

November 3, 2020

ADDENDUM 1 – JOB 23

TO: All prospective bidders on Projects NHU-1-806(052)071 and IM-1-094(200)153, Job No. 23 scheduled for the November 13, 2020 bid opening.

The following plans and request for proposal revision shall be made:

Plan Revisions:

See attached summaries from Paul Benning, P.E. dated November 5, 2020 for an explanation.

Request for Proposal Revisions:

Remove and replace pages 5 thru 16 of 18 of the Proposal pages located at the beginning of the Request for Proposal with pages revised 11/5/2020.

Bid Item Changes are summarized in the Plan Addendum Summary and Approval.

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.



PHILLIP MURDOFF, P.E. – CONSTRUCTION SERVICES ENGINEER

80: dch

Enclosure

PLAN ADDENDUM SUMMARY AND APPROVAL

Project Information							
Project: NHU-1-806(052)071 & IM-1-094(200)153					PCN: 22181 & 22182		
Location: Interstate 94 (Mandan Ave Interchange); ND 1806 (Interstate 94 to 27 th Street)							
Date: November 4, 2020			Project Manager: Troy Ripplinger (KLJ)				
Bid Opening Date: November 13, 2020			JOB#: 23		Addendum#: 1		
Section	Sheet	Description of Change					
2	2	Added Standard Drawing D-752-2 Chain Link Fence					
6	5	Revised note 724-P04 to include circular deflection and leakage testing and retesting					
6	6	Note 724-P10 moved from sheet 5 to sheet 6.					
6	8	Revised wording in note 770-P02.					
8	1	Text shifted due to bid item added on Section 8 Sheet 1.					
		Removed Bid Items:					
		Spec	Code	Description	Unit	Previous Quantity	Addendum 1 Quantity
		411	0100	MILLING PAVEMENT SURFACE	TON	13340	0
		Added Bid Items:					
		Spec	Code	Description	Unit	Previous Quantity	Addendum 1 Quantity
		411	0105	MILLING PAVEMENT SURFACE	SY	0	13340
		704	1020	ATTENUATION DEVICE SPECIAL	EA	0	2
8	2-3	Text shifted due to bid item added on Section 8 Sheet 1.					
8	4	Text shifted due to bid item added on Section 8 Sheet 1.					
		Revised Quantities:					
		Spec	Code	Description	Unit	Previous Quantity	Addendum 1 Quantity
		714	4096	PIPE CONDUIT 15IN-APPROACH	LF	120	0
		714	4099	PIPE CONDUIT 18IN-APPROACH	LF	198	318
		714	0205	PIPE CONC REINF 15IN CL III	LF	120	0
		714	0310	PIPE CONC REINF 18IN CL III	LF	198	318
20	11	Culvert at Sta 3801+27 Rt updated from 15IN to 18IN in table. Culvert at Sta 3849+54 Lt updated from 15IN to 18IN in table.					
51	6	Added 42IN Corrugated Steel Pipe option in table.					
51	7	Culvert at Sta 3800+95.0~38.6' Rt to 3801+55.0~38.6' Rt updated from 15IN to 18IN in table.					
		Culvert at Sta 3849+19.9~46.0' Lt to 3849+79.8~47.7' Lt updated from 15IN to 18IN in table.					
55	6	Culvert at Sta 3800+95.0~38.6' Rt to 3801+55.0~38.6' Rt updated from 15IN to 18IN.					
		Culvert at Sta 3800+95.0~38.6' Rt to 3801+55.0~38.6' Rt invert elevations updated from 1742.27 & 1742.57 to 1742.02 & 1742.32.					
		Revised Quantities:					
		Spec	Code	Description	Unit	Previous	Addendum 1

					Quantity	Quantity	
		714	4096	PIPE CONDUIT 15IN-APPROACH	LF	60	0
		714	4099	PIPE CONDUIT 18IN-APPROACH	LF	0	60
55	18	Culvert at Sta 3849+19.9~46.0' Lt to 3849+79.8~47.7' Lt updated from 15IN to 18IN. Revised Quantities:					
		Spec	Code	Description	Unit	Previous Quantity	Addendum 1 Quantity
		714	4096	PIPE CONDUIT 15IN-APPROACH	LF	60	0
		714	4099	PIPE CONDUIT 18IN-APPROACH	LF	0	60
200	36-39	Culvert at Sta 3800+95.0~38.6' Rt to 3801+55.0~38.6' Rt updated from 15IN to 18IN. Culvert at Sta 3800+95.0~38.6' Rt to 3801+55.0~38.6' Rt invert elevations updated from 1742.27 & 1742.57 to 1742.02 & 1742.32.					
200	107-108	Culvert at Sta 3849+19.9~46.0' Lt to 3849+79.8~47.7' Lt updated from 15IN to 18IN.					

APPROVAL

Should the revisions described above be processed as a plan addendum?

 X Yes No

Paul M. Benning

Paul Benning, P.E. – Local Government Engineer

11/5/2020

Date

BID ITEMS

Projects: NHU-1-806(052)071 (PCN-22181) and IM-1-094(200)153 (PCN-22182)

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

Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
001	103	0100	CONTRACT BOND	L SUM	1.				
002	201	0330	CLEARING & GRUBBING	L SUM	1.				
003	202	0114	REMOVAL OF CONCRETE PAVEMENT	SY	2,702.				
004	202	0130	REMOVAL OF CURB & GUTTER	LF	2,249.				
005	202	0135	REMOVAL OF BITUMINOUS SURFACING	TON	14,148.				
006	202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	1,403.				
007	202	0210	REMOVAL OF MANHOLES	EA	3.				
008	202	0230	REMOVAL OF INLETS	EA	4.				
009	202	0235	REMOVAL OF CATCH BASIN	EA	1.				
010	202	0312	REMOVE EXISTING FENCE	LF	1,623.				
011	203	0101	COMMON EXCAVATION-TYPE A	CY	9,325.				
012	203	0109	TOPSOIL	CY	8,404.				
013	203	0138	COMMON EXCAVATION-SUBCUT	CY	894.				
014	203	0140	BORROW-EXCAVATION	CY	19,186.				
015	216	0100	WATER	M GAL	1,082.				
016	251	0100	SEEDING CLASS I	ACRE	.965				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
017	251	0300	SEEDING CLASS III	ACRE	11.133				
018	251	2000	TEMPORARY COVER CROP	ACRE	11.874				
019	253	0201	HYDRAULIC MULCH	ACRE	19.438				
020	255	0101	ECB TYPE 1	SY	21,938.				
021	260	0100	SILT FENCE UNSUPPORTED	LF	2,115.				
022	260	0101	REMOVE SILT FENCE UNSUPPORTED	LF	2,115.				
023	261	0112	FIBER ROLLS 12IN	LF	9,717.				
024	261	0113	REMOVE FIBER ROLLS 12IN	LF	6,694.				
025	302	0050	TRAFFIC SERVICE AGGREGATE	TON	5,688.				
026	302	0120	AGGREGATE BASE COURSE CL 5	TON	23,619.				
027	302	0320	AGGREGATE SURFACE COURSE CL 5	TON	527.				
028	401	0050	TACK COAT	GAL	4,607.				
029	401	0060	PRIME COAT	GAL	4,713.				
030	401	0160	BLOTTER MATERIAL CL 44	TON	144.				
031	411	0105	MILLING PAVEMENT SURFACE	SY	13,340.				
032	430	0045	SUPERPAVE FAA 45	TON	7,766.				

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
033	430	1000	CORED SAMPLE	EA	84.				
034	430	5806	PG 58H-28 ASPHALT CEMENT	TON	467.				
035	550	0300	8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	6,052.				
036	550	0330	NON-REINF CONCRETE PVMT CL AE-DOWELED-COLORED	SY	642.				
037	570	0650	CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED	SY	937.				
038	570	0963	TRANSVERSE PCC JOINT CLEANING & SEALING	LF	3,320.				
039	570	0965	LONGITUDINAL PCC JOINT CLEANING & SEALING	LF	5,729.				
040	570	0966	RANDOM PCC CRACK CLEANING & SEALING	LF	535.				
041	570	1512	SPALL REPAIR-PARTIAL DEPTH	SF	331.				
042	702	0100	MOBILIZATION	L SUM	1.				
043	704	0100	FLAGGING	MHR	4,548.				
044	704	1000	TRAFFIC CONTROL SIGNS	UNIT	5,161.				
045	704	1020	ATTENUATION DEVICE SPECIAL	EA	2.				
046	704	1050	TYPE I BARRICADE	EA	20.				
047	704	1052	TYPE III BARRICADE	EA	18.				
048	704	1058	PEDESTRIAN WALKWAY	LF	586.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
049	704	1060	DELINEATOR DRUMS	EA	239.				
050	704	1067	TUBULAR MARKERS	EA	229.				
051	704	1072	FLEXIBLE DELINEATORS	EA	49.				
052	704	1080	STACKABLE VERTICAL PANELS	EA	372.				
053	704	1185	PILOT CAR	HR	320.				
054	704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	EA	32.				
055	704	4011	PORTABLE CHANGEABLE MESSAGE SIGN	EA	4.				
056	706	0500	AGGREGATE LABORATORY	EA	1.				
057	706	0550	BITUMINOUS LABORATORY	EA	1.				
058	706	0600	CONTRACTOR'S LABORATORY	EA	1.				
059	708	1531	INLET PROTECTION-FIBER ROLL 12IN	EA	38.				
060	708	1533	REMOVAL INLET PROTECTION-FIBER ROLL 12IN	EA	35.				
061	708	1540	INLET PROTECTION-SPECIAL	EA	42.				
062	708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	42.				
063	709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	31,278.				
064	714	7036	PIPE PVC 18IN	LF	564.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
065	720	0130	IRON PIN R/W MONUMENTS	EA	51.				
066	720	0135	IRON PIN REFERENCE MONUMENTS	EA	6.				
067	722	0100	MANHOLE 48IN	EA	9.				
068	722	0110	MANHOLE 60IN	EA	2.				
069	722	0120	MANHOLE 72IN	EA	1.				
070	722	0300	MANHOLE SANITARY	EA	12.				
071	722	1100	MANHOLE RISER 48IN	LF	185.100				
072	722	1110	MANHOLE RISER 60IN	LF	10.300				
073	722	1120	MANHOLE RISER 72IN	LF	6.300				
074	722	3410	MANHOLE REPAIR	EA	4.				
075	722	3510	INLET-TYPE 2	EA	22.				
076	722	3520	INLET-TYPE 2 DOUBLE	EA	4.				
077	722	3701	INLET SPECIAL-TYPE 2 48IN	EA	7.				
078	722	3720	INLET SPECIAL CATCH BASIN 6IN BEEHIVE 48IN	EA	1.				
079	722	3761	INLET SPECIAL-TYPE 2 60IN	EA	2.				
080	722	3766	INLET SPECIAL-TYPE 2 72IN	EA	3.				

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
081	722	3768	INLET SPECIAL-TYPE 2 84IN	EA	1.				
082	722	3900	INLET SLOTTED DRAIN 12IN	LF	20.				
083	722	4010	INLET CATCH BASIN 6IN BEEHIVE	EA	4.				
084	722	6140	ADJUST GATE VALVE BOX	EA	12.				
085	722	6160	ADJUST INLET	EA	3.				
086	722	6200	ADJUST MANHOLE	EA	2.				
087	722	6240	ADJUST UTILITY APPURTENANCE	EA	1.				
088	724	0310	GATE VALVE & BOX 8IN	EA	1.				
089	724	0375	RELOCATE GATE VALVE & BOX	EA	1.				
090	724	0412	8IN HYDRANT	EA	1.				
091	724	0427	ADJUST HYDRANT	EA	4.				
092	724	0430	REMOVE HYDRANT	EA	1.				
093	724	0830	WATERMAIN 8IN PVC	LF	9.				
094	724	0891	WATERMAIN MODIFICATIONS	L SUM	1.				
095	724	1035	SPRINKLER RELOCATION	L SUM	1.				
096	724	1124	21IN SANITARY SEWER PIPE	LF	3,199.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
097	724	7014	REMOVE GATE VALVE BOX	EA	1.				
098	744	0050	INSULATION BOARD	CF	433.				
099	748	0100	CURB & GUTTER	LF	324.				
100	748	0140	CURB & GUTTER-TYPE I	LF	10,462.				
101	748	0141	CURB & GUTTER-TYPE 1 SPECIAL	LF	415.				
102	748	1020	VALLEY GUTTER 36IN	SY	63.				
103	748	1030	VALLEY GUTTER 72IN	SY	82.				
104	750	0030	PIGMENTED IMPRINTED CONCRETE	SY	649.				
105	750	0115	SIDEWALK CONCRETE 4IN	SY	2,277.				
106	750	0210	CONCRETE MEDIAN NOSE PAVING	SY	60.500				
107	750	1020	DRIVEWAY CONCRETE 8IN	SY	784.				
108	750	2115	DETECTABLE WARNING PANELS	SF	424.				
109	752	0600	FENCE CHAIN LINK	LF	435.				
110	752	0610	FENCE CHAIN LINK-TYPE I	LF	65.				
111	752	3100	CORNER ASSEMBLY CHAIN LINK	EA	3.				
112	754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	372.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
113	754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	189.				
114	754	0170	FLEXIBLE DELINEATORS	EA	20.				
115	754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	951.				
116	754	0210	GALV STEEL POST-STANDARD PIPE	LF	75.				
117	754	0214	GALV STEEL POSTS-W-SHAPE POSTS(TWO OR MORE)	LF	57.				
118	754	0562	REFERENCE MARKER-TYPE B	EA	1.				
119	754	0592	RESET SIGN PANEL	EA	29.				
120	754	0593	RESET SIGN SUPPORT	EA	1.				
121	754	0805	OBJECT MARKERS - CULVERTS	EA	20.				
122	754	1100	CLASS AE CONCRETE-SIGN FOUNDATIONS	CY	1.				
123	754	1104	REMOVE SIGN FOUNDATION	EA	7.				
124	762	0112	EPOXY PVMT MK MESSAGE	SF	496.				
125	762	0113	EPOXY PVMT MK 4IN LINE	LF	25,215.				
126	762	0115	EPOXY PVMT MK 8IN LINE	LF	1,487.				
127	762	0117	EPOXY PVMT MK 24IN LINE	LF	280.				
128	762	0122	PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED)	SF	349.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
129	762	0436	SHORT TERM 24IN LINE-TYPE NR	LF	80.				
130	762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	9,157.				
131	762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF	354.				
132	762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	951.				
133	762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	602.				
134	766	0120	RESET MAILBOX	EA	3.				
135	770	0003	LIGHTING SYSTEM A	EA	1.				
136	770	0004	LIGHTING SYSTEM B	EA	1.				
137	770	0005	LIGHTING SYSTEM C	EA	1.				
138	770	4525	REVISE LIGHTING SYSTEM	EA	1.				
139	770	4567	REMOVE LIGHTING SYSTEM	EA	1.				
140	930	9551	CONCRETE MODULAR BLOCK RETAINING WALL	SF	128.				
141	970	0001	LANDSCAPING APPURTENANCES	L SUM	1.				
142	970	0060	PLANTING SOIL	CY	157.				
143	970	0070	STONE MULCH	SF	2,827.				
144	970	0080	LANDSCAPE BOULDERS	TON	34.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
145	970	2014	EMBERS AMUR MAPLE - TREE FORM	EA	51.				
146	970	2032	AUTUMN SPLENDOR BUCKEYE	EA	4.				
147	970	2194	RED SPLENDOR CRABAPPLE	EA	7.				
148	970	2202	SPRING SNOW CRABAPPLE	EA	6.				
149	970	2215	PRINCESS KAY PLUM	EA	53.				
150	970	2330	BUR OAK	EA	4.				
151	970	2405	JAPANESE TREE LILAC	EA	36.				
152	970	2456	PRAIRIE EXPEDITION AMERICAN ELM	EA	4.				
153	970	6016	DAYLILIES-CONTAINER	EA	32.				
			SUBTOTAL						
			OPTION 1						
154	709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	5,409.				
155	714	4091	PIPE CONDUIT 12IN-APPROACH	LF	64.				
156	714	4097	PIPE CONDUIT 15IN-STORM DRAIN	LF	1,458.				
157	714	4099	PIPE CONDUIT 18IN-APPROACH	LF	318.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
158	714	4101	PIPE CONDUIT 18IN-STORM DRAIN	LF	1,971.				
159	714	4106	PIPE CONDUIT 24IN-APPROACH	LF	100.				
160	714	4107	PIPE CONDUIT 24IN-STORM DRAIN	LF	847.				
161	714	4112	PIPE CONDUIT 30IN-STORM DRAIN	LF	415.				
162	714	4115	PIPE CONDUIT 36IN	LF	66.				
			SUBTOTAL OPTION 1						
			OPTION 2						
163	709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	5,380.				
164	714	0110	PIPE CONC REINF 12IN CL III	LF	64.				
165	714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF	1,458.				
166	714	0310	PIPE CONC REINF 18IN CL III	LF	318.				
167	714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF	1,971.				
168	714	0615	PIPE CONC REINF 24IN CL III	LF	100.				
169	714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN	LF	847.				
170	714	0825	PIPE CONC REINF 30IN CL III-STORM DRAIN	LF	415.				

North Dakota Department of Transportation

BID ITEMS

Rev: 11/5/2020

Projects: NHU-1-806(052)071 (PCN-22181) and IM-1-094(200)153 (PCN-22182)

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LIST OF STANDARD DRAWINGS

Revised	11/3/2020	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-1-806(052)071	2	2

IM-1-094(200)153

Number	Description
D-101-1, 2,3	NDDOT Abbreviations
D-101-10	NDDOT Utility Company and Organization Abbreviations
D-101-20, 21	Line Styles
D-101-30, 31,32	Symbols
D-203-6	Standard 90 Degree Flared Intersections - (Center Left Turn Lane on Major Road)
D-203-8	Standard Rural Approaches
D-261-1	Erosion Control - Fiber Roll Placement Details
D-550-2	Longitudinal Joint Details
D-550-3	Transverse Contraction Joint Details
D-550-4	Transverse Expansion Joint Detail
D-550-5	Transverse Construction Joint
D-704-4	Work Zone Business Sign Details
D-704-5	Construction Sign Detail
D-704-7	Breakaway Systems For Construction Zone Signs - Perforated Tube
D-704-8	Breakaway Systems For Construction Zone Signs - U-Channel Post
D-704-9	Construction Sign Details - Terminal And Guide Signs
D-704-10	Construction Sign Details - Regulatory Signs
D-704-11, 11A	Construction Sign Details - Warning Signs
D-704-13	Barricade And Channelizing Device Details
D-704-14	Construction Sign Punching And Mounting Details
D-704-22	Construction Truck And Temporary Detour Layouts
D-704-51	Portable Precast Concrete Median Barrier (Temporary Usage)
D-708-6	Erosion And Siltation Controls - Median Or Ditch Inlet Protection
D-714-1	Reinforced Concrete Pipe Culverts And End Sections (Round Pipe)
D-714-25	Transverse Mainline Pipe Installation Detail - Pipes More Than 4 Feet Below Top of Subgrade
D-720-1	Standard Monuments And Right Of Way Markers
D-722-1	Inlet - Type 1
D-722-1A	Inlet - Catch Basin
D-722-1B	Inlet - Special
D-722-2	Inlet - Type 2
D-722-3A	Inlet - Slotted Drain
D-722-5	Manhole Details
D-748-1	Curb & Gutter And Valley Gutter
D-750-1	Concrete Driveway - Urban
D-750-2	Sidewalk
D-750-3	Curb Ramp Details
D-752-2	Chain Link Fence
D-754-9	Letter and Arrow Details
D-754-11	State Highway Route Shield Detail
D-754-19	(Conventional Use) Reference Markers
D-754-23	Perforated Tube Assembly Details
D-754-24, 25	Mounting Details Perforated Tube
D-754-24A	Breakaway Coupler System For Perforated Tubes
D-754-26, 27,29,32,37	Sign Punching, Stringer, and Support Location Details Regulatory, Warning and Guide Signs
D-754-47	Sign Punching, Stringer And Support Location Details For Variable Length Signs

Number	Description
D-754-59	Sign Punching, Stringer And Support Location Details - Route Marker Signs
D-754-80	Light Standard, Signal Standard, And Span Wire Mounted Sign Assembly Detail
D-754-86	911 Sign Support Information And Sign Details
D-754-87	Sign Punching, Stringer And Support Location Details For Street Name Signs And 911 Signs
D-762-1	Pavement Marking Message Details
D-762-4	Pavement Marking
D-762-6	Pavement Marking for Standard 90 Degree Flared Intersection - (Center Left Turn Lane on Major Road)
D-770-1	Concrete Foundations (Traffic Signals & Highway Lighting)
D-770-2	Feed Points (Roadway Lighting)
D-770-3	Pull Box Details
D-770-4	Lighting And Signal Details
D-770-5	Light Standard Details

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tape in black capital letters. Provide marking tape equal to that manufactured by Griffolyn Company, Inc. standard grade.

Perform mandrel testing in all sanitary sewer 8-inches in diameter or larger no less than 30-days following installation, backfilling, and receiving passing compaction tests. Ensure circular deflections do not exceed the maximum allowable deflection requirements herein by more than 5 percent. The maximum average inside pipe diameter shall be equal to the average outside diameter per applicable ASTM Standards minus 2 minimum wall thicknesses per applicable ASTM Standards. Use a rigid, nonadjustable, 9-leg minimum mandrel having an effective length not less than its nominal diameter, fabricated of steel or aluminum with pull rings at either end, and stamped or engraved to indicate the pipe material specification, nominal size, and outside diameter. Pull the mandrel through the pipe by hand, if it fails to pass through the pipe, it will be deemed to be over-deflected. Uncover any over-deflected pipe and, if not damaged, remove and reinstall. Remove damaged pipe from the work site and replace with new pipe. Provide re-testing, if required, at no additional cost.

Perform hydrostatic or low air pressure testing of all sanitary sewer. For hydrostatic testing, perform an exfiltration or infiltration test with a minimum positive head of 2 feet. Prevent exfiltration or infiltration from exceeding 100 gallons per inch of internal pipe diameter, per mil, per day. For Air testing, conduct an air test, as a minimum, conforming to the test procedure as described in ASTM F1417 for plastic pipe.

Flush all sanitary sewer pipe and manholes with clean water. Have the sewer main televised and recorded by a firm normally engaged in such type of work. Provide an electronic video format for each section of sewer main televised. Clearly mark recordings as to the project number and recording number. In the recordings, describe locations and conditions of the sewer and have a visual footage counter showing the distance of the camera from the manhole. After the recordings and report are submitted, they will be viewed by the Engineer for acceptance.

Include all costs for labor, materials and equipment necessary for the installation including: pipe, fittings, plugs, bedding material, marking tape, flushing, circular deflection and leakage testing and retesting, and televising in the price bid for “()IN Sanitary Sewer Pipe”.

724-P05 HYDRANTS: Manufacture hydrants in accordance with the requirements of AWWA C502. Equip hydrants with break-a-way type traffic flanges and two (2) 2½-inch hose connections with National Standard Threads and one (1) 4 1/2-inch pumper connection with National Standard Threads. Provide a 5¼-inch Waterous Pacer Model WB-67-250 as manufactured by American Flow Control or 5¼-inch American Darling Model B-62-B as manufactured by American Flow Control or 5¼-inch American AVK Model 2700 as manufactured by the American AVK Company or an approved equal for all 6-inch and 8-inch hydrants.

Have a minimum of 24 inches between the 2½-inch hose connection and the nominal ground line groove for all new or reset hydrants. Provide a bury depth of 8½ feet unless otherwise called for in place. Provide brass, Class 304 or 316 stainless steel, or have an epoxy coating as such to prevent corrosion for the life of the fire hydrant for all metal internal moving parts below ground. Provide stainless steel for all washers and barrel bolts below ground level. Provide hydrant lower rod with Class 304 or 316 stainless steel or have an epoxy coating as such to prevent corrosion for the life of the fire hydrant. Surround the hydrants with 1/2 cubic yards of subcut gravel so placed that it will readily take up all water from the drip valves. Set the hydrants on a concrete pad 6 inches thick and 18 inches square.

Furnish and install all new hydrants with a 48-inch Red FH800 American Series Fire Hydrant Marker manufactured by Flexstake Inc. of Fort Myers Florida, or an approved equal.

Mechanically restrain all non-terminal hydrants temporarily placed for future watermain extensions to tee.

724-P06 ADJUST HYDRANT: Adjust hydrant to final grade by adding or removing riser pipe. Install per manufacturer’s recommendations. Provide a minimum distance between nozzle and ground of 24” and a maximum distance of 30”. Wrap hydrant risers with 8-mil polyethylene plastic and securely tape. Include all costs associated with material, labor, and equipment necessary to complete the adjustments to the existing hydrants in the price bid for “Adjust Hydrant”.

724-P07 REMOVE HYDRANT: Deliver all removed hydrants, unless marked for relocation, to the Mandan Public Works. Contact Mandan Public Works Department (701) 667- 3240 a minimum of 48 hours prior to delivery for the stockpile location at the Public Works yard.

724-P08 CONTROLLED DENSITY BACKFILL: Install controlled density backfill to provide special structural support at the existing water and proposed sanitary sewer crossings per plan locations.

Provide backfill with a blend of cement, water, pozzolanic materials, and fillers. Provide and install materials fluid on placement to flow around and fill voids around the pipe in the backfill area. Provide material able to support normal loads after six hours and have a compressive strength in the range of 80 psi to 130 psi at 28 days. Provide material such that it lends itself to easy removal with a tractor backhoe. If the mix design shown is used, no additional testing will be required. The mix design yields approximately one cubic yard of flowable mortar.

Mix Design	
Sand	2600 lbs
Water	70 gals
Fly Ash (Class C)	300 lbs
Cement	100 lbs

Excavate the lower crossing pipe to the top of pipe for the width of the upper crossing pipe trench and thoroughly compact the trench bottom by mechanical means, with care taken not to damage or disturb the lower crossing pipe. Fill the trench filled with controlled density backfill for 5 feet in either direction for a length of ten feet along the upper crossing pipe. Place the bedding material over the controlled density backfill after the controlled density backfill has adequately cured. Include the cost of the controlled density backfill in the price bid for “Pipe Conduit ()IN-Storm Drain”.

724-P09 WATERMAIN MODIFICATIONS: This bid item is for trench excavation and backfill required to install insulation over the existing watermain along ND 1806 from sta 3804+00 to sta 3806+00 LT. The price bid shall include all costs for labor, equipment, and materials required to locate the existing main, excavate, backfill, installation of new marking tape, and trench compaction. This work shall be included in the price bid for “Watermain Modifications.” The costs for furnishing and installing the insulation will be paid at the contract unit price for “Insulation Board.”

This document was originally issued and sealed by
Brad Krogstad,
Registration Number
PE-5786,
on 10/29/20 and the original document is stored at the North Dakota Department of Transportation

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724-P10 SPRINKLER RELOCATION: Mandan Northwest Pipe Fittings, Inc. and the Starion Sports Complex properties have underground sprinkler systems that will be impacted by the project. Coordinate with each property owner to determine the quantity of sprinkler heads and hoses that will be impacted prior to construction. Replace the sprinkler heads and hoses with new materials matching the existing in locations that will provide sufficient water coverage.

If the work to replace the sprinkler heads and hoses requires access outside of the right-of-way or temporary construction easement, gain written access from the landowner to complete the work and submit a copy of the agreement to the Engineer.

Include all costs for this work in the bid price for “Sprinkler Relocation”.

744-P01 INSULATION BOARD: Furnish and install the insulation required to protect the water main. Provide insulation board meeting the following requirements:

- Thermal conductivity of not more than 0.28 BTU per hour per square foot per degree Fahrenheit per inch of thickness as tested in accordance with ASTM C177 is required.
- Not to absorb moisture to an extent greater than 2.5 percent by volume as tested in accordance with ASTM D2842.
- Compression strength greater than 20 psi as tested in accordance with ASTM D-1621.
- Density between 0.9 and 1.3 pounds per cubic feet as tested in accordance with ASTM D-1622.
- Specifically designed for protection of underground utilities. Install in accordance with the manufacturer's recommendations.

Minimum of 4-inches thick insulation is to be centered over the watermain. Install pipe bedding material between pipe and insulation.

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NOTES

Revised 10/30/20

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770-P01 LIGHTING SYSTEM A, B, C: Equipment and material quantities are shown for informational purposes only and will not be bid individually. Include all equipment, material, and labor required for the complete and functional lighting system in the lump sum prices bid for “LIGHTING SYSTEM A”, “LIGHTING SYSTEM B”, and “LIGHTING SYSTEM C”.

Install all conduits from station 3768+33.2 to 3780+98.0 via boring. It is unknown if any irrigation systems are installed within this station range. After installation of the lights and conduits in this area, grade the disturbed areas to match preconstruction conditions. Seed the disturbed areas with Class I seed and mulch with hydraulic mulch. Include all labor, materials, and equipment necessary to perform this described work in the contract unit price for “LIGHTING SYSTEM A”.

770-P02 LIGHT STANDARDS 6FT MA 40FT MT HT BREAKAWAY. Provide a steel, galvanized truss arm pole with simplex lighting attachments, breakaway light standard with transformer base. Face hand holes in the opposite direction of roadway.

770-P03 LED LUMINAIRES: Provide LED luminaires according as shown in the table below:

LED Luminaire	Catalog Number
Eaton	NVN-AF-05-LED-U-T2 NVN-AF-05-LED-U-T3

The lighting system was designed using these values:

Roadway Classification: Principal Arterial - Commercial	
Average Maintained Illuminance	1.6 foot-candles
Average Maintained Illuminance – Roundabout	2.0 foot-candles
Illuminance Uniformity Ratio	3:1
Light Loss Factor	0.69

770-P04 FEED POINT TYPE II, IV PAD MOUNTED and FEED POINT TYPE I, POLE MOUNTED: Coordinate with the electric utility company (Montana-Dakota Utilities) to provide new electrical services for the new feed point cabinets. Coordinate the installation of new service conductors and conduit between the feed point and utility transformer.

Provide 2” conduit for the service conductors between the metersocket on the Feed Point cabinet to the utility transformer. Provide rigid steel conduit where exposed. Provide continuous conduit, at 24” below grade, between the utility transformer and the metersocket.

Orientate the feedpoint as shown on the plans and as directed by the Engineer. Install the photocell to face north.

770-P05 CONCRETE FOUNDATION HIGHWAY LIGHTING: Provide light standard foundations as shown in Section 140 and according to D-770-1. Bolt circle and projection to be verified with manufacturer specifications. Include spare conduit and cap end at all foundation located at end of a circuit.

770-P06 CONCRETE FOUNDATION-FEED POINT-TYPE B: Install top of concrete foundation level and at an elevation to prevent water inundation of cabinet. Duct seal all conduits with wire. Provide two spare 2” PVC conduits in the foundation. Provide conduit caps, with an oil-tight

plug and wing nut on the spare conduit sweeps and label each as to the direction each sweep faces.

770-P07 REMOVE LIGHTING SYSTEM: Remove and salvage all light standards, mast arms, and luminaires designated in Section 140. Deliver the mast arms and standards to the City of Mandan Landfill (Address: 4103 CO RD 82; Phone: 667-0184). Remove all conductors, pull boxes, and foundations associated with the removed light standards. Remove all existing light foundations a minimum of 2-foot below the existing ground. Removed pull boxes and wire become the property of the Contractor. Upon removal, grade the disturbed areas to match preconstruction conditions. Seed the disturbed areas per with Class I seed and mulch with hydraulic mulch. Include all labor, materials, and equipment necessary to perform this described work in the contract unit price for “Remove Lighting System”.

770-P08 REVISE LIGHTING SYSTEM: The Starion Sports Complex sign at station 3812+80, LT has existing lighting for their sign. Prior to construction in that area, remove and salvage the existing lights, mounting hardware, and junction boxes. Upon completion, reinstall the lights and associated salvaged items to adequately illuminate the existing sign. Include all costs for this work including, removing and replacing all conductors and conduits in the bid price for “Revise Lighting System”.

Coordinate with the landowner prior to any of this work taking place.

770-P09 EXISTING UTILITIES: Pot-hole existing utilities prior to installation of proposed lighting foundations to ensure location and depths are not in conflict with the proposed lighting foundation locations. Coordinate with the Engineer to revise the proposed lighting foundation locations as necessary to eliminate conflict with existing utilities. Include all cost for equipment, material, and labor required to pot-hole existing utilities in the lump sum prices bid “LIGHTING SYSTEM A”, “LIGHTING SYSTEM B”, AND “LIGHTING SYSTEM C”. No additional payment will be made for revisions to proposed lighting foundation locations due to conflict with existing utilities.

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Traci K. Sletmoe,
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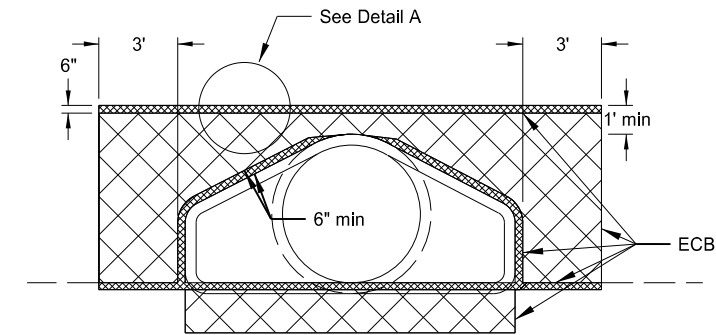
Estimated Quantities					Revised	11/4/2020	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
							ND	NHU-1-806(052)071	8	1
					IM-1-094(200)153					
SPEC	CODE	ITEM DESCRIPTION		UNIT	NHU-Federal Eligible	NHU-100% City Funds	IM-Federal Eligible		TOTAL	
103	0100	CONTRACT BOND	Mainline	L SUM	0.9		0.1		1	
201	0330	CLEARING & GRUBBING	Mainline	L SUM	1				1	
202	0114	REMOVAL OF CONCRETE PAVEMENT	Mainline	SY	2702				2702	
202	0130	REMOVAL OF CURB & GUTTER	Mainline	LF	2020		229		2249	
202	0135	REMOVAL OF BITUMINOUS SURFACING	Mainline	TON	13033		1115		14148	
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	Mainline	LF	1403				1403	
202	0210	REMOVAL OF MANHOLES	Mainline	EA	3				3	
202	0230	REMOVAL OF INLETS	Mainline	EA	4				4	
202	0235	REMOVAL OF CATCH BASIN	Mainline	EA	1				1	
202	0312	REMOVE EXISTING FENCE	Mainline	LF	1623				1623	
203	0101	COMMON EXCAVATION-TYPE A	Mainline	CY	9325				9325	
203	0109	TOPSOIL	Mainline	CY	8229		175		8404	
203	0138	COMMON EXCAVATION-SUBCUT	Mainline	CY			894		894	
203	0140	BORROW-EXCAVATION	Mainline	CY	19186				19186	
216	0100	WATER	Mainline	M GAL	970		112		1082	
251	0100	SEEDING CLASS I	Mainline	ACRE	0.965				0.965	
251	0300	SEEDING CLASS III	Mainline	ACRE	10.533		0.6		11.133	
251	2000	TEMPORARY COVER CROP	Mainline	ACRE	11.446		0.428		11.874	
253	0201	HYDRAULIC MULCH	Mainline	ACRE	18.41		1.028		19.438	
255	0101	ECB TYPE 1	Mainline	SY	21938				21938	
260	0100	SILT FENCE UNSUPPORTED	Mainline	LF	2066		49		2115	
260	0101	REMOVE SILT FENCE UNSUPPORTED	Mainline	LF	2066		49		2115	
261	0112	FIBER ROLLS 12IN	Mainline	LF	8941		776		9717	
261	0113	REMOVE FIBER ROLLS 12IN	Mainline	LF	6456		238		6694	
302	0050	TRAFFIC SERVICE AGGREGATE	Mainline	TON	5289		399		5688	
302	0120	AGGREGATE BASE COURSE CL 5	Mainline	TON	21061		2558		23619	
302	0320	AGGREGATE SURFACE COURSE CL 5	Mainline	TON	527				527	
401	0050	TACK COAT	Mainline	GAL	4076		531		4607	
401	0060	PRIME COAT	Mainline	GAL	4505		208		4713	
401	0160	BLOTTER MATERIAL CL 44	Mainline	TON	137		7		144	
411	0105	MILLING PAVEMENT SURFACE	Mainline	SY	7498		5842		13340	
430	0045	SUPERPAVE FAA 45	Mainline	TON	7010		756		7766	
430	1000	CORED SAMPLE	Mainline	EA	74		10		84	
430	5806	PG 58H-28 ASPHALT CEMENT	Mainline	TON	421		46		467	
550	0300	8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	Mainline	SY	6052				6052	
550	0330	NON-REINF CONCRETE PVMT CL AE-DOWELED-COLORED	Mainline	SY	642				642	
570	0650	CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED	Mainline	SY	593		344		937	
570	0963	TRANSVERSE PCC JOINT CLEANING & SEALING	Mainline	LF	3080		240		3320	
570	0965	LONGITUDINAL PCC JOINT CLEANING & SEALING	Mainline	LF	5284		445		5729	
570	0966	RANDOM PCC CRACK CLEANING & SEALING	Mainline	LF	87		448		535	
570	1512	SPALL REPAIR-PARTIAL DEPTH	Mainline	SF	146		185		331	
702	0100	MOBILIZATION	Mainline	L SUM	0.9		0.1		1	
704	0100	FLAGGING	Mainline	MHR	4500		48		4548	
704	1000	TRAFFIC CONTROL SIGNS	Mainline	UNIT	4165		996		5161	
704	1020	ATTENUATION DEVICE SPECIAL	Mainline	EA	2				2	
704	1050	TYPE I BARRICADE	Mainline	EA	20				20	
704	1052	TYPE III BARRICADE	Mainline	EA	16		2		18	

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SPEC	CODE	ITEM DESCRIPTION		UNIT	NHU-Federal Eligible	NHU-100% City Funds	IM-Federal Eligible		TOTAL		
704	1058	PEDESTRIAN WALKWAY	Mainline	LF	586				586		
704	1060	DELINEATOR DRUMS	Mainline	EA	201		38		239		
704	1067	TUBULAR MARKERS	Mainline	EA	133		96		229		
704	1072	FLEXIBLE DELINEATORS	Mainline	EA	49				49		
704	1080	STACKABLE VERTICAL PANELS	Mainline	EA	349		23		372		
704	1185	PILOT CAR	Mainline	HR	320				320		
704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	Mainline	EA	32				32		
704	4011	PORTABLE CHANGEABLE MESSAGE SIGN	Mainline	EA	4				4		
706	0500	AGGREGATE LABORATORY	Mainline	EA	1				1		
706	0550	BITUMINOUS LABORATORY	Mainline	EA	1				1		
706	0600	CONTRACTOR'S LABORATORY	Mainline	EA	1				1		
708	1531	INLET PROTECTION-FIBER ROLL 12IN	Mainline	EA	33		5		38		
708	1533	REMOVAL INLET PROTECTION-FIBER ROLL 12IN	Mainline	EA	32		3		35		
708	1540	INLET PROTECTION-SPECIAL	Mainline	EA	42				42		
708	1541	REMOVE INLET PROTECTION-SPECIAL	Mainline	EA	42				42		
709	0100	GEOSYNTHETIC MATERIAL TYPE G	Mainline	SY	28878	682	1718		31278		
714	7036	PIPE PVC 18IN	Mainline	LF			564		564		
720	0130	IRON PIN R/W MONUMENTS	Mainline	EA	51				51		
720	0135	IRON PIN REFERENCE MONUMENTS	Mainline	EA	6				6		
722	0100	MANHOLE 48IN	Mainline	EA	9				9		
722	0110	MANHOLE 60IN	Mainline	EA	2				2		
722	0120	MANHOLE 72IN	Mainline	EA	1				1		
722	0300	MANHOLE SANITARY	Mainline	EA		12			12		
722	1100	MANHOLE RISER 48IN	Mainline	LF	37.4	147.7			185.1		
722	1110	MANHOLE RISER 60IN	Mainline	LF	10.3				10.3		
722	1120	MANHOLE RISER 72IN	Mainline	LF	6.3				6.3		
722	3410	MANHOLE REPAIR	Mainline	EA	4				4		
722	3510	INLET-TYPE 2	Mainline	EA	22				22		
722	3520	INLET-TYPE 2 DOUBLE	Mainline	EA	4				4		
722	3701	INLET SPECIAL-TYPE 2 48IN	Mainline	EA	7				7		
722	3720	INLET SPECIAL CATCH BASIN 6IN BEEHIVE 48IN	Mainline	EA	1				1		
722	3761	INLET SPECIAL-TYPE 2 60IN	Mainline	EA	2				2		
722	3766	INLET SPECIAL-TYPE 2 72IN	Mainline	EA	3				3		
722	3768	INLET SPECIAL-TYPE 2 84IN	Mainline	EA	1				1		
722	3900	INLET SLOTTED DRAIN 12IN	Mainline	LF	20				20		
722	4010	INLET CATCH BASIN 6IN BEEHIVE	Mainline	EA	4				4		
722	6140	ADJUST GATE VALVE BOX	Mainline	EA	12				12		
722	6160	ADJUST INLET	Mainline	EA	2		1		3		
722	6200	ADJUST MANHOLE	Mainline	EA	2				2		
722	6240	ADJUST UTILITY APPURTENANCE	Mainline	EA	1				1		
724	0310	GATE VALVE & BOX 8IN	Mainline	EA	1				1		
724	0375	RELOCATE GATE VALVE & BOX	Mainline	EA	1				1		
724	0412	8IN HYDRANT	Mainline	EA	1				1		
724	0427	ADJUST HYDRANT	Mainline	EA	4				4		
724	0430	REMOVE HYDRANT	Mainline	EA	1				1		
724	0830	WATERMAIN 8IN PVC	Mainline	LF	9				9		
724	0891	WATERMAIN MODIFICATIONS	Mainline	L SUM	1				1		

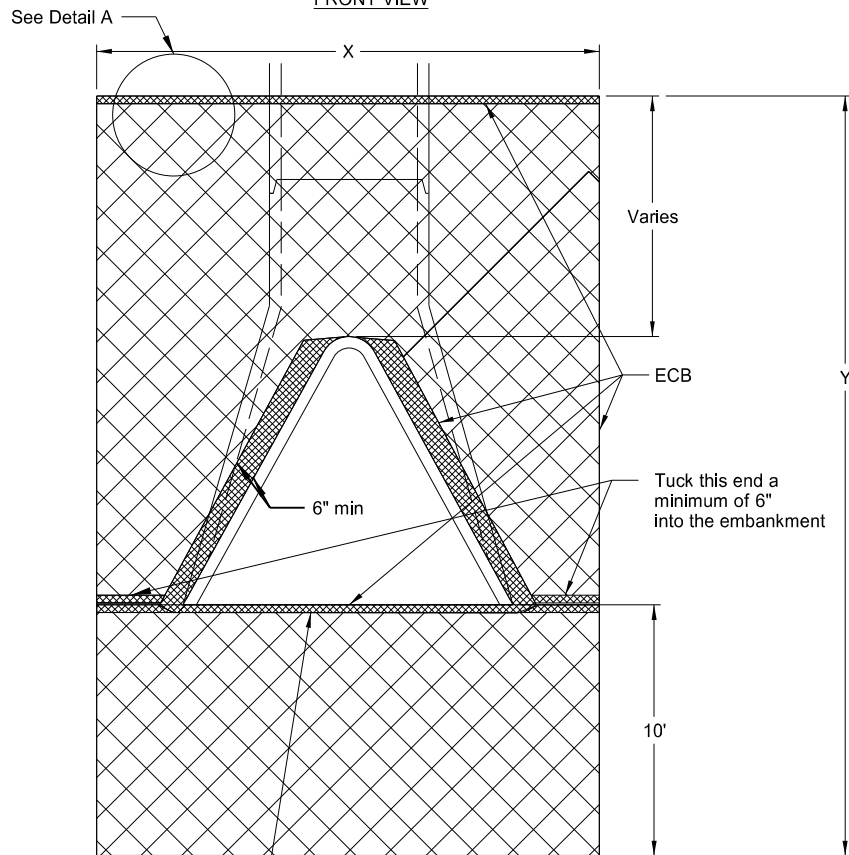
Estimated Quantities					Revised	10/29/2020	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
							ND	NHU-1-806(052)071	8	3
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SPEC	CODE	ITEM DESCRIPTION		UNIT	NHU-Federal Eligible	NHU-100% City Funds	IM-Federal Eligible			TOTAL
724	1035	SPRINKLER RELOCATION	Mainline	L SUM	1					1
724	1124	21IN SANITARY SEWER PIPE	Mainline	LF		3199				3199
724	7014	REMOVE GATE VALVE BOX	Mainline	EA	1					1
744	0050	INSULATION BOARD	Mainline	CF	433					433
748	0100	CURB & GUTTER	Mainline	LF	95		229			324
748	0140	CURB & GUTTER-TYPE I	Mainline	LF	10462					10462
748	0141	CURB & GUTTER-TYPE 1 SPECIAL	Mainline	LF	415					415
748	1020	VALLEY GUTTER 36IN	Mainline	SY	63					63
748	1030	VALLEY GUTTER 72IN	Mainline	SY	82					82
750	0030	PIGMENTED IMPRINTED CONCRETE	Mainline	SY	649					649
750	0115	SIDEWALK CONCRETE 4IN	Mainline	SY	2277					2277
750	0210	CONCRETE MEDIAN NOSE PAVING	Mainline	SY	60.5					60.5
750	1020	DRIVEWAY CONCRETE 8IN	Mainline	SY	784					784
750	2115	DETECTABLE WARNING PANELS	Mainline	SF	424					424
752	0600	FENCE CHAIN LINK	Mainline	LF	435					435
752	0610	FENCE CHAIN LINK-TYPE I	Mainline	LF	65					65
752	3100	CORNER ASSEMBLY CHAIN LINK	Mainline	EA	3					3
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	Mainline	SF	333		39			372
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	Mainline	SF	169		20			189
754	0170	FLEXIBLE DELINEATORS	Mainline	EA	20					20
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	Mainline	LF	951					951
754	0210	GALV STEEL POST-STANDARD PIPE	Mainline	LF			75			75
754	0214	GALV STEEL POSTS-W-SHAPE POSTS(TWO OR MORE)	Mainline	LF			57			57
754	0562	REFERENCE MARKER-TYPE B	Mainline	EA	1					1
754	0592	RESET SIGN PANEL	Mainline	EA	25		4			29
754	0593	RESET SIGN SUPPORT	Mainline	EA	1					1
754	0805	OBJECT MARKERS - CULVERTS	Mainline	EA	20					20
754	1100	CLASS AE CONCRETE-SIGN FOUNDATIONS	Mainline	CY			1			1
754	1104	REMOVE SIGN FOUNDATION	Mainline	EA			7			7
762	0112	EPOXY PVMT MK MESSAGE	Mainline	SF	464		32			496
762	0113	EPOXY PVMT MK 4IN LINE	Mainline	LF	20440		4775			25215
762	0115	EPOXY PVMT MK 8IN LINE	Mainline	LF	611		876			1487
762	0117	EPOXY PVMT MK 24IN LINE	Mainline	LF	224		56			280
762	0122	PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED)	Mainline	SF	253		96			349
762	0436	SHORT TERM 24IN LINE-TYPE NR	Mainline	LF	80					80
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	Mainline	LF	4623		4534			9157
762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	Mainline	LF			354			354
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	Mainline	LF	320		631			951
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	Mainline	LF	538		64			602
766	0120	RESET MAILBOX	Mainline	EA	3					3
770	0003	LIGHTING SYSTEM A	Mainline	EA	1					1
770	0004	LIGHTING SYSTEM B	Mainline	EA	1					1
770	0005	LIGHTING SYSTEM C	Mainline	EA	1					1
770	4525	REVISE LIGHTING SYSTEM	Mainline	EA	1					1
770	4567	REMOVE LIGHTING SYSTEM	Mainline	EA	1					1
930	9551	CONCRETE MODULAR BLOCK RETAINING WALL	Mainline	SF	128					128
970	0001	LANDSCAPING APPURTENANCES	Mainline	L SUM	1					1

Estimated Quantities					Revised 10/29/2020		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
							ND	NHU-1-806(052)071	8	4
								IM-1-094(200)153		
SPEC	CODE	ITEM DESCRIPTION		UNIT	NHU-Federal Eligible	NHU-100% City Funds	IM-Federal Eligible		TOTAL	
970	0060	PLANTING SOIL	Mainline	CY	157				157	
970	0070	STONE MULCH	Mainline	SF	2827				2827	
970	0080	LANDSCAPE BOULDERS	Mainline	TON	34				34	
970	2014	EMBERS AMUR MAPLE - TREE FORM	Mainline	EA	51				51	
970	2032	AUTUMN SPLENDOR BUCKEYE	Mainline	EA	4				4	
970	2194	RED SPLENDOR CRABAPPLE	Mainline	EA	7				7	
970	2202	SPRING SNOW CRABAPPLE	Mainline	EA	6				6	
970	2215	PRINCESS KAY PLUM	Mainline	EA	53				53	
970	2330	BUR OAK	Mainline	EA	4				4	
970	2405	JAPANESE TREE LILAC	Mainline	EA	36				36	
970	2456	PRAIRIE EXPEDITION AMERICAN ELM	Mainline	EA	4				4	
970	6016	DAYLILIES-CONTAINER	Mainline	EA	32				32	
709	0100	GEOSYNTHETIC MATERIAL TYPE G	Bid Option - 1	SY	5409				5409	
714	4091	PIPE CONDUIT 12IN-APPROACH	Bid Option - 1	LF	64				64	
714	4097	PIPE CONDUIT 15IN-STORM DRAIN	Bid Option - 1	LF	1458				1458	
714	4099	PIPE CONDUIT 18IN-APPROACH	Bid Option - 1	LF	318				318	
714	4101	PIPE CONDUIT 18IN-STORM DRAIN	Bid Option - 1	LF	1971				1971	
714	4106	PIPE CONDUIT 24IN-APPROACH	Bid Option - 1	LF	100				100	
714	4107	PIPE CONDUIT 24IN-STORM DRAIN	Bid Option - 1	LF	847				847	
714	4112	PIPE CONDUIT 30IN-STORM DRAIN	Bid Option - 1	LF	415				415	
714	4115	PIPE CONDUIT 36IN	Bid Option - 1	LF	66				66	
709	0100	GEOSYNTHETIC MATERIAL TYPE G	Bid Option - 2	SY	5380				5380	
714	0110	PIPE CONC REINF 12IN CL III	Bid Option - 2	LF	64				64	
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	Bid Option - 2	LF	1458				1458	
714	0310	PIPE CONC REINF 18IN CL III	Bid Option - 2	LF	318				318	
714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	Bid Option - 2	LF	1971				1971	
714	0615	PIPE CONC REINF 24IN CL III	Bid Option - 2	LF	100				100	
714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN	Bid Option - 2	LF	847				847	
714	0825	PIPE CONC REINF 30IN CL III-STORM DRAIN	Bid Option - 2	LF	415				415	
714	0905	PIPE CONC REINF 36IN CL III	Bid Option - 2	LF	66				66	

Revised	10/20/20	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-1-806(052)071	20	11
			IM-1-094(200)153		



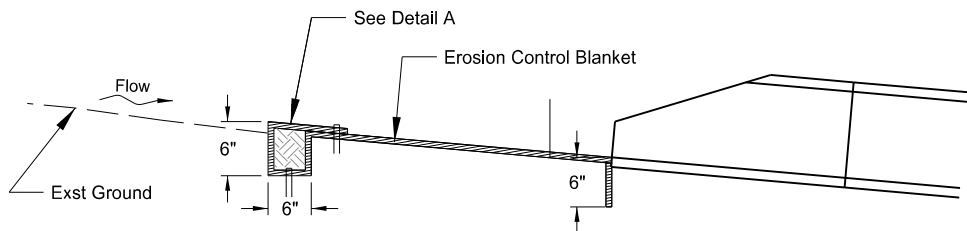
FRONT VIEW



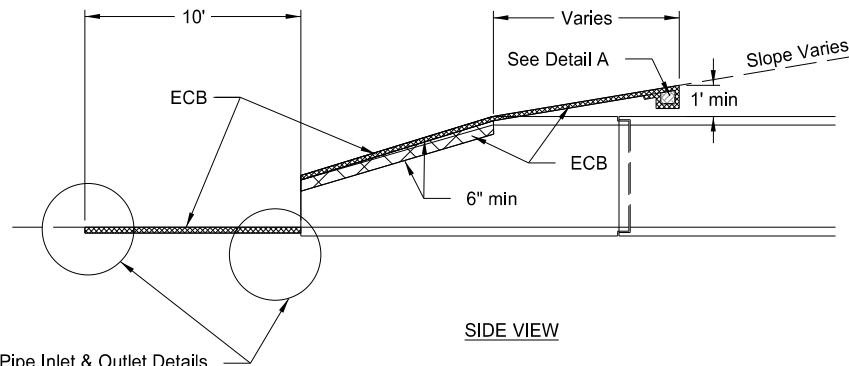
Inlet Side - See applicable detail for pipe inlet

Outlet Side - See applicable detail for pipe outlet

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

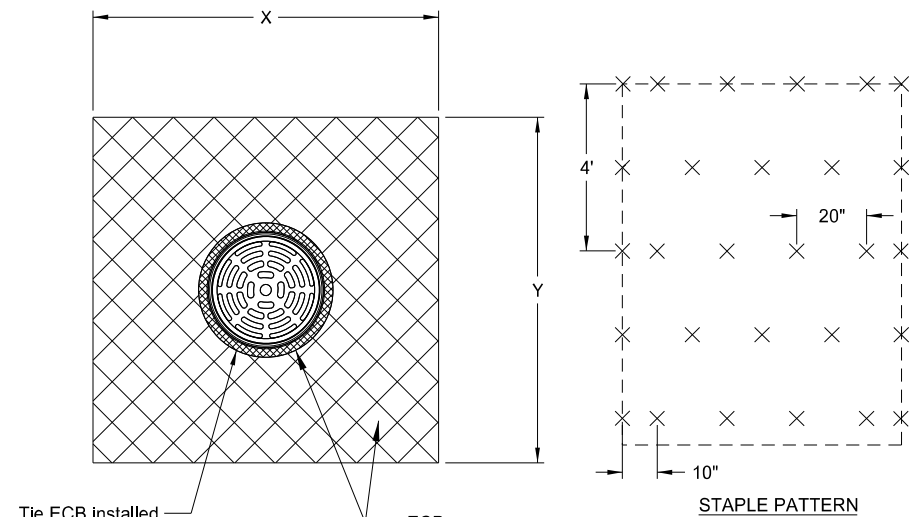


PIPE INLETS



SIDE VIEW

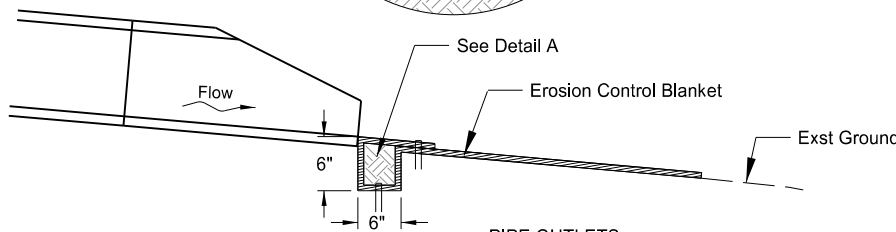
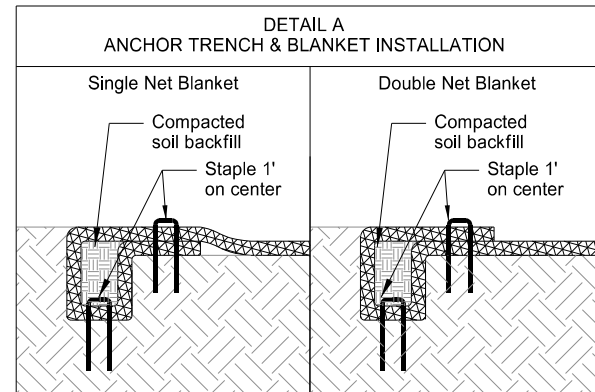
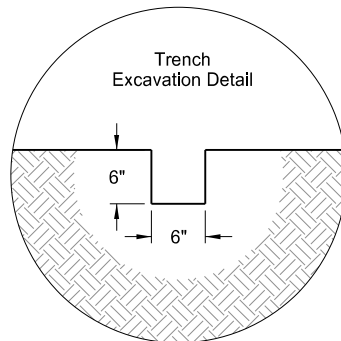
See Pipe Inlet & Outlet Details



Tie ECB installed along perimeter of catch basin 6" into the ground

TOP VIEW Catch Basin

STAPLE PATTERN



PIPE OUTLETS

255 0103 ECB TYPE 3							
Location of Surface Area to be Protected Manhole / Inlet No. or Station / Offset	Alignment	Pipe Diameter (IN)	No.	X (FT)	Y (FT)	Unit Quantity (SY)	Total Quantity (SY)
NHU-1-802(052)071							
202A	-	Catch Basin	1	9.0	9.0	9	9
202B	-	Catch Basin	1	9.0	9.0	9	9
207C	-	Catch Basin	1	9.0	9.0	9	9
3801+27	Rt	PR1806	18	2	9.5	16.7	19
3801+69	Lt	PR1806	15	1	9.5	16.7	19
3807+07	Rt	PR1806	18	1	9.5	16.7	19
3809+29	Rt	PR1806	18	1	9.5	16.7	19
3815+49	Rt	PR1806	24	1	10.5	17.6	20
3815+88	Lt	PR1806	18	1	9.5	16.7	19
217A	-	Catch Basin	1	9.0	9.0	9	9
3821+63	Lt	PR1806	24	1	10.5	17.6	20
3823+87	Lt	PR1806	24	2	10.5	17.6	20
3825+70	Lt	PR1806	24	2	10.5	17.6	20
3825+70	Rt	PR1806	18	2	9.5	16.7	19
3833+65	Lt	PR1806	18	2	9.5	16.7	19
3843+37	Rt	PR1806	12	2	9.0	16.5	16.5
3843+41	Rt	PR1806	12	2	9.0	16.5	16.5
3846+10	Lt & Rt	PR1806	36	2	12.7	19.2	24
3846+90	Lt	PR1806	15	1	9.5	16.7	19
3849+54	Lt	PR1806	18	2	9.5	16.7	19
3850+64	Lt	PR1806	15	1	9.5	16.7	19
13+08	Lt	EXCOL	30	1	11.6	18.5	22
IM-1-094(200)153							
1016+67	Lt & Rt	EX94SWR	24	2	10.5	17.6	20

Note: See Sec 77 for quantities.

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Ryan R Sundberg
Registration Number
PE-10775
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ND 1806

Erosion Control at Culvert Flared End Sections

CENTERLINE CULVERTS																
BEGIN STATION	BEGIN OFFSET	END STATION	END OFFSET	PIPE INSTALLATION PAY ITEM			ALLOWABLE MATERIAL	REQUIRED DIAMETER (IN)	STEEL PIPE COATINGS (TYPE)	STEEL PIPE CORRUGATIONS OF SPIRAL RIBS	MINIMUM THICKNESS (IN)	**Geosythetic Material - Type G (PAY ITEM) (SY)	***Geosythetic Material - Type G (PAY ITEM) (SY)	*END SECTIONS		APPLICABLE BACKFILL DETAIL
				(IN)	(BID ITEM)	(LF)								BEGIN (EA)	END (EA)	
NHU-1-806(052)071																
3846+10.0	32.2' Lt	3846+10.0	32.6' Rt	36	PIPE CONDUIT	66	Reinforced Concrete Pipe - Class III (Barrel Length = 62 LF)	36				346	323	TES	TES	Section 20, Sheet 17 & 18
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064					
							Spiral Rib Steel Pipe	36	A	3/4, 1	0.109					
							Corrugated Steel Pipe	42	P	2	0.064					
							Corrugated Steel Pipe	42	A	2	0.109					
							Corrugated Steel Pipe	42	Z	2	0.138					

Coatings: Z = Zinc
A = Aluminum
P = Polymeric (over Zinc or Aluminum)

Corr 2 = 2-2/3"x1/2"
3 = 3"x1"
5 = 5"x1"

Spiral Ribs: 3/4 = 3/4"x3/4"@7-1/2"
1 = 3/4"x1"@11-1/2"

(*) End sections are measured and paid for separately for pipe extensions.
(**) Bid Option 1
(***) Bid Option 2
FES = Flared End Section
TES = Traversable End Section

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PE- 5786,
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ND 1806
Allowable Pipe List
Centerline Culverts

APPROACH CULVERTS														
BEGIN STATION	BEGIN OFFSET	END STATION	END OFFSET	PIPE INSTALLATION PAY ITEM			ALLOWABLE MATERIAL	REQUIRED DIAMETER	STEEL PIPE COATINGS	STEEL PIPE CORRUGATIONS OF SPIRAL RIBS	MINIMUM THICKNESS	*END SECTIONS		APPLICABLE BACKFILL DETAIL
				(IN)	(BID ITEM)	(LF)						BEGIN (EA)	END (EA)	
NHU-1-806(052)071														
3800+95.0	38.6' Rt	3801+55.0	38.6' Rt	18	Pipe Conduit - Approach	60	Reinforced Concrete Pipe - Class III (Barrel Length = 54 LF)	18				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	18	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	18	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	18						
							Polypropylene Pipe (AASHTO M330, Type S)	18						
3823+62.3	42.9' Lt	3824+08.3	43.1' Lt	24	Pipe Conduit - Approach	46	Reinforced Concrete Pipe - Class III (Barrel Length = 42 LF)	24				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	24	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	24	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	24						
							Polypropylene Pipe (AASHTO M330, Type S)	24						
3825+11.2	47.7' Rt	3826+21.2	49.1' Rt	18	Pipe Conduit - Approach	110	Reinforced Concrete Pipe - Class III (Barrel Length = 104 LF)	18				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	18	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	18	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	18						
							Polypropylene Pipe (AASHTO M330, Type S)	18						
3825+42.6	42.6' Lt	3825+96.6	40.6' Lt	24	Pipe Conduit - Approach	54	Reinforced Concrete Pipe - Class III (Barrel Length = 50 LF)	24				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	24	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	24	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	24						
							Polypropylene Pipe (AASHTO M330, Type S)	24						
3833+25.2	47.5' Lt	3834+11.6	49.9' Lt	18	Pipe Conduit - Approach	88	Reinforced Concrete Pipe - Class III (Barrel Length = 82 LF)	18				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	18	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	18	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	18						
							Polypropylene Pipe (AASHTO M330, Type S)	18						
3843+37.0	59.7' Rt	3843+37.0	91.2' Rt	12	Pipe Conduit - Approach	32	Reinforced Concrete Pipe - Class III (Barrel Length = 24 LF)	12				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	12	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	12	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	12						
							Polypropylene Pipe (AASHTO M330, Type S)	12						
3843+41.0	59.7' Rt	3843+41.0	91.3' Rt	12	Pipe Conduit - Approach	32	Reinforced Concrete Pipe - Class III (Barrel Length = 24 LF)	12				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	12	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	12	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	12						
							Polypropylene Pipe (AASHTO M330, Type S)	12						
3849+19.9	46.0' Lt	3849+79.8	47.7' Lt	18	Pipe Conduit - Approach	60	Reinforced Concrete Pipe - Class III (Barrel Length = 54 LF)	18				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	18	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	18	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	18						
							Polypropylene Pipe (AASHTO M330, Type S)	18						

Coatings: Z = Zinc
A = Aluminum
P = Polymeric (over Zinc or Aluminum)

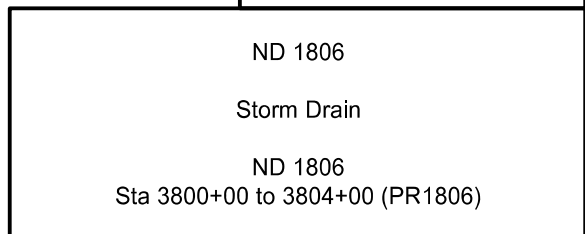
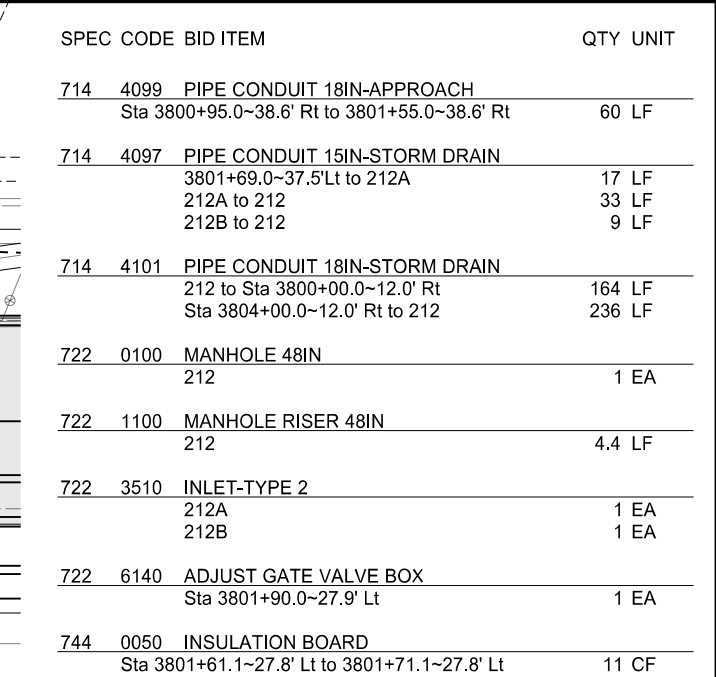
Corr 2 = 2-2/3"x1/2"
3 = 3"x1"
5 = 5"x1"

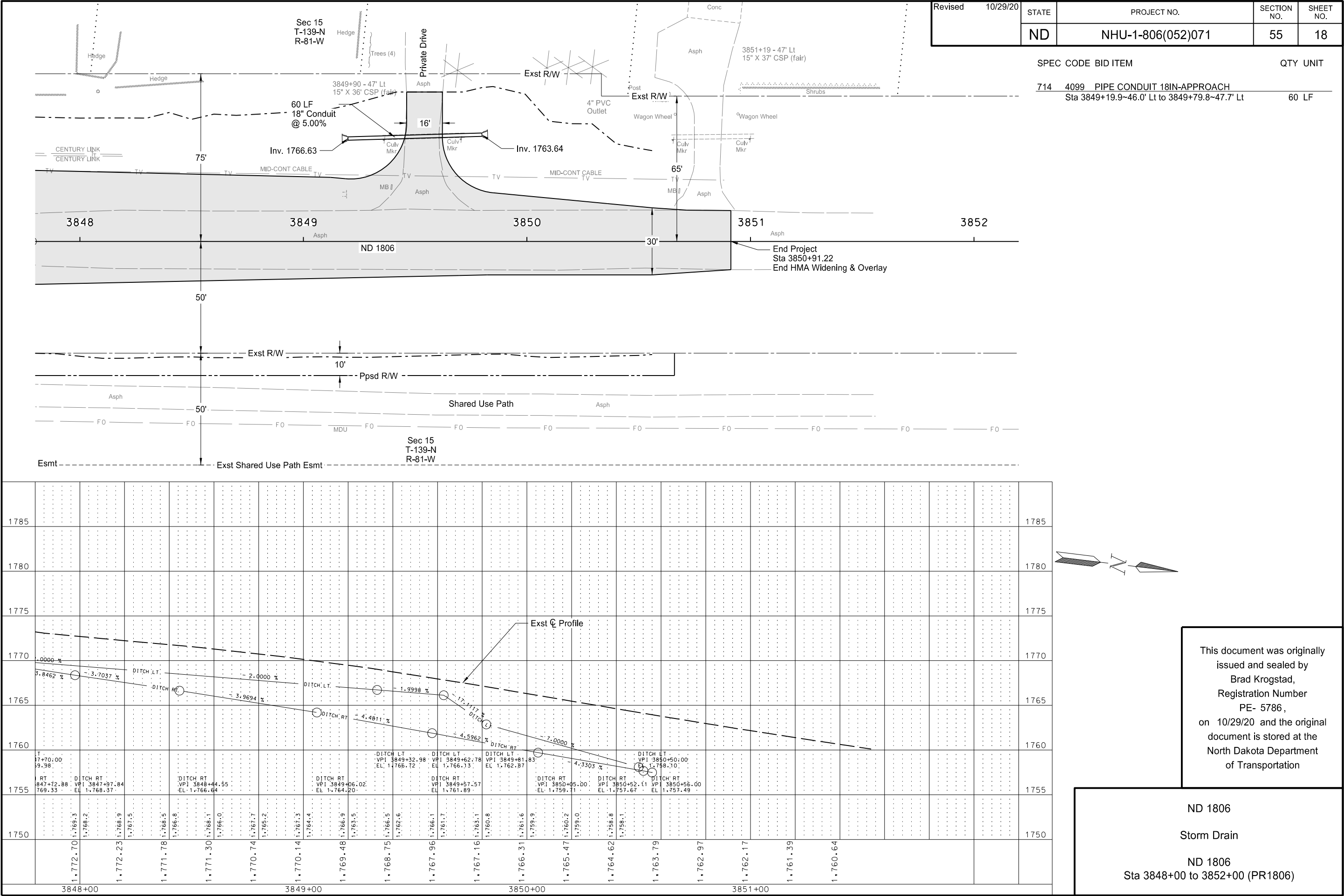
Spiral Ribs: 3/4 = 3/4"x3/4"@7-1/2"
1 = 3/4"x1"@11-1/2"

(*) End sections are measured and paid for separately for pipe extensions.
(**) Bid Option 1
(***) Bid Option 2
FES = Flared End Section
TES = Traversable End Section

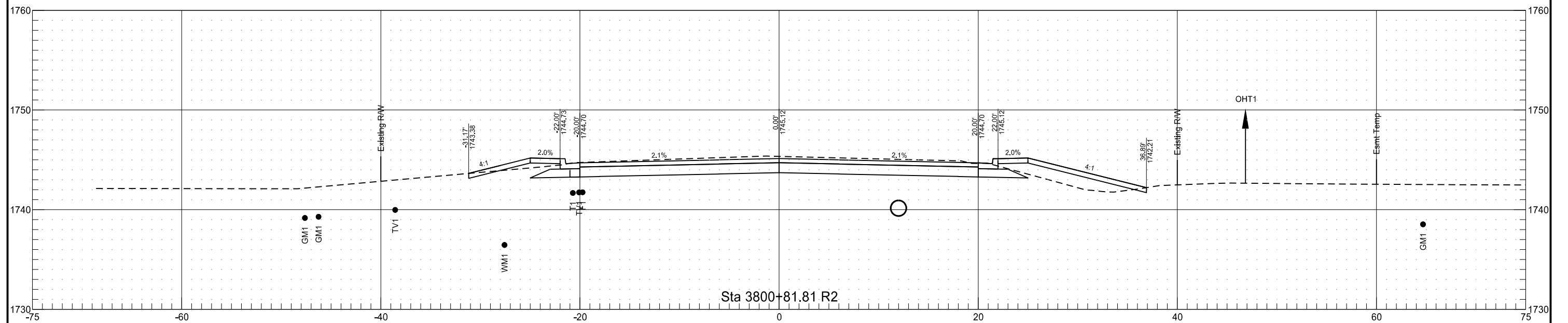
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ND 1806
Allowable Pipe List
Approach Culverts

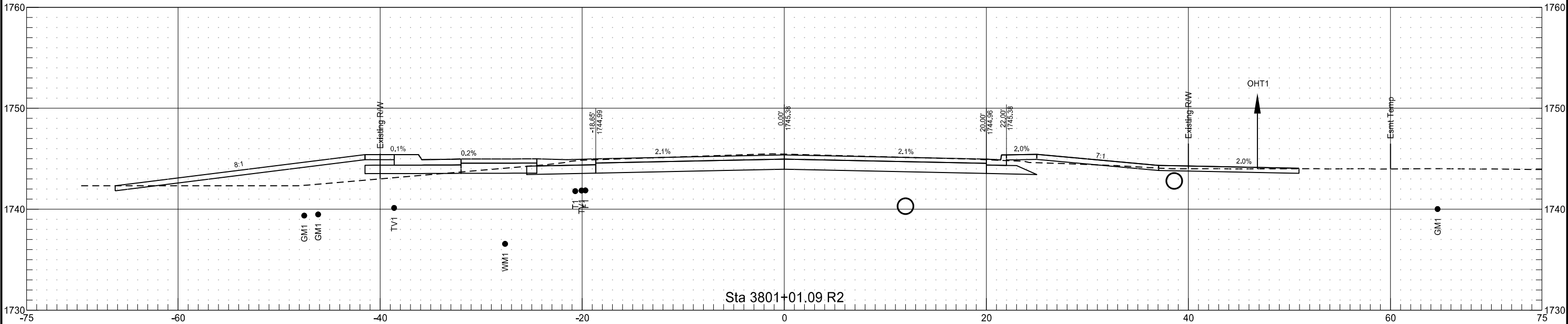
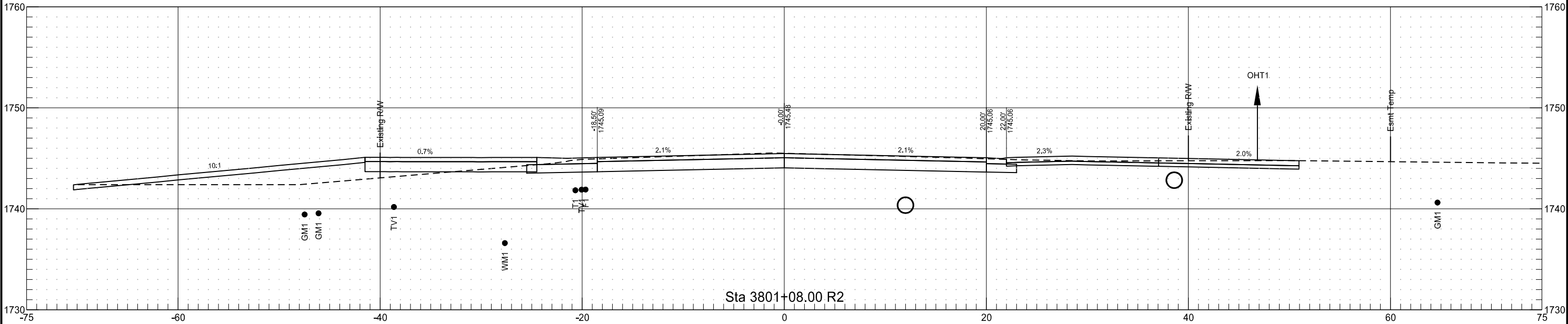




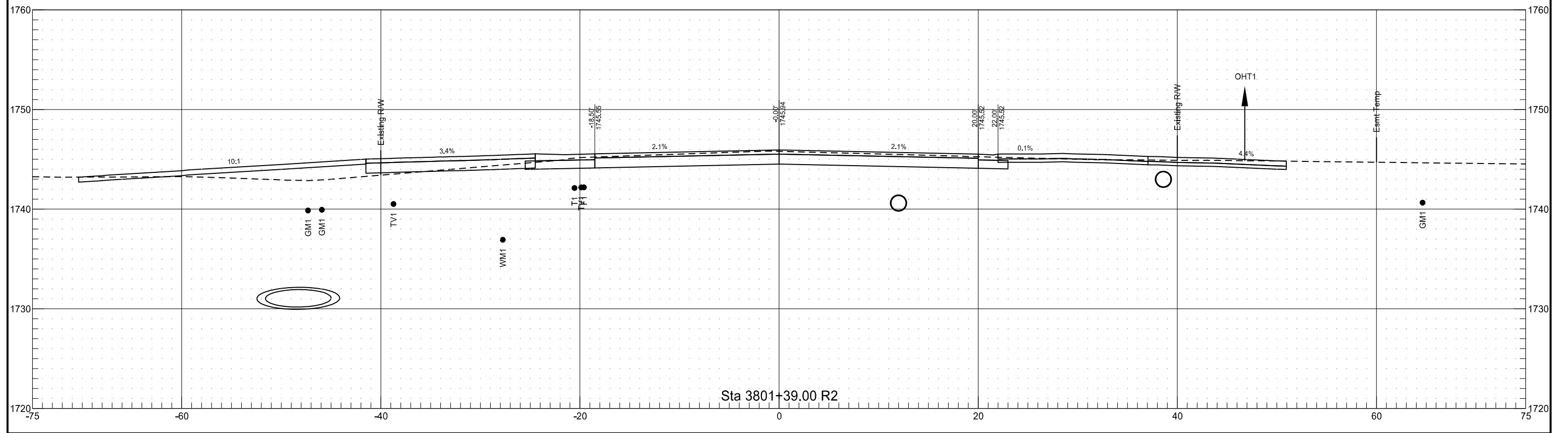
Revised 10/20/20	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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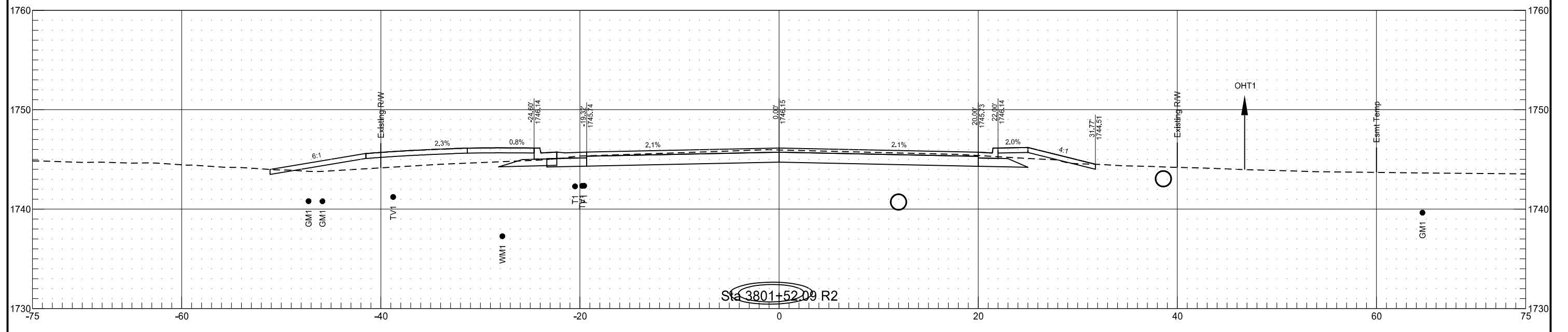
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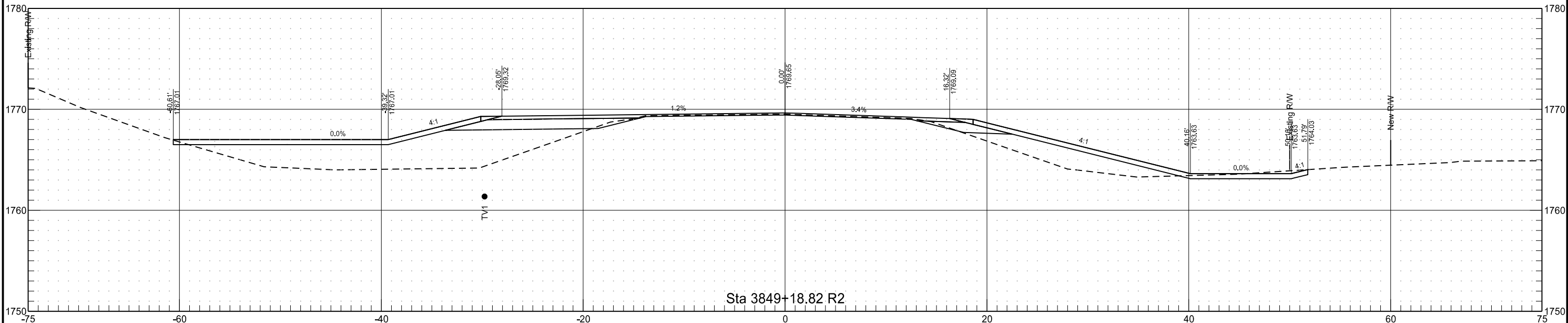
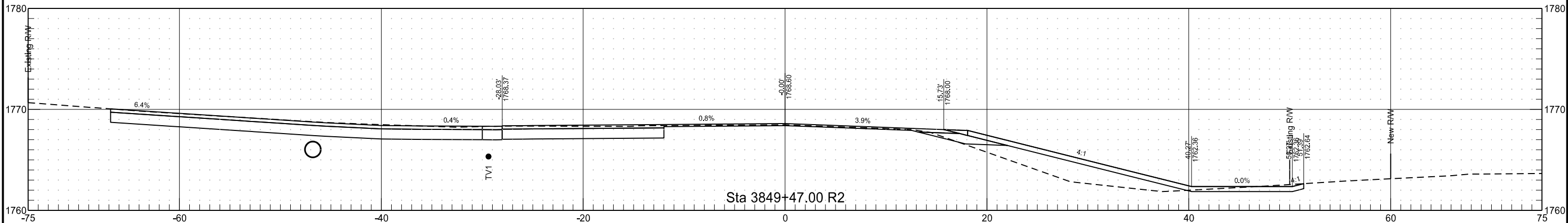
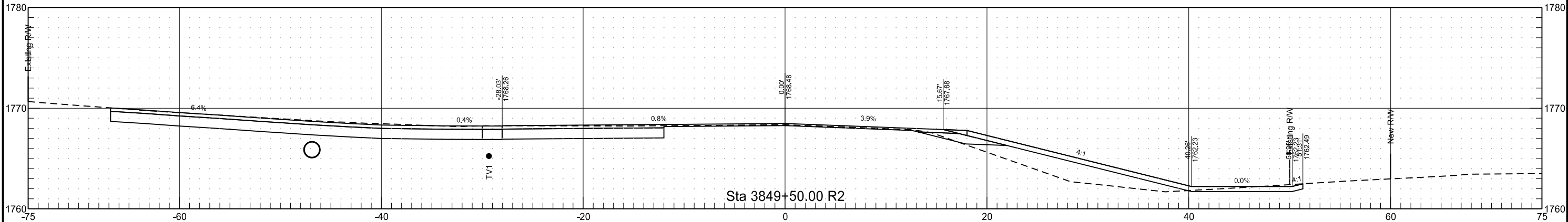
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Revised 10/20/20	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	200	39



Revised	10/20/20	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-1-806(052)071	200	107



ND 1806

Revised 10/20/20

STATE

PROJECT NO.

SECTION NO.

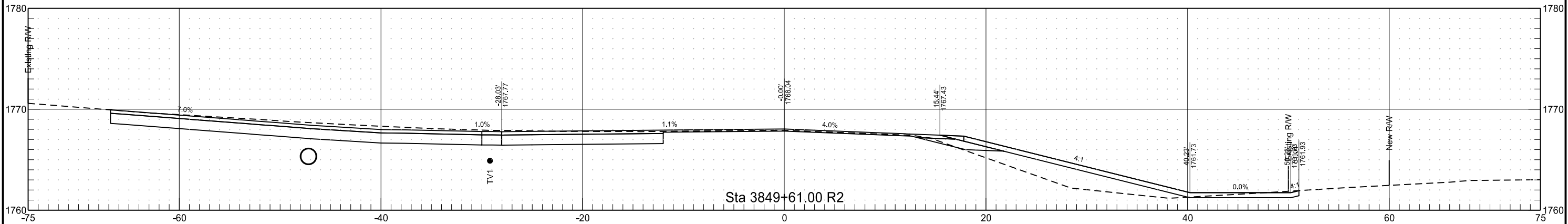
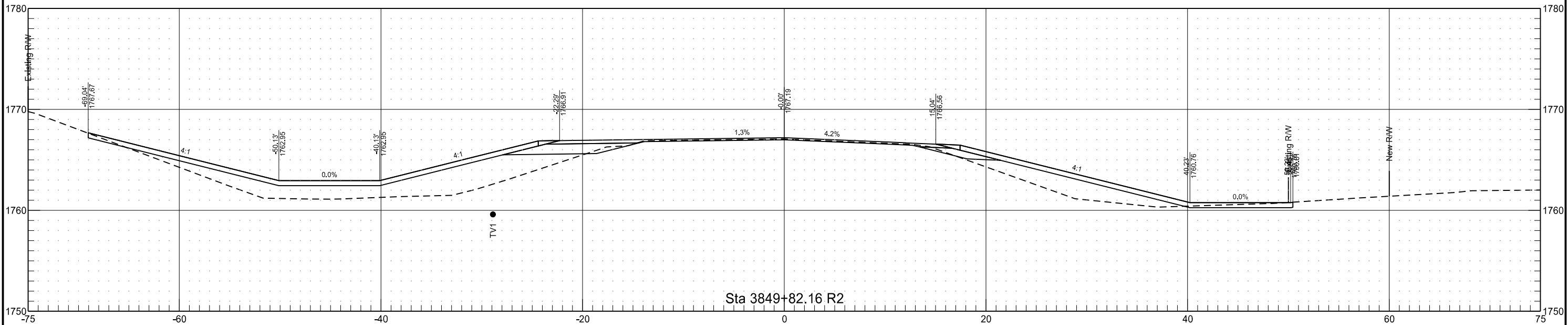
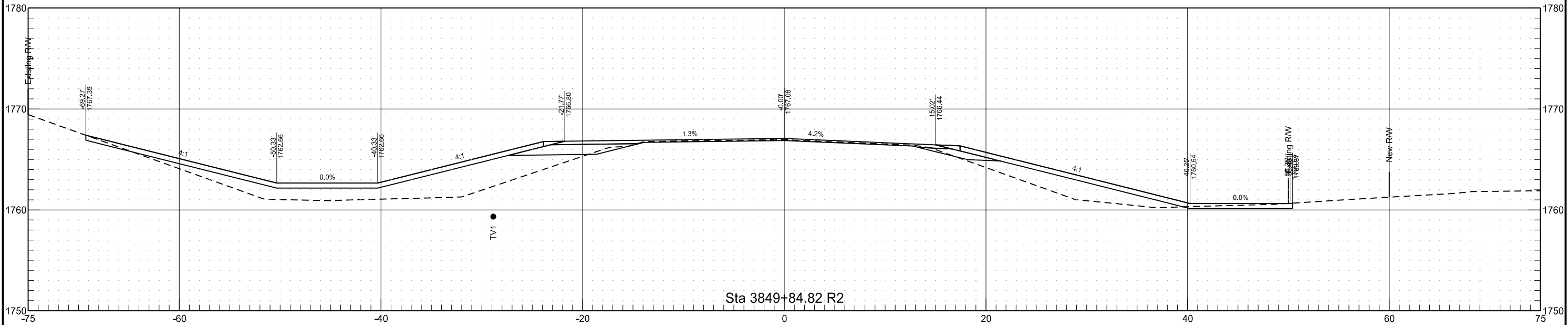
SHEET NO.

ND

NHU-1-806(052)071

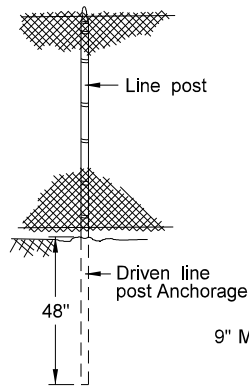
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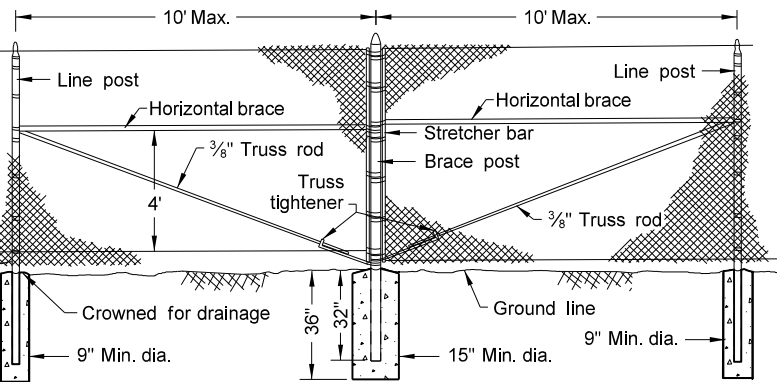


CHAIN LINK FENCE

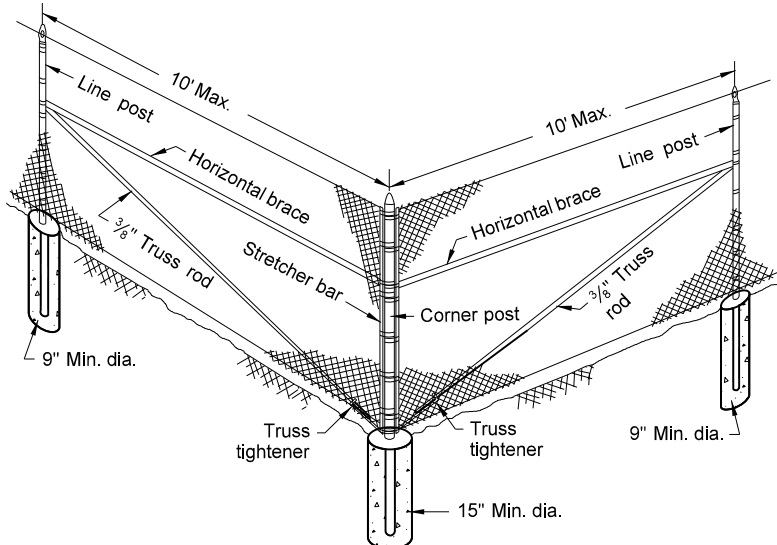
ALTERNATE
LINE POST
ANCHORAGE



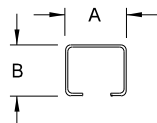
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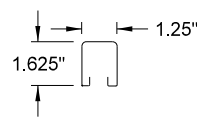
DOUBLE BRACE ASSEMBLY



CORNER ASSEMBLY

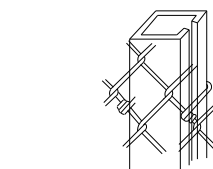


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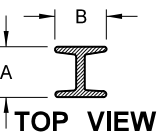


TOP &
BRACE RAIL

ROLL FORMED POST

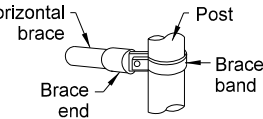


ROLL FORMED POST

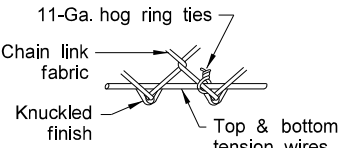


TOP VIEW

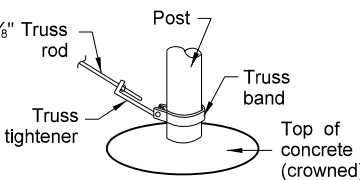
"H" COLUMN POST



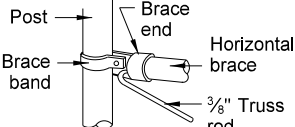
BRACE
ATTACHMENT



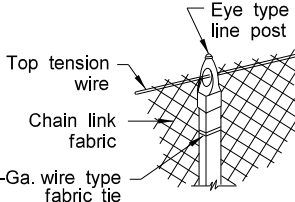
HOG RING
FASTENER DETAIL



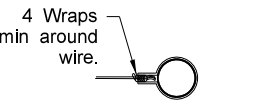
TRUSS ATTACHMENT
AT TERMINAL POSTS



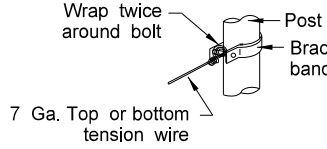
BRACE & TRUSS
ATTACHMENT



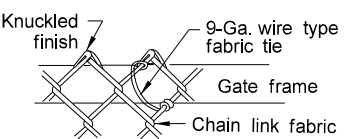
LINE POST TOP DETAIL



TOP VIEW



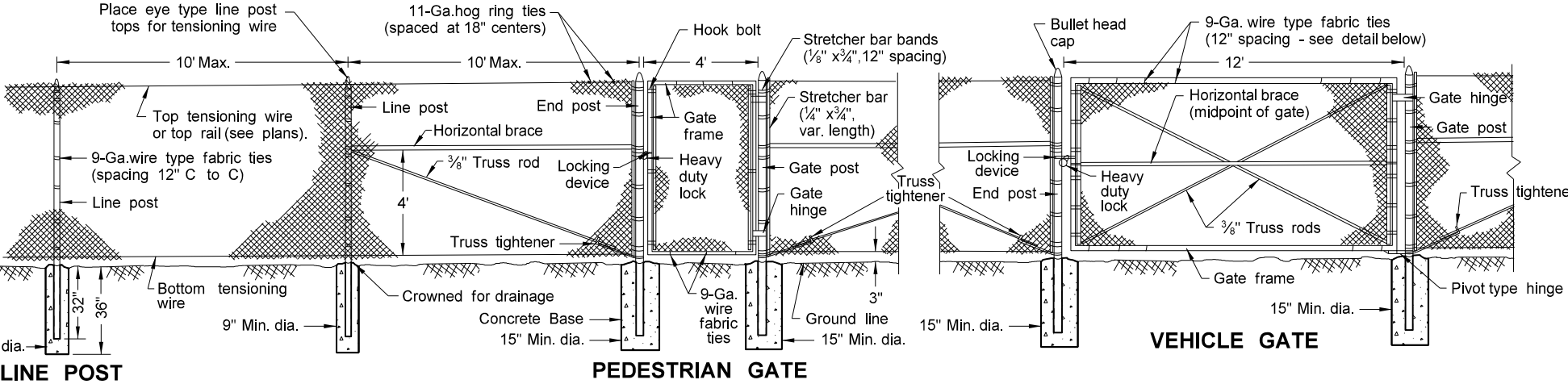
TENSION WIRE
ANCHORAGE



WIRE TYPE FABRIC
TIE DETAIL



STRETCHER
BAR BAND



PEDESTRIAN GATE

VEHICLE GATE

NOTES:

1. Install double brace assemblies at locations shown on the plans or established by the Engineer. Place adjacent fence terminals, corner assemblies, or double brace assemblies at a maximum spacing of 1000 feet. No deduction in measured pay length of chain link fence for gates, corner assemblies, double brace assemblies, or fence terminals.
2. Provide miscellaneous fittings of the type and size recommended by the manufacturer of the fence and approved by the Engineer.
3. Use 6' High fabric unless otherwise shown on the plans.
4. Use Class YE concrete for post bases in accordance with Sec. 802 of the Standard Specifications. Use size No. 4 or 5 course aggregate for concrete mix, but do not change during the work, except by Engineer's written permission.
5. Use any of the types of posts shown in the table of equivalent post sizes and weights for the specified use.
6. Do not connect private fences to highway right-of-way fence.
7. Use a concrete anchorage for all end, corner, and brace posts, and for first line post(s) adjacent to terminal posts.

EQUIVALENT POST SIZES AND WEIGHTS										
USE OF POST	FABRIC HEIGHT	ROUND STEEL			ROLL FORMED			"H" COLUMN STEEL		
		Size	Weight - Lbs./Ft.		Size		Weight	Size		Weight
		Out. Dia.	Grade 1	Grade 2	A	B	Lbs./Ft.	A	B	Lbs./Ft.
LINE POST	6' or less	1.900"	2.72	2.28	1.875"	1.625"	2.40	2.25"	1.70"	3.26
	Over 6'	2.375"	3.65	3.12	2.25"	1.70"	2.78	2.25"	1.70"	3.26
END or CORNER	6' or less	2.375"	3.65	3.12	ROLL FORMED STEEL POSTS NOT PERMITTED			"H" COLUMN STEEL POSTS NOT PERMITTED		
	Over 6'	2.875"	5.79	4.64						
BRACE POST	6' or less	2.375"	3.65	3.12						
	Over 6'	2.875"	5.79	4.64						
GATE POST	6' or less	3.500"	7.58	5.71						
	Over 6'	4.000"	9.11	6.56						
EXTERIOR FRAME FOR GATE	Gate width 6' or less	1.660"	2.27	1.84						
	Gate width over 6'	1.900"	2.72	2.28						
HORIZONTAL BRACE	All	1.660"	2.27	1.84	1.625" x 1.25"		1.35			

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-5-09	
REVISIONS	
DATE	CHANGE
9-28-10	Revised Equivalent Post Sizes and Weights, details, & notes. Updated to active voice.
10-17-17	

This document was originally issued and sealed by
Roger Weigel,
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