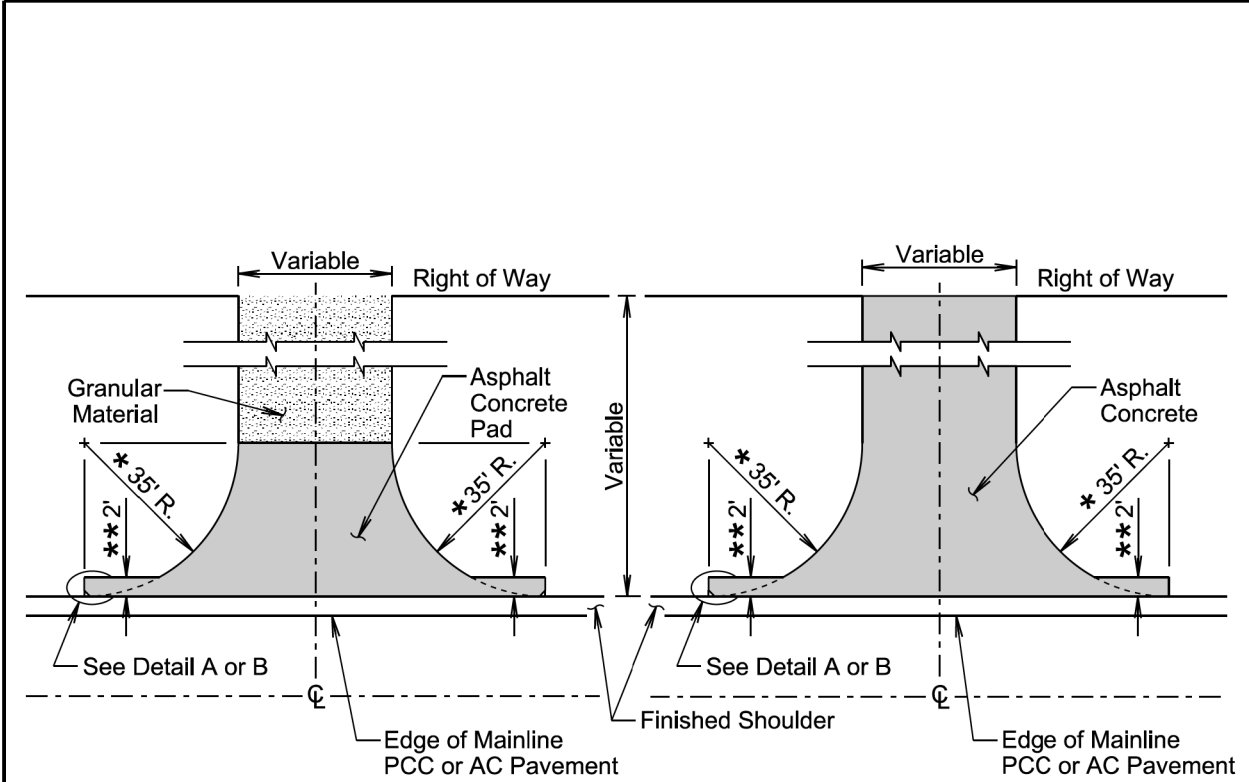
Published Date: 2026

SD
DOT

**SURFACING OR RESURFACING OF INTERSECTING
ROADS AND ENTRANCES (SHOULDERS: GRANULAR
MATERIAL OR COLD RECYCLED MATERIAL)**

PLATE NUMBER
320.01

Sheet 1 of 1



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

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

GENERAL NOTES:

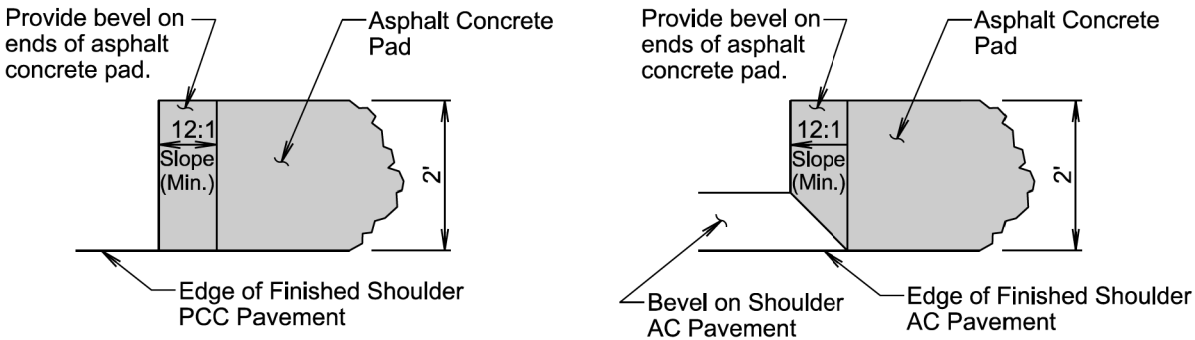
The precise construction limits for situations other than shown above will be determined by the Engineer during construction.

* For new construction, 35' radius typical or as specified in the plans. For resurfacing projects, radius is variable depending on existing conditions.

** The Contractor may adjust the screed of the paver during mainline paving operations to provide the 2-foot asphalt concrete pad or the Contractor may provide the 2-foot asphalt concrete pad during paving of the intersecting roads as shown above. The Engineer may eliminate the 2-foot asphalt concrete pads if the Engineer, in the Engineer's sole discretion, determines the pads are infeasible to construct due to site specific reasons including, but not limited to; existing inslope configuration, borrow and material availability, and right-of-way constraints.

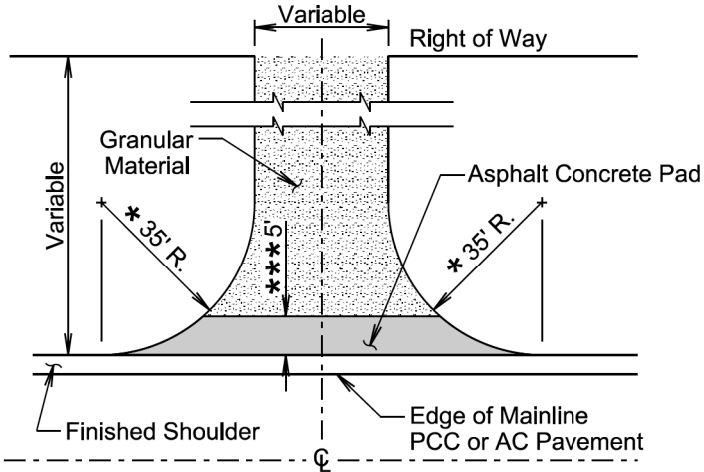
August 27, 2020

Published Date: 2026	SD DOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER
			320.04
			Sheet 1 of 2



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

DETAIL B
(Typ. for Projects with AC Pavement on Shoulder)

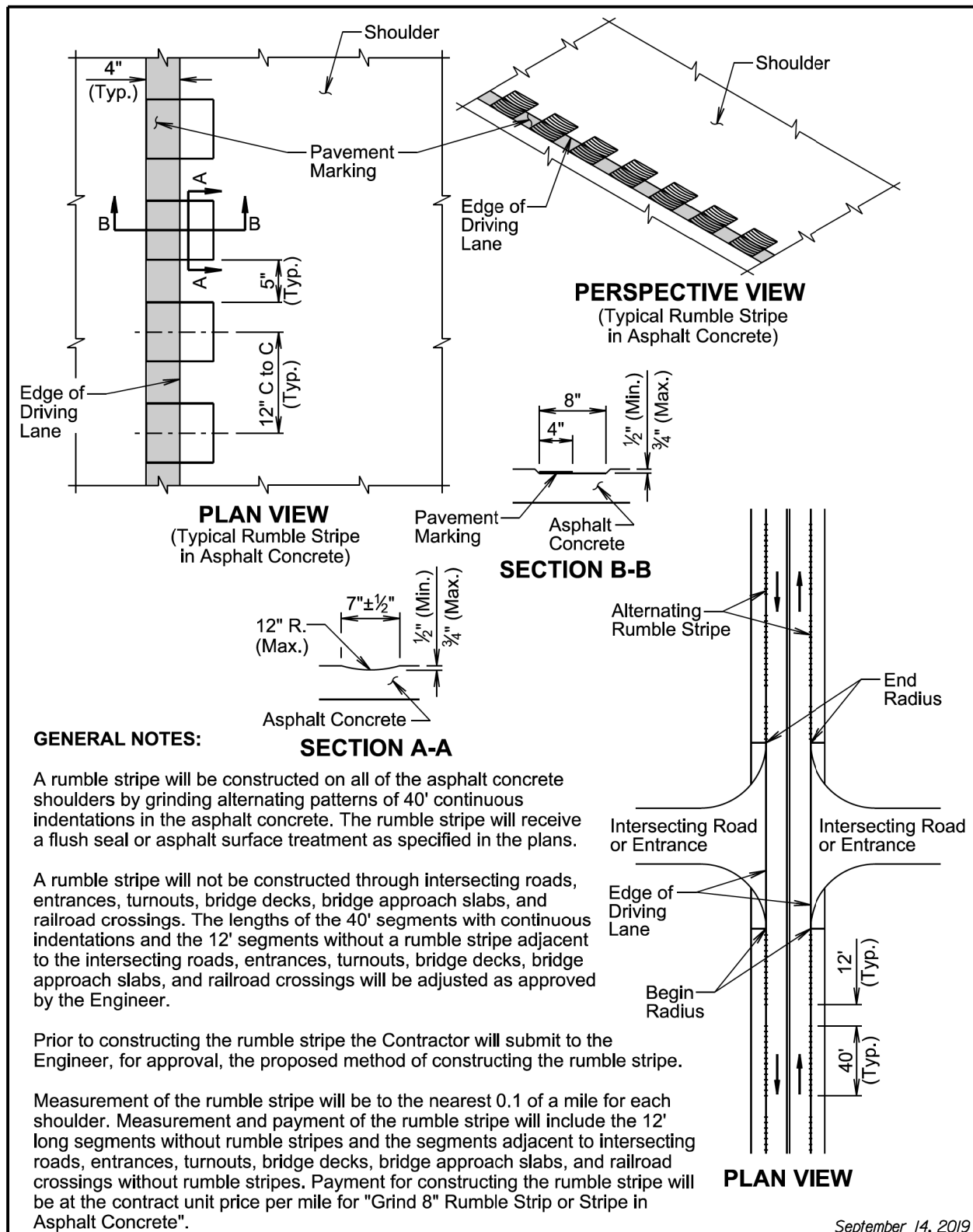


PLAN VIEW
(Entrance)

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

August 27, 2020

Published Date: 2026	SD DOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER
			320.04
			Sheet 2 of 2

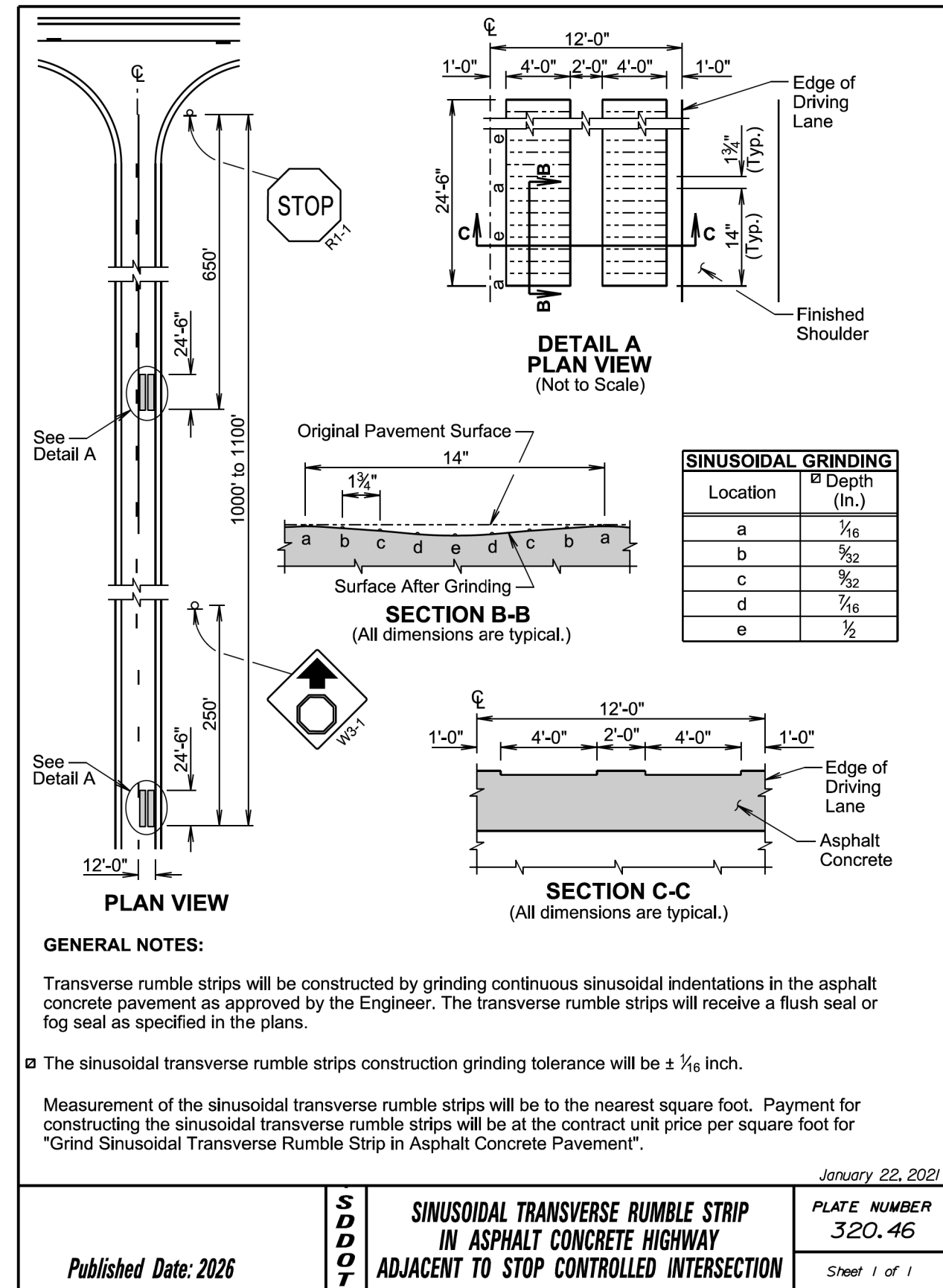
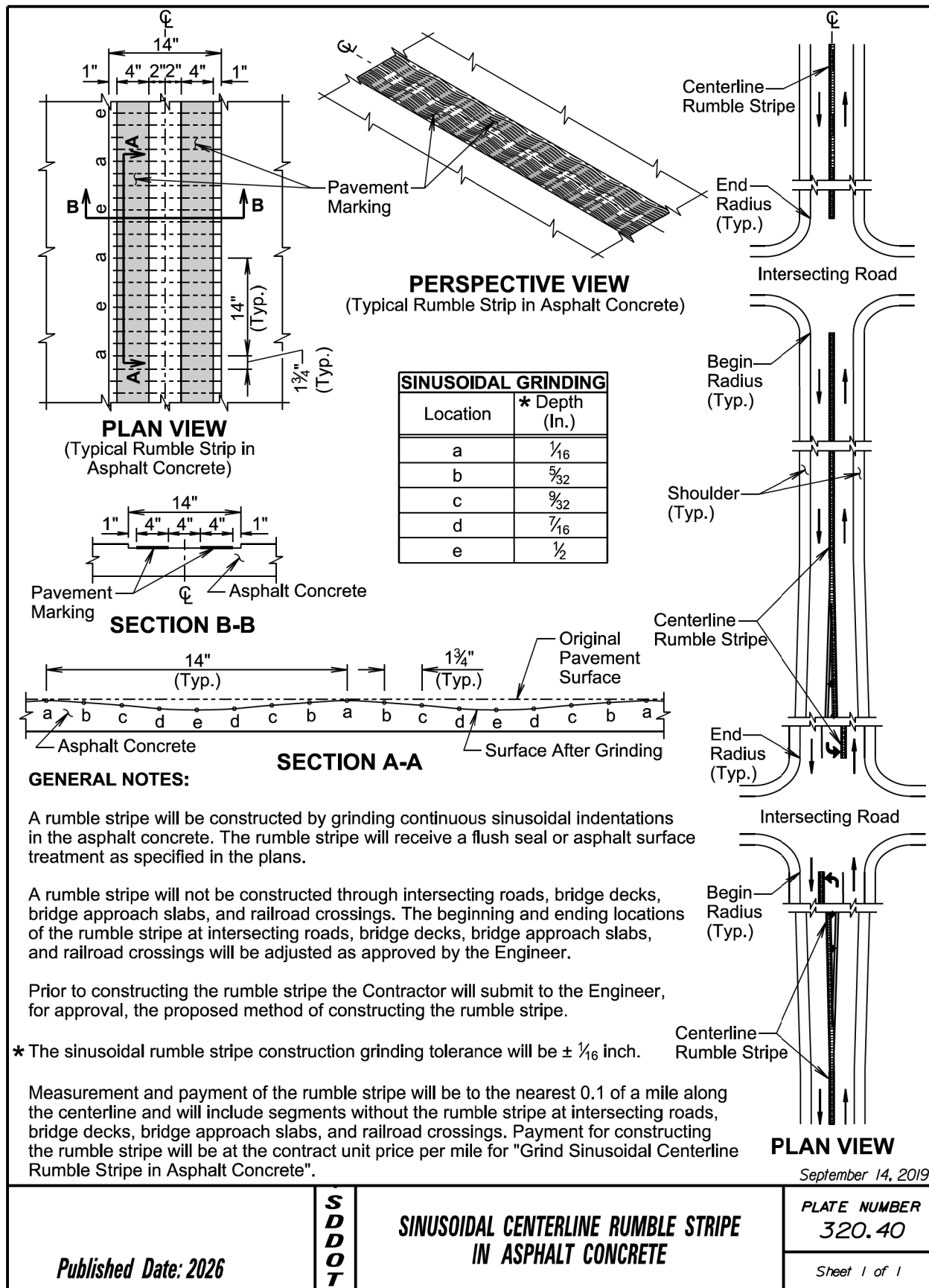


September 14, 2019

Published Date: 2026

SD
DOT**8" RUMBLE STRIPE IN ASPHALT CONCRETE
ON NONDIVIDED HIGHWAY SHOULDERS**PLATE NUMBER
320.20

Sheet 1 of 1



TOLERANCES IN DIMENSIONS

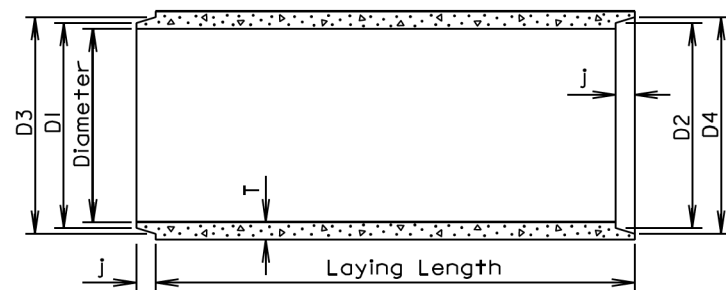
Diameter: $\pm 1.5\%$ for 24" Dia. or less and $\pm 1\%$ or $\frac{3}{8}"$ whichever is more for 27" Dia. or greater.

Diameters at joints: $\pm \frac{3}{16}"$ for 30" Dia. or less and $\pm \frac{1}{4}"$ for 36" or greater.

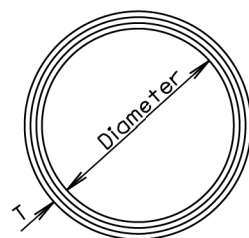
Length of joint (J): $\pm \frac{1}{4}"$.

Wall thickness (T): not less than design T by more than 5% or $\frac{3}{16}"$, whichever is greater.

Laying length: shall not underrun by more than $\frac{1}{2}"$.



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

Construction of R.C.P. shall conform to the requirements of Section 990 of the 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 ³ / ₈
36	524	4	3 ³ / ₄	38 ³ / ₄	39 ¹ / ₄	40	40 ¹ / ₂
42	685	4 ¹ / ₂	4	45 ¹ / ₈	45 ⁵ / ₈	46 ¹ / ₂	47
48	867	5	4 ¹ / ₂	51 ¹ / ₂	52	53	53 ¹ / ₂
54	1070	5 ¹ / ₂	4 ¹ / ₂	57 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 ⁵ / 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

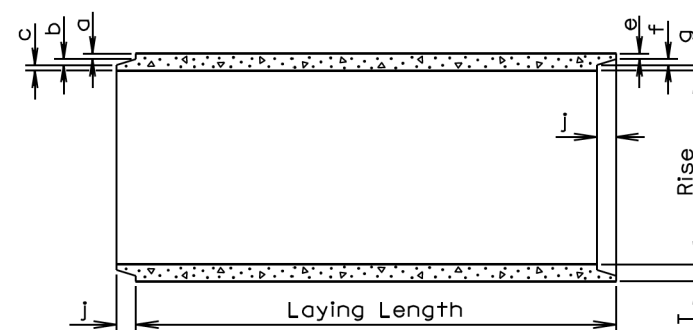
SD
DOT

REINFORCED CONCRETE PIPE

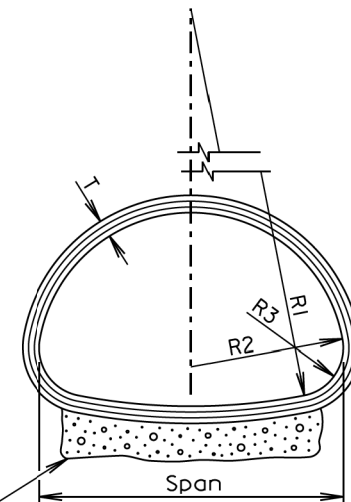
PLATE NUMBER
450.01

Sheet 1 of 1

Published Date: 2026



LONGITUDINAL SECTION



END VIEW

TOLERANCES IN DIMENSIONS

Radial dimensions at joints: $\pm \frac{1}{8}"$ for 65" span

or less and $\pm \frac{1}{4}"$ for longer spans.

Rise and Span: $\pm 2\%$ of tabular values.

Length of Joint (J): $\pm \frac{1}{4}"$.

Wall thickness (T): not less than design T by more than 5% or $\frac{3}{16}"$, whichever is greater.

Laying length: shall not underrun by more than $\frac{1}{2}"$.

Gravel Bedding Material shall be supplied for 102" to 169" spans. It shall be placed to a thickness of 6" (Min.) x 85% of the Span x Length of culvert and shall conform to the gradation requirements for gravel surfacing except material may be screened or may be plan provided material.

* Size (in.)	Approx. Wt./Ft. (lb.)	Rise (in.)	Span (in.)	T (in.)	a (in.)	b (in.)	c (in.)	j (in.)	e (in.)	f (in.)	g (in.)	R1 (in.)	R2 (in.)	R3 (in.)
18	170	13 ¹ / ₂	22	2 ¹ / ₂	1 ³ / ₈	³ / ₈	³ / ₄	2	1 ¹ / ₈	³ / ₈	1	27 ¹ / ₂	13 ³ / ₄	5 ¹ / ₄
24	320	18	28 ¹ / ₂	3 ¹ / ₂	1 ⁵ / ₈	¹ / ₂	1 ³ / ₈	3	1 ³ / ₈	¹ / ₂	1 ⁵ / ₈	40 ¹ / ₁₆	14 ³ / ₄	4 ⁵ / ₈
30	450	22 ¹ / ₂	36 ¹ / ₄	4	1 ¹³ / ₁₆	⁵ / ₈	1 ⁹ / ₁₆	3 ¹ / ₂	1 ⁹ / ₁₆	⁵ / ₈	1 ¹³ / ₁₆	51	18 ³ / ₄	6 ¹ / ₈
36	600	26 ⁵ / ₈	43 ³ / ₄	4 ¹ / ₂	2	³ / ₄	1 ³ / ₄	4	1 ³ / ₄	³ / ₄	2	62	22 ¹ / ₂	6 ¹ / ₂
42	740	31 ⁵ / ₁₆	51 ¹ / ₈	4 ¹ / ₂	2	³ / ₄	1 ³ / ₄	4	1 ³ / ₄	³ / ₄	2	73	26 ¹ / ₄	7 ³ / ₄
48	890	36	58 ¹ / ₂	5	2 ¹ / ₄	³ / ₄	2	5	2	³ / ₄	2 ¹ / ₄	84	30	8 ⁷ / ₈
54	1100	40	65	5 ¹ / ₂	2 ¹ / ₂	³ / ₄	2 ¹ / ₄	5	2 ¹ / ₄	³ / ₄	2 ¹ / ₂	92 ¹ / ₂	33 ³ / ₈	10
60	1400	45	73 ¹ / ₂	6	3 ⁵ / ₁₆	³ / ₄	1 ⁵ / ₁₆	5	2 ³ / ₄	³ / ₄	2 ¹ / ₂	105	37 ¹ / ₂	11
72	1900	54	88	7	3 ¹³ / ₁₆	1	2 ³ / ₁₆	6	3 ¹ / ₄	1	2 ³ / ₄	126	45	13 ⁵ / ₁₆
84	2500	62	102	8	4 ¹ / ₈	1	2 ⁷ / ₈	6	3 ¹ / ₂	1	3 ¹ / ₂	162 ¹ / ₂	52	14 ¹ / ₂
96	3300	78	122 ³ / ₈	9	4 ¹ / ₂	1	3 ¹ / ₂	7	4	1	4	218	62	20
108	4200	88	138 ¹ / ₂	10	5	1	4	7	4 ¹ / ₂	1	4 ¹ / ₂	269	70	22
120	5100	96 ⁷ / ₈	154	11	5 ¹ / ₂	1	4 ¹ / ₂	7	5	1	5	301 ³ / ₈	78	24
132	5100	106 ¹ / ₂	168 ³ / ₄	10		1	4	7	4 ¹ / ₂	1	4 ¹ / ₂	329	85 ⁵ / ₈	26 ⁷ / ₈

* Equivalent Diameter of Circular R.C.P.

GENERAL NOTES:

Construction of R.C.P. Arch 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.

June 26, 2015

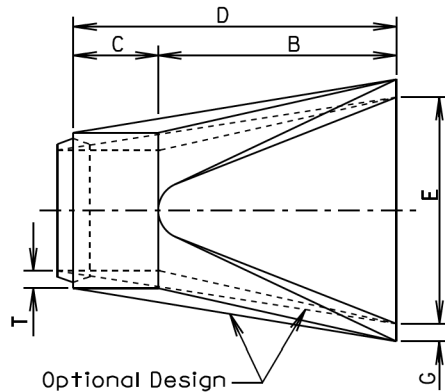
SD
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REINFORCED CONCRETE PIPE ARCH

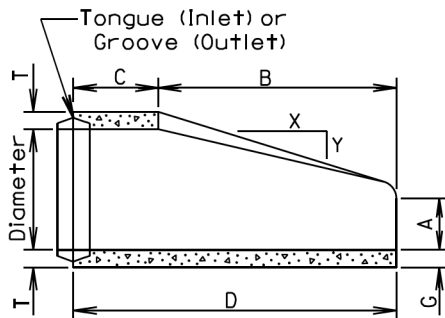
PLATE NUMBER
450.02

Sheet 1 of 1

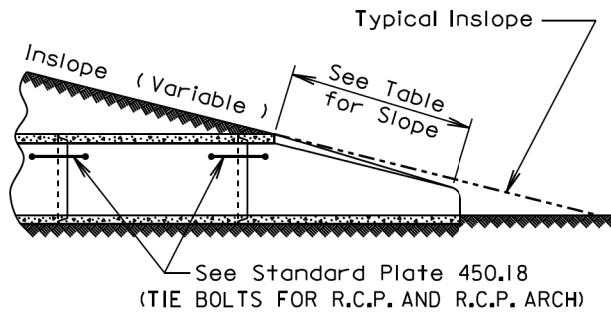
Published Date: 2026



TOP VIEW



LONGITUDINAL SECTION

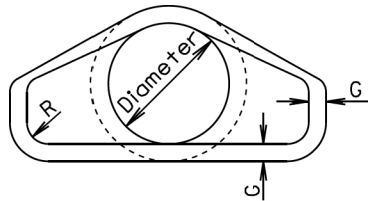


SLOPE DETAIL

GENERAL NOTES:

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

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

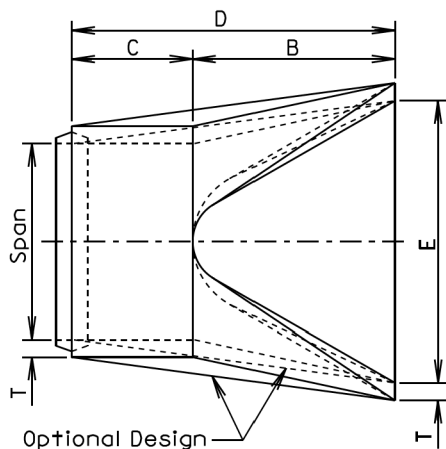
SD
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R. C. P. FLARED ENDS

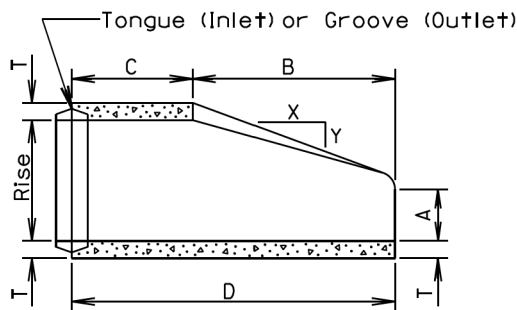
PLATE NUMBER
450.10

Sheet 1 of 1

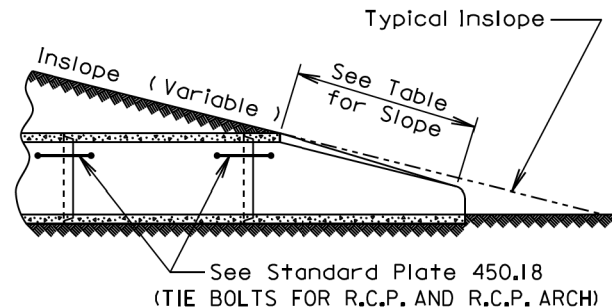
Published Date: 2026



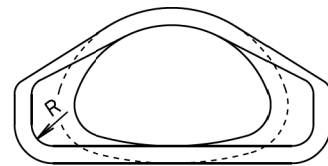
TOP VIEW



LONGITUDINAL SECTION



SLOPE DETAIL



END VIEW

GENERAL NOTES:

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

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

* Size (in.)	Approximate Weight of Section (lbs.)	Rise (in.)	Span (in.)	Slope (X:Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	R (in.)
18	1100	13 ¹ / ₂	22	3:1	2 ¹ / ₂	7	27	45	72	36	2
24	1750	18	28 ¹ / ₂	3:1	3 ¹ / ₂	8 ¹ / ₂	39	33	72	48	3
30	3300	22 ¹ / ₂	36 ¹ / ₄	3:1	4	9 ¹ / ₂	50	46	96	60	3
36	4350	26 ⁵ / ₈	43 ³ / ₄	3:1	4 ¹ / ₂	11 ¹ / ₈	60	36	96	72	6
42	5250	31 ⁵ / ₁₆	51 ¹ / ₈	3:1	4 ¹ / ₂	15 ¹³ / ₁₆	60	36	96	78	6
48	6400	36	58 ¹ / ₂	3:1	5	21	60	36	96	84	6
54	7850	40	65	3:1	5 ¹ / ₂	25 ¹ / ₂	60	36	96	90	6
60	9500	45	73 ¹ / ₂	3:1	6	31	60	36	96	96	6
72	13550	54	88	2:1	7	31	60	39	99	120	6
84	17950	62	102	2:1	8	28 ¹ / ₂	83	19	102	144	6

*Equivalent Diameter of Circular R. C. P.

June 26, 2015

SD
DOT

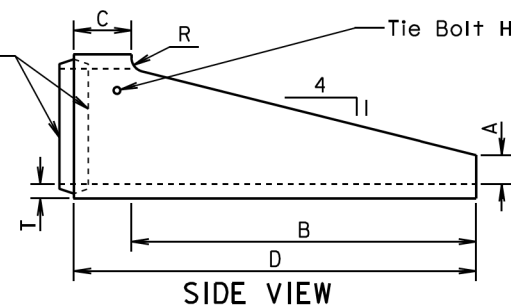
R. C. P. ARCH FLARED ENDS

PLATE NUMBER
450.11

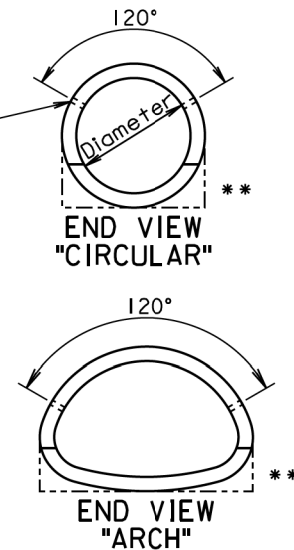
Sheet 1 of 1

Published Date: 2026

Tongue (Inlet)
or
Groove (Outlet)



SIDE VIEW



END VIEW
"CIRCULAR"

END VIEW
"ARCH"

Di _a . (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

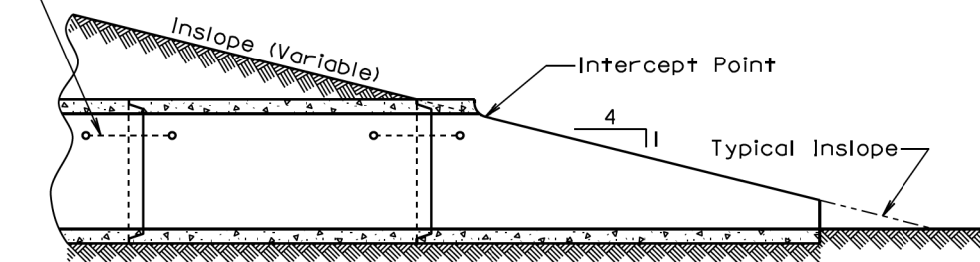
* Equivalent Diameter of Circular R.C.P.

** Acceptable Flat Bottom Alternate.

ALTERNATE

Di _a . (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

Tie Bolt (Typ.)
See Standard Plate 450.18



SECTION

(Along Centerline of Pipe)

GENERAL NOTE:

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

September 22, 2006

SD
DOT

R. C. P. SLOPED ENDS

PLATE NUMBER
450.13

Sheet 1 of 1

Published Date: 2026

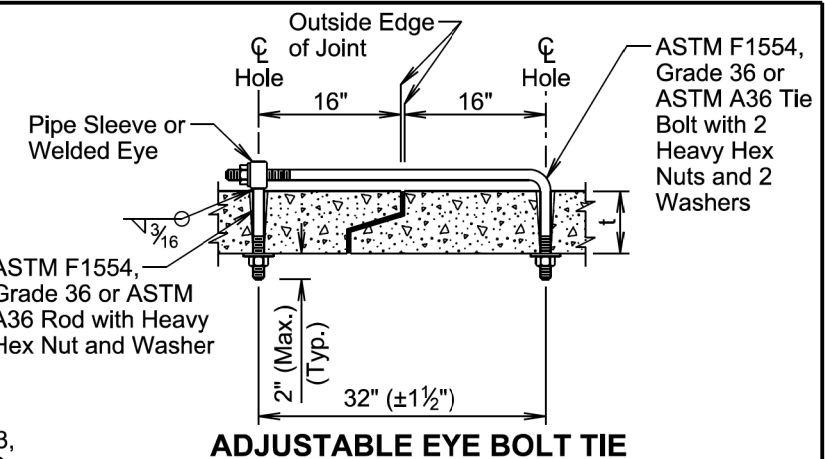
Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3¼	⅝	¾
3½-6½	¾	1
≥ 7	1	1¼

GENERAL NOTES:

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

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

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



ADJUSTABLE EYE BOLT TIE

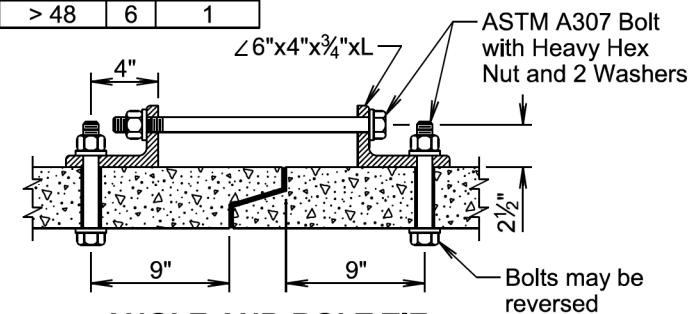
Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	¾
> 48	6	1

GENERAL NOTES:

Angles will conform to ASTM A36.

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

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



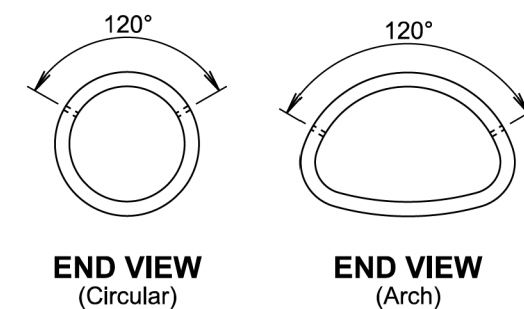
ANGLE AND BOLT TIE

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 will 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, manholes, and junction boxes will 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 will be incidental to the contract unit price per foot for the corresponding bid item for R.C.P. or R.C.P. Arch.



END VIEW
(Circular)

END VIEW
(Arch)

Apr 11 8, 2025

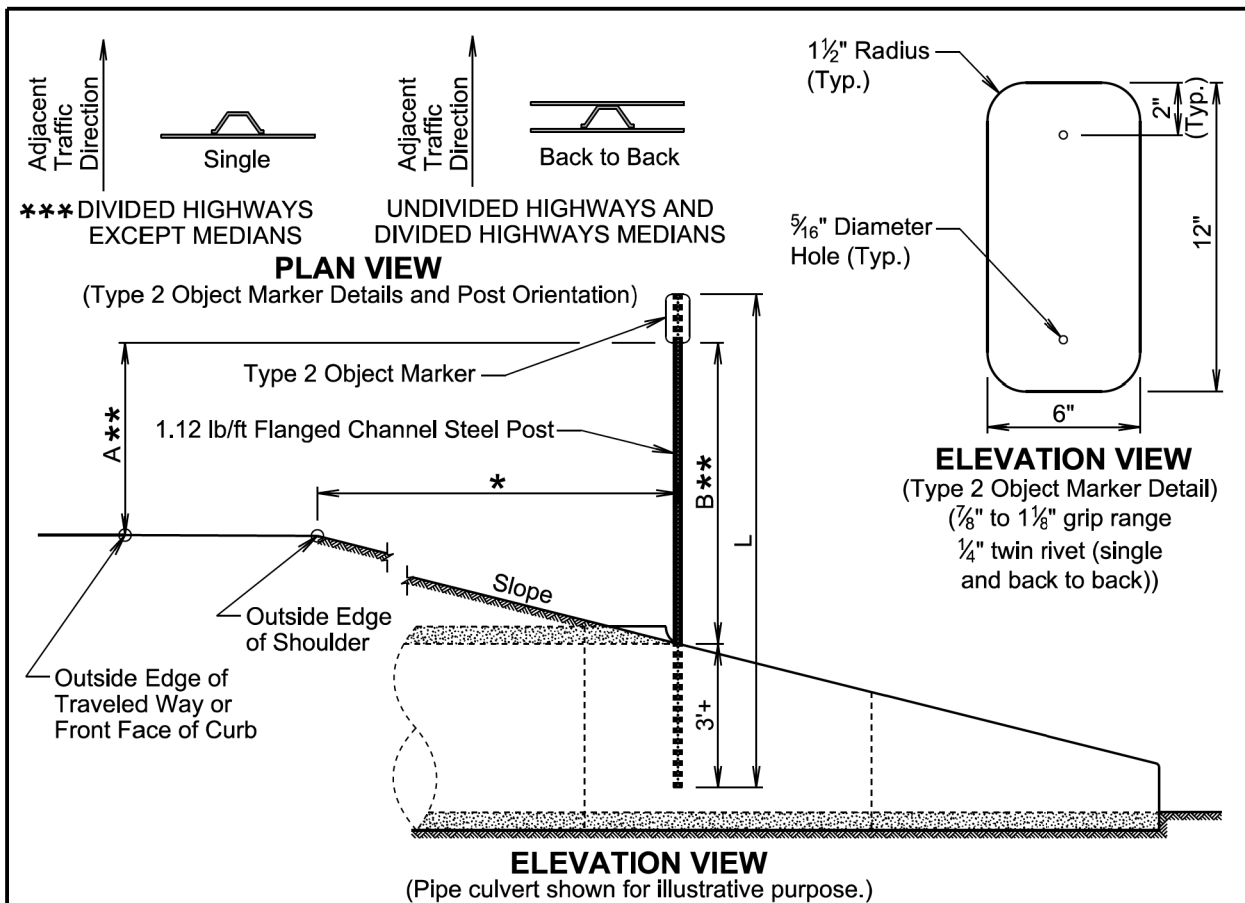
SD
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TIE BOLTS FOR R.C.P. AND R.C.P. ARCH

PLATE NUMBER
450.18

Sheet 1 of 1

Published Date: 2026



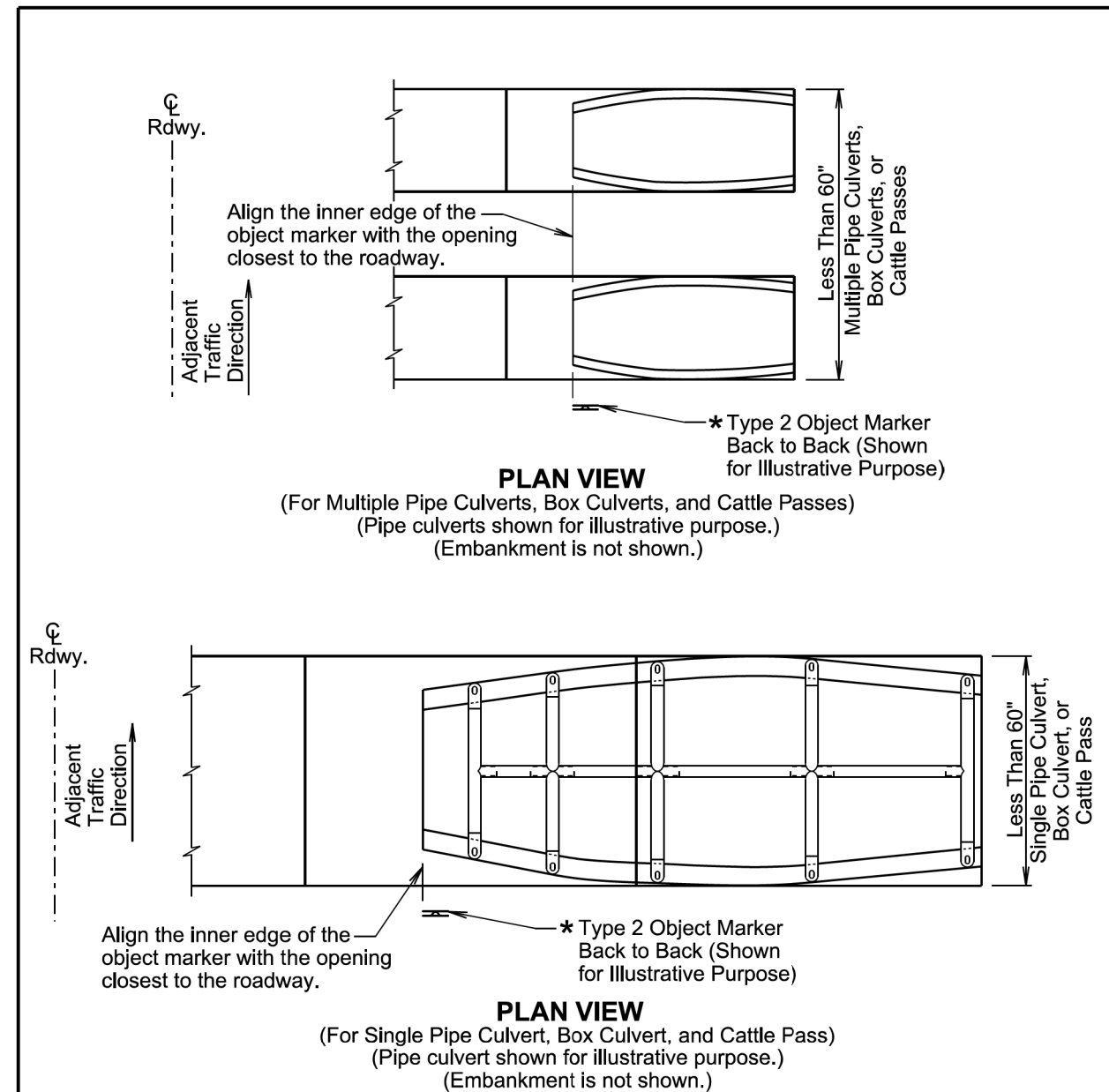
TYPE 2 OBJECT MARKER POST LENGTHS										
OFFSET (*)	1'	2'	3'	4'	5'	6'	7'	8'	Greater Than 8'	
		POST LENGTH (L)								
SLOPE	3:1	8'-6"	8'-9"	9'-3"	9'-6"	9'-9"	10'-3"	10'-6"	10'-9"	8'-0"
	4:1	8'-6"	8'-9"	9'-0"	9'-3"	9'-9"	9'-9"	10'-0"	10'-3"	8'-0"
	5:1	8'-3"	8'-6"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	9'-9"	8'-0"
	6:1	8'-3"	8'-6"	8'-9"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	8'-0"

GENERAL NOTES:

- *** The type 2 object marker may be installed back to back when specified in the plans.
- Post Length L was calculated based on a shoulder width of 6 feet at a crossslope of 4 percent and L was rounded up to the nearest 3 inches.
- ** Dimension A is 4 feet when the Offset * is 8 feet and less. Dimension B is 4 feet when Offset * is greater than 8 feet.
- The type 2 object marker and the 1.12 lb/ft flanged channel steel post will be in conformance with Specifications Section 982.2 J.
- Payment for the type 2 object marker will be in conformance with Specification Section 632.5 B.

December 23, 2019

Published Date: 2026	SD DOT	TYPE 2 OBJECT MARKER (DIRECT DRIVE)	PLATE NUMBER 632.01
			Sheet 1 of 1

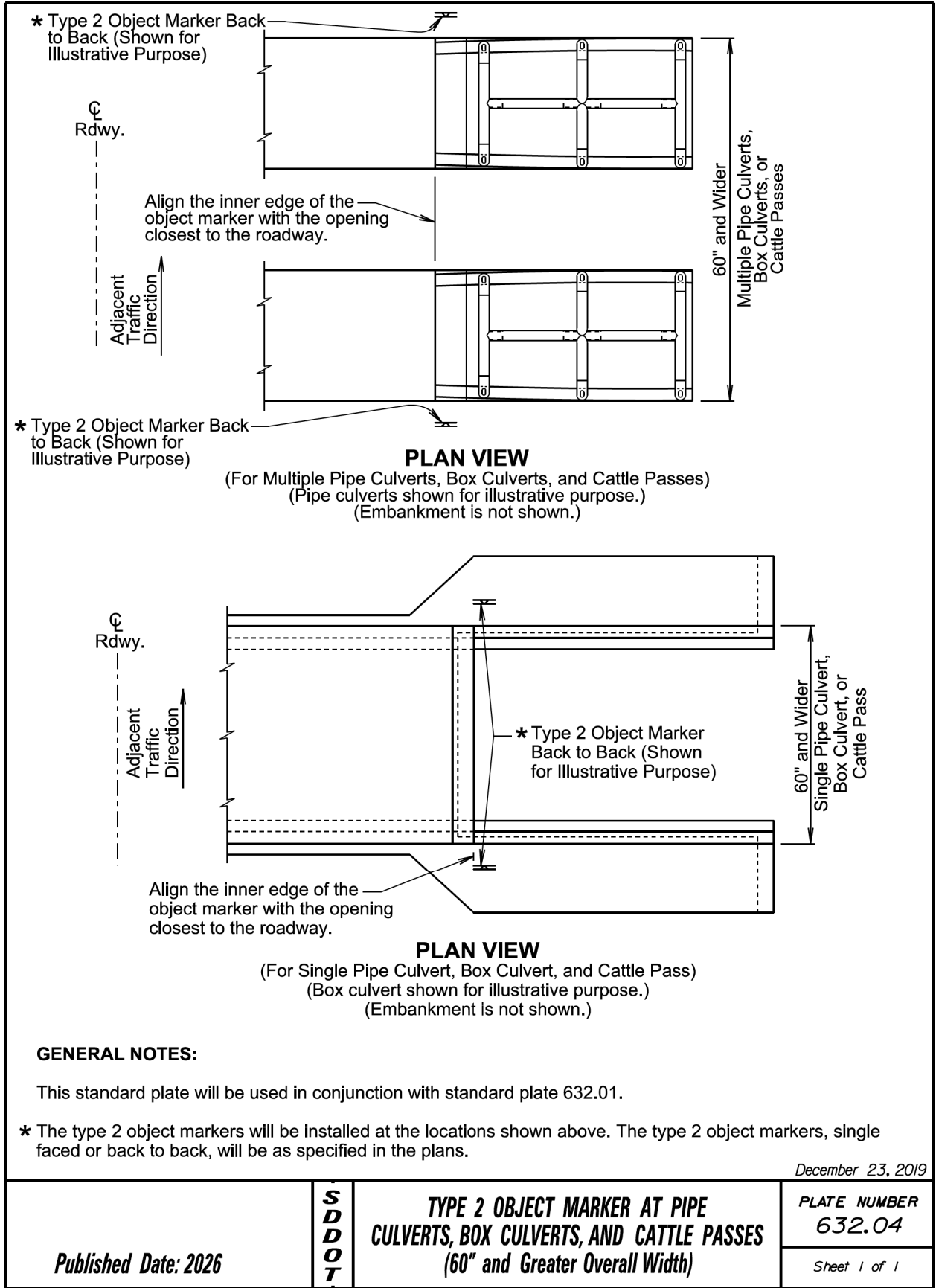
**GENERAL NOTES:**

This standard plate will be used in conjunction with standard plate 632.01.

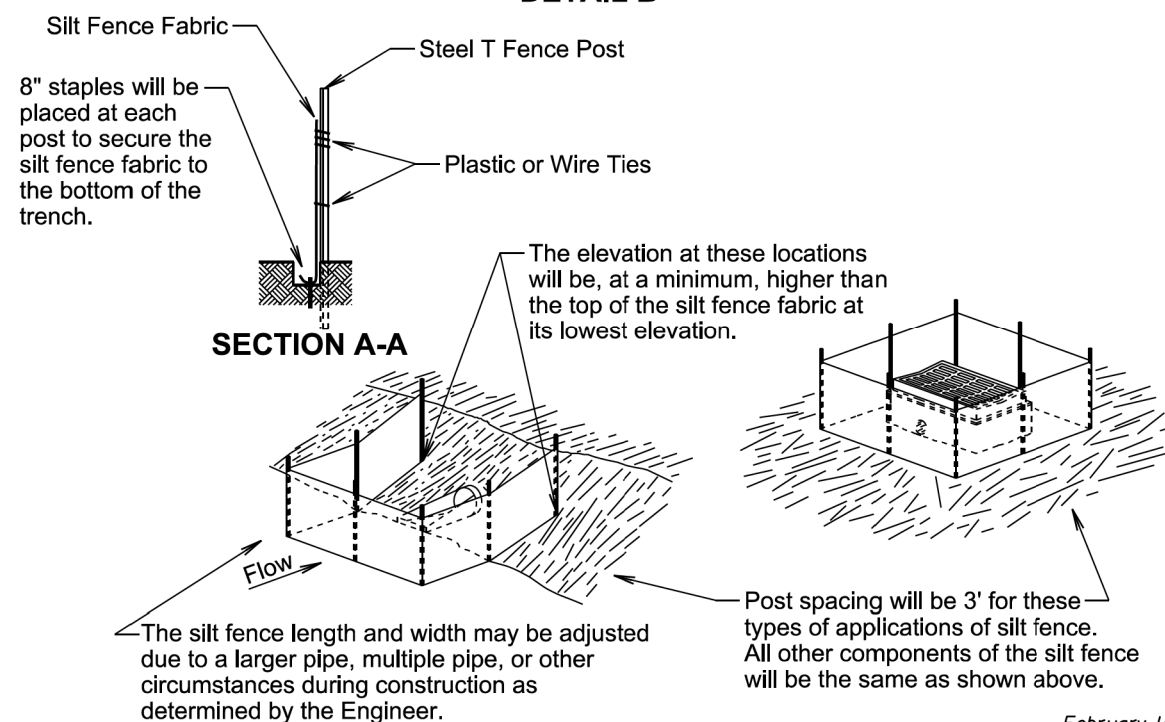
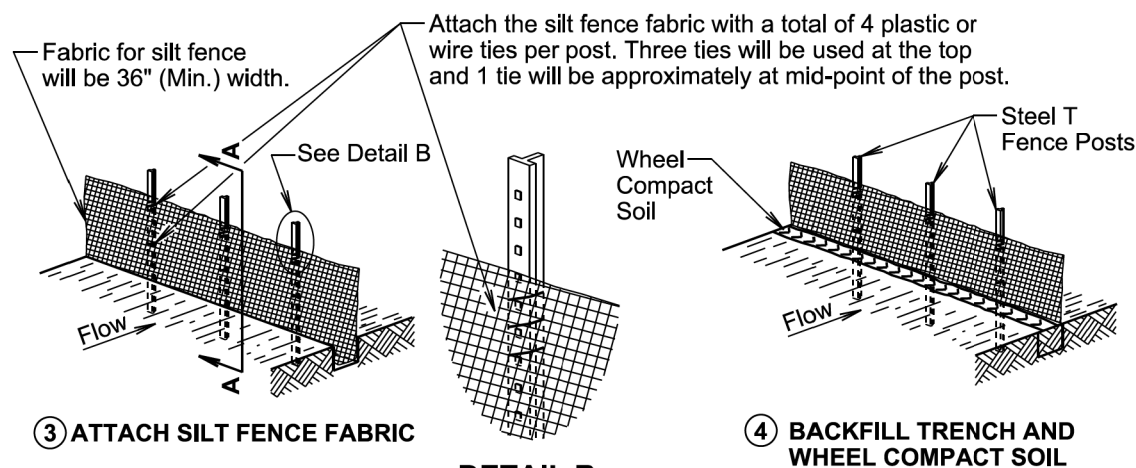
- * The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

December 23, 2019

Published Date: 2026	SD DOT	TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (Less than 60" Overall Width)	PLATE NUMBER 632.03
			Sheet 1 of 1



MANUAL HIGH FLOW SILT FENCE INSTALLATION



February 14, 2020

Published Date: 2026

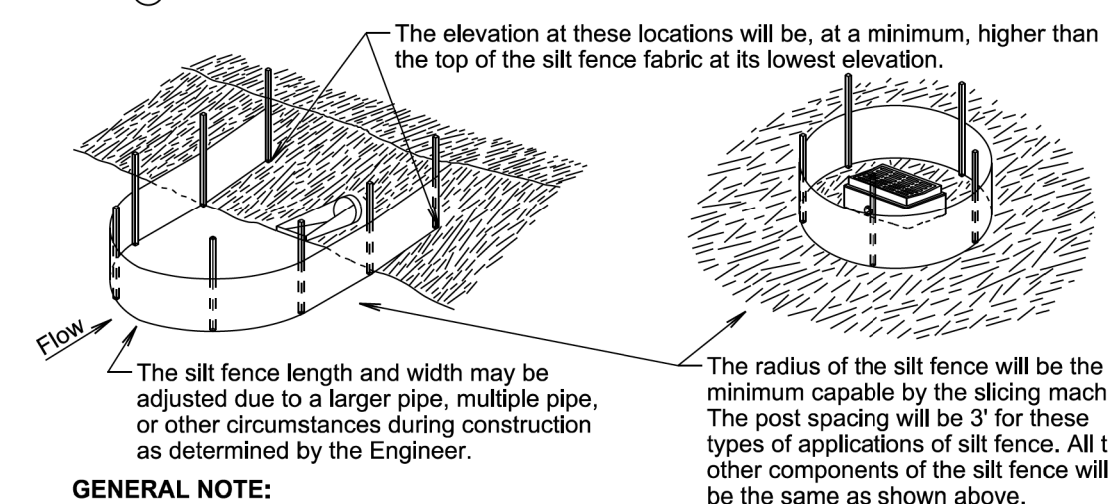
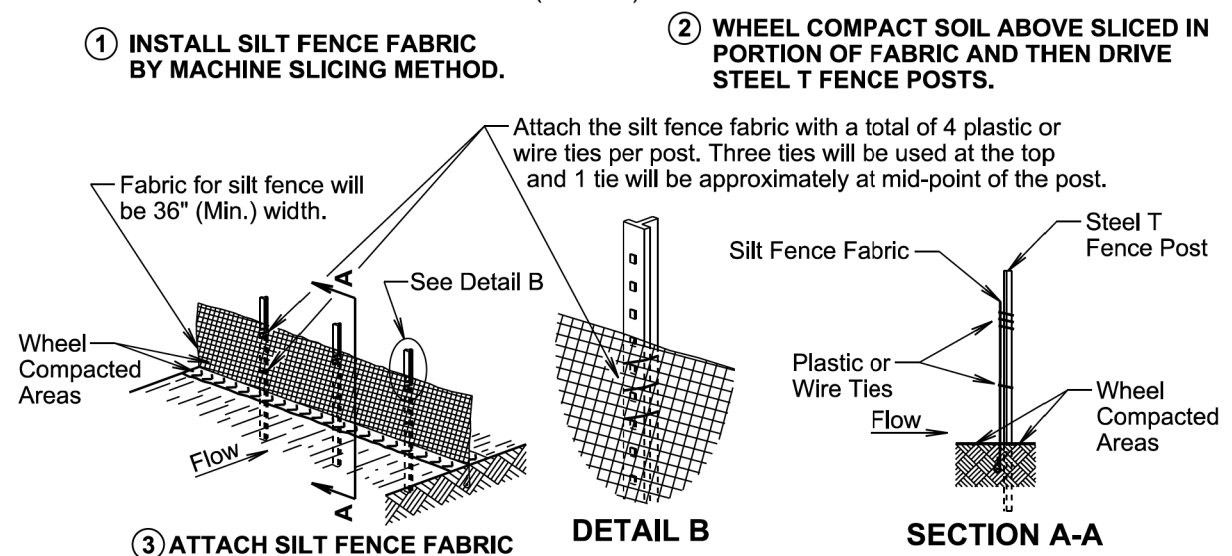
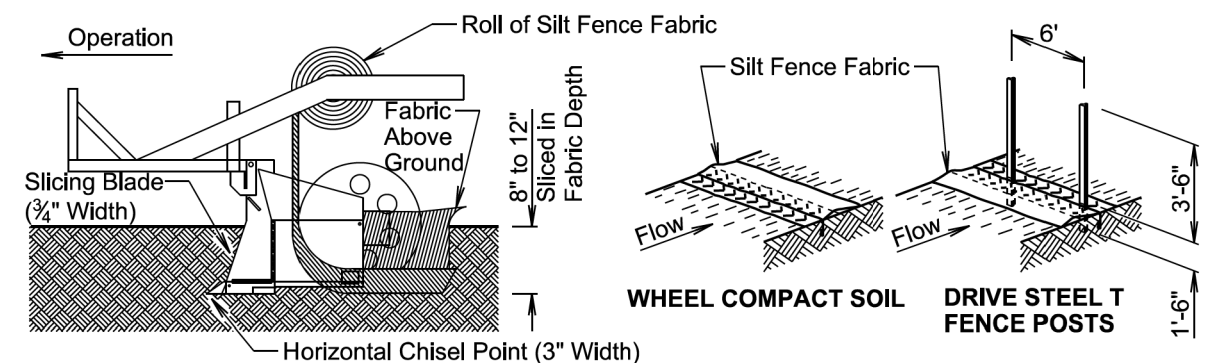
SD
DOT

HIGH FLOW SILT FENCE

PLATE NUMBER
734.05

Sheet 1 of 2

MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



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 will be provided on top of the extra length of silt fence fabric to prevent underflow.

February 14, 2020

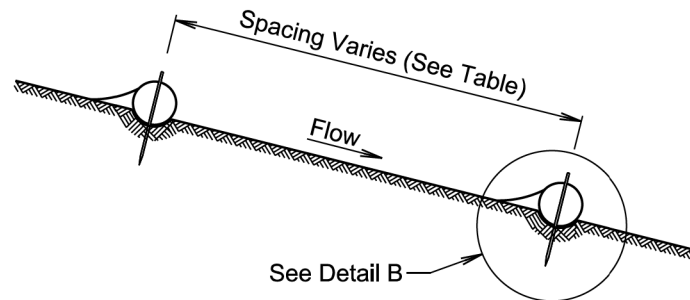
Published Date: 2026

SD
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HIGH FLOW SILT FENCE

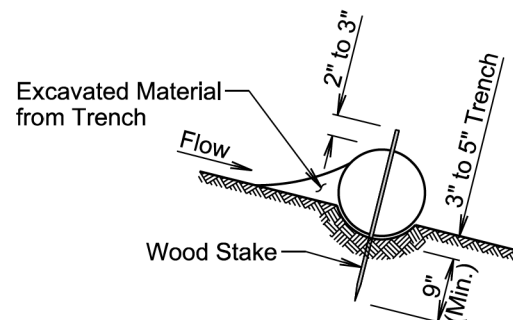
PLATE NUMBER
734.05

Sheet 2 of 2

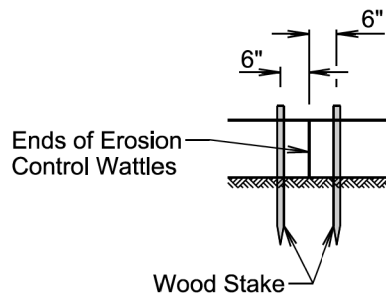


ELEVATION VIEW
(Cut or Fill Slope Installation)

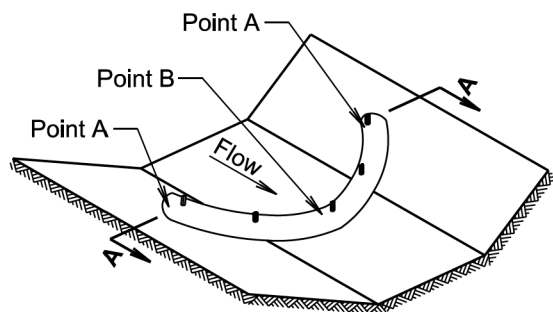
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40



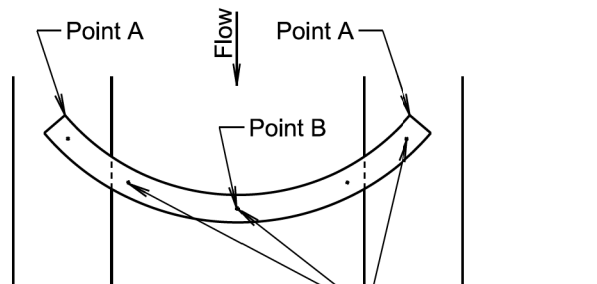
DETAIL B
(Typical of All Installations)



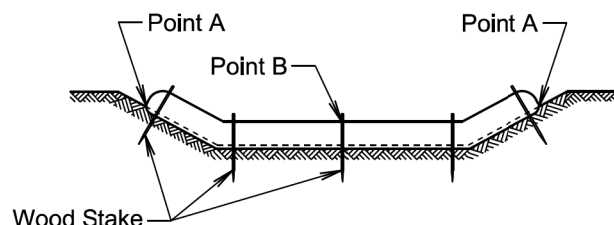
DETAIL C
(See General Notes)



ISOMETRIC VIEW
(Ditch Installation)



PLAN VIEW
(Ditch Installation)



SECTION A-A

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

February 14, 2020

Published Date: 2026

SD
DOT

EROSION CONTROL WATTLE

PLATE NUMBER
734.06

Sheet 1 of 2

GENERAL NOTES:

At cut or fill slope installations, wattles will 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 will 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 will 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 will be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles will be 3' to 4'.

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

The Contractor and Engineer will inspect the erosion control wattles in accordance with the storm water permit. The Contractor will remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping will be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping will 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 will be incidental to the contract unit price per foot for the corresponding erosion control wattle contract item.

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

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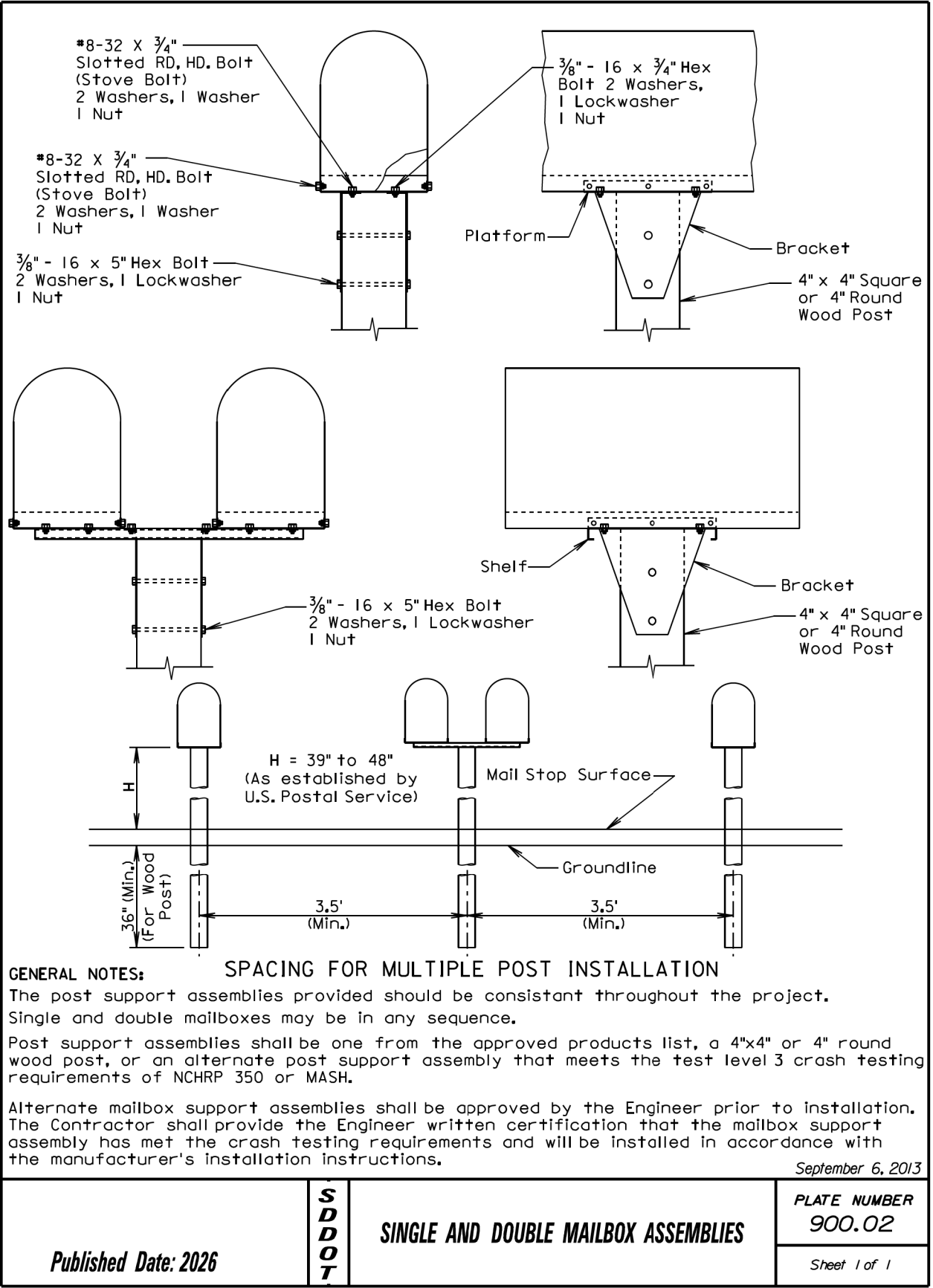
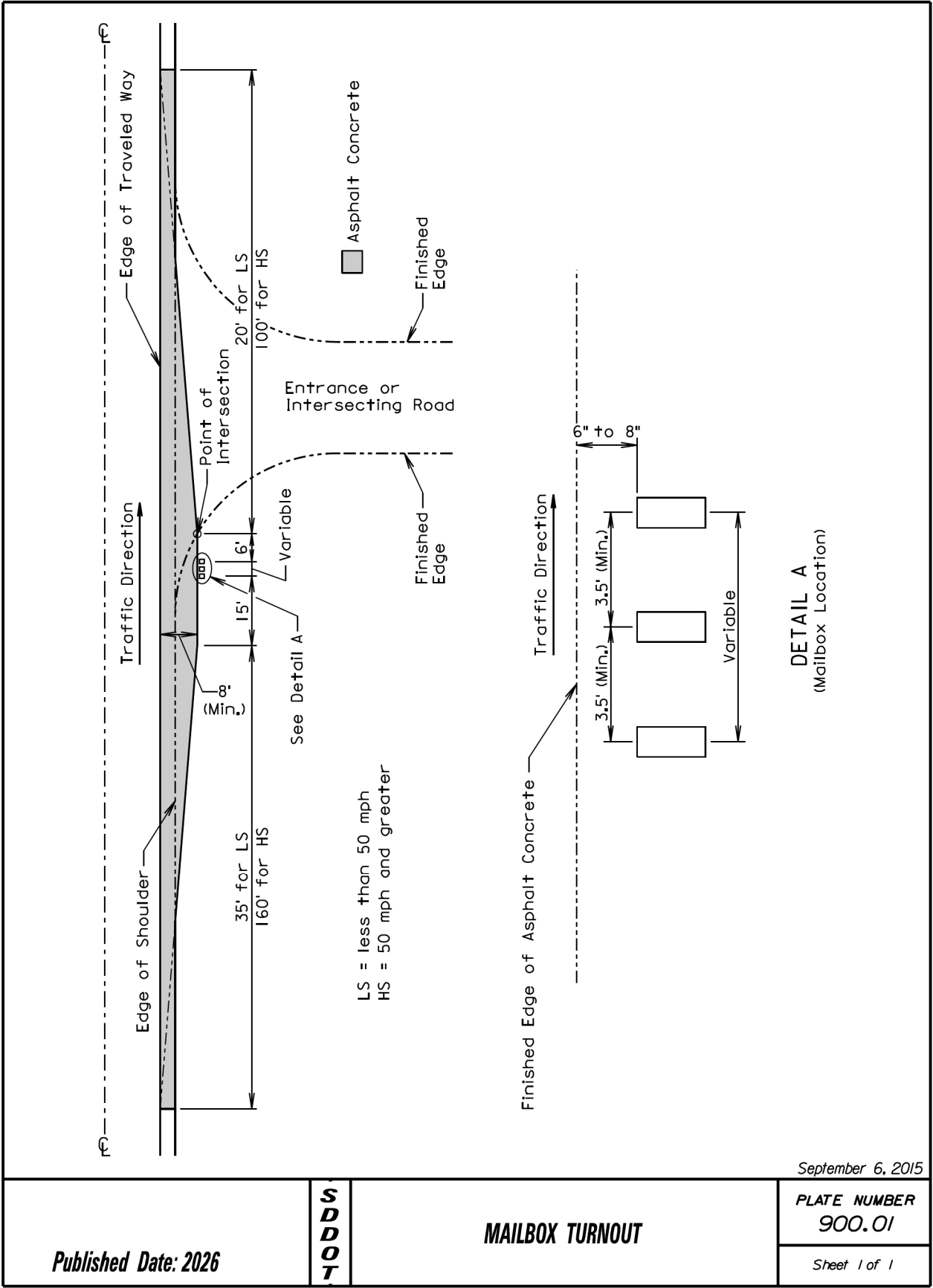
Published Date: 2026

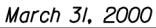
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EROSION CONTROL WATTLE

PLATE NUMBER
734.06

Sheet 2 of 2

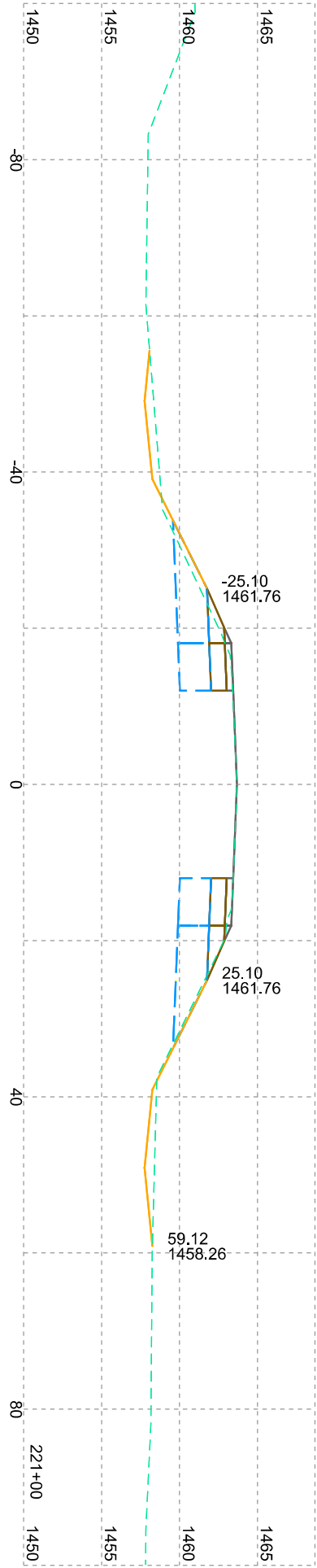
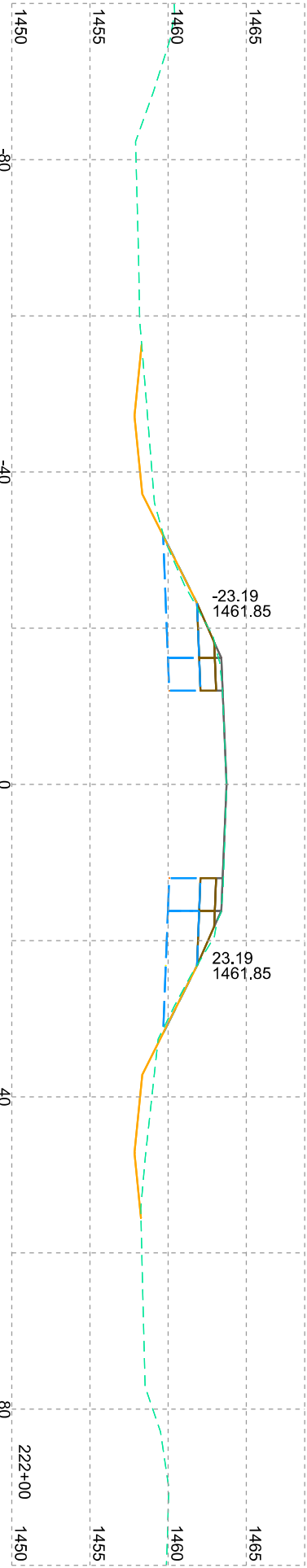
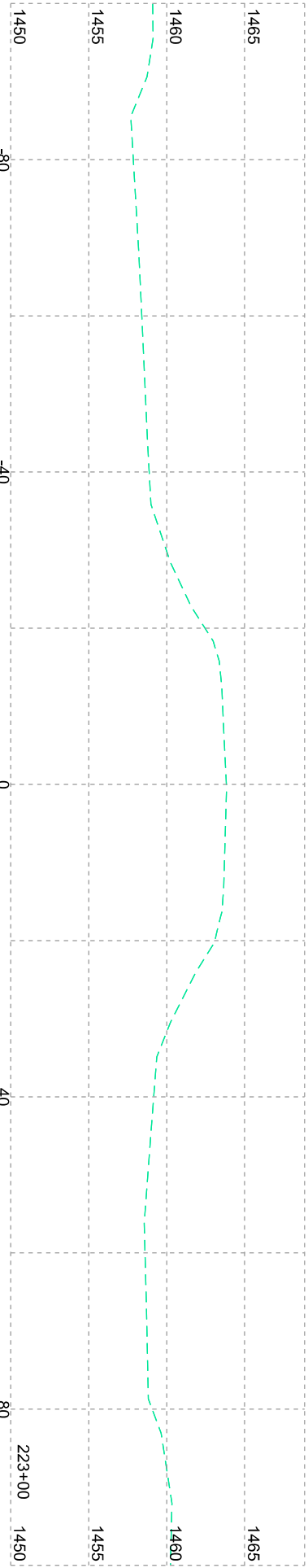




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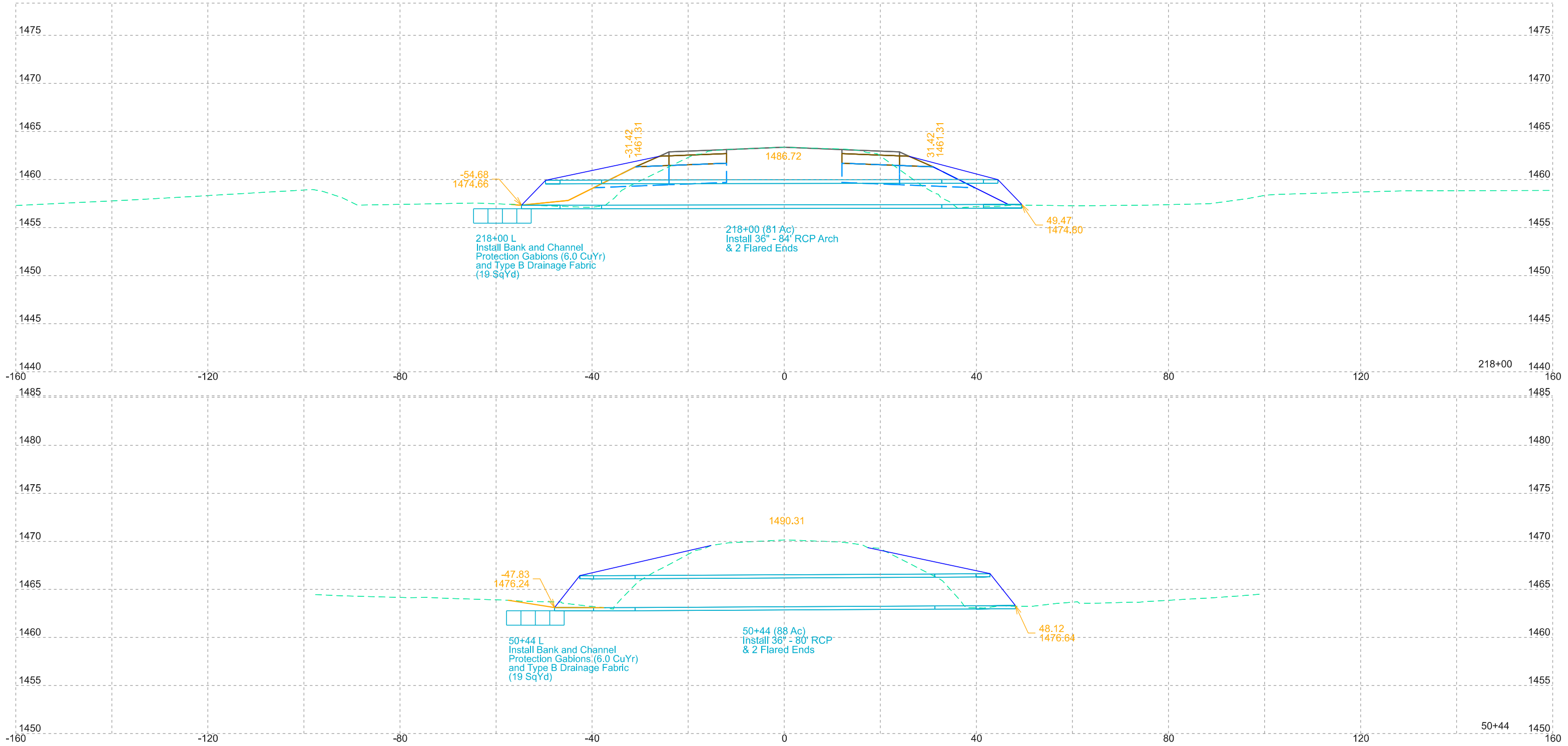
Sheet 1 of 1





Plotting Date: 3/18/2026

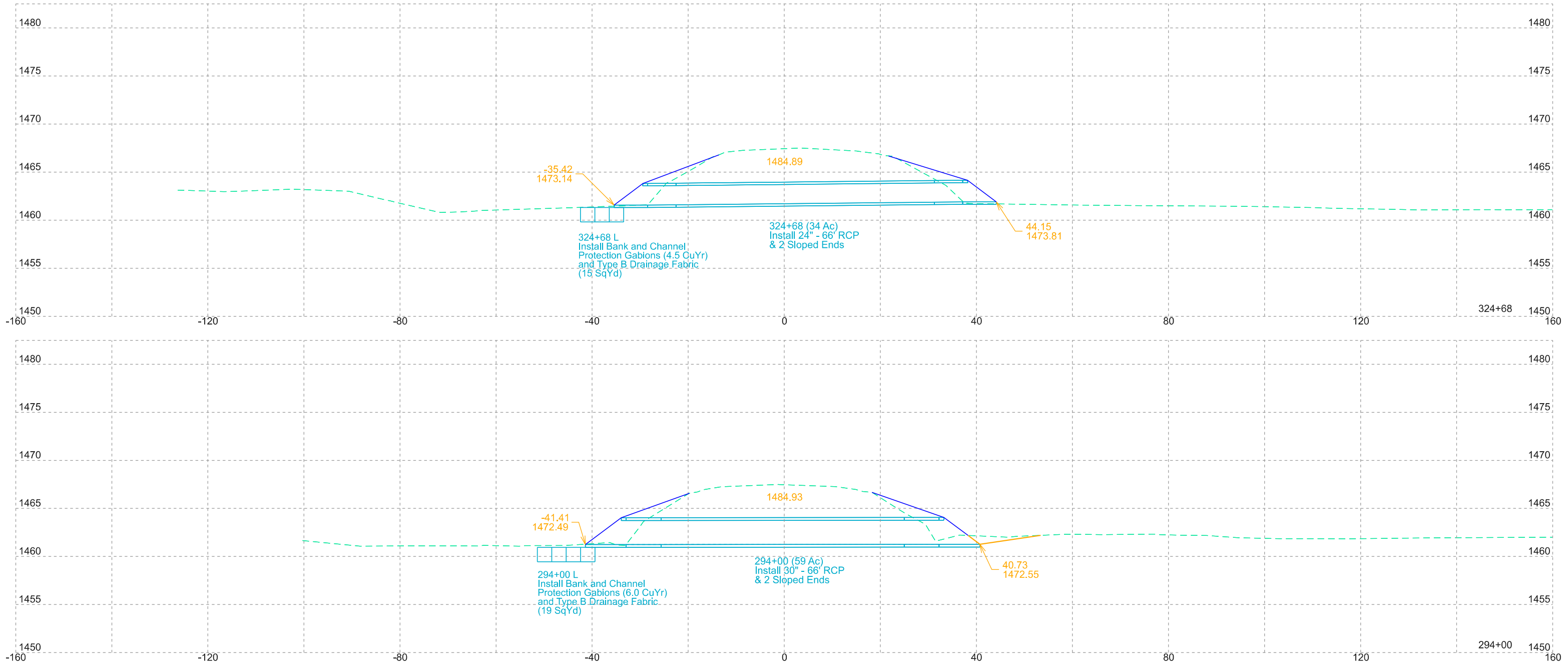
PROJECT	SHEET	TOTAL SHEETS
NH-P 0044(232)377	81	83

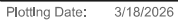




PROJECT		SHEET	TOTAL SHEETS
NH-P 0044(232)377		82	83

Plotting Date: 3/18/2026





SHEET	TOTAL SHEETS
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