



North Dakota Department of Transportation

Grant Levi, P.E.
Director

Jack Dalrymple
Governor

April 16, 2014

ADDENDUM 1 – JOB 1

TO: All prospective bidders on projects IM-1-094(145)162 & IM-BRI-1-094(147)162, Job No. 1 scheduled for the April 25, 2014 bid opening.

The following plan and proposal revisions shall be made:

Plan Revisions:

Remove and replace sheets 2-2, 4-1, 4-2, 6-1, 6-2, 6-3, 8-1, 8-2, 8-3, 10-1, 60-1 thru 8, 130-4, 130-5, 130-8, 130-9, 130-12, and 130-15 with the enclosed sheets revised 4/14/14.

Sheet 2-2:

Added SP 1409(08) Flexible Pavement Surface Tolerance.

Sheet 4-1 & 4-2:

Reference to Note 411-P03 TEMPORARY ASPHALT WEDGES was removed.

Sheet 6-1:

Note 100-P01 ORDER OF OPERATION FOR MILLING AND PAVING has been revised.

Note 410-P04 RECYCLED ASPHALT PAVEMENT has been revised.

Sheet 6-2:

Note 704-254 TRAFFIC CONTROL FOR UNEVEN PAVEMENT has been deleted.

Sheet 6-3:

Note 930-P01 3 IN EXPANSION JOINTS has been revised to correct the number of locations.

Sheet 8-1:

Item 202 0121 REMOVE & SALVAGE BITUMINOUS SURFACING, quantity 2,262.2 TON has been deleted.

Item 202 0122 REMOVE & SALVAGE BITUMINOUS SURFACING, quantity 5,129 SY has been added.

Item 410 0460 PG 64-28 ASPHALT CEMENT, quantity has decreased from 5,828 to 5,137 TON.

Item 570 0652 CONCRETE PAVEMENT REPAIR-FULL DEPTH-CONTINUOUS, quantity has decreased from 1,414.3 to 1,384.0 SY.

Sheet 8-2:

Item 714 9696 EDGEDRAIN NON PERMEABLE BASE, quantity has increased from 7,550 to 15,100 LF.

Sheet 8-3:
No changes.

Sheet 10-1:
PG 64-28 Asphalt Cement content has been revised.
Heading for Longitudinal Joint Treatment table has been revised.
Unit and quantities for Remove & Salvage Bituminous Surfacing has been revised.

Sheet 60-1 through 8:
Asphalt cement content in Basis of Estimate has been revised.

Sheet 130-4, 5, 8, 9, 12, and 15:
Remove & Salvage Bituminous Surfacing unit has been revised from TON to SY.

Proposal Revisions:

Add SP 1409(08) FLEXIBLE PAVEMENT SURFACE TOLERANCE.

Remove and replace pages 7, 8, and 9 of 13 of the Proposal pages located at the beginning of the Bidders Proposal with the enclosed pages revised 4/16/2014.

Page 7 of 13:

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Page 8 of 13:

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Page 9 of 13:

Item 714 9696 EDGEDRAIN NON PERMEABLE BASE, quantity has increased from 7,550 to 15,100 LF.

This addendum is to be incorporated into the bidder's proposal for this project. Expedite bid files should be updated by downloading the addendum file from the Bid Express on-line bidding exchange at <http://www.bidx.com/> or the Department's web page (<http://www.dot.nd.gov>) and load it into the Expedite program.



CAL J. GENDREAU – CONSTRUCTION SERVICES ENGINEER

80:dch

Enclosure

BID ITEMS

Projects: IM-1-094(145)162 (PCN-18792) and IM-BRI-1-094(147)162 (PCN-18844)

Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.

Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$\$	000	\$\$\$\$\$	00
001	103	0100	CONTRACT BOND	L SUM	1.				
002	202	0122	REMOVE & SALVAGE BITUMINOUS SURFACING	SY	5,129.				
003	202	0153	SAW BITUMINOUS SURFACING-FULL DEPTH	LF	520.				
004	202	0169	REMOVAL OF END SECTION-ALL TYPES & SIZES	EA	4.				
005	202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	20.				
006	203	0101	COMMON EXCAVATION-TYPE A	CY	140.				
007	203	0196	EMBANKMENT-TYPE B	EA	6.				
008	203	0208	GUARDRAIL EMBANKMENT-TYPE C	EA	12.				
009	216	0100	WATER	M GAL	57.				
010	302	0100	SALVAGED BASE COURSE	TON	502.				
011	401	0100	MC70 OR 250 LIQUID ASPHALT	GAL	401.400				
012	401	0150	SS1H OR CSS1H OR MS1 EMULSIFIED ASPHALT	GAL	52,966.				
013	410	0250	RECYCLED ASPHALT PAVEMENT-SUPERPAVE FAA 45	TON	114,152.				
014	410	0410	HYDRATED LIME	TON	1,141.500				
015	410	0460	PG 64-28 ASPHALT CEMENT	TON	5,137.				
016	410	0910	CORED SAMPLE	EA	474.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
017	411	0602	MILLING 2IN BITUMINOUS PAVEMENT	SY	996,096.				
018	570	0095	SAW CONCRETE	LF	76.				
019	570	0646	FULL DEPTH REPAIR-END PREP-MECH SPLICE	EA	69.				
020	570	0648	FULL DEPTH REPAIR-END PREPARATION	EA	83.				
021	570	0652	CONCRETE PAVEMENT REPAIR-FULL DEPTH-CONTINUOUS	SY	1,384.				
022	602	1200	JERSEY BARRIER FORMED OR SLIP FORMED	LF	280.				
023	702	0100	MOBILIZATION	L SUM	1.				
024	704	0100	FLAGGING	MHR	750.				
025	704	1000	TRAFFIC CONTROL SIGNS	UNIT	5,379.				
026	704	1052	TYPE III BARRICADE	EA	68.				
027	704	1060	DELINEATOR DRUMS	EA	262.				
028	704	1067	TUBULAR MARKERS	EA	1,028.				
029	704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	4.				
030	706	0300	FIELD LABORATORY-TYPE C	EA	2.				
031	708	1020	RIPRAP-LOOSE ROCK	CY	352.				
032	708	1029	REMOVAL RIPRAP-LOOSE ROCK	CY	140.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
033	708	1430	FIBER ROLLS 12IN	LF	513.				
034	708	1431	REMOVAL FIBER ROLLS 12IN	LF	513.				
035	708	2240	SEEDING-TYPE B-CL II	ACRE	.750				
036	708	2260	SEEDING-TYPE B-CL IV	ACRE	.750				
037	708	5500	MULCHING	ACRE	.750				
038	709	0600	GEOTEXTILE FABRIC-TYPE RR	SY	366.				
039	714	0310	PIPE CONC REINF 18IN CL III	LF	120.				
040	714	3013	END SECT-TRAVERSABLE REINF. CONC.18IN	EA	4.				
041	714	3150	HEADWALL-PRECAST CONCRETE 4IN	EA	62.				
042	714	4115	PIPE CONDUIT 36IN	LF	209.				
043	714	4155	PIPE CONDUIT 84IN	LF	209.				
044	714	9696	EDGEDRAIN NON PERMEABLE BASE	LF	15,100.				
045	748	0141	CURB & GUTTER-TYPE 1 SPECIAL	LF	240.				
046	754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	50.				
047	754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	108.				
048	754	0199	DIAMOND GRADE DELINEATORS-TYPE E	EA	4.				

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FLEXIBLE PAVEMENT SURFACE TOLERANCE

Project # 1-094(147)162 - PCN # 18844

Project # 1-094(145)162 - PCN # 18792

DESCRIPTION

This provision details the surface tolerance requirements, corrective actions, and incentive/disincentive payments for the flexible pavement on the above referenced project.

APPLICABLE AREAS AND EXCEPTIONS

In addition to specification 408.04 L, the following applies:

The pavement smoothness will be determined by profiling the finished surface of the mainline pavement. All finished bituminous surfaces will be profiled with the following exceptions:

- 1) Bridge decks and/or approach slabs.
- 2) Side roads and approaches.
- 3) Shoulders, ramps and gore areas.
- 4) At-grade railroad crossings.
- 5) Beginning and end of the project.
- 6) Finished surfaces within 150 feet before and after the excluded areas shown in 1 & 4.
- 7) Finished surfaces within 50 feet before and after the excluded areas shown in 5.
- 8) Where safety and roadway geometrics do not allow the proper operating speed for the profiler to collect data. These areas will be determined by the Engineer.

On surfaces exempt from the profile testing, the Engineer will determine the pavement smoothness in accordance with Section 408.04 L.

PROFILER

The profiler will be furnished and operated by the Department. The smoothness of the final roadway surface profile will be measured and analyzed using the International Roughness Index (IRI) to the nearest 0.1 inch. The Department will be using a Class 1 profiler meeting ASTM E-950.

The surface smoothness will be evaluated on a lot basis. A lot is defined as a single paved lane, 528 feet (0.1 mile) long. Any partial lot less than or equal to 370.0 feet long will be included in the previous lot. However, any partial lot greater than 370.0 feet long will be treated as an independent lot.

OPERATION

The MRI will be determined by averaging the IRI values from the right and left wheel paths to the nearest 0.1 inch. A pass will consist of a profile performed in each wheel path for each lane (one trace approximately 31" from centerline of the roadway and the other trace approximately 97" from centerline). The data will be marked and labeled at the beginning and end of each trace, equation, and reference points as identified by the Department. Each trace shall be labeled to show the project, location, lane, wheel path, date tested and the operator's name.

The Contractor shall contact the Project Engineer at least two weeks prior to the anticipated completion date of the final lift of paving for scheduling profile testing. Data will be collected and the results submitted to the contractor within five (5) working days following the agreed upon testing date, unless the final lift of paving of all lanes for the project is not complete on the agreed upon testing date. If the final lift of paving is not complete on the agreed upon testing date, the Department may require an additional two-week notice for a new testing date (plus the subsequent five working-day time period). If the final lift of pavement cannot be completed before the seasonal limitations, data will be collected for all portions of the roadway having been paved through the final lift at the completion of construction for the project. Profile data will be collected for the remaining pavement once the paving is completed.

The Department will not test the roadway between November 30 and May 15. The Department will not test when the ambient temperature is below 32°F, or while it is raining and/or under weather conditions determined inclement by the Engineer. The Department will test the roadway when the pavement is dry and free of deleterious material that would not provide accurate test results. It shall be the Contractor's responsibility to provide a clean surface for testing and shall pay for all costs including but not limited to sweeping.

EVALUATION

The data collected by the Department will be evaluated by and remain the property of the Department. The lot MRI will be used to evaluate incentive/disincentive payment for each lot.

The incentive/disincentive payment schedule will be a fixed dollar amount per lot based on the MRI and the applicable schedule.

The Contractor will be furnished the test results within five working days of completing the data collection.

CORRECTIVE ACTIONS

Corrective action required by the contractor may be in the form of a mill and overlay or diamond grinding.

In lieu of applying the disincentive, any lot of pavement with an MRI that places that lot into a disincentive may be milled and overlaid or diamond ground to achieve an MRI which is equal to or better than the \$0 incentive level.

Lots that have undergone corrective action shall be corrected to maximum MRI of 70.0 in /mile.

Lot(s) which have undergone corrective action will be reprofiled within five working days of completion of the corrective action. All criteria detailed in this Special Provision will apply to

the reprofiled section with the exception of the payment of an incentive. The Contractor will not be eligible to receive an incentive for a lot which has undergone corrective action.

Individual bumps in excess of 0.25 inches (1/4") in 16 feet shall receive corrective action by the Contractor. Individual bumps greater than 0.1875 inches (3/16") but less than or equal to 0.25 inches (1/4") in 16 feet will be ground at the discretion of the Engineer. Individual Bumps less than or equal to 0.1875 inches (3/16") in 16 feet will be accepted without corrective action.

Work required for any corrective action shall be performed in accordance with NDDOT specifications and with the approval of the Engineer. All work required to perform the corrective action will be done at the Contractor's expense.

GRINDING

Grinding shall be accomplished in accordance with Section 550.04 P.3 of the NDDOT specifications (excluding the 3rd sentence of the 2nd paragraph, beginning "The pavement shall..."). The equipment shall be a power operated mechanical grinder equipped with diamond blades and capable of uniformly grinding or removing the old surface to depths required without damaging the underlying pavement. Areas that have been ground shall not be left smooth or polished, but shall have a uniform texture approximately equal in roughness to the surrounding unground asphalt concrete. Grinding shall be day lighted to the outside edge of the pavement.

LIQUIDATED DAMAGES

If all work on the project is complete, excluding corrective work, and the project meets the requirements of being substantially complete in accordance with Section 108.04 J, liquidated damages may be suspended for up to 21 calendar days following the completion date for the project. However, if all corrective work is not completed within 21 calendar days following the completion date indicated for the project liquidated damages will be applied in accordance with Section 108.04 J.

INCENTIVE / DISINCENTIVE PAYMENT

Incentive/disincentive payments will be based on the average IRI determined for each lot and will be based on the following schedule:

Schedule 1	
Mine and Blend or Mill and Overlay	
IRI (Inches per lot)	Price Adjustment (Dollars per lot)
32.0 or less	\$400
32.1 – 36.0	\$300
36.1 – 39.0	\$200
39.1 – 42.0	\$100
42.1 – 50.0	\$0
50.1 – 57.0	-\$100
57.1 – 64.0	-\$200
64.1 – 70.0	-\$400
70.1 or greater	Grind

MISCELLANEOUS

All work required to prepare the roadway for testing, such as but not limited to sweeping, will not be measured and shall be incidental to the hot bituminous pavement. Flagging, pilot car and traffic control will be paid for at the contract unit price.

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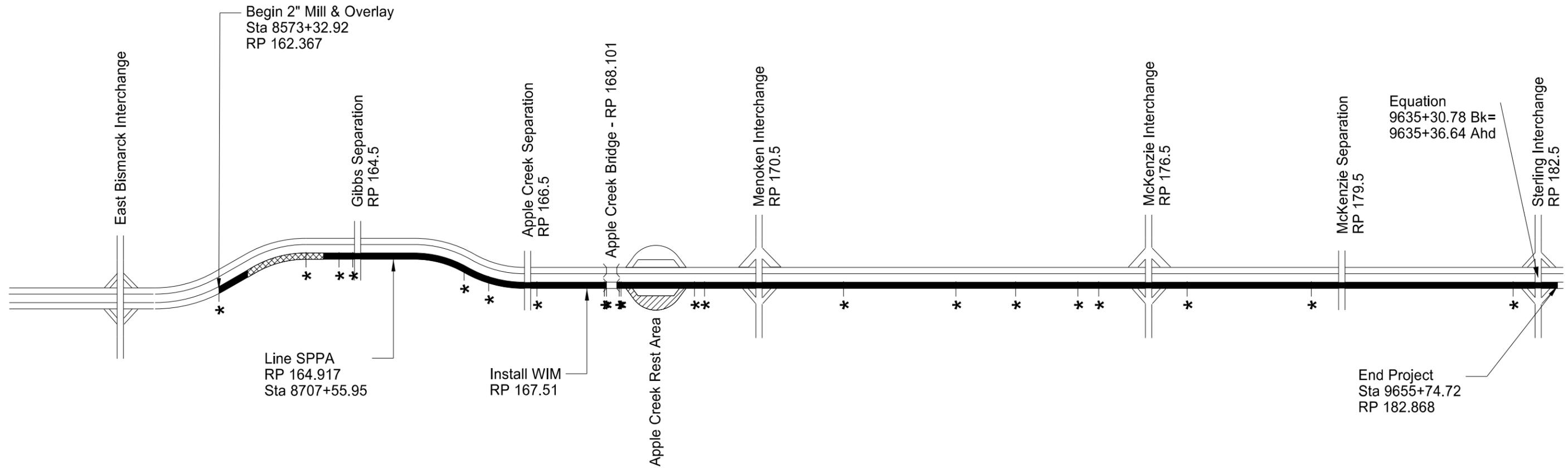
LIST OF STANDARD DRAWINGS

<u>STANDARD NO.</u>	<u>DESCRIPTION</u>
D-20-1, 2, 3	NDDOT Abbreviations
D-20-10	NDDOT Utility Company Abbreviations
D-20-20, 21	Linestyles
D-20-30, 31, 32	Symbols
D-704-1	Attenuation Device
D-704-2	Traffic Control For Coring Of Hot Bituminous Pavement
D-704-5	Contractor Sign Detail
D-704-7, 8	Breakaway Systems For Construction Zone Signs - Perforated Tube
D-704-9, 10, & 11	Construction Sign Details - Terminal And Guide Signs
D-704-13	Barricade And Channelizing Device Details
D-704-14	Construction Sign Punching And Mounting Details
D-704-15, 20, 22, & 26	Road Closure Layouts
D-704-27	Traffic Control Plan For Moving Operations
D-704-35	Sign Layout For One Lane Closure - Interstate System
D-704-50	Portable Sign Support Assembly
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D-708-6	Erosion And Siltation Controls - Median Or Ditch Inlet Protection
D-708-7	Erosion Control Fiber Roll Placement Details
D-714-1	Reinforced Concrete Pipe Culvert And End Section
D-714-11	Traversable End Sections For Corrugated Steel Pipe Culverts
D-714-18	Edgedrain Details
D-748-1	Curb & Gutter And Valley Gutter
D-754-1	Pipe Or W-Shape Assembly Details
D-754-2	(Conventional Use) Reference Markers
D-754-3	Break-Away Base And Foundation Details Stub Post Connection (Pipe)
D-754-5	Foundation Data For Steel Supports
D-754-6	Hinge Plate Details-Perforated Fuse Plate Detail
D-754-7	Mounting, Post Cap And Panel Details
D-754-8	Attachment Brackets - Std Steel Pipe (Galv.) & Aluminum Tubular Posts
D-754-9	Letter And Arrow Details For Variable Length Signs
D-754-13	Structural Details W Shape Supports
D-754-14	Wind Beams And Anchor Plates For W-Shape Supports
D-754-21	Reflectorized Delineators
D-754-22C	Approach Delineation
D-754-23	Perforated Tube Assembly Details
D-754-24	Mounting Details Perforated Tube
D-754-24A	Breakaway Coupler System For Perforated Tubes
D-754-25	Mounting Details Perforated Tube
D-754-32	Sign Punching, Stringer & Supp Location Details Reg, Warn, & Guide Signs
D-754-83	Object Markers - Culverts
D-760-1	Rumble Strips Interstate Highways
D-762-2	Interstate Pavement Marking 4 Lane Divided Highway
D-762-4	Pavement Marking
D-762-6	Short-Term Pavement Marking

LIST OF STANDARD DRAWINGS

<u>STANDARD NO.</u>	<u>DESCRIPTION</u>
D-764-1	Beam Guardrail - General Details
D-764-6	Flared Energy Absorbing Terminal For Steel Breakaway System
D-764-7	Slotted Rail Terminal 6 Post System
D-764-9	W-Beam Transition To Concrete Jersey Barrier With Approach Curb
D-764-20	Short Term End Treatment For Bridges (Attenuation Device Method)
D-764-21	Short Term End Treatment For Bridges (Guardrail Method)
D-764-22	Typical Grading At Bridge Ends With W-Beam Guardrail
D-770-1	Concrete Foundations (Traffic Signals & Highway Lighting)
D-770-3	Pull Box Details
D-770-4	Lighting & Signal Details
D-772-5	Loop Detectors Details (Saw Slot)
Special Provisions	
SP 559(08)	Permanent Pavement Marking Monitoring System
SP 1010(08)	Temporary Erosion and Sediment Best Management Practices
SP 1275(08)	Weather Limitations for Hot Bituminous Mix
SP 1349(08)	Federal Migratory Bird Treaty Act
SP 1376(08)	Virtual Weigh in Motion (WIM)
SP 1401(08)	Permits and Environmental Considerations
SP 1409(08)	Flexible Pavement Surface Tolerance
SP 1410(08)	Hot Bituminous Pavement - Hydrated Lime
SP 1417(08)	Accelerated Strength Concrete

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- * — CPR Location
- █ 2" Mill & Overlay with CPR* - EB Roadway
- ▨ 2" Mill & Overlay - Rest Area
- ▩ 2" Mill & Overlay with CPR & Edge Drain* - EB Roadway RP 162.76, Sta 8594+45 to RP 164.19, Sta 8669+68

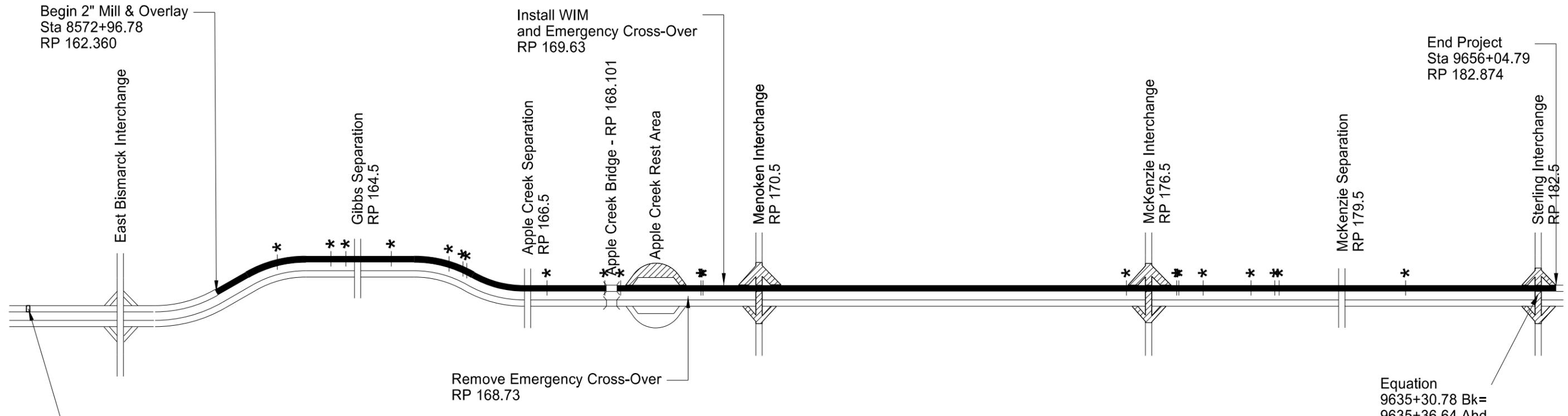
*Intermittent Joint Treatment (2" deep x 2' wide) on longitudinal joints as directed by the Engineer.
See Note 950-P02

This document was originally issued and sealed by Brian J Rosin, Registration Number PE- 2928, on 4/14/14 and the original document is stored at the North Dakota Department of Transportation

Scope of Work
Eastbound

East Bismarck Interchange to Sterling

Revised 4-14-2014	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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Begin Project
Hay Creek Separation
Joint Repair
Sta 8473+37.57
RP 160.649

Remove Emergency Cross-Over
RP 168.73

Equation
9635+30.78 Bk=
9635+36.64 Ahd

- * — CPR Location
- █ 2" Mill & Overlay with CPR* - WB Roadway
- ▨ 2" Mill & Overlay Ramps, Crossroads, & Rest Area

*Intermittent Joint Treatment (2" deep x 2' wide) at longitudinal joints as directed by the Engineer.
See Note 950-P02

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Scope of Work
Westbound

East Bismarck Interchange to Sterling

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-1-094(145)162 IM-BRI-1-094(147)162	6	1

NOTES

100-P01 ORDER OF OPERATION FOR MILLING AND PAVING:

- 1) The driving lane and 10 foot shoulder shall be milled prior to the adjacent passing lane within each one lane closure. The driving lane longitudinal shoulder joint treatment will be completed the same day as the driving lane milling.
- 2) The traffic shall be moved onto the milled driving lane while the adjacent passing lane is milled within a one lane closure. The passing lane longitudinal shoulder joint treatment and the longitudinal centerline joint treatment will be completed using the passing lane closure. The passing lane and shoulder can be overlaid using the same lane closure.
- 3) The traffic shall be moved onto the overlaid passing lane while the adjacent driving lane and shoulder is overlaid

The lane closures will remain in place until the driving and passing lanes are even.

Where an edgedrain installation coincides with the longitudinal shoulder joint treatment, the edgedrain installation will be completed before or during the longitudinal shoulder joint treatment at that joint.

Hay Creek Separation joint repair may be done at any time. All other CPR work will be completed prior to the mainline milling and overlay.

202-P01 REMOVE & SALVAGE SURFACING: The removal and salvaging of the surfacing material, including aggregate, at the guardrail locations will be paid for as "Remove & Salvage Bituminous Surfacing". This item includes any cutting that the contractor may choose to do at the shoulder edge. All removed material becomes property of the contractor.

203-P01 COMMON EXCAVATION-TYPE A: All costs for labor, equipment, hauling, and materials including salvaged base, topsoil, and seeding for the Emergency Median Crossover and Ditch Block will be included in the price bid for "Common Excavation Type-A".

410-P01 RECYCLED SUPERPAVE PROPERTIES: The following aggregate and mix design properties are required for Superpave Volumetric Design.

Test	Criteria	Reference
Coarse Aggregate Angularity	85% min	NDDOT Field Sampling/Testing Manual
Fine Aggregate Angularity	45% min	AASHTO T 304
Gyratory Effort, # Gyration	N _{ini} =7, N _{des} =75, N _{max} =115	AASHTO R 35
Voids Filled with Asphalt	65-75%	AASHTO M 323, T 166
%G _{mm} @ N _{ini}	89% max	AASHTO M 323, T 166
Lightweight Pieces for Virgin Aggregate % Shale	5.0% max	AASHTO M 113, NDDOT Modified

410-P02 PAVING SEAMS: The hot bituminous pavement for the 12-foot driving lane and 10-foot shoulder shall be placed in one pass or placed with a hot seam. A hot seam is defined as a seam created when two pavers are paving at the same time with no more than 300' between the pavers. The seam must be rolled in a way to join the seams. The seam shall not be visible.

410-P03 ASPHALT PATCH PROPERTIES: For the asphalt patch under the mainline overlay at the CPR and edgedrain locations (see the CPR detail in Section 20 and Proposed Mainline Typical-Eastbound in Section 30 for patch thickness), the Contractor may use the same Recycled Hot Bituminous Pavement (RHBP) as the mainline paving or a mixture that meets Superpave FAA 45 requirements (not recycled). The non-recycled option shall include asphalt cement at 6% and may be either PG 58-28 or PG 64-28. No lime will be used in this mix.

410-P04 RECYCLED ASPHALT PAVEMENT: Add 20 percent recycled asphalt pavement (RAP) and 4.5% PG 64-28 asphalt cement in the Superpave FAA 45 mixture. The contractor shall use 100% virgin material until enough RAP material is available to achieve the 20%.

Keep job mix formula tolerances for RAP within 5 percent of the target value. During mix production, the virgin aggregate shall meet the physical property requirements as determined from the mix design, except the Initial Control Points for Superpave Aggregate may be waived.

Obtain recycled asphalt pavement from the material produced by cold milling on the project.

Process the recycled asphalt pavement so the maximum particle size does not exceed 1-1/2 inches (37.5 mm) in the cold feed.

Introduce the recycled asphalt pavement into the drum and combine with the virgin aggregate to prevent the recycled asphalt pavement from direct contact with the burner flame. Add the asphalt binder to the mixture in the drum after the virgin aggregate and RAP have been combined.

Supply a 165 pound sample of material milled from the project in addition to the virgin aggregate and liquid asphalt required in Section 410 for mix design purposes. Submit the samples to the Bismarck District Materials Coordinator.

411-P01 MILLED MATERIAL: Use the milled bituminous material as recycle for "Recycled Asphalt Pavement-Superpave FAA 45". Excess millings will be handled as follows:

- 2,500 ton to Sterling Maintenance Reloading Site (SE ¼ S29 T139 R76)
- 1,000 ton to the Bismarck District Yard
- 7,500 ton to the State Aggregate pit north of McKenzie (NE ¼ of SE ¼ S28 T140 R77)

Excess beyond the above will become property of the contractor. Stockpiled material for any location will not be driven on.

411-P02 MILLING SECTIONS: At the beginning and end of milling sections and at bridge ends, the existing concrete or bituminous material shall be removed to form a straight vertical edge to allow placement of the full depth of surfacing. All material removed in these operations shall become the property of the contractor.

This document was originally issued and sealed by Brian J Rosin, Registration Number PE-2928, on 4/16/14 and the original document is stored at the North Dakota Department of Transportation.

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NOTES

411-P03 TEMPORARY ASPHALT WEDGES: The contractor shall place temporary asphalt wedges at the beginning and ends of the project, at the ends of bridge approach slabs, and at ramp/crossroad intersections, prior to allowing traffic across the transition, to allow a smooth passage of vehicles at milled locations. All costs associated with labor, materials, and equipment for the installation and removal of the asphalt wedges shall be included in the price bid for "Milling 2in Bituminous Pavement".

411-P04 MILLING AT CROSSROADS: Milling and overlay at crossroads shall not disturb the existing guardrail. The milling and overlay will include the traffic lanes and shoulders but may narrow to fit as the guardrail meets the bridge ends. Contractor will mill/overlay as much of the narrowed area as feasible without disturbing the guardrail.

570-P01 ASPHALT PATCH AT CPR LOCATIONS: All costs associated with labor, materials, and equipment for the removal and patching of the bituminous surfacing at the CPR locations shall be included in the price bid for "Concrete Pavement Repair – Full Depth - Continuous".

704-P01 TRAFFIC CONTROL: The traffic control devices list has been developed using the following layouts on the Standard Drawings for traffic control:
 D-704-2 for coring hot bituminous pavement.
 D-704-7, 8, 9, 10, 11, 13, and 14 are applicable.
 D-704-15 Layout Type A when the ramp overlay is being performed and the crossroad traffic will be controlled by flaggers.
 D-704-22, Types K & L for construction trucks hauling material,
 D-704-26, layouts Type CC and GG for the hot bituminous paving operation.
 D-704-26, layouts Type BB and EE as needed.
 D-704-27 for paving marking operations
 D-704-35 for lane closure and flagging during paving operations, guardrail, and joint repair (quantities have been developed based on 2 - 7mi closures for both WB and EB roadways).
 D-704-56 for grinding shoulder rumble strips.

704-P02 TRAFFIC CONTROL AT REST AREAS: Rest Areas will be closed during the work within the Rest Area. Closure is allowed for a maximum of 7 days. Contractor will coordinate dates of closure with the District. Sign E5-2a-48 "Exit Closed" will be placed diagonally on the existing exit direction signs at RP 168.1301 EB and 168.8107 WB during the closures. A total of 12 Type-III barricades have been provided, 3 of each are to be placed at each on and off ramp at the rest areas during closure. Contractor must bag or cover all signs that will not apply during the closures. All costs associated with bagging and covering will be incidental to 704-1000 "Traffic Control Signs".

708-P01 REMOVE RIPRAP: The riprap designated for removal consists of loose rock riprap. The contractor may salvage this removed riprap and place it at locations designated in the plans for new riprap. Any riprap salvaged and placed shall be paid for as "Riprap – Loose Rock". Any riprap removed and not salvaged shall become property of the contractor.

708-P02 TEMPORARY EROSION CONTROL: It is assumed that the grass in the ditch will serve as temporary erosion control during the culvert lining and riprap operations. In addition, fiber rolls have been provided to serve as temporary erosion control for placement at the edge of the wetlands and right-of-way prior to culvert and riprap work. Locations are shown in Section 75. Additional fiber rolls may be installed as directed by the Engineer in the field.

708-P03 PERMANENT EROSION CONTROL: Seeding and mulching quantities have been provided to repair damage to the ditch grasses within the culvert and riprap work area when that work is complete. If the integrity of the existing sod has not been damaged, these items are not necessary. The Engineer will determine the extent of seeding and mulching.

714-P01 EDGEDRAIN: All work required for trenching, excavation, backfill, the replacement of shoulder aggregate and bituminous surfacing that is additional to mainline and joint surfacing shall be included in the price bid for "Edgedrain Non Permeable Base".

714-P02 REMOVAL OF OBSTRUCTIONS: All silt and debris shall be cleaned out of the existing structural plate pipe before the liner pipes are installed. The floor of the existing SPP has deteriorated and heaved. Portions of the floor will have to be removed or reshaped to facilitate the pipe lining, as shown in the plans. All costs associated with removing silt, debris, and remove/reshape the SPP floor will be included in the price bid for "Pipe Conduit 84 IN".

714-P03 LINER INSTALLATION: The Contractor will submit a plan for installation of the liner pipes at or prior to the pre-job meeting to the Engineer for review. This plan will include method to remove or reshape the existing heaved areas and method to counteract the buoyancy of the liner pipes. If the contractor reshapes the existing pipe, holes will need to be cut into the existing pipe to ensure that the grout fills all voids outside the existing pipe.

The 84" diameter spiral rib shall be furnished with threaded bung holes to facilitate the grouting operation. The diameter of the holes and exact spacing shall be determined by the contractor to accommodate his equipment. A threaded bung shall be furnished for each hole by the contractor.

All cutting, bungs, or related work will be included in the price bid for "Pipe Conduit 84 IN".

760-P01 RUMBLE STRIP EXEMPTION: The rumble strips will be discontinued from 300 feet before until 100 feet after each WIM site.

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-1-094(145)162 IM-BRI-1-094(147)162	6	3

NOTES

910-P01 GROUT: The pressure grout method shall be used to fill the voids between the CSP liners and the SPP as well as any voids outside the SPP caused by heaving and deformation.

At the inlet and outlet ends of the pipe, the contractor shall form the opening sufficiently to provide a smooth, even surface between the liners and the structural plate pipe.

The grout shall be a mixture of one part cement and five parts fine aggregate, by volume, with 7 pounds of bentonite added for each sack of cement. This is based on a 200-barrel yield bentonite. If the yield of bentonite varies, the amount of bentonite added per sack of cement will be adjusted proportionally. The slump shall not be greater than that necessary to facilitate placement. The grout materials shall meet the following requirements:

1. The cement shall be as specified in Section 804 of the Standard Specifications.
2. The fine aggregate shall meet the requirements of Subsection 816.01 of the Standard Specifications.
3. The bentonite shall be a commercially packaged product.

Grout injection pressures shall be adequate to fill the void without causing deformation of the liner. Grouting equipment includes mixing and batching facilities, a pump specifically designed for pressure injection of grout, and pipe, hose, and fixtures to convey the grout into the void. Calibration of all equipment shall be required before beginning work. The grout pump shall have a liquid-filled diaphragm in-line gauge so that pressures can be continually monitored.

All costs of materials, equipment and labor to pressure grout the void will be included in the price bid for "Grout."

930-P01 3 IN EXPANSION JOINTS: This work consists of furnishing and installing 3" expansion joint above the existing sleeper slab on the interstate WB mainline at the Hay Creek Separation in accordance with the following:

The material utilized for sealing the expansion joints shall be one of the following or an approved equal:

1. "Pressure-Relief[®] (Ceramar[®])" as marketed by the W.R. Meadows, Inc., P.O. Box 338, Hampshire, IL 60140. www.wrmeadows.com
2. "EVA-SEAL[®]" manufactured by E-Poxy Engineered Materials, LLC, 10 Broadway, Albany, NY 12202. www.e-poxy.com

The pressure relief joint material shall be installed in accordance with the manufacturer's recommendation and as follows:

1. Expansion joint filler material used for a 3 inch pressure relief joint consists of a preformed foam product having minimum dimension of 3.5 inches in width (may be laminated). Each section shall have a minimum length of 6 feet. The material shall be installed under compression with a lubricant adhesive applied to the concrete contact surfaces.
2. Saw or form the joints 3 inches wide by the full-depth of the slab. Inspect to assure that the inside walls of the joint have been sandblasted, are dry, smooth and free of debris and loose particles. Apply tape to the top 2 to 3 inches of the inside walls to prevent the lubricant adhesive from contaminated the concrete bonding surfaces of the subsequently placed hot pour joint sealer.

3. Paint the inside walls of the joint with lubricant adhesive at the rate of approximately 1 gallon per 50 lineal feet of joint.
4. Pinch the bottom of the material together and push down into the joint. Walk the material down into the joint; use a sledgehammer and a 2x4 if necessary. When butting two pieces together, paint the ends with lubricant adhesive.
5. Install the foam relief joint material so that the top surface is depressed to a depth of approximately 7/8 inch below the concrete surface. Cut the foam material to a 45 degree angle as shown in the detail. After proper installation, remove the tape and fill the void on top of the foam material with approximately 1/2 inch of hot pour joint sealer to a level of 3/8 inch ± 1/4 inch below the surface. The hot joint sealer should only slightly melt into the foam pressure relief joint material. To prevent excessive melting of the joint material, place the hot-pour sealer at the lower end of the temperature specification. Check for correct temperature by placing hot pour sealer on a sample of waste foam material.

The volume of expansion joint material is 3" wide, 9" deep and 24' long at the west end of the west bound bridge at Hay Creek Separation.

All materials and labor required to perform this described work shall be included in the price bid for "3 In Expansion Joint".

950-P01 EXPANSION JOINT MODIFICATION: This work includes the costs related to cutting and removing parts of the existing WF beam to make it flush with the sleeper slab.

950-P02 LONGITUDINAL JOINT TREATMENT: The longitudinal joints on the mainline of both projects are subject to an extra 2" deep by 2' wide mill and RHBP patch as directed by the Engineer. A quantity of 77,693 LF in the EB project and 56,499 LF in the WB project has been provided for estimate purposes. The costs associated with this milling and subsequent patching, including tack, RHBP, and AC will be paid for as "Joint Treatment".

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ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-1-094(145)162 IM-BRI-1-094(147)162	8	1

REVISED 04/14/2014

SPEC	CODE	ITEM DESCRIPTION	UNIT	IM-1-094(145) 162	IM-1-094(147) 162	BRI-1-094(14 7)162	TOTAL
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103	0100	CONTRACT BOND	L SUM	0.5	0.5		1
202	0122	REMOVE & SALVAGE BITUMINOUS SURFACING	SY	2,571	2,558		5,129
202	0153	SAW BITUMINOUS SURFACING-FULL DEPTH	LF	266	254		520
202	0169	REMOVAL OF END SECTION-ALL TYPES & SIZES	EA	4			4
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	20			20
203	0101	COMMON EXCAVATION-TYPE A	CY		140		140
203	0196	EMBANKMENT-TYPE B	EA	6			6
203	0208	GUARDRAIL EMBANKMENT-TYPE C	EA	6	6		12
216	0100	WATER	M GAL	28.5	28.5		57
302	0100	SALVAGED BASE COURSE	TON	251	251		502
401	0100	MC70 OR 250 LIQUID ASPHALT	GAL	200.7	200.7		401.4
401	0150	SS1H OR CSS1H OR MS1 EMULSIFIED ASPHALT	GAL	24,436	28,530		52,966
410	0250	RECYCLED ASPHALT PAVEMENT-SUPERPAVE FAA 45	TON	52,713	61,439		114,152
410	0410	HYDRATED LIME	TON	527.1	614.4		1,141.5
410	0460	PG 64-28 ASPHALT CEMENT	TON	2,372	2,765		5,137
410	0910	CORED SAMPLE	EA	237	237		474
411	0602	MILLING 2IN BITUMINOUS PAVEMENT	SY	461,444	534,652		996,096
570	0095	SAW CONCRETE	LF			76	76
570	0646	FULL DEPTH REPAIR-END PREP-MECH SPLICE	EA	36	32	1	69
570	0648	FULL DEPTH REPAIR-END PREPARATION	EA	42	40	1	83
570	0652	CONCRETE PAVEMENT REPAIR-FULL DEPTH-CONTINUOUS	SY	715	627	42	1,384
602	1200	JERSEY BARRIER FORMED OR SLIP FORMED	LF	146	134		280
702	0100	MOBILIZATION	L SUM	0.5	0.5		1
704	0100	FLAGGING	MHR	375	375		750
704	1000	TRAFFIC CONTROL SIGNS	UNIT	2,689.5	2,689.5		5,379
704	1052	TYPE III BARRICADE	EA	34	34		68
704	1060	DELINEATOR DRUMS	EA	131	131		262
704	1067	TUBULAR MARKERS	EA	514	514		1,028
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	2	2		4
706	0300	FIELD LABORATORY-TYPE C	EA	1	1		2
708	1020	RIPRAP-LOOSE ROCK	CY	251	101		352
708	1029	REMOVAL RIPRAP-LOOSE ROCK	CY	126	14		140

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-1-094(145)162 IM-BRI-1-094(147)162	8	2

REVISED 04/14/2014

SPEC	CODE	ITEM DESCRIPTION	UNIT	IM-1-094(145) 162	IM-1-094(147) 162	BRI-1-094(14 7)162	TOTAL
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708	1430	FIBER ROLLS 12IN	LF	341	172		513
708	1431	REMOVAL FIBER ROLLS 12IN	LF	341	172		513
708	2240	SEEDING-TYPE B-CL II	ACRE	0.38	0.37		0.75
708	2260	SEEDING-TYPE B-CL IV	ACRE	0.38	0.37		0.75
708	5500	MULCHING	ACRE	0.38	0.37		0.75
709	0600	GEOTEXTILE FABRIC-TYPE RR	SY	258	108		366
714	0310	PIPE CONC REINF 18IN CL III	LF	120			120
714	3013	END SECT-TRAVERSABLE REINF. CONC.18IN	EA	4			4
714	3150	HEADWALL-PRECAST CONCRETE 4IN	EA	62			62
714	4115	PIPE CONDUIT 36IN	LF	104.5	104.5		209
714	4155	PIPE CONDUIT 84IN	LF	104.5	104.5		209
714	9696	EDGEDRAIN NON PERMEABLE BASE	LF	15,100			15,100
748	0141	CURB & GUTTER-TYPE 1 SPECIAL	LF	120	120		240
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	40	10		50
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	27	81		108
754	0199	DIAMOND GRADE DELINEATORS-TYPE E	EA		4		4
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF		28		28
754	0210	GALV STEEL POST-STANDARD PIPE	LF	45	44		89
754	0214	GALV STEEL POSTS-W-SHAPE POSTS(TWO OR MORE)	LF	258	130		388
754	0534	PANEL FOR SIGNS-TYPE IV REFLECTIVE SHEETING	SF	394	213		607
754	0805	OBJECT MARKERS - CULVERTS	EA	2	2		4
754	1100	CLASS AE CONCRETE-SIGN FOUNDATIONS	CY	1.9	2.1		4
754	1104	REMOVE SIGN FOUNDATION	EA	11	7		18
760	0005	RUMBLE STRIPS - ASPHALT SHOULDER	MILE	41	41		82
762	0112	EPOXY PVMT MK MESSAGE	SF	12	12		24
762	0113	EPOXY PVMT MK 4IN LINE	LF	252,208	275,248		527,456
762	0115	EPOXY PVMT MK 8IN LINE	LF	268	3,387		3,655
762	0117	EPOXY PVMT MK 24IN LINE	LF		180		180
762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	54,041	82,324		136,365
764	0131	W-BEAM GUARDRAIL	LF	536	661		1,197
764	0145	W-BEAM GUARDRAIL END TERMINAL	EA	1	2		3
764	0151	REMOVE W-BEAM GUARDRAIL & POSTS	LF	1,388	1,388		2,776

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-1-094(145)162 IM-BRI-1-094(147)162	8	3

REVISED 04/14/2014

SPEC CODE	ITEM DESCRIPTION	UNIT	IM-1-094(145 162	IM-1-094(147 162	BRI-1-094(14 7)162	TOTAL
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764 1050	RESET W-BEAM GUARDRAIL	LF	600	475		1,075
764 1059	RESET W-BEAM GUARDRAIL END TERMINAL	EA	5	4		9
764 2081	REMOVE END TREATMENT & TRANSITION	EA	6	6		12
764 2090	REMOVE BARREL ATTENUATION DEVICE	EA	12			12
764 8071	BARREL ATTENUATION DEVICE-TYPE B-75	EA	12			12
772 9110	VIRTUAL WEIGH IN MOTION SYSTEM	EA	1	1		2
910 0900	GROUT	CF	4,180	4,180		8,360
930 8700	3 IN EXPANSION JOINT	LF			38	38
950 8673	EXPANSION JOINT MODIFICATION	LF			28	28
950 9712	JOINT TREATMENT	LF	77,693	56,499		134,192

BASIS OF ESTIMATE

Revised 4-14-2014

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-1-094(145)162 IM-BRI-1-094(147)162	10	1

Material	Unit	Eastbound Mainline		Westbound Mainline		
		Length = 1080.8 Sta	Width (ft)	Quantity per Station	Length = 1080.3 Sta	Width (ft)
Milling	SY		37	411	37	411
SS-1h or CSS-1h Emuls Asphalt @ 0.05 Gal/SY	Gal		39.0	21.7	39.7	22.1
Recycled Hot Bituminous Pavement (RHBP) @ 2 Ton/CY	Ton		37	47.0	37	47.3
PG 64-28 Asphalt Cement @ 4.5%	Ton		-	2.1	-	2.1

Intermittent Longitudinal Joint Treatment (extra 2" Mill & Patch)			
EB Median	0.075 Mi	WB Median	0.579 Mi
EB Driving	13.450 Mi	WB Driving	9.412 Mi
EB Centerline	1.189 Mi	WB Centerline	1.278 Mi
Total EB	14.714 Mi	Total WB	11.269 Mi

Permanent Pavement Marking & Rumble Strips		
Mainline EB		
Location - Type	Basis	Quantity
Centerline – Epoxy Pvmt MK 4 IN Line	Centerline Skips 1,320 LF/mile	27020 LF
Edge Lines – Epoxy Pvmt MK 4 IN Line	10,560 LF/mile	216163 LF
Shoulder Rumble Strips	1.0 Mile/Shoulder	41 Mile
Mainline WB		
Location - Type	Basis	Quantity
Centerline – Epoxy Pvmt MK 4 IN Line	Centerline Skips 1,320 LF/mile	27007 LF
Edge Lines – Epoxy Pvmt MK 4 IN Line	10,560 LF/mile	216058 LF
Shoulder Rumble Strips	1.0 Mile/Shoulder	41 Mile
3 Interchanges (ramps)		
Epoxy Pvmt MK 4 IN Line - dotted	LF	1218 LF
Edge Lines – Epoxy Pvmt MK 4 IN Line	LF	13605 LF
Epoxy Pvmt MK 8 IN Line	LF	2910 LF
Epoxy Pvmt MK 24 IN Line	LF	180 LF
3 crossroads		
Centerline – Epoxy Pvmt MK 4 IN Line	Double Barrier Stripe 10,560 LF/mile	4400 LF
Edge Lines – Epoxy Pvmt MK 4 IN Line	10,560 LF/mile	3422 LF
Apple Creek Rest Area EB		
Epoxy Pvmt MK 4 IN Line	LF	9025 LF
Epoxy Pvmt MK 8 IN Line	LF	268 LF
Epoxy Pvmt MK Message	SF	12 SF
Apple Creek Rest Area WB		
Epoxy Pvmt MK 4 IN Line	LF	9538 LF
Epoxy Pvmt MK 8 IN Line	LF	477 LF
Epoxy Pvmt MK Message	SF	12 SF

Material	Unit	Guardrail Surfacing			
		Gibbs, Apple Creek, & McKenzie Separations		Menoken, McKenzie, & Sterling Interchanges	
		EB	WB	EB	WB
Remove & Salvage Bituminous Surfacing	SY	397.6	397.6	405.4	405.4
Salvaged Base	Ton	124.3	124.3	126.7	126.7
Water @ 20 Gal/Ton of Aggregate	Mgal	4.7	4.7	4.8	4.8
MC70 or 250 Liquid Asphalt @ 0.25/SY	Gal	99.4	99.4	101.3	101.3
SS-1h or CSS-1h Emuls Asphalt @ 0.05 Gal/SY	Gal	19.9	19.9	20.3	20.3
Recycled Hot Bituminous Pavement (RHBP) @ 2 Ton/CY	Ton	44.2	44.2	45.0	45.0
PG 64-28 Asphalt Cement @ 4.5%	Ton	2.0	2.0	2.0	2.0

Material	Unit	EB	WB	EB	WB
Remove & Salvage Bituminous Surfacing	SY	397.6	397.6	405.4	405.4
Salvaged Base	Ton	124.3	124.3	126.7	126.7
Water @ 20 Gal/Ton of Aggregate	Mgal	4.7	4.7	4.8	4.8
MC70 or 250 Liquid Asphalt @ 0.25/SY	Gal	99.4	99.4	101.3	101.3
SS-1h or CSS-1h Emuls Asphalt @ 0.05 Gal/SY	Gal	19.9	19.9	20.3	20.3
Recycled Hot Bituminous Pavement (RHBP) @ 2 Ton/CY	Ton	44.2	44.2	45.0	45.0
PG 64-28 Asphalt Cement @ 4.5%	Ton	2.0	2.0	2.0	2.0

Coring:

EB Density Cores
 108,082 LF/2,000 LF *1 Lifts *2 lanes = 108 sublots
 108 Sublots * 2 Cores/ Sublot = 216 cores

WB Density Cores
 108,029 LF/2,000 LF *1 Lifts *2 lanes = 108 sublots
 108 Sublots * 2 Cores/ Sublot = 216 cores

Coring:

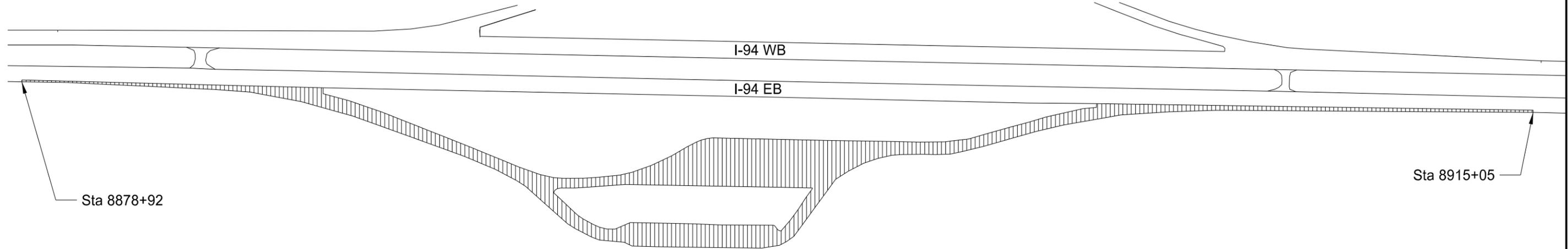
District Materials Coordinator Cores
 EB One full depth core per mile
 20.5 miles * 1 core/mile = 21 cores

WB One full depth core per mile
 20.5 miles * 1 core/mile = 21 cores

Culvert Markers	
8707+56 EB	Rt & Lt
8707+56 WB	Rt & Lt

Temporary 4 IN Line - Type NR		
Mainline EB		
Location - Type	Basis	Quantity
Centerline – 4 IN Line	Centerline Skips 1,320 LF/mile	54041 LF
Mainline WB		
Location - Type	Basis	Quantity
Centerline – 4 IN Line	Centerline Skips 1,320 LF/mile	54014 LF
3 crossroads		
Centerline – 4 IN Line	Centerline Skips 1,320 LF/mile	1100 LF
3 Interchanges (Ramps)		
Edge Lines – 4 IN Line	10,560/mile	27210 LF

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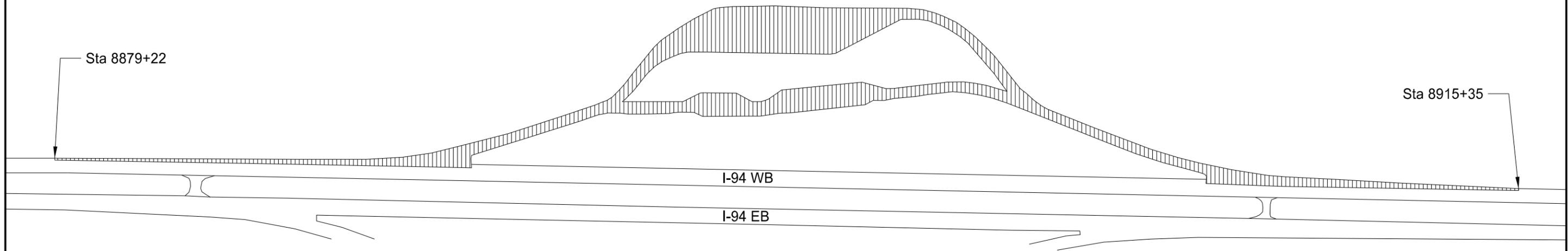
QUANTITIES

ITEM	UNIT	AREA (SY)	QUANTITY
Tack @ 0.05 Gal/SY	Gal	17,235	862
2" RHBP FAA 45 @ 2 Ton/CY	Ton	17,235	1915
Asphalt Cement @ 4.5%	Ton		86
2" Milling	SY	17,235	17,235

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EB Apple Creek Rest Area

East Bismarck Interchange to Sterling

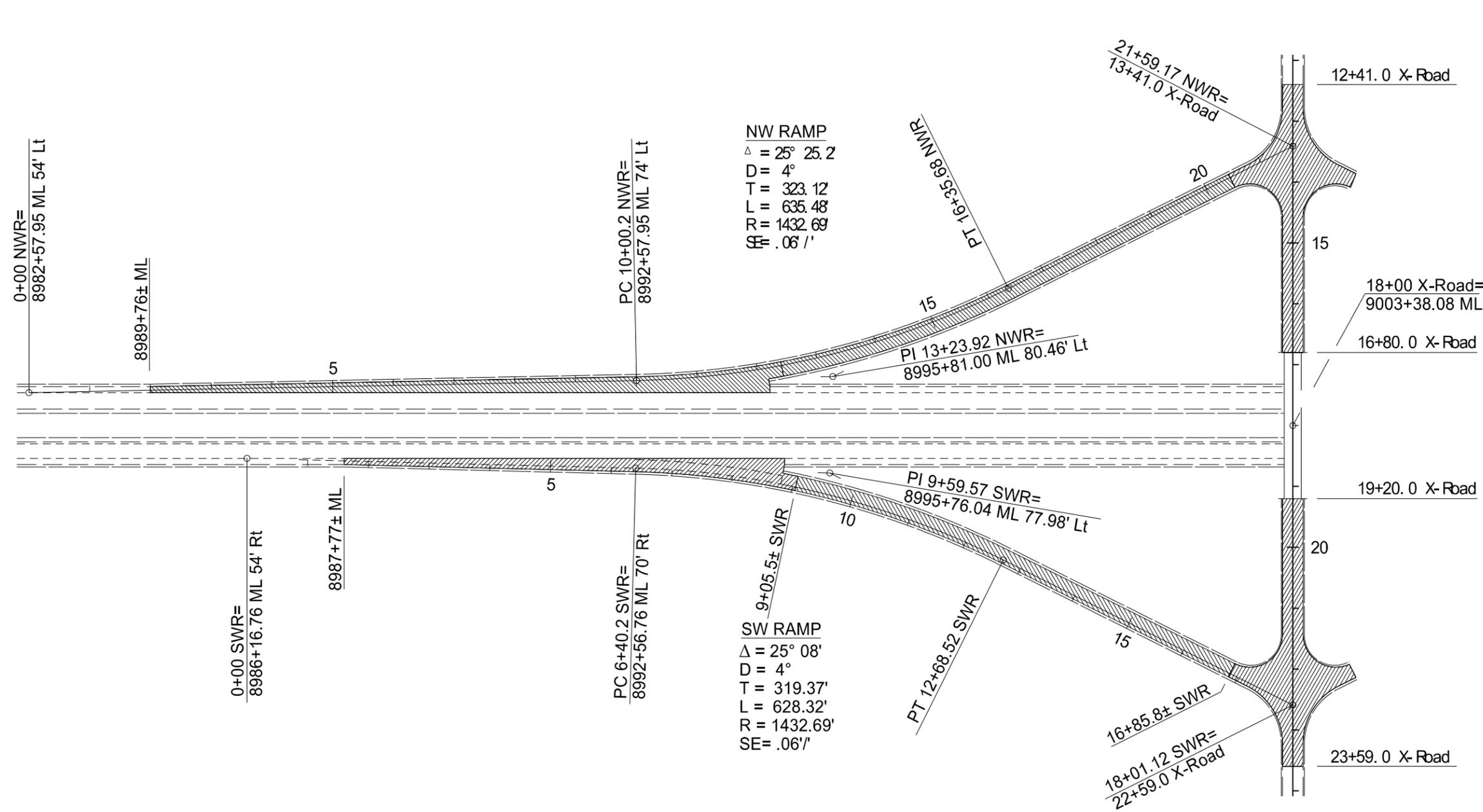


QUANTITIES

ITEM	UNIT	AREA (SY)	QUANTITY
Tack @ 0.05 Gal/SY	Gal	17,935	897
2" RHBP FAA 45 @ 2 Ton/CY	Ton	17,935	1993
Asphalt Cement @ 4.5%	Ton		90
2" Milling	SY	17,935	17,935

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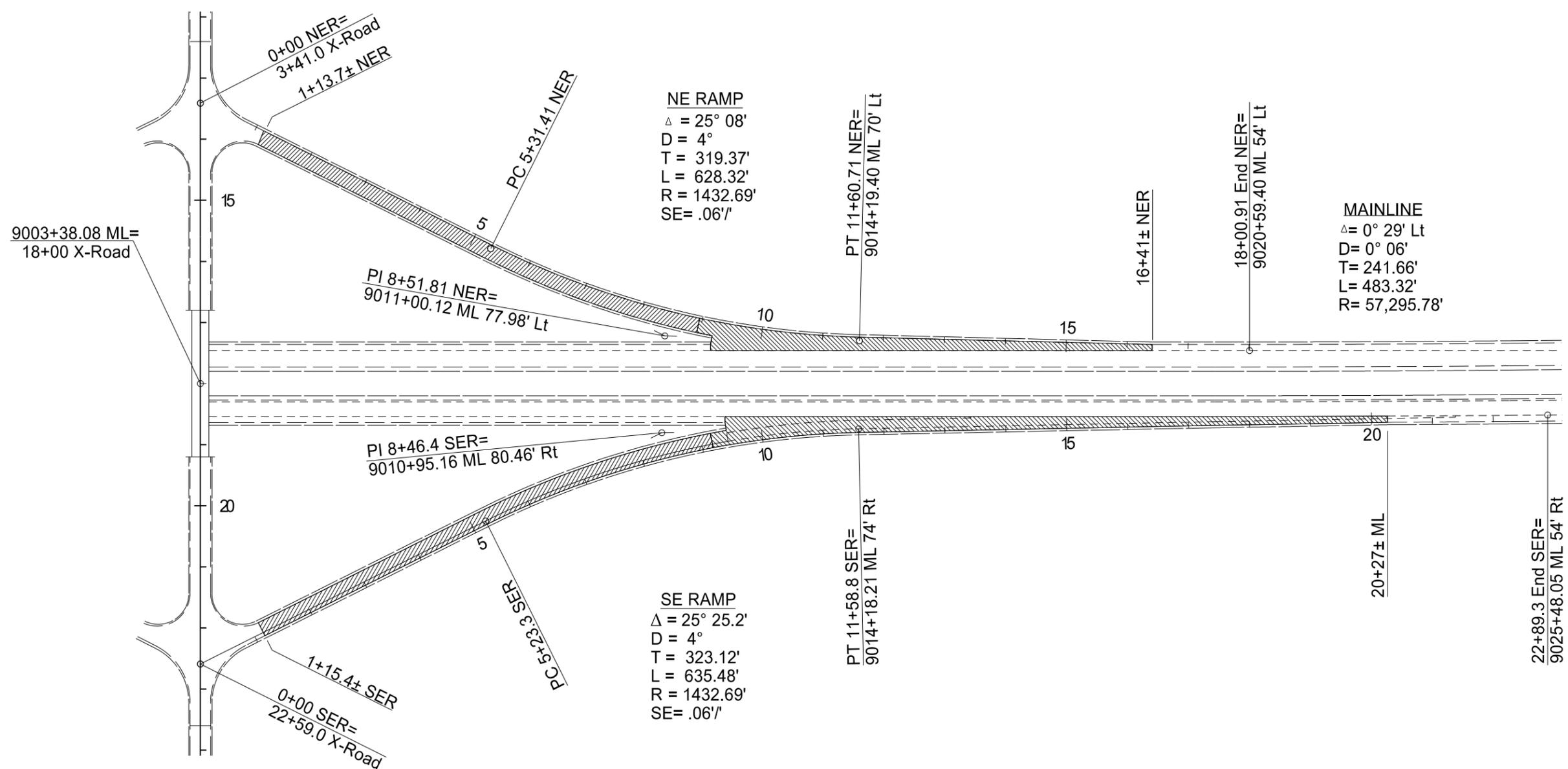
WB Apple Creek Rest Area
East Bismarck Interchange to Sterling



BASIS OF ESTIMATE										
ITEM	UNIT	NW RAMP			SW RAMP			CROSS ROAD		
		AREA(SY)	DEPTH	QUANTITY	AREA(SY)	DEPTH	QUANTITY	AREA(SY)	DEPTH	QUANTITY
Tack Coat @ 0.05 Gal/SY	Gal	4618		231	4019		201	5632		282
RHBP FAA 45	Ton	4618	2"	513	4019	2"	447	5632	2"	626
Asphalt Cement @ 4.5%	Ton			23			20			28
Milling Bituminous Pavement	SY	4618		4618	4019		4019	5632		5632

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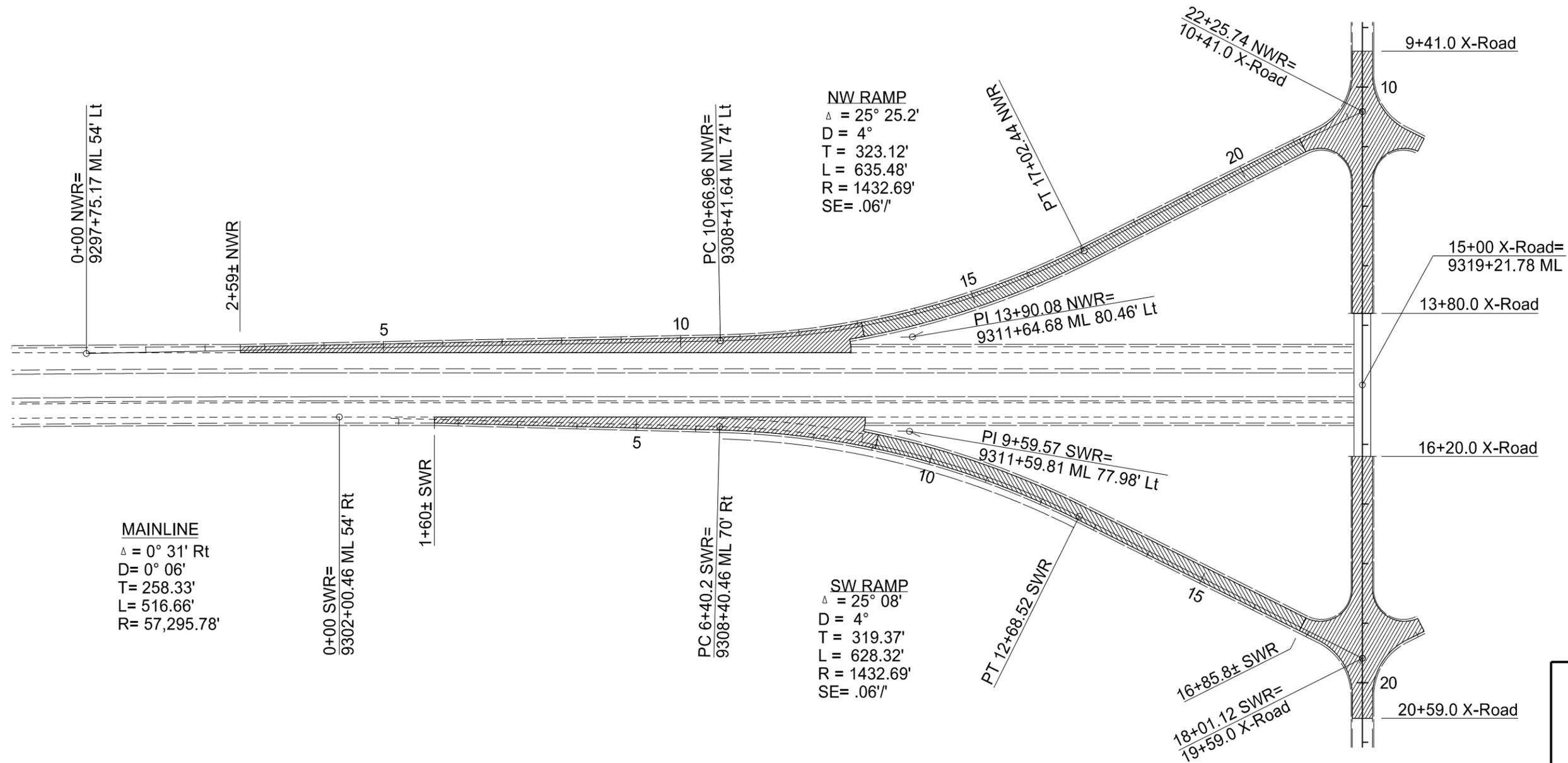
Menoken Interchange



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BASIS OF ESTIMATE							
ITEM	UNIT	NE RAMP			SE RAMP		
		AREA(SY)	DEPTH	QUANTITY	AREA(SY)	DEPTH	QUANTITY
Tack Coat @ 0.05 Gal/SY	Gal	3848		192	4877		244
RHBP FAA 45	Ton	3848	2"	428	4877	2"	542
Asphalt Cement @ 4.5%	Ton			19			24
Milling Bituminous Pavement	SY	3848		3848	4877		4877

Menoken Interchange



MAINLINE
 $\Delta = 0^\circ 31' \text{ Rt}$
 $D = 0^\circ 06'$
 $T = 258.33'$
 $L = 516.66'$
 $R = 57,295.78'$

NW RAMP
 $\Delta = 25^\circ 25.2'$
 $D = 4^\circ$
 $T = 323.12'$
 $L = 635.48'$
 $R = 1432.69'$
 $SE = .06''$

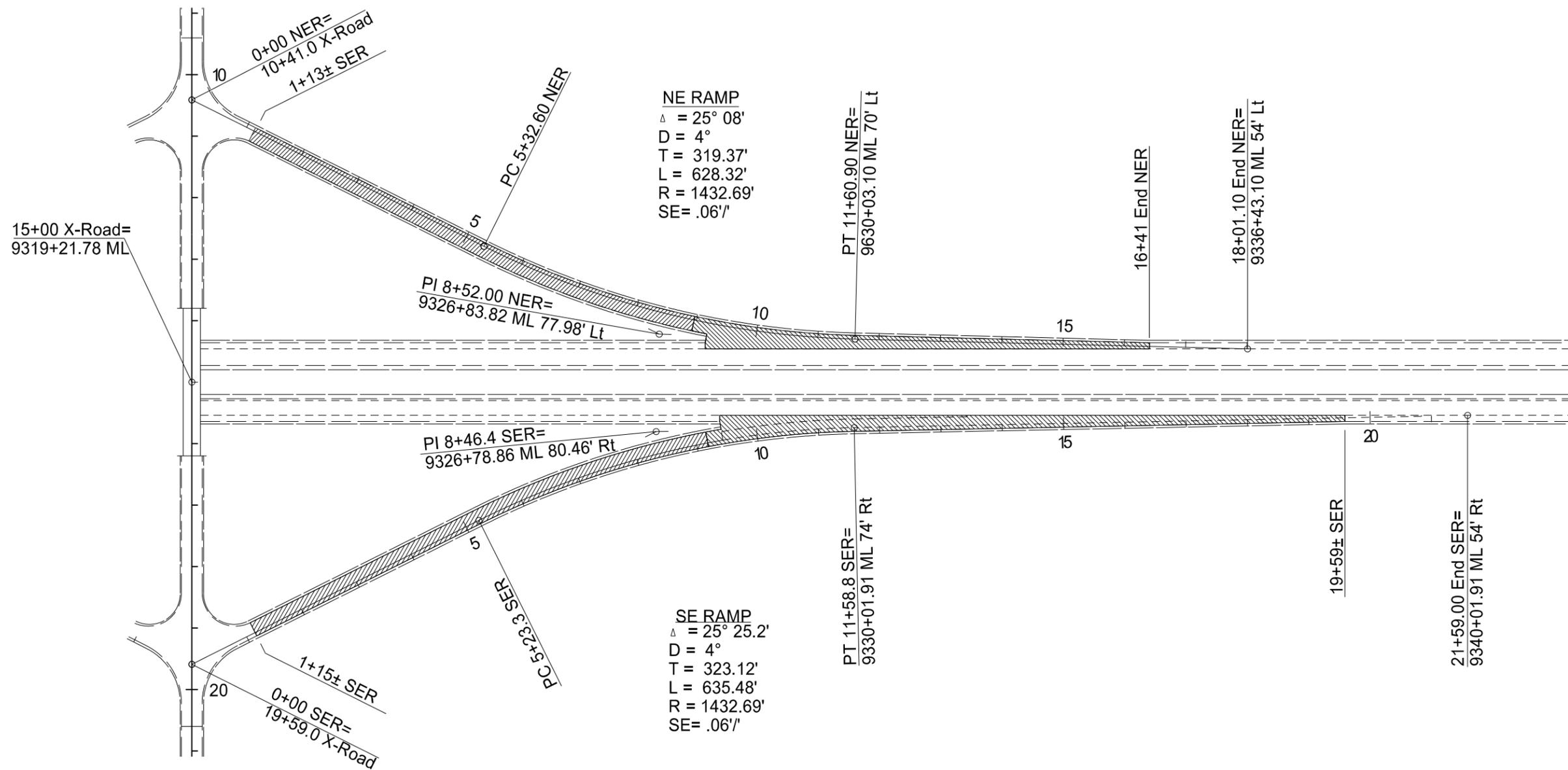
SW RAMP
 $\Delta = 25^\circ 08'$
 $D = 4^\circ$
 $T = 319.37'$
 $L = 628.32'$
 $R = 1432.69'$
 $SE = .06''$

BASIS OF ESTIMATE

ITEM	UNIT	NW RAMP			SW RAMP			CROSS ROAD		
		AREA(SY)	DEPTH	QUANTITY	AREA(SY)	DEPTH	QUANTITY	AREA(SY)	DEPTH	QUANTITY
Tack Coat @ 0.05 Gal/SY	Gal	4618		231	4019		201	5632		282
RHBP FAA 45	Ton	4618	2"	513	4019	2"	447	5632	2"	626
Asphalt Cement @ 4.5%	Ton			23			20			28
Milling Bituminous Pavement	SY	4618		4618	4019		4019	5632		5632

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McKenzie Interchange



NE RAMP
 $\Delta = 25^\circ 08'$
 $D = 4^\circ$
 $T = 319.37'$
 $L = 628.32'$
 $R = 1432.69'$
 $SE = .06''$

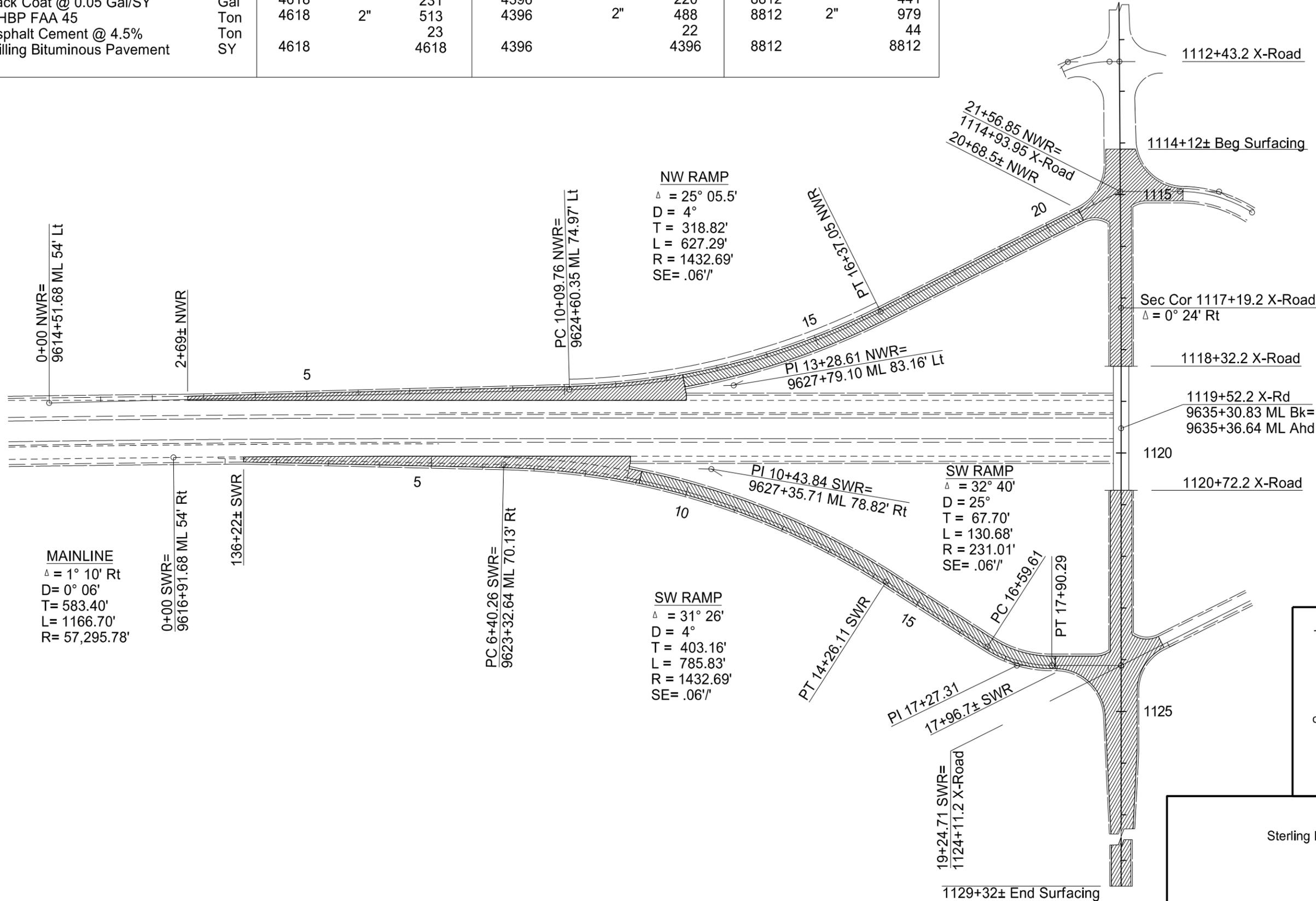
SE RAMP
 $\Delta = 25^\circ 25.2'$
 $D = 4^\circ$
 $T = 323.12'$
 $L = 635.48'$
 $R = 1432.69'$
 $SE = .06''$

BASIS OF ESTIMATE							
ITEM	UNIT	NE RAMP			SE RAMP		
		AREA(SY)	DEPTH	QUANTITY	AREA(SY)	DEPTH	QUANTITY
Tack Coat @ 0.05 Gal/SY	Gal	3851		193	4783		239
RHBP FAA 45	Ton	3851	2"	428	4783	2"	531
Asphalt Cement @ 4.5%	Ton			19			24
Milling Bituminous Pavement	SY	3851		3851	4783		4783

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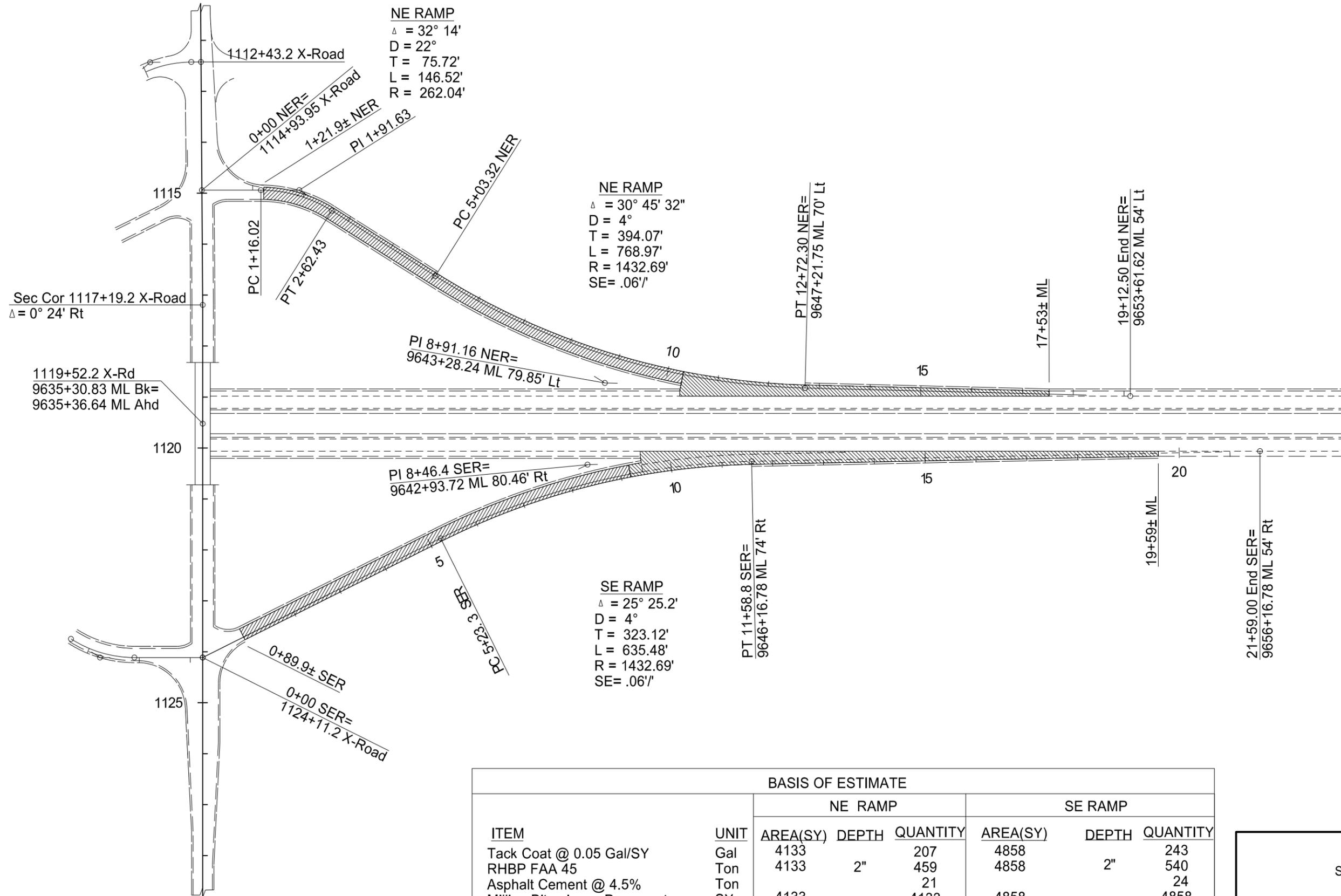
McKenzie Interchange

BASIS OF ESTIMATE										
ITEM	UNIT	NW RAMP			SW RAMP			CROSS ROAD		
		AREA(SY)	DEPTH	QUANTITY	AREA(SY)	DEPTH	QUANTITY	AREA(SY)	DEPTH	QUANTITY
Tack Coat @ 0.05 Gal/SY	Gal	4618		231	4396		220	8812		441
RHBP FAA 45	Ton	4618	2"	513	4396	2"	488	8812	2"	979
Asphalt Cement @ 4.5%	Ton			23			22			44
Milling Bituminous Pavement	SY	4618		4618	4396		4396	8812		8812



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Sterling Interchange



This document was originally issued and sealed by Brian J Rosin, Registration Number PE- 2928, on 4/14/14 and the original document is stored at the North Dakota Department of Transportation

BASIS OF ESTIMATE							
ITEM	UNIT	NE RAMP			SE RAMP		
		AREA(SY)	DEPTH	QUANTITY	AREA(SY)	DEPTH	QUANTITY
Tack Coat @ 0.05 Gal/SY	Gal	4133		207	4858		243
RHBP FAA 45	Ton	4133	2"	459	4858	2"	540
Asphalt Cement @ 4.5%	Ton			21			24
Milling Bituminous Pavement	SY	4133		4133	4858		4858

Sterling Interchange

**23 USC § 409 Documents
NDDOT Reserves All Objections**

Revised	4/14/2014	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	IM-1-094(145)162	130	4
			IM-BRI-1-094(147)162		

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES

W-BEAM GUARDRAIL AT OBSTRUCTIONS WITH JERSEY BARRIER

LOCATION	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(B)	
	TERMINAL CON-NECTOR	5/8" Ø x 22" LONG GUARD-RAIL BOLT	5/8" Ø x 20" LONG GUARD-RAIL BOLT	7/8" Ø x 10" LONG H.S. HEX HEAD BOLT	5/8" Ø x 18" LONG GUARD-RAIL BOLT	6"x 8" x 14" WOOD OFF-SET BLOCK	6"x 8" x 6" TIMBER POST	5/8" Ø x 1 1/4" LONG GUARD-RAIL BOLT	12'-6" DOUBLE RAIL SECTION	12'-6" STRAIGHT RAIL SECTION	12'-6" CURVED RAIL SECTION	5/8" Ø x 12" LONG HEX HEAD BOLT	1/2" Ø x 4" LONG LAG SCREW	6" x 8" x 7'-0" TIMBER POSTS	RUB RAIL END SHOE	C 6 x 8.2 x 14'-6 1/4" RUB RAIL SECTION	C 6 x 8.2 x 12'-7" RUB RAIL SECTION	5/8" Ø x 1 1/2" LONG GUARD-RAIL BOLT	7 3/4" x 4 1/2" x 3/8" RUB RAIL SPLICE PLATE	10"x 10" x 8'-0" TIMBER POST	10"x 8" x 21" TAPERED TIMBER BLOCK	6"x 8" x 21" TIMBER BLOCK	6"x 9 3/4" x 14" TIMBER BLOCK	REFL-ECTOR-IZED PLATES	EMBANK-MENT TYPE-C
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	CY
Sta 8685+90.99 to 8686+80.31 Rt	1	2	10	4	18	11	16	64	1	5	1	2	1	3	1	1	1	4	1	2	2	7	1	11	36
Sta 8687+07.25 to 8687+96.57 Lt	1	2	10	4	18	11	16	64	1	5	1	2	1	3	1	1	1	4	1	2	2	7	1	11	50
TOTAL	2	4	20	8	36	22	32	128	2	10	2	4	2	6	2	2	2	8	2	4	4	14	2	22	86

W-beam guardrail

Sta 8685+90.99 to 8686+80.31 Rt	89.4	LF
Sta 8687+07.25 to 8687+96.57 Lt	89.4	LF
Total	178.8	LF

Remove W-beam guardrail & posts

Sta 8685+02.84 to 8687+27.50 Rt	225	LF
Sta 8686+65.00 to 8688+89.66 Lt	225	LF
Total	450	LF

(A) These items are not to be bid separately but shall be included in the price bid for the item "W-Beam Guardrail".

Reset W-beam guardrail end terminal

Sta 8684+41.29 to 8684+91.19 Rt	1	ea
Sta 8688+96.38 to 8689+46.28 Lt	1	ea
Total	2	ea

Remove end treatment & transition

Sta 8684+52.95 to 8685+02.84 Rt	1	ea
Sta 8688+89.66 to 8689+39.55 Lt	1	ea
Total	2	ea

(B) The volume of embankment - type C (cubic yards) is for informational purposes only.

Reset W-beam guardrail

Sta 8684+91.19 to 8685+90.99 Rt	100	LF
Sta 8687+96.57 to 8688+96.38 Lt	100	LF
Total	200	LF

Saw bituminous surfacing - full depth

Sta 8686+79.06 to 8686+98.50 Rt	39.4	LF
Sta 8686+94.00 to 8687+08.50 Lt	34.5	LF
Total	73.9	LF

Guardrail embankment - type C

Sta 8684+37.76 to 8686+98.50 Rt	1	ea
Sta 8686+94.00 to 8689+42.75 Lt	1	ea
Total	2	ea

Remove & Salvage Bituminous Surfacing

Sta 8686+79.06 to 8686+98.50 Rt	21.6	SY
Sta 8686+94.00 to 8687+08.50 Lt	16.1	SY
Total	37.7	SY

Jersey barrier formed or slip formed

Sta 8686+79.06 to 8686+98.50 Rt	19.4	LF
Sta 8686+94.00 to 8687+08.50 Lt	14.5	LF
Total	33.9	LF

Curb & gutter - type 1 special

Sta 8686+59.06 to 8686+79.06 Rt	20	LF
Sta 8687+08.50 to 8687+28.50 Lt	20	LF
Total	40	LF

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE-5047, on 4/16/14 and the original document is stored at the North Dakota Department of Transportation

W-Beam Guardrail, Jersey Barrier and Curb & Gutter Quantities

Outside Pier Protection

**Gibbs Township Separation
RP 164.527
Eastbound and Westbound I-94**

**23 USC § 409 Documents
NDDOT Reserves All Objections**

Revised	4/14/2014	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	IM-1-094(145)162	130	5
			IM-BRI-1-094(147)162		

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES

W-BEAM GUARDRAIL AT OBSTRUCTIONS WITH JERSEY BARRIER

LOCATION	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(B)	
	TERMINAL CON-NECTOR	5/8" Ø x 22" LONG GUARD-RAIL BOLT	5/8" Ø x 20" LONG GUARD-RAIL BOLT	7/8" Ø x 10" LONG H.S. HEX HEAD BOLT	5/8" Ø x 18" LONG GUARD-RAIL BOLT	6"x 8" x 14" WOOD OFF-SET BLOCK	6"x 8" x 6" TIMBER POST	5/8" Ø x 1 1/4" LONG GUARD-RAIL BOLT	12'-6" DOUBLE RAIL SECTION	12'-6" STRAIGHT RAIL SECTION	12'-6" CURVED RAIL SECTION	5/8" Ø x 12" LONG HEX HEAD BOLT	1/2" Ø x 4" LONG LAG SCREW	6" x 8" x 7'-0" TIMBER POSTS	RUB RAIL END SHOE	C 6 x 8.2 x 14'-6 1/4" RUB RAIL SECTION	C 6 x 8.2 x 12'-7" RUB RAIL SECTION	5/8" Ø x 1 1/2" LONG GUARD-RAIL BOLT	7 3/4" x 4 1/2" x 3/8" RUB RAIL SPLICE PLATE	10"x 10" x 8'-0" TIMBER POST	10"x 8" x 21" TAPERED TIMBER BLOCK	6"x 8" x 21" TIMBER BLOCK	6"x 9 3/4" x 14" TIMBER BLOCK	REFL-ECTOR-IZED PLATES	EMBANK-MENT TYPE-C
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	CY
Sta 8791+74.00 to 8792+63.32 Rt	1	2	10	4	18	11	16	64	1	5	1	2	1	3	1	1	1	4	1	2	2	7	1	11	40
Sta 8792+90.15 to 8794+04.43 Lt	1	2	10	4	22	15	20	80	1	7	1	2	1	3	1	1	1	4	1	2	2	7	1	11	50
TOTAL	2	4	20	8	40	26	36	144	2	12	2	4	2	6	2	2	2	8	2	4	4	14	2	22	90

W-beam guardrail

Sta 8791+74.00 to 8792+63.32 Rt	89.4	LF
Sta 8792+90.15 to 8794+04.43 Lt	114.4	LF
Total	203.8	LF

Remove W-beam guardrail & posts

Sta 8790+85.74 to 8793+10.40 Rt	225	LF
Sta 8792+47.90 to 8794+72.56 Lt	225	LF
Total	450	LF

(A) These items are not to be bid separately but shall be included in the price bid for the item "W-Beam Guardrail".

Reset W-beam guardrail end terminal

Sta 8790+24.30 to 8790+74.20 Rt	1	ea
Sta 8794+79.28 to 8795+29.18 Lt	1	ea
Total	2	ea

Remove end treatment & transition

Sta 8790+35.85 to 8790+85.74 Rt	1	ea
Sta 8794+72.56 to 8795+22.45 Lt	1	ea
Total	2	ea

(B) The volume of embankment - type C (cubic yards) is for informational purposes only.

Reset W-beam guardrail

Sta 8790+74.20 to 8791+74.00 Rt	100	LF
Sta 8794+04.43 to 8794+79.28 Lt	75	LF
Total	175	LF

Saw bituminous surfacing - full depth

Sta 8792+62.07 to 8792+81.40 Rt	39.3	LF
Sta 8792+76.90 to 8792+91.40 Lt	34.5	LF
Total	73.8	LF

Guardrail embankment - type C

Sta 8790+20.77 to 8792+81.40 Rt	1	ea
Sta 8792+76.90 to 8792+76.90 Lt	1	ea
Total	2	ea

Remove & Salvage Bituminous Surfacing

Sta 8792+62.07 to 8792+81.40 Rt	21.5	SY
Sta 8792+76.90 to 8792+91.40 Lt	16.1	SY
Total	37.6	SY

Jersey barrier formed or slip formed

Sta 8792+62.07 to 8792+81.40 Rt	19.3	LF
Sta 8792+76.90 to 8792+91.40 Lt	14.5	LF
Total	33.8	LF

Curb & gutter - type 1 special

Sta 8792+42.07 to 8792+62.07 Rt	20	LF
Sta 8792+91.40 to 8793+11.40 Lt	20	LF
Total	40	LF

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE-5047, on 4/16/14 and the original document is stored at the North Dakota Department of Transportation

W-Beam Guardrail, Jersey Barrier and Curb & Gutter Quantities

Outside Pier Protection

**Apple Creek Separation
RP 166.531
Eastbound and Westbound I-94**

**23 USC § 409 Documents
NDDOT Reserves All Objections**

Revised	4/14/2014	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	IM-1-094(145)162	130	8
			IM-BRI-1-094(147)162		

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES

W-BEAM GUARDRAIL AT OBSTRUCTIONS WITH JERSEY BARRIER

LOCATION	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(B)	
	TERMINAL CON-NECTOR	5/8" Ø x 22" LONG GUARD-RAIL BOLT	5/8" Ø x 20" LONG GUARD-RAIL BOLT	7/8" Ø x 10" LONG H.S. HEX HEAD BOLT	5/8" Ø x 18" LONG GUARD-RAIL BOLT	6"x 8" x 14" WOOD OFF-SET BLOCK	6"x 8" x 6" TIMBER POST	5/8" Ø x 1 1/4" LONG GUARD-RAIL BOLT	12'-6" DOUBLE RAIL SECTION	12'-6" STRAIGHT RAIL SECTION	12'-6" CURVED RAIL SECTION	5/8" Ø x 12" LONG HEX HEAD BOLT	1/2" Ø x 4" LONG LAG SCREW	6" x 8" x 7'-0" TIMBER POSTS	RUB RAIL END SHOE	C 6 x 8.2 x 14'-6 1/4" RUB RAIL SECTION	C 6 x 8.2 x 12'-7" RUB RAIL SECTION	5/8" Ø x 1 1/2" LONG GUARD-RAIL BOLT	7 3/4" x 4 1/2" x 3/8" RUB RAIL SPLICE PLATE	10"x 10" x 8'-0" TIMBER POST	10"x 8" x 21" TAPERED TIMBER BLOCK	6"x 8" x 21" TIMBER BLOCK	6"x 9 3/4" x 14" TIMBER BLOCK	REFL-ECTOR-IZED PLATES	EMBANK-MENT TYPE-C
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	CY
Sta 9002+30.76 to 9003+20.08 Rt	1	2	10	4	18	11	16	64	1	5	1	2	1	3	1	1	1	4	1	2	2	7	1	11	60
Sta 9003+56.08 to 9004+45.40 Lt	1	2	10	4	18	11	16	64	1	5	1	2	1	3	1	1	1	4	1	2	2	7	1	11	60
TOTAL	2	4	20	8	36	22	32	128	2	10	2	4	2	6	2	2	2	8	2	4	4	14	2	22	120

W-beam guardrail

Sta 9002+30.76 to 9003+20.08 Rt	89.4	LF
Sta 9003+56.08 to 9004+45.40 Lt	89.4	LF
Total	178.8	LF

Remove W-beam guardrail & posts

Sta 9001+38.42 to 9003+75.58 Rt	237.5	LF
Sta 9003+00.58 to 9005+37.74 Lt	237.5	LF
Total	475	LF

(A) These items are not to be bid separately but shall be included in the price bid for the item "W-Beam Guardrail".

W-beam guardrail end terminal

Sta 9000+81.06 to 9001+30.96 Rt	1	ea
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Remove end treatment & transition

Sta 9000+81.06 to 9001+30.96 Rt	1	ea
Sta 9005+37.74 to 9005+87.63 Lt	1	ea
Total	2	ea

(B) The volume of embankment - type C (cubic yards) is for informational purposes only.

Reset W-beam guardrail end terminal

Sta 9005+45.21 to 9005+95.11 Lt	1	ea
---------------------------------	---	----

Saw bituminous surfacing - full depth

Sta 9003+18.83 to 9003+47.33 Rt	48.5	LF
Sta 9003+28.83 to 9003+57.33 Lt	48.5	LF
Total	97	LF

Reset W-beam guardrail

Sta 9001+30.96 to 9002+30.76 Rt	100	LF
Sta 9004+45.40 to 9005+45.21 Lt	100	LF
Total	200	LF

Remove & Salvage Bituminous Surfacing

Sta 9003+18.83 to 9003+47.33 Rt	31.7	SY
Sta 9003+28.83 to 9003+57.33 Lt	31.7	SY
Total	63.4	SY

Guardrail embankment - type C

Sta 9000+77.53 to 9003+47.33 Rt	1	ea
Sta 9003+28.83 to 9005+91.58 Lt	1	ea
Total	2	ea

Jersey barrier formed or slip formed

Sta 9003+18.83 to 9003+47.33 Rt	28.5	LF
Sta 9003+28.83 to 9003+57.33 Lt	28.5	LF
Total	57	LF

Curb & gutter - type 1 special

Sta 9002+98.83 to 9003+18.83 Rt	20	LF
Sta 9003+57.33 to 9003+77.33 Lt	20	LF
Total	40	LF

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE-5047, on 4/16/14 and the original document is stored at the North Dakota Department of Transportation

W-Beam Guardrail, Jersey Barrier and Curb & Gutter Quantities

Outside Pier Protection

**Menoken Interchange
RP 170.519
Eastbound and Westbound I-94**

**23 USC § 409 Documents
NDDOT Reserves All Objections**

Revised	4/14/2014	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	IM-1-094(145)162	130	9
			IM-BRI-1-094(147)162		

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES

W-BEAM GUARDRAIL AT OBSTRUCTIONS WITH JERSEY BARRIER

LOCATION	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(B)	
	TERMINAL CON-NECTOR	5/8" Ø x 22" LONG GUARD-RAIL BOLT	5/8" Ø x 20" LONG GUARD-RAIL BOLT	7/8" Ø x 10" LONG H.S. HEX HEAD BOLT	5/8" Ø x 18" LONG GUARD-RAIL BOLT	6"x 8" x 14" WOOD OFF-SET BLOCK	6"x 8" x 6" TIMBER POST	5/8" Ø x 1 1/4" LONG GUARD-RAIL BOLT	12'-6" DOUBLE RAIL SECTION	12'-6" STRAIGHT RAIL SECTION	12'-6" CURVED RAIL SECTION	5/8" Ø x 12" LONG HEX HEAD BOLT	1/2" Ø x 4" LONG LAG SCREW	6" x 8" x 7'-0" TIMBER POSTS	RUB RAIL END SHOE	C 6 x 8.2 x 14'-6 1/4" RUB RAIL SECTION	C 6 x 8.2 x 12'-7" RUB RAIL SECTION	5/8" Ø x 1 1/2" LONG GUARD-RAIL BOLT	7 3/4" x 4 1/2" x 3/8" RUB RAIL SPLICE PLATE	10"x 10" x 8'-0" TIMBER POST	10"x 8" x 21" TAPERED TIMBER BLOCK	6"x 8" x 21" TIMBER BLOCK	6"x 9 3/4" x 14" TIMBER BLOCK	REFL-ECTOR-IZED PLATES	EMBANK-MENT TYPE-C
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	CY
Sta 9318+14.46 to 9319+03.78 Rt	1	2	10	4	18	11	16	64	1	5	1	2	1	3	1	1	1	4	1	2	2	7	1	11	60
Sta 9319+41.97 to 9320+81.20 Lt	1	2	10	4	26	19	24	96	1	9	1	2	1	3	1	1	1	4	1	2	2	7	1	6	55
TOTAL	2	4	20	8	44	30	40	160	2	14	2	4	2	6	2	2	8	2	4	4	14	2	17	115	

W-beam guardrail

Sta 9318+14.46 to 9319+03.78 Rt	89.4	LF
Sta 9319+41.97 to 9320+81.20 Lt	139.4	LF
Total	228.8	LF

Remove W-beam guardrail & posts

Sta 9317+22.12 to 9319+59.28 Rt	237.5	LF
Sta 9318+84.28 to 9321+21.44 Lt	237.5	LF
Total	475	LF

(A) These items are not to be bid separately but shall be included in the price bid for the item "W-Beam Guardrail".

Reset W-beam guardrail end terminal

Sta 9316+64.76 to 9317+14.66 Rt	1	ea
Sta 9321+31.10 to 9321+81.00 Lt	1	ea
Total	2	ea

Remove end treatment & transition

Sta 9316+72.63 to 9317+22.12 Rt	1	ea
Sta 9321+21.44 to 9321+71.33 Lt	1	ea
Total	2	ea

(B) The volume of embankment - type C (cubic yards) is for informational purposes only.

Reset W-beam guardrail

Sta 9317+14.66 to 9318+14.46 Rt	100	LF
Sta 9320+81.20 to 9321+31.10 Lt	50	LF
Total	150	LF

Saw bituminous surfacing - full depth

Sta 9319+02.53 to 9319+31.03 Rt	48.5	LF
Sta 9319+12.53 to 9319+43.22 Lt	50.7	LF
Total	99.2	LF

Guardrail embankment - type C

Sta 9316+61.23 to 9319+31.03 Rt	1	ea
Sta 9319+12.53 to 9321+77.47 Lt	1	ea
Total	2	ea

Remove & Salvage Bituminous Surfacing

Sta 9319+02.53 to 9319+31.03 Rt	31.7	SY
Sta 9319+12.53 to 9319+43.22 Lt	34.1	SY
Total	65.8	SY

Jersey barrier formed or slip formed

Sta 9319+02.53 to 9319+31.03 Rt	28.5	LF
Sta 9319+12.53 to 9319+43.22 Lt	30.7	LF
Total	59.2	LF

Curb & gutter - type 1 special

Sta 9318+82.53 to 9319+02.53 Rt	20	LF
Sta 9319+43.22 to 9319+63.22 Lt	20	LF
Total	40	LF

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE-5047, on 4/16/14 and the original document is stored at the North Dakota Department of Transportation

W-Beam Guardrail, Jersey Barrier and Curb & Gutter Quantities

Outside Pier Protection

**McKenzie Interchange
RP 176.501
Eastbound and Westbound I-94**

**23 USC § 409 Documents
NDDOT Reserves All Objections**

Revised	4/14/2014	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	IM-1-094(145)162	130	12
			IM-BRI-1-094(147)162		

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES

W-BEAM GUARDRAIL AT OBSTRUCTIONS WITH JERSEY BARRIER

LOCATION	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(B)	
	TERMINAL CON-NECTOR	5/8" Ø x 22" LONG GUARD-RAIL BOLT	5/8" Ø x 20" LONG GUARD-RAIL BOLT	7/8" Ø x 10" LONG H.S. HEX HEAD BOLT	5/8" Ø x 18" LONG GUARD-RAIL BOLT	6"x 8" x 14" WOOD OFF-SET BLOCK	6"x 8" x 6" TIMBER POST	5/8" Ø x 1 1/4" LONG GUARD-RAIL BOLT	12'-6" DOUBLE RAIL SECTION	12'-6" STRAIGHT RAIL SECTION	12'-6" CURVED RAIL SECTION	5/8" Ø x 12" LONG HEX HEAD BOLT	1/2" Ø x 4" LONG LAG SCREW	6" x 8" x 7'-0" TIMBER POSTS	RUB RAIL END SHOE	C 6 x 8.2 x 14'-6 1/4" RUB RAIL SECTION	C 6 x 8.2 x 12'-7" RUB RAIL SECTION	5/8" Ø x 1 1/2" LONG GUARD-RAIL BOLT	7 3/4" x 4 1/2" x 3/8" RUB RAIL SPLICE PLATE	10"x 10" x 8'-0" TIMBER POST	10"x 8" x 21" TAPERED TIMBER BLOCK	6"x 8" x 21" TIMBER BLOCK	6"x 9 3/4" x 14" TIMBER BLOCK	REFLECTORIZED PLATES	EMBANKMENT TYPE-C
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	CY
Sta 9476+64.71 to 9477+54.03 Rt	1	2	10	4	18	11	16	64	1	5	1	2	1	3	1	1	1	4	1	2	2	7	1	11	48
Sta 9477+79.50 to 9478+93.78 Lt	1	2	10	4	22	15	20	80	1	7	1	2	1	3	1	1	1	4	1	2	2	7	1	11	45
TOTAL	2	4	20	8	40	26	36	144	2	12	2	4	2	6	2	2	2	8	2	4	4	14	2	22	93

W-beam guardrail

Sta 9476+64.71 to 9477+54.03 Rt	89.4	LF
Sta 9477+79.50 to 9478+93.78 Lt	114.4	LF
Total	203.8	LF

Remove W-beam guardrail & posts

Sta 9475+72.87 to 9477+97.53 Rt	225	LF
Sta 9477+35.03 to 9479+59.69 Lt	225	LF
Total	450	LF

(A) These items are not to be bid separately but shall be included in the price bid for the item "W-Beam Guardrail".

Reset W-beam guardrail end terminal

Sta 9475+15.01 to 9475+64.91 Rt	1	ea
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Remove end treatment & transition

Sta 9475+22.98 to 9475+72.87 Rt	1	ea
Sta 9479+59.69 to 9480+09.58 Lt	1	ea
Total	2	ea

(B) The volume of embankment - type C (cubic yards) is for informational purposes only.

W-beam guardrail end terminal

Sta 9479+68.63 to 9480+15.53 Lt	1	ea
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Saw bituminous surfacing - full depth

Sta 9477+52.78 to 9477+68.53 Rt	35.8	LF
Sta 9477+64.03 to 9477+80.75 Lt	36.7	LF
Total	72.5	LF

Reset W-beam guardrail

Sta 9475+64.91 to 9476+64.71 Rt	100	LF
Sta 9478+93.78 to 9479+68.63 Lt	75	LF
Total	175	LF

Remove & Salvage Bituminous Surfacing

Sta 9477+52.78 to 9477+68.53 Rt	17.5	SY
Sta 9477+64.03 to 9477+80.75 Lt	18.6	SY
Total	36.1	SY

Guardrail embankment - type C

Sta 9475+11.48 to 9477+68.53 Rt	1	ea
Sta 9477+64.03 to 9480+15.00 Lt	1	ea
Total	2	ea

Jersey barrier formed or slip formed

Sta 9477+52.78 to 9477+68.53 Rt	15.8	LF
Sta 9477+64.03 to 9477+80.75 Lt	16.7	LF
Total	32.5	LF

Curb & gutter - type 1 special

Sta 9477+32.78 to 9477+52.78 Rt	20	LF
Sta 9477+80.75 to 9478+00.75 Lt	20	LF
Total	40	LF

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W-Beam Guardrail, Jersey Barrier and Curb & Gutter Quantities

Outside Pier Protection

**McKenzie Separation
RP 179.502
Eastbound and Westbound I-94**

**23 USC § 409 Documents
NDDOT Reserves All Objections**

Revised	4/14/2014	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	IM-1-094(145)162	130	15
			IM-BRI-1-094(147)162		

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES

W-BEAM GUARDRAIL AT OBSTRUCTIONS WITH JERSEY BARRIER

LOCATION	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(B)	
	TERMINAL CON-NECTOR	5/8" Ø x 22" LONG GUARD-RAIL BOLT	5/8" Ø x 20" LONG GUARD-RAIL BOLT	7/8" Ø x 10" LONG H.S. HEX HEAD BOLT	5/8" Ø x 18" LONG GUARD-RAIL BOLT	6"x 8" x 14" WOOD OFF-SET BLOCK	6"x 8" x 6" TIMBER POST	5/8" Ø x 1 1/4" LONG GUARD-RAIL BOLT	12'-6" DOUBLE RAIL SECTION	12'-6" STRAIGHT RAIL SECTION	12'-6" CURVED RAIL SECTION	5/8" Ø x 12" LONG HEX HEAD BOLT	1/2" Ø x 4" LONG LAG SCREW	6" x 8" x 7'-0" TIMBER POSTS	RUB RAIL END SHOE	C 6 x 8.2 x 14'-6 1/4" RUB RAIL SECTION	C 6 x 8.2 x 12'-7" RUB RAIL SECTION	5/8" Ø x 1 1/2" LONG GUARD-RAIL BOLT	7 3/4" x 4 1/2" x 3/8" RUB RAIL SPLICE PLATE	10"x 10" x 8'-0" TIMBER POST	10"x 8" x 21" TAPERED TIMBER BLOCK	6"x 8" x 21" TIMBER BLOCK	6"x 9 3/4" x 14" TIMBER BLOCK	REFLECTORIZED PLATES	EMBANKMENT TYPE-C
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	CY
Sta 9634+60.44 to 9635+12.33 Rt	1	2	10	4	18	11	16	64	1	5	1	2	1	3	1	1	1	4	1	2	2	7	1	11	48
Sta 9635+55.14 to 9636+69.42 Lt	1	2	10	4	22	15	20	80	1	7	1	2	1	3	1	1	1	4	1	2	2	7	1	11	60
TOTAL	2	4	20	8	40	26	36	144	2	12	2	4	2	6	2	2	2	8	2	4	4	14	2	22	108

W-beam guardrail

Sta 9634+18.40 to 9635+07.72 Rt	89.4	LF
Sta 9635+55.14 to 9636+69.42 Lt	114.4	LF
Total	203.8	LF

Remove W-beam guardrail & posts

Sta 9633+31.17 to 9635+74.14 Rt	237.5	LF
Sta 9634+93.33 to 9637+36.30 Lt	237.5	LF
Total	475	LF

(A) These items are not to be bid separately but shall be included in the price bid for the item "W-Beam Guardrail".

Reset W-beam guardrail end terminal

Sta 9632+68.70 to 9633+18.60 Rt	1	ea
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Remove end treatment & transition

Sta 9632+81.28 to 9633+31.17 Rt	1	ea
Sta 9637+36.30 to 9637+86.19 Lt	1	ea
Total	2	ea

(B) The volume of embankment - type C (cubic yards) is for informational purposes only.

W-beam guardrail end terminal

Sta 9637+44.27 to 9637+94.017 Lt	1	ea
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Saw bituminous surfacing - full depth

Sta 9635+06.47 to 9635+46.39 Rt	54.1	LF
Sta 9635+21.08 to 9635+56.39 Lt	49.5	LF
Total	103.6	LF

Reset W-beam guardrail

Sta 9633+18.60 to 9634+14.40 Rt	100	LF
Sta 9636+69.42 to 9637+44.27 Lt	75	LF
Total	175	LF

Remove & Salvage Bituminous Surfacing

Sta 9635+06.47 to 9635+46.39 Rt	37.9	SY
Sta 9635+21.08 to 9635+56.39 Lt	32.8	SY
Total	70.7	SY

Guardrail embankment - type C

Sta 9632+65.17 to 9635+46.39 Rt	1	ea
Sta 9635+21.08 to 9637+90.64 Lt	1	ea
Total	2	ea

Jersey barrier formed or slip formed

Sta 9635+06.47 to 9635+46.39 Rt	34.1	LF
Sta 9635+21.08 to 9635+56.39 Lt	29.5	LF
Total	63.6	LF

Curb & gutter - type 1 special

Sta 9634+86.47 to 9635+06.47 Rt	20	LF
Sta 9635+56.39 to 9635+76.39 Lt	20	LF
Total	40	LF

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W-Beam Guardrail, Jersey Barrier and Curb & Gutter Quantities

Outside Pier Protection

**Sterling Interchange
RP 182.488
Eastbound and Westbound I-94**