



North Dakota Department of Transportation

Grant Levi, P.E.
Director

Jack Dalrymple
Governor

October 5, 2016

ADDENDUM 1 – JOB 7

TO: All prospective bidders on project SU-3-982(031)035, NHU-3-019(044)155 & NHU-3-020(074)103, Job No. 7 scheduled for the October 14, 2016 bid opening.

The following plan and request for proposal revisions shall be made:

Plan Revisions:

See attached summary from Chad Petersen, PE, KLJ, dated October 4, 2016 for an explanation.

Request for Proposal Revisions:

Remove and replace pages 8-10 and 13-18 of 20 of the Proposal pages located at the beginning of the Request for Proposal, with the enclosed pages revised 10/4/2016.

Page 8 of 20:

Item 216 0100 WATER; quantity decreased from 2,553 to 1027 MGAL.

Page 9 of 20:

Item 302 0356 AGGREGATE SURFACE COURSE CL 13; 5994 TON was deleted.

Page 10 of 20:

Item 624 0123 PEDESTRIAN RAILING; quantity decreased from 1297.4 to 1237.4 LF.

Item 704 1000 TRAFFIC CONTROL SIGNS; quantity decreased from 7437 to 5838 UNIT.

Item 704 9100 VIDEO MONITORING SYSTEM; 1 EA was added.

Item 706 0400 FIELD OFFICE; 1 EA was deleted.

Item 706 0500 AGGREGATE LABORATORY; 1 EA was added.

Page 13 of 20:

Item 748 0520 CURB-TYPE I; quantity decreased from 204 to 155 LF.

Item 750 0030 PIGMENTED IMPRINTED CONCRETE; quantity increased from 239 to 306 SY.

Item 750 0100 SIDEWALK CONCRETE; quantity decreased from 4145 to 4078 SY.

Page 14 of 20:

Item 762 0122 PREFORMED PATTERNED PVMT MK-MESSAGE (GROOVED); quantity increased from 3899 to 4219 SF.

Addendum 1

Job 7, October 14, 2016 Bid Opening

Page 2 of 2

Page 15 of 20:

Item 762 1305 PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED;
quantity increased from 14,569 to 14,765 LF.

Item 762 1307 PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED;
quantity increased from 153 to 314 LF.

Item 762 1309 PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED;
quantity increased from 1576 to 1673 LF.

Item 762 1325 PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED;
quantity increased from 318 to 403 LF.

Page 16 of 20:

Item 990 0220 GUARD POST-PERMANENT; 10 EA was added.

Page 17 and 18 of 20:

Items shifted.

This addendum is to be incorporated into the bidder's proposal for this project.

AASHTOWare Project Bids files should be updated by downloading the addendum file from the Bid Express on-line bidding exchange at <http://www.bidx.com/> and load it into the AASHTOWare Project Bids program.



CAL J. GENDREAU – CONSTRUCTION SERVICES ENGINEER

80:plm

Enclosure

◇ October 4, 2016

ADDENDUM 1 JOB 7

TO: All prospective bidders and suppliers on Project NHU-3-019(044)155, NHU-3-020(074)103 & SU-3-982(031)035 scheduled for the October 14, 2016 bid opening.

Revisions for NHU-3-019(044)155, NHU-3-020(074)103 & SU-3-982(031)035:

Add plan sheets:

- Section 180 Sheets 1-4 Added 9/29/2016

Remove & replace plan sheets:

- Section 2 Sheet 1 Revised 10/4/2016
- Section 6 Sheet 1-8 Revised 9/29/2016
- Section 8 Sheets 1-4 Revised 9/29/2016
- Section 10 Sheet 1 Revised 9/29/2016
- Section 20 Sheets 17-18, 38-39 Revised 10/3/2016
- Section 55 Sheets 1-2 Revised 9/29/2016
- Section 90 Sheets 1, 15, 18 Revised 9/29/2016
- Section 90 Sheets 6-8 Revised 9/30/2016
- Section 100 Sheets 1, 7-8, 57, 78 Revised 9/29/2016
- Section 140 Sheets 4, 7, 11 Revised 9/29/2016
- Section 170 Sheets 8, 17, 32, 37, 47, 58, 59, 69 Revised 10/3/2016

with the enclosed revised sheets.

Electronic files will be **made available through the NDDOT's Plans and Proposals Page**.

SECTION 2

SHEET 1:

- **Section 20 Sheet 39 has been renamed "Guard Post-Permanent".**
- Added Section 180 Sheets 1-4 to Table of Contents.

SECTION 6

SHEET 1-8:

- Note 107-P03: HAUL ROAD RESTORATION has been deleted.
- Note 107-P03: RAILWAY SAFETY has been added.
- Note 704-P05: TRUCK DETOUR has been deleted.
- Note 704-P06: STATE ROUTE MARKERS has been changed to Note 704-P05.
- Note 704-P07: TRAFFIC CONTROL has been changed to Note 704-P06.
- Note 706-P01: FIELD OFFICE has been deleted.
- Note 706-P01: AGGREGATE LABORATORY has been added.
- Note 714-P01: UNDERDRAIN has been revised.
- Note 722-P02: MANHOLE CASTINGS has been revised
- Note 722-P03: STORM DRAIN INLETS AND MANHOLES has been revised
- Note 722-P04: ADJUST MANHOLE has been revised.
- Note 724-P01: WATER SERVICE LINE 1IN has been revised.

- Note 724-P02: RELOCATE WATERMAIN has been revised.
- Note 724-P03: HYDRANT RELOCATE has been revised.
- Note 724-P04: SANITARY SEWER PIPE has been deleted.
- Note 724-P05: SANITARY SEWER has been deleted.
- Note 724-P06: TEMPORARY SEWAGE HANDLING has been changed to 724-P04.
- Note 770-P01: LIGHT STANDARD 8FT MA 40FT MT HT BREAKAWAY has been revised.

SECTION 8

SHEET 1-4:

- The following bid items have been updated:

Spec	Code	Description	Unit	Previous Quantity	Addendum 1 Quantity
216	0100	WATER	M GAL	2,553	1,027
624	0123	PEDESTRIAN RAILING	LF	1,297.4	1,237.4
704	1000	TRAFFIC CONTROL SIGNS	UNIT	7,437	5,838
748	0520	CURB-TYPE I	LF	204	155
750	0030	PIGMENTED IMPRINTED CONCRETE	SY	239	306
750	0100	SIDEWALK CONCRETE	SY	4,145	4,078
762	0122	PATTERNED PVMT MK-MESSAGE(GROOVED)	SF	3,899	4,219
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	14,569	14,765
762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF	153	314
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	1,576	1,673
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	318	403

- The following bid items have been added:

Spec	Code	Description	Unit	Previous Quantity	Addendum 1 Quantity
704	9100	VIDEO MONITORING SYSTEM	EA	-	1
706	0500	AGGREGATE LABORATORY	EA	-	1
990	0220	GUARD POST-PERMANENT	EA	-	10

- The following bid items have been removed:

Spec	Code	Description	Unit	Previous Quantity	Addendum 1 Quantity
302	0356	AGGREGATE SURFACE COURSE CL 13	TON	5,994	-
706	0400	FIELD OFFICE	EA	1	-

SECTION 10

SHEET 1:

- Removed Aggregate Surface Course CL 13 and reduced the water required for Dust Palliative.

SECTION 20

SHEET 17:

- Removed 60 LF of Pedestrian Railing. Added Guard Post-Permanent, 10 EA.

SHEET 18:

- PE underdrain has been updated to PVC.

SHEET 38:

- Sheet has been deleted.
- Reference to concrete footing have been deleted.
- Sheet 39 has been updated to Sheet 38.
- **Added 4" spacing for the ¾" pickets**

SHEET 39:

- Guard Post-Permanent detail has been added.

SECTION 55

SHEET 1:

- References to existing gas line (to be moved by others) has been updated to (abandoned).

SHEET 2:

- References to existing gas line (to be moved by others) has been updated to (abandoned).

SECTION 90

- Updates to Pigmented Imprinted Concrete are shown in Section 90. Other sections do not graphically reflect this change.

SHEET 1:

- Updated quantity of **"Pigmented Imprinted Concrete"**.
- Updated quantity of **"Sidewalk Concrete"**.
- **Updated quantity of "Curb-Type I"**.

SHEET 6:

- Added Pigmented Imprinted Concrete and updated dimensions.

SHEET 7:

- Added Pigmented Imprinted Concrete and updated dimensions.

SHEET 8:

- Added Pigmented Imprinted Concrete and updated dimensions.

SHEET 15:

- Added pavement marking through concrete exception.
- **The following bid items have been updated: “Preformed Patterned PVMT MK-Message(Grooved)”, “Preformed Patterned PVMT MK 4IN Line-Grooved”, “Preformed Patterned PVMT MK 8IN Line-Grooved”,**
- **The following bid items have been added: “Preformed Patterned PVMT MK 6IN Line-Grooved”, “Preformed Patterned PVMT MK 24IN Line-Grooved”.**

SHEET 18:

- Updated quantities in Pavement Marking (Grooved) and Pavement Marking Message (Grooved) tables.

SECTION 100

SHEET 1:

- Truck Detour Route signs have been deleted.

SHEET 7:

- Sheet has been deleted.

SHEET 8:

- Sheet has been deleted.

SHEET 57:

- Calls to Truck Detour Route have been deleted.

SHEET 78:

- Calls to Truck Detour Route have been deleted.

SECTION 140

SHEET 4:

- Update Concrete Foundation - Highway Lighting from 2 EA to 3 EA. Update LT STD 8FT MA 40FT MT HT Breakaway from 2 EA to 3 EA. Update L11 to Round Tapered Steel. Update Remarks on L11.

SHEET 7:

- Update Concrete Foundation - Highway Lighting from 3 EA to 2 EA. Update LT STD 8FT MA 40FT MT HT Breakaway from 3 EA to 2 EA.

SHEET 11:

- Update Concrete Foundation - Highway Lighting from 22 EA to 23 EA. Update LT STD 8FT MA 40FT MT HT Breakaway from 22 EA to 23 EA.

SECTION 170

SHEET 8:

- Added steel specification for anchor bolt assembly.

SHEET 17:

- Removed bolt holes in webs.

SHEET 32:

- Added Abutment Backwall, Abutment Bearing Seat and Abutment Footing callouts on Section at CL Bridge.

SHEET 37:

- Added Abutment Backwall, Abutment Bearing Seat and Abutment Footing callouts on Section at CL Bridge.

SHEET 47:

- Added minimum anchor bolt sizes in note 6.

SHEET 58:

- Added note 4 for HSS steel specification.

SHEET 59:

- Added note 4 for HSS steel specification.

SHEET 69:

- **Added 4" spacing for the $\frac{3}{4}$ " pickets.**

SECTION 180

SHEET 1-4:

- Plan sheets have been added.

This addendum is to be incorporated into bidder's proposal for this project.

Sincerely,
KLJ

A handwritten signature in blue ink that reads "Chad Petersen".

Project Engineer

Enclosure(s): Revised Plan Sheets

-Project #: NHU-3-019(044)155, NHU-3-020(074)103 & SU-3-982(031)035

c: Ardin Striefel, NDDOT

BID ITEMS

Projects: SU-3-982(031)035 (PCN-21609), NHU-3-019(044)155 (PCN-17505), and NHU-3-020(074)103 (PCN-17504)

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
017	203	0140	BORROW-EXCAVATION	CY	3,580.				
018	210	0102	CLASS 1 EXCAVATION-SITE 1	L SUM	1.				
019	210	0103	CLASS 1 EXCAVATION-SITE 2	L SUM	1.				
020	210	0201	FOUNDATION PREPARATION	EA	2.				
021	210	0209	FOUNDATION FILL	TON	20,908.				
022	210	0210	FOUNDATION FILL	CY	84.300				
023	216	0100	WATER	M GAL	1,027.				
024	251	0100	SEEDING CLASS I	ACRE	10.270				
025	251	2000	TEMPORARY COVER CROP	ACRE	6.950				
026	253	0101	STRAW MULCH	ACRE	6.950				
027	253	0201	HYDRAULIC MULCH	ACRE	10.270				
028	255	0101	ECB TYPE 1	SY	4,230.				
029	255	0151	REMOVE ECB TYPE 1	SY	4,230.				
030	258	0100	CONCRETE SLOPE PROTECTION	SY	421.				
031	261	0112	FIBER ROLLS 12IN	LF	6,836.				
032	261	0113	REMOVE FIBER ROLLS 12IN	LF	6,836.				

BID ITEMS

Projects: SU-3-982(031)035 (PCN-21609), NHU-3-019(044)155 (PCN-17505), and NHU-3-020(074)103 (PCN-17504)

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$\$	000	\$\$\$\$\$	00
033	302	0120	AGGREGATE BASE COURSE CL 5	TON	7,765.				
034	302	0314	TEMPORARY TRAFFIC SURFACE AGGREGATE	TON	1,328.				
035	411	0105	MILLING PAVEMENT SURFACE	SY	17,840.				
036	430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON	3,033.				
037	550	0302	8.5IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	10,378.				
038	602	0130	CLASS AAE-3 CONCRETE	CY	2,313.500				
039	602	1134	PILE SUPPORTED APPROACH SLAB	SY	115.600				
040	602	6001	PRECAST PIER CAP	EA	8.				
041	602	6002	PRECAST ABUTMENT	EA	4.				
042	602	6005	PRECAST CONCRET WING WALL	EA	4.				
043	604	9550	PRESTRESSED CONCRETE FASCIA GIRDER	LF	360.				
044	612	0115	REINFORCING STEEL-GRADE 60	LBS	409,054.				
045	612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	40,782.				
046	616	5890	STRUCTURAL STEEL	L SUM	1.				
047	618	0115	UNTREATED TIMBER	MBM	51.700				
048	622	0068	STEEL PILING HP 14 X 89	LF	12,880.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$\$	000	\$\$\$\$\$	00
049	624	0123	PEDESTRIAN RAILING	LF	1,237.400				
050	624	0124	PEDESTRIAN FENCE	LF	351.				
051	702	0100	MOBILIZATION	L SUM	1.				
052	704	0100	FLAGGING	MHR	2,600.				
053	704	1000	TRAFFIC CONTROL SIGNS	UNIT	5,838.				
054	704	1018	LANE CLOSURE-SIGNAL CONTROL/FLAGGING CONTROL	EA	2.				
055	704	1052	TYPE III BARRICADE	EA	43.				
056	704	1060	DELINEATOR DRUMS	EA	124.				
057	704	1067	TUBULAR MARKERS	EA	159.				
058	704	1086	SEQUENCING ARROW PANEL-TYPE B	EA	3.				
059	704	1500	OBLITERATION OF PAVEMENT MARKING	SF	5,484.				
060	704	3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF	40.				
061	704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	EA	62.				
062	704	9100	VIDEO MONITORING SYSTEM	EA	1.				
063	706	0500	AGGREGATE LABORATORY	EA	1.				
064	708	1200	SMALL ROCK COVER	TON	620.				

BID ITEMS

Projects: SU-3-982(031)035 (PCN-21609), NHU-3-019(044)155 (PCN-17505), and NHU-3-020(074)103 (PCN-17504)

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
097	722	6240	ADJUST UTILITY APPURTENANCE	EA	3.				
098	724	0420	HYDRANT-RELOCATE	EA	1.				
099	724	0611	WATER SERVICE LINE 1IN	LF	45.				
100	724	0892	RELOCATE WATERMAIN	EA	1.				
101	724	2120	36IN X 23IN ARCH SANITARY SEWER PIPE	LF	155.				
102	744	0100	POLYSTYRENE INSULATION BOARD	BD FT	10,422.				
103	748	0140	CURB & GUTTER-TYPE I	LF	3,912.				
104	748	0520	CURB-TYPE I	LF	155.				
105	750	0030	PIGMENTED IMPRINTED CONCRETE	SY	306.				
106	750	0100	SIDEWALK CONCRETE	SY	4,078.				
107	750	1000	DRIVEWAY CONCRETE	SY	88.				
108	750	1020	DRIVEWAY CONCRETE 8IN	SY	269.				
109	750	2115	DETECTABLE WARNING PANELS	SF	288.				
110	752	0600	FENCE CHAIN LINK	LF	2,400.				
111	752	0911	TEMPORARY SAFETY FENCE	LF	70.				
112	752	0922	FENCE REMOVE & RESET	LF	1,750.				

BID ITEMS

Projects: SU-3-982(031)035 (PCN-21609), NHU-3-019(044)155 (PCN-17505), and NHU-3-020(074)103 (PCN-17504)

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
113	754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	68.300				
114	754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	272.600				
115	754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	390.800				
116	754	0592	RESET SIGN PANEL	EA	5.				
117	754	0593	RESET SIGN SUPPORT	EA	3.				
118	762	0103	PVMT MK PAINTED-MESSAGE	SF	161.				
119	762	0122	PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED)	SF	4,219.				
120	762	0420	SHORT TERM 4IN LINE-TYPE R	LF	30,638.				
121	762	0422	SHORT TERM 6IN LINE-TYPE R	LF	96.				
122	762	0424	SHORT TERM 8IN LINE-TYPE R	LF	546.				
123	762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	9,790.				
124	762	0434	SHORT TERM 8IN LINE-TYPE NR	LF	768.				
125	762	0436	SHORT TERM 24IN LINE-TYPE NR	LF	84.				
126	762	0440	SHORT TERM MESSAGE-TYPE R	SF	68.				
127	762	0442	SHORT TERM MESSAGE-TYPE NR	SF	2,149.				
128	762	1104	PVMT MK PAINTED 4IN LINE	LF	682.				

BID ITEMS

Projects: SU-3-982(031)035 (PCN-21609), NHU-3-019(044)155 (PCN-17505), and NHU-3-020(074)103 (PCN-17504)

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
129	762	1108	PVMT MK PAINTED 8IN LINE	LF	286.				
130	762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	14,765.				
131	762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF	314.				
132	762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	1,673.				
133	762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	403.				
134	770	0001	LIGHTING SYSTEM	EA	1.				
135	772	9200	IT SYSTEM	EA	1.				
136	772	9811	TRAFFIC SIGNAL SYSTEM - SITE 1	EA	1.				
137	772	9812	TRAFFIC SIGNAL SYSTEM - SITE 2	EA	1.				
138	930	3040	BEARINGS (EXPANSION)	EA	51.				
139	930	3042	BEARINGS (FIXED)	EA	3.				
140	930	7013	ROADWAY CANOPY-SITE 1	L SUM	1.				
141	930	7014	ROADWAY CANOPY-SITE 2	L SUM	1.				
142	930	8600	ELASTOMERIC BEARING PAD	SF	97.800				
143	930	9537	ABUTMENT UNDERDRAIN SYSTEM	EA	2.				
144	930	9952	PIER MEDALLION	EA	4.				

BID ITEMS

Projects: SU-3-982(031)035 (PCN-21609), NHU-3-019(044)155 (PCN-17505), and NHU-3-020(074)103 (PCN-17504)

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
145	970	1000	TREES	EA	14.				
146	980	0510	RAILROAD SUB-BALLAST	TON	9,353.				
147	990	0220	GUARD POST-PERMANENT	EA	10.				
148	990	0230	TEMPORARY ACCESS	L SUM	1.				
			SUBTOTAL						
OPTION 1									
149	714	4097	PIPE CONDUIT 15IN-STORM DRAIN	LF	767.				
150	714	4101	PIPE CONDUIT 18IN-STORM DRAIN	LF	78.				
151	714	4107	PIPE CONDUIT 24IN-STORM DRAIN	LF	226.				
152	714	4117	PIPE CONDUIT 36IN-STORM DRAIN	LF	626.				
153	714	4121	PIPE CONDUIT 42IN-STORM DRAIN	LF	136.				
154	714	4131	PIPE CONDUIT 54IN-STORM DRAIN	LF	65.				
155	714	4216	PIPE CONDUIT ARCH 22IN X 13IN	LF	30.				
			SUBTOTAL OPTION 1						

BID ITEMS

Projects: SU-3-982(031)035 (PCN-21609), NHU-3-019(044)155 (PCN-17505), and NHU-3-020(074)103 (PCN-17504)

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
OPTION 2									
156	714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF	767.				
157	714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF	78.				
158	714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN	LF	226.				
159	714	0910	PIPE CONC REINF 36IN CL III-STORM DRAIN	LF	626.				
160	714	1010	PIPE CONC REINF 42IN CL III-STORM DRAIN	LF	136.				
161	714	1212	PIPE CONC REINF 54IN CL III-STORM DRAIN	LF	65.				
162	714	2101	PIPE CONC REINF ARCH 22IN X 13IN CL III-S DRAIN	LF	30.				
			SUBTOTAL OPTION 2						
OPTION 3									
163	714	4097	PIPE CONDUIT 15IN-STORM DRAIN	LF	145.				
164	714	4121	PIPE CONDUIT 42IN-STORM DRAIN	LF	31.				
165	714	4131	PIPE CONDUIT 54IN-STORM DRAIN	LF	412.				
			SUBTOTAL OPTION 3						

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NHU-3-020(074)103 / SU-3-982(031)035

PLAN SECTIONS

Section	Page(s)	Description	Section	Page(s)	Description
1	1	Title Sheet	80	2	Superelevation Layout
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6	1 - 9	Notes	90	1 - 18	Paving Layouts
8	1 - 4	Estimate of Quantities	100	1 - 88	Workzone Traffic Control
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20	1 - 2	PCC Pavement & Joint Details	110	4 - 12	Signing Layout
20	3 - 7	ADA Ramp Details	110	13 - 15	Sign Details
20	8	Aggregate & Pavement Transition Detail & Subgrade Repair Detail	110	16	Special Assemblies
20	9	Inlet Protection Device	110	17	ND Highway Shield Details for Route Markers and Guide Signs
20	10	Edge Drain Detail	120	1 - 10	Pavement Marking Layout
20	11	Watermain	140	1 - 12	Lighting Sheets
20	12	Underdrain Details	150	1 - 20	Signal Sheets
20	13	Light & Signal Concrete Foundations	165	1	Temporary & Permanent Alignments
20	14	Sanitary Sewer	165	2 - 3	Notes
20	15	Temporary Amtrak Passenger Platform Details	165	4	Curve & Turnout Definitions
20	16	Tree Detail	165	5 - 9	Typical Sections
20	17 - 38	Retaining Wall	165	10	Access Roads & Stormwater Grading
20	39	Guard Post-Permanent	165	11 - 15	Construction Sequencing Exhibits
30	1 - 5	Typical Sections	165	16 - 17	Turnout Pad Grading Details
40	1 - 4	Removals	165	18	HMA Layout Detail
50	1 - 2	Inlet & Manhole Summary	165	19 - 50	Plan & Profiles
50	3	Adjust Utility Appurtenance/Manhole Adjustment Schedule	170	1 - 24	Shoofly Bridge
51	1 - 2	Allowable Pipe List	170	25 - 70	Permanent Bridge
55	1 - 7	Storm Drain	175	1 - 2	Soil Borings
60	1 - 7	Plan & Profile	180	1 - 4	Pit Plat & Boring Logs
75	1	Wetland Impacts	200	1 - 13	Cross Sections - ND Highway 19
76	1 - 9	Temporary Sediment and Erosion Control	200	14 - 56	Cross Sections - ND Highway 20
77	1 - 9	Permanent Sediment and Erosion Control	200	57 - 61	Cross Sections - 6th Street NE
80	1	Fence Layout	200	62 - 161	Cross Sections - Railroad

SPECIAL PROVISIONS

Number	Description
SP 0003(14)	Temporary Erosion and Sediment Best Management Practices
SP 0004(14)	Federal Migratory Bird Treaty Act
SP 319(14)	Railroad Requirements
SP 320(14)	Interconnect Cable
SP 321(14)	2017 Construction Requirements
SP 328(14)	Painting Over Galvanized Steel
SP 329(14)	Timber
SP 339(14)	Waterproofing
SP 373(14)	Work Zone Camera

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100-P01 PUBLIC RELATIONS COORDINATOR: Provide a public relations and information coordinator. The coordinator should not be the project superintendent or construction foreman. The coordinator should be knowledgeable in construction operations, be able to develop effective media releases, possess written and verbal communication skills, and be able to organize productive meetings.

Provide the name, work address, and work phone number to the relevant project, community, and media personnel.

The public relations coordinator is responsible for providing the following:

1. Organizing, scheduling, and conducting a "Weekly Planning and Reporting Meeting".
2. Advise Mike Grafsgaard, from the City of Devils Lake, PH: 701-662-7600 ext. 2, of upcoming construction activities in regard to street closures and traffic detour routes so that city police, emergency services, schools, and other pertinent city agencies may be notified.
3. Provide news releases and necessary drawings to the media before and during construction. News releases should inform the public on construction activities, schedules, street closures, width or height restrictions to traffic, and traffic detour routes. Update news releases regarding construction activities every other week, at a minimum.
4. Be available for media interviews.
5. Work directly with property owners and businesses affected by construction activities. The coordinator must have sufficient knowledge and authority to resolve property owner and business concerns regarding scheduling, maintaining access, and construction operations.

105-110 PAVEMENT SWEEPING: Sweep paved areas that were used by construction traffic before opening these areas to public traffic.

Sweep all newly constructed pavement no more than 24 hours before a scheduled final inspection.

Use a vacuum or pick-up type sweeper to perform this work.

105-200 UTILITY COORDINATION: A utility coordination meeting is required.

107-115 RAILROAD PROTECTIVE LIABILITY INSURANCE: This project crosses the BNSF Railway Company at RP 0085.60. The type of work that will be performed within the railroad right of way is grading, retaining wall, bridge replacement, and new tracks. Direct inquiries regarding protective liability insurance to:

Rosa Martinez
Marsh USA Inc.
4400 Comerica Bank Tower
1717 Main Street
Dallas, TX 75201-7357, USA
214-303-8519
Rosa.M.Martinez@marsh.com

Include the cost of the Public Relations Coordinator in other items.

100-P02 WEEKLY PLANNING/REPORTING MEETING: Organize a weekly meeting to coordinate efforts between the contractor, subcontractors, and engineering staff. Send a knowledgeable representative to conduct the weekly reporting/planning meeting. Include a discussion of problems encountered during the current week and a discussion of work planned for the next week, as well as a tentative schedule for the following week. Prepare minutes for each meeting and make the appropriate distribution of the minutes. Have the minutes approved by the Engineer before distribution.

100-P03 COORDINATION OF CONTRACTORS: Work to be performed by other Contractors include:

- a. Relocation of statues, flagpoles and pedestals in the staging area
- b. Relocation of trees in the staging area
- c. Relocation of lights in the staging area
- d. Removal and replacement of facade at Proz Bar & Grill
- e. Removal and replacement of fire escape steps at Proz Bar & Grill
- f. Sidewalk concrete carriageway on east side of Proz Bar & Grill
- g. Water service connection from curb stop to Proz Bar & Grill

107-700 HAUL ROADS: The Engineer will not designate paved roads off the state system as haul roads.

107-710 HAUL ROADS: Before submitting a proposal, contact the appropriate State, County, Township, or City officials to determine if there are any roadways that will be designated as "no haul routes".

107-P01 HAUL ROAD: The entire haul cycle, loaded and empty, will be considered for haul routes.

107-P02 HAUL ROAD: If the contractor obtains written permission from the applicable local entity and chooses to use a paved road off the state system for this project, the contractor shall be responsible for all costs of the inspection, maintenance, restoration, and release of the haul road.

107-P03 RAILWAY SAFETY: All contractor employees working on BNSF property will be required to wear safety gear, including but not limited to OSHA approved safety glasses with side shields, hard hats, an orange safety vest of ANSI Class II/III, and above the ankle, lace up, steel-toed safety boots with a defined heel. During inclement weather, proper clothing/equipment to protect against frostbite, slipping, etc. will be worn. Hearing protection, fall protection, and respirators will be worn as needed and required by state and federal regulations.

Coordinate construction activities with other Contractors during the duration of construction. Contact Terry Wallace PH:701-662-8243 for work in the staging area and Richard Prozinski PH: 701-662-2101 for work at Proz Bar & Grill.

108-100 WEEKLY PLANNING & REPORTING MEETING: A weekly planning and reporting meeting is required.

100-P04 NOISE RESTRICTIONS: Limit all construction activities to the hours of 7:00 a.m. to 10:00 p.m. unless written permission is obtained from the Engineer. Request permission a minimum of 30 days prior to the work taking place.

The Contractor is allowed to green saw the concrete without written permission from the Engineer if the following stipulations are met:

Prior to the start of construction provide one written notice to all property owners within 500 feet of the project site. The notice shall warn that increased noise levels may be experienced at night. Use best practices to minimize the sawing of concrete pavement between the hours of 10:00 p.m. to 7:00 a.m.

155-P01 CONCRETE EQUIPMENT: Provide a NRMCA Certified plant for concrete used in Sections 550, "Concrete Pavement", 602 "Concrete Structures", and 622 "Pilings".

202-P01 REMOVAL OF TREES & BRUSH: Include the cost to remove existing planter and stumps called out on Section 40 Sheet 1 in the bid price for "Removal of Trees & Brush".

202-P02 REMOVAL OF PAVEMENT: The tonnage of "Removal of Pavement" is based on the existing typical sections shown in Section 30. The tonnage includes the entire bituminous/concrete/curb &

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gutter/aggregate/sidewalk surfacing and aggregate base except the bottom two inches. The quantity of Removal of Pavement has been deducted from the excavation quantity.

202-P03 REMOVAL OF PAVEMENT: Include the cost of the full depth vertical saw cuts adjacent to pavement removal areas, specified in Section 202.04 A "General", in the contract unit price for "Removal of Pavement".

202-P04 REMOVAL OF CURB & GUTTER: If Contractor operations require the removal of existing pavement and aggregate base adjacent to curb and gutter removals outside of the reconstruction limits, do not remove more than 3 feet of existing pavement adjacent to the curb & gutter. Include costs in the price bid for "Removal of Pavement".

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 COMMON EXCAVATION-TYPE B: Perform excavation of the roadway subgrade with a tracked excavator using a smooth cutting edge to minimize disturbance to underlying soils. Construction equipment will not be allowed to travel over the subgrade. Place Geosynthetic Material Type G at the bottom of all subgrade excavations and backfill with Aggregate Base Course CL 5. Spread the aggregate with a tracked dozer. Do not scarify the bottom of the subgrade. A transitional slope of approximately 20:1 must be constructed prior to entering and on exiting different paving sections to avoid differential heave.

All contours and cross sections represent the finished grade (top of the topsoil). In areas where topsoil is to be placed, complete the grading by cutting or filling earthwork to a point 6 inches below the final grade; with the topsoil bringing the grading template to finished grade elevations. Complete this work in the areas behind the curb and gutter, the inslopes and backslopes. Construct the earthwork to the lines and grades as shown on the plans.

Dispose of any excess excavation off site. Provide copies of all agreements with property owners and governing agencies to the Engineer. Include all cost associated with disposal of the excess excavation in the unit price bid for "Common Excavation-Type B".

203-P02 COMMON EXCAVATION-SUBCUT: The Engineer will determine the location and actual quantity of "Common Excavation-Subcut". Delete the second paragraph of Standard Specification 203.04 C in its entirety.

251-P01 MOWING: If areas of seeding are completed and the turf becomes established, mow and maintain the seeded areas. Remove any clippings that land on locations other than the grassed area. Mow when grass is longer than 6" and/or as directed by the Engineer in the field. Include all cost for labor, equipment and materials necessary to complete the in the price bid for "Seeding Class I".

302-115 BASE COURSE: Trim base course as specified in 302.04 C.2, "Surface Tolerance Type C."

302-P01 AGGREGATE BASE COURSE CL 5: Delete the first sentence of Standard Specification 302.03. The Contractor will not be allowed to substitute Salvaged Base Course in lieu of Aggregate Base Course CL 5.

302-P02 TRAFFIC SERVICE AGGREGATE: Temporary Service Aggregate has been provided for maintaining traffic and transitions throughout the construction phasing. Use the aggregate as directed by the Engineer in the field. Provide temporary service gravel that meets the requirements of Aggregate Base Course CL 5.

430-P01 COMMERCIAL GRADE HOT MIX ASPHALT: Provide commercial grade asphalt that meets the requirements of Superpave FAA 43 in Section 430.03 C, "Superpave Mix Properties".

624-P01 Meet the compaction requirements of Section 430.04 I.3 "Ordinary Compaction." Include the cost for the asphalt cement and tack required for the bituminous pavement in the unit price bid for "Commercial Grade Hot Mix Asphalt."

624-P01 RAILING: Paint the pedestrian railings after fabrication in accordance with SP 328(14). Use the paint color black, color no. 17038 of the Federal Standard No. 595B colors. Include all costs associated with fabrication, assembly, galvanizing, painting and installation of the railings in the unit price bid for "Pedestrian Railing".

704-100 TRAFFIC CONTROL SUPERVISOR: Provide a Traffic Control Supervisor.

704-200 PRECAST CONCRETE MEDIAN BARRIERS – STATE FURNISHED: Obtain 64 barriers from Devils Lake West Lot, 1905 Schwan Ave NW Devils Lake, ND 58301. Return barriers to Devils Lake West Lot.

Some 4 inch x 4 inch boards are available at the return location. Provide any additional 4 inch x 4 inch boards necessary to stack barriers. The boards will become property of the Department. Include the cost for boards in the contract unit price for "Precast Concrete Median Barrier - State Furnished".

704-450 LANE CLOSURE - SIGNAL CONTROL/FLAGGING CONTROL: Install either the signal controlled lane closure on Standard D-704-16 or the flagging controlled lane closure on Standard D-704-17.

Obtain an electrical source for traffic signals. Solar powered signals may be used. Place generators a minimum of 60 feet from the roadway centerline, unless the generator and signal are part of a trailer mounted unit.

Place utility poles and equipment a minimum of 60 feet from the roadway centerline and place power conductors a minimum of 6 inches below the ground surface. Remove poles after they are no longer necessary.

The Engineer will measure individual traffic control devices, other than the signal system and flaggers, shown on the standards. Payment will be made at the respective contract unit price.

Include the cost of either a traffic signal system or flaggers in the contract unit price for "Lane Closure – Signal Control/Flagging Control".

704-P01 TEMPORARY TRAFFIC SIGNALS: Set the initial signal timing as shown below:

N-Bound	Green	Yellow	Red			
S-Bound	Red		Green	Yellow	Red	
Time (sec)	30	3	15	30	3	15

Calibrate initial timing plans to actual traffic behavior. This may require adjustments during peak traffic periods. Notify the Engineer upon operation of the system and for approval of any signal timing adjustments.

Cover the traffic and pedestrian heads for the traffic signals at the intersection on 6th Street NE and ND HWY 20 and take the signals out of service when the temporary signals are in use.

704-P02 TRAFFIC CONTROL: The Contractor will be allowed to submit alternative traffic control plans for consideration by NDDOT and the City of Devils Lake, and if found acceptable by NDDOT and the City of Devils Lake may be used in lieu of the proposed traffic control plan.

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Multiple construction phases may be constructed concurrently, at the approval of the Engineer. There will be no compensation for additional traffic control devices required to construct multiple phases concurrently.

704-P03

TRAFFIC CONTROL PHASING: When phasing the construction of the storm sewer and concrete paving, if approved by the Engineer, the adjacent roadway may be closed to a single lane of traffic with flagging operations. This will only be allowed during working hours.

Phase 1a: Install temporary sanitary sewer (see Section 20 Sheet 14 for details).

Phase 1b: Shoofly Bridge Construction (Completion Date: August 6, 2017):

1. Construct pier 4
2. Construct west embankment slopes
3. Construct pier 5 & abutment 6
4. Construct west superstructure
5. Construct pier 3 - Close ND Hwy 20 for a maximum of 3 days for Phase 1b (Item 5). Sign local road detours prior to closing ND Hwy 20. See Phase 6 for details on closing ND Hwy 20.

Phase 1c:

6. Remove portion of southeast upper retaining wall
7. Construct east embankment slopes
8. Construct pier 2 & abutment 1
9. Construct remaining superstructure
10. Construct approach slabs
11. Install ballast & track (by others)

Close ND Hwy 20 for a maximum of 3 days for Phase 1c (Items 6 – 11). Sign local road detours prior to closing ND Hwy 20. See Phase 6 for details on closing ND Hwy 20.

Existing Bridge Demolition:

12. Remove superstructure
13. Remove east abutment/pier combination
14. Remove upper northeast retaining wall
15. Remove lower northeast retaining wall
16. Remove remaining upper southeast retaining wall
17. Remove upper northwest retaining wall
18. Remove lower northwest retaining wall
19. Remove upper southwest retaining wall
20. Remove west abutment/pier combination

Close ND Hwy 20 for a maximum of 3 days for the existing bridge demolition. Sign local road detours prior to closing ND Hwy 20. See Phase 6 for details on closing ND Hwy 20.

Permanent Bridge Construction:

21. Construct pier 3
22. Construct northwest retaining wall
23. Construct pier 2
24. Construct northeast retaining walls
25. Construct abutment 1 & 4
26. Install Concrete Slope Protection
27. Construct superstructure

28. Construct approach slabs
29. Install ballast & track (by others)

Close ND Hwy 20 for a maximum of 3 days for the construction of the permanent bridge. Sign local road detours prior to closing ND Hwy 20. See Phase 6 for details on closing ND Hwy 20.

Shoofly Bridge Demolition:

30. Remove superstructure
31. Remove approach slabs (cut pile 3' below proposed grade)
32. Remove pier 3 (cut pile to El 1433.0)
33. Remove pier 2 & abutment 1 (cut pile 3' below proposed grade)
34. Remove southeast lower retaining wall
35. Construct southeast retaining wall
36. Remove pier 4 (cut pile to El 1428.0)
37. Remove pier 5 & abutment 6 (cut pile 3' below proposed grade)
38. Remove lower southwest retaining wall
39. Construct southwest retaining wall

Close ND Hwy 20 for a maximum of 4 days for the shoofly bridge demolition. Sign local road detours prior to closing ND Hwy 20. See Phase 6 for details on closing ND Hwy 20.

Move pedestrian traffic back and forth from Pedestrian Route B to Pedestrian Route C as construction operations dictate. Provide alternative means for pedestrians to move through the corridor when safe pedestrian access is restricted due to construction operations. Provide a pedestrian traffic control plan to the Engineer for review a minimum of 7 days prior to Phase 1a.

Phase 2: ND Hwy 19: Close the westbound lanes of ND Hwy 19 to traffic along with the north sidewalk. Maintain two way traffic on the existing eastbound lanes of ND Hwy 19. Maintain pedestrian traffic on the south sidewalk. Construct storm drain, subgrade, aggregate base, curb & gutter, and sidewalk on the north side of ND Hwy 19.

Phase 3: ND Hwy 19: Close the eastbound lanes of ND Hwy 19 to traffic along with the south sidewalk. Maintain two-way traffic on the westbound lanes of ND Hwy 19. Maintain pedestrian traffic on the north side of ND Hwy 19. Construct storm drain, subgrade and aggregate base on the south side of ND Hwy 19.

Phase 4: ND Hwy 20: Close the southbound lanes of ND Hwy 20 south of ND Hwy 19 to traffic along with the west sidewalk. Maintain two-way traffic on the east side of ND Hwy 20. Maintain pedestrian traffic on the east side of ND Hwy 20. Construct storm drain, subgrade and aggregate base on the west side of ND Hwy 20 south of ND Hwy 19.

Phase 5: ND Hwy 20: Close the northbound lanes of ND Hwy 20 south of ND Hwy 19 and a portion of the east sidewalk to pedestrians. Maintain two-way traffic and pedestrian traffic on the east side of ND Hwy 20. Construct storm drain, subgrade and aggregate base on the east side of ND Hwy 20 south of ND Hwy 19.

Phase 6: ND Hwy 20: Close ND Hwy 20 between ND Hwy 19 and 6th Street NE. Set up ND Hwy 20 detour route prior to closure. Maintain pedestrian traffic on ND Hwy 20

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during closure. Construct storm drain, subgrade and aggregate base. Move pedestrian traffic from the east to the west side of ND Hwy 20 as construction operations dictate. Close Hwy 20 for a maximum of 28 days.

Phase 7: ND Hwy 19 & ND Hwy 20: Close ND Hwy 20 between 3rd Street SE and 6th Street NE and close ND Hwy 19 west of 2nd Avenue NW to ND Hwy 20. Set up ND Hwy 20 detour route prior to closure. Maintain pedestrian traffic on ND Hwy 20 and ND Hwy 19 during the closure. Construct PCC paving, curb and gutter and sidewalk. Close ND Hwy 19 and ND Hwy 20 for a maximum of 28 days.

Phase 8: ND Hwy 20: Close 6th Street NE. Close the southbound lane at the intersection of ND Hwy 20 and 6th Street NE. Maintain one lane of traffic in the northbound lane of ND Hwy 20. Install temporary traffic signal. Close the sidewalk west of ND Hwy 20. Maintain Pedestrian traffic on the east side of ND Hwy 20. Construct temporary access to Proz Bar & Grill. Construct storm drain, subgrade, aggregate base, curb & gutter and PCC Paving. Construct Phase 8 in a maximum of 14 days.

Phase 9: 6th St NE: Close 6th Street NE. Close the northbound lane at the intersection of ND Hwy 20 and 6th Street NE. Maintain one lane of traffic in the southbound lane of ND Hwy 20. Install temporary traffic signal. Detour pedestrian traffic. Maintain temporary access to Proz Bar & Grill. Construct storm drain, subgrade, aggregate base, curb & gutter and PCC Paving. Close 6th Street NE for a maximum of 14 days.

If the road closure exceeds the days listed in the above traffic control phasing, liquidated damages in the amount of \$4,000/day will be deducted from the money due. Coordinate with the Engineer, NDDOT and City to ensure the least amount of downtime and disruption to traffic.

The maximum number of traffic control devices required will be paid. No additional compensation will be made for relocation of devices. Asphalt millings may be used to construct temporary pedestrian ramps.

704-P04 TRAFFIC CONTROL: Leave the work area free of all hazards during non-working hours. Hazards include any type of obstruction, drop-offs greater than 2-inches, or steep embankment areas steeper than a 4:1 located within the clear zone. Fill with a temporary 4:1 slope, any drop-offs greater than 2-inches.

704-P05 STATE ROUTE MARKERS: Provide State Route Marker signs for temporary traffic control. State Route Markers may be either the old design or the new state outlined design; however, the all Route Marker signs provided must be of the same type.

Upon project completion, the State Route Marker sign panels will become property of the State. Stockpile sign panels within the project limits. The Engineer will arrange to have the stockpiled panels removed from the project limits.

Include the price of furnishing, installing, maintaining, stockpiling and other incidentals in the contract unit price of "Traffic Control Signs"

704-P06 TRAFFIC CONTROL: Traffic control device quantities are based on the list below. Provide additional devices at no additional cost to the Department.

1. Standard D-704-15; layout A and C
2. Standard D-704-20, layout G
3. Standard D-704-21, layout I
4. Standard D-704-22, layouts K and L
5. Standard D-704-23, layout Q
6. Standard D-704-25, layout V, W, and X
7. Standard D-704-26, layouts EE and FF

706-P01 AGGREGATE LABORATORY: Supply an Aggregate Laboratory with a printer/copy machine. The payment for these items will be included in the price bid for "Aggregate Laboratory".

714-P01 UNDERDRAINS: A system of two underdrain pipes are located from Sta. 5457+35 to 5459+35 as shown in the existing typical sections in Section 30. Replace the east underdrain and connect it to the existing manhole. Replace the west underdrain as shown in the proposed typical section in Section 30.

Install underdrain in accordance with the detail shown in Section 20 of the plans, located per the typical section in Section 30. Provide SDR 35 PVC underdrain. Include all costs associated with the work required to install the Underdrain, including but not limited to excavation, connections, pipe, labor, materials and equipment in the price bid for "Underdrain Pipe PVC Perforated 6IN".

714-P02 UNDERDRAIN CLEANOUT RISER: Include the costs for the labor, equipment and materials necessary to construct the wye, bend, riser, cap, gate valve top section, concrete slab in the price bid for "Underdrain Cleanout Riser".

714-P03 PLUG PIPE: At locations designated on the plans for plug and abandon pipe, blow the pipe full of sand or pump the pipe full of controlled density backfill to prevent any future collapse or failure of the abandoned pipe. Include all costs for labor, materials, and equipment necessary to perform this described work in the price bid for "Plug Pipe – All Types and Sizes".

722-100 INLETS AND MANHOLES: Inlets and manholes were designed with a minimum 4 foot riser height. Fill the bottom of each drainage structure with concrete, up to the lowest invert elevation.

722-P01 MANHOLE SANITARY: Include all labor, materials and equipment to install the new manhole base, external chimney seal, piping, rings, casting, and lid. Manufacture the base from precast, reinforced concrete no less than 8 inches thick. Payment will be per each, paid when installed.

Provide precast, reinforced concrete manholes conforming to the latest revisions of AASHTO M-199. Furnish manholes with a minimum of two, standard 2-inch thick adjusting rings and standard, OSHA approved manhole steps, spaced at 16-inches on center. Align all steps vertically in each manhole. Provide precast manholes with screw type lifting devices cast into the concrete section. Risers and covers shall be included in the price bid for "Manhole Riser _IN"

Provide floating castings equal to Neenah R-1955-1 or approved equal. The lids will be self-sealing and have a concealed pick bar. Label the lids SANITARY SEWER. Machine castings and lids to a uniform quality.

Set the manhole base at the proper grade and alignment to provide a smooth transition from the incoming pipes to the outgoing pipes. Bed the manhole base in 6" of 1 ¼" crushed rock to prevent settlement and provide support for the pipe from the manhole edge to the regular trench excavation. Provide a watertight connection between the manhole and the pipe. See Standard Drawing D-722-5 for details.

722-P02 MANHOLE CASTINGS: Install a floating casting on all new or existing manholes that lie within the limits of the new concrete roadway or sidewalk. Install an external chimney seal on all new or existing sanitary manholes located in the roadway. Install casting as shown on Standard Drawing D-722-5A. Where possible, position casting to avoid falling within a wheel path. Place all castings that lie in the roadway flush to within 1/8 inch below the pavement. Outfit the new manholes, adjusted manholes, or repaired manholes located outside of concrete with the standard casting (see Standard Drawing D-722-5). Include the cost for manhole castings in the price bid for "Manhole Sanitary", "Manhole _IN", "Manhole Repair", and "Adjust Manhole".

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722-P03 STORM DRAIN INLETS AND MANHOLES: Include precast openings with watertight "booted" rubber inserts to accommodate a 4" PVC SDR 35 highway underdrain.

Provide Neenah Foundry Company Type V & D grates and NDDOT Style Backs or East Jordan Iron Works with Type M4 Vane Grate and Type T5 Back or approved equal for the bid items "Inlet-Type 2", "Inlet-Type 2 Double".

Construct all inlet risers in the curb so the top of the riser is below the subgrade elevation to allow clearance for the paving machine. Wrap the inlet from the casting to 6 inches below the top of barrel in Geosynthetic Material Type D3 or D4 to cover all adjusting rings.

722-P04 ADJUST MANHOLE: This bid item provides for the adjustment of various existing castings to the proper grade. A maximum of six rings will be allowed. "Adjust Manhole" includes adjustments that can be made by adding or removing adjusting rings. Bid items "Adjust Manhole" and "Manhole Repair" may interchange based on field findings. Include all labor, materials, and equipment necessary to complete the in the price bid for "Adjust Manhole".

Use block and mortar to fill in the gap of removed pipe at Sta. 5458+35. Include all labor, materials, and equipment necessary to complete the repair in the price bid for "Adjust Manhole".

722-P05 MANHOLE REPAIR: This bid item provides for the adjustment and modification to bring existing manholes to grade. "Manhole Repair" includes adjustments that require major reconstruction, beyond adding or removing adjusting rings. Bid items "Adjust Manhole" and "Manhole Repair" may interchange based on field findings. Include all labor, materials and equipment necessary to complete the modification to the existing manhole in the price bid for "Manhole Repair".

722-P06 ADJUST UTILITY APPURTENANCE: Include the cost of adjusting existing curb stop in the price bid for "Adjust Utility Appurtenance".

724-P01 WATER SERVICE LINE 1IN: Wrap water service line fittings in 8 mil poly. Include all material, labor and equipment necessary to remove and replace 1 inch water service lines when indicated for replacement or when required to accommodate utility crossings, as indicated on the plans or directed by the Engineer.

Provide 1 inch PE 4710, ASTM D-2239, SIDR 7 poly pipe (250 psi). Include all material, labor and equipment necessary to install a new curb stop & box, service saddle & corporation, tapping the new main, and all fittings required to connect the new service line to the existing service line.

Provide Ford B66(size), Mueller, McDonald, or approved equal curb stop and box. Install the extension stem for stop operation not less than one foot from the top of the box.

Provide Romac Style stainless steel double bolt, Ford FS 303, Mueller 554, or approved equal service saddle.

Provide Ford FB1000, Mueller, McDonald, or approved equal corporation stop.

724-P02 RELOCATE WATERMAIN: In locations where the proposed storm drain conflicts with existing water mains, relocate the water main vertically in accordance with the detail in Section 20. Include all material, labor, and equipment to relocate the water main in the price bid for "Relocate Watermain". Include all sleeves, fittings, restraints, pipe, and accessories necessary for the relocation.

Provide Polyvinylchloride pipe (PVC), SDR 21, Class 200, rubber gasketed bell and spigot joints.

Provide sleeves that are 2-bolt wide range hydraulic coupling. Provide sleeve manufactured by Romac model Macro. Wrap all sleeves in 8 mil poly. Provide stainless steel bolts.

724-P03 HYDRANT RELOCATE: Include all costs associated with materials, labor, and equipment to relocate the existing fire hydrant in the bid price for "Hydrant Relocate":

- Remove and salvage the existing hydrant for the City of Devils Lake
- Remove and install a new tee, gate valve and box, and 90° bend
- Install 33 lineal feet of 6 inch water main
- Install new hydrant
- Provide temporary water service where needed

Wrap all fittings, components and portions of the hydrant that are below grade in 8 mil poly. Follow the installation procedures as outlined in the American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems. ANSI/AWWA C105/A21.5.

724-P04 TEMPORARY SEWAGE HANDLING: Include all equipment, materials and labor required to divert sewage flows as required for the project in the price bid for "36IN X 23IN Arch Sanitary Sewer Pipe".

750-P01 SIDEWALK CONCRETE: Construct concrete sidewalk greater than 8 feet in width with a No. 3 deformed reinforcing bar placed 24" on center both longitudinally and transversely. Provide a bar six inches shorter than the width of the slab and placed accurately at one-half the depth of the slab. Use plastic chairs.

Saw a centerline longitudinal joint on concrete sidewalk greater than 8 feet in width. Saw all longitudinal and transverse contraction joints. Saw joints in a timely manner to prevent any uncontrolled random cracking. If random cracking occurs, remove and replace all damaged panels at the contractor's expense. Include all costs for the labor, equipment, and material necessary to construct the sidewalks in the price bid for "Sidewalk Concrete".

750-P02 PIGMENTED IMPRINTED CONCRETE: Develop a mix design using any size coarse aggregate specified in Section 802.01 C.2, "Coarse Aggregate" and with a 60-40 fine aggregate-coarse aggregate ratio.

Provide a pigment from the list below or provide an approved equal. To be considered an approved equal, pigments must meet the requirements of ASTM C 979.

1. Number 366 Natural Red, produced by Soloman Colors, Inc.
<http://www.solomoncolors.com/>;
2. Brick Red pigment Number 160, produced by Davis Colors <http://www.daviscolors.com/>; or
3. Pigment R/M – Brick Red, produced by Southern Color Company
<http://www.southerncolor.com/>.

Use the same supplier for all colored concrete placed under the contract.

Add pigment at the ratio recommended by the manufacturer directly into the mixer along with the aggregate, cement, and water. Add pigment while the mixer is operating at mixing speed. Continue mixing for 5 to 10 minutes or between 50 and 100 revolutions.

Form a pattern in the concrete using a roller to create a 4 inch x 8 inch brick pattern.

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Cure concrete using curing compound that meets the requirements of ASTM C 309, Type 1.

752-P01 FENCING: Place a temporary chain link fence, with a height of 8 feet, in accordance with Standard Drawing 752-02 prior to removing the existing fence. Move the temporary fence as needed based on construction operations. Include the cost to install, relocate and remove temporary chain link fence in the price bid for "Fence Chain Link".

770-P01 LIGHT STANDARD 8FT MA 40FT MT HT BREAKAWAY: Provide steel, davit type galvanized breakaway light standards. Provide transformer bases and vibration dampeners for the 40' MT HT breakaway light standards. Position light standards so hand holes face the opposite direction of the roadway.

Provide extra wind loading and weight loading capacity for the traffic signal equipment mounted onto light L11 as required for the actual equipment to be installed on the pole. Provide structural calculations and drawings that take into consideration the added equipment and that adhere to section 896 of NDDOT standard specifications. Provide black paint matching the traffic signal standard. Paint to a height of 12', as shown in Standard Drawing D-772-4. The remainder will have a standard galvanized finish.

770-P02 ROADWAY LED LUMINAIRE: Provide LED roadway luminaires with the following specifications: American Electric Lighting, Model ATB2-80BLEDE10-MVOLT-R2-NL-NR. Provide a manufacturer's standard grey exterior finish.

770-P03 PEDESTRIAN LED LUMINAIRE: Provide LED Pedestrian Luminaire with the following specifications: Lithonia Lighting, Model TWP LED 10C 700 40K T3M MVOLT SPD DDBXD. Provide manufacturer's standard black exterior finish.

770-P04 PULL BOXES: Provide polymer concrete type pull boxes. Mark the cover clearly with the word "Lighting" as required. See standard drawing D-770-3 for details. Duct seal all conduits entering and exiting pull boxes.

770-P05 PADLOCKS: Obtain all padlocks from the City of Devils Lake.

770-P06 MARKER TAPE: Install marker tape 5" below finished grade in cable trenches above underground conductors. Provide Marker tape that is 6-inch wide red plastic tape marked "Caution – Buried Electric Cable."

770-P07 REMOVE LIGHT SYSTEM: Remove and salvage light standards, mast arms, luminaires and the feed point designated for removal. Deliver the luminaires, mast arms, standards and feed point equipment to the City of Devils Lake Public Works Department. Provide a 48 hour notice prior to delivery. Dispose of any items deemed unsalvageable.

770-P08 TEMPORARY LIGHTING SYSTEM: Provide temporary lighting where shown in the plans. The temporary lighting shall be established at the start of construction of the shoofly bridge. The existing circuits shall be verified and the lights South of the ND HWY19 and HWY20 intersection shall be maintained until the installation of the permanent lighting as shown in the plans. Provide any additional conductors, conduit and connections as required to maintain the temporary lighting.

772-P01 REMOVE TRAFFIC SIGNAL SYSTEMS: The Contractor is responsible for removing the existing traffic signal systems at the ND 19/ND 20 and 6th St NE/ND 20 intersections prior to installation of the new signal systems. All existing traffic signal heads with Astro brackets and the 6th St NE/ND 20 traffic signal controller and other cabinet equipment from that intersection will be delivered to the City of Devils Lake Fire Department at 621 College Drive N, Devils Lake, ND. All remaining above ground traffic signal components will be disposed of in accordance with Section 107.17 Removed Materials. Abandon all underground cable and conduit. Include in the price bid for "Traffic Signal

772-P02 TRAFFIC SIGNAL SYSTEM: Include in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2" all labor and equipment necessary for each signal system to be fully operational as shown in the plans upon construction completion. This includes but is not limited to, the installation of the following features where applicable; traffic signal standards and foundation, vehicular heads, video detection system, traffic signal controller and all ancillary hardware (conflict monitor, load switch, flasher, etc.), controller cabinet and foundation, and all cable, conduit, junction boxes, and appurtenances to install the traffic signal systems completely.

772-P03 FEED POINT-COMBO LIGHTING & SIGNAL-PAD MOUNT: Install the feed point at the locations indicated in the plans. Provide underground incoming electrical service. See standard drawings D770-2 and D770-2A along with Section 140 for details.

Coordinate with the Utility for the incoming electrical service. The utility shall be responsible for providing service connections and conductors from the utility transformer to the meter socket located on the feed point cabinet. The utility shall be responsible for any boring or trenching required up to the meter. Provide and install a 200 amp meter socket, with stud type connectors, and mount on the side of the feed point cabinet. Provide and install a 2" conduit sweep in the concrete foundation for the service conductors to the meter socket from a point 24" below grade. Provide rigid steel for all exposed conduit. Any cost imposed by the utility shall be coordinated by the Contractor and paid for by the City of Devils Lake.

Orient the feed points as shown on the plans and as directed by the field Engineer. Provide type 2 and 3 feed points as shown and according to the standard details. Provide a permanent etched label for the exterior feed point cabinet and for the contactors inside the cabinet. Construct the feed point cabinet with a minimum 12 gauge steel. Provide an enclosure with a NEMA 3R rating. Provide doors that are gasketed and capable of utilizing a padlock. Provide all the necessary breakers as shown in the detail and panel schedule. Install the photo cell facing north and design the photo cell to recess into the cabinet. Provide a hand-off-auto test switch to override the photocell control. Duct seal all conduit stubs in concrete foundation. Include all costs associated with the materials, labor, coordination, utility fees, and equipment necessary to furnish and install the feed point and electrical service in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2".

772-P04 CONCRETE FOUNDATION-FEED POINT-TYPE B: Set the top of concrete foundation 6" above the surrounding grade. Provide two spare 2" Schedule 40 PVC conduits in the concrete feed point foundation. Include all costs for labor, materials and equipment necessary for furnishing and installing this item in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2".

772-P05 BATTERY BACK-UP: Equip each traffic controller with an "on-line" type Uninterruptible Power Supply (UPS) that provides power conditioning in both normal and backup mode. Size it to provide backup power to the system for a minimum of 2 hours in full signalized operation and a minimum of 8 hours in flash operation. Provide the UPS with aux contacts to put the system into flash operation. Incorporate full power management and diagnostic function into the UPS.

Provide the UPS with features to automatically provide battery back-up power to the controller system with no interruption when the electric utility power supply de-energizes. Provide a UPS that operates such that it does not provide power to the de-energized incoming electric utility service conductors.

Install the UPS in a temperature and humidity controlled environment. Install the UPS in a separate enclosure on the same pad as the signal controller cabinet. Extend the controller cabinet pad mount foundation

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to provide a minimum of 3" of clearance from the outside edge of the cabinets to the outside edge of the foundation on any side, even if the battery back-up cabinet is mounted on the controller cabinet and not the foundation. Include all costs for materials, labor and equipment necessary to furnish and install the battery back-up in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2."

772-P06 PADLOCKS: Obtain all padlocks from the City of Devils Lake.

772-P07 TRAFFIC SIGNAL STANDARDS BASE: Provide "T" transformer base type standards for all traffic signal standards. Include all costs for labor, materials and equipment necessary for furnishing and installing this item in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2."

772-P08 TRAFFIC SIGNAL CONTROLLER: Provide NEMA TS2/NTCIP Actuated Controllers for the proposed volume density controllers. Provide PEEK ATC-1000 TS2 Type 1 controllers. Construct the concrete foundation as shown on standard detail D770-1. Provide a GFCI receptacle in the controller cabinet. Include all costs for labor, materials and equipment required to install the new controllers in the price bid for "Traffic Signal System – Site _". This includes but is not limited to the cabinet, detector amplifiers (furnished and installed), other ancillary signal components (such as load switches, conflict monitors, etc.), concrete foundation, and controller cabinet components connected as required to make the new controller equipment operational with the proposed signal equipment. This also includes any programming and data entry (i.e. signal timing plans) necessary to provide a fully functional traffic signal controller. Face the cabinet doors at both the ND 19/ND 20 and 6th St NE/ND 20 intersections east, with the hinge on the north edge.

772-P09 CONTROLLER WORKING SLAB: Construct the controller working slab a width of 6 feet and extending a minimum of 4 feet from the face of the controller foundation. Construct the slab 4 inches thick and reinforce with 6" x 6" x 10 GA welded wire fabric and tie it to the controller foundation with 18-inch long #3 rebar spaced 18 inches on center. Grade the controller working slab maintaining a slope of .25 inches per foot away from the controller cabinet foundation. Construct the slab so that the closest point of the top of the slab to finished grade is 2 inches above grade. Furnishing and installing the working slab is included in the price bid for "Traffic Signal System – Site 1" and Traffic Signal System – Site 2".

772-P10 VIDEO DETECTION SYSTEM: Provide PEEK Videotrak IQ Video Detection Equipment for the video detection system. A representative from the manufacturer to provide all cable connections, camera aiming and system set-up, including programming detection zones and verification of reliable operation. The location of cameras in the plans are for reference only. Install the cable, camera and provide all labor and equipment necessary for the video detection system to be fully operational. Include all costs for labor, materials and equipment necessary for furnishing and installing this item in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2."

772-P11 EMERGENCY VEHICLE PRE-EMPTION: Provide siren actuated SONEM 2000 emergency vehicle preemption systems for both traffic signal sites. Provide LED indicator lamps as shown in the plans. Provide all labor and equipment necessary for the emergency vehicle preemption system to be fully operational. Notify City of Devils Lake fire chief (Jim Moe) (701-662-3913) when the EVP systems are tested and operable. Include all costs for labor, materials and equipment necessary for furnishing and installing this item in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2."

772-P12 CONDUIT: Install conduit at the location shown on the plans.

Seal all conduit with duct seal at the controller cabinet and at the traffic signal standard foundations. Install three spare 2" conduit sweeps in the controller cabinet foundation and one spare 2" conduit sweep in each traffic signal standard base. Cap the spare conduits with an oil-tight plug with wing nut and labeled as to which direction they face.

772-P13 LABEL ALL FIELD CABLES: All labeling materials shall be approved by the City of Devils Lake. Provide Labels that are readable without moving the cables.

Use a heat-shrink labeling system. Do not strip back from the connection more than 12 to 18 inches. This work is not a separate pay item and include costs in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2".

772-P14 CONTROLLER CABINET WIRING DIAGRAM: Label the following items on the cabinet wiring diagram, in addition to information required by NDDOT Standard Specification.

- A. Label the camera number (e.g., D2-1) from the plan on the detector panel drawing adjacent to the point for termination.
- B. Label the field wire terminals for the vehicle/pedestrian head control cables with the phase number and direction (e.g., Ø2, SB).
- C. Label the field wire terminals for the SONEM cable with the pre-empt number (e.g., P.E. #1).
- D. Label the field wire terminal for the pre-empt indicator lamps with the pre-empt number and direction (e.g., P.E. #1, NB).
- E. Label the field wire terminals for the pedestrian push-button cables with the phase number (e.g., Ø8 PED).
- F. Provide an intersection diagram on cabinet door showing phasing of intersection and camera numbering and detection zone numbering
- G. Provide a CAD drawing file of the as-built cabinet wiring diagram.

772-P15 PULL BOXES: Provide polymer concrete type pull boxes. Mark the cover clearly as "Traffic Signal". Mark pull boxes for the interconnect cable as "Traffic Signal". See standard drawing D-770-3 for details. Duct seal all conduits entering and exiting pull boxes. No splicing is allowed in pull boxes.

772-P16 ACCESSIBLE PEDESTRIAN SIGNALS (APS) PUSHBUTTON AND SIGN: include the features, installation procedures, and be compliant with the following:

1. Features:
 - a. Rapid tick WALK indication, no more than 2–5dBA above ambient sound
 - b. Vibrotactile WALK indication
 - c. Speaker and vibrotactile indication located at pushbutton
 - d. Pushbutton locator tone
 - e. Tactile arrow on each device aligned in direction of travel on the crosswalk
2. Installation Procedures
 - a. APS should be reachable from the level landing of the curb ramp for the crossing or from a level surface with an accessible path to the ramp (MUTCD Section 4E.08 and Proposed and Draft PROWAG).
 - b. APS should be within 5 feet of the crosswalk line furthest from the center of the intersection and within 10 feet of the curb (MUTCD Section 4E.08).
 - c. Align tactile arrow with parallel to the direction of travel on the crosswalk (MUTCD Section 4E.12, P1).
 - d. Pushbutton required to be located within reach range for wheelchair users (Proposed PROWAG, R406).
3. Code Compliance:
 - a. Functionality: MUTCD 2009 - 4E
 - b. Temperature and Humidity: NEMA TS 2

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- c. Transient Voltage Protection: NEMA TS 2
- d. Transient Suppression: IEC 61000-4-4, IEC 61000-4-5
- e. Electronic Noise: FCC Title 47, Part 15, Class A
- f. Mechanical Shock and Vibration: NEMA TS 2
- g. EN4 PBS Enclosure: NEMA 250 - Type 4X
- h. Electrical Reliability: NEMA TS 4

Include the cost for the accessible pedestrian signals pushbuttons and signs in the bid items "Traffic Signal System – Site 1" and Traffic Signal System – Site 2".

772-P17 SIGNAL COMPONENT COLOR: The traffic signal system components shall be colored in accordance with the following:
 Transformer base – black
 Mast arm – black
 Shaft - black
 Signal housing - black
 Signal head mounting hardware – black
 Pedestrian pushbutton post - black
 Pedestrian pushbutton housing – black
 Luminaire mounted on signal standard – black

Use the paint color black, color no. 17038 of the Federal Standard No. 595B colors.

802-P01 PORTLAND CEMENT CONCRETE: Provide concrete meeting the following requirements:

- For all concrete, incorporate between 25% and 29% fly ash by weight.
- Retaining Walls:

Concrete Aggregate Testing: In addition to aggregate testing in Section 802 of the Standard Specifications for Road and Bridge Construction, AASHTO T 303 will be conducted. The contractor must have coarse and fine aggregate used in concrete be tested for alkali silica reactivity by an independent lab. If the average of the test results show an expansion greater than 0.10 percent then the aggregate will not be allowed for use on the project. Test results must be given to the engineer at least 30 calendar days before the aggregate is used on the project.

The aggregate tested must be from the stockpiled material used for the project.

Cement: In addition to the requirements of NDDOT 804.01, the cement must also meet the requirements of Table 2 in AASHTO M 85.

Fly Ash: For all concrete, incorporate between 25% and 29% fly ash by weight.

970-P01 LANDSCAPING

1. Remove weeds, contaminated soils, miscellaneous waste materials from area to be planted and seeded/sodded. Loosen compacted subsoils by tilling and importing new topsoil as required to restore grades and maintain positive drainage.
2. Do not install plant material when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F. Do not install plant material when wind velocity exceeds 30 mph. Acceptable planting dates are as follows:

Spring: April 15 – June 15
 Fall: September 15 – October 15

3. Include weed fabric around all trees/plants. Provide 5 oz. woven, needle punched, polypropylene fabric designed for professional and commercial use. Plastic and other non-breathable material will not be accepted. Weed fabric will not be paid for separately.
4. Provide a plant establishment warranty of one year commencing on date of acceptance by Engineer. Replace all plant materials found dead or not in a healthy growing condition.
5. Properly care for all plants from the time of planting until the contract plant establishment period expires.
6. Proper care of plants consists of doing work such as supplemental watering, weeding, pruning, spraying, tightening of braces and guys, retying wrapping, re-mulching and other work as necessary to keep plants in a neat appearance and in a healthy growing condition.
7. Perform complete waterings at 5 to 7 day intervals which may be lengthened when weather conditions and soil moisture permit. Additional waterings may be ordered by the Engineer at any time during the plant establishment period should conditions require such waterings.
8. Place a sufficient amount of water in each plant hole at the time of each watering to keep topsoil backfill material in a moist condition and to keep the plant in a healthy growing condition.
9. Replace all plants/trees that die or show evidence of dying, in the opinion of the Engineer/City Forester, during the plant establishment period at the earliest appropriate planting time. There will be no compensation for replacing plants.
10. Remove and dispose of all bracing and guying materials after final inspection of the plantings following the expiration of the establishment period.
11. Near the end of the applicable plant establishment period, an inspection of the planting will be made and only those plants found to be in a healthy growing condition will be accepted. Those plants not in a healthy growing condition will be replaced by the Contractor at the Contractor's expense.
12. Include the costs associated with plant care maintenance, warranty, weed fabric, and other items necessary for completion of the landscape plantings, in the price bid for the individual planting items.

Acceptable tree types include Autumn Blaze Maple, Discovery Elm and the American Linden.

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Estimate of Quantities

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SPEC	CODE	ITEM DESCRIPTION	UNIT	NHU-3-019(044)155 ND 19 (Participating)	NHU-3-019(044)155 ND 19 (Non-Participating)	NHU-3-020(074)103 ND 20 (Participating)	NHU-3-020(074)103 ND 20 (Non-Participating)	SU-3-982(031)035 Detour Route (Participating)	TOTAL
103	0100	CONTRACT BOND	L SUM	0.05	-	0.90	-	0.05	1.00
107	0100	RAILWAY PROTECTION INSURANCE	L SUM	-	-	1.00	-	-	1.00
201	0352	REMOVAL OF TREES & BRUSH	L SUM	-	-	1.00	-	-	1.00
201	0370	REMOVAL OF TREES 10IN	EA	-	-	12	-	-	12
201	0380	REMOVAL OF TREES 18IN	EA	-	-	2	-	-	2
202	0108	REMOVAL OF STRUCTURE-SITE 1	L SUM	-	-	1.00	-	-	1.00
202	0109	REMOVAL OF STRUCTURE-SITE 2	L SUM	-	-	1.00	-	-	1.00
202	0136	REMOVAL OF PAVEMENT	TON	2,220	39	8,944	-	-	11,203
202	0151	REMOVE PRECAST CONCRETE BARRIER	LF	-	-	50	-	-	50
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	575	-	714	-	-	1,289
202	0210	REMOVAL OF MANHOLES	EA	2	-	5	-	-	7
202	0230	REMOVAL OF INLETS	EA	4	-	12	-	-	16
203	0101	COMMON EXCAVATION-TYPE A	CY	-	-	13,480	-	-	13,480
203	0102	COMMON EXCAVATION-TYPE B	CY	645	-	4,545	-	-	5,190
203	0109	TOPSOIL	CY	188	-	4,899	-	-	5,087
203	0138	COMMON EXCAVATION-SUBCUT	CY	260	-	434	-	-	694
203	0140	BORROW-EXCAVATION	CY	-	-	3,580	-	-	3,580
210	0102	CLASS 1 EXCAVATION-SITE 1	L SUM	-	-	1.00	-	-	1.00
210	0103	CLASS 1 EXCAVATION-SITE 2	L SUM	-	-	1.00	-	-	1.00
210	0201	FOUNDATION PREPARATION	EA	-	-	2	-	-	2
210	0209	FOUNDATION FILL	TON	-	-	20,908	-	-	20,908
210	0210	FOUNDATION FILL	CY	-	-	84.3	-	-	84.3
216	0100	WATER	M GAL	126	-	901	-	-	1,027
251	0100	SEEDING CLASS I	ACRE	1.32	0.04	8.91	-	-	10.27
251	2000	TEMPORARY COVER CROP	ACRE	-	-	6.95	-	-	6.95
253	0101	STRAW MULCH	ACRE	-	-	6.95	-	-	6.95
253	0201	HYDRAULIC MULCH	ACRE	1.32	0.04	8.91	-	-	10.27
255	0101	ECB TYPE 1	SY	-	-	4,230	-	-	4,230
255	0151	REMOVE ECB TYPE 1	SY	-	-	4,230	-	-	4,230
258	0100	CONCRETE SLOPE PROTECTION	SY	-	-	421.0	-	-	421.0
261	0112	FIBER ROLLS 12IN	LF	484	-	6,352	-	-	6,836
261	0113	REMOVE FIBER ROLLS 12IN	LF	484	-	6,352	-	-	6,836
302	0120	AGGREGATE BASE COURSE CL 5	TON	2,115	72	5,578	-	-	7,765
302	0314	TEMPORARY TRAFFIC SERVICE AGGREGATE	TON	60	-	1,268	-	-	1,328
411	0105	MILLING PAVEMENT SURFACE	SY	-	-	-	-	17,840	17,840
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON	48	3	1,000	-	1,982	3,033
550	0302	8.5IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	2,569	-	7,809	-	-	10,378
602	0130	CLASS AAE-3 CONCRETE	CY	-	-	2,313.5	-	-	2,313.5
602	1134	PILE SUPPORTED APPROACH SLAB	SY	-	-	115.6	-	-	115.6
602	6001	PRECAST PIER CAP	EA	-	-	8	-	-	8
602	6002	PRECAST ABUTMENT	EA	-	-	4	-	-	4
602	6005	PRECAST CONCRETE WING WALL	EA	-	-	4	-	-	4

ND Highway 19 &
ND Highway 20

Estimate of Quantities

Estimate of Quantities

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SPEC	CODE	ITEM DESCRIPTION	UNIT	NHU-3-019(044)155 ND 19 (Participating)	NHU-3-019(044)155 ND 19 (Non-Participating)	NHU-3-020(074)103 ND 20 (Participating)	NHU-3-020(074)103 ND 20 (Non-Participating)	SU-3-982(031)035 Detour Route (Participating)	TOTAL
604	9550	PRESTRESSED CONCRETE FASCIA GIRDER	LF	-	-	360	-	-	360
612	0115	REINFORCING STEEL-GRADE 60	LBS	-	-	409,054	-	-	409,054
612	0116	REINFORCING STEEL - GRADE 60 - EPOXY COATED	LBS	-	-	40,782	-	-	40,782
616	5890	STRUCTURAL STEEL	L SUM	-	-	1.00	-	-	1.00
618	0115	UNTREATED TIMBER	MBM	-	-	51.7	-	-	51.7
622	0068	STEEL PILING HP 14 X 89	LF	-	-	12,880	-	-	12,880
624	0123	PEDESTRIAN RAILING	LF	-	-	1,237.4	-	-	1,237.4
624	0124	PEDESTRIAN FENCE	LF	-	-	351	-	-	351
702	0100	MOBILIZATION	L SUM	0.05	-	0.90	-	0.05	1.00
704	0100	FLAGGING	MHR	800	-	1,600	-	200	2,600
704	1000	TRAFFIC CONTROL SIGNS	UNIT	472	-	4,243	-	1,123	5,838
704	1018	LANE CLOSURE-SIGNAL CONTROL/FLAGGING CONTROL	EA	-	-	2	-	-	2
704	1052	TYPE III BARRICADE	EA	4	-	39	-	-	43
704	1060	DELINEATOR DRUMS	EA	12	-	112	-	-	124
704	1067	TUBULAR MARKERS	EA	9	-	79	-	71	159
704	1086	SEQUENCING ARROW PANEL-TYPE B	EA	-	-	3	-	-	3
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	1,215	-	4,269	-	-	5,484
704	3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF	-	-	40	-	-	40
704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	EA	-	-	62	-	-	62
704	9100	VIDEO MONITORING SYSTEM	EA	-	-	1	-	-	1
706	0500	AGGREGATE LABORATORY	EA	-	-	1	-	-	1
708	1200	SMALL ROCK COVER	TON	-	-	620	-	-	620
708	1531	INLET PROTECTION-FIBER ROLL 12IN	EA	-	-	7	-	-	7
708	1533	REMOVAL INLET PROTECTION-FIBER ROLL 12IN	EA	-	-	7	-	-	7
708	1540	INLET PROTECTION-SPECIAL	EA	5	-	27	-	15	47
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	5	-	27	-	15	47
709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	3,378	-	9,632	-	-	13,010
709	0161	GEOSYNTHETIC MATERIAL TYPE S1	SY	-	-	104	-	-	104
714	4115	PIPE CONDUIT 36IN	LF	-	-	64	-	-	64
714	4120	PIPE CONDUIT 42IN	LF	-	-	44	-	-	44
714	9680	PLUG PIPE-ALL TYPES & SIZES	EA	-	-	3	-	-	3
714	9696	EDGEDRAIN NON PERMEABLE BASE	LF	938	-	2,674	-	-	3,612
714	9705	UNDERDRAIN CLEANOUT RISER	EA	-	-	4	-	-	4
714	9730	UNDERDRAIN PIPE PVC PERFORATED 6IN	LF	-	-	400	-	-	400
722	0100	MANHOLE 48IN	EA	-	-	1	-	-	1
722	0110	MANHOLE 60IN	EA	-	-	5	-	-	5
722	0120	MANHOLE 72IN	EA	-	-	2	-	-	2
722	0130	MANHOLE 84IN	EA	3	-	1	-	-	4
722	0140	MANHOLE 96IN	EA	-	-	1	-	-	1
722	0300	MANHOLE SANITARY	EA	-	-	1	-	-	1
722	1100	MANHOLE RISER 48IN	LF	-	-	11.9	-	-	11.9
722	1110	MANHOLE RISER 60IN	LF	-	-	41.9	-	-	41.9

ND Highway 19 &
ND Highway 20

Estimate of Quantities

Estimate of Quantities

Revised	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-019(044)155	8	3
			NHU-3-020(074)103		
			SU-3-982(031)035		

SPEC	CODE	ITEM DESCRIPTION	UNIT	NHU-3-019(044)155 ND 19 (Participating)	NHU-3-019(044)155 ND 19 (Non-Participating)	NHU-3-020(074)103 ND 20 (Participating)	NHU-3-020(074)103 ND 20 (Non-Participating)	SU-3-982(031)035 Detour Route (Participating)	TOTAL
722	1120	MANHOLE RISER 72IN	LF	-	-	12.2	-	-	12.2
722	1130	MANHOLE RISER 84IN	LF	29.8	-	4.0	-	-	33.8
722	1140	MANHOLE RISER 96IN	LF	-	-	7.1	-	-	7.1
722	3410	MANHOLE REPAIR	EA	1	-	3	-	-	4
722	3510	INLET-TYPE 2	EA	5	-	19	-	-	24
722	3520	INLET-TYPE 2 DOUBLE	EA	-	-	4	-	-	4
722	3760	INLET SPECIAL-TYPE 160IN	EA	-	-	1	-	-	1
722	3910	INLET SLOTTED DRAIN 15IN	LF	-	-	10	-	-	10
722	3920	INLET SLOTTED DRAIN 18IN	LF	-	-	180	-	-	180
722	4020	INLET CATCH BASIN 9IN BEEHIVE	EA	-	-	2	-	-	2
722	6140	ADJUST GATE VALVE BOX	EA	3	-	3	-	7	13
722	6200	ADJUST MANHOLE	EA	3	-	5	-	12	20
722	6240	ADJUST UTILITY APPURTENANCE	EA	-	-	3	-	-	3
724	0420	HYDRANT-RELOCATE	EA	-	-	1	-	-	1
724	0611	WATER SERVICE LINE 1IN	LF	-	-	-	45	-	45
724	0892	RELOCATE WATERMAIN	EA	-	-	1	-	-	1
724	2120	36IN X 23IN ARCH SANITARY SEWER PIPE	LF	-	-	155	-	-	155
744	0100	POLYSTYRENE INSULATION BOARD	BD FT	-	-	10,422	-	-	10,422
748	0140	CURB & GUTTER-TYPE I	LF	1,002	24	2,886	-	-	3,912
748	0520	CURB-TYPE I	LF	-	-	155	-	-	155
750	0030	PIGMENTED IMPRINTED CONCRETE	SY	239	-	67	-	-	306
750	0100	SIDEWALK CONCRETE	SY	1,262	278	2,538	-	-	4,078
750	1000	DRIVEWAY CONCRETE	SY	88	-	-	-	-	88
750	1020	DRIVEWAY CONCRETE 8IN	SY	-	-	269	-	-	269
750	2115	DETECTABLE WARNING PANELS	SF	56	20	212	-	-	288
752	0600	FENCE CHAIN LINK	LF	-	-	2,400	-	-	2,400
752	0911	TEMPORARY SAFETY FENCE	LF	-	-	70	-	-	70
752	0922	FENCE REMOVE & RESET	LF	-	-	1,750	-	-	1,750
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	15.7	-	52.6	-	-	68.3
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	47.6	-	225.0	-	-	272.6
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	131.0	-	259.8	-	-	390.8
754	0592	RESET SIGN PANEL	EA	3	2	-	-	-	5
754	0593	RESET SIGN SUPPORT	EA	-	3	-	-	-	3
762	0103	PVMT MK PAINTED-MESSAGE	SF	-	-	-	-	161	161
762	0122	PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED)	SF	64	-	1,815	-	2,340	4,219
762	0420	SHORT TERM 4IN LINE-TYPE R	LF	4,058	-	26,580	-	-	30,638
762	0422	SHORT TERM 6IN LINE-TYPE R	LF	96	-	-	-	-	96
762	0424	SHORT TERM 8IN LINE-TYPE R	LF	-	-	546	-	-	546
762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	1,338	-	1,818	-	6,634	9,790
762	0434	SHORT TERM 8IN LINE-TYPE NR	LF	-	-	-	-	768	768
762	0436	SHORT TERM 24IN LINE-TYPE NR	LF	-	-	-	-	84	84
762	0440	SHORT TERM MESSAGE-TYPE R	SF	-	-	68	-	-	68

ND Highway 19 &
ND Highway 20

Estimate of Quantities

Estimate of Quantities

Revised	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-019(044)155	8	4

SPEC	CODE	ITEM DESCRIPTION	UNIT	NHU-3-019(044)155 ND 19 (Participating)	NHU-3-019(044)155 ND 19 (Non-Participating)	NHU-3-020(074)103 ND 20 (Participating)	NHU-3-020(074)103 ND 20 (Non-Participating)	SU-3-982(031)035 Detour Route (Participating)	TOTAL
762	0442	SHORT TERM MESSAGE-TYPE NR	SF	-	-	-	-	2,149	2,149
762	1104	PVMT MK PAINTED 4IN LINE	LF	-	-	-	-	682	682
762	1108	PVMT MK PAINTED 8IN LINE	LF	-	-	-	-	286	286
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	2,227	-	6,390	-	6,148	14,765
762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF	86	-	67	-	161	314
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	70	-	1,024	-	579	1,673
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	17	-	219	-	167	403
770	0001	LIGHTING SYSTEM	EA	0.30	-	0.70	-	-	1.00
772	9200	IT SYSTEM	EA	-	-	1	-	-	1
772	9811	TRAFFIC SIGNAL SYSTEM - SITE 1	EA	-	-	1	-	-	1
772	9812	TRAFFIC SIGNAL SYSTEM - SITE 2	EA	-	-	1	-	-	1
930	3040	BEARINGS (EXPANSION)	EA	-	-	51	-	-	51
930	3042	BEARINGS (FIXED)	EA	-	-	3	-	-	3
930	7013	ROADWAY CANOPY-SITE 1	L SUM	-	-	1.00	-	-	1.00
930	7014	ROADWAY CANOPY-SITE 2	L SUM	-	-	1.00	-	-	1.00
930	8600	ELASTOMERIC BEARING PAD	SF	-	-	97.8	-	-	97.8
930	9537	ABUTMENT UNDERDRAIN SYSTEM	EA	-	-	2.00	-	-	2.00
930	9952	PIER MEDALLION	EA	-	-	4	-	-	4
970	1000	TREES	EA	-	-	14	-	-	14
980	0510	RAILROAD SUB-BALLAST	TON	-	-	9,353	-	-	9,353
990	0220	GUARD POST-PERMANENT	EA	-	-	10	-	-	10
990	0230	TEMPORARY ACCESS	L SUM	-	-	1.00	-	-	1.00

NHU-3-020(074)103
SU-3-982(031)035

Option 1: Pipe Conduit Storm Sewer (See Section 51 for Allowable Materials)

SPEC	CODE	ITEM DESCRIPTION	UNIT	NHU-3-019(044)155 ND 19 (Participating)	NHU-3-019(044)155 ND 19 (Non-Participating)	NHU-3-020(074)103 ND 20 (Participating)	NHU-3-020(074)103 ND 20 (Non-Participating)	SU-3-982(031)035 Detour Route (Participating)	TOTAL
714	4097	PIPE CONDUIT 15IN-STORM DRAIN	LF	145	-	767	-	-	912
714	4101	PIPE CONDUIT 18IN-STORM DRAIN	LF	-	-	78	-	-	78
714	4107	PIPE CONDUIT 24IN-STORM DRAIN	LF	-	-	226	-	-	226
714	4117	PIPE CONDUIT 36IN-STORM DRAIN	LF	-	-	626	-	-	626
714	4121	PIPE CONDUIT 42IN-STORM DRAIN	LF	31	-	136	-	-	167
714	4131	PIPE CONDUIT 54IN-STORM DRAIN	LF	412	-	65	-	-	477
714	4216	PIPE CONDUIT ARCH 22IN X 13IN	LF	-	-	30	-	-	30

Option 2: Reinforced Concrete Pipe Storm Sewer

SPEC	CODE	ITEM DESCRIPTION	UNIT	NHU-3-019(044)155 ND 19 (Participating)	NHU-3-019(044)155 ND 19 (Non-Participating)	NHU-3-020(074)103 ND 20 (Participating)	NHU-3-020(074)103 ND 20 (Non-Participating)	SU-3-982(031)035 Detour Route (Participating)	TOTAL
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF	145	-	767	-	-	912
714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF	-	-	78	-	-	78
714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN	LF	-	-	226	-	-	226
714	0910	PIPE CONC REINF 36IN CL III-STORM DRAIN	LF	-	-	626	-	-	626
714	1010	PIPE CONC REINF 42IN CL III-STORM DRAIN	LF	31	-	136	-	-	167
714	1212	PIPE CONC REINF 54IN CL III-STORM DRAIN	LF	412	-	65	-	-	477
714	2101	PIPE CONC REINF ARCH 22IN X 13IN CL III-S DRAIN	LF	-	-	30	-	-	30

ND Highway 19 &
ND Highway 20

Estimate of Quantities

BASIS OF ESTIMATE

Revised 9/29/16

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND		NHU-3-019(044)155 & NHU-3-020(074)103 & SU-3-982(031)035	10	1

MATERIALS

Removal of Pavement:
 Concrete @ 2.0 Ton/CY
 Bituminous Surfacing @ 2.0 Ton/CY
 Aggregate Base @ 1.875 Ton/CY

Aggregate Base Course CL 5 @ 1.875 Ton/CY

Commercial Grade Hot Mix Asphalt @ 2 Ton/CY

PG 58-28 Asphalt Cement (to be included in the price bid for HMA)

Tack Coat @ 0.05 Gal/SY (to be included in the price bid for HMA)

GRADING

Water:
 10 Gal/CY of Embankment Quantities
 21 Gal/Ton of Aggregate Base Course
 100 M Gal for Dust Palliative

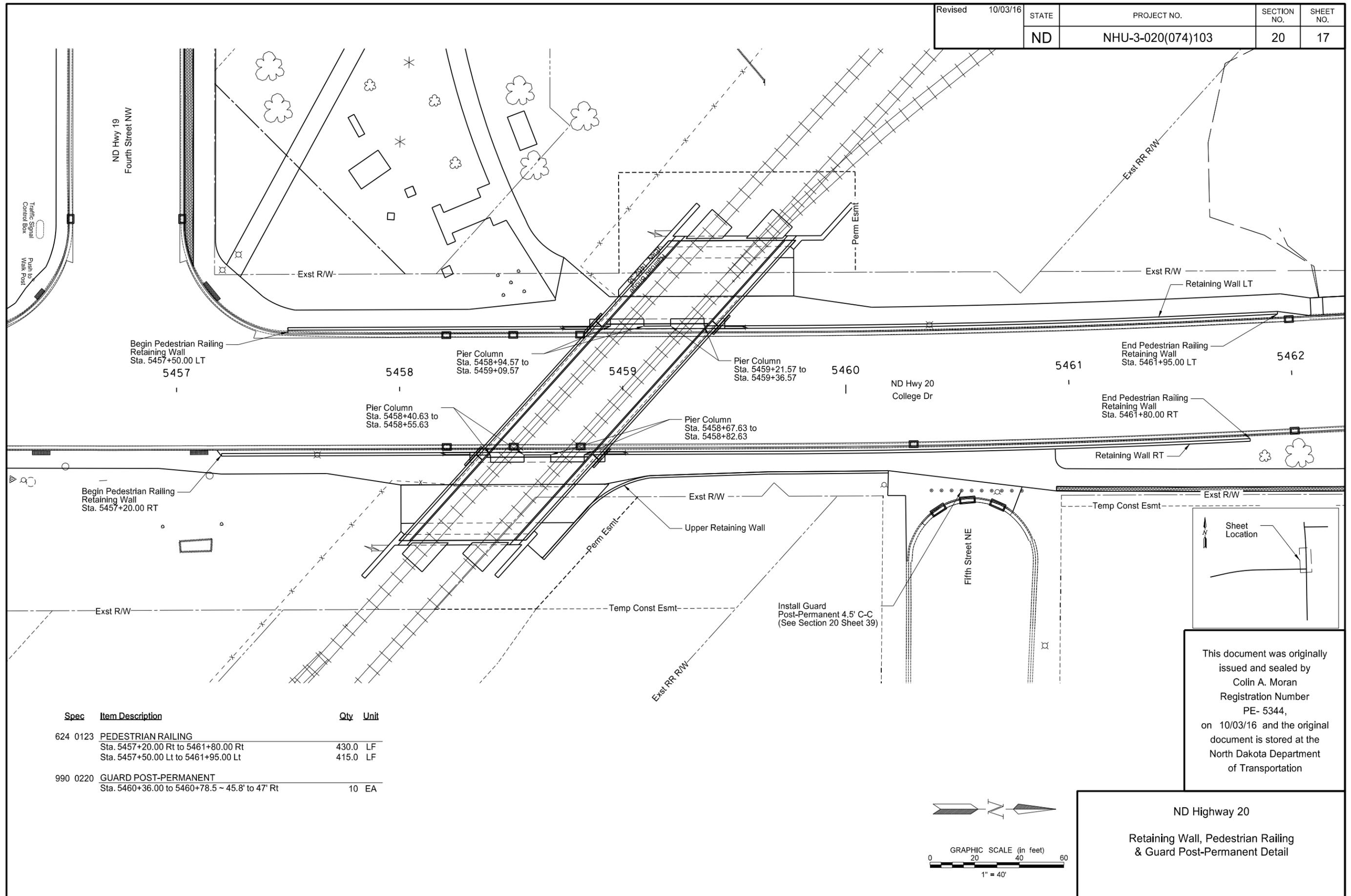
Railroad Sub-Ballast	
Location	Sub-Ballast (Ton)
Permanent Mainline & Siding	1,200
Permanent Industrial 1361	1,003
Permanent Industrial 1352	519
Temporary Mainline & Siding	5,498
Temporary Industrial 1361	467
Temporary Industrial 1352	666
Total =	9,353

Roadway Embankment						
Location	(A) Excavation (CY)	(B) Pvmt & Aggr Removal from Excavation Areas (CY)	(C) Common Excavation – Type A (CY)	(A)-(B)=(D) Common Excavation – Type B (CY)	(E) Embankment (CY)	(C)+(D)-(E)=(F) Excess Excavation (CY)
ND Hwy 19	1,715	1,070	0	645	0	645
ND Hwy 20	7,895	3,350	80	4,545	110	4,515
Total =	9,610	4,420	80	5,190	110	5,160

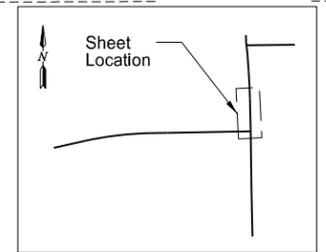
Topsoil			
Location	(A) Topsoil Excavation (CY)	(B) Topsoil Embankment (CY)	(A)-(B)=(C) Excess Topsoil (CY)
ND Hwy 19	188	55	133
ND Hwy 20	615	280	335
RR Temporary	3,833	1,509	2,324
RR Permanent	451	2,558	(2,107)
Total =	5,087	4,402	685

Railway Embankment						
Location	(A) Excavation (CY)	(B) Ballast Removal from Excavation Areas (CY)	(A)-(B)=(C) Common Excavation – Type A (CY)	(D) Embankment (CY)	(D)-(C)=(E) Borrow Excavation (CY)	(C)-(D)=(F) Excess Excavation (CY)
Permanent Mainline & Siding	5,050	-	5,050	2,879	-	2,171
Permanent Industrial 1361	129	-	129	533	404	-
Permanent Industrial 1352	339	-	339	155	-	184
Temporary Mainline & Siding	7,710	774	6,936	2,905	-	4,031
Temporary Industrial 1361	760	-	760	-	-	760
Temporary Industrial 1352	456	-	456	3,319	2,863	-
RR ACCESS	-	-	-	283	283	-
Total =	14,444	774	13,370	10,074	3,550	7,146

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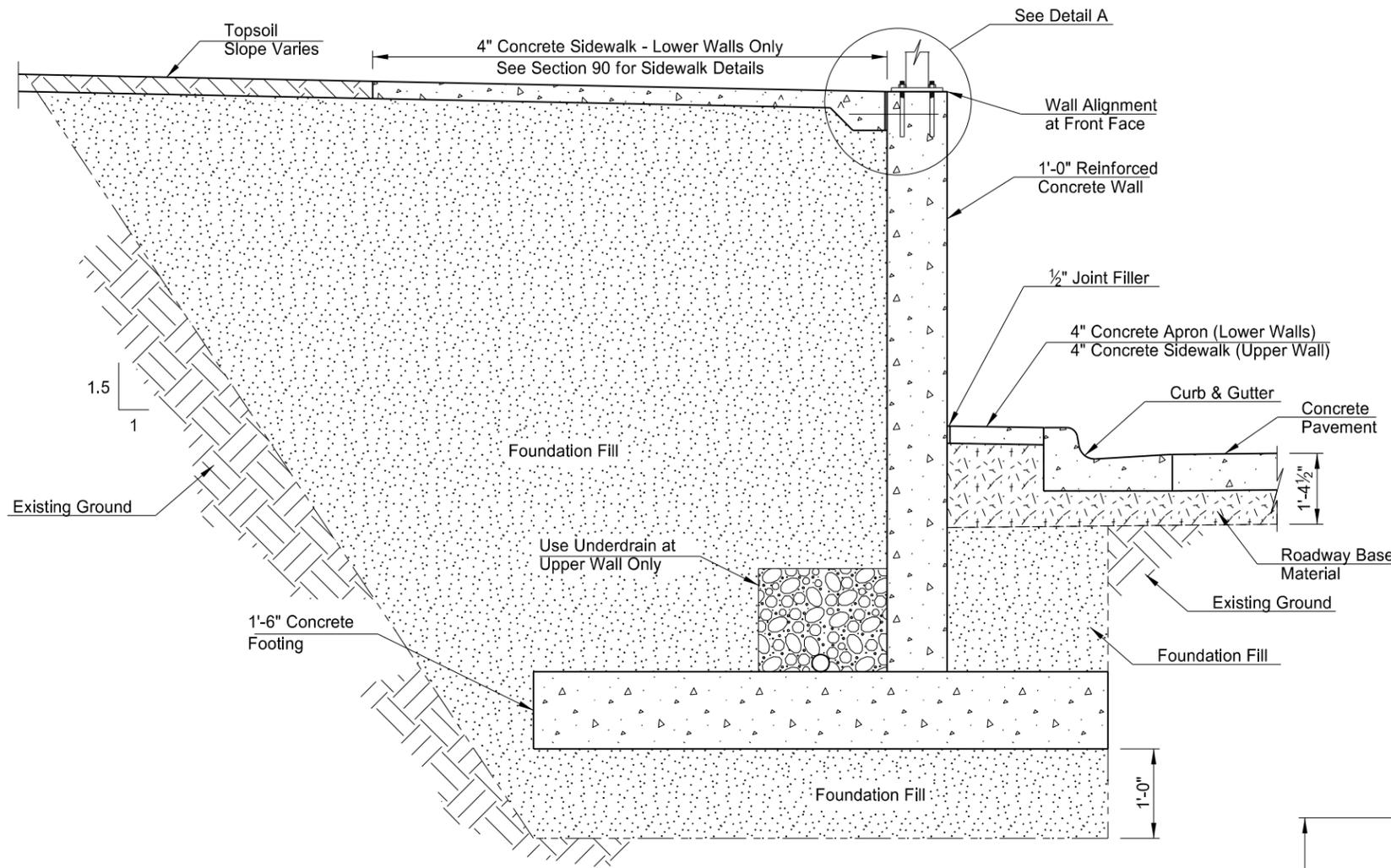


Spec	Item Description	Qty	Unit
624 0123	PEDESTRIAN RAILING		
	Sta. 5457+20.00 Rt to 5461+80.00 Rt	430.0	LF
	Sta. 5457+50.00 Lt to 5461+95.00 Lt	415.0	LF
990 0220	GUARD POST-PERMANENT		
	Sta. 5460+36.00 to 5460+78.5 ~ 45.8' to 47' Rt	10	EA



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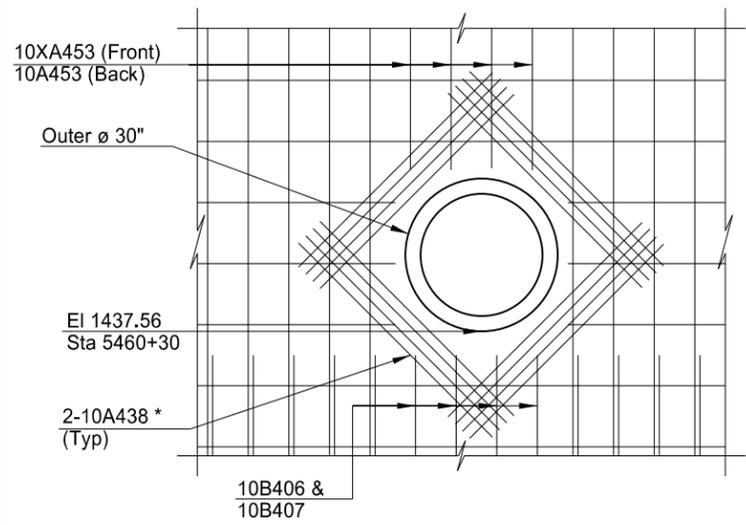
ND Highway 20
 Retaining Wall, Pedestrian Railing
 & Guard Post-Permanent Detail



WALL TYPICAL SECTION

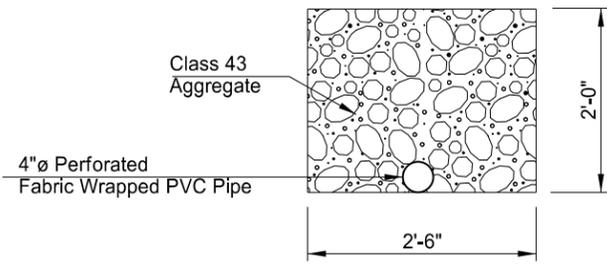
- NOTES:**
1. Use perforated fabric wrapped PVC pipe that meets the requirements of Section 830.03 A.3. Provide fabric wrapping for the pipe that meets the requirements of Section 858.01 for D3 or D4 drainage fabric. Provide aggregate that meets the requirements of Section 816.03, Class 43. Outlet PVC drainage pipe from the lowest point of the Upper Retaining Wall to Manhole 8.
 2. Include costs to furnish and place the Class 43 Aggregate, geosynthetic material, perforated pipe and drainage pipe in the lump sum bid item "Class AAE-3 Concrete".
 3. Provide foundation fill meeting the requirements of Section 816.02, Class 5 and compact in accordance with Section 302.04B.
 4. Surface Finish "D" is required on the face and top of the retaining walls. Provide surface finish color white meeting Federal Standard 595B Color Number 27722, "Light Gray". Include this work in the price bid for "Class AAE-3 Concrete".
 5. Install rail along the entire length of the lower retaining walls, including between the piers. See Section 20, Sheet 17 for rail locations.

DESIGN STRENGTHS:
 f'c = 4,000 psi ~ Class AAE-3 Concrete
 fy = 60,000 psi ~ Reinforcing Steel
 Load & Resistance Factor Design



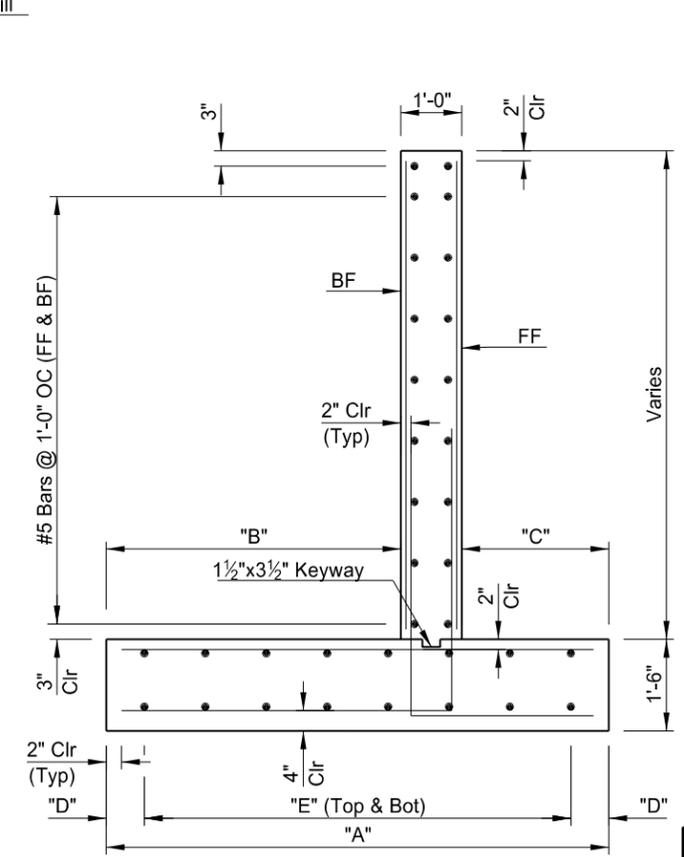
PIPE DETAIL
 (See Section 20, Sheet 29 for Pipe Locations)

* Space 10A438 Bars at 4" OC.

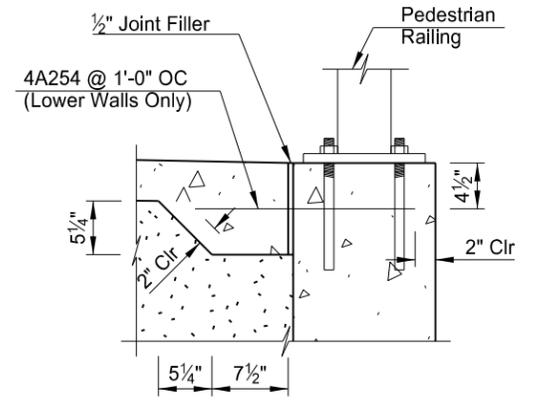


DRAIN DETAIL
 (Upper Wall Only)

WALL TYPE	"A"	"B"	"C"	"D"	"E"
WALL 'A'	10'-0"	5'-0"	4'-0"	6"	#6 Bars @ 1'-0"
WALL 'B'	12'-0"	5'-6"	5'-6"	6"	#6 Bars @ 1'-0"
WALL 'C'	15'-0"	6'-6"	7'-6"	6"	#6 Bars @ 8"
WALL 'D'	11'-0"	5'-6"	4'-6"	6"	#6 Bars @ 1'-0"
WALL 'E'	8'-9"	4'-6"	3'-3"	4 1/2"	#5 Bars @ 1'-0"
WALL 'F'	6'-9"	3'-0"	2'-9"	4 1/2"	#5 Bars @ 1'-0"



WALL TYPICAL SECTION
 (Showing Reinforcing)

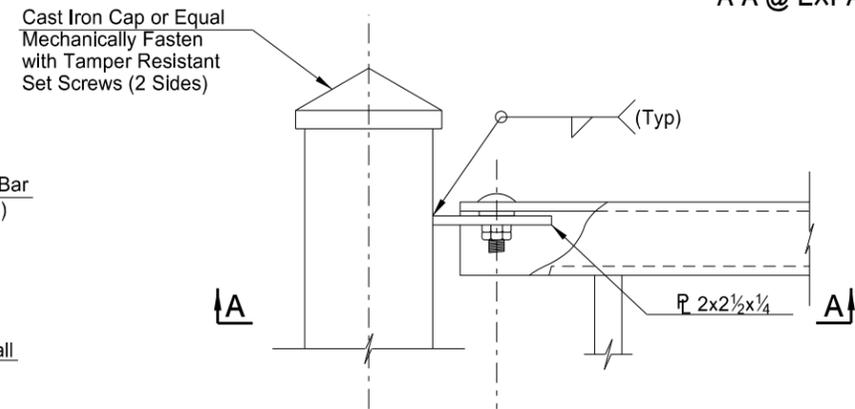
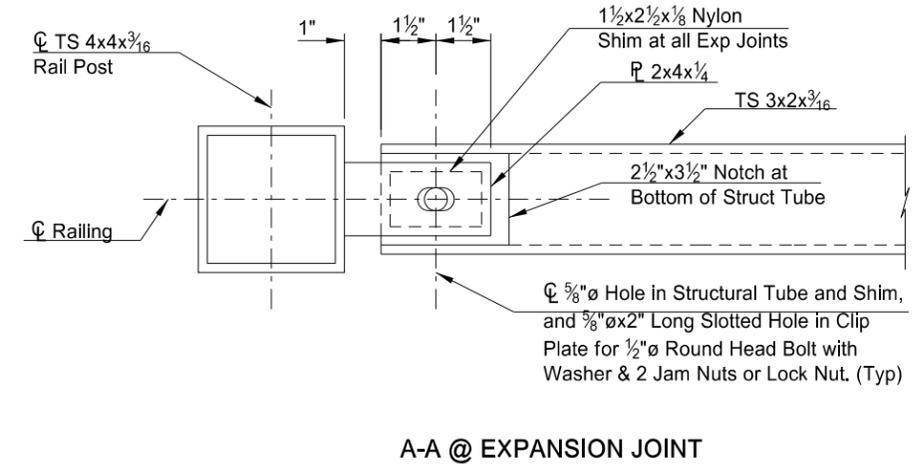
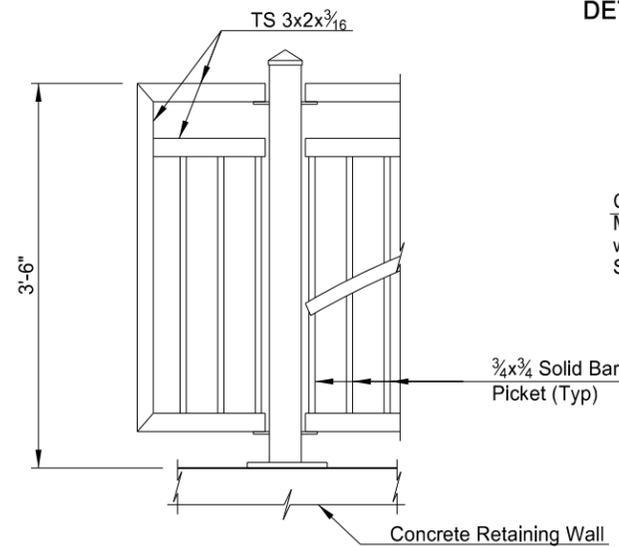
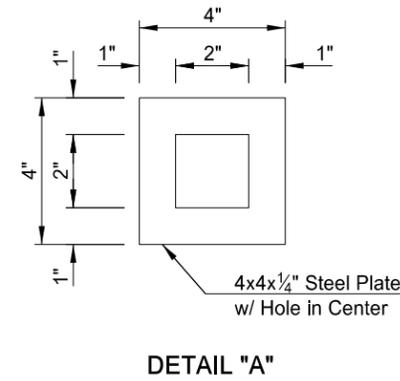
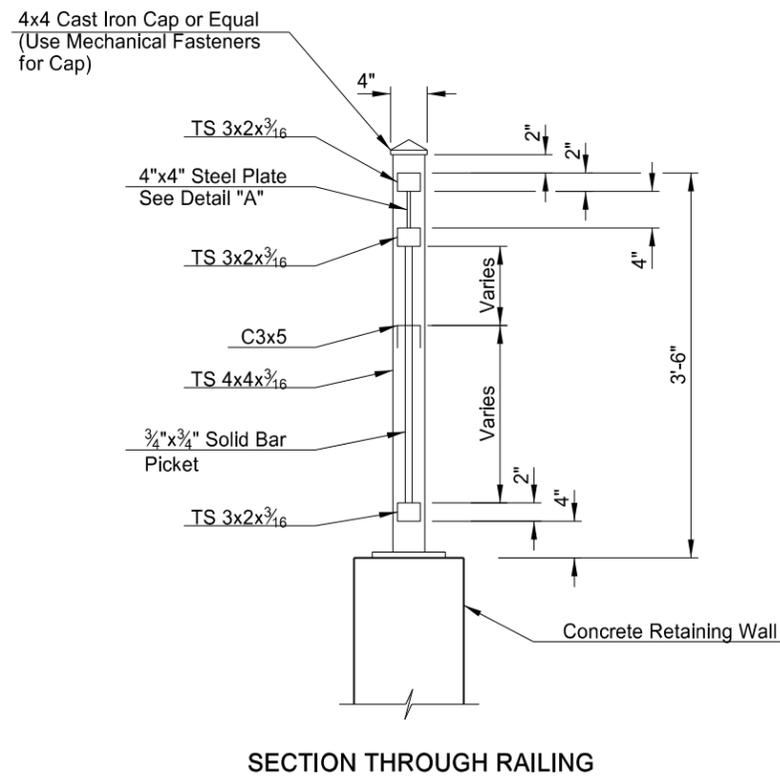
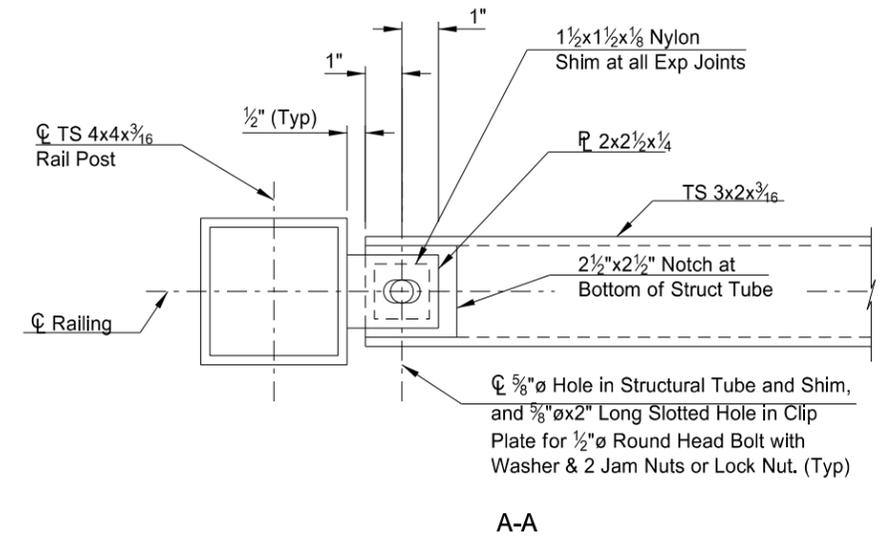
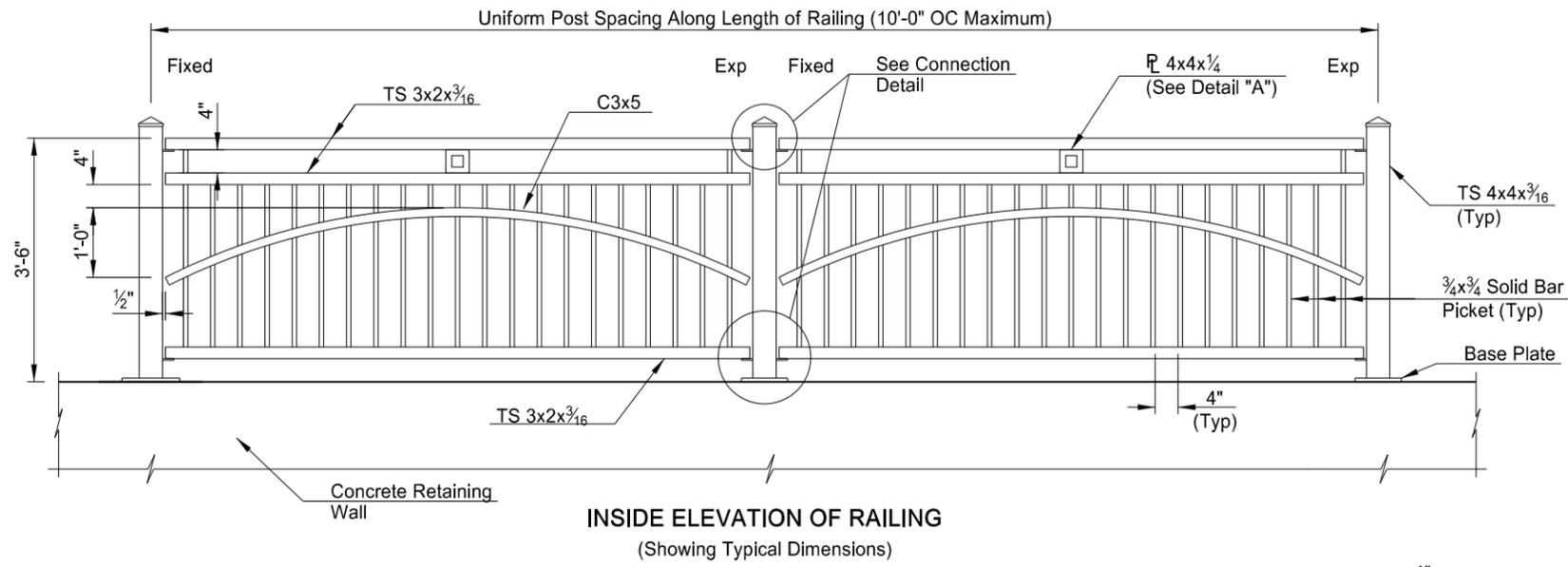


DETAIL A

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ND Highway 19 &
 ND Highway 20
 Retaining Wall Details

Revised	10/03/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-020(074)103	20	38



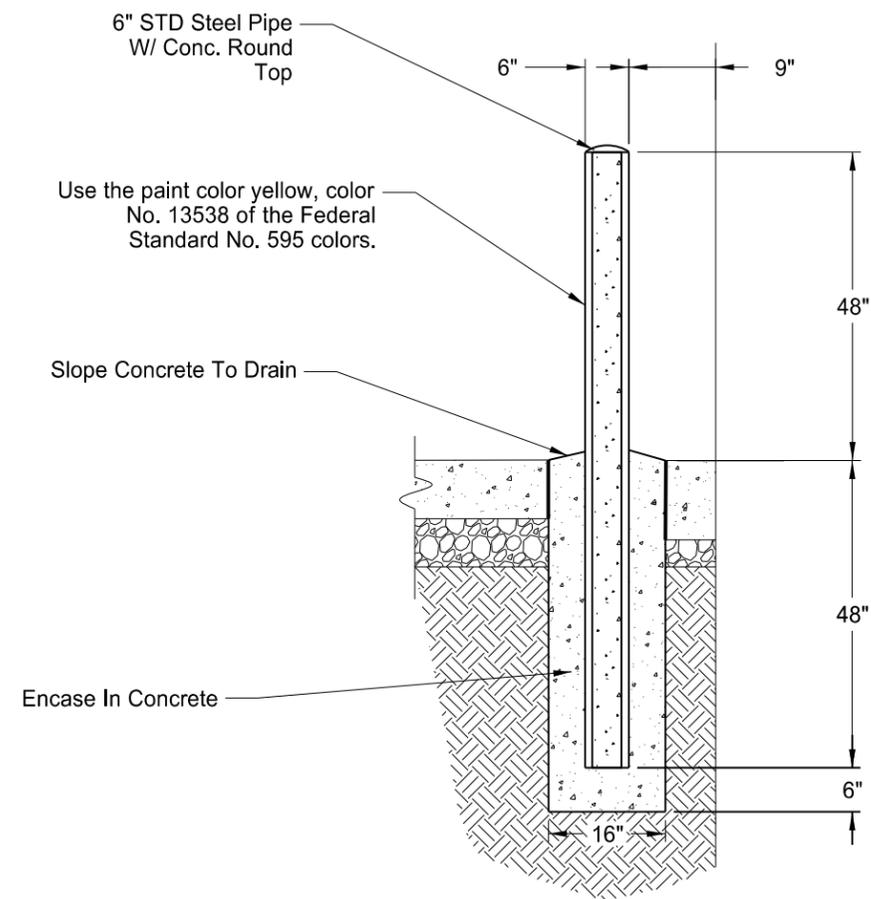
NOTES:

1. See Section 20, Sheet 17 for retaining wall railing location.
2. Included all pieces required for the fabrication or connection of the railing in the unit price bid "Pedestrian Railing".
3. Design railing anchor bolts to resist a tensile force of 9000 lbs.

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ND Highway 19 & ND Highway 20
Pedestrian Railing Details

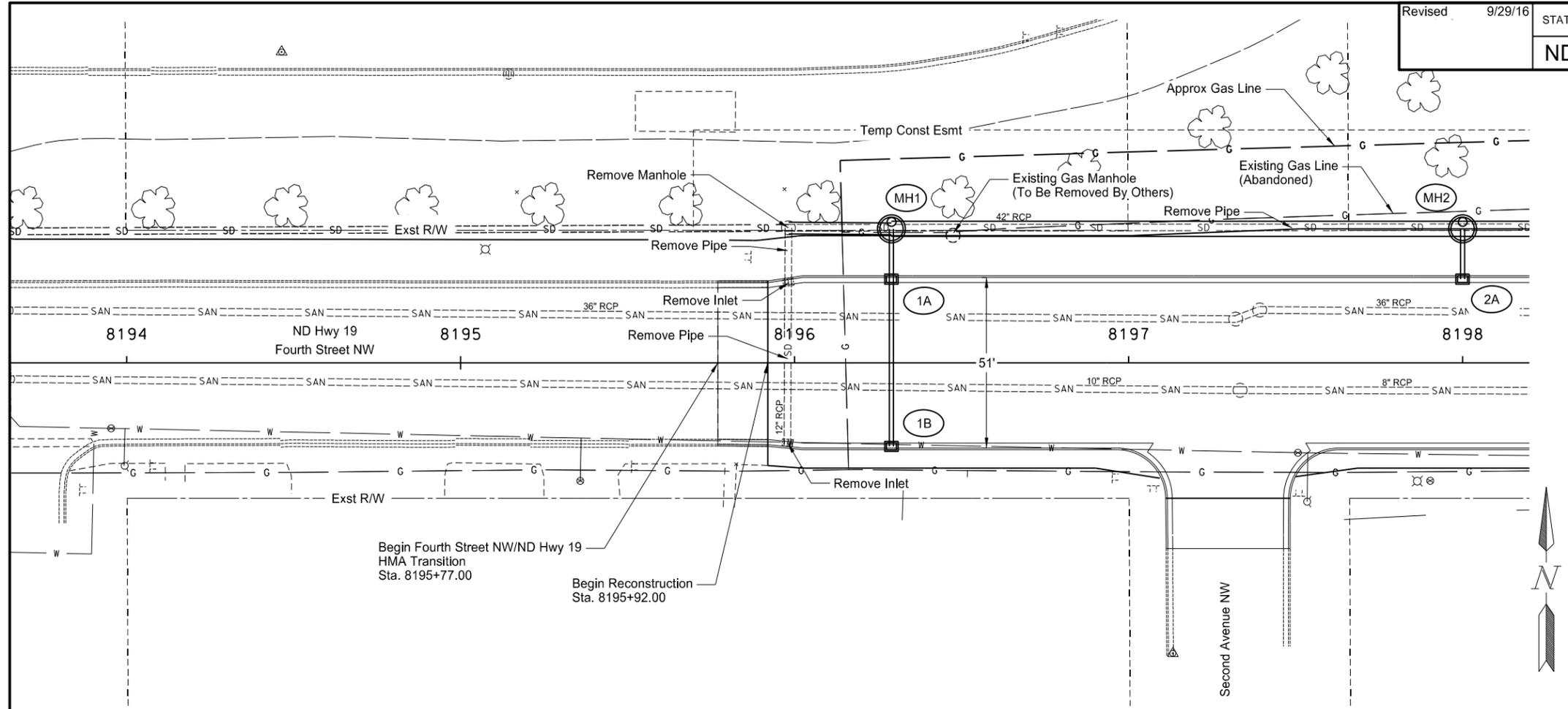
Revised	10/03/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-020(074)103	20	39



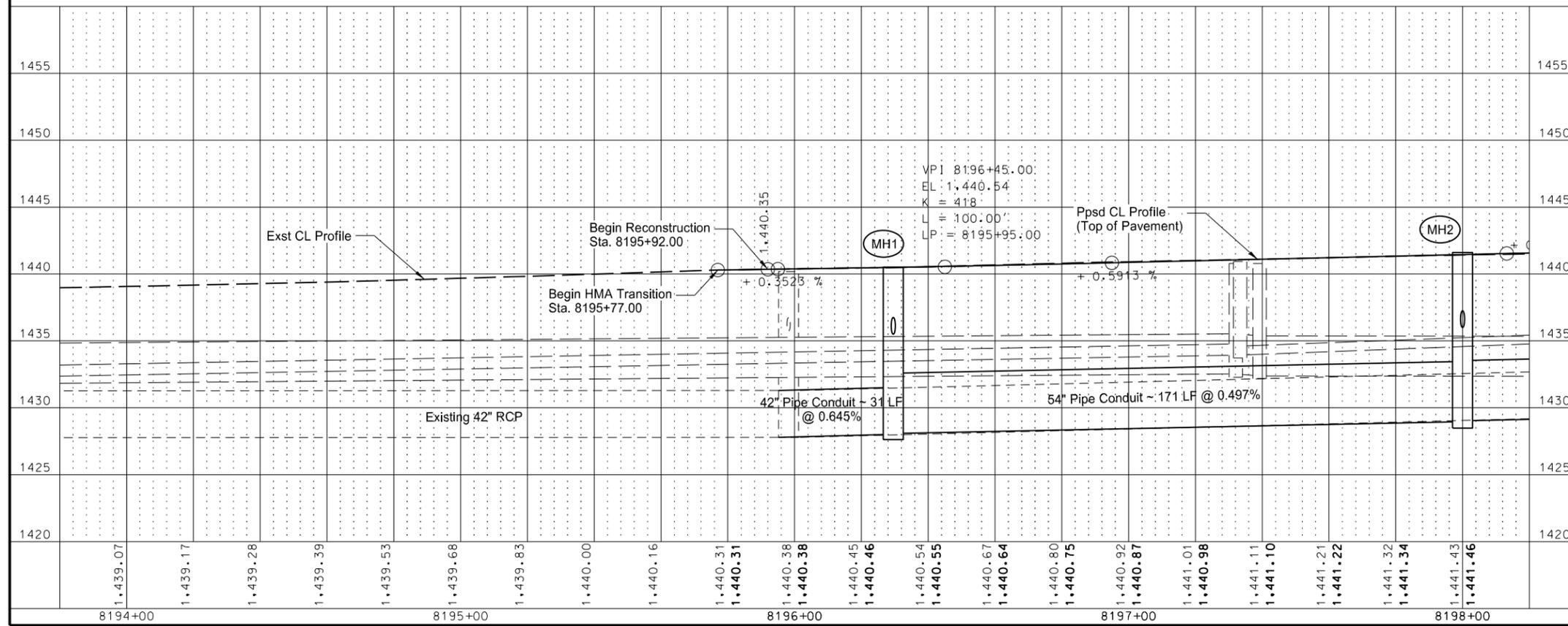
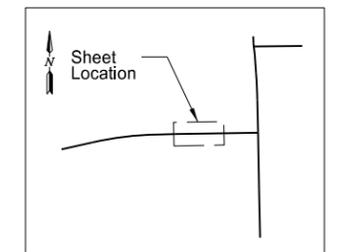
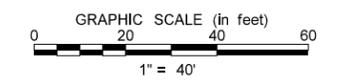
GUARD POST-PERMANENT
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ND Highway 20
Guard Post-Permanent



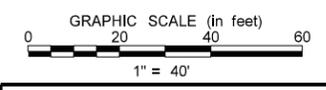
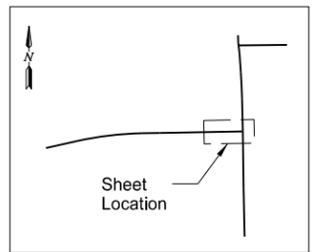
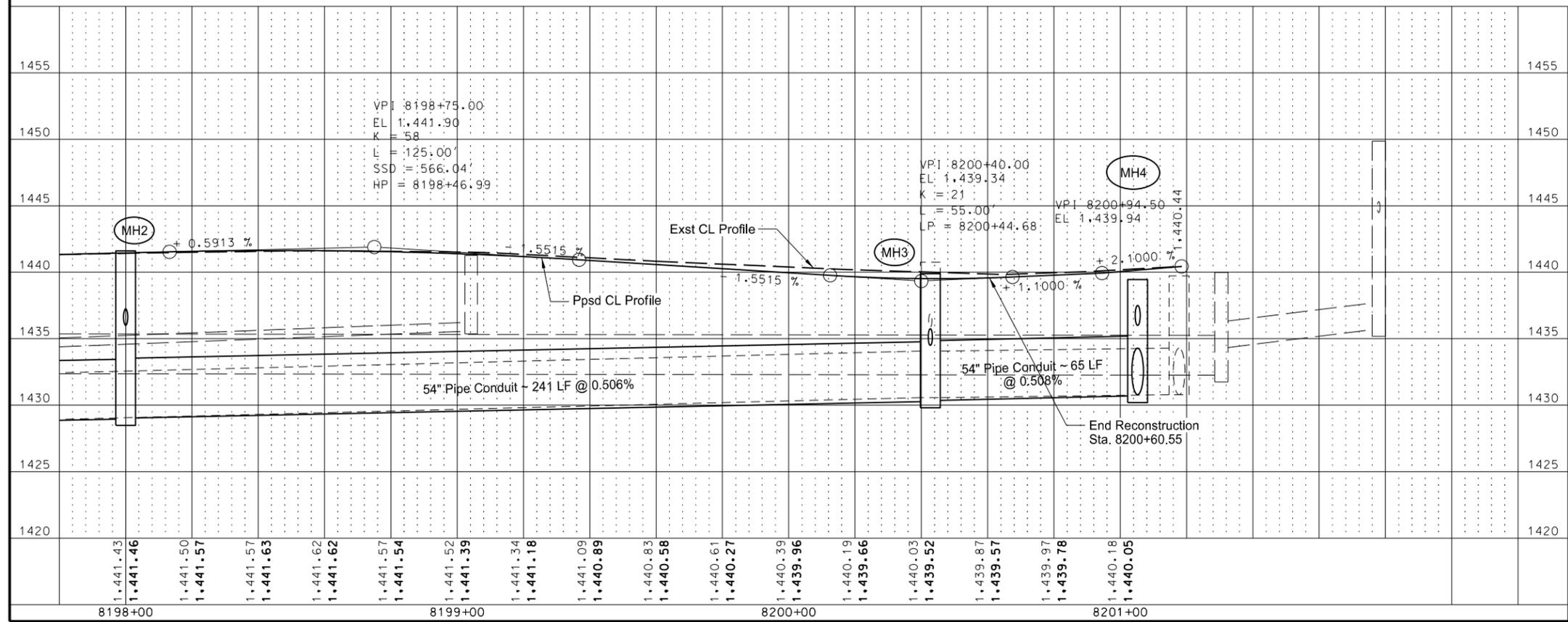
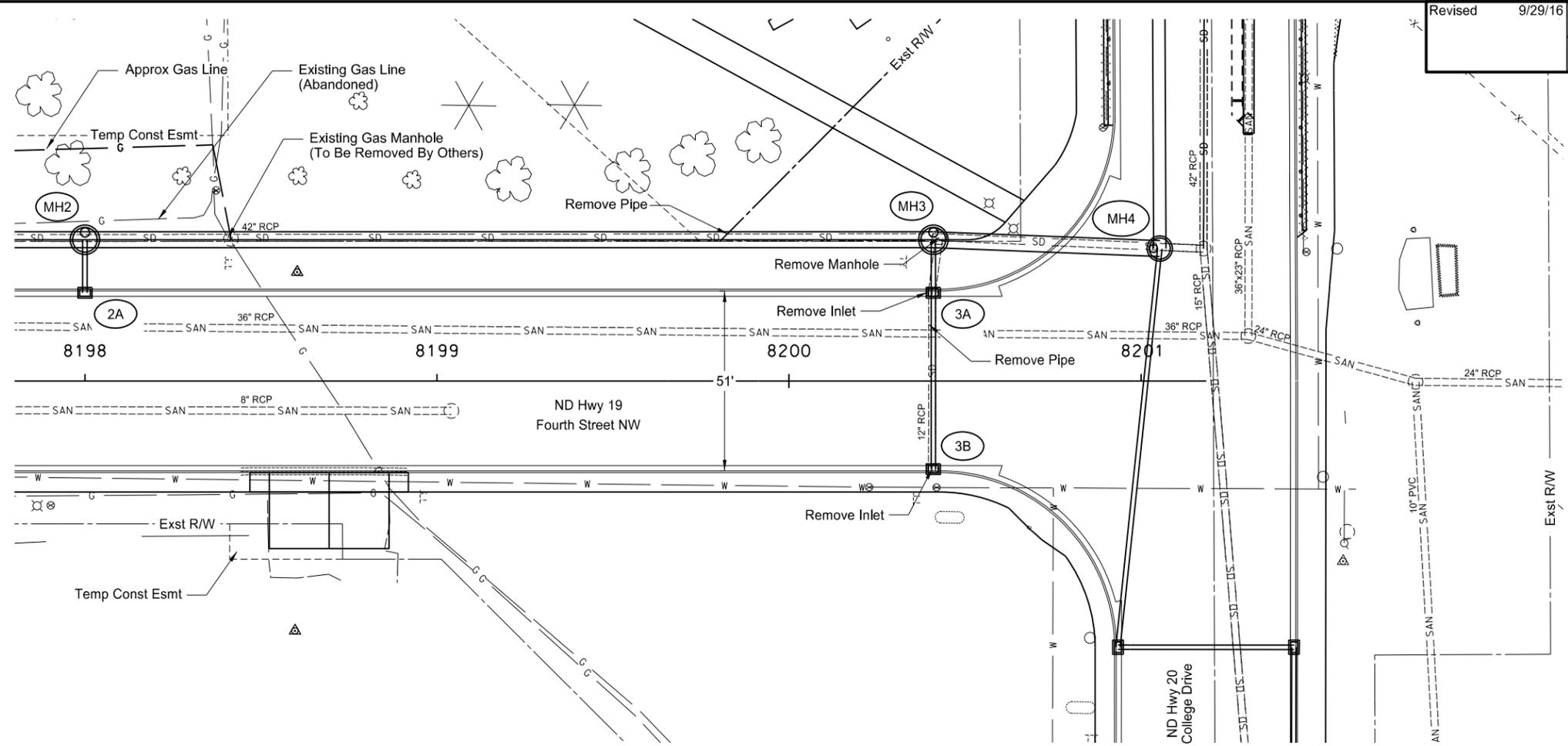
Spec	Item Description	Qty	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta. 8195+98 ~ 40' Lt to 8195+98 ~ 24' Rt Sta. 8195+98 ~ 40' Lt to 8198+00 ~ 40' Lt	64 202	LF LF
202-0210	REMOVAL OF MANHOLES Sta. 8195+98 ~ 40' Lt	1	EA
202-0230	REMOVAL OF INLETS Sta. 8195+98 ~ 24' Lt Sta. 8195+98 ~ 24' Rt	1 1	EA EA
714-4097	PIPE CONDUIT 15IN-STORM DRAIN 1A to 1B 1A to MH1 2A to MH2	50 15 15	LF LF LF
714-4121	PIPE CONDUIT 42IN-STORM DRAIN Sta. 8195+98 ~ 40' Lt to MH1	31	LF
714-4131	PIPE CONDUIT 54IN-STORM DRAIN MH1 to MH2	171	LF
722-0130	MANHOLE 84IN MH1 MH2	1 1	EA EA
722-1130	MANHOLE RISER 84IN MH1 MH2	10.8 11.0	LF LF
722-3510	INLET-TYPE 2 1A 1B 2A	1 1 1	EA EA EA



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ND Highway 19
Storm Drain
Sta. 8195+77 to Sta. 8198+00

Spec	Item Description	Qty	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta. 8198+00 ~ 40' Lt to 8200+43 ~ 41' Lt Sta. 8200+41 ~ 25' Rt to 8200+43 ~ 41' Lt	243 66	LF LF
202-0210	REMOVAL OF MANHOLES Sta. 8200+43 ~ 41' Lt	1	EA
202-0230	REMOVAL OF INLETS Sta. 8200+41 ~ 25' Lt Sta. 8200+41 ~ 25' Rt	1 1	EA EA
714-4097	PIPE CONDUIT 15IN-STORM DRAIN 3A to 3B 3A to MH3	50 15	LF LF
714-4131	PIPE CONDUIT 54IN-STORM DRAIN MH2 to MH3	241	LF
722-0130	MANHOLE 84IN MH3	1	EA
722-1130	MANHOLE RISER 84IN MH3	8.0	LF
722-3510	INLET-TYPE 2 3A 3B	1 1	EA EA



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ND Highway 19
Storm Drain
Sta. 8198+00 to Sta. 8200+41

Paving Summary

Revised	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-019(044)155	90	1
			NHU-3-020(074)103		

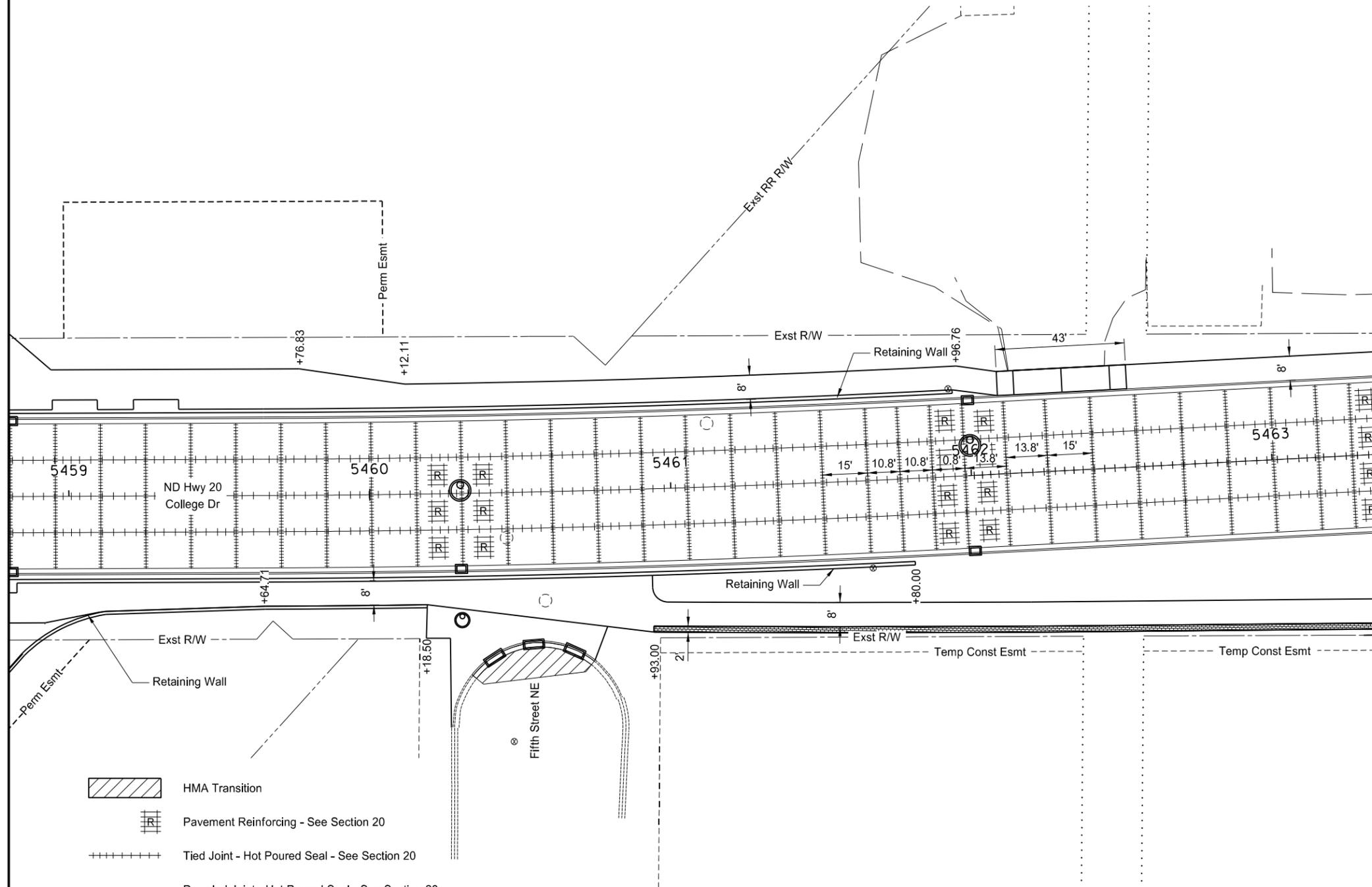
LOCATION	AGGREGATE BASE COURSE CL 5	COMMERCIAL GRADE HOT MIX ASPHALT	8.5IN NON-REINF CONCRETE PVMT CL AE-DOWELED	GEOSYNTHETIC MATERIAL TYPE G	CURB & GUTTER-TYPE I	CURB- TYPE I	SIDEWALK CONCRETE	DRIVEWAY CONCRETE	DRIVEWAY CONCRETE 8IN	DETECTABLE WARNING PANELS	PIGMENTED IMPRINTED CONCRETE
	TON	TON	SY	SY	LF	LF	SY	SY	SY	SF	SY
ND 19											
STA 8195+77.00 to STA 8195+92.00	47	25	-	82	30	-	-	-	-	-	-
STA 8195+92.00 to STA 8196+02.60	29	-	55	60	21	-	19	-	-	-	2
STA 8196+02.60 to STA 8197+07.40	308	-	559	606	210	-	182	-	-	10	23
STA 8197+07.40 to STA 8197+53.04	156	-	315	333	76	-	51	-	-	-	16
STA 8197+53.04 to STA 8200+60.55	909	-	1,640	1,776	615	-	505	-	-	10	135
SIDEWALK (NON-PARTICIPATING)	72	3	-	-	24	-	278	-	-	20	63
SIDEWALK (PARK)	118	2	-	-	-	-	505	-	-	26	-
DRIVEWAYS/CITY STREETS											
STA 8197+29.80 RT / 2ND AVE NW	36	18	-	-	30	-	-	-	-	-	-
STA 8198+69.00 RT	19	-	-	-	-	-	-	88	-	-	-
Subtotal (ND 19)	1,694	48	2,569	2,857	1,006	0	1,540	88	0	66	239
ND 20											
STA 5452+55.00 to STA 5452+70.45	48	26	-	83	31	-	-	-	-	-	-
STA 5452+70.45 to STA 5452+81.13	35	-	56	62	23	-	34	-	-	20	-
STA 5452+81.13 to STA 5453+26.50	143	-	311	328	73	-	13	-	-	20	-
STA 5453+26.50 to STA 5456+18.76	824	-	1,558	1,692	585	-	412	-	-	-	-
STA 5456+18.76 to STA 5457+34.60	451	-	918	963	201	-	184	-	-	62	-
STA 5457+34.60 to STA 5463+71.46	1,921	11	3,396	3,681	1,319	-	1,497	-	-	-	62
STA 5463+71.46 to STA 5464+76.36	382	-	768	811	189	64	139	-	-	60	5
STA 5464+76.36 to STA 5465+20.00	97	-	179	201	88	-	39	-	-	-	-
STA 5465+20.00 to STA 5465+35.00	39	21	-	-	30	-	-	-	-	-	-
DRIVEWAYS/CITY STREETS											
STA 5453+04.00 LT / 3RD ST NW	36	18	-	-	30	-	-	-	-	-	-
STA 5453+12.00 RT	17	-	-	-	-	-	-	84	-	-	-
STA 5454+84.00 LT	4	-	-	-	-	-	-	21	-	-	-
STA 5462+30.00 LT	8	-	-	-	-	-	-	38	-	-	-
STA 5464+31.00 LT	20	-	-	-	-	-	-	97	-	-	-
SIXTH											
STA 600+60.26 to STA 601+77.00	343	-	623	677	234	91	220	-	-	-	-
STA 601+77.00 to STA 602+18.55	136	74	-	267	83	-	-	-	-	-	-
DRIVEWAYS											
STA 601+93.00 LT	6	-	-	-	-	-	-	29	-	-	-
Subtotal (ND 20 & SIXTH)	4,510	150	7,809	8,765	2,886	155	2,538	0	269	162	67
TOTAL	6,204	198	10,378	11,622	3,892	155	4,078	88	269	228	306

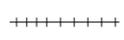
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ND Highway 19 &
 ND Highway 20

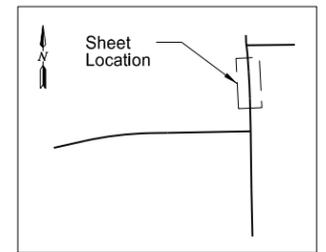
 Paving Summary

Revised	9/30/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-020(074)103	90	6

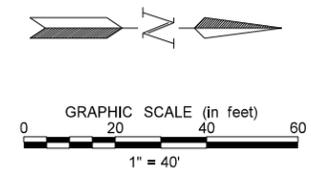


-  HMA Transition
-  Pavement Reinforcing - See Section 20
-  Tied Joint - Hot Poured Seal - See Section 20
-  Doweled Joint - Hot Poured Seal - See Section 20
-  Keyed Joint - See Section 20
-  Pigmented Imprinted Concrete

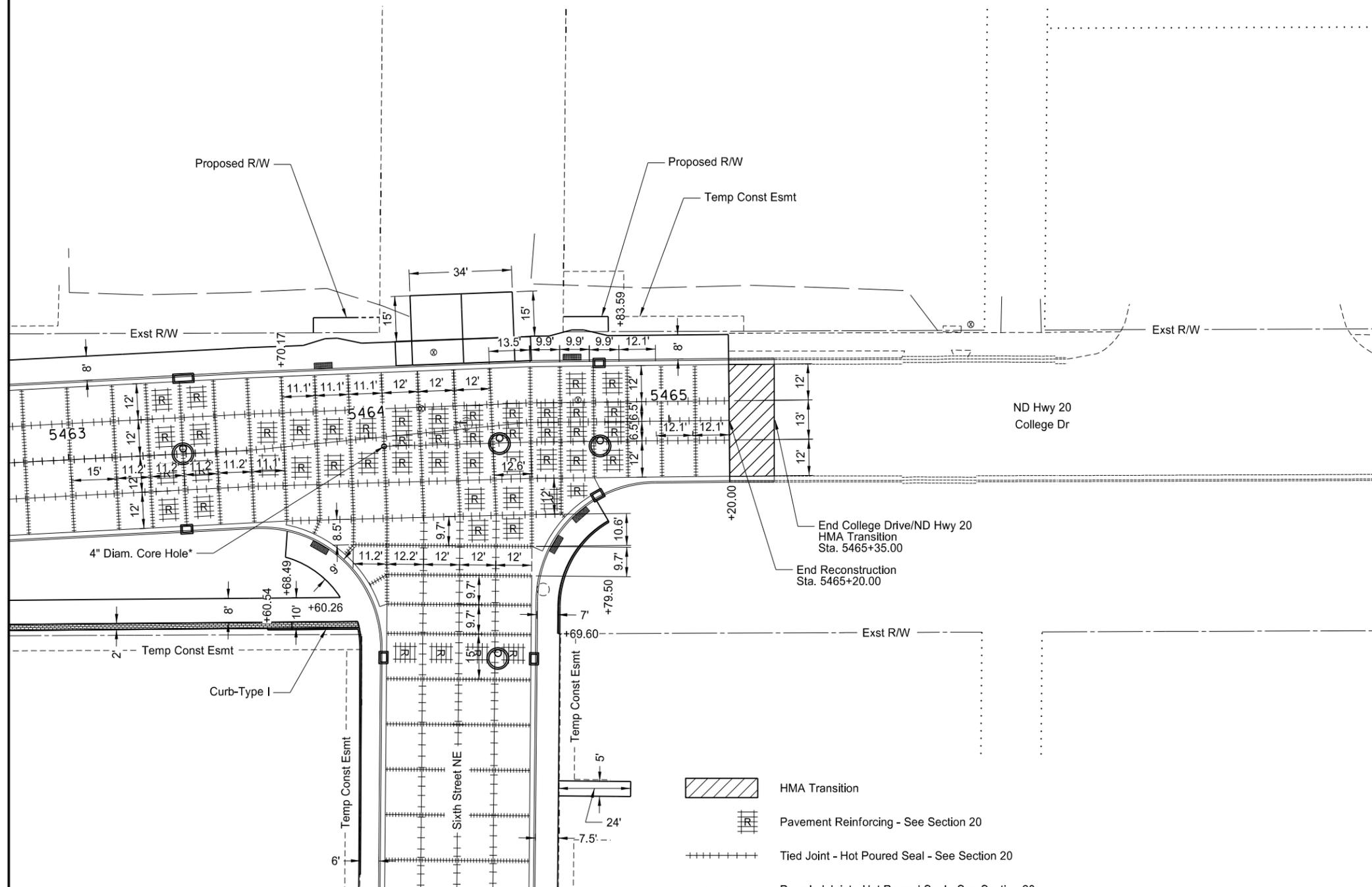
Note:
 Joint Spacing 15'
 (Unless Otherwise Noted)



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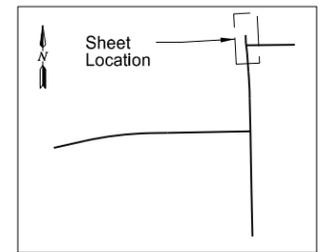
ND Highway 20
 Paving Layouts
 Sta. 5459+00 to Sta. 5463+00



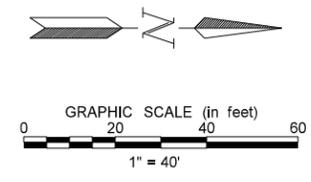
- HMA Transition
- Pavement Reinforcing - See Section 20
- Tied Joint - Hot Poured Seal - See Section 20
- Doweled Joint - Hot Poured Seal - See Section 20
- Keyed Joint - See Section 20
- Pigmented Imprinted Concrete

Note:
 Joint Spacing 15'
 (Unless Otherwise Noted)

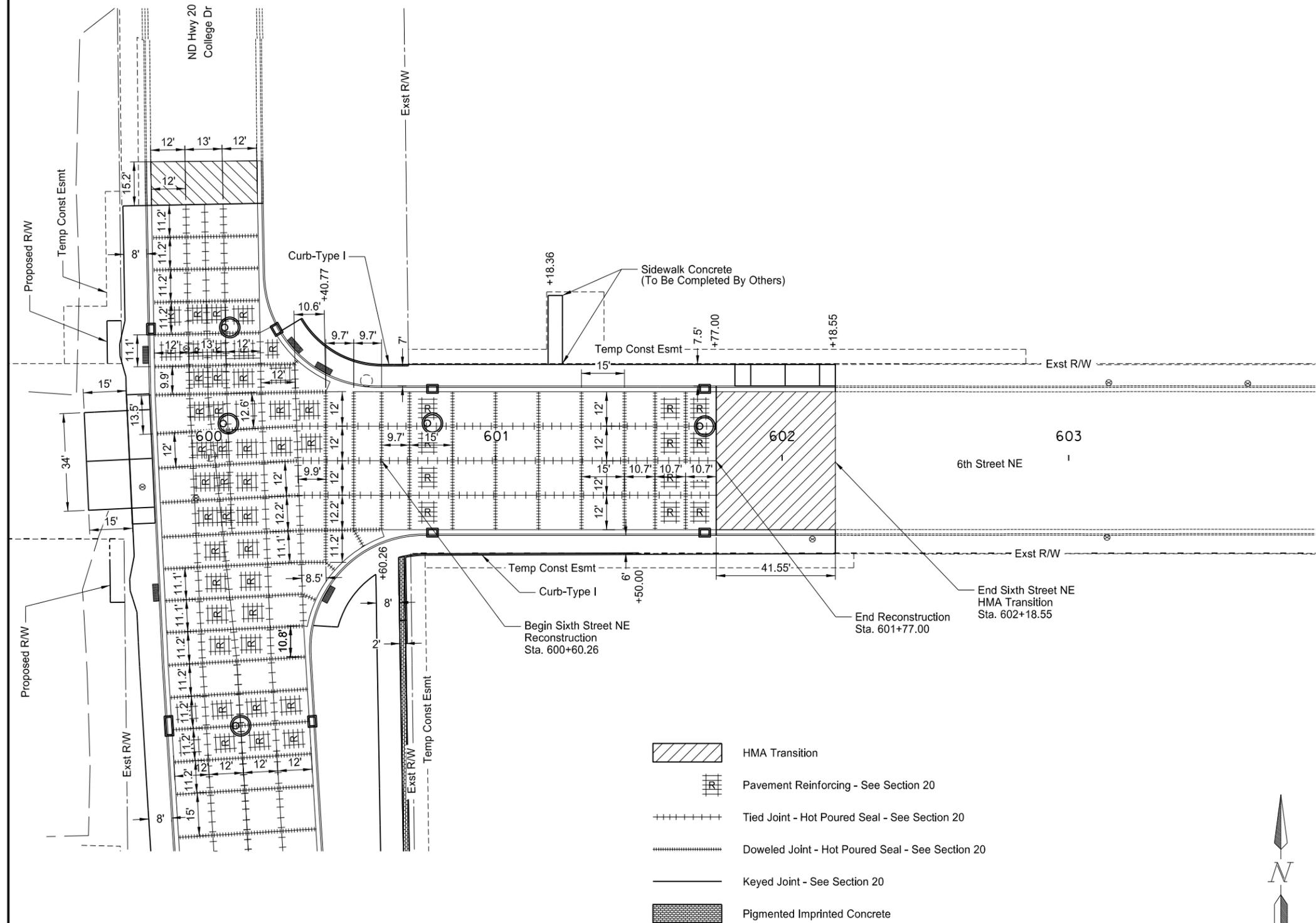
*Core hole to be placed to prevent sympathy cracking. Core hole to be filled with low modulus silicone. Coring and all associated work to be included in the "8.5IN NON-REINF CONCRETE PVMT CL AE-DOWELED" bid item.

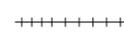


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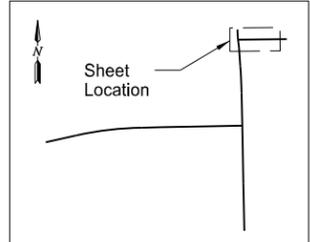
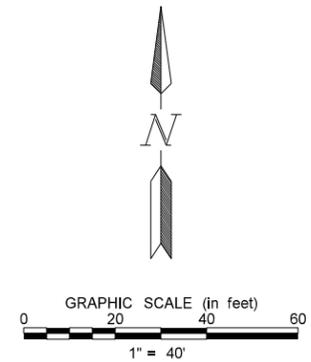


ND Highway 20
 Paving Layouts
 Sta. 5463+00 to Sta. 5465+35



-  HMA Transition
-  Pavement Reinforcing - See Section 20
-  Tied Joint - Hot Poured Seal - See Section 20
-  Doweled Joint - Hot Poured Seal - See Section 20
-  Keyed Joint - See Section 20
-  Pigmented Imprinted Concrete

Note:
Joint Spacing 15'
(Unless Otherwise Noted)

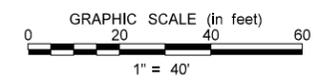
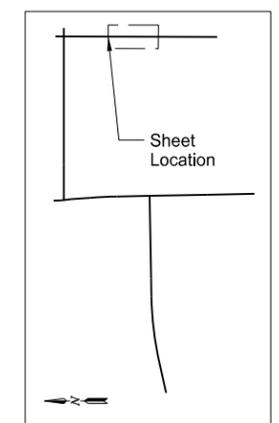
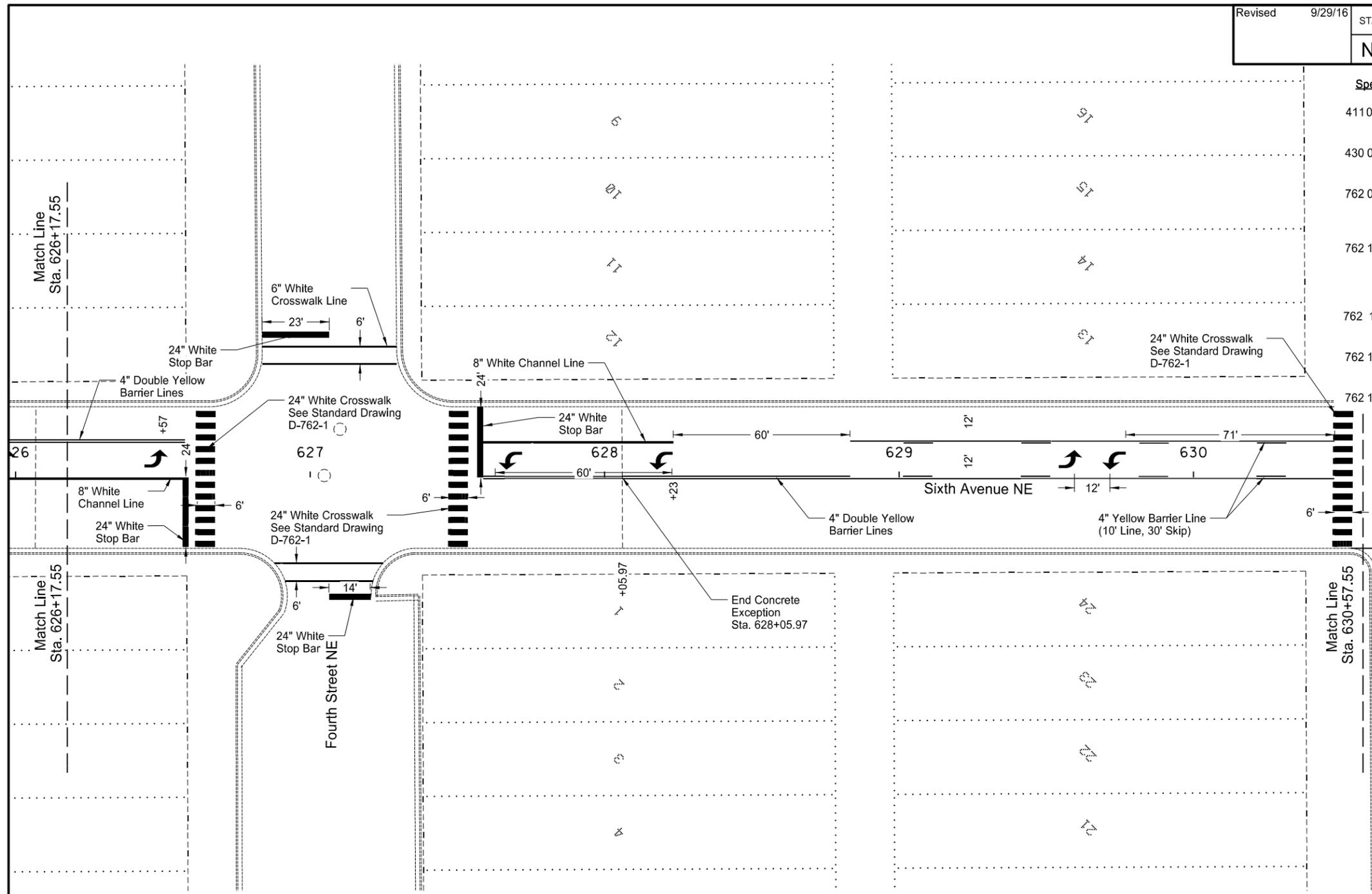


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Sixth Street
Paving Layouts
Sta. 600+60.26 to Sta. 602+18.55

Revised	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-3-982(031)035	90	15

Spec	Item Description	Qty	Unit
4110105	MILLING PAVEMENT SURFACE Sta. 628+05.97 to Sta. 630+57.55	1342	SY
430 0500	COMMERCIAL GRADE HOT MIX ASPHALT Sta. 628+05.97 to Sta. 630+57.55	149	TON
762 0122	PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED) LEFT TURN ARROW (5) 24" WHITE CROSSWALK	80 432	SF SF
762 1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED 4" DOUBLE YELLOW BARRIER LINES 4" YELLOW BARRIER LINE 10' LINE, 30' SKIP	351 329 80	LF LF LF
762 1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED 6" WHITE CROSSWALK LINE	161	LF
762 1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED 8" WHITE CHANNEL LINE	114	LF
762 1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED 24" WHITE STOP BAR	85	LF



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Sixth Avenue NE
 Detour Paving Layout
 Sta. 626+17.55 to Sta. 630+57.55

Revised	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-3-982(031)035	90	18

Short Term Pavement Marking	
Mainline	Total
4" Double Yellow Barrier	2679 LF
4" Yellow Barrier	3195 LF
4" Yellow Skips	760 LF
8" Channel Line	768 LF
24" White Stop Bar	84 LF

Pavement Marking Paint	
Mainline	Total
4" Double Yellow Barrier	682 LF
8" Channel Line	286 LF

Pavement Marking (Grooved)	
Mainline	Total
4" Double Yellow Barrier	2193 LF
4" Yellow Barrier	3195 LF
4" Yellow Skips	760 LF
6" White Crosswalk Line	161 LF
8" Channel Line	579 LF
24" White Stop Bar	169 LF

Short Term Pavement Marking Paint Message			
Mainline	Basis	Amount	Total
24" White Crosswalk	3 SF/LF	492 LF	1476 SF
Right Arrow Message	16 SF/EA	3 EA	48 SF
Left Arrow Message	16 SF/EA	36 EA	544 SF
Left/Through Arrow	27 SF/EA	3 EA	81 SF

Pavement Marking Paint Message			
Mainline	Basis	Amount	Total
Right Arrow Message	16 SF/EA	3 EA	48 SF
Left Arrow Message	16 SF/EA	2 EA	32 SF
Left/Through Arrow	27 SF/EA	3 EA	81 SF

Pavement Marking Message (Grooved)			
Mainline	Basis	Amount	Total
24" White Crosswalk	3 SF/LF	588 LF	1764 SF
Left Arrow Message	16 SF/EA	36 EA	576 SF

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Sixth Avenue NE
 Detour Pavement Marking Table

Revised	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-020(074)103	100	7

Deleted Under
Addendum 1

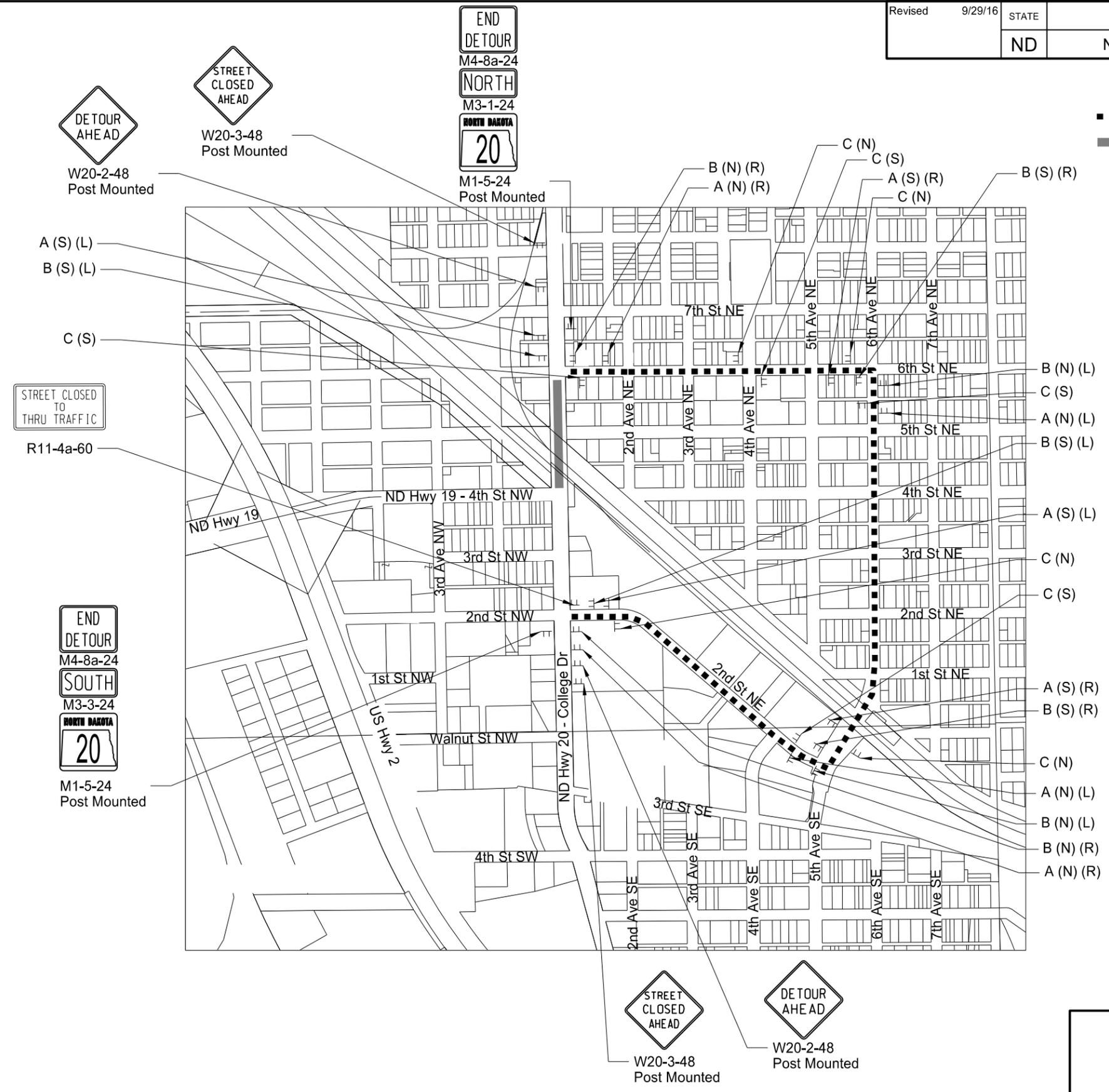
ND Highway 20
Work Zone Traffic Control
Truck Detour

Revised	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-020(074)103	100	8

Deleted Under
Addendum 1

ND Highway 20
Work Zone Traffic Control
Truck Detour

- A =
- DETOUR M4-8-24
 - NORTH (N)=M3-1-24
 - SOUTH (S)=M3-3-24
 - NORTH DAKOTA 20 M1-5-24
 - Left Turn Arrow (L)=M5-1-21
 - Right Turn Arrow (R)=M5-1-21 Post Mounted
- B =
- DETOUR M4-8-24
 - NORTH (N)=M3-1-24
 - SOUTH (S)=M3-3-24
 - NORTH DAKOTA 20 M1-5-24
 - Left Turn Arrow (L)=M6-1-21
 - Right Turn Arrow (R)=M6-1-21 Post Mounted
- C =
- DETOUR M4-8-24
 - NORTH (N)=M3-1-24
 - SOUTH (S)=M3-3-24
 - NORTH DAKOTA 20 M1-5-24 Post Mounted



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Phase 6 - ND Highway 20
Work Zone Traffic Control Detour Route

This layout shown is for general information purposes only. Conform to the MUTCD and the Standard Drawings when installing the traffic control signing.

Revised	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-020(074)103	100	78

DETOUR
M4-8-24
EAST
(E)=M3-2-24
WEST
A = (W)=M3-4-24

6th St NE

D3-36

(L)=M5-1-21

(R)=M5-1-21
Post Mounted

DETOUR
M4-8-24
EAST
(E)=M3-2-24
WEST
B = (W)=M3-4-24

6th St NE

D3-36

(L)=M6-1-21

(R)=M6-1-21
Post Mounted

DETOUR
M4-8-24
EAST
(E)=M3-2-24
WEST
C = (W)=M3-4-24

6th St NE

D3-36
Post Mounted

END
DETOUR
M4-8a-24
WEST
M3-3-24

6th St NE

D3-36
Post Mounted

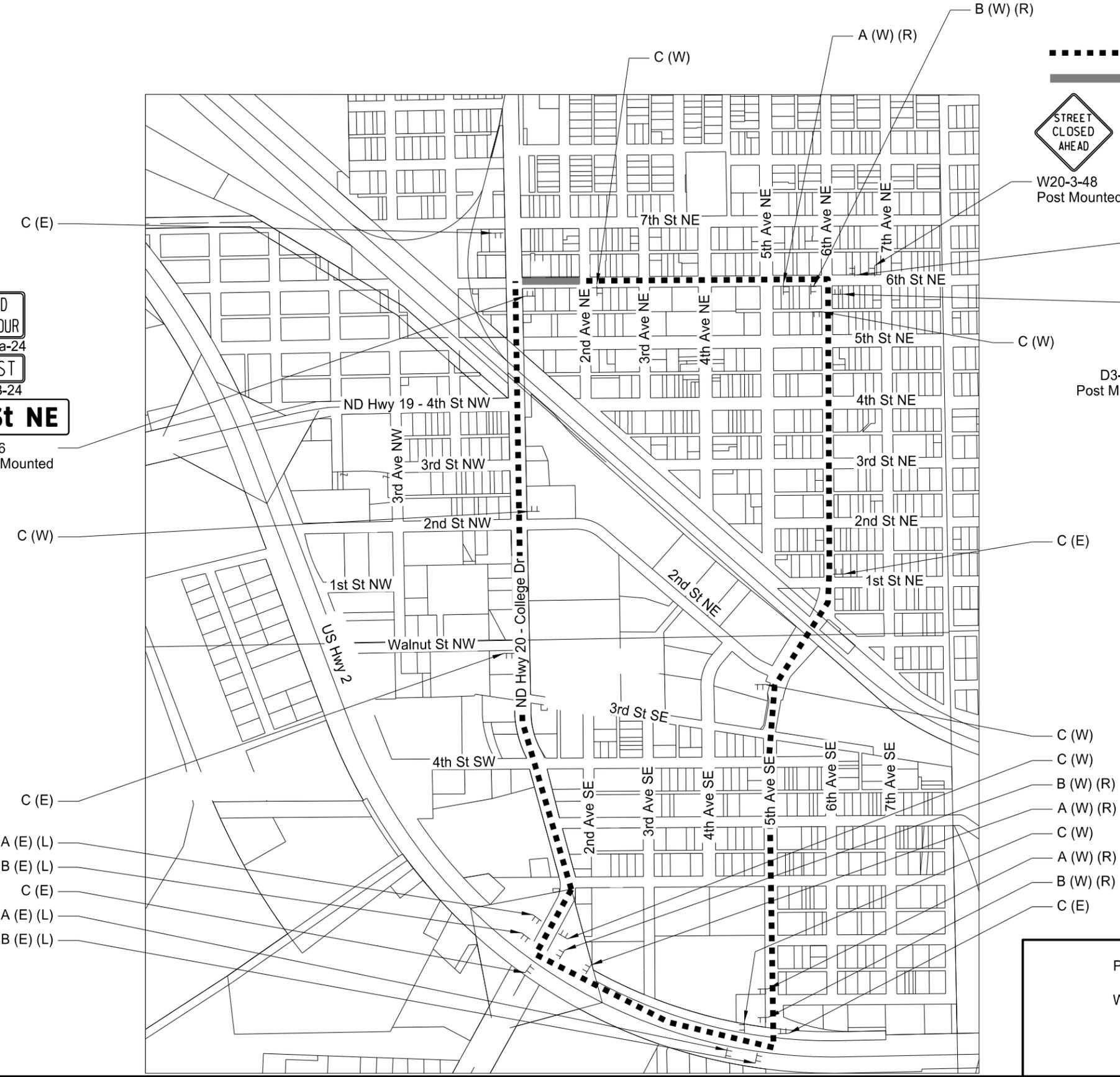
Local Vehicle Detour
Phase 8 & 9

 W20-3-48
Post Mounted

 W20-2-48
Post Mounted

M4-8a-24
END
DETOUR
M3-3-24
EAST
D3-36
Post Mounted

6th St NE



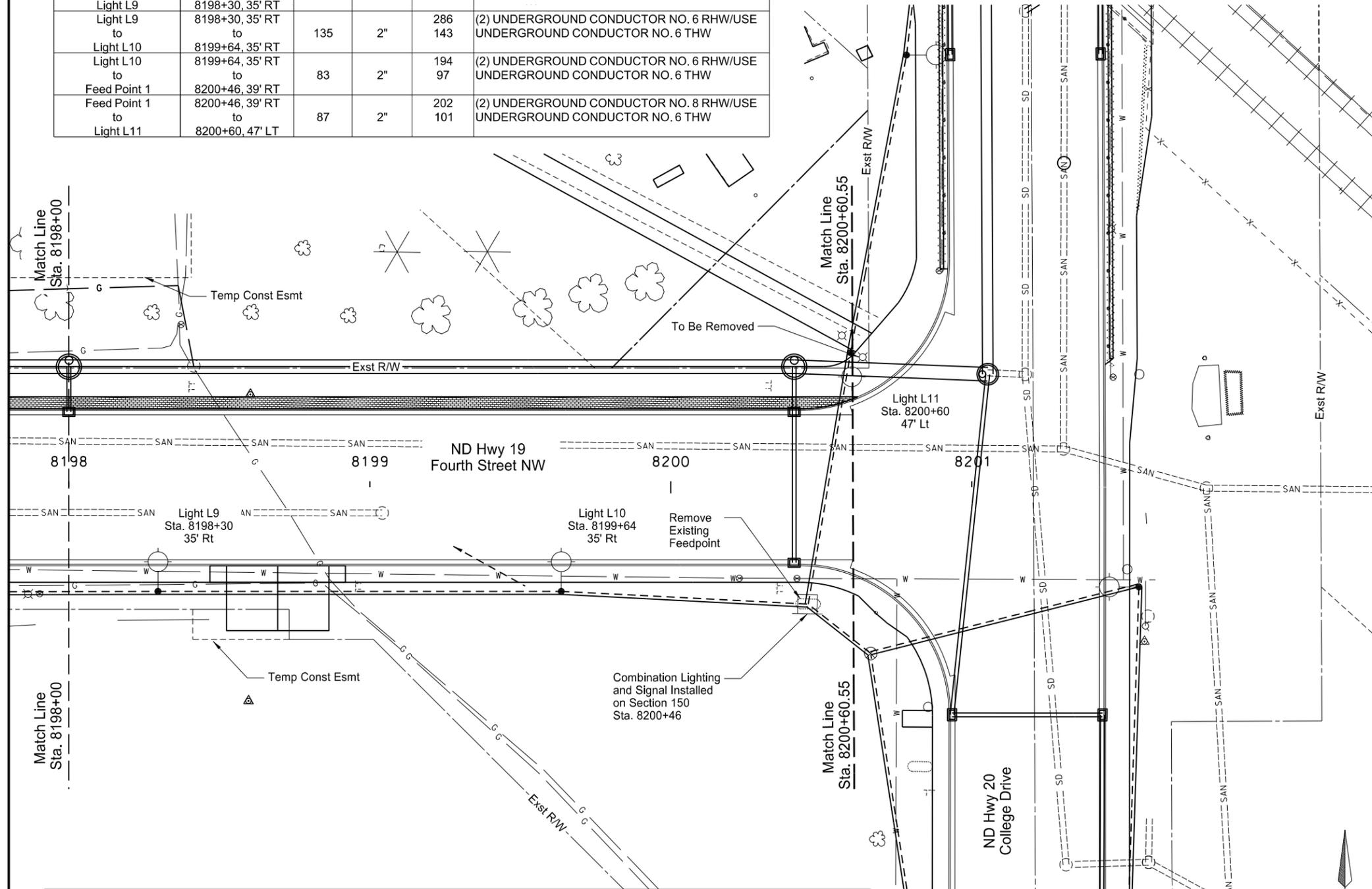
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Phase 9 - ND Highway 20
Work Zone Traffic Control
Detour Route

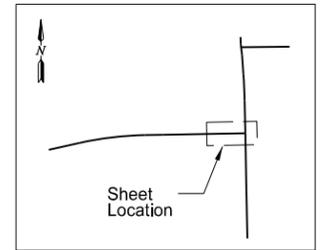
This layout shown is for general information purposes only. Conform to the MUTCD and the Standard Drawings when installing the traffic control signing.

ITEM	STATION OFFSET	CONDUIT RUN		CABLE RUN	
		TOTAL LF	SIZE (IN)	TOTAL LF	SIZE/TYPER
Light L8 to Light L9	8197+00, 35' RT to 8198+30, 35' RT	130	2"	276	(2) UNDERGROUND CONDUCTOR NO. 6 RHW/USE UNDERGROUND CONDUCTOR NO. 6 THW
Light L9 to Light L10	8198+30, 35' RT to 8199+64, 35' RT	135	2"	286	(2) UNDERGROUND CONDUCTOR NO. 6 RHW/USE UNDERGROUND CONDUCTOR NO. 6 THW
Light L10 to Feed Point 1	8199+64, 35' RT to 8200+46, 39' RT	83	2"	194	(2) UNDERGROUND CONDUCTOR NO. 6 RHW/USE UNDERGROUND CONDUCTOR NO. 6 THW
Feed Point 1 to Light L11	8200+46, 39' RT to 8200+60, 47' LT	87	2"	202	(2) UNDERGROUND CONDUCTOR NO. 8 RHW/USE UNDERGROUND CONDUCTOR NO. 6 THW

Spec	Item Description	Qty	Unit
770 0020	CONCRETE FOUNDATION-HIGHWAY LIGHTING	3	EA
770 0330	2IN DIAMETER RIGID CONDUIT	435	LF
770 0505	UNDERGROUND CONDUCTOR NO6-TYPE RHW	756	LF
770 0506	UNDERGROUND CONDUCTOR NO8-TYPE RHW	202	LF
770 0605	UNDERGROUND CONDUCTOR NO6-TYPE THW	479	LF
770 1726	LT STD 8FT MA 40FT MT HT BREAKAWAY	3	EA
770 4210	LED LUMINAIRE	3	EA
770 4560	REMOVE LIGHT STANDARD	1	EA
770 4590	REMOVE FEED POINT	1	EA

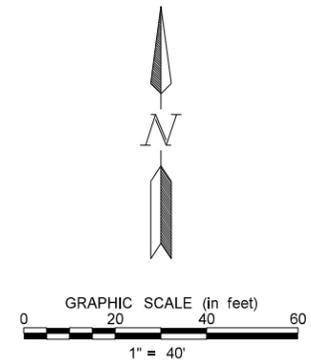


LIGHT NUMBER	WATTS/TYPER	OPTICS IES-Type	STANDARDS			REMARKS
			TYPE	MTG. HT.	ARM LG.	
L9, L10	LED	II	Round Tapered Steel	40'	8'	Install light standard on concrete foundation, breakaway transformer base. Luminaire operated at 240V.
L11	LED	II	Round Tapered Steel	40'	8'	Install light standard on concrete foundation, breakaway transformer base. Paint the light standard and transformer base black to a height of 12'. Luminaire to operate at 240V.



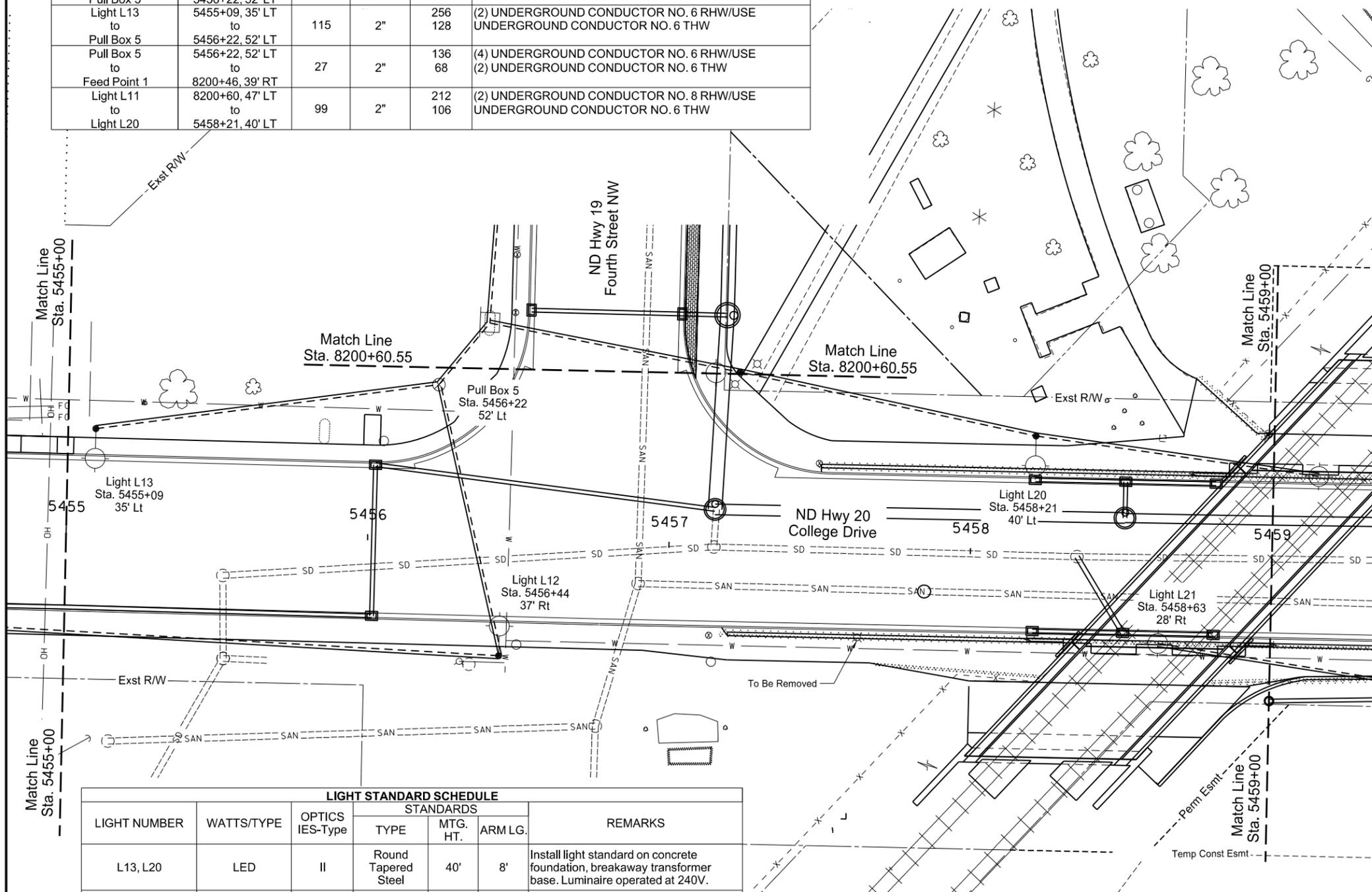
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ND Highway 19
Lighting Layout
Sta. 8198+00 to Sta. 8200+60.55



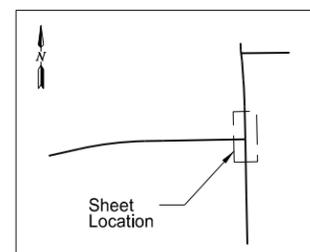
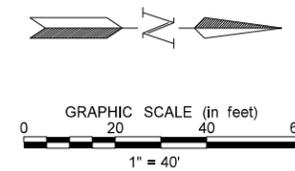
ITEM	STATION OFFSET	CONDUIT RUN		CABLE RUN	
		TOTAL LF	SIZE (IN)	TOTAL LF	SIZE/TYPER
Light L14 to Light L12	5453+87, 29' RT to 5456+44, 37' RT	258	2"	532 266	(2) UNDERGROUND CONDUCTOR NO. 6 RHW/USE UNDERGROUND CONDUCTOR NO. 6 THW
Light L12 to Pull Box 5	5456+44, 37' RT to 5456+22, 52' LT	92	2"	198 99	(2) UNDERGROUND CONDUCTOR NO. 6 RHW/USE UNDERGROUND CONDUCTOR NO. 6 THW
Light L13 to Pull Box 5	5455+09, 35' LT to 5456+22, 52' LT	115	2"	256 128	(2) UNDERGROUND CONDUCTOR NO. 6 RHW/USE UNDERGROUND CONDUCTOR NO. 6 THW
Pull Box 5 to Feed Point 1	5456+22, 52' LT to 8200+46, 39' RT	27	2"	136 68	(4) UNDERGROUND CONDUCTOR NO. 6 RHW/USE (2) UNDERGROUND CONDUCTOR NO. 6 THW
Light L11 to Light L20	8200+60, 47' LT to 5458+21, 40' LT	99	2"	212 106	(2) UNDERGROUND CONDUCTOR NO. 8 RHW/USE UNDERGROUND CONDUCTOR NO. 6 THW

Spec	Item Description	Qty	Unit
770 0020	CONCRETE FOUNDATION-HIGHWAY LIGHTING	2	EA
770 0100	PULL BOX	1	EA
770 0330	2IN DIAMETER RIGID CONDUIT	591	LF
770 0505	UNDERGROUND CONDUCTOR NO6-TYPE RHW	1122	LF
770 0506	UNDERGROUND CONDUCTOR NO8-TYPE RHW	212	LF
770 0605	UNDERGROUND CONDUCTOR NO6-TYPE THW	667	LF
770 1726	LT STD 8FT MA 40FT MT HT BREAKAWAY	2	EA
770 4210	LED LUMINAIRE	4	EA
770 4560	REMOVE LIGHT STANDARD	1	EA



LIGHT NUMBER	WATTS/TYPER	OPTICS IES-Type	STANDARDS			REMARKS
			TYPE	MTG. HT.	ARM LG.	
L13, L20	LED	II	Round Tapered Steel	40'	8'	Install light standard on concrete foundation, breakaway transformer base. Luminaire operated at 240V.
L12	LED	II	Signal Std. Extension	40'	8'	Install luminaire on combination signal standard light standard extension. Luminaire operated at 240V.
L21	LED	II	-	-	-	Mount luminaire to bridge support. Coordinate mounting equipment and location with field Engineer and structural Contractor. Luminaire operated at 240V.

Note:
Locate 1" Conduit Provided on Bridge Structure for Pedestrian Lighting circuits. Provide Necessary Connectors to Bridge Mounted Conduit.



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ND Highway 20
Lighting Layout
Sta. 5455+00 to Sta. 5459+00

Revised	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-019(044)155	140	11
			NHU-3-020(074)103		

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
770	0020	CONCRETE FOUNDATION-HIGHWAY LIGHTING	EA	23
770	0100	PULL BOX	EA	5
770	0305	1IN DIAMETER RIGID CONDUIT-BRIDGE MOUNTED	LF	107
770	0330	2IN DIAMETER RIGID CONDUIT	LF	3852
770	0505	UNDERGROUND CONDUCTOR NO6-TYPE RHW	LF	5764
770	0506	UNDERGROUND CONDUCTOR NO8-TYPE RHW	LF	3032
770	0605	UNDERGROUND CONDUCTOR NO6-TYPE THW	LF	4398
770	1726	LT STD 8FT MA 40FT POLE BREAKAWAY	EA	23
770	4210	LED LUMINAIRE	EA	28
770	4300	UNDERPASS LIGHT UNIT CEILING MTD-50 WATT	EA	2
770	4560	REMOVE LIGHT STANDARD	EA	13
770	4590	REMOVE FEED POINT	EA	2

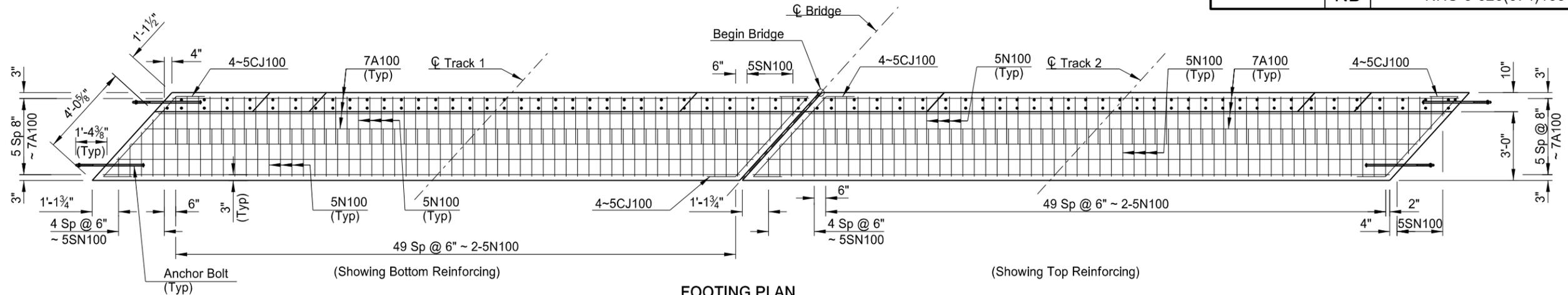
770	0001	LIGHTING SYSTEM	EA	1
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Items shown above are for informational purposes, contractor shall provide all labor and equipment necessary for the lighting system to be fully operational as shown in the plans.

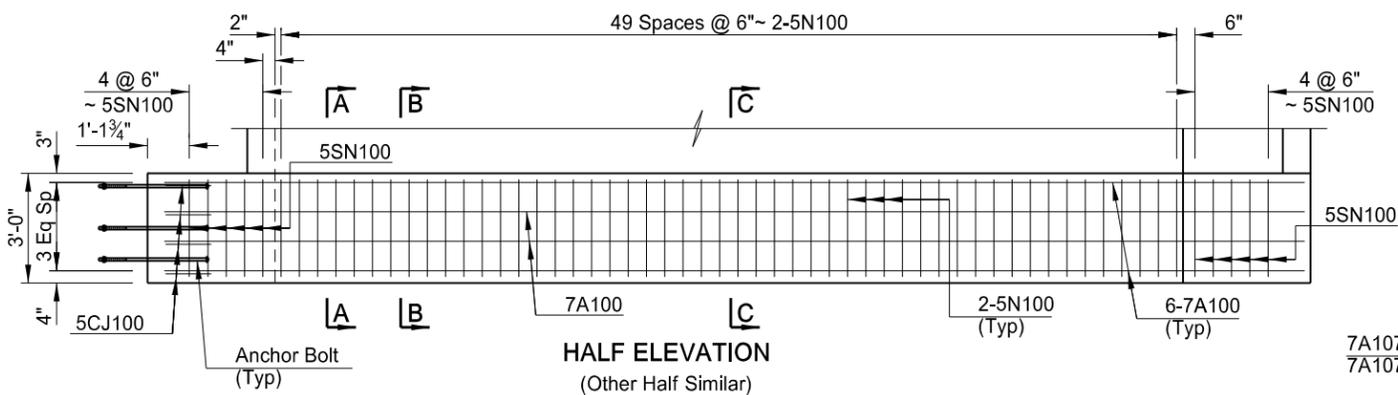
Items shall be included in the corresponding price bid for "LIGHTING SYSTEM"

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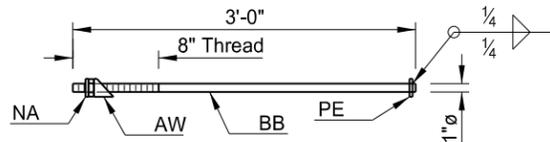
ND Highway 19 &
ND Highway 20
Lighting Estimate of Quantities



FOOTING PLAN
(Abutment 1 Shown)



HALF ELEVATION
(Other Half Similar)

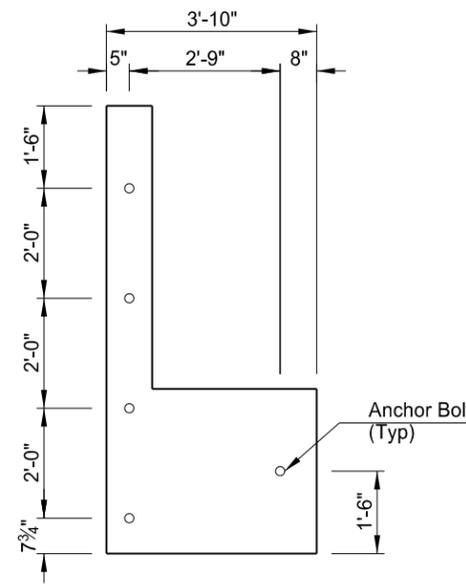


ANCHOR BOLT

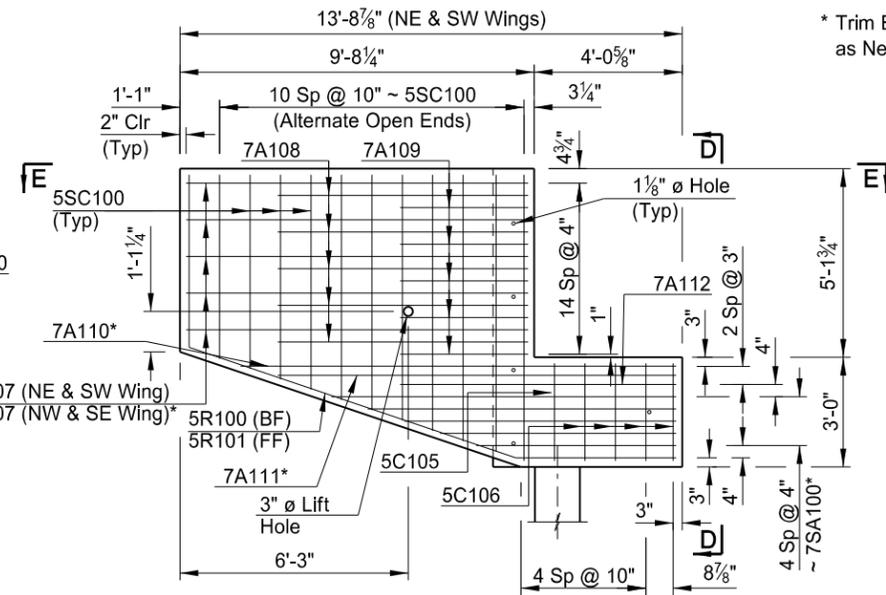
- 1-Bar 1" ϕ x 3'-0" ~ BB
- 1-Bar 4" x 3/4" x 0'-4" w/1/16" ϕ Hole at Center ~ PE
- 1-Std Hex Nut ~ NA
- 1-Angled Washer ~ AW
- Galvanize After Fabrication
- Anchor bolt assembly to meet ASTM A36

NOTES:

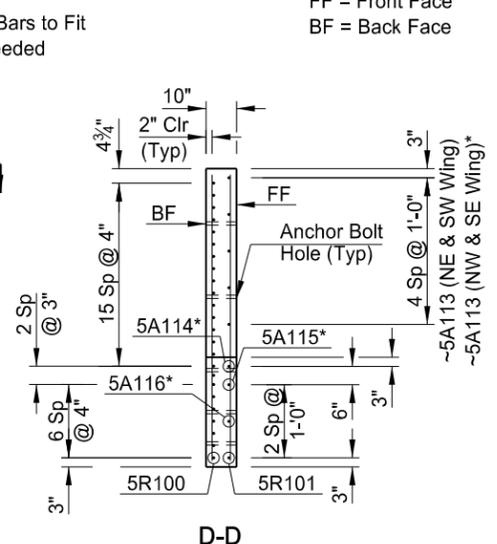
- See Dwg. 20-103.403-9 for Cross Sections A-A, B-B & C-C.
- Include the cost to furnish, cast and grout the anchor bolts in the pay item "Precast Abutment".
- BOLTING WINGWALLS TO END BENTS:** Spread mortar, consisting of equal parts by volume of AASHTO M 235, Type IV, Grade 3 epoxy and dry silica sand, mixed in accordance with manufacturer's directions, on ends of precast caps to a thickness of approximately 1/8" and then place and hold the wingwalls in the proper location. Fill void around bolts with grout as specified below. Add washer and hex nut to bolts. Tighten nuts and burr threads.
- The grout will consist of one part Type III Portland Cement to three parts of fine aggregate, by weight, mixed with a gaging solution made of one part accelerating admixture to five parts of water by volume. The following mix proportions will yield one cubic foot of grout: cement - 35 lbs, fine aggregate - 105 lbs, water - 1.25 gallons and accelerating admixture - 1 qt at a temperature above 50° F, the initial set of the grout will take place in three hours and design strength will be obtained in 24 hours.



ANCHOR BOLT LOCATION

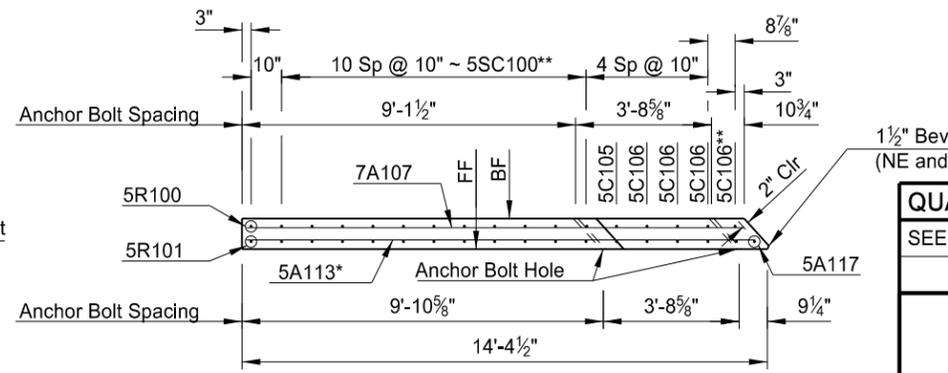


WING ELEVATION
(BF Shown, Along Skew)



D-D

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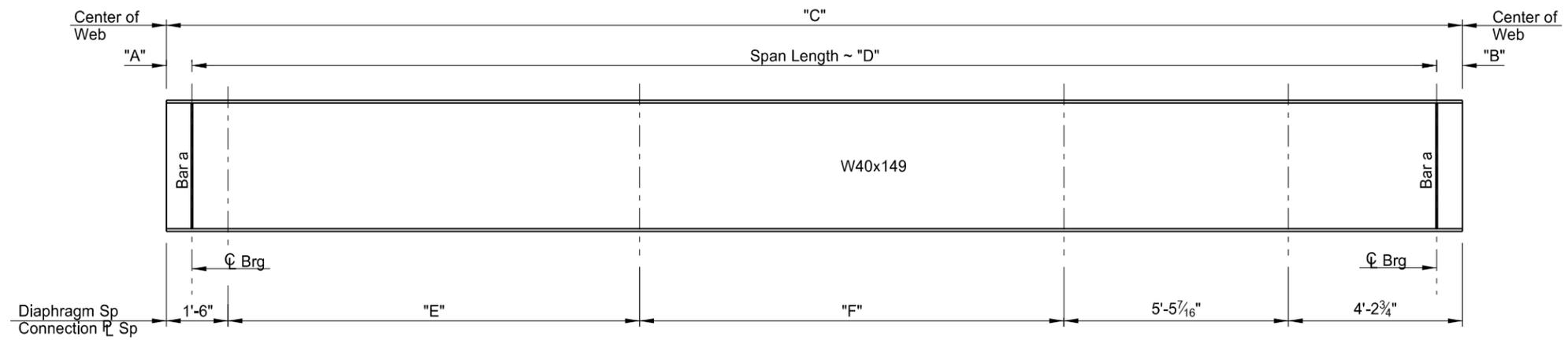
E-E

** Rotate Bar as Needed to Clear Anchor Bolt Hole

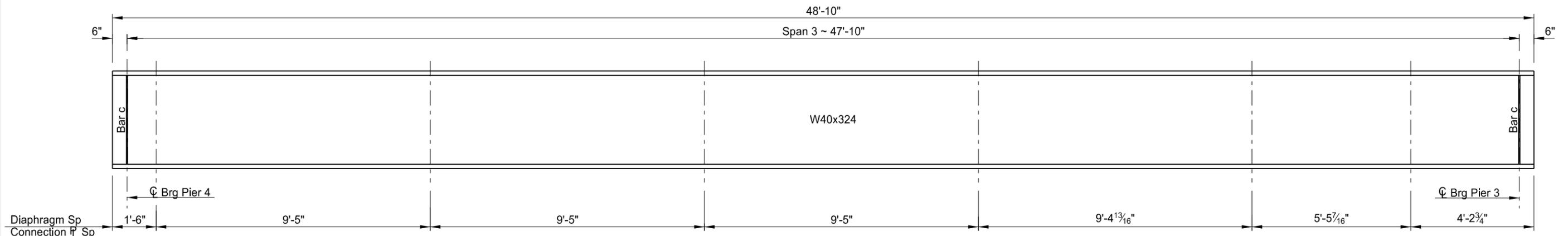
QUANTITIES

SEE DWG 20-103.403-10

BNSF RAILWAY
1 MILE NORTH OF US 2
BNSF Ry. Br.0033-0085.600
SHOOFLY BRIDGE
ABUTMENT DETAILS
(Showing Reinforcing)



GIRDER 1 ELEVATION
(Spans 1, 2, 4 & 5)



GIRDER 1 ELEVATION
(Span 3)

NOTES:

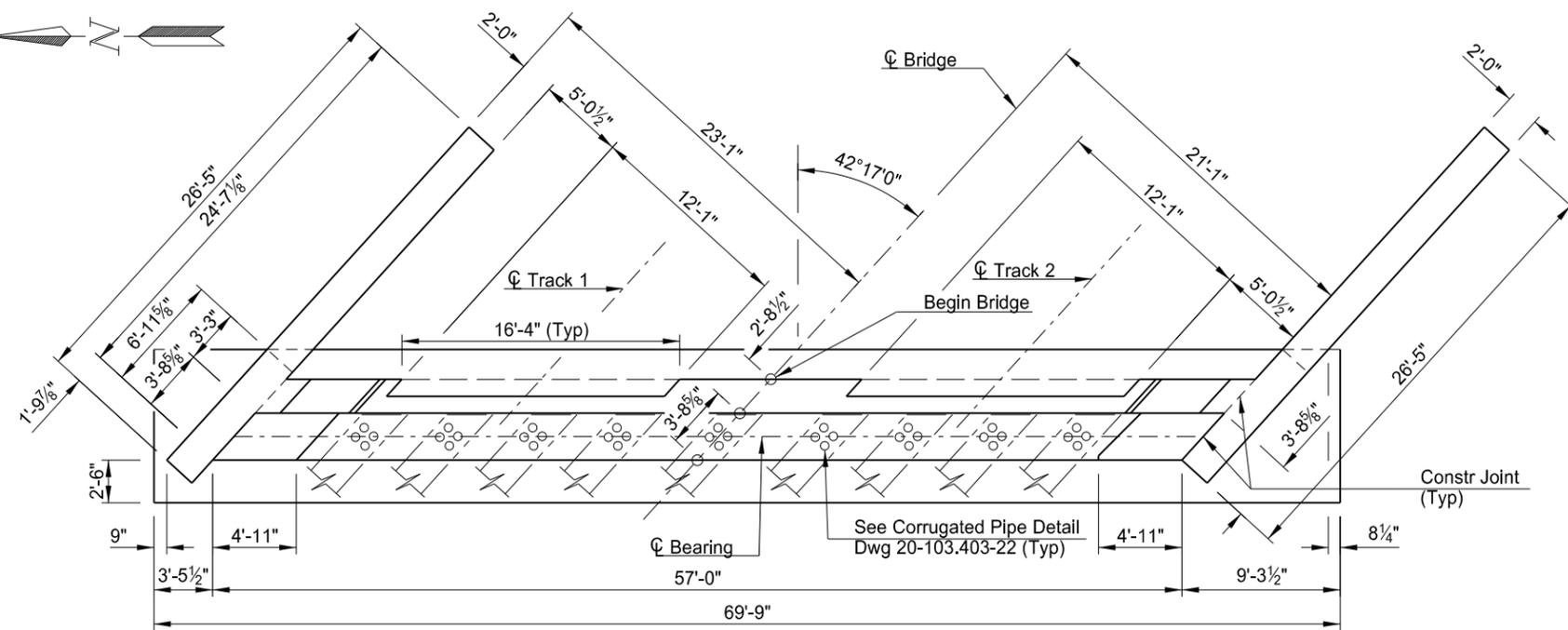
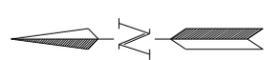
1. The girder elevation details shown represent girder No. 1 in an eight girder bridge. Other girders are similar. Fabricate other girders in accordance with Dwgs 20-103.403-15 and 20-103.403-16.
2. All dimensions shown are horizontal.
3. South face of girder shown.
4. See Dwg 20-103.403-18 for BAR a, BAR b and BAR c locations, connection plate and girder end details.
5. Place the natural camber in the up position.

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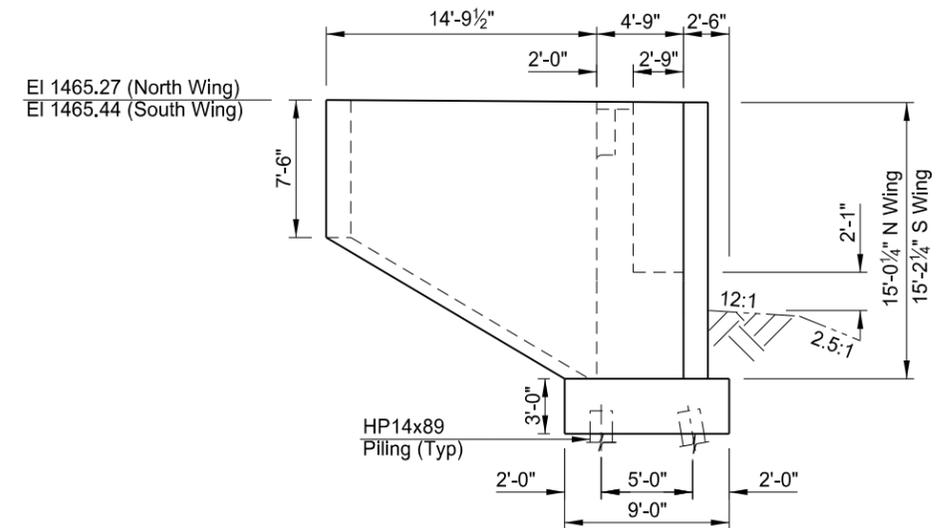
SPAN	"A"	"B"	"C"	"D"	"E"	"F"
SPAN 1	5 3/4"	1'-0 1/2"	31'-7 1/2"	30'-1 1/4"	10'-3"	10'-2 5/16"
SPAN 2	5 3/4"	5 3/4"	31'-9"	30'-9 1/2"	10'-3"	10'-3 13/16"
SPAN 3	5 3/4"	5 3/4"	31'-3"	30'-3 1/2"	10'-0"	10'-0 13/16"
SPAN 4	1'-0 1/2"	5 3/4"	31'-2 1/2"	29'-8 1/4"	10'-0"	10'-0 5/16"

BNSF RAILWAY
1 MILE NORTH OF US 2
BNSF Ry. Br.0033-0085.600
SHOOFLY BRIDGE
GIRDER 1 ELEVATION

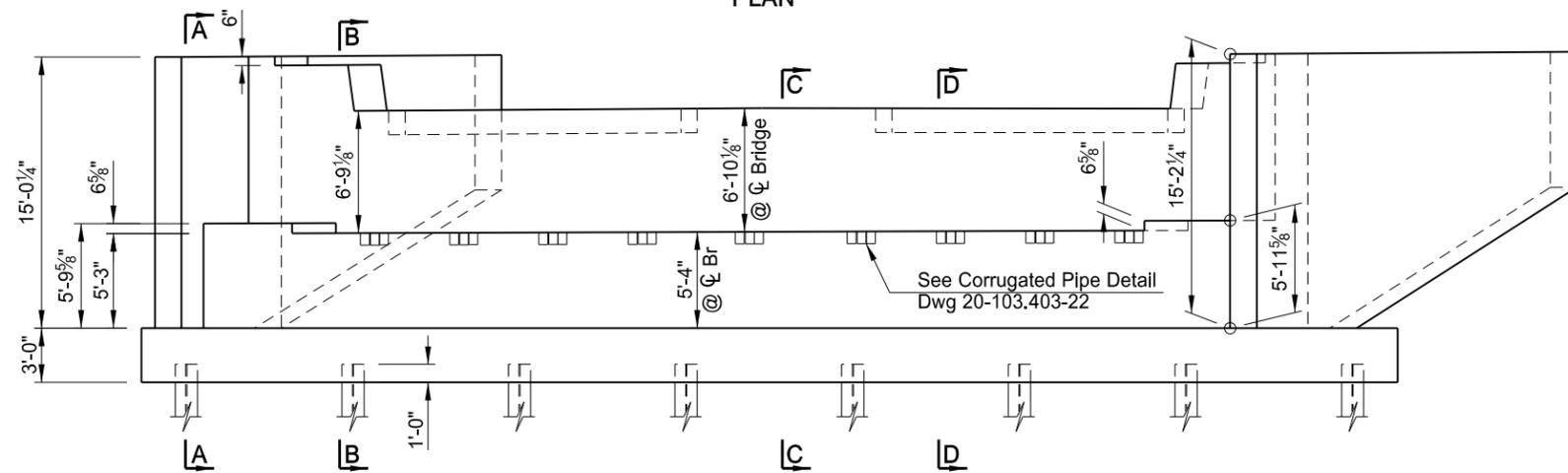
Revised	10/03/16	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
		ND	NHU-3-020(074)103	170	32



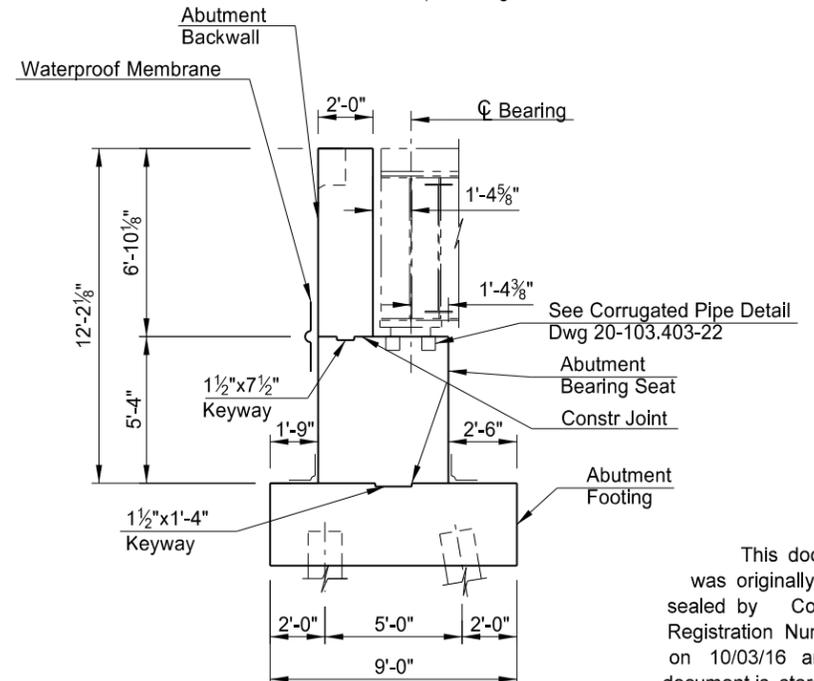
PLAN



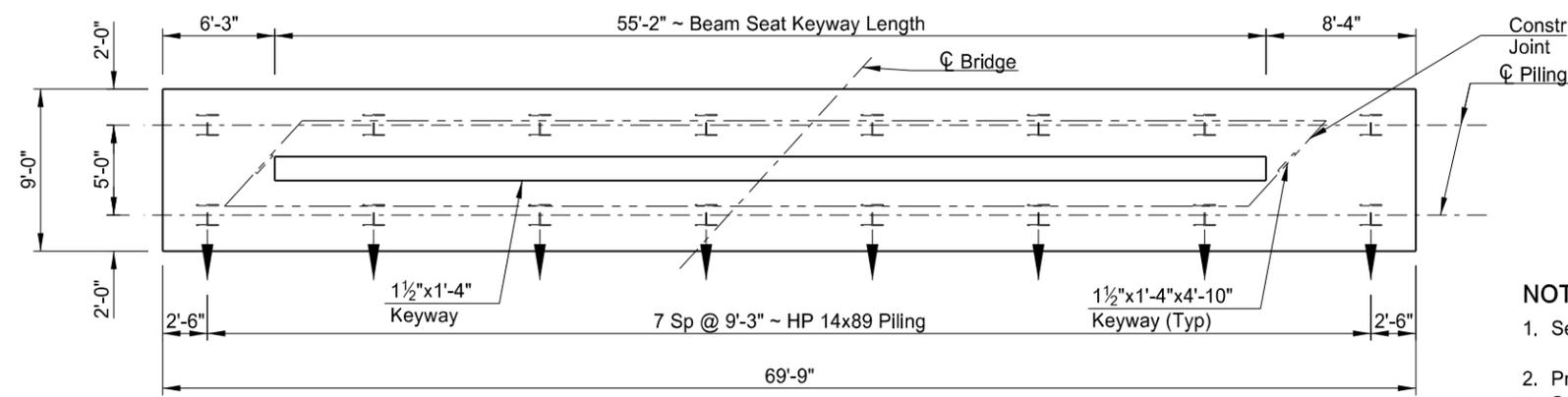
WING WALL ELEVATION
(See Dwg 20-103.403-13 for Skewed Dimensions)



ELEVATION



SECTION AT ϕ BRIDGE



FOOTING PLAN
(Wingwalls Omitted)

NOTES:

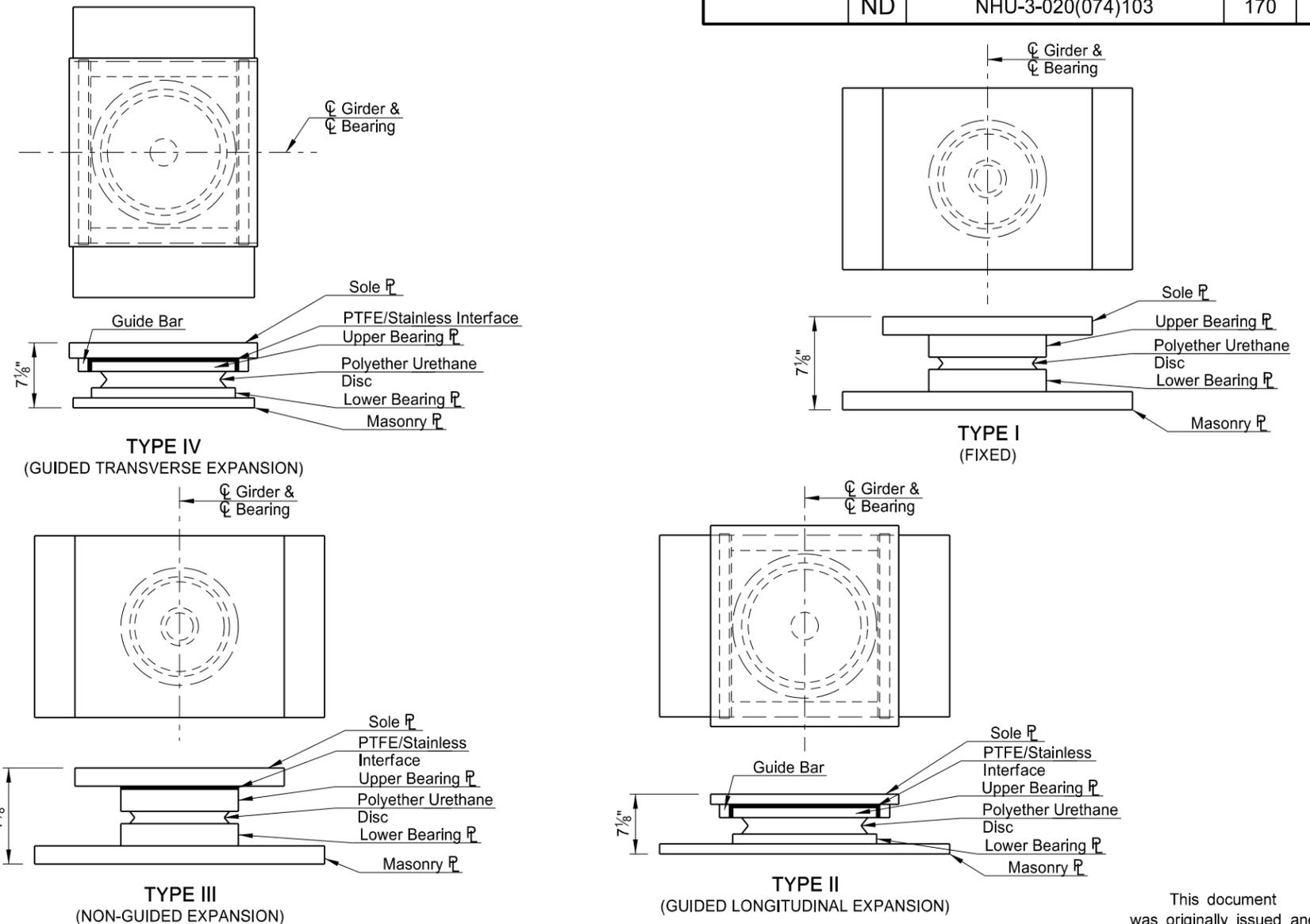
1. See Dwg 20-103.403-18 for Sections A-A, B-B, C-C and D-D.
2. Provide waterproofing membrane meeting Section 602 of the NDDOT Specifications and Section 8.29.2 of the AREMA Manual. Include all material and work in the unit price bid item, "Class AAE-3 Concrete".
3. Pour the wing walls and the stem wall together.

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QUANTITIES
SEE DWG 20-103.403-18
BNSF RAILWAY 1 MILE NORTH OF US 2 BNSF Ry. Br.0033-0085.600
ABUTMENT 1 DETAILS

BEARING TABLE					
LOCATION	GIRDER NO.	BEARING MARK ①	BEARING TYPE ②	BEARING DESIGN LOADS (kips)	
				SERVICE LIMIT STATE	
				VERTICAL	HORIZONTAL
Abutment 1	1	1.1	III	201	0
	2	1.2	III	175	0
	3	1.3	III	171	0
	4	1.4	III	212	0
	5	1.5	II	101	56
	6	1.6	III	195	0
	7	1.7	III	199	0
	8	1.8	III	200	0
	9	1.9	III	249	0
Pier 2 (Span 1)	1	2.1	IV	223	35
	2	2.2	IV	173	34
	3	2.3	IV	177	34
	4	2.4	IV	165	34
	5	2.5	I	101	56
	6	2.6	IV	210	34
	7	2.7	IV	166	34
	8	2.8	IV	176	34
	9	2.9	IV	199	35
Pier 2 (Span 2)	1	2.10	IV	282	58
	2	2.11	IV	265	56
	3	2.12	IV	243	56
	4	2.13	IV	276	57
	5	2.14	I	184	70
	6	2.15	IV	238	58
	7	2.16	IV	251	57
	8	2.17	IV	252	56
	9	2.18	IV	334	60
Pier 3 (Span 2)	1	3.1	III	334	0
	2	3.2	III	252	0
	3	3.3	III	251	0
	4	3.4	III	238	0
	5	3.5	II	184	70
	6	3.6	III	276	0
	7	3.7	III	243	0
	8	3.8	III	265	0
	9	3.9	III	282	0
Pier 3 (Span 3)	1	3.10	IV	199	35
	2	3.11	IV	176	34
	3	3.12	IV	166	34
	4	3.13	IV	210	34
	5	3.14	I	101	56
	6	3.15	IV	165	34
	7	3.16	IV	177	34
	8	3.17	IV	173	34
	9	3.18	IV	223	35
Abutment 4	1	4.1	III	249	0
	2	4.2	III	200	0
	3	4.3	III	199	0
	4	4.4	III	195	0
	5	4.5	II	101	56
	6	4.6	III	212	0
	7	4.7	III	171	0
	8	4.8	III	175	0
	9	4.9	III	201	0

Revised 10/03/16	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	NHU-3-020(074)103	170	47



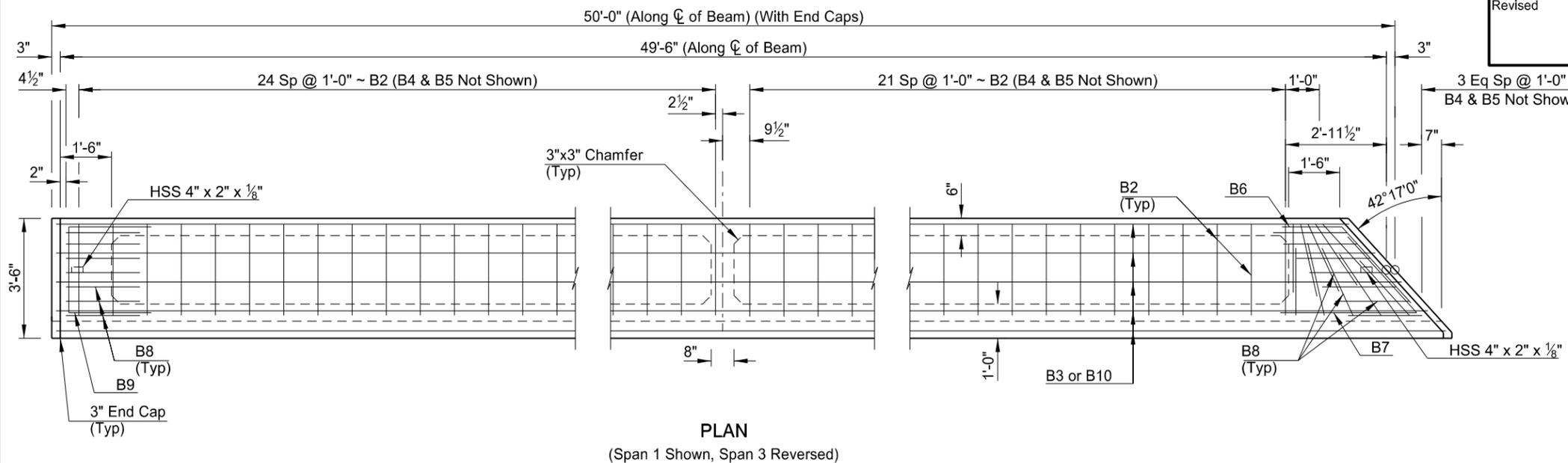
NOTES:

- Permanently mark the top plate of all bearings before shipping. Include the bearing location and direction arrows on the bearings. Install bearings so that the direction arrow is point up station and visible.
- TYPE I: Fixed Disc Bearing
TYPE II: Uni-Directional (Guided Longitudinal Expansion) Disc Bearings
TYPE III: Multi-Directional (Non-Guided Expansion) Disc Bearings
TYPE IV: Uni-Directional (Guided Transverse Expansion) Disc Bearings
- Use the bearing heights as shown.
- Design all bearings for 0.02 radians rotation.
- The maximum coefficient of sliding friction is 8% at any contact pressure on the PTFE. PTFE denotes Polytetrafluorethylene sheet.
- Disc manufacturer is responsible for design and dimensioning of anchorage from girder to bearing and from bearing to substructure. Use a minimum of 4 anchor bolts per bearing. Embed anchor bolts into concrete at least 1'-0". A minimum anchor bolt diameter of 1 1/4" is required.
- Connect girder to disc bearing with connection detail designed by the disc manufacturer.

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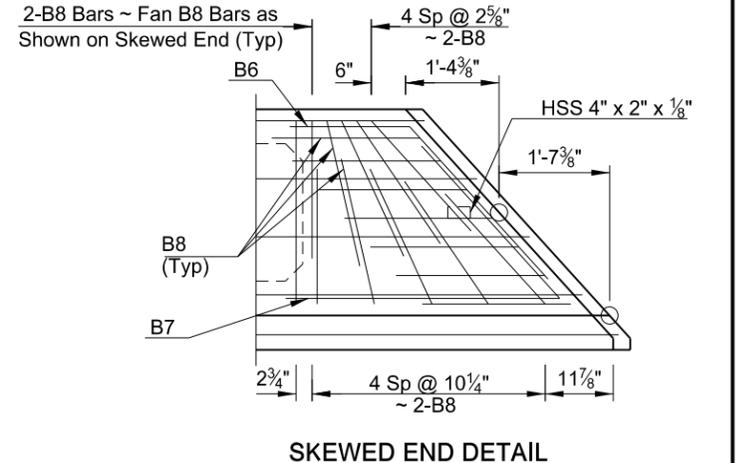
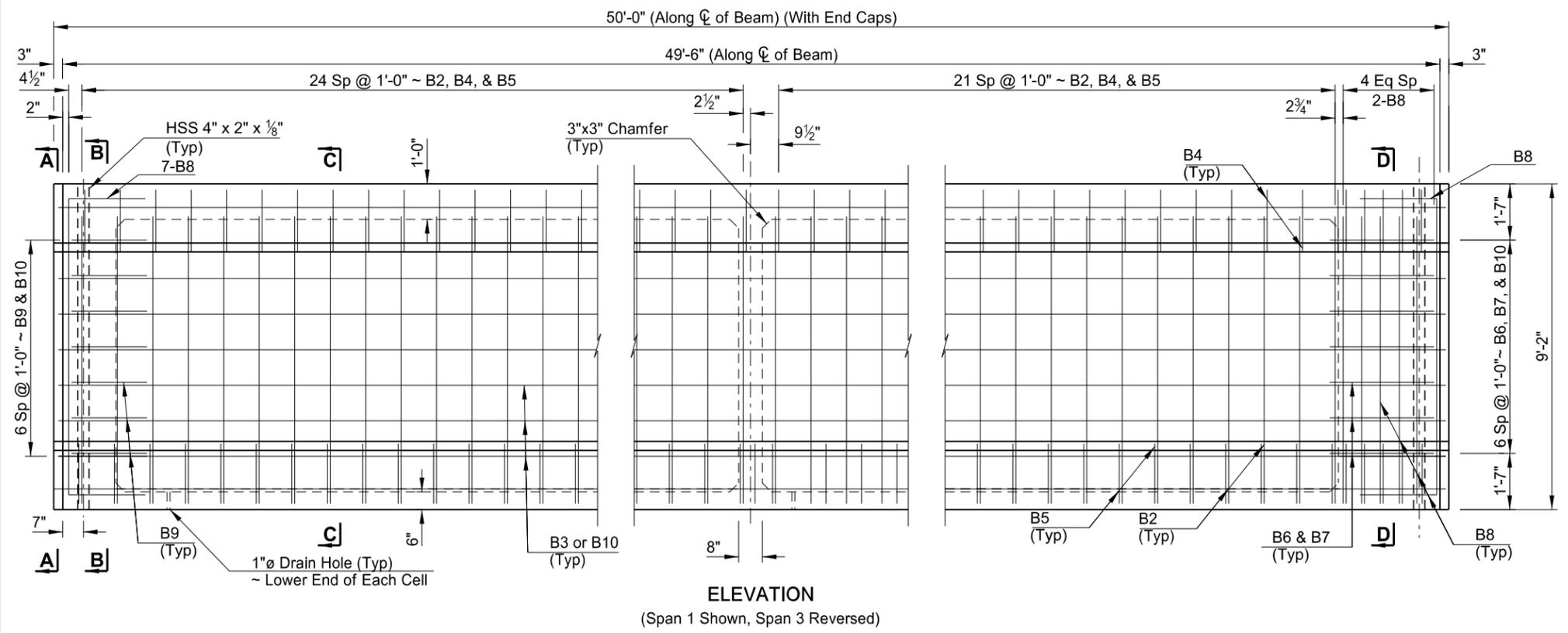
QUANTITIES	
BEARINGS (EXPANSION)	51 EA
BEARINGS (FIXED)	3 EA

BNSF RAILWAY
1 MILE NORTH OF US 2
 BNSF Ry. Br.0033-0085.600
DISC BEARING DETAILS



BAR LIST ~ ONE BEAM				
MARK	SIZE	NO.	LENGTH	SHAPE
B2	4	47	22'-4"	BENT
B3*	4	30	23'-0"	STR
B4	4	47	3'-10"	BENT
B5	4	47	4'-0"	BENT
B6	4	7	4'-9"	BENT
B7	4	7	7'-0"	BENT
B8	4	24	12'-8"	BENT
B9	4	7	7'-4"	BENT
B10*	4	30	30'-0"	STR

* Pair Bars Together and Alternate Lap Splices



BEAM SECTION DATA (W/O AESTHETICS)	
WT =	1,653 LBS/FT + 8,714 LBS FOR BLOCKS*
CROSS SECTIONAL AREA =	1,536 IN ²
C.G. (FROM BOTTOM) =	52 IN
I =	1,817,216.0 IN ⁴
S _B =	34,946.5 IN ³
END AREA =	3,744 IN ²

* 2 End Blocks and 1 Center Block
** Aesthetics Wt. = 321 LBS/FT

PRESTRESSING DATA (SPAN 1 & 3)					
C.G.	FINAL FORCE	DETENSION STRENGTH	ACCEPTANCE STRENGTH	WEIGHT (TONS)	BEAM LENGTH
1.75"	297.3 k	4000 psi (Min)	5000 psi (Min)	53.2	49'-6"
2.00"	298.3 k				
2.25"	299.3 k				

NOTES:

- Aesthetics details omitted for clarity.
- See Dwg. 20-103.403-36 for Sections A-A, B-B, C-C and D-D.
- See Dwg. 20-103.403-36 for Bent Bar Details and Dowel Bar Installation Details.
- HSS to meet ASTM A500, Grade B.

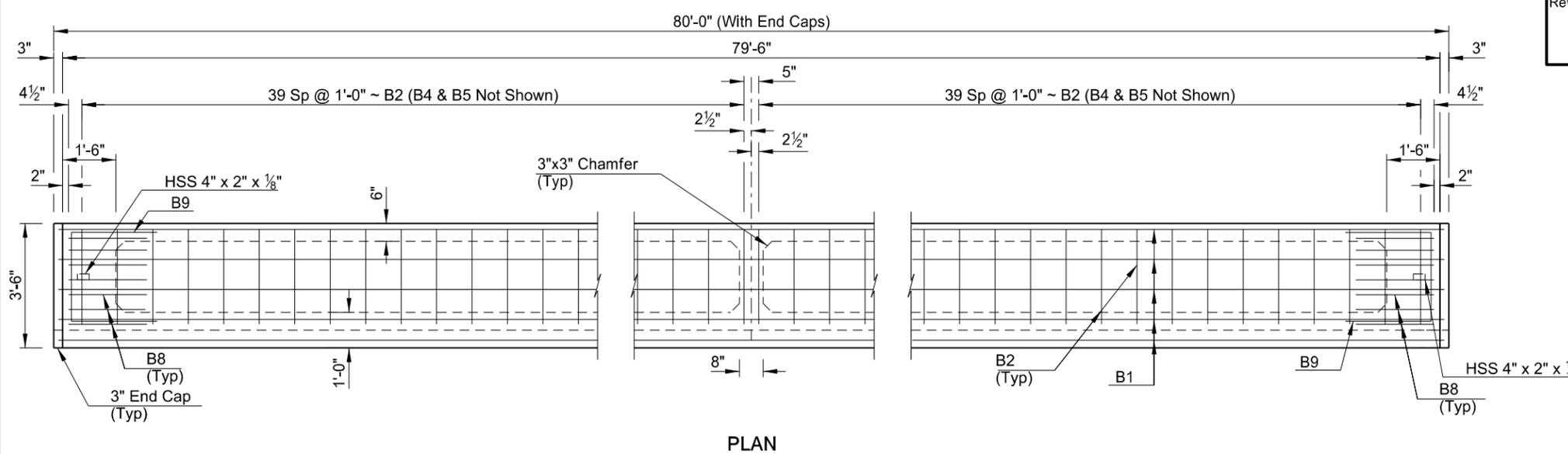
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QUANTITIES

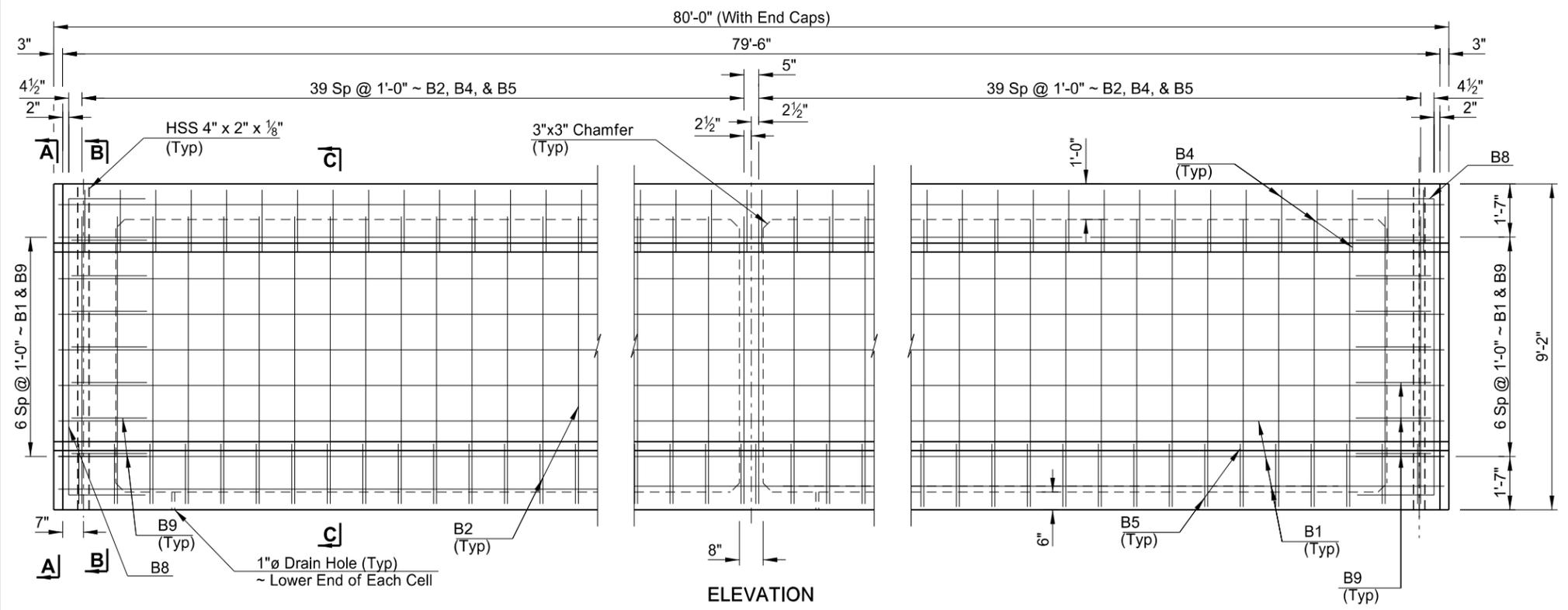
SEE DWG 20-102.403-36

BNSF RAILWAY
1 MILE NORTH OF US 2
BNSF Ry. Br.0033-0085.600

PRESTRESSED CONCRETE FASCIA GIRDERS (SPANS 1 & 3)



PLAN



ELEVATION

BAR LIST ~ ONE BEAM				
MARK	SIZE	NO.	LENGTH	SHAPE
B1	4	30	79'-8" *	STR
B2	4	80	22'-4"	BENT
B4	4	80	3'-10"	BENT
B5	4	80	4'-0"	BENT
B8	4	14	12'-8"	BENT
B9	4	14	7'-4"	BENT

* Lab Splices as Needed

BEAM SECTION DATA (W/O AESTHETICS)	
WT =	1,653 LBS/FT + 8,714 LBS FOR BLOCKS*
CROSS SECTIONAL AREA =	1,536 IN ²
C.G. (FROM BOTTOM) =	52 IN
I =	1,817,216.0 IN ⁴
SB =	34,946.5 IN ³
END AREA =	3,744 IN ²

* 2 End Blocks and 1 Center Block
 ** Aesthetics Wt. = 321 LBS/FT

PRESTRESSING DATA (SPAN 2)					
C.G.	FINAL FORCE	DETENSION STRENGTH	ACCEPTANCE STRENGTH	WEIGHT (TONS)	BEAM LENGTH
1.75"	372.0 k	4000 psi (Min)	5000 psi (Min)	82.9	79'-6"
2.00"	373.2 k				
2.25"	374.5 k				

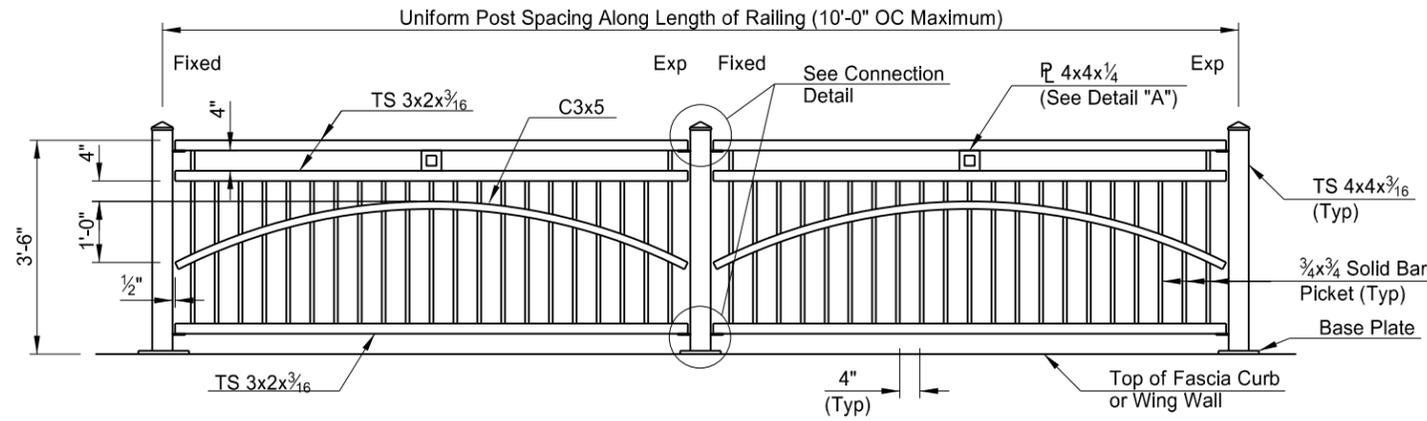
NOTES:

- Aesthetics details omitted for clarity.
- See Dwg. 20-103.403-36 for Sections A-A, B-B, and C-C.
- See Dwg. 20-103.403-36 for Bent Bar Details and Dowel Bar Installation Details.
- HSS to meet ASTM A500, Grade B.

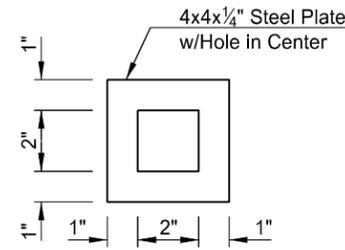
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QUANTITIES
SEE DWG 20-103.403-36
BNSF RAILWAY 1 MILE NORTH OF US 2 BNSF Ry. Br.0033-0085.600 PRESTRESSED CONCRETE FASCIA GIRDERS (SPAN 2)

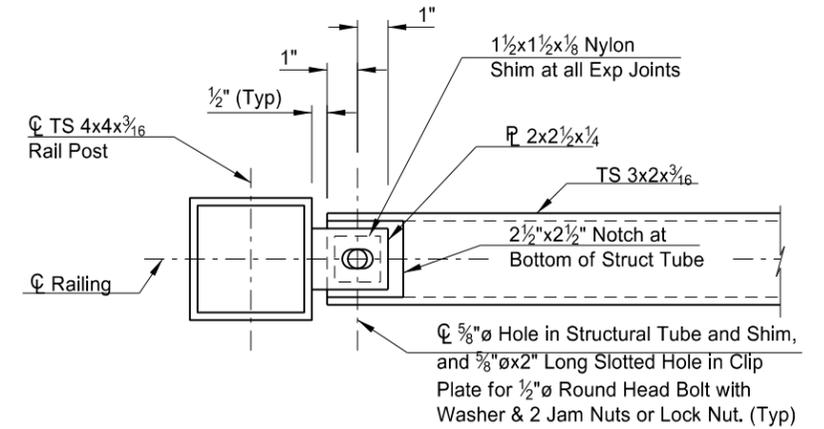
Revised	10/03/16	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
		ND	NHU-3-020(074)103	170	69



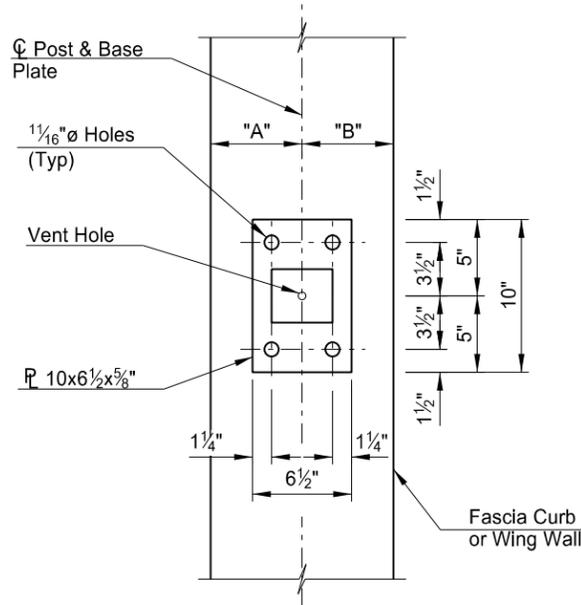
INSIDE ELEVATION OF RAILING
(Showing Typical Dimensions)



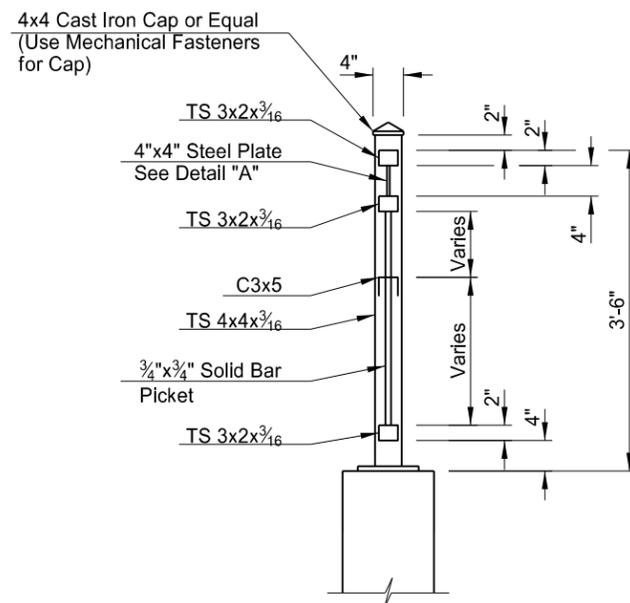
DETAIL "A"



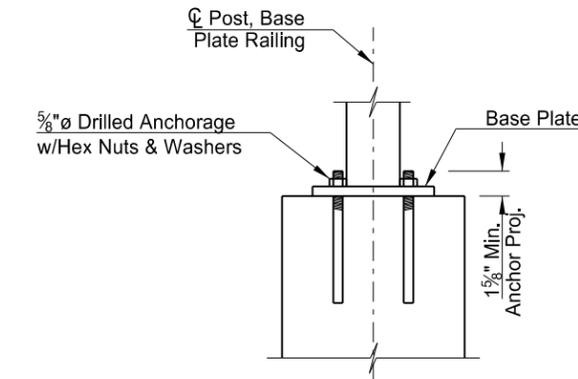
A-A



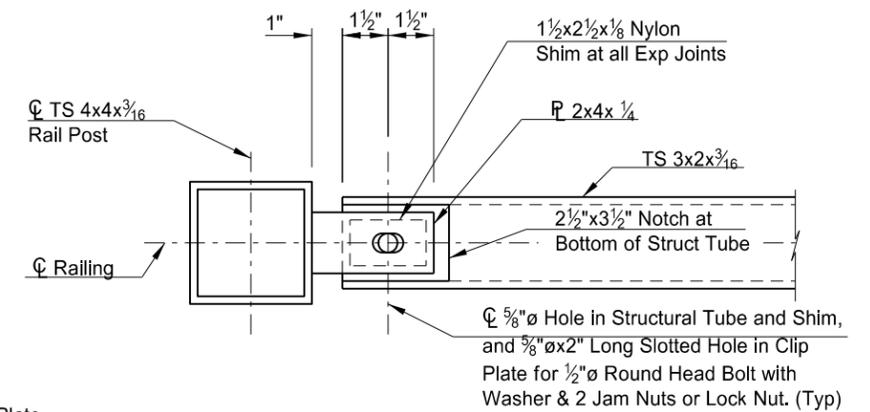
BASE PLATE PLAN



SECTION THROUGH RAILING



RAIL ANCHOR DETAIL

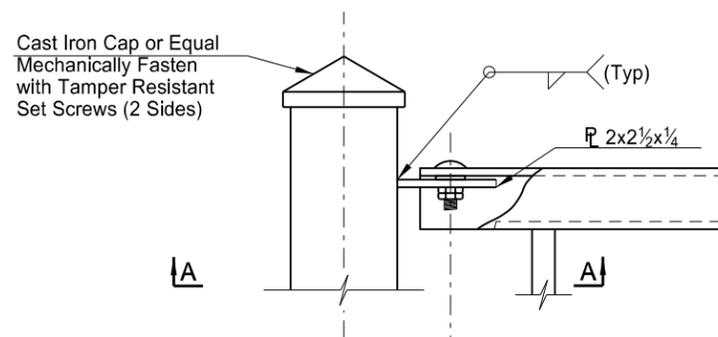


A-A @ EXPANSION JOINT

LOCATION	"A"	"B"
FASCIA CURB	6"	6"
WING WALL	1'-3"	9"

NOTES:

- See Dwg 20-103.403-44 for railing locations.
- Included all pieces required for the fabrication or connection of the railing in the unit price bid "Pedestrian Railing".
- Design railing anchor bolts to resist a tensile force of 9000 lbs.



TYPICAL CONNECTION DETAIL

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QUANTITIES	(BRIDGE ONLY)
PEDESTRIAN RAILING	392.4 LF

BNSF RAILWAY
1 MILE NORTH OF US 2
BNSF Ry. Br.0033-0085.600

PEDESTRIAN RAILING DETAILS

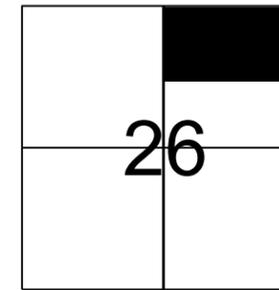
Added	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-020(074)103	180	1
			NHU-3-019(044)155		
			SU-3-982(031)035		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

LOCATION OF PIT IN SECTION

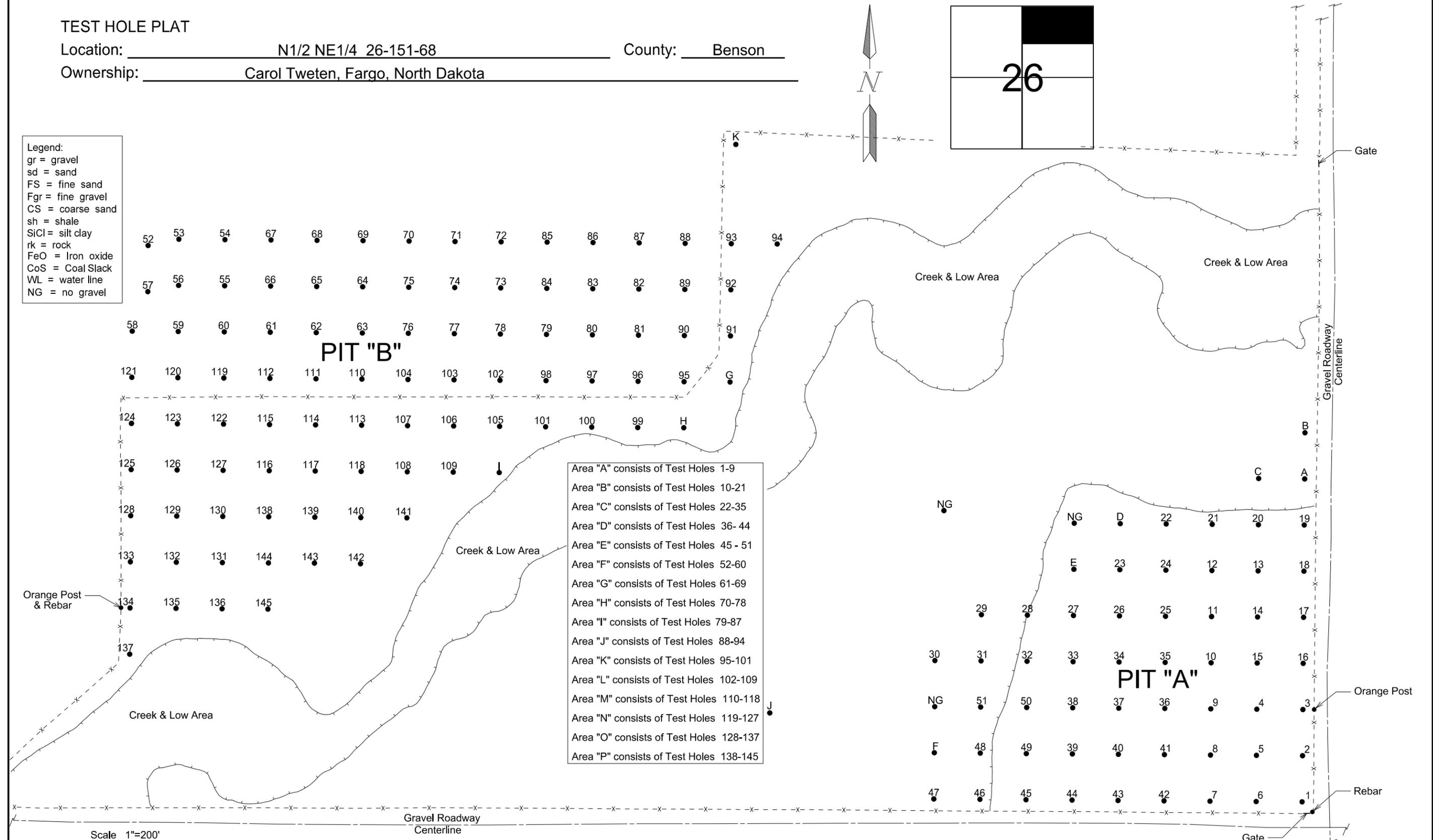
TEST HOLE PLAT

Location: N1/2 NE1/4 26-151-68 County: Benson
 Ownership: Carol Tweten, Fargo, North Dakota



- Legend:
- gr = gravel
 - sd = sand
 - FS = fine sand
 - Fgr = fine gravel
 - CS = coarse sand
 - sh = shale
 - SiCl = silt clay
 - rk = rock
 - FeO = Iron oxide
 - CoS = Coal Slack
 - WL = water line
 - NG = no gravel

- Area "A" consists of Test Holes 1-9
- Area "B" consists of Test Holes 10-21
- Area "C" consists of Test Holes 22-35
- Area "D" consists of Test Holes 36-44
- Area "E" consists of Test Holes 45 - 51
- Area "F" consists of Test Holes 52-60
- Area "G" consists of Test Holes 61-69
- Area "H" consists of Test Holes 70-78
- Area "I" consists of Test Holes 79-87
- Area "J" consists of Test Holes 88-94
- Area "K" consists of Test Holes 95-101
- Area "L" consists of Test Holes 102-109
- Area "M" consists of Test Holes 110-118
- Area "N" consists of Test Holes 119-127
- Area "O" consists of Test Holes 128-137
- Area "P" consists of Test Holes 138-145



Added	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-020(074)103	180	2
			NHU-3-019(044)155		
			SU-3-982(031)035		

PIT "A"

PIT LOGGING BY TEST HOLES								PIT LOGGING BY TEST HOLES								PIT LOGGING BY TEST HOLES								PIT LOGGING BY TEST HOLES							
Test Hole No.	Depth of Stripping (Ft)	Depth of Material (Ft)	% Retained on 1/2" Screen	% Retained on 3/8" Screen	% Retained on #4 Screen	% Retained on #10 Screen	Bottom of Test Hole	Test Hole No.	Depth of Stripping (Ft)	Depth of Material (Ft)	% Retained on 1/2" Screen	% Retained on 3/8" Screen	% Retained on #4 Screen	% Retained on #10 Screen	Bottom of Test Hole	Test Hole No.	Depth of Stripping (Ft)	Depth of Material (Ft)	% Retained on 1/2" Screen	% Retained on 3/8" Screen	% Retained on #4 Screen	% Retained on #10 Screen	Bottom of Test Hole	Test Hole No.	Depth of Stripping (Ft)	Depth of Material (Ft)	% Retained on 1/2" Screen	% Retained on 3/8" Screen	% Retained on #4 Screen	% Retained on #10 Screen	
1	4.0	8.0 CGr	7	22	33	43	WL	19	1.0	1.5 CGr	9	22	30	38	sd sh	37	2.0	3.0 CGr	4	15	24	32	WL	A	2.0	1.0 FS	8	14	18	22	SiCl
2	1.0	2.0 CGr	6	18	31	43	WL			0.5 gr sh								4.0 Fgr								1.0 gr					
		2.0 CGr								2.0 CGr						38	1.5	1.0 CGr	2	11	18	28	WL			2.0 FS					
		5.0 CGr								2.0 gr								3.5 CGr								1.0 CGr					
		1.0 gr								1.0 sd sh								2.0 Fgr						B	3.0	3.0 Fgr					WL
		1.0 CGr					20	0.5	3.5 CGr	4	16	26	34	FS			2.0 Fgr sh						C	1.5	2.5 CGr					SiCl	
3	3.0	5.0 CGr	3	11	23	37	WL			1.0 Fgr					39	1.0	7.0 CGr	10	23	38	50	WL	D	1.0	3.0 CGr					rk	
		2.5 gr								1.0 FS								3.0 gr						E	2.0	3.0 CGr					SiCl
4	1.5	4.5 CGr	7	20	32	43	WL	21	0.5	3.5 CGr	3	15	25	34	FS	40	2.0	5.0 CGr	6	16	24	33	WL	F	3.0	2.0 CGr					gr SiCl
		2.0 gr								0.5 gr								2.0 Fgr													
		3.0 CGr								0.5 FS								2.0 sd sh						J	1.0	3.0 CGr	6	17	28	34	SiCl
5	0.5	11.5 CGr	6	26	41	53	WL	22	0.5	5.5 CGr	8	22	35	45	WL	41	1.0	8.0 CGr	6	20	31	41	WL			2.0 gr					
6	2.0	10.0 CGr	3	18	31	43	WL	23	1.5	3.5 CGr	3	15	28	40	gr SiCl			3.0 gr								2.0 FS					
7	0.5	10.5 CGr	3	18	33	43	WL			1.0 gr sh					24	1.5	6.5 CGr	5	23	35	45	WL			1.0 CGr						
		1.0 gr						24	1.5	2.5 CGr	6	16	29	42	WL			2.0 gr								1.0 gr					
8	0.5	7.5 CGr	3	18	30	42	WL			6.0 gr								2.0 Fgr													
		2.0 gr								1.0 FS					43	2.0	8.5 CGr	8	25	35	44	WL									
9	1.0	2.0 gr	2	20	33	43	WL			1.0 gr								0.5 sd sh													
		3.0 CGr						25	1.5	1.5 CGr	1	5	8	11	FS	44	1.0	3.5 CGr	2	13	26	37	WL								
		2.0 Fgr								1.0 Fgr								1.5 Fgr													
		2.0 gr								6.0 sd sh								3.5 gr													
		1.0 CGr					26	1.0	3.0 CGr	5	13	21	27	FS			1.5 Fgr														
10	2.0	5.0 CGr	2	14	28	38	WL	27	2.0	4.0 sd sh						45	0.5	2.0 gr	7	18	30	41	WL								
11	0.5	3.5 CGr	0	5	11	15	WL			2.0 CGr	3	8	14	18	sd			4.5 gr													
		7.0 sd								2.0 Fgr								1.0 Fgr													
12	1.0	4.0 CGr	3	8	13	17	WL	28	1.5	3.0 sd								2.0 CGr													
		3.0 Fgr								1.5 CGr	1	6	11	16	SiCl			2.0 Fgr													
		4.0 sd								2.0 gr								1.0 sd													
13	2.0	5.0 CGr	3	15	28	38	FS	29	1.5	4.0 sd						46	2.0	2.0 gr	0	8	20	31	WL								
		2.0 gr								1.5 CGr	3	8	13	17	SiCl			4.5 gr													
		1.0 Fgr					30	3.5	3.0 CS	2	12	23	37	WL	47	2.5	2.5 Fgr	12	27	36	43	WL									
14	1.0	5.0 CGr	7	20	31	42	WL	31	2.5	4.5 gr	2	15	27	40	WL			1.5 gr													
		4.0 gr								0.5 gr								1.0 FS													
		2.0 gr CoS								2.0 FS								2.0 CGr													
15	2.0	4.5 CGr	6	15	23	30	WL			3.0 gr					48	4.0	1.0 CGr	2	11	18	25	WL									
		2.5 gr					32	2.0	1.0 sd	2	15	31	43	WL			2.0 Fgr sh														
		2.0 FS								4.0 gr					49	1.0	2.5 gr	3	16	24	34	WL									
		0.5 gr					33	1.0	2.0 sd	4	13	19	31	sd			5.0 CGr														
16	1.5	2.5 CGr	1	14	28	44	WL			2.0 CGr								2.0 gr													
		8.5 gr								2.5 gr					50	1.0	3.5 Fgr	9	18	26	32	WL									
17	1.0	5.0 CGr	8	22	34	44	WL			1.5 sd								3.5 CGr													
		2.0 gr sh					34	0.5	1.0 sd sh	3	12	23	31	WL			1.5 gr														
		4.0 gr								3.0 CGr					51	2.5	3.0 sd sh	2	11	18	25	WL									
18	1.5	4.5 CGr								3.0 CS								1.5 CGr													
		1.0 FS					35	1.0	3.0 gr	7	21	32	41	WL			2.0 gr														
		4.0 gr								4.0 Fgr								1.0 Fgr sh													
		1.0 FS								2.5 gr								2.0 CS													
							36	2.0	4.0 CGr	5	18	30	40	WL																	
										4.0 gr																					

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PROSPECTED BY Swank / Rogstad
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Added	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-020(074)103	180	3
			NHU-3-019(044)155		
			SU-3-982(031)035		

PIT "B"

PIT LOGGING BY TEST HOLES							PIT LOGGING BY TEST HOLES							PIT LOGGING BY TEST HOLES							PIT LOGGING BY TEST HOLES										
Test Hole No.	Depth of Stripping (Ft)	Depth of Material (Ft)	% Retained on 1/2" Screen	% Retained on 3/8" Screen	% Retained on #4 Screen	% Retained on #10 Screen	Bottom of Test Hole	Test Hole No.	Depth of Stripping (Ft)	Depth of Material (Ft)	% Retained on 1/2" Screen	% Retained on 3/8" Screen	% Retained on #4 Screen	% Retained on #10 Screen	Bottom of Test Hole	Test Hole No.	Depth of Stripping (Ft)	Depth of Material (Ft)	% Retained on 1/2" Screen	% Retained on 3/8" Screen	% Retained on #4 Screen	% Retained on #10 Screen	Bottom of Test Hole	Test Hole No.	Depth of Stripping (Ft)	Depth of Material (Ft)	% Retained on 1/2" Screen	% Retained on 3/8" Screen	% Retained on #4 Screen	% Retained on #10 Screen	Bottom of Test Hole
52	1.0	4.0 gr	0	1	4	15	WL	80	1.0	1.5 gr	7	24	43	58	WL	96	0.5	3.5 CGr	2	12	27	50	WL	110	0.5	10.5 CGr	7	30	47	61	WL
		4.0 sd								2.5 CGr							3.0 gr						111	1.0	3.0 CGr	6	27	48	61	WL	
53	1.0	6.0 gr	1	4	14	35	WL			1.0 CGrSiCl					97	3.0	1.0 CGr	1	11	33	53	WL			1.0 CGrSiCl						
		1.0 CS								2.5 CGr							1.0 Fgr								6.0 CGr						
		2.0 Fgr						81	1.0	1.0 CGr	1	11	35	47	WL			1.0 gr SiCl						112	0.5	6.5 CGr	8	33	53	65	WL
54	0.5	10.0 gr	1	13	33	52	WL			2.0 gr							2.0 gr CoS								1.0 gr						
55	1.0	7.0 gr	4	20	40	54	WL			2.0 CGrSiCl					98	2.5	2.5 CGr	3	18	38	61	WL			3.0 CGr						
		2.0 CGr								1.0 gr							1.0 CGrSiCl						113	1.0	6.0 CGr	3	17	38	56	WL	
56	1.0	9.5 gr	1	11	30	51	WL			1.0 CGr							3.0 gr								1.0 gr CoS						
57	1.0	4.0 gr	0	3	16	37	WL	82	1.0	7.0 CGr	5	20	38	53	WL	99	0.5	2.5 CGr	1	11	24	38	WL			2.0 gr SiCl					
		5.0 Fgr						83	0.5	3.5 CGr	1	12	31	49	WL			4.0 Fgr								2.0 CGr					
58	1.0	9.0 gr	1	14	36	54	WL			2.0 gr SiCl					100	2.0	7.0 Fgr	2	8	15	32	WL	114	1.5	8.5 CGr	3	22	41	56	gr SiCl	
59	1.0	5.0 gr	5	23	40	55	WL			1.0 gr CoS					101	1.0	2.0 gr	1	8	25	44	WL			1.0 CGrSiCl						
		5.0 CGr								2.5 CGr							2.0 CGr						115	1.0	4.0 CGr	7	25	48	64	WL	
60	1.0	4.0 gr	6	28	45	58	WL	84	0.5	9.5 CGr	5	23	44	61	WL			2.0 Fgr								1.0 CGrSiCl					
		5.5 CGr						85	0.5	7.5 CGr	3	22	45	61	WL			1.0 CGr								3.0 CGr					
61	1.0	9.0 CGr	10	33	48	60	WL			1.0 CGrSiCl					102	1.0	4.0 CGr	2	12	32	51	WL			1.0 CGrSiCl						
62	0.5	10.0 CGr	10	36	54	64	WL			1.0 gr							2.0 CGrSiCl								4.0 CGr						
63	1.0	10.0 CGr	8	33	51	64	WL	86	0.5	6.5 CGr	6	23	48	64	WL			3.0 CGr						116	1.0	5.0 CGr	5	22	41	56	WL
64	0.5	10.5 CGr	13	35	51	63	WL			2.0 CGrSiCl					103	0.5	2.5 CGr	6	22	41	58	WL			1.0 CGrSiCl						
65	1.0	11.0 CGr	8	26	43	54	WL			1.5 CGr							1.0 Fgr								1.0 Fgr						
66	1.0	10.5 CGr	7	30	48	60	WL	87	0.5	5.5 CGr	3	25	45	60	WL			3.0 CGr								1.0 gr					
67	0.5	10.5 CGr	3	23	43	53	WL			2.0 CGrSiCl							1.0 CGrSiCl								2.0 CGrSiCl						
68	1.0	10.5 CGr	8	32	50	60	WL			2.0 CGr							2.0 CGr								2.0 gr						
69	0.5	8.5 CGr	3	21	48	59	WL	88	1.0	8.0 CGr	4	22	43	59	WL	104	0.5	4.5 CGr	3	14	32	53	WL	117	1.0	7.0 CGr	6	21	38	56	WL
		2.5 CgrSiCl						89	1.0	1.0 CGr	2	12	28	46	WL			4.0 CGrSiCl								1.0 gr CoS					
70	1.0	11.0 CGr	8	33	51	64	WL			1.0 Fgr							1.0 CGr								1.0 CGrSiCl						
71	0.5	9.5 CGr	3	32	50	60	WL			2.0 CGrSiCl					105	1.0	2.0 CGr	8	18	33	52	WL			2.5 CGr						
		0.5 gr SiCl								1.0 CGr							1.0 gr CoS						118	1.0	6.0 CGr	5	16	34	53	WL	
72	0.5	11.5 CGr	12	40	55	65	WL			1.0 Fgr							1.0 CGr								1.0 gr CoS						
73	0.5	8.5 CGr	4	26	50	63	WL			2.0 CGr							1.0 CGrSiCl								0.5 gr SiCl						
		2.0 CgrSiCl						90	1.0	7.0 gr	3	13	28	49	WL			1.5 gr								0.5 CGr					
74	0.5	10.5 CGr	8	37	56	69	WL	91	2.0	2.0 gr	3	9	23	40	WL			0.5 gr CoS								2.5 Fgr					
75	2.0	1.0 CS	3	29	46	62	WL			1.0 Fgr							2.0 gr						119	0.5	10.5 CGr	8	33	50	61	WL	
		3.0 CGr								2.5 CGr					106	0.5	5.5 CGr	2	13	31	47	WL	120	0.5	10.0 CGr	6	28	48	58	WL	
		1.0 gr						92	1.0	1.0 CGr	1	6	22	38	WL			1.0 gr SiCl						121	1.0	9.0 CGr	2	22	46	59	WL
		2.0 CGr								1.0 Fgr							1.0 Fgr						122	1.0	12.0 CGr	8	28	51	64	WL	
		2.0 gr SiCl								2.0 CGrSiCl							1.5 gr CoS								1.0 gr SiCl						
76	1.0	9.5 CGr	8	31	48	62	WL			1.0 CS					107	1.0	3.0 CGr	6	18	38	56	WL	123	1.0	10.0 CGr	10	36	51	62	WL	
77	1.0	9.0 CGr	3	22	45	60	WL			2.0 Fgr							1.0 CGrSiCl														
78	1.0	4.0 CGr	8	21	43	61	WL			1.0 CGr							1.0 CGr														
		1.0 CgrSiCl						93	1.0	3.0 CGr	4	22	39	55	WL			3.0 CGrSiCl													
		4.0 CGr								3.0 CGrSiCl							2.0 gr														
79	1.0	2.0 CGr	1	14	33	55	WL			3.0 Fgr					108	1.0	3.0 CGr	3	15	31	48	WL									
		2.0 gr						94	1.0	3.0 CGr	1	6	26	46	WL			2.0 gr CoS													
		2.0 CgrSiCl								1.0 sd							2.0 CGr														
		2.0 CGr								2.0 CGrSiCl							1.0 gr														
										1.5 Fgr							1.5 CGr														
								95	1.5	5.5 Fgr	0	8	20	42	WL	109	1.0	2.0 CGr	1	8	23	44	WL								
																	6.5 gr														

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Added	9/29/16	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-3-020(074)103	180	4
			NHU-3-019(044)155		
			SU-3-982(031)035		

PIT "B"

PIT LOGGING BY TEST HOLES								PIT LOGGING BY TEST HOLES								PIT LOGGING BY TEST HOLES								PIT LOGGING BY TEST HOLES								
Test Hole No.	Depth of Stripping (Ft)	Depth of Material (Ft)	% Retained on 1" Screen	% Retained on 2" Screen	% Retained on 3/8" Screen	% Retained on #4 Screen	Bottom of Test Hole	Test Hole No.	Depth of Stripping (Ft)	Depth of Material (Ft)	% Retained on 1" Screen	% Retained on 2" Screen	% Retained on 3/8" Screen	% Retained on #4 Screen	Bottom of Test Hole	Test Hole No.	Depth of Stripping (Ft)	Depth of Material (Ft)	% Retained on 1" Screen	% Retained on 2" Screen	% Retained on 3/8" Screen	% Retained on #4 Screen	Bottom of Test Hole	Test Hole No.	Depth of Stripping (Ft)	Depth of Material (Ft)	% Retained on 1" Screen	% Retained on 2" Screen	% Retained on 3/8" Screen	% Retained on #4 Screen	Bottom of Test Hole	
124	1.0	5.0 gr	7	26	43	54	WL	135	1.0	3.0 CGr	4	18	33	51	WL	G	3.0	2.0 gr					WL									
		5.0 CGr								5.0 gr SiCl						H	3.0	1.0 gr SiCl					WL									
125	1.0	12.5 CGr	11	39	55	66	rk			1.0 gr					I	4.0	3.0 sd					WL										
126	1.0	2.0 gr	13	39	56	65	gr SiCl			1.0 gr SiCl																						
		8.0 CGr								2.0 gr					K	1.0	11.0 CGr	15	41	58	68	WL										
		1.0 CGrSiCl						136	1.0	3.0 gr	1	16	34	50	WL																	
		2.0 CGr								6.0 gr SiCl																						
127	1.0	8.0 CGr	12	36	55	68	WL			2.0 Fgr																						
		1.0 CGrSiCl						137	1.0	4.0 CGr	4	20	38	56	WL																	
		3.5 CGr								0.5 Fgr																						
128	1.0	2.0 gr	9	34	55	67	WL			0.5 Fgr CoS																						
		9.0 CGr								3.0 FgrSiCl																						
		1.0 CGrSiCl								4.0 gr																						
		2.0 CGr						138	1.0	5.0 gr	1	18	38	59	WL																	
129	1.0	5.0 CGr	3	22	46	64	WL			5.5 gr SiCl																						
		2.0 gr SiCl								0.5 gr																						
		2.0 CGr						139	1.0	4.0 CGr	3	15	32	48	WL																	
		3.0 gr SiCl								6.5 gr																						
		1.0 CGr						140	1.0	6.0 gr	1	15	30	51	WL																	
130	1.0	7.0 gr	2	14	35	53	WL			0.5 Fgr																						
		4.0 gr SiCl								0.5 gr																						
		2.0 gr								0.5 gr CoS																						
131	1.0	3.0 CGr	3	20	40	55	WL			0.5 gr																						
		1.5 gr								2.0 Fgr																						
		0.5 gr CoS						141	4.0	2.0 CGr	5	12	25	44	WL																	
		1.0 Fgr								1.0 gr SiCl																						
		2.0 gr SiCl								3.5 gr																						
		1.0 gr						142	3.0	4.0 Fgr	1	6	18	35	SiCl																	
		1.0 gr SiCl						143	1.5	5.0 CGr	8	20	35	48	WL																	
		2.0 gr								0.5 gr SiCl																						
132	1.0	1.0 CGr	3	19	38	55	WL			4.0 gr																						
		3.0 gr						144	2.0	2.0 CGr	1	15	36	56	WL																	
		1.5 gr SiCl								3.0 gr SiCl																						
		0.5 Fgr CoS								0.5 gr CoS																						
		1.0 FgrSiCl								3.0 gr SiCl																						
		1.0 gr								2.5 gr																						
133	1.0	5.0 CGr	5	17	39	56	gr SiCl			2.5 CGr	2	13	26	42	SiCl																	
		0.5 gr SiCl								6.0 gr																						
		0.5 gr																														
		1.5 gr SiCl																														
		0.5 gr																														
134	1.0	4.0 CGr	1	13	34	53	SiCl																									
		1.0 FgrSiCl																														
		1.0 Fgr																														
		1.5 FgrSiCl																														
		0.5 Fgr																														
		1.0 FgrSiCl																														

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