

MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN FOR TRAFFIC SIGNS AND DEVICES

TRUNK HIGHWAY NO. 77, T.H. 494 & T.H. 35

FED. PROJ. NO.

GOVERNING SPECIFICATIONS

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

INDEX

| SHEET NO. | DESCRIPTION            |
|-----------|------------------------|
| 1         | TITLE SHEET            |
| 2         | ESTIMATED QUANTITIES   |
| 3-10      | DATA SHEETS            |
| 11        | PUBLIC UTILITIES       |
| 12-26     | ROADWAY LAYOUTS        |
| 27-42     | SIGN PANEL LAYOUTS     |
| 43        | STANDARD SIGN DRAWINGS |
| 44-47     | PLACEMENT DETAILS      |
| 48-70     | STRUCTURAL DETAILS     |
| 71-73     | CROSS SECTIONS         |

THIS PLAN CONTAINS 73 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.

DATE \_\_\_\_\_ LIC. NO. \_\_\_\_\_ ENGR. \_\_\_\_\_  
HEATHER LYNN LOTT

DESIGN SQUAD: RICK SUNSTROM

RECOMMENDED FOR APPROVAL \_\_\_\_\_ 20\_\_\_\_\_  
DISTRICT TRANSPORTATION ENGINEER

RECOMMENDED FOR APPROVAL \_\_\_\_\_ 20\_\_\_\_\_  
DISTRICT TRAFFIC ENGINEER

RECOMMENDED FOR APPROVAL \_\_\_\_\_ 20\_\_\_\_\_

RECOMMENDED FOR APPROVAL \_\_\_\_\_ 20\_\_\_\_\_

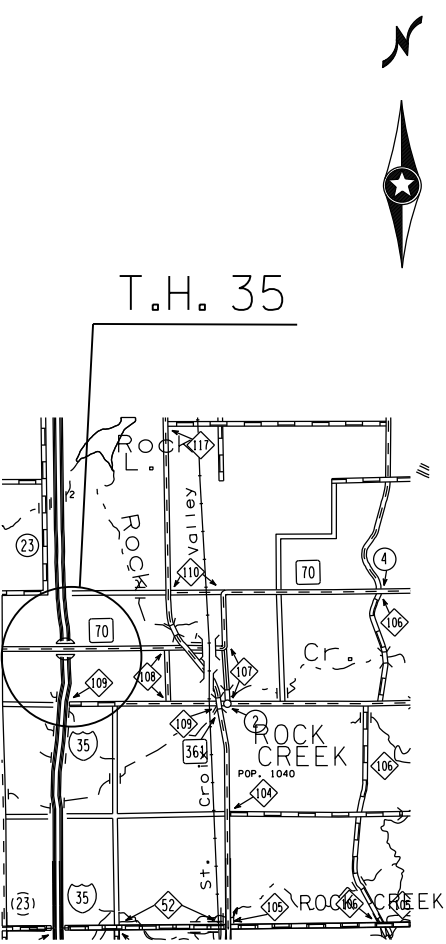
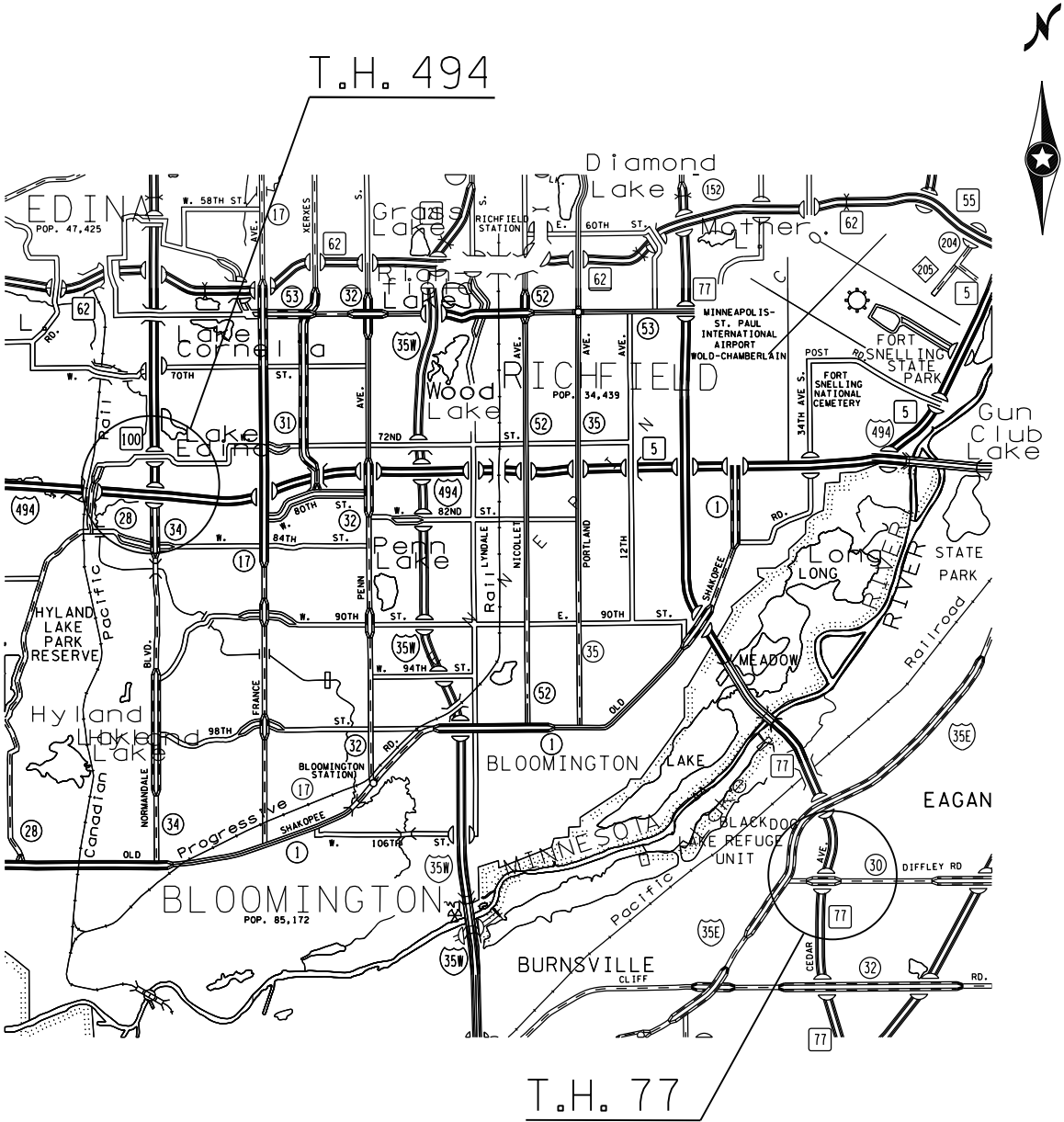
RECOMMENDED FOR APPROVAL \_\_\_\_\_ 20\_\_\_\_\_  
STATE PRE-LETTING ENGINEER

OFFICE OF LAND MANAGEMENT APPROVAL \_\_\_\_\_ 20\_\_\_\_\_  
DIRECTOR, LAND MANAGEMENT

APPROVED \_\_\_\_\_ 20\_\_\_\_\_  
STATE DESIGN ENGINEER

I HEREBY CERTIFY THAT THE FINAL FIELDS REVISIONS, IF ANY, OF THIS PLAN WERE MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE OF THE STATE OF MINNESOTA

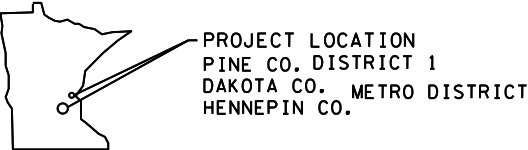
DATE \_\_\_\_\_ LIC. NO. \_\_\_\_\_



PLAN \_\_\_\_\_ 100'

INDEX MAP \_\_\_\_\_ 3300'

| PLAN REVISIONS |           |             |
|----------------|-----------|-------------|
| DATE           | SHEET NO. | APPROVED BY |
|                |           |             |
|                |           |             |
|                |           |             |
|                |           |             |
|                |           |             |



PROJECT LOCATION  
PINE CO. DISTRICT 1  
DAKOTA CO. METRO DISTRICT  
HENNEPIN CO.

FOR PLANS & UTILITIES SYMBOLS SEE TECHNICAL MANUAL

PROJ. NO CHARGE IDENTIFIER

|       |       |
|-------|-------|
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STATE PROJ. NO.

SHEET NO. 1 OF 73 SHEETS

DISTRICT #: METRO  
IPLOT NAME: TITLE-TS\*  
PATH & FILENAME: IP\_PWP-d143240NTITLE-TS\*.dgn  
PLOTTED/REVISED: 2/5/2013

DISTRICT #: METRO  
IPLOT NAME: CHARTS\_TB\*  
PATH & FILENAME: IP\_PWP-d143240\CHARTS\_TB\*.dgn

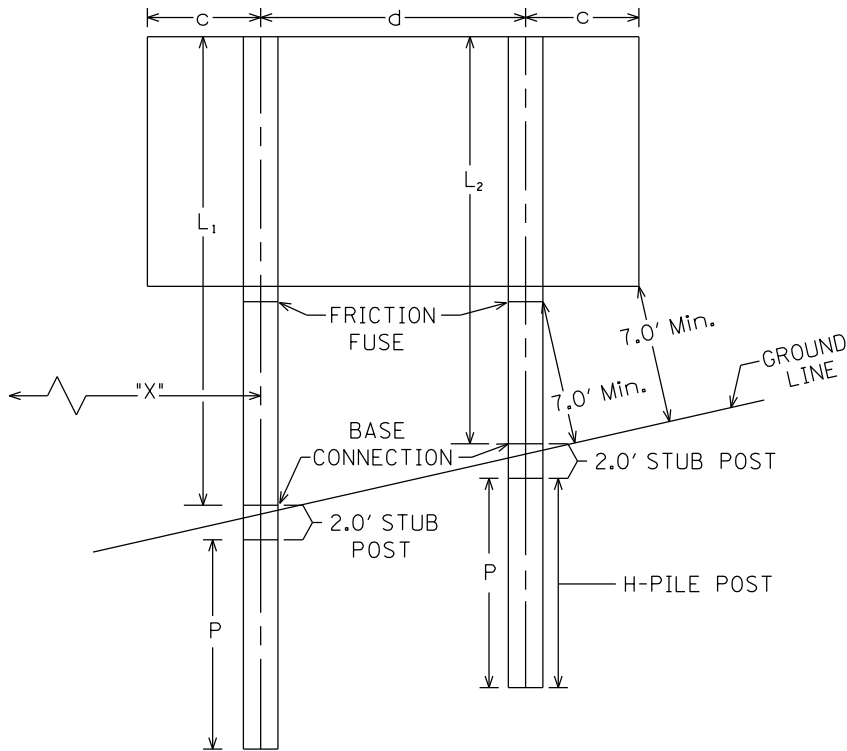
PLOTTED/REVISED: 2/5/2013

| STATEMENT OF ESTIMATED QUANTITIES |            |          |                                                          |          |                      |
|-----------------------------------|------------|----------|----------------------------------------------------------|----------|----------------------|
| SHEET NO.                         | CHART I.D. | ITEM NO. | ITEM                                                     | UNIT     | ESTIMATED QUANTITIES |
|                                   |            | 2021.501 | MOBILIZATION                                             | LUMP SUM | 1                    |
|                                   |            | 2563.601 | TRAFFIC CONTROL                                          | LUMP SUM | 1                    |
| 10                                | J          | 2564.511 | CONCRETE FOOTINGS (TYPE OH SPREAD)                       | CU. YD.  | 103                  |
| 10                                | J          | 2564.511 | CONCRETE FOOTINGS (TYPE OH SHAFT)                        | CU. YD.  | 14                   |
| 10                                | K          | 2564.513 | MEDIAN BARRIER FOOTING                                   | EACH     | 1                    |
| 3                                 | A          | 2564.522 | STRUCT. STEEL - POSTS FOR TYPE A SIGNS                   | POUND    | 8402                 |
| 10                                | J, K       | 2564.522 | STRUCT. STEEL - POSTS FOR OH SIGNS (DESIGN B)            | POUND    | 62987                |
| 10                                | J          | 2564.522 | STRUCT. STEEL - TRUSSES FOR OH SIGNS (DESIGN B)          | POUND    | 70098 (P)            |
| 10                                | J          | 2564.522 | STRUCT. STEEL - PANEL MTG. POSTS FOR OH SIGNS (DESIGN B) | POUND    | 4913 (P)             |
| 3                                 | A          | 2564.531 | SIGN PANELS TYPE A                                       | SQ. FT.  | 767 (P)              |
| 4                                 | B          | 2564.531 | SIGN PANELS TYPE C                                       | SQ. FT.  | 856                  |
| 5, 6                              | C          | 2564.531 | SIGN PANELS TYPE D                                       | SQ. FT.  | 894                  |
| 7                                 | D          | 2564.531 | SIGN PANELS TYPE EA                                      | SQ. FT.  | 42 (P)               |
| 7                                 | E          | 2564.531 | SIGN PANELS TYPE EO                                      | SQ. FT.  | 176 (P)              |
| 9                                 | I          | 2564.531 | SIGN PANELS TYPE OH                                      | SQ. FT.  | 1744 (P)             |
| 8                                 | F          | 2564.531 | SIGN PANELS TYPE OVERLAY                                 | SQ. FT.  | 222                  |
| 8                                 | H          | 2564.550 | DEL INEATOR TYPE X4-6                                    | EACH     | 58                   |
| 8                                 | G          | 2564.551 | REFERENCE POST MARKER                                    | EACH     | 2                    |
| 8                                 | H          | 2564.552 | HAZARD MARKER X4-2                                       | EACH     | 8                    |
| 8                                 | H          | 2564.553 | CLEARANCE MARKER X4-4                                    | EACH     | 3                    |

DISTRICT #: METRO  
IPLOT NAME: CHARTS\_TB\*  
PATH & FILENAME: IP\_PWP-d143240NCHARTS\_TB\*.dgn

PLOTTED/REVISED: 2/5/2013

| SIGN TYPE A (H PILE FOOTINGS) |                 |            |                |          |        |          |          |                                  |               |         |         |         |               |                                      |           |           | A |
|-------------------------------|-----------------|------------|----------------|----------|--------|----------|----------|----------------------------------|---------------|---------|---------|---------|---------------|--------------------------------------|-----------|-----------|---|
| SIGN NO.                      | LOCATION        | PANEL      |                | POST     |        |          |          |                                  |               |         |         | PILE    |               | TOTAL WEIGHT STRUCTURAL STEEL (LBS.) | "X" (FT.) | "H" (FT.) |   |
|                               |                 | SIZE (IN.) | AREA (SQ. FT.) | SIZE     | QUANT. | L1 (FT.) | L2 (FT.) | ADDITIONAL STEEL PER POST (LBS.) | WEIGHT (LBS.) | c (IN.) | d (IN.) | P (FT.) | WEIGHT (LBS.) |                                      |           |           |   |
| A-1                           | 369+75 SB TH 77 | 204 x 96   | 136.00         | W 8 X 28 | 2      | 18.0     | 20.0     | 143                              | 1350.00       | 42      | 120     | 12      | 672.00        | 2022.00                              | 40        | 5         |   |
| A-2                           | 370+00 NB TH 77 | 180 x 54   | 67.50          | W 4 X 13 | 2      | 13.0     | 15.0     | 59                               | 482.00        | 37      | 106     | 12      | 312.00        | 794.00                               | 30        | 5         |   |
| A-3                           | 157+00 NB TH 35 | 210 x 150  | 218.75         | W 8 X 24 | 2      | 19.5     | 16.5     | 118                              | 1100.00       | 43      | 124     | 12      | 576.00        | 1676.00                              | 30        | 5         |   |
| A-4                           | 170+00 SB TH 35 | 174 x 90   | 108.75         | W 6 X 20 | 2      | 19.0     | 17.0     | 104                              | 928.00        | 36      | 102     | 12      | 480.00        | 1408.00                              | 30        | 5         |   |
| A-5                           | 204+00 NB TH 35 | 210 x 162  | 236.25         | W 8 X 31 | 2      | 24.0     | 23.5     | 143                              | 1758.50       | 43      | 124     | 12      | 744.00        | 2502.50                              | 30        | 5         |   |
| TOTAL                         |                 | 767.25     |                |          |        |          |          |                                  |               |         |         |         |               | 8402.50                              |           |           |   |



BREAKAWAY POSTS-H-PILE FOOTING  
(L<sub>1</sub> IS POST NEAREST ROADWAY)

TYPE A SIGNS

| POST QUANTITIES |               |           |               |
|-----------------|---------------|-----------|---------------|
| POST SIZE       | QUANTITY (1)  | POST SIZE | QUANTITY (1)  |
| W4X13           | 59+13 LBS/FT  | W8X28     | 143+28 LBS/FT |
| W5X16           | 67+16 LBS/FT  | W8X31     | 173+31 LBS/FT |
| W6X20           | 104+20 LBS/FT | W10X39    | 195+39 LBS/FT |
| W8X24           | 118+24 LBS/FT |           |               |

SPECIFIC NOTE:  
(1) Constant includes stub post weight

- GENERAL NOTES:
- Pile shall be the same size as the sign post and is to be driven to a 12 to 14 ton bearing capacity.
  - See sheets 48 and 49 for Structural Details, Type A Signs (Breakaway).
  - Post lengths are approximate.
  - "X" is the distance from the edge of the thru lane to the first post.
  - "H" is the height above the pavement edge to the bottom edge of panel.
  - P is the length of H-pile post.
  - See sheet 71 for cross section.
  - See sheet 27-29 for sign panels.

DISTRICT #: METRO  
PLOT NAME: CHARTS\_TB\*2  
PATH & FILENAME: IP\_PWP-d143240\CHARTS\_TB\*.dgn  
PLOTTED/REVISED: 2/5/2013

| SIGN PANELS TYPE C |        |            |                    |            |                   |            |                |                      |          |                            | B |
|--------------------|--------|------------|--------------------|------------|-------------------|------------|----------------|----------------------|----------|----------------------------|---|
| SIGN NO.           | QUANT. | POSTS      |                    |            | MTG HT. (FT.) (1) | PANEL      |                |                      | CODE NO. | PANEL LEGEND               |   |
|                    |        | NO. & TYPE | KNEE BRACES QUANT. | LEN. (FT.) |                   | SIZE (IN.) | AREA (SQ. FT.) | TOTAL AREA (SQ. FT.) |          |                            |   |
| C-1                | 5      | 2-U        | 1                  | 16         | 7                 | 36 x 36    | 9.00           | 45.00                | R1-1     | STOP                       |   |
| C-2                | 1      | 2- U       | 1                  | 18         | 7                 | 48 x 18    | 6.00           | 6.00                 | R6-1(R)  | ONE WAY ➡                  |   |
|                    |        |            |                    |            |                   | 36 x 36    | 9.00           | 9.00                 | R1-1     | STOP                       |   |
| C-3                | 2      | 2- U       |                    | 15         | 7                 | 24 x 30    | 5.00           | 10.00                | R2-1     | SPEED LIMIT 55             |   |
| C-4                | 2      | 2- U       | 1                  | 17         | 7                 | 36 x 48    | 12.00          | 24.00                | R2-1     | SPEED LIMIT 40             |   |
| C-5                | 1      | 2- U       | 1                  | 18         | 7                 | 48 x 60    | 20.00          | 20.00                | R2-1     | SPEED LIMIT 65             |   |
| C-6                | 1      | 2- U       | 2                  | 21         | 7                 | 48 x 96    | 32.00          | 32.00                | R2-4b    | SPEED LIMIT 70 MIN. 40     |   |
| (4) C-7            | 2      | 2- U       | 1                  | 13         | 7                 | 36 x 30    | 7.50           | 15.00                | R3-30AB  | LANE CONTROL               |   |
| C-8                | 1      | 2- U       | 1                  | 15         | 7                 | 54 x 30    | 11.25          | 11.25                | R3-30ACA | LANE CONTROL               |   |
| (4) C-9            | 1      | 2- U       |                    | 13         | 7                 | 30 x 30    | 6.25           | 6.25                 | R3-7     | LEFT LANE MUST TURN LEFT   |   |
| C-10               | 1      | 2- U       |                    | 15         | 7                 | 30 x 30    | 6.25           | 6.25                 | R3-7     | LEFT LANE MUST TURN LEFT   |   |
| (5) C-11           | 2      | 1-0        |                    | 10         | 7                 | 30 x 30    | 6.25           | 12.50                | R3-7     | LEFT LANE MUST TURN LEFT   |   |
| C-12               | 6      | 2- U       |                    | 15         | 7                 | 30 x 30    | 6.25           | 37.50                | R3-7     | RIGHT LANE MUST TURN RIGHT |   |
| (4) C- 13          | 7      | 2- U       | 1                  | 14         | 7                 | 30 x 36    | 7.50           | 52.50                | R4-7     | KEEP RIGHT                 |   |
| C-14               | 4      | 2- U       |                    | 16         | 7                 | 48 x 48    | 16.00          | 64.00                | R5-1     | DO NOT ENTER               |   |
| (4) C-15           | 4      | 2- U       |                    | 14         | 7                 | 36 x 36    | 9.00           | 36.00                | R5-1     | DO NOT ENTER               |   |
| C-16               | 4      | 2- U       |                    | 16         | 7                 | 42 x 30    | 8.75           | 35.00                | R5-1A    | WRONG WAY                  |   |
| C-17               | 4      | 1- U       |                    | 15         | 7                 | 18 x 24    | 3.00           | 12.00                | R5-10d   | PEDS BIKES PROHIBITED      |   |
| C-18               | 1      | 2- U       |                    | 14         | 7                 | 48 x 18    | 6.00           | 6.00                 | R6-1(L ) | ↩ ONE WAY                  |   |
| C-19               | 6      | 2- U       |                    | 15         | 7                 | 48 x 18    | 6.00           | 36.00                | R6-1(L ) | ↩ ONE WAY                  |   |
|                    |        |            |                    |            |                   | 48 x 18    | 6.00           | 36.00                | R6-1(R ) | ONE WAY ➡                  |   |
| C-20               | 6      | 2- U       | 1                  | 16         | 7                 | 36 x 36    | 9.00           | 54.00                | R16-X4   | EMERGENCY STOP ONLY        |   |
| C-21               | 3      | 2- U       | 1                  | 17         | 7                 | 48 x 48    | 16.00          | 48.00                | W3-1A    | STOP AHEAD                 |   |
| C-22               | 1      | 2- U       | 1                  | 17         | 7                 | 48 x 48    | 16.00          | 16.00                | W3-3     | SIGNAL AHEAD               |   |
| C- 23              | 6      | 2- U       | 1                  | 17         | 7                 | 48 x 48    | 16.00          | 96.00                | W4-1(R ) | MERGE                      |   |
| C- 24              | 2      | 2- U       | 1                  | 17         | 7                 | 48 x 48    | 16.00          | 32.00                | W4-3(R ) | ADDED LANE                 |   |
| (6) C- 25          | 2      | 1-0        |                    |            |                   | 48 x 60    | 20.00          | 40.00                | W13-2    | EXIT 25 M.P.H.             |   |
| C-26               | 1      | 2- U       | 1                  | 17         | 7                 | 30 x 15    | 3.13           | 3.13                 | M3-3A    | SOUTH                      |   |
|                    |        |            |                    |            |                   | 36 x 36    | 9.00           | 9.00                 | M1-1     | INTERSTATE 35              |   |
| C-27               | 1      | 2- U       | 1                  | 17         | 7                 | 30 x 15    | 3.13           | 3.13                 | M3-3A    | SOUTH                      |   |
|                    |        |            |                    |            |                   | 36 x 36    | 9.00           | 9.00                 | M1-5A    | MINNESOTA 77               |   |
| C-28               | 1      | 2- U       | 1                  | 16         | 7                 | 24 x 12    | 2.00           | 2.00                 | M3-4A    | WEST                       |   |
|                    |        |            |                    |            |                   | 24 x 24    | 4.00           | 4.00                 | M1-5A    | MINNESOTA 70               |   |
| C-29               | 1      | 2- U       | 1                  | 16         | 7                 | 24 x 12    | 2.00           | 2.00                 | M3-2A    | EAST                       |   |
|                    |        |            |                    |            |                   | 24 x 24    | 4.00           | 4.00                 | M1-5A    | MINNESOTA 70               |   |
| C-30               | 1      | 2- U       | 1                  | 16         | 7                 | 24 x 12    | 2.00           | 2.00                 | M3-2     | EAST                       |   |
|                    |        |            |                    |            |                   | 24 x 24    | 4.00           | 4.00                 | M1-X4    | COUNTY 30                  |   |
| (4) C-31           | 1      | 2- U       |                    | 15         | 7                 | 48 x 48    | 16.00          | 16.00                | R5-1     | DO NOT ENTER               |   |
| TOTAL              |        |            |                    |            |                   | 856.50     |                |                      |          |                            |   |

SPECIFIC NOTES:

- (1) Mounting height is minimum, see sheet 51 for Typical Mounting.
- (2) For punching and mounting details, see sheet 52.
- (3) Mounted back to back.
- (4) Mounted in concrete, see sheet 47.
- (5) Mounted on bridge median island, see sheet 54.
- (6) Mounted on bridge rail, see sheet 55.

GENERAL NOTES:

- 1. Post lengths are approximate and include embedment but do not include additional length required for splice.
- 2. See sheets 50-52 for structural details.
- 3. See Standard Signs Manual for punching code, and detailed drawings of Type C sign panels.

DISTRICT #: METRO  
IPLOT NAME: CHARTS\_TB\*3  
PATH & FILENAME: IP\_PWP-d143240\CHARTS\_TB\*.dgn

PLOTTED/REVISED: 2/5/2013

| SIGN PANELS TYPE D |        |            |                    |            |               |                   |            |                |                      |              |                                                                                       | C |
|--------------------|--------|------------|--------------------|------------|---------------|-------------------|------------|----------------|----------------------|--------------|---------------------------------------------------------------------------------------|---|
| SIGN NO.           | QUANT. | POSTS      |                    |            |               | MTG HT. (FT.) (1) | PANEL      |                |                      | PANEL LEGEND |                                                                                       |   |
|                    |        | NO. & TYPE | KNEE BRACES QUANT. | LEN. (FT.) | SPACING (IN.) |                   | SIZE (IN.) | AREA (SQ. FT.) | TOTAL AREA (SQ. FT.) |              |                                                                                       |   |
| (3)                | D-1    | 2          | 2-U                | 2          | 16            | 42                | 7          | 72 x 60        | 30.00                | 60.00        |    |   |
| (4)                | D-2    | 1          | 2-U                | 2          | 18            | 42                | 7          | 72 x 84        | 42.00                | 42.00        |    |   |
| (4)                | D-3    | 1          | 2-U                | 2          | 18            | 42                | 7          | 72 x 84        | 42.00                | 42.00        |    |   |
| (4)                | D-4    | 1          | 2-U                | 2          | 18            | 42                | 7          | 72 x 84        | 42.00                | 42.00        |    |   |
| (4)                | D-5    | 1          | 2-U                | 2          | 18            | 42                | 7          | 72 x 84        | 42.00                | 42.00        |    |   |
| (4)                | D-6    | 2          | 2-U                | 2          | 18            | 42                | 7          | 72 x 84        | 42.00                | 84.00        |    |   |
| (4)                | D-7    | 1          | 2-U                | 2          | 17            | 54                | 7          | 96 x 48        | 32.00                | 32.00        |    |   |
|                    | D-8    | 1          | 2-U                | 2          | 15            | 78                | 7          | 126 x 24       | 21.00                | 21.00        |   |   |
|                    | D-9    | 1          | 2-U                | 2          | 18            | 30                | 7          | 42 x 54        | 15.75                | 15.75        |  |   |
|                    | D-10   | 1          | 2-U                | 2          | 18            | 30                | 7          | 42 x 54        | 15.75                | 15.75        |  |   |
|                    | D-11   | 1          | 2-U                | 2          | 15            | 78                | 7          | 126 x 24       | 21.00                | 21.00        |  |   |
|                    | D-12   | 1          | 2-U                | 2          | 17            | 30                | 7          | 48 x 66        | 22.00                | 22.00        |  |   |
|                    | D-13   | 1          | 2-U                | 2          | 19            | 54                | 7          | 78 x 78        | 42.25                | 42.25        |  |   |
|                    | D-14   | 1          | 2-U                | 2          | 18            | 30                | 7          | 54 x 66        | 24.75                | 24.75        |  |   |
| (2)                | D-15   | 1          | 1-0                |            |               |                   |            | 54 x 66        | 24.75                | 24.75        |  |   |
| SUB TOTAL          |        |            |                    |            |               |                   |            |                |                      | 531.25       |                                                                                       |   |

DISTRICT #: METRO  
IPLOT NAME: CHARTS\_TB\*4  
PATH & FILENAME: IP\_PWP-d143240NCHARTS\_TB\*.dgn

PLOTTED/REVISED: 2/5/2013

| SIGN PANELS TYPE D |        |            |                    |            |               |                   |            |                |                      |              | C |
|--------------------|--------|------------|--------------------|------------|---------------|-------------------|------------|----------------|----------------------|--------------|---|
| SIGN NO.           | QUANT. | POSTS      |                    |            |               | MTG HT. (FT.) (1) | PANEL      |                |                      | PANEL LEGEND |   |
|                    |        | NO. & TYPE | KNEE BRACES QUANT. | LEN. (FT.) | SPACING (IN.) |                   | SIZE (IN.) | AREA (SQ. FT.) | TOTAL AREA (SQ. FT.) |              |   |
| D-16               | 1      | 2-U        | 2                  | 19         | 54            | 7                 | 78 x 78    | 42.25          | 42.25                |              |   |
| D-17               | 1      | 2-U        | 2                  | 18         | 30            | 7                 | 48 x 66    | 22.00          | 22.00                |              |   |
| D-18               | 1      | 2-U        | 2                  | 16         | 66            | 7                 | 108 x 36   | 27.00          | 27.00                |              |   |
| D-19               | 1      | 2-U        | 2                  | 16         | 66            | 7                 | 108 x 36   | 27.00          | 27.00                |              |   |
| D-20               | 2      | 2-U        | 2                  | 17         | 30            | 7                 | 42 x 54    | 15.75          | 31.50                |              |   |
| D-21               | 1      | 2-U        | 2                  | 17         | 66            | 7                 | 108 x 54   | 40.50          | 40.50                |              |   |
| D-22               | 1      | 2-U        | 2                  | 19         | 54            | 7                 | 78 x 78    | 42.25          | 42.25                |              |   |
| D-23               | 1      | 2-U        | 2                  | 18         | 54            | 7                 | 78 x 66    | 35.75          | 35.75                |              |   |
| D-24               | 1      | 3-U        | 3                  | 18         | 45            | 7                 | 114 x 66   | 52.25          | 52.25                |              |   |
| D-25               | 1      | 2-U        | 2                  | 19         | 54            | 7                 | 78 x 78    | 42.25          | 42.25                |              |   |
| D-26               | 1      | 2-U        | 2                  | 17         | 66            | 7                 | 108 x 54   | 40.50          | 40.50                |              |   |
| SUB TOTAL          |        |            |                    |            |               |                   |            | 362.75         |                      |              |   |
| TOTAL              |        |            |                    |            |               |                   |            | 894.00         |                      |              |   |

SPECIFIC NOTE:

(1) Mounting height is minimum, see sheet 51 for Typical Mounting.

(2) Mounted on bridge rail, see sheet 55.

(3) See Standard Signs Manual (E5-1).

(4) See Standard Signs Manual (E5-1a).

GENERAL NOTES:

1. Post lengths are approximate and include embedment, but do not include additional length required for splice.

2. See sheets 50 to 52 for structural details.

3. See Standard Signs Manual for Type D stringer and panel-joint details.

4. See sheets 30-35 for sign panels.



PLOTTED/REVISED: 2/5/2013

| SIGN PANELS TYPE EA <span>D</span> |        |          |            |                |                      |       |         |          |
|------------------------------------|--------|----------|------------|----------------|----------------------|-------|---------|----------|
| SIGN NO.                           | QUANT. | LOCATION | PANEL      |                |                      | POSTS |         | LEGEND   |
|                                    |        |          | SIZE (IN.) | AREA (SQ. FT.) | TOTAL AREA (SQ. FT.) | NO.   | SPACING |          |
| EA-1                               | 2      | A-3, A-5 | 102 x 30   | 21.25          | 42.50                | 3     | 36      | EXIT 165 |
| TOTAL                              |        |          |            |                | 42.50                |       |         |          |

| SIGN PANELS TYPE EO <span>E</span> |        |                                                           |            |                |                      |       |         |         |
|------------------------------------|--------|-----------------------------------------------------------|------------|----------------|----------------------|-------|---------|---------|
| SIGN NO.                           | QUANT. | LOCATION                                                  | PANEL      |                |                      | POSTS |         | LEGEND  |
|                                    |        |                                                           | SIZE (IN.) | AREA (SQ. FT.) | TOTAL AREA (SQ. FT.) | NO.   | SPACING |         |
| EO-1                               | 4      | OH 369-494(L), OH 371-494, OH 372-494(R), OH 373-494(R)   | 96 x 30    | 20.00          | 80.00                | 2     | 54      | EXIT 7A |
| EO-2                               | 4      | OH 369-494(R), OH 370-494R), OH 372-494(L), OH 373-494(L) | 96 x 30    | 20.00          | 80.00                | 2     | 54      | EXIT 7B |
| EO-3                               | 1      | OH 370-494(L)                                             | 78 x 30    | 16.25          | 16.25                | 2     | 48      | EXIT 8  |
| TOTAL                              |        |                                                           |            |                | 176.25               |       |         |         |

- GENERAL NOTES:
- See sheets 56 for structural details.
  - Post spacing may be varied to miss members of OH sign structures.
  - See sheets 36 and 37 for sign panels.

DISTRICT #: METRO  
 IPLOT NAME: CHARTS\_TB\*5  
 PATH & FILENAME: IP\_PWP-d143240\CHARTS\_TB\*.dgn

PLOTTED/REVISED: 2/5/2013

DISTRICT #: METRO  
 IPLOT NAME: CHARTS\_TB\*6  
 PATH & FILENAME: IP\_PWP-d143240NCHARTS\_TB\*.dgn

| SIGN PANELS TYPE OVERLAY F |        |            |                |                 |                |
|----------------------------|--------|------------|----------------|-----------------|----------------|
| CODE NO.                   | QUANT. | SIZE (IN.) | AREA (SQ. FT.) | TOTAL (SQ. FT.) | LEGEND         |
| M1-1                       | 6      | 24 x 24    | 4.00           | 24.00           | INTERSTATE 35  |
| M1-1                       | 1      | 30 x 24    | 5.00           | 5.00            | INTERSTATE 35E |
| M1-5B                      | 1      | 36 x 36    | 9.00           | 9.00            | MINNESOTA 13   |
| M1-5B                      | 2      | 36 x 36    | 9.00           | 18.00           | MINNESOTA 70   |
| M1-5B                      | 6      | 24 x 24    | 4.00           | 24.00           | MINNESOTA 77   |
| M1-5B                      | 1      | 24 x 24    | 4.00           | 4.00            | MINNESOTA 95   |
| M1-5B                      | 4      | 45 x 36    | 11.25          | 45.00           | MINNESOTA 100  |
| M1-6A                      | 1      | 36 x 36    | 9.00           | 9.00            | COUNTY 28      |
| M1-X4A                     | 3      | 36 x 36    | 9.00           | 27.00           | COUNTY 30      |
| M1-X4A                     | 2      | 24 x 24    | 4.00           | 8.00            | COUNTY 30      |
| M1-X4A                     | 1      | 36 x 36    | 9.00           | 9.00            | COUNTY 32      |
| M1-X4A                     | 1      | 24 x 24    | 4.00           | 4.00            | COUNTY 32      |
| M1-6A                      | 4      | 36 x 36    | 9.00           | 36.00           | COUNTY 34      |
| TOTAL                      |        |            |                | 222.00          |                |

| REFERENCE POST MARKER (5) G |          |            |        |
|-----------------------------|----------|------------|--------|
| CODE NO.                    | QUANTITY | SIZE (IN.) | LEGEND |
| D10-1                       | 2        | 12 x 24    | 5      |
| TOTAL                       | 2        |            |        |

| DELINEATORS & MARKERS H |        |           |
|-------------------------|--------|-----------|
| TYPE                    | QUANT. | LOCATION  |
| (1) WHITE (X4-6)        | 34     | EXIT NOSE |
| (1) YELLOW (X4-6)       | 24     | EXIT NOSE |
| (2)(4) (X4-2)           | 8      | EXIT NOSE |
| (3)(4) (X4-4)L          | 3      | ISLAND    |

SPECIFIC NOTES:

- (1) See Standard Signs Manual for Guide Delineator X4-6.
- (2) See Standard Signs Manual for Hazard Marker X4-2.
- (3) See Standard Signs Manual for Clearance Marker X4-4 (12"x 36").
- (4) Attach to 3 lb/ft post (Mn/DOT 3401).
- (5) See Standard Signs Manual for Reference Post Marker.

GENERAL NOTES:

1. For Delineator and Marker placement, see sheet 46.
2. See roadway layouts for delineator and marker locations.



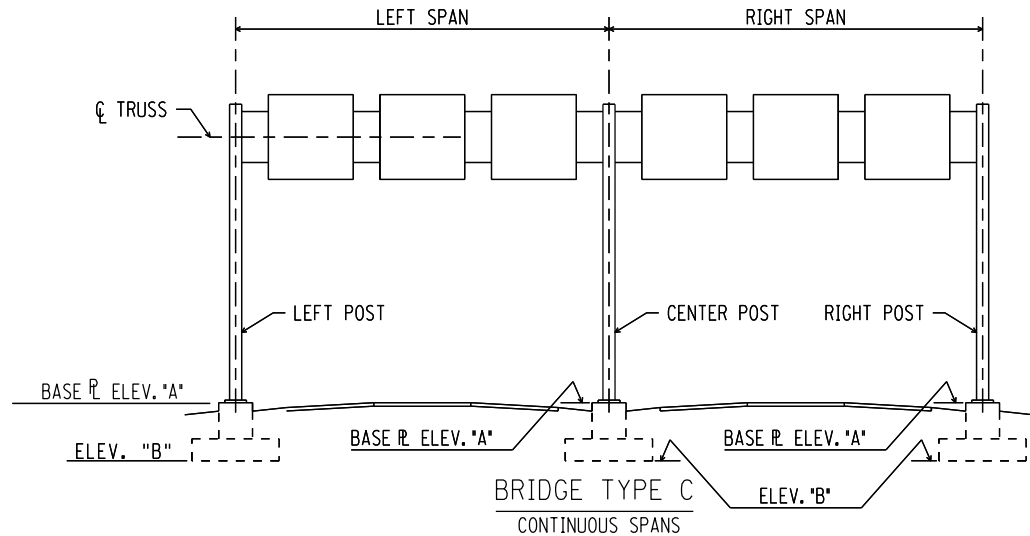
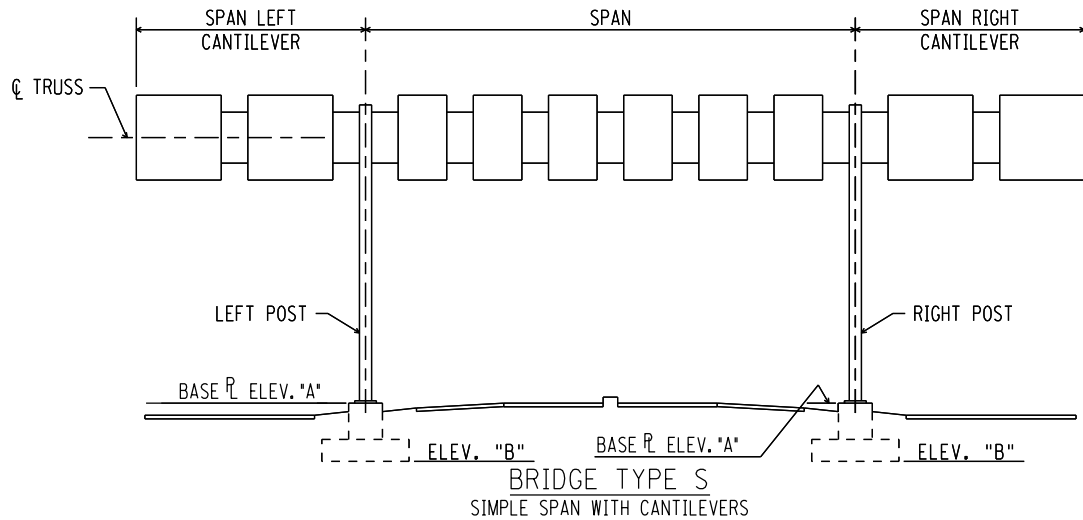
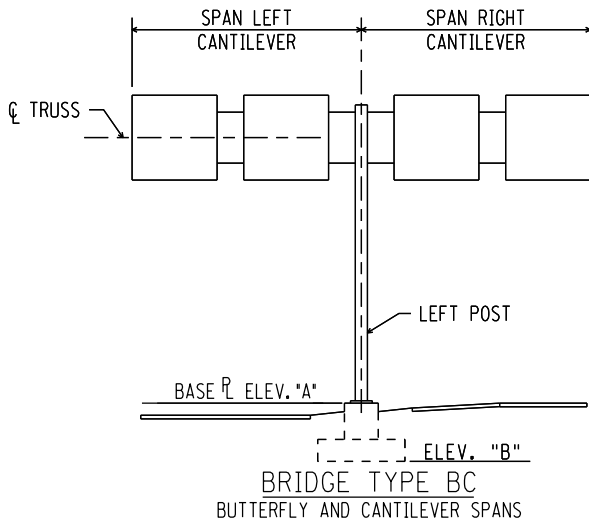
DISTRICT #: METRO  
PLOT NAME: CHARTS\_TB\*7  
PATH & FILENAME: IP\_PWP-d143240\CHARTS\_TB\*.dgn

PLOTTED/REVISED: 2/5/2013

| SIGN PANELS TYPE OH |             |                |                    |                |                    |                |                    |                             |
|---------------------|-------------|----------------|--------------------|----------------|--------------------|----------------|--------------------|-----------------------------|
| SIGN NO.            | LOCATION    | PANEL          |                    | PANEL          |                    | PANEL          |                    | TOTAL<br>AREA<br>(SQ. FT. ) |
|                     |             | SIZE<br>(IN. ) | AREA<br>(SQ. FT. ) | SIZE<br>(IN. ) | AREA<br>(SQ. FT. ) | SIZE<br>(IN. ) | AREA<br>(SQ. FT. ) |                             |
| OH 1-77             | 340+00 NB   | 120 x 132      | 110.00             |                |                    |                |                    | 110.00                      |
| OH 2-77             | 340+00 SB   | 120 x 108      | 90.00              |                |                    |                |                    | 90.00                       |
| OH 3-77             | 215+25 NB   | 150 x 132      | 137.50             | 144 x 114      | 114.00             |                |                    | 251.50                      |
| OH 4-77             | 417+25 SB   | 144 x 114      | 114.00             |                |                    |                |                    | 114.00                      |
| OH 369-494          | 455+00 EB   | 120 x 84       | 70.00              | 210 x 114      | 166.25             |                |                    | 236.25                      |
| OH 370-494          | 466+20 WB   | 186 x 132      | 170.50             | 216 x 114      | 171.00             |                |                    | 341.50                      |
| OH 371-494          | 1+70 Loop D | 120 x 84       | 70.00              |                |                    |                |                    | 70.00                       |
| OH 372-494          | 480+50 WB   | 174 x 132      | 159.50             | 126 x 90       | 78.75              |                |                    | 238.25                      |
| OH 373-494          | 531+00 WB   | 174 x 132      | 159.50             | 168 x 114      | 133.00             |                |                    | 292.50                      |
| TOTAL               |             |                |                    |                |                    |                |                    | 1744.00                     |

GENERAL NOTE:  
1. See sheets 38-42 for sign panels.

PLOTTED/REVISED: 2/5/2013



| OVERHEAD SIGN STRUCTURES |             |             |            |              |             |                   |            |                                 |               |       |      |               |   |      |               |       |      |
|--------------------------|-------------|-------------|------------|--------------|-------------|-------------------|------------|---------------------------------|---------------|-------|------|---------------|---|------|---------------|-------|------|
| SIGN NO.                 | STATION     | BRIDGE TYPE | TRUSS TYPE | SPAN LENGTHS |             |                   |            | LOW STEEL ELEVATION<br>SEE ST-1 | LEFT POST     |       |      | CENTER POST   |   |      | RIGHT POST    |       |      |
|                          |             |             |            | LEFT CANT.   | RIGHT CANT. | SPAN OR LEFT SPAN | RIGHT SPAN |                                 | ELEVATION (1) |       | TYPE | ELEVATION (1) |   | TYPE | ELEVATION (1) |       | TYPE |
|                          |             |             |            |              |             |                   |            |                                 | A             | B     |      | A             | B |      | A             | B     |      |
| OH 1-77                  | 340+00 NB   | BC          | A          | 33' -0"      |             |                   |            | 118.65                          | 101.14        | 94.7  | 4E   |               |   |      |               |       |      |
| OH 2-77                  | 340+00 SB   | BC          | A          | 32' -6"      |             |                   |            | 117.88                          | 101.68        | 93.66 | 4E   |               |   |      |               |       |      |
| OH 3-77                  | 215+25 NB   | BC          | B          | 42' -3"      |             |                   |            | 118.67                          | 100.12        | (3)   | 7E   |               |   |      |               |       |      |
| OH 4-77                  | 417+25 SB   | BC          | A          | 36' -0"      |             |                   |            | 117.99                          | 101.12        | 99.85 | 7E   |               |   |      |               |       |      |
| OH 369-494               | 455+00 EB   | BC          | A          | 43' -3"      |             |                   |            | 118.67                          | 100.18        | 93.51 | 4E   |               |   |      |               |       |      |
| OH 370-494               | 466+20 WB   | S           | B          |              |             | 96' -6"           |            | 118.67                          | 102.27        | (4)   | 4    |               |   |      | 99.19         | 93.16 | 4E   |
| OH 371-494               | 1+70 Loop D | BC          | A          | 32' -0"      |             |                   |            | 118.33                          | 100.46        | 93.57 | 4E   |               |   |      |               |       |      |
| OH 372-494               | 480+50 WB   | BC          | A          | 31' -0"      |             |                   |            | 117.33                          | 99.94         | 92.68 | 3E   |               |   |      |               |       |      |
| OH 373-494               | 531+00 WB   | BC          | A          | 33' -0"      |             |                   |            | 118.76                          | 103.41        | 94.99 | 4E   |               |   |      |               |       |      |

| TABULATION OF OVERHEAD SIGN STRUCTURE QUANTITIES (2) |         |         |         |         |         |            |            |            |            |            |        | J |
|------------------------------------------------------|---------|---------|---------|---------|---------|------------|------------|------------|------------|------------|--------|---|
| SIGN NO.                                             |         | OH 1-77 | OH 2-77 | OH 3-77 | OH 4-77 | OH 369-494 | OH 370-494 | OH 371-494 | OH 372-494 | OH 373-494 | TOTALS |   |
| STRUCT. STEEL POSTS                                  | LBS.    | 8607    | 6938    | 7017    | 8718    | 7696       | 7923       | 7863       | 5631       | 1813       | 62206  |   |
| STRUCT. STEEL TRUSSES                                | LBS.    | 3874    | 4305    | 7098    | 4920    | 10024      | 16212      | 11808      | 8536       | 3321       | 70098  |   |
| STRUCT. STEEL WALKWAY SUPPORTS                       | LBS.    |         |         |         |         |            |            |            |            |            |        |   |
| STRUCT. STEEL WALKWAY GRATING                        | LBS.    |         |         |         |         |            |            |            |            |            |        |   |
| STRUCT. STEEL PANEL MTG. POSTS                       | LBS.    | 517     | 404     | 635     | 472     | 684        | 687        | 495        | 675        | 344        | 4913   |   |
| CONCRETE FOOTINGS (SPREAD)                           | CU. YD. | 11.2    | 13.4    |         | 16.7    | 11.6       | 11.0       | 11.3       | 11.5       | 16.0       | 102.7  |   |
| CONCRETE FOOTINGS (SHAFT)                            | CU. YD. |         |         | 14.1    |         |            |            |            |            |            | 14.1   |   |

| MEDIAN BARRIER FOOTING K |           |                   |
|--------------------------|-----------|-------------------|
| SIGN NO.                 | LOCATION  | POST STEEL (LBS.) |
| OH 370-494               | 466+20 WB | 781               |
| TOTAL                    |           | 781               |

SPECIFIC NOTES:

- (1) Center line elevation = 100.00.
- (2) Based on tabulated elevations and dimensions. Revise if necessary using quantity tables on ST-2.
- (3) Shaft footing.
- (4) Median barrier footing, see sheet 57.

GENERAL NOTES:

1. The subscript E on the post type denotes the post which has the hand hole and provisions for grounding, i.e. post type 3E.
2. Tabulated elevations and dimensions are approximate only. Fabrication dependent on these elevations and dimensions shall not be started until the Engineer has made final determination of them in the field.
3. Left and right designations are shown looking in direction of traffic flow.
4. See sheets 59 to 70 for details.
5. See sheets 72-73 for cross section.

DISTRICT #: METRO  
 IPLOT NAME: CHARTS\_TB\*8  
 PATH & FILENAME: IP\_PWP-d143240\CHARTS\_TB\*.dgn

GENERAL NOTES:

- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE GOPHER ONE CALL EXCAVATION NOTICE SYSTEM (PHONE 651-454-0002), REQUIRED BY MINNESOTA STATUTE 216D, FOR ALL UTILITY LOCATIONS.
- 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."

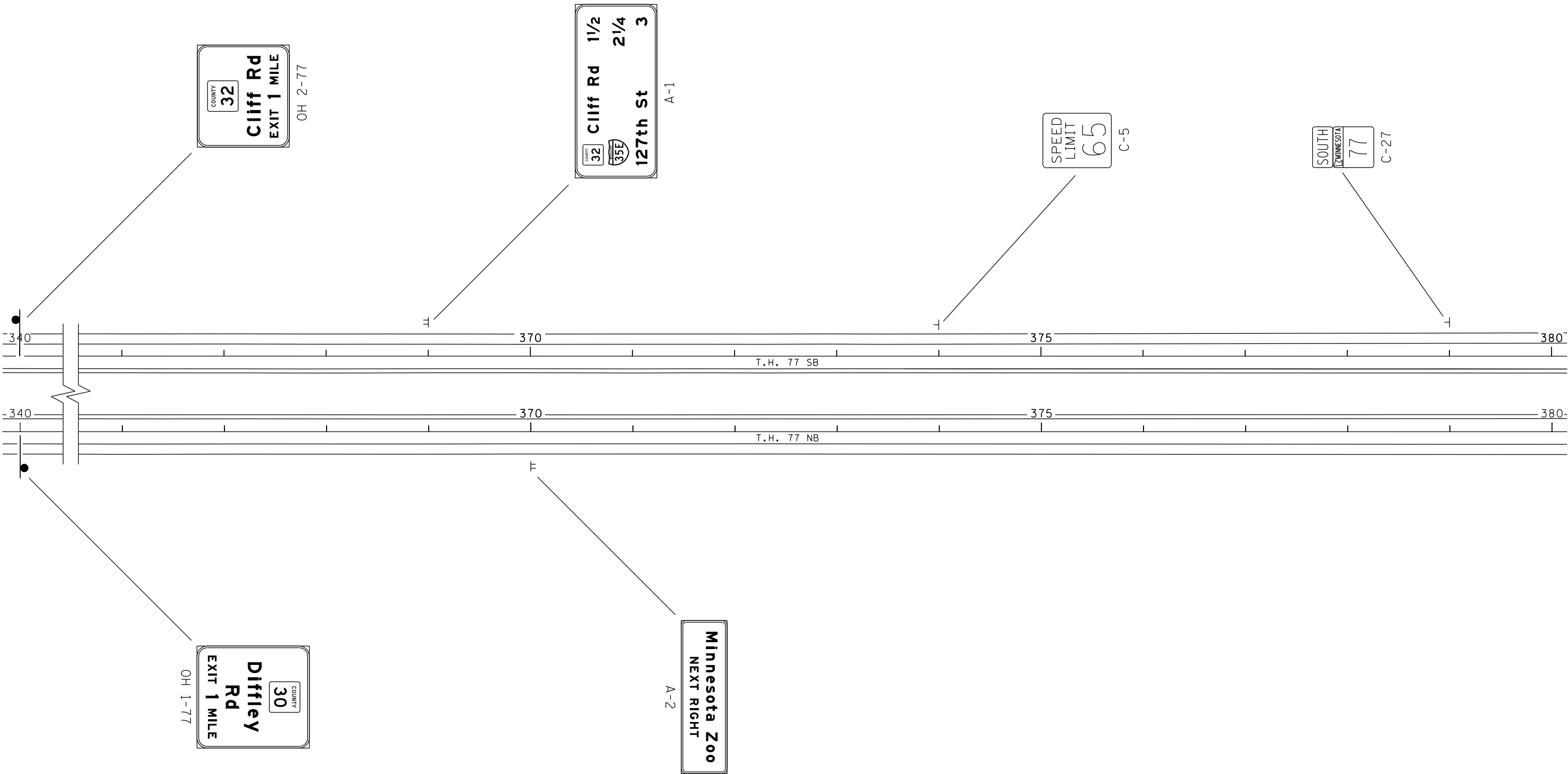
UTILITIES

THE FOLLOWING LIST SHOWS THE UTILITY COMPANIES WITHIN THE PROJECT LIMITS

|                                    |                                                     |
|------------------------------------|-----------------------------------------------------|
| AT&T BROADBAND                     | ONVOY                                               |
| CITY OF APPLE VALLEY               | METROPOLITAN COUNCIL (TRANSIT)                      |
| CITY OF EAGAN                      | METROPOLITAN COUNCIL (WASTE)                        |
| CITY OF MENDOTA HEIGHTS            | MN/DOT                                              |
| DAKOTA COUNTY HIGHWAY DEPT.        | MOBILE PIPE LINE COMPANY                            |
| DAKOTA ELECTRIC                    | XCEL ENERGY                                         |
| NORTHERN NATURAL GAS               | PEOPLES NATURAL GAS                                 |
| FRONTIER COMMUNICATIONS, INC       | BOARD OF WATER COMMISSIONERS OF THE CITY OF ST PAUL |
| KOCH PIPELINE COMPANY, C.P.        | WILLIAMS ENERGY SERVICE                             |
| MCI WORLDCOM NETWORK SERVICE, INC. |                                                     |
| MCLEOD USA                         |                                                     |

DISTRICT #: METRO  
IPLOT NAME: RDWY\_RD\*  
PATH & FILENAME: IP\_PWP-d143240\RDWY\_RD\*.dgn

PLOTTED/REVISED: 2/5/2013

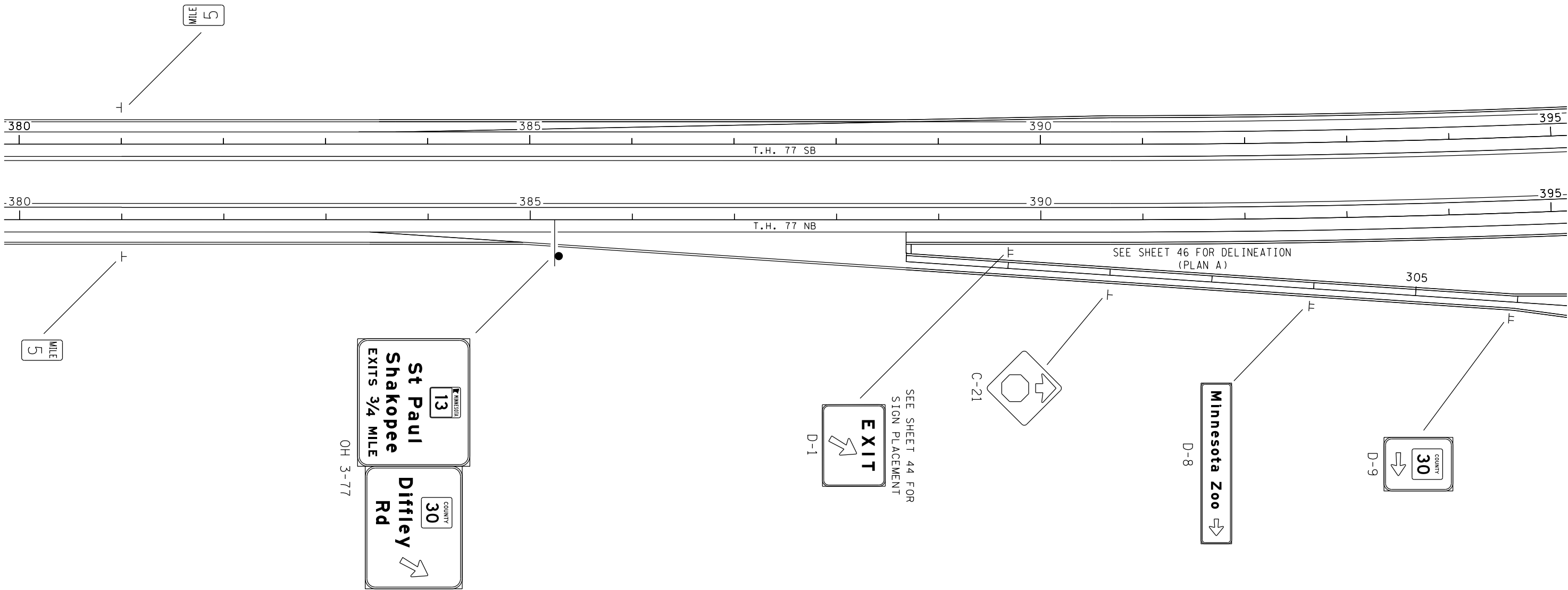


EAGAN



DISTRICT \*: METRO  
IPLOT NAME: RDWY\_RD\*  
PATH & FILENAME: IP\_PWP-d143240\RDWY\_RD\*.dgn

PLOTTED/REVISED: 2/5/2013



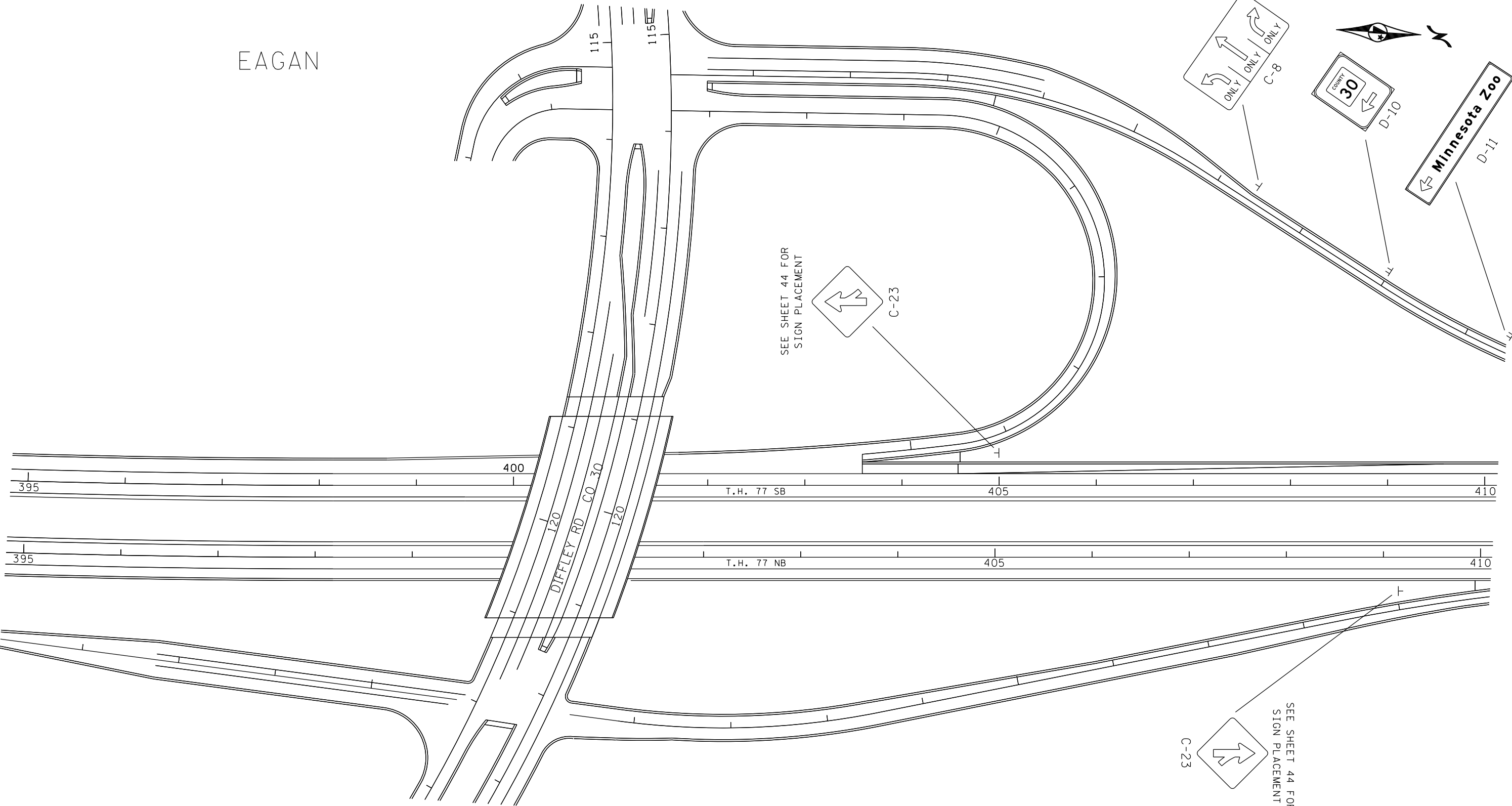
EAGAN



|           |  |  |                 |  |  |                                      |  |  |                |  |  |               |  |  |                 |  |  |                                   |  |  |
|-----------|--|--|-----------------|--|--|--------------------------------------|--|--|----------------|--|--|---------------|--|--|-----------------|--|--|-----------------------------------|--|--|
| DRAWN BY: |  |  | CHECKED BY: RAS |  |  | CERTIFIED BY <i>Michael B. Weiss</i> |  |  | LIC. NO. 10502 |  |  | DATE 2/5/2013 |  |  | STATE PROJ. NO. |  |  | T. H. 77 STA. 380 + 00 - 395 + 00 |  |  |
|           |  |  |                 |  |  |                                      |  |  |                |  |  |               |  |  |                 |  |  | SHEET NO. 13 OF 73 SHEETS         |  |  |

DISTRICT #: METRO  
I/PLOT NAME: RDWY\_RD\*2  
PATH & FILENAME: IP\_PWP-d143240\RDWY\_RD\*.dgn

PLOTTED/REVISED: 2/5/2013



SEE SHEET 44 FOR  
SIGN PLACEMENT

SEE SHEET 44 FOR  
SIGN PLACEMENT

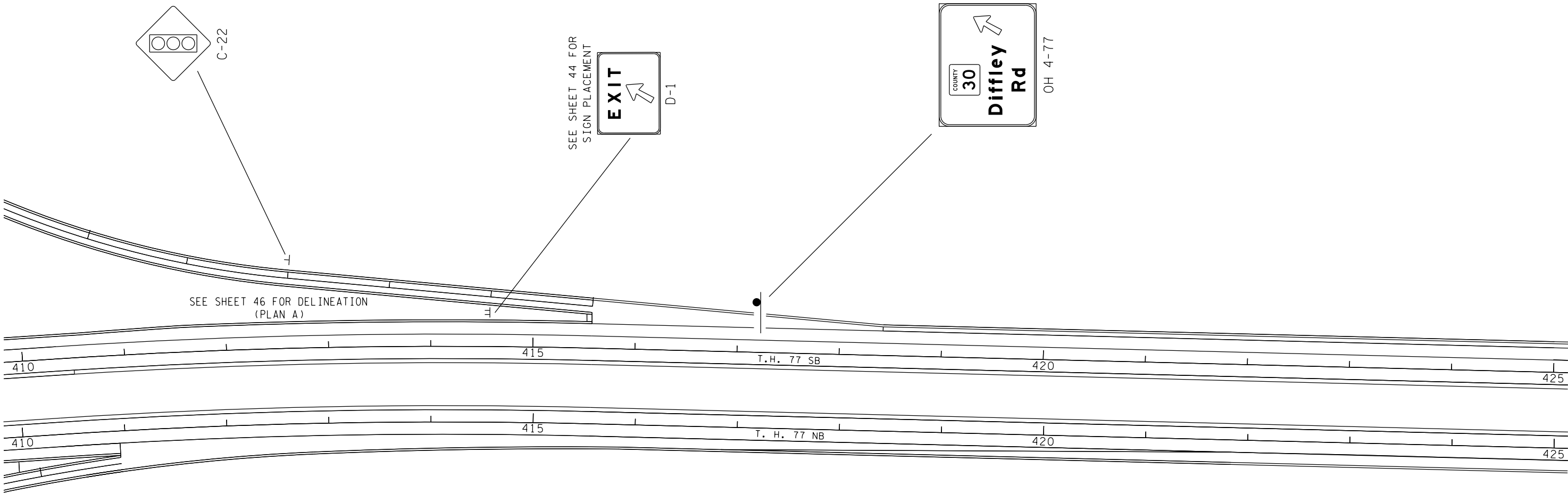
SEE SHEETS 23 & 24  
FOR DIFFLEY RD SIGNING



PLOTTED/REVISED: 2/5/2013

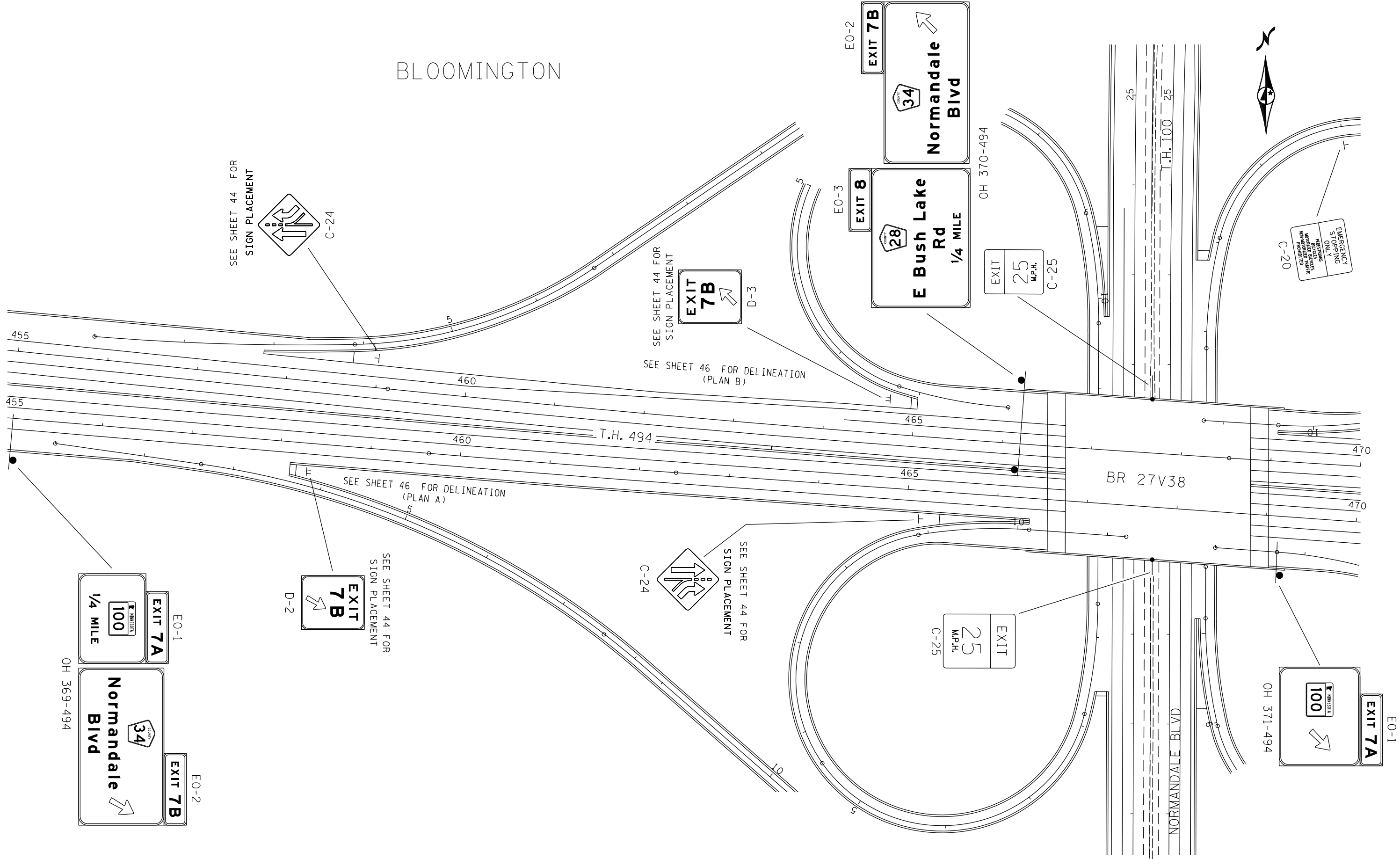
DISTRICT #: METRO  
IPLOT NAME: RDWY\_RD\*3  
PATH & FILENAME: IP\_PWP-d143240\RDWY\_RD\*.dgn

EAGAN



|           |  |  |                 |  |  |                                                                         |  |  |                |  |  |               |  |  |                 |  |  |                                   |  |  |                           |  |  |
|-----------|--|--|-----------------|--|--|-------------------------------------------------------------------------|--|--|----------------|--|--|---------------|--|--|-----------------|--|--|-----------------------------------|--|--|---------------------------|--|--|
| DRAWN BY: |  |  | CHECKED BY: RAS |  |  | CERTIFIED BY: <i>Michael B. Weiss</i><br>LICENSED PROFESSIONAL ENGINEER |  |  | LIC. NO. 10502 |  |  | DATE 2/5/2013 |  |  | STATE PROJ. NO. |  |  | T. H. 77 STA. 410 + 00 - 425 + 00 |  |  | SHEET NO. 15 OF 73 SHEETS |  |  |
|-----------|--|--|-----------------|--|--|-------------------------------------------------------------------------|--|--|----------------|--|--|---------------|--|--|-----------------|--|--|-----------------------------------|--|--|---------------------------|--|--|

PATH & FILENAME: IP\_PWP:d143240NRDwy\_RD#.dgn



SHEET NO. 16 OF 73 SHEETS

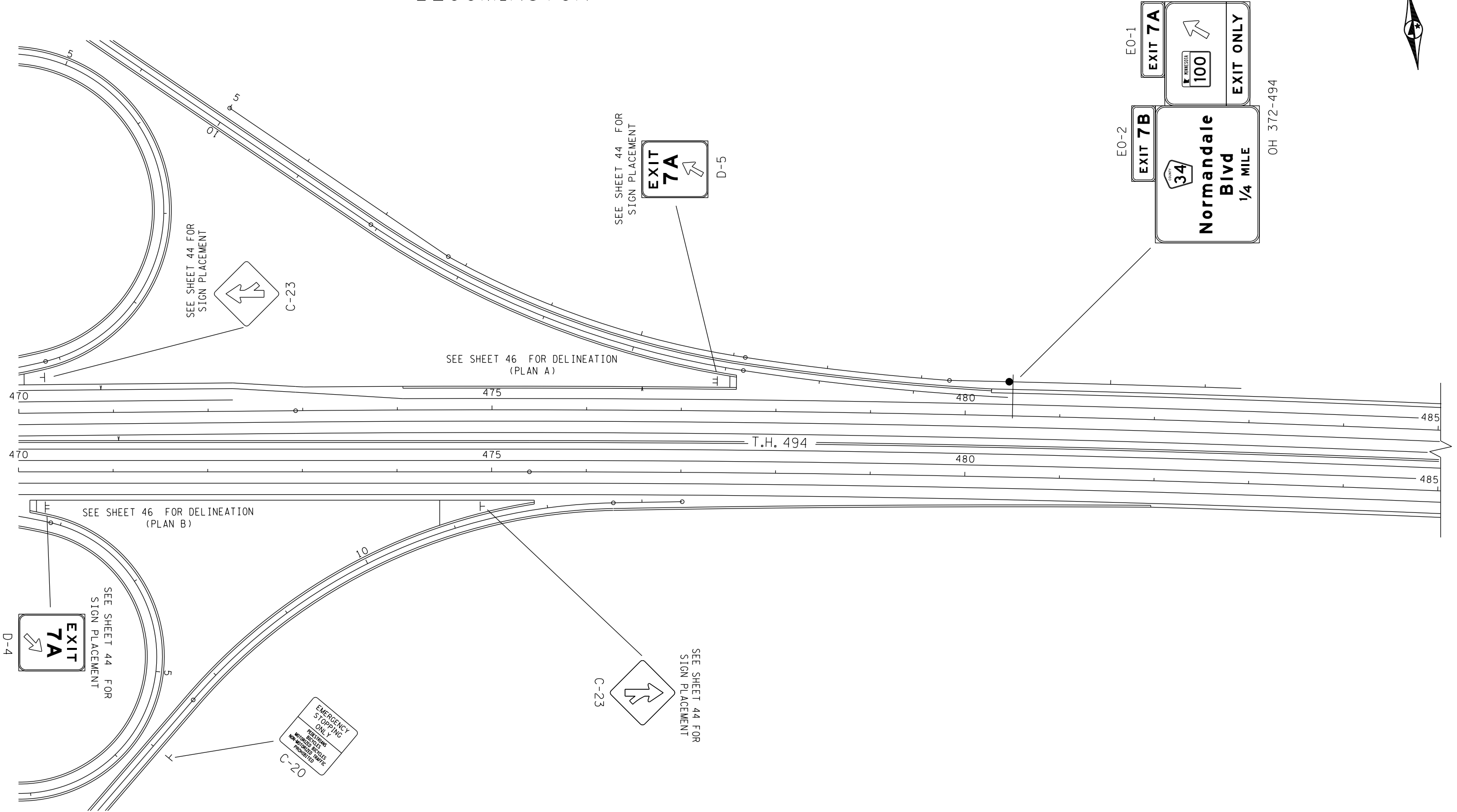


BLOOMINGTON



PLOTTED/REVISED: 2/5/2013

DISTRICT #: METRO  
IPLOT NAME: RDWY\_RD\*5  
PATH & FILENAME: IP\_PWP-d143240\RDWY\_RD\*.dgn



DRAWN BY:

CHECKED BY: RAS

CERTIFIED BY

*Michael B. Weiss*  
LICENSED PROFESSIONAL ENGINEER

LIC. NO. 10502

DATE 2/5/2013

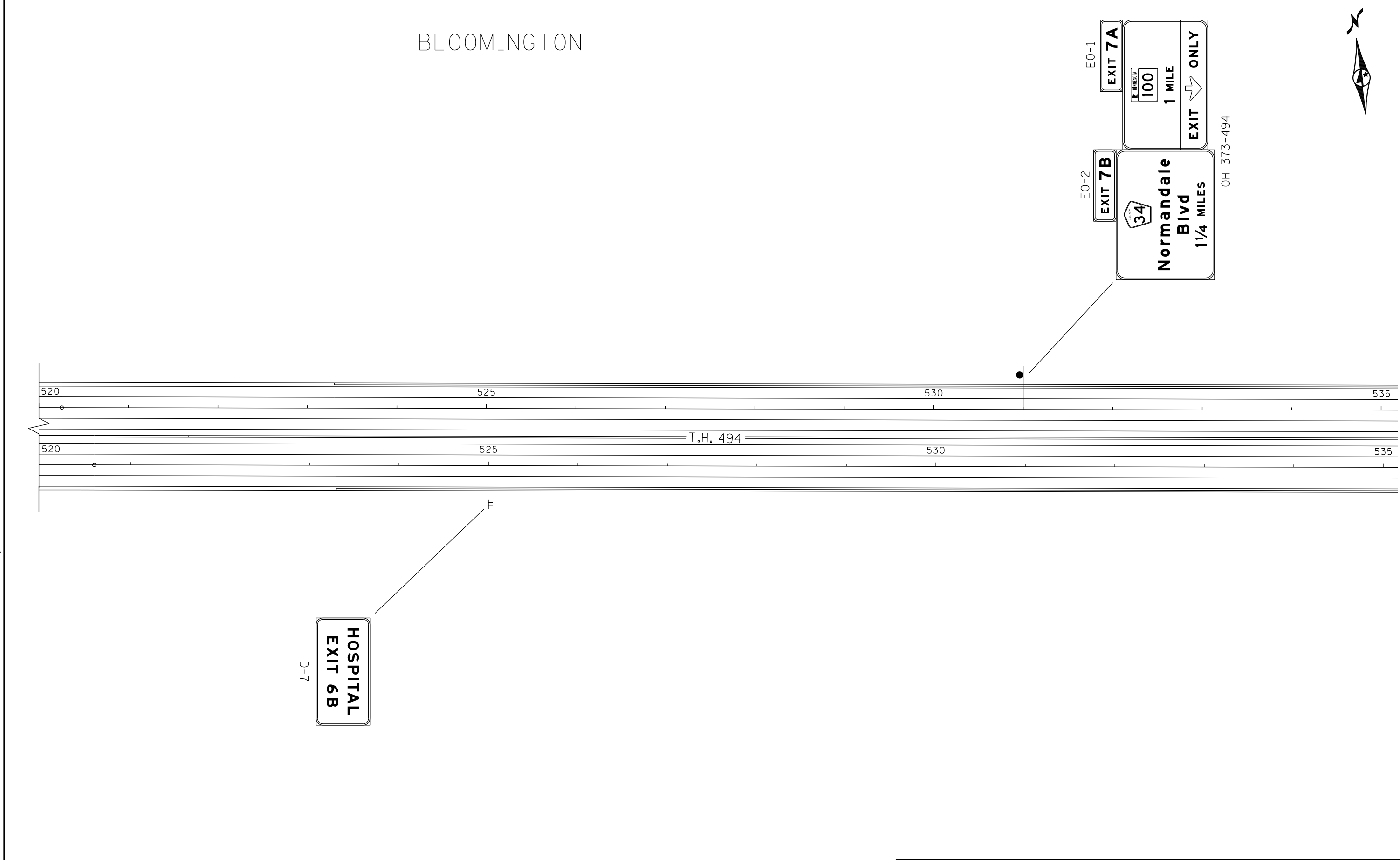
T. H. 494 STA. 470 + 00 - 485 + 00

STATE PROJ. NO.

SHEET NO. 17 OF 73 SHEETS

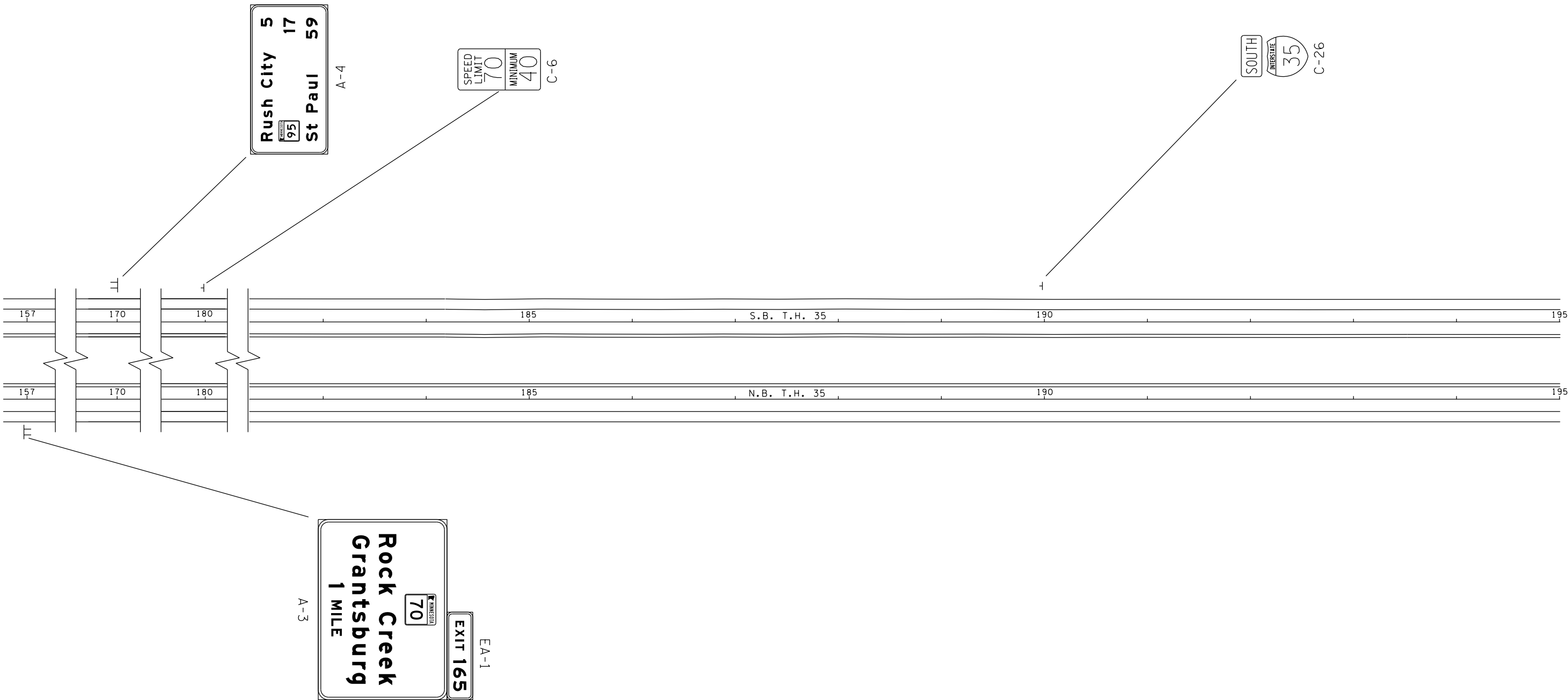
DISTRICT #: METRO  
IPLOT NAME: RDWY\_RD\*6  
PATH & FILENAME: IP\_PWP-d143240\RDWY\_RD\*.dgn

PLOTTED/REVISED: 2/5/2013



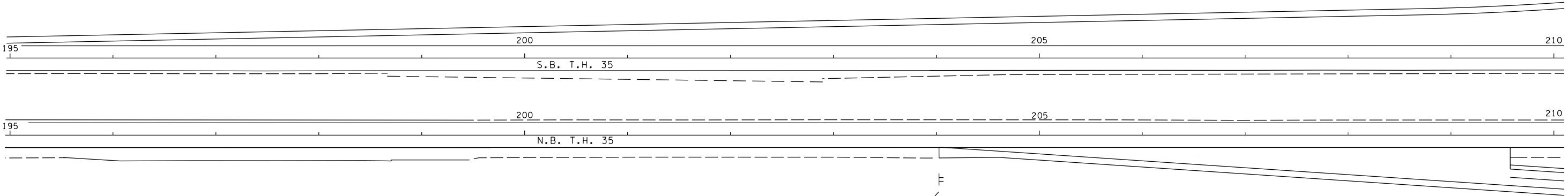
DISTRICT #: METRO  
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PLOTTED/REVISED: 2/5/2013



DISTRICT #: METRO  
IPLOT NAME: RDWY\_RD\*8  
PATH & FILENAME: IP\_PWP-d143240\RDWY\_RD\*.dgn

PLOTTED/REVISED: 2/5/2013



MINISTIA  
70

EXIT 165

EA-1

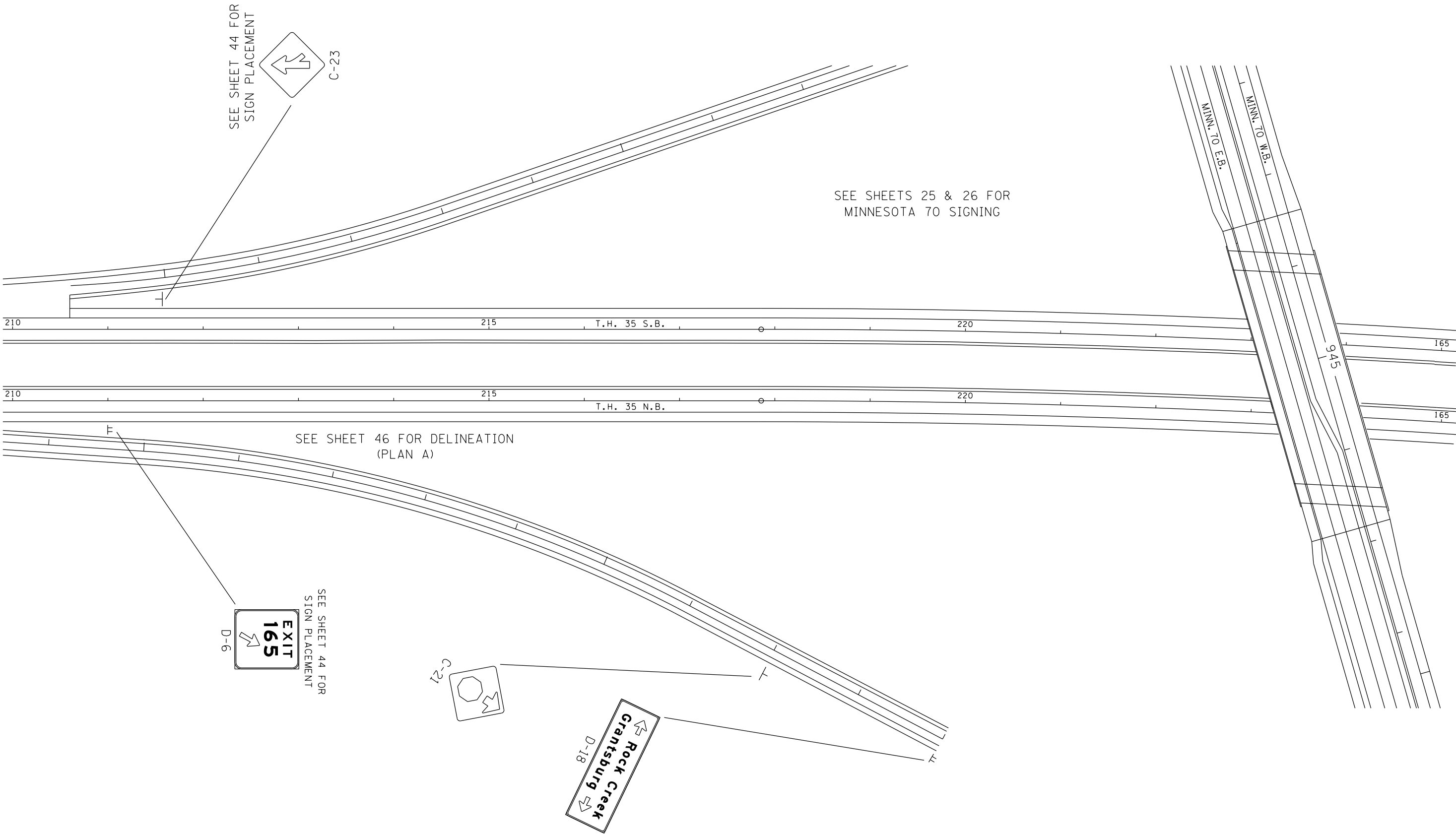
Rock Creek  
Grantsburg

A-5



PLOTTED/REVISED: 2/5/2013

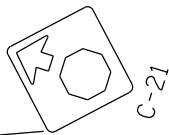
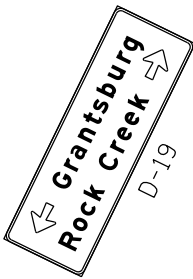
DISTRICT #: METRO  
I/PLOT NAME: RDWY\_RD\*9  
PATH & FILENAME: IP\_PWP-d143240\RDWY\_RD\*.dgn



|           |  |  |  |                 |  |  |  |                                                                        |  |  |  |                |  |  |  |               |  |  |  |                 |  |  |  |                                   |  |  |  |                           |  |  |  |
|-----------|--|--|--|-----------------|--|--|--|------------------------------------------------------------------------|--|--|--|----------------|--|--|--|---------------|--|--|--|-----------------|--|--|--|-----------------------------------|--|--|--|---------------------------|--|--|--|
| DRAWN BY: |  |  |  | CHECKED BY: RAS |  |  |  | CERTIFIED BY <i>Michael B. Weiss</i><br>LICENSED PROFESSIONAL ENGINEER |  |  |  | LIC. NO. 10502 |  |  |  | DATE 2/5/2013 |  |  |  | STATE PROJ. NO. |  |  |  | T. H. 35 STA. 210 + 00 - 225 + 00 |  |  |  | SHEET NO. 21 OF 73 SHEETS |  |  |  |
|-----------|--|--|--|-----------------|--|--|--|------------------------------------------------------------------------|--|--|--|----------------|--|--|--|---------------|--|--|--|-----------------|--|--|--|-----------------------------------|--|--|--|---------------------------|--|--|--|

DISTRICT #: METRO  
IPLOT NAME: RDWY\_RD\*10  
PATH & FILENAME: IP\_PWP-d143240\RDWY\_RD\*.dgn

PLOTTED/REVISED: 2/5/2013



SEE SHEET 44 FOR  
SIGN PLACEMENT

D-6

SEE SHEETS 25 & 26 FOR  
MINNESOTA 70 SIGNING

SEE SHEET 46 FOR DELINEATION  
(PLAN A)

S.B. T.H. 35

N.B. T.H. 35

C-23

SEE SHEET 44 FOR  
SIGN PLACEMENT

T. H. 35 STA. 225 + 00 - 240 + 00

DRAWN BY:

CHECKED BY: RAS

CERTIFIED BY

*Michael B. Weiss*  
LICENSED PROFESSIONAL ENGINEER

LIC. NO.

10502

DATE

2/5/2013

STATE PROJ. NO.

SHEET NO.

22

OF

73

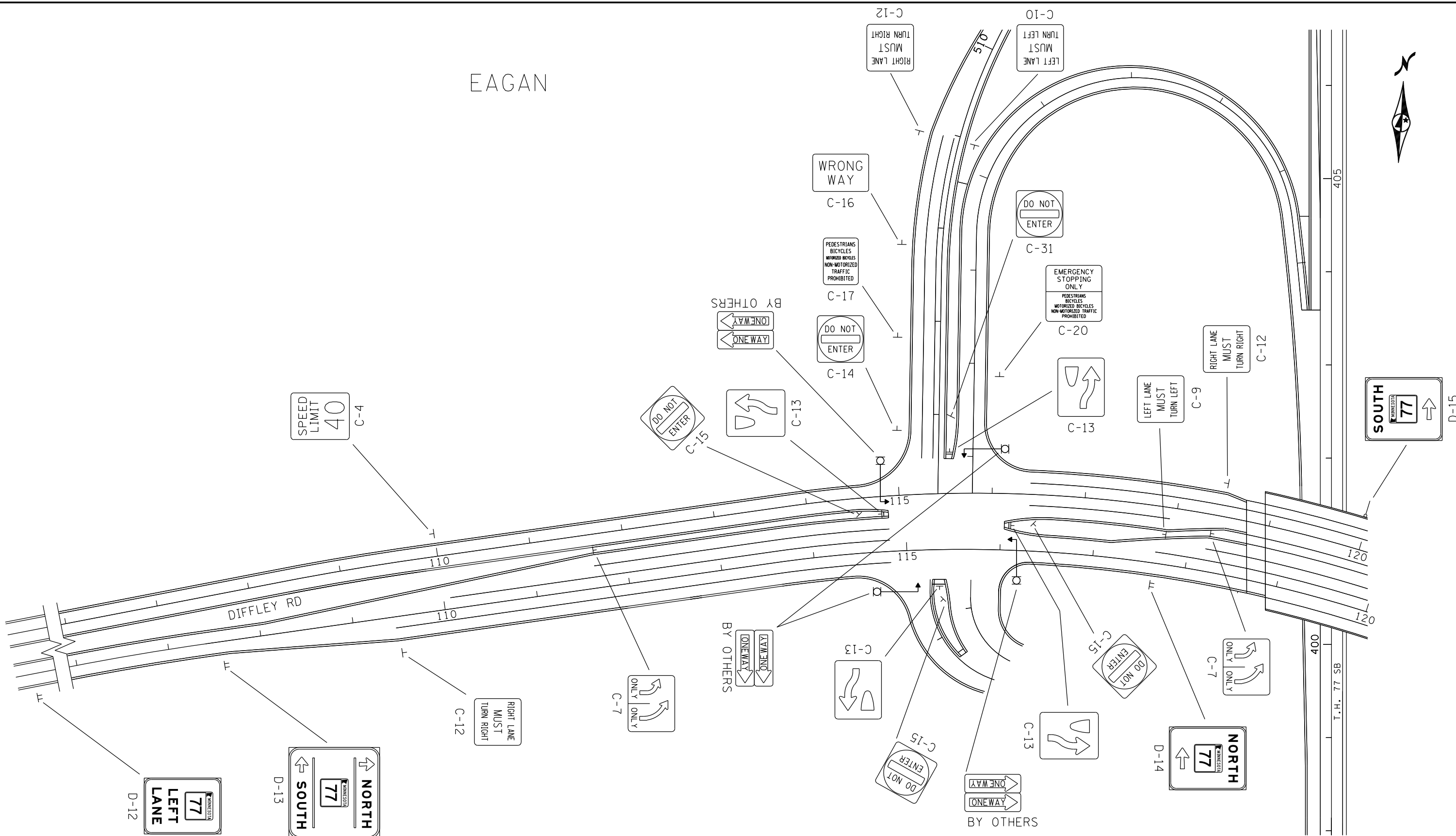
SHEETS



DISTRICT #: METRO  
IPLOT NAME: RDWY\_RD\*11  
PATH & FILENAME: IP\_PWP-d143240\RDWY\_RD\*.dgn

PLOTTED/REVISED: 2/5/2013

EAGAN



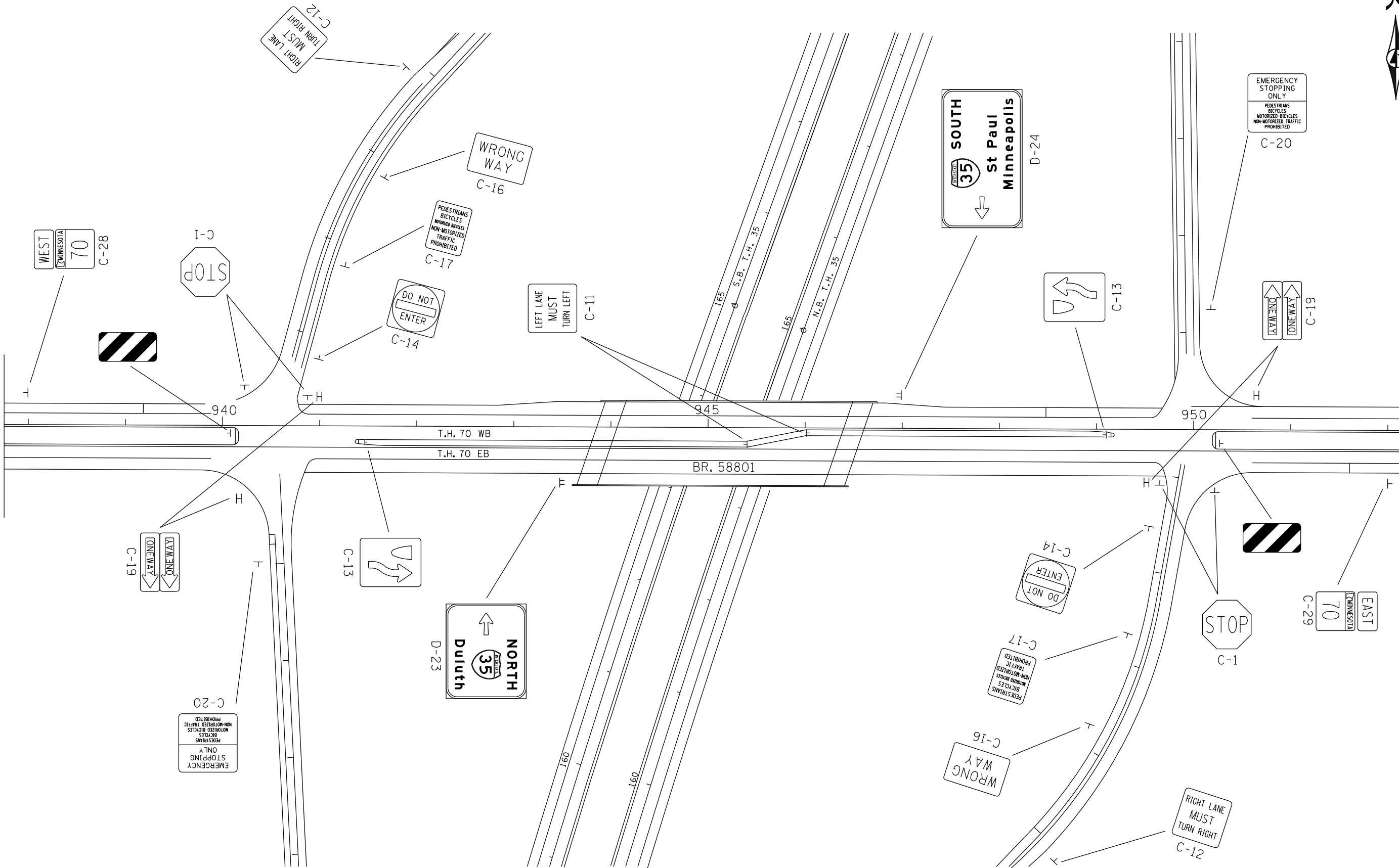
DIFFLEY ROAD INTERCHANGE 1 OF 2

DISTRICT #: METRO  
IPLOT NAME: RDWY\_RD\*12  
PATH & FILENAME: IP\_PWP-d143240\RDWY\_RD\*.dgn

PLOTTED/REVISED: 2/5/2013

MATCH LINE 1 SEE SHEET 26

MATCH LINE 2 SEE SHEET 26



MINN. 70 INTERCHANGE SHEET 1 OF 2

DRAWN BY:

CHECKED BY: RAS

CERTIFIED BY

*Michael B. Weiss*  
LICENSED PROFESSIONAL ENGINEER

LIC. NO. 10502

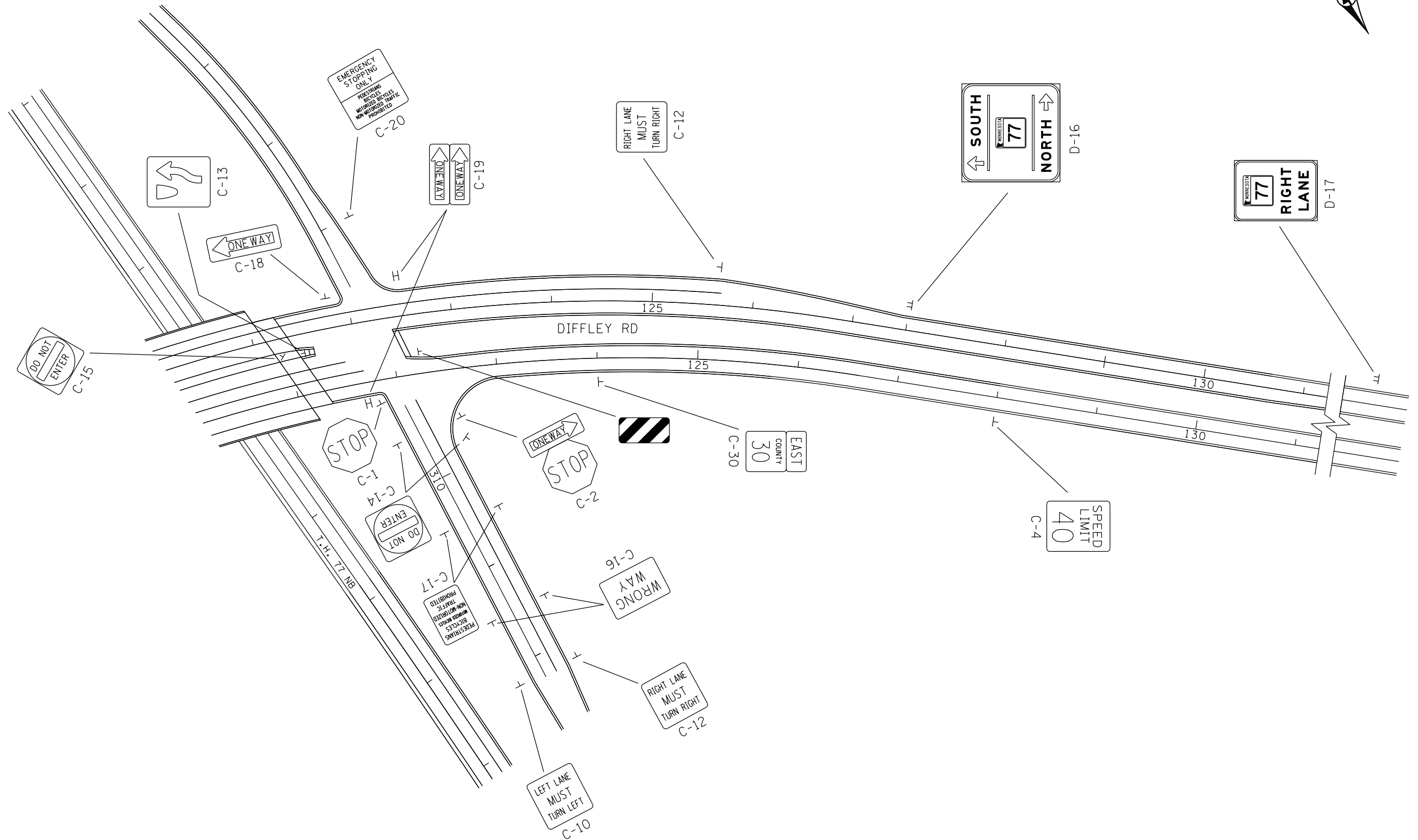
DATE 2/5/2013

STATE PROJ. NO.

SHEET NO. 25 OF 73 SHEETS



PATH & FILENAME: IP\_PWP:d143240\NRD\RD#.dgn

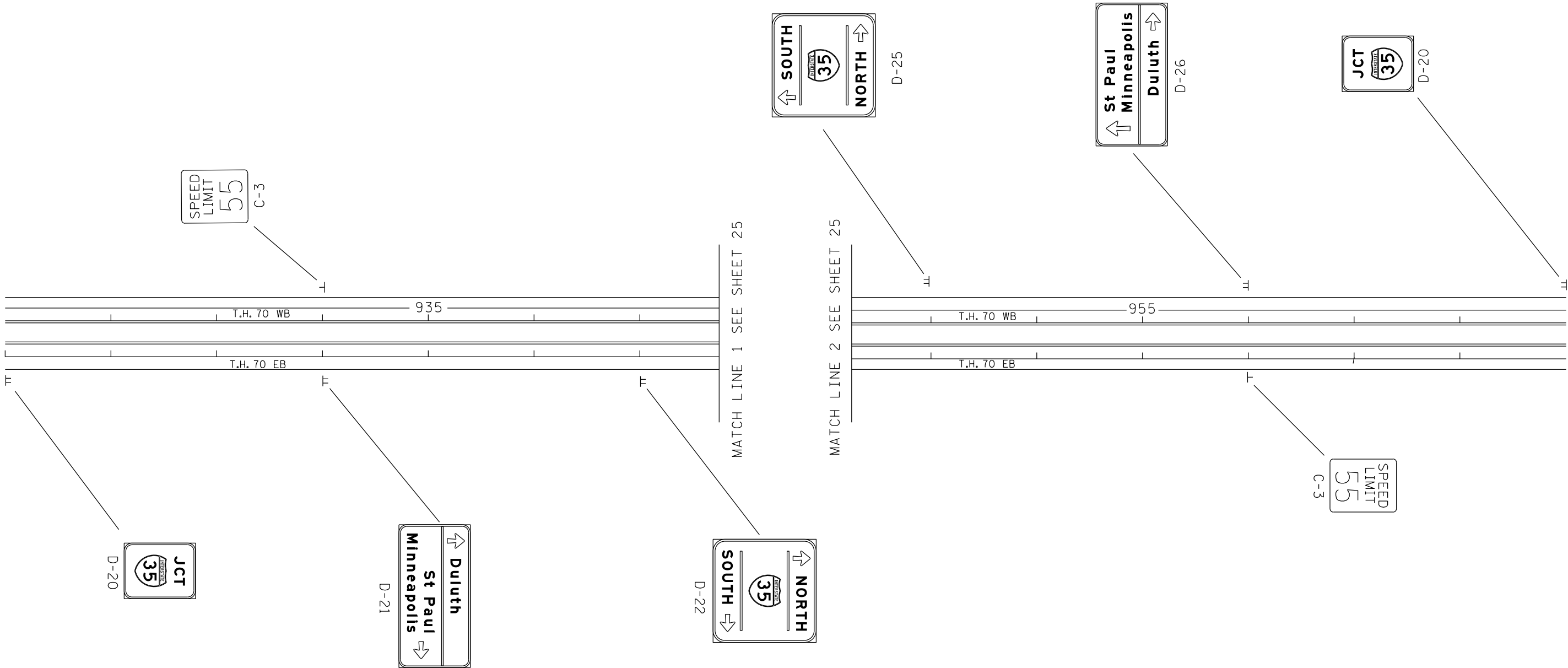


|                 |                           |
|-----------------|---------------------------|
| STATE PROJ. NO. | SHEET NO. 24 OF 73 SHEETS |
|-----------------|---------------------------|

DATE 2/5/2013

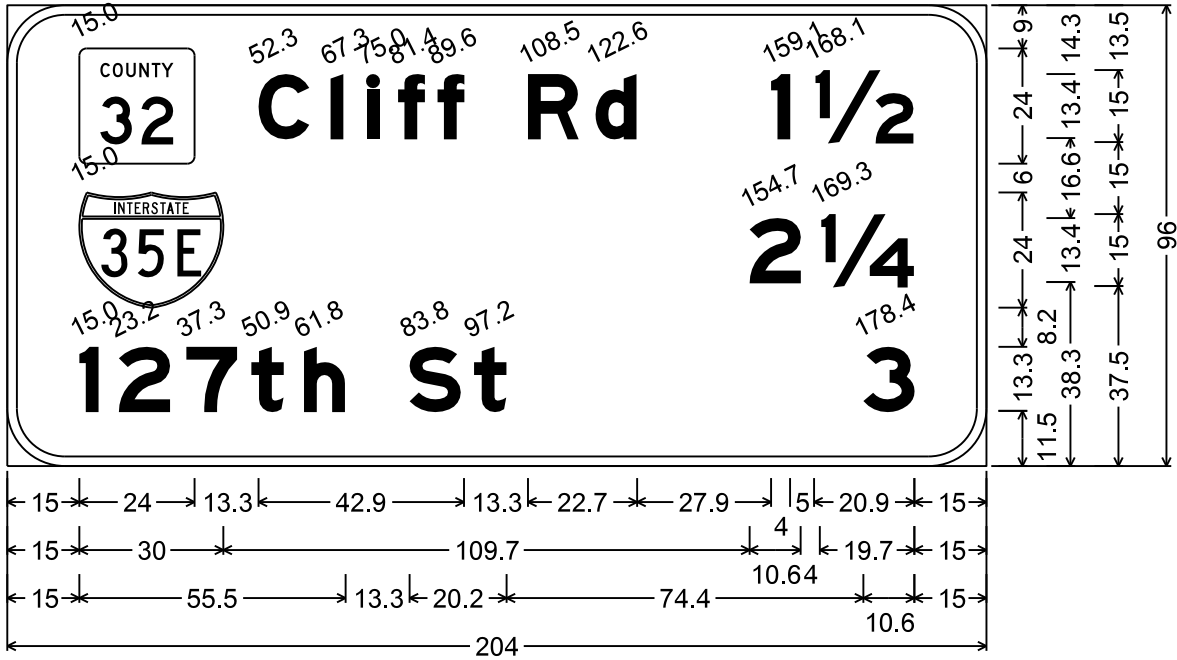
DISTRICT #: METRO  
IPLOT NAME: RDWY\_RD\*14  
PATH & FILENAME: IP\_PWP-d143240\NRDwy\_RD\*.dgn

PLOTTED/REVISED: 2/5/2013

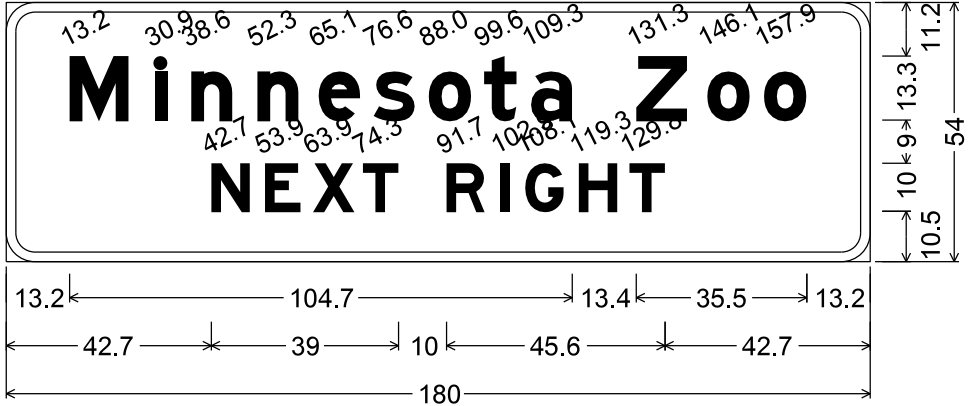


DISTRICT #: METRO  
PLOT NAME: PANELS.SP\*  
PATH & FILENAME: IP\_PWP-d143240\N\PANELS.SP\*.dgn

PLOTTED/REVISED: 2/5/2013



A-1; 12.0" Radius, 2.0" Border, White on Green;  
[Cliff Rd] E Mod; [1 1/2] E Mod; [2 1/4] E Mod; [127th St] E Mod;  
[3] E Mod;



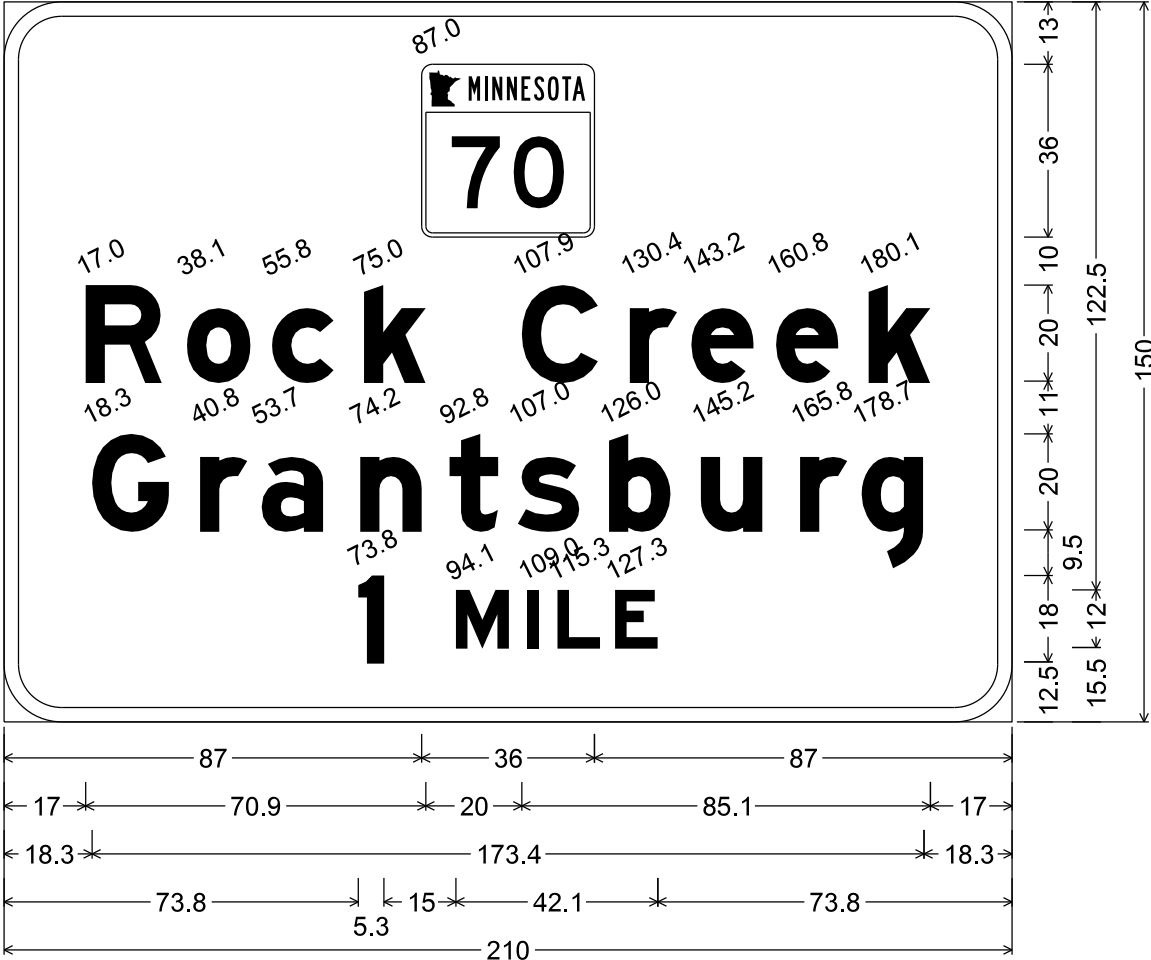
A-2; 6.0" Radius, 2.0" Border, White on Brown;  
[Minnesota Zoo] E Mod; [NEXT RIGHT] E Mod;

SEE SHEET 29 FOR NOTES

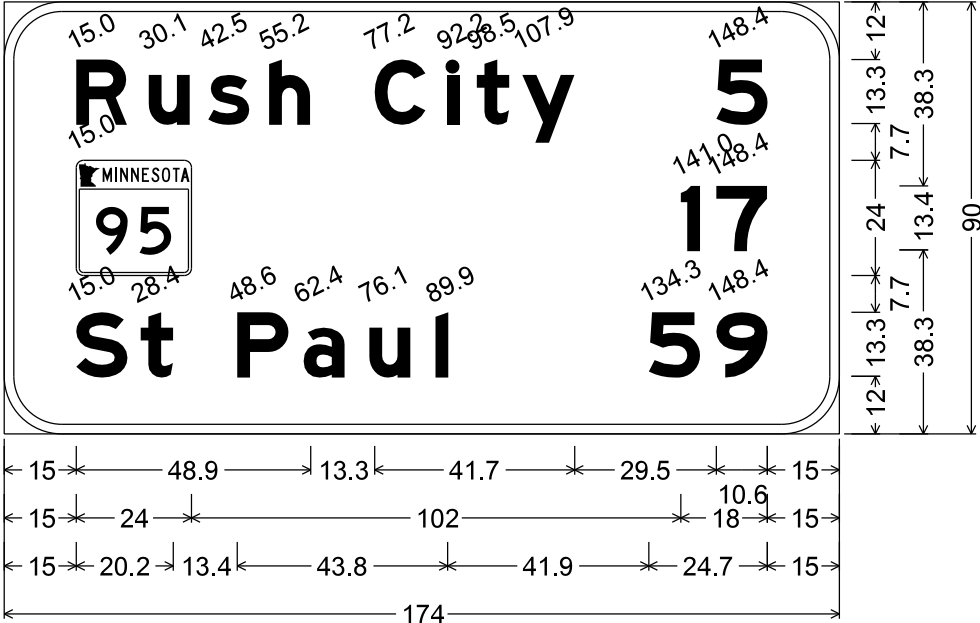
| TYPE A SIGN PANELS |                 |                                                                         | STATE PROJ. NO. |               | SHEET NO. 27 OF 73 SHEETS |  |
|--------------------|-----------------|-------------------------------------------------------------------------|-----------------|---------------|---------------------------|--|
| DRAWN BY:          | CHECKED BY: RAS | CERTIFIED BY: <i>Michael B. Weiss</i><br>LICENSED PROFESSIONAL ENGINEER | LIC. NO. 10502  | DATE 2/5/2013 |                           |  |

DISTRICT #: METRO  
PLOT NAME: PANELS.SP\*  
PATH & FILENAME: IP\_PWP-d143240\N\PANELS.SP\*.dgn

PLOTTED/REVISED: 2/5/2013



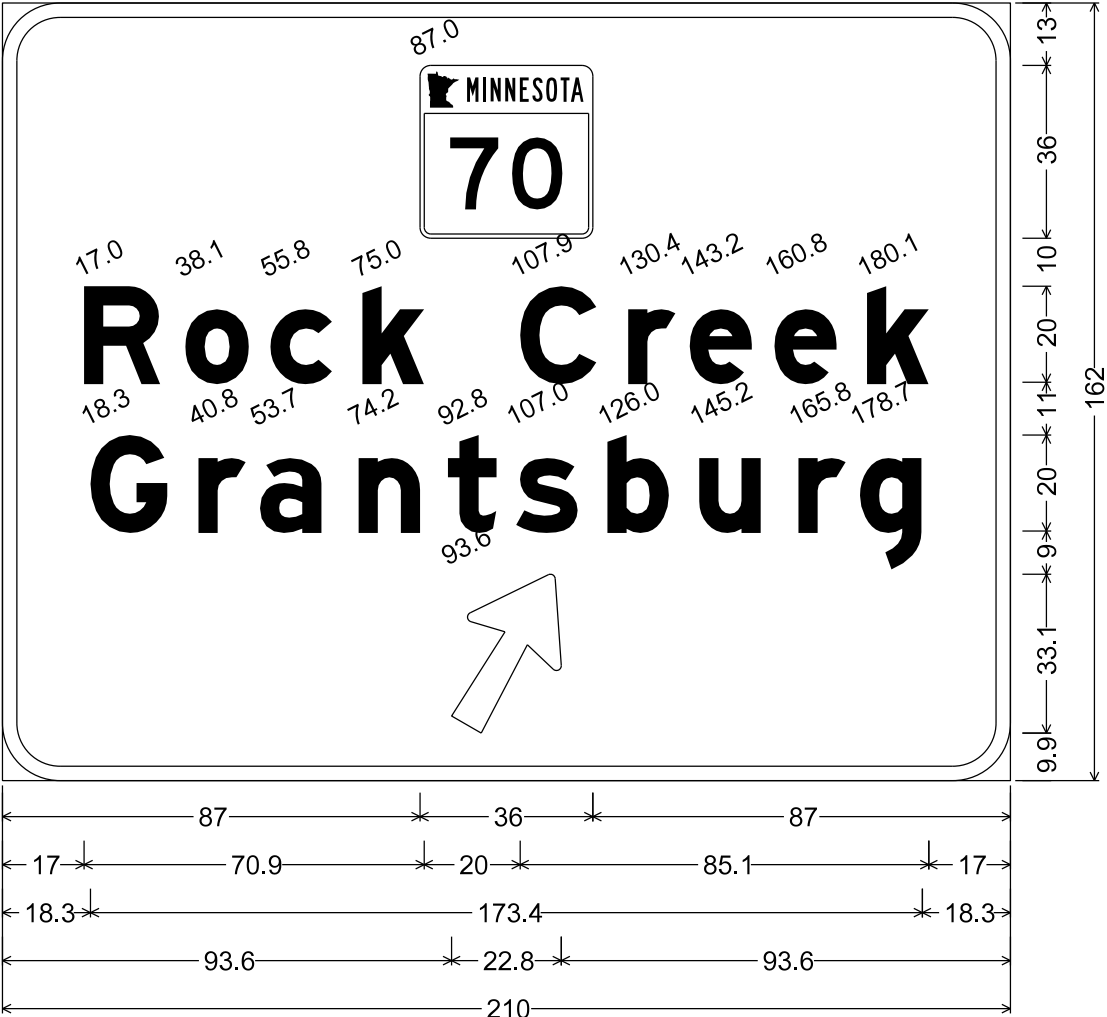
A-3; 12.0" Radius, 3.0" Border, White on Green;  
[Rock Creek] E Mod; [Grantsburg] E Mod; [1 MILE] E Mod;



A-4; 12.0" Radius, 2.0" Border, White on Green;  
[Rush City] E Mod; [5] E Mod; [17] E Mod; [St Paul] E Mod;  
[59] E Mod;

SEE SHEET 29 FOR NOTES

| DRAWN BY: |  |  | CHECKED BY: RAS |  |  | CERTIFIED BY |  |  | MICHAEL B. WEISS |  |  | LIC. NO. 10502 |  |  | DATE 2/5/2013 |  |  | STATE PROJ. NO. |  |  | TYPE A SIGN PANELS |  |  | SHEET NO. 28 OF 73 SHEETS |  |  |
|-----------|--|--|-----------------|--|--|--------------|--|--|------------------|--|--|----------------|--|--|---------------|--|--|-----------------|--|--|--------------------|--|--|---------------------------|--|--|
|-----------|--|--|-----------------|--|--|--------------|--|--|------------------|--|--|----------------|--|--|---------------|--|--|-----------------|--|--|--------------------|--|--|---------------------------|--|--|



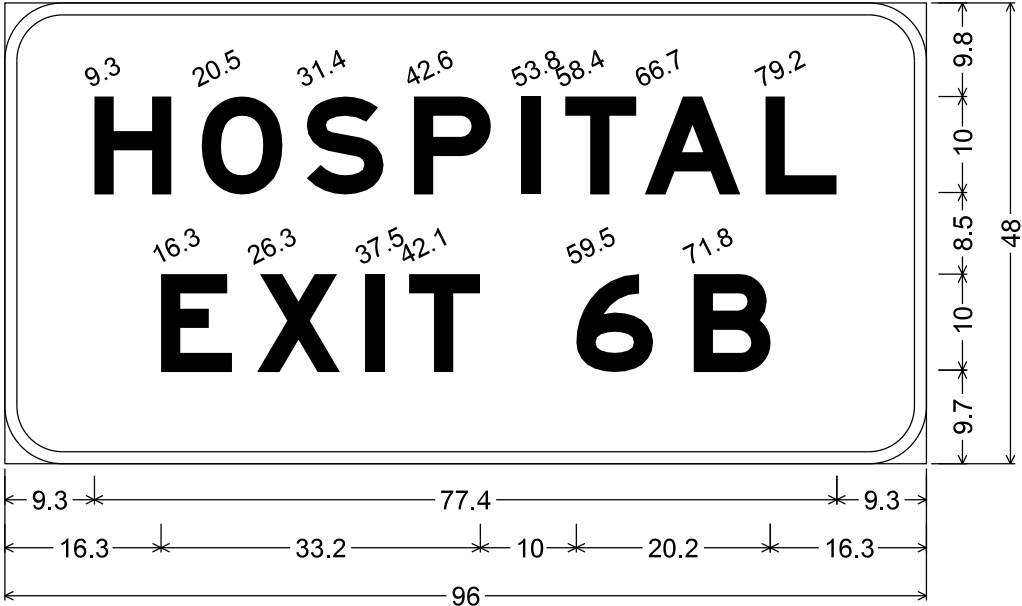
A-5; 12.0" Radius, 3.0" Border, White on Green;  
 [Rock Creek] E Mod; [Grantsburg] E Mod; Arrow 17 - 36.0" 60°;

NOTES:

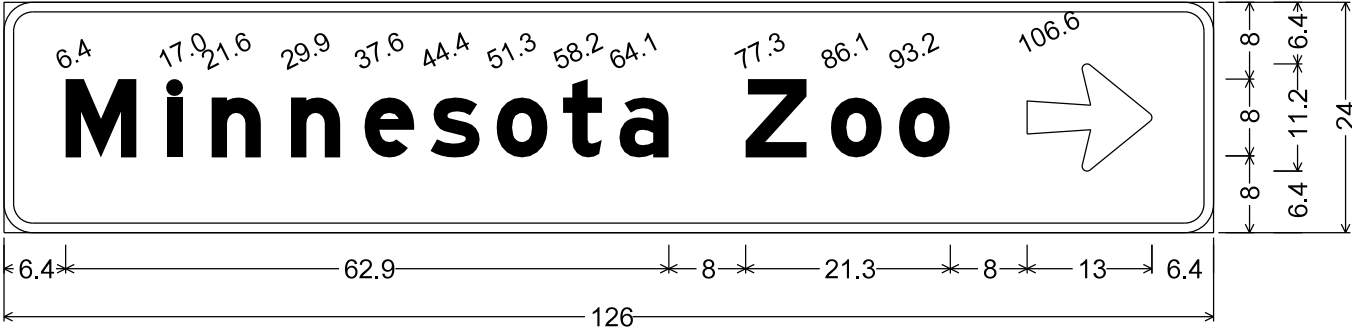
1. Corners of the sign panels extending beyond the border shall not be trimmed.
2. See Standard Signs Manual for fraction, arrow and overlay details.

PLOTTED/REVISED: 2/5/2013

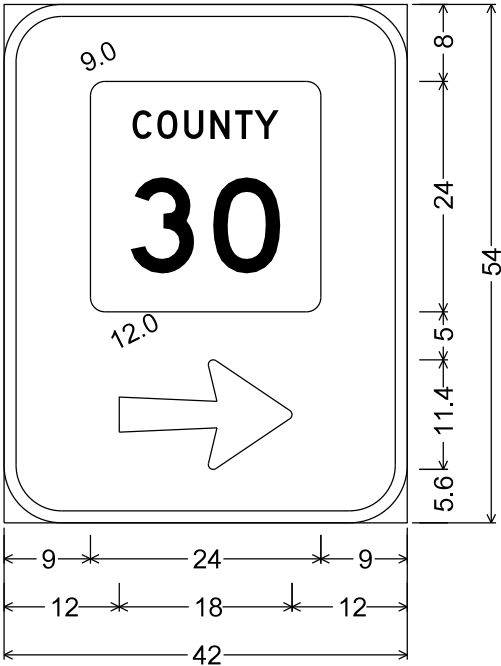
DISTRICT #: METRO  
 IPLOT NAME: PANELS\_SP\*8  
 PATH & FILENAME: IP\_PWP-d143240\N\PANELS\_SP\*.dgn



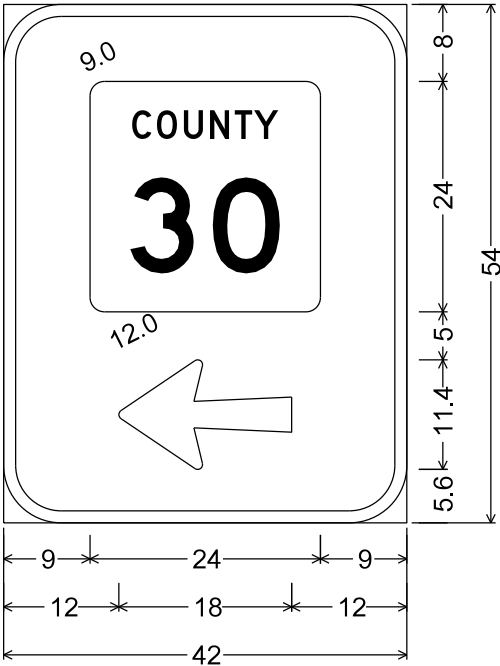
D-7; 6.0" Radius, 1.3" Border, White on Blue;  
 [HOSPITAL] E Mod; [EXIT 6B] E Mod;



D-8; 3.0" Radius, 1.0" Border, White on Brown;  
 [Minnesota Zoo] E Mod; Arrow 5 - 13.0" 0°;



D-9;  
 6.0" Radius, 1.3" Border, White on Green;  
 Arrow 14 - 18.0" 0°;



D-10;  
 6.0" Radius, 1.3" Border, White on Green;  
 Arrow 14 - 18.0" 180°;

SEE SHEET 35 FOR NOTES

TYPE D SIGN PANELS

DRAWN BY:

CHECKED BY: RAS

CERTIFIED BY

Michael B. Weiss  
 LICENSED PROFESSIONAL ENGINEER

LIC. NO.

10502

DATE

2/5/2013

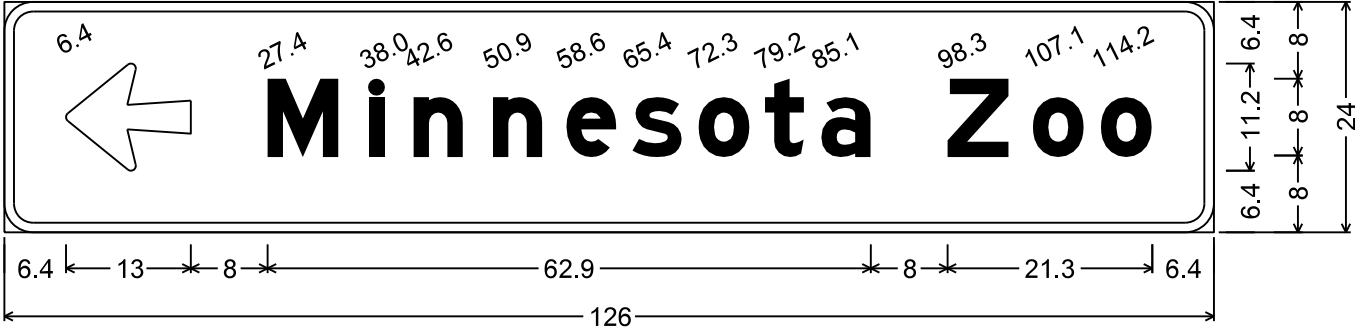
STATE PROJ. NO.

SHEET NO. 30

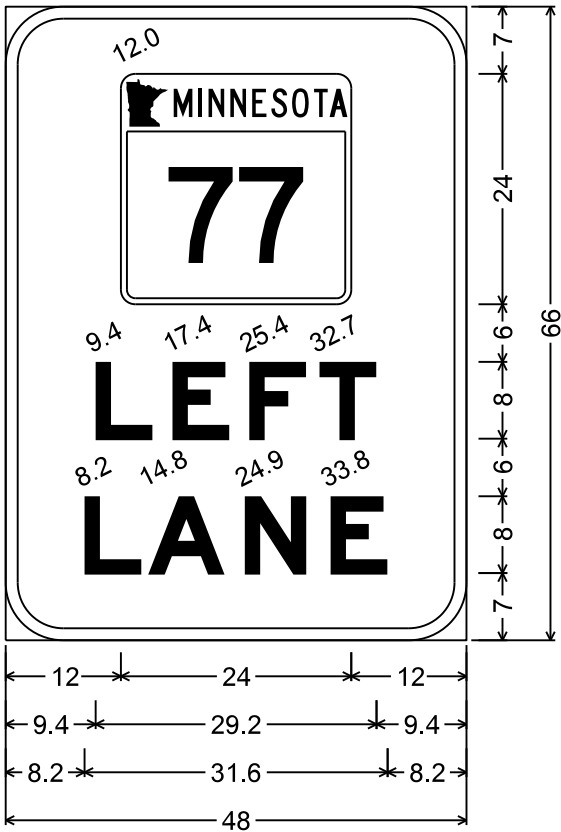
OF 73

SHEETS

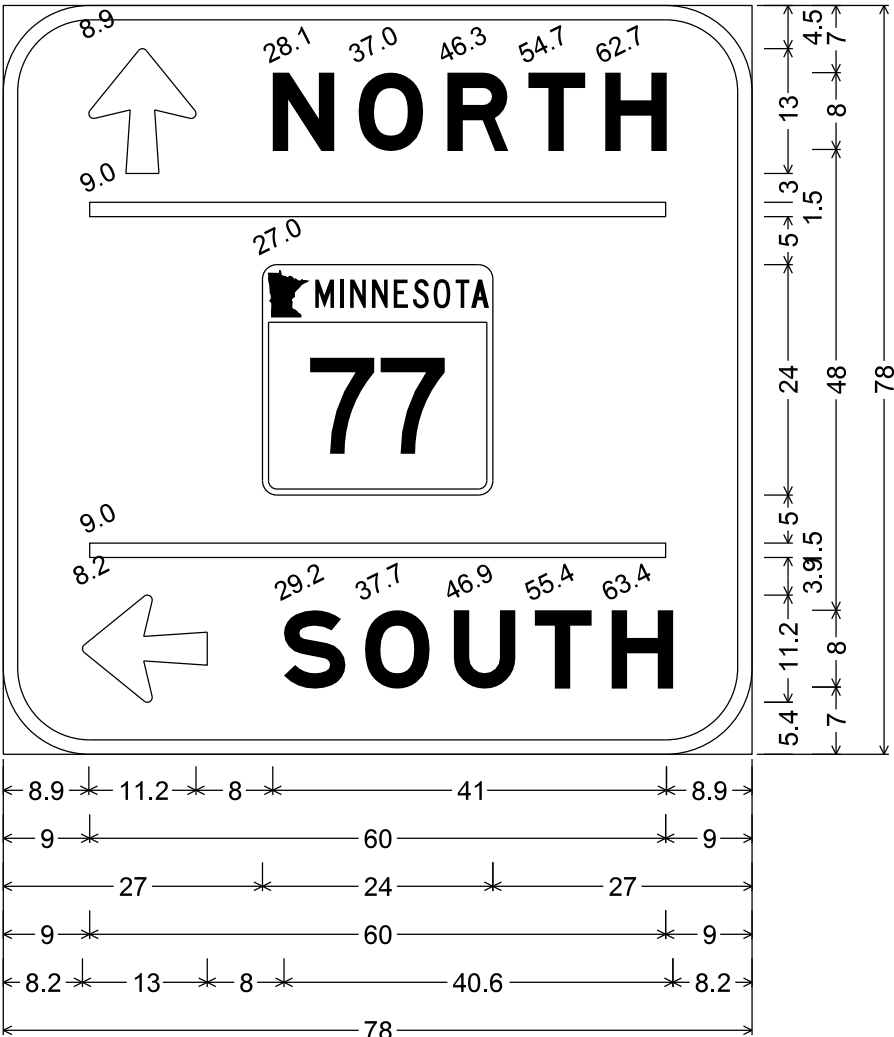




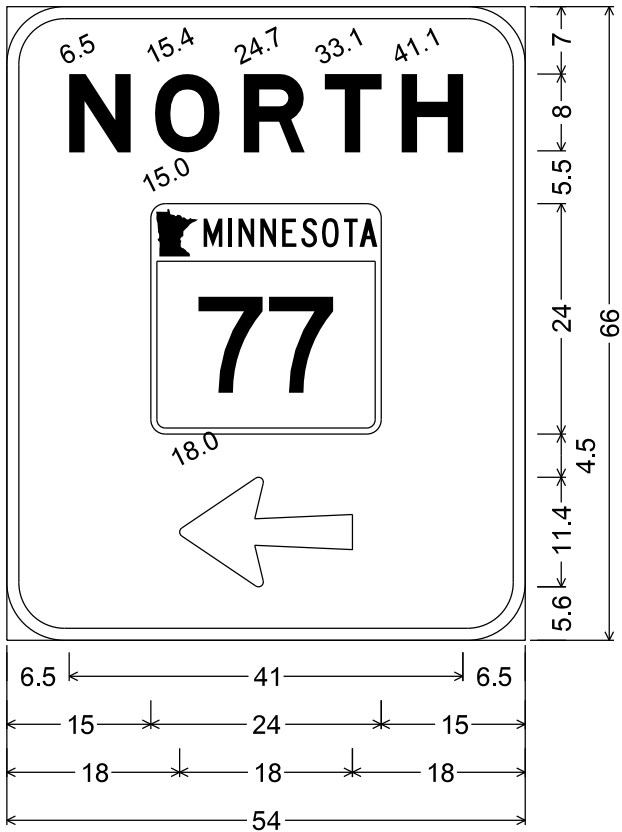
D-11; 3.0" Radius, 1.0" Border, White on Brown;  
 Arrow 5 - 13.0" 180°; [Minnesota Zoo] E Mod;



D-12;  
 6.0" Radius, 1.3" Border, White on Green;  
 [LEFT] E Mod; [LANE] E Mod;



D-13; 9.0" Radius, 1.5" Border, White on Green;  
 Arrow 5 - 13.0" 90°; [NORTH] E Mod;  
 Arrow 5 - 13.0" 180°; [SOUTH] E Mod;



D-14;  
 6.0" Radius, 1.3" Border, White on Green;  
 [NORTH] E Mod;  
 Arrow 14 - 18.0" 180°;

SEE SHEET 35 FOR NOTES

TYPE D SIGN PANELS

DRAWN BY:

CHECKED BY: RAS

CERTIFIED BY

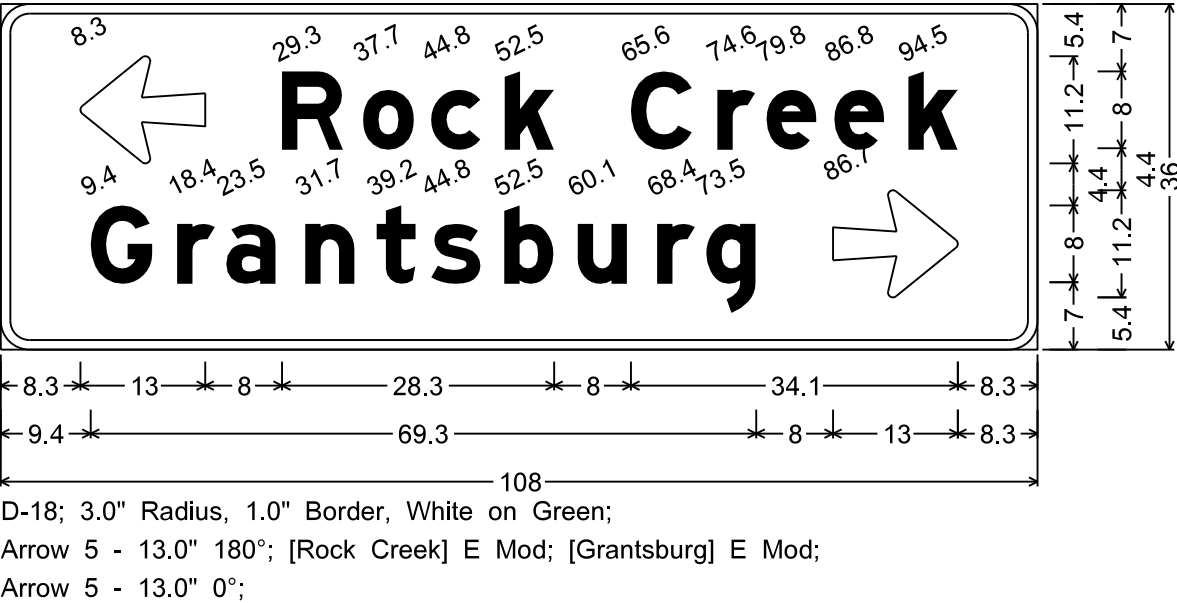
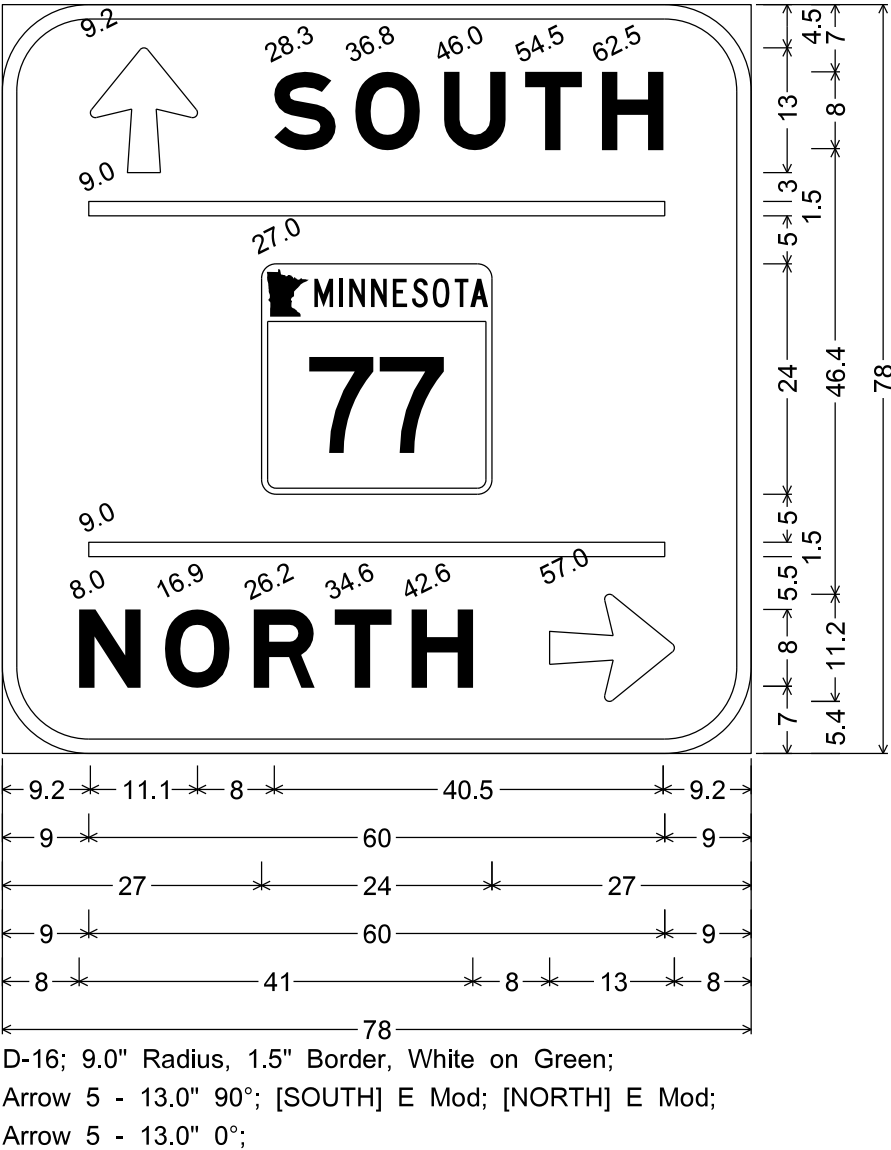
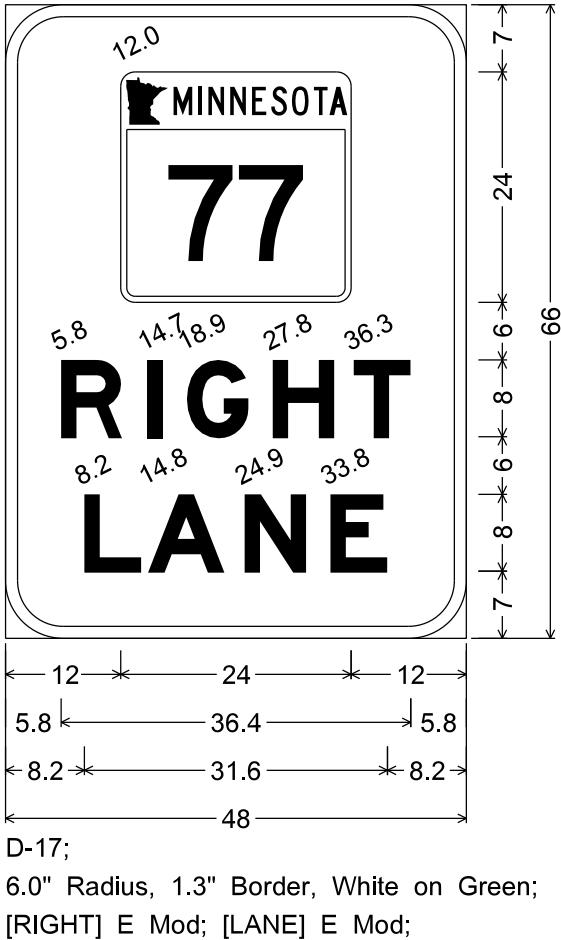
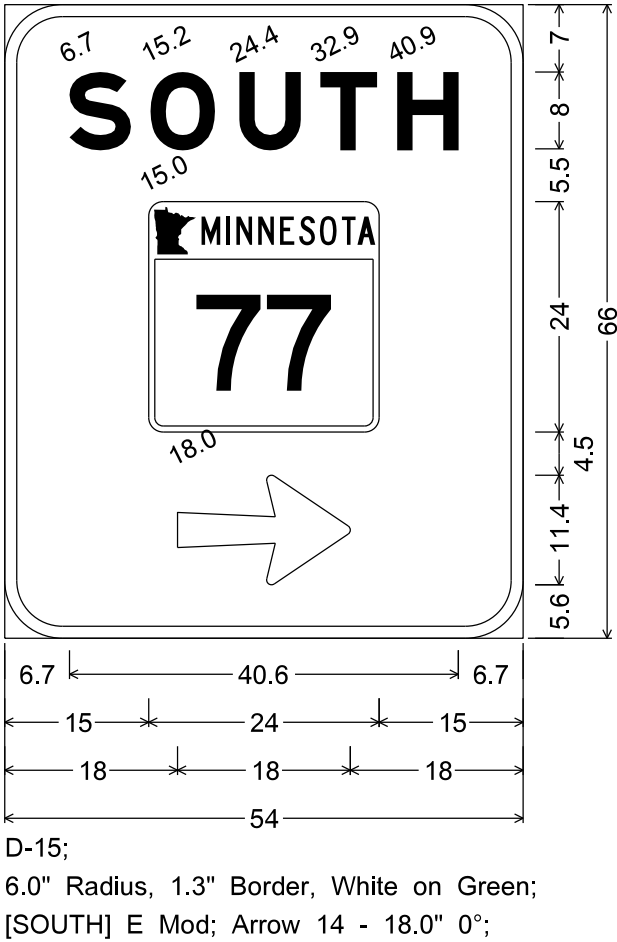
Michael B. Weiss  
 LICENSED PROFESSIONAL ENGINEER

LIC. NO. 10502

DATE 2/5/2013

STATE PROJ. NO.

SHEET NO. 31 OF 73 SHEETS



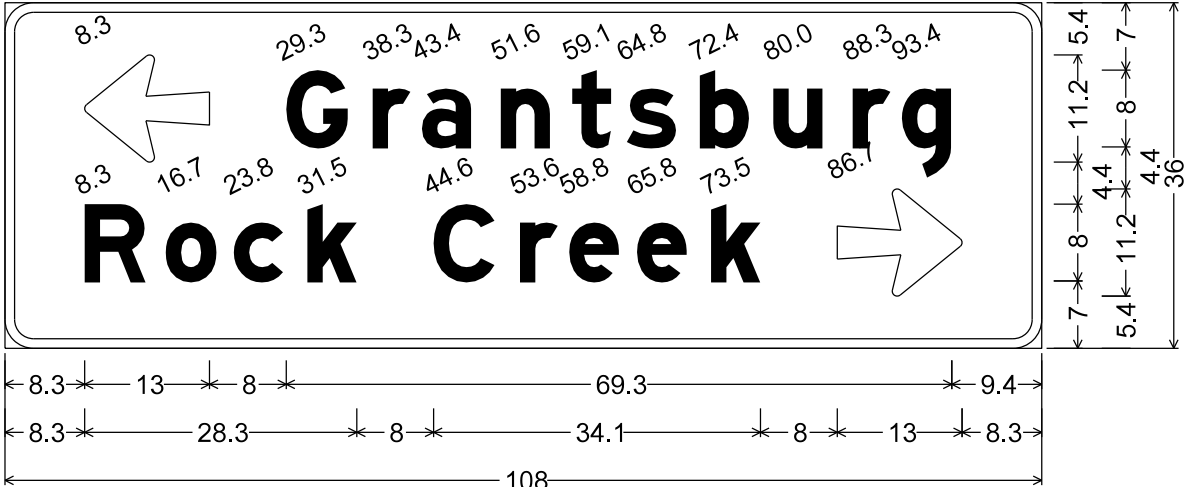
SEE SHEET 35 FOR NOTES

| TYPE D SIGN PANELS |                 |                                                                         | STATE PROJ. NO. |               | SHEET NO. 32 OF 73 SHEETS |  |
|--------------------|-----------------|-------------------------------------------------------------------------|-----------------|---------------|---------------------------|--|
| DRAWN BY:          | CHECKED BY: RAS | CERTIFIED BY: <i>Michael B. Weiss</i><br>LICENSED PROFESSIONAL ENGINEER | LIC. NO. 10502  | DATE 2/5/2013 |                           |  |

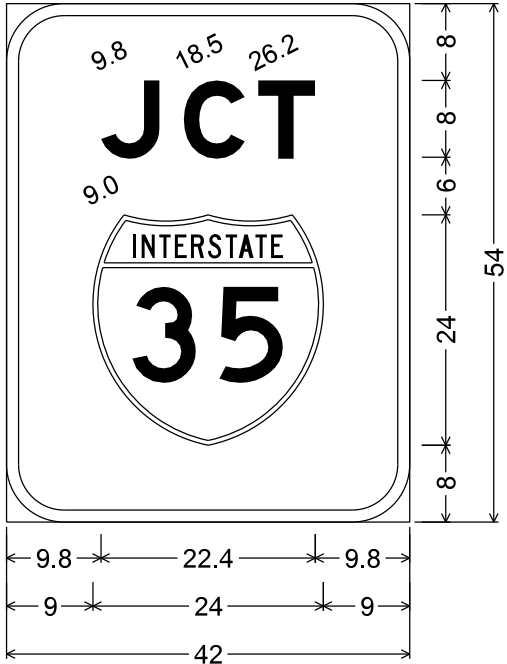


PLOTTED/REVISED: 2/5/2013

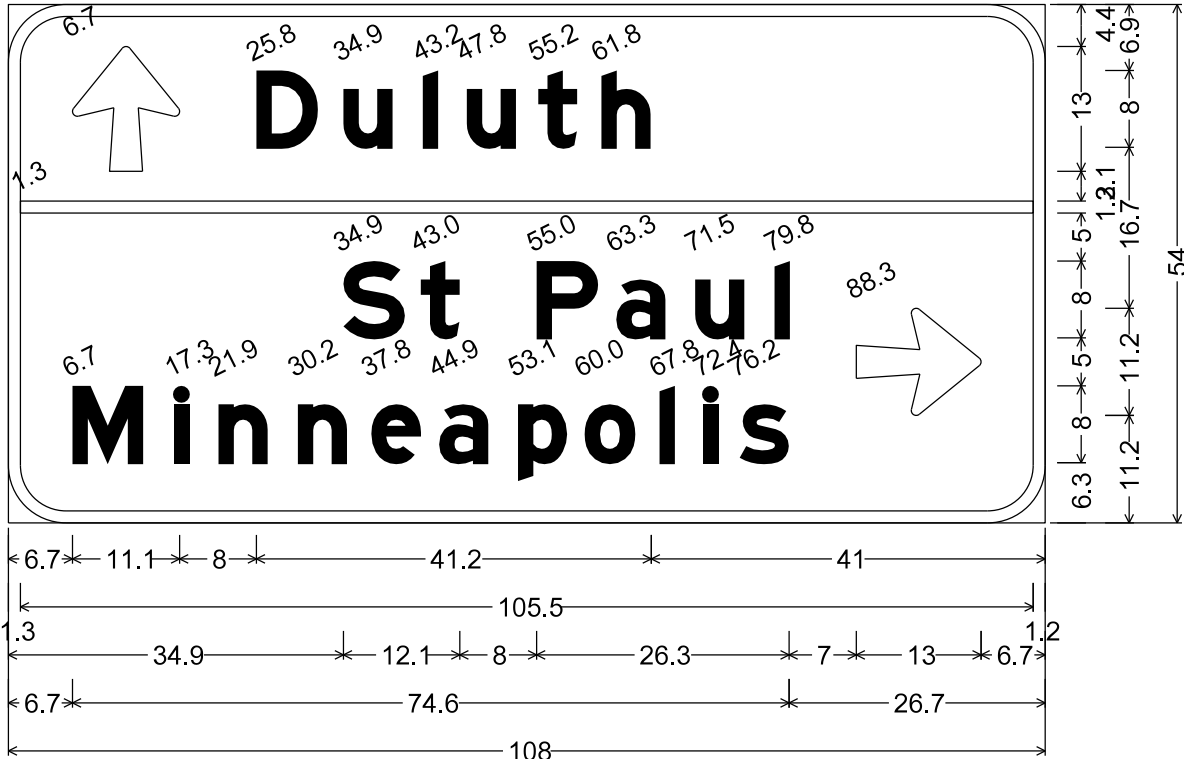
DISTRICT #: METRO  
 IPLOT NAME: PANELS\_SP\*II  
 PATH & FILENAME: IP\_PWP-d143240\PANELS\_SP\*.dgn



D-19; 3.0" Radius, 1.0" Border, White on Green;  
 Arrow 5 - 13.0" 180°; [Grantsburg] E Mod; [Rock Creek] E Mod;  
 Arrow 5 - 13.0" 0°;



D-20;  
 6.0" Radius, 1.3" Border, White on Green;  
 [JCT] E Mod;



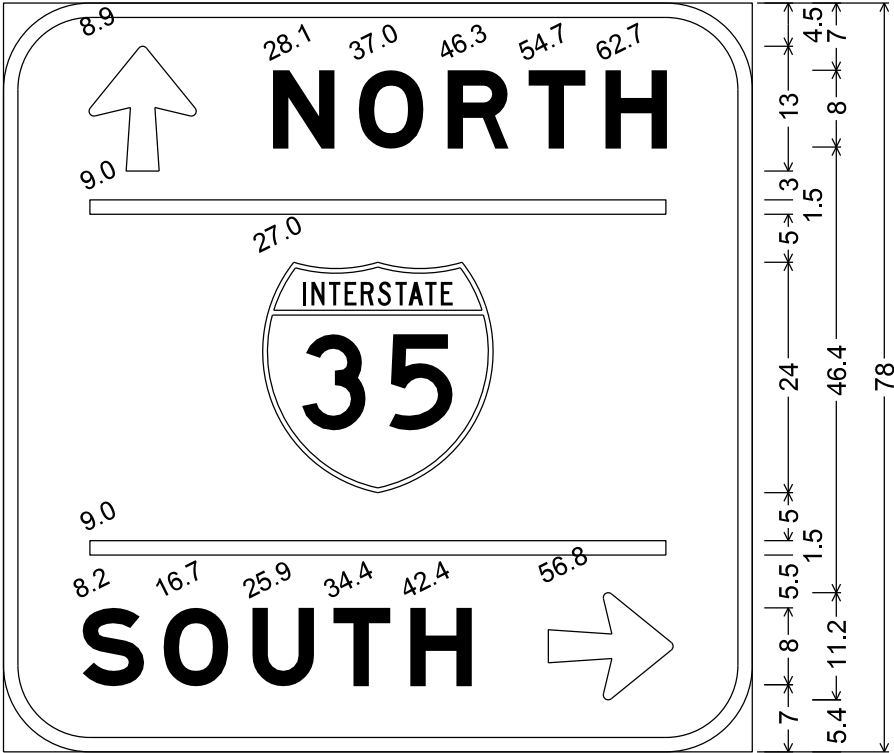
D-21; 6.0" Radius, 1.3" Border, White on Green;  
 Arrow 5 - 13.0" 90°; [Duluth] E Mod; [St Paul] E Mod; [Minneapolis] E Mod;  
 Arrow 5 - 13.0" 0°;

SEE SHEET 35 FOR NOTES

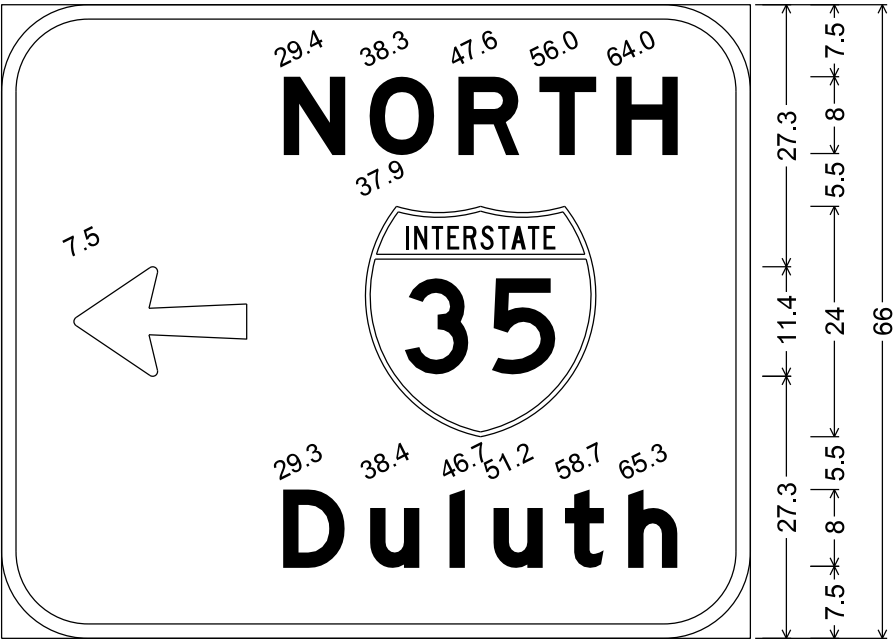
TYPE D SIGN PANELS

DISTRICT #: METRO  
IPLOT NAME: PANELS\_SP\*12  
PATH & FILENAME: IP\_PWP-d143240\N\PANELS\_SP\*.dgn

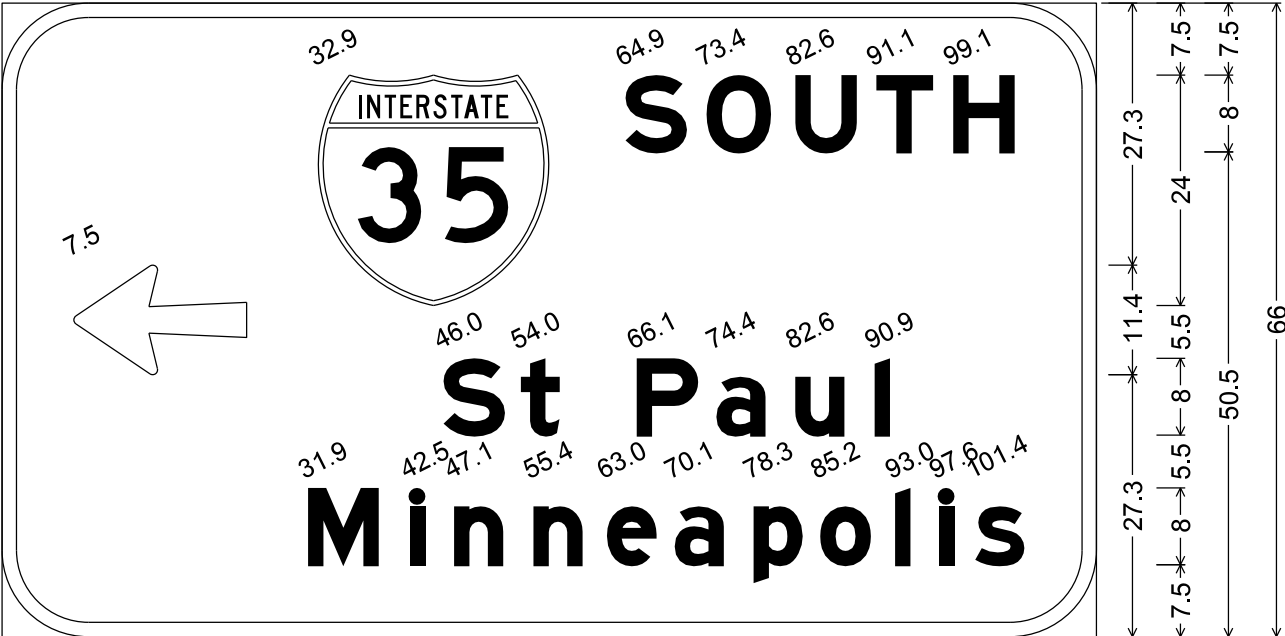
PLOTTED/REVISED: 2/5/2013



D-22; 9.0" Radius, 1.5" Border, White on Green;  
Arrow 5 - 13.0" 90°; [NORTH] E Mod; [SOUTH] E Mod;  
Arrow 5 - 13.0" 0°;



D-23; 9.0" Radius, 1.5" Border, White on Green;  
Arrow 14 - 18.0" 180°; [NORTH] E Mod;  
[Duluth] E Mod;



D-24; 9.0" Radius, 1.5" Border, White on Green;  
Arrow 14 - 18.0" 180°; [SOUTH] E Mod; [St Paul] E Mod; [Minneapolis] E Mod;

SEE SHEET 35 FOR NOTES

TYPE D SIGN PANELS

DRAWN BY:

CHECKED BY: RAS

CERTIFIED BY

Michael B. Weiss  
LICENSED PROFESSIONAL ENGINEER

LIC. NO. 10502

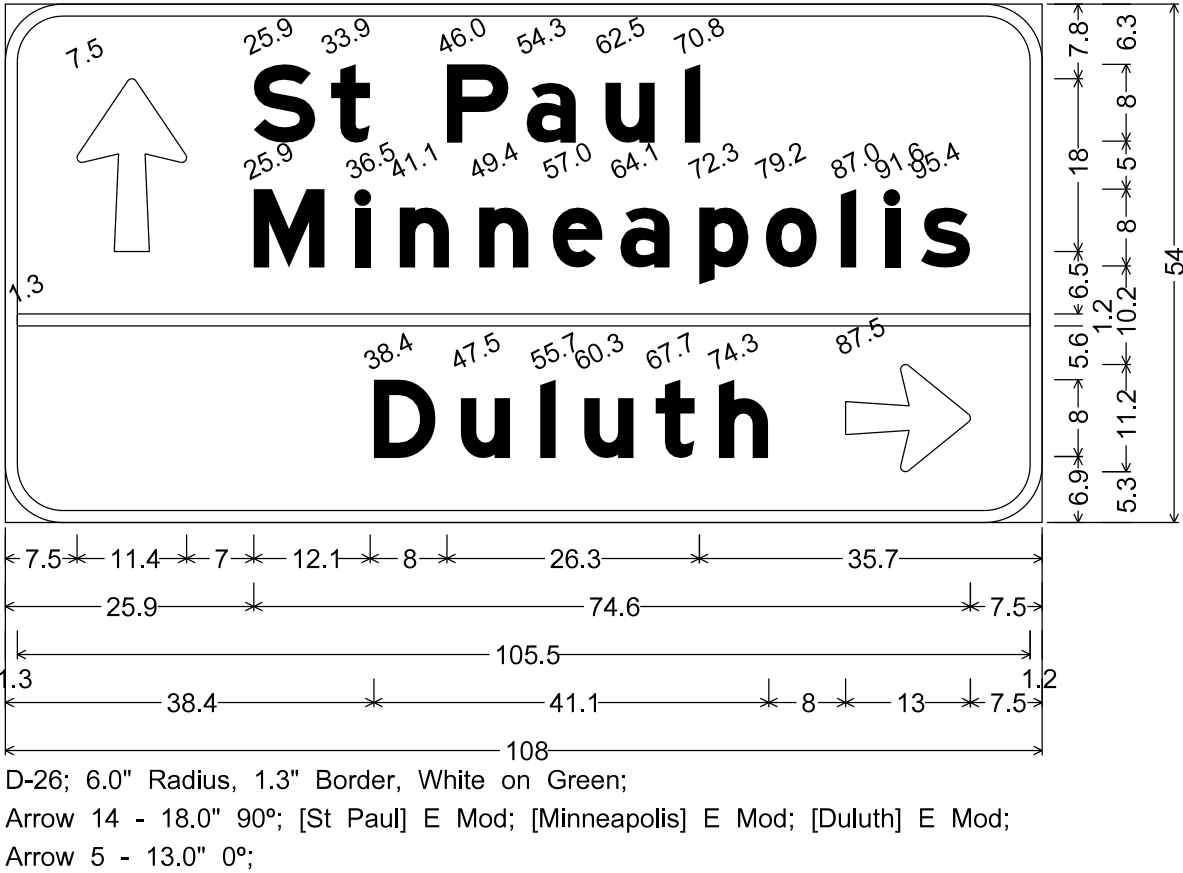
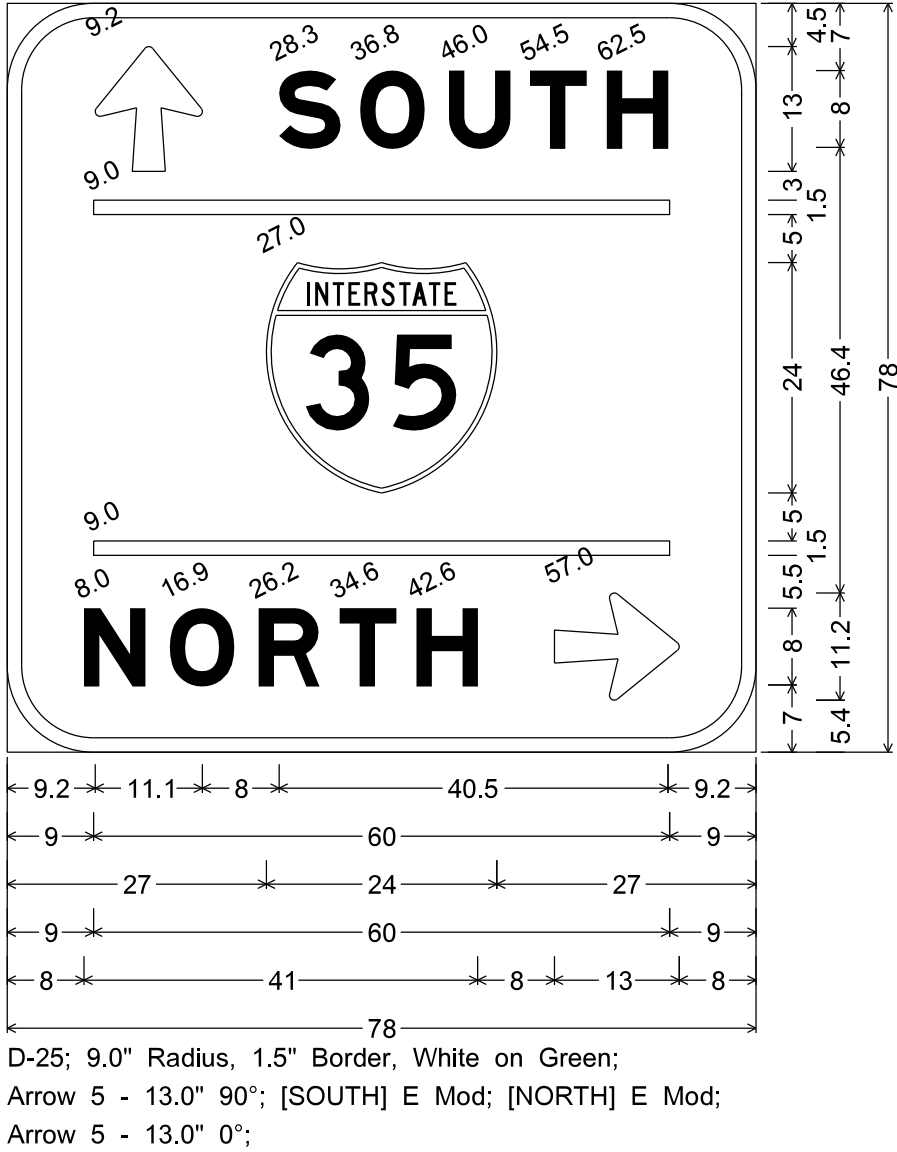
DATE 2/5/2013

STATE PROJ. NO.

SHEET NO. 34 OF 73 SHEETS

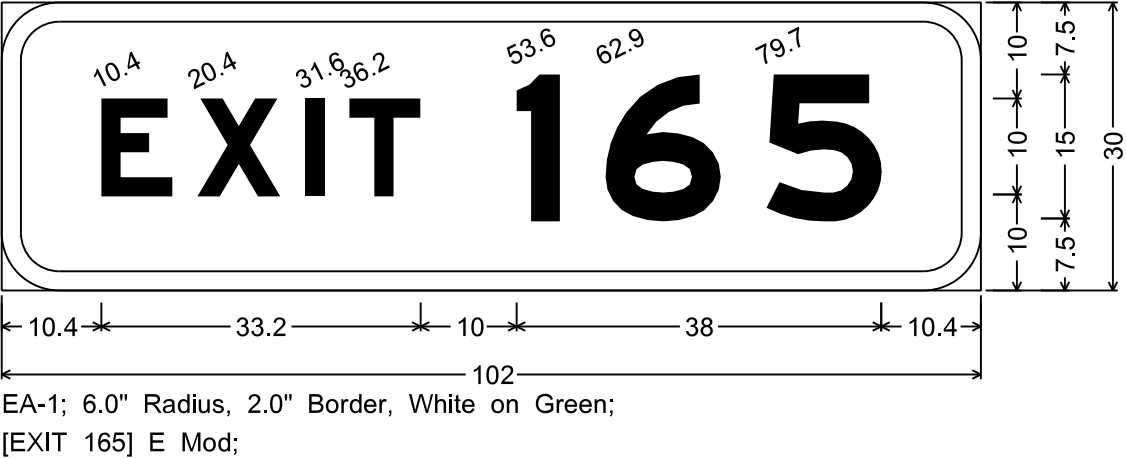
DISTRICT #: METRO  
PLOT NAME: PANELS\_SP\*13  
PATH & FILENAME: IP\_PWP-d143240\N\PANELS\_SP\*.dgn

PLOTTED/REVISED: 2/5/2013



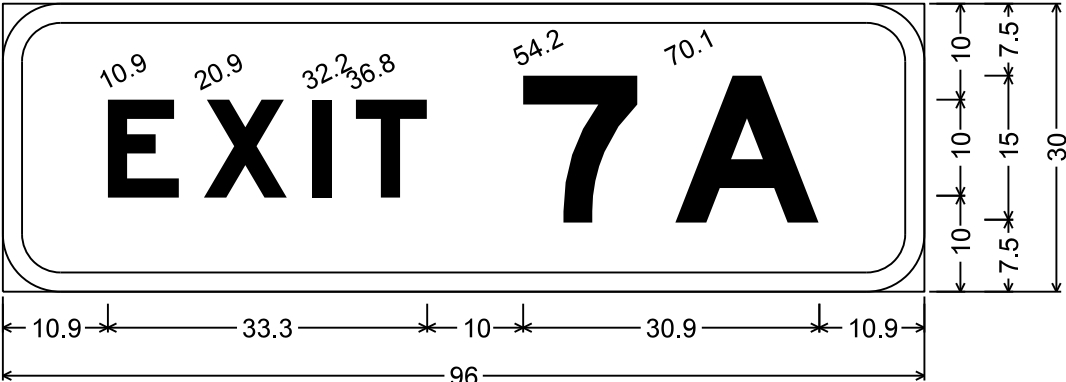
NOTES:

1. See Standard Signs Manual for arrow, fraction and overlay details.

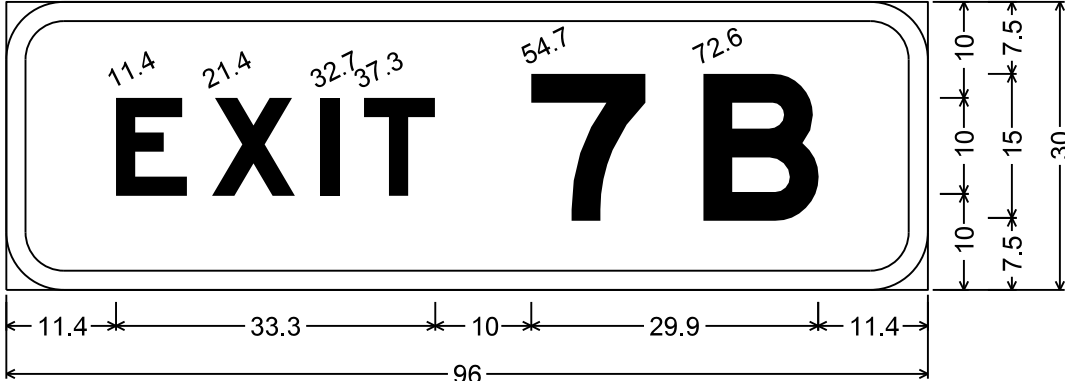


NOTE:

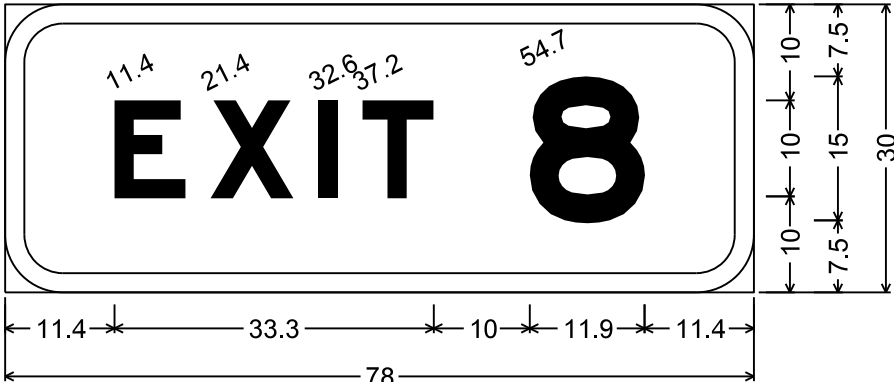
1. Corners of the sign panels extending beyond the border shall not be trimmed.



EO-1; 6.0" Radius, 2.0" Border, White on Green;  
 [EXIT 7A] E Mod;



EO-2; 6.0" Radius, 2.0" Border, White on Green;  
 [EXIT 7B] E Mod;

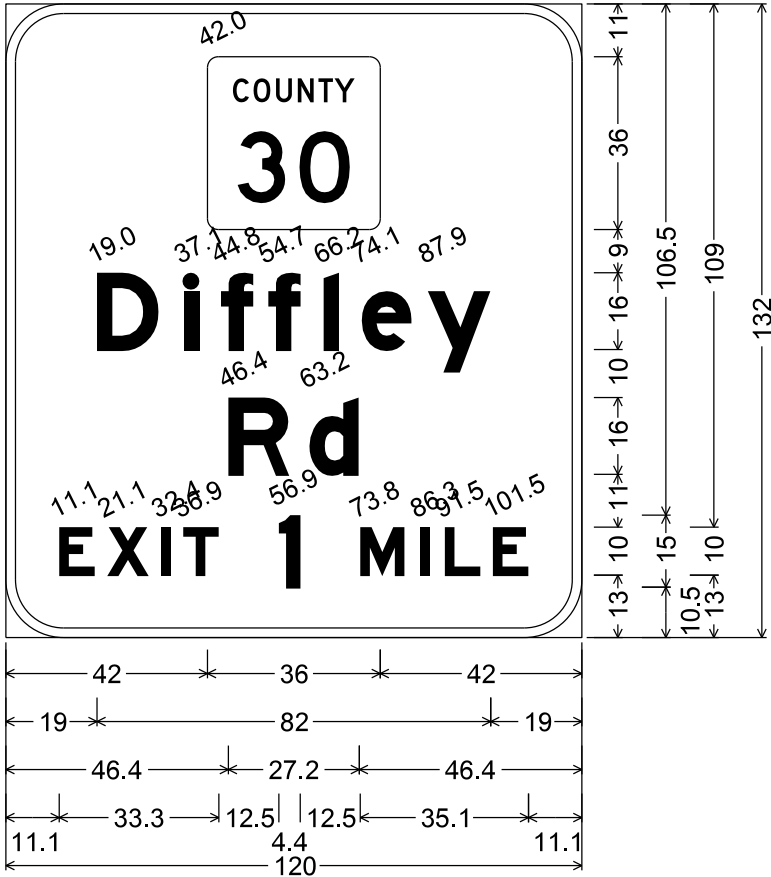


EO-3; 6.0" Radius, 2.0" Border, White on Green;  
 [EXIT 8] E Mod;

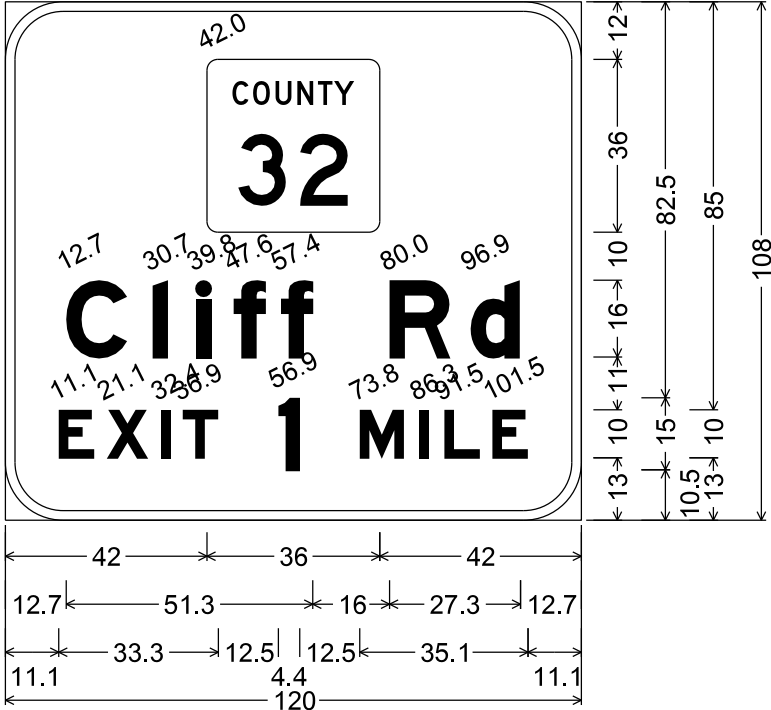
NOTE:  
 1. Corners of the sign panels extending beyond the border shall not be trimmed.

DISTRICT #: METRO  
PLOT NAME: PANELS\_SP\*3  
PATH & FILENAME: IP\_PWP-d143240\N\PANELS\_SP\*.dgn

PLOTTED/REVISED: 2/5/2013



OH 1-77;  
12.0" Radius, 2.0" Border, White on Green;  
[Diffley] E Mod; [Rd] E Mod;  
[EXIT 1 MILE] E Mod;



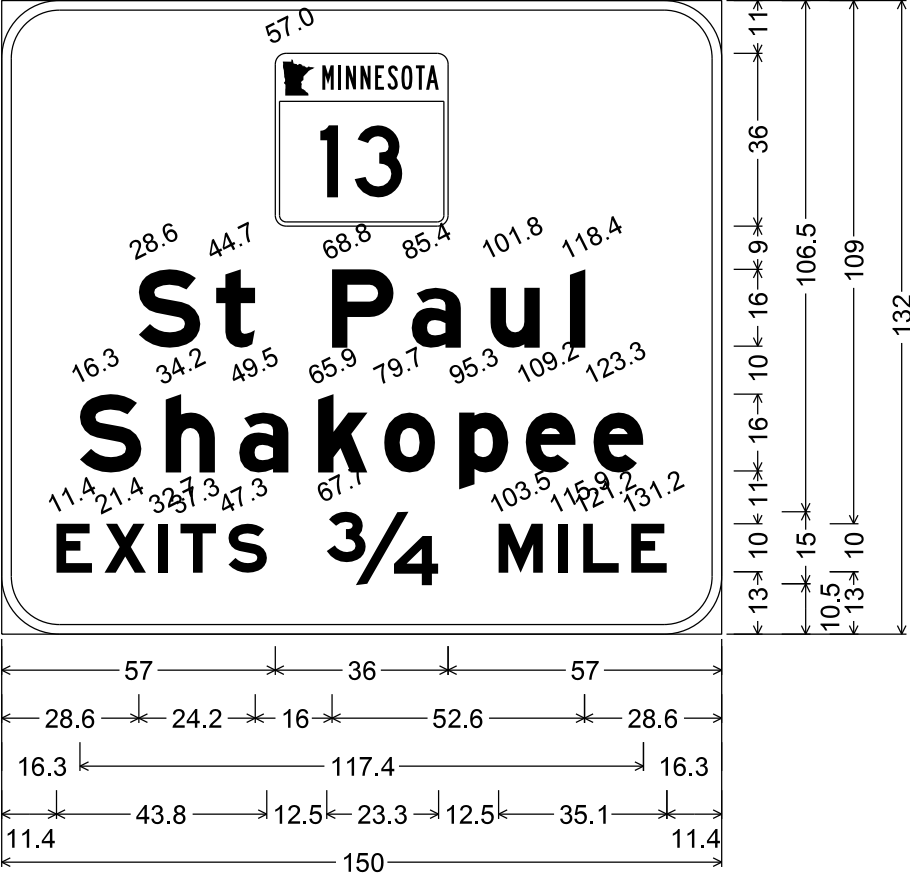
OH 2-77;  
12.0" Radius, 2.0" Border, White on Green;  
[Cliff Rd] E Mod; [EXIT 1 MILE] E Mod;

SEE SHEET 42 FOR NOTES

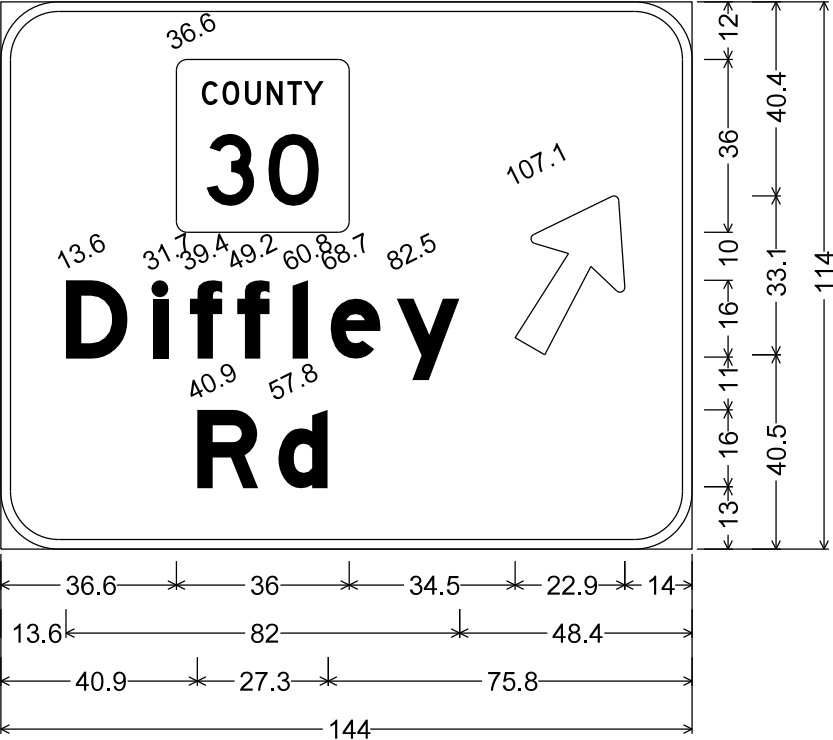


DISTRICT #: METRO  
PLOT NAME: PANELS\_SP\*4  
PATH & FILENAME: IP\_PWP-d143240\N\PANELS\_SP\*.dgn

PLOTTED/REVISED: 2/5/2013



OH 3-77(L);  
12.0" Radius, 2.0" Border, White on Green;  
[St Paul] E Mod; [Shakopee] E Mod;  
[EXITS 3/4 MILE] E Mod;



OH 3-77(R) & OH 4-77;  
12.0" Radius, 2.0" Border, White on Green;  
[Diffley] E Mod; [Rd] E Mod; Arrow 17 - 36.0" 60°;

SEE SHEET 42 FOR NOTES

DRAWN BY:

CHECKED BY: RAS

CERTIFIED BY

*Michael B. Weiss*  
LICENSED PROFESSIONAL ENGINEER

LIC. NO.

10502

DATE

2/5/2013

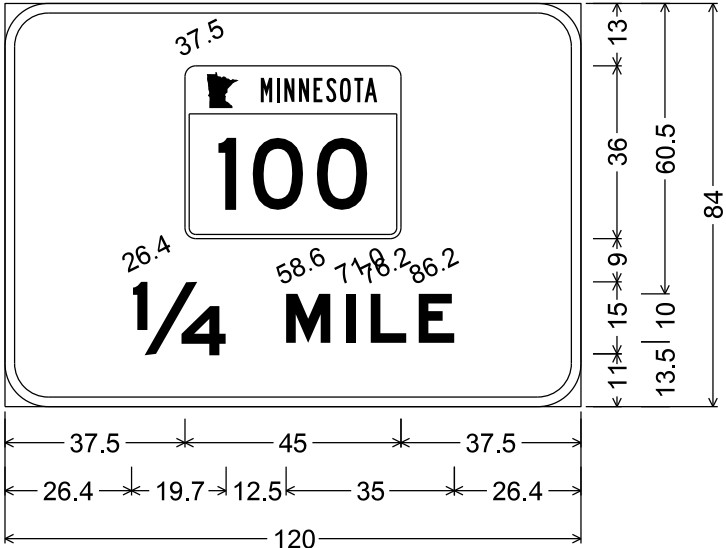
TYPE OH SIGN PANELS

STATE PROJ. NO.

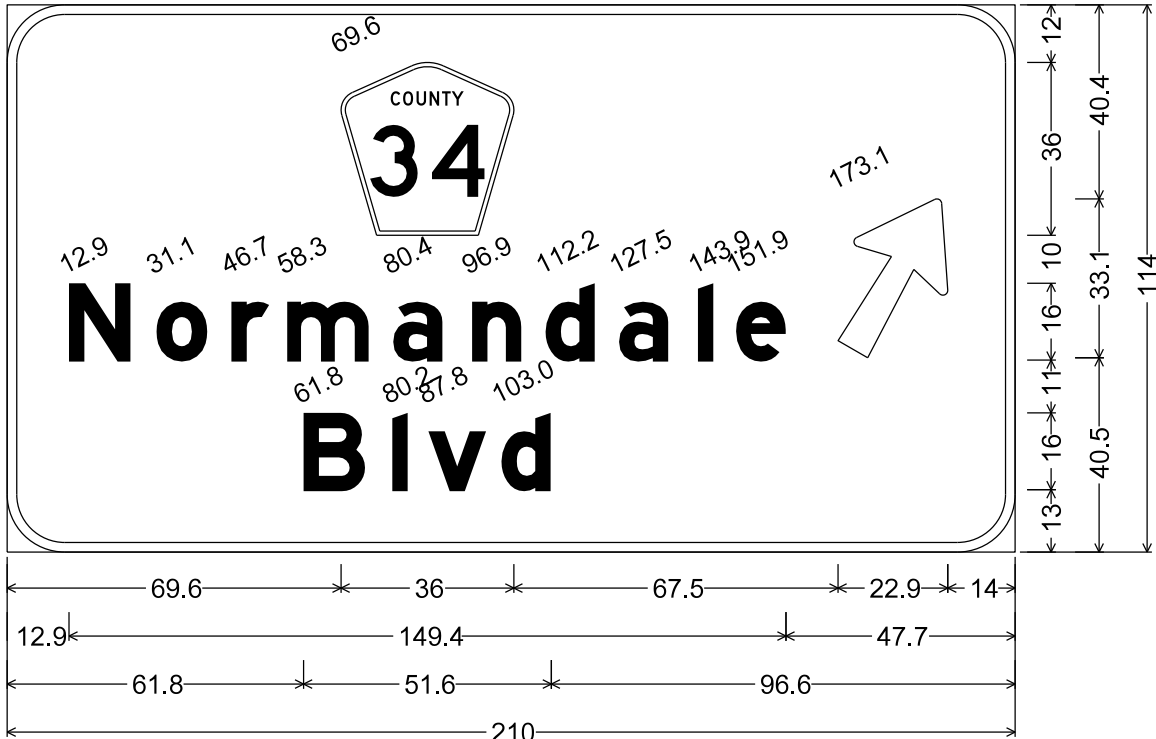
SHEET NO. 39 OF 73 SHEETS

DISTRICT #: METRO  
IPLOT NAME: PANELS\_SP\*5  
PATH & FILENAME: IP\_PWP-d143240\N\PANELS\_SP\*.dgn

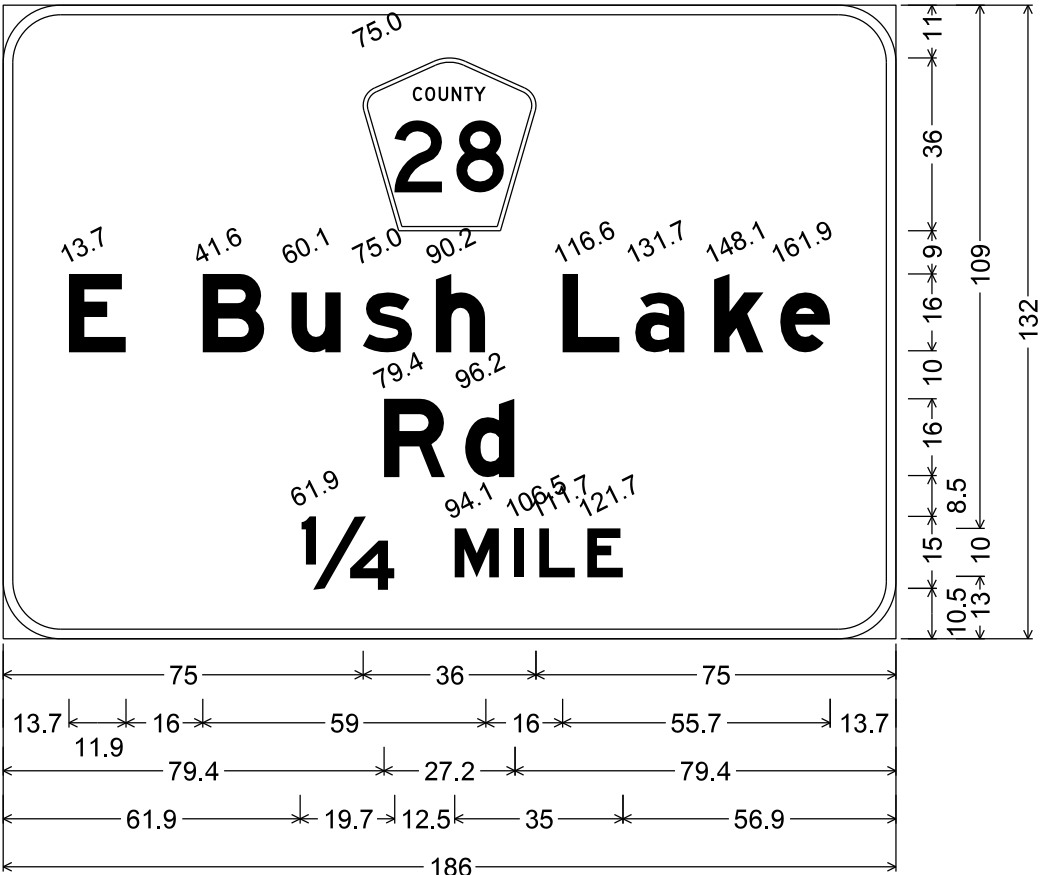
DISTRICT #: METRO  
IPLOT NAME: PANELS\_SP\*5  
PATH & FILENAME: IP\_PWP-d143240\N\PANELS\_SP\*.dgn



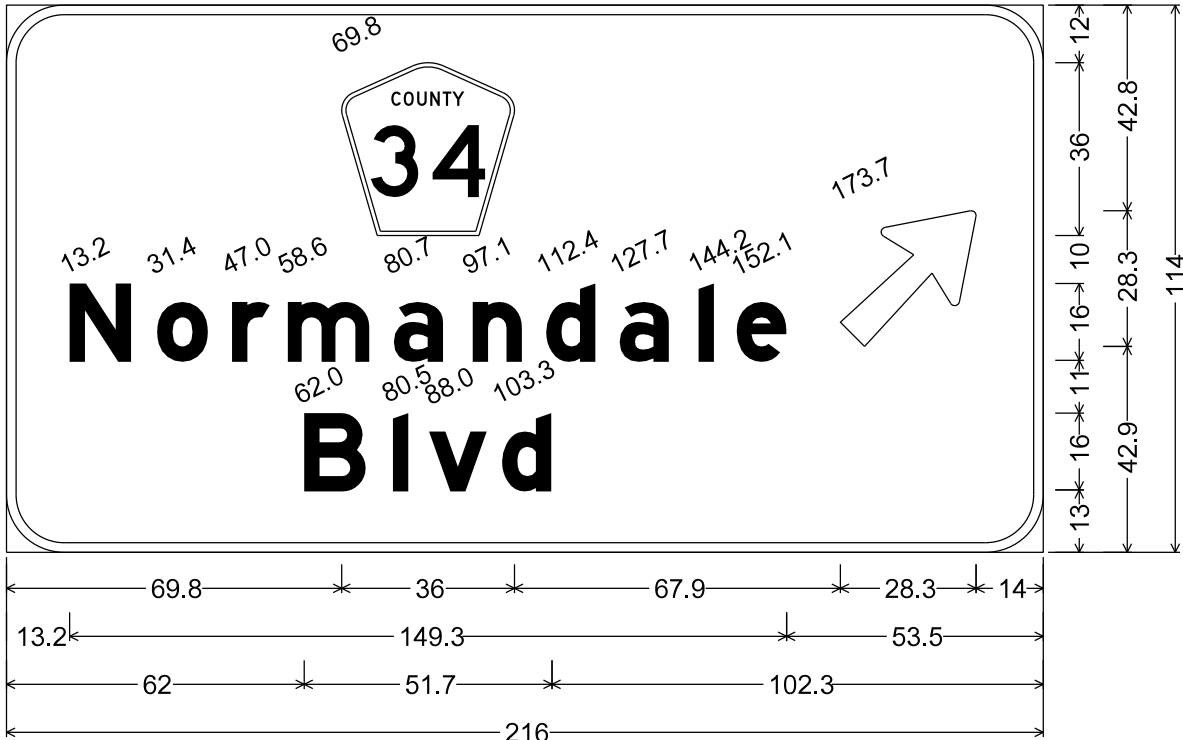
OH 369-494(L);  
9.0" Radius, 2.0" Border, White on Green;  
[1/4 MILE] E Mod;



OH 369-494(R) ; 12.0" Radius, 2.0" Border, White on Green;  
[Normandale] E Mod; [Blvd] E Mod; Arrow 17 - 36.0" 60°;



OH 370-494(L); 12.0" Radius, 2.0" Border, White on Green;  
[E Bush Lake] E Mod; [Rd] E Mod; [ 1/4 MILE] E Mod;



OH 370-494(R) ; 12.0" Radius, 2.0" Border, White on Green;  
[Normandale] E Mod; [Blvd] E Mod; Arrow 17 - 36.0" 45°;

SEE SHEET 42 FOR NOTES

DRAWN BY:

CHECKED BY: RAS

CERTIFIED BY

Michael B. Weiss  
LICENSED PROFESSIONAL ENGINEER

LIC. NO. 10502

DATE 2/5/2013

TYPE OH SIGN PANELS

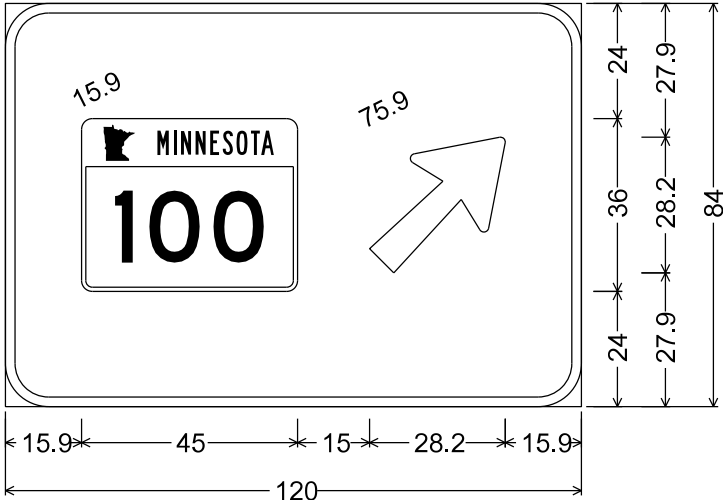
STATE PROJ. NO.

SHEET NO. 40 OF 73 SHEETS

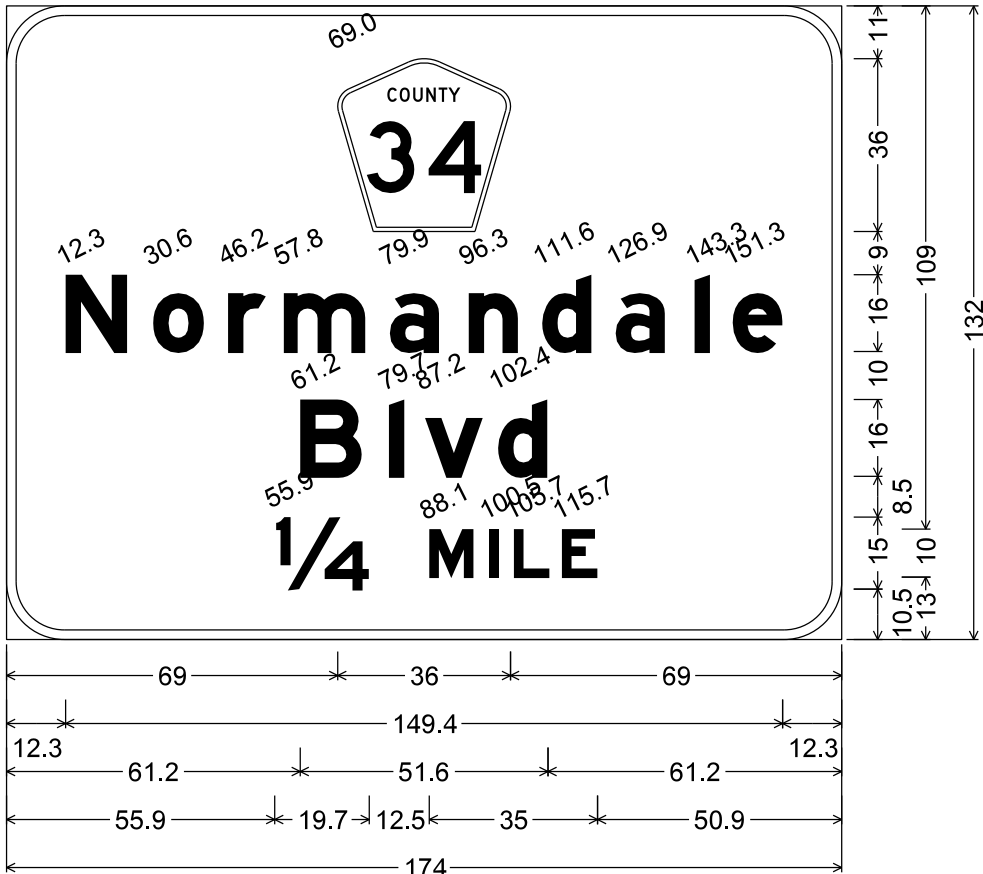


PLOTTED/REVISED: 2/5/2013

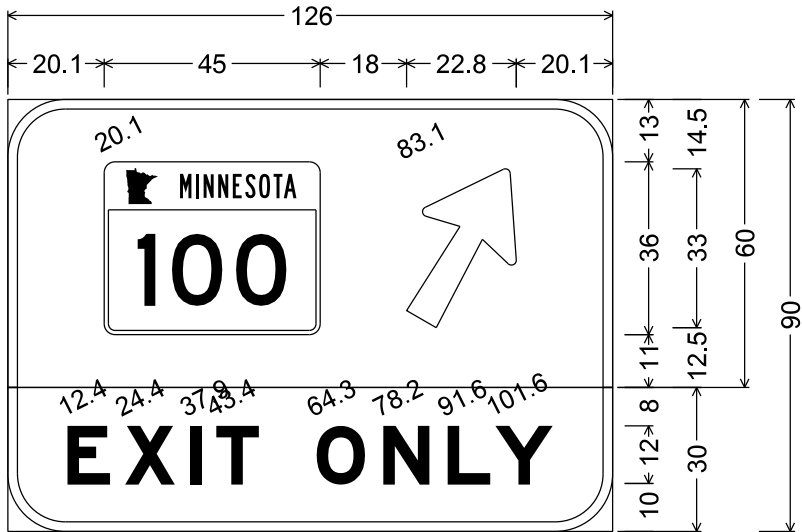
DISTRICT #: METRO  
 IPLOT NAME: PANELS\_SP\*6  
 PATH & FILENAME: IP\_PWP-d143240\ PANELS\_SP\*.dgn



OH 371-494;  
 9.0" Radius, 2.0" Border, White on Green;  
 Arrow 17 - 36.0" 45°;



OH 372-494(L); 12.0" Radius, 2.0" Border, White on Green;  
 [Normandale] E Mod; [Blvd] E Mod; [ 1/4 MILE] E Mod;



OH 372-494(R);  
 12.0" Radius, 2.0" Border, White on Green;  
 Arrow 17 - 36.0" 60°;  
 12.0" Radius, 2.0" Border, White on Yellow;  
 [EXIT ONLY] Black E Mod;

SEE SHEET 42 FOR NOTES

TYPE OH SIGN PANELS

DRAWN BY:

CHECKED BY: RAS

CERTIFIED BY

Michael B. Weiss  
 LICENSED PROFESSIONAL ENGINEER

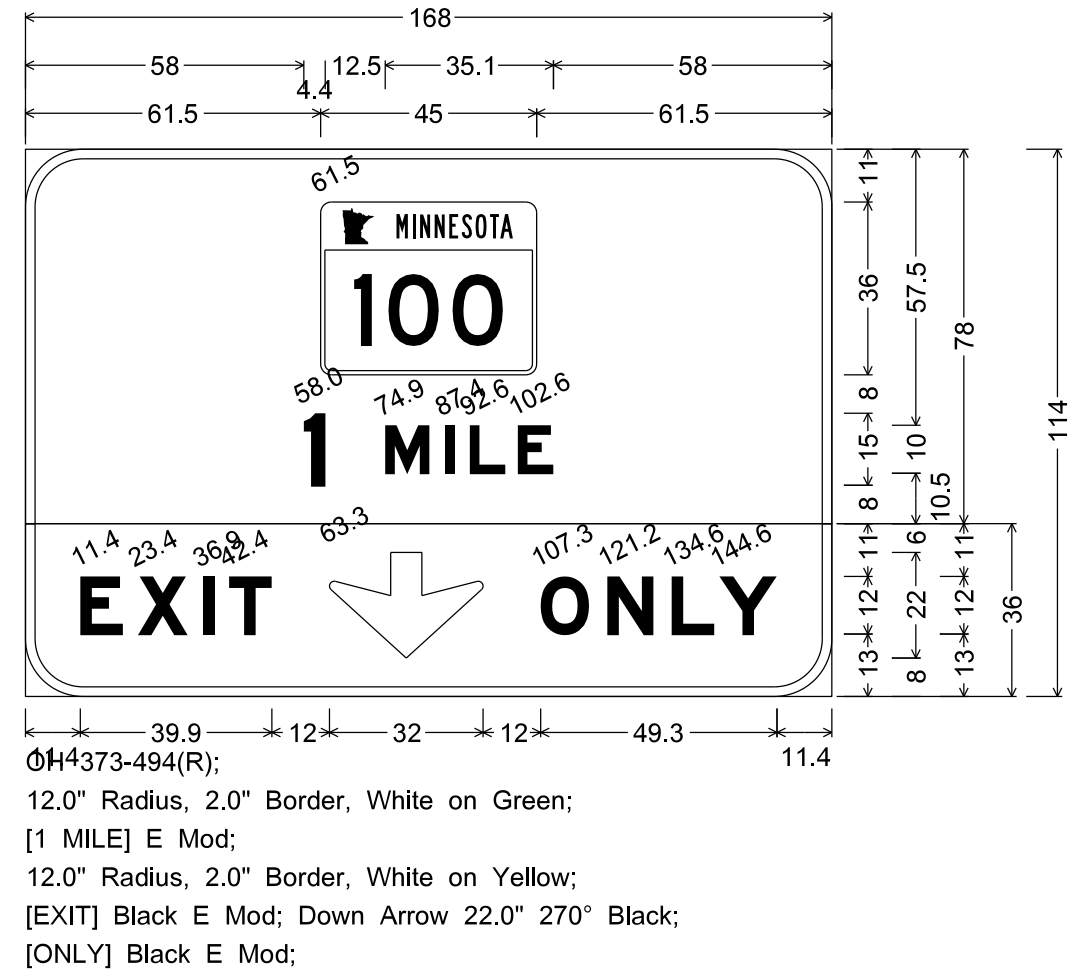
LIC. NO. 10502

DATE

2/5/2013

STATE PROJ. NO.

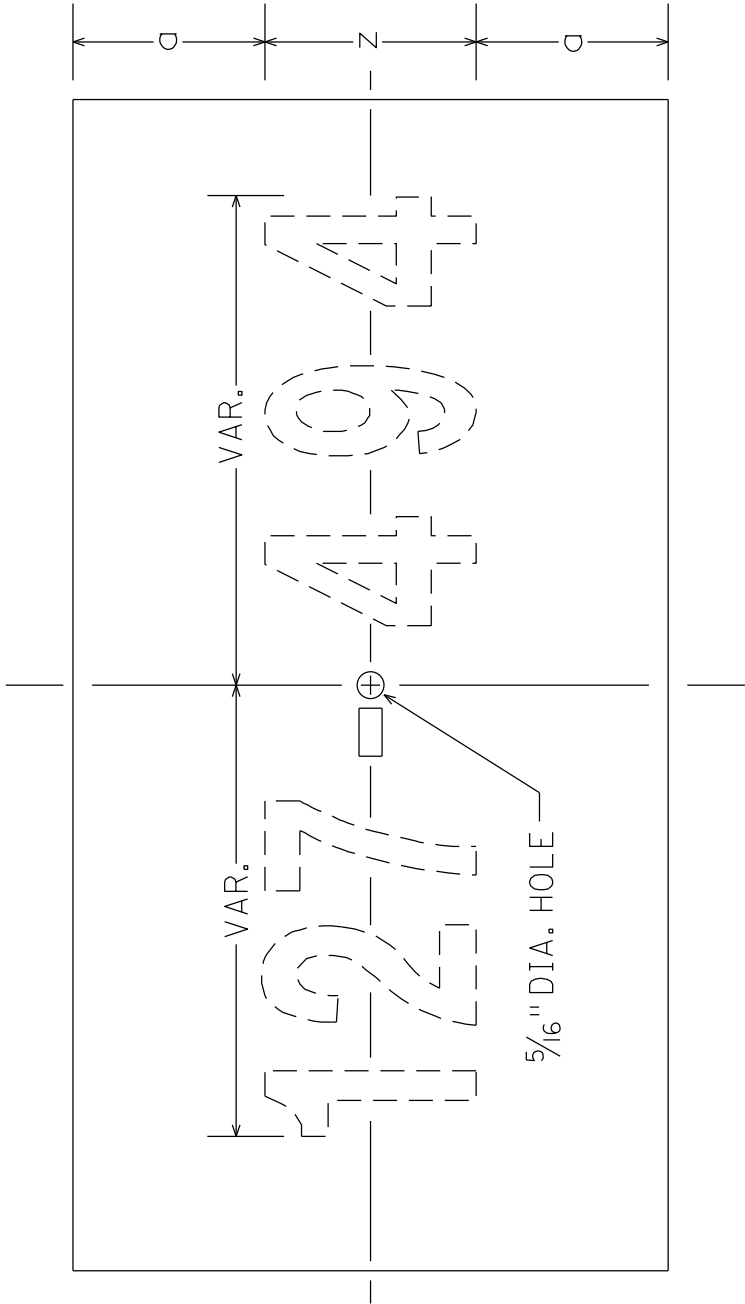
SHEET NO. 41 OF 73 SHEETS



- ØH4373-494(R);  
12.0" Radius, 2.0" Border, White on Green;  
[1 MILE] E Mod;  
12.0" Radius, 2.0" Border, White on Yellow;  
[EXIT] Black E Mod; Down Arrow 22.0" 270° Black;  
[ONLY] Black E Mod;

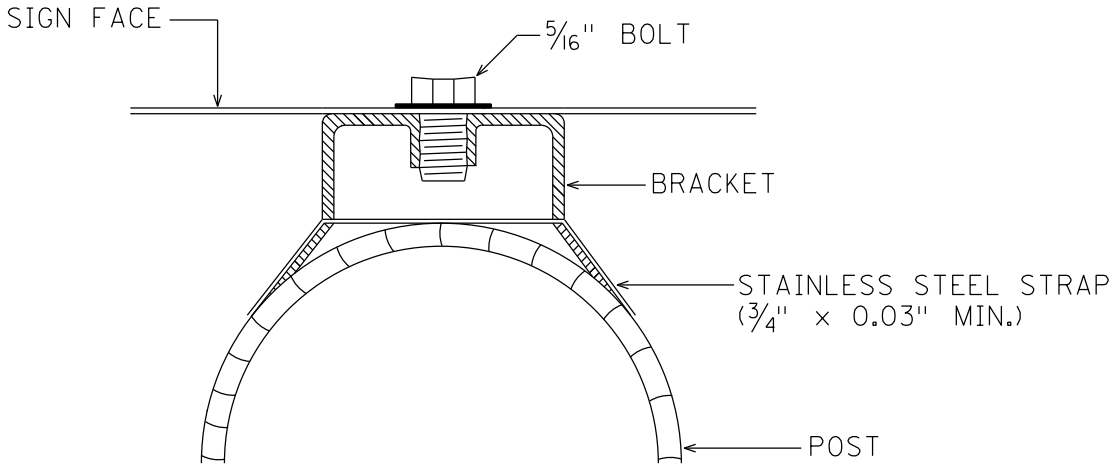
| SIZE<br>DIMENSION | 12x6 |
|-------------------|------|
| RADIUS            |      |
| MARGIN            |      |
| BORDER            |      |
| a                 | 2    |
| b                 |      |
| c                 |      |
| d                 |      |
| e                 |      |
| f                 |      |
| g                 |      |
| h                 |      |
| i                 |      |
| j                 |      |
| k                 |      |
| l                 |      |
| m                 |      |
| n                 |      |
| o                 |      |
| p                 |      |
| q                 |      |
| r                 |      |
| s                 |      |
| t                 |      |
| u                 |      |
| v                 |      |
| w                 |      |
| x                 |      |
| y                 |      |
| z                 | 2-C  |
| PUNCH CODE        |      |

STATE OF MINNESOTA  
DEPARTMENT OF TRANSPORTATION  
STANDARD SIGN DRAWING  
OH SIGN IDENTIFICATION  
PLATE



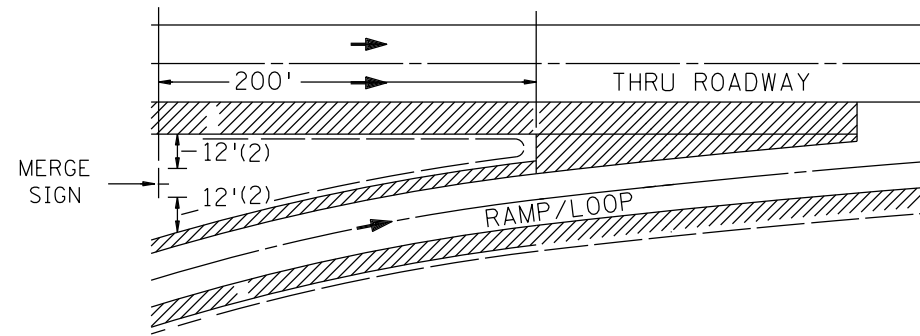
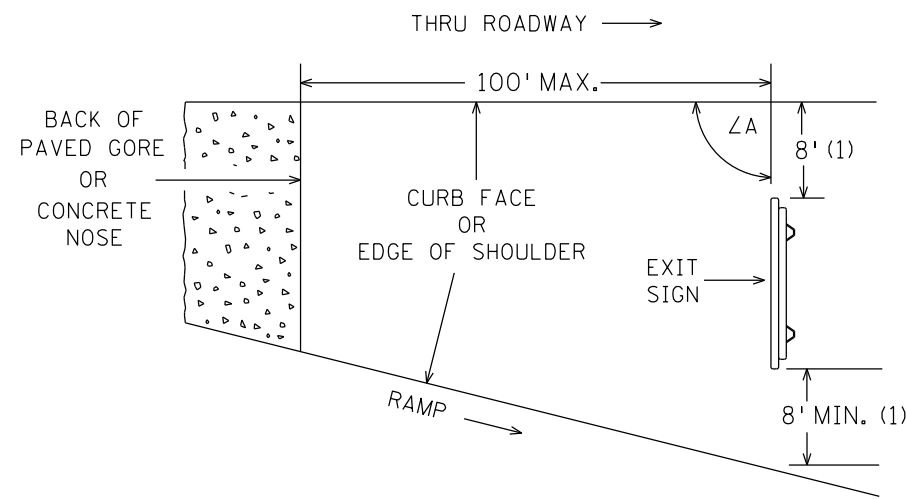
NOTES: 1) ALL DIMENSIONS AND SIZES SHOWN ARE IN INCHES.  
2) USE APPROPRIATE NUMERALS.  
3) PLATE MATERIAL - (MN/DOT 3352.2A1b).  
4) GREEN BACKGROUND - (MN/DOT 3352.2A2b).  
5) WHITE NUMERALS OR LETTERS - (MN/DOT 3352.2A2b).

GALVANIZED OR STAINLESS  
STEEL BRACKET, BOLT AND  
WASHER.



STRAP MOUNTING DETAIL

## GORE PLACEMENT



SPECIFIC NOTES:

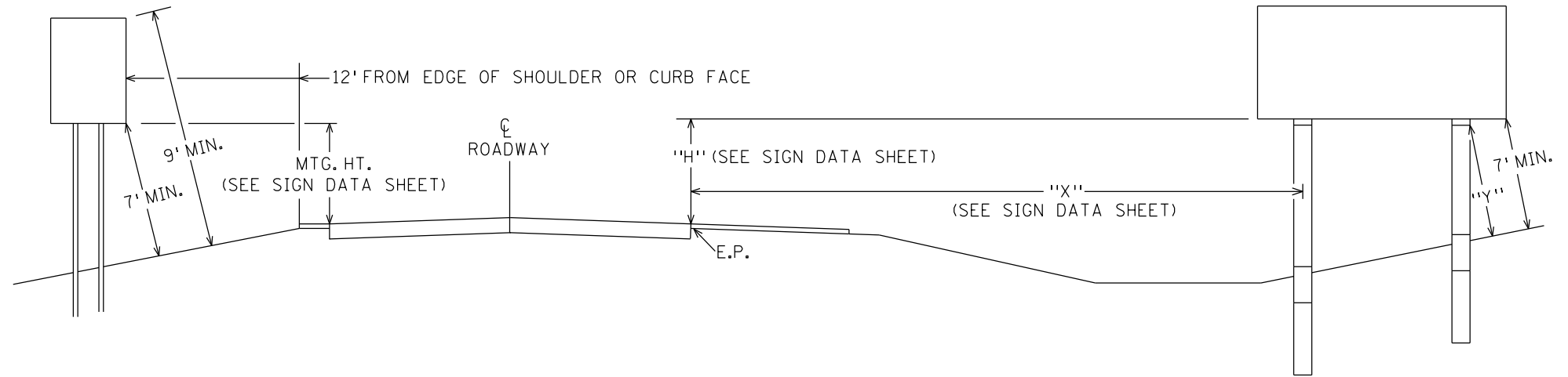
## (1) EXIT SIGNS

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 OTSO SIGNING UNIT.

(2) MERGE SIGNS

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 OTSO SIGNING UNIT.

## ROADSIDE PLACEMENT



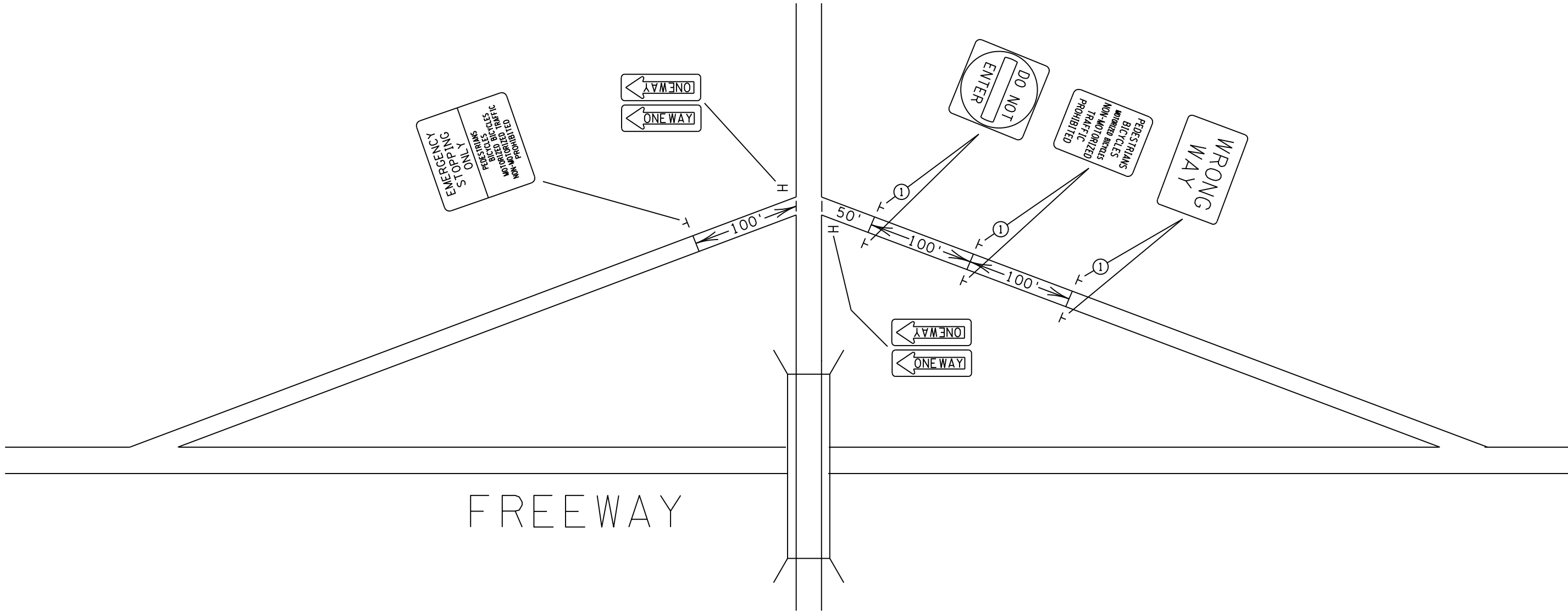
ROUTE MARKER, REGULATORY & WARNING SIGNS - TYPE C  
MINOR GUIDE SIGNS - TYPE D

## MAJOR GUIDE SIGN - TYPE A

NOTES:

1. IF A SECONDARY SIGN IS MOUNTED BELOW A MAJOR SIGN, THE MAJOR SIGN SHALL BE AT LEAST 8' ABOVE THE PAVEMENT EDGE AND THE SECONDARY SIGN AT LEAST 5'.
2. ALL ROUTE MARKERS, WARNING AND REGULATORY SIGNS SHALL BE AT LEAST 6' ABOVE PAVEMENT EDGE EXCEPT WHERE HEAVY PEDESTRIAN TRAFFIC IS ENCOUNTERED THEY SHALL BE 7'.
3. SIGN FACES SHALL BE VERTICAL.
4. OVERHEAD SIGNS SHALL BE POSITIONED AT RIGHT ANGLES TO THE THRU ROADWAY UNLESS OTHERWISE NOTED.
5. TO AVOID SPECULAR GLARE,  $\angle A$  SHALL BE APPROXIMATELY  $93^\circ$  FOR SIGNS LOCATED LESS THAN 30' FROM THE EDGE OF PAVEMENT AND APPROXIMATELY  $92^\circ$  FOR SIGNS LOCATED 30' OR MORE FROM EDGE OF PAVEMENT. THIS APPLIES TO SIGNS TYPE A, C, & D AND INCLUDES SIGNS IN THE GORE.
6. "Y" IS THE PERPENDICULAR DISTANCE FROM THE GROUND LINE TO THE FRICTION FUSE ON THE POST. THIS DISTANCE SHALL BE AT LEAST 7'.
7. WHERE "X" IS LESS THAN 30', "H" SHALL BE  $7' \pm 6''$ . WHERE "X" IS 30' OR GREATER, MINIMUM AND PREFERRED "H" IS 5'.
8. LATERAL CLEARANCES GIVEN APPLY TO RIGHT AND OR LEFT SIDE INSTALLATION.
9. WHEN A TYPE A SIGN IS INSTALLED DIRECTLY BEHIND TRAFFIC BARRIER, THE LEFT EDGE OF THE SIGN PANEL SHALL BE LOCATED A MINIMUM OF 4 FEET BEHIND THE FACE OF THE TRAFFIC BARRIER.

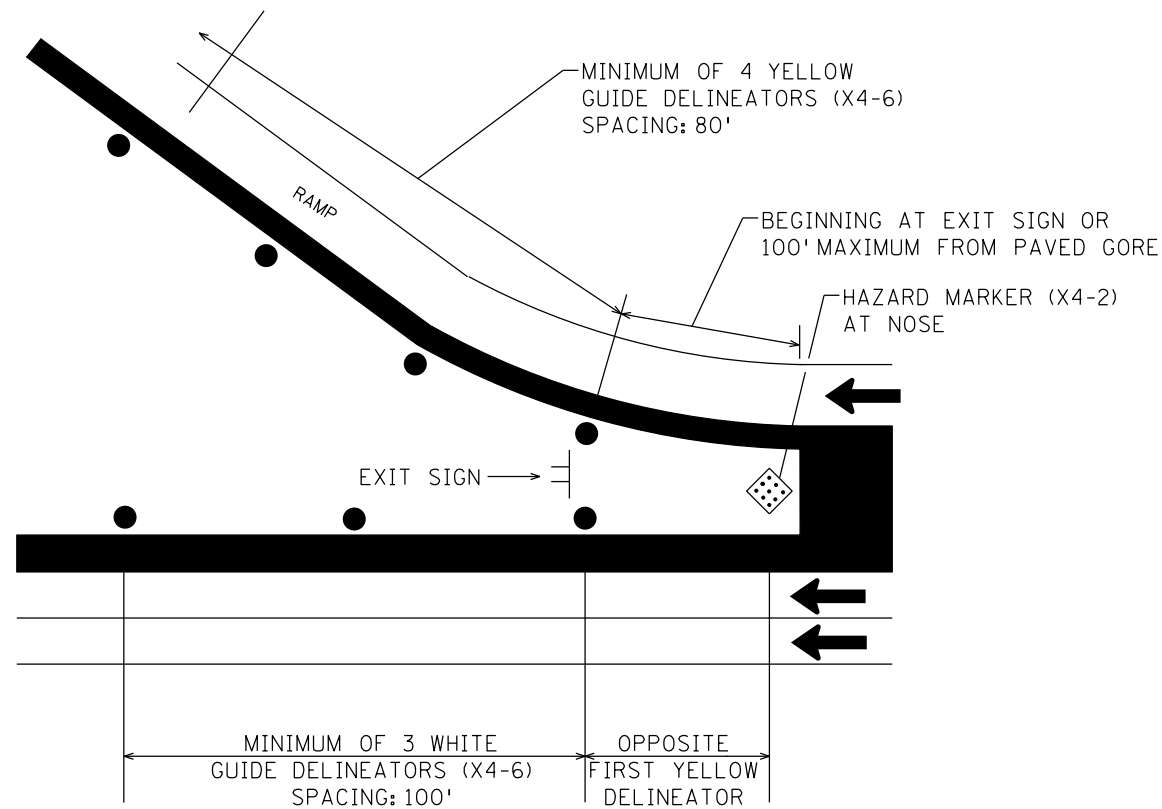
## SIGN PLACEMENT



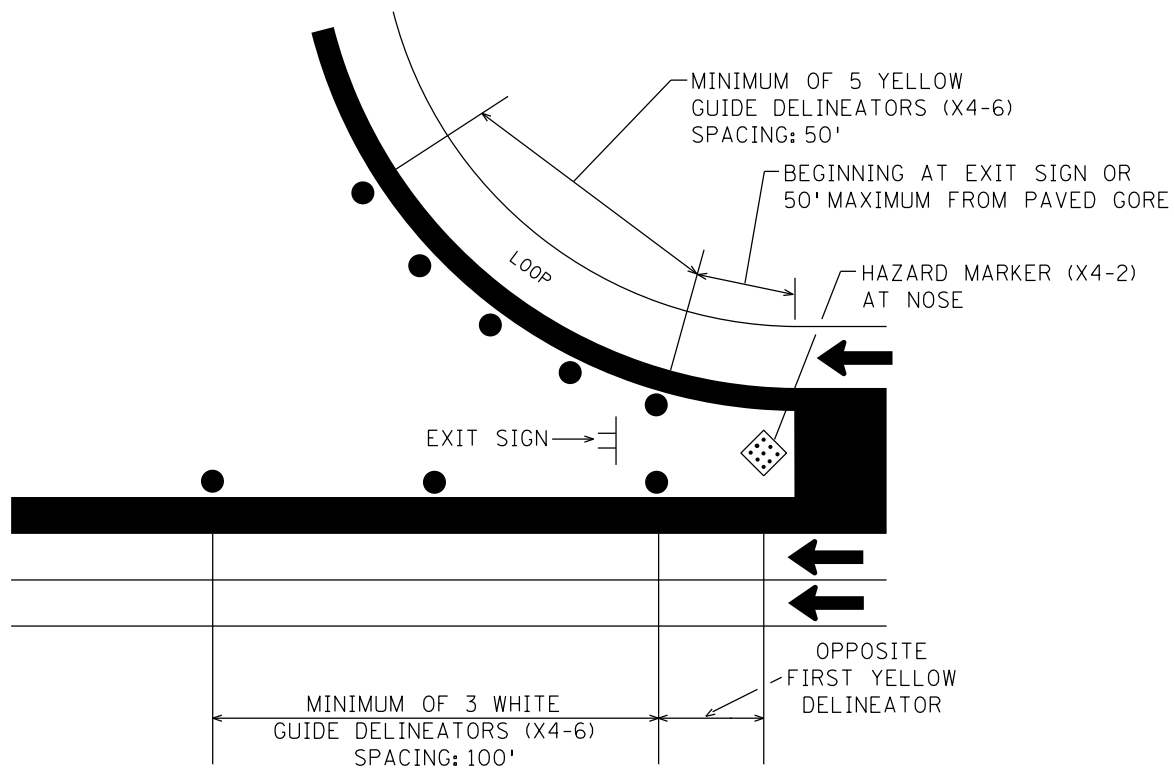
① ADDITIONAL SIGN REQUIRED WHEN RAMP IS 3 LANES OR WIDER

STANDARD SIGN PLACEMENT  
 REGULATORY, WRONG WAY, AND EXCLUSION SIGNS  
 ON FREEWAY DIAMOND INTERCHANGE RAMPS

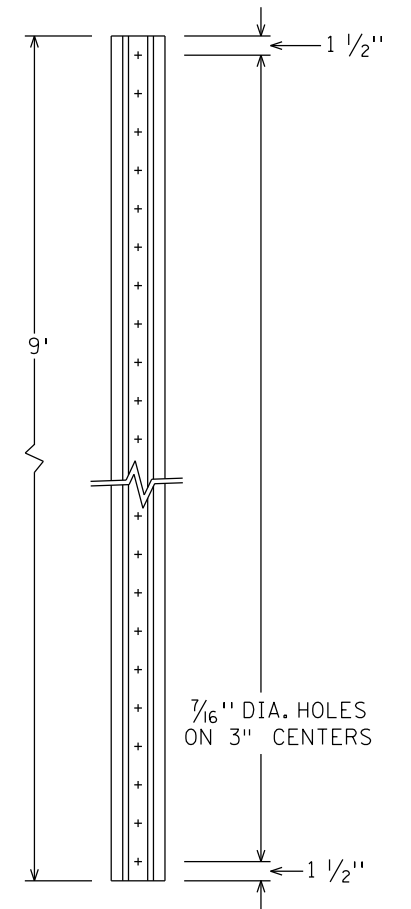
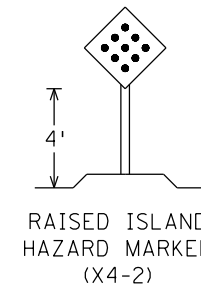
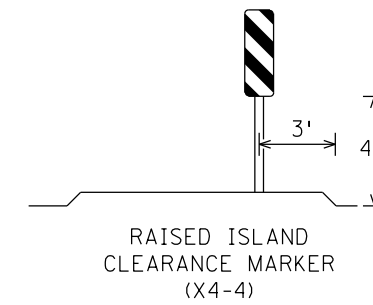
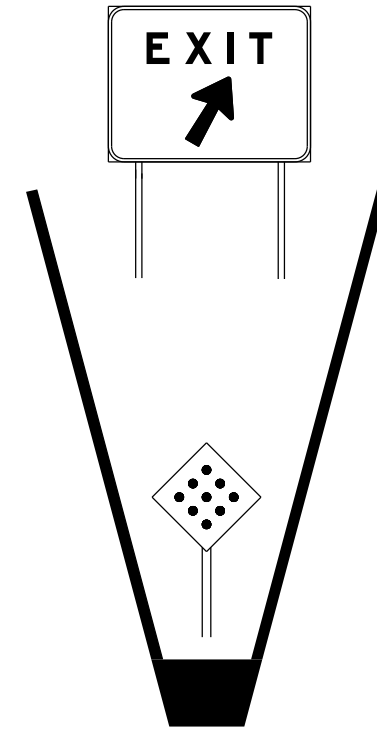
PLOTTED/REVISED: 2/5/2013



PLAN A  
RAMP DELINEATION

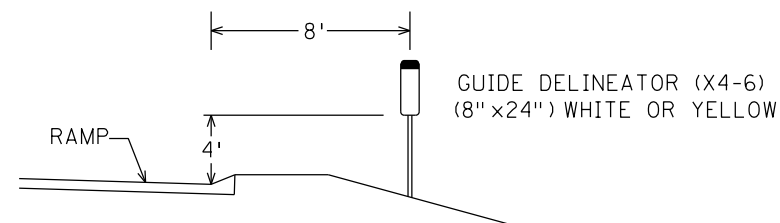
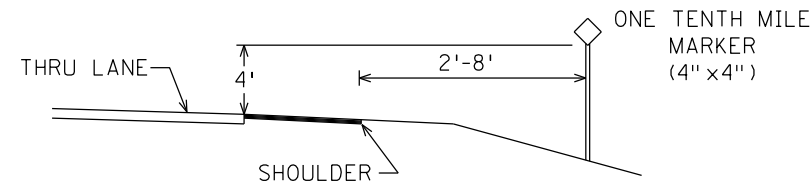


PLAN B  
LOOP DELINEATION

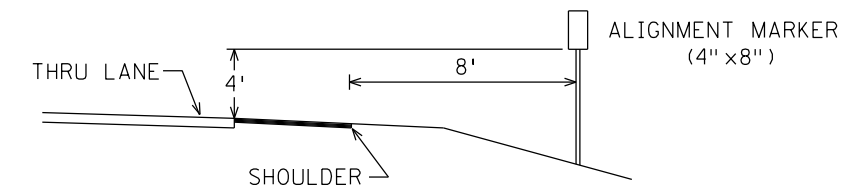
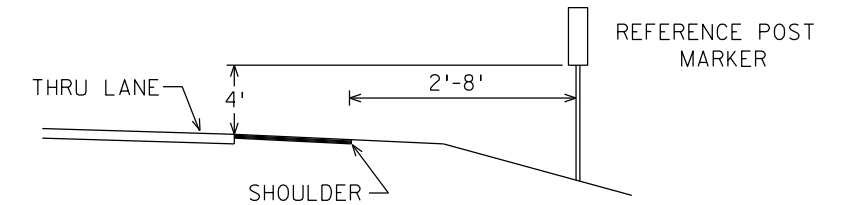


MN/DOT 3401  
NORMAL WEIGHT= 2 LB./FT.

DELINEATOR POST

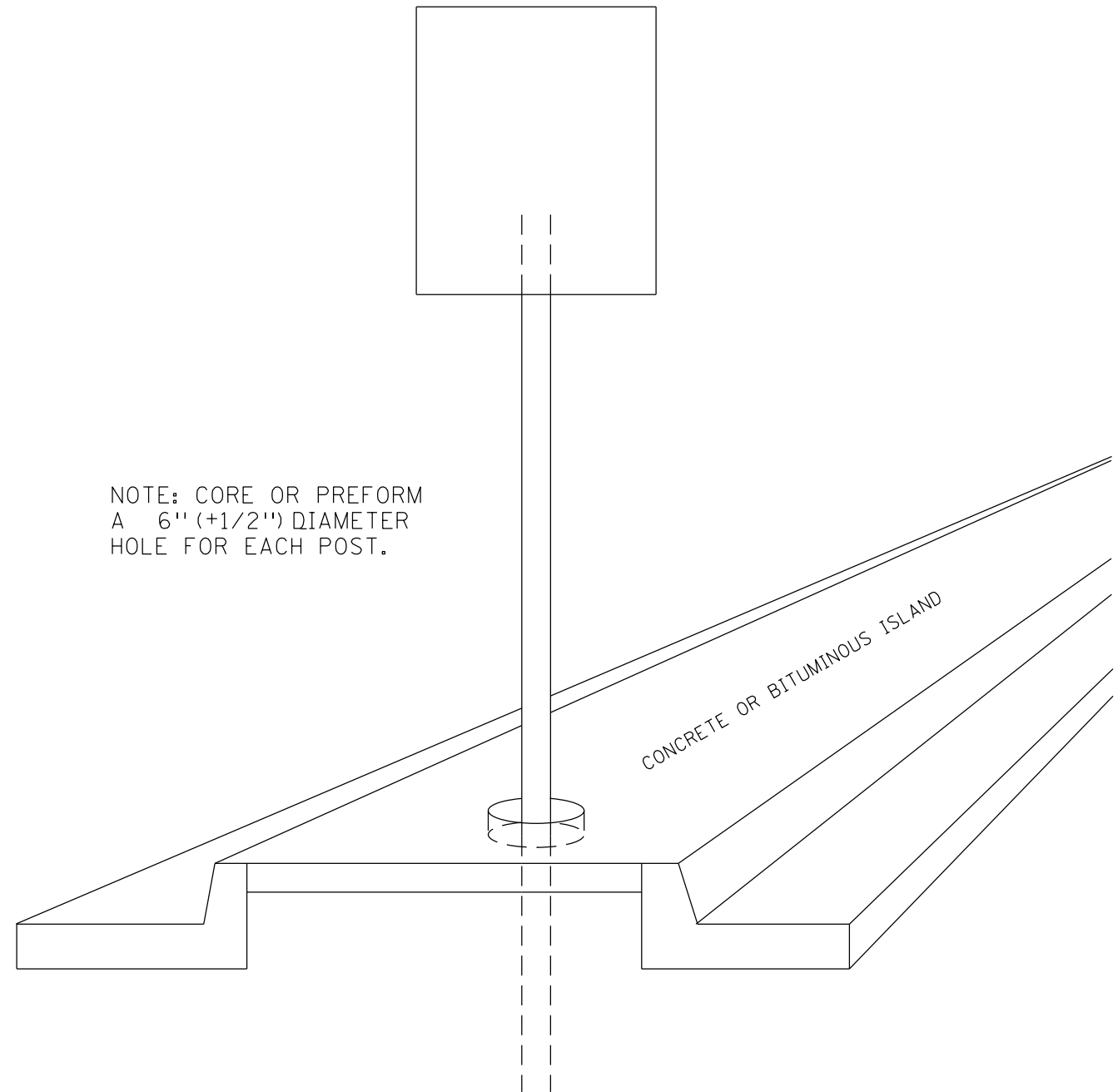


TYPICAL PLACEMENT



DELINEATORS AND MARKERS

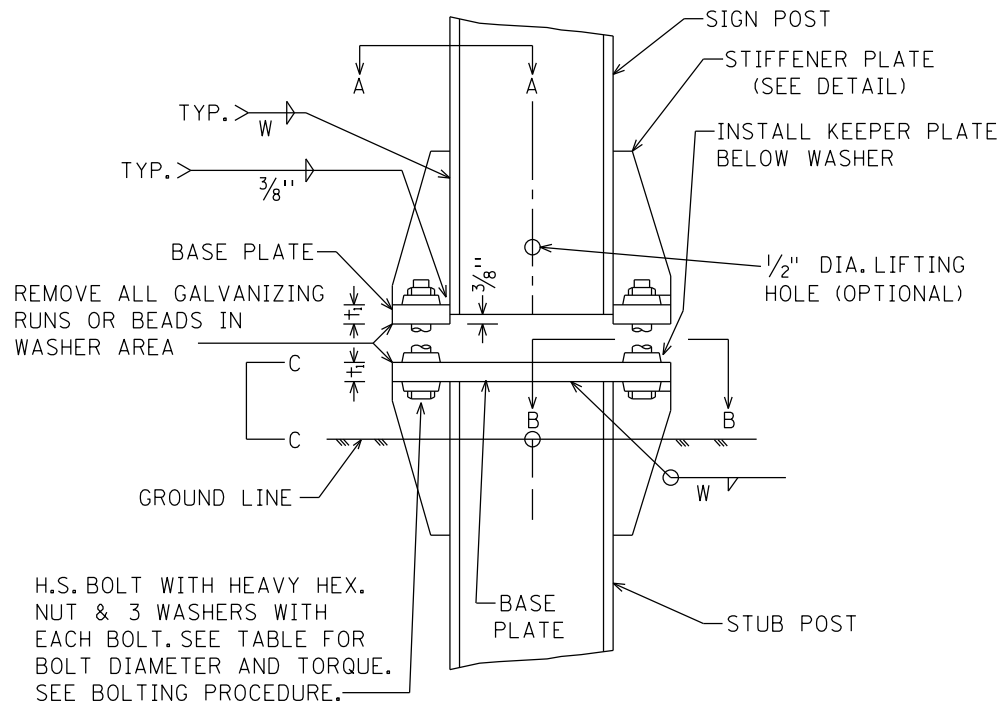




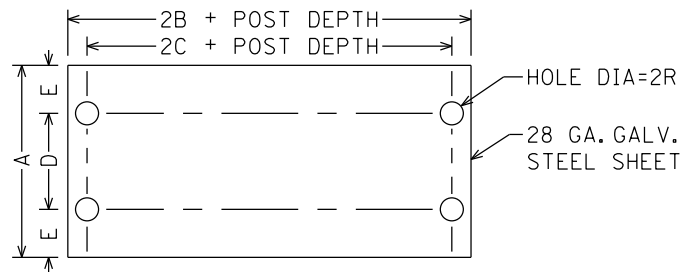
FLANGED CHANNEL POST MOUNTED THROUGH SURFACED  
MEDIAN OR SIDEWALK

DISTRICT #: METRO  
IPLOT NAME: STD STD\*8  
PATH & FILENAME: IP\_PWP-d143240\STD STD\*.dgn

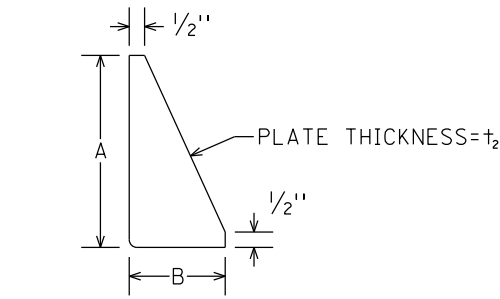
PLOTTED/REVISED: 2/5/2013



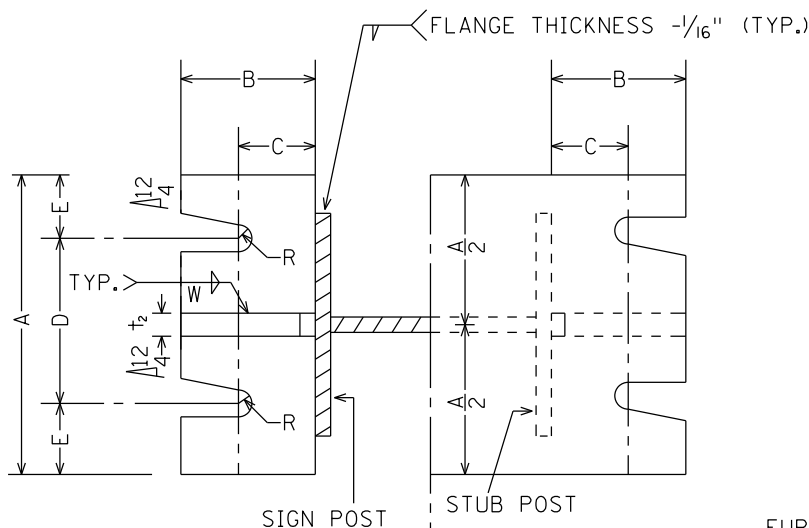
SIGN POST AND STUB POST  
ELEVATION



KEEPER PLATE

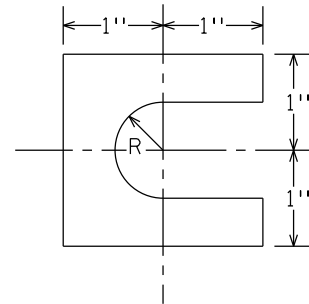


STIFFENER PLATE DETAIL  
(SEE TABLE FOR DIMENSIONS)



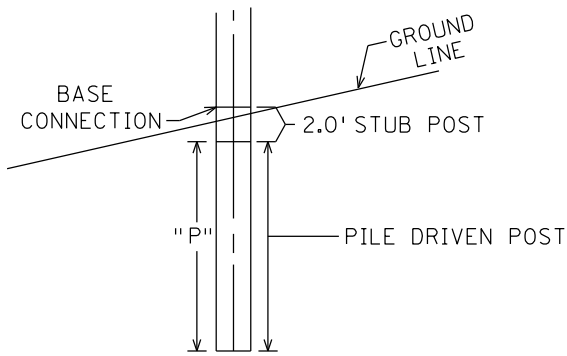
SECTION A-A SECTION B-B  
(SEE TABLE FOR DIMENSIONS)

SECTIONS SHOWN ARE FOR INSTALLATIONS ON  
RIGHT SHOULDER AND IN GORE. PLATE SLOT  
BEVELS ARE OPPOSITE HAND FROM THAT SHOWN  
FOR INSTALLATIONS ON LEFT SHOULDER.

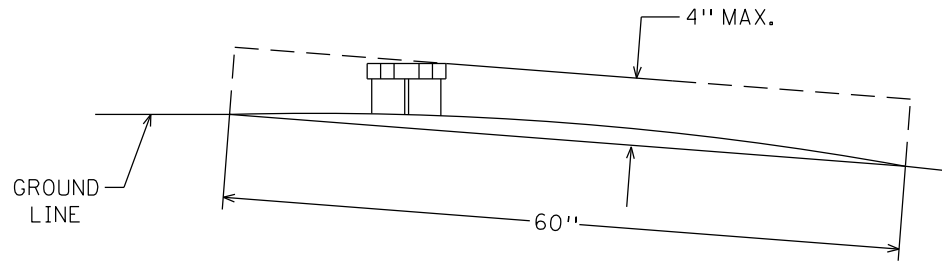


FURNISH TWO-.012"± THICK AND TWO-.032"± THICK  
SHIMS PER POST. SHIMS SHALL BE FABRICATED  
FROM BRASS SHIM STOCK OR STRIP CONFORMING  
TO A.S.T.M. B36.

SHIM DETAIL



H-PILE FOOTING



VIEW C-C

MAXIMUM PROJECTION OF STUB POST SHALL NOT  
EXTEND BEYOND A LINE, ABOVE AND 4" PARALLEL  
TO ANY CHORD, WHICH IS PERPENDICULAR TO (OR  
ALIGNED RADIALLY TO) THE CENTERLINE OF THE  
HIGHWAY AND HAS ITS (THE CHORD'S) END POINTS  
ON THE GROUND SURFACE ON OPPOSITE SIDES OF  
THE STUB POST.

SPECIFIC NOTES:

- ① MEASURED FROM TOP OF BASE PLATE
- ② OLD BEAM DEPTH = 10". NEW REVISED  
BEAM DEPTH = 9-7/8". KEEPER PLATES  
MUST BE FABRICATED ACCORDINGLY

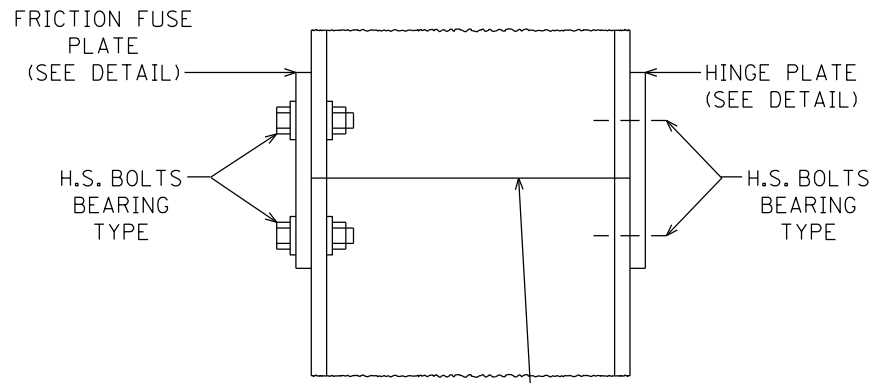
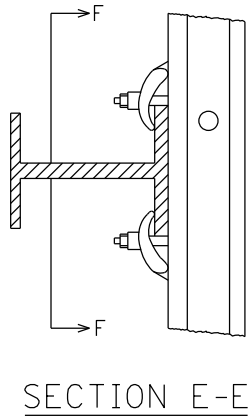
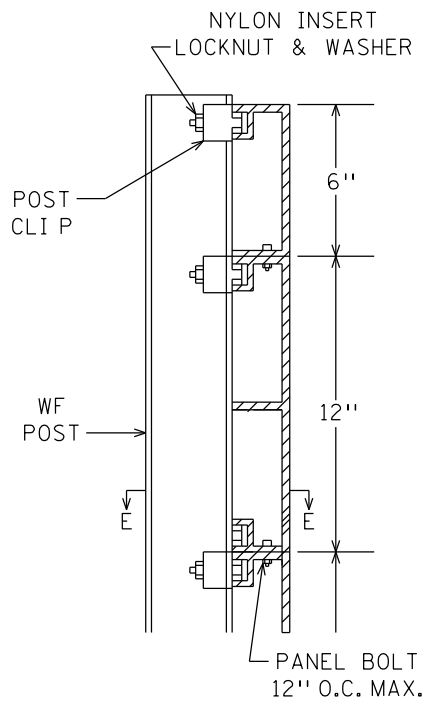
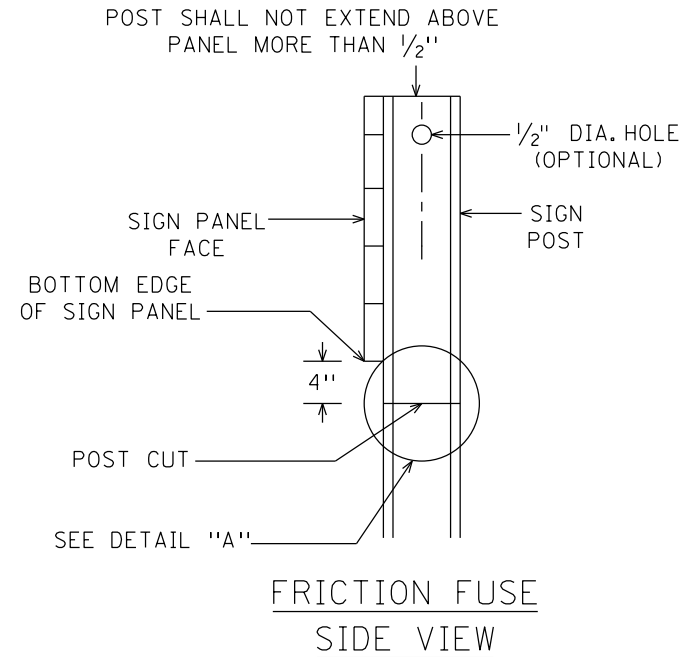
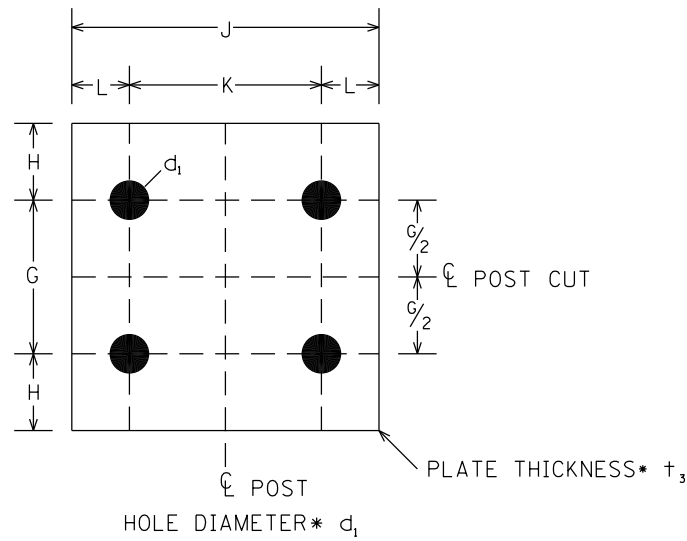
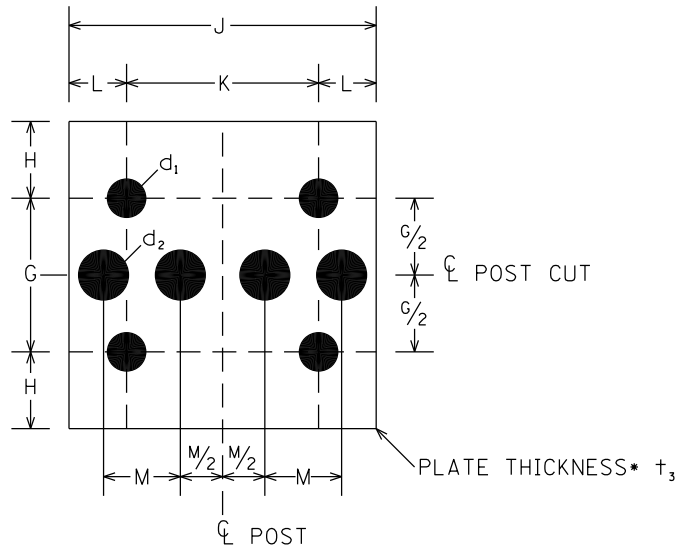
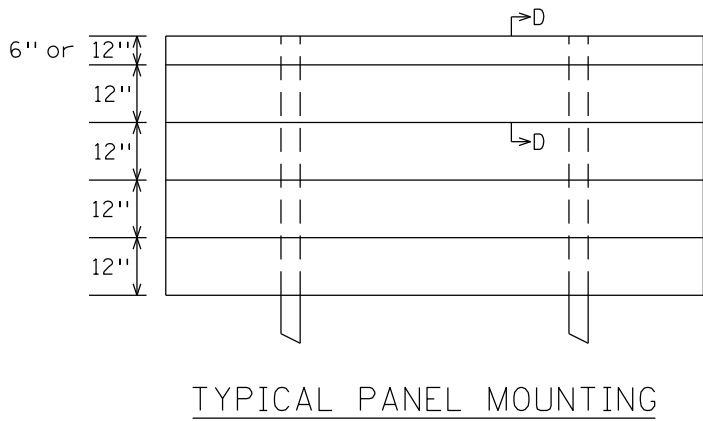
| DIMENSION<br><br>POST SIZE | BASE CONNECTION DATA           |    |        |        |        |        |                |                |       |        | FUSE AND HINGE PLATE DATA |        |        |        |        |        |                |                |                |              | FOOTING DATA          |                                  |
|----------------------------|--------------------------------|----|--------|--------|--------|--------|----------------|----------------|-------|--------|---------------------------|--------|--------|--------|--------|--------|----------------|----------------|----------------|--------------|-----------------------|----------------------------------|
|                            | BOLT SIZE<br>AND TORQUE        | A  | B      | C      | D      | E      | t <sub>1</sub> | t <sub>2</sub> | W     | R      | G                         | H      | J      | K      | L      | M      | d <sub>1</sub> | d <sub>2</sub> | t <sub>3</sub> | BOLT<br>DIA. | STUB POST<br>LENGTH ① | H PILE POST<br>"P" (MIN. LENGTH) |
| W4X13                      | 3/4" DIA. × 3-1/2"             | 6" | 2 1/2" | 1 1/2" | 3 1/2" | 1 1/4" | 1"             | 1/2"           | 1/4"  | 13/32" | 2"                        | 1 1/4" | 4"     | 2 1/4" | 7/8"   | 1"     | 1 1/16"        | 3/4"           | 3/8"           | 5/8"         | 2'                    | 12'                              |
| W5X16                      | TORQUE=600" #                  |    |        |        |        |        |                |                |       |        | 2 1/2"                    | 1 1/4" | 5"     | 2 3/4" | 1 1/8" | 1 1/8" | 1 3/16"        | 7/8"           | 3/8"           | 3/4"         | 2'                    | 12'                              |
| W6X20                      | 7/8" DIA. × 4-1/4"             | 8" | 3"     | 1 3/4" | 4"     | 2"     | 1 1/4"         | 1/2"           | 1/4"  | 15/32" | 2 1/2"                    | 1 1/4" | 6"     | 3 1/2" | 1 1/4" | 1 3/8" | 1 3/16"        | 1 1/8"         | 3/8"           | 3/4"         | 2'                    | 12'                              |
| W8X24                      | TORQUE=800" #                  |    |        |        |        |        |                |                |       |        | 2 1/2"                    | 1 1/2" | 6 1/2" | 3 1/2" | 1 1/2" | 1 1/2" | 1 5/16"        | 1 1/4"         | 1/2"           | 7/8"         | 2'                    | 12'                              |
| W8X28                      | 1" DIA. × 5"<br>TORQUE=1000" # | 8" | 3"     | 2"     | 4"     | 2"     | 1 1/2"         | 3/4"           | 5/16" | 17/32" | 2 1/2"                    | 1 1/2" | 6 1/2" | 3 1/2" | 1 1/2" | 1 5/8" | 1 1/16"        | 1 1/8"         | 1/2"           | 1"           | 2'                    | 12'                              |
| W8X31                      | 1-1/8" DIA. × 5"               | 9" | 3 1/2" | 2"     | 5"     | 2"     | 1 1/2"         | 3/4"           | 5/16" | 19/32" | 3"                        | 1 3/4" | 8"     | 5 1/2" | 1 1/4" | 2"     | 1 1/16"        | 1 1/2"         | 1/2"           | 1"           | 2'                    | 12'                              |
| ② W10X39                   | TORQUE=1200" #                 |    |        |        |        |        |                |                |       |        | 3"                        | 1 3/4" | 8"     | 5 1/2" | 1 1/4" | 1 7/8" | 1 3/16"        | 1 3/8"         | 1/2"           | 1 1/8"       | 2'                    | 12'                              |

TYPE A SIGN STRUCTURAL DETAILS

H-PILE FOOTING  
SHEET 1 OF 2

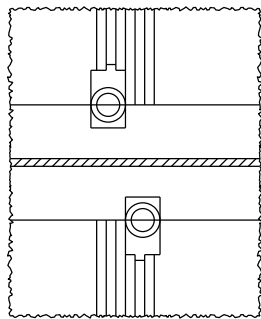


PLOTTED/REVISED: 2/5/2013



POST SHALL BE SAW CUT BEFORE GALVANIZING. USE H.S. BOLTS WITH HEX. HD., HEX. NUT, AND TWO FLAT WASHERS.

- GENERAL NOTES:
- STRUCTURAL STEEL SHALL CONFORM TO MN/DOT 3308. REINFORCING BARS SHALL CONFORM TO MN/DOT 3301. SPIRALS SHALL CONFORM TO MN/DOT 3305-NO SPLICES. HIGH STRENGTH BOLTS SHALL CONFORM TO A.S.T.M.-A325.
  - FORMS WILL BE REQUIRED FOR THE EXPOSED VERTICAL SURFACES OF THE FOOTINGS.
  - REFER TO "SIGN DATA" SHEET FOR SPECIFIC DATA ON EACH INDIVIDUAL SIGN INSTALLATION.
  - FRICTION FUSE PLATE SHALL BE INSTALLED ON SIDE OF POST FACING TRAFFIC.
  - ALL POST CUTS SHALL BE SAW CUTS. PLATES MAY BE SHEARED OR FLAME CUT USING A MECHANICALLY GUIDED CUTTING TORCH. EDGE PREPARATION SHALL BE IN ACCORDANCE WITH MN/DOT 2471.3C4 AND MN/DOT 2471.3d4.



NOTE: POST CLIPS SHALL BE INSTALLED ON BOTH SIDES OF EACH POST AT EACH PANEL JOINT AS INDICATED.

| BOLT SIZE   | MIN. RESIDUAL BOLT TENSION |
|-------------|----------------------------|
| 1/2" DIA.   | 12,050#                    |
| 5/8" DIA.   | 19,200#                    |
| 3/4" DIA.   | 28,400#                    |
| 7/8" DIA.   | 39,250#                    |
| 1" DIA.     | 51,500#                    |
| 1-1/8" DIA. | 56,450#                    |

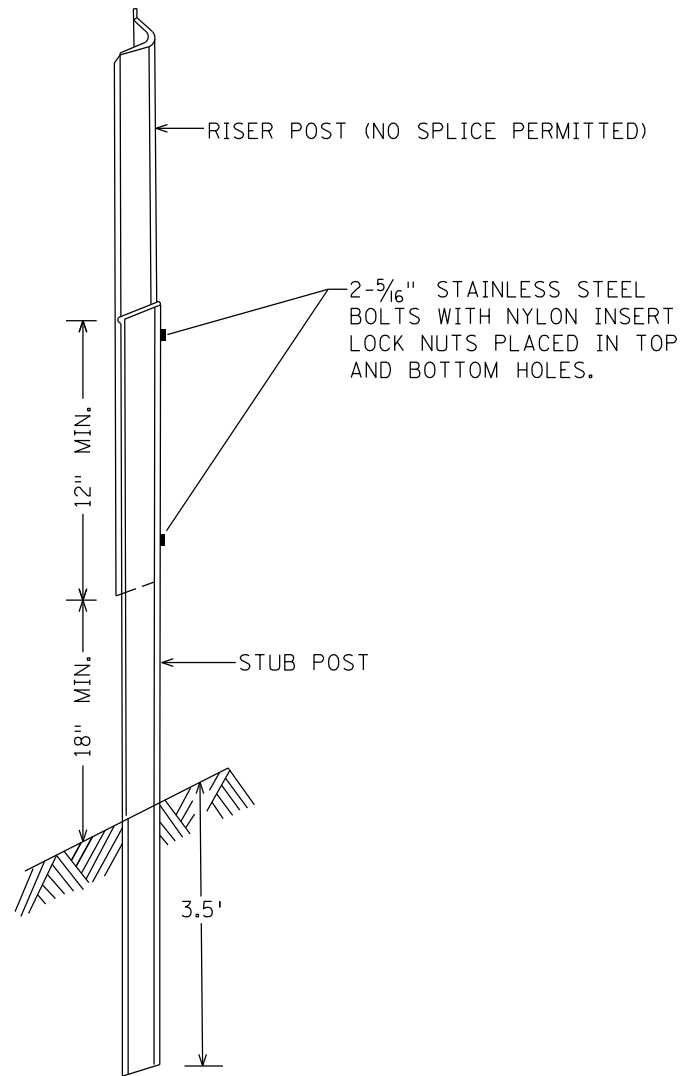
## TYPE A SIGN STRUCTURAL DETAILS

SHEET 2 OF 2

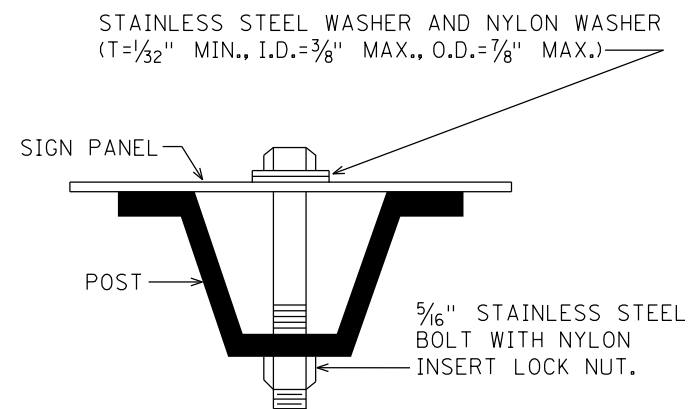
PLOTTED/REVISED: 2/5/2013

DISTRICT #: METRO  
IPLOT NAME: STD STD\*  
PATH & FILENAME: IP\_PWP-d143240\STD STD\*.dgn

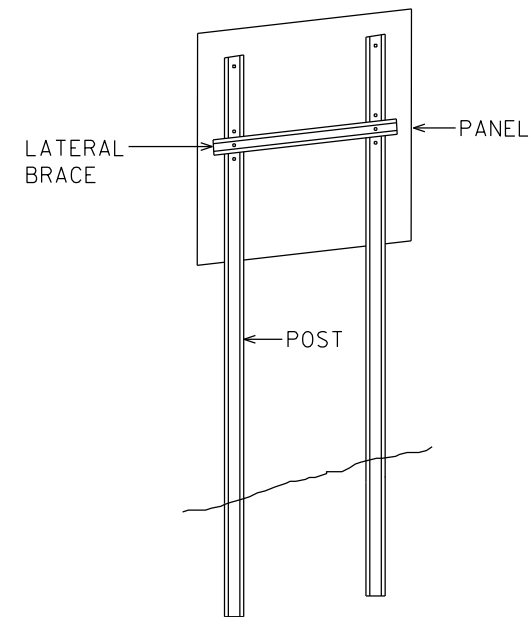
## TYPE C & D POST



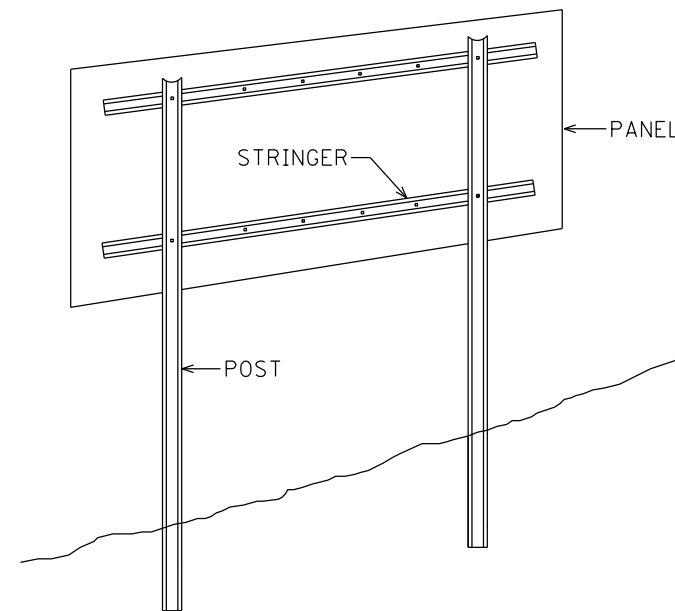
U POST SPLICE



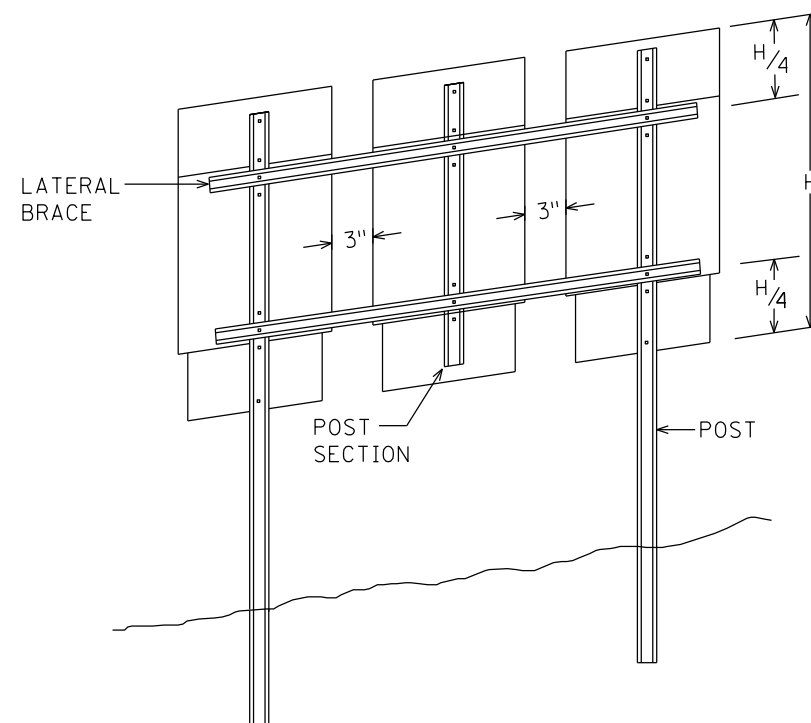
U POST MOUNTING  
TYPE C SIGNS



TYPICAL TYPE C INSTALLATION



TYPICAL TYPE D INSTALLATION



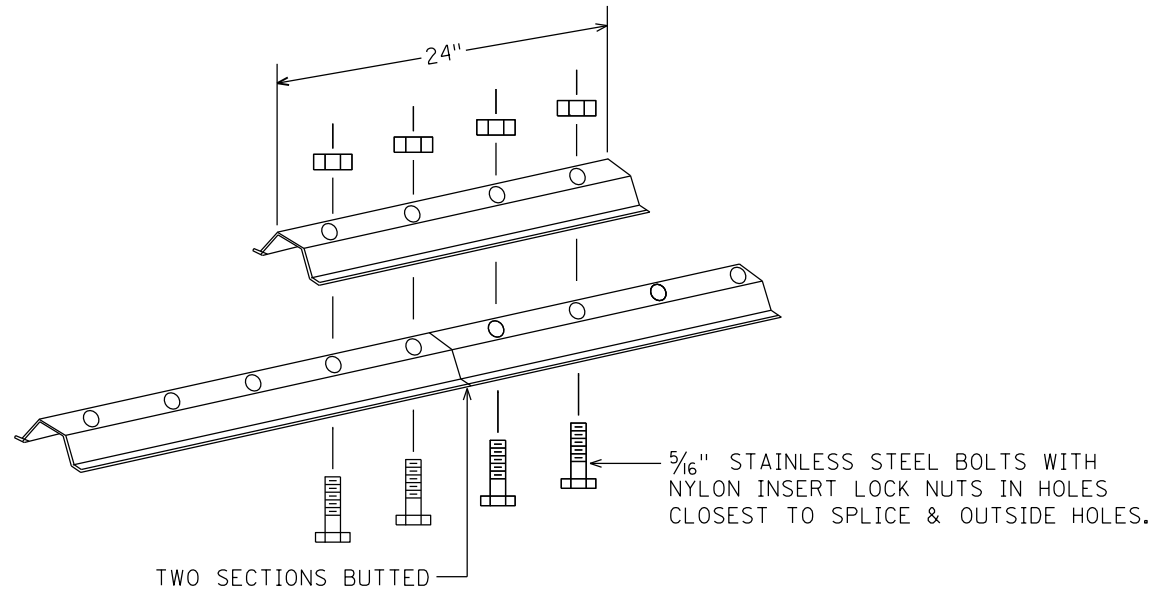
MODIFIED TYPE C INSTALLATION

## NOTES:

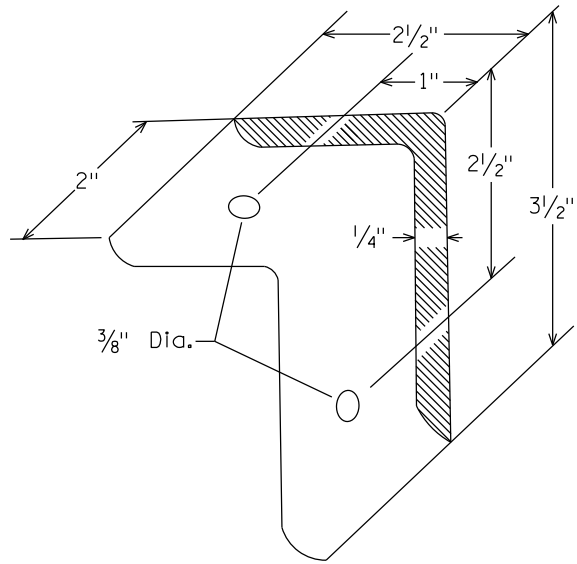
1. USE 3# STUB POSTS, RISER POSTS, STRINGERS, KNEE BRACES, LATERAL BRACES AND KNEE BRACE STUB POSTS. ALL SHALL CONFORM TO MN/DOT 3401.
2. FOR TYPE D SIGN POSTS LENGTHS AND SPACINGS, SEE SIGN DATA SHEET.
3. TYPE D SIGN PANELS SHALL BE BOLTED TO STINGERS AT 24" MAXIMUM INTERVALS IN ACCORDANCE WITH THE TYPE D STRINGER AND PANEL-JOINT DETAIL (SEE STANDARD SIGNS MANUAL).
4. MOUNTING (PUNCH CODE) FOR TYPE C SIGN PANELS SHALL BE AS INDICATED IN THE STANDARD SIGNS MANUAL UNLESS OTHERWISE SPECIFIED.
5. ALL RISER (VERTICAL) U POSTS SHALL BE SPLICED. DRIVEN STUB POSTS SHALL BE AT LEAST 7' LONG.
6. USE STAINLESS STEEL 5/16" BOLTS, WASHERS AND NYLON INSERT LOCK NUTS AS SHOWN FOR ALL GROUND MOUNTED AND OVERHEAD MOUNTED SIGNS.
7. STAINLESS STEEL WASHER WITH SAME DIMENSIONS SHALL BE PROVIDED BETWEEN ALL NYLON WASHERS AND BOLT HEADS.
8. BRACING STUBS SHALL BE NO MORE THAN 4" ABOVE GROUND AND EMBEDDED AT LEAST 3 1/2'.
9. A-FRAME BRACKET SHALL BE STEEL CONFORMING TO MN/DOT 3306 AND GALVANIZED IN ACCORDANCE WITH MN/DOT 3394.
10. COLLARS SHALL BE USED TO SHIM OVERLAYS AND DEMOUNTABLE LEGEND AWAY FROM PANEL WHERE INTERFERENCE WITH BOLT HEADS IS ENCOUNTERED. MN/DOT 3352.2A5.
11. 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.
12. 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.
13. 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 3

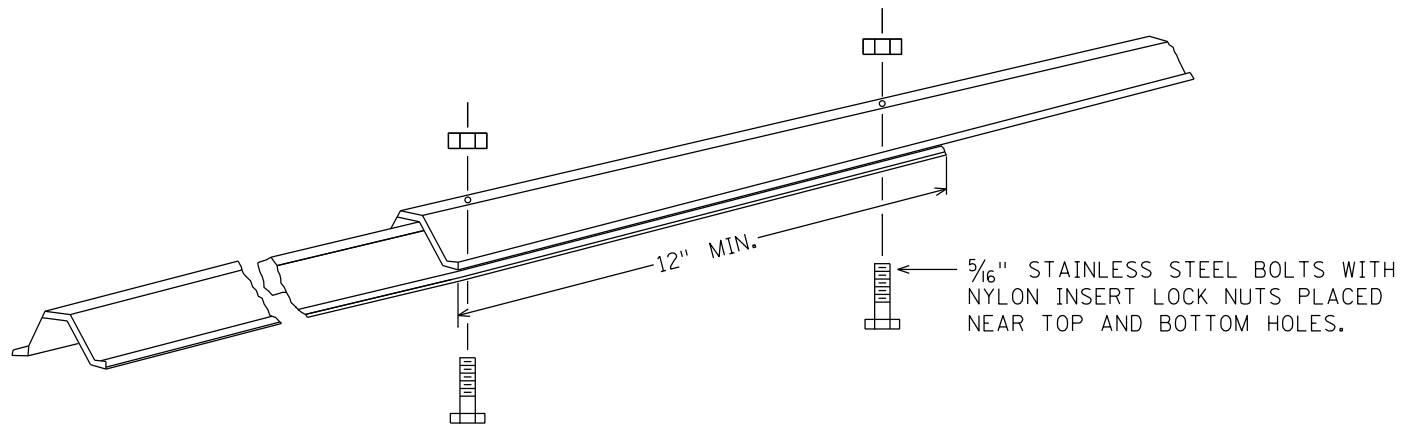


LATERAL BRACE OR STRINGER  
SPLICE DETAIL (EXPLODED VIEW)

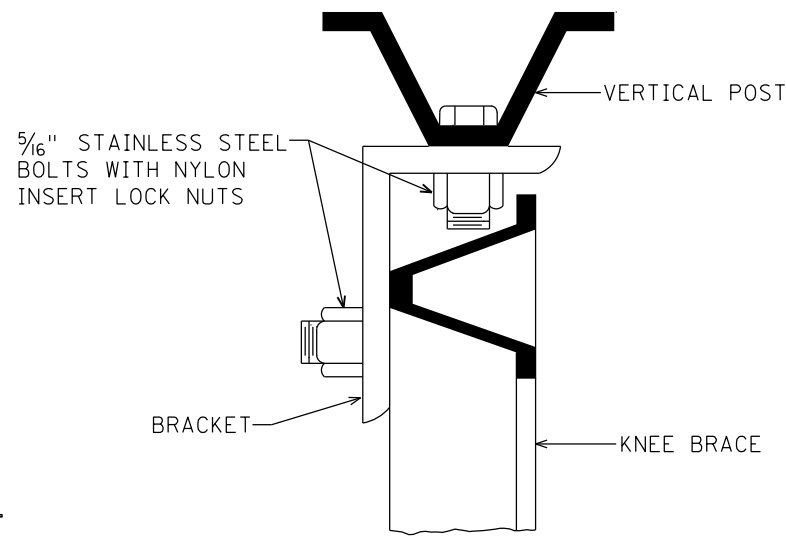


A-FRAME BRACKET

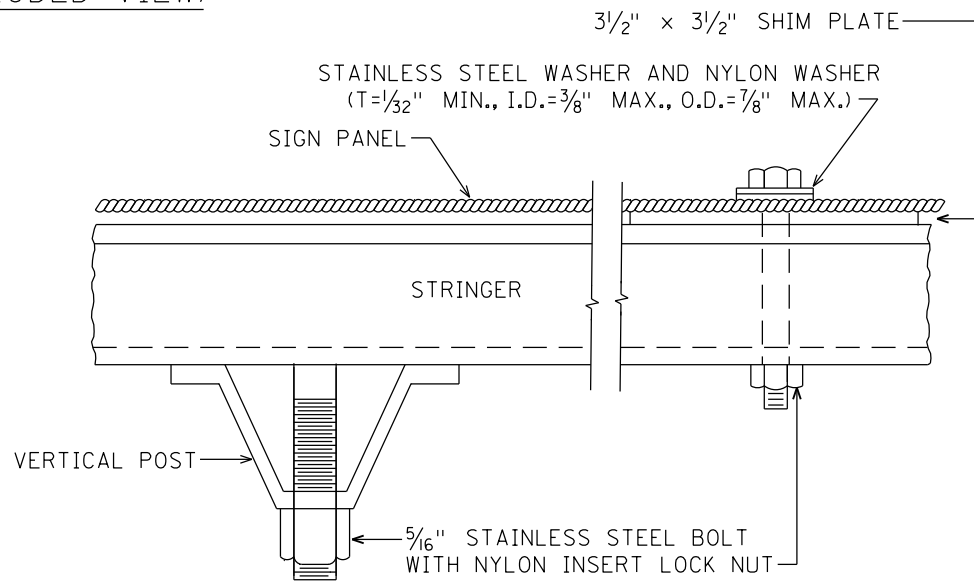
(STEEL MN/DOT 3306 GALVANIZED PER MN/DOT 3394)



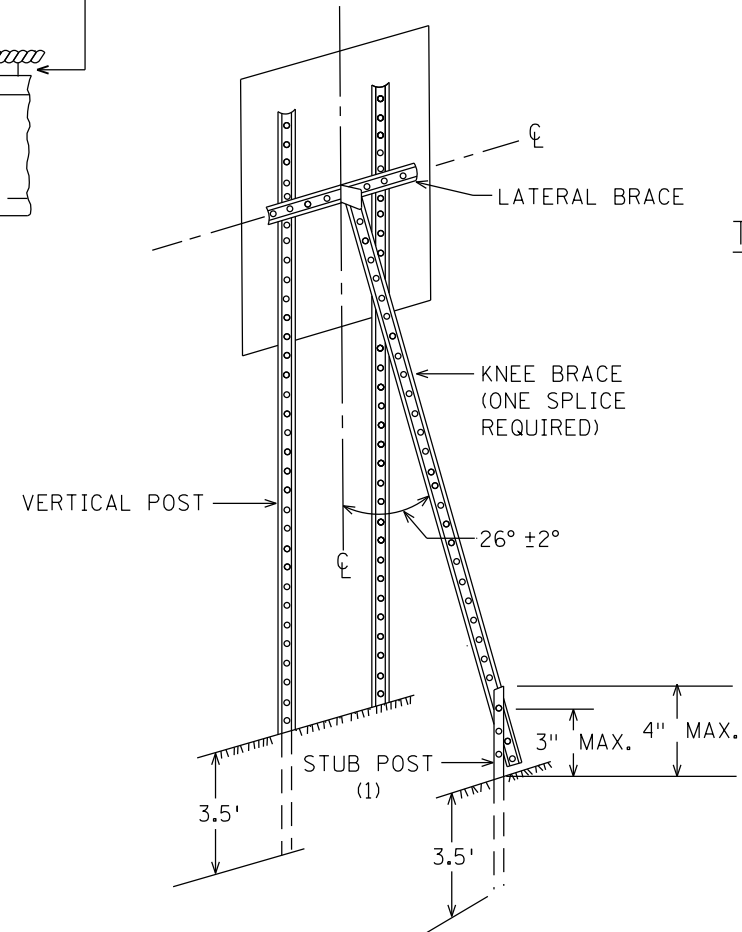
KNEE BRACE SPLICE



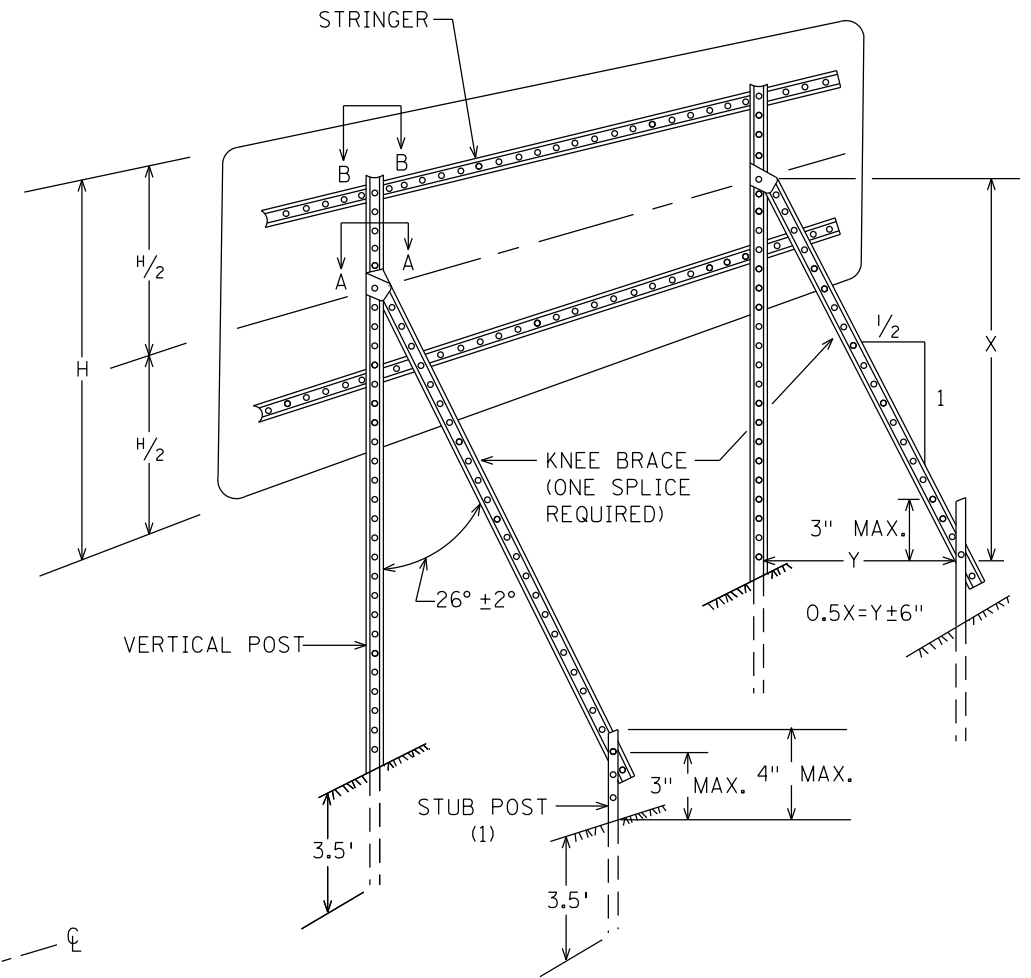
SECTION A-A



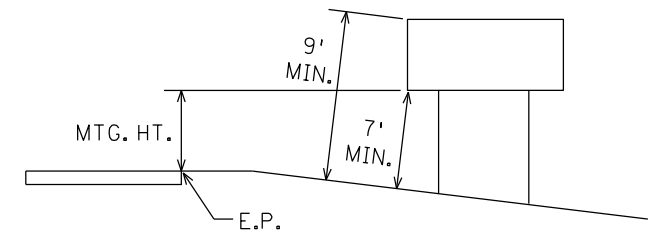
SECTION B-B



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



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

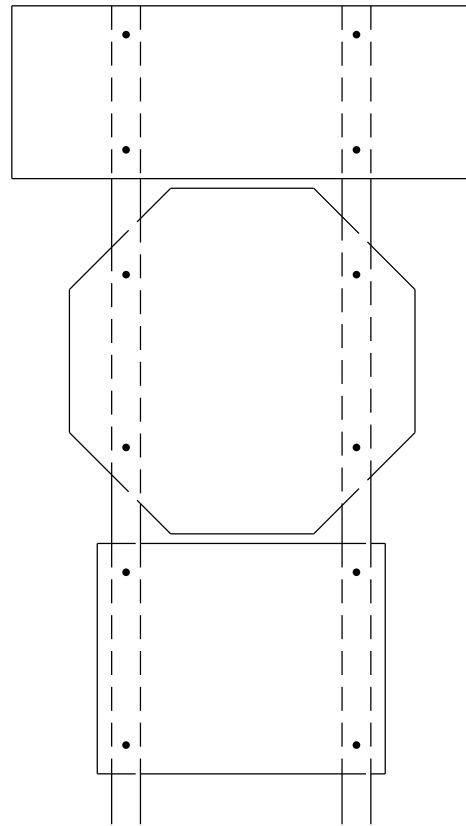


TYPICAL MOUNTING

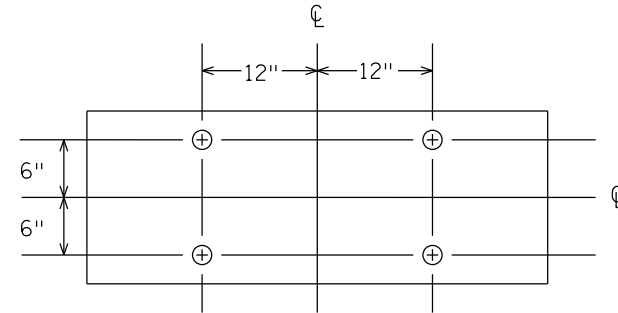
(1) OFFSET STUB POST 1' TOWARD ROADWAY  
RELATIVE TO VERTICAL POST. ATTACH STUB  
POST AND KNEE BRACE BACK TO BACK.

TYPE C & D SIGN  
STRUCTURAL DETAILS

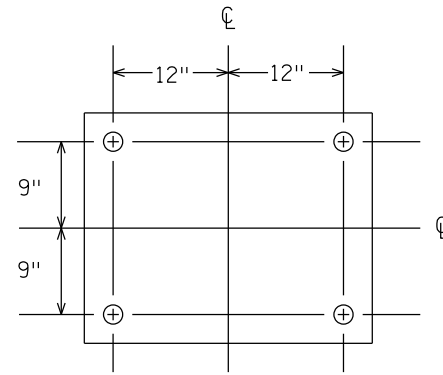
Sheet 2 of 3



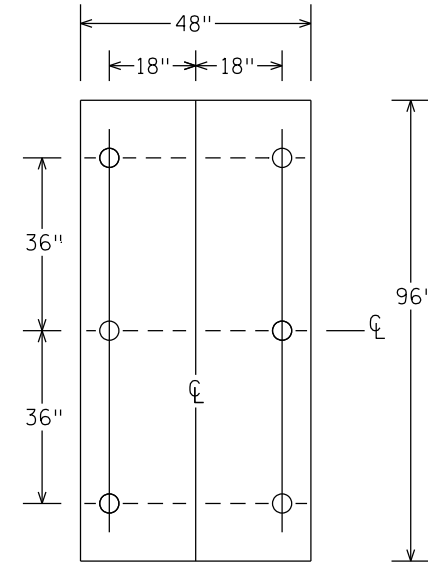
R6-1, R1-1 & (R6-3 OR R6-3a)  
 MOUNTING



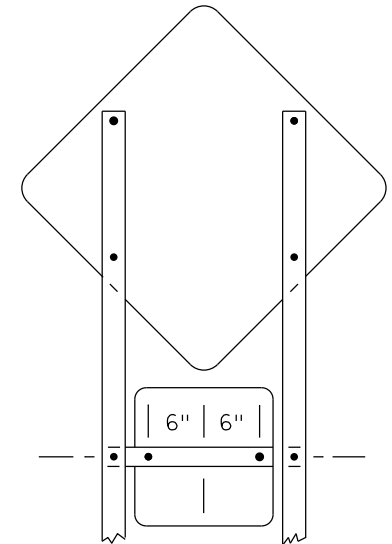
PUNCHING FOR R6-1(48" x 18")



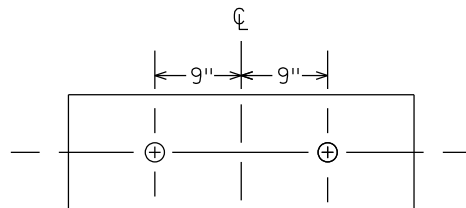
PUNCHING FOR R6-3 OR R6-3a(30" x 24")



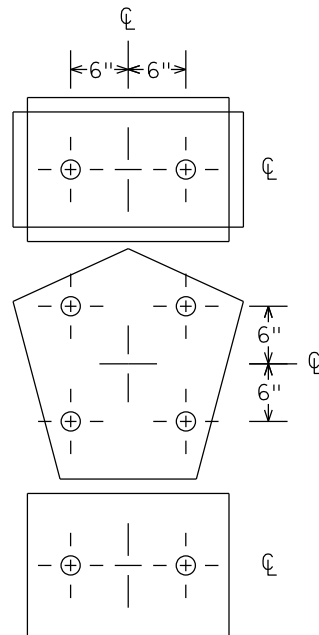
PUNCHING FOR R2-4b  
 SPEED LIMIT



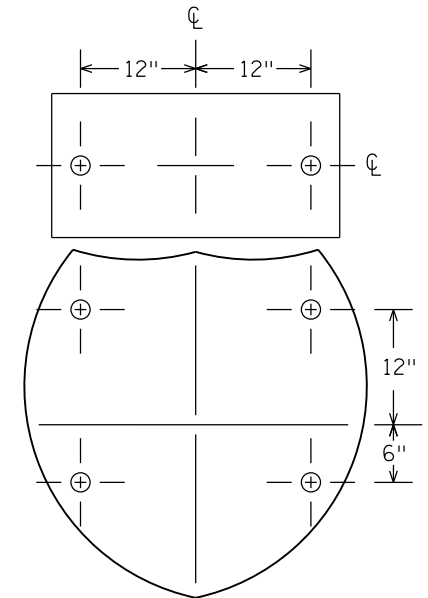
(W1-1, W1-2, W1-3, W1-4 OR W1-5) & W13-1  
 MOUNTING



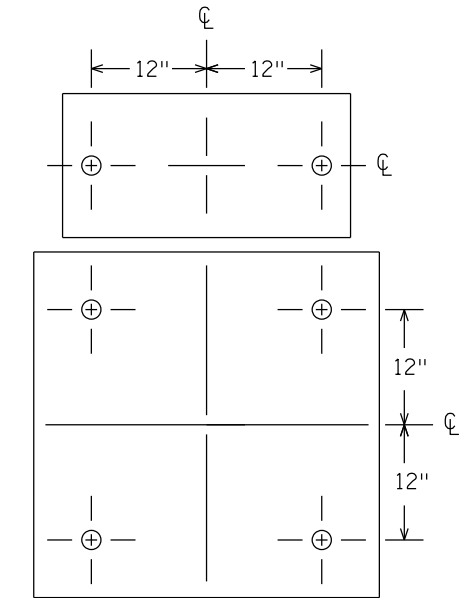
PUNCHING FOR R6-1(36" x 12")



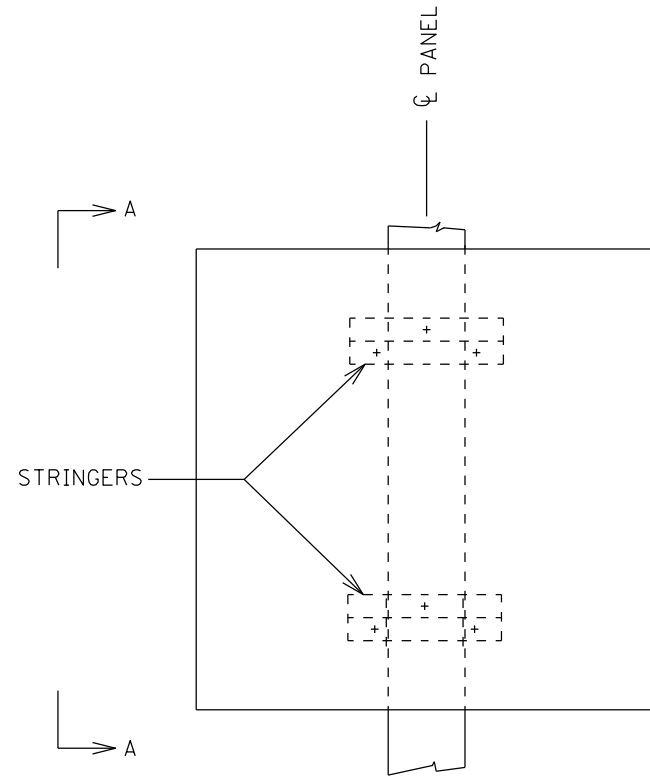
M2-1A [21" x 15"] OR  
 (M3-1A, M3-2A, M3-3A OR M3-4A) [24" x 12"] AND  
 M1-6 [24" x 24"] AND  
 (M5-1A, M5-2A, M6-1A, M6-2A, M6-3A M6-4A, M6-5A OR M6-6A) [21" x 15"]  
 PUNCHING



(M3-1A, M3-2A, M3-3A OR M3-4A) [30" x 15"] AND  
 M1-1 [45" x 36" OR 36" x 36"]  
 PUNCHING

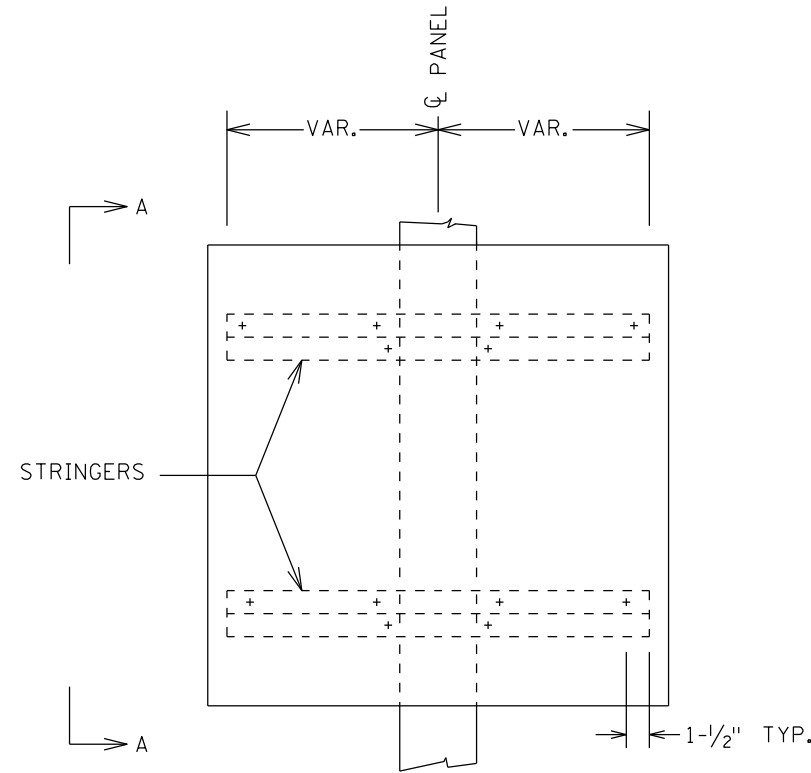


(M3-1, M3-1A, M3-2, M3-2A, M3-3, M3-3A M3-4 OR  
 M3-4A) [30" x 15"] AND (M1-4 OR M1-5A) [36" x 36"]  
 PUNCHING



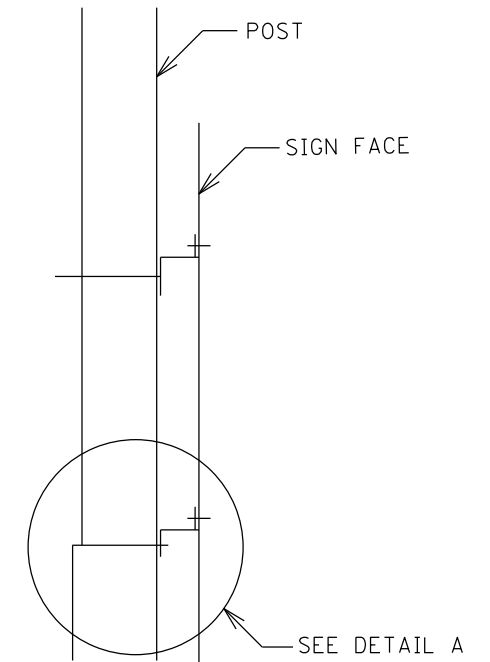
TYPE "C" SIGNS WITH SINGLE POST PUNCHING

ELEVATION

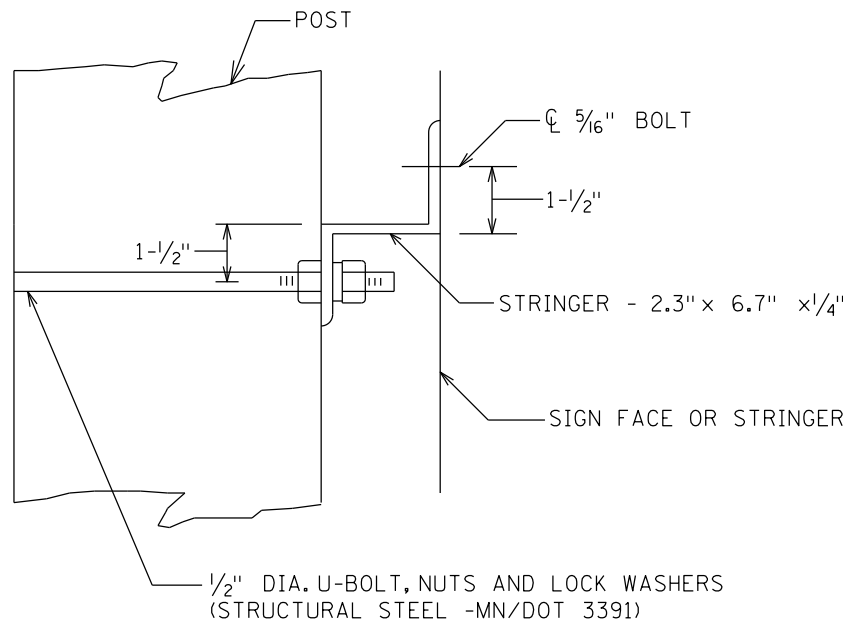


TYPE "C" SIGNS WITH 2-POST PUNCHING

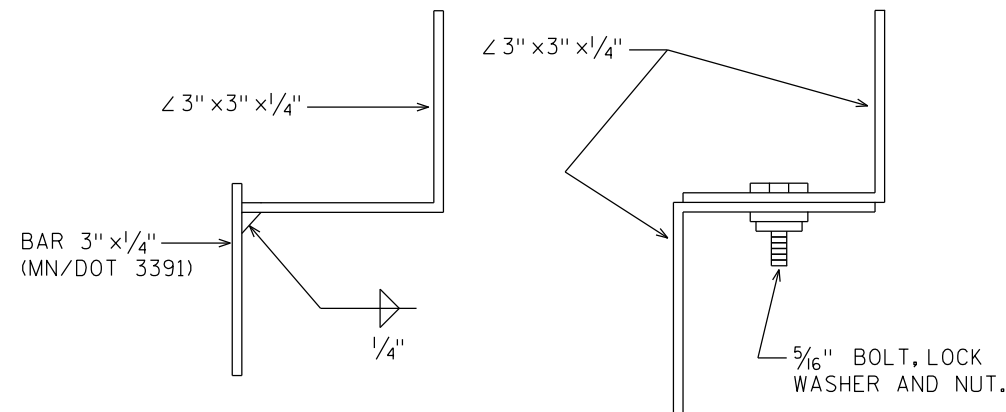
ELEVATION



VIEW A-A



DETAIL A

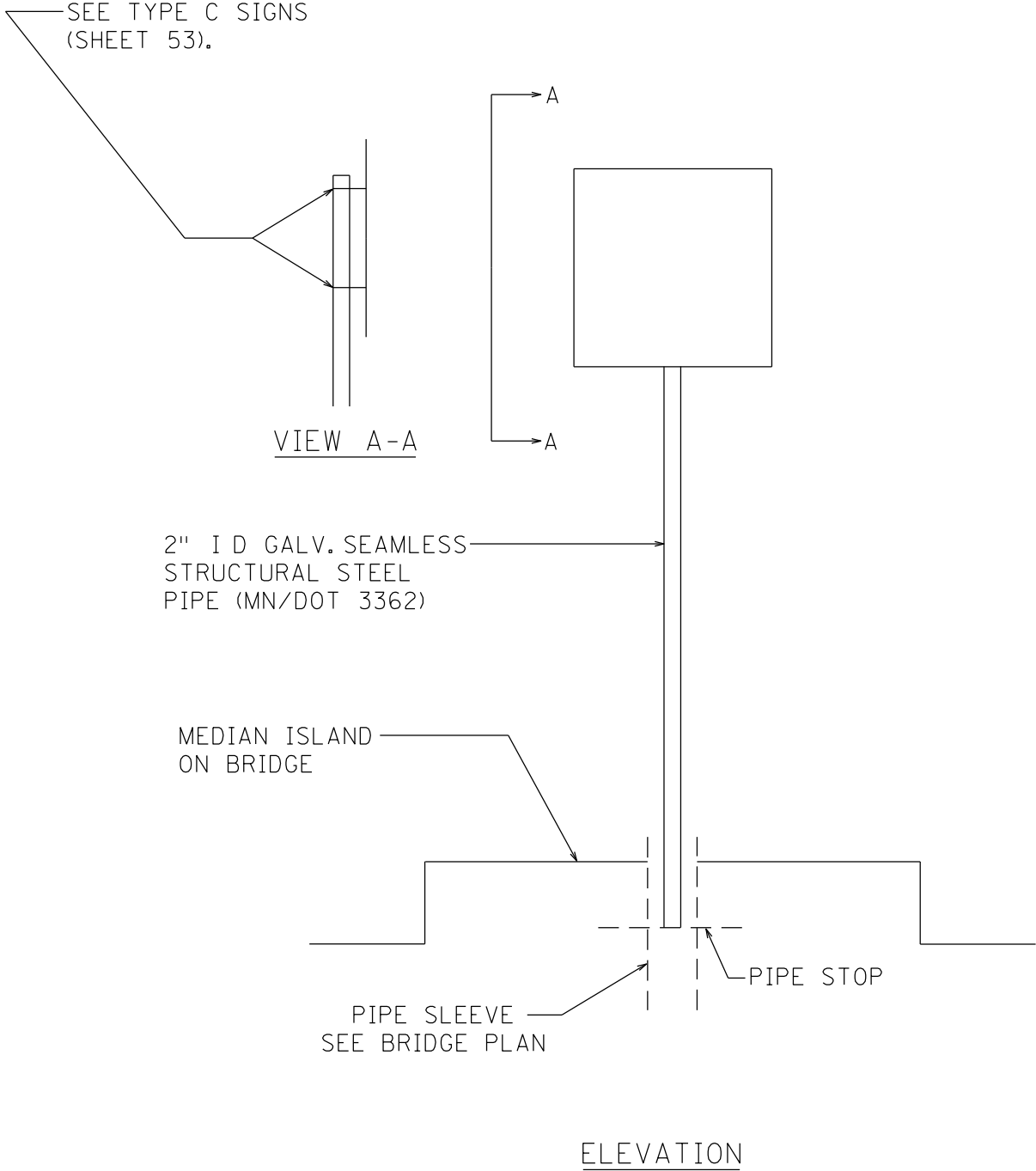


DETAIL A STRINGER ALTERNATES

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 MN/DOT 3306 AND GALVANIZED IN ACCORDANCE WITH MN/DOT 3394. FASTENERS SHALL BE IN ACCORDANCE WITH MN/DOT 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.

TYPE C SIGNS MOUNTED ON O-POSTS,  
OH SIGN POSTS OR SIGNAL STANDARDS



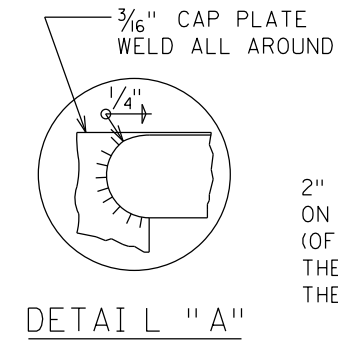
NOTES:  
 FOR NOTES AND DETAILS NOT SHOWN, SEE  
 TYPE C & D SIGN DETAILS - SHEETS 50-52.

TYPE C SIGNS MOUNTED ON  
 BRIDGE MEDIAN ISLAND

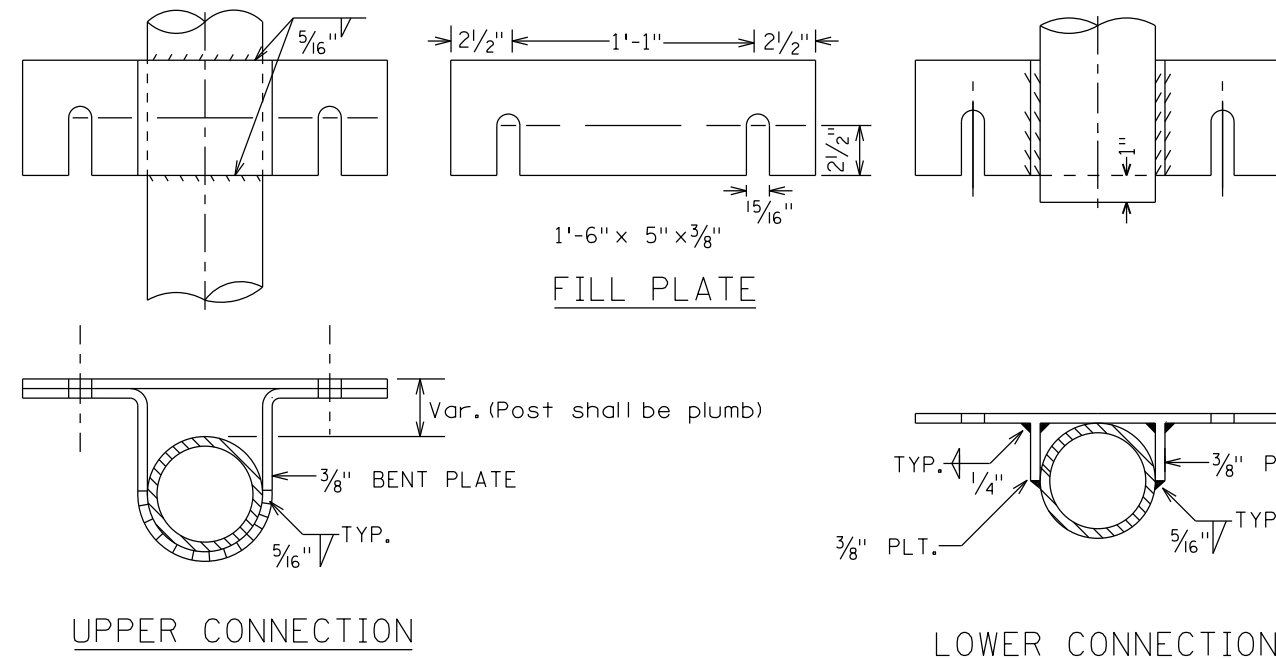


[illegible]

TABLE "A"



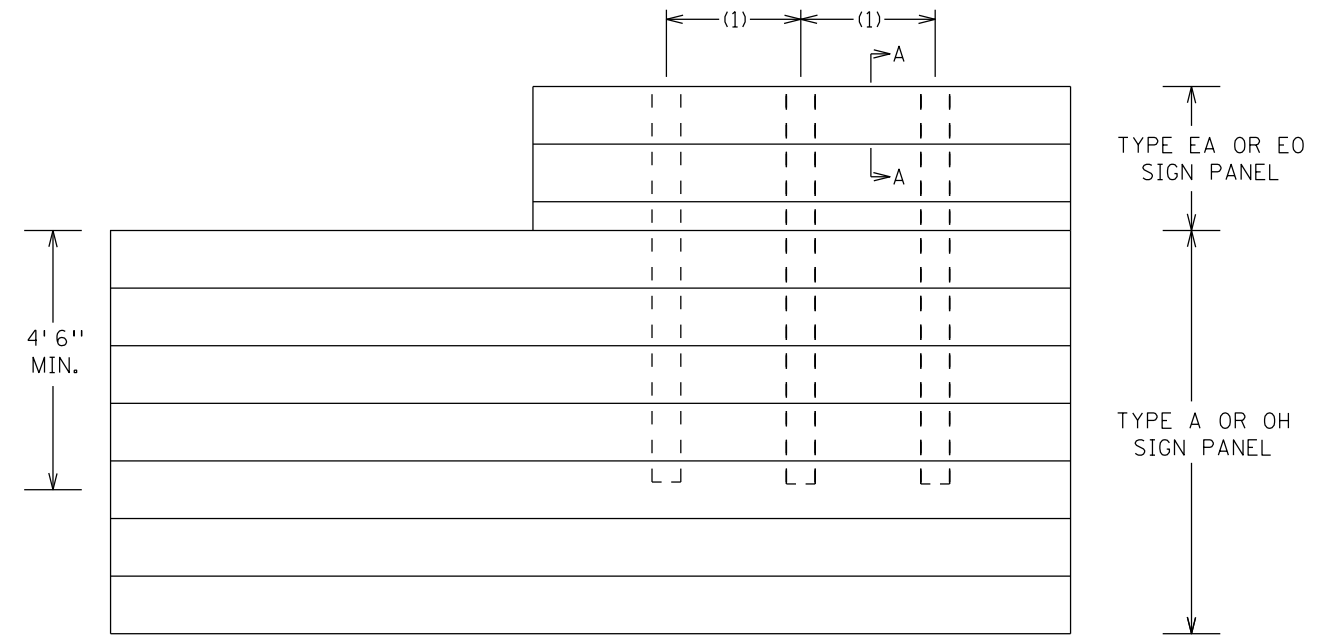
END VIEW



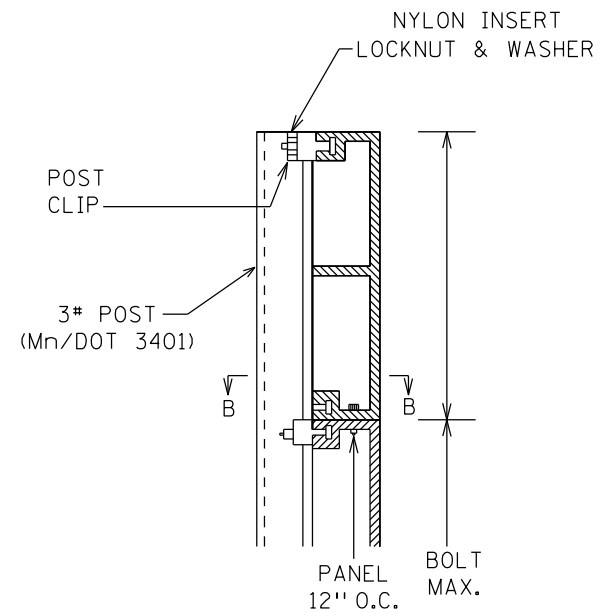
1. ALL PIPE MATERIAL SHALL CONFORM TO ASTM DESIGNATION A53, GRADE B, SCHEDULE 40.
2. ALL STEEL FOR STRUCTURAL ITEMS SHALL CONFORM TO MN/DOT 3306 (STRUCTURAL STEEL) UNLESS OTHERWISE NOTED.
3. FOR NOTES AND DETAILS NOT SHOWN, SEE TYPE C AND D SIGN DETAILS.

## TYPE C & D SIGNS

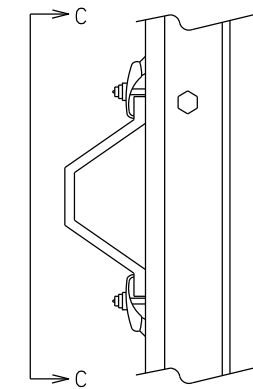
### MOUNTED ON BRIDGE RAIL



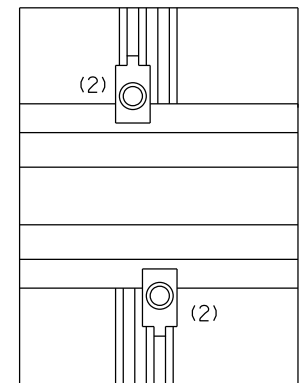
TYPICAL PANEL MOUNTING



SECTION A-A



SECTION B-B



VIEW C-C

SPECIFIC NOTES:

- (1) SEE SIGN DATA SHEET FOR NUMBER AND SPACING OF POSTS. SPACING AND LOCATION CAN BE ADJUSTED WHERE NECESSARY.
- (2) POST CLIPS SHALL BE INSTALLED ON BOTH SIDES OF EACH POST AT EACH PANEL JOINT AS INDICATED.

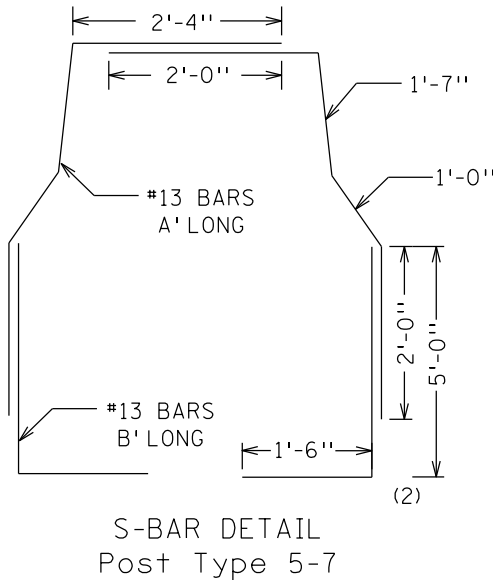
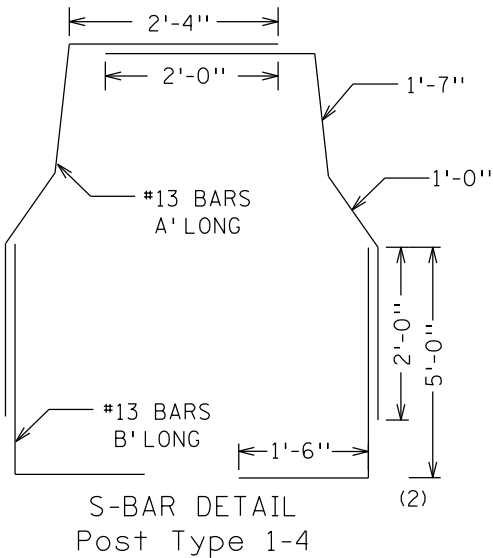
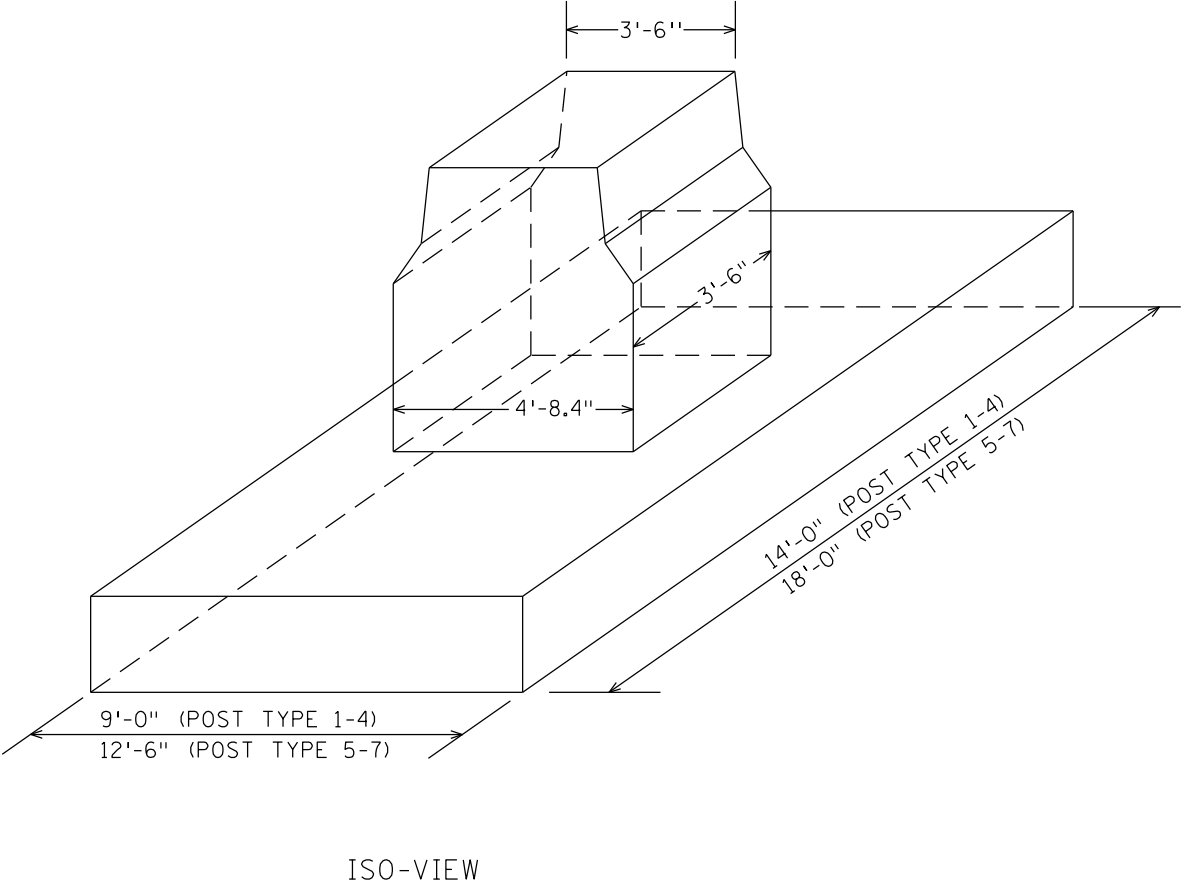
GENERAL NOTE:

1. TYPE EA OR EO SIGN PANEL SHALL BE LEFT JUSTIFIED FOR LEFT EXITS AND RIGHT JUSTIFIED FOR RIGHT EXITS ON TYPE A OR OH SIGN PANEL.

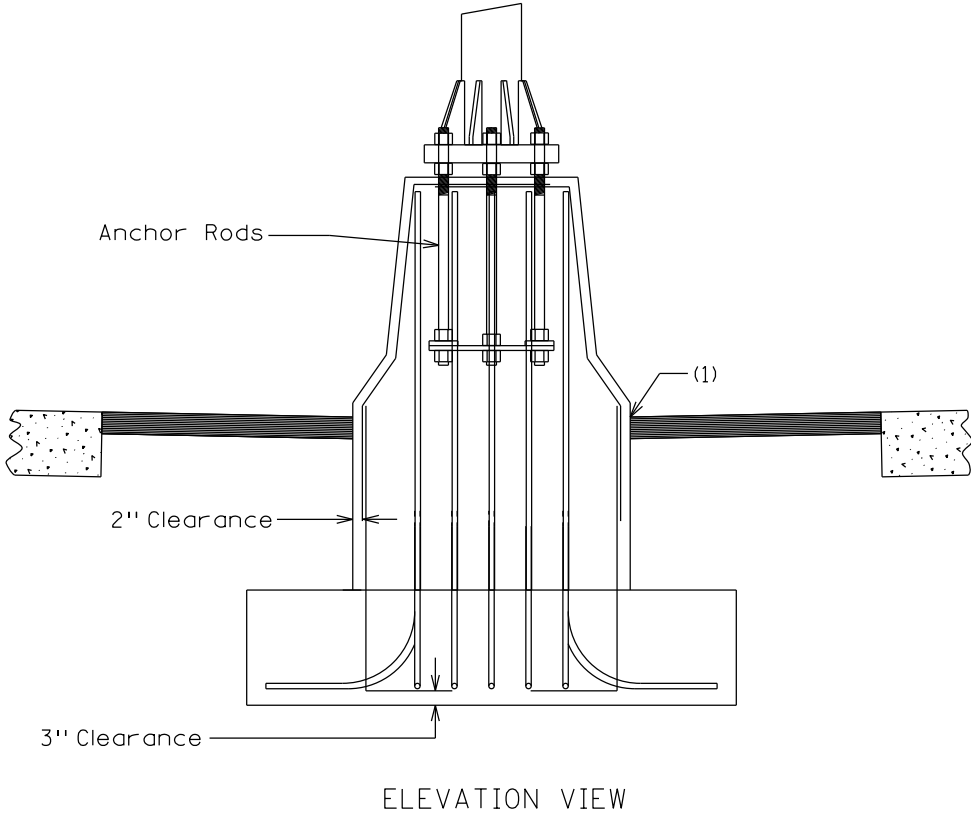
TYPE EA & EO SIGN  
STRUCTURAL DETAILS



DISTRICT #: METRO  
PLOT NAME: STD STD\*14  
PATH & FILENAME: IP\_PWP-d143240\STD STD\*.dgn  
PLOTTED/REVISED: 2/5/2013



| QUANTITIES (3)           |             |              |               |                     |                   |            |
|--------------------------|-------------|--------------|---------------|---------------------|-------------------|------------|
| ADDITIONAL REINFORCEMENT | NO. OF BARS | LENGTH (FT.) | WEIGHT (LBS.) | BAR SPACING         | CONCRETE (CU.YD.) | POST STEEL |
| #13 BARS A' LONG         | 8           | 6.92         | 37            | 3 SPACES @12"=3'-0" |                   |            |
| #13 BARS B' LONG         | 8           | 6.50         | 35            | 3 SPACES @12"=3'-0" |                   |            |
| TOTAL                    |             |              |               |                     |                   |            |

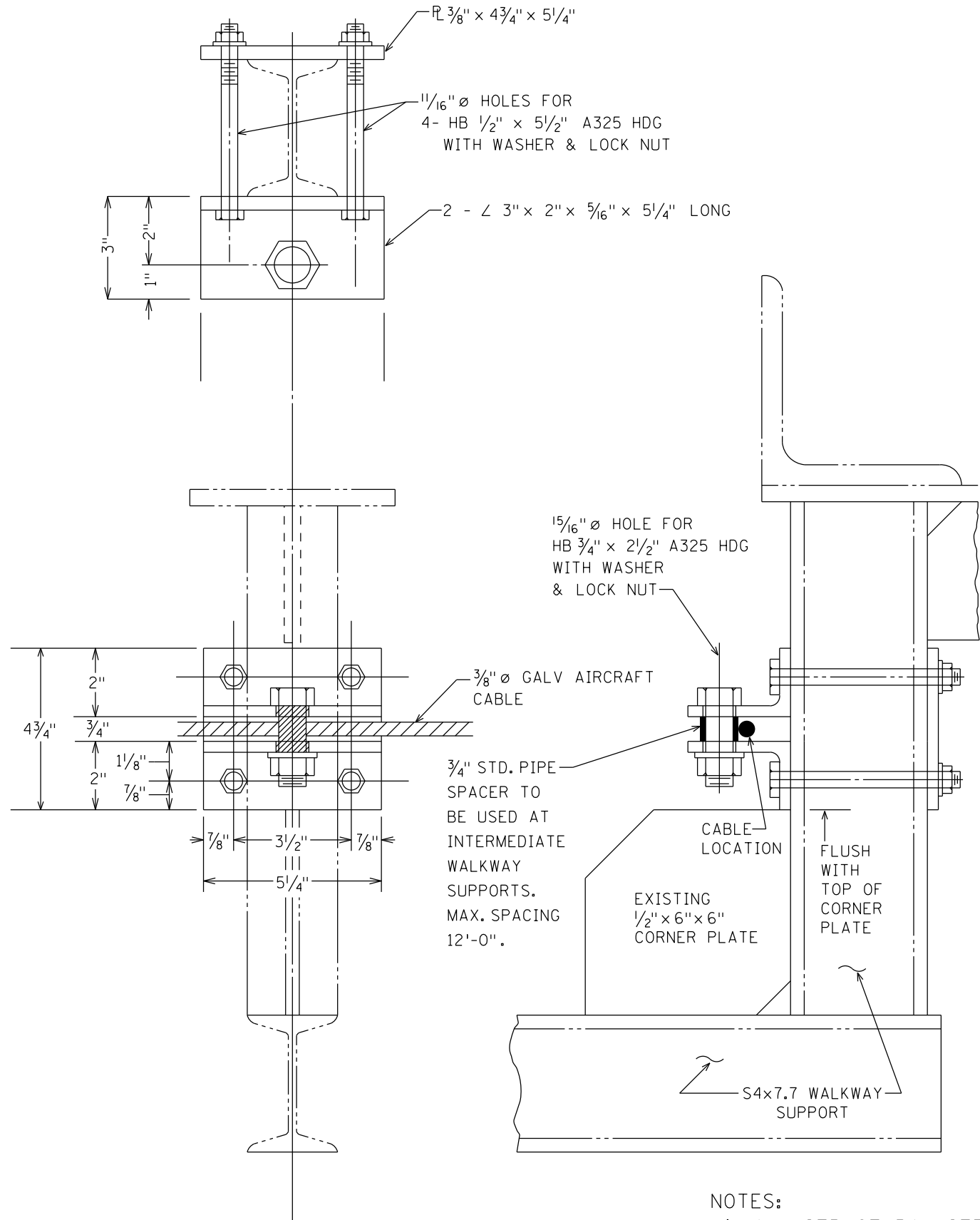


- GENERAL NOTE:
- For details and reinforcements not shown see standard sign sheet ST-5.
- SPECIFIC NOTES:
- 1/2" bituminous felt joint if adjacent pavement is concrete.
  - #13 S-bars placed symmetrical about the centerline of the post, bend in the field to fit.
  - All quantities depend upon field verification of footing elevations.

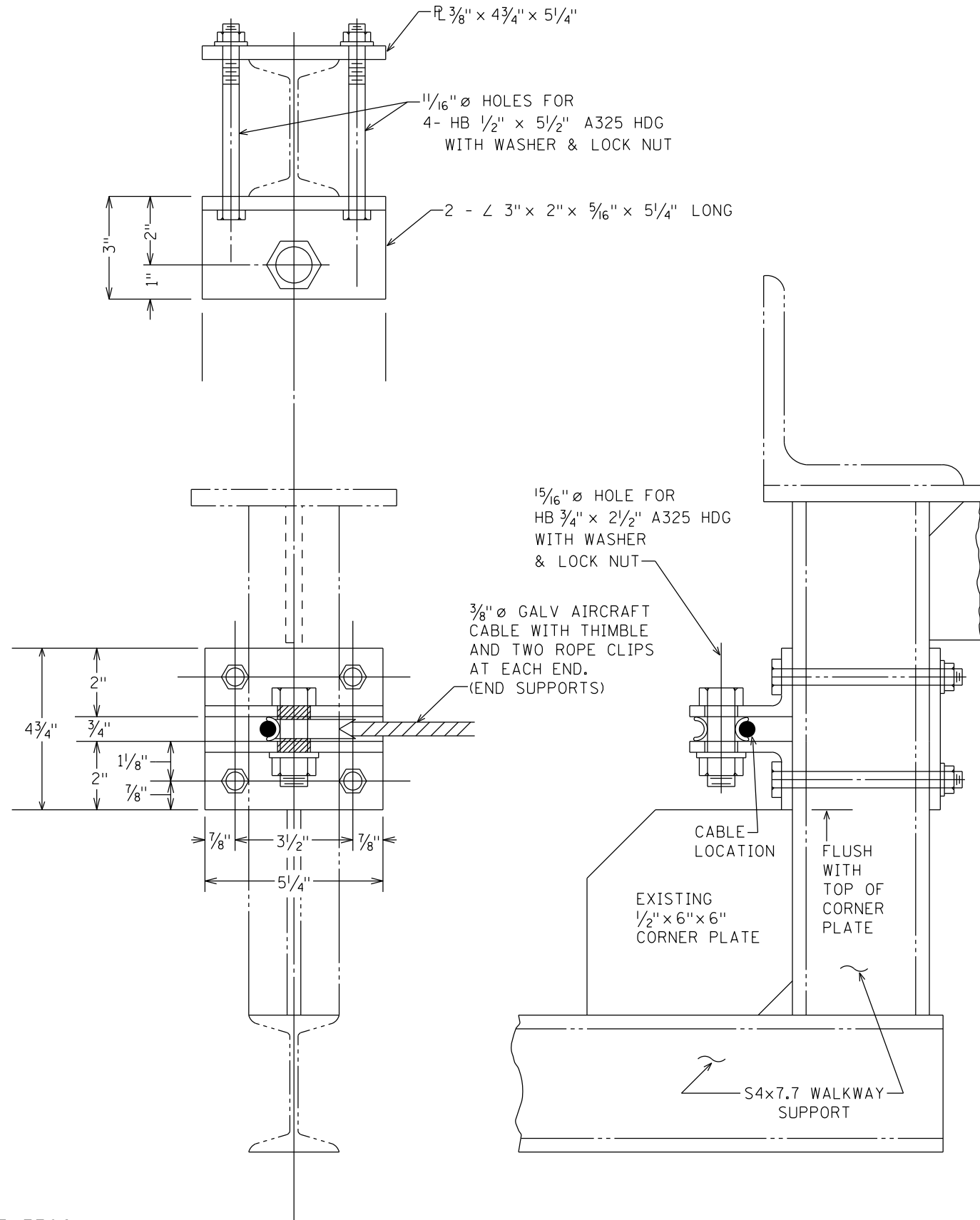
MEDIAN BARRIER FOOTING  
(SPREAD)

DISTRICT #: METRO  
IPLOT NAME: STD STD\*15  
PATH & FILENAME: IP\_PWP-d143240\STD STD\*.dgn

PLOTTED/REVISED: 2/5/2013



MIDDLE CONNECTION



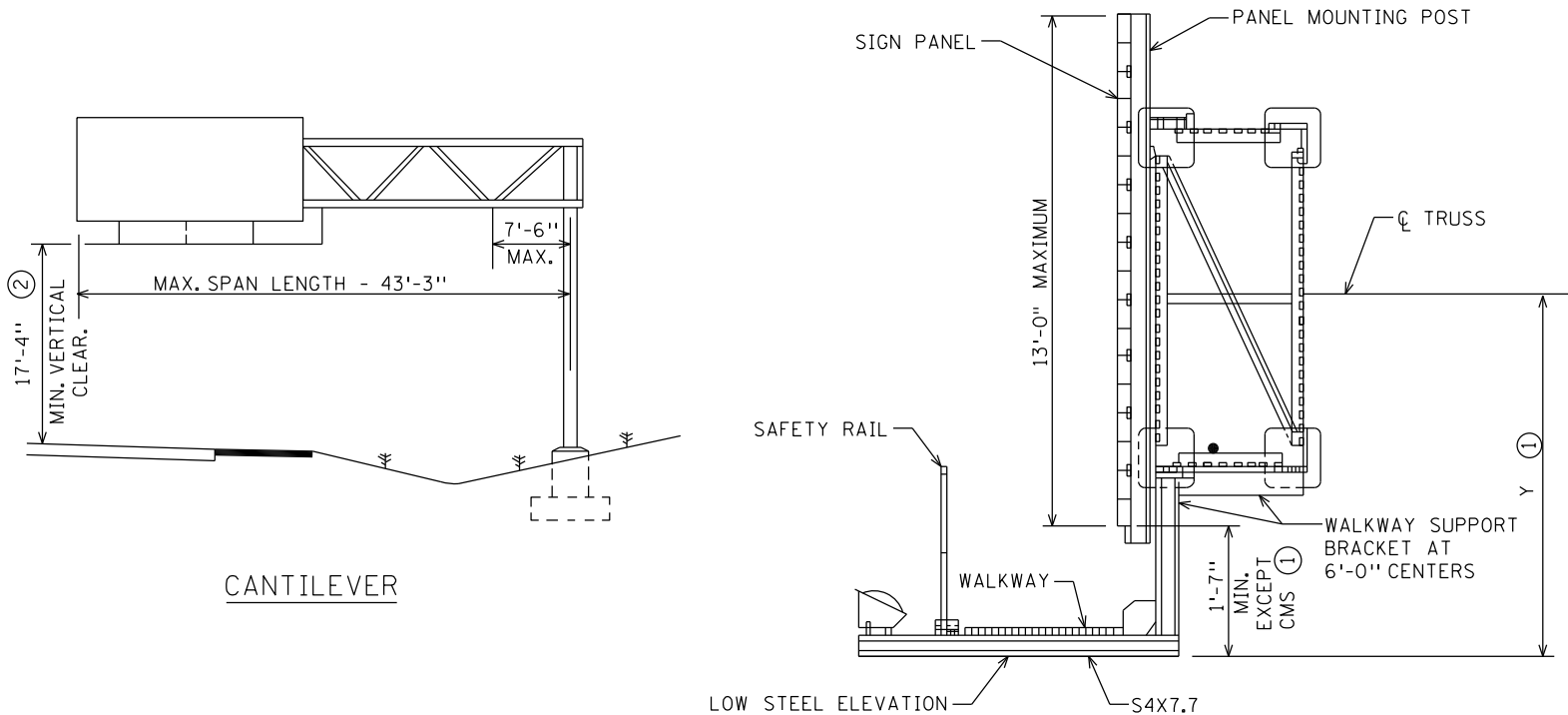
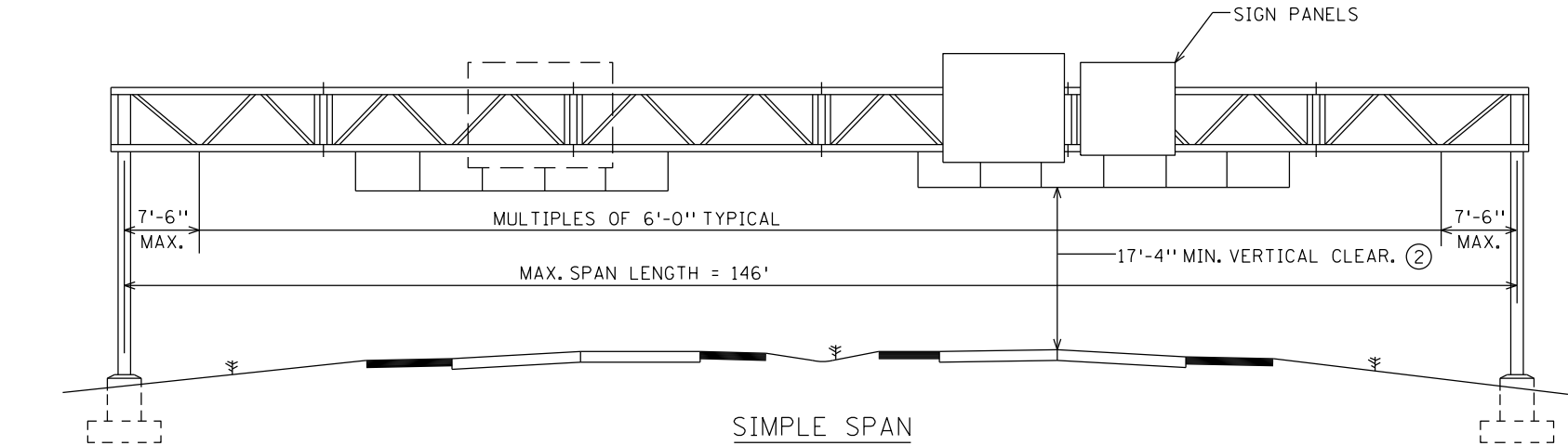
END CONNECTION

- NOTES:
1. ALL STRUCTURAL STEEL PER Mn/DOT 3306.  
GALVANIZED PER Mn/DOT 3394.
  2. ALL FASTENERS PER A325.  
GALVANIZED PER Mn/DOT 3392.
  3. HB-HEX BOLT.
  4. HDG-HOT DIP GALVANIZED.

SAFETY CABLE FOR OH SIGNS  
DESIGN B

DISTRICT #: METRO  
IPLOT NAME: STD.STD\*16  
PATH & FILENAME: IP\_PWP-d143240\STD.STD\*.dgn

PLOTTED/REVISED: 2/5/2013



### INDEX OF STANDARD SIGN DRAWINGS

| DRAWING | TITLE                                                   |
|---------|---------------------------------------------------------|
| ST-1    | GENERAL ELEVATION AND NOTES                             |
| ST-2    | CAMBER, POST IDENTIFICATION<br>AND ESTIMATED QUANTITIES |
| ST-3    | FOUNDATIONS AND ANCHOR RODS                             |
| ST-4    | TRUSS/POST CONNECTION & BASEPLATE                       |
| ST-5    | SIGN TRUSS DETAILS - TYPE A                             |
| ST-6    | SIGN TRUSS DETAILS - TYPE B                             |
| ST-7    | SIGN TRUSS DETAILS - TYPE C                             |
| ST-8    | WALKWAY DETAILS                                         |
| ST-9    | FOLDING HANDRAIL                                        |
| ST-10   | SIGN PANEL AND PANEL MOUNTING POST DETAILS              |
| ST-11   | ELECTRICAL DETAILS                                      |
| ST-12   | ELECTRICAL DETAILS                                      |
| ST-13   | ELECTRICAL DETAILS (CMS SIGNS)                          |

### SECTION

| SIGN HEIGHT | Y ①    |               |
|-------------|--------|---------------|
| 6'-6"       | 4'-4"  | CMS (NEW LED) |
| 7'-0"       | 4'-7"  |               |
| 7'-6"       | 4'-10" |               |
| 8'-0"       | 5'-1"  | CMS (LED)     |
| 8'-6"       | 5'-4"  |               |
| 9'-0"       | 5'-7"  | CMS (DRUM)    |
| 9'-6"       | 5'-10" |               |
| 10'-0"      | 6'-1"  |               |
| 10'-6"      | 6'-4"  |               |
| 11'-0"      | 6'-7"  |               |
| 11'-6"      | 6'-10" |               |
| 12'-0"      | 7'-1"  |               |
| 12'-6"      | 7'-4"  |               |
| 13'-0"      | 7'-7"  |               |

- SPECIFIC NOTES:
- ① DIMENSION Y IS CONSTANT AND BASED ON THE DEEPEST SIGN PANEL ABOVE THAT WALKWAY. WHEN STANDARD SIGN PANEL(S) AND CMS ARE MOUNTED ON THE SAME SPAN, DIMENSION Y SHALL BE GOVERNED BY THE CMS.
  - ② MINIMUM CLEARANCE WILL BE MEASURED FROM THE HIGHEST ELEVATION OF PAVEMENT, SHOULDERS, AND MOUNTABLE CURBS, OR IF INSURMOUNTABLE CURBS ARE USED, THE HIGHEST ELEVATION BETWEEN CURB LINES.

### GENERAL NOTES:

DESIGN SPECIFICATIONS:  
TRUSS, POST, & HARDWARE:  
AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS DATED 1999.

LOADING:  
WIND LOAD 90 M.P.H. NORMAL TO SIGN FACE IN COMBINATION WITH OTHER LOADS OUTLINED IN THE DESIGN SPECIFICATIONS.

UNIT STRESSES:  
CONCRETE----- F<sub>c</sub> = 1,600 PSI  
REINFORCEMENT STEEL----- F<sub>s</sub> = 24,000 PSI  
FOOTING SOIL PRESSURE----- 1-1/4 TONS PER SQ. FT.

MATERIALS:  
STRUCTURAL STEEL (EXCEPT POST, TUBES)- Mn/DOT 3306  
POST STEEL----- VARIES  
HIGH STRENGTH BOLTS----- Mn/DOT 3391.2B  
ANCHOR RODS----- Mn/DOT 3385  
CASTINGS----- Mn/DOT 3322  
REINFORCEMENT  
BARS----- Mn/DOT 3301  
SPIRAL----- Mn/DOT 3305 NO SPLICES  
WALKWAY GRATING----- FEDERAL SPECIFICATIONS RR-G-661b, TYPE 1, STEEL  
CONCRETE----- Mn/DOT 2461 (MIX 3Y43)

FINISH:  
ALL COMPONENTS SHALL BE GALVANIZED AFTER FABRICATION EXCEPT REINFORCEMENT BARS, LOWER PORTION OF ANCHOR RODS, ALUMINUM, AND OTHER NON FERROUS INCIDENTALS. GALVANIZING SHALL CONFORM TO Mn/DOT 3392 OR Mn/DOT 3394 AS APPLICABLE. BEARING SURFACES MUST BE SMOOTH.

FABRICATION:  
FABRICATION OF STRUCTURAL METALS SHALL BE IN ACCORDANCE WITH Mn/DOT 2471, Mn/DOT 2564 AND THE APPLICABLE SPECIAL PROVISIONS. ALL WELDING TO BE CONTINUOUS. ALL CONTACT SURFACES MUST BE COMPLETELY SEALED.

INSPECTION:  
INSPECTION BEFORE AND AFTER GALVANIZING PER Mn/DOT 1511 AND Mn/DOT 2471.

|                                                     |      |
|-----------------------------------------------------|------|
| STANDARD OVERHEAD SIGN SUPPORTS<br>INTERIM DESIGN B |      |
| GENERAL ELEVATIONS<br>AND NOTES                     |      |
| DRAWING                                             | ST-1 |

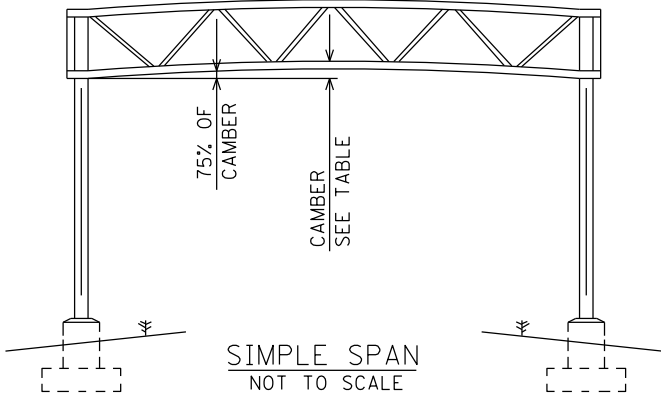
DISTRICT \*: METRO  
IPLOT NAME: STD STD\*17  
PATH & FILENAME: IP\_PWP-d143240\STD STD\*.dgn

PLOTTED/REVISED: 2/5/2013

SIMPLE SPAN

| SIMPLE SPAN TRUSS CAMBER |     |      |      |        |        |       |         |        |       |         |        |         |
|--------------------------|-----|------|------|--------|--------|-------|---------|--------|-------|---------|--------|---------|
| SPAN                     | 40  | 50   | 60   | 70     | 80     | 90    | 100     | 110    | 120   | 130     | 140    | 150     |
| CAMBER                   | 1/4 | 7/16 | 5/8  | 13/16  | 1 1/16 | 1 3/8 | 1 11/16 | 2      | 2 3/8 | 2 13/16 | 3 1/4  | 3 3/4   |
| DL DEFLECTION            | 0   | 1/16 | 1/16 | 1/8    | 1/4    | 3/8   | 9/16    | 13/16  | 1 1/8 | 1 1/2   | 2 1/16 | 2 11/16 |
| RESIDUAL CAMBER          | 1/4 | 3/8  | 9/16 | 1 1/16 | 1 3/16 | 1     | 1 1/8   | 1 3/16 | 1 1/4 | 1 5/16  | 1 3/16 | 1 1/16  |

NOTE:  
CAMBER AND DEFLECTIONS SHOWN ARE AT Q SPAN.  
THE DEFLECTIONS AND CAMBER AT THE QUARTER  
POINTS SHALL BE APPROXIMATELY 75% OF THESE  
VALUES.



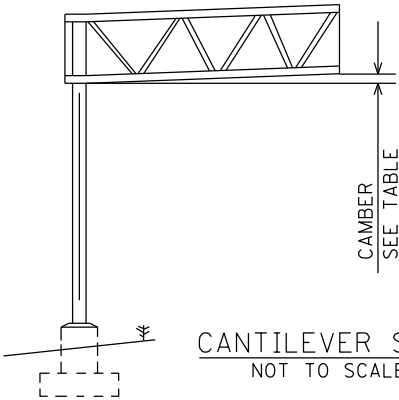
| TRUSS QUANTITIES                                          |              |              |
|-----------------------------------------------------------|--------------|--------------|
| USE LENGTH FROM Q POST WHEN CALCULATING<br>TOTAL WEIGHTS. |              |              |
| TRUSS TYPE A                                              | TRUSS TYPE B | TRUSS TYPE C |
| 123 LBS./FT.                                              | 168 LBS./FT. | 196 LBS./FT. |

CANTILEVER SPAN

| CANTILEVER SPAN TRUSS CAMBER |     |     |      |        |       |
|------------------------------|-----|-----|------|--------|-------|
| SPAN                         | 15' | 20' | 30'  | 40'    | 45'   |
| CAMBER                       | 1/8 | 1/4 | 5/8  | 1 1/16 | 1 1/4 |
| DL DEFLECTION                | 0   | 0   | 1/16 | 3/16   | 1/4   |
| RESIDUAL CAMBER              | 1/8 | 1/4 | 9/16 | 7/8    | 1     |

NOTE:  
CAMBER AND DEFLECTIONS SHOWN ARE SHOWN AT  
END OF CANTILEVER.

WHEN ERECTING CANTILEVER TRUSSES, THE POSTS  
SHALL BE SET 1/8" PER FOOT OUT OF PLUMB TO  
COMPENSATE FOR THE BENDING OF THE POSTS.



| PANEL MOUNTING POST QUANTITIES<br>INCLUDES MOUNTING ANGLES |             |
|------------------------------------------------------------|-------------|
| PANEL HEIGHT                                               | WEIGHT/POST |
| 6'-6"                                                      | 70          |
| 7'-0"                                                      | 74          |
| 7'-6"                                                      | 78          |
| 8'-0"                                                      | 82          |
| 8'-6"                                                      | 86          |
| 9'-0"                                                      | 90          |
| 9'-6"                                                      | 93          |
| 10'-0"                                                     | 97          |
| 10'-6"                                                     | 101         |
| 11'-0"                                                     | 105         |
| 11'-6"                                                     | 160         |
| 12'-0"                                                     | 166         |
| 12'-6"                                                     | 172         |
| 13'-0"                                                     | 178         |

| TABLE 1 - POST IDENTIFICATION                                 |                     |                               |                             |                               |                             |
|---------------------------------------------------------------|---------------------|-------------------------------|-----------------------------|-------------------------------|-----------------------------|
| POST<br>IDENTIFICATION<br>NUMBER                              | BASEPLATE<br>DESIGN | PERMISSIBLE PIPE SECTIONS     |                             |                               |                             |
|                                                               |                     | MIN. YIELD=35 KSI             |                             | MIN. YIELD=42 KSI             |                             |
|                                                               |                     | OUTSIDE<br>DIAMETER<br>(INCH) | WALL<br>THICKNESS<br>(INCH) | OUTSIDE<br>DIAMETER<br>(INCH) | WALL<br>THICKNESS<br>(INCH) |
| 1                                                             | A                   | N.A.                          | N.A.                        | 18                            | 0.250                       |
| 2                                                             | A                   | 18                            | 0.375                       | 18                            | 0.312                       |
| 3                                                             | A                   | 18                            | 0.500                       | 18                            | 0.375                       |
| 4                                                             | A                   | 18                            | 0.562                       | 18                            | 0.500                       |
| 5                                                             | B                   | 18                            | 0.938                       | 18                            | 0.750                       |
| 6                                                             | B                   | 20                            | 0.594                       | 20                            | 0.500                       |
| 7                                                             | B                   | N.A.                          | N.A.                        | 20                            | 0.812                       |
| WALL THICKNESS IS MINIMUM, THINNER WALLS WILL NOT BE APPROVED |                     |                               |                             |                               |                             |

POST IDENTIFICATION NOTES:

POST MATERIAL SHALL CONFORM TO ONE OF THE FOLLOWING SPECIFICATIONS:  
ASTM A709, GRADE 36  
ASTM A53, GRADE B  
API 5L, GRADES B, X42, X46, X52, X56, X60, X65

CONTRACTOR SHALL DEMONSTRATE THAT THE POST MATERIAL MEETS THE REQUIREMENTS  
OF ONE OF THE ABOVE CITED SPECIFICATIONS AND THE MINIMUM YIELD STRENGTH.

NO SPLICES OF ANY KIND WILL BE PERMITTED IN POSTS INTENDED FOR USE IN CANTILEVER  
TYPE STRUCTURES (BRIDGE TYPE BC).

ONE OF TWO POSTS FOR SIMPLE SPAN STRUCTURES (BRIDGE TYPE S) MAY INCORPORATE ONE  
WELDED CIRCUMFERENTIAL BUTT SPLICE CONFORMING TO AWS D1.1 DETAIL B-U2 IN THE  
UPPER 1/3 OF ITS LENGTH. BACK UP RINGS FOR THESE WELDED SPLICES SHALL BE  
COMMERCIAL PRODUCTS. BUTT WELDS REQUIRE RADIOGRAPHIC INSPECTION (Mn/DOT 2471.3).

ALL RADIOGRAPHIC INSPECTIONS AND MAGNETIC PARTICLE TESTING REPORTS AND  
RADIOGRAPHIC FILMS SHALL BECOME THE PROPERTY OF THE DEPARTMENT.

SEE DRAWING ST-4 FOR BASEPLATE DETAILS.

FOR FOUNDATION QUANTITIES SEE DRAWING ST-3

WALKWAY WEIGHTS:

1. USE 3'-4 3/4" WIDE GRATING @ 44 LBS/FT.
2. WEIGHT INCLUDES HANDRAIL (12 LBS/FT.) AND FIXTURE  
MOUNTING CHANNELS (4 LBS/FT.).

| POST QUANTITIES                                                                                                                                                                                                                                                                                         |                 |                 |                 |                 |                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| QUANTITIES INCLUDE ANCHORAGE ASSEMBLY AND TRUSS CONNECTION PLATES. PAY LENGTH OF<br>POSTS IS FROM THE BOTTOM OF THE BASE PLATE (ELEV. A) TO THE TOP OF THE TRUSS. POST<br>QUANTITIES ARE BASED ON GRADE 42 STEEL. NO ADJUSTMENTS WILL BE MADE IN THE QUANTITIES<br>FOR THE USE OF GRADE 35 STEEL POSTS. |                 |                 |                 |                 |                 |
| POST<br>TYPE                                                                                                                                                                                                                                                                                            | CANTILEVER      |                 | SIMPLE SPAN     |                 |                 |
|                                                                                                                                                                                                                                                                                                         | TRUSS<br>TYPE A | TRUSS<br>TYPE B | TRUSS<br>TYPE A | TRUSS<br>TYPE B | TRUSS<br>TYPE C |
| 1                                                                                                                                                                                                                                                                                                       | 1880+47 LBS/FT  | 2470+47 LBS/FT  | 1870+47 LBS/FT  | 1890+47 LBS/FT  | 1915+47 LBS/FT  |
| 2                                                                                                                                                                                                                                                                                                       | 1880+59 LBS/FT  | 2470+59 LBS/FT  | 1870+59 LBS/FT  | 1890+59 LBS/FT  | 1915+59 LBS/FT  |
| 3                                                                                                                                                                                                                                                                                                       | 1880+71 LBS/FT  | 2470+71 LBS/FT  | 1870+71 LBS/FT  | 1890+71 LBS/FT  | 1915+71 LBS/FT  |
| 4                                                                                                                                                                                                                                                                                                       | 1880+94 LBS/FT  | 2470+94 LBS/FT  | 1870+94 LBS/FT  | 1890+94 LBS/FT  | 1915+94 LBS/FT  |
| 5                                                                                                                                                                                                                                                                                                       | 1910+138 LBS/FT | 2500+138 LBS/FT | 2460+138 LBS/FT | 2480+138 LBS/FT | 2505+138 LBS/FT |
| 6                                                                                                                                                                                                                                                                                                       | N/A             | 2500+104 LBS/FT | N/A             | 2545+104 LBS/FT | 2570+104 LBS/FT |
| 7                                                                                                                                                                                                                                                                                                       | N/A             | 2500+167 LBS/FT | N/A             | 2545+167 LBS/FT | 2570+167 LBS/FT |

| WALKWAY SUPPORT QUANTITIES                                                                                                                                                        |                             |     |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----|-----|
| USE MAXIMUM PANEL HEIGHT ON SPAN TO CALCULATE QUANTITIES.<br>WHEN CONVENTIONAL SIGN PANEL(S) AND CMS ARE MOUNTED ON<br>THE SAME SPAN, QUANTITIES SHALL BE GOVERNED BY THE<br>CMS. |                             |     |     |
| PANEL<br>HEIGHT                                                                                                                                                                   | TRUSS TYPE (WEIGHT/SUPPORT) |     |     |
|                                                                                                                                                                                   | A                           | B   | C   |
| CMS(NEW LED)                                                                                                                                                                      |                             |     |     |
| 6'-6"                                                                                                                                                                             | 99                          | 105 | 113 |
| 7'-0"                                                                                                                                                                             | 101                         | 107 | 115 |
| 7'-6"                                                                                                                                                                             | 103                         | 109 | 117 |
| CMS(LED)                                                                                                                                                                          |                             |     |     |
| 8'-0"                                                                                                                                                                             | 105                         | 111 | 119 |
| 8'-6"                                                                                                                                                                             | 107                         | 113 | 121 |
| CMS(DRUM)                                                                                                                                                                         |                             |     |     |
| 9'-0"                                                                                                                                                                             | 109                         | 115 | 123 |
| 9'-6"                                                                                                                                                                             | 111                         | 117 | 125 |
| 10'-0"                                                                                                                                                                            | 113                         | 119 | 127 |
| 10'-6"                                                                                                                                                                            | 115                         | 121 | 129 |
| 11'-0"                                                                                                                                                                            | 135                         | 142 | 151 |
| 11'-6"                                                                                                                                                                            | 138                         | 144 | 153 |
| 12'-0"                                                                                                                                                                            | 141                         | 147 | 156 |
| 12'-6"                                                                                                                                                                            | 143                         | 150 | 159 |
| 13'-0"                                                                                                                                                                            | 146                         | 153 | 162 |

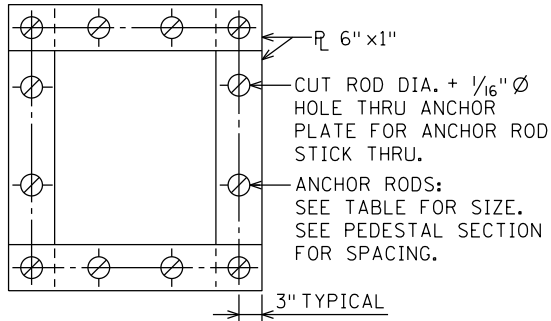
STANDARD OVERHEAD SIGN SUPPORTS  
INTERIM DESIGN B

CAMBER, POST IDENTIFICATION  
AND ESTIMATED QUANTITIES

DRAWING ST-2

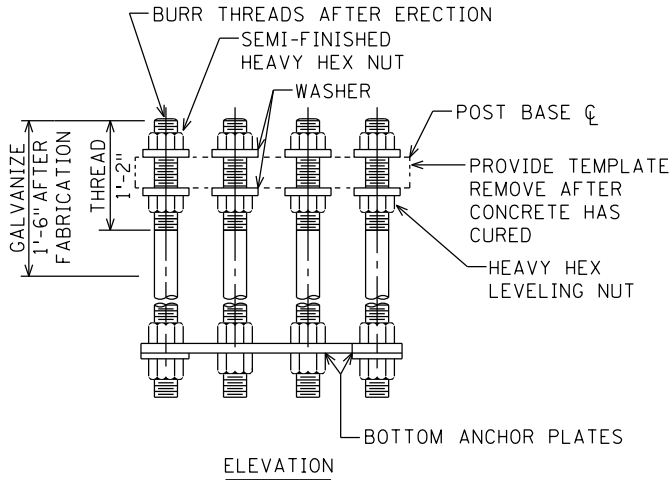
DISTRICT #: METRO  
IPLOT NAME: STD.STD\*18  
PATH & FILENAME: IP\_PWP-d143240\STD.STD\*.dgn

PLOTTED/REVISED: 2/5/2013

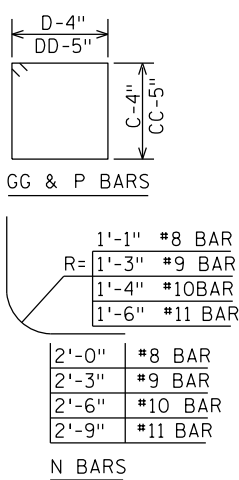


NOTE: ANCHOR PLATES SHOWN TYPICAL FOR ALL ANCHOR ROD SPACING.

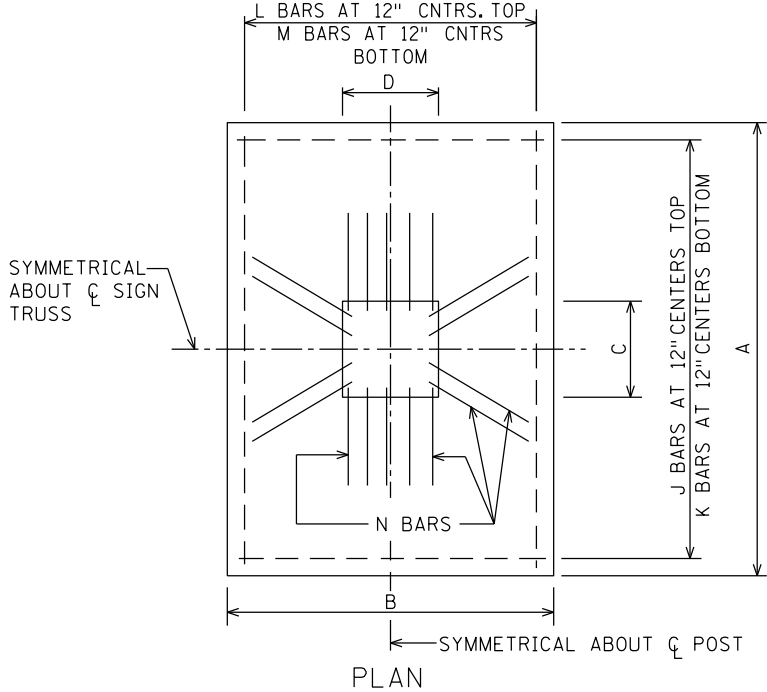
ANCHOR PLATE PLAN



ANCHOR ROD DETAILS



J, K, L, M, FF AND HH ARE STRAIGHT BARS  
BAR BENDING DIAGRAMS



SPECIFIC NOTES:

- ① G IS IN FEET. ROUND UP TO WHOLE NUMBER. E.G.  $G=4.10/26=8.2$  NO. REQ'D=9.
- ② G AND R ARE IN FEET.
- ③ BEND AS REQUIRED TO FORM A CLOSED LOOP.
- ④ FOR STRUCTURE STEEL SEE SPREAD FOOTING.
- ⑤ MUST BE FORMED A MIN. OF 6" BELOW THE GROUND SURFACE. THE SOIL EXCAVATED FOR FORMING SHALL BE BACKFILLED AND TAMPED TO EQUIVALENT COMPACTION AS SURROUNDING MATERIAL.
- ⑥ SPECIAL LARGE RADIUS BENDS ARE REQUIRED. SEE "BAR BENDING DIAGRAMS" FOR SIZES OF RADII.

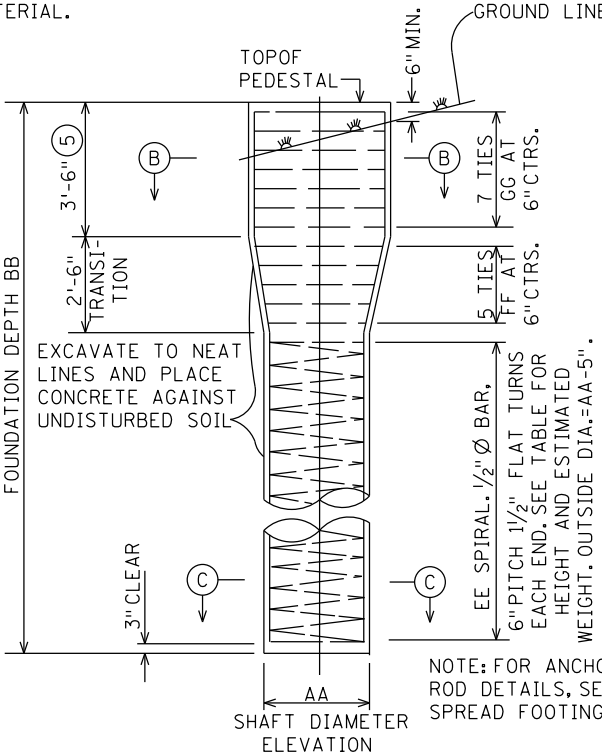
GENERAL NOTES:

1. SEE THE FORMAT SHEET FOR FOOTING LOCATIONS. POST DESIGNATIONS, TOP OF PEDESTAL ELEVATIONS AND BOTTOM OF FOOTING ELEVATIONS.
2. ALL CONCRETE SHALL CONFORM TO CONCRETE MIX 3Y43 (MN/DOT 2461).
3. ALL BAR DIMENSIONS ARE OUT TO OUT OF BARS.
4. ALL SPREAD FOOTINGS HAVE AN ALLOWABLE DESIGN BEARING PRESSURE OF  $1 \frac{1}{4}$  T PER SQUARE FOOT.
5. DRILLED SHAFTS SHALL BE USED ONLY WHEN SPECIFIED IN THE CONTRACT PLANS.
6. THE DRILLED SHAFTS HAVE AN ALLOWABLE DESIGN LATERAL BEARING PRESSURE OF 250 LBS. PER SQ. FT. PER FOOT OF DEPTH.
7. UNLESS OTHERWISE NOTED, ALL REINFORCEMENT BARS SHALL BE EPOXY COATED IN ACCORDANCE WITH MN/DOT 3301. SPIRAL BARS AND J, K, L, & M BARS NEED NOT BE EPOXY COATED.
8. THE FOLLOWING TORQUE VALUES SHALL BE USED WHEN INSTALLING ALL ANCHOR NUTS FOR OVERHEAD SIGN STRUCTURES:  
ANCHOR  

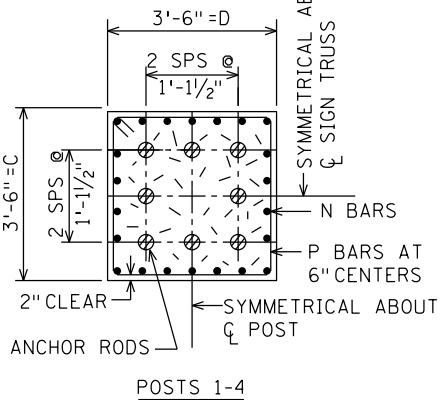
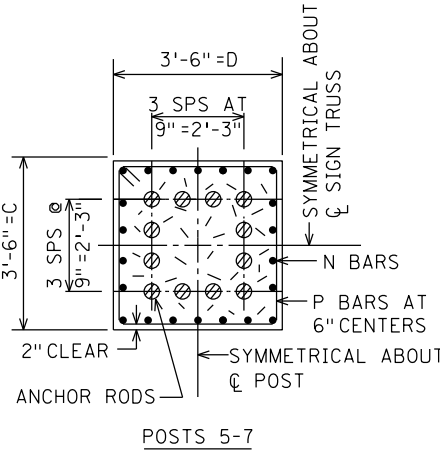
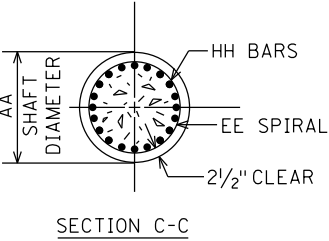
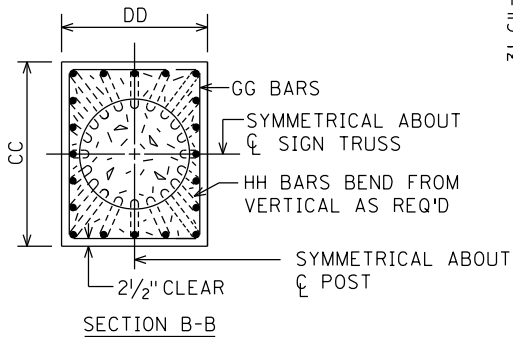
| BOLT DIAMETER     | TORQUE (FT./LBS.) |
|-------------------|-------------------|
| $2 \frac{1}{4}$ " | 375               |
| $2 \frac{1}{2}$ " | 450               |

THE CONTRACTOR SHALL BURR THE THREADS OF THE ANCHOR BOLTS IN ACCORDANCE WITH MN/DOT 2402.3H AFTER TORQUEING NUTS.

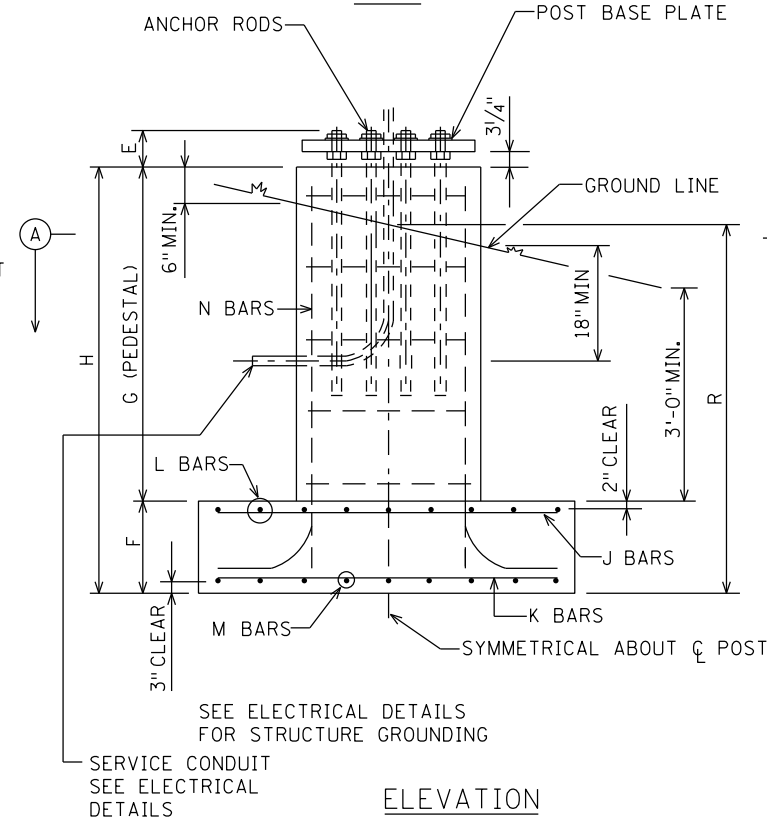
NOTE ⑤: MUST BE FORMED A MINIMUM OF 6" BELOW THE GROUND SURFACE. THE EXCAVATED AREA FOR FORMING SHALL BE BACKFILLED AND TAMPED WITH EQUIVALENT TO SURROUNDING MATERIAL.



DRILLED SHAFT



PEDESTAL CROSS SECTIONS A-A



ELEVATION  
SPREAD FOOTINGS

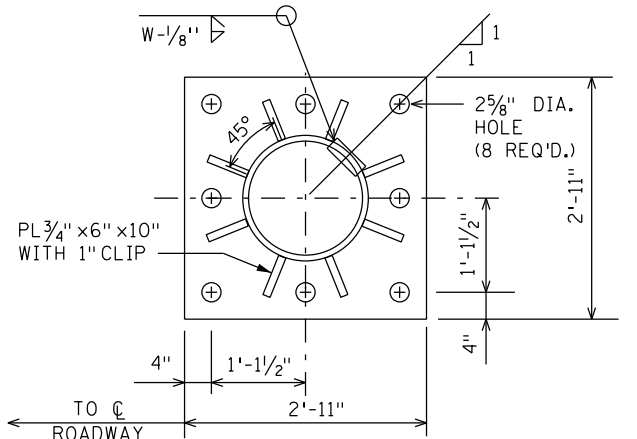
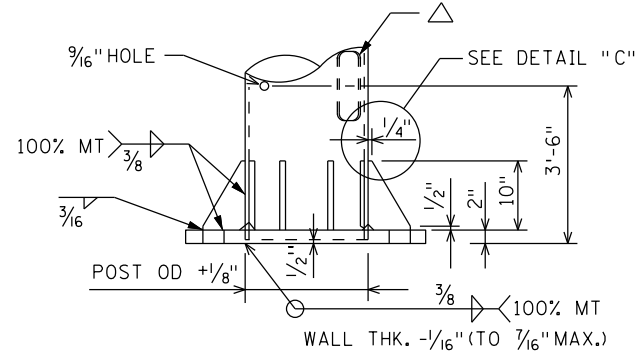
| DRILLED SHAFT |            |        |       |       |                   |               |               |                 |                        | SPREAD FOOTINGS  |                                 |                    |                                 |
|---------------|------------|--------|-------|-------|-------------------|---------------|---------------|-----------------|------------------------|------------------|---------------------------------|--------------------|---------------------------------|
| POST NO.      | DIMENSIONS |        |       |       | REINFORCING BARS  |               |               |                 | ESTIMATED QUANTITIES ④ |                  | SUMMARY OF ESTIMATED QUANTITIES |                    |                                 |
|               | AA         | BB     | CC    | DD    | EE                | FF ③          | GG            | HH              | CONCRETE CY            | REIN. STEEL LBS. | CONCRETE CY ②                   | REIN. STEEL LBS. ② | ANCH. ASSM. LBS ST. EXC. C.Y. ② |
| 1-4           | 3'-0" Ø    | 23'-0" | 3'-6" | 3'-6" | 16'-6" x 197 LBS. | 5 #5 x 14'-1" | 7 #5 x 14'-1" | 20 #9 x 22'-7"  | 6.9                    | 1910             | 9.3 + 0.46 G                    | 945 + 98G          | 781 7.4 R                       |
| 5-7           | 4'-0" Ø    | 29'-0" | 4'-0" | 4'-0" | 22'-6" x 362 LBS. | 5 #5 x 16'-1" | 7 #5 x 16'-1" | 24 #10 x 28'-7" | 14.1                   | 3490             | 16.7 + 0.46 G                   | 2333 + 133G        | 1320 12.1 R                     |

| SPREAD FOOTINGS |             |        |       |       |        |       |              |        |            |           |              |        |           |      |              |           |      |        |              |      |        |           |                |           |                |    |        |
|-----------------|-------------|--------|-------|-------|--------|-------|--------------|--------|------------|-----------|--------------|--------|-----------|------|--------------|-----------|------|--------|--------------|------|--------|-----------|----------------|-----------|----------------|----|--------|
| POST NO.        | ANCHOR RODS |        |       |       |        |       | J REIN. BARS |        |            |           | K REIN. BARS |        |           |      | L REIN. BARS |           |      |        | M REIN. BARS |      |        |           | ⑥ N REIN. BARS |           | P REIN. BARS ① |    |        |
|                 | A           | B      | C     | D     | E      | F     | NO. REQ'D    | DIA.   | LENGTH     | NO. REQ'D | SIZE         | LENGTH | NO. REQ'D | SIZE | LENGTH       | NO. REQ'D | SIZE | LENGTH | NO. REQ'D    | SIZE | LENGTH | NO. REQ'D | SIZE           | LENGTH    |                |    |        |
| 1-4             | 14'-0"      | 9'-0"  | 3'-6" | 3'-6" | 8 1/2" | 2'-0" | 8            | 2 1/4" | 3'-10 1/2" | 14        | #4           | 8'-6"  | 14        | #6   | 8'-6"        | 10        | #5   | 13'-6" | 10           | #7   | 13'-6" | 20        | #9             | H + 2'-6" | 2G             | #5 | 14'-3" |
| 5-7             | 18'-0"      | 12'-6" | 3'-6" | 3'-6" | 9"     | 2'-0" | 12           | 2 1/2" | 4'-0"      | 19        | #4           | 12'-0" | 19        | #6   | 12'-0"       | 13        | #6   | 17'-6" | 13           | #10  | 17'-6" | 24        | #10            | H + 2'-9" | 2G             | #5 | 14'-3" |

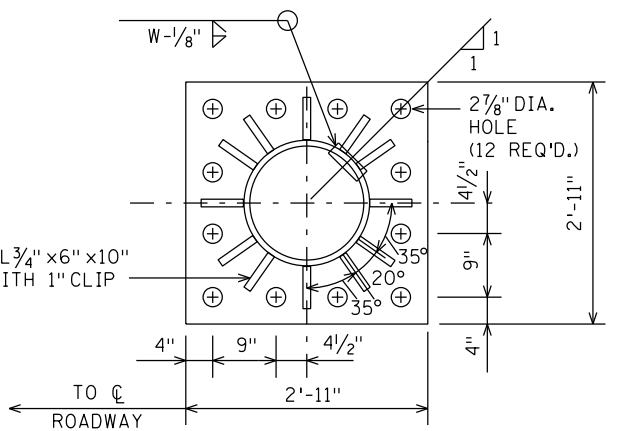
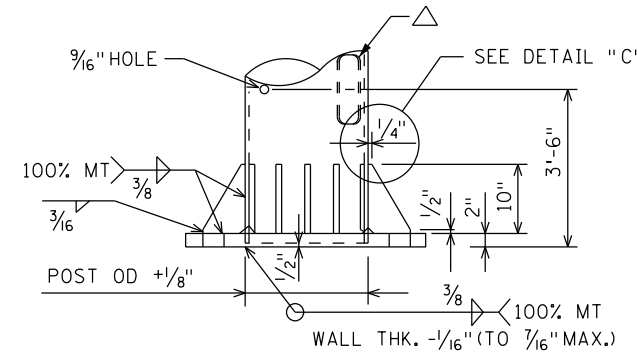
STANDARD OVERHEAD SIGN SUPPORTS  
INTERIM DESIGN B

FOUNDATIONS AND  
ANCHOR RODS

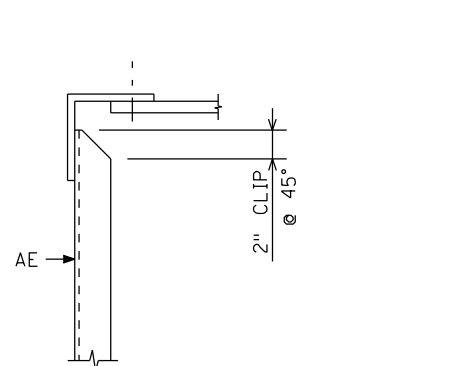
DRAWING ST-3



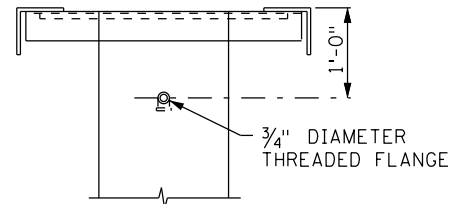
PLAN & ELEVATION - BASEPLATE TYPE A  
 POST NO. 1 THRU 4



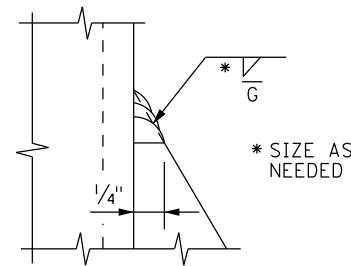
PLAN & ELEVATION - BASEPLATE TYPE B  
 POST NO. 5 THRU 7



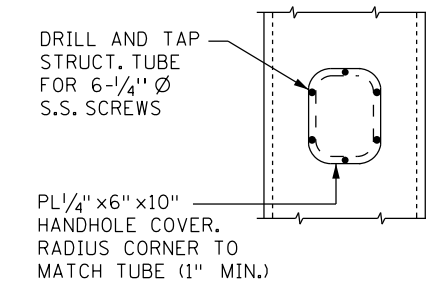
VIEW A-A



VIEW B-B  
 (TYPE 'E' POSTS)

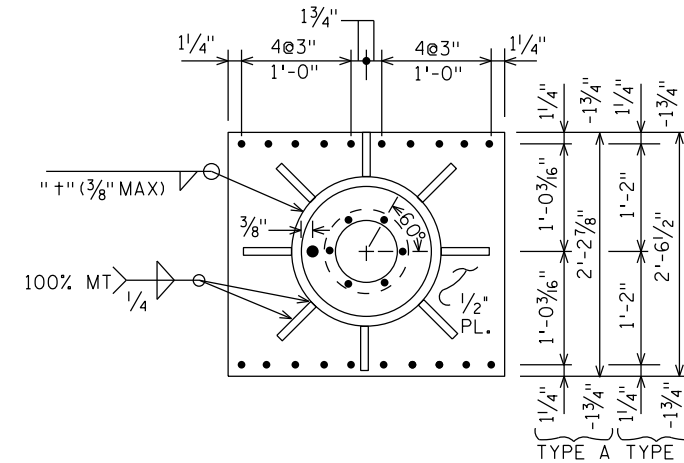
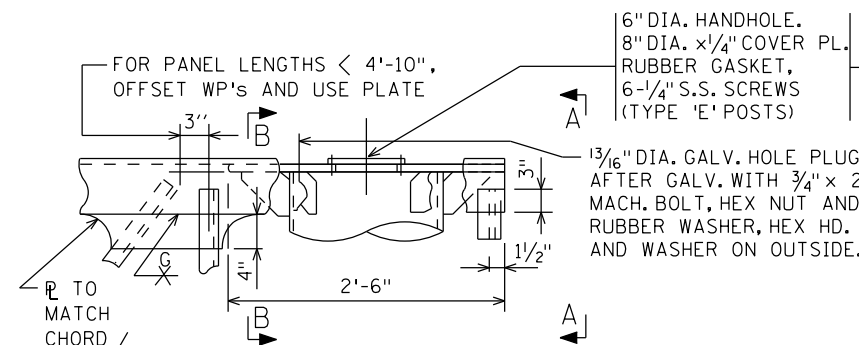


DETAIL "C"

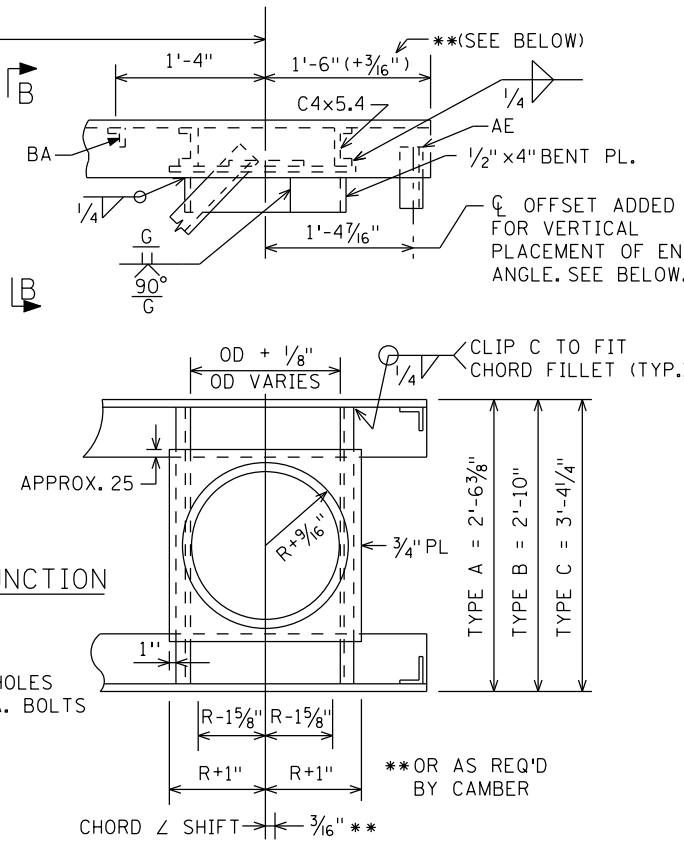


HANDHOLE & COVER PLATE DETAIL  
 (TYPE 'E' POSTS)

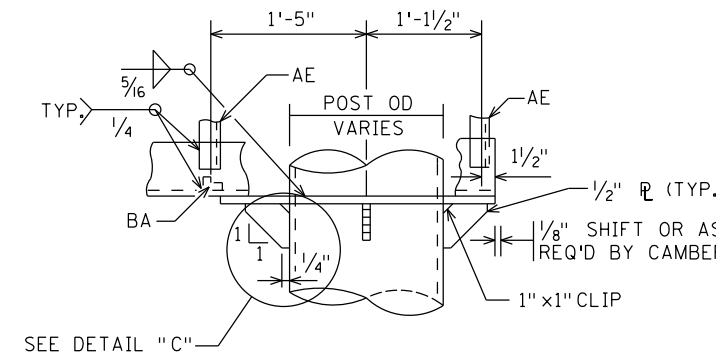
△ = FOR TYPE 'E' POST ONLY: LOCATE 45° AWAY FROM TRAFFIC. 10" x 6" x 1/2" x 0'-2" STRUCTURAL TUBE OR EQUAL W/1/4" RUBBER GASKET.



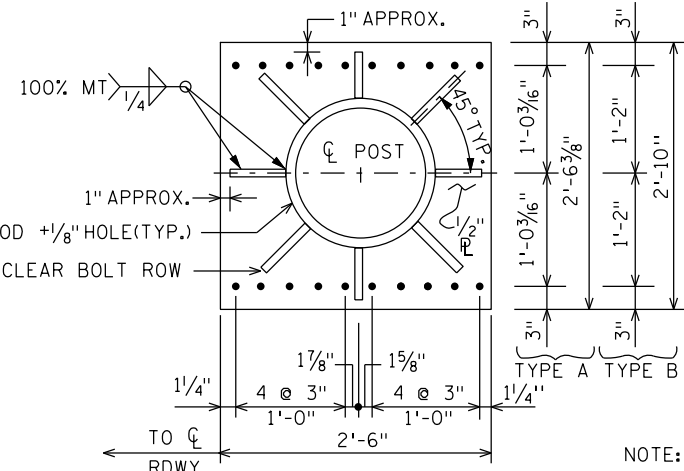
UPPER JUNCTION



SIMPLE TRUSS

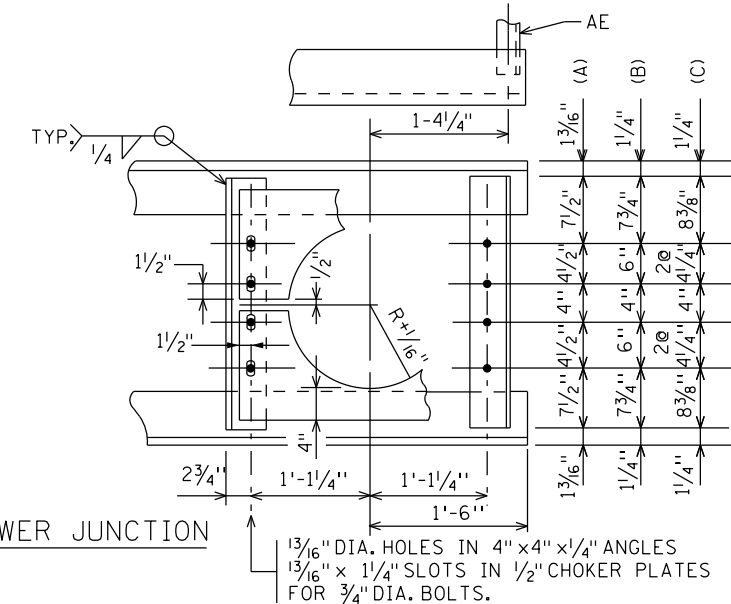


CANTILEVER TRUSS



NOTE:  
 CHOKER PLATES AND HANDHOLE COVERS SHALL BE GALVANIZED SEPARATELY.

LOWER JUNCTION

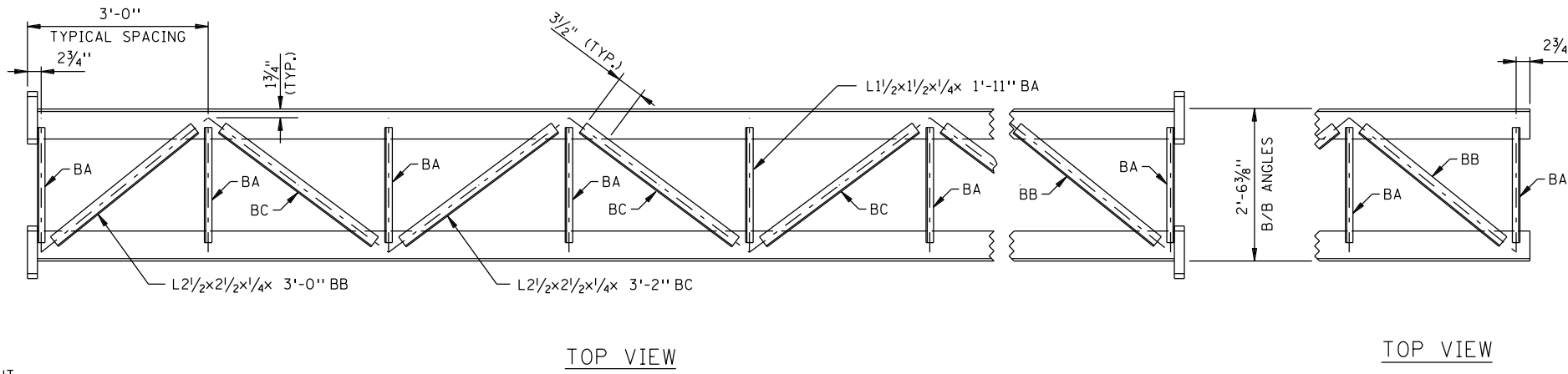
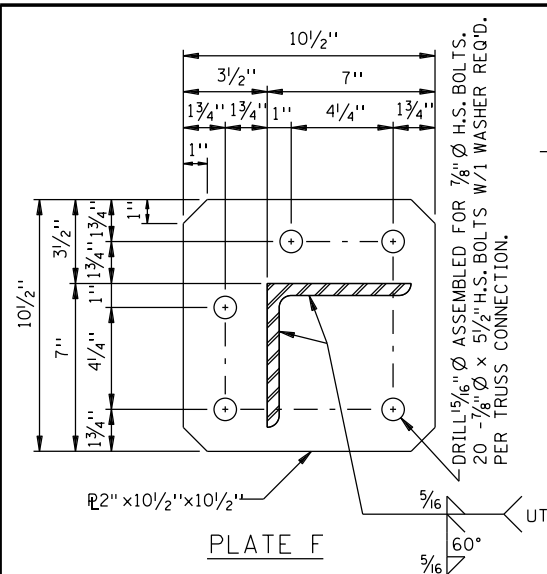


STANDARD OVERHEAD SIGN SUPPORTS  
 INTERIM DESIGN B

TRUSS/POST CONNECTION  
 &  
 BASEPLATES

DRAWING ST-4





NOTES:

TRUSS SECTIONS SHALL BE MADE IN MULTIPLES OF 6'-0", EXCEPT THAT THE BRACING PANEL NEAREST EACH POST MAY VARY TO MAKE UP THE NEEDED SECTION LENGTH. WELDED CHORD SPLICES ARE NOT PERMITTED EXCEPT IN CANTILEVER TRUSSES AS NOTED BELOW.

CANTILEVER TRUSSES SHALL BE SUPPLIED AS A SINGLE UNIT WHENEVER POSSIBLE. WHEN CANTILEVER TRUSS LENGTH EXCEEDS 40'-0" CHORDS MAY BE SPLICED, AS SHOWN, IN THE END BRACING PANEL ONLY. CHORD SPLICE WELD SHALL BE COMPLETE PENETRATION, WITH 100% UT AND MT TESTING PER 2471.3M.

UNLESS OTHERWISE SHOWN, ALL WELDS SHALL BE  
1/4" FILLET WELDS ALL AROUND.

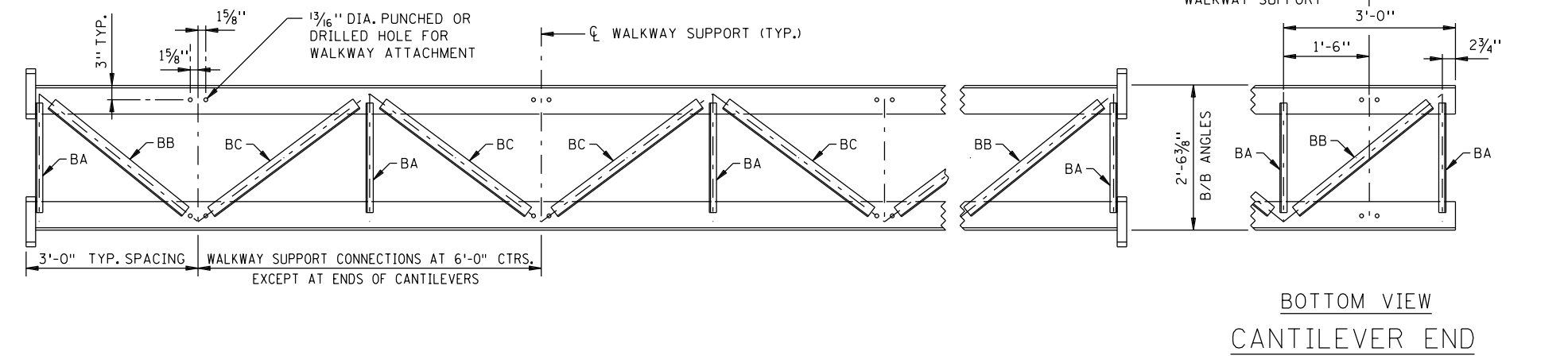
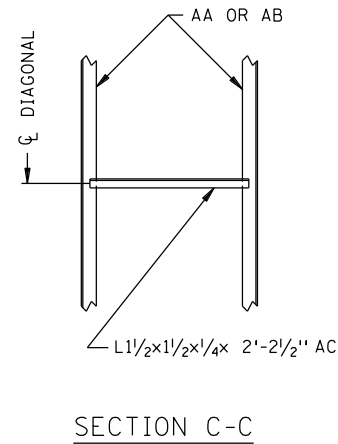
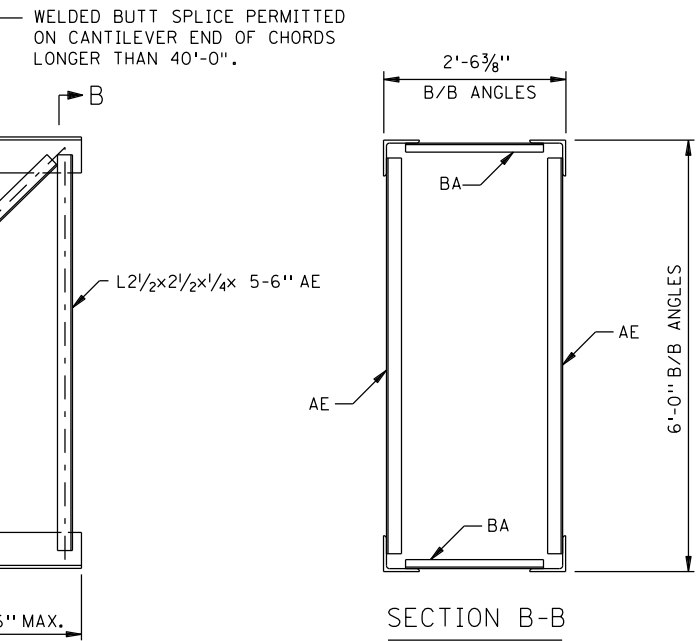
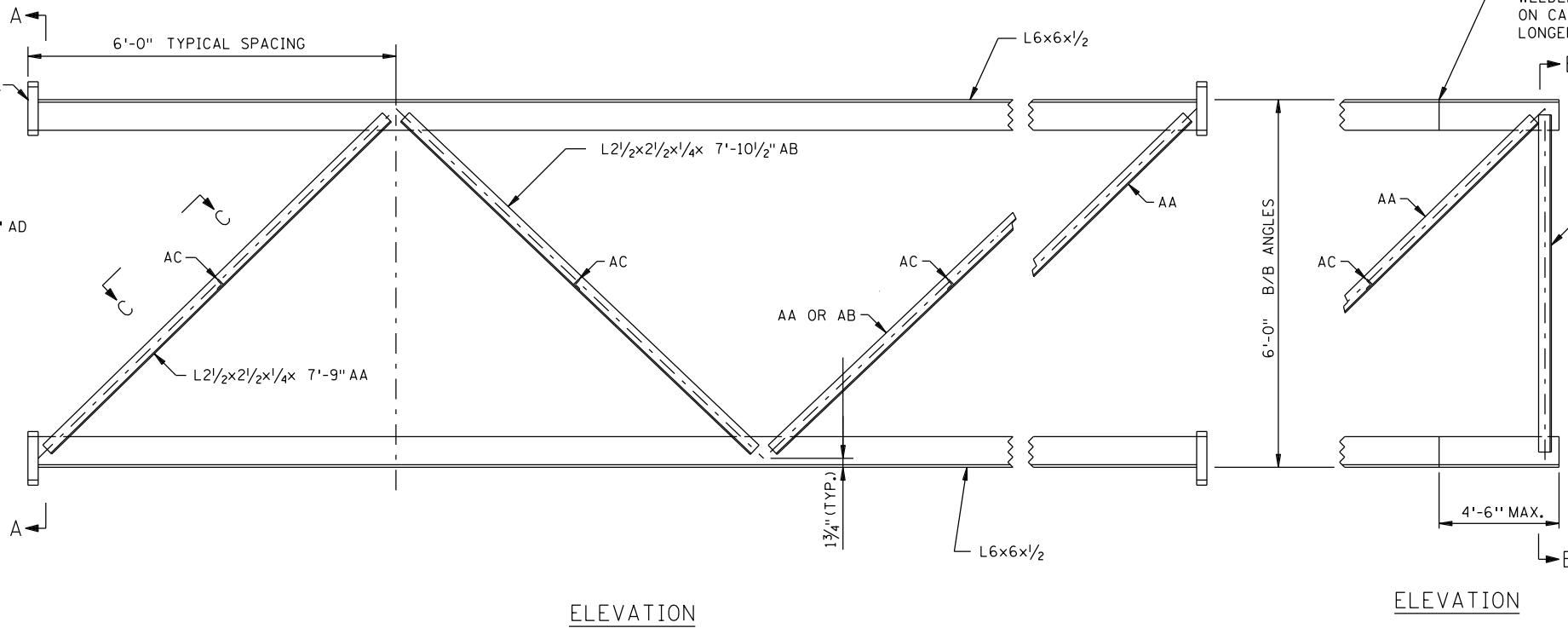
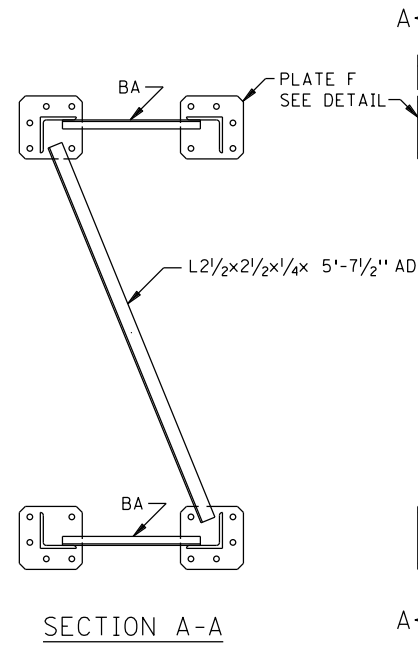
BOLTED SPLICES SHALL NOT BE LOCATED BEHIND  
CMS SIGNS.

PROVIDE 2- 1/16" BRASS, STAINLESS STEEL OR GALVANIZED STEEL SHIMS AT EACH FLANGE TO BRING TRUSS INTO CORRECT CAMBER AND ALIGNMENT.

TRUSSES SHALL BE SHOP ASSEMBLED AND MATCH MARKED.

ALL VIEWS OF THE TRUSSES ARE DRAWN FROM THE  
INSIDE OF THE TRUSS LOOKING OUT.

SEE DRAWING ST-4 FOR POST CONNECTION DETAILS.



NOTE:

NOTE: THE BOTTOM VIEW IS DETAILED TO PROVIDE FOR WALKWAY ATTACHMENT. WHERE THE WALKWAY IS OMITTED, PROVIDE STRUT BA AS INDICATED IN THE TOP VIEW.

BOTTOM VIEW

SIMPLE SPAN

BOTTOM VIEW

CANTILEVER END

DETAILS SHOWN ARE FOR THE FREE ENDS  
OF THE CANTILEVER SPANS. ALL OTHER  
DETAILS FOR CANTILEVER TRUSSES SHALL  
BE AS SHOWN FOR THE SIMPLE SPANS.

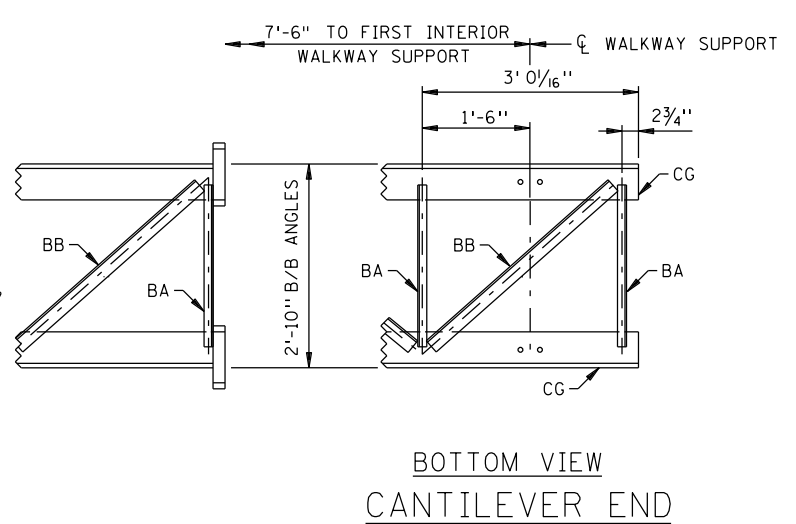
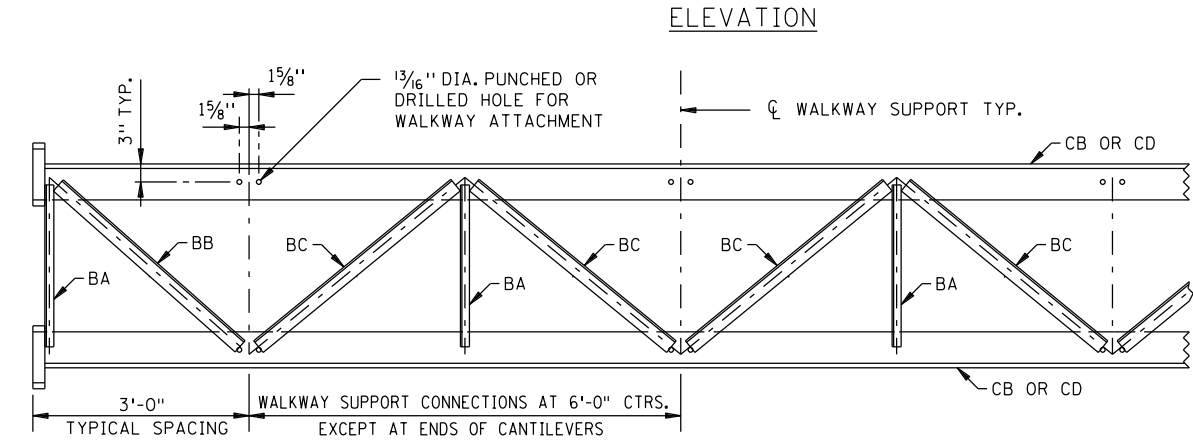
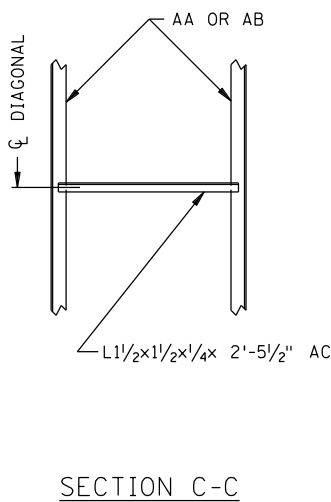
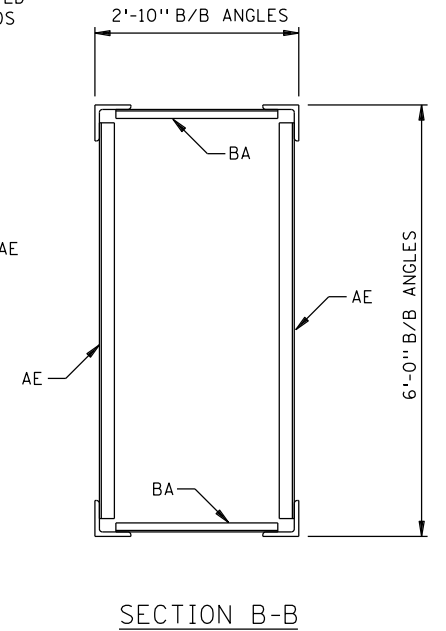
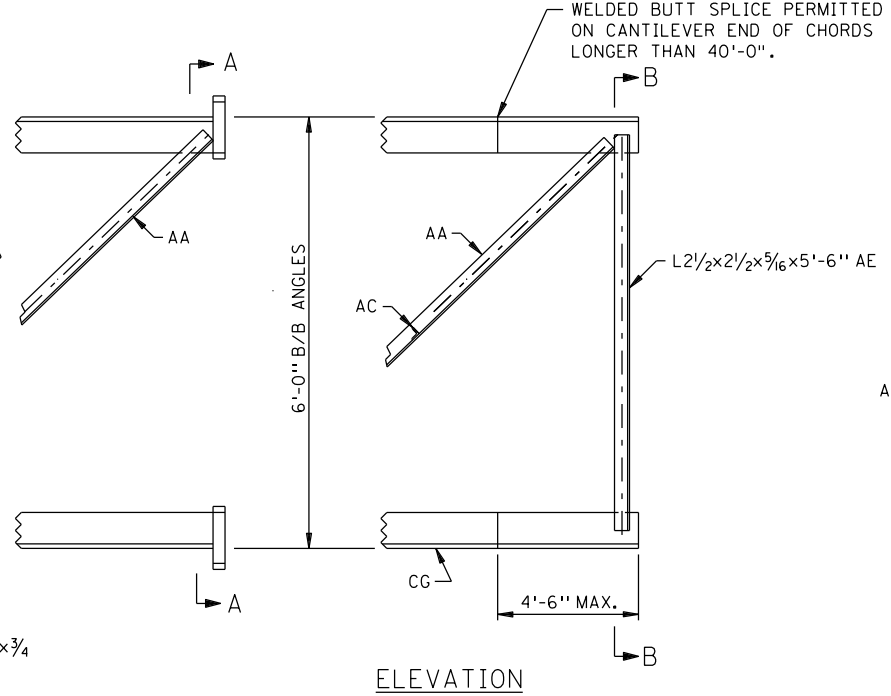
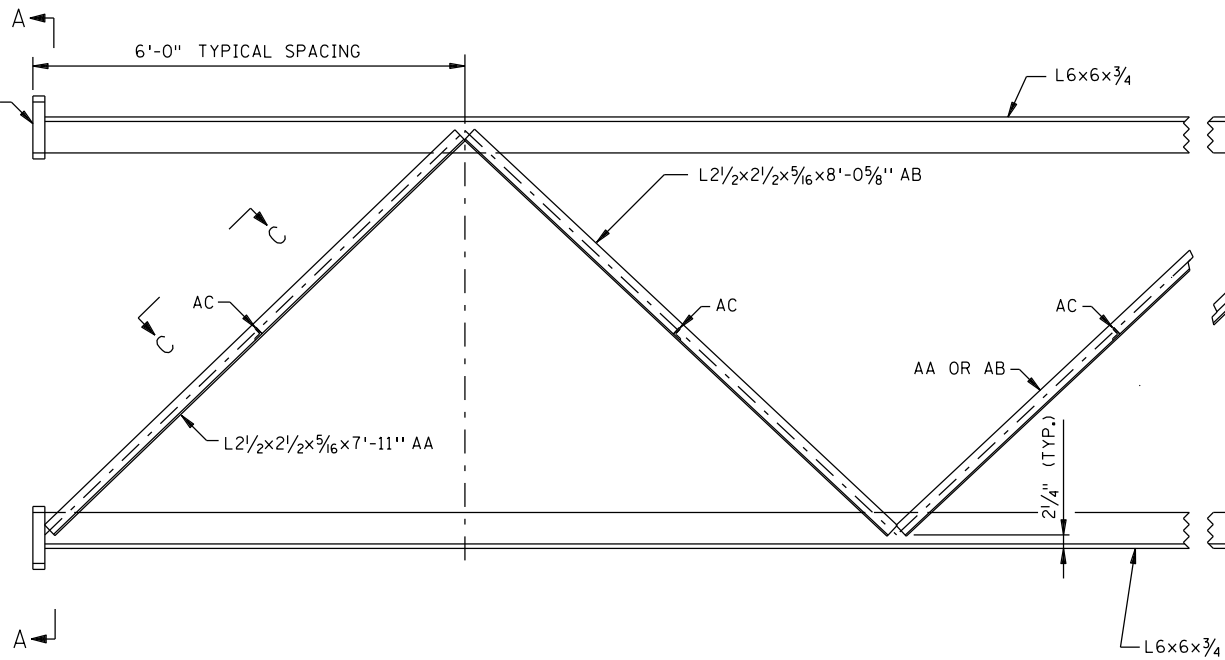
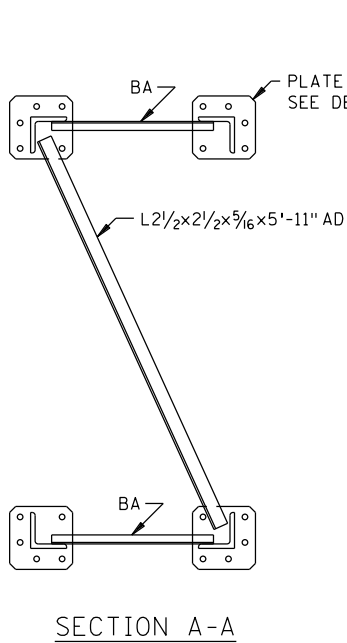
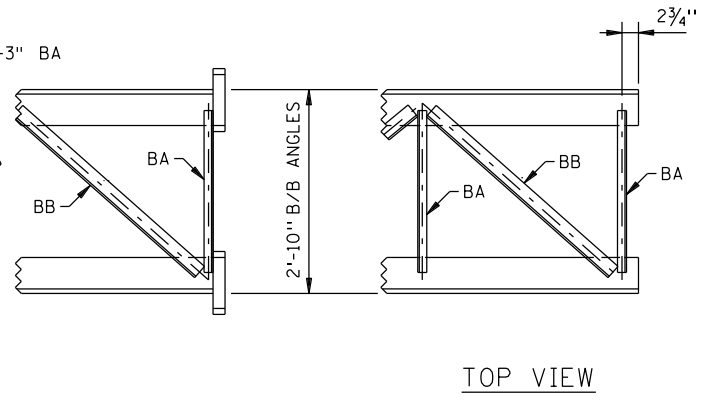
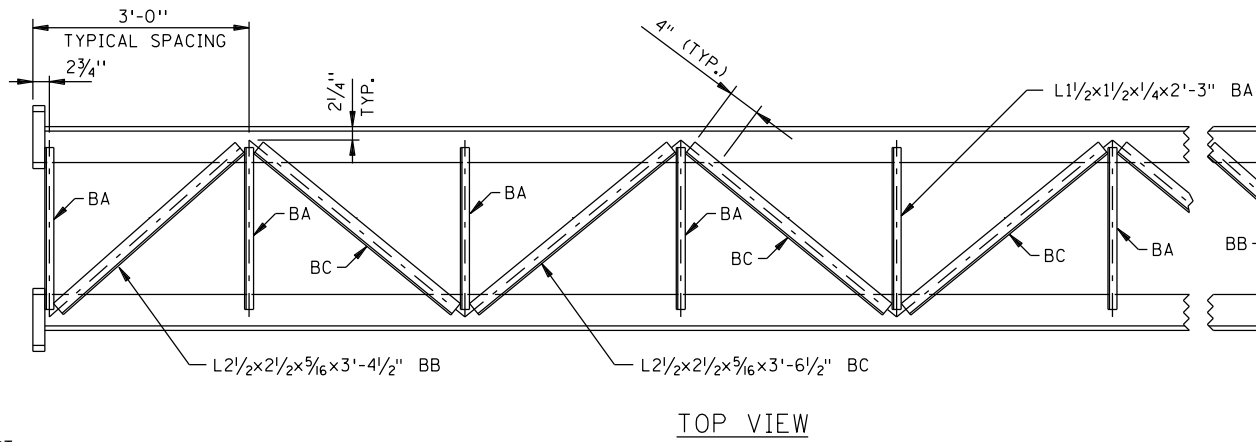
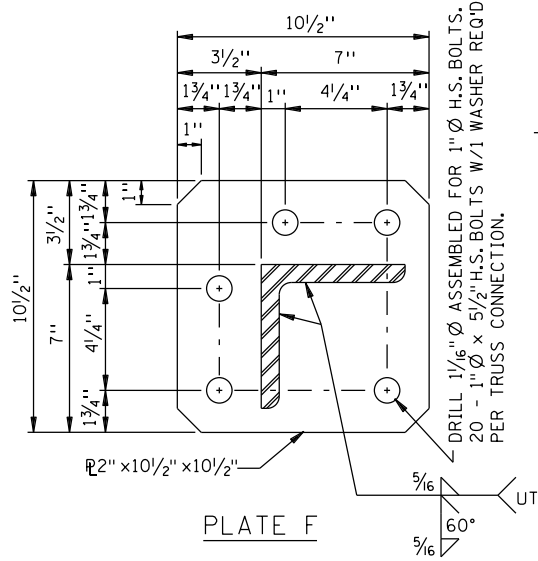
STANDARD OVERHEAD SIGN SUPPORTS  
INTERIM DESIGN B

SIGN TRUSS DETAILS  
TRUSS TYPE A

DRAWING ST-5

DISTRICT #: METRO  
IPLOT NAME: STD.STD\*21  
PATH & FILENAME: IP\_PWP-d143240\STD.STD\*.dgn

PLOTTED/REVISED: 2/5/2013



NOTE:  
THE BOTTOM VIEW IS DETAILED TO PROVIDE FOR WALKWAY ATTACHMENT. WHERE THE WALKWAY IS OMITTED, PROVIDE STRUT BA AS INDICATED IN THE TOP VIEW.

DETAILS SHOWN ARE FOR THE FREE ENDS OF THE CANTILEVER SPANS. ALL OTHER DETAILS FOR CANTILEVER TRUSSES SHALL BE AS SHOWN FOR THE SIMPLE SPANS.

NOTES:

TRUSS SECTIONS SHALL BE MADE IN MULTIPLES OF 6'-0", EXCEPT THAT THE BRACING PANEL NEAREST EACH POST MAY VARY TO MAKE UP THE NEEDED SECTION LENGTH. WELDED CHORD SPLICES ARE NOT PERMITTED EXCEPT IN CANTILEVER TRUSSES AS NOTED BELOW.

CANTILEVER TRUSSES SHALL BE SUPPLIED AS A SINGLE UNIT WHENEVER POSSIBLE. WHEN CANTILEVER TRUSS LENGTH EXCEEDS 40'-0" CHORDS MAY BE SPLICED, AS SHOWN, IN THE END BRACING PANEL ONLY. CHORD SPLICE WELD SHALL BE COMPLETE PENETRATION, WITH 100% UT AND MT TESTING PER 2471.3M.

UNLESS OTHERWISE SHOWN, ALL WELDS SHALL BE 1/4" FILLET WELDS ALL AROUND.

BOLTED SPLICES SHALL NOT BE LOCATED BEHIND CMS SIGNS.

PROVIDE 2- 1/16" BRASS, STAINLESS STEEL OR GALVANIZED STEEL SHIMS AT EACH FLANGE TO BRING TRUSS INTO CORRECT CAMBER AND ALIGNMENT.

TRUSSES SHALL BE SHOP ASSEMBLED AND MATCH MARKED.

ALL VIEWS OF THE TRUSSES ARE DRAWN FROM THE INSIDE OF THE TRUSS LOOKING OUT.

SEE DRAWING ST-4 FOR POST CONNECTION DETAILS.

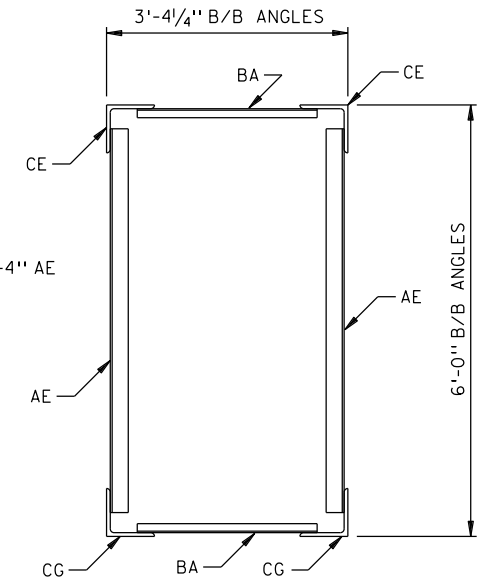
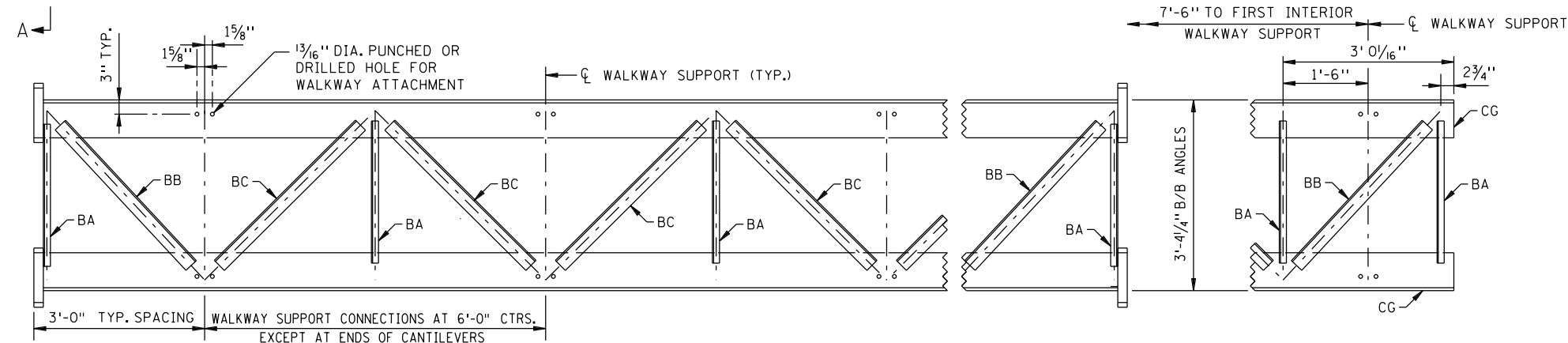
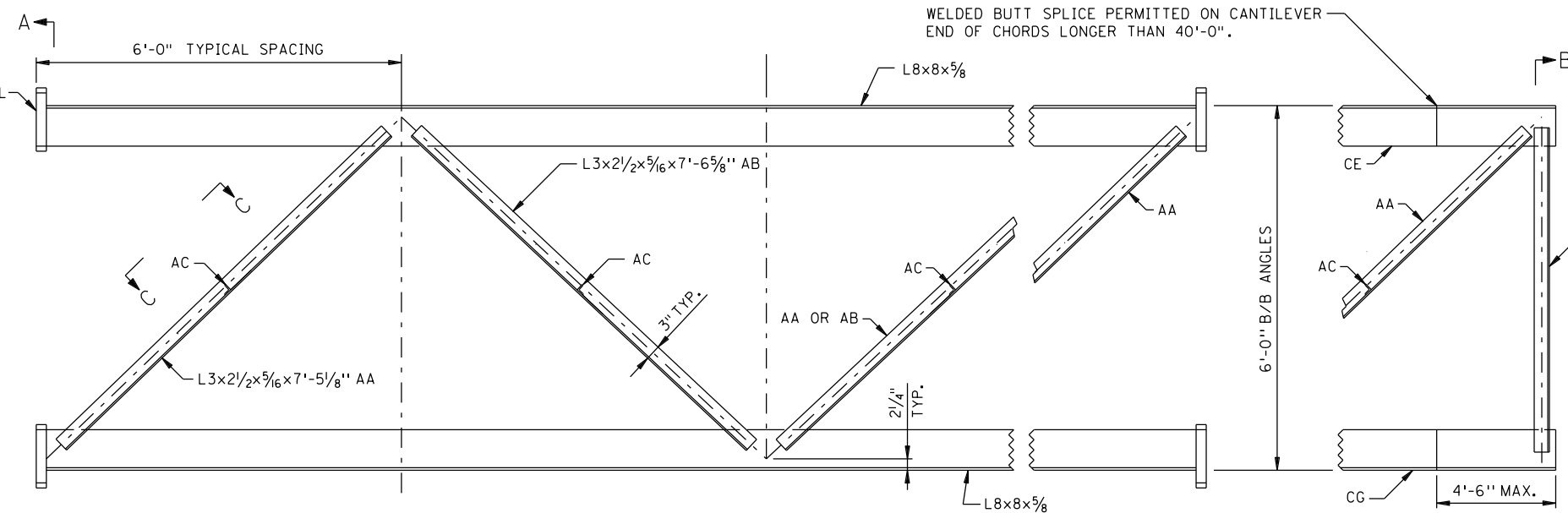
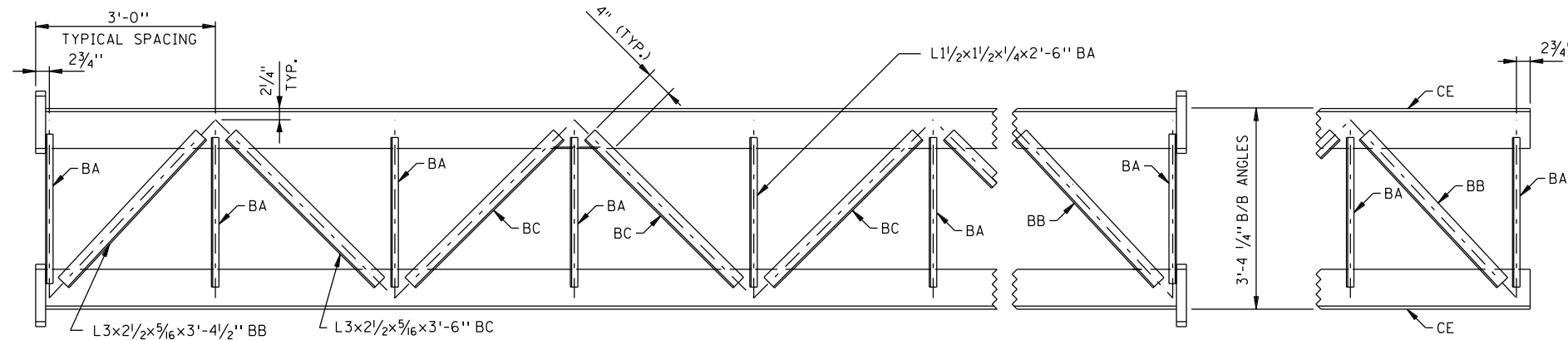
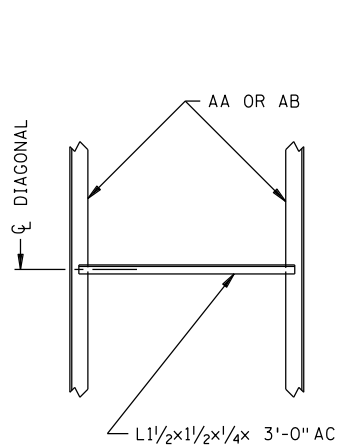
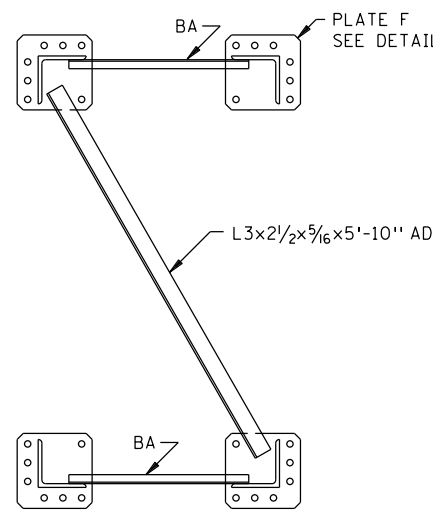
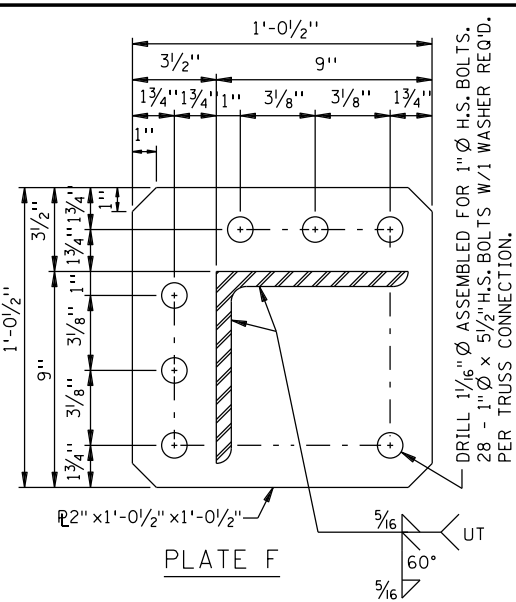
STANDARD OVERHEAD SIGN SUPPORTS  
INTERIM DESIGN B

SIGN TRUSS DETAILS  
TRUSS TYPE B

DRAWING ST-6



PATH & FILENAME: IP\_PWP:d\43240\STD\_STD#.dgn



NOTES:

TRUSS SECTIONS SHALL BE MADE IN MULTIPLES OF 6'-0", EXCEPT THAT THE BRACING PANEL NEAREST EACH POST MAY VARY TO MAKE UP THE NEEDED SECTION LENGTH. WELDED CHORD SPLICES ARE NOT PERMITTED EXCEPT IN CANTILEVER TRUSSES AS NOTED BELOW.

CANTILEVER TRUSSES SHALL BE SUPPLIED AS A SINGLE UNIT WHENEVER POSSIBLE. WHEN CANTILEVER TRUSS LENGTH EXCEEDS 40'-0" CHORDS MAY BE SPLICED, AS SHOWN, IN THE END BRACING PANEL ONLY. CHORD SPlice WELD SHALL BE COMPLETE PENETRATION, WITH 100% UT AND MT TESTING PER 2471.3M.

UNLESS OTHERWISE SHOWN, ALL WELDS SHALL BE  
1/4" FILLET WELDS ALL AROUND.

BOLTED SPLICES SHALL NOT BE LOCATED BEHIND  
CMS SIGNS.

PROVIDE 2- 1/8" BRASS, STAINLESS STEEL OR GALVANIZED STEEL SHIMS AT EACH FLANGE TO BRING TRUSS INTO CORRECT CAMBER AND ALIGNMENT.

TRUSSES SHALL BE SHOP ASSEMBLED AND MATCH MARKED.

ALL VIEWS OF THE TRUSSES ARE DRAWN FROM THE INSIDE OF THE TRUSS LOOKING OUT.

SEE DRAWING ST-4 FOR POST CONNECTION DETAILS.

NOTE:

NOTE:  
THE BOTTOM VIEW IS DETAILED TO  
PROVIDE FOR WALKWAY ATTACHMENT. WHERE  
THE WALKWAY IS OMITTED, PROVIDE STRUT  
BA AS INDICATED IN THE TOP VIEW.

REVISÉD 2/8/00

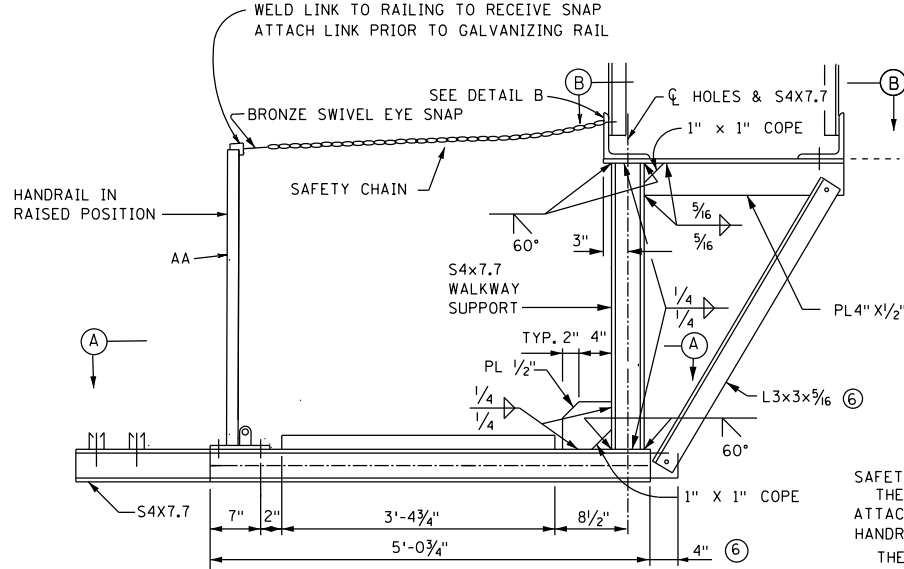
STATE PROJ. NO.

SHEET NO. 65 OF 73 SHEETS

## STANDARD OVERHEAD SIGN SUPPORTS INTERIM DESIGN B

SIGN TRUSS DETAILS  
TRUSS TYPE C

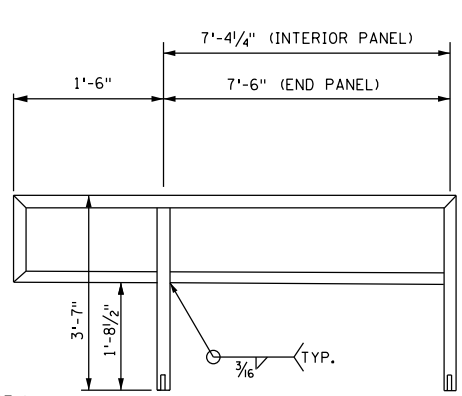
DRAWING ST-7



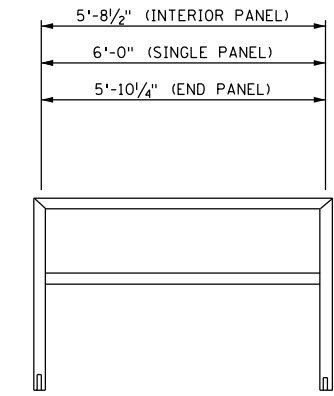
| SIGN HEIGHT | X ①   |
|-------------|-------|
| 6'-6"       | 1'-0" |
| 7'-0"       | 1'-3" |
| 7'-6"       | 1'-6" |
| 8'-0"       | 1'-9" |
| 8'-6"       | 2'-0" |
| 9'-0"       | 2'-3" |
| 9'-6"       | 2'-6" |
| 10'-0"      | 2'-9" |
| 10'-6"      | 3'-0" |
| 11'-0"      | 3'-3" |
| 11'-6"      | 3'-6" |
| 12'-0"      | 3'-9" |
| 12'-6"      | 4'-0" |
| 13'-0"      | 4'-3" |

① SEE NOTE 1 ON DRAWING ST-1

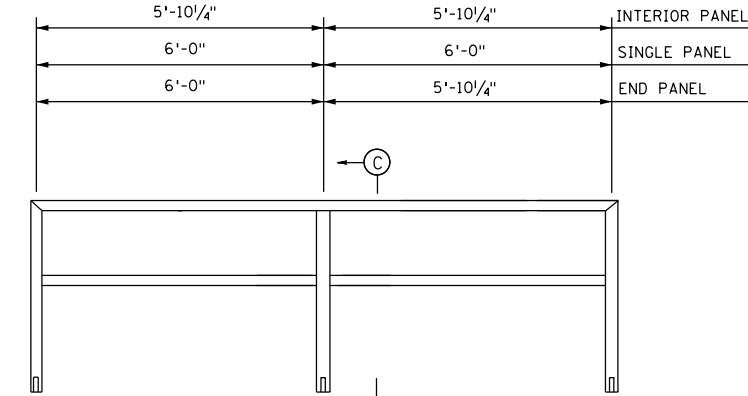
SAFETY CHAIN NOTES:  
THE SAFETY CHAIN SHALL BE ATTACHED AT EACH END OF THE HANDRAIL.  
THE CHAIN SHALL BE 3/16" STAINLESS STEEL STRAIGHT LENGTH CHAIN WITH APPROXIMATELY 12 LINKS PER FOOT.  
THE CHAIN AND ITS CONNECTIONS SHALL HAVE A MINIMUM RATED WORK LOAD OF 700 LBS.



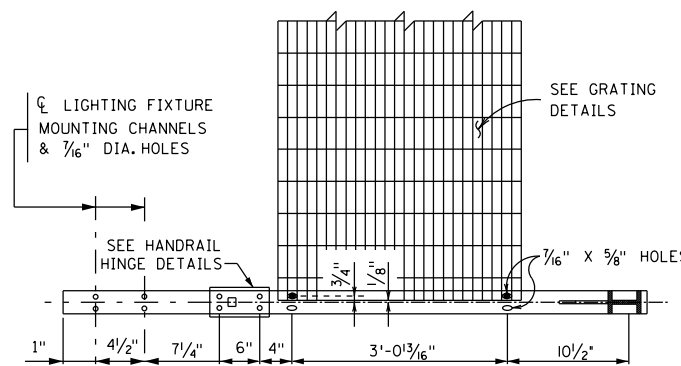
RAILING ELEVATION AT END OF CANTILEVER



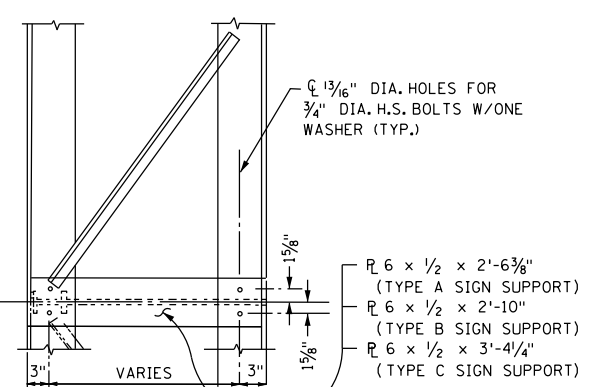
RAILING ELEVATION 6' PANEL



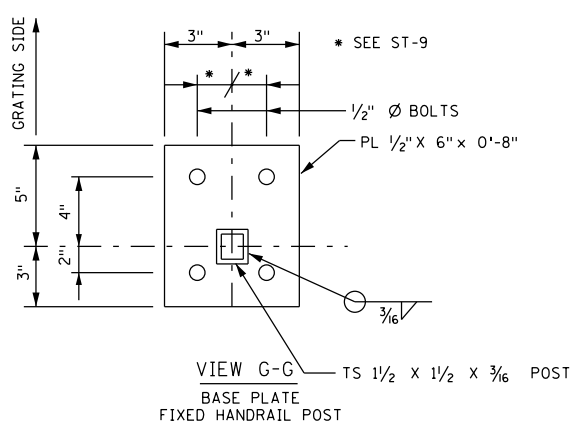
RAILING ELEVATION 12' PANEL



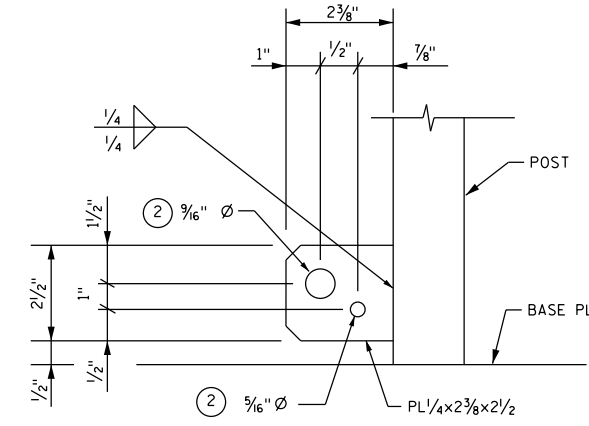
VIEW A-A



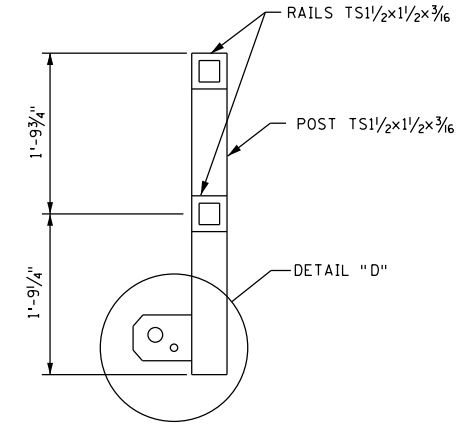
VIEW B-B



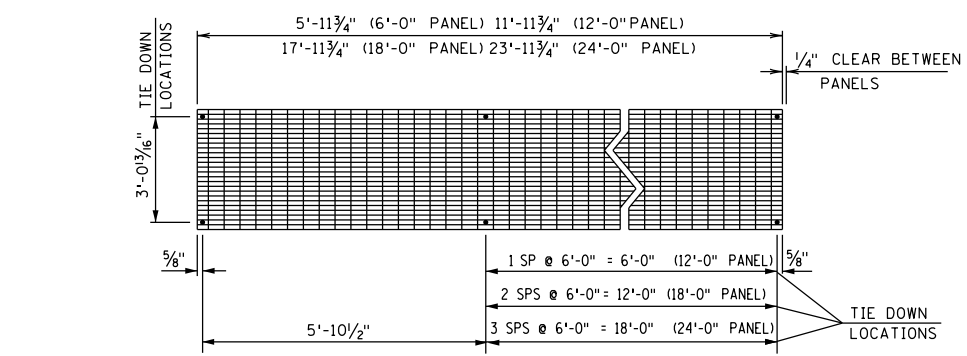
VIEW G-G  
BASE PLATE  
FIXED HANDRAIL POST



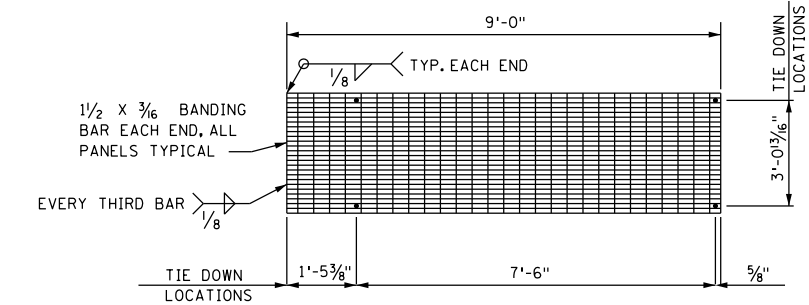
DETAIL "D"



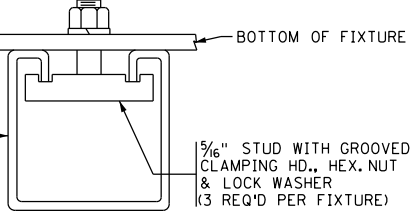
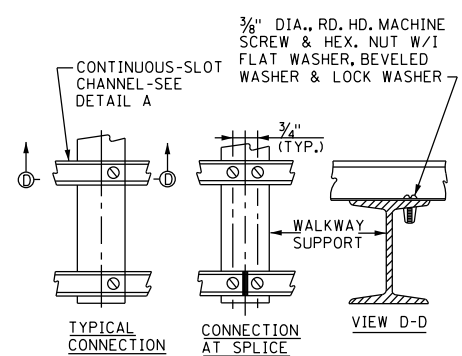
VIEW C-C  
FOLDING HANDRAIL POST



GRATING PLAN - 6'-0", 12'-0", 18'-0", OR 24'-0" PANELS



GRATING PLAN - AT CANTILEVERS ONLY

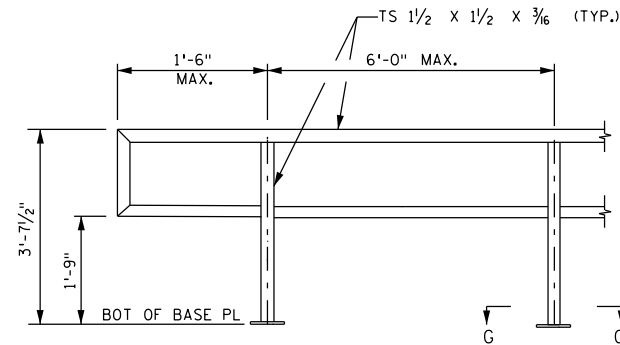


DETAIL A

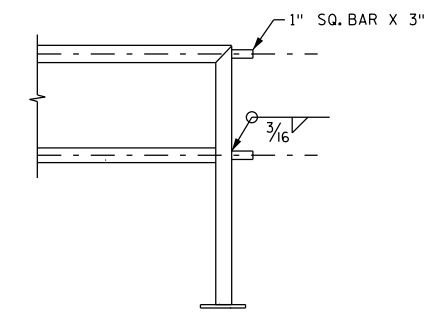
FIXTURE MOUNTING DETAILS

NOTE:  
ALL GRATING SHALL BE 3'-4 3/4" WIDE AND SHALL BE 1/2" x 3/16" SERRATED BEARING BARS AT 1 3/16" CENTERS WITH CROSS BARS AT 1/8" CENTERS. ATTACH GRATING AT EACH TIE DOWN LOCATION WITH A STAINLESS STEEL SADDLE ANCHOR DESIGNED FOR THIS SPECIFIC USE.

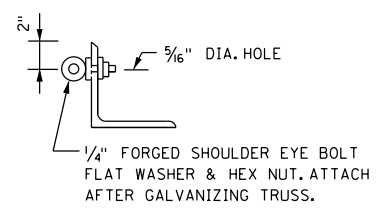
FIXTURE MOUNTING CHANNEL NOTES:  
FIXTURE MOUNTING CHANNELS SHALL EXTEND THE FULL LENGTH OF THE WALKWAY AND SHALL BE CONTINUOUS OVER AS MANY WALKWAY SUPPORT SPANS AS PRACTICABLE CONSISTENT WITH EASE OF HANDLING AND ASSEMBLING.  
JOINTS IN THE CHANNELS SHALL BE CENTERED ON THE WALKWAY SUPPORTS WITH A MAX 1/8" GAP BETWEEN SECTIONS.  
CHANNELS SHALL HAVE A 1/4" DRAIN HOLE IN EACH WALKWAY SUPPORT SPAN.



FIXED HANDRAIL FOR OH SIGN



FIXED RAIL SPLICE DETAIL



DETAIL B

- SPECIFIC NOTES:
- ① SEE NOTE 1 ON DRAWING ST-1
  - ② REAM RAILING SUPPORT BOLT AND LOCKING PIN HOLES AFTER GALVANIZING TO ENSURE BOLT AND PIN FIT.
  - ③ LED CMS
  - ④ DRUM CMS
  - ⑤ NEW LED CMS
  - ⑥ USE FOR SIGN HEIGHTS OF 11'-0" OR GREATER. EXTEND S4x7.7 BY 4" AND COPE FLANGES.

GENERAL NOTES:

WALKWAY DETAILS SHOWN ARE TYPICAL FOR CANTILEVER AND SIMPLE SPAN SIGNS

WHEN THE FORMAT SHEET INDICATES THAT THE WALKWAY IS CONTINUOUS FROM ONE SPAN TO ANOTHER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE SPECIAL LENGTH GRATING AND HANDRAIL PANELS REQUIRED.

FOLDING HANDRAIL PANELS ARE TO BE CONTINUOUS OVER A MAX. OF TWO WALKWAY SUPPORT SPANS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE LENGTH OF GRATING AND HANDRAIL PANELS REQUIRED FOR BRIDGE MOUNTED SIGNS AND CANTILEVERS WHERE THE SPECIFIED LENGTH DOES NOT AGREE WITH THE DETAILS.

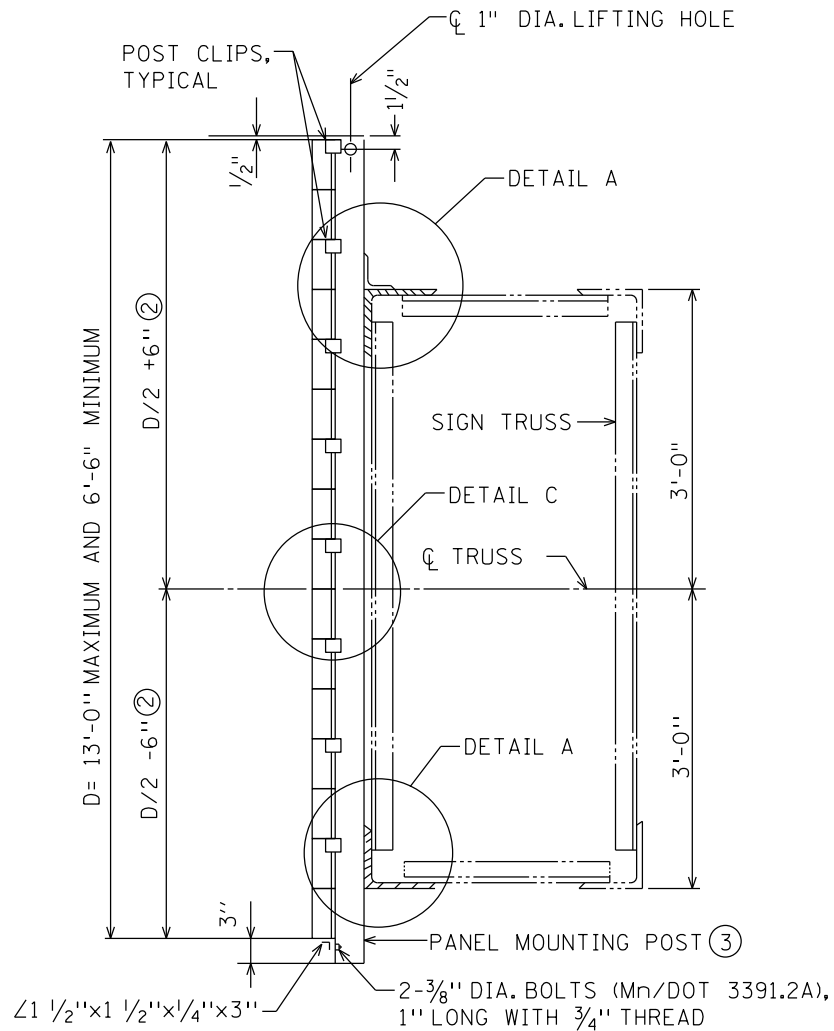
PROVIDE ADEQUATE WEEP HOLES FOR HOT-DIP GALVANIZING.

|                                                     |
|-----------------------------------------------------|
| STANDARD OVERHEAD SIGN SUPPORTS<br>INTERIM DESIGN B |
| WALKWAY DETAILS                                     |
| DRAWING ST-8                                        |

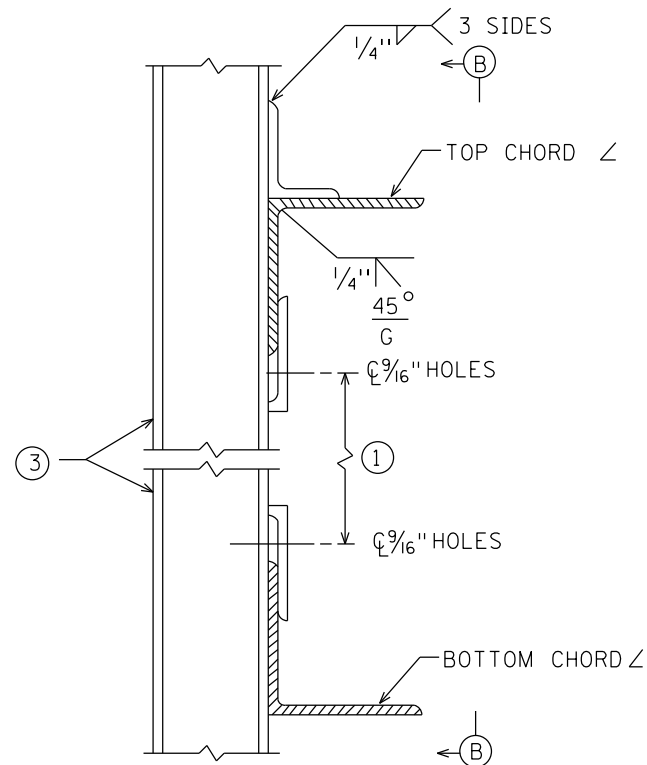
PATH & FILENAME: IP\_PWP:d\43240\STD\_STD#.dgn

PLOTTED/REVISED: 2/5/2013

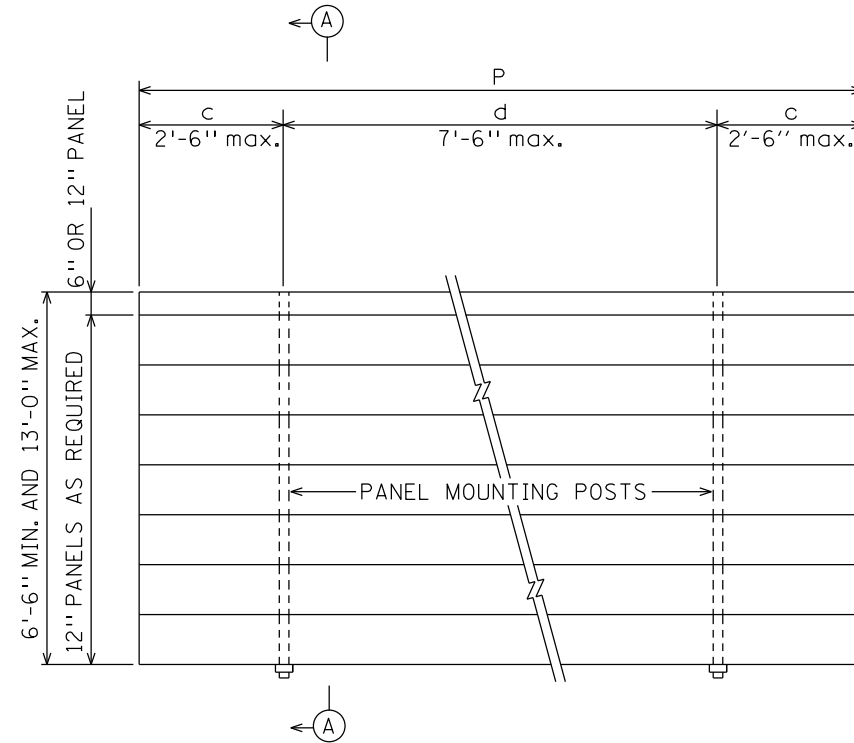
DISTRICT #: METRO  
IPLOT NAME: STD.STD\*25  
PATH & FILENAME: IP\_PWP-d143240\STD.STD\*.dgn



SECTION A-A

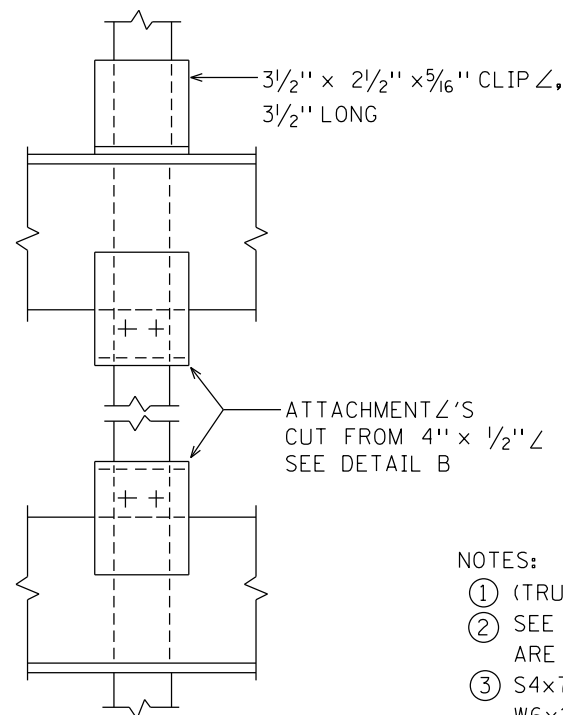


DETAIL A



| PANEL MOUNTING POST                                                                     |                                    |
|-----------------------------------------------------------------------------------------|------------------------------------|
| NO. OF POSTS                                                                            |                                    |
| 2                                                                                       | P=144" OR LESS, c=.207P, d=.586P   |
| 3                                                                                       | P=150" THRU 204", c=.145P, d=.355P |
| 4                                                                                       | P=210" THRU 276", c=.107P, d=.262P |
| 5                                                                                       | P=282" THRU 348", c=.084P, d=.208P |
| 6                                                                                       | P=354" THRU 420", c=.070P, d=.172P |
| 7                                                                                       | P=426" THRU 492", c=.059P, d=.147P |
| POST SPACING MAY BE ADJUSTED AS REQUIRED IF CONFLICT WITH TRUSS DETAILS IS ENCOUNTERED. |                                    |

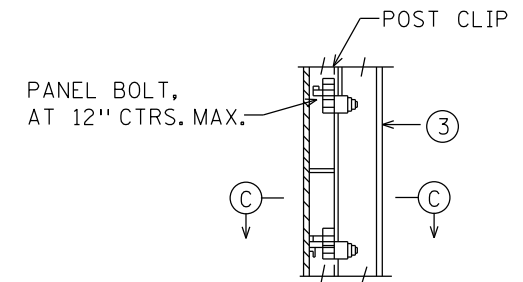
SIGN PANEL ELEVATION



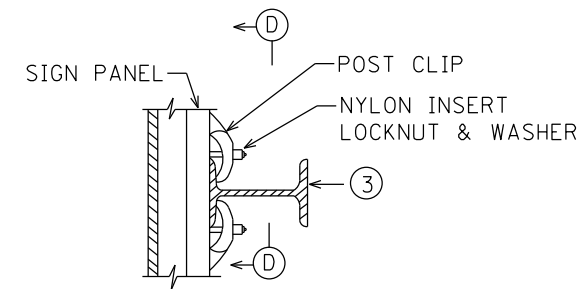
VIEW B-B

NOTES:

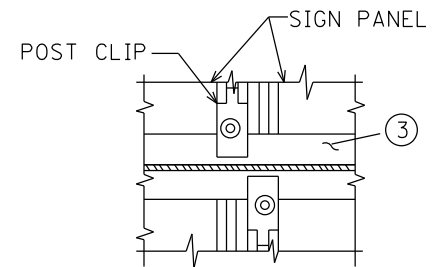
- (1) (TRUSS DEPTH)-(TOP & BOTTOM CHORD Z LEGS)-1/4"
- (2) SEE NOTE 1 ON ST-1 WHEN STANDARD PANELS AND CMS ARE MOUNTED ON THE SAME SPAN
- (3) S4x7.7 FOR SIGN HEIGHTS ≤ 11'-0"  
W6x12 FOR SIGN HEIGHTS OVER 11'-0"



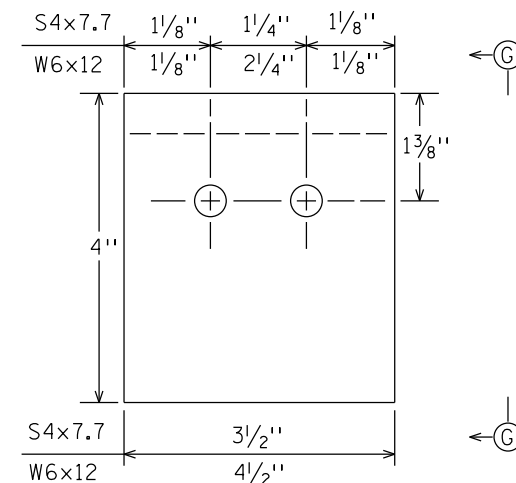
DETAIL C



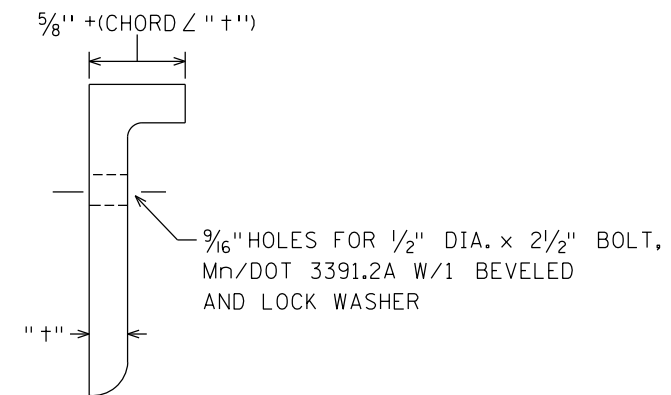
SECTION C



SECTION D-D



DETAIL B



VIEW G-G

REVISED 12/21/99

STATE PROJ. NO.

SHEET NO. 68 OF 73 SHEETS

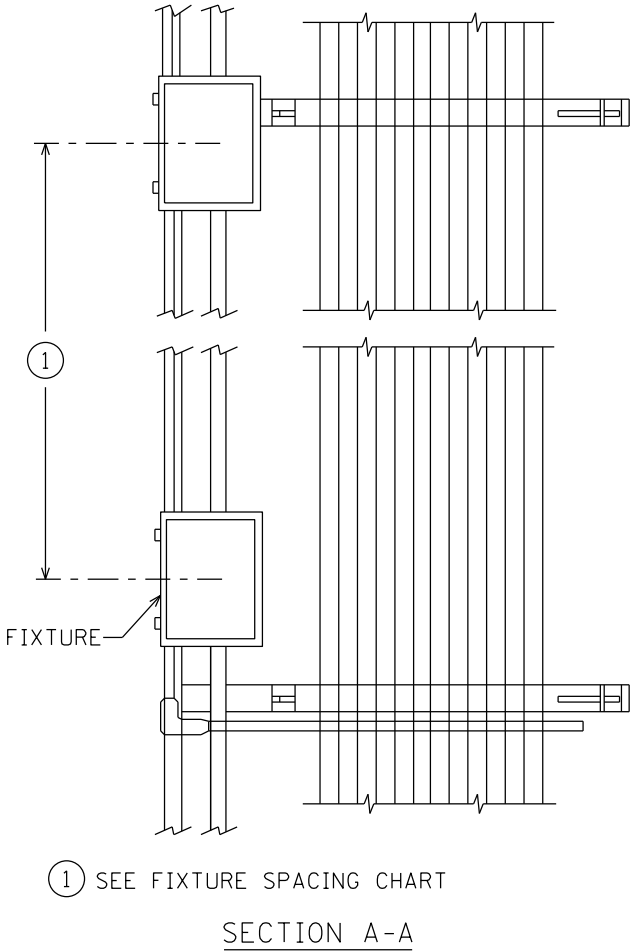
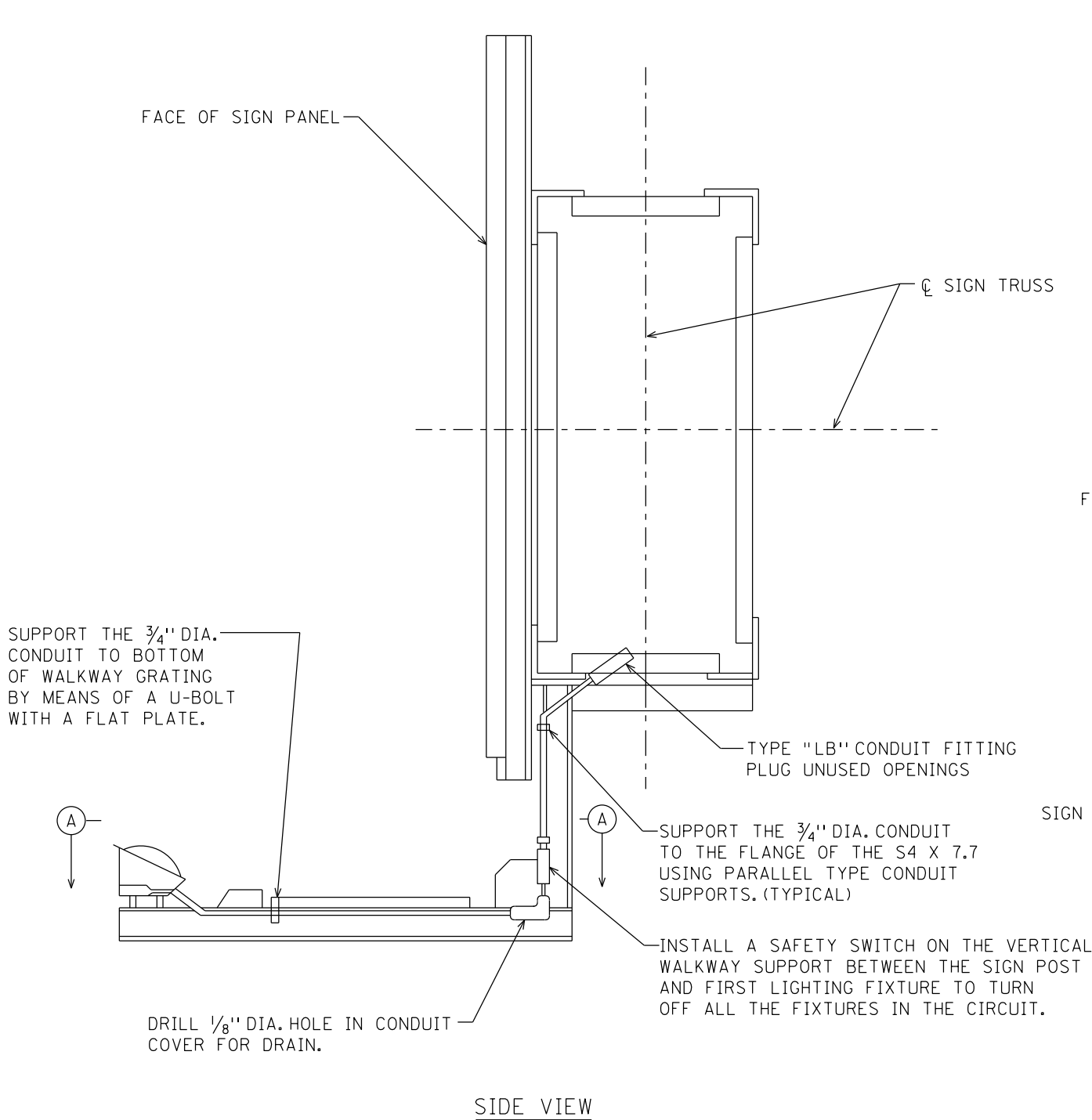
STANDARD OVERHEAD SIGN SUPPORTS  
INTERIM DESIGN B

SIGN PANEL AND PANEL  
MOUNTING POST DETAILS

DRAWING ST-10

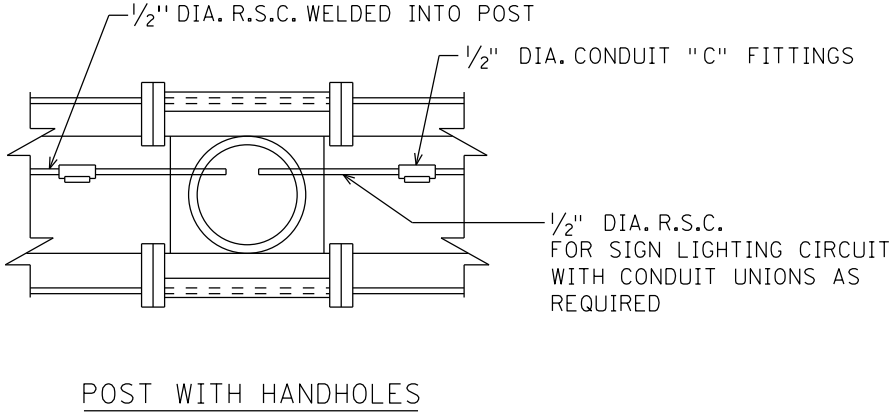
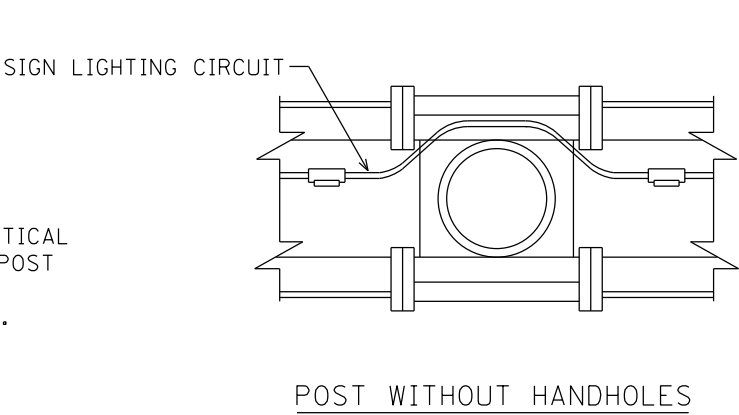
MOUNTING DETAILS FOR SIGN LIGHTING

PLOTTED/REVISED: 2/5/2013



| FIXTURE SPACING CHART |                       |                    |
|-----------------------|-----------------------|--------------------|
| W<br>(PANEL WIDTH)    | NUMBER OF<br>FIXTURES | FIXTURE<br>SPACING |
| 9.5' OR LESS          | 1                     |                    |
| 10.0' TO 16.5'        | 2                     | W/2                |
| 17.0' TO 24.5'        | 3                     | W/3                |
| 25.0' TO 32.5'        | 4                     | W/4                |
| 33.0' TO 40.5'        | 5                     | W/5                |
| 41.0' TO 48.5'        | 6                     | W/6                |
| 49.0' TO 56.5'        | 7                     | W/7                |
| 57.0' TO 64.5'        | 8                     | W/8                |
| 65.0' TO 72.5'        | 9                     | W/9                |
| 73.0' TO 80.0'        | 10                    | W/10               |

FIXTURES SHALL BE SYMMETRICALLY PLACED WITH RESPECT TO THE SIGN PANEL. SIGN PANELS WHICH ABUT EACH OTHER SHALL BE TREATED AS A SINGLE SIGN PANEL FOR LIGHTING FIXTURE SPACING.



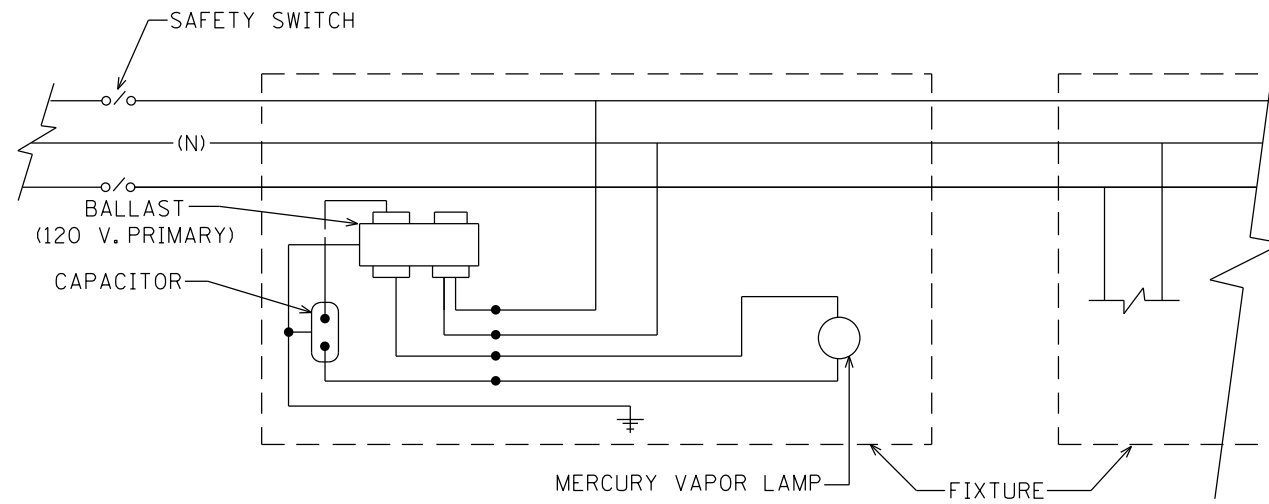
ELECTRICAL SERVICE CONNECTION FROM POST TO TRUSS

- NOTES:
- SEE SPECIAL PROVISIONS FOR SIGN LIGHTING FIXTURE REQUIREMENTS.
  - HIGH IMPACT RESISTANT POLYCARBONATE SHIELD SHALL BE PROVIDED FOR ALL SIGN LIGHTING FIXTURES INSTALLED ON TYPE OH SIGNS (BRIDGE MOUNTED).
  - WIRING BETWEEN THE SIGN POST AND THE SAFETY SWITCH SHALL BE RUN IN 3/4" R.S.C.

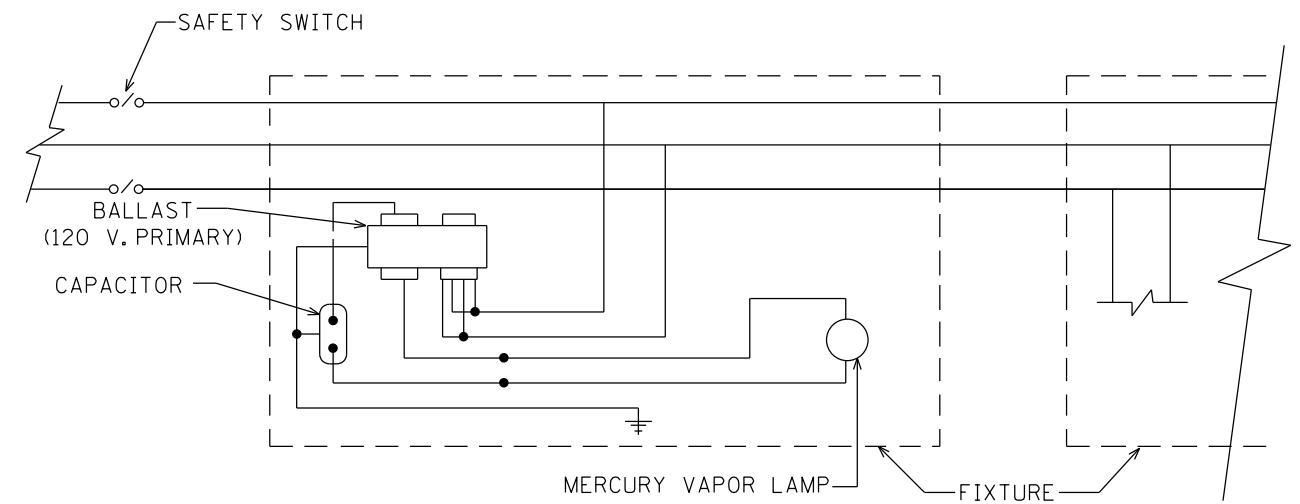
|                                                     |       |
|-----------------------------------------------------|-------|
| STANDARD OVERHEAD SIGN SUPPORTS<br>INTERIM DESIGN B |       |
| ELECTRICAL DETAILS                                  |       |
| DRAWING                                             | ST-11 |

DISTRICT #: METRO  
I/PLOT NAME: STD STD\*26  
PATH & FILENAME: IP\_PWP-d143240\STD STD\*.dgn

PLOTTED/REVISED: 2/5/2013

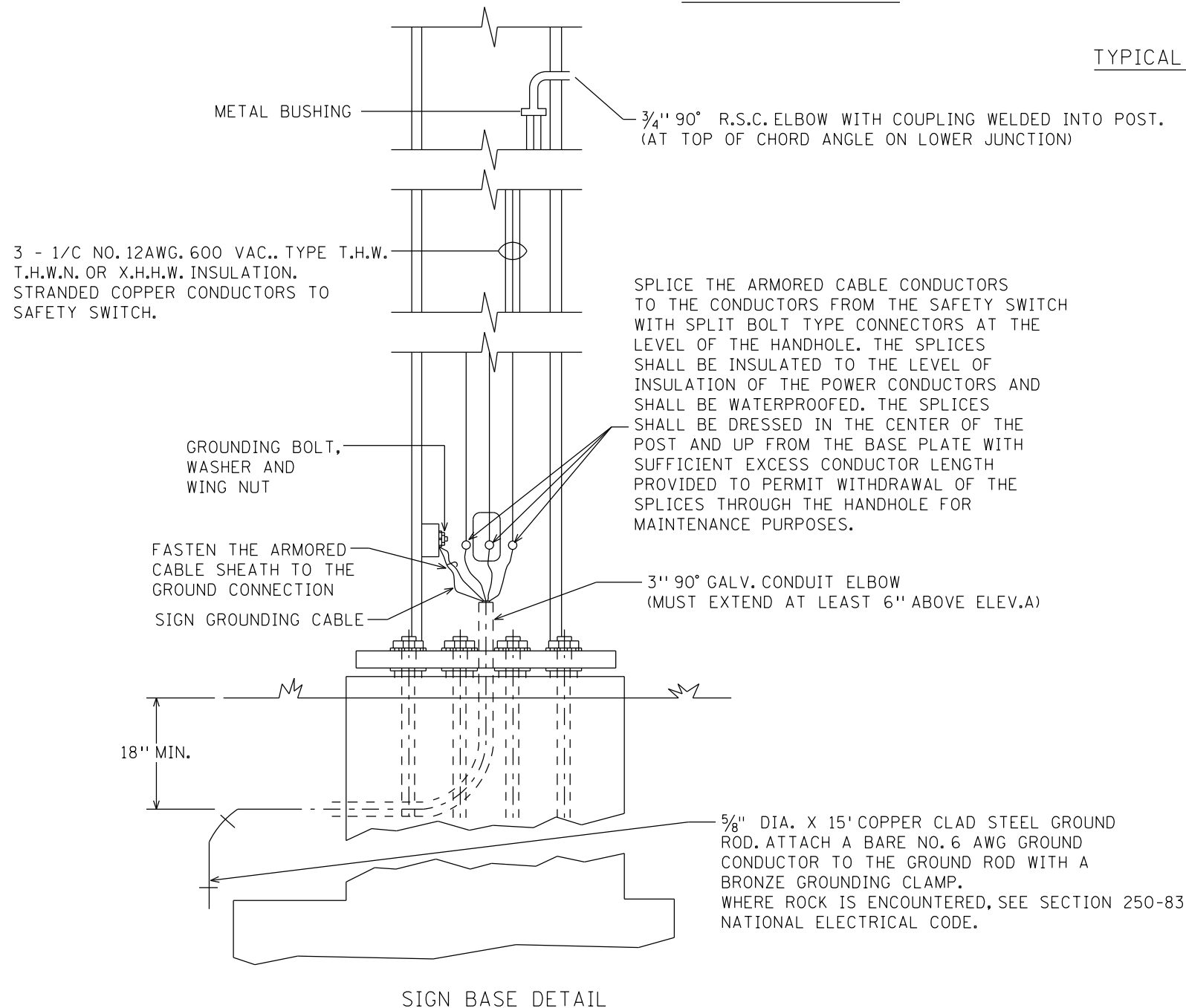


240/480 V. CIRCUIT



120/240 V. CIRCUIT

TYPICAL CIRCUIT DIAGRAMS



ELECTRICAL NOTES:

1. WHEN SIGN LIGHTING SYSTEMS HAVE BEEN COMPLETED, THE CONTRACTOR SHALL, WITHOUT FURTHER COMPENSATION, CONDUCT BURNING AND RESISTANCE TESTS FOR FINAL ACCEPTANCE. THE RESISTANCE TO GROUND OF EACH UNGROUNDED CONDUCTOR SHALL BE NOT LESS THAN 8 MEGOHMS.
2. ALL FITTINGS, HUBS, UNIONS, BUSHINGS, ETC. SHALL BE SUPPLIED AS PART OF CONDUIT, CONDUIT ENTERING SIGN POSTS SHALL HAVE INSULATED GROUNDING BUSHINGS INSTALLED BEFORE PULLING WIRE.
3. CONDUIT ON STRUCTURE SHALL BE SURFACED MOUNTED, STRAPPED AT EVERY ANGLE BRACE WITH U-BOLT TYPE CLAMPS.
4. SUCCESSIVE LIGHTING FIXTURES SHALL BE CONNECTED ON ALTERNATE SIDES OF THE 3-WIRE CIRCUIT.
5. THE CABLE SHEATH SHALL EXTEND AT LEAST 4" ABOVE THE TOP OF THE CONDUIT END AND THE TAPE ARMOR OF ARMORED CABLE SHALL BE CONNECTED TO THE GROUNDING BOLT IN THE SIGN POSTS.
6. WIRING FROM THE SAFETY SWITCH TO LIGHTING FIXTURES SHALL BE 1/C NO. 12 AWG AND SHALL BE RUN IN 3/4" R.S.C. ALL SPLICING SHALL BE ACCOMPLISHED WITH A WIRE NUT AND WATERPROOF COATING. ALL CONDUIT CONNECTIONS SHALL BE RAIN TIGHT.

STANDARD OVERHEAD SIGN SUPPORTS  
INTERIM DESIGN B

ELECTRICAL DETAILS

DRAWING ST-12

STATE PROJ. NO.

SHEET NO. 70 OF 73 SHEETS

DISTRICT #: METRO  
I/PLOT NAME: STD STD\*27  
PATH & FILENAME: IP\_PWP-d143240\STD STD\*.dgn



PLOTTED/REVISED: 2/5/2013

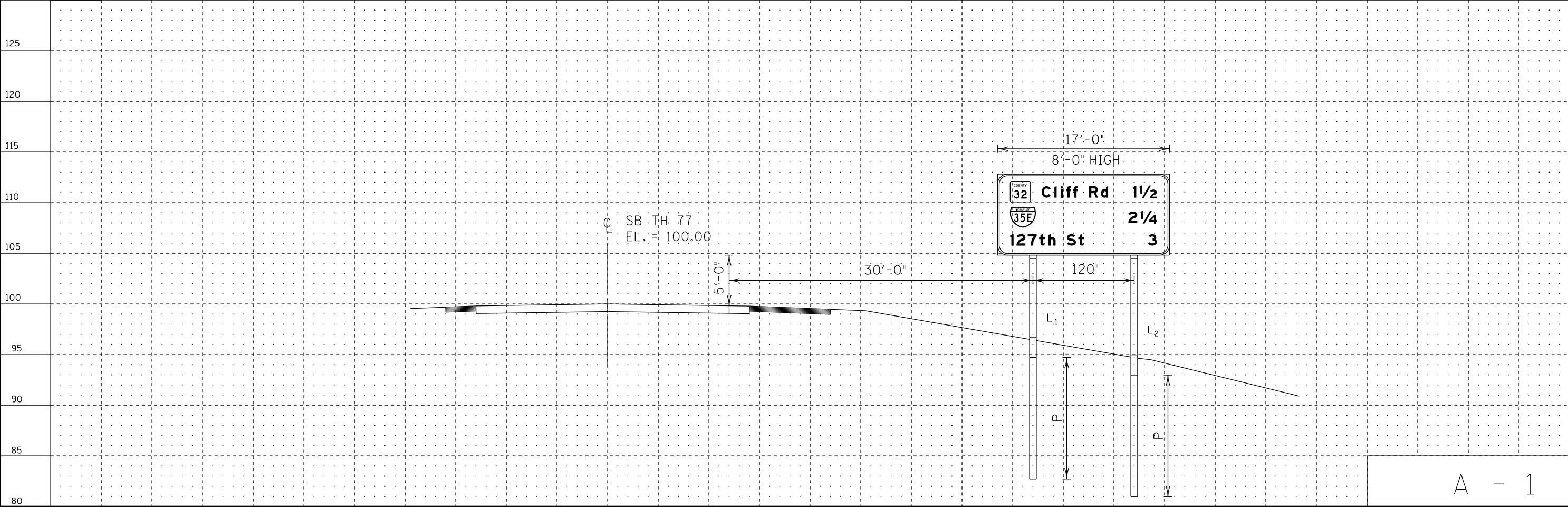
SIGN    A-1

SB    T.H. 77

STA. 369+00

|              |                |          |
|--------------|----------------|----------|
| POST TYPE    |                | W6X20    |
| POST LENGTH  | L <sub>1</sub> | 16.0 FT. |
| POST LENGTH  | L <sub>2</sub> | 18.0 FT. |
| PILE FOOTING | P              | 12.0 FT. |

DISTRICT #: METRO  
IPLOT NAME: X-SECTIONS.XS\*  
PATH & FILENAME: IP\_PWP-d143240\X-SECTIONS.XS\*.dgn



PLOTTED/REVISED: 2/5/2013

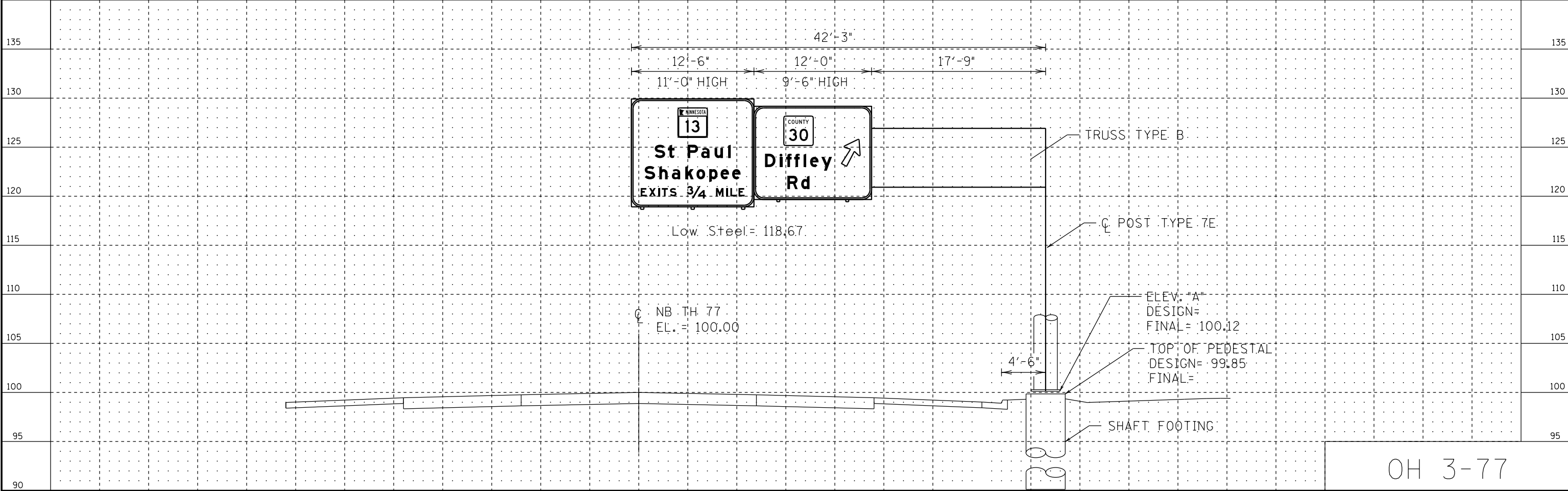
OH 3-77

N.B. T.H. 77  
 STA. 215+25

QUANTITIES

|                           | DESIGN       | FINAL |
|---------------------------|--------------|-------|
| POST STEEL                | 6976 LBS     | _____ |
| TRUSS STEEL               | 7098 LBS     | _____ |
| WALKWAY SUPPORT STEEL     | LBS          | _____ |
| WALKWAY GRATING STEEL     | LBS          | _____ |
| PANEL MOUNTING POST STEEL | 501 LBS      | _____ |
| CONCRETE (SHAFT) FOOTING  | 14.1 CU YDS  | _____ |
| SIGN PANELS TYPE OH       | 251.50 SQ FT | _____ |

NOTES: 1. LOW STEEL IS BOTTOM OF PANEL MOUNTING POSTS ON THE TALLEST PANEL.  
 2. STRUCTURE IS DESIGNED FOR FUTURE WALKWAY.



DISTRICT #: METRO

IPLOT NAME: X-SECTIONS.XS\*

PATH & FILENAME: IP\_PWP-d143240\X-SECTIONS.XS\*.dgn

DRAWN BY:

CHECKED BY: RAS

CERTIFIED BY *Michael B. Weiss*  
 LICENSED PROFESSIONAL ENGINEER

LIC. NO. 10502 DATE 2/5/2013

STATE PROJ. NO.

SHEET NO. 72 OF 73 SHEETS

OH 3-77



PLOTTED/REVISED: 2/5/2013

OH 370-494

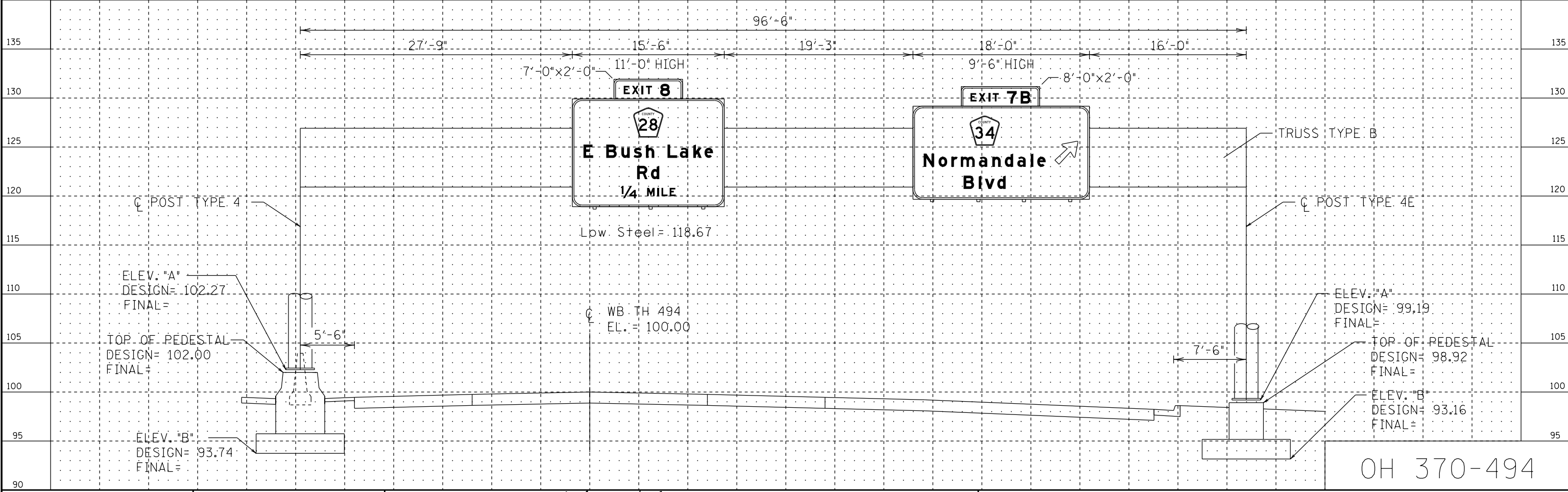
W.B. T.H. 494

STA. 466+20

QUANTITIES

|                           | DESIGN       | FINAL |
|---------------------------|--------------|-------|
| POST STEEL                | 7923 LBS     |       |
| TRUSS STEEL               | 16212 LBS    |       |
| WALKWAY SUPPORT STEEL     | LBS          |       |
| WALKWAY GRATING STEEL     | LBS          |       |
| PANEL MOUNTING POST STEEL | 687 LBS      |       |
| CONCRETE (SPREAD) FOOTING | 11.0 CU YDS  |       |
| SIGN PANELS TYPE OH       | 341.50 SQ FT |       |

- NOTES: 1. LOW STEEL IS BOTTOM OF PANEL MOUNTING POSTS ON THE TALLEST PANEL.  
2. STRUCTURE IS DESIGNED FOR FUTURE WALKWAY.



DISTRICT #: METRO

IPLOT NAME: X-SECTIONS.XS\*2

PATH & FILENAME: IP\_PWP-d143240\X-SECTIONS.XS\*.dgn

DRAWN BY:

CHECKED BY: RAS

CERTIFIED BY

Michael B. Weiss  
LICENSED PROFESSIONAL ENGINEER

LIC. NO. 10502

DATE 2/5/2013

STATE PROJ. NO.

SHEET NO. 73 OF 73 SHEETS