

DESIGN DATA			
Traffic	Average Daily (Eastbound)		
Current 2015	Pass: 16,150	Trucks: 1,495	Total: 17,645
Forecast 2040	Pass: 18,200	Trucks: 1,685	Total: 19,885
Traffic	Average Daily (Westbound)		
Current 2015	Pass: 15,660	Trucks: 1,400	Total: 17,060
Forecast 2040	Pass: 17,648	Trucks: 1,578	Total: 19,226

JOB # 4 NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	21898	1	1

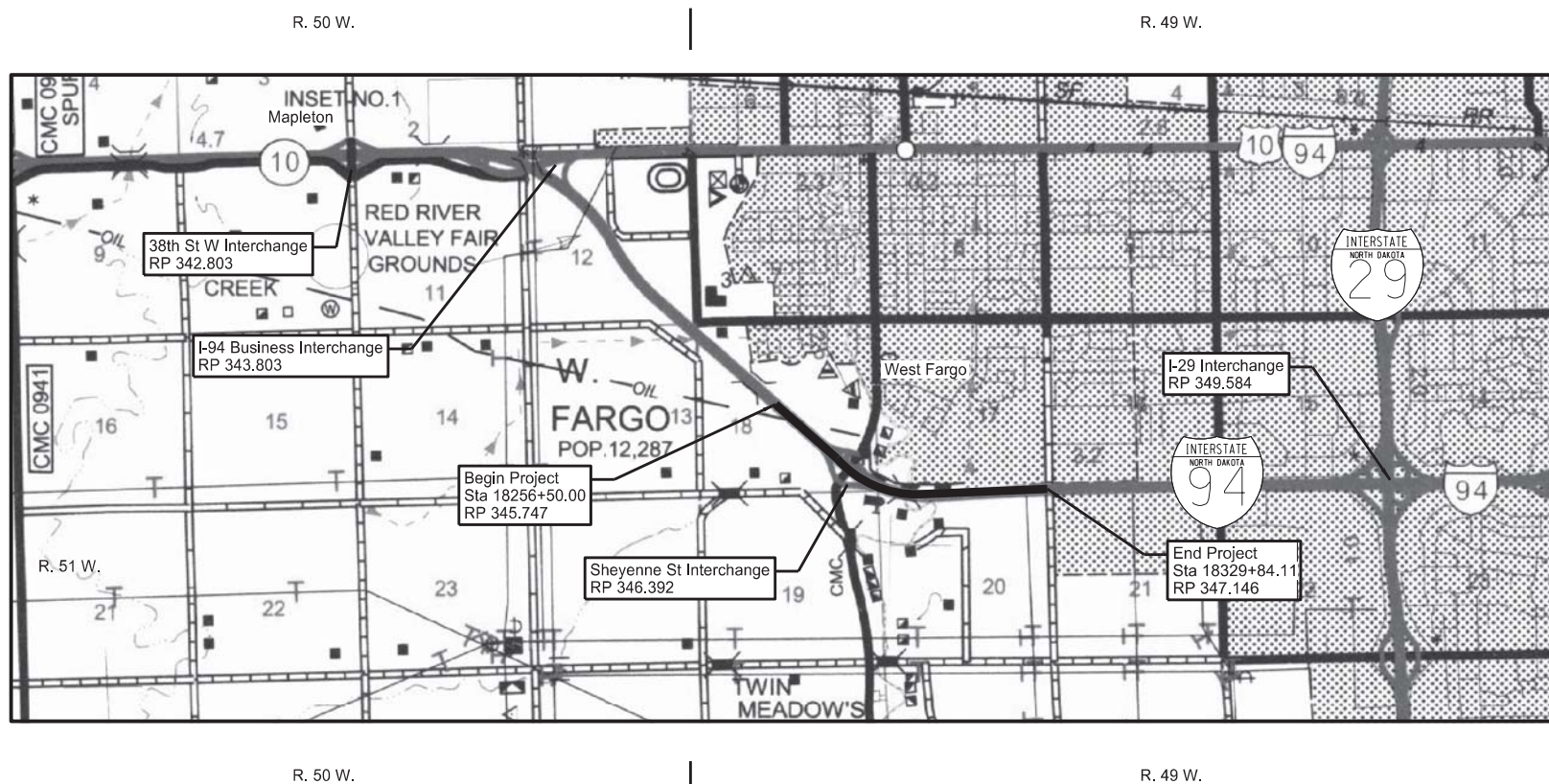
IM-8-094(094)345

Cass County
Interstate 94 - Horace Road Interchange
Median Crossovers

GOVERNING SPECIFICATIONS:

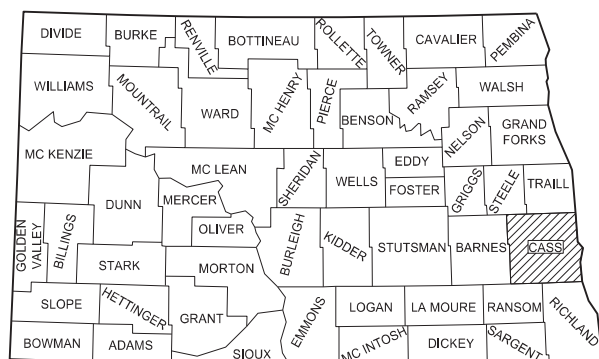
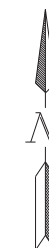
2014 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
IM-8-094(094)345	0.337	1.389



Legal Description
T. 139 N. R. 49 W. - Sec 17, 18, 19, 20

RP	Westbound	Eastbound
345	Sta 18217+01	Sta 18217+07
346	Sta 18269+53	Sta 18269+58
347	Sta 18322+14	Sta 18322+14



STATE COUNTY MAP

DESIGNERS
Todd Hummel, PE
Dylan Schwarz

DISTRICT REVIEW
Kevin Gorder /s/ NDDOT - Fargo District
APPROVED DATE <u>6-5-2017</u>
Roger Weigel /s/ ND DEPARTMENT OF TRANSPORTATION

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.
APPROVED DATE <u>05/26/2017</u>
Scott Middaugh /s/ KLJ

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PLAN SECTIONS

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4	1	Scope of Work
6	1 - 2	Notes
8	1	Estimate of Quantities
11	1	Data Tables & Basis of Estimate
20	1	Erosion Control at Culvert Flared End Sections
20	2	PCC Pavement Joint Details
20	3	Edgedrain to Centerline Culvert Tie in
20	4	Median Drain Detail
20	5	Slotted Drain Detail
30	1	Typical Sections
40	1 - 2	Removals
51	1	Allowable Pipe List
60	1 - 2	Plan & Profile
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82	1 - 2	Survey Data Layout
90	1 - 3	Paving Layout & Elevations
100	1 - 5	Work Zone Traffic Control
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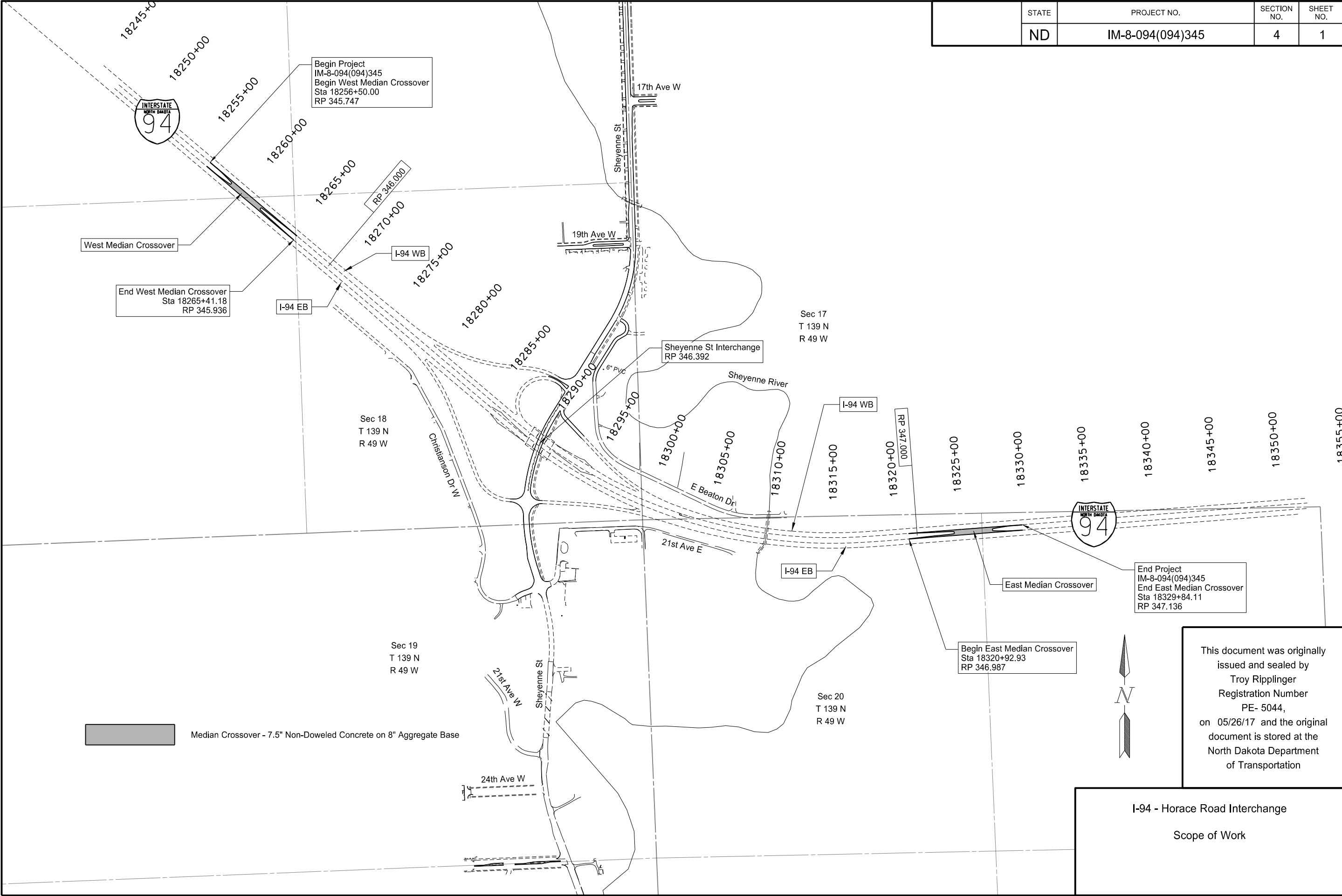
LIST OF STANDARD DRAWINGS

Number	Description
D-101-1, 2, 3	NDDOT Abbreviations
D-101-10	NDDOT Utility Company and Organization Abbreviations
D-101-20, 21	Line Styles
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D-255-2	Erosion And Siltation Control - Erosion Control Blanket Installation
D-260-1	Erosion And Siltation Controls - Silt Fence
D-261-1	Erosion Control - Fiber Roll Placement Details
D-704-5	Contractor Sign Detail
D-704-7	Breakaway Systems For Construction Zone Signs - Perforated Tube
D-704-8	Breakaway Systems For Construction Zone Signs - U-Channel Post
D-704-9	Construction Sign Details - Terminal And Guide Signs
D-704-10	Construction Sign Details - Regulatory Signs
D-704-11	Construction Sign Details - Warning Signs
D-704-13	Barricade And Channelizing Device Details
D-704-14	Construction Sign Punching And Mounting Details
D-704-22	Construction Truck And Temporary Detour Layouts
D-704-24	Shoulder Closures And Bridge Painting 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
D-708-6	Erosion And Siltation Controls - Median Or Ditch Inlet Protection
D-714-1	Reinforced Concrete Pipe Culverts And End Sections (Round Pipe)
D-714-18	Edgedrain Details
D-714-22	Concrete Pipe Or Precast Concrete Box Culvert Ties
D-722-7	Precast Concrete Median Drain
D-762-4	Pavement Marking

SPECIAL PROVISIONS

Number	Description
SP 003(14)	Temporary Erosion and Sediment Best Management Practices

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I-94 - Horace Road Interchange
 Scope of Work

NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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- 155-100 CONCRETE EQUIPMENT: Provide a NRMCA Certified plant for concrete used in Sections 550 "Concrete Pavement", 570 "Concrete Pavement Repair", 602 "Concrete Structures", and 622 "Pilings".
- 202-P01 REMOVAL OF MEDIAN DRAIN PRECAST CONCRETE: Include all costs associated with the removal of the existing median drain, riser, and/or adjustment rings in the bid price for "Removal of Median Drain Precast Concrete".
- 203-010 SHRINKAGE: 25 percent additional volume is included for shrinkage in earth embankment.
- 203-385 AVERAGE HAUL: No average haul has been computed for this project.
- 203-P01 CONTRACTOR FURNISHED PROCTORS: Determine the optimum moisture and density, as specified in ND T 99, for each type of material encountered that requires compaction control. Perform a multi-point test using a minimum of 4 points. Submit the results to the Engineer along with a split sample of each material.

The Engineer will perform comparison tests using the same procedure on the split sample. The Engineer's results will be used for determining in place density of material.

The cost of testing will not be paid for separately but be included in the bid price for "Common Excavation-Type A" and "Borrow-Excavation".
- 203-P02 TOPSOIL: The topsoil in the median may be temporarily stockpiled in the median. The median topsoil stockpile must have foreslopes 4:1 or flatter and approach slopes that are 10:1 or flatter.

At the areas of the median crossovers, there will be excess topsoil due to the fact that the median crossovers will remain in-place after the project is complete. Excess topsoil will remain property of the NDDOT and will be stockpiled within the median. Do not stockpile excess topsoil within the ditch bottom or wetlands. The engineer will approve the stockpile location and boundary of the excess topsoil stockpile prior to placement.
- 230-P01 SUBGRADE PREPARATION: Scarify and shape the subgrade to a depth of 6" prior to placing aggregate base or embankment material as specified in Section 230.04 D. Compact the scarified material as specified in Section 203.04 E.3. Include all costs associated with scarifying, shaping, and compacting the subgrade in the bid price for "Common Excavation-Type A".
- 253-P01 HYDRAULIC MULCH: Delete section 253.04 B.2 of the Standard Specifications in its entirety.
- 302-110 BASE COURSE: Trim base course as specified in Section 302.04 C.1, "Surface Tolerance Type B."
- 302-P01 AGGREGATE BASE COURSE CL 5: Modify gradation to 7.0 – 13.0 percent passing the No. 200 sieve.

- 704-255 TRAFFIC CONTROL FOR SHOULDER DROP-OFF: If the shoulder and adjacent driving lane are not even at the end of the day, the following criteria will apply:

Place the following sign assembly at the locations listed below.

Sign Assembly: Sign No. W8-9a-48 "Shoulder Drop Off" and supplemental plate Sign No. W20-52-54 to identify the distance.

- Locations:
- In advance of the drop off;
 - Spaced at each mile from the advance sign; and
 - At major intersections (CMC routes, state and US highways, and Interstate Ramps).

If the difference in elevation between the shoulder and the driving lane is 2" or greater, construct a slough on the driving lane that is 4:1 or flatter.

If the difference in elevation between the shoulder and driving lane is less than 2", no slough is required.

Sign assemblies will be measured and paid for according to Section 704 "Temporary Traffic Control".

- 704-P01 TRAFFIC CONTROL: Maintain traffic in the outside lanes of the interstate while working in the median. Construction traffic will not be allowed to cross lanes of traffic being used by the public at grade. Traffic control device quantities are based on a two-mile work zone limitation and the list below.

- D-704-22: Type K and L for construction trucks hauling material.
- D-704-24: Type T for mobile operations on shoulder.
- D-704-35: Sign Layout for One-Lane Closure Interstate System for constructing median crossovers and ramp connections.

- 704-P02 TUBULAR MARKERS: After completion of the median crossovers, immediately install weighted tubular markers at 5-foot spacing at locations shown in Section 100. Use a minimum of 36 pounds of weight for each tubular marker.

The weighted tubular markers will become property of the state at the completion of the project. Include all cost for providing and installing tubular markers in the unit price bid for "Tubular Markers."

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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NOTES

- 706-P01 AGGREGATE LABORATORY: Supply an Aggregate Laboratory with a printer/copy machine and office equipment including chairs, desks, and file cabinets. Include the cost in the contract unit price for "Aggregate Laboratory." The NDDOT Fargo district will provide the aggregate lab testing equipment.

- 714-P01 PIPE PVC 4IN DRAIN: Corrugated Polyethylene (PE) pipe may be used in lieu of PVC. If PE pipe is used, it must meet the requirements of Section 830.03 A.4. Include all costs associated with the connection of the existing underdrain to the proposed 12" and 15" PVC pipe in the bid price for "Pipe PVC 4IN Drain."

- 714-P02 PIPE PVC 12IN: Include all costs associated with connecting the proposed 12" PVC pipe to the existing RCP structure in the price bid for "Pipe PVC 12IN."

- 714-P03 HEADWALL-PRECAST CONCRETE 4IN: Include all costs for the removal of the existing headwalls in the price bid for "Headwall-Precast Concrete 4IN."

- 722-P01 MANHOLE RISER 30IN: Include the cost for a sealed concrete lid on the proposed manhole riser in the price bid for "Manhole Riser 30IN."

- 762-050 PAVEMENT MARKING: If the Engineer and Contractor agree, plan quantity will be used as the measurement for payment for pavement marking items.

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ESTIMATE OF QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	UNIT	TOTAL
103	0100	CONTRACT BOND	L SUM	1
202	0237	REMOVAL OF MEDIAN DRAIN PRECAST CONCRETE	EA	1
203	0101	COMMON EXCAVATION-TYPE A	CY	525
203	0109	TOPSOIL	CY	1,413
203	0140	BORROW-EXCAVATION	CY	847
216	0100	WATER	M GAL	110
251	0200	SEEDING CLASS II	ACRE	1.65
251	2000	TEMPORARY COVER CROP	ACRE	1.65
253	0101	STRAW MULCH	ACRE	1.65
253	0201	HYDRAULIC MULCH	ACRE	1.65
255	0103	ECB TYPE 3	SY	39
261	0112	FIBER ROLLS 12IN	LF	560
261	0113	REMOVE FIBER ROLLS 12IN	LF	310
302	0120	AGGREGATE BASE COURSE CL 5	TON	2,020
550	0183	7.5IN NON-REINF CONCRETE PAVEMENT CL AE	SY	4,392
702	0100	MOBILIZATION	L SUM	1
704	0100	FLAGGING	MHR	500
704	1000	TRAFFIC CONTROL SIGNS	UNIT	2,548
704	1052	TYPE III BARRICADE	EA	7
704	1060	DELINEATOR DRUMS	EA	167
704	1067	TUBULAR MARKERS	EA	302
704	1072	FLEXIBLE DELINEATORS	EA	30
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	2
706	0500	AGGREGATE LABORATORY	EA	1
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	5,038
709	0162	GEOSYNTHETIC MATERIAL TYPE S2	SY	330
714	3150	HEADWALL-PRECAST CONCRETE 4IN	EA	6
714	6589	PIPE PVC 4IN DRAIN	LF	114
714	7030	PIPE PVC 12IN	LF	650
714	7033	PIPE PVC 15IN	LF	308
722	1094	MANHOLE RISER 30IN	LF	2.5
762	0113	EPOXY PVMT MK 4IN LINE	LF	3,564
762	0420	SHORT TERM 4IN LINE-TYPE R	LF	1,272

I-94 - Horace Road Interchange

Estimate of Quantities

Earthwork and Topsoil Summary

LOCATION	EARTHWORK SUMMARY			TOPSOIL SUMMARY
	203 0101 COMMON EXCAVATION- TYPE A	Embankment	203 0140 BORROW- EXCAVATION	203 0109 *TOPSOIL
	(CY)	(CY)	(CY)	(CY)
	A	B	C = B - A	D
West Median Crossover				
Sta 18256+50 to Sta 18265+41 (EX94)	239	792	553	696
East Median Crossover				
Sta 18320+93 to Sta 18329+84 (EX94)	286	580	294	717
Grand Totals	525	1,372	847	1,413

*Excavation numbers are based upon removing 6" of topsoil

Permanent Pavement Marking

Pavement Markings						
Begin Station	End Station	Roadway	Color	Basis	Quantity (LF)	
West Median Crossover						
18256+50 Lt	18265+41 Lt	WB Edge Line	Yellow	5,280 LF/mile	891	
18256+50 Rt	18265+41 Rt	EB Edge Line	Yellow	5,280 LF/mile	891	
East Median Crossover						
18320+93 Lt	18329+84 Lt	WB Edge Line	Yellow	5,280 LF/mile	891	
18320+93 Rt	18329+84 Rt	EB Edge Line	Yellow	5,280 LF/mile	891	
762 0113 Epoxy Pvmt Mk 4IN Line					Total =	3,564

Notes:

- All stationing is based on "EX94" alignment.

West Median Crossover
(EX94)
Table 1 of 1

STATION	END AREA (SF)		ADJUSTED VOLUME (CY)		
	EXC	FILL	EXC	FILL	MASS
18256+50.00/1	6.63	17.27	0	0	0
18257+00.00/1	7.24	13.69	13	36	-23
18257+50.00/1	7.89	10.08	14	28	-37
18258+00.00/1	7.79	16.34	15	31	-53
18258+34.10/1	7.66	20.92	10	29	-72
18258+50.00/1	8.01	20.81	5	15	-82
18258+84.10/1	8.85	14.79	11	28	-99
18259+00.00/1	8.51	16.27	5	11	-105
18259+50.00/1	7.74	20.91	15	43	-133
18260+00.00/1	6.91	23.96	14	52	-171
18260+50.00/1	6.71	27.46	13	60	-218
18260+79.10/1	6.57	29.72	7	39	-250
18261+00.00/1	6.84	28.13	5	28	-273
18261+50.00/1	6.86	26.89	13	64	-324
18261+84.09/1	7.93	20.86	9	38	-353
18262+00.00/1	7.90	26.98	5	18	-366
18262+34.10/1	7.70	24.18	10	40	-396
18262+50.00/1	7.51	23.73	4	18	-410
18263+00.00/1	6.69	23.33	13	54	-451
18263+27.85/1	6.33	23.44	7	30	-474
18263+50.00/1	6.12	22.15	5	23	-492
18264+00.00/1	5.78	17.51	11	46	-527
18264+50.00/1	6.61	9.25	11	31	-547
18265+00.00/1	7.49	6.22	13	18	-552
18265+41.18/1	6.98	6.87	11	12	-553

East Median Crossover
(EX94)
Table 1 of 1

STATION	END AREA (SF)		ADJUSTED VOLUME (CY)		
	EXC	FILL	EXC	FILL	MASS
18320+92.93/1	12.67	5.19	0	0	0
18321+00.00/1	12.66	5.27	3	2	1
18321+50.00/1	10.00	5.50	21	12	10
18322+00.00/1	9.11	8.39	18	16	12
18322+50.00/1	8.94	13.03	17	25	4
18323+00.00/1	9.00	16.77	17	34	-13
18323+06.26/1	9.02	17.14	2	5	-16
18323+50.00/1	9.11	17.82	15	35	-36
18324+00.00/1	8.77	20.88	17	45	-64
18324+50.02/1	9.80	13.38	17	40	-87
18325+00.00/1	7.53	22.61	16	42	-113
18325+10.01/1	7.17	24.53	3	11	-121
18325+50.00/1	7.31	21.52	11	43	-153
18326+00.00/1	7.49	20.73	14	49	-188
18326+50.00/1	7.63	21.34	14	49	-223
18327+00.00/1	8.19	6.35	15	32	-240
18327+50.01/1	8.69	10.78	16	20	-244
18328+00.00/1	7.16	18.42	15	34	-263
18328+50.00/1	7.61	11.70	14	35	-284
18329+00.00/1	8.53	7.67	15	22	-291
18329+50.00/1	8.20	7.44	15	17	-293
18329+84.11/1	9.28	8.00	11	12	-294

Water
25 M Gal/Mile for Dust Palliative
20 Gal/Ton for Aggregate
10 Gal/CY for Embankment

Pavement
Aggregate Base Course Class 5 @ 1.875 Ton/CY

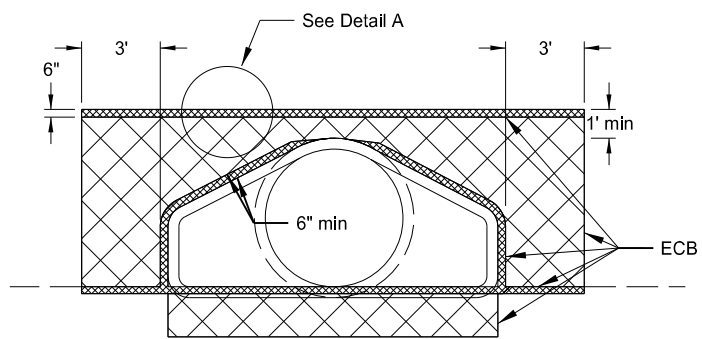
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I-94 - Horace Road Interchange
Data Tables & Basis of Estimate

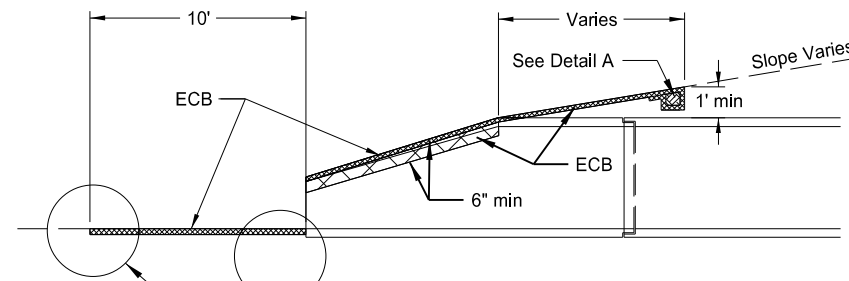
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Erosion Control Blanket (ECB)

Chain	Location of Surface Area to be Protected		Pipe Diameter (In)	No.	X (ft)	Y (ft)	Unit Quantity (SY)	Total Quantity (SY)
	Station	Offset						
EX94	18262+84	CL	15	1	9.5	18.4	19.5	19.5
	18323+69	CL	15	1	9.5	18.4	19.5	19.5
255 0103 ECB Type 3							Total =	39



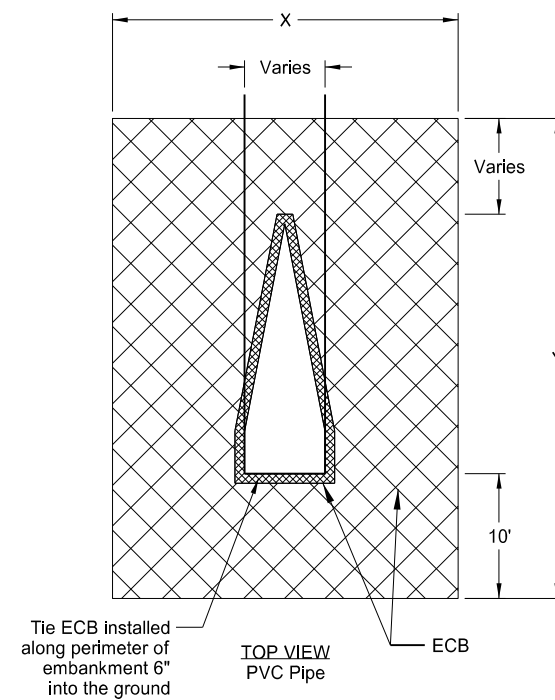
FRONT VIEW



SIDE VIEW

See Detail A

See Pipe Inlet & Outlet Details

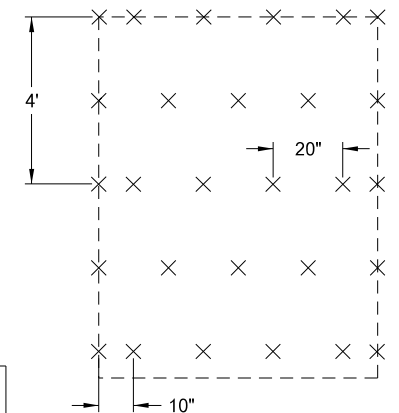


Tie ECB installed along perimeter of embankment 6" into the ground

TOP VIEW PVC Pipe

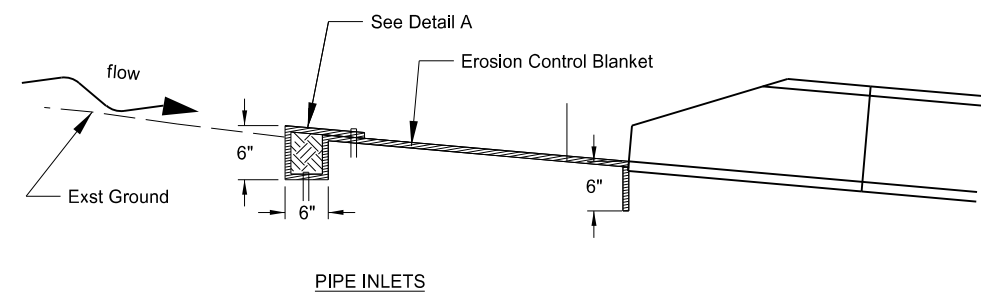
ECB

Notes:
1. Quantities based on 6:1 inslopes for Interstate culverts.

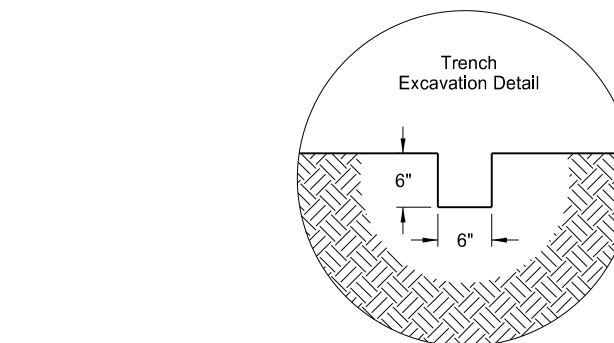


STAPLE PATTERN

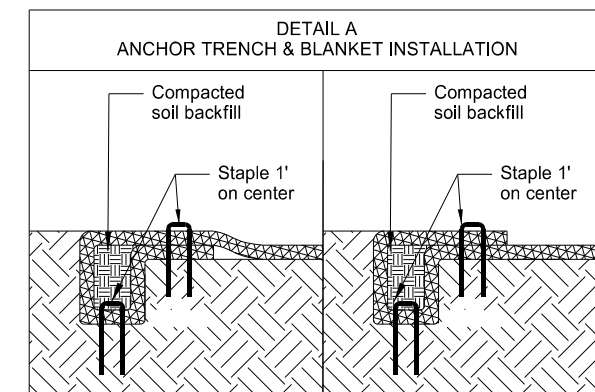
NOTE: Tuck the ECB a minimum of 6" into the embankment (against the flared end section) around the opening of the flared end section.



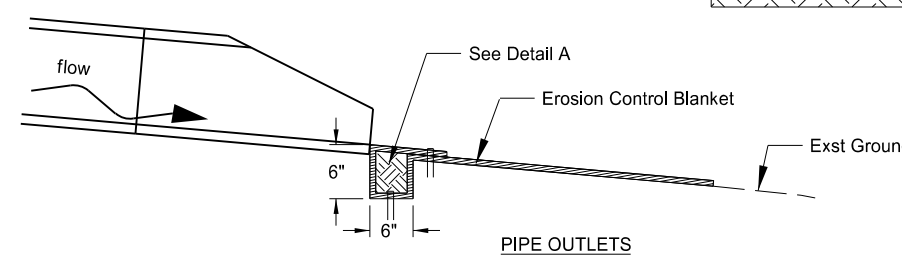
PIPE INLETS



Trench Excavation Detail



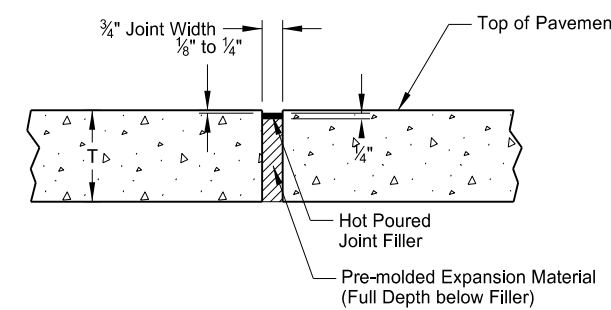
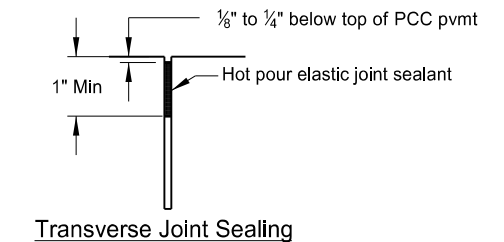
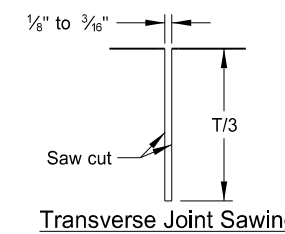
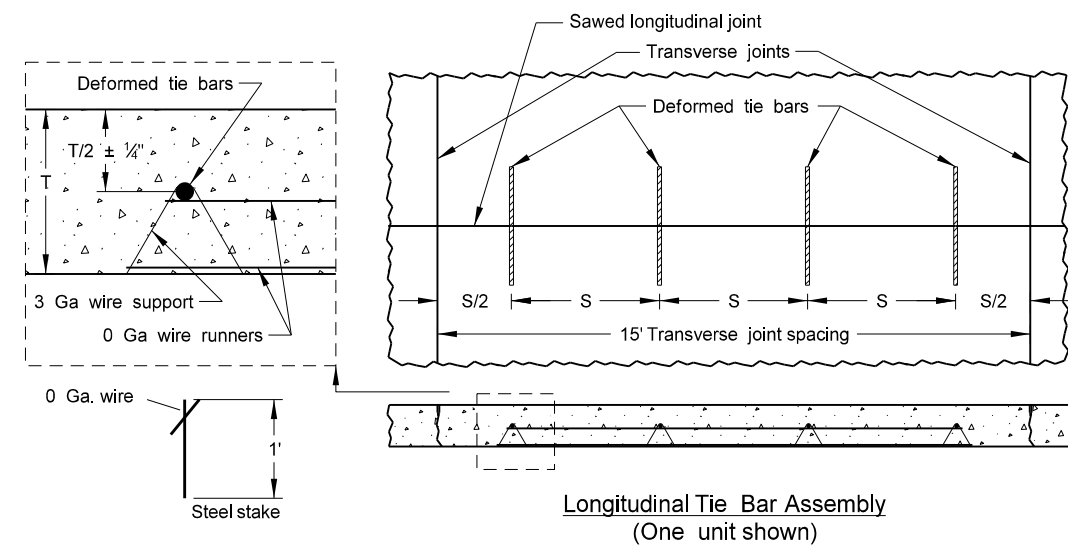
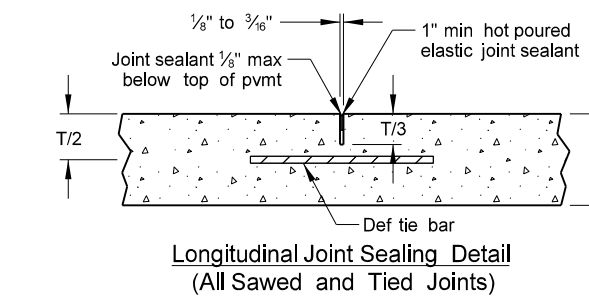
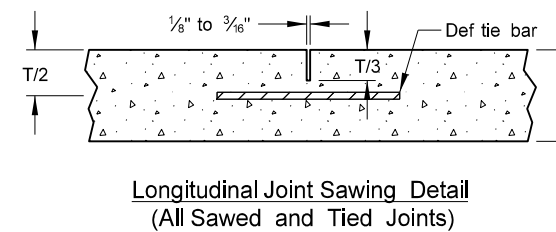
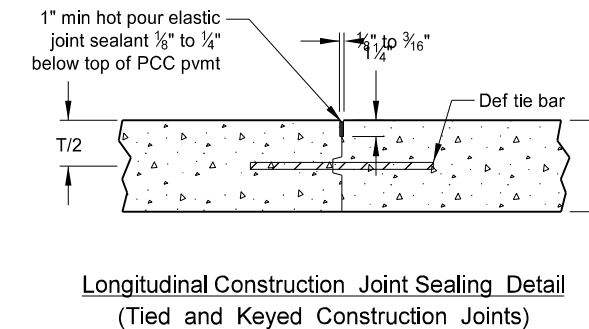
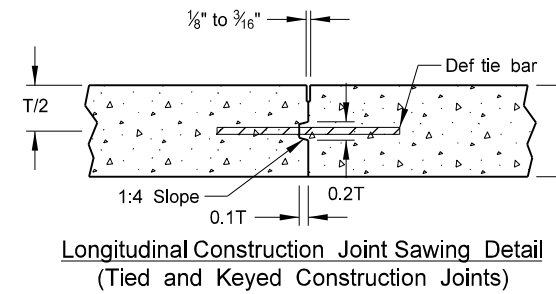
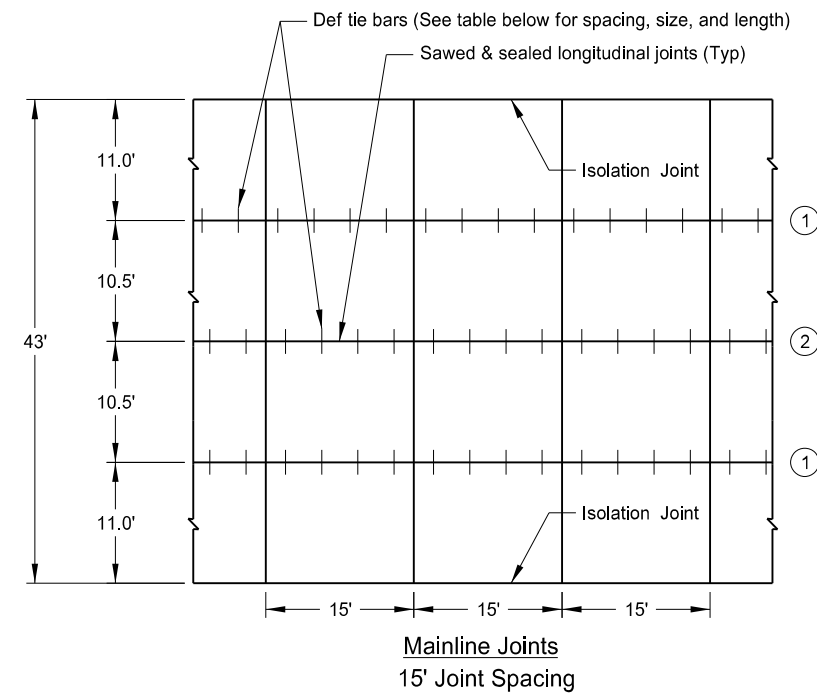
DETAIL A ANCHOR TRENCH & BLANKET INSTALLATION



PIPE OUTLETS

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I-94 - Horace Road Interchange
Erosion Control at Culvert Flared End Sections



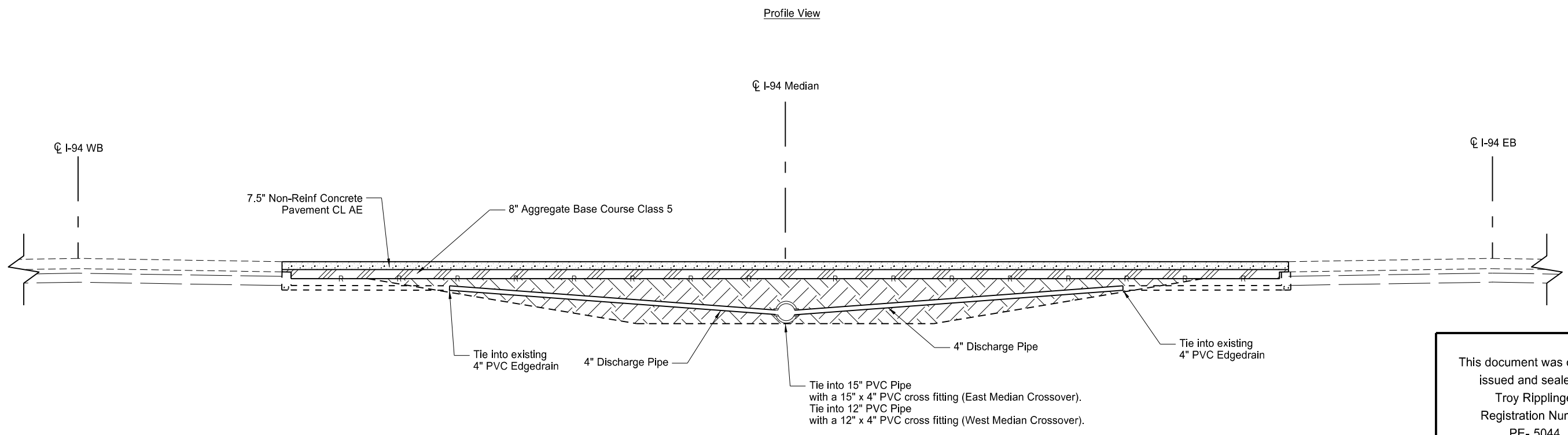
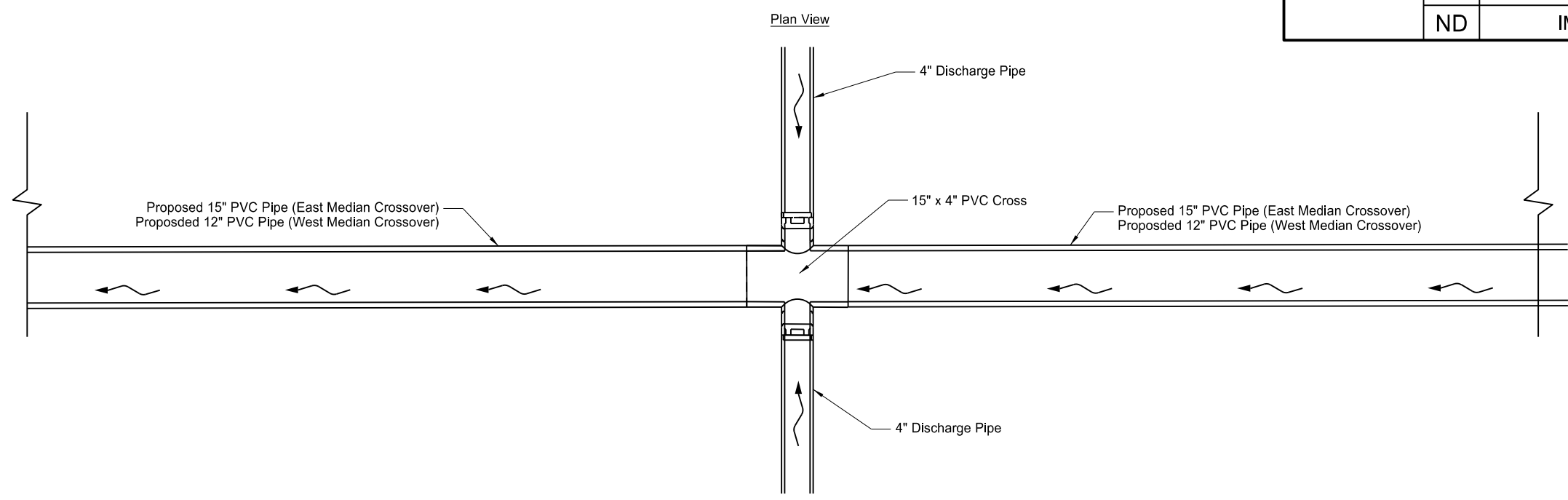
Longitudinal Joint Tie Bar Size, Length and Spacing					
Pavement Thickness	Bar Depth	Joint	Steel Grade	Bar Size and Length	Spacing
7.5"	3.75"	①	40	#5 Bar x 30"	45"
			60	#5 Bar x 42"	45"
		②	40	#6 Bar x 36"	36"
			60	#6 Bar x 48"	45"

- Notes:**
- S = Tie bar spacing
 - T = Pavement thickness
 - Place no tie bar within 15' of a transverse joint.
 - See Standard Drawing D-550-2 for tie bar lengths and sizes in transition areas.
 - All longitudinal joints are to be warp joints.

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I-94 - Horace Road Interchange
PCC Pavement Joint Details
Median Crossovers

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	20	3

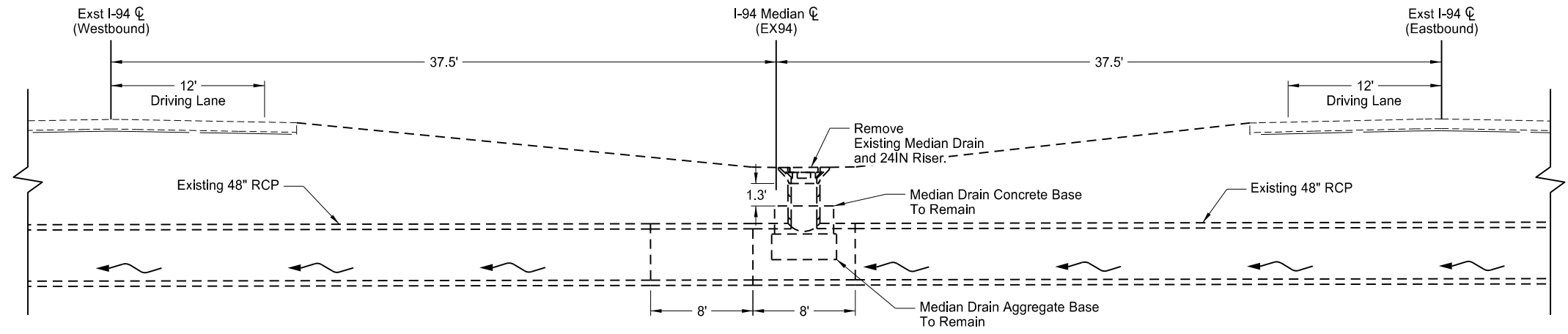


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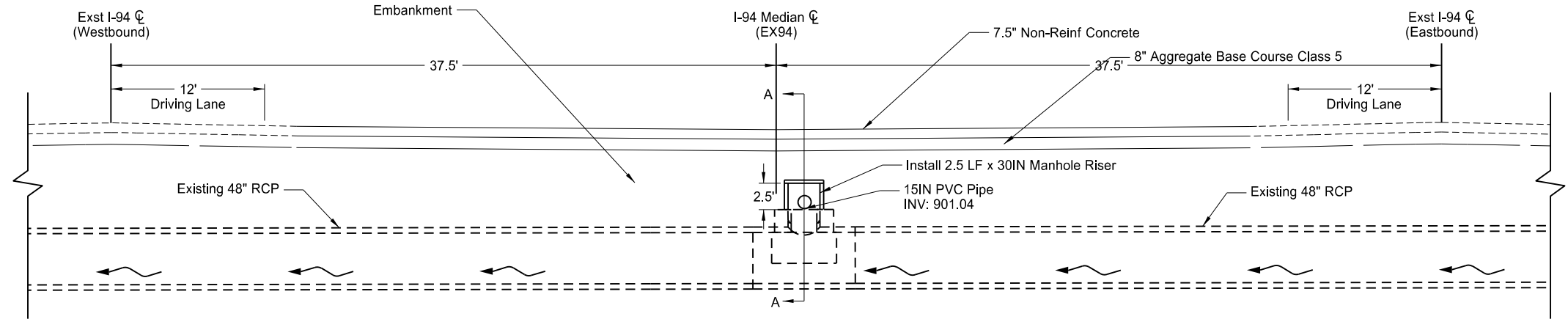
- Notes:
1. Refer to Standard Drawing D-714-18 for edgedrain details.
 2. Refer to Section 60 for proposed quantities.
 3. Include all costs to supply and install XX" x 4" crosses and tees shall be included in the price bid for "PIPE PVC xxin".
 4. Pipe material to meet requirements of Section 830.03 A.

I-94 - Horace Road Interchange
 Edgedrain to Centerline Culvert Tie In

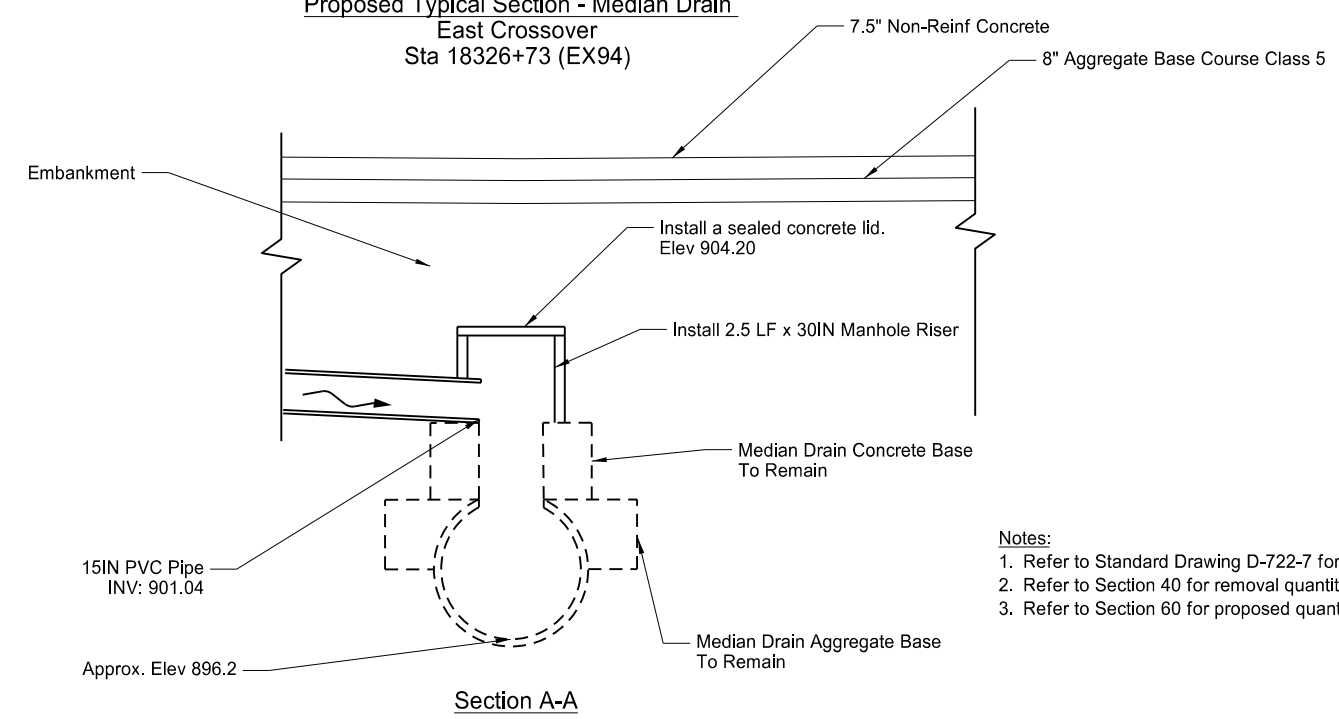
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	20	4



Removal Typical Section - Median Drain
East Crossover
Sta 18326+73 (EX94)



Proposed Typical Section - Median Drain
East Crossover
Sta 18326+73 (EX94)



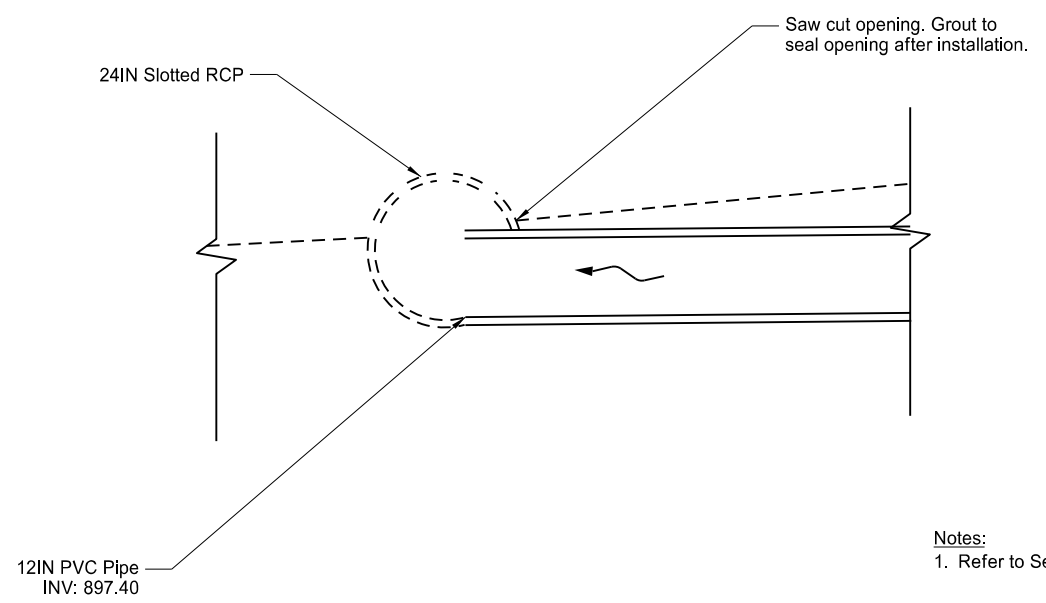
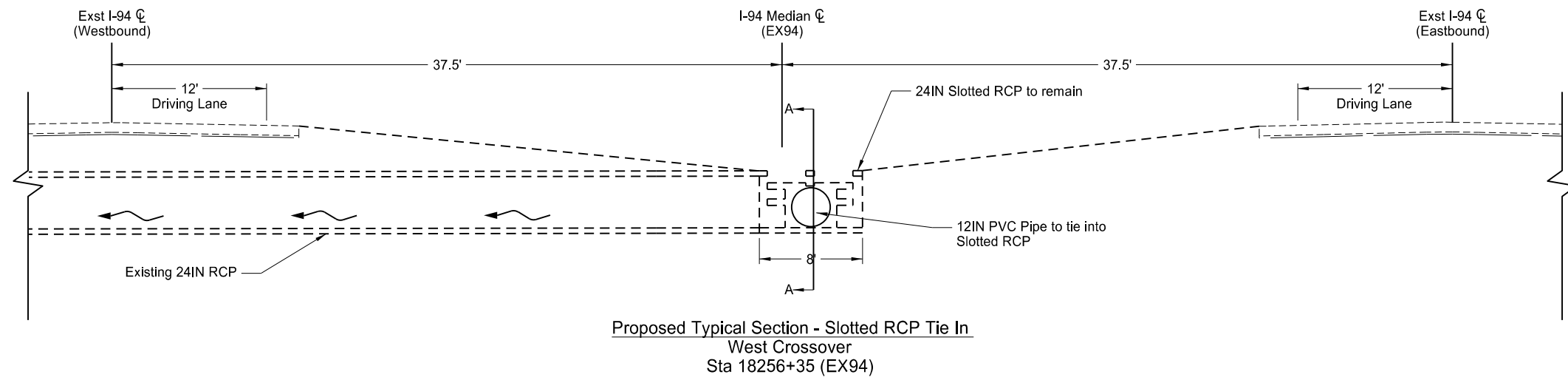
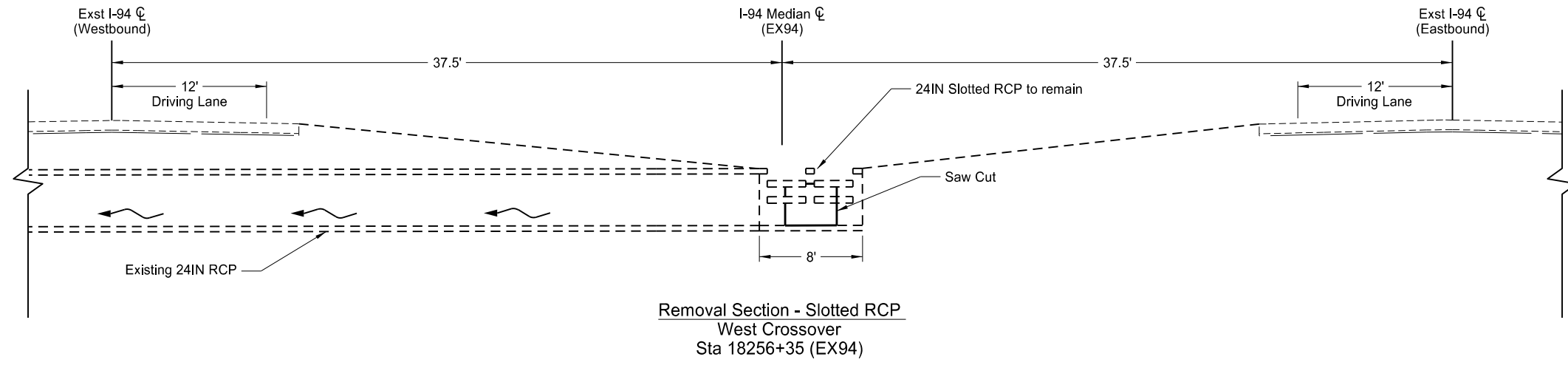
- Notes:**
1. Refer to Standard Drawing D-722-7 for additional details.
 2. Refer to Section 40 for removal quantities.
 3. Refer to Section 60 for proposed quantities.

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I-94 - Horace Road Interchange

Median Drain Detail

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	20	5

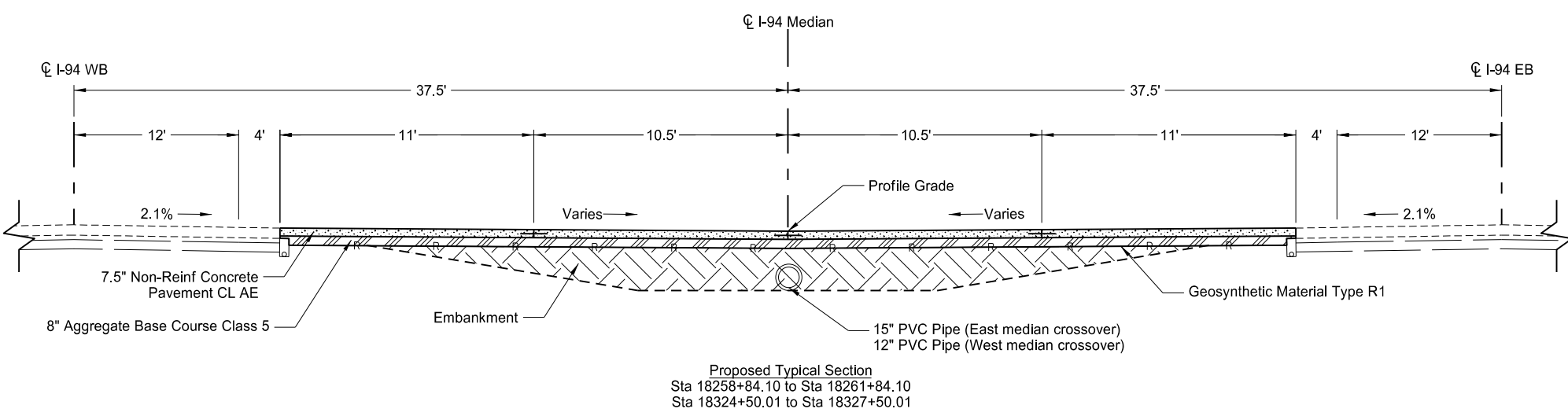
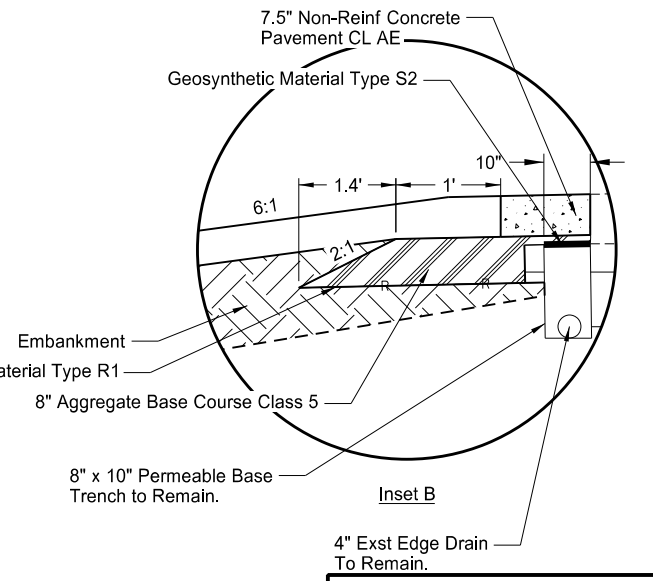
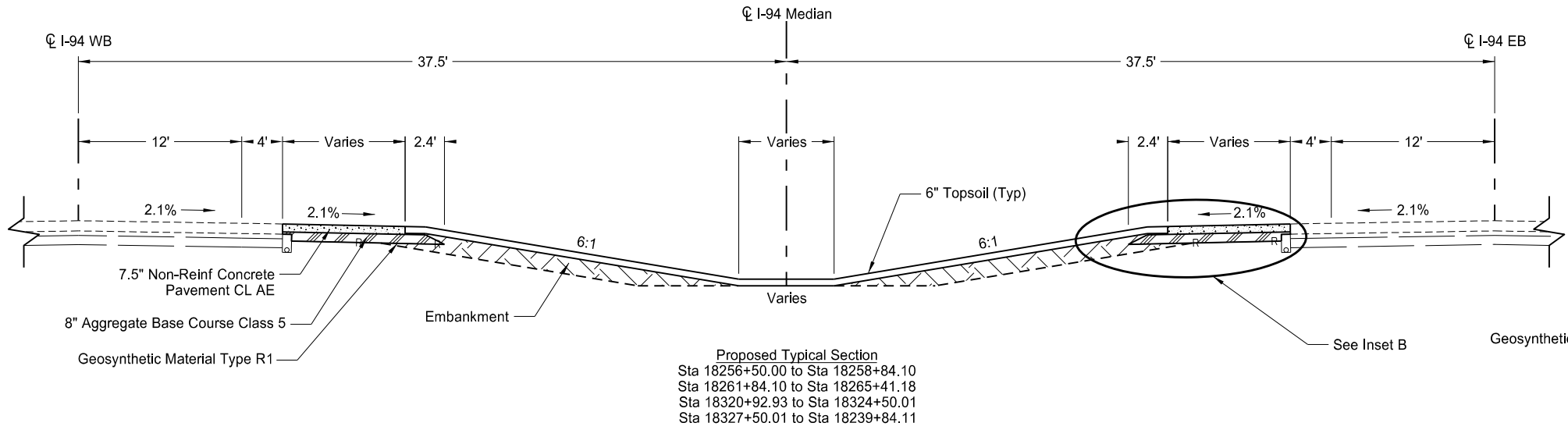
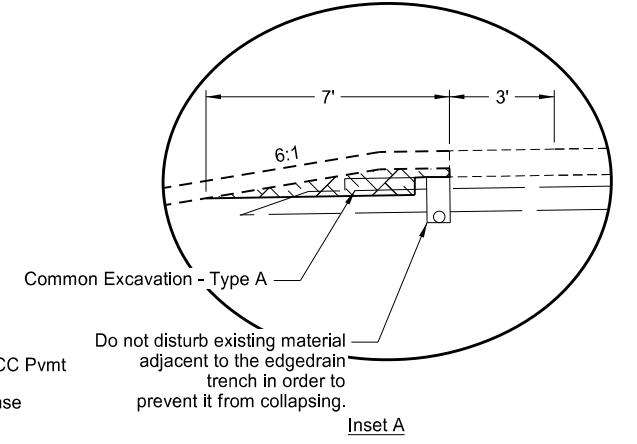
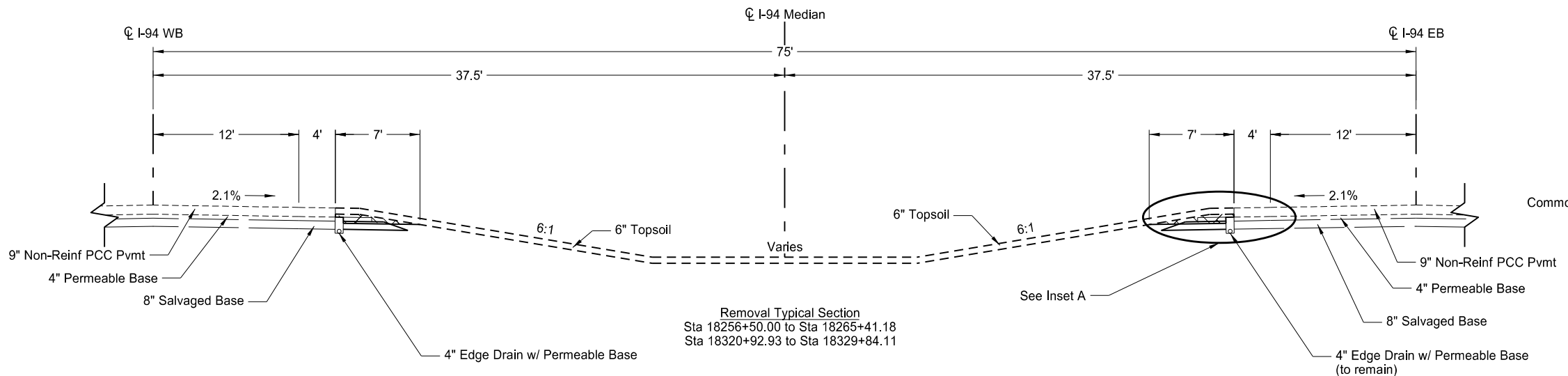


Notes:
1. Refer to Section 60 for proposed quantities.

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I-94 - Horace Road Interchange
Slotted Drain Detail

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	30	1

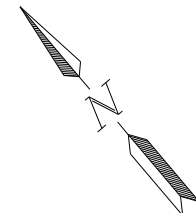
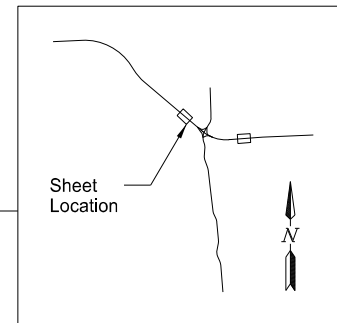
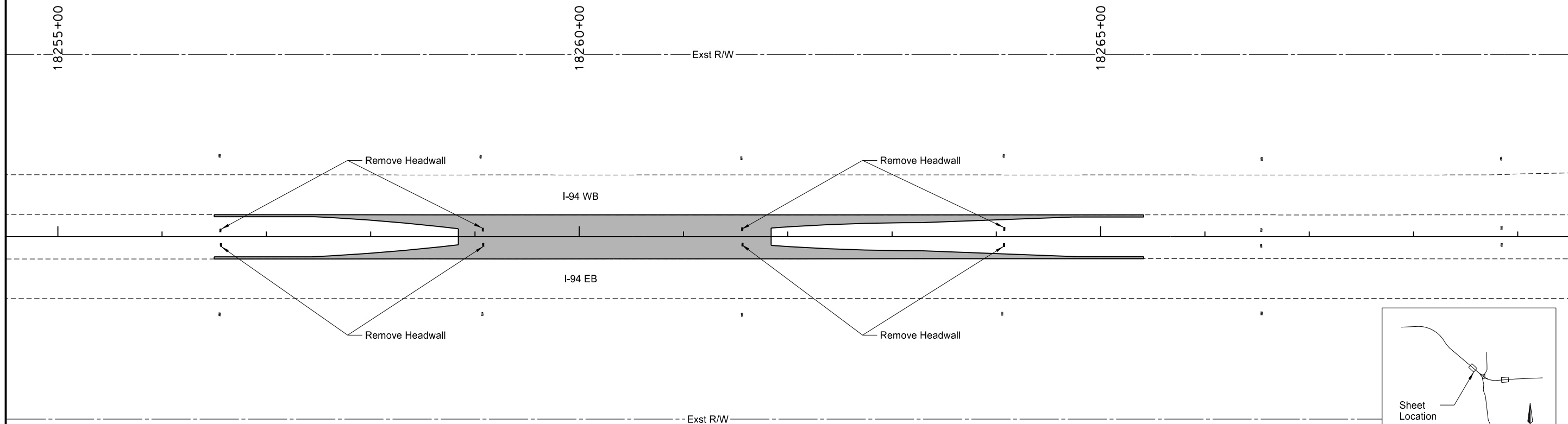


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I-94 - Horace Road Interchange
 Typical Sections
 West Median Crossover
 (EX94)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	40	1

*Remove Existing Headwalls
 Sta 18256+55 LT & RT
 Sta 18259+07 LT & RT
 Sta 18261+57 LT & RT
 Sta 18264+07 LT & RT



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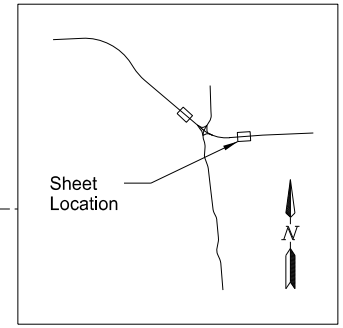
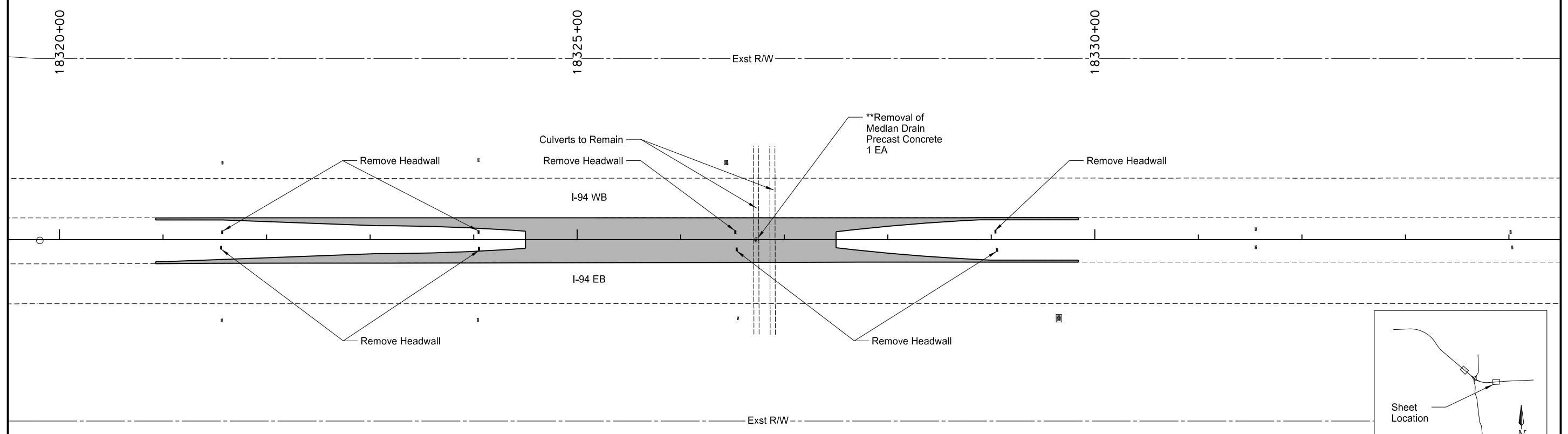
I-94 - Horace Road Interchange
 Removals
 West Median Crossover
 Sta 18256+50 to 18265+41 (EX94)

*See Section 6 for notes.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	40	2

*Remove Existing Headwalls
 Sta 18321+56 LT & RT
 Sta 18324+05 LT & RT
 Sta 18326+53 LT & RT
 Sta 18329+04 LT & RT

SPEC	CODE	BID ITEM	QTY	UNIT
202	0237	REMOVAL OF MEDIAN DRAIN PRECAST CONCRETE		
		Sta 18326+73	1	EA



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I-94 - Horace Road Interchange
 Removals
 East Median Crossover
 Sta 18320+93 to 18329+84 (EX94)

*See Section 6 for notes.

**See Seciton 20 Sheet 4

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-8-094(094)345	51	1

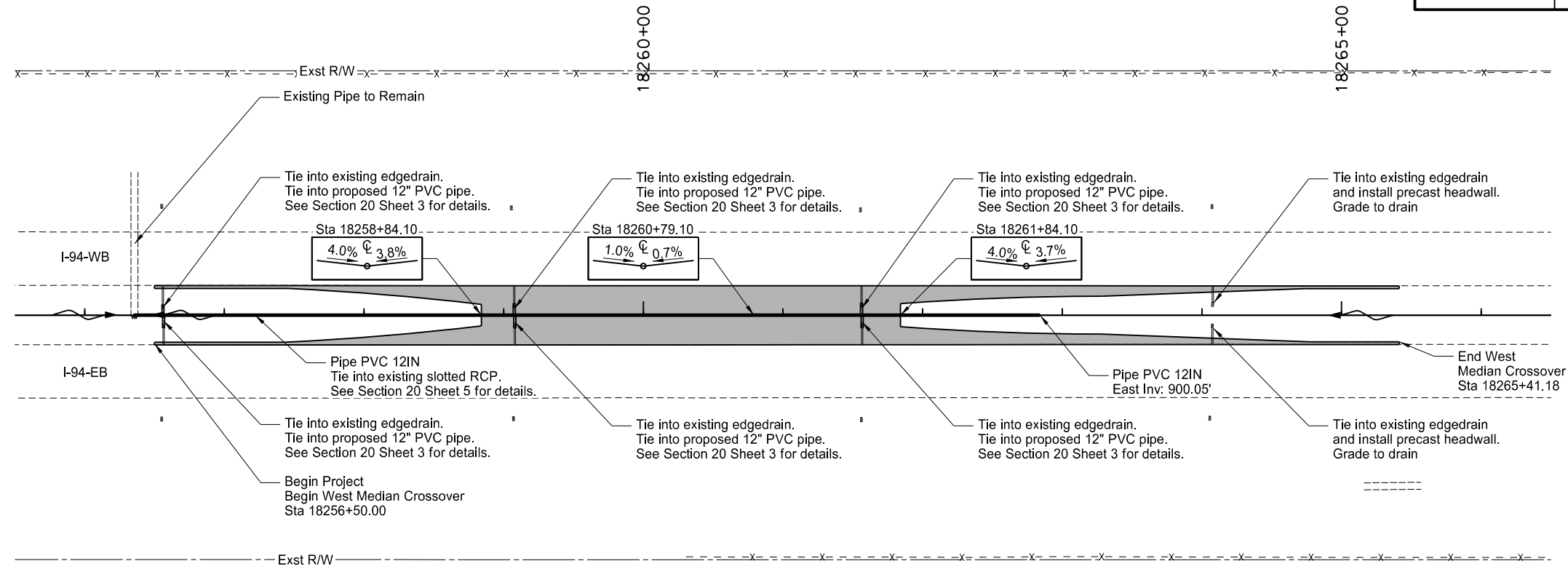
Allowable Pipe List

Location	Chain	Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter
						In	Bid Item	LF		
West Median Crossover	EX94	18256+35	CL	18262+84	CL	12	Pipe PVC	650	Polyvinyl Chloride (PVC)	12
East Median Crossover	EX94	18323+69	CL	18326+73	CL	15	Pipe PVC	308	Polyvinyl Chloride (PVC)	15

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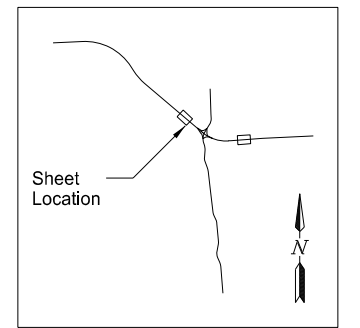
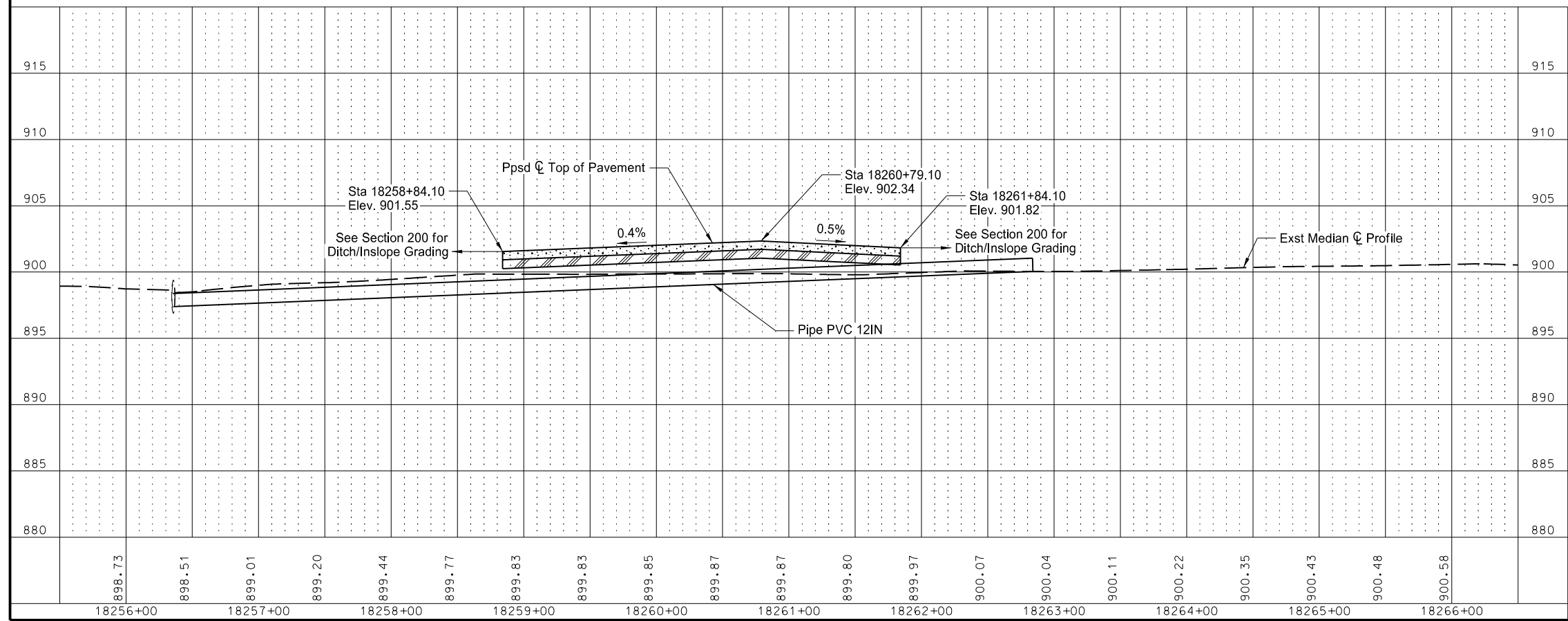
I-94 - Horace Road Interchange
Allowable Pipe List

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	60	1



SPEC	CODE	BID ITEM	QTY	UNIT
302	0120	AGGREGATE BASE COURSE CL 5 Sta 18256+50 to Sta 18265+41	990	TON
550	0183	7.5 IN NON-REINF CONCRETE PAVEMENT CL AE Sta 18256+50 to Sta 18265+41	2,149	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 Sta 18256+50 to Sta 18265+41	2,474	SY
709	0162	GEOSYNTHETIC MATERIAL TYPE S2 Sta 18256+50 to Sta 18265+41	165	SY
714	3150	HEADWALL-PRECAST CONCRETE 4IN Sta 18256+50 to Sta 18265+41	2	EA
714	6589	PIPE PVC 4IN DRAIN Sta 18256+55 ~ LT & RT Sta 18259+07 ~ LT & RT Sta 18261+57 ~ LT & RT Sta 18264+07 ~ LT & RT	16 18 16 10	LF
714	7030	PIPE PVC 12IN Sta 18258+26 ~ CL to Sta 18263+03 ~ CL	650	LF

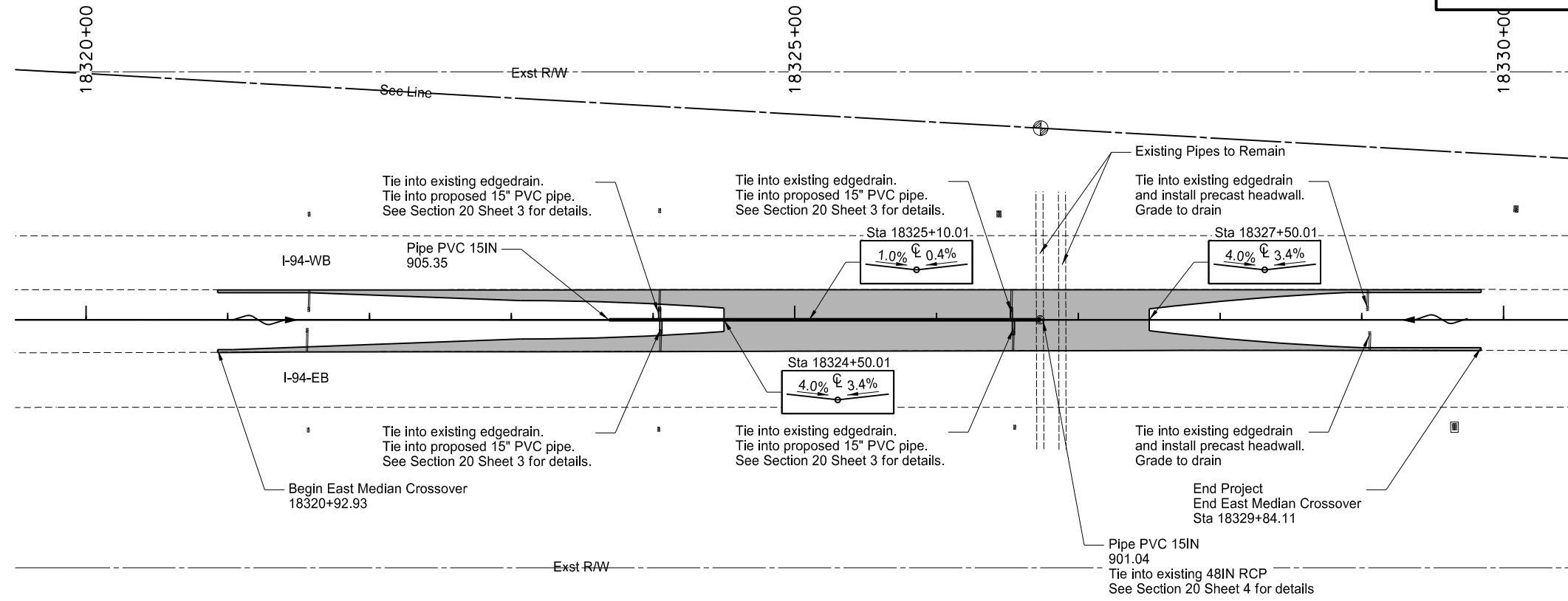
Notes:
1. The proposed profile is controlled by the existing edge of pavement. The proposed pavement will match existing pavement elevations at the tie points



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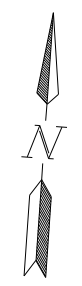
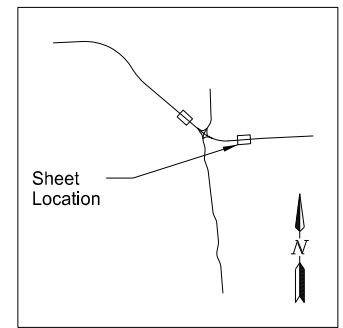
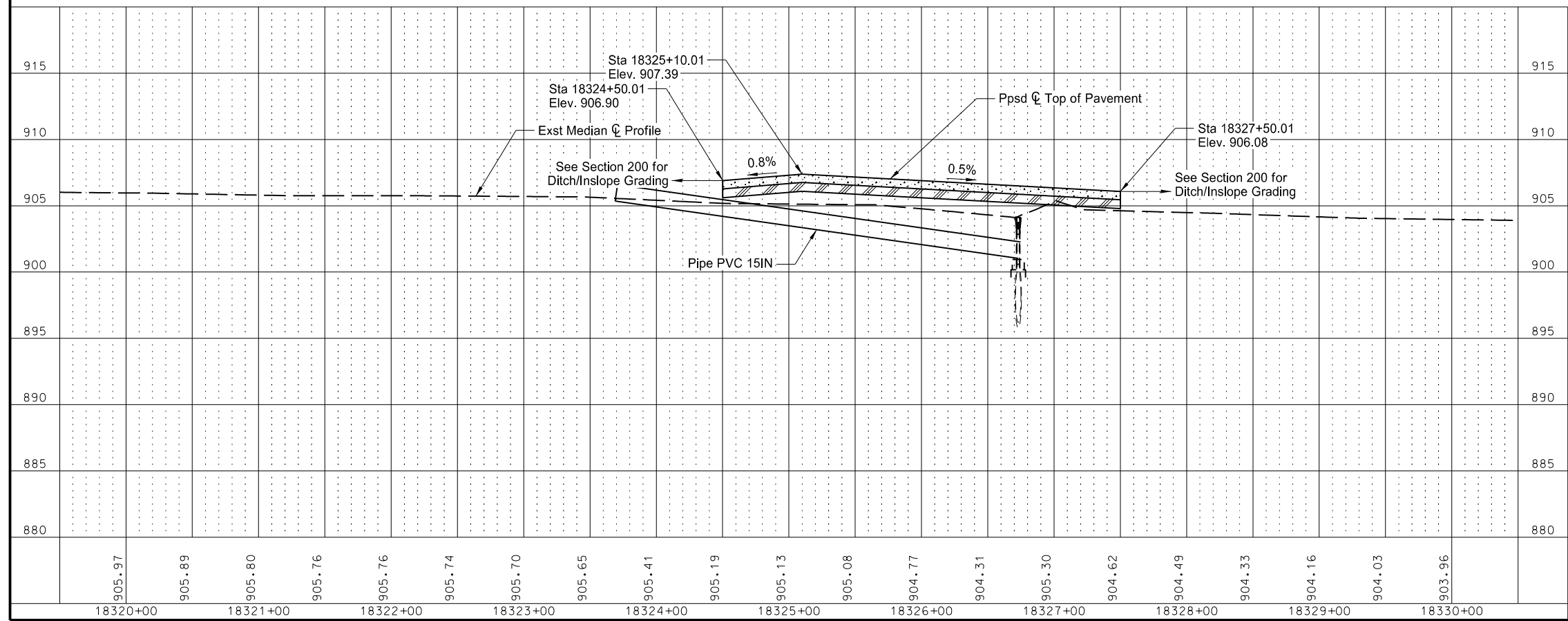
I-94 - Horace Road Interchange
Plan & Profile
West Median Crossover
Sta 18256+50 to 18265+41 (EX94)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	60	2



SPEC	CODE	BID ITEM	QTY	UNIT
302	0120	AGGREGATE BASE COURSE CL 5 Sta 18320+93 to Sta 18329+84	1,030	TON
550	0183	7.5 IN NON-REINF CONCRETE PAVEMENT CL AE Sta 18320+93 to Sta 18329+84	2,243	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 Sta 18320+93 to Sta 18329+84	2,564	SY
709	0162	GEOSYNTHETIC MATERIAL TYPE S2 Sta 18320+93 to Sta 18329+84	165	SY
714	3150	HEADWALL-PRECAST CONCRETE 4IN Sta 18320+93 to Sta 18329+84	4	EA
714	6589	PIPE PVC 4IN DRAIN Sta 18321+56 ~ LT & RT Sta 18323+05 ~ LT & RT Sta 18326+53 ~ LT & RT Sta 18328+04 ~ LT & RT	8 18 20 8	LF
714	7035	PIPE PVC 15IN Sta 18324+08 ~ CL to Sta 18326+73 ~ CL	308	LF
722	1094	MANHOLE RISER 30IN Sta 18326+73 ~ CL	2.5	LF

Notes:
1. The proposed profile is controlled by the existing edge of pavement. The proposed pavement will match existing pavement elevations at the tie points



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I-94 - Horace Road Interchange
Plan & Profile
East Median Crossover
Sta 18320+93 to 18329+84 (EX94)

Wetland Impact Table																			
Wetland Number	Location	Wetland Feature	USACE Jurisdictional Wetlands ¹	Wetland Impacts Acre(s)		USFWS Easement Impacts Acre(s)		Wetland Mitigation											
								Mitigation Required			USACE/11990 Bank		11990 Bank		USFWS Bank		Onsite		
				Temp.	Perm.	Temp.	Perm.	EO 11990	USACE	USFWS	Location	Acre(s)	Location	Acre(s)	Location	Acre(s)	Mitigation Location; Ratio	Acre(s)	Constructed Site #
18	Sec.20, T139N, R49W	Artificial	Y	0.12	0.00			N	N										
19	Sec.20, T139N, R49W	Artificial	Y	0.05	0.00			N	N										
23	Sec.18, T139N, R49W	Artificial	Y	0.16	0.00			N	N										

¹ A wetland Jurisdictional Determination was issued by the USACE on 4/03/2017; NWO-2009-02768-BIS.

² 1199 Mitigation requirements - All impacts to natural wetlands (natural/jurisdictional and natural/non-jurisdictional), regardless of size, as well as impacts greater than 0.10 acre to wetlands require mitigation. USACE Mitigation Requirements – All jurisdictional impacts greater than 0.10 acre to each resource (cumulative. eg 1a ,1b,1c..etc.) requires mitigation. Other Water impact greater than 300 linear feet requires mitigation.

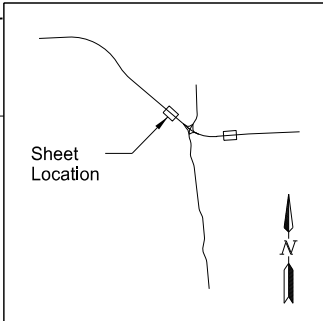
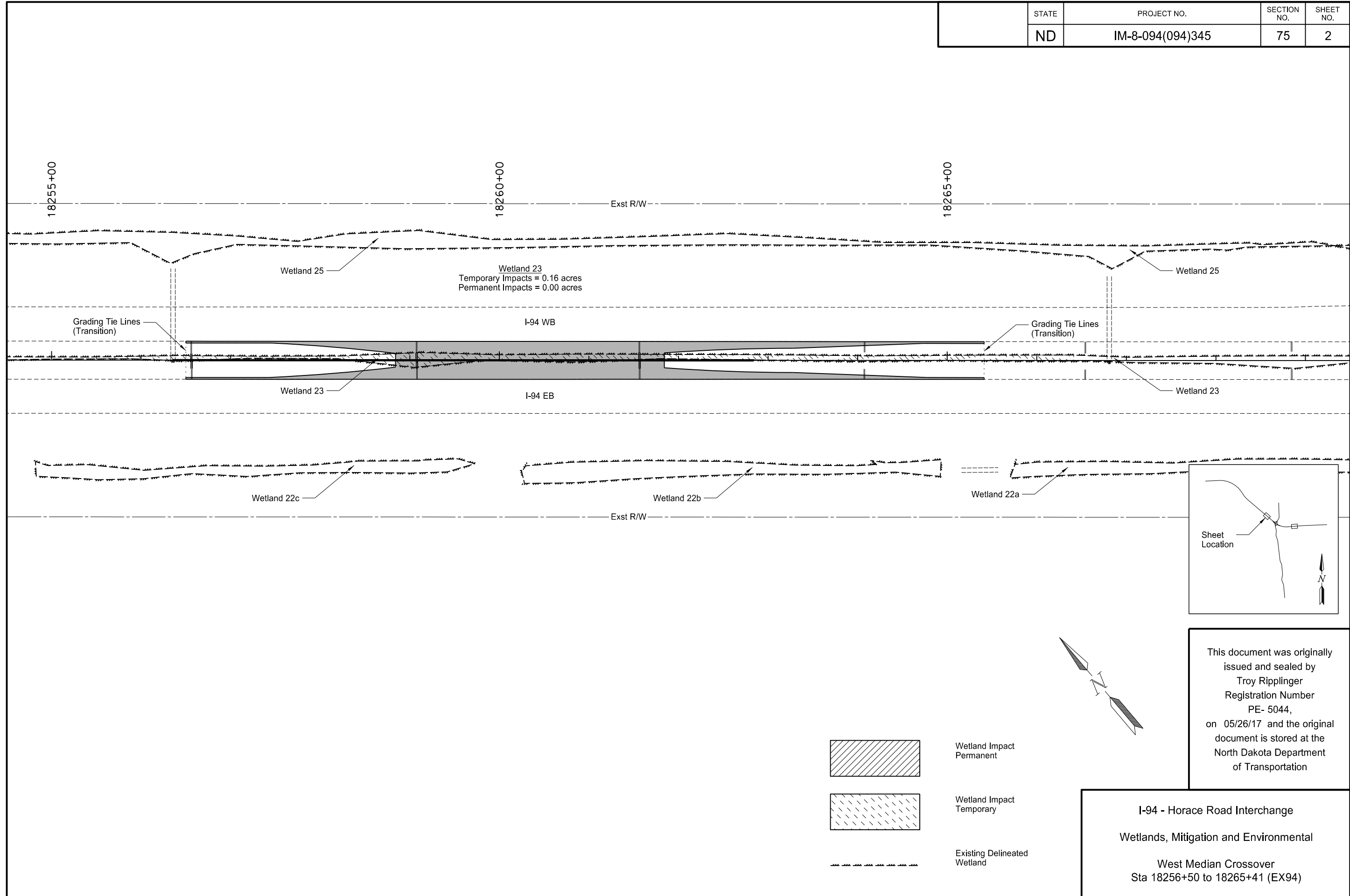
³ All artificial/non-jurisdictional, deep water (impacts greater than 6.6 feet), Other Waters less than 300 linear feet (determined by the USACE on a case by case), and temporary impacts do not require mitigation.

Impact Summary Table			
Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD	0.00	Temporary JD	0.00
Natural/Non-JD	0.00	Non-JD Temporary	0.33
Artificial/JD	0.00	Permanent JD > 0.10	0.00
Artificial/Non-JD	0.00	Permanent OW	0.00 / 0
Total	0.00	Temporary OW	0.00 / 0

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I-94 – Horace Road Interchange
Wetlands, Mitigation and Environmental

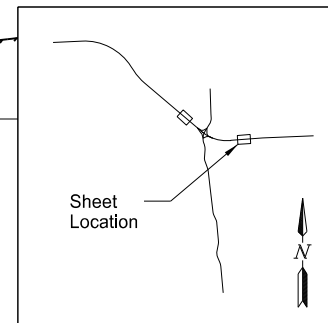
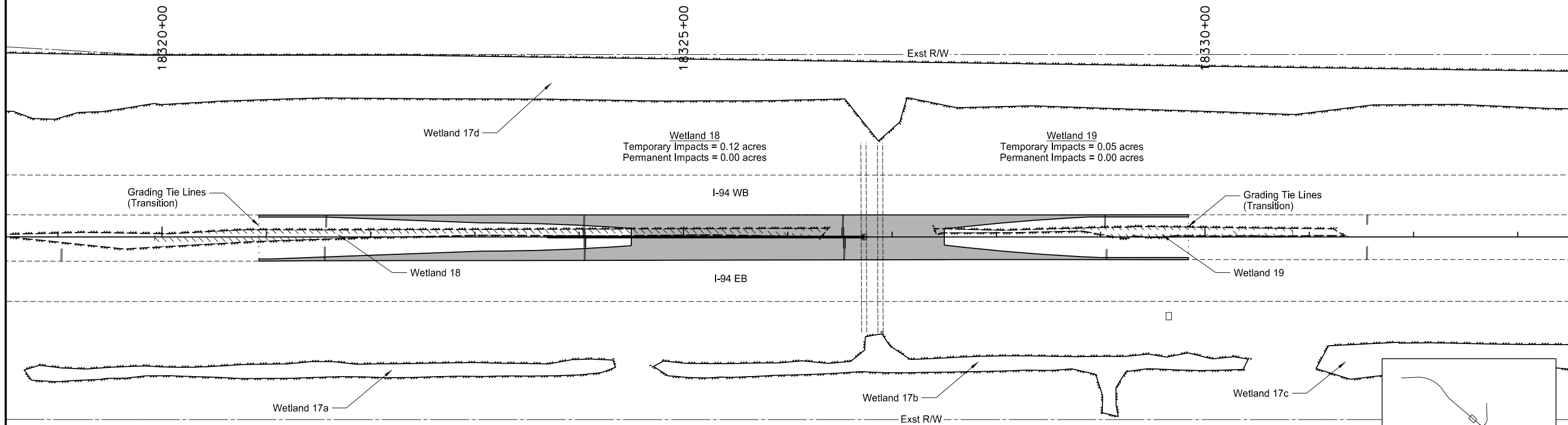
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ND	IM-8-094(094)345	75	2

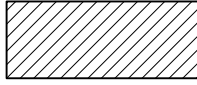

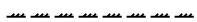


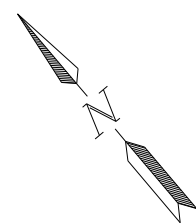
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I-94 - Horace Road Interchange
 Wetlands, Mitigation and Environmental
 West Median Crossover
 Sta 18256+50 to 18265+41 (EX94)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	75	3



-  Wetland Impact Permanent
-  Wetland Impact Temporary
-  Existing Delineated Wetland

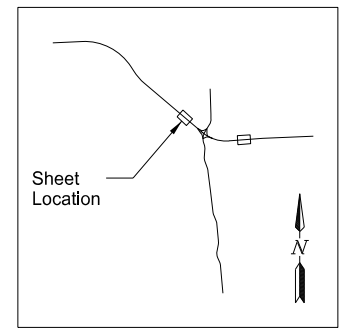
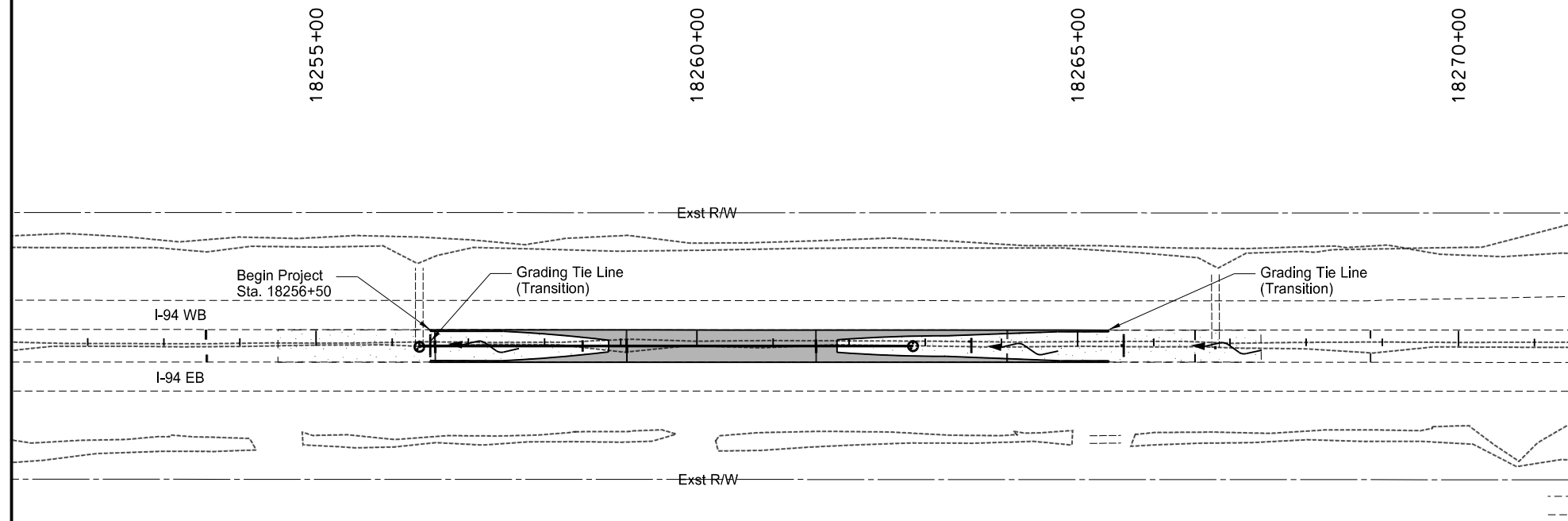


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I-94 - Horace Road Interchange
 Wetlands, Mitigation and Environmental
 East Median Crossover
 Sta 18320+93 to 18329+84 (EX94)

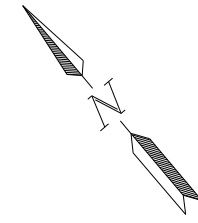
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	76	1

SPEC	CODE	BID ITEM	QTY	UNIT
251	2000	TEMPORARY COVER CROP		
Sta 18256+50 to Sta 18265+41			0.81	ACRE
253	0101	STRAW MULCH		
Sta 18256+50 to Sta 18265+41			0.81	ACRE
261	0112	FIBER ROLLS 12IN		
Sta 18256+50 to Sta 18265+41			175	LF
261	0113	REMOVE FIBER ROLLS 12IN		
Sta 18256+50 to Sta 18265+41			175	LF



Ditch Grade (%)	Roll Spacing (ft)
1%	200'
2%	100'
3%	65'
4%	50'
5%	40'

- Temporary Cover Crop & Straw Mulch
- Fiber Roll

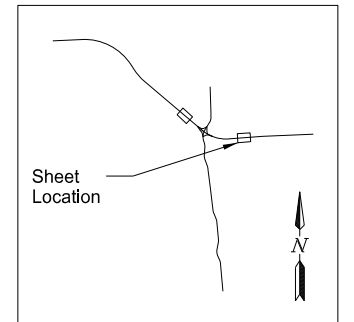
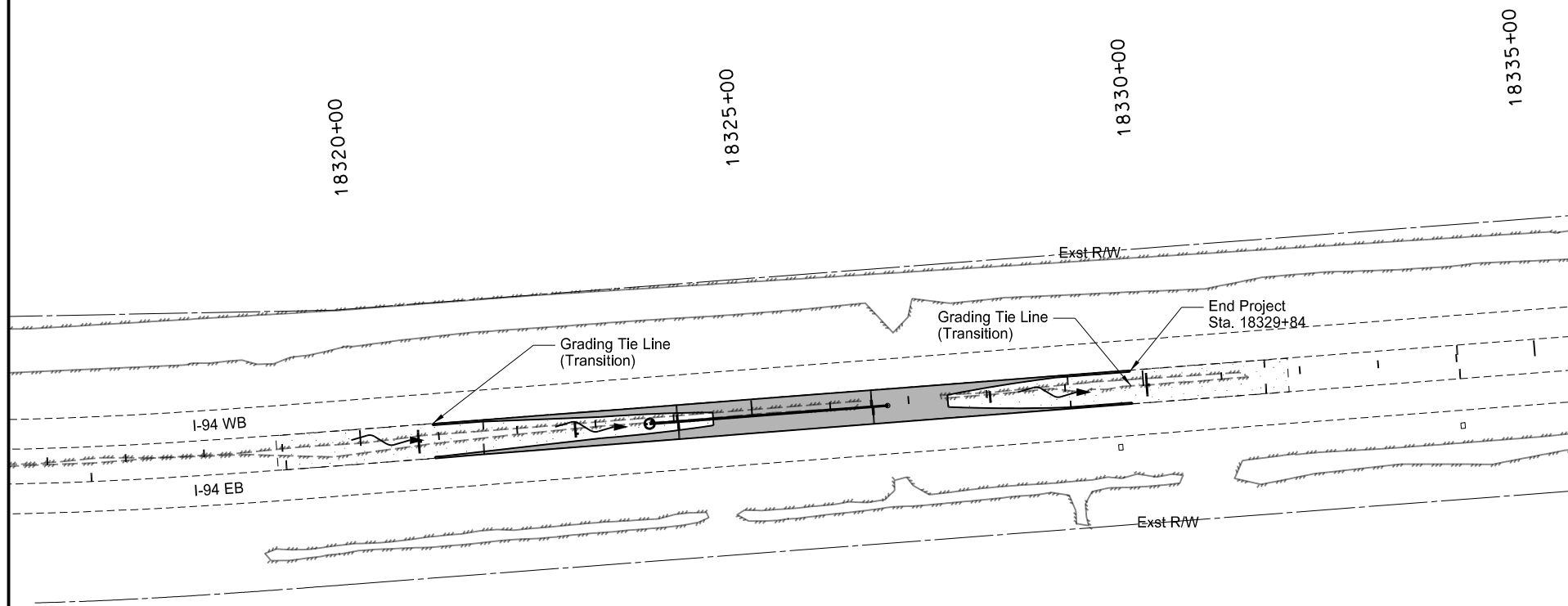


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I-94 - Horace Road Interchange
Temporary Erosion Control
West Median Crossover
Sta 18256+50 to 18265+41 (EX94)

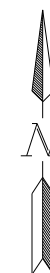
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ND	IM-8-094(094)345	76	2

SPEC	CODE	BID ITEM	QTY	UNIT
251	2000	TEMPORARY COVER CROP		
		Sta 18320+93 to Sta 18329+84	0.84	ACRE
253	0101	STRAW MULCH		
		Sta 18320+93 to Sta 18329+84	0.84	ACRE
261	0112	FIBER ROLLS 12IN		
		Sta 18320+93 to Sta 18329+84	135	LF
261	0113	REMOVE FIBER ROLLS 12IN		
		Sta 18320+93 to Sta 18329+84	135	LF



Ditch Fiber Roll Spacing	
Ditch Grade (%)	Roll Spacing (ft)
1%	200'
2%	100'
3%	65'
4%	50'
5%	40'

-  Temporary Cover Crop & Straw Mulch
-  Fiber Roll

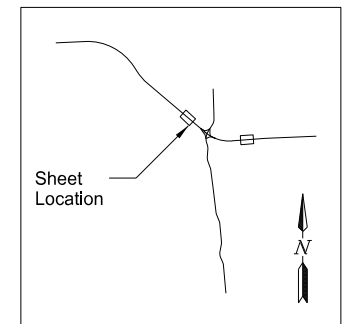
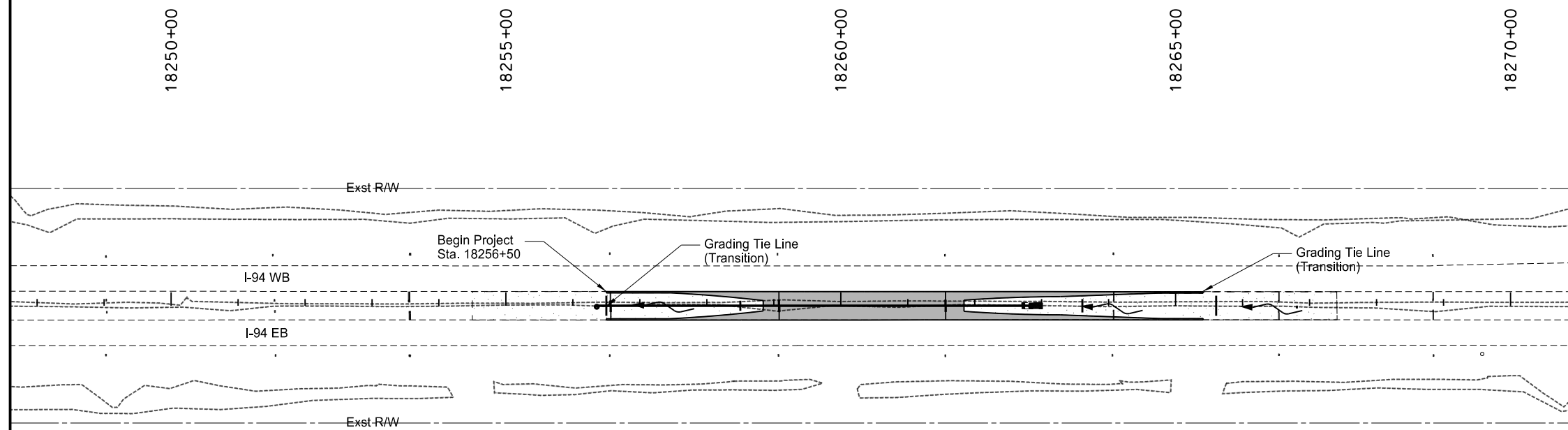





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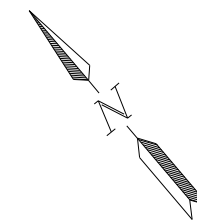
I-94 - Horace Road Interchange
 Temporary Erosion Control
 East Median Crossover
 Sta 18320+93 to Sta 18329+84 (EX94)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	77	1

SPEC	CODE	BID ITEM	QTY	UNIT
251	0200	SEEDING CLASS II Sta 18256+50 to Sta 18265+41	0.81	ACRE
253	0201	HYDRAULIC MULCH Sta 18256+50 to Sta 18265+41	0.81	ACRE
261	0112	FIBER ROLLS 12IN Sta 18256+50 to Sta 18265+41	135	LF



-  Seeding Class II & Hydraulic Mulch
-  Fiber Roll
-  Erosion Control Blanket (See Section 20)

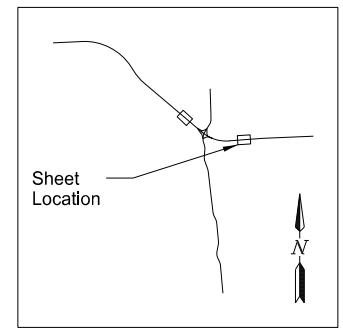
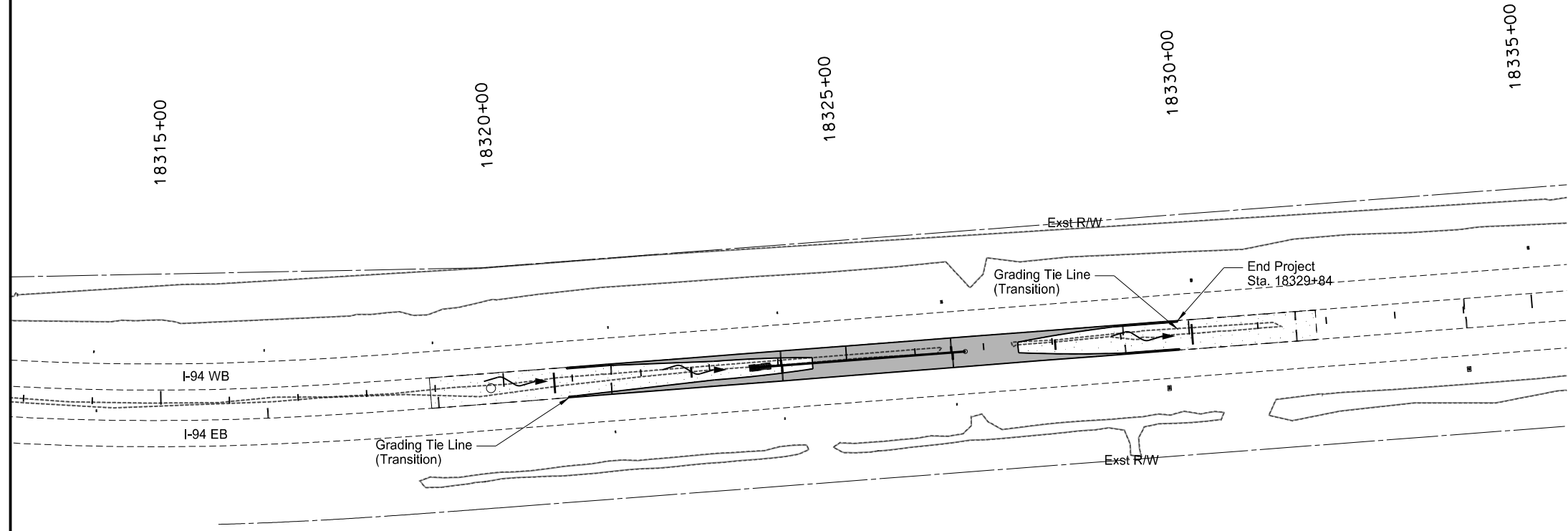





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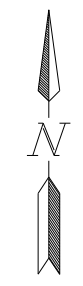
I-94 - Horace Road Interchange
 Permanent Erosion Control
 West Median Crossover
 Sta 18256+50 to Sta 18265+41 (EX94)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	77	2

SPEC	CODE	BID ITEM	QTY	UNIT
251	0200	SEEDING CLASS II		
Sta 18320+93 to Sta 18329+84			0.84	ACRE
253	0201	HYDRAULIC MULCH		
Sta 18320+93 to Sta 18329+84			0.84	ACRE
261	0112	FIBER ROLLS 12IN		
Sta 18320+93 to Sta 18329+84			115	LF



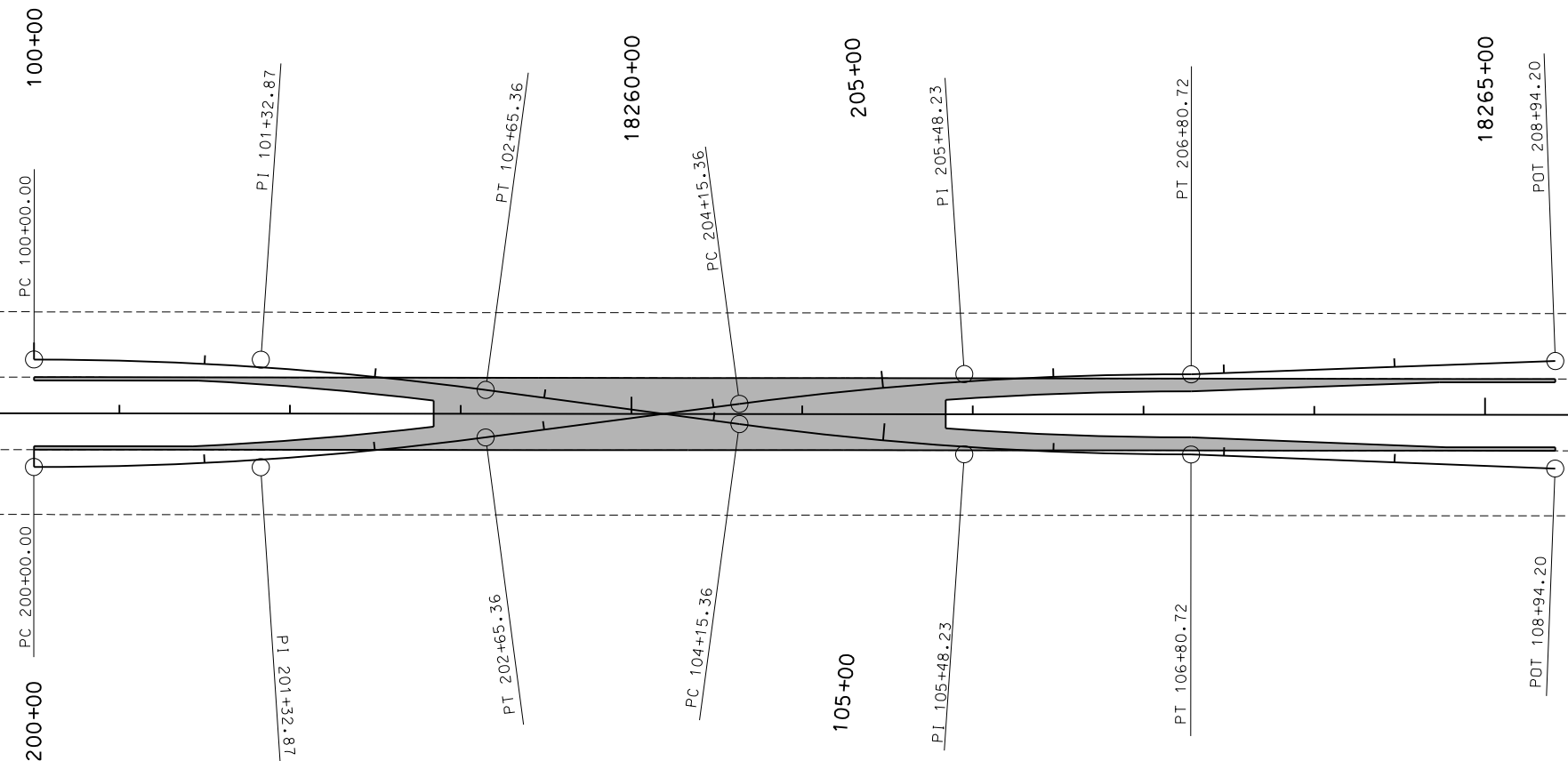
-  Seeding Class II & Hydraulic Mulch
-  Fiber Roll
-  Erosion Control Blanket (See Section 20)



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I-94 - Horace Road Interchange
Permanent Erosion Control
East Median Crossover
Sta 18320+93 to Sta 18329+84 (EX94)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	81	2



Beginning chain PRXO_W_WB description

=====
 Curve Data

 Curve PRXO_W_WB-1
 P.I. Station 101+32.87 N 454,175.2281 E 2,864,931.5194
 Delta = 7° 36' 07.21" (RT)
 Degree = 2° 51' 53.24"
 Tangent = 132.87
 Length = 265.36
 Radius = 2,000.0000
 External = 4.4091
 Long Chord = 265.1654
 Mid. Ord. = 4.3994
 P.C. Station 100+00.00 N 454,261.1607 E 2,864,830.1717
 P.T. Station 102+65.36 N 454,076.6433 E 2,865,020.6081
 C.C. N 452,735.7019 E 2,863,536.7361
 Back = S 42° 06' 12.25" E
 Ahead = S 49° 42' 19.47" E
 Chord Bear = S 45° 54' 15.86" E

Course from PT PRXO_W_WB-1 to PC PRXO_W_WB-2 S 42° 06' 12.25" E Dist 150.0000

=====
 Curve Data

 Curve PRXO_W_WB-2
 P.I. Station 105+48.23 N 453,866.7682 E 2,865,210.2675
 Delta = 7° 36' 07.21" (RT)
 Degree = 2° 51' 53.24"
 Tangent = 132.87
 Length = 265.36
 Radius = 2,000.00
 External = 4.4091
 Long Chord = 265.1654
 Mid. Ord. = 4.3994
 P.C. Station 104+15.36 N 453,965.3529 E 2,865,121.1787
 P.T. Station 106+80.72 N 453,780.8356 E 2,865,311.6152
 C.C. N 455,306.2943 E 2,866,605.2943
 Back = S 49° 42' 19.47" E
 Ahead = S 42° 06' 12.25" E
 Chord Bear = N 45° 54' 15.86" E

Course from PT PRXO_W_WB-2 to POT S 47° 33' 28.16" E Dist 213.4833

POT N 453,636.7673 E 2,865,469.1570 Sta 108+94.20

=====
 Ending chain PRXO_W_WB description

Beginning chain PRXO_W_EB description

=====

Curve Data

 Curve PRXO_W_EB-1
 P.I. Station 201+32.87 N 454,127.1761 E 2,864,890.7761
 Delta = 7° 36' 07.21" (LT)
 Degree = 2° 51' 53.24"
 Tangent = 132.87
 Length = 265.36
 Radius = 2,000.0000
 External = 4.4091
 Long Chord = 265.1654
 Mid. Ord. = 4.3994
 P.C. Station 200+00.00 N 454,213.1087 E 2,864,789.4285
 P.T. Station 202+65.36 N 454,055.4061 E 2,865,002.6011
 C.C. N 455,738.5675 E 2,866,082.8641
 Back = S 57° 18' 26.68" E
 Ahead = S 49° 42' 19.47" E
 Chord Bear = S 53° 30' 23.07" E

Course from PT PRXO_W_EB-1 to PC PRXO_W_EB-2 S 57° 18' 26.68" E Dist 150.0000

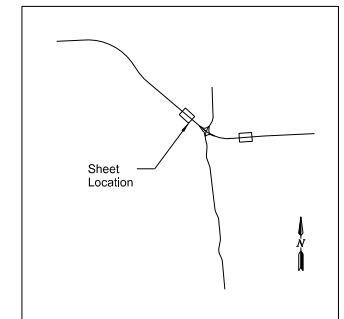
Curve Data

 Curve PRXO_W_EB-2
 P.I. Station 205+48.23 N 453,902.6165 E 2,865,240.6633
 Delta = 7° 36' 07.21" (RT)
 Degree = 2° 51' 53.24"
 Tangent = 132.87
 Length = 265.36
 Radius = 2,000.0000
 External = 4.4091
 Long Chord = 265.1654
 Mid. Ord. = 4.3994
 P.C. Station 204+15.36 N 453,974.3864 E 2,865,128.8382
 P.T. Station 206+80.72 N 453,816.6839 E 2,865,342.0109
 C.C. N 452,291.2251 E 2,864,048.5753
 Back = S 49° 42' 19.47" E
 Ahead = S 57° 18' 26.68" E
 Chord Bear = S 53° 30' 23.07" E

Course from PT PRXO_W_EB-2 to POT S 51° 51' 10.77" E Dist 213.4833

Point POT N 453,684.8192 E 2,865,509.9002 Sta 208+94.20

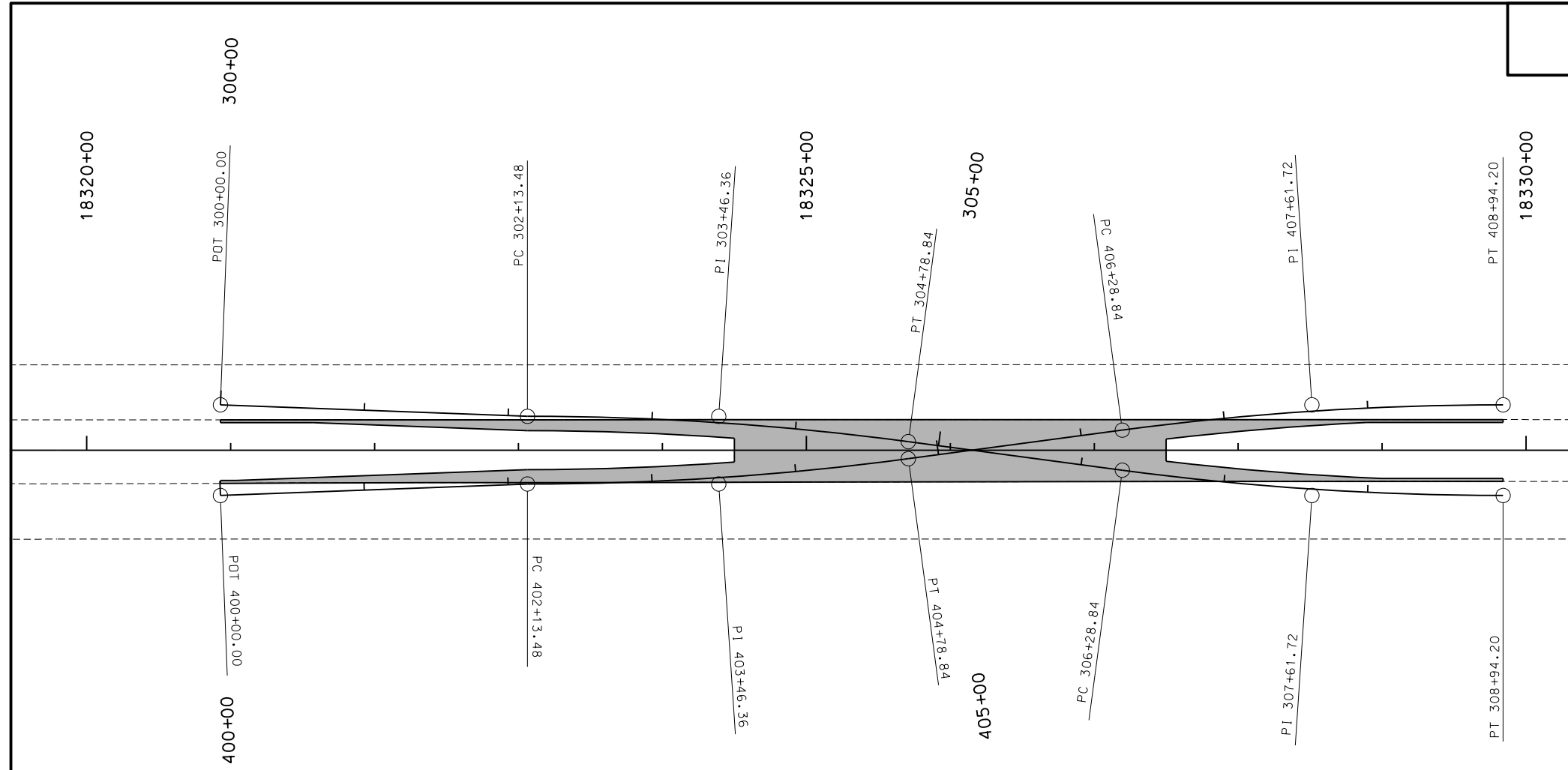
=====
 Ending chain PRXO_W_EB description



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I-94 - Horace Road Interchange
 Survey Coordinate and Curve Data
 West Median Crossover

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	81	3



Beginning chain PRXO_E_EB description
=====

Course from POT to PC PRXO_E_EB-1 N 87° 46' 31.86" E Dist 213.4833

POT N 451358.6013 E 2,870,286.5331 Sta 300+00

Curve Data

Curve XO_E_EB-1
P.I. Station 303+46.36 N 451,377.0171 E 2,870,632.3438
Delta = 7° 36' 07.21" (RT)
Degree = 2° 51' 53.24"
Tangent = 132.87
Length = 265.36
Radius = 2,000.0000
External = 4.4091
Long Chord = 265.1654
Mid. Ord. = 4.3994
P.C. Station 302+13.48 N 451,366.8877 E 2,870,499.8555
P.T. Station 304+78.84 N 451,369.5305 E 2,870,765.0077
C.C. N 449,372.7076 E 2,870,652.3215
Back = S 86° 46' 12.24" E
Ahead = N 85° 37' 40.55" E
Chord Bear = N 89° 25' 44.15" E

Course from PT PRXO_E_EB-1 to PC PRXO_E_EB-2 S 86° 46' 12.24" E Dist 150.0000

Curve Data

Curve PRXO_E_EB-2
P.I. Station 307+61.72 N 451,353.5925 E 2,871,047.4333
Delta = 7° 36' 07.11" (LT)
Degree = 2° 51' 53.24"
Tangent = 132.87
Length = 265.36
Radius = 2,000.00
External = 4.4091
Long Chord = 265.1654
Mid. Ord. = 4.3994
P.C. Station 306+28.84 N 451,361.0791 E 2,870,914.7694
P.T. Station 308+94.20 N 451,363.7219 E 2,871,179.9217
C.C. N 453,357.9020 E 2,871,027.4557
Back = N 85° 37' 40.55" E
Ahead = S 86° 46' 12.24" E
Chord Bear = N 89° 25' 44.15" E

Beginning chain PRXO_E_WB description
=====

Course from POT to PC PRXO_E_WB-1 N 83° 28' 49.24" E Dist 213.4833

POT N 451,295.7847 E 2,870,291.3358 Sta 400+00

Curve Data

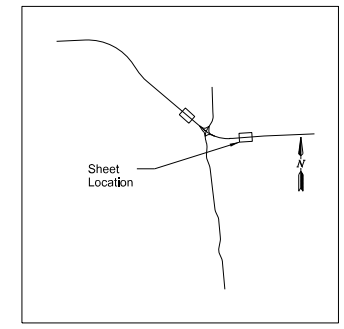
Curve PRXO_E_WB-1
P.I. Station 403+46.36 N 451,330.1539 E 2,870,635.9268
Delta = 7° 36' 07.21" (LT)
Degree = 2° 51' 53.24"
Tangent = 132.87
Length = 265.36
Radius = 2,000.0000
External = 4.4091
Long Chord = 265.1654
Mid. Ord. = 4.3994
P.C. Station 402+13.48 N 451,320.0244 E 2,870,503.4384
P.T. Station 404+78.01 N 451,357.7213 E 2,870,765.9106
C.C. N 453,314.2045 E 2,870,350.9725
Back = N 78° 01' 33.33" E
Ahead = N 85° 37' 40.55" E
Chord Bear = N 81° 49' 36.94" E

Course from PT PRXO_E_WB-1 to PC PRXO_E_WB-2 N 78° 01' 33.33" E Dist 150.0000

Curve Data

Curve PRXO_E_WB-2
P.I. Station 407+61.72 N 451,416.4091 E 2,871,042.6307
Delta = 7° 36' 07.21" (RT)
Degree = 2° 51' 53.24"
Tangent = 132.87
Length = 265.36
Radius = 2,000.0000
External = 4.4091
Long Chord = 265.1654
Mid. Ord. = 4.3994
P.C. Station 406+28.84 N 451,388.8417 E 2,870,912.6468
P.T. Station 408+94.20 N 451,426.5386 E 2,871,175.1190
C.C. N 449,432.3585 E 2,871,327.5849
Back = N 85° 37' 40.55" E
Ahead = N 78° 01' 33.33" E
Chord Bear = N 81° 49' 36.94" E

Ending chain PRXO_E_WB description
=====



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I-94 - Horace Road Interchange
Survey Coordinate and Curve Data
East Median Crossover

18255+00

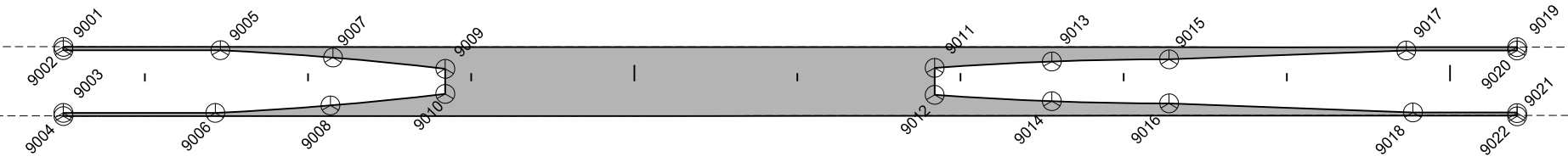
18260+00

18265+00

Exst R/W

I-94 WB

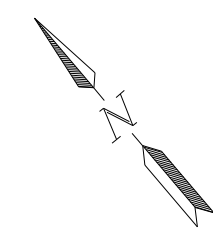
I-94 EB



Exst R/W

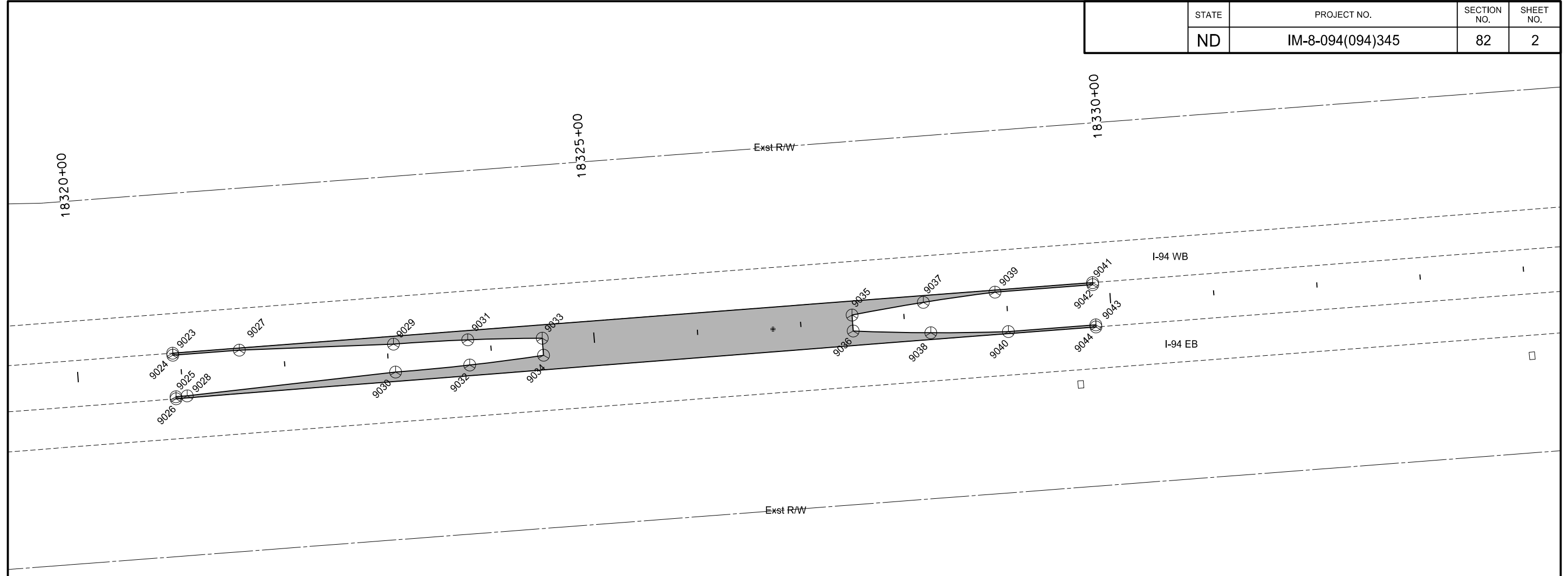
West Median Crossover
Stations and offsets based off EX94 alignment

Point	Northing	Easting	Station	Offset	Description
9001	454253.28	2864823.49	18256+50.00	21.17 LT	WEST END LT
9002	454251.76	2864822.20	18256+50.00	19.17 LT	WEST END HEADER LT
9003	454222.40	2864797.31	18256+50.00	19.32 RT	WEST END HEADER RT
9004	454220.87	2864796.01	18256+50.00	21.32 RT	WEST END RT
9005	454189.52	2864895.60	18257+46.23	19.17 LT	WEST BEGIN CURVE LT
9006	454162.19	2864868.32	18257+43.10	19.32 RT	WEST BEGIN CURVE RT
9007	454141.41	2864945.31	18258+15.26	14.63 LT	WEST MID CURVE LT
9008	454120.01	2864925.12	18258+13.70	14.76 RT	WEST MID CURVE RT
9009	454091.60	2864993.32	18258+84.10	7.68 LT	WEST END CURVE LT
9010	454079.88	2864983.38	18258+84.10	7.68 RT	WEST END CURVE RT
9011	453898.06	2865222.54	18261+84.10	8.30 LT	EAST BEGIN CURVE LT
9012	453885.39	2865211.80	18261+84.10	8.30 RT	EAST BEGIN CURVE RT
9013	453854.58	2865279.85	18262+55.92	12.20 LT	EAST MID CURVE LT
9014	453835.97	2865264.07	18262+55.92	12.20 RT	EAST MID CURVE RT
9015	453809.06	2865335.54	18263+27.85	13.50 LT	EAST END CURVE/BEGIN TAPER LT
9016	453788.46	2865318.08	18263+27.85	13.50 RT	EAST END CURVE/BEGIN TAPER RT
9017	453719.16	2865449.99	18264+73.28	18.95 LT	EAST END TAPER LT
9018	453687.51	2865428.48	18264+77.34	19.11 RT	EAST END TAPER RT
9019	453676.78	2865503.08	18265+41.18	20.95 LT	EAST END LT
9020	453675.25	2865501.79	18265+41.18	18.95 LT	EAST END HEADER LT
9021	453646.22	2865477.17	18265+41.18	19.11 RT	EAST END HEADER RT
9022	453644.70	2865475.88	18265+41.18	21.11 RT	EAST END RT



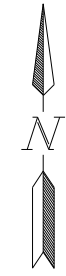
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I-94 - Horace Road Interchange
Survey Data Layout
West Median Crossover
Sta 18256+50 to 18265+41 (EX94)



East Median Crossover
Stations and offsets based off EX94 alignment

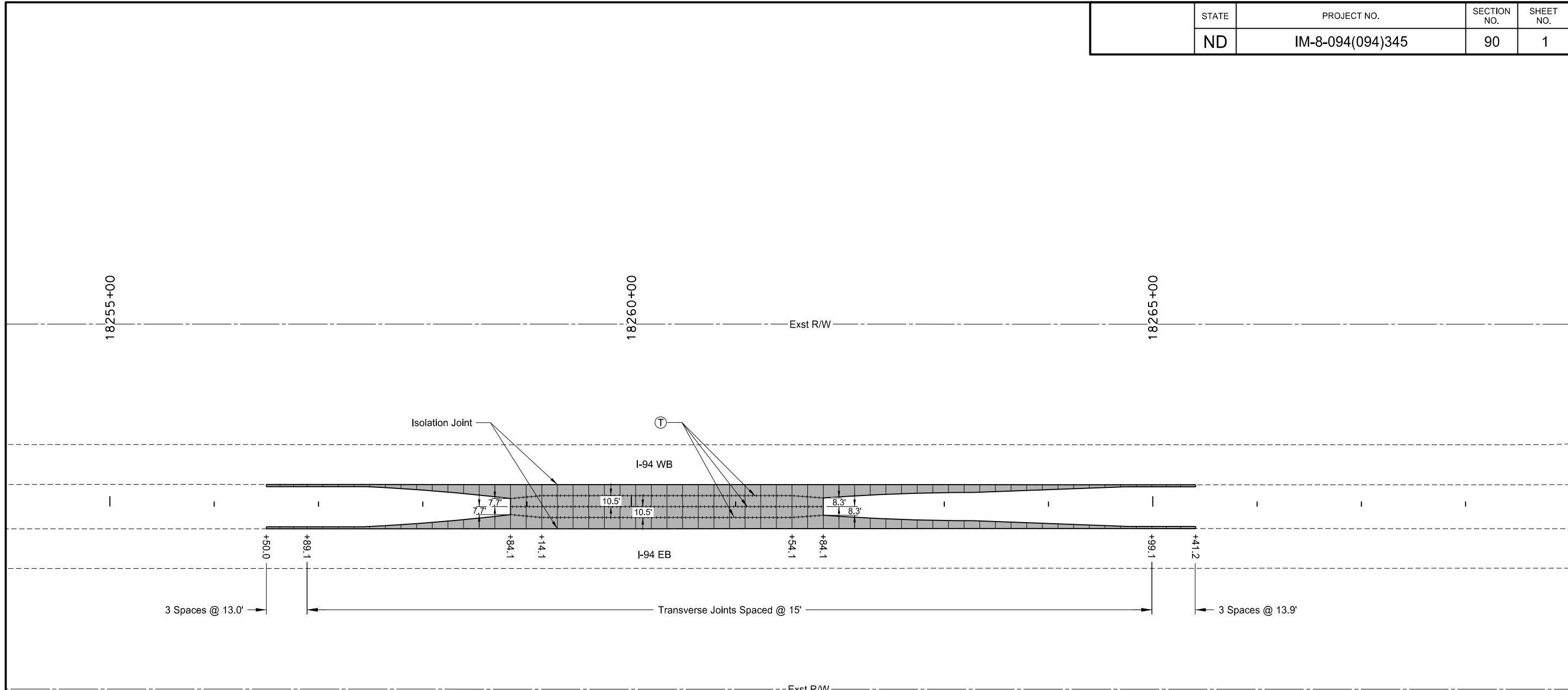
Point	Northing	Easting	Station	Offset	Description
9023	451348.22	2870287.33	18320+92.93	21.08 LT	WEST END LT
9024	451346.22	2870287.48	18320+92.93	19.08 LT	WEST END HEADER LT
9025	451306.16	2870290.54	18320+92.93	21.09 RT	WEST END HEADER RT
9026	451304.17	2870290.69	18320+92.93	23.09 RT	WEST END RT
9027	451351.13	2870351.73	18321+57.37	19.08 LT	WEST BEGIN TAPER LT
9028	451307.00	2870301.45	18231+03.87	21.09 RT	WEST BEGIN TAPER RT
9029	451356.92	2870500.62	18323+06.26	13.50 LT	WEST END TAPER/BEGIN CURVE LT
9030	451330.00	2870502.68	18323+06.26	13.50 RT	WEST END TAPER/BEGIN CURVE RT
9031	451361.10	2870572.43	18323+78.18	12.20 LT	WEST MID CURVE LT
9032	451336.77	2870574.29	18323+78.18	12.20 RT	WEST MID CURVE RT
9033	451362.69	2870644.35	18324+50.01	9.30 LT	WEST END CURVE LT
9034	451346.14	2870645.61	18324+50.01	8.30 RT	WEST END CURVE RT
9035	451384.95	2870943.52	18327+50.01	7.68 LT	EAST BEGIN CURVE LT
9036	451369.62	2870944.69	18327+50.01	7.68 RT	EAST BEGIN CURVE RT
9037	451397.24	2871012.40	18328+19.63	14.69 LT	EAST MID CURVE LT
9038	451367.92	2871019.65	18329+24.62	15.09 RT	EAST MID CURVE RT
9039	451407.11	2871081.68	18328+89.46	19.25 LT	EAST END CURVE LT
9040	451369.04	2871094.62	18328+99.45	19.70 RT	EAST END CURVE RT
9041	451416.32	2871175.90	18329+84.11	21.25 LT	EAST END LT
9042	451414.32	2871176.05	18329+84.11	19.25 LT	EAST END HEADER LT
9043	451375.49	2871179.02	18329+84.11	19.70 RT	EAST END HEADER RT
9044	451373.49	2871179.17	18329+84.11	21.70 RT	EAST END RT




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I-94 - Horace Road Interchange
Survey Data Layout
East Median Crossover
Sta 18320+93 to 18329+84 (EX94)

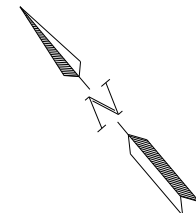
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	90	1



Legend

- +++++ Longitudinal Joint (Tied)
- Transverse Joint (Non-Doweled)
- Ⓟ Tied Joint - Hot Poured Seal
-  7.5" Non-Doweled Concrete w/ 8" Aggregate Base Course CL 5

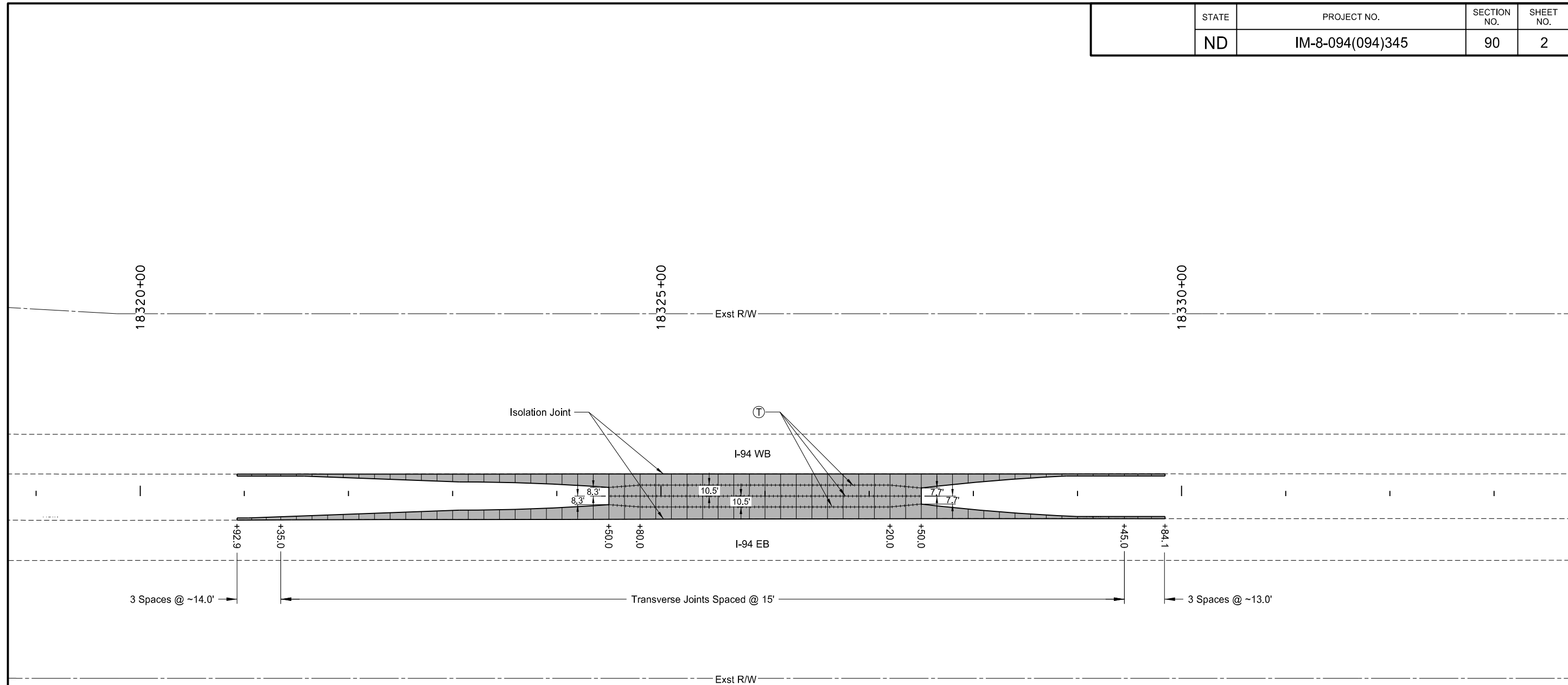
Notes:
 1. See Section 60 for Paving Quantities
 2. See Section 20 for Jointing Details



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I-94 - Horace Road Interchange
 Paving Layout
 West Median Crossover
 Sta 18256+50 to 18265+41 (EX94)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	90	2



Legend

+++++	Longitudinal Joint (Tied)
---	Transverse Joint (Non-Doweled)
Ⓧ	Tied Joint - Hot Poured Seal
	7.5" Non-Doweled Concrete w/ 8" Aggregate Base Course CL 5

Notes:
 1. See Section 60 for Paving Quantities
 2. See Section 20 for Jointing Details

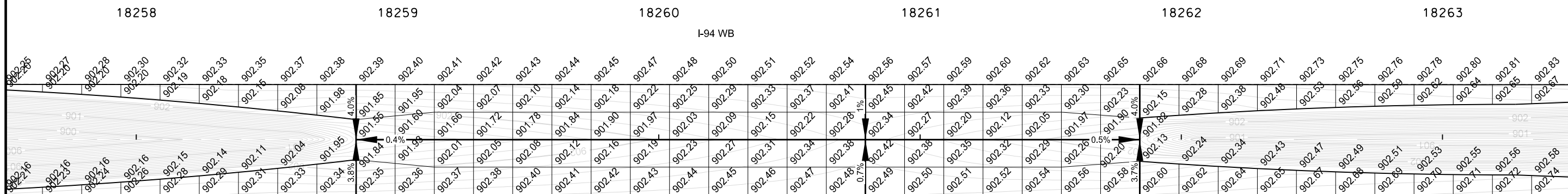


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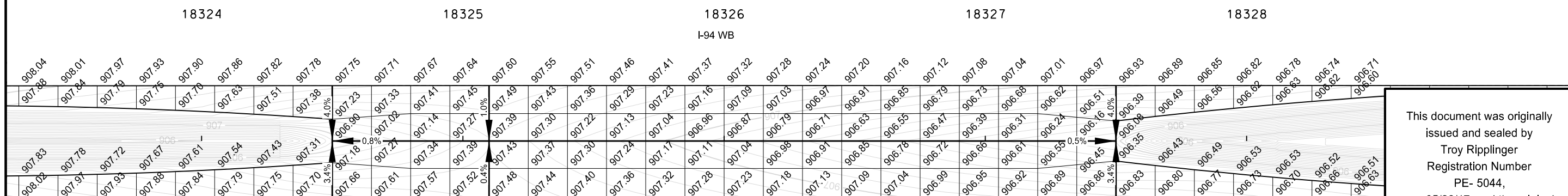
I-94 - Horace Road Interchange
 Paving Layout
 East Median Crossover
 Sta 18320+93 to 18329+84 (EX94)

West Median Crossover

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	90	3



East Median Crossover



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I-94 - Horace Road Interchange
 Paving Elevations
 West and East Median Crossover

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
D3-36	36"x6"	STREET NAME SIGN (Sign and installation only)		6	
E5-1-48	48"x48"	EXIT RAMP	2	28	56
G20-1-60	60"x24"	ROAD WORK NEXT ___ MILES		34	
G20-1b-60	60"x24"	WORK IN PROGRESS/ NO WORK IN PROGRESS (Sign and installation only)		26	
G20-2-48	48"x24"	END ROAD WORK	7	19	133
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)		18	
G20-10-108	108"x48"	CONTRACTOR SIGN		64	
G20-50a-72	72"x36"	ROAD WORK NEXT ___ MILES RT & LT ARROWS		37	
G20-52a-72	72"x24"	ROAD WORK NEXT ___ MILES RT or LT ARROW		30	
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE \$80 WHEN WORKERS PRESENT	4	59	236
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)		10	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)		10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)		10	
M3-1-24	24"x12"	NORTH (Mounted on route marker post)		7	
M3-2-24	24"x12"	EAST (Mounted on route marker post)		7	
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)		7	
M3-4-24	24"x12"	WEST (Mounted on route marker post)		7	
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)		7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT		15	
M4-10-48	48"x18"	DETOUR ARROW RIGHT or LEFT		23	
M5-1-21	21"x15"	ARROW AHD AND RT or LT (Mounted on route marker post)		7	
M5-2-21	21"x15"	ARROW AHD UP & RT or LT (Mounted on route marker post)		7	
M6-1-21	21"x15"	ARROW RT or LT (Mounted on route marker post)		7	
M6-2-21	21"x15"	ARROW UP & RT or LT (Mounted on route marker post)		7	
M6-3-21	21"x15"	ARROW AHD (Mounted on route marker post)		7	
R1-1-48	48"x48"	STOP	4	32	128
R1-1a-18	18"x18"	STOP and SLOW PADDLE Back to Back	2	5	10
R1-2-60	60"x60"	YIELD	3	29	87
R2-1-48	48"x60"	SPEED LIMIT ___	19	39	741
R2-1a-24	24"x18"	MINIMUM FEE \$80 (Mounted on Speed Limit post)	7	10	70
R3-7-48	48"x48"	LEFT or RIGHT LANE MUST TURN LEFT or RIGHT		35	
R4-1-48	48"x60"	DO NOT PASS	4	39	156
R4-7-48	48"x60"	KEEP RIGHT SYMBOL		39	
R5-1-48	48"x48"	DO NOT ENTER		35	
R6-1-36	36"x12"	ONE WAY RIGHT or LEFT		13	
R7-1-12	12"x18"	NO PARKING		11	
R10-6-24	24"x36"	STOP HERE ON RED		16	
R11-2-48	48"x30"	ROAD CLOSED		28	
R11-2a-48	48"x30"	STREET CLOSED		28	
R11-3a-60	60"x30"	ROAD CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY		31	
R11-3c-60	60"x30"	STREET CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY		31	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC		31	
W1-3-48	48"x48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW		35	
W1-4-48	48"x48"	RIGHT or LEFT REVERSE CURVE ARROW	1	35	35
W1-4b-48	48"x48"	DOUBLE RIGHT or LEFT REVERSE CURVE ARROW		35	
W1-6-48	48"x24"	LARGE ARROW		26	
W3-1-48	48"x48"	STOP AHEAD SYMBOL		35	
W3-3-48	48"x48"	SIGNAL AHEAD SYMBOL		35	
W3-4-48	48"x48"	BE PREPARED TO STOP		35	
W3-5-48	48"x48"	SPEED REDUCTION AHEAD	4	35	140
W4-2-48	48"x48"	RIGHT or LEFT LANE TRANSITION SYMBOL	4	35	140
W5-1-48	48"x48"	ROAD NARROWS		35	
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE		35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW		35	
W6-3-48	48"x48"	TWO WAY TRAFFIC SYMBOL		35	
W8-1-48	48"x48"	BUMP		35	
W8-3-48	48"x48"	PAVEMENT ENDS		35	
W8-7-48	48"x48"	LOOSE GRAVEL		35	
W8-9a-48	48"x48"	SHOULDER DROP-OFF	1	35	35
W8-11-48	48"x48"	UNEVEN LANES		35	
W8-12-48	48"x48"	NO CENTER STRIPE		35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY		35	
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or ___ FT.	2	35	70
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or ___ FT.	2	35	70
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY		35	
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL		35	
W12-2-48	48"x48"	LOW CLEARANCE SYMBOL		35	
W13-1-24	24"x24"	___ MPH ADVISORY SPEED PLATE (Mounted on warning sign post)		11	
W13-4-48	48"x60"	RAMP ARROW		39	
W14-3-48	48"x36"	NO PASSING ZONE		23	
W20-1-48	48"x48"	ROAD WORK AHEAD or ___ FT or ___ MILE	4	35	140
W20-2-48	48"x48"	DETOUR AHEAD or ___ FT		35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or ___ FT.		35	
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or ___ FT.		35	
W20-5-48	48"x48"	RIGHT or LEFT LANE CLOSED AHEAD or ___ FT.	4	35	140
W20-7a-48	48"x48"	FLAGGING SYMBOL	2	35	70
W20-7k-24	24"x18"	___ FEET (Mounted on warning sign post)		10	
W20-8-48	48"x48"	STREET CLOSED		35	
W20-51-48	48"x48"	EQUIPMENT WORKING		35	
W20-52-54	54"x12"	NEXT ___ MILES (Mounted on warning sign post)		12	
W21-1a-48	48"x48"	WORKERS SYMBOL		35	
W21-2-48	48"x48"	FRESH OIL		35	

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or ___ FT		35	
W21-5-48	48"x48"	SHOULDER WORK	1	35	35
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED		35	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or ___ FT.		35	
W21-6a-48	48"x48"	SURVEY CREW AHEAD		35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or ___ FT.		35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY		35	
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK		35	
	24"x24"	TAKE TURNS (6" D letters) (Mounted on stop sign post)		11	

SPECIAL SIGNS

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
E5-1-48	48"x48"	EXIT RAMP	2	28	56

SPEC & CODE

SPEC & CODE	DESCRIPTION	TOTAL UNITS
704-1000	TRAFFIC CONTROL SIGNS	2548

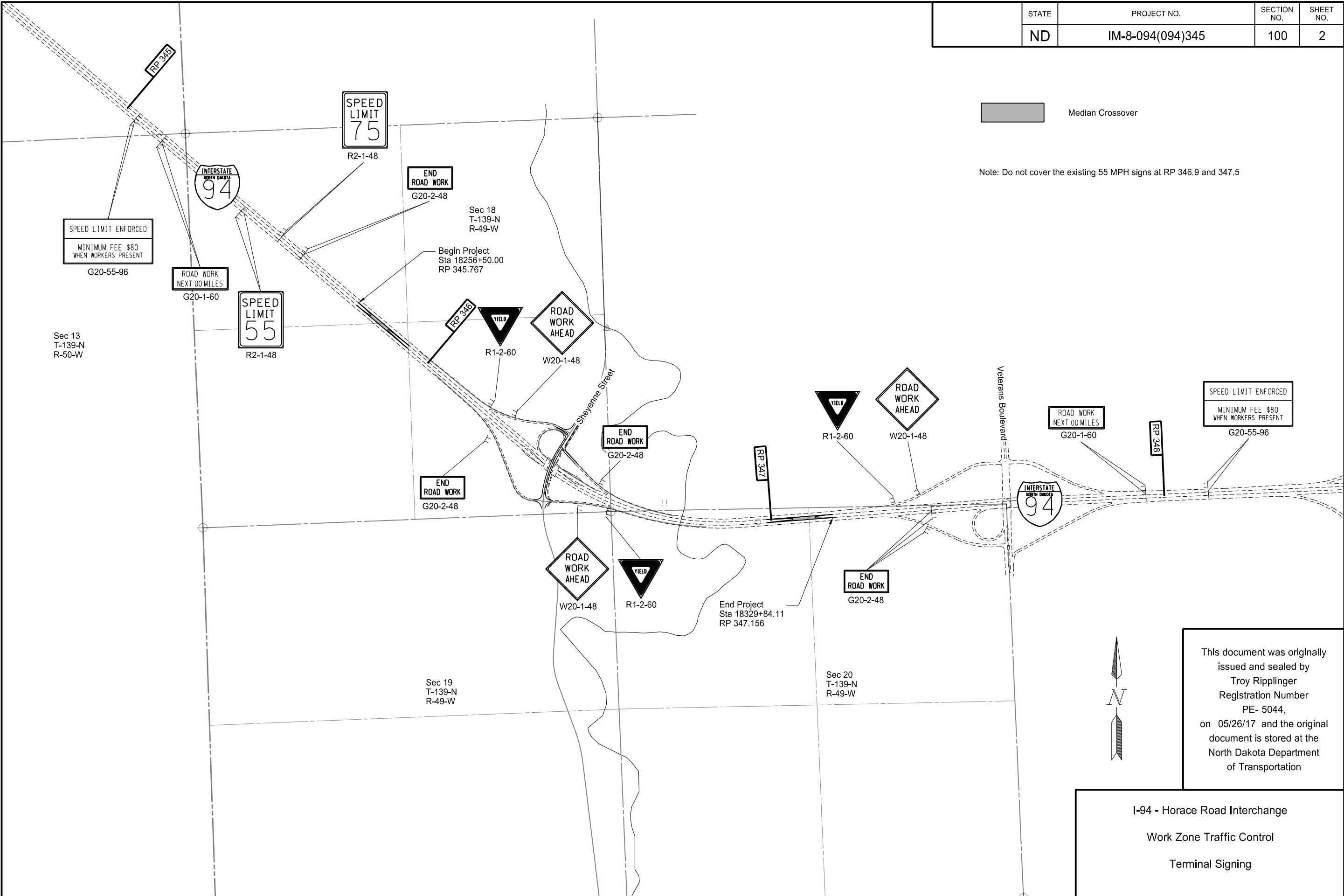
SPEC & CODE	DESCRIPTION	UNIT	QUANTITY
704-0100	FLAGGING	MHR	500
704-1041	ATTENUATION DEVICE-TYPE B-55	EACH	
704-1043	ATTENUATION DEVICE-TYPE B-65	EACH	
704-1044	ATTENUATION DEVICE-TYPE B-70	EACH	
704-1050	TYPE I BARRICADES	EACH	
704-1051	TYPE II BARRICADES	EACH	
704-1052	TYPE III BARRICADES	EACH	7
704-1060	DELINEATOR DRUMS	EACH	167
704-1065	TRAFFIC CONES	EACH	
704-1067	TUBULAR MARKERS	EACH	182
704-1070	DELINEATOR	EACH	
704-1072	FLEXIBLE DELINEATORS	EACH	30
704-1081	VERTICAL PANELS - BACK TO BACK	EACH	
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH	
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH	
704-1087	SEQUENCING ARROW PANEL - TYPE C	EACH	2
704-1088	SEQUENCING ARROW PANEL - TYPE C - CROSSOVER	EACH	
704-1095	TYPE B FLASHERS	EACH	
704-1500	OBLITERATION OF PVMT MK	SF	
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF	
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH	
762-0200	RAISED PAVEMENT MARKERS	EACH	
762-0420	SHORT TERM 4IN LINE - TYPE R	LF	1272
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF	
772-2110	FLASHING BEACON - POST MOUNTED	EACH	

NOTE:
If additional signs are required, units will be calculated using the formula from Section III-19.06 of the Design Manual.
<http://www.dot.nd.gov/>

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Traffic Control Devices List

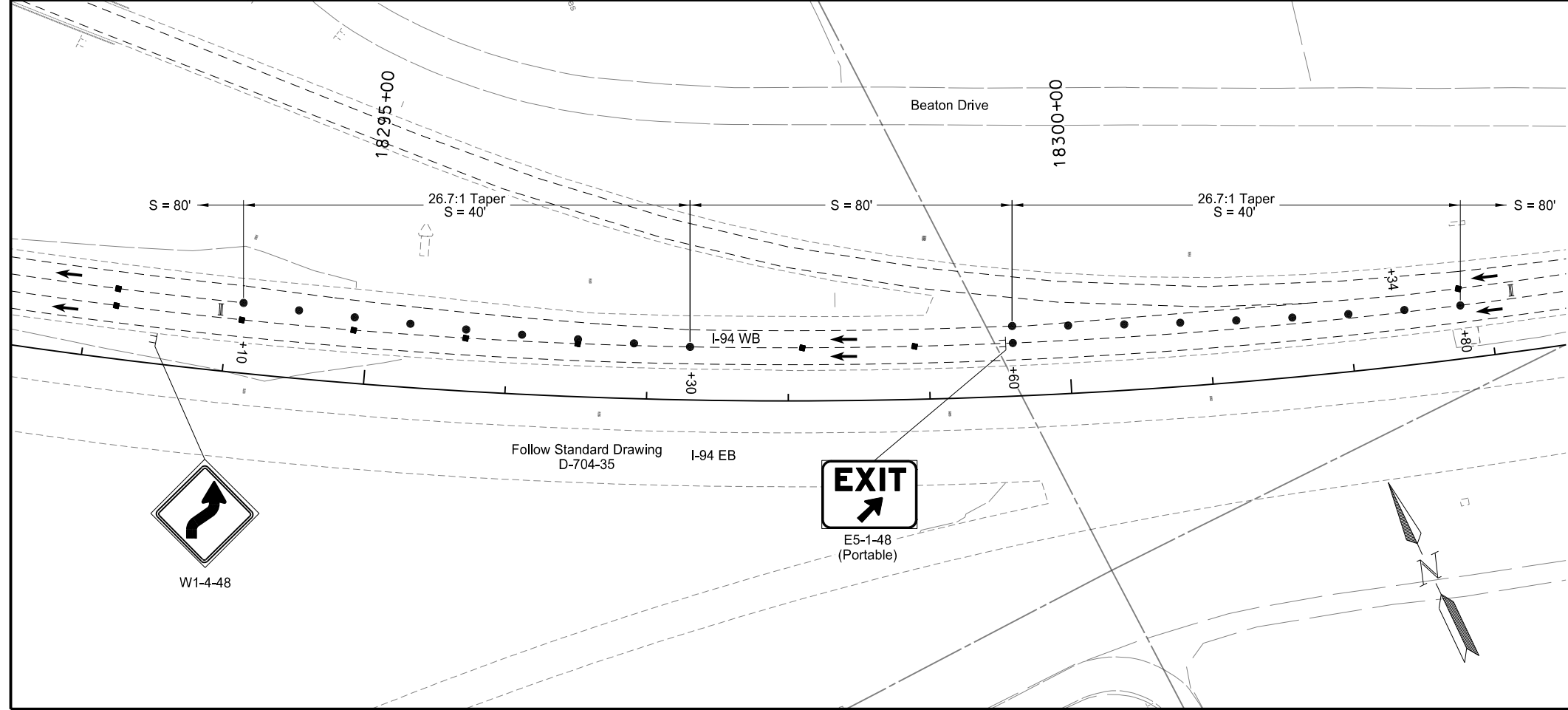
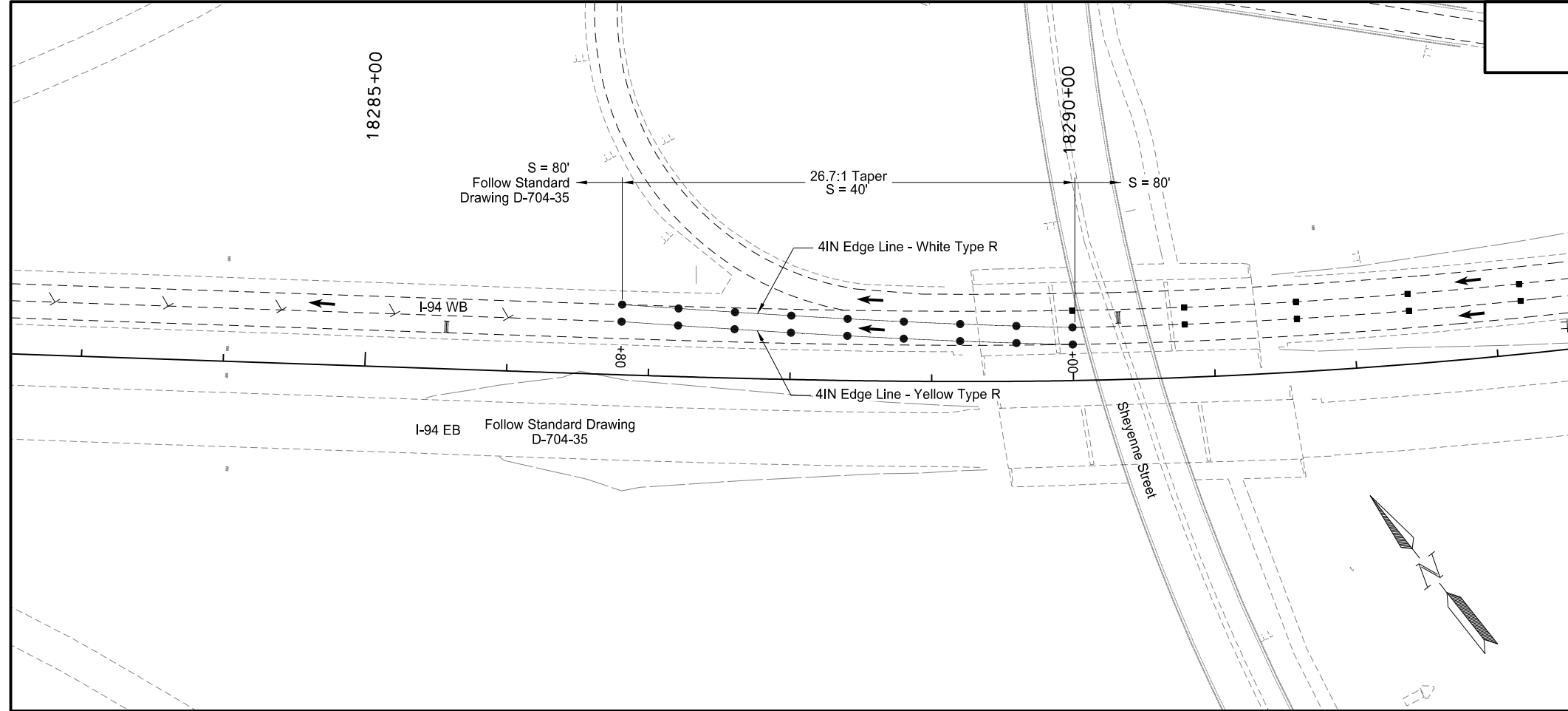
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	100	2



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I-94 - Horace Road Interchange
 Work Zone Traffic Control
 Terminal Signing

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	100	3

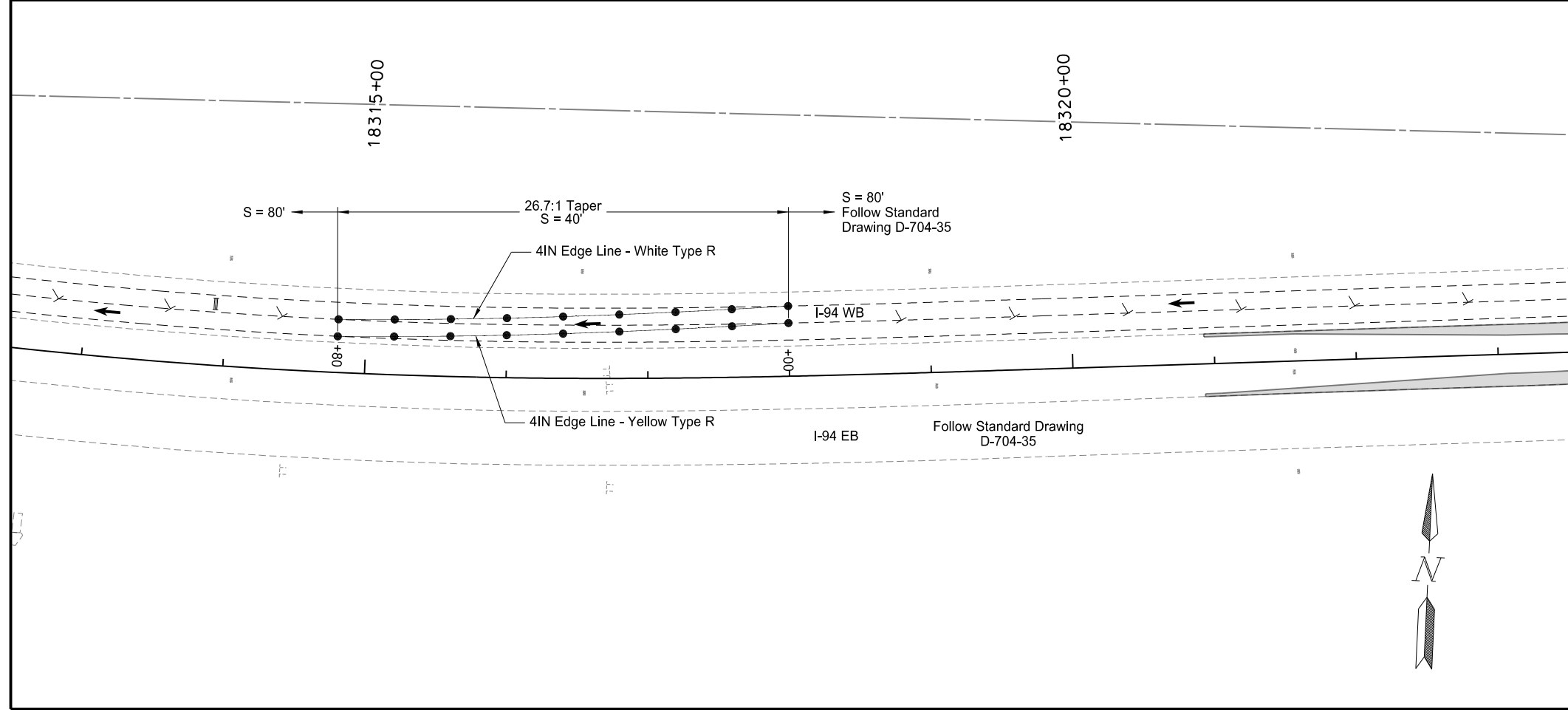
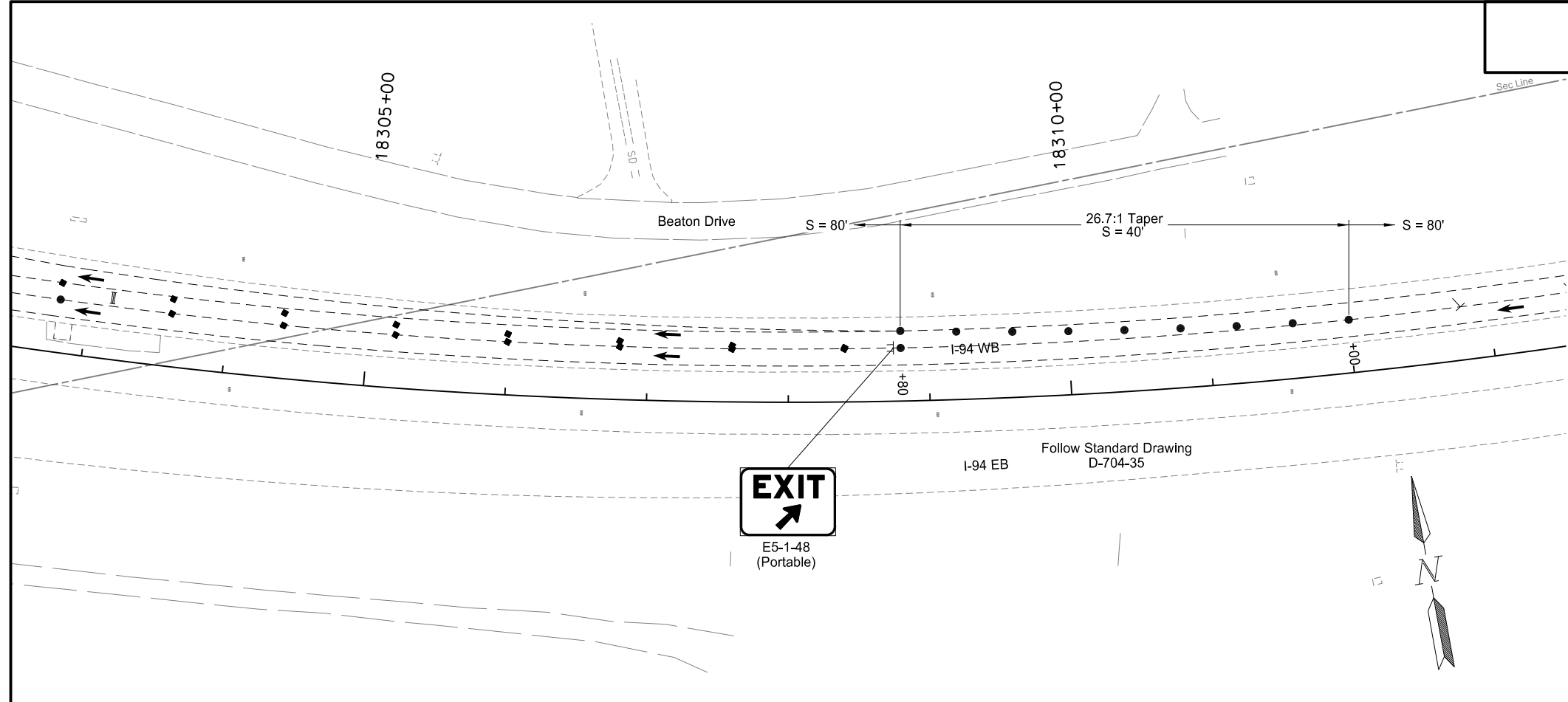


LEGEND	
	Tubular Marker
	Delineator Drum
	Flexible Delineators
	Sign
	Type III Barricade
	Short Term 4IN PvmT Mk - Type R
	Existing PvmT Mk

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I-94 - Horace Road Interchange
 Work Zone Traffic Control
 WB Lane Shifts at Sheyenne Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	100	4



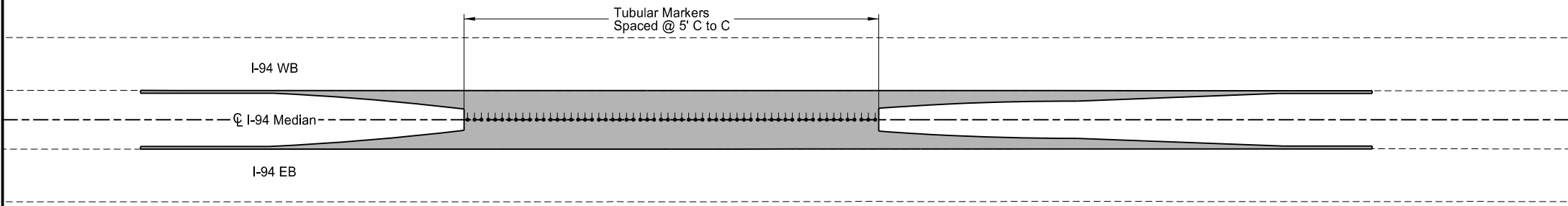
LEGEND	
	Tubular Marker
	Delineator Drum
	Flexible Delineators
	Sign
	Type III Barricade
	Short Term 4IN Pvmt Mk - Type R
	Existing Pvmt Mk

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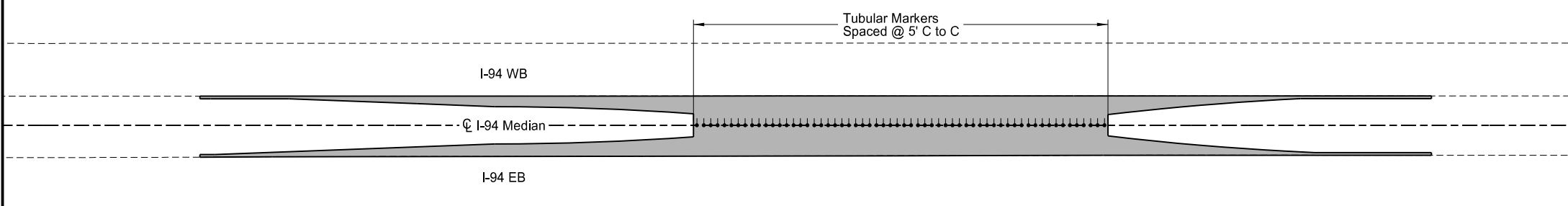
I-94 - Horace Road Interchange
 Work Zone Traffic Control
 WB Lane Shifts at Sheyenne Interchange

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-8-094(094)345	100	5

SPEC	CODE	BID ITEM	QTY	UNIT
704	1067	TUBULAR MARKERS		
		West Median Crossover	60	EA
		East Median Crossover	60	EA



West Median Crossover



East Median Crossover

- Notes:
1. 36 lbs of weight for each tubular marker
 2. Refer to Section 6 for additional information.

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I-94 - Horace Road Interchange
Work Zone Traffic Control
Tubular Markers Detail