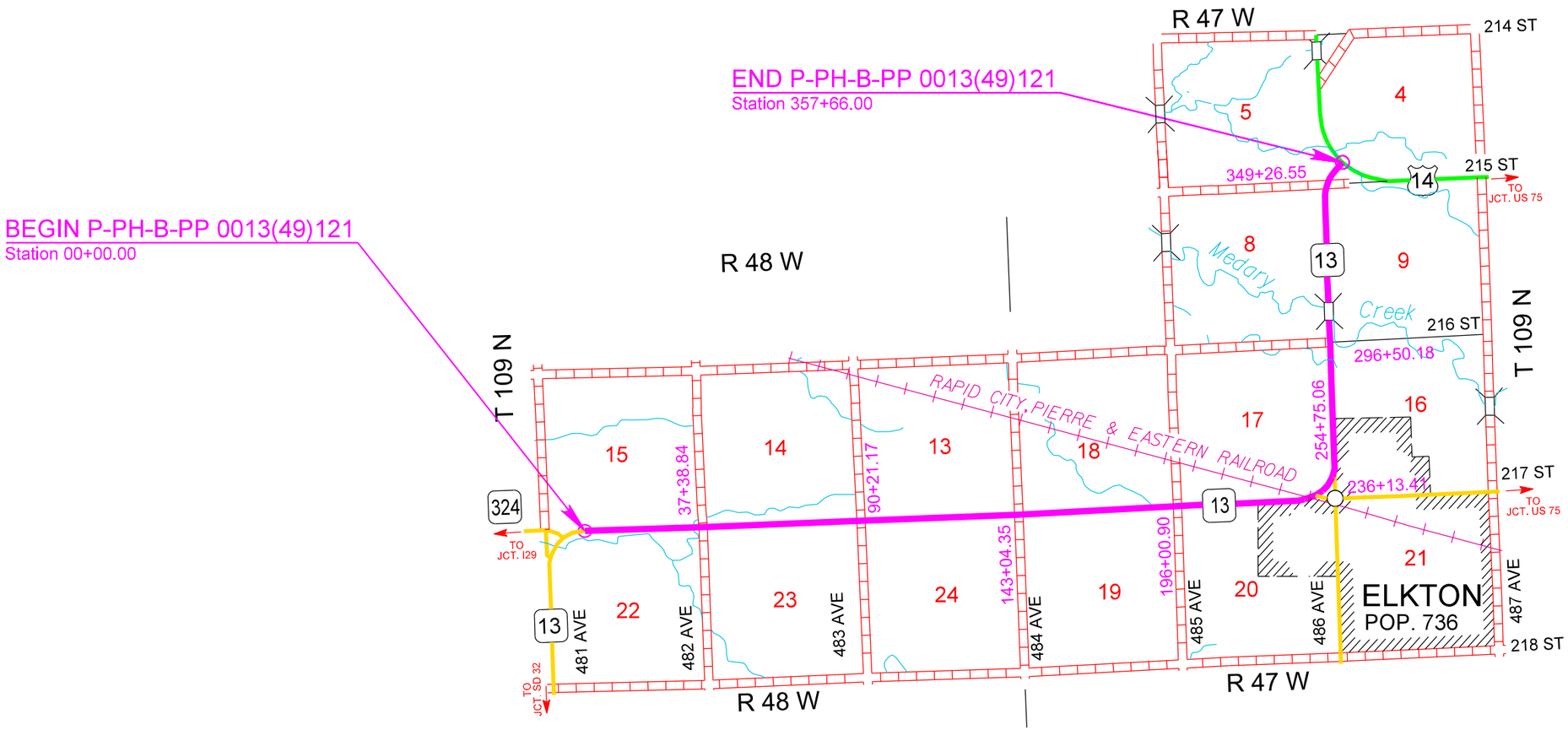
SECTION F: SURFACING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH-B-PP 0013(49)121	F1	F14

Plotting Date: 03/07/2024

INDEX OF SHEETS



Plot Scale - 1:200

Plotted From

Revised: 28May24, LLR

SECTION F – ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3320	Checker	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	440.4	SqYd
120E0100	Unclassified Excavation, Digouts	294	CuYd
120E6200	Water for Granular Material	992.2	MGal
260E1010	Base Course	45,276.9	Ton
260E1030	Base Course, Salvaged	36,114.5	Ton
260E1050	Base Course, Salvaged Asphalt Mix	1,306.1	Ton
320E0005	PG 58-34 Asphalt Binder	1,460.9	Ton
320E1200	Asphalt Concrete Composite	446.8	Ton
320E1202	Class Q2R Hot Mixed Asphalt Concrete	28,563.5	Ton
320E1800	Asphalt Concrete Blade Laid	880.9	Ton
320E4000	Hydrated Lime	284.4	Ton
320E5020	Saw Joint in Asphalt Concrete	62,014	Ft
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	13.5	Mile
320E7028	Grind Centerline Rumble Stripe in Asphalt Concrete	4.1	Mile
320E7030	Grind Sinusoidal Centerline Rumble Stripe in Asphalt Concrete	2.7	Mile
330E0010	MC-70 Asphalt for Prime	128.0	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	107.8	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	42.7	Ton
330E1000	Blotting Sand for Prime	10.0	Ton
330E2000	Sand for Flush Seal	414.4	Ton
332E0010	Cold Milling Asphalt Concrete	103,140	SqYd
900E1980	Storage Unit	1	Each

SURFACING THICKNESS DIMENSIONS

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

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

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 in Section 4.

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.

BASE COURSE, SALVAGED

Base Course, Salvaged will be obtained from the stockpile site(s) and may be used without further gradation testing.

The Contractor will ensure the Base Course, Salvaged material contains no more than 50% salvaged asphalt mix material and at least 50% granular material (salvaged or virgin). Blended material will be to the satisfaction of the Engineer.

All other requirements for Base Course, Salvaged will apply.

SALVAGED MATERIAL

The quantity of salvaged asphalt mix and granular base material may vary from the plans. The Contractor will be required to use all of the salvaged material on this project by decreasing or increasing the quantity of Base Course as necessary, or as directed by the Engineer.

SHOULDER WIDENING

The elevation of the subgrade under shoulder widening will be at or below subgrade elevation under existing adjacent mainline pavement that is to remain in place.

COLD MILLING ASPHALT CONCRETE

The Los Angeles Abrasion Loss value on the aggregate used for the in-place asphalt concrete was 25. 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). Additional cold milling may be needed in areas where maintenance patches have been placed. Milling will be daylighted to the outside edge of the roadway and provide a uniform typical section from the centerline to the 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 will be completed before the final shaping and priming of the granular material for the shoulder widening of Section 4.

Cold milling asphalt is estimated to produce 5,328.8 tons of cold milled asphalt concrete material. An estimated 4022.7 tons of cold milled asphalt concrete material will be used on this project as RAP in the Class Q2R Hot Mixed Asphalt Concrete mixture. The Contractor is responsible to assure enough asphalt concrete salvage is available for the Class Q2R Hot Mixed Asphalt Concrete.

The remainder of the cold milled asphalt concrete material will be used on the project as Base Course, Salvage Asphalt Mix or stockpiled as directed by the Engineer.

The quantity of 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 ASPHALT CONCRETE

Location of Cold Milling Areas	Cold Milled Asphalt Concrete SqYds	Depth of Cold Milling Asphalt Concrete	Cold Milled Asphalt Concrete Tons
Sta. 0+00 to 231+00	65,367	1”	3,377.3
Sta. 231+00 to 257+00	7,511	1”	388.1
Sta. 257+00 to 269+11.04	3,499	1”	180.8
Sta 269+11.04 to Sta. 290+70	6,237	1”	322.2
Sta. 290+70 to 336+39.5	13,201	1”	682.0
Sta. 336+39.5 to 357+66	7,325	1”	378.4
TOTAL	103,140		5,328.8

BASE COURSE, SALVAGED ASPHALT MIX

Base Course, Salvaged Asphalt Mix estimated at 1,306.1 tons will be obtained from the cold milled material produced on this project.

The Base Course, Salvaged Asphalt Mix will be crushed to meet the requirements of Section 884.2 D.3 prior to placement.

Base Course, Salvaged Asphalt Mix will be placed on field entrances and other locations as directed by the Engineer. The Base Course, Salvaged Asphalt Mix will be compacted to the satisfaction of the Engineer.

At the time of compaction, the material will have approximately 4% moisture uniformly blended throughout the depth of material. The Engineer may adjust the percent moisture.

TABLE OF SALVAGED MATERIAL UTILIZATION

	RAP for Class Q2R Asphalt Concrete	Base Course, Salvaged Asphalt Mix	Base Course, Salvaged	Total
	tons		tons	tons
Cold Milling Asphalt Concrete	4,022.7	1,306.1		5,328.8
Salvage and Stockpile Asphalt Mix and Granular Base Material			36,114.5	36,114.5
Total =	4,022.7	1,306.1	36,114.5	

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.

STORAGE UNIT (continued)

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”.

CHECKING SPREAD RATES

The Contractor will be responsible for checking the Base Course, Base Course, Salvaged and Class Q2R Hot mixed 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.

CLASS Q2R HOT MIXED ASPHALT CONCRETE

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

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

The Class Q2R Hot Mixed Asphalt Concrete will include 15 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 Q2R Hot Mixed Asphalt Concrete will conform to the requirements of Class Q2.

All remaining requirements for Class Q2 will apply.

ASPHALT CONCRETE COMPOSITE

Section 324 will apply except that Class Q2R 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.

SURFACING AT PIPE REPLACEMENTS

Place 2 lifts of 2” Asphalt Concrete Composite after pipe replacement thru the shoulder widening sections. The top elevation of the Asphalt Concrete Composite will be placed level with the existing surface prior to cold milling. The mainline 1” cold milling operations will be continuous thru the pipe replacement areas and will remove 1” of Asphalt Concrete Composite prior to the top lift of 2” Asphalt Concrete, Class Q2R. The final asphalt depth at the pipe replacement areas will be 2” Asphalt Concrete, Class Q2R over 3” Asphalt Concrete Composite.

FLEXIBLE PAVEMENT SMOOTHNESS PROVISION

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

ASPHALT FOR PRIME

It is recommended that asphalt for prime will not be placed on the shoulders until after the cold milling of Section 4 to ensure that the asphalt thickness is uniform throughout the shoulder widening.

FLUSH SEAL

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

Application of flush seal may be eliminated by the Engineer. If the paved surface remains tight, the Engineer will notify the Contractor as soon as possible that the flush seal is unnecessary.

SAND FOR FLUSH SEAL

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

ADDITIONAL QUANTITIES

Included in the Estimate of Quantities are 100 tons of Class Q2R Hot Mixed Asphalt Concrete, 1.0 ton of Hydrated Lime, and 4.9 tons of PG 58-34 Asphalt Binder per mile for spot leveling, strengthening, and repair of the existing surface for Section 4.

ASPHALT TACK FOR LEVELING, AND REPAIR

Included in the estimate of quantities are 1.5 tons of SS-1h or CSS–1h Emulsified Asphalt for Tack for repair and leveling areas through the project.

INTERSECTING ROADS AND ENTRANCES

In areas where granular material has been placed adjacent to the existing asphalt concrete, the Contractor will be required to remove the granular material to a depth below the existing asphalt concrete to allow for the placement of the new asphalt concrete. New asphalt concrete will be placed flush with the existing asphalt concrete. The existing granular material removed will be placed on the entrances, intersecting roads or other locations as directed by the Engineer.

All costs to remove and place the granular material including labor, equipment and incidentals will be incidental to the various related contract items.

BLOTTING SAND FOR PRIME

Included in the Estimate of Quantities are 10 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)

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 Section 4.

Mineral Aggregate for tight bladed material will use only the fine aggregate components combined in the same proportions as the Class Q2R 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 31.6 tons of SS-1h or CSS-1h Asphalt for Tack for use prior to the application of the Blade Laid lift. (Rate = 0.09 Gal./Sq.Yd.)

GRIND CENTERLINE RUMBLE STRIPE IN ASPHALT CONCRETE

Rumble stripes will be constructed on the centerline, as detailed in the plan set. Rumble stripes will be paid for at the contract unit price per mile for Grind Centerline Rumble Stripe in Asphalt Concrete. It is estimated that 4.1 miles of rumble stripes will be required.

Rumble stripe installation will be completed prior to application of the flush seal and permanent pavement markings. In the event the flush seal is eliminated from the contract, the Contractor will still be required to apply a flush seal to the newly installed rumble stripes at a width of 24” and a rate of 0.10 gal./SqYd No adjustment in payment will be made and SS-1h or CSS-1h Asphalt for Flush Seal will be paid at the contract unit price per ton.

GRIND SINUSOIDAL CENTERLINE RUMBLE STRIPE IN ASPHALT CONCRETE

Sinusoidal rumble stripes will be constructed on the centerline, as detailed in the plan set. Sinusoidal rumble stripes will be paid for at the contract unit price per mile for Grind Sinusoidal Centerline Rumble Stripe in Asphalt Concrete. It is estimated that 2.7 miles of sinusoidal rumble stripes will be required.

Sinusoidal rumble stripe installation will be completed prior to application of the flush seal and permanent pavement markings. In the event the flush seal is eliminated from the contract, the Contractor will still be required to apply a flush seal to the newly installed sinusoidal rumble stripes at a width of 24” and a rate of 0.10 gal./SqYd No adjustment in payment will be made and SS-1h or CSS-1h Asphalt for Flush Seal will be paid at the contract unit price per ton.

Sta. 86+00 to Sta. 99+00
Sta. 130+00 to Sta. 165+00
Sta. 179+00 to Sta. 202+00
Sta. 241+00 to Sta. 283+00
Sta. 324+00 to Sta. 351+00

CENTERLINE RUMBLE STRIPES – FLUSH SEAL

Asphalt for Flush Seal will be applied after the centerline rumble stripes have been installed. The application width should extend 1 ft beyond the centerline of the roadway in each direction to create a total application rate of 0.10 gal./sq.yd on the centerline rumble stripes.

GRIND RUMBLE STRIPS/STRIPES IN ASPHALT CONCRETE

Asphalt Concrete Rumble Strips/Stripes will be constructed on the shoulders. Rumble Strips/Stripes 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 13.5 miles of asphalt concrete rumble strips/stripes will be required.

Rumble Strip/Stripe installation will be completed prior to application of the Flush Seal and Permanent Pavement Markings. In the event the Flush Seal is eliminated from the contract, the Contractor will still be required to apply a Flush Seal to the newly installed 12” Rumble Strips/Stripes at a width of 1.5’ and at the same rate as specified in this plan set. No adjustment in payment will be made and SS-1h or CSS-1h Asphalt for Flush Seal will be paid at the contract unit price per ton.

SAW JOINT IN ASPHALT CONCRETE

Prior to the removal of in place asphalt concrete pavement, the existing pavement will be sawed full depth to a true line with a vertical face. See typical sections. If approved by the Engineer, the Contractor may elect to use a different method to create this vertical face. All costs to saw joint will be incidental to the contract unit price per foot for “Saw Joint in Asphalt Concrete”.

TABLE OF JOINT SAWING

Station		Station	Asphalt Concrete Joint (feet)
Lt. & Rt. Shoulders			
0+00	to	231+00	23,100
257+00	to	269+11	1,211
290+70	to	357+66	6,696
		Subtotal (Per Shoulder):	31,007
		Grand Total (Both Shoulders):	62,014

RATES OF MATERIALS

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

Section 4
SD 13 Shoulders (one side only)
Sta. 0+00 to 231+00
Sta. 257+00 to 269+11.04
Sta. 290+70 to 357+66

BASE COURSE or BASE COURSE, SALVAGED

Crushed Aggregate or Salvaged Material	4,896 Tons.

Water for Granular Material at the rate of 58.8 M. Gallons.

MC-70 Asphalt for Prime at the Rate of 7.6 ton applied 11 feet wide (Rate = 0.30 gallon per square yard).

SS-1h or CSS-1h Asphalt for Tack at the rate of 1.6 tons applied 10.5 feet wide (Rate = 0.06 gallon per square yard).

CLASS Q2R HOT MIXED ASPHALT CONCRETE - 1st Shoulder Lift

Crushed Aggregate		355 Tons
Salvaged Asphalt Concrete		63 Tons
PG 58-34 Asphalt Binder		22 Tons
	Total Mix	440 Tons
Hydrated Lime		4 Tons
Total Mix with Hydrated Lime		444 Tons

SS-1h or CSS-1h Asphalt for Tack at the rate of 1.6 tons applied 11 feet wide (Rate = 0.06 gallon per square yard).

CLASS Q2R HOT MIXED ASPHALT CONCRETE - 2nd Shoulder Lift

Crushed Aggregate		487 Tons
Salvaged Asphalt Concrete		86 Tons
PG 58-34 Asphalt Binder		30 Tons
	Total Mix	603 Tons
Hydrated Lime		6 Tons
Total Mix with Hydrated Lime		609 Tons

Section 4
SD 13 mainline (23')
Sta. 0+00 to 231+00
Sta. 257+00 to 269+11.04
Sta. 290+70 to 357+66

SS-1h or CSS-1h Asphalt for Tack at the rate of 3.7 tons applied 24 feet wide (Rate = 0.06 gallon per square yard).

CLASS Q2R HOT MIXED ASPHALT CONCRETE - Mainline Lift

Crushed Aggregate		1238 Tons
Salvaged Asphalt Concrete		218 Tons
PG 58-34 Asphalt Binder		75 Tons
	Total Mix	1531 Tons
Hydrated Lime		15 Tons
Total Mix with Hydrated Lime		1546 Tons

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

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 5.5 tons applied 44 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 52 tons applied 22 feet wide (Rate = 8.0 lbs. per square yard).

RATES OF MATERIALS

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

Section 5
SD 13 Mainline
Sta. 231+00 to 244+83.72
Sta. 256+81.79 to 257+00
Sta. 269+11.04 to 290+70

BASE COURSE or BASE COURSE, SALVAGED

Crushed Aggregate or Salvaged Material	396.21 Tons.

Water for Granular Material at the rate of 4.75 M. Gallons.

MC-70 Asphalt for Prime at the Rate of 0.61 ton applied 46 feet wide (Rate = 0.30 gallon per square yard).

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.13 tons applied 45 feet wide (Rate = 0.06 gallon per square yard).

CLASS Q2R HOT MIXED ASPHALT CONCRETE - 1st Lift

Crushed Aggregate		41.88 Tons
Salvaged Asphalt Concrete		7.39 Tons
PG 58-34 Asphalt Binder		2.54 Tons
	Total Mix	51.81 Tons
Hydrated Lime		0.52 Tons
Total Mix with Hydrated Lime		52.33 Tons

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.13 tons applied 45 feet wide (Rate = 0.06 gallon per square yard).

CLASS Q2R HOT MIXED ASPHALT CONCRETE – 2nd Lift

Crushed Aggregate		41.88 Tons
Salvaged Asphalt Concrete		7.39 Tons
PG 58-34 Asphalt Binder		2.54 Tons
	Total Mix	51.81 Tons
Hydrated Lime		0.52 Tons
Total Mix with Hydrated Lime		52.33 Tons

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

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.10 ton applied 44 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 0.98 ton applied 22 feet wide (Rate = 8.0 lbs. per square yard).

Section 6
SD 13 Mainline
Sta. 248+13.72 to 253+51.79

BASE COURSE or BASE COURSE, SALVAGED

Crushed Aggregate or Salvaged Material	494.23 Tons.

Water for Granular Material at the rate of 5.93 M. Gallons.

MC-70 Asphalt for Prime at the Rate of 0.76 ton applied 58 feet wide (Rate = 0.30 gallon per square yard).

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.16 tons applied 58 feet wide (Rate = 0.06 gallon per square yard).

CLASS Q2R HOT MIXED ASPHALT CONCRETE - 1st Lift

Crushed Aggregate		53.85 Tons
Salvaged Asphalt Concrete		9.50 Tons
PG 58-34 Asphalt Binder		3.26 Tons
	Total Mix	66.61 Tons
Hydrated Lime		0.67 Tons
Total Mix with Hydrated Lime		67.28 Tons

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

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.16 tons applied 58 feet wide (Rate = 0.06 gallon per square yard).

CLASS Q2R HOT MIXED ASPHALT CONCRETE – 2nd Lift

Crushed Aggregate		53.85 Tons
Salvaged Asphalt Concrete		9.50 Tons
PG 58-34 Asphalt Binder		3.26 Tons
	Total Mix	66.61 Tons
Hydrated Lime		0.67 Tons
Total Mix with Hydrated Lime		67.28 Tons

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

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.13 ton applied 56 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 1.47 ton applied 33 feet wide (Rate = 8.0 lbs. per square yard).

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH-B-PP 0013(49)121	F7	F14

Plotting Date: 03/07/2024

SUMMARY OF CLASS Q2R ASPHALT CONCRETE COMPACTION

Location	Compaction With Specified Density (1st / 2nd Lift)	Compaction Without Specified Density (1st / 2nd Lift)
	Ton	Ton
SD 13 shoulder widening – Lt.		
Sta. 0+00 to 231+00	1,942.5 / 2,664.4	
Sta. 257+00 to 269+11.04	101.8 / 139.7	
Sta. 290+70 to 357+66	563.1 / 772.4	
SD 13 shoulder widening – Rt.		
Sta. 0+00 to 231+00	1,942.5 / 2,664.4	
Sta. 257+00 to 269+11.04	101.8 / 139.7	
Sta. 290+70 to 357+66	563.1 / 772.4	
SD 13 mainline		
Sta. 0+00 to 231+00	6763.8	
Sta. 231+00 to 244+83.72 – 24' Mainline	413.7 / 413.7	
– Lt. & Rt. Shoulders		310.4 / 310.4
Sta. 244+83.72 to 248+13.72 – 24' Mainline	123.3 / 123.3	
– Lt. & Rt. Shoulders		73.9 / 73.9
Sta. 248+13.72 to 253+51.79 – 24' Mainline	241.3 / 241.3	
– Lt. & Rt. Shoulders		120.7 / 120.7
Sta. 253+51.79 to 256+81.79 – 24' Mainline	123.3 / 123.3	
– Lt. & Rt. Shoulders		73.9 / 73.9
Sta. 256+81.79 to 251+00 – 24' Mainline	5.4 / 5.4	
– Lt. & Rt. Shoulders		4.1 / 4.1
Sta. 257+00 to 269+11.04	354.7	
Sta. 269+11.04 to 290+70 – 24' Mainline	645.5 / 645.5	
– Lt. & Rt. Shoulders		484.3 / 484.3
Sta. 290+70 to 357+66	1,960.6	
XR 249		164.4 / 164.4
Additional Quantities for spot leveling, strengthening and repair		587.2
Pipe replacement (see Section B)		127.8 / 102.5
Intersecting Roads – 11		515.3
Field Entrances – 5		215.4
TOTALS	24,551.9	4,011.6

Plot Scale - 1:200

Plotted From - TRPR15123

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TABLE OF ADDITIONAL QUANTITIES

Location-Description	Water for Granular Material	Base Course or Base Course, Salvaged	Base Course, Salvaged Asphalt Mix	Asphalt Concrete Composite	Class Q2R Hot Mixed Asphalt Concrete (1st / 2nd Lift)	PG 58-34 Asphalt Binder (1st / 2nd Lift)	MC-70 Asphalt for Prime	Hydrated Lime (1st / 2nd Lift)	SS-1h or CSS-1h Asphalt for Tack (1st / 2nd Lift)	SS-1h or CSS-1h Asphalt for Flush Seal	Sand for Flush Seal
	Mgal	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton
Transitions:											
Sta. 244+83.72 to 248+13.72	17.6	1,469.0			197.2 / 197.2	9.6 / 9.6	2.2	1.9 / 1.9	0.5 / 0.5	0.4	4.0
Sta. 253+51.79 to 256+81.79	17.6	1,469.0			197.2 / 197.2	9.6 / 9.6	2.2	1.9 / 1.9	0.5 / 0.5	0.4	4.0
XR 249	16.1	1,343.5			164.4 / 164.4	8.0 / 8.0	2.5	1.5 / 1.5	0.4 / 0.4	0.4	3.8
Intersecting roads – 11	8.8	715.0			515.3	25.0	3.3	5.1	0.8	0.7	12.3
Field Entrances – 33	22.4	613.9	1,306.1								
Asphalt Entrances – 5	3.2	269.0			215.4	10.5	1.5	2.1	0.3	0.3	5.1
Pipe replacements – see Section B	7.8	652.9			127.8 / 102.5	6.3 / 4.9	1.2	1.2 / 1.0	0.2 / 0.2	0.2	2.0
Detour Road – see Restoration Letter				300.0							
TOTAL	93.5	6,532.3	1,306.1	300.0	2,078.6	101.1	12.9	20.0	4.3	2.4	31.2

TABLE OF MATERIAL QUANTITIES

Location-Description	Water for Granular Material	Base Course or Base Course, Salvaged	Base Course, Salvaged Asphalt Mix	Asphalt Concrete Composite	Class Q2R Hot Mixed Asphalt Concrete (1st / 2nd Lift)	PG 58-34 Asphalt Binder (1st / 2nd Lift)	MC-70 Asphalt for Prime	Blotting Sand For Prime	Hydrated Lime (1st / 2nd Lift)	SS-1h or CSS-1h Asphalt for Tack (1st / 2nd Lift)	SS-1h or CSS-1h Asphalt for Flush Seal	Sand for Flush Seal
	Mgal	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton	Ton
Section 4 – Rates of Materials Mainline 1st Lift both Shoulders 2nd Lift both Shoulders	690.6	57,504.0			9079.1 5,214.9 7,152.9	440.4 258.4 351.3	89.3		88.0 46.9 70.6	21.7 18.8 18.9	32.4	305.3
Section 5 – Rates of Materials	169.2	14,108.5			1,863.4 / 1,863.4	90.4 / 90.4	21.7		18.5 / 18.5	4.6 / 4.6	7.2	70
Section 6 – Rates of Materials	31.9	2,659.3			362.0 / 362.0	17.5 / 17.5	4.1		3.6 / 3.6	0.9 / 0.9	0.7	7.9
Additional Quantities Table	93.5	6,532.3	1,306.1	300.0	2,078.6	101.1	12.9		20.0	4.3	2.4	31.2
Quantities from Notes	7.0	587.3		146.8	587.2	93.9		10.0	14.7	33.1		
TOTAL	992.2	81,391.4	1,306.1	446.8	28,563.5	1,460.9	128.0	10.0	284.4	107.8	42.7	414.4

IN PLACE TYPICAL SECTIONS

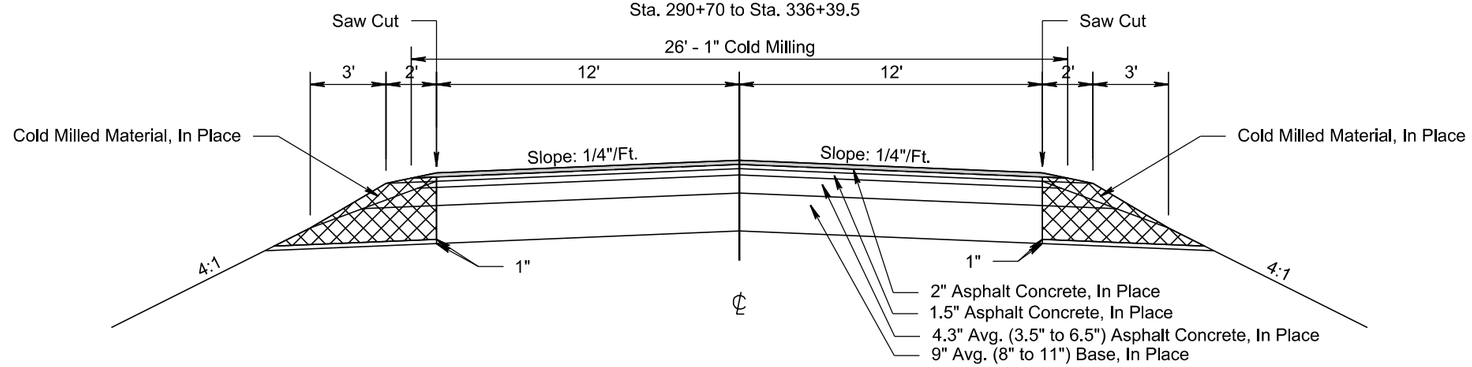
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH-B-PP 0013(49)121	F9	F14

Plotting Date: 03/07/2024

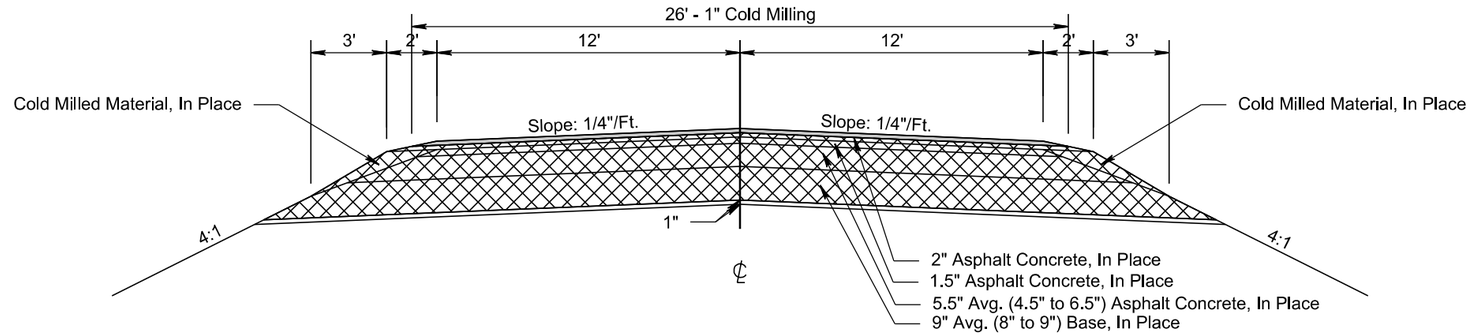
1" Cold Milling

Salvage and Stockpile Asphalt Mix and Granular Base Material

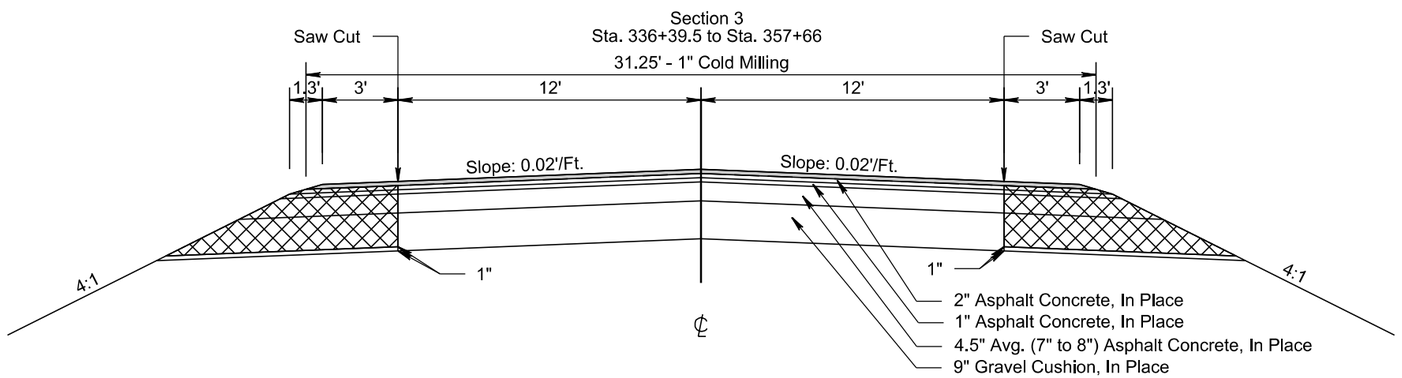
Section 1
Sta. 0+00 to Sta. 231+00
Sta. 257+00 to Sta. 269+00
Sta. 290+70 to Sta. 336+39.5



Section 2
Sta. 231+00 to Sta. 257+00
Sta. 269+00 to Sta. 290+70
(Grading)



Section 3
Sta. 336+39.5 to Sta. 357+66



PLOT SCALE - 1:6.00001

PLOTTED FROM - TRPR15123

PLOT NAME - 9

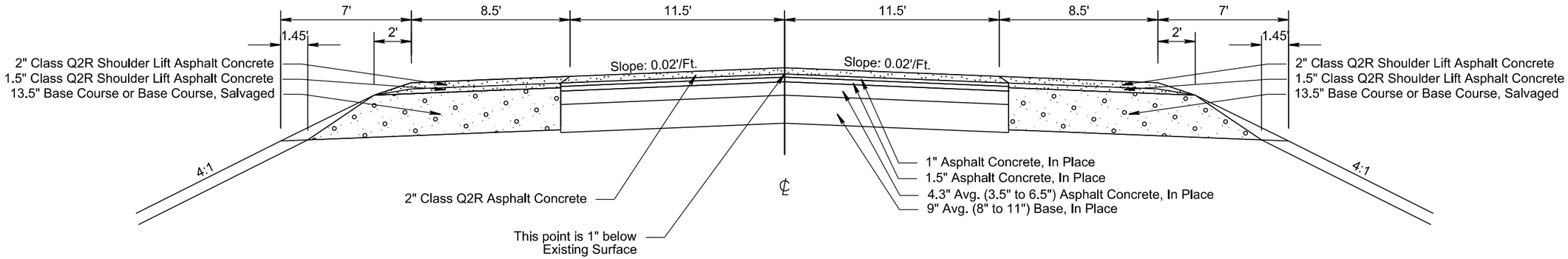
FILE - ...\05EX_TYPICAL SECTIONS.DGN

TYPICAL SURFACING SECTIONS

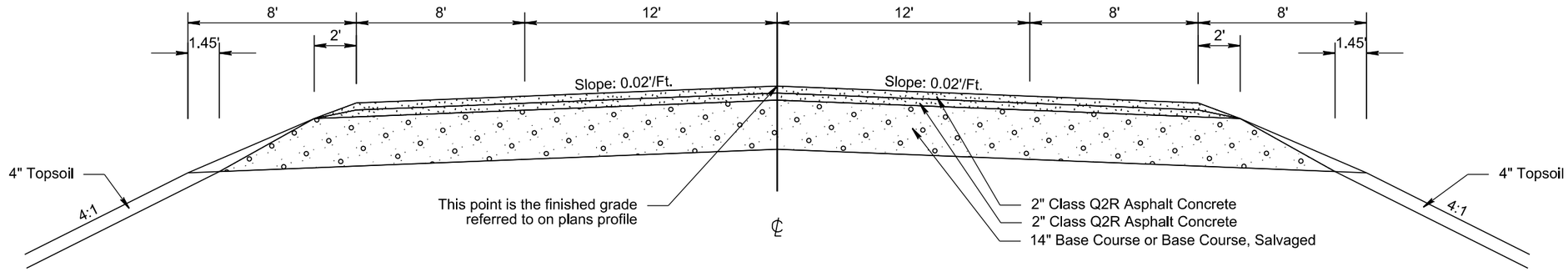
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH-B-PP 0013(49)121	F10	F14

Plotting Date: 03/07/2024

Section 4
Sta. 0+00 to Sta. 231+00
Sta. 257+00 to Sta. 269+11.04
Sta. 290+70 to Sta. 357+66



Section 5
Sta. 231+00 to Sta. 244+83.72
Sta. 256+81.79 to Sta. 257+00
Sta. 269+11.04 to Sta. 290+70
Grading Section



PLOT SCALE - 1:6.00001

PLOTTED FROM - TRPR15123

PLOT NAME - 10

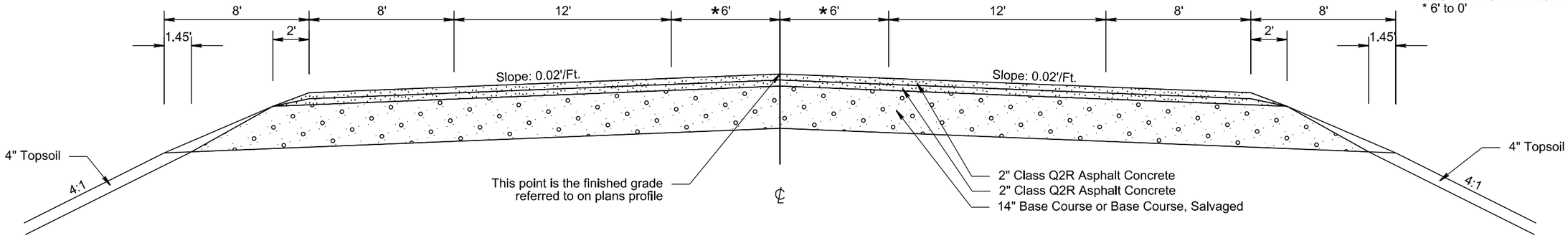
FILE - ...\05EX_TYPICAL SECTIONS.DGN

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH-B-PP 0013(49)121	F11	F14

Plotting Date: 03/07/2024

Section 6
Sta. 244+83.72 to Sta. 256+81.79
Grading Section

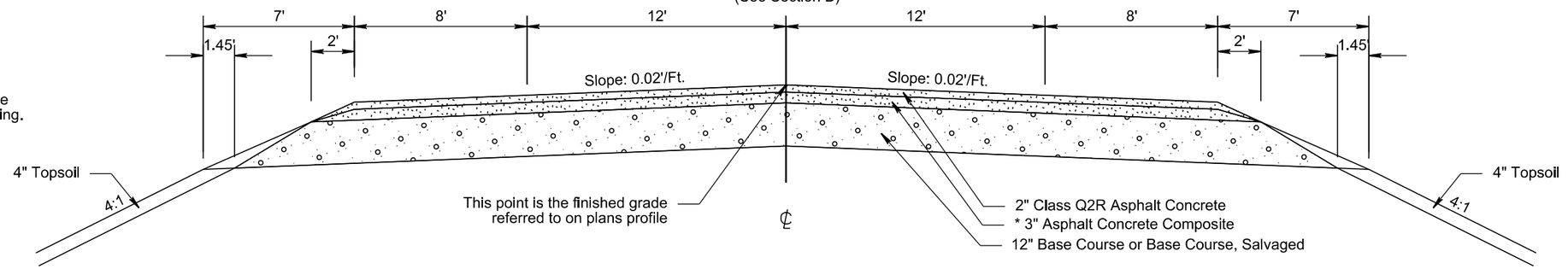


Transitions:

Sta. 244+83.72 to Sta. 248+13.72
* 0' to 6'

Sta. 253+51.79 to Sta. 256+81.79
* 6' to 0'

Section 7
Pipe Replacement Areas
(See Section B)

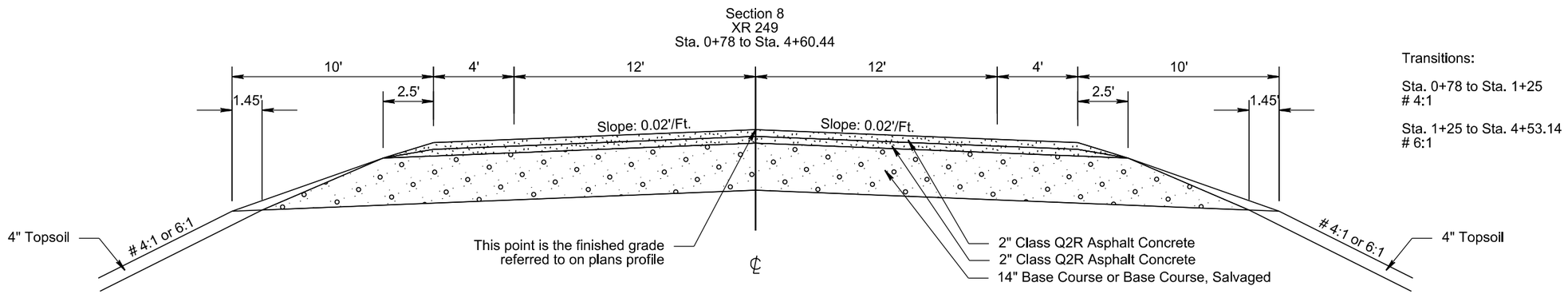


Note:

* Placed as 2 - 2"lifts of Asphalt Concrete Composite after pipe replacement.

See Asphalt Concrete Composite plan note for details on sequencing.

Section 8
XR 249
Sta. 0+78 to Sta. 4+60.44



Transitions:

Sta. 0+78 to Sta. 1+25
4:1

Sta. 1+25 to Sta. 4+53.14
6:1

PLOT SCALE - 1:6.00001

PLOT NAME - 11

FILE - ...\05EX_TYPICAL SECTIONS.DGN

PLOTTED FROM - TRPR15123

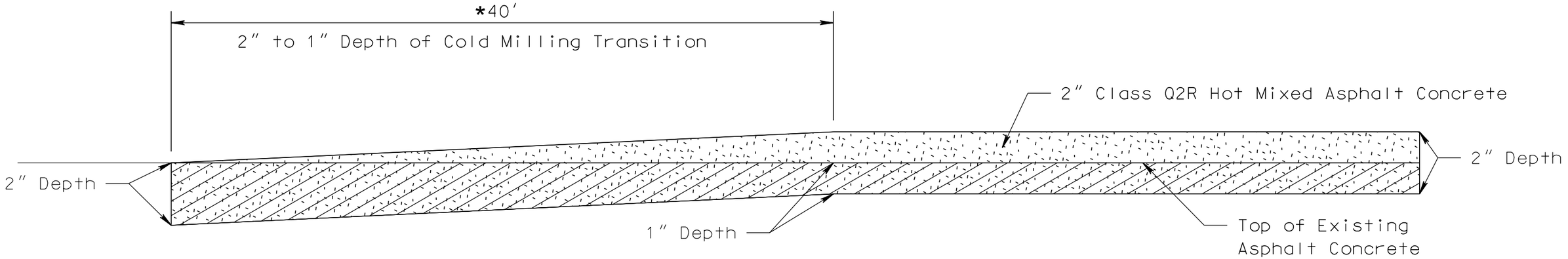
SURFACING TRANSITION LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH-B-PP 0013(49)121	F12	F14

Plotting Date: 03/07/2024

2" Class Q2R Hot Mixed Asphalt Concrete

Cold Milling Asphalt Concrete

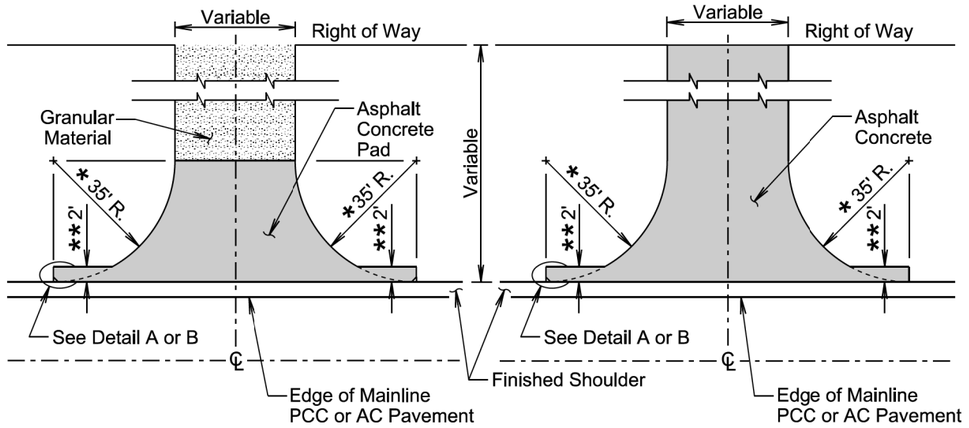


PLOT SCALE - 1:24

PLOT NAME - 12

FILE - ...\COLD MILLING TRANSITION.DGN

PLOTTED FROM - TRPR15123



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:

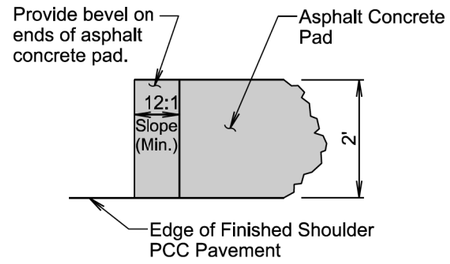
The precise construction limits for situations other than shown above will be determined by the Engineer during construction.

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

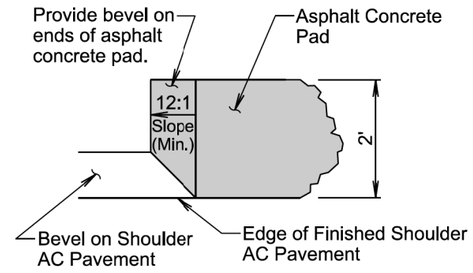
** The Contractor may adjust the screed of the paver during mainline paving operations to provide the 2-foot asphalt concrete pad or the Contractor may provide the 2-foot asphalt concrete pad during paving of the intersecting roads as shown above. The Engineer may eliminate the 2-foot asphalt concrete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

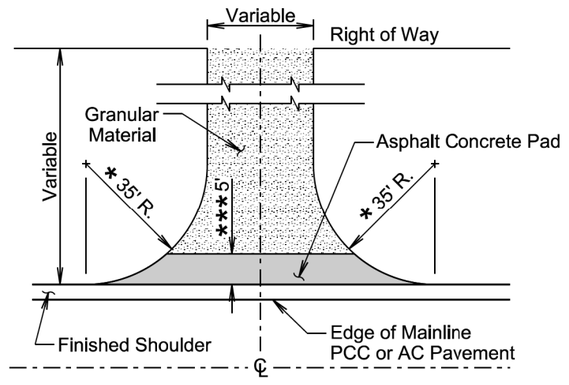
Published Date: 2024	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04
			Sheet 1 of 2



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



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



PLAN VIEW
(Entrance)

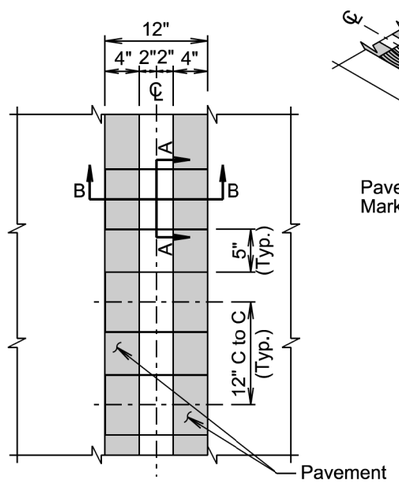
*** Not required if finished shoulder width is 4' or greater.

August 27, 2020

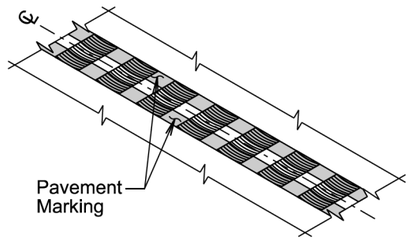
Published Date: 2024	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04
			Sheet 2 of 2

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P-PH-B-PP 0013(49)121	F14	F14

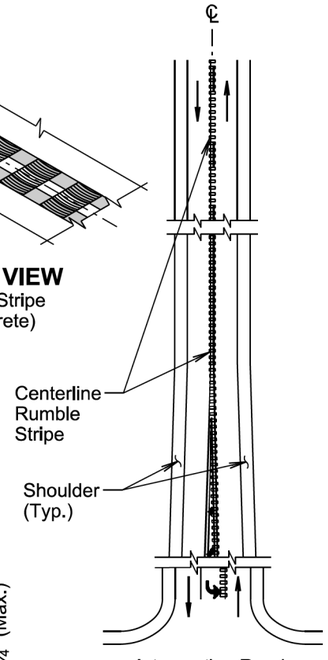
Plotting Date: 03/07/2024

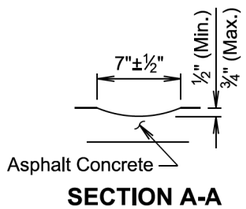


PLAN VIEW
(Typical Rumble Stripe in Asphalt Concrete)

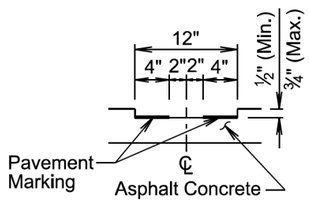


PERSPECTIVE VIEW
(Typical Rumble Stripe in Asphalt Concrete)





SECTION A-A



SECTION B-B

GENERAL NOTES:

A rumble stripe will be constructed on the centerline of the roadway by grinding continuous indentations in the asphalt concrete. The rumble stripe will receive a flush seal or asphalt surface treatment as specified in the plans.

A rumble stripe will not be constructed through intersecting roads, bridge decks, bridge approach slabs, and railroad crossings. The beginning and ending locations of the rumble stripe at intersecting roads, bridge decks, bridge approach slabs, and railroad crossings will be adjusted as approved by the Engineer.

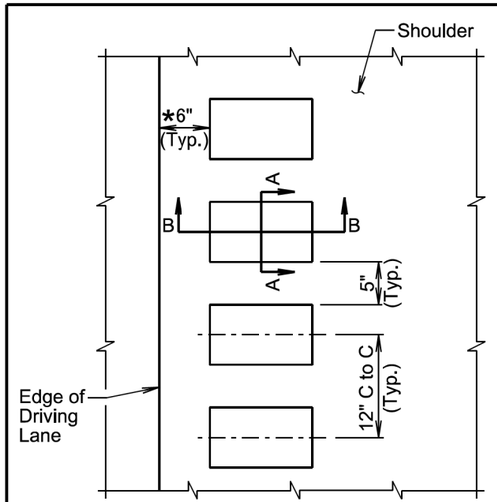
Prior to constructing the rumble stripe the Contractor will submit to the Engineer, for approval, the proposed method of constructing the rumble stripe.

Measurement and payment of the rumble stripe will be to the nearest 0.1 of a mile along the centerline and will include segments without the rumble stripe at intersecting roads, bridge decks, bridge approach slabs, and railroad crossings. Payment for constructing the rumble stripe will be at the contract unit price per mile for "Grind Centerline Rumble Stripe in Asphalt Concrete".

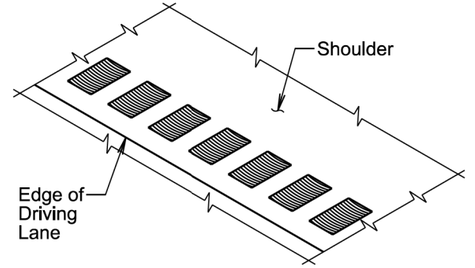
PLAN VIEW

November 19, 2020

Published Date: 2024	SDDOT	12" CENTERLINE RUMBLE STRIPE IN ASPHALT CONCRETE	PLATE NUMBER 320.18
			Sheet 1 of 1

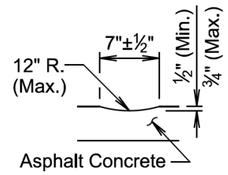


PLAN VIEW
(Typical Rumble Strip in Asphalt Concrete)

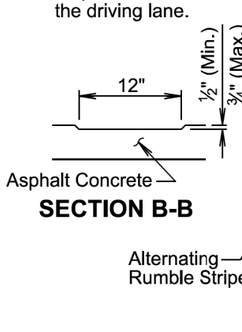


PERSPECTIVE VIEW
(Typical Rumble Strip in Asphalt Concrete)

*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 A-A



SECTION B-B

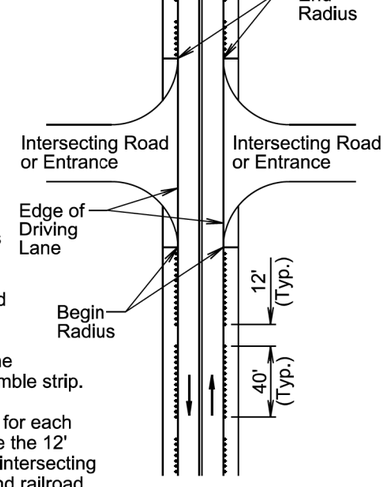
GENERAL NOTES:

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".



PLAN VIEW

September 14, 2019

Published Date: 2024	SDDOT	12" RUMBLE STRIP IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.24
			Sheet 1 of 1