CHAPTER 4: PLAN DEVELOPMENT

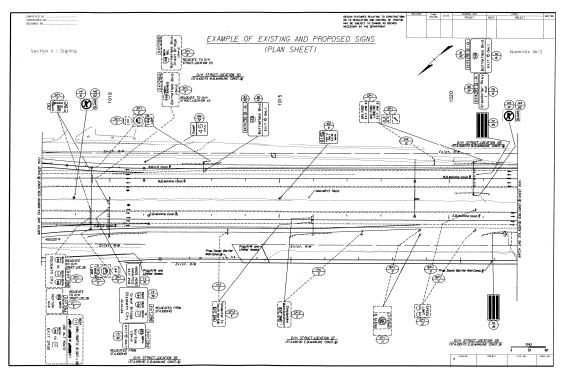
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4.1 SIGN PLAN SHEETS

Develop sign alignment base plans in accordance with the CADD Manual, Chapter 4. Pertinent information to be included is referenced in the Sign Alignment Base Plan Checklist located in Appendix IIB-1.

Design directives received during the preliminary sign plan meeting with the district and / or other agencies can be placed on the sign alignment base plans as shown and in Appendix IIA-3.

When indicating "standard" proposed signs, use the cell libraries found in the CADD Manual. For "Special" proposed signs, use the sign figure details developed by the Guide Sign program.



EXAMPLE OF EXISTING AND PROPOSED SIGN PLAN SHEET (See Appendix IIA-3)

This plan sheet illustrates an example of depicting and labeling existing and proposed signs on the base plan sheet.

All labeling should read from left to right and top to bottom. The sign plan sheet should indicate the sign and text numbers, the symbol for location of the structure and the message to be displayed on the sign. The sign plan sheet also illustrates existing signs with their messages and structures, and identifies what actions are to be taken during construction (i.e. ellipse method).

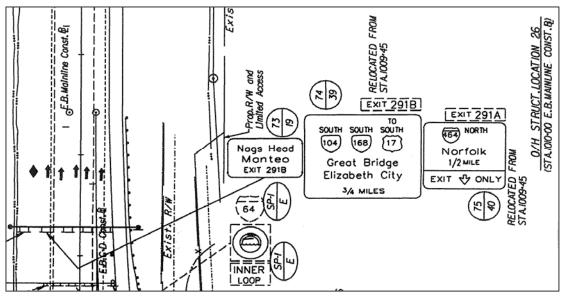


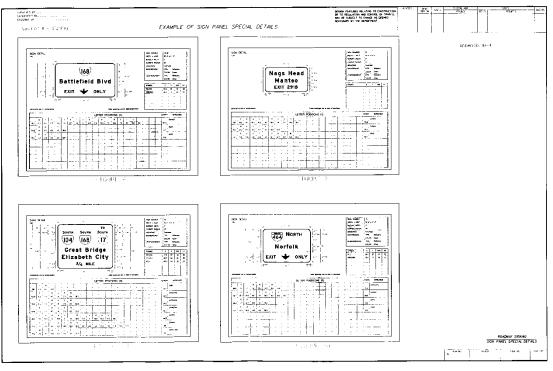
Figure 4-1: LABELING FOR EXISTING AND PROPOSED SIGNS

- Existing signs are identified by dashed lines with an ellipse symbol. The top half of the ellipse provides information identifying the type of existing sign structure and the bottom half identifies the measurement and payment for the sign, as shown in Figure 4-1. Further detailed information regarding the sign labeling is provided in Appendix IIA-9, "Notes For Safety Improvement Items".
- Proposed signs are identified by solid lines with a circle symbol. The top half of the circle identifies the sign number and the bottom half of the circle identifies the text number, as shown in Figure 4-1. Detailed information regarding sign numbers and text numbers are illustrated in Appendix IIA-6 or IIA-7. Discussion regarding the method of assigning sign and text numbers are presented in Subsection 4.3.1.

4.2 SIGN PANEL SPECIAL DETAIL SHEETS

Prepare Sign Panel Special Details, as shown in Appendix IIA-4 and IIA-5.

- All guide signs shall be designed and fabricated utilizing the "Clearview Highway Font" as is indicated in Traffic Engineering Memorandum TE-337. (See Appendix 11B-51).
- All special and Non-Standard signs indicated in the Sign Schedule require a Sign Figure Detail. After determining the appropriate letter size, spacing and margin from the MUTCD, Standard Highway Signs Manual or the Virginia Supplement to the MUTCD, the values are inserted into the GUIDSIGN software program to generate the detail, as shown in Figure 4-2. The values can be modified by the designer to accommodate sign sizing.
- The overall sign panel size dimensions from GUIDSIGN need to provide a dimension divisible by six, to be in accordance with VDOT Standards.
- If Logo Signs are included in the plans, it will be necessary to include insertable sheets for Logo Signing with guidance and input from the State Signing Programs Section.



EXAMPLE OF SIGN PANEL SPECIAL DETAILS (See Appendix IIA-4)

Sign Panel Special Detail sheets, designed by the GUIDSIGN program, provide sign dimensions and letter positions for sign fabrication on all non-standard signs. Several Sign Figure Details, as shown in Figure 4-2, can be placed on a Sign Panel Special Detail sheet. All sign details and dimensions shall be clearly legible for all sign size reproduction.

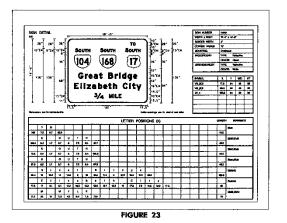


Figure 4-2: SIGN PANEL SPECIAL DETAIL

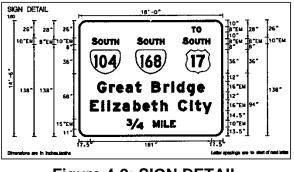
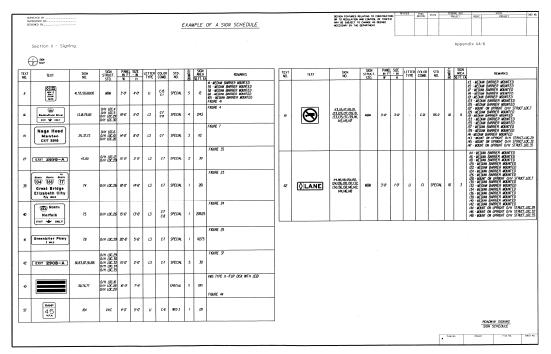


Figure 4-2: SIGN DETAIL (Enlarged View)

4.3 SIGN SCHEDULE

Prepare the Sign Schedule, as shown in Appendix IIA-6 or IIA-7.





A Sign Schedule sheet provides detailed information about all signs to be installed on the project. The following subsections will discuss the data needed on the Sign Schedule. To illustrate and detail the information shown on the Sign Schedule, Sign No. 74 in Appendix IIA-6 will be used as an example.

4.3.1 Text Number

The sign text number column, as shown in Figure 4-3, is determined by numbering the sign text from one through the number of signs, or grouping of signs, illustrated in the text column. Signs or grouping of signs that are alike should have the same text number. The text numbers shall match the bottom half of the circle of the signs on the plan sheet(s) for which it applies.

It is also desirable to arrange the signs in the following order: Regulatory signs, Warning signs, Guide signs. It is recommended to use the Standard Highway Signs Book when determining the type and order of signs to be presented on the Sign Schedule.

4.3.1a Text

The text column, as shown in Figure 4-3, illustrates a graphic view of the sign and message.

6	1 2 TEXT										
TEXT NO.	fEXT	Sign NO.	Sign Struct. Std.	PANEL IN FI	SIZE - IN H	LETTER TYPE	COLOR COMB.	STD. NO.	QUMITITY	SIGN AREA SO.FT. EA	REMARKS
8		4L55.58.68,05	WBW	3-0	4·0	μ	[-15 [3]	SPECIAL	5	12	41-WEDIAN BARRIER MOUNTED 55-WEDIAN BARRIER MOUNTED 58-WEDIAN BARRIER MOUNTED 68-WEDIAN BARRIER MOUNTED 765-WEDIAN BARRIER MOUNTED FIGURE 41
ŀБ	Battlefisid Bive Rot V our	13,18,79,82	0/H LOC.4 0/H LOC.5 0/H LOC.29 0/H LOC.30	ßE	11-07	ឋ	C-7 C-8	SPECIAL	4	214.5	FIGURE 4
19	Nags Head Manteo EXIT 2918	25.37.73	0/H LOC.6 0/H LOC.10 0/H LOC.26	H4-0	8.0	13	C-7	SPECIAL	J	112	FIGURE 7
27	EXIT 2898-A	43,80	0/H LOC.12 0/H LOC.29	15'-0'	20	Ľ	C-7	SPECIAL	2	30	FIGURE 35
39	Anne Anne Anne 104 (66 17) Groet Bridge Elizebeth City Ve ma	74	0/H LOC.26	187-07	14-5	IJ	C-7	SPECIAL	1	261	FIGURE 23

Figure 4-3: TEXT NUMBER and TEXT (Highlighted)

4.3.2 Sign Number

The sign number column, as shown in Figure 4-4, is determined by numbering the signs starting on the first sheet of the sign plans and progressing through the plans. The sign number shall match the top half of the circle of the signs on the plan sheet(s) for which it applies.

Э	1 2 TEXT										
TEXT NO.	fExt	Sign NO.	SIGN Struct. Std.	PANEL IN FT W	SIZE - N H	LETTER TYPE	COLOR COMB.	STD. NO.	QUMITITY	SIGN AREA SQ.FT. EA	REMARKS
8		41,55,58,68,05	МВМ	3-0	f ∙O	μ	C+5 C+	SPECIAL	5	12	41-WEDIAN BARRIER WOUNTED 55-WEDAN BARRIER WOUNTED 58-WEDAN BARRIER WOUNTED 68-WEDAN BARRIER WOUNTED KOS-WEDIAN BARRIER WOUNTED FOUNE 41
ŀ6	Notifefield Bive	13,18,79,82	0/H LOC.4 0/H LOC.5 0/H LOC.29 0/H LOC.30	ßE	11-07	IJ	C-7 C-8	SPECIAL	4	2145	FIGURE 4
19	Nags Head Manteo EXIT 2918	25.37.73	0/H LOC.6 0/H LOC.0 0/H LOC.26	H4-0	8.0	L3	C-7	SPECIAL	J	112	FIGURE 7
27	EXIT 2898-A	43,80	0/H LOC.12 0/H LOC.29	15'0'	20	ß	C-7	SPECIAL	2	30	FIGURE 35
39	Anne John Sime 104 (68 17) Great Bridge Elizabeth City Ve mat	и	0/H LOC.26	18-0	14-5	IJ	C-7	SPECIAL	1	261	FIQURE 23

Figure 4-4: SIGN NUMBER (Highlighted)

4.3.3 Sign Structure Standard

The sign structure standard column, as shown in Figure 4-5, identifies the type of structure [i.e. Overhead, Type VA, Type VIA, steel or wood (size and type)].

(1 2 TEXT										
TEXT NO.	TEXT	SIGN NO.	SIGN STRUCT. STD.	PANEI IN FI	SIZE - IN H	LETTER	COLOR COMB.	STD. NO.	OUNNTITY	SIGN AREA SO.F.L. EA	REMARKS
8		41,55,58,68,05	WBW	3-0	4.0	IJ	C+5 C+	SPECIAL	5	12	41-WEDIAN BARRIER MOUNTED 55-WEDIAN BARRIER MOUNTED 58-WEDIAN BARRIER MOUNTED 68-WEDIAN BARRIER MOUNTED 68-WEDIAN BARRIER MOUNTED FIGURE 41
15	Battlefisid Bive Istr V our	13,18,79,82	0/H LOC.4 0/H LOC.5 0/H LOC.29 0/H LOC.30	ษร	11-07	ប	C-7 C-8	SPECIAL	4	214.5	FIGURE 4
ß	Negs Head Manteo EXIT 2918	25.37.73	0/H LOC.6 0/H LOC.10 0/H LOC.26	H*-0"	8-0	IJ	C-7	SPECIAL	J	#2	FIGURE 7
27	EXIT 2898-A	43,80	0/H LOC.12 0/H LOC.29	15'-0'	20	B	C-7	SPECIAL	2	30	FIGURE 35
39	Amm Amm Amm (04) (68) (17) Greet Bridge Elizebeth City 3/4 mm	74	0/H LOC.26	18-07	14-6	IJ	C-7	SPECIAL	1	261	FIGURE 23

Figure 4-5: SIGN STRUCTURE STANDARD (Highlighted)

4.3.4 Panel Size

The panel size column, as shown in Figure 4-6, is determined from the GUIDSIGN Software Program, Standard Highway Signs Manual, MUTCD, or the Virginia supplement to the MUTCD.

(1 2 TEXT										
TEXT NO.	TEXT	SIGN NO.	SIGN STRUCT. STD.	PANEI IN FI	SIZE - IN H	letter Type	COLOR COM8.	STD. NO.	QUANTITY	SIGN AREA SQ.F1. EA	REMARKS
8		41,55,58,68,05	WBW	3-0	4·0	μ	[+5 [+]	SPECIAL	5	12	41-WEDIAN BARRIER WOUNTED 55-WEDIAN BARRIER WOUNTED 58-WEDIAN BARRIER WOUNTED 68-WEDIAN BARRIER WOUNTED 65-WEDIAN BARRIER WOUNTED FIGURE 41
њ	Battiofisid Bive Izor 🔶 con.y	13,18,79,82	0/H LOC.4 0/H LOC.5 0/H LOC.29 0/H LOC.30	ßE	IF-07	ឋ	C-7 C-8	SPECIAL	4	2145	FIGURE 4
19	Negs Head Manteo EXIT 2918	25.37.73	0/H LOC.6 0/H LOC.10 0/H LOC.26	H-0	8-0	IJ	C-7	SPECIAL	J	112	FIGURE 7
27	EXIT 2098-A	43,80	0/H LOC.12 0/H LOC.29	15'-0'	20	ß	C-7	SPECIAL	2	30	FIGURE 35
39	Anni Anni Anni 194 (66) (17) Great Bridge Elizabeth City 3/4 Mit	74	0/H LOC.26	18-0 ⁻	И-5	IJ	C-7	SPECIAL	1	251	FIGURE 23

Figure 4-6: PANEL SIZE (Highlighted)

4.3.5 Letter Type/Fabrication

The sign lettering type and fabrication column, as shown in Figure 4-7, is determined from the <u>VDOT Road and Bridge Specifications, Section 701 - Traffic Signs</u>.

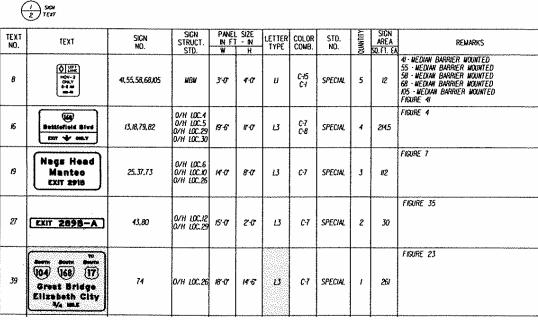


Figure 4-7: LETTER TYPE / FABRICATION (Highlighted)

4.3.6 Color Combination

The color combination column, as shown in Figure 4-8, is determined from the MUTCD and the Color Code Chart found in Appendix IIB-17.

TEXT NO.	ŤEXT	sign No.	Sign Struct. Std.	PANEL IN FT W	Size - N H	LETTER	COLOR COMB.	STD. NO.	QUANTITY	SIGN AREA SO.FT. EA	REMARKS
8		41,55,58,68,05	иви	3-0	4·0	IJ	C+5 C+	SPECIAL	5	12	41-WEDAN BARRIER WOUNTED 55-WEDAN BARRIER WOUNTED 58-WEDAN BARRIER WOUNTED 68-WEDAN BARRIER WOUNTED KS-WEDAN BARRIER WOUNTED KS-WEDAN BARRIER WOUNTED
ю	Battlefisid Bive Rot V our	13,18,79,82	0/H LOC.4 0/H LOC.5 0/H LOC.29 0/H LOC.30	øና	11-07	ឋ	C-7 C-8	SPECIAL	4	2145	FIGURE 4
ß	Negs Head Manteo EXIT 2915	25. <i>3</i> 7.73	0/H LOC.6 0/H LOC.0 0/H LOC.26	HT-07	8°0'	IJ	C-7	SPECIAL	J	112	FIGURE 7
27	EXIT 2098-A	43,80	0/Н LOC.12 0/Н LOC.29	15-0	20	IJ	C-7	SPECIAL	2	30	FRURE 35
39	Great Bridge Elizabeth City Va ma	74	0/H LOC.26	18-0	14-6	IJ	C7	SPECIAL	1	261	FIGURE 23

Figure 4-8: COLOR COMBINATION (Highlighted)

4.3.7 Standard Number

() SIGH

The standard number column, as shown in Figure 4-9, is derived from the MUTCD, Standard Highway Signs Manual or the Virginia Supplement to the MUTCD. If a standard number is not applicable, the word "SPECIAL" is indicated.

7	2) TEXT										
TEXT NO.	ŤEXT	SIGN NO.	SIGN STRUCT. STD.	PANEL IN FI	SIZE - IN H	LETTER TYPE	COLOR Comb.	STD. NO.	OUNITITY	SIGN AREA SO.FT. EA	REMARKS
8		41,55,58,68,05	WBW	3-07	4·0	U	C+5 C+	SPECIAL	5	12	41-WEDAN BARRER WOUNTED 55-WEDAN BARRER WOUNTED 59-WEDAN BARRER WOUNTED 69-WEDAN BARRER WOUNTED 75-WEDAN BARRER WOUNTED FOURE 41
15	Battlefinid Bive Rom V our	13,18,79,82	0/H LOC.4 0/H LOC.5 0/H LOC.29 0/H LOC.30	Ø-6	ır o	ឋ	C-7 C-8	SPECIAL	4	2145	FIGURE 4
19	Negs Head Manteo EXIT 2918	25.37.73	0/H LOC.6 0/H LOC.10 0/H LOC.26	HF-07	8-0	IJ	C-7	SPECIAL	J	112	FIGURE 7
27	EKIT 2098-A	43, <i>8</i> 0	0/H LOC.12 0/H LOC.29	15-0	20	IJ	C-7	SPECIAL	2	30	FIGURE 35
39	Ann Ann Ann (04) (68) (17) Greet Bridge Elizebeth City V4 ms	74	0/H LOC.26	18-07	14-5	IJ	C-7	SPECIAL	1	261	FIGURE 23

Figure 4-9: STANDARD NUMBER (Highlighted)

4.3.8 Quantity

The quantity column for each sign or grouping of signs of each text No. for the entire plan set is determined and identified in the Sign Schedule, as shown in Figure 4-10.

1 SIGH Z TEXT

TEXT NO.	TEXT	sign No.	SIGN STRUCT. STD.	PANEI IN FI	SIZE - IN H	LETTER	COLOR COMB.	STD. NO.	QUANTITY	SIGN AREA SQ.FI. EA	REMARKS
8		41,55,58,68,05	WBW	3-0	40	IJ	C+5 C+	SPECIAL	5	12	41 WEDIAN BARRIER WOUNTED 55 WEDIAN BARRIER WOUNTED 58 WEDIAN BARRIER WOUNTED 68 WEDIAN BARRIER WOUNTED 76 - WEDIAN BARRIER WOUNTED FIGURE 41
15	Buttlefisid Bive Rot V only	13,18,79,82	0/H LOC.4 0/H LOC.5 0/H LOC.29 0/H LOC.30	ตร	Ir o	ដ	C-7 C-8	SPECIAL	4	214.5	FIGURE 4
ß	Negs Head Manteo EXIT 2918	25.37.73	0/H LOC.6 0/H LOC.10 0/H LOC.26	H-0	80	IJ	C-7	SPECIAL	J	#2	FIGURE 7
27	EXIT 2898-A	43,80	0/H LOC.12 0/H LOC.29	15-07	20	B	C-7	SPECIAL	2	30	FIGURE 35
39	Anne Anne Anne 104 (66 117) Groet Bridge Elizebeth City Ve mit	74	0/H LOC.26	18-07	H.C.	IJ	C-7	SPECIAL	1	261	FIGURE 23

Figure 4-10: QUANTITY (Highlighted)

4.3.9 Sign Area

The sign area column, as shown in Figure 4-11, is the square feet of the sign panel for each sign text number.

(1 2 TEXT										
TEXT NO.	TEXT	sign No.	SIGN Struct. Std.	PANEI IN FI	SIZE - IN H	LETTER TYPE	color comb.	STD. NO.	QUANTITY	SIGN AREA SQ.F1. EA	REMARKS
8		4,55,58,68,05	WBW	3-0	4.0	μ	C+5 C+	SPECIAL	5	12	41 WEDIAN BARRIER WOUNTED 55 WEDIAN BARRIER WOUNTED 58 WEDIAN BARRIER WOUNTED 68 WEDIAN BARRIER WOUNTED 65 WEDIAN BARRIER WOUNTED FOG-WEDIAN BARRIER WOUNTED FOURE 41
15	Battlefield Bive Rot V con.y	13,18,79,82	0/H LOC.4 0/H LOC.5 0/H LOC.29 0/H LOC.30	ßE	IF-07	ឋ	C-7 C-8	SPECIAL	4	214.5	FRURE 4
19	Nags Head Manteo Exit 2918	25.37.73	0/H LOC.6 0/H LOC.10 0/H LOC.26	H4-0	8-0	13	C-7	SPECIAL	J	112	FIGURE 7
27	EKIT 2898-A	43,80	0/H LOC.12 0/H LOC.29	15-07	20	IJ	C-7	SPECIAL	2	30	FIGURE 35
39	Amm Jame T 104 (68 17) Great Bridge Elizabeth City Na mit	74	0/H LOC.26	18-07	14-6	IJ	C-7	SPECIAL	,	25/	FRURE 23

Figure 4-11: SIGN AREA (Highlighted)

4.3.10 Remarks

TEXT

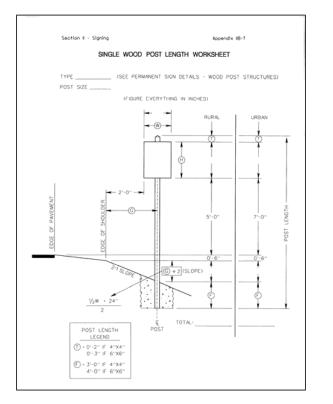
The remarks column, as shown in Figure 4-12, denotes figure references, special directions or intentions that further describe the construction requirement of the signs.

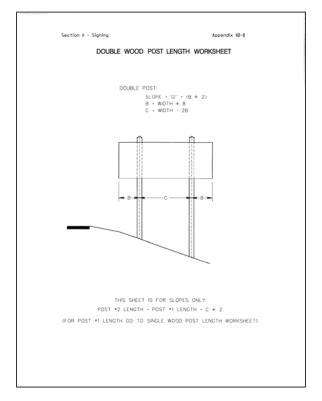
TEXT NO.	text	Sign NO.	SIGN STRUCT. STD.	PANEL IN FT W	SIZE - IN H	LETTER	COLOR COMB.	STD. NO.	QUMITY	SIGN AREA SO.FT. EA	REMARKS
8		41,55,58,68,05	WBW	3-0	f ∙O	ш	C+5 C+	SPECIAL	5	12	41-WEDAN BARRER WOUNTED 55 WEDAN BARRER WOUNTED 58 WEDAN BARRER WOUNTED 68 WEDAN BARRER WOUNTED 75 WEDAN BARRER WOUNTED FOURE 41
15	Rattiefisid Bive Rattiefisid Bive	13,18,79,82	0/H LOC.4 0/H LOC.5 0/H LOC.29 0/H LOC.30	øና	11-07	ដ	C-7 C-8	SPECIAL	4	2145	FIGURE 4
ß	Negs Head Manteo EXIT 2918	25.37.73	0/H LOC.6 0/H LOC.0 0/H LOC.26	HT-07	8-0	IJ	C-7	SPECIAL	J	112	FIGURE 7
27	EXIT 2098-A	43,80	0/H LOC.12 0/H LOC.29	15-0	20	IJ	C•7	SPECIAL	2	30	FRURE 35
39	Annu Annu Annu 104 (68 17) Greet Bridge Elizebeth City Va mit	74	0/H LOC.26	18-0	14-6	IJ	C-7	SPECIAL	1	261	FRUIRE 23

Figure 4-12: REMARKS (Highlighted)

4.4 WOOD POST STRUCTURE CALCULATIONS

Calculations for determining the length of wood post structures are as shown and in Appendix IIB-7 for Single Wood Posts and Appendix IIB-8 for Double Wood Posts.





SINGLE WOOD POST CALCULATION WORKSHEET (See Appendix IIB-7)

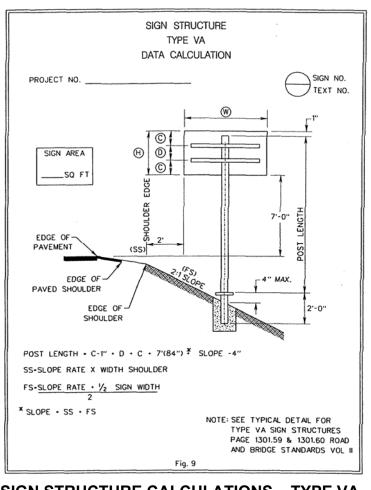
DOUBLE WOOD POST CALCULATION WORKSHEET (See Appendix IIB-8)

Details for determining type of wood post are provided in the <u>VDOT Road and Bridge</u> <u>Standards, Volume II, Section 1300</u>, Pages 1301.55 and 1301.56. Post installation and mounting height guidelines are provided on Page 1301.58. The procedure for calculating the size of the wood post is provided on Pages 1301.95 to 1301.106. Mounting height and slope at the sign location are required to determine which chart to use for these computations. The design standards are located under WSP-1 and calculation procedures are located under SPSC-1, SCI-1 and PSI-1.

4.5 TYPE VA SIGN STRUCTURE DETAIL

Instructions to determine the type and details for Type VA Sign Structures are provided in the <u>VDOT Road and Bridge Standards</u>, <u>Volume II, Section 1300</u>, Pages 1301.59 to 1301.66. Additionally, support and foundation detail standards are provided under SSP-VA.

• The type and details for Non-Standard Type VA Sign Structures can be determined using the Sign Structure Type VA Data Calculation, as shown and in Appendix IIB-9.



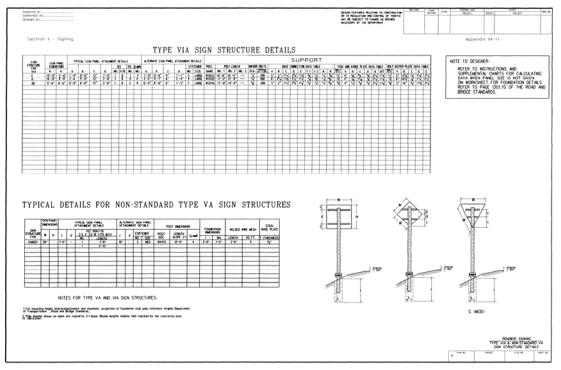
SIGN STRUCTURE CALCULATIONS – TYPE VA (See Appendix IIB-9)

 In some instances sign size discrepancies will occur. In those instances, the information for support details in the <u>VDOT Road and Bridge Standards</u>, <u>Volume II</u>, <u>Section 1300</u>, Pages 1301.60 will have to be modified based on the sign dimensions: W, H, c, d, post length and TEE Bar number and length. This information will be placed on the Chart for Non-Standard VA Structures, as shown and in Appendix IIA-11. The designer should reference Appendix IIB-6 where typical dimensions for c & d are provided.

• When using the SignFix software for alternate sign panel attachment details that are on ground mounted signs, the input for sign panel thickness shall be 0.100-inch, the channel size shall be medium and the wind loading shall be 80 mph.

4.6 TYPE VIA SIGN STRUCTURE DETAIL

Preparing the Type VIA Sign Structure Detail Sheet, as shown and in Appendix IIA-11, provides sign panel, attachment, and support detail data. This sheet is developed using references charts and calculation work sheets, which are available in Appendices IIB-10, IIB-11, IIB-12 and IIB-45.



TYPE VIA SIGN STRUCTURE DETAIL SHEET (See Appendix IIA-11)

- The Sign Structure Detail Chart, as shown and in Appendix IIB-45, provides VIA sign structure types, typical and alternate sign panel attachments, as well as, support values. The data represented on the Sign Structure Detail Chart is to be used to populate the detail blocks for the Type VIA Sign Structure Detail Sheet in Appendix IIA-11.
- The VIA sign structure type is determined by matching the height and width of the specific sign panel under consideration to those outlined in the Sign Structure Detail Chart.
- Most sign panel sizes on the project will not have dimensions exactly as shown on

the Sign Structure Detail Chart. When the sign panel dimensions vary from the Sign Structure Detail Chart, the following subsections will provide design strategies to be used to modify the sign structure type and determine the data values for the attachment details and supports:

PER-WEIGHT	87		Sec	tion s	- Signi	ing			SIGN	S	RUC	TURE	DE	TAII	. CH				OF 10 OF 10 HOUSE	PEATURE REGULATS SUBJECT	ID AND CO	NING, OF	CHER CHER		40	n their	PR0.417	40.75	PALACT	
	Size Parts	PP206	SIGN PARCE	ATLICHEN			ALTERNAL S	ON PAREL										ORT					l							
int	DIM:N51085		1.			t b.ars				TIME		P151 L0x5		CHOR BEAT	5	BASE CONN	CTION DA	1.08.1					THEE B				1		Appendix 18-45	
	F F	2 2 		20' 1	40. 518 M		9 8 8	1.00				-1" 16" -1"	111 1	7 200					- 110				0 9/7 8		0 1	P				
	10' 6'	3.6.8.	2, 18.	28' 2	2 8 1	0	1'-6' 8'-0'	157	1'-7" 1	1, 1963	#10(1) 11 #10(1) 14	1.18.02	100	2 200			1315	Q Q	23	10	3.3		100			28	j j			
	N. 6	1.4. 8.3	2" 12"	A'-0' 1	1 8 1	4	1'-0' 8'-0'	4*	1'-1' 5	1. 1972	11.0 10.0812 15	-0" 11"-9"		11 1 1 1 1	1.11.7			9.5	5.5	(4°	\$ 5	81	20 14 3	1 5" 1	88	14 257	1			
-	12' 6'	2.9. 8.4	5, 45 ₄	8°-8° 1 8°-8° 1 8°-8° 1	2 8 4	4	7 - 10 - 8 - 6 - 10 - 8 - 5	0		L BRCE	#12916 15 #12916 15	5" 18 5"	11	640	22220000000000000000000000000000000000	104 204	1313	141	33	$\left\{ \begin{array}{c} t \\ t \end{array} \right\}$	33	18 B	영광	1 5° 19 1 5° 19	25	불음	-			
_	16° - 6° 18° - 4°	1.5 10	S* 12*	1.5 1	1211	1-1-2-1	1.11 10.00			LNC	#12814 15 #12819 15	-4* 38'-3* -11*20'-11*		900	68		1213	1	33	10	운동	RB	영국		22	공동	-			
	20' 4' 22' 4'	4'-10' 12'	10.124	191			1 1 1 1 1 1 1 3 1 1 1 1	* 1* * 1*	11-27 4	LARCE	#12922 16 #14026 16	-11 20 -11 -2" 21 -4" -4" 27 -4"		900	17 2	15 25	EFF	28	1515	15	88	83			212	2.12				
	24' 4'	5'-4" 11'	4 12	1-1-1	2 6 3		6" 16" 16" 1 5" -7" 16" -1	0	8° 10 8° 33	L BRGE L BRGE	#14326-116	-1" 21 -5" -4" 14 -0" -1" 24 -18"		1 100	7 2	12 12	1511	1818	1513	15	88	1813	지 말 못		515.	31				
	24' 4'	8 J 19									#16431 17 #14430 12	1 H 18 1 B 1	1	100	1. 13		12	4818	5.5	122	\$\$	1313	\$ 51		55					
				1.0					100 - 100 -	1.662				2 10	1	10.7 10.7	1027 1								1.2	1.2 1.2				
	12" & 12" & 16 & A'	2.5 8.3	110	1.0	1 8 1	1	2.0. 8.0	18-7	2'-1' 4	LERICA	17176 16	4* 10 1 -0* 10 10 -7 10 4		640	1812	15.125	1513	13 5	1513	i i	33	\$1	1513		231					
_	14 8	1 0 1 0 1 0 1 1 1 1 1 1	1 17	14	8 0			6.	1	LANCE LANCE	#2122 fr	10-10 -7" 10 4 -7" 10 4 -7" 10 4		1 10	1818	出送	1813	18 3	13-13		2 3	13日3	영상품		33	E B				
	21. 8	1.4° 11'	0" 12" 0" 12" 3" 12"	1.0	5 6 9	1 T	1'-0' 12'-0 4'-0' 12'-0	4	1.2 2	LARCE LARCE	11-11-22 17 11-11-25 17	4 8 4		100	1 1 23	22	1.2	13 5	1313	물	3 3	接出	강경 :		33	50				
	27 K 34 B	11.47 1.117	47 137	37.00	1 0 0	0	41151 13112 (1-3)1 141-5	4 07	8° 13	LMCL	#16426 (7 #16431 18	न 27 7 18 24 - 8 न 28 न		100	5 P 5 5 P 5 5 5 P 5 5 5 7 7 5 5 5 7 7 5 5 5 5		12 1	13 3	1313	물왕	3. 14	K B		1-6	55	1.2 0	1			
	26' - 8' 28' - 8'	5'-10" 14" 6'-3" 15	4 12		5 0 0		2.4. 123	- 0°	e. 11	1.40	#14154 18 #16135 18	4 8 4 4 8 1 4 8 1		150	168	2 8	13	853	13-13		2 2	ΕB	의관	2 2 2	외환	38	1			
	15. 12.	5° 4° 16' 1° -0° 8° -3			3 31 0	1	1'-0' 8'-0'		1°-4° 3	1.8464	#7,8545 18 #12935 58	4. 33. 34	114 I	400	6 2	11 22	1919	150	13-13	10	2.5	18 2		67 35	38					
	12' 12'	2.0 8.0	1 18"	3.4.1	1 0 2		1-8' 8'-8' 7-8' 8'-8' 7-9' 8-9	10"	2.1 5	LARCE	#14822 18 #14922 19	4 11 1 3 12 1 3 12 1 6 17 16		900	100000	15 15	12/2	1813	1215	1	23	RB		67 11		26	}			
	8 8	1113							245	LARCE	#14826 175	-2" 23' 4"		100	1113	2 1	191	1815	1515	12	815	1513	5 5 5	11 13	55	55	1			
	20 10	14 11	3° 18°	12	120		1'-1' 10'-1 1'-0' 12'-0 1'-1' 13'-0	10	1.2 3	TIAKI	#16331 15 #18435 15	3 28 3		1907 1907 1908	1 2		131	12/2	1213	计约	8.13	は甘	515	1 1 1	33	35	1			
- 1	N 11	5.4 13	4 18	1 4	100	0	4 - 6" 12 - 0 4 - 4" 13 - 2 7 - 33" 14 - 5 5 - 2" - 35" - 2 	tir i	F 14	LARCE	etex40 20	-1' 8' 4' -4' 11' 4'		150	11 28	1. 1	15	12.2	1213	비린	4.5	i: li		Tr B	55	28.				
	N N	5 - 14 - 14 4' - 1" - 16'	4" 18"	12			1.1.15.1	1			wit104 20	-6' 28'-3'	1-1 1	110		1813	12 6	13 3	1313	너ઝ	\$ 13		3 3 1	1.	33	記録	1			
-	10 10	1.9. 1.4	14	3.0.1	5 0 8	10	1.0 8.0	6	141							16 3	15 3	13-13	33	말길	Ϋ́, Ϋ́	12 1	3 6 5	13. 18		38				
-	12 14	3.0 8.3	1 W.	1.0 1	1 8 2	1	1.21 1.3	1	1.0.4	LARCE	#1/219 17 #1/222 18	-0, 51, -10,	1	\$ 900	67 24	13 13	13 3	15 3	3.3	26	3. 12	53	333	67 28	33	28	1			
	16° 9' 16° 9'	1.41 10	-2" 58"	3'-0" 3	3 6 8	0		1.0	2.47 4	LARCE	11-126 18 11-126 19	4" (1 - 14" 2" (2 - 4" 4 - (2 - 4" 4" (2 - 2")		900 900 900 100 100	11 35	$\frac{2^{2}}{2^{2}} = \frac{4^{2}}{4^{2}}$	121	15/3	1213	원문	\$ 18	18 B	333		위신	21				
	20' Y	4.10 11	4' 18'	1.9	2 0 0	0	41-01 121-0 41-51 131-2	1.5	1'-2" 8 11" 10	LARGE				100	1 1 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	151 15	1X Z	13-3	임왕	5 14 5 14	N.	영성	12 6	귀운		}			
	N' 9'	5'-4" 13'	-4° 18° -6° 18°	3.0.1	3 0 0	0	11-101 141-5 51-21 151-1	2	8" 14 6" 19	LARCE				1 150 150	12	21 41	15 15 15 5	15 6	1515	181	8 19	18 3		P 23	영왕	1.5 1				
	8 9	61-10 N	4 18	3.0.3	2 0 0	0	111 111	1111	117		#18340 15 #21944 25	4 3 4 -18 2 4 -18 2 4 -19 2 4	¥	158	00000000000000000000000000000000000000	1. 1	15 14	1818	1818	10	\$ 18	18 3	5151		213-1	15 1				
	9° 9°	20 8-	11	3.6		12	1000	197	100 6	LANCE	12:425 28 10:635 21	-1 24 1 -0 24 10 -2 25 1		5300	TAR	特臣	151	1815	1218	지연	\$ 15	EB	3.8 8		53	38	1			
	16 12	14 8	11	131	111	12	129	12	2.4 6	LANCE	#16x31 29 #14x34 21	3 5 4	-1- 3	1 1200	1713	2 5	15 6	1212	1513	다고	515		21215	ir bi	313-1	31				
_	10 17	4. 4. H.	8 2	1 in		10	18 91	12	13 11	LARCE	#56445 21	3 8 11	1	100	18		15 6	1313	封白	그월	\$ 15	15 1	6 18 1	主義	38	51				
		4 70 17 57 47 59 3 50 5 5 4 7 57	4' n'	1.3		0		0	8 19	LBRG	401844 PT	4 14 10 3 24 10 3 25 4 4 34 4 5 36 4 4 34 4 5 36 4 4 36 4 4 36 4 4 36 4 4 36 4 4 36 4 4 36 4	111 1	서율	10 2	15 15	151.0	13-13	ST:	161	212		러러	計2 協	33.1	3 5				
	16 17	2 -10 1 -	10' 21'	4.3		1	1.07 1.07	111	100 0.00		#14125 15	6 21 2	6-2-1	150	1:18	12 6		144	1313	12	313	日子		臣務	리는					
	30' 12' 14' 14' 12' 14'	1.4. 10.	41 21	5.61.1		12	1 1	1.0.	5.9, 2	LUNC!	#16431 23		12-4, 2	* V58	1-3	2" 4"		88 8	1313		2.2	1 1	영국	두응	영웅	15.5				
	16° 14° 18° 14	1.41 3.4	-0° 18°	3.4.1						LINKE	¥18375 23 ¥18340 23	3 11 3	1	1500	行義	12 6		8FR	1515	임관	213		공공	11 8	위문	191				
	20 14	4 4' 11'	-0" 18" 1" 18"	1.4	1 8 3		4	6°	1.5. 13		#21648 23 #16640 21	4 2 4	11-11-1	Y 34 150	17 22	1912	長長	4548	1518	2.57	S 13	P.P.		2 8 21	원춘님	27				
	N 14'	1000	17 187	10.411		14			17* 17** 144 1448	1.11	#18475 [2] #18440 [25	4' 12' 4' 5' 12' 41'	N'-1' -1 N'-5' -1	150	1. 5	55		1848	1818	195	2. 6	158	2131	1. 23	381	28				
	28 14	4.4.15	10 18	3.4.1		18	111 111		111 111	1.11	#21844 21 #21844 21	3 12 11 4 12 4 4 13 1	24-41-1	150	1 5	1815	18 1	1818	轻松	15	813	1312	518	1.8	818		1			
_	16' 16'	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1	3.3			5-8 8-7	1'-0"	Y -4" 7								12.0	13 5	1515	12	213		5 15 1	12.18	화합니	32				
	18 16' 20' 16'	2.2.10	V 11"	2.3.		24	2.51 (10 -3		1.4 10	1.60	atta 16 5 1 3	1111111111	351-171-1	1 154	1 1 1 1 1 5	121.28	12 10	83 8	3.13	42	53			지수 않	38					
-	217 147 24 16	5.27 1.5	5" 18"	5-11		1 24	F 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1111			#18845 21 #21646 23	-4" 24" -4" -6" 24 -10"	281221	158	1 25	2* 1* 2* 1*		8818	STE	4.7	5 15	13月	5151	1" 25	경문					
	24 16 36 16 28 16	3 18 5	2" 18"	3.37	1 <u>b</u> 4	124		-			#21644 (2) #21644 (2)	4 24 -10 4 5 5 4 5 7	8 4 1	1500	1 3	22	15 10	9X Ş	315	18	213	128		1.0	왕산			190.41	1 11.1 46.	T
-	30 14	4 4 15	4 18	3-1-1	1 1 2 4	28	1-1 7-1	- 7 -			#21e44 25	4 8 -1	21"-0" #	9 250	11 5	122 5	DO B	215.15	15:05	यहरी	5115	1419	5 15 1	11 60	영화		1.			- 1

SIGN STRUCTURE DETAIL CHART (See Appendix IIB-45)

SIGN	SIGN	PANEL	TYP	ICAL SIG	IN PANEL	ATTACH	ENT D	ETAIL	s		ALTER	VATE SIG	N PANEL	ATTACHM	ENT O	ETAILS
STRUCTURE Type	DINE	PANEL ASTONS					Z	E	TEE	CLAMPS					STI	FFENER
VIA	¥	н	٥	b	c	đ	NO.	SIZE	NO,	NO.	a	b	c	٥	NÛ.	SIZE
A			****						***	*	****					
B	12	4'	2'-0"	8'-0'	14	20	2	ß	0	0	2'-0*	8'-0*	111/2	2'-1"	2	LARGE
C	11'	5'	1'-6"	8,~0,	16	28	2	8	0	0	1'-6"	8'-0"	12	1'-1"	4	LARGE



4.6.1 Width Discrepancy

Locate the width of sign panel under consideration within smallest possible range of widths in the Sign Structure Detail Chart.

• If the sign panel width is less than midway between the two widths on the chart, select the lower value within the range and use all data values except the "a" and "b" dimensions of the attachment detail.

- If the sign panel width is midway or more between the two widths on the chart, select the greater value within the range and use all data values except the "a" and "b" dimensions of the attachment detail.
- The attachment detail dimensions for "a" and "b" are determined using the Supplement Sign Panel Post Spacing Chart for Multi-Post VIA Structures, as shown and in Appendix IIB 6. Use the actual sign panel width to determine "a" and "b" dimensions and interpolate, if necessary.

4.6.2 Height Discrepancy

Locate the height of the sign panel under consideration within the smallest possible range of heights in the Sign Structure Detail Chart.

• If the sign panel height is more than 6-inches greater than the smaller height dimension within the chart range, select the larger height value within the chart range and use all data except the "c" and "d" of the attachment detail and the number of Zee / Tee Bars.

Use the Supplement Zee / Tee bar Spacing Chart, as shown and in Appendix IIB-6, as well as the Sign Structure Detail Chart to determine the "c" and "d" dimensions and number of the bars.

Calculate the post lengths by subtracting the height of the actual sign panel from the sign panel height obtained from the Sign Structure Detail Chart and then subtract the difference from the post length values from the Sign Structure Detail Chart to get the actual post length.

• If the sign height is 6-inches or less than the smaller height dimension within the chart range, use the smaller height dimension within the chart range to determine all data except the "c" and "d" post lengths and number of bars.

Use the Supplement Zee / Tee bar Spacing Chart, as shown and in Appendix IIB-6 and the Sign Structure Detail Chart to determine the "c" and "d" dimensions and number of the bars.

Calculate the post lengths by subtracting the height of the actual sign panel from the sign panel height obtained from the Sign Structure Detail Chart and then add the difference back to the post length values from the Sign Structure Detail Chart to get the actual post length.

4.6.3 Width and Height Discrepancies

If variances occur in both width and height dimensions, it will be necessary to complete both design strategies as described in 4.6.1 and 4.6.2. Use the results to determine the subsequent structure type and its associated support data.

Section II - S	Signing					Ap	opendix H	8-6	
			SUPPLE	MENT					
			EE/TEE B/	AR SPACI					
	FOR SIG	N HEIGHTS	S NOT SHO	WN ON TH	HE VIA WO	RKSHEET)			
	SIGN HEIGHT	c	-0-	SIGN HEIGHT	c	-0-			
	30	9"	1-6"	11-0"	18-	4'-0"			
	3e	12"	1'-6"	11'-0'''	12-	3'-0"			
Γ	4'-6"	14."	2'-2"	11'-6''	18-	4'-3"			
	5'-0"	16"	2'-4"	11'-6'''	15-	30			
	5'-6"	15"	3'-0"	126.3	12~	3e			
_	6'-6"	15"	4'-0"	13'-0"	18-	3'-4"			
L	7'-0"	12"	2'-6"	13'-6"	18-	3e			
Ļ	7'-6"	12"	2'-9"	14*-6*	18-	3'-10"			
-	8'-6"	15"	3'-0"	15'-0"	18-	30.			
-	9'-6"	18"	3'-3"	15'-6"	15"	33.			
L	10'-6"	18"	3'-9"	16'-6"	18-	341/2			
,	4 BARS	SIGN WID	THS 19 TH	RU 30'-6" RU 18'-6"					
,	4 BARS								
,	4 BARS 4 BARS	SIGN WID	SUPPLE	RU 186"					
,	4 BARS 4 BARS	SIGN WID ALWAYS	SUPPLE	RU 18'-6" EMENT PACING		OR			
,	4 BARS 4 BARS	SIGN WID ALWAYS	SUPPLE	RU 18'-6" EMENT PACING A STRUCT		OR			
;	4 BARS 4 BARS	SIGN WID ALWAYS	SUPPLI SUPPLI L POST S -POST VI/ (TYPICA	RU 18'-6" EMENT PACING A STRUCT					
;	4 BARS 4 BARS SIG	N PANEL	SUPPLI SUPPLI L POST S -POST VI/ (TYPICA	EMENT PACING NUCT	TURES				
:	4 BARS 4 BARS SIG	SIGN WID ALWAYS N PANEL MULTH POST S	SUPPLI SUPPLI L POST S -POST VI/ (TYPICAL	EMENT PACING ONLY PANEL	POST S	PACING			
;	4 BARS 4 BARS SIG PANEL WIDTH	SIGN WID ALWAYS N PANEI MULTI POST S "A"	SUPPLE SUPPLE L POST S -POST V/ (TYPICAL SPACING "8"	EMENT PACING A STRUCT ONLY PANEL WIDTH	POST S	PACING "B"			
:	4 BARS 4 BARS SIG PANEL WIDTH 9'-6"	SIGN WID ALWAYS N PANEL MULTH POST S "A" 9"	SUPPLE SUPPLE POST S POST VI/ (TYPICA) PACING "8" 8"-0"	RU 18'-6" EMENT PACING A STRUCT ONLY) PANEL WIDTH 18'-0"	POST S "A" 4'-0"	PACING "B" 10'-0''			
	4 BARS 4 BARS SIG PANEL WIDTH 9'-6" 10'-0'' 10'-6'' 11'-0''	SIGN WID ALWAYS N PANEL MULTI- POST S "A" 9" F-0" F-3" T-6"	SUPPLI SUPPLI POST S POST VI/ (TYPICA) PACING 8'-0" 8'-0" 8'-0" 8'-0"	EMENT PACING A STRUCT ONLY) PANEL WIDTH 18"-0" 18"-0" 19"-0" 19"-6"	POST S "A" 4'-0" 4'-3" 4'-4" 4'-6"	PACING 			
	4 BARS 4 BARS SIG PANEL WIDTH 9'-6" 10'-0" 10'-6" 11'-0" 11'-6"	SIGN WID ALWAYS N PANEL MULTI- POST S "A" 9" T-0" T-3" T-6" T-9"	SUPPLI SUPPLI POST V/ POST V/ (11/PicA PACING "8" 8'-0" 8'-0" 8'-0" 8'-0" 8'-0" 8'-0"	RU 18'-6" EMENT PACING A STRUCY ONLY' PANEL WIDTH 18'-0" 19'-0" 19'-6" 20'-0"	POST S "A" 4'-0" 4'-3" 4'-4" 4'-6" 4'-6"	PACING "B" 10'-0" 10'-4" 10'-6" 11'-0"			
	4 BARS 4 BARS SIG PANEL WDTH 9'-6" 10'-0" 10'-6" 11'-0" 11'-6" 12'-0"	SIGN WID ALWAYS N PANEL MULTI- POST S "A" 9" T-0" T-3" T-6" T-9" 2'-0"	SUPPLI SUPPLI POST SV/ (1YPICA) PACING "8"-0" 8'-0" 8'-0" 8'-0" 8'-0" 8'-0"	RU 18'-6" EMENT PACING A STRUCY ONLY' PANEL WIDTH 18'-0" 19'-0" 19'-6" 20'-0" 20'-6"	POST S "A" 4'-0" 4'-3" 4'-4" 4'-6" 4'-6" 4'-9"	PACING 			
	4 BARS 4 BARS SIG PANEL WDTH 9'-6" 10'-0" 10'-6" 11'-0" 11'-6" 12'-0" 12'-6"	SIGN WID ALWAYS N PANEL MULTI- POST S "A" 9" T-0" T-3" T-6" T-9" 2'-0" 2'-3"	SUPPLI SUPPLI POST S POST V/ (1YPICA PACING *8*-0** 8*-0*	RU 18-6" EMENT PACING A STRUCT ONLY) PAREL WIDTH 18-0" 19-0" 19-6" 20-0" 20-6" 21-0"	POST S "A" 4'-0" 4'-3" 4'-4" 4'-6" 4'-6" 4'-6" 4'-9" 4'-10"	PACING 			
	4 BARS 4 BARS SIG PANEL WDTH 9'-6" 10'-0" 10'-6" 11'-0" 11'-6" 12'-6" 13'-0"	ESIGN WID ALWAYS N PANEL MULTI POST S "A" 9" T-0" T-6" T-9" 2'-0" 2'-3" 2'-6"	SUPPLI SUPPLI L POST S -POST V// (TYPICAL PACING 8'-0'' 8'-0'' 8'-0'' 8'-0'' 8'-0'' 8'-0'' 8'-0'' 8'-0'' 8'-0'' 8'-0''	RU 18-6" EMENT PACING A STRUCT ONLY) PANEL 18-0" 18-6" 19-0" 19-6" 20-6" 20-6" 21-0" 21-6"	POST S "A" 4'-0" 4'-3" 4'-4" 4'-6" 4'-6" 4'-6" 4'-9" 4'-10" 4'-10"	PACING "B" 10'-0'' 10'-4" 10'-4" 10'-6" 11'-0'' 11'-0'' 11'-4" 11'-8"			
	4 BARS 4 BARS SIG PANEL WDTH 9'-6" 10'-0' 10'-6" 11'-0' 12'-6" 12'-6" 13'-0" 13'-6"	SIGN WID ALWAYS N PANEL MULTI- POST S "A" 9" T-0" T-3" T-6" T-9" 2'-0" 2'-6" 2'-9"	SUPPLI SUPPLI POST V// (11/PICAL POST V// (11/PICAL POST V// (11/PICAL 8*-0" 8*-0" 8*-0" 8*-0" 8*-0" 8*-0" 8*-0" 8*-0" 8*-0" 8*-0" 8*-0" 8*-0" 8*-0"	RU 18-6" EMENT PACING A STRUCT ONLY) PANEL W0TH 18"-0" 18"-6" 19"-0" 19"-6" 20"-6" 21"-0" 21"-6" 21"-0"	POST S "A" 4'-0" 4'-3" 4'-4" 4'-6" 4'-6" 4'-6" 4'-9" 4'-10" 4'-10"	PACING -B" 10'-0'' 10'-0'' 10'-4" 10'-6" 11'-0'' 11'-0'' 11'-2" 11'-8" 12'-4"			
	4 BARS 4 BARS SIG PANEL WDTH 9'-6" 10'-0" 10'-6" 11'-0" 11'-6" 12'-0" 12'-6" 13'-6" 13'-6" 13'-6" 14'-0"	ESIGN WID ALWAYS N PANEL MULTH POST S "A" P-0" T-3" T-6" T-9" 2'-0" 2'-0" 2'-0" 3'-0"	SUPPLI L POST S POST V/ (TYPICA) 8'-0" 8'-0" 8'-0" 8'-0" 8'-0" 8'-0" 8'-0" 8'-0" 8'-0" 8'-0" 8'-0" 8'-0" 8'-0" 8'-0"	RU 18-6" EMENT PACING A STRUC: ONLY') PANEL WIDTH 18"-0" 18"-0" 18"-0" 18"-0" 19"-0" 19"-0" 20"-0" 20"-0" 20"-6" 21"-6" 22"-0" 22"-6"	POST S "A" 4'-0" 4'-3" 4'-4" 4'-6" 4'-6" 4'-6" 4'-9" 4'-10" 4'-10" 5'-2"	PACING 			
	4 BARS 4 BARS SIG WIDTH 9'-6" 10'-0'' 10'-6" 11'-0'' 12'-6" 13'-0" 13'-6" 14'-0" 14'-6"	SIGN WID ALWAYS N PANEL MULTH POST S "A" 9" T-0" T-6" T-9" 2'-0" 2'-3" 2'-9" 3'-0" 3'-3"	SUPPLI SUPPLI POST S POST V/ (1YPCA) 8-0"	RU 18-6" EMENT PACING A STRUC: ONLY) PANEL WIDTH 18-6" 19-6" 19-6" 20'-6" 20'-6" 21'-6" 22'-6" 22'-6" 22'-6"	POST S "A" 4'-0" 4'-3" 4'-4" 4'-6" 4'-6" 4'-9" 4'-10" 5'-2" 5'-3"	PACING 			
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SUPPLEMENT FOR: ZEE / TEE BAR SPACING AND SIGN PANEL POST SPACING CHART FOR 2 POST VIA STRUCTURES (See Appendix IIB-6)

4.6.4 Alternate Attachment Method

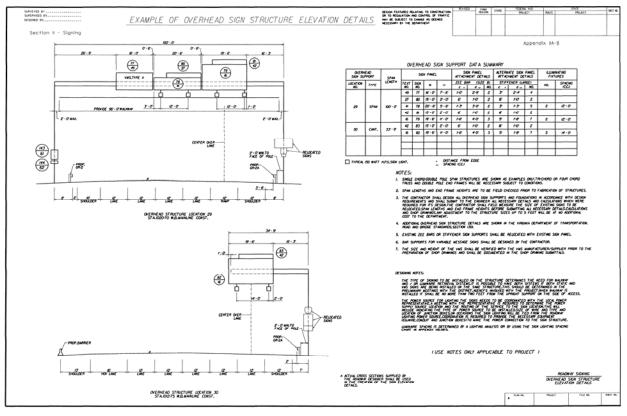
The designer should utilize the same support data used in the typical attachment method along with adjusted values for sign panel dimension discrepancies generated through the SignFix Software.

Regardless of the attachment method used, a minimum distance between sign posts shall be 8 feet for all VIA Sign Structures.

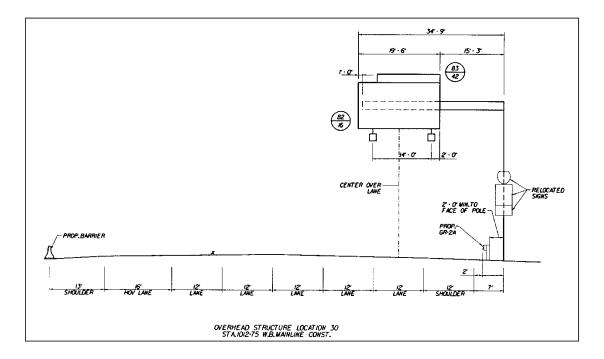
After determining the type of structure to be used, the designer should refer to <u>VDOT</u> <u>Road and Bridge Standards</u>, <u>Volume II</u>, <u>Section 1300</u>, Page 1301.70 for the Type VIA foundation details. Additionally, foundation detail standards are provided under SSP-VIA.

4.7 OVERHEAD (O/H) SIGN STRUCTURE ELEVATION DETAIL SHEET

Preparing the Overhead Sign Structure Elevation Detail Sheet, as shown and in Appendix IIA-8, provides information and data reflecting the relationship of the O/H signs and structures in relation to the roadway cross section, such as lane widths, shoulders, guardrails, sound walls, etc. It also provides sign support data for the sign panels.



OVERHEAD SIGN STRUCTURE ELEVATION DETAIL SHEET (See Appendix IIA-8)



OVERHEAD SIGN STRUCTURE ELEVATION DETAIL SHEET (Partial Enlarged View) (See Appendix IIA-8)

Developing the Overhead Sign Structure Elevation Detail Sheet requires evaluating the sign location and populating the Overhead Sign Support Data Summary Chart. The following instructions will assist in filling out the chart:

- Illustrate the Sign Structure Dimensions
 Obtain an accurate and current roadway design typical and cross-section of the
 location to establish placement and location of the sign structure relative to the
 roadway features.
- Determine the Sign Panel Data Populate the sign panel data in the Overhead Sign Support Data Summary using the Sign Schedule Sheet, (e.g. Text No., Sign No. and the panel size dimensions).
- Determine the Sign Panel Attachment Details
 Populate the sign panel attachment detail data in the Overhead Sign Support Data
 Summary using the instructions previously discussed in Subsection 4.6 or if height
 discrepancies are encountered use the height discrepancy strategy discussed in
 Subsection 4.6.2 with the exception that all bars shall be Zee Type, Size "B".
- Determine the Alternate Sign Panel Attachment Details SignFix software is used for alternate sign panel attachment details, the input for sign panel thickness shall be 0.100-inch, the channel size shall be large and the wind loading shall be 100 mph.

• Determine the Illuminating Fixtures

The Illuminating Fixtures information is obtained from the Illuminating Engineering Society of North America, Recommended Practice for Roadway Sign Lighting, (IESNA RP-19). If IESNA RP-19 is not available, the chart for Sign Lighting Spacing, as shown and in Appendix IIB-5, can be used to provide the lighting information. If "LUMI-TRAK" system is being considered, refer to memo in Appendix IIB-47.

Additional information discussing Sign Lighting can be found in the <u>TEDM</u>, <u>Section V</u> <u>– Roadway Lighting</u>, <u>Chapter 4</u>, 4.5.1.

Section II – Sig	ning		SIGN LIGI	HTING	SPACIN		endix IIB-5	
					No. of	<u>u</u>		
Sign Width		Spaci	ng		Lights			
8'-0"	4'-0"	•	4'-0"		1			
8'-6"	4'-3"	· ·	4'-3"	_	1			
9'-0"	4'-6"		4'-6"		1			
9'-6"	4'-9"	<u> </u>	4'-9"		1			
10'-0"	5'-0"		5'-0"		1			
Sign Width			Spacing				lo. of	
10'-6"	3'-0"		4'-6"	1.1	3'-0"		ights 2	
11'-0"	3'-0"	· · ·	5'-0"	1.1	3'-0"		2	
11'-6"	3'-0"	· · ·	5'-6"		3'-0"		2	
12'-0"	3'-0"	•	6'-0"	•	3'-0"		2	
12'-6"	3'-3"		6'-0"	•	3'-3"		2	
13'-0"	3'-6"	•	6'-0"	•	3'-6"		2	
13'-6"	3'-6"	•	6'-6"	•	3'-6"		2	
14'-0"	3'-6"	•	7'-0"	•	3'-6"		2	
14'-6"	3'-6"	•	7'-6"	•	3'-6"		2	
15'-0"	3'-6"		8'-0"		3'-6"		2	
15'-6"	3'-9"		8'-0"		3'-9"		2	
16'-0"	4'-0"		8'-0"	+:+	4'-0"		2	
16'-6"	4'-3"		8'-0"		4'-3"		2	
17'-0"	4'-3" 4'-3"		8'-6" 9'-0"		4'-3" 4'-3"		2	
17'-6" 18'-0"	4-3		9'-0"		4-3		2	
18'-6"	4'-0	- · ·	9'-0"	•	4'-9"		2	
19'-0"	4'-9"	1.1	9'-6"	· · ·	4'-9"		2	
19'-6"	4'-9"		10'-0"	•	4'-9"	-	2	
20'-0"	5'-0"	•	10'-0"	•	5'-0"		2	
								No. of
Sign Width	01.07		01.01	Spacing			01.07	Lights
20'-6"	3'-9"		6'-6"	- · -	6'-6" 7'-0"	-+-+-	3'-9" 3'-6"	3
21'-6"	3'-9"	- · · ·	7'-0"	•	7'-0"	1.1	3'-9"	3
22'-0"	4'-0"		7'-0"		7'-0"	-+ · +	4'-0"	3
22'-6"	3'-9"	· · ·	7'-6"	•	7'-6"	- · · ·	3'-9"	3
23'-0"	4'+0"	1.	7'-6"	•	7'-6"	· · ·	4'-0"	3
23'-6"	3'-9"	1.	8'-0"	•	8'-0"	•	3'-9"	3
24'-0"	4'-0"	•	8'-0"	•	8'-0"	•	4'-0"	3
24'-6"	4'-3"	•	8'-0"	•	8'-0"	•	4'-3"	3
25'-0"	4'-6"	•	8'-0"	•	8'-0"	•	4'-6"	3
25'-6"	4'-3"	•	8'-6"	•	8'-6"	•	4'-3"	3
26'-0"	4'-6"	· ·	8'-6"	:	8'-6"		4'-6"	3
26'-6"	4'-3"	_	9'-0"		9'-0"		4'-3"	3
27'-0"	4'-6"	· ·	9'-0"		9'-0"		4'-6"	3
27'-6"	4'-9"	+:+	9'-0"		9'-0"		4'-9"	3
28'-0"	5'-0" 4'-9"		9'-0"		9'-0"		5'-0"	3
28'-6" 29'-0"	4'-9" 4'-6"		9'-6" 10'-0"		9'-6" 10'-0"		4'-9" 4'-6"	3
29'-0"	4'-6"	+ + +	10'-0"		10'-0"	+++	4'-6"	3
30'-0"	4 -9 5'-0"		10'-0"		10'-0"		4 -9 5'-0"	3

SIGN LIGHTING SPACING CHART (See Appendix IIB-5)

- In addition, the following design issues must be evaluated:
 - Clear zone requirements, which is available in the <u>VDOT Road Design Manual</u>, <u>Section A-2 – Clear Zone Guidelines</u>.
 - Guardrail deflection requirements, which is available in the <u>VDOT Road and</u> <u>Bridge Standards, Volume I Section 500</u>.
 - Conflicts with sound walls and utilities (overhead and underground).
 - Combined concrete barrier / sign structure foundation design.
 - Airport and heliport flight path clear zones as discussed in <u>TEDM</u>, <u>Section I</u> <u>General</u>, <u>Chapter 4</u>, <u>4.5</u>.
- Additional Overhead Sign Structure Considerations
 - Cantilever arm lengths should not exceed 50-feet in length and the edge of the sign panel should extend 1-foot beyond the end of the arm.
 - When lighting is required on overhead signing it will be necessary to meet with a local power representative to determine the power source routing and identify power pole numbers from which the power would be supplied for service. On some projects this will be coordinated with the roadway lighting. Others will require obtaining separate power sources and providing the wire routing along with wire sizing and junction box locations. Additional information discussing locating and furnishing the power source locations can be found in the <u>TEDM</u>, <u>Section V Roadway Lighting</u>, <u>Chapter 3, 3.7</u>.

4.8 NOTES FOR SAFETY IMPROVEMENT ITEMS SHEET

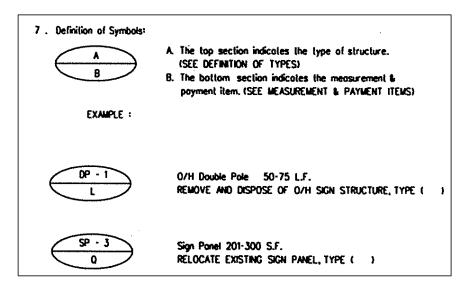
Preparing the Notes for Safety Improvement Items Sheet provides information regarding the construction activities for existing signs within the project limits. The General Notes, Measurement and Payment Items, and Definition of Types for the existing sign plans are as shown and in Appendix IIA-9.

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NOTES FOR SAFETY IMPROVEMENT ITEMS (See Appendix IIA-9)

General Notes

Provides general information related to the sign plans and applies throughout the project plan set. An important component of the General Notes is the definition of symbols, as shown and in Appendix IIA-9. The ellipse symbol in used on the plan sheet to provide instruction on the action to be taken for an existing sign and / or sign structure.



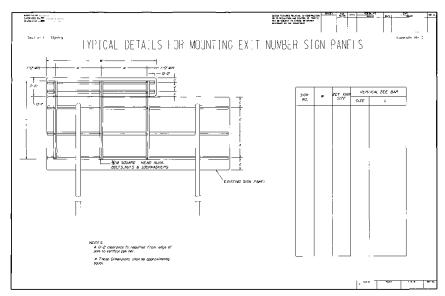
NOTES FOR SAFETY IMPROVEMENT ITEMS (Enlarged View) (See Appendix IIA-9)

- Measurement and Payment Items
- Provides a Measurement and Payment code for the existing signs and/or sign structures. Each Measurement and Payment Item is coded with a letter that describes the action to be taken and the method of payment. The code for the Measurement and Payment Item is placed in the lower half of the ellipse symbol. In some cases it may be necessary to modify the Measurement & Payment Items list to accommodate the needs of the project.
- Definition of Types Provides a Definition of Types code for the existing signs and/or sign structures. The code describes the type and size of the existing sign and/or sign structure and is placed in the upper half of the ellipse symbol.
- The description for the Measurement and Payment Item with the Definition of Types code placed where the parenthesis are located, provides the Pay Item that will be used in the Summary of Quantity Sheet, (e.g. RELOCATE EXISTING SIGN STRUCTURE, TYPE DP-1).

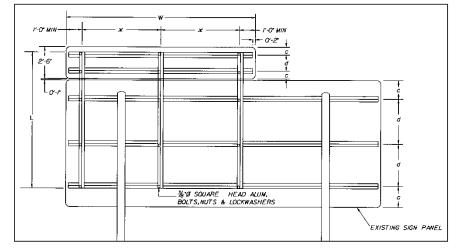
4.9 EXIT NUMBER SIGN PANELS DETAILS

4.9.1 Typical details for exit number sign panels

The Typical Details for Exit Number Sign Panel sheet is used to identify the horizontal Zee Bar & vertical Zee Bar size and length for all exit panels mounted above a guide sign. The sizes for both horizontal Zee Bars & vertical Zee Bars are always the same for both columns (Whatever one size is, the other will be the same). Typical details for mounting exit number sign panels are shown and in Appendix IIA-10.



TYPICAL DETAILS FOR MOUNTING EXIT NUMBER SIGN PANELS (See Appendix IIA-10)



TYPICAL DETAILS FOR MOUNTING EXIT NUMBER SIGN PANELS (Partial Enlarged View) (See Appendix IIA-10)

- The size of the Zee Bar is based on the guide sign it is mounted above and will always be "B" for both columns if they are mounted on O/H sign structures.
- The size for the Zee Bar may vary if dealing with a ground mounted sign structure. Determine the size using the actual size of the sign and refer to Sign Structure Detail Chart, as shown in Appendix IIB-45.
- The Vertical Zee Bar L (length) is determined by finding and adding the "c" dimension for both signs using the Sign Structure Details. Subtract it from the total height of both signs added together, then add 1-inch.

4.9.2 Exit Number Sign Panel Sizes

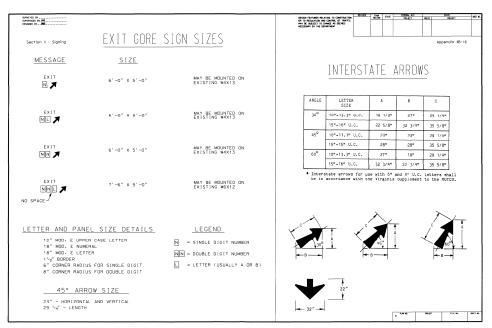
The Exit Number Sign Panel Sizes sheet, as shown and in Appendix IIB-15, can be used to determine the letter and panel size details.

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DESCHED #1			et to relation to clotha or there?
Section # - Signing		EXIT NUMBER SIGN PAN	IEL SIZES Appendix 18-15
MESSAGE exit N	<u>SIZE</u> 7'-0" x 2'-6"	TO BE MOUNTED ABOVE EXISTING GUIDE SIGN	
50=15" Exit N ¹ L	9'-6" X 2'-6"	TO BE MOUNTED ABOVE EXISTING GUIDE SIGN	LETTER AND PANEL SIZE DETAILS
5P=15" E×17 N A-B SP=30"	13'-0" X 2'-6"	TO BE MOUNTED ABOVE EXISTING GUIDE SIGN	10° MOD. E UMPER CASE LETTER 15° MOD. E NUMERAL 14°2° BORDER 30° HETGHT 3° CORNER RADIUS
EXIT INN	8'-6" X 2'-6"	TO BE MOUNTED ABOVE EXISTING GUIDE SIGN	
EXIT NN L	11'-0" X 2'-6"	TO BE MOUNTED ABOVE EXISTING GUIDE SIGN	
SP=15" EXIT NN A-B SP=30" (TWICE	14'-6" X 2'-6" THE LETTER HEIGHT -	TO BE NOUNTED ABOVE EXISTING GUIDE SIGN 15X2=301	LEGEND M = SINGLE DIGIT NUMBER MM = DOUBLE DIGIT NUMBER L = LETTER (USUALLY A DR B)
SPACE BETWEEN NUMBER AN SPACES AND HYPHEN = 30"	D LETTER - 15"		- wx wo wx wx

EXIT NUMBER SIGN PANEL SIZES (See Appendix IIB-15)

4.9.3 Interstate Arrows

The Interstate Arrows sheet, as shown and in Appendix IIB-16 can be used to determine detail information for Interstate arrows.



EXIT GORE SIGN SIZES / INTERSTATE ARROWS SHEET (See Appendix IIB-16)

4.10 SUMMARY OF QUANTITIES SHEET

The Summary of Quantities sheet(s), as shown and in Appendix IIA-12 provides the pay item quantities for the sign plan set and is used for establishing construction cost estimates and bid unit prices for the sign project.

- Quantity takeoffs for all pay items are totaled on each plan sheet and transferred to the Summary of Quantities sheet. The unit for the pay item is the measurement by which the pay item is paid for and is established in the <u>VDOT Road and Bridge</u> <u>Specifications</u> as a Standard pay item. If the pay item is a Non-Standard pay item, a Special Provision or Special Provision Copied Note may be required. Further discussion is provided in <u>TEDM Section I – General, Chapter 3, 3.7</u>. The project quantity total for each pay item is provided at the bottom of each pay item column.
- Contracts with more than one project number or funding source should have a separate quantity summary for each project.

• Acceptable alternative methods may be considered to accomplish summary sheet totals for each pay item. An example is shown in Appendix IIA-13. (This Summary Sheet is normally used for small projects)

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Section 8 - Signing	SUMMARY OF Q	UANTITIES	S			Appendix 1A-13		
	DESCRIPTION	QUANTITY	UNIT					
					A 7,000	PRLACT FLUE W	-	

EXAMPLE OF AN ALTERNATIVE SUMMARY SHEET (See Appendix IIA-13)

4.11 TITLE SHEET

A Title sheet is prepared only if the project is a stand-alone sign project. Further discussion is provided in <u>TEDM Section I – General, Chapter 3, 3.4</u>.