

MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN FOR SIGN REPLACEMENT
LOCATED ON T.H. 65 600' SO. OF 209TH AVE. N.E. TO 3/4 MILE NORTH OF 221ST AVE. N.E.

FED. PROJ. NO. 0000-00

GOVERNING SPECIFICATIONS
THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION
"STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

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21-24	STRUCTURAL DETAILS

THIS PLAN CONTAINS 24 SHEETS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT
SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE
LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: B. GOLDBERG LICENSE # 1984

DATE: SIGNATURE:

DESIGN SQUAD G. SCHWARTZ, R. SMITH, A. COGAN

RECOMMENDED FOR APPROVAL DISTRICT TRANSPORTATION ENGINEER 20

RECOMMENDED FOR APPROVAL DISTRICT TRAFFIC ENGINEER 20

RECOMMENDED FOR APPROVAL STATE PRE-LETTING ENGINEER 20

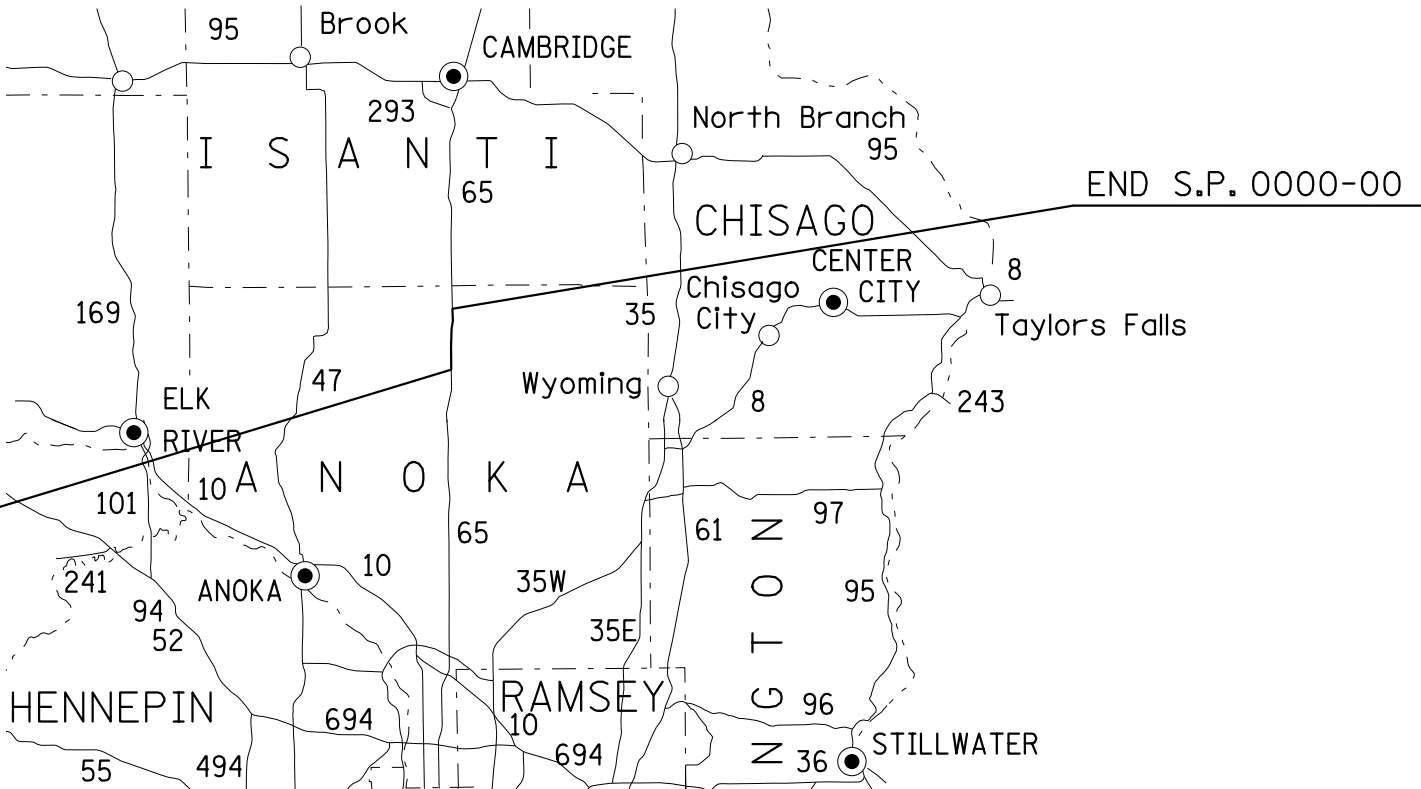
OFFICE OF LAND MANAGEMENT APPROVAL DIRECTOR, LAND MANAGEMENT 20

APPROVED 20 STATE DESIGN ENGINEER

I HEREBY CERTIFY THAT THE FINAL FIELD REVISIONS, IF ANY, WERE PREPARED BY ME
OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL
ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: LICENSE #

DATE: SIGNATURE:



SCALE
10 MILES

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL

STATE PROJ. NO. 0000-00 CHARGE IDENTIFIER

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY



PLOTTED/REVISED: 6/14/2017

DISTRICT #: METRO
IPLOT NAME: SAMPLE CO-SIGNING TYPICALS
PATH & FILENAME: IP_PWP-d1874706SAMPLE CO-SIGNING TYPICALS.dgn

STATEMENT OF ESTIMATED QUANTITIES					
TAB	SHEET NO	ITEM NO	ITEM	UNIT	TOTAL SIGNING QUANTITIES
		2011.601	AS BUILT	LUMP SUM	1
		2021.501	MOBILIZATION	LUMP SUM	1
		2104.509	REMOVE MARKER	EACH	6
		2104.509	REMOVE SIGN TYPE C	EACH	59
D	5	2104.509	REMOVE SIGN TYPE D	EACH	16
B	3	2104.523	SALVAGE SIGN TYPE C	EACH	2
E	5	2104.523	SALVAGE SIGN TYPE D	EACH	2
		2563.601	TRAFFIC CONTROL	LUMP SUM	1
A	3	2564.531	SIGN PANELS TYPE C	SQ FT	821
C	4	2564.531	SIGN PANELS TYPE D	SQ FT	573
H	6	2564.531	SIGN PANELS TYPE OVERLAY	SQ FT	32
B	3	2564.537	INSTALL SIGN TYPE C	EACH	2
E	5	2564.537	INSTALL SIGN TYPE D	EACH	2
G	6	2564.551	REFERENCE LOCATION SIGN	EACH	6
F	6	2564.552	OBJECT MARKER TYPE X4-2	EACH	2

DISTRICT #: METRO
PLOT NAME: SAMPLE CHARTSI
PATH & FILENAME: IP_PWP-d1874706\SAMPLE CHARTS.dgn

PLOTTED/REVISED: 6/14/2017

SIGN PANELS TYPE C										A	
SIGN NO	QTY	POSTS			MTG HT (1)	PANEL			CODE NO	PANEL LEGEND	
		NO & TYPE	KNEE BRACES QTY	LENGTH FEET		SIZE INCH	AREA SQ FT	TOTAL AREA SQ FT			
C-1	4	2-U	1	19	7	54 x 18	6.75	27.00	R6-1L	ONE WAY LEFT	(2)
						54 x 18	6.75	27.00	R6-1R	ONE WAY RIGHT	(2)
						36 x 36	9.00	36.00	R1-1	STOP	(2)
						30 x 24	5.00	20.00	R6-3A	DIVIDED HIGHWAY	(2)
C-2	4	2-U	1	17	7	54 x 18	6.75	27.00	R6-1L	ONE WAY LEFT	(2)
						48 x 48 x 48	6.93	27.72	R1-2	YIELD	(2)
C-3	7	2-U	1	16	7	36 x 36	9.00	63.00	R5-1	DO NOT ENTER	
C-4	6	2-U		14	7	54 x 18	6.75	40.50	R6-1L	ONE WAY LEFT	
C-5	9	2-U	1	15	7	30 x 30	6.25	56.25	R3-7R	RIGHT LANE MUST TURN RIGHT	
C-6	8	2-U	1	15	7	30 x 30	6.25	50.00	R3-7L	LEFT LANE MUST TURN LEFT	
C-7	4	2-U	1	16	7	54 x 18	6.75	27.00	R6-1L	ONE WAY LEFT	(2)
						54 x 18	6.75	27.00	R6-1R	ONE WAY RIGHT	(2)
						48 x 48 x 48	6.93	27.72	R1-2	YIELD	(2)
C-8	3	2-U		14	7	54 x 18	6.75	20.25	R6-1R	ONE WAY RIGHT	(2)
C-9	2	2-U	1	17	7	48 x 48	16.00	32.00	W3-3	SIGNAL AHEAD	
C-10	4	2-U	1	18	7	48 x 60	20.00	80.00	R2-1	SPEED LIMIT 65	
C-11	2	2-U	1	17	7	30 x 15	3.13	6.25	M3-3ma	SOUTH	(2)
						36 x 36	9.00	18.00	W13-1P	MINNESOTA 65	(2)
C-12	2				7	54 x 18	6.75	13.50	R6-1L	ONE WAY LEFT	(3)
						54 x 18	6.75	13.50	R6-1L	ONE WAY LEFT	(3)
C-13	2	2-U	1	17	7	30 x 15	3.13	6.25	M3-1ma	NORTH	(2)
						36 x 36	9.00	18.00	W13-1P	MINNESOTA 65	(2)
C-14	2	2-U	1	17	7	54 x 18	6.75	13.50	R6-1R	ONE WAY RIGHT	
						36 x 36	9.00	18.00	R1-1	STOP	
C-15	2	2-U	1	19	7	54 x 18	6.75	13.50	R6-1L	ONE WAY LEFT	(2)
						54 x 18	6.75	13.50	R6-1R	ONE WAY RIGHT	(2)
						36 x 36	9.00	18.00	R1-1	STOP	(2)
						30 x 24	5.00	10.00	R6-3	DIVIDED HIGHWAY	(2)
C-16	2	2-U	1	17	7	48 x 18	6.00	12.00	R6-1R	ONE WAY RIGHT	(4)
						48 x 48 x 48	6.93	13.86	R1-2	YIELD	(4)
C-17	2	1-ST		16	7	36 x 36	9.00	18.00	R5-1	DO NOT ENTER	
C-18	2	1-ST		10	7	54 x 18	6.75	13.50	R6-1L	ONE WAY LEFT	(3)
						54 x 18	6.75	13.50	R6-1L	ONE WAY LEFT	(3)
TOTAL								821.30			

SPECIFIC NOTES:

(1) MOUNTING HEIGHT IS MINIMUM (WITH A +6 INCH TOLERANCE) SEE SHEET NO. 22 FOR TYPICAL MOUNTING.

(2) FOR PUNCHING AND MOUNTING DETAILS SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL, PAGE 110.

(3) MOUNT BACK TO BACK.

(4) MOUNT BACK TO BACK WITH ONEWAY ABOVE YIELD.

(5) MOUNT IN CONCRETE, SEE SHEET 23

(6) MOUNT ON SIGNAL POLE, SEE SHEET 24.

GENERAL NOTES:

1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.

2. SEE SHEET 19 FOR SIGN PLACEMENT DETAILS.

3. SEE SHEETS 21 TO 22 FOR STRUCTURAL DETAILS.

4. SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR PUNCHING CODE AND DETAILED DRAWINGS OF TYPE C SIGN PANELS.

SALVAGE & INSTALL SIGN TYPE C							B
SIGN NO	QTY	POSTS			MTG HT	PANEL	PANEL LEGEND
		NO & TYPE	KNEE BRACES QTY	LENGTH	(1)	SIZE	
	EACH				FEET	INCH	
C-201	2	2-U	1	16	7	60 x 36	ADOPT A HIGHWAY
TOTAL	2						

SPECIFIC NOTES:

(1) MOUNTING HEIGHT IS MINIMUM (WITH A +6 INCH TOLERANCE) SEE SHEET 22 FOR TYPICAL MOUNTING.

GENERAL NOTES:

1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.

2. SEE SHEET 19 FOR SIGN PLACEMENT DETAILS.

3. SEE SHEETS 21 TO 22 FOR STRUCTURAL DETAILS.

4. SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR PUNCHING CODE AND DETAILED DRAWINGS OF TYPE C SIGN PANELS.

TABULATIONS

PLOTTED/REVISED: 6/14/2017

DISTRICT #: METRO
 IPLOT NAME: SAMPLE CHARTS3
 PATH & FILENAME: IP_PWP-d1874706\SAMPLE CHARTS.dgn

SIGN PANELS TYPE D										C
SIGN NO.	QUANT.	POSTS				MTG HT. (1) (FT.)	PANEL			PANEL LEGEND
		NO. & TYPE	KNEE BRACES QUANT.	LEN. (FT.)	SPACING (IN.)		SIZE (IN.)	AREA (SQ. FT.)	TOTAL AREA (SQ. FT.)	
D-1	2	2-U	2	18	42	7	72 x 60	30.00	60.00	
D-2	1	2-U	2	17	54	7	84 x 48	28.00	28.00	
D-3	2	2-U	2	17	54	7	84 x 48	28.00	56.00	
D-4	1	2-U	2	18	30	7	48 x 66	22.00	22.00	
D-5	1	2-U	2	18	30	7	48 x 66	22.00	22.00	
D-6	1	2-U	2	17	54	7	84 x 48	28.00	28.00	
D-7	2	3-U	3	19	45	7	102 x 78	55.25	110.50	
D-8	1	2-U	2	17	60	7	102 x 48	34.00	34.00	
D-9	1	2-U	2	17	60	7	102 x 48	34.00	34.00	
D-10	1	2-U	2	17	60	7	102 x 48	34.00	34.00	
D-11	2	3-U	3	19	45	7	102 x 78	55.25	110.50	
D-12	1	2-U	2	17	60	7	102 x 48	34.00	34.00	
TOTAL									573.00	

SPECIFIC NOTES:
 (1) MOUNTING HEIGHT IS MINIMUM (WITH A +6 INCH TOLERANCE) SEE SHEET 22 FOR TYPICAL MOUNTING.

- GENERAL NOTES:
- POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
 - SEE SHEET 19 FOR SIGN PLACEMENT DETAILS.
 - SEE SHEETS 21 TO 22 FOR STRUCTURAL DETAILS.
 - SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR TYPE D STRINGER AND PANEL JOINT DETAILS.
 - SEE SHEETS 16 TO 18 FOR SIGN PANELS.

PLOTTED/REVISED: 6/14/2017

DISTRICT #: METRO
 IPLOT NAME: SAMPLE CHARTS4
 PATH & FILENAME: IP_PWP-d1874706\SAMPLE CHARTS.dgn

REMOVE SIGN TYPE D					D
SIGN NO	QTY	POSTS		PANEL	PANEL LEGEND
		NO & TYPE	KNEE BRACES QTY	SIZE (1)	
	EACH			INCH	
D-101	2	2-U	2	72 x 60	
D-102	1	2-U	2	84 x 48	
D-103	2	2-U	2	84 x 48	
D-104	1	2-U	1	48 x 66	
D-105	1	2-U	1	48 x 66	
D-106	1	2-U	2	84 x 48	
D-107	2	3-U	3	102 x 78	
D-108	1	2-U	2	102 x 48	
D-109	1	2-U	2	102 x 48	
D-110	1	2-U	2	102 x 48	
D-111	2	3-U	3	102 x 78	
D-112	1	2-U	2	102 x 48	
TOTAL		16			

(1) SIZES ARE APPROXIMATE

SALVAGE & INSTALL SIGN TYPE D								E
SIGN NO	QTY	POSTS				MTG HT (1)	PANEL	PANEL LEGEND
		NO & TYPE	KNEE BRACES QTY	SPACING	LENGTH		SIZE	
	EACH			INCH	FEET	FEET	INCH	
D-201	1	2-U	2	17	90	7	144 x 48	
D-202	1	2-U	2	17	90	7	144 x 48	
TOTAL		2						

SPECIFIC NOTES:
 (1) MOUNTING HEIGHT IS MINIMUM (WITH A +6 INCH TOLERANCE) SEE SHEET 22 FOR TYPICAL MOUNTING.

GENERAL NOTES:
 1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
 2. SEE SHEETS 21 TO 22 FOR STRUCTURAL DETAILS.
 3. SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR TYPE D STRINGER AND PANEL JOINT DETAILS.

TABULATIONS

OBJECT MARKER				F
CODE NO	SIZE INCH	COLOR	QUANTITY EACH	
X4-2	18 x 18	YELLOW ON BLACK	2	
TOTAL QUANTITIES				
CODE NO	QUANTITY EACH			
X4-2	2			

SPECIFIC NOTES:
(1) MOUNT ON 3LB/FT POST (MNDOT 3401).
(2) MOUNTED IN CONCRETE.

GENERAL NOTES:
1. FOR MARKER PLACEMENT, SEE SHEET NO. 20.
2. SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR MARKER DETAIL.

REFERENCE LOCATION SIGN (1)				G
CODE NO	QTY	SIZE		LEGEND
	EACH	INCH		
D10-2	2	12	x 36	
D10-2	2	12	x 36	
D10-2	2	12	x 36	
TOTAL		6		

SPECIFIC NOTES:
(1) MOUNT ON 3 LB/FT POST (MNDOT 3401).

GENERAL NOTE:
1. SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR REFERENCE LOCATION SIGN DETAIL.
2. FOR REFERENCE LOCATION SIGN PLACEMENT, SEE SHEET NO. 20.

SIGN PANELS TYPE OVERLAY					H
CODE NO	QTY	SIZE	AREA	TOTAL	LEGEND
		INCH	SQ FT	SQ FT	
M1-6A	4	24 x 24	4.00	16.00	COUNTY 74
M1-6A	4	24 x 24	4.00	16.00	COUNTY 86
TOTAL				32.00	

DISTRICT #: METRO

IPLOT NAME: SAMPLE CHARTS5

PATH & FILENAME: IP_PWP-d1874706\SAMPLE CHARTS.dgn

PLOTTED/REVISED: 6/14/2017

GENERAL NOTES:

- NO UTILITIES WILL BE AFFECTED BY WORK ON THIS PROJECT.
- THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

UTILITIES

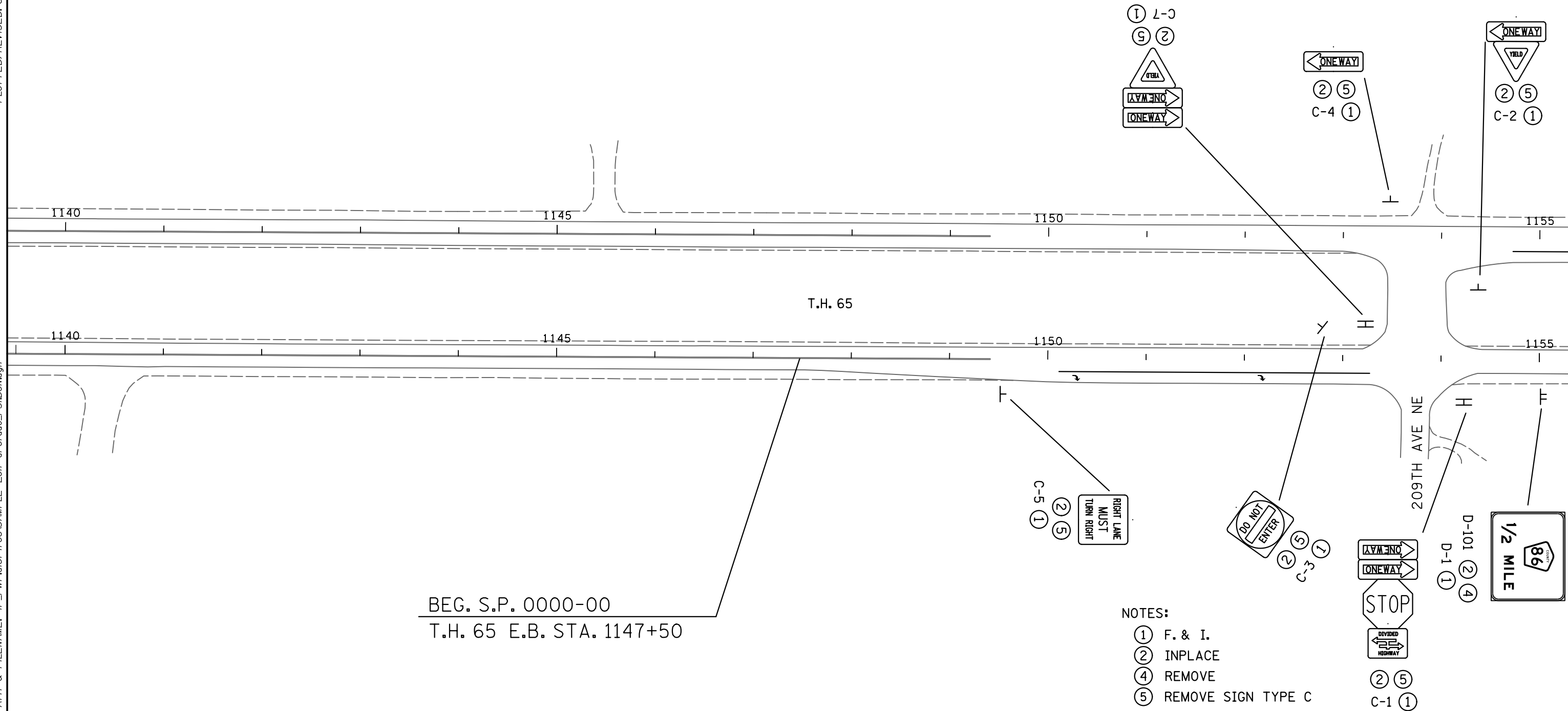
THE FOLLOWING LIST SHOWS THE UTILITY COMPANIES WITHIN THE PROJECT LIMITS

CENTERPOINT ENERGY
 MN/DOT
 MINNESOTA POWER
 QWEST CORPORATION
 US CABLE
 XCEL ENERGY

(THIS IS JUST AN EXAMPLE OF HOW TO LIST UTILITY COMPANIES)

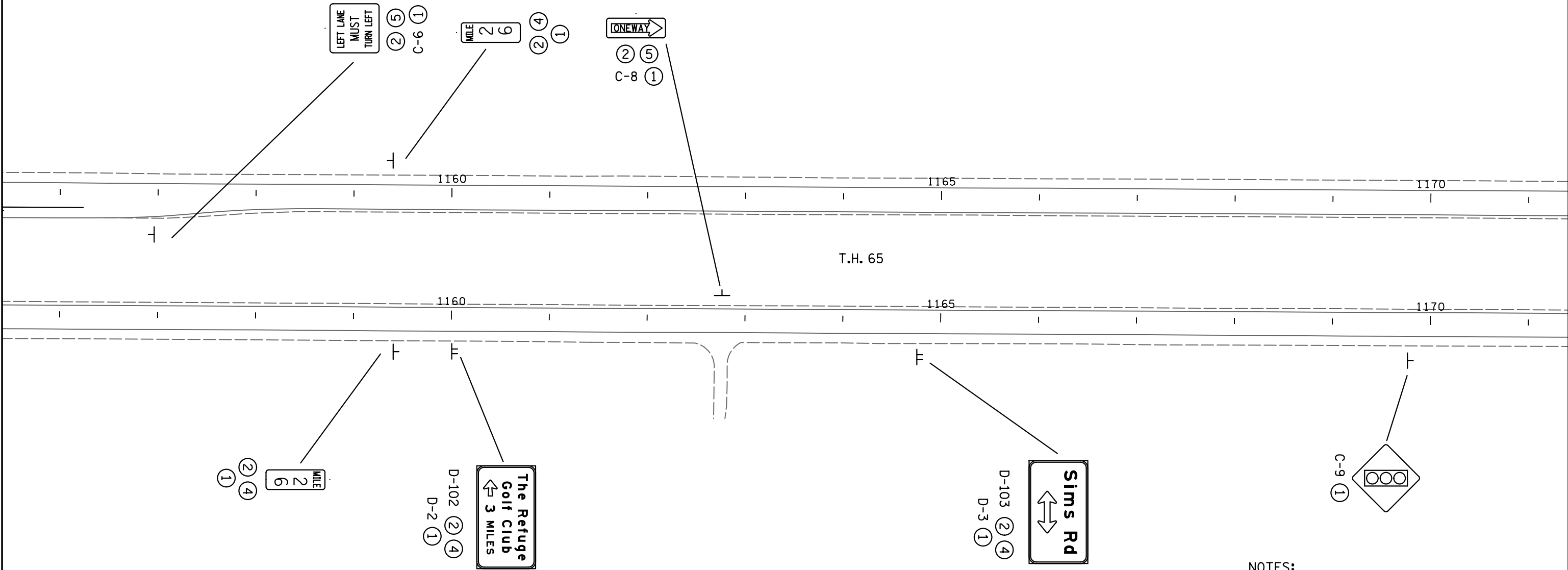
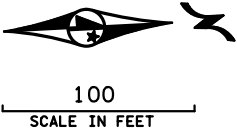
PLOTTED/REVISED: 6/14/2017

PATH & FILENAME: IP_PWP:\1874706\SAMPLE 2017 at Grade_PSI.DGN.dgn



DISTRICT *: METRO
IPLOT NAME: 2017 at GradeSAMPLE_PSI.DGN2
PATH & FILENAME: IP_PWP-d1874706\SAMPLE 2017 at Grade_PSI.DGN.dgn

PLOTTED/REVISED: 6/14/2017



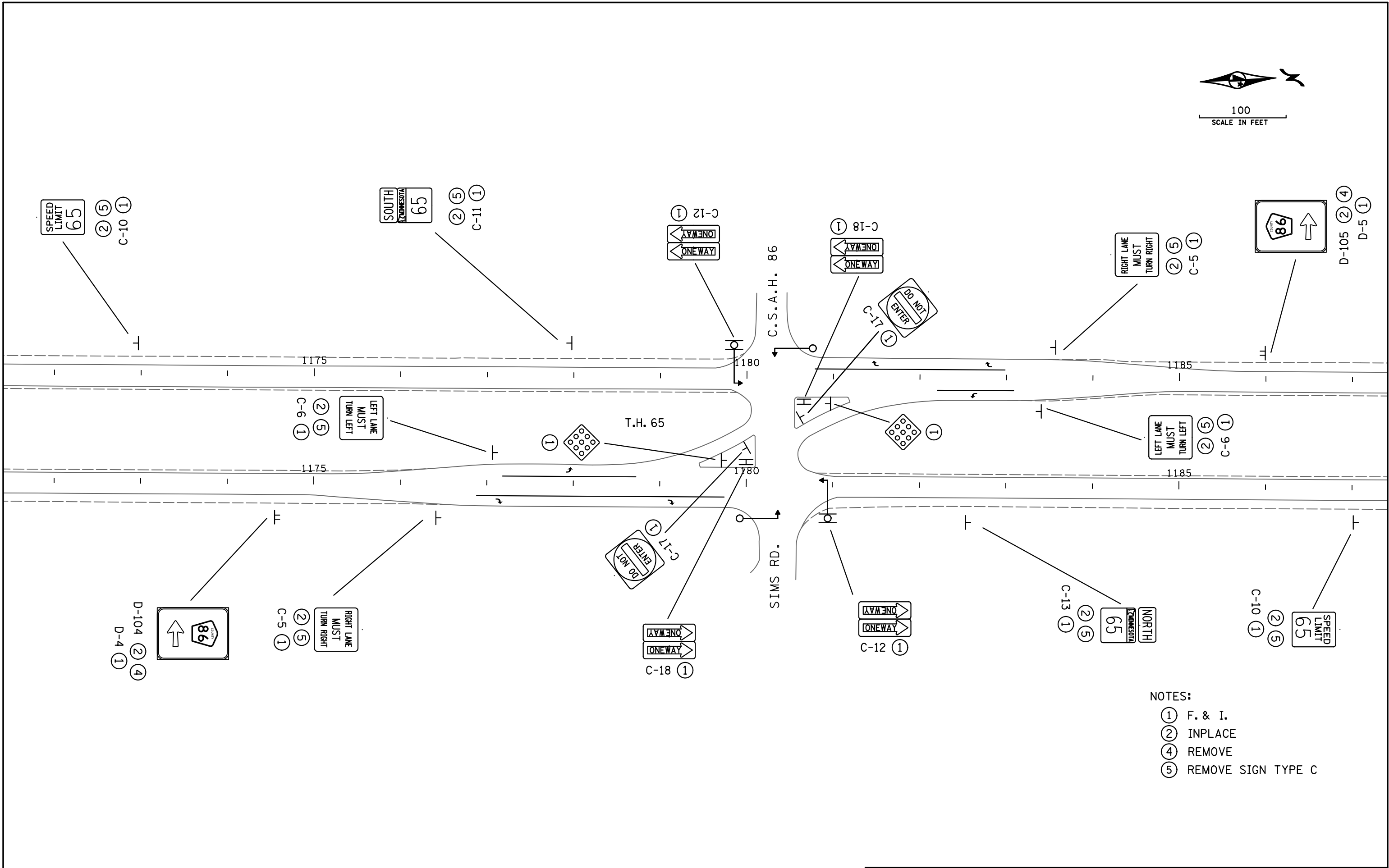
- NOTES:
- ① F. & I.
 - ② INPLACE
 - ④ REMOVE
 - ⑤ REMOVE SIGN TYPE C

DISTRICT *: METRO

IPLOT NAME: 2017 at GradeSAMPLE_PSI.DGN3

PATH & FILENAME: IP_PWP-d1874706\SAMPLE 2017 at Grade_PSI.DGN.dgn

PLOTTED/REVISED: 6/14/2017

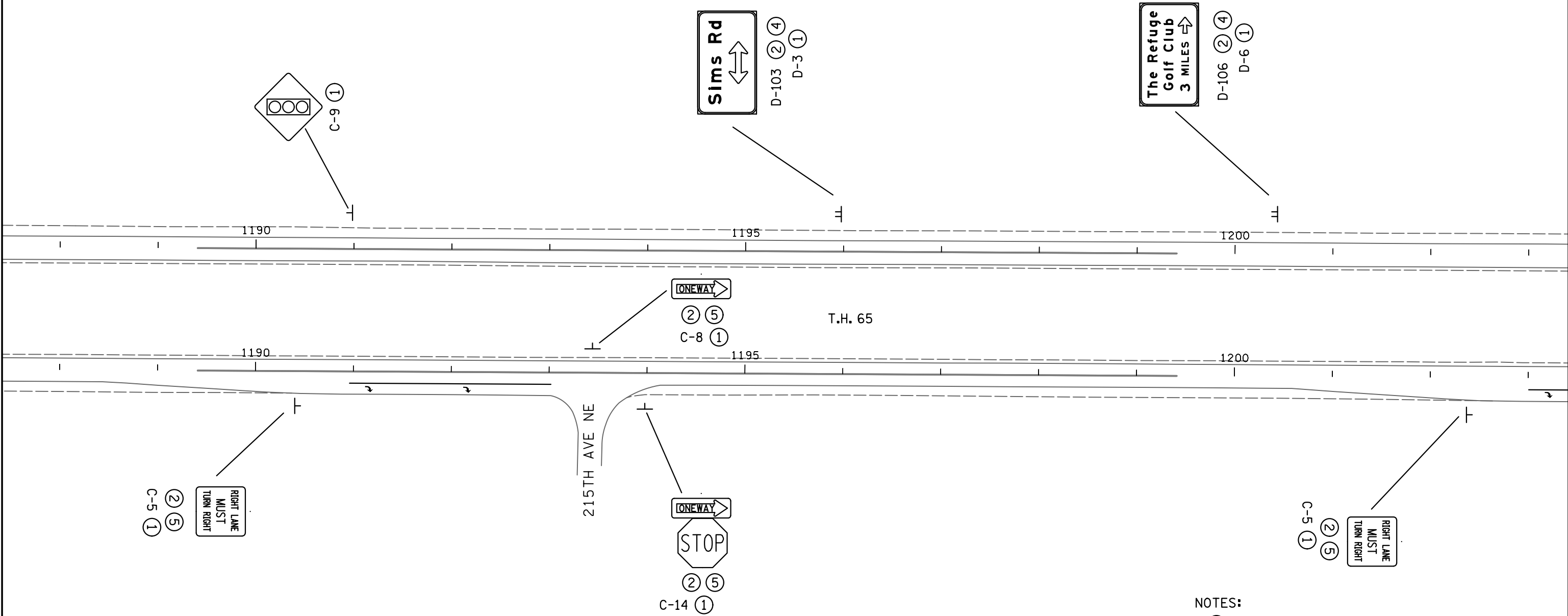
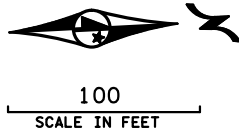


- NOTES:
- ① F. & I.
 - ② INPLACE
 - ④ REMOVE
 - ⑤ REMOVE SIGN TYPE C

INPLACE/PERMANENT SIGNING				STATE PROJ. NO. SAMPLE AT-GRADE SHEET NO. 10 OF 24 SHEETS		
DRAWN BY:	CHECKED BY:	CERTIFIED BY _____	LIC. NO. _____	DATE 6/14/2017		

LICENSED PROFESSIONAL ENGINEER

DISTRICT *: METRO
IPLOT NAME: 2017 at GradeSAMPLE_PSI.DGN4
PATH & FILENAME: IP_PWP-d1874706\SAMPLE 2017 at Grade_PSI.DGN.dgn



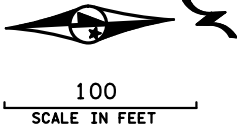
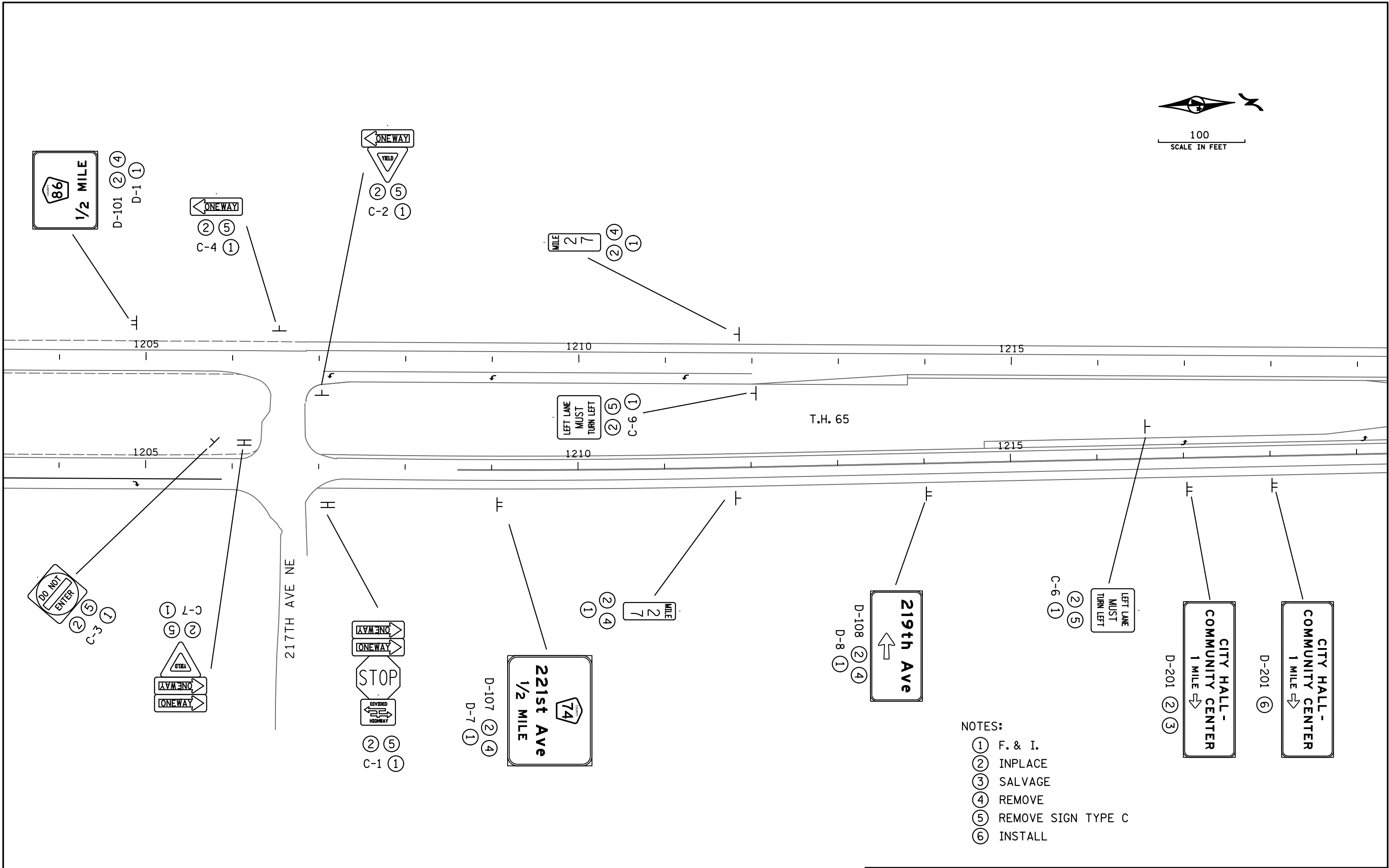
- NOTES:
- ① F. & I.
 - ② INPLACE
 - ④ REMOVE
 - ⑤ REMOVE SIGN TYPE C

DISTRICT *: METRO

IPLOT NAME: 2017 at GradeSAMPLE_PSI.DGN5

PATH & FILENAME: IP_PWP-d1874706\SAMPLE 2017 at Grade_PSI.DGN.dgn

PLOTTED/REVISED: 6/14/2017

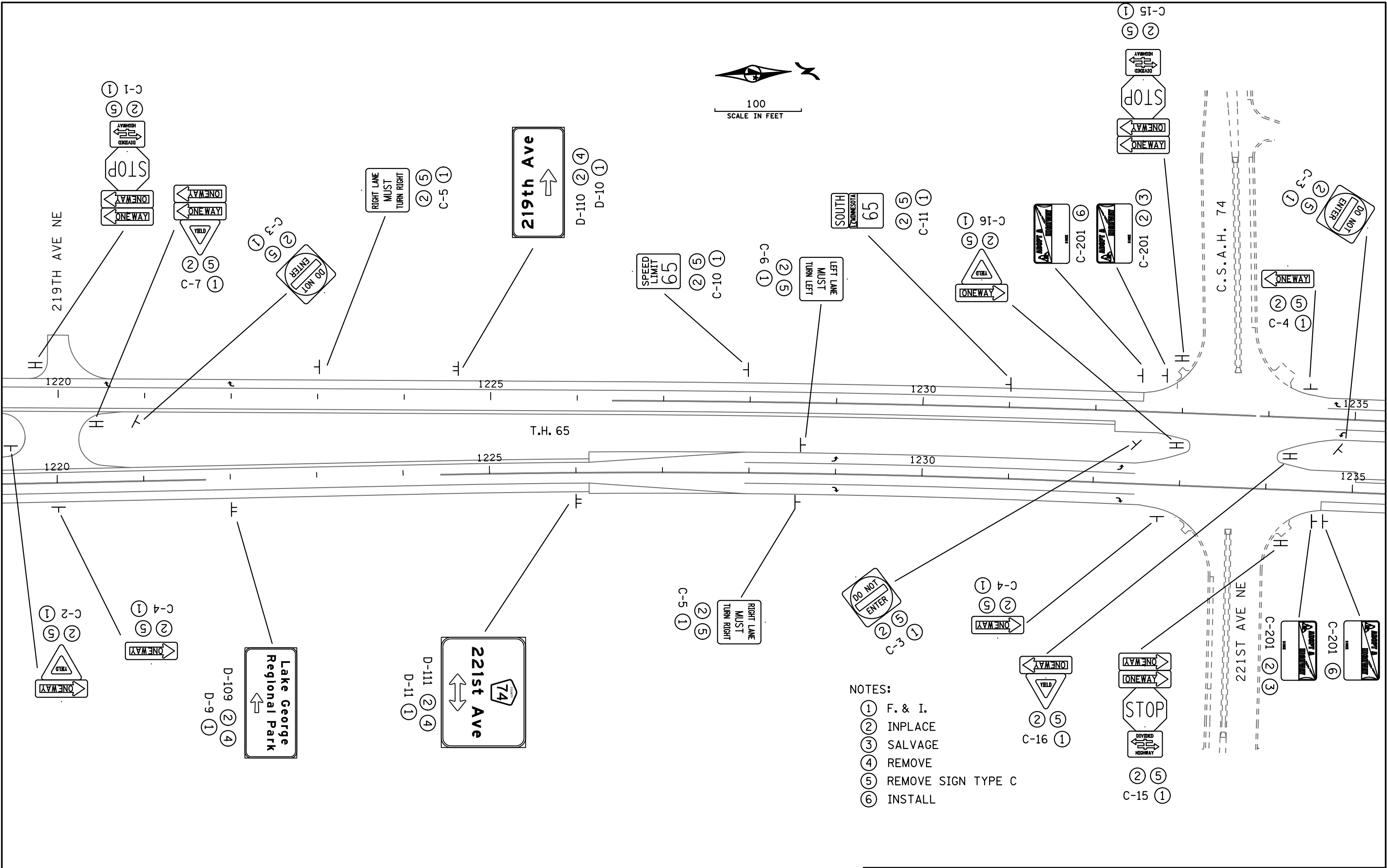


- NOTES:
- ① F. & I.
 - ② INPLACE
 - ③ SALVAGE
 - ④ REMOVE
 - ⑤ REMOVE SIGN TYPE C
 - ⑥ INSTALL

INPLACE/PERMANENT SIGNING					STATE PROJ. NO. SAMPLE AT-GRADE SHEET NO. 12 OF 24 SHEETS		
DRAWN BY:	CHECKED BY:	CERTIFIED BY	LIC. NO.	DATE 6/14/2017			

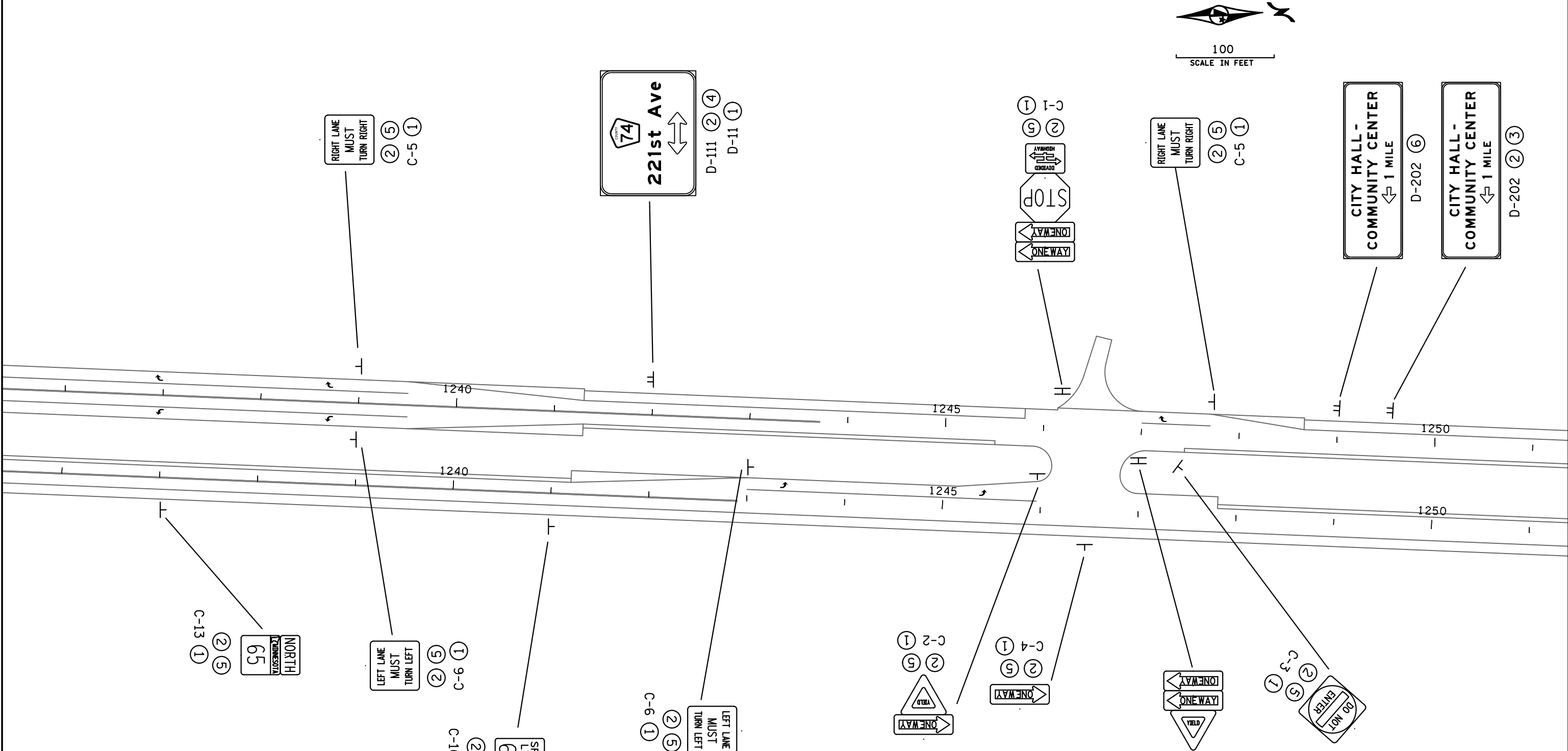
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PATH & FILENAME: IP_PWP-d1874706\SAMPLE 2017 at Grade_PSI.DGN.dgn

PLOTTED/REVISED: 6/14/2017



INPLACE/PERMANENT SIGNING					
DRAWN BY:	CHECKED BY:	CERTIFIED BY _____	LIC. NO. _____	DATE 6/14/2017	STATE PROJ. NO. SAMPLE AT-GRADE SHEET NO. 13 OF 24 SHEETS

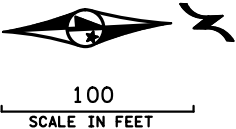
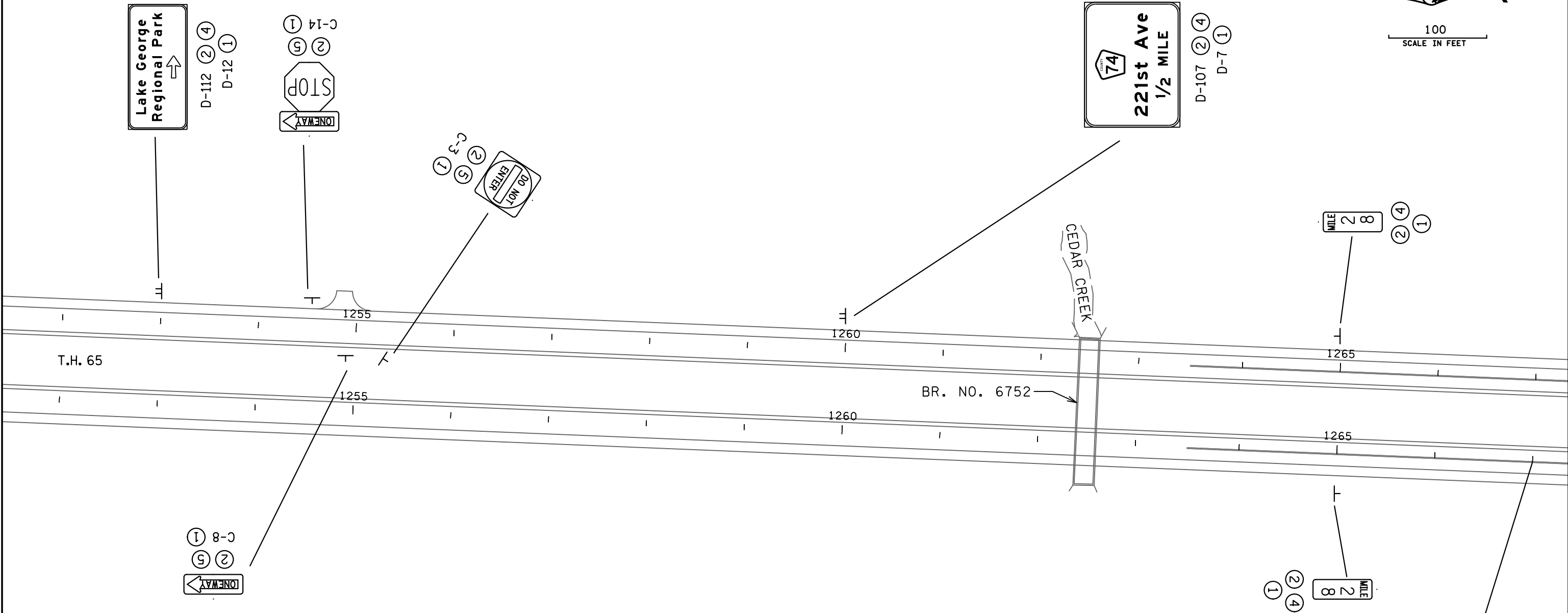
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IPLOT NAME: 2017 at GradeSAMPLE_PSI.DGN
PATH & FILENAME: IP_PWP-d1874706\SAMPLE 2017 at Grade_PSI.DGN.dgn
PLOTTED/REVISED: 6/14/2017



- NOTES:
- ① F. & I.
 - ② INPLACE
 - ③ SALVAGE
 - ④ REMOVE
 - ⑤ REMOVE SIGN TYPE C
 - ⑥ INSTALL

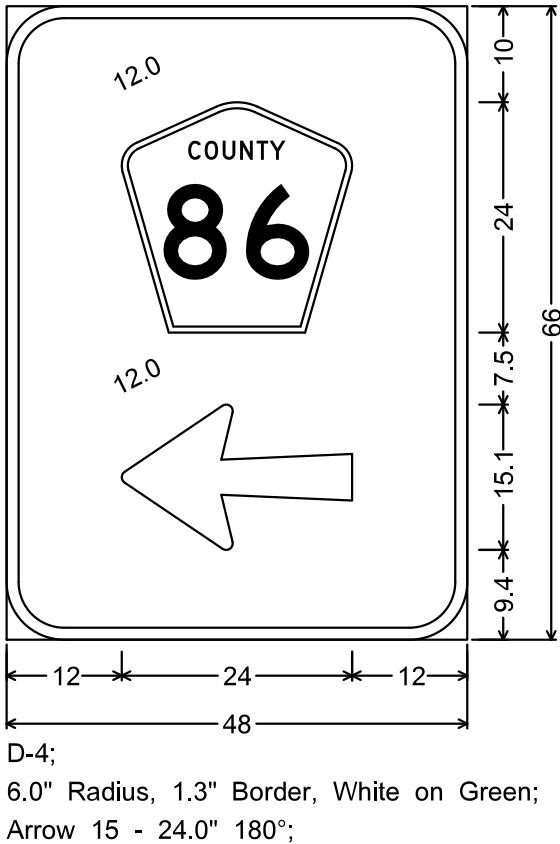
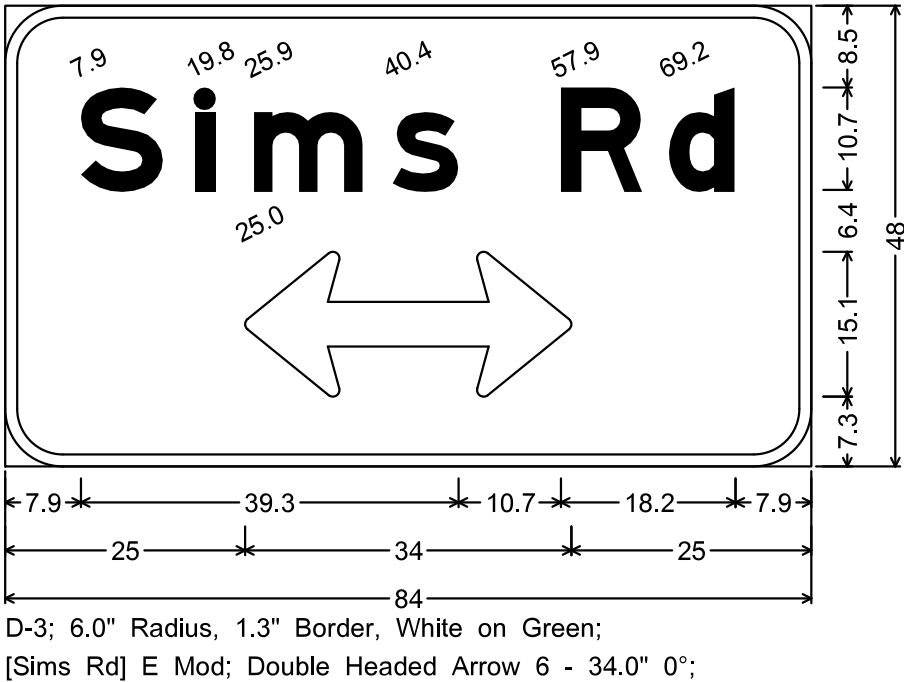
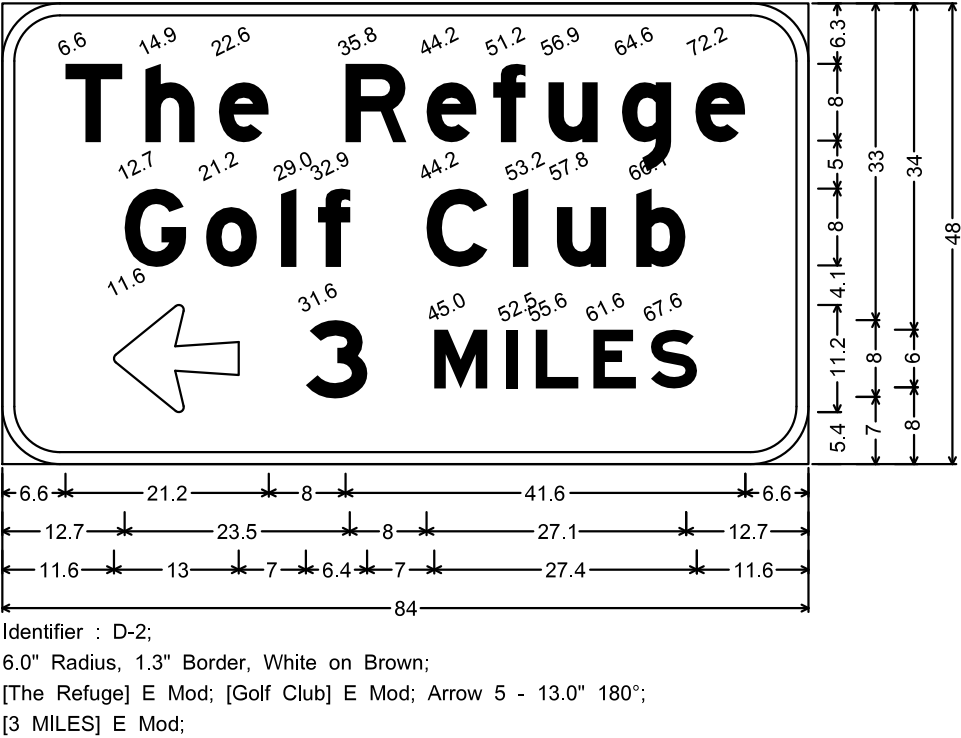
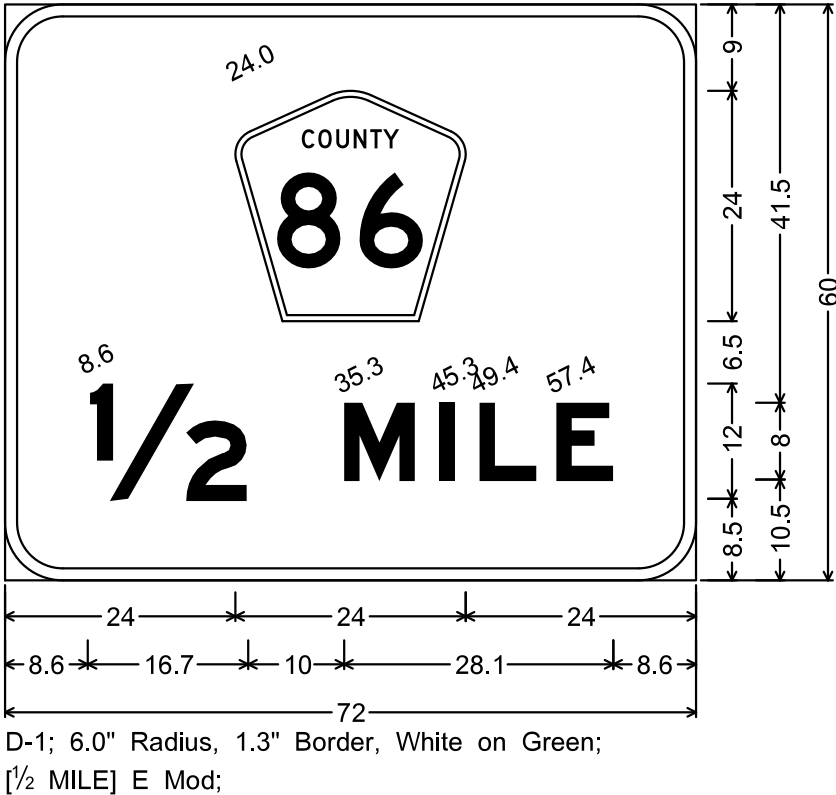
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PATH & FILENAME: IP_PWP-d1874706\SAMPLE 2017 at Grade_PSI.DGN.dgn

PLOTTED/REVISED: 6/14/2017



- NOTES:
- ① F. & I.
 - ② INPLACE
 - ④ REMOVE
 - ⑤ REMOVE SIGN TYPE C

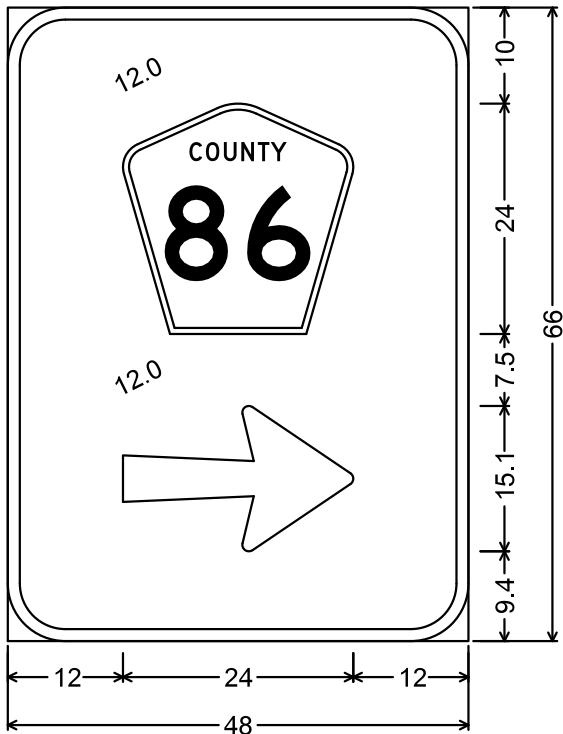
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T.H. 65 E.B. STA. 1267+00



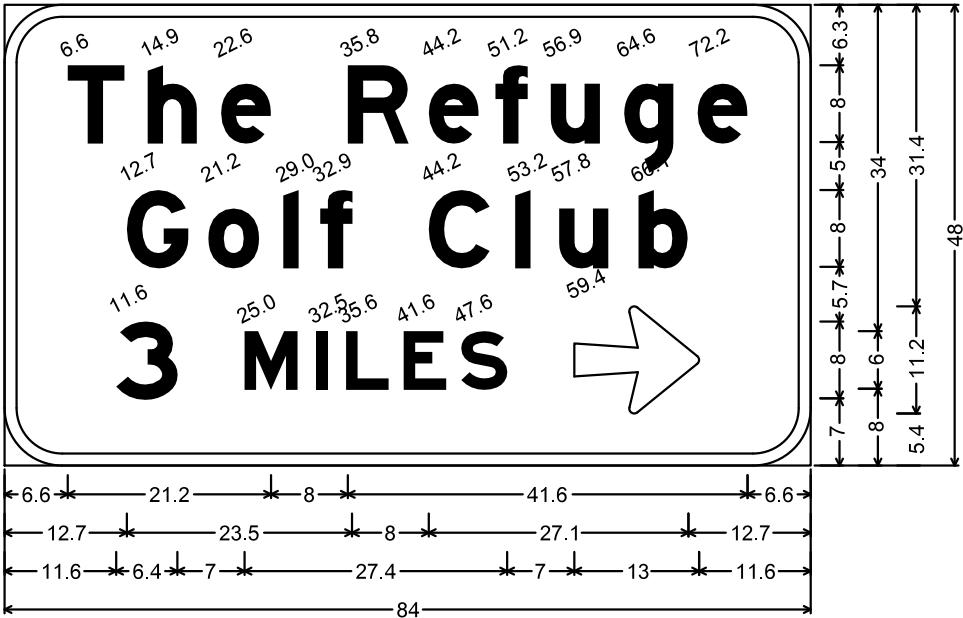
SEE SHEET 18 FOR NOTES

SIGN PANEL LAYOUTS - TYPE D			STATE PROJ. NO. SAMPLE AT-GRADE SHEET NO. 16 OF 24 SHEETS	
DRAWN BY:	CHECKED BY:	CERTIFIED BY _____ LIC. NO. _____ DATE 6/14/2017		

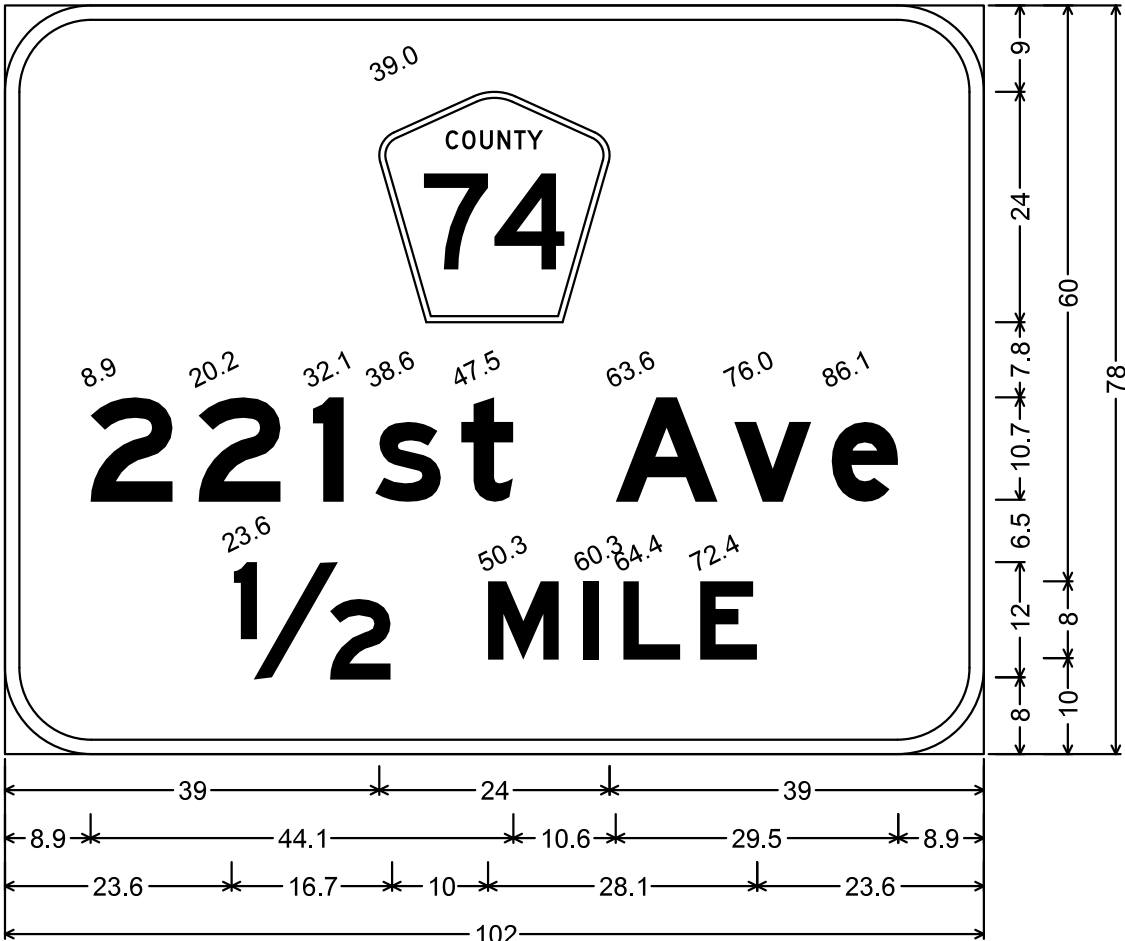
PLOTTED/REVISED: 6/14/2017



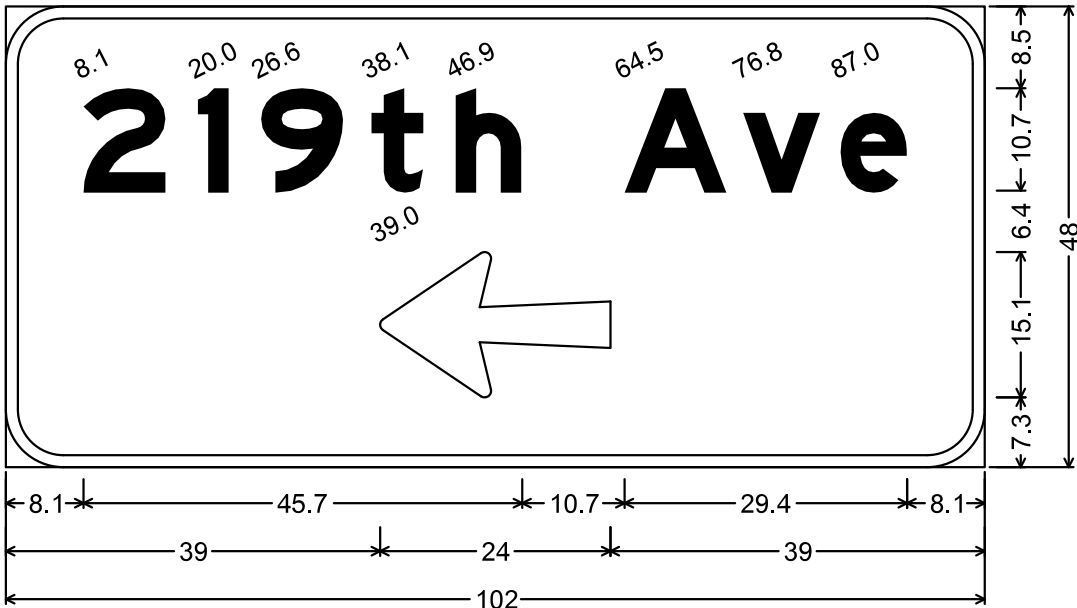
D-5;
6.0" Radius, 1.3" Border, White on Green;
Arrow 15 - 24.0" 0°;



D-6;
6.0" Radius, 1.3" Border, White on Brown;
[The Refuge] E Mod; [Golf Club] E Mod; [3 MILES] E Mod;
Arrow 5 - 13.0" 0°;



D-7; 9.0" Radius, 1.5" Border, White on Green;
[221st Ave] E Mod; [1/2 MILE] E Mod;



D-8; 6.0" Radius, 1.3" Border, White on Green;
[219th Ave] E Mod; Arrow 15 - 24.0" 180°;

SEE SHEET 18 FOR NOTES

SIGN PANEL LAYOUTS - TYPE D

DRAWN BY:

CHECKED BY:

CERTIFIED BY

LICENSED PROFESSIONAL ENGINEER

LIC. NO.

DATE

6/14/2017

STATE PROJ. NO. SAMPLE AT-GRADE

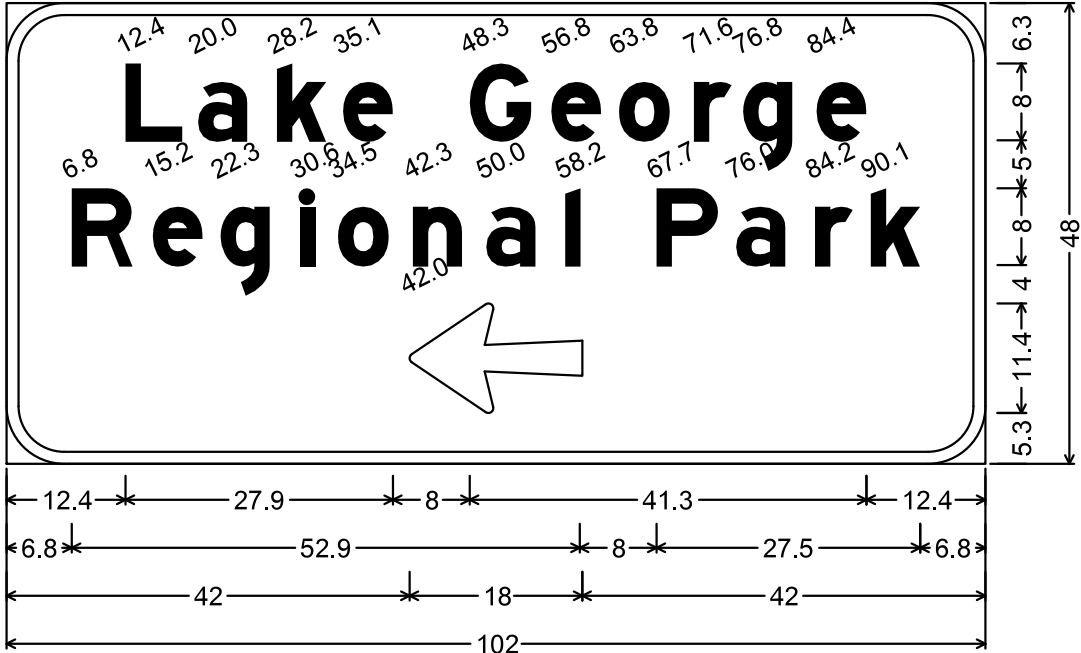
SHEET NO. 17

OF

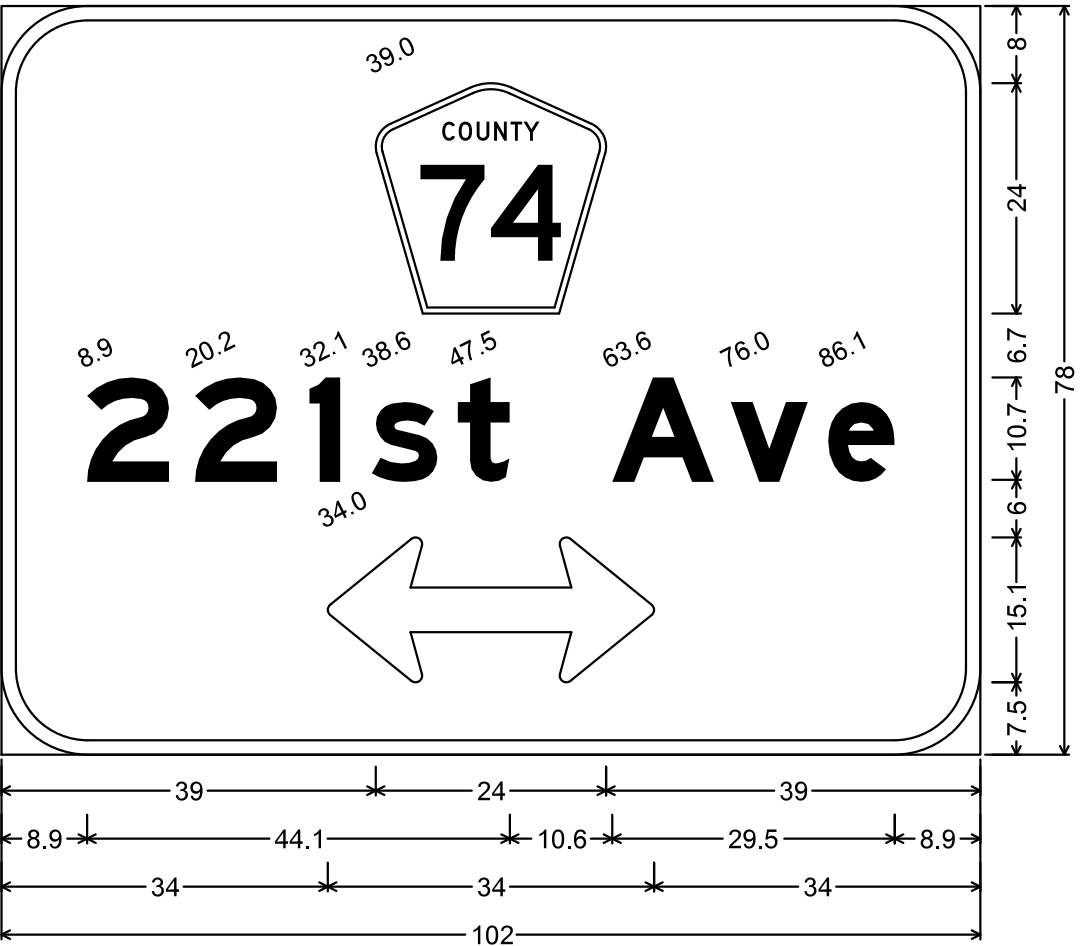
24 SHEETS

DISTRICT #: METRO
PLOT NAME: SAMPLE PLAN PANELS.DGN3
PATH & FILENAME: IP_PWP-d1874706\SAMPLE PLAN PANELS.DGN.dgn

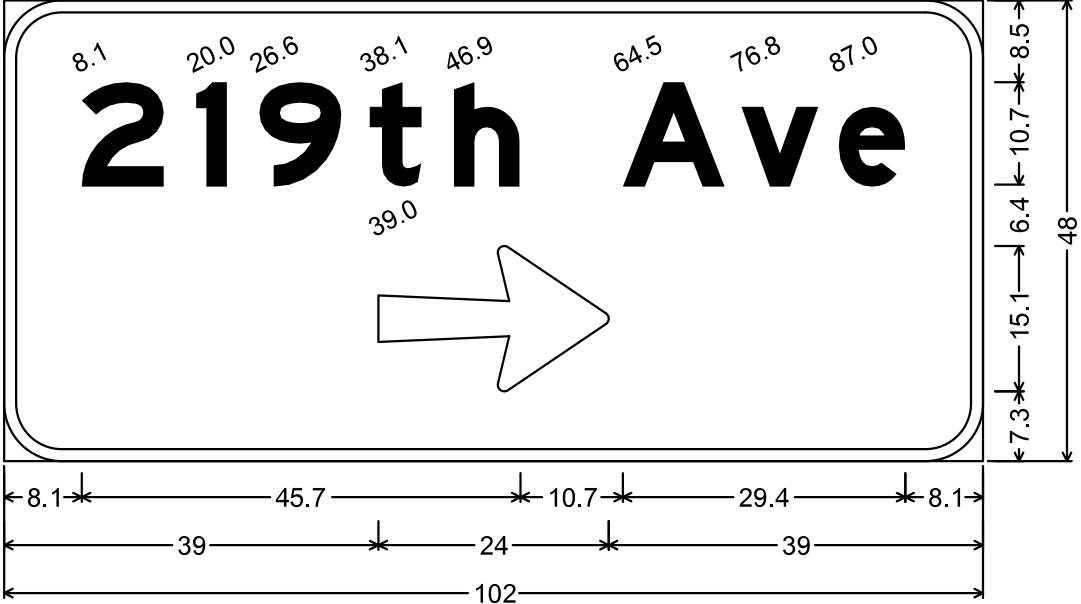
PLOTTED/REVISED: 6/14/2017



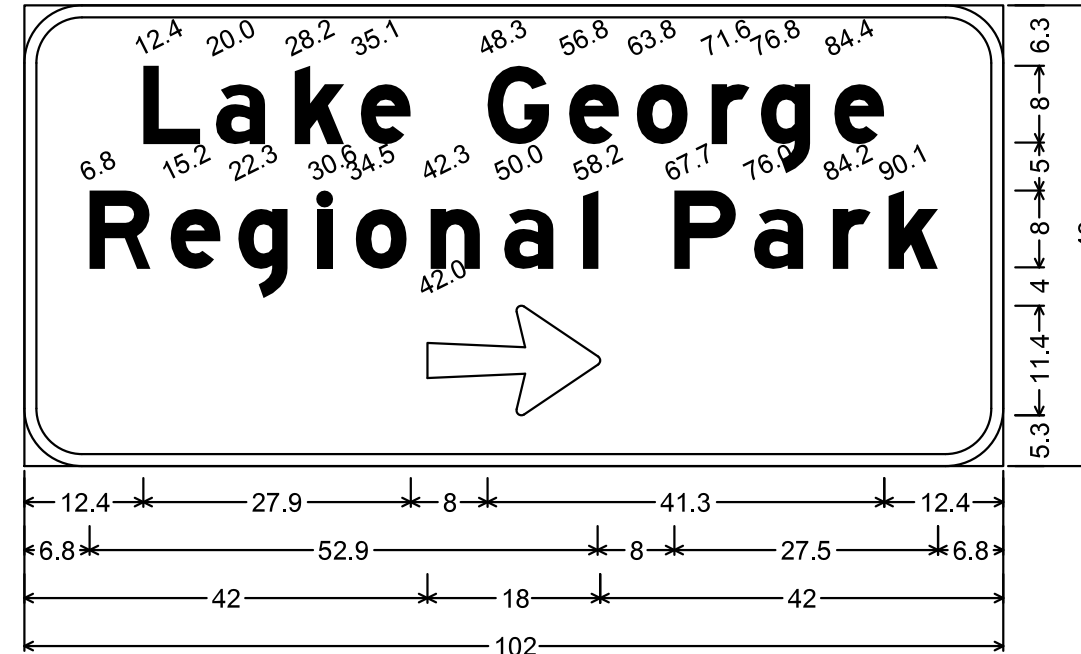
D-9; 6.0" Radius, 1.3" Border, White on Brown;
[Lake George] E Mod; [Regional Park] E Mod; Arrow 14 - 18.0" 180°;



D-11; 9.0" Radius, 1.5" Border, White on Green;
[221st Ave] E Mod; Double Headed Arrow 6 - 34.0" 0°;



D-10; 6.0" Radius, 1.3" Border, White on Green;
[219th Ave] E Mod; Arrow 15 - 24.0" 0°;



D-12; 6.0" Radius, 1.3" Border, White on Brown;
[Lake George] E Mod; [Regional Park] E Mod; Arrow 14 - 18.0" 0°;

- NOTES:
- CORNERS OF SIGN PANELS EXTENDING BEYOND THE BORDER MAY BE TRIMMED.
 - SEE MNDOT STANDARDS AND MARKINGS MANUAL FOR ARROW, FRACTION AND OVERLAY DETAILS.
 - ALL DIMENSIONS ARE IN INCHES.

SIGN PANEL LAYOUTS - TYPE D

DRAWN BY:

CHECKED BY:

CERTIFIED BY

LICENSED PROFESSIONAL ENGINEER

LIC. NO.

DATE

6/14/2017

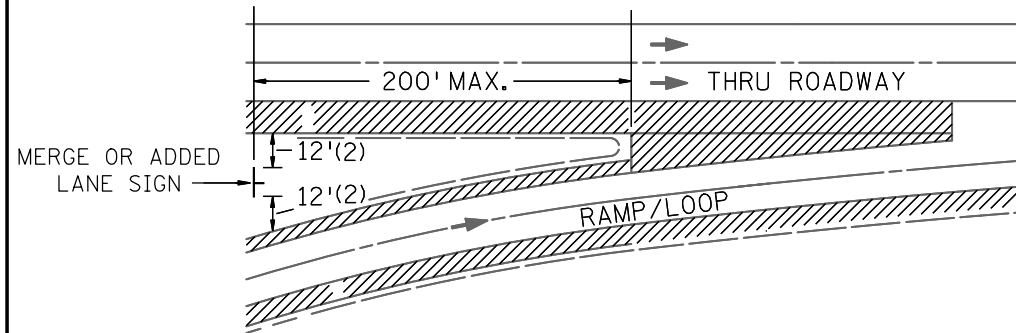
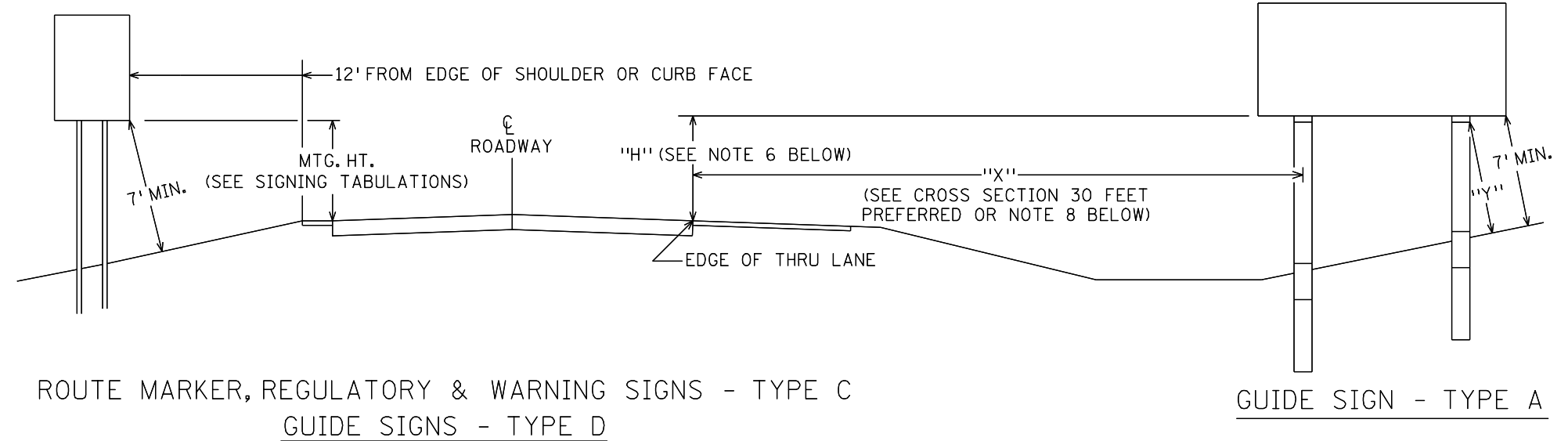
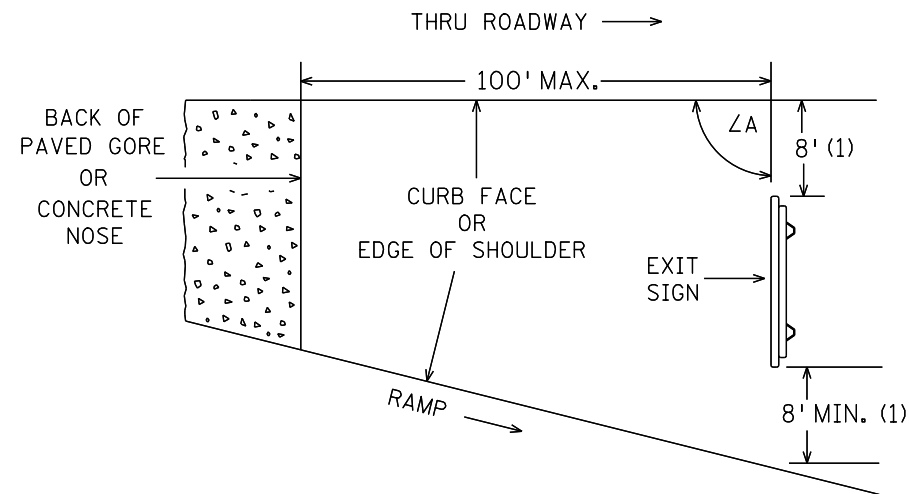
STATE PROJ. NO. SAMPLE AT-GRADE

SHEET NO. 18

OF

24 SHEETS

GORE PLACEMENT



SPECIFIC NOTES:

(1) EXIT SIGN

IF THESE OFFSETS CANNOT BE ATTAINED WITHIN 100 FEET OF THE PAVED GORE, A 4 FOOT OFFSET IS ACCEPTABLE. IF THE 4 FOOT OFFSETS CANNOT BE ATTAINED WITHIN 100 FEET OF THE PAVED GORE, CONTACT THE PROJECT ENGINEER.

(2) MERGE OR ADDED LANE SIGN

IF THESE OFFSETS CANNOT BE ATTAINED WITHIN 200 FEET OF THE PAVED GORE, A 4 FOOT OFFSET IS ACCEPTABLE. IF THE 4 FOOT OFFSETS CANNOT BE ATTAINED WITHIN 200 FEET OF THE PAVED GORE, CONTACT THE PROJECT ENGINEER.

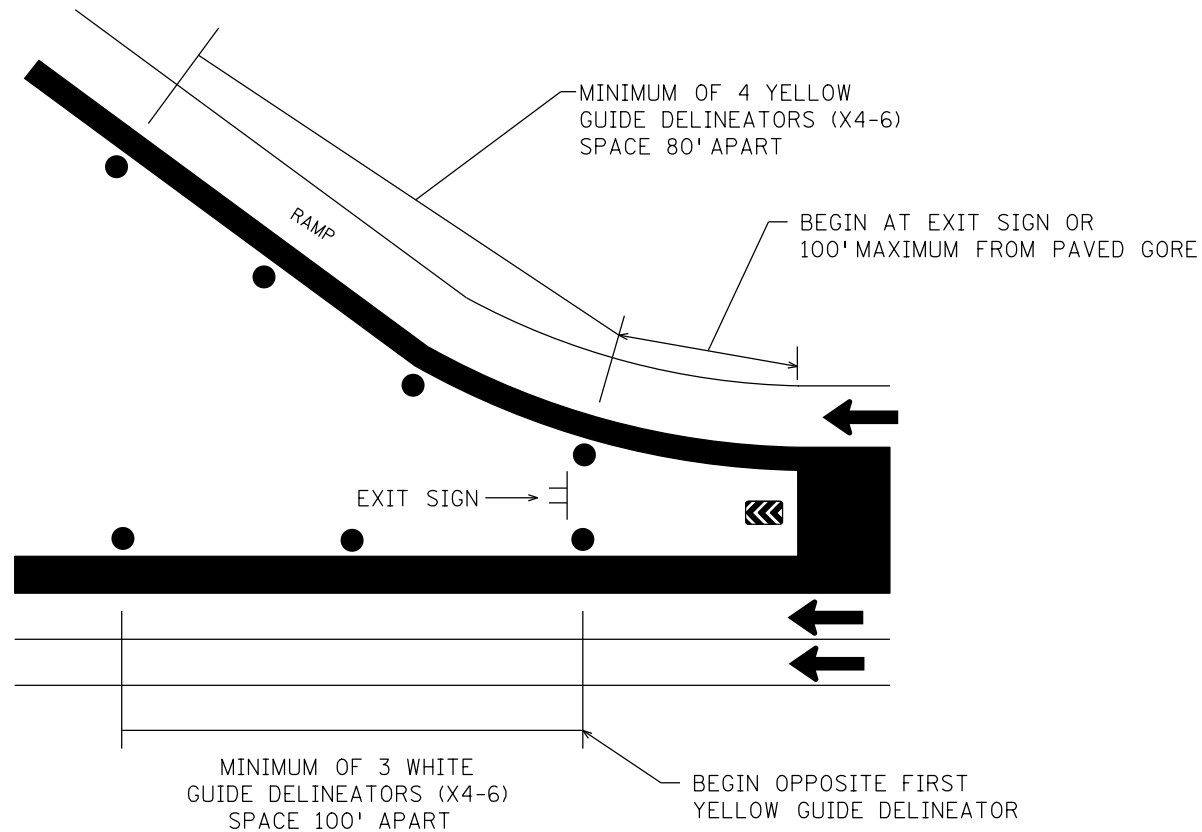
NOTES:

- ALL TYPE C AND D MOUNTING HEIGHTS ARE MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE ELEVATION OF THE NEAR EDGE OF PAVEMENT IN RURAL AREAS OR TO THE TOP OF THE CURB OR IN THE ABSCENCE OF CURB, TO THE NEAR EDGE OF THE TRAVELED WAY.
- SIGN FACES SHALL BE VERTICAL.
- OVERHEAD SIGNS SHALL BE POSITIONED AT RIGHT ANGLES TO THE THRU ROADWAY UNLESS OTHERWISE NOTED.
- TO AVOID SPECULAR GLARE, ΔA SHALL BE APPROXIMATELY 93° FOR SIGNS LOCATED LESS THAN 30' FROM THE EDGE OF THRU LANE AND APPROXIMATELY 92° FOR SIGNS LOCATED 30' OR MORE FROM EDGE OF THRU LANE. THIS APPLIES TO SIGNS TYPE A, C, & D AND INCLUDES SIGNS IN THE GORE.
- "Y" IS THE PERPENDICULAR DISTANCE FROM THE GROUND LINE TO THE FRICTION FUSE ON THE POST. THIS DISTANCE SHALL BE AT LEAST 7'.
- WHERE "X" IS LESS THAN 30', "H" SHALL BE 7'. WHERE "X" IS 30' OR GREATER, MINIMUM AND PREFERRED "H" IS 5'.
- LATERAL CLEARANCES GIVEN APPLY TO RIGHT AND OR LEFT SIDE INSTALLATION.
- WHEN A TYPE A SIGN IS INSTALLED DIRECTLY BEHIND TRAFFIC BARRIER, THE LEFT EDGE OF THE SIGN PANEL SHALL BE LOCATED A MINIMUM OF 8 FEET BEHIND THE FACE OF THE TRAFFIC BARRIER.

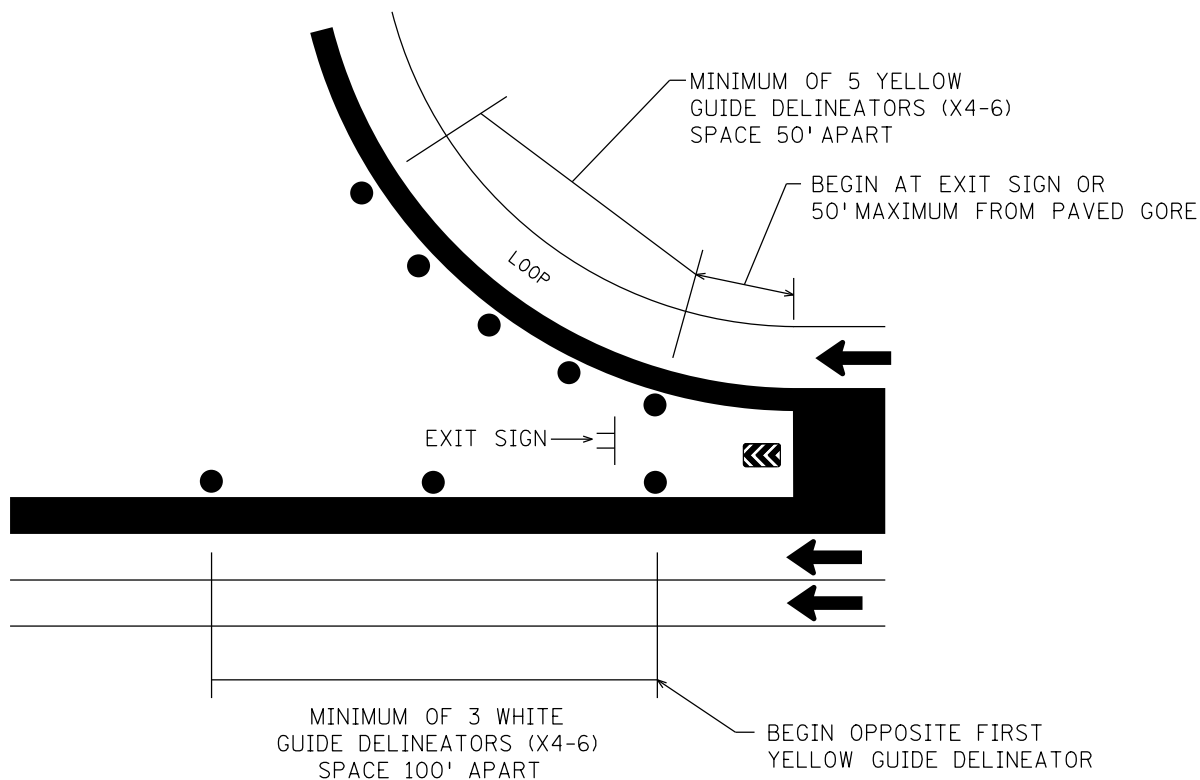
SIGN PLACEMENT

PLOTTED/REVISED: 6/14/2017

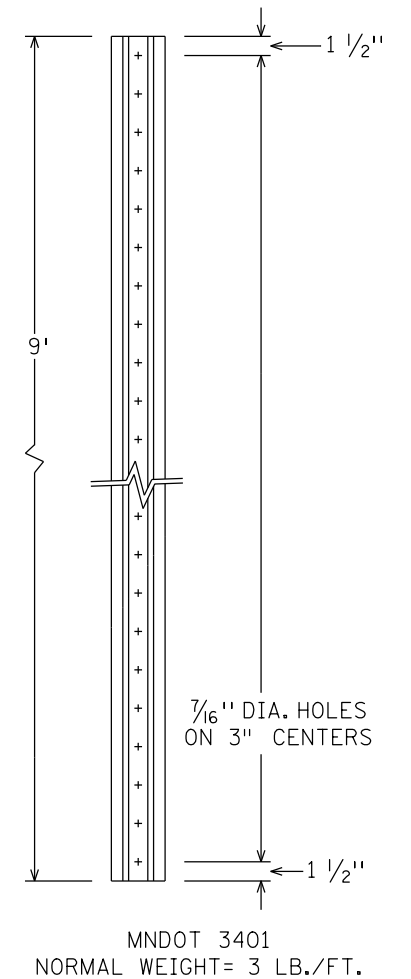
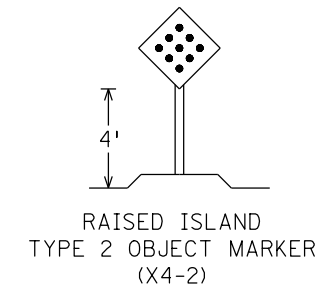
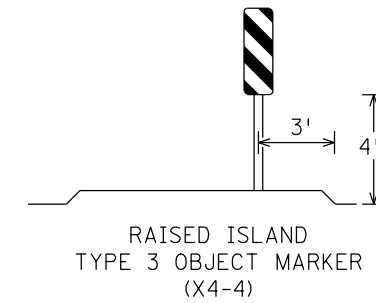
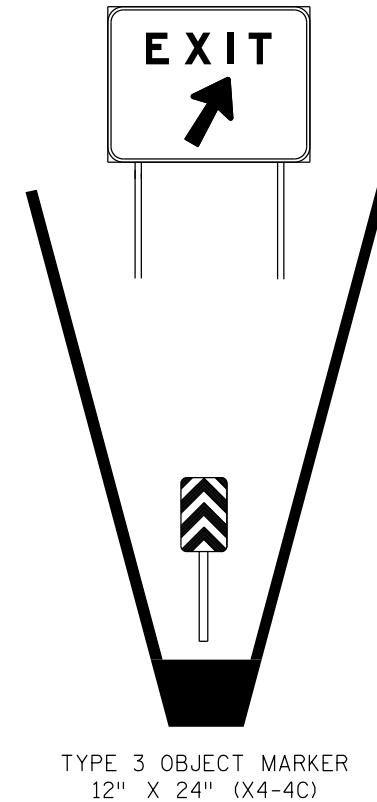
DISTRICT #: METRO
IPLOT NAME: SAMPLE CO-SIGNING TYPICALS5
PATH & FILENAME: IP_PWP-d1874706\SAMPLE CO-SIGNING TYPICALS.dgn



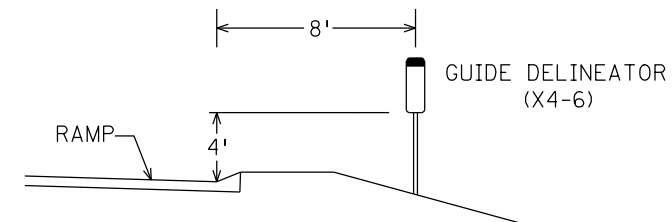
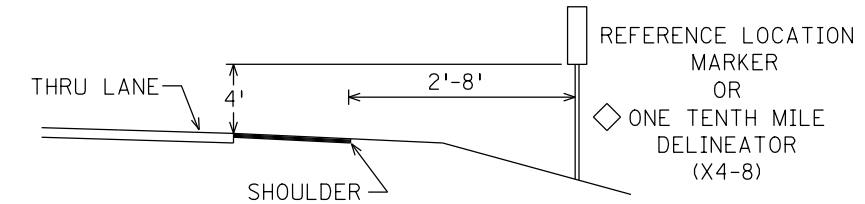
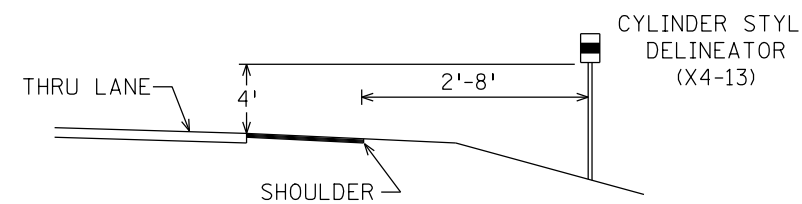
PLAN A
RAMP DELINEATION



PLAN B
LOOP DELINEATION



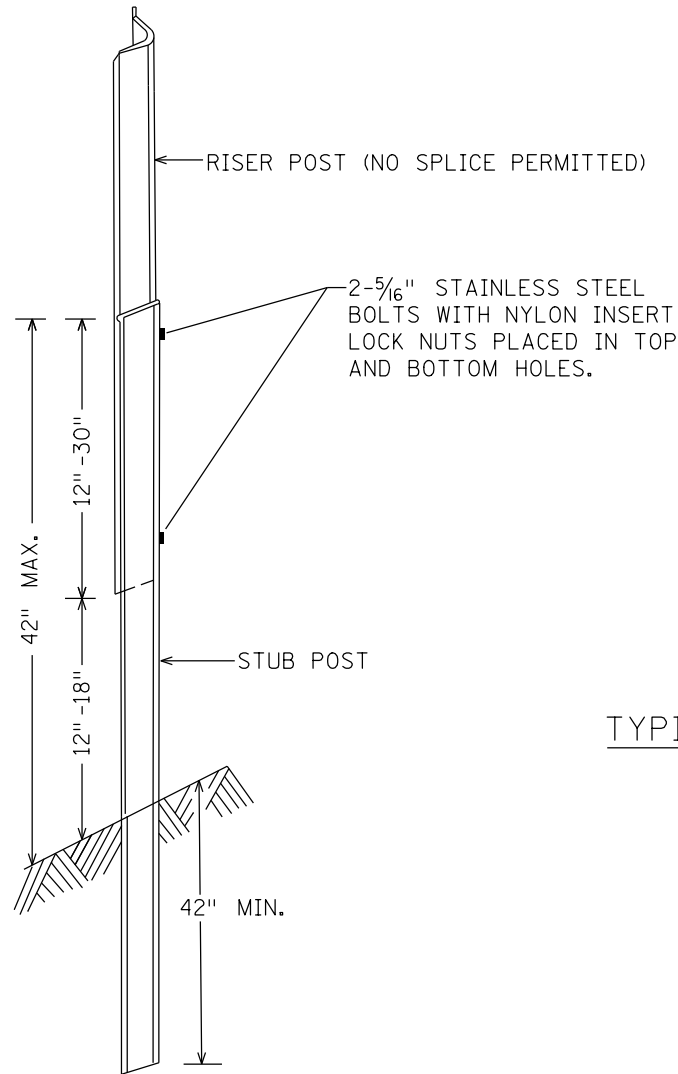
DELINEATOR POST



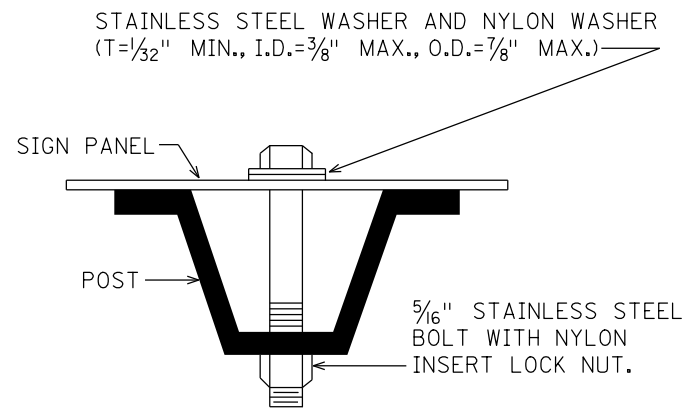
TYPICAL PLACEMENT

DELINEATORS AND MARKERS

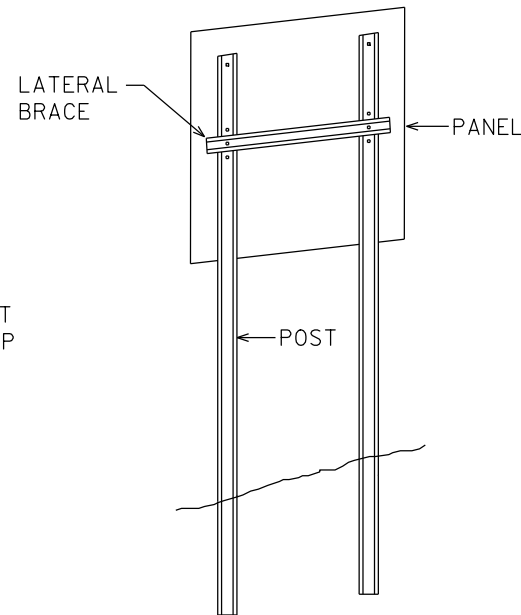
TYPE C & D POST



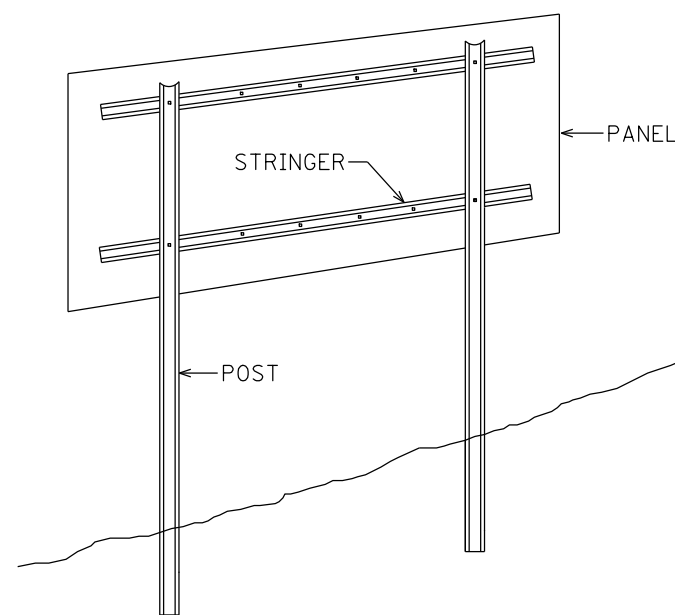
U POST BREAKAWAY SPLICE



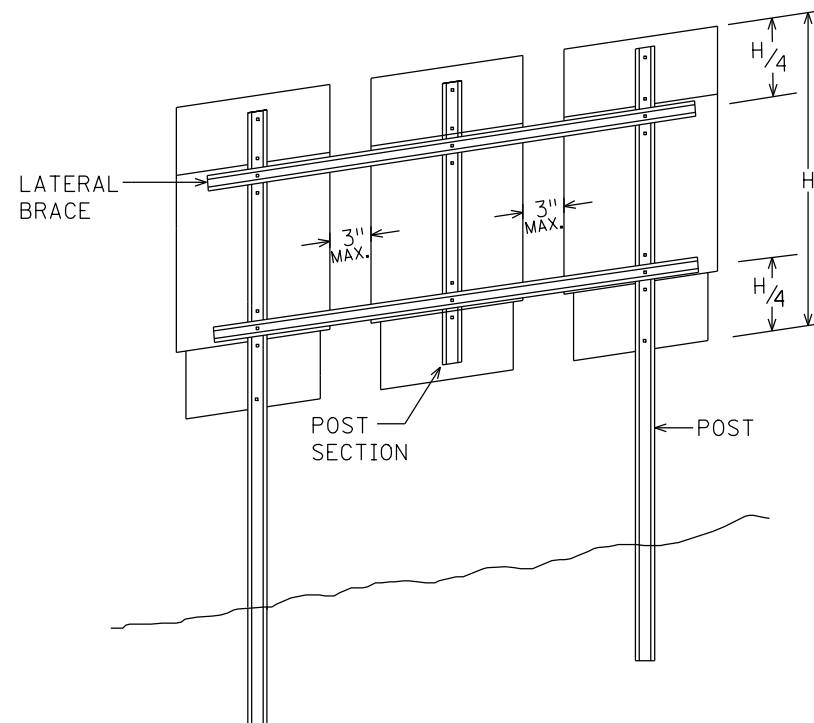
U POST MOUNTING
TYPE C SIGNS



TYPICAL TYPE C INSTALLATION



TYPICAL TYPE D INSTALLATION



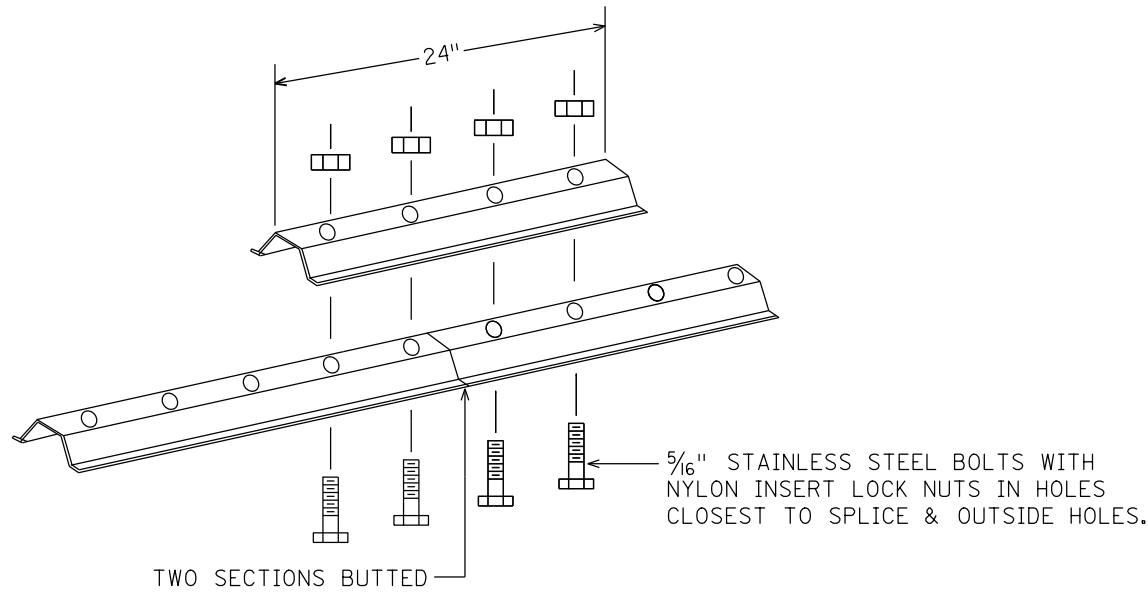
MODIFIED TYPE C INSTALLATION

NOTES:

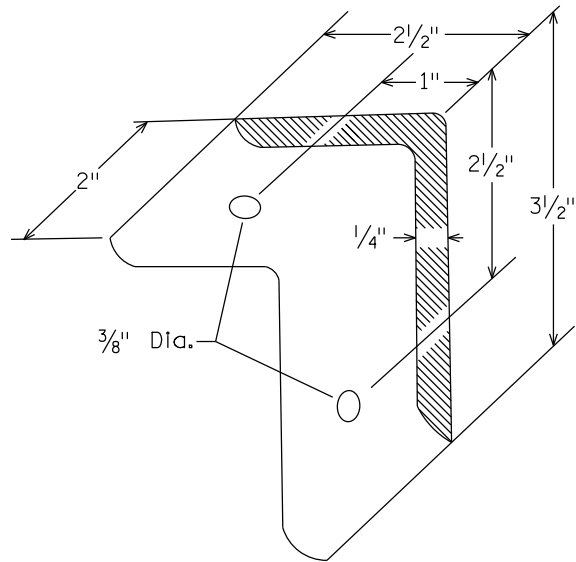
1. USE 3 LB/FT STUB POSTS. SHALL CONFORM TO MNDOT 3401.
2. USE 2.5 LB/FT RISER POSTS, STRINGERS, KNEE BRACES AND LATERAL BRACES. ALL SHALL CONFORM TO MNDOT 3401.
3. SEE SIGN DATA SHEETS FOR NUMBER OF POSTS, KNEE BRACES, POST LENGTHS AND SPACINGS, AS DETERMINED FROM TEM CHARTS 6.3 AND 6.4.
4. IF MORE THAN TWO POSTS ARE NEEDED, THE MINIMUM SPACING SHALL BE 45" BETWEEN POSTS.
5. TYPE D SIGN PANELS SHALL BE BOLTED TO STRINGERS AT 24" MAXIMUM INTERVALS IN ACCORDANCE WITH THE TYPE D STRINGER AND PANEL-JOINT DETAIL (SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL).
6. MOUNTING (PUNCH CODE) FOR TYPE C SIGN PANELS SHALL BE AS INDICATED IN THE MNDOT STANDARD SIGNS AND MARKINGS MANUAL UNLESS OTHERWISE SPECIFIED.
7. ALL RISER (VERTICAL) U POSTS SHALL BE SPLICED. DRIVEN STUB POSTS SHALL BE AT LEAST 7' LONG.
8. USE STAINLESS STEEL 5/16" BOLTS, WASHERS AND NYLON INSERT LOCK NUTS AS SHOWN FOR ALL GROUND MOUNTED AND OVERHEAD MOUNTED SIGNS.
9. STAINLESS STEEL WASHER WITH SAME DIMENSIONS SHALL BE PROVIDED BETWEEN ALL NYLON WASHERS AND BOLT HEADS.
10. BRACING STUBS SHALL BE NO MORE THAN 4" ABOVE GROUND AND EMBEDDED AT LEAST 42".
11. A-FRAME BRACKET SHALL BE STEEL CONFORMING TO MNDOT 3306 AND GALVANIZED IN ACCORDANCE WITH MNDOT 3394.
12. COLLARS SHALL BE USED TO SHIM OVERLAYS AND LEGEND COMPONENTS AWAY FROM PANEL WHERE INTERFERENCE WITH BOLT HEADS IS ENCOUNTERED. MNDOT 3352.2A6.
13. 2 POST TYPE C SIGNS SHALL BE REINFORCED WITH AT LEAST ONE LATERAL BRACE. INSTALLATIONS WHERE THE TOTAL PANEL HEIGHT IS 60" OR MORE SHALL HAVE TWO LATERAL BRACES LOCATED APPROXIMATELY AT THE QUARTER POINTS.
14. WHERE 2 SINGLE POST TYPE C SIGNS ARE INSTALLED SIDE BY SIDE, THEY SHALL BE REINFORCED Laterally BY AT LEAST 2 BRACES, BOLTED AT EACH POST AND LOCATED APPROXIMATELY AT THE QUARTER POINTS.
15. WHERE 3 OR MORE TYPE C SIGNS ARE INSTALLED SIDE BY SIDE, THEY SHALL BE REINFORCED Laterally BY AT LEAST 2 BRACES, BOLTED AT EACH POST AND POST SECTION AND LOCATED APPROXIMATELY AT THE QUARTER POINTS AS SHOWN IN MODIFIED TYPE C INSTALLATION.

TYPE C & D SIGN STRUCTURAL DETAILS

Sheet 1 of 2

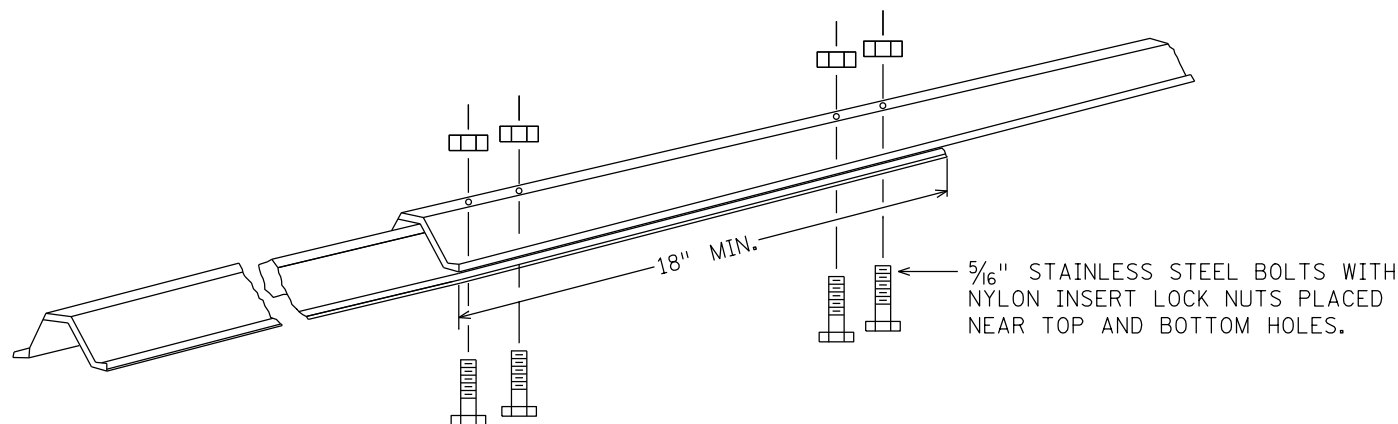


LATERAL BRACE OR STRINGER
 SPLICE DETAIL (EXPLODED VIEW)



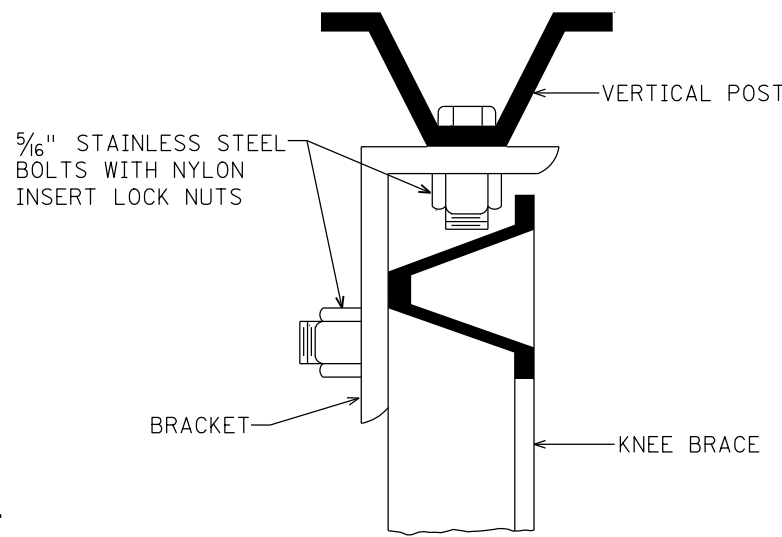
A-FRAME BRACKET

(STEEL MNDOT 3306 GALVANIZED PER MNDOT 3394)

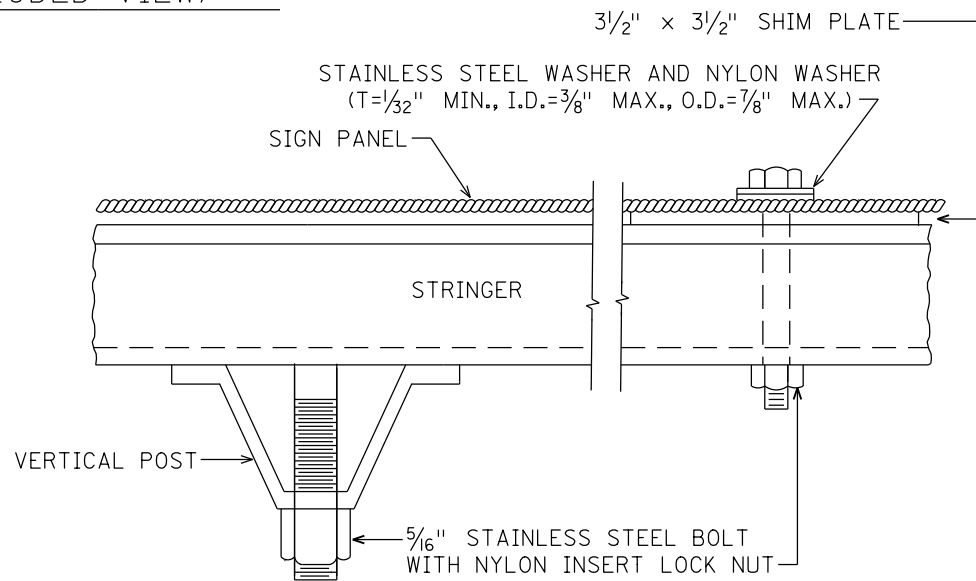


STRUCTURAL SPLICE

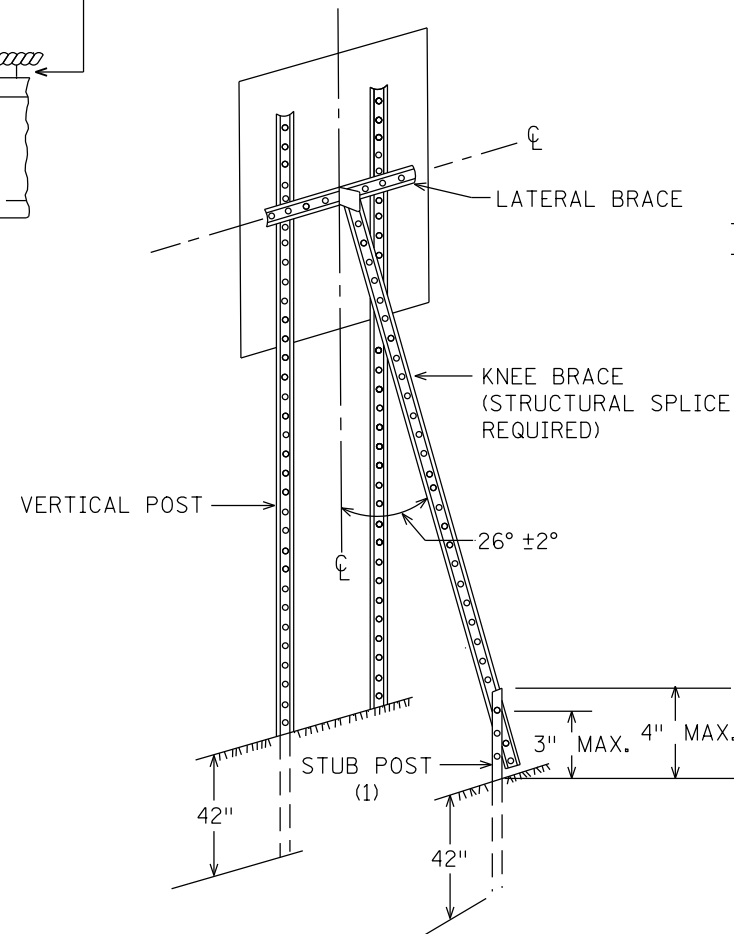
(USE WHEN IT IS NECESSARY TO FABRICATE THE CORRECT LENGTH OF POST FROM TWO PIECES)



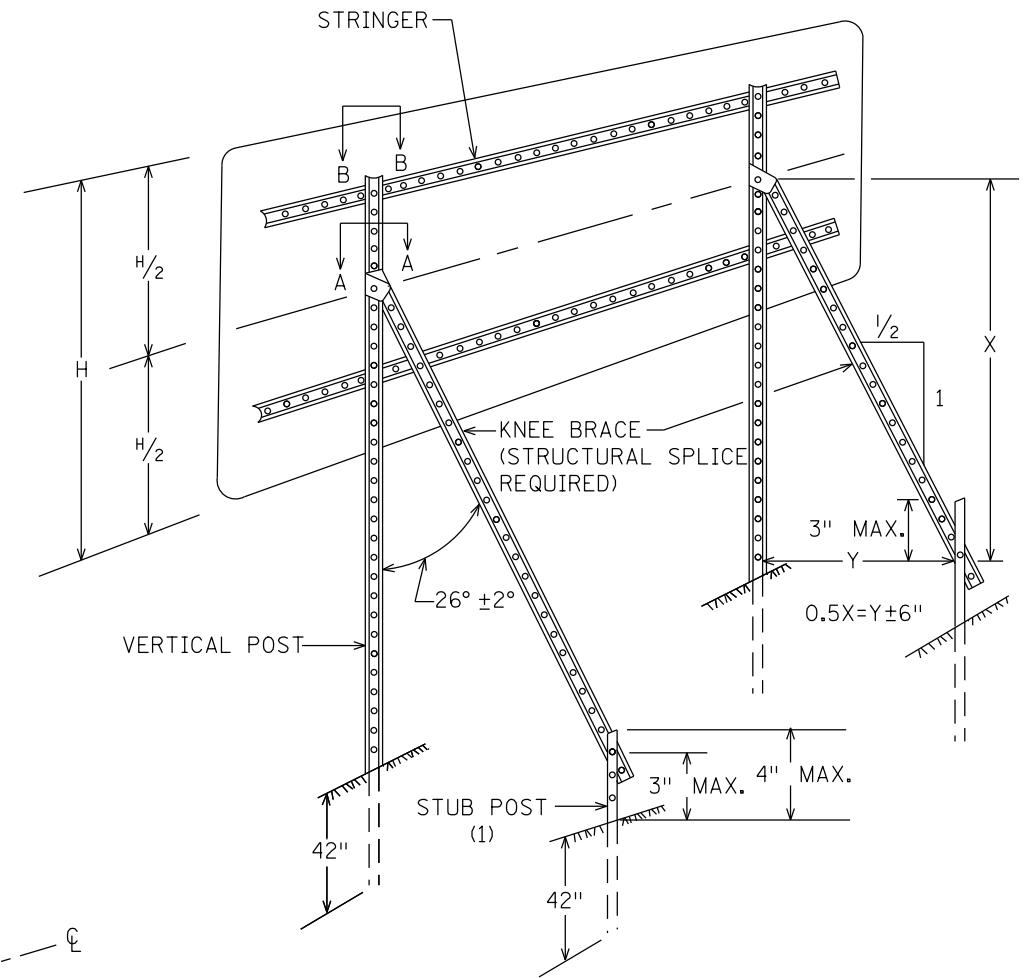
SECTION A-A



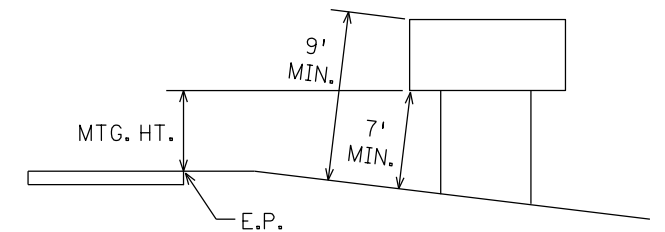
SECTION B-B



TYPICAL "A-FRAME" INSTALLATION
 TYPE "C" SIGNS



TYPICAL "A-FRAME" INSTALLATION
 TYPE "D" SIGNS

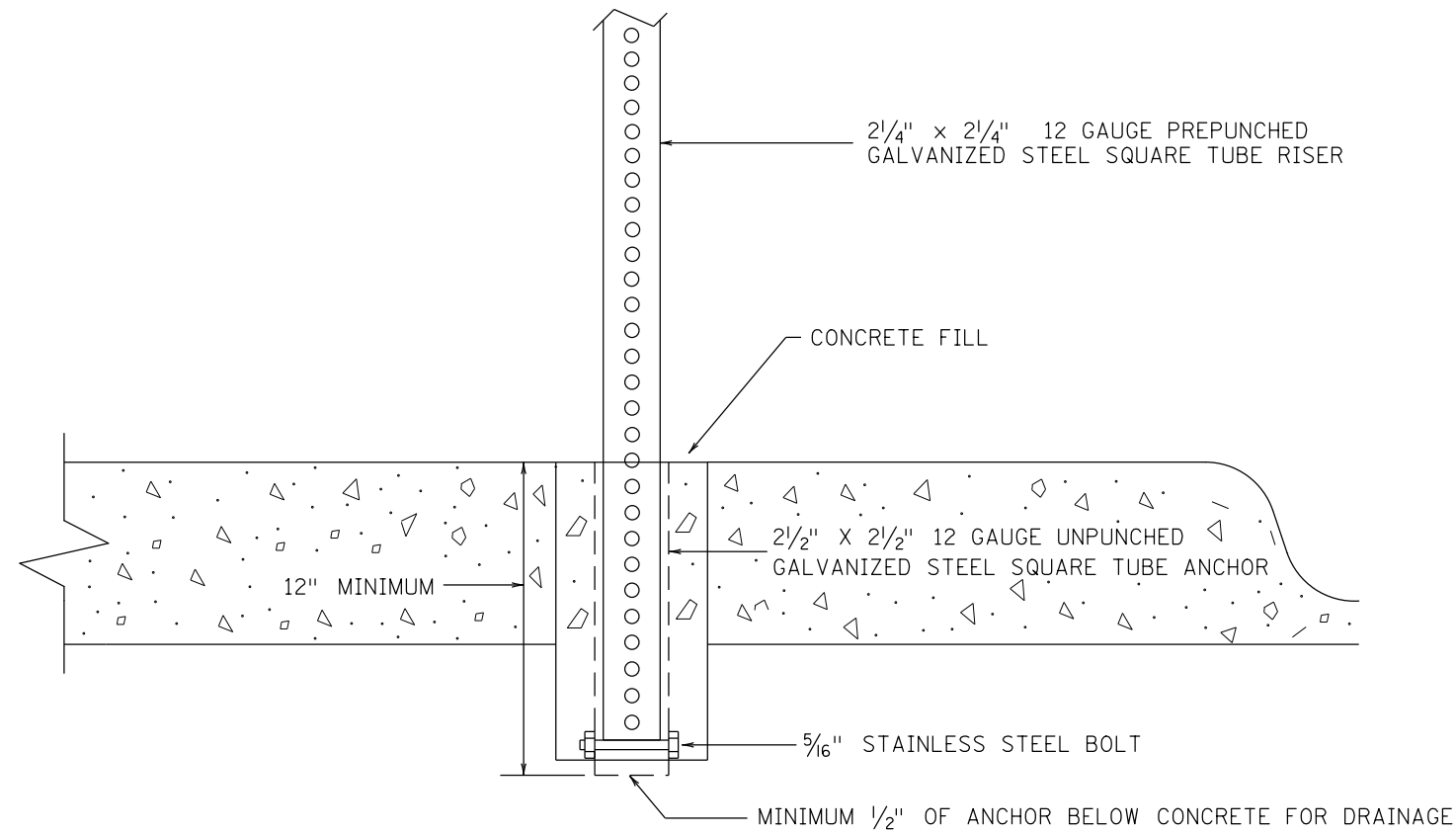


TYPICAL MOUNTING

(1) OFFSET STUB POST 1' TOWARD ROADWAY RELATIVE TO VERTICAL POST. ATTACH STUB POST AND KNEE BRACE BACK TO BACK.

TYPE C & D SIGN
 STRUCTURAL DETAILS

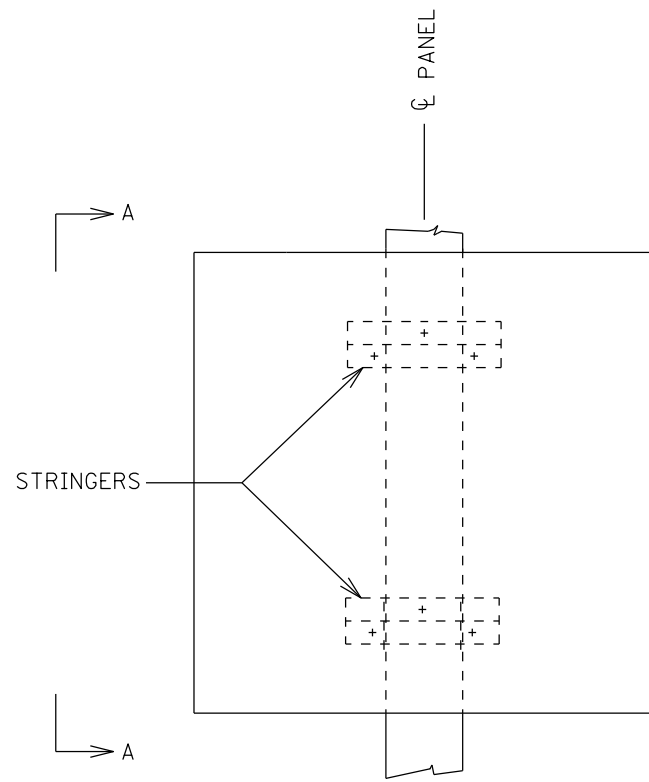
Sheet 2 of 2



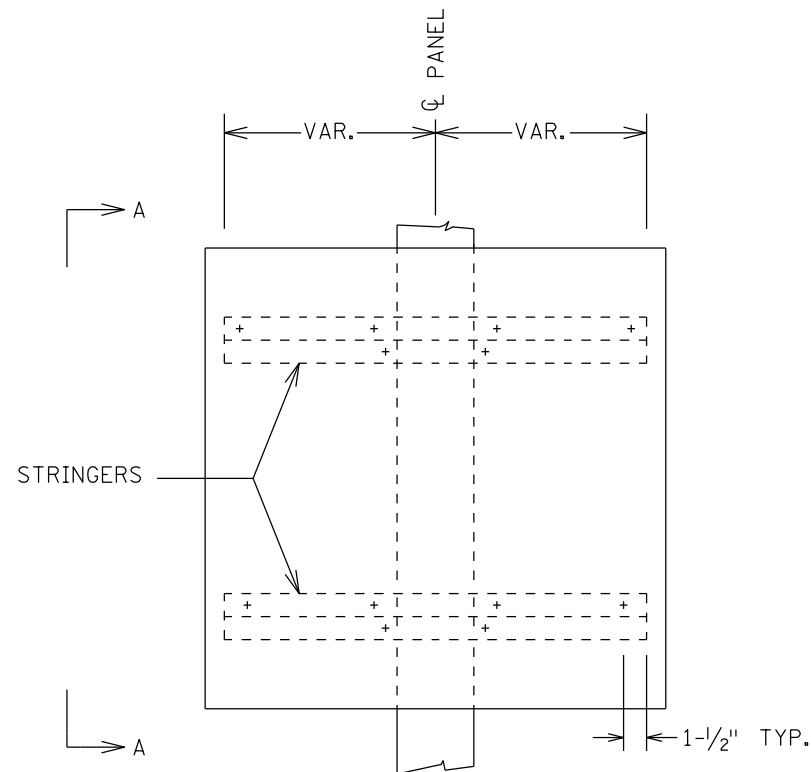
NOTES;

1. DRILL AN 8" DIAMETER HOLE THE FULL DEPTH OF THE ANCHOR.
2. DRILL $\frac{3}{8}$ " HOLES ON OPPOSITE SIDES OF THE UNPUNCHED GALVANIZED STEEL SQUARE TUBE ANCHOR APPROX. 1" FROM THE BOTTOM OF THE ANCHOR. INSERT A $\frac{5}{16}$ " STAINLESS STEEL BOLT THROUGH THE HOLES AND SECURE WITH A STAINLESS STEEL LOCK NUT WITH NYLON INSERT. THE PREPUNCHED GALVANIZED STEEL SQUARE TUBE RISER (TO BE INSERTED INSIDE THE UNPUNCHED GALVANIZED SQUARE TUBE ANCHOR) WILL REST ON BOLT.
3. INSERT THE ANCHOR IN THE HOLE.
4. AFTER INSTALLATION OF THE UNPUNCHED GALVANIZED STEEL SQUARE TUBE ANCHOR, FILL THE HOLE WITH A CONCRETE MIX APPROVED BY THE ENGINEER AND LEVEL OFF THE TOP OF CONCRETE.
5. MAXIMUM SIGN PANEL SIZE IS 42" WIDE X 48" HIGH.
6. SIGN PANEL TO BE MOUNTED 7 FT ABOVE THE GROUND.

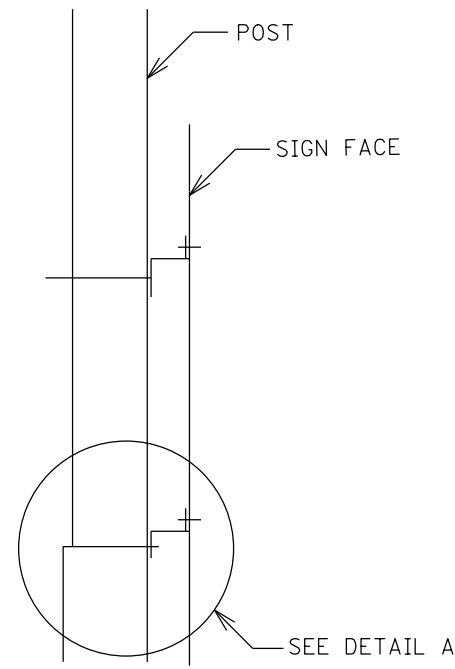
TYPE C SIGNS, DELINEATORS &
 MARKERS IN CONCRETE



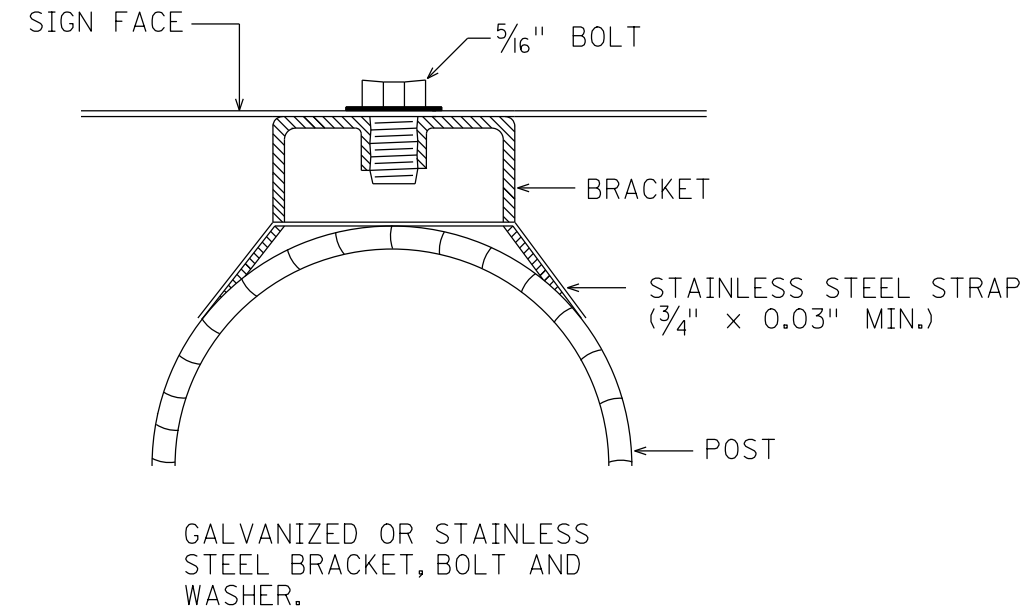
SINGLE POST PUNCHING
ELEVATION



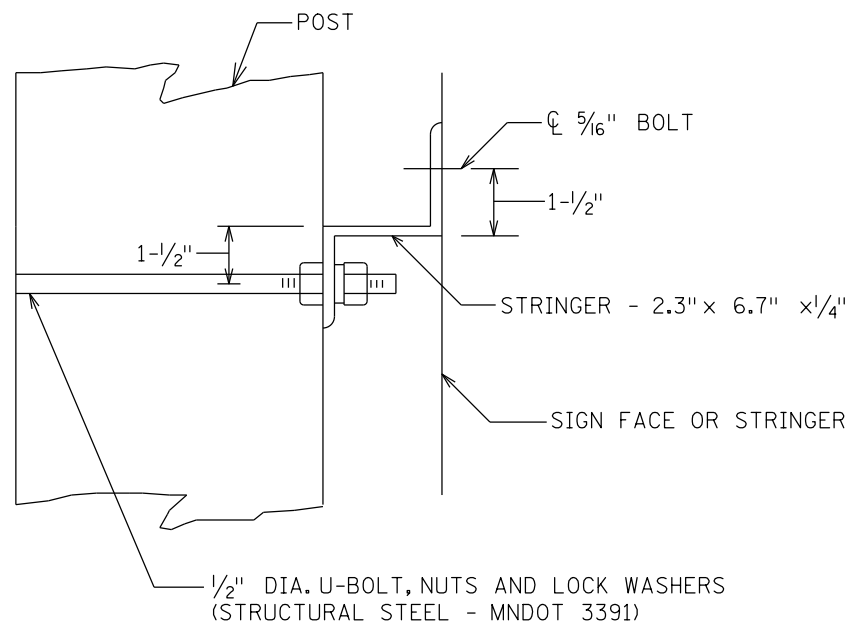
2-POST PUNCHING
ELEVATION



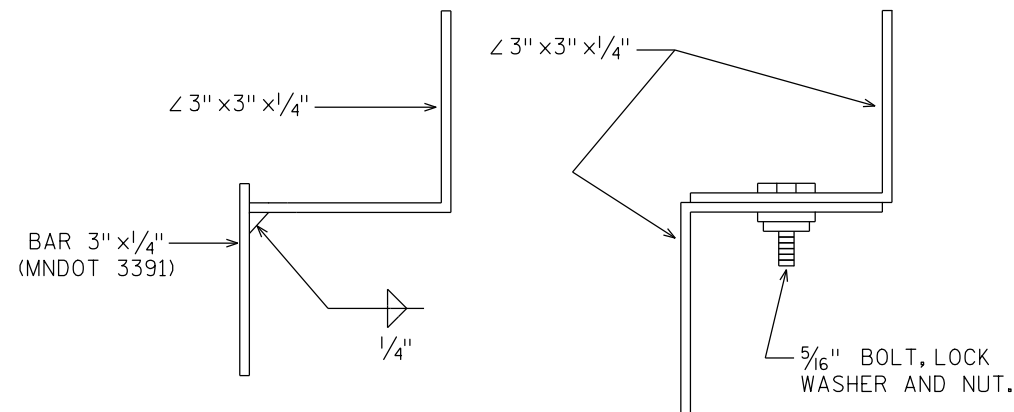
VIEW A-A



STRAP MOUNTING DETAIL FOR
OVERHEAD IDENTIFICATION AND
LIGHTING SYSTEM IDENTIFICATION PLATES



DETAIL A



DETAIL A STRINGER ALTERNATES

NOTES:

1. FOR DETAILS AND NOTES NOT SHOWN SEE "C" & "D" SIGN DETAILS.
2. FOR BACK TO BACK MOUNTINGS, ROTATE STRINGERS FOR ONE PANEL 180° FROM WHAT IS SHOWN SUCH THAT PANELS CAN BE MOUNTED AT SAME ELEVATION.
3. DETAIL A STRINGER MAY BE ONE OF THE THREE DESIGNS DETAILED OR AN APPROVED EQUAL. STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH MNDOT 3306 AND GALVANIZED IN ACCORDANCE WITH MNDOT 3394. FASTENERS SHALL BE IN ACCORDANCE WITH MNDOT 3391.2B AND SHALL BE GALVANIZED EITHER BY THE HOT-DIP PROCESS IN ACCORDANCE WITH ASTM A153, OR BY THE MECHANICAL PROCESS IN ACCORDANCE WITH ASTM B695, CLASS 50 OR GREATER.

SIGN TYPE C AND D STRUCTURAL
STEEL MOUNTING SYSTEM
FOR ROUND SUPPORTS