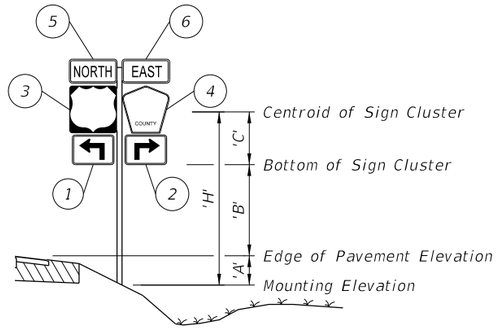
STEP 1: Calculate the area and the centroid for an individual sign or a sign cluster. Note that the centroid and areas have been calculated for frequently used sign clusters. These are shown on Sheet No. 6, 7 & 8 of 9.



	Size H x V	Centroid: Local $'Y_n'$	Centroid: Global $'X_n'$	Centroid: Global $'Y_n'$	$'A_n'$	$'X_n'$ x $'A_n'$	$'Y_n'$ x $'A_n'$
	(in. x in.)	(in.)	(in.)	(in.)	($in.^2$)	($in.^3$)	($in.^3$)
1	21 x 15	7.5	–10.5–1.5–1.5 = –13.5	7.5	315	–4,252.5	2,362.5
2	21 x 15	7.5	10.5+1.5+1.5 = 13.5	7.5	315	+4,252.5	2,362.5
3	24 x 24	12	–12–1.5 = –13.5	15+1+12= 28	576	–7,776	16,128
4	24 x 24	12	12+1.5 = 13.5	15+1+12= 28	436	5,886	12,208
5	24 x 12	6	–12–1.5 = –13.5	15+1+24+ 1+6=47	288	–3,888	13,536
6	24 x 12	6	12+1.5 = 13.5	15+1+24+ 1+6=47	288	3,888	13,536
				TOTALS	2,218	–1,890	60,133

$\Sigma\ ('A_n') = 2{,}218\ in.^2 = 15.4\ ft.^2$ $\quad \Sigma\ ('X_n' \times 'A_n') = -1{,}890\ in.^3 = -1.09\ ft.^3$ $\quad \Sigma\ ('Y_n' \times 'A_n') = 60{,}133\ in.^3 = 34.8\ ft.^3$

$$'X_c' = \frac{\Sigma\ ('X_n' \times 'A_n')}{\Sigma\ 'A_n'} = -0.1\ ft. \qquad 'Y_c' = \frac{\Sigma\ ('Y_n' \times 'A_n')}{\Sigma\ 'A_n'} = 2.26\ ft.$$

STEP 2: Determine the height 'H' from groundline for the individual sign or the cluster.

Assume: Bay County, Wind Speed = 130 mph, 'A' = 1 ft., 'B' = 7 ft.

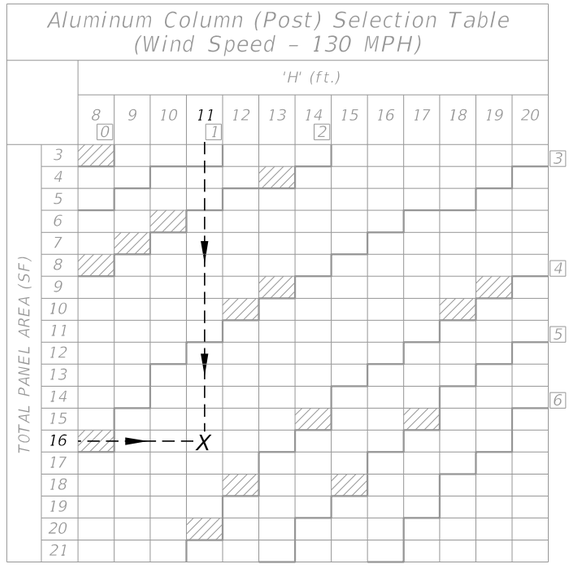
Calculated: $X_c' = -0.1$ ft., $Y_c' =$ 'C' 2.26 ft.

Since $X_c' = -0.1 < 6"$, it is not a cantilever sign, only dark-bold lines in the table will be referenced to.

'H' = 'A' + 'B' + 'C' = 10.26 ft. ==> USE 11 ft. $\quad \Sigma\ ('A_n') = 15.4\ ft.^2$ ==> USE 16 $ft.^2$

STEP 3: Select the appropriate Aluminum Column (Post) Selection Tables by Wind Speed and find the intersection point. See Sheet 3.

Aluminum Column (Post) Selection Table
(Wind Speed – 130 MPH)



For WIND SPEED = 130 MPH,
'H' = 11 ft., Area = 16 $ft.^2$

- Refer to the 130 mph Aluminum Column (Post) Selection Table, as copied from Sheet 3 and shown here.
- Using the 16 $ft.^2$ area on the left hand side of the table, go across to the 11 ft. height and find the cell marked with X.
- find the symbol [4] which the dark-bold line under the X cell leads to.
- In the Column (Post) and Foundation Table, the symbol [4] concludes that the design requires a 4.0" diameter and 0.25" thick Aluminum Column (Post) and a 2.0' diameter and 4.0' deep Concrete Foundation.

= If CANTILEVER SIGN configuration (see Cantilever Sign Details) falls in this region, use next larger Column (Post) size than that indicated.

STEP 4: Design the Column (Post) and the foundation according to the dark-bold lines or shaded area (if cantilever sign) in the Aluminum Column (Post) Selection Tables and Column (Post) and Foundation Table. For sign assemblies with signs oriented in two directions, only the sign with the largest area should be analyzed to determine the Column (Post) requirements.

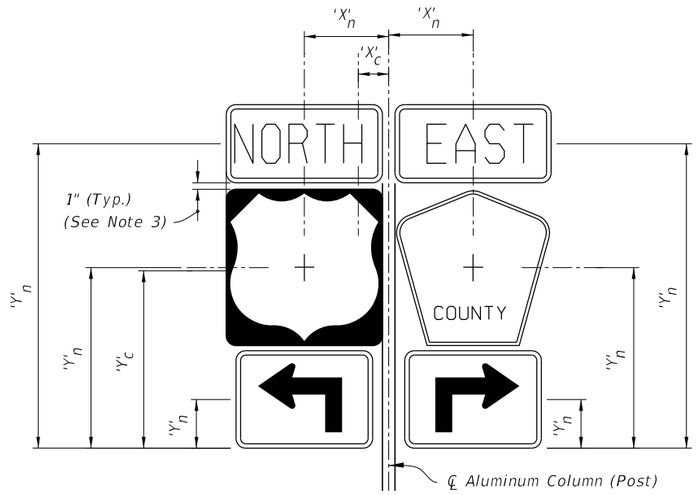
GUIDE TO USE THIS STANDARD

SHEET NO.	CONTENTS
1	General Notes and Example
2	Centroid and Height
3	Column and Foundation Tables
4	Slip Base and Foundation Details
5	Driven Post and Soil Plate Details
6	Connection and Wind Beam
7, 8 & 9	Frequently Used Sign Clusters

GENERAL NOTES:

1. Design Wind Speed is determined by County (see WIND SPEEDS BY COUNTY)
2. Maximum sign area (single or cluster) is 30 sf.
3. Maximum sign width (X) single or cluster (including rotated sign panels) is 60 inches.
4. Shop drawings: Not required.
5. Aluminum Sign, Wind Beams and Column (Post) Materials:
   a. Aluminum Plates: ASTM B209, Alloy 6061-T6
   b. Aluminum Bars and Extruded Shapes: ASTM B221, Alloy 6061-T6
   c. Aluminum Structural Shapes: ASTM B308 Alloy 6061-T6
   d. Cast Aluminum: Alloy 356-T6
   e. Aluminum Weld Material: ER 5556
6. Sign Mounting Bolts (Screws), Nuts and Washers:
   a. Aluminum Button Head and Flat Head Bolts (Screws): ASTM F 468 Alloy 2024-T4
   b. Aluminum Hex Nuts: ASTM F467 Alloy 6061-T6 or 6262-T9
   c. Aluminum Washers: ASTM B221, Alloy 7075-T6
   d. Galvanized Steel U-Bolts: ASTM A 307 Grade A
   e. Galvanized Hex Nuts: ASTM A 563
7. Stainless Steel Bolts, Nuts and Washers may be used in lieu of the Aluminum button head and flat head Bolts (Screws) as follows:
   a. Stainless Steel Bolts (Screws): ASTM F 593 Alloy Group 2, Condition A, CW1 or SH1
   b. Stainless Steel Nuts: ASTM F594
8. Sign Column (Post) Bolts, Nuts and Washers:
   a. Galvanized Bolts (Sleeve): ASTM A307 with Galvanized Hex Nuts and Washers
   b. Aluminum Bolts (Sleeve): ASTM B221, Alloy 6061-T6 or 2024-T4 with Hex Nuts and Washers.
   c. Galvanized High Strength Hex Head Bolts (BaseBolts): ASTM A325 Type 1
   d. Galvanized Hex Nuts: ASTM A563 Grade DH
   e. Galvanized Washers: ASTM F436
9. Coatings:
   a. Aluminum Fasteners: Anodic coating (0.0002 inches min.) and chromate sealed
   b. High Strength Steel Bolts Nuts and Washers: ASTM F2329
   c. All other steel items (excluding stainless steel): Hot-dip Galvanize – ASTM A123
   d. Repair damaged galvanizing in accordance with Specification Section 562

NOTES AND EXAMPLE



SIGN CLUSTER

$$'X'_c = \frac{\Sigma\ (\ 'X'_n \times 'A'_n\ )}{\Sigma\ 'A'_n} \qquad 'C' = 'Y'_c = \frac{\Sigma\ (\ 'Y'_n \times 'A'_n\ )}{\Sigma\ 'A'_n}$$

'A' = Height of the mounting elevation to the edge of pavement elevation

'A'_n = Area of individual sign

'B' = Height of the edge of pavement elevation and the bottom of the sign or cluster

'C' = Height from the bottom of the sign or cluster to the centroid of the sign or cluster

h = Individual sign height

h/2 = ℄ Individual sign center

'H' = Height of sign or cluster centroid from groundline

X = Individual sign width

'X'_c = Centroid horizontal location of sign or cluster from ℄ Aluminum Column (Post)

'Y'_c = Centroid height of sign or cluster from bottom of sign cluster

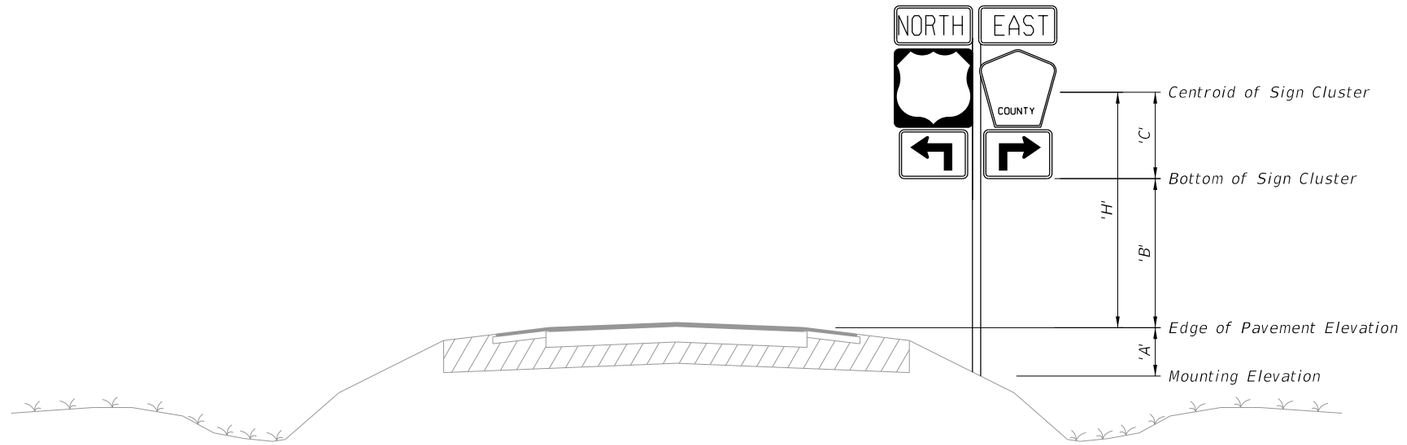
'X'_n = Individual sign centroid horizontal location from ℄ Aluminum Column (Post)

'Y'_n = Individual Sign centroid height from bottom of sign cluster

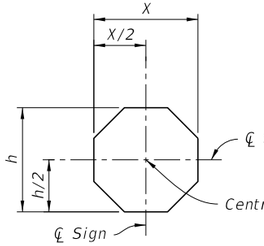
NOTES:

1. For 'A' & 'B' see Index No. 17302 and Roadway Plans.
2. Do not exceed an area of 30 SF or a width of 60 inches for a sign or a sign cluster.
3. Vertical sign spacing (1" shown on Sign Cluster detail) also applies to rotated signs.

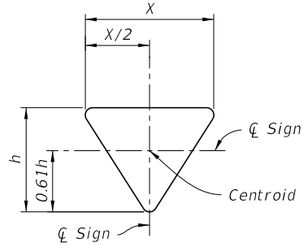
CALCULATION OF SIGN CLUSTER CENTROID



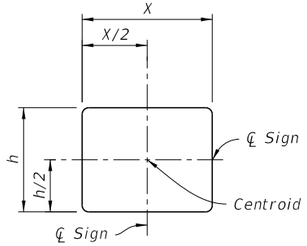
TYPICAL SECTION



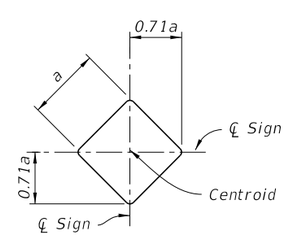
STOP



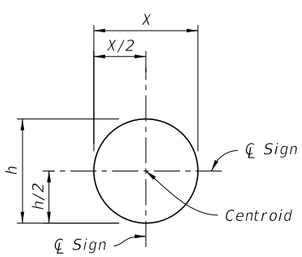
YIELD



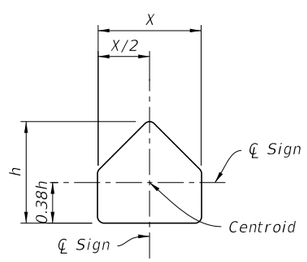
RECTANGLE



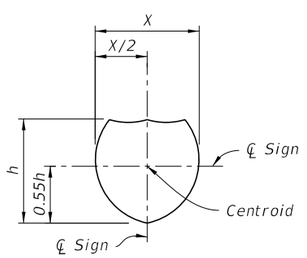
DIAMOND



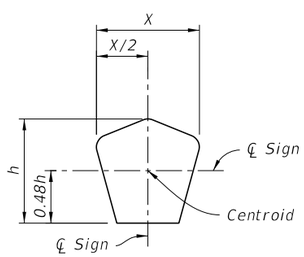
RAILROAD



SCHOOL



SHIELD



COUNTY

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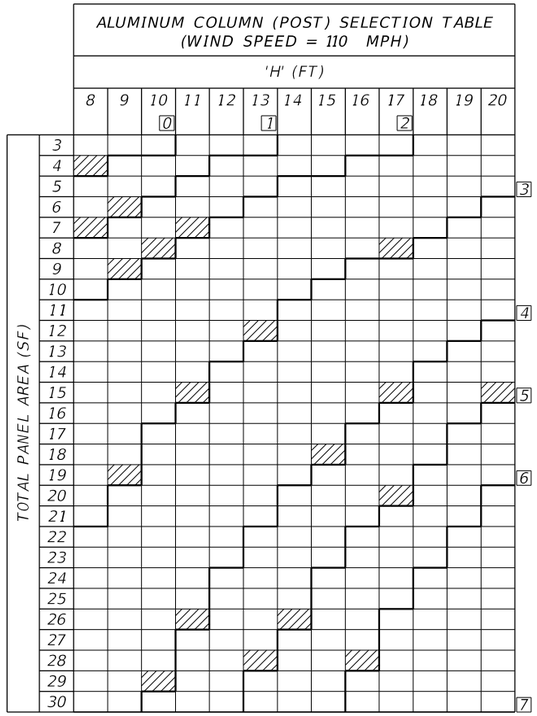
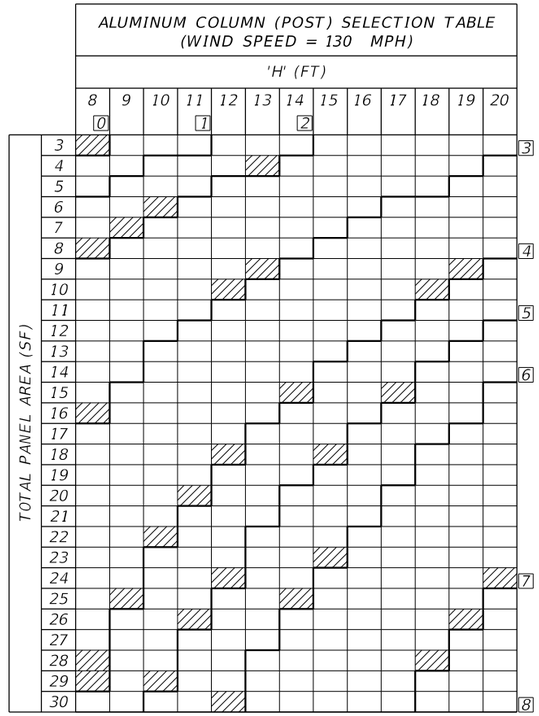
CENTROID AND HEIGHT

LAST REVISION	REVISION	DESCRIPTION:			INDEX NO.	SHEET NO.
07/01/15			FDOT 2016 DESIGN STANDARDS	SINGLE COLUMN GROUND SIGNS	11860	2 of 9

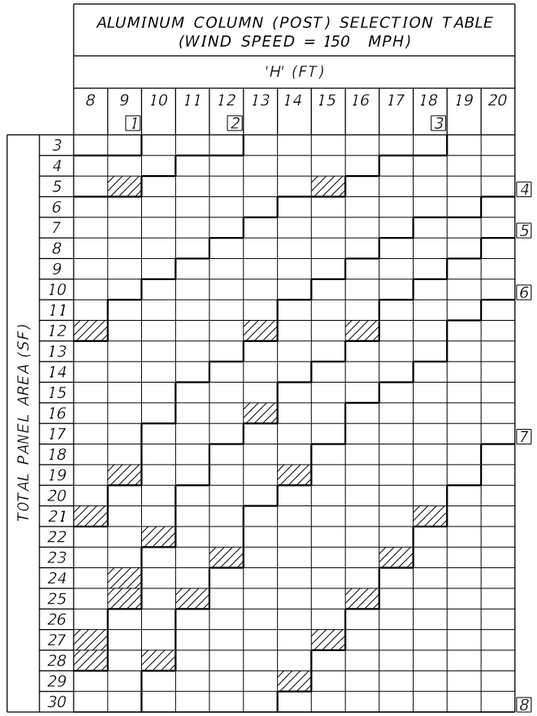
ALUMINUM COLUMN (POST) SELECTION TABLE (WIND SPEED = 110 MPH)



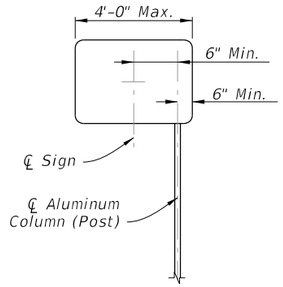
ALUMINUM COLUMN (POST) SELECTION TABLE (WIND SPEED = 130 MPH)



ALUMINUM COLUMN (POST) SELECTION TABLE (WIND SPEED = 150 MPH)



= *If CANTILEVER SIGN configuration (see Cantilever Sign Details) falls in this region, use next larger Column (Post) size than that indicated.*



CANTILEVER SIGN

NOTE:

1. For cantilever sign installations see Index 17302.
2. For cantilever signs with widths greater than 4' see Index 11861.

COLUMN (POST) AND FOUNDATION TABLE

	Column (Post) Size		Foundation Alternatives				
			Driven Post *		Concrete (Class I)		
	Diameter (NPS) (in)	Wall Thk. (in)	Embedment Depth (ft) without Soil Plate	Embedment Depth (ft) with Soil Plate	Diameter (ft)	Embedment Depth (ft)	Stub Length (ft)
0	2.0	1/8	4.5	2.5	2.0	2.0	2.0
1	2.5	1/8	5.0	3.0	2.0	2.0	2.0
2	3.0	1/8	5.0	3.5	2.0	2.5	2.5
3	3.5	3/16	6.0	4.5	2.0	3.0	3.0
4	4.0	1/4	---	---	2.0	4.0	3.0
5	4.5	1/4	---	---	2.0	4.0	3.0
6	5.0	1/4	---	---	2.0	4.5	3.0
7	6.0	1/4	---	---	2.0	5.0	3.0
8	8.0	5/16	---	---	2.0	5.5	3.0

* *INSTALLING FRANGIBLE COLUMN SUPPORTS:*
Columns (posts) may be installed by driving the post or the posts may be set to the depth indicated in preformed holes backfilled with suitable material tamped in layers not thicker than 6" (to provide adequate compaction) or filled with flowable fill or bagged concrete.

WIND SPEEDS BY COUNTY:

110 MPH
Alachua, Baker, Bradford, Clay, Columbia, Gadsden, Gilchrist, Hamilton, Hardee, Jackson, Jefferson, Lafayette, Lake, Leon, Madison, Marion, Polk, Putnam, Sumter, Suwannee and Union counties.

130 MPH
Bay, Brevard, Calhoun, Charlotte, Citrus, De Soto, Dixie, Duval, Flagler, Franklin, Glades, Gulf, Hendry, Hernando, Highlands, Hillsborough, Holmes, Lee, Levy, Liberty, Manatee, Nassau, Okaloosa, Okeechobee, Orange, Osceola, Pasco, Pinellas, Sarasota, Seminole, St. Johns, Taylor, Volusia, Wakulla, Walton and Washington counties.

150 MPH
Broward, Collier, Escambia, Indian River, Martin, Miami-Dade, Monroe, Palm Beach, Santa Rosa and St. Lucie counties.

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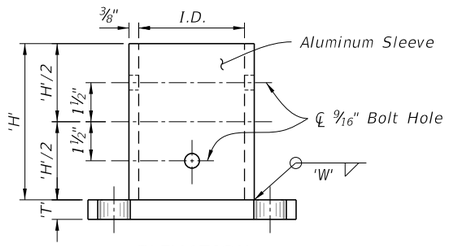
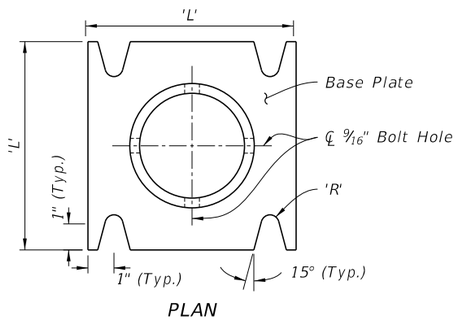
COLUMN AND FOUNDATION TABLES

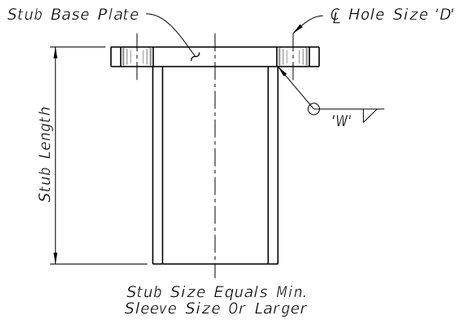


ELEVATION



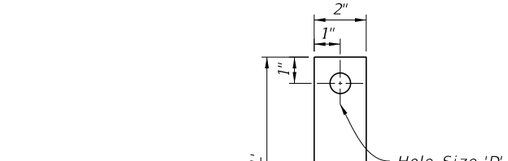
PLAN

SLEEVE & BASE PLATE DETAILS



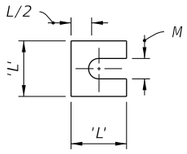
Stub Size Equals Min.
Sleeve Size Or Larger

STUB DETAIL



28 Ga. Thick Aluminum Strip
2 Reqd. Per Base

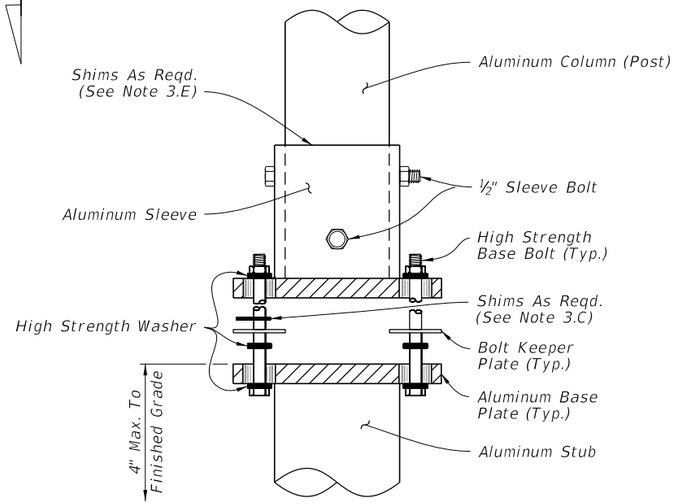
BOLT KEEPER PLATE DETAIL



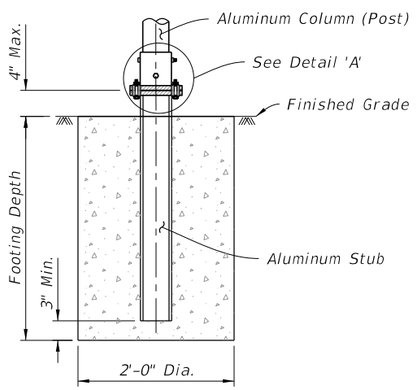
Provide 2- 0.0149" Thick (28 guage)
and 2- 0.0329" Thick (21 guage)
Brass Shims Per Post

SHIM DETAIL

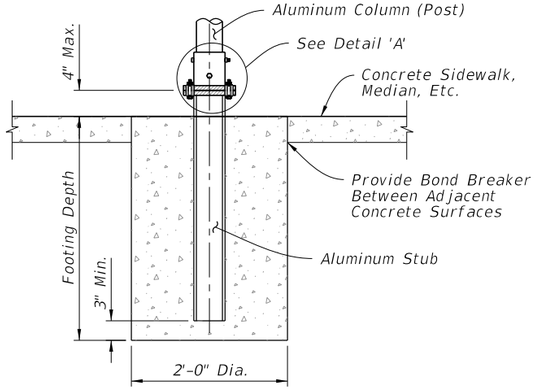
Direction of Traffic



DETAIL 'A'



SLIP BASE AND FOOTING DETAIL
(Non-Frangible Column)



SLIP BASE AND FOOTING DETAIL IN CONCRETE
(Non-Frangible Column In Crossovers, Medians & Sidewalks)

NOTES:

1. Foundation Notes for Frangible Slip Base:

   A. Place Stub into concrete to diameter and depth shown in POST AND FOUNDATION TABLE using Class I Concrete.

   B. Install precast concrete/stub section by placing into a preformed hole and backfilling with flowable fill or bagged concrete.

2. Slip Base Fabrication Notes:

   A. The difference between the O.D. of the post and I.D. of the Sleeve must be 1/16" or less.

   B. Base Plate to Sleeve and Base Plate to Stub may be welded or cast.

   C. For cast base plates bolted to foundation stubs, use a foundation stub the same size as the sign column (Post).

3. Slip-Base Assembly Instructions:

   A. Assemble Slip Base connections in the following manner:
      1. Insert Post into Sleeve and connect using 2 ~ ½" diameter Sleeve Bolts.

      2. Assemble top base plate to bottom Base Plate using Base Bolts (High strength) with 3 washers per bolt. (See Detail 'A'):
         a. Place one washer on each Base Bolt between the bottom Base Plate and the Base Bolt head.
         b. Place the next washer between the Bottom Base Plate and the Bolt Keeper Plate.
         c. Add the top base plate section.
         d. Place the third washer between the Top Base Plate and the Nut.

   B. Orient the Bolt Keeper Plates in the Direction of Traffic.

   C. Use brass shims to plumb the post.

   D. Tighten Base Bolts as follows:
      a. Tighten Base Bolts to the maximum possible with a 12" to 15" wrench (this will bed the washers and shims and clear the bolt threads).
      b. Loosen each Base Bolt one turn.
      c. Under the supervision of the Engineer, use a calibrated wrench to tighten bolts to the torque prescribed in the SLIP BASE DETAILS Table. Over tightened Base Bolts are not permitted.
      d. Distort bolt threads at the junction with nuts to prevent loosening. Repair damaged galvanizing.

   E. Place galvanized steel shims between the Sleeve and Post to obtain a tight fit between the Post and Sleeve.

Column (Post) Size	SLIP BASE DETAILS													
Dia. (NPS) (in)	Wall Thk. (in)	Sleeve I.D. (Max.)	Sleeve Height 'H'	Weld 'W'	Base Plate 'L'	Base Plate 'T'	Radius 'R'	Base Bolt Size	Base Bolt Length	Base Plate Torque ft-lbs	Base Plate Torque in.-lbs	Hole Size 'D'	SHIM L	SHIM M
4	1/4	4 1/16	6	5/8	8	3/4	1 1/32	5/8	3	29	345	1 1/16	1 3/8"	1 1/16"
4½	1/4	4 9/16	6	5/8	8	7/8	1 1/32	5/8	3¼	29	345	1 1/16	1 3/8"	1 1/16"
5	1/4	5 1/16	7	5/8	8	7/8	1 1/32	5/8	3¼	29	345	1 1/16	1 3/8"	1 1/16"
6	1/4	6 1/16	8	1 1/16	9	1	1 3/32	3/4	3½	46	554	1 3/16	1 3/4"	1 3/16"
8	5/16	8 1/16	10	3/4	11	1	1 5/32	7/8	3¾	53	640	1 5/16	2 3/8"	1 1/16"

SLIP BASE AND FOUNDATION DETAILS

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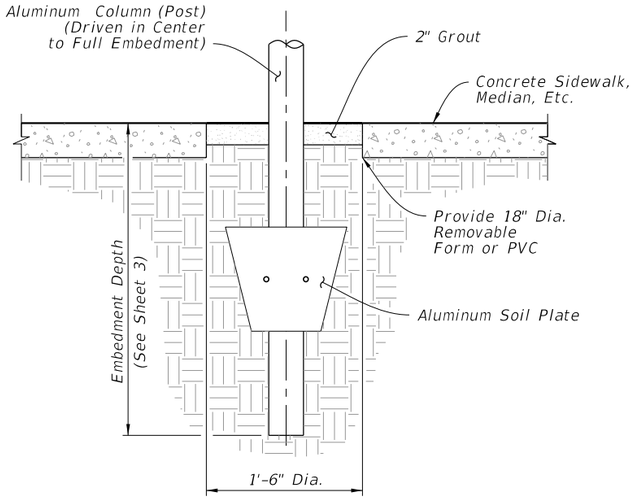
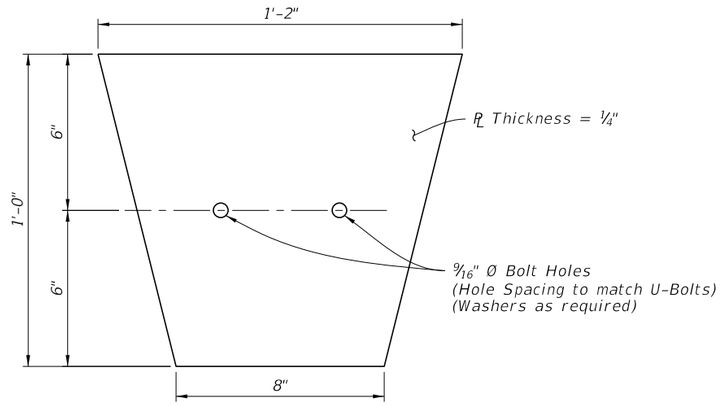
LAST REVISION	REVISION	DESCRIPTION:			
07/01/15			FDOT 2016 DESIGN STANDARDS	SINGLE COLUMN GROUND SIGNS	INDEX NO. 11860 / SHEET NO. 4 of 9



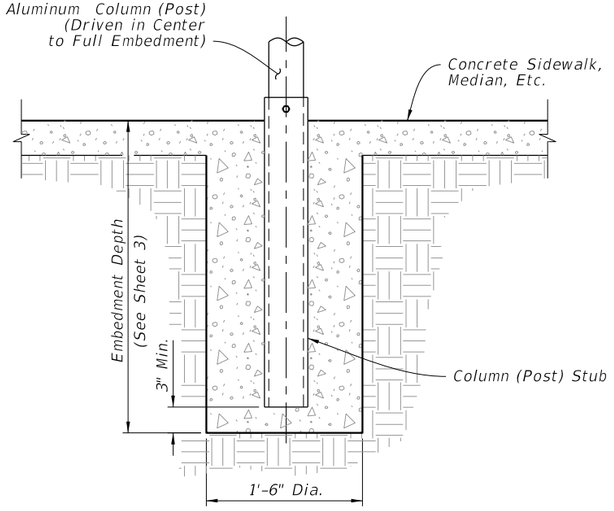
DRIVEN POST DETAIL
(Frangible Post In Crossovers, Medians & Sidewalks)

NOTES:

1. Align Soil Plate bottom at ⅔ of embedment depth.
2. Slot up to 1" long is allowed to accommodate various Column (Post) sizes.
3. Rectangular soil plate of size 1'-2" x 1'-0" may be used as an alternative.



ALUMINUM SOIL PLATE DETAIL



CONCRETE/STUB DETAIL
(Frangible Post In Crossovers, Medians & Sidewalks)

Note: Concrete foundation may be Class Non Structural
if poured monolithically with sidewalk or separator.

DRIVEN POST AND SOIL PLATE DETAIL

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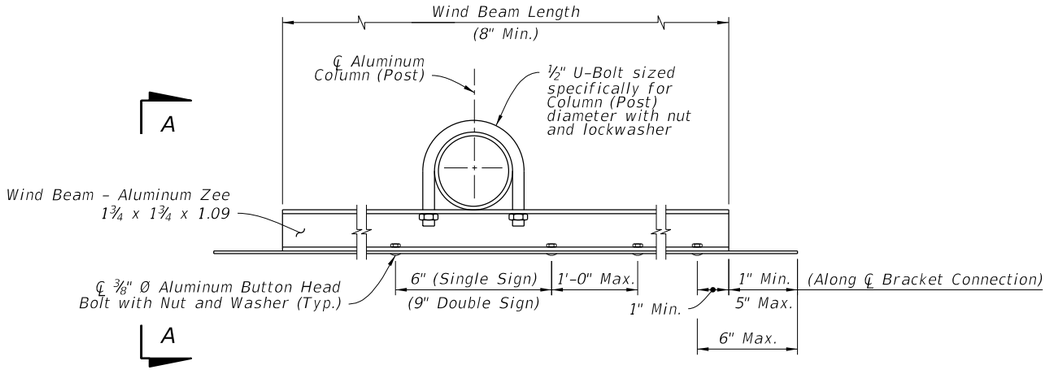
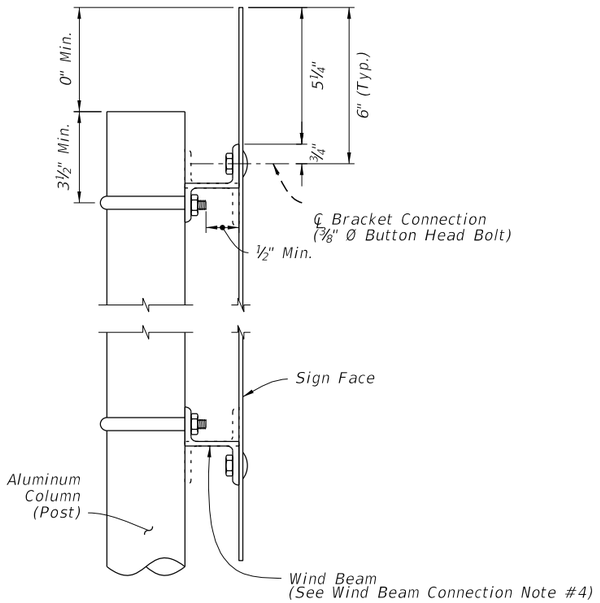


WIND BEAM CONNECTION NOTES:

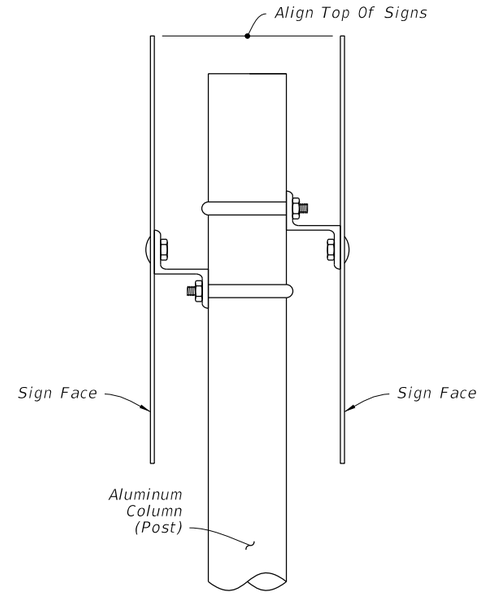
1. 5/16" Ø Stainless Steel Hex Head Bolts with Flat Washer under Head and Lockwasher under Nut may be used in lieu of ⅜" Ø Aluminum Button Head Bolts.
2. Use Nylon washers (provided by the sheeting supplier) under the button bolt heads to protect sign sheeting.
3. Slots up to 1" long are allowed in wind beams to accommodate U-Bolts for varying Column (Post) diameters.
4. Wind beams may be oriented in either direction.

BRACKET DETAIL



WIND BEAM CONNECTIONS DETAILS

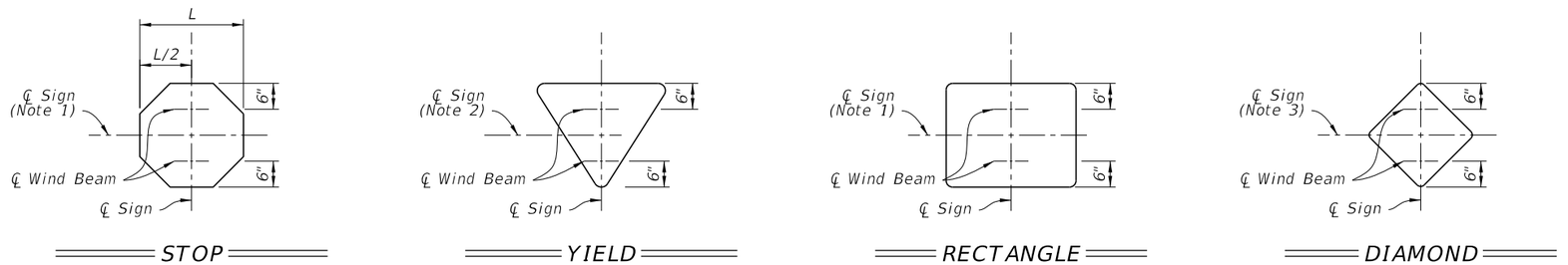
SECTION A-A



BACK-TO-BACK SIGN NOTE:

Use the area and the centroid location of the largest sign to determine aluminum column (post) size.

BACK-TO-BACK SIGN DETAIL



WIND BEAM PLACEMENT NOTES:

1. Install an additional third wind beam along the ℄ for signs with heights greater than 30" and less than 72". For rectangular signs greater than 72" maintain a maximum wind beam spacing of 2'-6", with the additional wind beams spaced evenly between the top and bottom wind beams. For rectangular signs up to 12" in height, use only one wind beam at ℄ Sign.
2. Install an additional third wind beam along the ℄ for Yield and School signs greater than 36".
3. Install an additional third wind beam along the ℄ for Diamond signs 30" or greater.

WIND BEAM PLACEMENT DETAILS

CONNECTION AND WIND BEAMS

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	Size	Area	Total Area	Centroid
ONE WAY	36x12	3.00 SF	6.31 SF	1.75 Ft.
STOP	24x24	3.31 SF		

	Size	Area	Total Area	Centroid
ONE WAY	36x12	3.00 SF	8.18 SF	1.92 Ft.
STOP	30x30	5.18 SF		

	Size	Area	Total Area	Centroid
ONE WAY	36x12	3.00 SF	10.46 SF	2.10 Ft.
STOP	36x36	7.46 SF		

	Size	Area	Total Area	Centroid
ONE WAY	36x12	3.00 SF	16.25 SF	2.48 Ft.
STOP	48x48	13.25 SF		

	Size	Area	Total Area	Centroid
STOP	24x24	3.31 SF	6.31 SF	1.71 Ft.
DIVIDED HIGHWAY	24x18	3.00 SF		

	Size	Area	Total Area	Centroid
STOP	30x30	5.18 SF	10.18 SF	2.19 Ft.
DIVIDED HIGHWAY	30x24	5.00 SF		

	Size	Area	Total Area	Centroid
STOP	36x36	7.46 SF	12.46 SF	2.55 Ft.
DIVIDED HIGHWAY	30x24	5.00 SF		

	Size	Area	Total Area	Centroid
ONE WAY	36x12	3.00 SF	13.18 SF	2.87 Ft.
STOP	30x30	5.18 SF		
DIVIDED HIGHWAY	30x24	5.00 SF		

	Size	Area	Total Area	Centroid
ONE WAY	36x12	3.00 SF	15.46 SF	3.15 Ft.
STOP	36x36	7.46 SF		
DIVIDED HIGHWAY	30x24	5.00 SF		

	Size	Area	Total Area	Centroid
JCT	21x15	2.19 SF	6.19 SF	1.60 Ft.
27	24x24	4.00 SF		

	Size	Area	Total Area	Centroid
JCT	21x15	2.19 SF	7.19 SF	1.52 Ft.
301	30x24	5.00 SF		

	Size	Area	Total Area	Centroid
BUSINESS OR EAST	24x12	2.00 SF	6.00 SF	1.53 Ft.
27 27	24x24	4.00 SF		

	Size	Area	Total Area	Centroid
BUSINESS OR EAST	24x12	2.00 SF	7.00 SF	1.45 Ft.
301 301	30x24	5.00 SF		

	Size	Area	Total Area	Centroid
BUSINESS OR EAST	30x15	3.13 SF	8.13 SF	1.66 Ft.
301 301	30x24	5.00 SF		

	Size	Area	Total Area	Centroid
27	24x24	4.00 SF	6.19 SF	1.73 Ft.
	21x15	2.19 SF		

	Size	Area	Total Area	Centroid
27	30x24	5.00 SF	7.19 SF	1.81 Ft.
	21x15	2.19 SF		

	Size	Area	Total Area	Centroid
BUSINESS EAST OR 27 27	24x12	2.00 SF	8.19 SF	2.26 Ft.
	24x24	4.00 SF		
	21x15	2.19 SF		

	Size	Area	Total Area	Centroid
BUSINESS EAST OR 301 301	24x12	2.00 SF	9.19 SF	2.27 Ft.
	30x24	5.00 SF		
	21x15	2.19 SF		

	Size	Area	Total Area	Centroid
BUSINESS EAST OR 301 301	30x15	3.13 SF	10.32 SF	2.49 Ft.
	30x24	5.00 SF		
	21x15	2.19 SF		

	Size	Area	Total Area	Centroid
EAST BUSINESS 27	24x12	2.00 SF	10.19 SF	2.80 Ft.
	24x12	2.00 SF		
	24x24	4.00 SF		
	21x15	2.19 SF		

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LAST REVISION	REVISION	DESCRIPTION:				
07/01/15			FDOT	2016 DESIGN STANDARDS	SINGLE COLUMN GROUND SIGNS	INDEX NO. 11860 / SHEET NO. 7 of 9

Size	Area	Total Area	Centroid
24x12	2.00 SF	11.19 SF	2.76 Ft.
24x12	2.00 SF		
30x24	5.00 SF		
21x15	2.19 SF		

Size	Area	Total Area	Centroid
30x15	3.13 SF	13.45 SF	3.16 Ft.
30x15	3.13 SF		
30x24	5.00 SF		
21x15	2.19 SF		

Size	Area	Total Area	Centroid
21x15	2.19 SF	3.90 SF	1.57 Ft.
18x18	1.71 SF		

Size	Area	Total Area	Centroid
21x15	2.19 SF	5.22 SF	1.72 Ft.
24x24	3.03 SF		

Size	Area	Total Area	Centroid
21x15	2.19 SF	6.95 SF	1.87 Ft.
30x30	4.76 SF		

Size	Area	Total Area	Centroid
18x18	1.71 SF	3.90 SF	1.26 Ft.
21x15	2.19 SF		

Size	Area	Total Area	Centroid
24x24	3.03 SF	5.22 SF	1.62 Ft.
21x15	2.19 SF		

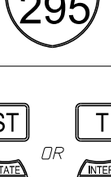
Size	Area	Total Area	Centroid
30x30	4.76 SF	6.95 SF	1.97 Ft.
21x15	2.19 SF		

Size	Area	Total Area	Centroid
24x12	2.00 SF	9.39 SF	2.87 Ft.
24x12	2.00 SF		
24x24	3.20 SF		
21x15	2.19 SF		

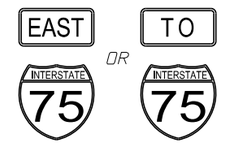
Size	Area	Total Area	Centroid
24x12	2.00 SF	10.18 SF	2.84 Ft.
24x12	2.00 SF		
30x24	3.99 SF		
21x15	2.19 SF		

Size	Area	Total Area	Centroid
30x15	3.13 SF	12.44 SF	3.26 Ft.
30x15	3.13 SF		
30x24	3.99 SF		
21x15	2.19 SF		

Size	Area	Total Area	Centroid
21x15	2.19 SF	5.39 SF	1.75 Ft.
24x24	3.20 SF		



Size	Area	Total Area	Centroid
21x15	2.19 SF	6.18 SF	1.67 Ft.
30x24	3.99 SF		



Size	Area	Total Area	Centroid
24x12	2.00 SF	5.20 SF	1.67 Ft.
24x24	3.20 SF		

Size	Area	Total Area	Centroid
24x12	2.00 SF	5.99 SF	1.60 Ft.
30x24	3.99 SF		

Size	Area	Total Area	Centroid
30x15	3.13 SF	7.12 SF	1.81 Ft.
30x24	3.99 SF		

Size	Area	Total Area	Centroid
30x15	3.13 SF	10.33 SF	2.27 Ft.
36x36	7.20 SF		

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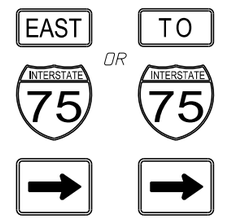
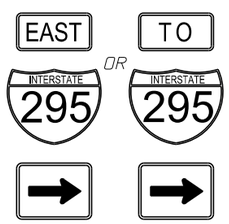
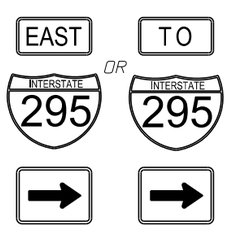
Size	Area	Total Area	Centroid
30x15	3.13 SF	12.12 SF	2.18 Ft.
45x36	8.99 SF		



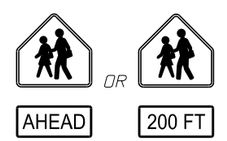
Size	Area	Total Area	Centroid
24x12	2.00 SF	7.39 SF	2.30 Ft.
24x24	3.20 SF		
21x15	2.19 SF		



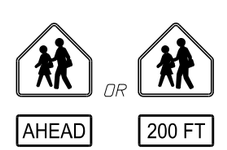
Size	Area	Total Area	Centroid
24x12	2.00 SF	8.18 SF	2.31 Ft.
30x24	3.99 SF		
21x15	2.19 SF		



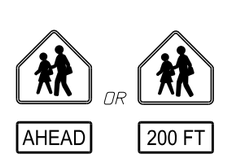
Size	Area	Total Area	Centroid
30x15	3.13 SF	9.31 SF	2.55 Ft.
30x24	3.99 SF		
21x15	2.19 SF		



Size	Area	Total Area	Centroid
30x30	4.69 SF	6.69 SF	1.61 Ft.
24x12	2.00 SF		



Size	Area	Total Area	Centroid
30x30	4.69 SF	8.44 SF	1.77 Ft.
30x18	3.75 SF		

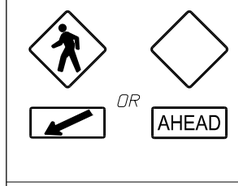


Size	Area	Total Area	Centroid
36x36	6.75 SF	10.50 SF	2.06 Ft.
30x18	3.75 SF		

Size	Area	Total Area	Centroid
30X30	4.69 SF	6.69 SF	1.61 Ft.
24X12	2.00 SF		

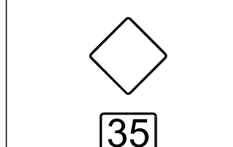
Size	Area	Total Area	Centroid
30X30	4.69 SF	8.44 SF	1.77 Ft.
30X18	3.75 SF		

Size	Area	Total Area	Centroid
36X36	6.75 SF	10.50 SF	2.06 Ft.
30X18	3.75 SF		

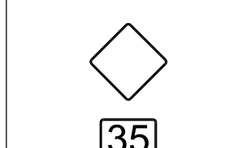


Size	Area	Total Area	Centroid
30X30	6.25 SF	8.25 SF	2.28 Ft.
24X12	2.00 SF		

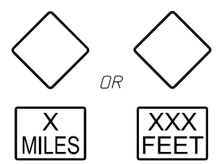
Size	Area	Total Area	Centroid
36X36	9.00 SF	12.75 SF	2.84 Ft.
30X18	3.75 SF		



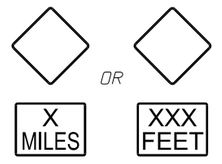
Size	Area	Total Area	Centroid
30X30	6.25 SF	10.25 SF	2.74 Ft.
24X24	4.00 SF		



Size	Area	Total Area	Centroid
36X36	9.00 SF	15.25 SF	3.29 Ft.
30X30	6.25 SF		



Size	Area	Total Area	Centroid
30X30	6.25 SF	9.25 SF	2.51 Ft.
24X18	3.00 SF		



Size	Area	Total Area	Centroid
36X36	9.00 SF	14.00 SF	3.06 Ft.
30X24	5.00 SF		

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