



# North Dakota Department of Transportation

Grant Levi, P.E.  
*Director*

Jack Dalrymple  
*Governor*

April 2, 2015

## ADDENDUM 1 – JOB 32

TO: All prospective bidders on project HRR-8-200(020)951, Job No. 32 scheduled for the April 10, 2015 bid opening.

The following plan and proposal revisions shall be made:

### Plan Revisions:

**Remove and replace sheets 2-1, 8-1, 75-7, 75-13, 130-1 thru 5, 170-1 and 170-16 thru 19 with the enclosed sheets revised 3/24/2015 and 3/31/2015. Add Sheet 170-16A and Standard Drawings D-764-7, D-764-10, D-764-20, and D-764-21.**

#### Sheet 2-1:

Revised the List of Standard Drawings to include; D-764-7 Slotted Rail Terminal, D-764-10 Thrie Beam Transition to Double Box Beam Retrofit, D-764-20 Short Term End Treatment for Bridges (Attenuation Device Method), D-764-21 Short Term End Treatment for Bridges (Guardrail Method).

#### Sheet 8-1:

Item 602 1210 BRIDGE END POST MODIFICATION; 4 EA was added.  
Item 624 3002 DOUBLE BOX BEAM RAIL RETROFIT – ERAIL; quantity increased from 444 LF to 447.2LF.  
Item 764 0131 W-BEAM GUARDRAIL; quantity increased from 477.7 LF to 540 LF.  
Item 764 0145 W-BEAM GUARDRAIL END TERMINAL; quantity increased from 4 EA to 5 EA.  
Item 764 0150 REMOVE & RESET GUARDRAIL; 425 LF was deleted.  
Item 764 0151 REMOVE W-BEAM GUARDRAIL & POSTS; quantity increased from 175 LF to 600 LF.  
Item 764 1050 RESET W-BEAM GUARDRAIL; 375 LF was added.  
Item 764 1059 RESET W-BEAM GUARDRAIL END TERMINAL; quantity decreased from 4 EA to 3 EA.  
Item 764 2081 REMOVE END TREATMENT & TRANSITION; 8 EA added.

#### Sheet 75-7:

Revised ND 200A stationing to the correct station.

#### Sheet 75-13:

Revised ND 200A stationing to the correct station.

Sheet 130-1 & 2:

Revised Guardrail Notes.

Added labels for the guardrail and end terminals to be reset and dimension for the curved rail.

Sheet 130-3 & 4:

Revised Guardrail Notes.

Added labels for the guardrail and end terminals to be reset and dimension for the curved rail.

Offset dimensions were revised by 0.04' to reflect connection plate.

Sheet 130-5:

Quantity tables and notes were revised based on bid item revisions (see above notes for section 8-1).

Sheet 170-1:

Added Bridge Engineer Signature to the sheet.

Sheet 170-16:

Item 602 1210 BRIDGE END POST MODIFICATION; 4 EA was added to the bridge bid items.

Item 624 3002 DOUBLE BOX BEAM RAIL RETROFIT – ERAIL; quantity increased from 444 LF to 447.2LF in the bridge bid items.

Sheet 170-16A:

End Post Modification Details Sheet added.

Sheet 170-17 & 18:

Revised End Post Detail.

Sheet 170-19:

Removed Bottom rail Connection Detail.

Revised E-rail Retrofit quantity to 447.2 LF.

Sheet D-764-7:

Slotted Rail Terminal Standard Drawing Added.

Sheet D-764-10:

Thrie Beam Transition to Double Box Beam Retrofit Standard Drawing Added.

Sheet D-764-20:

Short Term End Treatment for Bridges (Attenuation Device Method) Standard Drawing Added.

Sheet D-764-21:

Short Term End Treatment for Bridges (Guardrail Method) Standard Drawing Added.

Request for Proposal Revision:

**Remove and replace pages 9 thru 12 of 14 from the Proposal pages located at the beginning of the Request for Proposal, with the enclosed pages revised 3/31/2015.**

Page 9 of 14:

Item 602 1210 BRIDGE END POST MODIFICATION; 4 EA was added.

Item 624 3002 DOUBLE BOX BEAM RAIL RETROFIT – ERAIL; quantity increased from 444 LF to 447.2LF.

Page 11 of 14:

Item 764 0131 W-BEAM GUARDRAIL; quantity increased from 477.7 LF to 540 LF.

Item 764 0145 W-BEAM GUARDRAIL END TERMINAL; quantity increased from 4 EA to 5 EA.

Item 764 0150 REMOVE & RESET GUARDRAIL; 425 LF was deleted.

Item 764 0151 REMOVE W-BEAM GUARDRAIL & POSTS; quantity increased from 175 LF to 600 LF.

Item 764 1050 RESET W-BEAM GUARDRAIL; 375 LF was added.

Item 764 1059 RESET W-BEAM GUARDRAIL END TERMINAL; quantity decreased from 4 EA to 3 EA.

Page 12 of 14:

Item 764 2081 REMOVE END TREATMENT & TRANSITION; 8 EA added.

Page 9-12 of 14:

Items shifted due to added items.

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.



*For* CAL J. GENDREAU – CONSTRUCTION SERVICES ENGINEER

80:plm

Enclosure

BID ITEMS

Project: HRR-8-200(020)951 (PCN-16823)

**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
033	401	0050	TACK COAT	GAL	16,666.				
034	401	0060	PRIME COAT	GAL	9,992.				
035	401	0160	BLOTTER MATERIAL CL 44	TON	348.				
036	411	0100	MILLING PAVEMENT SURFACE	TON	7,776.				
037	430	0143	RAP - SUPERPAVE FAA 43	TON	30,782.				
038	430	1000	CORED SAMPLE	EA	187.				
039	430	5828	PG 58-28 ASPHALT CEMENT	TON	1,264.				
040	602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	632.				
041	602	1210	BRIDGE END POST MODIFICATION	EA	4.				
042	612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	86,400.				
043	624	3002	DOUBLE BOX BEAM RAIL RETROFIT - E-RAIL	LF	447.200				
044	702	0100	MOBILIZATION	L SUM	1.				
045	704	0100	FLAGGING	MHR	540.				
046	704	1000	TRAFFIC CONTROL SIGNS	UNIT	3,928.				
047	704	1052	TYPE III BARRICADE	EA	10.				
048	704	1060	DELINEATOR DRUMS	EA	75.				

BID ITEMS

Project: HRR-8-200(020)951 (PCN-16823)

**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
049	704	1067	TUBULAR MARKERS	EA	88.				
050	704	1080	STACKABLE VERTICAL PANELS	EA	15.				
051	704	1081	VERTICAL PANELS-BACK TO BACK	EA	46.				
052	704	1185	PILOT CAR	HR	444.				
053	704	1500	OBLITERATION OF PAVEMENT MARKING	SF	560.				
054	706	0500	AGGREGATE LABORATORY	EA	1.				
055	706	0550	BITUMINOUS LABORATORY	EA	1.				
056	706	0600	CONTRACTOR'S LABORATORY	EA	1.				
057	708	1531	INLET PROTECTION-FIBER ROLL 12IN	EA	36.				
058	708	1533	REMOVAL INLET PROTECTION-FIBER ROLL 12IN	EA	36.				
059	708	8100	REMOVE RIPRAP	CY	78.				
060	709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	1,116.				
061	709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	786.				
062	714	4135	PIPE CONDUIT 60IN	LF	262.				
063	714	9630	RELAY END SECTION-ALL TYPES & SIZES	EA	4.				
064	714	9640	RELAY PIPE-ALL TYPES & SIZES	LF	104.				

BID ITEMS

Project: HRR-8-200(020)951 (PCN-16823)

**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
065	720	0110	RIGHT OF WAY MARKERS	EA	51.				
066	720	0125	ALIGNMENT MONUMENTS	EA	12.				
067	720	0130	IRON PIN R/W MONUMENTS	EA	12.				
068	748	0540	CURB	LF	80.				
069	754	0557	INTERSTATE MILE POSTS-TYPE C	EA	1.				
070	754	0563	REFERENCE MARKER-TYPE C	EA	16.				
071	754	0805	OBJECT MARKERS - CULVERTS	EA	4.				
072	760	0005	RUMBLE STRIPS - ASPHALT SHOULDER	MILE	14.168				
073	760	0007	RUMBLE STRIPS - ASPHALT CENTERLINE	MILE	7.084				
074	760	0009	RUMBLE STRIPS - INTERSECTION	EA	1.				
075	762	0113	EPOXY PVMT MK 4IN LINE	LF	108,844.				
076	762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	11,536.				
077	764	0131	W-BEAM GUARDRAIL	LF	540.				
078	764	0145	W-BEAM GUARDRAIL END TERMINAL	EA	5.				
079	764	0151	REMOVE W-BEAM GUARDRAIL & POSTS	LF	600.				
080	764	1050	RESET W-BEAM GUARDRAIL	LF	375.				



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HRR-8-200(020)951	2	1

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	55-58	North Branch Elm River Revision

**LIST OF SPECIAL PROVISIONS (SP)**

<u>SP #</u>	<u>Description</u>
SP 0003(14)	Temporary Erosion and Sediment Best Management Practices
SP 0004(14)	Federal Migratory Bird Treaty Act
SP 0092(14)	Flexible Pavement Surface Tolerance
SP 0109(14)	Temporary Stream Diversions
SP 0130(14)	Airport Coordination
SP 5040(14)	Permitting and Environmental Considerations

**LIST OF STANDARD DRAWINGS**

<u>Standard No.</u>	<u>Description</u>
D-101-1, 2, & 3	NDDOT Abbreviations
D-101-10	NDDOT Utility Company Abbreviations
D-101-20 & 21	Line Styles
D-101-30, 31, 32	Symbols
D-203-8	Standard Rural Approaches
D-255-2	Erosion and Siltation Control-Erosion Control Blanket Installation

**LIST OF STANDARD DRAWINGS (Continued)**

<u>Standard No.</u>	<u>Description</u>
D-260-1	Erosion and Siltation Controls-Silt Fence
D-261-1	Erosion and Siltation Controls
D-704-2	Traffic Control for Coring of Hot Bituminous Pavement
D-704-4	Work Zone Business Sign Details
D-704-5	Contractor Sign Detail
D-704-7	Breakaway Systems for Construction Zone Signs
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-704-12	Shoulder Closure Tapers
D-704-13	Barricade and Channelizing Device Details
D-704-14	Construction Sign Punching and Mounting Details
D-704-15	Road Closure Layouts
D-704-19	Road Closure and Lane Closure on a Two Way Road Layouts
D-704-20	Terminal and Seal Coat Sign Layouts
D-704-22	Construction Truck and Temporary Detour Layouts
D-704-24	Shoulder Closures and Bridge Painting Layouts
D-704-26	Miscellaneous Sign Layouts
D-704-27	Traffic Control Plan for Moving Operations
D-704-30	Windrow Marking
D-704-34	Sign Layout for One Lane Closure
D-704-50	Portable Sign Support Assembly
D-704-56	Mobile Operation (Grinding Shoulder Rumble Strips)
D-706-1	Bituminous Lab
D-714-1	Reinforced Concrete Pipe Culverts and End Sections (Round Pipe)
D-714-4	Round Corrugated Steel Pipe Culverts and End Sections
D-714-26M	Transverse Mainline Pipe Excavation and Installation Detail for Multiple Pipes Less Than 4 Feet Below The Top of Proposed Subgrade
D-714-28M	Transverse Mainline Pipe Excavation and Installation Detail for Multiple Pipes Installed in New Embankment Areas
D-720-1	Standard Monuments and Right of Way Markers
D-754-19	(conventional use) Reference Markers
D-754-22A	Typical Interchange Delineation
D-754-82	Object Markers
D-754-83	Object Markers-Culverts
D-760-4	Rumble Strips Undivided Highways (Shoulders Less Than 4')
D-760-5	Saw Slotted Rumble Strips at Intersections
D-762-4	Pavement Marking
D-762-6	Short Term Pavement Marking
D-764-1	W-Beam Guardrail-General Details
D-764-6	Flared Energy Absorbing Terminal
D-764-7	Slotted Rail Terminal
D-764-10	Thrie Beam Transition to Double Box Beam Retrofit
D-764-11	W-Beam Transition to In-Place Concrete Safety Shape Transition
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-766-1	Mailbox Location Details

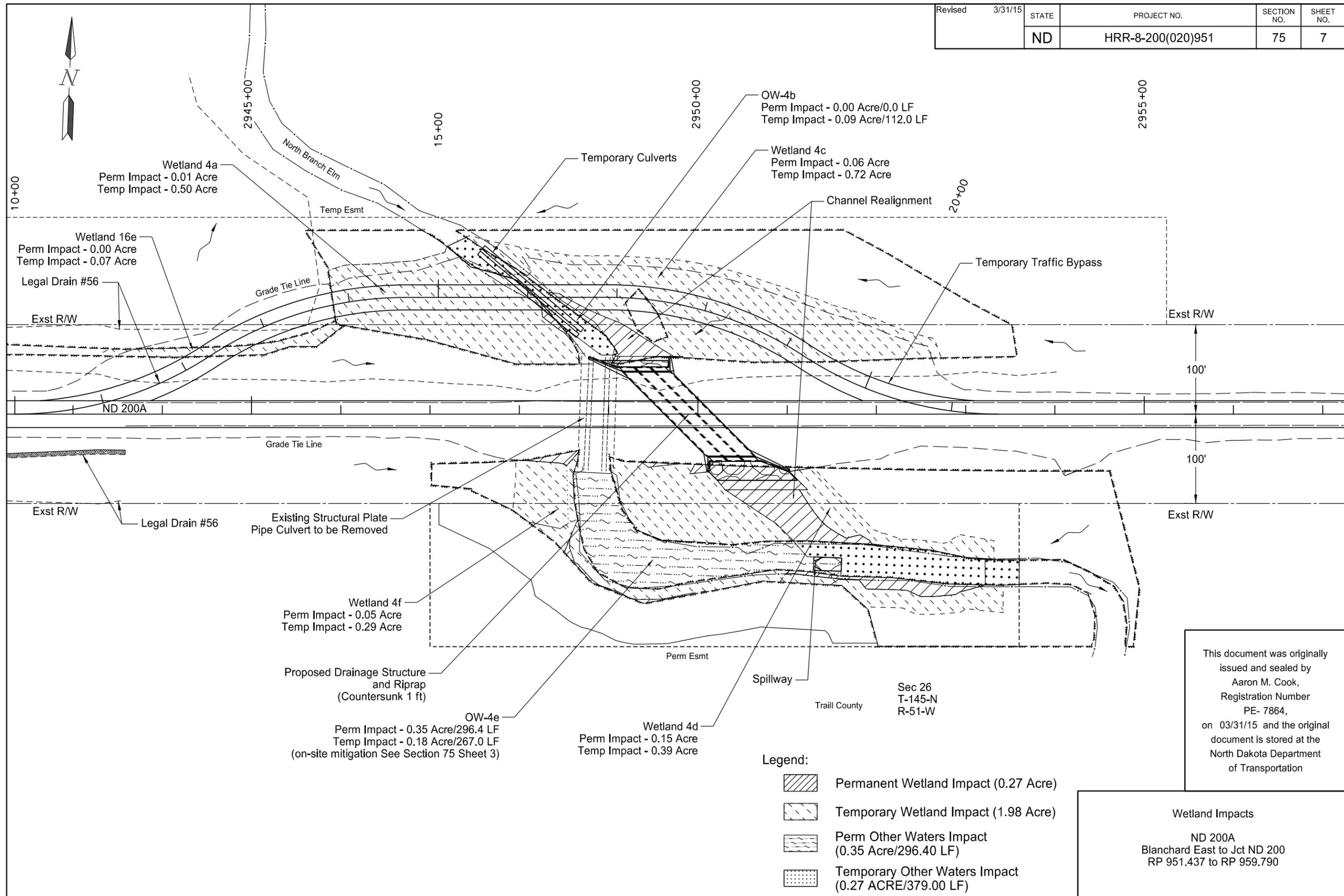
Spec	Code	Description	Unit	Total
103	100	CONTRACT BOND	L SUM	1
107	103	RAILWAY PROTECTION INSURANCE-SITE 1	EA	1
202	165	REMOVE & SALVAGE BASE & SURFACING	TON	24774
202	178	REMOVE STRUCTURAL PLATE PIPE	EA	2
202	350	REMOVAL OF TEMPORARY BYPASS	EA	1
203	101	COMMON EXCAVATION-TYPE A	CY	6781
203	109	TOPSOIL	CY	19714
203	121	TOPSOIL-WETLAND	CY	1696
203	130	MUCK EXCAVATION	CY	1363
203	140	BORROW-EXCAVATION	CY	18128
203	218	GUARDRAIL EMBANKMENT	EA	8
210	50	BOX CULVERT EXCAVATION	EA	1
210	126	CHANNEL EXCAVATION	CY	980
210	210	FOUNDATION FILL	CY	1570
210	405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
216	100	WATER	M GAL	1430
230	165	SUBGRADE PREPARATION - TYPE A-12IN	STA	415
251	200	SEEDING CLASS II	ACRE	20.8
251	300	SEEDING CLASS III	ACRE	0.6
251	1000	WETLAND SEED	ACRE	2.1
251	2000	TEMPORARY COVER CROP	ACRE	21.6
253	101	STRAW MULCH	ACRE	43.0
255	102	ECB TYPE 2	SY	1965
255	201	TRM TYPE 1	SY	196
256	100	RIPRAP GRADE I	CY	90
256	200	RIPRAP GRADE II	CY	258
261	112	FIBER ROLLS 12IN	LF	35649
261	113	REMOVE FIBER ROLLS 12IN	LF	32446
262	100	FLOTATION SILT CURTAIN	LF	132
262	101	REMOVE FLOTATION SILT CURTAIN	LF	132
302	100	SALVAGED BASE COURSE	TON	51933
302	316	TRAFFIC SERVICE GRAVEL	CY	46
401	50	TACK COAT	GAL	16666
401	60	PRIME COAT	GAL	9992
401	160	BLOTTER MATERIAL CL 44	TON	348
411	100	MILLING PAVEMENT SURFACE	TON	7776
430	143	RAP - SUPERPAVE FAA 43	TON	30782
430	1000	CORED SAMPLE	EA	187
430	5828	PG 58-28 ASPHALT CEMENT	TON	1264
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	632
602	1210	BRIDGE END POST MODIFICATION	EA	4
612	114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	86400
624	3002	DOUBLE BOX BEAM RAIL RETROFIT - E-RAIL	LF	447.2
702	100	MOBILIZATION	L SUM	1
704	100	FLAGGING	MHR	540
704	1000	TRAFFIC CONTROL SIGNS	UNIT	3928

704	1052	TYPE III BARRICADE	EA	10
704	1060	DELINEATOR DRUMS	EA	75
704	1067	TUBULAR MARKERS	EA	88
704	1080	STACKABLE VERTICAL PANELS	EA	15
704	1081	VERTICAL PANELS-BACK TO BACK	EA	46
704	1185	PILOT CAR	HR	444
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	560
706	500	AGGREGATE LABORATORY	EA	1
706	550	BITUMINOUS LABORATORY	EA	1
706	600	CONTRACTOR'S LABORATORY	EA	1
708	1531	INLET PROTECTION-FIBER ROLL 12IN	EA	36
708	1533	REMOVAL INLET PROTECTION-FIBER ROLL 12IN	EA	36
708	8100	REMOVE RIPRAP	CY	78
709	151	GEOSYNTHETIC MATERIAL TYPE R1	SY	1116
709	155	GEOSYNTHETIC MATERIAL TYPE RR	SY	786
714	4135	PIPE CONDUIT 60IN	LF	262
714	9630	RELAY END SECTION-ALL TYPES & SIZES	EA	4
714	9640	RELAY PIPE-ALL TYPES & SIZES	LF	104
720	110	RIGHT OF WAY MARKERS	EA	51
720	125	ALIGNMENT MONUMENTS	EA	12
720	130	IRON PIN R/W MONUMENTS	EA	12
748	540	CURB	LF	80
754	557	INTERSTATE MILE POSTS-TYPE C	EA	1
754	563	REFERENCE MARKER-TYPE C	EA	16
754	805	OBJECT MARKERS - CULVERTS	EA	4
760	5	RUMBLE STRIPS - ASPHALT SHOULDER	MILE	14.168
760	7	RUMBLE STRIPS - ASPHALT CENTERLINE	MILE	7.084
760	9	RUMBLE STRIPS - INTERSECTION	EA	1
762	113	EPOXY PVMT MK 4IN LINE	LF	108844
762	430	SHORT TERM 4IN LINE-TYPE NR	LF	11536
764	131	W-BEAM GUARDRAIL	LF	540.0
764	145	W-BEAM GUARDRAIL END TERMINAL	EA	5
764	151	REMOVE W-BEAM GUARDRAIL & POSTS	LF	600
764	1050	RESET W-BEAM GUARDRAIL	LF	375
764	1059	RESET W-BEAM GUARDRAIL END TERMINAL	EA	3
764	1990	REMOVE CONCRETE SAFETY SHAPE TRANSITION	EA	4
764	2081	REMOVE END TREATMENT & TRANSITION	EA	8
766	100	MAILBOX-ALL TYPES	EA	2
900	1000	TEMPORARY STREAM DIVERSION	EA	1
930	8644	SILICONE SEALANT	LF	77
930	9610	DECK SPALL REPAIR	SF	77

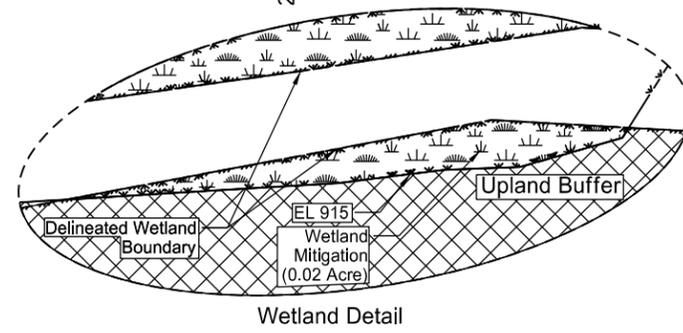
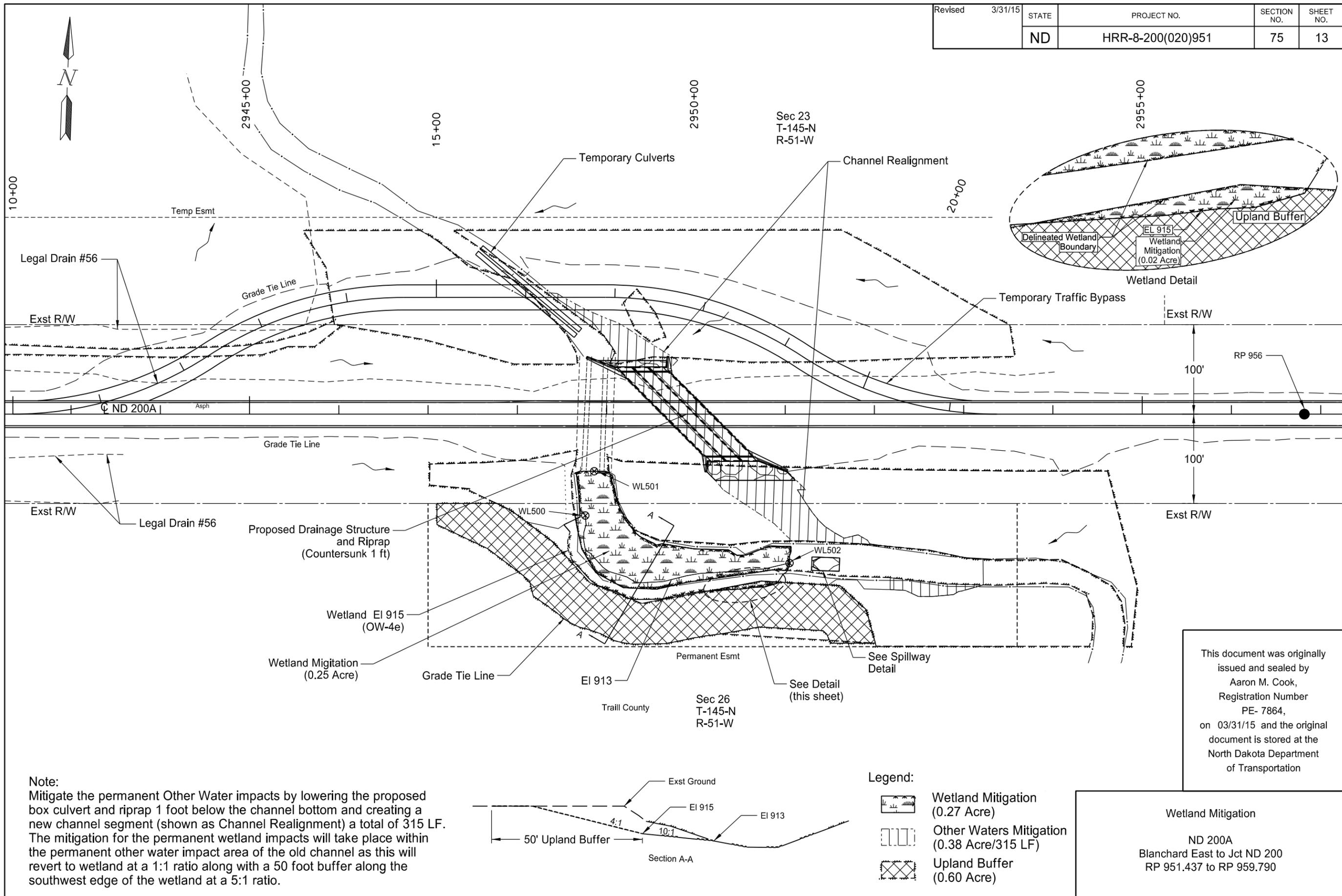
Summary of Quantities

ND 200A  
Blanchard East to Jct ND 200  
RP 951.437 to RP 959.790

Revised	3/31/15	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	HRR-8-200(020)951	75	7



Revised	3/31/15	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	HRR-8-200(020)951	75	13

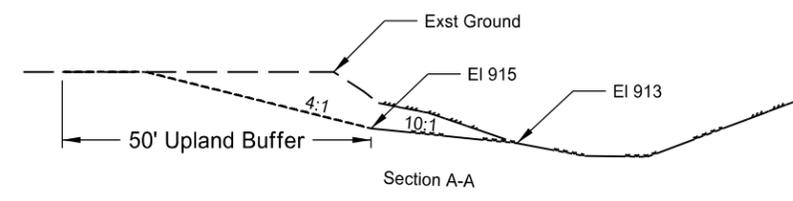


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Wetland Mitigation  
 ND 200A  
 Blanchard East to Jct ND 200  
 RP 951.437 to RP 959.790

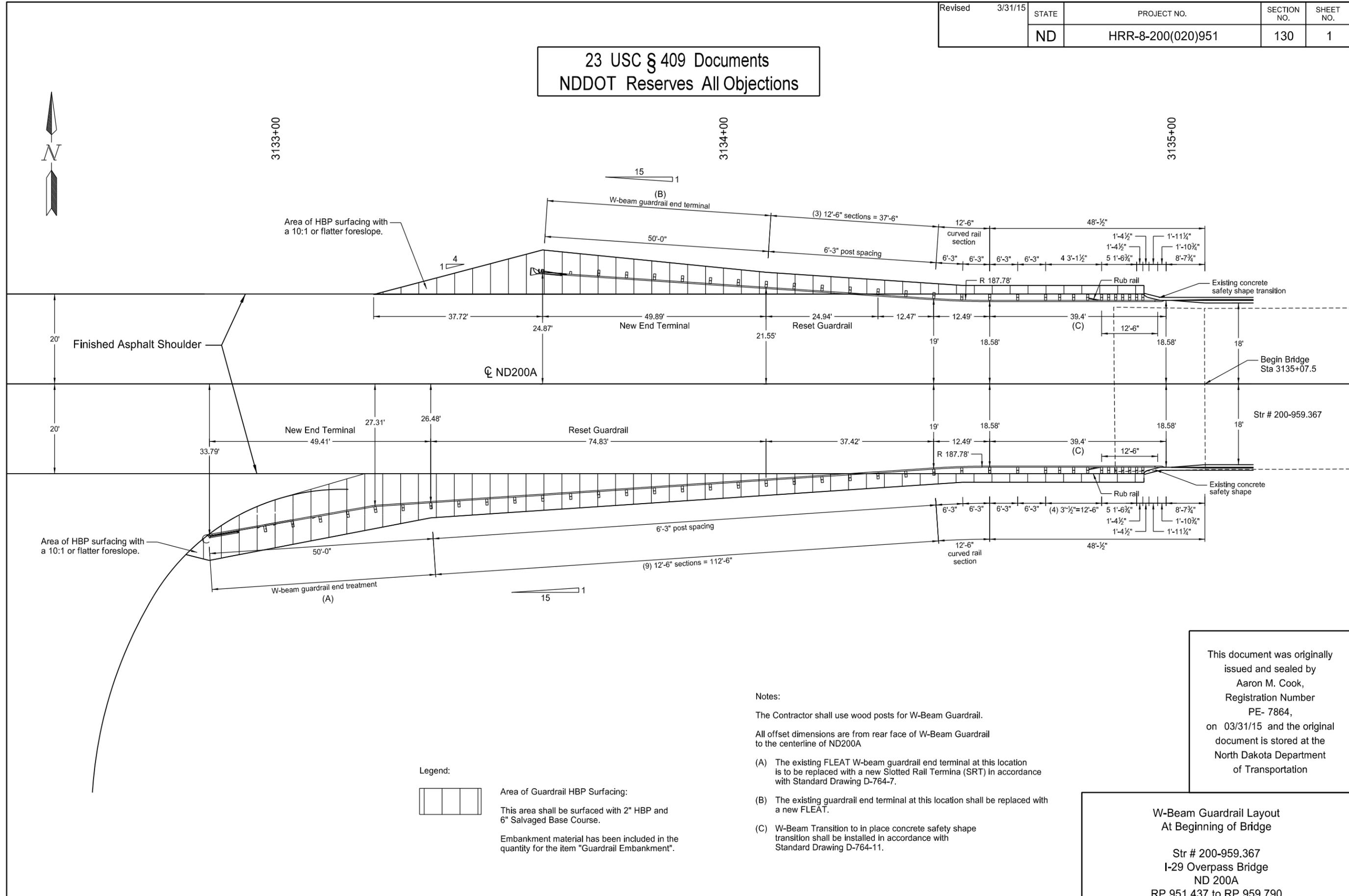
**Note:**  
 Mitigate the permanent Other Water impacts by lowering the proposed box culvert and riprap 1 foot below the channel bottom and creating a new channel segment (shown as Channel Realignment) a total of 315 LF. The mitigation for the permanent wetland impacts will take place within the permanent other water impact area of the old channel as this will revert to wetland at a 1:1 ratio along with a 50 foot buffer along the southwest edge of the wetland at a 5:1 ratio.

- Legend:**
- Wetland Mitigation (0.27 Acre)
  - Other Waters Mitigation (0.38 Acre/315 LF)
  - Upland Buffer (0.60 Acre)



Revised	3/31/15	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	HRR-8-200(020)951	130	1

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



**Notes:**

- The Contractor shall use wood posts for W-Beam Guardrail.
- All offset dimensions are from rear face of W-Beam Guardrail to the centerline of ND200A
- (A) The existing FLEAT W-beam guardrail end terminal at this location is to be replaced with a new Slotted Rail Terminal (SRT) in accordance with Standard Drawing D-764-7.
- (B) The existing guardrail end terminal at this location shall be replaced with a new FLEAT.
- (C) W-Beam Transition to in place concrete safety shape transition shall be installed in accordance with Standard Drawing D-764-11.

**Legend:**

- Area of Guardrail HBP Surfacing:  
This area shall be surfaced with 2" HBP and 6" Salvaged Base Course.
- Embankment material has been included in the quantity for the item "Guardrail Embankment".

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on 03/31/15 and the original document is stored at the  
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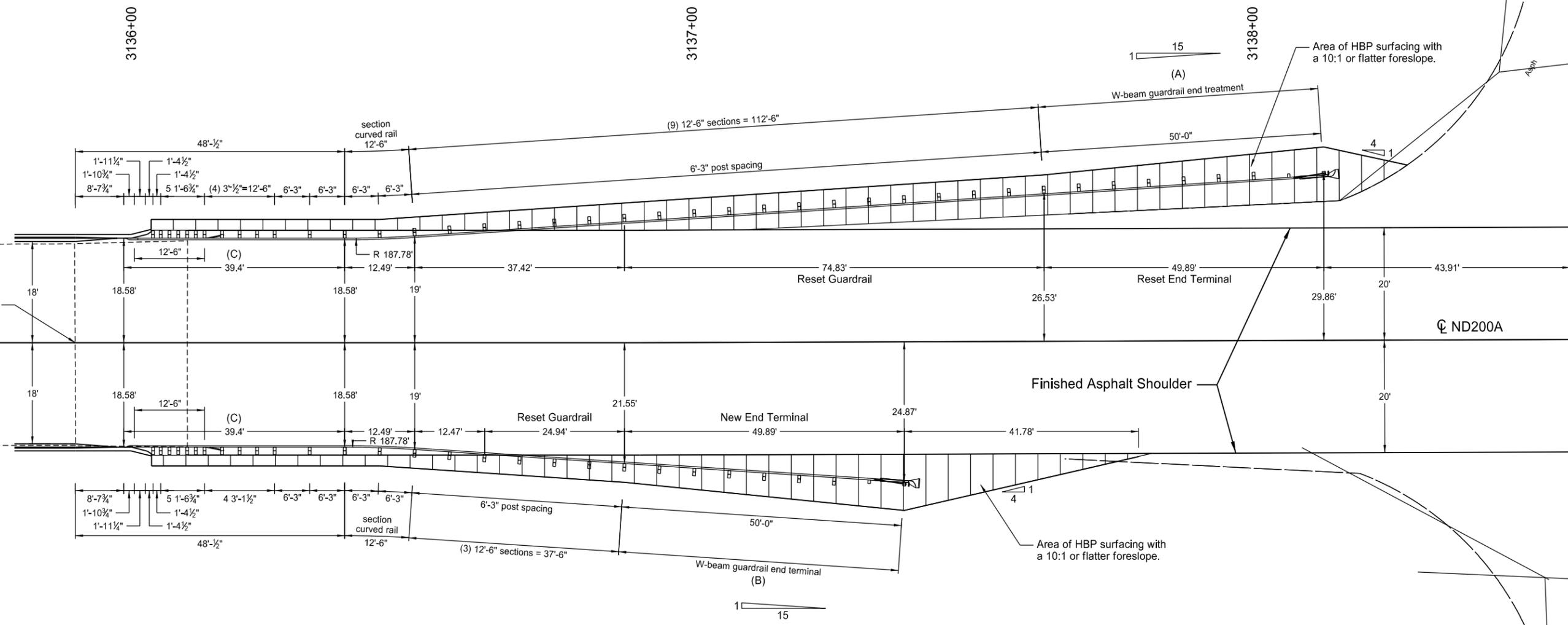
**W-Beam Guardrail Layout  
At Beginning of Bridge**

Str # 200-959.367  
I-29 Overpass Bridge  
ND 200A  
RP 951.437 to RP 959.790

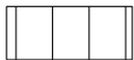


Revised	3/31/15	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	HRR-8-200(020)951	130	2

23 USC § 409 Documents  
NDDOT Reserves All Objections



**Legend:**

 Area of Guardrail HBP Surfacing:  
This area shall be surfaced with 2" HBP and 6" Salvaged Base Course.

 Embankment material has been included in the quantity for the item "Guardrail Embankment".

- Notes:**
- The Contractor shall use wood posts for W-Beam Guardrail.
  - All offset dimensions are from rear face of W-Beam Guardrail to the centerline of ND200A
  - (A) The existing FLEAT W-beam guardrail end terminal to be reset at this location. The price for 'Reset W-Beam End Terminal' shall include the installation of two (2) new steel HBA posts at 1 and 2 for the reset end.
  - (B) The existing guardrail end terminal at this location shall be replaced with a new FLEAT.
  - (C) W-Beam Transition to in place concrete safety shape transition shall be installed in accordance with Standard Drawing D-764-11.

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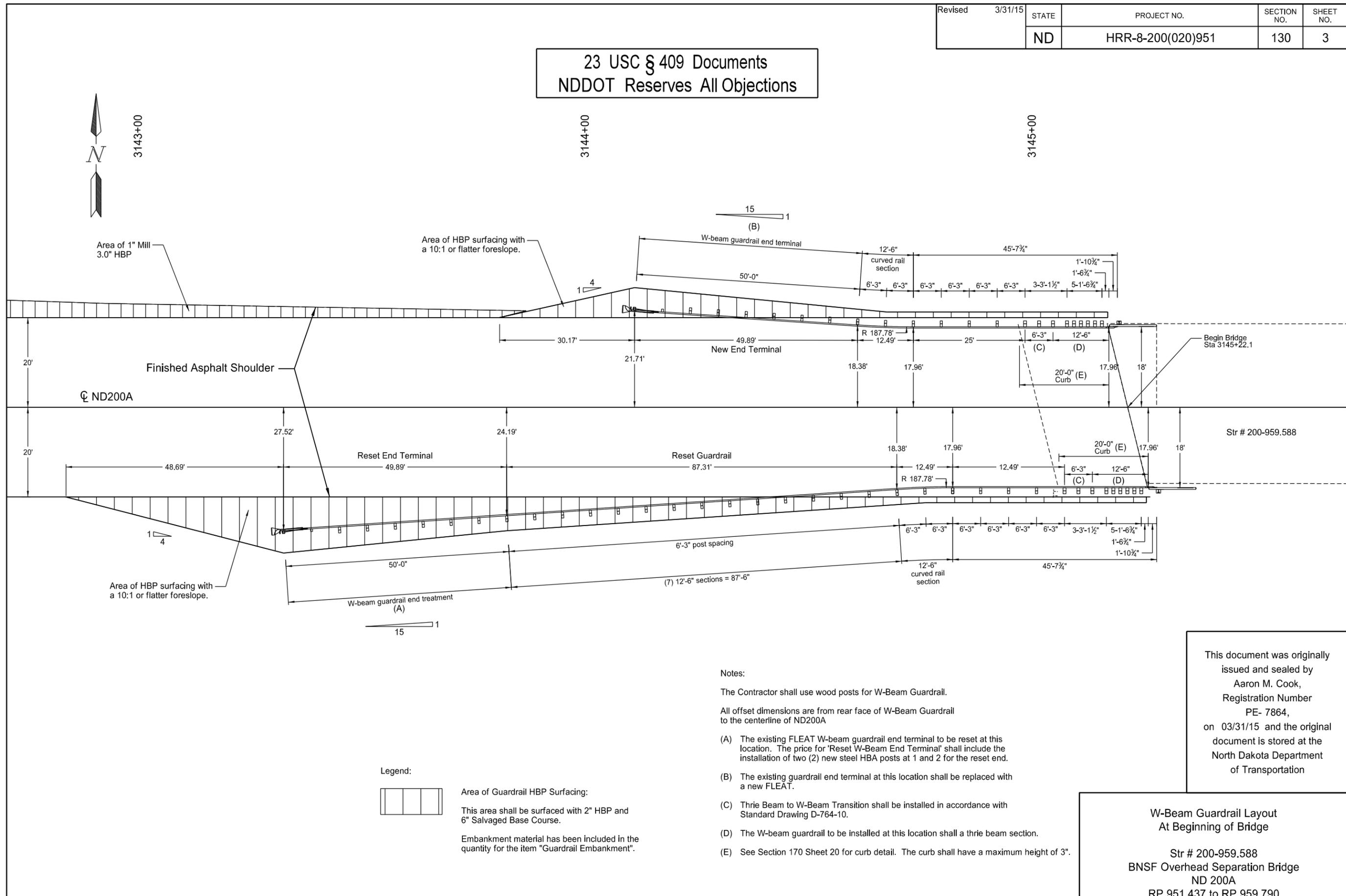
**W-Beam Guardrail Layout  
At End of Bridge**

Str # 200-959.367  
I-29 Overpass Bridge  
ND 200A  
RP 951.437 to RP 959.790



Revised	3/31/15	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	HRR-8-200(020)951	130	3

23 USC § 409 Documents  
NDDOT Reserves All Objections



- Notes:**
- The Contractor shall use wood posts for W-Beam Guardrail.
  - All offset dimensions are from rear face of W-Beam Guardrail to the centerline of ND200A
  - (A) The existing FLEAT W-beam guardrail end terminal to be reset at this location. The price for 'Reset W-Beam End Terminal' shall include the installation of two (2) new steel HBA posts at 1 and 2 for the reset end.
  - (B) The existing guardrail end terminal at this location shall be replaced with a new FLEAT.
  - (C) Thrie Beam to W-Beam Transition shall be installed in accordance with Standard Drawing D-764-10.
  - (D) The W-beam guardrail to be installed at this location shall a thrie beam section.
  - (E) See Section 170 Sheet 20 for curb detail. The curb shall have a maximum height of 3".

**Legend:**

Area of Guardrail HBP Surfacing:  
This area shall be surfaced with 2" HBP and 6" Salvaged Base Course.

Embankment material has been included in the quantity for the item "Guardrail Embankment".

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Aaron M. Cook,  
Registration Number  
PE- 7864,  
on 03/31/15 and the original document is stored at the  
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**W-Beam Guardrail Layout  
At Beginning of Bridge**

Str # 200-959.588  
BNSF Overhead Separation Bridge  
ND 200A  
RP 951.437 to RP 959.790



Revised	3/31/15	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	HRR-8-200(020)951	130	4

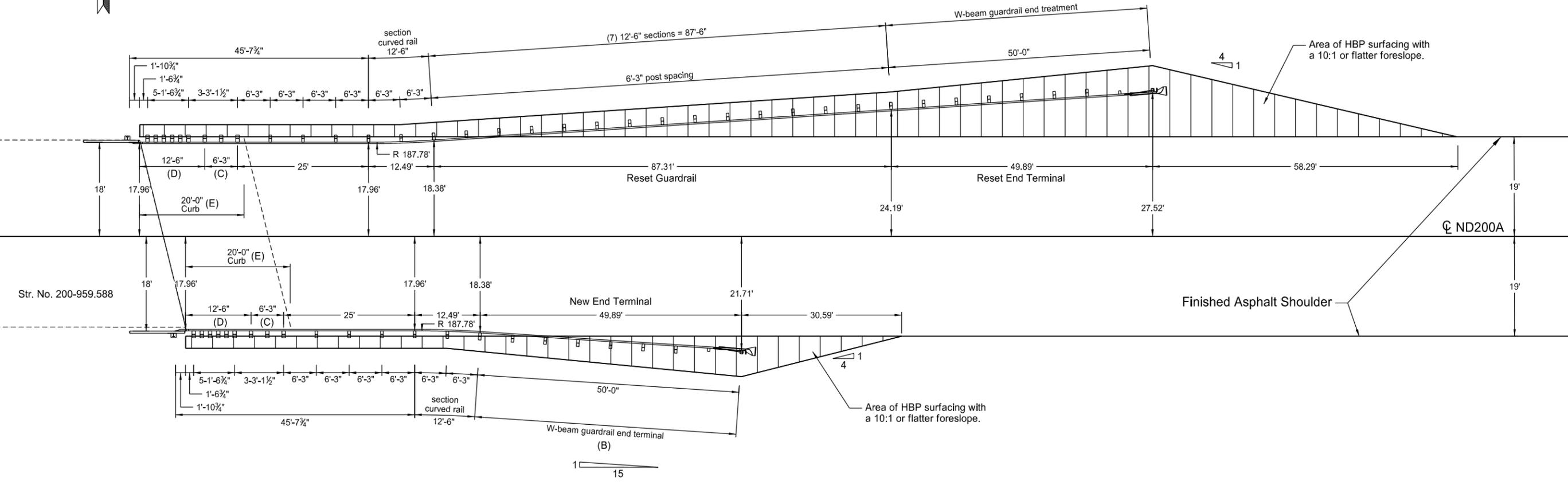
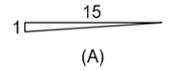
23 USC § 409 Documents  
NDDOT Reserves All Objections



3148+00

3149+00

3150+00



Str. No. 200-959.588

ND200A

**Notes:**

- The Contractor shall use wood posts for W-Beam Guardrail.
- All offset dimensions are from rear face of W-Beam Guardrail to the centerline of ND200A
- (A) The existing FLEAT W-beam guardrail end terminal to be reset at this location. The price for 'Reset W-Beam End Terminal' shall include the installation of two (2) new steel HBA posts at 1 and 2 for the reset end.
- (B) The existing guardrail end terminal at this location shall be replaced with a new FLEAT.
- (C) Thrie Beam to W-Beam Transition shall be installed in accordance with Standard Drawing D-764-10.
- (D) The W-beam guardrail to be installed at this location shall a thrie beam section.
- (E) See Section 170 Sheet 20 for curb detail. The curb shall have a maximum height of 3".

**Legend:**

- Area of Guardrail HBP Surfacing:  
This area shall be surfaced with 2" HBP and 6" Salvaged Base Course.
- Embankment material has been included in the quantity for the item "Guardrail Embankment".

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**W-Beam Guardrail Layout  
At Beginning of Bridge**  
  
Str #200-959.588  
BNSF Overhead Separation Bridge  
ND 200A  
RP 951.437 to RP 959.790



# 23 USC § 409 Documents NDDOT Reserves All Objections

Revised	3/31/15	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	HRR-8-200(020)951	130	5

### W-BEAM GUARDRAIL SUMMARY OF QUANTITIES (STR # 200-959.367)

LOCATION	W-BEAM TRANSITION TO IN PLACE CONCRETE SAFETY SHAPE TRANSITION																						(B)	
	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)		
	TERMINAL CONNECTOR	6" x 8" x 7' TIMBER POST	6" x 8" x 6' TIMBER POST	6" x 8" x 14" WOOD OFFSET BLOCK	6" x 9 3/4" x 14" WOOD OFFSET BLOCK	6" x 8" x 23" WOOD OFFSET BLOCK	5/8" Ø x 18" LONG GUARDRAIL BOLT	5/8" Ø x 1-1/4" LONG GUARDRAIL BOLT	5/8" Ø x 2" LONG GUARDRAIL BOLT	7/8" Ø x 10" LONG HEX HEAD BOLT	12'-6" DOUBLE RAIL SECTION	12' - 6" STRAIGHT RAIL SECTION	12' - 6" CURVED RAIL SECTION	6" ID STD PIPE 12" LONG	C6 X 8.2 RUB RAIL STRAIGHT SECTION (5'-3" LENGTH)	C6 X 8.2 RUB RAIL BENT SECTION (15' - 7 1/4" LENGTH)	5/8" Ø x 1-1/2" LONG HEX HEAD BOLT	5/8" Ø x 20" LONG GUARDRAIL BOLT	7" x 7" x 1/2" RUBRAIL ANCHOR PLATE	7 3/4" x 4 1/2" x 3/8" RUBRAIL SPLICE PLATE	12" x 12 1/2" x 5/8" PLATE	1/2" Ø x 4" LAG SCREW		REFLECT-ORIZED PLATES
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. 3134+09.5 to 3134+98.8 Rt	1	4	17	13	1	7	21	68	1	7	1	6	1	1	1	1	4	7	1	1	1	7	9	33
Sta. 3134+34.5 to 3134+98.8 Lt	1	4	13	9	1	7	17	52	1	7	1	4	1	1	1	1	4	7	1	1	1	7	6	13
Sta. 3135+98.7 to 3136+88.0 Lt	1	4	17	13	1	7	21	68	1	7	1	6	1	1	1	1	4	7	1	1	1	7	9	33
Sta. 3135+98.7 to 3136+63.1 Rt	1	4	13	9	1	7	17	52	1	7	1	4	1	1	1	1	4	7	1	1	1	7	6	13
<b>TOTAL</b>	<b>4</b>	<b>16</b>	<b>60</b>	<b>44</b>	<b>4</b>	<b>28</b>	<b>76</b>	<b>240</b>	<b>4</b>	<b>28</b>	<b>4</b>	<b>20</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>16</b>	<b>28</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>28</b>	<b>30</b>	<b>92</b>

#### Remove End Treatment & Transition

Sta. 3133+47.2 to 3133+97.2 Rt	1 EA
Sta. 3134+09.7 to 3134+59.7 Lt	1 EA
Sta. 3137+00.4 to 3137+50.4 Lt	1 EA
Sta. 3136+37.9 to 3136+87.9 Rt	1 EA
<b>Total</b>	<b>4 EA</b>

#### W-Beam Guardrail

Sta. 3134+09.5 to 3134+98.8 Rt	89.4 LF
Sta. 3134+34.5 to 3134+98.8 Lt	64.4 LF
Sta. 3135+98.7 to 3136+88.0 Lt	89.4 LF
Sta. 3135+98.7 to 3136+63.1 Rt	64.4 LF
<b>Total</b>	<b>307.6 LF</b>

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

(B) The volume of Guardrail Embankment (cubic yards) is for informational purposes only.

(C) The price for "Reset W-Beam Guardrail End Terminal" shall include new steel HBA posts to be provided at 1 and 2.

#### Remove W-Beam Guardrail & Posts

Sta. 3133+97.2 to 3134+98.8 Rt	100 LF
Sta. 3134+59.7 to 3134+98.8 Lt	37.5 LF
Sta. 3135+98.8 to 3137+00.4 Lt	100 LF
Sta. 3135+98.7 to 3136+37.9 Rt	37.5 LF
<b>Total</b>	<b>275 LF</b>

#### Reset W-Beam Guardrail

Sta. 3133+34.7 to 3134+09.5 Rt	75 LF
Sta. 3134+09.6 to 3134+34.5 Lt	25 LF
Sta. 3136+88.0 to 3137+62.8 Lt	75 LF
Sta. 3136+63.1 to 3136+88.0 Rt	25 LF
<b>Total</b>	<b>200 LF</b>

#### Guardrail Embankment

Sta. 3132+70.8 to 3134+98.8 Rt	1 EA
Sta. 3133+24.7 to 3134+98.8 Lt	1 EA
Sta. 3135+98.7 to 3138+27.7 Lt	1 EA
Sta. 3135+98.7 to 3137+79.7 Rt	1 EA
<b>Total</b>	<b>4 EA</b>

#### W-Beam Guardrail End Terminal

Sta. 3132+85.3 to 3133+34.7 Rt	1 EA
Sta. 3133+59.7 to 3134+09.6 Lt	1 EA
Sta. 3136+88.0 to 3137+37.9 Rt	1 EA
<b>Total</b>	<b>3 EA</b>

#### Reset W-Beam Guardrail End Terminal

Sta. 3137+62.8 to 3138+12.7 Lt	1 EA
<b>Total</b>	<b>1 EA</b>

### W-BEAM GUARDRAIL SUMMARY OF QUANTITIES (STR # 200-959.588)

LOCATION	THREE BEAM TRANSITION TO DOUBLE BOX BEAM RETROFIT																		(B)
	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	
	THREE BEAM TERMINAL CONNECTOR	8" X 8" X 6'-0" TIMBER POST	6" X 8" X 6'-0" TIMBER POST	8" x 8" x 22" WOOD OFFSET BLOCK	8" x 8" x 18" WOOD OFFSET BLOCK	8" x 8" x 14" WOOD OFFSET BLOCK	6" x 8" x 14" WOOD OFFSET BLOCK	5/8" Ø x 18" LONG GUARDRAIL BOLT	5/8" Ø x 1-1/4" LONG GUARDRAIL BOLT	7/8" Ø x 10" LONG HEX HEAD BOLT	12' - 6" STRAIGHT RAIL SECTION	12' - 6" CURVED RAIL SECTION	5/8" Ø x 25" LONG GUARDRAIL BOLT	5/8" Ø x 22" LONG GUARDRAIL BOLT	12' - 6" THRIE BEAM SECTION	6' - 3" THRIE BEAM TO W-BEAM TRANSITION SECTION	REFLECT-ORIZED PLATES	GUARDRAIL EMBANKMENT	
EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	CY	
Sta. 3144+69.8 to 3145+27.9 Rt	1	9	6	7	1	1	6	6	58	5	2	1	7	1	1	1	8	18	
Sta. 3144+60.9 to 3145+19.0 Lt	1	9	6	7	1	1	6	6	8	5	2	1	7	1	1	1	5	10	
Sta. 3147+34.7 to 3147+92.8 Lt	1	9	6	7	1	1	6	6	58	5	2	1	7	1	1	1	8	18	
Sta. 3147+43.7 to 3148+01.8 Rt	1	9	6	7	1	1	6	6	8	5	2	1	7	1	1	1	5	10	
<b>TOTAL</b>	<b>4</b>	<b>36</b>	<b>24</b>	<b>28</b>	<b>4</b>	<b>4</b>	<b>24</b>	<b>24</b>	<b>132</b>	<b>20</b>	<b>8</b>	<b>4</b>	<b>28</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>26</b>	<b>56</b>	

#### Remove End Treatment & Transition

Sta. 3143+39.4 to 3143+89.4 Rt	1 EA
Sta. 3144+17.6 to 3144+67.6 Lt	1 EA
Sta. 3148+73.0 to 3149+23.0 Lt	1 EA
Sta. 3147+95.3 to 3148+45.3 Rt	1 EA
<b>Total</b>	<b>4 EA</b>

#### W-Beam Guardrail

Sta. 3144+69.8 to 3145+27.9 Rt	58.1 LF
Sta. 3144+60.9 to 3145+19.0 Lt	58.1 LF
Sta. 3147+34.7 to 3147+92.8 Lt	58.1 LF
Sta. 3147+43.7 to 3148+01.8 Rt	58.1 LF
<b>Total</b>	<b>232.4 LF</b>

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

(B) The volume of Guardrail Embankment (cubic yards) is for informational purposes only.

(C) The price for "Reset W-Beam Guardrail End Terminal" shall include new steel HBA posts to be provided at 1 and 2.

#### Remove W-Beam Guardrail & Posts

Sta. 3143+89.4 to 3145+12.4 Rt	125 LF
Sta. 3144+67.6 to 3145+05.6 Lt	37.5 LF
Sta. 3147+51.7 to 3148+73.0 Lt	125 LF
Sta. 3147+53.7 to 3147+95.3 Rt	37.5 LF
<b>Total</b>	<b>325 LF</b>

#### Reset W-Beam Guardrail

Sta. 3143+82.5 to 3144+69.8 Rt	87.5 LF
Sta. 3147+92.8 to 3148+01.1 Lt	87.5 LF
<b>Total</b>	<b>175 LF</b>

#### Guardrail Embankment

Sta. 3142+83.9 to 3145+27.9 Rt	1 EA
Sta. 3143+80.8 to 3145+19.0 Lt	1 EA
Sta. 3147+34.7 to 3149+88.3 Lt	1 EA
Sta. 3147+43.7 to 3148+82.3 Rt	1 EA
<b>Total</b>	<b>4 EA</b>

#### W-Beam Guardrail End Terminal

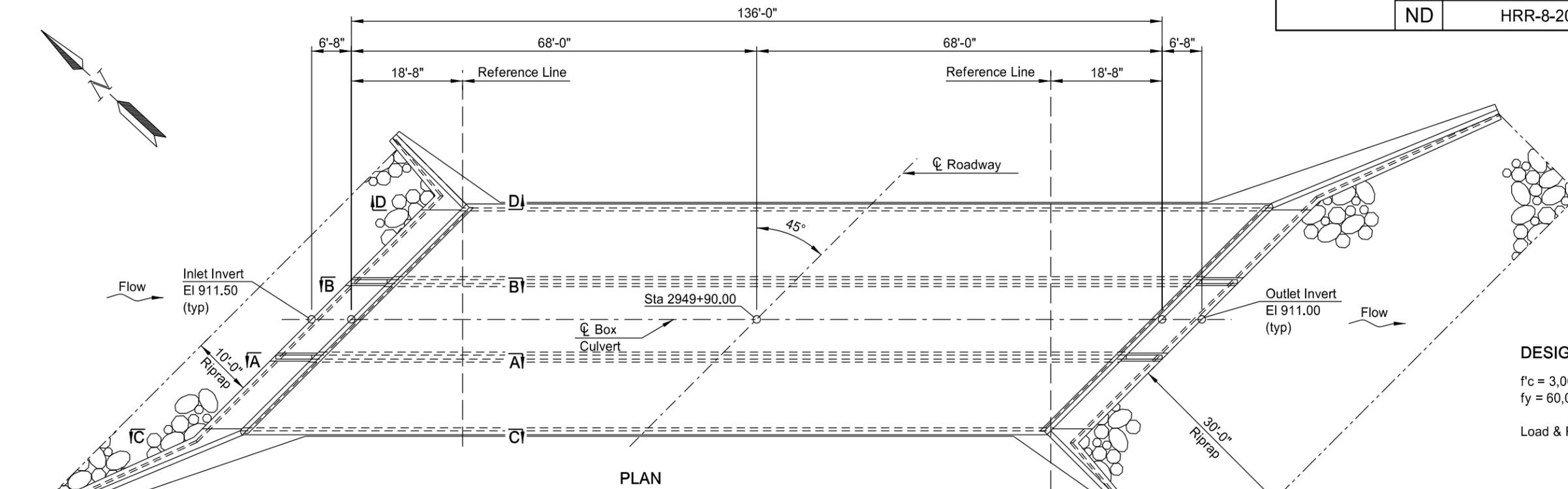
Sta. 3144+11.0 to 3144+60.9 Lt	1 EA
Sta. 3148+01.8 to 3148+51.7 Rt	1 EA
<b>Total</b>	<b>2 EA</b>

#### Reset W-Beam Guardrail End Terminal

Sta. 3143+32.6 to 3143+82.5 Rt	1 EA
Sta. 3148+80.1 to 3149+30.0 Lt	1 EA
<b>Total</b>	<b>2 EA</b>

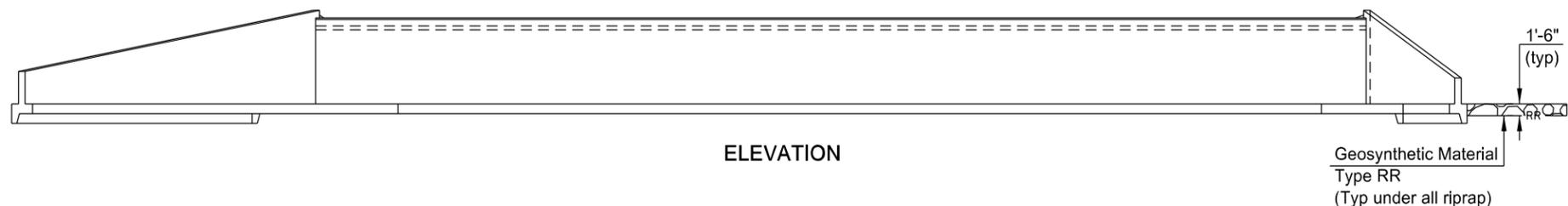
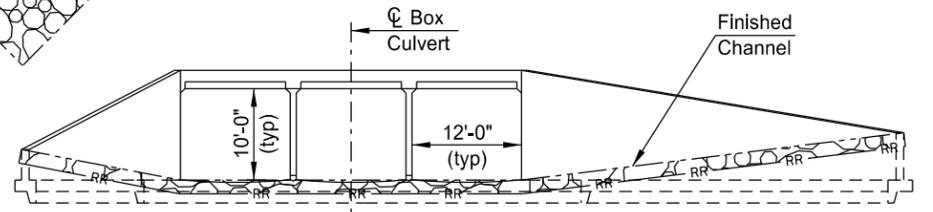
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Registration Number  
PE- 7864,  
on 03/31/15 and the original document is stored at the  
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W-Beam Guardrail Quantities  
Str #200-959.367  
Str #200-959.588  
ND 200A  
Blanchard East to Jct ND 200  
RP 951.437 to RP 959.790



**DESIGN STRENGTHS:**  
 f'c = 3,000 psi ~ Class AE-3 Concrete  
 fy = 60,000 psi ~ Reinforcing Steel  
 Load & Resistance Factor Design

**NOTE:**  
 See Dwg 200-955.869-10 for Sections A-A and B-B.  
 See Dwg 200-955.869-11 for Sections C-C and D-D.



**HYDRAULIC DATA:**

Drainage Area	108.7	sq mi
Stream Gradient	0.0006	ft/ft
Design Frequency	50	yr
Design Discharge	2,373.6	cfs
Design Headwater Stage	921.49	ft
Design Tailwater Stage	918.65	ft
Velocity Through Bridge	9.91	fps
100-Year Frequency Discharge	2,896.2	cfs
100-Year Frequency Headwater	922.72	ft
Overtopping Stage	1029.0	ft
Overtopping Discharge	4,933.60	cfs

**BOX CULVERT BID ITEMS**

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
		REMOVE STRUCTURAL PLATE PIPE	EA	2
		BOX CULVERT EXCAVATION	EA	1
		FOUNDATION FILL	CY	1570
		FOUNDATION PREPARATION-BOX CULVERT	EA	1
		RIPRAP GRADE II	CY	180
		CLASS AE-3 CONCRETE-BOX CULVERT	CY	632.0
		REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	86,400
		GEOSYNTHETIC MATERIAL TYPE R1	SY	625
		GEOSYNTHETIC MATERIAL TYPE RR	SY	360

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**HL-93 DESIGN LOADING**  
 NORTH DAKOTA  
 DEPARTMENT OF TRANSPORTATION  
 NORTH BRANCH ELM RIVER

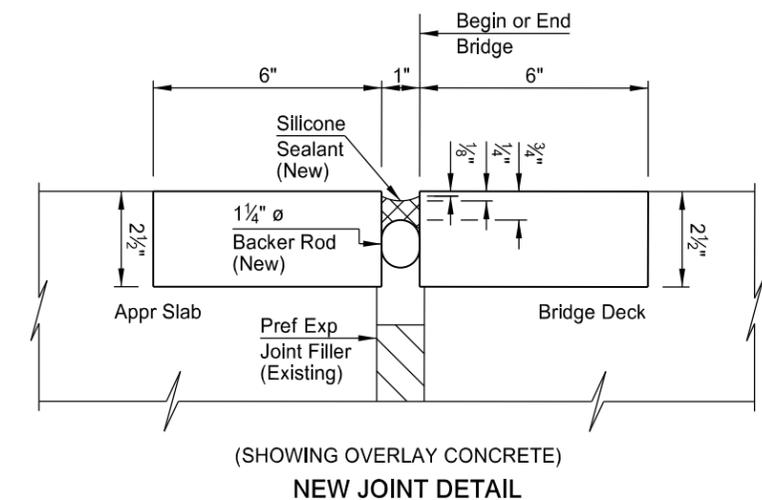
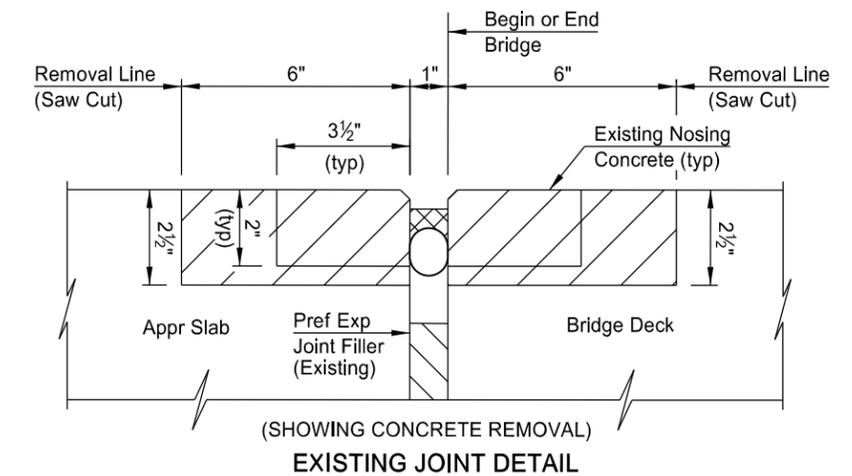
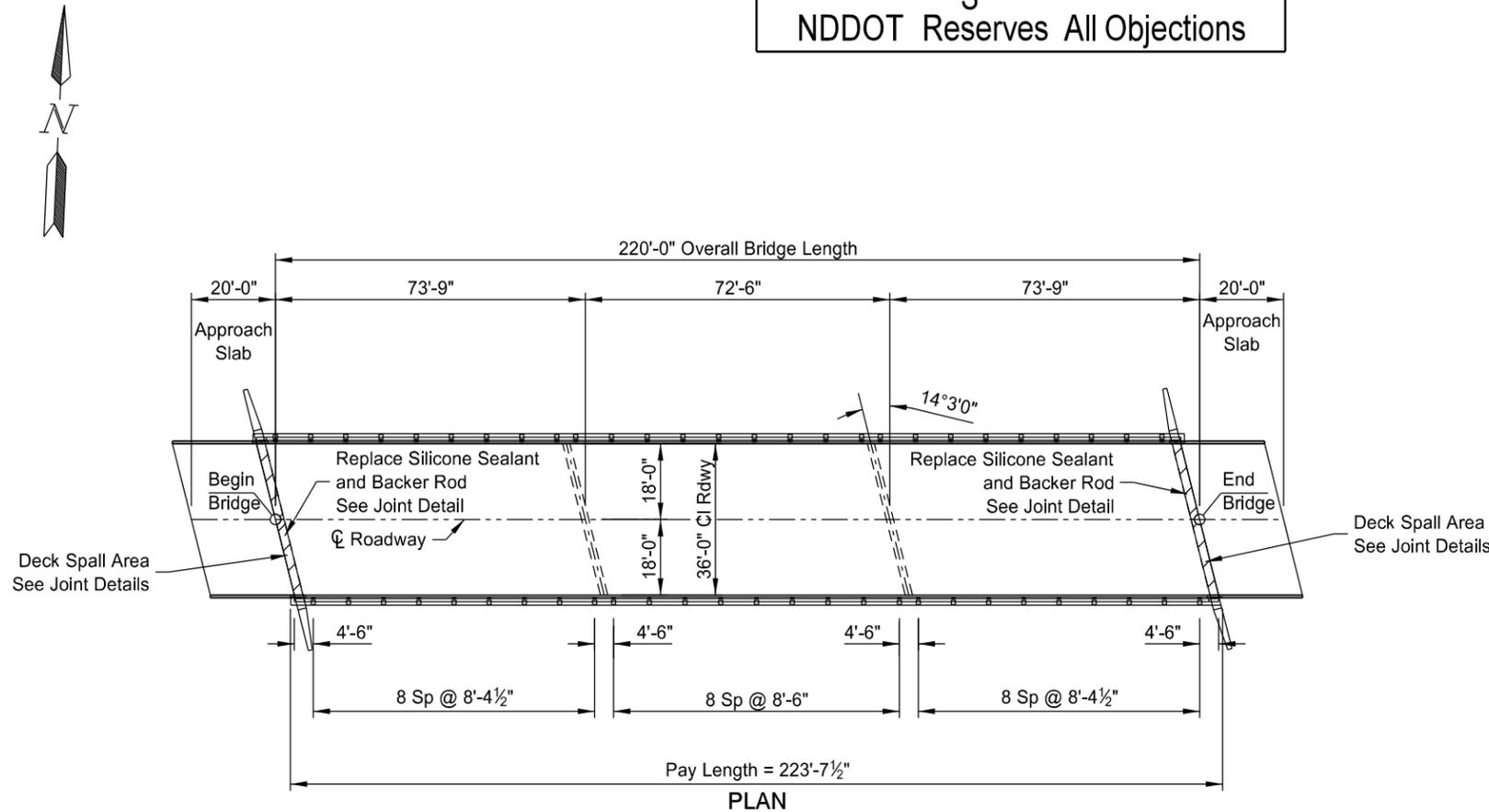
45° SKEW  
**REINFORCED CONCRETE  
 TRIPLE BOX CULVERT LAYOUT**  
 CLEAR SPAN 3 x 12' CLEAR HEIGHT 10'  
 MAXIMUM FILL 10'

PROJECT: HRR-8-200(020)951  
 STATION: 2949+90.00  
 TRAILL COUNTY

DATE: 3/24/15  
 Terrence R. Udland  
 BRIDGE ENGINEER

23 USC § 409 Documents  
NDDOT Reserves All Objections

Revised	3/24/15	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
		ND	HRR-8-200(020)951	170	16



NOTES:

- 100 SCOPE OF WORK: Work at this site consists of removing concrete safety shape transitions and portions of the east and west approach slabs, placing concrete curbs on the east and west approach slabs, replacing the end block at all corners and installing double box beam rail retrofit.
- 764 REMOVE CONCRETE SAFETY SHAPE TRANSITION: The removal of the safety shape transitions and portion of approach slab as shown shall be included in the price bid for "Remove Concrete Safety Shape Transition."
- 930 SILICONE SEALANT: The silicone sealant and backer rod shall be placed in the joints between the approach slabs and deck at both ends of the bridge. After placing the new concrete, the joint shall be cleaned of all foreign material and sandblasted before the new backer rod and silicone sealant are installed. The new silicone sealant and backer rod shall extend 6" up the face of the curb. All materials, labor and equipment required to remove and replace the backer rod and silicone sealant shall be included in the bid item "Silicone Sealant."
- 930 DECK SPALL REPAIR: The bridge deck and approach slabs have spall areas as shown at both ends of the bridge. The deck spall repair shall be constructed as a Bridge Deck Overlay meeting Section 650 of the NDDOT Standard Specifications with the exception that a mobile mixer will not be required. The depth of removal shall be 2½". The perimeter of the repair area shall be saw cut to a depth of 1". The saw cutting and all material, labor and equipment required to remove the concrete and repair the deck spall areas shall be included in the bid item "Deck Spall Repair."

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
602	1210	BRIDGE END POST MODIFICATION	EA	4
624	3002	DOUBLE BOX BEAM RAIL RETROFIT - E-RAIL	LF	447.2
748	0540	CURB	LF	80
764	1990	REMOVE CONCRETE SAFETY SHAPE TRANSITION	EA	4
930	8644	SILICONE SEALANT	LF	77
930	9610	DECK SPALL REPAIR	SF	77

This document was originally issued and sealed by Aaron M. Cook Registration Number PE 7864, on 03/24/15 and the original document is stored at the North Dakota Department of Transportation

NORTH DAKOTA  
DEPARTMENT OF TRANSPORTATION

**BNSF Overhead Separation Bridge**

**BRIDGE LAYOUT**

PROJECT: HRR-8-200(020)951

TRAILL COUNTY

DATE: 3/24/15  
BRIDGE ENGINEER: Terrence R. Udland

**BILL OF REINFORCING STEEL, GRADE 60**

LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS

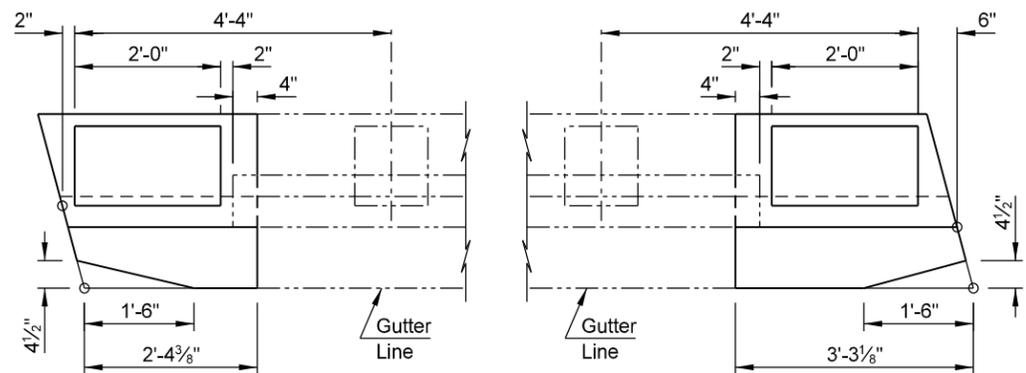
LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS											
					a	b	c	d	e	f	g	h	k	m		
CURBS & END POSTS	5	A500	24	2'-8"		2'-8"										
	5	D500	16	3'-6"		2'-4"	1'-2"					12	7.4			
	6	D501	24	3'-3"		2'-1"	1'-2"					9.2	12			
	5	F500	22	4'-9"			1'-3"	1'-1"	1'-7"	2.75"	10"	12	7.4	9.2		
	4	N500	16	6'-2"	10"	1'-9"	6"					0	12			

**NOTES:**

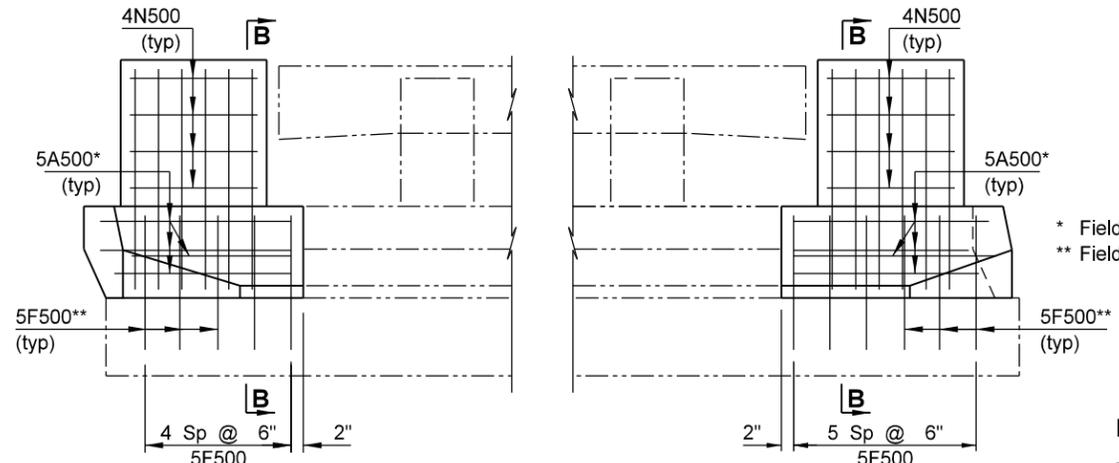
1. Fabrication and tolerances shall be in accordance with the CRSI Manual of Standard Practice.
2. All dimensions are out to out of bars.
3. Nominal length of each bent bar or cut bar is the sum total of the detailing dimensions for that bar, unless otherwise noted.
4. The "f" dimension indicates the inside radius unless otherwise noted.
5. The 5F500 bars shall be embedded into the concrete with a chemical adhesive system. The "g" dimension of the 5F500 bar is based on the embedment shown. The actual "g" dimension shall be based on embedment according to the chemical adhesive manufacturer's recommendations.

Sheet Added	3/24/15	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
		ND	HRR-8-200(020)951	170	16A

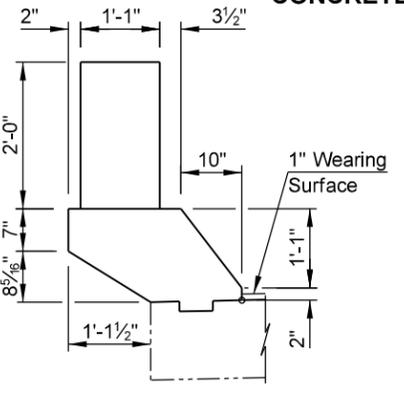
23 USC § 409 Documents  
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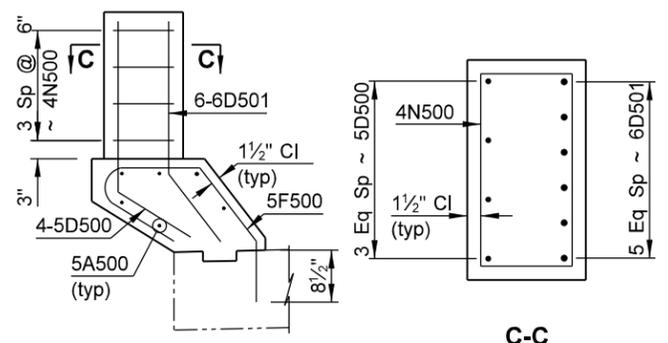
(SHOWING DIMENSIONS)  
**CONCRETE CURB & END POST PLAN**



(SHOWING REINFORCING)  
**CONCRETE CURB & END POST PLAN**



(SHOWING DIMENSIONS)  
**B-B**



(SHOWING REINFORCING)  
**B-B**

**C-C**

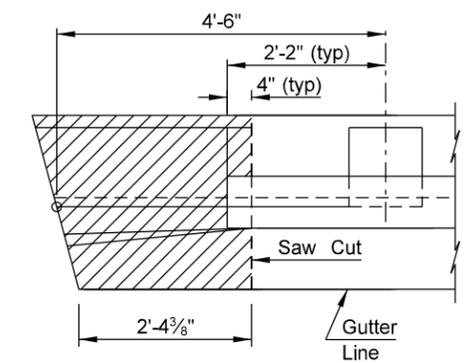
**NOTES:**

The concrete shall be class AAE-3 and the reinforcing steel shall be grade 60.

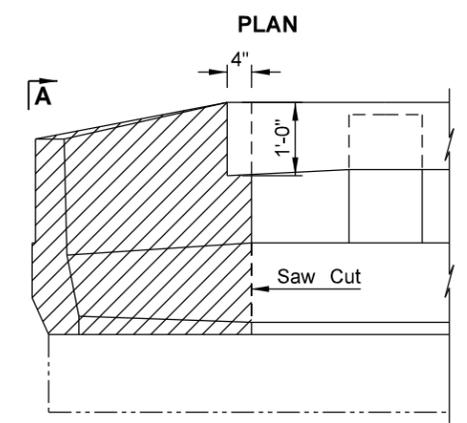
The existing end posts and curb shall be removed according to the details in the plans and properly disposed of. The perimeter of the curb shall be saw cut to a depth of 1" to produce a neat line between the concrete to be removed and the concrete to remain.

The quantities shown are for informational purposes only. All materials, labor and equipment including concrete and reinforcing steel required to remove and replace the end posts and portions of the curbs shall be included in the pay item "Bridge End Post Modification."

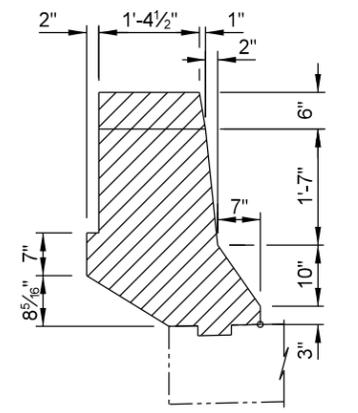
Surface finish "D" shall be required for all surfaces of the new concrete. The color of the finished surface shall match the color of the existing rail.



Hatched areas indicate concrete to be removed.



**PLAN**  
**ELEVATION**



**A-A**

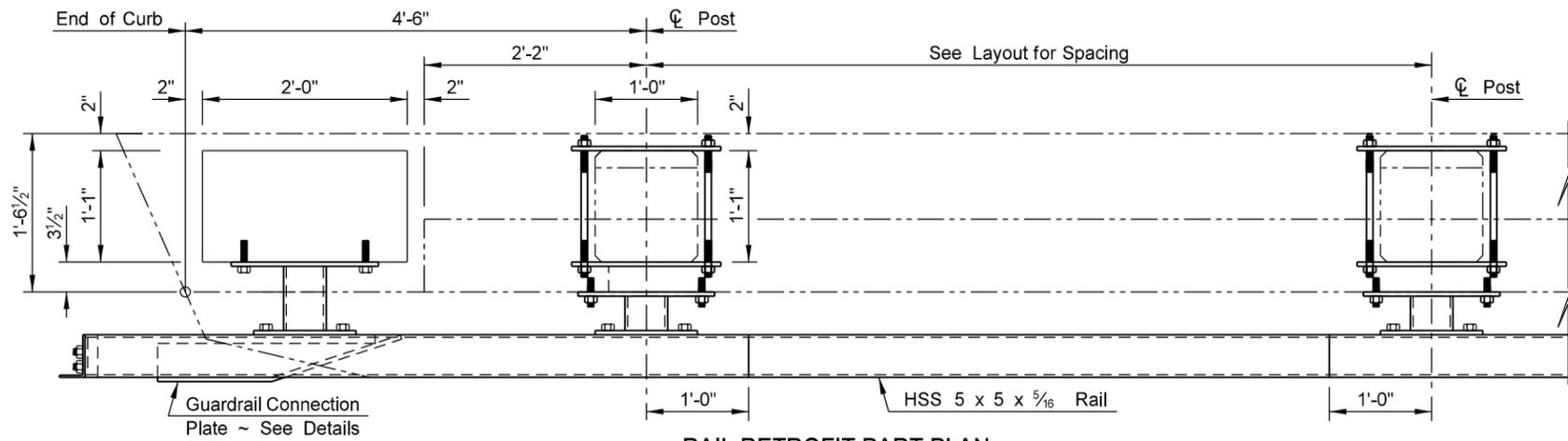
**CONCRETE REMOVAL DETAILS**

QUANTITIES	
BRIDGE END POST MODIFICATION	4 EA
BNSF Overhead Separation Bridge	
END POST MODIFICATION DETAILS	

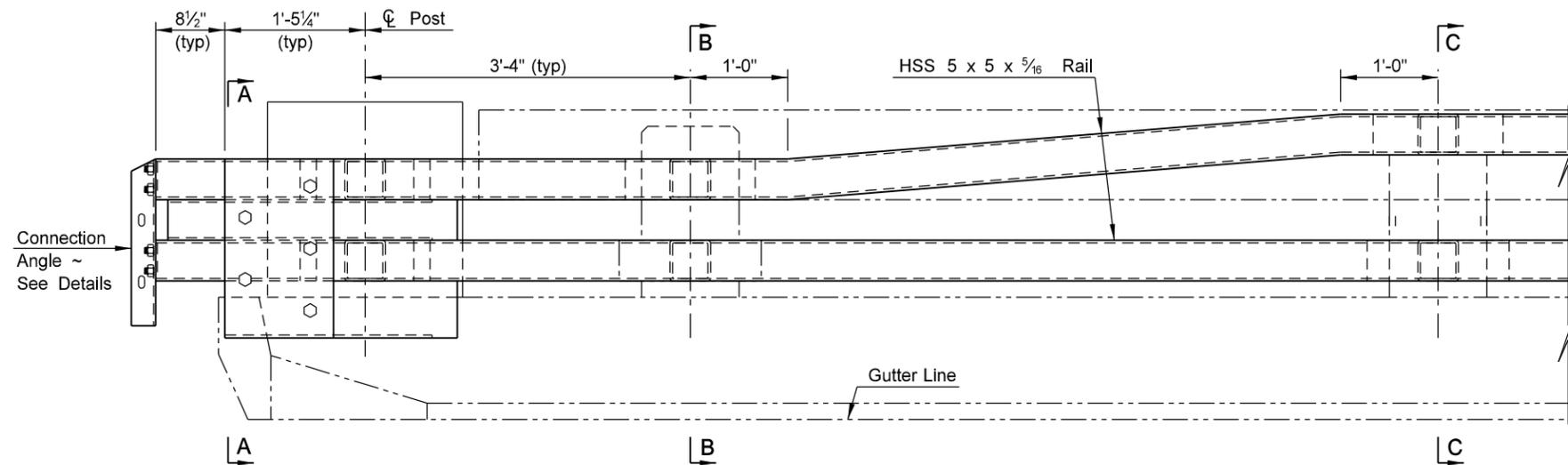
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Revised	3/24/15	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
		ND	HRR-8-200(020)951	170	17

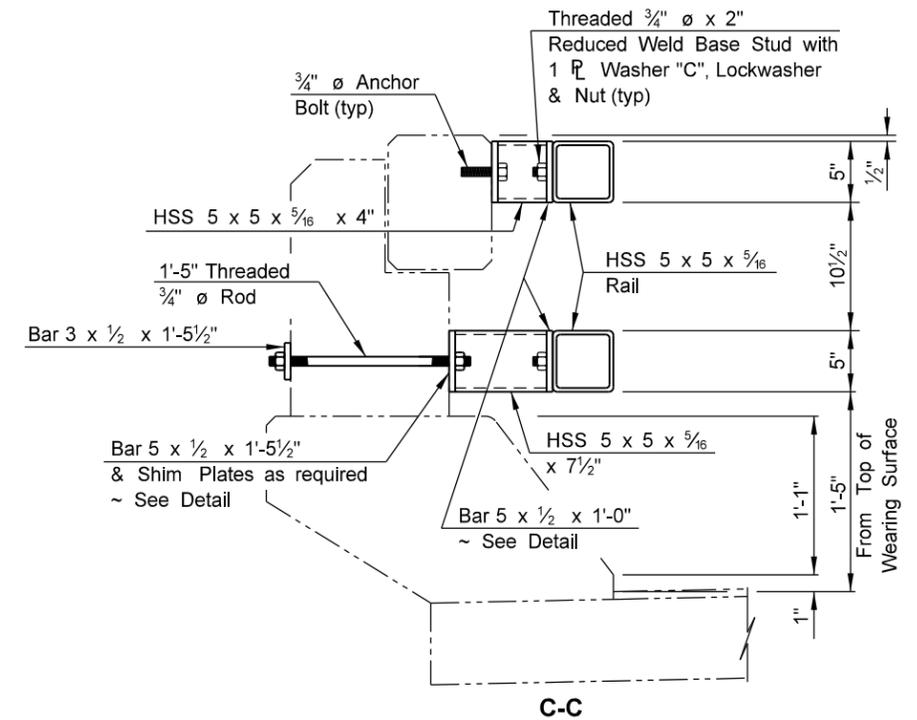
23 USC § 409 Documents  
NDDOT Reserves All Objections



RAIL RETROFIT PART PLAN

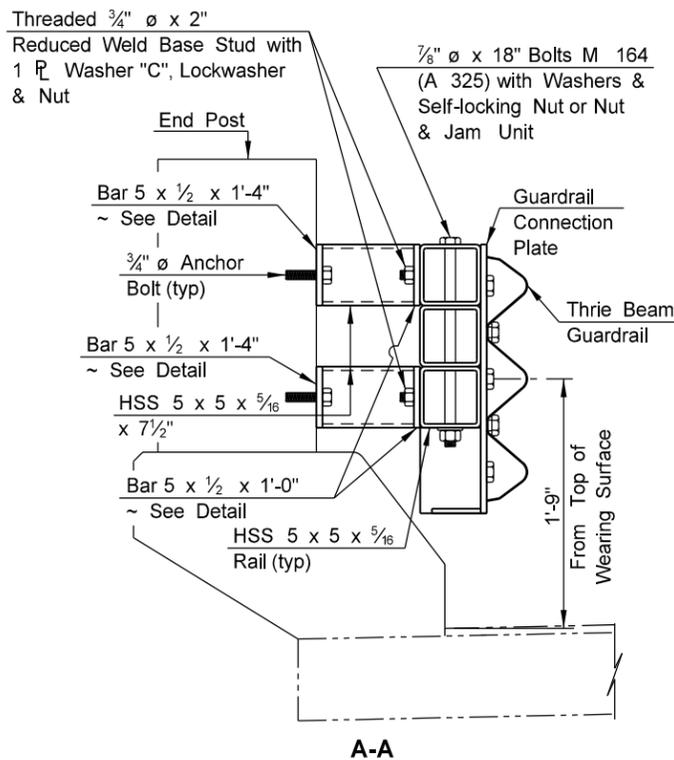


RAIL RETROFIT PART ELEVATION

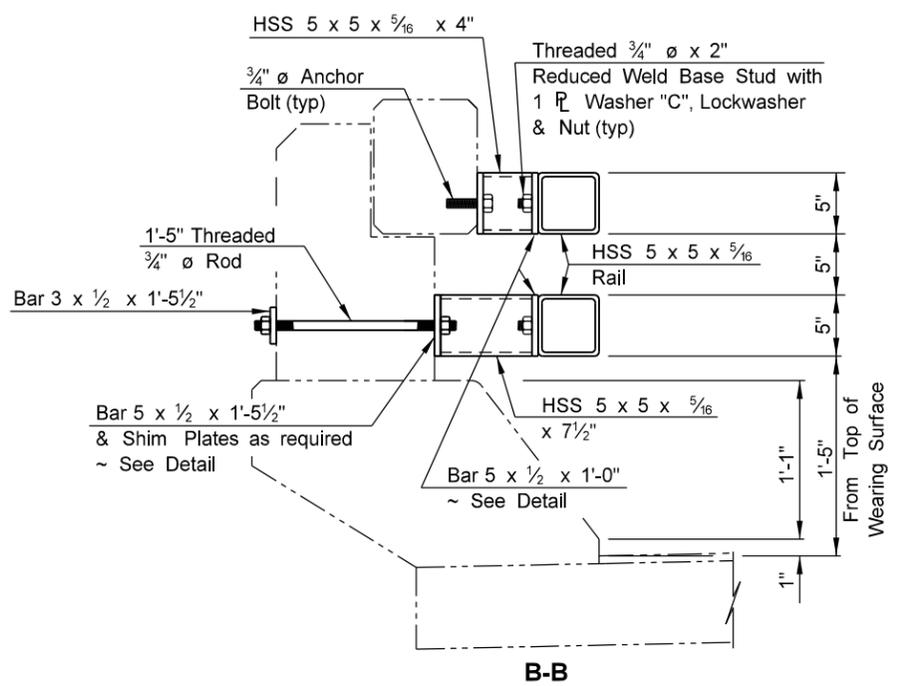


C-C

NOTE:  
See Dwg 200-959.588-4 for notes and details not shown on this drawing.



A-A



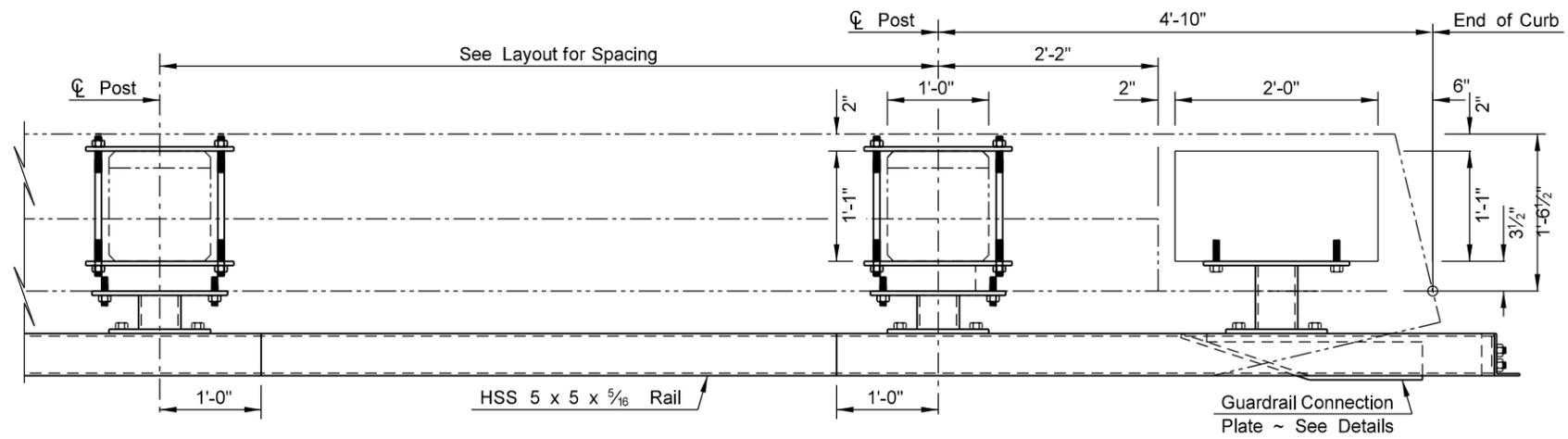
B-B

<b>QUANTITIES</b>
SEE DWG 200-959.588-4
<b>BNSF Overhead Separation Bridge</b>
<b>DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS</b>

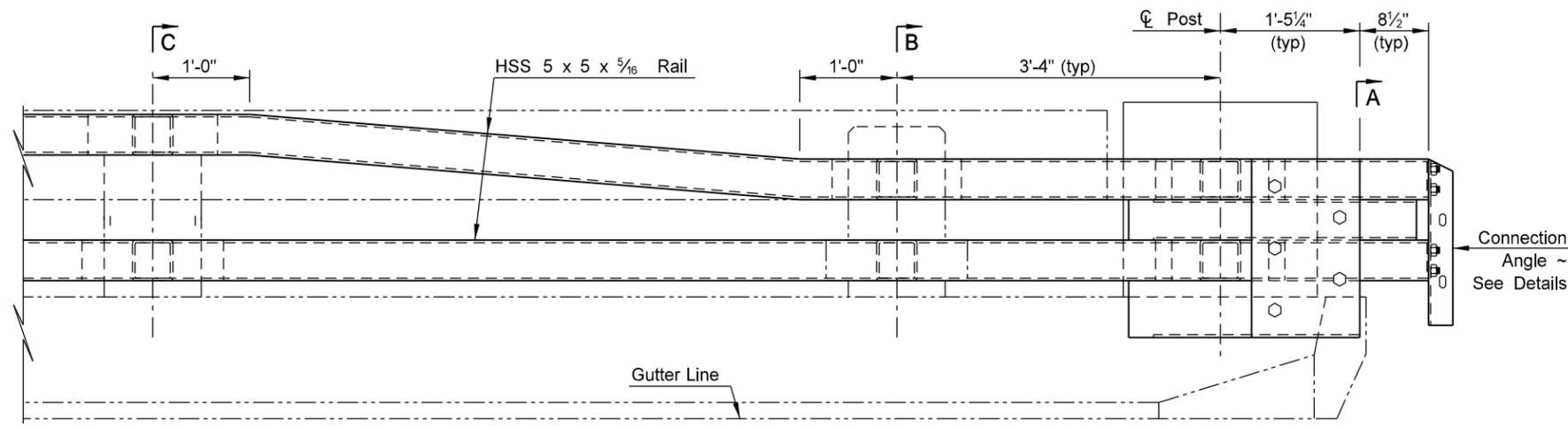
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Revised	3/24/15	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
		ND	HRR-8-200(020)951	170	18

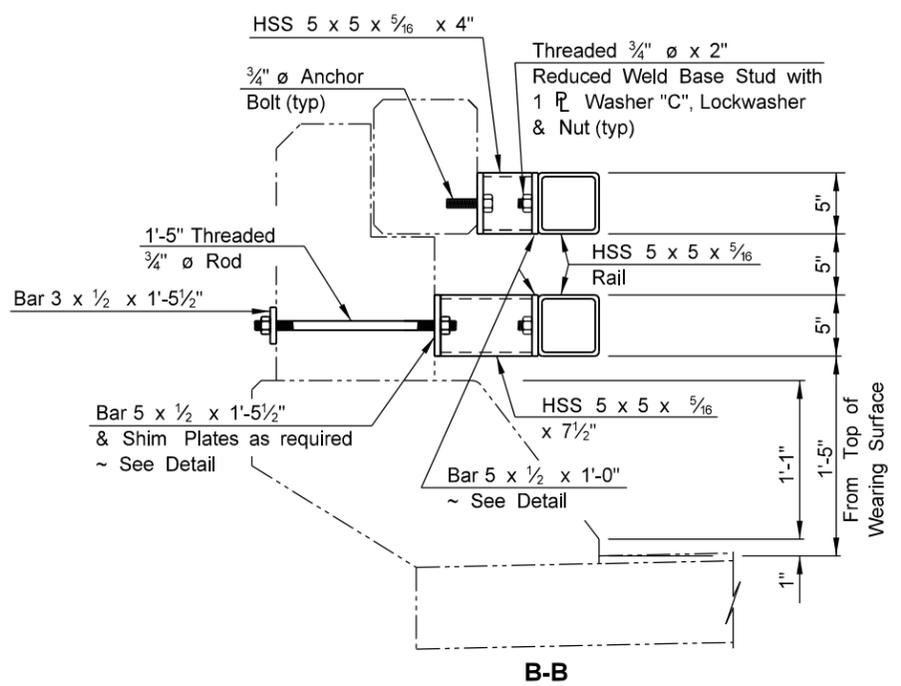
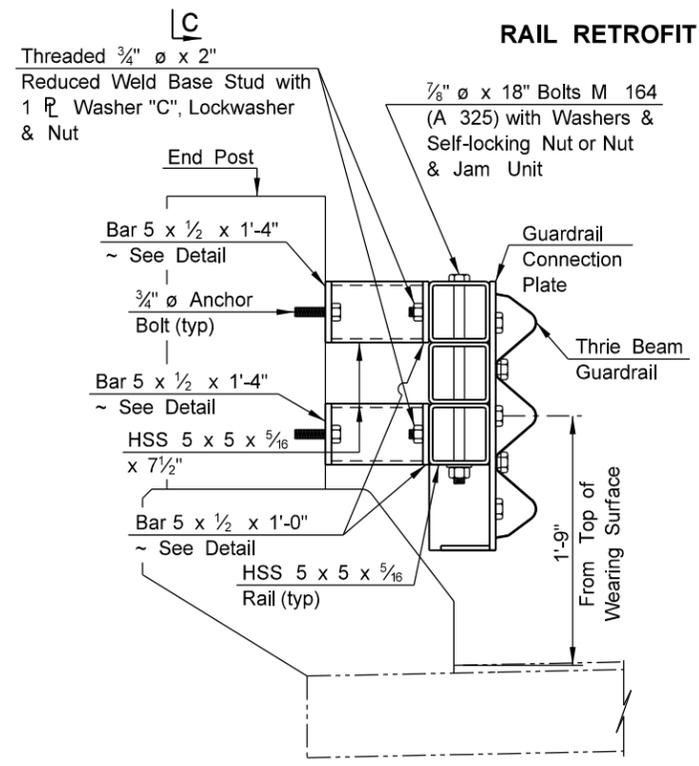
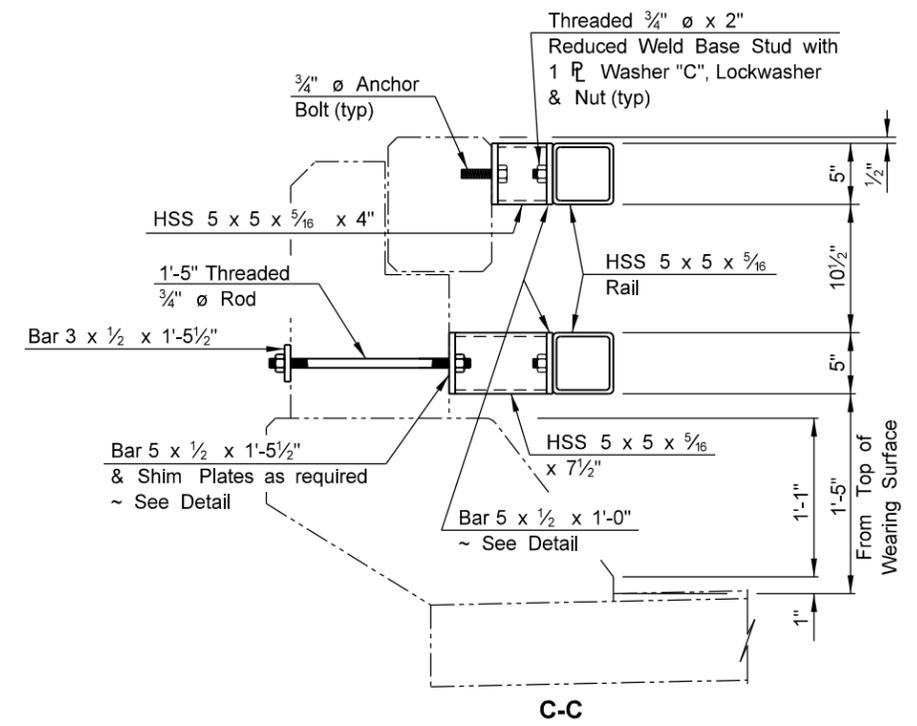
23 USC § 409 Documents  
NDDOT Reserves All Objections



RAIL RETROFIT PART PLAN



RAIL RETROFIT PART ELEVATION



**NOTE:**  
See Dwg 200-959.588-4 for notes and details not shown on this drawing.

<b>QUANTITIES</b>
SEE DWG 200-959.588-4
<b>BNSF Overhead Separation Bridge</b>
<b>DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS</b>

Revised	3/24/15	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
		ND	HRR-8-200(020)951	170	19

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

**NOTES:**

The bid item shall be "Double Box Beam Rail Retrofit - E-Rail." The pay length shall be end to end and in linear feet.

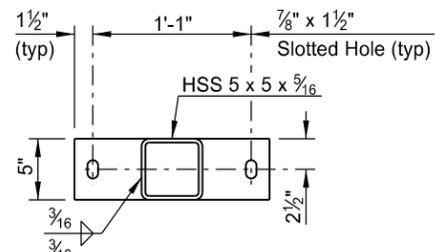
Anchor bolts shall be embedded into the concrete with a chemical adhesive system that can develop a tensile strength of at least 17,500 lbs.

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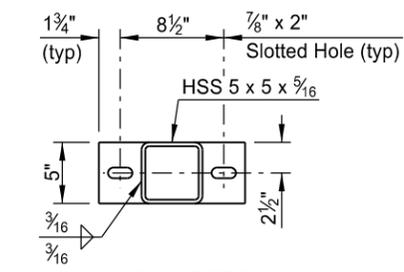
QUANTITIES	
E-RAIL RETROFIT	447.2 LF

BNSF Overhead Separation Bridge

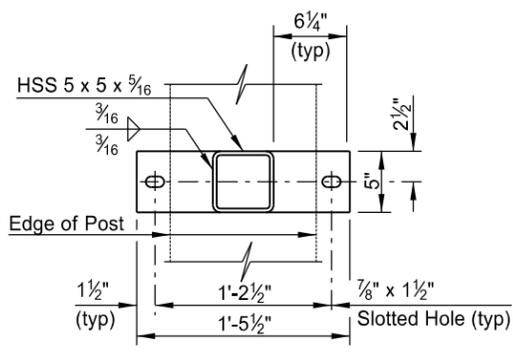
**DOUBLE BOX BEAM  
E-RAIL RETROFIT DETAILS**



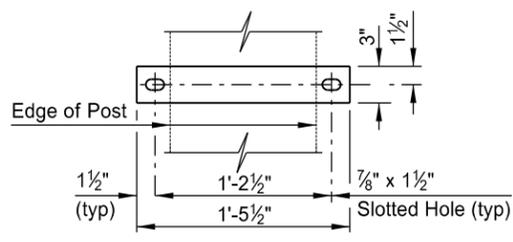
(CONCRETE RAIL CONNECTION)  
**BAR 5 X 1/2 X 1'-4" DETAIL**



(RAIL CONNECTION)  
**BAR 5 X 1/2 X 1'-0" DETAIL**

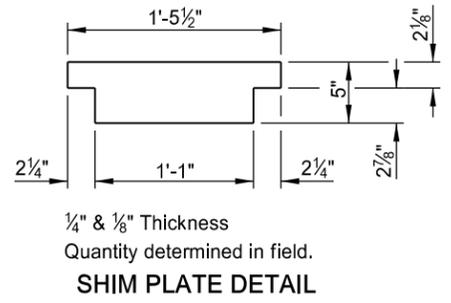


(CONCRETE POST CONNECTION)  
**BAR 5 X 1/2 X 1'-5 1/2" DETAIL**

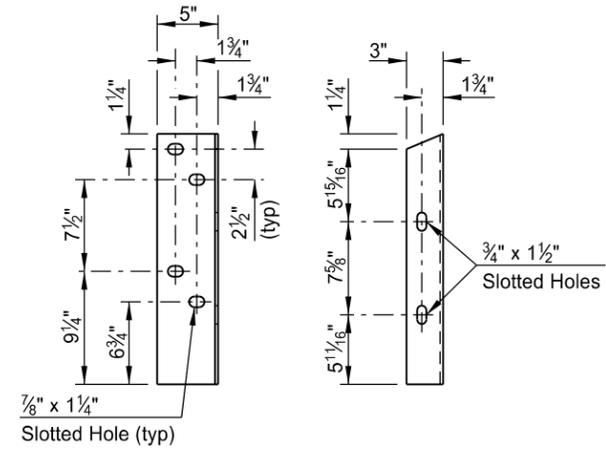


(CONCRETE POST CONNECTION)  
**BAR 3 X 1/2 X 1'-5 1/2" DETAIL**

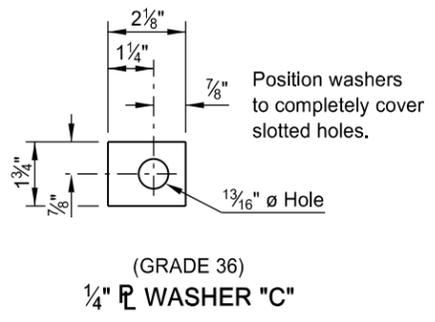
The filled circles indicate drilled and tapped holes for 7/8" ø bolts M 164 (A 325). See Detail "B."  
The open circle indicates a drilled hole through the 1/2" plate for a 7/8" ø bolt M 164 (A 325).



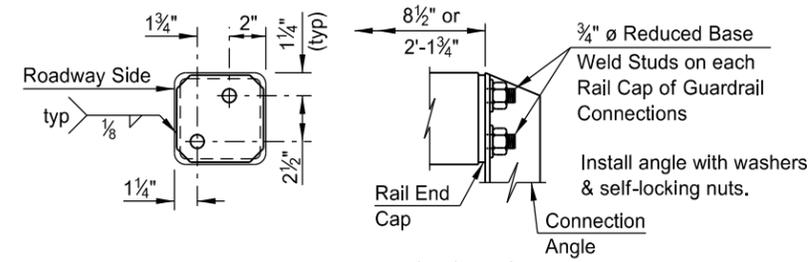
1/4" & 1/8" Thickness  
Quantity determined in field.  
**SHIM PLATE DETAIL**



**L5 X 3 X 1/4 X 1'-8 1/2"**  
(4 REQUIRED)  
**CONNECTION ANGLE DETAILS**

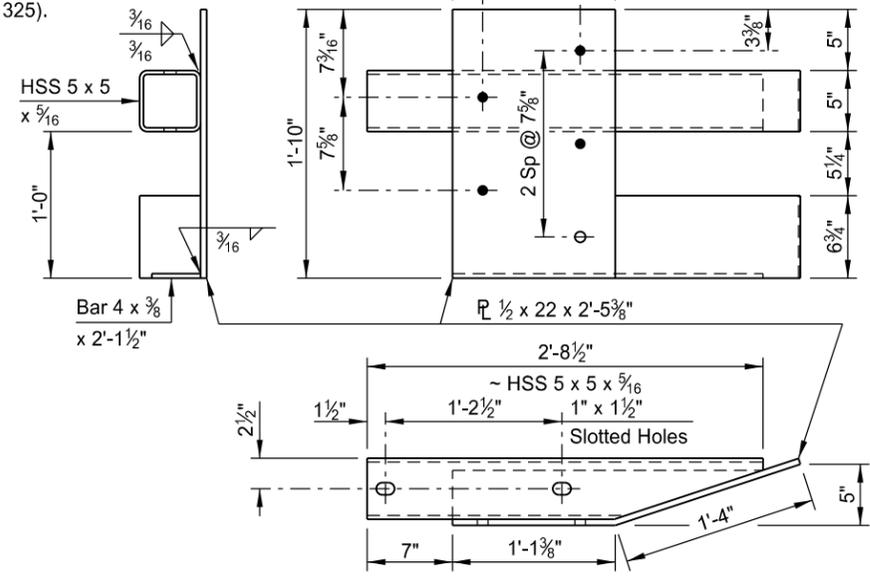


(GRADE 36)  
**1/4" R WASHER "C"**

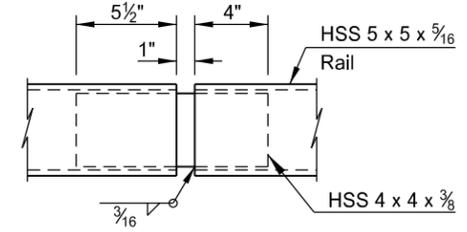


Rail cap shall be a Bar 4 3/4 x 3/16 x 4 3/4".  
Cope corners 1" to provide zinc drains.

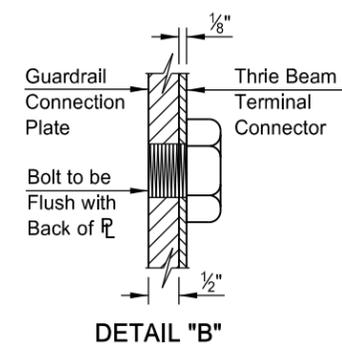
**RAIL CAP DETAILS**



(4 REQUIRED)  
**GUARDRAIL CONNECTION PLATE DETAILS**



**RAIL SPLICE DETAIL**

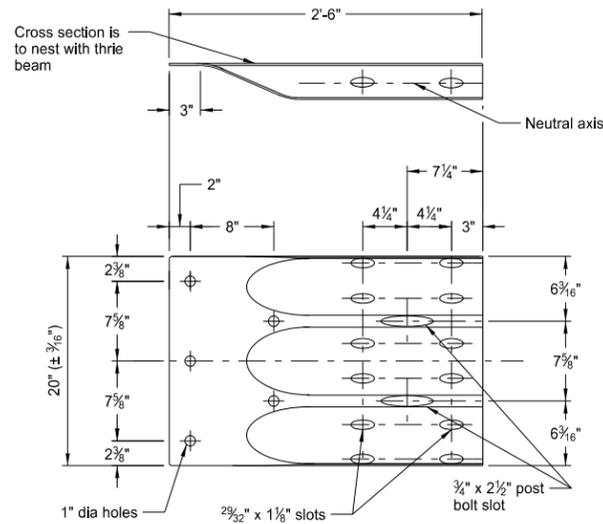


**DETAIL "B"**

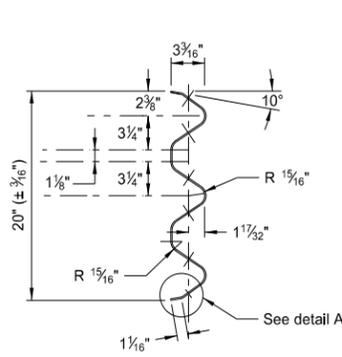


# THRIE BEAM TRANSITION TO DOUBLE BOX BEAM RETROFIT

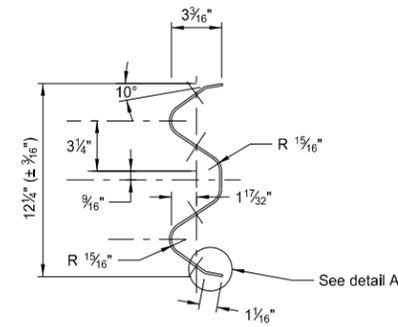
D-764-10



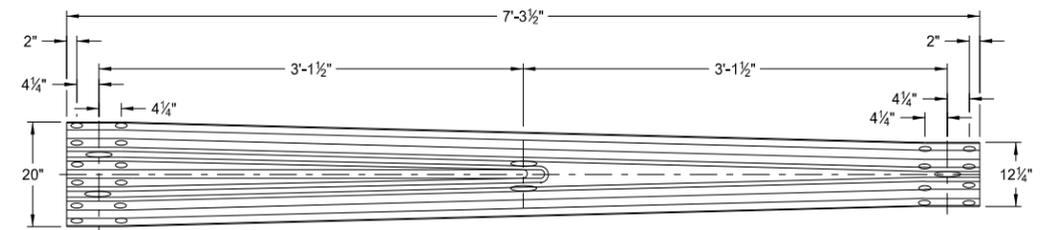
THRIE BEAM TERMINAL CONNECTOR



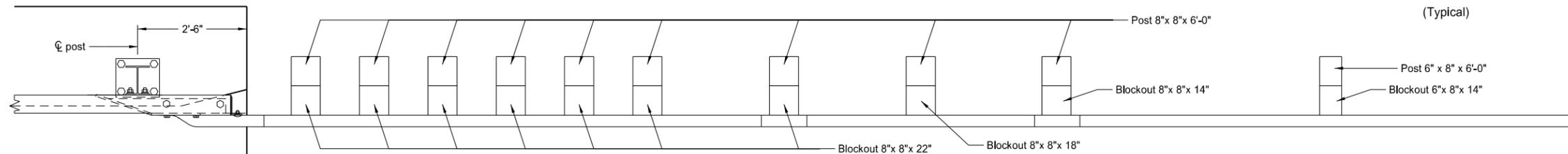
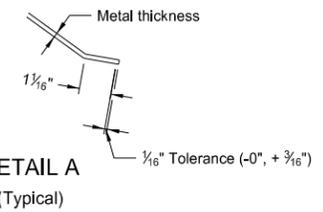
THRIE BEAM END VIEW



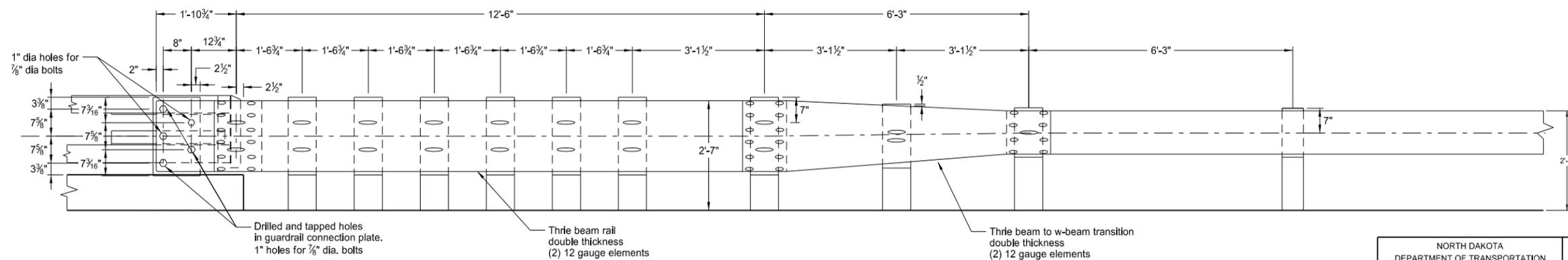
W-BEAM END VIEW



THRIE BEAM TO W-BEAM TRANSITION SECTION



PLAN

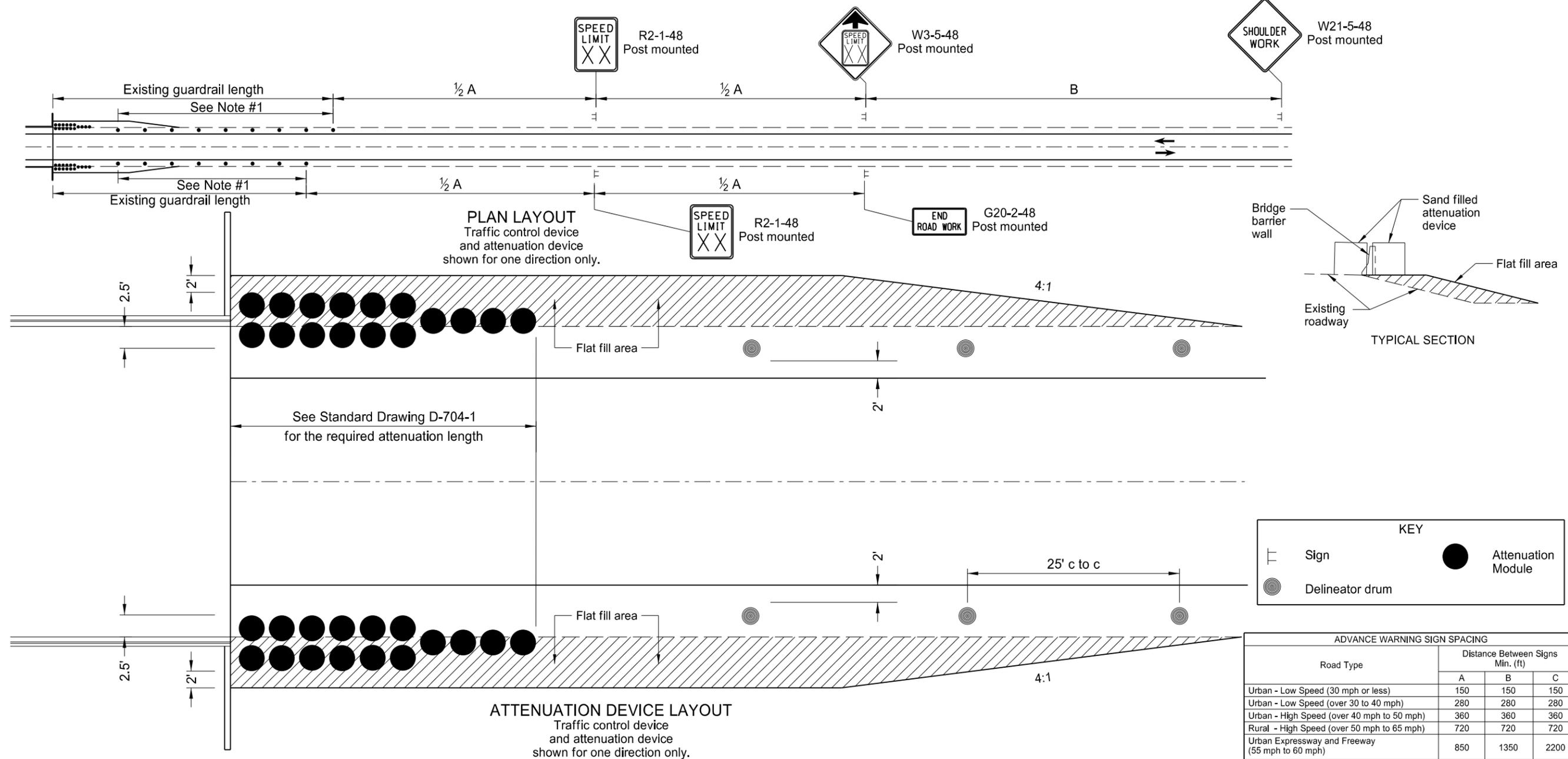


ELEVATION

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-11-13	
REVISIONS	
DATE	CHANGE

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SHORT TERM END TREATMENT FOR BRIDGES  
(ATTENUATION DEVICE METHOD)



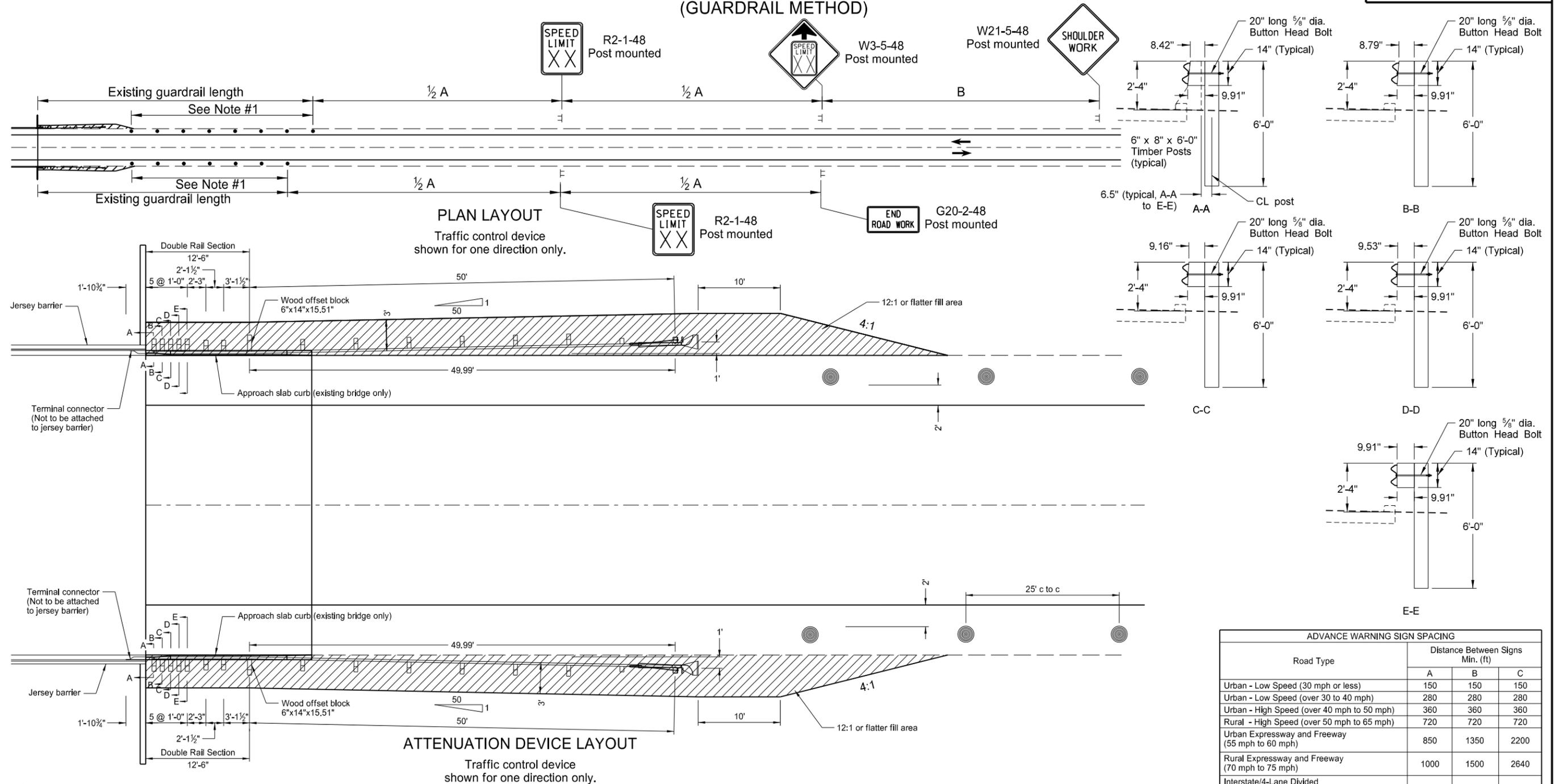
Notes

1. If the shoulder width is less than 3', the vertical panels shall be used and placed as far from the driving lane as possible and still be on the finished shoulder. When there is no shoulder, the vertical panels shall be placed as near as possible to the driving lane on the foreslope of the shoulder.
2. If the bridge is within construction zone signing, the reduced speed ahead sign can be eliminated.
3. The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 mph. Where speed limits are to be reduced more than 30 mph, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 mph. The second speed limit shall be placed at  $\frac{1}{2} B$ .
4. The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
5. Existing speed limit signs within a reduced speed zone shall be covered.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-27-13	
REVISIONS	
DATE	CHANGE

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 PE-2930,  
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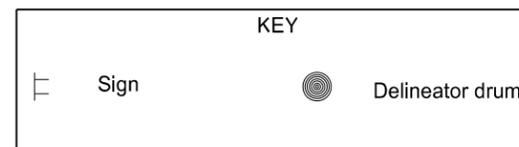
SHORT TERM END TREATMENT FOR BRIDGES  
(GUARDRAIL METHOD)



Notes

1. If the shoulder width is less than 3', vertical panels shall be used in place of delineator drums and placed as far from the driving lane as possible and still be on the finished shoulder. When there is no shoulder, the vertical panels shall be placed as near as possible to the driving lane on the foreslope of the shoulder.
2. If the bridge is within construction zone signing, the reduced speed ahead sign can be eliminated.
3. The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 mph. Where speed limits are to be reduced more than 30 mph, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 mph. The second speed limit shall be placed at 1/2 B.

4. The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
5. Existing speed limit signs within a reduced speed zone shall be covered.



Road Type	ADVANCE WARNING SIGN SPACING		
	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
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