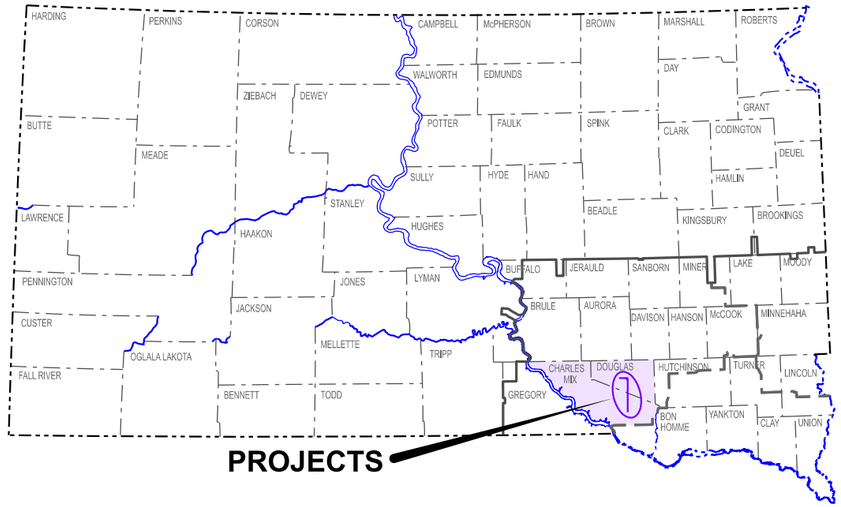
SD DOT	PROJECT	SHEET	TOTAL SHEETS
Plotting Date: 3/3/2025	NH 0281(125)40 NH 0018(237)348	1	72

Rev. SM 3/4/2025

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECTS NH 0281(125)35 & NH 0018(237)348
US HIGHWAYS 281 & 18
DOUGLAS & CHARLES MIX COUNTIES

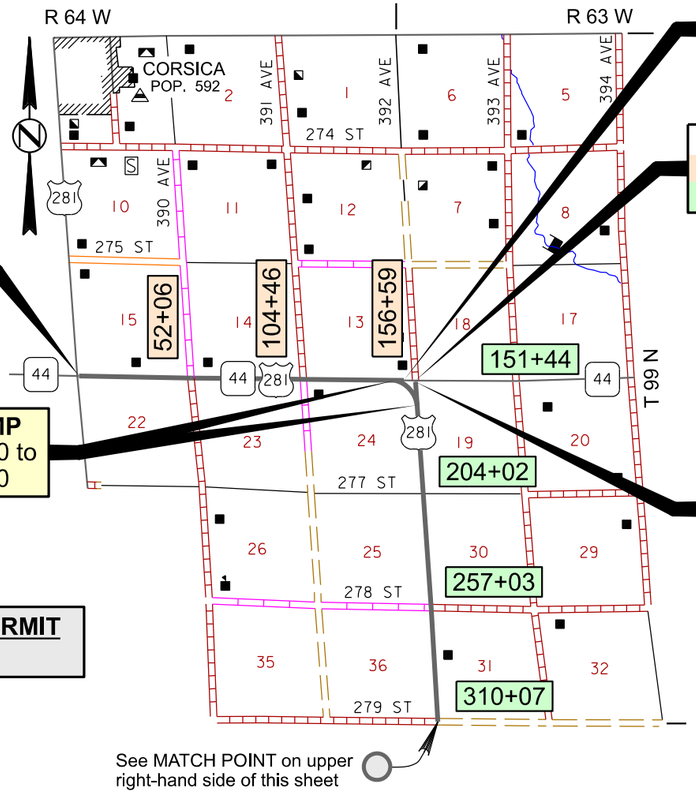
COLD MILLING, ASPHALT CONCRETE RESURFACING,
CULVERT WORK & PAVEMENT MARKING
PCN 06PE & 08GN



INDEX OF SHEETS

US281 STATIONING
W to E STATIONING
N to S STATIONING
RAMP STATIONING
S to N STATIONING

US281
PCN 06PE



BEGIN US281
W to E STA. 0+50
MRM 48.56 +0.000
MILEAGE 13.563
(50' E of Jct SD44)

US281 RAMP
STA. 146+30 to
STA. 162+70

SUSPEND US281
W to E STA. 149+85
(674' W of Jct SD44)

EQUATION
W to E STA. 156+59 Bk=
N to S STA. 151+44 Ah

EXCEPTION (729')
W to E STA. 149+85
through Equation to
N to S STA. 151+99

CONTINUE US281
N to S STA. 151+99
(55' S of Jct SD44)

See MATCH POINT on upper right-hand side of this sheet

STORM WATER PERMIT
(None required)

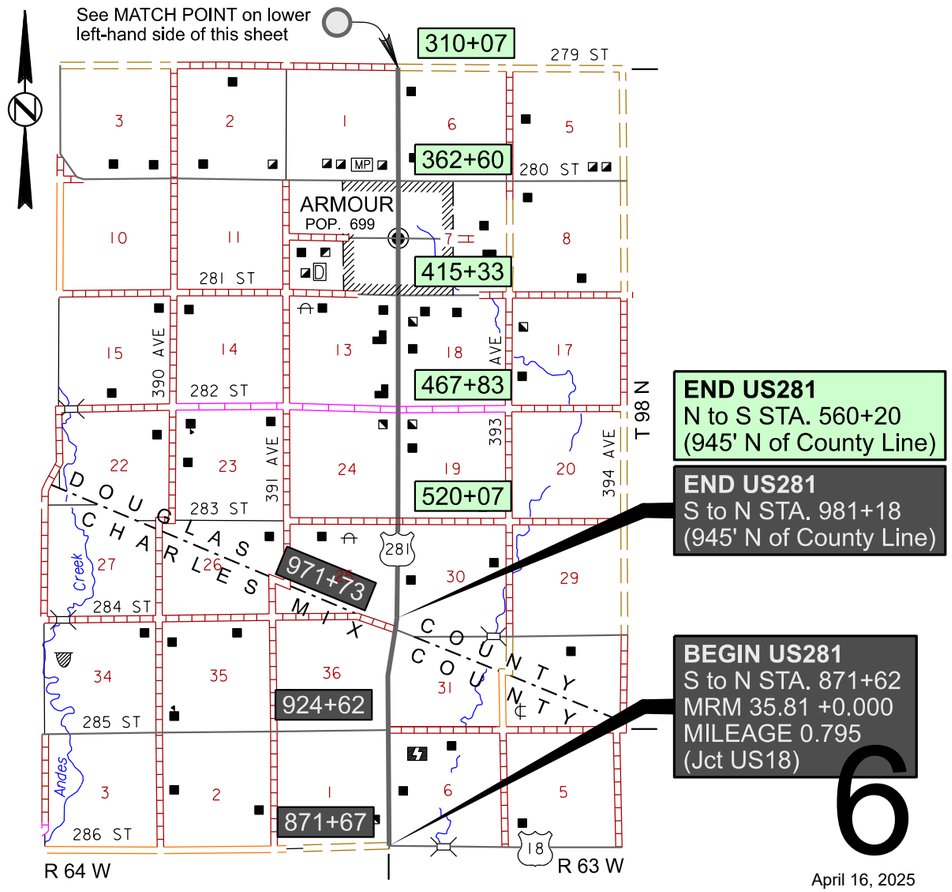
DESIGN DESIGNATION
(US281)

ADT(2023)	1,389
ADT(2043)	1,958
DHV	226
D	51%
T DHV	8.6%
T ADT	28.8%
V (Armour)	30/45 MPH
V (Rural)	65 MPH

US281 LENGTH

Gross Length:	69,081'	13.084 Miles
Exception Length:	729'	0.138 Miles
Net Length:	68,352'	12.945 Miles

US281
PCN 06PE



END US281
N to S STA. 560+20
(945' N of County Line)

END US281
S to N STA. 981+18
(945' N of County Line)

BEGIN US281
S to N STA. 871+62
MRM 35.81 +0.000
MILEAGE 0.795
(Jct US18)

See next Sheet for US18

6
April 16, 2025

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	2	72

Plotting Date: 3/3/2025

US18
PCN 08GN

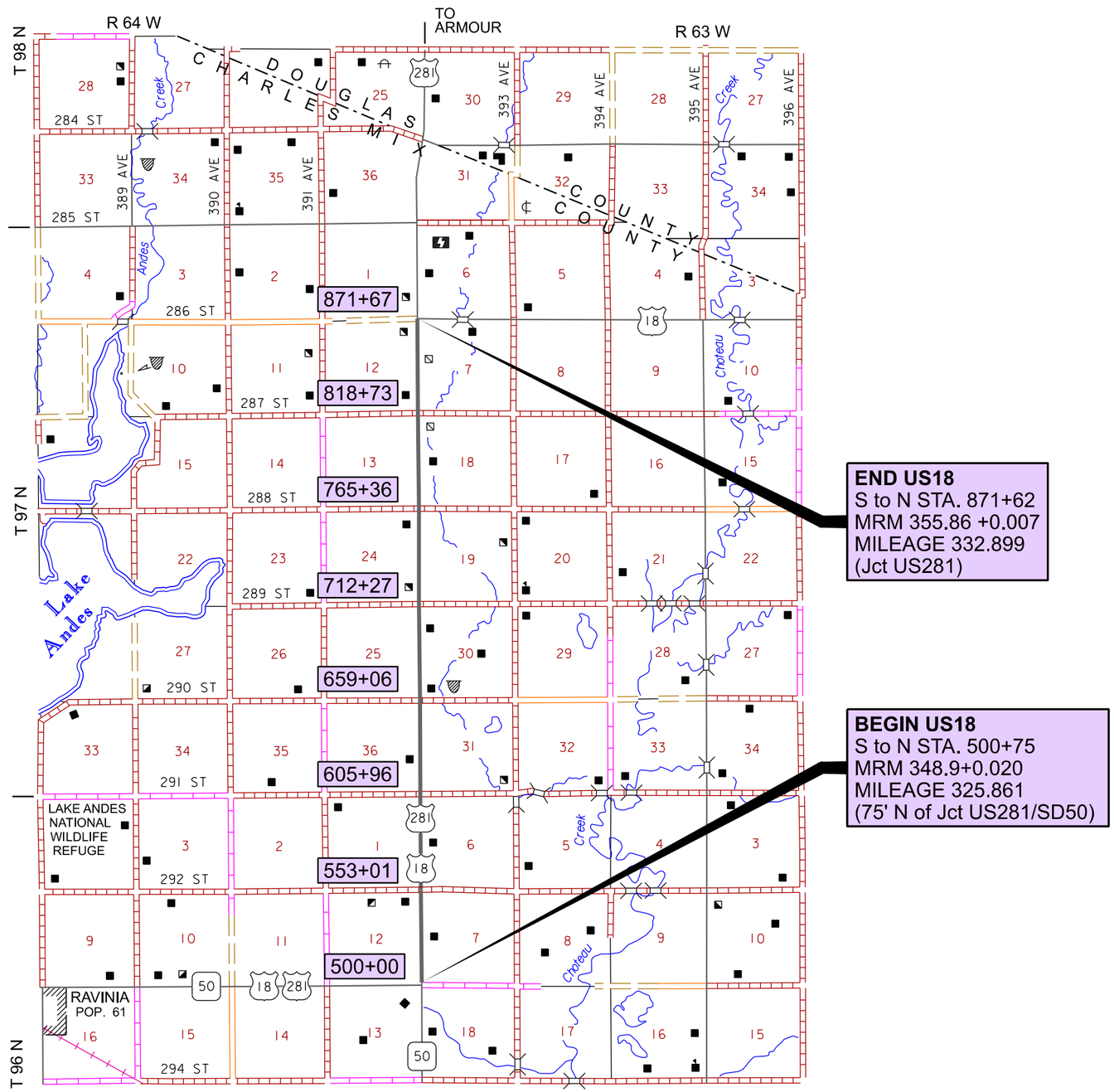
US18 STATIONING
S to N STATIONING

DESIGN DESIGNATION
(US18)

ADT(2023)	1,075
ADT(2043)	1,551
DHV	179
D	51%
T DHV	3.6%
T ADT	8.0%
V	65 MPH

STORM WATER PERMIT
(None required)

US18 LENGTH
Length: 37,087' 7.024 Miles



END US18
S to N STA. 871+62
MRM 355.86 +0.007
MILEAGE 332.899
(Jct US281)

BEGIN US18
S to N STA. 500+75
MRM 348.9+0.020
MILEAGE 325.861
(75' N of Jct US281/SD50)

See previous Sheet for US281

ESTIMATE OF QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	3	72

Rev. SM 3/4/2025

NH 0281(125)35
PCN 06PE

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3320	Checker	Lump Sum	LS
110E0135	Remove Delineator	26	Each
110E0500	Remove Pipe Culvert	236	Ft
110E0510	Remove Pipe End Section	4	Each
110E1010	Remove Asphalt Concrete Pavement	1,174.0	SqYd
110E7500	Remove Pipe for Reset	6	Ft
110E7510	Remove Pipe End Section for Reset	14	Each
120E0100	Unclassified Excavation, Digouts	648	CuYd
120E0600	Contractor Furnished Borrow Excavation	39	CuYd
120E0900	Contaminated Material Excavation	100	CuYd
120E6200	Water for Granular Material	194.0	MGal
210E1000	Shoulder Preparation	13.600	Mile
260E1010	Base Course	3,358.0	Ton
* 260E6000	Granular Material, Furnish	6,220.0	Ton
* 270E0220	Blend and Stockpile Granular Material	12,440.0	Ton
* 270E0230	Haul and Stockpile Asphalt Mix Material	6,220.0	Ton
320E0005	PG 58-34 Asphalt Binder	1,883.6	Ton
320E1200	Asphalt Concrete Composite	416.0	Ton
320E1203	Class Q3R Hot Mixed Asphalt Concrete	37,331.0	Ton
320E1800	Asphalt Concrete Blade Laid	1,978.0	Ton
320E4000	Hydrated Lime	389.1	Ton
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	24.4	Mile
330E0010	MC-70 Asphalt for Prime	66.0	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	234.3	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	4.4	Ton
330E1000	Blotting Sand for Prime	5.0	Ton
332E0010	Cold Milling Asphalt Concrete	235,370	SqYd
421E0100	Pipe Culvert Undercut	52	CuYd
450E0142	24" RCP Class 2, Furnish	236	Ft
450E0150	24" RCP, Install	236	Ft
450E2016	24" RCP Flared End, Furnish	4	Each
450E2017	24" RCP Flared End, Install	4	Each
* 450E8900	Cleanout Pipe Culvert	12	Each
450E9000	Reset Pipe	6	Ft
450E9001	Reset Pipe End Section	14	Each
600E0300	Type III Field Laboratory	1	Each
632E2510	Type 2 Object Marker Back to Back	42	Each
633E1200	High Build Waterborne Pavement Marking Paint, White	621	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	197	Gal
633E9200	Mobile Retroreflectometer Measurements	13.084	Mile
634E0010	Flagging	801.9	Hour
634E0020	Pilot Car	364.0	Hour

NH 0281(125)35 (CONT.)
PCN 06PE (CONT.)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
634E0110	Traffic Control Signs	522.8	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0630	Temporary Pavement Marking	38.8	Mile
720E1015	Bank and Channel Protection Gabion	21.0	CuYd
734E0010	Erosion Control	Lump Sum	LS
734E0102	Type 2 Erosion Control Blanket	94	SqYd
734E0103	Type 3 Erosion Control Blanket	101	SqYd
831E0110	Type B Drainage Fabric	68	SqYd
900E0010	Refurbish Single Mailbox	29	Each
900E1980	Storage Unit	1	Each

*** - Denotes Non-Participating**

NH 0018(237)348
08GN

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3320	Checker	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	527.0	SqYd
120E0100	Unclassified Excavation, Digouts	352	CuYd
120E6200	Water for Granular Material	8.0	MGal
260E1010	Base Course	703.0	Ton
* 260E6000	Granular Material, Furnish	1,651.0	Ton
* 270E0220	Blend and Stockpile Granular Material	3,302.0	Ton
* 270E0230	Haul and Stockpile Asphalt Mix Material	1,651.0	Ton
320E0005	PG 58-34 Asphalt Binder	1,156.2	Ton
320E1200	Asphalt Concrete Composite	175.0	Ton
320E1203	Class Q3R Hot Mixed Asphalt Concrete	23,163.0	Ton
320E1800	Asphalt Concrete Blade Laid	1,054.0	Ton
320E4000	Hydrated Lime	239.6	Ton
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	14.1	Mile
330E0100	SS-1h or CSS-1h Asphalt for Tack	128.0	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	2.4	Ton
332E0010	Cold Milling Asphalt Concrete	129,598	SqYd
633E1200	High Build Waterborne Pavement Marking Paint, White	318	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	98	Gal
633E9200	Mobile Retroreflectometer Measurements	7.025	Mile
634E0010	Flagging	485.1	Hour
634E0020	Pilot Car	221.0	Hour
634E0110	Traffic Control Signs	537.3	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0630	Temporary Pavement Marking	21.2	Mile
900E0010	Refurbish Single Mailbox	7	Each

*** - Denotes Non-Participating**

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

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 0.081 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	0+90	0.00	0.00	0.001	0.001	0.002
2	1+10	0.00	0.00	0.001	0.001	0.002
3	17+00	0.00	0.00	0.002	0.002	0.004
4	69+93	0.00	0.00	0.002	0.002	0.004
5	86+02	0.00	0.00	0.001	0.001	0.002
6	96+56	0.00	0.00	0.001	0.001	0.002
7	116+03	0.00	0.00	0.002	0.002	0.004
8	128+96	0.00	0.00	0.001	0.001	0.002
9	147+00	0.00	0.00	0.002	0.002	0.004
10	156+00	0.00	0.00	0.002	0.002	0.004
11	295+68	0.00	0.00	0.001	0.001	0.002
12	345+37	0.002	0.002	0.012	0.007	0.023
13	362+13	0.001	0.001	0.012	0.007	0.021
14	385+35	0.00	0.00	0.002	0.002	0.004

Action Taken/Required:

Mitigation is required in accordance with the "*Statewide Finding Regarding Wetlands for South Dakota Federal-Aid Highway Projects (February 2018)*". Replacement of 0.006 acres of permanent wetland impacts will be completed through another wetland mitigation opportunity in a manner which considers FHWA's program-wide goal of 'net gain' of wetlands through enhancement, creation, and preservation.

Temporary impacts identified in the Table of Impacted Wetlands will not be mitigated as original contours and elevations will be re-established. Prior to initiating temporary work in wetlands, the Contractor will submit a plan to the Project Engineer in accordance with Section 7.21 D of the Specifications.

The Contractor will notify the Project Engineer if additional easement is needed to complete work adjacent to any wetland. The Project Engineer will obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any wetlands beyond the work limits and easements shown in the plans.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

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

Action Taken/Required:

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

COMMITMENT B6: MIGRATORY BIRDS WORK RESTRICTION

Migratory birds (Swainson's Hawk) are known to use the project area for nesting, which primarily occurs from April 15st to August 15th.

Action Taken/Required:

The Contractor is responsible for contracting the services of a qualified biologist for conducting preconstruction migratory bird surveys in suitable areas that have not been mowed or cleared prior to April 15th to determine if there are current nests and to determine offsetting measures to compensate for impacts to migratory birds. A survey will be conducted annually for each year of construction. Contractor will coordinate the survey findings with the Project Engineer. If any nests are found, appropriate minimization measures will need to be developed in cooperation with the Environmental Office.

Construction activities should not occur in the locations listed in the table below during the migratory bird work restriction without prior approval from the SDDOT Environmental Office to avoid conflicts with nesting migratory birds.

Table of Migratory Bird Restrictions

Station	Migratory Bird Restriction
50+00 to 55+00 (L/R)	April 15 to August 15

If project activities cannot be conducted outside of the seasonal restriction the Contractor will notify the Project Engineer and the Environmental Office Biologist (605-773-3309) to coordinate with the USFWS.

COMMITMENT C: WATER SOURCE

If a Contractor needs access to state waters for extraction, the Contractor must obtain a water right, through the application of a Temporary Permit to Use Public Waters before work begins.

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

Action Taken/Required:

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

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

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

COMMITMENT 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 D2: SURFACE WATER DISCHARGE

The DANR General Permit for Temporary Discharge Activities is required for temporary dewatering and discharges to waters of the state. The effluent limit for total suspended solids will be 90 mg/L 30-day average. The effluent limit applies to discharges to all waters of the state except discharges to waters classified as coldwater permanent fish life propagation waters according to the ARSD 74:51:01:45. For discharges to waters of the state classified as coldwater permanent fish life propagation waters, the effluent limit for total suspended solids will be 53 mg/L daily maximum.

The permittee has the option of completing effluent testing or implementing a pollution prevention plan for compliance with this permit. If the permittee develops a pollution prevention plan instead of total suspended solids sampling, the plan must be developed and implemented prior to discontinuing total suspended solids sampling. Refer to Section 4.0 of the permit. If any pollutants are suspected of being discharged, a sample must be taken for those parameters listed in Section 3.4 of the permit.

Refer to Commitment D1: Surface Water Quality for stream classification.

Action Taken/Required:

If construction dewatering is required and this project is currently covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the contractor will need to submit the dewatering information to the Project Engineer using the following form:

<https://dot.sd.gov/media/documents/SDDOTDewateringInfoCDX.pdf>

The Contractor will provide a copy of the approved permit or the submitted dewatering information to the Project Engineer prior to proceeding with any dewatering activities. The approved permit or submitted dewatering information must be kept on-site and as part of the project records.

Effluent monitoring, as a result of dewatering activities, will be summarized for each month and recorded on a separate Discharge Monitoring Report (DMR) and submitted to DANR monthly. Additional information can be found at:
< https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/swdpermitting/Ereporting.aspx >

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

COMMITMENT H: WASTE DISPOSAL SITE Rev. SM 3/5/2025

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) 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 L: CONTAMINATED MATERIAL

Contaminated soil and/or known gas stations, undergrounds storage tanks, etc. are located within the project limits. Petroleum contaminated soil may be located at the following sites:

Description	Station	L / R
Various spill and tank sites located along US281 from 280th St to 281st St in Armour	362+13	L/R
Various spill and tank sites located along US281 from 280th St to 281st St in Armour	385+35	L/R

Action Taken/Required:

The Contractor will give notice to the Engineer when contaminated soil is encountered on the project. The Engineer will contact the Environmental Office so that contact with the DANR and consultant to inspect and monitor removal of any contaminated soil can be initiated.

The Contractor will be responsible for having the existing underground utilities located in the construction area. Underground utilities damaged by the Contractor due to negligence will be repaired at the Contractor's expense.

Petroleum contaminated soil may be disposed of at the Southern Missouri Landfill (phone 605.487.9542). Measurement of "Contaminated Material Excavation" will be in accordance with Section 120.4 of the Specifications. All costs for excavating and transporting the contaminated materials to the disposal site and all fees charged per cubic yard by the disposal site will be incidental to the contract unit price per cubic yard for "Contaminated Material Excavation".

The estimated quantity of "Contaminated Material Excavation" is 100 cubic yards. The quantity of "Contaminated Material Excavation" may vary from the plans. No adjustment will be made to the contract unit price for variations in the quantity of "Contaminated Material Excavation". The estimated quantity of "Contaminated Material Excavation" is provided in Section B – Grading Plans.

COMMITMENT N: SECTION 404 PERMIT

The SDDOT has obtained a Section 404 Permit from the USACE for the permanent actions associated with this project.

Action Taken/Required:

The Contractor will comply with all requirements contained in the Section 404 Permit.

The Contractor will also be responsible for obtaining a Section 404 Permit for any dredge, excavation, or fill activities associated with material sources, storage areas, waste sites, and Contractor work sites outside the plan work limits that affect wetlands, floodplains, or waters of the United States.

COMMITMENT T: FALSE MAP TURTLE – STATE THREATENED SPECIES

False map turtles (*Graptemys pseudogeographica*), a state threatened species riverine species has been recorded adjacent to the project area and is assumed present. False map turtles nest in barren sandy areas (beaches, sand bars, etc.) in May and June, with eggs hatching approximately two months later.

Action Taken/Required:

If false map turtles or other state listed species are sighted within the project, borrow pits, or staging areas associated with the project, cease construction activities and contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to SDGFP.

1. A scientific collectors permit and a state listed species authorization are required to survey for and to handle False Map Turtles.
2. A qualified biologist is required to complete visual surveys for False Map Turtles if staging of construction materials will occur along barren sandy habitats during nesting seasons in May and June.
3. Remove any False Map Turtles from the construction area prior to staging of construction materials along barren sandy habitats to avoid crushing turtles or their nests.
4. Use the minimum amount of rip-rap necessary for bank stabilization structure protection.

If turtles are in imminent danger, move them by hand out of harm's way; otherwise, they are to be left undisturbed or moved by a qualified biologist

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	7	72

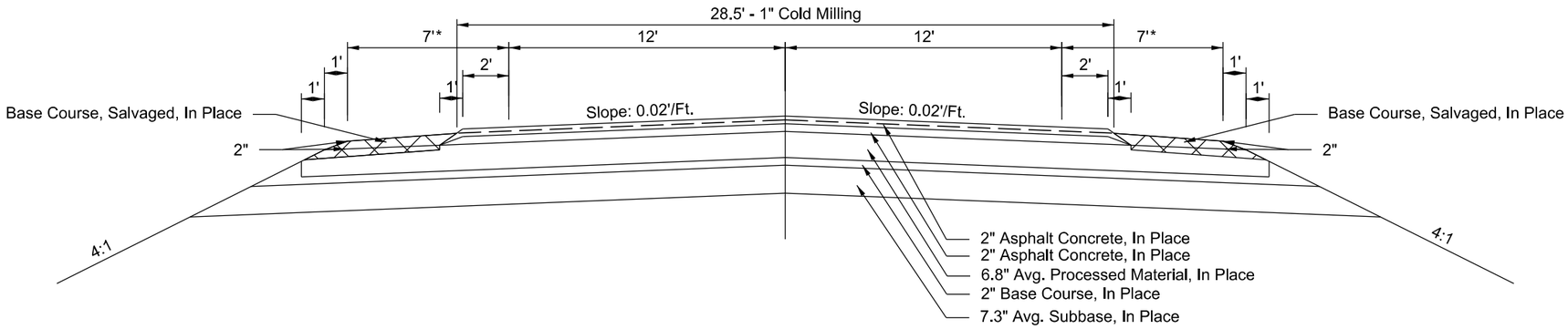
Plotting Date: 3/3/2025

TYPICAL SECTIONS

COLD MILLING

4" Shoulder Preparation

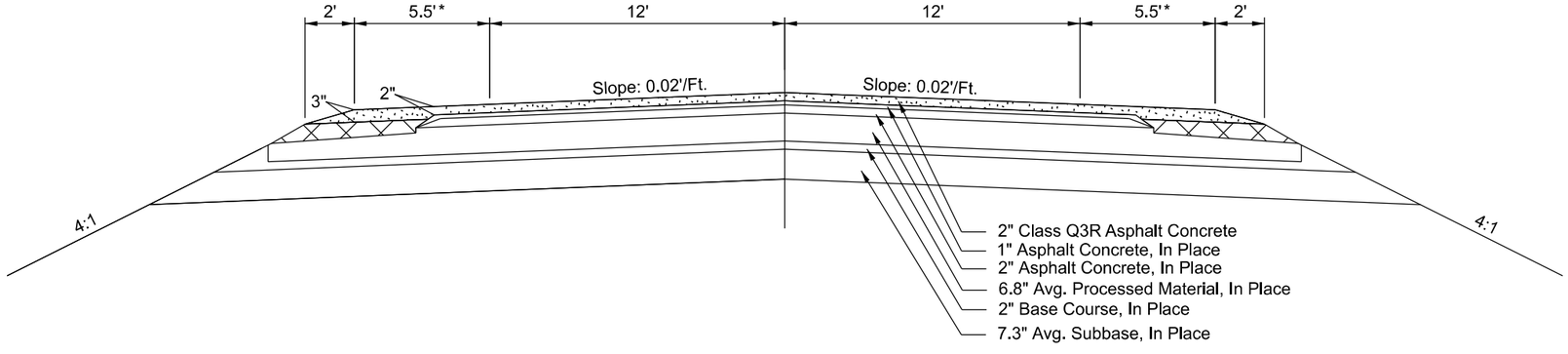
Section 1
US HWY 281 - PCN 06PE
Sta. 0+50 to Sta. 149+85



*8'
Sta. 148+83 to Sta. 149+85
(see Table of Additional Quantites for items related to this additional 5' shoulder width)

RESURFACING

Section 1
US HWY 281 - PCN 06PE
Sta. 0+50 to Sta. 149+85



SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	8	72

Plotting Date: 3/3/2025

TYPICAL SECTIONS

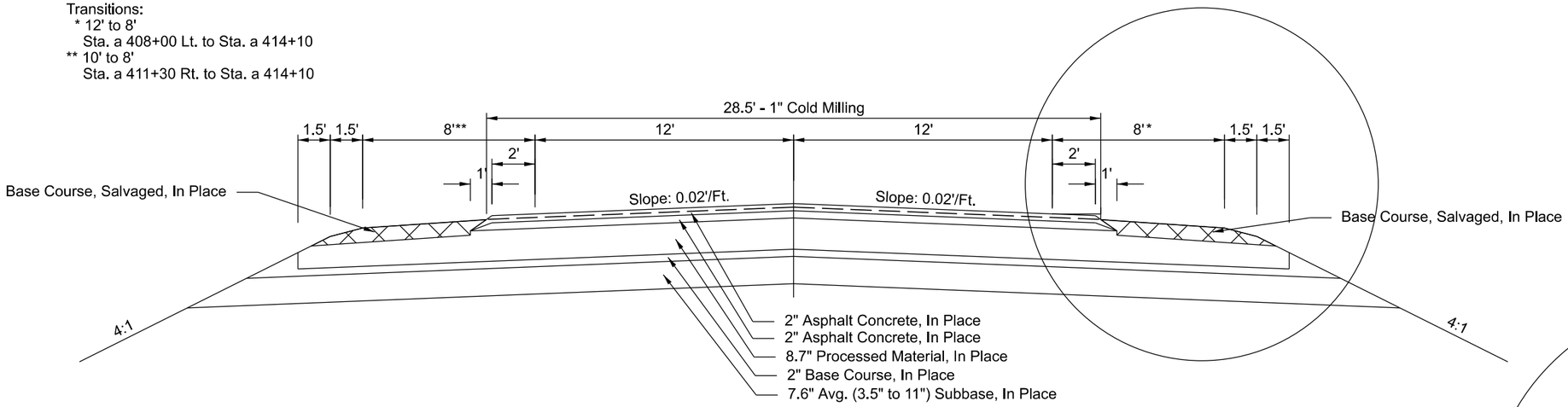
COLD MILLING

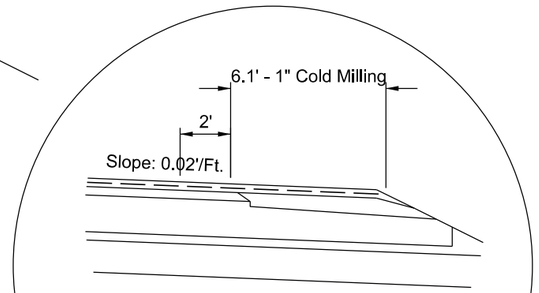
4" Shoulder Preparation

Section 2

US HWY 281 - PCN 06PE
Sta. a 151+99 to Sta. a 362+60
Sta. a 408+00 Lt. & Sta. a 411+30 Rt. to Sta. a 414+10

Transitions:
* 12' to 8'
Sta. a 408+00 Lt. to Sta. a 414+10
** 10' to 8'
Sta. a 411+30 Rt. to Sta. a 414+10





Shoulder Detail

Sta. a 408+00 Lt. to Sta. a414+10
Sta. a 411+30 Rt. to Sta. a 414+10

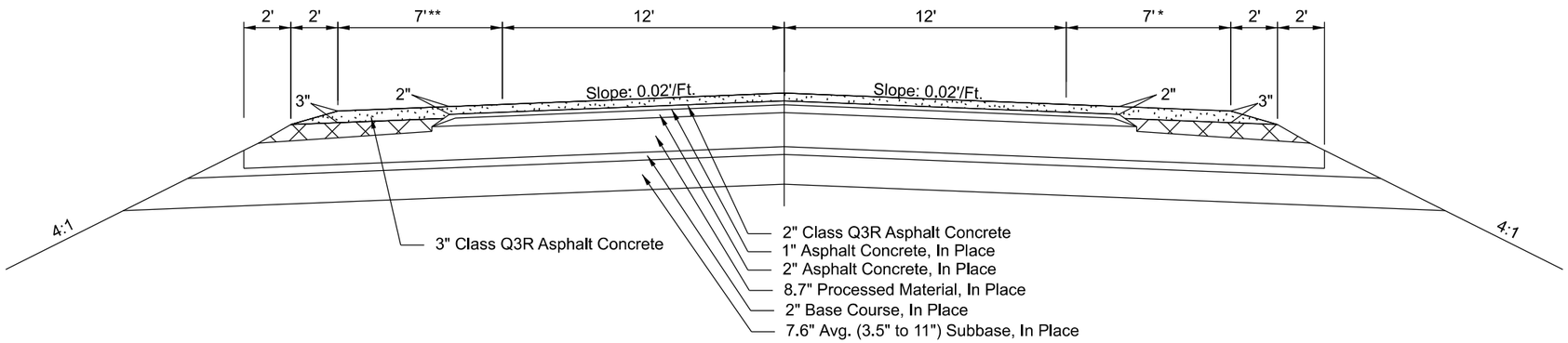
Quantities for this additional milling are included in the Table of Additional Quantities

RESURFACING

Transitions:
*12' to 7'
Sta. a 408+00 Lt. to Sta. a 414+10
** 10' to 7'
Sta. a 411+30 Rt. to Sta. a 414+10

Section 2

US HWY 281 - PCN 06PE
Sta. a 151+99 to Sta. a 362+60
Sta. a 408+00 Lt. & Sta. a 411+30 Rt. to Sta. a 414+10



SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	9	72

Plotting Date: 3/3/2025

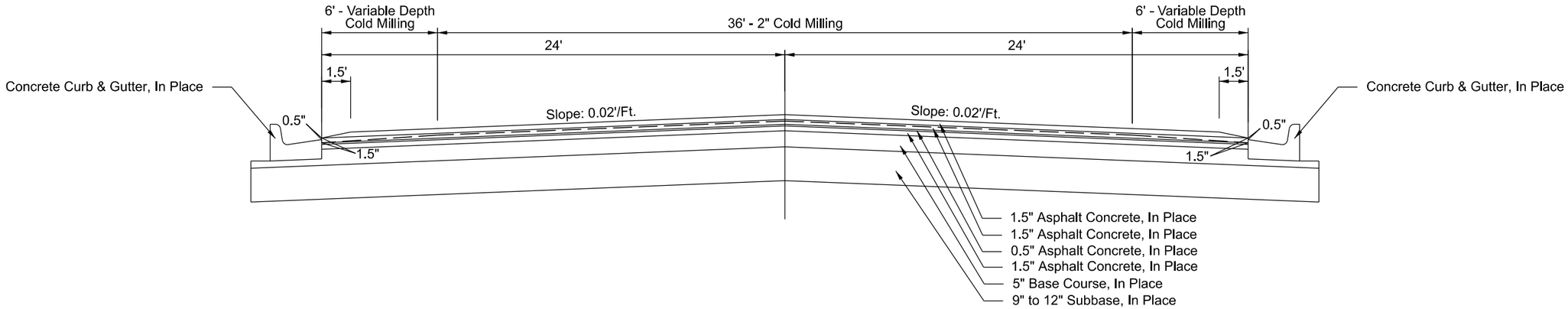
TYPICAL SECTIONS

COLD MILLING

Section 3

US HWY 281 - PCN 06PE

Sta. a 362+60 to Sta. a 408+00 Lt. & Sta. a 411+30 Rt.

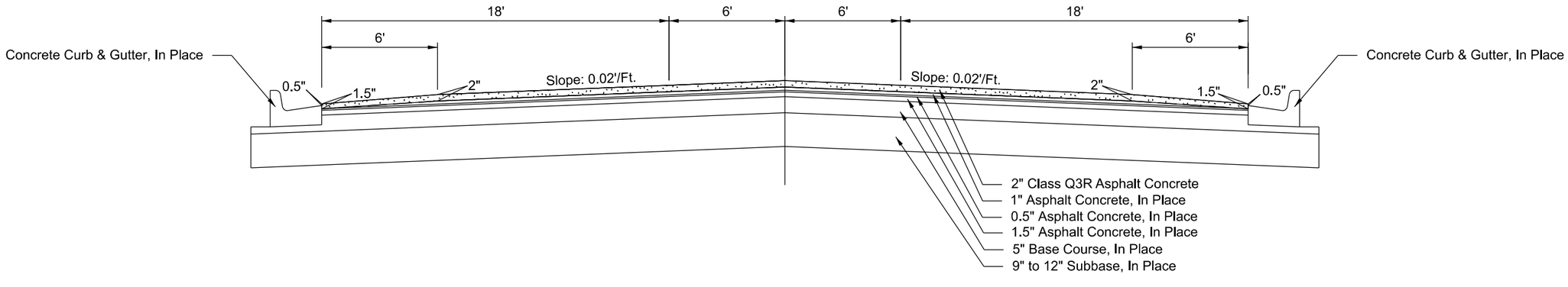


RESURFACING

Section 3

US HWY 281 - PCN 06PE

Sta. a 362+60 to Sta. a 408+00 Lt. & Sta. a 411+30 Rt.



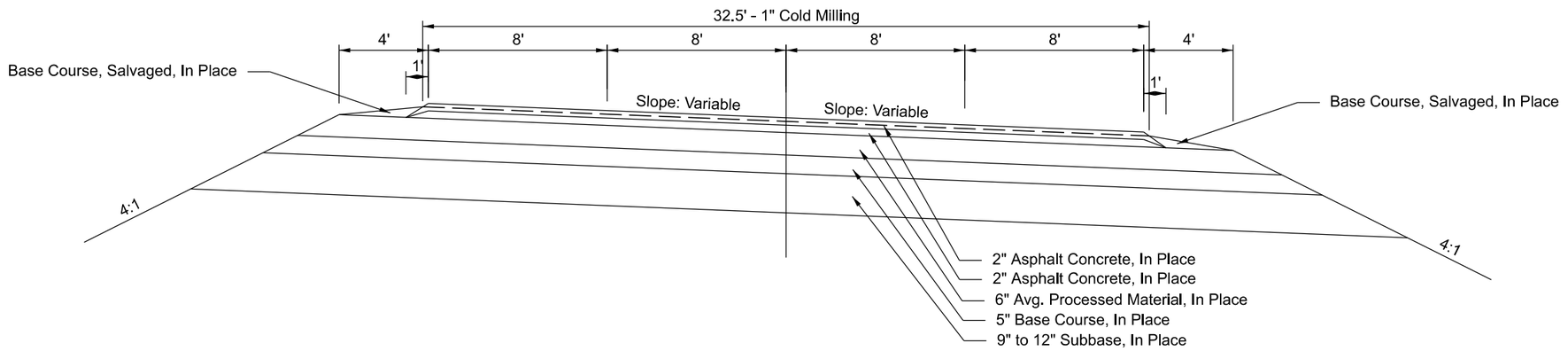
SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	10	72

Plotting Date: 3/3/2025

TYPICAL SECTIONS

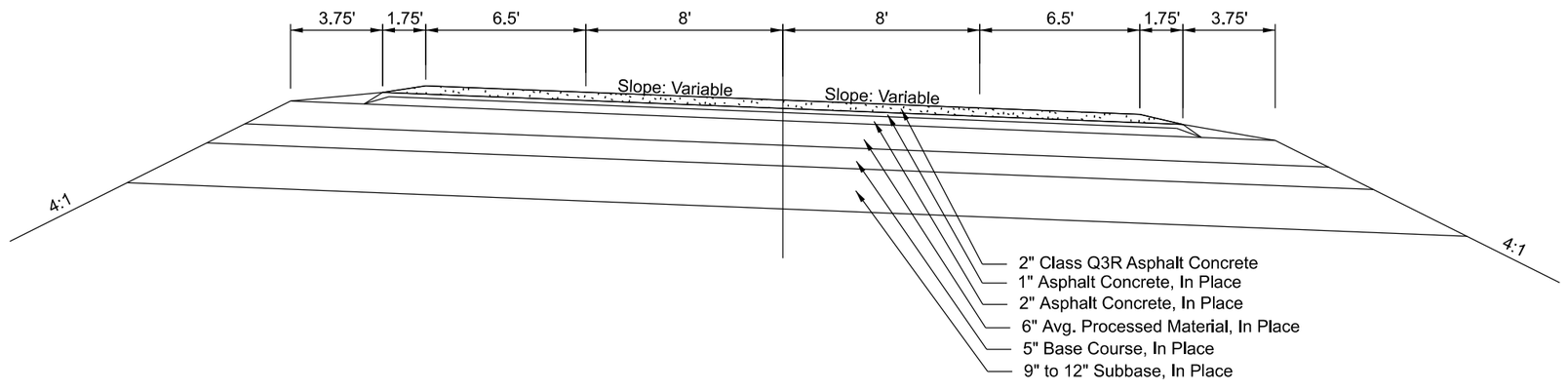
COLD MILLING

Section 4
US HWY 281 - PCN 06PE
Sta. 146+30 to Sta. 162+70 (Ramp Stationing)



RESURFACING

Section 4
US HWY 281 - PCN 06PE
Sta. 146+30 to Sta. 162+70 (Ramp Stationing)



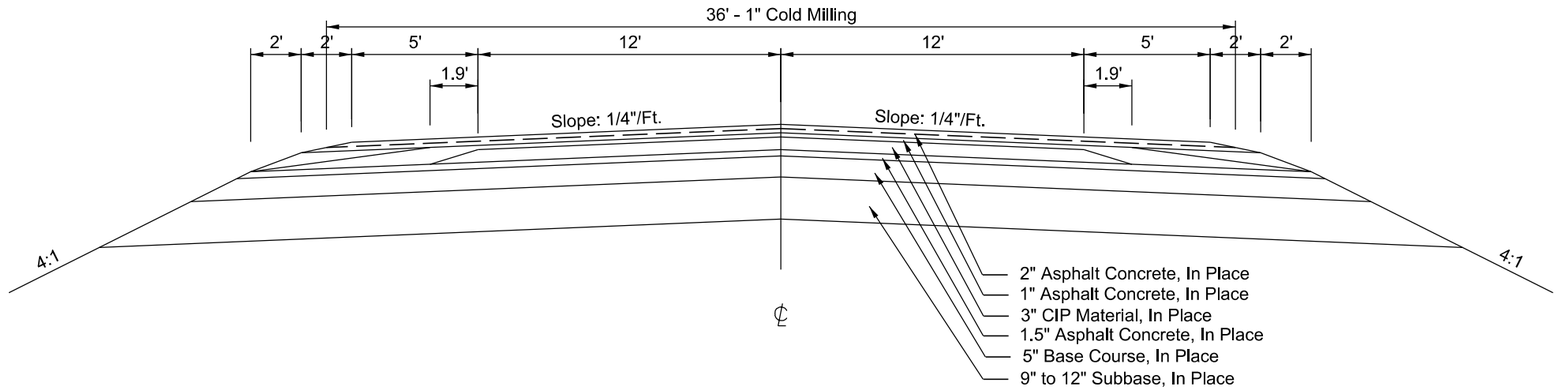
SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	11	72

Plotting Date: 3/3/2025

TYPICAL SECTIONS

COLD MILLING

Section 5
US HWY 281 - PCN 06PE
Sta. a 414+10 to Sta. a 560+20

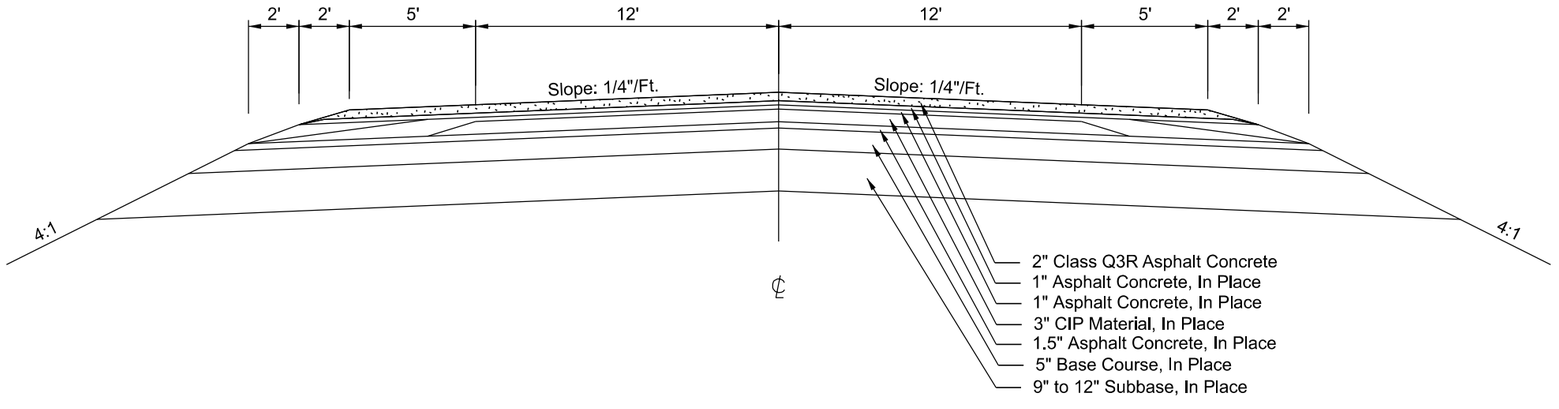


Sta. a 560+20 Bk=
Sta. b 981+18 Ah

Reverse Stationing

RESURFACING

Section 5
US HWY 281 - PCN 06PE
Sta. a 414+10 to Sta. a 560+20



SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	12	72

Plotting Date: 3/3/2025

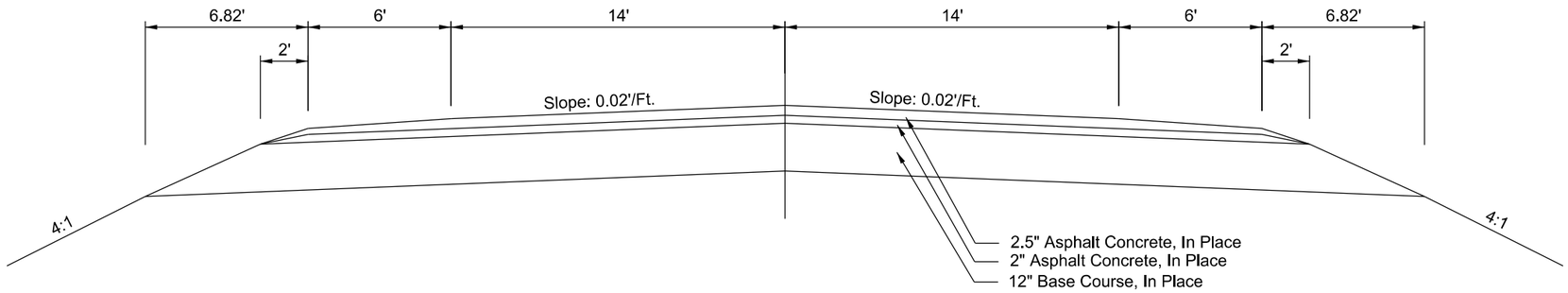
TYPICAL SECTIONS

IN-PLACE

Section 6

US HWY 281 - PCN 06PE

Sta. b 981+18 to Sta. b 944+51 (Reverse Stationing)



Sta. a 560+20 Bk=
Sta. b 981+18 Ah

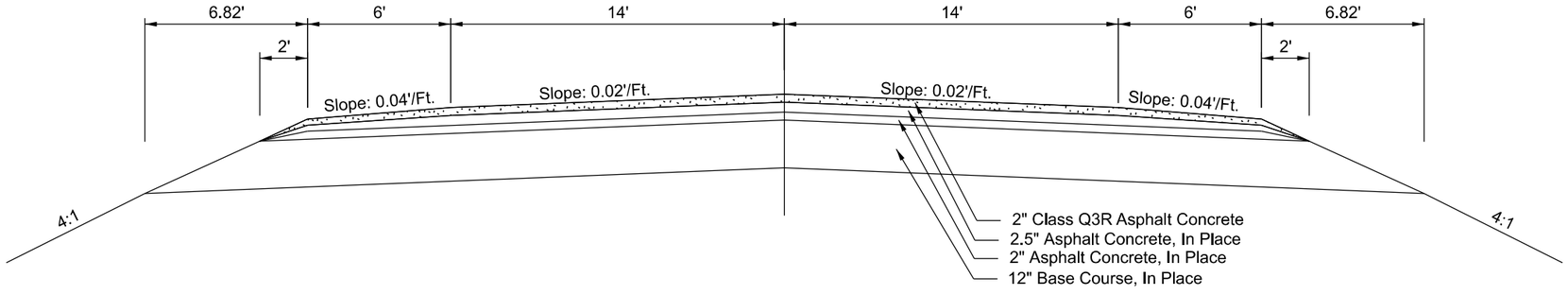
Reverse Stationing

RESURFACING

Section 6

US HWY 281 - PCN 06PE

Sta. b 981+18 to Sta. b 944+51 (Reverse Stationing)



SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	13	72

Plotting Date: 3/3/2025

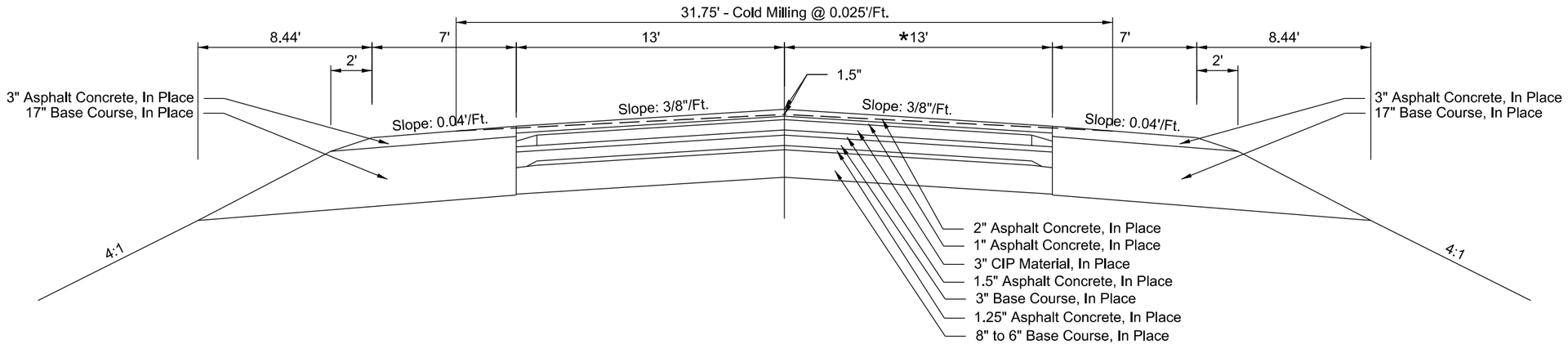
TYPICAL SECTIONS

COLD MILLING

Section 7

US HWY 281 - PCN 06PE
Sta. b 944+51 to Sta. b 871+62 (Reverse Stationing)

US HWY 18 - PCN 08GN
Sta. b 871+62 to Sta. b 554+95 (Reverse Stationing)



Transitions:

* 13' to 25'
Sta. b 883+38 to Sta. b 874+98

* 25'
Sta. b 874+98 to Sta. b 871+50

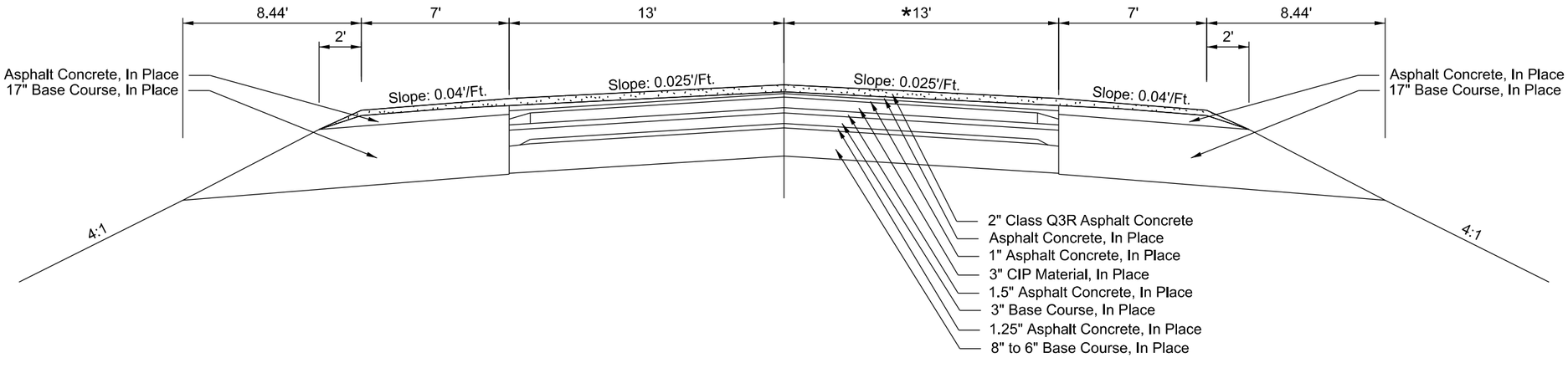
*25' to 13'
Sta. b 871+50 to Sta. b 863+10

RESURFACING

Section 7

US HWY 281 - PCN 06PE
Sta. b 944+51 to Sta. b 871+62 (Reverse Stationing)

US HWY 18 - PCN 08GN
Sta. b 871+62 to Sta. b 554+95 (Reverse Stationing)



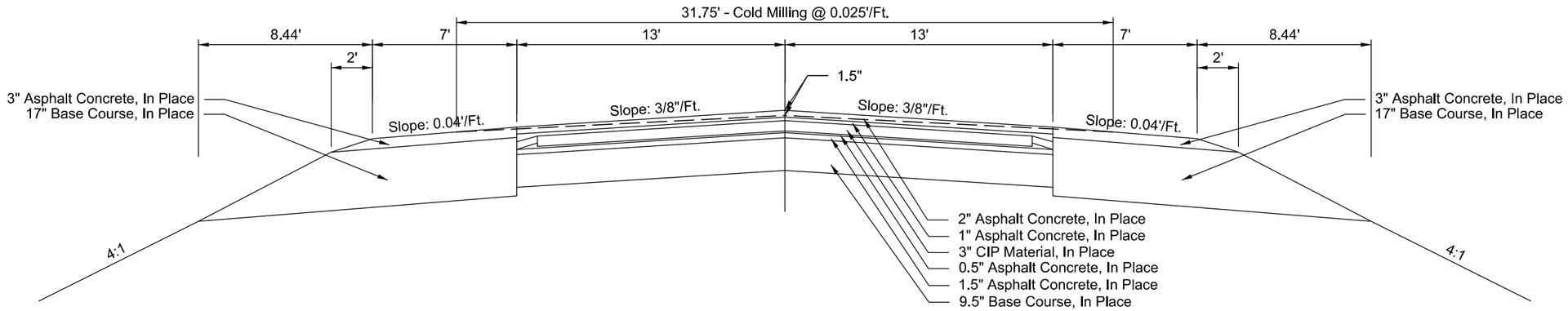
SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	14	72

Plotting Date: 3/3/2025

TYPICAL SECTIONS

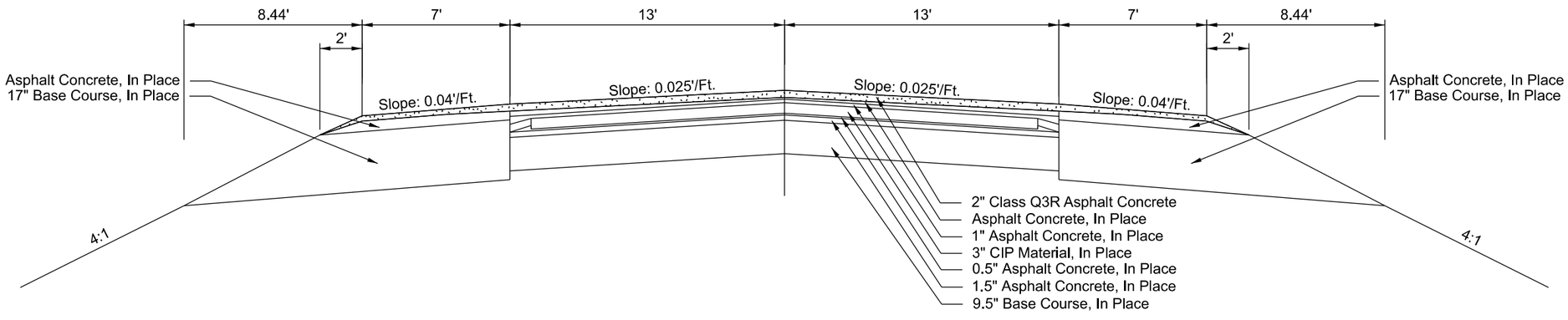
COLD MILLING

Section 8
US HWY 18 - PCN 08GN
Sta. b 554+95 to Sta. b 507+65 (Reverse Stationing)



RESURFACING

Section 8
US HWY 18 - PCN 08GN
Sta. b 554+95 to Sta. b 507+65 (Reverse Stationing)



SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	15	72

Plotting Date: 3/3/2025

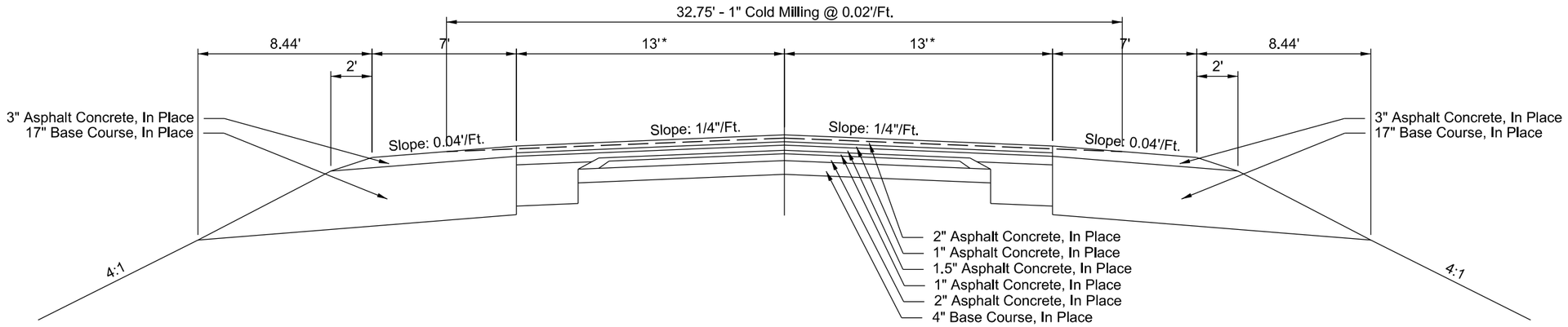
TYPICAL SECTIONS

COLD MILLING

Section 9

US HWY 18 - PCN 08GN

Sta. b 507+65 to Sta. b 500+75 (Reverse Stationing)



Transitions:

* 13' to 19'
Sta. b 507+65 to Sta. b 503+45

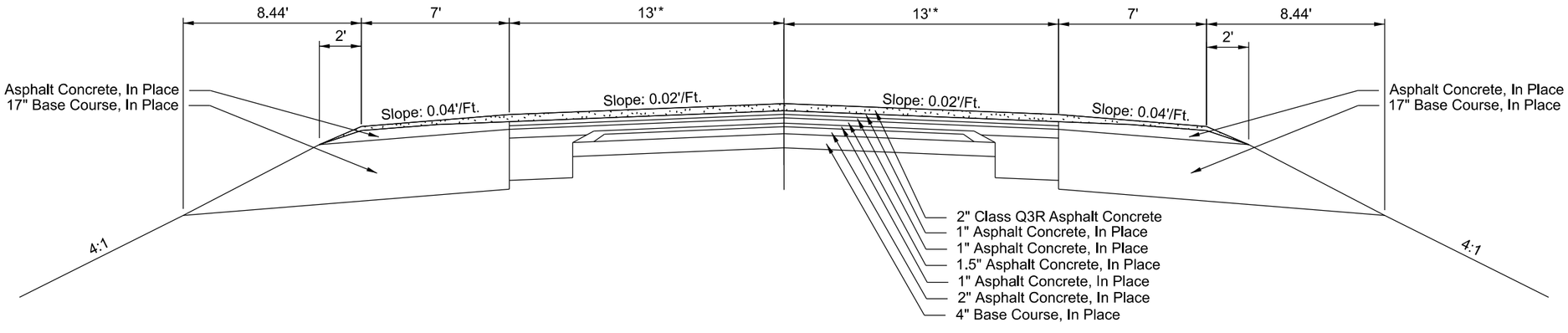
19'
Sta. b 503+45 to 500+75

RESURFACING

Section 9

US HWY 18 - PCN 08GN

Sta. b 507+65 to Sta. b 500+75 (Reverse Stationing)



RATES OF MATERIALS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	16	72

Section 1
06PE
US 281 E/W
0+50.00 to 156+59.00 (less 674' for one exception)

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

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

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 5.6 tons applied 25 feet wide (Rate = 0.09 gallon per square yard) prior to the application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 6 tons applied 40 feet wide (Rate = 0.06 gallon per square yard) prior to the application of Class Q3R Hot Mixed Asphalt Concrete.

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE

Salvaged Asphalt Concrete	511 Tons
Crushed Aggregate	2043 Tons
PG 58-34 Asphalt Binder	126 Tons
	TOTAL: 2680 Tons
Hydrated Lime	27 Tons
	TOTAL: 2707 Tons

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

FLUSH SEAL (Centered over Outside Shoulder Rumble Strips)
Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.4 ton applied 3 feet wide (1.5 feet wide each shoulder) (Rate = 0.05 gallon per square yard).

Section 2
06PE
US 281 N of Armour
151+44.00 to 362+60.00 (less 55' for one exception)
409+65.00 to 414+10.00

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

MC-70 Asphalt for Prime at the rate of 10.4 tons applied 15 feet wide (7.5 feet wide each shoulder) (Rate = 0.3 gallon per square yard).

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 5.6 tons applied 25 feet wide (Rate = 0.09 gallon per square yard) prior to the application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 6.4 tons applied 43 feet wide (Rate = 0.06 gallon per square yard) prior to the application of Class Q3R Hot Mixed Asphalt Concrete.

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE

Salvaged Asphalt Concrete	566 Tons
Crushed Aggregate	2267 Tons
PG 58-34 Asphalt Binder	140 Tons
	TOTAL: 2973 Tons
Hydrated Lime	30 Tons
	TOTAL: 3003 Tons

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

FLUSH SEAL (Centered over Outside Shoulder Rumble Strips)
Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.4 ton applied 3 feet wide (1.5 feet wide each shoulder) (Rate = 0.05 gallon per square yard).

NOTE: No prime is needed from:
Sta. 411+30 Rt. to Sta. 414+10
Sta. 408+00 Lt. to Sta. 414+10
See Section 2 Shoulder Detail.

Section 3
06PE
Armour
362+60.00 to 409+65.00

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

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.2 ton applied 48 feet wide (Rate = 0.09 gallon per square yard) prior to the application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.14 ton applied 48 feet wide (Rate = 0.06 gallon per square yard) prior to the application of Class Q3R Hot Mixed Asphalt Concrete.

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE

Salvaged Asphalt Concrete	10.94 Tons
Crushed Aggregate	43.75 Tons
PG 58-34 Asphalt Binder	2.7 Tons
	TOTAL: 57.39 Tons
Hydrated Lime	0.57 Ton
	TOTAL: 57.96 Tons

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

Section 4
06PE
Ramp
146+30.00 to 162+70.00

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

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.11 ton applied 25 feet wide (Rate = 0.09 gallon per square yard) prior to the application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.09 ton applied 33.5 feet wide (Rate = 0.06 gallon per square yard) prior to the application of Class Q3R Hot Mixed Asphalt Concrete.

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE

Salvaged Asphalt Concrete	7.24 Tons
Crushed Aggregate	28.94 Tons
PG 58-34 Asphalt Binder	1.78 Tons
	TOTAL: 37.96 Tons
Hydrated Lime	0.38 Ton
	TOTAL: 38.34 Tons

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

RATES OF MATERIALS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	17	72

Section 5
06PE
US 281 S of Armour
414+10.00 to 560+20.00

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

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 5.6 tons applied 25 feet wide (Rate = 0.09 gallon per square yard) prior to the application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 5.8 tons applied 39 feet wide (Rate = 0.06 gallon per square yard) prior to the application of Class Q3R Hot Mixed Asphalt Concrete.

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE

Salvaged Asphalt Concrete	441 Tons
Crushed Aggregate	1764 Tons
PG 58-34 Asphalt Binder	109 Tons
	TOTAL: 2314 Tons
Hydrated Lime	23 Tons
	TOTAL: 2337 Tons

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

FLUSH SEAL (Centered over Outside Shoulder Rumble Strips)
Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.4 ton applied 3 feet wide (1.5 feet wide each shoulder) (Rate = 0.05 gallon per square yard).

Section 6
06PE
US 281 N/S Reverse Stationing
981+18.00 to 944+51.00

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

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.13 ton applied 45 feet wide (Rate = 0.06 gallon per square yard) prior to application of Class Q3R Hot Mixed Asphalt Concrete.

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE

Salvaged Asphalt Concrete	9.44 Tons
Crushed Aggregate	37.76 Tons
PG 58-34 Asphalt Binder	2.33 Tons
	TOTAL: 49.53 Tons
Hydrated Lime	0.5 Ton
	TOTAL: 50.03 Tons

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

Section 7
06PE
US 281 N/S Reverse Stationing
944+51.00 to 871+62.00
08GN
US 18 Reverse Stationing
871+62.00 to 554+95.00

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

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 5.6 tons applied 25 feet wide (Rate = 0.09 gallon per square yard) prior to the application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 6.7 tons applied 45 feet wide (Rate = 0.06 gallon per square yard) prior to the application of Class Q3R Hot Mixed Asphalt Concrete.

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE

Salvaged Asphalt Concrete	479 Tons
Crushed Aggregate	1917 Tons
PG 58-34 Asphalt Binder	118 Tons
	TOTAL: 2514 Tons
Hydrated Lime	25 Tons
	TOTAL: 2539 Tons

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

FLUSH SEAL (Centered over Outside Shoulder Rumble Strips)
Provide SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.4 ton applied 3 feet wide (1.5 feet wide each shoulder) (Rate = 0.05 gallon per square yard).

Section 8
08GN
US 18 Reverse Stationing
554+95.00 to 507+65.00

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

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.11 ton applied 25 feet wide (Rate = 0.09 gallon per square yard). prior to the application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.13 ton applied 45 feet wide (Rate = 0.06 gallon per square yard). prior to the application of Class Q3R Hot Mixed Asphalt Concrete.

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE

Salvaged Asphalt Concrete	9.08 Tons
Crushed Aggregate	36.3 Tons
PG 58-34 Asphalt Binder	2.24 Tons
	TOTAL: 47.62 Tons
Hydrated Lime	0.48 Ton
	TOTAL: 48.1 Tons

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

RATES OF MATERIALS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	18	72

Section 9
08GN
US 18 Reverse Stationing
507+65.00 to 500+75.00

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

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.11 ton applied 25 feet wide (Rate = 0.09 gallon per square yard) prior to application of Asphalt Concrete Blade Laid.

Provide SS-1h or CSS-1h Asphalt for Tack at the rate of 0.13 ton applied 45 feet wide (Rate = 0.06 gallon per square yard) prior to application of Class Q3R Hot Mixed Asphalt Concrete.

2" CLASS Q3R HOT MIXED ASPHALT CONCRETE

Salvaged Asphalt Concrete	8.67 Tons
Crushed Aggregate	34.7 Tons
PG 58-34 Asphalt Binder	2.14 Tons
	TOTAL: 45.51 Tons
Hydrated Lime	0.46 Ton
	TOTAL: 45.97 Tons

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

TABLE OF PROJECT STATIONING

SECTION	PROJECT NUMBER	STATION	TO	STATION	DESCRIPTION	LENGTH	GROSS SECTION LENGTHS		NET SECTION LENGTHS	
1	06PE	0+50.00	to	156+59.00	US 281 E/W	15609.00'	**15609.00'**		**14935.00'**	**2.829 mi.**
2	06PE	151+44.00	to	362+60.00	US 281 N of Armour	21116.00'	**21561.00'**		**21506.00'**	**4.073 mi.**
		409+65.00	to	414+10.00		445.00'				
3	06PE	362+60.00	to	409+65.00	Armour	4705.00'	**4705.00'**		**4705.00'**	**0.891 mi.**
4	06PE	146+30.00	to	162+70.00	Ramp	1640.00'	**1640.00'**		**1640.00'**	**0.311 mi.**
5	06PE	414+10.00	to	560+20.00	US 281 S of Armour	14610.00'	**14610.00'**		**14610.00'**	**2.767 mi.**
6	06PE	981+18.00	to	944+51.00	US 281 N/S Reverse Stationing	3667.00'	**3667.00'**		**3667.00'**	**0.695 mi.**
7	06PE	944+51.00	to	871+62.00	US 281 N/S Reverse Stationing	7289.00'	**7289.00'**		**7289.00'**	**1.380 mi.**
7	08GN	871+62.00	to	554+95.00	US 18 Reverse Stationing	31667.00'	**31667.00'**		**31667.00'**	**5.998 mi.**
8	08GN	554+95.00	to	507+65.00	US 18 Reverse Stationing	4730.00'	**4730.00'**		**4730.00'**	**0.896 mi.**
9	08GN	507+65.00	to	500+75.00	US 18 Reverse Stationing	690.00'	**690.00'**		**690.00'**	**0.131 mi.**
					06PE		**69081.00'**	**13.084 mi.**	**68352.00'**	**12.945 mi.**
					08GN		**37087.00'**	**7.024 mi.**	**37087.00'**	**7.024 mi.**
					Grand Totals		**106168.00'**	**20.108 mi.**	**105439.00'**	**19.969 mi.**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	20	72

Rev. SM 3/4/2025

TABLE OF MATERIALS QUANTITIES

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

SECTION	PCN	DESCRIPTION	UNCL. EXC. DIG-OUTS	REMOVE ASPHALT CONCRETE PAVEMENT	CONTRACTOR FURNISHED BORROW EXCAVATION	BASE COURSE	WATER FOR GRAN. MATER.	COLD MILLING ASPHALT CONCRETE	ASPHALT CONCRETE COMPOSITE	ASPHALT CONCRETE BLADE LAID	PG 58-34 ASPHALT BINDER	HYDRATED LIME	CLASS Q3R HOT MIXED ASPHALT CONCRETE	PG 58-34 ASPHALT BINDER	HYDRATED LIME	SALV. MAT'L. N.A.B.I.	MC-70 ASPH. FOR PRIME	BLOTTING SAND FOR PRIME	SS-1h/ CSS-1h ASPH. FOR TACK	SS-1h/ CSS-1h ASPH. FOR FLUSH SEAL
			CuYd	SqYd	CuYd	Ton	MGal	SqYd	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton
1	06PE	US 281 E/W	141	212	-	283	67	47294	71	-	-	-	7658	356.4	75.8	1445	23.8	2	32.8	1.1
2	06PE	US 281 N of Armour	204	306	39	407	97	68102	102	-	-	-	12231	569.2	121.1	2308	42.2	3	48.9	1.6
3	06PE	Armour	45	67	-	89	1	25093	22	-	-	-	2727	126.9	27.0	514	-	-	16.0	-
4	06PE	Ramp	16	23	-	31	-	5922	8	-	-	-	629	29.3	6.2	118	-	-	3.3	-
5	06PE	US 281 S of Armour	138	208	-	277	3	58440	69	-	-	-	6467	300.9	64.0	1221	-	-	31.5	1.1
6	06PE	US 281 N/S Reverse Stationing	35	52	-	70	1	-	17	-	-	-	1835	85.4	18.2	346	-	-	4.8	-
7	06PE	US 281 N/S Reverse Stationing	69	104	-	138	2	25714	35	-	-	-	3505	163.1	34.7	661	-	-	17.0	0.6
7	08GN	US 18 Reverse Stationing	300	450	-	600	7	111714	150	-	-	-	15228	708.6	150.8	2873	-	-	73.7	2.4
8	08GN	US 18 Reverse Stationing	45	67	-	90	1	15373	22	-	-	-	2275	105.9	22.5	430	-	-	11.3	-
9	08GN	US 18 Reverse Stationing	7	10	-	13	-	2511	3	-	-	-	317	14.8	3.1	60	-	-	1.7	-
Subtotals:			**1000**	**1499**	**39**	**1998**	**179**	**360163**	**499**	**-**	**-**	**-**	**52872**	**2460.5**	**523.4**	**9976**	**66.0**	**5**	**241.0**	**6.8**
06PE Add Quans for spot leveling and tight blading in Section 1									-	424	31.5	4.2	283	13.2	2.8	53	-	-	16.6	-
06PE Add Quans for spot leveling and tight blading in Section 2									-	611	45.4	6.0	407	19.0	4.0	77	-	-	23.9	-
06PE Add Quans for spot leveling and tight blading in Section 3									-	267	19.8	2.6	89	4.1	0.9	17	-	-	9.6	-
06PE Add Quans for spot leveling and tight blading in Section 4									-	47	3.5	0.5	31	1.4	0.3	5	-	-	1.9	-
06PE Add Quans for spot leveling and tight blading in Section 5									-	415	30.8	4.1	277	12.9	2.7	52	-	-	16.2	-
06PE Add Quans for spot leveling in Section 6									-	-	-	-	70	3.2	0.7	13	-	-	0.2	-
06PE Add Quans for spot leveling and tight blading in Section 7									-	207	15.4	2.1	138	6.4	1.4	26	-	-	8.1	-
08GN Add Quans for spot leveling and tight blading in Section 7									-	900	66.8	8.9	600	27.9	5.9	113	-	-	35.1	-
08GN Add Quans for spot leveling and tight blading in Section 8									-	134	10.0	1.3	4730	220.1	46.8	892	-	-	5.4	-
08GN Add Quans for spot leveling and tight blading in Section 9									-	20	1.5	0.2	13	0.6	0.1	2	-	-	0.8	-
Table of Additional Quantities:			**-**	**202**	**-**	**2063**	**23**	**4805**	**92**	**7**	**-**	**-**	**984**	**45.8**	**9.8**	**186**	**-**	**-**	**3.5**	**-**
Grand Totals:			**1000**	**1701**	**39**	**4061**	**202**	**364968**	**591**	**3032**	**224.7**	**29.9**	**60494**	**2815.1**	**598.8**	**11412**	**66.0**	**5**	**362.3**	**6.8**
06PE SUBTOTALS:			648	972	39	1295	171	230565	324	1971	146.4	19.5	36347	1691.4	359.8	6856	66.0	5	230.8	4.4
06PE ADDITIONALS TABLE:			-	202	-	2063	23	4805	92	7	-	-	984	45.8	9.8	186	-	-	3.5	-
06PE TOTALS:			**648**	**1174**	**39**	**3358**	**194**	**235370**	**416**	**1978**	**146.4**	**19.5**	**37331**	**1737.2**	**369.6**	**7042**	**66.0**	**5**	**234.3**	**4.4**
08GN SUBTOTALS:			352	527	-	703	8	129598	175	1054	78.3	10.4	23163	1077.9	229.2	4370	-	-	128.0	2.4
08GN ADDITIONALS TABLE:			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08GN TOTALS:			**352**	**527**	**-**	**703**	**8**	**129598**	**175**	**1054**	**78.3**	**10.4**	**23163**	**1077.9**	**229.2**	**4370**	**-**	**-**	**128.0**	**2.4**

Rev. SM 3/4/2025

TABLE OF ADDITIONAL QUANTITIES

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

LOCATION					REMOVE ASPHALT CONCRETE PAVEMENT SqYd	BASE COURSE Ton	WATER FOR GRAN. MATER. MGal	COLD MILLING ASPHALT CONCRETE SqYd	ASPHALT CONCRETE COMPOSITE 1ST LIFT Ton	ASPHALT CONCRETE COMPOSITE 2ND LIFT Ton	ASPHALT CONCRETE BLADE LAID Ton	CLASS Q3R HOT MIXED ASPHALT CONCRETE Ton	PG 58-34 ASPHALT BINDER Ton	HYDRATED LIME Ton	SALV. MAT'L. N.A.B.I. Ton	SS-1h/ CSS-1h ASPH. FOR TACK Ton
Mainline Transitions			Width	Avg.Mill Depth												
Sec. 9	507+65	to 503+45	12' to 0'	1"	-	-	-	280	-	-	3	31	1.4	0.3	6	0.18
Sec. 9	503+45	to 500+75	12'	1"	-	-	-	360	-	-	4	40	1.9	0.4	8	0.23
Other Locations (Density)																
Pipe Replacement					202	248	3	-	47	45	-	-	-	-	-	-
Pipe Undercut					-	105	1	-	-	-	-	-	-	-	-	-
Shoulder Transitions - Outside			Width	Mill Depth												
Sec. 1	148+83	to 149+85	2.5'	1"	-	-	-	57	-	-	-	6	0.3	0.1	1	0.01
Sec. 2	408+00	to 414+10	4.0' to 0'	1"	-	-	-	136	-	-	-	15	0.7	0.1	3	0.03
Sec. 2	411+30	to 414+10	2.0' to 0'	1"	-	-	-	31	-	-	-	3	0.1	-	1	0.01
Sec. 5	414+10	to 414+60	2.0' to 0'	1"	-	-	-	11	-	-	-	1	-	-	-	-
Other Shoulder Locations (Nondensity)																
Sec. 2 Shoulder Detail					-	-	-	603	-	-	-	-	-	-	-	-
Turnouts																
25	Mailbox Turnouts				-	-	-	100	-	-	-	10	0.5	0.1	2	0.04
Resurface to ROW																
18	Intersecting Roads				-	-	-	1718	-	-	-	292	13.6	2.9	55	1.01
2	Home Entrances				-	-	-	128	-	-	-	37	1.7	0.4	7	0.13
Resurface to End of Radius																
22	Intersecting Roads				-	330	4	1381	-	-	-	338	15.7	3.4	63	1.17
Pads																
0	Approaches				-	-	-	-	-	-	-	-	-	-	-	-
8	Commercial Entrances				-	240	2	-	-	-	-	-	-	-	-	-
34	Farm Entrances				-	340	4	-	-	-	-	70	3.2	0.7	13	0.24
80	Field Entrances				-	800	9	-	-	-	-	141	6.6	1.3	27	0.48
TOTALS:					**202**	**2063**	**23**	**4805**	**47**	**45**	**7**	**984**	**45.7**	**9.7**	**186**	**3.53**

NOTES: 3.5 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

All Sections / All Projects	ASPHALT CONCRETE COMPOSITE 1ST LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	ASPHALT CONCRETE COMPOSITE 2ND LIFT COMPACTION WITHOUT SPECIFIED DENSITY TONS	ASPHALT CONCRETE BLADE LAID COMPACTION WITHOUT SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE COMPACTION WITH SPECIFIED DENSITY TONS	CLASS Q3R HOT MIXED ASPHALT CONCRETE COMPACTION WITHOUT SPECIFIED DENSITY TONS
Section 1					
24' Finished Roadway Surface	-	-	-	4466	-
Shoulders	-	-	-	-	3192
Backfilling Digouts	71	-	-	-	-
Add Quans for spot leveling and tight blading	-	-	424	-	283
Section 2					
24' Finished Roadway Surface	-	-	-	6429	-
Shoulders	-	-	-	-	5802
Backfilling Digouts	102	-	-	-	-
Add Quans for spot leveling and tight blading	-	-	611	-	407
Section 3					
36' Finished Roadway Surface	-	-	-	2110	-
Shoulders	-	-	-	-	617
Backfilling Digouts	22	-	-	-	-
Add Quans for spot leveling and tight blading	-	-	267	-	89
Section 4					
16' Finished Roadway Surface	-	-	-	327	-
Shoulders	-	-	-	-	302
Backfilling Digouts	8	-	-	-	-
Add Quans for spot leveling and tight blading					
Section 5					
24' Finished Roadway Surface	-	-	-	4368	-
Shoulders	-	-	-	-	2099
Backfilling Digouts	69	-	-	-	-
Add Quans for spot leveling and tight blading	-	-	415	-	277
Section 6					
24' Finished Roadway Surface	-	-	-	1096	-
Shoulders	-	-	-	-	738
Backfilling Digouts	17	-	-	-	-
Add Quans for spot leveling	-	-	-	-	70
Section 7					
24' Finished Roadway Surface	-	-	-	11645	-
Shoulders	-	-	-	-	7088
Backfilling Digouts	185	-	-	-	-
Add Quans for spot leveling and tight blading					
Section 8					
24' Finished Roadway Surface	-	-	-	1414	-
Shoulders	-	-	-	-	861
Backfilling Digouts	22	-	-	-	-
Add Quans for spot leveling and tight blading	-	-	134	-	4730
Section 9					
24' Finished Roadway Surface	-	-	-	206	-
Shoulders	-	-	-	-	111
Backfilling Digouts	3	-	-	-	-
Add Quans for spot leveling and tight blading					

Table of Additional Quantities					
Mainline Transitions	-	-	7	71	-
Other Locations (Density)	47	45	-	-	-
Shoulder Transitions - Outside	-	-	-	-	25
Turnouts, Int Roads, Ents & Pads	-	-	-	-	888
Additional Totals:	**47**	**45**	**7**	**71**	**913**
Totals:	**546**	**45**	**3032**	**32132**	**28361**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	23	72

Rev. SM 3/4/2025

TABLE FOR MAINLINE CULVERT WORK

CULVERT: LOCATION: SITE NO	CUL-VERT ID	MRM	STATION	PIPE DATA: NO of PIPE - SIZE (DIA or W x H) DIA = IN W x H = FT	LENGTH	TYPE	DRAINAGE AREA ACRES	DRAINAGE DIRECTION	CLEAR ZONE 15 FT **: SIDE OF ROAD Φ	ROW *	WORK DESCRIPTION	CLEANOUT: DEPTH	LENGTH	PIPE CLEANOUT	REMOVE / RESET: REMOVE PIPE	REMOVE PIPE FOR RESET	RESET PIPE	NEW: RCP CIR 24"	CULVERT ENDS: TYPE: EXISTING	NEW	REMOVE / RESET: REMOVE PIPE END	REMVOE END FOR RESET	RESET PIPE END	NEW: RCP FE 24"	EARTHWORK: PIPE UNDERCUT	MISC FILL: WIDTH	LENGTH	DEPTH	CONTR FURN BORROW EXCAVATION	DITCH / CHANNEL: DITCH PROTECTION: CHANNEL PROTECT AREA W x L	EROSION CTRL BLANKET: TYPE 2	TYPE 3	DRAINAGE FABRIC TYPE B	GABION	OBJ MARKER: OM-2 & POST: EXISTING ***	REMOVE	NEW Bk-Bk
					FT					FT		IN	FT	EA	FT	FT	FT	FT	Δ		EA	EA	EA	EA	CU YD	FT	FT	IN	YD^3	FT	YD^2	YD^2	YD^2	YD^3	EA	EA	EA
US 281				NH 0281(125)35 PCN 06PE																																	
E1	1035	48.56	0+90	1 - 18 DIA	70	RCP	1.6	N	N	75	Cleanout Pipe	12	35	1					FE																1B		
									S	75	Cleanout Pipe	12	35						FE																1B		
E2	6357	48.51	1+10	1 - 24 DIA	64	RCP	22	N	N	75	Cleanout Pipe, Remove and Reset End with Ties	9	32	1					FE			1	1												1B	1	1
									S	75	Cleanout Pipe, Remove and Reset End with Ties	9	32						FE			1	1												1B	1	1
E3	6354	48.21	17+00	1 - 36 DIA	62	RCP ARCH	89	N	N	75	Cleanout Pipe	12	31	1					FE																1B		
									S	75	Cleanout Pipe	12	31						FE																1B		
E4	6296	47.21	69+93	1 - 36 DIA	64	RCP	56	N	N	75	Remove and Reset End, Cleanout Pipe	12	32	1					FE			1	1												1B	1	2
									S	75	Remove and Reset End, Cleanout Pipe	12	32						FE			1	1												1B	1	2
E5	473	46.96	86+02	1 - 18 DIA	60	RCP	13	S	N	75	Remove and Reset End + 1 Pipe Section with Ties					6	6		FE			1	1												1B	1	1
									S	75	Remove and Reset End + 1 Pipe Section with Ties								FE			1	1												1B	1	1
E6	472	46.76	96+56	1 - 24 DIA	72	RCP	-	S	N	75	Cleanout Pipe, Remove and Reset End with Ties	12	36	1					FE			1	1												1B	1	1
									S	75	Cleanout Pipe, Remove and Reset End with Ties	12	36						FE			1	1												1B	1	1
E7	471	46.39	116+03	1 - 36 DIA	62	RCP	80	S	N	75	Cleanout Pipe, Remove and Reset End	12	31	1					FE			1	1												1B	1	2
									S	75	Cleanout Pipe, Remove and Reset End	12	31						FE			1	1												1B	1	2
E8	469	46.15	128+96	1 - 24 DIA	78	RCP	58	S	N	75	Cleanout Pipe, Remove and Reset End with Ties	9	39	1					FE			1	1												1B	1	1
									S	75	Cleanout Pipe, Remove and Reset End with Ties	9	39						FE			1	1												1B	1	1
E9	1112	45.88	147+00	1 - 30 DIA	222	RCP	35	SE	N	100	Cleanout Pipe, Remove and Reset End with Ties	6	111	1					FE			1	1												1B	1	2
									S	100	Cleanout Pipe, Remove and Reset End with Ties	6	111						FE			1	1												1B	1	2
NH 0281(125)35 PCN 06PE - TOTALS THIS SHEET														8	-	6	6	-			-	14	14	-					-		-	-	-	-		14	20

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 EDGELINE. *** - B = BACK-TO-BACK S = SINGLE Φ - (N)orth = LT, (S)outh = RT, (E)ast = LT, (W)est = RT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	24	72

Rev. SM 3/4/2025

TABLE FOR MAINLINE CULVERT WORK

CULVERT – LOCATION: SITE NO	CUL-VERT ID	MRM	STATION	PIPE DATA: NO of PIPE - SIZE (DIA or W x H) DIA = IN, W x H = FT	LENGTH (FT)	TYPE	DRAINAGE AREA ACRES	DRAINAGE DIRECTION	CLEAR ZONE 15 FT **: SIDE OF ROAD Φ	CLEAR ZONE 15 FT **: ROW * (FT)	WORK DESCRIPTION	CLEANOUT: DEPTH (IN)	CLEANOUT: LENGTH (FT)	CLEANOUT: PIPE CLEANOUT (EA)	REMOVE / RESET: REMOVE PIPE (FT)	REMOVE / RESET: REMOVE PIPE FOR RESET (FT)	REMOVE / RESET: RESET PIPE (FT)	NEW: RCP CIR 24" (FT)	CULVERT ENDS – TYPE (Δ): EXISTING	TYPE (Δ): NEW	REMOVE / RESET: REMOVE PIPE END (EA)	REMOVE / RESET: REMVOE END FOR RESET (EA)	REMOVE / RESET: RESET PIPE END (EA)	NEW: RCP FE 24" (EA)	EARTHWORK – PIPE UNDERCUT (CU YD)	MISC FILL: WIDTH (FT)	MISC FILL: LENGTH (FT)	MISC FILL: DEPTH (IN)	MISC FILL: CONTR FURN BORROW EXCAVATION (YD^3)	DITCH / CHANNEL – DITCH PROTECTION: CHANNEL PROTECT AREA W x L (FT)	EROSION CTRL BLANKET: TYPE 2 (YD^2)	EROSION CTRL BLANKET: TYPE 3 (YD^2)	DRAINAGE FABRIC TYPE B (YD^2)	GABION (YD^3)	OBJ MARKER – OM-2 & POST: EXISTING *** (EA)	REMOVE (EA)	NEW Bk-Bk (EA)
US 281				NH 0281(125)35 PCN 06PE																																	
E10	6256	45.70	**156+00**	1 - 36 DIA	90	RCP	-	SW	**N**	**100**	**Cleanout Pipe**	**9**	**45**	1					**FE**																**1B**	**1**	**2**
									S	100	Cleanout Pipe	9	45						FE																1B	1	2
E11	6255	45.32	**167+22**	1 - 66 DIA	62	RCP	606	E	**N**	**100**	**No Work**								**FE**																**1B**	**1**	**2**
									S	100	No Work								FE																1B	1	**2**
S12	6254	44.61	**204+72**	1 - 24 DIA	114	CMP	-	EQ	**E**	**100**	**Replace Pipe**				**57**			**57**	**FE**	**FE**	**1**			**1**	**13**										**1B**	**1**	**1**
									W	100	Replace Pipe				57			57	FE	FE	1			1	13										1B	1	**1**
S13	6253	44.21	**226+24**	1 - 24 DIA	122	CMP	118	E	**E**	**100**	**Replace Pipe**				**61**			**61**	**FE**	**FE**	**1**			**1**	**14**										**1B**	**1**	**1**
									W	100	Replace Pipe				61			61	FE	FE	1			1	14										1B	1	**1**
S14	6252	43.53	**262+00**	1 - 30 DIA	110	CMP	-	EQ	**E**	**100**	**No Work**								**FE**																**1B**		
									W	100	No Work								FE																1B		
S15	6251	42.89	**295+68**	1 - 24 DIA	90	RCP	14	E	**E**	**100**	**Cleanout Pipe**	**9**	**45**	1					**FE**																**1B**		
									W	100	Cleanout Pipe	6	45						FE																1B		
S16	6250	41.94	**345+37**	1 - 36 DIA	64	RCP	74	E	**E**	**100**	**Repair Erosion Damage, Install Gabion Channel Protection**								**FE**							**20**	**25**	**8**	**13**	**9 x 12**		**56**	**19**	**6**	**1B**	**1**	**2**
									W	100	Repair Erosion Damage, Install Gabion Channel Protection								FE							20	20	5	7	9 x 12		45	19	6	1B	1	**2**
S17	6249	41.62	**362+13**	1 - 24 DIA	66	RCP	6.4	E	**E**	**100**	**Cleanout Pipe, Repair Erosion Damage, Install Gabion Channel Protection**	**9**	**33**	1					**FE**							**20**	**27**	**8**	**14**	**9 x 9**	**60**		**15**	**4.5**	1B	**1**	**1**
									W	100	Cleanout Pipe, Repair Erosion Damage, Install Gabion Channel Protection	9	33						FE							20	15	5	5	9 x 9	34		15	4.5	1B	1	**1**
S18	318253	41.18	**385+35**	1 - 72 x 36	76	RCBC	-	E	**E**	**35**	**Cleanout**	**6**	**38**	1					**WW**																**-**	**-**	**2**
									W	35	Cleanout	6	38						WW																-	-	**2**
NH 0281(125)35 PCN 06PE - TOTALS THIS SHEET														4	236	-	-	236			4	-	-	4	52				39		94	101	68	21		12	22

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 EDGELINE. *** - B = BACK-TO-BACK S = SINGLE Φ - (N)orth = LT, (S)outh = RT, (E)ast = LT, (W)est = RT

TABLE FOR MAINLINE CULVERT WORK

CULVERT – LOCATION: SITE NO	CUL-VERT ID	MRM	STATION	PIPE DATA: NO of PIPE - SIZE (DIA or W x H) DIA = IN W x H = FT	LENGTH (FT)	TYPE	DRAINAGE AREA ACRES	DRAINAGE DIRECTION	CLEAR ZONE 15 FT **: SIDE OF ROAD Φ	ROW * (FT)	WORK DESCRIPTION	CLEANOUT: DEPTH (IN)	CLEANOUT: LENGTH (FT)	CLEANOUT: PIPE CLEANOUT (EA)	REMOVE / RESET: REMOVE PIPE (FT)	REMOVE / RESET: REMOVE PIPE FOR RESET (FT)	REMOVE / RESET: RESET PIPE (FT)	NEW: RCP CIR 24" (FT)	CULVERT ENDS – TYPE: EXISTING (Δ)	TYPE: NEW (Δ)	REMOVE / RESET: REMOVE PIPE END (EA)	REMOVE / RESET: REMVOE END FOR RESET (EA)	REMOVE / RESET: RESET PIPE END (EA)	NEW: RCP FE 24" (EA)	EARTHWORK: PIPE UNDERCUT (CU YD)	MISC FILL: WIDTH (FT)	MISC FILL: LENGTH (FT)	MISC FILL: DEPTH (IN)	MISC FILL: CONTR FURN BORROW EXCAVATION (YD³)	DITCH / CHANNEL – DITCH PROTECTION: CHANNEL PROTECT AREA W x L (FT)	EROSION CTRL BLANKET: TYPE 2 (YD²)	EROSION CTRL BLANKET: TYPE 3 (YD²)	DRAINAGE FABRIC TYPE B (YD²)	GABION (YD³)	OBJ MARKER – OM-2 & POST: EXISTING *** (EA)	REMOVE (EA)	NEW Bk-Bk (EA)
US 281				**NH 0281(125)35 PCN 06PE**																																	
S19	1197	40.26	**435+00**	2 - 30 DIA	60	RCP ARCH	-	E	**E**	**100**	**No Work**								**FE**																**1B**		
									W	100	No Work								FE																1B		
S20	1196	40.11	**443+14**	1 - 42 DIA	64	RCP	85	E	**E**	**100**	**No Work**								**FE**																**1B**		
									W	100	No Work								FE																1B		
S21	1195	39.96	**450+88**	1 - 42 DIA	68	RCP ARCH	102	W	**E**	**100**	**No Work**								**FE**																**1B**		
									W	100	No Work								FE																1B		
S22	1194	39.66	**467+03**	1 - 24 DIA	66	RCP	8	W	**E**	**100**	**No Work**								**FE**																**1B**		
									W	100	No Work								FE																1B		
S23	1193	39.05	**499+18**	1 - 42 DIA	52	RCP ARCH	112	E	**E**	**100**	**No Work**								**FE**																**1B**		
									W	100	No Work								FE																1B		
S24	5573	38.66	**519+80**	1 - 24 DIA	64	RCP	-	E	**E**	**100**	**No Work**								**FE**																**1B**		
									W	100	No Work								FE																1B		
S25	5572	38.58	**523+79**	1 - 42 DIA	76	RCP ARCH	64	E	**E**	**100**	**No Work**								**FE**																**1B**		
									W	100	No Work								FE																1B		
S26	5571	38.12	**548+00**	1 - 42 DIA	64	CMP	-	W	**E**	**100**	**No Work**								**FE**																**1B**		
									W	100	No Work								FE																1B		
S27	5570	38.04	**552+50**	1 - 18 DIA	66	RCP	-	W	**E**	**100**	**No Work**								**FE**																**1B**		
									W	100	No Work								FE																1B		
S28	5569	37.85	**979+59**	1 - 24 DIA	78	RCP	2	E	**E**	**100**	**No Work**								**SL**																**1B**		
									W	100	No Work								SL																1B		
S29	320425	37.37	**953+89**	1 - 24 DIA	118	RCP	-	-	**E**	**100**	**No Work**								**FE**																**1B**		
									W	100	No Work								FE																1B		
NH 0281(125)35 PCN 06PE - TOTALS THIS SHEET														-	-	-	-	-			-	-	-	-	-				-		-	-	-	-		-	-

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 EDGELINE. *** - B = BACK-TO-BACK S = SINGLE Φ - (N)orth = LT, (S)outh = RT, (E)ast = LT, (W)est = RT

TABLE FOR MAINLINE CULVERT WORK

CULVERT – LOCATION: SITE NO	CUL-VERT ID	MRM	STATION	PIPE DATA: NO of PIPE - SIZE (DIA or W x H) DIA = IN W x H = FT	LENGTH (FT)	TYPE	DRAINAGE AREA ACRES	DRAINAGE DIRECTION	CLEAR ZONE 15 FT **: SIDE OF ROAD Φ	ROW * (FT)	WORK DESCRIPTION	CLEANOUT: DEPTH (IN)	CLEANOUT: LENGTH (FT)	CLEANOUT: PIPE CLEANOUT (EA)	REMOVE / RESET: REMOVE PIPE (FT)	REMOVE / RESET: REMOVE PIPE FOR RESET (FT)	REMOVE / RESET: RESET PIPE (FT)	NEW: RCP CIR 24" (FT)	CULVERT ENDS – TYPE: EXISTING (∆)	TYPE: NEW (∆)	REMOVE / RESET: REMOVE PIPE END (EA)	REMOVE / RESET: REMVOE END FOR RESET (EA)	REMOVE / RESET: RESET PIPE END (EA)	NEW: RCP FE 24" (EA)	EARTHWORK – PIPE UNDERCUT (CU YD)	MISC FILL: WIDTH (FT)	MISC FILL: LENGTH (FT)	MISC FILL: DEPTH (IN)	MISC FILL: CONTR FURN BORROW EXCAVATION (YD^3)	DITCH / CHANNEL – DITCH PROTECTION: CHANNEL PROTECT AREA W x L (FT)	EROSION CTRL BLANKET: TYPE 2 (YD^2)	EROSION CTRL BLANKET: TYPE 3 (YD^2)	DRAINAGE FABRIC TYPE B (YD^2)	GABION (YD^3)	OBJ MARKER – OM-2 & POST: EXISTING *** (EA)	REMOVE (EA)	NEW Bk-Bk (EA)
US 281				**NH 0281(125)35 PCN 06PE**																																	
S30	5567	37.28	**949+56**	2 - 48 DIA	80	RCP	243	E	**E**	**75**	**No Work**								**FE**																**1B**		
									W	75	No Work								FE																1B		
S31	5566	36.83	**925+28**	1 - 48 DIA	78	RCP ARCH	109	E	**E**	**75**	**No Work**								FE																**1B**		
									W	75	No Work								FE																1B		
S32	5565	36.76	**921+82**	1 - 36 DIA	78	RCP	182	E	**E**	**75**	**No Work**								**FE**																**1B**		
									W	75	No Work								FE																1B		
S33	5564	35.82	**872+36**	2 - 30 DIA	76	RCP	184	E	**E**	**75**	**No Work**								**SL**																**1B**		
									W	75	No Work								SL																1B		
US 18				**NH 0018(237)348 PCN 08GN**																																	
S34	8820	355.86	**870+96**	1 - 24 DIA	80	RCP	5	E	**E**	**75**	**No Work**								**SL**																**1B**		
									W	75	No Work								SL																1B		
S35	8819	355.22	**836+86**	1 - 48 DIA	80	RCP	334	E	**E**	**75**	**No Work**								**FE**																1B		
									W	75	No Work								FE																1B		
S35	8818	354.91	**819+37**	1 - 42 DIA	78	RCP	86	E	**E**	**75**	**No Work**								**FE**																**1B**		
									W	75	No Work								FE																1B		
S37	8817	354.85	**816+08**	1 - 24 DIA	88	RCP	7	E	**E**	**75**	**No Work**								**SL**																1B		
									W	75	No Work								SL																1B		
S38	8816	354.68	**807+36**	1 - 36 DIA	78	RCP	35	E	**E**	**75**	**No Work**								**FE**																**1B**		
									W	75	No Work								FE																1B		
NH 0281(125)35 PCN 06PE - TOTALS THIS SHEET														-	-	-	-	-			-	-	-	-	-				-		-	-	-	-		-	-
NH 0018(237)348 PCN 08GN - TOTALS THIS SHEET														-	-	-	-	-			-	-	-	-	-				-		-	-	-	-		-	-

∆ - 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 EDGELINE. *** - B = BACK-TO-BACK S = SINGLE Φ - (N)orth = LT, (S)outh = RT, (E)ast = LT, (W)est = RT

TABLE FOR MAINLINE CULVERT WORK

CULVERT																			CULVERT ENDS						EARTHWORK					DITCH / CHANNEL					OBJ MARKER		
LOCATION				PIPE DATA								CLEANOUT			REMOVE / RESET			NEW	TYPE		REMOVE / RESET			NEW	PIPE UNDERCUT	MISC FILL				DITCH PROTECTION					OM-2 & POST		
SITE NO	CUL-VERT ID	MRM	STATION	NO of PIPE - SIZE (DIA or W x H) DIA = IN W x H = FT	LENGTH	TYPE	DRAINAGE AREA ACRES	DRAINAGE DIRECTION	CLEAR ZONE 15 FT ** SIDE OF ROAD Φ	ROW *	WORK DESCRIPTION	DEPTH	LENGTH	PIPE CLEANOUT	REMOVE PIPE	REMOVE PIPE FOR RESET	RESET PIPE	RCP CIR 24"	EXISTING	NEW	REMOVE PIPE END	REMVOE END FOR RESET	RESET PIPE END	RCP FE 24"		WIDTH	LENGTH	DEPTH	CONTR FURN BORROW EXCAVATION	CHANNEL PROTECT AREA W x L	EROSION CTRL BLANKET TYPE 2	TYPE 3	DRAINAGE FABRIC TYPE B	GABION	EXISTING ***	REMOVE	NEW Bk-Bk
					FT					FT		IN	FT	EA	FT	FT	FT	FT	Δ		EA	EA	EA	EA	CU YD	FT	FT	IN	YD^3	FT	YD^2	YD^2	YD^2	YD^3	EA	EA	EA
US 18				NH 0018(237)348 PCN 08GN																																	
S39	8815	354.50	797+99	1 - 42 DIA	80	RCP	95	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
S40	8814	354.34	789+21	1 - 36 DIA	80	RCP	78	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
S41	8813	354.15	779+43	1 - 54 DIA	80	RCP	208	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
S42	8812	353.85	764+78	1 - 42 DIA	78	RCP ARCH	118	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
S43	8811	353.49	745+61	1 - 42 DIA	78	RCP ARCH	56	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
S44	8810	353.33	737+34	1 - 42 DIA	70	RCP	5	E	E	75	No Work								SL																1B		
									W	75	No Work								SL																1B		
S45	8809	352.86	712+88	1 - 42 DIA	78	RCP ARCH	57	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
S46	8808	352.84	711+66	1 - 48 DIA	78	RCP ARCH	75	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
S47	8807	351.85	659+75	1 - 48 DIA	78	RCP ARCH	201	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
S48	8806	351.83	658+48	1 - 48 DIA	78	RCP ARCH	97	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
S49	8805	351.51	641+88	1 - 48 DIA	80	RCP	309	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
S50	7961	350.87	608+04	1 - 60 DIA	78	RCP ARCH	495	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
S51	7960	350.26	575+90	1 - 36 DIA	80	RCP	112	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
S52	7959	349.90	556+78	1 - 36 DIA	78	RCP ARCH	270	E	E	75	No Work								FE																1B		
									W	75	No Work								FE																1B		
NH 0018(237)348 PCN 08GN - TOTALS THIS SHEET														-	-	-	-	-			-	-	-	-	-				-		-	-	-	-		-	-
NH 0281(125)35 PCN 06PE - TOTALS														12	236	6	6	236			4	14	14	4	52				39		94	101	68	21		26	42
NH 0018(237)348 PCN 08GN - TOTALS														-	-	-	-	-			-	-	-	-	-				-		-	-	-	-		-	-
OVERALL TOTALS														12	236	6	6	236			4	14	14	4	52				39		94	101	68	21		26	42

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 EDGELINE. *** - B = BACK-TO-BACK S = SINGLE Φ - (N)orth = LT, (S)outh = RT, (E)ast = LT, (W)est = RT

Rev. SM 3/4/2025

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.

SURFACING/SUBGRADE INVESTIGATION

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

SURFACING THICKNESS DIMENSIONS

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

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

FLEXIBLE PAVEMENT SMOOTHNESS SPECIAL PROVISION

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

TYPE III FIELD LABORATORY

The lab will be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection will be provided with a multi-port wireless router. The internet connection will be a minimum speed of 5 Mbps unless limited by job location and approved by the DOT. Prior to installing the wireless router, the Contractor will submit the wireless router's technical data to the Area Office to check for compatibility with the State's computer equipment. The internet connection is intended for State personnel usage only. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer.

Reimbursement will not be made for fees associated with the purchase, installation, maintenance, monthly line charges, and incidentals involved with the internet connection (including attachments). These items 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:

1. The portable storage container will be constructed of steel.
2. 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.

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

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

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

INTERSECTING ROADS AND ENTRANCES

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

SHOULDER WORK

Prior to construction, Department of Transportation maintenance forces will spray the shoulders to kill existing vegetation. It is the Contractor's responsibility to notify the State a minimum of 30 days prior to starting work on the surface of the highway. The State assumes no responsibility for the effectiveness of the herbicide applied.

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

Cost for shoulder work including removal and replacement of topsoil will be incidental to the contract unit prices for the various items. Separate measurement and payment will not be made.

CONTRACTOR FURNISHED BORROW EXCAVATION

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

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

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

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

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

SHOULDER PREPARATION

Prior to placement of asphalt concrete on the shoulders, the upper 4" of existing granular shoulder material will be scarified, reworked, shaped, watered, and compacted to obtain a uniform and stable surface according to Section 260.3 D. The cross slope and inslope requirements will meet what is shown in the typical sections. The final shaping of the granular material on the shoulder must be completed after the Cold Milling Asphalt Concrete operation. Cost for this work will be incidental to the contract unit price per mile for "Shoulder Preparation".

Included in the Estimate of Quantities are 22.5 MGals per mile of Water for Granular Material for shaping and recompaction of Sections 1 and 2.

UNCLASSIFIED EXCAVATION, DIGOUTS

The locations and extent of digout areas will be determined in the field by the Engineer. The backfilling material for the digouts will be Asphalt Concrete Composite and Base Course. The depth of asphalt will match the in-place thickness.

Included in the Estimate of Quantities are 50 cubic yards of Unclassified Excavation, Digouts and 75 square yards of Remove Asphalt Concrete Pavement per mile for the removal of asphalt and unstable material throughout the project.

Included in the Estimate of Quantities are 100 tons of Base Course and 25 tons of Asphalt Concrete Composite per mile for backfill of Unclassified Excavation, Digouts.

The digouts will be extended through the shoulder and backfilled with granular material that will daylight to the inslope to allow water to escape the subsurface.

BLOTTING SAND FOR PRIME

Included in the Estimate of Quantities are 5 tons of Blotting Sand for Prime to be used where necessary for maintenance of traffic as directed by the Engineer. (Rate = 10 pounds per square yard)

BASE COURSE

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

WATER FOR COMPACTION

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

COLD MILLING ASPHALT CONCRETE

The Los Angeles Abrasion Loss value on the aggregate used for the in-place asphalt concrete was 20. This value was obtained from testing during construction of the in-place asphalt concrete.

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

Cold milling asphalt is estimated to produce 19,287 tons of cold milled asphalt concrete material. An estimated 11,416 tons of cold milled asphalt concrete material will be used on this project as RAP in the Class Q3R Hot Mixed Asphalt Concrete mixture. The Contractor is responsible to assure enough asphalt concrete salvage is available for the Class Q3R Hot Mixed Asphalt Concrete.

The remainder of the salvaged asphalt concrete material will be stockpiled according to the Haul and Stockpile Asphalt Mix Material plan note.

RAP achieved for project use and/or other uses is based on the dimensions given in the typical section(s). Field conditions will vary from that given in the typical section(s). Therefore, the Contractor may be required to adjust the mill depth, as necessary, to provide the quantity of RAP specified by the plans, if approved by the Engineer.

COLD MILLING TAPERS

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

The surface will be milled full roadway width.

Cost for this work will be incidental to the contract unit price per square yard for Cold Milling Asphalt Concrete.

GRANULAR MATERIAL, FURNISH

Granular material will be furnished by the Contractor for use in blending with the salvaged asphalt mix material from this project.

The granular material will be Base Course meeting the requirements of Section 882.

BLEND AND STOCKPILE GRANULAR MATERIAL

Excess salvaged asphalt concrete material estimated at 7,871 tons (for informational purposes only) will be blended with 7,871 tons of Granular Material, Furnish and stockpiled in the north west quarter of Section 31, Township 98 North, Range 63 West of the 5th P.M, Charles Mix County, South Dakota on the west side of US281 south of 284th Street. The Contractor will have approval from the Engineer of the stockpile location prior to stockpiling the material within the aforementioned site.

The Contractor will use a portable platform scale, stationary commercial scale, stationary commercial plant, portable plant scale, or a belt scale to control the blending and weighing of the salvage material with Contractor furnished granular material.

Excess Salvaged asphalt mix material and salvaged granular material will be blended with Granular Material, Furnish at a rate of 50% salvaged asphalt mix material and 50% Granular Material, Furnish to obtain stockpile material. Material will be uniformly blended to the satisfaction of the Engineer.

No further gradation testing of the blended material will be required.

All costs for crushing the salvaged asphalt mix material, stockpiling, and blending the materials will be incidental to the contract unit price per ton for “Blend and Stockpile Granular Material”.

HAUL AND STOCKPILE ASPHALT MIX MATERIAL

Excess salvaged asphalt concrete material estimated at 7,871 tons (for informational purposes only) will be hauled and stockpiled in the northwest quarter of Section 31, Township 98 North, Range 63 West of the 5th P.M, Charles Mix County, South Dakota on the west side of US281 south of 284th Street. The Contractor will have approval from the Engineer of the stockpile location prior to stockpiling the material within the aforementioned site.

A computerized scale, portable platform scale, stationary commercial scale, stationary commercial plant, portable plant scale, or a belt scale along with a scale operator will be provided by the Contractor at the stockpile site to weigh the salvaged material prior to stockpiling.

The salvaged asphalt concrete material will be crushed to meet the requirements of Section 884.2 D.2 prior to stockpiling.

No further gradation testing of the material will be required.

All other costs for crushing, hauling, and stockpiling the remaining salvaged material will be incidental to the contract unit price per ton for “Haul and Stockpile Asphalt Mix Material”.

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 CONCRETE BLADE LAID

Included in the Estimate of Surfacing Quantities are 150 tons of Asphalt Concrete Blade Laid, 1.5 tons of Hydrated Lime, and 11.1 tons of PG 58-34 Asphalt Binder per mile and will be tight bladed on the existing surface 24 feet wide prior to the overlay of Sections 1, 2, 4, 5, 7, 8 and 9. Included in the Estimate of Surfacing Quantities are 300 tons of Asphalt Concrete Blade Laid, 3 tons of Hydrated Lime, and 22.2 tons of PG 58-34 Asphalt Binder per mile and will be tight bladed on the existing surface 48 feet wide prior to the overlay of Section 3. Gaps at centerline will not be permitted.

Mineral Aggregate for tight bladed material will use only the fine aggregate components combined in the same proportions as the Class Q3R Hot Mixed Asphalt Concrete mix. Mineral Aggregate for tight bladed material will meet the gradation requirements of the Job Mix Formula. Fine Aggregate Angularity and Sand Equivalent requirements will be the same as the Class Q3R Hot Mixed Asphalt Concrete mix. Quality testing is not required on the coarse aggregate (+No. 4 sieve) in this mixture.

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 121.1 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)

Rev. SM 3/4/2025

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.

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.

ADDITIONAL QUANTITIES

Included in the Estimate of Quantities are 100 tons of Class Q3R Hot Mixed Asphalt Concrete, 4.7 tons of PG 58-34 Asphalt Binder and 1 ton of Hydrated Lime per mile for spot leveling, strengthening and repair of the existing surface throughout the project.

Included in the Estimate of Quantities are 5 tons of SS-1h or CSS-1h Emulsified Asphalt for Tack for surface repair and leveling areas throughout the project. (Rate = 0.09 gallon per square yard).

FLUSH SEAL

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

GRIND RUMBLE STRIPS IN ASPHALT CONCRETE

Asphalt concrete rumble strips will be constructed on the shoulders. Rumble strips will be paid for at the contract unit price per mile for Grind 12” Rumble Strip or Stripe in Asphalt Concrete. It is estimated that 24.4 miles of asphalt concrete rumble strips will be required for PCN 06PE and 14.1 miles for PCN 08GN.

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 12” rumble strips at a width of 18” and a rate of 0.05 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.

CULVERT CLEANOUT

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

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

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 in order to prevent discharges from project boundaries.

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

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

DITCH RESTORATION

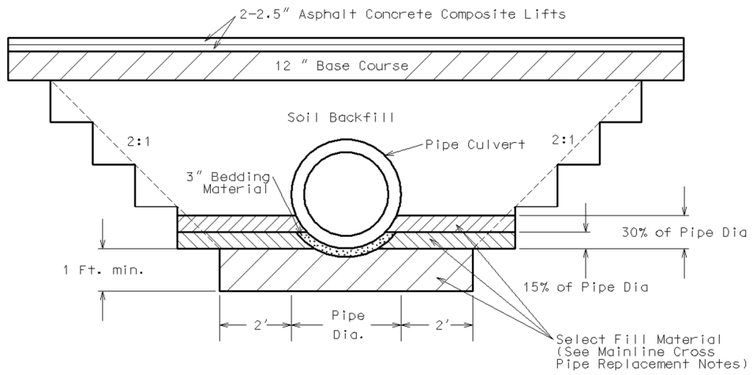
The ditches will be excavated for approximately 50 feet in each direction (or as directed by the Engineer) from the new/reset pipe ends to obtain proper water flow through the pipe. The excavated material may be used as fill material for culvert work, etc. as approved by the Engineer.

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

MAINLINE CROSS PIPE REPLACEMENT

Pipe culvert at Sta. 204+72 and Sta. 226+24 will be installed in accordance with the following notes and as shown on the Pipe Installation Detail below.

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



Pipe Installation Detail

MAINLINE CROSS PIPE REPLACEMENT (CONT.)

After the existing pipe has been removed, the new pipe culvert will be undercut to a minimum depth of 1 foot. 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 1 foot in depth.

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.

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.

TIE BOLTS FOR RCP/RCP ARCH CULVERTS

Tie bolts will conform to Standard Plate 450.18.

Tie Bolts will be installed at the inlet and outlet on the first three sections of new/reset culvert and on new/reset culvert ends (requires connection from existing culvert to new culvert / new end section).

For informational purposes:

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

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

The Contractor will place culvert and end sections such that the installation does not cause existing culvert sections to separate at any of the existing joints. Any joint separation caused by the Contractor's operations will result in removal, resetting and re-tie bolting of said culvert sections at the Contractor's expense.

TABLE OF BANK AND CHANNEL PROTECTION GABIONS AND DRAINAGE FABRIC

Station	L/R	Bank and Channel Protection Gabion (CuYd)	Type B Drainage Fabric (SqYd)
345+37	L	6	19
345+37	R	6	19
362+13	L	4.5	15
362+13	R	4.5	15
	Totals:	21	68

EROSION CONTROL BLANKET

Erosion control blanket will be installed 20 feet wide at the locations noted in the Table for Mainline Culvert Work and at locations determined by the Engineer during construction.

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

http://apps.sd.gov/HC60ApprovedProducts/main.aspx

INSLOPE TRANSITIONS

Inslope transitions will be required at various drainage structures and culvert locations. Refer to Standard Plate 120.05 for details.

EMBANKMENT ADJACENT TO CULVERTS

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

Cost for removing, replacing and compacting the earth embankment will be incidental to the contract unit prices for the various culvert.

TYPE 2 OBJECT MARKERS

The Contractor is required to remove Object Markers prior to the work and install new Type 2 Object markers after the work for all the pipe ends, as detailed in the plans. Cost for Type 2 Object Marker and post removal will be incidental to the contract unit price per each for Remove Delineator.

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

RESETTING AND REFURBISH SINGLE MAILBOXES

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

Station		Class Q3R Hot Mixed Asphalt Concrete (Tons)	Refurbish Single Mailbox (Each)
PCN 06PE			
023+74	L	2	1
110+99	R	0	1
281+00	L	0	1
296+79	R	0	1
322+81	L	0	1
343+80	L	0	1
352+94	R	0	1
354+58	L	0	1
396+10	L	0	1
402+71	L	0	1
403+96	L	0	1
406+31	R	0	1
410+13	R	0	1
410+46	L	0	1
410+87	R	0	1
414+91	R	0	1
425+87	R	2.7	1
437+35	R	0	1
455+25	R	0	1
475+30	R	2.7	1
549+80	L	2.7	1
980+42	R	0	1
883+02	R	0	1
869+81	R	0	1
831+77	R	0	1
756+91	R	0	1
848+40	R	0	1
790+99	R	0	1
896+23	L	0	1
PCN 08GN			
717+47	L	0	1
696+04	R	0	1
661+41	R	0	1
670+94	R	0	1
576+50	L	0	1
545+14	R	0	1
524+91	R	0	1
TOTALS:		**10.1**	**36**

RESETTING AND REFURBISH SINGLE MAILBOXES (CONT.)

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

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

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

EROSION CONTROL

Type G Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk, Chief, Nebraska 54	3
Big Bluestem	Bison, Bonilla, Champ, Sunnyview, Rountree, Bonanza	3
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
	Total:	26

The areas to be seeded and mulched are estimated at 2 acres.

Cost for material, labor and equipment necessary for seeding and mulching will be incidental to the contract lump sum price for Erosion Control.

If the Contractor uses a no-till drill, mulch may be applied prior to seeding and the mulch can then be punched into the soil by the no-till drill. If the Contractor uses this process, the no-till drill seeding will be completed immediately following the mulch application and the mulch will be punched into the soil at a 3-inch depth.

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:

http://apps.sd.gov/HC60ApprovedProducts/main.aspx

WATER SHUTOFF CAPS

Approximately 9 water shutoff caps are in place within the curb and gutter section in the City of Armour Water shutoff caps will be adjusted, as necessary, by the City.

The Contractor will be required to contact the City of Armour one week prior to the start of work in this area.

CHECKING SPREAD RATES

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

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

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

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

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

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

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

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work.

GENERAL TRAFFIC CONTROL

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

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

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

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

All construction operations will be conducted in the general direction of traffic movement.

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

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

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

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

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

At no time will a vertical drop-off of greater than 3 inches be left overnight adjacent to the traveled way. The Contractor will utilize 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.

GENERAL TRAFFIC CONTROL (CONTINUED)

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.

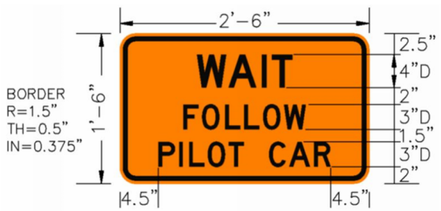
The Contractor will notify businesses/homeowners a minimum of two weeks prior to construction to inform them of upcoming construction and again a minimum of 48 hours prior to any blocked access to make appropriate arrangements.

A mobile work operation will be allowed provided the 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 4.4 miles.

It is estimated that 25 DO NOT PASS (R4-1) and 22 PASS WITH CARE (R4-2) signs will be required to mark the no passing zones, should the Contractor elect to use these signs.

Temporary flexible vertical markers (tabs) will be used to mark dashed centerline, No Passing Zones, and applicable lane lines. Paint will not be allowed for temporary pavement marking on the asphalt concrete wear course or after application of the flush seal.

Temporary pavement marking paint will not be allowed on the final lift of asphalt surfacing. Temporary pavement marking paint will not be allowed on the chip seal, fog seal, or flush seal. Temporary flexible vertical markers (tabs) must be used on the final lift of asphalt surfacing. The Contractor may use tabs with covers, uncovering them for the chip seal, fog seal, or flush seal. As an alternative, the Contractor may install new tabs for the fog seal or flush seal.

Covers on the tabs will be sufficiently secured to prevent traffic from dislodging the cover and when removed, the covers will be properly disposed of. The Contractor will remove and properly dispose of the tabs after permanent pavement marking is applied. Method of removal will be nondestructive to the road surface and will be accomplished within one week of completion of the permanent pavement marking.

Full reflectivity of all temporary flexible vertical markers (tabs) is required at all times. The Contractor will be required to replace any missing or non-reflective tabs after each installation as detailed below at no additional cost to the State.

Quantities of Temporary Pavement Markings consist of:

- One pass on top of milled surface
- One pass on the first lift of asphalt concrete
- One pass on top of the final lift of asphalt concrete

If the Engineer determines that an additional pass prior to the flush seal is not required, this application of the temporary pavement marking will be eliminated. 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.

Prior to nightfall, tabs will be required to mark centerline on segments of roadway where existing centerline markings have been removed and new markings have not been installed.

PAVEMENT MARKING PAINT

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

Marking 12-inch gore lines will require the use of 3 spray nozzles to achieve the required width.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

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

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Solid 4" line = 22.5 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 2 days and within 30 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.

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/m^2/lux for white and 170 mc/m^2/lux for yellow.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS - PCN 06PE

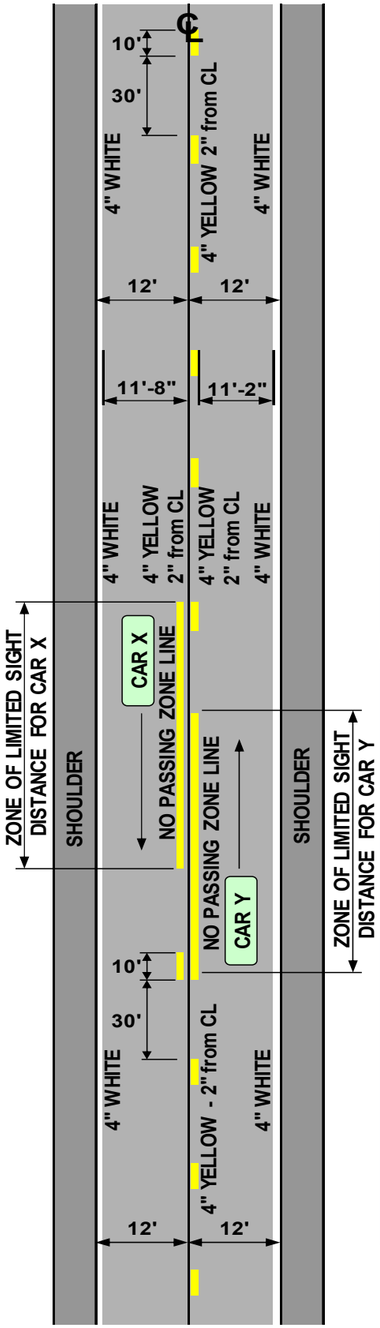
SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	2	48" x 48"	16.0	32.0
W8-1	BUMP	12	48" x 48"	16.0	192.0
W8-6	TRUCK CROSSING	3	48" x 48"	16.0	48.0
W8-15	GROOVED PAVEMENT	3	48" x 48"	16.0	48.0
W8-15P	MOTORCYCLE (plaque)	3	24" x 18"	3.0	9.0
W20-1	ROAD WORK AHEAD	3	48" x 48"	16.0	48.0
W20-4	ONE LANE ROAD AHEAD	3	48" x 48"	16.0	48.0
W20-7	FLAGGER (symbol)	3	48" x 48"	16.0	48.0
SPECIAL	WAIT FOLLOW PILOT CAR	6	30" x 18"	3.8	22.8
G20-1	ROAD WORK NEXT 20 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 17 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 13 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 3 MILES	1	36" x 18"	4.5	4.5
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			522.8

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS - PCN 08GN

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	2	48" x 48"	16.0	32.0
W8-1	BUMP	8	48" x 48"	16.0	128.0
W8-6	TRUCK CROSSING	4	48" x 48"	16.0	64.0
W8-15	GROOVED PAVEMENT	4	48" x 48"	16.0	64.0
W8-15P	MOTORCYCLE (plaque)	4	24" x 18"	3.0	12.0
W20-1	ROAD WORK 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)	4	48" x 48"	16.0	64.0
SPECIAL	WAIT FOLLOW PILOT CAR	6	30" x 18"	3.8	22.8
G20-1	ROAD WORK NEXT 20 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 7 MILES	1	36" x 18"	4.5	4.5
G20-2	END ROAD WORK	3	36" x 18"	4.5	13.5
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			537.3

PAVEMENT MARKING - PCN 06PE

TWO LANE ROADWAY



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 striper 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	**621 GALLONS**
YELLOW	**197 GALLONS**

Included in the above quantities are:

Additional White (1 Application)			Additional Yellow (1 Application)			
Description		Gallons	Description			Gallons
4" Lines	100'	1	Transitions	2 Ea	1521'	8
8" Lines	-	-	4" Skip Lines		2640'	15
12" Gore Lines	608'	10	8" Lines		-	-
Crosswalks -	-	-	12" Lines		-	-
24" Stop Lines	52'	3	24" Hatches		-	-
24" Hatches	-	-	Solid Areas		-	-
Solid Areas	-	-	Additional Yellow:			23
Arrows						
Left Arrows	30 Ea	19				
Right Arrows	-	-				
Straight Arrows	-	-				
Combo Arrows	-	-				
Lane Drop Arrows	-	-				
Messages						
STOP	-	-				
STOP AHEAD	-	-				
R X R w/ Stop Lines	-	-				
SCHOOL X-ING	-	-				
Additional White:		33				

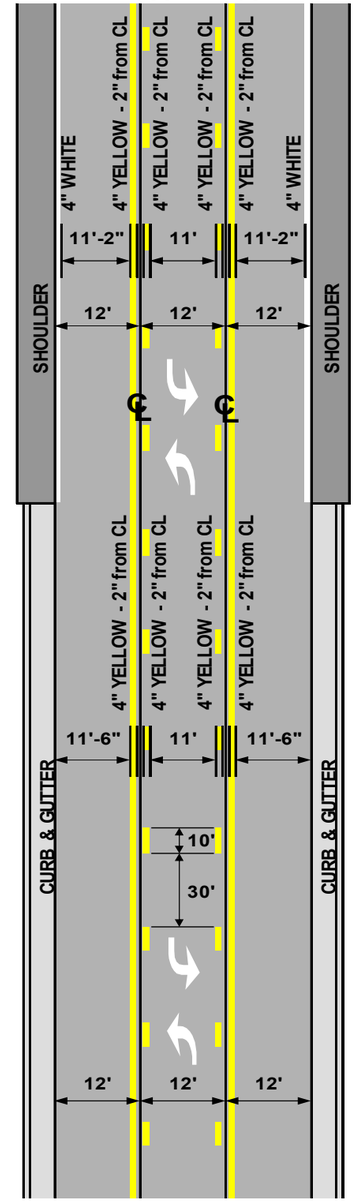
Additional Quantities

Rates of Coverage:	SqFt/Gal
4", 8" & 12" Lines -	60
24" Lines & Hatches -	40
Arrows, Messages and Solid Areas -	25

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

PAVEMENT MARKING - PCN 06PE

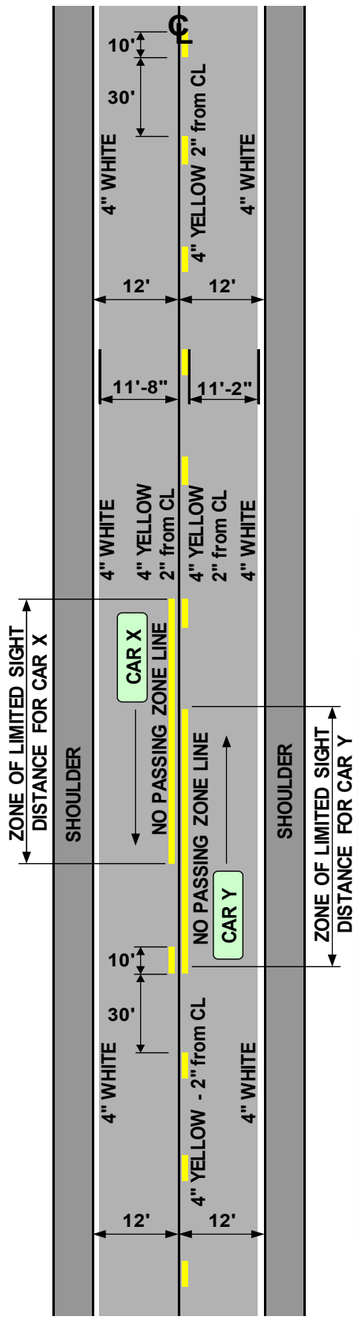
TWO LANE ROADWAY WITH CENTER TURN LANE THROUGH ARMOUR



Left Arrows, in sets of two, spaced 8' arrow tip to arrow tip, (when two are required) will be positioned in the center turn lane at 300' spacing, at a frequency of one set of arrows per block or at existing arrow locations.

PAVEMENT MARKING - PCN 08GN

TWO LANE ROADWAY



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 striper 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	**318 GALLONS**
YELLOW	**98 GALLONS**

Included in the above quantities are:

Additional White (1 Application)		
Description		Gallons
4" Lines	80'	-
8" Lines	-	-
12" Gore Lines	-	-
Crosswalks -	-	-
24" Stop Lines	-	-
24" Hatches	-	-
Solid Areas	-	-
Arrows		
Left Arrows	2 Ea	1
Right Arrows	-	-
Straight Arrows	-	-
Combo Arrows	-	-
Lane Drop Arrows	-	-
Messages		
STOP	-	-
STOP AHEAD	-	-
R X R w/ Stop Lines	-	-
SCHOOL X-ING	-	-
Additional White:		1

Additional Yellow (1 Application)			
Description			Gallons
Transitions	1 Ea	1014'	6
4" Skip Lines		-	-
8" Lines		-	-
12" Lines		-	-
24" Hatches		260'	13
Solid Areas		125sf	5
Additional Yellow:			24

Additional Quantities

Rates of Coverage:	SqFt/Gal
4", 8" & 12" Lines -	60
24" Lines & Hatches -	40
Arrows, Messages and Solid Areas -	25

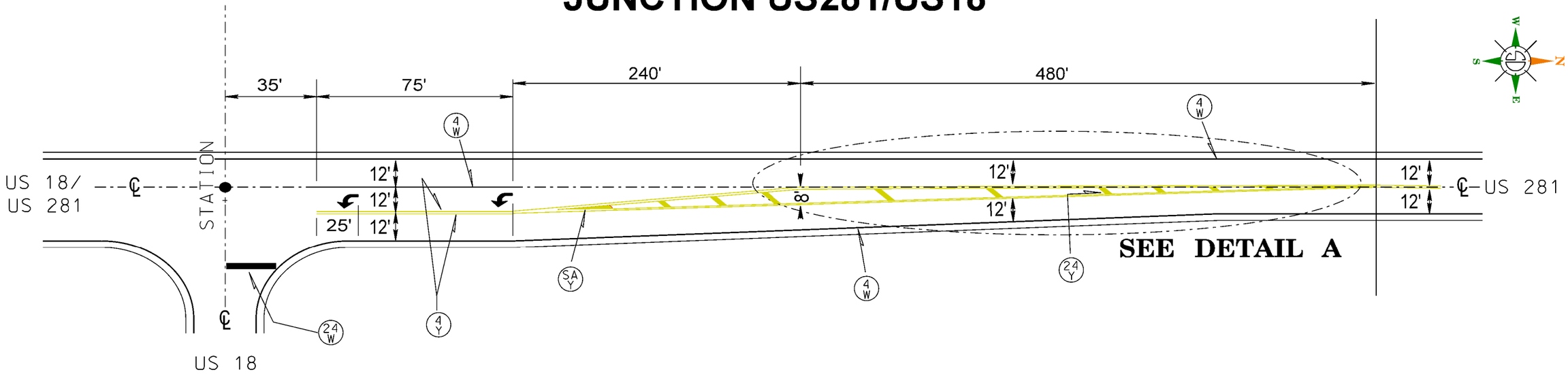
All pavement marking dimensions are based on 12' driving lanes.

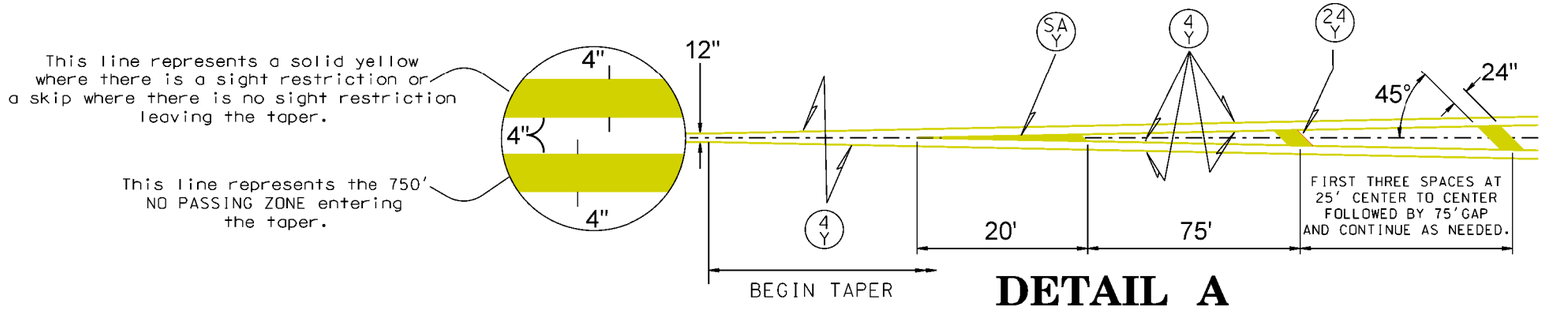
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	37	72

Plotting Date: 02/10/2025

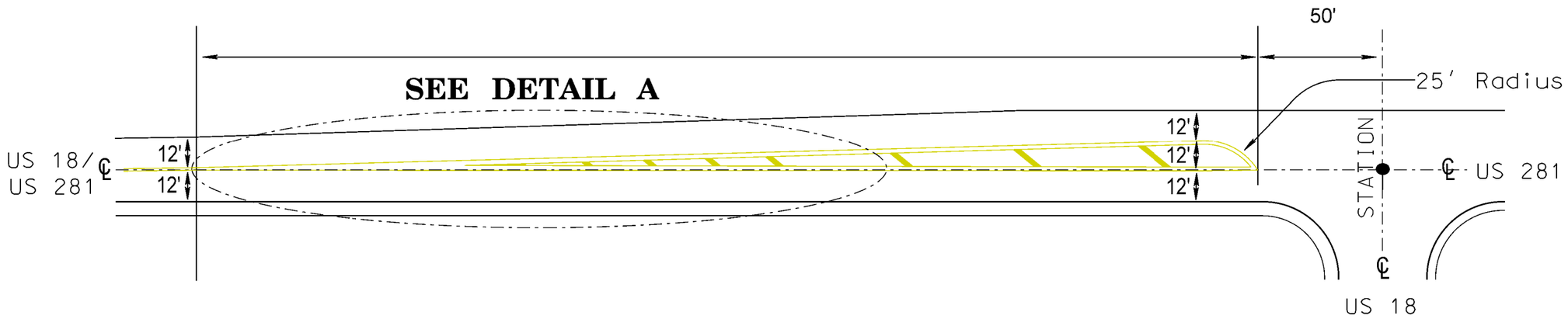
PERMANENT PAVEMENT MARKING

JUNCTION US281/US18





DETAIL A



KEY:

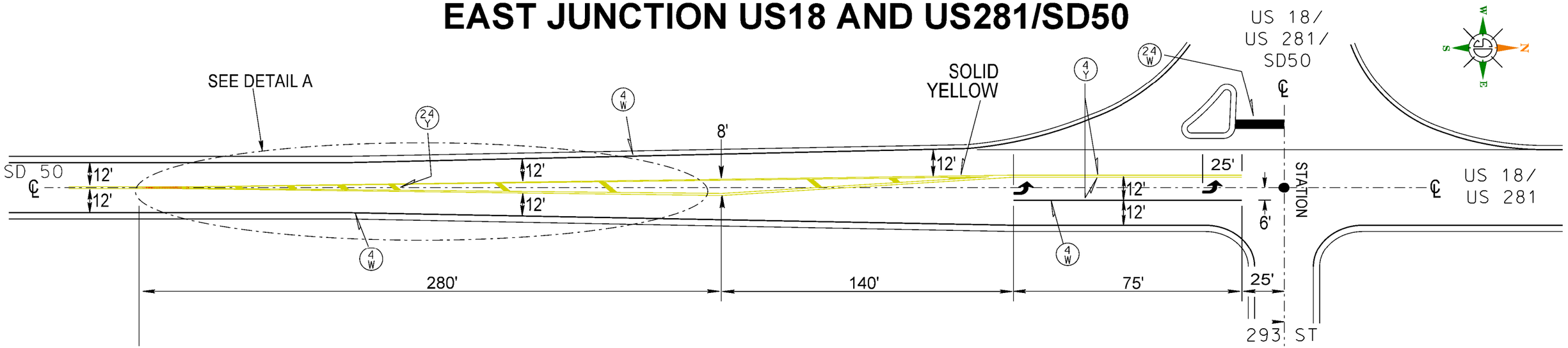
- (4 W) -4" White Pavement Marking
- (4 Y) -4" Yellow Pavement Marking
- (24 W) -24" White Pavement Marking
- (24 Y) -24" Yellow Pavement Marking
- -Pavement Marking Arrow

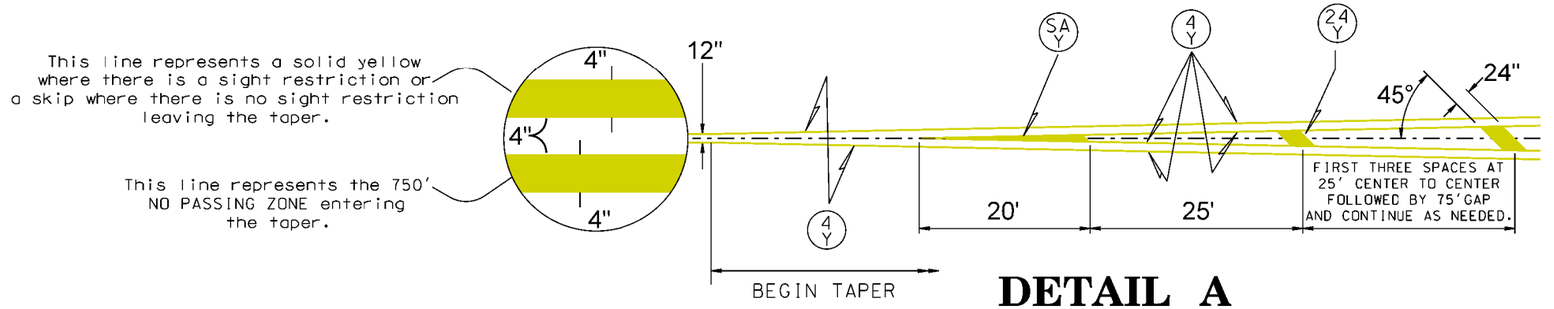
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	38	72

Plotting Date: 02/10/2025

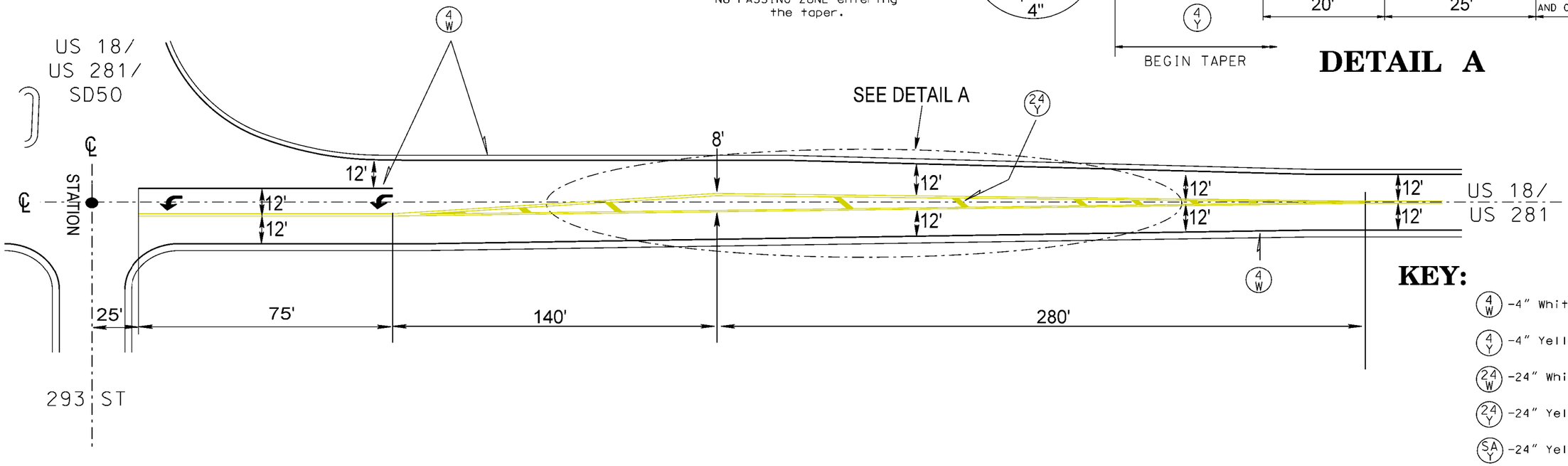
PERMANENT PAVEMENT MARKING

EAST JUNCTION US18 AND US281/SD50





DETAIL A



KEY:

- (4 W) -4" White Pavement Marking
- (4 Y) -4" Yellow Pavement Marking
- (24 W) -24" White Pavement Marking
- (24 Y) -24" Yellow Pavement Marking
- (SA Y) -24" Yellow Solid Area
- -Pavement Marking Arrow

PLOT SCALE - 1:46.5882

PLOTTED FROM - TRM111119

PLOT NAME - 1

FILE - ...\MARK\01B0 TRAFFIC DONS.DGN

TRAFFIC CONTROL

FIXED LOCATION SIGNS
(GROUND MOUNTED SUPPORTS)

A

ROAD WORK
NEXT 20 MILES

B

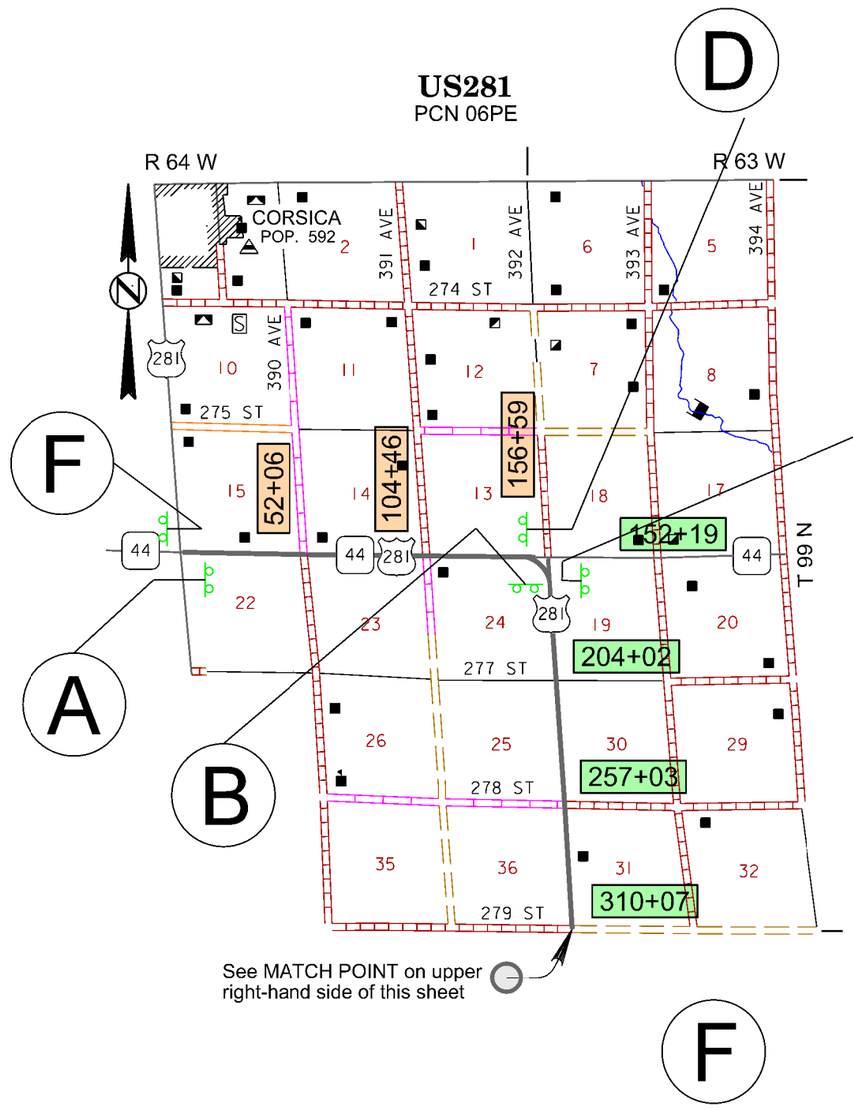
ROAD WORK
NEXT 17 MILES

C

ROAD WORK
NEXT 13 MILES

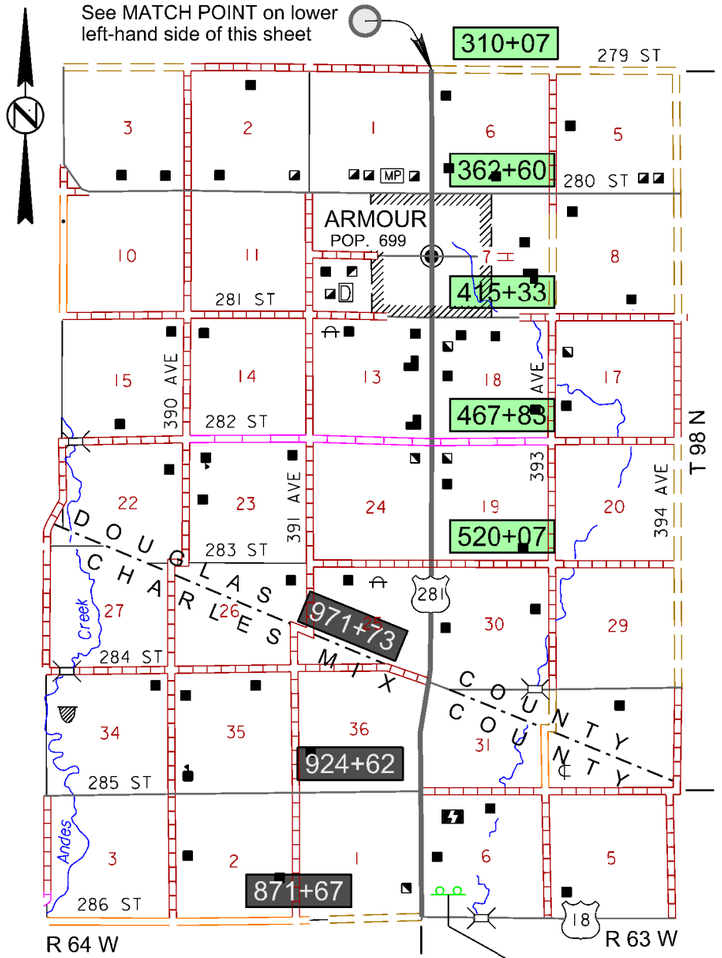
D

ROAD WORK
NEXT 3 MILES



F

END
ROAD WORK



TRAFFIC CONTROL

FIXED LOCATION SIGNS
(GROUND MOUNTED SUPPORTS)

A

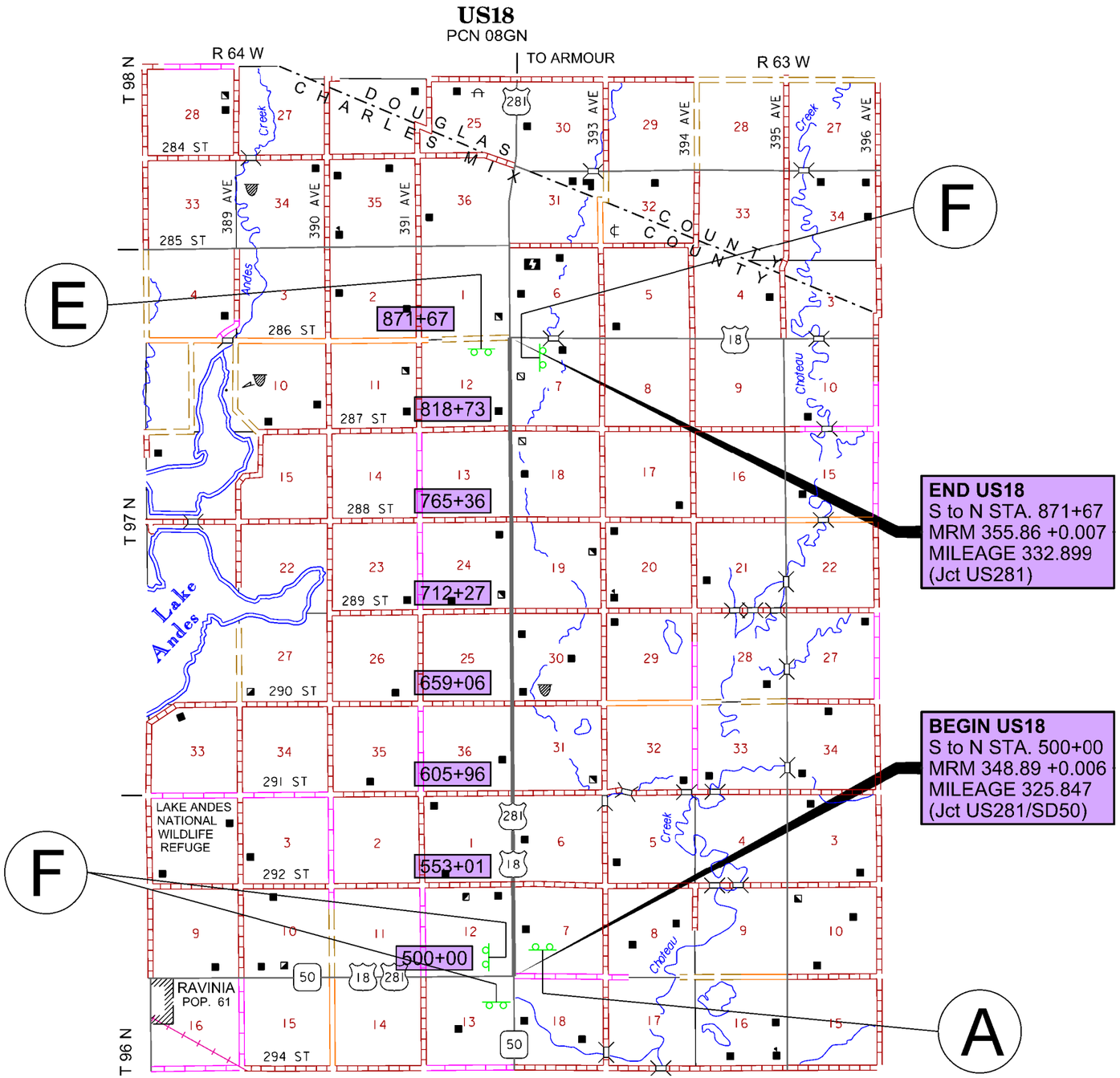
ROAD WORK
NEXT 20 MILES

E

ROAD WORK
NEXT 7 MILES

F

END
ROAD WORK



See previous Sheet for US281

* 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.

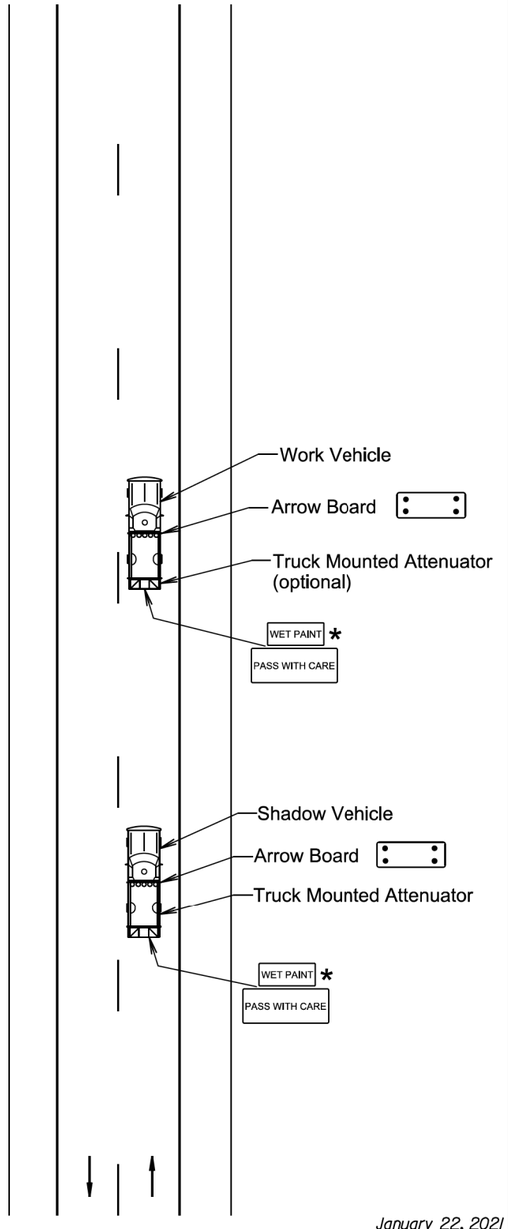
Shadow and Work vehicles will display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow boards.

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: 2025	SDDOT	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.

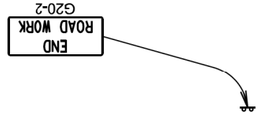
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

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.

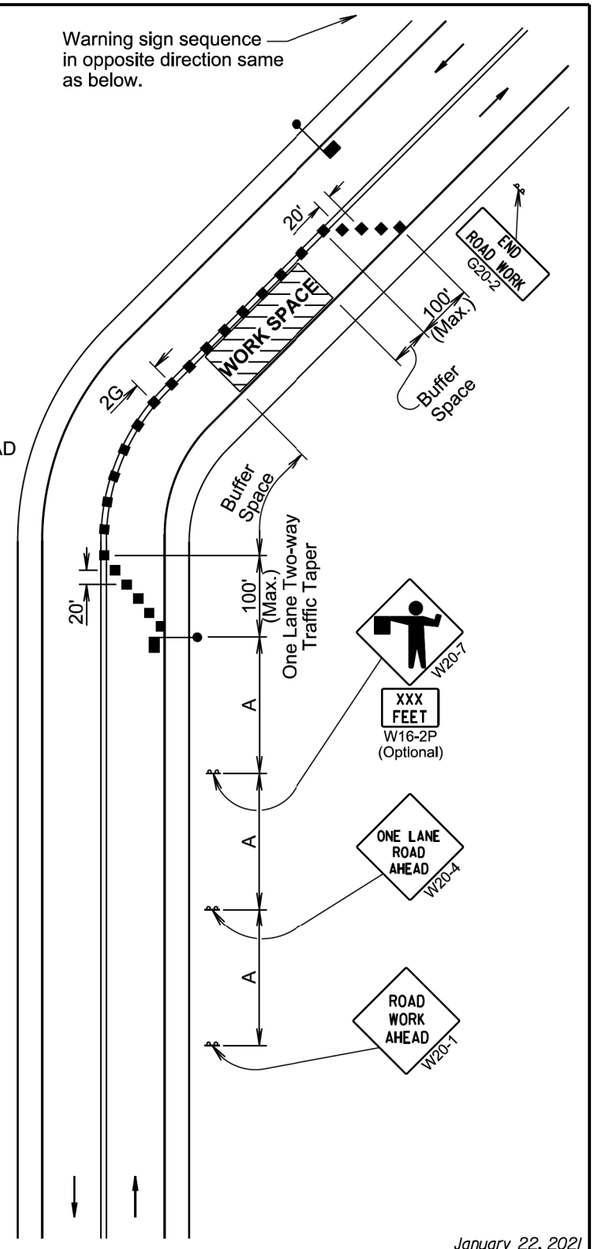
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



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

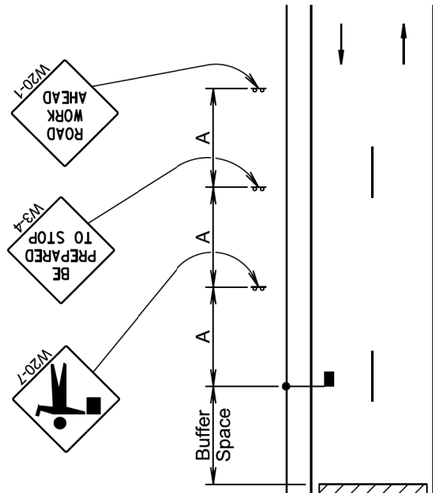
The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

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



January 22, 2021

Published Date: 2025	SDDOT	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
			Sheet 1 of 1



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

Flagger

END ROAD WORK
G20-2
(Optional)

Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645

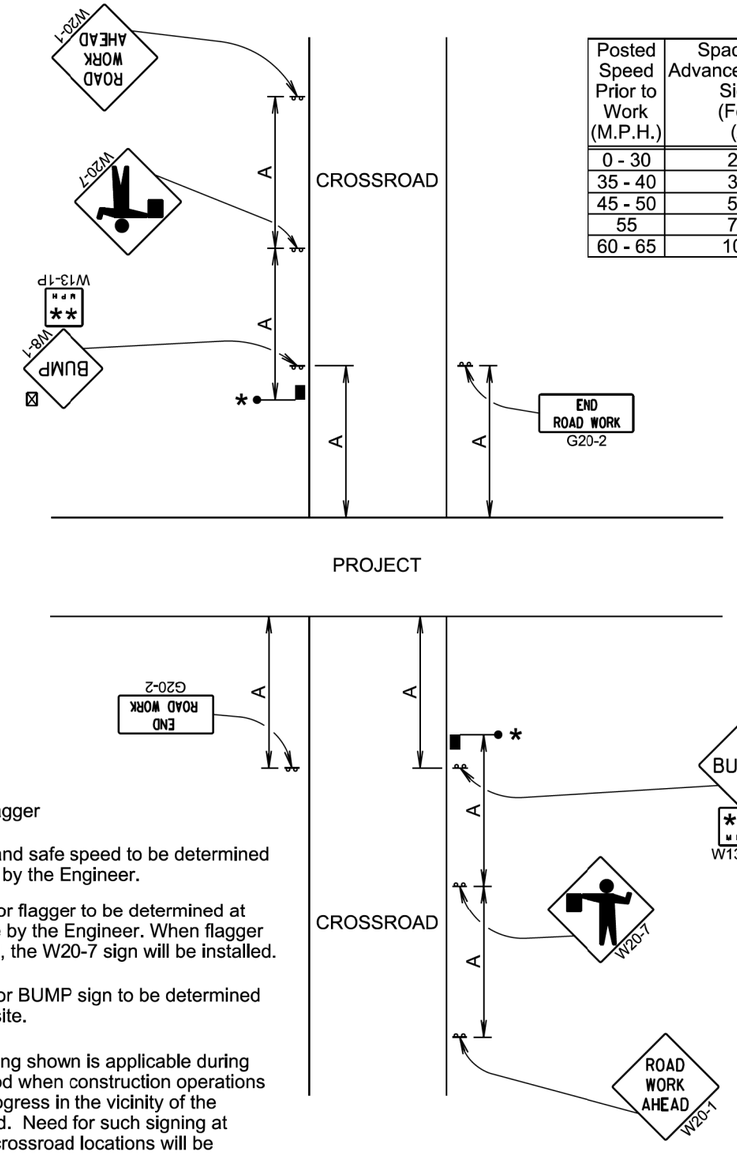
Buffer space dependent on work site limitations.

Conditions represented are for work that requires closings during daytime hours only.

This application is intended for a planned temporary closing not to exceed 15 to 20 minutes.

January 22, 2021

Published Date: 2025	SDDOT	TEMPORARY ROAD WORK	PLATE NUMBER 634.30
			Sheet 1 of 1



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

Flagger

** Need and safe speed to be determined on site by the Engineer.

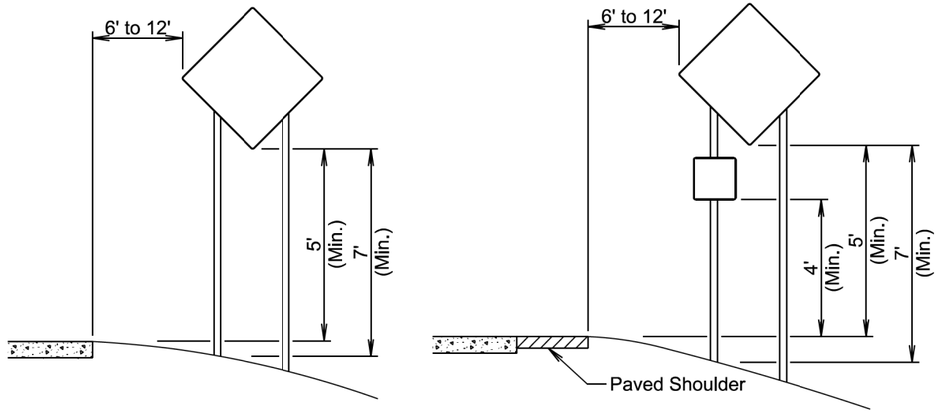
* Need for flagger to be determined at the site by the Engineer. When flagger is used, the W20-7 sign will be installed.

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

The signing shown is applicable during that period when construction operations are in progress in the vicinity of the crossroad. Need for such signing at specific crossroad locations will be determined at the site by the Engineer.

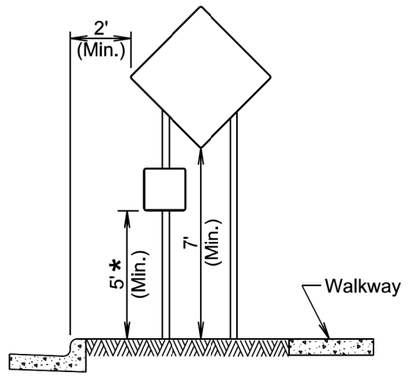
January 22, 2021

Published Date: 2025	SDDOT	PROJECT OPEN TO TRAFFIC FROM CROSSROAD	PLATE NUMBER 634.38
			Sheet 1 of 1

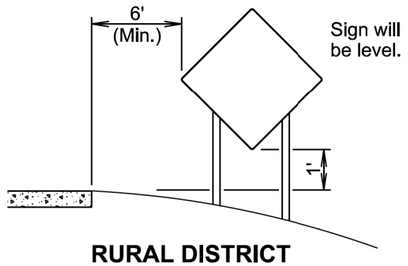


RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

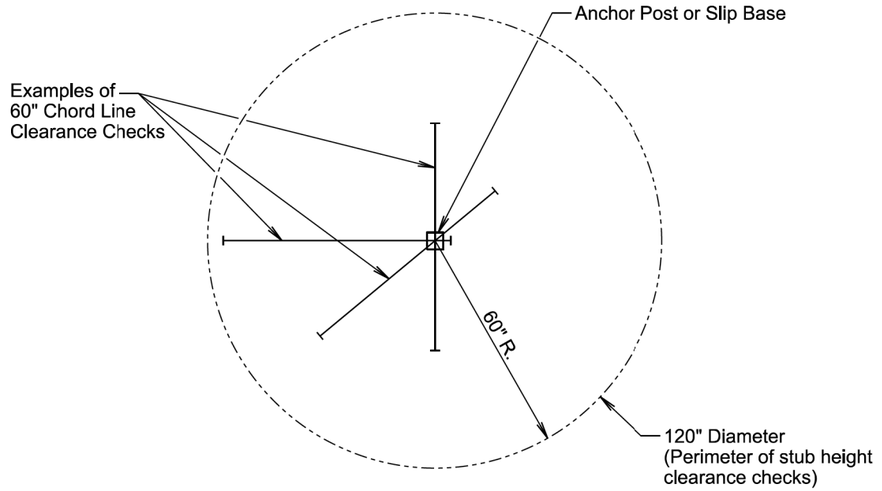


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

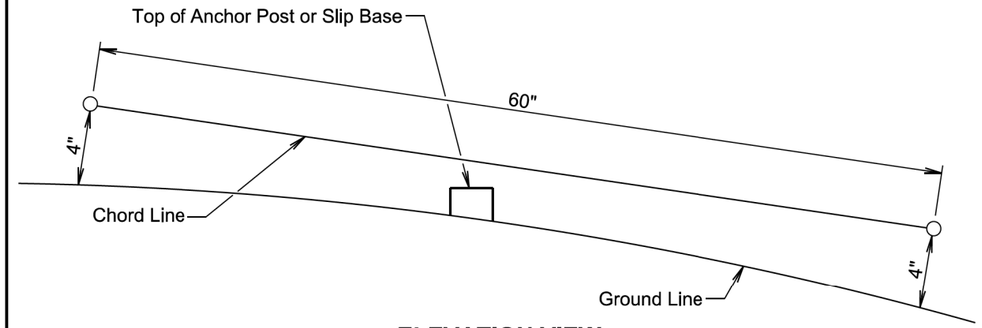
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2025	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases 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.

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

January 22, 2021

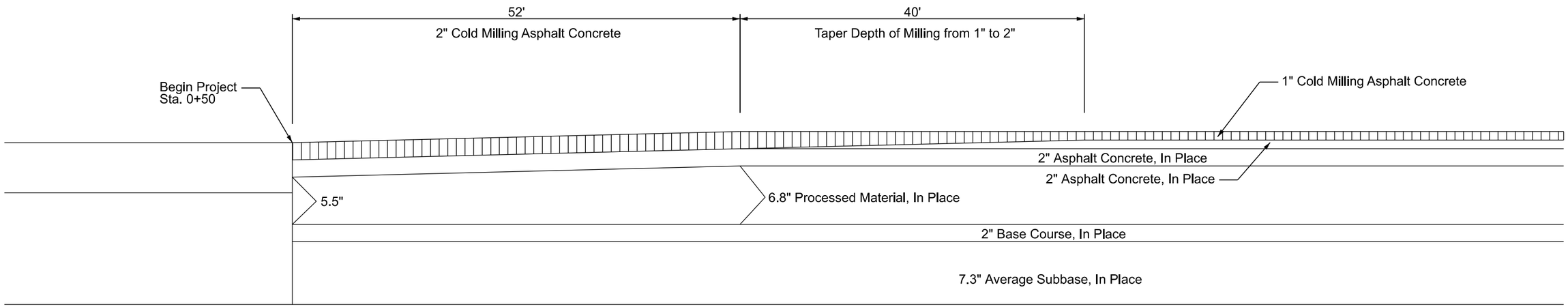
Published Date: 2025	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	44	72

Plotting Date: 3/3/2025

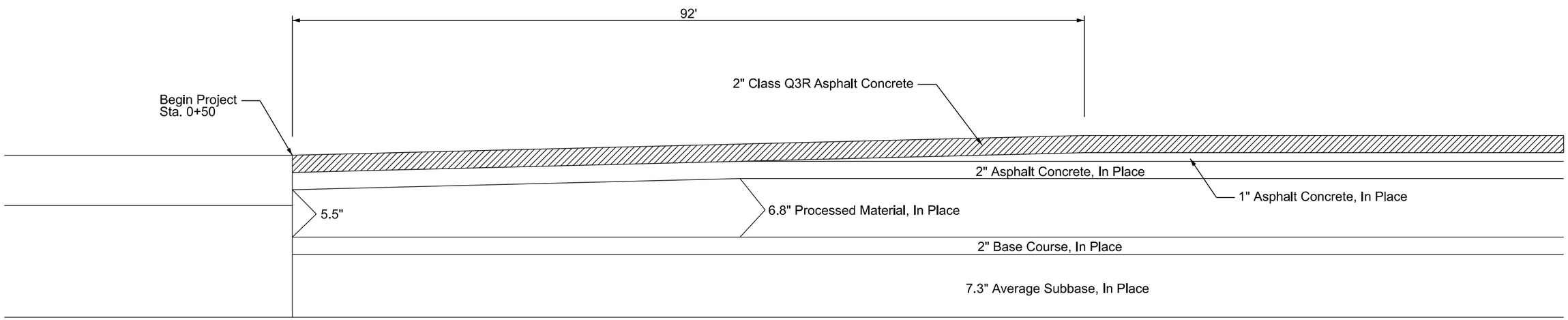
DETAIL FOR COLD MILLING TAPER

AT BEGIN PROJECT
Sta. 0+50



DETAIL FOR RESURFACING TAPER

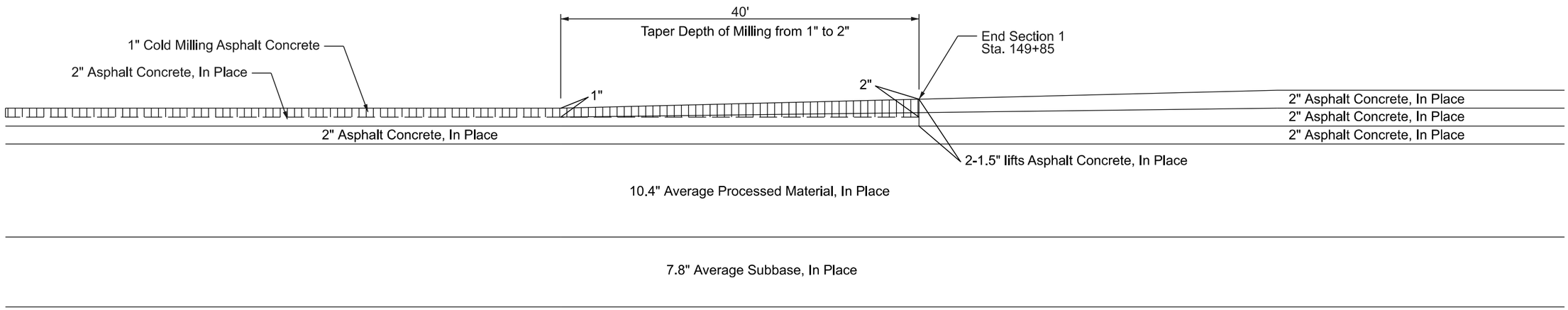
AT BEGIN PROJECT
Sta. 0+50



SD DOT	PROJECT	SHEET	TOTAL SHEETS
Plotting Date: 3/3/2025	NH 0281(125)40 NH 0018(237)348	45	72

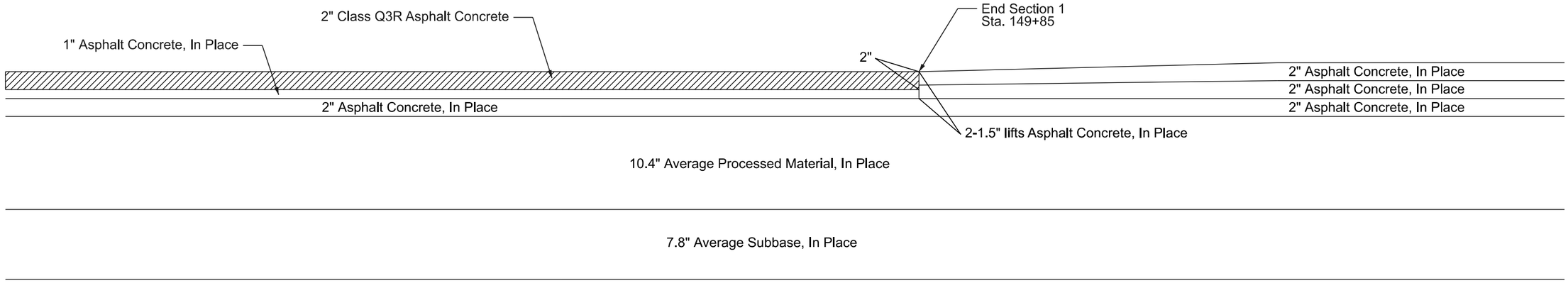
DETAIL FOR COLD MILLING TAPER

AT END SECTION 1
Sta. 148+83



DETAIL FOR RESURFACING TAPER

AT END SECTION 1
Sta. 148+83

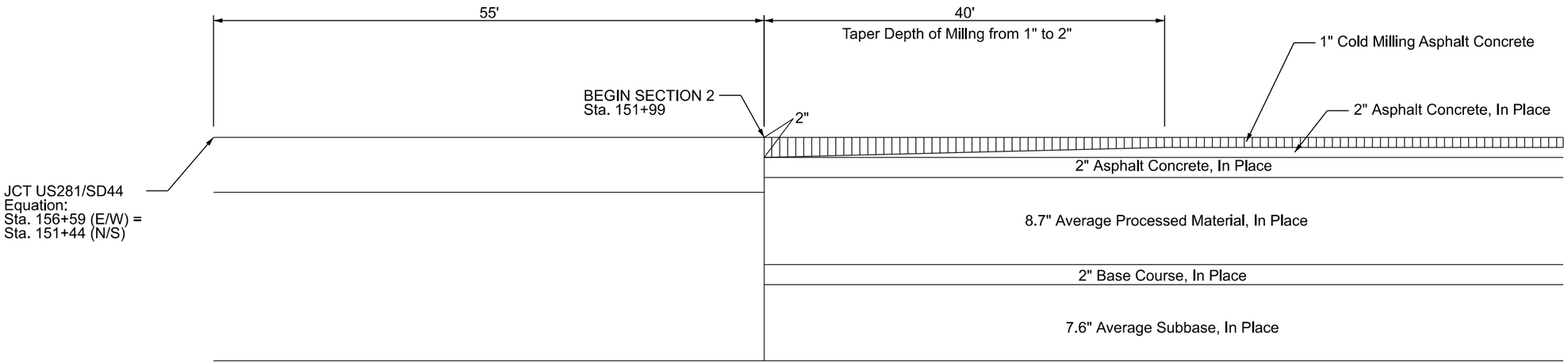


SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	46	72

Plotting Date: 3/3/2025

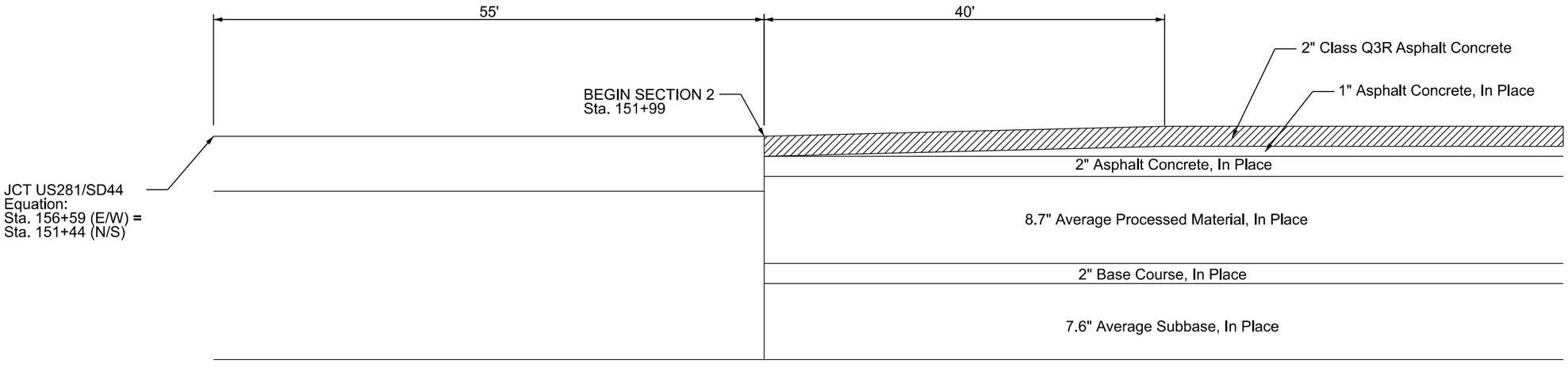
DETAIL FOR COLD MILLING TAPER

AT BEGIN SECTION 2
Sta. 151+99



DETAIL FOR RESURFACING TAPER

AT BEGIN SECTION 2
Sta. 151+99

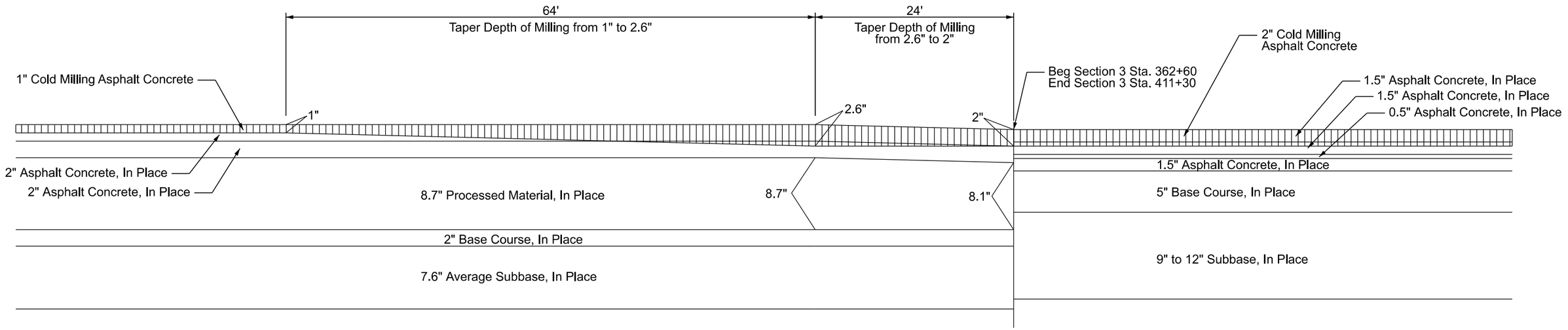


SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	47	72

Plotting Date: 3/3/2025

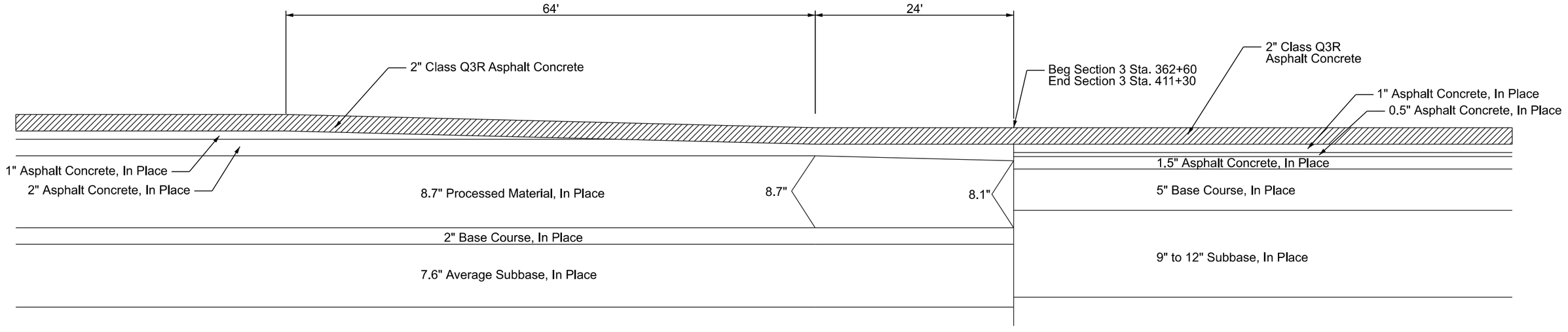
DETAIL FOR COLD MILLING TAPER

AT BEGIN & END SECTION 3
Sta. 362+60 & Sta. 411+30



DETAIL FOR RESURFACING TAPER

AT BEGIN & END SECTION 3
Sta. 362+60 & Sta. 411+30

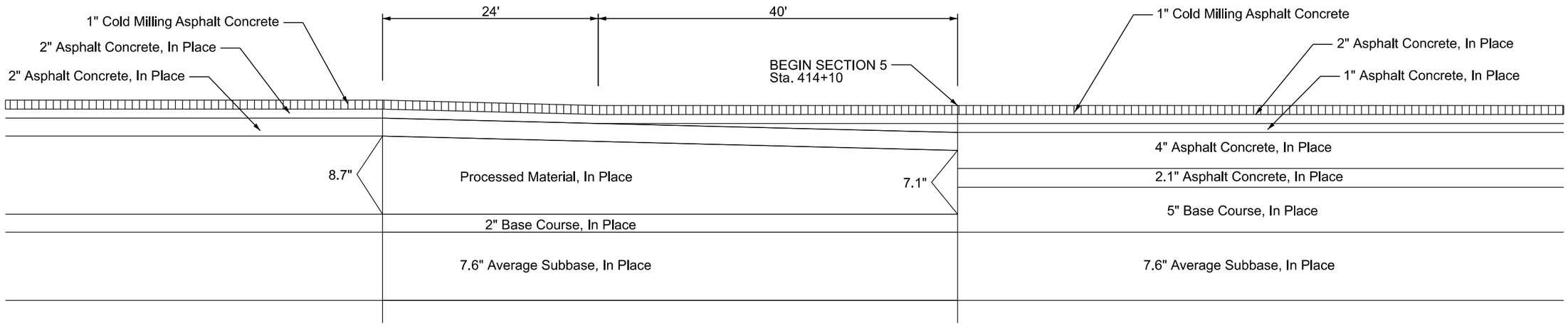


SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	48	72

Plotting Date: 3/3/2025

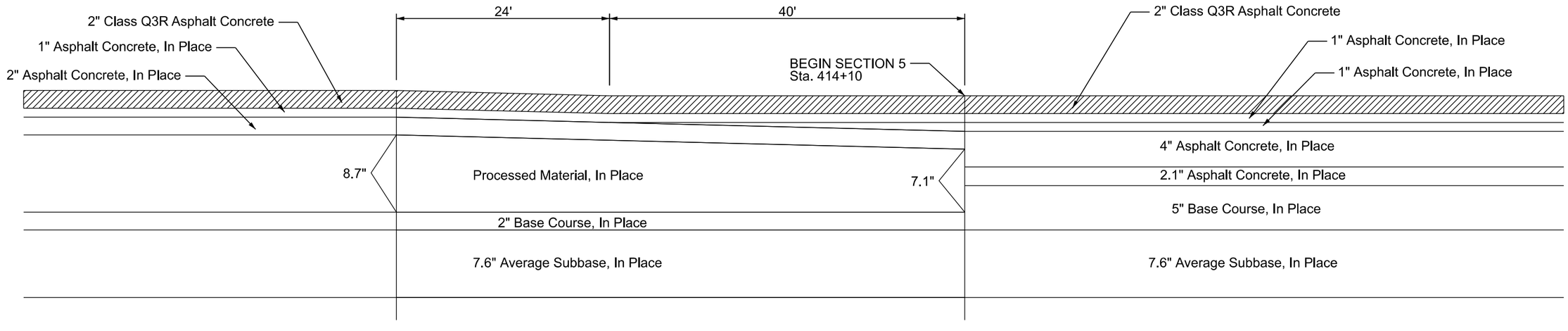
DETAIL FOR COLD MILLING TAPER

AT BEGIN SECTION 5
Sta. 414+10



DETAIL FOR RESURFACING TAPER

AT BEGIN SECTION 5
Sta. 414+10

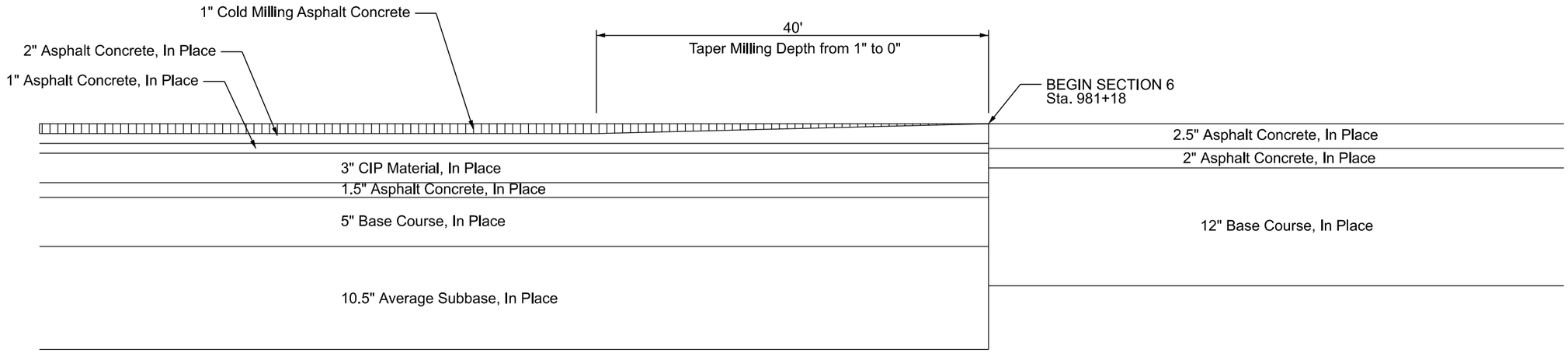


SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	49	72

Plotting Date: 3/3/2025

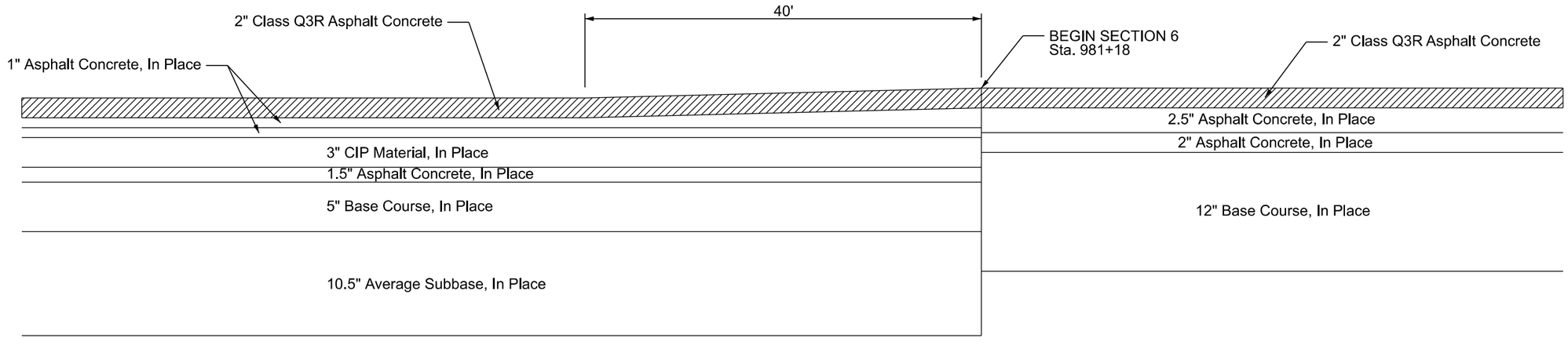
DETAIL FOR COLD MILLING TAPER

AT BEGIN SECTION 6
Sta. 981+18



DETAIL FOR RESURFACING TAPER

AT BEGIN SECTION 6
Sta. 981+18

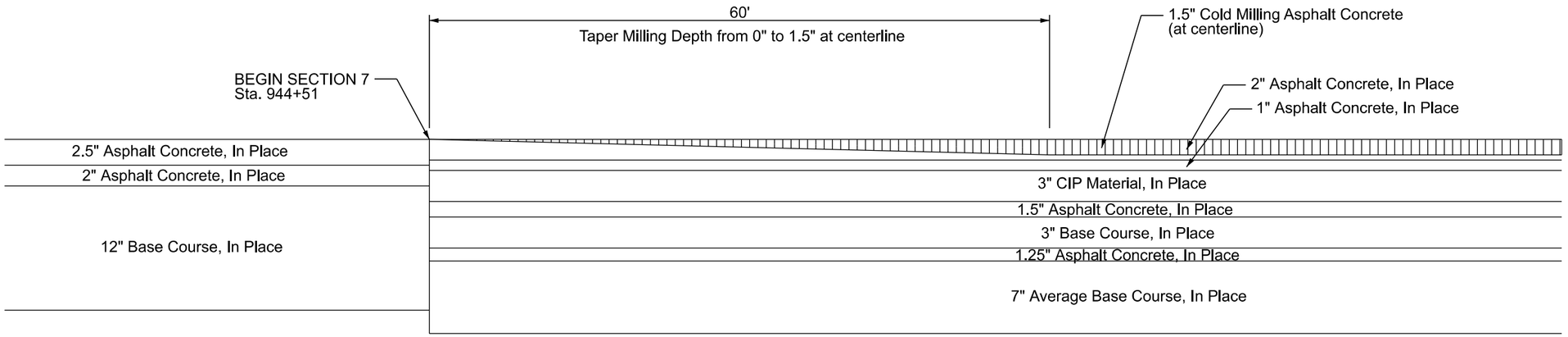


SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	50	72

Plotting Date: 3/3/2025

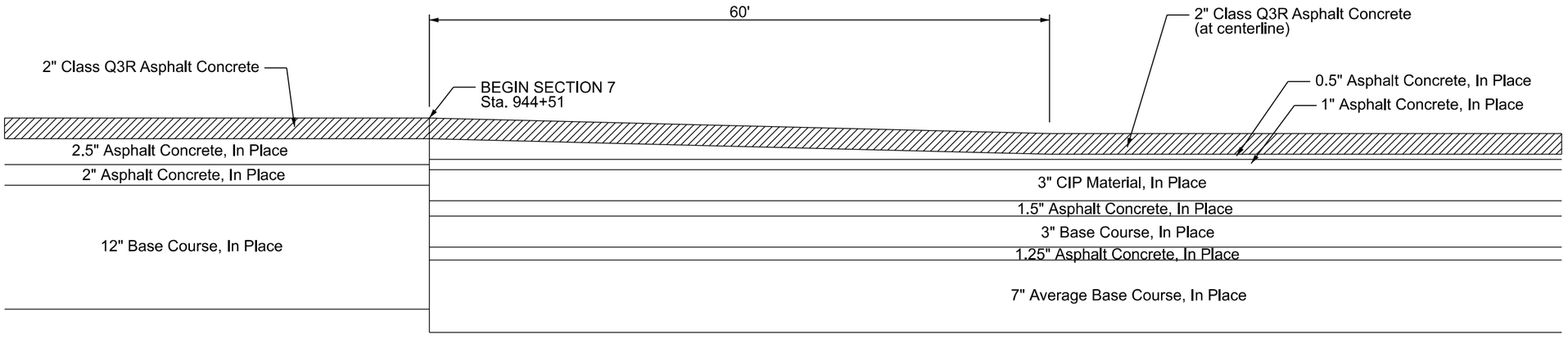
DETAIL FOR COLD MILLING TAPER

AT BEGIN SECTION 7
Sta. 944+51



DETAIL FOR RESURFACING TAPER

AT BEGIN SECTION 7
Sta. 944+51

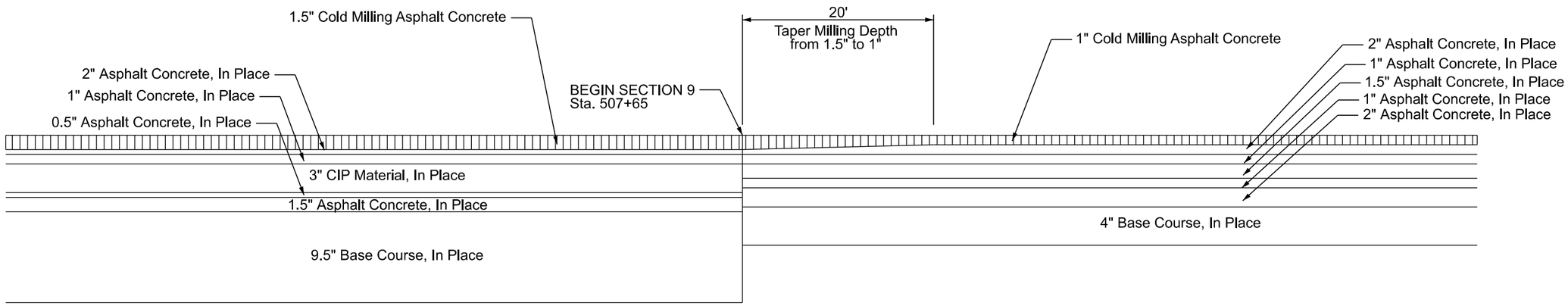


SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	51	72

Plotting Date: 3/3/2025

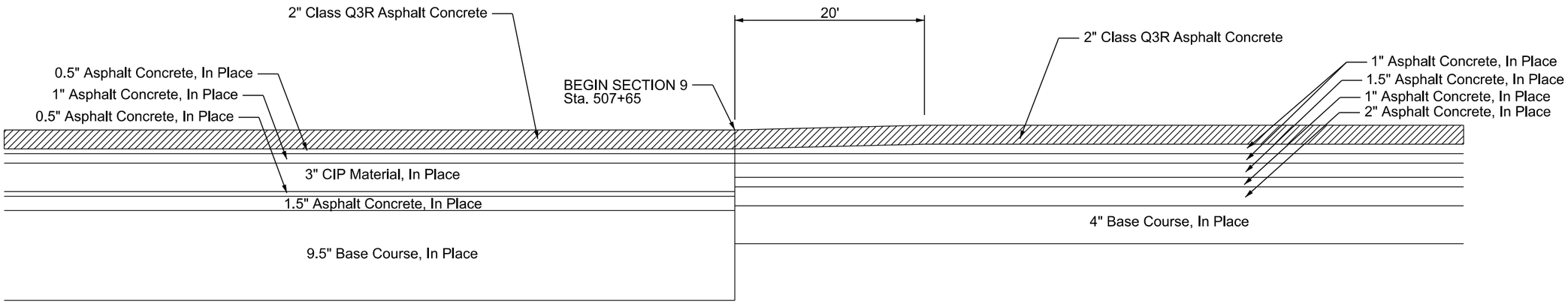
DETAIL FOR COLD MILLING TAPER

AT BEGIN SECTION 9
Sta. 507+65



DETAIL FOR RESURFACING TAPER

AT BEGIN SECTION 9
Sta. 507+65

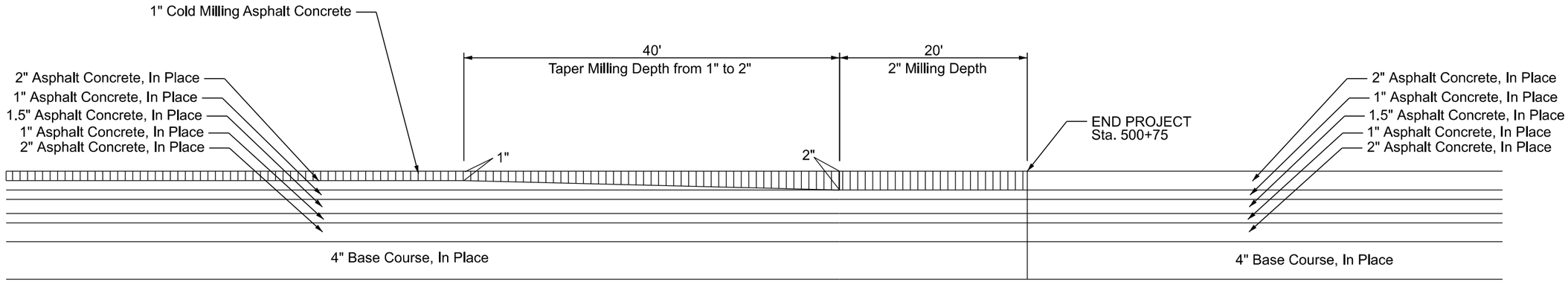


SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	52	72

Plotting Date: 3/3/2025

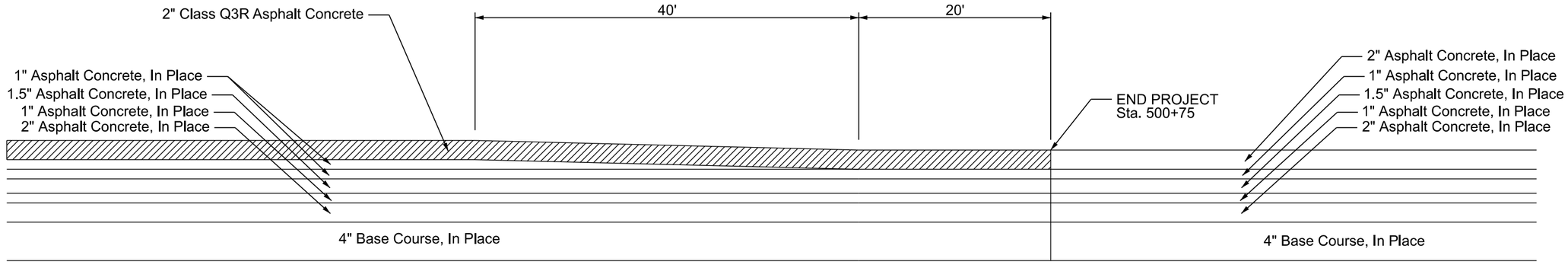
DETAIL FOR COLD MILLING TAPER

AT END SECTION 9
Sta. 500+75



DETAIL FOR RESURFACING TAPER

AT END SECTION 9
Sta. 500+75



SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	53	72

Plotting Date: 3/3/2025

CULVERT WORK
US 281

0+90
Retain 18"-70' RCP

0+90
Cleanout Pipe

1+10
Retain 24"-64' RCP

1+10
Remove 2 Pipe End Sections for Reset

1+10
Reset 2 Pipe End Sections

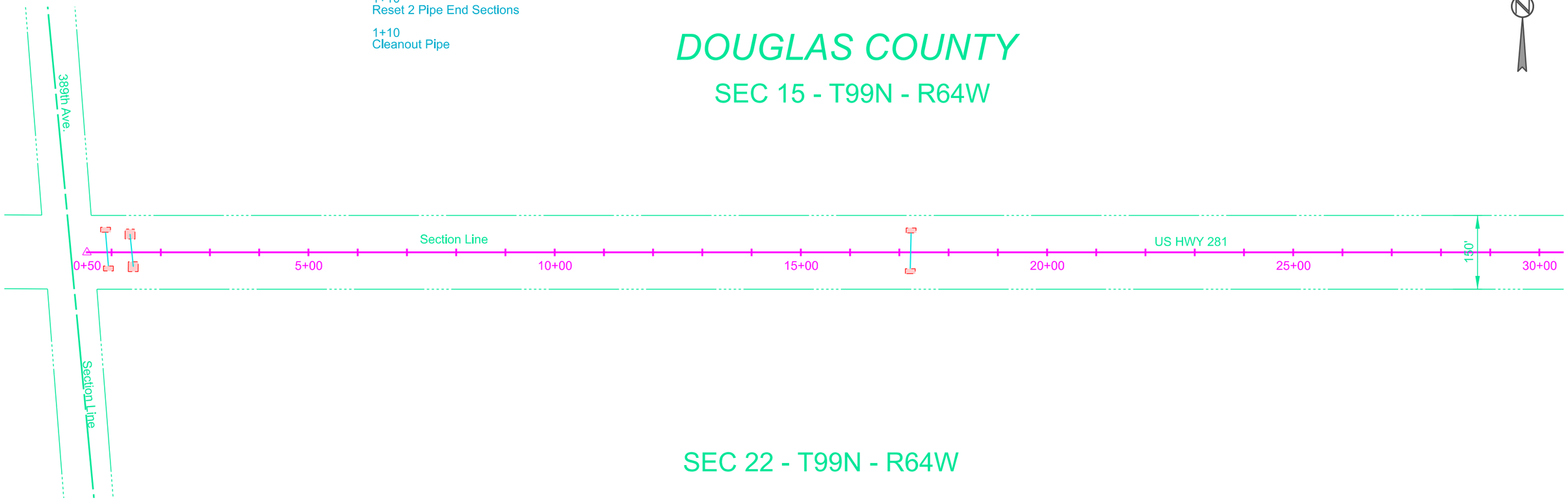
1+10
Cleanout Pipe

17+00
Retain 36"-62' RCP Arch

17+00
Cleanout Pipe

DOUGLAS COUNTY

SEC 15 - T99N - R64W



SEC 22 - T99N - R64W

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	54	72

Plotting Date: 3/3/2025

Rev. SM 3/4/2025

CULVERT WORK
US 281

69+93
Retain 36"-64' RCP

69+93
Remove 2 Pipe End Sections for Reset

69+93
Reset 2 Pipe End Sections

69+93
Cleanout Pipe

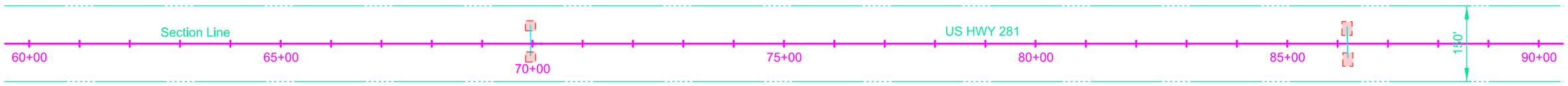
86+02
Retain 18"-60' RCP

86+02
Remove 2 Pipe End Sections & 6' RCP for Reset

86+02
Reset 2 Pipe End Sections Reset 6' RCP

DOUGLAS COUNTY

SEC 14 - T99N - R64W



SEC 23 - T99N - R64W

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	55	72

Plotting Date: 3/3/2025

CULVERT WORK
US 281

96+56
Retain 24"-72' RCP

96+56
Remove 2 Pipe End Sections for Reset

96+56
Reset 2 Pipe End Sections

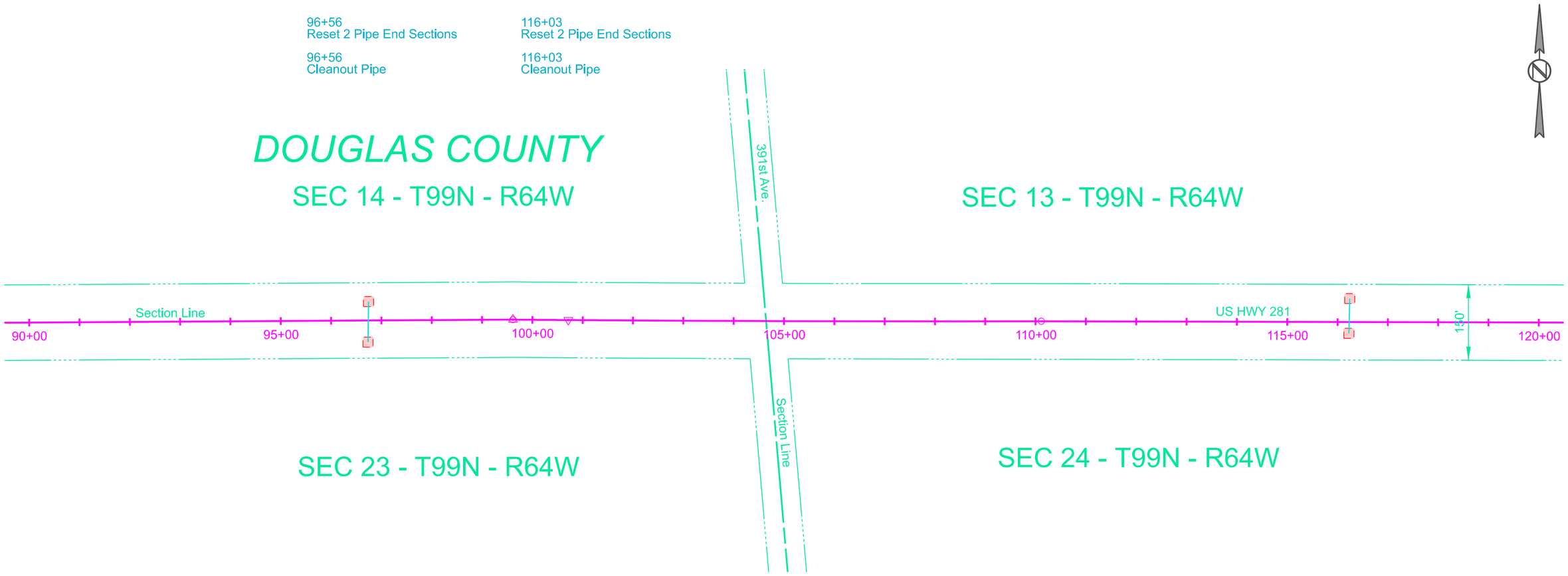
96+56
Cleanout Pipe

116+03
Retain 36"-62' RCP

116+03
Remove 2 Pipe End Sections for Reset

116+03
Reset 2 Pipe End Sections

116+03
Cleanout Pipe



SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	56	72

Plotting Date: 3/3/2025

CULVERT WORK
US 281

128+96
Retain 24"-78' RCP

128+96
Remove 2 Pipe End Sections for Reset

128+96
Reset 2 Pipe End Sections

128+96
Cleanout Pipe

147+00
Retain 30"-222' RCP

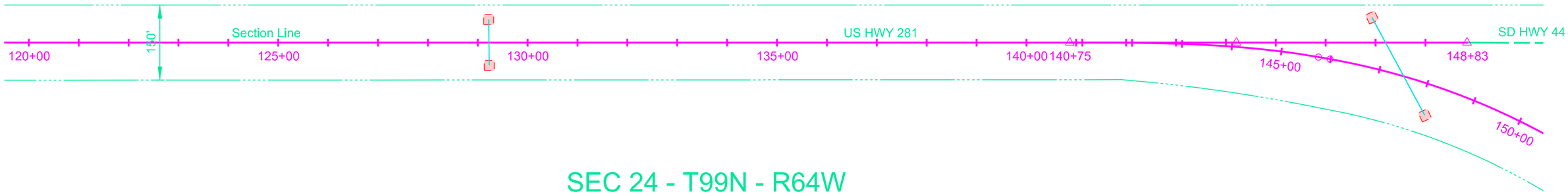
147+00
Remove 2 Pipe End Sections for Reset

147+00
Reset 2 Pipe End Sections

147+00
Cleanout Pipe

DOUGLAS COUNTY

SEC 13 - T99N - R64W

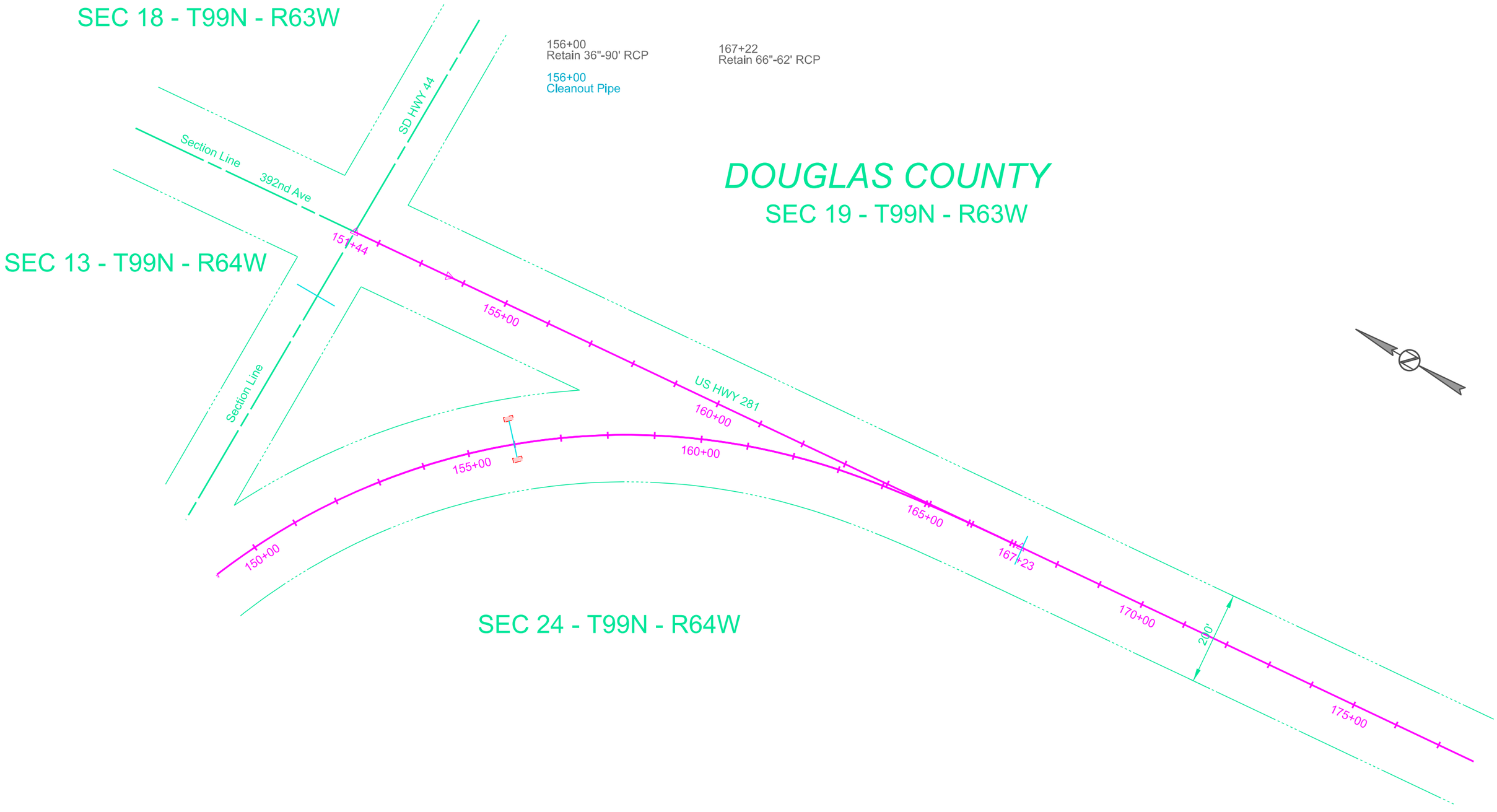


SEC 24 - T99N - R64W

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	57	72

Plotting Date: 3/3/2025

CULVERT WORK
US 281



SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	58	72

Plotting Date: 3/5/2025

Rev. SM 3/5/2025

CULVERT WORK
US 281

204+72
Remove 24"- 114' CMP
(Incidental Work, Grading)

204+72
Install 24" - 114' RCP
& 2 Flared Ends
*Field Verify Elevations

226+24
Remove 24"- 122' CMP
(Incidental Work, Grading)

226+24 (415 ac)
Install 24" - 122' RCP
& 2 Flared Ends
*Field Verify Elevations

DOUGLAS COUNTY

SEC 30 - T99N - R63W

SEC 25 - T99N - R64W

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	59	72

Plotting Date: 3/3/2025

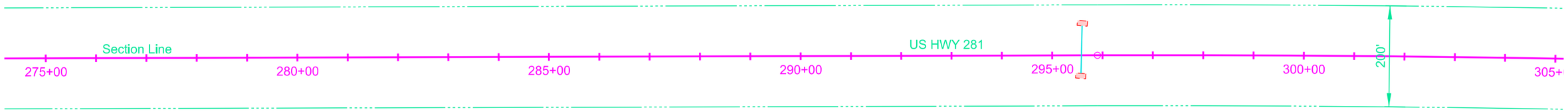
CULVERT WORK
US 281

295+68
Retain 24"-90' RCP

295+68
Cleanout Pipe

DOUGLAS COUNTY

SEC 31 - T99N - R63W



SEC 36 - T99N - R64W

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	60	72

Plotting Date: 3/3/2025

CULVERT WORK
US 281

345+37
Retain 36"-64' RCP

345+37 L/R
Install Bank and Channel
Protection Gabions (6 CuYd)
& Type B Drainage Fabric (19 SqYd)

345+37 L
Install Type 3 Erosion
Control Blanket (12 SqYd)

345+37
Repair Erosion Damage

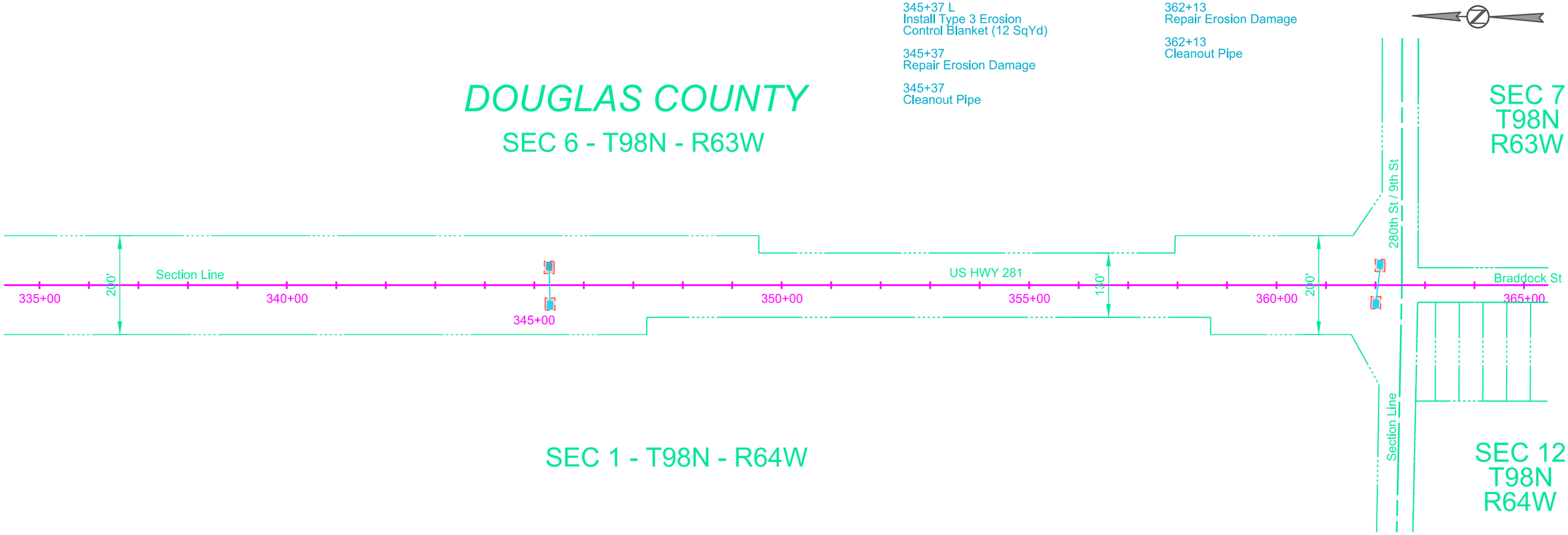
345+37
Cleanout Pipe

362+13
Retain 24"-66' RCP

362+13 L/R
Install Bank and Channel
Protection Gabions (4.5 CuYd)
& Type B Drainage Fabric (15 SqYd)

362+13
Repair Erosion Damage

362+13
Cleanout Pipe



SD DOT	PROJECT	SHEET	TOTAL SHEETS
	NH 0281(125)40 NH 0018(237)348	61	72

Plotting Date: 3/4/2025

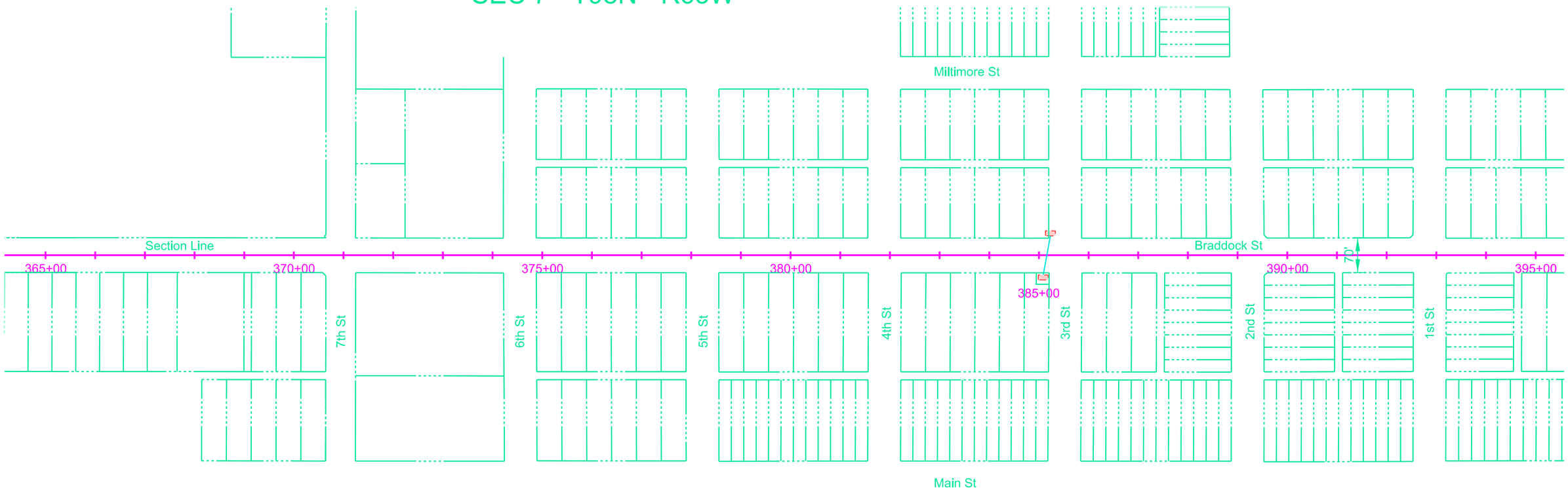
CULVERT WORK
US 281

DOUGLAS COUNTY

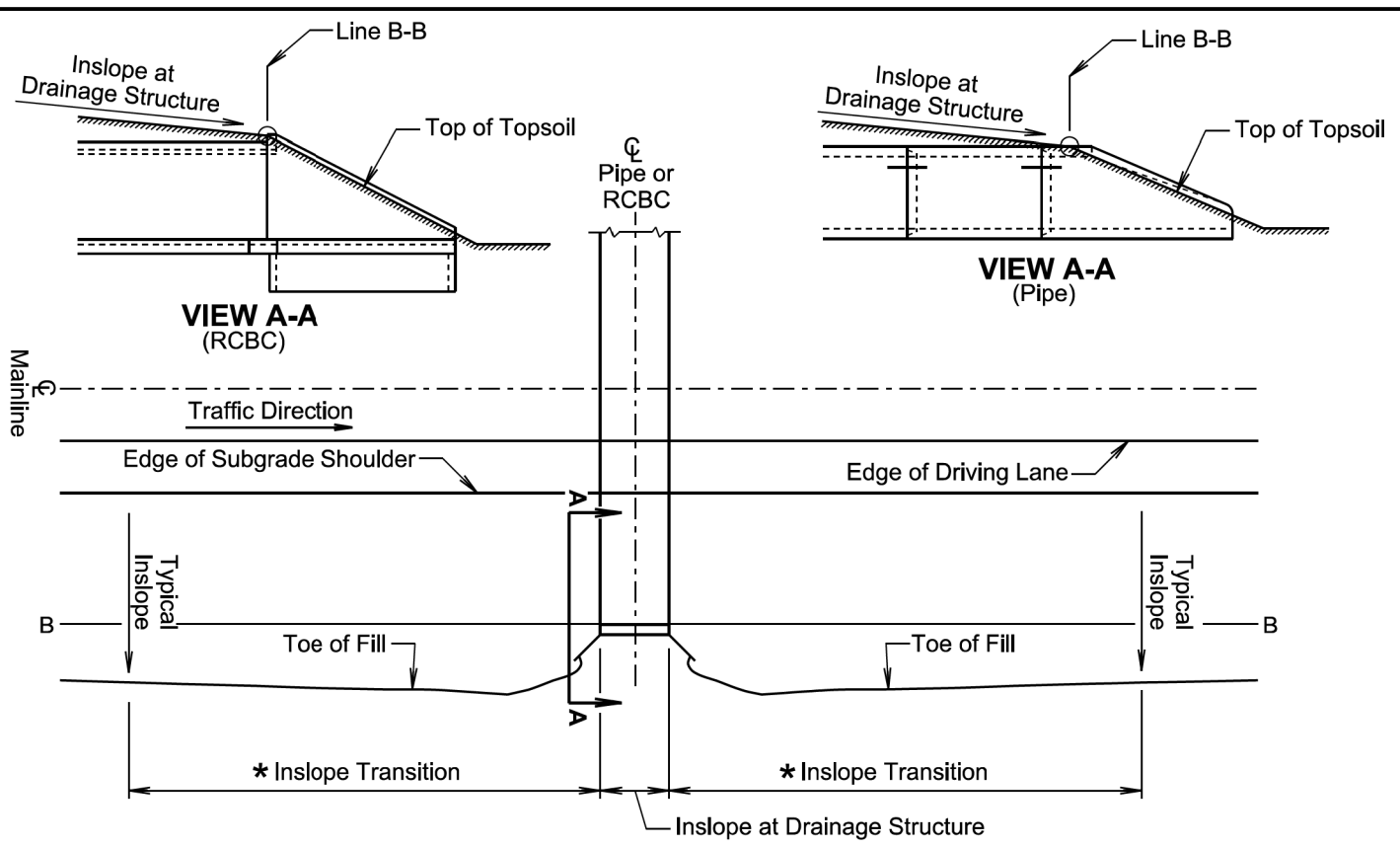
SEC 7 - T98N - R63W

385+35
Retain 72x36"-76' RCBC

385+35
Cleanout Box Culvert



SEC 12 - T98N - R64W



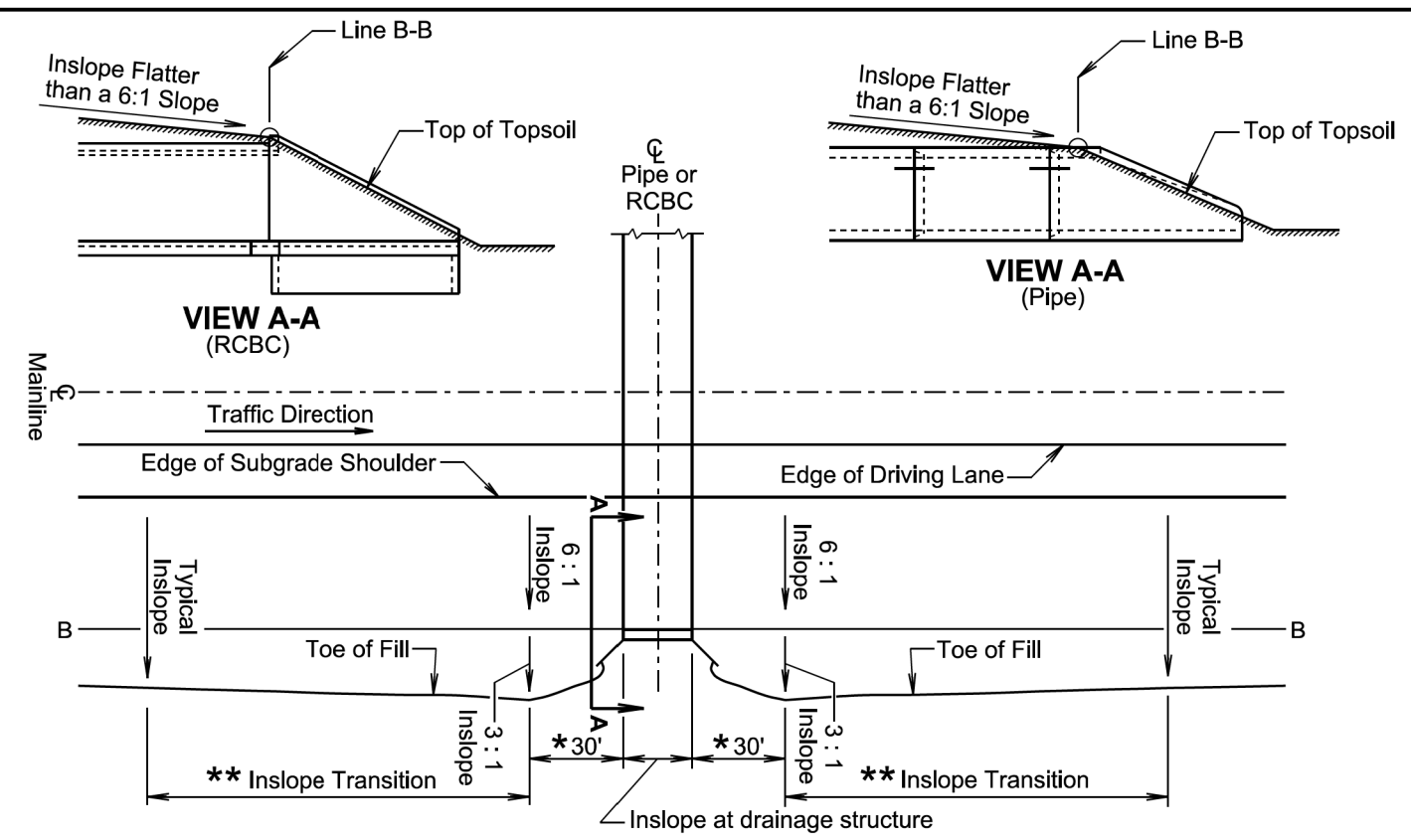
TYPE 1 INSLOPE TRANSITION

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.



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.

INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

SDDOT

Published Date: 2025

PLATE NUMBER 120.05

September 14, 2018

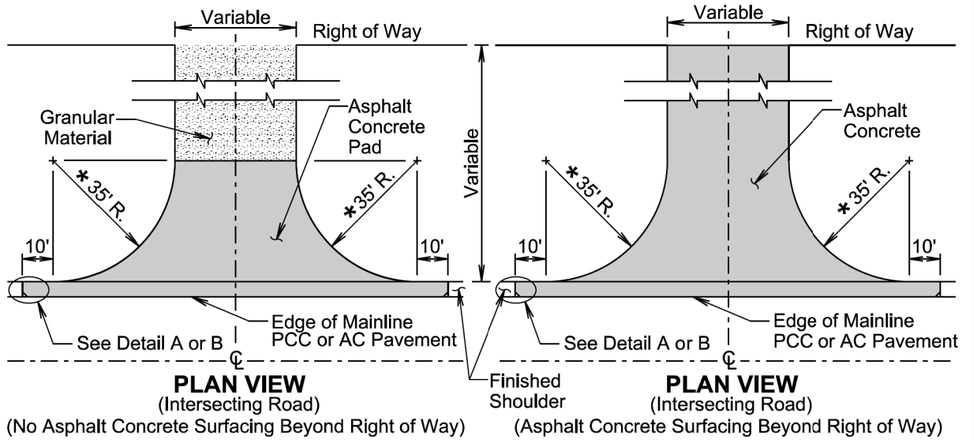
Sheet 1 of 2

Sheet 2 of 2

PROJECT NH 0281(125)40 NH 0018(237)348

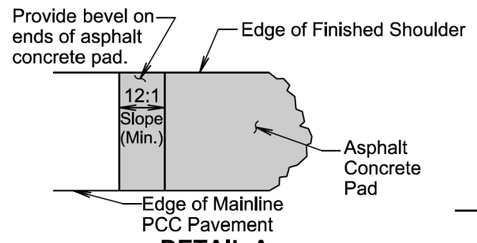
SHEET 62

TOTAL SHEETS 72

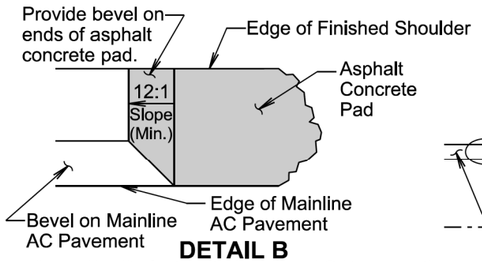


PLAN VIEW
(Intersecting Road)
(No Asphalt Concrete Surfacing Beyond Right of Way)

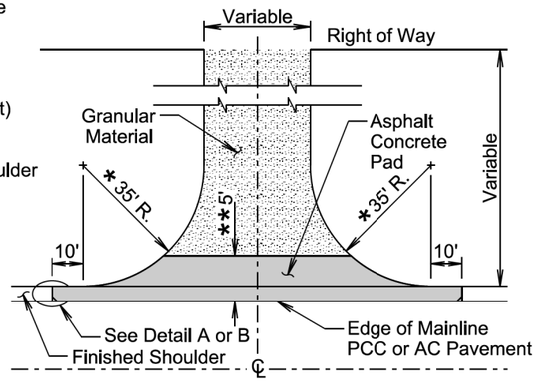
PLAN VIEW
(Intersecting Road)
(Asphalt Concrete Surfacing Beyond Right of Way)



DETAIL A
(Typ. For Projects with Mainline PCC Pavement)



DETAIL B
(Typ. For Projects with Mainline AC Pavement)



PLAN VIEW
(Entrance)

GENERAL NOTES:

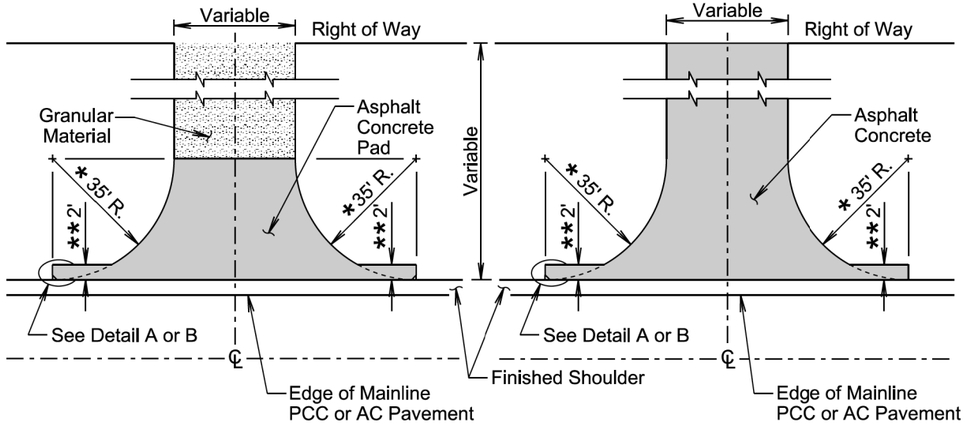
The precise construction limits for situations other than shown above will be determined by the Engineer during construction.

* 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: 2025	SDDOT	*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:

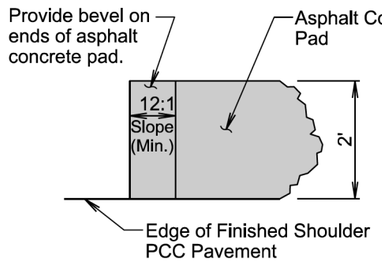
The precise construction limits for situations other than shown above will be determined by the Engineer during construction.

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

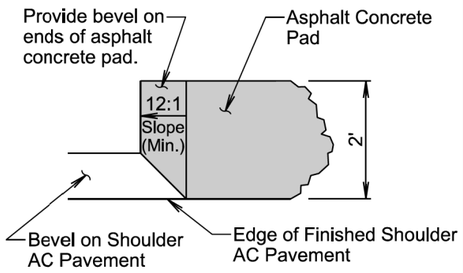
** The Contractor may adjust the screed of the paver during mainline paving operations to provide the 2-foot asphalt concrete pad or the Contractor may provide the 2-foot asphalt concrete pad during paving of the intersecting roads as shown above. The Engineer may eliminate the 2-foot asphalt concrete 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

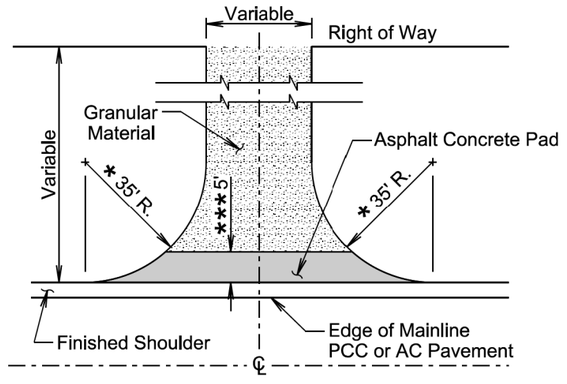
Published Date: 2025	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04 Sheet 1 of 2



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



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

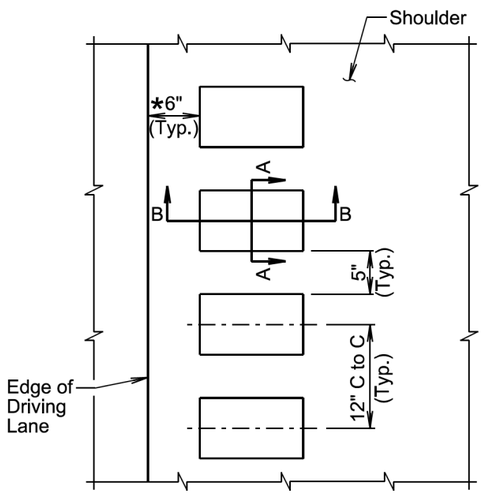


PLAN VIEW
(Entrance)

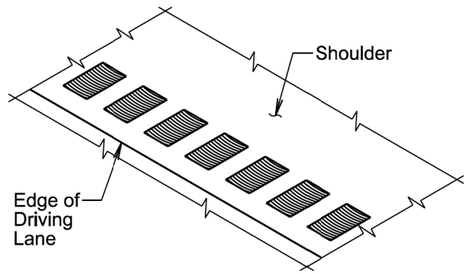
*** Not required if finished shoulder width is 4' or greater.

August 27, 2020

Published Date: 2025	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04 Sheet 2 of 2

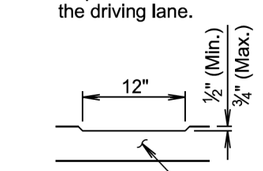


PLAN VIEW
(Typical Rumble Strip in Asphalt Concrete)

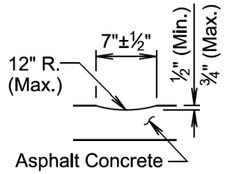


PERSPECTIVE VIEW
(Typical Rumble Strip in Asphalt Concrete)

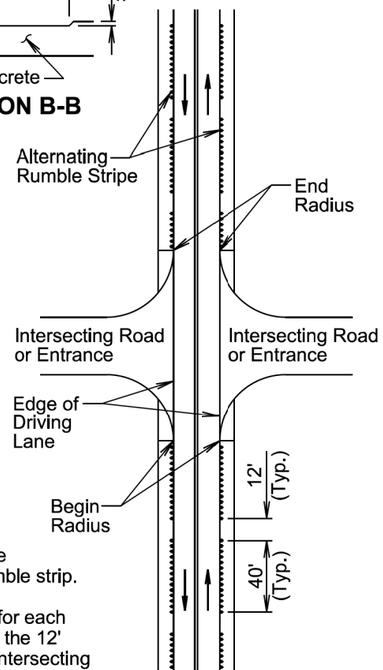
* When PCC pavement width from centerline to edge of pavement is 12', the rumble strip may be placed a maximum of 2' from the edge of the driving lane.



SECTION B-B



SECTION A-A



PLAN VIEW

GENERAL NOTES:

A rumble strip will be constructed on all of the asphalt concrete shoulders by grinding alternating patterns of 40' continuous indentations in the asphalt concrete. The rumble strip will receive a flush seal or asphalt surface treatment as specified in the plans.

A rumble strip will not be constructed through intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble strip adjacent to the intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings will be adjusted as approved by the Engineer.

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

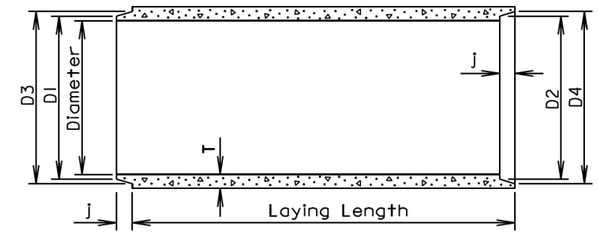
Measurement of the rumble strip will be to the nearest 0.1 of a mile for each shoulder. Measurement and payment of the rumble strip will include the 12' long segments without rumble strips and the segments adjacent to intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings without rumble strips. Payment for constructing the rumble strip will be at the contract unit price per mile for "Grind 12" Rumble Strip or Stripe in Asphalt Concrete".

September 14, 2019

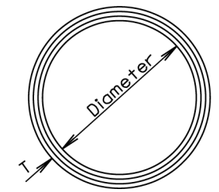
Published Date: 2025	SDDOT	12" RUMBLE STRIP IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.24
			Sheet 1 of 1

TOLERANCES IN DIMENSIONS

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



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

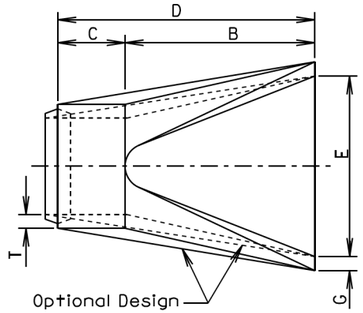
Construction of R.C.P. shall conform to the requirements of Section 990 of the Specifications.

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

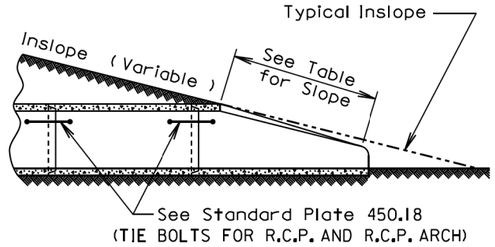
Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 7/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 7/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322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

June 26, 2015

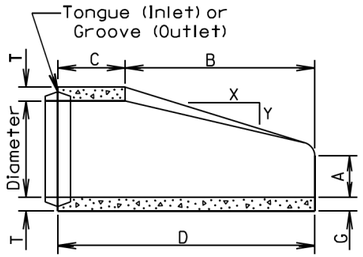
Published Date: 2025	SDDOT	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01
			Sheet 1 of 1



TOP VIEW



SLOPE DETAIL

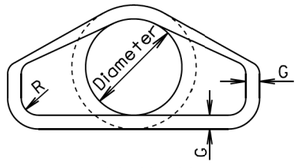


LONGITUDINAL SECTION

GENERAL NOTES:

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

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



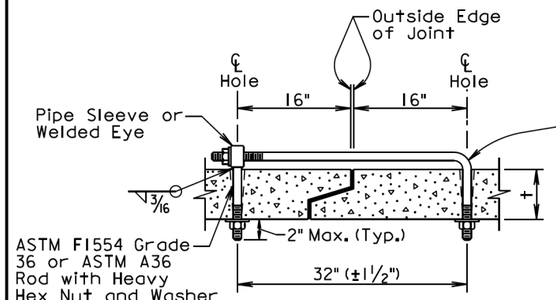
END VIEW

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

June 26, 2015

Published Date: 2025	SDDOT	R. C. P. FLARED ENDS	PLATE NUMBER 450.10	Sheet 1 of 1

Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3 1/4	5/8	3/4
3 1/2-6 1/2	3/4	1
≥ 7	1	1 1/4



ADJUSTABLE EYE BOLT TIE

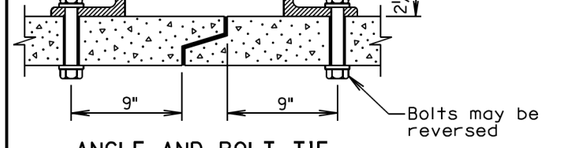
GENERAL NOTES:

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

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

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

Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	3/4
> 48	6	1



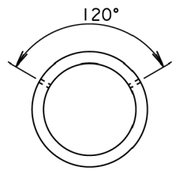
ANGLE AND BOLT TIE

GENERAL NOTES:

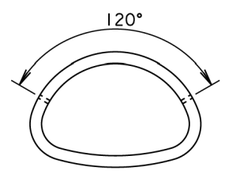
Angles shall conform to ASTM A36.

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

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



END VIEW "CIRCULAR"



END VIEW "ARCH"

GENERAL NOTES:

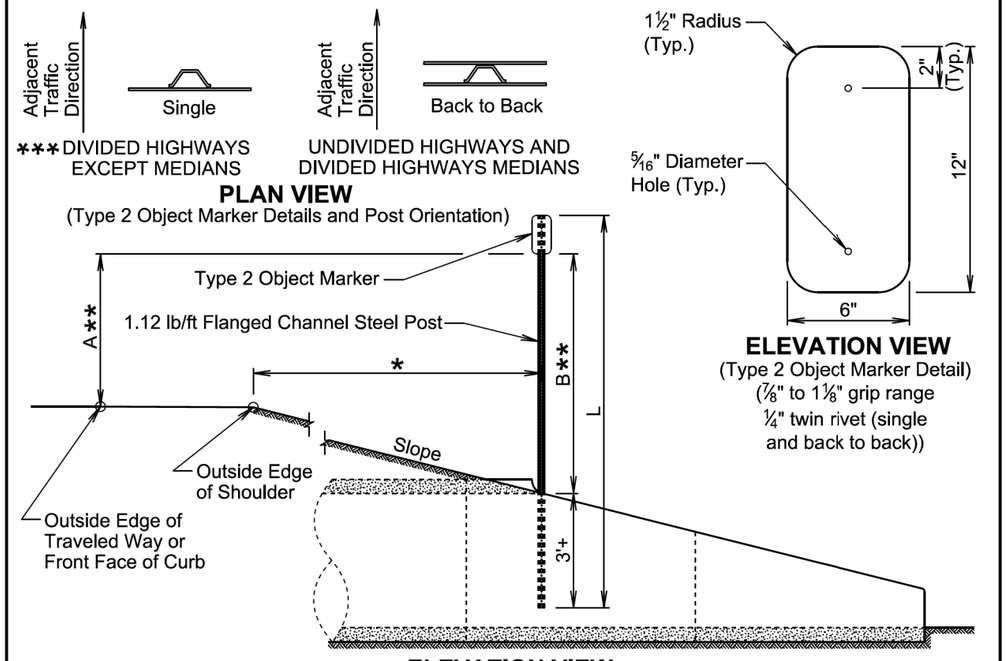
In lieu of the tie bolts detailed above other types of tie bolt connections may be installed as approved by the Office of Bridge Design.

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

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

February 28, 2013

Published Date: 2025	SDDOT	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	PLATE NUMBER 450.18	Sheet 1 of 1



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 crosslope of 4 percent and L was rounded up to the nearest 3 inches.

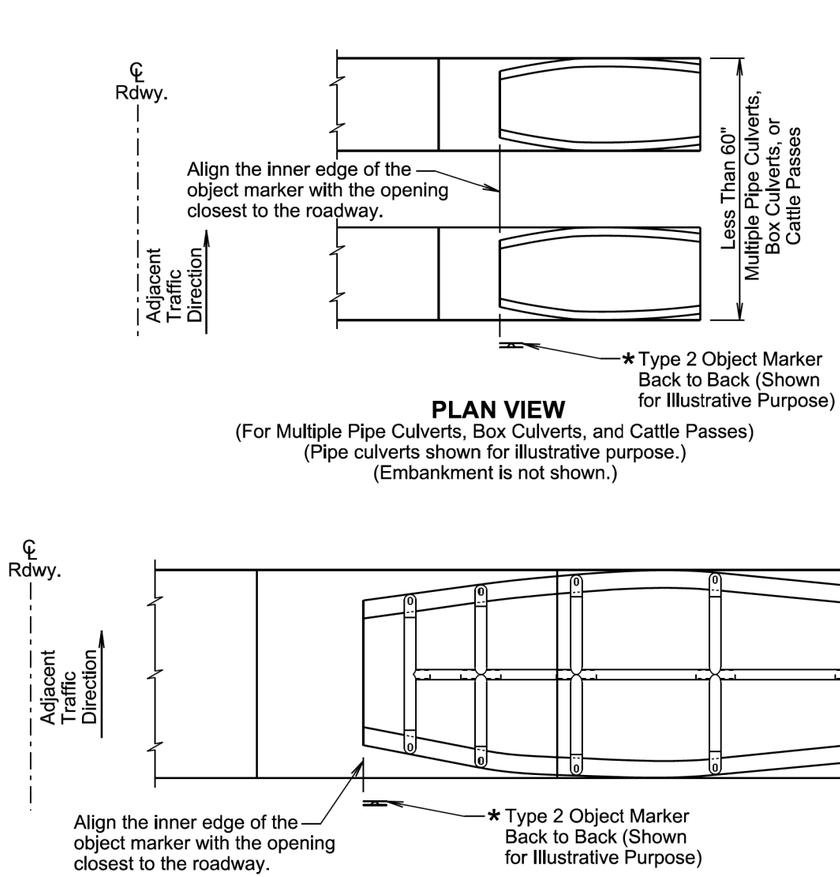
** Dimension A is 4 feet when the Offset * is 8 feet and less. Dimension B is 4 feet when Offset * is greater than 8 feet.

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: 2025	SDDOT	TYPE 2 OBJECT MARKER (DIRECT DRIVE)	PLATE NUMBER 632.01
			Sheet 1 of 1



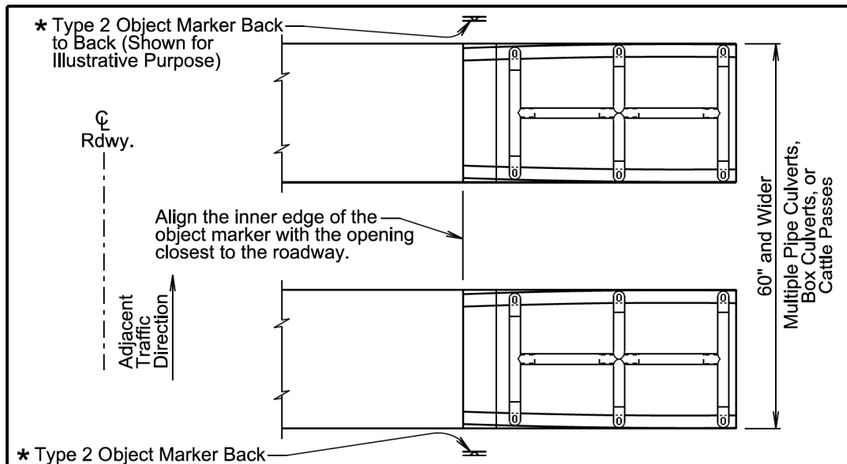
GENERAL NOTES:

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

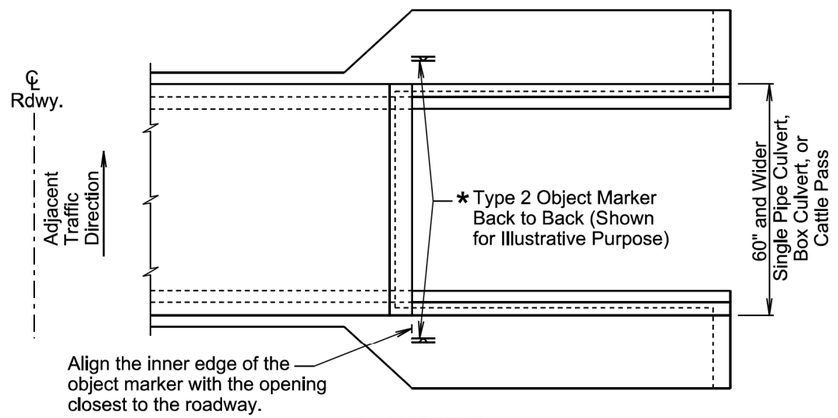
* The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

December 23, 2019

Published Date: 2025	SDDOT	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



PLAN VIEW
(For Multiple Pipe Culverts, Box Culverts, and Cattle Passes)
(Pipe culverts shown for illustrative purpose.)
(Embankment is not shown.)



PLAN VIEW
(For Single Pipe Culvert, Box Culvert, and Cattle Pass)
(Box culvert shown for illustrative purpose.)
(Embankment is not shown.)

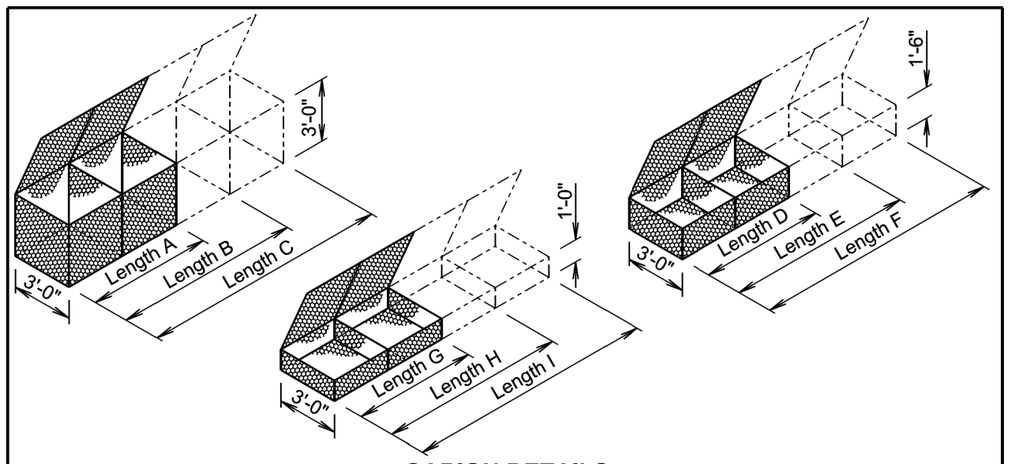
GENERAL NOTES:

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: 2025	SDDOT	TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (60" and Greater Overall Width)	PLATE NUMBER 632.04 Sheet 1 of 1



GABION DETAILS

STANDARD SIZES					
SIZE	LENGTH	WIDTH	HEIGHT	NUMBER OF CELLS	CAPACITY (Cu. Yd.)
A	6'-0"	3'-0"	3'-0"	2	2.0
B	9'-0"	3'-0"	3'-0"	3	3.0
C	12'-0"	3'-0"	3'-0"	4	4.0
D	6'-0"	3'-0"	1'-6"	2	1.0
E	9'-0"	3'-0"	1'-6"	3	1.5
F	12'-0"	3'-0"	1'-6"	4	2.0
G	6'-0"	3'-0"	1'-0"	2	0.7
H	9'-0"	3'-0"	1'-0"	3	1.0
I	12'-0"	3'-0"	1'-0"	4	1.3

Above dimensions subject to mill tolerances.

GENERAL NOTES:

Lacing and internal connecting wire will be 0.0866 inch diameter steel wire ASTM A641, Class 3 soft temper measured after galvanizing and for PVC coated gabions will be 0.0866 inch diameter steel wire measured after galvanizing but before PVC coating.

The lacing procedure is as follows:

1. Cut a length of lacing wire approximately 1½ times the distance to be laced but not exceeding 5 feet.
2. Secure the wire terminal at the corner by looping and twisting.
3. Proceed lacing with alternating single and double loops at a spacing not to exceed 6 inches.
4. Securely fasten the other lacing wire terminal.

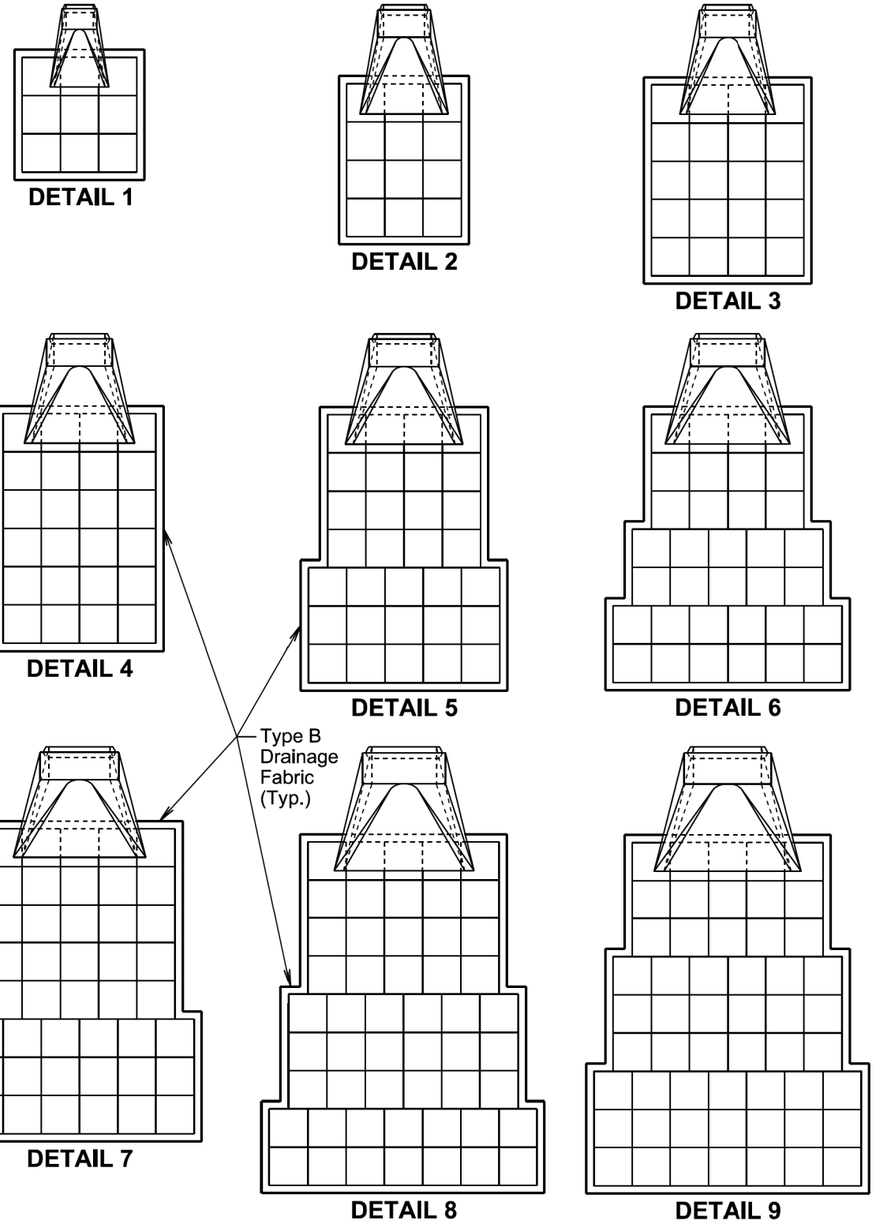
Wire lacing or interlocking type fasteners will be used for gabion assembly and final construction of gabion structures. Interlocking fasteners for galvanized gabions will be high tensile 0.120 inch diameter galvanized steel wire measured after galvanizing. The galvanizing will conform to ASTM A641-92, Class 3 coating. Fasteners will also be in accordance with ASTM A764, Class II, Type III.

Interlocking fasteners for PVC coated gabions will be high tensile 0.120 inch diameter stainless steel wire conforming to ASTM A313, Type 302, Class 1. The spacing of the interlocking fasteners during all phases of assembly and construction will not exceed 6 inches.

All fasteners will be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

February 14, 2020

Published Date: 2025	SDDOT	BANK AND CHANNEL PROTECTION GABIONS	PLATE NUMBER 720.01 Sheet 1 of 1



February 14, 2020

Published Date: 2025	SDDOT	BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS	PLATE NUMBER 720.03	Sheet 1 of 2

	⋆ ESTIMATED QUANTITIES			
	Detail	Pipe Diameter (Inches)	Gabion (Cu. Yd.)	Type B Drainage Fabric (Sq. Yd.)
RCP, RCP Arch, CMP, and CMP Arch	1	12, 18, and 24	4.5	15
	2	30 and 36	6.0	19
	3	42	10.0	29
	4	48 and 54	12.0	34
	5	60	15.5	43
	6	66	17.0	47
	7	72	21.5	57
	8	78	26.0	68
	9	84	27.0	70

GENERAL NOTES:

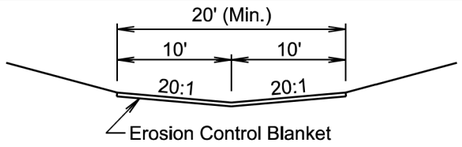
Gabions at outlets of CMP and RCP will be placed under the end section a distance of 2 feet from the outlet end. For CMP end section installations, the upper fabric of the gabions will be modified to accommodate the metal end section as approved by the Engineer.

⋆ Gabion and type B drainage fabric quantities on this standard plate are based on standard gabion sizes D, E, and F as depicted on standard plate 720.01.

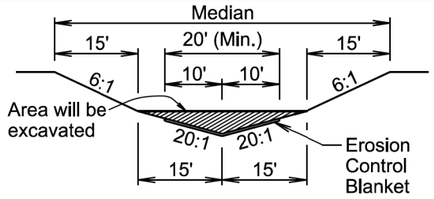
Type B drainage fabric will be placed under the gabions and around the exterior sides (perimeter) of the gabions as approved by the Engineer. The type B drainage fabric will be in conformance with Section 831 of the Specifications. Measurement and payment of the type B drainage fabric will be in conformance with Section 720 of the Specifications.

February 14, 2020

Published Date: 2025	SDDOT	BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS	PLATE NUMBER 720.03	Sheet 2 of 2

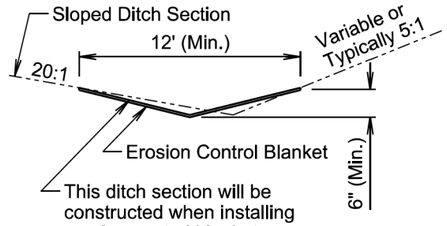


STANDARD DITCH SECTION

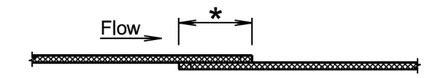


The median will be shaped to the limits shown in this detail where the erosion control blanket will be placed.

MEDIAN SECTION



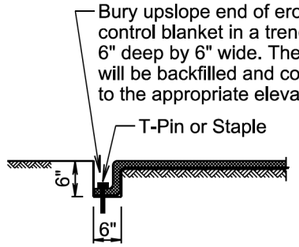
SLOPED DITCH SECTION



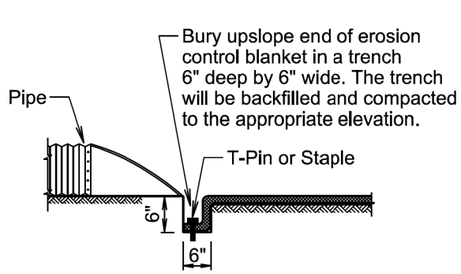
* Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.

* Use a 6" (Min.) overlap wherever one roll of erosion control blanket ends and another begins.

OVERLAP DETAIL



TRENCH DETAIL



PIPE END DETAIL

GENERAL NOTES:

Prior to placement of the erosion control blanket, the areas will be properly prepared, shaped, seeded, and fertilized.

Erosion control blanket will be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket will be buried in a trench 6" wide by 6" deep. There will be at least a 6" overlap wherever one roll of erosion control blanket ends and another begins, with the upslope erosion control blanket placed on top of the downslope erosion control blanket.

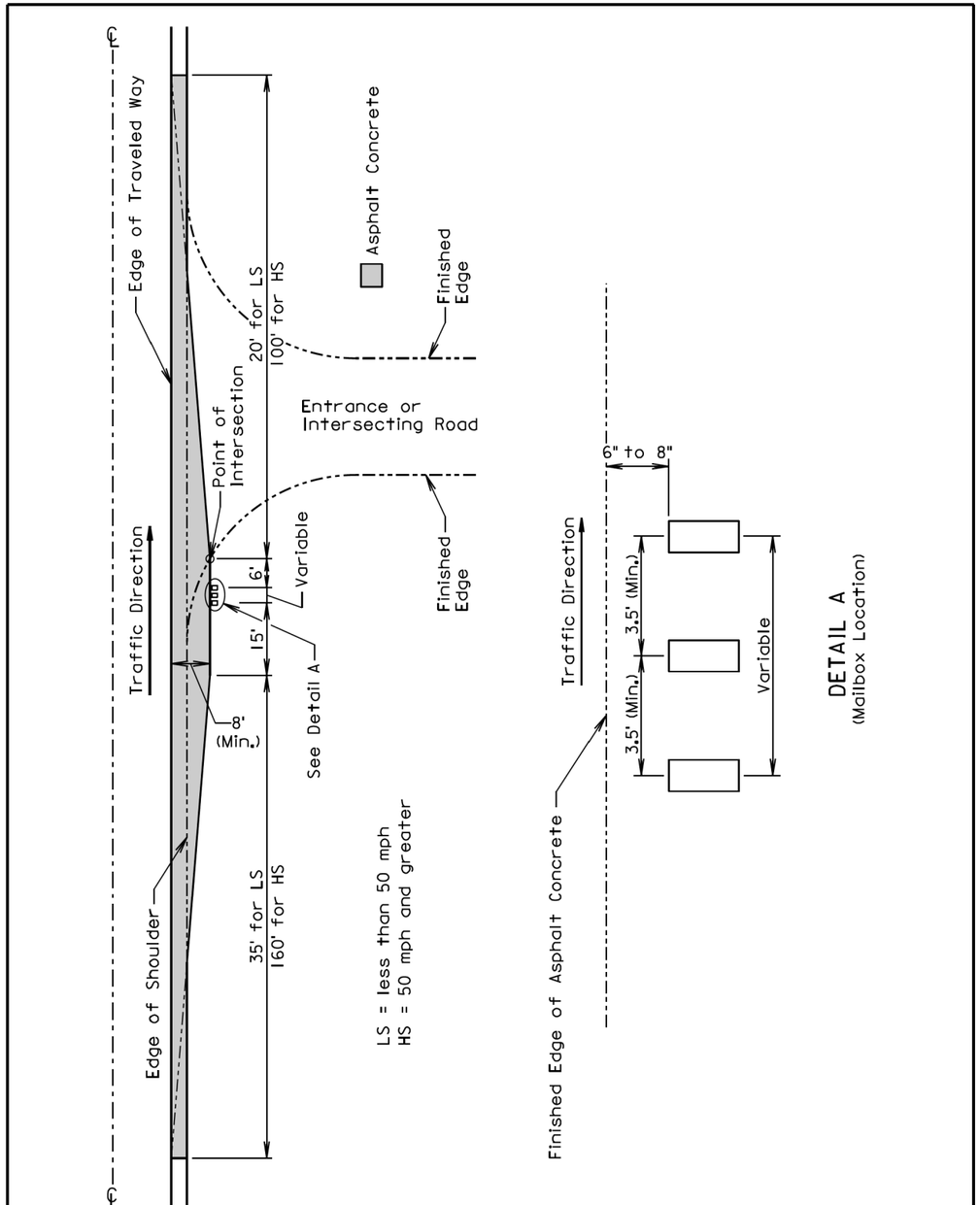
The erosion control blanket will be pinned to the ground according to the manufacturer's installation recommendations.

After the placement of the erosion control blanket, the Contractor will fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

All ditch sections will be shaped when installing the erosion control blanket. All costs for shaping the ditches will be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

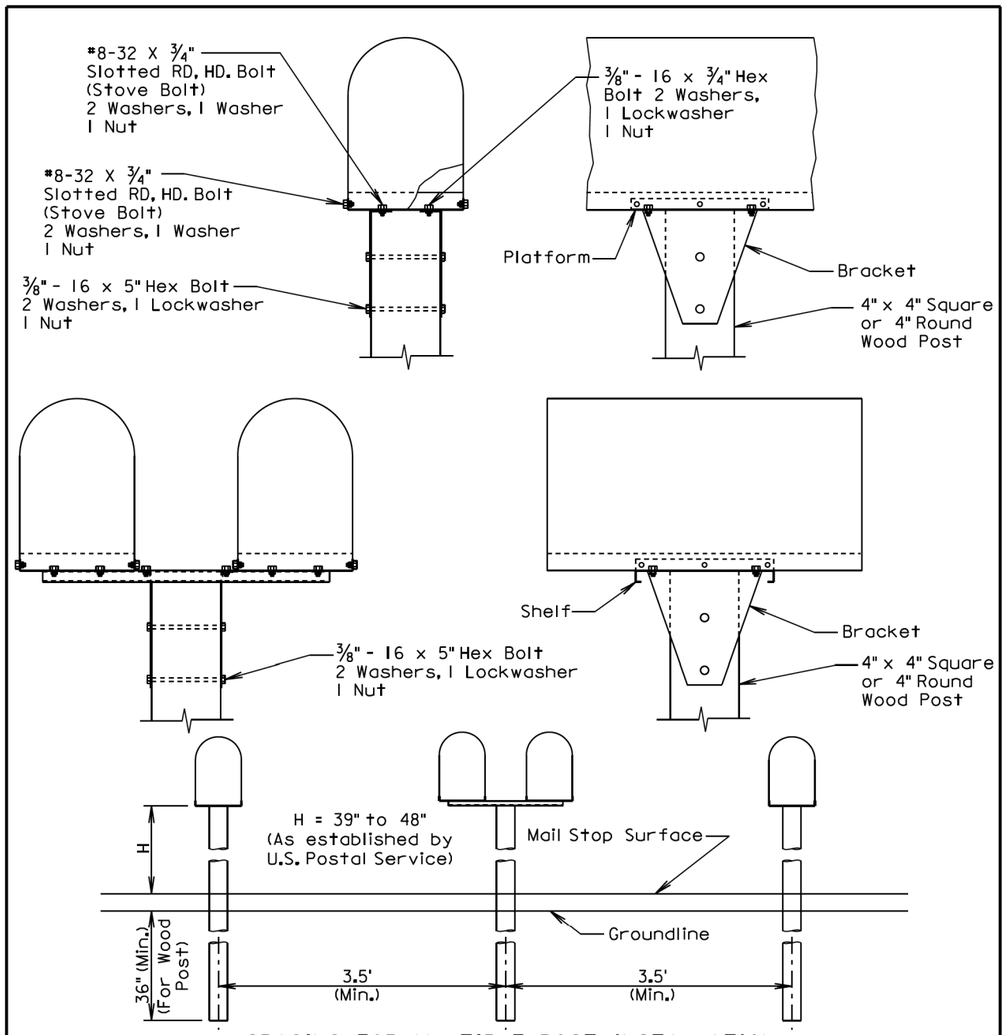
February 14, 2020

Published Date: 2025	SDDOT	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
			Sheet 1 of 1



September 6, 2015

Published Date: 2025	SDDOT	MAILBOX TURNOUT	PLATE NUMBER 900.01
			Sheet 1 of 1



SPACING FOR MULTIPLE POST INSTALLATION

GENERAL NOTES:

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

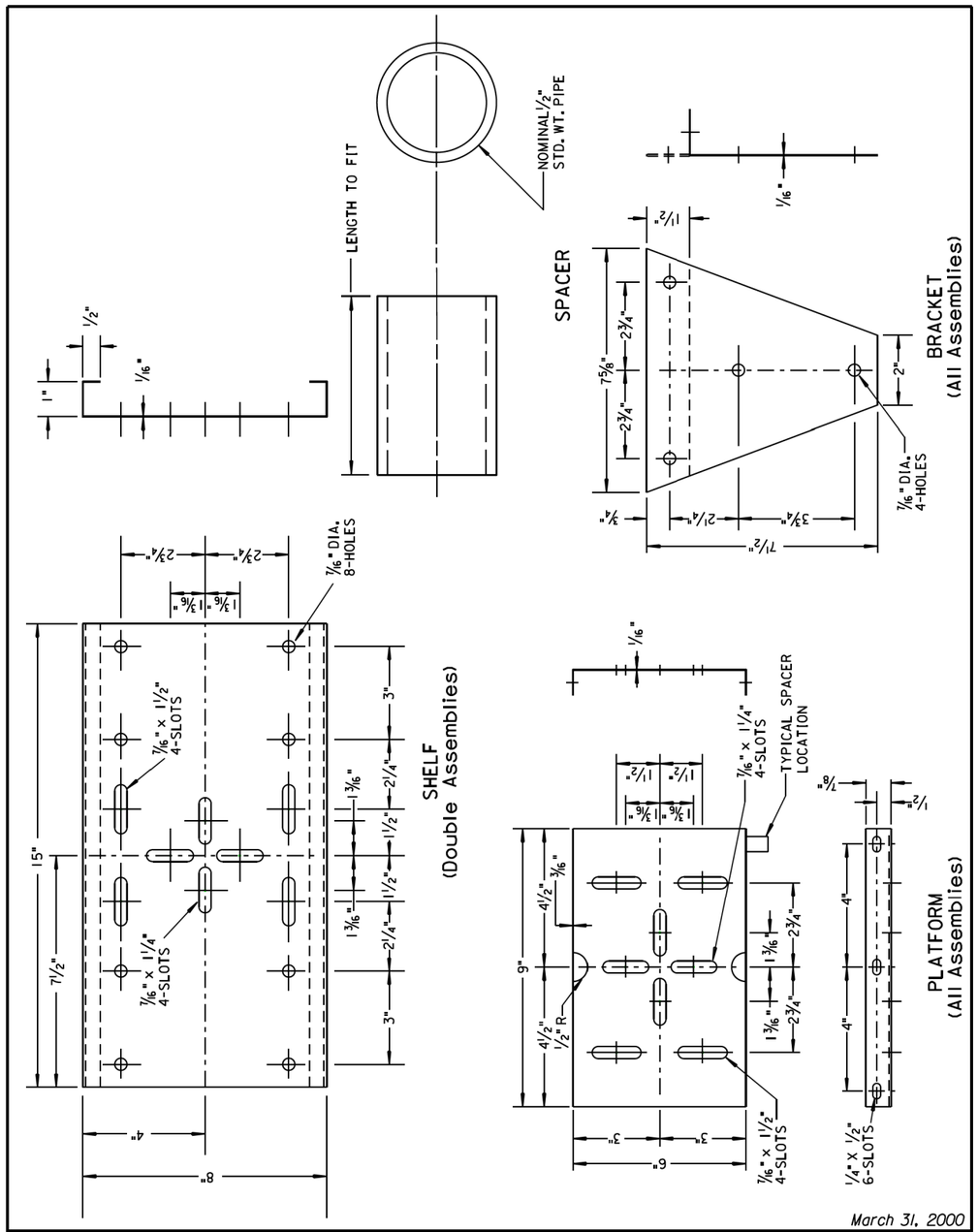
Single and double mailboxes may be in any sequence.

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

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

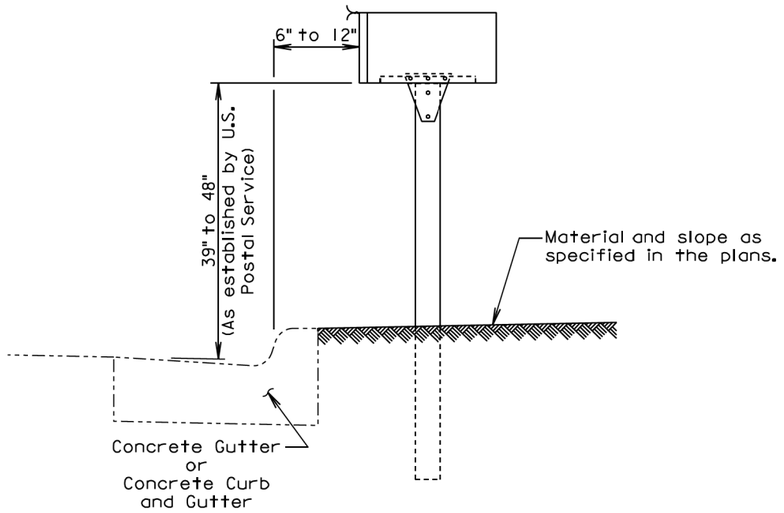
September 6, 2013

Published Date: 2025	SDDOT	***SINGLE AND DOUBLE MAILBOX ASSEMBLIES***	***PLATE NUMBER*** 900.02 / Sheet 1 of 1



March 31, 2000

Published Date: 2025	SDDOT	***MAILBOX SUPPORT HARDWARE***	***PLATE NUMBER*** 900.03 / Sheet 1 of 1



ELEVATION VIEW

GENERAL NOTES:

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

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

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

February 10, 2014

Published Date: 2025	SDDOT	***MAILBOX ADJACENT TO CONCRETE GUTTER OR CONCRETE CURB AND GUTTER***	***PLATE NUMBER*** 900.05
			Sheet 1 of 1