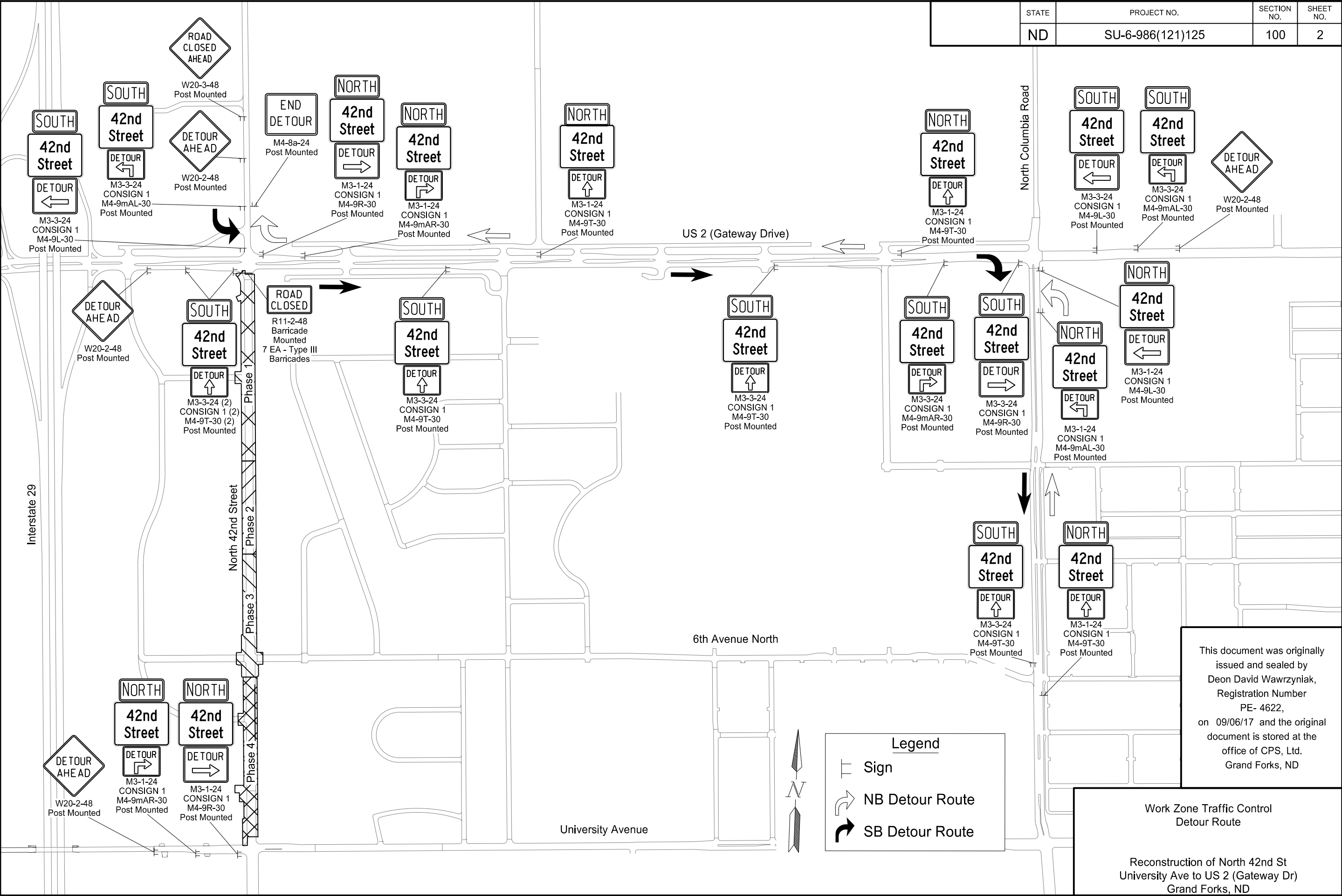
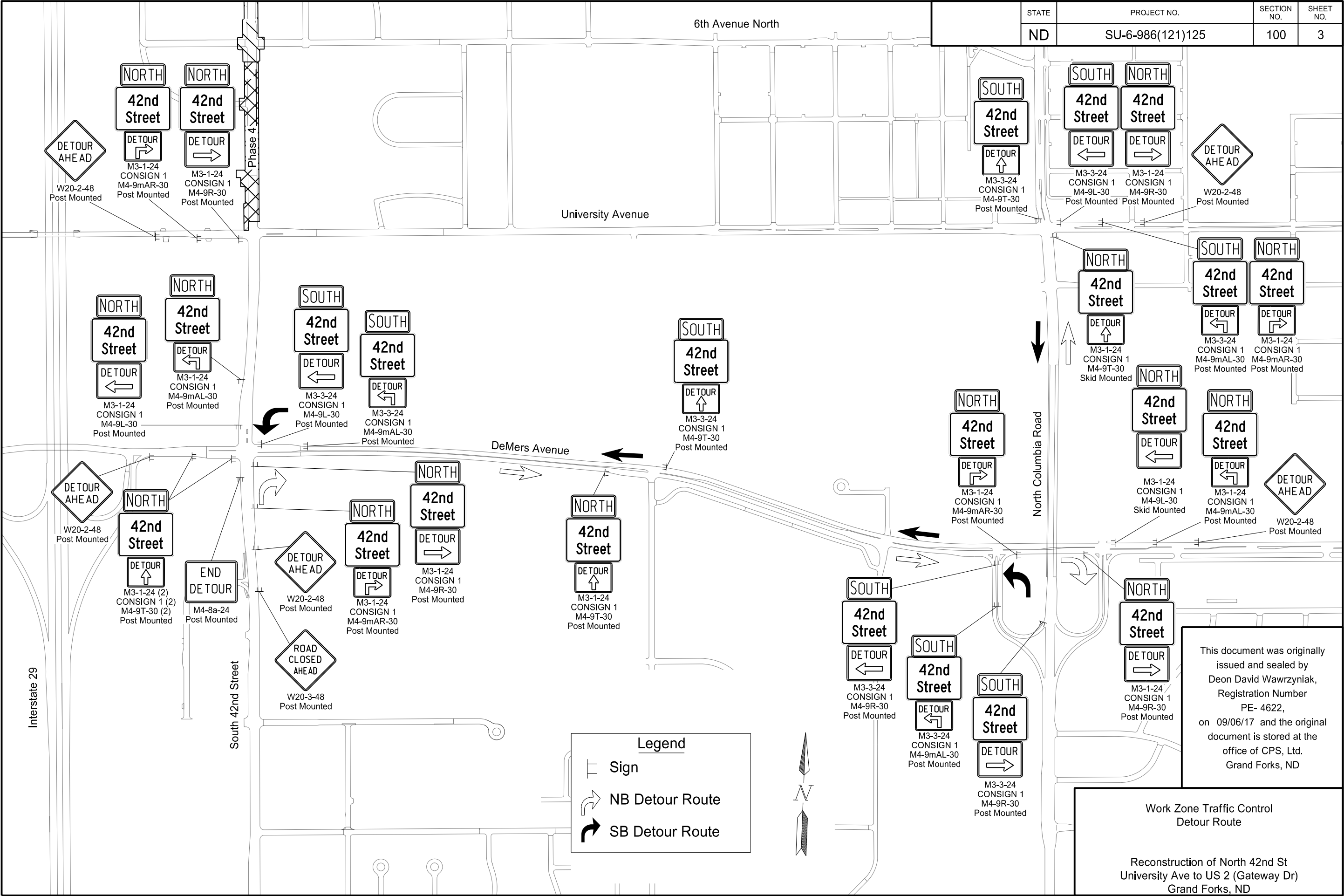
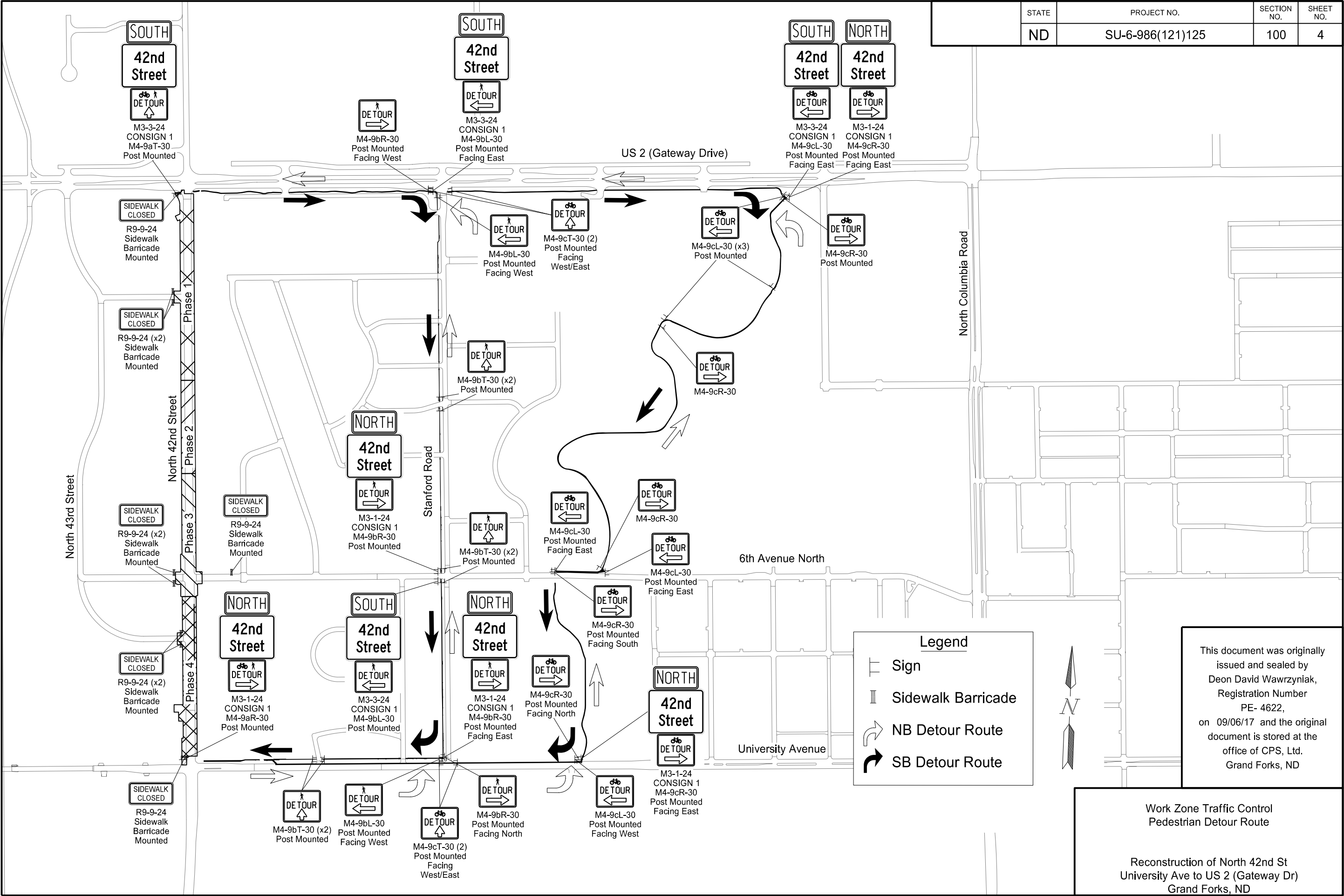




STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-6-986(121)125	100	2

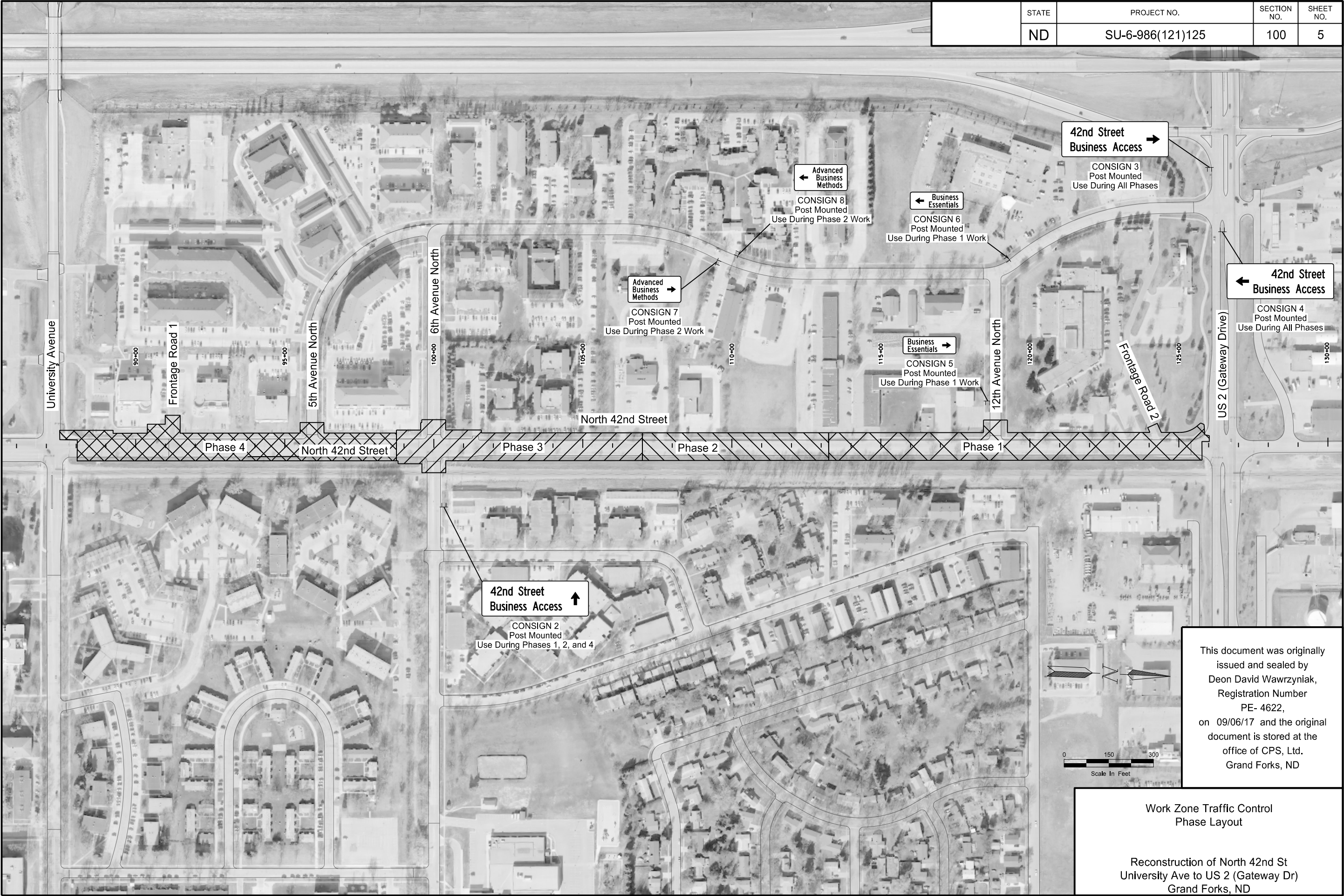


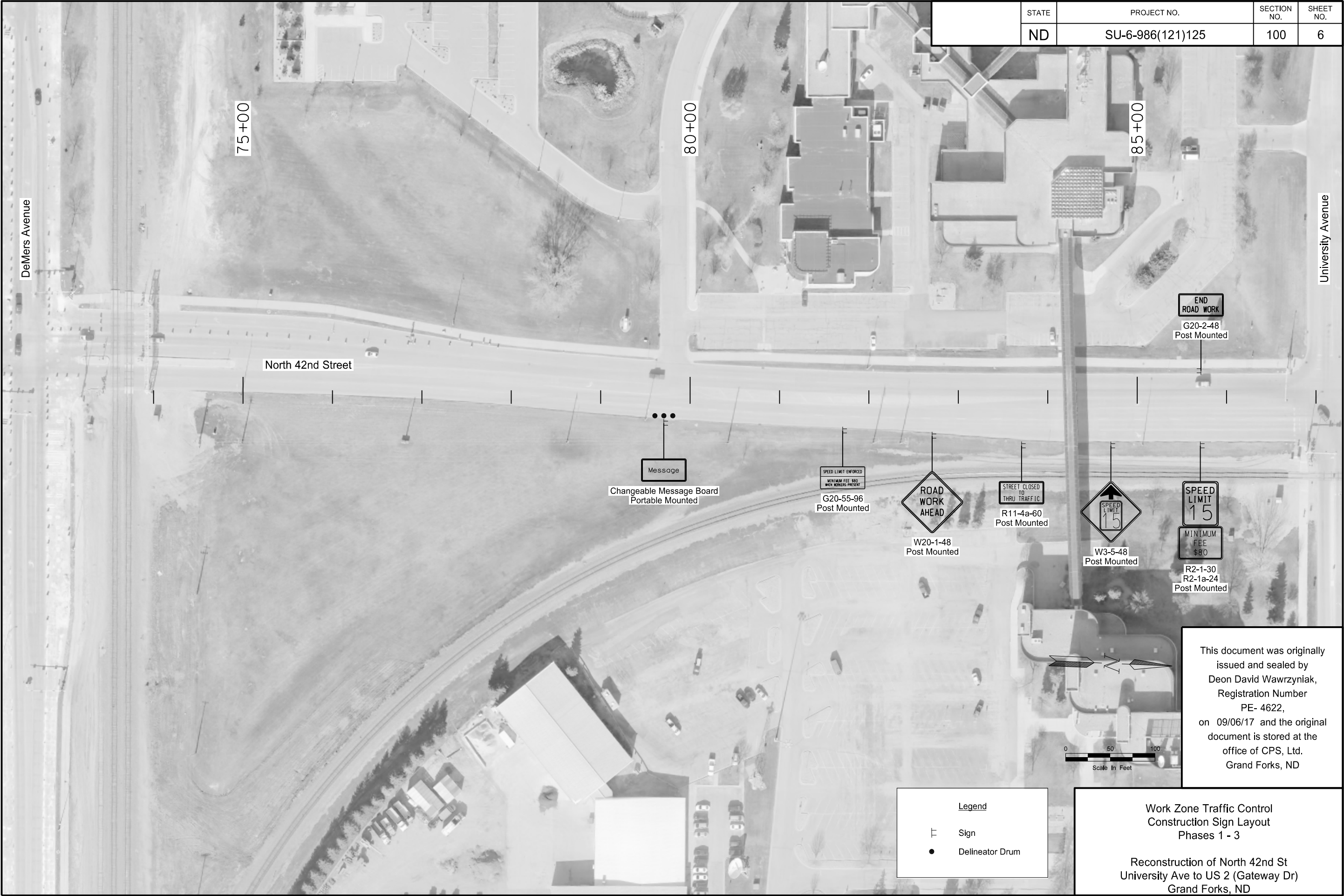




STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-6-986(121)125	100	4

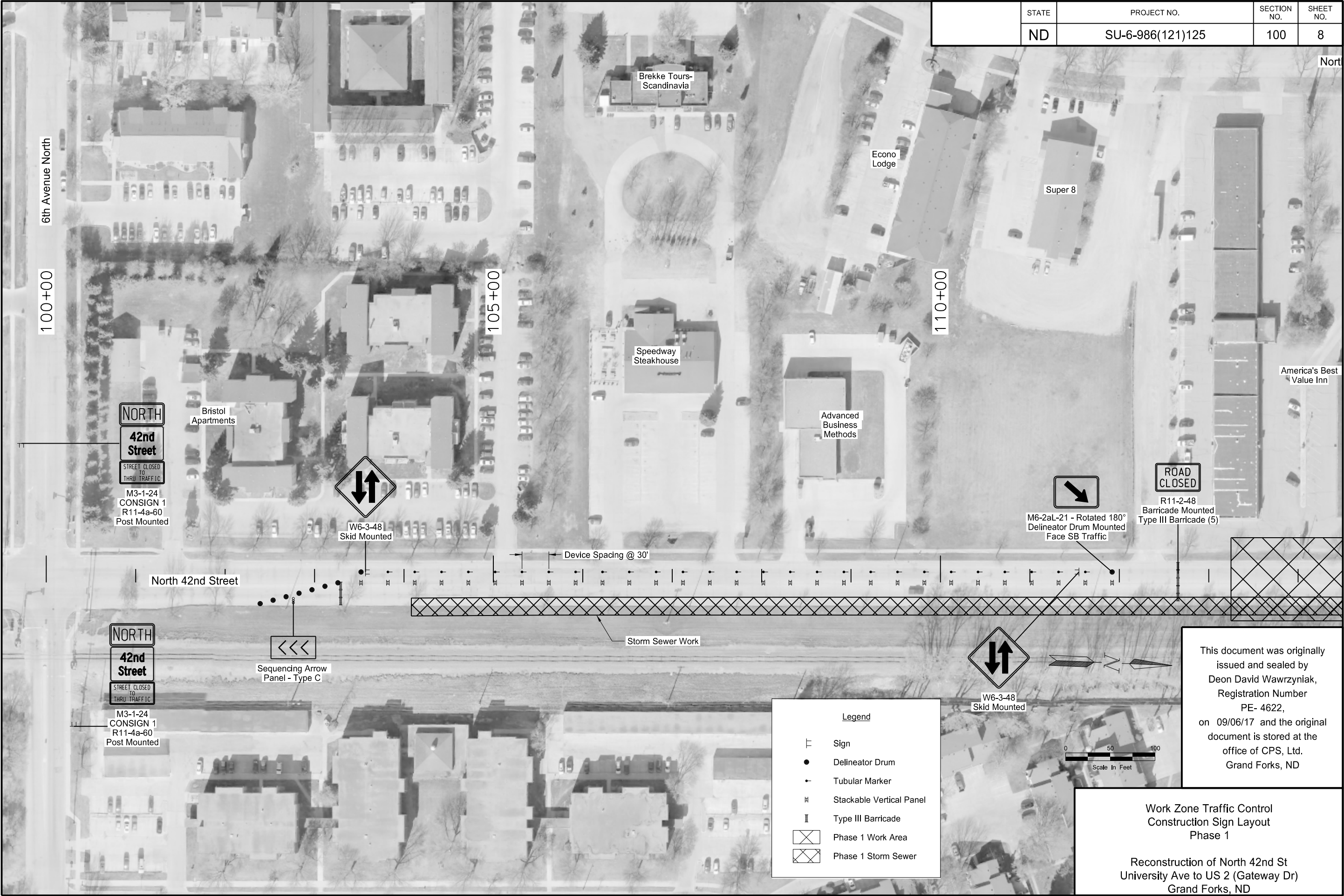






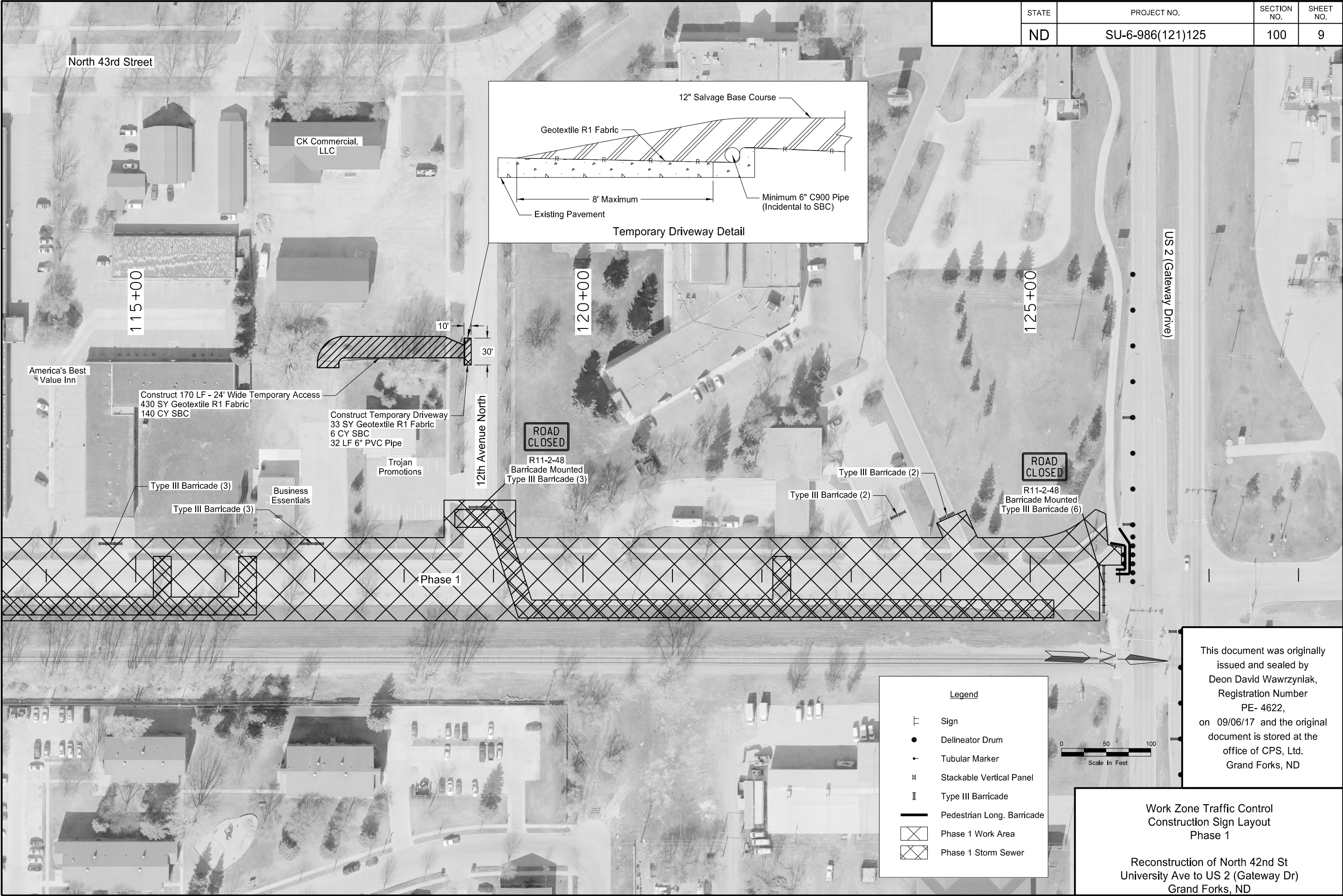




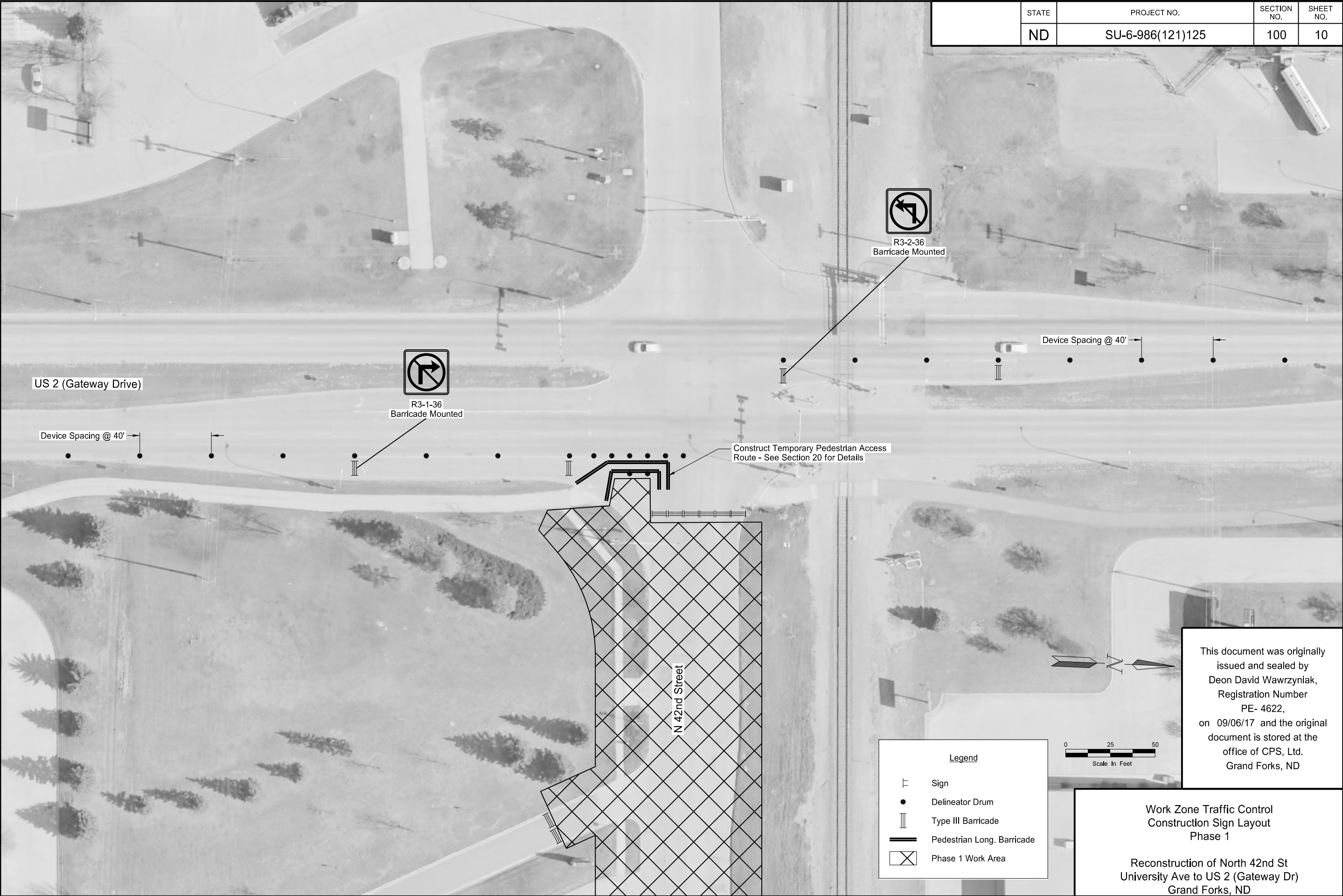




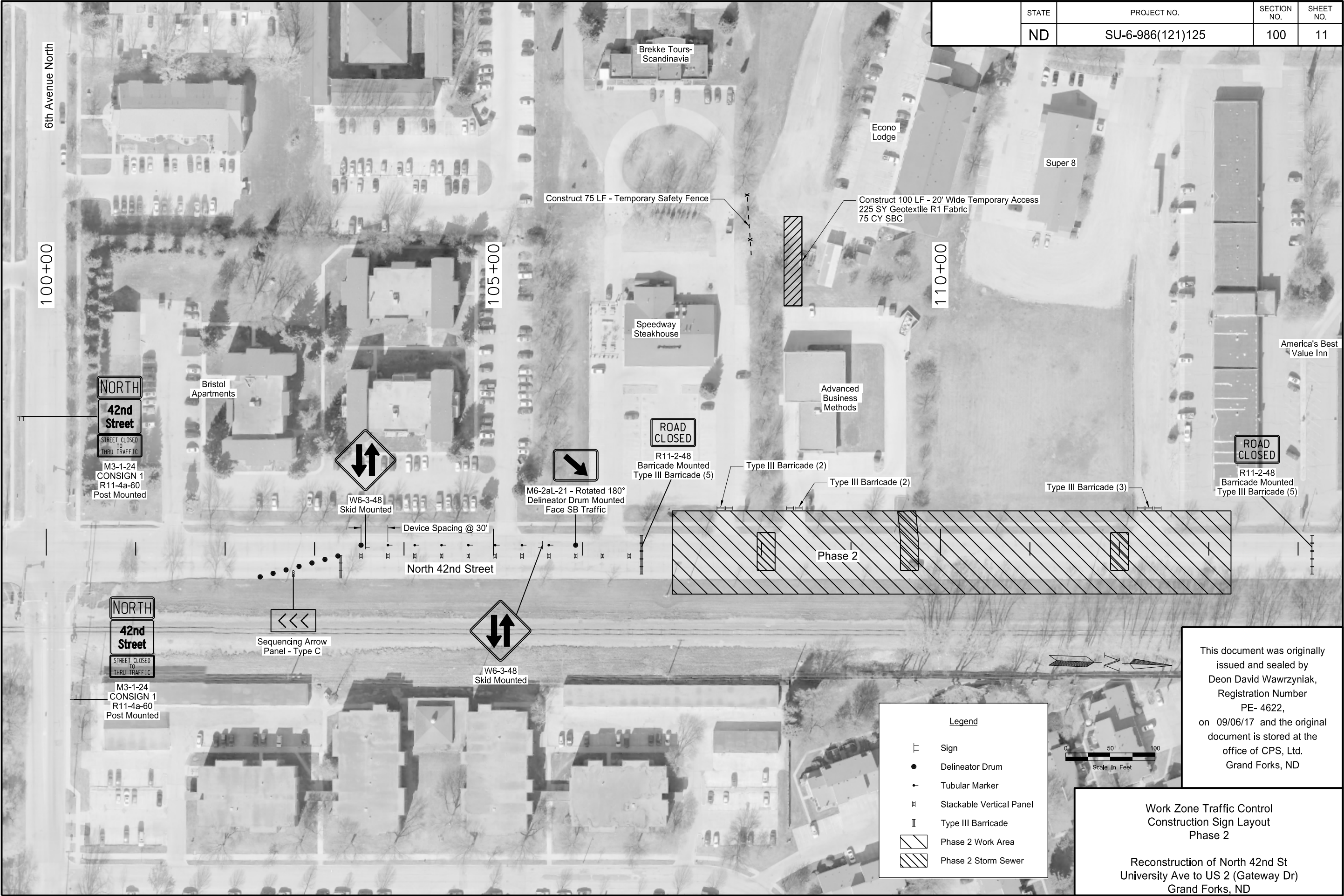
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ND	SU-6-986(121)125	100	9

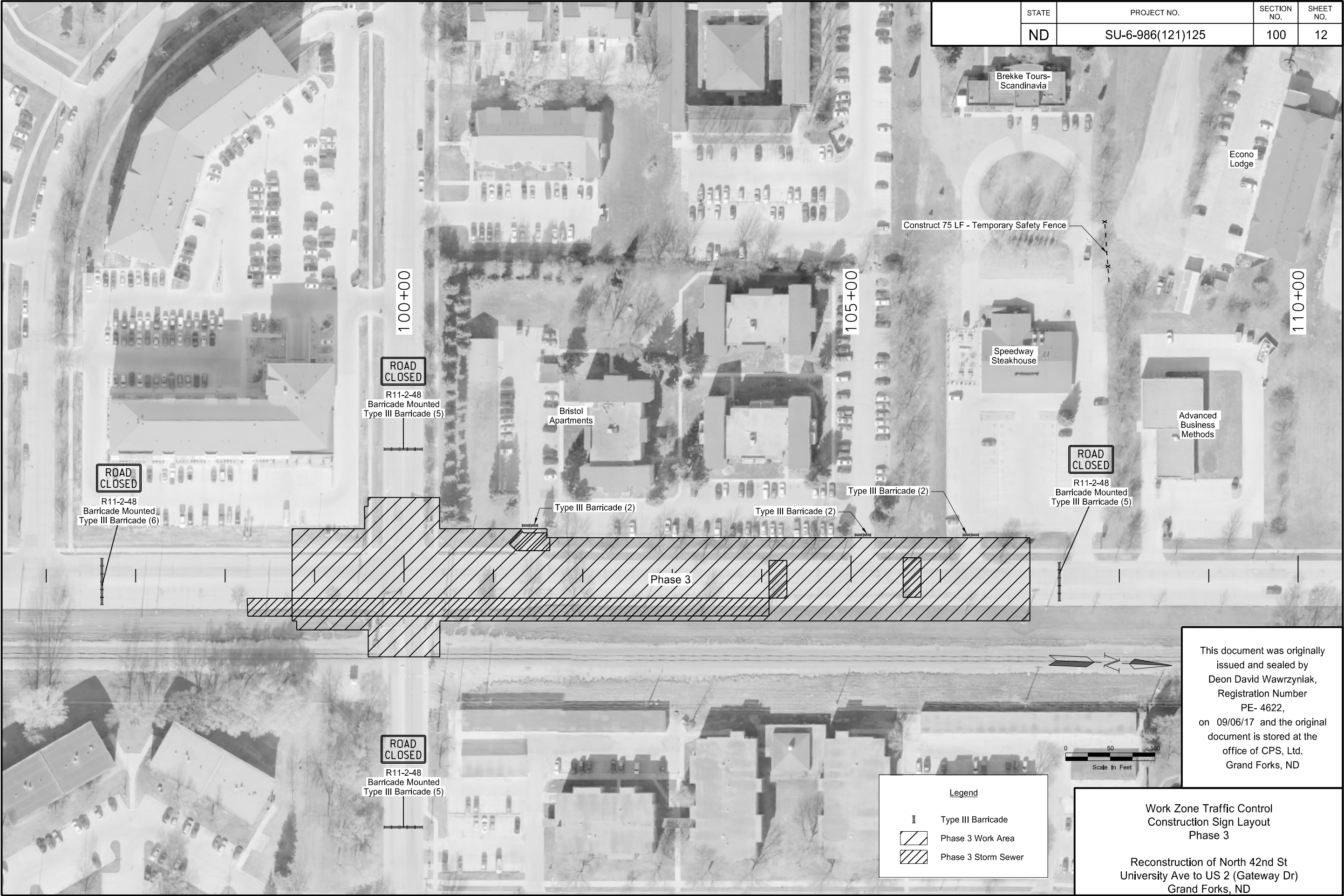


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	100	10

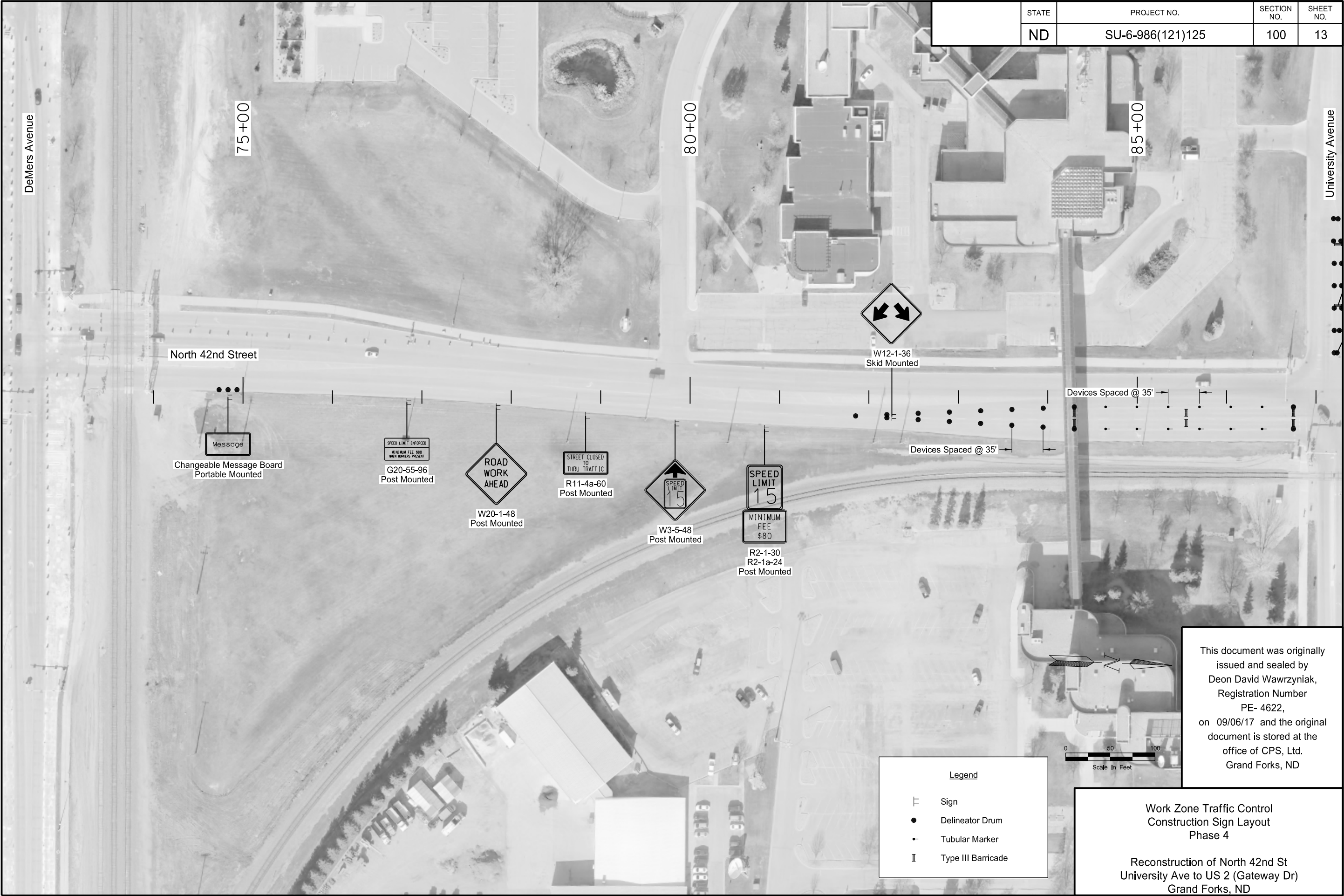






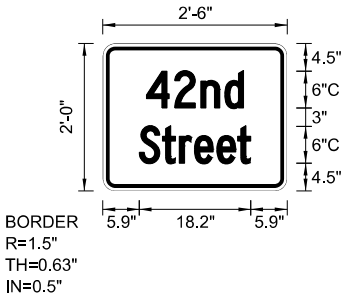








Area: 5.0 Sq. Ft.  
1:20



SIGN NUMBER	CONSIGN 1
WIDTH x HGHT.	2'-6" x 2'-0"
BORDER WIDTH	0.63"
CORNER RADIUS	1.5"
MOUNTING	Overhead
BACKGROUND	TYPE: XI Reflective COLOR: Fluorescent Orange
LEGEND/BORDER	TYPE: XI Reflective COLOR: Black

SYMBOL	ROT	X	Y	WID	HT

Dimensions are in Inches,tenths

Letter locations are paneledge to lower left corner

LETTER POSITIONS (X)																LENGTH	SERIES/SIZE
4	2	n	d														C 2000
7.1	11.7	16	19.9													15.8	6/4.5
S	t	r	e	e	t												C 2000
5.9	9.7	12.5	14.9	18.6	21.9											18.2	6/4.5

Area: 12.0 Sq. Ft.  
1:20



SIGN NUMBER	CONSIGN 2
WIDTH x HGHT.	6'-0" x 2'-0"
BORDER WIDTH	0.5"
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective COLOR: White

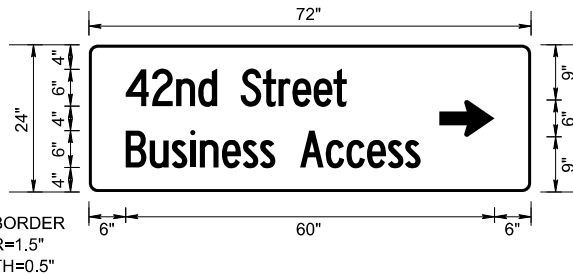
SYMBOL	ROT	X	Y	WID	HT
AR_Type D	360	60	7.6	6	9

Dimensions are in Inches,tenths

Letter locations are paneledge to lower left corner

LETTER POSITIONS (X)																LENGTH	SERIES/SIZE
4	2	n	d		S	t	r	e	e	t							C 2000
6	10.3	14.2	17.8	20.9	24.7	28.3	30.9	33.2	36.6	39.8						36	6/4.5
B	u	s	i	n	e	s	s	A	c	c	e	s	s				C 2000
6	9.9	13.5	16.5	18.1	21.7	25.1	27.9	30.4	34.4	38.6	41.9	45.3	48.7	51.5		48	6/4.5

Area: 12.0 Sq. Ft.  
1:20



SIGN NUMBER	CONSIGN 3
WIDTH x HGHT.	6'-0" x 2'-0"
BORDER WIDTH	0.5"
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective COLOR: White

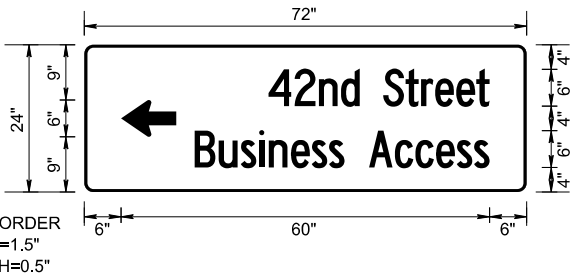
SYMBOL	ROT	X	Y	WID	HT
AR_Type D	270	57.1	9	6	9

Dimensions are in inches,tenths

Letter locations are panel edge to lower left corner

LETTER POSITIONS (X)																LENGTH	SERIES/SIZE
4	2	n	d		S	t	r	e	e	t							C 2000
6	10.3	14.2	17.8	20.9	24.7	28.3	30.9	33.2	36.6	39.8						36	6/4.5
B	u	s	i	n	e	s	s	A	c	c	e	s	s				C 2000
6	9.9	13.5	16.5	18.1	21.7	25.1	27.9	30.4	34.4	38.6	41.9	45.3	48.7	51.5		48	6/4.5

Area: 12.0 Sq. Ft.  
1:20



SIGN NUMBER	CONSIGN 4
WIDTH x HGHT.	6'-0" x 2'-0"
BORDER WIDTH	0.5"
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective COLOR: White

SYMBOL	ROT	X	Y	WID	HT
AR_Type D	90	6	9	6	9

Dimensions are in inches,tenths

Letter locations are panel edge to lower left corner

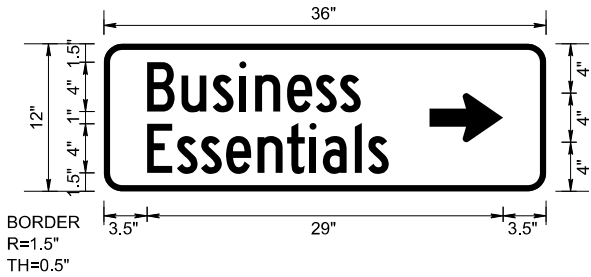
LETTER POSITIONS (X)																LENGTH	SERIES/SIZE
4	2	n	d		S	t	r	e	e	t							C 2000
30	34.3	38.2	41.8	44.8	48.7	52.3	54.8	57.1	60.6	63.8						36	6/4.5
B	u	s	i	n	e	s	s	A	c	c	e	s	s				C 2000
18	21.9	25.5	28.5	30	33.7	37	39.8	42.4	46.4	50.6	53.9	57.3	60.7	63.5		48	6/4.5

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Work Zone Traffic Control  
Construction Sign Detail

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

Area: 3.0 Sq. Ft.  
1:10



SIGN NUMBER	CONSIGN 5
WIDTH x HGHT.	3'-0" x 1'-0"
BORDER WIDTH	0.5"
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

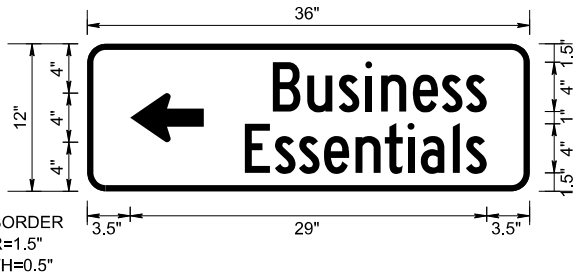
SYMBOL	ROT	X	Y	WID	HT
AR_Type D	270	26.5	4	4	6

Dimensions are in inches,tenths

Letter locations are panel edge to lower left corner

LETTER POSITIONS (X)																LENGTH	SERIES	SIZE
B	u	s	i	n	e	s	s											C 2000
3.5	6.3	8.9	11	12.3	14.9	17.3	19.2										17.4	4/3
E	s	s	e	n	t	i	a	l	s									C 2000
3.5	6	7.9	10	12.5	14.9	16.8	17.8	20.4	21.5								19.7	4/3

Area: 3.0 Sq. Ft.  
1:10



SIGN NUMBER	CONSIGN 6
WIDTH x HGHT.	3'-0" x 1'-0"
BORDER WIDTH	0.5"
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

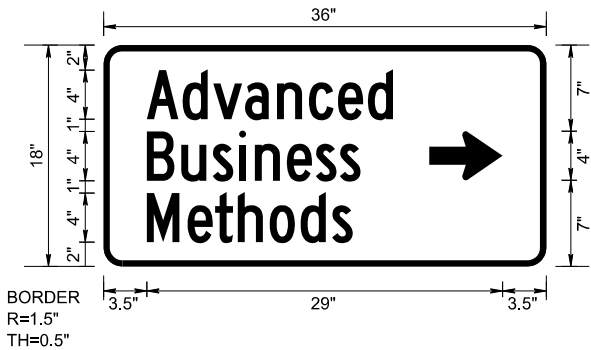
SYMBOL	ROT	X	Y	WID	HT
AR_Type D	90	3.5	4	4	6

Dimensions are in inches,tenths

Letter locations are panel edge to lower left corner

LETTER POSITIONS (X)																		LENGTH	SERIES	SIZE
B	u	s	i	n	e	s	s											C 2000		
15.1	17.9	20.5	22.6	23.9	26.5	28.9	30.8										17.4	4/3		
E	s	s	e	n	t	i	a	l	s									C 2000		
12.8	15.3	17.2	19.3	21.8	24.2	26.1	27.2	29.8	30.8								19.7	4/3		

Area: 4.5 Sq. Ft.  
1:10



SIGN NUMBER	CONSIGN 7
WIDTH x HGHT.	3'-0" x 1'-6"
BORDER WIDTH	0.5"
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

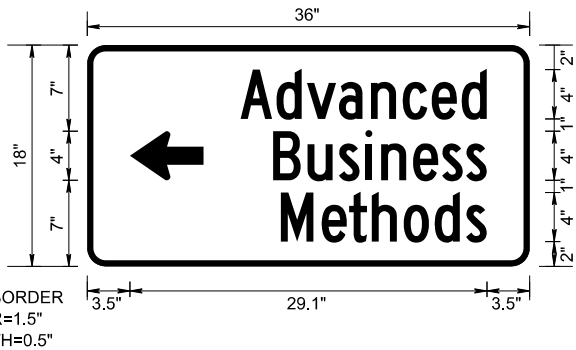
SYMBOL	ROT	X	Y	WID	HT
AR_Type D	270	26.5	7	4	6

Dimensions are in inches,tenths

Letter locations are panel edge to lower left corner

LETTER POSITIONS (X)															LENGTH	SERIESIZE
A	d	v	a	n	c	e	d									C 2000
3.5	6.4	8.9	11.5	14.1	16.7	19.1	21.5								20	4/3
B	u	s	i	n	e	s	s									C 2000
3.5	6.3	8.9	11	12.3	14.9	17.3	19.2								17.4	4/3
M	e	t	h	o	d	s										C 2000
3.5	6.8	9.1	10.9	13.5	16	18.6									16.8	4/3

Area: 4.5 Sq. Ft.  
1:10



SIGN NUMBER	CONSIGN 8
WIDTH x HGHT.	3'-0" x 1'-6"
BORDER WIDTH	0.5"
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Blue
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	ROT	X	Y	WID	HT
AR_Type D	90	3.5	7	4	6

Dimensions are in inches,tenths

Letter locations are panel edge to lower left corner

LETTER POSITIONS (X)															LENGTH	SERIES	SIZE
A	d	v	a	n	c	e	d										C 2000
12.5	15.4	17.9	20.5	23.1	25.7	28.1	30.5									20	4/3
B	u	s	i	n	e	s	s										C 2000
15.1	17.9	20.5	22.7	23.9	26.5	28.9	30.9									17.4	4/3
M	e	t	h	o	d	s											C 2000
15.8	19.1	21.3	23.2	25.8	28.3	30.9										16.8	4/3

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Work Zone Traffic Control  
Construction Sign Detail

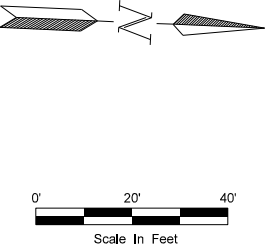
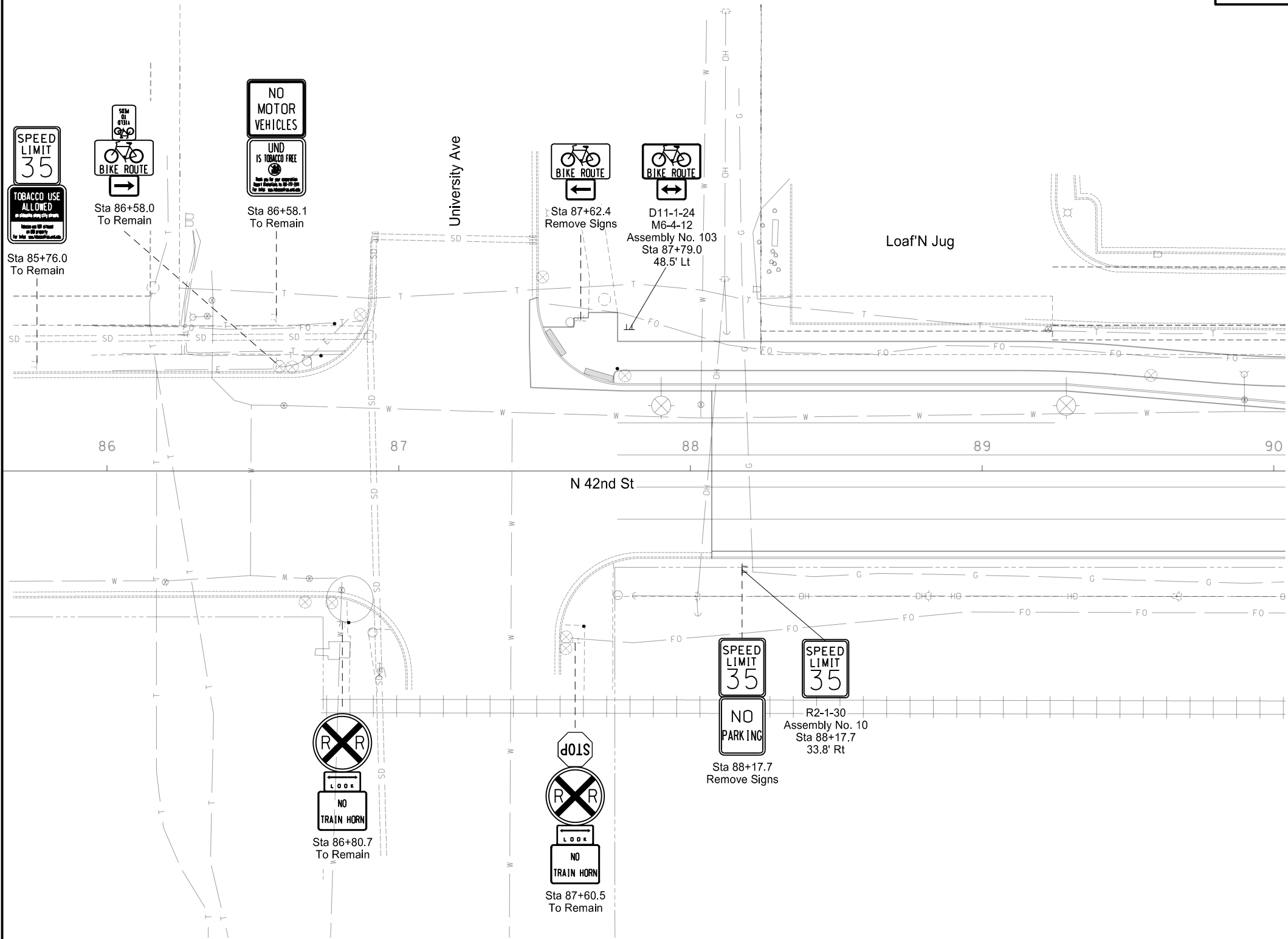
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	110	3

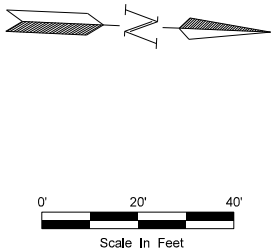
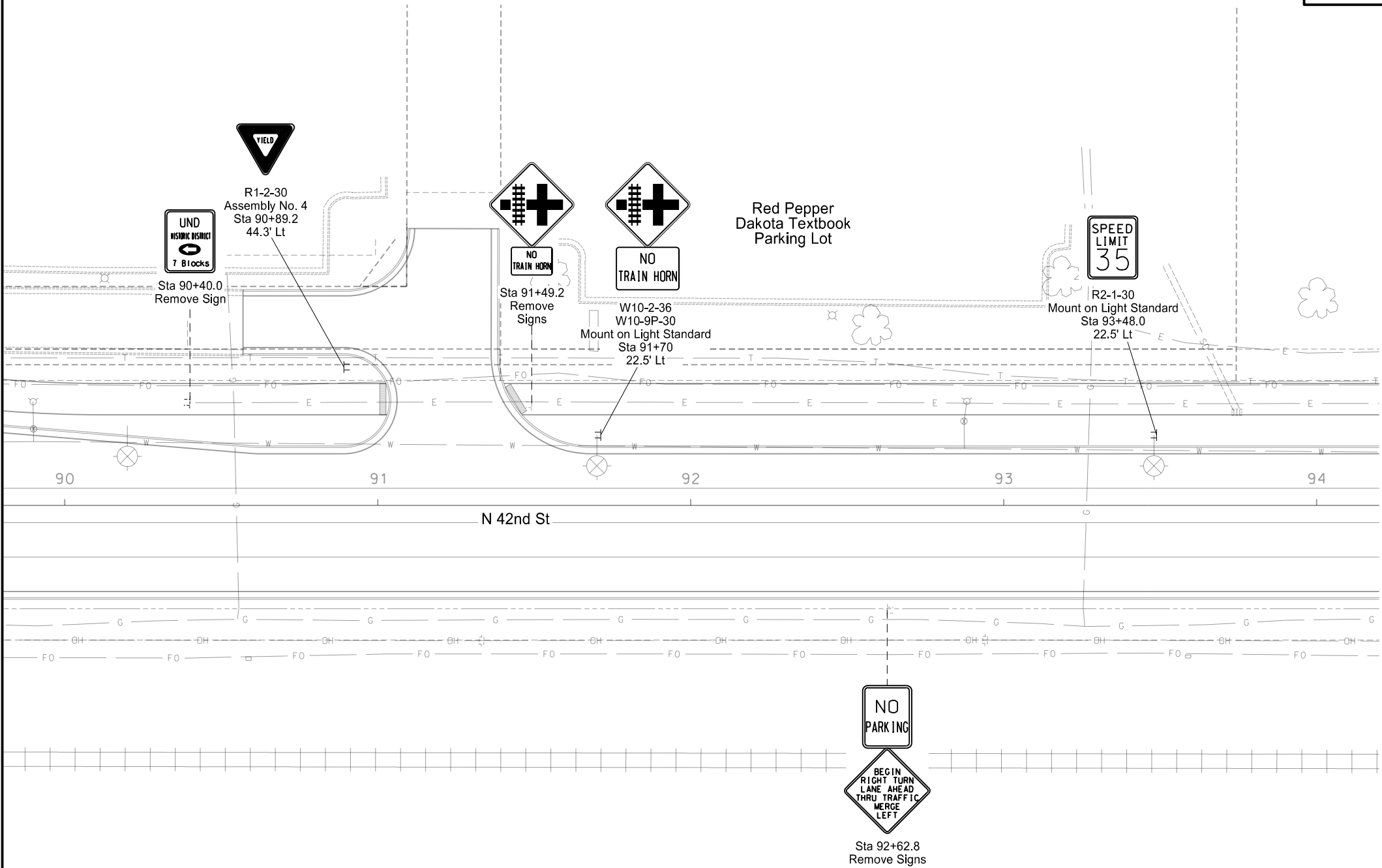


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Reconstruction of North 42nd St  
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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	110	4



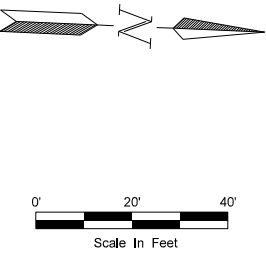
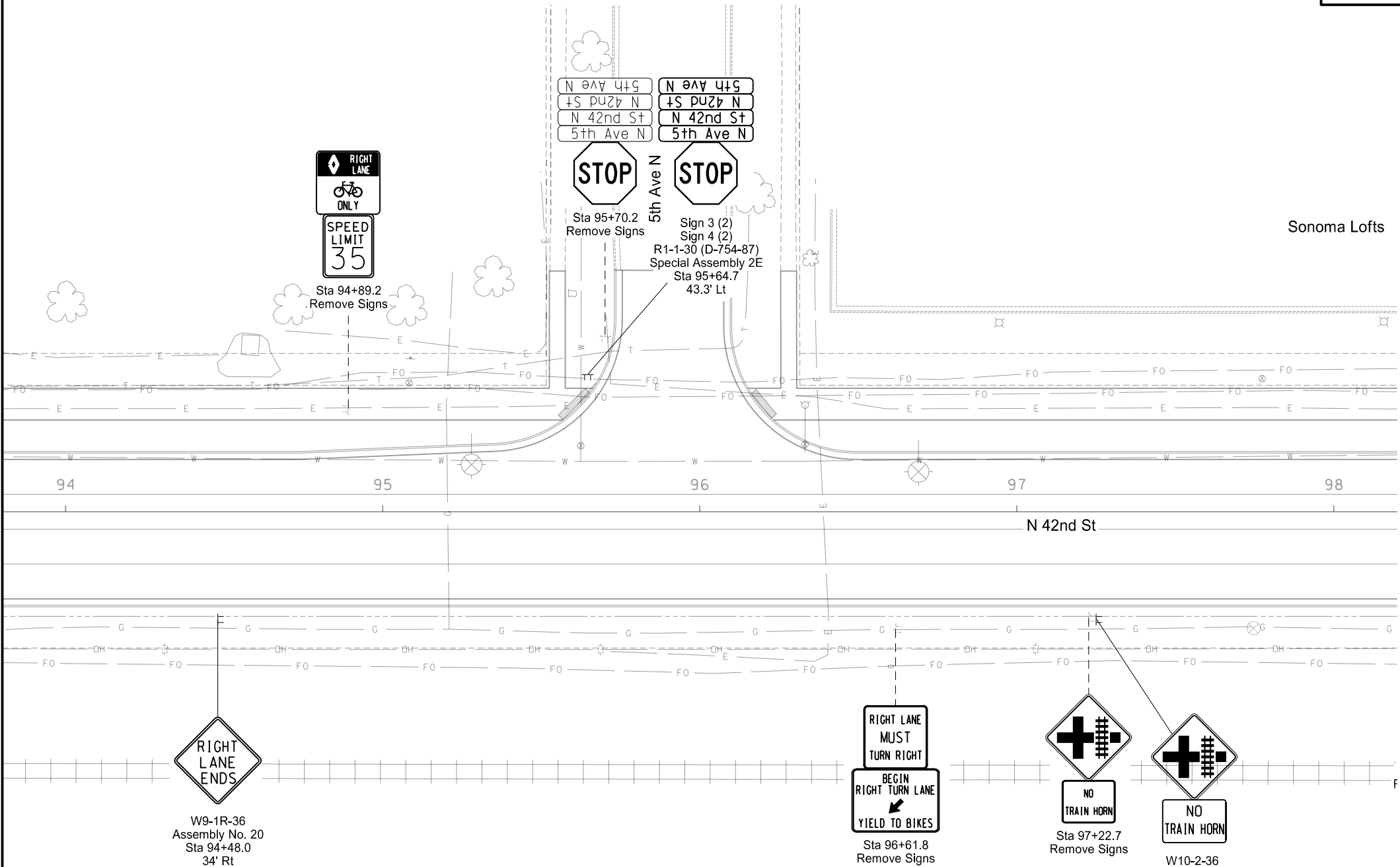
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Reconstruction of North 42nd St  
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Grand Forks, ND



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	ND	SU-6-986(121)125	110	5

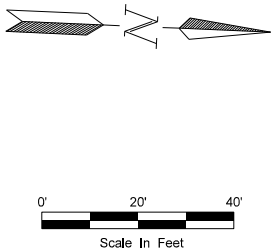
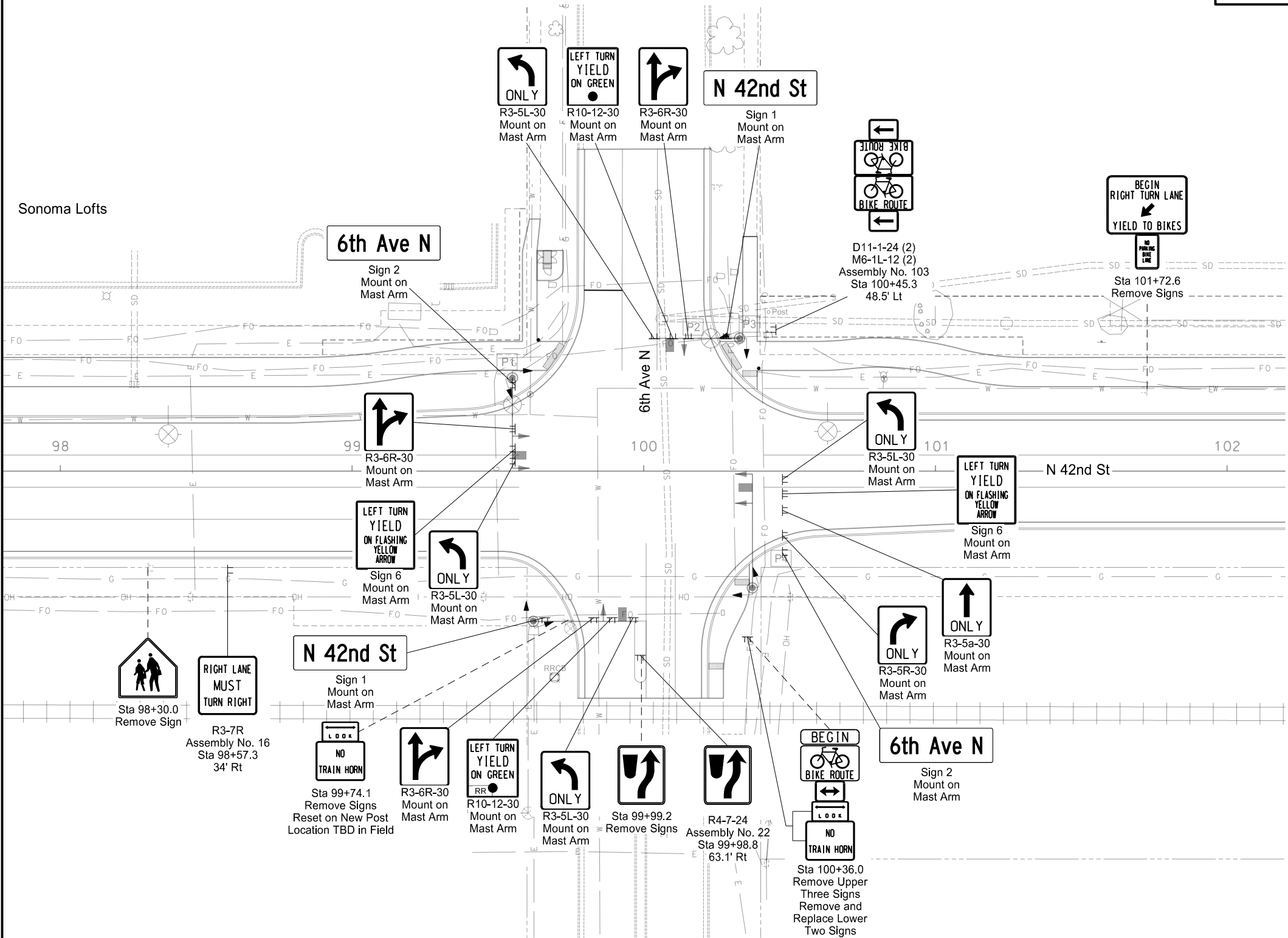


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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	110	6

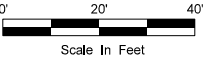
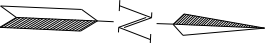
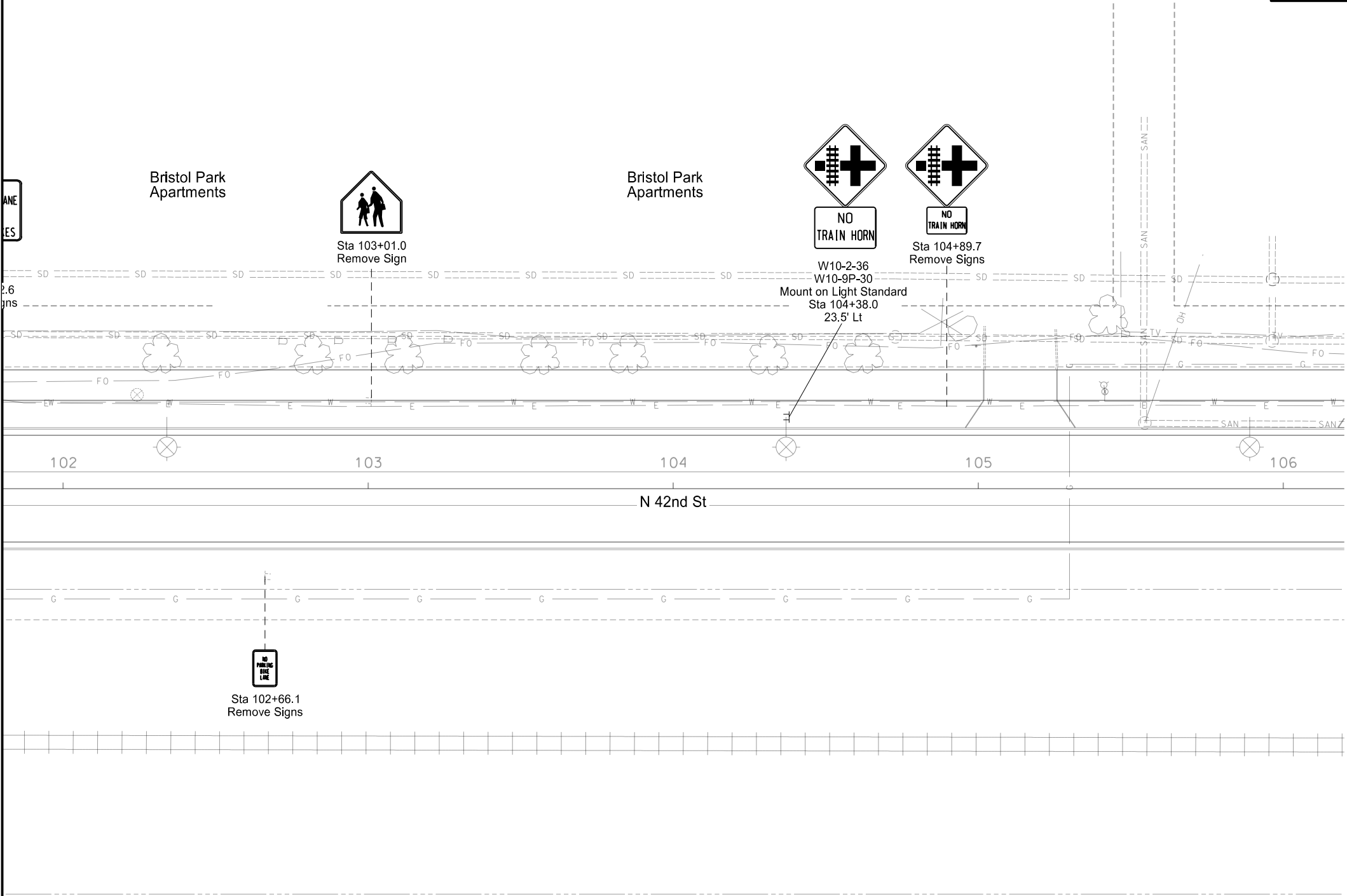


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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	110	7

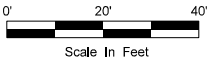
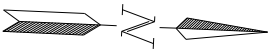
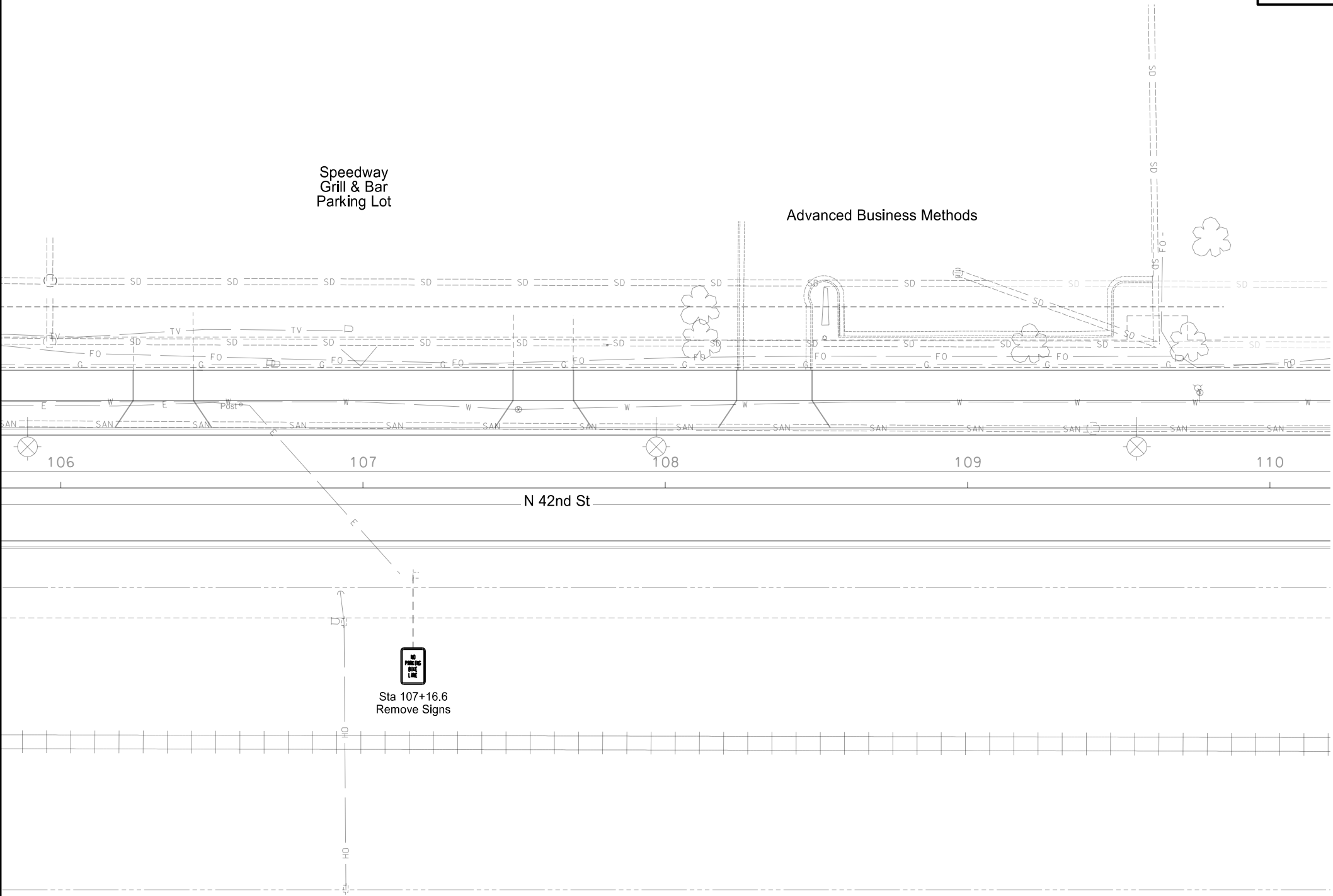


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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	110	8

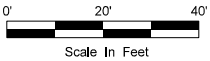
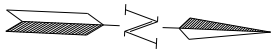
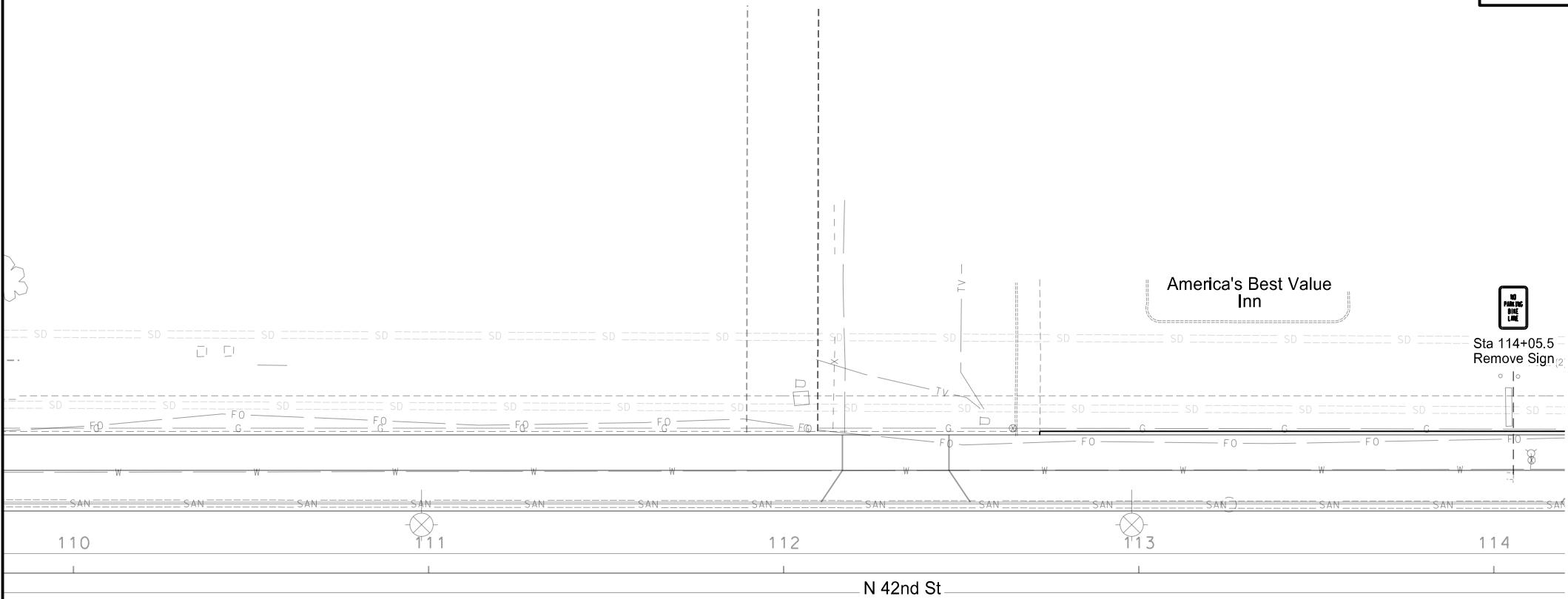


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Grand Forks, ND

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	110	9

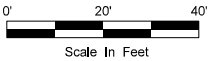
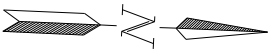
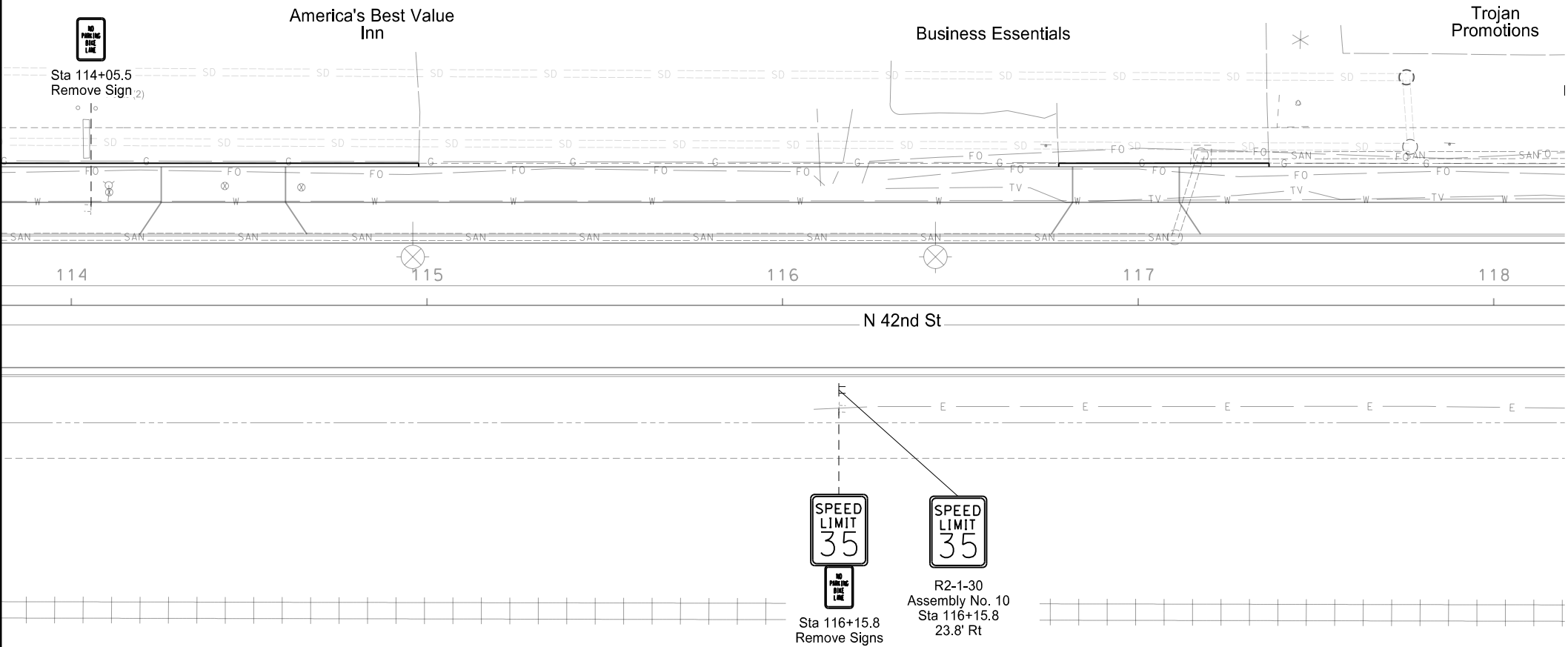


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Reconstruction of North 42nd St  
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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	110	10



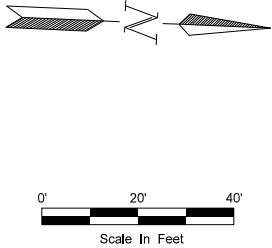
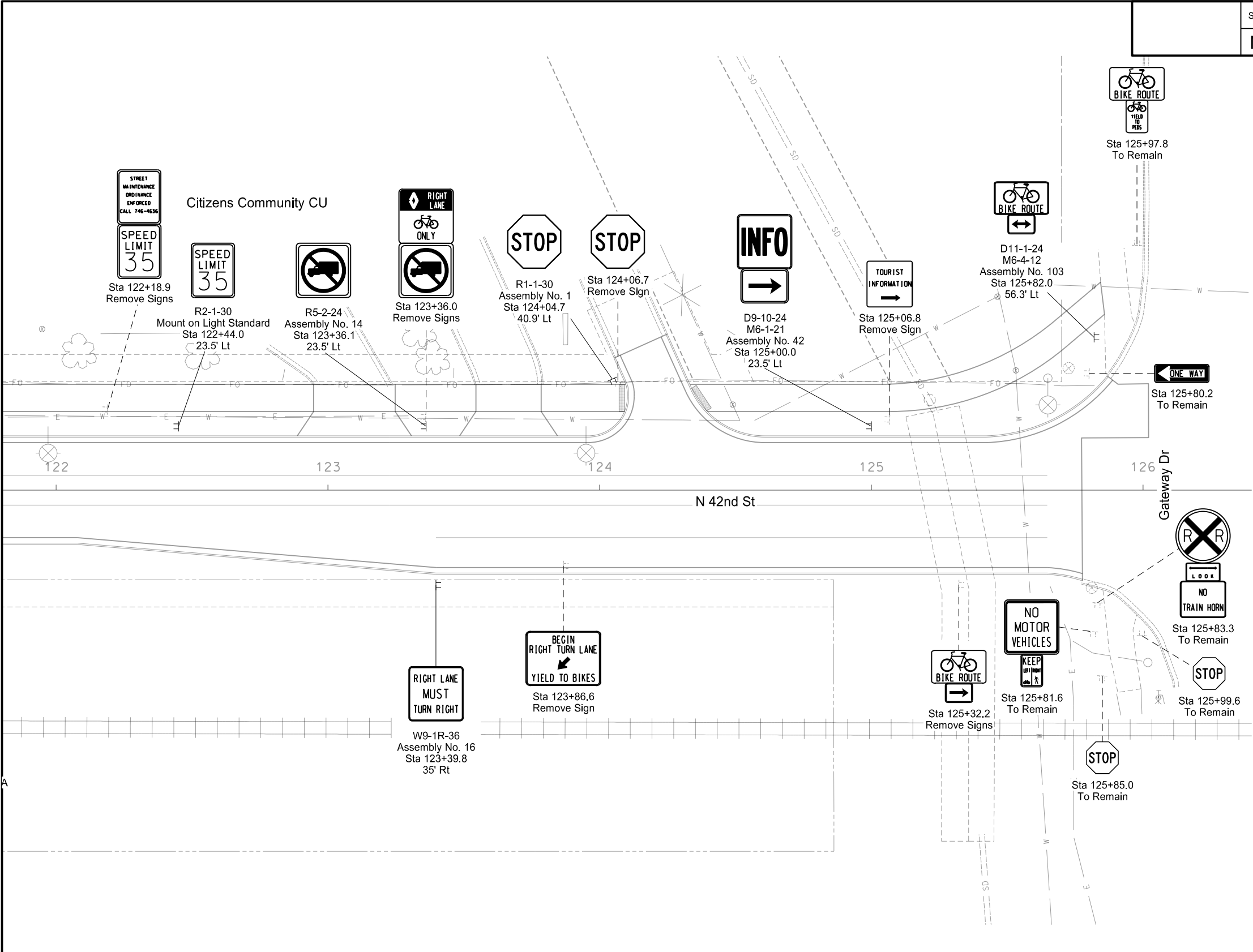
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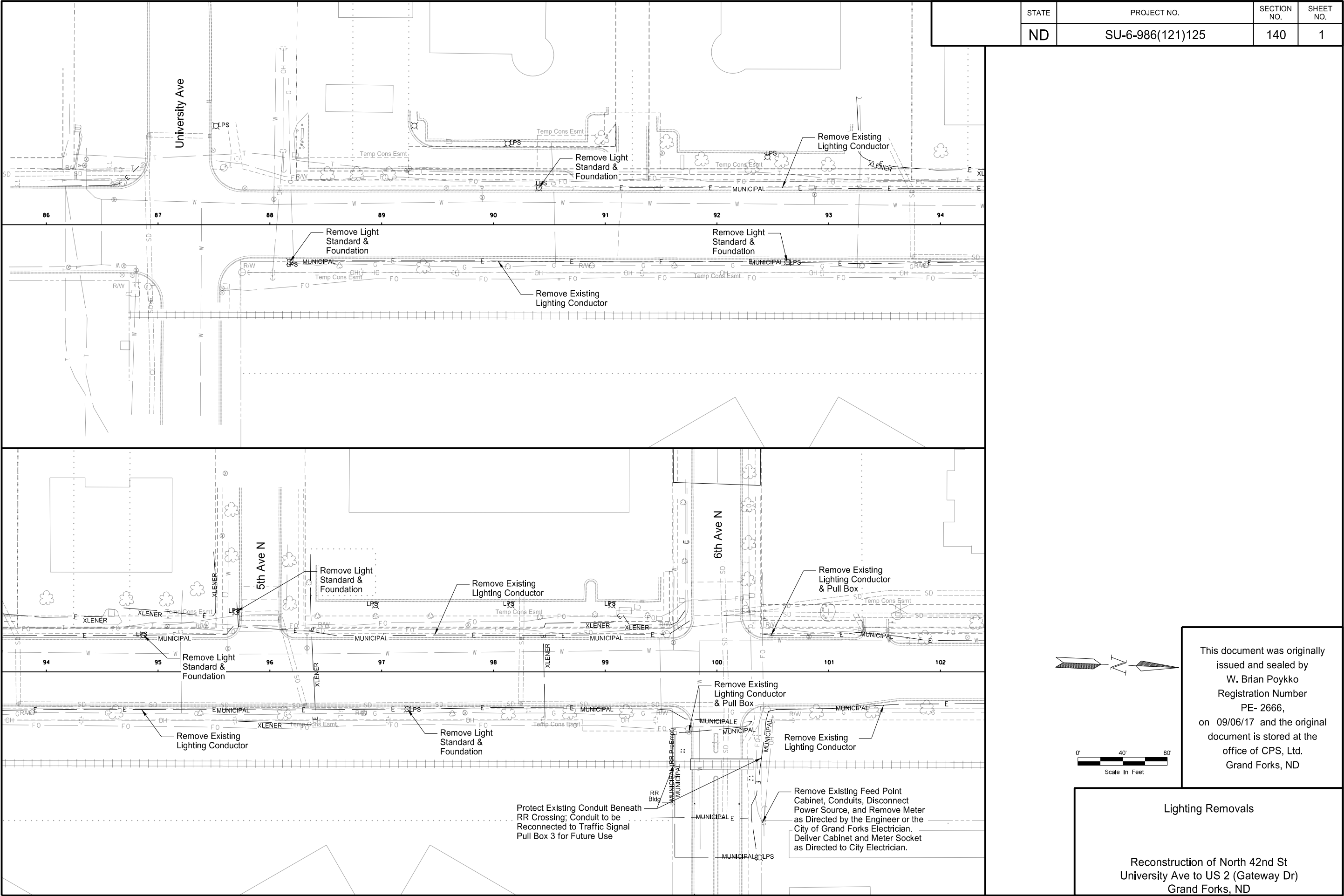




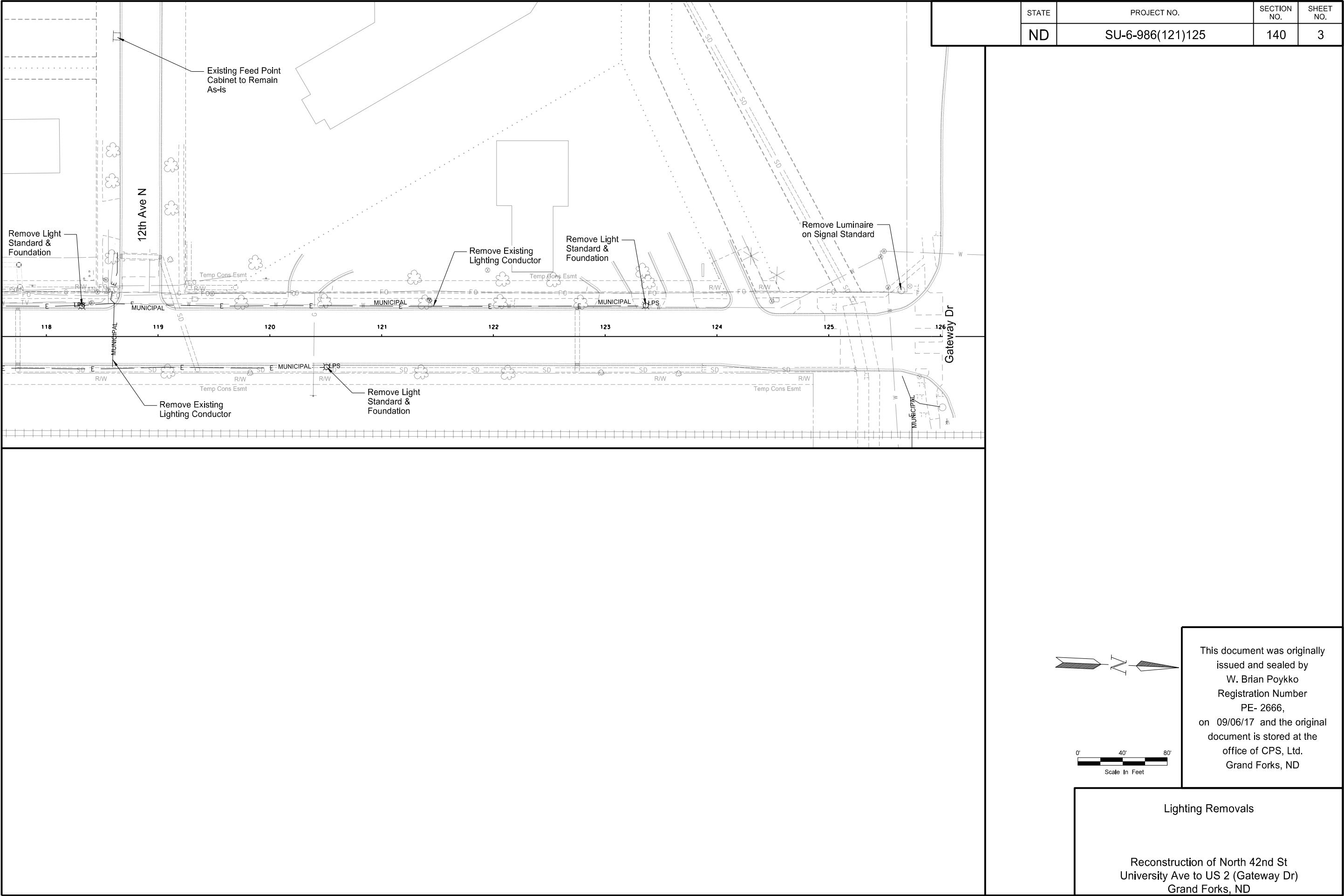






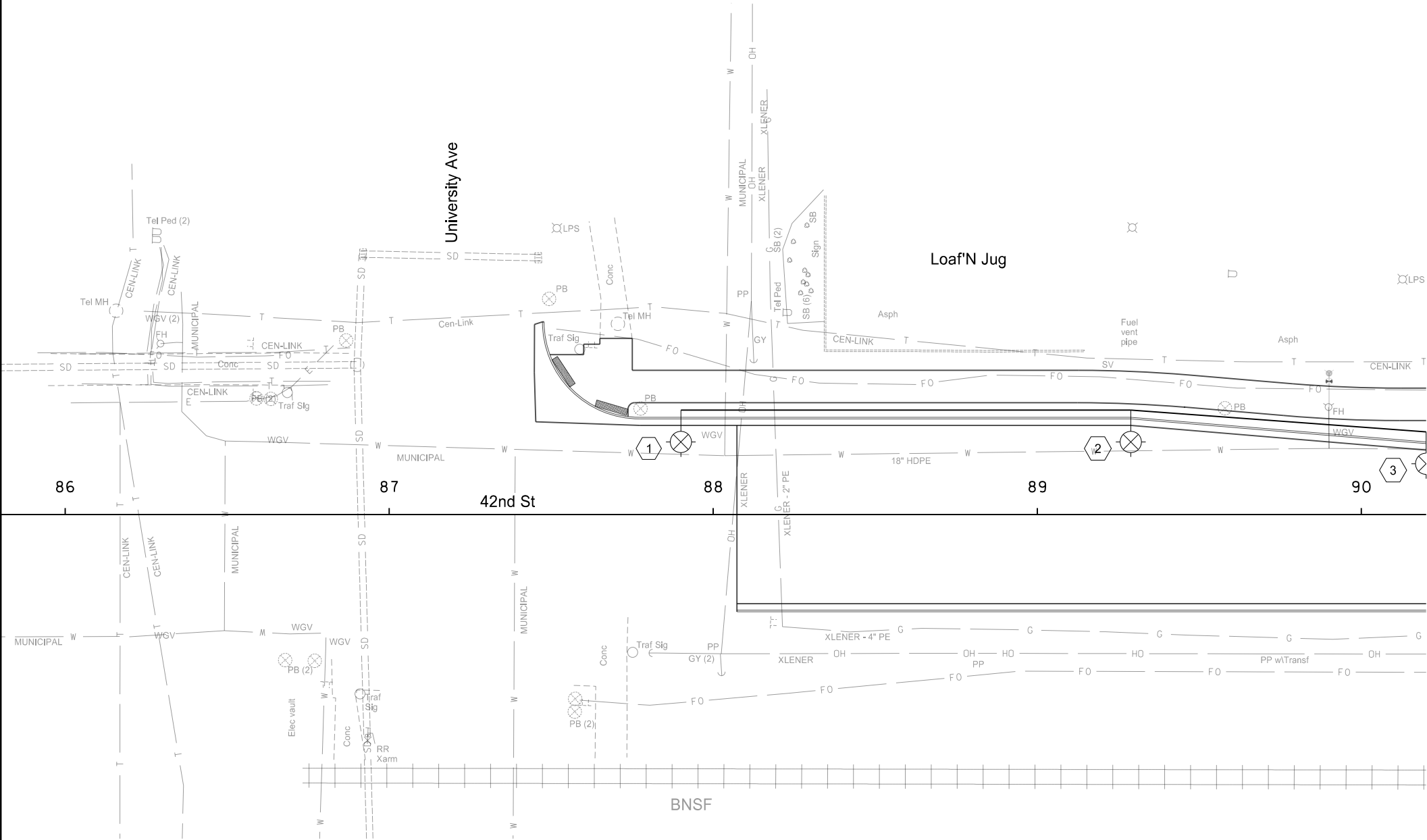






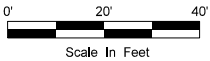
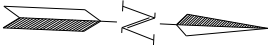
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	ND	SU-6-986(121)125	140	4

SPEC CODE	BID ITEM	QTY	UNIT
770 0025	SCREW IN BASE FOUNDATION		
	Sta 86+00 to Sta 90+00	2	EA
770 0320	1.5IN DIAMETER RIGID CONDUIT		
	Sta 86+00 to Sta 90+00	210	LF
770 0504	UNDERGROUND CONDUCTOR NO4-TYPE RHW		
	Sta 86+00 to Sta 90+00	462	LF
770 0605	UNDERGROUND CONDUCTOR NO6-TYPE THW		
	Sta 86+00 to Sta 90+00	231	LF
770 1676	LT STD 6FT MA 40FT MT HT BREAKAWAY		
	Sta 86+00 to Sta 90+00	2	EA
770 4210	LED LUMINAIRE		
	Sta 86+00 to Sta 90+00	2	EA



POLE & FIXTURE SCHEDULE							
NO.	STATION	OFFSET	WATTAGE	CIRCUIT	IES TYPE	MOUNT HEIGHT	MAST ARM
1	87+90	32.3' Lt	208	1	III	40'	6'
2	89+29	32.3' Lt	208	1	III	40'	6'

CONDUIT & CABLE SCHEDULE					
STATION/LOCATION	CONDUIT RUNS		CABLE RUNS		
	LENGTH	SIZE	LENGTH NO. 2 OR NO. 4 RHW-US	LENGTH NO. 4 RHW-USE OR NO. 6	TYPE
No. 1 to No. 2	139	1.5"	306	153	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 2 to Sta 90+00 O/s 27' Lt	71	1.5"	156	78	(2) No. 4 RHW-USE & (1) No. 6 THW



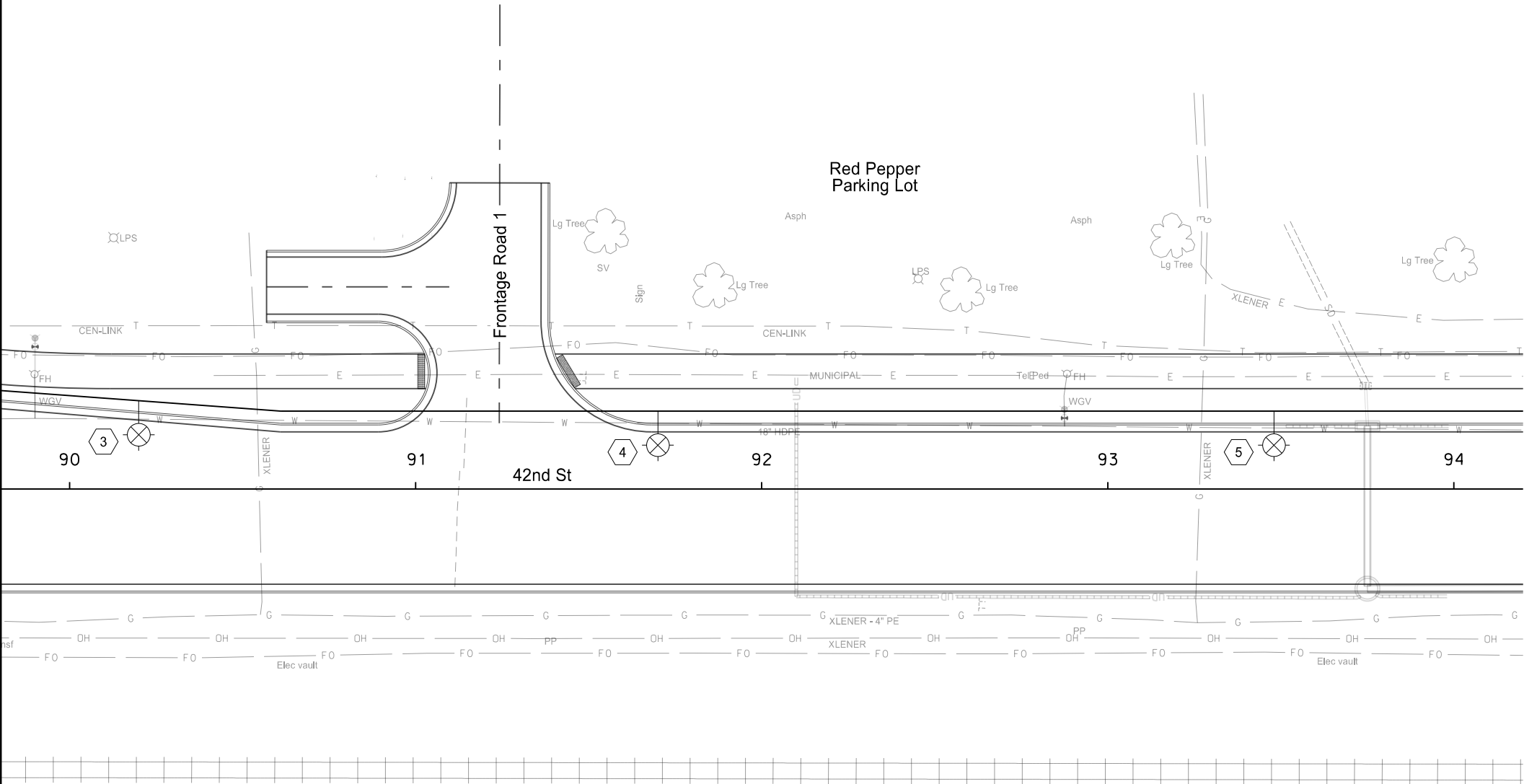
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Lighting  
Sta 86+00 to Sta 90+00

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

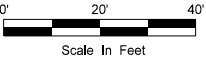
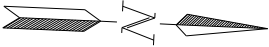
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	140	5

SPEC CODE	BID ITEM	QTY	UNIT
770 0025	SCREW IN BASE FOUNDATION		
	Sta 90+00 to Sta 94+00	3	EA
770 0320	1.5IN DIAMETER RIGID CONDUIT		
	Sta 90+00 to Sta 94+00	400	LF
770 0504	UNDERGROUND CONDUCTOR NO4-TYPE RHW		
	Sta 90+00 to Sta 94+00	884	LF
770 0605	UNDERGROUND CONDUCTOR NO6-TYPE THW		
	Sta 90+00 to Sta 94+00	442	LF
770 1676	LT STD 6FT MA 40FT MT HT BREAKAWAY		
	Sta 90+00 to Sta 94+00	3	EA
770 4210	LED LUMINAIRE		
	Sta 90+00 to Sta 94+00	3	EA



POLE & FIXTURE SCHEDULE							
NO.	STATION	OFFSET	WATTAGE	CIRCUIT	IES TYPE	MOUNT HEIGHT	MAST ARM
3	90+20	25.5' Lt	208	1	II	40'	6'
4	91+70	22.5' Lt	208	1	II	40'	6'
5	93+48	22.5' Lt	208	1	II	40'	6'

CONDUIT & CABLE SCHEDULE					
STATION/LOCATION	CONDUIT RUNS		CABLE RUNS		
	LENGTH	SIZE	LENGTH NO. 2 OR NO. 4 RHW-US	LENGTH NO. 4 RHW-USE OR NO. 6	TYPE
Sta 90+00 O/s 27' Lt to No. 3	20	1.5"	54	27	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 3 to No. 4	150	1.5"	328	164	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 4 to No. 5	178	1.5"	384	192	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 5 to Sta 94+00 O/s 22.5' Lt	52	1.5"	118	59	(2) No. 4 RHW-USE & (1) No. 6 THW

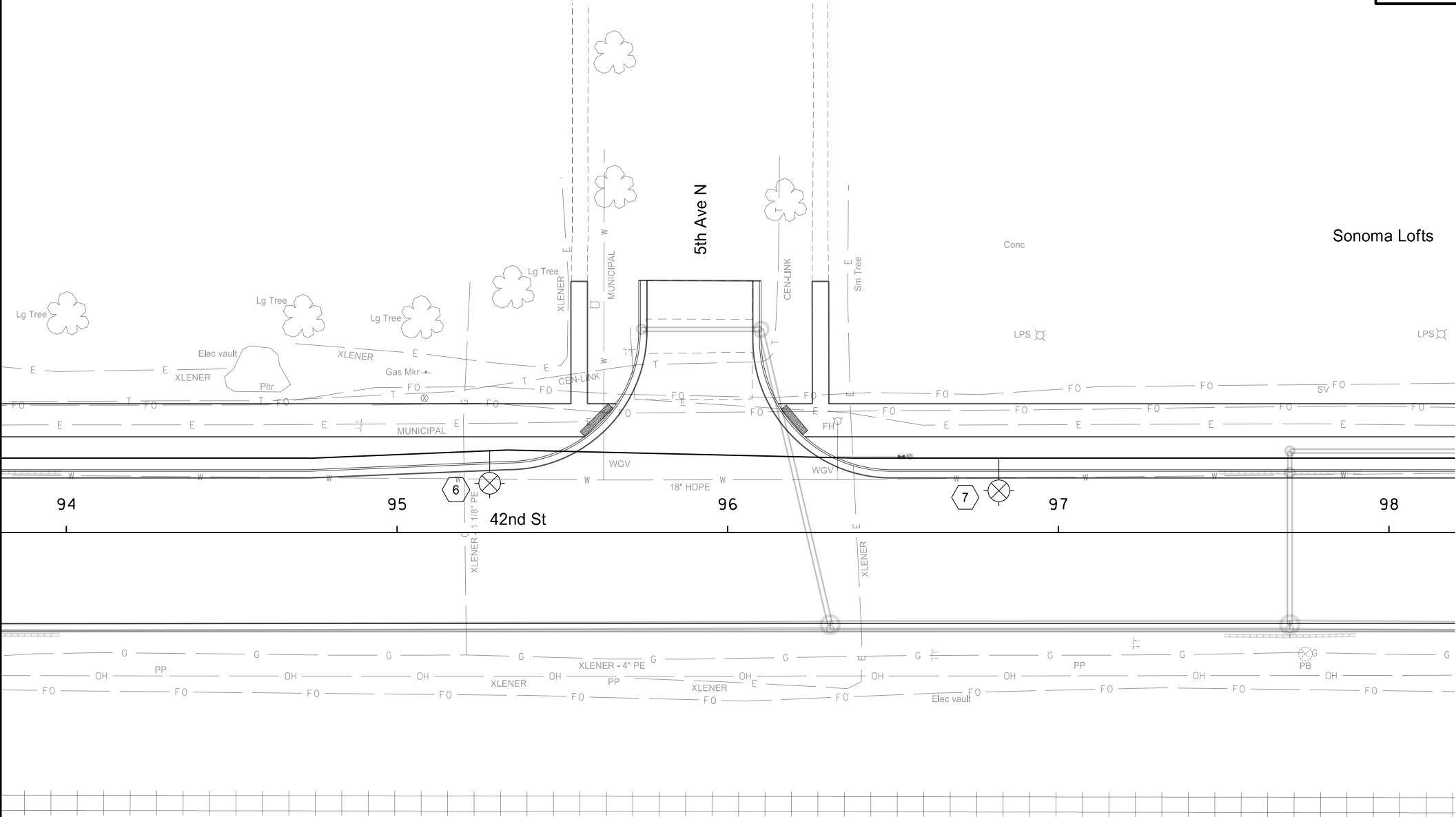


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Lighting  
Sta 90+00 to Sta 94+00  
  
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

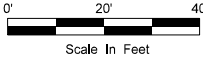
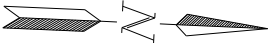
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	140	6

SPEC CODE	BID ITEM	QTY	UNIT
770 0025	SCREW IN BASE FOUNDATION		
	Sta 94+00 to Sta 98+00	3	EA
770 0320	1.5IN DIAMETER RIGID CONDUIT		
	Sta 94+00 to Sta 98+00	400	LF
770 0504	UNDERGROUND CONDUCTOR NO4-TYPE RHW		
	Sta 94+00 to Sta 98+00	856	LF
770 0605	UNDERGROUND CONDUCTOR NO6-TYPE THW		
	Sta 94+00 to Sta 98+00	428	LF
770 1676	LT STD 6FT MA 40FT MT HT BREAKAWAY		
	Sta 94+00 to Sta 98+00	3	EA
770 4210	LED LUMINAIRE		
	Sta 94+00 to Sta 98+00	3	EA



POLE & FIXTURE SCHEDULE							
NO.	STATION	OFFSET	WATTAGE	CIRCUIT	IES TYPE	MOUNT HEIGHT	MAST ARM
6	95+28	24.8' Lt	208	1	II	40'	6'
7	96+82	22.5' Lt	208	1	II	40'	6'

CONDUIT & CABLE SCHEDULE					
STATION/LOCATION	CONDUIT RUNS		CABLE RUNS		
	LENGTH	SIZE	LENGTH NO. 2 OR NO. 4 RHW-US	LENGTH NO. 4 RHW-USE OR NO. 6	TYPE
Sta 94+00 O/s 22.5' Lt to No. 6	128	1.5"	270	135	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 6 to No. 7	154	1.5"	336	168	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 7 to Sta 98+00 O/s 22.5' Lt	118	1.5"	250	125	(2) No. 4 RHW-USE & (1) No. 6 THW



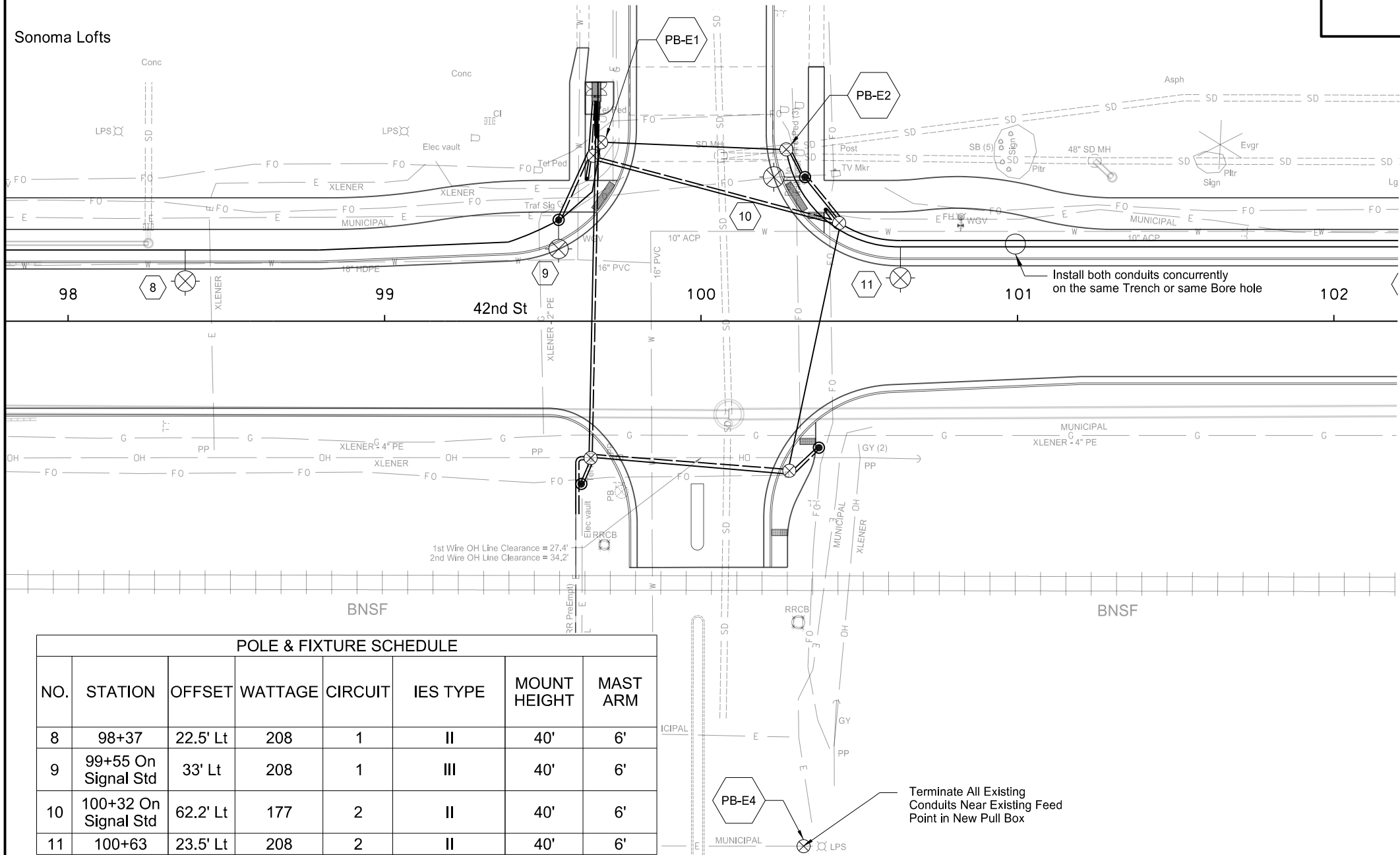
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Lighting  
Sta 94+00 to Sta 98+00

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

Sonoma Lofts



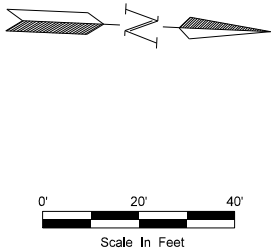
POLE & FIXTURE SCHEDULE							
NO.	STATION	OFFSET	WATTAGE	CIRCUIT	IES TYPE	MOUNT HEIGHT	MAST ARM
8	98+37	22.5' Lt	208	1	II	40'	6'
9	99+55 On Signal Std	33' Lt	208	1	III	40'	6'
10	100+32 On Signal Std	62.2' Lt	177	2	II	40'	6'
11	100+63	23.5' Lt	208	2	II	40'	6'

CONDUIT & CABLE SCHEDULE					
STATION/LOCATION	CONDUIT RUNS		CABLE RUNS		
	LENGTH	SIZE	LENGTH NO. 2 OR NO. 4 RHW-US	LENGTH NO. 4 RHW-USE OR NO. 6	TYPE
Sta 98+00 O/s 22.5' Lt to No. 8	37	1.5"	88	44	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 8 to PB-E1	150	1.5"	326	163	(2) No. 4 RHW-USE & (1) No. 6 THW
PB-E1 to FP	14	1.5"	60	23	(2) No. 4 RHW-USE & (1) No. 6 THW
FP to PB-E1	14	1.5"	60	23	(2) No. 2 RHW-USE & (1) No. 4 RHW
FP to PB-E1	14	1.5"	0	0	Spare Conduit
FP to PB-E1	14	1.5"	0	0	Spare Conduit
PB-E1 to No. 9	29	1.5"	84	42	(2) No. 2 RHW-USE & (1) No. 4 RHW
PB-E1 to PB-E2	59	1.5"	130	65	(2) No. 2 RHW-USE & (1) No. 4 RHW
PB-E2 to No. 10	9	1.5"	44	22	(2) No. 2 RHW-USE & (1) No. 4 RHW
PB-E2 to No. 11	52	1.5"	130	65	(2) No. 2 RHW-USE & (1) No. 4 RHW
No. 11 to Sta 102+00 O/s 23.5' Lt	137	1.5"	288	144	(2) No. 2 RHW-USE & (1) No. 4 RHW
PB 2 to Sta 102+00 O/s 23.5' Lt	157	2.0"	0	0	Spare Conduit

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-6-986(121)125	140	7

SPEC CODE	BID ITEM	QTY	UNIT
770 0025	SCREW IN BASE FOUNDATION		
	Sta 98+00 to Sta 102+00	1	EA
770 0100	PULL BOX		
	Sta 98+00 to Sta 102+00	3	EA
770 0320	1.5IN DIAMETER RIGID CONDUIT		
	Sta 98+00 to Sta 102+00	492	LF
770 0330	2IN DIAMETER RIGID CONDUIT		
	Sta 98+00 to Sta 102+00	157	LF
770 0503	UNDERGROUND CONDUCTOR NO2-TYPE RHW		
	Sta 98+00 to Sta 102+00	736	LF
770 0504	UNDERGROUND CONDUCTOR NO4-TYPE RHW		
	Sta 98+00 to Sta 102+00	835	LF
770 0605	UNDERGROUND CONDUCTOR NO6-TYPE THW		
	Sta 98+00 to Sta 102+00	230	LF
770 0745	FEED POINT-TYPE IV-PAD MOUNTED		
	Sta 98+00 to Sta 102+00	1	EA
770 1676	LT STD 6FT MA 40FT MT HT BREAKAWAY		
	Sta 98+00 to Sta 102+00	1	EA
770 4210	LED LUMINAIRE		
	Sta 98+00 to Sta 102+00	1	EA

- Notes:
- See Section 150 for additional details regarding traffic signal pull boxes. These pull boxes shall be included in the bid item "Traffic Signal System - Site 1".
  - Luminaires and pole extensions for light fixture locations 9 and 10 shall be included in the bid item "Traffic Signal System - Site 1".
  - Connect Existing Conduit Beneath RR Crossing to Traffic Signal Pull Box 3.



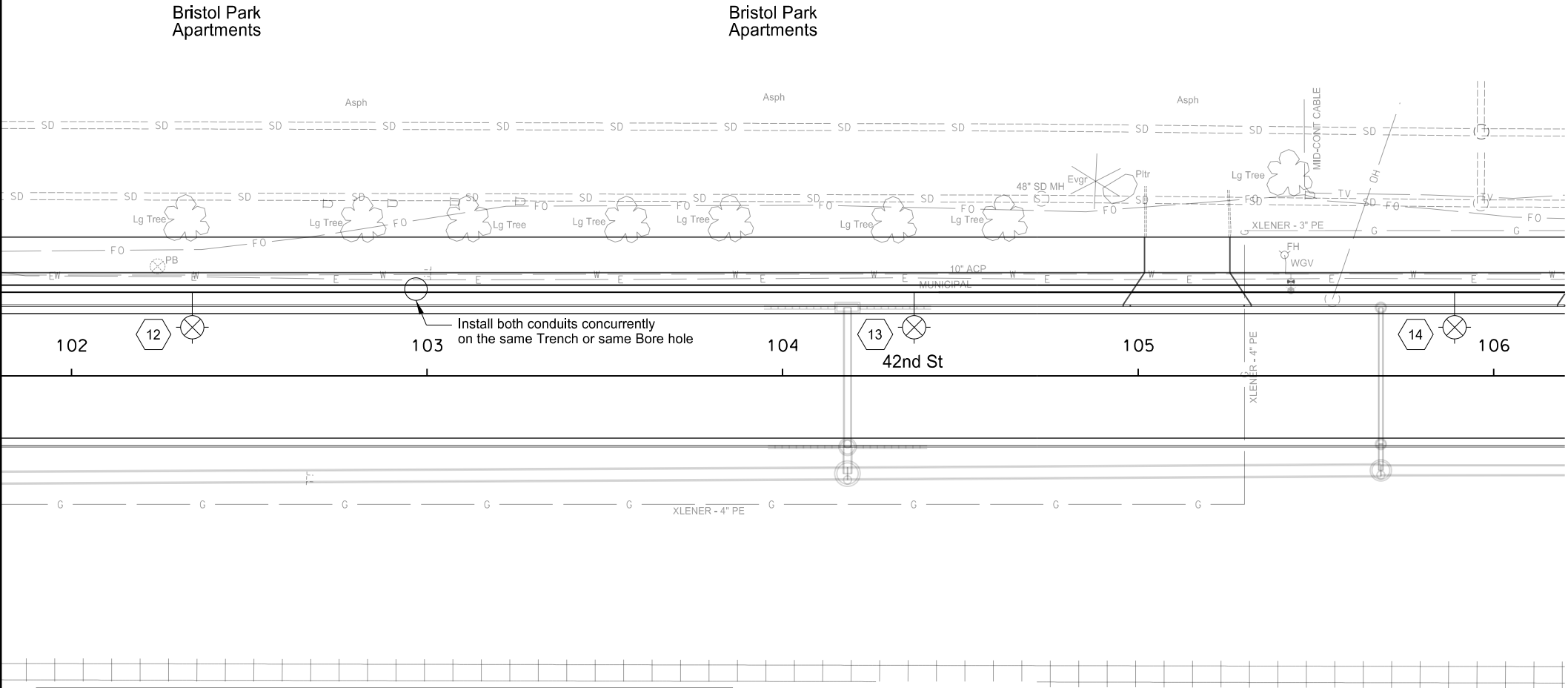
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Lighting  
Sta 98+00 to Sta 102+00

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

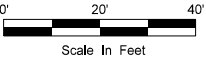
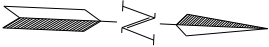
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	140	8

SPEC CODE	BID ITEM	QTY	UNIT
770 0025	SCREW IN BASE FOUNDATION		
	Sta 102+00 to Sta 106+00	3	EA
770 0320	1.5IN DIAMETER RIGID CONDUIT		
	Sta 102+00 to Sta 106+00	400	LF
770 0330	2IN DIAMETER RIGID CONDUIT		
	Sta 102+00 to Sta 106+00	400	LF
770 0503	UNDERGROUND CONDUCTOR NO2-TYPE RHW		
	Sta 102+00 to Sta 106+00	884	LF
770 0504	UNDERGROUND CONDUCTOR NO4-TYPE RHW		
	Sta 102+00 to Sta 106+00	442	LF
770 1676	LT STD 6FT MA 40FT MT HT BREAKAWAY		
	Sta 102+00 to Sta 106+00	3	EA
770 4210	LED LUMINAIRE		
	Sta 102+00 to Sta 106+00	3	EA



POLE & FIXTURE SCHEDULE							
NO.	STATION	OFFSET	WATTAGE	CIRCUIT	IES TYPE	MOUNT HEIGHT	MAST ARM
12	102+34	23.5' Lt	208	2	II	40'	6'
13	104+37	23.5' Lt	208	2	II	40'	6'
14	105+89	23.5' Lt	208	2	II	40'	6'

CONDUIT & CABLE SCHEDULE					
STATION/LOCATION	CONDUIT RUNS		CABLE RUNS		
	LENGTH	SIZE	LENGTH NO. 2 OR NO. 4 RHW-US	LENGTH NO. 4 RHW-USE OR NO. 6	TYPE
Sta 102+00 O/s 23.5' Lt to No. 12	34	1.5"	82	41	(2) No. 2 RHW-USE & (1) No. 4 RHW
No. 12 to No. 13	203	1.5"	434	217	(2) No. 2 RHW-USE & (1) No. 4 RHW
No. 13 to No. 14	152	1.5"	332	166	(2) No. 2 RHW-USE & (1) No. 4 RHW
No. 14 to Sta 106+00 O/s 23.5' Lt	11	1.5"	36	18	(2) No. 2 RHW-USE & (1) No. 4 RHW
Sta 102+00 O/s 23.5' Lt to Sta 106+00	400	2.0"	0	0	Spare Conduit



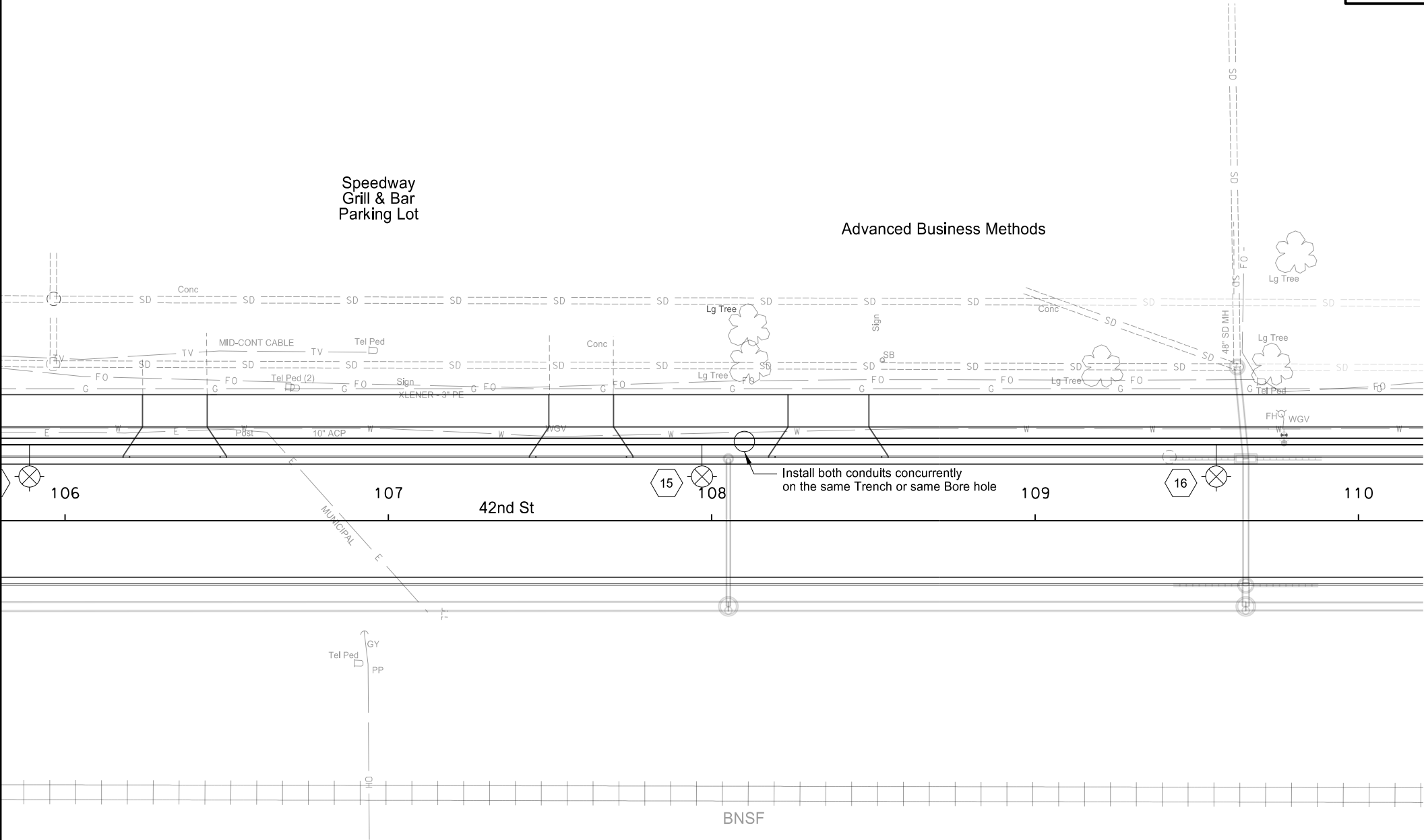
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Lighting  
Sta 102+00 to Sta 106+00  
  
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND



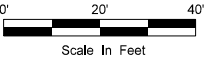
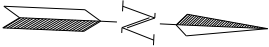
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	140	9

SPEC CODE	BID ITEM	QTY	UNIT
770 0025	SCREW IN BASE FOUNDATION		
	Sta 106+00 to Sta 110+00	2	EA
770 0320	1.5IN DIAMETER RIGID CONDUIT		
	Sta 106+00 to Sta 110+00	400	LF
770 0330	2IN DIAMETER RIGID CONDUIT		
	Sta 106+00 to Sta 110+00	400	LF
770 0503	UNDERGROUND CONDUCTOR NO2-TYPE RHW		
	Sta 106+00 to Sta 110+00	856	LF
770 0504	UNDERGROUND CONDUCTOR NO4-TYPE RHW		
	Sta 106+00 to Sta 110+00	428	LF
770 1676	LT STD 6FT MA 40FT MT HT BREAKAWAY		
	Sta 106+00 to Sta 110+00	2	EA
770 4210	LED LUMINAIRE		
	Sta 106+00 to Sta 110+00	2	EA



POLE & FIXTURE SCHEDULE							
NO.	STATION	OFFSET	WATTAGE	CIRCUIT	IES TYPE	MOUNT HEIGHT	MAST ARM
15	107+97	23.5' Lt	208	2	II	40'	6'
16	109+56	23.5' Lt	208	2	II	40'	6'

CONDUIT & CABLE SCHEDULE					
STATION/LOCATION	CONDUIT RUNS		CABLE RUNS		
	LENGTH	SIZE	LENGTH NO. 2 OR NO. 4 RHW-US	LENGTH NO. 4 RHW-USE OR NO. 6	TYPE
Sta 106+00 O/s 23.5' Lt to No. 15	197	1.5"	408	204	(2) No. 2 RHW-USE & (1) No. 4 RHW
No. 15 to No. 16	159	1.5"	346	173	(2) No. 2 RHW-USE & (1) No. 4 RHW
No. 16 to Sta 110+00 O/s 23.5' Lt	44	1.5"	102	51	(2) No. 2 RHW-USE & (1) No. 4 RHW
Sta 106+00 O/s 23.5' Lt to Sta 110+00	400	2.0"	0	0	Spare Conduit

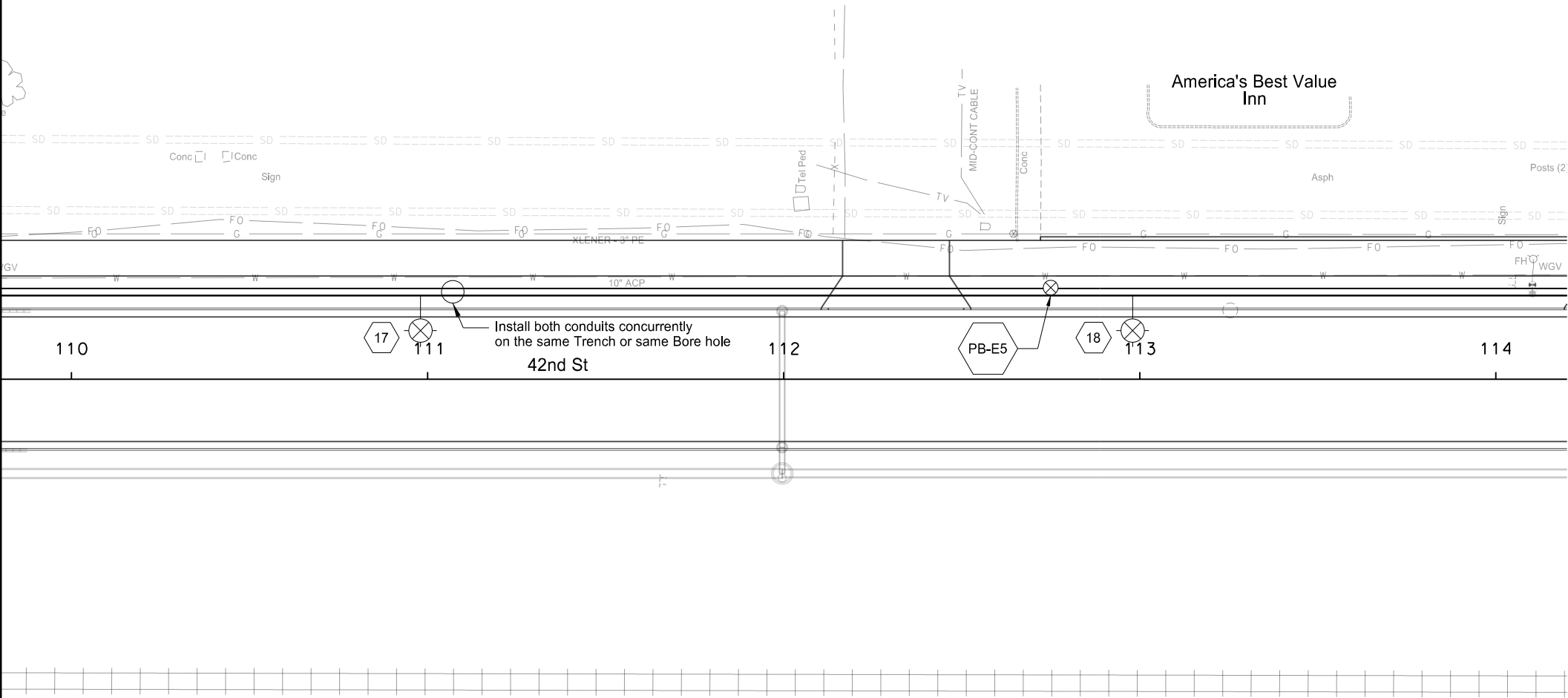


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Lighting  
Sta 106+00 to Sta 110+00  
  
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

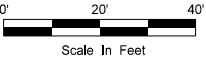
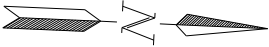
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	140	10

SPEC CODE	BID ITEM	QTY	UNIT
770 0025	SCREW IN BASE FOUNDATION		
	Sta 110+00 to Sta 114+00	2	EA
770 0100	PULL BOX		
	Sta 110+00 to Sta 114+00	1	EA
770 0320	1.5IN DIAMETER RIGID CONDUIT		
	Sta 110+00 to Sta 114+00	400	LF
770 0330	2IN DIAMETER RIGID CONDUIT		
	Sta 110+00 to Sta 114+00	400	LF
770 0503	UNDERGROUND CONDUCTOR NO2-TYPE RHW		
	Sta 110+00 to Sta 114+00	210	LF
770 0504	UNDERGROUND CONDUCTOR NO4-TYPE RHW		
	Sta 110+00 to Sta 114+00	751	LF
770 0605	UNDERGROUND CONDUCTOR NO6-TYPE THW		
	Sta 110+00 to Sta 114+00	323	LF
770 1676	LT STD 6FT MA 40FT MT HT BREAKAWAY		
	Sta 110+00 to Sta 114+00	2	EA
770 4210	LED LUMINAIRE		
	Sta 110+00 to Sta 114+00	2	EA



POLE & FIXTURE SCHEDULE							
NO.	STATION	OFFSET	WATTAGE	CIRCUIT	IES TYPE	MOUNT HEIGHT	MAST ARM
17	110+98	23.5' Lt	208	2	II	40'	6'
18	112+98	23.5' Lt	208	2	II	40'	6'

CONDUIT & CABLE SCHEDULE					
STATION/LOCATION	CONDUIT RUNS		CABLE RUNS		
	LENGTH	SIZE	LENGTH NO. 2 OR NO. 4 RHW-US	LENGTH NO. 4 RHW-USE OR NO. 6	TYPE
Sta 110+00 O/s 23.5' Lt to No. 17	98	1.5"	210	105	(2) No. 2 RHW-USE & (1) No. 4 RHW
No. 17 to No. 18	200	1.5"	428	214	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 18 to Sta 114+00 O/s 23.5' Lt	102	1.5"	218	109	(2) No. 4 RHW-USE & (1) No. 6 THW
Sta 110+00 O/s 25.5' Lt to PB-E5	275	2.0"	0	0	Spare Conduit
PB-E5 to Sta 114+00 O/s 23.5' Lt	125	2.0"	0	0	Spare Conduit

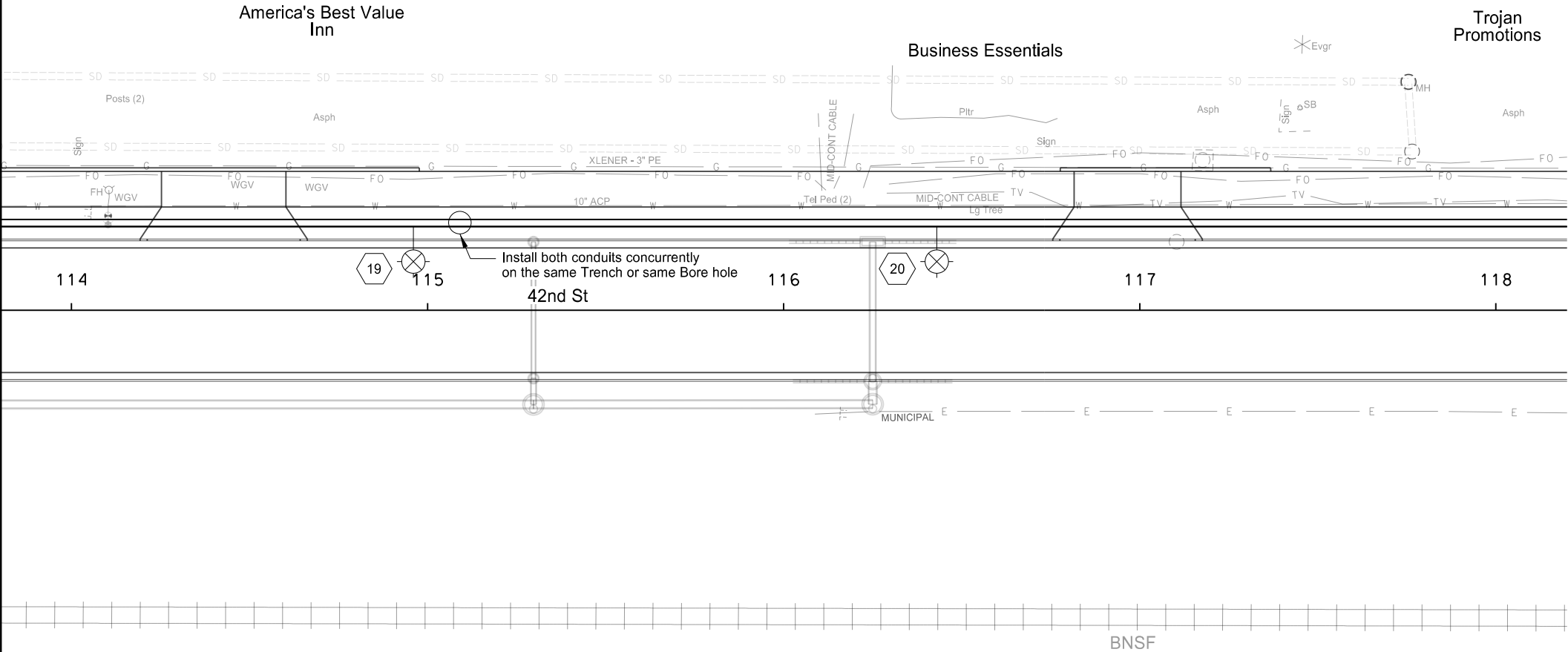


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Lighting  
Sta 110+00 to Sta 114+00  
  
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

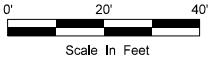
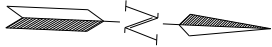
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	140	11

SPEC CODE	BID ITEM	QTY	UNIT
770 0025	SCREW IN BASE FOUNDATION		
	Sta 114+00 to Sta 118+00	2	EA
770 0320	1.5IN DIAMETER RIGID CONDUIT		
	Sta 114+00 to Sta 118+00	400	LF
770 0330	2IN DIAMETER RIGID CONDUIT		
	Sta 114+00 to Sta 118+00	400	LF
770 0504	UNDERGROUND CONDUCTOR NO4-TYPE RHW		
	Sta 114+00 to Sta 118+00	856	LF
770 0605	UNDERGROUND CONDUCTOR NO6-TYPE THW		
	Sta 114+00 to Sta 118+00	428	LF
770 1676	LT STD 6FT MA 40FT MT HT BREAKAWAY		
	Sta 114+00 to Sta 118+00	2	EA
770 4210	LED LUMINAIRE		
	Sta 114+00 to Sta 118+00	2	EA



POLE & FIXTURE SCHEDULE							
NO.	STATION	OFFSET	WATTAGE	CIRCUIT	IES TYPE	MOUNT HEIGHT	MAST ARM
19	114+96	23.5' Lt	208	2	II	40'	6'
20	116+43	23.5' Lt	208	2	II	40'	6'

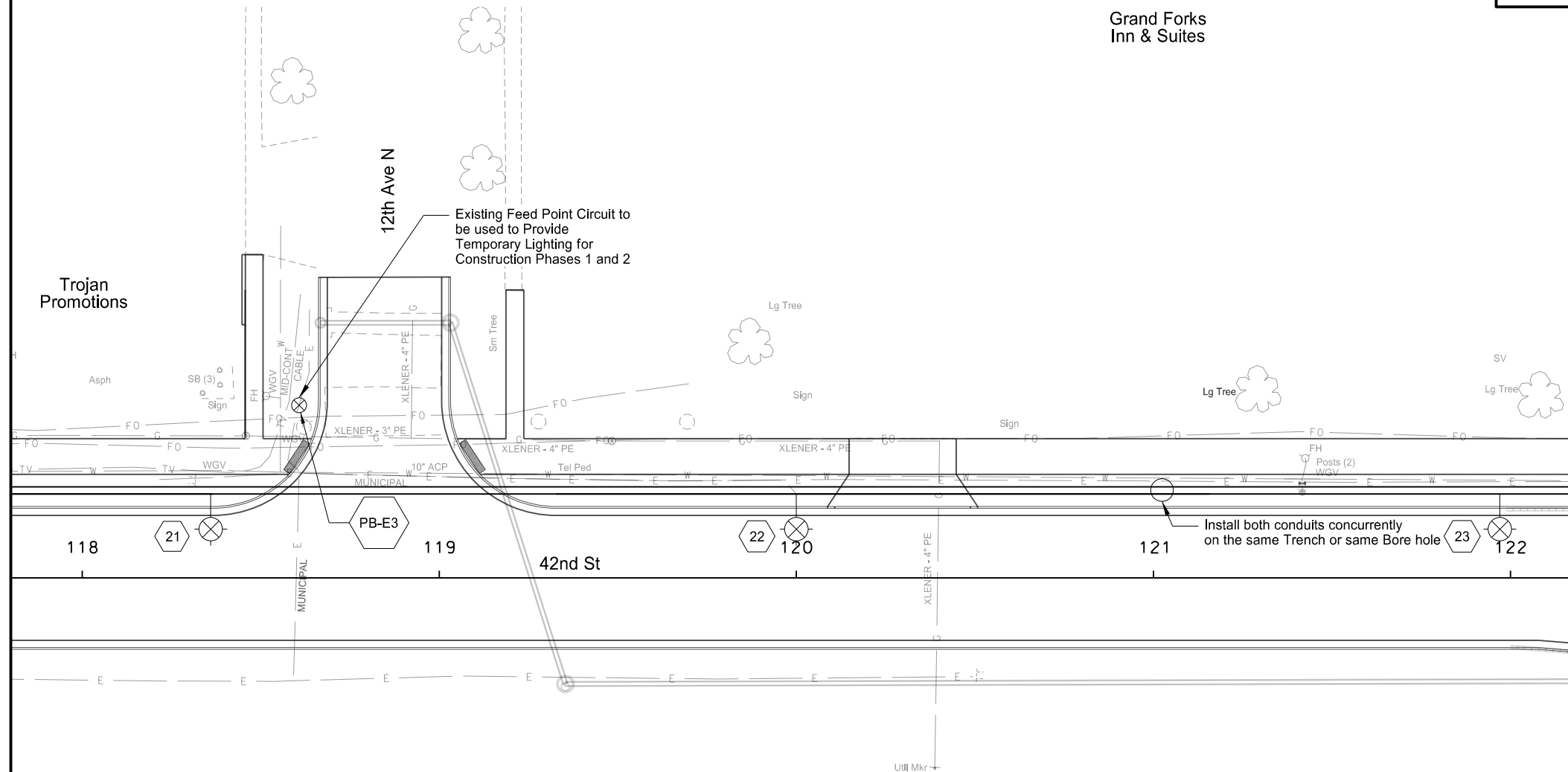
CONDUIT & CABLE SCHEDULE					
STATION/LOCATION	CONDUIT RUNS		CABLE RUNS		
	LENGTH	SIZE	LENGTH NO. 2 OR NO. 4 RHW-US	LENGTH NO. 4 RHW-USE OR NO. 6	TYPE
Sta 114+00 O/s 23.5' Lt to No. 19	96	1.5"	206	103	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 19 to No. 20	147	1.5"	322	161	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 20 to Sta 118+00 O/s 23.5' Lt	157	1.5"	328	164	(2) No. 4 RHW-USE & (1) No. 6 THW
Sta 114+00 O/s 23.5' Lt to Sta 118+00	400	2.0"	0	0	Spare Conduit



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Lighting  
Sta 114+00 to Sta 118+00  
  
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	140	12



SPEC	CODE	BID ITEM	QTY	UNIT
770	0025	SCREW IN BASE FOUNDATION		
		Sta 118+00 to Sta 122+00	2	EA
770	0100	PULL BOX		
		Sta 118+00 to Sta 122+00	1	EA
770	0320	1.5IN DIAMETER RIGID CONDUIT		
		Sta 118+00 to Sta 122+00	400	LF
770	0330	2IN DIAMETER RIGID CONDUIT		
		Sta 118+00 to Sta 122+00	400	LF
770	0504	UNDERGROUND CONDUCTOR NO4-TYPE RHW		
		Sta 118+00 to Sta 122+00	908	LF
770	0605	UNDERGROUND CONDUCTOR NO6-TYPE THW		
		Sta 118+00 to Sta 122+00	454	LF
770	1676	LT STD 6FT MA 40FT MT HT BREAKAWAY		
		Sta 118+00 to Sta 122+00	2	EA
770	4210	LED LUMINAIRE		
		Sta 118+00 to Sta 122+00	2	EA

POLE & FIXTURE SCHEDULE							
NO.	STATION	OFFSET	WATTAGE	CIRCUIT	IES TYPE	MOUNT HEIGHT	MAST ARM
21	118+36	23.5' Lt	208	2	II	40'	6'
22	120+00	23.5' Lt	208	2	II	40'	6'
23	122+00	23.5' Lt	208	2	II	40'	6'

CONDUIT & CABLE SCHEDULE					
STATION/LOCATION	CONDUIT RUNS		CABLE RUNS		
	LENGTH	SIZE	LENGTH NO. 2 OR NO. 4 RHW-US	LENGTH NO. 4 RHW-USE OR NO. 6	TYPE
Sta 118+00 O/s 23.5' Lt to No. 21	36	1.5"	86	43	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 21 to PB-E3	97	1.5"	220	110	(2) No. 4 RHW-USE & (1) No. 6 THW
PB-E3 to No. 22	67	1.5"	160	80	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 22 to No. 23	197	1.5"	422	211	(2) No. 4 RHW-USE & (1) No. 6 THW
No. 23 to Sta 122+00 O/s 23.5' Lt	3	1.5"	20	10	(2) No. 4 RHW-USE & (1) No. 6 THW
Sta 118+00 O/s 23.5' Lt to Sta 122+00	400	2.0"	0	0	Spare Conduit

The diagram illustrates the process of transforming a rectangular prism into a triangular prism. It starts with a rectangular prism on the left, followed by a series of three cuts represented by diagonal lines, and ends with a triangular prism on the right.

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0' 20'

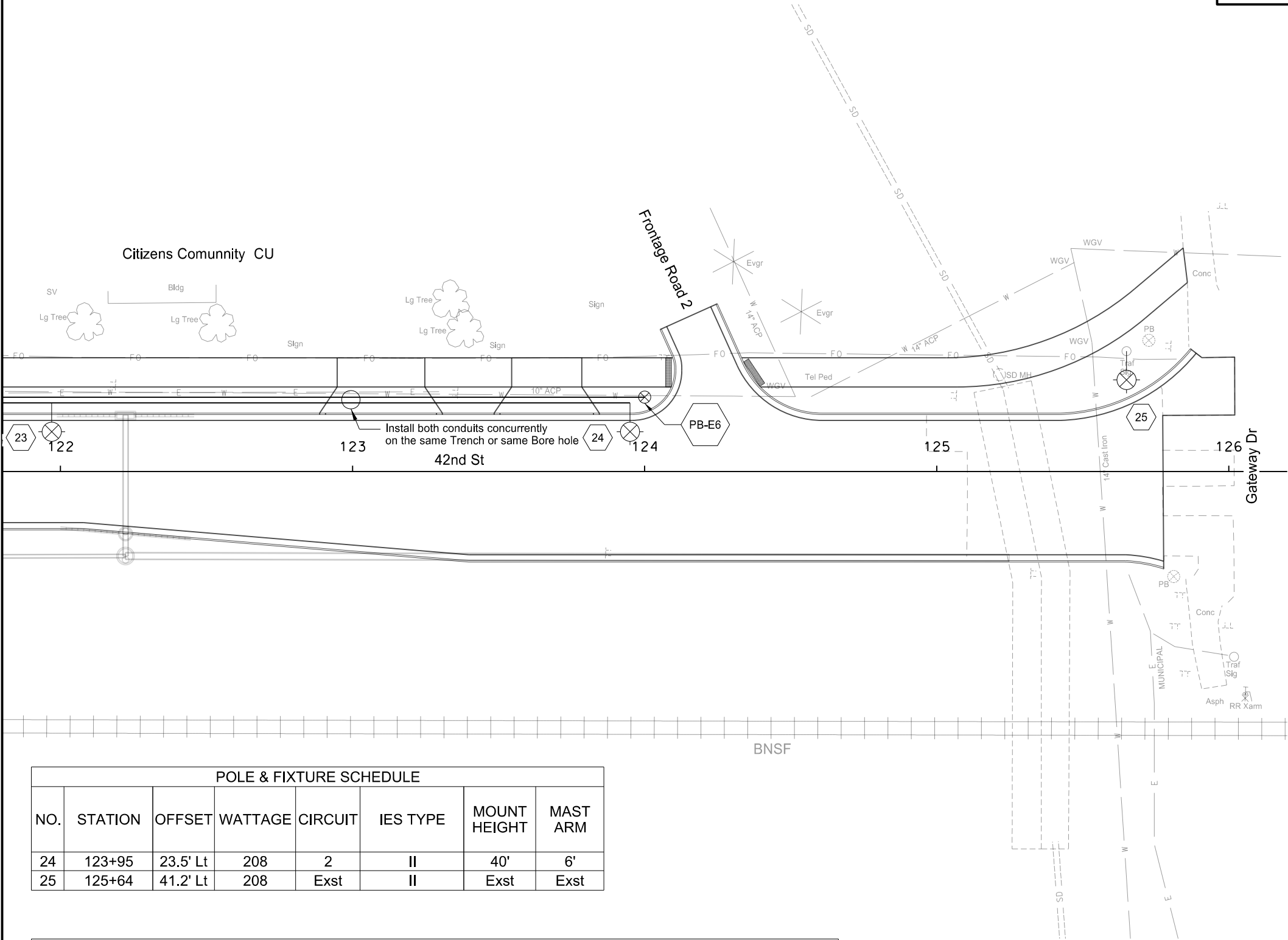
Scale In Feet

Lighting  
Sta 118+00 to Sta 122+00

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

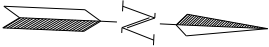
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-6-986(121)125	140	13

SPEC CODE	BID ITEM	QTY	UNIT
770 0025	SCREW IN BASE FOUNDATION		
	Sta 122+00 to Sta 126+00	2	EA
770 0100	PULL BOX		
	Sta 122+00 to Sta 126+00	1	EA
770 0320	1.5IN DIAMETER RIGID CONDUIT		
	Sta 122+00 to Sta 126+00	195	LF
770 0330	2IN DIAMETER RIGID CONDUIT		
	Sta 122+00 to Sta 126+00	200	LF
770 0504	UNDERGROUND CONDUCTOR NO4-TYPE RHW		
	Sta 122+00 to Sta 126+00	404	LF
770 0605	UNDERGROUND CONDUCTOR NO6-TYPE THW		
	Sta 122+00 to Sta 126+00	202	LF
770 1676	LT STD 6FT MA 40FT MT HT BREAKAWAY		
	Sta 122+00 to Sta 126+00	2	EA
770 4210	LED LUMINAIRE		
	Sta 122+00 to Sta 126+00	3	EA



POLE & FIXTURE SCHEDULE							
NO.	STATION	OFFSET	WATTAGE	CIRCUIT	IES TYPE	MOUNT HEIGHT	MAST ARM
24	123+95	23.5' Lt	208	2	II	40'	6'
25	125+64	41.2' Lt	208	Exst	II	Exst	Exst

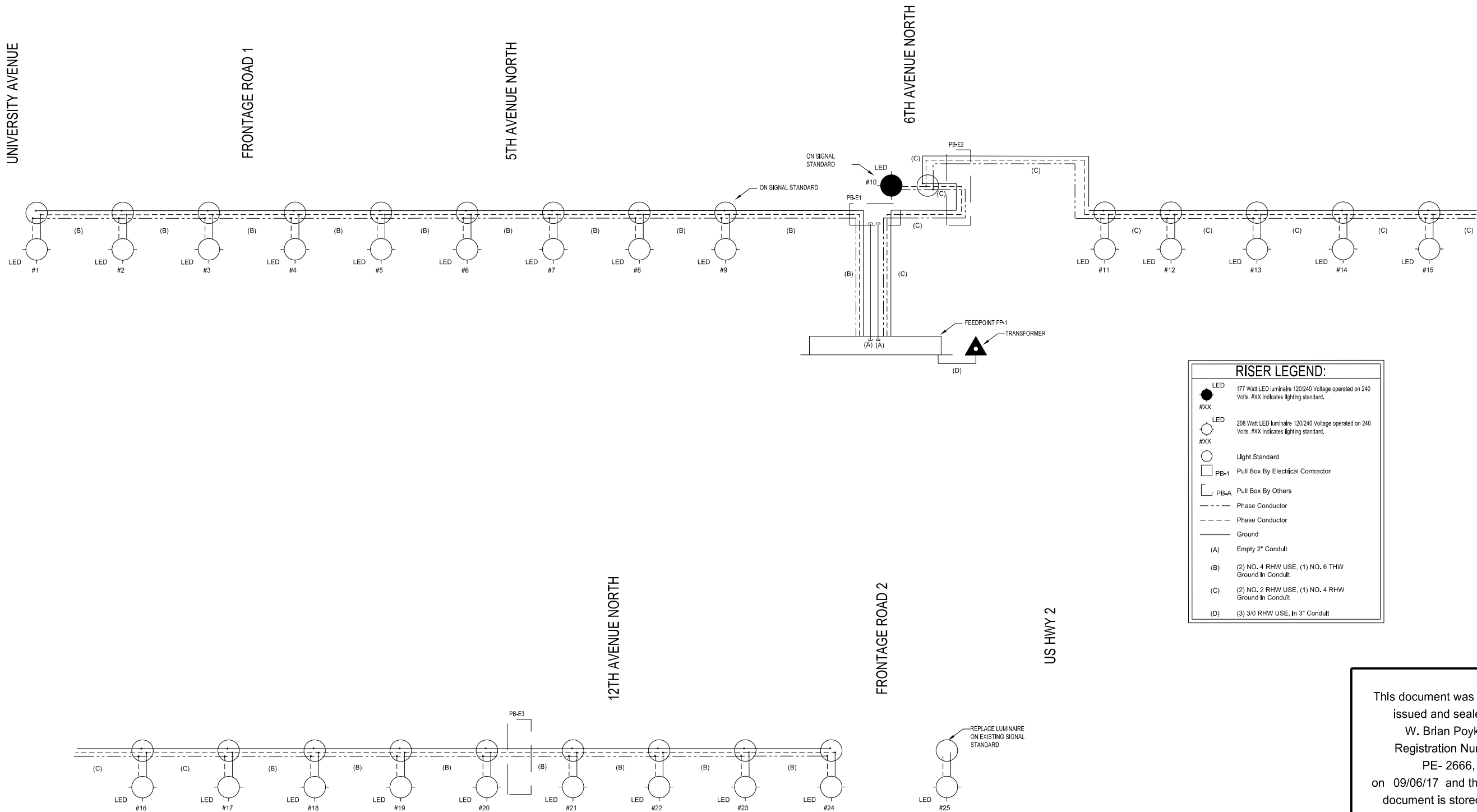
CONDUIT & CABLE SCHEDULE					
STATION/LOCATION	CONDUIT RUNS		CABLE RUNS		
	LENGTH	SIZE	LENGTH NO. 2 OR NO. 4 RHW-US	LENGTH NO. 4 RHW-USE OR NO. 6	TYPE
Sta 122+00 O/s 23.5' Lt to No. 24	195	1.5"	404	202	(2) No. 4 RHW-USE & (1) No. 6 THW
Sta 122+00 O/s 23.5' to PB-E6	200	2.0"	0	0	Spare Conduit



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Lighting  
Sta 122+00 to Sta 126+00  
  
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	140	14

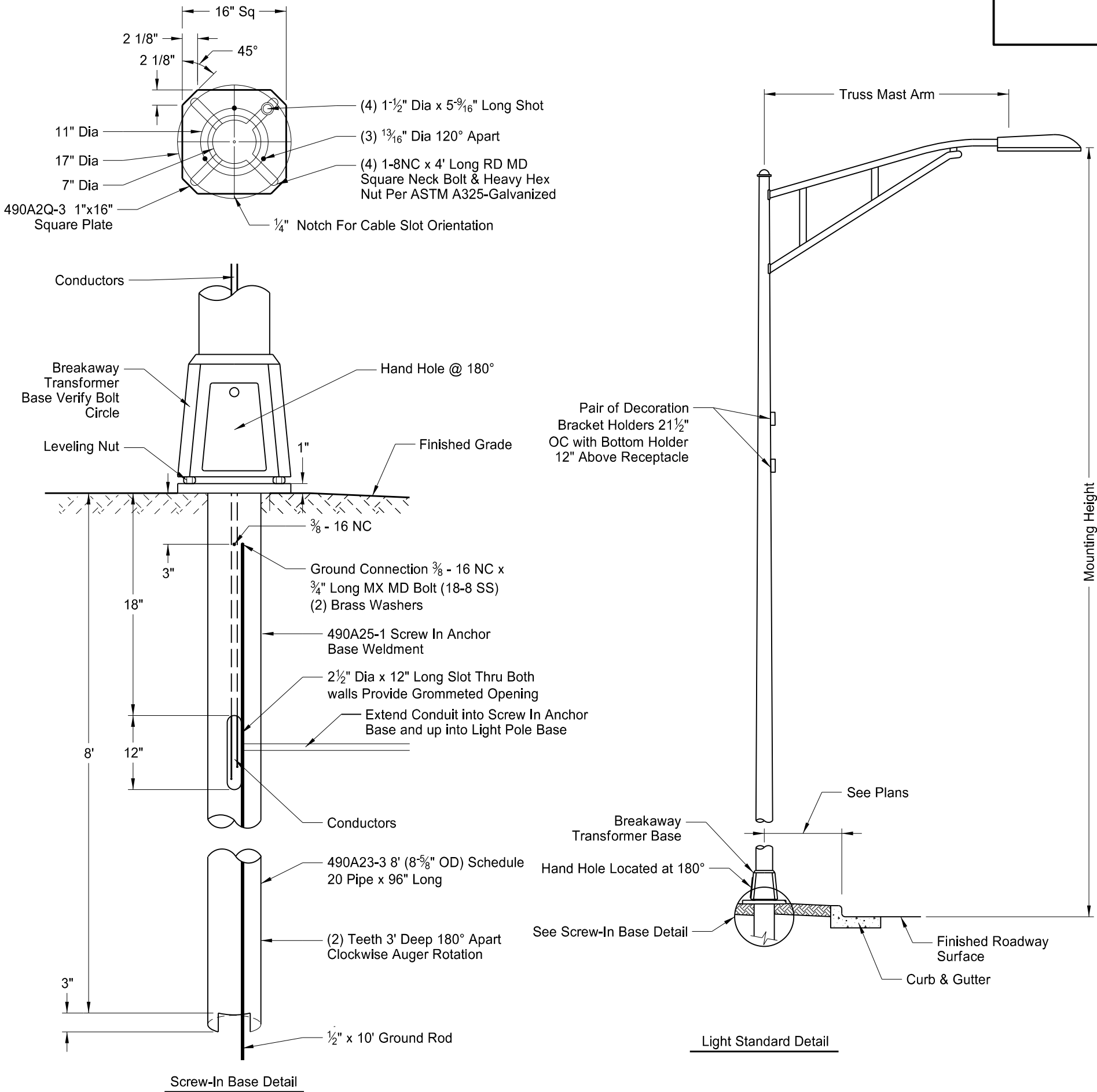


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Lighting Details  
One Line Schematic

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	140	15

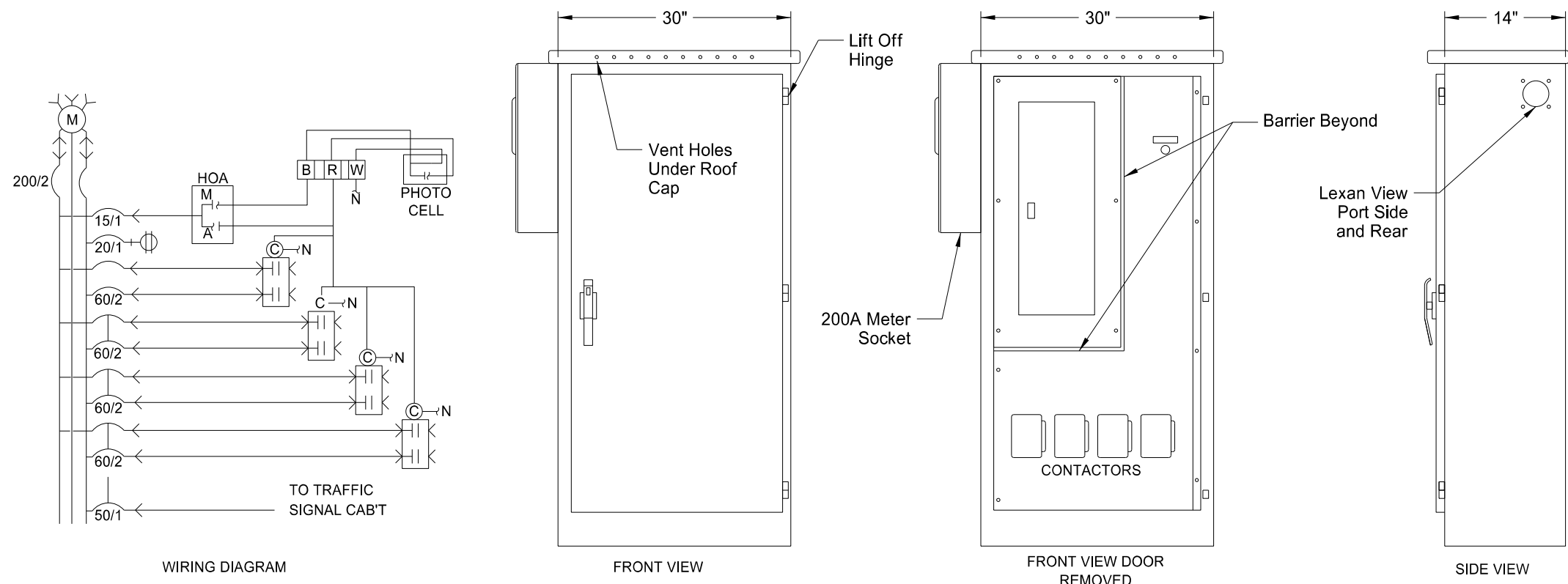


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Lighting Details

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-6-986(121)125	140	16



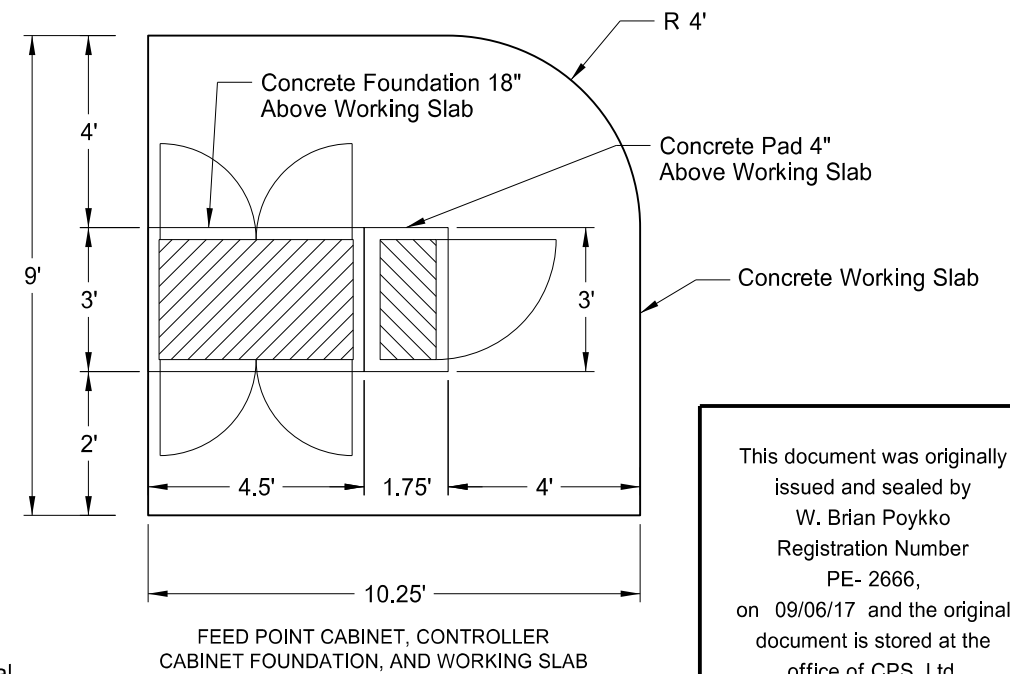
**Notes:**

1. Combination Feed Point to be used when Traffic Signals and Street Lights are to utilize same Feed Point.
2. Cabinet fabricated from 14 Gauge #304 Stainless Steel.
3. Padlockable Vault Type Handle to be Stainless Steel with Three Point Latch.
4. Lift Off Hinges - Southco #98-10-500-50, Sugatsume or Equal.
5. Inner Dead Front to be Hinged.
6. Cabinet to be Suitable for Service Entrance.
7. Assembly to be UL508 Listed.
8. Bill of Material:

- 200A, 1PH., 3W., 120/240V Load Center  
1 - 200A 2P Main Circuit Breaker  
1 - 15A 1P Branch Breaker  
1 - 20A 1P Branch Breaker  
1 - 50A 1P Branch Breaker  
4 - 60A 2P Branch Breaker  
4 - 60A 2P Mercury Contactors  
Mercury Displacement #260N0102AH

- Test Switch - Allen Bradley #800T-H2A, Square D or Equal

- 200A 2P By-Pass Meter Socket - Street Lights  
- Photocell Base - Area Lighting Research AW2A-NB, Intermatic, Paragon, Tork or Equal  
- Photocell - DTL #DP124-0.8-TJUJ50, Intermatic, Paragon, Tork or Equal



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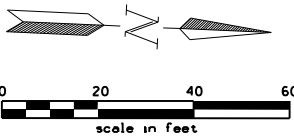
Lighting Details

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

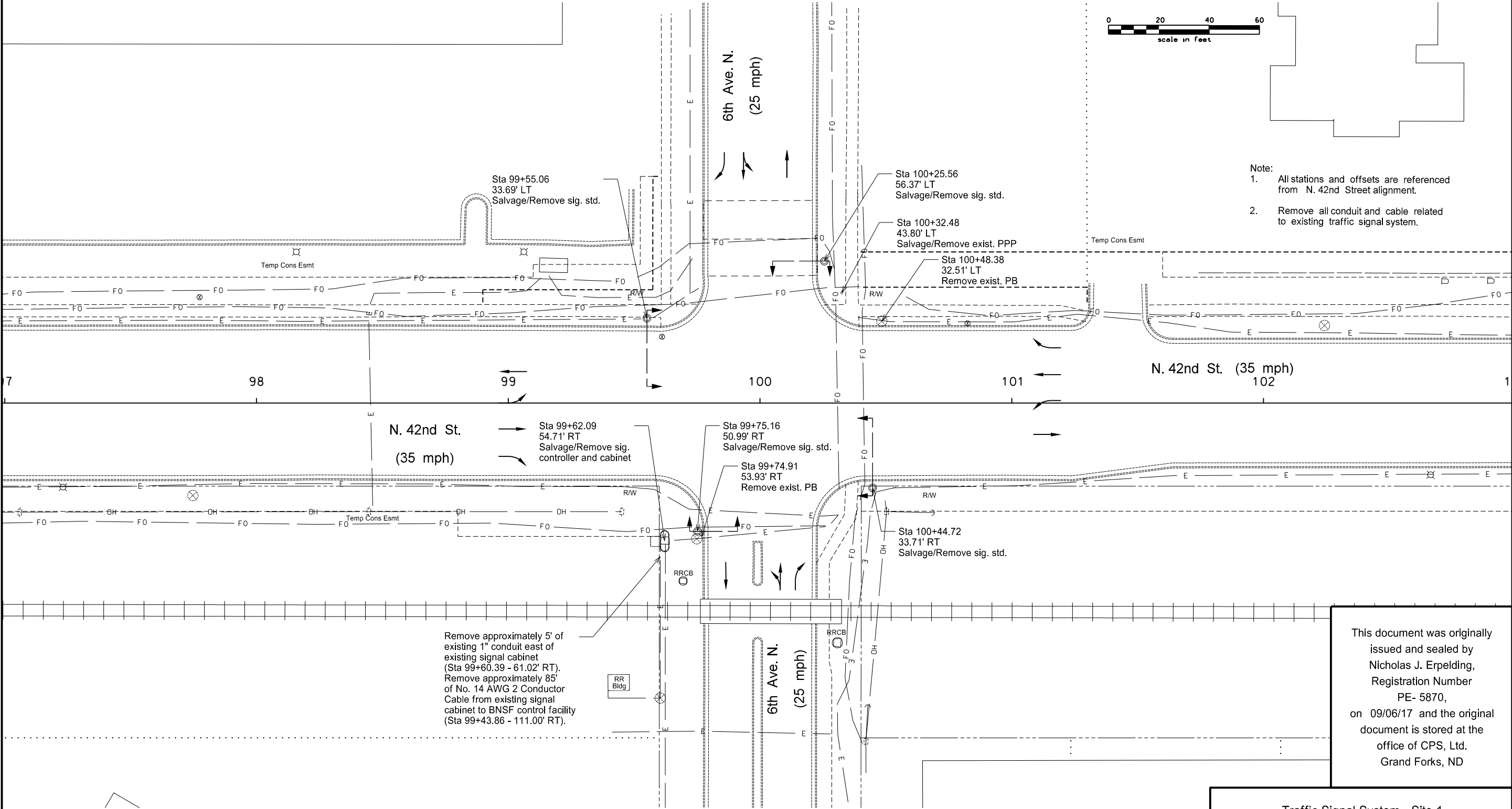
Feed Point Type IV - Pad Mounted



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-6-986(121)125	150	1



- Note:
1. All stations and offsets are referenced from N. 42nd Street alignment.
  2. Remove all conduit and cable related to existing traffic signal system.



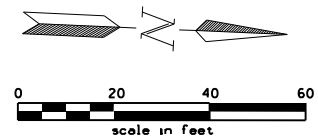
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Traffic Signal System - Site 1  
Traffic Signal Removal  
6th Avenue North

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

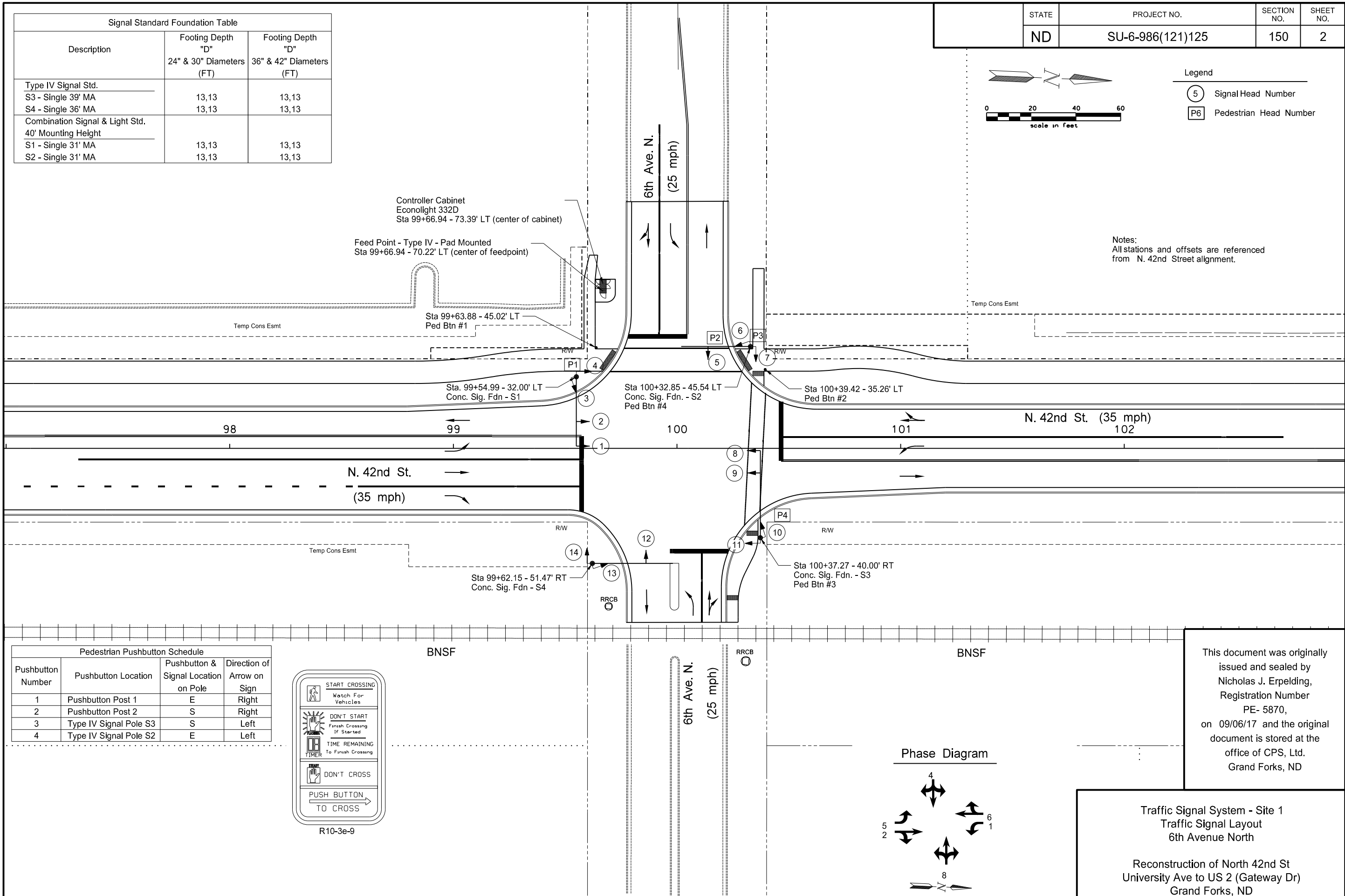
Signal Standard Foundation Table		
Description	Footing Depth "D" 24" & 30" Diameters (FT)	Footing Depth "D" 36" & 42" Diameters (FT)
Type IV Signal Std.		
S3 - Single 39' MA	13,13	13,13
S4 - Single 36' MA	13,13	13,13
Combination Signal & Light Std. 40' Mounting Height		
S1 - Single 31' MA	13,13	13,13
S2 - Single 31' MA	13,13	13,13

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	150	2

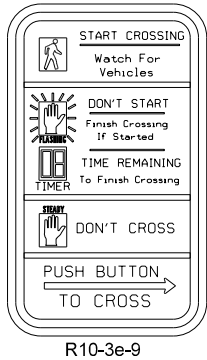


- Legend
- 5 Signal Head Number
  - P6 Pedestrian Head Number

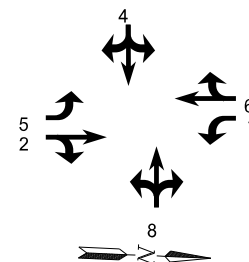
Notes:  
All stations and offsets are referenced from N. 42nd Street alignment.



Pedestrian Pushbutton Schedule			
Pushbutton Number	Pushbutton Location	Pushbutton & Signal Location on Pole	Direction of Arrow on Sign
1	Pushbutton Post 1	E	Right
2	Pushbutton Post 2	S	Right
3	Type IV Signal Pole S3	S	Left
4	Type IV Signal Pole S2	E	Left



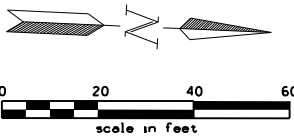
Phase Diagram



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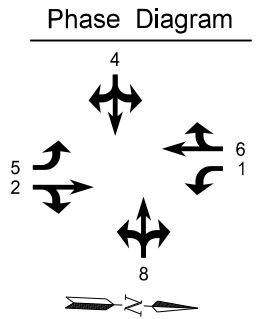
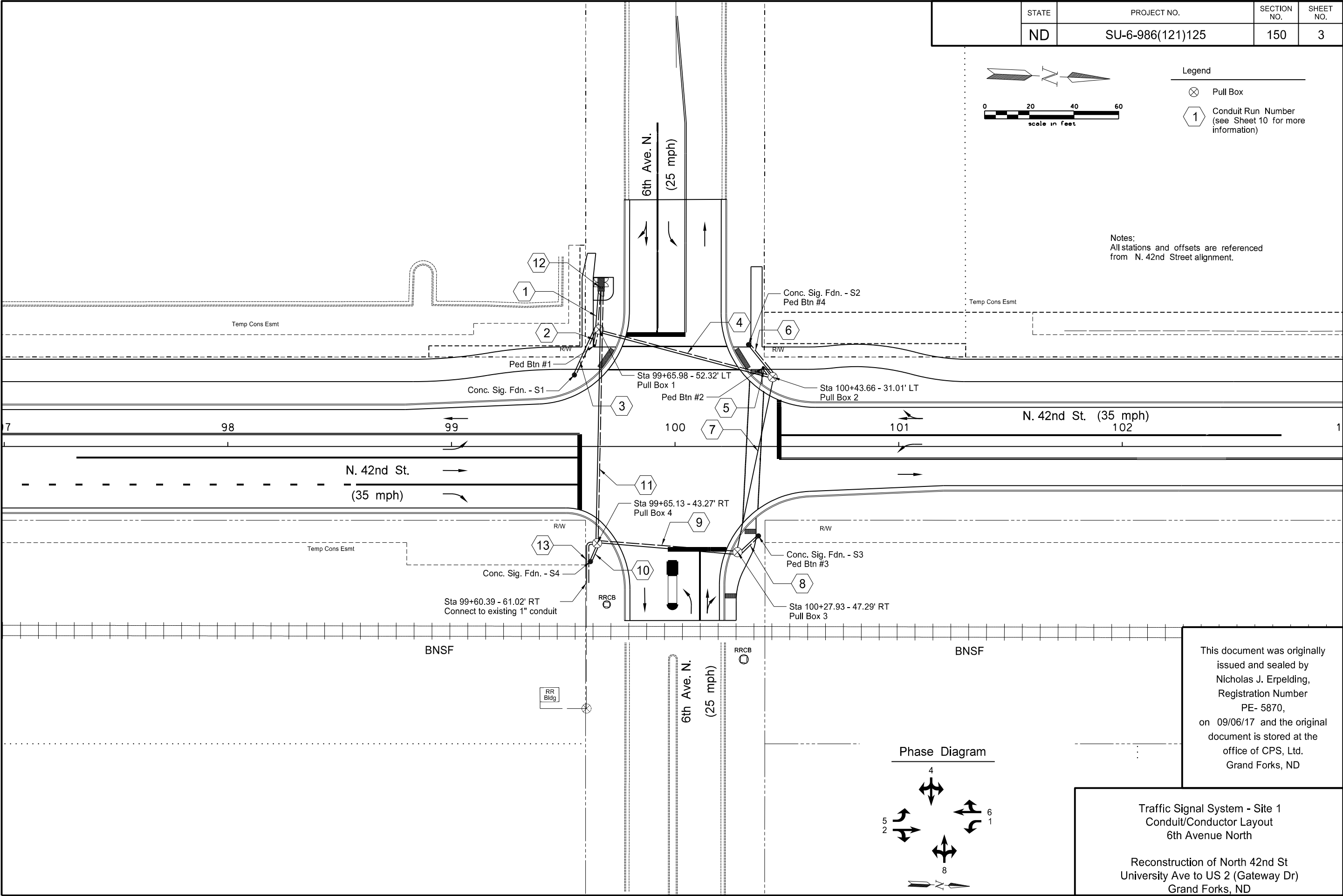
Traffic Signal System - Site 1  
Traffic Signal Layout  
6th Avenue North  
  
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	150	3



- Legend
- Pull Box
  - Conduit Run Number  
(see Sheet 10 for more information)

Notes:  
All stations and offsets are referenced from N. 42nd Street alignment.



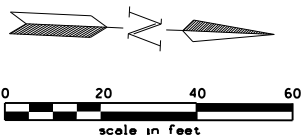
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Traffic Signal System - Site 1  
Conduit/Conductor Layout  
6th Avenue North

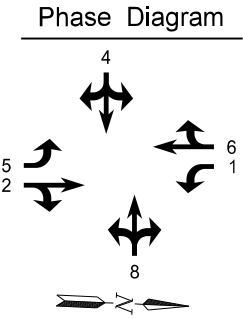
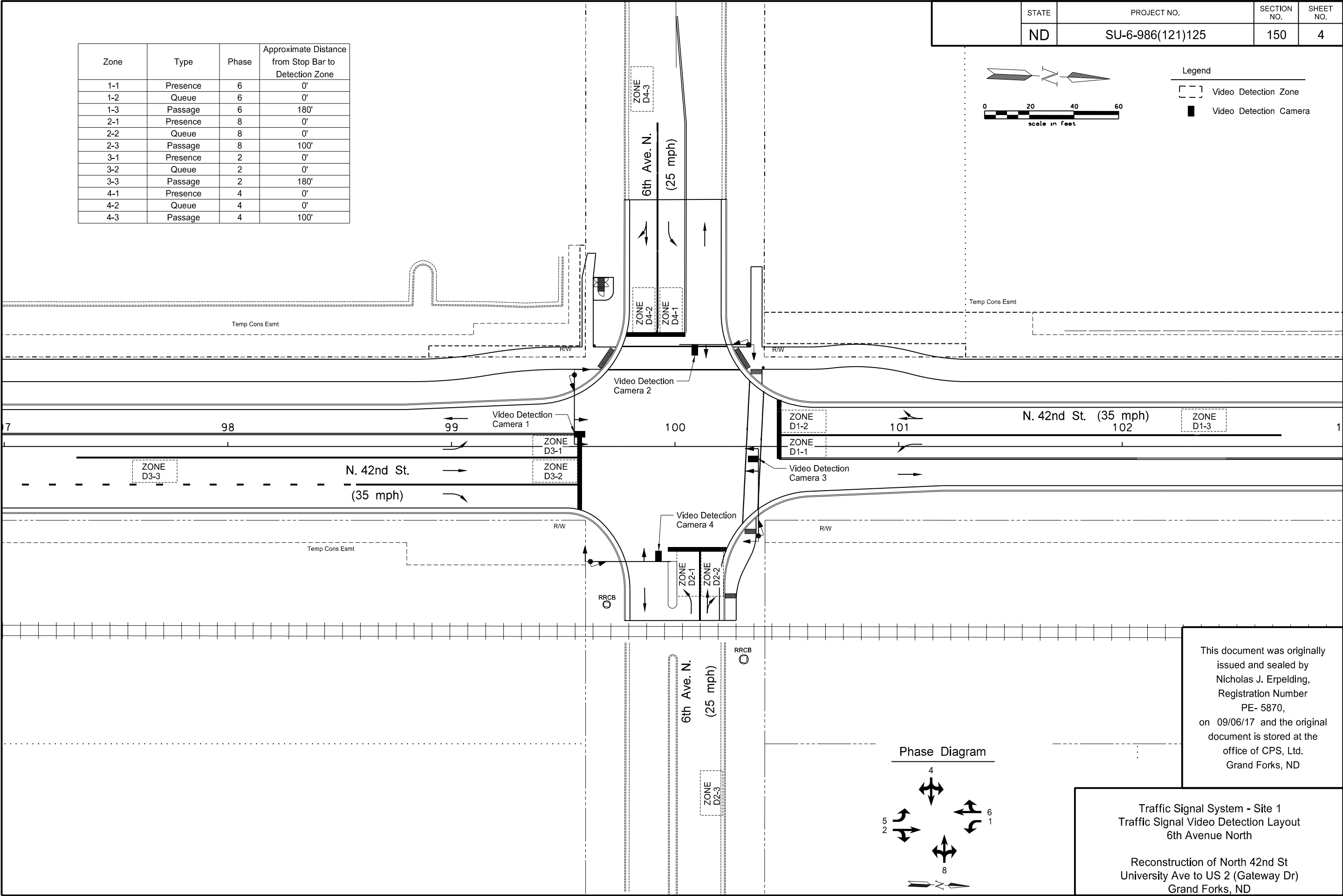
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

Zone	Type	Phase	Approximate Distance from Stop Bar to Detection Zone
1-1	Presence	6	0'
1-2	Queue	6	0'
1-3	Passage	6	180'
2-1	Presence	8	0'
2-2	Queue	8	0'
2-3	Passage	8	100'
3-1	Presence	2	0'
3-2	Queue	2	0'
3-3	Passage	2	180'
4-1	Presence	4	0'
4-2	Queue	4	0'
4-3	Passage	4	100'

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	150	4



- Legend
- Video Detection Zone
  - Video Detection Camera



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Traffic Signal System - Site 1  
Traffic Signal Video Detection Layout  
6th Avenue North

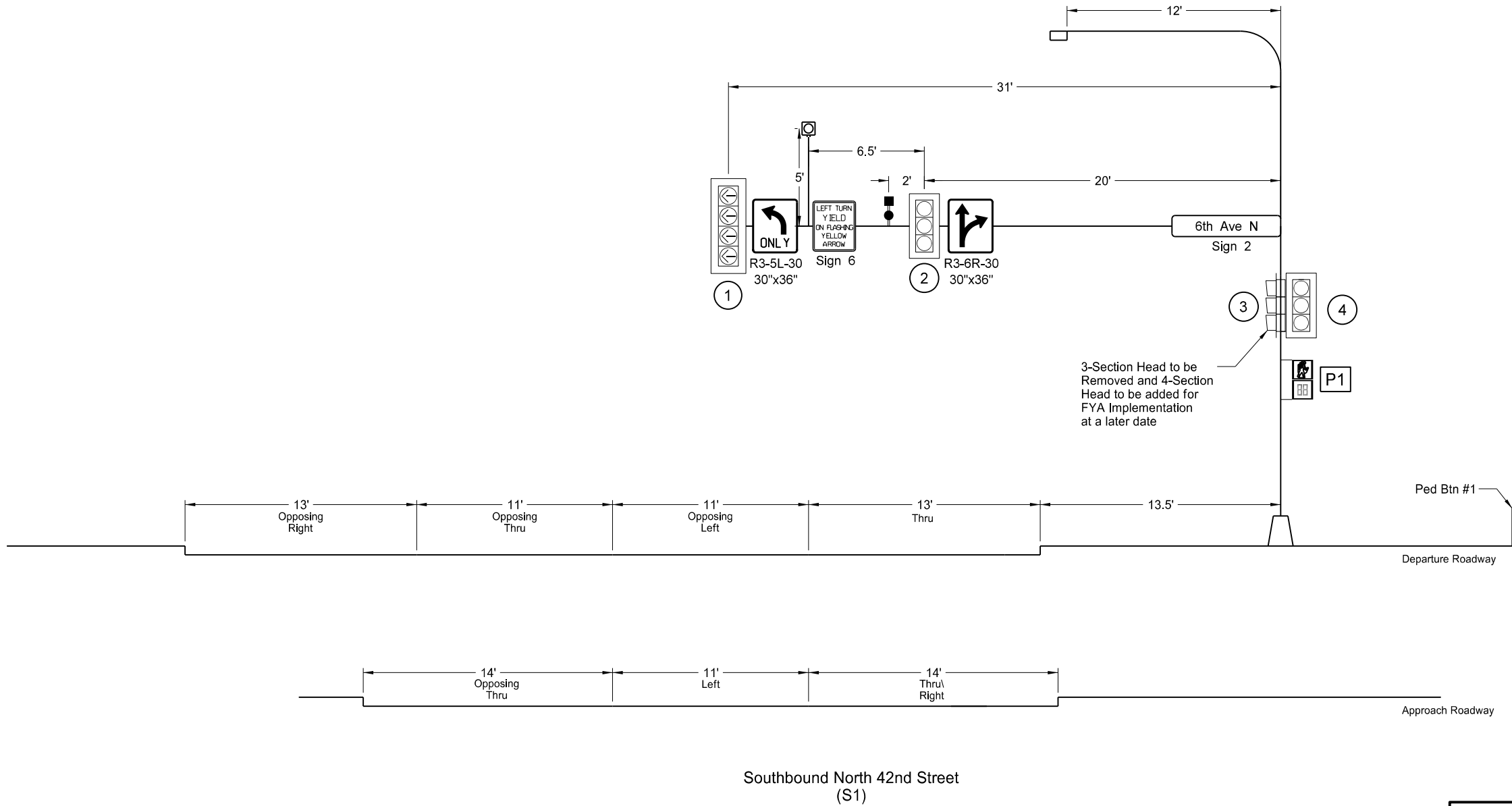
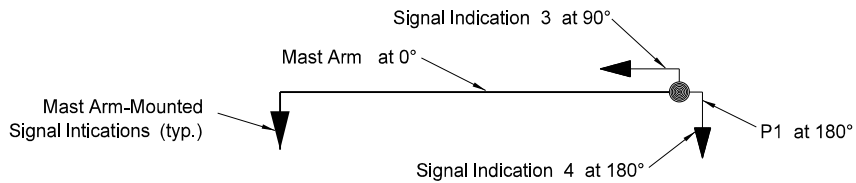
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

Notes:

1. Luminaire extension shall be 40' mounting height and 12' mast arm.
2. Furnish and install LED luminaire. See Section 140 for details. (Typ.)
3. The final location of the video detection camera shall be determined by the contractor to provide a functional system.
4. The final location of the Emergency Vehicle Preemption GPS detector shall be determined by the contractor to provide a functional system.
5. Support brackets for pole mounted signal heads shall not restrict access to mast arm handhole.
6. See Section 110 for sign details.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-6-986(121)125	150	5

Pole-Mounted Signal  
Indication Orientation Detail  
Not to Scale



Legend

- Transformer Base
- Video Detection Camera
- Traffic Signal Head
- Pedestrian Signal Head
- Vehicle Signal Head Number
- Pedestrian Head Number
- Emergency Vehicle Preemption GPS Detector and Light

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Traffic Signal System - Site 1  
Signal Standard & Head Locations  
6th Avenue North

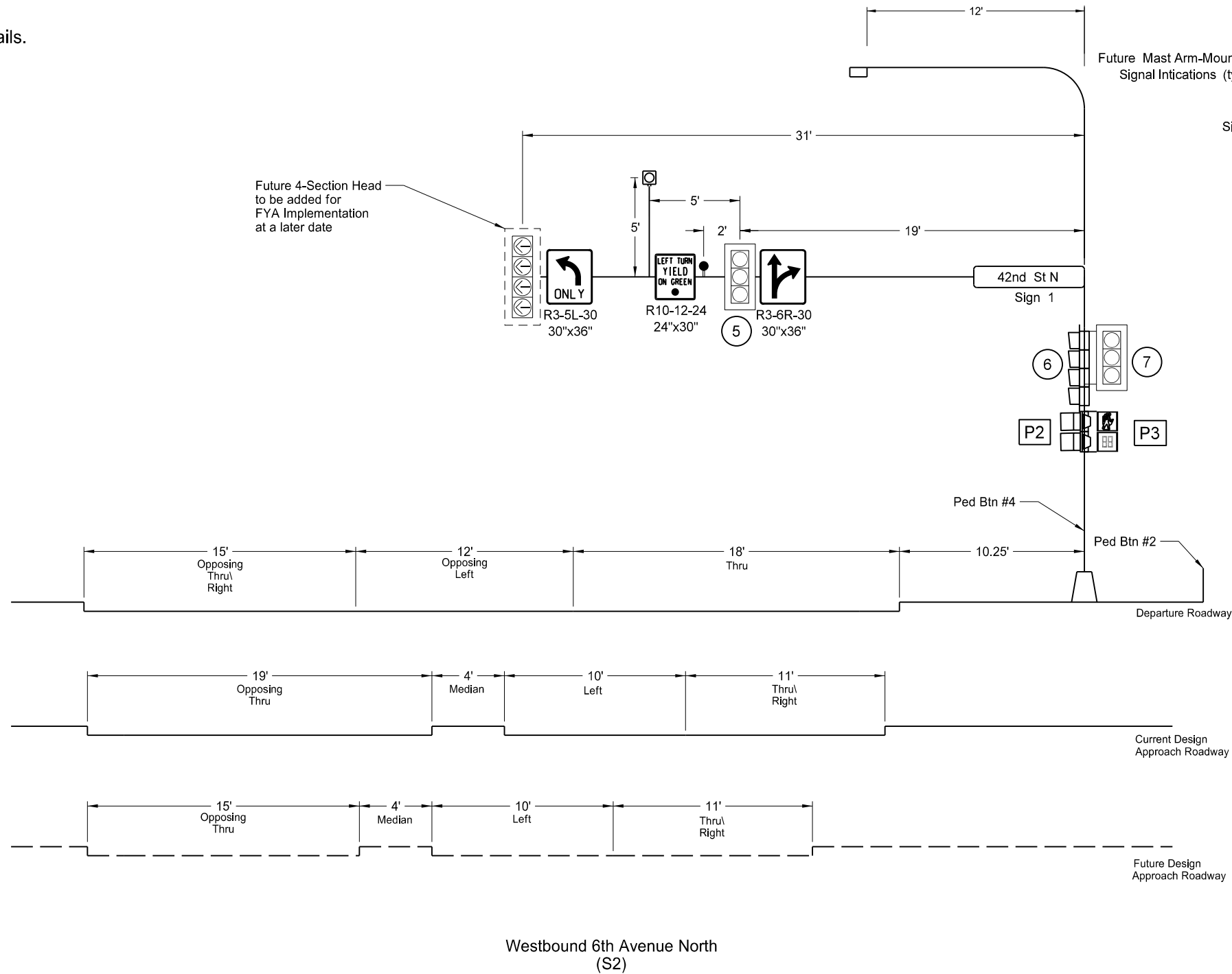
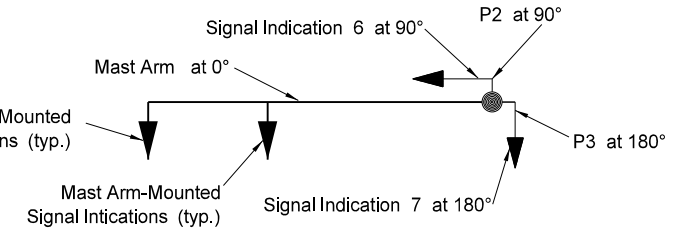
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

Notes:

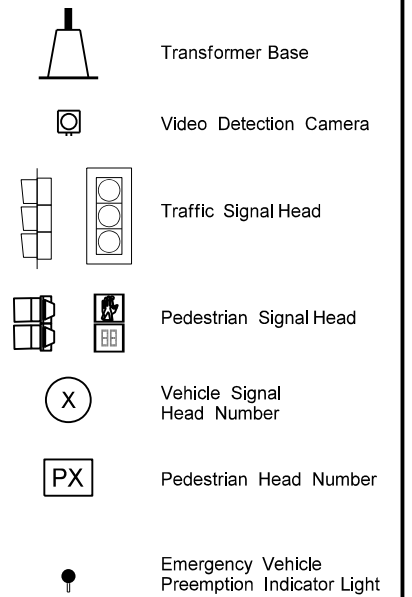
1. Luminaire extension shall be 30' mounting height and 12' mast arm.
2. Furnish and install LED luminaire. See Section 140 for details. (Typ.)
3. The final location of the video detection camera shall be determined by the contractor to provide a functional system.
4. Support brackets for pole mounted signal heads shall not restrict access to mast arm handhole.
5. See Section 110 for sign details.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SU-6-986(121)125	150	6

Pole-Mounted Signal  
Indication Orientation Detail  
Not to Scale



Legend



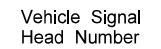
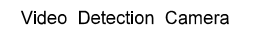
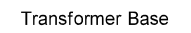
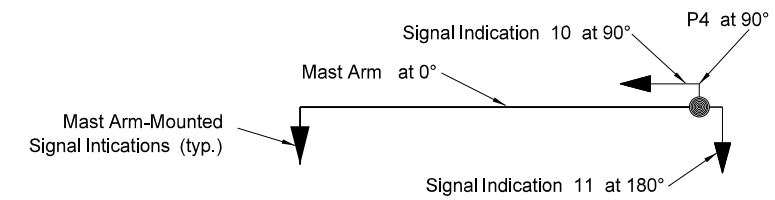
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Traffic Signal System - Site 1  
Signal Standard & Head Locations  
6th Avenue North

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

3. See Section 110 for sign details.

Pole-Mounted Signal  
Indication Orientation Detail  
Not to Scale



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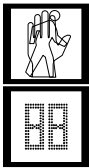
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND



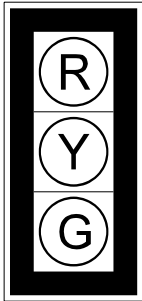


Conductor			Cable 1 (14 No.12 AWG)			Cable 2 (14 No.12 AWG)			Cable 3 (14 No.12 AWG)			Cable 4 (14 No.12 AWG)		
Run	Base	Tracer	Head	Phase	Indication	Head	Phase	Indication	Head	Phase	Indication	Head	Phase	Indication
1	Black		2,4	6	Green	3	8	Green	5,7	8	Green		5	Future Green Left Arrow
2	White				Neutral			Neutral			Neutral			Neutral
3	Red		2,4	6	Red	3	8	Red	5,7	8	Red	6	5	Red Left Arrow
4	Green				Ground			Ground			Ground			Ground
5	Orange		2,4	6	Yellow	3	8	Yellow	5,7	8	Yellow	6	5	Yellow Left Arrow
6	Blue				Spare			Future / WB FYA			Spare	6	5	FY Left Arrow
7	White	Black			Spare			Spare			Spare			Spare
8	Red	Black	P1	6	Walk	1	1	Red Left Arrow	P2	6	Walk		3	Future Red Left Arrow
9	Green	Black			Spare			Spare			Spare			Spare
10	Orange	Black	P1	6	Don't Walk	1	1	Yellow Left Arrow	P2	6	Don't Walk		3	Future Yellow Left Arrow
11	Blue	Black			Spare	1	1	FY Left Arrow	P3	8	Walk		3	Future FY Left Arrow
12	Black	White			Spare		1	Future Green Left Arrow	P3	8	Don't Walk		3	Future Green Left Arrow

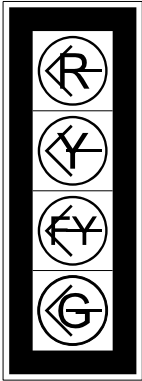
Conductor			Cable 5 (14 No.12 AWG)			Cable 6 (14 No.12 AWG)			Cable 7 (14 No.12 AWG)			Cable 8 (14 No.12 AWG)		
Run	Base	Tracer	Head	Phase	Indication	Head	Phase	Indication	Head	Phase	Indication	Head	Phase	Indication
1	Black		9,11	2	Green	10	4	Green	12,14	4	Green		7	Future Green Left Arrow
2	White				Neutral			Neutral			Neutral			Neutral
3	Red		9,11	2	Red	10	4	Red	12,14	4	Red		7	Future Red Left Arrow
4	Green				Ground			Ground			Ground			Ground
5	Orange		9,11	2	Yellow	10	4	Yellow	12,14	4	Yellow		7	Future Yellow Left Arrow
6	Blue				Spare			Future / EB FYA			Spare		7	Future FY Left Arrow
7	White	Black			Spare			Spare			Spare			Spare
8	Red	Black	P4	8	Walk	8	5	Red Left Arrow	13	1	Red Left Arrow			Spare
9	Green	Black			Spare			Spare			Spare			Spare
10	Orange	Black	P4	8	Don't Walk	8	5	Yellow Left Arrow	13	1	Yellow Left Arrow			Spare
11	Blue	Black			Spare	8	5	FY Left Arrow	13	1	FY Left Arrow			Spare
12	Black	White			Spare		5	Future Green Left Arrow		1	Future Green Left Arrow			Spare



(12" Lenses)  
Heads P1, P2, P3, P4



(12" Lenses)  
Heads 2, 3, 4, 5, 7,  
9, 10, 11, 12, 14



(12" Lenses)  
Heads 1, 6, 8, 13

- Note:
1. All Heads Shall use LED Indications
  2. 5" Louvered Black Plate with Type XI Yellow Reflective Border (typ.) on all heads

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Traffic Signal System - Site 1  
Signal Heads & Conductor Schedule  
6th Avenue North

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

Conduit Run	Location	Conduit Run		Cable Run			
		Length	Size	Length	Code	QTY	Type
1	Controller to Pull Box 1	15	4"	50	A	2	No. 14 AWG 3 Conductor Cable
				50	B	2	Emergency Detector Cable
				100	C	4	No. 14 AWG 12 Conductor Cable
				80	C	3	Push Button
				50	D	2	Video Detector Cable
2	Pull Box 1 to Pedestrian Push Btn. 1	5	2"	20	C	1	Push Button
3	Pull Box 1 to Signal S1	25	4"	80	A	1	No. 14 AWG 3 Conductor Cable
				80	B	1	Emergency Detector Cable
				160	C	2	No. 14 AWG 12 Conductor Cable
				80	D	1	Video Detector Cable
4	Pull Box 1 to Pull Box 2	80	4"	80	A	1	No. 14 AWG 3 Conductor Cable
				80	B	1	Emergency Detector Cable
				160	C	2	No. 14 AWG 12 Conductor Cable
				160	C	2	Push Button
				80	D	1	Video Detector Cable
5	Pull Box 2 to Pedestrian Push Btn. 2	5	2"	20	C	1	Push Button
6	Pull Box 2 to Signal S2	15	4"	70	A	1	No. 14 AWG 3 Conductor Cable
				70	B	1	Emergency Detector Cable
				140	C	2	No. 14 AWG 12 Conductor Cable
				70	C	1	Push Button
				70	D	1	Video Detector Cable
7	Pull Box 2 to Pull Box 3	75	4"	Spare conduit for future use			

Conduit Run	Location	Conduit Run		Cable Run			
		Length	Size	Length	Code	QTY	Type
8	Pull Box 3 to Signal S3	10	4"	80	A	1	No. 14 AWG 3 Conductor Cable
				80	B	1	Emergency Detector Cable
				150	C	2	No. 14 AWG 12 Conductor Cable
				80	C	1	Push Button
				80	D	1	Video Detector Cable
9	Pull Box 3 to Pull Box 4	60	4"	60	A	1	No. 14 AWG 3 Conductor Cable
				60	B	1	Emergency Detector Cable
				120	C	2	No. 14 AWG 12 Conductor Cable
				60	C	1	Push Button
				60	D	1	Video Detector Cable
10	Pull Box 4 to Signal S4	10	4"	70	A	1	No. 14 AWG 3 Conductor Cable
				70	B	1	Emergency Detector Cable
				140	C	2	No. 14 AWG 12 Conductor Cable
				70	D	1	Video Detector Cable
11	Controller to Pull Box 4	110	4"	240	A	2	No. 14 AWG 3 Conductor Cable
				240	B	2	Emergency Detector Cable
				480	C	4	No. 14 AWG 12 Conductor Cable
				120	C	1	Push Button
				240	D	2	Video Detector Cable
				120	F	1	No. 14 AWG 2 Conductor Cable
12	Feed Point to Controller	5	2"	30	E	1	Mult 3 No 6 USE
13	Sta. 99+60.39 - 61.02' RT to Pull Box 4	20	1"	20	F	1	No. 14 AWG 2 Conductor Cable
Existing	BNSF control facility to Sta. 99+60.39 - 61.02' RT	80	1"	80	F	1	No. 14 AWG 2 Conductor Cable

Cable Code

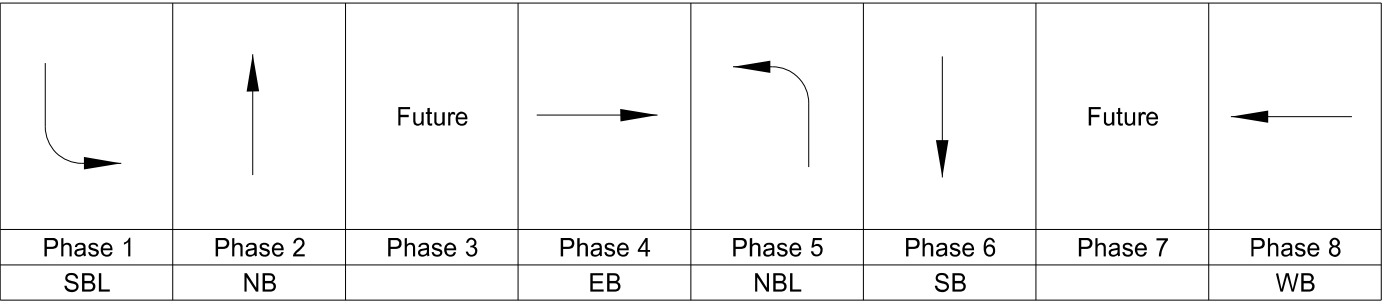
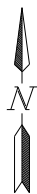
A = Emergency Vehicle Indicator Lamp  
B = Emergency Vehicle Detector Cable  
C = Signal Control Cable  
D = Video Detection Cable  
E = Power Cable  
F = Railroad Preemption Cable

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Traffic Signal System - Site 1  
Conduit Schedule  
6th Avenue North

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND





BASIC INTERVALS (OR FUNCTIONS)

Minimum Initial	5.0	15	-	10	5.0	15	-	12
Vehicle Extension	3.0	4.5	-	3.0	3.0	4.5	-	3.0
Maximum Green (Max 1)	30	55	-	30	30	55	-	55
Yellow Change	3.5	4.0	-	3.0	3.5	4.0	-	3.0
Red Clearance	2.0	1.5	-	2.0	2.0	1.5	-	2.0
Walk	-	-	-	-	-	7.0	-	7.0
Pedestrian Clearance	-	-	-	-	-	11.0	-	15.0
Delayed Green (Leading Pedestrian Interval)	-	-	-	-	-	-	-	-

VOLUME DENSITY TIMING FUNCTIONS

VARIABLE INITIAL TIMING OPTIONS

Actuations Before Added Initial	-	-	-	-	-	-	-	-
Added Initial per Actuation	-	-	-	-	-	-	-	-
Maximum Initial	-	-	-	-	-	-	-	-

GAP REDUCTION OPTIONS

Time Before Reduction	-	20	-	-	-	20	-	-
Time to Reduce to Minimum Gap	-	20	-	-	-	20	-	-
Minimum Gap	-	2.5	-	-	-	2.5	-	-

OTHER CONTROLLER FUNCTIONS

Locking Memory	-	x	-	x	-	x	-	x
Non-Locking Memory	x	-	x	-	x	-	x	-
Phase recall	-	x	-	-	-	x	-	-
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Backup Prevent Phases	-	-	-	-	-	-	-	-
No Serve Phases	-	-	-	-	-	-	-	-
Flashing-Normal & Conflict Monitor	R	R	R	R	R	R	R	R

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Traffic Signal System - Site 1  
Signal Timing Settings  
6th Avenue North

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

Coordination Timing:

		Coord Pattern:													
		1	2	3	4	5	7	9	10	17	18	19	21	23	24
Cycle Length		80	70	80	65	90	100	60	90	80	60	70	80	80	65
Offset		23	54	46	51	13	29	8	13	6	18	52	36	50	16
Sequence		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Phase 1	SBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 2	NB	38	34	41	33	50	52	30	46	38	30	38	38	38	34
Phase 3	WBL	Future													
Phase 4	EB	42	36	39	32	40	48	30	44	42	30	32	42	42	31
Phase 5	NBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 6	SB	38	34	41	33	50	52	30	46	38	30	38	38	38	34
Phase 7	EBL	Future													
Phase 8	WB	42	36	39	32	40	48	30	44	42	30	32	42	42	31
Coord Phase(s)		2,6	2,6	2,6	2,6	2,6	2,6	2,6	2,6	2,6	2,6	2,6	2,6	2,6	2,6
Leading Phase(s)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Omitted Phase(s)		1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5

Coord Pattern Descriptions:

- 1 AM Peak

2 AM Off Peak

3 PM Off Peak

4 PM Peak

5 Weekend

6 Weekend Off Peak

7

9
- 10

17 Weekday AM Peak

18 Weekday PM Peak

19 Saturday Midday Peak

21 Snow Day Plan; Morning Peak, Evening

23 Snow Day Plan; Morning Off Peak

24 Snow Day Plan; Weekday Afternoon

Time of Day Schedules:

Day Plan:	1
In Effect:	Monday - Friday
Time	Pattern
0	100
6 30	2
7 15	1
8 15	2
11 30	3
16 15	4
17 45	3
18 30	2
22 00	100

Day Plan:	2
In Effect:	Saturday - Sunday
Time	Pattern
0	100
8 00	2
21 00	100

Note: Signal to operate in permissive only left turn mode at all times.

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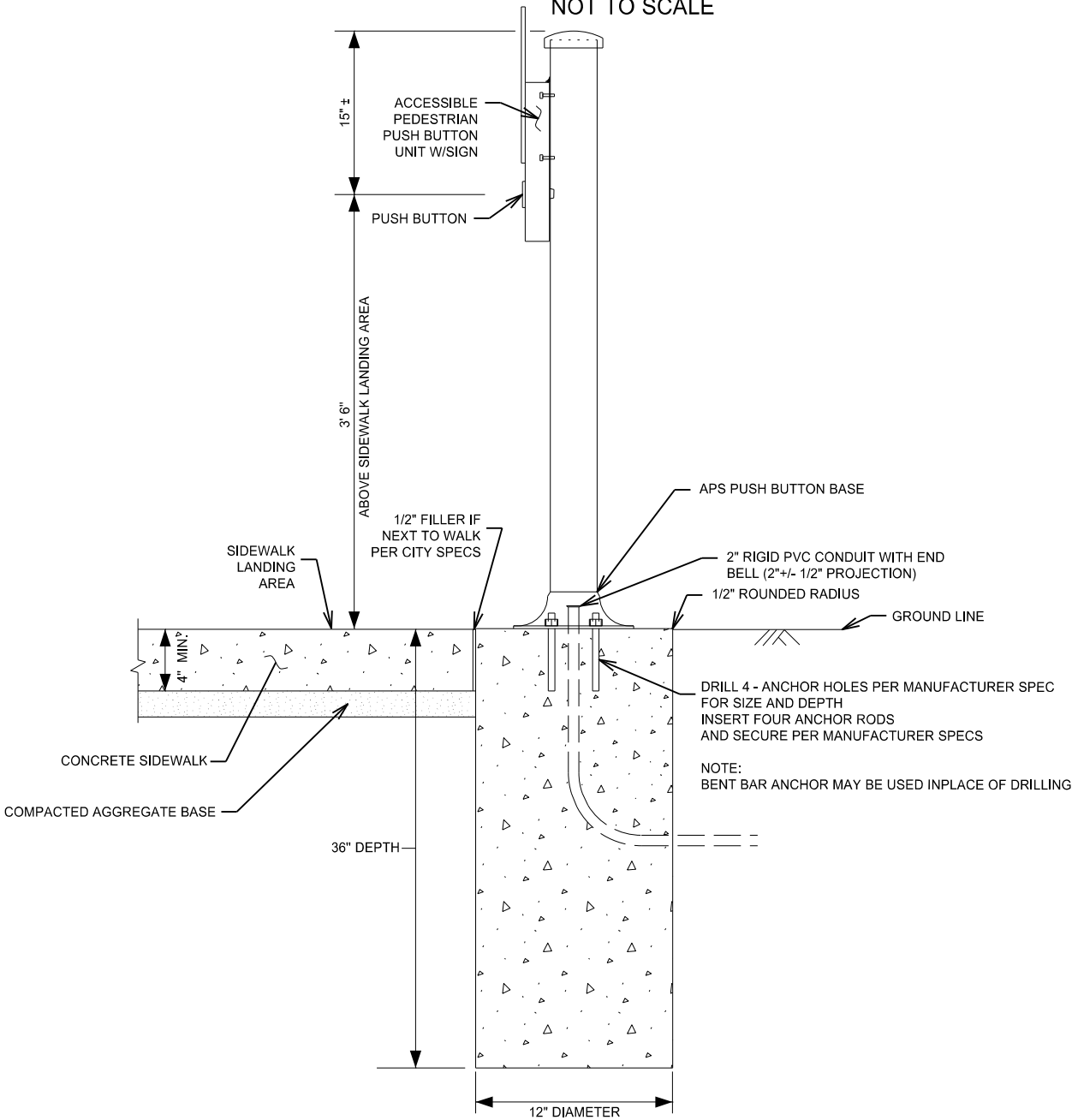
Traffic Signal System - Site 1  
Coordination Signal Timing Settings  
6th Avenue North

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SU-6-986(121)125	150	14

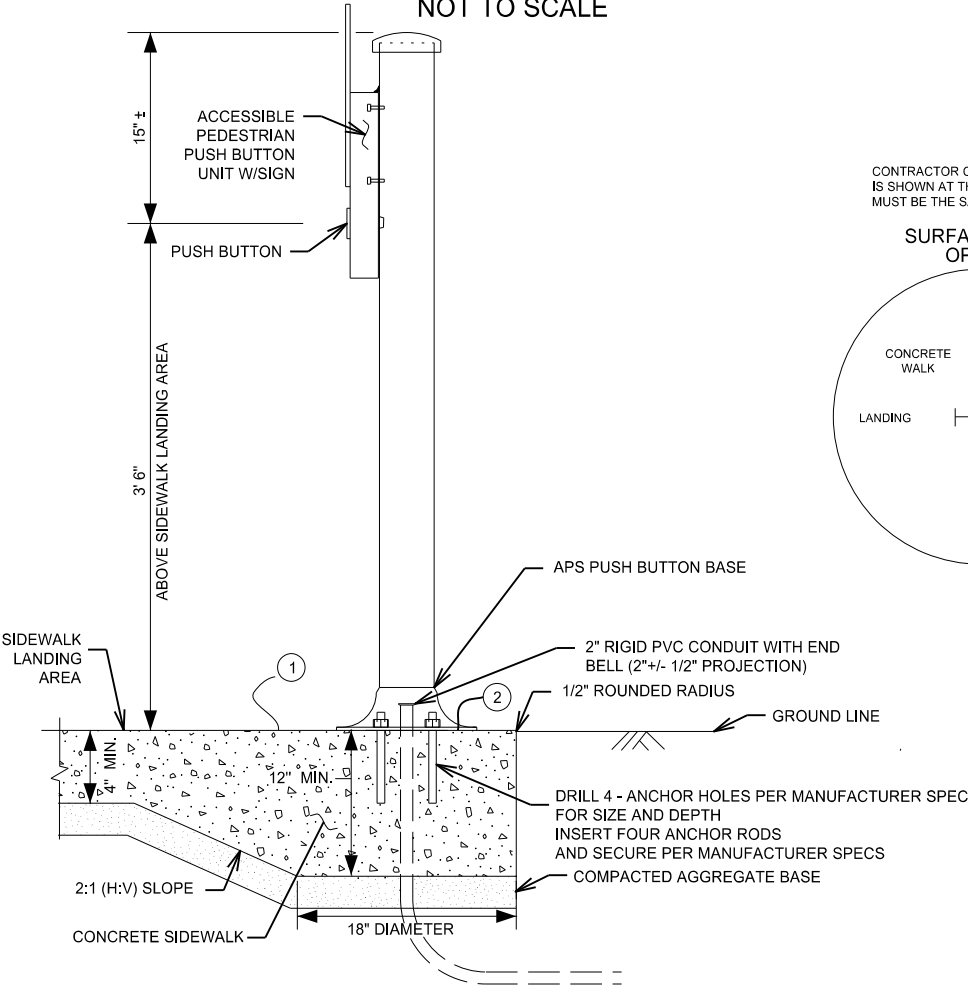
APS PUSH BUTTON STATION - FOUNDATION MOUNT

NOT TO SCALE



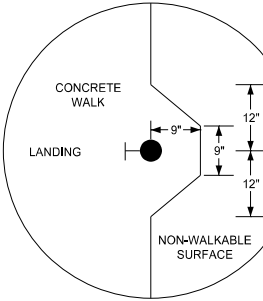
APS PUSH BUTTON STATION - SURFACE MOUNT  
(MAY BE USED WITH APPROVAL BY THE ENGINEER)

NOT TO SCALE

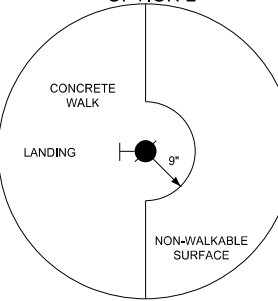


CONTRACTOR CAN USE OPTION 1 OR 2 WHEN THE APS PUSH BUTTON IS SHOWN AT THE EDGE OF WALK. OPTION USED (OR SELECTED) MUST BE THE SAME THROUGHOUT THE ENTIRE PROJECT.

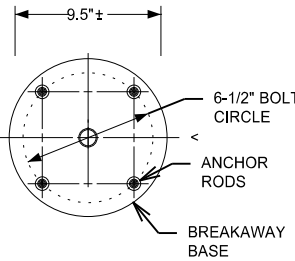
SURFACE MOUNT  
OPTION 1



SURFACE MOUNT  
OPTION 2



ANCHOR ROD PLACEMENT



NOTES:

PLACEMENT AND ORIENTATION OF THE PUSH BUTTON STATION IS CRITICAL. MOUNT THE BUTTON SO THAT THE FACE IS PARALLEL WITH THE ASSOCIATED CROSSWALK. SCREW IN SHAFT TO A TIGHTENED POSITION BEFORE MOUNTING ACCESSIBLE PEDESTRIAN PUSH BUTTON UNIT TO THE SHAFT.

PLUMB THE PUSH BUTTON STATION WITH LEVELING SHIMS.

AN 18" X 6" FIBER FORMING TUBE MAY BE USED FOR THE LOWER HALF OF THE FOUNDATION WHEN CONDITIONS DO NOT ALLOW FOR THE 18" X 6" HOLE TO STAND OPEN.

- 1 THE PUSH BUTTON STATION FOUNDATION IS MONOLITHIC (POURED AT ONE TIME) WITH THE SIDEWALK. PROVIDE A 2:1 (H:V) SLOPE GRADE WHERE THE 4" MIN SIDEWALK DEPTH TRANSITIONS TO THE 12" MIN FOUNDATION DEPTH. MAINTAIN THE COMPACTED AGGREGATE BASE AND THICKNESS USED FOR THE SIDEWALK THROUGHOUT THE SLOPE AND FOUNDATION GRADING. PROVIDE 2:1 (H:V) SLOPE GRADING 360 DEGREES FOR THE TRANSITION FROM THE SIDEWALK TO THE FOUNDATION WHEN THE FOUNDATION IS NOT LOCATED NEAR EDGE OF SIDEWALK AND IS SURROUNDED BY CONCRETE WALK.
- 2 ENSURE CONCRETE CONTROL JOINTS AND EDGE OF CONCRETE WALK ARE A MINIMUM 9" FROM THE CENTER OF THE PUSH BUTTON FOUNDATION. (SEE OPTION 1 OR 2).

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Traffic Signal System - Site 1  
Push Button Foundation Detail  
6th Avenue North

Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND

SPEC	CODE	ITEM DESCRIPTION	UNIT	TOTAL
770	0445	MULTIPLE UNDERGROUND CABLE 3NO6 STYLE USE	LF	30
772	0020	CONCRETE FOUNDATION-TRAFFIC SIGNALS	EA	4
772	0100	PULL BOX	EA	4
772	0200	1IN DIAMETER RIGID CONDUIT	LF	20
772	0240	2IN DIAMETER RIGID CONDUIT	LF	15
772	0290	4IN DIAMETER RIGID CONDUIT	LF	400
772	0375	EMERGENCY VEHICLE DETECTOR CABLE	LF	730
772	0432	NO14 AWG 2 CONDUCTOR CABLE	LF	830
772	0433	NO14 AWG 3 CONDUCTOR CABLE	LF	730
772	0442	NO14 AWG 12 CONDUCTOR CABLE	LF	1450
772	0636	TYPE IV SIGNAL STD 36FT MA	EA	1
772	0639	TYPE IV SIGNAL STD 39FT MA	EA	1
772	1012	COMBO 31FT MA SIG & LT STD-TYPE C	EA	2
772	1810	1-WAY 3 SEC HEAD W/12IN LENS-POST MTD	EA	6
772	1812	1-WAY 3 SEC HEAD W/12IN LENS-MA MTD	EA	4
772	1820	1-WAY 4 SEC HEAD W/12IN LENS-POST MTD	EA	2
772	1822	1-WAY 4 SEC HEAD W/12IN LENS-MA MTD	EA	2
772	2060	PEDESTRIAN COUNTDOWN SIGNAL HEAD-POST MTD	EA	4
772	2200	PEDESTRIAN PUSHBUTTON POST	EA	2
772	2215	PEDESTRIAN PUSHBUTTON & SIGN	EA	4
772	2260	VIDEO DETECTION CABLE	LF	730
772	2265	VIDEO DETECTION SYSTEM	EA	1
772	2522	VOLUME DENSITY CONTR W/EMER PREEMPTION & CABINET	EA	1
772	2556	BATTERY BACKUP SYSTEM	EA	1
772	2610	EMERGENCY VEHICLE PREEMPTION UNIT	EA	4
772	2621	EMERGENCY VEHICLE PRE-EMPTION PHASE SELECTOR	EA	1
772	9811	TRAFFIC SIGNAL SYSTEM - SITE 1	EA	1
		Items shown above are for informational purposes; contractor shall provide all labor and equipment necessary for the signal system to be fully operational as shown in the Plans. Items shall be included in the corresponding price bid for "TRAFFIC SIGNAL SYSTEM - SITE 1"		

See section 140 for LED luminaires

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Traffic Signal System - Site 1  
Estimated Traffic Signal Quantities  
6th Avenue North  
  
Reconstruction of North 42nd St  
University Ave to US 2 (Gateway Dr)  
Grand Forks, ND



