

Standard Signs Manual

NEW, CHANGED, OR DELETED 1/2017

STANDARD SIGN DETAILS

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APPROVED FRACTIONS

FONT	WIDTHS OF FRACTIONS					
	1/5	1/4	1/3	1/2	2/3	3/4
B SERIES	1.25H	1.17H	1.21H	1.24H	1.49H	1.38H
C SERIES	1.47H	1.37H	1.42H	1.46H	1.75H	1.63H
D SERIES	1.80H	1.58H	1.70H	1.72H	2.12H	1.87H
E SERIES	1.99H	1.85H	1.92H	1.97H	2.39H	2.24H
E MODIFIED	2.12H	2.02H	2.06H	2.08H	2.56H	2.39H

- NOTES: 1. H = Numeral Height.
 2. Overall height of fraction = 1.5H.
 3. Slash is slanted 60 degrees from horizontal, and the stroke width is the same as the numerals.

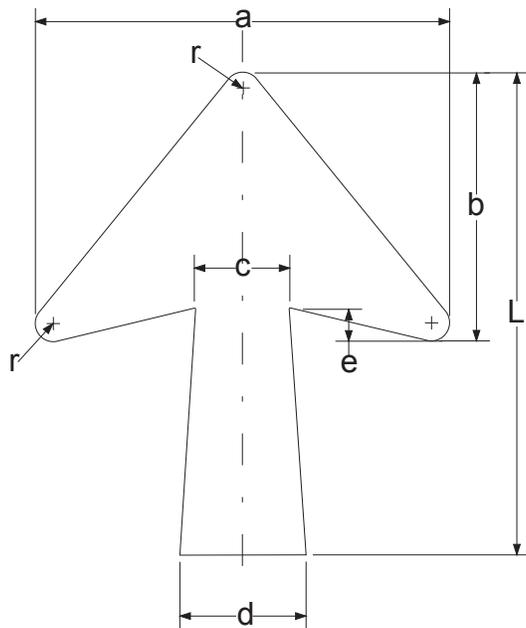
APPROVED
9/1/73

DATE OF REV.
1/1/03

Fractions



PAGE NUMBER
101



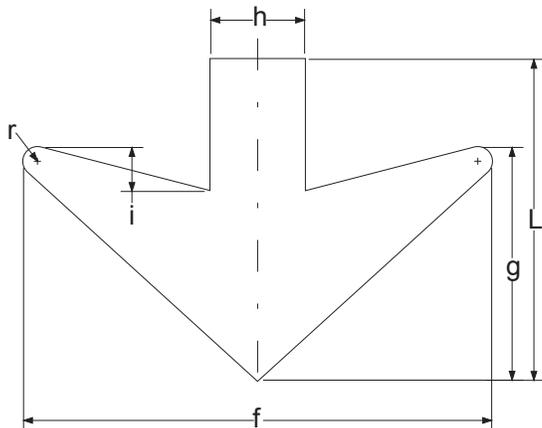
NOTES:

1. Arrow Code: First number specifies the head to be used. Second number specifies the length L. Thus, a 5-13 arrow has head #5 and length 13".
2. For each legend size there is a corresponding short shaft and long shaft arrow.

TABLE 1 - SHORT SHAFT ARROWS								
Head	Matching Letter Size	Standard Length L	Dimensions in Inches					
			a	b	c	d	e	r
1	4", 4.3"	6"	5.58	3.63	1.28	1.72	.47	.26
2	5"	8"	7.06	4.60	1.61	2.18	.56	.32
3	6", 6-4.5"	10"	8.35	5.44	1.91	2.58	.67	.38
4			9.75	6.35	2.23	3.02	.78	.44
5	8", 8-6"	13"	11.16	7.27	2.55	3.44	.89	.51
6	10", 10.67-8"	17"	15.09	9.83	3.45	4.65	1.21	.69
7	10", 12", 13.33-10"	20"	17.72	11.54	4.05	5.47	1.42	.81
8	16-12"	25"	21.88	14.25	5.00	6.75	1.75	1.00

TABLE 2 - LONG SHAFT ARROWS								
Head	Matching Letter Size	Standard Length L	Dimensions in Inches					
			a	b	c	d	e	r
11	4", 4.3"	9"	5.70	4.36	1.38	1.83	.45	.26
12	5"	12"	7.18	5.48	1.74	2.30	.56	.32
13	6", 6-4.5"	14"	8.56	6.54	2.07	2.74	.67	.38
14	8", 8-6"	18"	11.41	8.72	2.76	3.66	.90	.51
15	10", 10.67-8"	24"	15.14	11.56	3.66	4.85	1.19	.68
16	10", 12", 13.33-10"	29"	18.24	13.93	4.41	5.84	1.43	.82
17	16-12", 20-15"	36"	22.25	17.00	5.38	7.13	1.75	1.00
17		42"	22.25	17.00	5.38	8.39	1.75	1.00
18		36"	26.18	20.00	6.33	7.13	2.06	1.18
18		42"	26.18	20.00	6.33	8.39	2.06	1.18

OVERHEAD SIGNS ONLY							
Arrow	Letter and Overlay Size	Dimensions in Inches					
		f	g	h	i	L	r
16"	13.33-10", 10" & less	24.0	12.0	4.88	2.25	16.5	.75
22"	16-12", 12" & greater	32.0	16.0	6.5	3.0	22.0	1.00



ARROW SELECTION:

- Adjacent to one line of legend - use Table 1 for vertical, horizontal, or diagonal arrow.
- Adjacent to two or more lines of legend - use Table 2 for vertical or diagonal arrow; Table 1 for horizontal arrow.
- Beneath one or more lines of legend - use Table 2 for horizontal or diagonal arrow. Use Table 1 for vertical arrow.
- ALL FREEWAY SIGNS AND EXPRESSWAY INTERCHANGE SIGNS - use Table 2.

ARROW SIZE:

Arrow head numbers determine which straight arrow corresponds with which advance turn, double head, and double head 90° arrows and legend.

For example, a 5-13 arrow and a 5-24 double head arrow (both have #5 heads) would be appropriate arrows to use with an 8-6" legend.

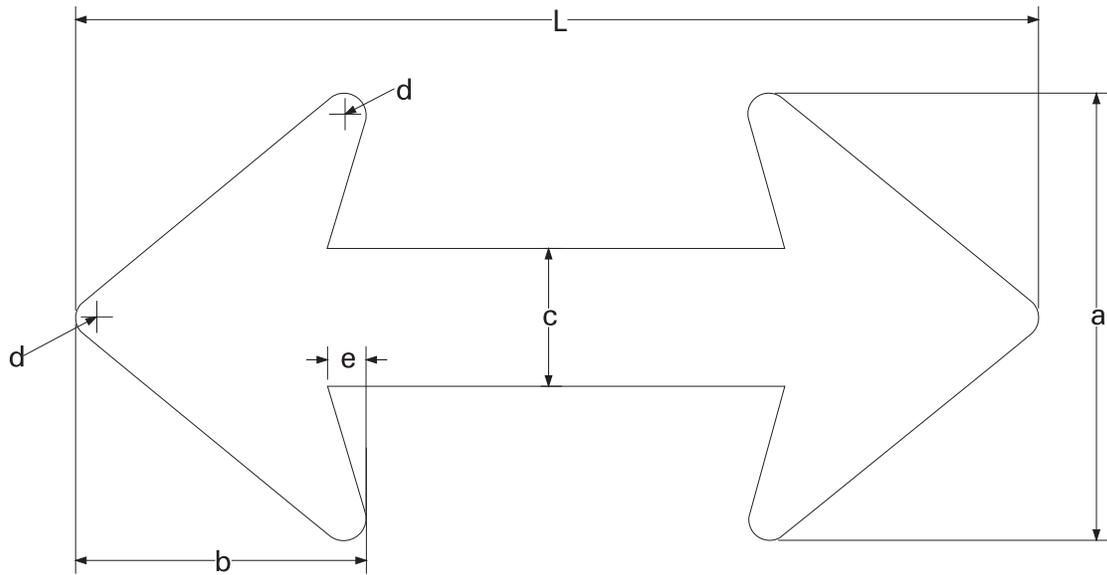
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Straight Arrows



PAGE NUMBER
102



SIZE DIMENSIONS	1 Head	3 Head	5 Head	6 Head	7 Head
a	5.58	8.35	11.16	15.09	17.72
b	3.63	5.44	7.27	9.83	11.54
c	1.72	2.58	3.44	4.65	5.47
d	.26	.38	.51	.69	.81
e	.47	.67	.89	1.21	1.42
L-Minimum	12	18	24	30	36

NOTES:

1. All dimensions are in inches.
2. Arrow lengths shall be sized in 6 inch increments.

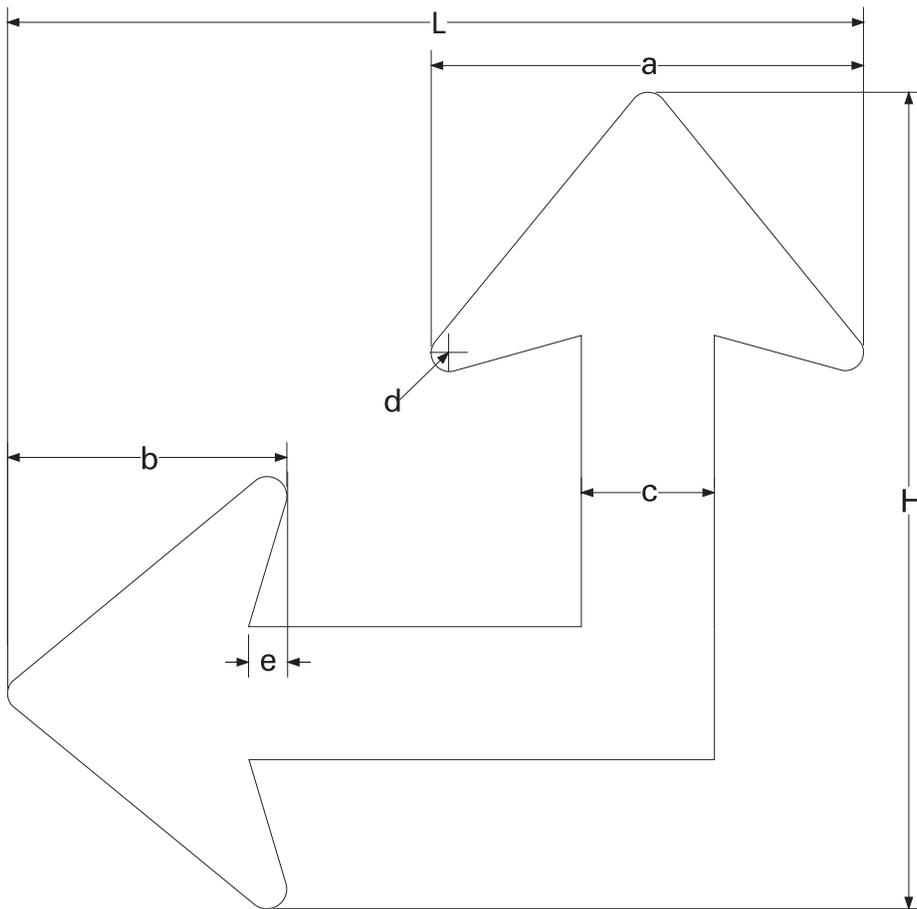
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3/23/77

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1/1/03

Double Head Arrows



PAGE NUMBER
102A



SIZE DIMENSIONS	1-11	3-16	5-22	6-29
a	5.58	8.35	11.16	15.09
b	3.63	5.44	7.27	9.83
c	1.75	2.5	3.5	4.75
d	.26	.38	.51	.69
e	.47	.67	.89	1.21
L	11	16.5	22	29.5
H	10.5	15.75	21	28

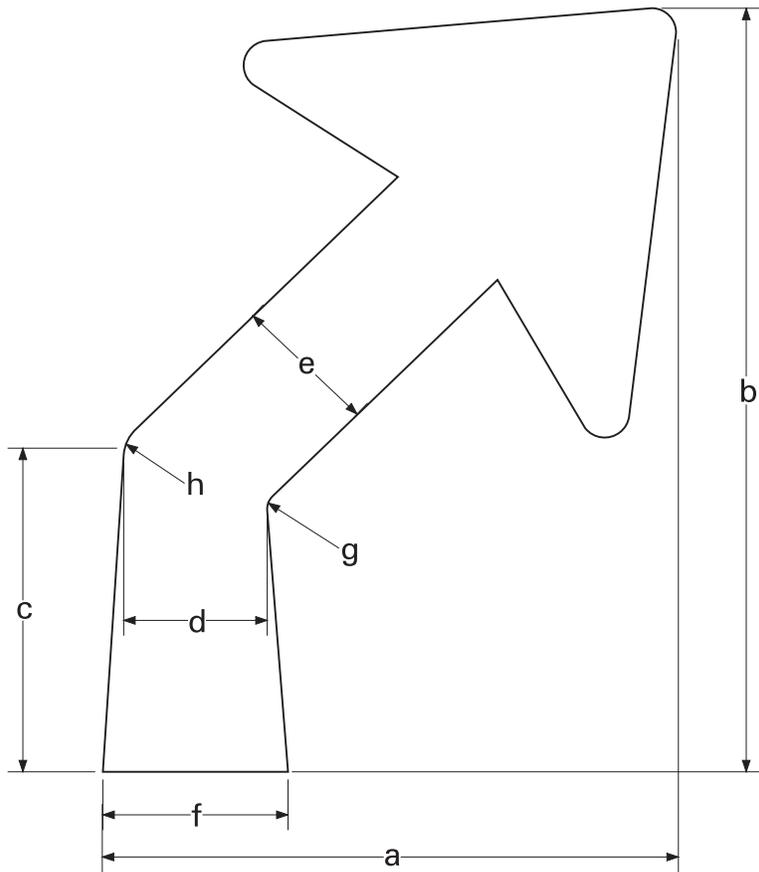
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DATE OF REV.

Double Head Arrows - 90°



PAGE NUMBER
102B



SIZE DIMENSIONS	6 X 8	9 X 12	12 X 16	15 X 20	17 X 24
ARROW HEAD	1	3	5	6	7
a	6	9	12	15	17
b	8	12	16	20	24
c	3.3	5	6.6	8.3	11
d	1.5	2.25	3	4.2	5
e	1.5	2.25	3	4.2	5
f	1.94	3	3.88	5	6
g-rad.	.2	.3	.4	.44	.55
h-rad.	.4	.6	.8	.94	1.1

NOTE: All dimensions are in inches.

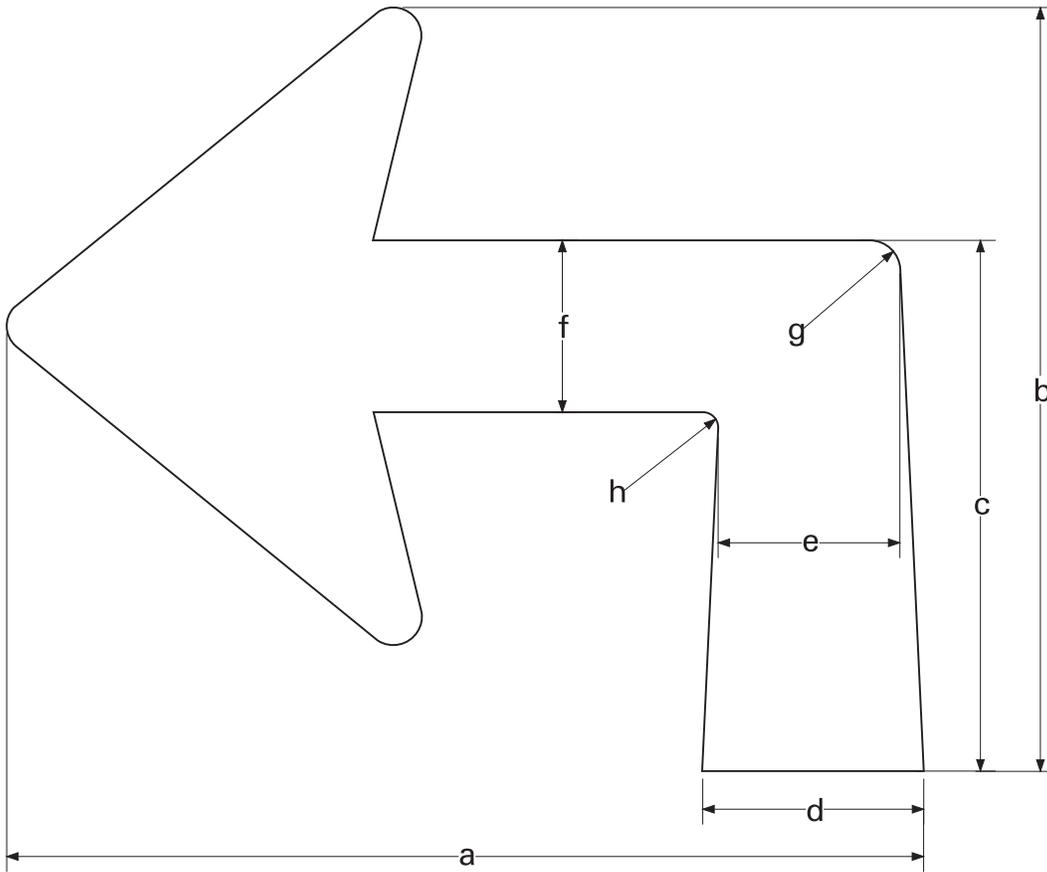
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9/1/73

DATE OF REV.
9/1/90

Advance Turn Arrows - 45°



PAGE NUMBER
103



SIZE DIMENSIONS	8 X 6.5	12 X 10	16 X 13	18 X 16	22 X 18	25 X 21
ARROW HEAD	1	3	5	14	6	7
a	8	12	16	18	22	25
b	6.5	10	13	16	18	21
c	4.45	6.95	8.92	11.9	12.48	14.52
d	1.95	2.9	3.9	4.1	5.25	6.2
e	1.5	2.25	3	3.2	4.05	4.75
f	1.5	2.25	3	3.2	4.05	4.75
g-rad.	.27	.4	.5	.5	.7	.8
h-rad.	.13	.2	.25	.25	.35	.4

NOTE: All dimensions are in inches.

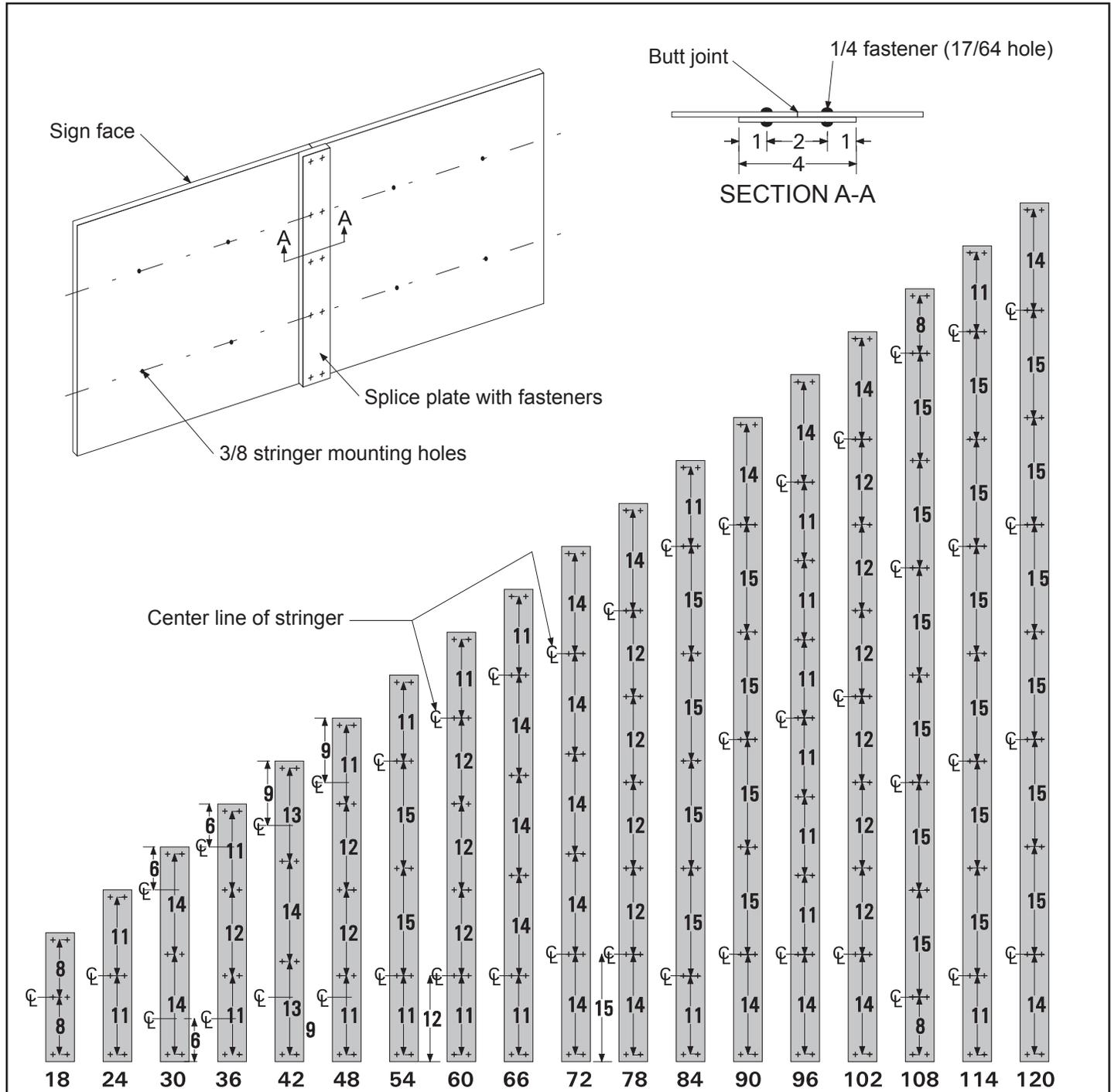
APPROVED
9/1/73

DATE OF REV.
1/1/87

Advance Turn Arrows - 90°



PAGE NUMBER
104

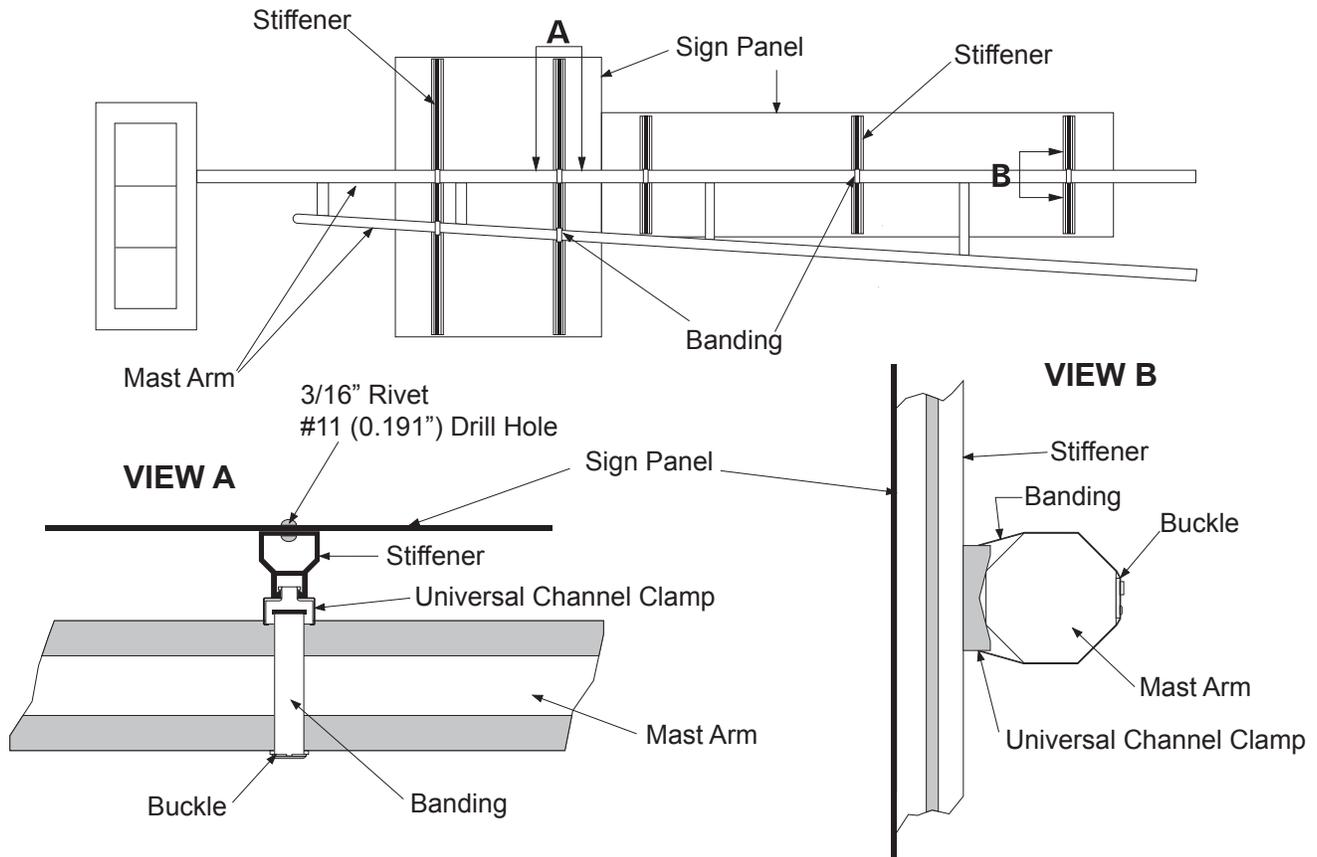


NOTES:

1. All dimensions are in inches.
2. Splice plates shall be made of the same material as the sign panel with a minimum thickness equal to that of the panel.
3. Stringers are required for all "D" panels unless otherwise noted.
4. The end fasteners are located 1" in from the end of the splice plate.
5. 3/8" stringer mounting holes shall be spaced vertically as detailed for each sign height above. Horizontally the holes shall be spaced on 24" centers maximum, beginning 6" in from the edge of the sign panel.
6. All sign panel splices shall be vertical.

APPROVED 3/3/71	DATE OF REV. 8/21/06	Type "D" Stringer and Panel Joint Detail		PAGE NUMBER 105
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TYPICAL MAST ARM SIGN MOUNTING



STIFFENER (LARGE CHANNEL EXTRUSION) REQUIREMENT TABLE

(Based on Sign Panel Dimensions in Feet)

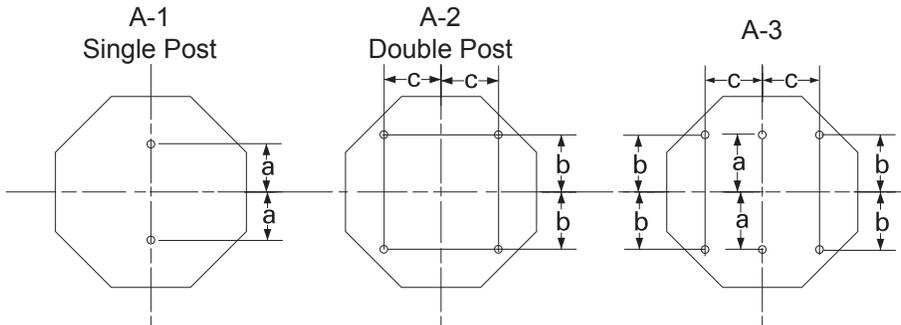
(Where sign panel dimensions fall between one foot increments use the next highest foot length and/or height).

		Length													
		2	3	4	5	6	7	8	9	10	11	12	13	14	
Height	2	2	2	2	3	3	3	4	4	4	5	5	5	5	
	3	2	2	2	3	3	3	4	4	5	5	5	5	5	
	4	2	2	2	3	3	3	4	4	5	5	5	5	6	
	5	2	2	2	3	4	4	5	5	5	5	5	5	6	
	6	X	X	2	3	4	4	5	5	5	5	5	5	6	
	7	X	X	X	4	4	5	5	5	5	5	5	5	6	

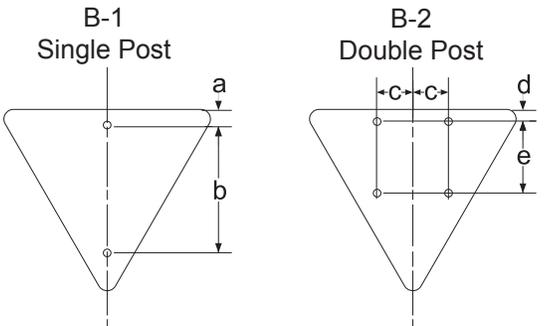
NOTES:

1. Signs shall be affixed to upper and lower mast arm chords whenever possible.
2. Position bottom of sign panel 17' minimum above centerline elevation.
3. Sign panels shall be mounted plumb. Shim as required.
4. Horizontal spacing between stiffeners shall not exceed 36".
5. Horizontal inset from panel edge to stiffener shall not exceed 12".
6. Vertical inset from panel edge to stiffener shall be 0" to 0.5".
7. Rivets attaching stiffeners to sign panels shall be installed 1", on center, from the top and bottom of the panel, and then spaced no more than 6" on center.
8. Banding straps shall be 0.75" x 0.030" Type 201 (1/4 Hard) stainless steel. Banding buckles shall be Type 201 (1/4 Hard) stainless steel. Two banding straps, each with a banding buckle, shall be single-wrapped around the mast arm, clipped and tightened independently in accordance with the manufacturer's instructions. The second strap shall be installed directly over the first strap.

APPROVED 8/9/02	DATE OF REV. 7/6/07	Structural Details for Signal Mast Arm Mounted Signs		PAGE NUMBER 105A
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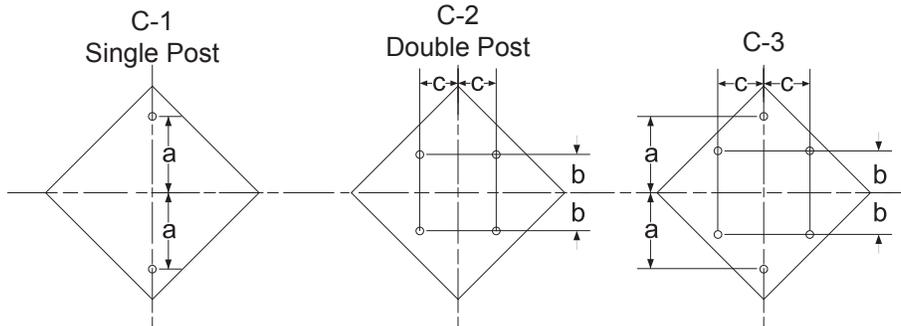


SIZE DIMENSION	18 X 18	24 X 24	30 X 30	36 X 36	48 X 48
a	6	6	9		
b			9	9	12
c			9	12	15



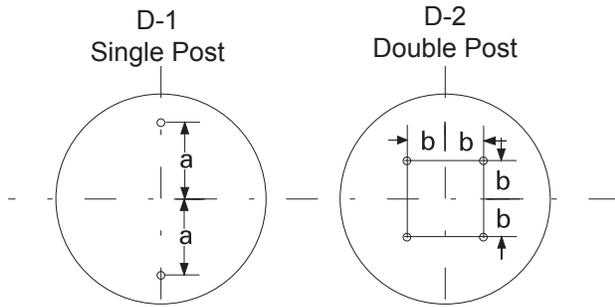
SIZE DIMENSION	9.5 X 12.75	24*	36*	48*	60*
a	1.5	2	2		
b	6	16	24		
c				9	9
d				3	6
e				18	24

* Distance between points of an equilateral triangle.

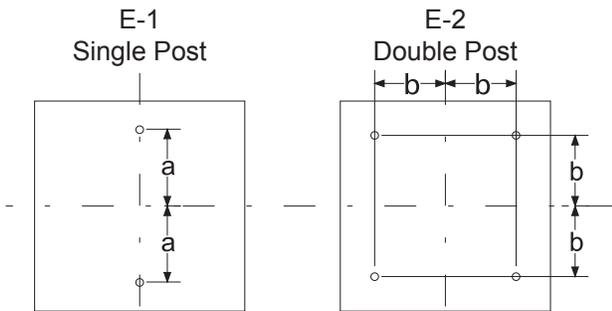


SIZE DIMENSION	18 x 18	24 x 24	30 x 30	36 x 36	48 x 48	60 x 60
a	9	12	15			
b			6	9	15	15
c			9	9	15	18

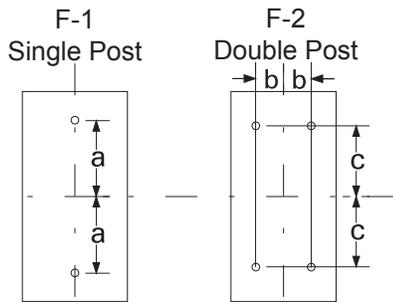
- NOTES:
1. All dimensions are in inches.
 2. All bolt holes shall have a diameter of .375" (3/8").
 3. Sketches show normal position of sign when mounted.



SIZE DIMENSION	18 DIA.	36 DIA.	48 DIA.
a	6		
b		9	12



SIZE DIMENSION	16 X 16	18 X 18	24 X 24
a	6	6	9
b			9
SIZE DIMENSION	30 X 30	36 X 36	48 X 48
a	12		
b	12	15	18



SIZE DIMENSION	3 X 9	6 X 12	8 X 12	8 X 18	8 X 24	9 X 12
a	3	4.5	3	6	9	3
b						
c						
SIZE DIMENSION	12 X 18	12 X 24	12 X 36	18 X 24	18 X 36	24 X 30
a	6	9	12	9	12	12
b						9
c						12

SIZE DIMENSION	24 X 36	24 X 48	30 X 36	36 X 48	36 X 60	48 X 60	48 X 96
a	15						
b	9	9	12	15	15	18	18
c	15	18	15	18	24	24	36

NOTES:

1. All dimensions are in inches.
2. All bolt holes shall have a diameter of .375" (3/8").
3. Sketches show normal position of sign when mounted.

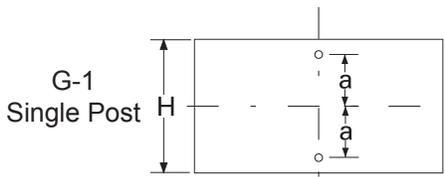
APPROVED
9/1/73

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4/1/96

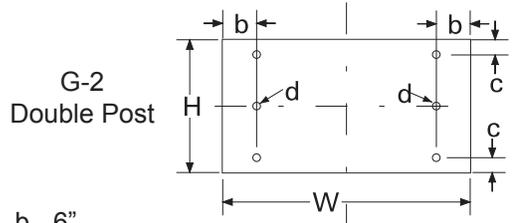
**Mounting Holes
(Punch Codes D, E, F)**



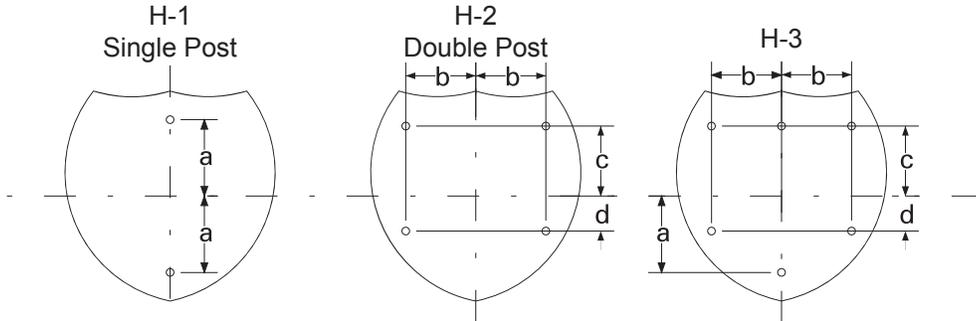
PAGE NUMBER
107



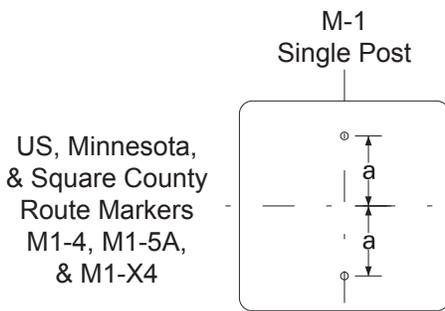
Where H is 6", a = 1.5"
 H is 8", 9", or 12", a = 3"
 H is 15", a = 4.5"
 H is 18", a = 6"
 H is 24", a = 9"



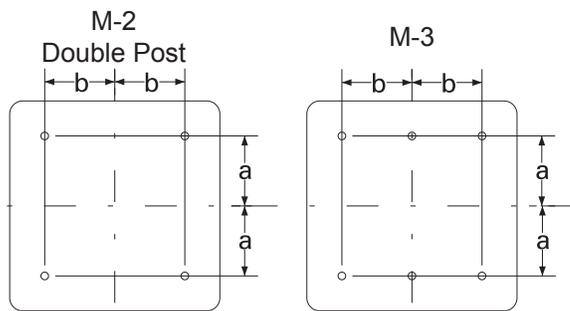
b - 6"
 Where H is 12" or less, use "d" holes
 H is greater than 12" & less than 42", c = 3"
 H is 42" or greater, c = 6"
 Where W is 21", c = 1.5", b = 1.5"
 Where W is 24", b = 3"
 Where W is 54", H is 18", b = 9"



SIZE DIMENSION	24 X 24	30 X 24	36 X 36	45 X 36
a	9	9		
b	9	9	12	12
c	9	9	12	12
d	3	6	6	6



US, Minnesota,
 & Square County
 Route Markers
 M1-4, M1-5A,
 & M1-X4

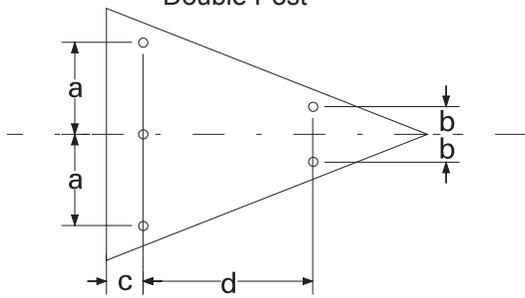


SIZE DIMENSION	24 X 24	30 X 24	36 X 36	45 X 36
a	9	9	12	12
b	9	9	12	12

NOTES:

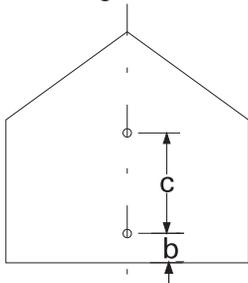
1. All dimensions are in inches.
2. All bolt holes shall have a diameter of .375" (3/8").
3. Sketches show normal position of sign when mounted.

J-2
Double Post

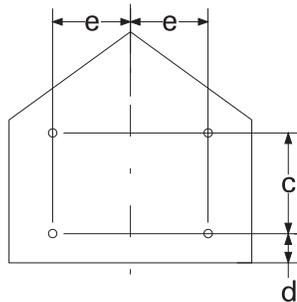


SIZE DIMENSION	36 X 48 X 48	48 X 64 X 64
a	12	12
b	3	3
c	8	10
d	24	30

K-1
Single Post

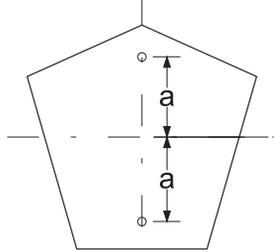


K-2
Double Post

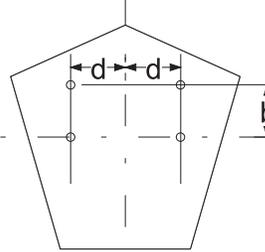


SIZE DIMENSION	30 X 30	36 X 36	48 X 48
a	12		
b	3		
c	12	12	18
d	3	3	3
e	9	9	12

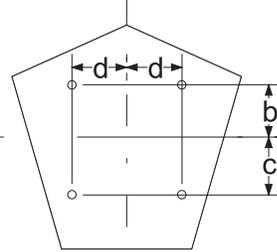
L-1
Single Post



L-2
Double Post



L-3
Double Post



SIZE DIMENSION	L-1 24 X 24	L-2 24 X 24	L-3 36 X 36
a	9		
b		6	12
c			9
d		9	9

NOTES:

1. All dimensions are in inches.
2. All bolt holes shall have a diameter of .375" (3/8").
3. Sketches show normal position of sign when mounted.

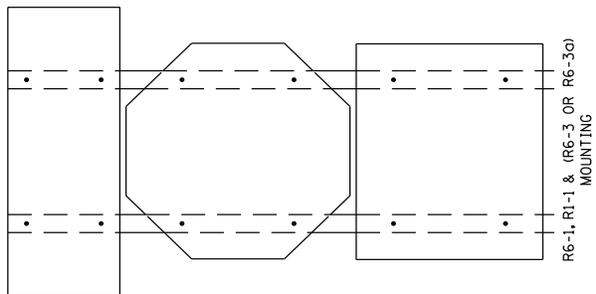
APPROVED
9/1/73

DATE OF REV.
5/1/13

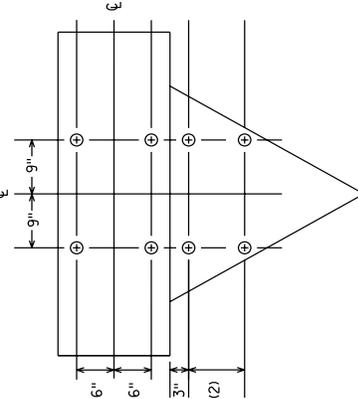
**Mounting Holes
(Punch Codes J, K, L)**



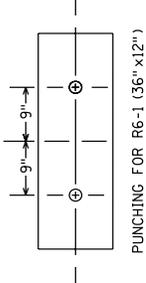
PAGE NUMBER
109



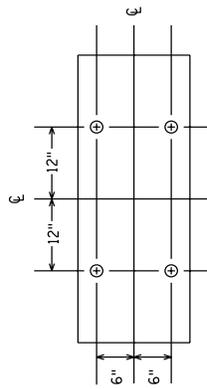
R6-1, R1-1 & (R6-3 OR R6-3a)
MOUNTING



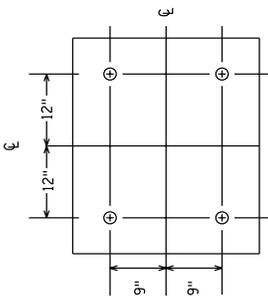
PUNCHING FOR R6-1 (54" x 18") AND
R1-2 (36" x 36" OR 48" x 48" x 48")
(2) 9" FOR 36" x 36" x 36"
18" FOR 48" x 48" x 48"



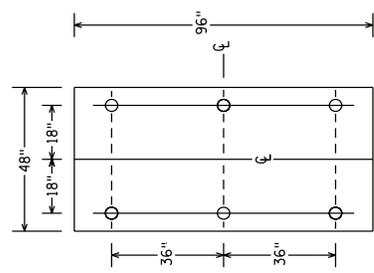
PUNCHING FOR R6-1 (36" x 12")



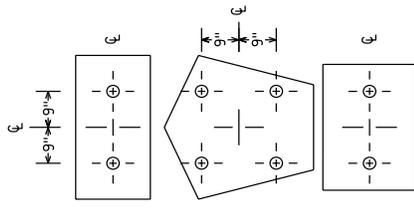
PUNCHING FOR R6-1 (54" x 18")



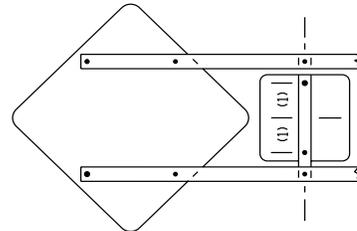
PUNCHING FOR R6-3 OR R6-3a (36" x 30")



PUNCHING FOR R2-4b
SPEED LIMIT



(M3-1A, M3-2A, M3-3A OR M3-4A) [36" x 18"] AND
M1-6 [36" x 36"] AND
(M5-1A, M5-2A, M6-1A, M6-2A, M6-3A, M6-4A, M6-5A OR M6-6A) [30" x 24"]
PUNCHING



WARNING SIGN [30" x 30 OR 48" x 48"] AND
WARNING PLAQUE [18" x 18" OR 30" x 30"]
PUNCHING AND MOUNTING
(1) 6" FOR WARNING PLAQUE (18" x 18")
12" FOR WARNING PLAQUE (30" x 30")

APPROVED

DATE OF REV.
2/13/2015

Mounting Holes (Modified Punching)



PAGE NUMBER

110

STANDARD CORNER RADII, MARGIN, AND BORDER FOR SIGNS

The following dimensions shall be used for trimming corners and for application of borders on standard sign blanks. Where a complete sign is furnished, the radius, margin, and border dimensions shall be as shown on the standard sign drawing.

LENGTH OF SHORTEST SIDE	RADIUS	MARGIN	BORDER
Under 24"	1.5"	.38"	.38"
24"	1.5"	.38"	.63"
30"	1.88"	.5"	.75"
36"	2.25"	.63"	.88"
42"	2.25"	.63"	.88"
48" - 60"	3"	.75"	1.25"

GUIDE SIGN BORDER AND RADII*

LENGTH OF SHORTEST SIDE	BORDER WIDTH	BORDER RADIUS
To & Including 36"	1"	3"
42" - 60"	1.25"	6"
66" - 84"	1.5"	9"
90" & greater	2"	12"

*Exceptions for State Highway Signs:

1. A sign having 20" legend shall use a 3" border width and a border radius based on the above table.
2. 16" - 12" or 13.3" - 10" legend on Type "A" or Type "OH" signs shall use a 2" border width and a border radius based on the above table.

APPROVED
9/1/73

DATE OF REV.
5/1/94

Corner Radii, Margin, and Border



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