North Dakota Department of Transportation

Thomas K. Sorel
Director

Doug Burgum
Governor

October 31, 2018

ADDENDUM 2 – JOB 2

TO: All prospective bidders on Project SU-8-984(164), Job No. 2 scheduled for the November 9, 2018 bid opening.

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

Plan Revisions:

See attached summary from Adam Ruud, P.E. dated October 30, 2018 for an explanation.

Request for Proposal Revisions:

Remove and replace pages 5 thru 15 of 17 of the Proposal pages located at the beginning of the Request for Proposal with pages revised 10/31/2018.

The following changes were made to the Bid Items:

Spec	Code	Description	Unit	Previous Quantity	Revised Quantity
202	0130	REMOVAL OF CURB & GUTTER	LF	1,748	2,218
202	0136	REMOVAL OF PAVEMENT	TON	37,210	38,763
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	2,429	2,444
251	0300	SEEDING CLASS III	ACRE	17.77	17.85
251	2000	TEMPORARY COVER CROP	ACRE	17.77	17.85
253	0201	HYDRAULIC MULCH	ACRE	17.77	17.85
253	0301	BONDED FIBER MATRIX	ACRE	17.77	17.85
302	0101	SALVAGED BASE COURSE	CY	32,167	32,836
401	0050	TACK COAT	GAL	188	737
401	0060	PRIME COAT	GAL	1,052	1,591
430	0043	SUPERPAVE FAA 43	TON	1,848	2,313
430	5834	PG 58-34 ASPHALT CEMENT	TON	111	139
704	1052	TYPE III BARRICADE	EA	35	53
722	3510	INLET TYPE 2	EA	21	19
722	3701	INLET SPECIAL-TYPE 2 48 IN	EA	16	18
724	0210	FITTINGS DUCTILE IRON	LBS	3,600	3,446
724	0850	WATERMAIN 12IN PVC	LF	2,832	2,853
724	0852	WATERMAIN 16IN PVC	LF	213	207
748	0140	CURB & GUTTER-TYPE I	LF	34,079	34,650
750	0030	PIGMENTED IMPRINTED CONCRETE	SY	4,032	4,187
750	1000	DRIVEWAY CONCRETE	SY	298	341
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	461	446
754	0112	FLAT SHEET FOR SIGNS-TYPE IV RELF SHEETING	SF	240	319
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	1,133	1,073
762	0420	SHORT TERM 4IN LINE-TYPE R	LF	7,020	10,717
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	1,090	1,730
764	9010	ATTENUATING CRASH CUSHION TL-2	EA	0	5
772	9812	TRAFFIC SIGNAL SYSTEM-SITE 2	EA	0	1
970	0320	TRASH RECEPTACLE	EA	0	2

Replace SP 742(14) TRAFFIC SIGNAL SYSTEM with the updated version dated 10/26/2018.

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: jwj
Enclosure

October 30, 2018

To: All prospective bidders on Project SU-8-984(164), PCN 22007, scheduled for the November 9, 2018 bid opening.

The following plan revisions shall be made:

Remove and replace all sheets listed below, with the enclosed revised sheets.

Section 2 Sheet 1	Modified page numbers due to revisions noted below
Section 6 Sheet 1-10	Note 100-P01, modified project descriptions Note 100-P02, included completion dates and associated penalty references Note 203-P03, modified note to state borrow excavation to be paid based on plan quantity Note 251-P01, updated seed mixture Note 704-P02, updated traffic control phasing Note 714-P01, revised to specify Class 3 (Modified) Note 722-P15, modified description of utility appurtenances Note 722-P19, removed note Note 724-P01, included contact information for coordination prior to impacts to watermain Note 970-P01, added for trash receptacle specification
Section 6 Sheet 11	Revised page number to Sheet 12
Section 8 Sheet 1	Revised 202-0130 “Removal of Curb & Gutter” from 1748 LF to 2218 LF Revised 202-0136 “Removal of Pavement” from 37,210 Ton to 38,763 Ton Revised 202-0174 “Removal of Pipe All Types and Sizes” from 2429 LF to 2444 LF Revised 251-0300 “Seeding Class III” from 17.77 Acre to 17.85 Acre Revised 251-2000 “Temporary Cover Crop” from 17.77 acre to 17.85 Acre Revised 253-0201 “Hydraulic Mulch” from 17.77 Acre to 17.85 Acre Revised 253-0301 “Bonded Fiber Matrix” from 17.77 Acre to 17.85 Acre Revised 302-0101 “Salvaged Base Course” from 32,167 CY to 32,836 CY Revised 401-0050 “Tack Coat” from 188 Gal to 737 Gal Revised 401-0060 “Prime Coat” from 1052 Gal to 1591 Gal Revised 430-0043 “Superpave FAA 43” from 1,848 Ton to 2,313 Ton Revised 430-5834 “PG 58-34 Asphalt Cement” from 111 Ton to 139 Ton
Section 8 Sheet 2	Revised 704-1052 “Type III Barricade” from 35 Each to 53 Each
Section 8 Sheet 3	Revised 722-3510 “Inlet Type 2” from 21 Ea to 19 Ea Revised 722-3701 “Inlet Special-Type 2 48IN” from 16 Ea to 18 EA Revised 724-0210 “Fittings Ductile Iron” from 3600 lbs to 3446 lbs Revised 724-0850 “Watermain 12IN PVC” from 2832 LF to 2853 LF Revised 724-0852 “Watermain 16IN PVC” from 213 LF to 207 LF Revised 748-0140 “Curb & Gutter-Type I” from 34,079 LF to 34,650 LF Revised 750-0030 “Pigmented Imprinted Concrete” from 4,032 SY to 4,187 SY

	Revised 750-1000 “Driveway Concrete” from 298 SY to 341 SY Revised 754-0110 “Flat Sheet for Signs-Type XI Refl Sheeting” from 461 SF to 446 SF Revised 754-0112 “Flat Sheet for Signs-Type IV Refl Sheeting” from 240 SF to 319 SF Revised 754-0206 “Steel Galv Posts-Telescoping Perforated Tube” from 1133 LF to 1073 LF
Section 8 Sheet 4	Revised 762-0420 “Short Term 4IN Line-Type R” from 7,020 LF to 10,717 LF Revised 762-1325 “Preformed Patterned Pvmt Mk 24IN Line-Grooved” from 1090 LF to 1730 LF Add 764-9010 “Attenuating Crash Cushion TL-2” 5 EA Added 772-9812 “Traffic Signal System-Site 2” 1 Ea Added 970-0320 “Trash Receptacle” 2 Ea
Section 10 Sheet 1	Updated project removals summary
Section 10 Sheet 2	Updated salvaged base course summary, included temporary pavement summary
Section 20 Sheet 1	Added gate valve locations 12-15
Section 20 Sheet 2	Added gate valve locations 16 and 17
Section 20 Sheet 3	Extended existing watermain in view 5
Section 20 Sheet 4	Extended existing watermain in view 9
Section 20 Sheet 4a	Added gate valve tie details for locations 12 thru 17
Section 20 Sheet 13	Added filter material around edgedrain on Storm Inlet/PVC Drain Pipe Detail Revised cleanout casting to Neenah R-1973
Section 20 Sheet 18	Added manhole at center of intersection in Typical Concrete Intersection Layout
Section 20 Sheet 27	Revised joint reference and added trash receptacle
Section 40 Sheet 1	Added 10 LF of 12” PVC pipe removal
Section 40 Sheet 3	Added limits of valve box west of Veterans Blvd, added removal of Minnkota driveway pavement Added 5 LF of 12” PVC pipe removal
Section 40 Sheet 9	Added additional removals for KFNW driveway and the north leg of Veterans Blvd due to traffic control revisions
Section 50 Sheet 1	Changed STS-101A to Inlet Special – Type 2 48IN and adjusted H’Dist
Section 50 Sheet 4	Changed STS-311A to Inlet Special – Type 2 48IN and adjusted H’Dist

Section 55 Sheet 1	Removed 12” GV on west end of 12” PVC watermain
Section 55 Sheet 2	Changed STS-101A to Inlet Special – Type 2 48IN. Removed 12” GV west of intersection. Added two 12” GVs north and south of 12”x12” Tees at intersection
Section 55 Sheet 4	Removed 12” GV north of 52nd Ave and 53rd Ave intersection before 12” Plug. Added 12” GV south of 12”x12” Tees at intersection
Section 55 Sheet 5	Replaced 16”x16” Tee with 16”x12” Tee and removed 16”x12” Reducer. Replaced 6 LF of 16” PVC watermain with 6 LF of 12” PVC watermain
Section 55 Sheet 6	Replaced 16”x16” Tee with 16”x12” Tee and removed 16”x12” Reducer. Replaced 6 LF of 16” PVC watermain with 6 LF of 12” PVC watermain
Section 55 Sheet 12	Changed STS-311A to Inlet Special – Type 2 48IN
Section 55 Sheet 15	Modified background linework
Section 55 Sheet 16	Modified background linework and added label for overhead sign. Replaced 16”x16” Tee with 16”x12” Tee and removed 16”x12” Reducer. Replaced 6 LF of 16” PVC watermain with 6 LF of 12” PVC watermain
Section 60 Sheet 5	Added limits of Minnkota driveway pavement
Section 60 Sheet 6	Additional Veterans Blvd pavement due to temporary traffic control revisions.
Section 60 Sheet 9	Removed flared end section shown north of 52nd Ave S
Section 60 Sheet 10	Removed flared end sections shown north of 52nd Ave S
Section 60 Sheet 14	Added additional KFNW driveway limits, added curb and gutter and median pavement on north leg of Veterans Blvd due to traffic control revisions
Section 76 Sheet 6	Added grass median on Veterans Blvd north of 52nd Ave S
Section 77 Sheet 6	Added grass median on Veterans Blvd north of 52nd Ave S
Section 80 Sheet 7-17	Updated linestyle of #4 Deformed Tie Bar shown in the legend
Section 80 Sheet 22	Updated sidewalk control points, added control points for Minnkota driveway
Section 80 Sheet 26	Added control points for driveway
Section 80 Sheet 29	Added control points for driveway
Section 90 Sheet 1-13	Updated note 2. Added quantities for KFNW driveway, Minnkota driveway and Veterans Blvd curb and gutter

Section 100 all Sheets	Revised traffic control to construction Veterans Blvd in phases. Remove and replace all sheets. Added sheets 24-28
Section 110 Sheet 1	Revised to remove stop signs and ground mounted street signs, added signal mast arm signs
Section 110 Sheet 2	Revised to reflect updated sheeting and support totals
Section 110 Sheet 5	Revised to remove stop signs and ground mounted street signs, added signal mast arm signs
Section 110 Sheet 16	Revised to remove ground mounted street signs, added signal mast arm signs.
Section 120 Sheet 2	Added crosswalk striping within 63rd St S intersection
Section 130 Sheets 4-5	Added sheets for attenuation devices at traffic signals
Section 140 all Sheets	Revised lighting at the 63rd St S intersection to mount lighting to signal standards Revised luminaire quantities near traffic signals Modified innerduct alignment west of Veterans Blvd intersection Updated tables and quantities accordingly
Section 150 all Sheets	Added sheets for the installation of 63rd St signals Revised sheet numbers due to installation of 63rd St signals Revised locations of signal standards, push buttons and other devices to shift outside of clear zone or to accommodate attenuation device placement. Revised mast arm lengths resulting from relocation of signal standards Revised numbering of signal components due to added devices as a result of items noted above Revised all quantities resulting from the revisions noted above At 45th St revised number of spare conduits in the Existing Traffic Signal Cabinet Foundation Diagram, and added “Remove & Salvage EVP Detector” and “Remove and Salvage EVP Confirmation Light”. Added a note for poles to be painted gloss black on Sheet 16
Section 160 all Sheets	Added Sheet 1 to show fiber layout from 63rd St S to Veterans Blvd Revised sheet number of all sheets Updated quantities due to installation of signals at 63rd St S Added ITS-Fiber Diagram 63rd St S Revised “Provide 4-3’ SM ST-LC Jumper Cords” to “Provide 6-3’ SM ST-LC Jumper Cords”
Section 170 Sheet 56	Revised 1” spindles to ¾” spindles Revised weld note to state welding to be completed prior to painting

SP 742(14)

In Subsection a., Section 2 Signal Paint of the Materials Part of the Traffic Signal System Special Provision SP742(14), the Signal Head Mounting Hardware shall match the pole color specified in the plan documents.

In Subsection a., Section 2 Signal Paint of the Materials Part of the Traffic Signal System Special Provisions SP742(14), the Signal Housing color option yellow was removed.

The new traffic signal standards in the Revise Traffic Signal System bid item shall have Gloss Black paint for all items in Subsection a., Section 2 Signal Paint of the Materials Part of the Traffic Signal System Special Provision SP742(14). This addendum is to be incorporated into the bidder's proposal for this project.

Sincerely,

HOUSTON ENGINEERING, INC.

Adam M. Ruud

AMR:sh
Enclosure
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Project: SU-8-984(164) (PCN-22007)

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	0105	REMOVAL OF STRUCTURE	L SUM	1.				
004	202	0114	REMOVAL OF CONCRETE PAVEMENT	SY	1,032.				
005	202	0130	REMOVAL OF CURB & GUTTER	LF	2,218.				
006	202	0136	REMOVAL OF PAVEMENT	TON	38,763.				
007	202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	2,444.				
008	202	0210	REMOVAL OF MANHOLES	EA	1.				
009	202	0231	REMOVE & RESET INLETS	EA	1.				
010	203	0101	COMMON EXCAVATION-TYPE A	CY	11,169.				
011	203	0109	TOPSOIL	CY	14,335.				
012	203	0138	COMMON EXCAVATION-SUBCUT	CY	1,683.				
013	203	0140	BORROW-EXCAVATION	CY	145,345.				
014	210	0099	CLASS 1 EXCAVATION	L SUM	1.				
015	210	0111	CLASS 2 EXCAVATION	L SUM	1.				
016	210	0127	CHANNEL EXCAVATION	L SUM	1.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
017	210	0411	FOUNDATION PREPARATION	L SUM	1.				
018	216	0100	WATER	M GAL	2,253.				
019	230	0165	SUBGRADE PREPARATION-TYPE A-12IN	STA	92.700				
020	251	0300	SEEDING CLASS III	ACRE	17.850				
021	251	2000	TEMPORARY COVER CROP	ACRE	17.850				
022	253	0201	HYDRAULIC MULCH	ACRE	17.850				
023	253	0301	BONDED FIBER MATRIX	ACRE	17.850				
024	255	0104	ECB TYPE 4	SY	503.				
025	256	0100	RIPRAP GRADE I	CY	42.				
026	256	0200	RIPRAP GRADE II	CY	722.				
027	258	0100	CONCRETE SLOPE PROTECTION	SY	452.				
028	260	0200	SILT FENCE SUPPORTED	LF	1,618.				
029	260	0201	REMOVE SILT FENCE SUPPORTED	LF	1,618.				
030	302	0101	SALVAGED BASE COURSE	CY	32,836.				
031	401	0050	TACK COAT	GAL	737.				
032	401	0060	PRIME COAT	GAL	1,591.				

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
033	430	0043	SUPERPAVE FAA 43	TON	2,313.				
034	430	1000	CORED SAMPLE	EA	16.				
035	430	5834	PG 58-34 ASPHALT CEMENT	TON	139.				
036	550	0310	10IN NON REINF CONCRETE PVMT CL AE-DOWELED	SY	63,559.				
037	602	0130	CLASS AAE-3 CONCRETE	CY	449.600				
038	602	1130	CLASS AE-3 CONCRETE	CY	389.700				
039	602	1133	CONCRETE BRIDGE APPROACH SLAB	SY	564.400				
040	602	1220	SINGLE SLOPE BARRIER	LF	675.600				
041	602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	1,204.				
042	604	9610	PRESTRESSED BOX BEAM-27IN	LF	1,645.				
043	612	0115	REINFORCING STEEL-GRADE 60	LBS	36,382.				
044	612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	93,166.				
045	616	5890	STRUCTURAL STEEL	L SUM	1.				
046	622	0012	STEEL H-PILE TIPS 10 X 42	EA	24.				
047	622	0014	STEEL H-PILING POINTS 12 X 53	EA	32.				
048	622	0020	STEEL PILING HP 10 X 42	LF	2,040.				

Project: SU-8-984(164) (PCN-22007)

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
049	622	0040	STEEL PILING HP 12 X 53	LF	2,560.				
050	624	0123	PEDESTRIAN RAILING	LF	160.				
051	624	0151	RAILING	LF	432.				
052	702	0100	MOBILIZATION	L SUM	1.				
053	704	1000	TRAFFIC CONTROL SIGNS	UNIT	6,237.				
054	704	1037	ATTENUATION DEVICE-TYPE B-35	EA	2.				
055	704	1052	TYPE III BARRICADE	EA	53.				
056	704	1054	SIDEWALK BARRICADE	EA	8.				
057	704	1060	DELINEATOR DRUMS	EA	240.				
058	704	1072	FLEXIBLE DELINEATORS	EA	54.				
059	704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	2.				
060	704	1500	OBLITERATION OF PAVEMENT MARKING	SF	384.				
061	706	0400	FIELD OFFICE	EA	1.				
062	706	0500	AGGREGATE LABORATORY	EA	1.				
063	706	0550	BITUMINOUS LABORATORY	EA	1.				
064	706	0600	CONTRACTOR'S LABORATORY	EA	1.				

Project: SU-8-984(164) (PCN-22007)

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
065	708	1540	INLET PROTECTION-SPECIAL	EA	77.				
066	708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	77.				
067	709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	86,121.				
068	709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	1,444.				
069	714	0115	PIPE CONC REINF 12IN CL III-STORM DRAIN	LF	100.				
070	714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF	3,769.				
071	714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF	1,308.				
072	714	0405	PIPE CONC REINF 21IN CL III-STORM DRAIN	LF	1,669.				
073	714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN	LF	1,861.				
074	714	0710	PIPE CONC REINF 27IN CL III-STORM DRAIN	LF	433.				
075	714	0910	PIPE CONC REINF 36IN CL III-STORM DRAIN	LF	497.				
076	714	1010	PIPE CONC REINF 42IN CL III-STORM DRAIN	LF	859.				
077	714	1110	PIPE CONC REINF 48IN CL III-STORM DRAIN	LF	235.				
078	714	1212	PIPE CONC REINF 54IN CL III-STORM DRAIN	LF	1,269.				
079	714	2111	PIPE CONC REINF ARCH 29IN X 18IN CL III-S DRAIN	LF	230.				
080	714	2118	PIPE CONC REINF ARCH 36IN X 23IN CL III-S DRAIN	LF	556.				

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
081	714	3000	END SECT-CONC REINF 12IN	EA	1.				
082	714	3010	END SECT-CONC REINF 18IN	EA	1.				
083	714	3050	END SECT-CONC REINF 54IN	EA	1.				
084	714	5045	PIPE CORR STEEL .064IN 36IN	LF	41.				
085	714	9660	REMOVE & RELAY END SECTION-ALL TYPE & SIZES	EA	1.				
086	714	9696	EDGEDRAIN NON PERMEABLE BASE	LF	26,671.				
087	714	9909	FLAP GATE 15IN	EA	1.				
088	714	9911	FLAP GATE 21IN	EA	1.				
089	714	9912	FLAP GATE 24IN	EA	1.				
090	722	0100	MANHOLE 48IN	EA	11.				
091	722	0110	MANHOLE 60IN	EA	14.				
092	722	0120	MANHOLE 72IN	EA	2.				
093	722	0130	MANHOLE 84IN	EA	6.				
094	722	0140	MANHOLE 96IN	EA	1.				
095	722	1100	MANHOLE RISER 48IN	LF	98.420				
096	722	1110	MANHOLE RISER 60IN	LF	87.430				

Project: SU-8-984(164) (PCN-22007)

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
097	722	1120	MANHOLE RISER 72IN	LF	15.160				
098	722	1130	MANHOLE RISER 84IN	LF	45.360				
099	722	1140	MANHOLE RISER 96IN	LF	6.740				
100	722	2490	MANHOLE STORM CONNECTION	EA	3.				
101	722	3300	SANITARY MANHOLE REPAIR	EA	4.				
102	722	3410	MANHOLE REPAIR	EA	6.				
103	722	3510	INLET-TYPE 2	EA	19.				
104	722	3520	INLET-TYPE 2 DOUBLE	EA	6.				
105	722	3701	INLET SPECIAL-TYPE 2 48IN	EA	18.				
106	722	3761	INLET SPECIAL-TYPE 2 60IN	EA	1.				
107	722	3825	INLET SPECIAL-TYPE 2 DOUBLE 84IN	EA	5.				
108	722	4005	INLET CATCH BASIN	EA	15.				
109	722	4108	INLET SPECIAL CATCH BASIN 48IN	EA	2.				
110	722	4110	INLET SPECIAL CATCH BASIN 60IN	EA	1.				
111	722	4112	INLET SPECIAL CATCH BASIN 72IN	EA	2.				
112	722	4114	INLET SPECIAL CATCH BASIN 84IN	EA	3.				

BID ITEMS

Project: SU-8-984(164) (PCN-22007)

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
113	722	4116	INLET SPECIAL CATCH BASIN 96IN	EA	2.				
114	722	6140	ADJUST GATE VALVE BOX	EA	6.				
115	722	6240	ADJUST UTILITY APPURTENANCE	EA	1.				
116	724	0210	FITTINGS-DUCTILE IRON	LBS	3,446.				
117	724	0300	GATE VALVE & BOX 6IN	EA	5.				
118	724	0314	GATE VALVE & BOX 12IN	EA	8.				
119	724	0317	GATE VALVE & BOX 16IN	EA	1.				
120	724	0410	HYDRANT-INSTALL 5IN	EA	5.				
121	724	0426	HYDRANT EXTENSION	LF	8.450				
122	724	0430	REMOVE HYDRANT	EA	1.				
123	724	0810	WATERMAIN 6IN PVC	LF	67.				
124	724	0850	WATERMAIN 12IN PVC	LF	2,853.				
125	724	0852	WATERMAIN 16IN PVC	LF	207.				
126	724	0870	24IN WATERMAIN	LF	10.				
127	724	7014	REMOVE GATE VALVE BOX	EA	4.				
128	748	0140	CURB & GUTTER-TYPE I	LF	34,650.				

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						$$$$$	000	$$$$$	00
129	750	0030	PIGMENTED IMPRINTED CONCRETE	SY	4,187.				
130	750	0125	SIDEWALK CONCRETE 5IN	SY	16,018.				
131	750	0140	SIDEWALK CONCRETE 6IN	SY	770.				
132	750	0210	CONCRETE MEDIAN NOSE PAVING	SY	121.				
133	750	1000	DRIVEWAY CONCRETE	SY	341.				
134	750	2115	DETECTABLE WARNING PANELS	SF	734.				
135	752	0850	ORNAMENTAL FENCE	LF	432.				
136	752	0911	TEMPORARY SAFETY FENCE	LF	2,650.				
137	754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	446.				
138	754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	319.				
139	754	0193	FLEXIBLE DELINEATORS-TYPE D	EA	75.				
140	754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	1,073.				
141	762	0122	PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED)	SF	960.				
142	762	0420	SHORT TERM 4IN LINE-TYPE R	LF	10,717.				
143	762	0424	SHORT TERM 8IN LINE-TYPE R	LF	902.				
144	762	0426	SHORT TERM 24IN LINE-TYPE R	LF	27.				

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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	762	0440	SHORT TERM MESSAGE-TYPE R	SF	64.				
146	762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	5,264.				
147	762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF	27.				
148	762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	14,538.				
149	762	1317	PREFORMED PATTERNED PVMT MK 16IN LINE-GROOVED	LF	342.				
150	762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	1,730.				
151	762	1344	PREF PATT PVMT MK 7IN LINE CONTRAST-GROOVED	LF	4,102.				
152	764	0131	W-BEAM GUARDRAIL	LF	508.				
153	764	0145	W-BEAM GUARDRAIL END TERMINAL	EA	4.				
154	764	0151	REMOVE W-BEAM GUARDRAIL & POSTS	LF	336.				
155	764	2081	REMOVE END TREATMENT & TRANSITION	EA	4.				
156	764	9010	ATTENUATING CRASH CUSHION TL-2	EA	5.				
157	770	0003	LIGHTING SYSTEM A	EA	4.				
158	770	0004	LIGHTING SYSTEM B	EA	1.				
159	772	2800	INTERIM TRAFFIC SIGNALS	EA	1.				
160	772	2904	REVISE TRAFFIC SIGNAL SYSTEM	EA	1.				

BID ITEMS

Project: SU-8-984(164) (PCN-22007)

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
161	772	3125	REMOVE TRAFFIC SIGNAL SYSTEM	EA	1.				
162	772	9200	IT SYSTEM	EA	1.				
163	772	9811	TRAFFIC SIGNAL SYSTEM - SITE 1	EA	1.				
164	772	9812	TRAFFIC SIGNAL SYSTEM - SITE 2	EA	1.				
165	910	0570	MODIFY MANHOLE	EA	1.				
166	930	3000	BRIDGE BENCH MARKS	SET	1.				
167	930	9537	ABUTMENT UNDERDRAIN SYSTEM	EA	4.				
168	970	0300	BENCH	EA	2.				
169	970	0320	TRASH RECEPTACLE	EA	2.				
170	990	0400	PIPE CLEANOUT	EA	20.				
			TOTAL SUM BID						

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SP 5221(14)	Permits and Environmental Considerations
SP 742(14)	Traffic Signal System
SP 743(14)	Painting Over Galvanized Steel

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D-256-1	Erosion And Siltation Controls
D-258-1	Standard Slope Protection Under Bridges
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D-764-40	MGS W-Beam Guardrail General Details
D-764-48	Typical Grading at Bridge Ends with MGS W-Beam Guardrail
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D-764-51	MASH Sequential Kinking Terminal - Wood Post
D-764-60	MGS W-Beam Transition with Approach Curb to Concrete Single Slope or Jersey Barrier
D-764-61	Single Slope to Thrie Beam Connector Plate Details
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D-772-3	Traffic Signal Standards (Mast Arm Type)
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100-P01 COORDINATION OF PROJECTS: Other projects in the vicinity of this project are under contract during the 2019 construction season. These projects are:

- SU-8-992(040)041 (West Fargo Improvement District 2250), Reconstruction of Sheyenne St from 40th Ave S to 32nd Ave S
- SU-8-992(039)040, Reconstruction of Sheyenne St near Interstate 94
- City of Fargo Project DN-18-A1, Construction of box culvert through 63rd St S, south of 52nd Ave S and Drain 27 conveyance improvement project located south of 52nd Ave S from Sheyenne River to Veterans Boulevard
- City of Fargo Project NN-18-A1, Storm sewer lift station construction at Drain 27 and Veterans Boulevard

100-P02 PROJECT COMPLETION: Phase and schedule construction activities to meet the following requirements.

Work affecting 52nd Ave S traffic may not commence prior to April 1, 2019.

Work within the Veterans Blvd and 52nd Ave S intersection and west may not begin until after June 15, 2019.

August 15, 2019 Interim Completion Date: Complete Phases 1 thru 4 defined in note 704-P02 for the reconstruction of 52nd Ave S as well as one structure crossing Drain 27. Open the roadway for head to head traffic.

Failure to meet completion dates will result in penalties being applied as defined in note 704-P02.

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.

105-P01 UNDERGROUND UTILITY INSTALLATION: The City of Fargo Standard Specifications for Construction, govern underground utility, including storm sewer, sanitary sewer and watermain construction.

105-P02 LOCATION OF EXISTING UTILITIES: Existing utilities have been shown to direct the Contractor's attention to their existence. Such utilities have been plotted from record drawings. The location of private utilities shown on the plans are approximate.

The Contractor is cautioned that all existing utilities may not be shown. The location of existing utilities is not guaranteed. The Contractor is responsible for determining the exact location of, and protection of, the existing utilities.

The Contractor, before commencing any excavation or construction, shall determine the location and seek aid in locating all public and private utilities.

The Contractor shall be responsible for contacting and coordinating with utility owners to allow access to their own utilities to perform the relocations and/or inspections. The Contractor shall schedule their work accordingly so as not to delay or prevent each utility from maintaining their relocation schedule.

All costs to perform such work shall be considered incidental to other bid items.

105-P03 NOISE RESTRICTIONS: No construction activities or moving of equipment shall occur between the hours of 10:00 pm and 7:00 am except for sawing of new concrete. When sawing is planned to occur during these hours, the Contractor shall distribute written notices to residents located within ½ block of the work by 7:30 pm.

105-P04 UTILITIES: Utility facilities identified in the table below are to remain in place (the table may not be all inclusive). Adjust operations adjacent to these utility facilities to protect them as described in the table (See Comments Column). Repair the damaged utilities at the Contractor's expense.

In addition to the table below, more utilities in conflict with the proposed work are identified in the Utility Conflict Plans. (Utility Conflict Plans do include utilities listed in the Table below as well.)

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Sta	Offset	Appr. Qty	Comments	Utility Company	Type of Facility	Approx. Max Cut/Fill
525+73 to 556+38	Left	3090'	Contractor to protect in place.	Xcel Engery	Gas line.	5'
556+38 to 557+57	Left	120'	Contractor to protect in place.	Consolidated Communications	Fiber optic line.	5'
527+69 to 529+80	Right	210'	Contractor to protect in place.	Cable One	Fiber optic line.	4'
530+95 to 531+02	Crossing	100'	Contractor to protect in place.	Cass County Electrical Coop	Electric line.	1'
530+97 to 531+04	Crossing	100'	Contractor to protect in place.	Century Link	Fiber optic line.	1'
531+47 to 531+48	Crossing	90'	Contractor to protect in place.	Cable One	Fiber optic line.	1'
531+80 to 532+73	Left	100'	Contractor to protect in place.	Consolidated Communications	Fiber optic line.	2'
531+87 to 532+98	Left	110'	Contractor to protect in place.	Century Link	Fiber optic line.	2'
531+87 to 532+98	Left	110'	Contractor to protect in place.	Century Link	Fiber optic line.	2'
531+88 to 532+92	Left	110'	Contractor to protect in place.	Century Link	Fiber optic line.	2'
532+61 to 532+62	Crossing	140'	Contractor to protect in place.	Xcel Engery	Gas line.	1'
532+90 to 532+92	Crossing	100'	Contractor to protect in place.	Cable One	Fiber optic line.	1'
532+97 to 532+98	Crossing	100'	Contractor to protect in place.	Cable One	Fiber optic line.	1'
532+98 to 533+00	Crossing	100'	Contractor to protect in place.	Cable One	Fiber optic line.	1'
532+98 to 533+56	Left	60'	Contractor to protect in place.	Century Link	Fiber optic line.	5'
533+73 to 543+20	Right	960'	Contractor to protect in place.	Midcontinent	Fiber optic line.	1.5'
537+78 to 538+49	Left	70'	Contractor to protect in place.	Consolidated Communications	Fiber optic line.	1.5'
539+01 to 545+90	Left	700'	Contractor to protect in place.	Minnkota Power	Fiber optic line.	2'
539+10 to 539+26	Crossing	90'	Contractor to protect in place.	Cass County Electrical Coop	Fiber optic line.	1'
539+10 to 539+33	Crossing	90'	Contractor to protect in place.	Century Link	Fiber optic line.	1'
544+91 to 548+20	Right	330'	Contractor to protect in place.	Midcontinent	Fiber optic line.	0.5'
544+94 to 545+88	Right	100'	Contractor to protect in place.	Cass County Electrical Coop	Electric line.	0.5'
544+96 to 548+20	Right	325'	Contractor to protect in place.	Century Link	Fiber optic line.	0.5'
547+46 to 547+47	Crossing	100'	Contractor to protect in place.	Xcel Engery	Gas line.	1'
548+40 to 548+41	Crossing	120'	Contractor to protect in place.	Xcel Engery	Gas line.	1'
548+39 to 557+93	Right	960'	Contractor to protect in place.	Midcontinent	Fiber optic line.	2.5'
549+87 to 557+59	Right	775'	Contractor to protect in place.	Unknown	Fiber optic line.	2.5'
556+14 to 556+70	Left	60'	Contractor to protect in place.	Cass County Electrical Coop	Electric line.	2.5'
557+45 to 560+00	Left	290'	Contractor to protect in place.	Cass County Electrical Coop	Electric line.	5'
557+63 to 558+89	Right	130'	Contractor to protect in place.	Century Link	Fiber optic line.	5'
557+84 to 558+29	Right	50'	Contractor to protect in place.	Unknown	Fiber optic line.	5'
558+28 to 559+05	Right	80'	Contractor to protect in place.	Unknown	Fiber optic line.	5'
558+30 to 559+03	Right	75'	Contractor to protect in place.	Midcontinent	Fiber optic line.	5'
558+86 to 558+98	Crossing	140'	Contractor to protect in place.	Century Link	Fiber optic line.	1'
558+94 to 559+04	Crossing	140'	Contractor to protect in place.	Midcontinent	Fiber optic line.	1'
558+99 to 559+13	Crossing	140'	Contractor to protect in place.	Century Link	Fiber optic line.	1'
560+01 to 560+06	Crossing	100'	Contractor to protect in place.	Xcel Engery	Gas line.	1'
560+08 to 560+09	Crossing	20'	Contractor to protect in place.	Xcel Engery	Gas line.	1'
561+76 to 561+87	Left	25'	Contractor to protect in place.	Cass County Electrical Coop	Electric line.	3.5'
561+98 to 572+57	Right	1070'	Contractor to protect in place.	Century Link	Fiber optic line.	4'
566+78 to 566+78	Left	20'	Contractor to protect in place.	Unknown	Fiber optic line.	5'
566+79 to 566+79	Left	20'	Contractor to protect in place.	Unknown	Fiber optic line.	5'
566+81 to 566+82	Left	20'	Contractor to protect in place.	Unknown	Fiber optic line.	5'
566+86 to 566+87	Left	20'	Contractor to protect in place.	Unknown	Fiber optic line.	5'
570+18 to 570+20	Left	10'	Contractor to protect in place.	Xcel Engery	Gas line.	6'
572+56 to 572+62	Crossing	125'	Contractor to protect in place.	Unknown	Fiber optic line.	1'
572+62 to 572+62	Crossing	120'	Contractor to protect in place.	Unknown	Fiber optic line.	1'
572+65 to 572+68	Crossing	120'	Contractor to protect in place.	Midcontinent	Fiber optic line.	1'
572+63 to 572+65	Crossing	30'	Contractor to protect in place.	Unknown	Fiber optic line.	1'
572+66 to 572+67	Crossing	40'	Contractor to protect in place.	Midcontinent	Fiber optic line.	1'
572+99 to 573+43	Right	50'	Contractor to protect in place.	Midcontinent	Fiber optic line.	6'
573+76 to 573+78	Crossing	100'	Contractor to protect in place.	Xcel Engery	Gas line.	1'
579+97 to 579+97	Crossing	120'	Contractor to protect in place.	Midcontinent	Fiber optic line.	1'
582+36 to 582+66	Right	30'	Contractor to protect in place.	Unknown	Fiber optic line.	5'
582+36 to 582+66	Right	30'	Contractor to protect in place.	Cass County Electrical Coop	Electric line.	5'
582+72 to 582+84	Crossing	570'	Contractor to protect in place.	Midcontinent	Overhead line.	1'
582+77 to 583+09	Left	30'	Contractor to protect in place.	Midcontinent	Fiber optic line.	4'
583+21 to 583+42	Left	20'	Contractor to protect in place.	Midcontinent	Fiber optic line.	4'
585+81 to 585+85	Crossing	110'	Contractor to protect in place.	Cass County Electrical Coop	Electric line.	1'
585+82 to 585+86	Crossing	110'	Contractor to protect in place.	Unknown	Fiber optic line.	1'
585+82 to 585+84	Crossing	20'	Contractor to protect in place.	Cass County Electrical Coop	Electric line.	1'
585+83 to 585+84	Crossing	20'	Contractor to protect in place.	Unknown	Fiber optic line.	1'
596+68 to 596+85	Left	20'	Contractor to protect in place.	Cass County Electrical Coop	Electric line.	3.5'
596+68 to 596+85	Left	20'	Contractor to protect in place.	Unknown	Fiber optic line.	3.5'
596+90 to 597+32	Left	40'	Contractor to protect in place.	Cass County Electrical Coop	Electric line.	3.5'
596+90 to 597+32	Left	40'	Contractor to protect in place.	Unknown	Fiber optic line.	3.5'
597+31 to 597+52	Left	40'	Contractor to protect in place.	Unknown	Electric line.	2'
597+32 to 597+52	Left	40'	Contractor to protect in place.	Unknown	Electric line.	2'

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

108-150 PUBLIC RELATIONS COORDINATOR: Provide a public relations and information coordinator. The coordinator cannot 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 the meeting specified in Note 108-100, "Weekly Planning/Reporting Meeting".
2. Advise Jeremy Gorden, from the City of Fargo, PH: (701) 241-1545, 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.

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.

108-P01 PROGRESS SCHEDULE: A Critical Path Method schedule is required.

202-P01 REMOVAL OF CONCRETE PAVEMENT: Include all costs for removal of concrete driveways, and sidewalks in the price bid for “Removal of Concrete Pavement”.

202-P02 REMOVAL OF PAVEMENT: Include all costs for removal of mainline HMA pavement, PCC pavement, concrete median and aggregate base in the price bid for “Removal of Pavement”.

202-P03 BULKHEAD EXISTING MANHOLE: Remove pipe from existing manhole. Bulkhead the pipe opening within the existing manhole using low slump concrete or concrete blocks with mortar. Repair any damage to the existing manhole caused during the work. Include all costs for bulkheading the existing manhole in “REMOVAL OF PIPES ALL TYPES AND SIZES”.

203-010 SHRINKAGE: 15 percent additional volume is included for shrinkage in earth embankment.

This document was originally issued and sealed by Adam M. Ruud, Registration Number PE- 10407, on 10/26/18 and the original document is stored in the Engineering Dept. at City Hall

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203-360 COMPACTION AND DENSITY CONTROL: Compact material as specified in Section 203.04 E.2.b, "ND T-99".

Manipulate embankment material with disking equipment.

203-385 AVERAGE HAUL: No average haul has been computed for this project.

203-P01 PROOF ROLLING: In addition to density/moisture testing, perform a proof roll test to verify the uniformity of support and to identify unstable areas which will require correction. Perform a proof roll test on subgrade located under the roadway. In fill areas, perform a proof roll test per one foot of each compacted lift.

Complete proof rolling by using a fully loaded tandem dump truck. Other heavy equipment may be substituted to complete proof rolling upon prior approval of the Engineer. Offset each trip of the proof roller by no more than one tire width.

If the grade shows no signs of pumping, cracking, or rutting, the grade being tested is considered acceptable. Correct any defective areas discovered during proof rolling and proof roll again.

Include all costs associated with performing the proof roll test and any corrective work in the price bid for “Common Excavation-Type A.”

203-P02 COMMON EXCAVATION SUBCUT: No subcuts are planned for 52nd Ave S. If the Engineer determines that an area of the subgrade is too wet or unstable, a subcut may be required. A discretionary quantity of 500’ of 18” subcutting has been provided.

203-P03 BORROW EXCAVATION: Provide contractor optioned borrow material. Payment for borrow material will be done based on plan quantity. No measurement will be completed. If material underrun or overrun is encountered, no price adjustment will be considered.

251-P01 SEEDING CLASS III: Use the following seed mix for all permanent seeding.

Species	Percent by Weight	Purity	Germination
Perennial Ryegrass	40%	90%	85%
Creeping Red Fescue	30%	90%	85%
Annual Ryegrass	15%	90%	85%
Kentucky Bluegrass	15%	90%	85%

Rate of Seeding = 220 Lbs/Acre

Remove all stumps, brush, sticks, roots, stones larger than ½ inch in diameter, concrete chunks, rebar, wire or other material that may hinder seeding and maintenance operations. Dispose of any accumulated material at no additional cost to the City/State.

Drill seed prior to installation of hydraulic mulch. Water the seeded areas sufficiently to moisten the seedbed to a depth of 2 inches. Apply water in a manner that provides uniform coverage and prevents erosion and damage to the final surface. Provide daily watering for the first five days and sufficient water to maintain surface moisture in the top 2 inches of the soil until such time as the grass (not cover crop) has been evenly established to a height of 2 inches. Include all costs for labor, equipment and materials necessary to complete the work in the price bid for “Seeding Class III”.

261-P01 PERMANENT FIBER ROLLS: If fiber rolls are to remain on the project, use fiber rolls that are composed of netting that meets either of the following:

- Plastic or natural fiber photodegradable netting that has a life expectancy between 12 to 24 months. If the photodegradable netting is plastic, the netting color must be either clear or green. Black plastic netting will not be allowed.
- 100 percent biodegradable jute netting that has a life expectancy between 6 to 12 months.

302-110 BASE COURSE: Trim base course as specified in Section 302.04 C.1, "Surface Tolerance Type B."

430-P01 PG 58-34 ASPHALT CEMENT: Use PG asphalt cement that meets AASHTO M 320.

550-P01 CONCRETE PAVEMENT AND CURB & GUTTER: Install manhole castings with the paving operation or install with each adjoining full concrete panel. Manhole isolation or box outs will not be allowed.

Keyways will only be allowed when placing concrete in forms. Keyways will not be allowed when concrete is slip-formed.

Pour curb & gutter separate from adjacent concrete pavement.

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

704-P01 PORTABLE CHANGEABLE MESSAGE SIGN: Install Portable Changeable Message Signs (PCMS) before work begins on the project. The Engineer will determine the locations for PCMS installation. Relocate the PCMS as directed by the Engineer.

Provide an operator trained in the use of the PCMS.

The Engineer will determine the message to be displayed. The operator shall program the message within one hour of the Engineer's request to change the message.

704-P02 TRAFFIC CONTROL PHASING: The traffic control details have been developed based on the premise that the project will be constructed in six phases. Include all costs to remove and reset traffic control devices in the price bid for individual items. Submit traffic control adjustments due to deviations from the listed assumptions for approval prior to implementing.

Bridge Construction: Begin bridge construction at any time after the contract is awarded. Do not impact existing traffic operations on 52nd Ave S until after April 1, 2019. Open one bridge to two-way head to head traffic with 11’ lanes by August 15, 2019. Failure to complete one bridge and open to traffic prior to August 15, 2019 shall result in an interim completion penalty of $5,000 per calendar day. The remaining bridge shall be completed prior to Phase 6 construction.

The eastbound bridge cannot be started until after April 1, 2019. Both bridges may be constructed concurrently after April 1, 2019. The project phasing assumes completion of the westbound bridge prior to the eastbound bridge.

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The existing gas line located under the location of the westbound bridge is anticipated to be relocated prior to construction. If, due to unforeseen delays, the line has not been relocated, begin work on the eastbound bridge after April 1, 2019. Work on the westbound bridge may begin once the gas line has been relocated.

Phase 1: Install storm sewer outlet pipe from STS-200, Sta 556+31.73, to STS-205, Sta 557+29.18. Coordinate the removal and replacement of the KNFW Radio Station driveway with the landowner. The closure of the KNFW Radio Station driveway shall be limited to one calendar day. Restore the driveway with temporary gravel surfacing and reopen to public traffic at the conclusion of the calendar day. Replace the permanent asphalt pavement within 10 calendar days of the removal. Do not impact traffic operations within the 52nd Ave and Veterans Blvd intersection. Failure to complete this work shall result in an interim completion penalty of $3,500 per calendar day.

Phase 2: Reconstruct eastbound and westbound 52nd Ave S from the east side of Veterans Blvd, approximately Sta 559+00, to west of 45th St S, Sta 609+33 with the exception of the items detailed as part of Phase 6. Install temporary asphalt pavement, 4" HMA on 8" aggregate base, within the median at the intersection of 52nd Ave S and 53rd St S, Sta 572+50 to Sta 574+00, and the location of the temporary crossover east of Drain 27, approximately Sta 588+10 to 591+00. Temporary pumping or drainage may be required until after all utilities under Phase 3 are installed. Include all costs associated with temporary drainage in the price bid for other Storm Sewer items. This phase may not be constructed concurrent with Phase 5. However, it is anticipated Phase 2 will be constructed concurrently with Phase 3, 4A, and 4B.

Install all underground utilities and permanent pavement shown in Phase 2, with the exception of the permanent median pavement from Sta 572+50 to Sta 574+00 and from Sta 588+10 to Sta 591+00 as well as the eastbound roadway from Veterans Blvd to the west side of 53rd St S, Sta 559+00 to Sta 572+50, and from the east side of 53rd St S to the temporary crossover east of Drain 27, Sta 574+00 to Sta 588+10 prior to August 15, 2019. Failure to complete this work prior to August 15, 2019 shall result in an interim completion penalty of $5,000 per calendar day.

The intersection of 52nd Ave S and 53rd St S may be closed to traffic (fully or partially) for a total of 35 nonconsecutive calendar days over the duration of the project. Closure beyond the 35 nonconsecutive calendar days limit will result in an interim completion penalty of $3,500 per calendar day.

Phase 3A thru 3C: Reconstruct the 52nd Ave S and Veterans Blvd intersection from Sta 557+00 to Sta 559+00 in three subphases. Traffic operations at the intersection of 52nd Ave S and Veterans Blvd will not be allowed to be impacted prior to the intersection of Sheyenne St and 40th Ave S being fully opened to traffic, on June 20, 2019. Coordinate the timing of the closure of 52nd Ave S and Veterans Blvd with project SU-8-992(040)041, West Fargo Improvement District 2250. Subphase 3A may not be constructed concurrently with Phases 4A, 4B, and 5. However, it is anticipated Phases 3B and 3C will be constructed concurrently with Phase 2, 4A, and 4B.

Construct watermain improvements and lowering during subphase 3A. Install temporary 4" HMA on 8" aggregate base within removed area. To complete this work, fully close the intersection for 2 consecutive calendar days. Coordinate closure and watermain impacts with the Water Treatment Plant. Closure beyond the 2 consecutive calendar days will result in an interim completion penalty of $3,500 per calendar day.

During subphase 3B, reconstruct the NE, SW and SE quadrants of the intersection. Maintain head to head traffic on the existing pavement within the NW quadrant. Install temporary 4" HMA and 8" aggregate base within the SW quadrant to tie into the existing roadway.

Reconstruct the NW quadrant of the intersection during subphase 3C. Maintain head to head traffic in the NE, SW and SE quadrants of the intersection. 50 consecutive calendar days will be allowed for the construction of Phase 3A, 3B and 3C. Construction within the intersection beyond the 50 consecutive calendar days will result in an interim completion penalty of $3,500 per calendar day.

Install all underground utilities and paving in Phase 3 prior to August 15, 2019. Failure to complete this work prior to August 15, 2019 shall result in an interim penalty of $5,000 per calendar day. If Phase 3 is completed prior to August 15, 2019, temporary connections from the reconstructed intersection to the existing roadway west of Veterans Blvd may be needed as directed by the Engineer. Construct the temporary connections utilizing 4" HMA on 8" aggregate base. Include all costs to construct the temporary connections in the price bid for the applicable HMA and aggregate bid items.

The intersection of 52nd Ave S and Veterans Blvd may be closed to traffic (fully or partially) for a total of 35 consecutive calendar days over the duration of the project. Closure beyond the 35 consecutive calendar days limit will result in an interim completion penalty of $3,500 per calendar day.

Upon completion of the work items detailed in the Bridge Construction, Phase 2 and Phase 3 that are to be completed prior to August 15, 2019, open 52nd Ave S to head to head traffic on the westbound roadway from Veterans Blvd to 45th St S.

Phase 4A: Reconstruct 52nd Ave S from Sta 521+22 to west of the 63rd St S intersection, Sta 531+25. If traffic operations are impacted within the intersection of 52nd Ave S and 63rd St S, Phase 4B closure duration limitations detailed in Phase 4B will apply. Phase 4A will not be allowed to begin until after June 20, 2019. If Phase 3 is constructed concurrently, maintain access to 53rd Ave S from Rocking Horse Rd. This phase may not be constructed concurrently with Phase 5. However, it is anticipated Phase 4A will be constructed concurrently with Phase 2, 3, and 4B.

Install all underground utilities and paving in Phase 4A prior to August 15, 2019. Failure to complete this work prior to August 15, 2019 shall result in an interim penalty of $5,000 per calendar day.

Phase 4B: Reconstruct the intersection of 52nd Ave S and 63rd St S. Install all underground utilities and paving from Sta 531+25 to Sta 533+00. Traffic operations at the intersection of 52nd Ave S and 63rd St S will not be allowed to be impacted prior to June 20, 2019. If Phase 3 is constructed concurrently, maintain access to 53rd Ave S from Rocking Horse Rd. This phase may not be constructed concurrently with Phase 5. However, it is anticipated Phase 4B will be constructed concurrently with Phase 2, 3, and 4A.

The intersection of 52nd Ave S and 63rd St S may be closed to traffic (fully or partially) for a total of 35 consecutive calendar days over the duration of the project. Closure beyond the 35 consecutive calendar days limit will result in an interim completion penalty of $3,500 per calendar day.

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Install all underground utilities and paving in Phase 4B prior to August 15, 2019. Failure to complete this work prior to August 15, 2019 shall result in an interim penalty of $5,000 per calendar day.

Phase 5: Reconstruct 52nd Ave S and install underground utilities from east of 63rd St S, Sta 533+00 to west of Veterans Blvd, Sta 557+00. Maintain access to 53rd Ave S from 63rd St S. Construction of Phase 5 will not be allowed until Phases 3, 4A, and 4B are complete.

Phase 6: Remove temporary asphalt pavement and install permanent median pavement within the 53rd St S and 52nd Ave S intersection, Sta 572+50 to Sta 574+00, and temporary crossover, Sta 588+10 to Sta 591+00. Construct 52nd Ave S westbound right turn lane east of 45th St S, Sta 610+89 to Sta 615+51. Maintain two-way traffic on the outside lanes of the eastbound and westbound roadways. This phase may not be constructed concurrent with Phase 2 and Bridge Construction.

704-P03 ROAD CLOSURES: Where road closures are required, install multiple Type III barricades to block the full width of the roadway.

706-P01 FIELD OFFICE: Provide a field office which meets the following requirements:

1. Minimum total area of 450 square feet.
2. Indoor bathroom facilities with weekly cleaning services.
3. Hookups for heat, electricity, sewer, and potable water.
4. Minimum cabinet space of 32 cubic feet.
5. Minimum counter space of 60 square feet.
6. A heating and cooling system that is capable of maintaining the temperature between 65°F and 78°F.
7. Lighting with a minimum of 110 foot-candles.
8. Photocopier/Printer with scanning capabilities capable of producing 11x17 photocopies and enough toner to last the duration of the project. Other features to include digital copying and scanning. Provide a photocopier/printer with operating software compatible with that used by the NDDOT.
9. Supply a photocopier with enough toner to last the length of the project and with the following capabilities:
    a. Printing;
    b. Scanning; and
    c. Producing 11x17 photocopies and prints.

Place the field office on the project, or as close to the project as possible. The Contractor is responsible for the following fees:

- Rental Fees
- Cleaning Service
- Heating
- Electricity
- Sewer
- Potable Water

Make the field office available for occupancy one week before the start of the project and remain through project completion. The Engineer will approve the location and the condition of the office.

The Engineer is responsible for the following items:

- Furnishing office equipment;
- Supplying paper; and
- Supplying and paying for internet service.

All requirements of the Field Office are subject to approval by the Engineer. Include the costs for the field office in the bid item “Field Office.”

Schedule for Payments:

- 25% when set up on site.
- 50% when 30% of the work is complete.
- 75% when 60% of the work is complete.
- 100% when project is complete

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714-P01 PIPE BACKFILL: Use Aggregate Base Course Class 3 (Modified) to backfill all pipe installations and removals under sidewalks, driveways, and concrete roadways. Include all costs for excavation, backfill, gravel backfill and pipe installation in the price bid for "Pipe Conc Reinf __IN CL __" or "Watermain __IN PVC".

714-P02 TEMPORARY DRAINAGE: During construction, provide means of temporary drainage or pumping to maintain the existing storm sewer system. This includes, but is not limited to, temporary grading, temporary pipe connections and pumping. Due to the limited work space shoring may be required. Include all costs to perform this work in the price bid for "PIPE CONC REINF __IN CL __".

714-P03 EDGEDRAIN NON PERMEABLE BASE: Install edge drain as shown. Connect edge drain to inlets or manholes as shown in Section 20.

714-P04 FLAP GATE: Install Waterman Industries F-10 Cast Iron Drainage Gate with setting collar for concrete pipe or approved equal flap gate to mount to exterior of reinforced concrete pipe. Install the reinforced concrete pipe a sufficient length into the structure to ensure mounting of the flap gate to the pipe per the manufacturers recommendation while allowing for full opening of the gate.

722-P01 INLET SPECIAL – TYPE 2 __IN: Construct concrete base and riser in accordance with D-722-1B. Construct covers in accordance with "INLET SPECIAL – TYPE 2 COVER" detail in Section 20. Use Neenah Foundry R-3067 or EJ Iron Works 7030 casting frames. Use Neenah VB or EJ Iron Works M11 grates in sag locations. Use Neenah V or EJ Iron Works M4 grates in on-grade locations.

722-P02 INLET SPECIAL – TYPE 2 DOUBLE __IN: Construct structures in accordance with "INLET SPECIAL TYPE 2 DOUBLE" detail in Section 20. Use Neenah Foundry R-3295-2 or EJ Iron Works 7031 casting frames. Use Neenah V or EJ Iron Works M4 grates.

722-P03 INLET SPECIAL – CATCH BASIN __IN: If build height allows for the use of an eccentric cone section, construct structure in accordance with "MANHOLE 48"" or "MANHOLE 60"-96"" details in Section 20. Where build height does not allow for the use of an eccentric cone section, construct concrete base and riser in accordance with D-722-1B and construct covers in accordance with "INLET SPECIAL – CATCH BASIN COVER" detail in Section 20. Use Neenah Foundry R-4342 or EJ Iron Works 6489 grates.

722-P04 MANHOLE: If build height allows for the use of an eccentric cone section, construct structures in accordance with "MANHOLE 48" or "MANHOLE 60-96"" details in Section 20. Where build height does not allow for the use of an eccentric cone section, construct concrete base and riser in accordance with D-722-1B and construct covers in accordance with "INLET SPECIAL – CATCH BASIN COVER" detail in Section 20. Use Neenah Foundry R-1733 or EJ Iron Works 1205Z for installations in the boulevard and floating Neenah Foundry R-1955-1 for installations in pavement.

722-P05 INLET TYPE 2: Construct structures in accordance with "INLET TYPE 2" detail in Section 20. Use Neenah Foundry R-3067 or EJ Iron Works 7030 casting frames. Use Neenah VB or EJ Iron Works M11 grates in sag locations. Use Neenah V or EJ Iron Works M4 grates in on-grade locations.

722-P06 INLET TYPE 2 DOUBLE: Construct structures in accordance with "INLET TYPE 2 DOUBLE" detail in Section 20. Use Neenah Foundry R-3295-2 or EJ Iron Works 7031 casting frames. Use Neenah V or EJ Iron Works M4 grates.

722-P07 INLET CATCH BASIN: (City of Fargo RDI) Construct structures in accordance with "INLET CATCH BASIN" detail in Section 20. Construct covers in accordance with "INLET SPECIAL – CATCH BASIN COVER" detail in Section 20. Use Neenah Foundry R-4342 or EJ Iron Works 6489 grates.

722-P08 MANHOLE CLEANING: Vacuum all debris from each manhole after adjusting the castings to final grade is complete. Include all costs for manhole cleaning in the price bid for "MANHOLE __IN".

722-P09 CONNECT TO EXISTING STORM SEWER: Connect to the existing 36" RCP stub at 63rd St S. All inverts that are within manholes or inlets to remain in place shall have the pipe inverts repaired. The Contractor will be required to remove all deteriorated mortar, clean and repour the invert and grout around all of the pipes in the manhole or inlet. Include all costs in the price bid for "PIPE CONC REINF __IN CL __".

722-P010 MANHOLE STORM CONNECTION: Connect new piping to existing manhole by field cutting hole a minimum of 2" larger than the pipe outside diameter. Seal void around pipe inside and outside of manhole with concrete. Include all costs in the price bid for "MANHOLE STORM CONNECTION".

722-P11 MANHOLE REPAIR: Repair existing storm manholes by furnishing and installing the items as listed below. Include all costs associated with furnishing and installing the items below in the price bid for "MANHOLE REPAIR".

1. Water Tight Manhole Seals: Install internal or external watertight manhole seals per manufacturer's recommendations to cover and seal the manhole frame, adjusting rings, and 7 to 10 inches of the chimney. Verify the dimensions and determine which type of seal should be utilized and the seal length required. Use seal manufactured by Cretex Specialty Products, NPC, Inc., or approved equal and utilize Type 304 stainless steel mounting hardware.

   If an internal seal is used, clean the surface and verify it is free of loose material and excessive voids. If the surface has minor irregularities, apply a bead of butyl-rubber caulking to fill the voids. If the sealing surface is rough or has excessive voids, install a low-shrink mortar sealing surface. Grind smooth any flanges or protrusions on the interior of the casting.

   If an external seal is used, clean the casting with a wire-brush. If necessary, level and smooth the exterior surface to be covered by the external seal with a low-shrink mortar.

2. External Sealing Bands: Install external sealing bands to all existing and new joints in the riser section of the indicated manholes in accordance with ASTM C877. Expose and clean the structure joints before installing the sealing band.

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3. Replace Casting: Remove and dispose of the existing manhole castings. Furnish and install a Neenah R-1916-F casting or approved watertight manhole frame with a bolted lid. Fasten the casting to the existing chimney by the use of 4 – ¾" diameter stainless steel "J" bolts with nuts. Install the "J" bolts in accordance with the Floating Manhole Casting Detail on Sheet 20 of Section 20. Drill holes for the "J" bolts into the existing manhole chimney. Anchor "J" bolts into drilled holes using epoxy.

722-P12 MANHOLE RISER: Where manhole riser is indicated for existing storm manholes, raise manholes as required to match proposed grading by adding riser sections below the cones of the manholes. This requires the cones to be excavated, removed, and reinstalled. Provide mastic sealant in the joints and seal the exterior of the joints with external sealing bands in accordance with ASTM C877. Include all costs in the price bid for "MANHOLE RISER".

Where manhole riser is indicated for existing sanitary manholes, raise manholes as required to match proposed grading by adding riser sections manufactured with Con Shield (Microbial Induced Corrosion) Admixture below the cones of the manholes. Include all costs in the price bid for "MANHOLE RISER".

722-P13 SANITARY MANHOLE REPAIR: Repair existing sanitary manholes by furnishing and installing the items as listed below. Include all costs associated with furnishing and installing the items below in the price bid for "SANITARY MANHOLE REPAIR".

1. Coating: Repair existing sanitary manholes by coating the new manhole riser sections. Thoroughly clean existing manhole sections in accordance with coating manufacturer recommendations where coating is to be applied. Overlap coating by applying new coating over existing coating and all new concrete to create one continuous coating system in accordance with manufacturer recommendations. Apply Tnemec coating system including Series 218 material and Series 435 Perma-Shield H25 and Series 435 Perma-Glaze per manufacturer recommendations.

2. Water Tight Manhole Seals: Install internal or external watertight manhole seals per manufacturer's recommendations to cover and seal the manhole frame, adjusting rings, and 7 to 10 inches of the chimney. Verify the dimensions and determine which type of seal should be utilized and the seal length required. Use seal manufactured by Cretex Specialty Products, NPC, Inc., or approved equal and utilize Type 304 stainless steel mounting hardware.

   If an internal seal is used, clean the surface and verify it is free of loose material and excessive voids. If the surface has minor irregularities, apply a bead of butyl-rubber caulking to fill the voids. If the sealing surface is rough or has excessive voids, install a low-shrink mortar sealing surface. Grind smooth any flanges or protrusions on the interior of the casting.

   If an external seal is used, clean the casting with a wire-brush. If necessary, level and smooth the exterior surface to be covered by the external seal with a low-shrink mortar.

3. Replace Casting: Remove and dispose of the existing manhole castings. Furnish and install a Neenah R-1916-F casting or approved watertight manhole frame with a bolted lid. Fasten the casting to the existing chimney by the use of 4 – ¾" diameter stainless steel "J" bolts with nuts. Install the "J" bolts in accordance with the Floating Manhole Casting Detail on Sheet 20 of Section 20. Drill holes for the "J" bolts into the existing manhole chimney. Anchor "J" bolts into drilled holes using epoxy.

722-P14 36 INCH – 45 DEGREE CMP BEND: Furnish and install fabricated bend fitting according to manufacturer recommendation. Include all costs in the price bid for "PIPE CORR STEEL .064IN 36IN".

722-P15 ADJUST UTILITY APPURTENANCE: Adjust the existing "Rhino TriView Test Station" locate pedestals containing tracer wires and anode ground system for the existing sanitary sewer forcemain. Adjust the locate pedestals by bringing the bases to existing ground while ensuring that tracer wire and anode ground are brought above finished grade. Splice and extend tracer and ground wires as required. Maintain the system in good working order and verify functionality upon completion of the adjustment. Include all costs in the price bid for "ADJUST UTILITY APPURTENANCE".

722-P16 MODIFY MANHOLE 8' x 8' EAST VAULT: Modify the existing sanitary forcemain 8' x 8' east vault (Sta 589 + 67.07) by furnishing and installing 8' x 8' precast concrete riser section between existing riser sections as required to match proposed grading. This requires the vault to be excavated, top slab removed and reinstalled, and top riser section to be removed and reinstalled. Include all costs in the price bid for "MODIFY MANHOLE". Construct riser section to the following criteria:

1. Cement: Grey Portland, conforming to ASTM C150 Type I or Type III.

2. Concrete: Minimum 4,000 psi 28-day strength, water, aggregates, and sand conforming to ASTM C-33.

3. Admixtures:

   a. Crystalline waterproofing material: Xypex or Engineer Approved Equal.

   b. Air entraining admixtures: ASTM C260.

   c. Water reducing, retarding, accelerating, high range water reducing admixtures: ASTM C494.

4. Reinforcing Steel: Deformed reinforcing bars Grade 40, or Grade 60 conforming to ASTM A615, A616, A617, or ASTM A706.

5. Welded Wire Fabric: Conforming to ASTM A185.

6. Prestressing Strand: Uncoated, 7-wire, stress relieved strand conforming to ASTM A416 (including supplement) - Grade 270K, low relaxation type.

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7. Maintain plant records and quality control program during production of structural precast concrete. Make records available to Engineer.

8. Use molds that are rigid and constructed of material that will result in uniform finished products.

9. Ensure reinforcing steel, anchors, inserts, plates, angles, and other cast-in items are sufficiently embedded and properly located.

10. Ensure finished surfaces of precast structural units are uniform.

11. Manufacturer's proposed design:

    a. Supported by complete design calculations and drawings.

    b. Manufacture required to submit design calculations for review bearing seal and signature of Registered Professional Engineer in the State of North Dakota.

12. Standard finish produced in forms such as plastic-lined or metal that impart smooth finish to concrete.

13. Small surface holes, normal form joint marks, minor chips, and spalls will be considered acceptable. Major or unsightly imperfections as determined by the Engineer, honeycombing, or structural defects will not be considered acceptable and is basis for rejection of Product.

14. Minor patching: Acceptable providing structural adequacy and appearance of units is not impaired.

Furnish and install spray lining for the exterior of the new riser section. Thoroughly clean existing riser sections in accordance with lining manufacturer recommendations where lining is to be applied. Overlap lining by applying new lining over existing lining and covering all new unlined concrete to create one continuous lining system in accordance with manufacturer recommendations.

Furnish and install the lining as follows:

1. Coating and Primer System Physical Properties: When tested in accordance with the Standard Specifications for Public Works Construction, "the Greenbook", Section 500-2, Table 500-2.7.5 (except as noted), system meets the physical and chemical properties.

2. Polyurethane Coatings: High performance, 2-part,100 percent solids polyurethane coating.

    a. Physical Properties:

        i. Color: Cream.

        ii. Specific Gravity (ASTM D792):

            1. Series 300:1.3 (10.84 lbs/ gal).

            2. Series 400: 1.11 (9.23 lbs/gal).

        iii. Tensile Strength (ASTM D638): 2500 psi at 77 degrees F (25° C).

        iv. Elongation (ASTM D638): Recoverable; 67 percent at 77 degrees F (25° C).

        v. Flexibility (ASTM D792): No effect bending 0.5 mm plate coated with 20 mils over 8 mm diameter mandrel.

        vi. Compressibility (ASTM G95): 4200 psi.

        vii. Surface Hardness: 60 to 70, Shore "D".

        viii. Abrasion Resistance (ASTM D4060): 2.12 oz. (60 mg).

        ix. Thermal Conductivity (ASTM C177): 0.000723 cal. per sec. cm2 per degree C per cm at 20 degrees C (0.175 btu per hr. ft. degree F per ft. at 77 degrees F).

        x. Permeability (ASTM E96):

            1. Type 386: 0.262 gms per m2 per 24-hrs; 0.0358 U.S. perms.

            2. Type 396: 0.193 gms per m2 per 24-hrs; 0.0264 U.S. perms.

3. Comply with manufacturer's written instructions for examination, surface preparation, mixing, and application.

4. Total coating thickness not less than 150 mils DFT.

5. Testing: The following field tests and inspections will be conducted by the applicator:

    a. Materials Testing:

        i. Verify thickness of coatings during application for each 600 sq. ft. of applied coating or part thereof.

    b. Holiday Testing:

        i. Conduct holiday testing on the completed coating after cure or 24 hours, whichever is less, using a high voltage spark test in accordance with NACE Standard SP0188.

        ii. Do not conduct testing until coating is at 75 percent or greater of its fully cured hardness value prior to holiday testing.

        iii. Conduct tests for holiday detection on minimum specified coating thickness.

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iv. Plainly mark holidays immediately after detection and repair in accordance with manufacturer's recommendations.

v. Perform holiday testing in a manner to prevent or reduce damage to coating.

1. If test results show coating does not comply with requirements, remove and replace or repair the coating as recommended in writing by coating manufacturer and make further repairs after retesting until coating application passes.

6. Final Coating Inspection: Arrange for coating manufacturer's technical personnel to inspect coating application on completion. Notify Engineer and Owner 48 hours in advance of date and time of inspection.

7. Qualifications:

a. Manufacturer: A firm specializing in producing high performance coating materials, with not less than 25 years of experience in the chemical coating industry.

b. Applicator:

i. A firm with not less than 5 years of experience in the application of the high-performance coating system specified.
ii. Acceptable to the manufacturer of the coating system.

8. Warranties:

a. General Contractor: The General Contractor warrants the work of this Section to be free of faults and defects in accordance with the Conditions of their Contract.

b. Coating Material Manufacturer: Provide a written warranty against defects in materials for a period of one year from the date of Substantial Completion.

i. Material defects, if any, will result in replacement of materials after examination by the manufacturer and determination of defects.

ii. Notify manufacturer within 30 days of application.

c. Applicator: Provide a written warranty against defects in application for a period of 15 years when material is applied at minimum specified thickness or greater.

i. Defects may include holidays, runs or sags the result of improper mixing or application methods, or other surface imperfections that would affect the integrity of the coating.

722-P17 REINFORCED CONCRETE PIPE (RCP): Manufacture of RCP shall be in accordance with 1500 2.1.2 Manufacture of the City of Fargo Standard Specifications for Construction, except as modified herein.Pipe 12” to 15” in diameter shall be Class V, C Wall. Pipe 18” in diameter shall be Class V, B Wall.

722-P18 CONNECT SUMP PUMP DISCHARGE FROM METER PIT TO STS-208B: Connect sump pump discharge to STS-208B. Include all costs for material and installation in the bid price for “”INLET SPECIAL-TYPE 2 48IN”.

724-P01 CONNECT TO EXISTING WATERMAIN: Connect to existing watermain with the fittings designated in the plans. Coordinate watermain shutdowns impacting the 30” and 36” DIP lines with Troy Hall at City of Fargo Filtration (701-476-6741). Provide a minimum of 72 hour notice prior to watermain shutdowns. Include all costs in the price bid for “Fittings-Ductile”.

724-P02 RESTRAINED JOINTS AND FITTINGS: Restrain all fittings in accordance with City of Fargo Specification Section 1200. Brace all fittings by means of minimum 3,000 psi concrete or concrete thrust blocks placed against undisturbed earth. Take care to not cover joints, bolts, flanges, and the fittings with concrete. Mechanical restraints may be used in lieu of concrete thrust blocking if restraint devices meet or exceed the requirements of ASTM F 1674-96 or the latest revision, Standard Test Method for Joint Restraint Products for Use with PVC Pipe. If mechanical restrained joints are used, install restraints a minimum of two joints each way from bend location. Include all costs for restraint at fittings in the price bid for “Fittings-Ductile”.

Restrain pipe joints where indicated in the plans using mechanical restraints. Include all costs for restraint at pipe joints in the price bid for “Watermain __IN PVC”.

724-P03 FITTINGS DUCTILE IRON: Unless otherwise noted on the plans, water main fittings will be measured by the pound without joint accessories or cement lining. The weight for fittings not listed in the tables below shall be in accordance with AWWA C153. The weight for fittings not listed in the tables below or in AWWA C153 shall be the actual weight of the fitting(s) furnished and installed based on acceptable documentation provided by the Contractor. The standard weight of water main fittings, for payment purposes, shall be as follows:

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Bends, Caps, and Plugs							
	Fitting Weights, lbs. (AWWA C153)						
	Bends (degrees)						
Size	90	45	22.5	11.25	Caps	Plugs	Sleeves
4	25	22	18	16	9	10	20
6	39	32	31	30	15	16	29
8	57	46	46	42	22	26	45
10	89	70	64	58	32	36	61
12	108	86	80	67	42	46	76
14	210	160	136	93	66	75	128
16	264	202	172	148	92	95	159
20	400	305	310	245	125	135	236
24	565	405	412	315	166	175	306

Tees, Crosses, and Reducers									
		Fitting Weights, lbs. (AWWA C153)					Fitting Weights, lbs. (AWWA C153)		
Run	Branch				Run	Branch			
Large	Small	Tee	Cross	Reducer	Large	Small	Tee	Cross	Reducer
4	4	32	40		16	6	228	240	124
6	4	46	57	24	16	8	248	260	124
6	6	56	75		16	10	264	317	124
8	4	60	68	32	16	12	280	306	112
8	6	72	74	36	16	14	316		140
8	8	86	105		16	16	322	385	
10	4	78	112	46	20	6	315		
10	6	90	119	47	20	8	345	379	
10	8	105	124	50	20	10	370		220
10	10	120	145		20	12	395	413	205
12	4	94	119	58	20	14	440		200
12	6	110	126	58	20	16	465		200
12	8	125	149	57	20	20	535		
12	10	140	179	61	24	6	415		
12	12	160	213		24	8	445	481	
14	4	172			24	10	470		
14	6	182	200	100	24	12	500	529	305
14	8	206	228	100	24	14	550		306
14	10	228		100	24	16	580	576	320
14	12	234		100	24	20	660	1589	300
14	14	280	299		24	24	720		

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750-P01 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 338 Leather, produced by Soloman Colors, Inc. http://www.solomoncolors.com/;
   or
2. Number 31078 Adobe, produced by Davis Colors, http:/www.daviscolors.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 × 8 inch brick pattern.

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

750-P02 PIGMENTED IMPRINTED CONCRETE: Reinforce concrete median with #4 deformed reinforcing bar at 24” o.c. each way. Accurately place reinforcement at one-half depth of the slab. Use plastic chairs. Joint concrete matching that of the adjacent pavement.

750-P03 DETECTABLE WARNING PANELS: Install unpainted, cast iron plates manufactured by EJ Iron Works, Neenah Foundry, or approved equal. Tuftile is not an approved equal for radial domes.

750-P04 SIDEWALK CONCRETE: Saw contraction joints in a timely manner and construct per details in Section 020. Place one half-inch expansion joint at intervals not to exceed 150’.

Use a #4 deformed reinforcing bar placed 24” o.c. both ways on all sidewalks. The bar shall be six (6) inches shorter than the width of the slab and placed accurately at one-half depth of the slab. Use plastic chairs.

Use four (4) #4 bars 10’ long, centered over new utility trenches. Place and compact the aggregate base to the required uniform section prior to setting forms.

Saw longitudinal and transverse joints. Saw a centerline longitudinal joint on sidewalk 8’ or wider per details in Section 020. Match the existing elevation for newly placed concrete within +/- 1/8” of all adjoining concrete. Remove any placed concrete not properly matching elevations as deemed by the Engineer and replace at the Contractor’s expense. Include all items listed above in the price bid for “Sidewalk Concrete __IN”.

750-P05 DRIVEWAY CONCRETE: Reinforce and joint driveways per City of Fargo Standard Drawings 2300 5.4, 5.5, 5.6, and 5.7.

752-P01 TEMPORARY SAFETY FENCE: Install and maintain a temporary safety fence in any areas where a hazardous situation may occur such as open trenches, pavement removal areas, or other areas that could be a hazard to the public.

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

970-P01 TRASH RECEPTACLE: Provide and install Sitescapes Cityview Trash Receptacle CV2-3001 or approved equal. Trash receptacle shall be surface mounted, black, and measure 20” in length, 34” in height and 28” deep. Capacity of the receptacle shall be 32 gallons with a top opening, dome lid. Provide a high density polyethylene liner with handles.

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-984(164)	6	12

ENVIRONMENTAL NOTES

ENVIRONMENTAL NOTES (EN): The City of Fargo and North Dakota Department of Transportation and the Federal Highway Administration have made environmental commitments to secure approval of this project. The following environmental notes are requirements to comply with these commitments:

EN-1 TEMPORARY WETLAND IMPACT: Temporary impact areas within wetlands and or other waters are incorporated into the plans for this project. Remove temporary fill placed and sedimentation in wetlands or other waters. Restore these wetlands to preconstruction contours.

This document was originally issued and sealed by Adam M. Ruud, Registration Number PE- 10407, on 10/26/18 and the original document is stored in the Engineering Dept. at City Hall

Revised 10/26/2018	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	8	1

Estimated Quantities

SPEC	CODE	ITEM DESCRIPTION	UNIT	Participating	Non-Participating	Drainage (76% Fed, 24% City)		TOTAL
103	100	CONTRACT BOND	L SUM	1				1
201	330	CLEARING & GRUBBING	L SUM	1				1
202	105	REMOVAL OF STRUCTURE	L SUM	1				1
202	114	REMOVAL OF CONCRETE PAVEMENT	SY	1032				1032
202	130	REMOVAL OF CURB & GUTTER	LF	2218				2218
202	136	REMOVAL OF PAVEMENT	TON	38763				38763
202	174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	2444				2444
202	210	REMOVAL OF MANHOLES	EA	1				1
202	231	REMOVE & RESET INLETS	EA	1				1
203	101	COMMON EXCAVATION-TYPE A	CY	11169				11169
203	109	TOPSOIL	CY	14335				14335
203	138	COMMON EXCAVATION-SUBCUT	CY	1683				1683
203	140	BORROW-EXCAVATION	CY	145345				145345
210	99	CLASS 1 EXCAVATION	L SUM	1				1
210	111	CLASS 2 EXCAVATION	L SUM	1				1
210	127	CHANNEL EXCAVATION	L SUM	1				1
210	411	FOUNDATION PREPARATION	L SUM	1				1
216	100	WATER	M GAL	2253				2253
230	165	SUBGRADE PREPARATION-TYPE A-12IN	STA	92.7				92.7
251	300	SEEDING CLASS III	ACRE	17.85				17.85
251	2000	TEMPORARY COVER CROP	ACRE	17.85				17.85
253	201	HYDRAULIC MULCH	ACRE	17.85				17.85
253	301	BONDED FIBER MATRIX	ACRE	17.85				17.85
255	104	ECB TYPE 4	SY	503				503
256	100	RIPRAP GRADE I	CY	42				42
256	200	RIPRAP GRADE II	CY	722				722
258	100	CONCRETE SLOPE PROTECTION	SY	452				452
260	200	SILT FENCE SUPPORTED	LF	1618				1618
260	201	REMOVE SILT FENCE SUPPORTED	LF	1618				1618
302	101	SALVAGED BASE COURSE	CY	32836				32836
401	50	TACK COAT	GAL	737				737
401	60	PRIME COAT	GAL	1591				1591
430	43	SUPERPAVE FAA 43	TON	2313				2313
430	1000	CORED SAMPLE	EA	16				16
430	5834	PG 58-34 ASPHALT CEMENT	TON	139				139
550	310	10IN NON REINF CONCRETE PVMT CL AE-DOWELED	SY	63559				63559
602	130	CLASS AAE-3 CONCRETE	CY	449.6				449.6
602	1130	CLASS AE-3 CONCRETE	CY	389.7				389.7
602	1133	CONCRETE BRIDGE APPROACH SLAB	SY	564.4				564.4
602	1220	SINGLE SLOPE BARRIER	LF	675.6				675.6
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	1204				1204
604	9610	PRESTRESSED BOX BEAM-27IN	LF	1645				1645
612	115	REINFORCING STEEL-GRADE 60	LBS	36382				36382
612	116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	93166				93166
616	5890	STRUCTURAL STEEL	L SUM	1				1
622	12	STEEL H-PILE TIPS 10 X 42	EA	24				24
622	14	STEEL H-PILING POINTS 12 X 53	EA	32				32

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	ND	SU-8-984(164)	8	2

Estimated Quantities

SPEC	CODE	ITEM DESCRIPTION	UNIT	Participating	Non-Participating	Drainage (76% Fed, 24% City)		TOTAL
622	20	STEEL PILING HP 10 X 42	LF	2040				2040
622	40	STEEL PILING HP 12 X 53	LF	2560				2560
624	123	PEDESTRIAN RAILING	LF	160				160
624	151	RAILING	LF	432				432
702	100	MOBILIZATION	L SUM	1				1
704	1000	TRAFFIC CONTROL SIGNS	UNIT	6237				6237
704	1037	ATTENUATION DEVICE-TYPE B-35	EA	2				2
704	1052	TYPE III BARRICADE	EA	53				53
704	1054	SIDEWALK BARRICADE	EA	8				8
704	1060	DELINEATOR DRUMS	EA	240				240
704	1072	FLEXIBLE DELINEATORS	EA	54				54
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	2				2
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	384				384
706	400	FIELD OFFICE	EA	1				1
706	500	AGGREGATE LABORATORY	EA	1				1
706	550	BITUMINOUS LABORATORY	EA	1				1
706	600	CONTRACTOR'S LABORATORY	EA	1				1
708	1540	INLET PROTECTION-SPECIAL	EA	77				77
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	77				77
709	151	GEOSYNTHETIC MATERIAL TYPE R1	SY	86121				86121
709	155	GEOSYNTHETIC MATERIAL TYPE RR	SY	1444				1444
714	115	PIPE CONC REINF 12IN CL III-STORM DRAIN	LF			100		100
714	210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF			3769		3769
714	315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF			1308		1308
714	405	PIPE CONC REINF 21IN CL III-STORM DRAIN	LF			1669		1669
714	620	PIPE CONC REINF 24IN CL III-STORM DRAIN	LF			1861		1861
714	710	PIPE CONC REINF 27IN CL III-STORM DRAIN	LF			433		433
714	910	PIPE CONC REINF 36IN CL III-STORM DRAIN	LF			497		497
714	1010	PIPE CONC REINF 42IN CL III-STORM DRAIN	LF			859		859
714	1110	PIPE CONC REINF 48IN CL III-STORM DRAIN	LF			235		235
714	1212	PIPE CONC REINF 54IN CL III-STORM DRAIN	LF			1269		1269
714	2111	PIPE CONC REINF ARCH 29IN X 18IN CL III-S DRAIN	LF			230		230
714	2118	PIPE CONC REINF ARCH 36IN X 23IN CL III-S DRAIN	LF			556		556
714	3000	END SECT-CONC REINF 12IN	EA	1				1
714	3010	END SECT-CONC REINF 18IN	EA	1				1
714	3050	END SECT-CONC REINF 54IN	EA	1				1
714	5045	PIPE CORR STEEL .064IN 36IN	LF	41				41
714	9660	REMOVE & RELAY END SECTION-ALL TYPE & SIZES	EA	1				1
714	9696	EDGEDRAIN NON PERMEABLE BASE	LF	26671				26671
714	9909	FLAP GATE 15IN	EA	1				1
714	9911	FLAP GATE 21IN	EA	1				1
714	9912	FLAP GATE 24IN	EA	1				1
722	100	MANHOLE 48IN	EA	11				11
722	110	MANHOLE 60IN	EA	14				14
722	120	MANHOLE 72IN	EA	2				2
722	130	MANHOLE 84IN	EA	6				6
722	140	MANHOLE 96IN	EA	1				1

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Estimated Quantities

SPEC	CODE	ITEM DESCRIPTION	UNIT	Participating	Non-Participating	Drainage (76% Fed, 24% City)		TOTAL
722	1100	MANHOLE RISER 48IN	LF	98.42				98.42
722	1110	MANHOLE RISER 60IN	LF	87.43				87.43
722	1120	MANHOLE RISER 72IN	LF	15.16				15.16
722	1130	MANHOLE RISER 84IN	LF	45.36				45.36
722	1140	MANHOLE RISER 96IN	LF	6.74				6.74
722	2490	MANHOLE STORM CONNECTION	EA	3				3
722	3300	SANITARY MANHOLE REPAIR	EA		4			4
722	3410	MANHOLE REPAIR	EA	6				6
722	3510	INLET-TYPE 2	EA	19				19
722	3520	INLET-TYPE 2 DOUBLE	EA	6				6
722	3701	INLET SPECIAL-TYPE 2 48IN	EA	18				18
722	3761	INLET SPECIAL-TYPE 2 60IN	EA	1				1
722	3825	INLET SPECIAL-TYPE 2 DOUBLE 84IN	EA	5				5
722	4005	INLET CATCH BASIN	EA	15				15
722	4108	INLET SPECIAL CATCH BASIN 48IN	EA	2				2
722	4110	INLET SPECIAL CATCH BASIN 60IN	EA	1				1
722	4112	INLET SPECIAL CATCH BASIN 72IN	EA	2				2
722	4114	INLET SPECIAL CATCH BASIN 84IN	EA	3				3
722	4116	INLET SPECIAL CATCH BASIN 96IN	EA	2				2
722	6140	ADJUST GATE VALVE BOX	EA		6			6
722	6240	ADJUST UTILITY APPURTENANCE	EA		1			1
724	210	FITTINGS-DUCTILE IRON	LBS		3446			3446
724	300	GATE VALVE & BOX 6IN	EA		5			5
724	314	GATE VALVE & BOX 12IN	EA		8			8
724	317	GATE VALVE & BOX 16IN	EA		1			1
724	410	HYDRANT-INSTALL 5IN	EA		5			5
724	426	HYDRANT EXTENSION	LF		8.45			8.45
724	430	REMOVE HYDRANT	EA		1			1
724	810	WATERMAIN 6IN PVC	LF		67			67
724	850	WATERMAIN 12IN PVC	LF		2853			2853
724	852	WATERMAIN 16IN PVC	LF		207			207
724	870	24IN WATERMAIN	LF		10			10
724	7014	REMOVE GATE VALVE BOX	EA		4			4
748	140	CURB & GUTTER-TYPE I	LF	34650				34650
750	30	PIGMENTED IMPRINTED CONCRETE	SY	4187				4187
750	125	SIDEWALK CONCRETE 5IN	SY	16018				16018
750	140	SIDEWALK CONCRETE 6IN	SY	770				770
750	210	CONCRETE MEDIAN NOSE PAVING	SY	121				121
750	1000	DRIVEWAY CONCRETE	SY	341				341
750	2115	DETECTABLE WARNING PANELS	SF	734				734
752	850	ORNAMENTAL FENCE	LF	432				432
752	911	TEMPORARY SAFETY FENCE	LF	2650				2650
754	110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	446				446
754	112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	319				319
754	193	FLEXIBLE DELINEATORS-TYPE D	EA	75				75
754	206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	1073				1073
762	122	PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED)	SF	960				960

Estimated Quantities

SPEC	CODE	ITEM DESCRIPTION	UNIT	Participating	Non-Participating	Drainage (76% Fed, 24% City)		TOTAL
762	420	SHORT TERM 4IN LINE-TYPE R	LF	10717				10717
762	424	SHORT TERM 8IN LINE-TYPE R	LF	902				902
762	426	SHORT TERM 24IN LINE-TYPE R	LF	27				27
762	440	SHORT TERM MESSAGE-TYPE R	SF	64				64
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	5264				5264
762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF	27				27
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	14538				14538
762	1317	PREFORMED PATTERNED PVMT MK 16IN LINE-GROOVED	LF	342				342
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	1730				1730
762	1344	PREF PATT PVMT MK 7IN LINE CONTRAST-GROOVED	LF	4102				4102
764	131	W-BEAM GUARDRAIL	LF	508				508
764	145	W-BEAM GUARDRAIL END TERMINAL	EA	4				4
764	151	REMOVE W-BEAM GUARDRAIL & POSTS	LF	336				336
764	2081	REMOVE END TREATMENT & TRANSITION	EA	4				4
764	9010	ATTENUATING CRASH CUSHION TL-2	EA	5				5
770	3	LIGHTING SYSTEM A	EA	4				4
770	4	LIGHTING SYSTEM B	EA	1				1
772	2800	INTERIM TRAFFIC SIGNALS	EA	1				1
772	2904	REVISE TRAFFIC SIGNAL SYSTEM	EA	1				1
772	3125	REMOVE TRAFFIC SIGNAL SYSTEM	EA	1				1
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
910	570	MODIFY MANHOLE	EA	1				1
930	3000	BRIDGE BENCH MARKS	SET	1				1
930	9537	ABUTMENT UNDERDRAIN SYSTEM	EA	4				4
970	300	BENCH	EA	2				2
970	320	TRASH RECEPTACLE	EA	2				2
990	400	PIPE CLEANOUT	EA	20				20

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BASIS OF ESTIMATE

Project Removals

	202-0114		202-0136							302-0101
	Removal of Concrete Pavement Pay Item		Removal of Pavement Pay Item							
	Removal of Concrete		Removal of Aggregate		Removal of Asphalt		Removal of Concrete		Removal Total	Salvaged Base Course Pay Item
Project	(SY)	(CY) A	(CY) B	(Ton)	(CY) C	(Ton)	(CY) D	(Ton)	(CY) E = A+B+C+D	(CY) F
SU-8-984(164)	1,032	115	4,178	7,834	16,218	30,408	278	521	20,789	32,836
Total		**115**	**4,178**		**16,218**		**278**		**20,789**	**32,836**

Notes:

1. This is not a balance sheet, calculate own balance of materials.
2. It is assumed 95% of removed materials may be reclaimed after the crushing process.

Sidewalk Concrete 6IN

			750-0140	
			Sidewalk Concrete 6IN Pay Item	
Intersection	Quadrant	Description	Area, SF	Area, SY
52nd Ave S & 63rd St S	NW	5' offset from back of curb	145.30	16
	NE	5' offset from back of curb	150.78	17
	SW	5' offset from back of curb	67.46	8
	SE	5' offset from back of curb	154.48	17
52nd Ave S & 53rd Ave S	NW	5' offset from back of curb	84.22	9
	NE	5' offset from back of curb	116.79	13
	SW	5' offset from back of curb	94.63	10
	SE	5' offset from back of curb	68.67	8
52nd Ave S & Veterans Blvd	NW	5' offset from back of curb	96.92	11
	NE	5' offset from back of curb	145.67	16
	SW	5' offset from back of curb	178.46	20
	SE	5' offset from back of curb	156.16	17
52nd Ave S & 53rd St S	NW	5' offset from back of curb	76.61	9
	NE	5' offset from back of curb	93.07	10
	SW	5' offset from back of curb	91.68	10
	SE	5' offset from back of curb	76.61	9
Drain 27 Crossing	NW	Sta 581+97.07 to Sta 582+47.07 (Ex_52ndAve)	500.88	56
	SW	Sta 581+70.34 to Sta 582+20.34 (Ex_52ndAve)	497.76	55
	-	Sta 1501+97.02 to Sta 1504+36.53 (Pr_Path)	2680.11	298
	NE	Sta 584+72.94 to Sta 585+23.00 (Ex_52ndAve)	490.17	54
	SE	Sta 584+46.00 to Sta 584+95.94 (Ex_52ndAve)	468.10	52
52nd Ave S & 47th St S	NW	5' offset from back of curb	91.00	10
	NE	5' offset from back of curb	91.68	10
	SW	5' offset from back of curb	92.41	11
	SE	5' offset from back of curb	81.84	9
52nd Ave S & 45th St S	NE	5' offset from back of curb	133.67	15
			Total	**770**

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BASIS OF ESTIMATE

Salvaged Base Course

	Asphalt					Concrete			Curb & Gutter (Outside, Grass Blvd)			Curb & Gutter (Outside, Impressioned Blvd)			Impressioned Concrete (Blvd)			Curb & Gutter (Inside, Grass Median)			Curb & Gutter (Inside, Impressioned Median)			Impressioned Concrete (Median)			Median Nose			Driveway			Sidewalk					
	Surface Area	Depth	Sluff Area	Sluff Length	Volume	Surface Area	Depth	Volume	Area	Length	Volume	Area	Length	Volume	Surface Area	Depth	Volume	Area	Length	Volume	Area	Length	Volume	Surface Area	Depth	Volume	Surface Area	Depth	Volume	Surface Area	Depth	Volume	Surface Area	Depth	Sluff Area	Sluff Length	Volume	Total
Station Range	**SF**	**LF**	**SF**	**LF**	**CY**	**SF**	**LF**	**CY**	**SF**	**LF**	**CY**	**SF**	**LF**	**CY**	**SF**	**LF**	**CY**	**SF**	**LF**	**CY**	**SF**	**LF**	**CY**	**SF**	**LF**	**CY**	**SF**	**LF**	**CY**	**SF**	**LF**	**CY**	**SF**	**LF**	**SF**	**LF**	**CY**	**CY**
Sta 521+22.19 to Sta 527+50.00	23666.33	1	6.08	984.67	1098	6700.55	1	248	3.86	276.04	39			0			0	3.5	266.03	34			0			0			0			0					0	1420
Sta 527+50.00 to Sta 535+00.00					0	58196.64	1	2155	3.86	1560.05	223	4.17	4.07	1	9.27	0.1667	0	3.5	98.36	13	1.92	1195.09	85	3830.83	2	284	53.71	1	2			0	6404.99	0.17	0.17	1119.73	46	2809
Sta 535+00.00 to Sta 542+50.00					0	37625.05	1	1394	3.86	1500.52	215			0			0	3.5	1227.74	159	1.92	272.97	19	1116.69	2	83			0			0	13500.00	0.17	0.17	3000.00	102	1971
Sta 542+50.00 to Sta 550+00.00					0	61475.89	1	2277	3.86	1348.91	193	4.17	259.11	40	748.72	0.1667	5	3.5	468.19	61	1.92	1239.27	88	6961.45	2	516	246.31	1	9			0	12965.75	0.17	0.17	1903.66	92	3280
Sta 550+00.00 to Sta 557+50.00	1088.7	0.5	1.5	124.75	27	52428.86	1	1942	3.86	1441.25	206	4.17	61.77	10	202.13	0.1667	1	3.5	1480.72	192			0			0	26.86	1	1	381.28	0.33	5	14944.54	0.17	0.17	2919.53	110	2494
Sta 557+50.00 to Sta 565+00.00					0	69268.79	1	2566	3.86	1743.15	249	4.17	3.18	0	9.61	0.1667	0	3.5	1453.85	188	1.92	484.46	34	1875.86	2	139	86.83	1	3			0	14850.84	0.17	0.17	2844.29	109	3290
Sta 565+00.00 to Sta 572+50.00					0	46542.46	1	1724	3.86	1409.78	202	4.17	106.99	17	327.59	0.1667	2	3.5	809.33	105	1.92	750.76	53	4294.88	2	318	95.35	1	4			0	15032.65	0.17	0.17	2898.83	111	2534
Sta 572+50.00 to Sta 580+00.00	2878.28	1			107	57846.71	1	2142	3.86	1809.07	259			0			0	3.5	559.68	73	1.92	1146.52	82	5093.96	2	377	236.02	1	9			0	14487.28	0.17	0.17	2896.87	107	3155
Sta 580+00.00 to Sta 587+50.00					0	24730.91	1	916	3.86	827.04	118	4.17	221.56	34	607.72	0.1667	4	3.5	1048.6	136			0			0			0	1550.12	0.33	19	22057.38	0.17	0.17	3481.70	158	1385
Sta 587+50.00 to Sta 595+00.00					0	40980.05	1	1518	3.86	1516.73	217			0			0	3.5	1107.45	144	1.92	453.17	32	2720.46	2	202	97.40	1	4			0	15032.67	0.17	0.17	3006.54	111	2227
Sta 595+00.00 to Sta 602+50.00					0	63176.93	1	2340	3.86	1486.94	213	4.17	97.39	15	268.05	0.1667	2	3.5	228.37	30	1.92	1467.71	104	6272.93	2	465	239.97	1	9			0	14385.96	0.17	0.17	2648.00	105	3282
Sta 602+50.00 to Sta 609+32.74					0	48964.24	1	1813	3.86	1366.45	195			0			0	3.5	616.60	80	1.92	749.79	53	3345.09	2	248			0	1137.35	0.33	14	7089.87	0.17	0.17	1419.73	53	2457
Sta 610+87.38 to Sta 615+50.72					0	4085.27	1	151	3.86	486.48	70			0			0			0			0			0			0			0	326.08	0.17	0.17	20.00	2	223
Guardrail					0			0			0			0			0			0			0			0			0			0					0	166
Temporary Pavement	16435.25	0.67	1.77	798.93	460			0			0			0			0			0			0			0			0			0					0	460
Discretionary Subcut					0			0			0			0			0			0			0			0			0			0					0	1683
																																					Total	32836

HBP Cored Samples

Specification Section	A Distance (Ft)÷2000	B Lanes	C Lifts	D Sublots (A × B × C)	Quantity (D × 2)	Quantity (1 per mile)	Unit
430.04 I.2.b(1), "General"	1	2	4	8	16	N/A	EA
430.04 I.2.b(2), "Pavement Thickness Determination Cores"					N/A	0	EA
				Total	16	0	EA

Quantities for Guardrail Grading Pavement

Location	Salvaged Base Course (CY)	Prime Coat (GAL)	PG 58-34 Asphalt Cement (TON)	Superpave FAA 43 (TON)
Sta 579+75.73 EB to Sta 582+20.34 EB	36	52	1	23
Sta 579+93.76 EB to Sta 582+20.34 EB	47	59	2	27
Sta 584+72.95 WB to Sta 586+99.53 WB	48	61	2	28
Sta 584+72.95 WB to Sta 587+17.56 WB	35	42	1	20
Totals	**166**	**214**	**6**	**98**

Temporary Pavement

Material	Unit	Phase 2	Phase 3A	Phase 3B	Subtotal
Salvaged Base Course @ 2 Ton/CY (8IN Depth)	Ton	461	299	160	920
Commercial Grade Hot Mix Asphalt @ 2 Ton/CY (4IN Depth)	Ton	211	136	73	420
Prime Coat @ 0.25 GAL/SY	GAL	244	158	84	486
Tack Coat @ 0.05 GAL/SY (2 lifts, 1 application)	GAL	47	31	16	94

Removal of Pavement

Concrete Pavements @ 2.0 Ton/CY
Bituminous Pavements @ 2.0 Ton/CY
Aggregate Base @ 1.875 Ton/CY

Pavement

Salvaged Base Course @ 1.875 Ton/CY
Tack Coat @ 0.05 Gal/SY
Prime Coat @ 0.25 Gal/SY
Superpave FAA 43 @ 2 Ton/CY
PG 58-34 Asphalt Cement @ 6.0%

Water

25 MGal/Mile for Dust Palliative
20 Gal/Ton for Aggregates
10 Gal/CY for Embankment

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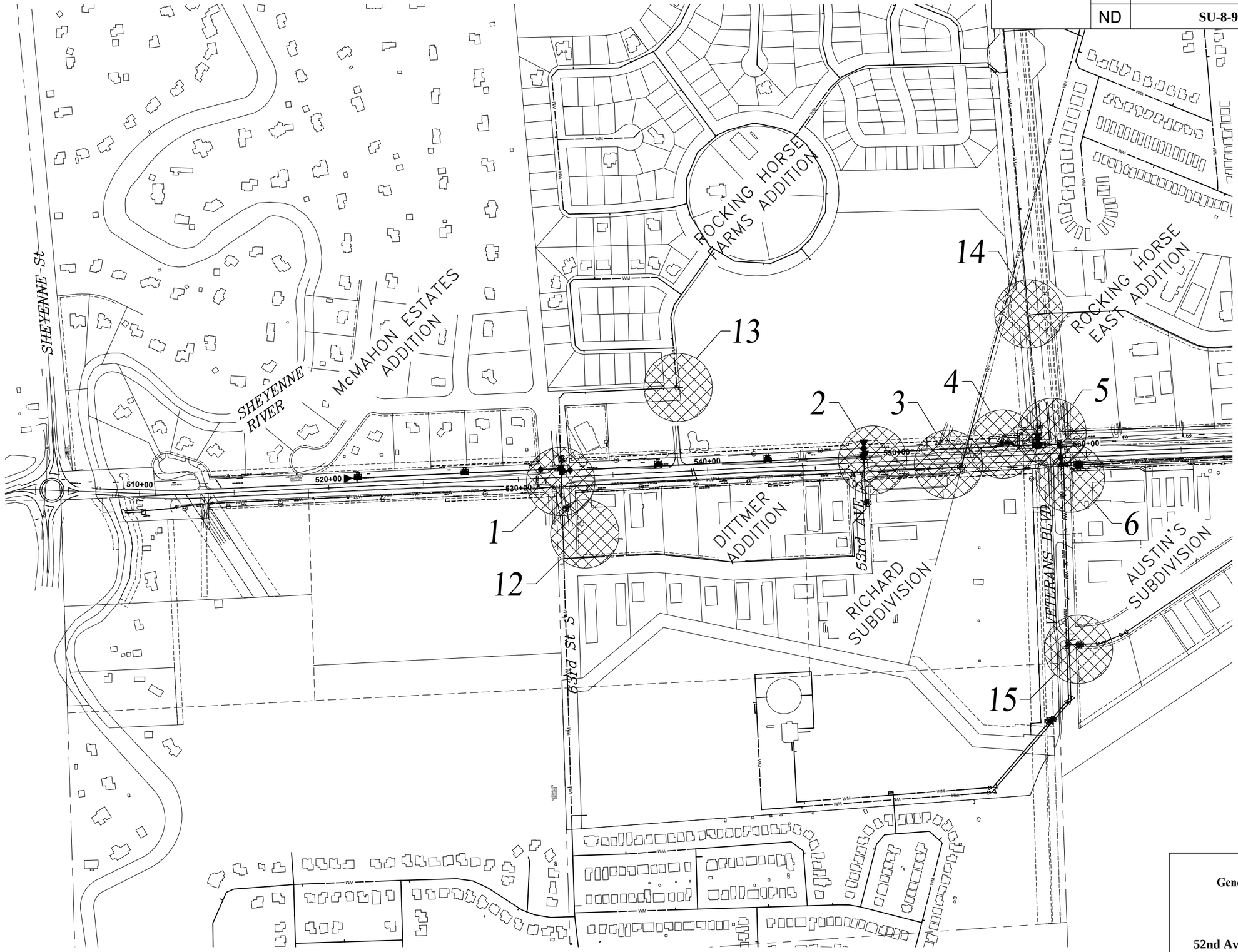
Revised	10/26/18				
		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	20	1



N

0 250 500'

NOTE:

SEE GATE VALVE TIE DETAILS (SHEETS 3 & 4)

THE CITY OF Fargo FAR MORE

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Houston Engineering Inc.
Ph: 701.237.5065

ALL ELEVATIONS ARE BASED ON THE U.S.G.S. VERTICAL DATUM OF 1988. (UNLESS NOTED OTHERWISE)

General Details - Gate Valve Location

52nd Ave S - West of 63rd St S to 45th St S

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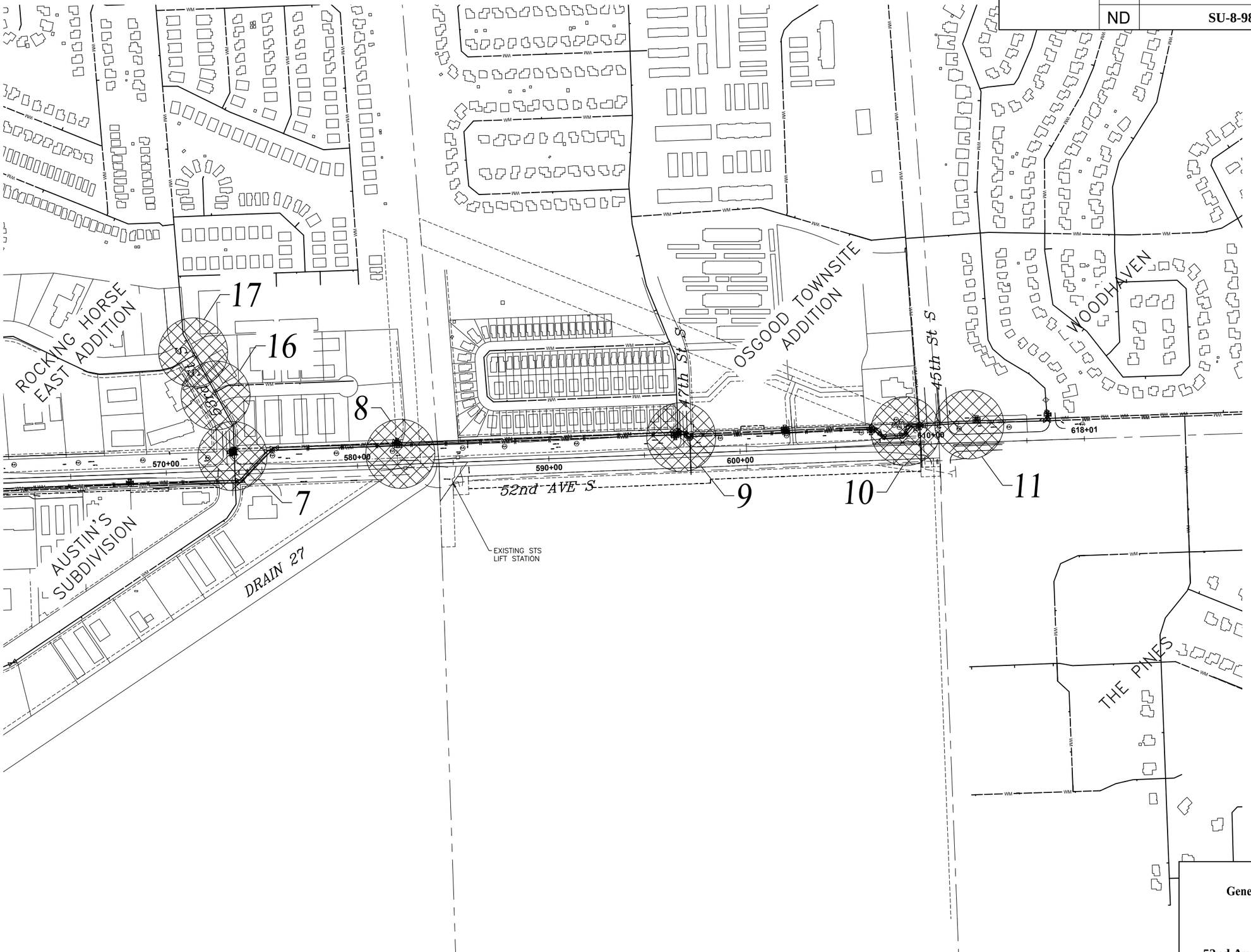
Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	20	2



NOTE:

SEE GATE VALVE TIE DETAILS (SHEETS 3 & 4)

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General Details - Gate Valve Location

52nd Ave S - West of 63rd St S to 45th St S

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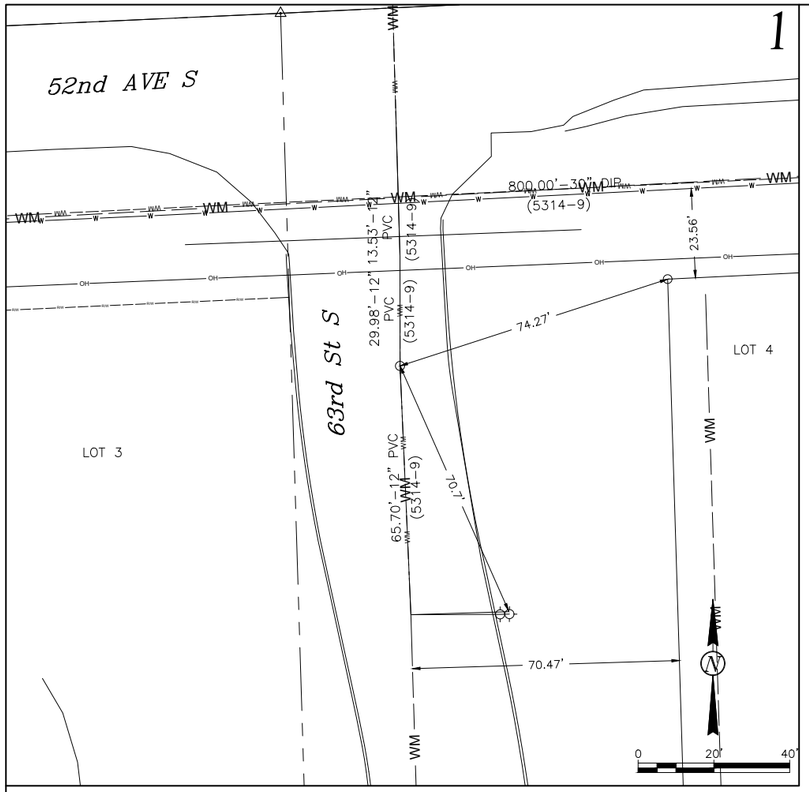
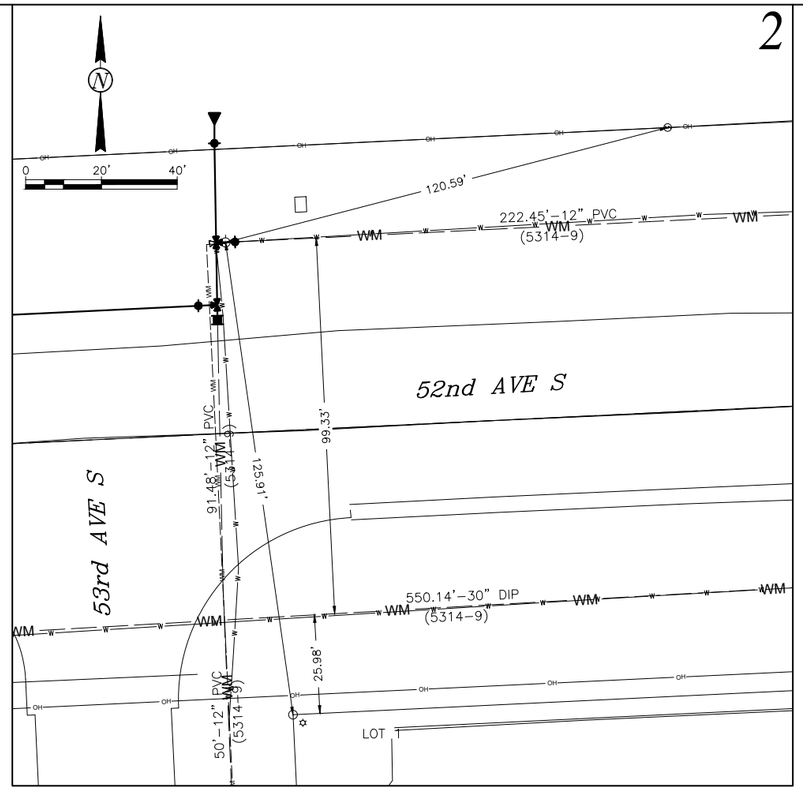
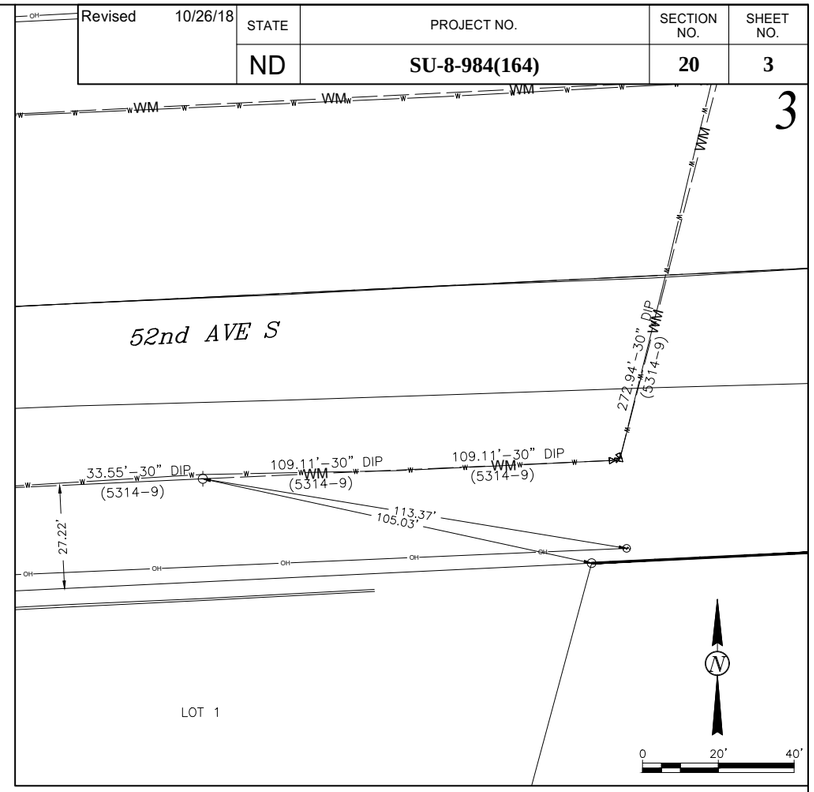
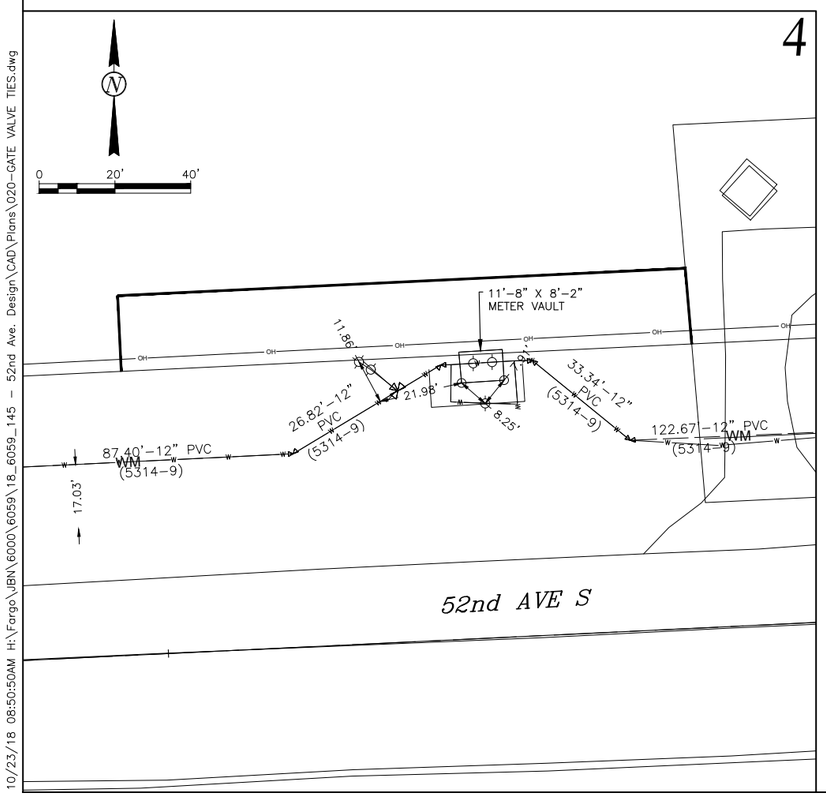
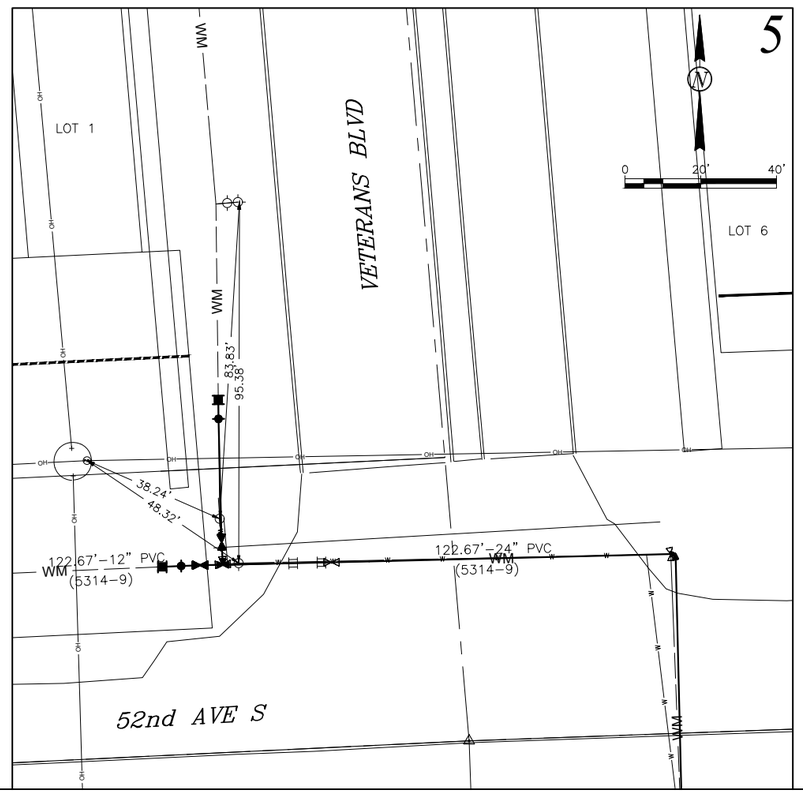
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	20	3











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General Details - Gate Valve Tie Details

52nd Ave S - West of 63rd St S to 45th St S

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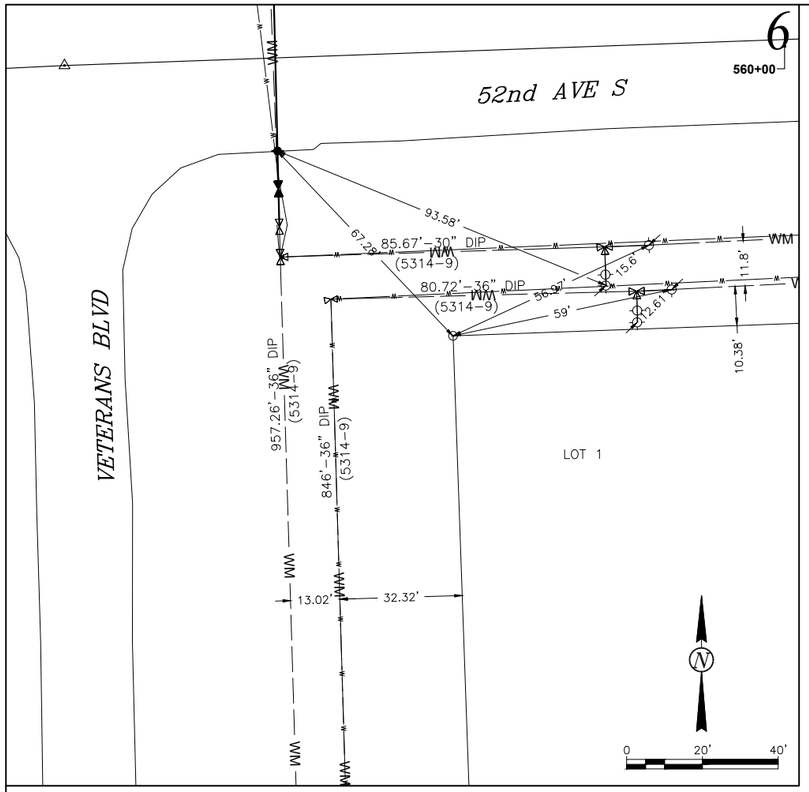
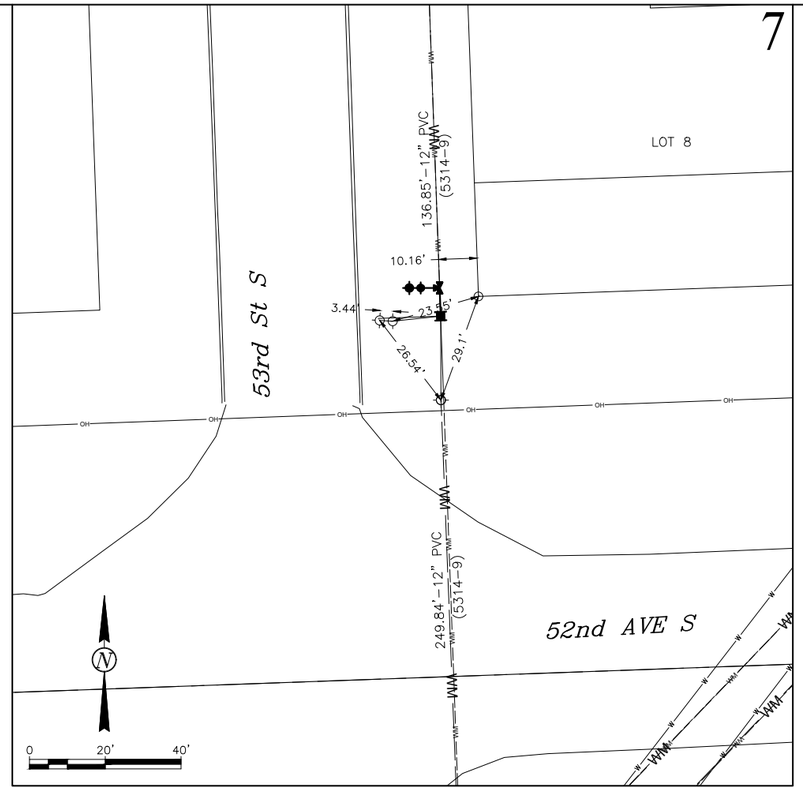
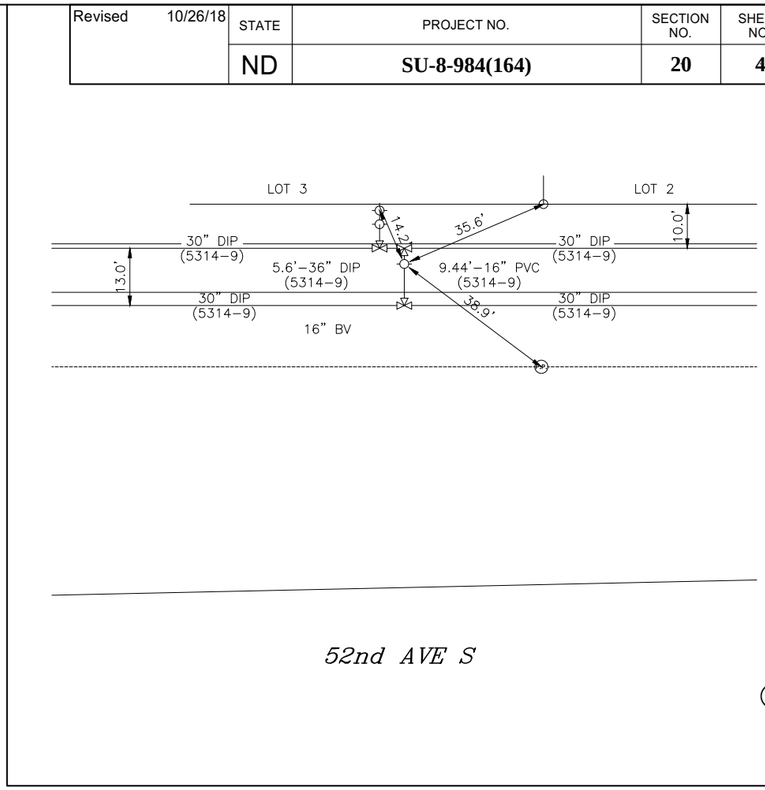
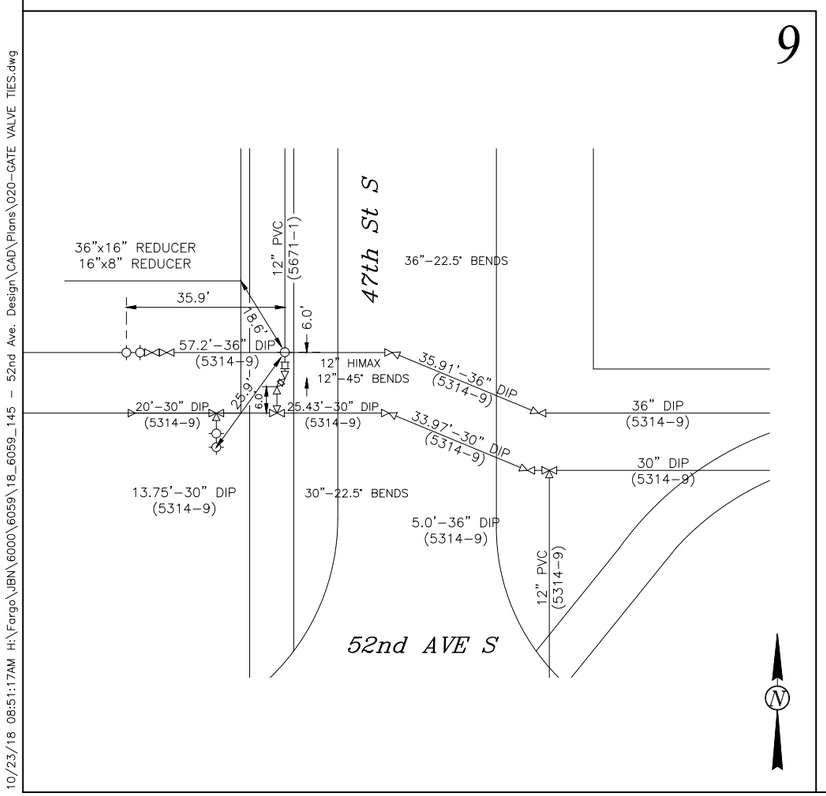
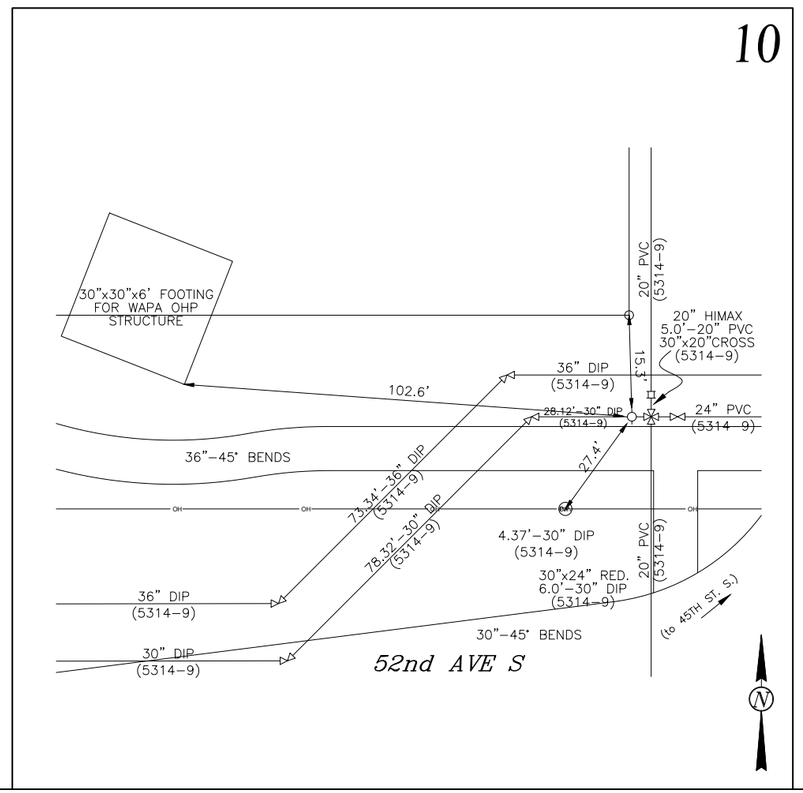
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	20	4

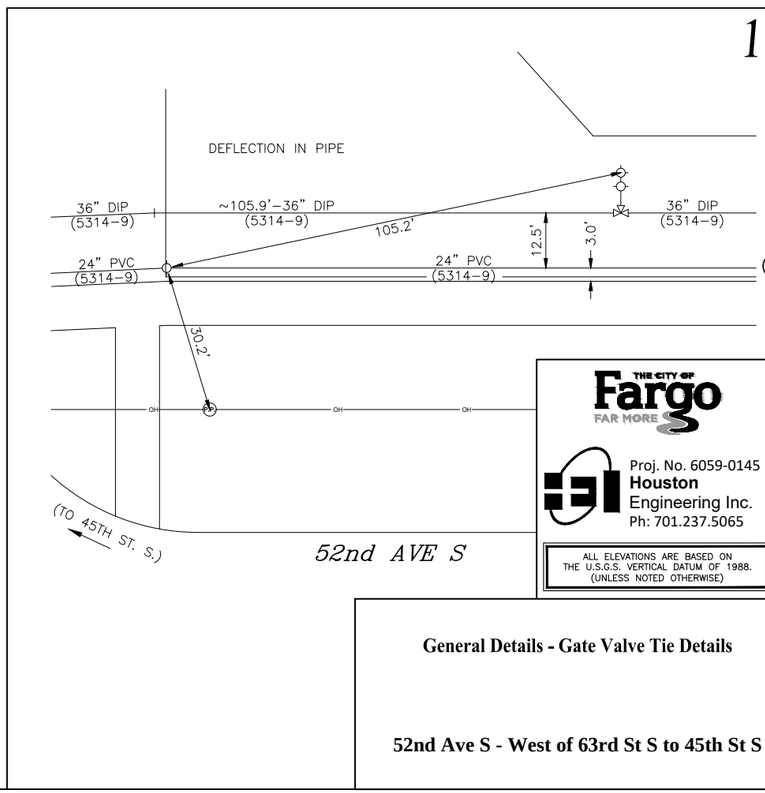












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General Details - Gate Valve Tie Details

52nd Ave S - West of 63rd St S to 45th St S

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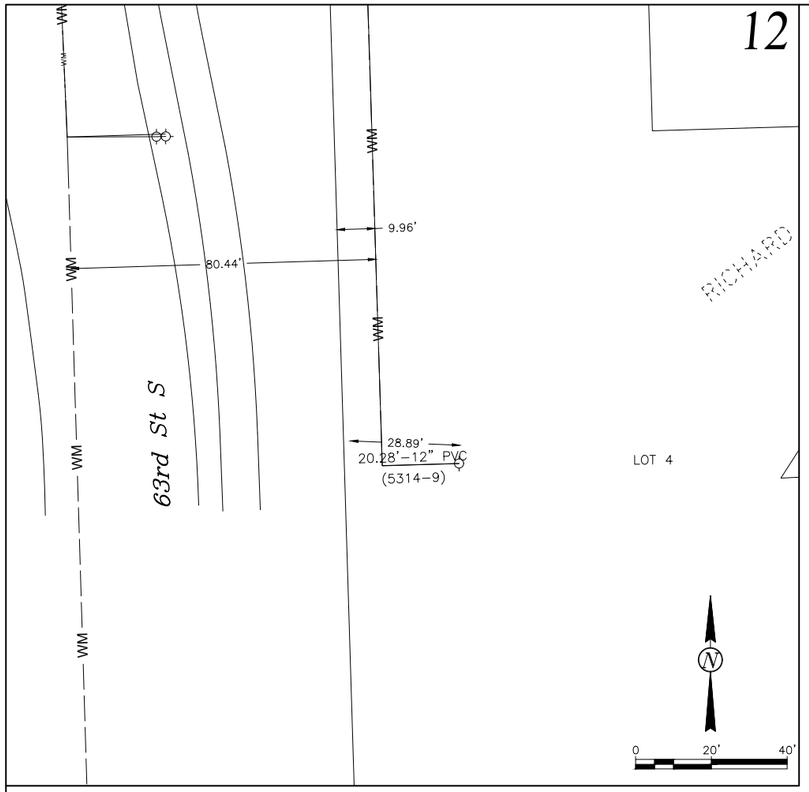
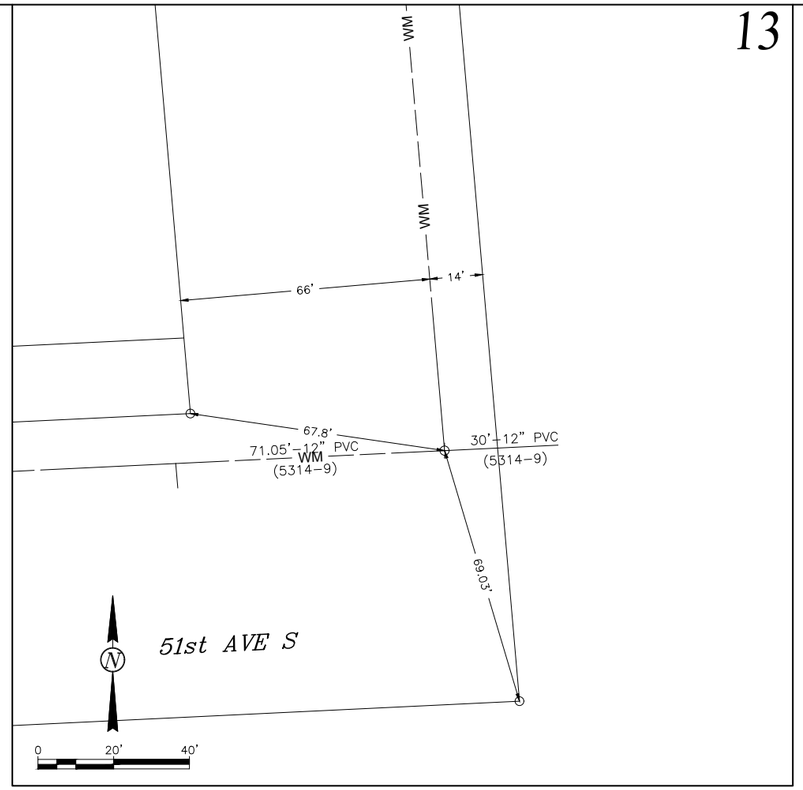
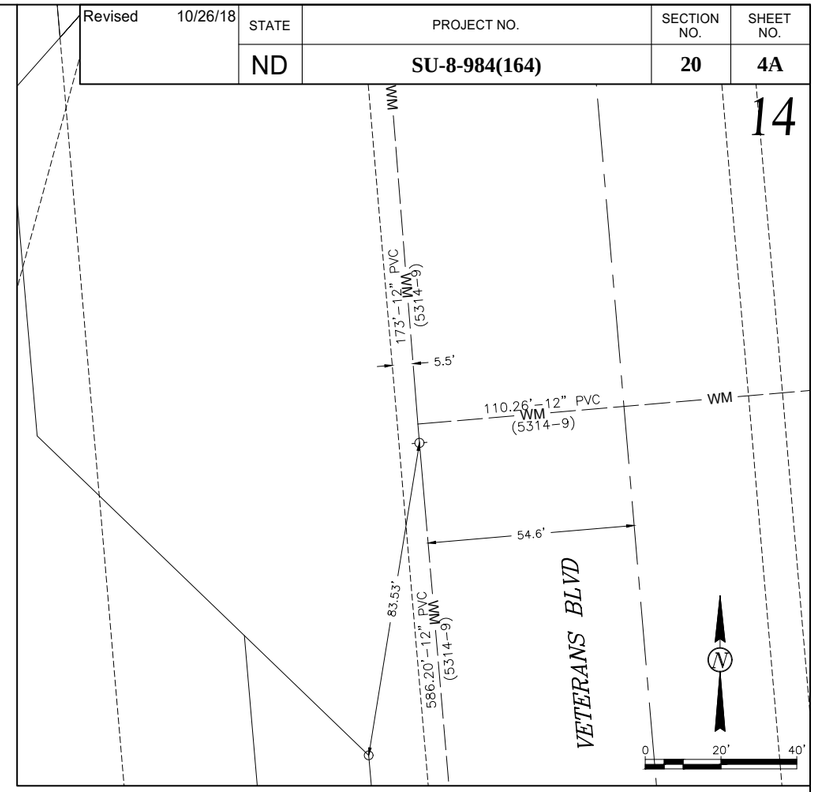
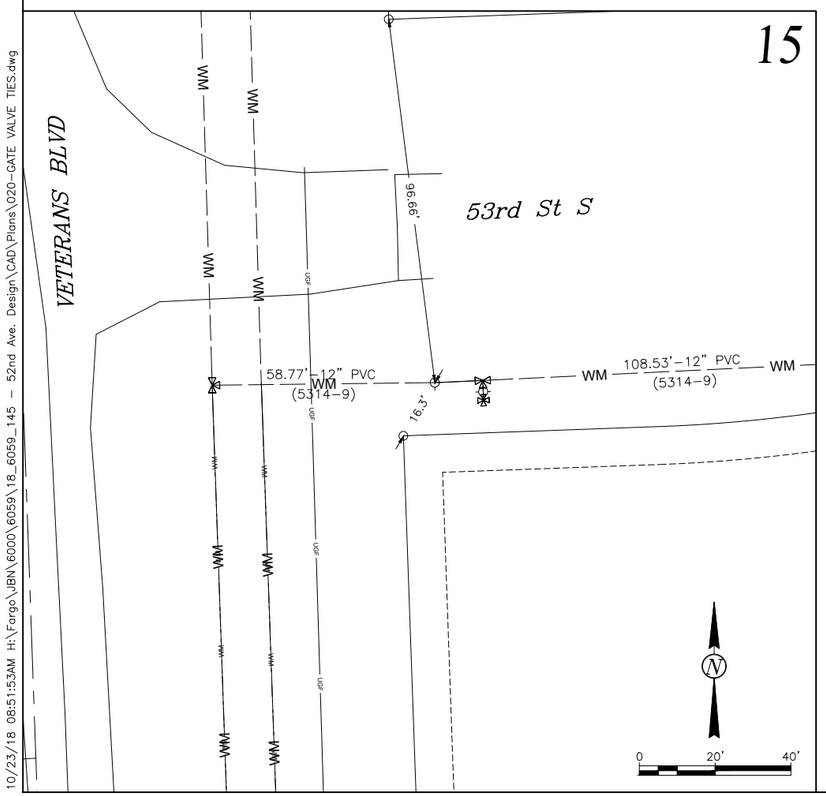
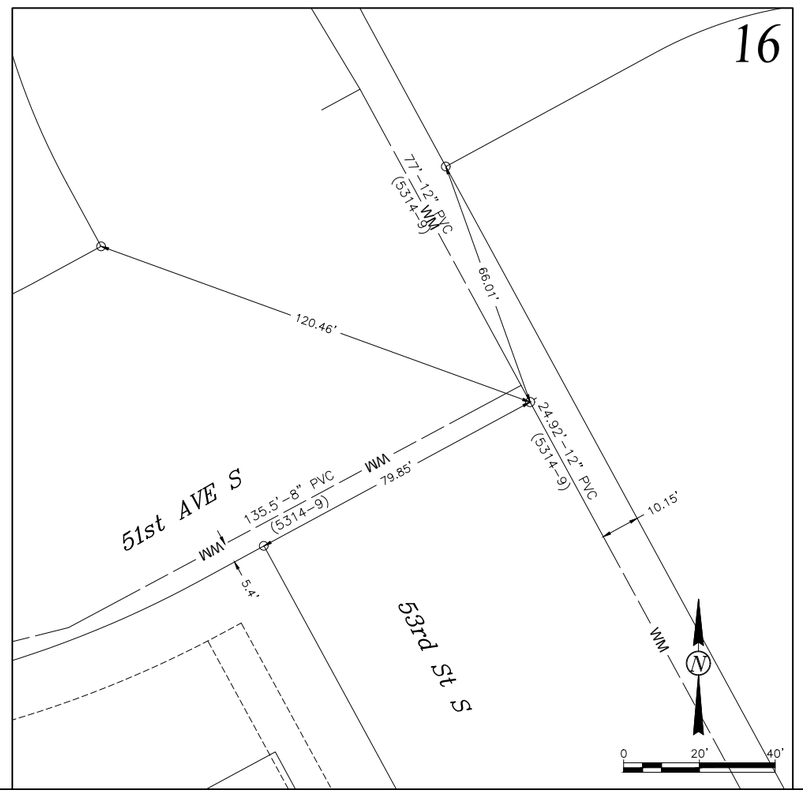
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	20	4A

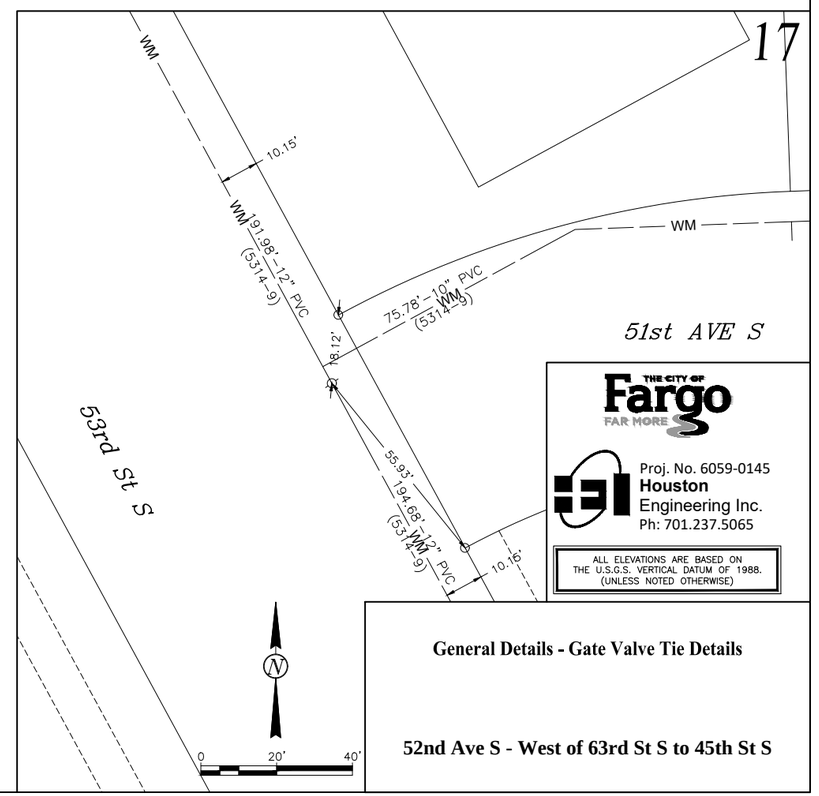












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General Details - Gate Valve Tie Details

52nd Ave S - West of 63rd St S to 45th St S

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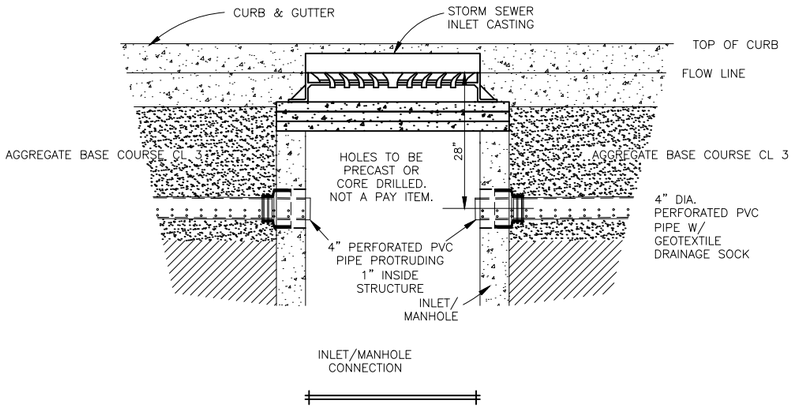
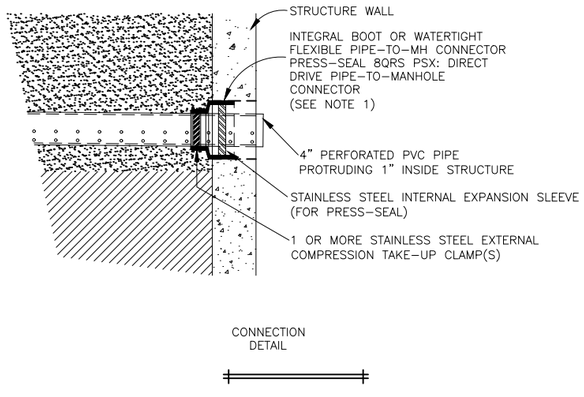
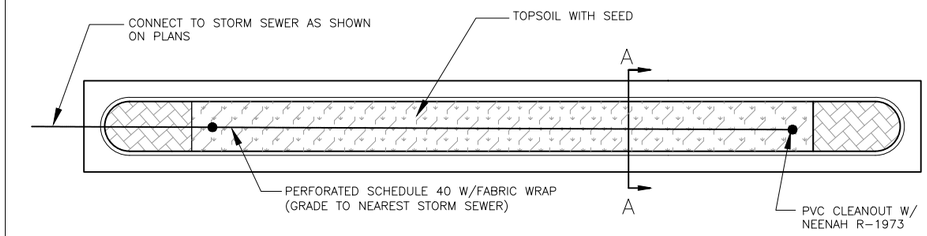
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	**SU-8-984(164)**	**20**	**13**



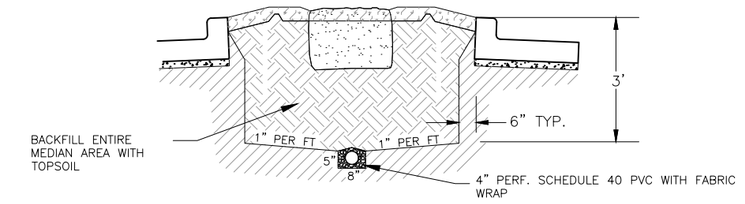


NOTES:
1. INSERTA TEE, LINK-SEAL, OR OTHER APPROVED EQUAL MAY BE UTILIZED WITH ENGINEER APPROVAL.
2. SEE 4" PVC EDGE DRAIN DETAIL FOR ADDITIONAL DETAILS.

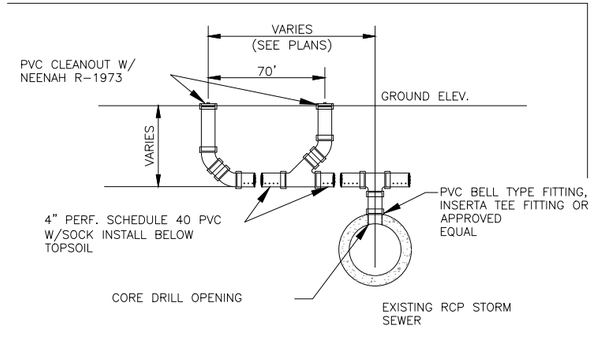
STORM INLET/PVC DRAIN PIPE DETAIL



TYPICAL MEDIAN



SECTION A-A



TYPICAL MEDIAN TREE PLANTING WITH DRAIN TILE

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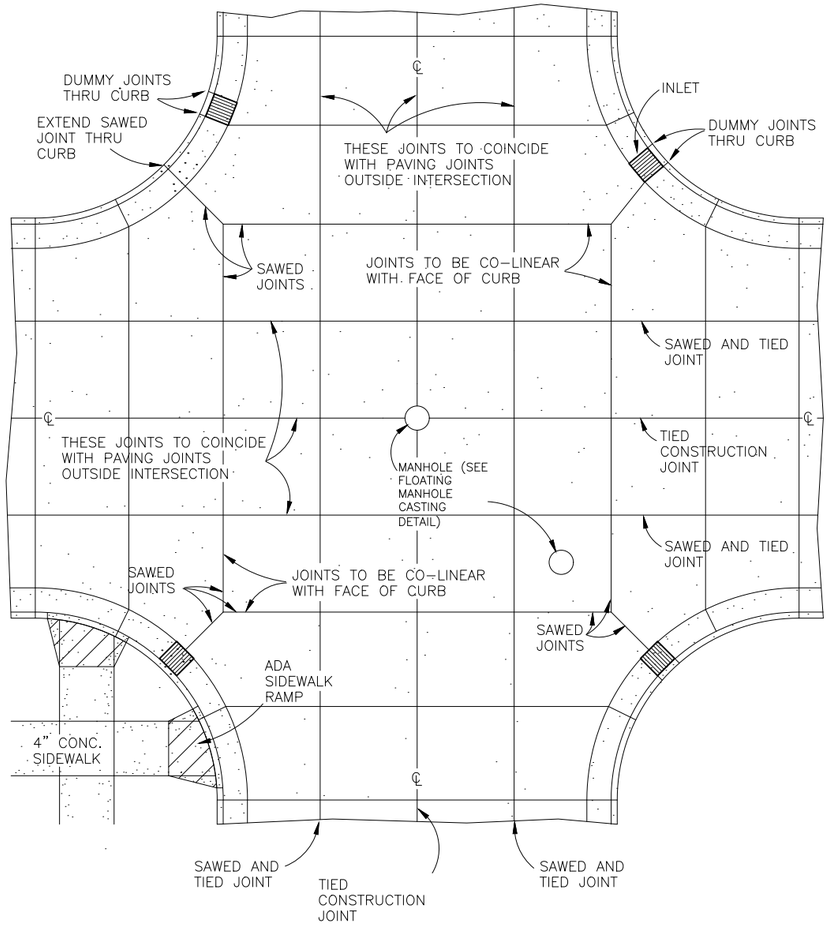
General Details - Storm Sewer

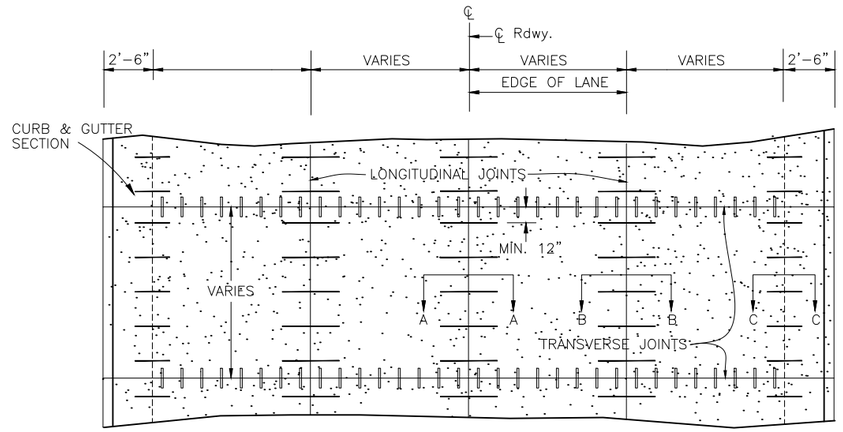
52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	20	18

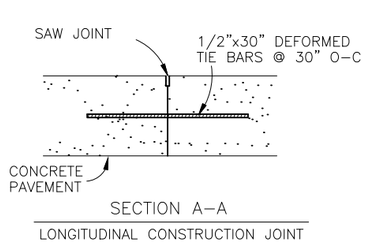


NOTES:
1. ALL DIMENSIONS ARE VARIABLE, SEE PLANS AND PROPER CONCRETE PAVEMENT DETAIL FOR DIMENSIONS

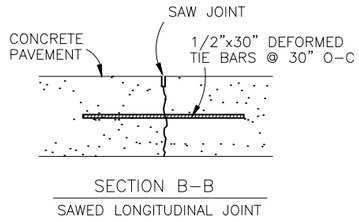
TYPICAL CONCRETE INTERSECTION LAYOUT



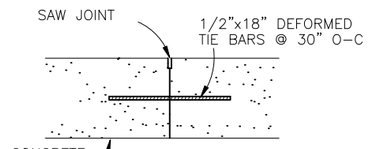
LONGITUDINAL JOINTS



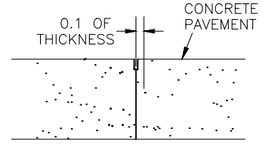
SECTION A–A
LONGITUDINAL CONSTRUCTION JOINT



SECTION B–B
SAWED LONGITUDINAL JOINT



SECTION C–C
LONGITUDINAL CONSTRUCTION JOINT



STANDARD KEYWAY DIMENSIONS

NOTES:
1. ALL LONGITUDINAL JOINTS SHALL BE TIED AND ALL LONGITUDINAL CONSTRUCTION JOINTS SHALL BE BOTH TIED.
2. SEE SAW JOINT DETAILS
3. WHERE TIE BARS ARE INSTALLED AND LATER STRAIGHTENED, GRADE 40 STEEL SHALL BE USED
4. ALL TIE BARS SHALL BE EPOXY COATED IN ACCORDANCE WITH AASHTO M284

LONGITUDINAL JOINTS

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Houston Engineering Inc.
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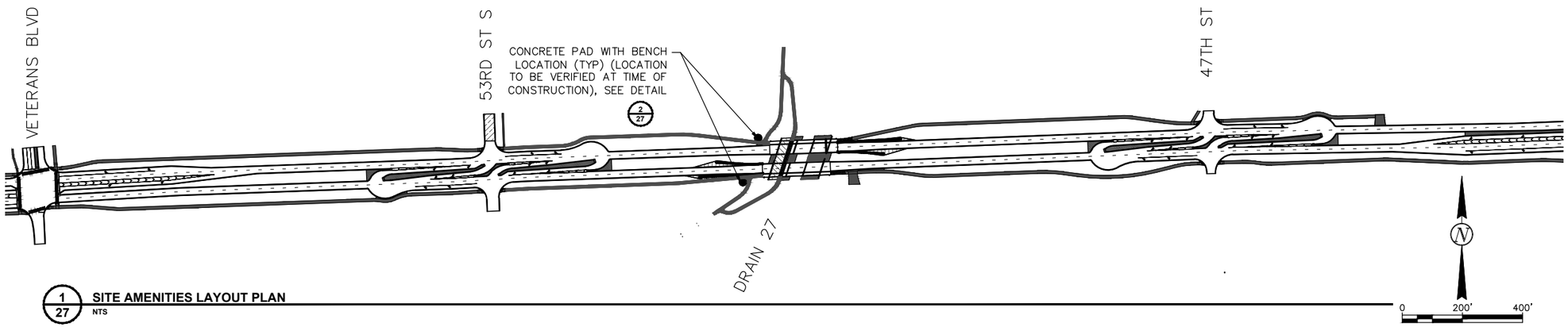
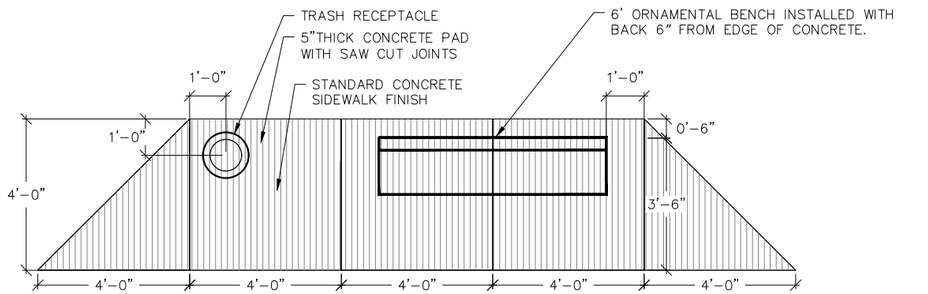
General Details - Paving

52nd Ave S - West of 63rd St S to 45th St S

REVISED 10/26/2018	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	20	27

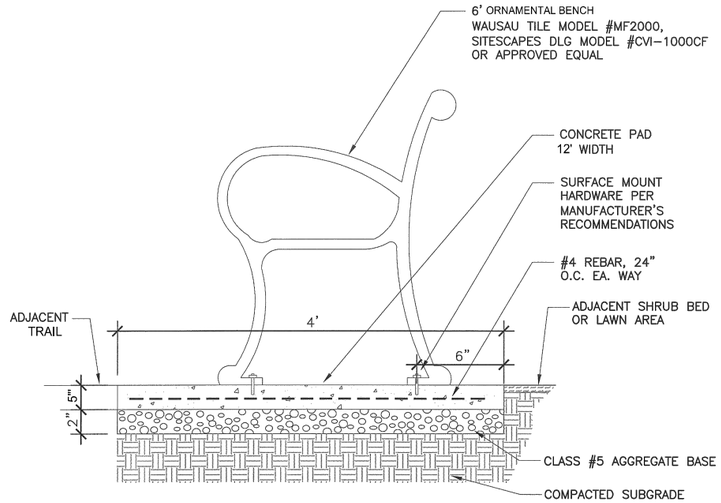


1/27 **SITE AMENITIES LAYOUT PLAN**
NTS



NOTES:

1. COLOR TO BE POWDER COATED
2. SURFACE MOUNT PER MANUFACTURE'S RECOMMENDATIONS
3. CONCRETE TO BE 4,000 PSI
4. DOWEL INTO ADJACENT SIDEWALK WITH #4 DOWELS, 3 PER PAD
5. INCLUDE CONCRETE PAD IN THE PRICE BID FOR 5' SIDEWALK CONCRETE



BENCH AND CONCRETE PAD DETAIL
NOT TO SCALE

2/27 **CONCRETE PAD WITH BENCH DETAIL**
NTS

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WSB PROJECT NO. 012067-000

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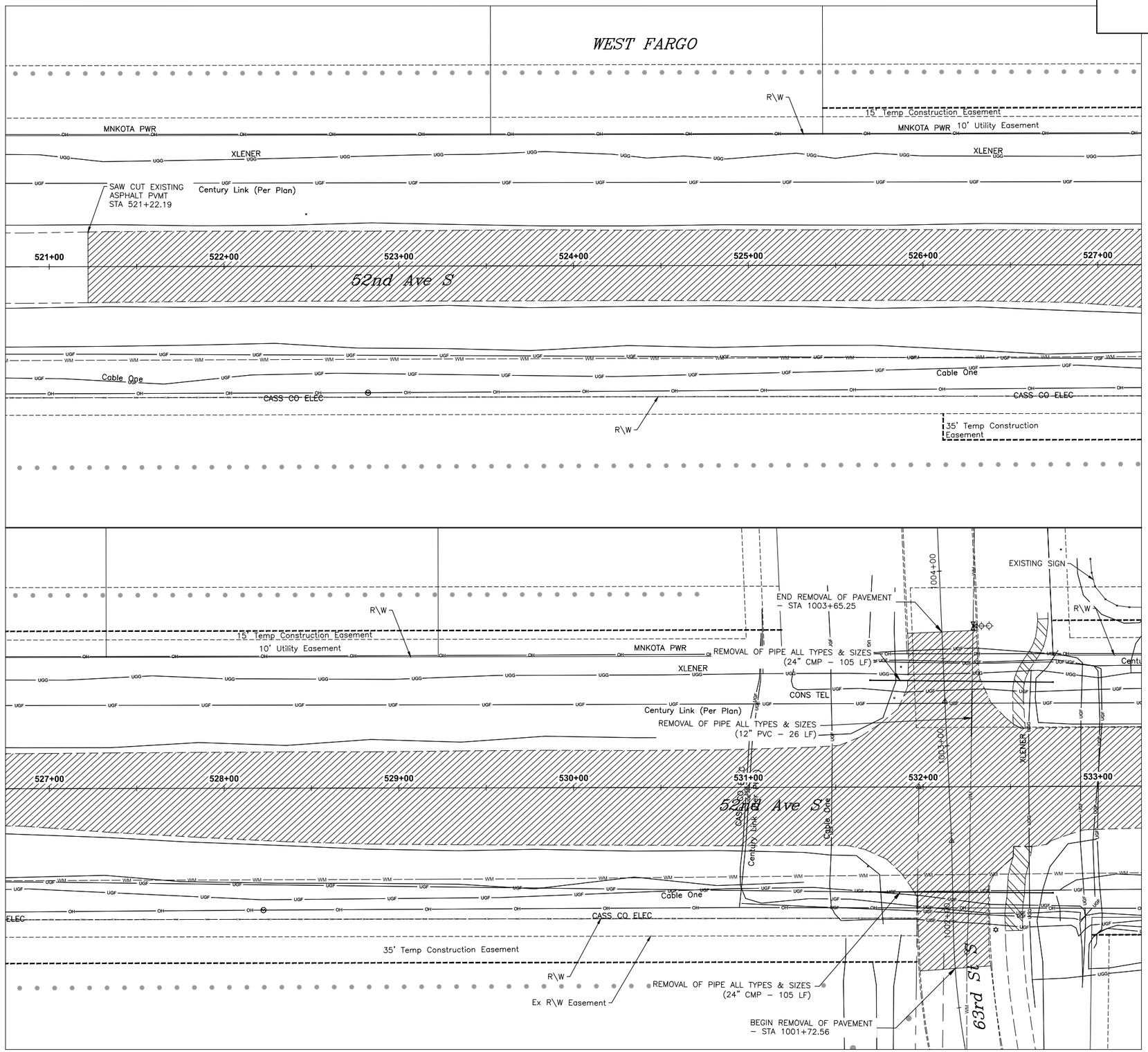
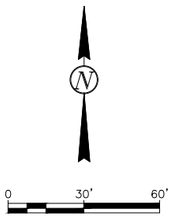
PEDESTRIAN BENCH DETAILS

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	**SU-8-984(164)**	**40**	**1**





SPEC	CODE	BID ITEM	QTY	UNIT
202	0114	REMOVAL OF CONCRETE PAVEMENT STA 521+22 TO STA 533+00	97	SY
202	0130	REMOVAL OF CURB & GUTTER STA 521+22 TO STA 533+00	115	LF
202	0136	REMOVAL OF PAVEMENT STA 521+22 TO STA 533+00	5005	TON
202	0174	REMOVAL OF PIPE ALL TYPES & SIZES STA 521+22 TO STA 533+00	220	LF

REMOVAL OF CONCRETE PAVEMENT

REMOVAL OF PAVEMENT

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Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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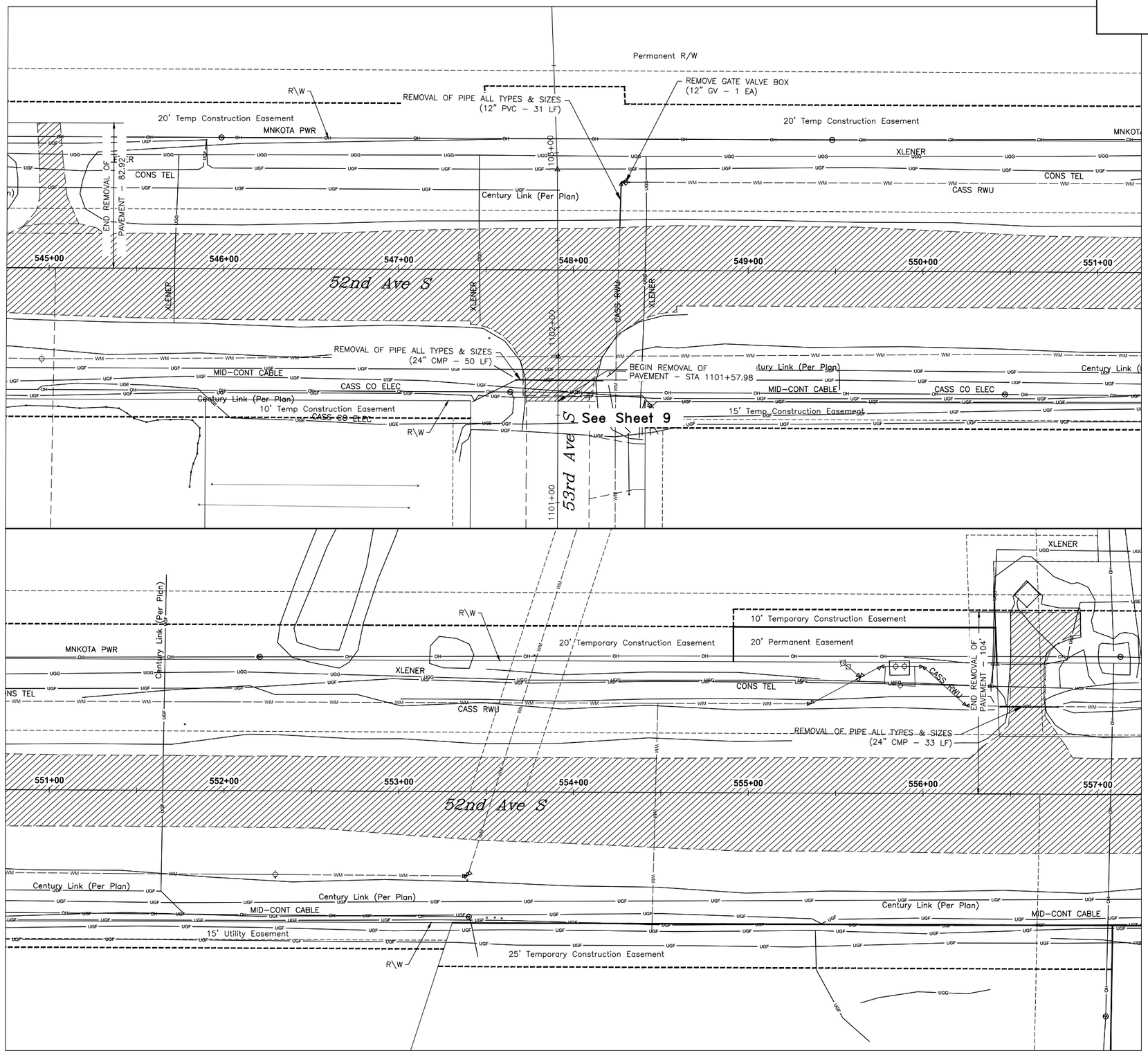
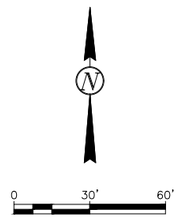
Removals

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	**SU-8-984(164)**	**40**	**3**





SPEC CODE	BID ITEM	QTY	UNIT
202 0136	REMOVAL OF PAVEMENT STA 545+00 TO STA 557+00	5036	TON
202 0174	REMOVAL OF PIPE ALL TYPES & SIZES STA 545+00 TO STA 557+00	114	LF
724 7014	REMOVE GATE VALVE BOX STA 545+00 TO STA 557+00	1	EA

REMOVAL OF CONCRETE PAVEMENT

REMOVAL OF PAVEMENT

THE CITY OF Fargo
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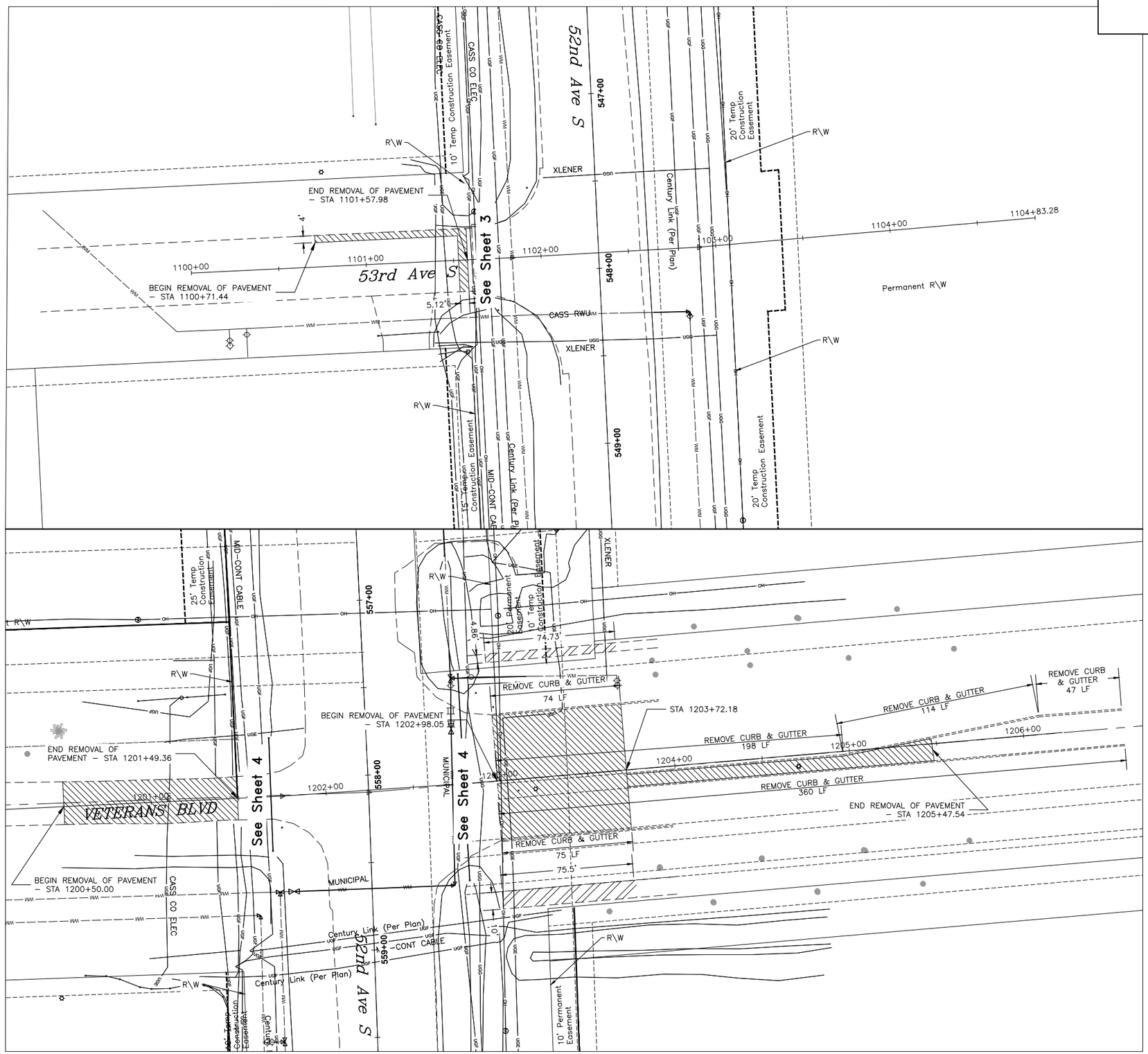
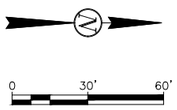
Removals

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	40	9





SPEC CODE	BID ITEM		QTY	UNIT
202 0114	REMOVAL OF CONCRETE PAVEMENT			
	VETERANS BLVD		125	SY
202 0130	REMOVAL OF CURB & GUTTER			
	VETERANS BLVD		768	LF
202 0136	REMOVAL OF PAVEMENT			
	53RD AVE S		21	TON
	VETERANS BLVD		724	TON
		TOTAL	745	TON

REMOVAL OF CONCRETE PAVEMENT

REMOVAL OF PAVEMENT

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Removals

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	**SU-8-984(164)**	**50**	**1**

Structure No.	EX STS–400
Type	MANHOLE RISER 60IN
Grate Style	R–1733
Sta.	581+07.70 55.00'R
Rim Elev	907.88
Ex Rim Elev	902.00
Riser	5.88

Structure No.	EX STS–500
Type	MANHOLE RISER 48IN
Grate Style	R–1916–F
Sta.	589+94.12 91.50'R
Rim Elev	904.40
Ex Rim Elev	900.90
Riser	3.50

Structure No.	EX STS–501
Type	MANHOLE RISER 48IN
Grate Style	R–1916–F
Sta.	593+85.61 91.86'R
Rim Elev	910.71
Ex Rim Elev	906.21
Riser	4.50

Structure No.	EX STS–504
Type	MANHOLE RISER 48IN
Grate Style	R–1916–F
Sta.	607+99.58 91.78'R
Rim Elev	910.16
Ex Rim Elev	906.09
Riser	4.07

Structure No.	STS–1
Type	END SECT–CONC REINF 12IN
Sta.	526+00.81 55.01'R
INV NE	905.86 12" RCP

Structure No.	STS–1A
Type	INLET SPECIAL – TYPE 2 48IN
Grate Style	R–3067–VB
Sta.	526+17.16 33.00'R
Rim Elev	909.33
Base Thickness	0.50
Invert Elev	905.94
H' Dist	2.23
INV N	905.94 12" RCP
INV SW	905.94 12" RCP

Structure No.	STS–1B
Type	INLET – TYPE 2
Grate Style	R–3067–VB
Sta.	526+17.17 –39.92'L
Rim Elev	909.22
Base Thickness	0.67
Invert Elev	906.16
H' Dist	2.40
INV S	906.16 12" RCP

Structure No.	STS–100
Type	MANHOLE 84IN
Grate Style	R–1955–1
Sta.	532+12.02 62.62'R
Rim Elev	909.49
Base Thickness	0.67
Invert Elev	900.65
Riser	7.01
INV W	903.51 15" RCP
INV S	900.65 36" RCP
INV E	900.65 36" x 23" RCPA

Structure No.	STS–101
Type	MANHOLE 48IN
Grate Style	R–1733
Sta.	529+84.96 61.00'R
Rim Elev	909.75
Base Thickness	0.50
Invert Elev	904.42
Riser	4.04
INV N	904.42 15" RCP
INV E	904.42 15" RCP

Structure No.	STS–101A
Type	INLET SPECIAL – TYPE 2 48IN
Grate Style	R–3067–VB
Sta.	529+85.00 43.92'R
Rim Elev	909.00
Base Thickness	0.50
Invert Elev	904.49
H' Dist	3.39
INV S	904.49 15" RCP
INV N	904.49 15" RCP

Structure No.	STS–101B
Type	INLET – TYPE 2
Grate Style	R–3067–VB
Sta.	529+85.00 –39.92'L
Rim Elev	908.83
Base Thickness	0.67
Invert Elev	904.83
H' Dist	3.38
INV S	904.83 15" RCP

Structure No.	STS–102A
Type	INLET SPECIAL CATCH BASIN – 72IN
Grate Style	R–4342
Sta.	535+50.00 62.00'R
Rim Elev	905.80
Base Thickness	0.67
Invert Elev	901.33
H' Dist	3.47
INV E	901.33 36" x 23" RCPA
INV W	901.33 36" x 23" RCPA
INV N	902.42 15" RCP

Structure No.	STS–102B
Type	INLET SPECIAL – TYPE 2 48IN
Grate Style	R–3067–V
Sta.	535+50.00 32.92'R
Rim Elev	909.59
Base Thickness	0.50
Invert Elev	902.54
H' Dist	5.93
INV N	905.29 15" RCP
INV S	902.54 15" RCP

Structure No.	STS–102C
Type	INLET – TYPE 2
Grate Style	R–3067–V
Sta.	535+50.00 –50.92'L
Rim Elev	909.63
Base Thickness	0.67
Invert Elev	905.63
H' Dist	3.38
INV S	905.63 15" RCP

Structure No.	STS–103A
Type	INLET SPECIAL CATCH BASIN – 84IN
Grate Style	R–4342
Sta.	537+68.41 62.00'R
Rim Elev	905.61
Base Thickness	0.67
Invert Elev	901.77
H' Dist	2.76
INV N	902.17 18" RCP
INV W	901.77 36" x 23" RCPA
INV E	901.77 29" x 18" RCPA

Structure No.	STS–103B
Type	INLET SPECIAL – TYPE 2 48IN
Grate Style	R–3067–VB
Sta.	537+59.99 32.92'R
Rim Elev	908.75
Base Thickness	0.50
Invert Elev	902.32
H' Dist	5.35
INV S	902.32 18" RCP
INV N	902.97 15" RCP

Structure No.	STS–103C
Type	INLET SPECIAL – TYPE 2 48IN
Grate Style	R–3067–VB
Sta.	537+68.47 –41.10'L
Rim Elev	908.75
Base Thickness	0.50
Invert Elev	903.27
H' Dist	4.36
INV S	903.27 15" RCP
INV E	903.27 15" RCP

Structure No.	STS–103D
Type	INLET CATCH BASIN
Grate Style	R–4342
Sta.	538+65.00 –60.00'L
Rim Elev	907.56
Base Thickness	0.50
Invert Elev	903.96
H' Dist	3.14
INV W	903.96 15" RCP

Structure No.	STS–104
Type	MANHOLE 60IN
Grate Style	R–1733
Sta.	539+97.98 60.00'R
Rim Elev	906.81
Base Thickness	0.67
Invert Elev	902.23
Riser	3.30
INV E	902.76 18" RCP
INV W	902.23 29" x 18" RCPA
INV N	903.61 15" RCP

Structure No.	STS–104A
Type	INLET SPECIAL – TYPE 2 48IN
Grate Style	R–3067–V
Sta.	539+99.02 38.19'R
Rim Elev	909.70
Base Thickness	0.50
Invert Elev	903.70
H' Dist	4.88
INV N	905.85 15" RCP
INV S	903.70 15" RCP

Structure No.	STS–104B
Type	INLET – TYPE 2
Grate Style	R–3067–V
Sta.	540+01.66 –46.25'L
Rim Elev	910.44
Base Thickness	0.67
Invert Elev	906.44
H' Dist	3.38
INV S	906.44 15" RCP

Structure No.	STS–105
Type	MANHOLE 48IN
Grate Style	R–1955–1
Sta.	543+59.15 63.17'R
Rim Elev	911.24
Base Thickness	0.50
Invert Elev	904.20
Riser	5.29
INV N	906.03 15" RCP
INV W	904.20 18" RCP
INV SE	906.26 15" RCP

Structure No.	STS–105A
Type	INLET – TYPE 2 DOUBLE
Grate Style	R–3295–2–VB
Sta.	543+64.47 75.64'R
Rim Elev	910.33
Base Thickness	0.67
Invert Elev	906.33
H' Dist	3.38
INV NW	906.33 15" RCP

Structure No.	STS–105B
Type	INLET SPECIAL – TYPE 2 48IN
Grate Style	R–3067–VB
Sta.	543+60.00 –48.42'L
Rim Elev	911.28
Base Thickness	0.50
Invert Elev	906.48
H' Dist	3.68
INV S	906.48 15" RCP
INV NE	906.48 15" RCP

Structure No.	STS–105C
Type	INLET CATCH BASIN
Grate Style	R–4342
Sta.	543+90.00 –60.00'L
Rim Elev	910.34
Base Thickness	0.50
Invert Elev	906.74
H' Dist	3.14
INV SW	906.74 15" RCP

Structure No.	STS–200
Type	END SECT–CONC REINF 54IN
Sta.	556+31.73 1497.07'R
INV NE	896.10 54" RCP

Structure No.	STS–201
Type	MANHOLE 84IN
Grate Style	R–1733
Sta.	557+16.71 1409.83'R
Rim Elev	905.37
Base Thickness	0.67
Invert Elev	896.26
Riser	7.86
INV N	896.26 54" RCP
INV SW	896.26 54" RCP

Structure No.	STS–202
Type	MANHOLE 84IN
Grate Style	R–1733
Sta.	557+20.10 1063.08'R
Rim Elev	905.24
Base Thickness	0.67
Invert Elev	896.71
Riser	7.28
INV N	896.71 54" RCP
INV S	896.71 54" RCP

Structure No.	STS–203
Type	MANHOLE 84IN
Grate Style	R–1733
Sta.	557+24.02 663.06'R
Rim Elev	905.67
Base Thickness	0.67
Invert Elev	897.11
Riser	7.31
INV N	897.11 54" RCP
INV S	897.11 54" RCP

Structure No.	STS–204
Type	MANHOLE 84IN
Grate Style	R–1733
Sta.	557+27.94 263.09'R
Rim Elev	905.47
Base Thickness	0.67
Invert Elev	897.51
Riser	6.71
INV N	897.51 48" RCP
INV S	897.51 54" RCP

Structure No.	STS–205
Type	MANHOLE 96IN
Grate Style	R–1733
Sta.	557+29.18 143.78'R
Rim Elev	905.61
Base Thickness	0.67
Invert Elev	897.63
Riser	6.74
INV N	899.66 27" RCP
INV S	897.63 48" RCP
INV E	897.72 48" RCP

Structure No.	STS–206A
Type	INLET SPECIAL CATCH BASIN – 48IN
Grate Style	R–4342
Sta.	557+29.63 96.17'R
Rim Elev	904.50
Base Thickness	0.50
Invert Elev	899.90
H' Dist	3.76
INV N	899.90 27" RCP
INV S	899.90 27" RCP

Structure No.	STS–207
Type	MANHOLE 60IN
Grate Style	R–1733
Sta.	557+29.97 60.86'R
Rim Elev	909.64
Base Thickness	0.67
Invert Elev	900.04
Riser	8.35
INV S	900.04 27" RCP
INV W	900.64 27" RCP

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Inlet and Manhole Summary - Storm

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	**SU-8-984(164)**	**50**	**4**

Structure No.	STS–308B
Type	INLET – TYPE 2
Grate Style	R–3067–VB
Sta.	597+85.00 24.42'R
Rim Elev	906.89
Base Thickness	0.67
Invert Elev	902.89
H' Dist	3.38
INV N	902.89 15" RCP

Structure No.	STS–309A
Type	INLET SPECIAL – TYPE 2 48IN
Grate Style	R–3067–VB
Sta.	600+70.00 30.19'R
Rim Elev	906.33
Base Thickness	0.50
Invert Elev	897.01
H' Dist	8.25
INV SW	897.01 21" RCP
INV N	897.01 21" RCP

Structure No.	STS–310
Type	MANHOLE 60IN
Grate Style	R–1955–1
Sta.	600+74.15 –65.77'L
Rim Elev	906.53
Base Thickness	0.67
Invert Elev	897.49
Riser	7.21
INV NW	901.71 15" RCP
INV E	897.49 21" RCP
INV S	897.49 21" RCP

Structure No.	STS–310A
Type	INLET – TYPE 2
Grate Style	R–3067–VB
Sta.	600+62.90 –93.27'L
Rim Elev	905.83
Base Thickness	0.67
Invert Elev	901.83
H' Dist	3.38
INV SE	901.83 15" RCP

Structure No.	STS–311
Type	MANHOLE 60IN
Grate Style	R–1733
Sta.	603+14.63 –61.99'L
Rim Elev	904.94
Base Thickness	0.50
Invert Elev	898.45
Riser	5.16
INV E	898.45 21" RCP
INV W	898.45 21" RCP
INV S	900.05 15" RCP

Structure No.	STS–311A
Type	INLET SPECIAL – TYPE 2 48IN
Grate Style	R–3067–VB
Sta.	603+14.29 –53.00'L
Rim Elev	906.01
Base Thickness	0.50
Invert Elev	900.11
H' Dist	4.78
INV S	901.82 15" RCP
INV N	900.11 15" RCP

Structure No.	STS–311B
Type	INLET – TYPE 2
Grate Style	R–3067–VB
Sta.	603+14.29 35.62'R
Rim Elev	906.17
Base Thickness	0.67
Invert Elev	902.17
H' Dist	3.38
INV N	902.17 15" RCP

Structure No.	STS–312
Type	MANHOLE 48IN
Grate Style	R–1955–1
Sta.	606+77.97 –37.50'L
Rim Elev	906.65
Base Thickness	0.50
Invert Elev	899.91
Riser	4.99
INV E	900.14 18" RCP
INV W	899.91 21" RCP
INV N	899.91 15" RCP

Structure No.	STS–312A
Type	INLET CATCH BASIN
Grate Style	R–4342
Sta.	606+79.00 –61.76'L
Rim Elev	903.63
Base Thickness	0.50
Invert Elev	900.03
H' Dist	3.14
INV S	900.03 15" RCP

Structure No.	STS–313
Type	MANHOLE 48IN
Grate Style	R–1955–1
Sta.	608+50.00 –36.00'L
Rim Elev	905.68
Base Thickness	0.50
Invert Elev	900.83
Riser	3.10
INV S	901.04 15" RCP
INV W	900.83 18" RCP
INV N	901.72 15" RCP

Structure No.	STS–313A
Type	INLET – TYPE 2
Grate Style	R–3067–VB
Sta.	608+50.00 –43.92'L
Rim Elev	905.75
Base Thickness	0.67
Invert Elev	901.75
H' Dist	3.38
INV S	901.75 15" RCP

Structure No.	STS–313B
Type	INLET – TYPE 2 DOUBLE
Grate Style	R–3295–2–VB
Sta.	608+50.00 55.92'R
Rim Elev	905.41
Base Thickness	0.67
Invert Elev	901.41
H' Dist	3.38
INV N	901.41 15" RCP

Structure No.	STS–401
Type	MANHOLE 48IN
Grate Style	R–1733
Sta.	579+51.77 57.28'R
Rim Elev	907.00
Base Thickness	0.50
Invert Elev	896.15
Riser	9.64
INV W	896.15 24" RCP
INV E	896.15 24" RCP
INV S	899.72 15" RCP

Structure No.	STS–401A
Type	INLET CATCH BASIN
Grate Style	R–4342
Sta.	579+51.38 73.00'R
Rim Elev	903.40
Base Thickness	0.50
Invert Elev	899.80
H' Dist	3.14
INV N	899.80 15" RCP

Structure No.	STS–402
Type	MANHOLE 48IN
Grate Style	R–1733
Sta.	577+09.97 57.22'R
Rim Elev	906.51
Base Thickness	0.50
Invert Elev	896.63
Riser	8.67
INV W	896.63 24" RCP
INV E	896.63 24" RCP
INV S	899.82 15" RCP

Structure No.	STS–402A
Type	INLET CATCH BASIN
Grate Style	R–4342
Sta.	577+09.52 73.00'R
Rim Elev	903.50
Base Thickness	0.50
Invert Elev	899.90
H' Dist	3.14
INV N	899.90 15" RCP

Structure No.	STS–403
Type	MANHOLE 48IN
Grate Style	R–1733
Sta.	574+39.32 57.41'R
Rim Elev	904.54
Base Thickness	0.50
Invert Elev	897.16
Riser	6.17
INV W	897.16 24" RCP
INV E	897.16 24" RCP
INV N	901.90 15" RCP

Structure No.	STS–404
Type	MANHOLE 60IN
Grate Style	R–1733
Sta.	573+49.27 81.98'R
Rim Elev	906.44
Base Thickness	0.67
Invert Elev	897.35
Riser	7.80
INV E	897.35 24" RCP
INV S	897.38± 18" RCP

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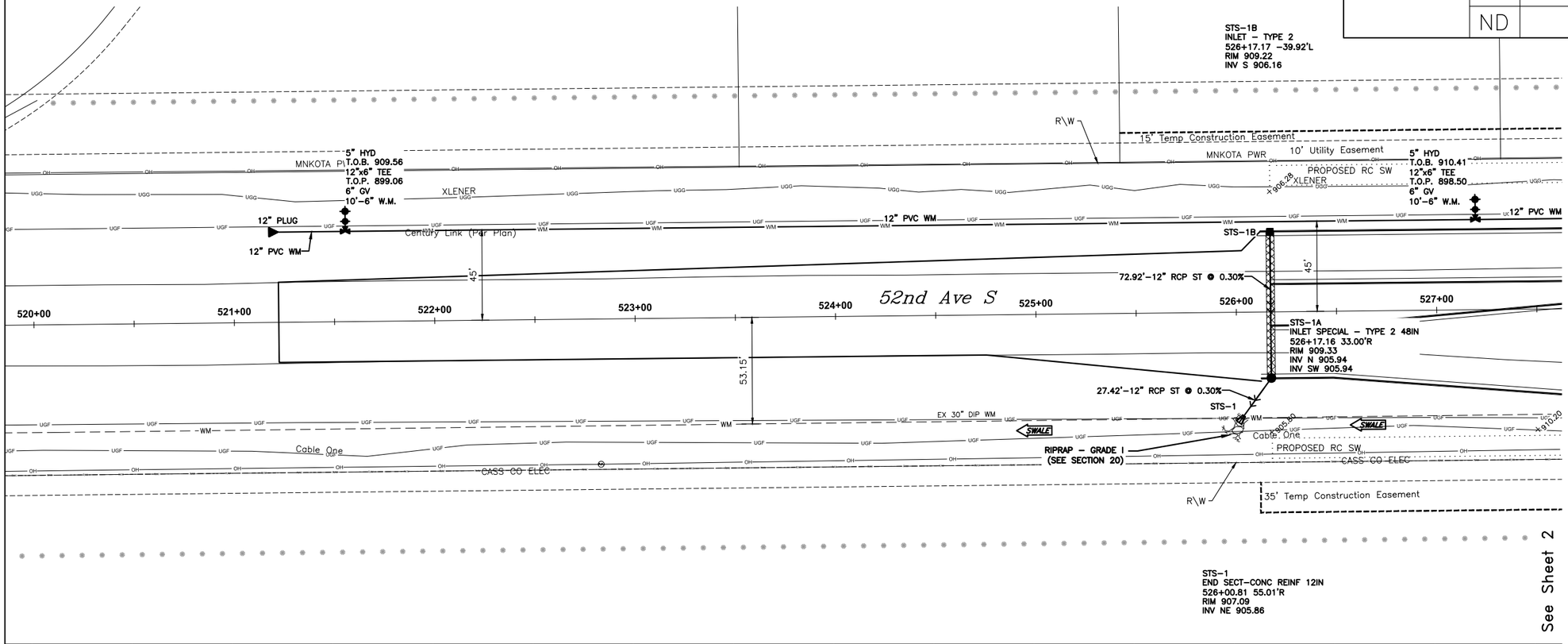
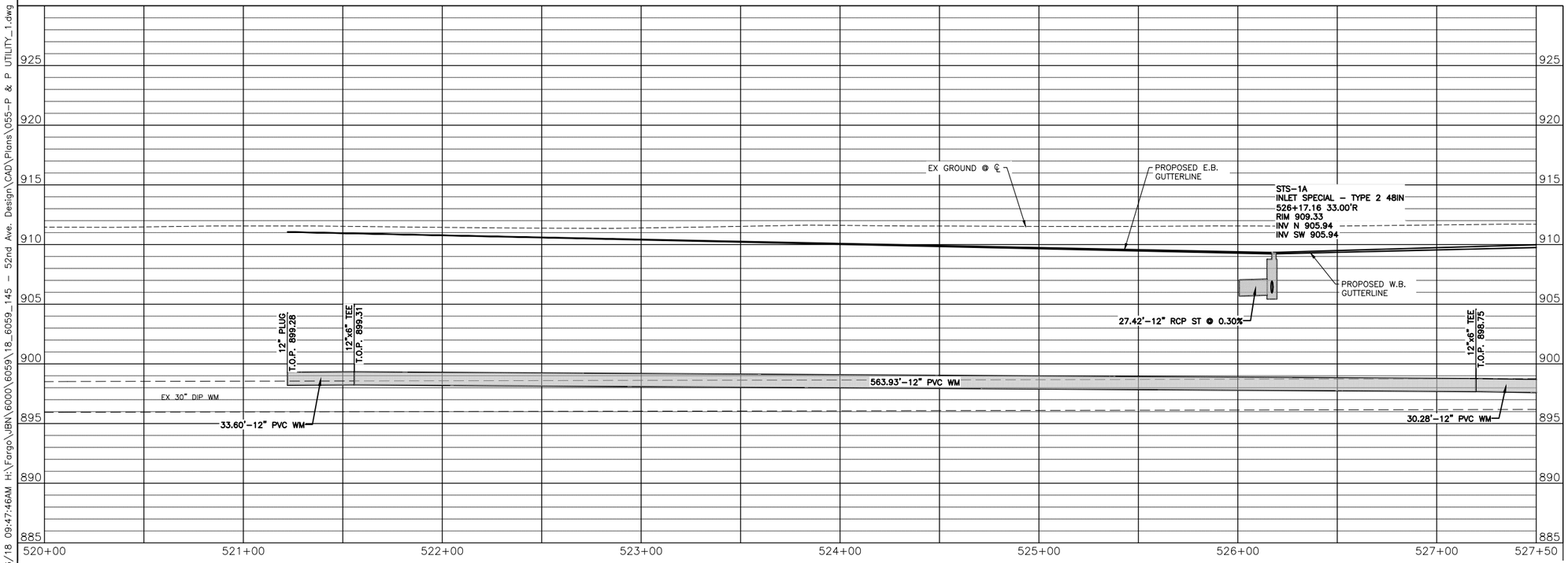
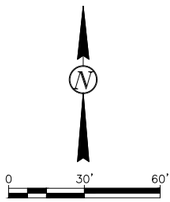
Inlet and Manhole Summary - Storm

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	55	1







NOTES:
1. ALL WATER MAIN TO HAVE A MINIMUM 7.5' OF COVER.

+xxx.xx SPOT ELEVATION

GRAVEL BACKFILL (SEE SECTION 20)

SPEC	CODE	BID ITEM	QTY	UNIT
714	0115	PIPE CONC REINF 12IN CL III-STORM DRAIN		
		1B TO 1A	73	LF
		1A TO 1	27	LF
		TOTAL	100	LF
714	3000	END SECT-CONC REINF 12IN		
		1	1	EA
722	3510	INLET TYPE 2		
		1B	1	EA
722	3701	INLET SPECIAL-TYPE 2 48IN		
		1A	1	EA
724	0210	FITTINGS-DUCTILE		
		STA 520+00 TO STA 527+50	266	LBS
724	0300	GATE VALVE & BOX 6IN		
		STA 520+00 TO STA 527+50	2	EA
724	0410	HYDRANT-INSTALL 5IN		
		STA 520+00 TO STA 527+50	2	EA
724	0810	WATERMAIN 6IN PVC		
		STA 520+00 TO STA 527+50	20	LF
724	0850	WATERMAIN 12IN PVC		
		STA 520+00 TO STA 527+50	628	LF

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Drainage Layout - 52nd Ave S

52nd Ave S - West of 63rd St S to 45th St S

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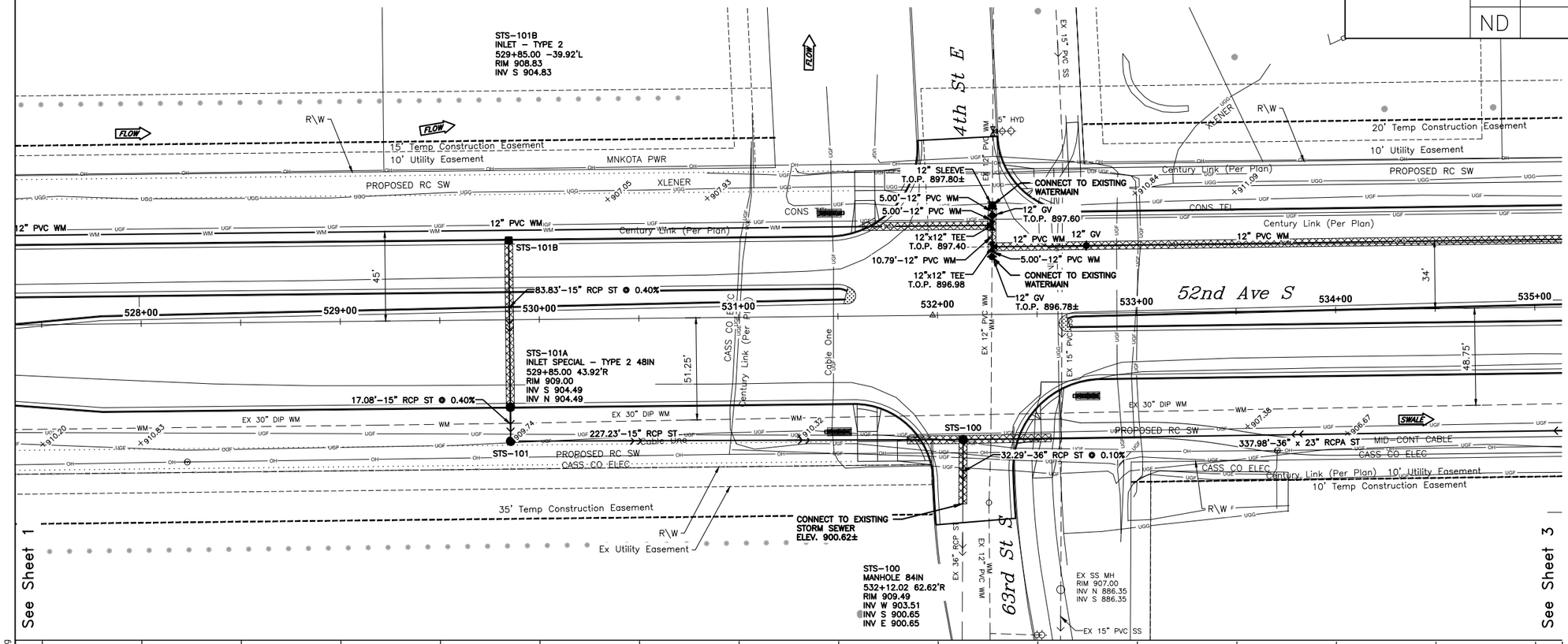
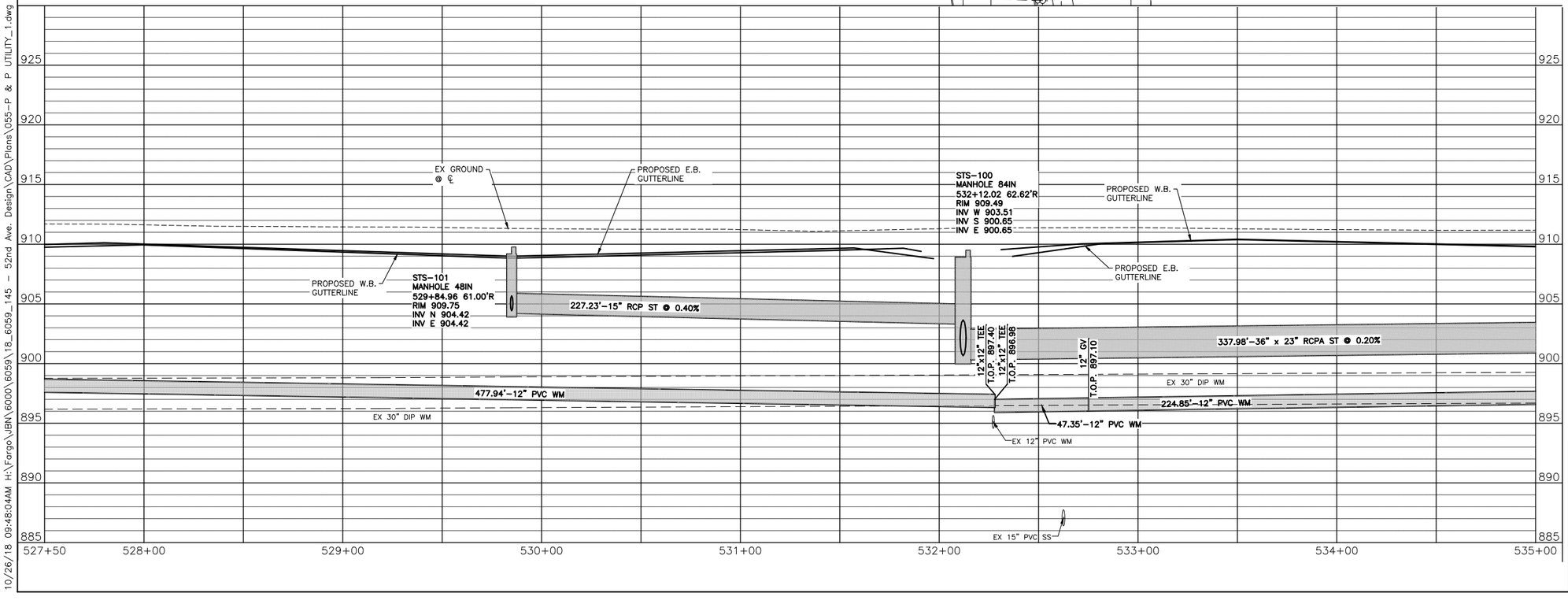
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	**SU-8-984(164)**	**55**	**2**





NOTES:
1. ALL WATER MAIN TO HAVE A MINIMUM 7.5' OF COVER.

910.24 SPOT ELEVATION

GRAVEL BACKFILL (SEE SECTION 20)

SPEC	CODE	BID ITEM	QTY	UNIT
714	0210	PIPE CONC REINF 15IN CL III–STORM DRAIN		
		101B TO 101A	84	LF
		101A TO 101	17	LF
		101 TO 100	227	LF
		TOTAL	328	LF
714	0910	PIPE CONC REINF 36IN CL III–STORM DRAIN		
		100 TO EX 36" RCP	32	LF
714	2118	PIPE CONC REINF ARCH 36IN X 23IN CL III–STORM DRAIN		
		102A TO 100	338	LF
722	0100	MANHOLE 48IN		
		101	1	EA
722	0130	MANHOLE 84IN		
		100	1	EA
722	1100	MANHOLE RISER 48IN		
		101	4.04	LF
722	1130	MANHOLE RISER 84IN		
		100	7.01	LF
722	3510	INLET TYPE 2		
		101B	1	EA
722	3701	INLET SPECIAL–TYPE 2 48IN		
		101A	1	EA
724	0210	FITTINGS–DUCTILE		
		STA 527+50 TO STA 535+00	396	LBS
724	0314	GATE VALVE & BOX 12IN		
		STA 527+50 TO STA 535+00	3	EA
724	0850	WATERMAIN 12IN PVC		
		STA 527+50 TO STA 535+00	776	LF

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Drainage Layout - 52nd Ave S

52nd Ave S - West of 63rd St S to 45th St S

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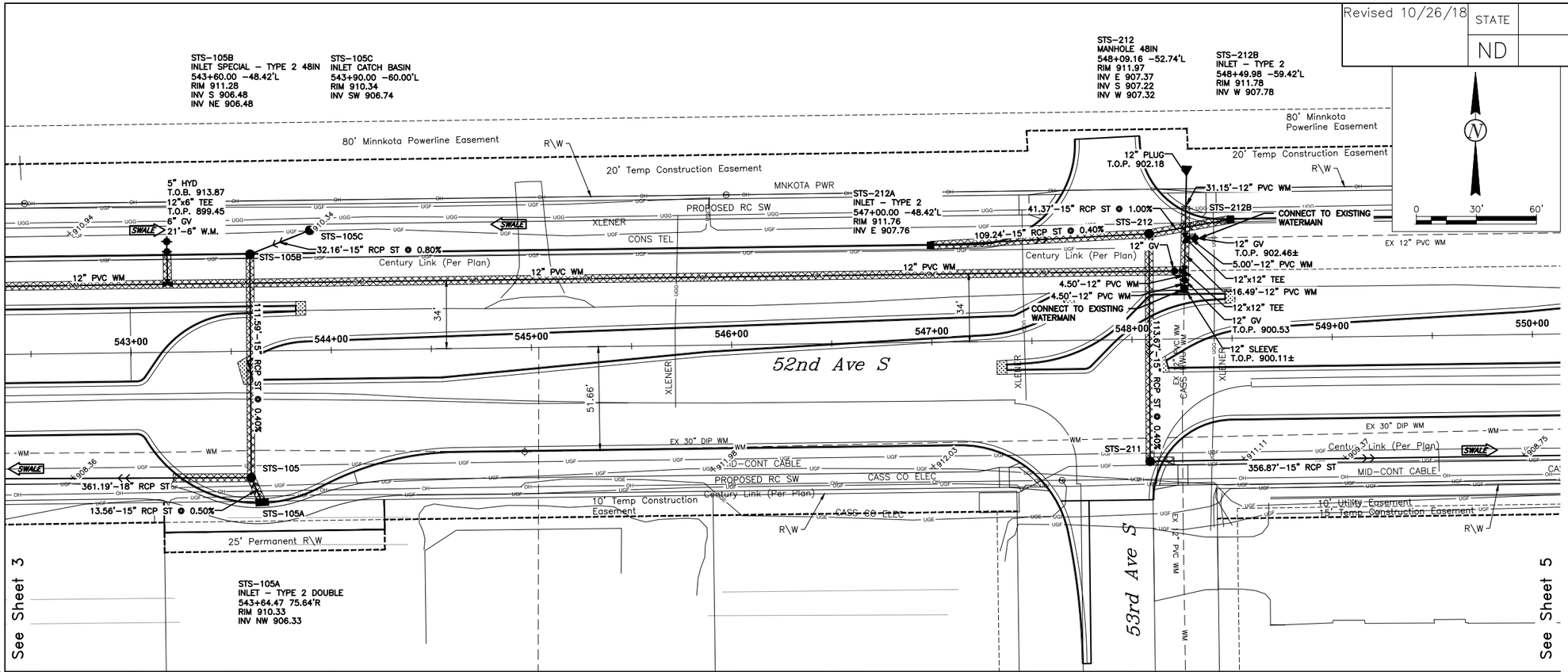
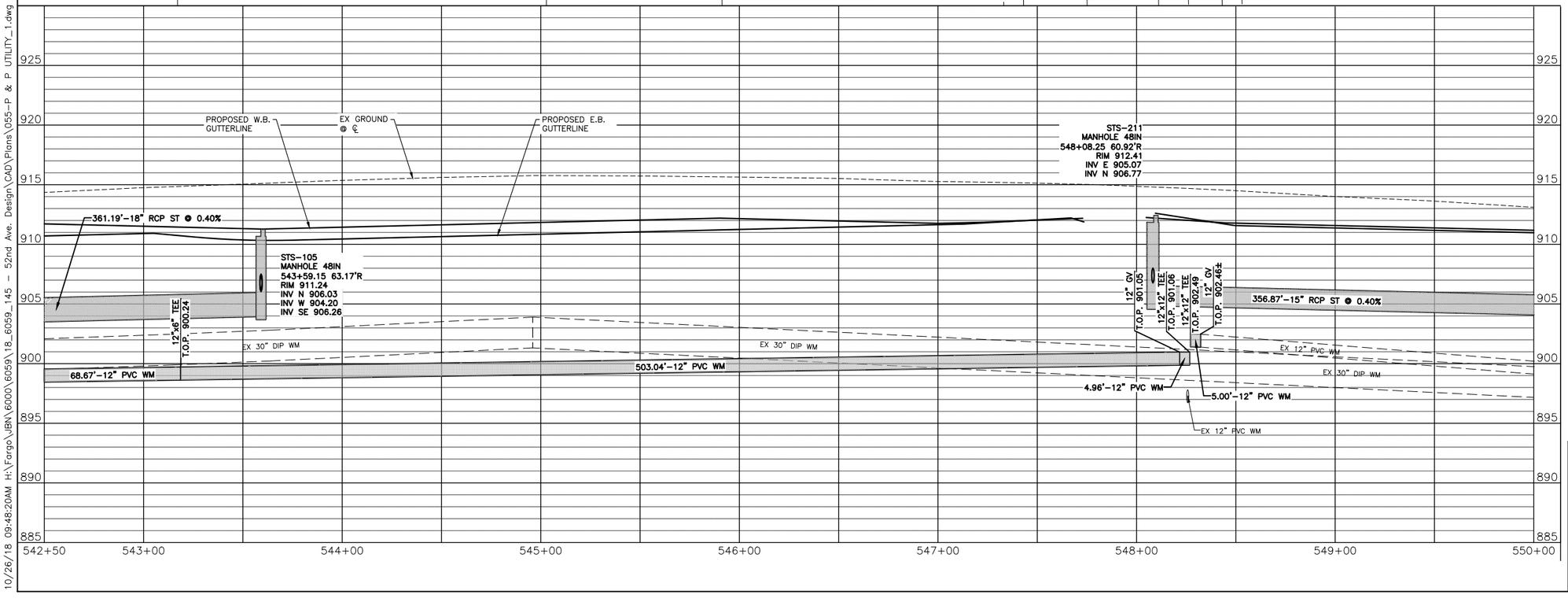
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	55	4



STS-105A
INLET – TYPE 2 DOUBLE
543+64.47 75.64'R
RIM 910.33
INV NW 906.33



NOTES:
1. ALL WATER MAIN TO HAVE A MINIMUM 7.5' OF COVER.

+XX.XX SPOT ELEVATION

GRAVEL BACKFILL (SEE SECTION 20)

SPEC	CODE	BID ITEM	QTY	UNIT
714	0210	PIPE CONC REINF 15IN CL III–STORM DRAIN		
		105C TO 105B	32	LF
		105B TO 105	112	LF
		105A TO 105	14	LF
		211 TO 210A	357	LF
		212 TO 211	114	LF
		212A TO 212	109	LF
		212B TO 212	41	LF
		TOTAL	779	LF
722	0100	MANHOLE 48IN		
		105	1	EA
		211	1	EA
		212	1	EA
		TOTAL	3	EA
722	1100	MANHOLE RISER 48IN		
		105	5.29	LF
		211	5.55	LF
		212	2.96	LF
		TOTAL	13.80	LF
722	3510	INLET TYPE 2		
		212A	1	EA
		212B	1	EA
		TOTAL	2	EA
722	3520	INLET TYPE 2 DOUBLE		
		105A	1	EA
722	3701	INLET SPECIAL–TYPE 2 48IN		
		105B	1	EA
722	4005	INLET CATCH BASIN		
		105C	1	EA
724	0210	FITTINGS–DUCTILE		
		STA 542+50 TO STA 550+00	552	LBS
724	0300	GATE VALVE & BOX 6IN		
		STA 542+50 TO STA 550+00	1	EA
724	0314	GATE VALVE & BOX 12IN		
		STA 542+50 TO STA 550+00	3	EA
724	0410	HYDRANT–INSTALL 5IN		
		STA 542+50 TO STA 550+00	1	EA
724	0810	WATERMAIN 6IN PVC		
		STA 542+50 TO STA 550+00	21	LF
724	0850	WATERMAIN 12IN PVC		
		STA 542+50 TO STA 550+00	638	LF

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Drainage Layout - 52nd Ave S

52nd Ave S - West of 63rd St S to 45th St S

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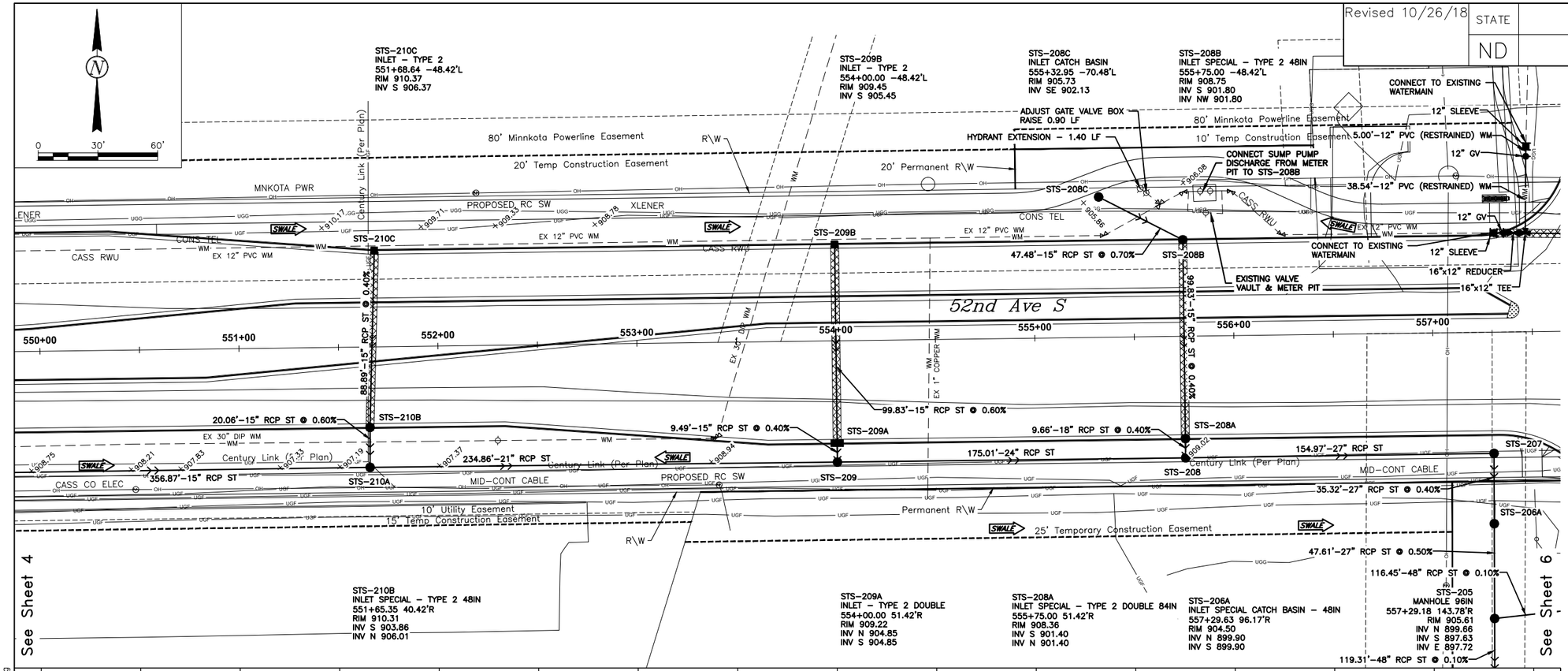
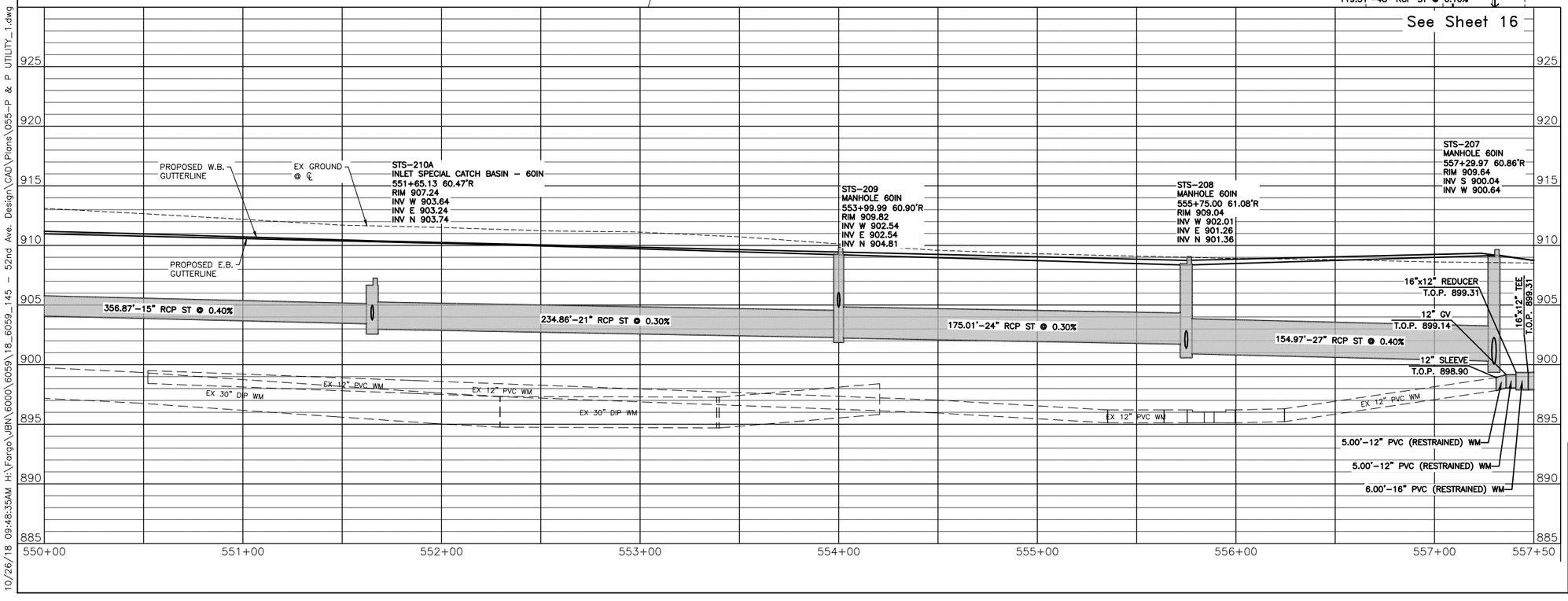
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	55	5





NOTES:
1. ALL WATER MAIN TO HAVE A MINIMUM 7.5' OF COVER.

+XX.XX SPOT ELEVATION

GRAVEL BACKFILL (SEE SECTION 20)

SPEC	CODE	BID ITEM	QTY	UNIT
714	0210	PIPE CONC REINF 15IN CL III–STORM DRAIN		
		210C TO 210B	89	LF
		210B TO 210A	20	LF
		209B TO 209A	100	LF
		209A TO 209	10	LF
		208C TO 208B	47	LF
		208B TO 208A	100	LF
		TOTAL	365	LF
714	0315	PIPE CONC REINF 18IN CL III–STORM DRAIN		
		208A TO 208	10	LF
714	0405	PIPE CONC REINF 21IN CL III–STORM DRAIN		
		210A TO 209	235	LF
714	0620	PIPE CONC REINF 24IN CL III–STORM DRAIN		
		209 TO 208	175	LF
714	0710	PIPE CONC REINF 27IN CL III–STORM DRAIN		
		208 TO 207	155	LF
722	0110	MANHOLE 60IN		
		207	1	EA
		208	1	EA
		209	1	EA
		TOTAL	3	EA
722	1110	MANHOLE RISER 60IN		
		207	8.35	LF
		208	6.53	LF
		209	6.00	LF
		TOTAL	20.88	LF
722	3510	INLET TYPE 2		
		209B	1	EA
		210C	1	EA
		TOTAL	2	EA
722	3520	INLET TYPE 2 DOUBLE		
		209A	1	EA
722	3701	INLET SPECIAL–TYPE 2 48IN		
		208B	1	EA
		210B	1	EA
		TOTAL	2	EA
722	3825	INLET SPECIAL–TYPE 2 DOUBLE 84IN		
		208A	1	EA
722	4005	INLET CATCH BASIN		
		208C	1	EA
722	4110	INLET SPECIAL CATCH BASIN–60IN		
		210A	1	EA
722	6140	ADJUST GATE VALVE BOX		
		STA 550+00 TO STA 557+50	1	EA
724	0210	FITTINGS–DUCTILE		
		STA 550+00 TO STA 557+50	544	LBS
724	0314	GATE VALVE & BOX 12IN		
		STA 550+00 TO STA 557+50	2	EA
724	0426	HYDRANT EXTENSION		
		STA 550+00 TO STA 557+50	1.40	LF
724	0850	WATERMAIN 12IN PVC		
		STA 550+00 TO STA 557+50	54	LF
724	0852	WATERMAIN 16IN PVC		
		STA 550+00 TO STA 557+50	6	LF

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Drainage Layout - 52nd Ave S

52nd Ave S - West of 63rd St S to 45th St S

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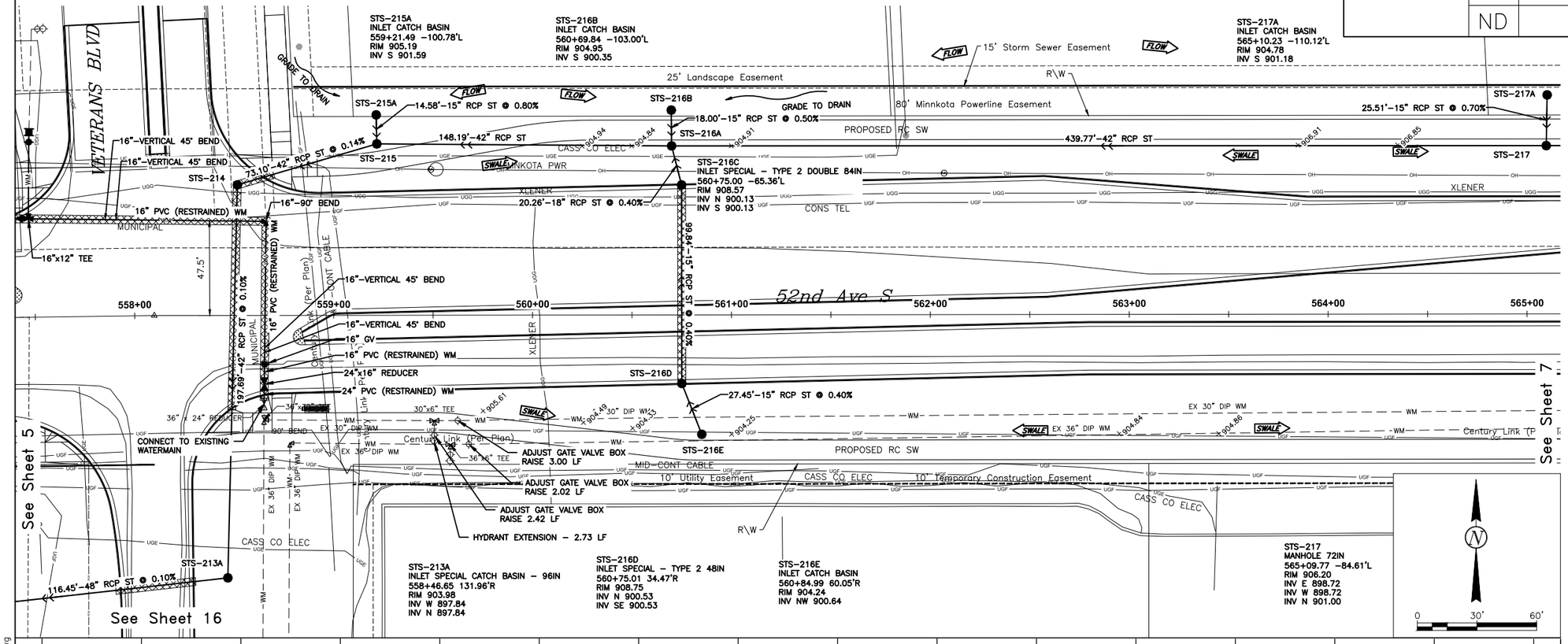
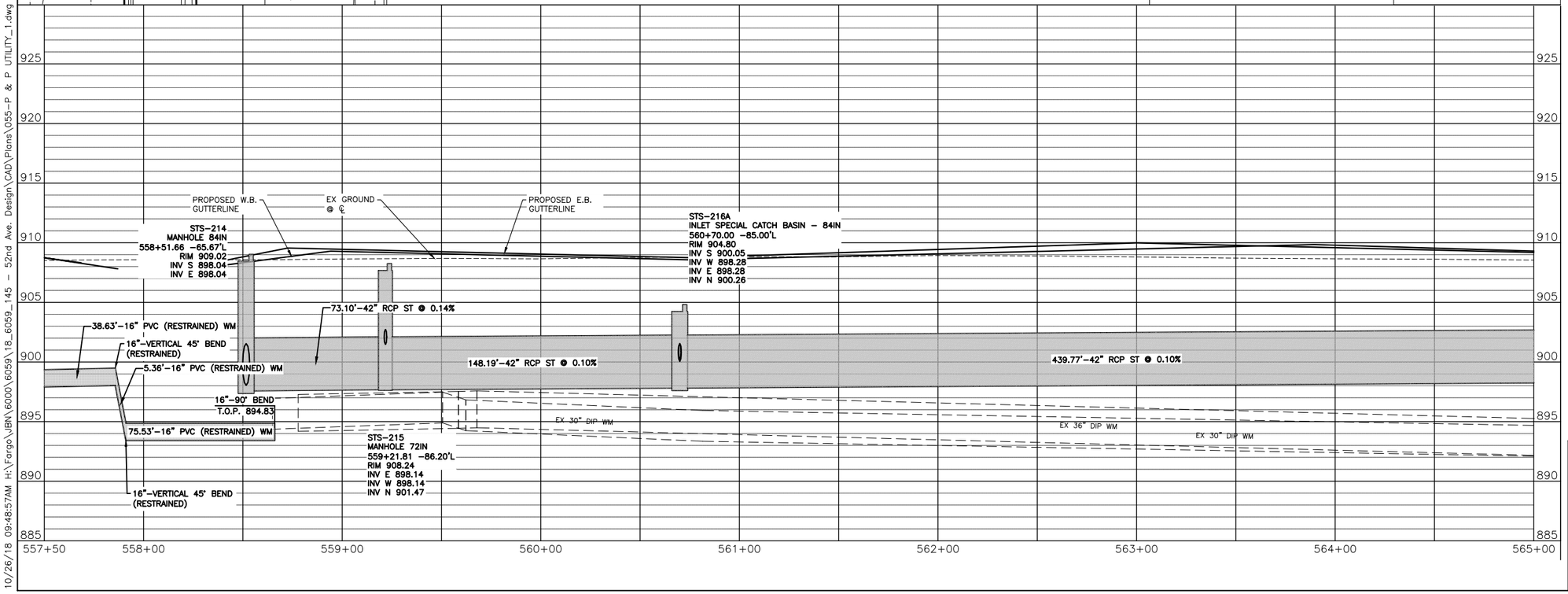
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	55	6





NOTES:
1. ALL WATER MAIN TO HAVE A MINIMUM 7.5' OF COVER.

+xxx.xx SPOT ELEVATION

GRAVEL BACKFILL (SEE SECTION 20)

SPEC	CODE	BID ITEM	QTY	UNIT
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN		
		216E TO 216D	27	LF
		216D TO 216C	100	LF
		216B TO 216A	18	LF
		215A TO 215	15	LF
		TOTAL	160	LF
714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN		
		216C TO 216A	20	LF
714	1010	PIPE CONC REINF 42IN CL III-STORM DRAIN		
		217 TO 216A	440	LF
		216A TO 215	148	LF
		215 TO 214	73	LF
		TOTAL	661	LF
722	0120	MANHOLE 72IN		
		215	1	EA
722	0130	MANHOLE 84IN		
		214	1	EA
722	1120	MANHOLE RISER 72IN		
		215	8.89	LF
722	1130	MANHOLE RISER 84IN		
		214	9.19	LF
722	3701	INLET SPECIAL-TYPE 2 48IN		
		216D	1	EA
722	3825	INLET SPECIAL-TYPE 2 DOUBLE 84IN		
		216C	1	EA
722	4005	INLET CATCH BASIN		
		215A	1	EA
		216B	1	EA
		216E	1	EA
		TOTAL	3	EA
722	4114	INLET SPECIAL CATCH BASIN-84IN		
		216A	1	EA
722	6140	ADJUST GATE VALVE BOX		
		STA 557+50 TO STA 565+00	3	EA
724	0210	FITTINGS-DUCTILE		
		STA 557+50 TO STA 565+00	1392	LBS
724	0317	GATE VALVE & BOX 16IN		
		STA 557+50 TO STA 565+00	1	EA
724	0426	HYDRANT EXTENSION		
		STA 557+50 TO STA 565+00	2.73	LF
724	0852	WATERMAIN 16IN PVC		
		STA 557+50 TO STA 565+00	202	LF
724	0870	24IN WATERMAIN		
		STA 557+50 TO STA 565+00	10	LF

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Drainage Layout - 52nd Ave S

52nd Ave S - West of 63rd St S to 45th St S

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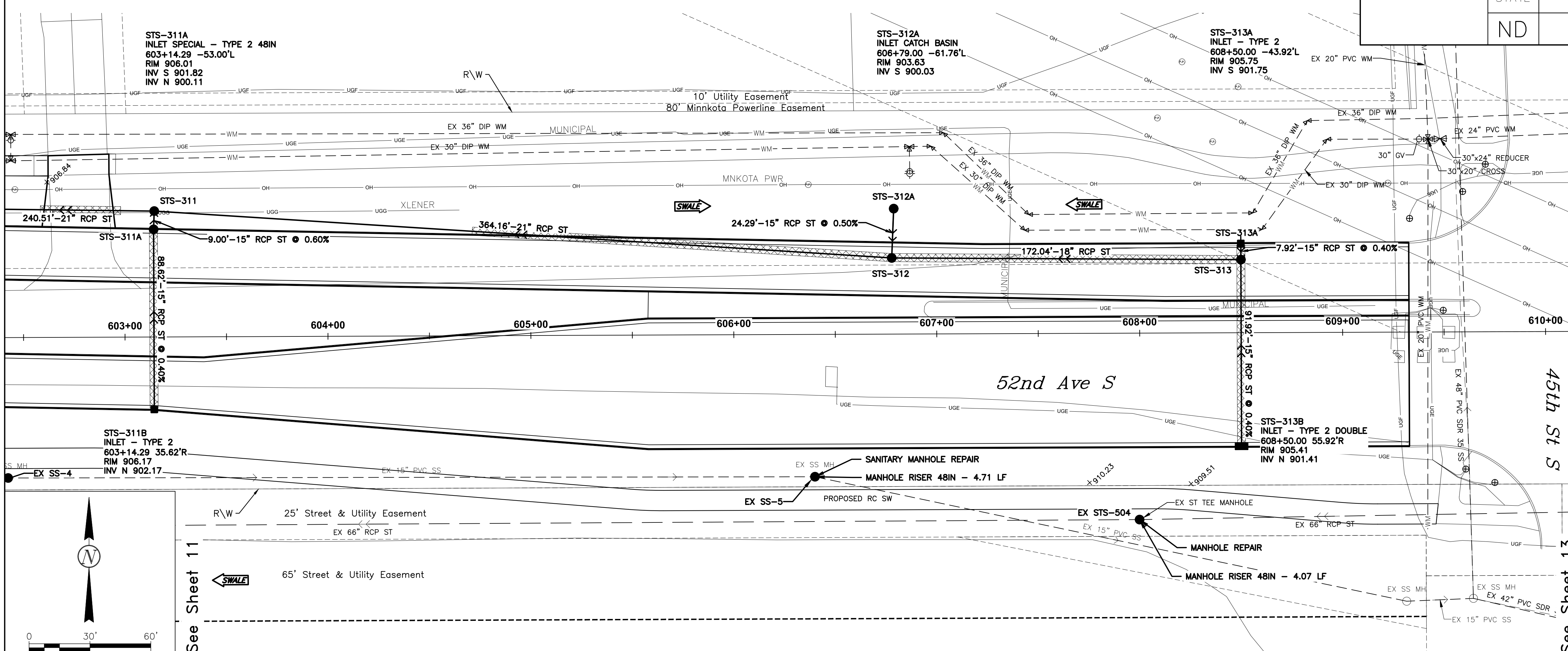
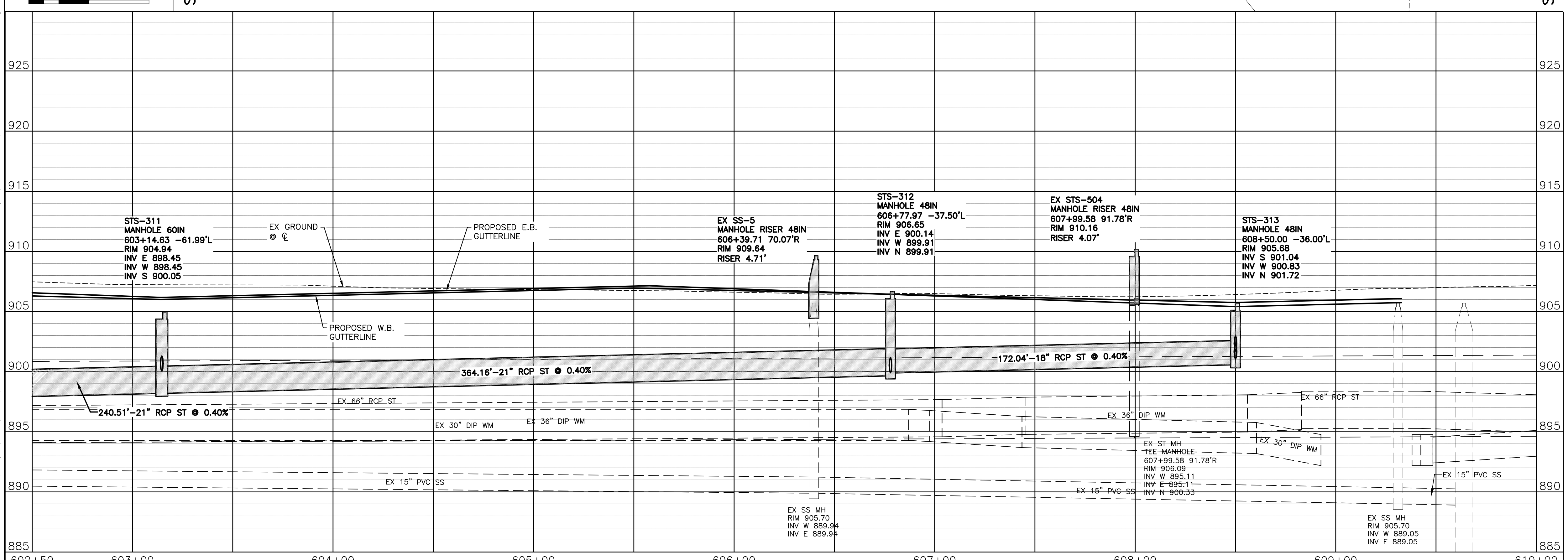
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	**SU-8-984(164)**	**55**	**12**



STS-311A
INLET SPECIAL - TYPE 2 48IN
603+14.29 -53.00'L
RIM 906.01
INV S 901.82
INV N 900.11
STS-312A
INLET CATCH BASIN
606+79.00 -61.76'L
RIM 903.63
INV S 900.03
STS-313A
INLET - TYPE 2
608+50.00 -43.92'L
RIM 905.75
INV S 901.75
10' Utility Easement
80' Minnkota Powerline Easement
240.51'-21" RCP ST
9.00'-15" RCP ST @ 0.60%
364.16'-21" RCP ST
24.29'-15" RCP ST @ 0.50%
172.04'-18" RCP ST
7.92'-15" RCP ST @ 0.40%
88.62'-15" RCP ST @ 0.40%
91.92'-15" RCP ST @ 0.40%
52nd Ave S
45th St S
STS-311B
INLET - TYPE 2
603+14.29 35.62'R
RIM 906.17
INV N 902.17
STS-313B
INLET - TYPE 2 DOUBLE
608+50.00 55.92'R
RIM 905.41
INV N 901.41
SANITARY MANHOLE REPAIR
MANHOLE RISER 48IN - 4.71 LF
EX SS-5
PROPOSED RC SW
EX STS-504
EX ST TEE MANHOLE
MANHOLE REPAIR
MANHOLE RISER 48IN - 4.07 LF
25' Street & Utility Easement
65' Street & Utility Easement
See Sheet 11
See Sheet 13



STS-311
MANHOLE 60IN
603+14.63 -61.99'L
RIM 904.94
INV E 898.45
INV W 898.45
INV S 900.05
EX GROUND @ ℄
PROPOSED E.B. GUTTERLINE
PROPOSED W.B. GUTTERLINE
EX SS-5
MANHOLE RISER 48IN
606+39.71 70.07'R
RIM 909.64
RISER 4.71'
STS-312
MANHOLE 48IN
606+77.97 -37.50'L
RIM 906.65
INV E 900.14
INV W 899.91
INV N 899.91
EX STS-504
MANHOLE RISER 48IN
607+99.58 91.78'R
RIM 910.16
RISER 4.07'
STS-313
MANHOLE 48IN
608+50.00 -36.00'L
RIM 905.68
INV S 901.04
INV W 900.83
INV N 901.72
364.16'-21" RCP ST @ 0.40%
172.04'-18" RCP ST @ 0.40%
240.51'-21" RCP ST @ 0.40%
EX ST MH
TEE MANHOLE
607+99.58 91.78'R
RIM 906.09
INV W 895.11
INV E 895.11
INV N 900.33
EX SS MH
RIM 905.70
INV W 889.94
INV E 889.94
EX SS MH
RIM 905.70
INV W 889.05
INV E 889.05

SPOT ELEVATION

GRAVEL BACKFILL (SEE SECTION 20)

SPEC	CODE	BID ITEM		QTY	UNIT
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN			
		311B TO 311A		89	LF
		311A TO 311		9	LF
		312A TO 312		24	LF
		313A TO 313		8	LF
		313B TO 313		92	LF
			TOTAL	222	LF
714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN			
		313 TO 312		172	LF
714	0405	PIPE CONC REINF 21IN CL III-STORM DRAIN			
		312 TO 311		364	LF
722	0100	MANHOLE 48IN			
		312		1	EA
		313		1	EA
			TOTAL	2	EA
722	0110	MANHOLE 60IN			
		311		1	EA
722	1100	MANHOLE RISER 48IN			
		312		4.99	LF
		313		3.10	LF
		504		4.07	LF
		5 (SANITARY)		4.71	LF
			TOTAL	16.87	LF
722	1110	MANHOLE RISER 60IN			
		311		5.16	LF
722	3300	SANITARY MANHOLE REPAIR			
		5 (SANITARY)		1	EA
722	3410	MANHOLE REPAIR			
		504		1	EA
722	3510	INLET TYPE 2			
		311B		1	EA
		313A		1	EA
			TOTAL	2	EA
722	3520	INLET TYPE 2 DOUBLE			
		313B		1	EA
722	3701	INLET SPECIAL-TYPE 2 48IN			
		311A		1	EA
722	4005	INLET CATCH BASIN			
		312A		1	EA

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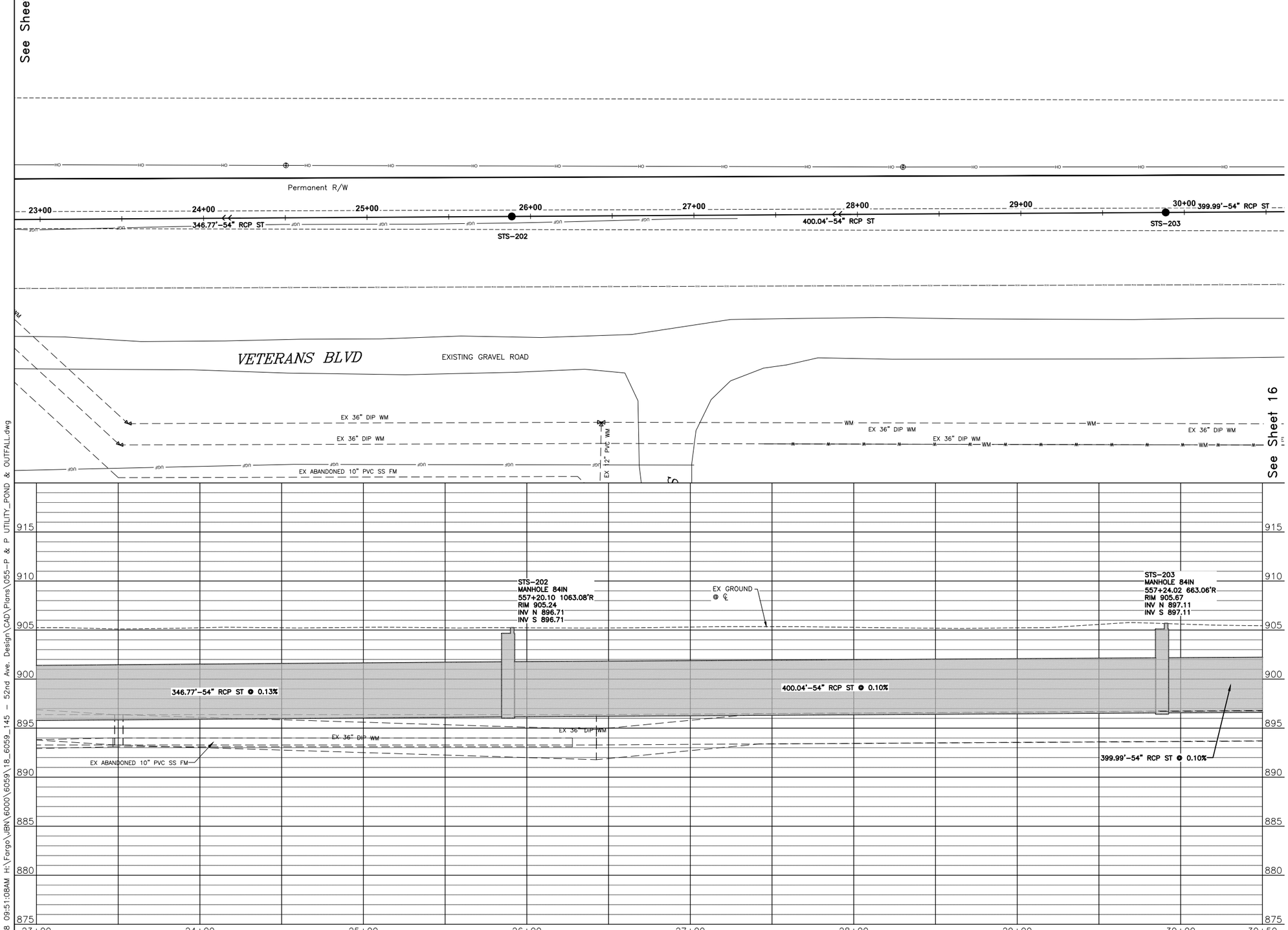
Drainage Layout - 52nd Ave S

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	55	15

See Sheet 14



See Sheet 16

0 30' 60'

SPEC	CODE	BID ITEM	QTY	UNIT
714	1212	PIPE CONC REINF 54IN CL III-STORM DRAIN 203 TO 202	400	LF
722	0130	MANHOLE 84IN 203	1	EA
722	1130	MANHOLE RISER 84IN 203	7.31	LF

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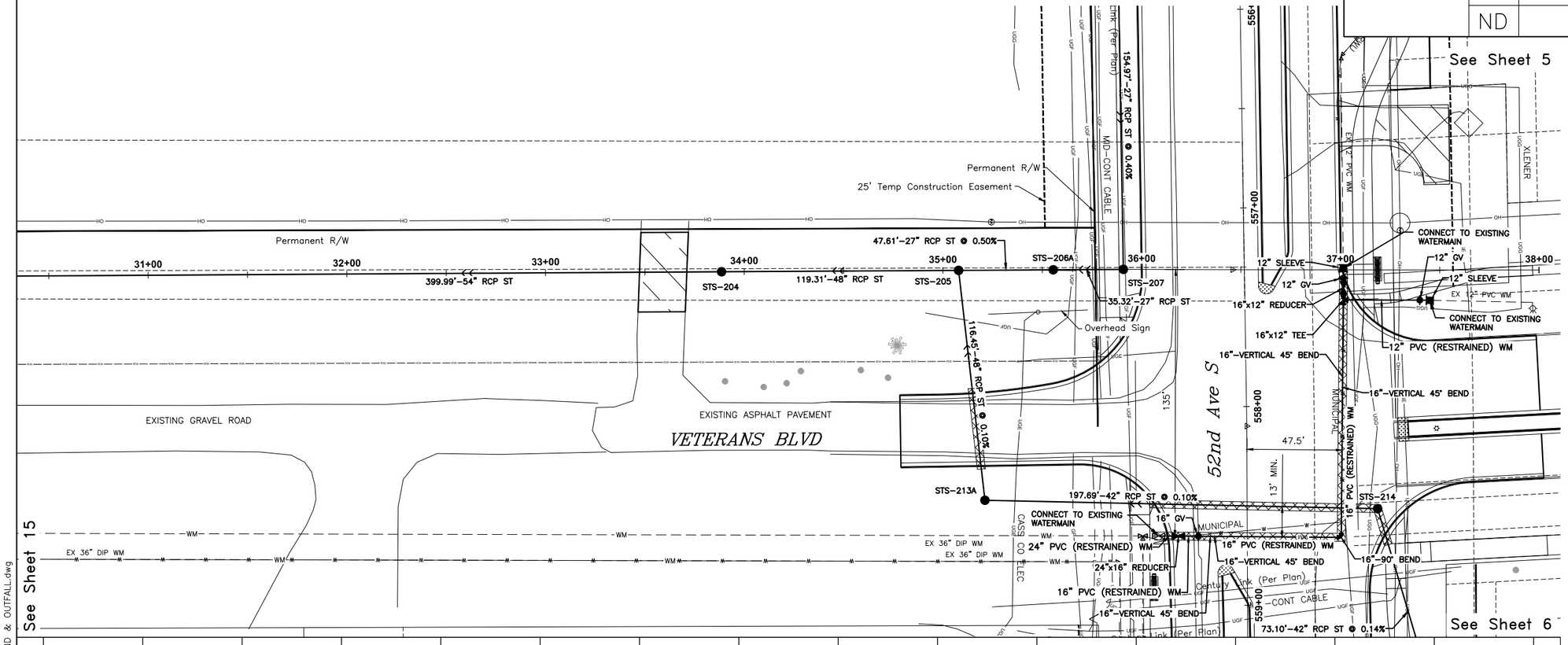
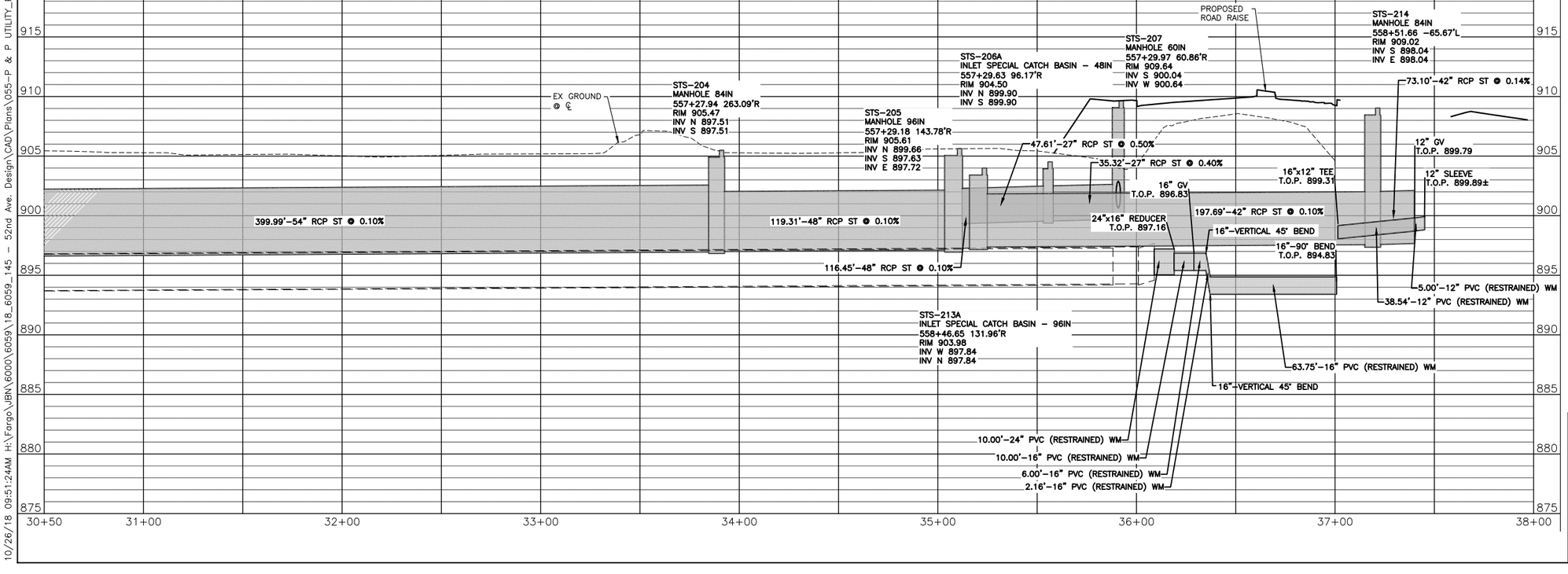
Drainage Layout - Veterans Blvd

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	55	16





0 30' 60'

NOTES:
1. ALL WATER MAIN TO HAVE A MINIMUM 7.5' OF COVER.

GRAVEL BACKFILL (SEE SECTION 20)

SPEC	CODE	BID ITEM	QTY	UNIT
714	0710	PIPE CONC REINF 27IN CL III-STORM DRAIN		
		207 TO 206A	35	LF
		206A TO 205	48	LF
		TOTAL	83	LF
714	1010	PIPE CONC REINF 42IN CL III-STORM DRAIN		
		214 TO 213A	198	LF
714	1110	PIPE CONC REINF 48IN CL III-STORM DRAIN		
		205 TO 204	119	LF
		213A TO 205	116	LF
		TOTAL	235	LF
714	1212	PIPE CONC REINF 54IN CL III-STORM DRAIN		
		204 TO 203	400	LF
722	0130	MANHOLE 84IN		
		204	1	EA
722	0140	MANHOLE 96IN		
		205	1	EA
722	1130	MANHOLE RISER 84IN		
		204	6.71	LF
722	1140	MANHOLE RISER 96IN		
		204	6.74	LF
722	4108	INLET SPECIAL CATCH BASIN-48IN		
		206A	1	EA
722	4116	INLET SPECIAL CATCH BASIN-96IN		
		213A	1	EA

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Drainage Layout - Veterans Blvd

52nd Ave S - West of 63rd St S to 45th St S

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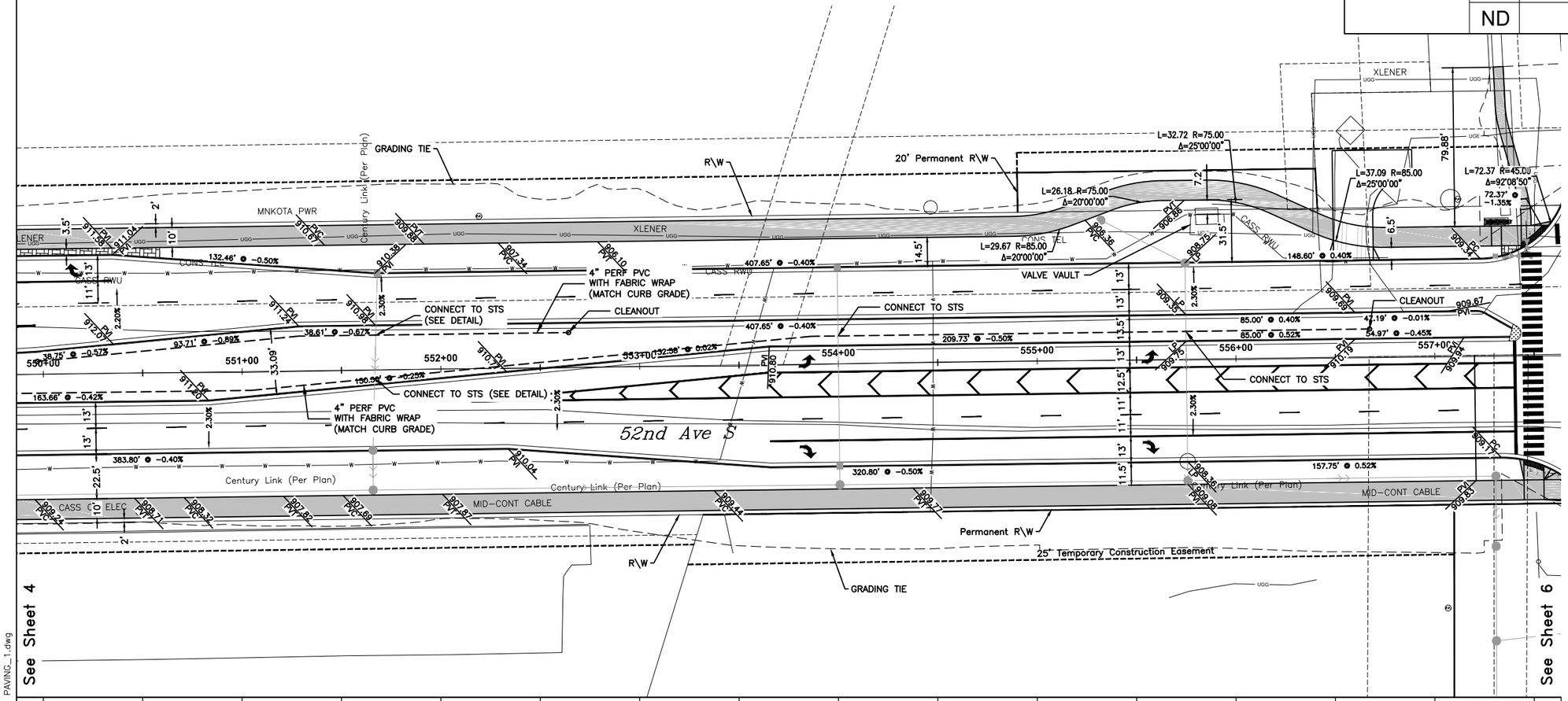
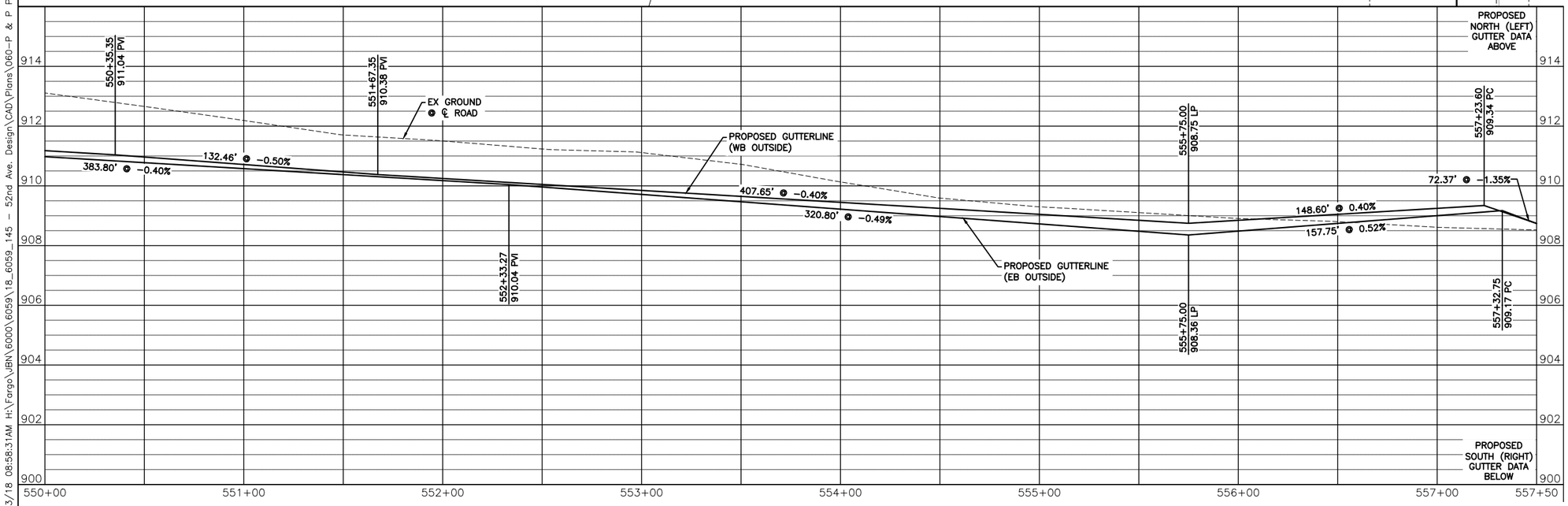
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	60	5





NOTES:

1. ALL GRADES ARE FLOWLINE GRADES SHOWN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL CURB IS STANDARD TYPE I UNLESS OTHERWISE NOTED.

IMPRESSIONED CONCRETE

5" SIDEWALK

6" SIDEWALK

MEDIAN NOSE

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Plan & Profile - 52nd Ave S

52nd Ave S - West of 63rd St S to 45th St S

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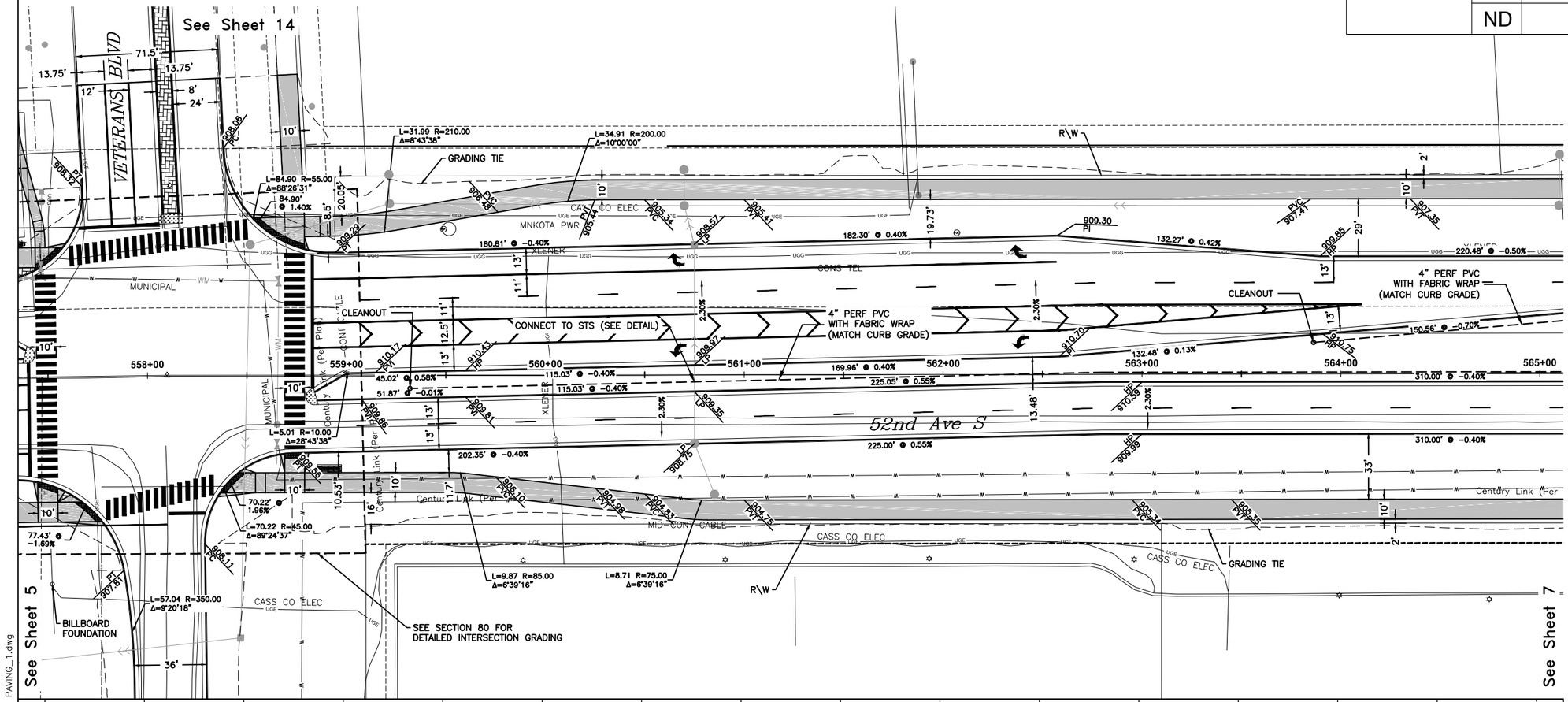
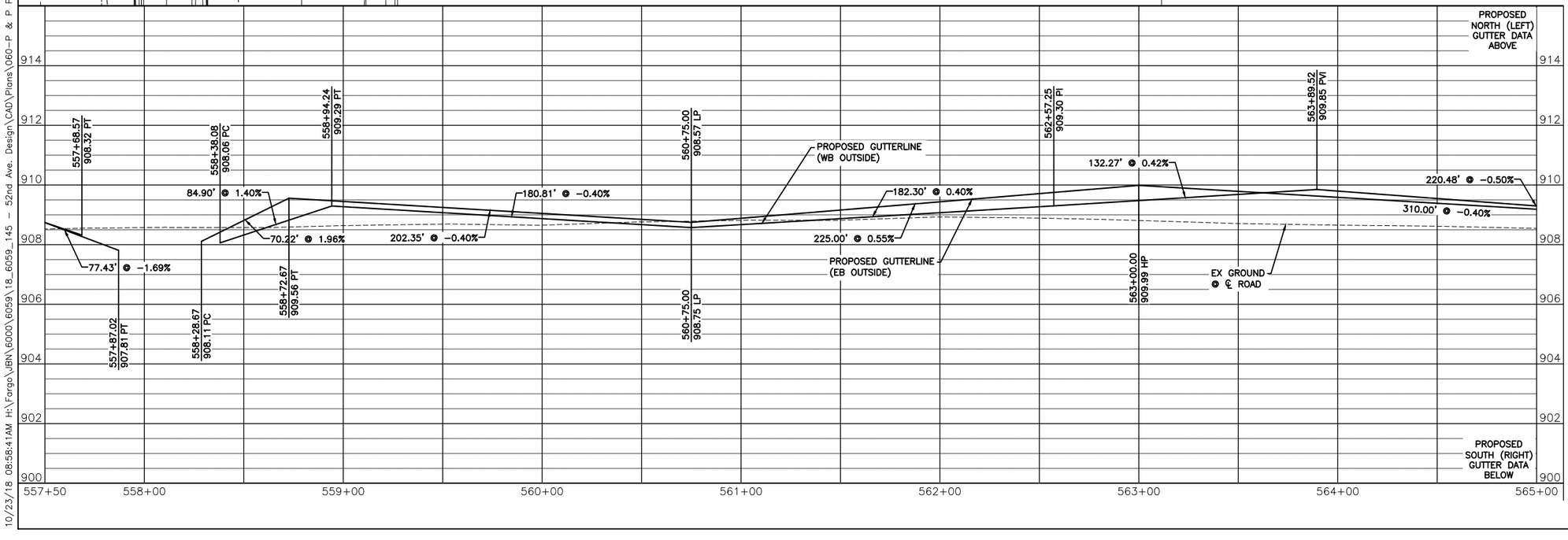
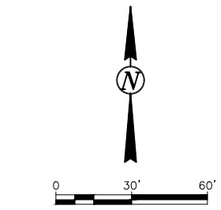
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	60	6







NOTES:

1. ALL GRADES ARE FLOWLINE GRADES SHOWN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL CURB IS STANDARD TYPE I UNLESS OTHERWISE NOTED.

IMPRESSIONED CONCRETE

5" SIDEWALK

6" SIDEWALK

MEDIAN NOSE

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

ALL ELEVATIONS ARE BASED ON THE U.S.G.S. VERTICAL DATUM OF 1988. (UNLESS NOTED OTHERWISE)

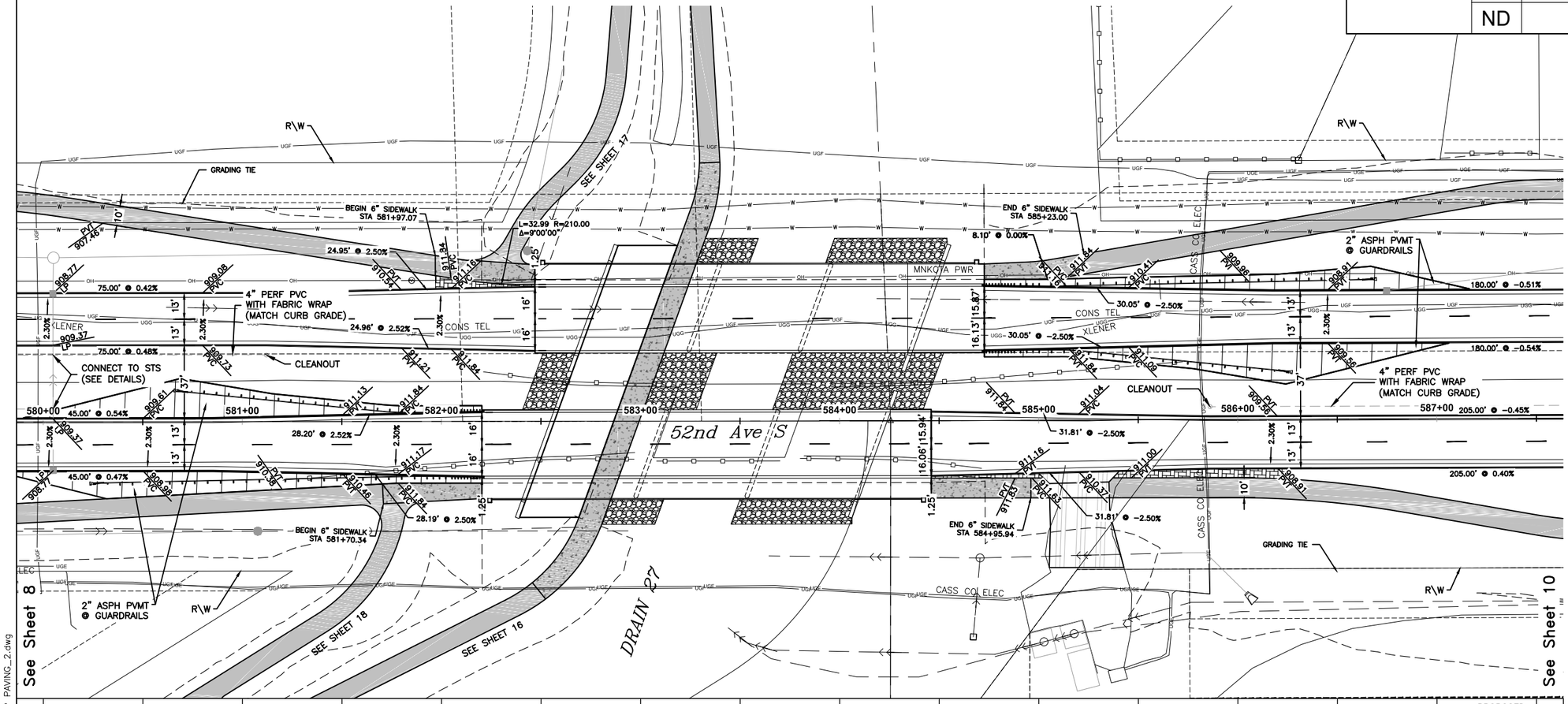
This document was originally issued and sealed by Adam M. Ruud Registration Number 10407 on 10/26/18 and the original document is stored in the Engineering Dept. at City Hall.

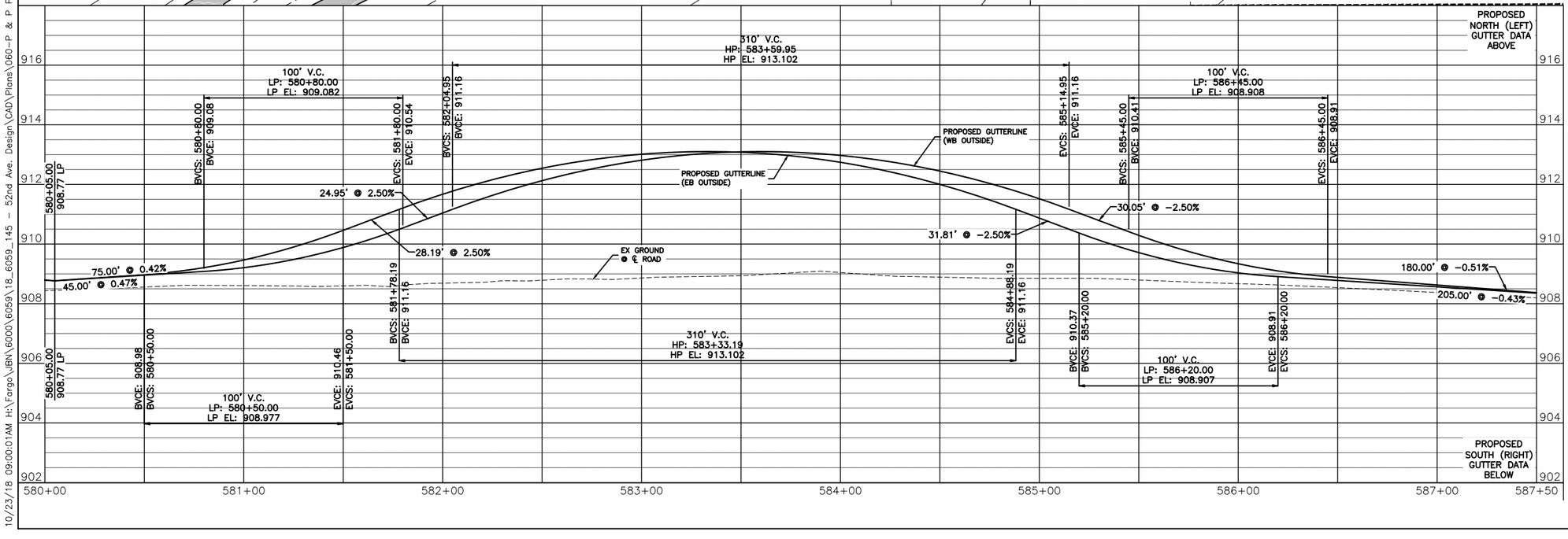
Plan & Profile - 52nd Ave S

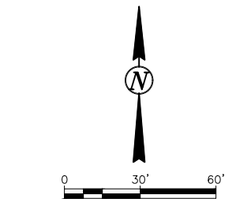
52nd Ave S - West of 63rd St S to 45th St S

10/23/18 08:58:41AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\060-P & P PAVING_1.dwg

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	60	9







NOTES:

1. ALL GRADES ARE FLOWLINE GRADES SHOWN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL CURB IS STANDARD TYPE I UNLESS OTHERWISE NOTED.

IMPRESSIONED CONCRETE

5" SIDEWALK

6" SIDEWALK

MEDIAN NOSE

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
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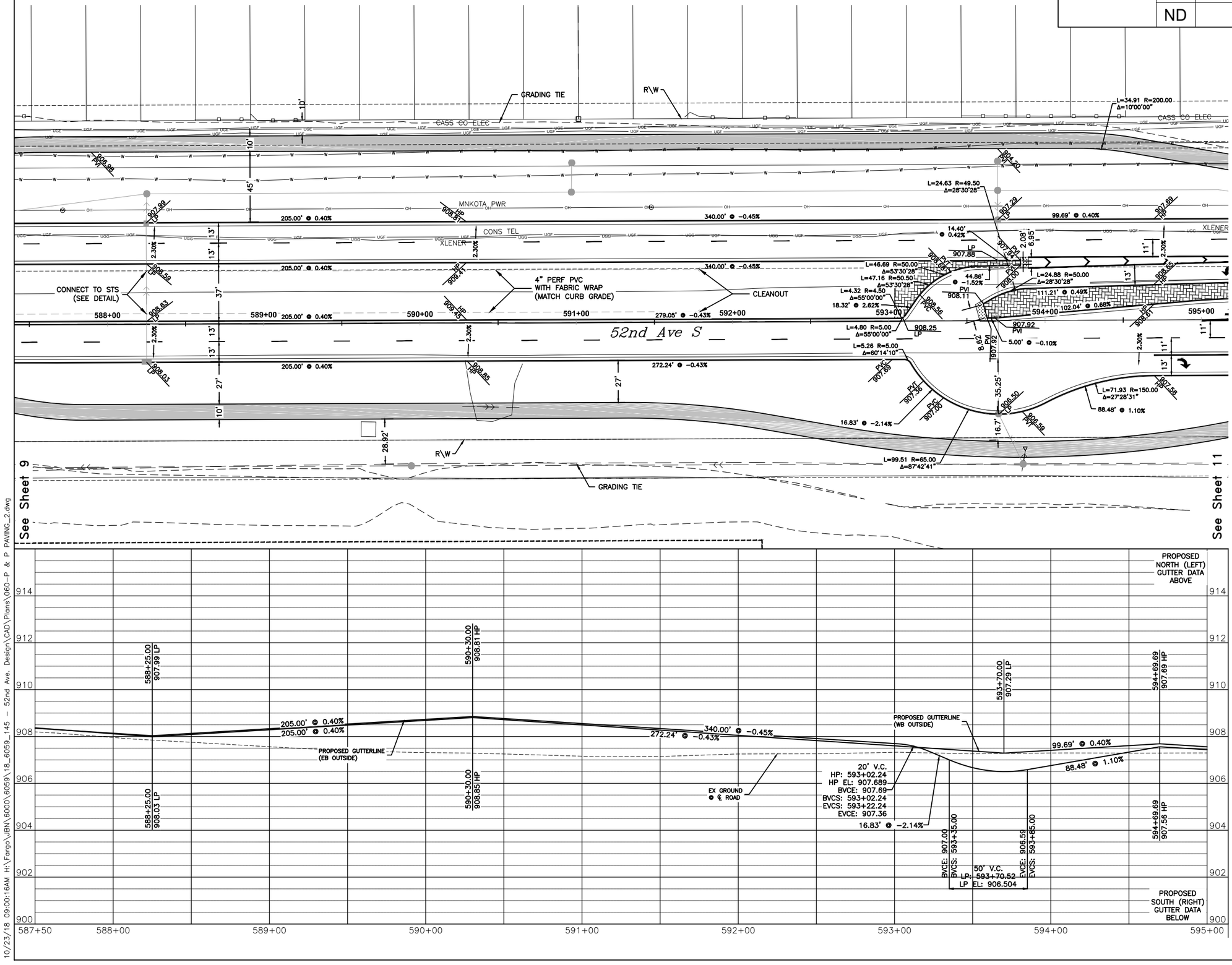
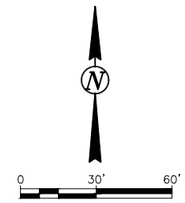
Plan & Profile - 52nd Ave S

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:00:01AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\060-P & P PAVING_2.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	60	10





NOTES:

1. ALL GRADES ARE FLOWLINE GRADES SHOWN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL CURB IS STANDARD TYPE I UNLESS OTHERWISE NOTED.

IMPRESSIONED CONCRETE

5" SIDEWALK

6" SIDEWALK

MEDIAN NOSE

THE CITY OF Fargo FAR MORE

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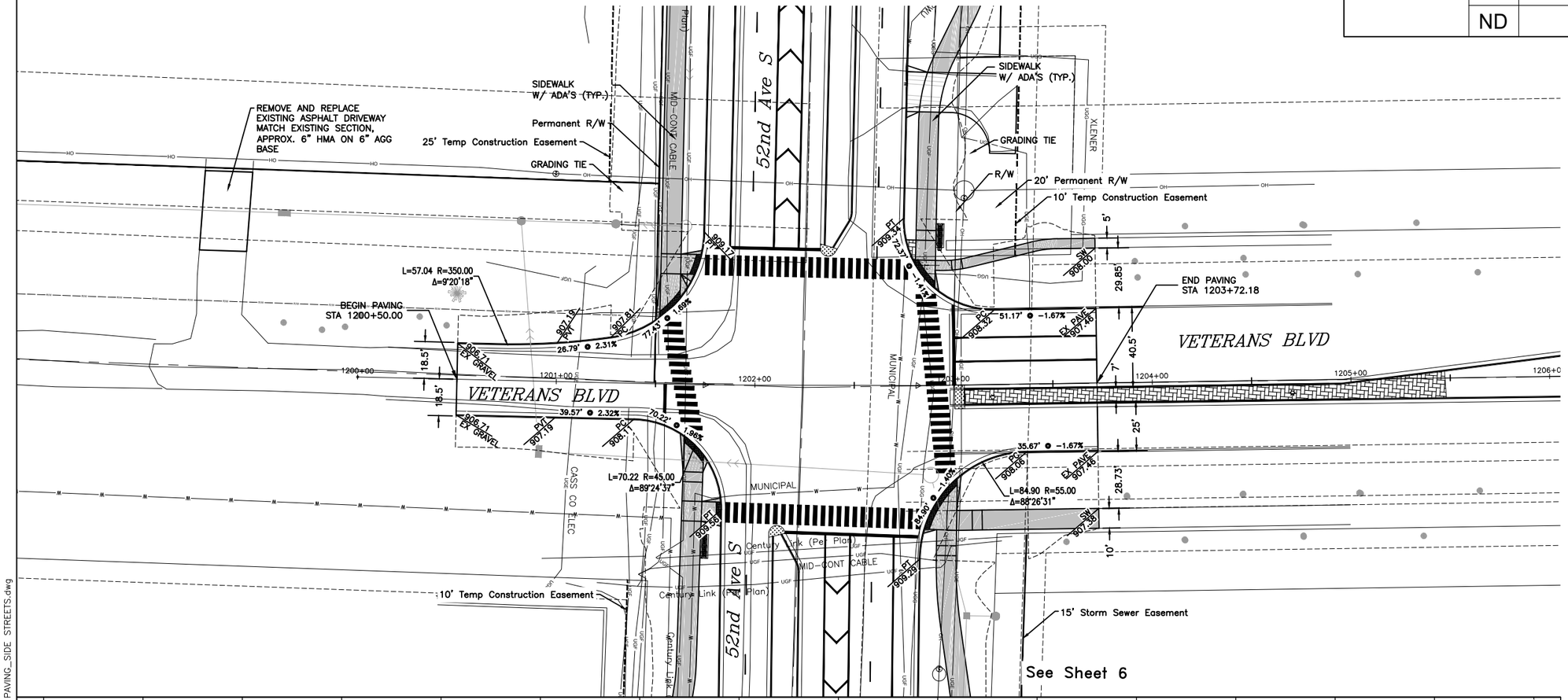
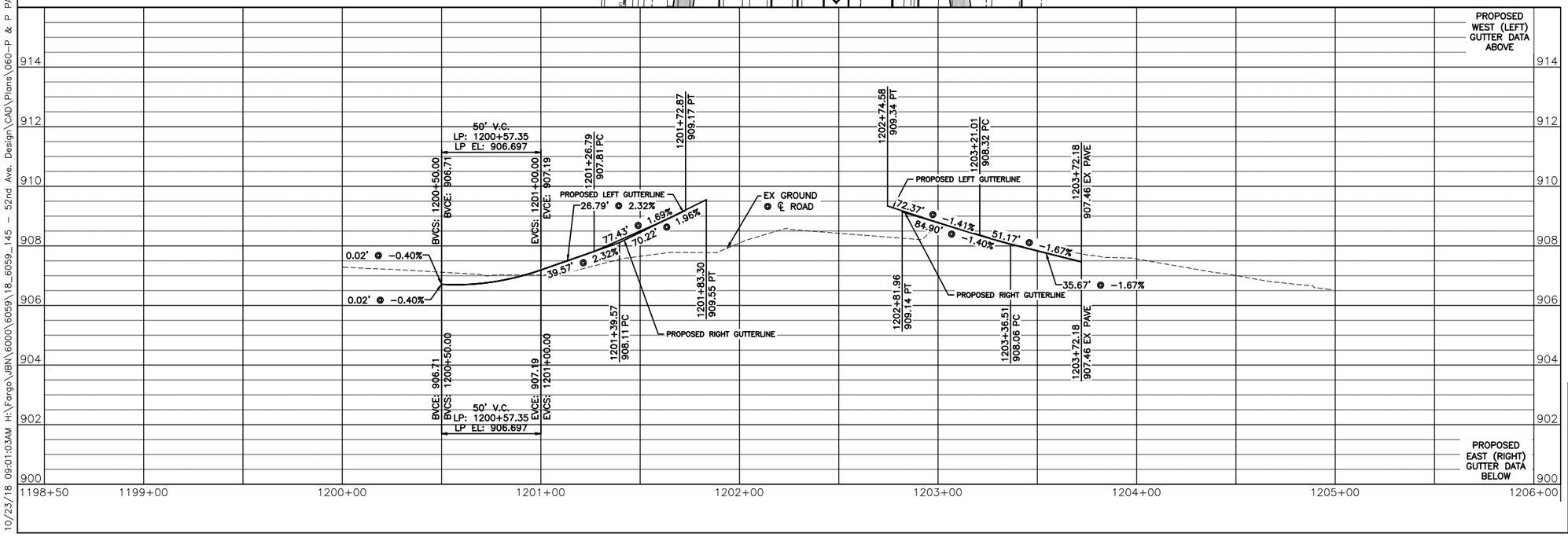
Plan & Profile - 52nd Ave S

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:00:16AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\060-P & P PAVING_2.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	60	14





0 30' 60'

NOTES:

1. ALL GRADES ARE FLOWLINE GRADES SHOWN AT FACE OF CURB UNLESS OTHERWISE NOTED.
2. ALL CURB IS STANDARD TYPE I UNLESS OTHERWISE NOTED.

IMPRESSIONED CONCRETE
5" SIDEWALK
6" SIDEWALK
MEDIAN NOSE

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
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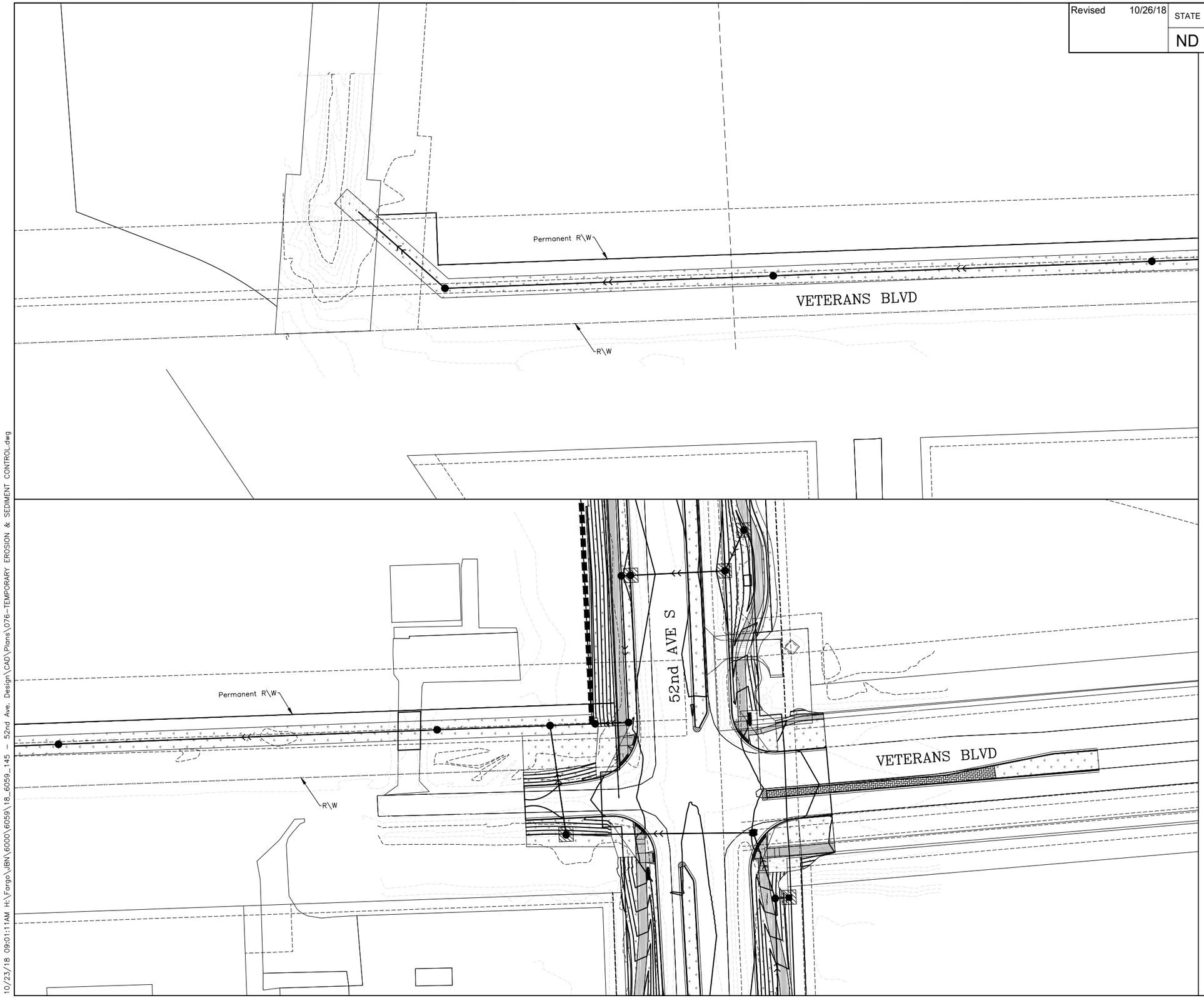
Plan & Profile - Veterans Blvd

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:01:03AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\060-P & P PAVING_SIDE STREETS.dwg

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	76	6



LEGEND:

- PROPOSED SILT FENCE
- BIO ROLL
- RIGHT OF WAY LIMITS
- INLET PROTECTION – EXISTING INLET
- INLET PROTECTION – NEW INLET
- EX STORM INLET
- EX STORM MH
- EX STORM SEWER
- PROPOSED STORM SEWER
- CONSTRUCTION LIMITS
- FLOW / FLOW — FLOW DIRECTION
- TEMPORARY CONSTRUCTION ENTRANCE
- DO NOT DISTURB AREA
- TEMPORARY COVER CROP HYDRAULIC MULCH (0.72 ACRES)
- 5" SIDEWALK
- 6" SIDEWALK
- MEDIAN NOSE

0 50' 100'

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
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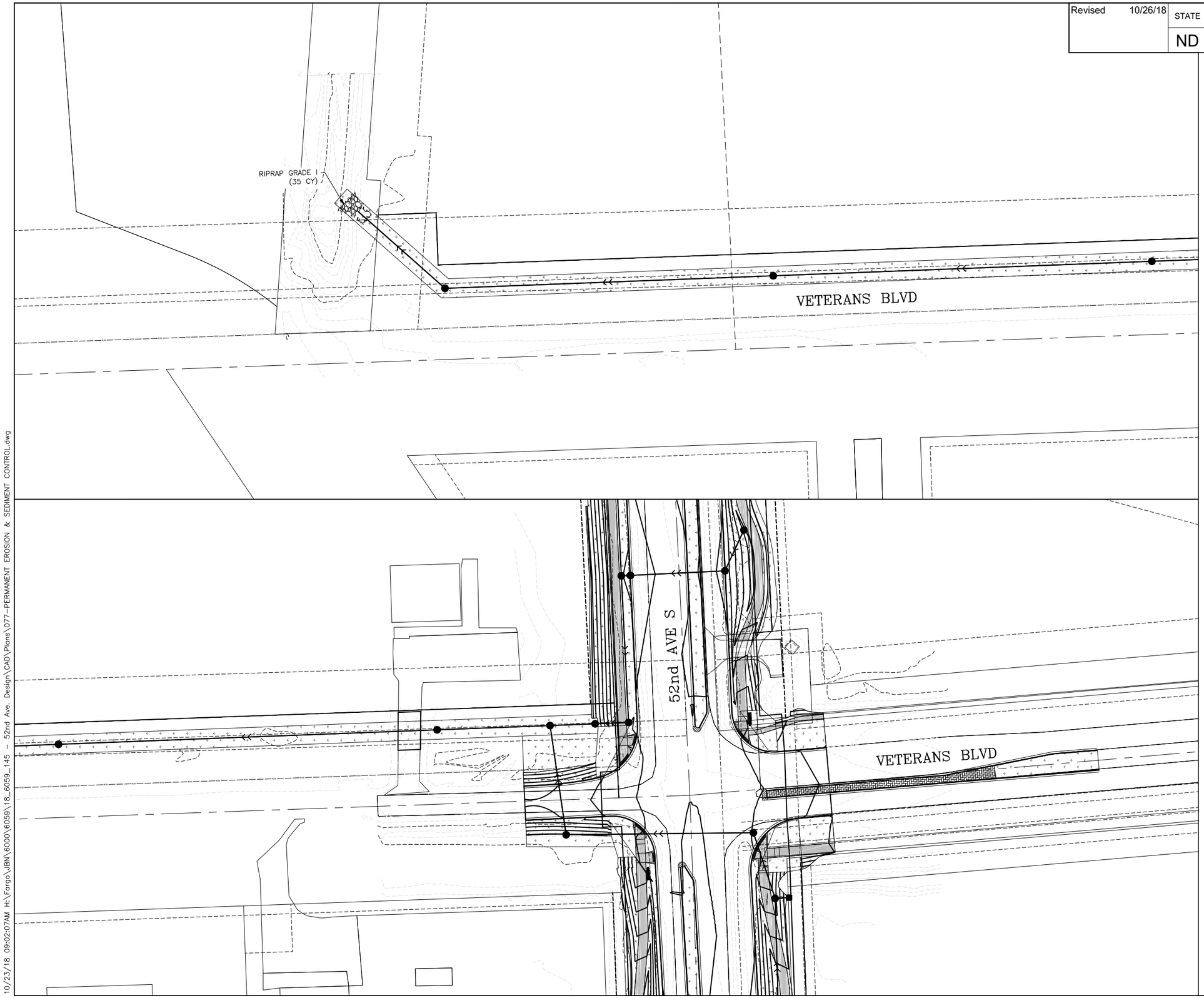
Temporary Erosion Control

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:01:11AM H:\Fargo\JBN\6000\6059\18_6059_145 – 52nd Ave. Design\CAD\Plans\076-TEMPORARY EROSION & SEDIMENT CONTROL.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	77	6



0 50' 100'

LEGEND:

- RIGHT OF WAY LIMITS
- EX STORM INLET
- EX STORM MH
- EX STORM SEWER
- PROPOSED STORM SEWER
- CONSTRUCTION LIMITS
- FLOW DIRECTION
- DO NOT DISTURB AREA
- SEEDING CLASS III BONDED FIBER MATRIX (0.72 SY)
- 5" SIDEWALK
- 6" SIDEWALK
- MEDIAN NOSE
- EROSION CONTROL BLANKET TYPE 4
- RIPRAP GRADE I (35 CY)

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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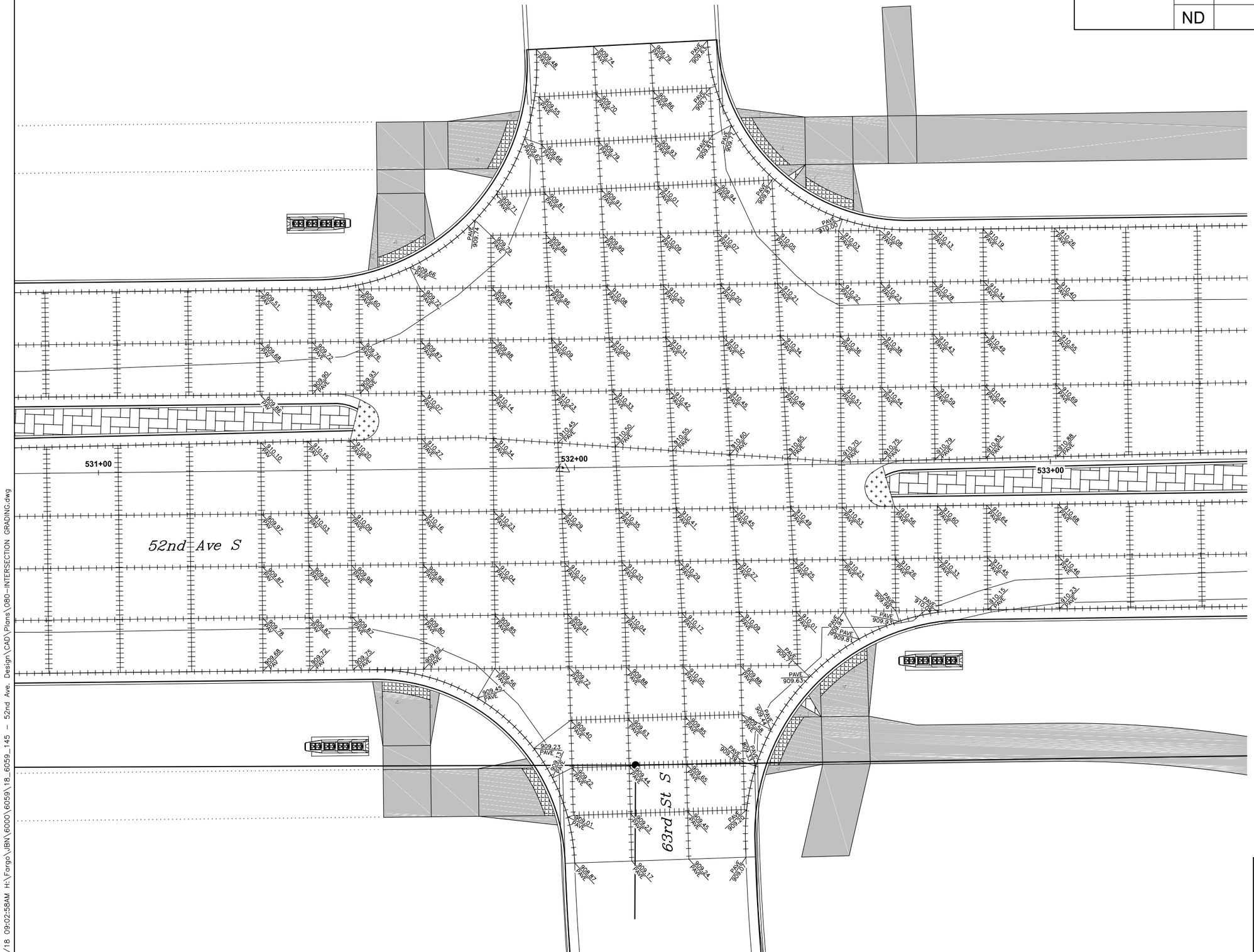
Permanent Erosion Control

52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	80	7



N

0 10' 20'

#4 DEFORMED TIE BAR

DOWELED JOINT

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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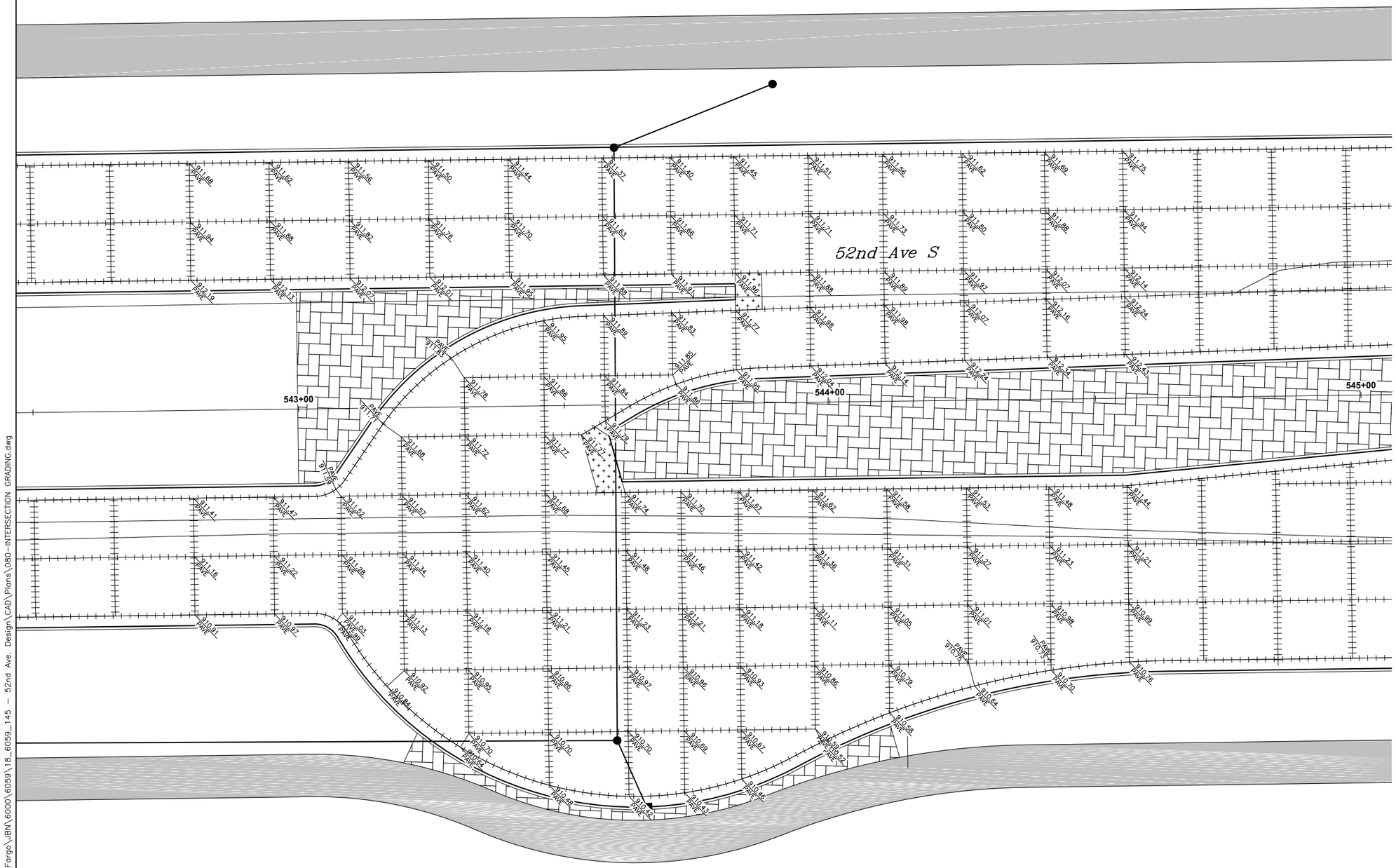
Layouts - Int Grading 63rd Ave S

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:02:58AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\080-INTERSECTION GRADING.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	80	8



N

0 10' 20'

#4 DEFORMED TIE BAR

DOWELED JOINT

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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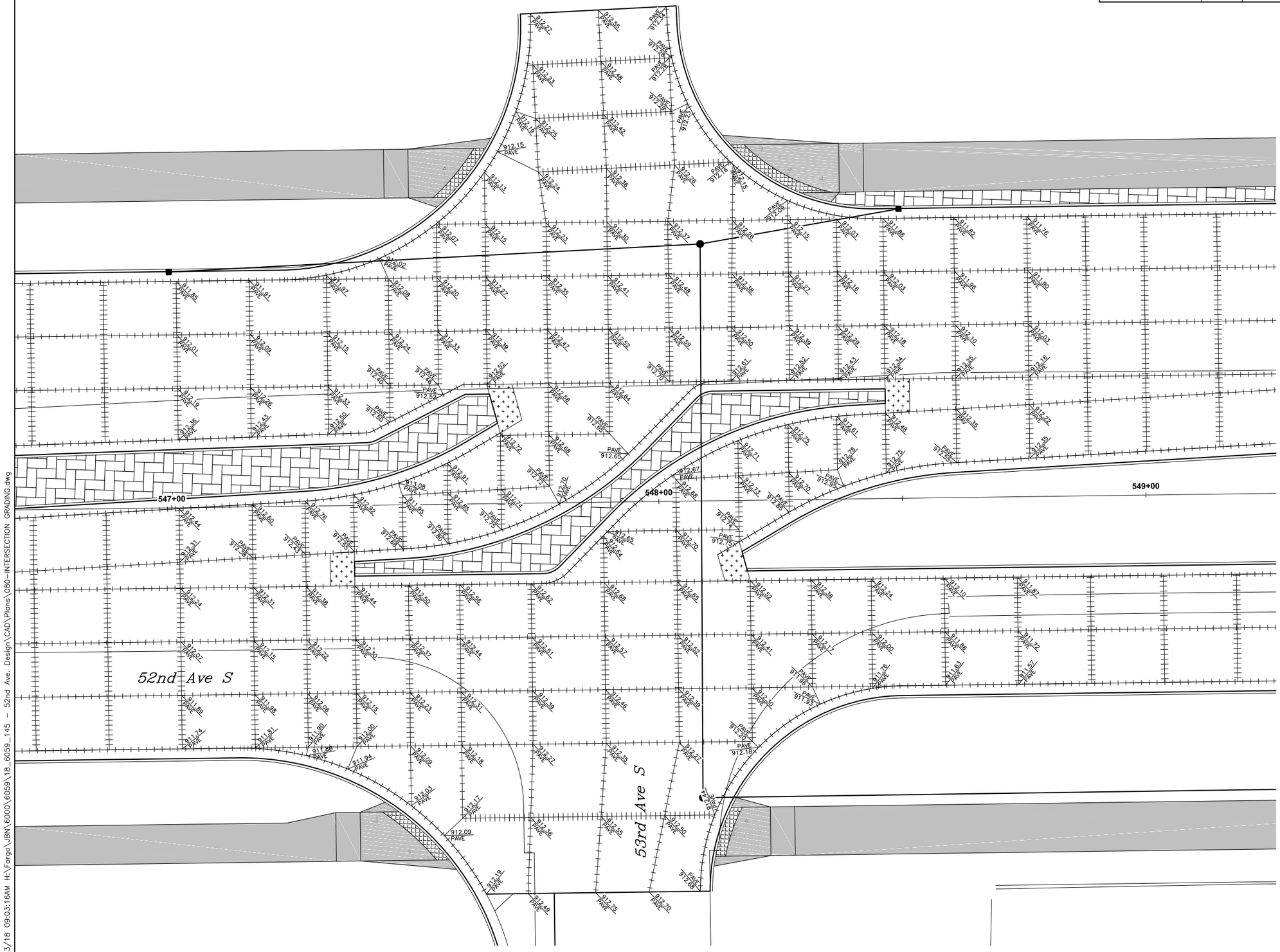
Layouts - Loon Grading West 53rd Ave S

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:03:06AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\080-INTERSECTION GRADING.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	80	9



N

0 10' 20'

#4 DEFORMED TIE BAR

DOWELED JOINT

THE CITY OF Fargo FAR MORE

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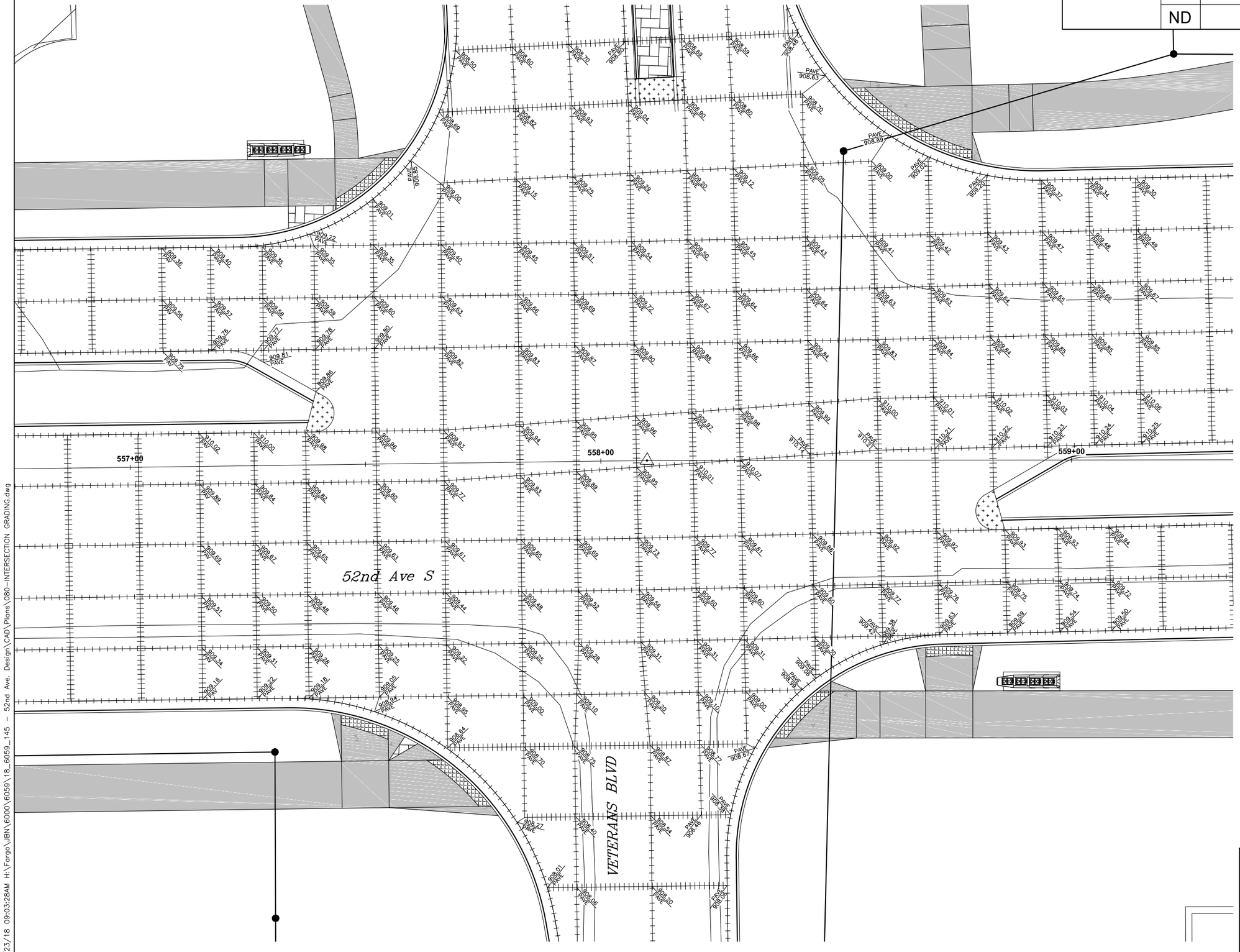
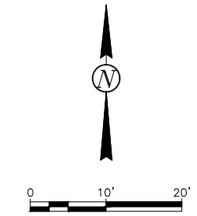
Layouts - Int Grading 53rd Ave S

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:03:16AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\080-INTERSECTION GRADING.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	80	10





#4 DEFORMED TIE BAR

DOWELED JOINT

THE CITY OF Fargo FAR MORE

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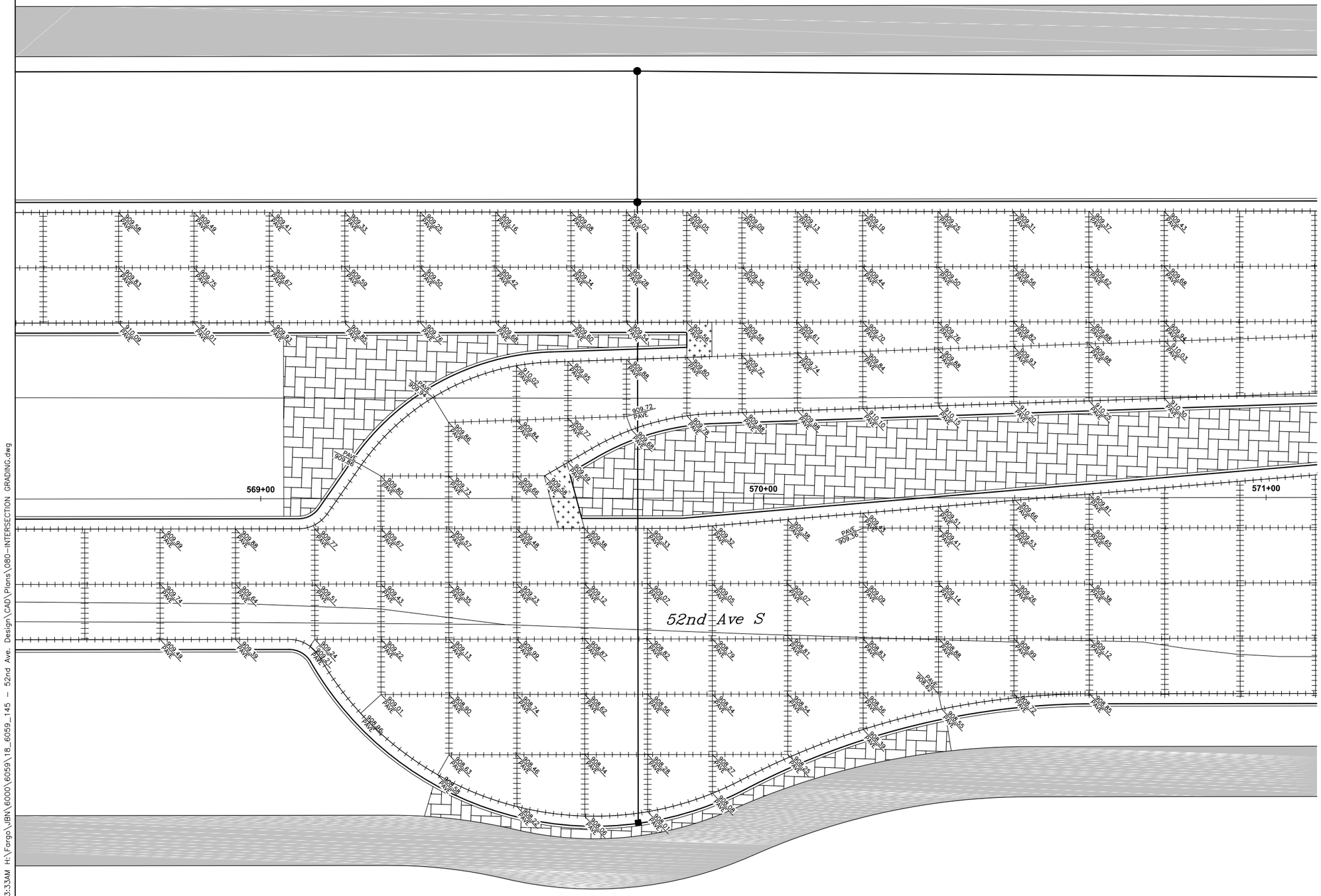
Layouts - Int Grading Veterans Blvd

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:03:28AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\080-INTERSECTION GRADING.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	80	11



0 10' 20'

#4 DEFORMED TIE BAR

DOWELED JOINT

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
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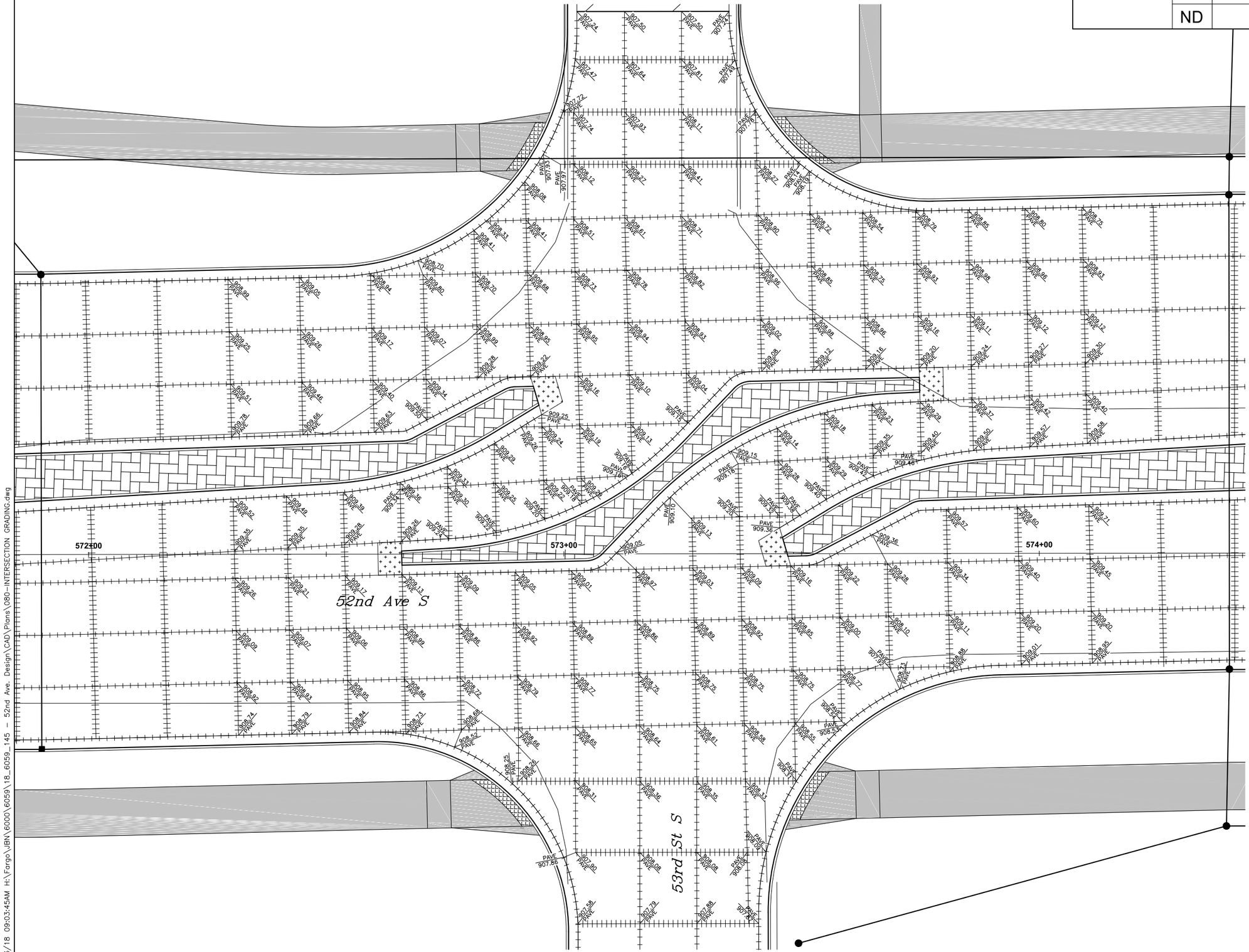
Layouts - Loon Grading West 53rd St S

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:03:33AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\080-INTERSECTION GRADING.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	80	12



N

0 10' 20'

#4 DEFORMED TIE BAR

DOWELED JOINT

THE CITY OF Fargo FAR MORE

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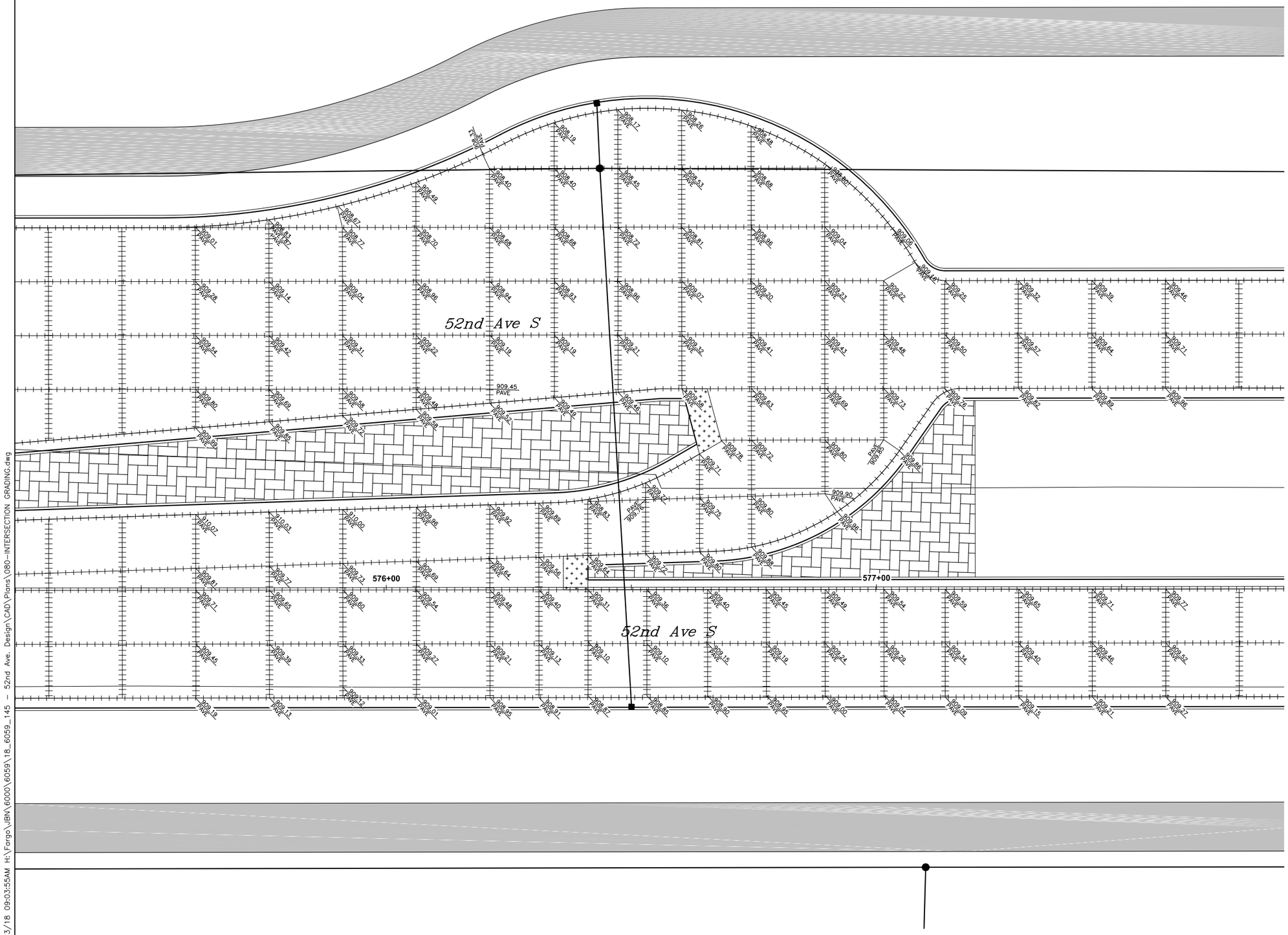
Layouts - Int Grading 53rd St S

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	80	13



N

0 10' 20'

#4 DEFORMED TIE BAR

DOWELED JOINT

THE CITY OF Fargo FAR MORE

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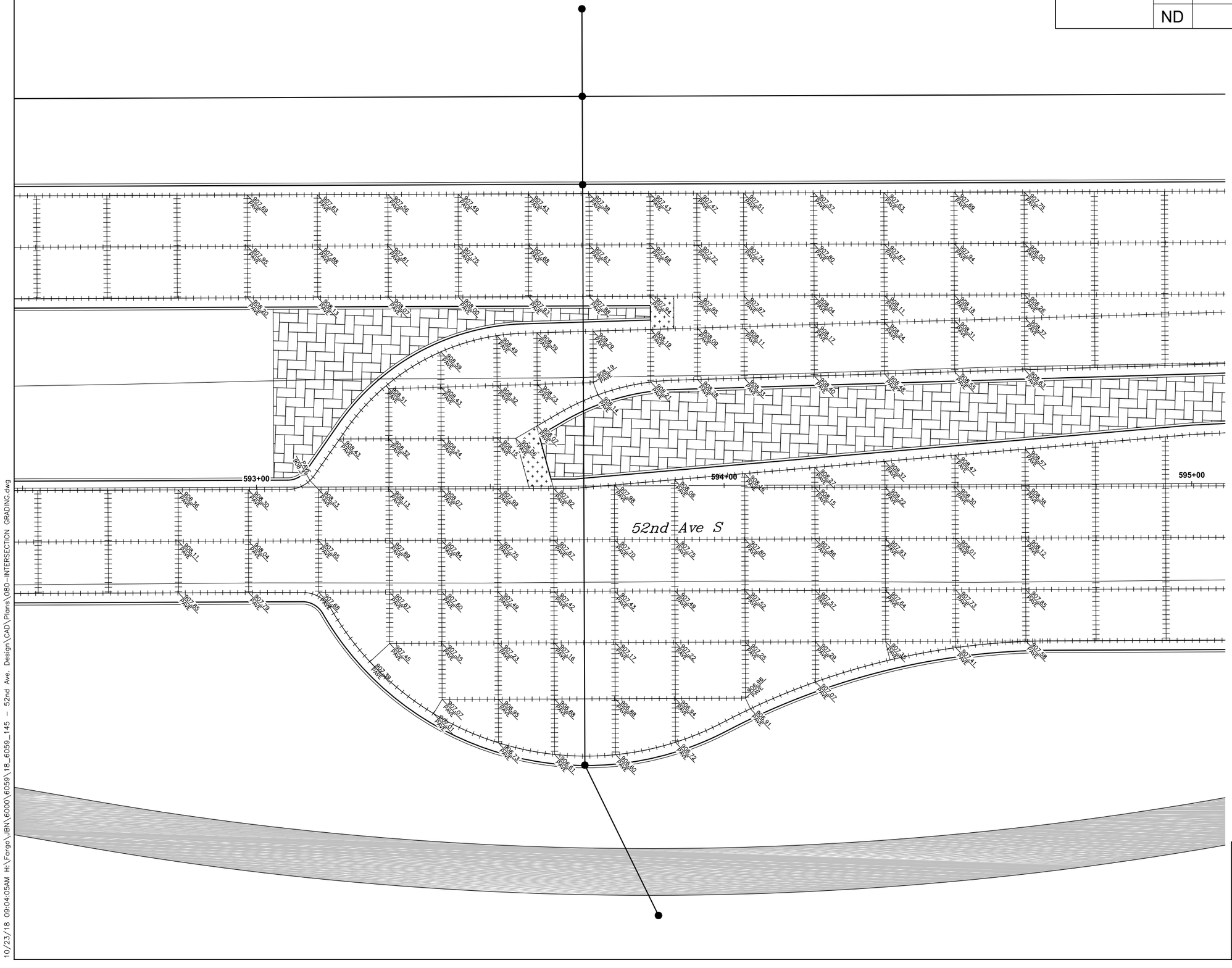
Layouts - Loon Grading East 53rd St S

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:03:55AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\080-INTERSECTION GRADING.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	80	14



N

0 10' 20'

#4 DEFORMED TIE BAR

DOWELED JOINT

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
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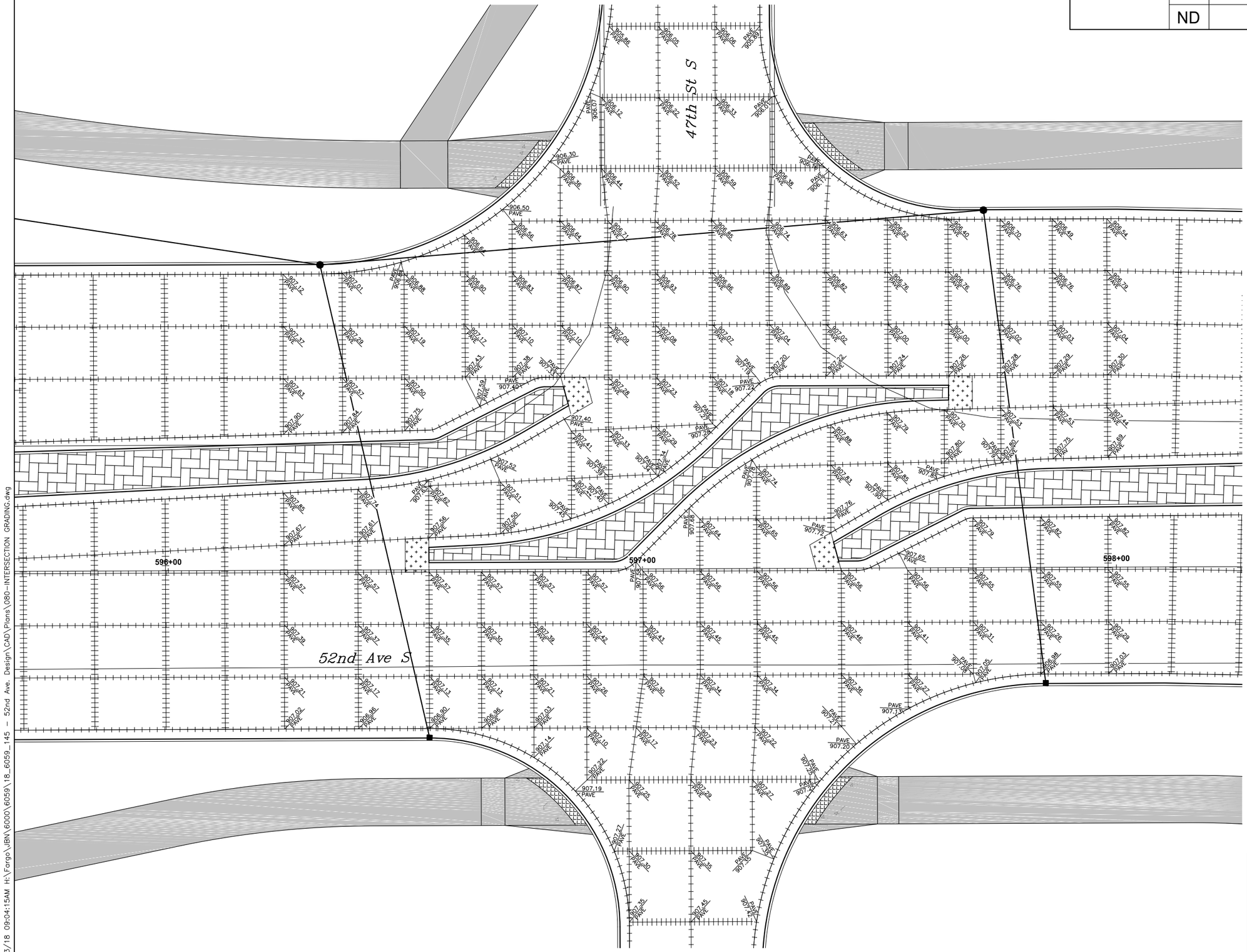
Layouts - Loon Grading West 47th St S

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:04:05AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\080-INTERSECTION GRADING.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	80	15



N

0 10' 20'

#4 DEFORMED TIE BAR

DOWELED JOINT

THE CITY OF Fargo FAR MORE

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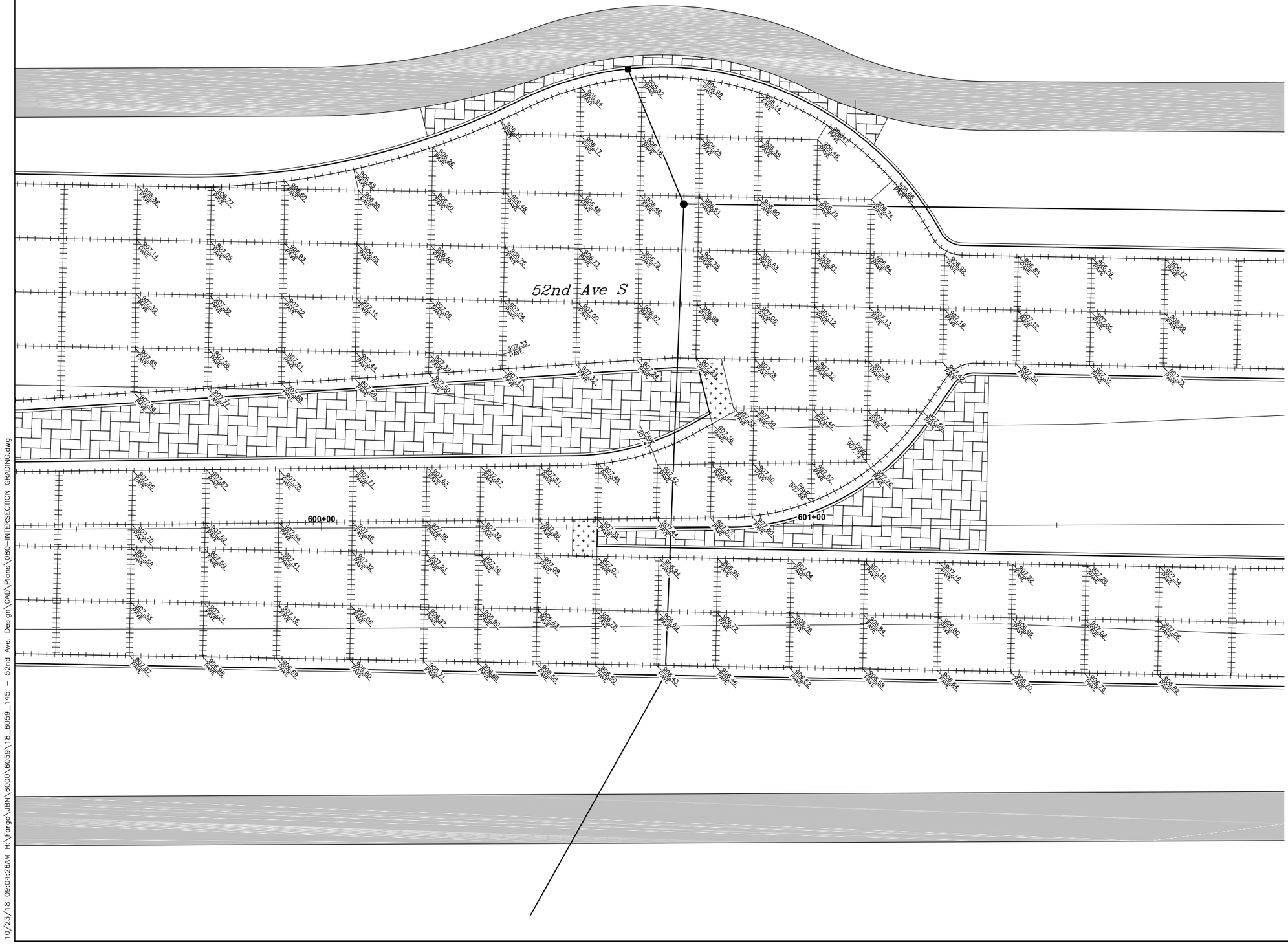
Layouts - Int Grading 47th St S

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:04:15AM H:\Fargo_JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\080-INTERSECTION GRADING.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	80	16



N

0 10' 20'

#4 DEFORMED TIE BAR

DOWELED JOINT

THE CITY OF Fargo FAR MORE

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Layouts - Loon Grading East 47th St S

52nd Ave S - West of 63rd St S to 45th St S

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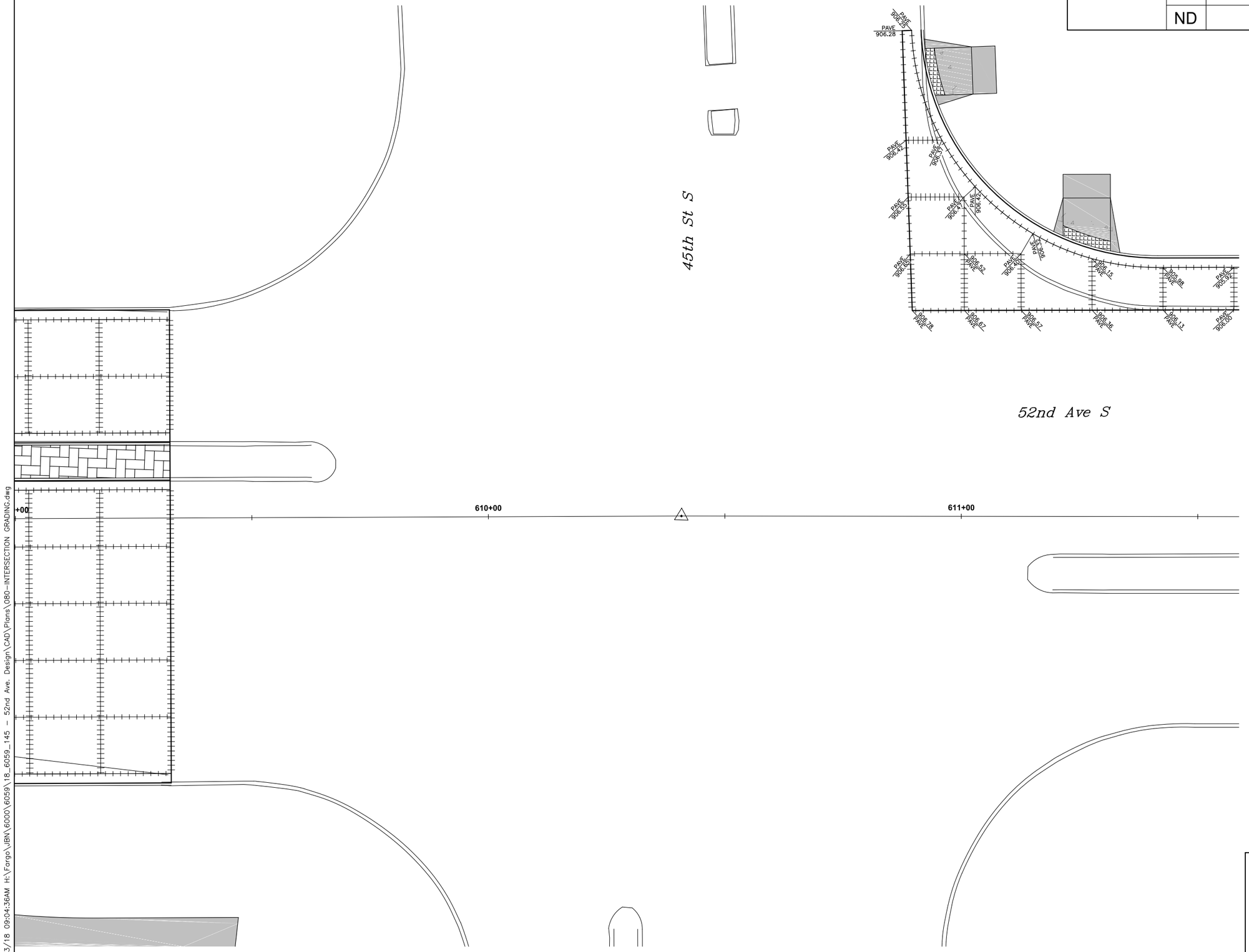
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	80	17



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THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
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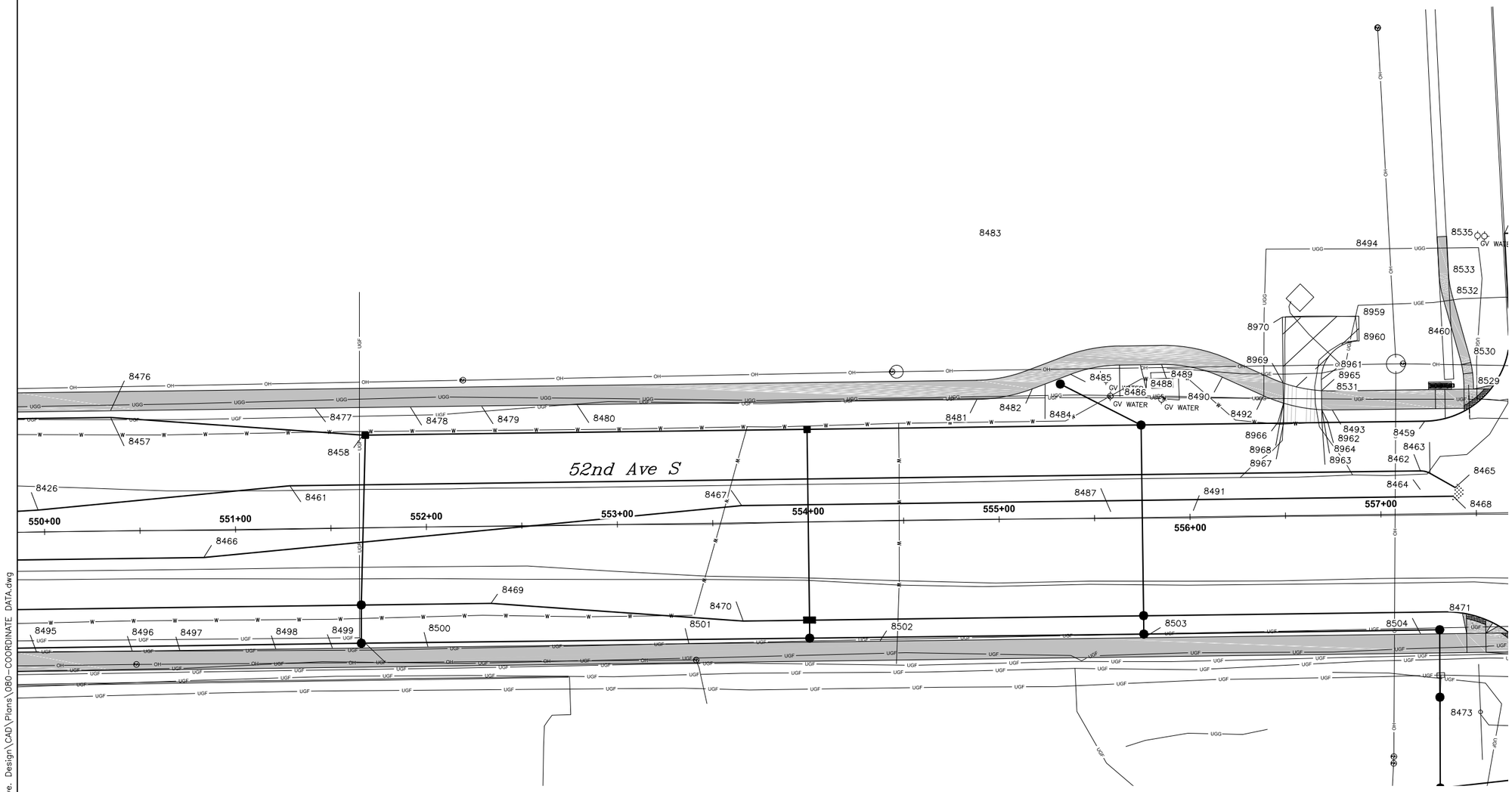
Layouts - Int Grading 45th St S

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	80	22



Point Table					
Point #	Raw Description	Northing	Easting	Station	Offset
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8457	FL	435636.3823	2873494.0900	550+35.35	59.50
8458	FL	435631.7361	2873626.4661	551+67.35	48.50
8459	FL-PC	435658.4574	2874182.0702	557+23.60	48.50
8460	FL-RADIUS	435703.4055	2874179.9084	557+23.60	93.50
8461	FL	435603.9110	2873589.1421	551+28.74	22.50
8462	FL-PC	435632.3600	2874180.6692	557+20.95	22.50
8463	FL-PT	435631.2515	2874185.7482	557+25.97	21.15
8464	FL-RADIUS	435622.3715	2874181.1496	557+20.95	12.50
8465	FL	435624.2628	2874199.2435	557+39.11	13.52
8466	FL	435564.7647	2873545.4047	550+83.17	14.50
8467	FL	435601.7895	2873826.0541	553+65.27	9.00
8468	FL	435619.6897	2874198.2453	557+37.90	9.00
8469	FL	435546.0055	2873696.5844	552+33.27	40.50
8470	FL	435541.3593	2873828.9604	553+65.27	51.50
8471	FL-PC	435559.0124	2874196.0132	557+32.75	51.50
8473	FL-RADIUS	435504.0759	2874198.6553	557+32.75	106.50

Point Table					
Point #	Raw Description	Northing	Easting	Station	Offset
8475	FL-RADIUS	435442.2803	2873910.2003	554+41.66	154.37
8476	SW-PVI	435639.8758	2873493.8713	550+35.30	63.00
8477	SW-PVC	435645.0182	2873600.7936	551+42.35	63.00
8478	SW-PVT	435647.4197	2873650.7273	551+92.34	63.00
8479	SW-PVC	435649.2124	2873688.0028	552+29.66	63.00
8480	SW-PVT	435651.6144	2873737.9450	552+79.66	63.00
8481	SW-PC	435661.6793	2873947.2216	554+89.18	63.00
8482	SW-PT	435668.1961	2873976.0135	555+18.25	68.13
8483	SW-RADIUS	435746.5812	2873943.1383	554+89.18	148.00
8484	SW-PVC	435670.9902	2873982.6756	555+25.04	70.60
8485	SW-PC	435676.5086	2873995.8333	555+38.45	75.48
8486	SW-PT	435682.2587	2874021.2379	555+64.10	80.00
8487	SW-RADIUS	435605.0837	2874019.4483	555+58.60	3.00
8488	SW-PVT	435682.7825	2874032.1274	555+75.00	80.00
8489	SW-PC	435683.3177	2874043.2574	555+86.14	80.00
8490	SW-PT	435677.8216	2874075.2547	556+17.84	72.97
8491	SW-RADIUS	435607.1508	2874062.4295	556+01.63	3.00

Point Table					
Point #	Raw Description	Northing	Easting	Station	Offset
8492	SW-PC	435668.8550	2874097.1756	556+39.30	62.96
8493	SW-PT	435662.6261	2874133.4392	556+75.23	55.00
8494	SW-RADIUS	435748.0661	2874140.5451	556+86.43	140.00
8495	SW-PVC	435512.0839	2873459.6400	549+94.97	63.00
8496	SW-PVT	435514.4899	2873509.6670	550+45.06	63.00
8497	SW-PVC	435515.6880	2873534.5800	550+70.00	63.00
8498	SW-PVT	435518.1044	2873584.8219	551+20.30	63.00
8499	SW-PVC	435519.5313	2873614.4909	551+50.00	63.00
8500	SW-PVT	435521.9327	2873664.4223	551+99.99	63.00
8501	SW-PVC	435528.4980	2873800.9321	553+36.66	63.00
8502	SW-PVT	435533.3019	2873900.8167	554+36.66	63.00
8503	SW-PVI	435539.9464	2874038.9722	555+74.98	63.00
8504	SW-PVI	435546.9132	2874183.8295	557+20.00	63.00
8529	SW-PC	435678.2728	2874206.8757	557+49.33	67.10
8530	SW-PT	435693.6858	2874204.0876	557+47.29	82.63
8531	SW-RADIUS	435672.6145	2874132.9589	556+75.23	65.00
8532	SW-PC	435725.1865	2874194.0020	557+38.72	114.58

Point Table					
Point #	Raw Description	Northing	Easting	Station	Offset
8533	SW-PT	435736.1613	2874191.8037	557+37.06	125.65
8535	SW-PI	435755.6430	2874190.1333	557+36.32	145.19
8959	SW-RADIUS	435712.2661	2874145.5692	556+89.33	67.10
8960	SW-RADIUS	435699.2811	2874146.1937	556+89.33	67.10
8961	SW-RADIUS	435678.3434	2874127.1776	556+89.33	67.10
8962	SW-RADIUS	435656.5129	2874131.2309	556+89.33	67.10
8963	SW-RADIUS	435656.3688	2874128.2344	556+89.33	67.10
8964	SW-RADIUS	435662.5398	2874127.9376	556+89.33	67.10
8965	SW-RADIUS	435672.5520	2874127.4561	556+89.33	67.10
8966	SW-PC	435655.2639	2874105.2610	556+50.51	62.96
8967	SW-PC	435655.4080	2874108.2575	556+50.51	62.96
8968	SW-PC	435665.3116	2874107.7812	556+50.51	62.96
8969	SW-PC	435675.8523	2874107.2742	556+50.51	62.96
8970	SW-PC	435710.3445	2874105.6154	556+50.51	62.96

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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Layouts - Coordinate Data

52nd Ave S - West of 63rd St S to 45th St S

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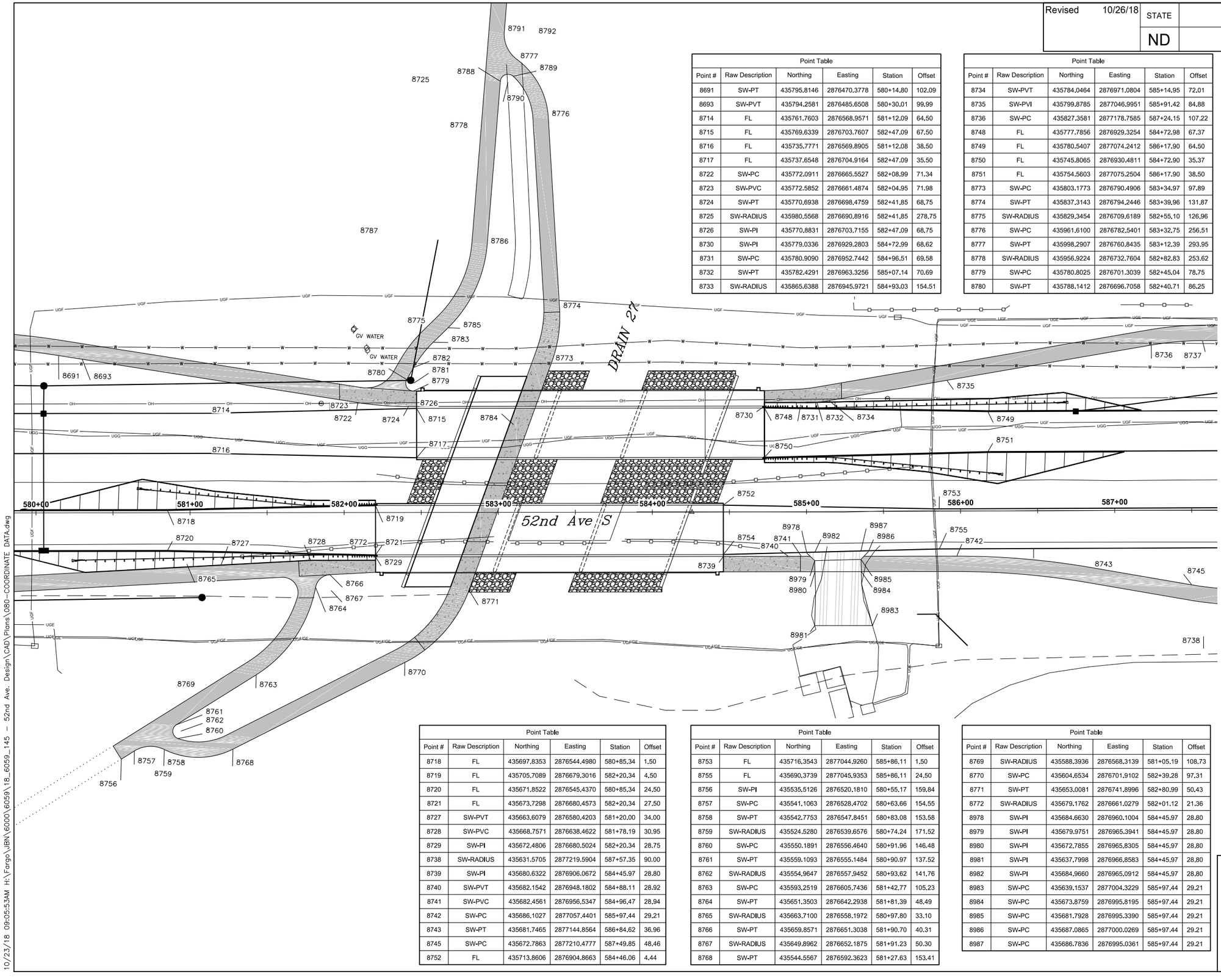
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	80	26



Point Table					
Point #	Raw Description	Northing	Easting	Station	Offset
8691	SW-PT	435795.8146	2876470.3778	580+14.80	102.09
8693	SW-PVT	435794.2581	2876485.6508	580+30.01	99.99
8714	FL	435761.7603	2876568.9571	581+12.09	64.50
8715	FL	435769.6339	2876703.7607	582+47.09	67.50
8716	FL	435735.7771	2876569.8905	581+12.08	38.50
8717	FL	435737.6548	2876704.9164	582+47.09	35.50
8722	SW-PC	435772.0911	2876665.5527	582+08.99	71.34
8723	SW-PVC	435772.5852	2876661.4874	582+04.95	71.98
8724	SW-PT	435770.6938	2876698.4759	582+41.85	68.75
8725	SW-RADIUS	435980.5568	2876690.8916	582+41.85	278.75
8726	SW-PI	435770.8831	2876703.7155	582+47.09	68.75
8730	SW-PI	435779.0336	2876929.2803	584+72.99	68.62
8731	SW-PC	435780.9090	2876952.7442	584+96.51	69.58
8732	SW-PT	435782.4291	2876963.3256	585+07.14	70.69
8733	SW-RADIUS	435865.6388	2876945.9721	584+93.03	154.51

Point Table					
Point #	Raw Description	Northing	Easting	Station	Offset
8734	SW-PVT	435784.0464	2876971.0804	585+14.95	72.01
8735	SW-PVI	435799.8785	2877046.9951	585+91.42	84.88
8736	SW-PC	435827.3581	2877178.7585	587+24.15	107.22
8748	FL	435777.7856	2876929.3254	584+72.98	67.37
8749	FL	435780.5407	2877074.2412	586+17.90	64.50
8750	FL	435745.8065	2876930.4811	584+72.90	35.37
8751	FL	435754.5603	2877075.2504	586+17.90	38.50
8773	SW-PC	435803.1773	2876790.4906	583+34.97	97.89
8774	SW-PT	435837.3143	2876794.2446	583+39.96	131.87
8775	SW-RADIUS	435829.3454	2876709.6189	582+55.10	126.96
8776	SW-PC	435961.6100	2876782.5401	583+32.75	256.51
8777	SW-PT	435998.2907	2876760.8435	583+12.39	293.95
8778	SW-RADIUS	435956.9224	2876732.7604	582+82.83	253.62
8779	SW-PC	435780.8025	2876701.3039	582+45.04	78.75
8780	SW-PT	435788.1412	2876696.7058	582+40.71	86.25

Point Table					
Point #	Raw Description	Northing	Easting	Station	Offset
8781	SW-RADIUS	435785.7992	2876701.1234	582+45.04	83.75
8782	SW-PC	435796.2109	2876700.9839	582+45.27	94.16
8783	SW-PT	435812.8996	2876713.0275	582+57.91	110.40
8784	SW-RADIUS	435761.0811	2876767.2478	583+10.23	56.66
8785	SW-PC	435822.6833	2876722.3778	582+67.61	119.84
8786	SW-PT	435877.5665	2876745.8412	582+93.04	173.84
8787	SW-RADIUS	435881.4110	2876660.9282	582+08.32	180.75
8788	SW-PC	435983.6361	2876750.6436	583+01.67	279.67
8789	SW-PT	435987.1939	2876758.9068	583+10.06	282.93
8790	SW-RADIUS	435983.4100	2876755.6385	583+06.65	279.26
8791	SW-PT	436015.7426	2876752.0972	583+04.28	311.70
8792	SW-RADIUS	436014.8380	2876772.0768	583+24.22	310.08
8793	SW-PI	436093.8653	2876755.6343	583+10.64	389.65

Point Table					
Point #	Raw Description	Northing	Easting	Station	Offset
8718	FL	435697.8353	2876544.4980	580+85.34	1.50
8719	FL	435705.7089	2876679.3016	582+20.34	4.50
8720	FL	435671.8522	2876545.4370	580+85.34	24.50
8721	FL	435673.7298	2876680.4573	582+20.34	27.50
8727	SW-PVT	435663.6079	2876580.4203	581+20.00	34.00
8728	SW-PVC	435668.7571	2876638.4622	581+78.19	30.95
8729	SW-PI	435672.4806	2876680.5024	582+20.34	28.75
8738	SW-RADIUS	435631.5705	2877219.5904	587+57.35	90.00
8739	SW-PI	435680.6322	2876906.0672	584+45.97	28.80
8740	SW-PVT	435682.1542	2876948.1802	584+88.11	28.92
8741	SW-PVC	435682.4561	2876956.5347	584+96.47	28.94
8742	SW-PC	435686.1027	2877057.4401	585+97.44	29.21
8743	SW-PT	435681.7465	2877144.8564	586+84.62	36.96
8745	SW-PC	435672.7863	2877210.4777	587+49.85	48.46
8752	FL	435713.8606	2876904.8663	584+46.06	4.44

Point Table					
Point #	Raw Description	Northing	Easting	Station	Offset
8753	FL	435716.3543	2877044.9260	585+86.11	1.50
8755	FL	435690.3739	2877045.9353	585+86.11	24.50
8756	SW-PI	435535.5126	2876520.1810	580+55.17	159.84
8757	SW-PC	435541.1063	2876528.4702	580+63.66	154.55
8758	SW-PT	435542.7753	2876547.8451	580+83.08	153.58
8759	SW-RADIUS	435524.5280	2876539.6576	580+74.24	171.52
8760	SW-PC	435550.1891	2876556.4640	580+91.96	146.48
8761	SW-PT	435559.1093	2876555.1484	580+90.97	137.52
8762	SW-RADIUS	435554.9647	2876557.9452	580+93.62	141.76
8763	SW-PC	435593.2519	2876605.7436	581+42.77	105.23
8764	SW-PT	435651.3503	2876642.2938	581+81.39	48.49
8765	SW-RADIUS	435663.7100	2876558.1972	580+97.80	33.10
8766	SW-PT	435659.8571	2876651.3038	581+90.70	40.31
8767	SW-RADIUS	435649.8962	2876652.1875	581+91.23	50.30
8768	SW-PT	435544.5567	2876592.3623	581+27.63	153.41

Point Table					
Point #	Raw Description	Northing	Easting	Station	Offset
8769	SW-RADIUS	435588.3936	2876568.3139	581+05.19	108.73
8770	SW-PC	435604.6534	2876701.9102	582+39.28	97.31
8771	SW-PT	435653.0081	2876741.8996	582+80.99	50.43
8772	SW-RADIUS	435679.1762	2876661.0279	582+01.12	21.36
8978	SW-PI	435684.6630	2876960.1004	584+45.97	28.80
8979	SW-PI	435679.9751	2876965.3941	584+45.97	28.80
8980	SW-PI	435672.7855	2876965.8305	584+45.97	28.80
8981	SW-PI	435637.7998	2876966.8583	584+45.97	28.80
8982	SW-PI	435684.9660	2876965.0912	584+45.97	28.80
8983	SW-PC	435639.1537	2877004.3229	585+97.44	29.21
8984	SW-PC	435673.8759	2876995.8195	585+97.44	29.21
8985	SW-PC	435681.7928	2876995.3390	585+97.44	29.21
8986	SW-PC	435687.0865	2877000.0269	585+97.44	29.21
8987	SW-PC	435686.7836	2876995.0361	585+97.44	29.21

N

0 30' 60'

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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Layouts - Coordinate Data

52nd Ave S - West of 63rd St S to 45th St S

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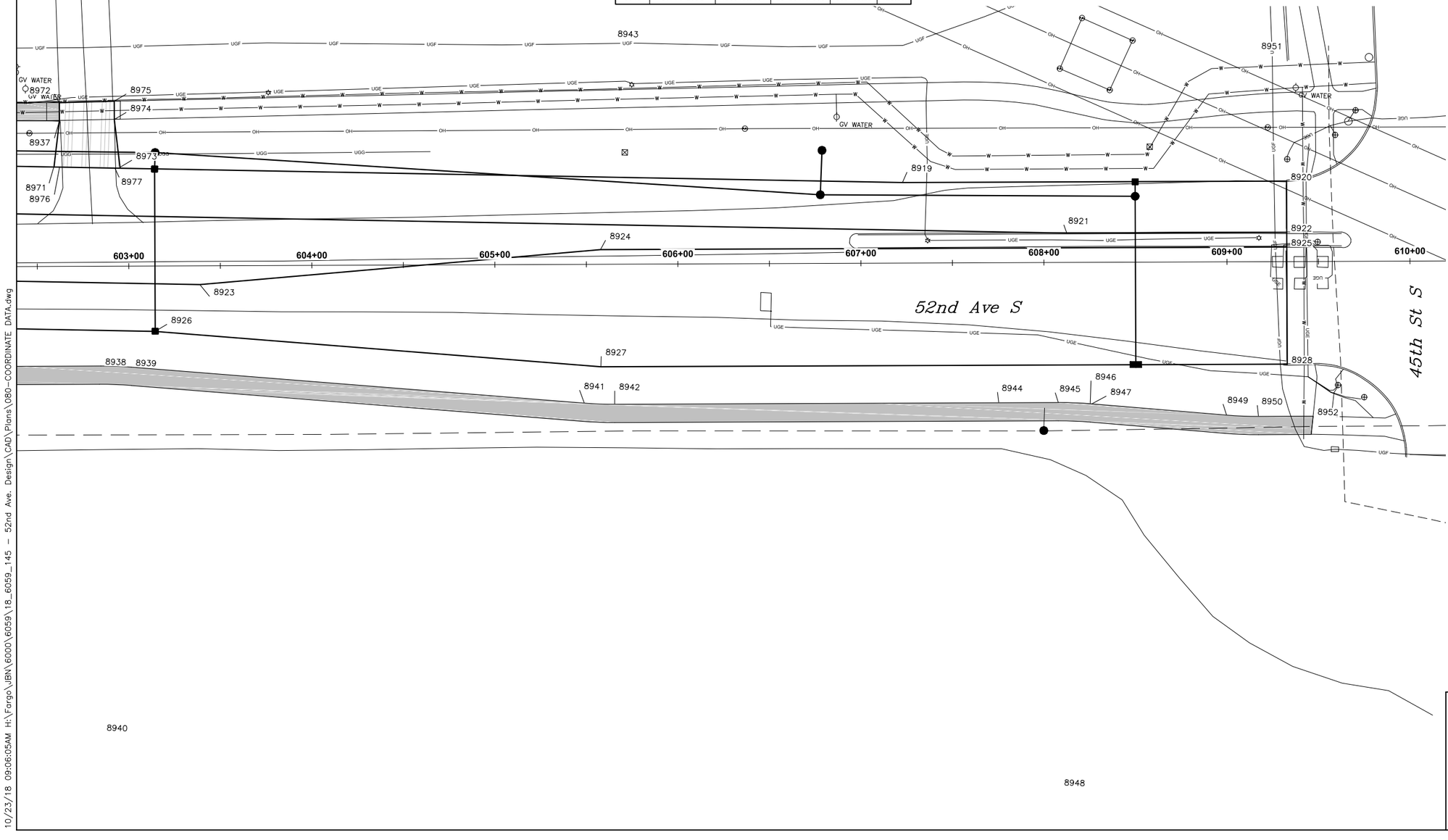
Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	80	29

Point Table					
Point #	Raw Description	Northing	Easting	Station	Offset
8919	FL	435841.7667	2879178.4285	607+22.87	44.00
8920	FL	435849.9132	2879388.1331	609+32.74	44.00
8921	FL	435817.2702	2879269.1589	608+12.59	16.00
8922	FL	435821.9343	2879389.2200	609+32.74	16.00
8923	FL	435772.6540	2878796.7498	603+38.80	10.24
8924	FL	435799.3836	2879014.8132	605+57.74	8.00
8925	FL	435813.9403	2879389.5306	609+32.74	8.00
8926	FL	435746.2583	2878773.1433	603+14.19	35.70
8927	FL	435735.4319	2879017.2975	605+57.74	56.00
8928	FL	435749.9885	2879392.0149	609+32.74	56.00
8937	SW-PI	435859.2976	2878716.9213	602+62.40	79.43
8938	SW-PC	435726.3268	2878744.2736	602+84.57	54.50
8939	SW-PT	435726.2812	2878760.8970	603+01.18	55.19
8940	SW-RADIUS	435526.4775	2878752.0371	602+84.57	254.50
8941	SW-PC	435715.2827	2879008.9305	605+48.59	75.81
8942	SW-PT	435715.2371	2879025.5539	605+65.20	76.50
8943	SW-RADIUS	435915.0864	2879017.7903	605+65.20	123.50

Point Table					
Point #	Raw Description	Northing	Easting	Station	Offset
8944	SW-PVC	435723.3809	2879235.1918	607+75.00	76.50
8945	SW-PC	435724.6451	2879267.7324	608+07.57	76.50
8946	SW-PVT	435724.5974	2879285.1822	608+25.00	77.22
8947	SW-PT	435724.5570	2879286.0523	608+25.87	77.30
8948	SW-RADIUS	435514.8033	2879275.8841	608+07.57	286.50
8949	SW-PC	435720.9793	2879359.8544	608+99.48	83.74
8950	SW-PT	435720.8955	2879377.3019	609+16.91	84.50
8951	SW-RADIUS	435920.7447	2879369.5384	609+16.91	115.50
8952	SW-PI	435722.0564	2879407.1869	609+46.81	84.50
8971	SW-PI	435834.5670	2878714.8797	602+62.40	79.43
8972	SW-PI	435869.2905	2878716.5331	602+62.40	79.43
8973	FL	435835.1651	2878750.8836	603+14.19	35.70
8974	FL	435861.1601	2878746.8716	603+14.19	35.70
8975	FL	435871.1552	2878746.4833	603+14.19	35.70
8976	SW-PI	435834.6184	2878717.9694	602+62.40	79.43
8977	SW-PI	435835.1152	2878747.8833	602+62.40	79.43



0 30' 60'

THE CITY OF Fargo FAR MORE

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Layouts - Coordinate Data

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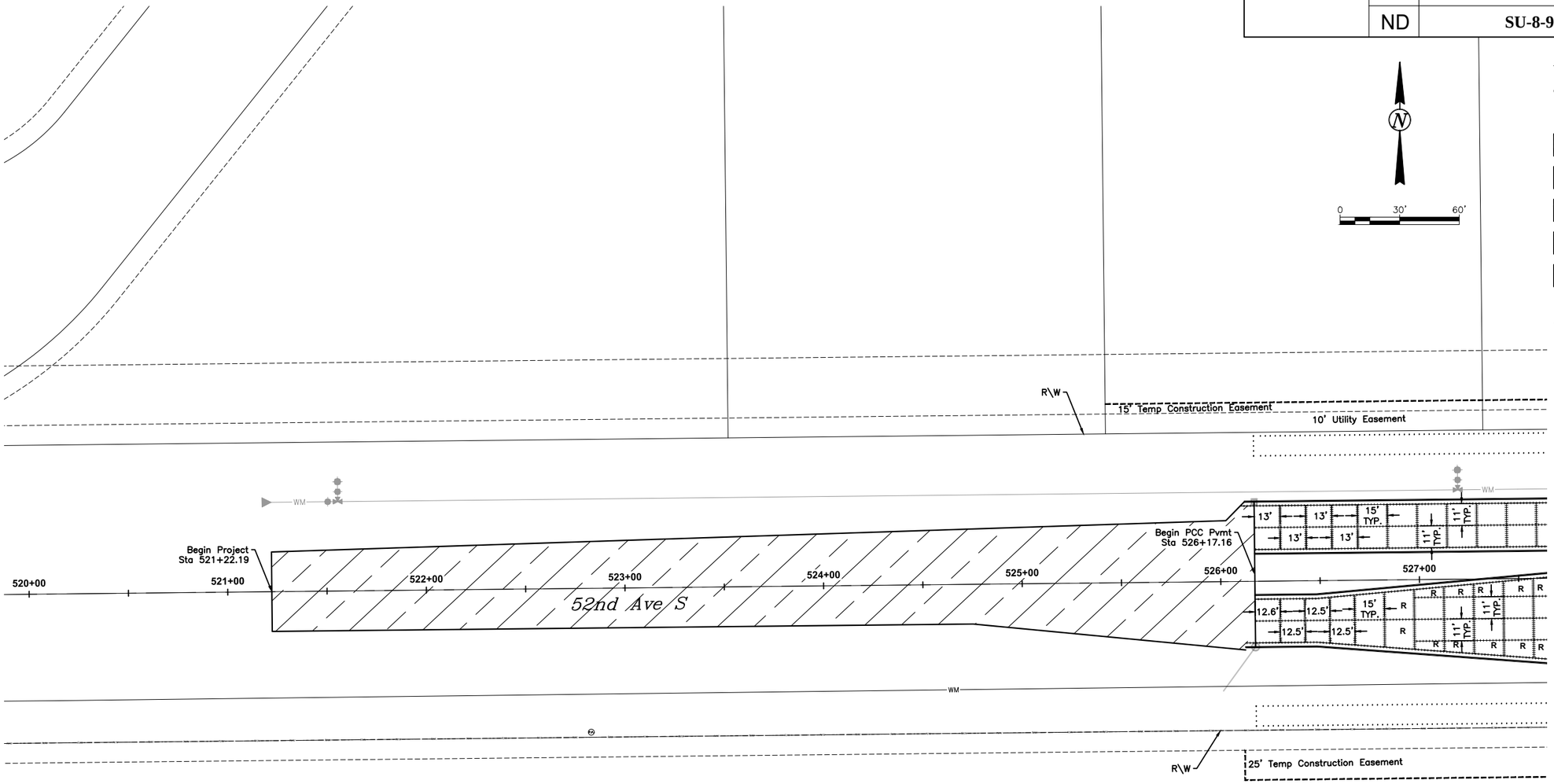
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	90	1



#4 DEFORMED TIE BAR

DOWELED JOINT

R REINFORCED PANELS

IMPRESSIONED CONCRETE

5" SIDEWALK

6" SIDEWALK

MEDIAN NOSE

10" ASPHALT PAVEMENT

NOTE:

1. ALL CONCRETE PAVEMENT JOINTS ADJACENT TO EXISTING CONCRETE SHALL MATCH THE EXISTING JOINT PATTERN.
2. ALL CONCRETE PAVEMENT SHALL BE DOWELED WITH REINFORCED PANELS AT UTILITY CROSSINGS AND AS SHOWN. REINFORCED PANELS SHALL NOT BE PAID FOR SEPARATELY BUT INCLUDED IN THE PRICE BID FOR 10" NON-REINF. CONC. PVMT CL AE-DOWELED.
3. ALL MANHOLE CASTINGS WITHIN THE CONCRETE PAVEMENT SHALL BE FLOATING CASTING R-1955-1. ALL COSTS FOR THE FLOATING CASTING SHALL BE INCLUDED IN THE PRICE OF EACH STRUCTURE.
4. POUR CURB & GUTTER SEPARATE FROM ADJACENT CONCRETE PAVEMENT.
5. INSTALL MH CASTINGS WITH PAVING OPERATION OR INSTALL WITH EACH ADJOINING FULL CONCRETE PANEL. MH ISOLATION OR BOX OUTS WILL NOT BE ALLOWED.

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SPEC	CODE	BID ITEM	QTY	UNIT
302	0101	SALVAGED BASE COURSE STA 521+22 TO STA 527+50	1420	CY
401	0050	TACK COAT STA 521+22 TO STA 526+17	172	GAL
401	0060	PRIME COAT STA 521+22 TO STA 526+17	758	GAL
430	0143	SUPERPAVE FAA 43 STA 521+22 TO STA 526+17	1572	TON
430	5834	PG 58-34 ASPHALT CEMENT STA 521+22 TO STA 526+17	94	TON
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 526+17 TO STA 527+50	745	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 526+17 TO STA 527+50	996	SY
714	9696	EDGEDRAIN NON PERMEABLE BASE STA 526+17 TO STA 527+50	542	LF
748	0140	CURB & GUTTER-TYPE I STA 526+17 TO STA 527+50	542	LF
990	0400	PIPE CLEANOUT STA 526+17 TO STA 527+50	1	EA

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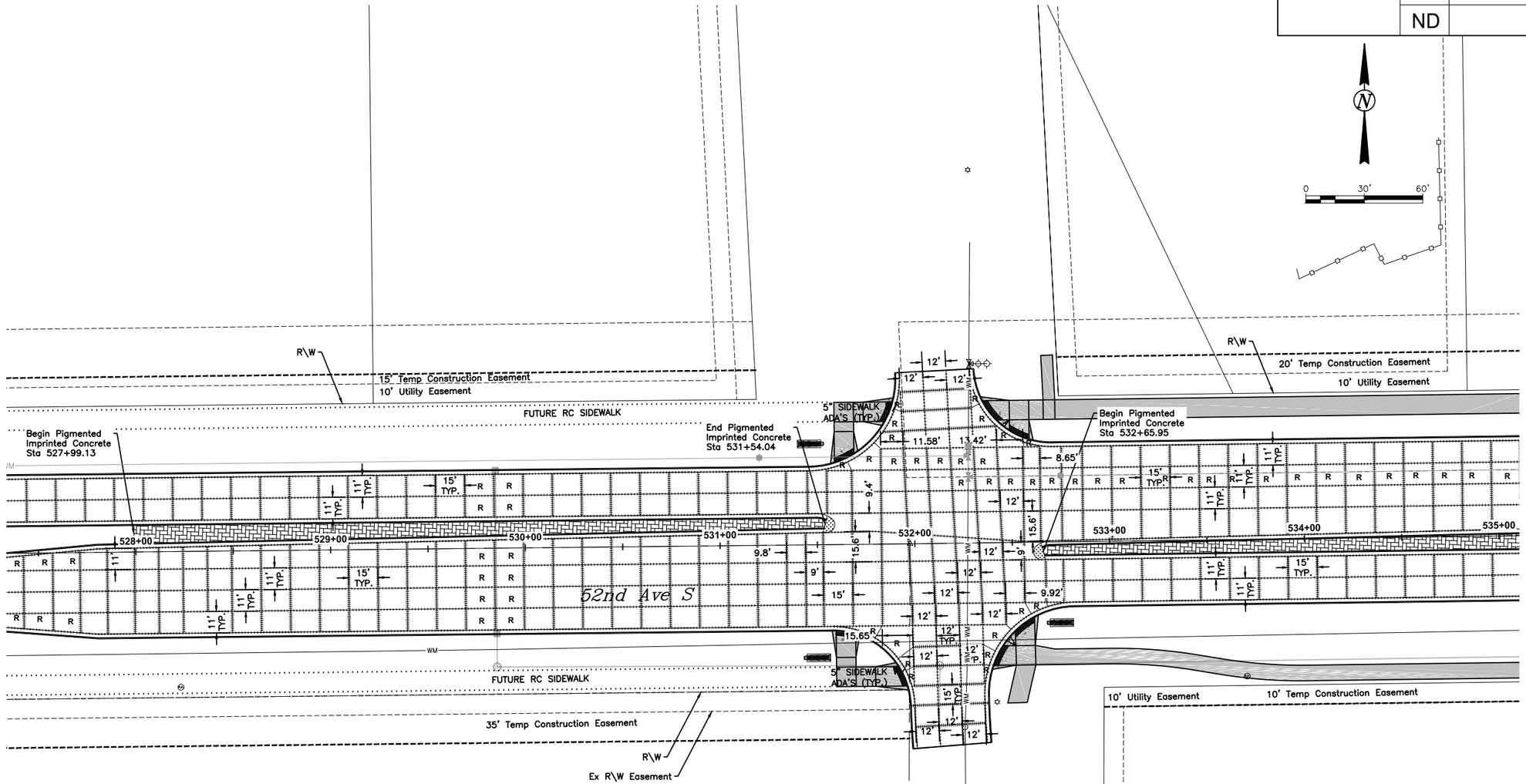
Paving Layouts

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	90	2



- #4 DEFORMED TIE BAR
- DOWELED JOINT
- R REINFORCED PANELS
- IMPRESSIONED CONCRETE
- 5" SIDEWALK
- 6" SIDEWALK
- MEDIAN NOSE
- 10" ASPHALT PAVEMENT

NOTE:

1. ALL CONCRETE PAVEMENT JOINTS ADJACENT TO EXISTING CONCRETE SHALL MATCH THE EXISTING JOINT PATTERN.
2. ALL CONCRETE PAVEMENT SHALL BE DOWELED WITH REINFORCED PANELS AT UTILITY CROSSINGS AND AS SHOWN. REINFORCED PANELS SHALL NOT BE PAID FOR SEPARATELY BUT INCLUDED IN THE PRICE BID FOR 10" NON-REINF. CONC. PVMT CL AE-DOWELED.
3. ALL MANHOLE CASTINGS WITHIN THE CONCRETE PAVEMENT SHALL BE FLOATING CASTING R-1955-1. ALL COSTS FOR THE FLOATING CASTING SHALL BE INCLUDED IN THE PRICE OF EACH STRUCTURE.
4. POUR CURB & GUTTER SEPARATE FROM ADJACENT CONCRETE PAVEMENT.
5. INSTALL MH CASTINGS WITH PAVING OPERATION OR INSTALL WITH EACH ADJOINING FULL CONCRETE PANEL. MH ISOLATION OR BOX OUTS WILL NOT BE ALLOWED.

SPEC	CODE	BID ITEM	QTY	UNIT
302	0101	SALVAGED BASE COURSE STA 527+50 TO STA 535+00	2809	CY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 527+50 TO STA 535+00	6466	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 527+50 TO STA 535+00	8109	SY
714	9696	EDGEDRAIN NON PERMEABLE BASE STA 527+50 TO STA 535+00	1662	LF
748	0140	CURB & GUTTER-TYPE I STA 527+50 TO STA 535+00	2858	LF
750	0030	PIGMENTED IMPRINTED CONCRETE STA 527+50 TO STA 535+00	427	SY
750	0125	SIDEWALK CONCRETE 5IN STA 527+50 TO STA 535+00	654	SY
750	0140	SIDEWALK CONCRETE 6IN STA 527+50 TO STA 535+000	58	SY
750	0210	CONCRETE MEDIAN NOSE PAVING STA 527+50 TO STA 535+00	6	SY
750	2115	DETECTABLE WARNING PANELS STA 527+50 TO STA 535+00	181	SF

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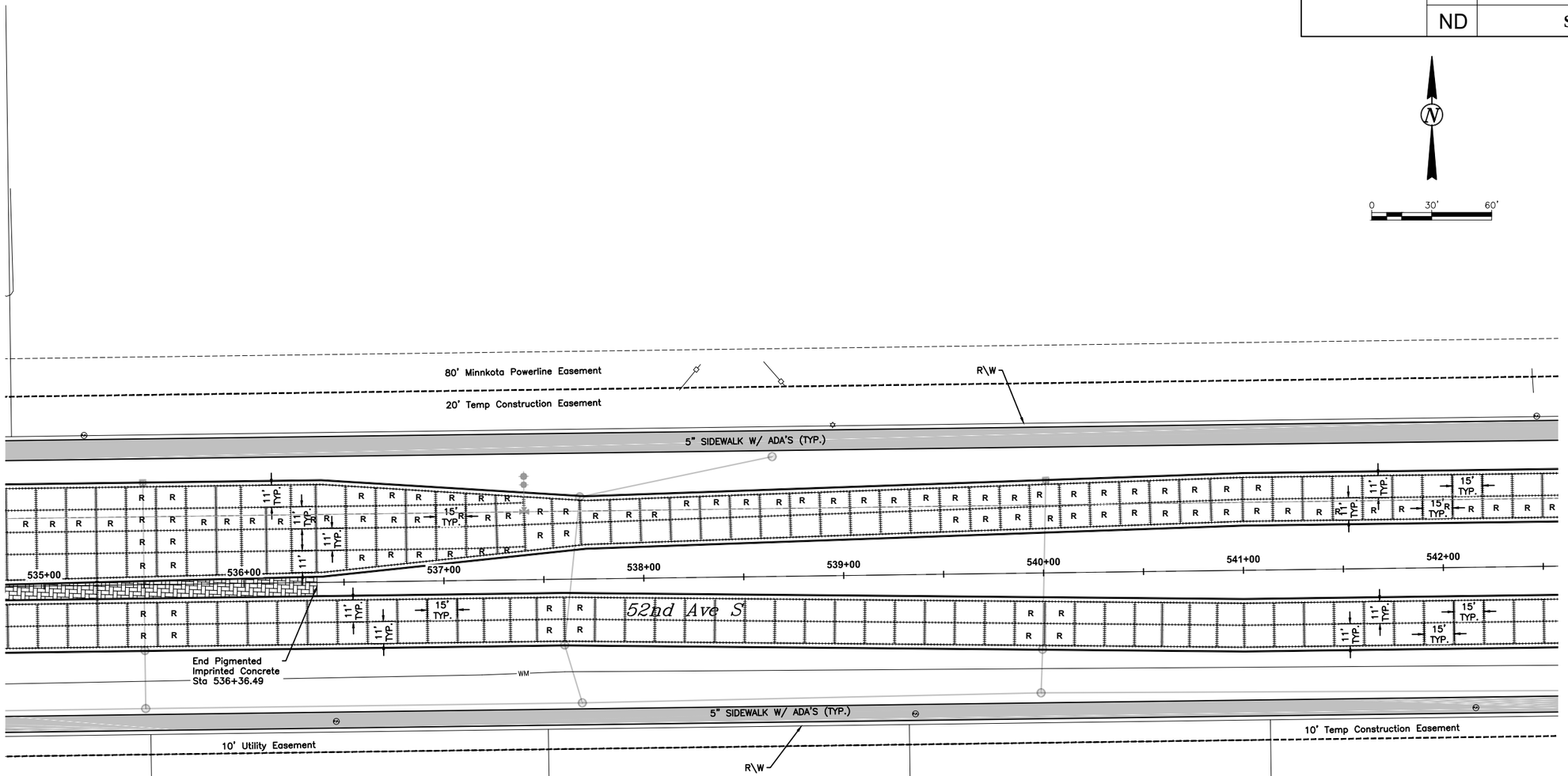
Paving Layouts

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	90	3



#4 DEFORMED TIE BAR

DOWELED JOINT

R REINFORCED PANELS

IMPRESSIONED CONCRETE

5" SIDEWALK

6" SIDEWALK

MEDIAN NOSE

10" ASPHALT PAVEMENT

NOTE:

1. ALL CONCRETE PAVEMENT JOINTS ADJACENT TO EXISTING CONCRETE SHALL MATCH THE EXISTING JOINT PATTERN.
2. ALL CONCRETE PAVEMENT SHALL BE DOWELED WITH REINFORCED PANELS AT UTILITY CROSSINGS AND AS SHOWN. REINFORCED PANELS SHALL NOT BE PAID FOR SEPARATELY BUT INCLUDED IN THE PRICE BID FOR 10" NON-REINF. CONC. PVMT CL AE-DOWELED.
3. ALL MANHOLE CASTINGS WITHIN THE CONCRETE PAVEMENT SHALL BE FLOATING CASTING R-1955-1. ALL COSTS FOR THE FLOATING CASTING SHALL BE INCLUDED IN THE PRICE OF EACH STRUCTURE.
4. POUR CURB & GUTTER SEPARATE FROM ADJACENT CONCRETE PAVEMENT.
5. INSTALL MH CASTINGS WITH PAVING OPERATION OR INSTALL WITH EACH ADJOINING FULL CONCRETE PANEL. MH ISOLATION OR BOX OUTS WILL NOT BE ALLOWED.

SPEC	CODE	BID ITEM	QTY	UNIT
302	0101	SALVAGED BASE COURSE STA 535+00 TO STA 542+50	1971	CY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 535+00 TO STA 542+50	4181	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 353+00 TO STA 542+50	5665	SY
714	9696	EDGEDRAIN NON PERMEABLE BASE STA 535+00 TO STA 542+50	2728	LF
748	0140	CURB & GUTTER-TYPE I STA 535+00 TO STA 542+50	3001	LF
750	0030	PIGMENTED IMPRINTED CONCRETE STA 535+00 TO STA 542+50	124	SY
750	0125	SIDEWALK CONCRETE 5IN STA 535+00 TO STA 542+50	1500	SY
990	0400	PIPE CLEANOUT STA 535+00 TO STA 542+50	2	EA

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Paving Layouts

52nd Ave S - West of 63rd St S to 45th St S

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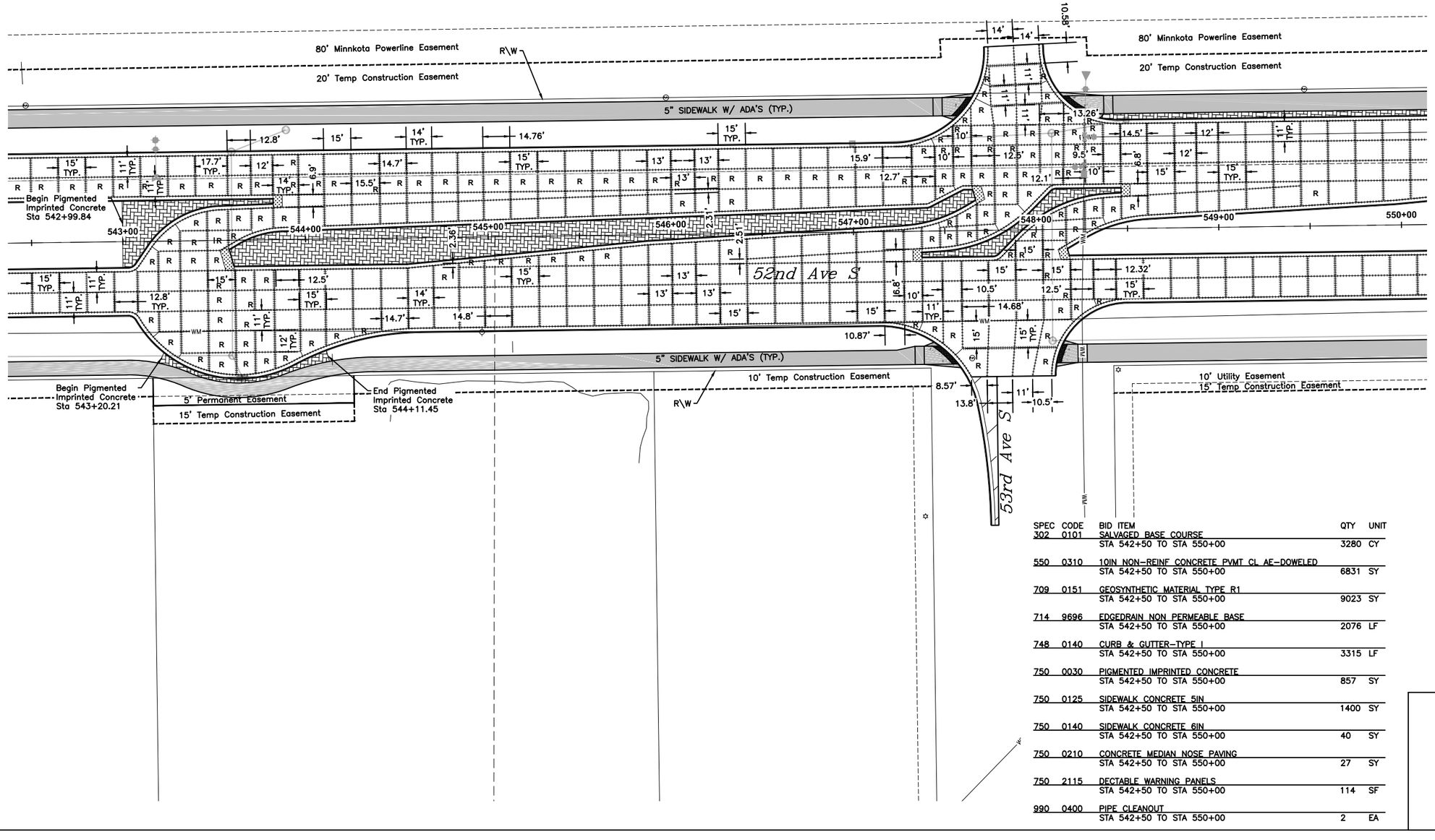
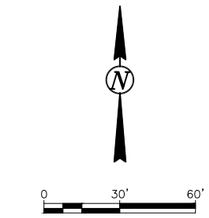
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	90	4





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DOWELED JOINT

R REINFORCED PANELS

IMPRESSIONED CONCRETE

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SPEC	CODE	BID ITEM	QTY	UNIT
302	0101	SALVAGED BASE COURSE STA 542+50 TO STA 550+00	3280	CY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 542+50 TO STA 550+00	6831	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 542+50 TO STA 550+00	9023	SY
714	9696	EDGEDRAIN NON PERMEABLE BASE STA 542+50 TO STA 550+00	2076	LF
748	0140	CURB & GUTTER-TYPE I STA 542+50 TO STA 550+00	3315	LF
750	0030	PIGMENTED IMPRINTED CONCRETE STA 542+50 TO STA 550+00	857	SY
750	0125	SIDEWALK CONCRETE 5IN STA 542+50 TO STA 550+00	1400	SY
750	0140	SIDEWALK CONCRETE 6IN STA 542+50 TO STA 550+00	40	SY
750	0210	CONCRETE MEDIAN NOSE PAVING STA 542+50 TO STA 550+00	27	SY
750	2115	DECTABLE WARNING PANELS STA 542+50 TO STA 550+00	114	SF
990	0400	PIPE CLEANOUT STA 542+50 TO STA 550+00	2	EA

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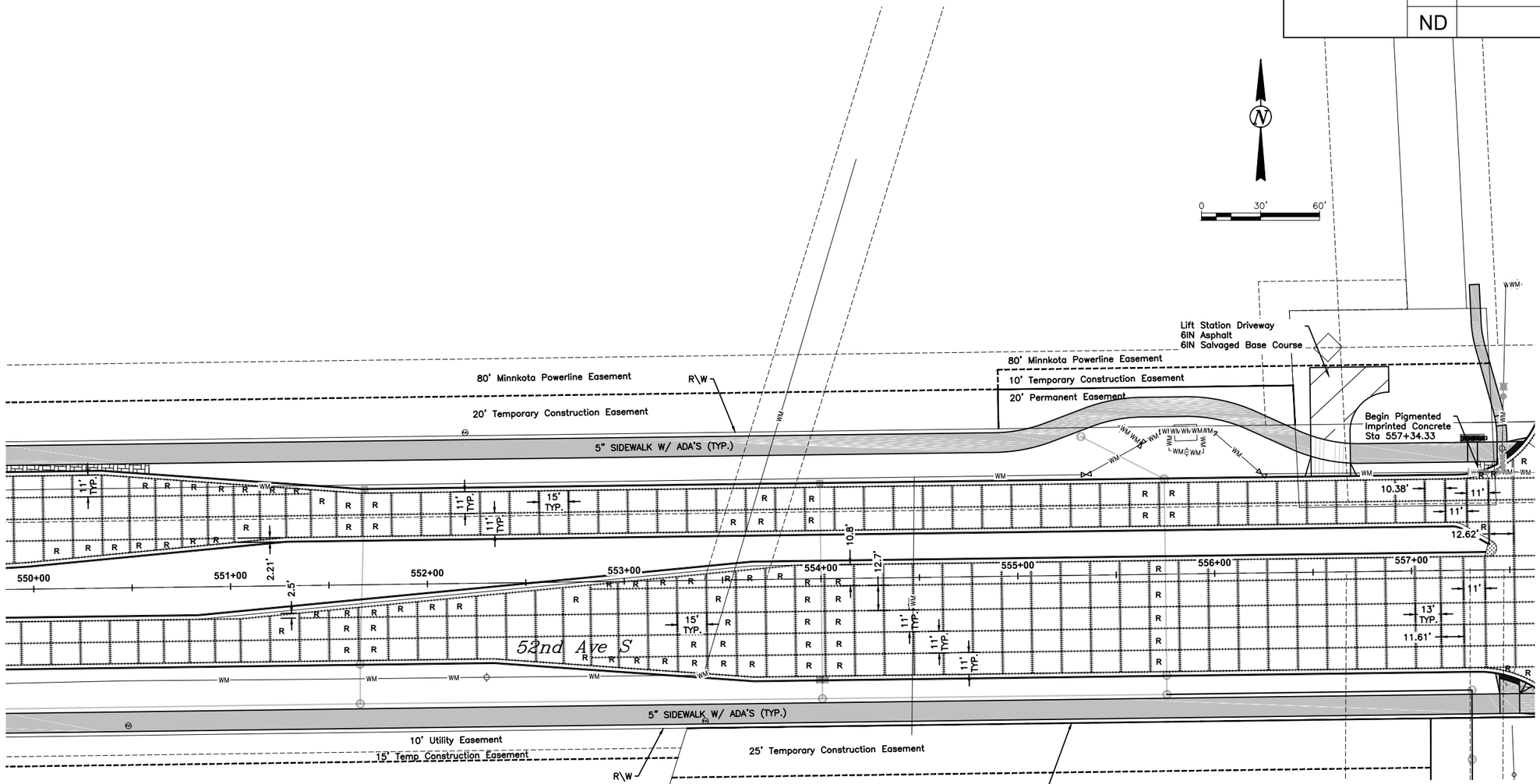
52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	90	5



#4 DEFORMED TIE BAR

DOWELED JOINT

R REINFORCED PANELS

IMPRESSIONED CONCRETE

5" SIDEWALK

6" SIDEWALK

MEDIAN NOSE

10" ASPHALT PAVEMENT

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5. INSTALL MH CASTINGS WITH PAVING OPERATION OR INSTALL WITH EACH ADJOINING FULL CONCRETE PANEL. MH ISOLATION OR BOX OUTS WILL NOT BE ALLOWED.

SPEC CODE	BID ITEM	QTY	UNIT
302 0101	SALVAGED BASE COURSE STA 550+00 TO STA 557+50	2494	CY
430 0050	TACK COAT STA 550+00 TO STA 557+50	13	GAL
430 0060	PRIME COAT STA 550+00 TO STA 557+50	37	GAL
430 0143	SUPERPAVE FAA 43 STA 550+00 TO STA 557+50	45	TON
430 5828	PG58-28 ASPHALT CEMENT STA 550+00 TO STA 557+50	3	TON
550 0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 550+00 TO STA 557+50	5825	SY
709 0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 550+00 TO STA 557+50	7213	SY
714 9696	EDGEDRAIN NON PERMEABLE BASE STA 550+00 TO STA 557+50	2984	LF
748 0140	CURB & GUTTER-TYPE I STA 550+00 TO STA 557+50	2984	LF
750 0030	PIGMENTED IMPRINTED CONCRETE STA 550+00 TO STA 557+50	22	SY
750 0125	SIDEWALK CONCRETE 5IN STA 550+00 TO STA 557+50	1661	SY
750 0210	CONCRETE MEDIAN NOSE PAVING STA 550+00 TO STA 557+50	3	SY
750 1000	DRIVEWAY CONCRETE STA 550+00 TO STA 557+50	42	SY
990 0400	PIPE CLEANOUT STA 550+00 TO STA 557+50	1	EA

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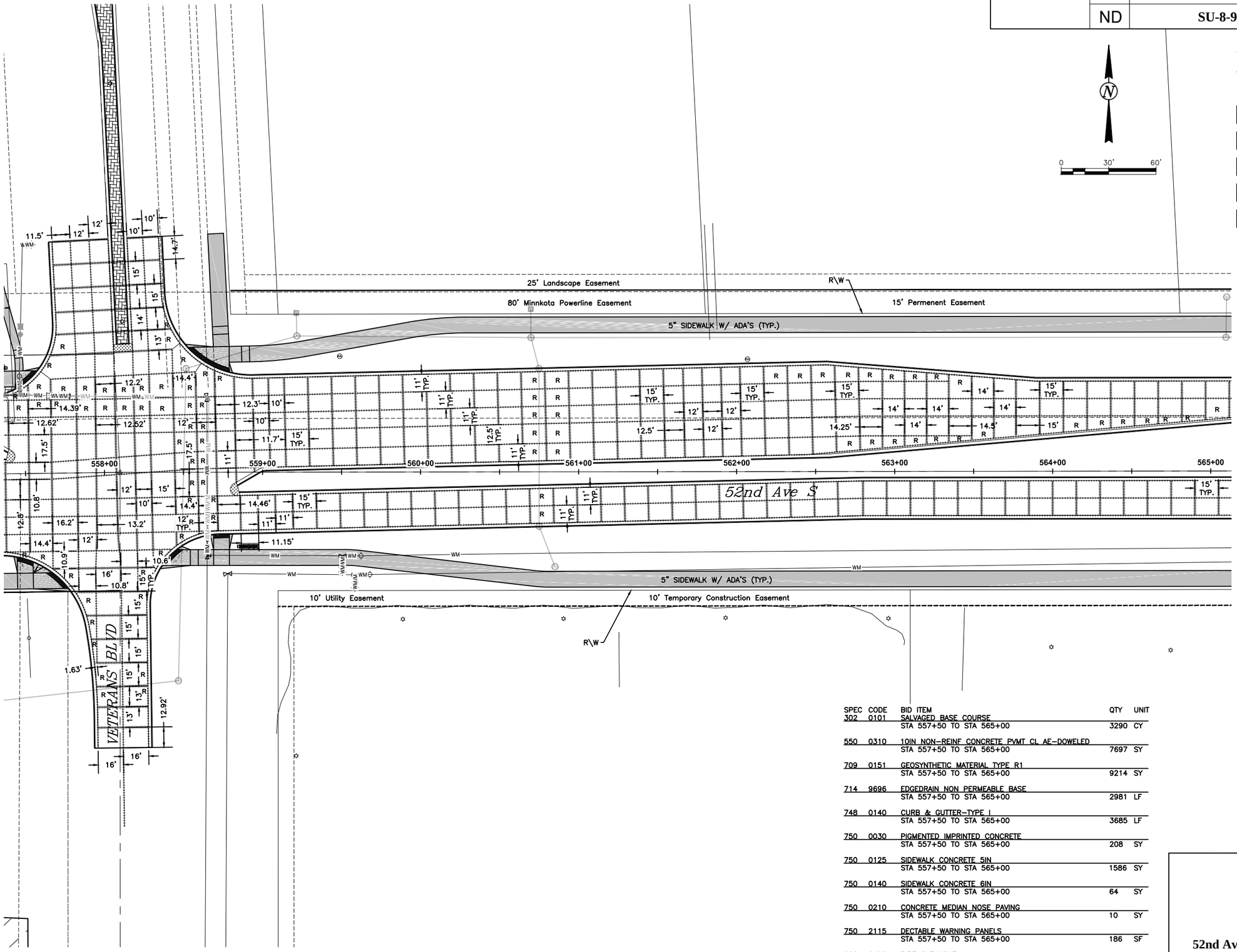
Paving Layouts

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	90	6



#4 DEFORMED TIE BAR

DOWELED JOINT

R REINFORCED PANELS

IMPRESSIONED CONCRETE

5" SIDEWALK

6" SIDEWALK

MEDIAN NOSE

10" ASPHALT PAVEMENT

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SPEC	CODE	BID ITEM	QTY	UNIT
302	0101	SALVAGED BASE COURSE STA 557+50 TO STA 565+00	3290	CY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 557+50 TO STA 565+00	7697	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 557+50 TO STA 565+00	9214	SY
714	9696	EDGEDRAIN NON PERMEABLE BASE STA 557+50 TO STA 565+00	2981	LF
748	0140	CURB & GUTTER-TYPE I STA 557+50 TO STA 565+00	3685	LF
750	0030	PIGMENTED IMPRINTED CONCRETE STA 557+50 TO STA 565+00	208	SY
750	0125	SIDEWALK CONCRETE 5IN STA 557+50 TO STA 565+00	1586	SY
750	0140	SIDEWALK CONCRETE 6IN STA 557+50 TO STA 565+00	64	SY
750	0210	CONCRETE MEDIAN NOSE PAVING STA 557+50 TO STA 565+00	10	SY
750	2115	DECTABLE WARNING PANELS STA 557+50 TO STA 565+00	186	SF
990	0400	PIPE CLEANOUT STA 557+50 TO STA 565+00	2	EA

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Paving Layouts

52nd Ave S - West of 63rd St S to 45th St S

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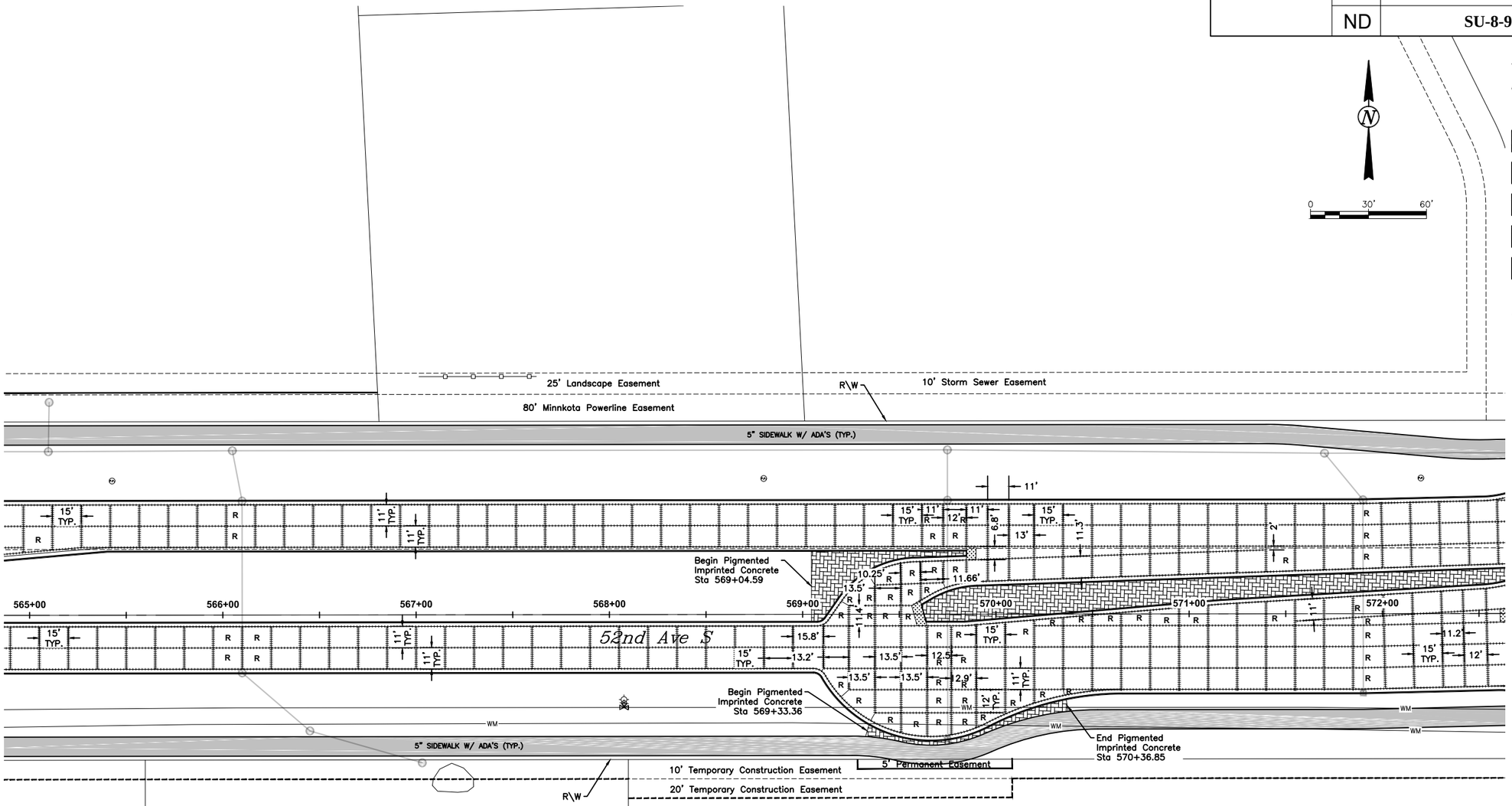
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	90	7



#4 DEFORMED TIE BAR

DOWELED JOINT

R REINFORCED PANELS

IMPRESSIONED CONCRETE

5" SIDEWALK

6" SIDEWALK

MEDIAN NOSE

10" ASPHALT PAVEMENT

NOTE:

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SPEC	CODE	BID ITEM	QTY	UNIT
302	0101	SALVAGED BASE COURSE STA 565+00 TO STA 572+50	2534	CY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 565+00 TO STA 572+50	5171	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 565+00 TO STA 572+50	6998	SY
714	9696	EDGEDRAIN NON PERMEABLE BASE STA 565+00 TO STA 572+50	2326	LF
748	0140	CURB & GUTTER-TYPE I STA 565+00 TO STA 572+50	3077	LF
750	0030	PIGMENTED IMPRINTED CONCRETE STA 565+00 TO STA 572+50	514	SY
750	0125	SIDEWALK CONCRETE 5IN STA 565+00 TO STA 572+50	1670	SY
750	0210	CONCRETE MEDIAN NOSE PAVING STA 565+00 TO STA 572+50	11	SY
990	0400	PIPE CLEANOUT STA 565+00 TO STA 572+50	2	EA

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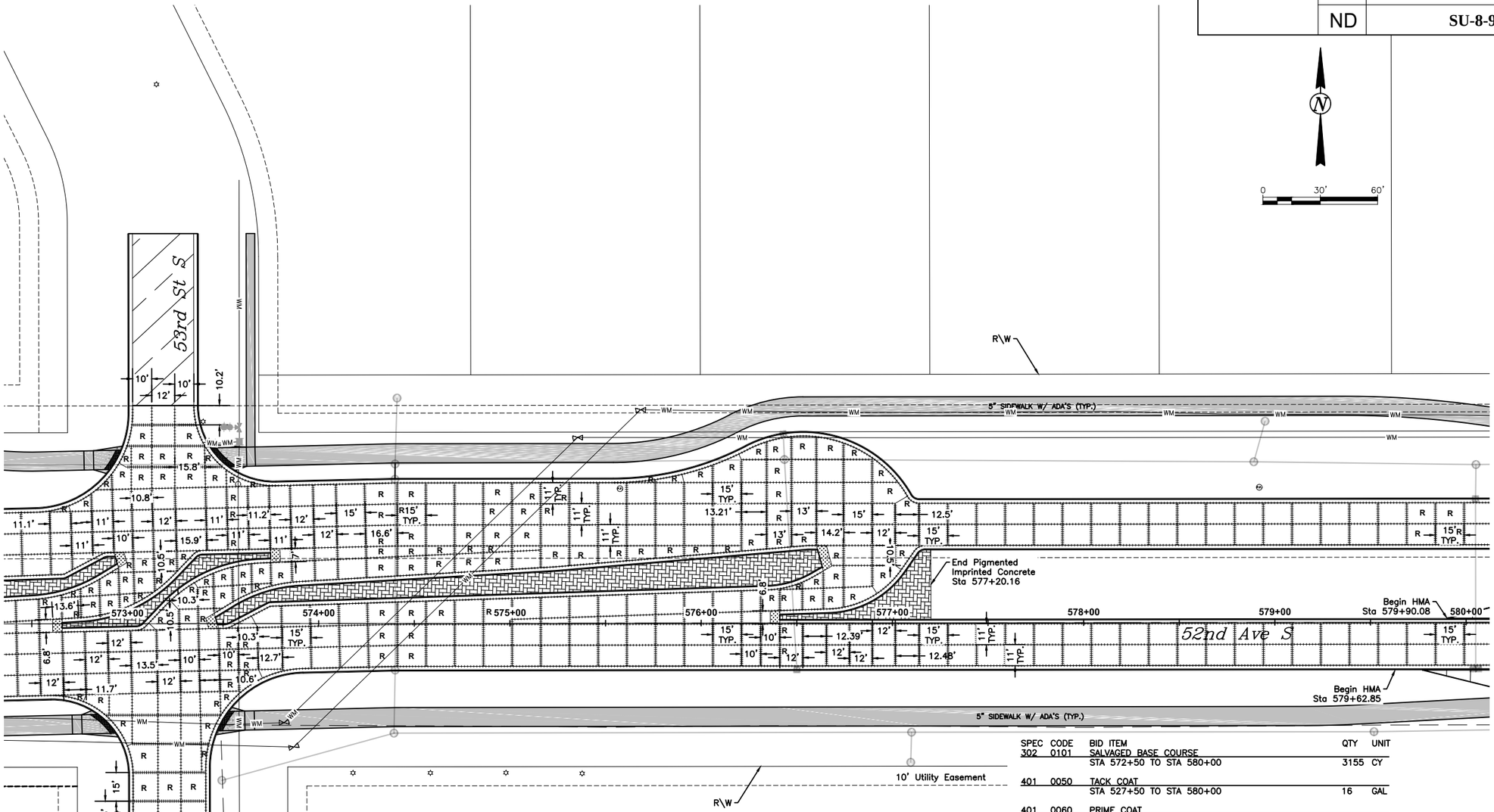
Paving Layouts

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	90	8



- #4 DEFORMED TIE BAR
- DOWELED JOINT
- R REINFORCED PANELS
- IMPRESSIONED CONCRETE
- 5" SIDEWALK
- 6" SIDEWALK
- MEDIAN NOSE
- 10" ASPHALT PAVEMENT

NOTE:

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2. ALL CONCRETE PAVEMENT SHALL BE DOWELED WITH REINFORCED PANELS AT UTILITY CROSSINGS AND AS SHOWN. REINFORCED PANELS SHALL NOT BE PAID FOR SEPARATELY BUT INCLUDED IN THE PRICE BID FOR 10" NON-REINF. CONC. PVMT CL AE-DOWELED.
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SPEC	CODE	BID ITEM	QTY	UNIT
302	0101	SALVAGED BASE COURSE STA 572+50 TO STA 580+00	3155	CY
401	0050	TACK COAT STA 527+50 TO STA 580+00	16	GAL
401	0060	PRIME COAT STA 527+50 TO STA 580+00	80	GAL
430	0143	SUPERPAVE FAA 43 STA 527+50 TO STA 580+00	178	TON
430	5834	PG 58-34 ASPHALT CEMENT STA 527+50 TO STA 580+00	11	TON
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 572+50 TO STA 580+00	6427	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 572+50 TO STA 580+00	8529	SY
714	9696	EDGEDRAIN NON PERMEABLE BASE STA 572+50 TO STA 580+00	2369	LF
748	0140	CURB & GUTTER-TYPE I STA 572+50 TO STA 580+00	3515	LF
750	0030	PIGMENTED IMPRINTED CONCRETE STA 572+50 TO STA 580+00	566	SY
750	0125	SIDEWALK CONCRETE 5IN STA 572+50 TO STA 580+00	1572	SY
750	0140	SIDEWALK CONCRETE 6IN STA 572+50 TO STA 580+00	38	SY
750	0210	CONCRETE MEDIAN NOSE PAVING STA 572+50 TO STA 580+00	26	SY
750	2115	DECTABLE WARNING PANELS STA 572+50 TO STA 580+00	104	SF
990	0400	PIPE CLEANOUT STA 572+50 TO STA 580+00	2	EA

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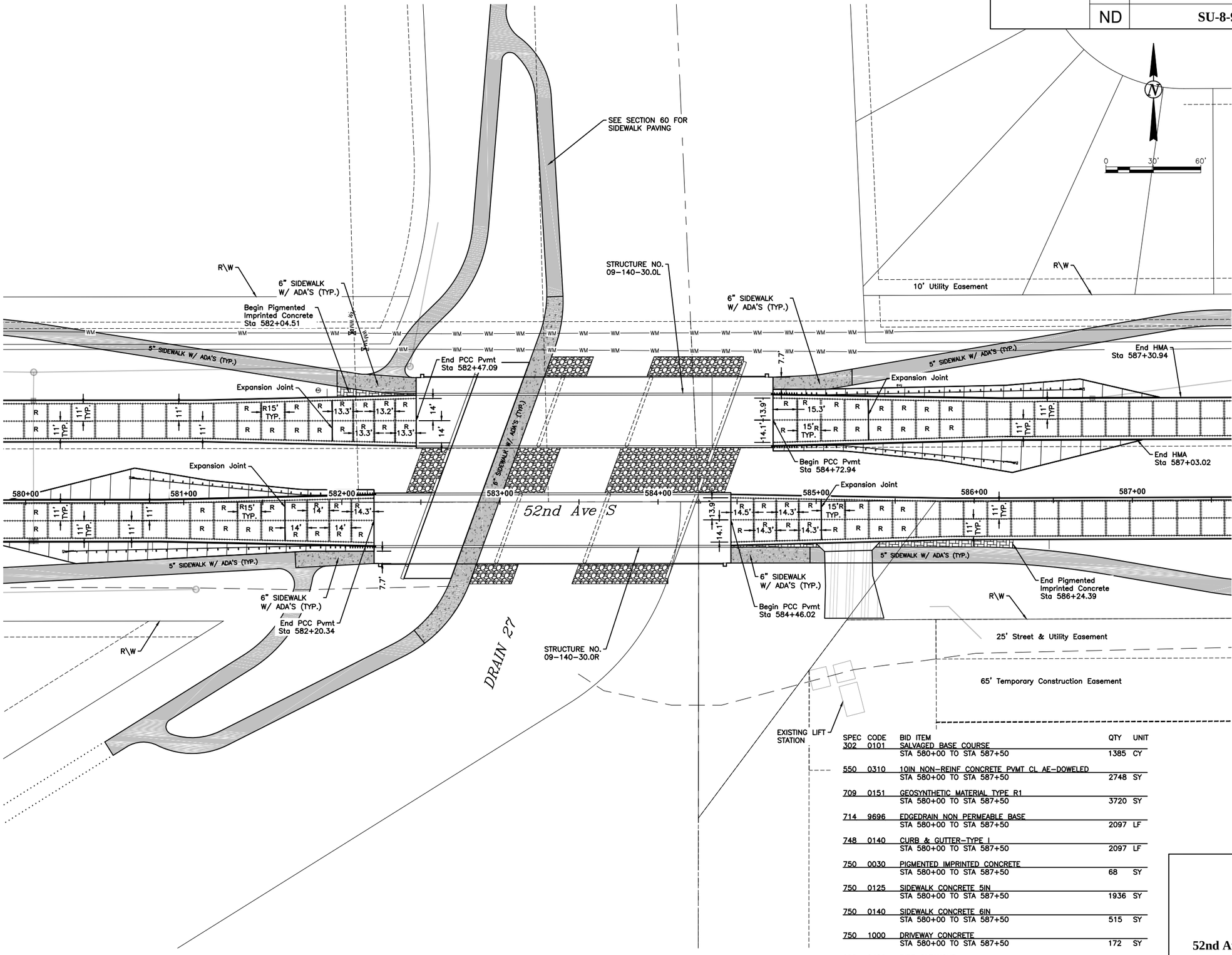
	ND	SU-8-984(164)	90	9



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DOWELED JOINT

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IMPRESSIONED CONCRETE

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6. SEE SECTION 130 AND STANDARD DRAWING 764-60 FOR LIMITS OF 3" CURB HEIGHT THRU GUARDRAIL

SPEC	CODE	BID ITEM	QTY	UNIT
302	0101	SALVAGED BASE COURSE STA 580+00 TO STA 587+50	1385	CY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 580+00 TO STA 587+50	2748	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 580+00 TO STA 587+50	3720	SY
714	9696	EDGEDRAIN NON PERMEABLE BASE STA 580+00 TO STA 587+50	2097	LF
748	0140	CURB & GUTTER-TYPE I STA 580+00 TO STA 587+50	2097	LF
750	0030	PIGMENTED IMPRINTED CONCRETE STA 580+00 TO STA 587+50	68	SY
750	0125	SIDEWALK CONCRETE 5IN STA 580+00 TO STA 587+50	1936	SY
750	0140	SIDEWALK CONCRETE 6IN STA 580+00 TO STA 587+50	515	SY
750	1000	DRIVEWAY CONCRETE STA 580+00 TO STA 587+50	172	SY
990	0400	PIPE CLEANOUT STA 580+00 TO STA 587+50	2	EA

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ALL ELEVATIONS ARE BASED ON THE U.S.G.S. VERTICAL DATUM OF 1988. (UNLESS NOTED OTHERWISE)

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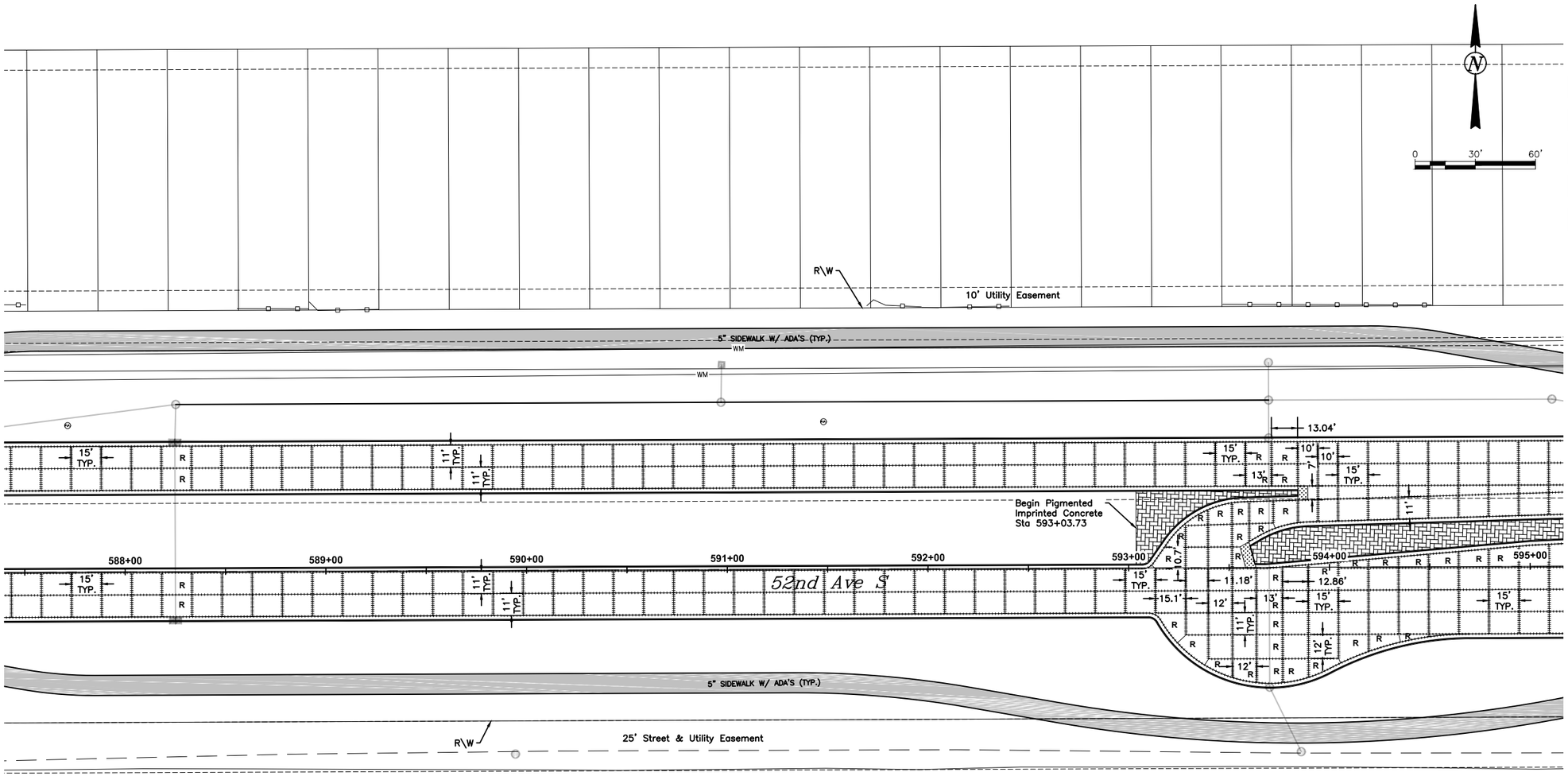
Paving Layouts

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	90	10



#4 DEFORMED TIE BAR

DOWELED JOINT

R REINFORCED PANELS

IMPRESSIONED CONCRETE

5" SIDEWALK

6" SIDEWALK

MEDIAN NOSE

10" ASPHALT PAVEMENT

NOTE:

1. ALL CONCRETE PAVEMENT JOINTS ADJACENT TO EXISTING CONCRETE SHALL MATCH THE EXISTING JOINT PATTERN.
2. ALL CONCRETE PAVEMENT SHALL BE DOWELED WITH REINFORCED PANELS AT UTILITY CROSSINGS AND AS SHOWN. REINFORCED PANELS SHALL NOT BE PAID FOR SEPARATELY BUT INCLUDED IN THE PRICE BID FOR 10" NON-REINF. CONC. PVMT CL AE-DOWELED.
3. ALL MANHOLE CASTINGS WITHIN THE CONCRETE PAVEMENT SHALL BE FLOATING CASTING R-1955-1. ALL COSTS FOR THE FLOATING CASTING SHALL BE INCLUDED IN THE PRICE OF EACH STRUCTURE.
4. POUR CURB & GUTTER SEPARATE FROM ADJACENT CONCRETE PAVEMENT.
5. INSTALL MH CASTINGS WITH PAVING OPERATION OR INSTALL WITH EACH ADJOINING FULL CONCRETE PANEL. MH ISOLATION OR BOX OUTS WILL NOT BE ALLOWED.

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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SPEC	CODE	BID ITEM	QTY	UNIT
302	0101	SALVAGED BASE COURSE STA 587+50 TO STA 595+00	2227	CY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 587+50 TO STA 595+00	4553	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 587+50 TO STA 595+00	6239	SY
714	9696	EDGEDRAIN NON PERMEABLE BASE STA 587+50 TO STA 595+00	2624	LF
748	0140	CURB & GUTTER-TYPE I STA 587+50 TO STA 595+00	3077	LF
750	0030	PIGMENTED IMPRINTED CONCRETE STA 587+50 TO STA 595+00	302	SY
750	0125	SIDEWALK CONCRETE 5IN STA 587+50 TO STA 595+00	1670	SY
750	0210	CONCRETE MEDIAN NOSE PAVING STA 587+50 TO STA 595+00	11	SY
990	0400	PIPE CLEANOUT STA 587+50 TO STA 595+00	2	EA

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Paving Layouts

52nd Ave S - West of 63rd St S to 45th St S

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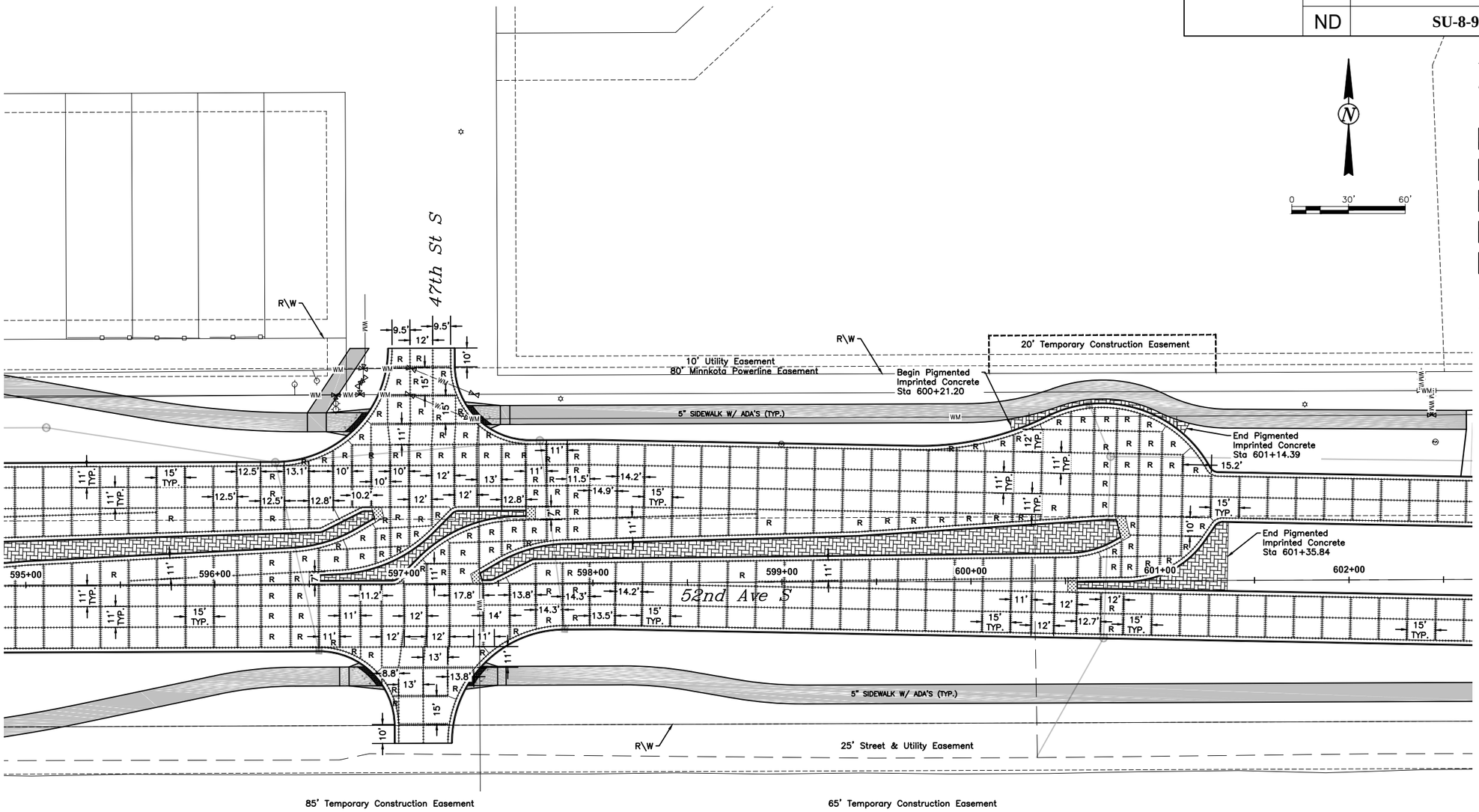
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	90	11



#4 DEFORMED TIE BAR

DOWELED JOINT

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THE CITY OF Fargo FAR MORE

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SPEC	CODE	BID ITEM	QTY	UNIT
302	0101	SALVAGED BASE COURSE STA 595+00 TO STA 602+50	3282	CY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 595+00 TO STA 602+50	7020	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 595+00 TO STA 602+50	9092	SY
714	9696	EDGEDRAIN NON PERMEABLE BASE STA 595+00 TO STA 602+50	1813	LF
748	0140	CURB & GUTTER-TYPE I STA 595+00 TO STA 602+50	3280	LF
750	0030	PIGMENTED IMPRINTED CONCRETE STA 595+00 TO STA 602+50	727	SY
750	0125	SIDEWALK CONCRETE 5IN STA 595+00 TO STA 602+50	1559	SY
750	0140	SIDEWALK CONCRETE 6IN STA 595+00 TO STA 602+50	40	SY
750	0210	CONCRETE MEDIAN NOSE PAVING STA 595+00 TO STA 602+50	27	SY
750	2115	DETECTABLE WARNING PANELS STA 595+00 TO STA 602+50	108	SF
990	0400	PIPE CLEANOUT STA 595+00 TO STA 602+50	2	EA

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Paving Layouts

52nd Ave S - West of 63rd St S to 45th St S

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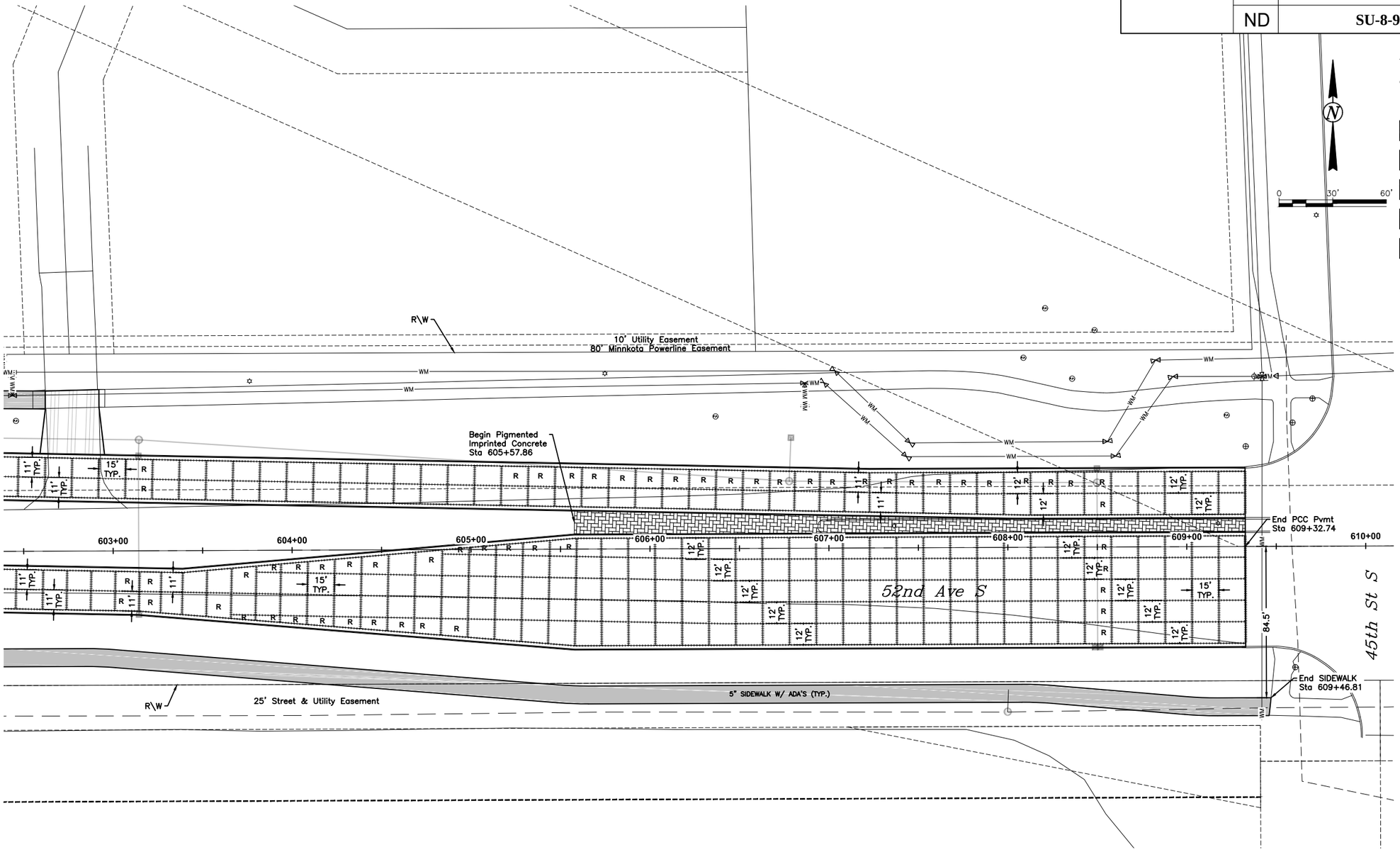
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	90	12



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SPEC	CODE	BID ITEM	QTY	UNIT
302	0101	SALVAGED BASE COURSE STA 602+50 TO STA 609+33	2457	CY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 602+50 TO STA 609+33	5441	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 602+50 TO STA 609+33	6995	SY
714	9696	EDGEDRAIN NON PERMEABLE BASE STA 602+50 TO STA 609+33	1983	LF
748	0140	CURB & GUTTER-TYPE I STA 602+50 TO STA 609+33	2733	LF
750	0030	PIGMENTED IMPRINTED CONCRETE STA 602+50 TO STA 609+33	372	SY
750	0125	SIDEWALK CONCRETE 5IN STA 602+50 TO STA 609+33	789	SY
750	1000	DRIVEWAY CONCRETE STA 602+50 TO STA 609+33	126	SY
990	0400	PIPE CLEANOUT STA 602+50 TO STA 608+33	2	EA

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Paving Layouts

52nd Ave S - West of 63rd St S to 45th St S

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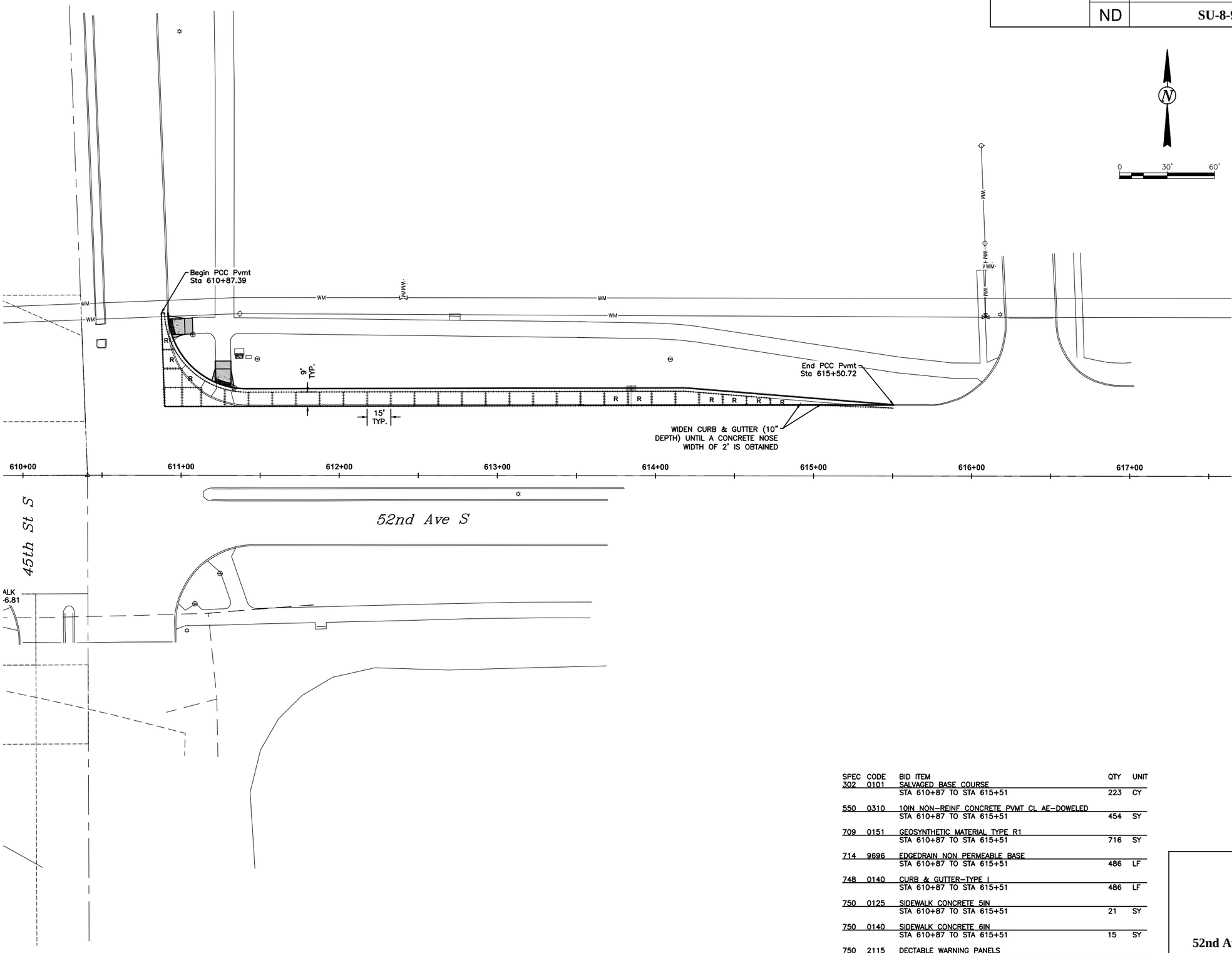
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	90	13



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SPEC	CODE	BID ITEM	QTY	UNIT
302	0101	SALVAGED BASE COURSE STA 610+87 TO STA 615+51	223	CY
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED STA 610+87 TO STA 615+51	454	SY
709	0151	GEOSYNTHETIC MATERIAL TYPE R1 STA 610+87 TO STA 615+51	716	SY
714	9696	EDGEDRAIN NON PERMEABLE BASE STA 610+87 TO STA 615+51	486	LF
748	0140	CURB & GUTTER-TYPE I STA 610+87 TO STA 615+51	486	LF
750	0125	SIDEWALK CONCRETE 5IN STA 610+87 TO STA 615+51	21	SY
750	0140	SIDEWALK CONCRETE 6IN STA 610+87 TO STA 615+51	15	SY
750	2115	DECTABLE WARNING PANELS STA 610+87 TO STA 615+51	41	SF

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Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	100	1

SIGN NUMBER	SIGN SIZE	DESCRIPTION	PHASE 1	2	3A	3B	3C	4A	4B	5	6	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
D3-36	36"x6"	STREET NAME SIGN (Sign and installation only)										0	6	0
G20-1-60	60"x24"	ROAD WORK NEXT __ MILES										0	34	0
G20-1b-60	60"x24"	WORK IN PROGRESS/ NO WORK IN PROGRESS (Sign and installation only)										0	26	0
G20-2-48	48"x24"	END ROAD WORK										0	19	0
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)										0	18	0
G20-10-108	108"x48"	CONTRACTOR SIGN										0	64	0
G20-50a-72	72"x36"	ROAD WORK NEXT __ MILES RT & LT ARROWS										0	37	0
G20-52a-72	72"x24"	ROAD WORK NEXT __ MILES RT or LT ARROW										0	30	0
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE $80 WHEN WORKERS PRESENT										0	59	0
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)										0	10	0
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)										0	10	0
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)										0	10	0
M3-1-24	24"x12"	NORTH (Mounted on route marker post)	4	11	15	15	15	14	12	14	3	15	7	105
M3-2-24	24"x12"	EAST (Mounted on route marker post)		32	41	41	41	41	42	24		42	7	294
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)	4	21	19	19	19	21	16	21	3	21	7	147
M3-4-24	24"x12"	WEST (Mounted on route marker post)		32	46	46	46	53	51	27		53	7	371
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)	8	96	121	121	121	129	121	86	6	129	7	903
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT										0	15	0
M4-10-48	48"x18"	DETOUR ARROW RIGHT or LEFT		4	3	3	3	3	3	2		4	23	92
M5-1-21	21"x15"	ARROW AHD AND RT or LT(Mounted on route marker post)	2	21	30	30	30	34	31	16		34	7	238
M5-2-21	21"x15"	ARROW AHD UP & RT or LT (Mounted on route marker post)										0	7	0
M6-1-21	21"x15"	ARROW RT or LT (Mounted on route marker post)	2	45	54	54	54	55	54	28	2	55	7	385
M6-2-21	21"x15"	ARROW UP & RT or LT (Mounted on route marker post)	2	11	12	12	12	13	10	14		14	7	98
M6-3-21	21"x15"	ARROW AHD (Mounted on route marker post)	2	15	17	17	17	21	20	19		21	7	147
R1-1-48	48"x48"	STOP								1		1	32	32
R1-1a-18	18"x18"	STOP and SLOW PADDLE Back to Back										0	5	0
R1-2-60	60"x60"	YIELD										0	29	0
R2-1-48	48"x60"	SPEED LIMIT __				2	2			7	10	10	39	390
R2-1a-24	24"x18"	MINIMUM FEE $80 (Mounted on Speed Limit post)										0	10	0
R3-7-48	48"x48"	LEFT or RIGHT LANE MUST TURN LEFT or RIGHT										0	35	0
R4-1-48	48"x60"	DO NOT PASS										0	39	0
R4-7-48	48"x60"	KEEP RIGHT SYMBOL								1		1	39	39
R5-1-48	48"x48"	DO NOT ENTER										0	35	0
R6-1-36	36"x12"	ONE WAY RIGHT or LEFT										0	13	0
R7-1-12	12"x18"	NO PARKING										0	11	0
R10-6-24	24"x36"	STOP HERE ON RED										0	16	0
R11-2-48	48"x30"	ROAD CLOSED								2		2	28	56
R11-2a-48	48"x30"	STREET CLOSED	3	4	6	6	6	4	7	4		7	28	196
R11-3a-60	60"x30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY										0	31	0
R11-3c-60	60"x30"	STREET CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY										0	31	0
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC	1	4	5	6	6	2	7	2		7	31	217
W1-3-48	48"x48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW										0	35	0
W1-4-48	48"x48"	RIGHT or LEFT REVERSE CURVE ARROW								6	1	6	35	210
W1-4b-48	48"x48"	DOUBLE RIGHT or LEFT REVERSE CURVE ARROW								2		2	35	70
W1-6-48	48"x24"	LARGE ARROW										0	26	0
W3-1-48	48"x48"	STOP AHEAD SYMBOL										0	35	0
W3-3-48	48"x48"	SIGNAL AHEAD SYMBOL										0	35	0
W3-4-48	48"x48"	BE PREPARED TO STOP										0	35	0
W3-5-48	48"x48"	SPEED REDUCTION AHEAD								2	4	4	35	140
W4-2-48	48"x48"	RIGHT or LEFT LANE TRANSITION SYMBOL								2	4	4	35	140
W5-1-48	48"x48"	ROAD NARROWS										0	35	0
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE										0	35	0
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW										0	35	0
W6-3-48	48"x48"	TWO WAY TRAFFIC SYMBOL								4		4	35	140
W8-1-48	48"x48"	BUMP										0	35	0
W8-3-48	48"x48"	PAVEMENT ENDS										0	35	0
W8-7-48	48"x48"	LOOSE GRAVEL										0	35	0
W8-9a-48	48"x48"	SHOULDER DROP-OFF										0	35	0
W8-11-48	48"x48"	UNEVEN LANES										0	35	0
W8-12-48	48"x48"	NO CENTER STRIPE										0	35	0
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY										0	35	0
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or __ FT.										0	35	0
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or __ FT.										0	35	0
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY										0	35	0
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL										0	35	0
W12-2-48	48"x48"	LOW CLEARANCE SYMBOL										0	35	0
W13-1-24	24"x24"	__ MPH ADVISORY SPEED PLATE (Mounted on warning sign post)								3		3	11	33
W13-4-48	48"x60"	RAMP ARROW										0	39	0
W14-3-48	48"x36"	NO PASSING ZONE										0	23	0
W20-1-48	48"x48"	ROAD WORK AHEAD or _FT or _ MILE	2							2	4	4	35	140
W20-2-48	48"x48"	DETOUR AHEAD or __ FT	1	5	4	4	4	4	4	2		5	35	175
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or __ FT.	1	5	4	4	4	4	4	2		5	35	175
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or __ FT.										0	35	0
W20-5-48	48"x48"	RIGHT or LEFT LANE CLOSED AHEAD or __ FT.								2	4	4	35	140
W20-7a-48	48"x48"	FLAGGING SYMBOL										0	35	0
W20-7k-24	24"x18"	__ FEET (Mounted on w arning sign post)										0	10	0
W20-8-48	48"x48"	STREET CLOSED										0	35	0
W20-51-48	48"x48"	EQUIPMENT WORKING										0	35	0
W20-52-54	54"x12"	NEXT __ MILES (Mounted on w arning sign post)										0	12	0
W21-1a-48	48"x48"	WORKERS SYMBOL										0	35	0
W21-2-48	48"x48"	FRESH OIL										0	35	0
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or __ FT										0	35	0

SIGN NUMBER	SIGN SIZE	DESCRIPTION	PHASE 1	2	3A	3B	3C	4A	4B	5	6	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W21-5-48	48"x48"	SHOULDER WORK										0	35	0
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED										0	35	0
W21-5b-48	48"x48"	MATERIAL ON ROADWAY										0	35	0
W21-6a-48	48"x48"	SURVEY CREW AHEAD										0	35	0
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or __ FT.										0	35	0
W21-51-48	48"x48"	MATERIAL ON ROADWAY										0	35	0
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK										0	35	0
	24"x24"	TAKE TURNS (6" D letters) (Mounted on stop sign post)										0	11	0
M5-3-21	21"x15"	ARROW AROUND ROUNDABOUT LT (Mounted on route marker post)	2	4	8	8	8	6	6	6		8	7	56
W12-1-36	36"x36"	DOUBLE ARROW		1								1	16	16
R3-2-24	24"x24"	NO LEFT TURN		1						2		2	7	14
R3-1-24	24"x24"	NO RIGHT TURN		1						1		1	7	7
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
SPECIAL SIGNS														
		CONSIGN 1		64	87	87	87	94	93	51		94	7	658
		CONSIGN 2		16	16	16	16	23	16	17		23	7	161
		CONSIGN 3	8	6	18	18	18	12	12	6		18	7	126
		CONSIGN 4		5						4	3	5	7	35
		CONSIGN 5		5						8	3	8	7	56
		CONSIGN 6								1		1	7	7
		CONSIGN 7								3	4	4	7	28
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0
												0	0	0

SPEC & CODE			
704-1000	TRAFFIC CONTROL SIGNS	TOTAL UNITS	6237

SPEC & CODE	DESCRIPTION	PHASE 1	2	3A	3B	3C	4A	4B	5	6	UNIT	QUANTITY
704-0100	FLAGGING										MHR	0
704-1037	ATTENUATION DEVICE-TYPE B-35			2	2	2					EACH	2
704-1043	ATTENUATION DEVICE-TYPE B-65										EACH	0
704-1044	ATTENUATION DEVICE-TYPE B-70										EACH	0
704-1050	TYPE I BARRICADES										EACH	0
704-1051	TYPE II BARRICADES										EACH	0
704-1052	TYPE III BARRICADES	9	18	32	48	53	17	35	14	18	EACH	53
704-1054	SIDEWALK BARRICADE		3	5	5	5	4	6	8		EACH	8
704-1060	DELINEATOR DRUMS		44							239	EACH	240
704-1065	TRAFFIC CONES										EACH	0
704-1067	TUBULAR MARKERS										EACH	0
704-1070	DELINEATOR										EACH	0
704-1072	FLEXIBLE DELINEATORS				14	25			54	23	EACH	54
704-1081	VERTICAL PANELS - BACK TO BACK										EACH	0
704-1085	SEQUENCING ARROW PANEL - TYPE A										EACH	0
704-1086	SEQUENCING ARROW PANEL - TYPE B										EACH	0
704-1087	SEQUENCING ARROW PANEL - TYPE C								1	2	EACH	2
704-1088	SEQUENCING ARROW PANEL - TYPE C - CROSSOVER										EACH	0
704-1095	TYPE B FLASHERS										EACH	0
704-1500	OBLITERATION OF PVMT MK										SF	0
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER										LF	0
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED										EACH	0
762-0200	RAISED PAVEMENT MARKERS										EACH	0
762-0420	SHORT TERM 4IN LINE - TYPE R										LF	10717
762-0424	SHORT TERM 8IN LINE - TYPE R								902		LF	902
762-0426	SHORT TERM 24IN LINE - TYPE R								27		LF	27
762-0440	SHORT TERM MESSAGE-TYPE R								64		SF	64

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

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Work Zone Traffic Control - Device List

52nd Ave S - West of 63rd St S to 45th St S

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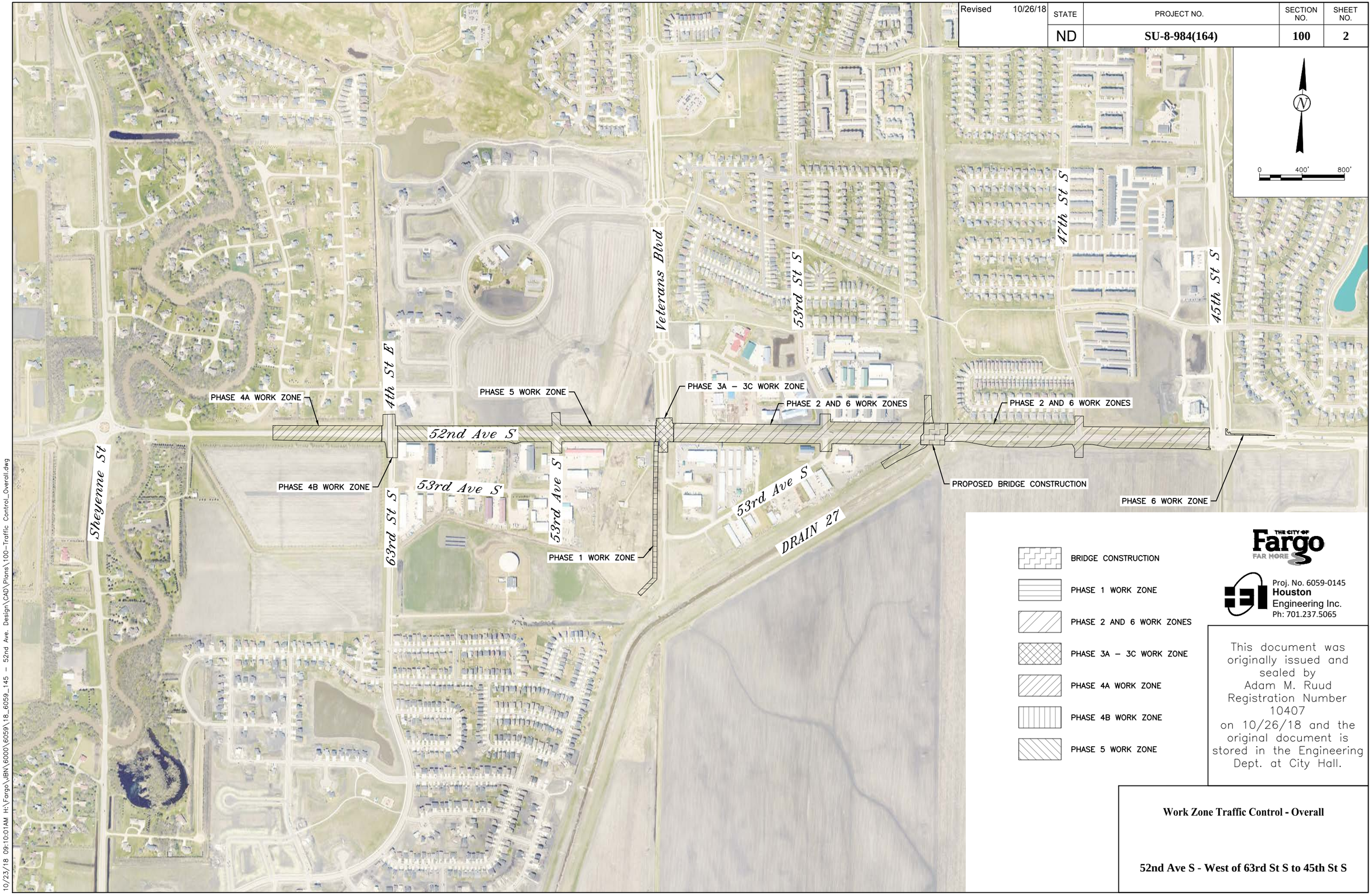
Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	2



BRIDGE CONSTRUCTION

PHASE 1 WORK ZONE

PHASE 2 AND 6 WORK ZONES

PHASE 3A – 3C WORK ZONE

PHASE 4A WORK ZONE

PHASE 4B WORK ZONE

PHASE 5 WORK ZONE

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Work Zone Traffic Control - Overall

52nd Ave S - West of 63rd St S to 45th St S

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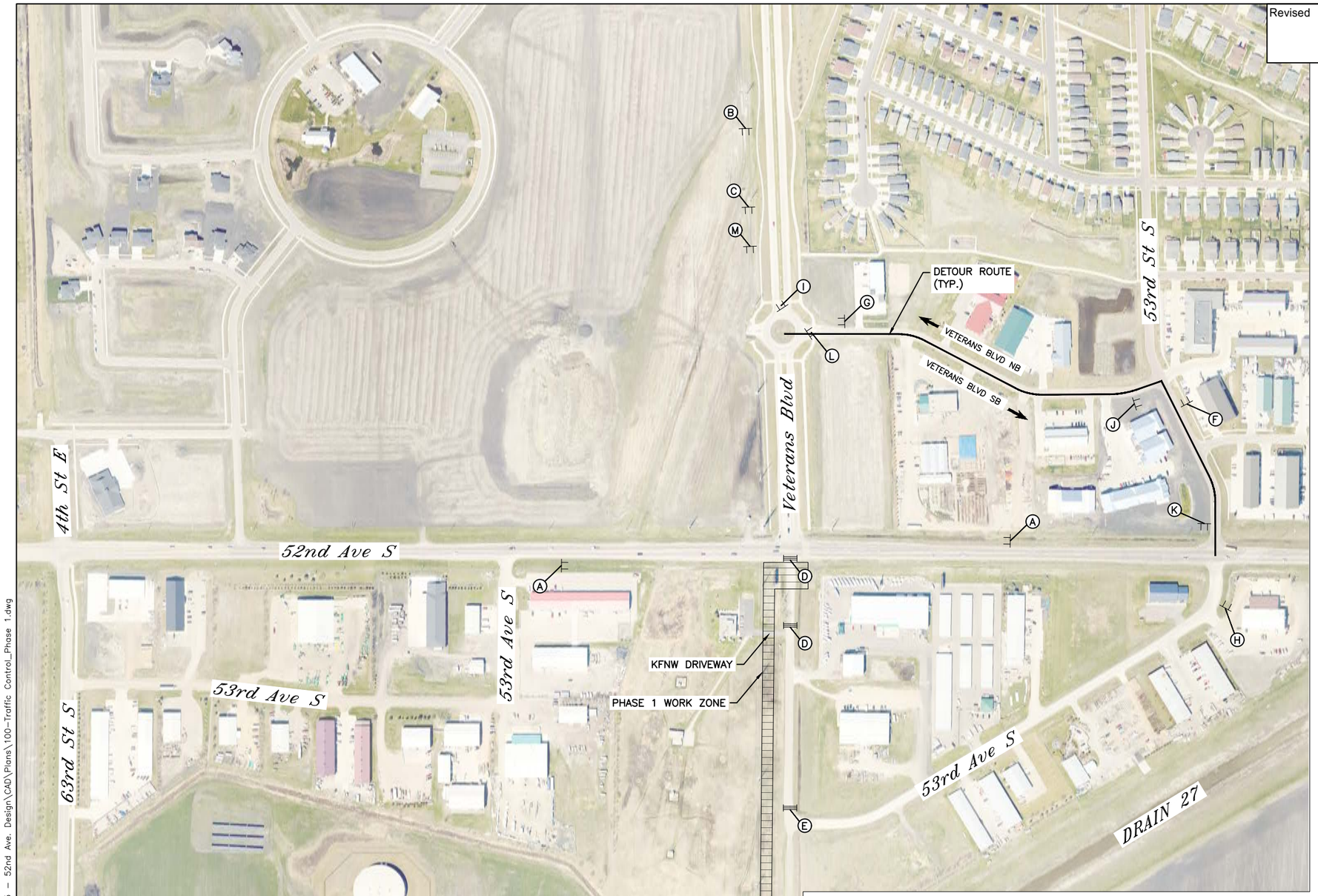
Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	3



A — ROAD WORK AHEAD — W20-1-48

B — STREET CLOSED AHEAD — W20-3-48

C — DETOUR AHEAD — W20-2-48

D — STREET CLOSED — R11-2a-48

E — STREET CLOSED TO THRU TRAFFIC — R11-4a-60

F — DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21

G — DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M5-1-21

H — DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-3-21

I — DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-2-21

J — DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M6-1-21

K — DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M6-3-21

L — DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M6-2-21

M — DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M5-3-21

N

0 200' 400'

PHASE 1 WORK ZONE

NOTES:

1. PHASE 1 TRAFFIC CONTROL IS FOR CONSTRUCTION OF THE PROPOSED STORM SEWER AT THE LOCATION SHOWN IN THE LAYOUT.
2. TRAFFIC CONTROL LAYOUT ASSUMES INDEPENDENT PHASE 1 CONSTRUCTION.
3. NORMAL TRAFFIC OPERATIONS TO BE MAINTAINED. CROSSING OF KFNW DRIVEWAY TO BE COORDINATED TO ALLOW ACCESS TO BUSINESS.

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ALL ELEVATIONS ARE BASED ON THE U.S.G.S. VERTICAL DATUM OF 1988. (UNLESS NOTED OTHERWISE)

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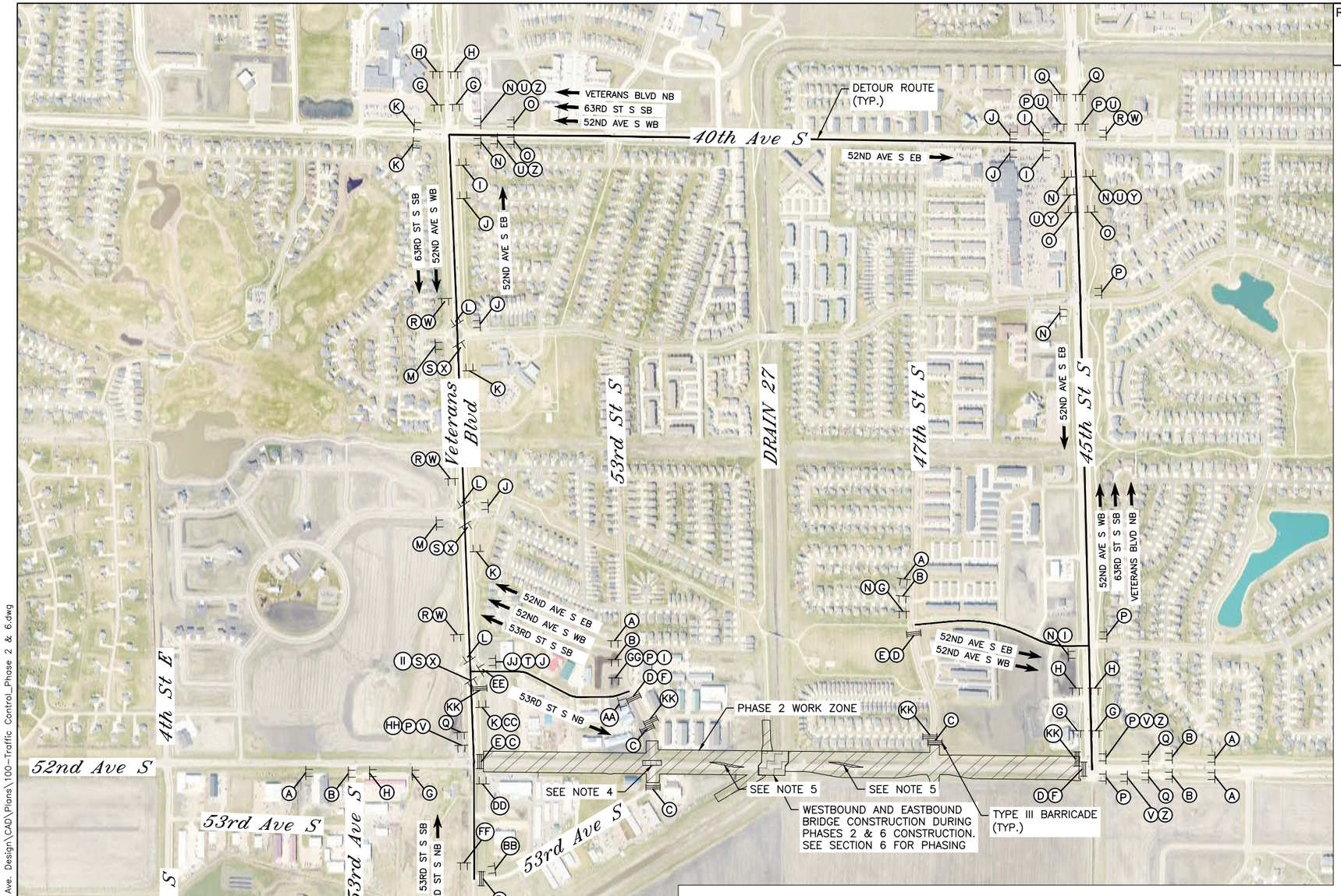
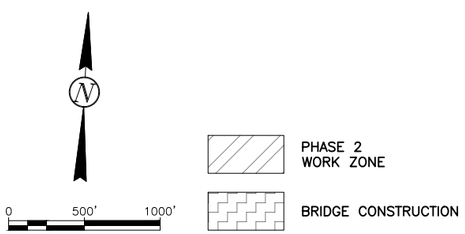
Work Zone Traffic Control - Phase 1

52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	4





NOTES:

1. PHASE 2 IS FOR CONSTRUCTION OF 52ND AVE FROM VETERANS BLVD TO 45TH ST S.
2. INTERSECTION OF 52ND AVE S AND VETERANS BLVD TO REMAIN OPEN DURING PHASE 2 CONSTRUCTION.
3. REFER TO ADDITIONAL PHASE 2 TRAFFIC CONTROL SHEETS FOR ADDITIONAL TRAFFIC CONTROL SIGNS AND DEVICES TO BE INSTALLED DURING PHASE 2.
4. CONTRACTOR SHALL NOT CONSTRUCT THE PROPOSED CONCRETE ¾ ACCESS PAVEMENT, CURB AND GUTTER, OR MEDIAN PAVEMENT WITHIN THE INTERSECTION OF 52ND AVE S AND 53RD ST S DURING PHASE 2 CONSTRUCTION. TEMPORARY PAVEMENT TO BE INSTALLED AT THIS LOCATION. TEMPORARY PAVEMENT SHALL CONSIST OF 4" OF HMA AND 8" OF AGGREGATE BASE.
5. CONTRACTOR SHALL NOT CONSTRUCT THE PROPOSED CURB AND GUTTER WITHIN THE TEMPORARY CROSSOVER. TEMPORARY CROSSOVER SHALL CONSIST OF 4" OF HMA AND 8" OF AGGREGATE BASE. TEMPORARY CROSSOVER TO BE UTILIZED FOR HEAD TO HEAD TRAFFIC ON THE WESTBOUND ROADWAY AFTER AUGUST 15, 2019.

(A) STREET CLOSED AHEAD — W20-3-48
(B) DETOUR AHEAD — W20-2-48
(C) STREET CLOSED — R11-2a-48
(D) STREET CLOSED TO THRU TRAFFIC — R11-4a-60
(E) DETOUR — M4-10L-48
(F) DETOUR — M4-10R-48

(G)
DETOUR	M4-8-24
EAST	M3-2-24
52nd Ave S	CONSIGN 1
←	M6-1-21

(H)
DETOUR	M4-8-24
EAST	M3-2-24
52nd Ave S	CONSIGN 1
↰	M5-1-21

(I)
DETOUR	M4-8-24
EAST	M3-2-24
52nd Ave S	CONSIGN 1
→	M6-1-21

(J)
DETOUR	M4-8-24
EAST	M3-2-24
52nd Ave S	CONSIGN 1
↱	M5-1-21

(K)
DETOUR	M4-8-24
EAST	M3-2-24
52nd Ave S	CONSIGN 1
↑	M6-3-21

(L)
DETOUR	M4-8-24
EAST	M3-2-24
52nd Ave S	CONSIGN 1
↗	M6-2-21

(M)
DETOUR	M4-8-24
EAST	M3-2-24
52nd Ave S	CONSIGN 1
↰	M5-1-21

(N)
DETOUR	M4-8-24
WEST	M3-4-24
52nd Ave S	CONSIGN 1
←	M6-1-21

(O)
DETOUR	M4-8-24
WEST	M3-4-24
52nd Ave S	CONSIGN 1
↰	M5-1-21

(P)
DETOUR	M4-8-24
WEST	M3-4-24
52nd Ave S	CONSIGN 1
→	M6-1-21

(Q)
DETOUR	M4-8-24
WEST	M3-4-24
52nd Ave S	CONSIGN 1
↱	M5-1-21

(R)
DETOUR	M4-8-24
WEST	M3-4-24
52nd Ave S	CONSIGN 1
↑	M6-3-21

(S)
DETOUR	M4-8-24
WEST	M3-4-24
52nd Ave S	CONSIGN 1
↗	M6-2-21

(T)
DETOUR	M4-8-24
WEST	M3-4-24
52nd Ave S	CONSIGN 1
↰	M5-3-21

(U)
DETOUR	M4-8-24
SOUTH	M3-3-24
63rd St S	CONSIGN 2
←	M6-1-21

(V)
DETOUR	M4-8-24
SOUTH	M3-3-24
63rd St S	CONSIGN 2
→	M6-1-21

(W)
DETOUR	M4-8-24
SOUTH	M3-3-24
63rd St S	CONSIGN 2
↑	M6-3-21

(X)
DETOUR	M4-8-24
SOUTH	M3-3-24
63rd St S	CONSIGN 2
↗	M6-2-21

(Y)
DETOUR	M4-8-24
NORTH	M3-1-24
Veterans Blvd	CONSIGN 3
←	M6-1-21

(Z)
DETOUR	M4-8-24
NORTH	M3-1-24
Veterans Blvd	CONSIGN 3
→	M6-1-21

(AA)
DETOUR	M4-8-24
NORTH	M3-1-24
53rd St S	CONSIGN 4
←	M6-1-21

(BB)
DETOUR	M4-8-24
NORTH	M3-1-24
53rd St S	CONSIGN 4
→	M6-1-21

(CC)
DETOUR	M4-8-24
NORTH	M3-1-24
53rd St S	CONSIGN 4
↱	M5-1-21

(DD)
DETOUR	M4-8-24
NORTH	M3-1-24
53rd St S	CONSIGN 4
↑	M6-3-21

(EE)
DETOUR	M4-8-24
NORTH	M3-1-24
53rd St S	CONSIGN 4
↗	M6-2-21

(FF)
DETOUR	M4-8-24
SOUTH	M3-3-24
53rd St S	CONSIGN 4
←	M6-1-21

(GG)
DETOUR	M4-8-24
SOUTH	M3-3-24
53rd St S	CONSIGN 4
→	M6-1-21

(HH)
DETOUR	M4-8-24
SOUTH	M3-3-24
53rd St S	CONSIGN 4
↑	M6-3-21

(II)
DETOUR	M4-8-24
SOUTH	M3-3-24
53rd St S	CONSIGN 4
↗	M6-2-21

(JJ)
DETOUR	M4-8-24
SOUTH	M3-3-24
53rd St S	CONSIGN 4
↰	M5-3-21

(KK) SIDEWALK CLOSED — R9-9-24

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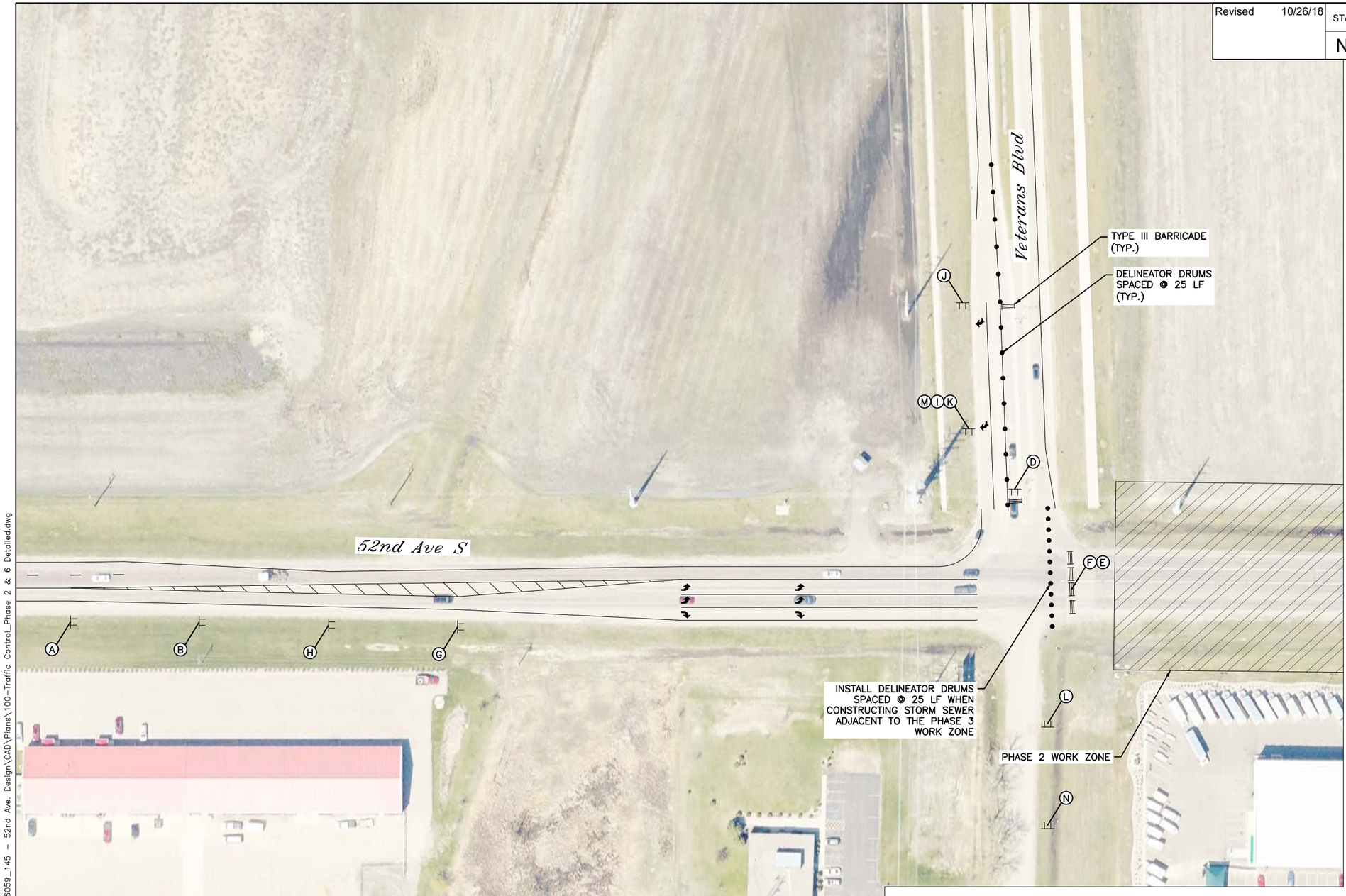
Work Zone Traffic Control - Phase 2

52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	5



A — STREET CLOSED AHEAD — W20-3-48

B — DETOUR AHEAD — W20-2-48

C — W12-1-30

D — R3-2-24

E — STREET CLOSED — R11-2a-48

F — DETOUR — M4-10-48

G — DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21

H — DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-1-21

I — DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21

J — DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-1-21

K — DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21

L — DETOUR M4-8-24 / NORTH M3-1-24 / 53rd St S CONSIGN 4 / M6-3-21

M — DETOUR M4-8-24 / SOUTH M3-3-24 / 53rd St S CONSIGN 4 / M6-3-21

N — R3-1-24

PHASE 2 WORK ZONE

NOTES:

1. PHASE 2 IS FOR CONSTRUCTION OF 52ND AVE S FROM VETERANS BLVD TO 45TH ST S.
2. UPON COMPLETION OF PHASE 2 , RE-ESTABLISH EXISTING PAVEMENT MARKINGS TO PRE-CONSTRUCTION CONDITIONS OR AS REQUIRED. INCLUDE ALL COSTS IN THE BID PRICE FOR TRAFFIC CONTROL.
3. PAVEMENT MARKINGS SHOWN ARE FOR REFERENCE ONLY (EXISTING) UNLESS MARKING TYPE IS LABELED IN THE PLAN VIEW.
4. DELINEATOR DRUMS SHALL BE SPACED AT 25 LF FOR TAPERS AND 50 LF FOR TANGENTS UNLESS SPECIFIED OTHERWISE.

N

0 50' 100'

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Work Zone Traffic Control - Phase 2

52nd Ave S - West of 63rd St S to 45th St S

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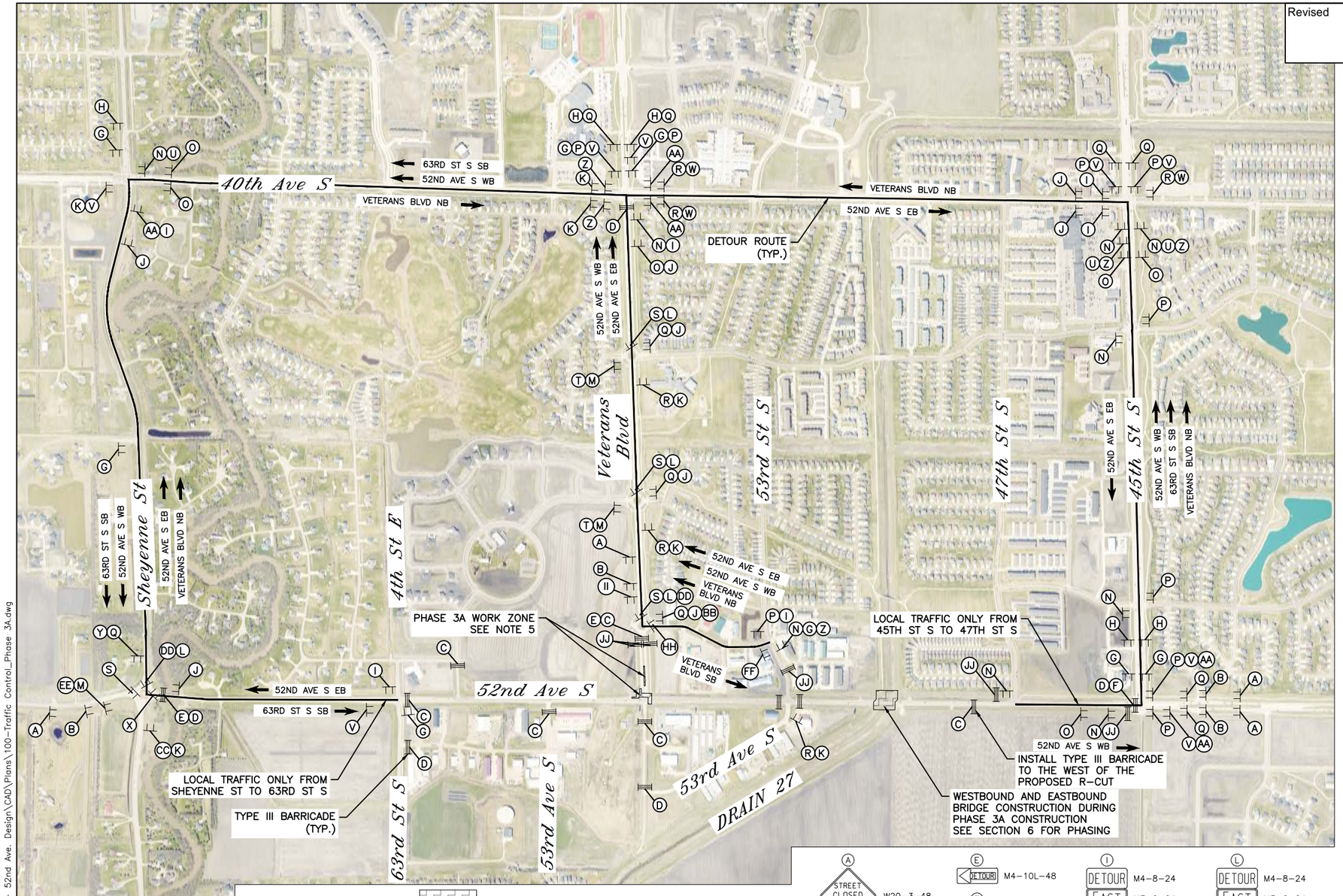
Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	6



BRIDGE CONSTRUCTION

PHASE 3A WORK ZONE

NOTES:

1. PHASE 3A TRAFFIC CONTROL IS FOR WATERMAIN IMPROVEMENTS AND LOWERING WITHIN THE 52ND AVE S AND VETERANS BLVD INTERSECTION.
2. TRAFFIC CONTROL LAYOUT ASSUMES CONCURRENT PHASE 3A AND BRIDGE CONSTRUCTION.
3. COORDINATE WORK WITH SU-8-992(040)041 PRIOR TO CLOSING INTERSECTION. SEE SECTION 6 FOR DATE RESTRICTIONS.
4. REMOVE EXISTING CONCRETE MEDIAN ALONG VETERANS BLVD. INSTALL TEMPORARY PAVEMENT WITHIN THE REMOVED MEDIAN AND NW QUADRANT OF THE INTERSECTION.

0 600' 1200'

(A) STREET CLOSED AHEAD W20-3-48
(B) DETOUR AHEAD W20-2-48
(C) STREET CLOSED R11-2a-48
(D) STREET CLOSED TO THRU TRAFFIC R11-4a-60

(E) DETOUR M4-10L-48
(F) DETOUR M4-10R-48
(G) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21
(H) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-1-21
(I) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21
(J) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-1-21
(K) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-3-21
(L) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-2-21
(M) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-3-21
(N) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21
(O) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-1-21
(P) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21
(Q) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-1-21
(R) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-3-21
(S) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-2-21
(T) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-3-21
(U) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21
(V) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21
(W) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-3-21
(X) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-2-21
(Y) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M5-3-21
(Z) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21
(AA) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21
(BB) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M5-1-21
(CC) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-3-21
(DD) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-2-21
(EE) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M5-3-21
(FF) DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M6-1-21
(GG) DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M5-1-21
(HH) DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M6-2-21
(II) DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M5-3-21
(JJ) SIDEWALK CLOSED R9-9-24

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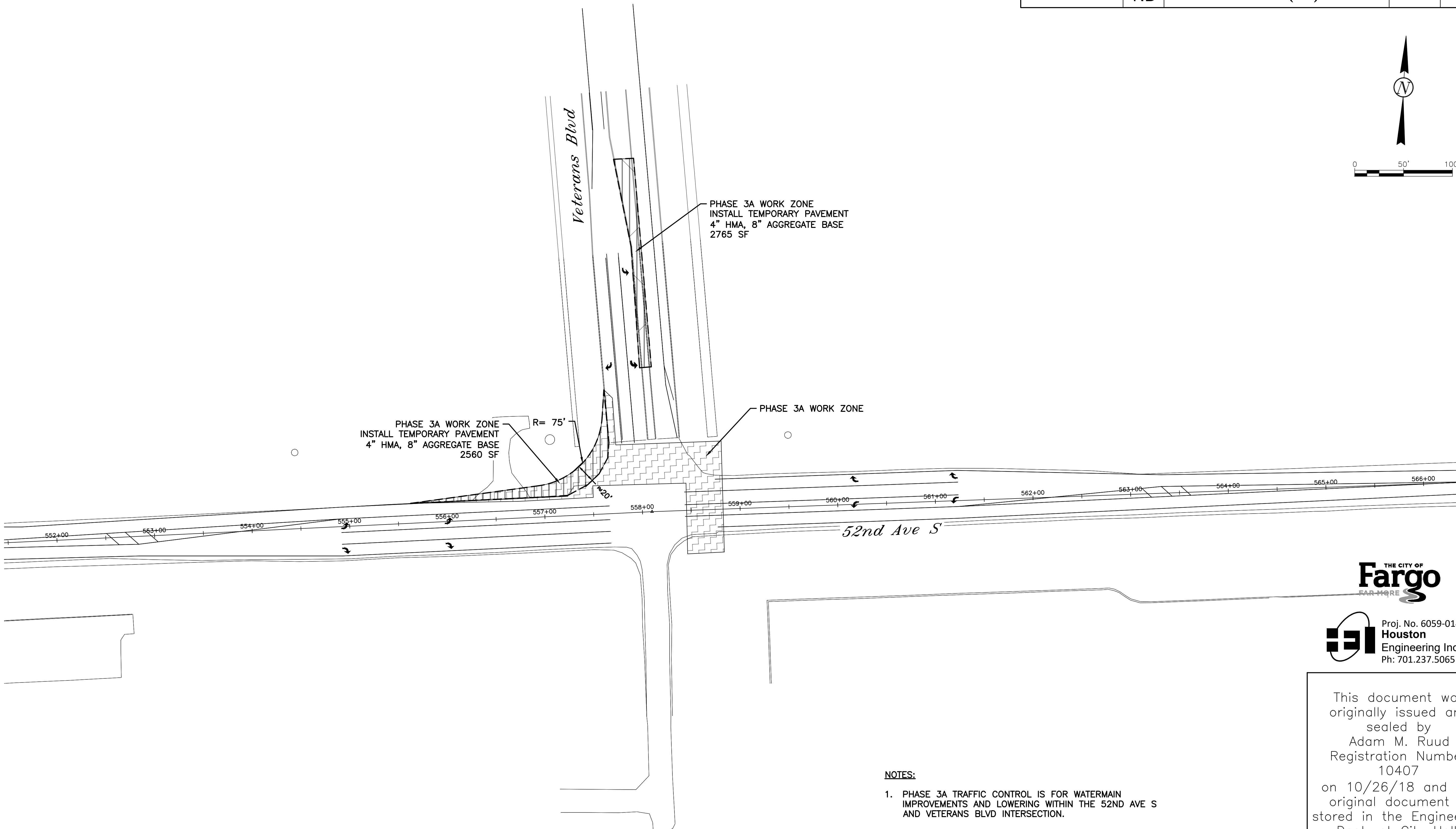
Work Zone Traffic Control - Phase 3A

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	100	7



PHASE 3A WORK ZONE

TEMPORARY PAVEMENT
4" HMA, 8" AGGREGATE BASE

NOTES:

1. PHASE 3A TRAFFIC CONTROL IS FOR WATERMAIN IMPROVEMENTS AND LOWERING WITHIN THE 52ND AVE S AND VETERANS BLVD INTERSECTION.
2. TRAFFIC CONTROL LAYOUT ASSUMES CONCURRENT PHASE 3A AND BRIDGE CONSTRUCTION.
3. REMOVE EXISTING CONCRETE MEDIAN ALONG VETERANS BLVD. INSTALL TEMPORARY PAVEMENT WITHIN THE REMOVED MEDIAN AND NW QUADRANT OF THE INTERSECTION.

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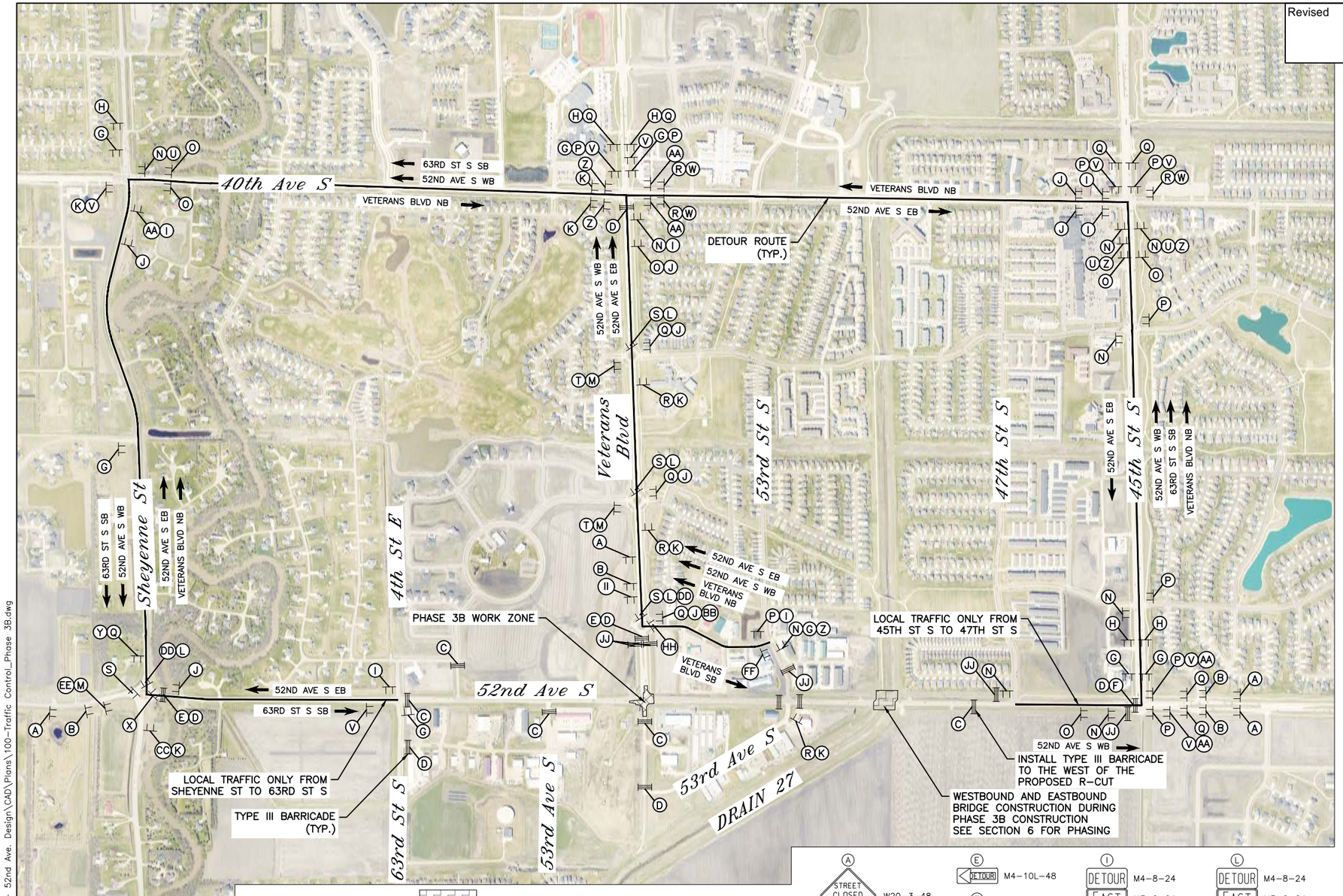
Work Zone Traffic Control - Phase 3A

52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	8



BRIDGE CONSTRUCTION

PHASE 3B WORK ZONE

NOTES:

1. PHASE 3B TRAFFIC CONTROL IS FOR THE RECONSTRUCTION OF THE NE, SE, AND SW QUADRANTS OF 52ND AVE S AND VETERANS BLVD INTERSECTION. INSTALL TEMPORARY PAVEMENT, 4" HMA AND 8" AGGREGATE BASE BETWEEN THE SW QUADRANT OF THE INTERSECTION AND THE EXISTING PAVEMENT TO MAINTAIN TRAFFIC DURING PHASE 3C.
2. TRAFFIC CONTROL LAYOUT ASSUMES CONCURRENT PHASE 3B AND BRIDGE CONSTRUCTION.
3. COORDINATE WORK WITH SU-8-992(040)041 PRIOR TO CLOSING INTERSECTION. SEE SECTION 6 FOR DATE RESTRICTIONS.

(A) STREET CLOSED AHEAD W20-3-48

(B) DETOUR AHEAD W20-2-48

(C) STREET CLOSED R11-2a-48

(D) STREET CLOSED TO THRU TRAFFIC R11-4a-60

(E) DETOUR M4-10L-48

(F) DETOUR M4-10R-48

(G) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(H) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(I) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(J) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-3-21

(K) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-3-21

(L) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-2-21

(M) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-3-21

(N) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(O) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(P) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(Q) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(R) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-3-21

(S) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-2-21

(T) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-3-21

(U) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21

(V) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21

(W) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-3-21

(X) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-2-21

(Y) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M5-3-21

(Z) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21

(AA) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21

(BB) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M5-1-21

(CC) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-3-21

(DD) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-2-21

(EE) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M5-3-21

(FF) DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M6-1-21

(GG) DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M5-1-21

(HH) DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M6-2-21

(II) DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M5-3-21

(JJ) SIDEWALK CLOSED R9-9-24

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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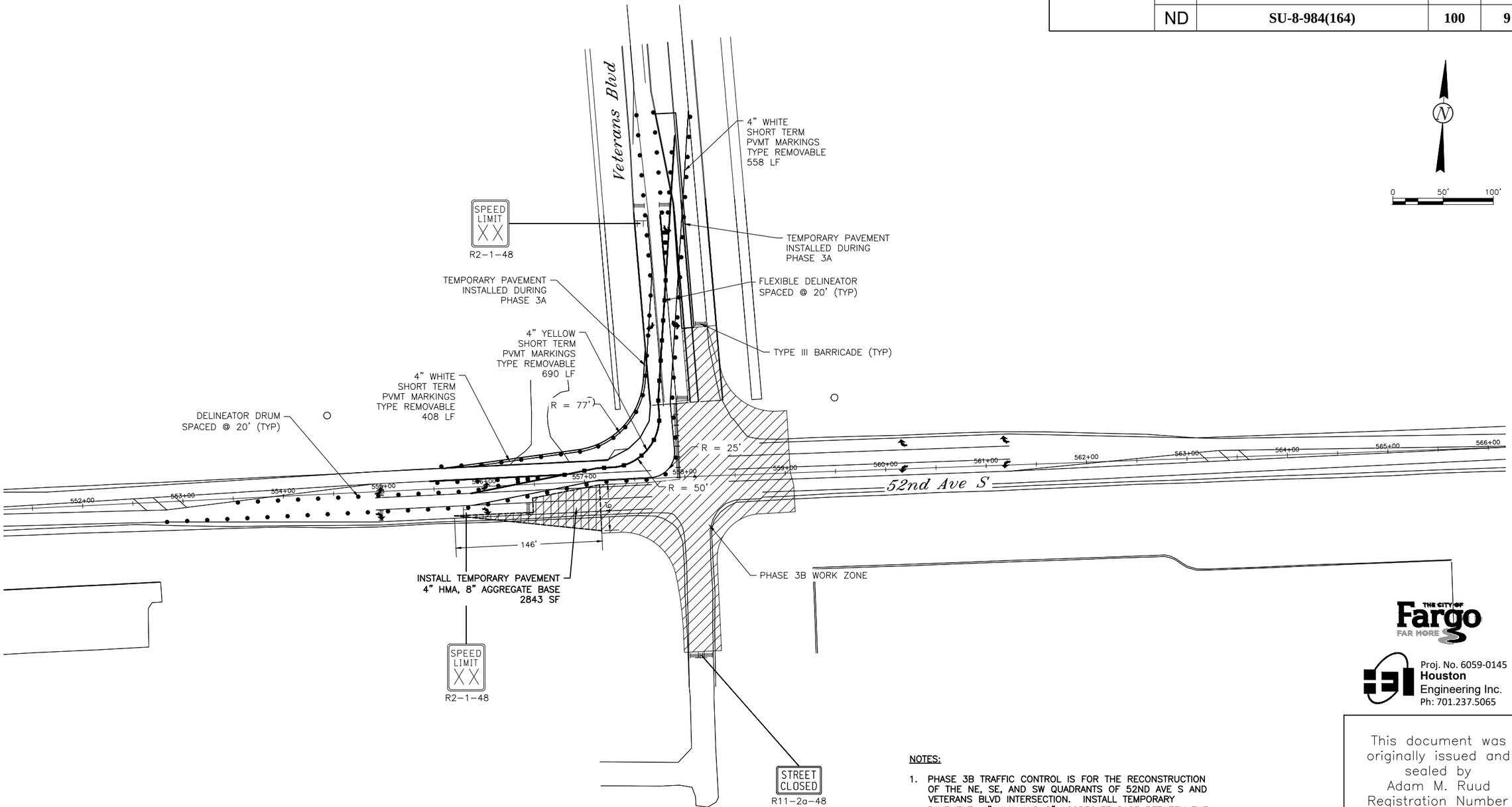
Work Zone Traffic Control - Phase 3B

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	100	9



PHASE 3B WORK ZONE

TEMPORARY PAVEMENT
4" HMA, 8" AGGREGATE BASE

NOTES:

1. PHASE 3B TRAFFIC CONTROL IS FOR THE RECONSTRUCTION OF THE NE, SE, AND SW QUADRANTS OF 52ND AVE S AND VETERANS BLVD INTERSECTION. INSTALL TEMPORARY PAVEMENT, 4" HMA AND 8" AGGREGATE BASE BETWEEN THE SW QUADRANT OF THE INTERSECTION AND THE EXISTING PAVEMENT TO MAINTAIN TRAFFIC DURING PHASE 3C.
2. TRAFFIC CONTROL LAYOUT ASSUMES CONCURRENT PHASE 3B AND BRIDGE CONSTRUCTION.
3. OBLITERATE EXISTING PAVEMENT MARKINGS TO ACCOMMODATE TEMPORARY PAVEMENT MARKINGS. INCLUDE ALL COSTS IN THE PRICE BID FOR TRAFFIC CONTROL.
4. PAVEMENT MARKINGS SHOWN ARE FOR REFERENCE ONLY (EXISTING OR DETAILED IN SECTION 120) UNLESS MARKING TYPE IS LABELED IN THE PLAN VIEW.
5. DELINEATOR DRUMS AND FLEXIBLE DELINEATORS SHALL BE SPACED AT 25 LF FOR TAPERS AND 50 LF FOR TANGENTS UNLESS SPECIFIED OTHERWISE.

THE CITY OF Fargo FAR MORE

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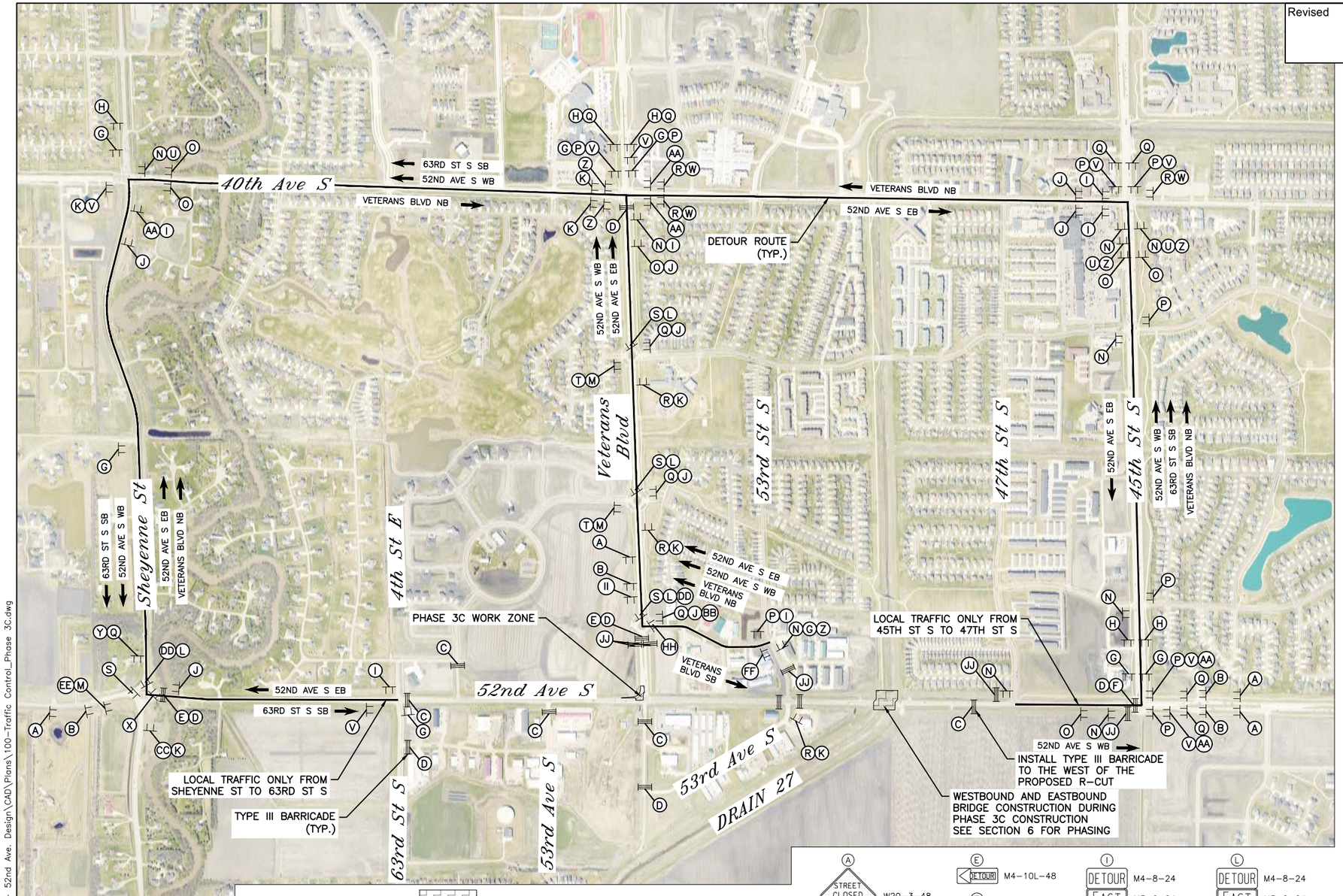
Work Zone Traffic Control - Phase 3B

52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	10



BRIDGE CONSTRUCTION

PHASE 3C WORK ZONE

NOTES:

1. PHASE 3C TRAFFIC CONTROL IS FOR THE RECONSTRUCTION OF THE NW QUADRANT OF 52ND AVE S AND VETERANS BLVD INTERSECTION.
2. TRAFFIC CONTROL LAYOUT ASSUMES CONCURRENT PHASE 3C AND BRIDGE CONSTRUCTION.
3. COORDINATE WORK WITH SU-8-992(040)041 PRIOR TO CLOSING INTERSECTION. SEE SECTION 6 FOR DATE RESTRICTIONS.

(A) STREET CLOSED AHEAD W20-3-48

(B) DETOUR AHEAD W20-2-48

(C) STREET CLOSED R11-2a-48

(D) STREET CLOSED TO THRU TRAFFIC R11-4a-60

(E) DETOUR M4-10L-48

(F) DETOUR M4-10R-48

(G) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(H) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(I) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(J) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-3-21

(K) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-3-21

(L) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-2-21

(M) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-3-21

(N) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(O) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(P) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(Q) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(R) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-3-21

(S) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-2-21

(T) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-3-21

(U) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21

(V) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21

(W) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-3-21

(X) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-2-21

(Y) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M5-3-21

(Z) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21

(AA) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21

(BB) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M5-1-21

(CC) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-3-21

(DD) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-2-21

(EE) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M5-3-21

(FF) DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M6-1-21

(GG) DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M5-1-21

(HH) DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M6-2-21

(II) DETOUR M4-8-24 / SOUTH M3-3-24 / Veterans Blvd CONSIGN 3 / M5-3-21

(JJ) SIDEWALK CLOSED R9-9-24

THE CITY OF Fargo FAR MORE

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Houston Engineering Inc.
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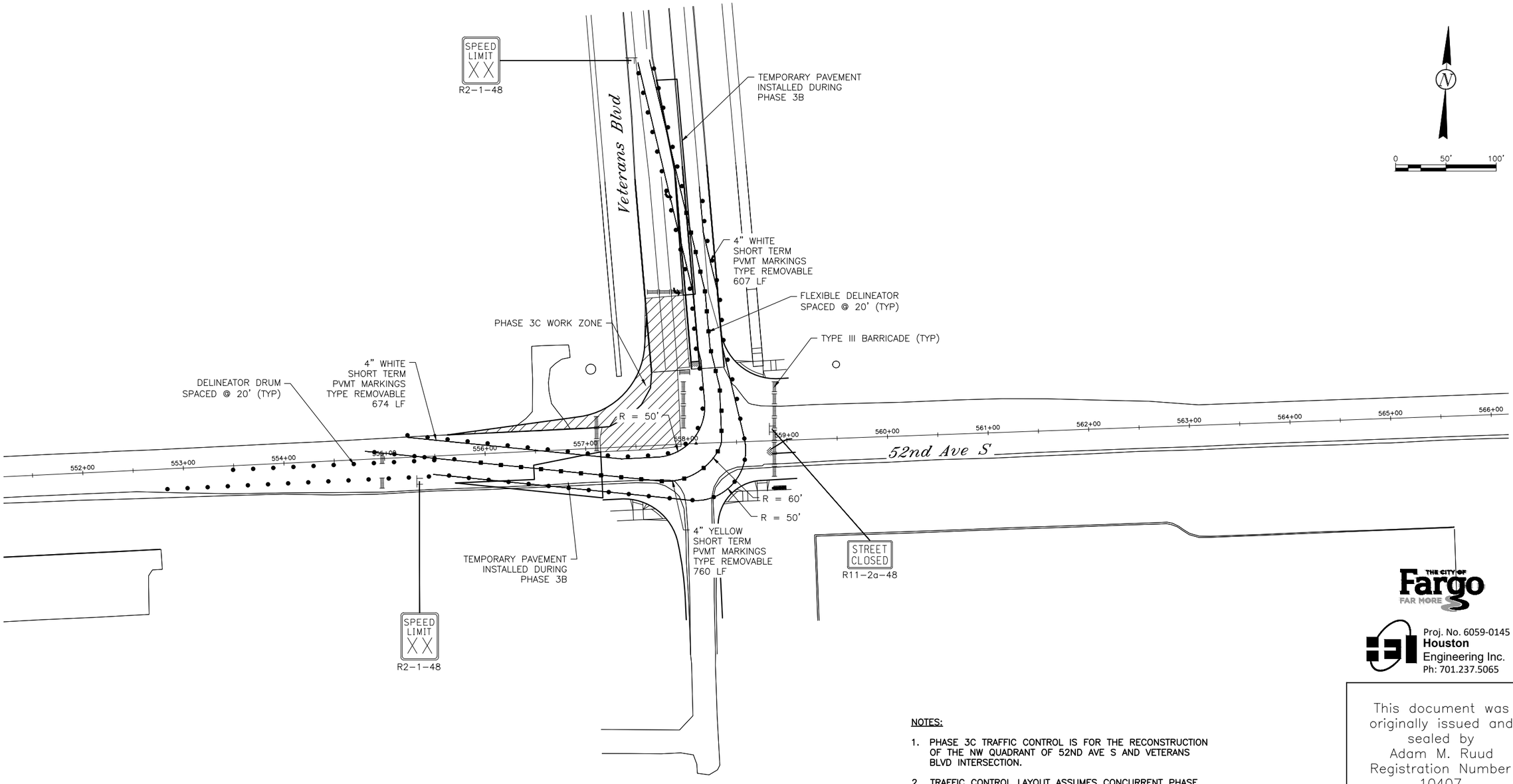
Work Zone Traffic Control - Phase 3C

52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	11



PHASE 3C WORK ZONE

NOTES:

1. PHASE 3C TRAFFIC CONTROL IS FOR THE RECONSTRUCTION OF THE NW QUADRANT OF 52ND AVE S AND VETERANS BLVD INTERSECTION.
2. TRAFFIC CONTROL LAYOUT ASSUMES CONCURRENT PHASE 3C AND BRIDGE CONSTRUCTION.
3. OBLITERATE EXISTING PAVEMENT MARKINGS TO ACCOMMODATE TEMPORARY PAVEMENT MARKINGS. INCLUDE ALL COSTS IN THE PRICE BID FOR TRAFFIC CONTROL.
4. UPON COMPLETION OF PHASE 3C, INSTALL PERMANENT PAVEMENT MARKINGS. INCLUDE ALL COSTS IN THE PRICE BID FOR THE APPLICABLE MARKING.
5. PAVEMENT MARKINGS SHOWN ARE FOR REFERENCE ONLY (EXISTING OR DETAILED IN SECTION 120) UNLESS MARKING TYPE IS LABELED IN THE PLAN VIEW.
6. DELINEATOR DRUMS AND FLEXIBLE DELINEATORS SHALL BE SPACED AT 25 LF FOR TAPERS AND 50 LF FOR TANGENTS UNLESS SPECIFIED OTHERWISE.

THE CITY OF Fargo FAR MORE

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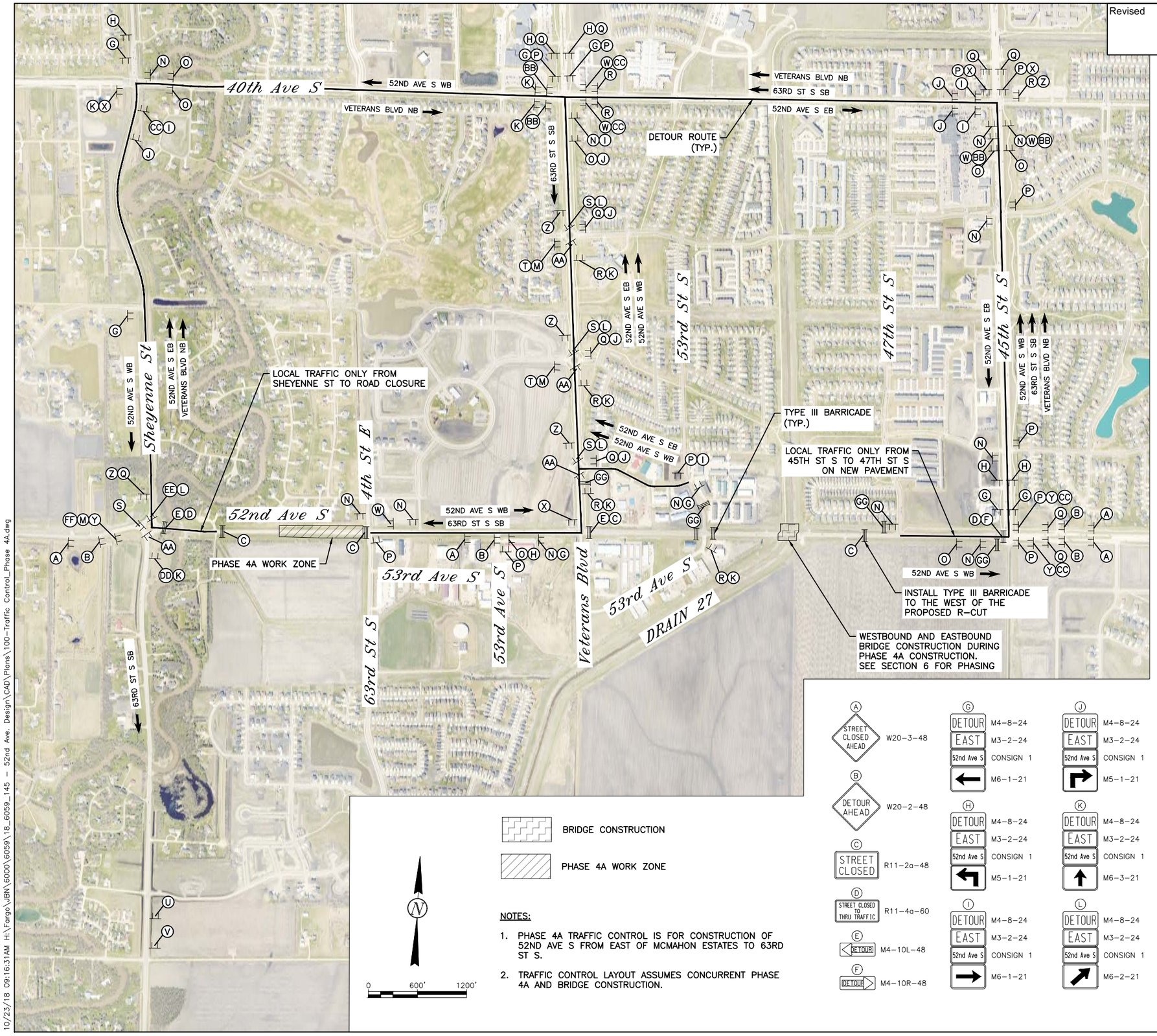
Work Zone Traffic Control - Phase 3C

52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	12



NOTES:

1. PHASE 4A TRAFFIC CONTROL IS FOR CONSTRUCTION OF 52ND AVE S FROM EAST OF MCMAHON ESTATES TO 63RD ST S.
2. TRAFFIC CONTROL LAYOUT ASSUMES CONCURRENT PHASE 4A AND BRIDGE CONSTRUCTION.

(A) STREET CLOSED AHEAD — W20-3-48

(B) DETOUR AHEAD — W20-2-48

(C) STREET CLOSED — R11-2a-48

(D) STREET CLOSED TO THRU TRAFFIC — R11-4a-60

(E) DETOUR — M4-10L-48

(F) DETOUR — M4-10R-48

(G) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(H) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(I) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(J) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(K) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-3-21

(L) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-2-21

(M) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-3-21

(N) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(O) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(P) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(Q) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-3-21

(R) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-3-21

(S) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-2-21

(T) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-3-21

(U) DETOUR M4-8-24 / NORTH M3-1-24 / 63rd St S CONSIGN 2 / M6-1-21

(V) DETOUR M4-8-24 / NORTH M3-1-24 / 63rd St S CONSIGN 2 / M5-1-21

(W) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21

(X) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21

(Y) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M5-1-21

(Z) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-3-21

(AA) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-2-21

(BB) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21

(CC) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21

(DD) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-3-21

(EE) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-2-21

(FF) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M5-3-21

(GG) SIDEWALK CLOSED — R9-9-24

THE CITY OF Fargo FAR MORE

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Houston Engineering Inc.
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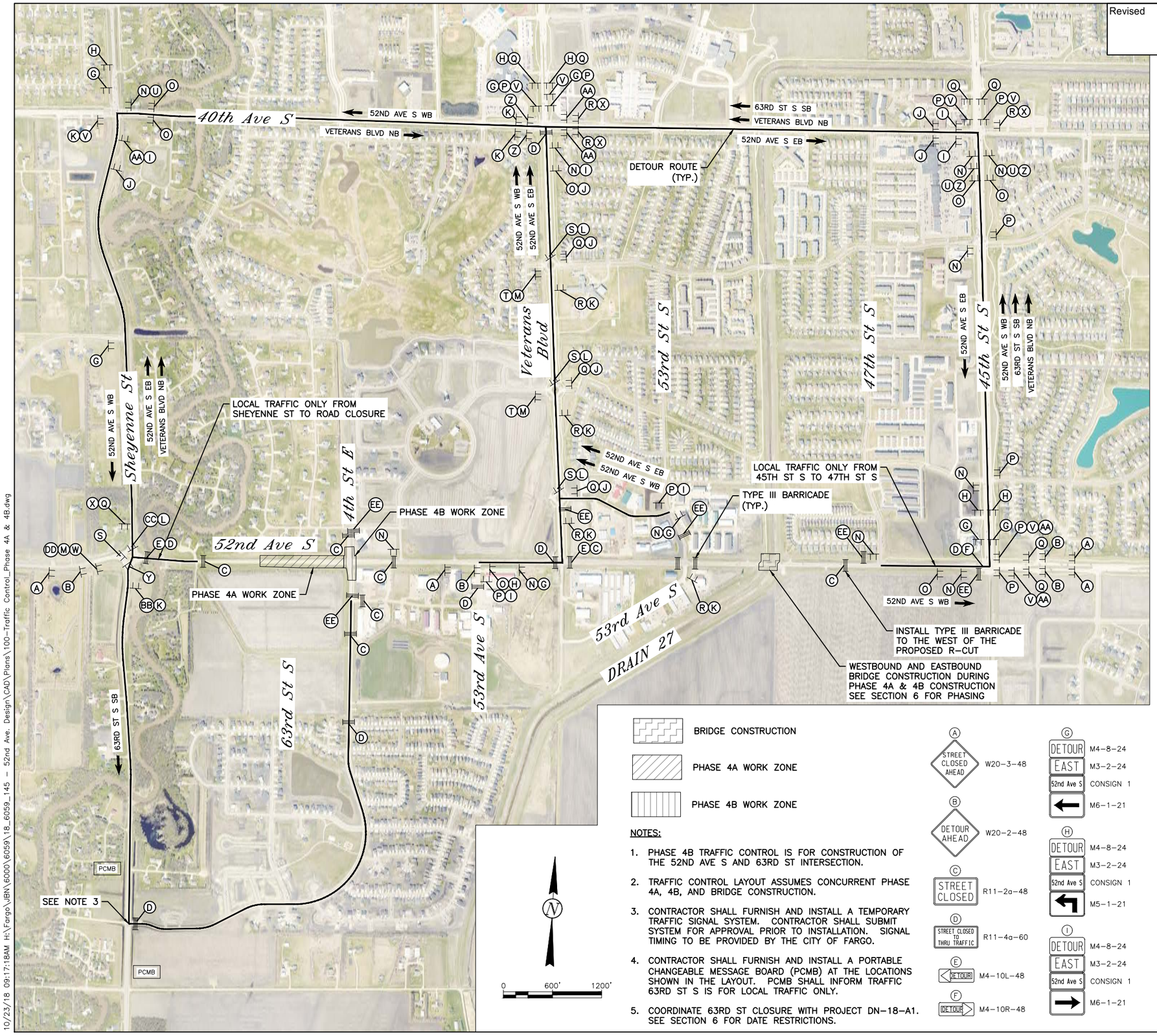
Work Zone Traffic Control - Phase 4A

52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	13



BRIDGE CONSTRUCTION

PHASE 4A WORK ZONE

PHASE 4B WORK ZONE

NOTES:

1. PHASE 4B TRAFFIC CONTROL IS FOR CONSTRUCTION OF THE 52ND AVE S AND 63RD ST INTERSECTION.
2. TRAFFIC CONTROL LAYOUT ASSUMES CONCURRENT PHASE 4A, 4B, AND BRIDGE CONSTRUCTION.
3. CONTRACTOR SHALL FURNISH AND INSTALL A TEMPORARY TRAFFIC SIGNAL SYSTEM. CONTRACTOR SHALL SUBMIT SYSTEM FOR APPROVAL PRIOR TO INSTALLATION. SIGNAL TIMING TO BE PROVIDED BY THE CITY OF FARGO.
4. CONTRACTOR SHALL FURNISH AND INSTALL A PORTABLE CHANGEABLE MESSAGE BOARD (PCMB) AT THE LOCATIONS SHOWN IN THE LAYOUT. PCMB SHALL INFORM TRAFFIC 63RD ST S IS FOR LOCAL TRAFFIC ONLY.
5. COORDINATE 63RD ST CLOSURE WITH PROJECT DN-18-A1. SEE SECTION 6 FOR DATE RESTRICTIONS.

(A) STREET CLOSED AHEAD W20-3-48

(B) DETOUR AHEAD W20-2-48

(C) STREET CLOSED R11-2a-48

(D) STREET CLOSED TO THRU TRAFFIC R11-4a-60

(E) DETOUR M4-10L-48

(F) DETOUR M4-10R-48

(G) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(H) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(I) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(J) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(K) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-3-21

(L) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-2-21

(M) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-3-21

(N) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(O) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(P) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(Q) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(R) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-3-21

(S) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-2-21

(T) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-3-21

(U) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21

(V) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21

(W) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M5-1-21

(X) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-3-21

(Y) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-2-21

(Z) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21

(AA) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21

(BB) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-3-21

(CC) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-2-21

(DD) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M5-3-21

(EE) SIDEWALK CLOSED R9-9-24

THE CITY OF Fargo FAR MORE

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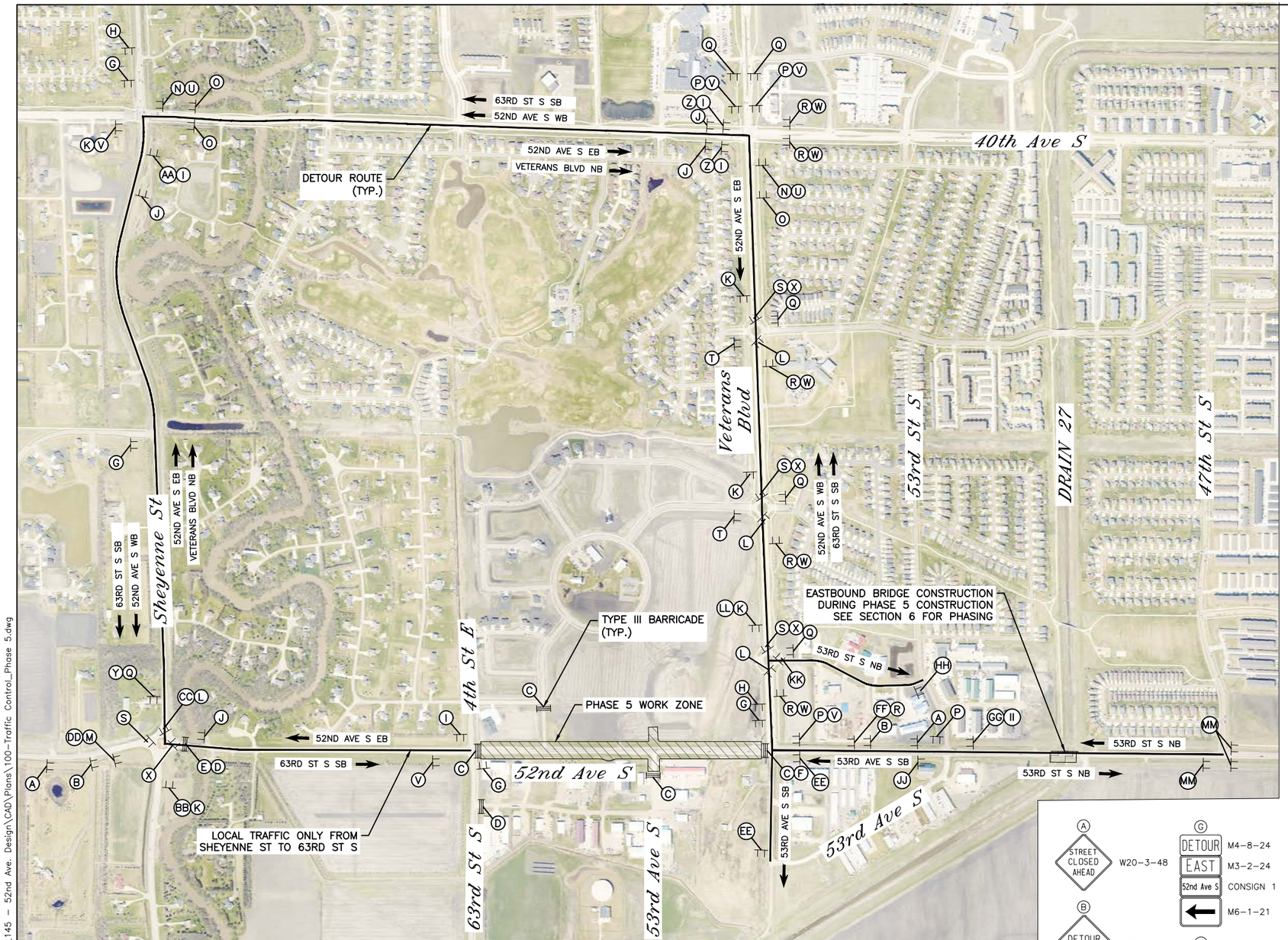
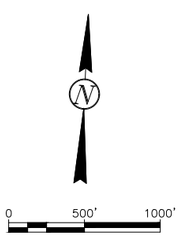
Work Zone Traffic Control - Phase 4B

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	100	14





EASTBOUND BRIDGE CONSTRUCTION

PHASE 5 WORK ZONE

NOTES:

1. PHASE 5 TRAFFIC CONTROL IS FOR CONSTRUCTION OF 52ND AVE S FROM 63RD ST S TO VETERANS BLVD.
2. TRAFFIC CONTROL LAYOUT ASSUMES CONCURRENT PHASE 5 AND EASTBOUND BRIDGE CONSTRUCTION.
3. INTERSECTIONS OF 52ND AVE S AND VETERANS BLVD AND 52ND AVE S AND 63RD ST S TO REMAIN OPEN DURING PHASE 5 CONSTRUCTION.
4. REFER TO ADDITIONAL PHASE 5 TRAFFIC CONTROL SHEETS FOR ADDITIONAL TRAFFIC CONTROL SIGNS AND DEVICES TO BE INSTALLED DURING PHASE 5.

(A) STREET CLOSED AHEAD — W20-3-48

(B) DETOUR AHEAD — W20-2-48

(C) STREET CLOSED — R11-2a-48

(D) STREET CLOSED TO THRU TRAFFIC — R11-4a-60

(E) DETOUR — M4-10L-48

(F) DETOUR — M4-10R-48

(G) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(H) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(I) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(J) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(K) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-3-21

(L) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M6-2-21

(M) DETOUR M4-8-24 / EAST M3-2-24 / 52nd Ave S CONSIGN 1 / M5-3-21

(N) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(O) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(P) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-1-21

(Q) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-1-21

(R) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-3-21

(S) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M6-2-21

(T) DETOUR M4-8-24 / WEST M3-4-24 / 52nd Ave S CONSIGN 1 / M5-3-21

(U) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21

(V) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-1-21

(W) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-3-21

(X) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M6-2-21

(Y) DETOUR M4-8-24 / SOUTH M3-3-24 / 63rd St S CONSIGN 2 / M5-3-21

(Z) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21

(AA) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-1-21

(BB) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-3-21

(CC) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M6-2-21

(DD) DETOUR M4-8-24 / NORTH M3-1-24 / Veterans Blvd CONSIGN 3 / M5-3-21

(EE) DETOUR M4-8-24 / SOUTH M3-3-24 / 53rd Ave S CONSIGN 4 / M6-1-21

(FF) DETOUR M4-8-24 / SOUTH M3-3-24 / 53rd Ave S CONSIGN 4 / M5-1-21

(GG) DETOUR M4-8-24 / SOUTH M3-3-24 / 53rd Ave S CONSIGN 4 / M6-3-21

(HH) DETOUR M4-8-24 / NORTH M3-1-24 / 53rd St S CONSIGN 5 / M6-1-21

(II) DETOUR M4-8-24 / NORTH M3-1-24 / 53rd St S CONSIGN 5 / M6-1-21

(JJ) DETOUR M4-8-24 / NORTH M3-1-24 / 53rd St S CONSIGN 5 / M6-3-21

(KK) DETOUR M4-8-24 / NORTH M3-1-24 / 53rd St S CONSIGN 5 / M6-2-21

(LL) DETOUR M4-8-24 / NORTH M3-1-24 / 53rd St S CONSIGN 5 / M5-3-21

(MM) DETOUR M4-8-24 / NORTH M3-1-24 / 53rd St S CONSIGN 5 / CONSIGN 7

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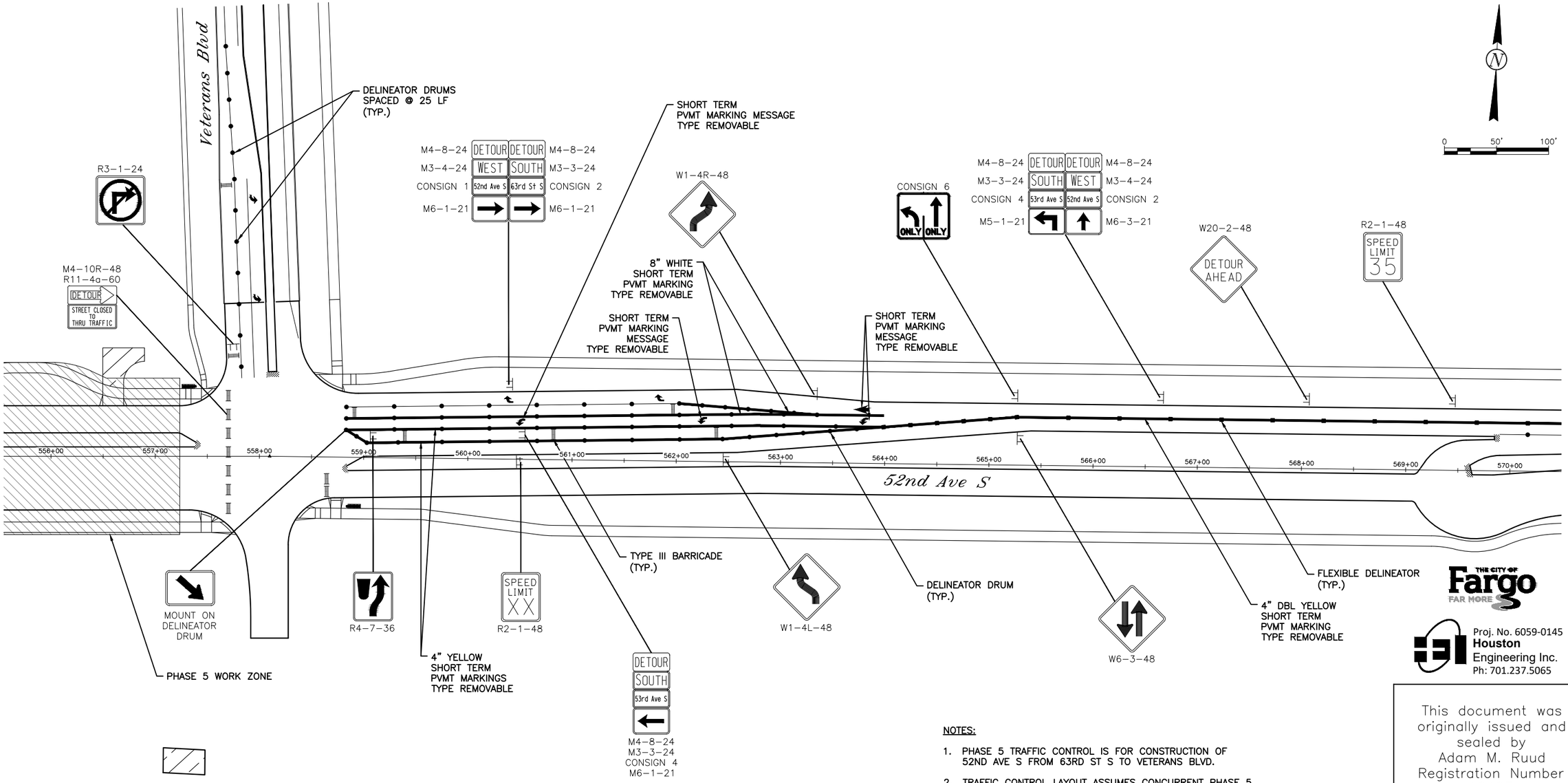
Work Zone Traffic Control - Phase 5

52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	15



EASTBOUND BRIDGE CONSTRUCTION

PHASE 5 WORK ZONE

NOTES:

1. PHASE 5 TRAFFIC CONTROL IS FOR CONSTRUCTION OF 52ND AVE S FROM 63RD ST S TO VETERANS BLVD.
2. TRAFFIC CONTROL LAYOUT ASSUMES CONCURRENT PHASE 5 AND EASTBOUND BRIDGE CONSTRUCTION.
3. OBLITERATE EXISTING PAVEMENT MARKINGS TO ACCOMMODATE TEMPORARY PAVEMENT MARKINGS. INCLUDE ALL COSTS IN THE PRICE BID FOR TRAFFIC CONTROL.
4. UPON COMPLETION OF PHASE 5, INSTALL PERMANENT PAVEMENT MARKINGS. INCLUDE ALL COSTS IN THE PRICE BID FOR THE APPLICABLE MARKING.
5. PAVEMENT MARKINGS SHOWN ARE FOR REFERENCE ONLY (EXISTING OR DETAILED IN SECTION 120) UNLESS MARKING TYPE IS LABELED IN THE PLAN VIEW.
6. DELINEATOR DRUMS AND FLEXIBLE DELINEATORS SHALL BE SPACED AT 25 LF FOR TAPERS AND 50 LF FOR TANGENTS UNLESS SPECIFIED OTHERWISE.

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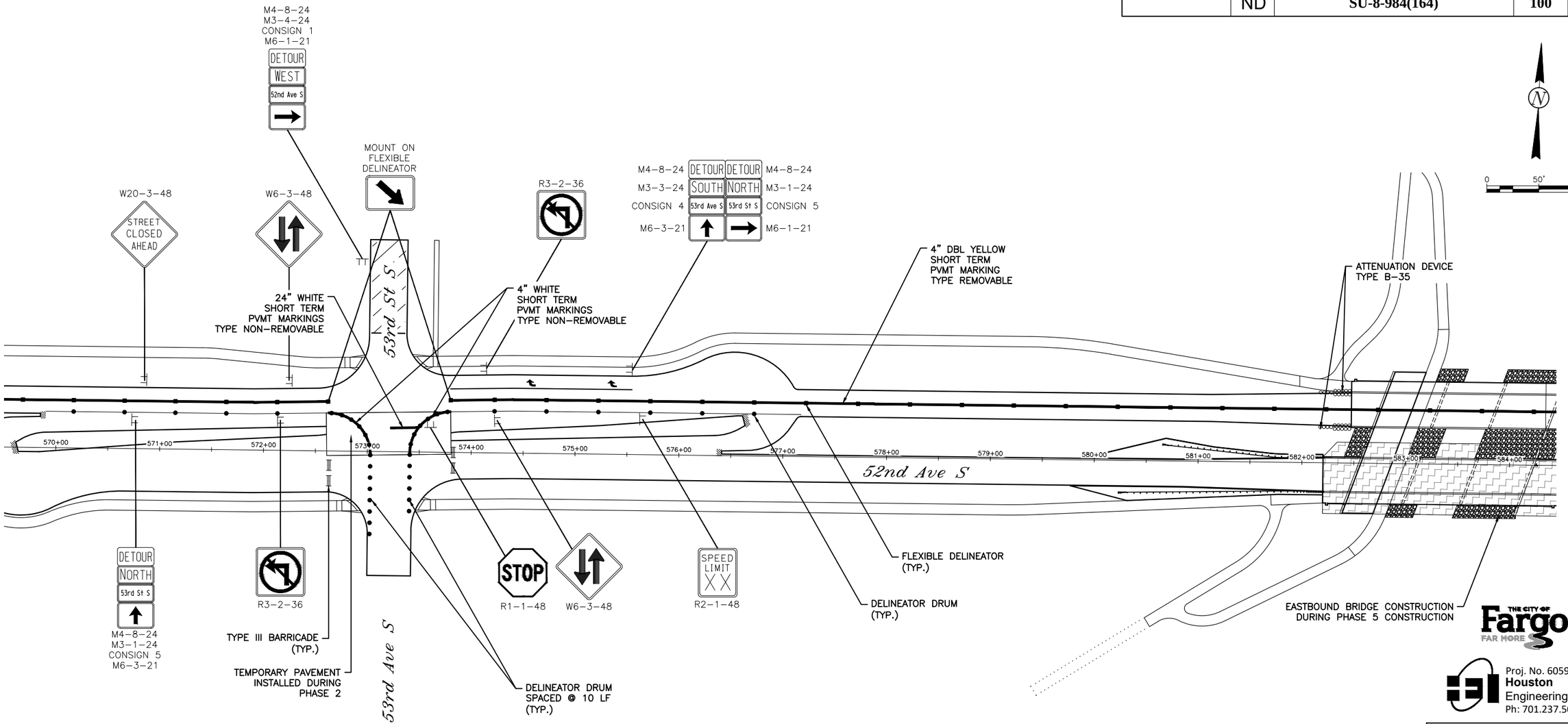
52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	16



EASTBOUND BRIDGE CONSTRUCTION

PHASE 5 WORK ZONE

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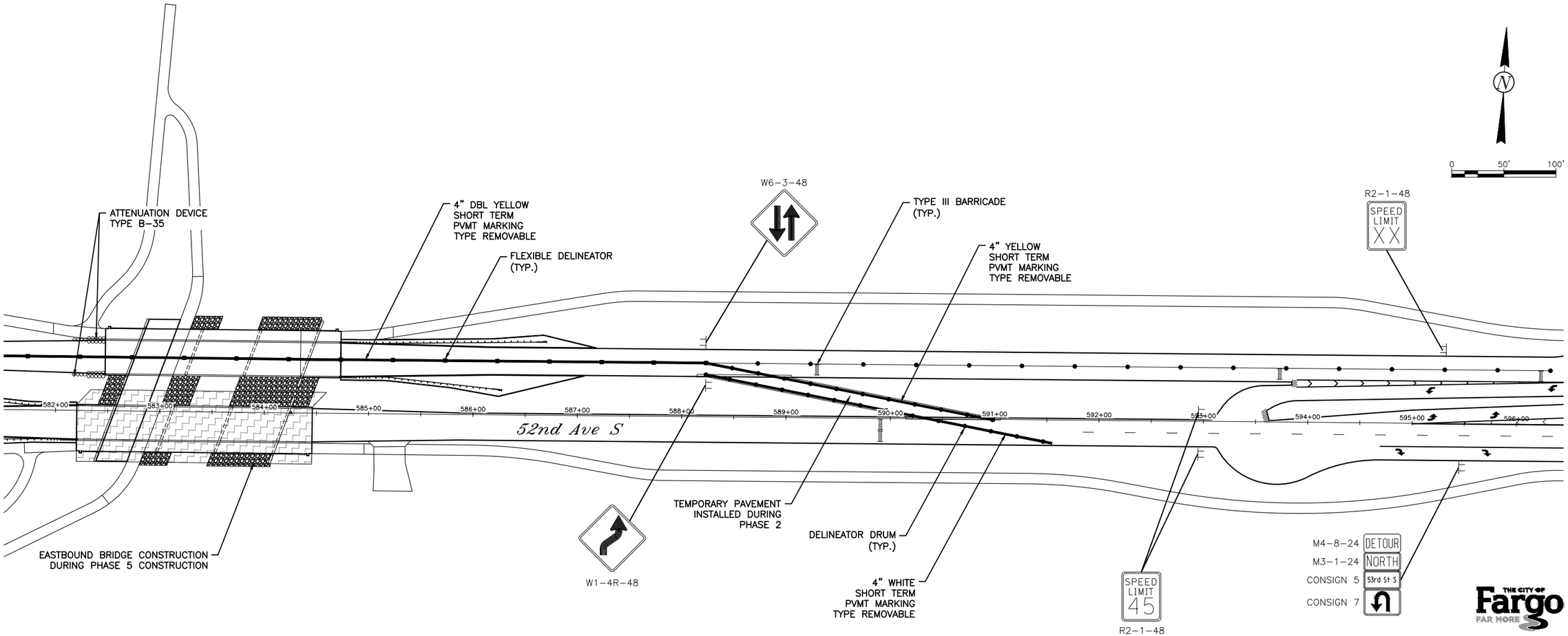
52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	100	17



EASTBOUND BRIDGE CONSTRUCTION

PHASE 5 WORK ZONE

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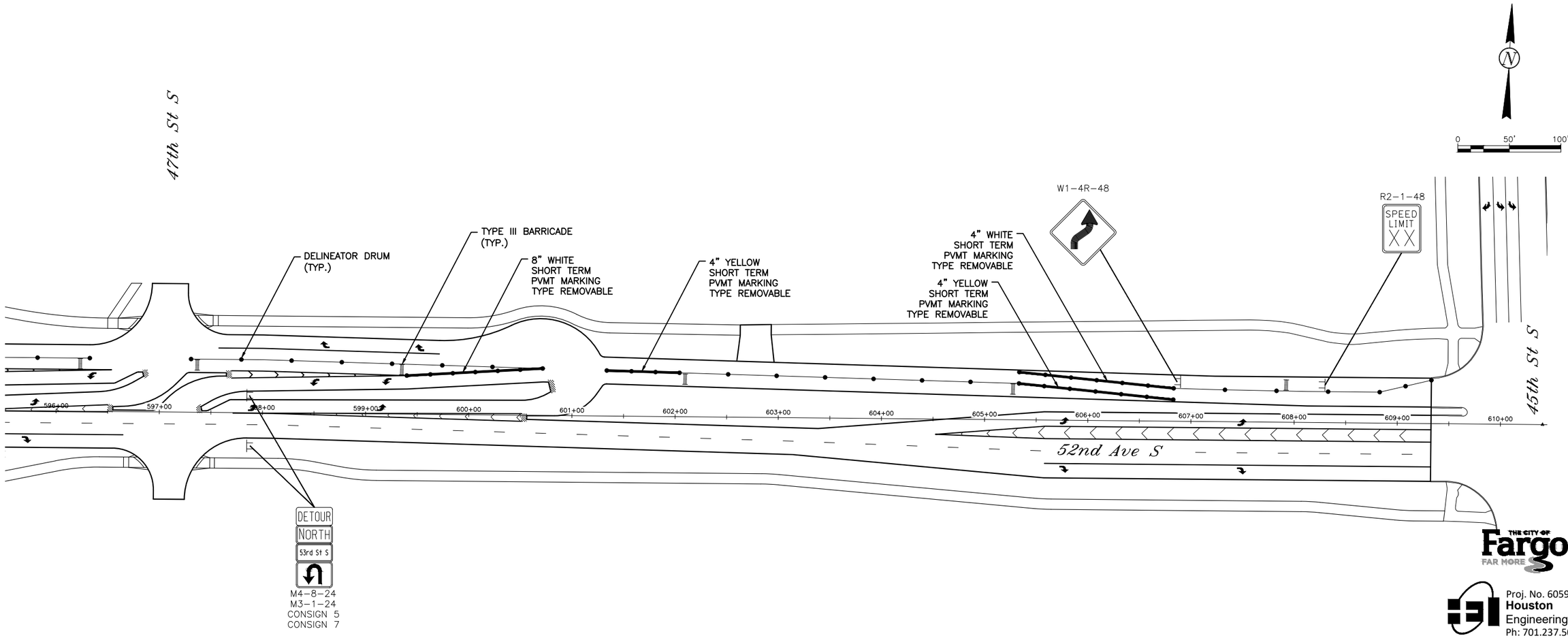
52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	100	18



EASTBOUND BRIDGE CONSTRUCTION

PHASE 5 WORK ZONE

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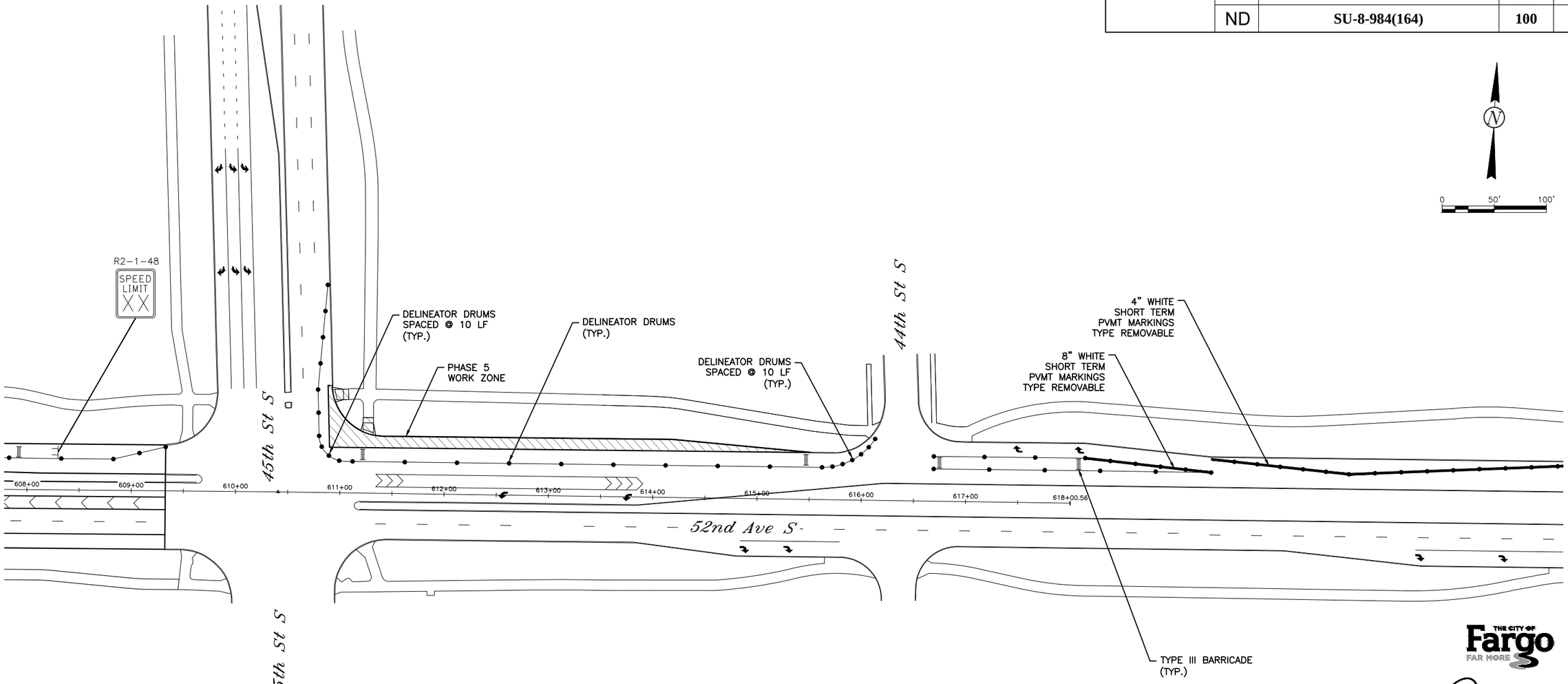
Work Zone Traffic Control - Phase 5

52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	19



EASTBOUND BRIDGE CONSTRUCTION

PHASE 5 WORK ZONE

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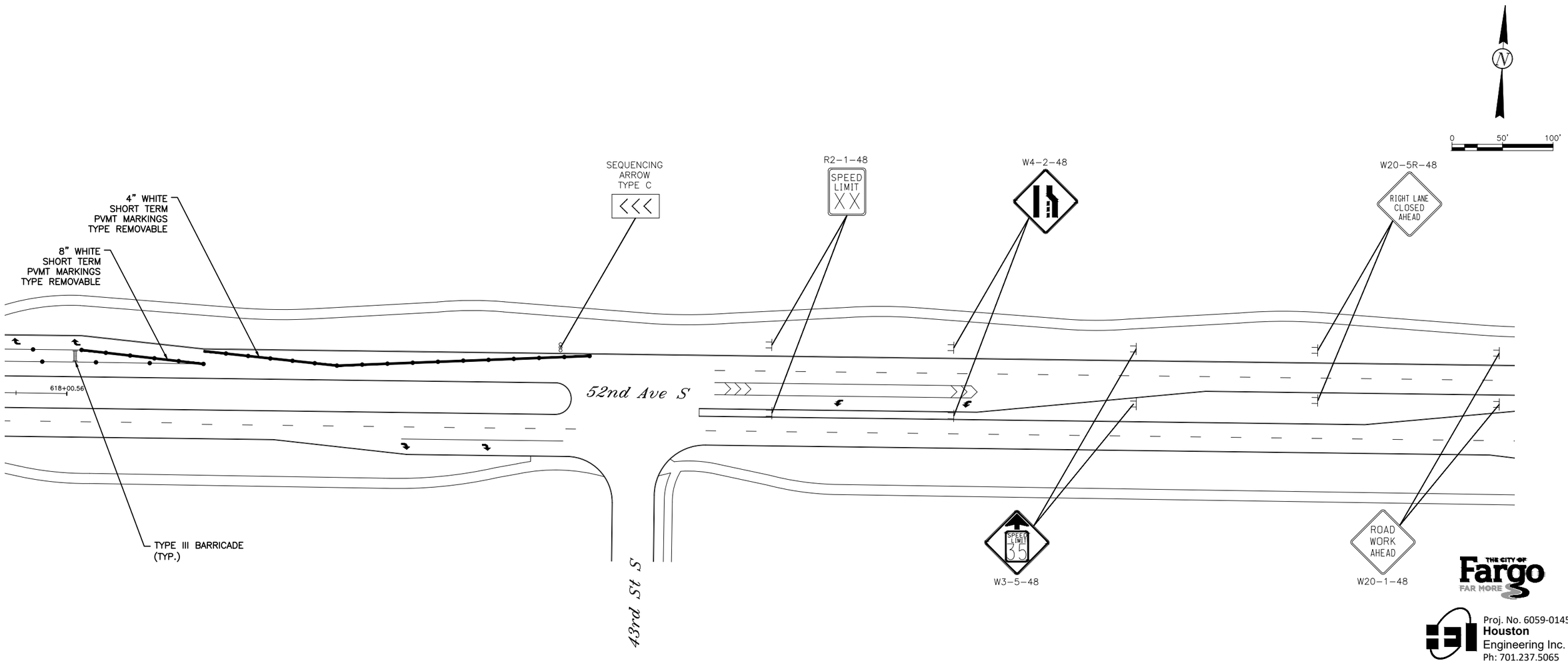
Work Zone Traffic Control - Phase 5

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	100	20



EASTBOUND BRIDGE CONSTRUCTION

PHASE 5 WORK ZONE

NOTES:

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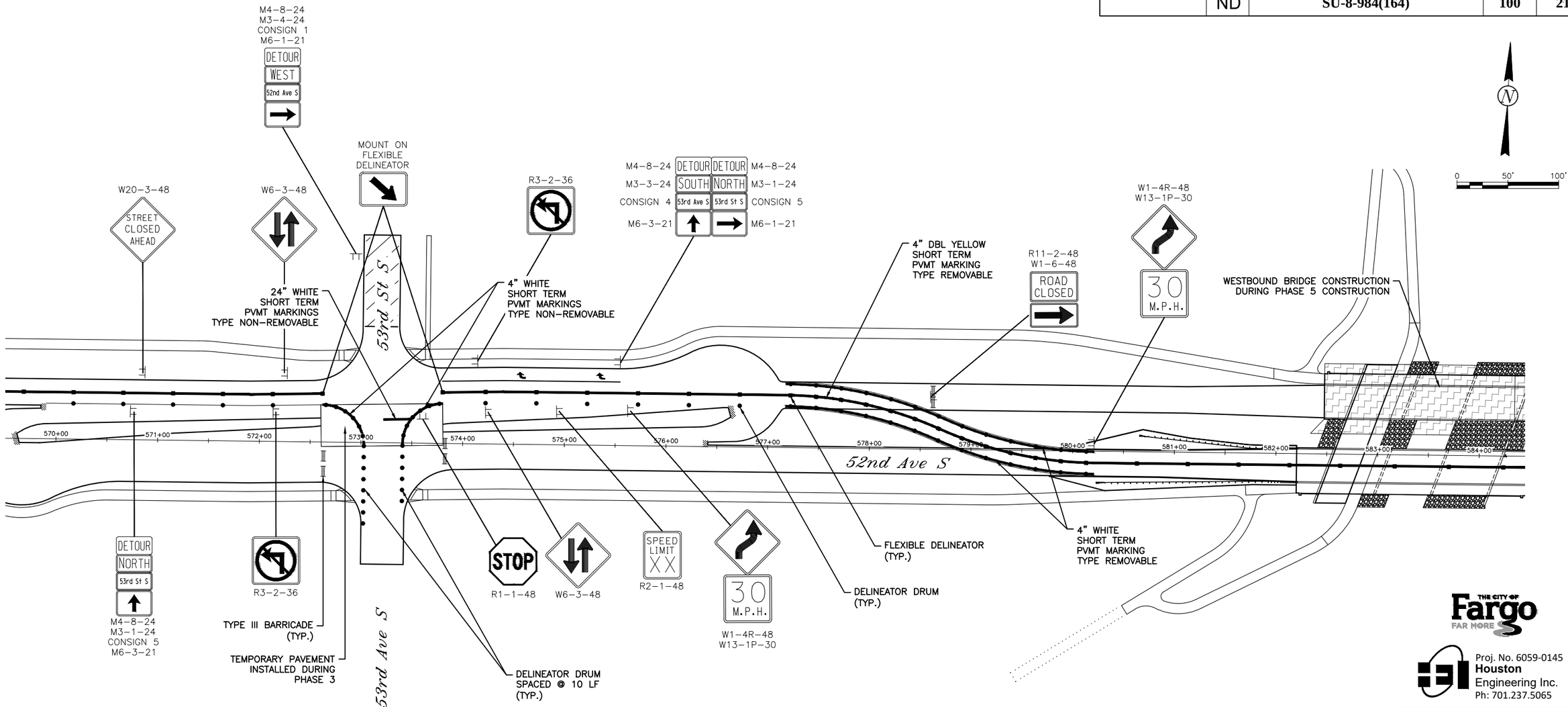
Work Zone Traffic Control - Phase 5

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	100	21



EASTBOUND BRIDGE CONSTRUCTION

PHASE 5 WORK ZONE

NOTES:

1. PHASE 5 TRAFFIC CONTROL IS FOR CONSTRUCTION OF 52ND AVE S FROM 63RD ST S TO VETERANS BLVD. THIS ALTERNATIVE IS FOR IF THE EASTBOUND BRIDGE IS COMPLETED PRIOR TO THE WESTBOUND BRIDGE.
2. ALTERNATE TRAFFIC CONTROL LAYOUT ASSUMES CONCURRENT PHASE 5 AND WESTBOUND BRIDGE CONSTRUCTION.
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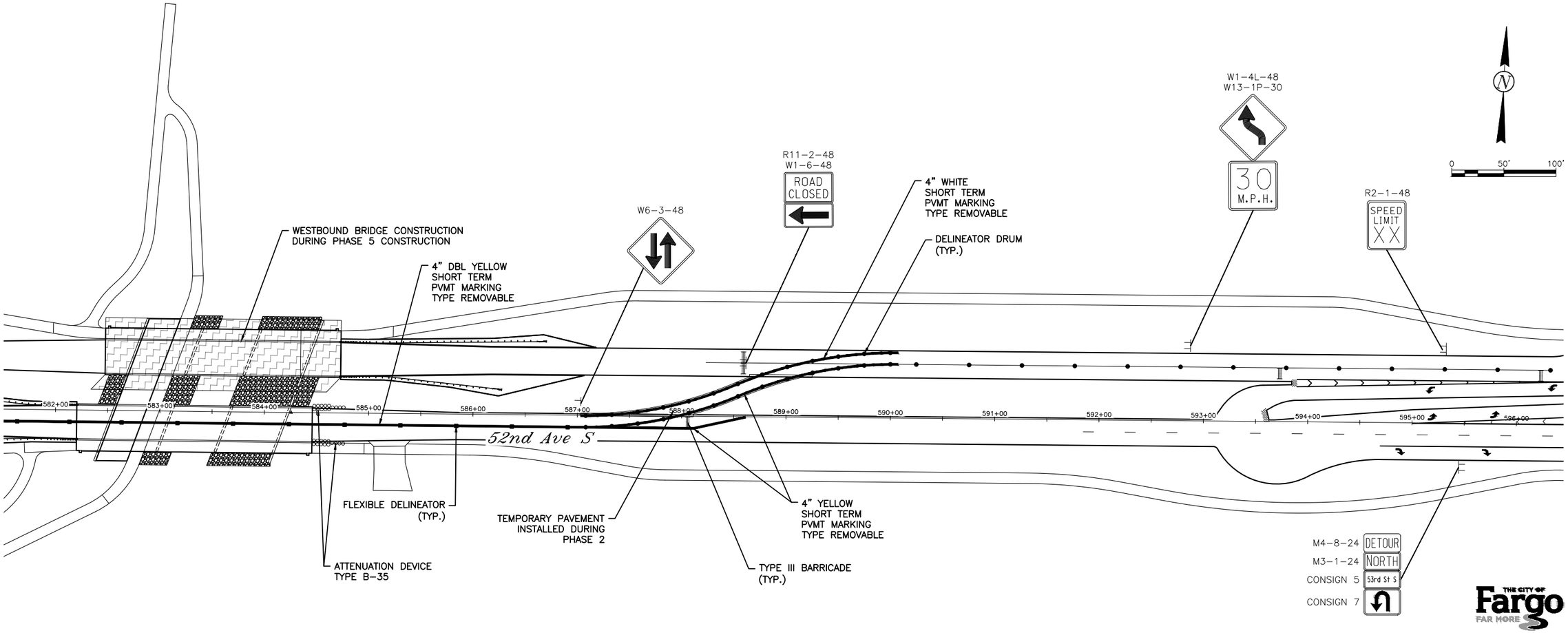
Work Zone Traffic Control - Phase 5
Alternate Bridge Crossing

52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	22



EASTBOUND BRIDGE CONSTRUCTION

PHASE 5 WORK ZONE

NOTES:

1. PHASE 5 TRAFFIC CONTROL IS FOR CONSTRUCTION OF 52ND AVE S FROM 63RD ST S TO VETERANS BLVD. THIS ALTERNATIVE IS FOR IF THE EASTBOUND BRIDGE IS COMPLETED PRIOR TO THE WESTBOUND BRIDGE.
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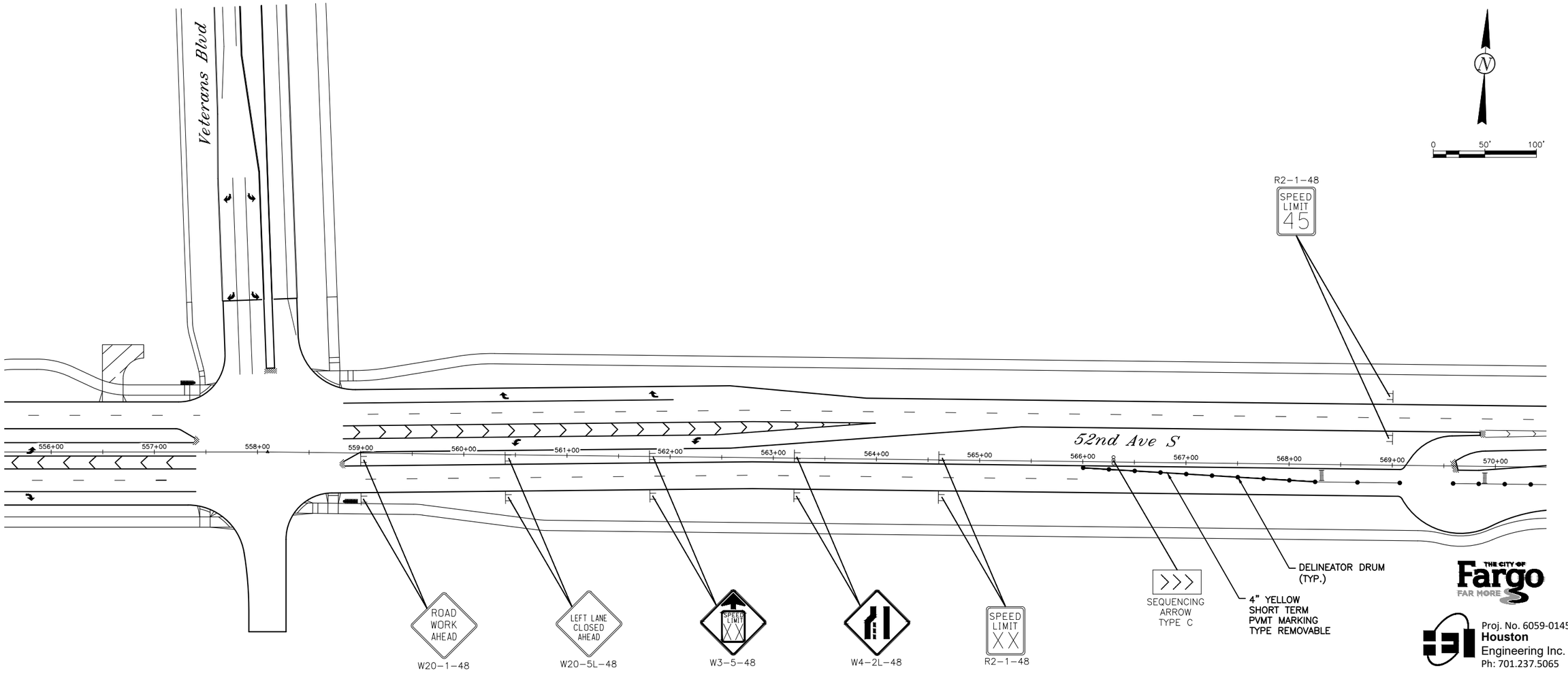
Work Zone Traffic Control - Phase 5
Alternate Bridge Crossing

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	100	23



PHASE 6 WORK ZONE

NOTES:

1. PHASE 6 TRAFFIC CONTROL IS FOR DIVERTING TRAFFIC TO THE OUTSIDE LANES OF 52ND AVE FOR CONSTRUCTION AT THE LOCATIONS SHOWN IN THE LAYOUT.
2. UPON COMPLETION OF PHASE 6, RE-ESTABLISH ALL OBLITERATED PAVEMENT MARKINGS OUTSIDE THE PROJECT LIMITS TO PRE-CONSTRUCTION CONDITION OR AS DIRECTED BY THE ENGINEER. INCLUDE ALL COSTS IN THE PRICE BID FOR TRAFFIC CONTROL.
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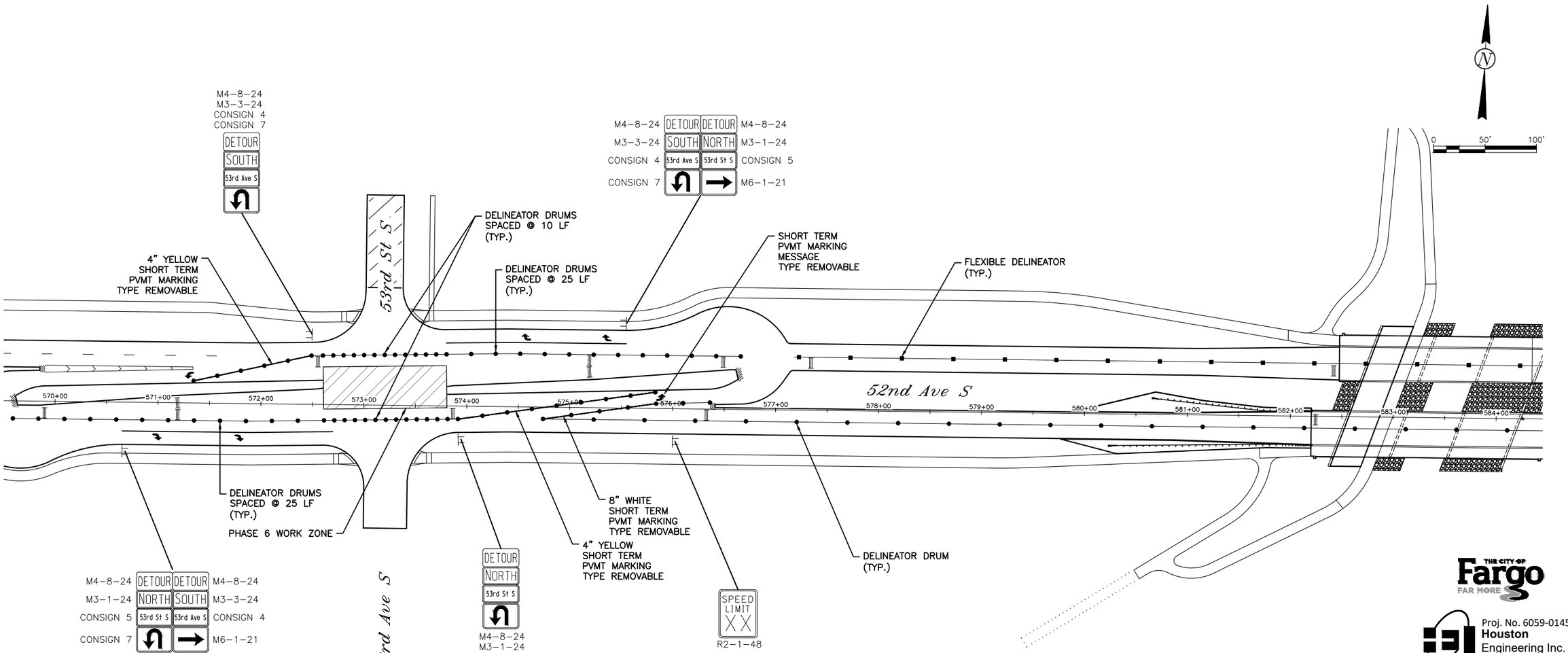
Work Zone Traffic Control - Phase 6

52nd Ave S - West of 63rd St S to 45th St S

Revised	10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	SU-8-984(164)	100	24



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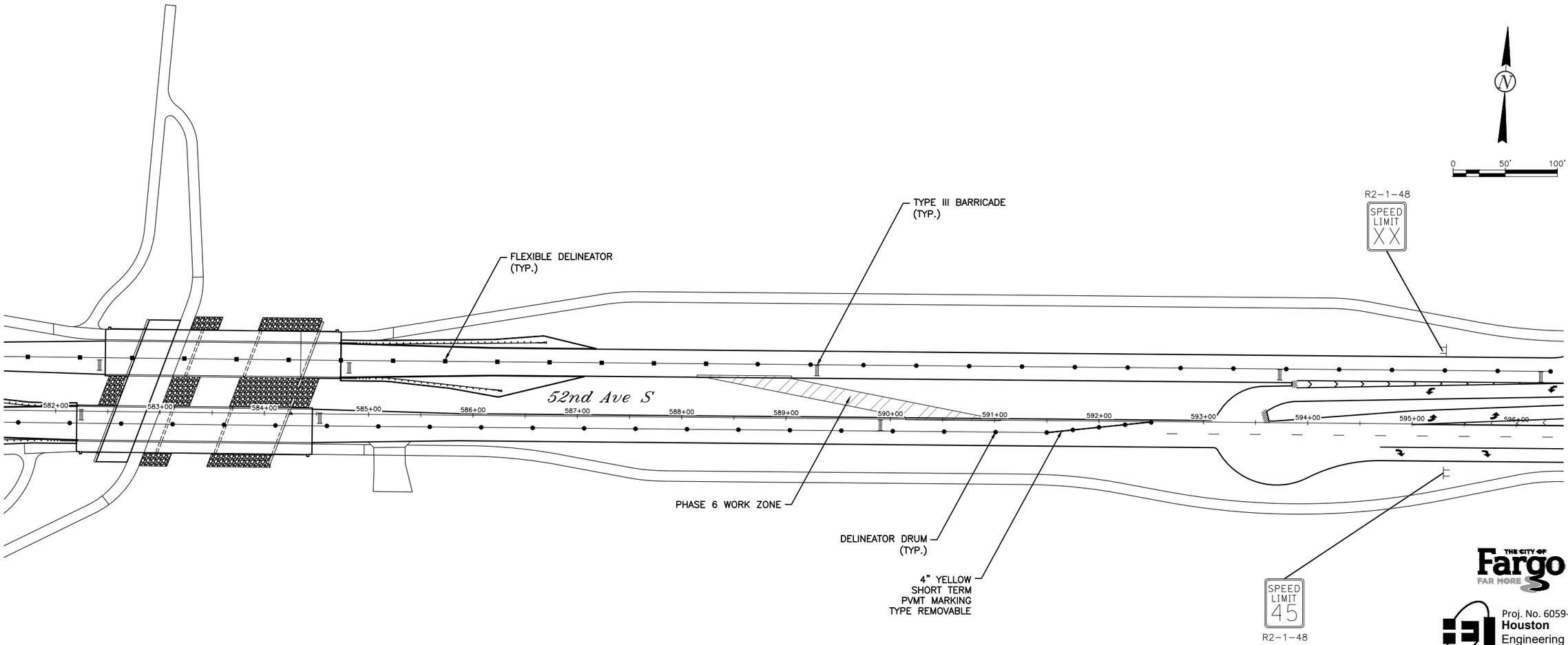
Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	100	25



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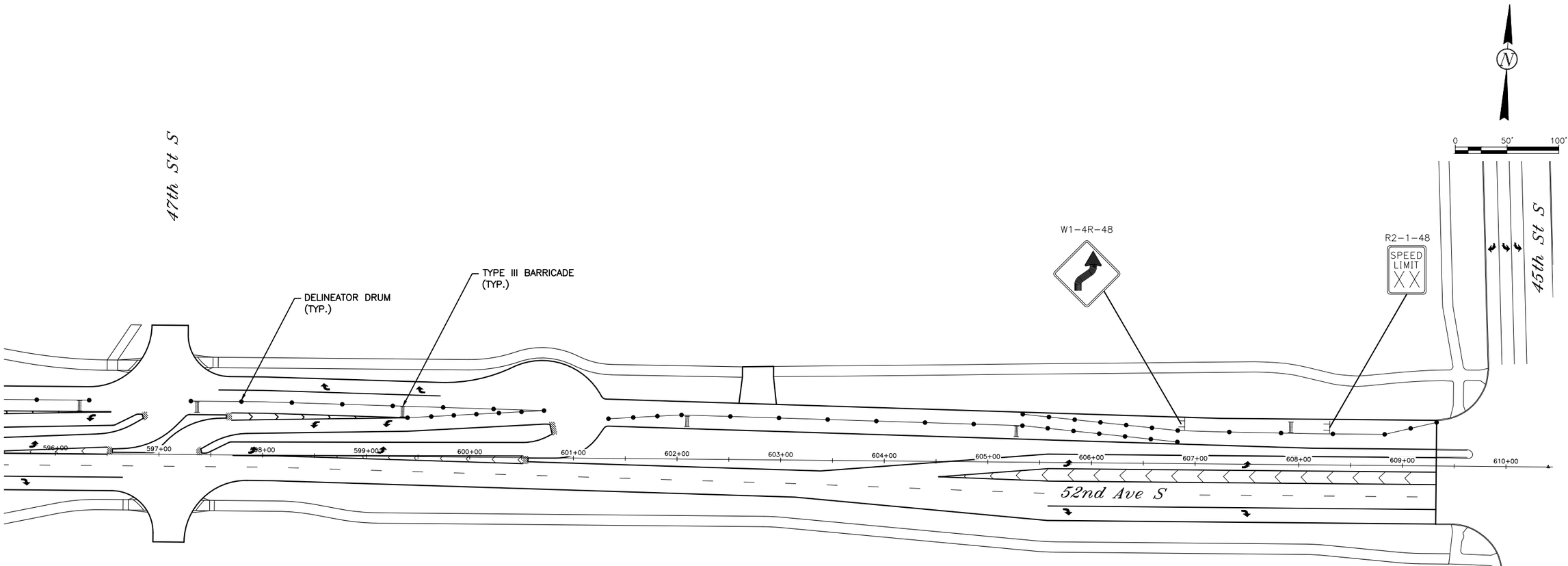
	ND	SU-8-984(164)	100	26



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52nd Ave S - West of 63rd St S to 45th St S

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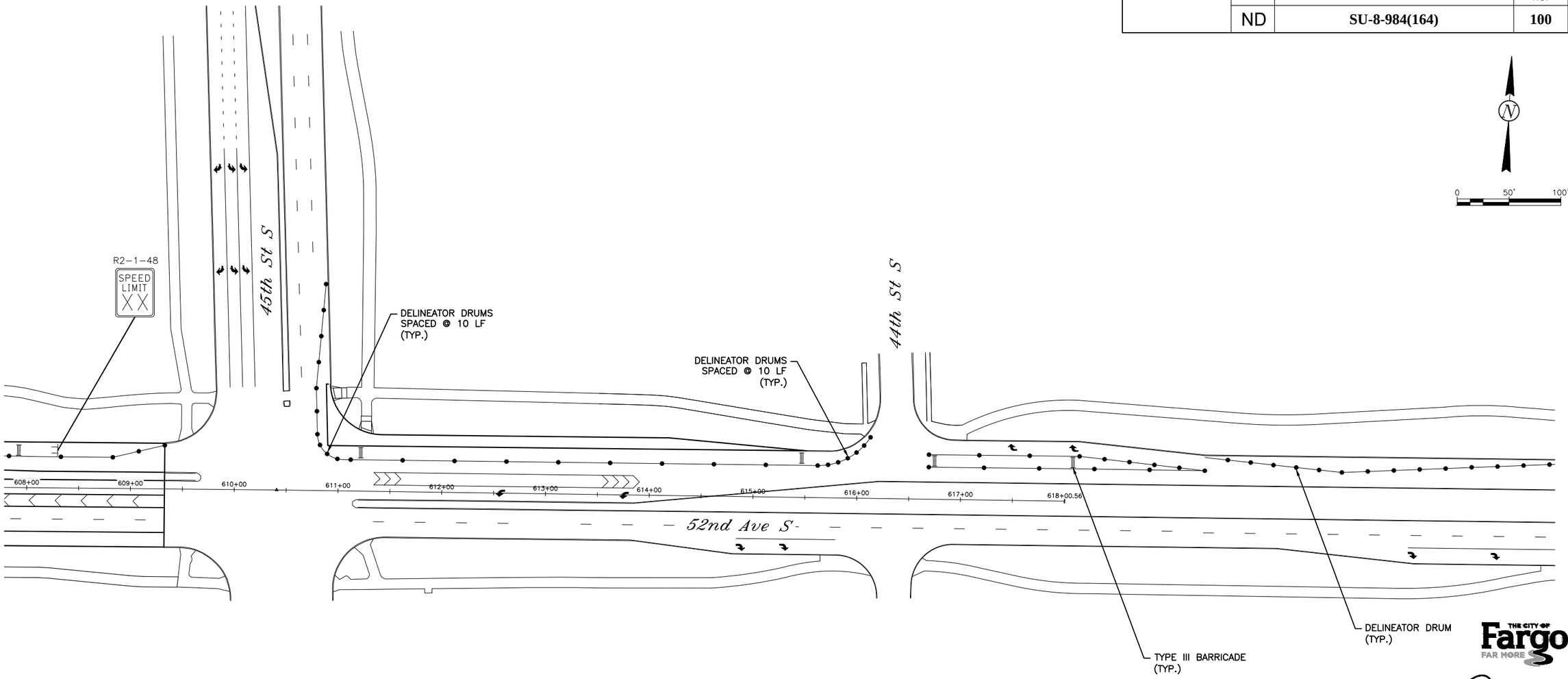
		ND	SU-8-984(164)	100	27



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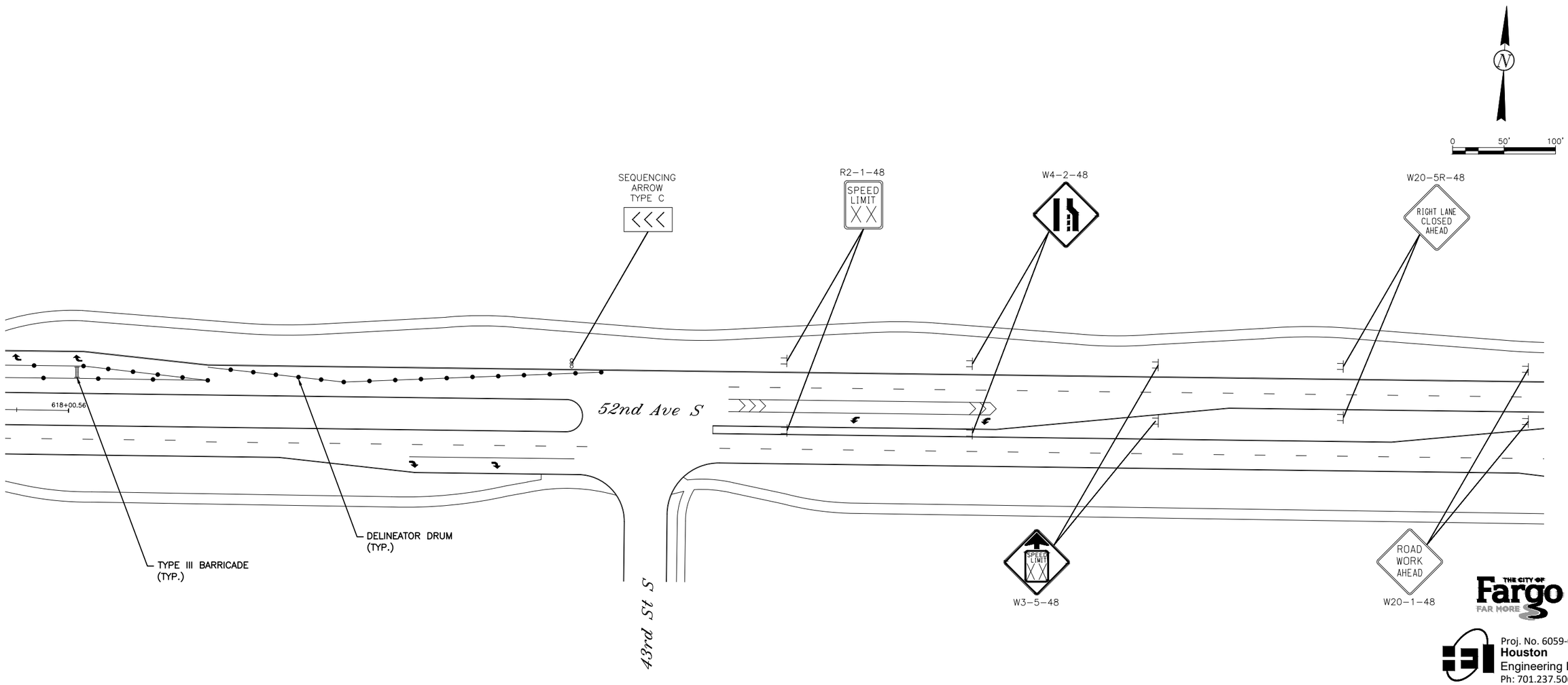
	ND	SU-8-984(164)	100	28



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NOTES:

1. PHASE 6 TRAFFIC CONTROL IS FOR DIVERTING TRAFFIC TO THE OUTSIDE LANES OF 52ND AVE FOR CONSTRUCTION AT THE LOCATIONS SHOWN IN THE LAYOUT.
2. UPON COMPLETION OF PHASE 6, RE-ESTABLISH ALL OBLITERATED PAVEMENT MARKINGS OUTSIDE THE PROJECT LIMITS TO PRE-CONSTRUCTION CONDITION OR AS DIRECTED BY THE ENGINEER. INCLUDE ALL COSTS IN THE PRICE BID FOR TRAFFIC CONTROL.
3. PAVEMENT MARKINGS SHOWN ARE FOR REFERENCE ONLY (EXISTING OR DETAILED IN SECTION 120) UNLESS MARKING TYPE IS LABELED IN THE PLAN VIEW.
4. DELINEATOR DRUMS AND FLEXIBLE DELINEATORS SHALL BE SPACED AT 25 LF FOR TAPERS AND 50 LF FOR TANGENTS UNLESS SPECIFIED OTHERWISE.

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

This document was originally issued and sealed by Adam M. Ruud Registration Number 10407 on 10/26/18 and the original document is stored in the Engineering Dept. at City Hall.

Work Zone Traffic Control - Phase 6

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/22/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	110	1

Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs IV SF	Flat Sheet For Signs XI SF	Sign Support Length 1st LF	2nd LF	3rd LF	4th LF	Vert Clear-ance FT	Support Size	Max Post Len LF	Sleeve Length 1st LF	2nd LF	3rd LF	4th LF	Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
52nd Ave S																							
512+00 Rt	W6-2	20		9.0	11.4				5.0	2.5 x 2.5 10 ga	12.9						1	4	3 x 3 7 ga			1	
514+35 Rt	R2-1	10		7.5	11.0				5.0	2.5 x 2.5 12 ga	13.3						1	4	3 x 3 7 ga				
526+21 Lt	R4-7	10		7.5	13.1				7.0	2.5 x 2.5 12 ga	13.3						1	4	3 x 3 7 ga				
528+17 Lt	W6-2	20		9.0	13.5				7.0	2.25 x 2.25 12 ga	14.1	4.7				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
528+17 Lt	W6-2	20		9.0	13.5				7.0	2.25 x 2.25 12 ga	14.1	4.7				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
531+38 Lt	R4-7	10		7.5	13.1				7.0	2.5 x 2.5 12 ga	13.3						1	4	3 x 3 7 ga				
531+70 Lt	SN 9		36.0																				Mount on Mast Arm
531+83 Lt	R3-8BD	35		7.5	12.1				7.0	2.5 x 2.5 10 ga	14.8						1	4	3 x 3 7 ga			1	
532+10 Rt	SN 8		14.5																				Mount on Mast Arm
532+27 Lt	SN 8		14.5																				Mount on Mast Arm
532+52 Rt	R3-8BD	35		7.5	12.1				7.0	2.5 x 2.5 10 ga	14.8						1	4	3 x 3 7 ga			1	
532+63 Lt	SN 10		36.0																				Mount on Mast Arm
532+82 Rt	R4-7	10		7.5	13.1				7.0	2.5 x 2.5 12 ga	13.3						1	4	3 x 3 7 ga				
535+95 Lt	W4-2R	20		9.0	13.5				7.0	2.25 x 2.25 12 ga	14.1	4.7				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
542+95 Rt	R3-4	16		9.0	12.1				7.0	2.5 x 2.5 10 ga	12.5						1	4	3 x 3 7 ga			1	
542+97 Rt	S.A. C			12.0	13.0				7.0	2.5 x 2.5 12 ga	15.1	3.6				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
543+21 Lt	S.A. A		9.0		14.0				7.0	2.25 x 2.25 12 ga	15.6	4.1				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
545+55 Lt	S.A. D			12.3	12.5				7.0	2.5 x 2.5 12 ga	13.7	4.0				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
547+08 Lt	S.A. A		9.0		14.9				7.0	2.25 x 2.25 12 ga	15.6	5.1				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
547+56 Rt	S.A. 1E		10.5		11.6				7.0	2.25 x 2.25 12 ga	12.8						1	4	2.5 x 2.5 12 ga				
547+61 Lt	S.A. C			12.0	12.9				7.0	2.5 x 2.5 12 ga	15.1	3.6				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
547+66 Lt	S.A. B			13.5	12.9				7.0	2.5 x 2.5 12 ga	13.6	4.4				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
548+16 Rt	S.A. B			13.5	12.9				7.0	2.5 x 2.5 12 ga	13.6	4.4				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
548+17 Rt	R3-5R	10		7.5	12.9				7.0	2.5 x 2.5 12 ga	13.3						1	4	3 x 3 7 ga				
548+29 Rt	S.A. C			12.0	12.9				7.0	2.5 x 2.5 12 ga	15.1	3.6				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
548+45 Lt	S.A. 1E		10.5		11.6				7.0	2.25 x 2.25 12 ga	12.8						1	4	2.5 x 2.5 12 ga				
557+23 Lt	R4-7	10		7.5	12.8				7.0	2.5 x 2.5 10 ga	15.9						1	4	3 x 3 7 ga			1	
557+54 Lt	SN 11		17.1																				Mount on Mast Arm
557+86 Lt	SN 8		14.5																				Mount on Mast Arm
557+90 Rt	SN 8		14.5																				Mount on Mast Arm
558+09 Lt	R4-7	10		7.5	12.8				7.0	2.5 x 2.5 10 ga	15.9						1	4	3 x 3 7 ga			1	
558+67 Rt	SN 11		17.1																				Mount on Mast Arm
558+95 Rt	R4-7	10		7.5	12.4				7.0	2.5 x 2.5 12 ga	13.3						1	4	3 x 3 7 ga				
568+89 Rt	S.A. C			12.0	13.3				7.0	2.5 x 2.5 12 ga	15.1	3.9				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
568+94 Rt	R3-4	16		9.0	11.4				7.0	2.5 x 2.5 10 ga	12.5						1	4	3 x 3 7 ga			1	
569+27 Lt	S.A. A		9.0		14.3				7.0	2.25 x 2.25 12 ga	15.6	4.4				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
570+94 Lt	S.A. D			12.3	10.4				7.0	2.25 x 2.25 12 ga	10.9	3.4				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
572+06 Lt	S.A. A		9.0		14.3				7.0	2.25 x 2.25 12 ga	15.6	4.4				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
572+75 Rt	S.A. 1E		10.5		11.6				7.0	2.25 x 2.25 12 ga	12.8						1	4	2.5 x 2.5 12 ga				
572+91 Lt	S.A. C			12.0	14.7	15.1			7.0	2.5 x 2.5 12 ga	16.7						2	8	3 x 3 7 ga			2	
572+95 Lt	S.A. B			13.5	14.4				7.0	2.5 x 2.5 10 ga	16.0	4.4				2.19 x 2.19 10 ga	1	4	3 x 3 7 ga			1	
573+50 Lt	S.A. C			12.0	14.0				7.0	2.5 x 2.5 12 ga	15.1	4.7				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	

THE CITY OF Fargo FAR MORE

WSB PROJECT NO. 012067-000

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Sign Summary

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/22/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	110	2

Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs IV SF	Flat Sheet For Signs XI SF	Sign Support Length 1st LF	2nd LF	3rd LF	4th LF	Vert Clear-ance FT	Support Size	Max Post Len LF	Sleeve Length 1st LF	2nd LF	3rd LF	4th LF	Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
573+53 Rt	S.A. B			13.5	10.9				7.0	2.5 x 2.5 12 ga	13.6	2.4				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
573+71 Lt	S.A. 1E		11.2		11.6				7.0	2.25 x 2.25 12 ga	13.8						1	4	2.5 x 2.5 12 ga				
574+33 Lt	S.A. A		9.0		15.1				7.0	2.25 x 2.25 12 ga	15.6	5.2				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
575+53 Lt	S.A. D			12.3	14.9				7.0	2.5 x 2.5 10 ga	16.2	4.9				2.19 x 2.19 10 ga	1	4	3 x 3 7 ga			1	
577+03 Lt	S.A. A		9.0		14.7				7.0	2.25 x 2.25 12 ga	15.6	4.8				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
577+28 Lt	R3-4	16		9.0	14.0				7.0	2.5 x 2.5 12 ga	14.4	5.4				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
577+46 Lt	S.A. C			12.0	14.7	15.1			7.0	2.5 x 2.5 12 ga	16.7						2	8	3 x 3 7 ga			2	
592+88 Rt	S.A. C			12.0	13.6				7.0	2.5 x 2.5 12 ga	15.1	4.3				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
592+94 Lt	R3-4	16		9.0	12.4				7.0	2.25 x 2.25 12 ga	13.8	4.0				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
593+25 Lt	S.A. A		9.0		15.6				7.0	2.5 x 2.5 12 ga	16.2	5.5				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
594+92 Lt	S.A. D			12.3	13.2				7.0	2.5 x 2.5 12 ga	13.7	4.7				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
596+03 Lt	S.A. A		9.0		15.1				7.0	2.25 x 2.25 12 ga	15.6	5.2				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
596+63 Rt	S.A. 1E		11.2		11.7				7.0	2.25 x 2.25 12 ga	13.5						1	4	2.5 x 2.5 12 ga				
596+77 Lt	S.A. C			12.0	14.7				7.0	2.5 x 2.5 12 ga	15.1	5.3				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
596+84 Lt	S.A. B			13.5	14.8				7.0	2.5 x 2.5 10 ga	16.0	4.8				2.19 x 2.19 10 ga	1	4	3 x 3 7 ga			1	
597+36 Rt	S.A. C			12.0	13.2				7.0	2.5 x 2.5 12 ga	15.1	3.8				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
597+37 Rt	S.A. B			13.5	13.6				7.0	2.5 x 2.5 10 ga	16.0	3.6				2.19 x 2.19 10 ga	1	4	3 x 3 7 ga			1	
597+59 Lt	S.A. 1E		11.2		11.7				7.0	2.25 x 2.25 12 ga	13.5						1	4	2.5 x 2.5 12 ga				
598+48 Lt	S.A. A		9.0		15.5				7.0	2.5 x 2.5 12 ga	16.2	5.3				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
599+71 Lt	S.A. D			12.3	14.4				7.0	2.5 x 2.5 10 ga	16.2	4.4				2.19 x 2.19 10 ga	1	4	3 x 3 7 ga			1	
601+19 Lt	S.A. A		9.0		14.2				7.0	2.25 x 2.25 12 ga	15.6	4.4				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
601+46 Lt	R3-4	16		9.0	12.7				7.0	2.25 x 2.25 12 ga	13.8	4.3				2 x 2 12 ga	1	4	3 x 3 7 ga			1	
601+62 Lt	S.A. C			12.0	14.7	15.1			7.0	2.5 x 2.5 12 ga	16.7						2	8	3 x 3 7 ga			2	
607+18 Lt	R2-1	10		7.5	12.6				7.0	2.5 x 2.5 12 ga	13.3						1	4	3 x 3 7 ga				
609+32 Lt	R4-7	10		7.5	13.5				7.0	2.5 x 2.5 10 ga	15.9						1	4	3 x 3 7 ga			1	
Sub Total			319.3	445.5		**Total**	825.1										**Total**	248		0	0	49	
Grand Total			**319.3**	**445.5**		**Total**	**825.1**										**Total**	**248**	**0**	**0**	**0**	**49**	

THE CITY OF Fargo FAR MORE

WSB WSB PROJECT NO. 012067-000

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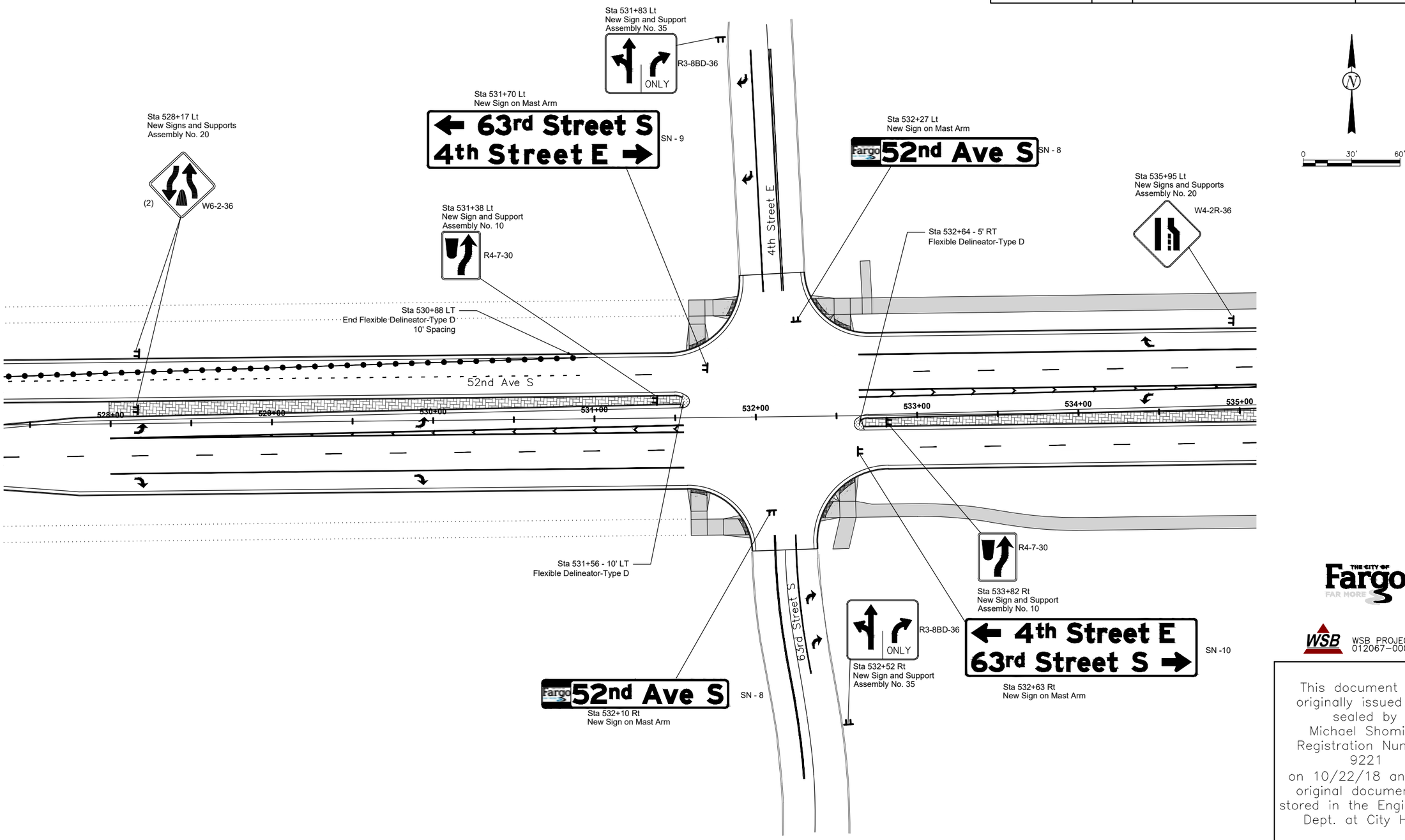
Sign Summary

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/22/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	110	5



THE CITY OF Fargo
FAR MORE

WSB PROJECT NO. 012067-000

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Proposed Signing

Sta 527+50 to Sta 536+00

52nd Ave S - West of 63rd St S to 45th St S

10/22/2018 2:57 PM Nate Wingerter K:\012067-000\Cad\Proposed\Signing

Revised 10/22/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	110	16

SIGN NUMBER	SN 8
WIDTH X HEIGHT	9'-8" x 1'-6"
BORDER WIDTH	1" (inset 0")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
532+27 LT, 532+10 RT
557+90 RT, 557+86 LT

AREA: 14.5 Sq.Ft.

Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Conv_Street Name_Overhead_Fargo.ssi

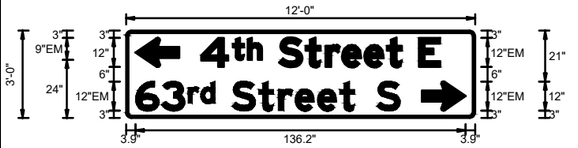
LETTER POSITION (X)																		LENGTH	SIZE	SERIES
5	2	n	d	A	v	e		S										93.1	12.1, 9/6.8, 12/9	EM 2000
19.3	30.5	42.2	49.5	62.4	75.3	85.8	93.7	102.7												

SIGN NUMBER	SN 10
WIDTH X HEIGHT	12'-0" x 3'-0"
BORDER WIDTH	1" (inset 0")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_12IN_TYPE D	3.9	21	12	18	90
ND_12IN_TYPE D	122.1	3	12	18	270

STATION(S):
532+63 RT

AREA: 36.1 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Conv_Street Name_Overhead.ssi

LETTER POSITION (X)																		LENGTH	SIZE	SERIES
4	t	h	S	t	r	e	e	t		E								101.5	12, 9/6.8, 12/9	EM 2000
31	44	50.1	63	74	82.2	89.1	98.3	107.5	113.7	122.7										
6	3	r	d	S	t	r	e	e	t		S							109.2	12, 9/6.8, 12/9	EM 2000
3.9	14.6	25.6	30.8	43.7	54.6	62.8	69.7	78.9	88.1	94.4	103.4									

SIGN NUMBER	SN 9
WIDTH X HEIGHT	12'-0" x 3'-0"
BORDER WIDTH	1" (inset 0")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ND_12IN_TYPE D	4.6	21	12	18	90
ND_12IN_TYPE D	121.4	3	12	18	270

STATION(S):
531+17 LT

AREA: 36.1 Sq.Ft.

Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Conv_Street Name_Overhead.ssi

LETTER POSITION (X)																		LENGTH	SIZE	SERIES
6	3	r	d	S	t	r	e	e	t	S								107.7	12, 9/6.8, 12/9	EM 2000
31.7	42.3	53.9	59.1	72	83	91.1	98	107.3	116.4	129.6										
4	t	h	S	t	r	e	e	t	E									106.7	12, 9/6.8, 12/9	EM 2000
4.6	17.7	25.3	38.2	50.4	60.5	68.3	78.8	89.3	102.5											

SIGN NUMBER	SN 11
WIDTH X HEIGHT	11'-5" x 1'-6"
BORDER WIDTH	1" (inset 0")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
557+53 LT, 558+67 RT

AREA: 17.2 Sq.Ft.

Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Conv_Street Name_Overhead.ssi

LETTER POSITION (X)																		LENGTH	SIZE	SERIES
V	e	t	e	r	a	n	s	B	l	v	d							114.2	12/9	EM 2000
19.3	31.2	40.4	48	57.8	64.7	75	84.7	99.6	111	115.1	125.6									

THE CITY OF Fargo
PAR MORE

WSB PROJECT NO. 012067-000

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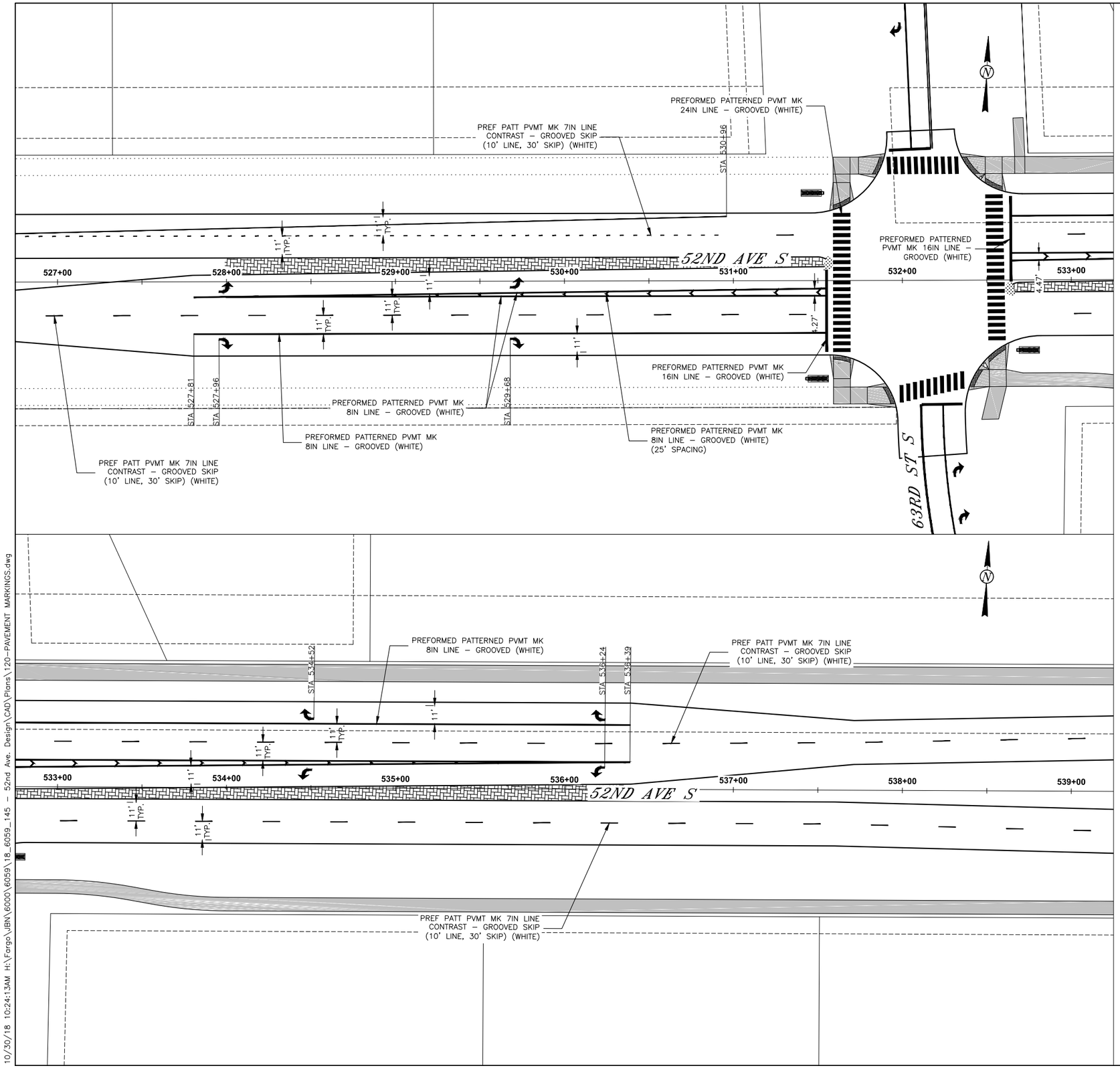
Sign Details

Various Locations

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/30/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	120	2



0 30' 60'

SPEC	CODE	BID ITEM	QTY	UNIT
762	0122	PREFORMED PATTERNED PVMT MK–MESSAGE (GROOVED) STA 527+00 TO STA 539+00	128	SF
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE–GROOVED STA 527+00 TO STA 539+00	2294	LF
762	1317	PREFORMED PATTERNED PVMT MK 16IN LINE–GROOVED STA 527+00 TO STA 539+00	99	LF
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE–GROOVED STA 527+00 TO STA 539+00	640	LF
762	1344	PREF PATT PVMT MK 7IN LINE CONTRAST–GROOVED STA 527+00 TO STA 539+00	518	LF

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

ALL ELEVATIONS ARE BASED ON THE U.S.G.S. VERTICAL DATUM OF 1988. (UNLESS NOTED OTHERWISE)

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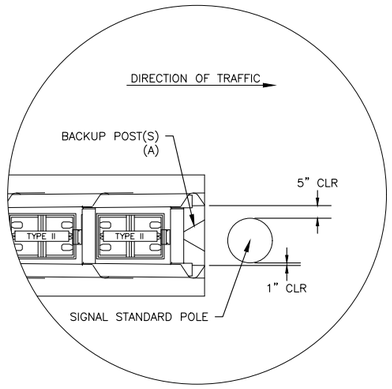
Pavement Markings

52nd Ave S - West of 63rd St S to 45th St S

10/30/18 10:24:13AM H:\Fargo\JBN\6000\6059\18_6059_145 – 52nd Ave. Design\CAD\Plans\120–PAVEMENT MARKINGS.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	130	4

23 USC § 409 Documents
NDDOT Reserves All Objections



DETAIL A

SPEC	CODE	BID ITEM	QTY	UNIT
764	9010	ATTENUATING CRASH CUSION TL-2		
		STA 531+43 RT TO STA 531+58 RT	1	EA
		STA 531+39 LT TO STA 531+53 LT	1	EA
		STA 532+68 RT TO STA 532+82 RT	1	EA
		TOTAL	3	EA

(A) INSTALL THE CONCRETE SLAB AND STEEL BACKUP POST(S) IN ACCORDANCE WITH THE CRASH CUSHION MANUFACTURER'S RECOMMENDATIONS.

INCLUDE ALL COSTS TO INSTALL THE CONCRETE SLAB AND STEEL BACKUP POST IN THE CONTRACT UNIT PRICE BID FOR "ATTENUATING CRASH CUSHION TL-2."

THE CITY OF Fargo FAR MORE

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Houston Engineering Inc.
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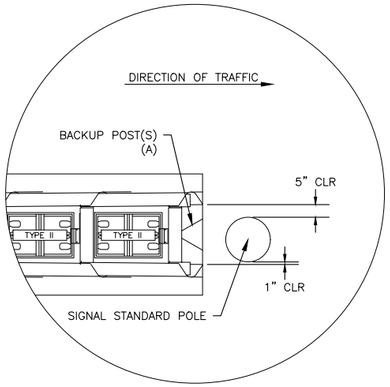
Guardrail - Traffic Signal Layout

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:20:39AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\130-GUARDRAIL LAYOUT.dwg

Revised 10/26/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	130	5

23 USC § 409 Documents
NDDOT Reserves All Objections



DETAIL A

SPEC CODE	BID ITEM	QTY	UNIT
764 9010	ATTENUATING CRASH CUSION TL-2		
	STA 557+24 LT TO STA 557+39 LT	1	EA
	STA 558+84 RT TO STA 558+99 RT	1	EA
	TOTAL	2	EA

(A) INSTALL THE CONCRETE SLAB AND STEEL BACKUP POST(S) IN ACCORDANCE WITH THE CRASH CUSHION MANUFACTURER'S RECOMMENDATIONS.

INCLUDE ALL COSTS TO INSTALL THE CONCRETE SLAB AND STEEL BACKUP POST IN THE CONTRACT UNIT PRICE BID FOR "ATTENUATING CRASH CUSHION TL-2."

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

ALL ELEVATIONS ARE BASED ON THE U.S.G.S. VERTICAL DATUM OF 1988. (UNLESS NOTED OTHERWISE)

This document was originally issued and sealed by Adam M. Ruud Registration Number 10407 on 10/26/18 and the original document is stored in the Engineering Dept. at City Hall.

Guardrail - Traffic Signal Layout

52nd Ave S - West of 63rd St S to 45th St S

10/23/18 09:20:49AM H:\Fargo\JBN\6000\6059\18_6059_145 - 52nd Ave. Design\CAD\Plans\130-GUARDRAIL LAYOUT.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-984(164)	140	1

Light Standards (1)							
No.	Station	Offset	Wattage	Circuit	Mounting	Pole Ht.	Breakaway
L1	526+33	Center In Median	215	A1	Twin	40'	H Base
L2	528+33	Center In Median	215	A1	Twin	40'	H Base
L3	530+33	Center In Median	215	A1	Twin	40'	H Base
L4	531+47	Center In Median	215	A1	Twin	40'	H Base
L5	(2)		215	A1	Combo std	40'	(2)
L6	(2)		215	A1	Combo std	40'	(2)
L7	(2)		215	A2	Combo std	40'	(2)
L8	(2)		215	A2	Combo std	40'	(2)
L9	533+00	Center In Median	215	A2	Twin	40	H Base
L10	534+90	Center In Median	215	A2	Twin	40'	H Base
L11	536+80	Center In Median	215	A2	Twin	40'	H Base
L12	538+70	Center In Median	215	A2	Twin	40'	H Base
L13	540+59	Center In Median	215	A2	Twin	40'	H Base
L14	542+49	Center In Median	215	A2	Twin	40'	H Base

Notes:

(1) The conductor required for street light standards between distribution conductors and luminaires shall consist of No. 12 AWG - USE.

(2) Install luminaire on combination signal standard light standard extension, refer to section 150.

Lighting Quantites (A)(B)									
Concrete Foundation - Highway Lighting	1.5" Diameter HDPE Conduit	Underground Conductor No. 6 - USE	Conductor No. 12 AWG - USE	Luminaire Type "A"	Twin Tenon "T" adapter	Single 1' tenon adapter	Double 1' tenon adapter @ 90 degrees	LT STD 40FT Pole Breakaway H Base	Lighting System A
EA	LF	LF	LF	EA	EA	EA	EA	EA	EA
10	2516	7342	2400	25	10	3	1	10	1

(A) Include the cost for all items tabulated in the unit price bid for "Lighting System A"

(B) Quantities are completed according to NDDOT Specifications.

Light Standards - Circuit A1 & A2					
Light Std	Station	Conduit Runs		Cable Runs	
		LF	Dia	LF	Type
L1 L2	526+33 to 528+33	232	1.5	722	(3) No. 6 USE
L2 L3	528+33 to 530+33	206	1.5	644	(3) No. 6 USE
L3 PB 16	530+33 to Signal Pull Box 16	116	1.5	376	(3) No. 6 USE
PB 16 L4	Signal Pull Box 16 to 531+47	10	1.5	58	(3) No. 6 USE
PB 16 PB 17	Signal Pull Box 16 to Signal Pull Box 17	56	1.5	198	(3) No. 6 USE
PB 17 L6	Signal Pull Box 17 to Signal Pole 18	23	1.5	153	(6) No. 6 USE
PB 16 PB 12	Signal Pull Box 16 to Signal Pull Box 12	82	1.5	276	(3) No. 6 USE
PB 12 L5	Signal Pull Box 12 to Signal Pole 10	28	1.5	183	(6) No. 6 USE
PB 12 FP A	Signal Pull Box 12 to Combo Cabinet	125	1.5	413	(3) No. 6 USE
FP A PB 5	Combo Cabinet to Signal Pull Box 5	38	1.5	152	(3) No. 6 USE
PB 5 L8	Signal Pull Box 5 to Signal Pole 6	15	1.5	105	(6) No. 6 USE
PB 5 PB 27	Signal Pull Box 5 to Signal Pull Box 27 to	48	1.5	174	(3) No. 6 USE
PB 27 L9	Signal Pull Box 27 to 533+00	30	1.5	118	(3) No. 6 USE
PB 27 PB 25	Signal Pull Box 27 to Signal Pull Box 25 to	68	1.5	234	(3) No. 6 USE
PB 25 PB 23	Signal Pull Box 25 to Signal Pull Box 23 to	33	1.5	129	(3) No. 6 USE
PB 23 L7	Signal Pull Box 23 to Signal Pole 21	23	1.5	84	(6) No. 6 USE
L9 L10	533+00 to 534+90	196	1.5	616	(3) No. 6 USE
L10 L11	534+90 to 536+80	196	1.5	614	(3) No. 6 USE
L11 L12	536+80 to 538+70	196	1.5	614	(3) No. 6 USE
L12 L13	538+70 to 540+59	196	1.5	614	(3) No. 6 USE
L13 L14	540+59 to 542+49	196	1.5	614	(3) No. 6 USE
FP A	Combo Cabinet 532+46-90' rt	76	1.5	251	(3) No. 6 USE
PB 17 PB 23	Signal Pull Box 17 to Signal Pull Box 23	114	1.5		
PB 23 EX LT	Signal Pull Box 23 to 532+28-117' lt	53	1.5		
L14 L15	542+49 to 544+03	160	1.5		

Description	Footing Depth "D" 24" Diameter
Light Standard 40' Mounting Height (twin head)	7'

THE CITY OF Fargo FAR MORE

WSB WSB PROJECT NO. 012067-000

This document was originally issued and sealed by Sean Delmore Registration Number 9177 on 10/23/18 and the original document is stored in the Engineering Dept. at City Hall.

LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	2

Light Standards (1)							
No.	Station	Offset	Wattage	Circuit	Mounting	Pole Ht.	Breakaway
L15	544+03	Center in Median	215	B1	Twin	40'	H Base
L16	545+58	Center in Median	215	B1	Twin	40'	H Base
L17	547+13	Center in Median	215	B1	Twin	40'	H Base
L18	548+79	Center in Median	215	B1	Twin	40'	H Base
L19	550+45	Center in Median	215	B1	Twin	40'	H Base
L20	552+13	Center in Median	215	B1	Twin	40'	H Base
L21	553+81	Center in Median	215	B1	Twin	40'	H Base
L22	555+48	Center in Median	215	B2	Twin	40'	H Base
L23	557+19	Center in Median	215	B2	Twin	40'	H Base
L24	(2)		215	B2	Combo std	40'	(2)
L25	(2)		215	B2	Combo std	40'	(2)
L26	(2)		215	B2	Combo std	40'	(2)
L27	559+07	Center in Median	215	B2	Twin	40'	H Base
L28	(2)		215	B2	Combo std	40'	(2)
Existing	574+68	108' rt		Existing	Std	40'	H Base

Notes:

(1) The conductor required for street light standards between distribution conductors and luminaires shall consist of No. 12 AWG - USE.

(2) Install luminaire on combination signal standard light standard extension, refer to section 150.

Lighting Quantites (A)(B)													
Concrete Foundation - Highway Lighting (C)	1.5" Diameter HDPE Conduit	Underground Conductor No. 4 - USE	Underground Conductor No. 6 - USE	Conductor No. 12 AWG - USE	Luminaire Type "A"	Twin Tenon "T" adapter	Single 1' tenon adapter	Double 1' tenon adapter @ 90 degrees	LT STD 40FT Pole Breakaway H Base	Remove Concrete Foundation	Salvage Light STD	Install Light STD	Lighting System A
EA	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA
11	3180	5372	3531	2880	26	10	2	2	10	2	2	1	1

(A) Include the cost for all items tabulated in the unit price bid for "Lighting System A"

(B) Quantities are completed according to NDDOT Specifications.

(C) New foundations for salvaged light shall be 24" x 6'.

Light Standards - Circuit B1 & B2					
Light Std Number	Station	Conduit Runs		Cable Runs	
		LF	Dia	LF	Type
L15 L16	544+03 to 545+58	161	1.5	509	(3) No. 4 USE
L16 L17	545+58 to 547+13	162	1.5	512	(3) No. 4 USE
L17 L18	547+13 to 548+79	172	1.5	542	(3) No. 4 USE
L18 L19	548+79 to 550+45	172	1.5	542	(3) No. 4 USE
L19 L20	550+45 to 552+13	174	1.5	548	(3) No. 4 USE
L20 L21	552+13 to 553+81	174	1.5	548	(3) No. 4 USE
L21 PB 16	553+81 to Signal Pull Box 16	412	1.5	1251	(3) No. 4 USE
PB 16 PB 17	Signal Pull Box 16 to Signal Pull Box 17	45	1.5	150	(3) No. 4 USE
PB 17 PB 20	Signal Pull Box 17 to Signal Pull Box 20 to	64	1.5	222	(3) No. 4 USE
PB 20 PB 22	Signal Pull Box 20 to Signal Pull Box 22	65	1.5	225	(3) No. 4 USE
PB 22 PB 24	Signal Pull Box 22 to Signal Pull Box 24	60	1.5	210	(3) No. 4 USE
PB 24 FP B	Signal Pull Box 24 to Combo Cabinet	25	1.5	113	(3) No. 4 USE
L22 L23	555+48 to 557+19	178	1.5	560	(3) No. 6 USE
L23 PB 16	557+19 to Signal Pull Box 16	14	1.5	57	(3) No. 6 USE
PB 16 PB 14	Signal Pull Box 16 to Signal Pull Box 14	77	1.5	261	(3) No. 6 USE
PB 14 L25	Signal Pull Box 14 to Signal Pole 11	25	1.5	165	(6) No. 6 USE
PB 8 L26	Signal Pull Box 8 to Signal Pole 7	12	1.5	87	(6) No. 6 USE
PB 8 PB 6	Signal Pull Box 8 to Signal Pull Box 6	100	1.5	330	(3) No. 6 USE
PB 6 L27	Signal Pull Box 6 to 559+07	18	1.5	82	(3) No. 6 USE
PB 6 PB 4	Signal Pull Box 6 to Signal Pull Box 4	80	1.5	270	(3) No. 6 USE
PB 4 PB 24	Signal Pull Box 4 to Signal Pull Box 24	44	1.5	162	(3) No. 6 USE
PB 24 L28	Signal Pull Box 24 to Signal Pole 23	17	1.5	117	(6) No. 6 USE
PB 24 PB 22	Signal Pull Box 24 to Signal Pull Box 22	60	1.5	210	(3) No. 6 USE
PB 22 PB 20	Signal Pull Box 22 to Signal Pull Box 20 to	65	1.5	225	(3) No. 6 USE
PB 20 PB 17	Signal Pull Box 20 to Signal Pull Box 17	64	1.5	222	(3) No. 6 USE
PB 17 L24	Signal Pull Box 17 to Signal Pole 18	32	1.5	207	(6) No. 6 USE
PB 17 PB 16	Signal Pull Box 17 to Signal Pull Box 16	65	1.5	225	(3) No. 6 USE
PB 4 FP B	Signal Pull Box 4 to Combo Cabinet	38	1.5	152	(3) No. 6 USE
PB 22 EX LT	Signal Pull Box 22 to 557+94- 247' lt	167	1.5		
L27 L29	559+07 to 561+03	202	1.5		
PB 14 PB 8	Signal Pull Box 14 to Signal Pull Box 8 to	174	1.5		
EX LT	547+64-108' rt to 547+64-167' rt	62	1.5	199	(3) No. 6 USE

Description	Footing Depth "D" 24" Diameter
Light Standard 40' Mounting Height (twin head)	7'

THE CITY OF Fargo FAR MORE

WSB WSB PROJECT NO. 012067-000

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LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	3

Light Standards (1)							
No.	Station	Offset	Wattage	Circuit	Mounting	Pole Ht.	Breakaway
L29	561+03	Center in Median	215	C1	Twin	40'	H Base
L30	562+99	Center in Median	215	C1	Twin	40'	H Base
L31	564+95	Center in Median	215	C1	Twin	40'	H Base
L32	566+90	Center in Median	215	C1	Twin	40'	H Base
L33	568+86	Center in Median	215	C1	Twin	40'	H Base
L34	570+57	Center in Median	215	C1	Twin	40'	H Base
L35	572+28	Center in Median	215	C1	Twin	40'	H Base
L36	573+99	Center in Median	215	C2	Twin	40'	H Base
L37	575+61	Center in Median	215	C2	Twin	40'	H Base
L38	577+23	Center in Median	215	C2	Twin	40'	H Base
L39	578+92	Center in Median	215	C2	Twin	40'	H Base
L40	580+60	Center in Median	215	C2	Twin	40'	H Base
L41	582+28	Center in Median	215	C2	Twin	40'	H Base
L42	582+81	(2)	25	C2	-	-	(2)
L43	582+91	(2)	25	C2	-	-	(2)
L44	583+08	(2)	25	C2	-	-	(2)
L45	583+17	(2)	25	C2	-	-	(2)
Existing	572+97	82' rt		Existing	Std	40'	H Base

Notes:

(1) The conductor required for street light standards between distribution conductors and luminaires shall consist of No. 12 AWG - USE.

(2) See detail.

Lighting Quantites (A)(B)															
Concrete Foundation - Highway Lighting (C)	0.75" Diameter Galvanized Rigid Steel Conduit	1.5" Diameter HDPE Conduit	Underground Conductor No. 6 - USE	Conductor No. 10 AWG - USE	Conductor No. 12 AWG - USE	Feed Point - Type IV - Pad Mtd	Feed Point Cabinet Foundation Pad	Luminaire Type "A"	Twin Tenon "T" adapter	LT STD 40FT Pole Breakaway H Base	Remove Concrete Foundation	Salvage Light STD	Install Light STD	Pull Box	Lighting System A
EA	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
14	368	2478	7830	1164	2740	1	1	26	13	13	1	1	1	1	1

(A) Include the cost for all items tabulated in the unit price bid for "Lighting System A"

(B) Quantities are completed according to NDDOT Specifications.

(C) New foundations for salvaged light shall be 24" x 6'.

Light Standards - Circuit C1 & C2					
Light Std Number	Station	Conduit Runs		Cable Runs	
		LF	Dia	LF	Type
L29 L30	561+03 to 562+99	202	1.5	632	(3) No. 6 USE
L30 L31	562+99 to 564+95	202	1.5	632	(3) No. 6 USE
L31 L32	564+95 to 566+90	202	1.5	632	(3) No. 6 USE
L32 L33	566+90 to 568+86	202	1.5	632	(3) No. 6 USE
L33 L34	568+86 to 570+57	178	1.5	560	(3) No. 6 USE
L34 L35	570+57 to 572+28	178	1.5	560	(3) No. 6 USE
L35 FP C	572+28 to 573+84-104' lt	248	1.5	780	(3) No. 6 USE
FP C L36	573+84-104' lt to 573+99	94	1.5	318	(3) No. 6 USE
L36 L37	573+99 to 575+61	168	1.5	530	(3) No. 6 USE
L37 L38	575+61 to 577+23	169	1.5	533	(3) No. 6 USE
L38 L39	577+23 to 578+92	175	1.5	551	(3) No. 6 USE
L39 L40	578+92 to 580+60	175	1.5	551	(3) No. 6 USE
L40 L41	580+60 to 582+28	175	1.5	551	(3) No. 6 USE
L41 PB	582+28 to 582+37	16	1.5	220	(12) No. 6 USE
PB L42	582+37 to 582+81-32' rt	94	0.75	297	(3) No. 10 USE
PB L43	582+37 to 582+91-2' rt	63	0.75	204	(3) No. 10 USE
PB L44	582+37 to 583+08-45' lt	90	0.75	285	(3) No. 10 USE
PB L45	582+37 to 583+17-75' lt	121	0.75	378	(3) No. 10 USE
EX LT	572+97-82' rt to 572+97-123' rt	45	1.5	148	(3) No. 6 USE
FP C EX LT	573+84-104' lt to 573+35-133' lt	49	1.5		

Description	Footing Depth "D" 24" Diameter
Light Standard 40' Mounting Height (twin head)	7'

THE CITY OF Fargo FAR MORE

WSB WSB PROJECT NO. 012067-000

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LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	4

Light Standards (1)							
No.	Station	Offset	Wattage	Circuit	Mounting	Pole Ht.	Breakaway
L46	584+58	Center In Median	215	D1	Twin	40'	H Base
L47	586+50	Center In Median	215	D1	Twin	40'	H Base
L48	588+50	Center In Median	215	D1	Twin	40'	H Base
L49	590+50	Center In Median	215	D1	Twin	40'	H Base
L50	592+50	Center In Median	215	D1	Twin	40'	H Base
L51	594+40	Center In Median	215	D1	Twin	40'	H Base
L52	596+30	Center In Median	215	D1	Twin	40'	H Base
L53	597+90	Center In Median	215	D2	Twin	40'	H Base
L54	599+70	Center In Median	215	D2	Twin	40'	H Base
L55	601+50	Center In Median	215	D2	Twin	40'	H Base
L56	603+45	Center In Median	215	D2	Twin	40'	H Base
L57	605+40	Center In Median	215	D2	Twin	40'	H Base
L58	607+35	Center In Median	215	D2	Twin	40'	H Base
L59	609+30	Center In Median	215	D2	Twin	40'	H Base
Existing	597+28	85' lt		D4	Std	40'	H Base

Notes:

(1) The conductor required for street light standards between distribution conductors and luminaires shall consist of No. 12 AWG - USE.

Lighting Quantites (A)(B)													
Concrete Foundation - Highway Lighting (C)	1.5" Diameter HDPE Conduit	Underground Conductor No. 6 - USE	Conductor No. 12 AWG - USE	Feed Point - Type IV - Pad Mtd	Feed Point Cabinet Foundation Pad	Luminaire Type "A"	Twin Tenon "T" adapter	Double 1' tenon adapter @ 90 degrees	LT STD 40FT Pole Breakaway H Base	Remove Concrete Foundation	Salvage Light STD	Install Light STD	Lighting System A
EA	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
15	2974	9569	2720	1	1	34	14	1	14	8	8	1	1

(A) Include the cost for all items tabulated in the unit price bid for "Lighting System A"

(B) Quantities are completed according to NDDOT Specifications.

(C) New foundations for salvaged light shall be 24" x 6'.

Light Standards - Circuit D1 & D2					
Light Std Number	Station	Conduit Runs		Cable Runs	
		LF	Dia	LF	Type
L46 L47	584+58 to 586+50	199	1.5	623	(3) No. 6 USE
L47 L48	586+50 to 588+50	206	1.5	644	(3) No. 6 USE
L48 L49	588+50 to 590+50	206	1.5	644	(3) No. 6 USE
L49 L50	590+50 to 592+50	206	1.5	644	(3) No. 6 USE
L50 L51	592+50 to 594+40	196	1.5	614	(3) No. 6 USE
L51 L52	594+40 to 596+30	198	1.5	620	(3) No. 6 USE
L52 FP D	596+30 to 597+82-116' lt	242	1.5	762	(3) No. 6 USE
FP D L53	597+82-116' lt 597+90	106	1.5	354	(3) No. 6 USE
L53 L54	597+90 to 599+70	188	1.5	590	(3) No. 6 USE
L54 L55	599+70 to 601+50	187	1.5	587	(3) No. 6 USE
L55 L56	501+50 to 603+45	202	1.5	632	(3) No. 6 USE
L56 L57	603+45 to 605+40	201	1.5	629	(3) No. 6 USE
L57 L58	605+40 to 607+35	202	1.5	632	(3) No. 6 USE
L58 L59	607+35 to 609+30	202	1.5	632	(3) No. 6 USE
L59 PB 18	609+30 to Signal Pull Box 18	20	1.5	75	(3) No. 6 USE
PB 18 PB 16	Signal Pull Box 18 to Signal Pull Box 16	81	1.5	273	(3) No. 6 USE
PB 16 L60	Signal Pull Box 16 to Signal Pole 14	47	1.5	297	(6) No. 6 USE
FP D EX LT	597+82-116' lt to 597+28-85' lt	60	1.5	216	(3) No. 6 USE
EX LT	597+28-85' lt 597+28-134' lt	25	1.5	101	(3) No. 6 USE

Description	Footing Depth "D" 24" Diameter
Light Standard 40' Mounting Height (twin head)	7'

Light Standards (1)							
No.	Station	Offset	Wattage	Circuit	Mounting	Pole Ht.	Breakaway
L61	(2)		215	E2	Combo std	40'	(2)
L62	(2)		215	E1	Combo std	40'	(2)

Notes:

(1) The conductor required for street light standards between distribution conductors and luminaires shall consist of No. 12 AWG - USE.

(2) Install luminaires on combination signal standard light standard 1' extensions. refer to section 150.

Lighting Quantites (A)(B)						
1.5" Diameter HDPE Conduit	Underground Conductor No. 6 - USE	Conductor No. 12 AWG - USE	Luminaire Type "A"	Double 1' tenon adapter @ 90 degrees	Remove Luminaire	Lighting System B
LF	LF	LF	EA	EA	EA	EA
496	1321	480	4	2	4	1

(A) Include the cost for all items tabulated in the unit price bid for "Lighting System B"

(B) Quantities are completed according to NDDOT Specifications.

Light Standards - Circuit E1, E2, E3, & E4					
Light Std Number	Station	Conduit Runs		Cable Runs	
		LF	Dia	LF	Type
EX PB L61	Existing Signal Pull Box to Signal Pole 27	16	1.5	111	(6) No. 6 USE
EX PB PB 30	Existing Signal Pull Box to Signal Pull Box 30	44	1.5	162	(3) No. 6 USE
PB 30 FP E	Signal Pull Box 30 to Combo Cabinet	42	1.5	164	(3) No. 6 USE
FP E PB 6	Combo Cabinet to Signal Pull Box 6	93	1.5	317	(3) No. 6 USE
PB 6 PB 8	Signal Pull Box 6 to Signal Pull Box 8	56	1.5	198	(3) No. 6 USE
PB 8 L62	Signal Pull Box 8 to Existing Pole	59	1.5	369	(6) No. 6 USE
FP E PB 6	Combo Cabinet to Signal Pull Box 6	93	1.5		
FP E PB 6	Combo Cabinet to Signal Pull Box 6	93	1.5		

THE CITY OF Fargo FAR MORE

WSB WSB PROJECT NO. 012067-000

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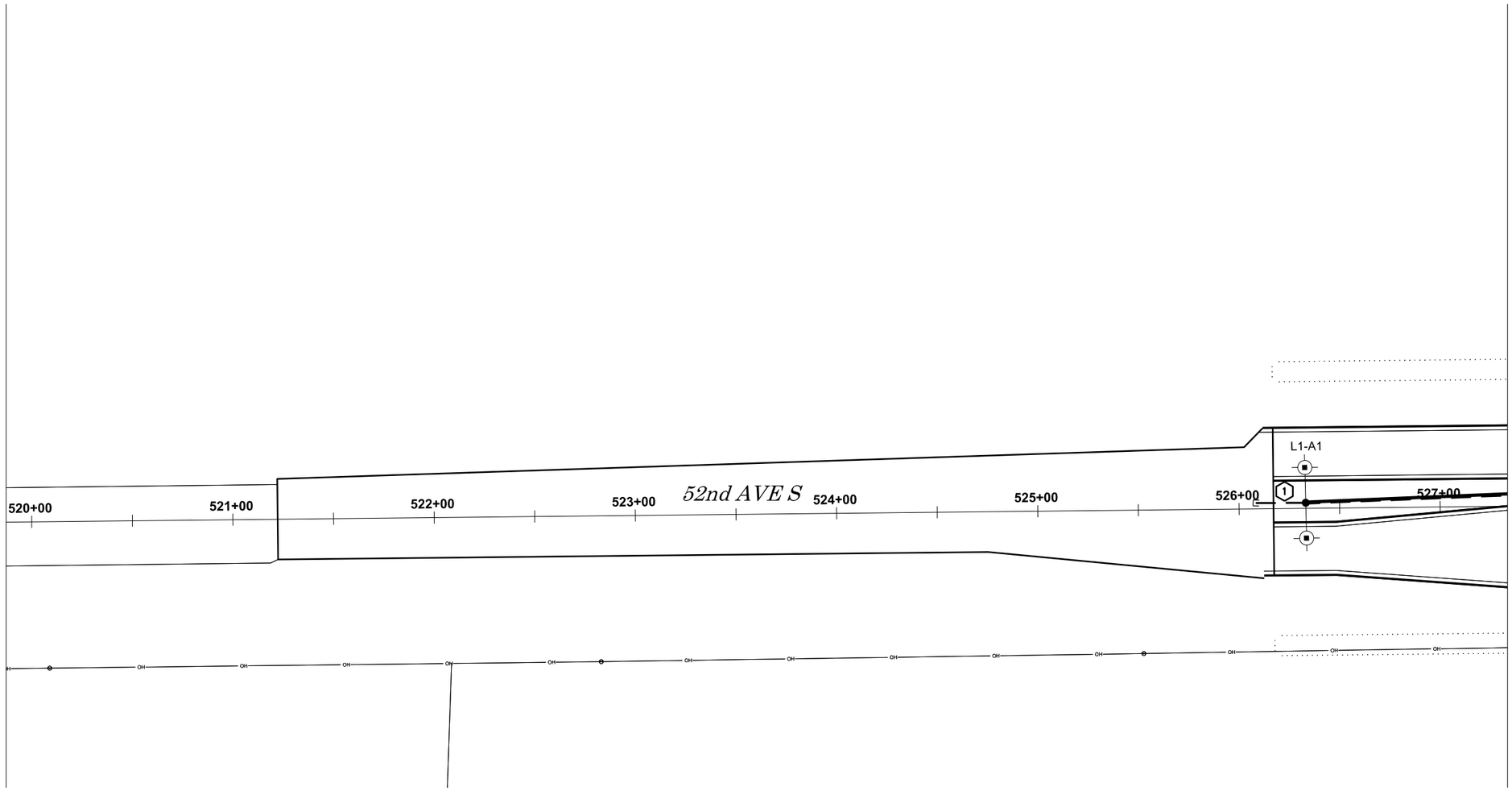
LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	5



0 30' 60'

L1-A1 — TYPE "A" LED LUM. ON 40' STD WITH LUM NO./CIRCUIT NO.

L9-B1 — TYPE "A" LED LUM. ON TRAFFIC EXTENSION WITH LUM NO./CIRCUIT NO.

EXISTING STREET LIGHT

CONDUCTOR

1.5" INNERDUCT

EXISTING CONDUCTOR

EXISTING 1.5" INNERDUCT

PULL BOX

NEW FEED POINT

EXISTING FEED POINT

THE CITY OF Fargo FAR MORE

WSB PROJECT NO. 012067-000

SHEET NOTE:

(1) 25' OF 1.5" INNERDUCT, INSTALL TRACER WIRE & CAP END.

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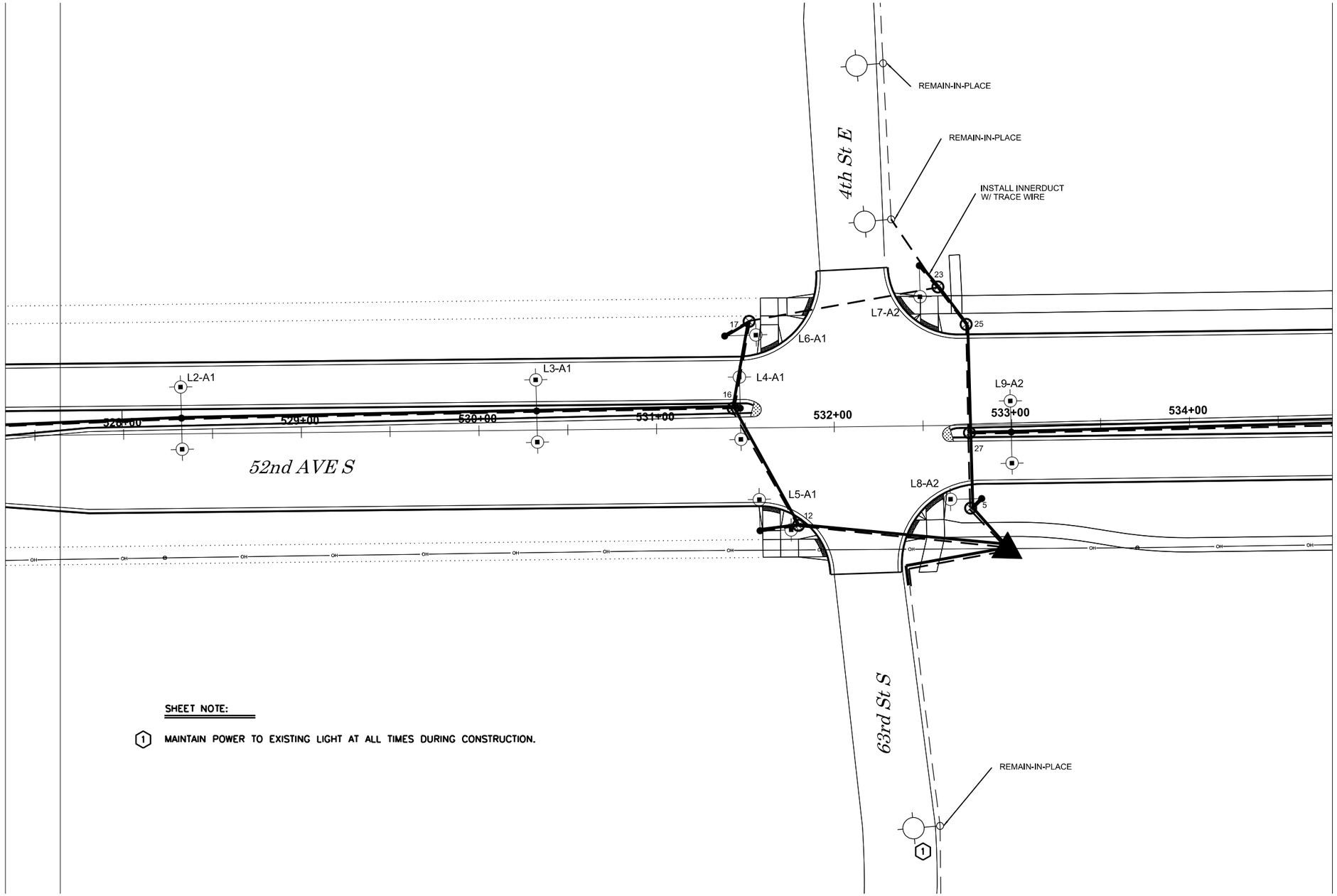
LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

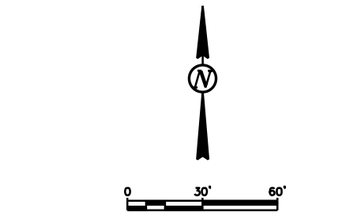
10/23/2018 8:00 AM Mallori Fitzpatrick K:\ 012067-000\Cad\Proposed\Lighting

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	6



SHEET NOTE:

1. MAINTAIN POWER TO EXISTING LIGHT AT ALL TIMES DURING CONSTRUCTION.



L1-A1 — TYPE "A" LED LUM. ON 40' STD WITH LUM NO./CIRCUIT NO.

L9-B1 — TYPE "A" LED LUM. ON TRAFFIC EXTENSION WITH LUM NO./CIRCUIT NO.

EXISTING STREET LIGHT

CONDUCTOR

1.5" INNERDUCT

EXISTING CONDUCTOR

EXISTING 1.5" INNERDUCT

PULL BOX

NEW FEED POINT

EXISTING FEED POINT

THE CITY OF Fargo FAR MORE

WSB WSB PROJECT NO. 012067-000

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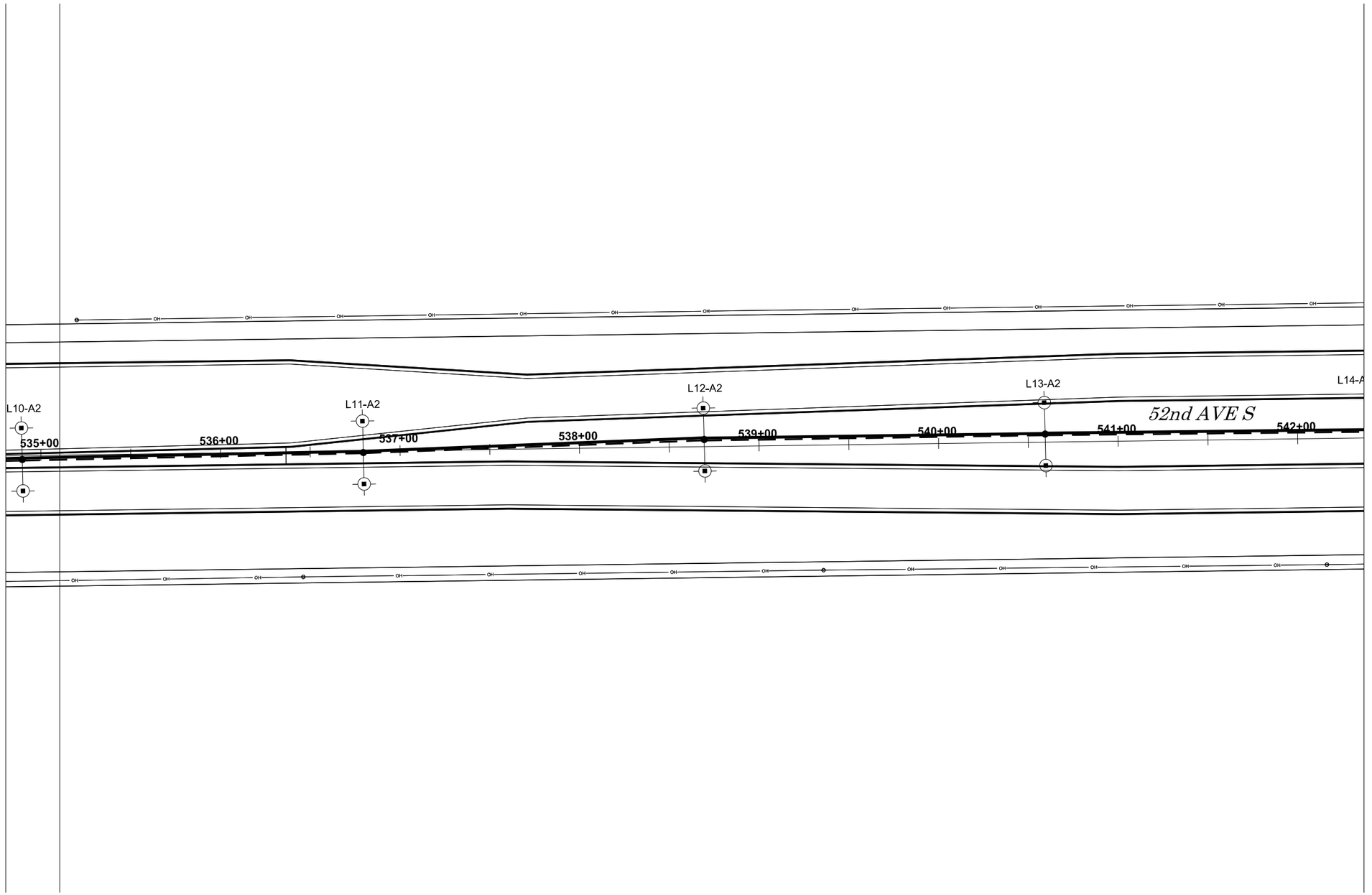
LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

10/23/2018 8:00 AM Mallori Fitzpatrick K:\ 012067-000\Cad\Proposed\Lighting

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	7



N

0 30' 60'

L1-A1 TYPE "A" LED LUM. ON 40' STD WITH LUM NO./CIRCUIT NO.

L9-B1 TYPE "A" LED LUM. ON TRAFFIC EXTENSION WITH LUM NO./CIRCUIT NO.

EXISTING STREET LIGHT

CONDUCTOR

1.5" INNERDUCT

EXISTING CONDUCTOR

EXISTING 1.5" INNERDUCT

PULL BOX

NEW FEED POINT

EXISTING FEED POINT

THE CITY OF Fargo FAR MORE

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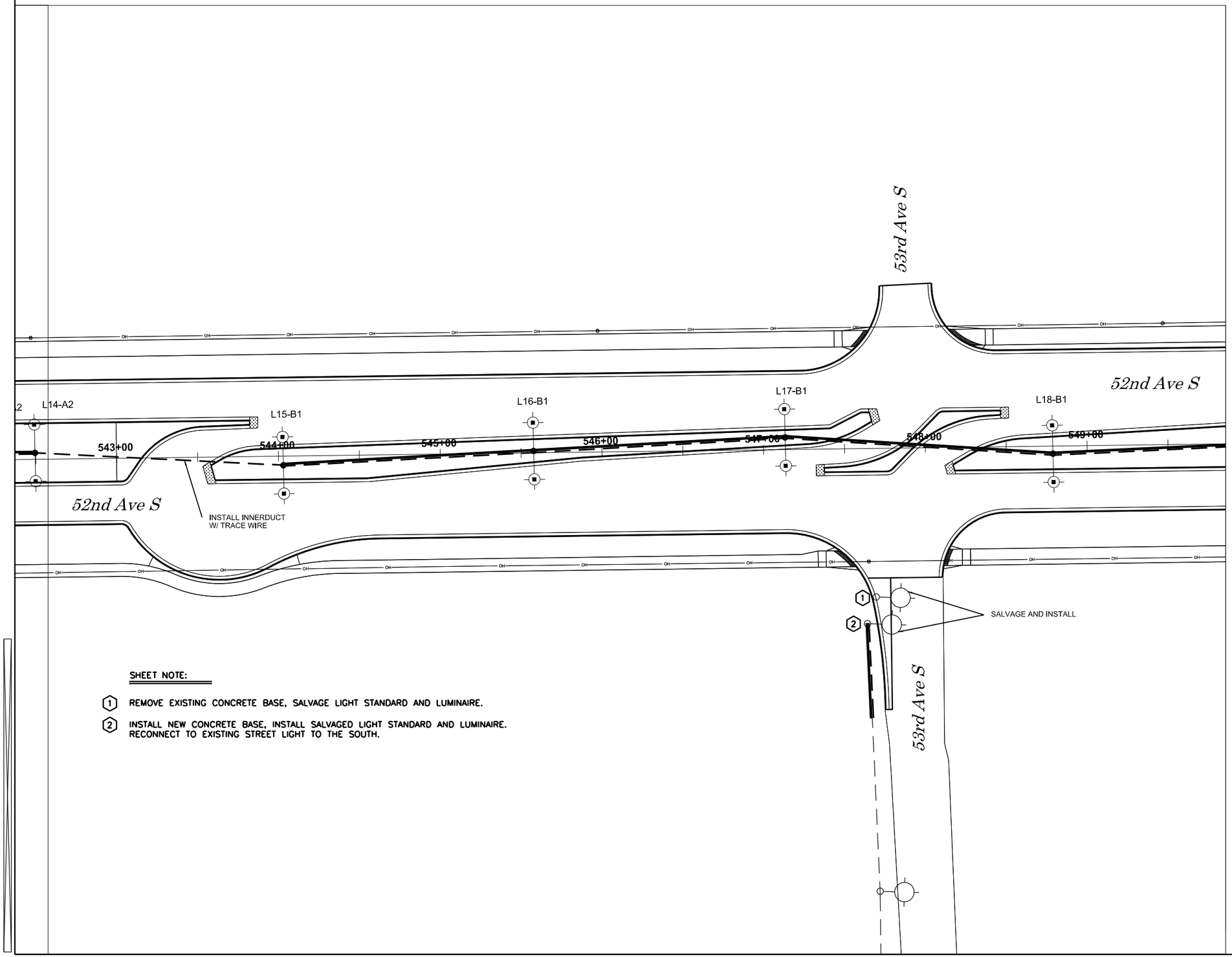
LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

10/23/2018 8:00 AM Mallori Fitzpatrick K:\ 012067-000\Cad\Proposed\Lighting

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	8



SHEET NOTE:

1. REMOVE EXISTING CONCRETE BASE, SALVAGE LIGHT STANDARD AND LUMINAIRE.
2. INSTALL NEW CONCRETE BASE, INSTALL SALVAGED LIGHT STANDARD AND LUMINAIRE. RECONNECT TO EXISTING STREET LIGHT TO THE SOUTH.

N

0 30' 60'

L1-A1 — TYPE "A" LED LUM. ON 40' STD WITH LUM NO./CIRCUIT NO.

L9-B1 — TYPE "A" LED LUM. ON TRAFFIC EXTENSION WITH LUM NO./CIRCUIT NO.

EXISTING STREET LIGHT

CONDUCTOR

1.5" INNERDUCT

EXISTING CONDUCTOR

EXISTING 1.5" INNERDUCT

PULL BOX

NEW FEED POINT

EXISTING FEED POINT

THE CITY OF Fargo FAR MORE

WSB PROJECT NO. 012067-000

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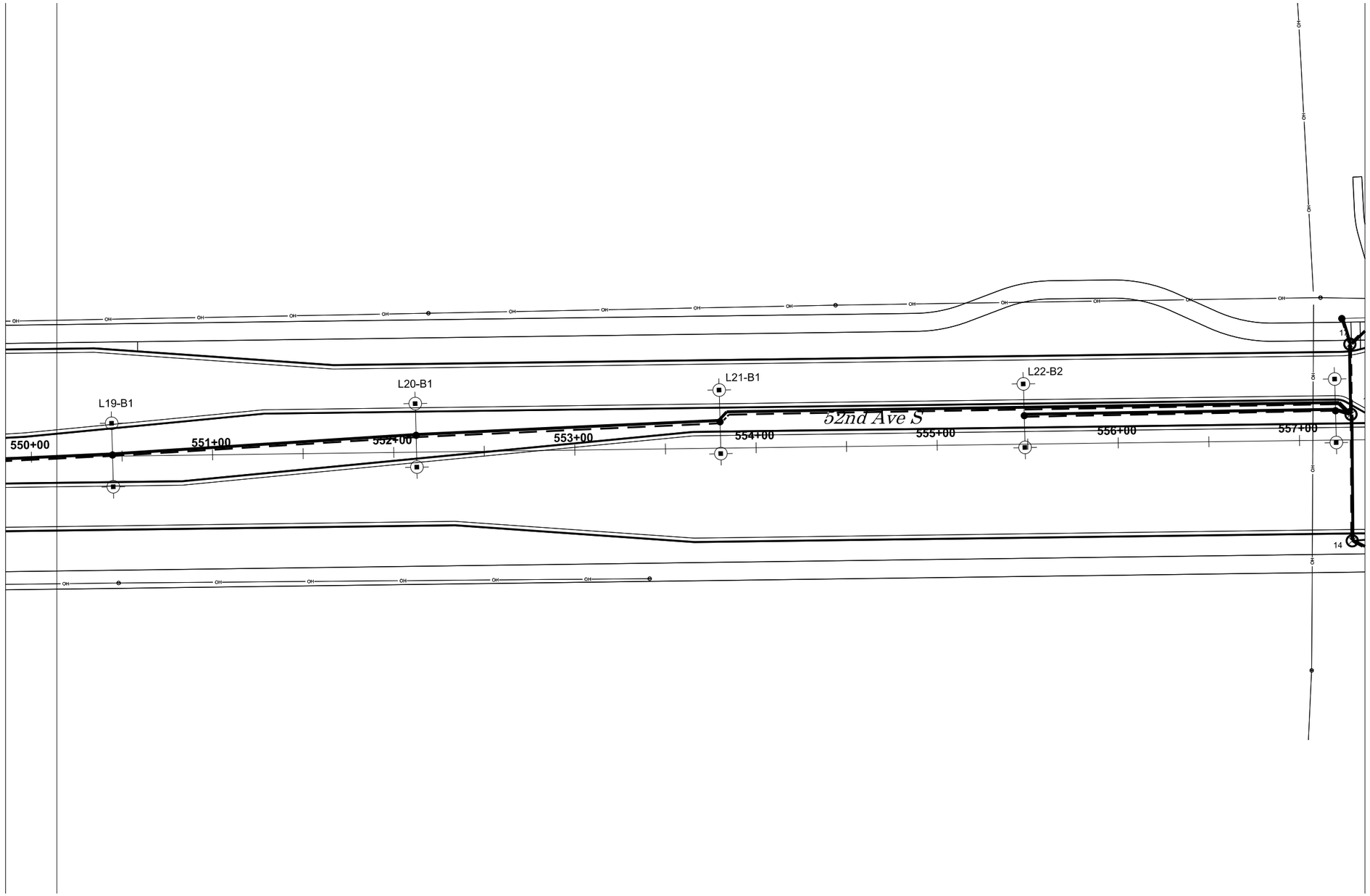
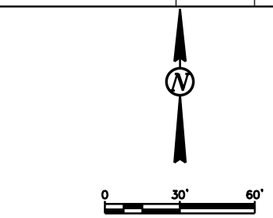
LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	9





L1-A1 — TYPE "A" LED LUM. ON 40' STD WITH LUM NO./CIRCUIT NO.

L9-B1 — TYPE "A" LED LUM. ON TRAFFIC EXTENSION WITH LUM NO./CIRCUIT NO.

EXISTING STREET LIGHT

CONDUCTOR

1.5" INNERDUCT

EXISTING CONDUCTOR

EXISTING 1.5" INNERDUCT

PULL BOX

NEW FEED POINT

EXISTING FEED POINT

THE CITY OF Fargo FAR MORE

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LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

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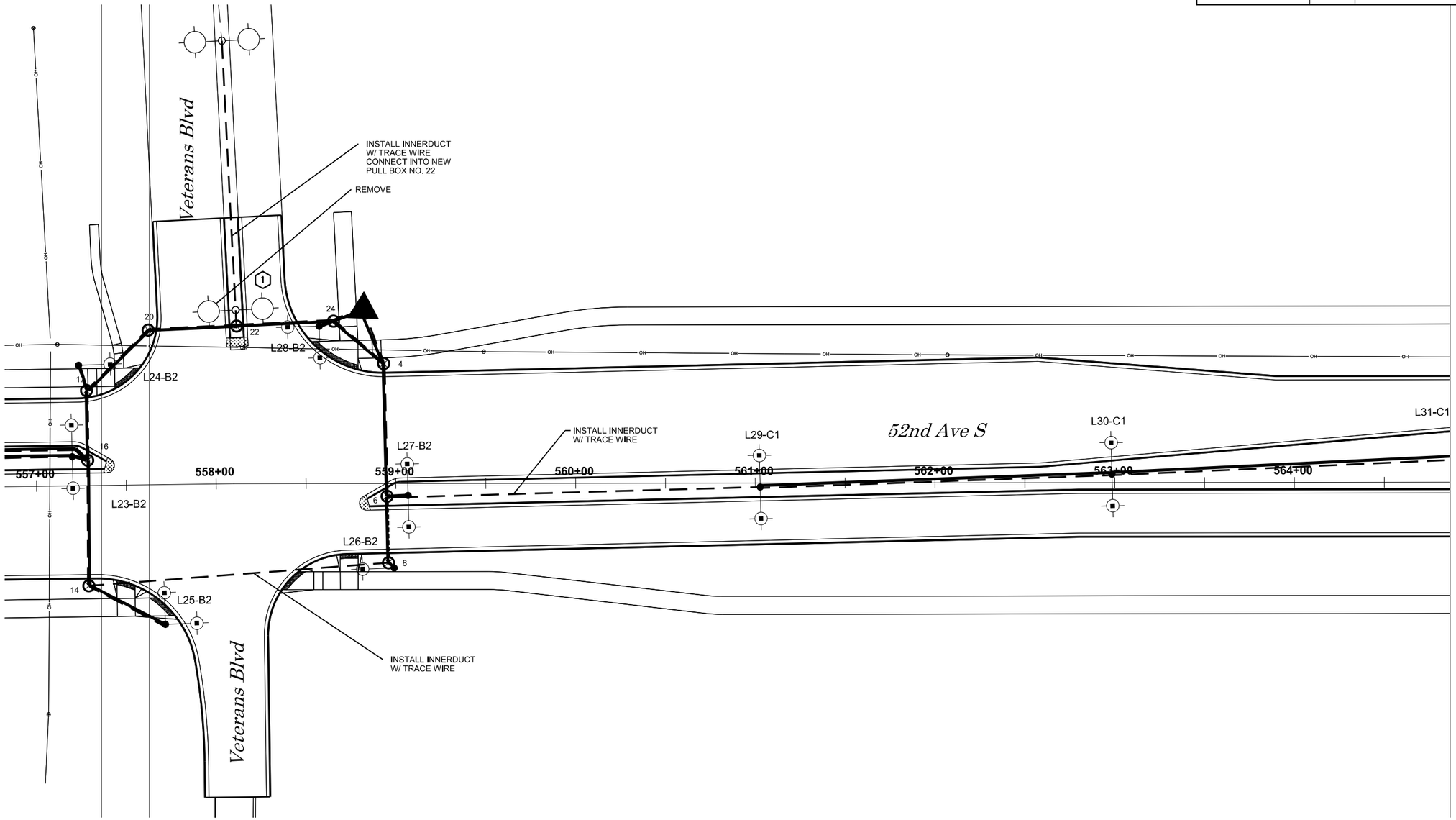
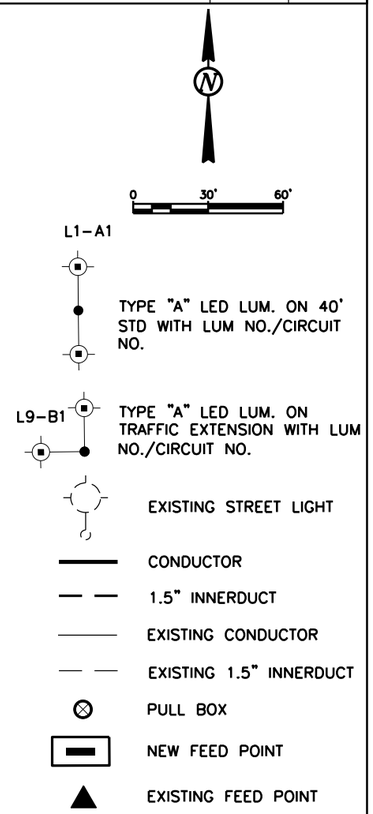
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	10





THE CITY OF Fargo FAR MORE

WSB WSB PROJECT NO. 012067-000

SHEET NOTE:

(1) REMOVE EXISTING CONCRETE BASE, SALVAGE LIGHT STANDARD AND LUMINAIRE BACK TO THE CITY OF FARGO.

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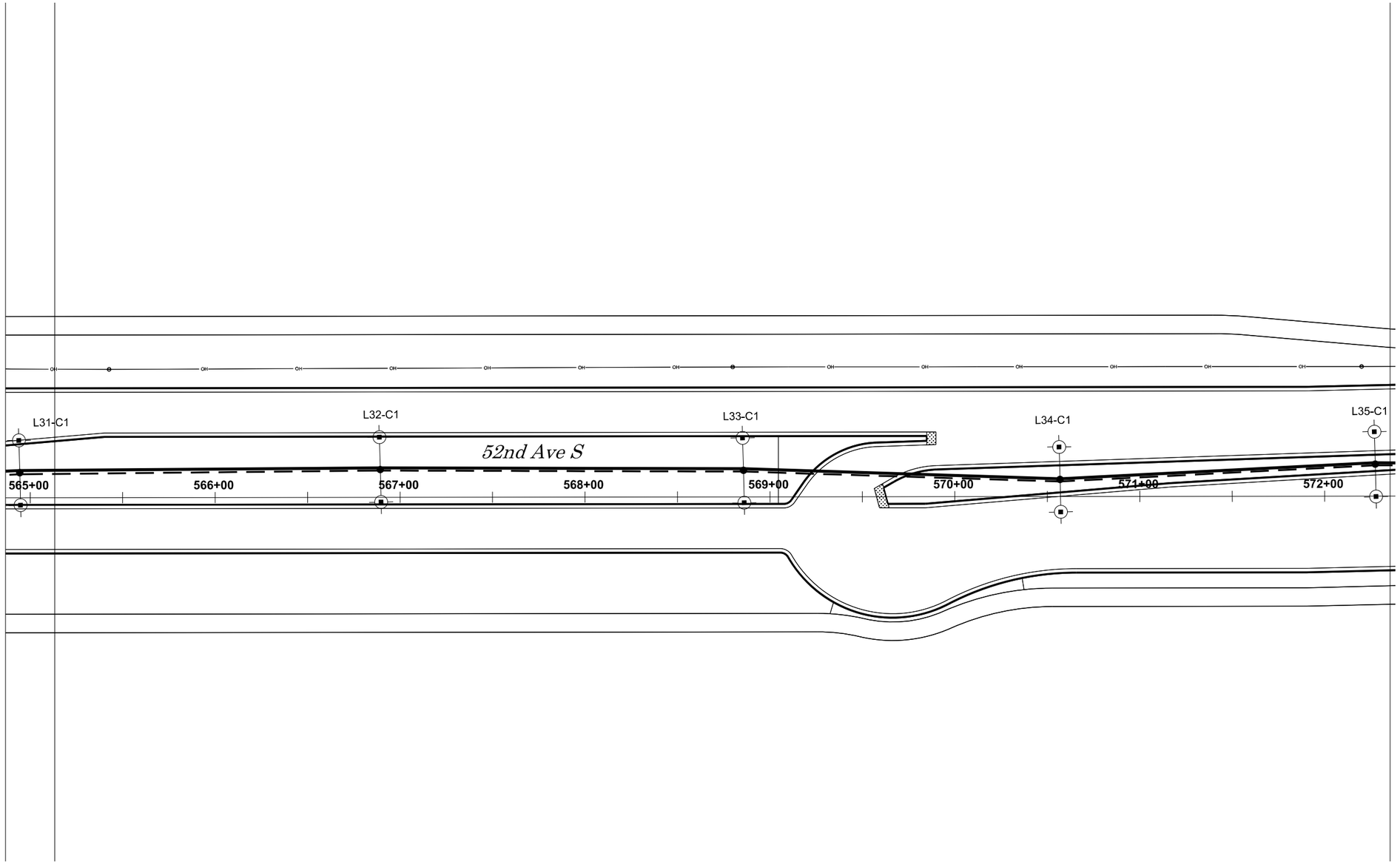
LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

10/23/2018 8:00 AM Mallori Fitzpatrick K:\ 012067-000\Cad\Proposed\Lighting

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	11



0 30' 60'

L1-A1

TYPE "A" LED LUM. ON 40' STD WITH LUM NO./CIRCUIT NO.

L9-B1

TYPE "A" LED LUM. ON TRAFFIC EXTENSION WITH LUM NO./CIRCUIT NO.

EXISTING STREET LIGHT

CONDUCTOR

1.5" INNERDUCT

EXISTING CONDUCTOR

EXISTING 1.5" INNERDUCT

PULL BOX

NEW FEED POINT

EXISTING FEED POINT

THE CITY OF Fargo FAR MORE

WSB WSB PROJECT NO. 012067-000

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LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

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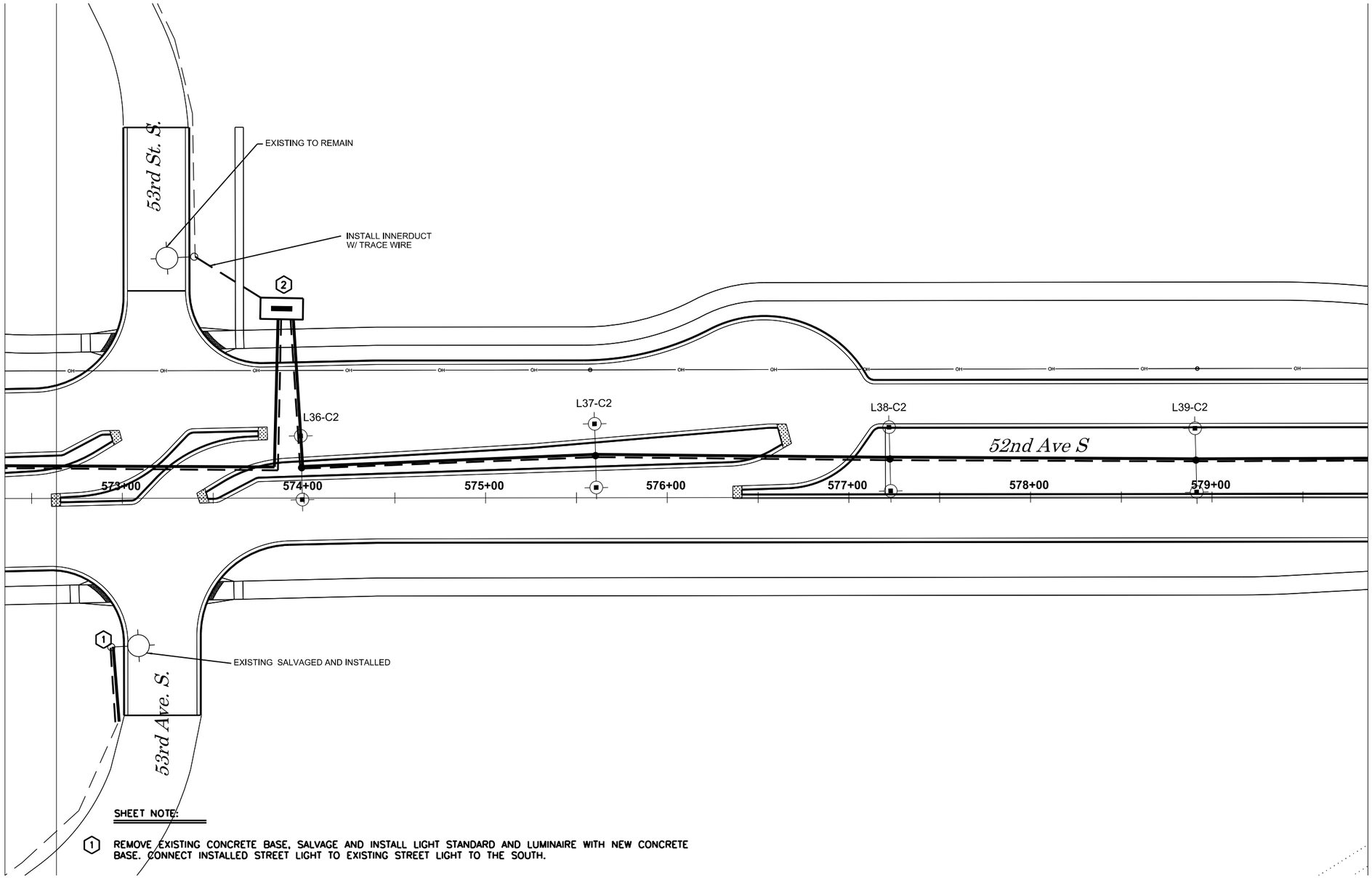
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	12



SHEET NOTE:

1. REMOVE EXISTING CONCRETE BASE, SALVAGE AND INSTALL LIGHT STANDARD AND LUMINAIRE WITH NEW CONCRETE BASE. CONNECT INSTALLED STREET LIGHT TO EXISTING STREET LIGHT TO THE SOUTH.
2. INSTALL PAD MOUNTED, METERED FEED POINT WITH (4) 60AMP CIRCUITS. PROVIDE (1) SPARE 1.5" CONDUIT AND (1) 2" CONDUIT FOR POWER COMPANY. VERIFY LOCATION WITH PROJECT ENGINEER.

N

0 30' 60'

L1-A1 — TYPE "A" LED LUM. ON 40' STD WITH LUM NO./CIRCUIT NO.

L9-B1 — TYPE "A" LED LUM. ON TRAFFIC EXTENSION WITH LUM NO./CIRCUIT NO.

EXISTING STREET LIGHT

CONDUCTOR

1.5" INNERDUCT

EXISTING CONDUCTOR

EXISTING 1.5" INNERDUCT

PULL BOX

NEW FEED POINT

EXISTING FEED POINT

THE CITY OF Fargo FAR MORE

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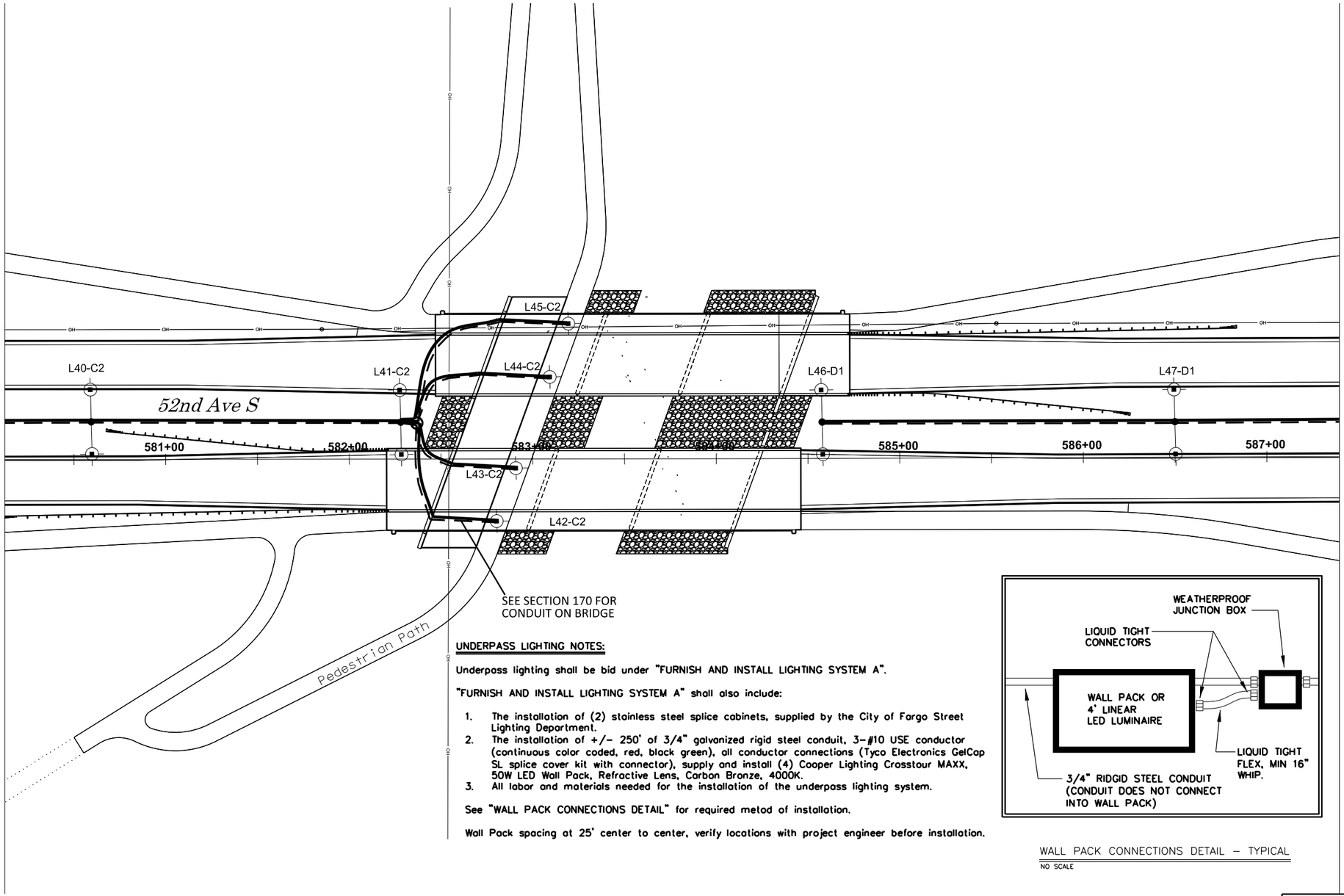
LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	13



L1-A1 0 30' 60'

TYPE "A" LED LUM. ON 40' STD WITH LUM NO./CIRCUIT NO.

L9-B1 TYPE "A" LED LUM. ON TRAFFIC EXTENSION WITH LUM NO./CIRCUIT NO.

WALL PACK (SEE NOTES)

EXISTING STREET LIGHT

CONDUCTOR

1.5" INNERDUCT

EXISTING CONDUCTOR

EXISTING 1.5" INNERDUCT

PULL BOX

NEW FEED POINT

EXISTING FEED POINT

THE CITY OF Fargo FAR MORE

WSB WSB PROJECT NO. 012067-000

UNDERPASS LIGHTING NOTES:

Underpass lighting shall be bid under "FURNISH AND INSTALL LIGHTING SYSTEM A".

"FURNISH AND INSTALL LIGHTING SYSTEM A" shall also include:

1. The installation of (2) stainless steel splice cabinets, supplied by the City of Fargo Street Lighting Department.
2. The installation of +/- 250' of 3/4" galvanized rigid steel conduit, 3-#10 USE conductor (continuous color coded, red, black green), all conductor connections (Tyco Electronics GelCap SL splice cover kit with connector), supply and install (4) Cooper Lighting Crosstour MAXX, 50W LED Wall Pack, Refractive Lens, Carbon Bronze, 4000K.
3. All labor and materials needed for the installation of the underpass lighting system.

See "WALL PACK CONNECTIONS DETAIL" for required metod of installation.

Wall Pack spacing at 25' center to center, verify locations with project engineer before installation.

WALL PACK CONNECTIONS DETAIL – TYPICAL
NO SCALE

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LIGHTING

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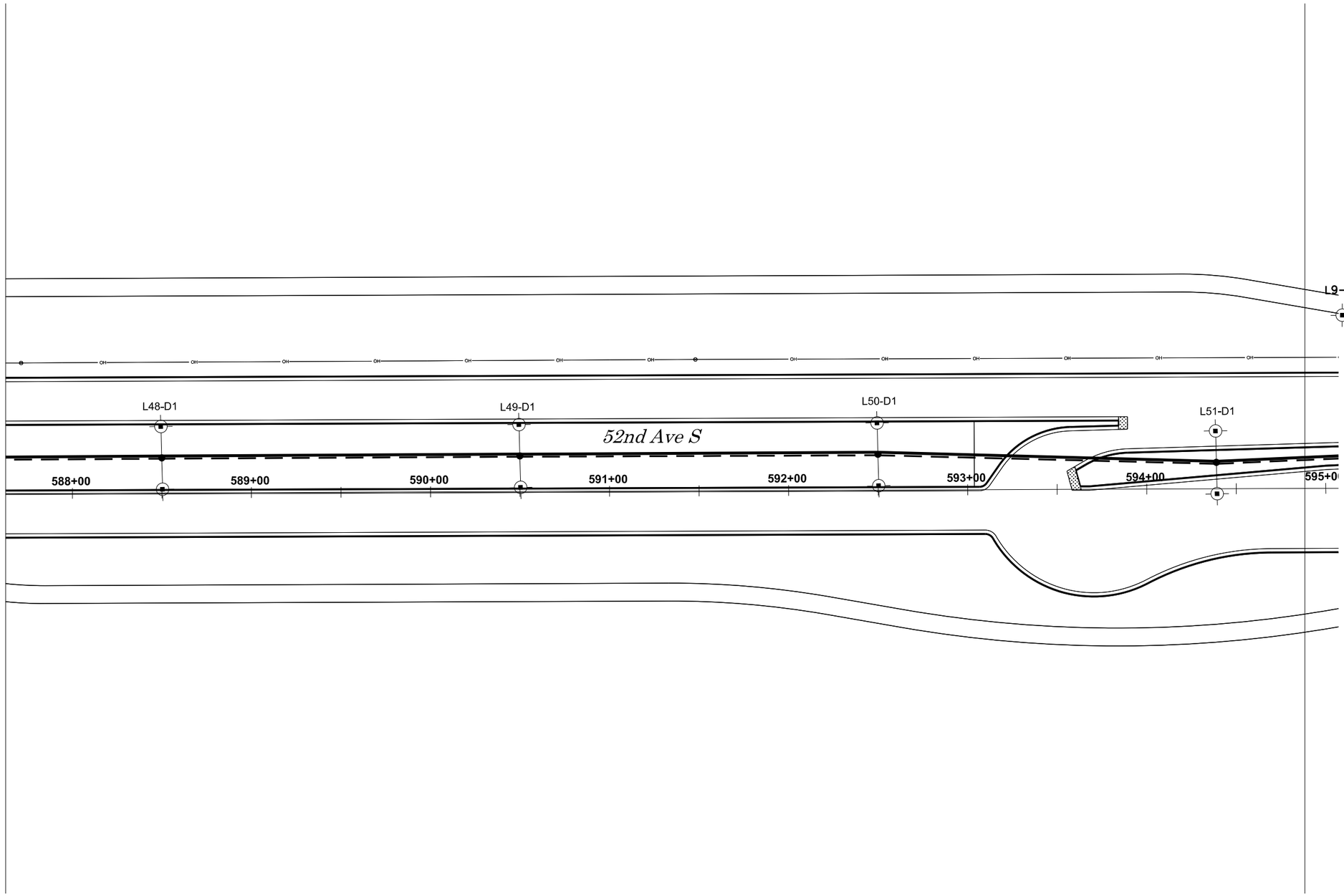
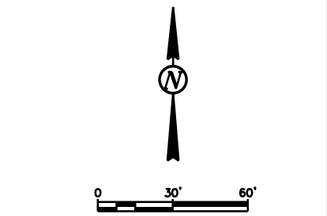
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	14





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LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

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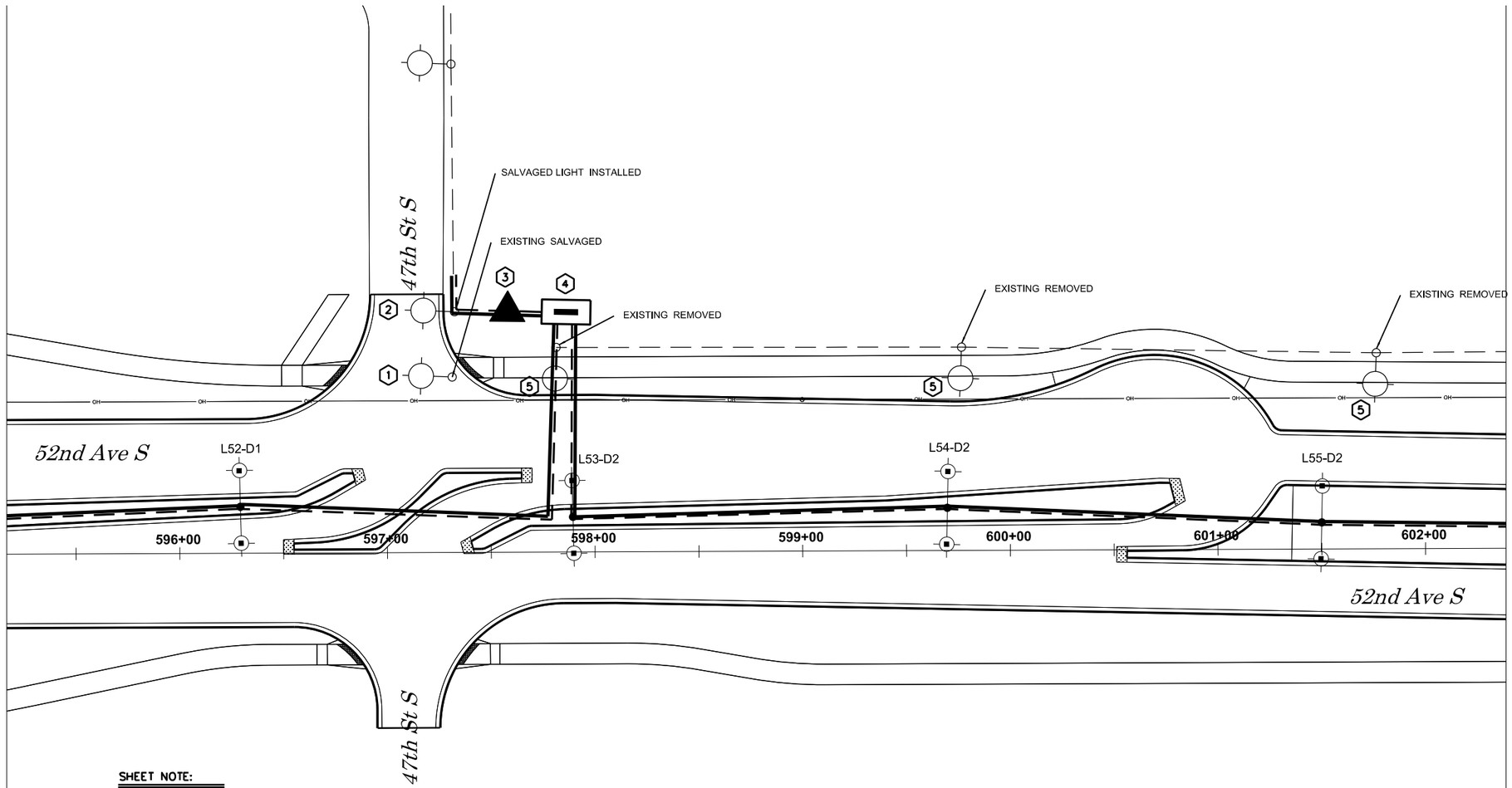
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	15



SHEET NOTE:

1. REMOVE EXISTING CONCRETE BASE, SALVAGE LIGHT STANDARD AND LUMINAIRE.
2. INSTALL NEW CONCRETE BASE, INSTALL SALVAGED LIGHT STANDARD AND LUMINAIRE.
3. REMOVE EXISTING FEED POINT. FEED POINT SHALL REMAIN OPERATIONAL UNTILL NEW FEED POINT HAS BEEN ENERGIZED. COORDINATE REMOVAL WITH POWER COMPANY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE EXISTING STREET LIGHTS CONNECTED TO THIS FEED POINT OPERATIONAL AT ALL TIMES. THE LABOR, METHODS USED (TEMPORARY UNDERGROUND SPLICES, OVERHEAD SPAN WIRE) AND MATERIALS NEEDED SHALL BE INCIDENTAL TO THE PROJECT.
4. INSTALL PAD MOUNTED, METERED FEED POINT WITH (4) 60AMP CIRCUITS. PROVIDE (1) SPARE 1.5" CONDUIT AND (1) 2" CONDUIT FOR POWER COMPANY. VERIFY LOCATION WITH PROJECT ENGINEER. AFTER ENERGIZING OF FEED POINT AND CONNECTION IS MADE TO EXISTING LIGHT, DISCONNECT OLD FEED POINT.
5. LIGHTS SHALL REMAIN OPERATIONAL DURING CONSTRUCTION. REMOVE EXISTING BASE AND SALVAGE LIGHT STANDARD AND LUMINAIRE BACK TO THE CITY OF FARGO AFTER NEW SYSTEM IS OPERATIONAL.

N

0 30' 60'

L1-A1 — TYPE "A" LED LUM. ON 40' STD WITH LUM NO./CIRCUIT NO.

L9-B1 — TYPE "A" LED LUM. ON TRAFFIC EXTENSION WITH LUM NO./CIRCUIT NO.

EXISTING STREET LIGHT

CONDUCTOR

1.5" INNERDUCT

EXISTING CONDUCTOR

EXISTING 1.5" INNERDUCT

PULL BOX

NEW FEED POINT

EXISTING FEED POINT

THE CITY OF Fargo FAR MORE

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LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

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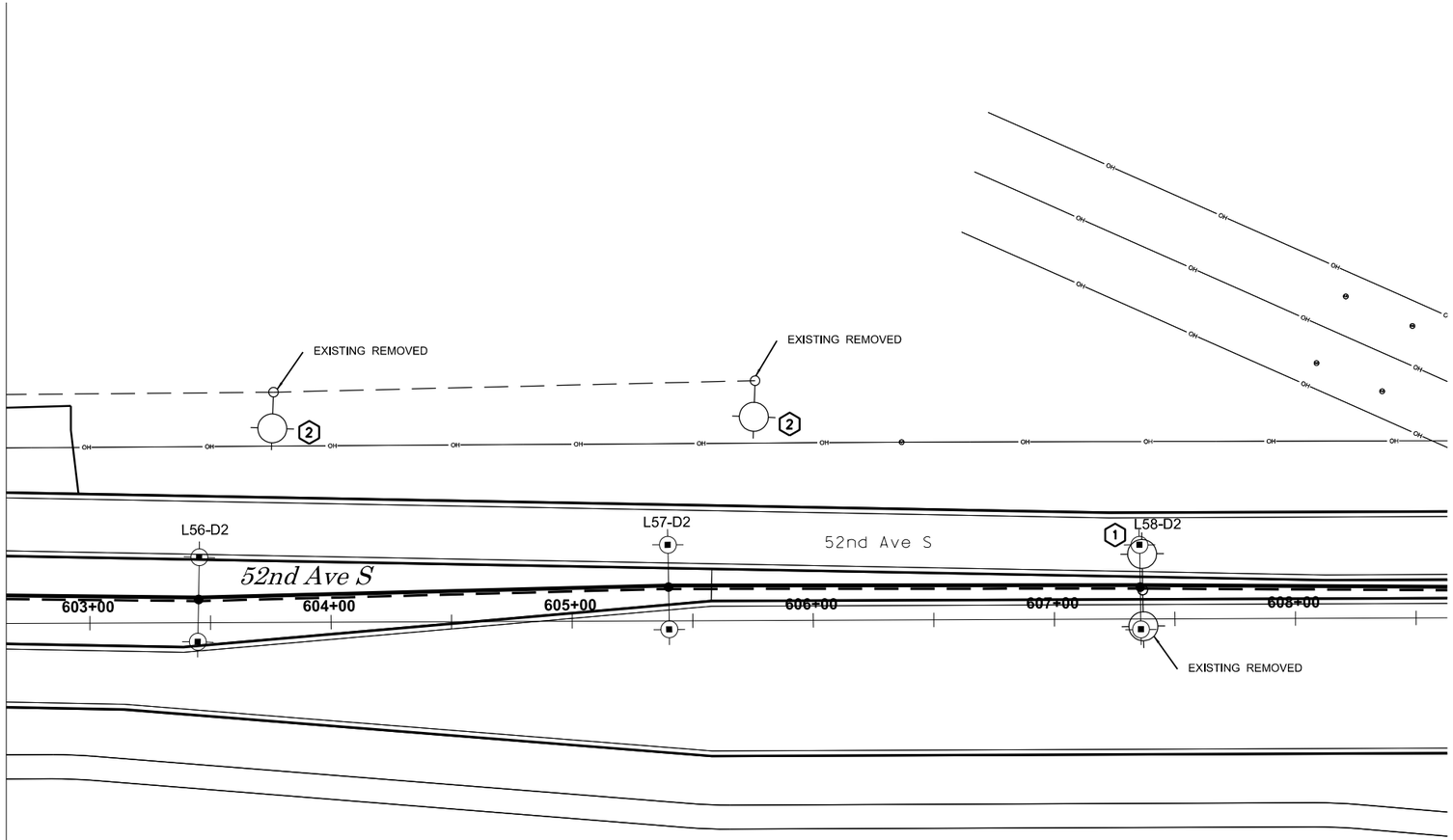
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	16



SHEET NOTE:

1. REMOVE EXISTING CONCRETE BASE, SALVAGE LIGHT STANDARD AND LUMINAIRE BACK TO THE CITY OF FARGO.
2. LIGHTS SHALL REMAIN OPERATIONAL DURING CONSTRUCTION. REMOVE EXISTING BASE AND SALVAGE LIGHT STANDARD AND LUMINAIRE BACK TO THE CITY OF FARGO AFTER NEW SYSTEM IS OPERATIONAL.

N

0 30' 60'

L1-A1 — TYPE "A" LED LUM. ON 40' STD WITH LUM NO./CIRCUIT NO.

L9-B1 — TYPE "A" LED LUM. ON TRAFFIC EXTENSION WITH LUM NO./CIRCUIT NO.

EXISTING STREET LIGHT

CONDUCTOR

1.5" INNERDUCT

EXISTING CONDUCTOR

EXISTING 1.5" INNERDUCT

PULL BOX

NEW FEED POINT

EXISTING FEED POINT

THE CITY OF Fargo FAR MORE

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LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

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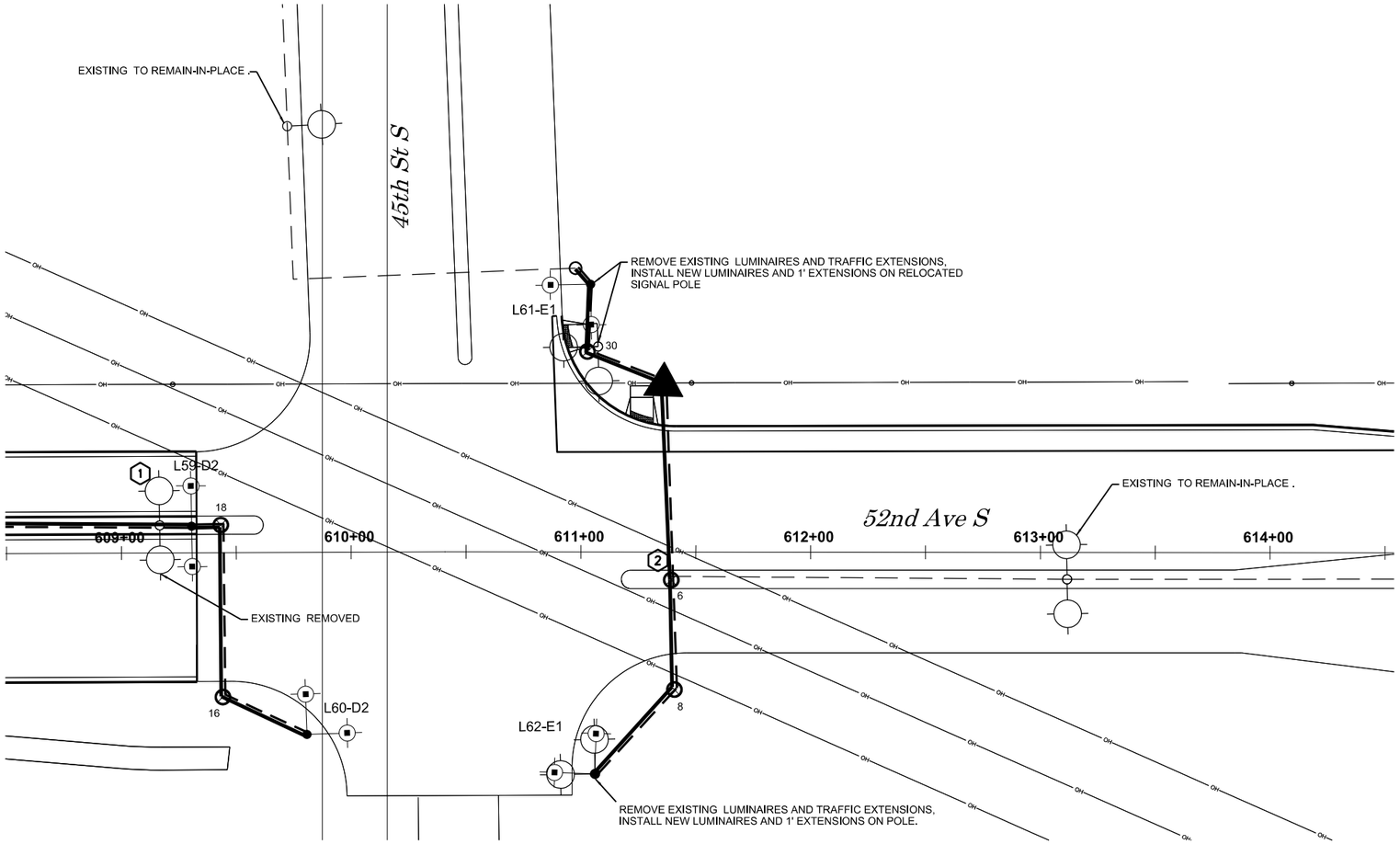
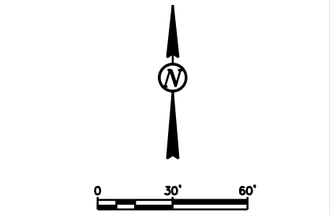
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	17





L1-A1 — TYPE "A" LED LUM. ON 40' STD WITH LUM NO./CIRCUIT NO.

L9-B1 — TYPE "A" LED LUM. ON TRAFFIC EXTENSION WITH LUM NO./CIRCUIT NO.

EXISTING STREET LIGHT

CONDUCTOR

1.5" INNERDUCT

EXISTING CONDUCTOR

EXISTING 1.5" INNERDUCT

PULL BOX

NEW FEED POINT

EXISTING FEED POINT

THE CITY OF Fargo FAR MORE

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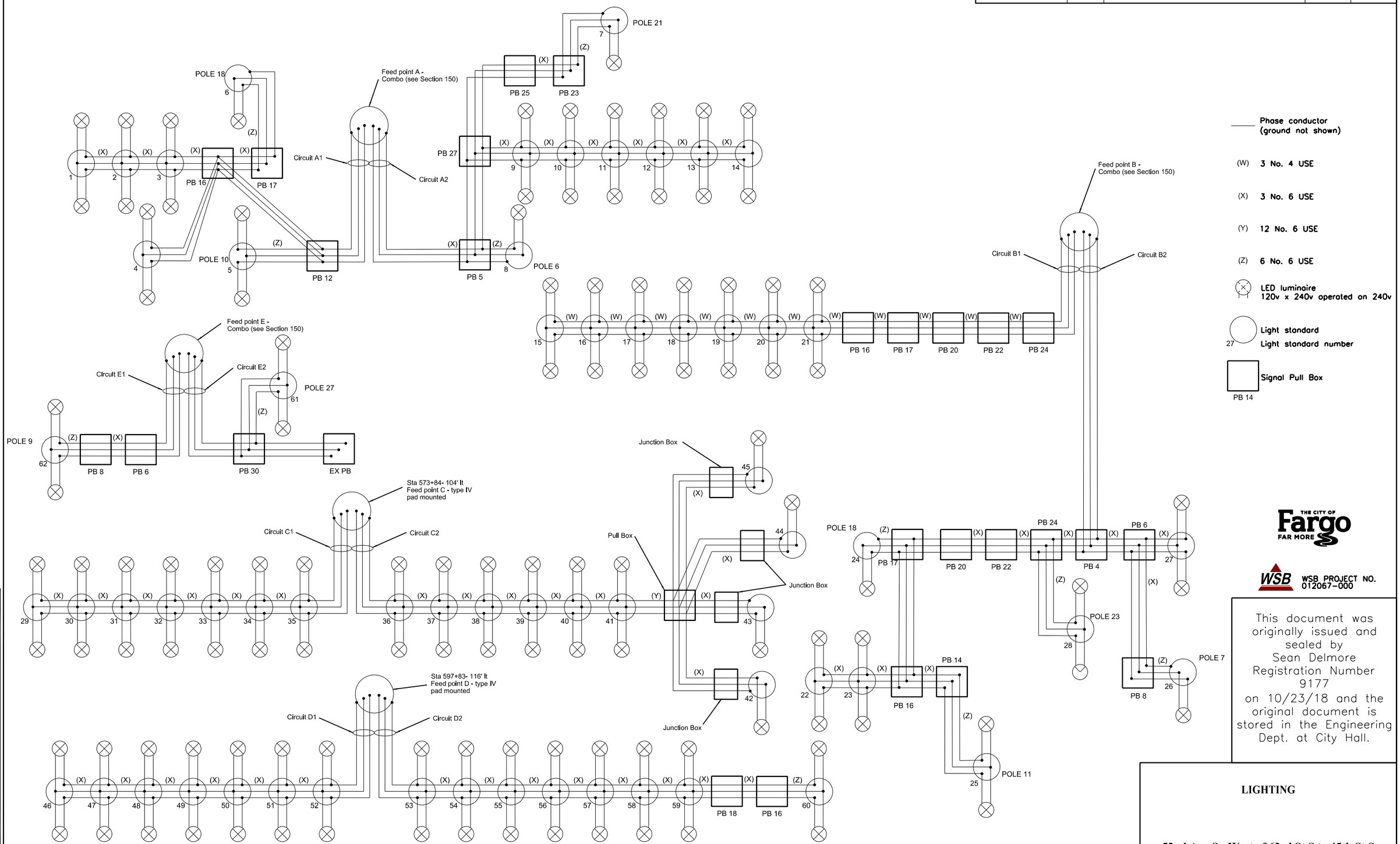
SHEET NOTE:

1. REMOVE EXISTING CONCRETE BASE, SALVAGE LIGHT STANDARD AND LUMINAIRE BACK TO THE CITY OF FARGO.
2. EXISTING LIGHTS TO THE EAST SHALL REMAIN OPERATIONAL DURING CONSTRUCTION. COIL EXISTING CABLE BACK TO THE PULL BOX AND RECONNECT TO COMBO FEEDPOINT.

LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	18



(W) **3 No. 4 USE**

(X) **3 No. 6 USE**

(Y) **12 No. 6 USE**

(Z) **6 No. 6 USE**

Phase conductor (ground not shown)

LED luminaire 120v x 240v operated on 240v

27 **Light standard**
Light standard number

PB 14 **Signal Pull Box**

THE CITY OF Fargo FAR MORE

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LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	19

STREET LIGHTING NOTES:

The City of Fargo Standard Specifications for Construction and these notes shall govern the construction of the project. Specifications can be downloaded at http://fargond.gov/city-government/departments/engineering/design-construction/construction-specifications

INNERDUCT: 1.5", Schedule 40 Innerduct, Smooth Outside, Controlled Outside Diameter at 1.900. Inside Diameter of 1.579, Minimum wall thickness of .145 and color RED.
Innerduct will be required as shown on plans and will be connected to stubbed out 1.5" conduit at all concrete base and feed point locations. Installation of Innerduct shall be at a minimum depth of 24" below finished grade. The innerduct will be placed in line with bases behind curb unless contractor gets approval from project engineer to adjust placement. BORING WILL BE THE REQUIRED METHOD OF INSTALLATION IN ALL ESTABLISHED AREAS. Duct Seal all innerduct/conduit entering or exiting foundations, feedpoints and pull boxes.
Innerduct will be measured by the linear foot. Couplings/fittings used at concrete bases and feed points, trace wire and the method of Innerduct installation will not be measured for payment but will be included in the price bid for Innerduct.

CONDUCTOR: All conductor shall be continuous color coded (black, red and green). The conductor between standards shall be, 3-#6 USE, unless otherwise noted. All wiring within standards between distribution conductors and luminaires shall be #12 AWG stranded copper, 600-VOLT, type RHW. All luminaires shall be grounded.
Conductor connections in street light bases shall be Panduit, clear insulated aluminum connector (PCSB4-3S-12Y) or Burndy equal. In pull boxes, Tyco Electronics GelCap SL splice cover kit with connector. All other conductor splices shall be, UL listed, with PowerGel sealant type connections meeting all codes for desired application.

FUSE HOLDERS: All fuse holders shall have 3" of heat shrink at conductor connections.

CONCRETE BASE: Bases shall be 24" x 7' deep (24" x 6' or 18" x 5' for relocated lights). Bolt circle and projection shall be verified with manufacturer specifications.

The contractor shall use Hydro-vac excavation for concrete bases where standard auger method is not possible. Base locations shall be field verified after locates with contractor and City of Fargo project manager. Method of base excavation is incidental to bid.

FURNISH AND INSTALL FEED POINT: Pedestal type, four circuit, stainless steel feed point cabinet, shall be concrete pad mounted (see detail for size of cabinet). Feed Point cabinet shall also include a padlocable lift-off service panel along with a factory installed, interior mounted meter trim which meets the requirements of the local utility company (Cass County Electric Co.). Meter to be provided by the local utility company.
All exposed conduit shall be 2" galvanized steel. Concrete foundation/pad, weather head and riser, 2" conduit and properly sized conductor for connection to CCEC transformer or to closest utility pole as required by CCEC and other miscellaneous items shall be incidental to the price bid for feed point. The feed point will be measured as a complete unit installed and operational. Verify feed point location and elevation with the project engineer before installation.

FEED POINT: Prefabricated feed point enclosure to be assembled by States, UL 508 Listed, Service entrance rated. Or equal.

ANTI-SEIZE: Anti-seize material shall be applied to all threaded bolts and screws. Verify with project engineer type of material.

FURNISH AND INSTALL LIGHTING STANDARD TYPE "A": Millerbernd, SD1 (Davit) Stainless Steel, 40' Mounting Height, Break-away "H" Base, 16 Sided, Frost Finish with 9' Twin Arm Arrangement.

CONTRACTOR SHALL FURNISH AND INSTALL MOUSE GUARD: XCLUDER LIGHT POLE GASKET 2800g, ITEM NO. 162728 INCIDENTAL TO PRICE FOR STANDARD.

FURNISH AND INSTALL LUMINAIRE TYPE "A": Phillips Roadfocus RFL Series, 215 W LED, Type R3S optics, 240V, 4000K, 25,000 lumens, gray. Or approved equal: AEL AUTOBAHN or LEOTEK

FURNISH AND INSTALL LUMINAIRE TYPE "B": Cooper Lighting Crosstour MAXX, 50W LED Wall Pack, Refractive Lens, Carbon Bronze, 4000K.

FURNISH & INSTALL PULL BOX: PVC Pull Box with metal frame and cover, the size shall be 24" dia x 36" deep. 24" of pea rock shall be installed for drainage below the pull box and will extend 6" beyond the outside edge of pull box. The top of pull box shall be flush mounted in concrete areas and 1" above final grade and sloped to match in areas of sod. Provide enough slack to pull conductor and splices a minimum of four feet above finished grade.
The pull box will be measured as a complete unit installed. Pull box, pea rock, and other miscellaneous items required shall be incidental to the cost bid.

REMOVE BASES: The contractor shall be responsible for the removal of existing concrete bases, backfilling with proper compaction and the disposal of concrete bases. The removal, back filling and disposal of bases shall be incidental to the price bid.

EXISTING STREET LIGHTING SYSTEM: The Electrical Contractor shall coordinate with the project manager and general contractor to ensure the operation of all existing street lights adjacent to project limits at all times. The contractor will provide necessary labor and materials needed to maintain the operation of the existing lighting system. These costs shall be incidental to the price bid for the street lighting work.

REMOVE STREET LIGHT: The contractor shall be responsible for the removal and delivery of standards and luminaires to the City of Fargo Street Lighting Department or a location directed by the project engineer. The removal of cables and conduit shall be incidental to the price bid.

THE CITY OF Fargo FAR MORE

WSB WSB PROJECT NO. 012067-000

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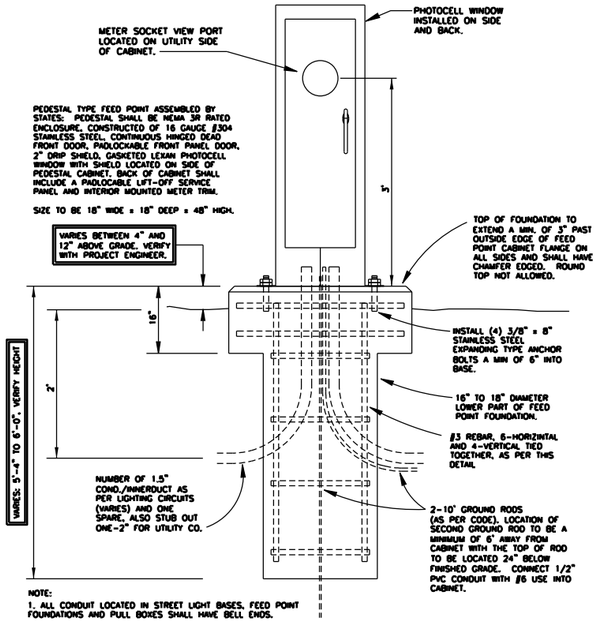
LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

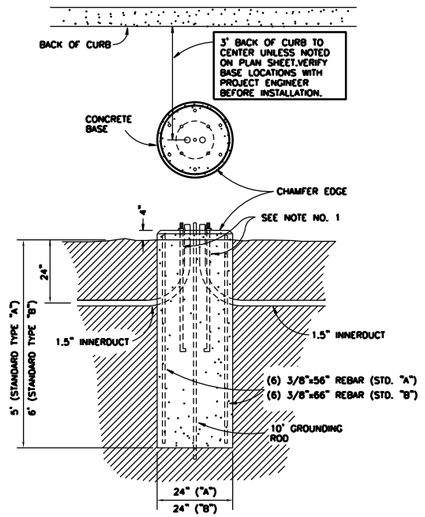
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	140	20



NOTE:
1. ALL CONDUIT LOCATED IN STREET LIGHT BASES, FEED POINT FOUNDATIONS AND PULL BOXES SHALL HAVE BELL ENDS.

FEED POINT ELEVATION

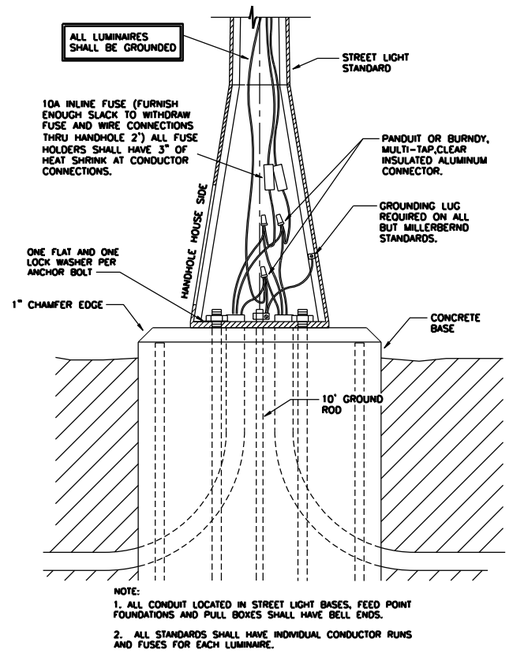
NO SCALE



NOTE:
1. ANCHOR BOLT SIZE, BOLT CIRCLE AND PROJECTION OF ANCHOR BOLTS TO BE VERIFIED WITH MANUFACTURER SPECIFICATIONS.
3. BASES LOCATED AT THE END OF CIRCUIT SHALL HAVE SPARE CONDUIT, CAP END.

5' OR 6' CONCRETE BASE DETAIL

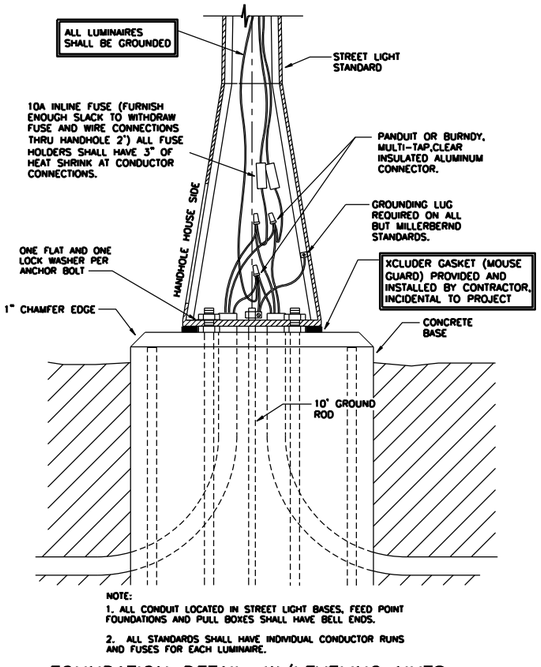
NO SCALE



NOTE:
1. ALL CONDUIT LOCATED IN STREET LIGHT BASES, FEED POINT FOUNDATIONS AND PULL BOXES SHALL HAVE BELL ENDS.
2. ALL STANDARDS SHALL HAVE INDIVIDUAL CONDUCTOR RUNS AND FUSES FOR EACH LUMINAIRE.

FOUNDATION DETAIL: NO LEVELING NUTS

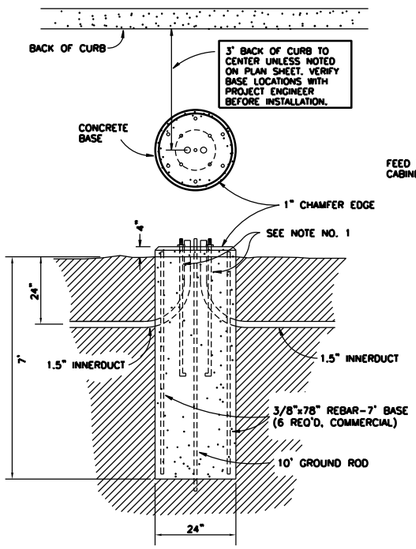
NO SCALE



NOTE:
1. ALL CONDUIT LOCATED IN STREET LIGHT BASES, FEED POINT FOUNDATIONS AND PULL BOXES SHALL HAVE BELL ENDS.
2. ALL STANDARDS SHALL HAVE INDIVIDUAL CONDUCTOR RUNS AND FUSES FOR EACH LUMINAIRE.

FOUNDATION DETAIL: W/LEVELING NUTS

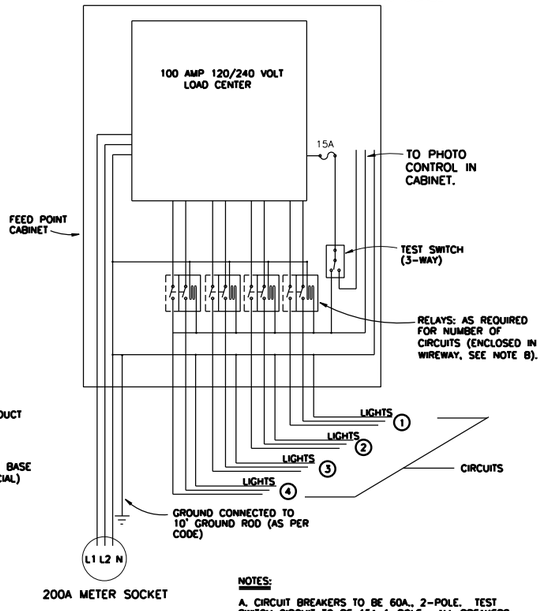
NO SCALE



NOTE:
1. 1"x 40" ANCHOR BOLTS (25'-40' COMMERCIAL POLE)
2. BASES LOCATED AT THE END OF CIRCUIT SHALL HAVE SPARE CONDUIT, CAP END.

7' CONCRETE BASE DETAIL

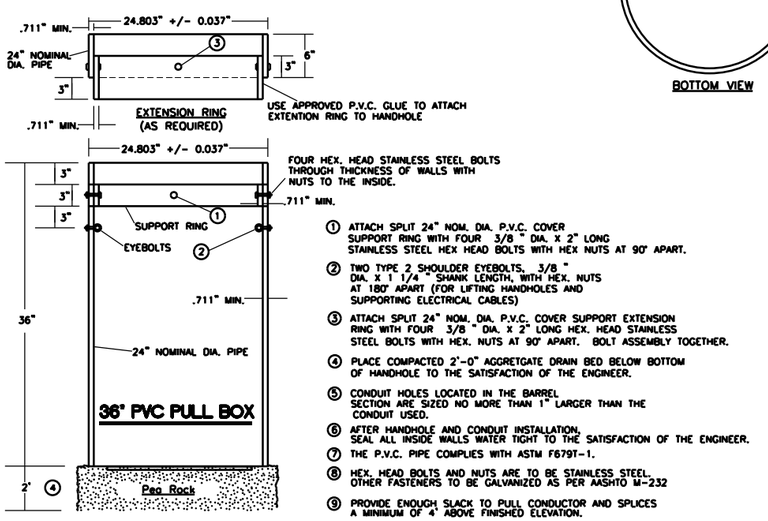
NO SCALE



NOTES:
A. CIRCUIT BREAKERS TO BE 60A., 2-POLE. TEST SWITCH CIRCUIT TO BE 15A 1-POLE. ALL BREAKERS ARE TO BE RATED AT 22,000 AIC.
B. CONTACTORS TO BE NORMAL OPEN TYPE, 60A, 2-POLE, MECHANICAL, 240V TO GROUND. QUANTITY OF RELAYS AS REQUIRED FOR NUMBER OF CIRCUITS.

WIRING SCHEMATIC: MULTI CIRCUIT FEED POINT

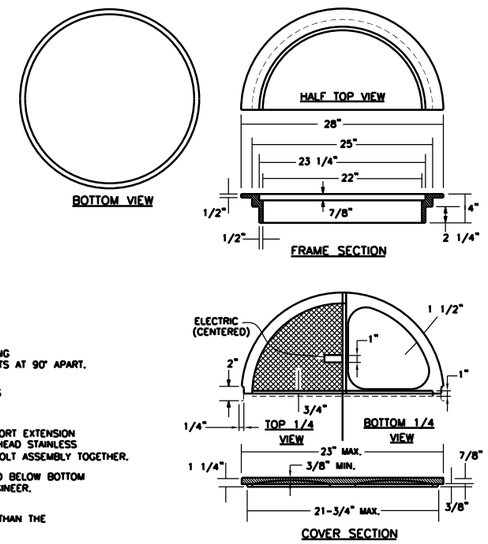
NO SCALE



1. ATTACH SPLIT 24" NOM. DIA. P.V.C. COVER SUPPORT RING WITH FOUR 3/8 " DIA. x 2" LONG STAINLESS STEEL HEX HEAD BOLTS WITH HEX NUTS AT 90° APART.
2. TWO TYPE 2 SHOULDER EYEBOLTS, 3/8 " DIA. x 1 1/4 " SHANK LENGTH, WITH HEX. NUTS AT 180° APART (FOR LIFTING HANDHOLES AND SUPPORTING ELECTRICAL CABLES)
3. ATTACH SPLIT 24" NOM. DIA. P.V.C. COVER SUPPORT EXTENSION RING WITH FOUR 3/8 " DIA. x 2" LONG HEX. HEAD STAINLESS STEEL BOLTS WITH HEX. NUTS AT 90° APART. BOLT ASSEMBLY TOGETHER.
4. PLACE COMPACTED 2'-0" AGGRETGATE DRAIN BED BELOW BOTTOM OF HANDHOLE TO THE SATISFACTION OF THE ENGINEER.
5. CONDUIT HOLES LOCATED IN THE BARREL SECTION ARE SIZED NO MORE THAN 1" LARGER THAN THE CONDUIT USED.
6. AFTER HANDHOLE AND CONDUIT INSTALLATION, SEAL ALL INSIDE WALLS WATER TIGHT TO THE SATISFACTION OF THE ENGINEER.
7. THE P.V.C. PIPE COMPLIES WITH ASTM F679T-1.
8. HEX. HEAD BOLTS AND NUTS ARE TO BE STAINLESS STEEL. OTHER FASTENERS TO BE GALVANIZED AS PER AASHTO M-232
9. PROVIDE ENOUGH SLACK TO PULL CONDUCTOR AND SPLICES A MINIMUM OF 4' ABOVE FINISHED ELEVATION.

PULL BOX, METAL FRAME AND COVER DETAIL

NO SCALE



FRAME AND COVER CASTING

NOTE:
ALL CASTINGS ARE GRAY IRON AS PER SPEC. 3321 CLASS 35B

THE CITY OF Fargo FAR MORE

WSB PROJECT NO. 012067-000

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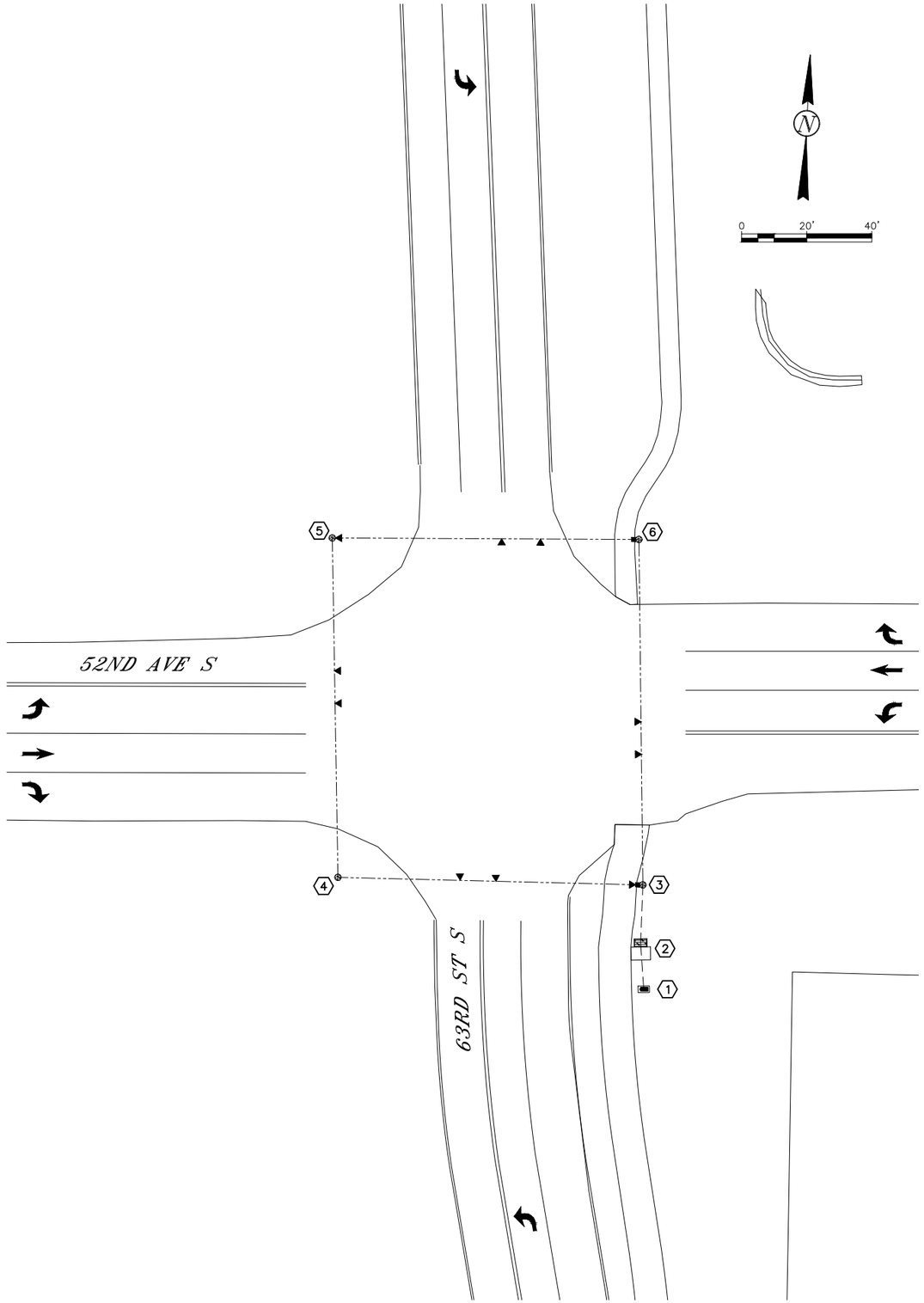
LIGHTING

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	1



1. REMOVE, SALVAGE, AND RELOCATE EXISTING COMBO FEED POINT CABINET AND EQUIPMENT. DISPOSE CONCRETE FOUNDATION.
2. REMOVE AND SALVAGE EXISTING TRAFFIC SIGNAL CONTROLLER CABINET AND EQUIPMENT. DISPOSE CONCRETE FOUNDATION AND WORKING PAD. REMOVE AND SALVAGE EMERGENCY VEHICLE DETECTION SYSTEM.
3. REMOVE AND SALVAGE EXISTING TEMPORARY WOOD POLE WITH GUY WIRE. REMOVE AND SALVAGE ALL LED SECTIONS FROM VEHICLE HEADS. DISPOSE OF REMAINDER OF VEHICLE HEADS. REMOVE AND SALVAGE PEDESTRIAN COUNTDOWN HEAD. REMOVE AND SALVAGE EXISTING PEDESTRIAN PUSH BUTTON. REMOVE AND SALVAGE ALL MOUNTING EQUIPMENT.
4. REMOVE AND SALVAGE EXISTING TEMPORARY WOOD POLE WITH GUY WIRE. REMOVE AND SALVAGE ALL LED SECTIONS FROM VEHICLE HEADS. DISPOSE OF REMAINDER OF VEHICLE HEADS. REMOVE AND SALVAGE ALL MOUNTING EQUIPMENT.
5. REMOVE AND SALVAGE EXISTING TEMPORARY WOOD POLE WITH GUY WIRE. REMOVE AND SALVAGE ALL LED SECTIONS FROM VEHICLE HEADS. DISPOSE OF REMAINDER OF VEHICLE HEADS. REMOVE AND SALVAGE ALL MOUNTING EQUIPMENT.
6. REMOVE AND SALVAGE EXISTING TEMPORARY WOOD POLE WITH GUY WIRE. REMOVE AND SALVAGE ALL LED SECTIONS FROM VEHICLE HEADS. DISPOSE OF REMAINDER OF VEHICLE HEADS. REMOVE AND SALVAGE PEDESTRIAN COUNTDOWN HEAD. REMOVE AND SALVAGE EXISTING PEDESTRIAN PUSH BUTTON. REMOVE AND SALVAGE ALL MOUNTING EQUIPMENT.

NOTE:
1. EXISTING TRAFFIC CONTROL SIGNAL SYSTEM SHOWN BASED OFF EXISTING PLANS. ACTUAL FIELD LOCATION OF SYSTEM COMPONENTS MAY VARY.

- Polymer Concrete Fiber Pull Box
- Detector Loops
- Feed Point
- Controller Cabinet
- Existing Signal Std.
- Existing Pull Box
- New Pull Box
- Ped. Post
- Utility Pole
- New Signal Std.
- Flasher
- Ped. Head
- Vehicle Head
- Conduit
- Existing Conduit
- Signal Fiber Line
- Span Wire

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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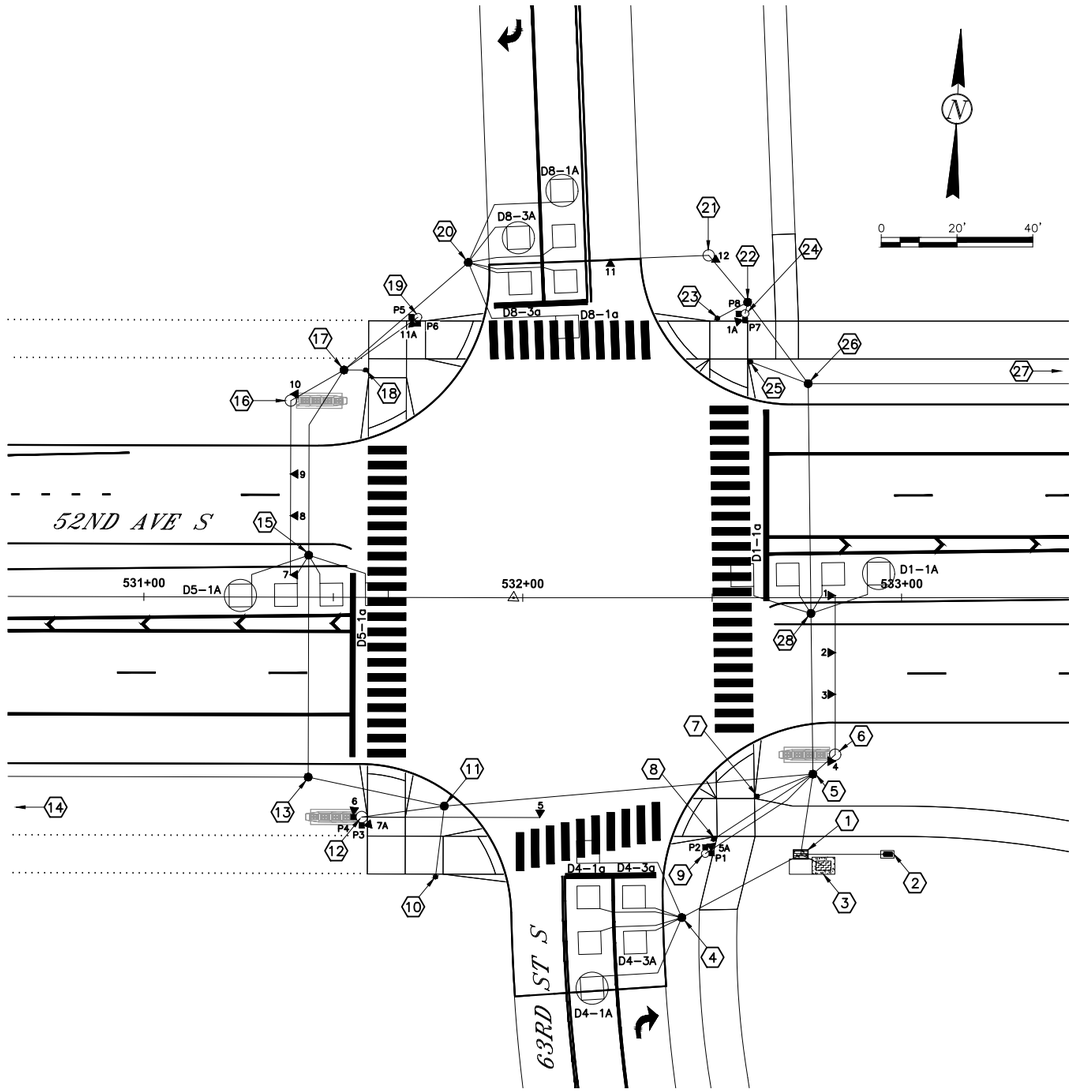
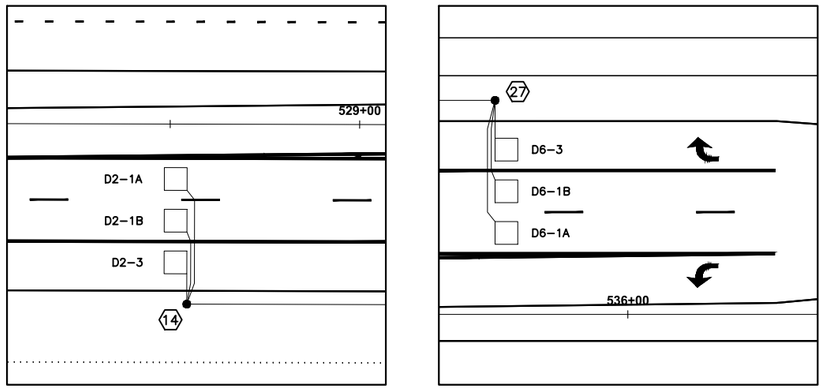
Signals - Removals 63rd St S

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	2





EASTBOUND WESTBOUND

1. INSTALL TRAFFIC SIGNAL CABINET FOUNDATION AND WORKING SLAB. F&I NEW FARGO TYPE B CABINET. INSTALL A SECOND SEPARATE STAND ALONE DETECTOR RACK WITH ITS OWN POWER SUPPLY AND ITS OWN SEPARATE SELF CONTAINED WIRING HARNESS WITH NO JUMPERS BETWEEN THE TWO DETECTOR RACKS. IT SHALL BE LOCATED TO THE RIGHT OF THE STANDARD DETECTOR RACK. INSTALL TWO EXTRA DETECTOR PANELS DIRECTLY ABOVE THE STANDARD FARGO TYPE B CABINET PANELS; THESE SHALL BE CONNECTED TO THE SECOND DETECTOR RACK. PROVIDE TWO PS 2.4 AMP POWER SUPPLIES FOR THE DETECTOR RACKS. PROVIDE 2 SPARE 2" CONDUITS IN THE FOUNDATION STUBBED OUT TO THE NORTH. THE CABINET DOOR SHALL FACE SOUTH AND RIGHT HINGED. PROVIDE 18 – 2–CHANNEL VEHICLE DETECTORS.
2. INSTALL FEED POINT CABINET FOUNDATION. RELOCATE EXISTING COMBO FEED POINT CABINET AND EQUIPMENT. PROVIDE 2 SPARE 2" CONDUITS IN THE FOUNDATION, 1 NORTH AND 1 EAST. THE CABINET DOOR SHALL FACE SOUTH.
3. F&I NEW POLYMER CONCRETE FIBER PULL BOX. INSTALL CONCRETE PAD AROUND PULL BOX.
4. F&I NEW PVC PULL BOX. INSTALL 4 – 6'x6' LOOPS(D4–1A/D4–1a). INSTALL 2 – 6'x6' LOOPS(D4–3A/D4–3a).
5. F&I NEW PVC PULL BOX.
6. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE IV/COMBO TRAFFIC SIGNAL STANDARD WITH A 42' MAST ARM. F&I MODEL 722 EVP DETECTOR AND CONFIRMATION LIGHT. F&I NEW PTZ CAMERA.
7. F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING WEST WITH A LEFT ARROW.
8. F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING NORTH WITH A RIGHT ARROW.
9. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE V TRAFFIC SIGNAL STANDARD (15' HEIGHT).
10. F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING NORTH WITH A LEFT ARROW.
11. F&I NEW PVC PULL BOX.
12. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE IV/COMBO TRAFFIC SIGNAL STANDARD WITH A 47' MAST ARM. F&I EVP CONFIRMATION LIGHT. F&I NEW APS PEDESTRIAN PUSH BUTTON FACING EAST WITH A RIGHT ARROW.
13. F&I NEW PVC PULL BOX.
14. F&I NEW PVC PULL BOX. INSTALL 3 – 6'x6' LOOPS(D2–1A/D2–1B/D2–3).
15. F&I NEW PVC PULL BOX. INSTALL 4 – 6'x6' LOOPS(D5–1A/D5–1a).
16. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE IV/COMBO TRAFFIC SIGNAL STANDARD WITH A 46' MAST ARM. F&I EVP CONFIRMATION LIGHT.
17. F&I NEW PVC PULL BOX.
18. F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING EAST WITH A LEFT ARROW.
19. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE V TRAFFIC SIGNAL STANDARD (15' HEIGHT). F&I NEW APS PEDESTRIAN PUSH BUTTON FACING SOUTH WITH A RIGHT ARROW.
20. F&I NEW PVC PULL BOX. INSTALL 4 – 6'x6' LOOPS(D8–1A/D8–1a). INSTALL 2 – 6'x6' LOOPS (D8–3A/D8–3a).
21. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE IV/COMBO TRAFFIC SIGNAL STANDARD WITH A 26' MAST ARM. F&I MODEL 722 EVP DETECTOR AND CONFIRMATION LIGHT.
22. F&I NEW PVC PULL BOX.
23. F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING SOUTH WITH A LEFT ARROW.
24. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT).
25. F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING WEST WITH A RIGHT ARROW.
26. F&I NEW PVC PULL BOX.
27. F&I NEW PVC PULL BOX. INSTALL 3 – 6'x6' LOOPS(D6–1A/D6–1B/D6–3).
28. F&I NEW PVC PULL BOX. INSTALL 4 – 6'x6' LOOPS(D1–1A/D1–1a).

- Polymer Concrete Fiber Pull Box
- Detector Loops
- Feed Point
- Controller Cabinet
- Existing Signal Std.
- Existing Pull Box
- New Pull Box
- Ped. Post
- Utility Pole
- New Signal Std.
- Flasher
- Ped. Head
- Vehicle Head
- Conduit
- Existing Conduit
- Signal Fiber Line
- Span Wire

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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Signals - Layout 63rd St S

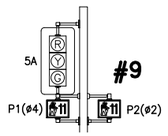
52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	3

HEAD 5A SHALL BE MOUNTED ON THE EAST SIDE OF THE POLE AND FACE NORTH.

HEAD P1 SHALL BE MOUNTED ON THE EAST SIDE OF THE POLE AND FACE NORTH.

HEAD P2 SHALL BE MOUNTED ON THE NORTH SIDE OF THE POLE AND FACE WEST.

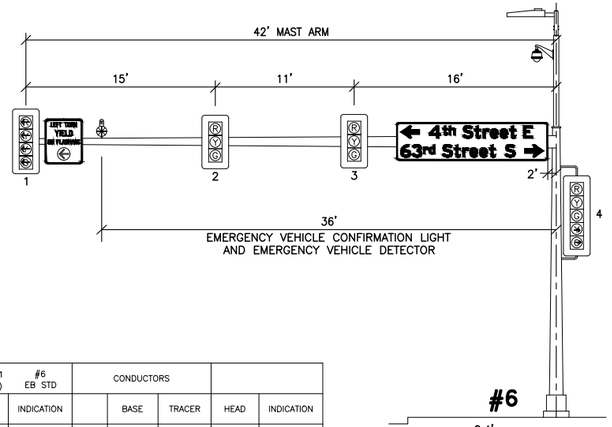


TYPE V–15' HEIGHT
PEDESTAL MOUNTED–VEHICULAR AND PEDESTRIAN HEADS

20'–#14/5	Vehicle Head #5A
18'–#14/3	Ped. Head #P1
18'–#14/3	Ped. Head #P2

ø2 & ø5/OLC EAST–BOUND APPROACH

SEE STREET LIGHTING PLANS FOR TYPE OF LUMINAIRE EXTENSION AND FIXTURE
1 – LUMINAIRE MOUNTED AT 40'

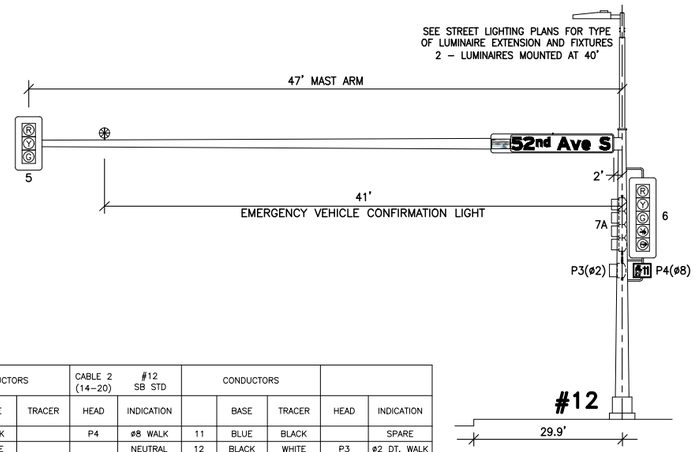


72'–#14/7	Vehicle Head #1
57'–#14/5	Vehicle Head #2
46'–#14/5	Vehicle Head #3
20'–#14/7	Vehicle Head #4
79'–#12/2	PE2 Ind Light

CONDUCTORS			CABLE 1 (14–20)	#6 EB STD	CONDUCTORS				
	BASE	TRACER	HEAD	INDICATION		BASE	TRACER	HEAD	INDICATION
1	BLACK		P1	ø4 WALK	11	BLUE	BLACK	2–4	ø2 GREEN
2	WHITE			NEUTRAL	12	BLACK	WHITE	P2	ø2 DT. WALK
3	RED		5A	ø8 RED	13	RED	WHITE		SPARE
4	GREEN			GROUND	14	GREEN	WHITE	EVP	PE2 IND LIGHT
5	ORANGE		5A	ø8 YELLOW	15	BLUE	WHITE	4	ø4 YELLOW
6	BLUE		5A	ø8 GREEN	16	BLACK	RED	4	ø4 GREEN
7	WHITE	BLACK	P1	ø4 DT. WALK	17	WHITE	RED	1	OLC FL YELLOW
8	RED	BLACK	2–4	ø2 RED	18	ORANGE	RED	1	OLC YELLOW
9	GREEN	BLACK	P2	ø2 WALK	19	BLUE	RED	1	ø5 GREEN
10	ORANGE	BLACK	2–4	ø2 YELLOW	20	RED	GREEN	1	OLC RED

ø8 SOUTH–BOUND APPROACH

SEE STREET LIGHTING PLANS FOR TYPE OF LUMINAIRE EXTENSION AND FIXTURES
2 – LUMINAIRES MOUNTED AT 40'



77'–#14/5	Vehicle Head #5
20'–#14/7	Vehicle Head #6
20'–#14/7	Vehicle Head #7A
18'–#14/3	Ped. Head #P3
18'–#14/3	Ped. Head #P4
84'–#12/2	PE3 Ind Light

CONDUCTORS			CABLE 2 (14–20)	#12 SB STD	CONDUCTORS				
	BASE	TRACER	HEAD	INDICATION		BASE	TRACER	HEAD	INDICATION
1	BLACK		P4	ø8 WALK	11	BLUE	BLACK		SPARE
2	WHITE			NEUTRAL	12	BLACK	WHITE	P3	ø2 DT. WALK
3	RED		5–6	ø8 RED	13	RED	WHITE		SPARE
4	GREEN			GROUND	14	GREEN	WHITE	EVP	PE3 IND LIGHT
5	ORANGE		5–6	ø8 YELLOW	15	BLUE	WHITE	6	ø5 YELLOW
6	BLUE		5–6	ø8 GREEN	16	BLACK	RED	6	ø5 GREEN
7	WHITE	BLACK	P4	ø8 DT. WALK	17	WHITE	RED	7A	OLA FL YELLOW
8	RED	BLACK		SPARE	18	ORANGE	RED	7A	OLA YELLOW
9	GREEN	BLACK	P3	ø2 WALK	19	BLUE	RED	7A	ø1 GREEN
10	ORANGE	BLACK		SPARE	20	RED	GREEN	7A	OLA RED

MAST ARMS AND STANDARDS:
All mast arms and standards shall be design for a windload factor that accounts for the heads and signs shown, replacing the vehicle head at the end of the mast arm with a 5–section cluster head, and an additional 10 square feet of sign area added to the mast arm.

EACH VEHICLE/PEDESTRIAN HEAD CABLE SHALL BE LABELED WITH THE HEAD #.

EACH CABLE FROM THE CONTROLLER CABINET SHALL HAVE A SEPARATE TERMINAL BLOCK INSIDE THE T–BASE FOR TERMINATIONS.

MAST ARM MOUNTED SIGNS SHALL NOT BE PAID FOR SEPARATELY, BUT INCLUDED IN THE PRICE BID FOR TRAFFIC SIGNAL SYSTEM.

THESE POLES SHALL BE GALVANIZED.

HEAD CONDUCTOR ASSIGNMENT

CONDUCTORS			No.14 Awg 3 Ped. Heads	No.14 Awg 5 Veh. Heads	No.14 Awg 7 5–Section Veh. Heads
	BASE	TRACER	INDICATION	INDICATION	INDICATION
1	BLACK		WALK	GREEN	GREEN BALL
2	WHITE		NEUTRAL	NEUTRAL	NEUTRAL
3	RED		DT. WALK	RED	RED
4	GREEN			GROUND	GROUND
5	ORANGE			YELLOW	YELLOW BALL
6	BLUE				GREEN ARRROW
7	WHITE	BLACK			YELLOW ARROW

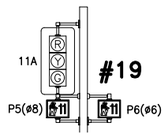
FYA CONDUCTOR ASSIGNMENT

CONDUCTORS			No.14 Awg 7 4–Section Veh. Heads
	BASE	TRACER	INDICATION
1	BLACK		SPARE
2	WHITE		NEUTRAL
3	RED		RED ARROW
4	GREEN		GROUND
5	ORANGE		FLASHING YELLOW ARROW
6	BLUE		GREEN ARRROW
7	WHITE	BLACK	YELLOW ARROW

HEAD 11A SHALL BE MOUNTED ON THE WEST SIDE OF THE POLE AND FACE SOUTH.

HEAD P5 SHALL BE MOUNTED ON THE WEST SIDE OF THE POLE AND FACE SOUTH.

HEAD P6 SHALL BE MOUNTED ON THE SOUTH SIDE OF THE POLE AND FACE EAST.

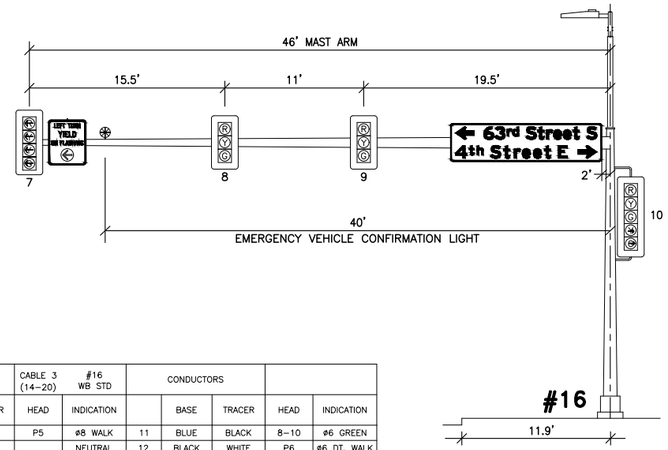


TYPE V–15' HEIGHT
PEDESTAL MOUNTED–VEHICULAR AND PEDESTRIAN HEADS

20'–#14/5	Vehicle Head #11A
18'–#14/3	Ped. Head #P5
18'–#14/3	Ped. Head #P6

ø1/OLA & ø6 WEST–BOUND APPROACH

SEE STREET LIGHTING PLANS FOR TYPE OF LUMINAIRE EXTENSION AND FIXTURE
1 – LUMINAIRE MOUNTED AT 40'



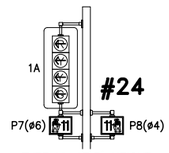
76'–#14/7	Vehicle Head #7
61'–#14/5	Vehicle Head #8
50'–#14/5	Vehicle Head #9
20'–#14/7	Vehicle Head #10
83'–#12/2	PE1 Ind Light

CONDUCTORS			CABLE 3 (14–20)	#16 WB STD	CONDUCTORS				
	BASE	TRACER	HEAD	INDICATION		BASE	TRACER	HEAD	INDICATION
1	BLACK		P5	ø8 WALK	11	BLUE	BLACK	8–10	ø6 GREEN
2	WHITE			NEUTRAL	12	BLACK	WHITE	P6	ø6 DT. WALK
3	RED		11A	ø4 RED	13	RED	WHITE		SPARE
4	GREEN			GROUND	14	GREEN	WHITE	EVP	PE1 IND LIGHT
5	ORANGE		11A	ø4 YELLOW	15	BLUE	WHITE	10	ø8 YELLOW
6	BLUE		11A	ø4 GREEN	16	BLACK	RED	10	ø8 GREEN
7	WHITE	BLACK	P5	ø8 DT. WALK	17	WHITE	RED	7	OLA FL YELLOW
8	RED	BLACK	8–10	ø6 RED	18	ORANGE	RED	7	OLA YELLOW
9	GREEN	BLACK	P6	ø6 WALK	19	BLUE	RED	7	ø1 GREEN
10	ORANGE	BLACK	8–10	ø6 YELLOW	20	RED	GREEN	7	OLA RED

HEAD 1A SHALL BE MOUNTED ON THE SOUTH SIDE OF THE POLE AND FACE WEST.

HEAD P7 SHALL BE MOUNTED ON THE SOUTH SIDE OF THE POLE AND FACE WEST.

HEAD P8 SHALL BE MOUNTED ON THE WEST SIDE OF THE POLE AND FACE SOUTH.

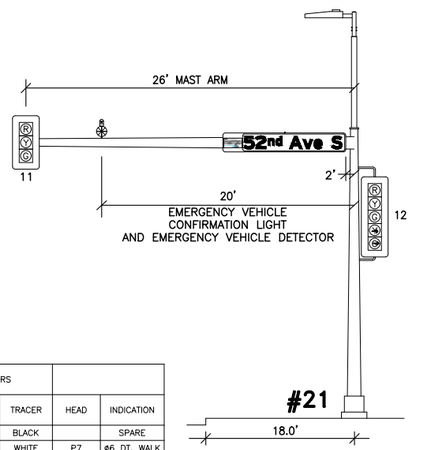


TYPE VI–17.5' HEIGHT
PEDESTAL MOUNTED–VEHICULAR AND PEDESTRIAN HEADS

20'–#14/7	Vehicle Head #1A
18'–#14/3	Ped. Head #P7
18'–#14/3	Ped. Head #P8

ø4 NORTH–BOUND APPROACH

SEE STREET LIGHTING PLANS FOR TYPE OF LUMINAIRE EXTENSION AND FIXTURE
1 – LUMINAIRE MOUNTED AT 40'



56'–#14/5	Vehicle Head #11
20'–#14/7	Vehicle Head #12
63'–#12/2	PE4 Ind Light

CONDUCTORS			CABLE 4 (14–20)	#21 NB STD	CONDUCTORS				
	BASE	TRACER	HEAD	INDICATION		BASE	TRACER	HEAD	INDICATION
1	BLACK		P8	ø4 WALK	11	BLUE	BLACK		SPARE
2	WHITE			NEUTRAL	12	BLACK	WHITE	P7	ø6 DT. WALK
3	RED		11–12	ø4 RED	13	RED	WHITE		SPARE
4	GREEN			GROUND	14	GREEN	WHITE	EVP	PE4 IND LIGHT
5	ORANGE		11–12	ø4 YELLOW	15	BLUE	WHITE	12	ø1 YELLOW
6	BLUE		11–12	ø4 GREEN	16	BLACK	RED	12	ø1 GREEN
7	WHITE	BLACK	P8	ø4 DT. WALK	17	WHITE	RED	1A	OLC FL YELLOW
8	RED	BLACK		SPARE	18	ORANGE	RED	1A	OLC YELLOW
9	GREEN	BLACK	P7	ø6 WALK	19	BLUE	RED	1A	ø5 GREEN
10	ORANGE	BLACK		SPARE	20	RED	GREEN	1A	OLC RED

NOTE: All signal heads shall be SIG Polycarbonate. All back plates shall be lovered .063" thick aluminum.

ALL PEDESTRIAN HEADS
16" x 18" Filled Overlay
L.E.D. PEDESTRIAN HEAD
WITH PEDESTRIAN COUNT DOWN TIMER

ALL L.E.D. SIGNAL HEADS
12" Lenses
VEHICLE HEADS
2,3,5,5A,8,9,11,11A

ALL L.E.D. SIGNAL HEADS
12" Lenses
VEHICLE HEADS
1,1A,7,7A

ALL L.E.D. SIGNAL HEADS
12" Lenses
VEHICLE HEADS
4,6,10,12

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
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Signals - Standards 63rd St S

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	4

Feed Point
Pedestrian Signal Standard
Traffic Signal Standard
Controller Cabinet
Ped. Push Button Post
Pull Box
Polymer Concrete Fiber Pull Box

Plan Note Number
2
Symbol

43'-2" Conduit
2-Loop Lead-In(20 to 1-345'*2) D8-1A/D8-1a
2-Loop Lead-In(20 to 1-345'*2) D8-3A/D8-3a

16'-2" Conduit
#14 AWG 20(16 to 1-313')Cable 3
#14 AWG 5(19)Head 11A
#14 AWG 3(19)Head P5
#14 AWG 3(19)Head P6

24'-2" Conduit
#14 AWG 2(19 to 1-327')ø6 Ped.
#14 AWG 3(15')ø6 Ped. PB to Head P6
#14 AWG 5(19 to 16-53')Head 11A
#14 AWG 3(19 to 16-53')Head P5
#14 AWG 3(19 to 16-53')Head P6
#14 AWG 3(19 to 18-65')ø8 Ped. PB to Head P5

52'-3" Conduit
#14 AWG 20(16)Cable 3
#14 AWG 2(18)ø8 Ped.
#14 AWG 2(19)ø6 Ped.
4-Loop Lead-In(20)

6'-1" Conduit
#14 AWG 2(18 to 1-309')ø8 Ped.
#14 AWG 3(19)ø8 Ped. PB to Head P5

16'-2" Conduit
#14 AWG 20(21 to 1-195')Cable 4
Opticom(21 to 1-256')EVP Detector
#14 AWG 7(24)Head 1A
#14 AWG 3(24)Head P7
#14 AWG 3(24)Head P8

27'-2" Conduit
#14 AWG 20(21)Cable 4
#14 AWG 2(23)ø6 Ped.
Opticom(21)EVP Detector
#14 AWG 3(24)ø4 Ped. PB to Head P8

16'-1" Conduit
#14 AWG 2(25 to 1-171')ø4 Ped.
#14 AWG 3(24)ø4 Ped. PB to Head P8

290'-2" Conduit
3-Loop Lead-In(27 to 1-444'*3)
D6-1A/D6-1B/D6-3

9'-1" Conduit
#14 AWG 2(23 to 1-194')ø6 Ped.
#14 AWG 3(24)ø6 Ped. PB to Head P7

3'-2" Conduit
#14 AWG 7(24 to 21-32')Head 1A
#14 AWG 3(24 to 21-32')Head P7
#14 AWG 3(24 to 21-32')Head P8
#14 AWG 3(24 to 23-47')ø6 Ped. PB to Head P7
#14 AWG 3(24 to 25-84')ø4 Ped. PB to Head P8

61'-3" Conduit
#14 AWG 20(21)Cable 4
#14 AWG 2(25)ø4 Ped.
#14 AWG 2(23)ø6 Ped.
Opticom(21)EVP Detector
3-Loop Lead-In(27)

52ND AVE S

59'-3" Conduit
#14 AWG 20(16)Cable 3
#14 AWG 2(18)ø8 Ped.
#14 AWG 2(19)ø6 Ped.
2-Loop Lead-In(15 to 1-244'*2)D5-1A/D5-1a
4-Loop Lead-In(20)

37'-3" Conduit
#14 AWG 20(16)Cable 3
#14 AWG 2(18)ø8 Ped.
#14 AWG 2(19)ø6 Ped.
3-Loop Lead-In(14)
2-Loop Lead-In(15)
4-Loop Lead-In(20)

8'-2" Conduit
#14 AWG 20(6 to 1-47')Cable 1
Opticom(6 to 1-124')EVP Detector
#16 AWG 3(6 to 1-88')PTZ Camera
CAT 6 Cable(6 to 1-88')PTZ Camera
#14 AWG 5(9)Head 5A
#14 AWG 3(9)Head P1
#14 AWG 3(9)Head P2

43'-3" Conduit
#14 AWG 20(21)Cable 4
#14 AWG 2(25)ø4 Ped.
#14 AWG 2(23)ø6 Ped.
Opticom(21)EVP Detector
2-Loop Lead-In(28 to 1-87'*2)D1-1A/D1-1a
3-Loop Lead-In(27)

16'-1" Conduit
#14 AWG 2(7 to 1-61')ø4 Ped.
#14 AWG 3(9)ø4 Ped. PB to Head P1

21'-4" Conduit
#14 AWG 20(6)Cable 1
#14 AWG 20(21)Cable 4
#14 AWG 2(7)ø4 Ped.
#14 AWG 2(8)ø2 Ped.
#14 AWG 2(25)ø4 Ped.
#14 AWG 2(23)ø6 Ped.
Opticom(6)EVP Detector
Opticom(21)EVP Detector
2-Loop Lead-In(28)
3-Loop Lead-In(27)
#16 AWG 3(6)PTZ Camera
CAT 6 Cable(6)PTZ Camera

289'-2" Conduit
3-Loop Lead-In(14 to 1-474'*3)
D2-1A/D2-1B/D2-3

98'-4" Conduit
#14 AWG 20(12)Cable 2
#14 AWG 20(16)Cable 3
#14 AWG 2(10)ø2 Ped.
#14 AWG 2(12)ø8 Ped.
#14 AWG 2(18)ø8 Ped.
#14 AWG 2(19)ø6 Ped.
3-Loop Lead-In(14)
2-Loop Lead-In(15)
4-Loop Lead-In(20)

31'-1" Conduit
#14 AWG 2(8 to 1-76')ø2 Ped.
#14 AWG 3(9)ø2 Ped. PB to Head P2

21'-4" Conduit
#14 AWG 20(12)Cable 2
#14 AWG 20(16)Cable 3
#14 AWG 2(10)ø2 Ped.
#14 AWG 2(12)ø8 Ped.
#14 AWG 2(18)ø8 Ped.
#14 AWG 2(19)ø6 Ped.
3-Loop Lead-In(14)
2-Loop Lead-In(15)
4-Loop Lead-In(20)

22'-2" Conduit
#14 AWG 20(12 to 1-162')Cable 2
#14 AWG 2(12 to 1-168')ø8 Ped.
#14 AWG 3(15')ø8 Ped. PB to Head P4
#14 AWG 3(12 to 10-76')ø2 Ped. PB to Head P3

23'-2" Conduit
2-#6 RHW(2 to 1-43'*2)
#6 THW(2 to 1-43')

19'-1" Conduit
#14 AWG 2(10 to 1-165')ø2 Ped.
#14 AWG 3(12)ø2 Ped. PB to Head P3

7'-2" Conduit
Fiber Optic Cable
See Section 160

63RD ST S

36'-2" Conduit
2-Loop Lead-In(4 to 1-56'*2)D4-1A/D4-1a
2-Loop Lead-In(4 to 1-56'*2)D4-3A/D4-3a

36'-2" Conduit
#14 AWG 5(9 to 6-57')Head 5A
#14 AWG 3(9 to 6-57')Head P1
#14 AWG 3(9 to 6-57')Head P2
#14 AWG 3(9 to 7-87')ø4 Ped. PB to Head P1
#14 AWG 3(9 to 8-102')ø2 Ped. PB to Head P2

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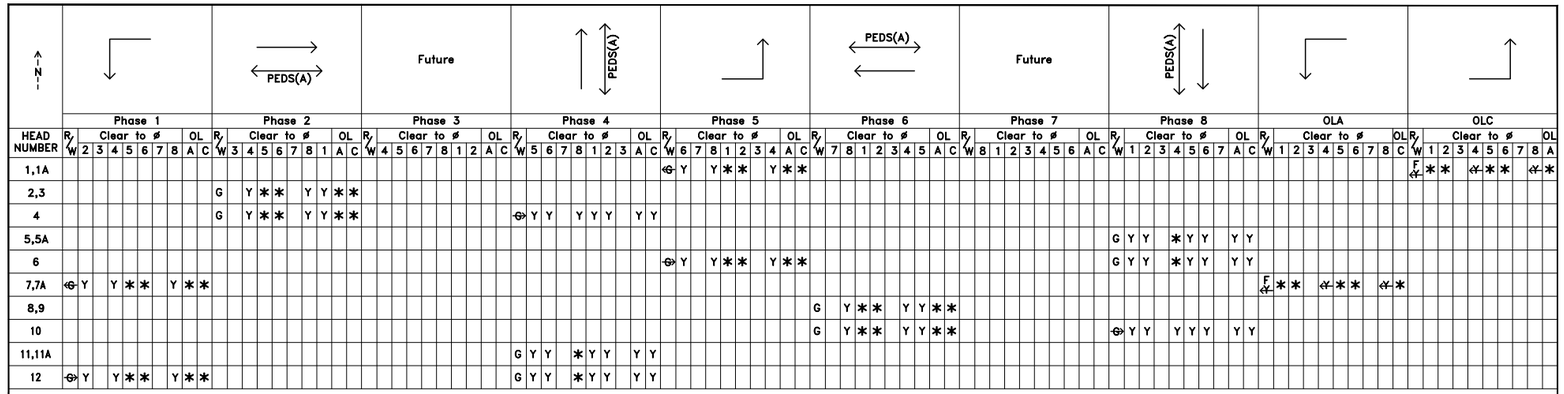
Signals - Wiring Diagram 63rd St S

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	5

52nd Ave S & 63rd St S



HEAD NUMBER	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8	OLA	OLC
	R/W 2 3 4 5 6 7 8 A C OL	R/W 3 4 5 6 7 8 1 A C OL	R/W 4 5 6 7 8 1 2 A C OL	R/W 5 6 7 8 1 2 3 A C OL	R/W 6 7 8 1 2 3 4 A C OL	R/W 7 8 1 2 3 4 5 A C OL	R/W 8 1 2 3 4 5 6 A C OL	R/W 1 2 3 4 5 6 7 A C OL	R/W 1 2 3 4 5 6 7 8 C OL	R/W 1 2 3 4 5 6 7 8 A OL
1,1A	Clear to ø	Clear to ø	Clear to ø	Clear to ø	Clear to ø	Clear to ø	Clear to ø	Clear to ø	Clear to ø	Clear to ø
2,3	G Y * * Y Y * *	G Y * * Y Y * *								
4	G Y * * Y Y * *			⊖ Y Y Y Y Y Y						
5,5A								G Y Y * Y Y Y Y		
6					⊖ Y Y * * Y * *			G Y Y * Y Y Y Y		
7,7A	⊖ Y Y * * Y * *								F ↺ * * ↺ * * ↺ *	
8,9						G Y * * Y Y * *				
10						G Y * * Y Y * *		⊖ Y Y Y Y Y Y		
11,11A				G Y Y * Y Y Y Y						
12	⊖ Y Y * * Y * *			G Y Y * Y Y Y Y						

Chart "A"	
On Phase	Non-Conflicting Phase Allowed to Time Concurrently
1	5,6,OLA,OLC
2	5,6,OLA,OLC
3	Future
4	8
5	1,2,OLA,OLC
6	1,2,OLA,OLC
7	Future
8	4
OLA	1,2,5,6,OLC
OLC	1,2,5,6,OLA

Blank Squares Denote a Red Indication

(*) When one phase is on alone, any non-conflicting phase may start timing concurrently without a clearance interval. (See Chart "A")

(A) Only upon pedestrian actuation.

THE CITY WILL PROGRAM THE SIGNAL TIMING INTO THE CONTROLLER PRIOR TO START UP.

TRAFFIC CONTROL SYSTEM
Controller Phasing

PHASE-LOOP · DIRECTION · CONTROLLER INPUT LOCATION · LOOP TYPE · WHITE BACKGROUND · BLACK LEGEND & LINES

CH.1		1-1A	WBLT	2-1A	EB			4-1A	NB	5-1A	EBLT	6-1A	WB			8-1A	SB	PE1	WB	PE3	SB
		VD1	PR	VD2	P	VD3		VD4	PR	VD5	PR	VD6	P	VD7		VD8	PR		ø1&ø6		ø8
CH.2		1-1a	WBLT	2-1B	EB			4-1a	NB	5-1a	EBLT	6-1B	WB			8-1a	SB	PE2	EB	PE4	NB
		SD1	PR	SD2	P	SD3		SD4	PR	SD5	PR	SD6	P	SD7		SD8	PR		ø2&ø5		ø4
REF	POWER SUPPLY	DT1		DT2		DT3		DT4		DT5		DT6		DT7		DT8		OD1		OD2	

CH.1				2-3	EBRT			4-3A	NBRT			6-3	WBRT			8-3A	SBRT
		VD9		VD10	P	VD11		VD12	PR	VD13		VD14	P	VD15		VD16	PR
CH.2								4-3a	NBRT							8-3a	SBRT
		VD17		VD18		VD19		VD20	PR	VD21		VD22		VD23		VD24	PR
REF	POWER SUPPLY	DT1		DT2		DT3		DT4		DT5		DT6		DT7		DT8	

TYPICAL 8 PHASE DETECTOR LABEL

SAME PHASE MULTIPLE LEAD-INS
LETTERS A-D
LANE LOCATION START
"A" ON THE CENTER LINE
TO CURB.

PHASE-LOOP
(N)-1 = (2,4,6,8)-PASSAGE
(N)-1 = (2,4,6,8)-PRESENCE
(N)-2 = (2,4,6,8)-CALLING
(N)-1 = (1,3,5,7)-LEFT TURN
(N)-3 = (2,4,6,8)-RIGHT TURN
(N)-5 = (1,2,3,4,5,6,7,8)- COUNT LOOP

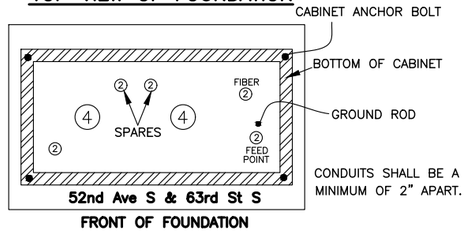
LOOP TYPE
P = PASSAGE
PR = PRESENCE
C = CALLING
LT = LEFT TURN
RT = RIGHT TURN
T = COUNT LOOP

CONTROLLER INPUT LOCATION
VD(#) = VEHICLE DETECTOR (1-8)
SD(#) = SPECIAL DETECTOR (1-8)
PD(#) = PEDESTRIAN DETECTOR (1-8)

EMERGENCY VEHICLE PRE-EMPTION PHASING

ø6 ← ø1+OLA ↓	ø5+OLC ↑ → ø2	ø8 ↓	ø4 ↑
WEST BOUND	EAST BOUND	SOUTH BOUND	NORTH BOUND
PREEMPT 1	PREEMPT 2	PREEMPT 3	PREEMPT 4
TOP TUBE/BLUE WIRE	BOTTOM TUBE/YELLOW WIRE	TOP TUBE/BLUE WIRE	BOTTOM TUBE/YELLOW WIRE

CONDUIT PLACEMENT
TOP VIEW OF FOUNDATION



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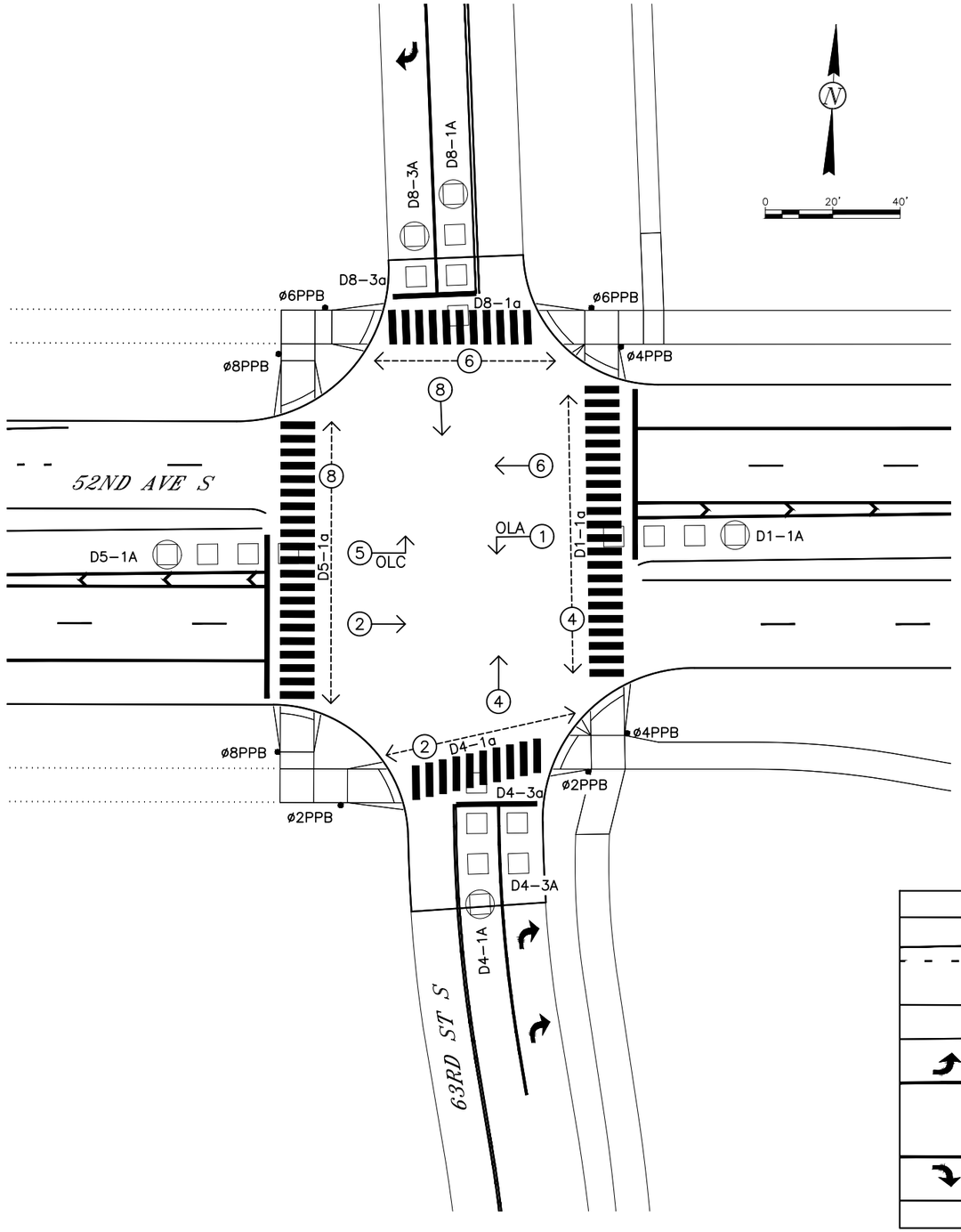
Signals - Controller Phasing 63rd St S

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	6

PHASE DESIGNATION DIAGRAM

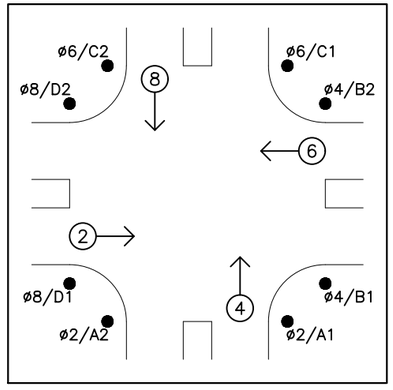


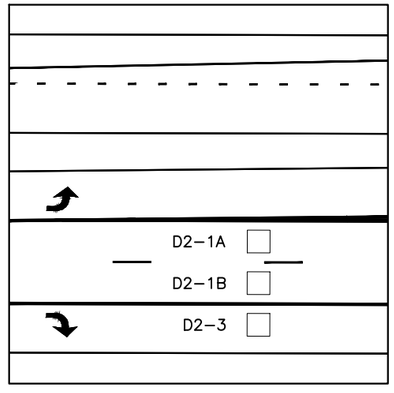
52nd Ave S & 63rd St S

DETECTOR LOOP SCHEDULE - 52nd Ave S & 63rd St S

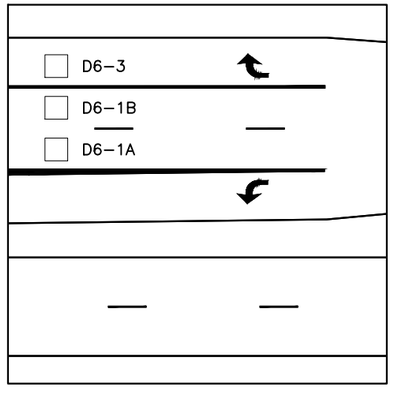
DETECTION ZONE	DETECTION TYPE	NUMBER OF LOOPS	PHASE	SIZE (FEET)	TYPE OF LOOP	NUMBER OF TURNS	CONDUCTOR (LF)	SLAW SLOT (LF)
D1–1A D1–1a	LOOP	4	ø1	6 x 6	PRESENCE	3	392	106
D2–1A D2–1B D2–3	LOOP	3	ø2	6 x 6	PASSAGE	3	332	114
D4–1A D4–1a	LOOP	4	ø4	6 x 6	PRESENCE	3	498	156
D4–3A D4–3a	LOOP	2	ø4	6 x 6	PRESENCE	3	184	53
D5–1A D5–1a	LOOP	4	ø5	6 x 6	PRESENCE	3	392	106
D6–1A D6–1B D6–3	LOOP	3	ø6	6 x 6	PASSAGE	3	344	114
D8–1A D8–1a	LOOP	4	ø8	6 x 6	PRESENCE	3	510	160
D8–3A D8–3a	LOOP	2	ø8	6 x 6	PRESENCE	3	196	54
						TOTAL	2,848	863

PUSHBUTTON ASSIGNMENT





EASTBOUND



WESTBOUND

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Signals - Phase Diagram 63rd St S

52nd Ave S - West of 63rd St S to 45th St S

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-984(164)	150	7

TRAFFIC SIGNAL QUANTITIES (A)

LOCATION	CONCRETE FOUNDATION - TRAFFIC SIGNALS	POLYMER CONCRETE FIBER PULL BOX & CONCRETE PAD	PULL BOX	FARGO TYPE B CABINET, FOUNDATION, & WORKING SLAB	1" DIA. RIGID CONDUIT	2" DIA. RIGID CONDUIT	3" DIA. RIGID CONDUIT	4" DIA. RIGID CONDUIT	UNDERGROUND CONDUCTOR NO. 6 - RHW	UNDERGROUND CONDUCTOR NO. 6 - THW	LOOP LEAD-IN CONDUCTOR	LOOP WIRE	EMERGENCY VEHICLE DETECTOR CABLE (OPTICOM)	EMERGENCY VEHICLE INDICATOR CABLE (NO. 12 AWG 2)	NO. 14 AWG 2 CONDUCTOR CABLE	NO. 14 AWG 3 CONDUCTOR CABLE	NO. 14 AWG 5 CONDUCTOR CABLE	NO. 14 AWG 7 CONDUCTOR CABLE	NO. 14 AWG 20 CONDUCTOR CABLE	SAW SLOT	FEED POINT CABINET FOUNDATION	RELOCATE COMBO FEED POINT CABINET	TYPE V SIGNAL STANDARD	TYPE VI SIGNAL STANDARD	COMBO 40' MH SIGNAL & LIGHT STANDARD - 26' MA	COMBO 40' MH SIGNAL & LIGHT STANDARD - 42' MA	COMBO 40' MH SIGNAL & LIGHT STANDARD - 46' MA	COMBO 40' MH SIGNAL & LIGHT STANDARD - 47' MA	LED LUMINAIRE	1-WAY 3 SEC HEAD W/ 12" LENS - PEDESTAL MTD.	1-WAY 3 SEC HEAD W/ 12" LENS - MA MTD.	1-WAY 3 SEC HEAD W/ 12" LENS - POST MTD.	1-WAY 4 SEC HEAD W/ 12" LENS - PEDESTAL MTD.	1-WAY 4 SEC HEAD W/12" LENS - MA MTD.	1-WAY 5 SEC HEAD W/ 12" LENS - POST MTD.	PEDESTRIAN COUNTDOWN SIGNAL HEAD - POST MTD.	PEDESTRIAN COUNTDOWN SIGNAL HEAD - PEDESTAL MTD.	PEDESTRIAN PUSH BUTTON POST	APS PEDESTRIAN PUSH BUTTON & SIGN	EMERGENCY VEHICLE DETECTOR SYSTEM	BATTERY BACKUP SYSTEM	PTZ CAMERA	CAT 6 CABLE	NO. 16 AWG 3 (PTZ CAMERA POWER)	MAST ARM MOUNTED SIGNS		TRAFFIC SIGNAL SYSTEM - SITE 1
	EA	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	LF	LF	LSUM		EA
POLE 6	1																								1				1		2			1	1														
POLE 9	1																							1						1						2												
POLE 12	1																												1	2		1	1			1	2			1								
POLE 16	1																										1			1		2			1	1											
POLE 19	1																							1							1						2		1								
POLE 21	1																									1				1		1				1										
POLE 24	1																								1									1				2										
VARIOUS LOCATIONS		1	12	1	97	833	252	140	86	43	5,020	2,848	380	309	1,471	919	497	300	717	863	1	1																			6	6	1	1	1	88	88	1		
TOTAL	7	1	12	1	97	833	252	140	86	43	5,020	2,848	380	309	1,471	919	497	300	717	863	1	1	2	1	1	1	1	1	5	2	6	1	1	2	4	2	6	6	8	1	1	1	88	88	1		1

(A) TRAFFIC SIGNAL QUANTITIES FOR INFORMATIONAL PURPOSES ONLY. ALL COSTS SHALL BE INCLUDED IN THE BID PRICE FOR "TRAFFIC SIGNAL SYSTEM - SITE 1".
QUANTITIES CALCULATED ACCORDING TO NDDOT SPECIFICATIONS.

REMOVAL QUANTITIES (B)

REMOVE FEED POINT FOUNDATION	REMOVE & SALVAGE COMBO FEED POINT CABINET	REMOVE TRAFFIC SIGNAL CONTROLLER FOUNDATION & WORKING SLAB	REMOVE & SALVAGE TRAFFIC SIGNAL CONTROLLER CABINET	REMOVE & SALVAGE WOOD POLE W/ GUY WIRE	REMOVE & SALVAGE VEHICULAR HEADS	REMOVE & SALVAGE PEDESTRIAN HEADS	REMOVE & SALVAGE PEDESTRIAN PUSH BUTTON	REMOVE & SALVAGE EMERGENCY VEHICLE DETECTION SYSTEM	REMOVE & SALVAGE VEHICULAR & PEDESTRIAN HEAD MOUNTING EQUIPMENT	REMOVE & SALVAGE SPAN & STABILITY WIRE	REMOVE & SALVAGE CONDUCTOR	REMOVE CONDUIT		REMOVE TRAFFIC SIGNAL SYSTEM
EA	EA	EA	EA	EA	EA	EA	EA	EA	LSUM	LSUM	LSUM	LSUM		EA
1	1	1	1	4	10	2	2	1	1	1	1	1		1

(B) TRAFFIC SIGNAL REMOVAL QUANTITIES FOR INFORMATIONAL PURPOSES ONLY.
ALL COSTS SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVE TRAFFIC SIGNAL SYSTEM".
QUANTITIES CALCULATED ACCORDING TO NDDOT SPECIFICATIONS.

THE CITY OF Fargo FAR MORE

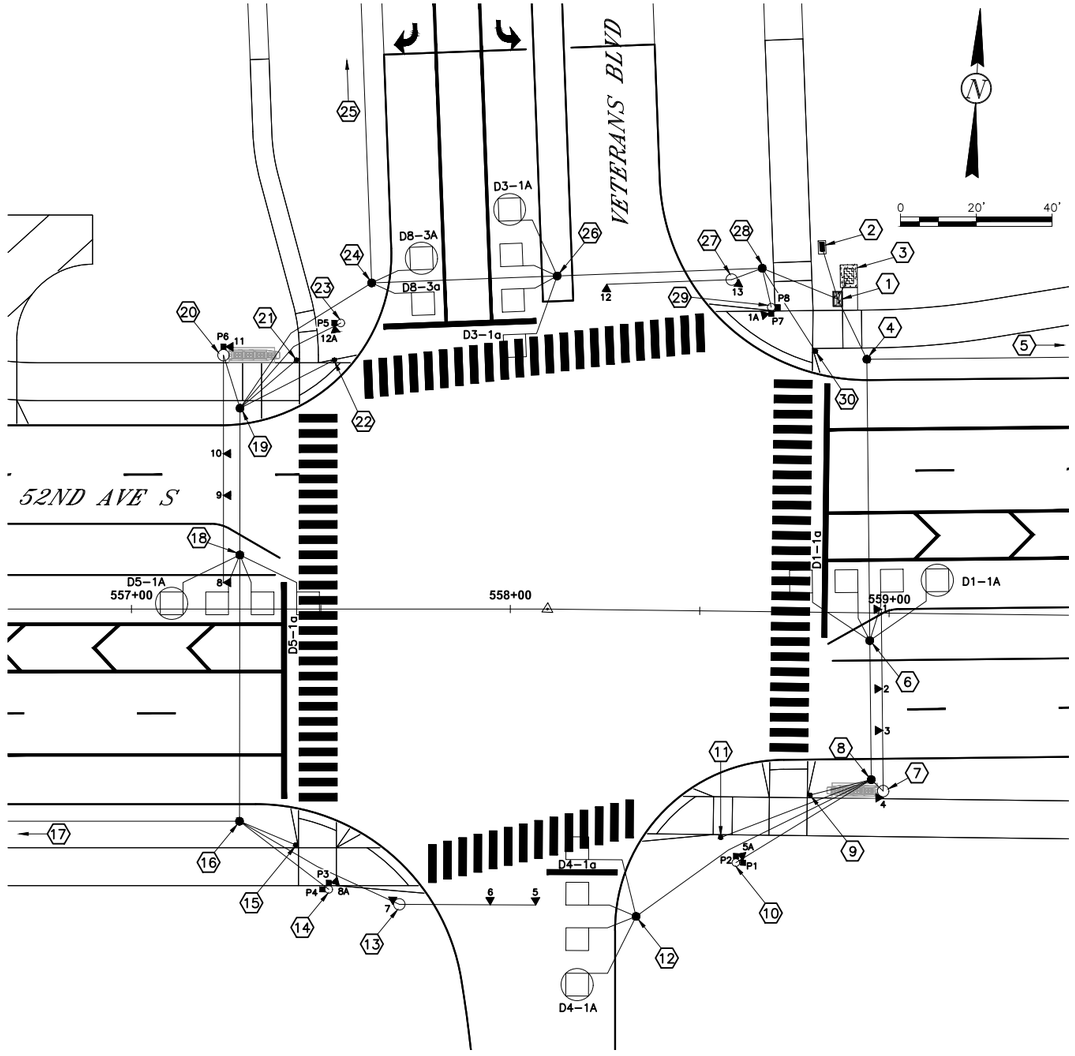
Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

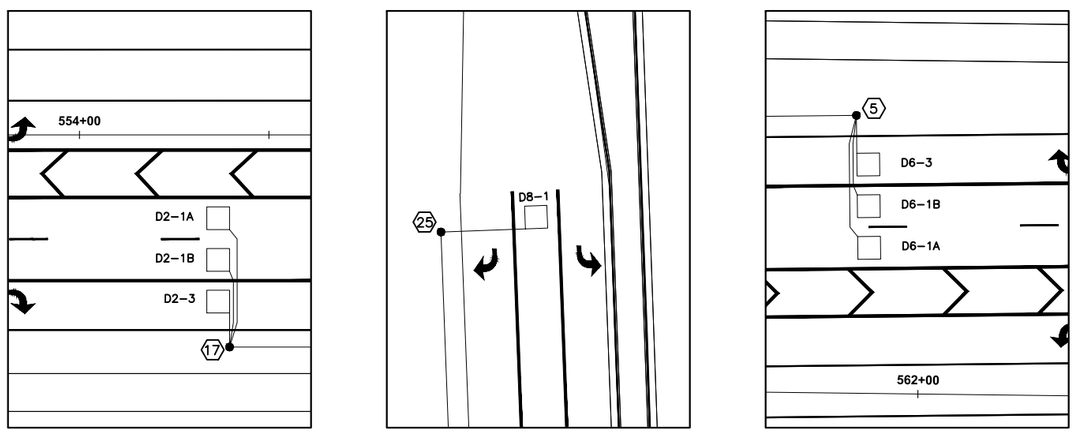
This document was originally issued and sealed by Josh N. Hinds Registration Number 8261 on 10/26/18 and the original document is stored in the Engineering Dept. at City Hall.

Signals - Quantities 63rd St S

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	8





EASTBOUND SOUTHBOUND WESTBOUND

1. INSTALL TRAFFIC SIGNAL CABINET FOUNDATION AND WORKING SLAB. F&I NEW FARGO TYPE B CABINET. INSTALL A SECOND SEPARATE STAND ALONE DETECTOR RACK WITH ITS OWN POWER SUPPLY AND ITS OWN SEPARATE SELF CONTAINED WIRING HARNESS WITH NO JUMPERS BETWEEN THE TWO DETECTOR RACKS. IT SHALL BE LOCATED TO THE RIGHT OF THE STANDARD DETECTOR RACK. INSTALL TWO EXTRA DETECTOR PANELS DIRECTLY ABOVE THE STANDARD FARGO TYPE B CABINET PANELS; THESE SHALL BE CONNECTED TO THE SECOND DETECTOR RACK. PROVIDE TWO PS 2.4 AMP POWER SUPPLIES FOR THE DETECTOR RACKS. PROVIDE 2 SPARE 2" CONDUITS IN THE FOUNDATION STUBBED OUT TO THE WEST. THE CABINET DOOR SHALL FACE EAST AND RIGHT HINGED. PROVIDE 17 – 2–CHANNEL VEHICLE DETECTORS.
2. INSTALL FEED POINT CABINET FOUNDATION. F&I NEW COMBO FEED POINT CABINET. PROVIDE 2 SPARE 2" CONDUITS IN THE FOUNDATION, 1 EAST AND 1 WEST. THE CABINET DOOR SHALL FACE EAST.
3. F&I NEW POLYMER CONCRETE FIBER PULL BOX. INSTALL CONCRETE PAD AROUND PULL BOX.
4. F&I NEW PVC PULL BOX.
5. F&I NEW PVC PULL BOX. INSTALL 3 – 6'x6' LOOPS(D6–1A/D6–1B/D6–3).
6. F&I NEW PVC PULL BOX. INSTALL 4 – 6'x6' LOOPS(D1–1A/D1–1a).
7. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE IV/COMBO TRAFFIC SIGNAL STANDARD WITH A 48' MAST ARM. F&I MODEL 722 EVP DETECTOR AND CONFIRMATION LIGHT. F&I NEW PTZ CAMERA.
8. F&I NEW PVC PULL BOX.
9. F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING WEST WITH A LEFT ARROW.
10. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT).
11. F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING NORTH WITH A RIGHT ARROW.
12. F&I NEW PVC PULL BOX. INSTALL 4 – 6'x6' LOOPS(D4–1A/D4–1a).
13. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE IV/COMBO TRAFFIC SIGNAL STANDARD WITH A 36' MAST ARM. F&I EVP CONFIRMATION LIGHT.
14. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT). F&I NEW APS PEDESTRIAN PUSH BUTTON FACING NORTH WITH A LEFT ARROW.
15. F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING EAST WITH A RIGHT ARROW.
16. F&I NEW PVC PULL BOX.
17. F&I NEW PVC PULL BOX. INSTALL 3 – 6'x6' LOOPS(D2–1A/D2–1B/D2–3).
18. F&I NEW PVC PULL BOX. INSTALL 4 – 6'x6' LOOPS(D5–1A/D5–1a).
19. F&I NEW PVC PULL BOX.
20. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE IV/COMBO TRAFFIC SIGNAL STANDARD WITH A 60' MAST ARM. F&I EVP CONFIRMATION LIGHT.
21. F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING EAST WITH A LEFT ARROW.
22. F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING SOUTH WITH A RIGHT ARROW.
23. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE V TRAFFIC SIGNAL STANDARD (15' HEIGHT).
24. F&I NEW PVC PULL BOX. INSTALL 2 – 6'x6' LOOPS(D8–3A/D8–3a).
25. F&I NEW PVC PULL BOX. INSTALL 1 – 6'x6' LOOP(D8–1).
26. F&I NEW PVC PULL BOX. INSTALL 4 – 6'x6' LOOPS(D3–1A/D3–1a).
27. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE IV/COMBO TRAFFIC SIGNAL STANDARD WITH A 33' MAST ARM. F&I MODEL 722 EVP DETECTOR AND CONFIRMATION LIGHT.
28. F&I NEW PVC PULL BOX.
29. F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT). F&I NEW APS PEDESTRIAN PUSH BUTTON FACING SOUTH WITH A LEFT ARROW.
30. F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING WEST WITH A RIGHT ARROW.

- Polymer Concrete Fiber Pull Box
- Detector Loops
- Feed Point
- Controller Cabinet
- Existing Signal Std.
- Existing Pull Box
- New Pull Box
- Ped. Post
- Utility Pole
- New Signal Std.
- Flasher
- Ped. Head
- Vehicle Head
- Conduit
- Existing Conduit
- Signal Fiber Line
- Span Wire

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Signals - Layout Veterans

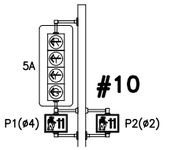
52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	9

HEAD 5A SHALL BE MOUNTED ON THE EAST SIDE OF THE POLE AND FACE NORTH.

HEAD P1 SHALL BE MOUNTED ON THE EAST SIDE OF THE POLE AND FACE NORTH.

HEAD P2 SHALL BE MOUNTED ON THE NORTH SIDE OF THE POLE AND FACE WEST.

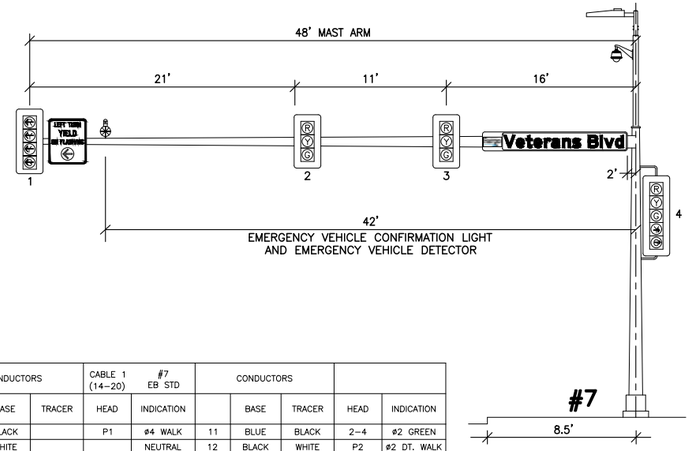


TYPE VI–17.5' HEIGHT
PEDESTAL MOUNTED–VEHICULAR AND PEDESTRIAN HEADS

20'–#14/7	Vehicle Head #5A
18'–#14/3	Ped. Head #P1
18'–#14/3	Ped. Head #P2

ø2 & ø5/OLC EAST–BOUND APPROACH

SEE STREET LIGHTING PLANS FOR TYPE OF LUMINAIRE EXTENSION AND FIXTURE
1 – LUMINAIRE MOUNTED AT 40'



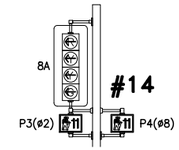
CONDUCTORS			CABLE 1 (14–20)	#7 EB STD	CONDUCTORS				
	BASE	TRACER	HEAD	INDICATION		BASE	TRACER	HEAD	INDICATION
1	BLACK		P1	ø4 WALK	11	BLUE	BLACK	2–4	ø2 GREEN
2	WHITE			NEUTRAL	12	BLACK	WHITE	P2	ø2 DT. WALK
3	RED		5A	← OLB RED	13	RED	WHITE	5A	OLB FL YELLOW →
4	GREEN			GROUND	14	GREEN	WHITE	EVP	PE2 IND LIGHT
5	ORANGE		5A	OLB YELLOW →	15	BLUE	WHITE	4	ø4 YELLOW →
6	BLUE		5A	← ø3 GREEN	16	BLACK	RED	4	ø4 GREEN →
7	WHITE	BLACK	P1	ø4 DT. WALK	17	WHITE	RED	1	OLC FL YELLOW →
8	RED	BLACK	2–4	ø2 RED	18	ORANGE	RED	1	OLC YELLOW →
9	GREEN	BLACK	P2	ø2 WALK	19	BLUE	RED	1	← ø5 GREEN
10	ORANGE	BLACK	2–4	ø2 YELLOW	20	RED	GREEN	1	← OLC RED

78'–#14/7	Vehicle Head #1
57'–#14/5	Vehicle Head #2
46'–#14/5	Vehicle Head #3
20'–#14/7	Vehicle Head #4
85'–#12/2	PE2 Ind Light

HEAD 8A SHALL BE MOUNTED ON THE NORTH SIDE OF THE POLE AND FACE EAST.

HEAD P3 SHALL BE MOUNTED ON THE NORTH SIDE OF THE POLE AND FACE EAST.

HEAD P4 SHALL BE MOUNTED ON THE WEST SIDE OF THE POLE AND FACE NORTH.

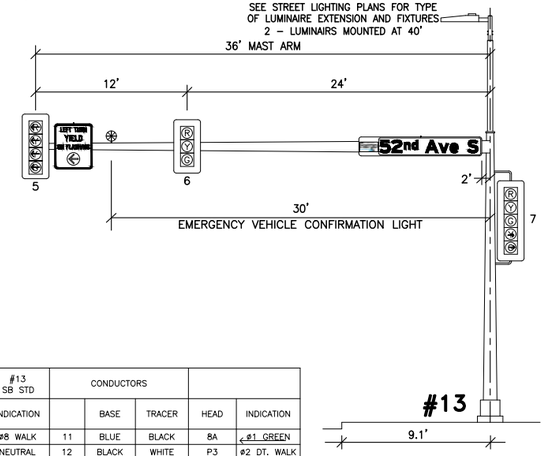


TYPE VI–17.5' HEIGHT
PEDESTAL MOUNTED–VEHICULAR AND PEDESTRIAN HEADS

20'–#14/7	Vehicle Head #8A
18'–#14/3	Ped. Head #P3
18'–#14/3	Ped. Head #P4

ø3/OLB & ø8 SOUTH–BOUND APPROACH

SEE STREET LIGHTING PLANS FOR TYPE OF LUMINAIRE EXTENSION AND FIXTURES
2 – LUMINAIRS MOUNTED AT 40'



CONDUCTORS			CABLE 2 (14–20)	#13 SB STD	CONDUCTORS				
	BASE	TRACER	HEAD	INDICATION		BASE	TRACER	HEAD	INDICATION
1	BLACK		P4	ø8 WALK	11	BLUE	BLACK	8A	← ø1 GREEN
2	WHITE			NEUTRAL	12	BLACK	WHITE	P3	ø2 DT. WALK
3	RED		6–7	ø8 RED	13	RED	WHITE	8A	OLA FL YELLOW →
4	GREEN			GROUND	14	GREEN	WHITE	EVP	PE3 IND LIGHT
5	ORANGE		6–7	ø8 YELLOW	15	BLUE	WHITE	7	ø5 YELLOW →
6	BLUE		6–7	ø8 GREEN	16	BLACK	RED	7	ø5 GREEN →
7	WHITE	BLACK	P4	ø8 DT. WALK	17	WHITE	RED	5	OLB FL YELLOW →
8	RED	BLACK	8A	← OLA RED	18	ORANGE	RED	5	OLB YELLOW →
9	GREEN	BLACK	P3	ø2 WALK	19	BLUE	RED	5	← ø3 GREEN
10	ORANGE	BLACK	8A	OLA YELLOW →	20	RED	GREEN	5	← OLB RED

66'–#14/7	Vehicle Head #5
54'–#14/5	Vehicle Head #6
20'–#14/7	Vehicle Head #7
73'–#12/2	PE3 Ind Light

MAST ARMS AND STANDARDS:
All mast arms and standards shall be design for a windload factor that accounts for the heads and signs shown, replacing the vehicle head at the end of the mast arm with a 5–section cluster head, and an additional 10 square feet of sign area added to the mast arm.

EACH VEHICLE/PEDESTRIAN HEAD CABLE SHALL BE LABELED WITH THE HEAD #.

EACH CABLE FROM THE CONTROLLER CABINET SHALL HAVE A SEPARATE TERMINAL BLOCK INSIDE THE T–BASE FOR TERMINATIONS.

MAST ARM MOUNTED SIGNS SHALL NOT BE PAID FOR SEPARATELY, BUT INCLUDED IN THE PRICE BID FOR TRAFFIC SIGNAL SYSTEM.

THESE POLES SHALL BE GALVANIZED.

HEAD CONDUCTOR ASSIGNMENT

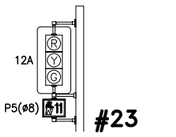
CONDUCTORS			No.14 Awg 3 Ped. Heads	No.14 Awg 5 Veh. Heads	No.14 Awg 7 5–Section Veh. Heads
	BASE	TRACER	INDICATION	INDICATION	INDICATION
1	BLACK		WALK	GREEN	GREEN BALL
2	WHITE		NEUTRAL	NEUTRAL	NEUTRAL
3	RED		DT. WALK	RED	RED
4	GREEN			GROUND	GROUND
5	ORANGE			YELLOW	YELLOW BALL
6	BLUE				GREEN ARRROW
7	WHITE	BLACK			YELLOW ARROW

FYA CONDUCTOR ASSIGNMENT

CONDUCTORS			No.14 Awg 7 4–Section Veh. Heads
	BASE	TRACER	INDICATION
1	BLACK		SPARE
2	WHITE		NEUTRAL
3	RED		RED ARROW
4	GREEN		GROUND
5	ORANGE		FLASHING YELLOW ARROW
6	BLUE		GREEN ARRROW
7	WHITE	BLACK	YELLOW ARROW

HEAD 12A SHALL BE MOUNTED ON THE WEST SIDE OF THE POLE AND FACE SOUTH.

HEAD P5 SHALL BE MOUNTED ON THE WEST SIDE OF THE POLE AND FACE SOUTH.

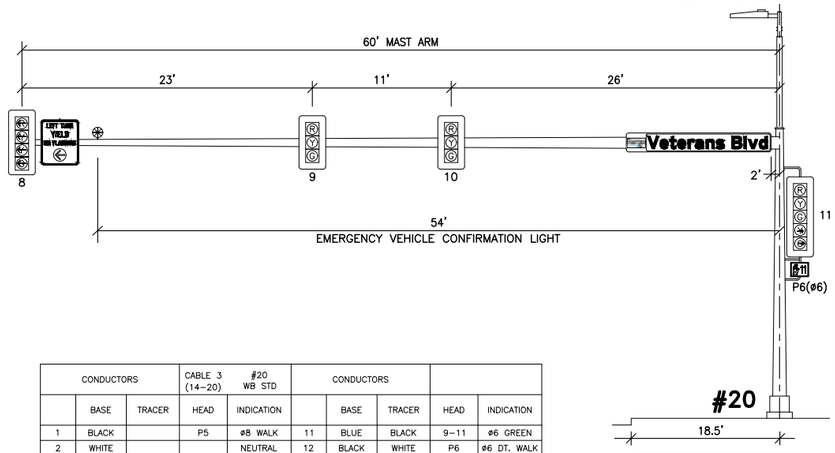


TYPE V–15' HEIGHT
PEDESTAL MOUNTED–VEHICULAR AND PEDESTRIAN HEADS

20'–#14/5	Vehicle Head #12A
18'–#14/3	Ped. Head #P5

ø1/OLA & ø6 WEST–BOUND APPROACH

SEE STREET LIGHTING PLANS FOR TYPE OF LUMINAIRE EXTENSION AND FIXTURE
1 – LUMINAIRE MOUNTED AT 40'



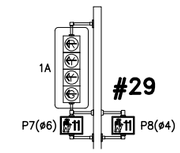
CONDUCTORS			CABLE 3 (14–20)	#20 WB STD	CONDUCTORS				
	BASE	TRACER	HEAD	INDICATION		BASE	TRACER	HEAD	INDICATION
1	BLACK		P5	ø8 WALK	11	BLUE	BLACK	9–11	ø6 GREEN
2	WHITE			NEUTRAL	12	BLACK	WHITE	P6	ø6 DT. WALK
3	RED		12A	ø4 RED	13	RED	WHITE		SPARE
4	GREEN			GROUND	14	GREEN	WHITE	EVP	PE1 IND LIGHT
5	ORANGE		12A	ø4 YELLOW	15	BLUE	WHITE	11	ø3 YELLOW →
6	BLUE		12A	ø4 GREEN	16	BLACK	RED	11	ø3 GREEN →
7	WHITE	BLACK	P5	ø8 DT. WALK	17	WHITE	RED	8	OLA FL YELLOW →
8	RED	BLACK	9–11	ø6 RED	18	ORANGE	RED	8	OLA YELLOW →
9	GREEN	BLACK	P6	ø6 WALK	19	BLUE	RED	8	← ø1 GREEN
10	ORANGE	BLACK	9–11	ø6 YELLOW	20	RED	GREEN	8	← OLA RED

90'–#14/7	Vehicle Head #8
67'–#14/5	Vehicle Head #9
56'–#14/5	Vehicle Head #10
20'–#14/7	Vehicle Head #11
18'–#14/3	Ped. Head P6
97'–#12/2	PE1 Ind Light

HEAD 1A SHALL BE MOUNTED ON THE SOUTH SIDE OF THE POLE AND FACE WEST.

HEAD P7 SHALL BE MOUNTED ON THE SOUTH SIDE OF THE POLE AND FACE WEST.

HEAD P8 SHALL BE MOUNTED ON THE EAST SIDE OF THE POLE AND FACE SOUTH.

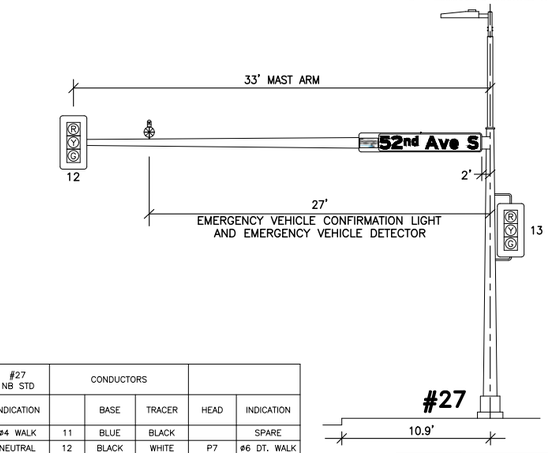


TYPE VI–17.5' HEIGHT
PEDESTAL MOUNTED–VEHICULAR AND PEDESTRIAN HEADS

20'–#14/7	Vehicle Head #1A
18'–#14/3	Ped. Head #P7
18'–#14/3	Ped. Head #P8

ø4 NORTH–BOUND APPROACH

SEE STREET LIGHTING PLANS FOR TYPE OF LUMINAIRE EXTENSION AND FIXTURES
2 – LUMINAIRES MOUNTED AT 40'



CONDUCTORS			CABLE 4 (14–20)	#27 NB STD	CONDUCTORS				
	BASE	TRACER	HEAD	INDICATION		BASE	TRACER	HEAD	INDICATION
1	BLACK		P8	ø4 WALK	11	BLUE	BLACK		SPARE
2	WHITE			NEUTRAL	12	BLACK	WHITE	P7	ø6 DT. WALK
3	RED		12–13	ø4 RED	13	RED	WHITE		SPARE
4	GREEN			GROUND	14	GREEN	WHITE	EVP	PE4 IND LIGHT
5	ORANGE		12–13	ø4 YELLOW	15	BLUE	WHITE		SPARE
6	BLUE		12–13	ø4 GREEN	16	BLACK	RED		SPARE
7	WHITE	BLACK	P8	ø4 DT. WALK	17	WHITE	RED	1A	OLC FL YELLOW →
8	RED	BLACK		SPARE	18	ORANGE	RED	1A	OLC YELLOW →
9	GREEN	BLACK	P7	ø6 WALK	19	BLUE	RED	1A	← ø5 GREEN
10	ORANGE	BLACK		SPARE	20	RED	GREEN	1A	← OLC RED

63'–#14/5	Vehicle Head #12
20'–#14/5	Vehicle Head #13
70'–#12/2	PE4 Ind Light

NOTE: All signal heads shall be SIG Polycarbonate. All back plates shall be lovered .063" thick aluminum.

ALL PEDESTRIAN HEADS
16" x 18" Filled Overlay
L.E.D. PEDESTRIAN HEAD
WITH PEDESTRIAN COUNT DOWN TIMER

ALL L.E.D. SIGNAL HEADS
12" Lenses
VEHICLE HEADS
2,3,6,9,10,12,12A,13

ALL L.E.D. SIGNAL HEADS
12" Lenses
VEHICLE HEADS
1,1A,5,5A,8,8A

ALL L.E.D. SIGNAL HEADS
12" Lenses
VEHICLE HEADS
4,7,11

THE CITY OF Fargo FAR MORE

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Signals - Standards Veterans

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	10

Feed Point
Pedestrian Signal Standard
Traffic Signal Standard
Controller Cabinet
Ped. Push Button Post
Pull Box
Polymer Concrete Fiber Pull Box

Plan Note Number
2
Symbol

169'–2" Conduit
1–Loop Lead–In(25 to 1–323')D8–1

49'–3" Conduit
#14 AWG 20(20)Cable 3
#14 AWG 20(13)Cable 2
#14 AWG 2(22)ø6 Ped.
#14 AWG 2(21)ø8 Ped.
#14 AWG 2(15)ø8 Ped.
#14 AWG 2(14)ø2 Ped.
2–Loop Lead–In(18)
3–Loop Lead–In(17)

36'–2" Conduit
#14 AWG 5(23 to 20–64')Head 12A
#14 AWG 3(23 to 20–64')Head P5
#14 AWG 3(23 to 21–91')ø8 Ped. PB to Head P5

15'–2" Conduit
#14 AWG 20(20 to 1–216')Cable 3
#14 AWG 5(23)Head 12A
#14 AWG 3(23)Head P5
#14 AWG 3(20 to 22–78')ø6 Ped. PB to Head P6

39'–3" Conduit
#14 AWG 20(13)Cable 2
#14 AWG 2(15)ø8 Ped.
#14 AWG 2(14)ø2 Ped.
2–Loop Lead–In(18 to 1–245'*2)D5–1A/D5–1a
3–Loop Lead–In(17)

70'–3" Conduit
#14 AWG 20(13)Cable 2
#14 AWG 2(15)ø8 Ped.
#14 AWG 2(14)ø2 Ped.
3–Loop Lead–In(17)

20'–1" Conduit
#14 AWG 2(21 to 1–227')ø8 Ped.
#14 AWG 3(23)ø8 Ped. PB to Head P5

16'–1" Conduit
#14 AWG 2(15 to 1–338')ø8 Ped.
#14 AWG 3(14)ø8 Ped. PB to Head P4

28'–1" Conduit
#14 AWG 2(22 to 1–235')ø6 Ped.
#14 AWG 3(20)ø6 Ped. PB to Head P6

289'–2 Conduit
3–Loop Lead–In(17 to 1–610'*3)
D2–1A/D2–1B/D2–3

30'–2" Conduit
#14 AWG 2(14 to 1–352')ø2 Ped.
#14 AWG 3(15')ø2 Ped. PB to Head P3
#14 AWG 7(14 to 13–91')Head 8A
#14 AWG 3(14 to 13–91')Head P3
#14 AWG 3(14 to 13–91')Head P4
#14 AWG 3(14 to 15–81')ø8 Ped. PB to Head P4

48'–2" Conduit
#14 AWG 20(13 to 1–364')Cable 2
#14 AWG 7(14)Head 8A
#14 AWG 3(14)Head P3
#14 AWG 3(14)Head P4

49'–4" Conduit
#14 AWG 20(20)Cable 3
#14 AWG 20(13)Cable 2
#14 AWG 2(22)ø6 Ped.
#14 AWG 2(21)ø8 Ped.
#14 AWG 2(15)ø8 Ped.
#14 AWG 2(14)ø2 Ped.
2–Loop Lead–In(24 to 1–151'*2)
D8–3A/D8–3a
1–Loop Lead–In(25)
2–Loop Lead–In(18)
3–Loop Lead–In(17)

54'–4" Conduit
#14 AWG 20(20)Cable 3
#14 AWG 20(13)Cable 2
#14 AWG 2(22)ø6 Ped.
#14 AWG 2(21)ø8 Ped.
#14 AWG 2(15)ø8 Ped.
#14 AWG 2(14)ø2 Ped.
2–Loop Lead–In (26 to 1–99'*2)
D3–1A/D3–1a
2–Loop Lead–In(24)
1–Loop Lead–In(25)
2–Loop Lead–In(18)
3–Loop Lead–In(17)

9'–2" Conduit
#14 AWG 20(27 to 1–49')Cable 4
Opticom(27 to 1–117')EVP Detector
#14 AWG 7(29)Head 1A
#14 AWG 3(29)Head P7
#14 AWG 3(29)Head P8

11'–2" Conduit
#14 AWG 2(29 to 1–57')ø6 Ped.
#14 AWG 3(15')ø6 Ped. PB to Head P7
#14 AWG 7(29 to 27–33')Head 1A
#14 AWG 3(29 to 27–33')Head P7
#14 AWG 3(29 to 27–33')Head P8
#14 AWG 3(29 to 30–72')ø4 Ped. PB to Head P8

22'–4" Conduit
#14 AWG 20(27)Cable 4
#14 AWG 20(20)Cable 3
#14 AWG 20(13)Cable 2
#14 AWG 2(30)ø4 Ped.
#14 AWG 2(29)ø6 Ped.
#14 AWG 2(22)ø6 Ped.
#14 AWG 2(21)ø8 Ped.
#14 AWG 2(15)ø8 Ped.
#14 AWG 2(14)ø2 Ped.
Opticom(27)EVP Detector
2–Loop Lead–In(26)
2–Loop Lead–In(24)
1–Loop Lead–In(25)
2–Loop Lead–In(18)
3–Loop Lead–In(17)

26'–1" Conduit
#14 AWG 2(30 to 1–72')ø4 Ped.
#14 AWG 3(29)ø4 Ped. PB to Head P8

14'–2" Conduit
2–#6 RHW(2 to 1–34'*2)
#6 THW(2 to 1–34')

7'–2" Conduit
Fiber Optic Cable
See Section 160

18'–3" Conduit
#14 AWG 20(7)Cable 1
#14 AWG 2(9)ø4 Ped.
#14 AWG 2(11)ø2 Ped.
Opticom(7)EVP Detector
3–Loop Lead–In(5)
2–Loop Lead–In(6)
2–Loop Lead–In(12)
#16 AWG 3(7)PTZ Camera
CAT 6 Cable(7)PTZ Camera

290'–2" Conduit
3–Loop Lead–In(5 to 1–331'*3)
D6–1A/D6–1B/D6–3

74'–3" Conduit
#14 AWG 20(7)Cable 1
#14 AWG 2(9)ø4 Ped.
#14 AWG 2(11)ø2 Ped.
Opticom(7)EVP Detector
2–Loop Lead–In(6 to 1–115'*2)D1–1A/D1–1a
2–Loop Lead–In(12)
#16 AWG 3(7)PTZ Camera
CAT 6 Cable(7)PTZ Camera

52ND AVE S

17'–1" Conduit
#14 AWG 2(9 to 1–176')ø4 Ped.
#14 AWG 3(10)ø4 Ped. PB to Head P1

37'–3" Conduit
#14 AWG 20(7)Cable 1
#14 AWG 2(9)ø4 Ped.
#14 AWG 2(11)ø2 Ped.
Opticom(7)EVP Detector
2–Loop Lead–In(12)
#16 AWG 3(7)PTZ Camera
CAT 6 Cable(7)PTZ Camera

43'–1" Conduit
#14 AWG 2(11 to 1–202')ø2 Ped.
#14 AWG 3(10)ø2 Ped. PB to Head P2

5'–2" Conduit
#14 AWG 20(7 to 1–158')Cable 1
Opticom(7 to 1–241')EVP Detector
#16 AWG 3(7 to 1–199')PTZ Camera
CAT 6 Cable(7 to 1–199')PTZ Camera
#14 AWG 7(10)Head 5A
#14 AWG 3(10)Head P1
#14 AWG 3(10)Head P2

42'–2" Conduit
#14 AWG 7(10 to 7–60')Head 5A
#14 AWG 3(10 to 7–60')Head P1
#14 AWG 3(10 to 7–60')Head P2
#14 AWG 3(10 to 9–94')ø4 Ped. PB to Head P1
#14 AWG 3(10 to 11–120')ø2 Ped. PB to Head P2

72'–2" Conduit
2–Loop Lead–In(12 to 1–230'*2)
D4–1A/D4–1a

VETERANS BLVD

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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Signals - Wiring Diagram Veterans

52nd Ave S - West of 63rd St S to 45th St S

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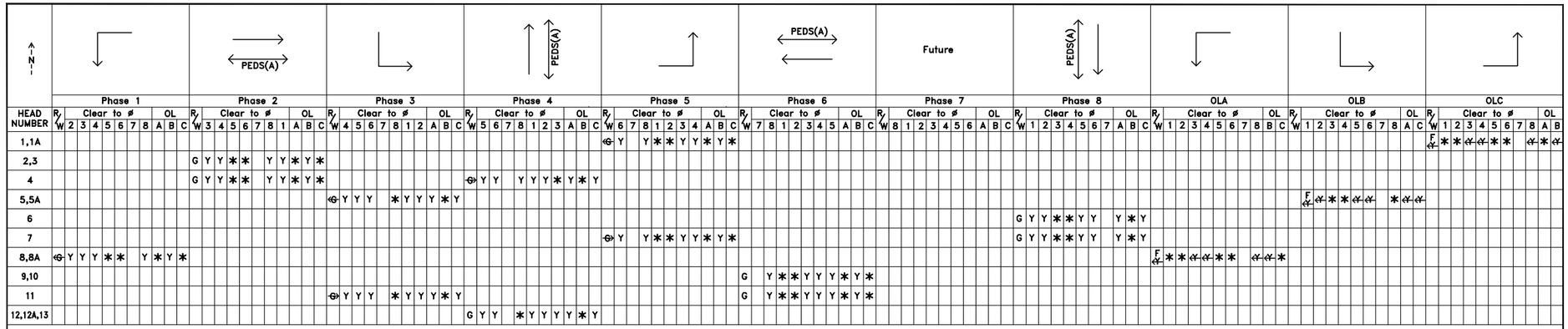
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	11

52nd Ave S & Veterans Blvd



HEAD NUMBER	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8	OLA	OLB	OLC
	R/W 2 3 4 5 6 7 8 A B C OL	R/W 3 4 5 6 7 8 1 A B C OL	R/W 4 5 6 7 8 1 2 A B C OL	R/W 5 6 7 8 1 2 3 A B C OL	R/W 6 7 8 1 2 3 4 A B C OL	R/W 7 8 1 2 3 4 5 A B C OL	R/W 8 1 2 3 4 5 6 A B C OL	R/W 1 2 3 4 5 6 7 A B C OL	R/W 1 2 3 4 5 6 7 8 B C OL	R/W 1 2 3 4 5 6 7 8 A C OL	R/W 1 2 3 4 5 6 7 8 A B OL
1,1A					⊖ Y Y * * Y Y * Y *						F ⊀ * * ⊀ ⊀ * * ⊀ * ⊀
2,3		G Y Y * * Y Y * Y *									
4		G Y Y * * Y Y * Y *		⊖ Y Y Y Y * Y * Y							
5,5A			⊖ Y Y Y * Y Y Y * Y							F ⊀ * * ⊀ ⊀ * ⊀ ⊀	
6								G Y Y * * Y Y * Y			
7					⊖ Y Y * * Y Y * Y *			G Y Y * * Y Y * Y			
8,8A	⊖ Y Y Y * * Y * Y *								F ⊀ * ⊀ ⊀ * * ⊀ ⊀ *		
9,10						G Y * * Y Y Y * Y *					
11			⊖ Y Y Y * Y Y Y * Y			G Y * * Y Y Y * Y *					
12,12A,13				G Y Y * Y Y Y Y * Y							

Chart "A"	
On Phase	Non-Conflicting Phase Allowed to Time Concurrently
1	5,6,OLA,OLC
2	5,6,OLA,OLC
3	8,OLB
4	8,OLB
5	1,2,OLA,OLC
6	1,2,OLA,OLC
7	Future
8	3,4,OLB
OLA	1,2,5,6,OLC
OLB	3,4,8
OLC	1,2,5,6,OLA

Blank Squares Denote a Red Indication

(*) When one phase is on alone, any non-conficiting phase may start timing concurrently without a clearance interval. (See Chart "A")

(A) Only upon pedestrian actuation.

THE CITY WILL PROGRAM THE SIGNAL TIMING INTO THE CONTROLLER PRIOR TO START UP.

TRAFFIC CONTROL SYSTEM
Controller Phasing

PHASE-LOOP
DIRECTION
CONTROLLER INPUT LOCATION
LOOP TYPE
WHITE BACKGROUND
BLACK LEGEND & LINES

CH.1		1-1A	WBLT	2-1A	EB	3-1A	SBLT	4-1A	NB	5-1A	EBLT	6-1A	WB			8-1	SB	PE1	WB	PE3	SB
		VD1	PR	VD2	P	VD3	PR	VD4	PR	VD5	PR	VD6	P	VD7		VD8	P		ø1&ø6		ø3&ø8
CH.2		1-1a	WBLT	2-1B	EB	3-1a	SBLT	4-1a	NB	5-1a	EBLT	6-1B	WB					PE2	EB	PE4	NB
		SD1	PR	SD2	P	SD3	PR	SD4	PR	SD5	PR	SD6	P	SD7		SD8			ø2&ø5		ø4
REF	POWER SUPPLY	DT1		DT2		DT3		DT4		DT5		DT6		DT7		DT8		OD1		OD2	

CH.1				2-3	EBRT							6-3	WBRT			8-3A	SBRT
		VD9		VD10	P	VD11		VD12		VD13		VD14	P	VD15		VD16	PR
CH.2																8-3a	SBRT
		VD17		VD18		VD19		VD20		VD21		VD22		VD23		VD24	PR
REF	POWER SUPPLY	DT1		DT2		DT3		DT4		DT5		DT6		DT7		DT8	

TYPICAL 8 PHASE DETECTOR LABEL

SAME PHASE MULTIPLE LEAD-INS
LETTERS A-D
LANE LOCATION START
"A" ON THE CENTER LINE
TO CURB.

PHASE-LOOP
(N)-1 = (2,4,6,8)-PASSAGE
(N)-1 = (2,4,6,8)-PRESENCE
(N)-2 = (2,4,6,8)-CALLING
(N)-1 = (1,3,5,7)-LEFT TURN
(N)-3 = (2,4,6,8)-RIGHT TURN
(N)-5 = (1,2,3,4,5,6,7,8)- COUNT LOOP

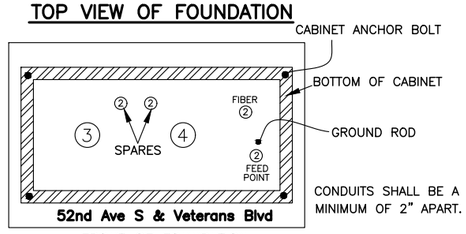
LOOP TYPE
P = PASSAGE
PR = PRESENCE
C = CALLING
LT = LEFT TURN
RT = RIGHT TURN
T = COUNT LOOP

CONTROLLER INPUT LOCATION
VD(#) = VEHICLE DETECTOR (1-8)
SD(#) = SPECIAL DETECTOR (1-8)
PD(#) = PEDESTRIAN DETECTOR (1-8)

EMERGENCY VEHICLE PRE-EMPTION PHASING

ø6 ← / ø1+OLA ↓	ø5+OLC ↑ / ø2 →	ø8 ↓ / ø3+OLB →	ø4 ↑
WEST BOUND	EAST BOUND	SOUTH BOUND	NORTH BOUND
PREEMPT 1	PREEMPT 2	PREEMPT 3	PREEMPT 4
TOP TUBE/BLUE WIRE	BOTTOM TUBE/YELLOW WIRE	TOP TUBE/BLUE WIRE	BOTTOM TUBE/YELLOW WIRE

CONDUIT PLACEMENT
TOP VIEW OF FOUNDATION



FRONT OF FOUNDATION

THE CITY OF Fargo FAR MORE

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Signals - Controller Phasing Veterans

52nd Ave S - West of 63rd St S to 45th St S

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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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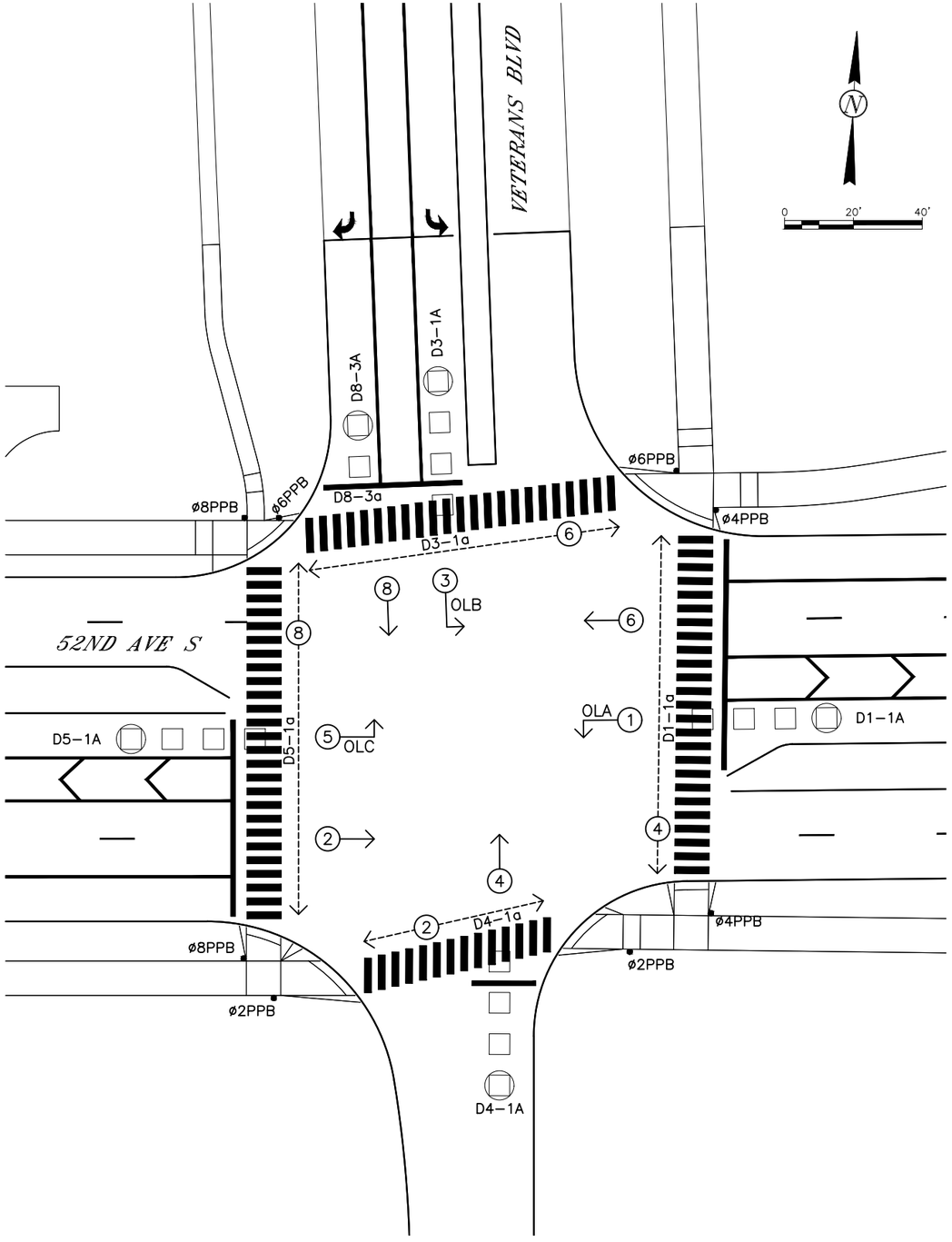
PHASE DESIGNATION DIAGRAM



52nd Ave S & Veterans Blvd

DETECTOR LOOP SCHEDULE - 52nd Ave S & Veterans Blvd

DETECTION ZONE	DETECTION TYPE	NUMBER OF LOOPS	PHASE	SIZE (FEET)	TYPE OF LOOP	NUMBER OF TURNS	CONDUCTOR (LF)	SLAW SLOT (LF)
D1–1A D1–1a	LOOP	4	ø1	6 x 6	PRESENCE	3	424	106
D2–1A D2–1B D2–3	LOOP	3	ø2	6 x 6	PASSAGE	3	338	114
D3–1A D3–1a	LOOP	4	ø3	6 x 6	PRESENCE	3	404	108
D4–1A D4–1a	LOOP	4	ø4	6 x 6	PRESENCE	3	432	120
D5–1A D5–1a	LOOP	4	ø5	6 x 6	PRESENCE	3	404	106
D6–1A D6–1B D6–3	LOOP	3	ø6	6 x 6	PASSAGE	3	344	114
D8–1	LOOP	1	ø8	6 x 6	PASSAGE	3	116	39
D8–3A D8–3a	LOOP	2	ø8	6 x 6	PRESENCE	3	188	56
						TOTAL	2,650	763

PUSHBUTTON ASSIGNMENT

SOUTHBOUND

EASTBOUND

WESTBOUND

THE CITY OF Fargo FAR MORE

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Signals - Phase Diagram Veterans

52nd Ave S - West of 63rd St S to 45th St S

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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TRAFFIC SIGNAL QUANTITIES (A)

LOCATION	CONCRETE FOUNDATION - TRAFFIC SIGNALS	POLYMER CONCRETE FIBER PULL BOX & CONCRETE PAD	PULL BOX	FARGO TYPE B CABINET, FOUNDATION, & WORKING SLAB	1" DIA. RIGID CONDUIT	2" DIA. RIGID CONDUIT	3" DIA. RIGID CONDUIT	4" DIA. RIGID CONDUIT	UNDERGROUND CONDUCTOR NO. 6 - RHW	UNDERGROUND CONDUCTOR NO. 6 - THW	LOOP LEAD-IN CONDUCTOR	LOOP WIRE	EMERGENCY VEHICLE DETECTOR CABLE (OPTICOM)	EMERGENCY VEHICLE INDICATOR CABLE (NO. 12 AWG 2)	NO. 14 AWG 2 CONDUCTOR CABLE	NO. 14 AWG 3 CONDUCTOR CABLE	NO. 14 AWG 5 CONDUCTOR CABLE	NO. 14 AWG 7 CONDUCTOR CABLE	NO. 14 AWG 20 CONDUCTOR CABLE	SAW SLOT	COMBO FEED POINT CABINET & FOUNDATION	TYPE V SIGNAL STANDARD	TYPE VI SIGNAL STANDARD	COMBO 40' MH SIGNAL & LIGHT STANDARD - 33' MA	COMBO 40' MH SIGNAL & LIGHT STANDARD - 36' MA	COMBO 40' MH SIGNAL & LIGHT STANDARD - 48' MA	COMBO 40' MH SIGNAL & LIGHT STANDARD - 60' MA	LED LUMINAIRE	1-WAY 3 SEC HEAD W/ 12" LENS - POST MTD.	1-WAY 3 SEC HEAD W/ 12" LENS - PEDESTAL MTD.	1-WAY 3 SEC HEAD W/ 12" LENS - MA MTD.	1-WAY 4 SEC HEAD W/ 12" LENS - PEDESTAL MTD.	1-WAY 4 SEC HEAD W/12" LENS - MA MTD.	1-WAY 5 SEC HEAD W/ 12" LENS - POST MTD.	PEDESTRIAN COUNTDOWN SIGNAL HEAD - POST MTD.	PEDESTRIAN COUNTDOWN SIGNAL HEAD - PEDESTAL MTD.	PEDESTRIAN PUSH BUTTON POST	APS PEDESTRIAN PUSH BUTTON & SIGN	EMERGENCY VEHICLE DETECTOR SYSTEM	BATTERY BACKUP SYSTEM	PTZ CAMERA	CAT 6 CABLE	NO. 16 AWG 3 (PTZ CAMERA POWER)	MAST ARM MOUNTED SIGNS		TRAFFIC SIGNAL SYSTEM - SITE 2
	EA	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	LF	LF	LSUM		EA
POLE 7	1																									1		1			2		1	1												
POLE 10	1																						1									1				2										
POLE 13	1																								1			2			1		1	1												
POLE 14	1																						1									1				2		1								
POLE 20	1																										1	1			2		1	1	1											
POLE 23	1																					1								1						1										
POLE 27	1																							1				2	1		1															
POLE 29	1																						1									1				2		1								
VARIOUS LOCATIONS		1	13	1	150	1,030	287	125	68	34	4,826	2,650	358	325	1,659	1,142	449	538	787	763	1																6	6	1	1	1	199	199	1		
TOTAL	8	1	13	1	150	1,030	287	125	68	34	4,826	2,650	358	325	1,659	1,142	449	538	787	763	1	1	3	1	1	1	1	6	1	1	6	3	3	3	1	7	6	8	1	1	1	199	199	1		1

(A) TRAFFIC SIGNAL QUANTITIES FOR INFORMATIONAL PURPOSES ONLY. ALL COSTS SHALL BE INCLUDED IN THE BID PRICE FOR "TRAFFIC SIGNAL SYSTEM - SITE 2".
QUANTITIES CALCULATED ACCORDING TO NDDOT SPECIFICATIONS.

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Signals - Quantities Veterans

52nd Ave S - West of 63rd St S to 45th St S

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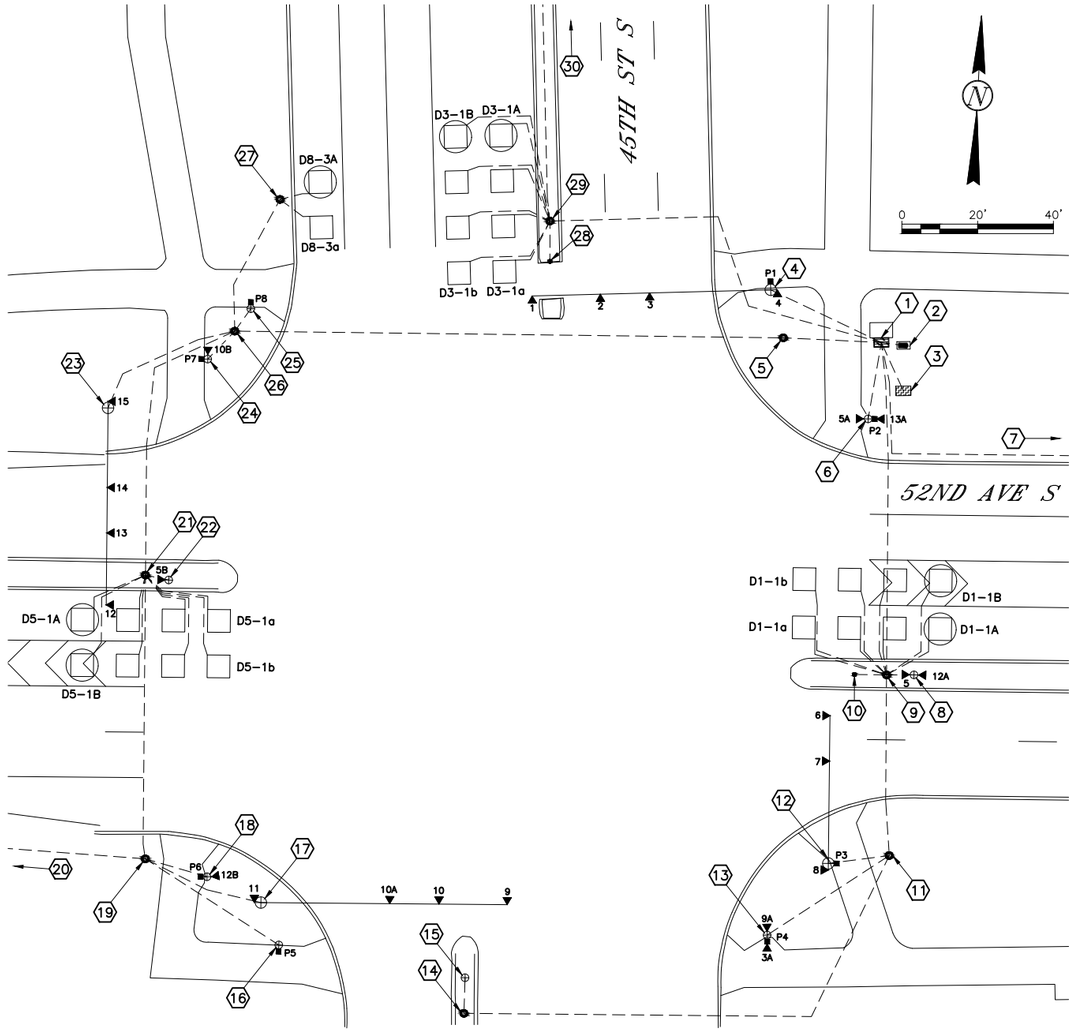
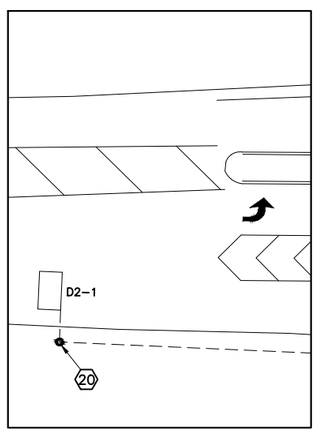
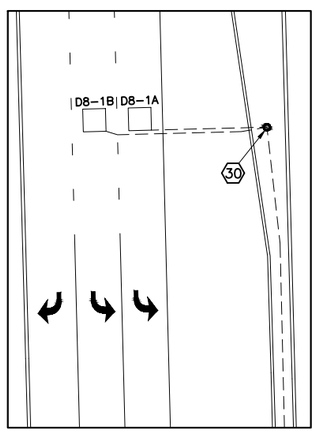
	ND	SU-8-984(164)	150	14

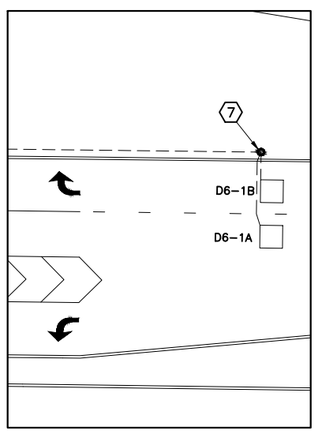




EASTBOUND



SOUTHBOUND



WESTBOUND

1. EXISTING TRAFFIC SIGNAL CONTROLLER FOUNDATION AND WORKING SLAB TO REMAIN IN PLACE. REMOVE AND SALVAGE EXISTING TRAFFIC SIGNAL CONTROLLER CABINET AND EQUIPMENT.
2. EXISTING COMBO FEED POINT CABINET TO REMAIN IN PLACE.
3. EXISTING QUAZITE FIBER OPTIC PULL BOX TO REMAIN IN PLACE.
4. REMOVE EXISTING TYPE IV/COMBO TRAFFIC SIGNAL STANDARD. SALVAGE TYPE IV/COMBO SIGNAL STANDARD POLE, LUMINAIRE EXTENSION, LUMINAIRES, PEDESTRIAN PUSH BUTTON, EVP DETECTOR, CONFIRMATION LIGHT, AND PTZ CAMERA. DISPOSE CONCRETE FOUNDATION. REMOVE AND SALVAGE ALL LED SECTIONS FROM VEHICLE HEADS. DISPOSE OF REMAINDER OF VEHICLE HEADS. REMOVE AND SALVAGE PEDESTRIAN COUNTDOWN HEAD. REMOVE AND SALVAGE ALL MOUNTING EQUIPMENT.
5. EXISTING PVC PULL BOX TO REMAIN IN PLACE.
6. REMOVE EXISTING TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT). SALVAGE AND RELOCATE TYPE VI TRAFFIC SIGNAL PEDESTAL POLE. SALVAGE PEDESTRIAN PUSH BUTTON. DISPOSE CONCRETE FOUNDATION. REMOVE AND SALVAGE ALL LED SECTIONS FROM VEHICLE HEADS. DISPOSE OF REMAINDER OF VEHICLE HEADS. REMOVE AND SALVAGE PEDESTRIAN COUNTDOWN HEAD. REMOVE AND SALVAGE ALL MOUNTING EQUIPMENT.
7. REMOVE AND SALVAGE EXISTING PVC PULL BOX. REMOVE EXISTING LOOP LEAD-INS AND LOOPS(D6-1A/6-1B).
8. EXISTING TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT) TO REMAIN IN PLACE. REMOVE VEHICLE HEADS 5 AND 12A. REMOVE AND SALVAGE ALL LED SECTIONS FROM REMOVED VEHICLE HEADS. DISPOSE OF REMAINDER OF REMOVED VEHICLE HEADS. REMOVE AND SALVAGE MOUNTING EQUIPMENT FOR REMOVED VEHICLE HEADS.
9. EXISTING PVC PULL BOX TO REMAIN IN PLACE. EXISTING LOOP LEAD-INS AND LOOPS(D1-1A/D1-1a/D1-1B/D1-1b) TO REMAIN IN PLACE.
10. REMOVE AND SALVAGE EXISTING PEDESTRIAN PUSH BUTTON POST AND BUTTON.
11. EXISTING PVC PULL BOX TO REMAIN IN PLACE.
12. EXISTING TYPE IV TRAFFIC SIGNAL STANDARD WITH 39' MAST ARM, PEDESTRIAN PUSH BUTTON, EVP DETECTOR, AND CONFIRMATION LIGHT TO REMAIN IN PLACE.
13. EXISTING TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT) WITH PEDESTRIAN PUSH BUTTON TO REMAIN IN PLACE. REMOVE VEHICLE HEAD 9A. REMOVE AND SALVAGE ALL LED SECTIONS FROM REMOVED VEHICLE HEAD. DISPOSE OF REMAINDER OF REMOVED VEHICLE HEAD. REMOVE AND SALVAGE MOUNTING EQUIPMENT FOR REMOVED VEHICLE HEAD.
14. EXISTING PVC PULL BOX TO REMAIN IN PLACE.
15. EXISTING 24" CONCRETE FOUNDATION TO REMAIN IN PLACE.
16. EXISTING TYPE V TRAFFIC SIGNAL STANDARD (10' HEIGHT) WITH PEDESTRIAN PUSH BUTTON TO REMAIN IN PLACE.
17. REMOVE EXISTING TYPE IV TRAFFIC SIGNAL STANDARD. SALVAGE TYPE IV TRAFFIC SIGNAL STANDARD POLE AND CONFIRMATION LIGHT. DISPOSE CONCRETE FOUNDATION. REMOVE AND SALVAGE ALL LED SECTIONS FROM VEHICLE HEADS. DISPOSE OF REMAINDER OF REMOVED VEHICLE HEADS. REMOVE AND SALVAGE ALL MOUNTING EQUIPMENT.
18. EXISTING TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT) WITH PEDESTRIAN PUSH BUTTON TO REMAIN IN PLACE. REMOVE VEHICLE HEAD 12B. REMOVE AND SALVAGE ALL LED SECTIONS FROM REMOVED VEHICLE HEAD. DISPOSE OF REMAINDER OF REMOVED VEHICLE HEAD. REMOVE AND SALVAGE MOUNTING EQUIPMENT FOR REMOVED VEHICLE HEAD.
19. EXISTING PVC PULL BOX TO REMAIN IN PLACE.
20. REMOVE AND SALVAGE EXISTING PVC PULL BOX. REMOVE EXISTING LOOP LEAD-IN AND LOOP(D2-1).
21. EXISTING PVC PULL BOX TO REMAIN IN PLACE. EXISTING LOOP LEAD-INS AND LOOPS(D5-1a/D5-1b) TO REMAIN IN PLACE. REMOVE EXISTING LOOPS(D5-1A/D5-1B).
22. EXISTING TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT) TO REMAIN IN PLACE. REMOVE AND SALVAGE PEDESTRIAN PUSH BUTTON. REMOVE VEHICLE HEAD 5B. REMOVE AND SALVAGE ALL LED SECTIONS FROM REMOVED VEHICLE HEAD. DISPOSE OF REMAINDER OF REMOVED VEHICLE HEAD. REMOVE AND SALVAGE MOUNTING EQUIPMENT FOR REMOVED VEHICLE HEAD.
23. EXISTING TYPE IV TRAFFIC SIGNAL STANDARD WITH 52' MAST ARM AND CONFIRMATION LIGHT TO REMAIN IN PLACE. REMOVE VEHICLE HEADS 12 AND 15. REMOVE AND SALVAGE ALL LED SECTIONS FROM REMOVED VEHICLE HEADS. DISPOSE OF REMAINDER OF REMOVED VEHICLE HEADS. REMOVE AND SALVAGE MOUNTING EQUIPMENT FOR REMOVED VEHICLE HEADS.
24. EXISTING TYPE V TRAFFIC SIGNAL STANDARD (17.5' HEIGHT) WITH PEDESTRIAN PUSH BUTTON TO REMAIN IN PLACE. REMOVE VEHICLE HEAD 10B. REMOVE AND SALVAGE ALL LED SECTIONS FROM REMOVED VEHICLE HEAD. DISPOSE OF REMAINDER OF VEHICLE HEAD. REMOVE AND SALVAGE MOUNTING EQUIPMENT FOR REMOVED VEHICLE HEAD.
25. EXISTING TYPE V TRAFFIC SIGNAL STANDARD (10' HEIGHT) WITH PEDESTRIAN PUSH BUTTON TO REMAIN IN PLACE.
26. EXISTING PVC PULL BOX TO REMAIN IN PLACE.
27. EXISTING PVC PULL BOX TO REMAIN IN PLACE. EXISTING LOOP LEAD-INS AND LOOPS(D8-3A/D8-3a) TO REMAIN IN PLACE.
28. REMOVE AND SALVAGE EXISTING PEDESTRIAN PUSH BUTTON POST AND BUTTON.
29. EXISTING PVC PULL BOX TO REMAIN IN PLACE. EXISTING LOOP LEAD-INS AND LOOPS(D3-1A/D3-1a/D3-1B/D3-1b) TO REMAIN IN PLACE.
30. EXISTING PVC PULL BOX TO REMAIN IN PLACE. EXISTING LOOP LEAD-INS AND LOOPS(D8-1A/D8-1B) TO REMAIN IN PLACE.

NOTES:
1. EXISTING TRAFFIC CONTROL SIGNAL SYSTEM SHOWN BASED OFF SURVEY AND EXISTING PLANS. ACTUAL FIELD LOCATION OF SYSTEM COMPONENTS MAY VARY.
2. ALL EXISTING PEDESTRIAN COUNTDOWN HEADS AND VEHICLE HEADS SHALL REMAIN IN PLACE UNLESS NOTED OTHERWISE.

- Quazite Fiber Pull Box
- Detector Loops
- Feed Point
- Controller Cabinet
- Existing Signal Std.
- Existing Pull Box
- New Pull Box
- Ped. Post
- Utility Pole
- New Signal Std.
- Flasher
- Ped. Head
- Vehicle Head
- Conduit
- Existing Conduit
- Signal Fiber Line
- Span Wire

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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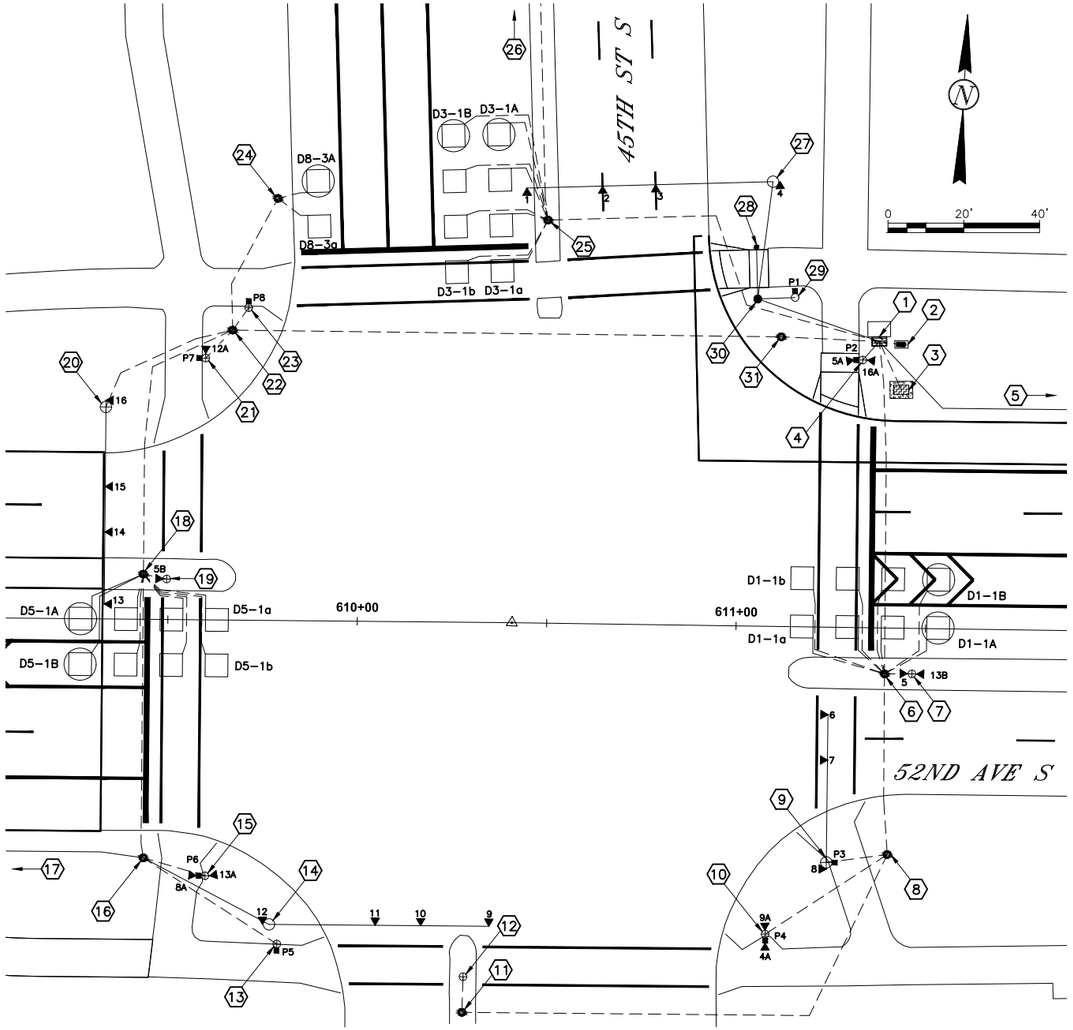
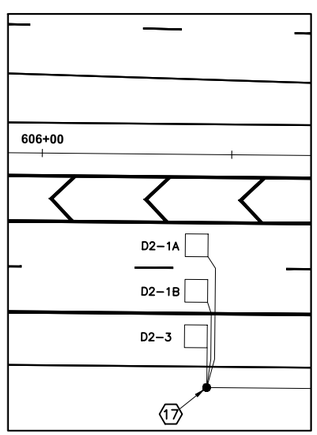
Signals - Removals 45th St S

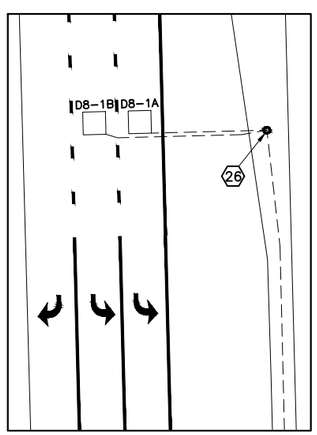
52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	15

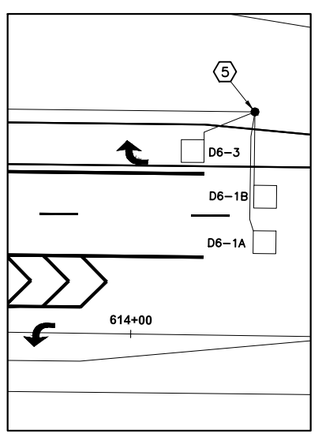




EASTBOUND



SOUTHBOUND



WESTBOUND

(1) EXISTING TRAFFIC SIGNAL CONTROLLER FOUNDATION AND WORKING SLAB TO REMAIN IN PLACE. F&I NEW FARGO TYPE B CABINET. INSTALL A SECOND SEPARATE STAND ALONE DETECTOR RACK WITH ITS OWN POWER SUPPLY AND ITS OWN SEPARATE SELF CONTAINED WIRING HARNESS WITH NO JUMPERS BETWEEN THE TWO DETECTOR RACKS. IT SHALL BE LOCATED TO THE RIGHT OF THE STANDARD DETECTOR RACK. INSTALL TWO EXTRA DETECTOR PANELS DIRECTLY ABOVE THE STANDARD FARGO TYPE B CABINET PANELS; THESE SHALL BE CONNECTED TO THE SECOND DETECTOR RACK. PROVIDE TWO PS 2.4 AMP POWER SUPPLIES FOR THE DETECTOR RACKS. THE CABINET DOOR SHALL FACE NORTH AND LEFT HINGED. PROVIDE 20 – 2–CHANNEL VEHICLE DETECTORS.

(2) EXISTING COMBO FEED POINT CABINET TO REMAIN IN PLACE.

(3) EXISTING QUAZITE FIBER OPTIC PULL BOX TO REMAIN IN PLACE. INSTALL CONCRETE PAD AROUND EXISTING PULL BOX.

(4) F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. RELOCATE EXISTING TYPE VI TRAFFIC SIGNAL PEDESTAL POLE (17.5' HEIGHT). F&I NEW VEHICLE AND PEDESTRIAN HEADS. F&I NEW CONDUCTOR AND MOUNTING EQUIPMENT. F&I NEW APS PEDESTRIAN PUSH BUTTON FACING WEST WITH A RIGHT ARROW.

(5) F&I NEW PVC PULL BOX. INSTALL 3 – 6'x6' LOOPS(D6–1A/D6–1B/D6–3).

(6) EXISTING PVC PULL BOX TO REMAIN IN PLACE. EXISTING LOOP LEAD–INS AND LOOPS(D1–1A/D1–1a/D1–1B/D1–1b) TO REMAIN IN PLACE.

(7) EXISTING TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT) TO REMAIN IN PLACE. F&I NEW VEHICLE HEADS 5 AND 13B. F&I NEW CONDUCTOR AND MOUNTING EQUIPMENT FOR VEHICLE HEADS 5 AND 13B.

(8) EXISTING PVC PULL BOX TO REMAIN IN PLACE.

(9) EXISTING TYPE IV TRAFFIC SIGNAL STANDARD WITH 39' MAST ARM, PEDESTRIAN PUSH BUTTON, EVP DETECTOR, AND CONFIRMATION LIGHT TO REMAIN IN PLACE.

(10) EXISTING TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT) WITH PEDESTRIAN PUSH BUTTON TO REMAIN IN PLACE. F&I NEW VEHICLE HEAD 9A. F&I NEW CONDUCTOR AND MOUNTING EQUIPMENT FOR VEHICLE HEAD 9A.

(11) EXISTING PVC PULL BOX TO REMAIN IN PLACE.

(12) EXISTING 24" CONCRETE FOUNDATION TO REMAIN IN PLACE.

(13) EXISTING TYPE V TRAFFIC SIGNAL STANDARD (10' HEIGHT) WITH PEDESTRIAN PUSH BUTTON TO REMAIN IN PLACE.

(14) F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE IV/COMBO TRAFFIC SIGNAL STANDARD WITH A 58' MAST ARM. F&I EVP CONFIRMATION LIGHT.

(15) EXISTING TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT) WITH PEDESTRIAN PUSH BUTTON TO REMAIN IN PLACE. F&I NEW VEHICLE HEADS 8A AND 13A. F&I NEW CONDUCTOR AND MOUNTING EQUIPMENT FOR VEHICLE HEADS 8A AND 13A.

(16) EXISTING PVC PULL BOX TO REMAIN IN PLACE.

(17) F&I NEW PVC PULL BOX. INSTALL 3 – 6'x6' LOOPS(D2–1A/D2–1B/D2–3).

(18) EXISTING PVC PULL BOX TO REMAIN IN PLACE. EXISTING LOOP LEAD–INS AND LOOPS(D5–1a/D5–1b) TO REMAIN IN PLACE. INSTALL 2 – 6'x6' LOOPS(D5–1A/D5–1B).

(19) EXISTING TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT) TO REMAIN IN PLACE. F&I NEW VEHICLE HEAD 5B. F&I NEW CONDUCTOR AND MOUNTING EQUIPMENT FOR HEAD 5B.

(20) EXISTING TYPE IV TRAFFIC SIGNAL STANDARD WITH 52' MAST ARM AND CONFIRMATION LIGHT TO REMAIN IN PLACE. F&I NEW VEHICLE HEADS 13 AND 16. F&I NEW CONDUCTOR AND MOUNTING EQUIPMENT FOR VEHICLE HEADS 13 AND 16.

(21) EXISTING TYPE VI TRAFFIC SIGNAL STANDARD (17.5' HEIGHT) WITH PEDESTRIAN PUSH BUTTON TO REMAIN IN PLACE. F&I NEW VEHICLE HEAD 12A. F&I NEW CONDUCTOR AND MOUNTING EQUIPMENT FOR HEAD 12A.

(22) EXISTING PVC PULL BOX TO REMAIN IN PLACE.

(23) EXISTING TYPE V TRAFFIC SIGNAL STANDARD (10' HEIGHT) WITH PEDESTRIAN PUSH BUTTON TO REMAIN IN PLACE.

(24) EXISTING PVC PULL BOX TO REMAIN IN PLACE. EXISTING LOOP LEAD–INS AND LOOPS(D8–3A/D8–3a) TO REMAIN IN PLACE.

(25) EXISTING PVC PULL BOX TO REMAIN IN PLACE. EXISTING LOOP LEAD–INS AND LOOPS (D3–1A/D3–1a/D3–1B/D3–1b) TO REMAIN IN PLACE.

(26) EXISTING PVC PULL BOX TO REMAIN IN PLACE. EXISTING LOOP LEAD–INS AND LOOPS (D8–1A/D8–1B) TO REMAIN IN PLACE.

(27) F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE IV/COMBO TRAFFIC SIGNAL STANDARD WITH A 65' MAST ARM. F&I MODEL 722 EVP DETECTOR AND CONFIRMATION LIGHT. F&I NEW PTZ CAMERA.

(28) F&I NEW PEDESTRIAN PUSH BUTTON POST WITH NEW APS PEDESTRIAN PUSH BUTTON FACING SOUTH WITH A LEFT ARROW.

(29) F&I NEW CONCRETE TRAFFIC SIGNAL FOUNDATION. F&I NEW TYPE V TRAFFIC SIGNAL STANDARD (10' HEIGHT).

(30) F&I NEW PVC PULL BOX.

(31) EXISTING PVC PULL BOX TO REMAIN IN PLACE.

NOTE:
1. EXISTING TRAFFIC CONTROL SIGNAL SYSTEM FEATURES SHOWN BASED OFF SURVEY AND EXISTING PLANS. ACTUAL FIELD LOCATION OF SYSTEM COMPONENTS MAY VARY.

- Quazite Fiber Pull Box
- Detector Loops
- Feed Point
- Controller Cabinet
- Existing Signal Std.
- Existing Pull Box
- New Pull Box
- Ped. Post
- Utility Pole
- New Signal Std.
- Flasher
- Ped. Head
- Vehicle Head
- Conduit
- Existing Conduit
- Signal Fiber Line
- Span Wire

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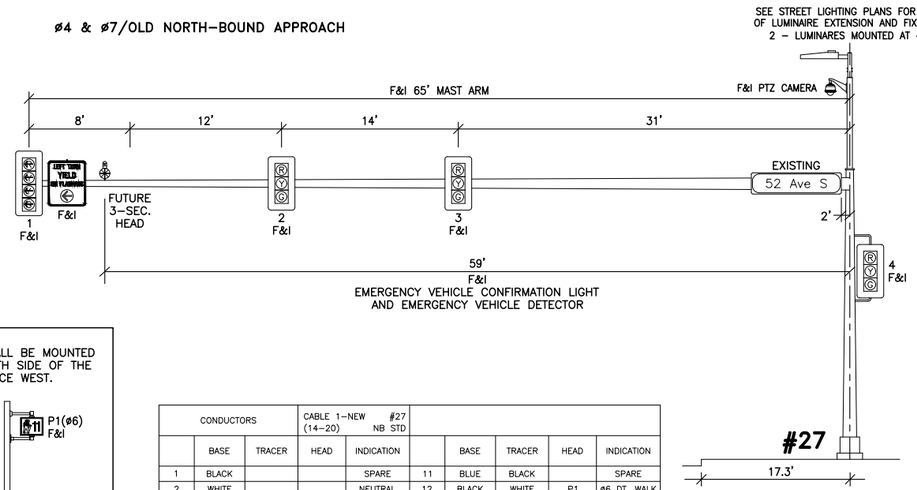
Signals - Layout 45th St S

52nd Ave S - West of 63rd St S to 45th St S

Revised 10/30/18	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	16

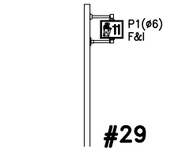
ø4 & ø7/OLD NORTH-BOUND APPROACH



CONDUCTORS			CABLE 1-NEW #27 (14-20) NB STD						
	BASE	TRACER	HEAD	INDICATION		BASE	TRACER	HEAD	INDICATION
1	BLACK			SPARE	11	BLUE	BLACK		SPARE
2	WHITE			NEUTRAL	12	BLACK	WHITE	P1	ø6 DT. WALK
3	RED		2-4	ø4 RED	13	RED	WHITE		SPARE
4	GREEN			GROUND	14	GREEN	WHITE	EVP	PE4 IND LIGHT
5	ORANGE		2-4	ø4 YELLOW	15	BLUE	WHITE		SPARE
6	BLUE		2-4	ø4 GREEN	16	BLACK	RED		SPARE
7	WHITE	BLACK		SPARE	17	WHITE	RED	1	OLD FL YELLOW
8	RED	BLACK		SPARE	18	ORANGE	RED	1	OLD YELLOW
9	GREEN	BLACK	P1	ø6 WALK	19	BLUE	RED	1	ø7 GREEN
10	ORANGE	BLACK		SPARE	20	RED	GREEN	1	OLD RED

95'-#14/7	Vehicle Head #1
75'-#14/5	Vehicle Head #2
61'-#14/5	Vehicle Head #3
20'-#14/5	Vehicle Head #4
102'-#12/2	PE4 Ind Light

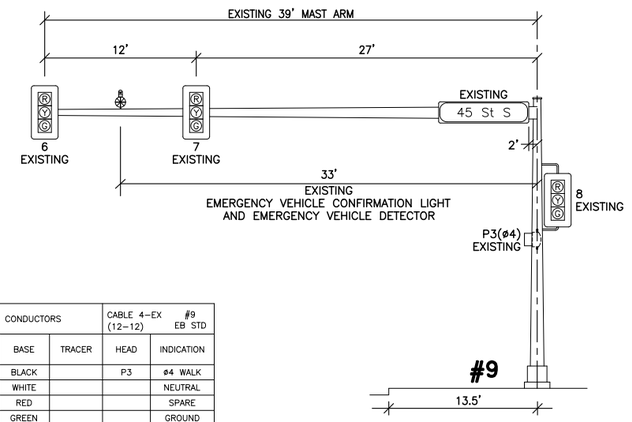
HEAD P1 SHALL BE MOUNTED ON THE NORTH SIDE OF THE POLE AND FACE WEST.



TYPE V-10' HEIGHT
PEDESTAL MOUNTED-
PEDESTRIAN HEADS

18'-#14/3	Ped. Head #P1

ø2 EAST-BOUND APPROACH



CONDUCTORS			CABLE 4-EX #9 (12-12) EB STD	
	BASE	TRACER	HEAD	INDICATION
1	BLACK		P3	ø4 WALK
2	WHITE			NEUTRAL
3	RED			SPARE
4	GREEN			GROUND
5	ORANGE			SPARE
6	BLUE			SPARE
7	WHITE	BLACK	P3	ø4 DT. WALK
8	RED	BLACK	6-8	ø2 RED
9	GREEN	BLACK		SPARE
10	ORANGE	BLACK	6-8	ø2 YELLOW
11	BLUE	BLACK	6-8	ø2 GREEN
12	BLACK	WHITE		SPARE

MAST ARMS AND STANDARDS:
All mast arms and standards shall be design for a windload factor that accounts for the heads and signs shown, replacing the vehicle head at the end of the mast arm with a 5-section cluster head, and an additional 10 square feet of sign area added to the mast arm.

EACH VEHICLE/PEDESTRIAN HEAD CABLE SHALL BE LABELED WITH THE HEAD #.

EACH CABLE FROM THE CONTROLLER CABINET SHALL HAVE A SEPARATE TERMINAL BLOCK INSIDE THE T-BASE FOR TERMINATIONS.

MAST ARM MOUNTED SIGNS SHALL NOT BE PAID FOR SEPARATELY, BUT INCLUDED IN THE PRICE BID FOR TRAFFIC SIGNAL SYSTEM.

THESE POLES SHALL BE BLACK.

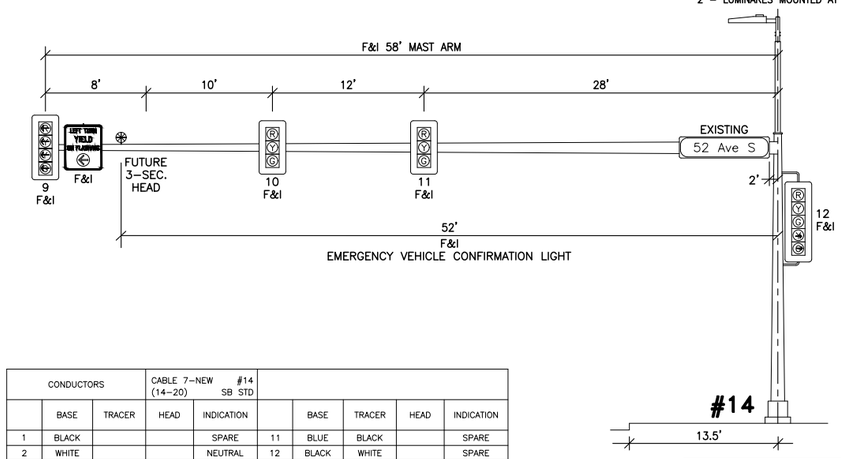
HEAD CONDUCTOR ASSIGNMENT

CONDUCTORS			No.14 Awg 3 Ped. Heads	No.14 Awg 5 Veh. Heads	No.14 Awg 7 5-Section Veh. Heads
	BASE	TRACER	INDICATION	INDICATION	INDICATION
1	BLACK		WALK	GREEN	GREEN BALL
2	WHITE		NEUTRAL	NEUTRAL	NEUTRAL
3	RED		DT. WALK	RED	RED
4	GREEN			GROUND	GROUND
5	ORANGE			YELLOW	YELLOW BALL
6	BLUE				GREEN ARRROW
7	WHITE	BLACK			YELLOW ARROW

FYA CONDUCTOR ASSIGNMENT

CONDUCTORS			No.14 Awg 7 4-Section Veh. Heads
	BASE	TRACER	INDICATION
1	BLACK		SPARE
2	WHITE		NEUTRAL
3	RED		RED ARROW
4	GREEN		GROUND
5	ORANGE		FLASHING YELLOW ARROW
6	BLUE		GREEN ARRROW
7	WHITE	BLACK	YELLOW ARROW

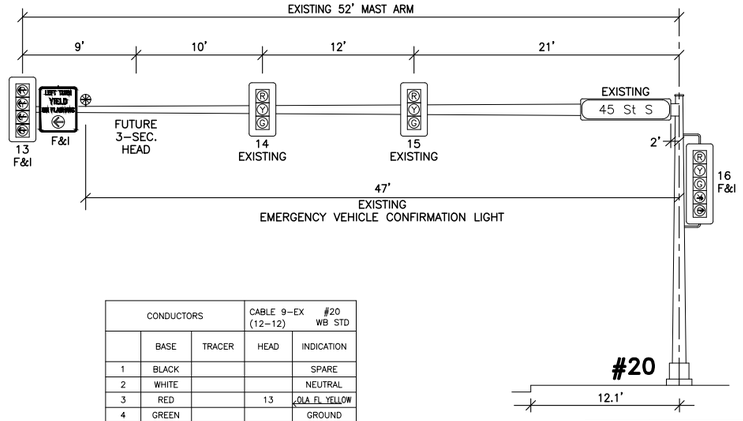
ø3/OLB & ø8 SOUTH-BOUND APPROACH



CONDUCTORS			CABLE 7-NEW #14 (14-20) SB STD						
	BASE	TRACER	HEAD	INDICATION		BASE	TRACER	HEAD	INDICATION
1	BLACK			SPARE	11	BLUE	BLACK		SPARE
2	WHITE			NEUTRAL	12	BLACK	WHITE		SPARE
3	RED		10-12	ø8 RED	13	RED	WHITE		SPARE
4	GREEN			GROUND	14	GREEN	WHITE	EVP	PE3 IND LIGHT
5	ORANGE		10-12	ø8 YELLOW	15	BLUE	WHITE	12	ø5 YELLOW
6	BLUE		10-12	ø8 GREEN	16	BLACK	RED	12	ø5 GREEN
7	WHITE	BLACK		SPARE	17	WHITE	RED	9	OLB FL YELLOW
8	RED	BLACK		SPARE	18	ORANGE	RED	9	OLB YELLOW
9	GREEN	BLACK		SPARE	19	BLUE	RED	9	ø3 GREEN
10	ORANGE	BLACK		SPARE	20	RED	GREEN	9	OLB RED

88'-#14/7	Vehicle Head #9
70'-#14/5	Vehicle Head #10
58'-#14/5	Vehicle Head #11
20'-#14/7	Vehicle Head #12
95'-#12/2	PE3 Ind Light

ø1/OLA & ø6 WEST-BOUND APPROACH



CONDUCTORS			CABLE 9-EX #20 (12-12) WB STD	
	BASE	TRACER	HEAD	INDICATION
1	BLACK			SPARE
2	WHITE			NEUTRAL
3	RED		13	OLA FL YELLOW
4	GREEN			GROUND
5	ORANGE		13	OLA YELLOW
6	BLUE		13	ø1 GREEN
7	WHITE	BLACK	13	OLA RED
8	RED	BLACK	14-16	ø6 RED
9	GREEN	BLACK	16	ø3 YELLOW
10	ORANGE	BLACK	14-16	ø6 YELLOW
11	BLUE	BLACK	14-16	ø6 GREEN
12	BLACK	WHITE	16	ø3 GREEN

82'-#14/7	Vehicle Head #13
20'-#14/7	Vehicle Head #16

NOTE: All signal heads shall be SIG Polycarbonate. All back plates shall be lovered .063" thick aluminum.

ALL PEDESTRIAN HEADS
16" x 18" Filled Overlay
L.E.D. PEDESTRIAN HEAD
WITH PEDESTRIAN COUNT DOWN TIMER

ALL L.E.D. SIGNAL HEADS
12" Lenses
VEHICLE HEADS
2,3,4,10,11

ALL L.E.D. SIGNAL HEADS
12" Lenses
VEHICLE HEADS
1,9,13

ALL L.E.D. SIGNAL HEADS
12" Lenses
VEHICLE HEADS
12,16

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Signals - Standards 45th St S

52nd Ave S - West of 63rd St S to 45th St S

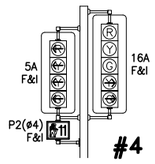
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	17

20'–#14/7	Vehicle Head #5A
20'–#14/7	Vehicle Head #16A
18'–#14/3	Ped. Head #P2

HEAD 5A SHALL BE MOUNTED ON THE WEST SIDE OF THE POLE AND FACE WEST.

HEAD 16A SHALL BE MOUNTED ON THE EAST SIDE OF THE POLE AND FACE EAST.

HEAD P2 SHALL BE MOUNTED ON THE WEST SIDE OF THE POLE AND FACE SOUTH.



TYPE VI–17.5' HEIGHT
PEDESTAL MOUNTED–VEHICULAR AND PEDESTRIAN HEADS

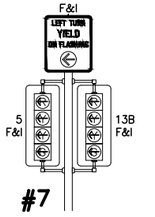
CONDUCTORS			CABLE 2–NEW (14–20) STD #4	
	BASE	TRACER	HEAD	INDICATION
1	BLACK		P2	ø4 WALK
2	WHITE			NEUTRAL
3	RED			SPARE
4	GREEN			GROUND
5	ORANGE			SPARE
6	BLUE			SPARE
7	WHITE	BLACK	P2	ø4 DT. WALK
8	RED	BLACK	16A	ø6 RED
9	GREEN	BLACK		SPARE
10	ORANGE	BLACK	16A	ø6 YELLOW
11	BLUE	BLACK	16A	ø6 GREEN
12	BLACK	WHITE		SPARE
13	RED	WHITE		SPARE
14	GREEN	WHITE		SPARE
15	BLUE	WHITE	16A	ø3 YELLOW
16	BLACK	RED	16A	ø3 GREEN
17	WHITE	RED	5A	OLC FL YELLOW
18	ORANGE	RED	5A	OLC YELLOW
19	BLUE	RED	5A	ø5 GREEN
20	RED	GREEN	5A	OLC RED

HEAD 5 SHALL BE MOUNTED ON THE WEST SIDE OF THE POLE AND FACE WEST.

HEAD 13B SHALL BE MOUNTED ON THE EAST SIDE OF THE POLE AND FACE EAST.

SIGN SHALL BE MOUNTED FACING WEST.

20'–#14/7	Vehicle Head #5
20'–#14/7	Vehicle Head #13B



TYPE VI–17.5' HEIGHT
PEDESTAL MOUNTED–VEHICULAR HEADS

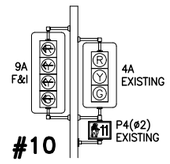
CONDUCTORS			CABLE 3–EX (12–12) STD #7	
	BASE	TRACER	HEAD	INDICATION
1	BLACK			SPARE
2	WHITE			NEUTRAL
3	RED		13B	OLA FL YELLOW
4	GREEN			GROUND
5	ORANGE		13B	OLA YELLOW
6	BLUE		13B	ø1 GREEN
7	WHITE	BLACK		SPARE
8	RED	BLACK	13B	OLA RED
9	GREEN	BLACK	5	OLC FL YELLOW
10	ORANGE	BLACK	5	OLC YELLOW
11	BLUE	BLACK	5	ø5 GREEN
12	BLACK	WHITE	5	OLC RED

HEAD 4A MOUNTED ON THE SOUTH SIDE OF THE POLE AND FACING SOUTH.

HEAD 9A SHALL BE MOUNTED ON THE NORTH SIDE OF THE POLE AND FACE NORTH.

HEAD P4 MOUNTED ON THE SOUTH SIDE OF THE POLE AND FACING WEST.

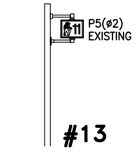
20'–#14/7	Vehicle Head #9A



TYPE VI–17.5' HEIGHT
PEDESTAL MOUNTED–VEHICULAR AND PEDESTRIAN HEADS

CONDUCTORS			CABLE 5–EX (12–12) STD #10	
	BASE	TRACER	HEAD	INDICATION
1	BLACK			SPARE
2	WHITE			NEUTRAL
3	RED		4A	ø4 RED
4	GREEN			GROUND
5	ORANGE		4A	ø4 YELLOW
6	BLUE		4A	ø4 GREEN
7	WHITE	BLACK	9A	OLB FL YELLOW
8	RED	BLACK	9A	OLB YELLOW
9	GREEN	BLACK	P4	ø2 WALK
10	ORANGE	BLACK	9A	ø3 GREEN
11	BLUE	BLACK	9A	OLB RED
12	BLACK	WHITE	P4	ø2 DT. WALK

HEAD P5 MOUNTED ON THE SOUTH SIDE OF THE POLE AND FACING EAST.



TYPE V–10' HEIGHT
PEDESTAL MOUNTED–PEDESTRIAN HEADS

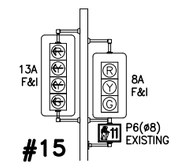
CONDUCTORS			CABLE 6–EX (12–7) STD #13	
	BASE	TRACER	HEAD	INDICATION
1	BLACK			SPARE
2	WHITE			NEUTRAL
3	RED		P5	ø2 WALK
4	GREEN			GROUND
5	ORANGE			SPARE
6	BLUE		P5	ø2 DT. WALK
7	WHITE	BLACK		SPARE

HEAD 8A SHALL BE MOUNTED ON THE WEST SIDE OF THE POLE AND FACE WEST.

HEAD 13A SHALL BE MOUNTED ON THE EAST SIDE OF THE POLE AND FACE EAST.

20'–#14/5	Vehicle Head #8A
20'–#14/7	Vehicle Head #13A

HEAD P6 MOUNTED ON THE WEST SIDE OF THE POLE AND FACING NORTH.



TYPE VI–17.5' HEIGHT
PEDESTAL MOUNTED–VEHICULAR AND PEDESTRIAN HEADS

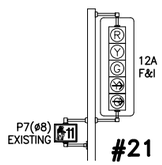
CONDUCTORS			CABLE 8–EX (12–12) STD #15	
	BASE	TRACER	HEAD	INDICATION
1	BLACK		P6	ø8 WALK
2	WHITE			NEUTRAL
3	RED		13A	OLA FL YELLOW
4	GREEN			GROUND
5	ORANGE		13A	OLA YELLOW
6	BLUE		13A	ø1 GREEN
7	WHITE	BLACK	P6	ø8 DT. WALK
8	RED	BLACK	8A	ø2 RED
9	GREEN	BLACK		SPARE
10	ORANGE	BLACK	8A	ø2 YELLOW
11	BLUE	BLACK	8A	ø2 GREEN
12	BLACK	WHITE	13A	OLA RED

HEAD 12A SHALL BE MOUNTED ON THE NORTH SIDE OF THE POLE AND FACE NORTH.

HEAD P7 MOUNTED ON THE WEST SIDE OF THE POLE AND FACING SOUTH.

FUTURE 4–SECTION TO BE MOUNTED ON THE WEST SIDE OF THE POLE AND FACE SOUTH.

20'–#14/7	Vehicle Head #12A



TYPE VI–17.5' HEIGHT
PEDESTAL MOUNTED–VEHICULAR AND PEDESTRIAN HEADS

CONDUCTORS			CABLE 10–NEW (14–20) STD #21	
	BASE	TRACER	HEAD	INDICATION
1	BLACK		P7	ø8 WALK
2	WHITE			NEUTRAL
3	RED		12A	ø8 RED
4	GREEN			GROUND
5	ORANGE		12A	ø8 YELLOW
6	BLUE		12A	ø8 GREEN
7	WHITE	BLACK	P7	ø8 DT. WALK
8	RED	BLACK		SPARE
9	GREEN	BLACK		SPARE
10	ORANGE	BLACK		SPARE
11	BLUE	BLACK		SPARE
12	BLACK	WHITE		SPARE
13	RED	WHITE		SPARE
14	GREEN	WHITE		SPARE
15	BLUE	WHITE	12A	ø5 YELLOW
16	BLACK	RED	12A	ø5 GREEN
17	WHITE	RED		SPARE
18	ORANGE	RED		SPARE
19	BLUE	RED		SPARE
20	RED	GREEN		SPARE

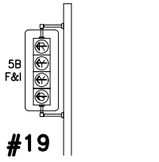
HEAD P8 MOUNTED ON THE NORTH SIDE OF THE POLE AND FACING EAST.

TYPE V–10' HEIGHT
PEDESTAL MOUNTED–PEDESTRIAN HEADS

CONDUCTORS			CABLE 11–EX (12–7) STD #23	
	BASE	TRACER	HEAD	INDICATION
1	BLACK			SPARE
2	WHITE			NEUTRAL
3	RED		P8	ø6 WALK
4	GREEN			GROUND
5	ORANGE			SPARE
6	BLUE		P8	ø6 DT. WALK
7	WHITE	BLACK		SPARE

HEAD 5B SHALL BE MOUNTED ON THE WEST SIDE OF THE POLE AND FACE WEST.

20'–#14/7	Vehicle Head #5B



TYPE VI–17.5' HEIGHT
PEDESTAL MOUNTED–VEHICULAR HEADS

CONDUCTORS			CABLE 12–EX (12–12) STD #19	
	BASE	TRACER	HEAD	INDICATION
1	BLACK			SPARE
2	WHITE			NEUTRAL
3	RED			SPARE
4	GREEN			GROUND
5	ORANGE			SPARE
6	BLUE			SPARE
7	WHITE	BLACK		SPARE
8	RED	BLACK		SPARE
9	GREEN	BLACK	5B	OLC FL YELLOW
10	ORANGE	BLACK	5B	OLC YELLOW
11	BLUE	BLACK	5B	ø5 GREEN
12	BLACK	WHITE	5B	OLC RED

HEAD CONDUCTOR ASSIGNMENT

CONDUCTORS			No.14 Awg 3 Ped. Heads	No.14 Awg 5 Veh. Heads	No.14 Awg 7 5–Section Veh. Heads
	BASE	TRACER	INDICATION	INDICATION	INDICATION
1	BLACK		WALK	GREEN	GREEN BALL
2	WHITE		NEUTRAL	NEUTRAL	NEUTRAL
3	RED		DT. WALK	RED	RED
4	GREEN			GROUND	GROUND
5	ORANGE			YELLOW	YELLOW BALL
6	BLUE				GREEN ARRROW
7	WHITE	BLACK			YELLOW ARROW

FYA CONDUCTOR ASSIGNMENT

CONDUCTORS			No.14 Awg 7 4–Section Veh. Heads
	BASE	TRACER	INDICATION
1	BLACK		SPARE
2	WHITE		NEUTRAL
3	RED		RED ARROW
4	GREEN		GROUND
5	ORANGE		FLASHING YELLOW ARROW
6	BLUE		GREEN ARROW
7	WHITE	BLACK	YELLOW ARROW

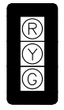
EACH VEHICLE/PEDESTRIAN HEAD CABLE SHALL BE LABELED WITH THE HEAD #.

EACH CABLE FROM THE CONTROLLER CABINET SHALL HAVE A SEPARATE TERMINAL BLOCK INSIDE THE T–BASE FOR TERMINATIONS.

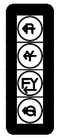
SIGN MOUNTED ON PEDESTAL POLE #7 SHALL NOT BE PAID FOR SEPARATELY, BUT INCLUDED IN THE PRICE BID FOR TRAFFIC SIGNAL SYSTEM.

NOTE: All signal heads shall be SIG Polycarbonate. All back plates shall be lovered .063" thick aluminum.

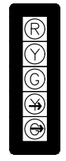
**ALL PEDESTRIAN HEADS
16" x 18" Filled Overlay
L.E.D. PEDESTRIAN HEAD
WITH PEDESTRIAN COUNT
DOWN TIMER**



**ALL L.E.D. SIGNAL HEADS
12" Lenses
VEHICLE HEADS
8A**



**ALL L.E.D. SIGNAL HEADS
12" Lenses
VEHICLE HEADS
5,5A,5B,9A,13A,13B**



**ALL L.E.D. SIGNAL HEADS
12" Lenses
VEHICLE HEADS
12A,16A**

THE CITY OF Fargo FAR MORE

Houston Engineering Inc.
Proj. No. 6059-0145
Ph: 701.237.5065

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Signals - Standards 45th St S

52nd Ave S - West of 63rd St S to 45th St S

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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	18

Plan Note Number
2
Symbol

- Feed Point
- Pedestrian Signal Standard
- Traffic Signal Standard
- Controller Cabinet
- Ped. Push Button Post
- Pull Box
- Quazite Pull Box

45TH ST S

52ND AVE S

EXISTING 251'–2" Conduit
2–Loop Lead–In(26 to 1)D8–1A/D8–1B – Existing

EXISTING 38'–2" Conduit
2–Loop Lead–In(24 to 1)
D8–3A/D8–3a – Existing

EXISTING 7'–2" Conduit
#12 AWG 7(23 to 1)Cable 11 – Existing
#12 AWG 2(23 to 1)ø6 Ped. – Existing

EXISTING 42'–2" Conduit
#12 AWG 12(20 to 1)Cable 9 – Existing
#12 AWG 2(20 to 1)EVP Light – Existing

EXISTING 78'–3" Conduit
4–Loop Lead–In(18 to 1)
D5–1A/D5–1a/D5–1B/D5–1b – Existing
3–Future Camera Wires – Existing

EXISTING 78'–3" Conduit
#14 AWG 20(14)Cable 7 – New
#12 AWG 12(19)Cable 12 – Existing
#12 AWG 12(15)Cable 8 – Existing
#12 AWG 7(13)Cable 6 – Existing
#12 AWG 2(15)ø8 Ped. – Existing
#12 AWG 2(13)ø2 Ped. – Existing
3–Loop Lead–In(17) – New

EXISTING 106'–2" Conduit
4–Loop Lead–In(25 to 1)
D3–1A/D3–1a/D3–1B/D3–1b – Existing
2–Loop Lead–In(26) – Existing

EXISTING 145'–4" Conduit
#14 AWG 20(14)Cable 7 – New
#12 AWG 12(19)Cable 12 – Existing
#12 AWG 12(15)Cable 8 – Existing
#12 AWG 7(13)Cable 6 – Existing
#12 AWG 2(15)ø8 Ped. – Existing
#12 AWG 2(13)ø2 Ped. – Existing
2–Loop Lead–In(24) – Existing
3–Loop Lead–In(17) – New

EXISTING 10'–2" Conduit
#14 AWG 20(21 to 1–202')Cable 10 – New
#12 AWG 2(21 to 1)ø8 Ped. – Existing

EXISTING 6'–2" Conduit
#12 AWG 12(19 to 1)Cable 12 – Existing

EXISTING 6'–2" Spare Conduit

EXISTING 75'–4" Conduit
#14 AWG 20(14)Cable 7 – New
#12 AWG 12(15)Cable 8 – Existing
#12 AWG 7(13)Cable 6 – Existing
#12 AWG 2(15)ø8 Ped. – Existing
#12 AWG 2(13)ø2 Ped. – Existing
3–Loop Lead–In(17) – New

EXISTING 17'–2" Conduit
#12 AWG 12(15 to 1)Cable 8 – Existing
#12 AWG 2(15 to 1)ø8 Ped. – Existing

300'–2" Conduit
3–Loop Lead–In(17 to 1–656'*3)
D2–1A/D2–1B/D2–3 – New

2 EXISTING 10'–2" Spare Conduit
Future Wire in Pull Box #11

38'–2" Conduit
#14 AWG 20(14 to 1–389')Cable 7 – New

EXISTING 42'–2" Conduit
#12 AWG 7(13 to 1)Cable 6 – Existing
#12 AWG 2(13 to 1)ø2 Ped. – Existing

EXISTING 145'–4" Conduit
#14 AWG 20(21)Cable 10 – New
#12 AWG 12(20)Cable 9 – Existing
#12 AWG 7(23)Cable 11 – Existing
#12 AWG 2(23)ø6 Ped. – Existing
#12 AWG 2(21)ø8 Ped. – Existing
#12 AWG 2(20)EVP Light – Existing
4–Loop Lead–In(18) – Existing
3–Future Camera Wires – Existing

EXISTING 139'–3" Conduit
#12 AWG 7(11 to 1)Future Cable – Existing
4–Loop Lead–In (11 to 1)Future Detection Loops – Existing

14'–1" Conduit
#14 AWG 2(28 to 1–72')ø6 Ped. – New
#14 AWG 3(29)ø6 Ped. PB to Head P1 – New

EXISTING 26'–4" Conduit
#14 AWG 20(14)Cable 7 – New
#12 AWG 12(19)Cable 12 – Existing
#12 AWG 12(15)Cable 8 – Existing
#12 AWG 7(13)Cable 6 – Existing
#12 AWG 2(15)ø8 Ped. – Existing
#12 AWG 2(13)ø2 Ped. – Existing
2–Loop Lead–In(24) – Existing
3–Loop Lead–In(17) – New

EXISTING 26'–4" Conduit
#14 AWG 20(21)Cable 10 – New
#12 AWG 12(20)Cable 9 – Existing
#12 AWG 7(23)Cable 11 – Existing
#12 AWG 2(23)ø6 Ped. – Existing
#12 AWG 2(21)ø8 Ped. – Existing
#12 AWG 2(20)EVP Light – Existing
4–Loop Lead–In(18) – Existing
3–Future Camera Wires – Existing

8'–2" Conduit
#14 AWG 20(4 to 1–23')Cable 2 – New
#14 AWG 2(4 to 1–29')ø4 Ped. – New
#14 AWG 3(15')ø4 Ped. PB to Head P2 – New

EXISTING 38'–2" Conduit
#12 AWG 12(10 to 1)Cable 5 – Existing
#12 AWG 2(10 to 1)ø2 Ped. – Existing

EXISTING 16'–2" Conduit
#12 AWG 12(9 to 1)Cable 4 – Existing
#12 AWG 2(9 to 1)ø4 Ped. – Existing
#12 AWG 2(9 to 1)EVP Light – Existing
Opticom(9 to 1)EVP Detector – Existing

31'–2" Conduit
#14 AWG 20(27 to 1–83')Cable 1 – New
Opticom(27 to 1–183')EVP Detector – New
#16 AWG 3(27 to 1–124')PTZ Camera – New
CAT 6 Cable(27 to 1–124')PTZ Camera – New
#14 AWG 3(29)Head P1 – New

16'–2" Conduit
#14 AWG 3(29 to 27–60')Head P1 – New
#14 AWG 3(29 to 28–65')ø6 Ped. PB to Head P1 – New

34'–2" Conduit
#14 AWG 20(27)Cable 1 – New
#14 AWG 2(28)ø6 Ped. – New
Opticom(27)EVP Detector – New
#16 AWG 3(27)PTZ Camera – New
CAT 6 Cable(27)PTZ Camera – New

EXISTING 6'–2" Conduit
2–#6 RHW(2 to 1) – Existing
#6 THW(2 to 1) – Existing

EXISTING 14'–2" Conduit
Fiber Optic Cable
See Section 160

303'–2" Conduit
3–Loop Lead–In(5 to 1–323'*3)
D6–1A/D6–1B/D6–3 – New

EXISTING 88'–4" Conduit
#12 AWG 12(9)Cable 4 – Existing
#12 AWG 12(10)Cable 5 – Existing
#12 AWG 2(9)ø4 Ped. – Existing
#12 AWG 2(10)ø2 Ped. – Existing
#12 AWG 2(9)EVP Light – Existing
Opticom(9)EVP Detector – Existing

EXISTING 88'–4" Conduit
#12 AWG 12(7)Cable 3 – Existing
#12 AWG 7(11)Future Cable – Existing
4–Loop Lead–In(6 to 1)
D1–1A/D1–1a/D1–1B/D1–1b – Existing
4–Loop Lead–In(11) – Existing

EXISTING 7'–2" Conduit
#12 AWG 12(7 to 1)Cable 3 – Existing

EXISTING 7'–2" Spare Conduit

EXISTING 48'–3" Conduit
#12 AWG 12(9)Cable 4 – Existing
#12 AWG 12(10)Cable 5 – Existing
#12 AWG 2(9)ø4 Ped. – Existing
#12 AWG 2(10)ø2 Ped. – Existing
#12 AWG 2(9)EVP Light – Existing
Opticom(9)EVP Detector – Existing

EXISTING 48'–3" Conduit
#12 AWG 7(11)Future Cable – Existing
4–Loop Lead–In(11) – Existing

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Signals - Wiring Diagram 45th St S

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	19

52nd Ave S & 45th St S

HEAD NUMBER	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8	OLA	OLB	OLC	OLD
	PEDS(A)	PEDS(A)	PEDS(A)									
	R/W 2 3 4 5 6 7 8 A B C D	R/W 3 4 5 6 7 8 1 A B C D	R/W 4 5 6 7 8 1 2 A B C D	R/W 5 6 7 8 1 2 3 A B C D	R/W 6 7 8 1 2 3 4 A B C D	R/W 7 8 1 2 3 4 5 A B C D	R/W 8 1 2 3 4 5 6 A B C D	R/W 1 2 3 4 5 6 7 A B C D	R/W 1 2 3 4 5 6 7 8 A C D	R/W 1 2 3 4 5 6 7 8 B C D	R/W 1 2 3 4 5 6 7 8 A B D	R/W 1 2 3 4 5 6 7 8 A B C
1							⊖ Y Y Y * * Y Y Y * Y *					F * * * * * * * * * *
2,3,4,4A				G Y Y * * Y Y Y Y * Y *								
5,5A,5B					⊖ Y Y Y * * Y Y * Y * Y						F * * * * * * * * * *	
6,7,8,8A	G Y Y * * Y Y Y * Y * Y											
9,9A			⊖ Y Y Y * * Y Y Y * Y *							F * * * * * * * * * *		
10,11								G Y Y * * Y Y Y * Y *				
12,12A					⊖ Y Y Y * * Y Y * Y * Y			G Y Y * * Y Y Y * Y *				
13,13A,13B	⊖ Y Y Y * * Y Y * Y * Y								F * * * * * * * * * *			
14,15						G Y Y * * Y Y Y * Y * Y						
16,16A			⊖ Y Y Y * * Y Y Y * Y *			G Y Y * * Y Y Y * Y * Y						

Chart "A"	
On Phase	Non-Conflicting Phase Allowed to Time Concurrently
1	5,6,OLA,OLC
2	5,6,OLA,OLC
3	7,8,OLB,OLD
4	7,8,OLB,OLD
5	1,2,OLA,OLC
6	1,2,OLA,OLC
7	3,4,OLB,OLD
8	3,4,OLB,OLD
OLA	1,2,5,6,OLC
OLB	3,4,7,8,OLD
OLC	1,2,5,6,OLA
OLD	3,4,7,8,OLB

Blank Squares Denote a Red Indication

(*) When one phase is on alone, any non-conficiting phase may start timing concurrently without a clearance interval. (See Chart "A")

(A) Only upon pedestrian actuation.

THE CITY WILL PROGRAM THE SIGNAL TIMING INTO THE CONTROLLER PRIOR TO START UP.

TRAFFIC CONTROL SYSTEM
Controller Phasing

PHASE-LOOP · DIRECTION · CONTROLLER INPUT LOCATION · LOOP TYPE · WHITE BACKGROUND · BLACK LEGEND & LINES

CH.1		1-1A	WBLT	2-1A	EB	3-1A	SBLT			5-1A	EBLT	6-1A	WB			8-1A	SB	PE1	WB	PE3	SB
		VD1	PR	VD2	P	VD3	PR	VD4		VD5	PR	VD6	P	VD7		VD8	P		ø1&ø6		ø3&ø8
CH.2		1-1B	WBLT	2-1B	EB	3-1B	SBLT			5-1B	EBLT	6-1B	WB			8-1B	SB	PE2	EB	PE4	NB
		SD1	PR	SD2	P	SD3	PR	SD4		SD5	PR	SD6	P	SD7		SD8	P		ø2&ø5		ø4&ø7
REF	POWER SUPPLY	DT1		DT2		DT3		DT4		DT5		DT6		DT7		DT8		OD1		OD2	

CH.1		1-1a	WBLT	2-3	EBRT	3-1a	SBLT			5-1a	EBLT	6-3	WBRT			8-3A	SBRT
		VD9	PR	VD10	P	VD11	PR	VD12		VD13	PR	VD14	P	VD15		VD16	PR
CH.2		1-1b	WBLT			3-1b	SBLT			5-1b	EBLT					8-3a	SBRT
		VD17	PR	VD18		VD19	PR	VD20		VD21	PR	VD22		VD23		VD24	PR
REF	POWER SUPPLY	DT1		DT2		DT3		DT4		DT5		DT6		DT7		DT8	

TYPICAL 8 PHASE DETECTOR LABEL

SAME PHASE MULTIPLE LEAD-INS
LETTERS A-D
LANE LOCATION START
"A" ON THE CENTER LINE
TO CURB.

PHASE-LOOP
(N)-1 = (2,4,6,8)-PASSAGE
(N)-1 = (2,4,6,8)-PRESENCE
(N)-2 = (2,4,6,8)-CALLING
(N)-1 = (1,3,5,7)-LEFT TURN
(N)-3 = (2,4,6,8)-RIGHT TURN
(N)-5 = (1,2,3,4,5,6,7,8)- COUNT LOOP

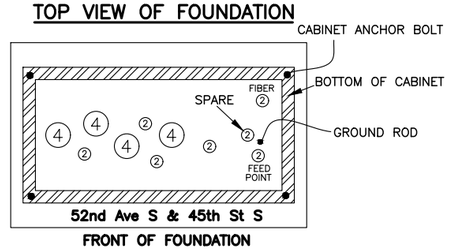
LOOP TYPE
P = PASSAGE
PR = PRESENCE
C = CALLING
LT = LEFT TURN
RT = RIGHT TURN
T = COUNT LOOP

CONTROLLER INPUT LOCATION
VD(#) = VEHICLE DETECTOR (1-8)
SD(#) = SPECIAL DETECTOR (1-8)
PD(#) = PEDESTRIAN DETECTOR (1-8)

EMERGENCY VEHICLE PRE-EMPTION PHASING

ø6 ← ø1+OLA ↓	ø5+OLC ↑ ø2 →	ø8 ↓ ø3+OLB →	← ø7+OLD ↑ ø4
WEST BOUND	EAST BOUND	SOUTH BOUND	NORTH BOUND
PREEMPT 1	PREEMPT 2	PREEMPT 3	PREEMPT 4
TOP TUBE/BLUE WIRE	BOTTOM TUBE/YELLOW WIRE	TOP TUBE/BLUE WIRE	BOTTOM TUBE/YELLOW WIRE

EXISTING CONDUIT PLACEMENT
TOP VIEW OF FOUNDATION



FRONT OF FOUNDATION

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Signals - Controller Phasing 45th St S

52nd Ave S - West of 63rd St S to 45th St S

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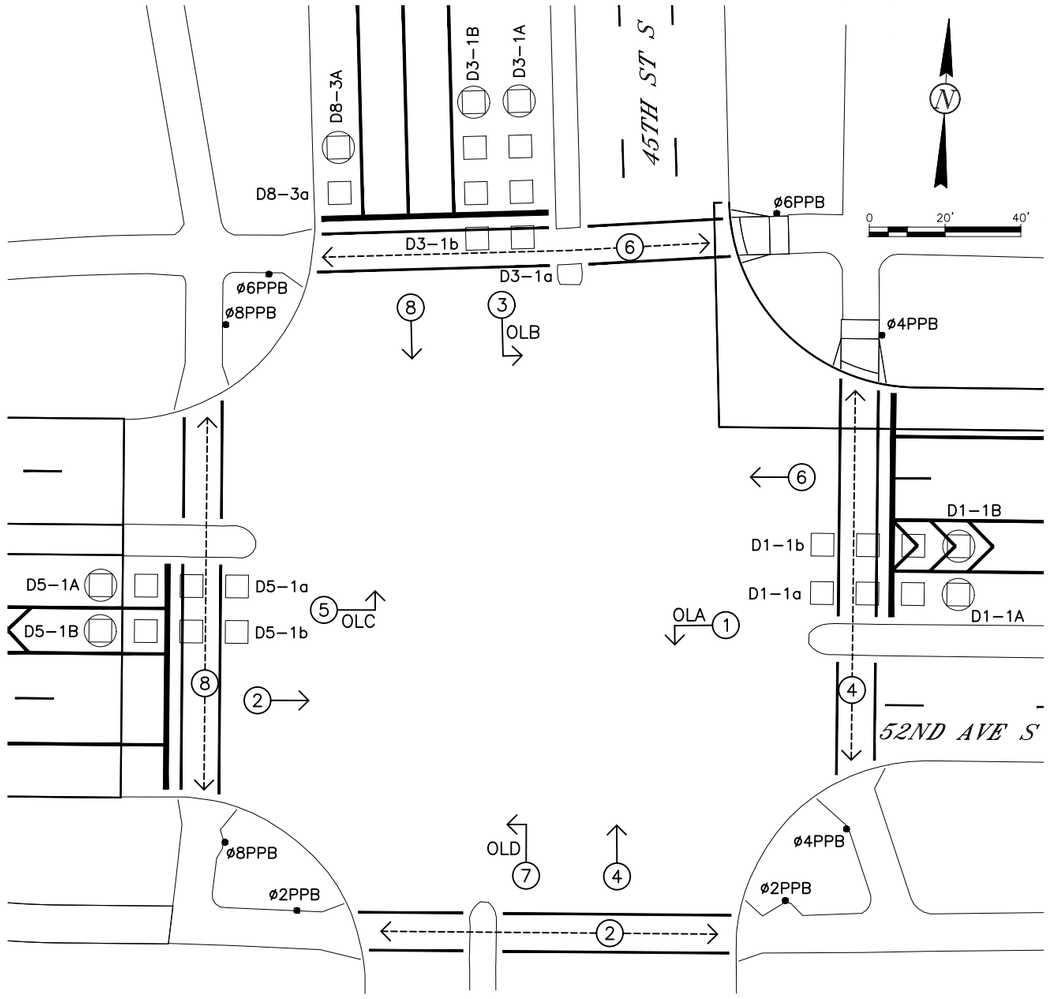
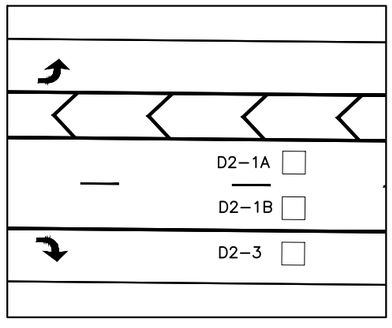
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	20

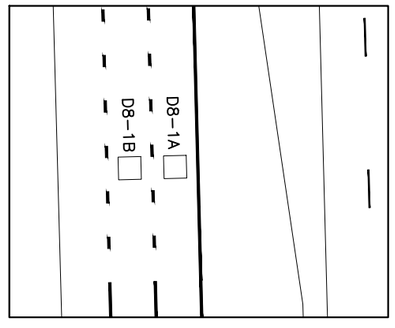
PHASE DESIGNATION DIAGRAM



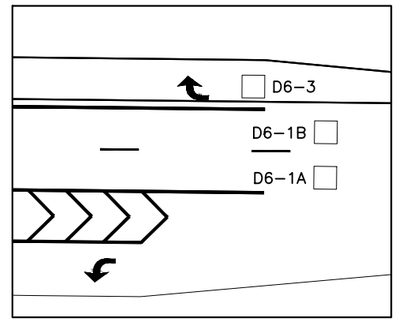
52nd Ave S & 45th St S



EASTBOUND



SOUTHBOUND

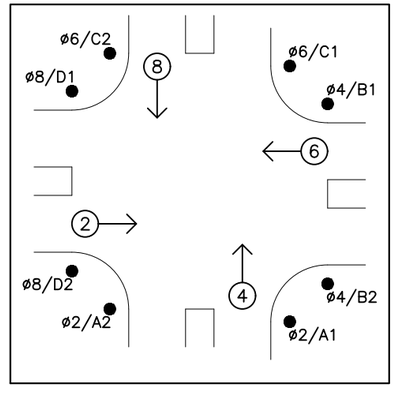


WESTBOUND

DETECTOR LOOP SCHEDULE - 52nd Ave S & 45th St S

DETECTION ZONE	DETECTION TYPE	NUMBER OF LOOPS	PHASE	SIZE (FEET)	TYPE OF LOOP	NUMBER OF TURNS	CONDUCTOR (LF)	SLAW SLOT (LF)
D1–1A D1–1a	LOOP	4	ø1	6 x 6	PRESENCE	3	EXISTING	EXISTING
D1–1B D1–1b	LOOP	4	ø1	6 x 6	PRESENCE	3	EXISTING	EXISTING
D2–1A D2–1B D2–3	LOOP	3	ø2	6 x 6	PASSAGE	3	354	118
D3–1A D3–1a	LOOP	4	ø3	6 x 6	PRESENCE	3	EXISTING	EXISTING
D3–1B D3–1b	LOOP	4	ø3	6 x 6	PRESENCE	3	EXISTING	EXISTING
D5–1A	LOOP	1	ø5	6 x 6	PRESENCE	3	108	27
D5–1a	LOOP	3	ø5	6 x 6	PRESENCE	3	EXISTING	EXISTING
D5–1B	LOOP	1	ø5	6 x 6	PRESENCE	3	130	40
D5–1b	LOOP	3	ø5	6 x 6	PRESENCE	3	EXISTING	EXISTING
D6–1A D6–1B D6–3	LOOP	3	ø6	6 x 6	PASSAGE	3	350	42
D8–1A D8–1B	LOOP	2	ø8	6 x 6	PASSAGE	3	EXISTING	EXISTING
D8–3A D8–3a	LOOP	2	ø8	6 x 6	PRESENCE	3	EXISTING	EXISTING
						TOTAL	942	227

PUSHBUTTON ASSIGNMENT



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Signals - Phase Diagram 45th St S

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	21

TRAFFIC SIGNAL QUANTITIES (A)

LOCATION	CONCRETE FOUNDATION - TRAFFIC SIGNALS	CONCRETE PAD FOR EXISTING QUAZITE FIBER PULL BOX	PULL BOX	FARGO TYPE B CABINET	1" DIA. RIGID CONDUIT	2" DIA. RIGID CONDUIT	LOOP LEAD-IN CONDUCTOR	LOOP WIRE	EMERGENCY VEHICLE DETECTOR CABLE (OPTICOM)	EMERGENCY VEHICLE INDICATOR CABLE (NO. 12 AWG 2)	NO. 14 AWG 2 CONDUCTOR CABLE	NO. 14 AWG 3 CONDUCTOR CABLE	NO. 14 AWG 5 CONDUCTOR CABLE	NO. 14 AWG 7 CONDUCTOR CABLE	NO. 14 AWG 20 CONDUCTOR CABLE	SAW SLOT	TYPE V SIGNAL STANDARD	RELOCATE TYPE VI SIGNAL STANDARD	COMBO 40' MH SIGNAL & LIGHT STANDARD - 58' MA	COMBO 40' MH SIGNAL & LIGHT STANDARD - 65' MA	LED LUMINAIRE	1-WAY 3 SEC HEAD W/ 12" LENS - POST MTD.	1-WAY 3 SEC HEAD W/ 12" LENS - PEDESTAL MTD.	1-WAY 3 SEC HEAD W/ 12" LENS - MA MTD.	1-WAY 4 SEC HEAD W/ 12" LENS - PEDESTAL MTD.	1-WAY 4 SEC HEAD W/12" LENS - MA MTD.	1-WAY 5 SEC HEAD W/ 12" LENS - POST MTD.	1-WAY 5 SEC HEAD W/ 12" LENS - PEDESTAL MTD.	PEDESTRIAN COUNTDOWN SIGNAL HEAD - PEDESTAL MTD.	PEDESTRIAN PUSH BUTTON POST	APS PEDESTRIAN PUSH BUTTON & SIGN	REVISE EMERGENCY VEHICLE DETECTOR SYSTEM	BATTER BACKUP SYSTEM	PTZ CAMERA	CAT 6 CABLE	NO. 16 AWG 3 (PTZ CAMERA POWER)	MAST ARM MOUNTED SIGNS		REVISE TRAFFIC SIGNAL SYSTEM
LOCATION	EA	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	LSUM	EA	EA	LF	LF	LSUM		EA
POLE 4	1																	1							1			1	1		1								
POLE 7																									2														
POLE 10																									1														
POLE 14	1																		1		2			2		1	1												
POLE 15																						1			1														
POLE 19																									1														
POLE 20																										1	1												
POLE 21																												1											
POLE 27	1																		1	2	1		2		1														
POLE 29	1																1										1												
VARIOUS LOCATIONS		1	3	1	14	730	2,937	942	183	197	101	176	304	465	697	227												1	1	1	1	1	124	124	1			
TOTAL	4	1	3	1	14	730	2,937	942	183	197	101	176	304	465	697	227	1	1	1	1	4	1	1	4	6	3	2	2	2	1	2	1	1	1	124	124	1		1

(A) TRAFFIC SIGNAL QUANTITIES FOR INFORMATIONAL PURPOSES ONLY. ALL COSTS SHALL BE INCLUDED IN THE BID PRICE FOR "REVISE TRAFFIC SIGNAL SYSTEM". QUANTITIES CALCULATED ACCORDING TO NDDOT SPECIFICATIONS.

REMOVAL QUANTITIES (B)

LOCATION	REMOVE CONCRETE FOUNDATION - TRAFFIC SIGNALS	REMOVE & SALVAGE PULL BOX	REMOVE & SALVAGE TRAFFIC SIGNAL CONTROLLER CABINET	REMOVE VEHICLE DETECTION LOOPS	REMOVE & SALVAGE TYPE VI SIGNAL STANDARD	REMOVE & SALVAGE TYPE IV/COMBO SIGNAL STANDARD	REMOVE & SALVAGE LED LUMINAIRE	REMOVE & SALVAGE VEHICULAR HEADS	REMOVE & SALVAGE PEDESTRIAN HEADS	REMOVE & SALVAGE PEDESTRIAN PUSH BUTTON POST	REMOVE & SALVAGE PEDESTRIAN PUSH BUTTON	REMOVE & SALVAGE EVP DETECTOR	REMOVE & SALVAGE EVP CONFIRMATION LIGHT	REMOVE & SALVAGE PTZ CAMERA	REMOVE & SALVAGE VEHICULAR & PEDESTRIAN HEAD MOUNTING EQUIPMENT	REMOVE & SALVAGE CONDUCTOR	REMOVE CONDUIT		REVISE TRAFFIC SIGNAL SYSTEM
LOCATION	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	LSUM	LSUM	LSUM		EA
POLE 4	1					1	2	4	1		1	1	1	1					
POLE 6	1				1			2	1		1								
POLE 8								2											
POLE 13								1											
POLE 17	1					1		4					1						
POLE 18								1											
POLE 22								1			1								
POLE 23								2											
POLE 24								1											
VARIOUS LOCATIONS		2	1	5						2	2				1	1	1		
TOTAL	3	2	1	5	1	2	2	18	2	2	5	1	2	1	1	1	1		1

(B) TRAFFIC SIGNAL QUANTITIES FOR INFORMATIONAL PURPOSES ONLY. ALL COSTS SHALL BE INCLUDED IN THE BID PRICE FOR "REVISE TRAFFIC SIGNAL SYSTEM". QUANTITIES CALCULATED ACCORDING TO NDDOT SPECIFICATIONS.

THE CITY OF Fargo
FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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Signals - Quantities 45th St S

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	22

TRAFFIC SIGNAL STANDARD FOUNDATIONS

TRAFFIC SIGNAL STANDARD FOUNDATION SELECTION TABLE				
SIGNAL STANDARD DESCRIPTION	24" DIAMETER FOOTING DEPTH	30" DIAMETER FOOTING DEPTH	36" DIAMETER FOOTING DEPTH	42" DIAMETER FOOTING DEPTH
TYPE I, II, V, VI, VII STANDARD				
10–14' HEIGHT	4'	4'	3'	–
15'–17' HEIGHT	6'	6'	5'	–
TYPE IV SIGNAL STANDARD				
0'–25' MAST ARM	–	11'	11'	11'
26'–30' MAST ARM	–	12'	12'	12'
31'–35' MAST ARM	–	12'	12'	12'
36'–39' MAST ARM	–	13'	13'	13'
40'–45' MAST ARM	–	15'	15'	15'
46'–50' MAST ARM	–	16'	15'	15'
51'–55' MAST ARM	–	16'	16'	16'
56'–60' MAST ARM	–	17'	17'	17'
61'–65' MAST ARM	–	18'	18'	18'
COMBO SIGNAL STANDARD 30' MT HEIGHT				
0'–25' MAST ARM	–	11'	11'	11'
26'–30' MAST ARM	–	12'	12'	12'
31'–35' MAST ARM	–	13'	13'	13'
36'–39' MAST ARM	–	14'	14'	14'
40'–45' MAST ARM	–	16'	15'	15'
46'–50' MAST ARM	–	16'	16'	16'
51'–55' MAST ARM	–	17'	16'	16'
56'–60' MAST ARM	–	18'	17'	17'
61'–65' MAST ARM	–	19'	18'	18'
COMBO SIGNAL STANDARD 40' MT HEIGHT				
0'–25' MAST ARM	–	12'	12'	12'
26'–30' MAST ARM	–	13'	13'	13'
31'–35' MAST ARM	–	13'	13'	13'
36'–39' MAST ARM	–	14'	14'	14'
40'–45' MAST ARM	–	16'	15'	15'
46'–50' MAST ARM	–	16'	16'	16'
51'–55' MAST ARM	–	17'	16'	16'
56'–60' MAST ARM	–	18'	17'	17'
61'–65' MAST ARM	–	19'	18'	18'
COMBO SIGNAL STANDARD 50' MT HEIGHT				
0'–25' MAST ARM	–	12'	12'	12'
26'–30' MAST ARM	–	13'	13'	13'
31'–35' MAST ARM	–	13'	13'	13'
36'–39' MAST ARM	–	14'	14'	14'
40'–45' MAST ARM	–	16'	16'	16'
46'–50' MAST ARM	–	16'	16'	16'
51'–55' MAST ARM	–	17'	17'	17'
56'–60' MAST ARM	–	18'	18'	17'
61'–65' MAST ARM	–	19'	19'	18'

FOUNDATION REINFORCING TABLE	
FOOTING DEPTH	LONGITUDINAL REINFORCING
12' or Less	8 – #5
13'–14'	8 – #6
15'–16'	8 – #7
17'–19'	8 – #8

FOUNDATION NOTES:

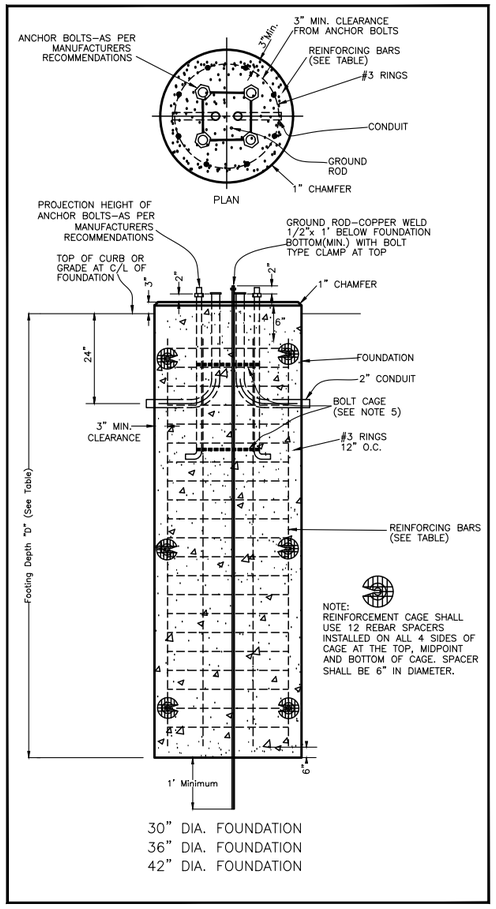
1. SEE PLANS FOR CORRECT LOCATION OF FOUNDATION. THE GRADE AND EXACT LOCATION SHALL BE ESTABLISHED BY THE ENGINEER IN THE FIELD.

2. THE FOUDATION SHALL PROVIDE A MINIMUM OF 3" OF CONCRETE COVER FROM THE ANCHOR BOLTS TO THE REBAR CAGE AND A MINIMUM OF 3" OF CONCRETE COVER OVER THE REBAR CAGE TO THE OUTSIDE OF THE FOUNDATION. THE DIAMETER OF THE FOUNDATION SHALL BE INCREASED TO ACCOMODATE A LARGER BOL CIRCLE.

3. AN ANCHOR BOLT CAGE SHALL BE SHOP FABRICATED FROM #6 BAR CIRCLE OR ¾" SQUARE STOCK OR APPROVED EQUAL WELDED TO THE INSIDE OF THE ANCHOR BOLT TO HOLD ALIGNMENT.

4. GROUND ROD SHALL BE PLACED PRIOR TO CONCRETE PLACEMENT. THE ROD SHALL PROJECT 4" ABOVE THE FINISHED FOUNDATION AND SHALL EXTEND 12" BELOW THE FOUNDATION BOTTOM.

5. CONDUIT BENDS SHALL BE 90°. CONDUIT SHALL BE LOCATED 24" MINIMUM BELOW GROUND LEVEL. A SPARE 2" CONDUIT SHALL BE INSTALL IN EACH FOUNDATION WITH BOTH ENDS PLUGED AS PER SPARE CONDUIT SPECIFICATION.



30" DIA. FOUNDATION
36" DIA. FOUNDATION
42" DIA. FOUNDATION

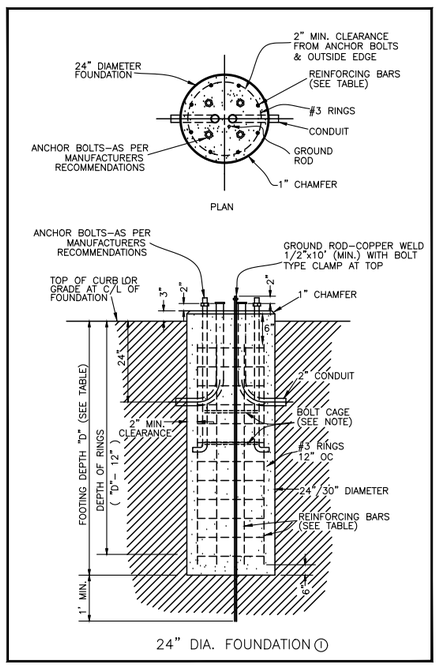
CONCRETE FOUNDATION:

1. CONCRETE USED IN THE WORK SHALL BE CLASS AE PORTLAND CEMENT CONCRETE MIXED AND PROPORTIONED AS SPECIFIED IN SECTION 802 IN ND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

2. CONTRACTOR IS RESPONSIBLE FOR CALLING OR NOTIFYING ENGINEER BEFORE CONCRETE IS ORDERED, NO CONCRETE SHALL BE INSTALLED UNTIL CONCRETE IS TESTED.

3. CONCRETE SHALL MEET THE FOLLOWING TESTS:
   - –AIR CONTENT BETWEEN 5% TO 8%
   - –SLUMP BETWEEN 2" TO 4"
   - –MAX TEMP OF 90 DEGREES

4. CONCRETE SHALL ATTAIN A COMPRESSIVE STRENGTH OF 3000 PSI BEFORE SIGNAL STANDARD IS INSTALLED AND SHALL ATTAIN A COMPRESSIVE STRENGTH OF 4000 PSI BEFORE 28 DAYS TO BE ACCEPTED.



24" DIA. FOUNDATION ①

NOTES:

① NO REINFORCEMENT IS REQUIRED IF THE ANCHOR BOLTS EXTEND TO WITHIN 3" TO 6" ABOVE THE BOTTOM OF THE FOUNDATION FOR THE 24" DIAMETER FOUNDATION.

② ALL REINFORCING STEEL TO BE GRADE 40 OR 60.

③ RINGS SHALL BE SPACED AT EQUAL SPACE TO A MAXIMUM OF 12" OC, STARTING WITH THE FIRST AT THE TOP OF THE LONGITUDINAL REINFORCING AND THE LAST AT THE BOTTOM OF THE LONGITUDINAL REINFORCING. RINGS SHALL HAVE A MIN OF 12" OVERLAP.

④ SEE PLANS FOR CONDUIT SIZE, NUMBER OF BENDS AND CORRECT POSITIONING FOR EACH FOUNDATION.

⑤ THE TOP OF THE FOUNDATION SHALL BE CIRCULAR. IF APPROVED BY THE ENGINEER A SQUARE CASING MAY BE USED. PRIOR TO FINAL GRADING OR SIDEWALK PLACEMENT THE CASING TUBES SHALL BE REMOVED TO A POINT 6" BELOW GRADE.

SECTION NO. 4200	DRAWING NO. 5.1
REV.D. 2016	
TRAFFIC SIGNAL FOUNDATION	
CITY OF FARGO ENGINEERING DEPARTMENT	
APPROVED	DATE

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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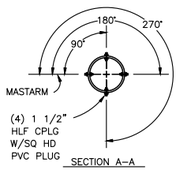
Signals - Details

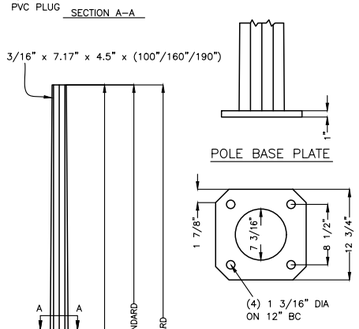
52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	23

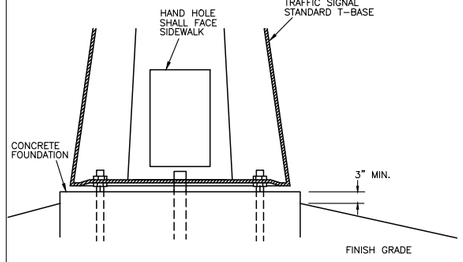
TYPE V, TYPE V,TYPE VIII SIGNAL STANDARDS



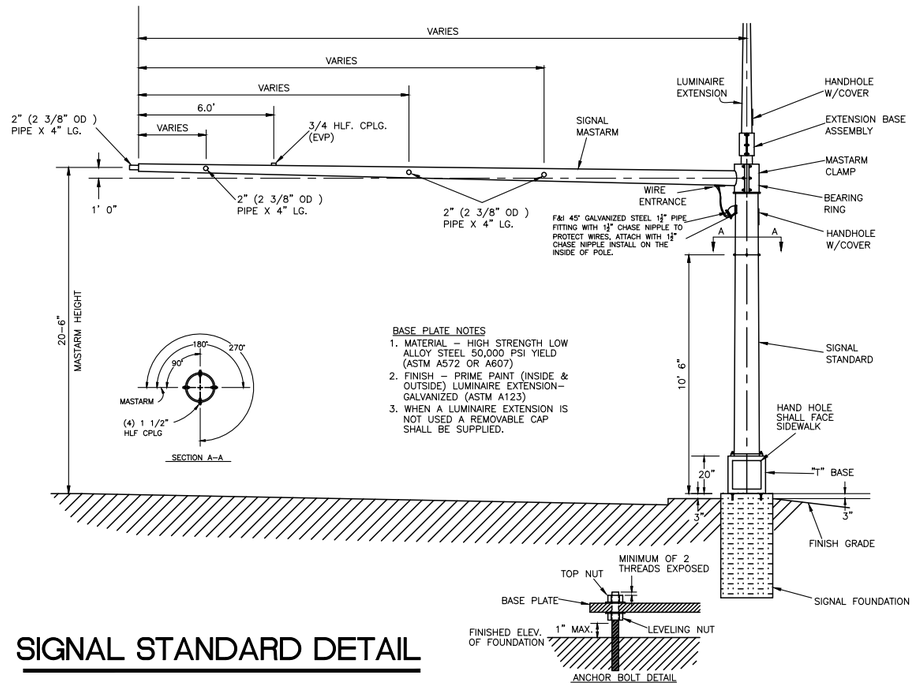
POLES:
ALL TYPE V AND TYPE VI SIGNAL STANDARDS SHALL BE MANUFACTURED BY MILLERBERND MANUFACTURING AND HAVE A T-BASE INSTALLED.



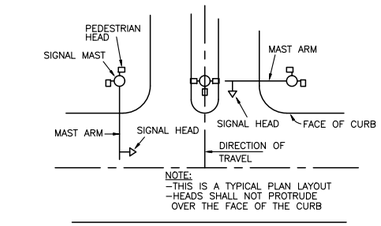
NOTE:
POLE MATERIAL-HIGH STRENGTH LOW ALLOY STEEL 50,000 PSI MIN. YIELD PER ASTM A572 OR A1011(A871 OR A606 IF SELF WEATHERING) BASE PLATE MATERIAL-36,000 PSI MIN. YEILD PER ASTM A36(A588 IF SELF WEATHERING) SHALL BE PAINTED USING THE MILLERBOND I2/ZRU PAINT SYSTEM WITH A TOP CLEAR COAT.



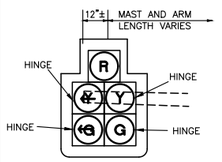
SIGNAL STANDARD DETAIL



SIGNAL MAST ARM HEAD MOUNTING

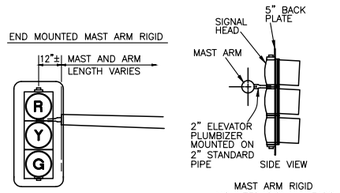


NOTE:
-THIS IS A TYPICAL PLAN LAYOUT
-HEADS SHALL NOT PROTRUDE OVER THE FACE OF THE CURB



NOTE:
5-SECTION CLUSTER HEAD ASTRO BRACKET SHALL BE MOUNTED TO THE MAST ARM AT THE CENTER OF THE YELLOW BALL HEAD.

NOTE:
ALL HINGES SHALL BE ON OUTSIDE OF 5 SECTION CLUSTER

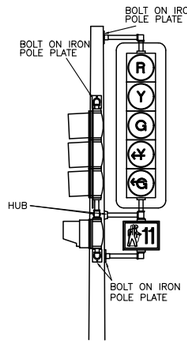


MAST ARM RIGID MOUNTED SIGNAL HEADS

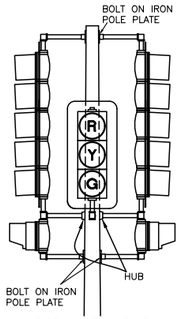
TRAFFIC SIGNAL HEAD MOUNTING

NOTE:
TYPE V,TYPE VI, AND TYPE VIII SIGNAL STANDARDS THAT ARE 15' OR 17.5' IN HEIGHT SHALL USE A 24" CONCRETE SIGNAL FOUNDATION THAT IS 6' IN DEPTH.

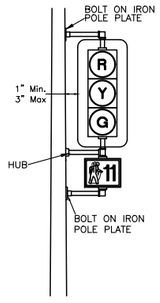
ALL VEHICLE AND PEDESTRIAN MOUNTING HARDWARE SHALL BE STEEL.



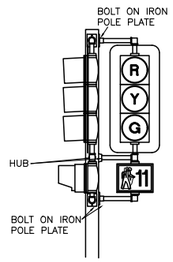
TYPE VI-17.5' HEIGHT
PEDESTAL MOUNTED-VEHICULAR
PEDESTAL MOUNTED-PEDESTRIAN



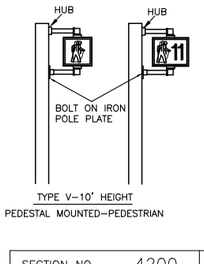
TYPE VIII-17.5' HEIGHT
PEDESTAL MOUNTED-VEHICULAR
PEDESTAL MOUNTED-PEDESTRIAN



TYPE IV
POST MOUNTED-VEHICULAR
POST MOUNTED-PEDESTRIAN



TYPE V-15' HEIGHT
PEDESTAL MOUNTED-VEHICULAR AND PEDESTRIAN HEADS



TYPE V-10' HEIGHT
PEDESTAL MOUNTED-PEDESTRIAN

NOTES:
CLEARANCE
CLEARANCE FROM GROUND LINE OR SIDEWALK TO THE BOTTOM OF POST OF PEDISTAL MOUNTED VEHICULAR SIGNAL HEADS SHALL BE 10 FT. MINIMUM FROM PEDESTRIAN SIGNAL SHALL BE 8 FT. MINIMUM.

SIGNAL HEADS
SHALL BE BLACK(UNLESS NOTED OTHER IN PLANS), SEE TRAFFIC LAYOUT FOR CORRECT MOUNTING POSITION, NUMBER, SIZE, AND ARRANGEMENT OF LENSES.

POLE CLAMPS
A POLE PLATE WITH SUITABLE BANDING MATERIAL AS APPROVED BY ENGINEER SHALL BE USED.

PAINT
SIGNAL HOUSING SHALL BE PAINTED BLACK. SEE PLANS. BACK PLATES SHALL BE PAINTED FLAT BLACK. POLE CLAMPS AND SIGNAL HEAD MOUNTING HARDWARE SHALL BE PAINTED THE SAME COLOR AS THE SIGNAL STANDARD.

SECTION NO. 4200	DRAWING NO. 5.2
REV,D. 2016	

SIGNAL STANARDS & HEAD MOUNTING

CITY OF FARGO
ENGINEERING DEPARTMENT

APPROVED	DATE

THE CITY OF Fargo FAR MORE

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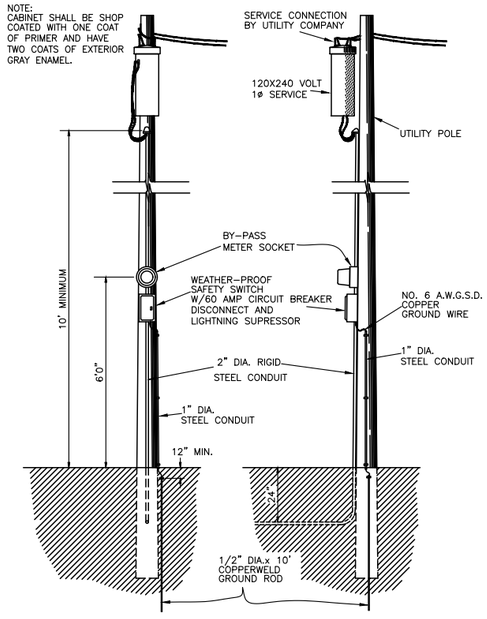
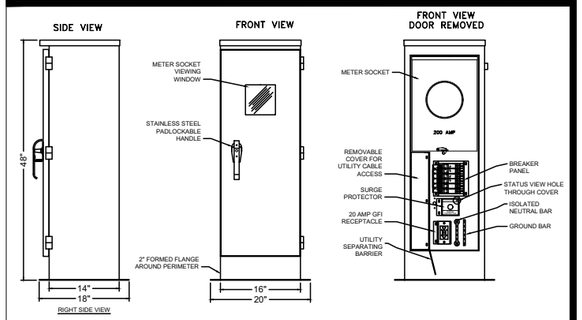
Signals - Details

52nd Ave S - West of 63rd St S to 45th St S

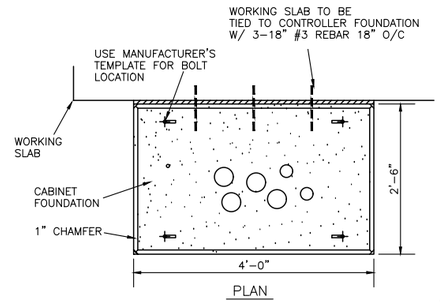
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	24

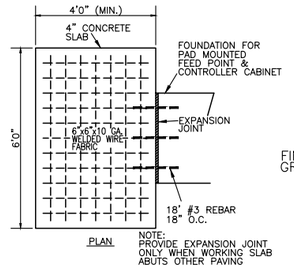


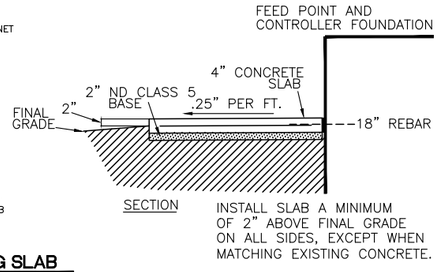
POLE MOUNTED FEED POINT



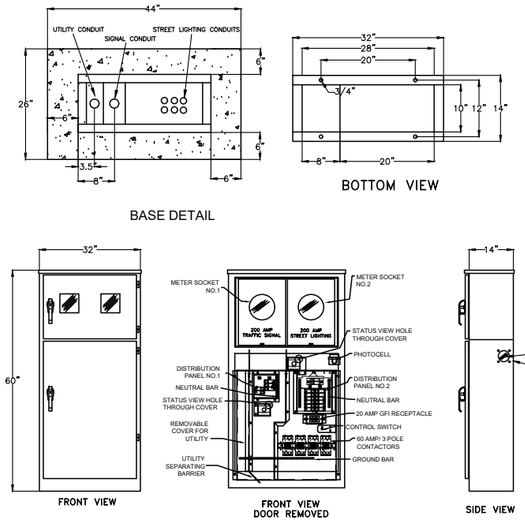
PAD MOUNTED FEED POINT



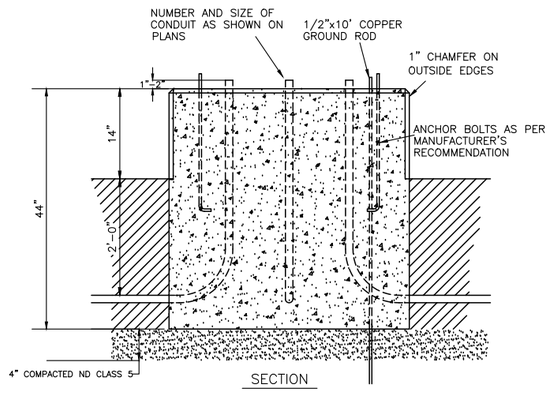




CONTROLLER + FEED POINT WORKING SLAB



COMBO PAD MOUNTED FEED POINT



ANCHOR BOLTS MUST BE SET INTO CONTROLLER FOUNDATION WHEN POURED

CONTROLLER CABINET FOUNDATION PAD MOUNT

SECTION NO. 4200	DRAWING NO. 5.3
REV.D. 2016	
FEED POINT, PED. POST & CABINET FOUNDATION	
CITY OF FARGO ENGINEERING DEPARTMENT	
APPROVED	DATE

THE CITY OF Fargo FAR MORE

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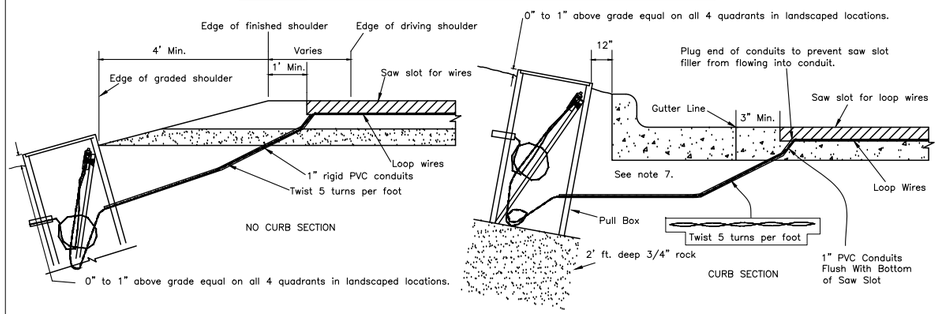
Signals - Details

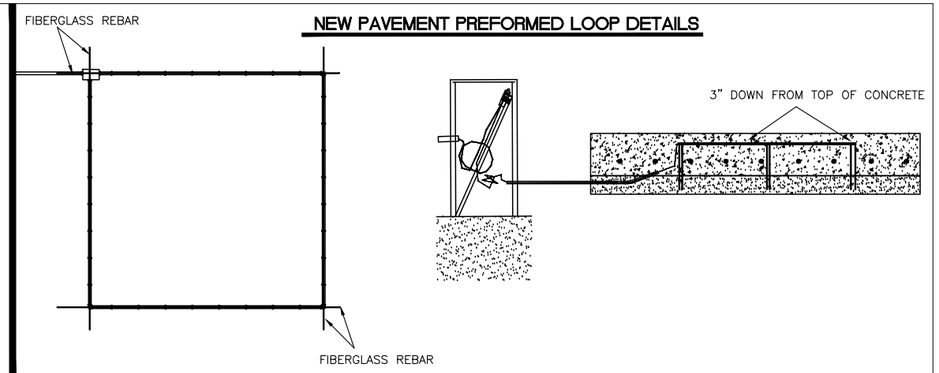
52nd Ave S - West of 63rd St S to 45th St S

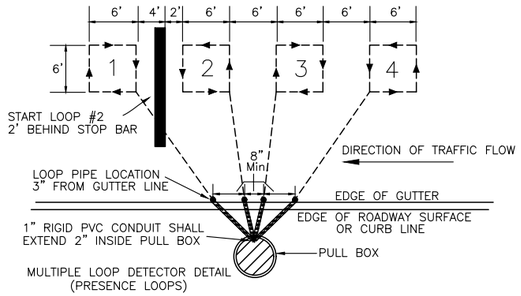
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	25

EXISTING PAVEMENT SAW SLOT TO PULL BOX DETAILS



NEW PAVEMENT PREFORMED LOOP DETAILS

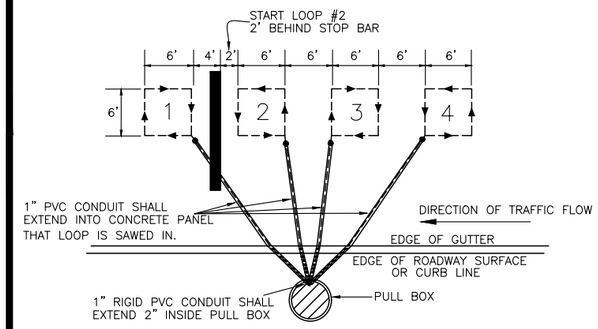




NOTES

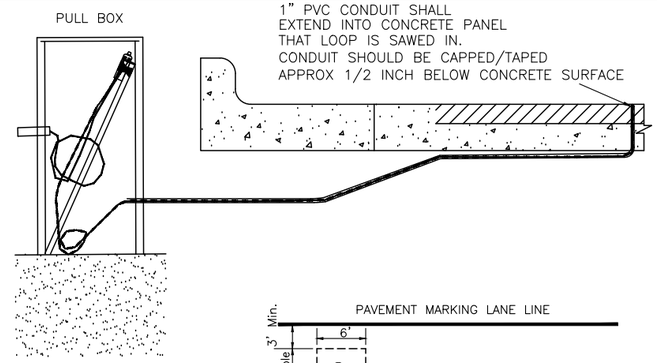
1) Loop saw cut shall be 2" deep in concrete and 3" deep in asphalt, saw depth in asphalt shall be determined by the engineer in the field, depending on road conditions.
2) All contraction joints and cracks crossed by saw slot must use a 1 1/4" wide saw slot. See note 1) for depth. See contraction joint detail. Contraction joint saw slot cut shall be cut in a single pass using stacked blades.
3) Duct type wire shall be used for all loops consisting of a High Density XLPE polyethylene tube and XHHW insulated wire. Provide slack at all drilled corners and contraction and crack joints. Use 1" long pieces of 3/4" backer rod at required intervals, 2' max, in saw cut to prevent wire from floating.
4) Provide 3 turns in all loops.
5) Spacing of lead–in conduits shall be a minimum of 8" at the edge of road way surface or gutter line(on existing pavement). See multiple loop detector detail. Lead–in loop pipe shall not enter gutter section.
6) Provide loop wire slack in J–box such that loop wire will extend a minimum of 6–feet above the top of the J–box.
7) Splices and Conductors in Pull Boxes: There shall be no splices below grade except for loop lead–in conductors. Wire nut together the spliced wires and encapsulate in an UraSeal CK200 epoxy splice kit. Conductors in the splice kit shall not be taped together. Loop lead–in and loop wires shall have sufficient slack to extend a minimum of 6 feet above the pull box opening and be installed in the pull box with the splice kit taped to a length of 1/2 PVC so the splice is secured inside the upper 1/4 of pull box (See Detail). Pull through. Conductors shall have sufficient slack to extend a minimum of 18–inches above the pull box opening.
8) Pull boxes in landscaped areas shall have the top of the box 0 to 1 inches above final grade and sloped to match the slope of the final grade on all four sides. Pull boxes in concrete areas shall be set with the top of the box flush with the final grade at all four sides. See pull box detail.

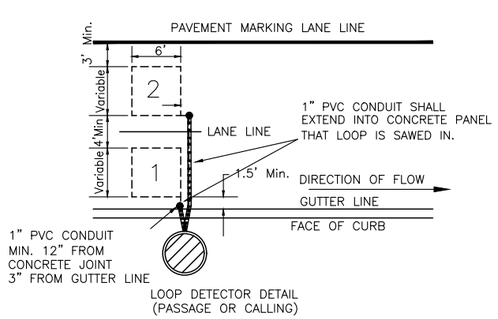
NEW PAVEMENT LOOP PIPE TO PULL BOX DETAILS

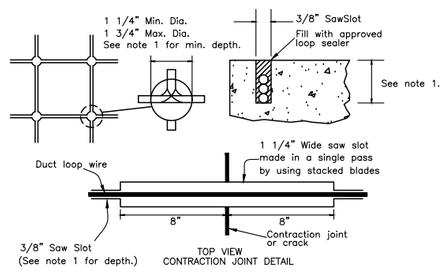


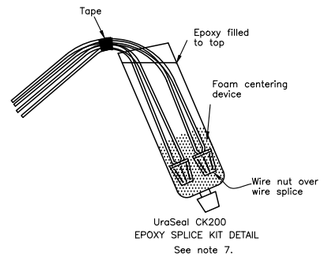
WIRE SHALL BE INSTALLED IN A CLOCKWISE/COUNTER CLOCKWISE ROTATION ON ALL LOOPS AS PER DETAIL.

BOTH ENDS OF THE LOOP SHALL BE LABELED AS PER LOOP DETAIL.









SECTION NO. 4200	DRAWING NO. 5.4
REV,D. 2016	
DETECTOR LOOPS DETAILS	
CITY OF FARGO ENGINEERING DEPARTMENT	
APPROVED	DATE

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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Signals - Details

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	26

PRE-EMPTION CABLE TERMINATION

TERMINAL T1
PRE-EMPTION 1 AND 2-SHRINK WRAP GROUND WIRE

TERMINAL T2
PRE-EMPTION 1 AND 2-ORANGE WIRE-TOP TUBE

TERMINAL T3
PRE-EMPTION 1-TOP TUBE-BLUE WIRE

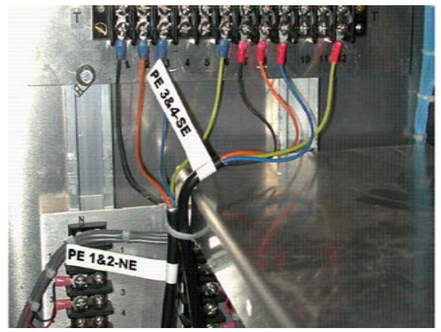
TERMINAL T6
PRE-EMPTION 2-BOTTOM TUBE-YELLOW WIRE

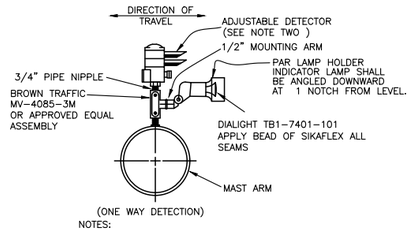
TERMINAL T7
PRE-EMPTION 3 AND 4-SHRINK WRAP GROUND WIRE

TERMINAL T8
PRE-EMPTION 3 AND 4-ORANGE WIRE-BOTTOM TUBE

TERMINAL T9
PRE-EMPTION 3-TOP TUBE-BLUE WIRE

TERMINAL T12
PRE-EMPTION 4-BOTTOM TUBE-YELLOW WIRE



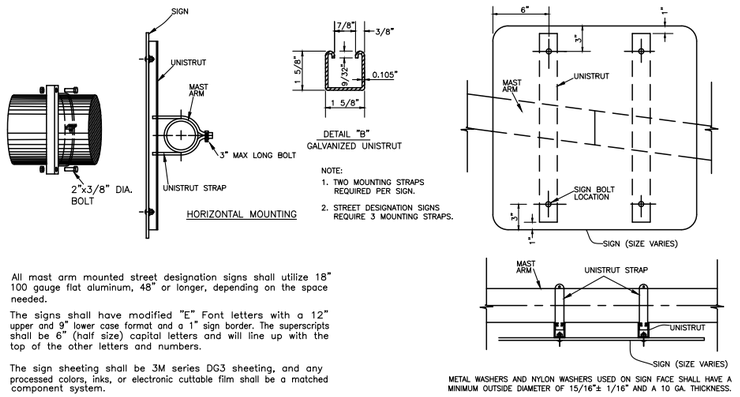


(ONE WAY DETECTION)

NOTES:
1. TWO WAY DETECTOR SHALL HAVE TYPE X UNILET WITH ONE PAR LAMP HOLDERS AND LAMP.
2. TWO-WAY DETECTOR SHALL HAVE THE DETECTOR LENS ROTATED TO FACE THE DIRECTIONS OF TRAVEL.

EMERGENCY VEHICLE DETECTOR DETAIL (ADJUSTABLE)

(LOCATION AS SHOWN IN PLANS)



All mast arm mounted street designation signs shall utilize 18" 100 gauge flat aluminum, 48" or longer, depending on the space needed.

The signs shall have modified "E" Font letters with a 12" upper and 9" lower case format and a 1" sign border. The superscripts shall be 6" (half size) capital letters and will line up with the top of the other letters and numbers.

The sign sheeting shall be 3M series DG3 sheeting, and any processed colors, inks, or electronic cuttable film shall be a matched component system.

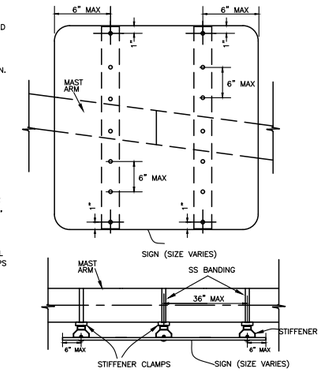
NOTE:
SIGNS MOUNTED ON THE SIGNAL STANDARD VERTICAL POST, EXCLUDING THE MAST ARMS SHALL BE INSTALLED BY DRILLING, TAPPING AND DIE THE POLE AND INSTALLING SIGNS WITH A 3/8" x 1" STAINLESS STEEL HEX BOLT USING A 3/8" STAINLESS STEEL FLAT WASHER AND A NYLON WASHER.

METAL WASHERS AND NYLON WASHERS USED ON SIGN FACE SHALL HAVE A MINIMUM OUTSIDE DIAMETER OF 15/16"± 1/16" AND A 10 GA. THICKNESS.

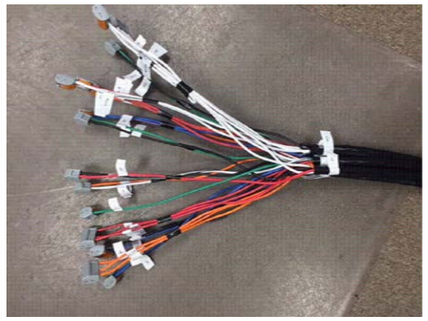
MAST ARM MOUNTED SIGN DETAIL

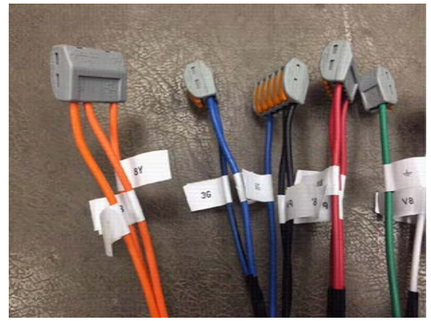
INSTALLATION NOTES:

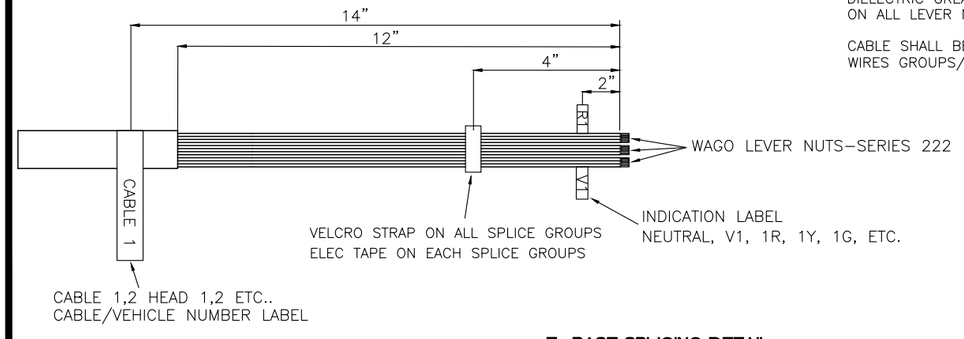
1. SIGNS SHALL BE AFFIXED TO UPPER AND LOWER MAST ARM CHORDS WHENEVER POSSIBLE.
2. POSITION BOTTOM OF SIGN PANEL 17' MINIMUM ABOVE ROAD CENTERLINE ELEVATION.
3. SIGN PANELS SHALL BE MOUNTED PLUMB.
4. HORIZONTAL INSET FROM PANEL EDGE TO STIFFENER SHALL NOT EXCEED 6"
5. HORIZONTAL SPACING BETWEEN STIFFENERS SHALL NOT EXCEED 36".
6. VERTICAL INSET FROM PANEL EDGE TO STIFFENER SHALL BE 0" TO 0.5".
7. RIVETS ATTACHING STIFFENERS TO SIGN PANELS SHALL BE INSTALLED 1" TO CENTER FROM THE TOP AND BOTTOM OF THE PANEL, AND THEN SPACED NO MORE THAN 6" ON CENTER.
8. BANDING SHALL BE ¾"X 0.03" 316 STAINLESS STEEL. BANDING BUCKLES SHALL BE ¾" STAINLESS STEEL. (2) BANDING STRAPS PER MOUNTING BUCKLE. SECOND STRIP NEEDED TO BE INSTALLED DIRECTLY OVER FIRST, TIGHTEN TO MANUFACTURES SPECS.



DETAIL "B"
STIFFENER AND BANDING







T- BASE SPLICING DETAIL

NOTE:
DIELECTRIC GREASE SHALL BE INSTALLED IN ALL OPENINGS ON ALL LEVER NUTS BEFORE WIRES ARE INSALLED

CABLE SHALL BE SPLICED IN A NEATLY MANNER, SO NO WIRES GROUPS/PAHSE ARE INTERTWINED WITH EACH OTHER.

SECTION NO. 4200	DRAWING NO. 5.5
REV,D. 2016	
EVP SYSTEM, SIGNING & SPLICING DETAIL	
CITY OF FARGO ENGINEERING DEPARTMENT	
APPROVED	DATE

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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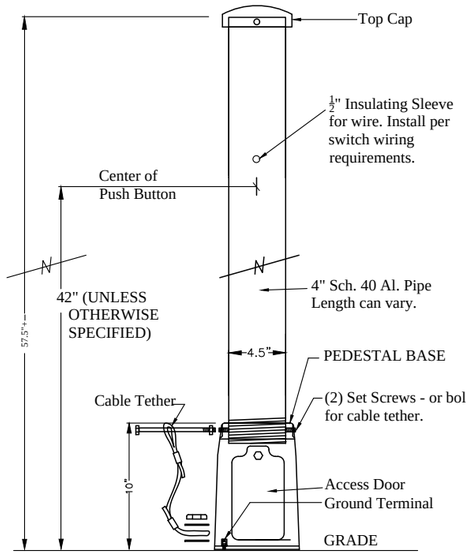
Signals - Details

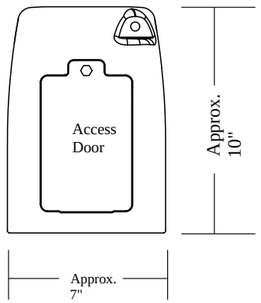
52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	27

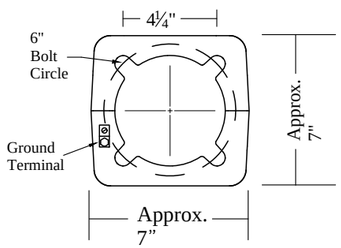
PEDESTRIAN PUSH BUTTON POST DETAILS



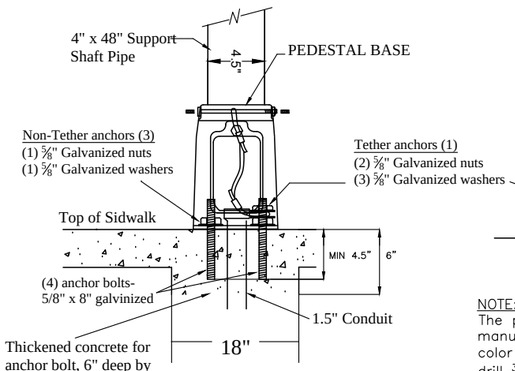
CROSSWALK PEDESTAL ASSEMBLY

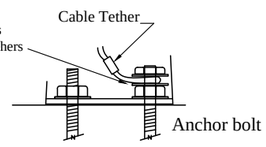


BASE SIDE VIEW



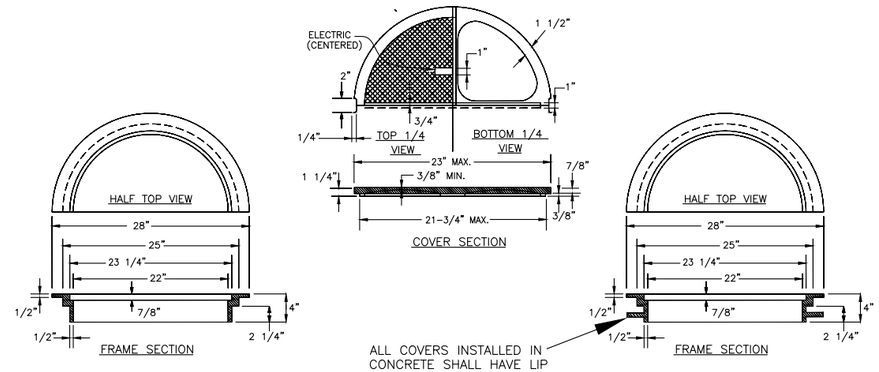
BASE BOTTOM VIEW



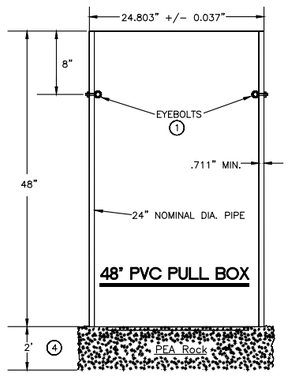


NOTE:
The pedestrian push button post shall be manufactured by Frey Manufacturing and black in color (part number CP6ACT4840TCSS). Shall hammer drill ¾" hole, clean holes of all concrete dust, use approved 2 part epoxy, and install (4) galvanized ⅝"x 8" anchor bolts a minimum of 4.5" into concete.

PULL BOX METAL FRAME AND COVER



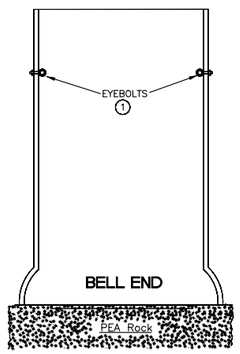
ALL COVERS INSTALLED IN CONCRETE SHALL HAVE LIP ON BOTTOM TO PREVENT HEAVING.



NON-CONCRETE INSTALL

FRAME AND COVER CASTING

NOTE:
ALL CASTINGS ARE GRAY IRON AS PER SPEC. 3321 CLASS 35B



CONCRETE INSTALL

INSTALLLATION NOTES:

1. TWO STAINLESS/GALVINIZED TYPE 2 SHOULDER EYEBOLTS, 3/8" DIA. X 1 1/4 " SHANK LENGTH, WITH HEX. NUTS AT 180° APART (FOR LIFTING HANDHOLES AND SUPPORTING ELECTRICAL CABLES)

2. 4 PLACE COMPACTED 2'-0" AGGRETGATE DRAIN BED(PEA ROCK) BELOW BOTTOM OF HANDHOLE, TO THE SATISFACTION OF THE ENGINEER.

3. CONDUIT HOLES DIAMETER LOCATED IN THE BARREL SECTION ARE SIZED NO MORE THAN 1" LARGER THAN THE CONDUIT OUTSIDE DIAMETER USED.

4. AFTER HANDHOLE AND CONDUIT INSTALLATION, SEAL ALL INSIDE WALLS WATER TIGHT TO THE SATISFACTION OF THE ENGINEER.

5. THE P.V.C. PIPE COMPLIES WITH ASTM F679T-1.

6. ALL CONDUITS SHALL EXTEND A MAXIMUM OF 3" INTO PULL BOX.

SECTION NO. 4200	DRAWING NO. 5.6
REV,D. 2016	

PUSH BUTTON POST & PULLBOX DETAIL

CITY OF FARGO
ENGINEERING DEPARTMENT

APPROVED	DATE

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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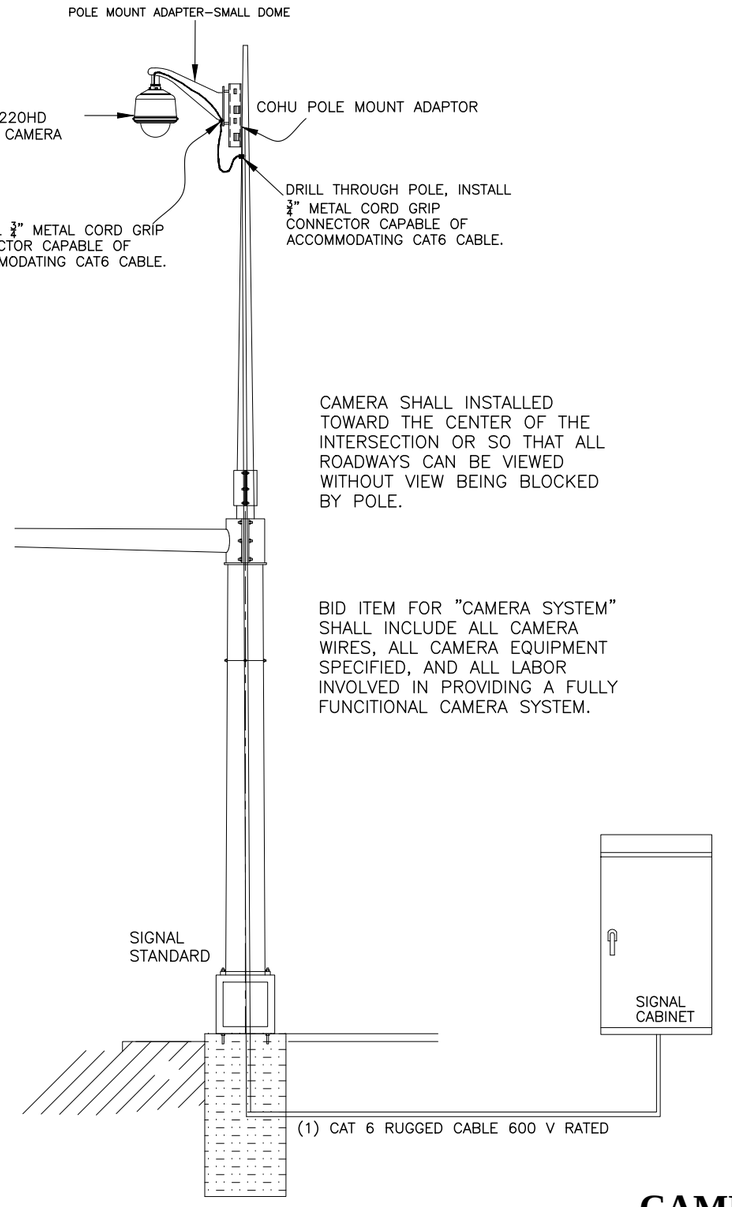
Signals - Details

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	150	28



CAMERA SHALL INSTALLED TOWARD THE CENTER OF THE INTERSECTION OR SO THAT ALL ROADWAYS CAN BE VIEWED WITHOUT VIEW BEING BLOCKED BY POLE.

BID ITEM FOR "CAMERA SYSTEM" SHALL INCLUDE ALL CAMERA WIRES, ALL CAMERA EQUIPMENT SPECIFIED, AND ALL LABOR INVOLVED IN PROVIDING A FULLY FUNCITIONAL CAMERA SYSTEM.

CONTRACTOR SUPPLIED EQUIPMENT:
–ETHERNET SWITCH AS SPECIFIED ON PLAN
–CAT 6 RUGGED CABLE 600 V RATED
–COHU POLE MOUNT PART# PMR09799–003
–POE INJECTOR, 70W PART# PPS08255–003
–COUPLER: RJ45 IP67 PART# PDC09714–004
–COHU CAMERA 4220HD H.264 60W PoE, IP67
PART# PAD09753–008

CAMERA SYSTEM

SECTION NO. 4200	DRAWING NO. 5.9
REV.D. 2016	
TRAFFIC CAMERA DETAIL	
CITY OF FARGO ENGINEERING DEPARTMENT	
APPROVED	DATE

THE CITY OF Fargo FAR MORE

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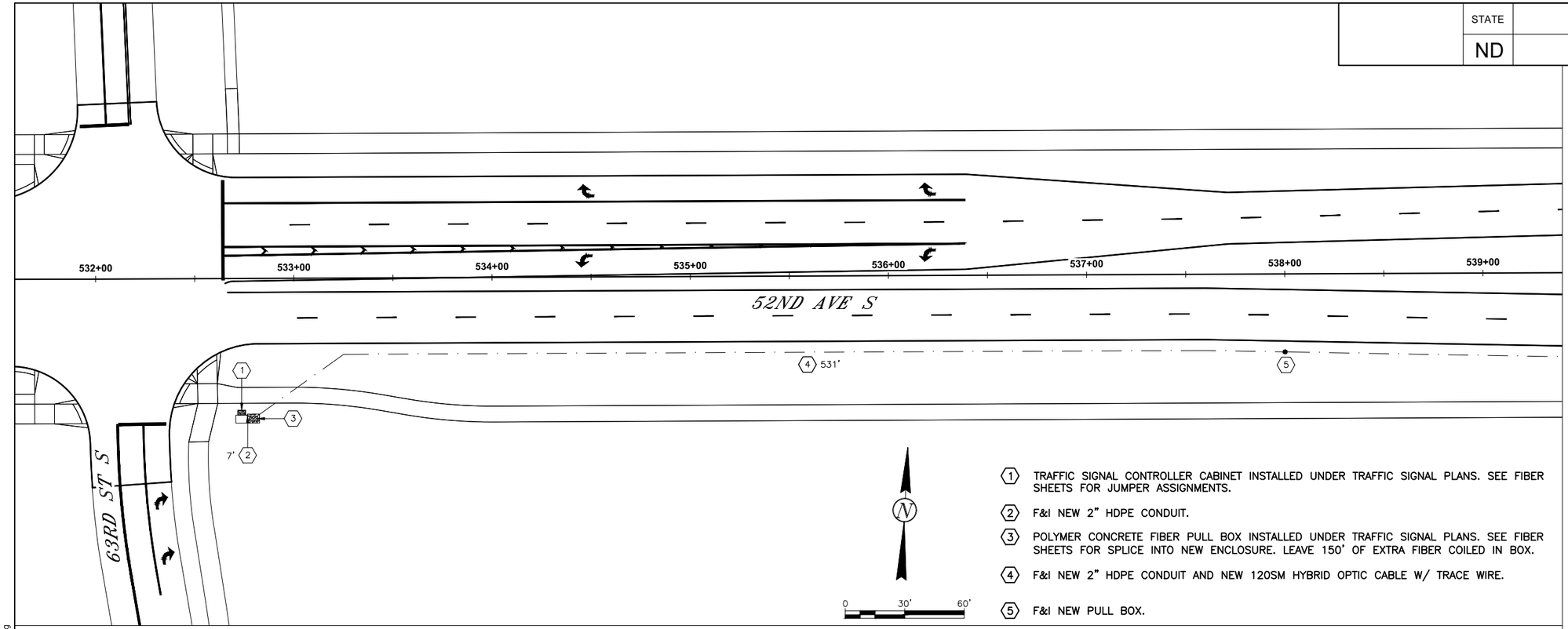
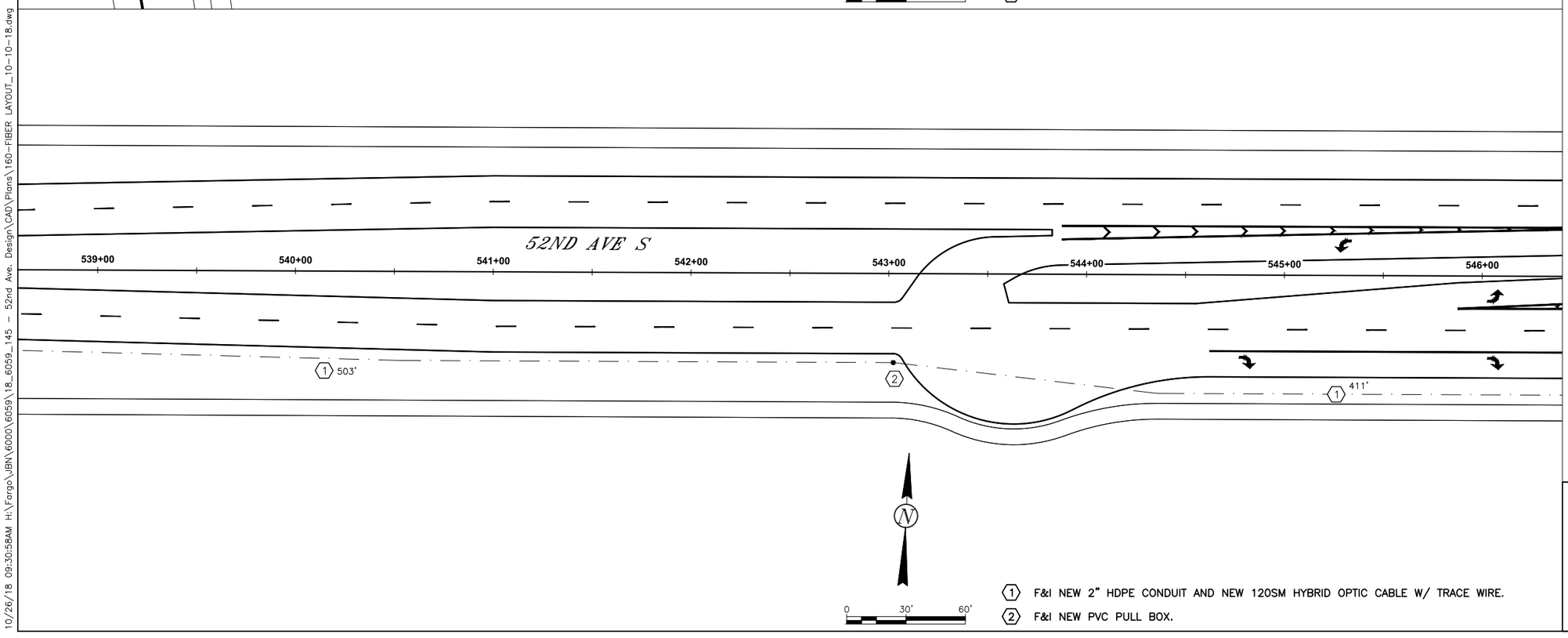
Signals - Details

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	160	1



1. TRAFFIC SIGNAL CONTROLLER CABINET INSTALLED UNDER TRAFFIC SIGNAL PLANS. SEE FIBER SHEETS FOR JUMPER ASSIGNMENTS.
2. F&I NEW 2" HDPE CONDUIT.
3. POLYMER CONCRETE FIBER PULL BOX INSTALLED UNDER TRAFFIC SIGNAL PLANS. SEE FIBER SHEETS FOR SPLICE INTO NEW ENCLOSURE. LEAVE 150' OF EXTRA FIBER COILED IN BOX.
4. F&I NEW 2" HDPE CONDUIT AND NEW 120SM HYBRID OPTIC CABLE W/ TRACE WIRE.
5. F&I NEW PULL BOX.



1. F&I NEW 2" HDPE CONDUIT AND NEW 120SM HYBRID OPTIC CABLE W/ TRACE WIRE.
2. F&I NEW PVC PULL BOX.

- Polymer Concrete Fiber Pull Box
- Controller Cabinet
- Existing Pull Box
- New Pull Box
- Signal Fiber Line

THE CITY OF Fargo FAR MORE

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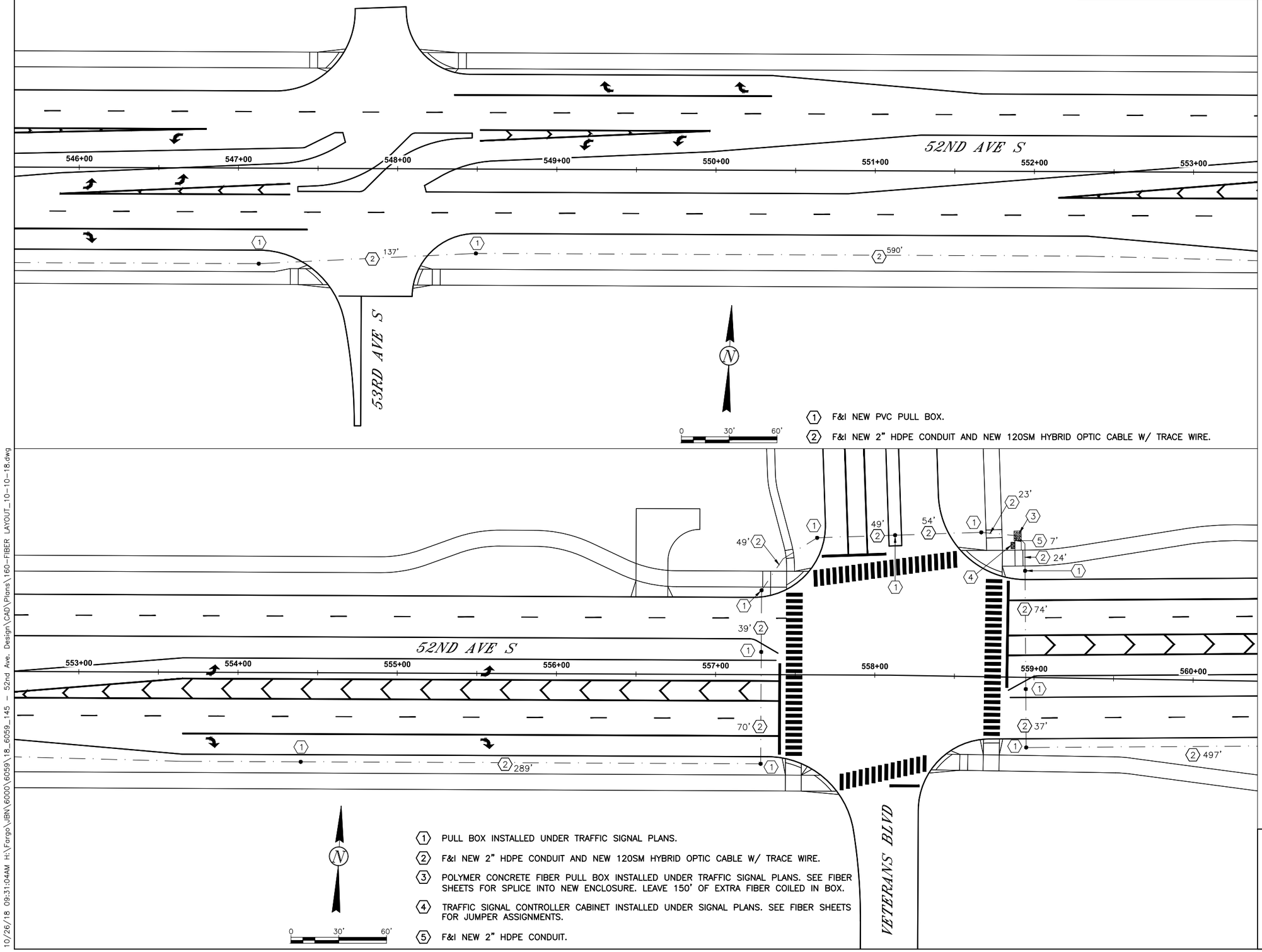
ITS - Layout

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	160	2



1. F&I NEW PVC PULL BOX.
2. F&I NEW 2" HDPE CONDUIT AND NEW 120SM HYBRID OPTIC CABLE W/ TRACE WIRE.

1. PULL BOX INSTALLED UNDER TRAFFIC SIGNAL PLANS.
2. F&I NEW 2" HDPE CONDUIT AND NEW 120SM HYBRID OPTIC CABLE W/ TRACE WIRE.
3. POLYMER CONCRETE FIBER PULL BOX INSTALLED UNDER TRAFFIC SIGNAL PLANS. SEE FIBER SHEETS FOR SPLICE INTO NEW ENCLOSURE. LEAVE 150' OF EXTRA FIBER COILED IN BOX.
4. TRAFFIC SIGNAL CONTROLLER CABINET INSTALLED UNDER SIGNAL PLANS. SEE FIBER SHEETS FOR JUMPER ASSIGNMENTS.
5. F&I NEW 2" HDPE CONDUIT.

- Polymer Concrete Fiber Pull Box
- Controller Cabinet
- Existing Pull Box
- New Pull Box
- Signal Fiber Line

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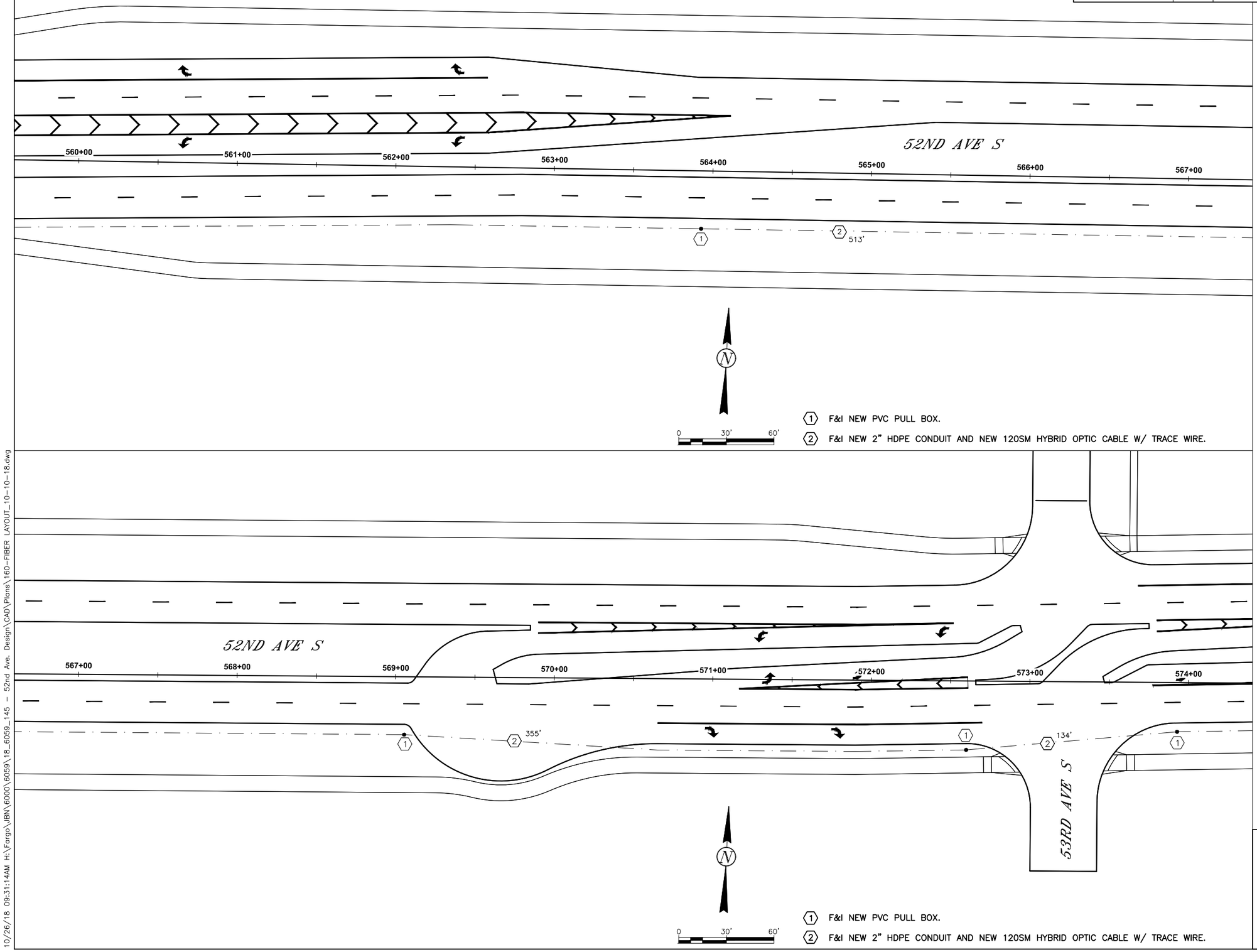
ITS - Layout

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	160	3



1. F&I NEW PVC PULL BOX.
2. F&I NEW 2" HDPE CONDUIT AND NEW 120SM HYBRID OPTIC CABLE W/ TRACE WIRE.

Polymer Concrete Fiber Pull Box
Controller Cabinet
Existing Pull Box
New Pull Box
Signal Fiber Line

THE CITY OF Fargo FAR MORE

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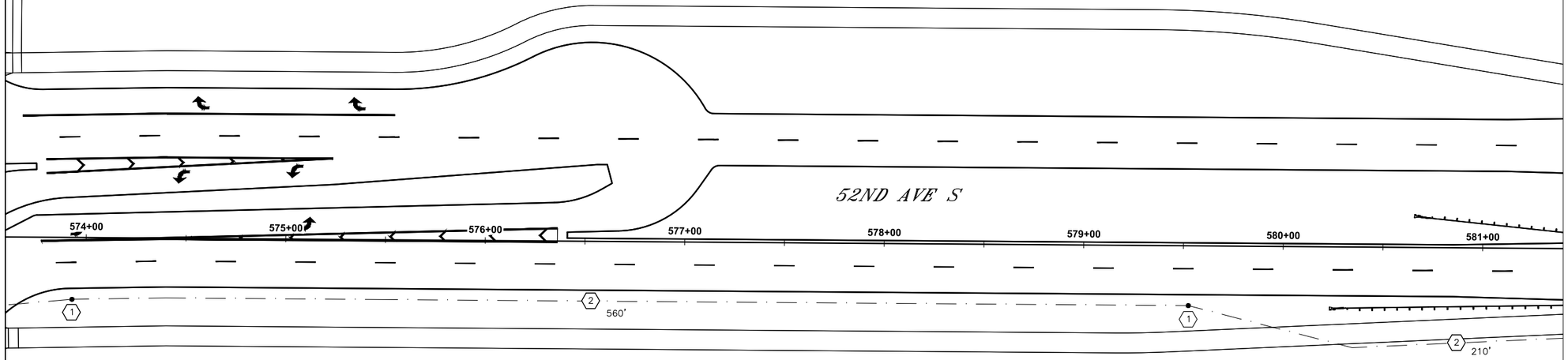
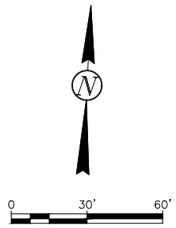
ITS - Layout

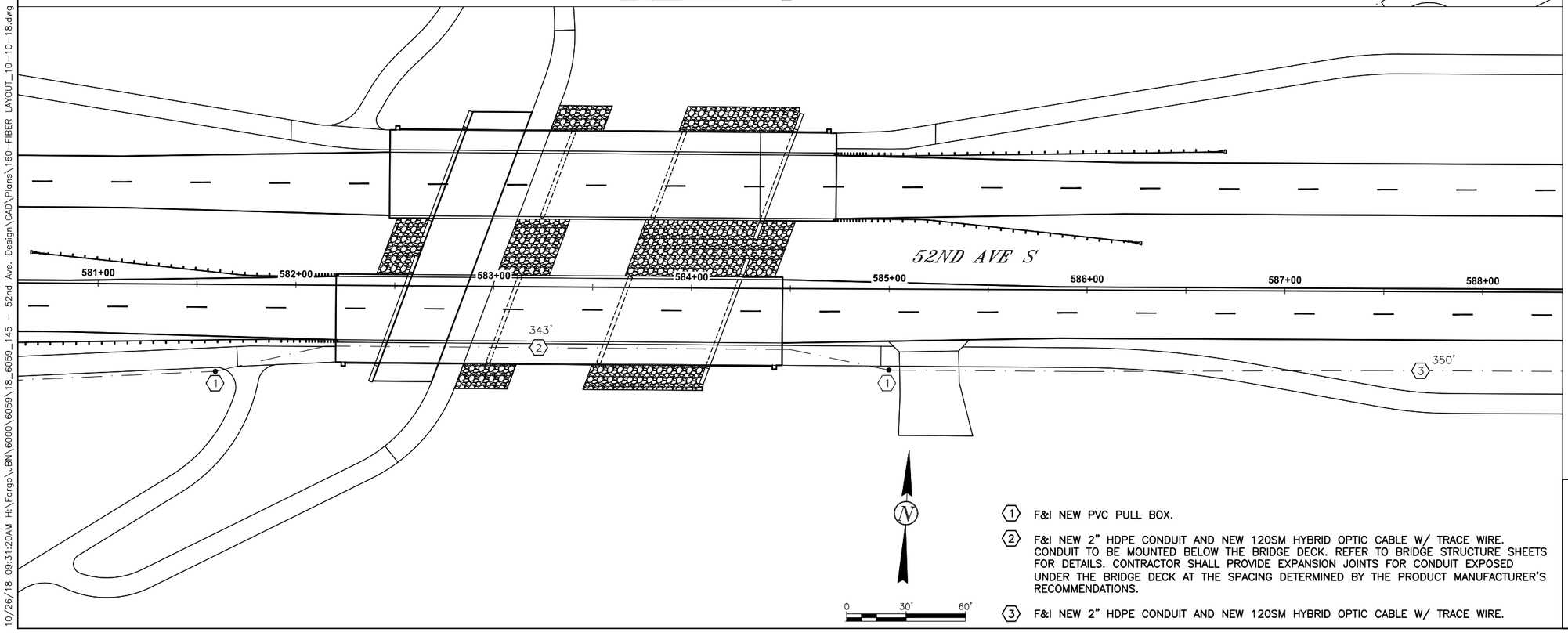
52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	160	4





1. F&I NEW PVC PULL BOX.
2. F&I NEW 2" HDPE CONDUIT AND NEW 120SM HYBRID OPTIC CABLE W/ TRACE WIRE.



1. F&I NEW PVC PULL BOX.
2. F&I NEW 2" HDPE CONDUIT AND NEW 120SM HYBRID OPTIC CABLE W/ TRACE WIRE. CONDUIT TO BE MOUNTED BELOW THE BRIDGE DECK. REFER TO BRIDGE STRUCTURE SHEETS FOR DETAILS. CONTRACTOR SHALL PROVIDE EXPANSION JOINTS FOR CONDUIT EXPOSED UNDER THE BRIDGE DECK AT THE SPACING DETERMINED BY THE PRODUCT MANUFACTURER'S RECOMMENDATIONS.
3. F&I NEW 2" HDPE CONDUIT AND NEW 120SM HYBRID OPTIC CABLE W/ TRACE WIRE.

- Polymer Concrete Fiber Pull Box
- Controller Cabinet
- Existing Pull Box
- New Pull Box
- Signal Fiber Line

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

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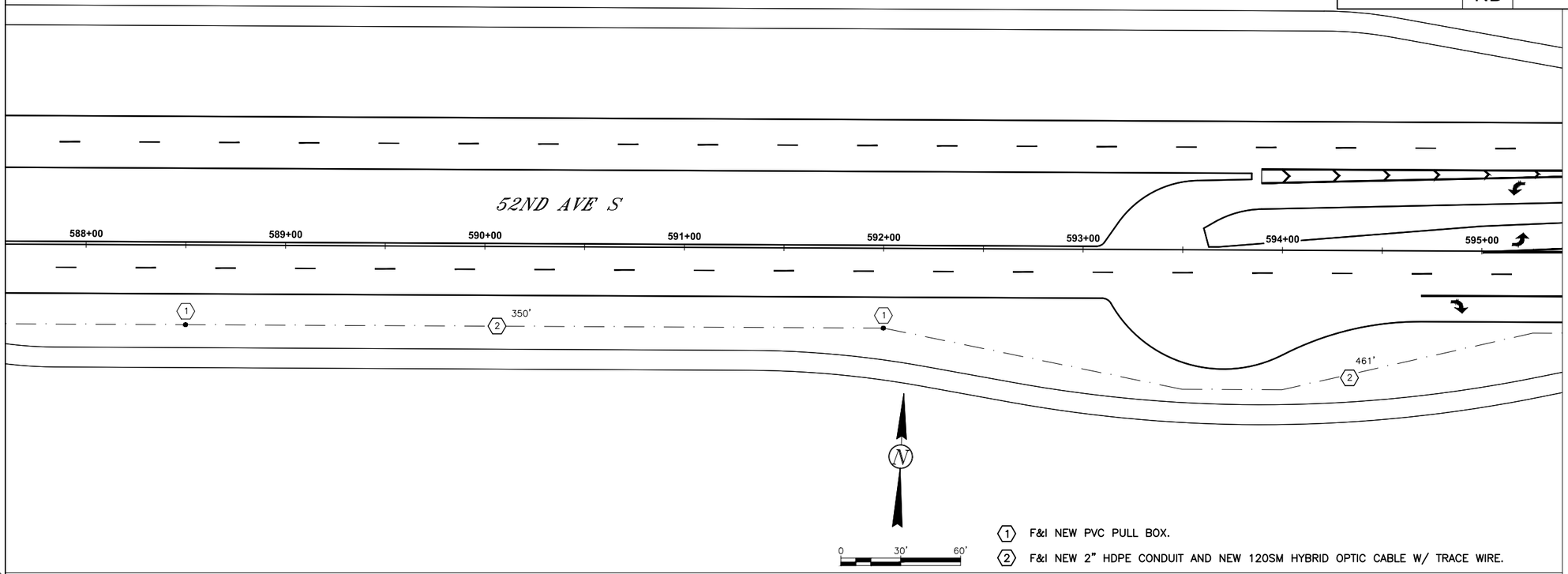
ITS - Layout

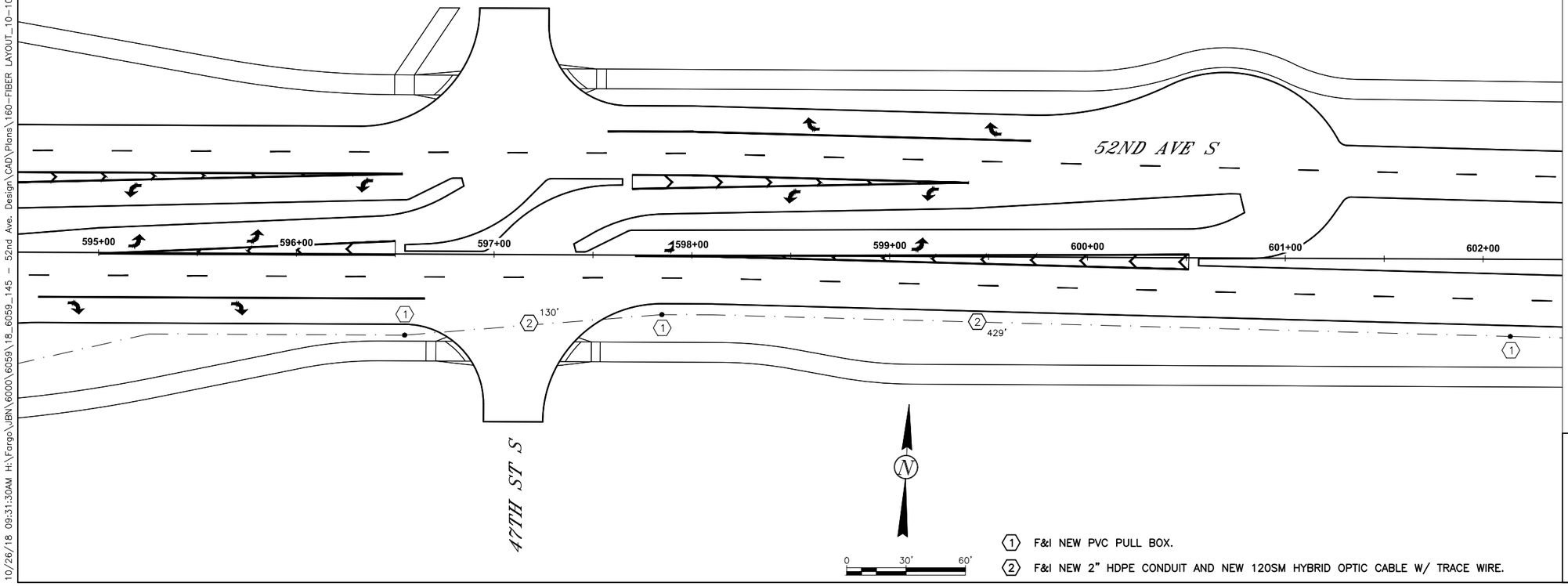
52nd Ave S - West of 63rd St S to 45th St S

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-984(164)	160	5



1 F&I NEW PVC PULL BOX.

2 F&I NEW 2" HDPE CONDUIT AND NEW 120SM HYBRID OPTIC CABLE W/ TRACE WIRE.



1 F&I NEW PVC PULL BOX.

2 F&I NEW 2" HDPE CONDUIT AND NEW 120SM HYBRID OPTIC CABLE W/ TRACE WIRE.

Polymer Concrete Fiber Pull Box

Controller Cabinet

Existing Pull Box

New Pull Box

Signal Fiber Line

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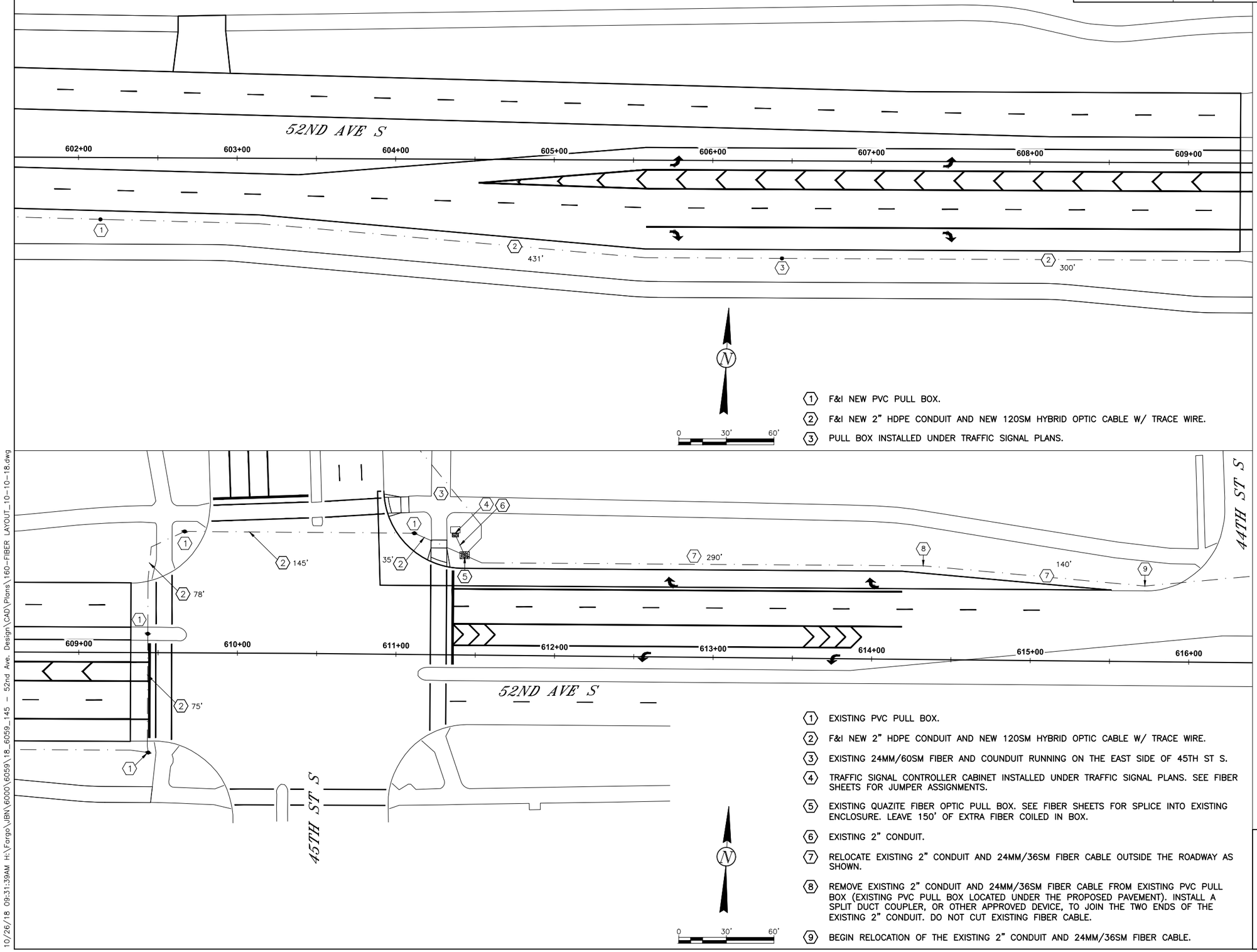
ITS - Layout

52nd Ave S - West of 63rd St S to 45th St S

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-8-984(164)	160	6



QUANTITIES (A)

FIBER OPTIC TERMINATIONS & EQUIPMENT	PULL BOX	2" HDPE CONDUIT	120SM HYBRID OPTIC CABLE W/LOCATE WIRE	RELOCATE EXISTING CONDUIT AND FIBER OPTIC CABLE		IT SYSTEM
LSUM	EA	LF	LF	LF		EA
1	16	8,290	9,806	430		1

(A) QUANTITIES SHOWN FOR INFORMATIONAL PURPOSES ONLY. ALL COSTS SHALL BE INCLUDED IN THE BID PRICE FOR "IT SYSTEM". QUANTITIES CALCULATED ACCORDING TO NDDOT SPECIFICATIONS.

- Quazite Fiber Pull Box
- Controller Cabinet
- Existing Pull Box
- New Pull Box
- Signal Fiber Line

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ITS - Layout

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	160	7

TYCO ENCLOSURE FOSC 450 D6

NEW-12 CT SM FIBER DISTRIBUTION BOX-LC

PROVIDE 4-3' SM ST-LC JUMPER CORDS

FIBERS 25-26 = COF CABINET ETHERNET SWITCH
FIBERS 27-28 = SPARE

PG1 FIBERS 25-28
LC CONNECTORS

BLUE 25 SM
ORANGE 26 SM
GREEN 27 SM
BROWN 28 SM

GREEN TUBE PG1
52 Ave S & Vets Blvd

100' NEW SINGLEMODE Pigtail

BLUE 25 SM
ORANGE 26 SM
GREEN 27 SM
BROWN 28 SM

FIBERS 25-28

PG1
52 Ave S & Vets Blvd
120SM
NEW FIBER
OPTIC CABLE

12CT SM-BLUE TUBE FIBERS 1-12	FIBERS 1-12 TO REMAIN IN TUBE, LEAVE 3' OF SLACK IN CASE FOR FUTURE SPLICING
12CT SM-ORANGE TUBE FIBERS 13-24	FIBERS 13-24 TO REMAIN IN TUBE, LEAVE 3' OF SLACK IN CASE FOR FUTURE SPLICING
12CT SM-GREEN TUBE FIBERS 25-36	FUSION SPLICE FIBERS 25-28 TO PIGTAIL, FIBERS 29-36 LEAVE 3' OF SLACK IN CASE FOR FUTURE SPLICING
12CT SM-BROWN TUBE FIBERS 37-48	FIBERS 37-48 TO REMAIN IN TUBE, LEAVE 3' OF SLACK IN CASE FOR FUTURE SPLICING
12CT SM-SLATE TUBE FIBERS 49-60	FIBERS 49-60 TO REMAIN IN TUBE, LEAVE 3' OF SLACK IN CASE FOR FUTURE SPLICING
12CT SM-WHITE TUBE FIBERS 61-72	FIBERS 61-72 TO REMAIN IN TUBE, LEAVE 3' OF SLACK IN CASE FOR FUTURE SPLICING
12CT SM-RED TUBE FIBERS 73-84	FIBERS 73-84 TO REMAIN IN TUBE, LEAVE 3' OF SLACK IN CASE FOR FUTURE SPLICING
12CT SM-BLACK TUBE FIBERS 85-96	FIBERS 85-96 TO REMAIN IN TUBE, LEAVE 3' OF SLACK IN CASE FOR FUTURE SPLICING
12CT SM-YELLOW TUBE FIBERS 97-108	FIBERS 97-108 TO REMAIN IN TUBE, LEAVE 3' OF SLACK IN CASE FOR FUTURE SPLICING
12CT SM-VIOLET TUBE FIBERS 109-120	FIBERS 109-120 TO REMAIN IN TUBE, LEAVE 3' OF SLACK IN CASE FOR FUTURE SPLICING

52 Ave S & 63 St S

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ITS - Fiber Diagram 63rd St S

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	160	8

TYCO ENCLOSURE FOSC 450 D6

NEW-12 CT SM FIBER DISTRIBUTION BOX-LC

PROVIDE 4-3' SM ST-LC JUMPER CORDS

FIBERS 25-26 = COF CABINET ETHERNET SWITCH
FIBERS 27-28 = SPARE

PG1 FIBERS 25-28 LC CONNECTORS

PG3 FIBERS 25-28 LC CONNECTORS

GREEN TUBE PG1 52 Ave S & 63 St S

BLUE	25 SM
ORANGE	26 SM
GREEN	27 SM
BROWN	28 SM

GREEN TUBE PG3 52 Ave S & 45 St S

SLATE	25 SM
WHITE	26 SM
RED	27 SM
BLACK	28 SM

100' NEW SINGLEMODE Pigtail

BLUE	25 SM
ORANGE	26 SM
GREEN	27 SM
BROWN	28 SM

FIBERS 25-28

SLATE	25 SM
WHITE	26 SM
RED	27 SM
BLACK	28 SM

FIBERS 25-28

PG3
52 Ave S & 45 St S
120SM
NEW FIBER
OPTIC CABLE

12CT SM-BLUE TUBE FIBERS 1-12	FIBERS 1-12 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-ORANGE TUBE FIBERS 13-24	FIBERS 13-24 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-GREEN TUBE FIBERS 25-36	FUSION SPLICE FIBERS 25-28 TO PIGTAIL, FIBERS 29-36 TO REMAIN INTACT, DO NOT CUT
12CT SM-BROWN TUBE FIBERS 37-48	FIBERS 37-48 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-SLATE TUBE FIBERS 49-60	FIBERS 49-60 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-WHITE TUBE FIBERS 61-72	FIBERS 61-72 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-RED TUBE FIBERS 73-84	FIBERS 73-84 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-BLACK TUBE FIBERS 85-96	FIBERS 85-96 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-YELLOW TUBE FIBERS 97-108	FIBERS 97-108 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-VIOLET TUBE FIBERS 109-120	FIBERS 109-120 TO REMAIN IN TUBE, DO NOT CUT

PG1
52 Ave S & 63 St S
120SM
NEW FIBER
OPTIC CABLE

12CT SM-BLUE TUBE FIBERS 1-12	FIBERS 1-12 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-ORANGE TUBE FIBERS 13-24	FIBERS 13-24 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-GREEN TUBE FIBERS 25-36	FUSION SPLICE FIBERS 25-28 TO PIGTAIL, FIBERS 29-36 TO REMAIN INTACT, DO NOT CUT
12CT SM-BROWN TUBE FIBERS 37-48	FIBERS 37-48 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-SLATE TUBE FIBERS 49-60	FIBERS 49-60 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-WHITE TUBE FIBERS 61-72	FIBERS 61-72 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-RED TUBE FIBERS 73-84	FIBERS 73-84 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-BLACK TUBE FIBERS 85-96	FIBERS 85-96 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-YELLOW TUBE FIBERS 97-108	FIBERS 97-108 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-VIOLET TUBE FIBERS 109-120	FIBERS 109-120 TO REMAIN IN TUBE, DO NOT CUT

52 Ave S & Veterans Blvd

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ITS - Fiber Diagram Veterans

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	160	9

PROVIDE 4-3' MM ST-LC JUMPER CORDS
PROVIDE 6-3' SM ST-LC JUMPER CORDS

NEW-12 CT MM FIBER DISTRIBUTION BOX-ST

EXISTING FIBER DISTRIBUTION BOX-LC

EXISTING TYCO ENCLOSURE FOSC 450 B6

PG1 & PG2 FIBERS 25-26
PG3 FIBERS 25-28
LC CONNECTORS

EXISTING

PG1 FIBERS 1-4
EXISTING
ST CONNECTORS

PG2 FIBERS 1-4
EXISTING
ST CONNECTORS

BLUE 1 MM
ORANGE 2 MM
GREEN 3 MM
BROWN 4 MM

BLUE TUBE PG1
42 St S & 52 Ave S

SLATE 1 MM
WHITE 2 MM
RED 3 MM
BLACK 4 MM

BLUE TUBE PG2
45 St S & 40 Ave S

EXISTING MULTI MODE PIGTAIL

BLUE 1 MM
ORANGE 2 MM
GREEN 3 MM
BROWN 4 MM
SLATE 1 MM
WHITE 2 MM
RED 3 MM
BLACK 4 MM

EXISTING, DO NOT DISTURB

EXISTING, DO NOT DISTURB

BLUE 25 SM
ORANGE 26 SM
GREEN 27 SM
BROWN 28 SM
SLATE 25 SM
WHITE 26 SM
RED 27 SM
BLACK 28 SM
YELLOW 25 SM
VIOLET 26 SM
ROSE 27 SM
AQUA 28 SM

NEW 100' SINGLE MODE PIGTAIL

GREEN TUBE PG1
42 St S & 52 Ave S

GREEN TUBE PG2
45 St S & 40 Ave S

GREEN TUBE PG3
52 Ave S & Vets Blvd

BLUE 25 SM
ORANGE 26 SM
GREEN 27 SM
BROWN 28 SM
SLATE 25 SM
WHITE 26 SM
RED 27 SM
BLACK 28 SM
YELLOW 25 SM
VIOLET 26 SM
ROSE 27 SM
AQUA 28 SM

PG1
42 St S & 52 Ave S
24MM-36SM
EXISTING FIBER
OPTIC CABLE

TRAFFIC FIBERS 1-36
IT FIBERS 37-60

12CT MM-BLUE TUBE FIBERS 1-12	EXISTING FIBERS 1-4 ARE FUSED TO PIGTAIL, FIBERS 5-12 ARE FUSED TO PG2 BLUE TUBE FIBERS 5-12
12CT MM-ORANGE TUBE FIBERS 13-24	EXISTING FIBERS 13-24 ARE FUSED TO PG2 ORANGE TUBE FIBERS 13-24
12CT SM-GREEN TUBE FIBERS 25-36	EXISTING FIBERS 25-26 ARE FUSED TO PIGTAIL, FIBERS 27-36 ARE FUSED TO PG2 GREEN TUBE FIBERS 27-36
12CT SM-BROWN TUBE FIBERS 37-48	EXISTING FIBERS 37-48 ARE FUSED TO PG2 BROWN TUBE FIBERS 37-48
12CT SM-SLATE TUBE FIBERS 49-60	EXISTING FIBERS 49-60 ARE FUSED TO PG2 SLATE TUBE FIBERS 49-60

PG2
45 St S & 40 Ave S
24MM-60SM
EXISTING FIBER
OPTIC CABLE

TRAFFIC FIBERS 1-36
IT FIBERS 37-84

12CT MM-BLUE TUBE FIBERS 1-12	EXISTING FIBERS 1-4 ARE FUSED TO PIGTAIL, FIBERS 5-12 ARE FUSED TO PG1 BLUE TUBE FIBERS 5-12
12CT MM-ORANGE TUBE FIBERS 13-24	EXISTING FIBERS 13-24 ARE FUSED TO PG1 ORANGE TUBE FIBERS 13-24
12CT SM-GREEN TUBE FIBERS 25-36	EXISTING FIBERS 25-26 ARE FUSED TO PIGTAIL, FIBERS 27-36 ARE FUSED TO PG1 GREEN TUBE FIBERS 27-36
12CT SM-BROWN TUBE FIBERS 37-48	EXISTING FIBERS 37-48 ARE FUSED TO PG1 BROWN TUBE FIBERS 37-48
12CT SM-SLATE TUBE FIBERS 49-60	EXISTING FIBERS 49-60 ARE FUSED TO PG1 SLATE TUBE FIBERS 49-60
12CT SM-WHITE TUBE FIBERS 61-72	FIBERS 61-72 TO REMAIN IN TUBE, LEAVE 3' OF SLACK IN CASE FOR FUTURE FUSION SPLICING
12CT SM-RED TUBE FIBERS 73-84	FIBERS 73-84 TO REMIAN IN TUBE , LEAVE 3' OF SLACK IN CASE FOR FUTURE FUSION SPLICING

PG3
52 Ave S & Vets Blvd
120SM
NEW FIBER
OPTIC CABLE

TRAFFIC FIBERS 1-36
IT FIBERS 37-120

12CT SM-BLUE TUBE FIBERS 1-12	FIBERS 1-12 TO REMAIN INTACT, DO NOT CUT
12CT SM-ORANGE TUBE FIBERS 13-24	FIBERS 13-24 TO REMAIN IN TUBE, DO NOT CUT
12CT SM-GREEN TUBE FIBERS 25-36	FUSION SPLICE FIBERS 25-28 TO PIGTAIL, FIBERS 29-36 TO REMAIN INTACT, DO NOT CUT
12CT SM-BROWN TUBE FIBERS 37-48	FIBERS 37-48 TO REMAIN IN TUBE, LEAVE 3' OF SLACK FOR FUTURE SPLICING
12CT SM-SLATE TUBE FIBERS 49-60	FIBERS 49-60 TO REMAIN IN TUBE, LEAVE 3' OF SLACK FOR FUTURE SPLICING
12CT SM-WHITE TUBE FIBERS 61-72	FIBERS 61-72 TO REMAIN IN TUBE, LEAVE 3' OF SLACK FOR FUTURE SPLICING
12CT SM-RED TUBE FIBERS 73-84	FIBERS 73-84 TO REMAIN IN TUBE, LEAVE 3' OF SLACK FOR FUTURE SPLICING
12CT SM-BLACK TUBE FIBERS 85-96	FIBERS 85-96 TO REMAIN IN TUBE, LEAVE 3' OF SLACK FOR FUTURE SPLICING
12CT SM-YELLOW TUBE FIBERS 97-108	FIBERS 97-108 TO REMAIN IN TUBE, LEAVE 3' OF SLACK FOR FUTURE SPLICING
12CT SM-VIOLET TUBE FIBERS 109-120	FIBERS 109-120 TO REMAIN IN TUBE, LEAVE 3' OF SLACK FOR FUTURE SPLICING

45 St & 52 Ave S

THE CITY OF Fargo FAR MORE

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ITS - Fiber Diagram 45th St S

52nd Ave S - West of 63rd St S to 45th St S

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	160	10

FIBER OPTIC BUFFER TUBE COLOR CODE
SINGLE MODE FIBERS 1–120
1. BLUE
2. ORANGE
3. GREEN
4. BROWN
5. SLATE
6. WHITE
7. RED
8. BLACK
9. YELLOW
10. VIOLET
11. ROSE
12. AQUA

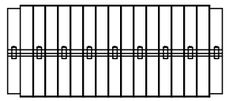
INSTALL FAN OUT KIT ON ALL TERMINATED OR FIBER STRANDS WHEN TERMINATING THE FIBER OPTIC CABLE

FIBER OPTIC CABLE:
TUBE 1 = BLUE TUBE 1–12 SM FIBERS
TUBE 2 = ORANGE TUBE 13–24 SM FIBERS
TUBE 3 = GREEN TUBE 25–36 SM FIBERS
TUBE 4 = BROWN TUBE 37–48 SM FIBERS
TUBE 5 = SLATE TUBE 49–60 SM FIBERS
TUBE 6 = WHITE TUBE 61–72 SM FIBERS
TUBE 7 = RED TUBE 73–84 SM FIBERS
TUBE 8 = BLACK TUBE 85–96 SM FIBERS
TUBE 9 = YELLOW TUBE 97–108 SM FIBERS
TUBE 10 = VIOLET TUBE 109–120 SM FIBERS

QUAZITE PULL BOX
30" x 48" x 48"

PLACE 2' ROCK DRAIN BED BELOW HANDHOLE.

TYCO ENCLOSURE

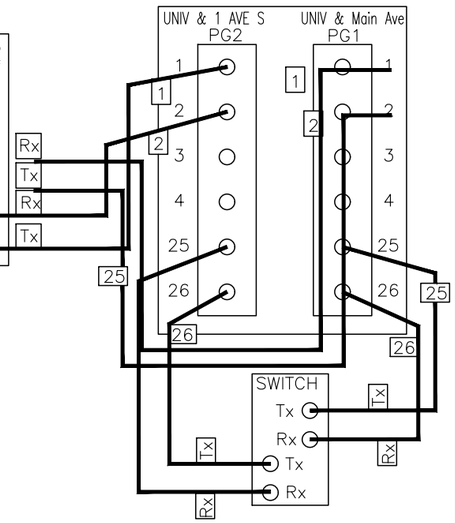


FIBER OPTIC ENCLOSURE SHALL BE A TYCO CLOSURE. FIBER OPTIC CABLES SHALL BE INSTALLED IN THE TYCO AS PER MANUFACTURE'S INSTRUCTIONS AND RECOMMENDATIONS. SEE COMMUNICATION CABLE SPECIFICATION NOTES FOR FURTHER INSTRUCTIONS.

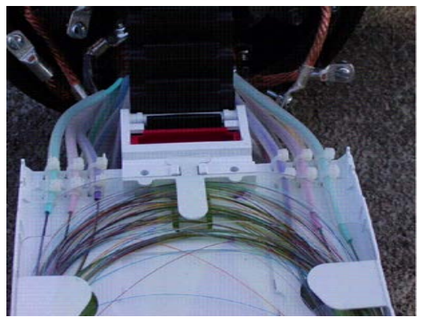
EAGLE EPAC CONTROLLER

Rx
Tx
Rx
Tx

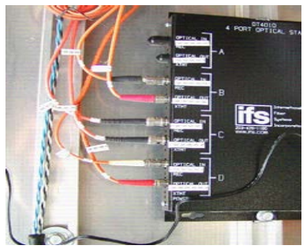
FIBER DISTRIBUTION PANEL



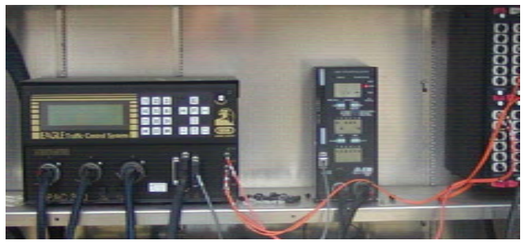
INSTALL PROTECTIVE TUBE SLEEVE AND TIE WRAP EACH TUBE TO SPLICE CASE.

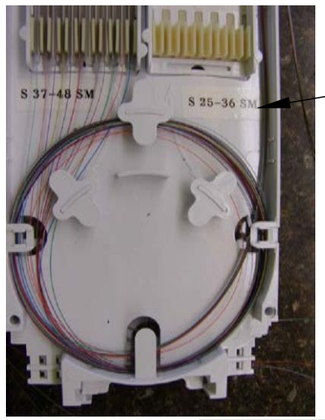


FIBER OPTIC STAR MODEM



LABEL STAR MODEM 1–8.



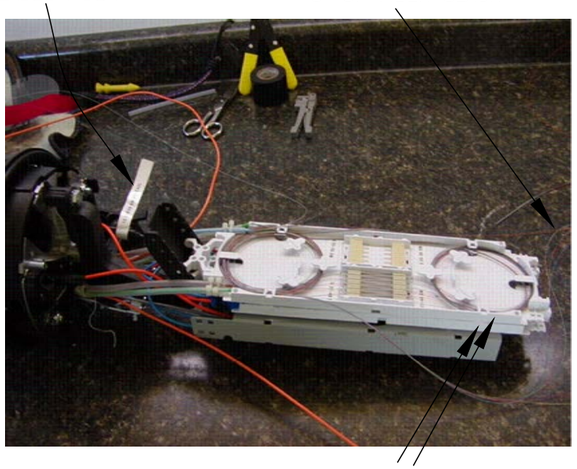


FIBER SHALL BE NEATLY INSTALLED IN SPLICE CASE AND LABELED.

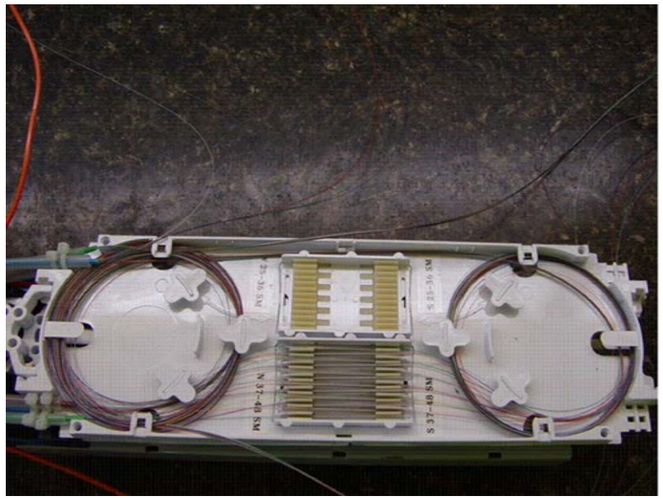
ALL FIBER CABLES SHALL BE LABELED INSIDE AND OUTSIDE THE TYCO CASE AND SHALL BE COLOR CODE AS FOLLOWS:
NORTH=ORANGE
EAST=GREEN
SOUTH=BROWN
WEST=SLATE

LABEL FIBER

3' OF FIBER SLACK



SEPARATE SPLICE TRAY FOR EVERY 2 TUBES OF FIBER INCLUDING NON–SPLICED FIBER TUBES



HEAT TUBE FUSION SPLICE HOLDERS SHALL BE MANUFACTURED BY TYCO ELECTRONICS PART # SMOUV–1120–01–US.

SECTION NO. 4200	DRAWING NO. 5.10
REV,D. 2016	
FIBER OPTIC DETAIL	
CITY OF FARGO ENGINEERING DEPARTMENT	
APPROVED	DATE

THE CITY OF Fargo FAR MORE

Houston Engineering Inc.
Proj. No. 6059-0145
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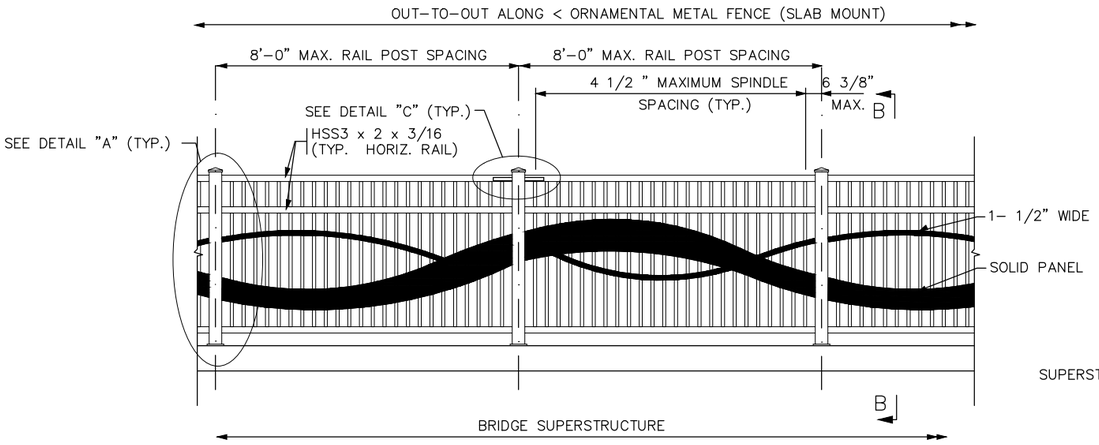
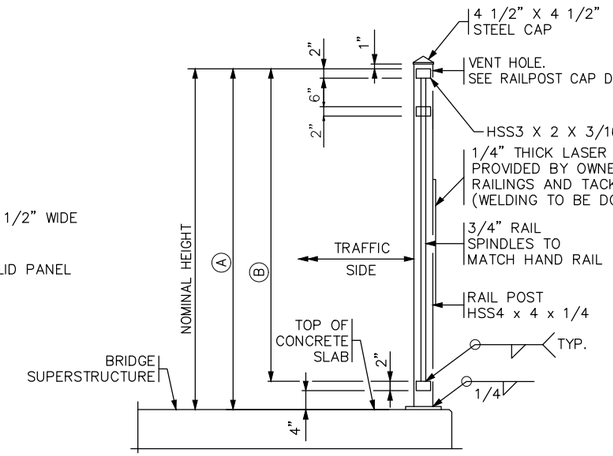
ITS - Details

52nd Ave S - West of 63rd St S to 45th St S

REVISED 10/26/2018	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-8-984(164)	170	56



INSIDE ELEVATION OF ORNAMENTAL FENCE



SECTION B–B

(4'–6" TALL OPTION SHOWN)

RAILING HEIGHT TABLE			
	NOMINAL HEIGHT	Ⓐ	Ⓑ
TYPE "A"	4'–6"	4'–6"	4'–0"

GENERAL NOTES

CONTINUOUSLY GROUND ALL METAL RAILINGS;

PAYMENT LENGTH SHALL BE MEASURED AS THE OUT TO OUT LENGTH ALONG THE CENTERLINE OF THE RAILING BETWEEN THE OUTSIDE ENDS, WITH DEDUCTIONS FOR THE LENGTH OF CONCRETE POSTS, IF PRESENT.

USE A500, GRADE B STRUCTURAL STEEL TUBING (HSS) IN THE RAIL CONFORMING TO SPEC. 3361. FINIAL CAPS SHALL BE SPEC. 3322. ALL OTHER STEEL SHALL CONFORM TO SPEC. 3306.

GALVANIZE BOLTS, NUTS, WASHERS AND ANCHORS PER SPEC. 3392. GALVANIZE ALL OTHER STRUCTURAL STEEL PER SPEC. 3394, AFTER FABRICATION.

COAT THE GALVANIZED RAILING, BASE PLATES, AND PROTRUDING PORTIONS OF BOLTS, NUTS, ANCHORS, AND WASHERS.

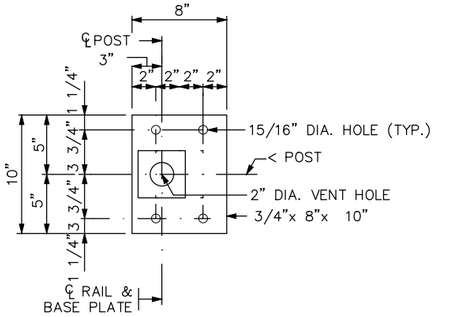
INSTALL RAIL POSTS AND SPINDLES.

CURVE HORIZONTAL RAILS WHERE APPLICABLE AND PLACE RAILS PARALLEL TO THE EDGE OF SIDEWALK PROFILE.

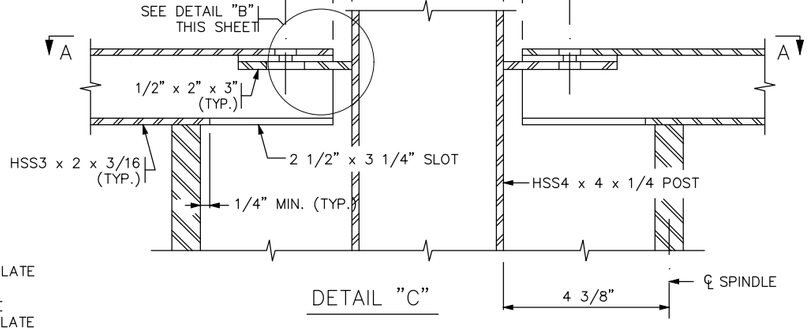
SEE SPECIAL PROVISIONS FOR REQUIREMENTS NOT INCLUDED ON THIS SHEET.

DRILL 1/4" DIA. MAX. VENT HOLES ON THE UNDERSIDE OF RAIL TUBES AS NECESSARY TO FACILITATE GALVANIZING.

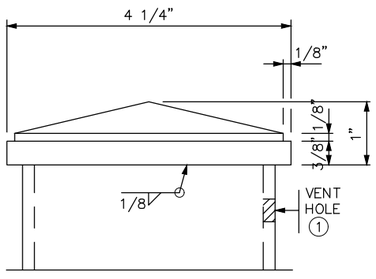
DRILL 1/4" DIA. MAX. WEEP HOLE ON UNDERSIDE OR BOTTOM OF ALL VERTICAL AND HORIZONTAL TUBULAR STEEL MEMBERS



BASE PLATE



DETAIL "C"

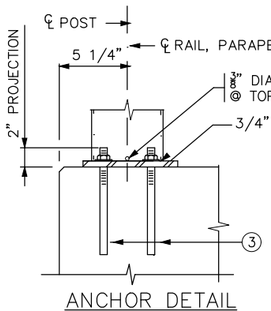


RAILPOST CAP DETAIL ②

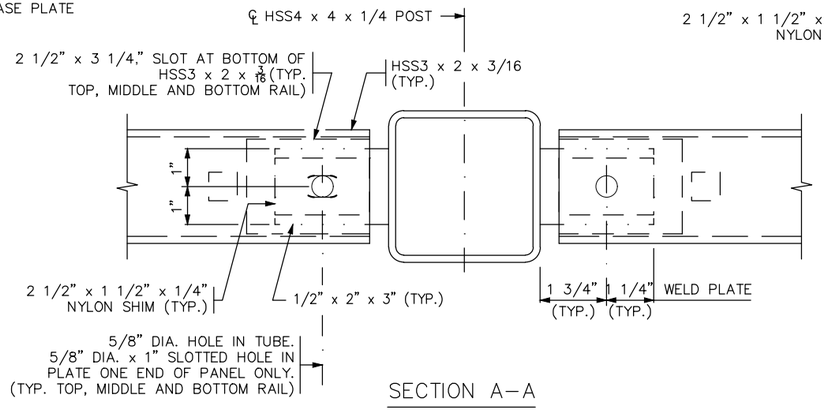
① DRILL VENT HOLE IN THE RAIL POST WITHIN 2" OF THE UNDERSIDE OF THE CAP, ON THE NON–TRAFFIC SIDE OF THE POST AS NECESSARY TO FACILITATE GALVANIZING. MAXIMUM HOLE SIZE IS " DIA.

② PROVIDE A PYRAMID TOP STYLE STEEL CAP WELDED TO TOP OF POST WITH A SURFACE FINISH OF 1000 MICRO–INCH, OR SMOOTHER, PRIOR TO GALVANIZING.

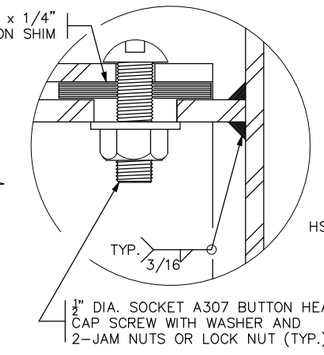
③ 5/8"Ø HIT–HY 200 + HIT–Z ANCHOR SYSTEM WITH 6" EMBEDMENT IN CLEANED HOLE (HOLE CONDITION 2). INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. PROOF LOAD TO 7.4 KIPS.



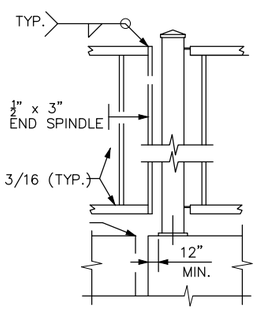
ANCHOR DETAIL



SECTION A–A



DETAIL "B"



DETAIL "A"

THE CITY OF Fargo FAR MORE

Proj. No. 6059-0145
Houston Engineering Inc.
Ph: 701.237.5065

WSB PROJECT NO. 012067–000

This document was originally issued and sealed by Candace Amberg 76 on 10/26/18 and the original document is stored in the Engineering Dept. at City Hall.

52nd Ave S over Drain 27

Bridge Aesthetics

Ornamental Fence Details

10/26/18 10:35:57AM K:\012067-000\Cad\Plan\012067-000-L-PLAN.dwg

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

TRAFFIC SIGNAL SYSTEM

Project SU-8-984(164) – PCN #22007

This document was originally issued and sealed by Josh N. Hinds Registration Number PE-8261, on 10/26/18 and the original document is stored in the Engineering Dept at City Hall

GENERAL

This work shall consist of, but is not limited to, furnishing and installing traffic signals, communication cable, traffic surveillance cameras, and battery back-up systems. All work and material shall meet the National Electric Code, North Dakota State Electrical Board, local utility company, and ordinances established by the City of Fargo. All materials shall be furnished and installed new unless specified otherwise in the Special Instructions for Bidders.

a. Traffic Signal Warranty

   i. The Contractor shall warrant and guarantee all materials, work, and equipment for a period of at least one year from the date of final acceptance. In addition, the controller equipment supplier and manufacturer shall provide an additional four-year warranty for a total of five years on the EPAC controller. All manufacturer warranties and guarantees with respect to materials, parts, workmanship, or performance shall be secured and included with the shop drawing submittal.

b. Service Manuals

   i. The Engineer shall be furnished 1 service and operating manual for the traffic signal controller unit and emergency vehicle pre-emption controller.

      Each service manual shall include the following minimum information:

      1. Detailed description of operation and instructions for initial set-up
      2. All schematics and wiring diagrams of the unit
      3. Recommended servicing and service hints
      4. Complete parts list
      5. Recommended spare parts list

c. Coordination

   i. The Contractor shall coordinate all work with the City's Project Engineer and/or Inspector when work activities are scheduled. The Contractor is responsible for coordinating his activities with other City, State, or County work. If the Contractor

determines that other work in the area will substantially affect the project's substantial completion date, it is his responsibility to notify the Project Engineer and request a time extension.

d. Location of Existing Utilities

   i. Partial existing utilities have been shown to direct the Contractor's attention to their existence. Such utilities have been plotted from record drawings.

   ii. The Contractor is cautioned that all existing utilities may not be shown. The location of existing utilities is not guaranteed, and the Contractor will be responsible for determining the exact location and protection of the existing utilities. Before commencing any excavation or construction, the Contractor shall find out the location and seek aid in locating all public and private utilities. The Contractor shall contact ND One-Call (1-800-795-0555) or 811 and request locates prior to beginning construction. Sub cutting or scarifying over utility lines may be eliminated if, in the opinion of the Engineer, a hazardous situation exists.

   iii. The Contractor is responsible for verifying and following minimum horizontal and vertical clearances between light and/or signal standards and overhead power lines.

e. Stop Sign Removal

   i. Removal of existing stop signs prior to starting up the operation of a traffic signal shall be incidental to installing the traffic signal system. Contractor shall deliver all signs to City of Fargo Maintenance Shop.

TRAFFIC SIGNAL INITIAL AND FINAL INPSECTION AND SUBSTANTIAL COMPLETION

a. The project will not be classified as substantially complete until the signal system is functional, including completion of all pay items and a fully functional fiber optic communication system.

b. After the Contractor has completed the installation of the signal system(s) and any clean up items, he shall complete the "Contractor's Pre-Initial Traffic Signal Inspection Check List" provided by the City. Each item on the checklist shall be inspected by the Contractor. The Contractor's personnel that actually did the inspection shall initial each item showing that it has been completed. The completed check list shall be forwarded to the Engineer, along with the request for an initial inspection on the form provided by the City. The Engineer will set a date and time for the initial inspection. At the time of either an initial or final inspection, the Contractor is required to open and close all pull boxes, open and close all signal standard doors, and remove and hold wiring to allow for inspection of anchor bolt nut tightness with hammer test. The Contractor shall be present within 10' of each item being inspected to ensure clarity on what needs to be corrected.

c. Initial and final inspections will not be performed between November 1st and April 1st. Inspections will not be done if there is rain, snow, wind greater than 15mph, or if the temperature is less than 50° F.

d. All items requiring additional work after the initial inspection will be noted by the City on the checklist. The Contractor shall complete work on all items prior to requesting a final inspection. A final functional inspection will be made a minimum of 30 days after the initial inspection date. The Contractor shall submit, in writing to the Engineer, that all punch list items have been completed and request a final inspection on the form provided by the City. The Engineer or Inspector may, at his discretion, stop the final inspection and require the Contractor to resubmit his request for final inspection after completing the required work. The City of Fargo will perform one initial inspection and one final inspection at no cost to the Contractor. Additional initial and final inspections shall assess the prime Contractor a fee of

$250 for each time an additional initial or final inspection is performed. The project will not be classified as final until the City accepts the project and assigns a final acceptance date. The date of final acceptance will be 30 days without failure for the City to accept the system. If the system fails during the 30-day acceptance period, the 30 days will start over after the failure has been repaired and inspected by the City. The Contractor is responsible for all maintenance and repair/replacement caused by accident, vandalism, or road/sidewalk maintenance of the signal system until the date of final acceptance, which includes being responsible for the system 24 hours a day, 365 days a year until the final acceptance date is reached.

MATERIALS

1. SHOP DRAWINGS

   a. The Contractor shall provide an electronic PDF file of shop drawings and certifications required by the City of Fargo within 15 days after the contract has been signed by the City Commission. All shop drawings and certifications shall be approved prior to any work being started. The Contractor shall be responsible for the accuracy of the shop drawings. The Engineer's review does not relieve the Contractor of full responsibility for providing a quality product that meets Specifications.

   b. The Contractor shall submit shop drawings on the following listed items for approval:

      i. Traffic Signal Controller Cabinet

         1. Load Bay
         2. Controller
         3. EDI Conflict Monitor
         4. Voltage Surge Suppression
         5. Flash Transfer Power Relay
         6. Solid State Flasher
         7. Solid State Load Switches with Input and Output Indicators
         8. Detector Rack 2.4 AMP+ Power Supply
         9. Vehicle Detector Rack Card
         10. GTT Model 764 Opticom Phase Selector
         11. Ethernet Switch
         12. Audible Pedestrian Push Button System
         13. Video Detection System

      ii. Battery Backup Cabinet

         1. UPS Power Module
         2. Batteries
         3. Battery Charge Management System
         4. Maintenance Bypass Switch
         5. Signal Cabinet Circuit Breaker

iii. Feed Point Cabinet
    1. Surge Protection
    2. Circuit Breaker
    3. # 6 Power Wire THW & RHW

iv. EVP System
    1. Opticom Detector
    2. EVP Confirmation Light
    3. EVP Mounting Hardware
    4. Opticom Cable

v. Fiber Communication
    1. Fiber Optic Cable
    2. Fiber Optic Pigtail
    3. Fan Out Kit
    4. Fiber Optic Connectors
    5. Fiber Optic Jumper Cables
    6. Fiber Optic Distribution Panel
    7. Fiber Optic Splice Cabinet
    8. Fiber Optic Tyco Splice Enclosure
    9. 4 Port Active Optical Star Coupler

vi. Vehicle Heads
    1. Housing
    2. Back Plate
    3. LED Sections
    4. Mounting Hardware-Must include complete installation instructions
    5. Visors-Cup or Cutaway

vii. Pedestrian Heads
    1. Housing
    2. Visor
    3. LED section
    4. Mounting Hardware

viii. Signal Standards
    1. Standard
    2. Mast Arm
    3. T-Base
    4. Anchor Bolts
    5. Bolts, Nuts, & Washers

6. Luminaire Extension & Fixture

ix. Pull Box
   1. Frame
   2. Cover

x. Pedestrian Push Buttons
   1. Button
   2. Housing
   3. Sign
   4. Post

xi. Detection Loops
   1. Loop Wire
   2. Loop Sealant
   3. Loop Lead-in
   4. Splice Kits

xii. Conduit & Innerduct (HDPE)

xiii. Signal Control Cables
   1. No.14 AWG 20
   2. No.14 AWG 12
   3. No.14 AWG 7
   4. No.14 AWG 5
   5. No.14 AWG 3
   6. No.14 AWG 2

xiv. Master Controller

xv. Labeling Tape

xvi. Camera Equipment
   1. Camera
   2. Mounting Hardware
   3. Power Supply
   4. Cables CAT 6 & No.16 AWG 3
   5. Ethernet Switch
   6. IMSA 40-2 Cable (Iteris Versa Cam)

xvii. Interim Traffic Signal
   1. Wood Service Poles
   2. Vehicle Head Hardware
   3. Pedestrian Head Hardware
   4. Span Wire

5. Guy Wire Anchors & Hardware
6. Junction Boxes on Poles
7. Weather Entrance Heads
8. Span, Stabilization, & Guy Wire I-Bolts and Hardware
9. 1" Ultratite-Type UL Liquid Tight Flexible Metal Conduit

2. SIGNAL PAINT

The traffic signal system components shall be painted in accordance with the following:

a. All new signal standards shall be painted with the Millerbernd Factory Finish Paint Coat Specification using the Millerbernd I2/ZRU Paint System with a clear top coat or approved Valmont equal. Colors shall be as follows:

   i. Transformer base – galvanized, or gloss black
   ii. Mast arm – galvanized, gloss black, or yellow* (see plans)
   iii. Signal head mounting hardware – galvanized, gloss black, yellow*(see plans)
   iv. Shaft – galvanized, gloss black, or yellow*(see plans)
   v. Signal housing – gloss black
   vi. Pedestrian push-button post – gloss black, or yellow*(see plans)
   vii. Pedestrian push-button housing – gloss black, or yellow* (see plans)
   viii. Signal head doors, back plates and visors – flat black

   **Yellow color shall be No.13538 of Federal Standard No. 595 B.*

b. All areas requiring painting or touch up paint shall be prepared as follows:

   i. If rusted:

      1. Completely remove all rust and loose paint.
      2. Sand all painted areas with 40 to 100 grit paper, depending on conditions.
      3. Wash down with "no rinse pre-paint cleaner" manufactured by Great Lakes Laboratories.
      4. Prime bare metal with Devran 205 primer manufactured by Devoe High Performance Coatings, or an approved equal.
      5. Top coat and clear coat with products supplied by the original pole manufacturer.

   ii. All other non-rust paint areas:

      1. Remove loose paint.
      2. Sand all paint areas with 40-grit paper.
      3. Wash down with "no rinse pre-paint cleaner".
      4. Prime bare metal with Devran 205 primer manufactured by Devoe High Performance Coatings, or an approved equal.
      5. Top coat and clear coat with products supplied by the original pole manufacturer.

c. The following method shall be followed for re-painting existing standards when required on the plan:

   i. Sandblast Signal Standard

      1. Remove all bandit mounting material, signs, and pedestrian buttons.
      2. Completely remove all rust and paint by white metal blasting the signal standard.
      3. White metal blast cleaning is used when a totally cleaned surface is required. This method of cleaning is defined as a sandblasted cleaned surface with a gray-white uniform metallic color. It shall be free of all oil, grease, dirt, mill scale, rust, corrosion products, oxides, paint, stains, streaks, or any other contaminant across 100% of every square inch.
      4. Sandblasting material shall be a steel grit angular carbon steel.
      5. Sandblasting shall be done on site with the signal standards in place and operational. All pedestrians and the traveling public shall be protected from all debris. All sandblasting material and removed pole paint/debris shall be collected in a method that is approved by the EPA. Existing pole paint-debris may contain harmful chemicals or existing lead paint, which the Contractor shall be responsible for containing and cleaning up, along with protecting pedestrians and the traveling public from these hazardous contaminates.+
      6. Before the primer is applied, the pole must be inspected by the City of Fargo to ensure that it is free of all paint, rust, and contaminates. Pole must be prepped according to Specifications and to the satisfaction of the Engineer in the field. Pole may need to be re-blasted or cleaned with Devoe DEVPREP 88 cleaner. The Engineer in the field will require which method shall be used.

   ii. Paint Signal Standard

      1. Mask all areas as per detail sheet in plans.
      2. Prime bare metal with Devoe Devran 205 primer.
      3. Apply two top coats of Devthane 379UVA manufactured by Devoe High Performance Coatings and one coat of clear coat as recommended by the top coat manufacturer. **Yellow color shall be No.13538 of Federal Standard No. 595 B.*
      4. Thickness of all coats applied shall be according to the manufacturer's recommended film thickness. Application of all materials shall follow the manufacturer's directions for use.
      5. Re-install all pedestrian push buttons and signs. Re-install iron pole plates for vehicle heads as per detail. Remove all masking.
      6. After sandblasting has been approved, splice all conductor in T-base with lever nuts and splice according to City of Fargo splice detail.
      7. Remove and replace ALL post mount plugs on standard before painting.

iii. The Contractor shall warrant and guarantee all materials, work, and equipment for a period of at least five years from the date of final acceptance. Contractor is required to get a certified warranty from Devoe to the City of Fargo covering all labor and materials if the paint fails. Cost of warranty shall be included in the price bid for "Paint Traffic Signal Standards".

3. PULL BOXES

   a. Install PVC Box (Detail 5.6)

      i. Pull boxes shall be PVC with metal frames and covers and shall conform to Drawing No. 5.6 included in the plans.

      ii. Pull boxes in landscaped areas shall have the top of the box level with the final grade and sloped to match the slope of the final grade on all 4 quadrants. Pull boxes in concrete area shall be set with the top of the box flush with the final grade on all 4 quadrants.

      iii. All PVC pull boxes installed in concrete areas shall have a bell end on the bottom of the pull box to prevent frost heaving and a frame with a frost heaping lip.

      iv. ALL conduits shall extend into pull box a MAXIMUM of 3".

      v. All pull boxes shall have a minimum of two feet of pea rock below for drainage. Backfill around pull boxes shall be a Class 3 gravel with 95% compaction.

   b. Install Fiber Pull Box (Detail 5.10)

      i. The size shall be 30" x 48" x 48" deep with no base. The cover shall be 1-3/4" thick, secured with stainless steel bolts, and have a logo of "Traffic Signals". The base and cover shall be made from polymer concrete and sustain a minimum test load of 12,000#. Color shall be gray. Pull box shall be a PD style enclosure that has a 1-degree flare to prevent frost heaving.

      ii. Two feet of pea rock shall be installed for drainage below the pull box and extend 6" beyond the outside edge of pull box. Backfill around pull boxes shall be a Class 3 gravel with 95% compaction. The top of box shall be at final grade and sloped to match. A 6' x 6' concrete pad shall be installed around the IT-Pull box. The concrete pad shall be 6" thick and reinforced with 6" x 6" x 10 GA welded wire fabric and shall be incidental to the price bid for "Install Fiber Pull Box". All conduit entrances shall be a minimum of 24" from top of box. ALL conduits shall extend into pull box a MAXIMUM of 3".

4. PEDESTRIAN PUSH BUTTON AND SIGNS (Detail5.6)

   a. Pedestrian push button signs shall be bolted directly to the traffic signal standards. Do not use bandit for this purpose. Furnishing and installing pedestrian push buttons and signs shall be included in the price bid for "Traffic Signal Standards" and Pedestrian Push Button Post".

   b. All Pedestrian push buttons shall be a Polara iNavigator 3-wire push button system (iN35AB0-B). All Pedestrian heads shall have a 3-Wire Ped Head Control Unit (iPHCU3W) installed and a 14 AWG/3C shall be installed between the 3-Wire Ped Head Control Unit and iNavigator push button; length of cable shall be incidental to the cost of the push button. Pedestrian buttons shall have a 5" x 7" face plate with braille options and corresponding directional arrow. One spare button with (2) spare signs, (1) for street and (1) for avenue shall be provided with the system. The system shall include the most current revision of software for installation on up to 10 computers. All sound/wave files for each APS button SHALL be supplied to City of Fargo.

c. Pedestrian push button posts shall be manufactured by Frey Manufacturing and be black in color, unless matching existing intersection push button post color or specified in plans.

5. FARGO TYPE B CABINET (Detail 5.3)

a. The Cabinet size shall conform to the details shown in the plan and the following:

i. Type A Cabinet shall be size M (height 51", width 36", depth 17")

ii. Type B Cabinet shall be size P-44 (height 66", width 44", depth 25.5")

b. Anchor bolts must be set into controller foundation when poured.

c. When installing the cabinet on the concrete foundation, a bead of SikaFlex 15LM construction sealant shall be placed under the bottom flange of the cabinet within one inch of the outside edge of the cabinet. An additional bead of SikaFlex 15LM construction sealant shall be placed continuously around the outside of the cabinet at the seam between the cabinet and the foundation. All exposed outer cabinet seams shall be sealed with a bead of SikaFlex 15LM construction sealant.

d. The Contractor shall supply a fully wired and terminated NEMA cabinet from the pre-approved supplier list below. Controllers shall be supplied by the same manufacturer and be of the same model number and most recent software.

e. City of Fargo Type B Cabinet assembly with an Intelight NEMA X3L TS2/Type 2 Controller shall have full ATC compliance with A, B, C, and D harness connectors (D harness requires a DB37 adapter that is used by Siemens). MaxView Central Software shall be included and installed on the City of Fargo server with a minimum of 6 users. Intelight shall do all programming on controller for the intersection. The conflict monitor shall be an EDI SSM 12LEip. All cabinets shall be wired for use of either 2-channel or 4-channel Global Traffic Technologies opticom cards. The Contractor shall supply LM 602 Series rack mounted vehicle loop monitors from EDI, or approved Reno equal. See plans for additional cabinet requirements.

f. All new Fargo Type B cabinets shall have a Comtrol RocketLinx ES8520-XT managed ethernet switch with (2) PULS ML60.242 power supplies (Part # 32112-5). Furnish (2) SFP MM 2KM 1000BASE-SX Fast Ethernet (Extended Temp) Part# 1200088 and (2) SFP SM 10KM 1000BASE-GLX (Extended Temp) Part#1200060.

g. OCC Fiber distribution enclosure. Standard is a ZDMB6B enclosures for single-mode fiber. Adapter plates shall be 6112DLC. Adapter plate may vary depending on the number of fibers to be landed in the signal cabinet. See fiber splice diagrams for details.

h. All cabinets shall be delivered to the City of Fargo Sign and Signal Maintenance building located at 4630 15th Ave N, Fargo, ND, 58102 before installation. Contractor is responsible for picking up and installing at required intersections.

i. Cabinet Wiring Diagram

i. The following items shall be labeled on the cabinet wiring diagram:

ii. The loop designation number (i.e. D2-1) from the plan shall be labeled on the detector panel drawing adjacent to the point for termination.

iii. The field wire terminals for the vehicle/pedestrian head control cables shall be labeled with the phase number and direction (i.e. θ2, SB).

iv. The field wire terminals for the opticom cable shall be labeled with the pre-empt number (i.e. P.E. #1).

v. The field wire terminals for the pre-emption indicator lamps shall be labeled with the pre-emption number and direction (i.e. P.E. #1, N.B.).

vi. The field wire terminals for the pedestrian push button cables shall be labeled with the phase number (i.e. θ8 PED).

vii. Provide an AutoCAD drawing file of the as-built cabinet wiring diagram. Diagram shall include battery backup wiring.

viii. All text on the cabinet wiring diagram shall use the Arial style font.

ix. The detector rack label shall look like the detector rack label on the plans. The text size shall be 0.13 in height for all text on the label except the VD1, SD1, VD2, SD2, etc. shall be 0.09 in height.

x. Contractor is responsible for pickup of cabinet prints and for returning one revised print to the cabinet in the field and returning all other copies to the City of Fargo Sign and Signal shop, located at 510 5 St N.

j. A complete cabinet conflict monitor test shall be performed and passed by the Contractor just prior to the uncovering of the traffic heads. The City will supply the conflict monitor maintenance record test form. The instructions on this form must be followed completely before the signals are used. The Contractor is responsible for providing a traffic control flagger person for the intersection while the conflict monitor test is performed.

k. The Contractor shall provide two spare load switches and one spare two-channel vehicle detector for each controller and cabinet supplied on the project.

l. All load switches provided as part of this project shall be equipped with both input and output LEDs and shall be manufactured by EDI or Reno.

m. Controller working slab shall be 6 feet wide and extend a minimum of 4 feet from the face of the controller foundation. The slab shall be 4 inches thick and reinforced with 6” x 6” x 10 GA welded wire fabric and shall be tied to the controller foundation with 18-inch long #3 rebar spaced 18 inches on center. The controller working slab shall have a slope of 0.25 inches per foot away from the controller cabinet foundation. The closest point of the top of the slab to finished grade shall be 2 inches above grade, except where matched to sidewalk grade. Working slab shall be incidental to pouring the controller cabinet foundation. If working slab is within 3’ of sidewalk, Contractor shall connect working slab to sidewalk.

n. The cabinet shall have a 6x6x6 splice box mounted on the outside of the cabinet for locating personal. All trace wires shall be clearly labeled. Insulation shall be removed a minimum of ½” at the end of each wire. Box shall be installed toward grass area and not toward sidewalk.

o. The Contractor shall label and provide to the City before installing the following equipment for programming:

-Controller

-Conflict Monitor

-Fiber Switch w/ all accessories

-PTZ Camera (Camera only)

-EVP Card

-UPS Power Inverter

-Cabinet

6. VEHICLE AND PEDESTRIAN HEADS (Detail 5.2)

   a. All signal plumbizers, mounting hardware, and pedestal adapters/collars shall be iron – absolutely no aluminum. Color SHALL be black unless noted in plans.

   b. All vehicle heads and all pedestrian heads shall be SG polycarbonate. All heads shall be installed level on all sides. Five section cluster mast arm mounted heads shall be installed using a Frey Manufacturing 52CA cluster adapter with a 45V angled plumbizer and a 32C clamp adapter. All vehicle and pedestrian heads shall be manufactured by Siemens Eagle, McCain, or approved equal. All signal heads shall be required to have reinforcement plate kits installed on them. All 5 section doghouse style heads shall have the door hinges on the outside of the head, so all heads can be opened at the same time. All signal heads are required to have **cap or cutaway** style visor installed on them.

   c. Vehicle indication alignment of post and pedestal vehicle heads mounted on signal standards shall be leveled on all 4-sides and aimed to the center of the oncoming traffic lane 200 feet from the stop bar. Left turn heads that are post and pedestal mounted shall be aimed to the center of the left turn lane 200 feet from the stop bar. Mast arm heads shall be parallel to oncoming traffic.

   d. All traffic signal back plates shall be louvered aluminum and have a minimum thickness of 0.063". Back plates shall be installed using 3/4" O.D. x 3/16" I.D. x standard thickness washers on all screws. Washers shall be stainless steel #10 fender washers. Screws used to attach the back plates to the signal head shall be stainless steel ½" #10 pan head tap screws.

   e. All red, yellow, green and pedestrian indications shall be LED conforming to the latest standards of the Institute of Transportation Engineers. All LED's shall have a 5-year warranty. Approved 12" LED balls are Dialight "XL" series red ball part number 433-1210-003XL, yellow ball part number 433-3230-901XL, green ball part number 433-2270-001XL; or GE "GT1" series red ball part number DR6-RTFB-17A, yellow ball part number DR6-YTFB-17A-YX1, green ball part number DR6-GCFB-17A; or Leotek "P2" series red ball part number TSL-12R-LX-IL6-A1-P2, yellow ball part number TSL-12Y-LX-IL6-A1-P2, green ball part number TSL-12G-LX-IL6-A1-P2. Approved 12" LED arrows are Dialight red arrow part number 432-1314-001XOD, yellow arrow part number 431-3334-901XOD, and green arrow part number 432-2374-001XOD; or GE "GT1" series red arrow part number DR6-RTAAN-17A, yellow arrow part number DR6-YTAAN-17A-YX, green arrow part number DR6-GCAAN-17A; or Leotek "P2" series red arrow part number TSL-12RA-IL6-A1, yellow arrow part number TSL-12YA-IL6-A1, green arrow part number TSL-12GA-IL6-A1. Approved pedestrian heads shall be 16"x18" countdown pedestrian signals. Approved pedestrian countdown signals are GE "GT1" series part number PS7-CFF1-26A-J, or Leotek "CIL" series part number TSL-PED-16-CIL-P1, or approved equal. Dialight pedestrian countdown signals will NOT be approved.

   f. Installing LED vehicle signal sections shall include furnishing and installing 12-inch LED vehicle signal indications in the existing signal head housing for the existing red, yellow, and green vehicle indications. The price bid shall include all materials and labor for each LED vehicle signal installed. Contractor is required to place an LED load on any phase with a single LED when changing out the LEDs to prevent the signal from going into flash. Contractor shall install Wago 222-Series lever nuts on all splices in vehicle/pedestrian heads. Contractor shall install dielectric grease in all used or unused entrances of the lever nut.

   g. Installing LED pedestrian signal sections shall include furnishing and installing a 16-inch LED pedestrian countdown indication in the existing pedestrian signal head housing. The price bid shall include all materials and labor for each LED pedestrian signal installed.

h. All conductor from the signal/pedestrian heads to the splice in T-base shall be included in the cost of furnishing and installing the signal/pedestrian head.

7. VEHICLE DETECTION LOOPS (Detail 5.4)

a. Sawed vehicle loops shall be shown on the plans and the loop detector detail sheet. The loop location shall be marked on the pavement. The loop shall be placed in the lane for which it was intended, perpendicular to the lane, and to the size shown in the Contract. The Engineer may move the loop location longitudinally to avoid joints, pavement cracks, manholes, and other obstructions. All vehicle loops in milled areas shall be sawed after the surface has been milled and prior to the final lift of new asphalt.

b. Interruption of the normal flow of traffic shall be kept at the minimum time necessary for installation of the road loop. Work shall not begin until all materials, equipment, and personnel are at the site. Type III barricades, warning signs, and traffic control flagger persons shall be placed to protect the workers and the traveling public.

c. Conduit shall be installed from the pull box to the same panel in which the loop is installed. Home run saw slots shall not cross any contraction joints in the concrete when new loops are installed on projects where a new concrete roadway is installed. Each loop shall have a separate conduit installed for the pull box entry. Loops installed on an existing roadway surface shall have conduit installed from the pull box to the gutter or roadway edge as specified on the detail sheet. The excavation from the saw slot at the gutter or roadway edge shall be made by means of a punch or drill type tool, rather than by usual excavating methods. The visible portion of the gutter shall not be cut for conduit installation. The conduit shall be installed to directly receive the loop wire in line and not at an angle. The hole to receive the conduit shall be at a depth below the roadway surface so there is a minimum of 2 inches of cover on top of the conduit when installed. Duct Seal shall be inserted into the loop pipe to prevent any sealant from entering the pipe and the top 2-inches of the cover over the conduit hole shall be sealed with the same sealant used to close the saw cut. The conduit and the pull box shall be installed at the same time.

d. Only vehicle loop duct type wire shall be used having a ¼-inch XLPE high density polyethylene tube jacket covering a #14 AWG stranded copper conductor with Type XHHW insulation.

    i. All loops shall have 3 turns of loop wire.

e. Loop Saw Slot

    i. The pavement slot shall be sawed with a self-propelled power saw equipped with a depth gauge and alignment guide. The pavement slot shall be cut cleanly and well defined. The saw cut shall be overlapped at all corners and right-angle corners shall be cored as shown on the detail sheet. The saw cut may be made at any time before installation of the wire. Slots shall be cleaned immediately after the cutting operation.

    ii. All saw cuts shall be sealed with an approved sealant. Before sealing the saw slot, each saw slot shall be thoroughly dried and cleaned of all dust, dirt, concrete scale, and other foreign matter. Sandblast all sealed areas and then blow out with a jet of compressed air to remove sandblaster material. The joint faces shall be clean and dry when the joints are sealed. Joints shall not be sealed when the air temperature is above 100°F and below 40°F.

    iii. Failure of the saw slot material in either adhesion or cohesion in the first year after the final acceptance date shall be cause for rejection and shall be repaired at the Contractor's expense.

f. Loop Sealant

i. The sealant shall be 3M Detector Loop Sealant 5000.

g. Loop Lead-In Cables

i. Loop lead-in cables shall be a #14 AWG stranded polyethylene insulated twisted pair with a foil shield, drain wire, and a polyethylene jacket. The loop lead-in conductor shall not be spliced except at the pull box where this conductor and the loop conductor are spliced together.

ii. Loop lead-in conductors shall be lightly sanded, cleaned with an approved method, wiped clean with a clean towel, wire nut or crimp connected, and encapsulated in an epoxy splice kit manufactured by URASEAL Product No. CK200. Kits must be under 1 year from manufacturing date. Conductors in the splice kit shall not be taped together. Loop lead-in and loop wires shall have sufficient slack to extend a minimum of 6 feet above the pull box opening and installed in the pull box with the splice kit taped to a length of 1" PVC such that the splice is secured in the upper 1/3 of pull box.

h. Preformed Loops

i. Preformed loops shall be installed on all new pavement replacements when possible. Preform loops shall be manufactured by Reno A&E and installed to manufacture's specifications.

i. Testing

i. Before pouring the sealer, the loop shall be checked for continuity, inductance, and insulation resistance. The test shall be made in the Engineer's presence and the necessary equipment needed to perform these tests shall be furnished by the Contractor. The City reserves the right to retest and these test results shall govern the acceptance or rejection of the loop installation. Tests shall be made as follows:

1. Continuity Test: Each loop detector circuit shall be tested for continuity at two locations:

i. Loop detector at the pull box before splicing with the loop detector lead-in cable shall have a value less than 0.5 ohms.

ii. Loop detector and lead-in cable system at the traffic signal controller cabinet or detector cabinet, after splicing in the pull box, shall have a value less than 5 ohms. The continuity test ohm reading at the traffic signal controller cabinet or detector cabinet shall be greater than the ohm reading measured at the loop detector at the pull box.

2. Inductance Test: Each loop detector and lead-in cable system shall have an inductance test measured at the traffic signal controller cabinet or detector cabinet. The inductance shall be in the range of 50 to 700 micro henries.

3. Insulation Resistance Test: An insulation resistance test at 500 volts, direct current, shall be made at the traffic signal controller cabinet or at the detector cabinet between one loop detector lead-in conductor and the cabinet ground rod. The insulation resistance shall have a value of 500 mega ohms or greater.

ii. A vehicle loop detector test shall be performed and recorded before the initial inspection using a City provided form. This form will be used for rechecking the loops at the final inspection.

iii. The City will retest all loops at the final inspection.

8. CONTROL CABLES

   a. The jacket on all control cables shall be polyethylene with the thickness meeting Table 7.4.2 NEMA WC-70.

   b. All cables shall be un-spliced, including pedestrian push button wires.

   c. Terminal boards and blocks shall be provided for connections of control circuits in signal standard T-Bases.

   d. There shall be no splices below grade except for loop lead-in conductors. Pulled through conductors shall have sufficient slack to extend a minimum of 18 inches above the pull box opening.

   e. Additional Cable Quantities

      Additional cable quantities shall be installed to provide for slack and the wiring of controllers, feed points, and signal heads as follows:

      A. Ten feet at the controller

      B. Twenty feet at post-mounted and pedestal-mounted vehicular signal heads

      C. Eighteen feet at post-mounted and pedestal-mounted pedestrian signal heads

      D. Eight feet at each pedestrian push button

      E. Twenty-three feet at each signal pole with a mast arm, plus the length of the mast arm, plus an additional 2' for plumbizer mount, and an additional 5' for an Astro bracket mount.

      F. Ten feet at the feed point

      G. Five feet at each foundation for each incoming and outgoing pedestrian and signal head control circuit

      H. Ten feet at pull boxes where connections are made

      I. Ten feet for loop lead-in cables where they are spliced to the loop in the pull box

      J. Three feet at each foundation for each incoming and outgoing circuit which passes through the foundation with no connection being made

      K. 43 feet plus length of mast arm for opticom and indicator light; Contractor shall pull out any excess of five feet from T-base and store in the nearest pull box.

9. LABEL ALL FIELD CABLES

   a. All labeling materials shall be approved by the City. Labels shall be readable without moving the cables. All field cables installed by the Contractor shall be labeled with the following cable designations:

Type	Label	Label Location
Fiber Cable	Comm./intersection address of the other end	Within 12" of conduit
Fiber Jumper & Box	Fiber jumper-fiber #, fiber-panel-fiber #	See fiber detail sheet
Pedestrian Push Button	Phase/location (i.e. θ2-NW, θ2-SW, θ2-S MED, etc.)	Within 6" of terminals
Loop Lead-In	Detection zone (i.e. D2-1, D2-	Within 6" of terminals

	2, etc.)	
Control Cable	Cable number & location (i.e. Cable 1-NW, Cable 2-SW, etc.)	Within 12" of conduit
Opticom Cable	Pre-emption number/location (i.e. P.E. 1-NW, P.E. 2-SW, etc.)	Within 6" of terminal
Camera Power Cable	Camera number/location (i.e. Camera 1/NW)	Within 6" of terminal
CAT 6 Cable	Camera number/location (i.e. Camera 1/NW)	Within 6" of terminal
T-Base Cables	Head #, cable #, and label individual head wires, (i.e. phase 2R,2Y,2G, 2W, 2DW, OLA-R, i.e. head # P1, P2, V1, V2, V10, V10A, neutral+each head #) see photo detail	See photo detail
Head Cabinet Controller Wires	Tie the RED-YELLOW-GREEN wires together with electrical tape for each cable head and label with the plan head number (i.e. Head #1, Head #2, P1, P2)	Within 6" of terminal

b. All labels shall be machine printed on a tape width of 1/2". All lettering shall be 20pt. uppercase block style letters. The tape shall be affixed around the perimeter of cable with the tail at 90° to the cable. All lettering shall be on the tail of the label and readable without moving the cables. The labeling tape shall be designed for outdoor use. The tape shall have a minimum outdoor durability rating of 5 years in temperature ranging from 180°F to -40°F. The labels shall be capable of being applied outdoors at temperatures as low as 0°F.

10. EMERGENCY VEHICLE PRE-EMPTION (Detail 5.5)

a. All locations on the plans calling for an emergency vehicle pre-emption detector shall consist of a Global Traffic Technologies Model 722 EVP detector and light assembly. Install assembly 6 feet from end of mast arm poles unless otherwise shown on the mast arm detail sheet. Each detector tube shall be aimed at a point 1800' from the intersection towards the associated on-coming traffic. The indicator lamp shall be angled downward 1 notch from level and aimed at a point 1800 feet from the intersection.

b. The Opticom Priority Control System shall be an Opticom Model 764 Multimode Phase Selector.

c. Install EVP LED indicator lamps for all phases when new cabinet/EVP system is in place and operational.

d. The Contractor shall notify the Fargo Fire Department when EVP is taken out of service and returned to service.

e. The Contractor shall setup and verify the EVP detector operation within one week of the signal being operational to traffic. Contractor shall test range with a Contractor supplied EVP emitter at a distance of 1800' from the intersection. City will set the EVP range at the initial inspection.

f. The EVP system shall be wired with an approved opticom cable that is recommended by the Manufacturer for the EVP detector.

i. Top Tube Pre-emption 1 & 3 Blue Wire

ii. Bottom Tube Pre-emption 2 & 4 Yellow Wire

g. The Contractor shall follow Global Traffic Technologies instructions for all opticom cable connections. If only one circuit is needed, wire both tubes as assigned above. Cap the unused pre-emption opticom cable wire in the controller cabinet. Aim both tubes in the one direction that is being used.

11. CONDUIT

a. All conduit shall be installed 24 inches below final grade. Nonmetallic conduit shall be either polyvinyl chloride (heavy wall – PVC) or high-density polyethylene (HDPE) conduit as specified below.

b. All trenched or backhoed areas under sidewalks or roads shall be backfilled with a Class 3 gravel to a 90% compaction.

c. PVC conduit shall meet the requirements of UL 651 suitable for direct burial applications and shall have a minimum wall thickness equivalent to Schedule 40 as defined by ASTM 1785.

d. HDPE conduit shall meet the requirements of UL 651 and either ASTM 2447 or ASTM 3035 suitable for direct burial applications. HDPE conduit shall have a minimum wall thickness equivalent to Schedule 40 as defined by ASTM 2447 or DR 15.5 as defined by ASTM 3035. HDPE conduit shall not be installed when either the conduit temperature or ambient temperature is below –10°F.

e. Conduit shall be installed at the location shown on the plans. Conduit shall be bored under existing pavement. Boring conduit shall be considered incidental to the bid price for conduit and for which no additional compensation shall be made. ALL bored conduits SHALL be HDPE innerduct.

f. All conduits shall have bell ends installed on both ends of the conduit run. All conduits shall extend into pull boxes a MAXIMUM of 3”.

g. All conduits containing conductor/cables shall be sealed with duct seal at the controller cabinet and at the traffic signal standard foundations.

h. All spare conduits shall be plugged with an expanding rubber pipe plug and labeled at the cabinet and signal standard bases.

i. The Contractor shall use 2” innerduct for the interconnect conduit. Innerduct shall be 2”, Schedule 40 innerduct, smooth outside, controlled outside diameter at 2.375, inside diameter of 2.027, minimum wall thickness of 0.154, and color ORANGE. Installation of innerduct shall be at a depth of 24” below finished grade. Innerduct will be measured by the linear foot. Couplings/fittings used at concrete bases and the method of innerduct installation shall not be measured for payment but included in the price bid for “Conduit”. Innerduct may also be used for all signal wire conduit runs, but if it is used, it must be red in color. All innerduct shall have bell ends installed on both ends of the innerduct run.

j. The Contractor shall install two additional 2-inch diameter conduits in each new controller foundation. The direction of these conduits will be determined in the field by the Engineer and labeled in the cabinet by the Contractor. Each foundation for a traffic signal standard and each feed point foundation shall have a minimum of one spare 2-inch conduit. The direction will be determined by the Engineer in the field and labeled at the foundation by the Contractor. The conduits shall be plugged with a 2” expandable pipe plug. All associated costs shall not be not be measured for payment but included in the price bid for “Conduit”.

k. All conduits shall have a **RED 600V** rated No. 12 Copper Clad trace wire with HDPE insulation, rated at a minimum 250 LB of breaking load, installed. Includes all empty/spare conduits. Dead end of all runs shall be grounded.

12. COMMUNICATION CABLE (Detail 5.10)

The communication cable shall be a 120-strand single-mode fiber optic cable suitable for outside plant operations manufactured by OCC Fiber or Superior Essex. The cable shall be a loose tube, single jacket, all dielectric cable design. The buffer tubes shall be gel filled and the cable shall have a dielectric central strength member and a dry water blocking system. Tube colors shall be single-mode blue tube fibers 1-12, single-mode orange tube fibers 13-24, single-mode green tube fibers 25-36, single-mode brown tube fibers 37-48, single-mode slate tube fibers 49-60, single-mode white tube fibers 61-72, single-mode red tube fibers 73-84, single-mode black tube fibers 85-96, single-mode yellow tube 97-108, and single-mode violet tube 109-120.

Requirement	Single-Mode
Outer Jacket	Polyethylene
Core Diameter (µm)	8.0 – 10.0
Clad Diameter (µm)	125
Max. Attenuation ($^{db}/_{km}$)	0.35 @1310 nm, 0.25 @1550 nm
Min. Bandwidth ($^{MHZ}/_{km}$)	N/A
Max. Tensile Loading (N)	2700 Short Term, 600 Long Term

a. Fiber Optic Cable

i. The fiber optic cable shall be dual window single-mode fiber with a maximum attenuation of 0.4 db/km at 1310 wavelength and maximum attenuation of 0.3 db/km at 1550 wavelength and shall meet or exceed ethernet transmission standard IEEE 802.3ae.

ii. Fiber cable construction shall be loose tube gel-filled color-coding per TIA/EIA 598B standards. The central strength member shall contain no metallic conductors. The overall strength member shall be aramid fiber yarn or fiberglass. The inner jacket shall be black UV and moisture resistant PE. The outer jacket shall be black UV and moisture resistant PE with sequential meter markings.

iii. The item “Communication Cable” will be measured by the linear foot. The quantities measured will be paid for at the contract price and shall be full compensation for all labor, equipment, and materials necessary to complete the installation of the communication cable.

iv. Fiber optic cable insulation shall have a maximum tensile load of 600 lbs. for installation and 200 lbs. for in-service load. The minimum bend radius shall be 20xO.D. for installation and 10xO.D. for in-service.

b. Handling of Cable

i. Cables or innerduct shall be carefully inspected by the Contractor during placement operation to be certain that the fiber optic cable and innerduct are free from damage before placement.

ii. Bends of small radii and twists that might damage cable or wire shall be avoided. During the placement operation, fiber optic cable shall not be bent in a radius less than 20 times the outside diameter of the cable.

iii. Care is to be exercised during the placing operation and while feeding the cable into the innerduct loosely and at no tension. Equipment and construction methods shall be such as to assure compliance with this requirement. The Contractor shall furnish

competent supervision at all times at the site during cable placing operations to assure compliance with this requirement.

iv. Every instance of damaged cable or wire observed at any time, whether prior to installation, during construction, or discovered by test of observation subsequent to installation in plant, shall be immediately called to the attention of the Engineer. The method of repair or correction of such damage shall be in accordance with the written instructions of the Engineer. The Contractor shall promptly repair such damage or make such corrections in accordance with such written instruction of the Engineer. Minor damage to the outer jacket of the cable or wire observed prior to or during construction shall be repaired in accordance with RUS Splicing Standard Bulletin 1753F-401 (PC-2).

v. The Contractor shall use a break-away swivel rated for 600 lb. break load for pulling all fiber optic cables.

c. Miscellaneous Specifications

i. The Contractor shall include an **ORANGE** No. 12 Copper Clad trace wire with HDPE insulation, rated at a minimum 250 LB of breaking load, running the full length and parallel to each communication cable installed in conduits as a trace wire. This is not a separate bid item. The cost shall be included in the price bid for "Communication Cable". The trace wire shall be labeled with the intersection address that it connects to. If the distance is too long to have a trace wire un-spliced, the Contractor may splice the trace wire with an approved underground splice connector. Dead end of all runs shall be grounded.

ii. The Contractor shall provide 30' of slack cable in each pull box. The Contractor shall provide 150' of slack for each cable at the cabinet pull box where termination or splicing will occur or 85' of slack if the fiber cable is completely cut and is the end of the fiber run. The Contractor shall remove 10' of each cable end that was used to pull cable prior to installing the required amount of slack to be left in the pull box. Contractor is required to contact the Engineer in the field to discuss all footages left in pull boxes and what is needed for splicing before pulling in fiber and cutting it.

d. Fiber Optic Terminations and Equipment

The price bid for "Fiber Optic Terminations and Equipment" shall include all necessary connectors, terminations, equipment, labor, and all other miscellaneous materials to install a fully functional communication system including, but not limited to, the following:

i. Supply and install a SM fiber optic pigtail; pigtail shall be an OCC LC12XBX8A-0100 SM assembly with a BX 12F yellow outer jacket for single-mode fiber and a 2.0-mm sub-cable around each fiber strand or approved equal. All ends of the pigtail shall be factory installed.

ii. All installed ST connectors and fusion splicing.

iii. Supplying and installing all OCC fiber optic distribution panels as per plan sheet.

1. OCC fiber distribution enclosure. Standard is a ZDMB6B enclosure. Adapter plates shall be 6112DLC. Adapter plate may vary depending on the number of fibers to be landed in the signal cabinet. See fiber splice diagrams for details.

2. Distribution panel labels shall be labeled with the intersection address of the cable's other end, the port group as shown on the detail, the number of the fiber strand terminated, and placed on the face of the distribution panel adjacent to the cable's fiber ports.

iv. Providing and installing all fiber optic jumpers.

1. Fiber optic jumpers attached to the distribution panel shall be labeled with the fiber # it's connected to for each port group, representing the port it's plugged into.

v. Providing and installing TYCO FOSC 450 D6 enclosures and splice trays as per plan sheet.

vi. Providing and installing any International Fiber Systems minimum four port active optical star coupler as per plan.

vii. Any managed ethernet switches that are called out for on the fiber splice diagram.

viii. Labeling all fiber cables, fiber tubes, trace wires, fiber pigtails, fiber distribution panels, fiber scalability centers, fibers jumpers, and all individual terminated fibers.

e. Fiber Optic Cable Testing

i. The Contractor shall test all terminated fibers at both ends with an OTDR tester and light meter recording the results on a City of Fargo Fiber Test Report Form and providing a computer printout from the OTDR of each fiber tested. If multi-mode fiber tests at 850 NM and 1300 NM are not within the City of Fargo standards of 0.5 dB loss for each ST connector at the bulkhead, 0.2 dB loss for each fusion splice, and 0.1 dB loss per 100 feet for 850 NM, and 0.1 dB loss per 300 feet for 1300 NM of fiber being tested, then the Contractor shall repair/replace. The Contractor shall re-test the fiber with City personnel present. If single-mode fiber tests at 1310 NM and 1550 NM are not within the City of Fargo standards of 0.5 dB loss for each ST connector at the bulkhead, 0.2 dB loss for each fusion splice, 0.1 dB loss per 600 feet for 1310 NM, and 0.1 dB loss per 750 feet for 1550 NM of fiber being tested, then the Contractor shall repair/replace. The Contractor shall re-test the fiber with City personnel present. All fiber shall be tested at each end. Any terminated fiber run that doesn't meet the testing tolerances specified shall be repaired/replaced by the Contractor. If any connectors or fusion splices fail, the Contractor shall repair the connection. If a fiber cable is damaged or broke between connections, the Contractor shall replace the entire cable between connections.

ii. Single-mode fiber, when tested, shall be allowed the following tolerances: 0.1 dB per 600' (1310nm) of fiber, 0.1 dB per 750' (1550nm) of fiber, 0.2 dB for each fusion splice, 0.5 dB for each ST connector, and 0.5 dB for each end that is bare fiber tested.

iii. All fiber optic cable that is removed shall be tested by the Contractor and documented after it is removed and placed on a wire spool. All existing fiber optic cable will be considered good and meeting City of Fargo tolerance specifications. If the existing fiber tested doesn't fall within the tolerance of the specification, the Contractor shall replace the fiber optic cable with a new one. The Contractor may test the existing cable before it is removed with an OTDR or light meter and provide a computer printout of the testing results to the City of Fargo to ensure that the existing cable is good and meets specification tolerances.

f. When all terminations are complete, the City of Fargo must inspect all splices inside the TYCO FOSC enclosures before the fiber optic communication system can be put into use. Contractor must set up a time to have the cases inspected. Contractor must open splice cases and show all splices and fiber tubes inside the TYCO splice case to the Engineer in the field. All fiber tubes shall be labeled inside the splice enclosure.

13. REMOVAL OF TRAFFIC SIGNAL EQUIPMENT

a. Remove and Salvage Traffic Signal Equipment

i. This item includes the removal and salvage of all above ground and removal and disposal of all unused below ground conduit. All salvaged material shall be delivered by the Contractor to a City storage facility as directed by the Engineer. All salvaged material shall be protected by the Contractor and materials that are damaged by the Contractor's removal process or mishandling, shall be replaced with new equipment at the Contractor's expense. Before removing existing equipment, arrangements shall be made for the local utility company to disconnect the power source. When the meter is no longer needed, the local utility will remove it. The Contractor shall disconnect all wiring to the equipment and completely remove the item from its foundation. Traffic signal heads and mounting brackets shall be removed from the standards and the signal heads shall be removed from the mounting brackets. Old traffic control cabinet concrete foundation shall not be salvaged.

ii. Remove and Salvage Signal Standard

1. All signal standards removed from the project shall become property of the City of Fargo, unless noted in plans or directed by Engineer. Signal standards and mast arms shall be delivered to the City of Fargo Pole Lot for storage or taken to Fargo Iron and Metal for metal scrap salvage. A check shall be written to City of Fargo Traffic Engineering for the amount issued for the signal standard scrap metal. The signal poles that will be scrapped are to be determined by the Engineer in the field. All costs for removing and salvaging signal standards shall be incidental to the price bid for "Remove & Salvage Traffic Signal Equipment".

iii. Remove Interim Traffic Signals

1. Feed point equipment shall be removed from the service pole. The conductor to the signal heads and controller shall be disconnected and removed. All equipment on the service poles shall be removed. The service poles, span wire, and stabilization wire shall be removed and stored as directed.

iv. Remove Traffic Signal Controller

1. The controller cabinet and all controller equipment shall be removed for storage. The foundation shall be removed, and the surface of the site restored.

v. Remove Traffic Signal Foundation

1. The existing foundations shall be completely removed, and the surface restored to match adjacent areas.

vi. Remove and Salvage Conductor

1. This item covers the disconnection of all wires and removal and salvage of all wire from intersection. Deliver all salvaged wire to a facility designated by the City of Fargo.

vii. Remove Pull Box

1. Old concrete pull boxes shall not be salvaged; they shall be disposed of by the Contractor. All PVC pull boxes, frames, and covers shall be salvaged and delivered to a facility designated by the City of Fargo.

14. <u>INSTALL INTERIM SIGNAL (Detail 5.8)</u>

This item includes the cost of providing, installing, and maintaining interim signals at the location shown on the plans. All equipment supplied by the Contractor shall meet City of Fargo Specifications. The Contractor shall install a pole mounted feed point and is responsible for arranging electrical service to the interim signals. All costs associated with the feed point shall be incidental to the price bid for "Install Interim Signal System". The Contractor will be responsible for the maintenance and electricity costs for the interim signal until the date of final acceptance.

a. Contractor shall provide the following items for the interim signal; items shall be incidental to the price bid for "Install Interim Signal System".
    i. Span wire
    ii. Guy wire and anchors
    iii. Conduit
    iv. Wire
    v. Weather entrance leads
    vi. Junction boxes on interim poles
    vii. Span and stabilization wire eye bolts
    viii. Pedestrian push buttons and signs
    ix. Pole mounted feed point
    x. All 16" x 18" countdown pedestrian heads and mounting hardware
    xi. All vehicle heads and mounting hardware
    xii. Class II wood service poles
    xiii. Traffic signal controller cabinet and controller with all pluggable
    xiv. All Miscellaneous hardware needed to install the interim signal

15. FEED POINT (Detail 5.3)

a. All conduits, cabinets, service conductor, service entrance heads, meter sockets (if required), ground rods, concrete foundations, and working slabs shall be furnished by the Contractor. All equipment mounted in a switch box of the size shown on the Plans shall be arranged, installed, and wired as required. The local utility company shall be contacted for specific locations of feed points. The utility company will furnish and install the required single-phase voltage service connection and any required meter. The Contractor is responsible for ALL coordination and costs involved with getting power to the feed point.

b. All traffic signal or combination traffic signal/street light feed points shall be pad mounted. The cabinet shall be NEMA 3R rating with lock drip shield and a 10-gauge steel back panel with ½" spacer behind the panel. The panel shall be painted white. The cabinet shall be constructed of welded, anodized Duranodiz 311 finished aluminum or stainless steel, minimum 0.125 thick, with non-corroding hardware. The minimum size shall be 60" high, 27" wide, 14" deep (larger size may be required based on number of street light circuits) with a 3-point latch pad lockable handle. Cabinet shall be weatherproof. Padlock shall be obtained from the City of Fargo Engineering Department. The Electrical Company may require 2 electrical meters; 1 for traffic signals and 1 for street lights. This shall be incidental to the price bid for "Feed Point". Feed points shall require two ground rods that are spaced 6' to 7' apart.

c. A lightning protection device shall be installed on the feed point's incoming lines to prevent lightning surges entering through the wiring and damaging electrical wiring and control

equipment in the traffic controller cabinets. The protector shall be a sturdy, weatherproof, service-proven device that immediately drains lightning surges harmlessly to ground. The protector shall be installed on the switch box and shall discharge a surge in a fraction of a second. It shall perform this protective function over and over again without any maintenance required; it shall possess the same long-life, value-type characteristics obtained in higher voltage distribution arrestors. The protector shall be a two-pole, three-wire device designed for single-phase 120/240 volt three-wire grounded neutral service. The protector shall be mounted in the knockout in the switch box. All leads shall be tinned copper No. 14 AWG. The protector shall be capable of:

i. Limiting the surge voltage to 3 KV peak, while;

ii. Conducting surge currents of at least 10 KA with an 8 by 20 microseconds (time to crest by time to second half-crest) waveform; and recovering to its former state after the surge is over with AC power applied. The manufacturer of the AC suppressor shall certify that the suppressor meets ANSI C 621.1/IEEE, Standard 28, paragraphs 7.1 and 7.6. The suppressor peak voltage shall not exceed 3 KV when tested according to paragraphs 7.3 and 7.5 of the ANSI/IEEE Specification. The AC line surge protector shall be installed on the load side of the circuit breaker. If the protector should fail and short the circuit, the circuit breaker shall open to give maximum protection. The AC neutral shall have the same protection as the AC load. The arrester leads shall be kept as short as possible. Grounds shall be made directly to the cabinet wall or ground plate as near as possible to the object being grounded. An acceptable arrangement is shown on the Plans. If the AC power is brought into the cabinet via an underground conduit, a similar arrangement shall be followed as shown on the Plans. If the conduit is metallic, it shall be connected to the ground rod as shown on the Plans. Connections from the ground rod to the objects inside shall be made with AWG No. 8 (or larger) copper wire.

iii. Install 6’ wide by 4’ deep working slab. This shall be incidental to cost of the feed point.

16. BATTERY BACKUP SYSTEM

The cost bid for this item shall include all the equipment listed below, any miscellaneous hardware, and installation of the UPS.

a. UPS Equipment and Hardware

Qty.	Part Number & Description	Item #
1	FXM 1100 with SNMP ethernet interface	017-230-23
1	Universal automatic transfer switch with status dry contact terminal blocks 120 volt	020-165-22
1	Wall mount kit for UATS	740-756-21
4	AlphaCell 195 GXL - 5 yr warranty - 100Ah	181-230-10
1	Remote battery management system/RMBS Plus	0370260-002
1	8' cables - 33,160,165,180,210 - FXM	875-596-21
1	41H24W16D (Southern Quote JR-469) revised (cabinet) with fan and thermostat	New Part

1	30A circuit breaker and mounting hardware	QOU130

Qty.	Part Number & Description
4	3/8” x 2” bolts with nuts and lock washers used to mount UPS cabinet
8	3/8” X 1 5/8”x ¼” heavy square washers used to mount UPS cabinet
4	¼” spring nuts and ¼” X ½” screws used to mount bypass transfer switch
1	2” chase nipple, lock nut and plastic bushing
2	1 ½” x 23” Telespar used to space up the lower shelf

Qty.	Part Number & Description
Unit	#10AWG solid blue, white and green power wires
Unit	#16 AWG stranded black for logic common, yellow and orange control wires
3	#16 AWG #8 stud crimp lugs
Unit	SikaFlex 15LM construction sealant

b. UPS Install Instructions

i. City will program the UPS controller.

ii. Attach the UPS cabinet to the signal cabinet 10” up from the top of the signal cabinet cement foundation using 4-bolts, nuts, and 8-large square washers. Drill mounting holes through the UPS cabinet reinforcement plates about ¾” from the cabinet sides. Caulk the top and sides of the UPS cabinet where it meets the signal cabinet.

iii. Install top of top shelf 31” from bottom of UPS cabinet and top of the center shelf 16-1/2’” from bottom of UPS cabinet. Install the bottom shelf on top of the Telespar spacers.

iv. Install a 2” steel chase nipple and plastic bushing directly below the top shelf of the UPS cabinet into the signal cabinet.

v. Install the following equipment in the UPS cabinet and wire per the plan wiring instructions and drawings:

1. Place the UPS control unit on the top shelf.
2. Place left to right batteries #1 & #2 on the middle shelf.
3. Place left to right Alpha Guard and batteries #3 & #4 on the bottom shelf.

vi. Install and wire the UPS transfer switch in the signal cabinet on the mounting channels above the power panel.

vii. The existing traffic signal cabinet power panel will need modifications to comply with the plan’s wiring drawing. Below is a written description:

1. Install circuit breaker CP4.
2. Remove feed wire from CP3 and install to CP4.
3. Remove feed jumper from between CP1 and CP2
4. Remove feed wire from CP2 and install to CP1.

5. Install Jumper between CP2 and CP3.

viii. Verify the operation of the equipment by exercising the transfer switch to all positions and test for the appropriate 120 voltages on the terminals of the transfer switch, UPS, and signal cabinet power panel.

c. The City of Fargo shall supply a typical wiring diagram showing how the battery backup system shall be installed in the traffic signal cabinet. Contractor is responsible for redlining and providing 3 copies of the Mobotrex for AutoCAD revisions of the traffic signal cabinet wiring diagram. Contractor is responsible for pickup of cabinet prints and for returning one revised print to the cabinet in the field and returning all other copies to the Sign and Signal Shop. All costs associated with this shall be included in the cost bid for "Battery Backup System".

d. The Contractor shall provide all traffic control for all projects.

17. SIGNAL STANDARDS (Detail5.1)

a. Install Signal Standard

i. The City of Fargo will provide all new Type IV, Type V, and Type VI signal standards. The standards, T-Bases, and anchor bolts have been ordered from Millerbernd Manufacturing, Winsted, MN or approved Valmont signal standard. All signal standards shall be designed for AASHTO 5th Edition 2010 Interim with a wind velocity of 90mph. Fatigue category III for mast arm lengths less than 40' and Fatigue Category II for mast arm lengths equal to or greater than 40'. All Signal standards shall have 4 anchor bolts. The Contractor is responsible for unloading, storing, and transporting the standards from the time of delivery until installation. The City will inspect the standards upon delivery from the manufacturer. Any damage to the signal standards, T-Bases, or anchor bolts after the date of delivery and acceptance by the City will be the Contractor's responsibility to repair or replace as directed by the Engineer.

ii. The cost bid for this item shall include unloading, storage, transportation, installation, miscellaneous hardware, installation of all signage, providing and installing all pedestrian buttons and signs, etc. The luminaire is included in the street lighting section.

b. Furnish and Install Signal Standard

i. The Contractor shall provide all new Combo, Type IV, Type V, and Type VI signal standards. The standards, T-Bases, and anchor bolts shall be ordered from Millerbernd Manufacturing, Winsted, MN or approved Valmont signal standard. All signal standards shall be designed for AASHTO 5th Edition 2010 Interim with a wind velocity of 90mph. Fatigue category III for mast arm lengths less than 40' and Fatigue Category II for mast arm lengths equal to or greater than 40'. All signal standards shall have 4 anchor bolts. The Contractor is responsible for unloading, storing and transporting the standards from the time of delivery until installation. Any damage to the signal standards, T-Bases, or anchor bolts will be the Contractor's responsibility to repair or replace as directed by the Engineer.

ii. The cost bid for this item shall include providing unloading, storage, transportation, installation, miscellaneous hardware, installation of all signage, providing and installing all pedestrian buttons and signs, etc.

iii. All signal poles shall be Contractor provided unless otherwise noted on the signal plan.

c. Signal Standard Signs (Detail 5.5)

i. Furnishing and installing mast arm and signal standard signs on new signal standards is considered incidental to the bid price for all types of combo and signal standards for which no direct compensation will be made.

ii. All mast arm mounted street designation signs shall utilize 18" 100-gauge flat aluminum, 48" or longer, depending on the space needed.

iii. The signs shall have modified "E" series letters with a 12" upper and 9" lower case format and a 1" sign border. The superscripts shall be 9" lowercase letters and will line up with the top of the other letters and numbers. Signs shall include approved City of Fargo logo.

iv. The sign sheeting shall be 3M DG3 sheeting, and any processed colors, inks, or electronic cuttable film shall be a matched component system.

d. Signal and pedestrian standard transformer bases shall have Xcluder fill fabric placed continuously around the inside of the lower plate to prevent rodents from accessing the base through space between the concrete foundation and the lower plate. The fabric shall be secured to the anchor bolts.

e. Wire entrance fittings shall be provided by the Contractor. Fittings shall be a 1-½" 45-degree galvanized steel elbow on each signal standard upright. The cost to supply and install the wire entrance shall be incidental to the price bid for "Traffic Signal Standards".

f. All standards shall be plumbed with leveling nuts. The hand hole shall be located away from traffic and the mast arms shall be perpendicular to the roadway centerline.

g. The anchor bolts shall be installed and tightened as specified on detail sheet and according to the manufacturer's recommendations.

h. Spliced or pulled through conductors shall have sufficient slack to extend a minimum of 24 inches outside of the enclosure.

i. All T-Base terminations shall be made using a Wago lever nut (Series 222), installed and labeled as per drawing detail photo. Contractor shall install dielectric grease in all used or unused entrances of the lever nut.

18. REVISE CONTROLLER AND CABINET

a. The price bid shall include all material and labor to upgrade the existing controller and cabinet.

b. The work at each location is listed on the plan sheet.

19. TRAFFIC SIGNAL SHUT DOWN

a. Signing Requirements

i. When a signal is taken out of operation, the Contractor is required to install a 36" x 36" "Signal Out Ahead" sign, a 24" x 24" R2-1 25mph speed limit sign, and a 36" x 36" W20-7 "Flagger Ahead" sign. Contractor shall install 2 STOP signs for each direction of travel when signal is down.

b. Other Requirements

i. The Contractor shall contact the City of Fargo Sign and Signal Shop at 701-241-1440 and notify them that the signal is going to be taken out of service. The Contractor shall not be allowed to take the signal out of operation between the hours of 7am to 8:30am, 11am to 1pm, and from 4pm to 6pm. The Contractor shall shut down the traffic signal only during off peak hours as approved by the Engineer in the field. The Contractor shall provide two flaggers and have them control the intersection while the

traffic signal is not in operation. All flagging activities and equipment shall conform to the standards set forth in the current version of the Manual on Uniform Traffic Control Devices published by the FHWA.

20. CAMERA SYSTEM (Detail 5.9)

This shall include all camera wires, camera equipment specified, and all labor involved in providing a fully functional camera system that can be viewed on the City of Fargo network.

a. Equipment

i. Comtrol managed ethernet switch specified on plan.
ii. CAT 6 600 volt rated direct burial cable
iii. COHU pole mount
iv. PoE Injector, 70W
v. Couple: RJ45 IP67
vi. All required hardware
vii. COHU Camera 4220HD H.264 60W PoE, IP67
viii. 20 AMP four receptacle outlet with surge protection
ix. Fiber optic jumpers

PART 2
MEASUREMENT & PAYMENT

1. LINEAR FOOT

   These items will be measured by the linear foot as follows:

   a. Conduit
   b. Conductor Cable
   c. Opticom Cable
   d. Fiber Optics Cable
   e. Loop Wire
   f. Loop Lead-in Cable
   g. Saw Slot
   h. Coaxial Cable

2. EACH

   These items will be measured by the number installed. Separate measurement will be made for each size or type if more than one size or type is installed. These items are as follows:

   a. Paint Traffic Signal Standards
   b. Sandblast Signal Standards
   c. Concrete Foundation Traffic Signal
   d. Remove Traffic Signal Foundation
   e. Remove Street Light
   f. Relocate Street Light Standard
   g. Traffic Signal Standards
   h. Install Pedestrian Push Button & Sign
   i. Relocate Pedestrian Post & Button
   j. Pedestrian Push Button Post
   k. Install LED Vehicle Section
   l. Install LED Pedestrian Section
   m. Pedestrian Head
   n. Vehicle Heads
   o. Electronic Signal Sign
   p. School Flashing Beacon
   q. Pedestrian Flashing Beacon Assembly
   r. Relocate Signal Head
   s. Install Cabinet & Controller
   t. Relocate Pull Box

u. Remove Pull Box
v. Install Fiber Pull Box
w. Install PVC Pull Box
x. Install Frame and Cover
y. Traffic Signal Detector Loop
z. Replace Traffic Signal Detector Loop
aa. Install Micro Loop Probe
bb. Install Preformed Loop
cc. Furnish & Install Luminaire Extension
dd. Revise Controller and Cabinet
ee. Fargo Type B Cabinet
ff. Emergency Vehicle Pre-emption System
gg. Feed Point
hh. Battery Backup System
ii. Install Interim Signal System

3. LUMP SUM

These items will be measured by lump sum. The items are as follows:

a. Traffic Signal System
b. Revise Traffic Signal System
c. Remove & Salvage Traffic Signal Equipment
d. Install Flasher Cabinet
e. Modify Existing Traffic Controller Cabinet
f. Fiber Optic Terminations and Equipment
g. Video Detection System
h. Camera System
i. Controller & Cabinet Assembly
j. Temporary Signal Service

These items will be paid by lump sum. These items are as follows:

a. Remove Traffic Signal System
b. Revise Traffic Signal System
c. Traffic Signal System
d. IT System