

Signing Plan Design - At Grade Intersections

Sample Plan Set

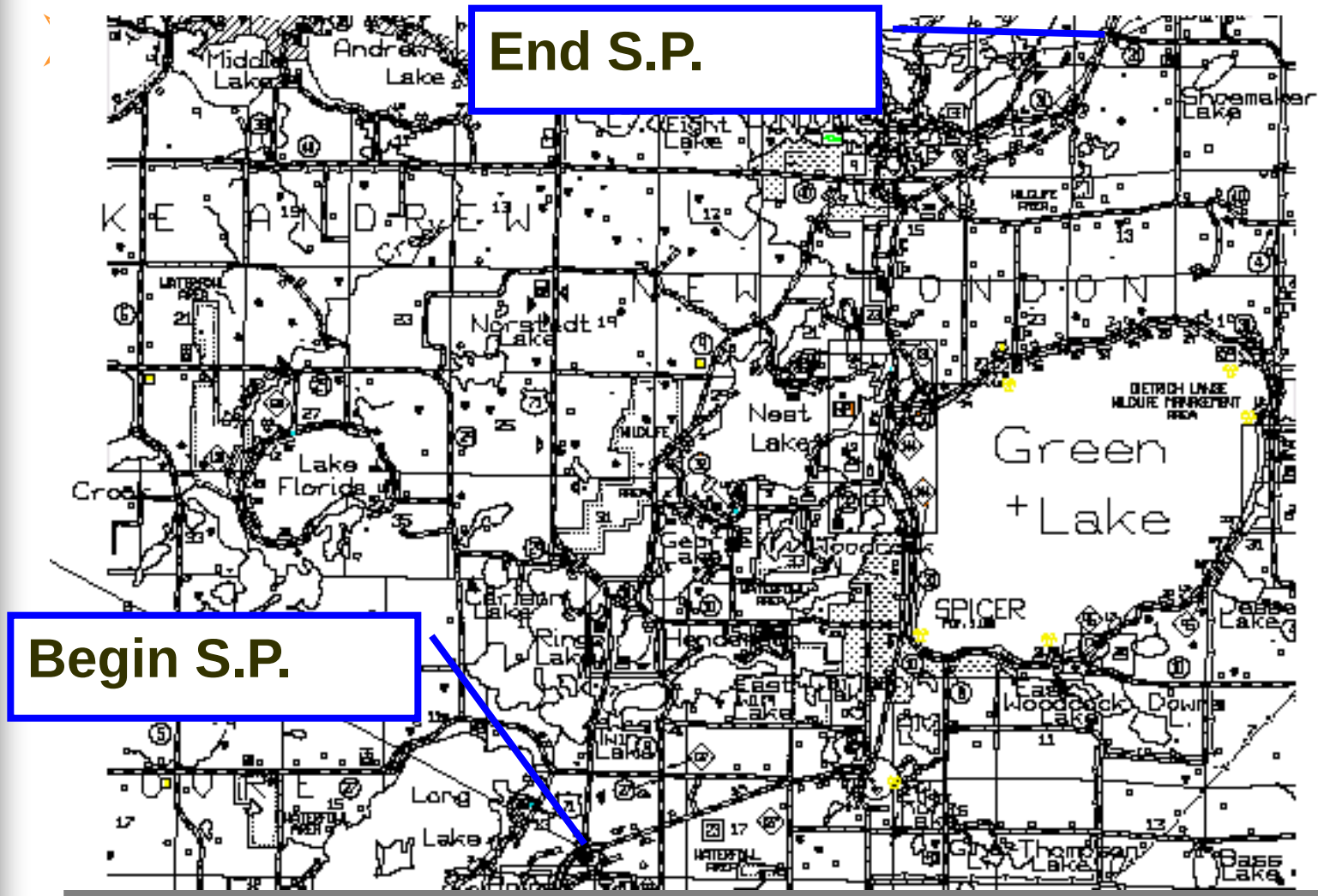
Sample Plan Set

➤ Sheet #1 -Title Sheet

- Index Map
 - Begin & End Project
 - North arrow
 - Scales
 - Plan Revisions
 - Project location within MN
- Federal Project #
- Governing Specifications
 - 2000 Edition Mn/DOT “Standard Specifications for Construction”

Refer to Sample Plan in Section 3 of Manual

Sample Plan Set



Sample Plan Set

➤ Sheet #1 -Title Sheet

FED. PROJ. NO.

GOVERNING SPECIFICATIONS

THE 2000 EDITION OF THE MINNESOTA DEPARTMENT
OF TRANSPORTATION 'STANDARD SPECIFICATIONS FOR
CONSTRUCTION' SHALL GOVERN.

- Federal Project #
- Governing Specifications
 - 2000 Edition Mn/DOT “Standard Specifications for Construction”

Sample Plan Set

➤ Sheet #1 - Title Sheet

- Index
 - Sheet #
 - Description
- Plan Certification
- Plan Approvals
- State Project #
- Sheet X of X Sheets

Sample Plan Set



S

SHEET NO.

INDEX

DESCRIPTION

1	TITLE SHEET
2	ESTIMATED QUANTITIES
3-6	DATA SHEETS
7	UTILITIES
8-10	ROADWAY LAYOUTS
11-12	SIGN PANEL LAYOUTS
	STANDARD SIGN DRAWINGS
13-14	PLACEMENT DETAILS
15-18	STRUCTURAL DETAILS
	X-SECTIONS

THIS PLAN CONTAINS 18 SHEETS

I HEREBY CERTIFY THAT THIS PLAN 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.

Sample Plan Set



DATE _____ LIC. NO. _____ ENGR. _____
MICHEAL B. WEISS

DESIGN SQUAD: RICK SUNSTROM PHONE NO. (651) 284-3442

RECOMMENDED FOR APPROVAL _____ 20_____
DISTRICT TRANSPORTATION ENGINEER

RECOMMENDED FOR APPROVAL _____ 20_____

RECOMMENDED FOR APPROVAL _____ 20_____

RECOMMENDED FOR APPROVAL _____ 20_____
DISTRICT TRAFFIC ENGINEER

RECOMMENDED FOR APPROVAL _____ 20_____
STATE PRE-LETTING ENGINEER

OFFICE OF LAND MANAGEMENT APPROVAL _____ 20_____
DIRECTOR, LAND MANAGEMENT

APPROVED _____ 20_____
STATE DESIGN ENGINEER

Sample Plan Set

➤ Sheet #1 - Title Sheet

- Index
 - Sheet #
 - Description
- Plan Certification

State Proj. No.

Sheet No. 1 of 18 Sheets

- State Project #
- Sheet X of X Sheets

Sample Plan Set

➤ Sheet #2 - Estimated Quantities

- Quantities generally taken from data sheets that follow
- List of pay items - 2000 Spec. Book, page 705

Sample Plan Set

STATEMENT OF ESTIMATED QUANTITIES				
SHEET NO.	CHART I.D.	ITEM NO.	ITEM	ESTIMATED QUANTITIES
		2021 501	MOBILIZATION	LUMP SUM 1
		2104 509	REMOVE SIGN TYPE D	EACH 2
4	B C	2104 523	SALVAGE SIGN TYPE C	EACH 6
		2104 601	HAUL SALVAGED MATERIAL	LUMP SUM 1
		2603 601	TRAFFIC CONTROL	LUMP SUM 1
3	A	2604 531	SIGN PANELS TYPE C	SQ. FT. 282
5	D	2604 531	SIGN PANELS TYPE D	SQ. FT. 150
6	E	2604 531	SIGN PANELS TYPE OVERLAY	SQ. FT. 18
4	C	2604 537	INSTALL SIGN TYPE C	EACH 2
6	F	2604 161	REFERENCE POST MARKER	EACH 2
6	G	2604 252	HAZARD MARKER X4-2	EACH 1

ESTIMATED QUANTITIES

DESIGNED BY *Michael J. Wilson* PROJECT NO. 10502

STATE PROJ. NO.

SHEET NO. 2 OF 18 SHEETS

Sample Plan Set

➤ Sheet

- Quantity that
- List 705

Payment for traffic signs and devices will be made on the basis of the following schedule:

Item No.	Item	Unit
2564.511	Concrete Footings-Type	cubic meter (cubic yard)
2564.513	Median Barrier Footing	each
2564.515	Sign Support	each
2564.518	Overhead Sign Structure Repair	man-hour
2564.522	Structural Steel --- (Specify Item & Use)	kilogram (pound)
2564.524	Modify Post	each
2564.531	Sign Panels Type ____	square meter (square foot)
2564.533	Furnish Sign Panels Type ____ ..	square meter (square foot)
2564.534	Saw Sign Panel Type	meter (linear foot)
2564.535	Sign Panel Overlay Type	square meter (square foot)
2564.536	Install Sign Panel Type ____	each
2564.537	Install Sign Type ____	each
2564.538	Sign Legend Revision	each
2564.539	Overhead Sign Identification Plate	each
2564.540	Extend Walkway Support	each
2564.541	Friction Fuse	each
2564.542	Keeper Plate	each
2564.550	Delineator, Type ____	each
2564.551	Reference Post Marker	each
2564.552	Hazard Marker X4-2	each
2564.553	Clearance Marker X4-4	each
2564.554	Snowplow Marker X4-5	each
2564.555	End of Roadway Marker X4-11	each

heets

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Sample Plan Set

➤ **Sheet #3 - C Sign Data Sheet**

— Chart A - Sign Panels Type C

- New Type C signs to be furnished & installed
- Sign Number (C1 - C13)
 - Order of the signs follows the Standard Signs Summary
 - R Series (Regulatory)
 - W Series (Warning)
 - M Series (Route Markers & Auxiliaries)
 - Illustrated in Roadway Layout Sheets 8-10

Sample Plan Set

➤ **Sheet #3 - C Sign Data Sheet**

— Chart A - Sign Panels Type C

- Quantity - number of new Type C signs
- Post Number & Type + A-Frame (Knee Bracing) Quantity
 - TEM Charts 6-2 & 6-3
 - see exceptions TEM page 6-13
- Post Length
 - See Sign Post Length Determination in Appendix

Sample Plan Set

➤ **Sheet #3 - C Sign Data Sheet**

— Chart A - Sign Panels Type C

- Mounting Height

- Mounting height is a minimum - see Sheet 17 for Typical Mounting

Sample Plan Set

➤ **Sheet #3 - C Sign Data Sheet**

— Chart A - Sign Panels Type C

- Panel Size (in.)
 - Specified in 2002 Standard Signs Summary
 - Compare size with MN MUTCD, Appendix C
 - Use larger of the two sizes
 - STOP sign panel sizes specified in TEM Section 6-5.02.01

Sample Plan Set

➤ **Sheet #3 - C Sign Data Sheet**

— Chart A - Sign Panels Type C

- Sign Panel Area (sq. ft.)
- Total Sign Panel Area (sq. ft.)
 - totaled at the bottom and used for the Estimated Quantities Sheet #2
- Code Number
- Panel Legend
- Review Specific & General Notes

Sample Plan Set

A										
SIGN PANELS TYPE C										
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	1	2-U	1	19	7	48 x 18	8.00	8.00	R6-1(L)	ONE WAY
						48 x 18	8.00	8.00	R6-1(R)	ONE WAY
						36 x 36	9.00	9.00	R1-1	STOP
						24 x 18	3.00	3.00	R6-3	DIVIDED HIGHWAY
C-2	1	2-U	1	17	7	48 x 18	8.00	8.00	R6-1(L)	ONE WAY
						48 x 18	8.00	8.00	R6-1(R)	ONE WAY
						36 x 36	9.00	9.00	R1-1	STOP
						24 x 18	3.00	3.00	R6-3	DIVIDED HIGHWAY
C-3	2	2-U	1	17	7	48 x 18	8.00	12.00	R6-1(R)	ONE WAY
						36 x 36	9.00	18.00	R1-1	STOP
C-4	2	2-U	1	17	7	48 x 18	8.00	12.00	R6-1(L)	ONE WAY
						48 x 18	8.00	12.00	R6-1(R)	ONE WAY
						36 EQUIL.	3.90	7.80	R1-2	YIELD
C-5	1	2-U		16	7	36 EQUIL.	3.90	3.90	R1-2	YIELD
C-6	2	2-U	1	17	7	36 x 48	12.00	24.00	R2-1	SPEED LIMIT 55
C-7	2	2-U		15	7	30 x 30	6.25	12.50	R3-X1	RIGHT TURN LANE
C-8	2	2-U		15	7	30 x 30	6.25	12.50	R3-X2	LEFT TURN LANE
C-9	3	2-U	1	16	7	36 x 36	9.00	27.00	R5-1	DO NOT ENTER
C-10	2	2-U		14	7	48 x 18	8.00	18.00	R6-1(R)	ONE WAY
C-11	2	2-U	1	17	7	48 x 48	18.00	32.00	W3-1a	STOP AHEAD
C-12	1	2-U		16	7	24 x 12	2.00	2.00	M3-2A	EAST
						24 x 24	4.00	4.00	M1-5A	MINN 23
C-13	1	2-U		16	7	24 x 12	2.00	2.00	M3-4A	WEST
						24 x 24	4.00	4.00	M1-5A	MINN 23
TOTAL							251.70			

A SHEET

Sample Plan Set

➤ **Sheet #4 - C Sign Data Sheet**

— Chart B - Salvage Sign Type C

- Inplace signs that will be salvaged (saved)
- Sign Number (C-201, C-202, C-203)
- Quantity
- Post Number & Type + A-Frame (Knee Bracing) Quantity
- Panel Size (in.)
- Panel Legend

Sample Plan Set

➤ **Sheet #4 - C Sign Data Sheet**

- Chart C - Salvage & Install Sign Type C
 - Inplace Type C signs that will be salvaged & installed.
 - Sign Number (C-301)
 - See Sheet #8
 - Quantity
 - Post Number & Type + A-Frame (Knee Bracing) Quantity
 - TEM Charts 6-2 & 6-3
 - see exceptions TEM page 6-13

Sample Plan Set

➤ **Sheet #4 - C Sign Data Sheet**

- Chart C - Salvage & Install Sign Type C
 - Post Length
 - See Sign Post Length Determination in Appendix
 - Mounting Height
 - Mounting height is a minimum - see Sheet 17 for Typical Mounting
 - Panel Size (in.)

Sample Plan Set

B SALVAGE SIGN TYPE C					
SIGN NO.	QUANT.	POSTS		PANEL SIZE (IN.)	PANEL LEGEND
		NO. & TYPE	KNEE BRACES QUANT.		
C-201	2	2-U		21 x 15	JCT
				24 x 24	COUNTY 31
C-202	1	2-U		24 x 24	COUNTY 31
				21 x 15	LEFT ARROW
C-203	1	2-U		24 x 24	COUNTY 31
				21 x 15	RIGHT ARROW
TOTAL		4			

PE C	
NEL ZE N.)	PANEL LEGEND
x 38	ADOPT A HIGHWAY

C SALVAGE & INSTALL SIGN TYPE C							
SIGN NO.	QUANT.	POSTS			MTG HT. (FT.) (1)	PANEL SIZE (IN.)	PANEL LEGEND
		NO. & TYPE	KNEE BRACES QUANT.	LEN. (FT.)			
C-301	2	2-U	1	16	7	60 x 36	ADOPT A HIGHWAY
TOTAL		2					

C SIGN DATA SHEET

CERTIFIED BY *Michael D. Wilson* REG. NO. 10502

State Proj. No.

Sheet No. 4 of 18 Sheets

Sample Plan Set

➤ **Sheet #5 - D Sign Data Sheet**

— Chart D - Sign Panels Type D

- New Type D signs to be furnished and installed
- See Sheets 11-12 for panels
- Sign Number
- Quantity
- Post Number & Type + A-Frame (Knee Bracing) Quantity
 - TEM Charts 6-2 & 6-3
 - see exceptions TEM page 6-13

Sample Plan Set

➤ **Sheet #5 - D Sign Data Sheet**

— Chart D - Sign Panels Type D

- Post Length
 - See Sign Post Length Determination in Appendix
- Post Spacing
 - Center to center of posts
 - Punch codes in Standard Signs Manual
 - If no punch code found in Standard Signs Manual or if sign structure is unique, refer to TEM Chart 6-4

Sample Plan Set

➤ **Sheet #5 - D Sign Data Sheet**

— Chart D - Sign Panels Type D

- Mounting Height
 - Mounting height is a minimum - see Sheet 17 for Typical Mounting
- Size (in.)
 - See Sheets 11 & 12 for sign panels
- Sign Panel Area (sq. ft.)
- Total Sign Panel Area (sq. ft.)
 - totaled at the bottom and used for the Estimated Quantities Sheet #2

Sample Plan Set

➤ **Sheet #5 - D Sign Data Sheet**

— Chart D - Sign Panels Type D

- Post Length
 - See Sign Post Length Determination in Appendix
- Post Spacing
 - Center to center of posts
 - Punch codes in Standard Signs Manual
 - If no punch code found in Standard Signs Manual or if sign structure is unique, refer to TEM Chart 6-4

Sample Plan Set

➤ **Sheet #5 - D Sign Data Sheet**

— Chart D - Sign Panels Type D

- Panel Legend
- Review Specific and General Notes
 - See Standard Signs Manual for Type D stringer and panel joint details.

Sample Plan Set

D SIGN PANELS TYPE D SEE SHEETS 11-12 FOR PANELS										
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-1	1	2-U	2	18	42	7	72 x 60	30.00	30.00	
D-2	2	2-U	2	17	54	7	84 x 48	28.00	56.00	
D-3	1	2-U	1	18	30	7	48 x 60	20.00	20.00	
D-4	1	2-U	1	18	30	7	48 x 60	20.00	20.00	
D-5	1	2-U	2	18	42	7	72 x 60	30.00	30.00	
TOTAL									156.00	

D SIGN DATA SHEET

CERTIFIED BY *Michael P. Wines* REG. NO. 10502

State Proj. No.

Sheet No. 5 of 18 Sheets

Sample Plan Set

➤ **Sheet #6 - Overlay & Marker Data Sheet**

- Chart E - Sign Panels Type Overlay
 - Code Number
 - Standard Signs Manual
 - Quantity
 - overlay for D-1, D-3, D-4, D-5 “County 31”
 - Panel Size (in.)
 - Specified in 2002 Standard Signs Summary
 - Compare size with MN MUTCD, Appendix C
 - Use larger of the two sizes

Sample Plan Set

➤ **Sheet #6 - Overlay & Marker Data Sheet**

- Chart E - Sign Panels Type Overlay
 - Sign Panel Area (sq. ft.)
 - Total Sign Panel Area (sq. ft.)
 - totaled at the bottom and used for the Estimated Quantities Sheet #2
 - Legend
 - See Standard Signs Manual for overlay details

Sample Plan Set

➤ **Sheet #6 - Overlay & Marker Data Sheet**

- Chart F - Reference Post Marker
 - Code Number
 - Quantity
 - Panel Size (in.)
 - Specified in 2002 Standard Signs Summary
 - Compare size with MN MUTCD, Appendix C
 - Use larger of the two sizes
 - Legend

Sample Plan Set

➤ **Sheet #6 - Overlay & Marker Data Sheet**

- Chart G - Markers
 - Type
 - See Standard Signs Manual for Hazard Marker Plate
 - Install on 3 lb./ft. post (Mn/DOT 3401)
 - Quantity
 - Location
 - Review Specific & General Notes

Signing Plan Set

E SIGN PANELS TYPE OVERLAY					
CODE NO.	QUANT.	SIZE (IN.)	AREA (SQ. FT.)	TOTAL (SQ. FT.)	LEGEND
M1-X4A	4	24 x 24	4.00	16.00	COUNTY 31
TOTAL				16.00	

(2)

F REFERENCE POST MARKER			
CODE NO.	QUANTITY	SIZE (IN.)	LEGEND
D10-3	2	12 x 48	183
TOTAL		2	

(2) Install on 3 lb/ft post (Mn/DOT 3401).

(1)(2)

G MARKERS		
TYPE	QUANT.	LOCATION
(X4-2)	1	ISLAND

OVERLAY &
MARKER DATA SHEET

CERTIFIED BY Michael R. Winters REG. NO. 10502 State Proj. No.

Sheet No. 6 of 18 Sheets

Sample Plan Set

➤ **Sheet #7 - Utilities**

- Gopher One Call Excavation Notice System
- List of utility companies within the project limits
- No utilities will be affected by this project

Sample Plan Set

GENERAL NOTE:

- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE GOPHER ONE CALL EXCAVATION NOTICE SYSTEM (PHONE 612 454-002), REQUIRED BY MINNESOTA STATUTE 216D, FOR ALL UTILITY LOCATIONS.

UTILITIES

THE FOLLOWING LIST SHOWS THE UTILITY COMPANIES WITHIN THE PROJECT LIMITS

CENTERPOINT ENERGY MINNEGASCO
CHARTER COMMUNICATIONS
CITY OF SPICER
KANDIYOHI COUNTY (GREEN LAKE SANITARY SEWER AND WATER DISTRICT)
KANDIYOHI POWER COOPERATIVE
QWEST CORPORATION
TDS TELECOM
XCEL ENERGY (ELECTRIC)
XCEL ENERGY (GAS)

NO UTILITIES WILL BE AFFECTED BY THIS PROJECT

UTILITIES

CERTIFIED BY Michael S. Wenz uc. no. 10502
LICENSED PROFESSIONAL ENGINEER

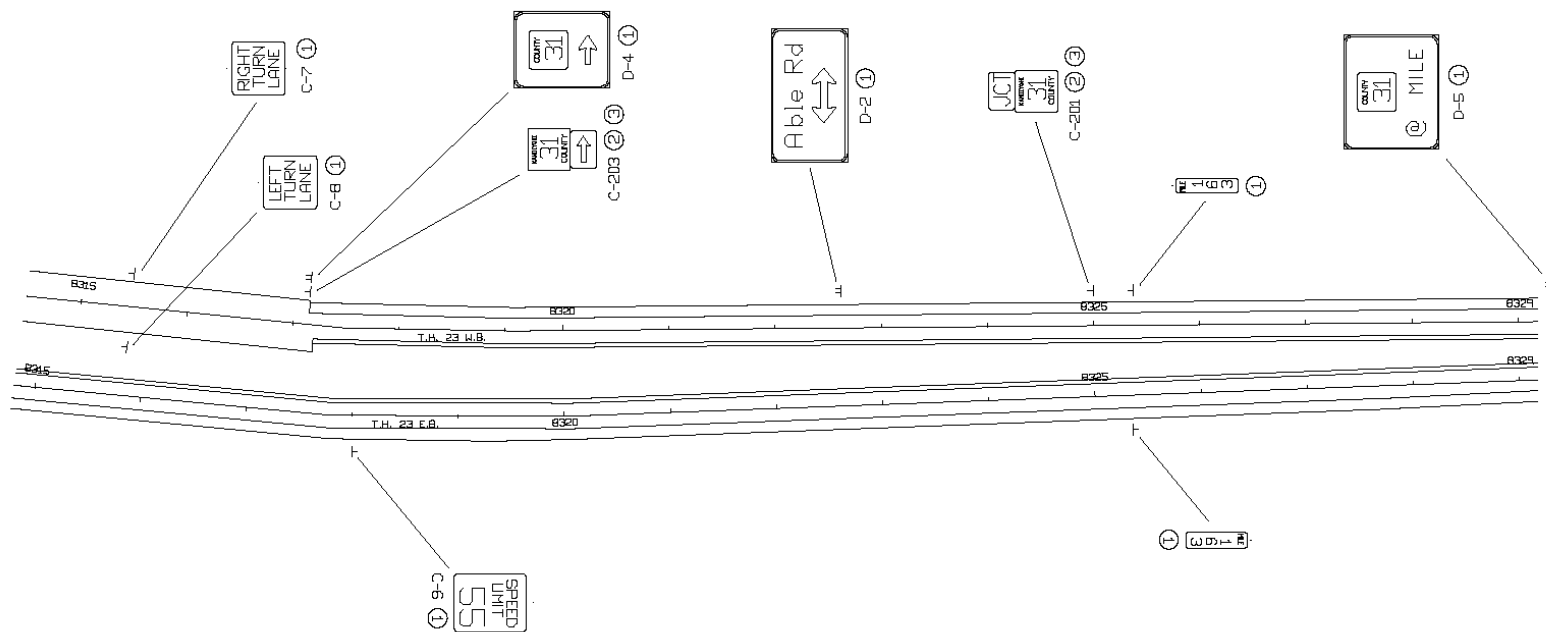
State Proj. No.

Sheet No. 7 of 18 Sheets

Sample Plan Set

➤ **Sheet #8 - #10 - Roadway Layout**

- Roadway layout & stationing
- Sign number
- Sign location
- Notes
 - 1. Furnish & install
 - 2. Inplace
 - 3. Salvage
 - 5. Install
 - 6. Remove sign Type C



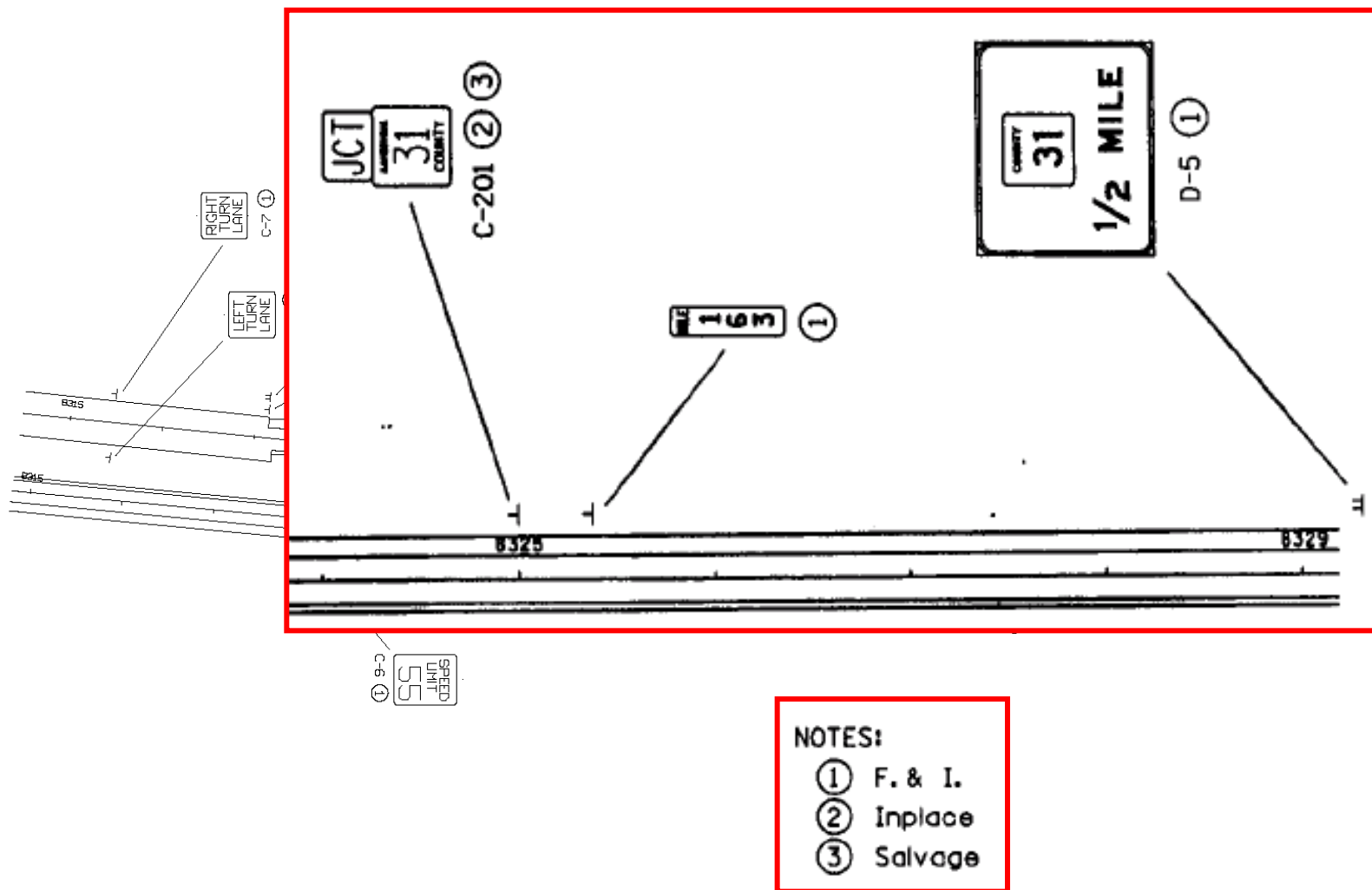
NOTES:

- ① F. & I.
- ② Inplace
- ③ Salvage

ROADWAY LAYOUT
T.H. 23 STA. 8315+00 - 8329+00
Sheet No. 10 of 18 Sheets

CERTIFIED BY *Michael A. Weiss* UC. NO. 10502

State Proj. No.



NOTES:

- ① F. & I.
- ② Inplace
- ③ Salvage

ROADWAY LAYOUT
T.H. 23 STA. 8315+00 - 8329+00

CERTIFIED BY *Michael A. Weiss* LIC. NO. 10502

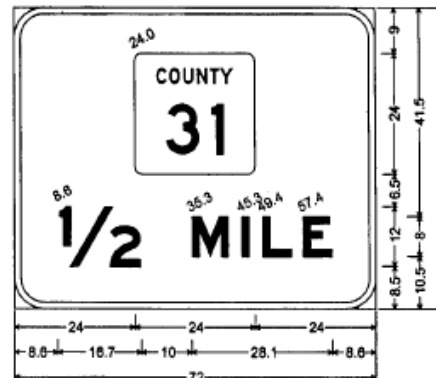
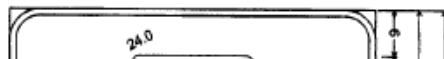
State Proj. No.

Sheet No. 10 of 18 Sheets

Sample Plan Set

➤ **Sheets #11 & 12**

- SignCAD program used to design panels
- Sign panel dimensioning
- See Standard Signs Manual for arrow, fraction and overlay details.



D-5; 6.0" Radius, 1.3" Border, White on Green;
[1/2 MILE] E Mod 125% spacing;

NOTES:

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

TYPE D SIGN PANELS

CERTIFIED BY *Michael A. White* LIT. NO. 10502
LARGE PRINTED: 10/00

State Proj. No.

Sheet No. 12 of 18 Sheets

Sample Plan Set

➤ Sheet #13 - Sign Placement

— Gore Placement

- Exit Signs

- Offsets measured from curb face or edge of shoulder

- Within 100' of the paved gore:

- 8' offset from thru roadway
 - Min. 8' offset from ramp
 - If offsets cannot be attained, a 4' offset is acceptable
 - If 4' offsets cannot be attained, contact the OTE signing unit

Sample Plan Set

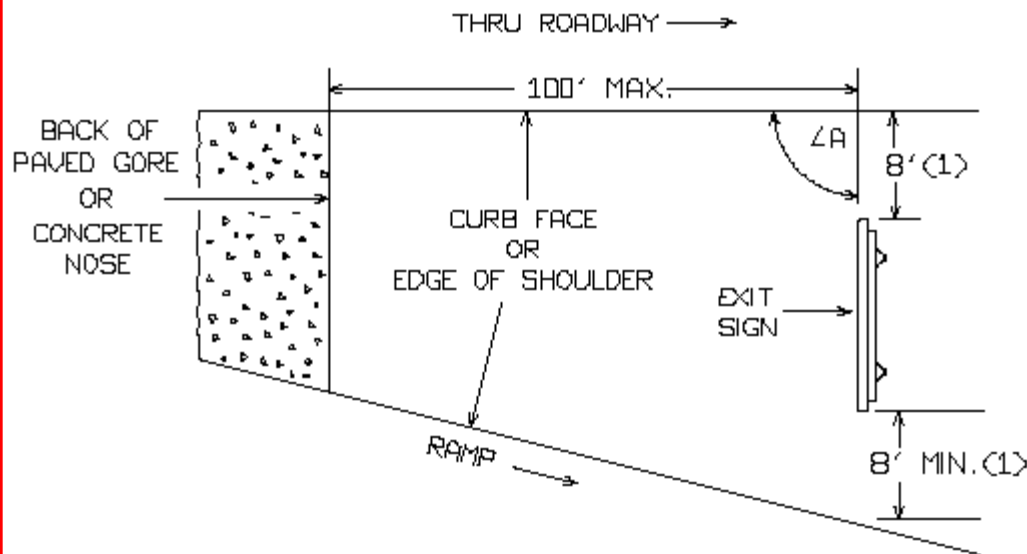
➤ Sheet #13 - Sign Placement

— Gore Placement

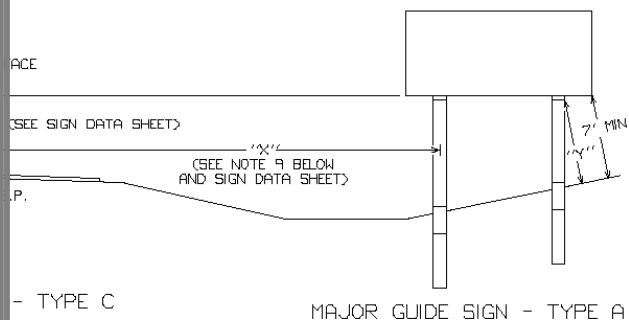
- Exit Signs

- If gore needs to be delineated, install a hazard marker X4-2 just beyond the paved gore.
- Install ramp delineators on separate posts to maintain their proper locations and spacings.

GORE PLACEMENT



PLACEMENT



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'.

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'.

SIGN FACES SHALL BE VERTICAL.

OVERHEAD SIGNS SHALL BE POSITIONED AT RIGHT ANGLES TO THE THRU ROADWAY UNLESS OTHERWISE NOTED.

TO AVOID SPECULAR GLARE, $\angle A$ SHALL BE APPROXIMATELY 93° FOR

(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 OTE SIGNING UNIT.

IF THE GORE NEEDS TO BE DELINEATED, INSTALL A HAZARD MARKER X4-2 JUST BEYOND THE PAVED GORE. IN ADDITION, INSTALL RAMP DELINEATORS ON SEPARATE POSTS TO MAINTAIN THEIR PROPER LOCATIONS AND SPACINGS.

Sample Plan Set

➤ **Sheet #13 - Sign Placement**

— Gore Placement

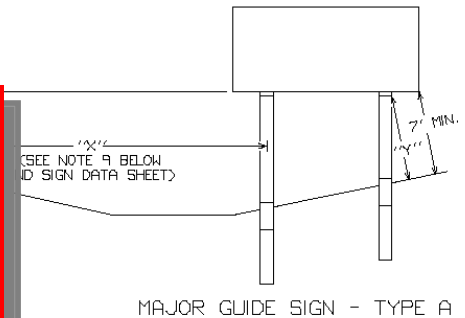
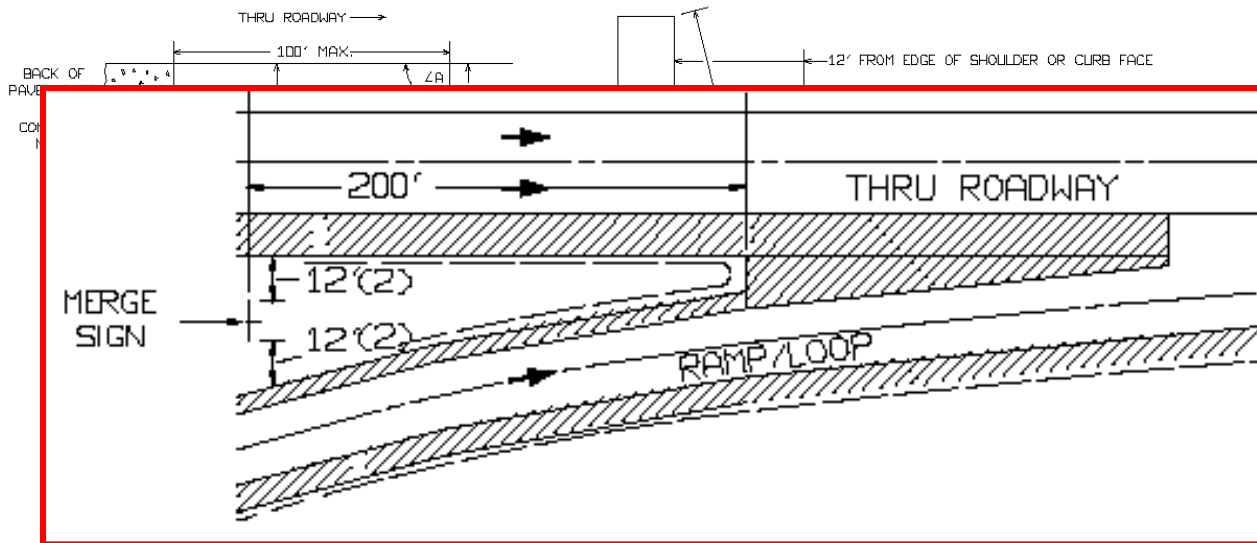
- Merge Signs

- Within 200' of the paved gore:

- 12' offsets from thru roadway and ramp
- If these offsets cannot be attained, a 4' offset is acceptable.
- If 4' offsets cannot be attained, contact the OTE signing unit

GORE PLACEMENT

ROADSIDE PLACEMENT



IF A SIGN IS MOUNTED BELOW A MAJOR SIGN, IT SHALL BE AT LEAST 8' ABOVE THE PAVEMENT SURFACE. WARNING AND REGULATORY SIGNS SHALL BE AT LEAST 5' ABOVE PAVEMENT EDGE EXCEPT WHERE HEAVY TRAFFIC IS ENCOUNTERED THEY SHALL BE 7'.

ALL SIGNS SHALL BE VERTICAL.

SPECIFIC NOTES:
(1) EXIT SIGNS

4. OVERHEAD SIGNS SHALL BE POSITIONED AT RIGHT ANGLES TO THE THRU ROADWAY UNLESS OTHERWISE NOTED.

(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 OTE SIGNING UNIT.

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 OTE SIGNING UNIT.

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

Revised 3-12-03

State Proj. No.

Sheet No. 13 of 18 Sheets

Sample Plan Set

➤ Sheet #13 - Sign Placement

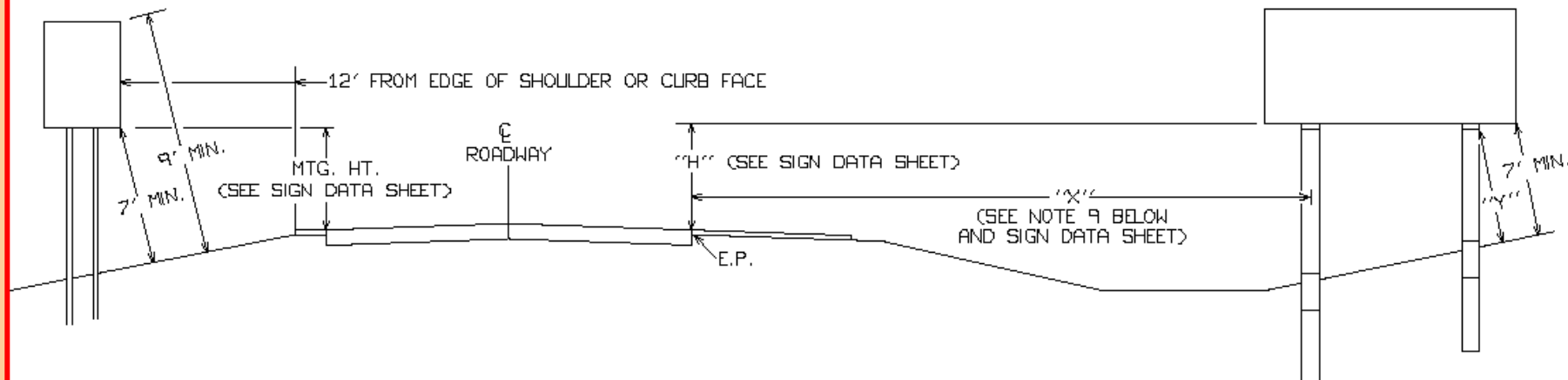
— Roadside Placement

- Route Marker, Regulatory & Warning Signs - Type C & Minor Guide Signs - Type D
- See left side of drawing on sheet
 - 7' min. to bottom of panel
 - 9' min to top of panel
 - 12' from edge of shoulder or curb face to panel edge closest to the roadway
 - See sign data sheet for mounting height

GORE PLACEMENT

ROADSIDE PLACEMENT

ROADSIDE PLACEMENT



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

MAJOR GUIDE SIGN - TYPE A

WITHIN 100 FEET OF THE PAVED GORE, CONTACT THE OTE SIGNING UNIT.

IF THE GORE NEEDS TO BE DELINEATED, INSTALL A HAZARD MARKER X4-2 JUST BEYOND THE PAVED GORE. IN ADDITION, INSTALL RAMP DELINEATORS ON SEPARATE POSTS TO MAINTAIN THEIR PROPER LOCATIONS AND SPACINGS.

(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 OTE SIGNING UNIT.

APPROXIMATELY 42' 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' - 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

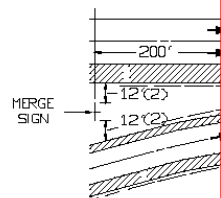
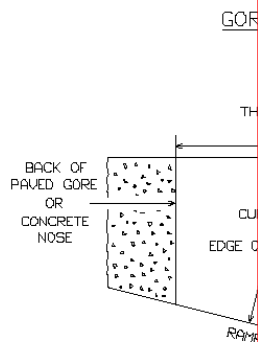
Sample Plan Set

➤ Sheet #13 - Sign Placement

— Roadside Placement

- Notes

- Note 2. All route markers, warning and regulatory signs shall be at least 6' above pavement edge except where heavy pedestrian activity is encountered they shall be 7'.
- Note 3. Sign faces shall be vertical.
- Note 8. Lateral clearances given apply to right and/or left side installation.



SPECIFIC
(1) IF
IF
A
WIT
IF
JUS
SEP
(2) IF
IF
A
WIT

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° FOR SIGNS LOCATED LESS THAN 30' FROM THE EDGE OF PAVEMENT AND APPROXIMATELY 92° 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' 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.



- TYPE A

GN.
PAVEMENT
SHALL
HEAVY
7'

ES TO THE

ATELY 93° FOR
VEMENT AND
FROM
C. & D

ND LINE
SHALL BE

6". WHERE "X"
5'.

LEFT SIDE

TRAFFIC
E LOCATED A
BARRIER.

ACEMENT

Sample Plan Set

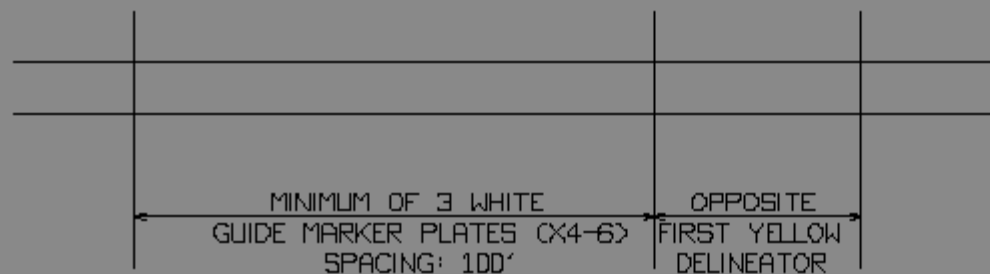
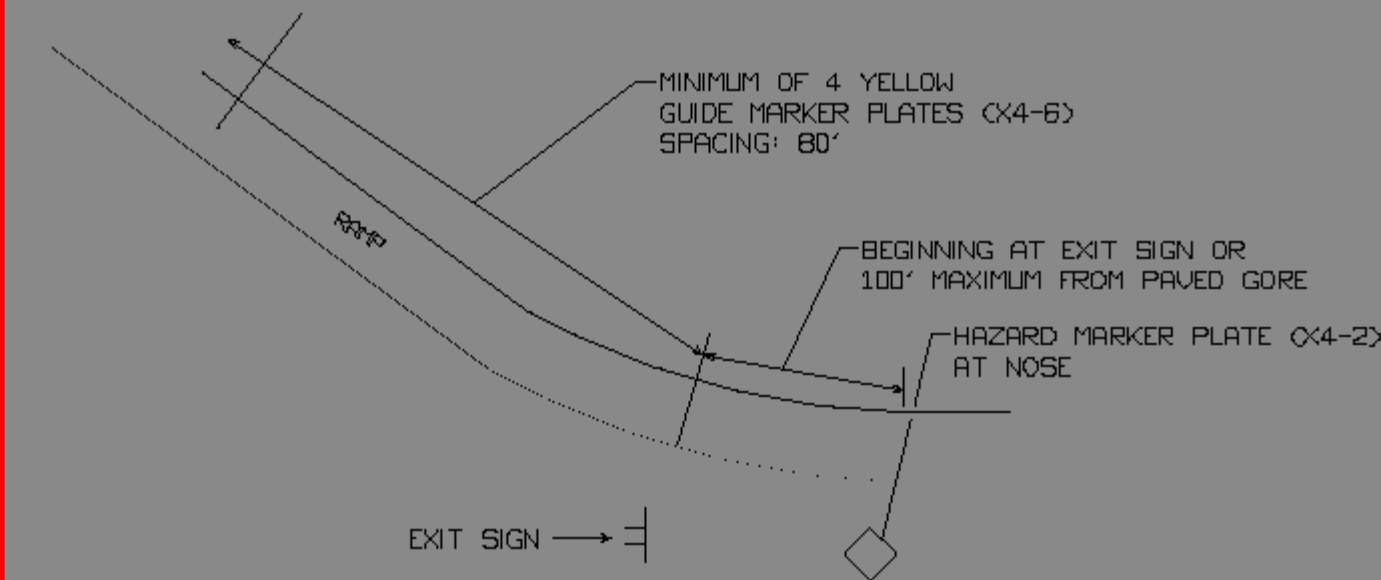
➤ **Sheet #14 - Delineators and Markers**

— Plan A - Ramp Delineation

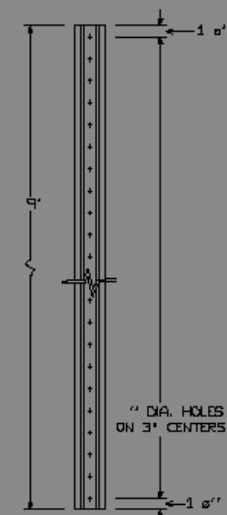
- Hazard Marker Plate (X4-2) at nose
- Along ramp beginning at Exit sign or 100' max. from paved gore
 - Min. of 4 yellow guide marker plates (X4-6)
 - Spacing = 80'

Sample Plan Set

- **Sheet #14 - Delineators and Markers**
 - Plan A - Ramp Delineation
 - Along thru roadway opposite first yellow delineator along ramp
 - Min. of 3 white guide marker plates (X4-6)
 - Spacing = 100'

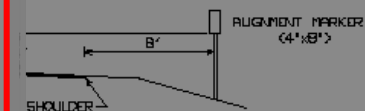
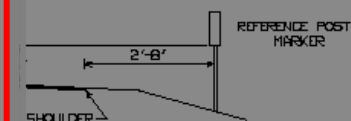


PLAN A
RAMP DELINEATION



MIN/ODT 3401
NORMAL WEIGHT- 2 LB./FT.

DELINEATOR POST



DELINEATORS AND MARKERS

PLAN B
LOOP DELINEATION

Revised 6-11-04

State Proj. No.

Sheet No. 14 of 18 Sheets

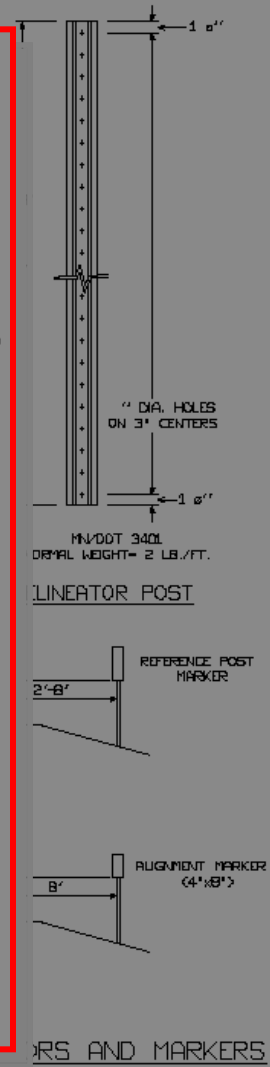
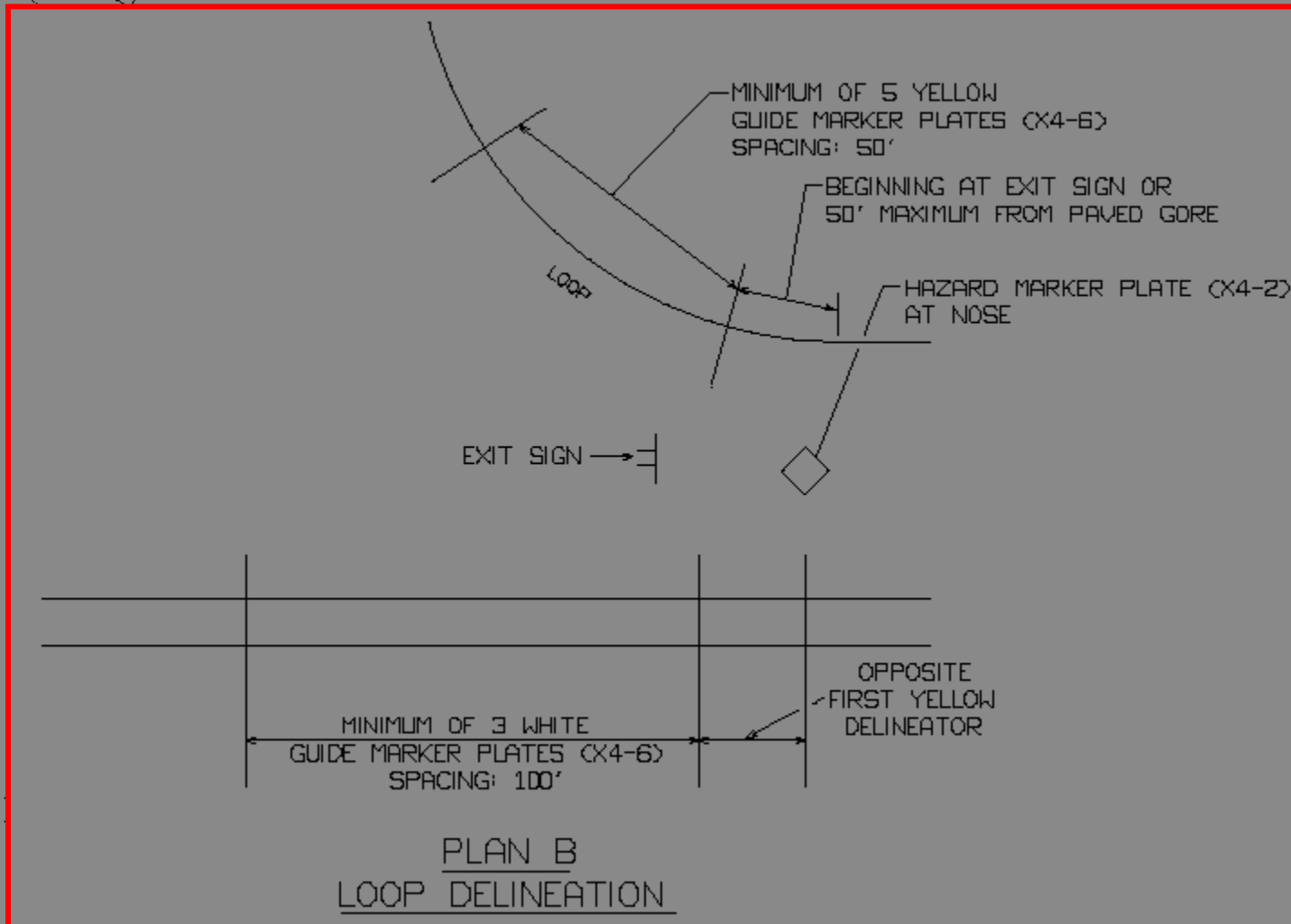
Sample Plan Set

- **Sheet #14 - Delineators and Markers**
 - Plan B - Loop Delineation
 - Hazard Marker Plate (X4-2) at nose
 - Along ramp beginning at Exit sign or 50' max. from paved gore
 - Min. of 5 yellow guide marker plates (X4-6)
 - Spacing = 50'

Sample Plan Set

- **Sheet #14 - Delineators and Markers**
 - Plan B - Loop Delineation
 - Along thru roadway opposite first yellow delineator along loop
 - Min. of 3 white guide marker plates (X4-6)
 - Spacing = 100'

Sample Plan Set



LOOP DELINEATION

Revised 6-11-01

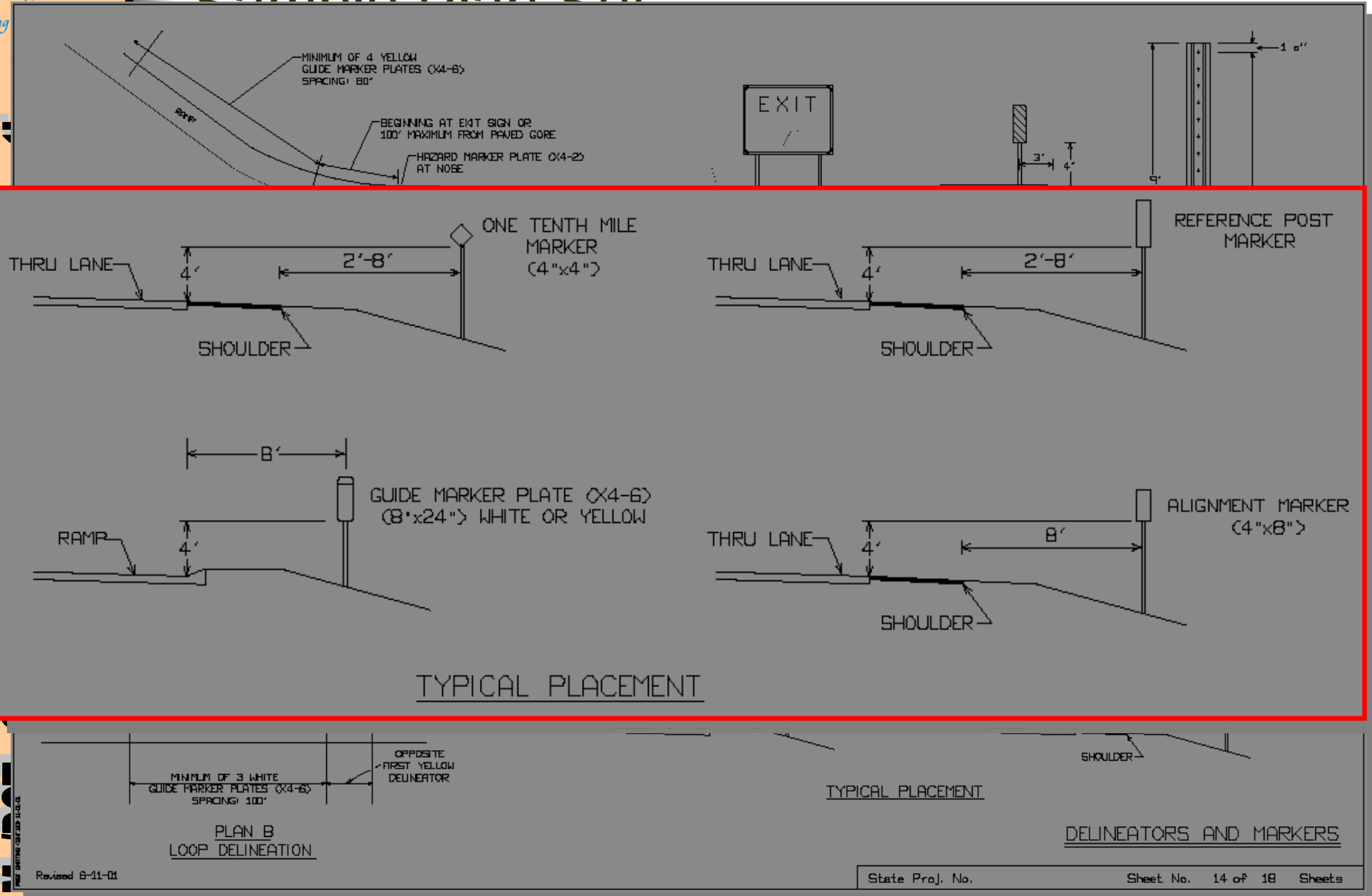
State Proj. No.

Sheet No. 14 of 18 Sheets

Sample Plan Set

- **Sheet #14 - Delineators and Markers**
 - Typical Placement
 - Raised Island Clearance Marker (X4-4)
 - Raised Island Hazard Marker Plate (X4-2)
 - One Tenth Mile Marker (4" x 4")
 - Guide Marker Plate (X4-6) (8" x 24")
White or Yellow
 - Reference Post Marker
 - Alignment Marker (4" x 8")

Sample Plan Set



Revised 8-11-01

State Proj. No.

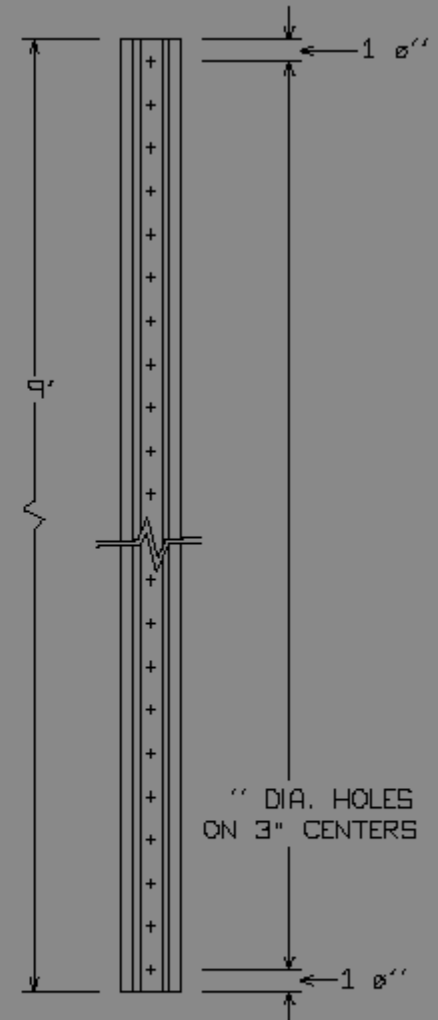
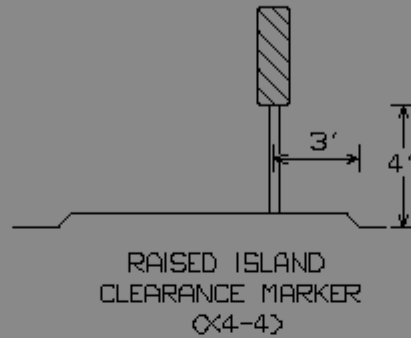
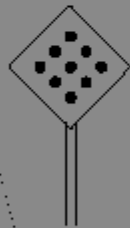
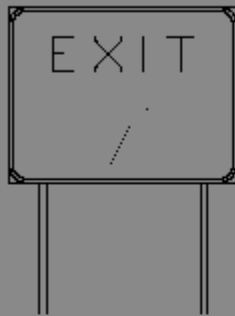
Sheet No. 14 of 18 Sheets

Sample Plan Set

➤ **Sheet #14 - Delineators and Markers**

— Delineator Post

- 9' height
- Normal weight = 2 lb./ft.



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

DELINEATOR POST

Sample Plan Set

- **Sheet #15 - Flanged Channel Post Mounted Through Surfaced Median or Sidewalk**
 - Sign number C-2
 - Core or preform a 6" (+1/2") diameter hole for each post

NOTE: CORE OR PREFORM
A 6" (+1/2") DIAMETER
HOLE FOR EACH POST.

CONCRETE OR BITUMINOUS ISLAND

Revised 12-23

POST SPACING: 6' TO 12' O.C.

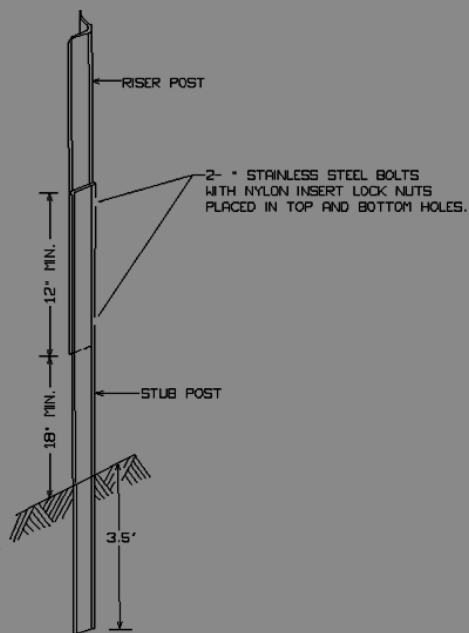
SURFACED

Sheets

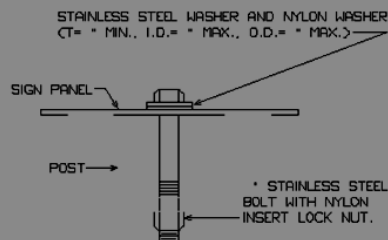
Sample Plan Set

- **Sheet #16 - Type C & D Sign Structural Details**
 - Type C and D post U-Post splice
 - U-Post mounting Type C signs
 - Typical Type C installations
 - Typical Type D installation

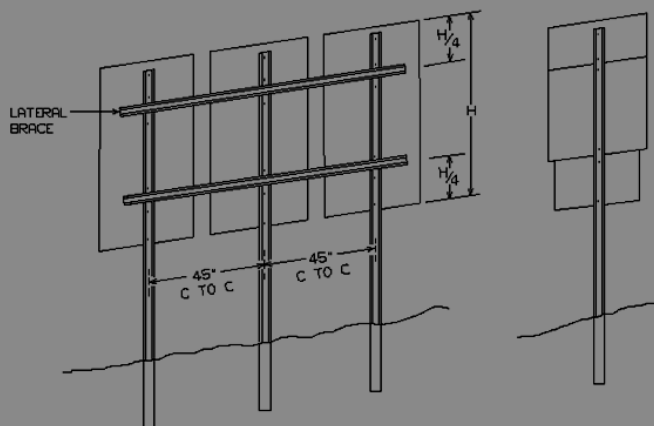
TYPE "C" & "D" POST



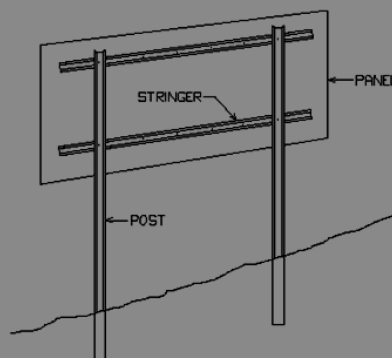
U POST SPLICE



U POST MOUNTING
TYPE "C" SIGNS



TYPICAL TYPE "C" INSTALLATIONS



TYPICAL TYPE "D" 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 STRINGERS AT 24" MAXIMUM INTERVALS IN ACCORDANCE WITH TYPE "D" STRINGER AND PANEL-JOINT DETAIL (SEE STANDARD SIGNS MANUAL).
4. MOUNTING (PUNCHING 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 36".
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 3352.2AS.
11. 2 AND 3 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 OR MORE SINGLE POST SIGNS (TYPE "C") ARE MOUNTED SIDE BY SIDE, THEY SHALL BE REINFORCED Laterally BY AT LEAST 2 POST SECTIONS, BOLTED AT EACH POST AND LOCATED APPROXIMATELY AT THE QUARTER POINTS AS SHOWN IN SKETCH.

TYPE C & D SIGN STRUCTURAL DETAILS

Sheet 1 of 3

Revised 7-25-01

State Proj. No.

Sheet No. 16 of 18 Sheets

Sample Plan Set

➤ **Sheet #17 - Type C & D Sign Structural Details**

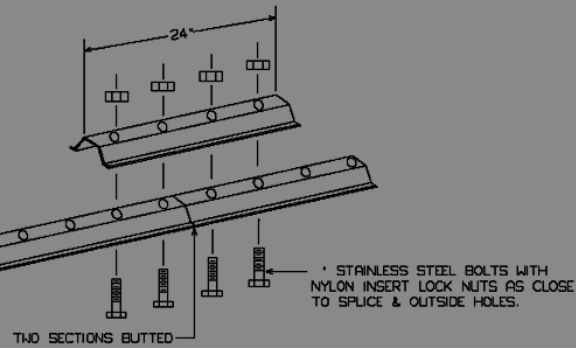
- Typical A-Frame installation Type C signs
 - Vertical post
 - A-Frame (knee bracing)
 - Lateral brace
 - Stub post

Sample Plan Set

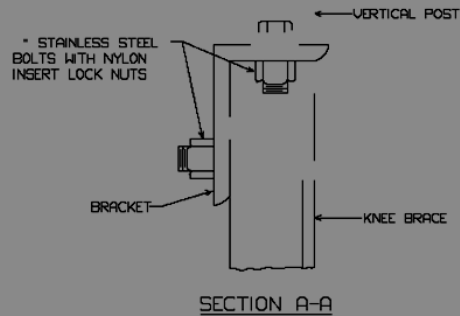
➤ **Sheet #17 - Type C & D Sign Structural Details**

- Typical A-Frame installations Type D signs
 - Vertical post
 - A-Frame (knee bracing)
 - Stringer
 - Stub post
- Typical Mounting

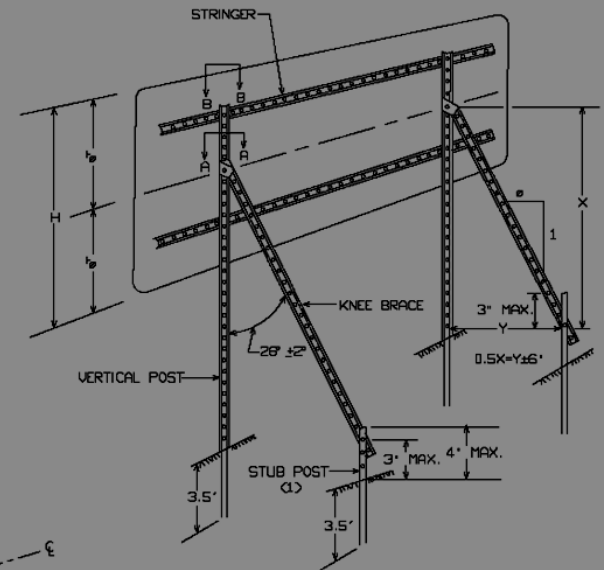
Sample Plan Set



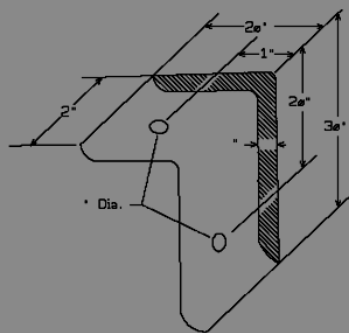
LATERAL BRACE OR STRINGER
SPlice DETAIL (EXPLODED VIEW)



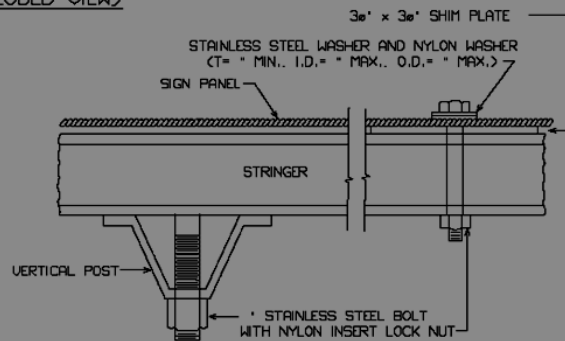
SECTION A-A



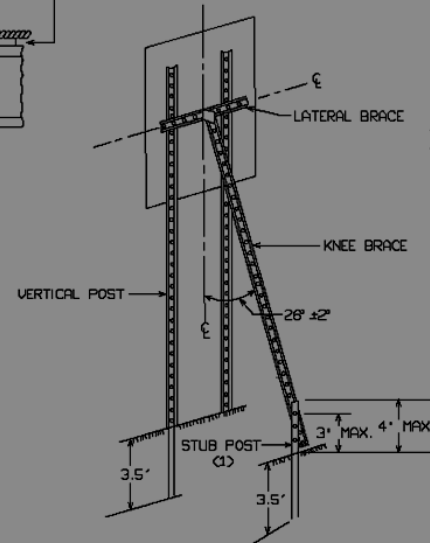
TYPICAL "A-FRAME" INSTALLATION
TYPE "D" SIGNS



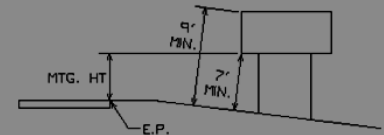
A-FRAME BRACKET
(STEEL MIN/DOT 3306 GALVANIZED PER MIN/DOT 3394)



SECTION B-B

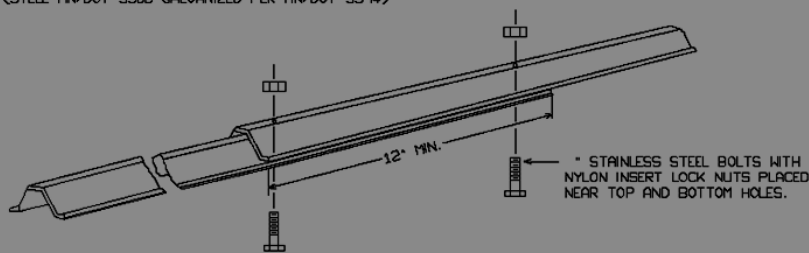


TYPICAL "A-FRAME" INSTALLATION
TYPE "C" SIGNS



TYPICAL MOUNTING

(1) OFFSET STUB POST 1' TOWARD ROADWAY
RELATIVE TO VERTICAL POST.



KNEE BRACE SPlice

TYPE C & D SIGN
STRUCTURAL DETAILS

Sheet 2 of 3

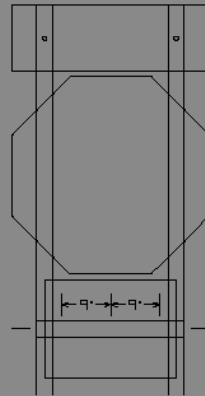
Revised 6-18-99

State Proj. No.

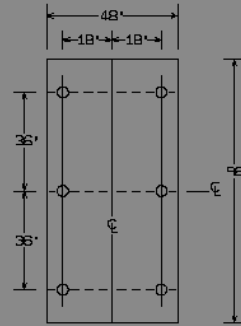
Sheet No. 17 of 18 Sheets

Sample Plan Set

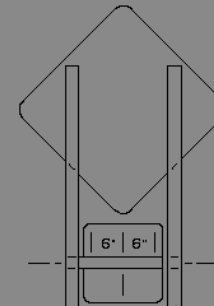
- **Sheet #18 - Type C & D Sign
Structural Details**
 - Mounting & punching details



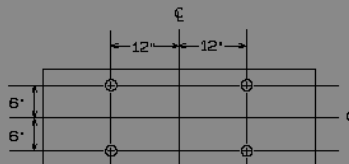
RG-1, R1-1 & (RG-3 or RG-3m)
MOUNTING



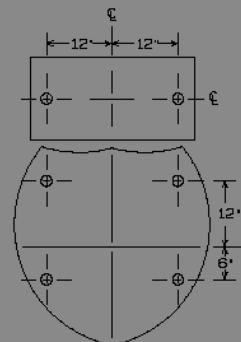
PUNCHING FOR R2-4b
SPEED LIMIT



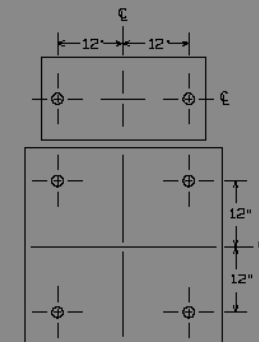
(W1-1, W1-2, W1-3, W1-4 OR W1-5) & W13-1
MOUNTING



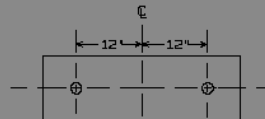
PUNCHING FOR RG-1 (48" x 16")



(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 (W1-4 OR W1-5A) (36" x 36")
PUNCHING



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

TYPE C & D SIGN
STRUCTURAL DETAILS

Sheet 3 of 3

State Proj. No.

Sheet No. 18 of 18 Sheets