

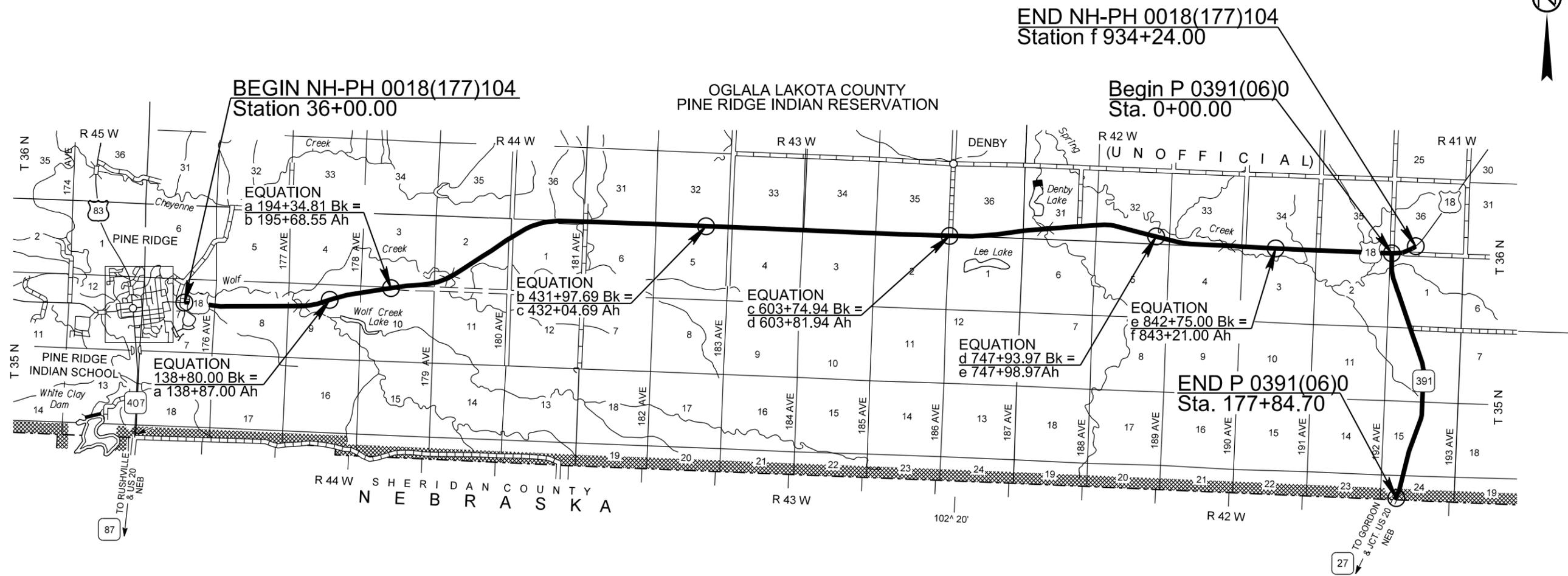
Section F: Surfacing Plans

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0018(177)104 & P 0391(06)0	F1	F38

Plotting Date: 07/23/2015

INDEX OF SHEETS

F1	General Layout with Index
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Plot Scale - 1:200

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ESTIMATE OF QUANTITIES – NH-PH 0018(177)104, PCN 02QC

Bid Item Number	Item	Quantity	Unit
009E3320	Checker	Lump Sum	LS
120E0100	Unclassified Excavation, Digouts	849	CuYd
120E6200	Water for Granular Material	2,460.2	MGal
260E1010	Base Course	200,240.0	Ton
260E1030	Base Course, Salvaged	4,601.2	Ton
320E1800	Asphalt Concrete Blade Laid	2,546.0	Ton
320E5020	Saw Joint in Asphalt Concrete	176,431	Ft
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	33.9	Mile
330E0100	SS-1h or CSS-1h Asphalt for Tack	107.9	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	99.6	Ton
330E2000	Sand for Flush Seal	951.5	Ton
332E0010	Cold Milling Asphalt Concrete	241,780	SqYd

Alternate A Quantities – NH-PH 0018(177)104, PCN 02QC

Bid Item Number	Item	Quantity	Unit
320E0005	PG 58-34 Asphalt Binder	4,220.9	Ton
320E1203	Class Q3R Hot Mixed Asphalt Concrete	90,635.8	Ton
320E4000	Hydrated Lime	914.9	Ton

Alternate B Quantities – NH-PH 0018(177)104, PCN 02QC

Bid Item Number	Item	Quantity	Unit
320E0005	PG 58-34 Asphalt Binder	3,874.9	Ton
320E1203	Class Q3R Hot Mixed Asphalt Concrete	93,085.9	Ton
320E4000	Hydrated Lime	962.3	Ton

ESTIMATE OF QUANTITIES – P 0391(06)0, PCN 02NH

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3320	Checker	Lump Sum	LS
110E0510	Remove Pipe End Section	10	Each
120E0100	Unclassified Excavation, Digouts	168	CuYd
120E0600	Contractor Furnished Borrow Excavation	172	CuYd
120E6100	Water for Embankment	1.7	MGal
120E6200	Water for Granular Material	11.6	MGal
260E1010	Base Course	927.9	Ton
260E1030	Base Course, Salvaged	21.3	Ton
320E1800	Asphalt Concrete Blade Laid	505.2	Ton
320E7008	Grind 8" Rumble Strip or Stripe in Asphalt Concrete	6.7	Mile
330E0100	SS-1h or CSS-1h Asphalt for Tack	13.8	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	13.1	Ton
330E2000	Sand for Flush Seal	176.0	Ton
332E0010	Cold Milling Asphalt Concrete	48,019	SqYd
450E5211	18" CMP Flared End, Furnish	6	Each
450E5212	18" CMP Flared End, Install	6	Each
450E5317	36" CMP Sloped End with Bars, Furnish	2	Each
450E5319	36" CMP Sloped End, Install	2	Each
450E5321	42" CMP Sloped End with Bars, Furnish	2	Each
450E5323	42" CMP Sloped End, Install	2	Each
450E8900	Cleanout Pipe Culvert	5	Each
900E0010	Refurbish Single Mailbox	2	Each
900E0012	Refurbish Double Mailbox	3	Each

Alternate A Quantities – P 0391(06)0, PCN 02NH

Bid Item Number	Item	Quantity	Unit
320E0005	PG 58-34 Asphalt Binder	396.6	Ton
320E1203	Class Q3R Hot Mixed Asphalt Concrete	8,088.0	Ton
320E4000	Hydrated Lime	86.7	Ton

Alternate B Quantities – P 0391(06)0, PCN 02NH

Bid Item Number	Item	Quantity	Unit
320E0005	PG 58-34 Asphalt Binder	367.7	Ton
320E1203	Class Q3R Hot Mixed Asphalt Concrete	8,305.2	Ton
320E4000	Hydrated Lime	90.1	Ton

SURFACING THICKNESS DIMENSIONS

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

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

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SAWING IN EXISTING SURFACING

Where new Portland Cement Concrete Pavement (PCCP) or new asphalt concrete is placed adjacent to existing asphalt concrete or PCCP, the existing pavement shall be sawed full depth to a true line with a vertical face.

No separate payment shall be made for sawing except for the following locations:

- Shoulder Widening Area
 - Sta. 36+00 to Sta. 86+87 Lt. & Rt., US18
 - Sta. 94+50 to Sta. c 495+30 Lt. & Rt., US18
 - Sta. c 501+70 to Sta. f 934+24 Lt. & Rt., US18

UNCLASSIFIED EXCAVATION, DIGOUTS

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

The Contractor must ensure any water that collects in the digouts can escape the subgrade. The Contractor can accomplish this by ensuring the digouts daylight to the inslope or a drain tube is placed at the bottom of the digouts and the outlet is placed at the closest available point. Cost for drain tube shall be included in the contract unit price per cubic yard for "Unclassified Excavation, Digouts".

TABLE OF UNCLASSIFIED EXCAVATION, DIGOUTS

Location	Unclassified Excavation, Digouts
	Cubic Yards
US18	848.7
SD391	168.4
TOTAL	1,017.1

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

BACKFILLING OF DIGOUTS

Included in the Estimate of Quantities are 100 cubic yards of Base Course or Base Course, Salvaged per mile and 1.2 Mgal of Water for Granular Material per mile for backfilling of digouts of the existing surface at locations to be designated by the Engineer. Compaction of the Base Course or Base Course, Salvaged for the digouts shall be to the satisfaction of the Engineer. Backfilling length is estimated at 16.973 miles for US18 and 3.368 miles for SD391.

COLD MILLING ASPHALT CONCRETE

The Cold Milled Material will be used as RAP for Class Q3R Hot Mixed Asphalt Concrete on this project.

Cold milling asphalt is estimated to produce 22,517.4 tons of salvaged asphalt concrete material. An estimated 21,400 tons of salvaged asphalt concrete will be used on this project in the Class Q3R Asphalt Concrete mixture. An estimated 1,117.4 tons (591.2 cu.yds.) of cold milled material will be used on this project as Base Course, Salvaged. The Contractor is responsible to assure enough salvaged asphalt concrete is available for the Class Q3R Asphalt Concrete. The Contractor will stockpile the RAP in a separate pile.

Asphalt Concrete Pavement removed from within the project limits (Cold Milled material) and not used as RAP will be crushed and reused as Base Course, Salvaged provided it is blended at a ratio not exceeding 1 part asphalt concrete material to 1 part either virgin granular material or granular material removed from project. An estimated 1,005.7 tons of salvaged material will be available for construction of the project due to an estimated 10 percent loss during the removal/replacement operation or salvaging operation near the completion of the project. Cold Milled material to be used as Base Course, Salvaged on this project must meet plan note requirements and the Engineer's approval.

Cold milled material left over after completion of the Class Q3R Hot Mixed Asphalt paving shall be disposed of as directed by the Engineer.

In order to construct the new surfacing flush with the asphalt concrete at the beginning/end of project it will be necessary to mill the existing asphalt concrete from 1" to 2", see details.

Intersecting road with asphalt concrete beyond Right of Way shall be milled back for approximately 25 feet from edge of shoulder so that additional surfacing may be placed at these locations.

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

TABLE OF COLD MILLING ASPHALT CONCRETE

Location of Removal Areas	* Cold Milling Asphalt Concrete	
	Sq. Yds.	Tons
US18	241,779.7	21,147.0
SD391	48,018.7	1,370.4
TOTAL	289,798.4	22,517.4

*This is only an estimate as the milling operation at 0.02 ft/ft with a maximum cut at the centerline will be 1.0" for US18 and this is only an estimate as the milling operation at 0.025 ft/ft with a maximum cut at the centerline will be 1.0" for SD391. See Typical Sections for more information.

SALVAGED MATERIAL

An estimated 4,018.7 tons (2,126.3 cu.yds.) will be salvaged during this operation. The salvaged material will be reused as Base Course, Salvaged. An estimated 3,616.8 tons of salvaged material will be available for construction of the project due to an estimated 10 percent loss during the removal/replacement operation or salvaging operation near the completion of the project.

The quantity of salvaged material may vary from the plans. The Contractor will be required to construct the roadway according to the depths shown in typical sections. The Contractor will be required to use all available Base Course, Salvaged on this project by decreasing or increasing the quantity of Base Course necessary, or as directed by the Engineer.

No adjustment in the contract unit price for salvage material will be made because of a variation in salvaged material quantities, see Section B.

PLACEMENT OF SALVAGED MATERIAL TABLE

	RAP needed for Class Q3R Hot Mixed Asphalt Concrete (tons)	Granular Material needed for project (tons)	Total (tons)
Cold Milled Asphalt Concrete (tons)	21,400.0	1,005.7	22,405.7
Salvaged and Stockpiled Asphalt Mix and Granular Base Material (tons)		3,616.8	3,616.8
Virgin Base Course (tons)		197,506.2	197,506.2
Total (tons)	21,400.0	202,128.7	

Quantities include an estimated 10 percent loss of salvaged material during the removal and replacement operation.

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 11.3 tons of PG 58-34 Asphalt Binder per mile for Alternate A and 150 tons of Asphalt Concrete Blade Laid, 1.5 tons of Hydrated Lime, and 11.3 tons of PG 58-34 Asphalt Binder per mile for Alternate B and shall be tight bladed on the existing surface 26 feet wide on US18 and 24 feet wide on SD391 prior to the overlay. A sufficient amount of material shall be kept in front of the blade to fill and level all joints, cracks and other surface irregularities. An estimated 16.973 miles are required for US18 and an estimated 3.368 miles are required for SD391.

The blade used to tight blade the material shall be equipped with gates, wings or other devices approved by the Engineer to prevent the material from windrowing at the edges of the blade.

A paver may be used to place the material provided it is equipped with a solid screed bar plate measuring a minimum of 12" wide by 1 1/2" thick that forces the mixture into the joints and cracks to adequately level and fill them while not exceeding the application rate set up in the Plans.

Mineral Aggregate for tight bladed material shall use only the fine aggregate components combined in the same proportions as the Class Q3R Hot Mixed Asphalt Concrete mix. No quality testing will be done on any of the coarse aggregate (+No. 4 sieve) in this mix.

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

The tight bladed material shall be compacted by at least 2 complete coverages with pneumatic tired rollers.

All loose existing joint material shall be removed and the surface shall be thoroughly swept with a rotary broom to remove all loose asphalt concrete and joint material from cracks and spall areas prior to placing the Blade Laid Mix. Cost for removing the material and brooming shall be included in the contract unit price per ton Asphalt Concrete Blade Laid.

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CHECKING SPREAD RATES

The Contractor shall be responsible for checking the Base Course, Base Course, Salvaged and Class Q3R Hot Mixed Asphalt Concrete spread rates. The Contractor shall also take the weigh delivery tickets as the surfacing material arrives on the project and is placed onto the roadway.

The Contractor shall 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 shall be written on each ticket as the surfacing material is delivered to the roadway.

At the end of each days shift, the Contractor shall 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 days 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 shall 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 shall 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 shall 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 $\pm 1/2$ inch of the plan shown depth, the Contractor shall 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 shall 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 shall then be increased or decreased by the same proportion as the placed material quantity bears to the estimated material quantity.

BASE COURSE, SALVAGED

The Base Course, Salvaged shall be obtained from the stockpile site(s) provided by the Contractor from the material salvaged on this project and may be used without further testing.

Base Course, Salvaged taken from stockpile sites shall be run over a 1 1/2 inch screen prior to placement.

All other requirements for Base Course, Salvaged shall apply.

CLASS Q3R HOT MIXED ASPHALT CONCRETE

Asphalt concrete aggregates shall consist of salvaged asphalt concrete mix material (RAP) and virgin aggregate.

Virgin mineral aggregate shall be furnished by the Contractor.

Mineral Aggregate for Class Q3R Hot Mixed Asphalt Concrete - Alternate A shall conform to the requirements set forth in Section 322 of the Specifications For Roads And Bridges except for the following:

Gyratory Compactive Effort:

	Ninitial	Ndesign	Nmaximum
Class Q3R	6	50	75

Mineral Aggregate for Class Q3R Hot Mixed Asphalt Concrete - Alternate B shall consist of a minimum of 80 percent crushed limestone ledgerock and shall conform to the requirements set forth in Section 322 of the Specifications For Roads And Bridges except for the following:

Gyratory Compactive Effort:

	Ninitial	Ndesign	Nmaximum
Class Q3R	6	50	75

Voids in Mineral Aggregate (VMA):

	Minimum VMA (%)
Class Q3R	13.0

All remaining requirements set forth in Section 322 of the Specifications For Roads And Bridges shall apply.

Salvaged asphalt concrete material (RAP) shall be obtained from the cold milled material produced on this project and shall be crushed so that the maximum particle size in the cold feed will not exceed 1-1/2 inches

No further quality testing will be required for the RAP material

The Class Q3R Asphalt Concrete shall include 20 percent salvaged asphalt concrete (RAP) in the mixture. Job mix formula tolerances for the RAP shall be $\pm 5\%$ from the target value.

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

FLEXIBLE PAVEMENT SMOOTHNESS PROVISION

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

FLUSH SEAL

Application of Flush Seal shall be completed within 10 working days following completion of the asphalt concrete surfacing. For each working day that the Flush Seal remains uncompleted after the 10 working day limitation, the Contractor will be assessed liquidated damages at the rate of \$250.00 per day.

The liquidated damages shall apply only up to the Contract Completion Date, as extended. After the Contract Completion Date, liquidated damages will be assessed in accordance with the schedule set forth in Section 8.8 of the Specifications For Roads And Bridges.

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

SAND FOR FLUSH SEAL

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

GRIND RUMBLE STRIPS IN ASPHALT CONCRETE

Rumble Strips for the shoulders along US 18 shall be constructed as per Standard Plate 320.24. Payment for forming rumble strips, on the shoulders, including labor, materials and incidentals shall be at the contract unit price per mile for "Grind 12" Rumble Strip or Stripe in Asphalt Concrete". It is estimated that 33.9 miles of asphalt concrete rumble strip will be required for the shoulders.

Rumble Stripes for the shoulders along SD 391 shall be constructed as per Standard Plate 320.20. Payment for forming rumble strips, on the shoulders, including labor, materials and incidentals shall be at the contract unit price per mile for "Grind 8" Rumble Strip or Stripe in Asphalt Concrete". It is estimated that 6.7 miles of asphalt concrete rumble strip will be required for the shoulders.

Rumble strips must receive an application of flush seal even if mainline flush seal is eliminated. If the Contractor covers the pavement markings with the flush seal, they will replace the pavement markings at no additional cost.

**Summary of Class Q3R Hot Mixed Asphalt Concrete Compaction –
Alternate A**

Location	With Specified Density Ton	Without Specified Density Ton
US18		
Sta. 36+00 to Sta. 86+87 Mainline Shoulders	1647.4 ---	--- 2227.3 / 1498.0
Sta. 86+87 to Sta. 94+50 Mainline Shoulders	247.1 ---	--- 261.3
Sta. 94+50 to Sta. 110+00 Mainline Shoulders	501.9 ---	--- 804.4 / 535.5
Sta. 110+00 to Sta. a 139+50 Mainline Shoulders	1430.9 / 953.0 ---	--- 935.5 / 623.3
Sta. a 139+50 to Sta. b 235+75 Mainline Shoulders	3073.9 ---	--- 3012.8 / 2009.7
Sta. b 235+75 to Sta. b 245+00 Mainline Shoulders	449.4 / 299.6 ---	--- 293.9 / 195.8
Sta. b 245+00 to Sta. c 495+30 Mainline Shoulders	8104.8 ---	--- 8368.0 / 5581.6
Sta. c 495+30 to Sta. c 501+70 Mainline Shoulders	207.2 ---	--- 192.0
Sta. c 501+70 to Sta. d 693+50 Mainline Shoulders	6209.4 ---	--- 6086.0 / 4059.8
Sta. d 693+50 to Sta. d 705+25 Mainline Shoulders	570.8 / 380.5 ---	--- 373.4 / 248.8
Sta. d 705+25 to Sta. e 834+25 Mainline Shoulders	4176.2 ---	--- 4093.2 / 2730.5
Sta. e 834+25 to Sta. f 850+50 Mainline Shoulders	767.1 / 511.4 ---	--- 501.8 / 334.3
Sta. f 850+50 to Sta. f 934+24 Mainline Shoulders	2712.0 ---	--- 2954.3 / 1970.6
Miscellaneous Areas		
Additional Edge Surfacing	4010.8	---
Intersecting Roads	---	665.7
Pipe Replacement Areas	1276.0 / ---	854.8 / ---
Spot Leveling and Repair Areas	---	1697.3
SD391		
Sta. 0+00 to Sta. 177+84.7 Mainline Shoulders	5,318.5 ---	--- 471.6 / 1,889.7
Miscellaneous Areas		
Intersecting Road	---	31.8
Mailbox Turnouts	---	39.6
Spot Leveling and Repair Areas	---	336.8
TOTAL	42,846.3	55,877.5

**Summary of Class Q3R Hot Mixed Asphalt Concrete Compaction –
Alternate B**

Location	With Specified Density Ton	Without Specified Density Ton
US18		
Sta. 36+00 to Sta. 86+87 Mainline Shoulders	1691.8 ---	--- 2287.8 / 1539.1
Sta. 86+87 to Sta. 94+50 Mainline Shoulders	253.7 ---	--- 268.5
Sta. 94+50 to Sta. 110+00 Mainline Shoulders	515.5 ---	--- 825.2 / 550.1
Sta. 110+00 to Sta. a 139+50 Mainline Shoulders	1468.0 / 978.7 ---	--- 960.5 / 640.6
Sta. a 139+50 to Sta. b 235+75 Mainline Shoulders	3156.6 ---	--- 3099.0 / 2065.4
Sta. b 235+75 to Sta. b 245+00 Mainline Shoulders	461.4 / 307.6 ---	--- 301.9 / 201.3
Sta. b 245+00 to Sta. c 495+30 Mainline Shoulders	8323.0 ---	--- 8605.6 / 5735.7
Sta. c 495+30 to Sta. c 501+70 Mainline Shoulders	212.9 ---	--- 197.0
Sta. c 501+70 to Sta. d 693+50 Mainline Shoulders	6376.6 ---	--- 6260.2 / 4172.2
Sta. d 693+50 to Sta. d 705+25 Mainline Shoulders	586.1 / 390.8 ---	--- 383.5 / 255.7
Sta. d 705+25 to Sta. e 834+25 Mainline Shoulders	4288.6 ---	--- 4210.3 / 2806.1
Sta. e 834+25 to Sta. f 850+50 Mainline Shoulders	787.7 / 525.1 ---	--- 515.2 / 343.6
Sta. f 850+50 to Sta. f 934+24 Mainline Shoulders	2785.1 ---	--- 3037.7 / 2024.7
Miscellaneous Areas		
Additional Edge Surfacing	4118.6	---
Intersecting Roads	---	684.6
Pipe Replacement Areas	1308.5 / ---	881.0 / ---
Spot Leveling and Repair Areas	---	1697.3
SD391		
Sta. 0+00 to Sta. 177+84.7 Mainline Shoulders	5460.0 ---	--- 491.8 / 1943.5
Miscellaneous Areas		
Intersecting Road	---	32.6
Mailbox Turnouts	---	40.5
Spot Leveling and Repair Areas	---	336.8
TOTAL	43,996.3	57,394.8

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INTERSECTING ROADS AND ENTRANCES

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

MAILBOXES – SD 391

The Contractor shall reset the existing mailboxes on new posts with the necessary support hardware for single or double mailbox assemblies. The local Postmaster will determine the recommended mounting height of the mailboxes throughout the project. The Contractor shall coordinate with the Engineer on the proper postal representative to contact.

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

TABLE OF REFURBISH MAILBOX

Location	L/R	Single (Each)	Double (Each)
Sta. 3+06	R	---	1
Sta. 29+85	L	1	---
Sta. 57+20	R	---	2
Sta. 105+85	L	1	---
Totals:		2	3

Mailbox Turnout located at Sta. 29+85 Lt. will require an estimated 41.7 cubic yards of Contractor Furnished Borrow Excavation.

CONTRACTOR FURNISHED BORROW EXCAVATION

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

Restoration of the Contractor Furnished Borrow Excavation site shall be the responsibility of the Contractor.

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Contractor Furnished Borrow Excavation.

TABLE OF SUPERELEVATION – SD391

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Station	to	Station	
0+00.0		4+87.2	- Normal Crown Section
4+87.2		6+60.2	- Superelevation Transition
6+60.2		20+35.4	- 3820' Radius Curve Left 0.042'/' Superelevation Rate Point of Rotation at Centerline
20+35.4		22+08.4	- Superelevation Transition
22+08.4		76+59.2	- Normal Crown Section
76+59.2		78+32.2	- Superelevation Transition
78+32.2		92+01.9	- 3820' Radius Curve Right 0.042'/' Superelevation Rate Point of Rotation at Centerline
92+01.9		93+74.9	- Superelevation Transition
93+74.9		113+36.3	- Normal Crown Section
113+36.3		115+09.3	- Superelevation Transition
115+09.3		126+89.0	- 3820' Radius Curve Right 0.042'/' Superelevation Rate Point of Rotation at Centerline
126+89.0		128+62.0	- Superelevation Transition
128+62.0		142+27.4	- Normal Crown Section
142+27.4		143+67.4	- Superelevation Transition
143+67.4		151+46.4	- 5730' Radius Curve Left 0.030'/' Superelevation Rate Point of Rotation at Centerline
141+46.4		152+86.4	- Superelevation Transition
152+86.4		165+06.0	- Normal Crown Section
165+06.0		166+18.0	- Superelevation Transition
166+18.0		172+06.5	- 11,460' Radius Curve Right 0.020'/' Superelevation Rate Point of Rotation at Centerline
172+06.5		173+18.5	- Superelevation Transition
173+18.5		177+84.7	- Normal Crown Section

RATES OF MATERIALS

The Estimate of Surfacing Quantities is based on the following quantities of materials per **MILE**.

US 18 RESURFACING

Sta. a 139+50 to Sta. b 235+75
 Sta. b 245+00 to Sta. b 275+80
 Sta. b 293+38 to Sta. c 487+58
 Sta. c 501+70 to Sta. d 693+50
 Sta. d 705+25 to Sta. e 834+25
 Sta. f 850+50 to Sta. f 916+60

LEFT AND RIGHT SHOULDERS

(Rate is for 1 shoulder only)

BASE COURSE or BASE COURSE, SALVAGED

Crushed or Salvage Aggregate 4805 Tons.

Water for Granular Material at the rate of 57.7 M. Gallons.

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	634 Tons	655 Tons
Salvaged Asphalt Concrete	159 Tons	164 Tons
PG 58-34 Asphalt Binder	<u>37 Tons</u>	<u>34 Tons</u>
Total Mix without Hydrated Lime	830 Tons	853 Tons
Hydrated Lime	<u>8 Tons</u>	<u>9 Tons</u>
Total Mix with Hydrated Lime	838 Tons	862 Tons

The exact proportions of this material will be determined on construction.

MAINLINE

SS-1h or CSS-1h Asphalt for Tack at the rate of 5.9 ton applied 47.0 feet wide (Rate = 0.05 gallon per square yard).

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	2139 Tons	2209 Tons
Salvaged Asphalt Concrete	535 Tons	552 Tons
PG 58-34 Asphalt Binder	<u>126 Tons</u>	<u>115 Tons</u>
Total Mix without Hydrated Lime	2800 Tons	2876 Tons
Hydrated Lime	<u>28 Tons</u>	<u>29 Tons</u>
Total Mix with Hydrated Lime	2828 Tons	2905 Tons

The exact proportions of this material will be determined on construction.

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 5.7 ton applied 46.0 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 52 tons applied 22.0 feet wide (Rate = 8.00 lbs. per square yard).

US 18 RESURFACING

Sta. 110+34 to Sta. a 139+50
 Sta. b 235+70 to Sta. b 245+00
 Sta. d 693+50 to Sta. d 705+25
 Sta. e 834+25 to Sta. f 850+50

MAINLINE

BASE COURSE or BASE COURSE, SALVAGED

Crushed or Salvage Aggregate 19219 Tons.

Water for Granular Material at the rate of 230.6 M. Gallons.

CLASS Q3R HOT MIXED ASPHALT CONCRETE – 1ST LIFT

	Alt. A	Alt. B
Crushed Aggregate	3209 Tons	3313 Tons
Salvaged Asphalt Concrete	802 Tons	828 Tons
PG 58-34 Asphalt Binder	<u>189 Tons</u>	<u>173 Tons</u>
Total Mix without Hydrated Lime	4200 Tons	4314 Tons
Hydrated Lime	<u>42 Tons</u>	<u>43 Tons</u>
Total Mix with Hydrated Lime	4242 Tons	4357 Tons

SS-1h or CSS-1h Asphalt for Tack at the rate of 5.9 ton applied 47.0 feet wide (Rate = 0.05 gallon per square yard).

CLASS Q3R HOT MIXED ASPHALT CONCRETE – 2ND LIFT

	Alt. A	Alt. B
Crushed Aggregate	2139 Tons	2209 Tons
Salvaged Asphalt Concrete	535 Tons	552 Tons
PG 58-34 Asphalt Binder	<u>126 Tons</u>	<u>115 Tons</u>
Total Mix without Hydrated Lime	2800 Tons	2876 Tons
Hydrated Lime	<u>28 Tons</u>	<u>29 Tons</u>
Total Mix with Hydrated Lime	2828 Tons	2905 Tons

The exact proportions of this material will be determined on construction.

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 5.7 ton applied 46.0 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 52 tons applied 22.0 feet wide (Rate = 8.00 lbs. per square yard).

SD 391 RESURFACING

Sta. 0+00 to Sta. 177+84.7

LEFT AND RIGHT SHOULDERS

(Rate is for 1 shoulder only)

BASE COURSE or BASE COURSE, SALVAGED

Crushed or Salvage Aggregate 55 Tons.

Water for Granular Material at the rate of 0.7 M. Gallons.

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	53 Tons	55 Tons
Salvaged Asphalt Concrete	13 Tons	14 Tons
PG 58-34 Asphalt Binder	<u>3 Tons</u>	<u>3 Tons</u>
Total Mix without Hydrated Lime	69 Tons	72 Tons
Hydrated Lime	<u>1 Tons</u>	<u>1 Tons</u>
Total Mix with Hydrated Lime	70 Tons	73 Tons

The exact proportions of this material will be determined on construction.

MAINLINE

SS-1h or CSS-1h Asphalt for Tack at the rate of 4.1 ton applied 32.6 feet wide (Rate = 0.05 gallon per square yard).

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	1619 Tons	1671 Tons
Salvaged Asphalt Concrete	405 Tons	418 Tons
PG 58-34 Asphalt Binder	<u>95 Tons</u>	<u>87 Tons</u>
Total Mix without Hydrated Lime	2119 Tons	2176 Tons
Hydrated Lime	<u>21 Tons</u>	<u>22 Tons</u>
Total Mix with Hydrated Lime	2140 Tons	2198 Tons

The exact proportions of this material will be determined on construction.

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 3.9 ton applied 31.6 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 52 tons applied 22.0 feet wide (Rate = 8.00 lbs. per square yard).

RATES OF MATERIALS

The Estimate of Surfacing Quantities is based on the following quantities of materials per **STATION**.

US 18 RESURFACING

Sta. 39+60 to Sta. 62+00

LEFT SHOULDER

BASE COURSE or BASE COURSE, SALVAGED

Crushed or Salvage Aggregate 52.50 Tons.

Water for Granular Material at the rate of 0.63 M. Gallons.

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	5.65 Tons	5.84 Tons
Salvaged Asphalt Concrete	1.41 Tons	1.46 Tons
PG 58-34 Asphalt Binder	<u>0.33 Tons</u>	<u>0.30 Tons</u>
Total Mix without Hydrated Lime	7.39 Tons	7.60 Tons
Hydrated Lime	<u>0.07 Tons</u>	<u>0.08 Tons</u>
Total Mix with Hydrated Lime	7.46 Tons	7.68 Tons

The exact proportions of this material will be determined on construction.

RIGHT SHOULDER

BASE COURSE or BASE COURSE, SALVAGED

Crushed or Salvage Aggregate 175.00 Tons.

Water for Granular Material at the rate of 2.10 M. Gallons.

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	28.97 Tons	29.91 Tons
Salvaged Asphalt Concrete	7.24 Tons	7.48 Tons
PG 58-34 Asphalt Binder	<u>1.71 Tons</u>	<u>1.56 Tons</u>
Total Mix without Hydrated Lime	37.92 Tons	38.95 Tons
Hydrated Lime	<u>0.38 Tons</u>	<u>0.39 Tons</u>
Total Mix with Hydrated Lime	38.30 Tons	39.34 Tons

The exact proportions of this material will be determined on construction.

MAINLINE

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.13 ton applied 54.0 feet wide (Rate = 0.05 gallon per square yard).

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	47.58 Tons	49.13 Tons
Salvaged Asphalt Concrete	11.90 Tons	12.28 Tons
PG 58-34 Asphalt Binder	<u>2.8 Tons</u>	<u>2.56 Tons</u>
Total Mix without Hydrated Lime	62.28 Tons	63.97 Tons
Hydrated Lime	<u>0.62 Tons</u>	<u>0.64 Tons</u>
Total Mix with Hydrated Lime	62.90 Tons	64.61 Tons

The exact proportions of this material will be determined on construction.

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.13 ton applied 53.0 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 1.47 tons applied 33.0 feet wide (Rate = 8.00 lbs. per square yard).

US 18 RESURFACING

Sta. 63+50 to Sta. 83+67

LEFT SHOULDER

BASE COURSE or BASE COURSE, SALVAGED

Crushed or Salvage Aggregate 63.00 Tons.

Water for Granular Material at the rate of 0.76 M. Gallons.

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	6.36 Tons	6.57 Tons
Salvaged Asphalt Concrete	1.59 Tons	1.64 Tons
PG 58-34 Asphalt Binder	<u>0.37 Tons</u>	<u>0.34 Tons</u>
Total Mix without Hydrated Lime	8.32 Tons	8.55 Tons
Hydrated Lime	<u>0.08 Tons</u>	<u>0.09 Tons</u>
Total Mix with Hydrated Lime	8.40 Tons	8.64 Tons

The exact proportions of this material will be determined on construction.

RIGHT SHOULDER

BASE COURSE or BASE COURSE, SALVAGED

Crushed or Salvage Aggregate 147.00 Tons.

Water for Granular Material at the rate of 1.76 M. Gallons.

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	23.32 Tons	24.08 Tons
Salvaged Asphalt Concrete	5.83 Tons	6.02 Tons
PG 58-34 Asphalt Binder	<u>1.37 Tons</u>	<u>1.25 Tons</u>
Total Mix without Hydrated Lime	30.52 Tons	31.35 Tons
Hydrated Lime	<u>0.31 Tons</u>	<u>0.31 Tons</u>
Total Mix with Hydrated Lime	30.83 Tons	31.66 Tons

The exact proportions of this material will be determined on construction.

MAINLINE

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.12 ton applied 51.0 feet wide (Rate = 0.05 gallon per square yard).

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	44.29 Tons	45.72 Tons
Salvaged Asphalt Concrete	11.07 Tons	11.43 Tons
PG 58-34 Asphalt Binder	<u>2.61 Tons</u>	<u>2.38 Tons</u>
Total Mix without Hydrated Lime	57.97 Tons	59.53 Tons
Hydrated Lime	<u>0.58 Tons</u>	<u>0.60 Tons</u>
Total Mix with Hydrated Lime	58.56 Tons	60.13 Tons

The exact proportions of this material will be determined on construction.

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.12 ton applied 50.0 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 1.47 tons applied 33.0 feet wide (Rate = 8.00 lbs. per square yard).

RATES OF MATERIALS

The Estimate of Surfacing Quantities is based on the following quantities of materials per **STATION**.

US 18 RESURFACING

Sta. 86+87 to Sta. 94+50
Sta. c 495+30 to Sta. c 498+05

MAINLINE

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.13 ton applied 56.0 feet wide (Rate = 0.05 gallon per square yard).

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	50.41 Tons	52.04 Tons
Salvaged Asphalt Concrete	12.60 Tons	13.01 Tons
PG 58-34 Asphalt Binder	<u>2.97 Tons</u>	<u>2.71 Tons</u>
Total Mix without Hydrated Lime	65.98 Tons	67.76 Tons
Hydrated Lime	<u>0.66 Tons</u>	<u>0.68 Tons</u>
Total Mix with Hydrated Lime	66.64 Tons	68.44 Tons

The exact proportions of this material will be determined on construction.

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.13 ton applied 55.0 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 1.47 tons applied 33.0 feet wide (Rate = 8.00 lbs. per square yard).

US 18 RESURFACING

Sta. 94+50 to Sta. 106+44
Sta. b 279+70 to Sta. b 288+38
Sta. c 491+48 to Sta. c 495+30
Sta. f 920+50 to Sta. f 929+24

LEFT AND RIGHT SHOULDERS

(Rate is for 1 shoulder only)

BASE COURSE or BASE COURSE, SALVAGED

Crushed or Salvage Aggregate 133.00 Tons.

Water for Granular Material at the rate of 1.60 M. Gallons.

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	20.49 Tons	21.16 Tons
Salvaged Asphalt Concrete	5.12 Tons	5.29 Tons
PG 58-34 Asphalt Binder	<u>1.21 Tons</u>	<u>1.10 Tons</u>
Total Mix without Hydrated Lime	26.82 Tons	27.55 Tons
Hydrated Lime	<u>0.27 Tons</u>	<u>0.28 Tons</u>
Total Mix with Hydrated Lime	27.09 Tons	27.83 Tons

The exact proportions of this material will be determined on construction.

MAINLINE

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.14 ton applied 59.0 feet wide (Rate = 0.05 gallon per square yard).

CLASS Q3R HOT MIXED ASPHALT CONCRETE

	Alt. A	Alt. B
Crushed Aggregate	51.82 Tons	53.50 Tons
Salvaged Asphalt Concrete	12.96 Tons	13.38 Tons
PG 58-34 Asphalt Binder	<u>3.05 Tons</u>	<u>2.79 Tons</u>
Total Mix without Hydrated Lime	67.83 Tons	69.67 Tons
Hydrated Lime	<u>0.68 Tons</u>	<u>0.70 Tons</u>
Total Mix with Hydrated Lime	68.51 Tons	70.37 Tons

The exact proportions of this material will be determined on construction.

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.14 ton applied 58.0 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 1.47 tons applied 33.0 feet wide (Rate = 8.00 lbs. per square yard).

TABLE OF ADDITIONAL QUANTITIES – PCN 02QC

Location-Description	Water for Granular Material	Base Course or Base Course, Salvaged	Class Q3R Hot Mixed Asphalt Concrete Alt. A	PG 58-34 Asphalt Binder Alt. A	Hydrated Lime Alt. A	Class Q3R Hot Mixed Asphalt Concrete Alt. B	PG 58-34 Asphalt Binder Alt. B	Hydrated Lime Alt. B	SS-1h or CSS-1h Asphalt for Tack	SS-1h or CSS-1h Asphalt for Flush Seal	Sand for Flush Seal
	MGal	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton
US 18											
Sta. 36+00 to Sta. 39+60											
Mainline	---	---	241.3	10.8	2.4	247.9	9.8	2.4	0.4	0.4	5.3
Left Shoulder	4.1	349.2	69.7	3.1	0.6	71.5	2.9	0.7	---	---	---
Right Shoulder	6.7	554.2	97.6	4.4	1.0	100.3	4.0	1.0	---	---	---
Sta. 62+00 to Sta. 63+50											
Mainline	---	---	95.3	4.2	0.9	97.8	3.9	1.0	0.2	0.2	2.2
Left Shoulder	1.1	94.5	12.6	0.6	0.1	12.9	0.5	0.1	---	---	---
Right Shoulder	3.1	262.4	57.4	2.6	0.6	59.0	2.3	0.6	---	---	---
Sta. 83+67 to Sta. 86+87											
Mainline	--	---	219.2	9.8	2.2	225.1	8.9	2.2	0.4	0.4	4.7
Left Shoulder	4.3	358.4	68.8	3.1	0.7	70.6	2.8	0.7	---	---	---
Right Shoulder	5.9	492.8	104.6	4.7	1.0	107.5	4.3	1.1	---	---	---
Sta. 106+44 to Sta. 110+00											
Mainline	---	---	219.4	9.8	2.2	225.4	8.9	2.2	0.4	0.4	4.3
Left Shoulder	4.9	405.1	78.2	3.5	0.8	80.3	3.2	0.8	---	---	---
Right Shoulder	4.9	405.1	78.2	3.5	0.8	80.3	3.2	0.8	---	---	---
Sta. 110+00 to Sta. 110+34											
Mainline	1.5	124.2	27.5 / 18.3	1.2 / 0.8	0.3 / 0.2	28.2 / 18.8	1.1 / 0.7	0.3 / 0.2	---	---	0.3
Sta. b 275+80 to Sta. b 279+70											
Mainline	---	---	238.2	10.6	2.4	244.6	9.7	2.4	0.5	0.5	4.8
Left Shoulder	5.2	437.0	83.8	3.7	0.8	86.1	3.4	0.9	---	---	---
Right Shoulder	5.2	437.0	83.8	3.7	0.8	86.1	3.4	0.9	---	---	---
Sta. b 288+38 to Sta. b 293+38											
Mainline	---	---	305.2	13.6	3.0	313.4	12.4	3.1	0.6	0.6	6.1
Left Shoulder	6.7	560.0	107.4	4.8	1.1	110.3	4.4	1.1	---	---	---
Right Shoulder	6.7	560.0	107.4	4.8	1.1	110.3	4.4	1.1	---	---	---
Sta. c 487+58 to Sta. c 491+47											
Mainline	---	---	238.2	10.6	2.4	244.6	9.7	2.4	0.5	0.5	4.8
Left Shoulder	5.2	437.0	83.8	3.7	0.8	86.1	3.4	0.8	---	---	---
Right Shoulder	5.2	437.0	83.8	3.7	0.8	86.1	3.4	0.8	---	---	---
Sta. c 498+05 to Sta. c 501+70											
Mainline	---	---	215.9	9.6	2.1	221.7	8.8	2.2	0.4	0.4	4.5
Sta. f 916+60 to Sta. f 920+50											
Mainline	---	---	238.2	10.6	2.4	244.6	9.7	2.4	0.5	0.5	4.8
Left Shoulder	5.2	437.0	83.8	3.7	0.8	86.1	3.4	0.8	---	---	---
Right Shoulder	5.2	437.0	83.8	3.7	0.8	86.1	3.4	0.8	---	---	---
Sta. f 929+24 to Sta. f 934+24											
Mainline	---	---	305.2	13.6	3.0	313.4	12.4	3.1	0.6	0.6	6.1
Left Shoulder	6.7	560.0	107.4	4.8	1.1	110.3	4.4	1.1	---	---	---
Right Shoulder	6.7	560.0	107.4	4.8	1.1	110.3	4.4	1.1	---	---	---
Leveling Lift Surfacing											
Sta. 36+00 to Sta. 39+95.6											
Left Mainline Edge	---	---	25.3	1.1	0.2	25.9	1.0	0.3	0.1	---	---
Right Mainline Edge	---	---	21.3	1.0	0.2	21.9	0.9	0.2	0.1	---	---
Sta. 45+31 to Sta. 51+94.8											
Left Mainline Edge	---	---	21.5	1.0	0.2	22.1	0.9	0.2	0.1	---	---
Right Mainline Edge	---	---	23.4	1.0	0.2	24.0	1.0	0.2	0.1	---	---
Sta. b 216+29.6 to Sta. b 235+75											
Right Mainline Edge	---	---	228.7	10.2	2.2	234.8	9.3	2.3	0.2	---	---

TABLE OF ADDITIONAL QUANTITIES CONTINUED – PCN 02QC

Location-Description	Water for Granular Material	Base Course or Base Course, Salvaged	Class Q3R Hot Mixed Asphalt Concrete Alt. A	PG 58-34 Asphalt Binder Alt. A	Hydrated Lime Alt. A	Class Q3R Hot Mixed Asphalt Concrete Alt. B	PG 58-34 Asphalt Binder Alt. B	Hydrated Lime Alt. B	SS-1h or CSS-1h Asphalt for Tack	SS-1h or CSS-1h Asphalt for Flush Seal	Sand for Flush Seal
	MGal	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton
Leveling Lift Surfacing (Continued)											
Sta. b 287+63.6 to Sta. b 325+45.2											
Left Mainline Edge	---	---	1285.2	57.3	12.7	1319.9	52.3	13.0	0.5	---	---
Right Mainline Edge	---	---	7.4	0.4	0.1	7.5	0.3	0.1	0.2	---	---
Sta. b 325+45.2 to Sta. c 495+30											
Left Mainline Edge	---	---	443.8	19.6	4.5	455.4	18.0	4.5	1.3	---	---
Right Mainline Edge	---	---	200.0	9.0	1.9	204.9	8.0	1.9	1.3	---	---
Sta. d 614+95.7 to Sta. d 630+02.9											
Left Mainline Edge	---	---	2.2	0.1	---	2.2	0.1	---	0.1	---	---
Right Mainline Edge	---	---	317.6	14.2	3.1	326.2	12.9	3.2	0.2	---	---
Sta. d 636+01 to Sta. d 651+21.4											
Left Mainline Edge	---	---	332.1	14.8	3.3	341.0	13.5	3.4	0.2	---	---
Right Mainline Edge	---	---	9.3	0.4	0.1	9.5	0.4	0.1	0.1	---	---
Sta. d 708+22.4 to Sta. d 729+09.6											
Left Mainline Edge	---	---	643.8	28.7	6.4	661.2	26.2	6.6	0.3	---	---
Sta. e 766+95.7 to Sta. e 782+10.4											
Left Mainline Edge	---	---	8.6	0.4	0.1	8.8	0.3	0.1	0.1	---	---
Right Mainline Edge	---	---	327.6	14.6	3.2	336.5	13.3	3.3	0.2	---	---
Sta. f 923+53 to Sta. f 934+24											
Left Mainline Edge	---	---	73.7	3.3	0.7	75.7	3.0	0.8	0.1	---	---
Right Mainline Edge	---	---	39.3	1.7	0.4	40.4	1.6	0.4	0.1	---	---
Intersecting Roads											
XR 191	4.0	340.4	31.7	1.4	0.3	32.6	1.3	0.3	---	---	0.8
XR b 286	10.1	844.6	31.7	1.4	0.3	32.6	1.3	0.3	---	---	0.8
XR b 340	1.3	112.0	31.7	1.4	0.3	32.6	1.3	0.3	---	---	0.8
XR d 696	2.1	174.4	31.7	1.4	0.3	32.6	1.3	0.3	---	---	0.8
XR e 816	2.1	179.1	31.7	1.4	0.3	32.6	1.3	0.3	---	---	0.8
XR f 869	1.3	109.2	31.7	1.4	0.3	32.6	1.3	0.3	---	---	0.8
XR f 922	1.7	138.4	31.7	1.4	0.3	32.6	1.3	0.3	---	---	0.8
XR f 934	2.6	219.4	31.7	1.4	0.3	32.6	1.3	0.3	---	---	0.8
Standard Int. Rds. – 13 each	2.6	260.0	412.1	18.2	3.9	423.8	16.9	3.9	0.5	0.5	9.8
Frontage Roads											
FR 70	5.7	474.1	---	---	---	---	---	---	---	---	---
FR 111	3.4	285.6	---	---	---	---	---	---	---	---	---
FR a 169	4.8	398.7	---	---	---	---	---	---	---	---	---
Entrances											
Sta. 83+46 Lt.	0.9	75.0	---	---	---	---	---	---	---	---	---
Sta. 131+35 Lt.	2.3	189.1	---	---	---	---	---	---	---	---	---
Standard Entrances – 103 each	20.6	1545.0	---	---	---	---	---	---	---	---	---
Diversions											
DIV 122	7.5	621.1	---	---	---	---	---	---	---	---	---
DIV b 342	3.0	252.4	---	---	---	---	---	---	---	---	---
DIV c 502	3.9	327.7	---	---	---	---	---	---	---	---	---
DIV d 673	5.1	426.3	---	---	---	---	---	---	---	---	---
DIV e 805	4.5	378.6	---	---	---	---	---	---	---	---	---
DIV f 903	2.9	241.8	---	---	---	---	---	---	---	---	---
DIV f 912	4.6	379.9	---	---	---	---	---	---	---	---	---
Miscellaneous											
Pipe Undercut Backfill – 51 each	81.7	6,809.7									
Pipe Replacement Areas – 62 each	116.4	9702.1	2131.8/ ---	94.4/ ---	21.0/ ---	2189.5/ ---	86.5/ ---	21.0/ ---	---	---	---
Spot Leveling and Repair	---	---	1697.3	76.4	17.0	1697.3	67.9	17.0	---	---	---
TOTAL	389.6	32,392.5	12,367.0	551.1	122.1	12,655.0	501.9	124.0	10.3	5.0	64.1

TABLE OF INTERSECTING ROADS – US 18

Revised: 23 Jul 15, RML

Locations		
Sta. 63+50 Rt.	Sta. b 392+05 Lt.	Sta. c 497+79 Lt.
Sta. 70+79 Rt.	Sta. b 392+10 Rt.	Sta. c 550+51 Rt.
Sta. 83+46 Rt.	Sta. c 444+98 Lt.	Sta. c 603+51 Rt.
Sta. b 286+04 Lt.	Sta. c 444+99 Rt.	Sta. c 603+55 Lt.
Sta. b 340+62 Rt.		

TABLE OF ADDITIONAL QUANTITIES – PCN 02NH

Location-Description	Water for Granular Material	Base Course or Base Course, Salvaged	Class Q3R Hot Mixed Asphalt Concrete Alt. A	PG 58-34 Asphalt Binder Alt. A	Hydrated Lime Alt. A	Class Q3R Hot Mixed Asphalt Concrete Alt. B	PG 58-34 Asphalt Binder Alt. B	Hydrated Lime Alt. B	SS-1h or CSS-1h Asphalt for Tack	SS-1h or CSS-1h Asphalt for Flush Seal	Sand for Flush Seal
	MGal	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton
Intersecting Road – Sta. 55+56.3 Lt.	0.2	20.0	31.8	1.4	0.3	32.6	1.3	0.3	---	---	0.8
Entrances – 13 each	2.3	195.0	---	---	---	---	---	---	---	---	---
Mailbox Turnouts											
MRM 3.312 Rt.	---	---	9.9	0.4	0.1	10.1	0.4	0.1	---	---	---
MRM 2.805 Lt.	0.3	26.8	9.6	0.4	0.1	9.8	0.4	0.1	---	---	---
MRM 2.287 Rt.	---	---	10.5	0.5	0.1	10.8	0.4	0.1	---	---	---
MRM 1.365 Lt.	---	---	9.6	0.4	0.1	9.8	0.4	0.1	---	---	---
Spot Leveling and Repair	---	---	336.8	15.2	3.4	336.8	13.5	3.4	---	---	---
TOTAL	2.8	241.8	408.2	18.3	4.1	409.9	16.4	4.1	0.0	0.0	0.8

TABLE OF PIPE AND RELATED ITEMS – PCN 02NH

SD391 Location	Culvert Type and End	Contractor Furnished Borrow Excavation (cu.yds.)		Remove Pipe End Section (each)		36" CMP Sloped Ends w/ Bars (each)		42" CMP Sloped Ends w/ Bars (each)		18" CMP Flared Ends (each)		Cleanout Pipe Culvert (each)
		Lt.	Rt.	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.	
Sta. 21+00	36" CMP w/Flared Ends	10	10	1	1	1	1					
Sta. 33+40	42" CMP w/Flared Ends	10	10	1	1			1	1			
Sta. 46+40	18" CMP w/Flared Ends											1
Sta. 62+00	18" CMP w/Flared Ends	5	5	1	1					1	1	1
Sta. 73+50	18" CMP w/Flared Ends	5	5	1	1					1	1	1
Sta. 84+00	18" CMP w/Flared Ends	5	5	1	1					1	1	1
Sta. 108+92	Box Culvert	30	30									1
	SUBTOTALS	65	65	5	5	1	1	1	1	3	3	
	TOTAL	130		10		2		2		6		5

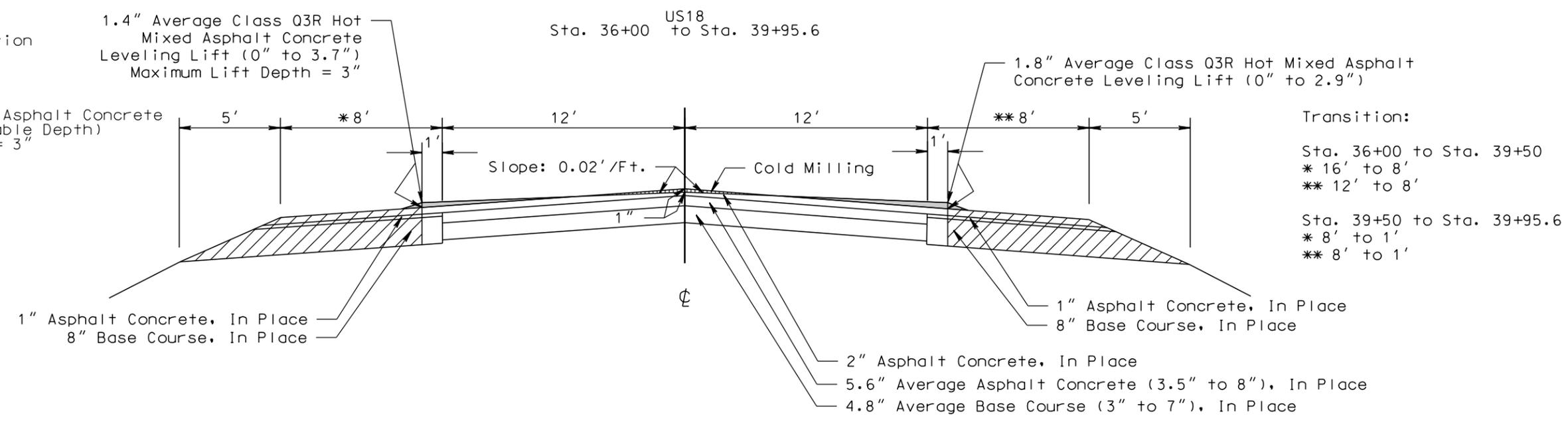
SURFACING TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT NH-PH 0018(177)104 & P 0391(06)0	SHEET F13	TOTAL SHEETS F38
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Plotting Date: 07/23/2015

PLOT SCALE - 1+6.00001

- Cold Milling Asphalt Concrete
(1" depth at ϕ)
- Unclassified Excavation
(See Section B)
- Class Q3R Hot Mixed Asphalt Concrete
Leveling Lift (Variable Depth)
Maximum Lift Depth = 3"



Transition:
 Sta. 36+00 to Sta. 39+50
 * 16' to 8'
 ** 12' to 8'

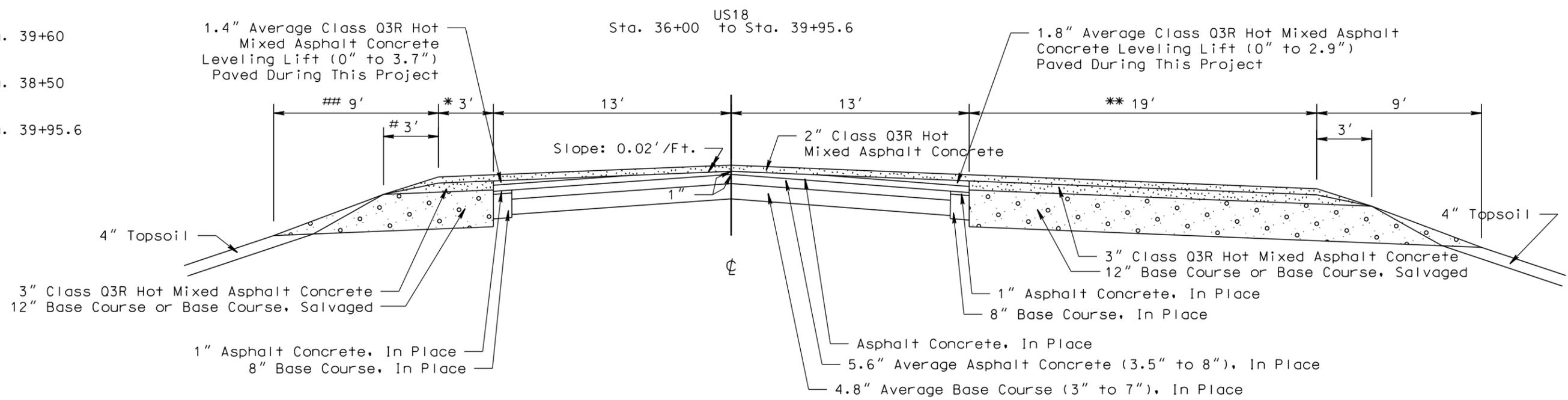
Sta. 39+50 to Sta. 39+95.6
 * 8' to 1'
 ** 8' to 1'

Transition:
 Sta. 36+00 to Sta. 38+50
 * 13' to 8.8'

Sta. 38+50 to Sta. 39+60
 * 8.8' to 3'

Sta. 36+00 to Sta. 38+50
 ** 13' to 19'

Sta. 36+00 to Sta. 39+95.6
 # 2'
 ## 7'



PLOTTED FROM - TRPR16032

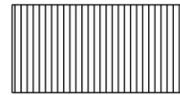
PLOT NAME - 2

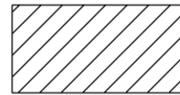
FILE - ... \020C TYPICAL SECTION.DGN

SURFACING TYPICAL SECTIONS

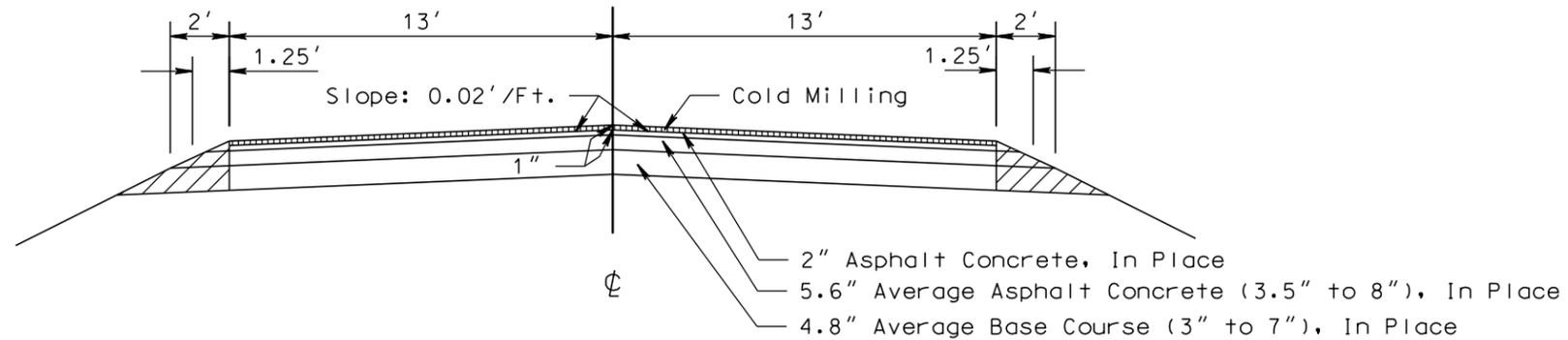
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0018(177)104 & P 0391(06)0	F14	F38

Plotting Date: 07/23/2015

 Cold Milling Asphalt Concrete
(1" depth at ϕ)

 Unclassified Excavation
(See Section B)

US18
Sta. 39+95.6 to Sta. 85+93.5
Sta. 98+92.7 to Sta. 110+00
Sta. a 139+50 to Sta. b 235+75
Sta. b 245+00 to Sta. b 325+45.2
Sta. c 502+64.1 to Sta. d 693+50
Sta. d 705+25 to Sta. e 834+25
Sta. f 850+50 to Sta. f 922+85.9
(See Superelevated Typical for Curve Sections)



Transition:

Sta. 39+95.6 to Sta. 62+00
2'
7'

Sta. 39+95.6 to Sta. 63+50
* 3'
** 19'

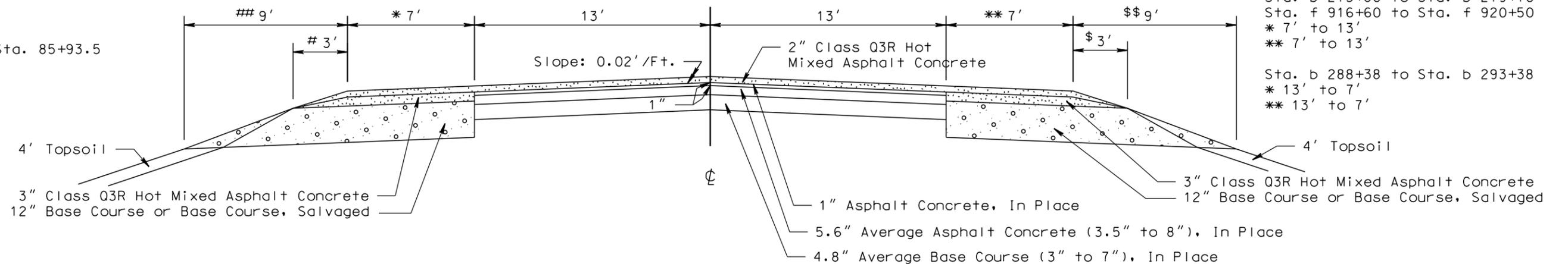
Sta. 40+87 to Sta. 41+50
\$ 2'
\$\$ 7'

Sta. 41+50 to Sta. 42+50
\$ 2' to 3'
\$\$ 7' to 9'

Sta. 63+50 to Sta. 83+67
* 3'
** 15'

Sta. 83+67 to Sta. 85+93.5
* 7' to 11.2'
** 19' to 14.8'

US18
Sta. 39+95.6 to Sta. 85+93.5
Sta. 98+92.7 to Sta. 110+00
Sta. a 139+50 to Sta. b 235+75
Sta. b 245+00 to Sta. b 325+45.2
Sta. c 502+64.1 to Sta. d 693+50
Sta. d 705+25 to Sta. e 834+25
Sta. f 850+50 to Sta. f 922+85.9
(See Superelevated Typical for Curve Sections)



Transition:

Sta. 98+92.7 Sta. 106+44
Sta. b 279+70 to Sta. b 288+38
Sta. f 920+50 to Sta. f 922+85.9
* 13'
** 13'

Sta. 106+44 to Sta. 110+00
* 13' to 7.52'
** 13' to 7.52'

Sta. b 275+80 to Sta. b 279+70
Sta. f 916+60 to Sta. f 920+50
* 7' to 13'
** 7' to 13'

Sta. b 288+38 to Sta. b 293+38
* 13' to 7'
** 13' to 7'

PLOT SCALE - 1/8" = 10'-0"

PLOTTED FROM - TRPR16032

PLOT NAME - 3

FILE - ... \020C TYPICAL SECTION.DGN

Transitions:

Sta. 85+93.5 to Sta. 86+41.7

** 1' to 8'

Sta. 86+41.7 to Sta. 86+87

* 0' to 0.8'

Sta. 94+68 to Sta. 98+31.2

* 6' to 0'

Sta. 98+31.2 to Sta. 98+92.7

** 8' to 1'

SURFACING TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0018(177)104 & P 0391(06)0		
Plotting Date: 07/23/2015		F15	F38

Transitions:

Sta. 491+34 to Sta. c 491+80

** 1' to 8'

Sta. 491+80 to Sta. c 495+30

* 0' to 5.2'

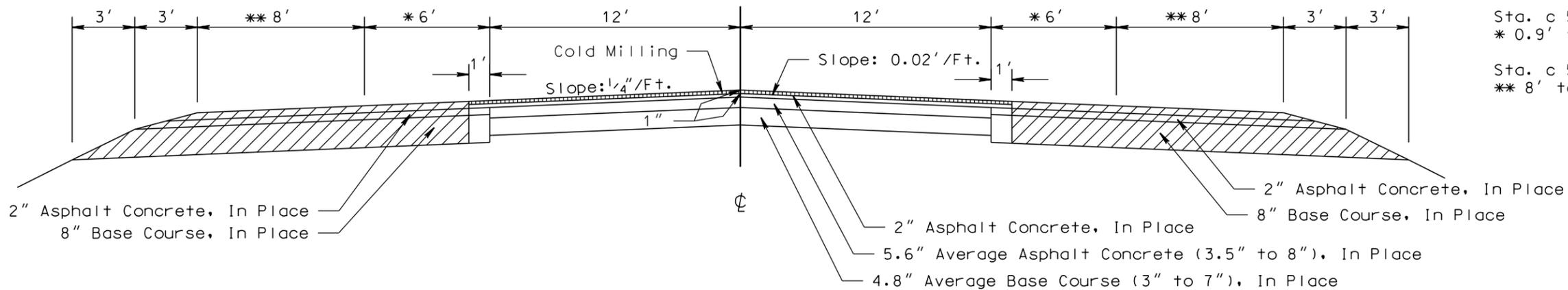
Sta. c 501+70 to Sta. c 502+31

* 0.9' to 0'

Sta. c 502+31 to Sta. c 502+64.1

** 8' to 1'

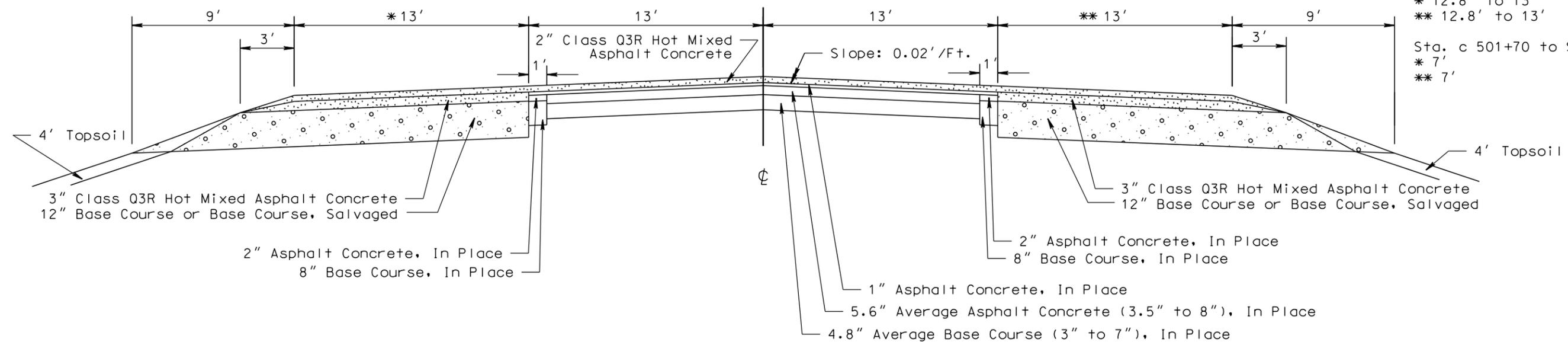
US18
 Sta. 85+93.5 to Sta. 86+87
 Sta. 94+50 to Sta. 98+92.7
 Sta. c 491+34 to Sta. c 495+30
 Sta. c 501+70 to Sta. c 502+64.1



 Cold Milling Asphalt Concrete
(1" depth at CL)

 Unclassified Excavation
(See Section B)

US18
 Sta. 85+93.5 to Sta. 86+87
 Sta. 94+50 to Sta. 98+92.7
 Sta. c 491+34 to Sta. c 495+30
 Sta. c 501+70 to Sta. c 502+64.1



Transitions:

Sta. 85+93.5 to Sta. 86+87

* 11.2' to 13'

** 14.8' to 13'

Sta. 491+34 to Sta. c 491+48

* 12.8' to 13'

** 12.8' to 13'

Sta. c 501+70 to Sta. c 502+64.1

* 7'

** 7'

PLOT SCALE - 1/4" = 10'-0"

PLOTTED FROM - TRPR16032

PLOT NAME - 4

FILE - ... \020C TYPICAL SECTION.DGN

SURFACING TYPICAL SECTIONS

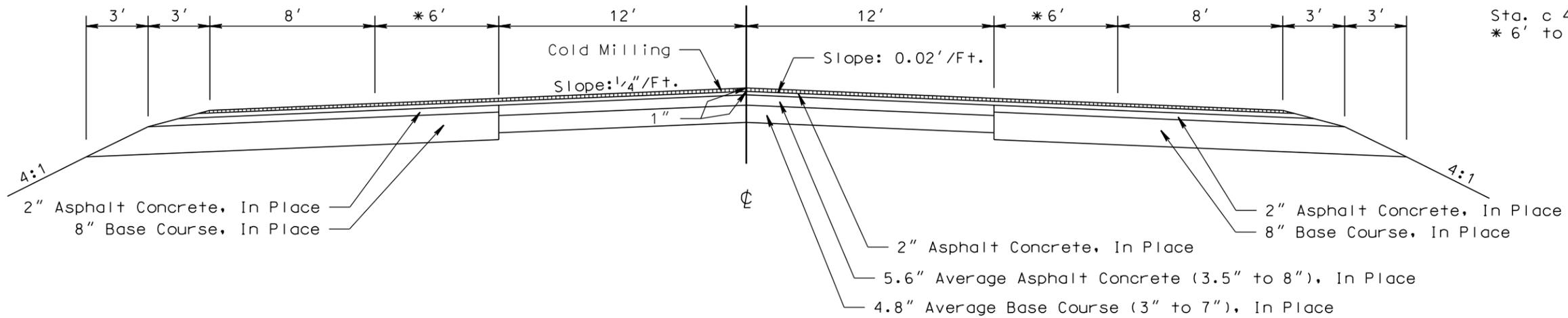
STATE OF SOUTH DAKOTA	PROJECT NH-PH 0018(177)104 & P 0391(06)0	SHEET F16	TOTAL SHEETS F38
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Plotting Date: 07/23/2015

PLOT SCALE - 1+6.00001

Cold Milling Asphalt Concrete
(1" depth at ϕ)

US18
Sta. 86+87 to Sta. 94+50
Sta. c 495+30 to Sta. c 501+70



Transitions:

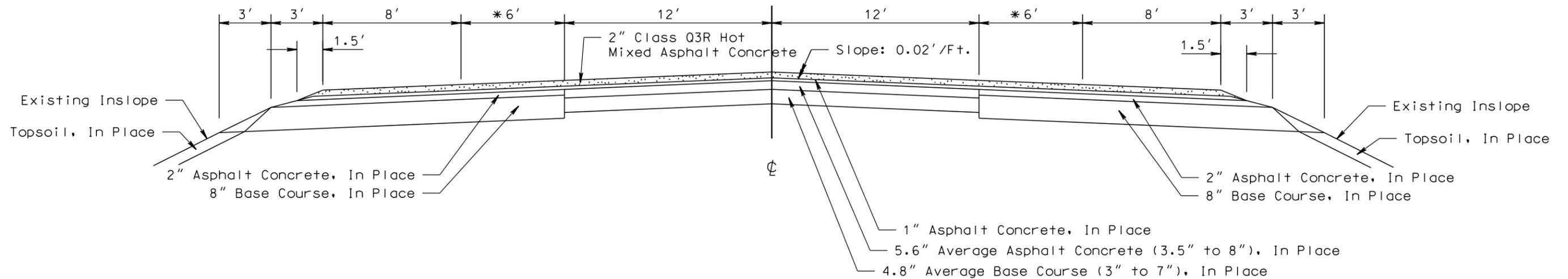
Sta. 86+87 to Sta. 89+68
* 0.8' to 6'

Sta. 495+30 to Sta. c 495+80
* 5.2' to 6'

Sta. c 498+05 to Sta. c 501+70
* 6' to 0.9'

PLOT NAME - 5

US18
Sta. 86+87 to Sta. 94+50
Sta. c 495+30 to Sta. c 501+70



Transitions:

Sta. c 498+05 to Sta. c 501+70
* 6' to 0'

FILE - ... \020C TYPICAL SECTION.DGN

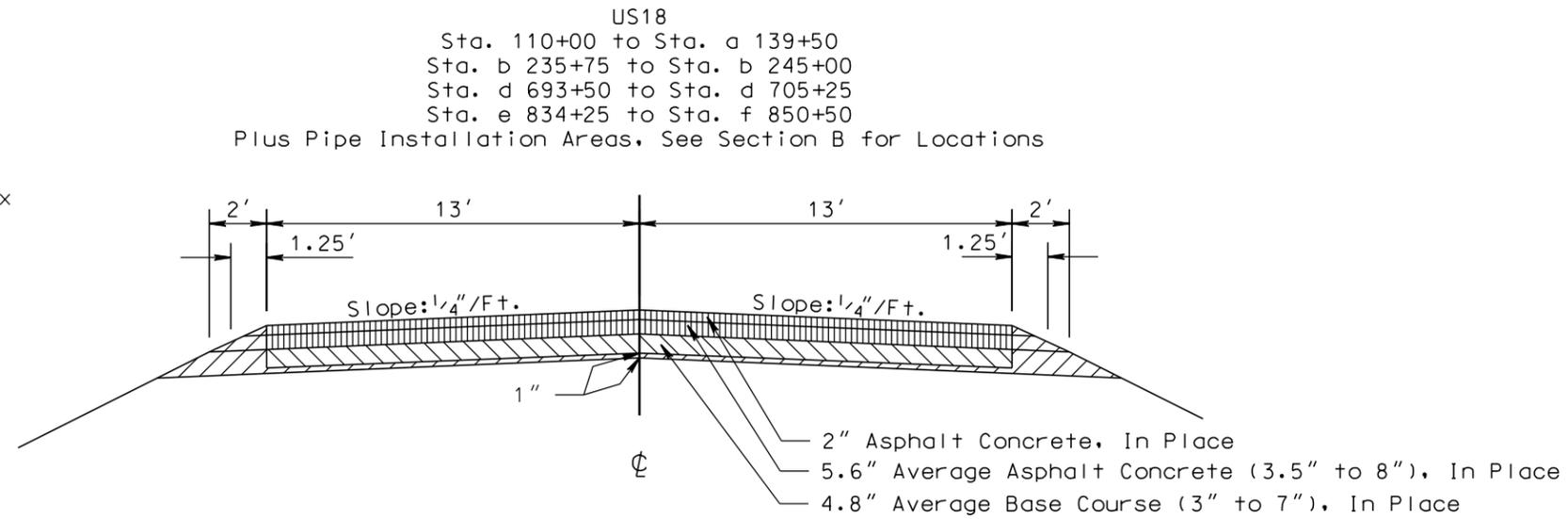
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SURFACING TYPICAL SECTIONS

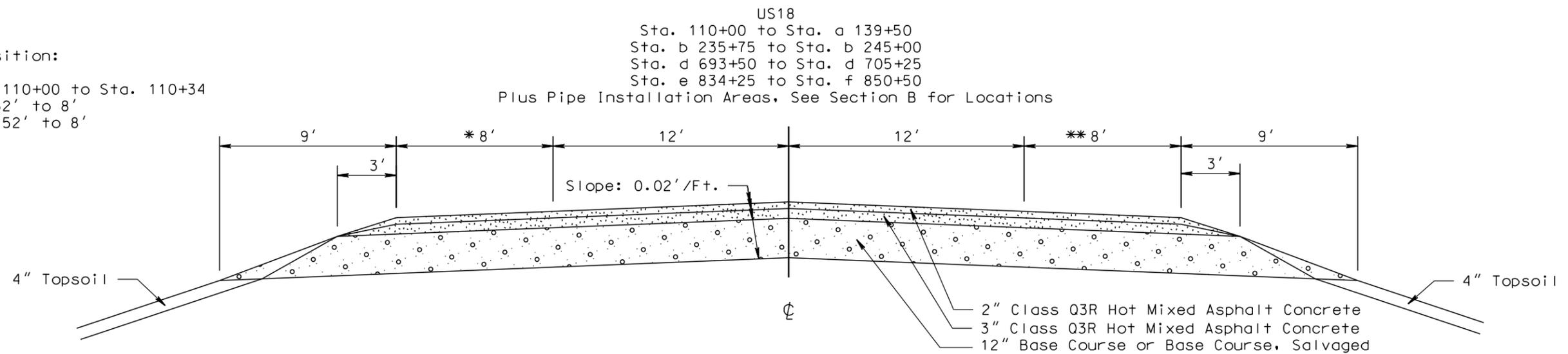
STATE OF SOUTH DAKOTA	PROJECT NH-PH 0018(177)104 & P 0391(06)0	SHEET	TOTAL SHEETS
		F17	F38

Plotting Date: 07/23/2015

- Cold Milling Asphalt Concrete
- Unclassified Excavation
(See Section B)
- Salvaged and Stockpile Asphalt Mix and Granular Base Material



Transition:
Sta. 110+00 to Sta. 110+34
* 8.52' to 8'
** 8.52' to 8'



PLOT SCALE - 1+6.00001

PLOTTED FROM - TRPR16032

PLOT NAME - 6

FILE - ... \020C TYPICAL SECTION.DGN

SURFACING TYPICAL SECTIONS

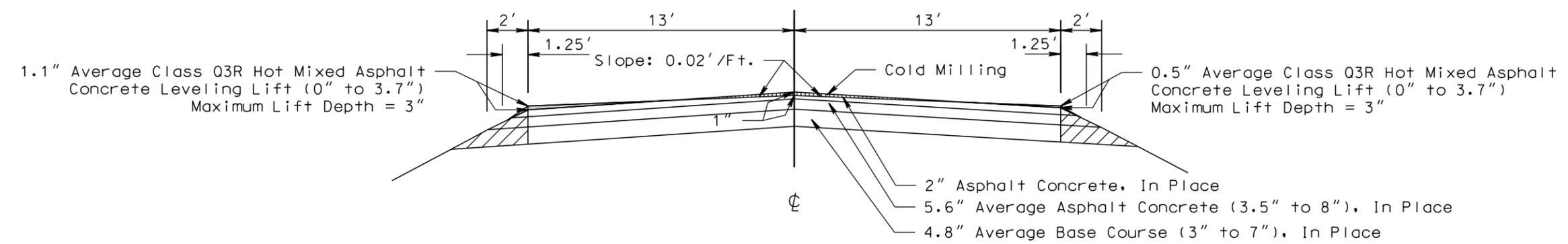
STATE OF SOUTH DAKOTA	PROJECT NH-PH 0018(177)104 & P 0391(06)0	SHEET	TOTAL SHEETS
		F18	F38

Plotting Date: 07/23/2015

PLOT SCALE - 1+6.00001

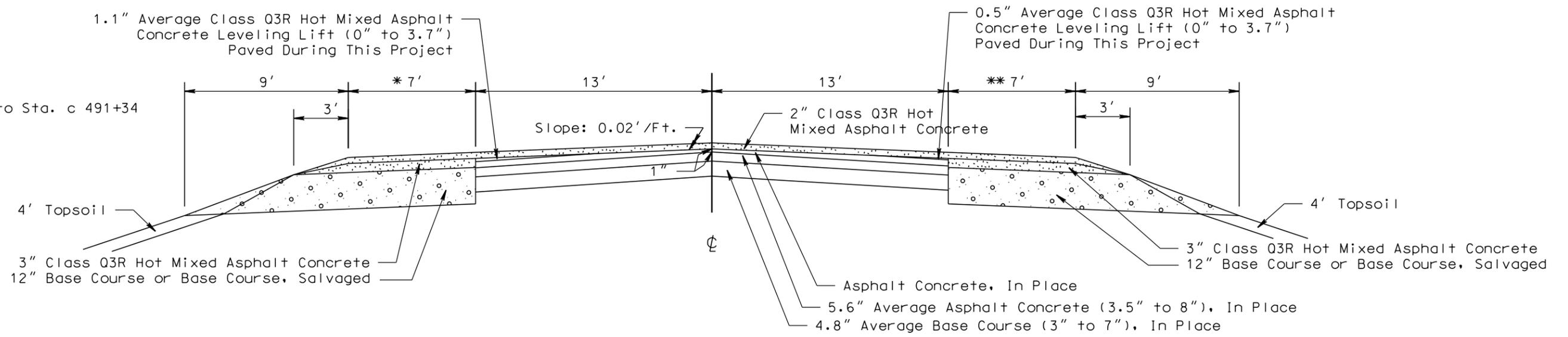
- Cold Milling Asphalt Concrete
(1" depth at ϕ)
- Unclassified Excavation
(See Section B)
- Class Q3R Hot Mixed Asphalt Concrete
Leveling Lift (Variable Depth)
Maximum Lift Depth = 3"

US18
Sta. b 325+45.2 to Sta. c 491+34



US18
Sta. b 325+45.2 to Sta. c 491+34

Transition:
Sta. c 487+58 to Sta. c 491+34
* 7' to 12.8'
** 7' to 12.8'



PLOTTED FROM - TRPR16032

PLOT NAME - 7

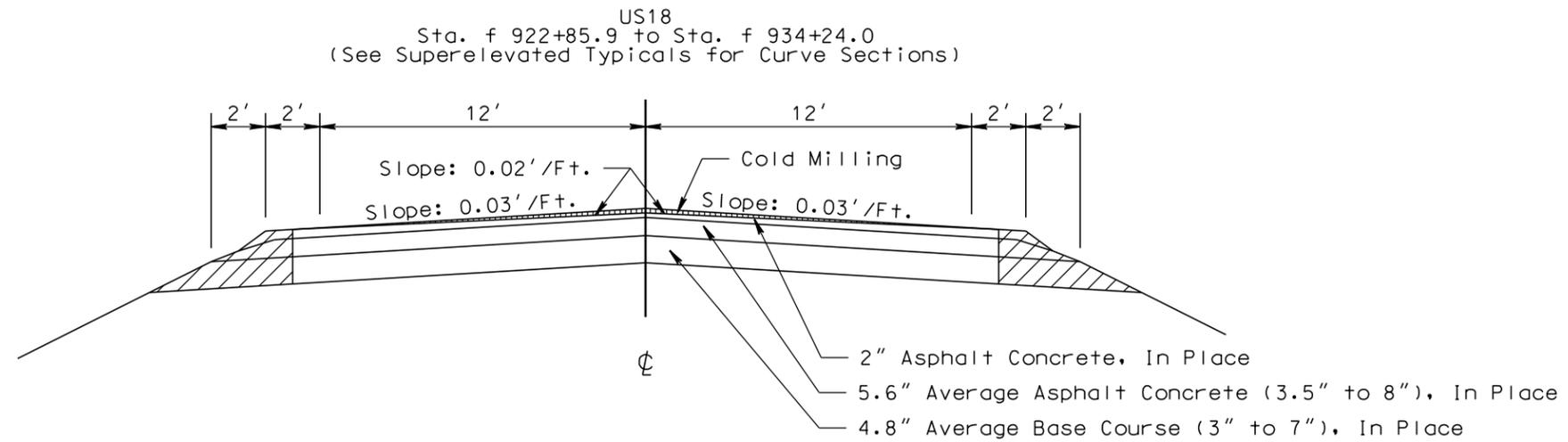
FILE - ... \020C TYPICAL SECTION.DGN

SURFACING TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT NH-PH 0018(177)104 & P 0391(06)0	SHEET F19	TOTAL SHEETS F38
Plotting Date: 07/23/2015			

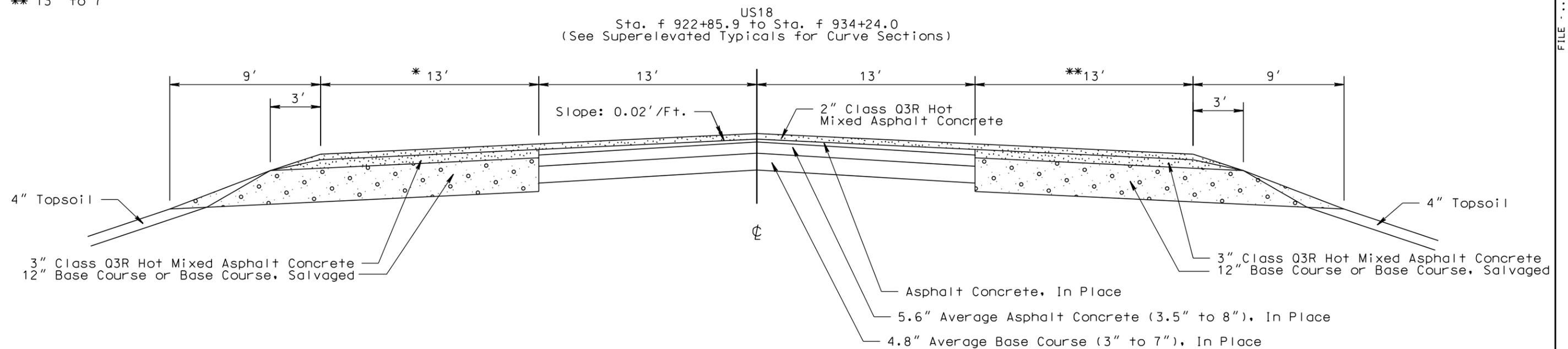
Cold Milling Asphalt Concrete
(1" depth at ϕ)

Unclassified Excavation
(See Section B)



Transitions:

Sta. f 929+24 to Sta. f 934+24
 * 13' to 7'
 ** 13' to 7'



PLOT SCALE - 1/8" = 100'

PLOTTED FROM - TRPR16032

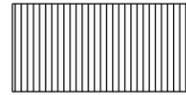
PLOT NAME - 8

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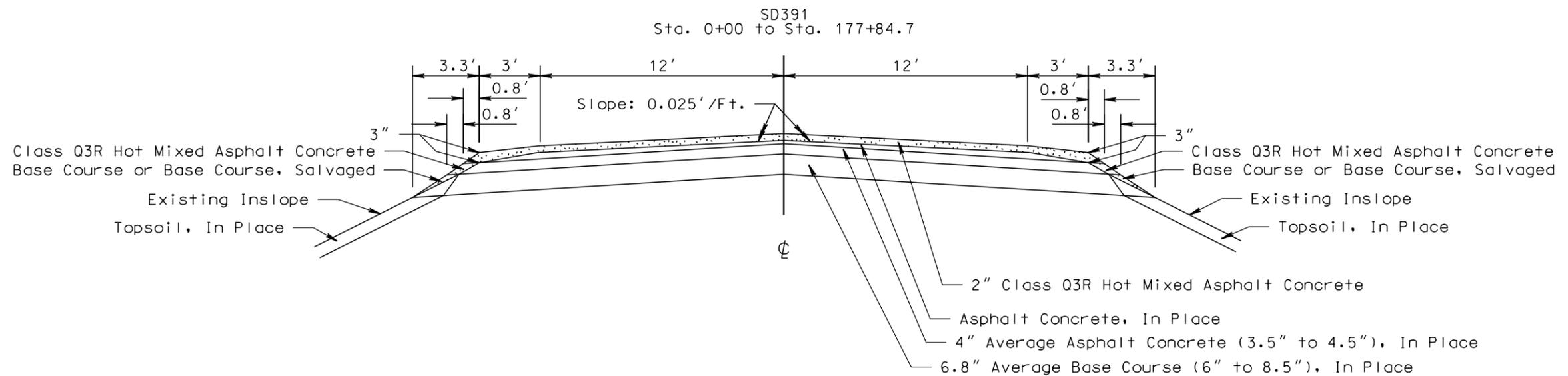
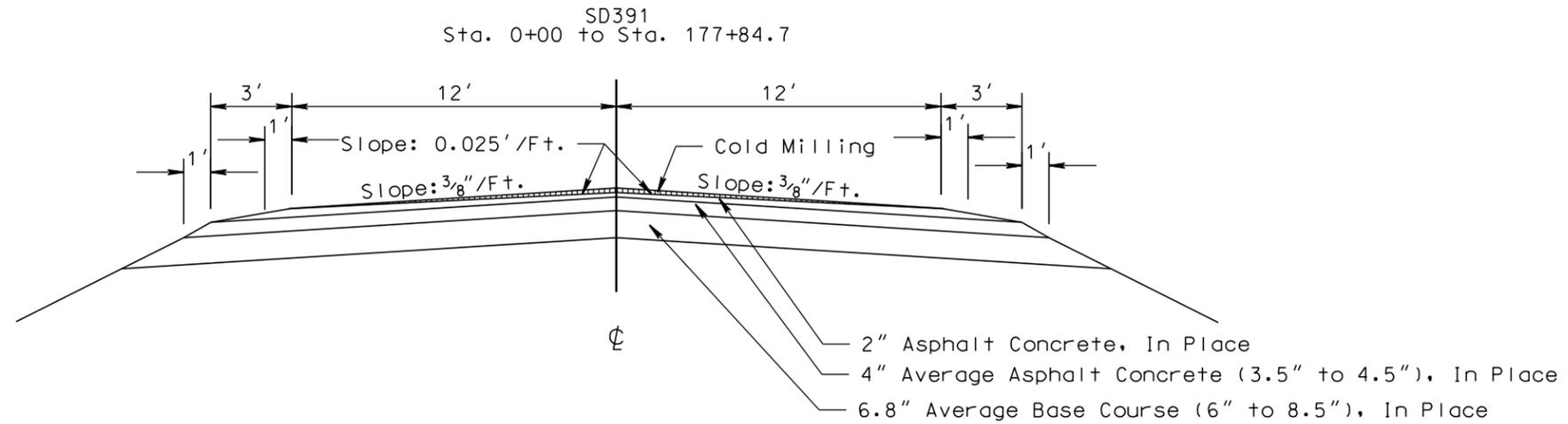
SURFACING TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT NH-PH 0018(177)104 & P 0391(06)0	SHEET	TOTAL SHEETS
		F20	F38

Plotting Date: 07/23/2015



Cold Milling Asphalt Concrete
(1" depth at ϕ)



PLOT SCALE - 1+6.00001

PLOTTED FROM - TRPR16032

PLOT NAME - 9

FILE - ... \020C TYPICAL SECTION.DGN

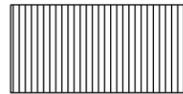
SUPERELEVATED TYPICALS

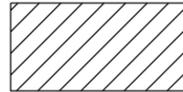
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0018(177)104 & P 0391(06)0	F21	F38

Plotting Date: 07/23/2015

PLOT SCALE - 1+6.00001

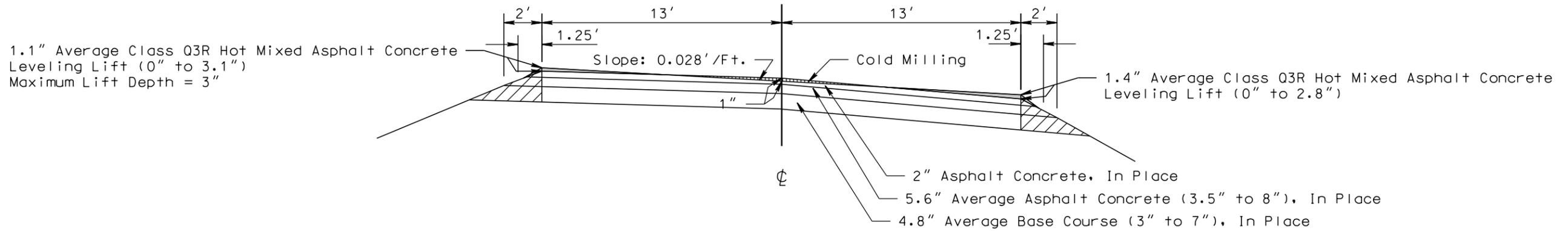
PLOT NAME - 10

 Cold Milling Asphalt Concrete
(1" depth at ϕ)

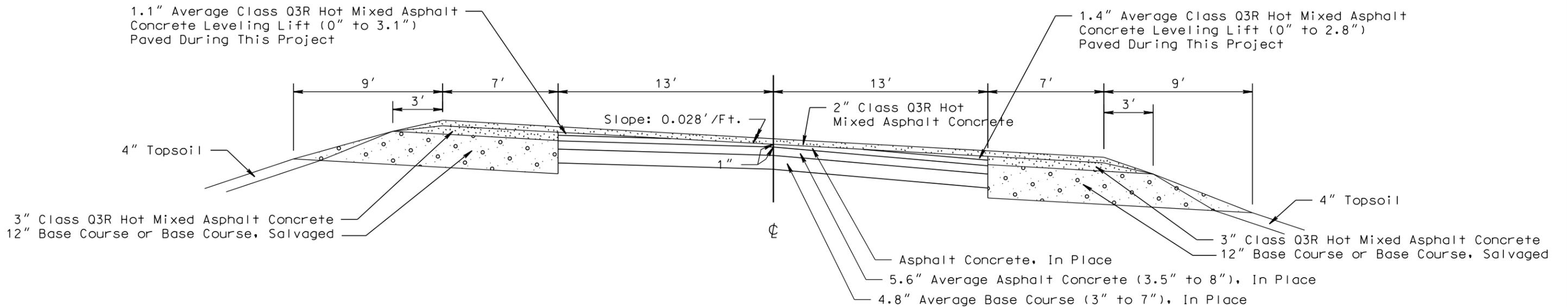
 Unclassified Excavation
(See Section B)

 Class Q3R Hot Mixed Asphalt Concrete
Leveling Lift (Variable Depth)
Maximum Lift Depth = 3"

US18
Sta. 45+31 to Sta. 51+94.8
(See Section B, Superelevation Table for slope transition.)



US18
Sta. 45+31 to Sta. 51+94.8
(See Section B, Superelevation Table for slope transition.)



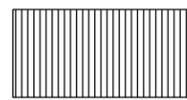
PLOTTED FROM - TRPR16032

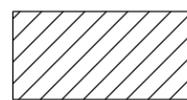
FILE - ... \020C TYPICAL SECTION.DGN

SUPERELEVATED TYPICALS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0018(177)104 & P 0391(06)0	F22	F38

Plotting Date: 07/23/2015

 Cold Milling Asphalt Concrete
(1" depth at ϕ)

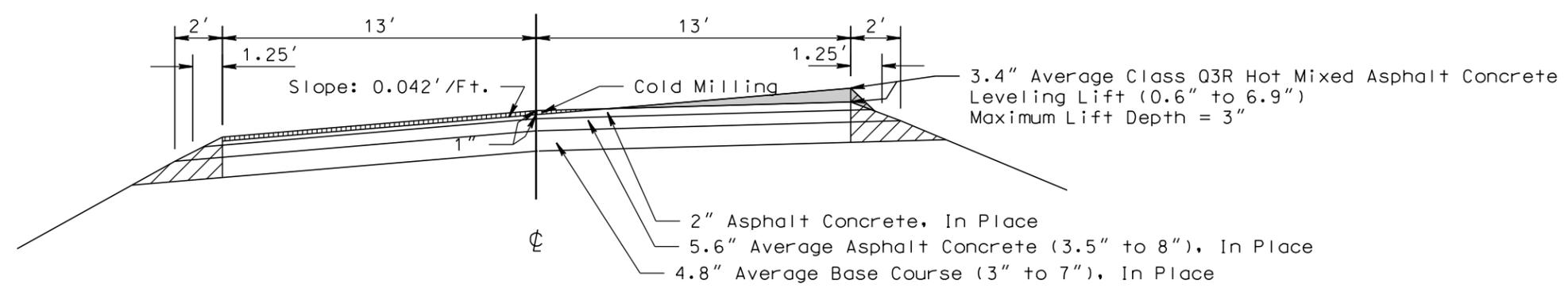
 Unclassified Excavation
(See Section B)

 Class Q3R Hot Mixed Asphalt Concrete
Leveling Lift (Variable Depth)
Maximum Lift Depth = 3"

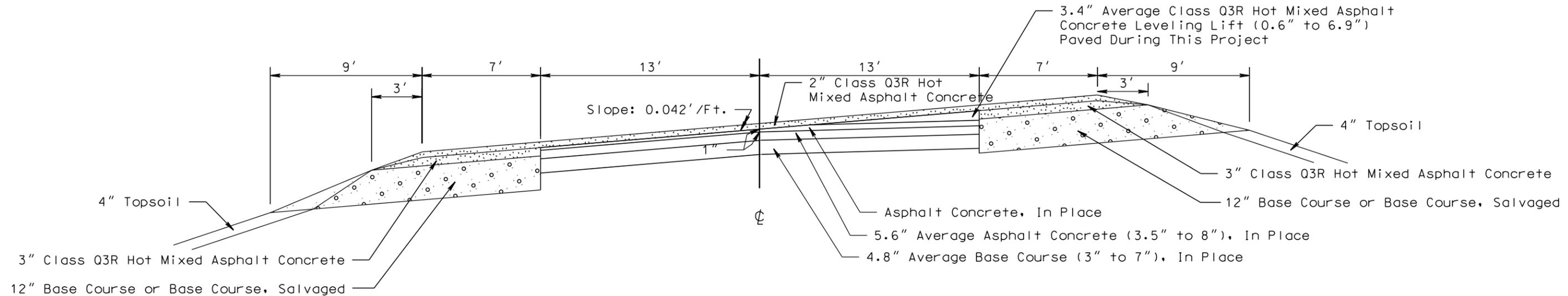
PLOT SCALE - 1+6.00001

PLOT NAME - 11

US18
Sta. b 216+29.6 to Sta. b 235+75
(See Section B, Superelevation Table for slope transition.)



US18
Sta. b 216+29.6 to Sta. b 235+75
(See Section B, Superelevation Table for slope transition.)



PLOTTED FROM - TRPR16032

FILE - ... \020C TYPICAL SECTION.DGN

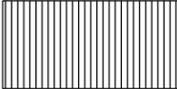
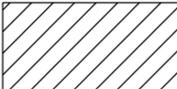
SUPERELEVATED TYPICALS

STATE OF SOUTH DAKOTA	PROJECT NH-PH 0018(177)104 & P 0391(06)0	SHEET F23	TOTAL SHEETS F38
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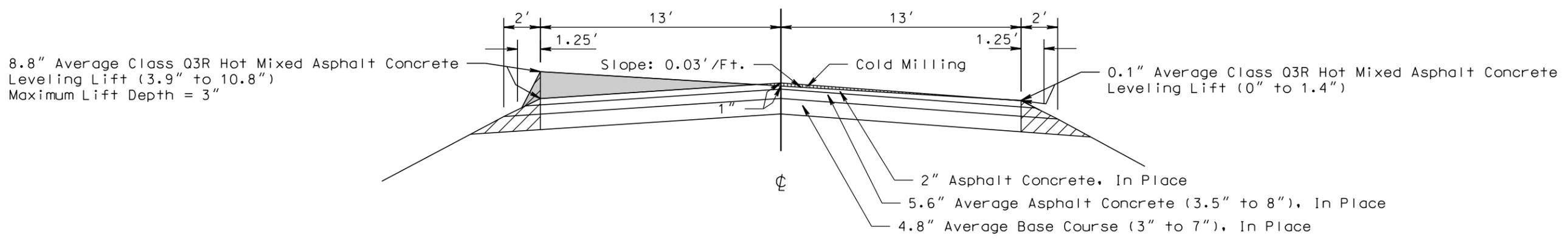
Plotting Date: 07/23/2015

PLOT SCALE - 1+6.00001

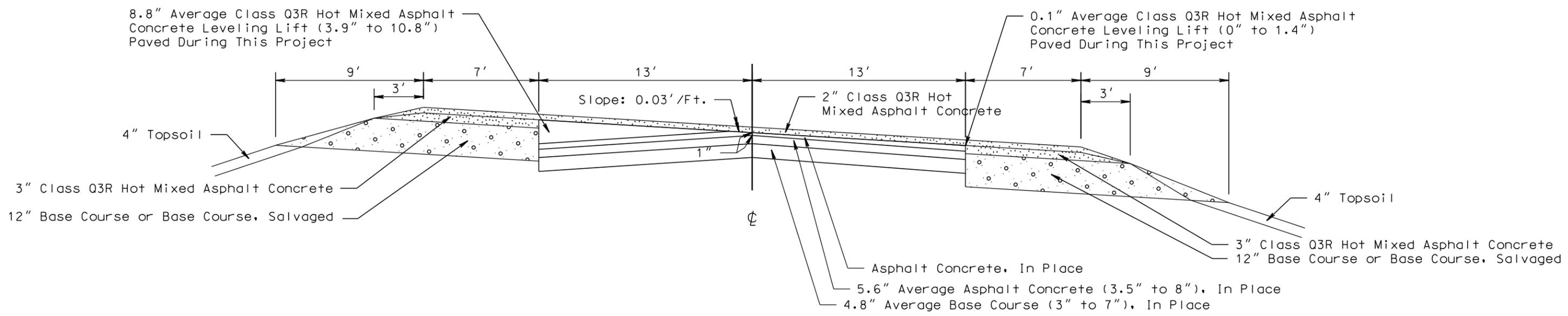
PLOT NAME - 12

-  Cold Milling Asphalt Concrete (1" depth at ϕ)
-  Unclassified Excavation (See Section B)
-  Class Q3R Hot Mixed Asphalt Concrete Leveling Lift (Variable Depth) Maximum Lift Depth = 3"

US18
Sta. b 287+63.6 to Sta. b 325+45.2
(See Section B, Superelevation Table for slope transition.)



US18
Sta. b 287+63.6 to Sta. b 325+45.2
(See Section B, Superelevation Table for slope transition.)



PLOTTED FROM - TRPR16032

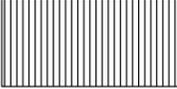
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SUPERELEVATED TYPICALS

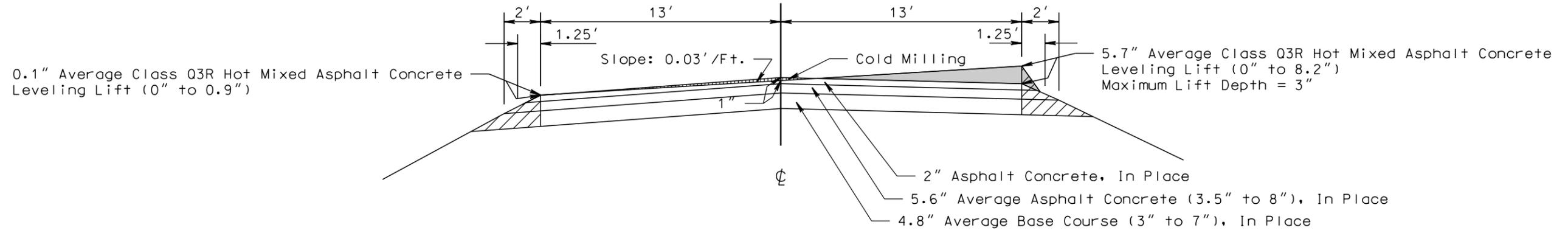
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0018(177)104 & P 0391(06)0		

Plotting Date: 07/23/2015

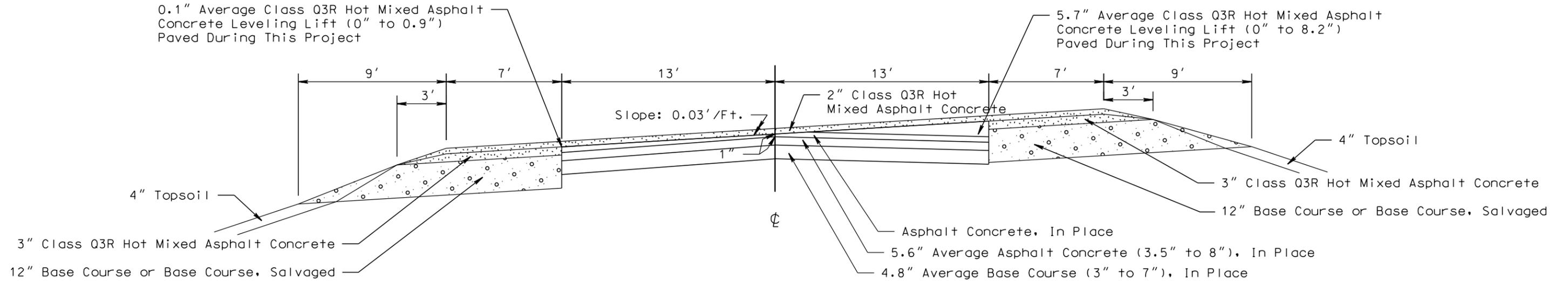
PLOT SCALE - 1+6.00001

-  Cold Milling Asphalt Concrete
(1" depth at ϕ)
-  Unclassified Excavation
(See Section B)
-  Class Q3R Hot Mixed Asphalt Concrete
Leveling Lift (Variable Depth)
Maximum Lift Depth = 3"

US18
Sta. d 614+95.7 to Sta. d 630+02.9
(See Section B, Superelevation Table for slope transition.)



US18
Sta. d 614+95.7 to Sta. d 630+02.9
(See Section B, Superelevation Table for slope transition.)



PLOTTED FROM - TRPR16032

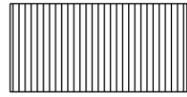
PLOT NAME - 13
FILE - ... \020C TYPICAL SECTION.DGN

SUPERELEVATED TYPICALS

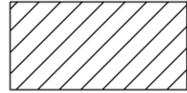
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0018(177)104 & P 0391(06)0		

Plotting Date: 07/23/2015

PLOT SCALE - 1+6.00001



Cold Milling Asphalt Concrete
(1" depth at ϕ)

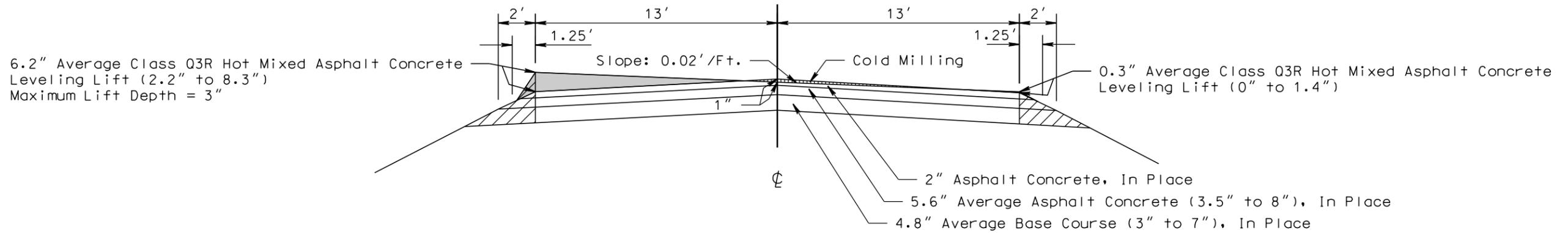


Unclassified Excavation
(See Section B)

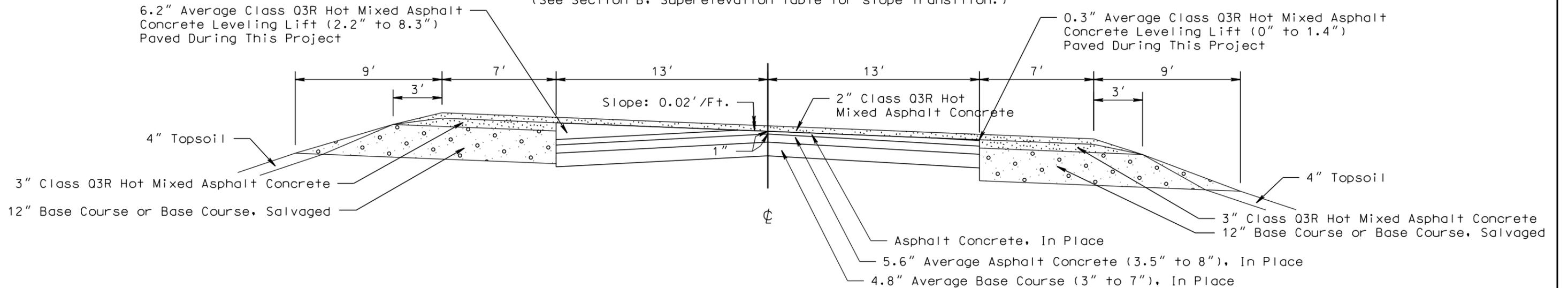


Class Q3R Hot Mixed Asphalt Concrete
Leveling Lift (Variable Depth)
Maximum Lift Depth = 3"

US18
Sta. d 636+01 to Sta. d 651+21.4
(See Section B, Superelevation Table for slope transition.)



US18
Sta. d 636+01 to Sta. d 651+21.4
(See Section B, Superelevation Table for slope transition.)



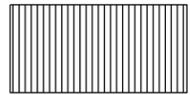
PLOTTED FROM - TRPR16032

PLOT NAME - 14

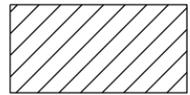
FILE - ... \020C TYPICAL SECTION.DGN

SUPERELEVATED TYPICALS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0018(177)104 & P 0391(06)0		
Plotting Date: 07/23/2015		F26	F38



Cold Milling Asphalt Concrete
(1" depth at ϕ)



Unclassified Excavation
(See Section B)

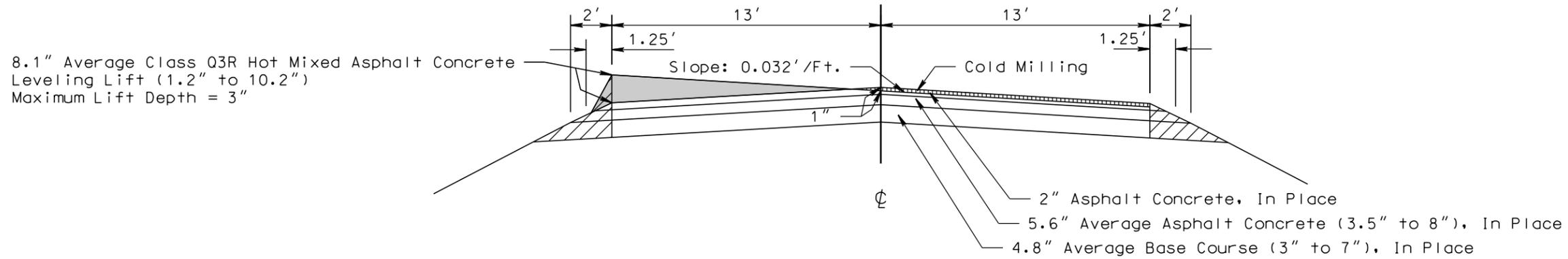


Class Q3R Hot Mixed Asphalt Concrete
Leveling Lift (Variable Depth)
Maximum Lift Depth = 3"

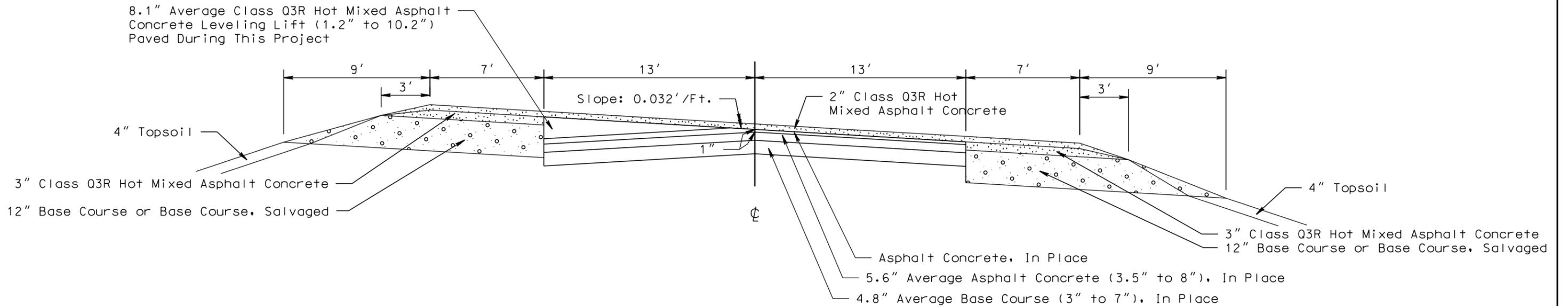
PLOT SCALE - 1+6.00001

PLOT NAME - 15

US18
Sta. d 708+22.4 to Sta. d 729+09.6
(See Section B, Superelevation Table for slope transition.)



US18
Sta. d 708+22.4 to Sta. d 729+09.6
(See Section B, Superelevation Table for slope transition.)



PLOTTED FROM - TRPR16032

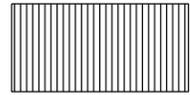
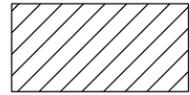
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SUPERELEVATED TYPICALS

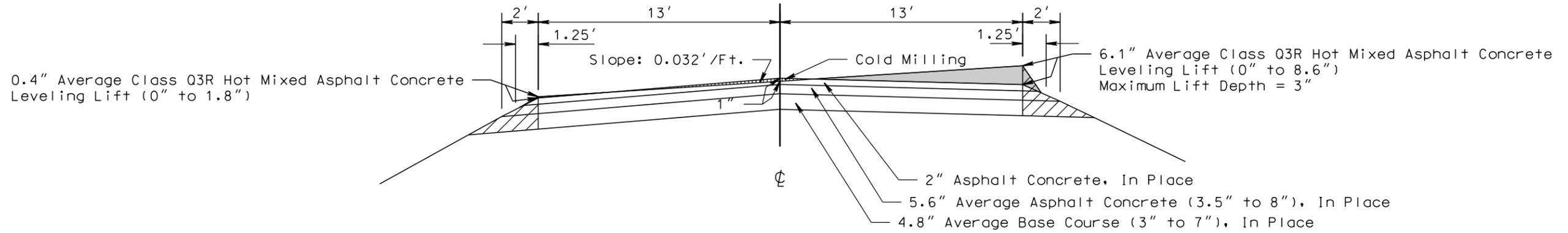
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0018(177)104 & P 0391(06)0	F27	F38

Plotting Date: 07/23/2015

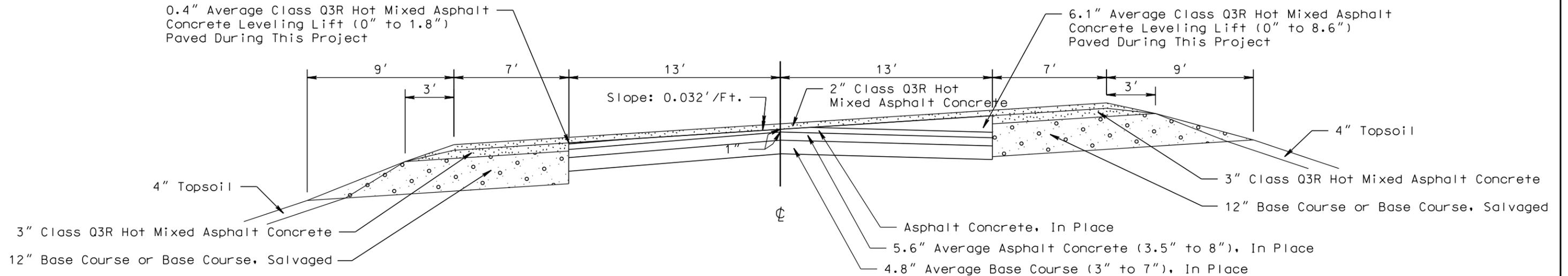
PLOT SCALE - 1+6.00001

-  Cold Milling Asphalt Concrete
(1" depth at ϕ)
-  Unclassified Excavation
(See Section B)
-  Class Q3R Hot Mixed Asphalt Concrete
Leveling Lift (Variable Depth)
Maximum Lift Depth = 3"

US18
Sta. e 766+95.7 to Sta. e 782+10.4
(See Section B, Superelevation Table for slope transition.)



US18
Sta. e 766+95.7 to Sta. e 782+10.4
(See Section B, Superelevation Table for slope transition.)



PLOTTED FROM - TRPR16032

PLOT NAME - 16

FILE - ... \020C TYPICAL SECTION.DGN

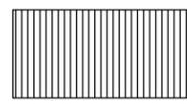
SUPERELEVATED TYPICALS

STATE OF SOUTH DAKOTA	PROJECT NH-PH 0018(177)104 & P 0391(06)0	SHEET F28	TOTAL SHEETS F38
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Plotting Date: 07/23/2015

PLOT SCALE - 1+6.00001

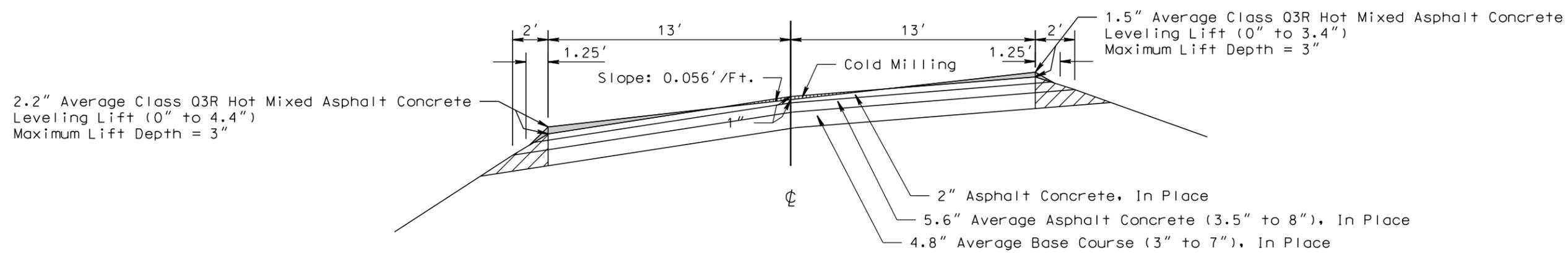
PLOT NAME - 17

 Cold Milling Asphalt Concrete
(1" depth at ϕ)

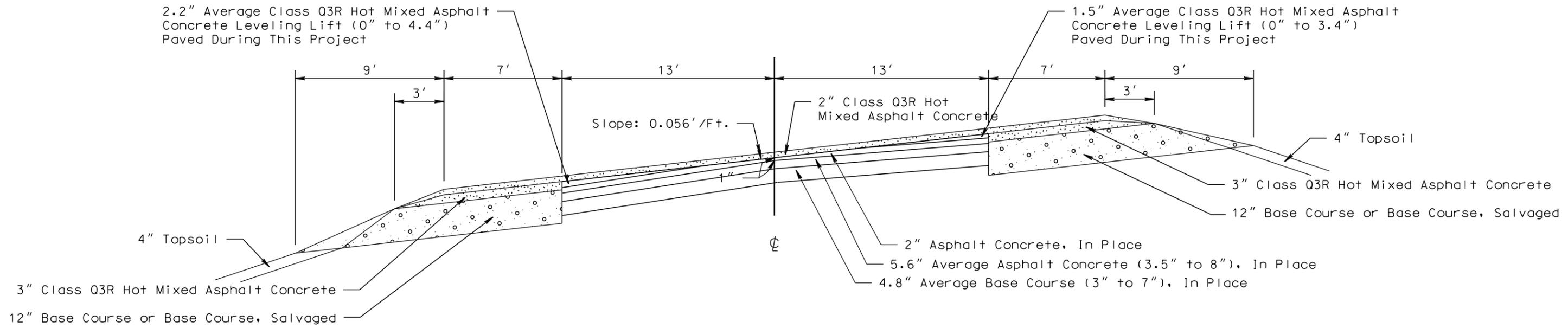
 Unclassified Excavation
(See Section B)

 Class Q3R Hot Mixed Asphalt Concrete
Leveling Lift (Variable Depth)
Maximum Lift Depth = 3"

US18
Sta. f 923+53 to Sta. f 934+24
(See Section B, Superelevation Table for slope transition.)



US18
Sta. f 923+53 to Sta. f 934+24
(See Section B, Superelevation Table for slope transition.)



PLOTTED FROM - TRPR16032

FILE - ... \020C TYPICAL SECTION.DGN

SURFACING TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0018(177)104 & P 0391(06)0		

Plotting Date: 07/23/2015

PLOT SCALE - 1+6.00001

PLOT NAME - 18

	US18
Crossroad a 191	Sta. 10+20 to Sta. 15+20
Crossroad b 340	Sta. 0+20 to Sta. 1+83
Crossroad d 696	Sta. 0+20 to Sta. 3+00
Crossroad e 816	Sta. 0+20 to Sta. 3+15
Crossroad f 869	Sta. 0+20 to Sta. 2+00
Crossroad f 922	Sta. 0+20 to Sta. 2+40
Crossroad f 934	Sta. 0+18.2 to Sta. 3+80

Transitions:

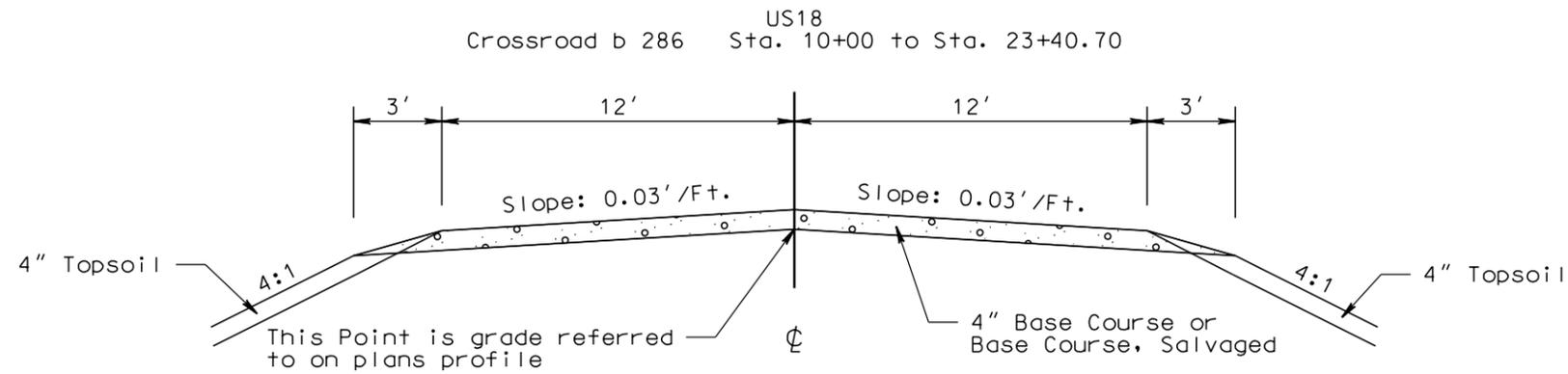
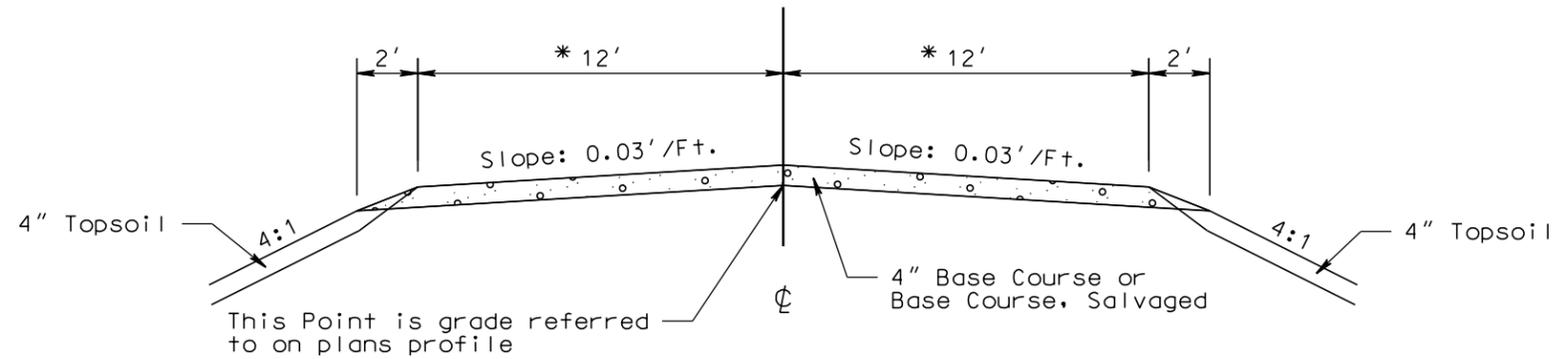
Crossroad a 191
Sta. 10+20 to Sta. 11+70
* 16'
Sta. 11+70 to Sta. 12+70
* 16' to 12'

Crossroad b 340
Sta. 0+60 to Sta. 0+65
* 16'
Sta. 0+65 to Sta. 1+15
* 16' to 12'

Crossroad d 696
Sta. 0+57 to Sta. 0+82
* 14' to 12'

Crossroad f 922
Sta. 0+63 to Sta. 0+88
* 14' to 12'

Crossroad f 934
Sta. 3+00 to Sta. 3+80
* 12" to Match Existing



PLOTTED FROM - TRPR16032

FILE - ... \020C TYPICAL SECTION.DGN

SURFACING TYPICAL SECTIONS

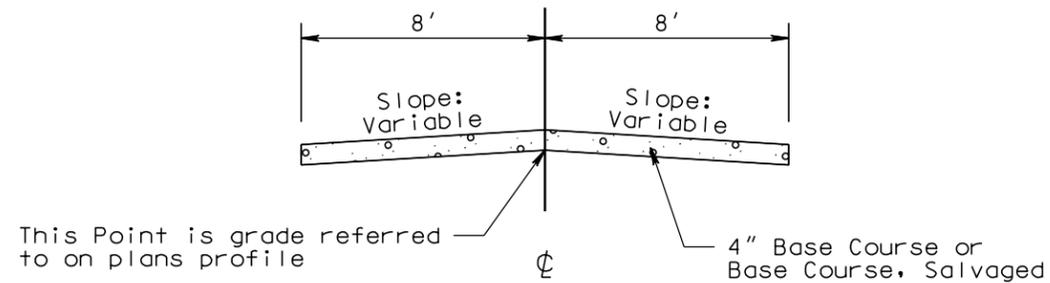
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0018(177)104 & P 0391(06)0	F30	F38

Plotting Date: 07/23/2015

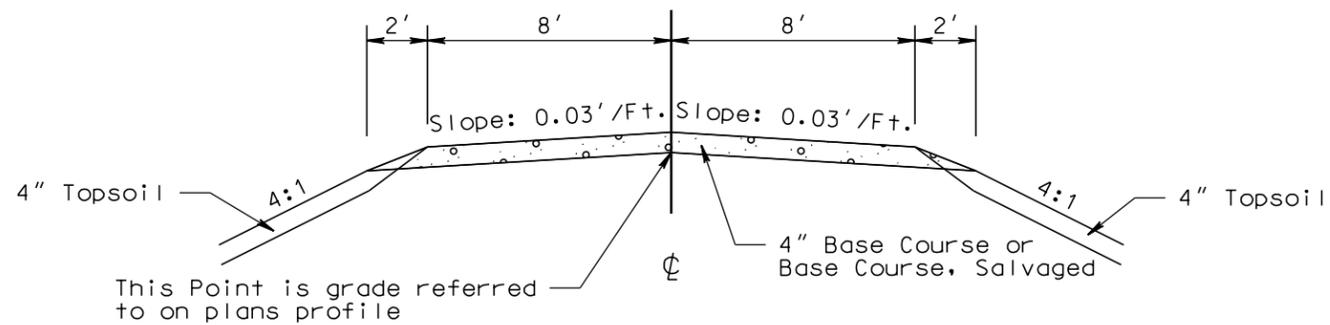
PLOT SCALE - 1+6.00001

PLOT NAME - 19

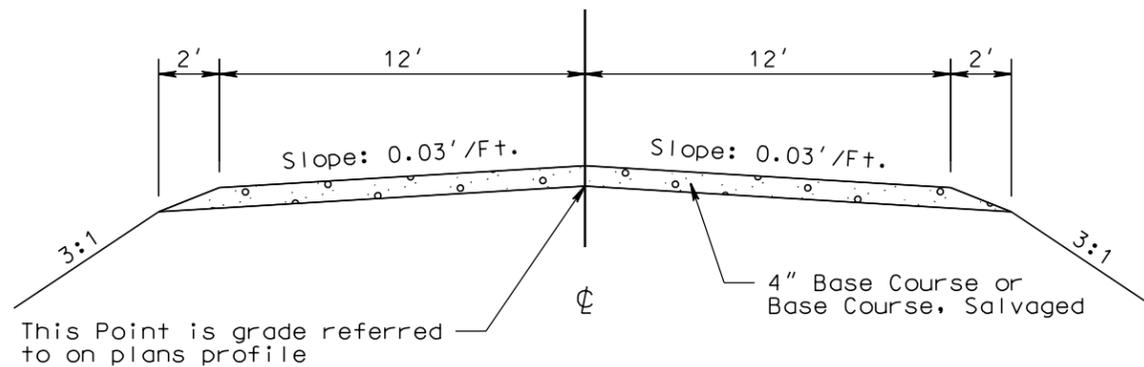
Frontage Road 70 Sta. 10+00 to Sta. 22+70
Frontage road 111 Sta. 0+00 to Sta. 4+00



Frontage Road 111 Sta. 4+00 to Sta. 7+24
Frontage Road a 169 Sta. 0+12 to Sta. 9+61.20



		US18	
DIV 122	Sta. 10+37.4	to Sta. 20+61.4	
DIV b 342	Sta. 1+85.4	to Sta. 6+01.3	
DIV c 502	Sta. 11+77.2	to Sta. 17+17.5	
DIV d 673	Sta. 1+02.3	to Sta. 8+05.0	
DIV e 805	Sta. 1+02.2	to Sta. 7+26.4	
DIV f 903	Sta. 1+36.1	to Sta. 5+34.9	
DIV f 912	Sta. 1+02.3	to Sta. 7+28.5	



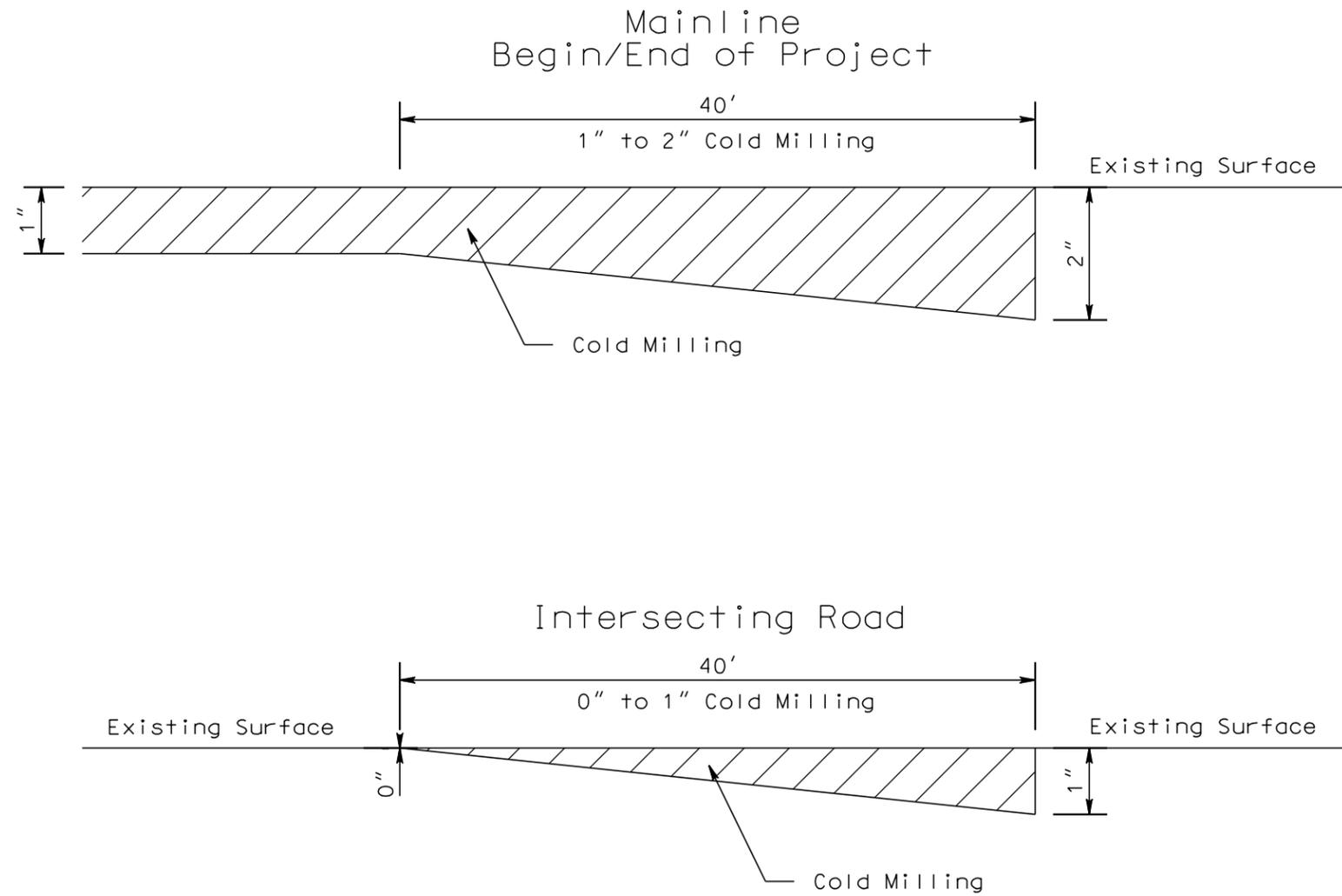
PLOTTED FROM - TRPR16032

FILE - ... \020C TYPICAL SECTION.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-PH 0018(177)104 & P 0391(06)0		

Plotting Date: 07/23/2015

COLD MILLING ASPHALT CONCRETE PROFILE



PLOT SCALE - 1:10

PLOT NAME - 20

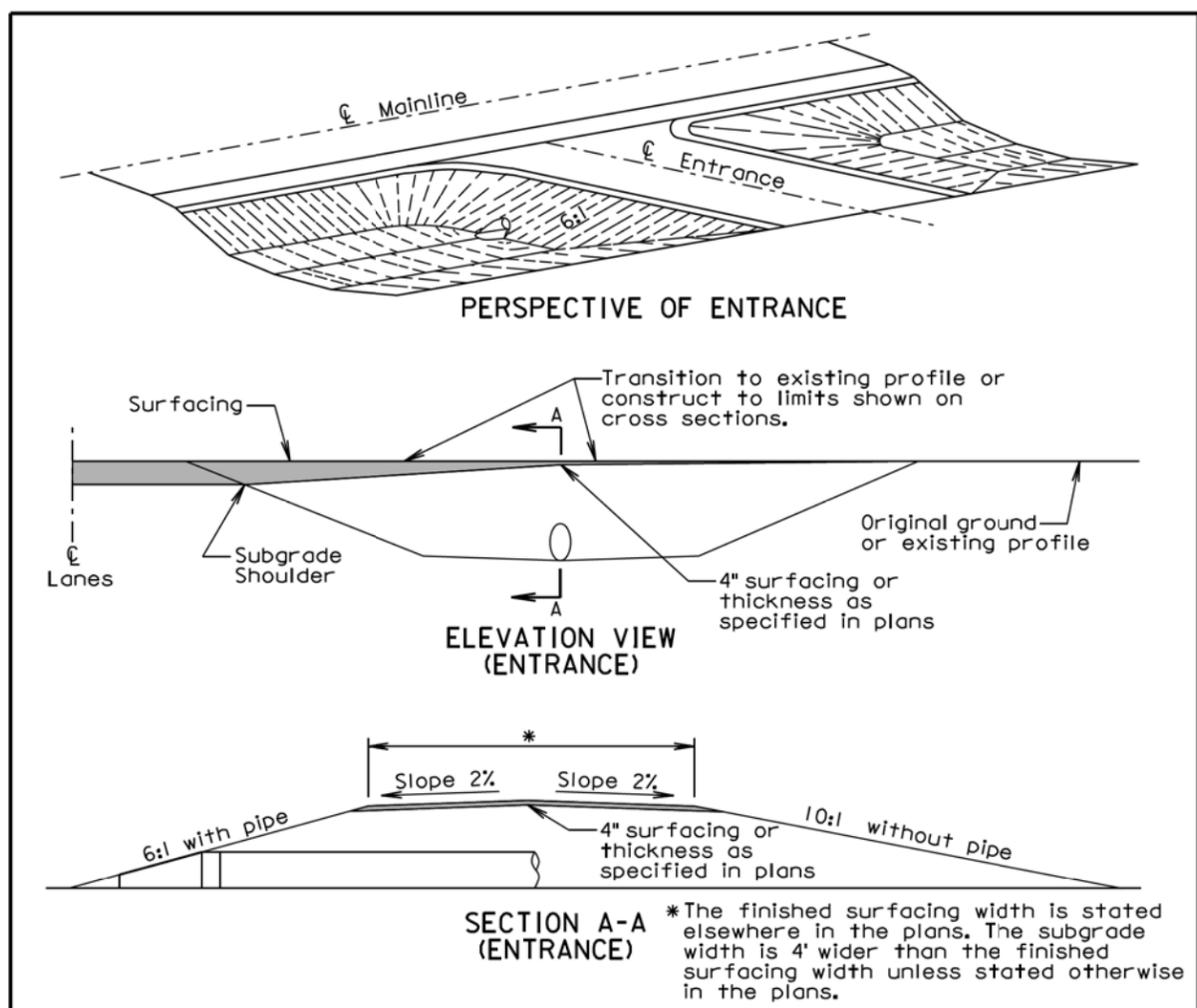
FILE - ... \COLD MILLING AT EOP.DGN

PLOTTED FROM - IRPR16032

PLOT SCALE - 1:200

PLOT NAME - 21

FILE - ... \00LA020C\020C STDPLATE 1.DGN



GENERAL NOTES:

The ditch section shown above in the perspective and elevation view is only for illustrative purposes.

A 6:1 inslope shall be constructed for an entrance when a pipe is required. A 10:1 inslope shall be constructed when a pipe is not required.

Pipe lengths shall be adjusted if necessary during construction to obtain the 6:1 slopes. For grading projects, the pipe lengths are estimated typically using a 4" thickness of surfacing directly over the subgrade above the pipe.

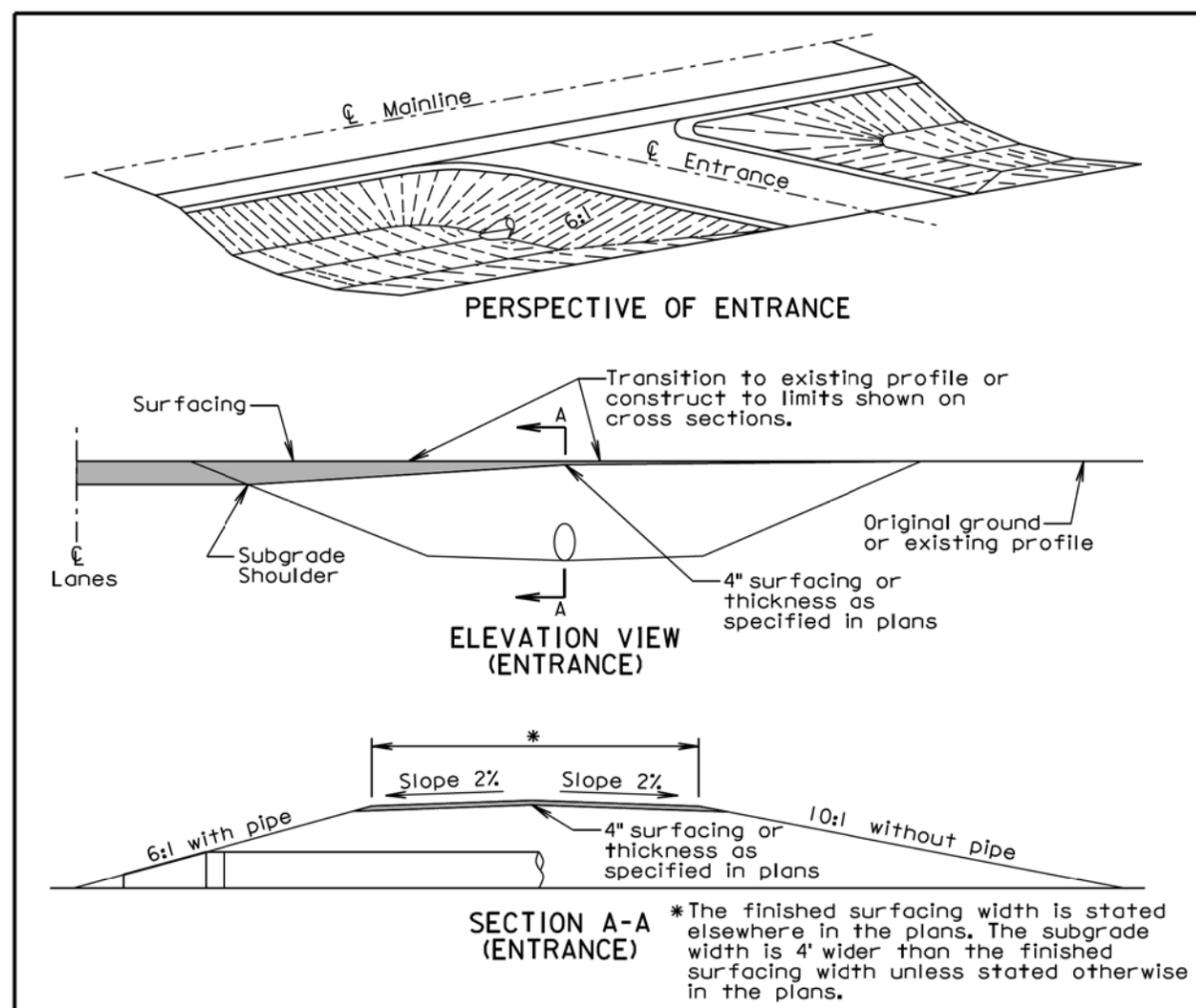
The transition area between the mainline inslope and the approach inslope for entrances shall be rounded to eliminate an abrupt transition.

The turning radii shall be 35' for intersecting roads and entrances unless stated otherwise in the plans.

September 6, 2013

S D D O T	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
		Sheet 1 of 2

Published Date: 2nd Qtr. 2015



GENERAL NOTES:

The ditch section shown above in the perspective and elevation view is only for illustrative purposes.

A 6:1 inslope shall be constructed for an entrance when a pipe is required. A 10:1 inslope shall be constructed when a pipe is not required.

Pipe lengths shall be adjusted if necessary during construction to obtain the 6:1 slopes. For grading projects, the pipe lengths are estimated typically using a 4" thickness of surfacing directly over the subgrade above the pipe.

The transition area between the mainline inslope and the approach inslope for entrances shall be rounded to eliminate an abrupt transition.

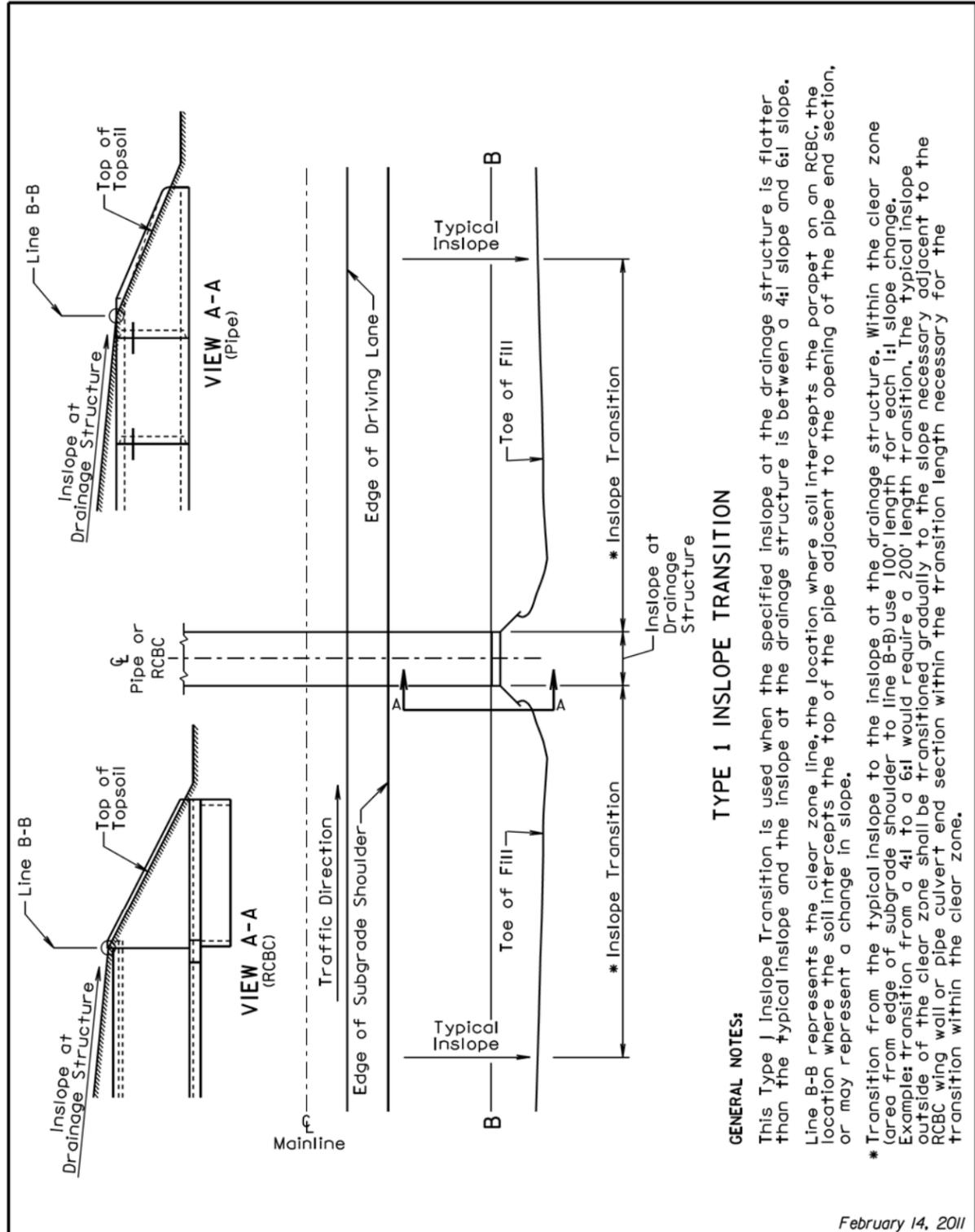
The turning radii shall be 35' for intersecting roads and entrances unless stated otherwise in the plans.

September 6, 2013

S D D O T	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
		Sheet 1 of 2

Published Date: 2nd Qtr. 2015

PLOTTED FROM - TRPR16032



TYPE 1 INSLOPE TRANSITION

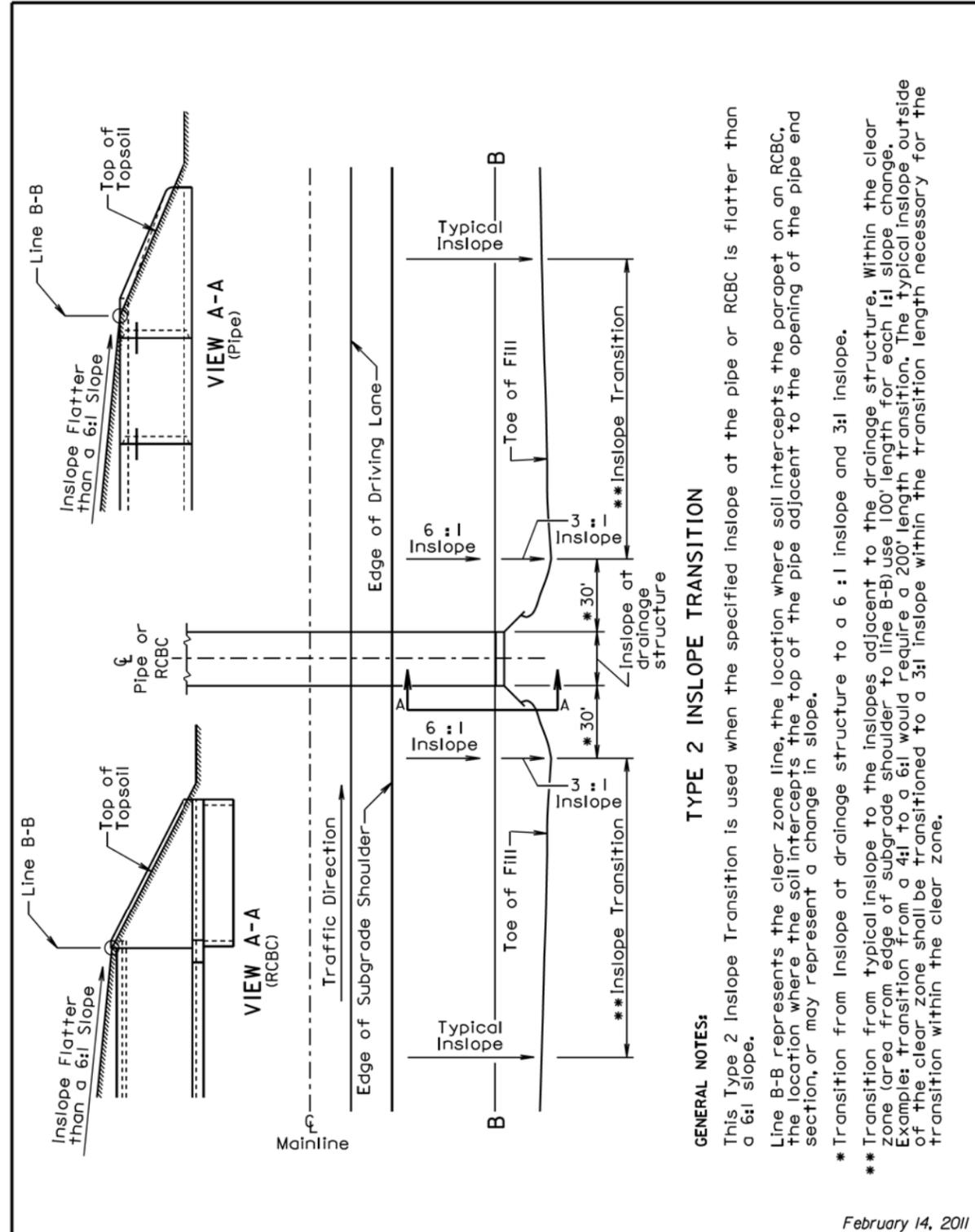
GENERAL NOTES:

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 shall 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.

February 14, 2011

SDOT	INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS	PLATE NUMBER 120.05
	Published Date: 2nd Qtr. 2015	Sheet 1 of 2



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 shall be transitioned to a 3:1 inslope within the transition length necessary for the transition within the clear zone.

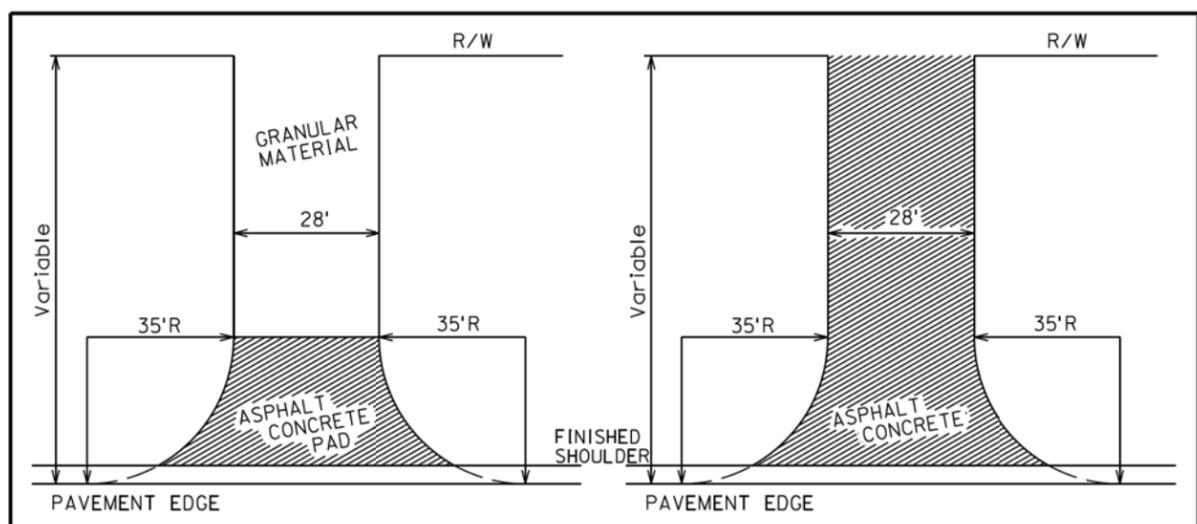
February 14, 2011

SDOT	INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS	PLATE NUMBER 120.05
	Published Date: 2nd Qtr. 2015	Sheet 2 of 2

Plotting Date: 07/23/2015

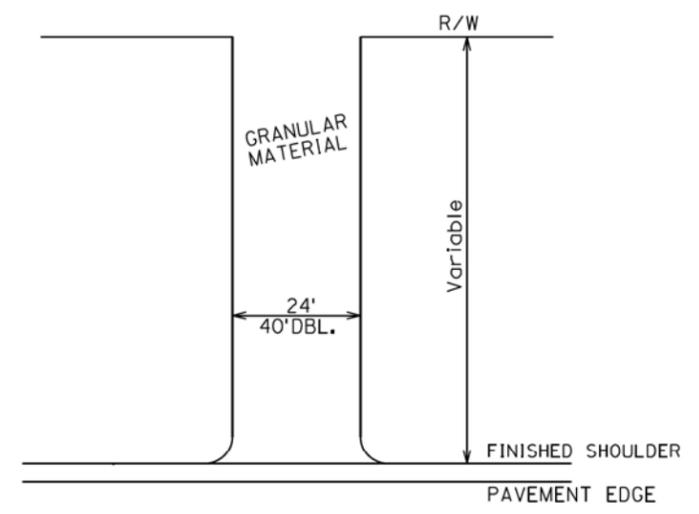
PLOT SCALE - 1:200

PLOT NAME - 23



INTERSECTING ROAD
NO ASPHALT CONCRETE SURFACING
BEYOND R/W

INTERSECTING ROAD
ASPHALT CONCRETE SURFACING
BEYOND R/W



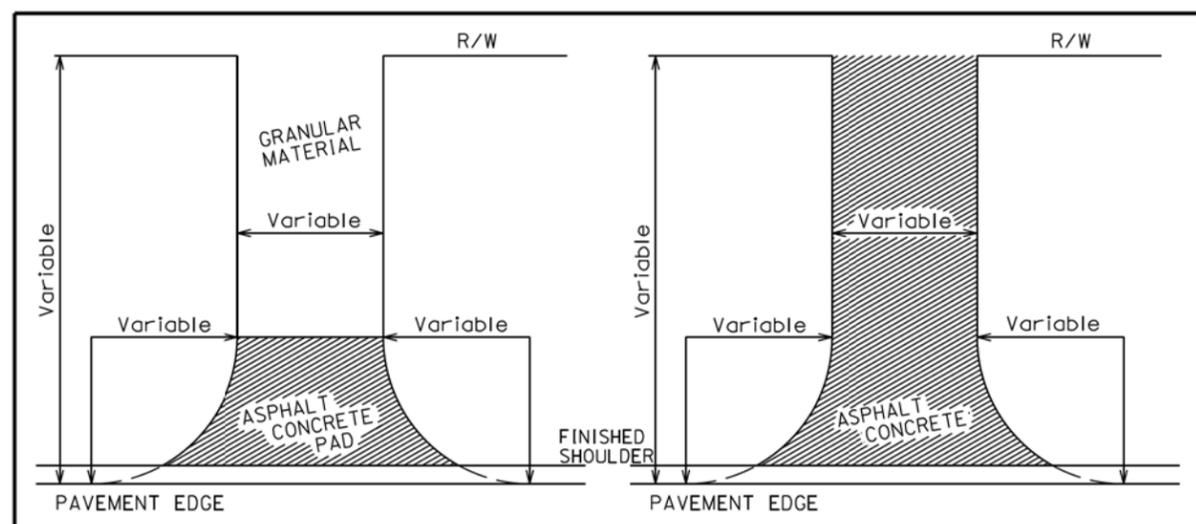
ENTRANCE

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

ROADWAY WITH SHOULDER

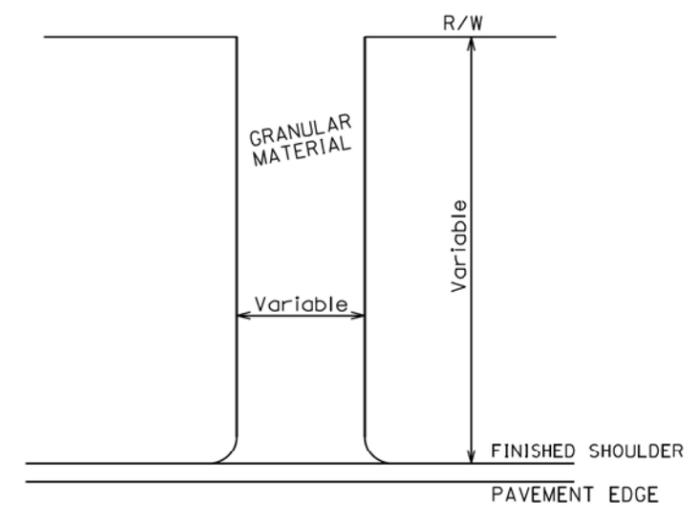
March 31, 2000

Published Date: 2nd Qtr. 2015	S D D O T	SURFACING OF INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 320.04
			Sheet 1 of 1



INTERSECTING ROAD
NO ASPHALT CONCRETE SURFACING
BEYOND R/W

INTERSECTING ROAD
ASPHALT CONCRETE SURFACING
BEYOND R/W



ENTRANCE

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

ROADWAY WITH SHOULDER

March 31, 2000

Published Date: 2nd Qtr. 2015	S D D O T	RESURFACING OF INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 320.11
			Sheet 1 of 1

PLOTTED FROM - TRPR16032

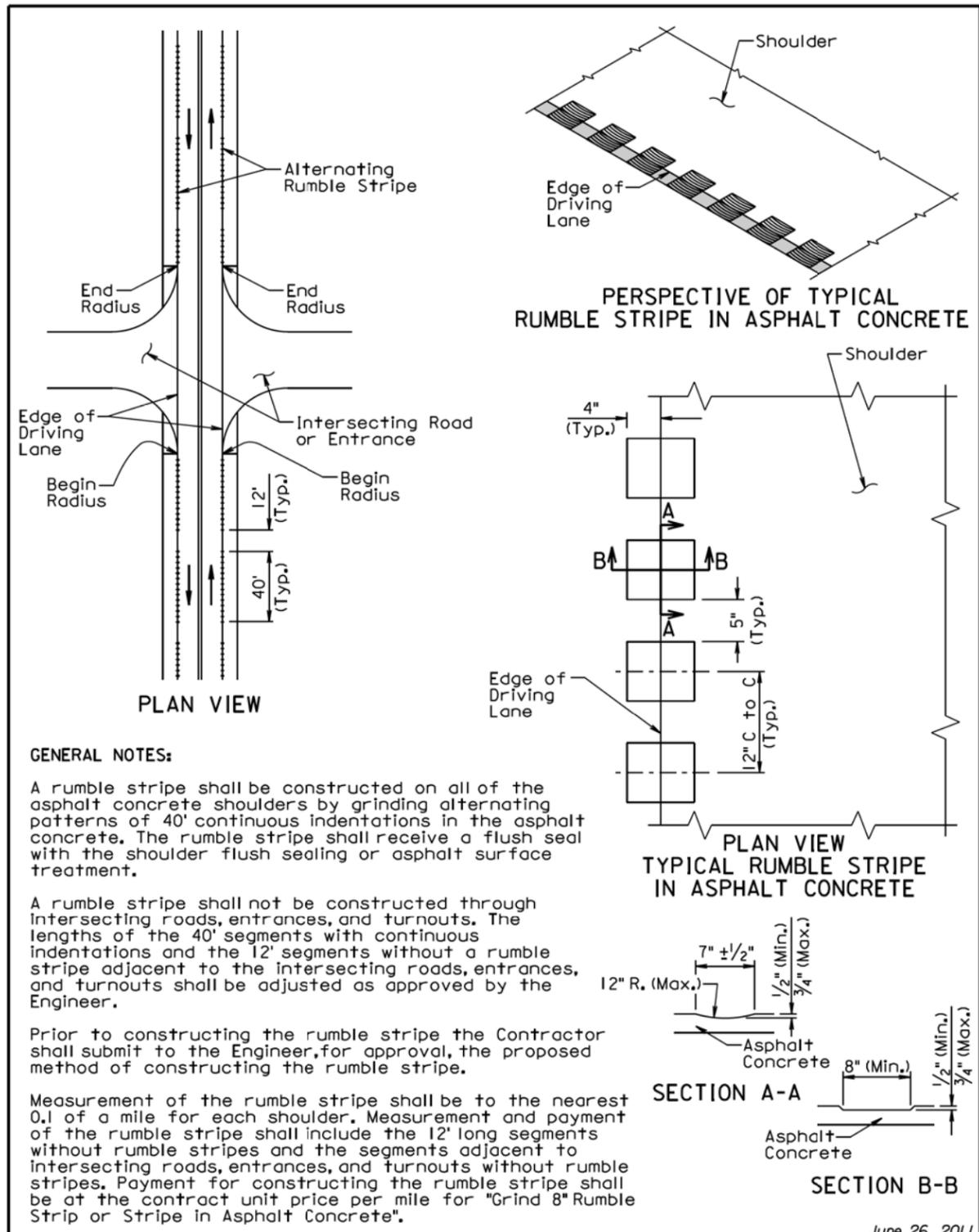
FILE - ... \00L4020C\020C STDPLATE 3.DGN

Plotting Date: 07/23/2015

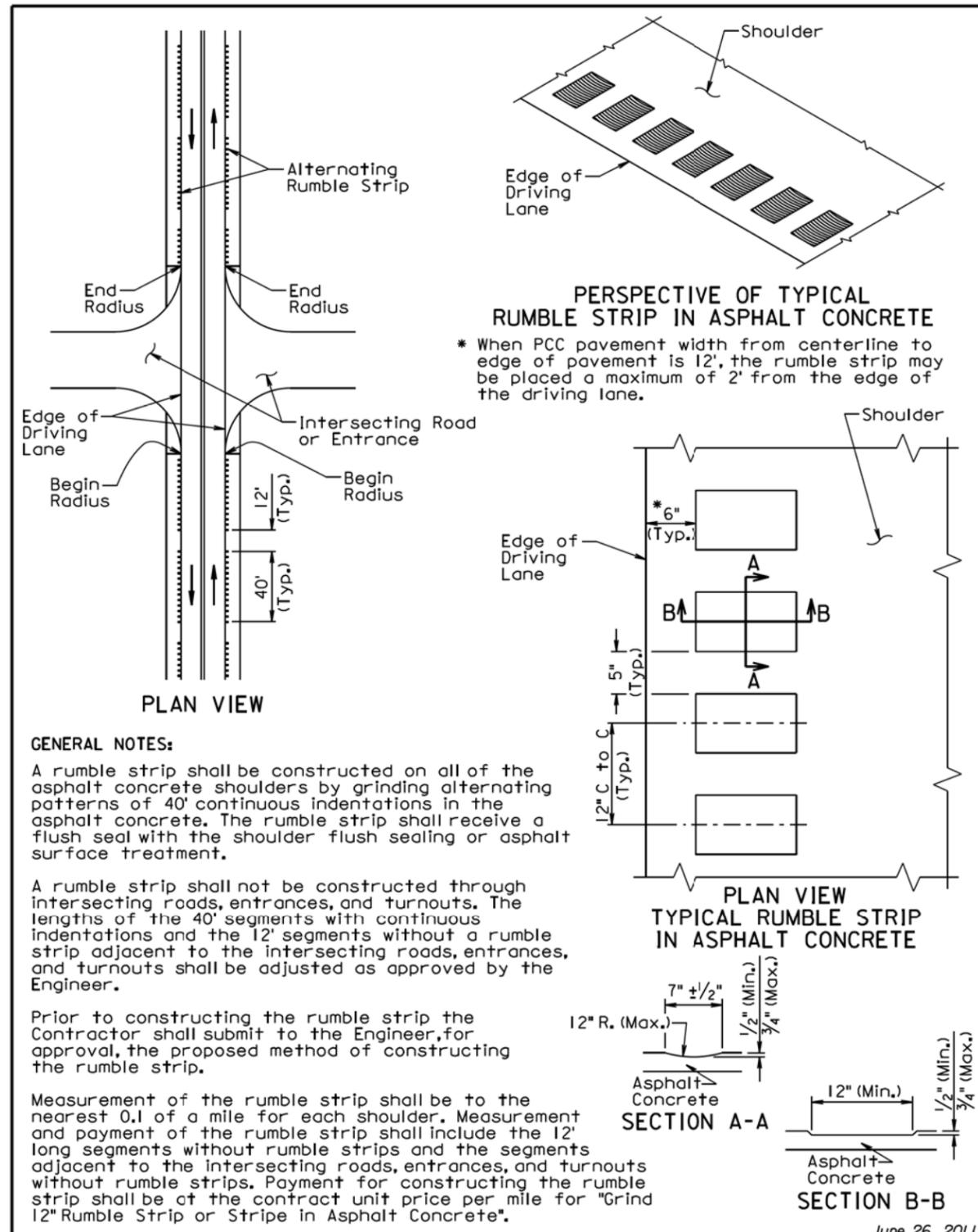
PLOT SCALE - 1:200

PLOT NAME - 24

FILE ... \00L4020C\020C STDPLATE 4.DGN



S D D O T	8" RUMBLE STRIPE IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.20
	Published Date: 2nd Qtr. 2015	Sheet 1 of 1



S D D O T	12" RUMBLE STRIPE IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.24
	Published Date: 2nd Qtr. 2015	Sheet 1 of 1

Plotting Date: 07/23/2015

PLOT SCALE - 1:200

PLOT NAME - ... \00LA020C\020C STDPLATE 5.DGN

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

PLAN

ELEVATION

Dia. D (in.)	Ga.	DIMENSIONS (in.)					Approx. Slope	Body
		A	B	H	L	W		
12	16	6	6	6	21	24	2 1/2:1	1 Pc.
15	16	7	8	6	26	30	2 1/2:1	1 Pc.
18	16	8	10	6	31	36	2 1/2:1	1 Pc.
21	16	9	12	6	36	42	2 1/2:1	1 Pc.
24	16	10	13	6	41	48	2 1/2:1	1 Pc.
30	14	12	16	8	46	60	2 1/2:1	1 Pc.
36	14	14	19	9	51	72	2 1/2:1	2 Pc.
42	12	16	22	11	60	84	2 1/2:1	2 Pc.
48	12	18	27	12	69	90	2 1/4:1	2 Pc.
54	12	18	30	12	78	102	2:1	3 Pc.
60	12	18	33	12	84	114	1 3/4:1	3 Pc.
66	12	18	36	12	87	120	1 1/2:1	3 Pc.
72	12	18	39	12	87	126	1 1/3:1	3 Pc.
78	12	18	42	12	87	132	1 1/4:1	3 Pc.
84	12	18	45	12	87	138	1 1/6:1	3 Pc.

STANDARD CONNECTIONS

For 30" through 84" Alternate for all sizes

TUBING ATTACHMENT DETAILS SECTION A-A

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

TYPICAL CROSS-SECTION

Finish Earth Slope as Required Approx. 2 1/2:1 Slope

SECTION A-A (alternate)

For 12" through 24" only

GENERAL NOTES:

All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by 3/8" Dia. galvanized rivets or bolts.

For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x 1/4" for 60" through 72" diameters and 2 1/2" x 2 1/2" x 1/4" for 78" and 84" diameters. The angles shall be attached by 3/8" diameter galvanized nuts and bolts.

Rivets and Bolts shall be 3/8" Dia. Min. for 10 Ga. and 12 Ga. sheet, and 5/16" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

March 31, 2000

S D D O T	C.M.P. FLARED ENDS	PLATE NUMBER 450.35
	Published Date: 2nd Qtr. 2015	Sheet 1 of 1

ELEVATION VIEW

48" (Max.) Spacing 4" Pipe Size

1" x 9/16" Slotted Hole 5 1/4" 3" Galvanized Pipe: Flatten end, then bend outside 4" to match end section sides.

DETAIL OF SAFETY BARS

SECTION A-A

7/16" (Min.) Dia. Galvanized Steel Rod or No. 4 Galvanized Reinforcing Bar

SECTION B-B

Corrugation sized to fit pipe. Pipe 1/2" Dia. Hex. Head Bolts (Typ.)

ISOMETRIC VIEW

When bars are specified in the plans, the cross drainage bar is required when span is over 30". Cross bar to be welded to parallel bars to make one piece unit.

FRONT VIEW

Reinforced Edge Full Length of End Section (See Section A-A)

Bolts to hold the Surfaces tightly together

Optional Toe Plate Extension (Same Gage as End Section)

Holes Spaced at 12" (Max.)

Overall Width Overall Width

TYPE #2 CONNECTOR DETAIL
(For 30" and Larger)

1/2" Threaded rod with flanged nuts. Form over top of end section. Side lugs to be bolted to end section.

Side Lug

TYPE #1 CONNECTOR DETAIL
(For 15" Through 24")

1/2" x 6" Culvert bolt with flanged nut

Galvanized strap

February 10, 2014

S D D O T	C.M.P. SLOPED ENDS	PLATE NUMBER 450.37
	Published Date: 2nd Qtr. 2015	Sheet 1 of 2

ARCH C.M.P. SLOPED ENDS										
Equiv. Dia. (Inch)	(Inches)		Min. Thick. Inch	Dimensions (Inches)				L Dimensions		
	Span	Rise		Gage	A	H	W	Overall Width	Slope	Length (Inch)
18	21	15	.064	16	8	6	27	43	4:1	20
21	24	18	.064	16	8	6	30	46	4:1	32
24	28	20	.064	16	8	6	34	50	4:1	40
30	35	24	.079	14	12	9	41	65	4:1	56
36	42	29	.109	12	12	9	48	72	4:1	76
42	49	33	.109	12	16	12	55	87	4:1	92
48	57	38	.109	12	16	12	63	95	4:1	112
54	64	43	.109	12	16	12	70	102	4:1	132
60	71	47	.109	12	16	12	77	109	4:1	148
72	83	57	.109	12	16	12	89	121	4:1	188

CIRCULAR C.M.P. SLOPED ENDS								
Pipe Dia. (Inch)	Min. Thick.		Dimensions (Inches)				L Dimensions	
	Inch	Gage	A	H	W	Overall Width	Slope	Length (Inch)
15	.064	16	8	6	21	37	4:1	20
18	.064	16	8	6	24	40	4:1	32
21	.064	16	8	6	27	43	4:1	44
24	.064	16	8	6	30	46	4:1	56
30	.109	12	12	9	36	60	4:1	80
36	.109	12	12	9	42	66	4:1	104
42	.109	12	16	12	48	80	4:1	128
48	.109	12	16	12	54	86	4:1	152
54	.109	12	16	12	60	92	4:1	176
60	.109	12	16	12	66	98	4:1	200

GENERAL NOTES:

Safety bars shall be attached to sloped ends over 30" in diameter only when specified in the plans.

Sloped ends shall be fabricated from galvanized steel and shall conform to the requirements of the Specifications.

Safety bars shall be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5X.216 in conformance with ASTM A500, grade B.

Slotted holes for safety bar attachment shall be provided for all end sections.

Attachment to circular pipes 15" through 24" diameter shall be made with Type #1 straps. All other sizes shall be attached with Type #2 rods and lugs.

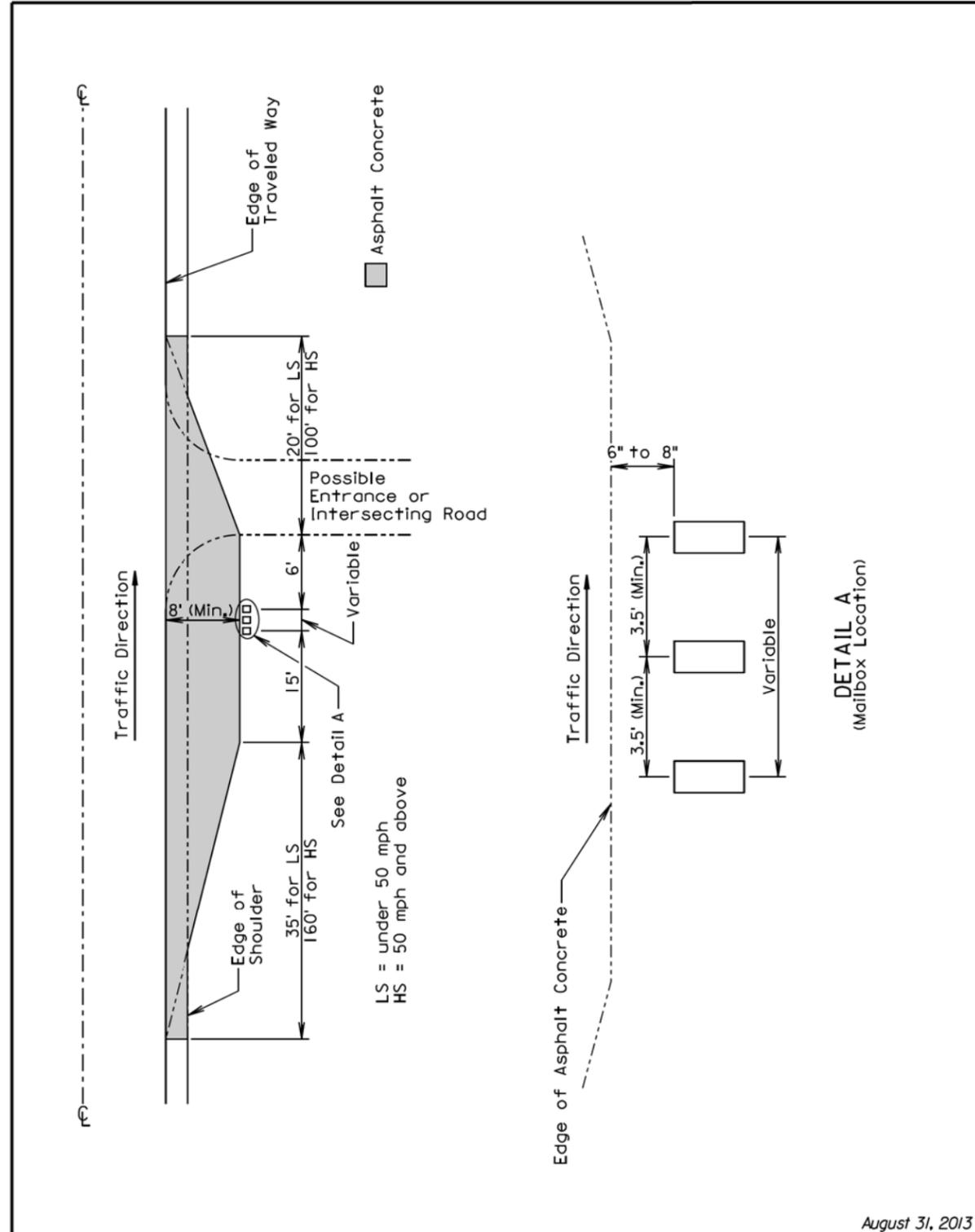
When stated in the plans, optional toe plate extension shall be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension shall be same gauge as end section. Dimensions shall be overall width less 6" by 8" high.

Installation shall be performed in accordance with the Specifications.

Cost of all work and materials required for fabrication and installation of sloped ends shall be incidental to the bid items for the various sizes of sloped ends.

February 10, 2014

S D D O T	C. M. P. SLOPED ENDS	PLATE NUMBER 450.37
	Published Date: 2nd Qtr. 2015	Sheet 2 of 2



August 31, 2013

S D D O T	MAILBOX TURNOUT	PLATE NUMBER 900.01
	Published Date: 2nd Qtr. 2015	Sheet 1 of 1

