GENERAL NOTES AND SPECIFICATIONS:

1. GOVERNING CODES:

   INTERNATIONAL BUILDING CODE 2009
   INTERNATIONAL BUILDING CODE 2006
   INTERNATIONAL BUILDING CODE 2003
   CALIFORNIA BUILDING CODE 2010
   FLORIDA BUILDING CODE 2007

2. DESIGN LOADS:

   DEAD LOAD: $WT_{EXTRUSION}$ = 3 LB/FT
   WT_{SIGN} = 2.00 PSF
   WT_{PIPE} = 12.5 LB/FT

   WIND LOAD: 150 MPH MAX. (3 SEC. GUST.) EXPOSURE C

HEIGHT	PRESSURE
0'-15'	65.44 PSF
15'-20'	69.29 PSF
20'-25'	72.37 PSF

3. RESTRICTIONS:

   THE BOTTOM POLE SUPPORT, SPLICE CONNECTION, FOUNDATION AND ANCHORAGE ARE NOT A PART OF THIS SCOPE OF WORK AND SHALL BE DESIGNED PER LOCAL ENGINEERING REQUIREMENTS. CONTACT STC FOR ENGINEER SEALED SITE SPECIFIC CALCULATIONS.

4. LIMITATIONS:

   THE DESIGN AND CONSTRUCTION OF THE SIGN SHOWN CONFORM TO THE ABOVE GOVERNING CODES WHEN INSTALLED AS SPECIFIED ON THIS DRAWING. NO OTHER WARRANTY IS EXPRESSED OR IMPLIED. ANY ALTERATIONS OF THIS DRAWING WILL VOID THE SHEET. THIS SHEET IS VALID ONLY IF IT INCLUDES A WET SIGNATURE BY THE ENGINEER OF RECORD.

   DO NOT REPRODUCE THESE DRAWINGS AND SPECIFICATIONS WITHOUT THE EXPRESSED WRITTEN PERMISSION OF STRUCTURAL TECHNOLOGY CONSULTANTS, INC. (STC). THE DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF THE SERVICE AND SHALL REMAIN THE PROPERTY OF STC WHETHER THE PROJECT FOR WHICH THEY ARE MADE IS EXECUTED OR NOT. THESE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED BY ANYONE ON ANY OTHER PROJECT(S) OR FOR ADDITIONS TO THIS PROJECT BY OTHERS, EXCEPT BY THE EXPRESSED WRITTEN PERMISSION OF STC.

5. MATERIALS:

   A. ALUMINUM EXTRUSIONS GRADE 6063-T5.
   B. PIPE STEEL ASTM A53 GRADE B.
   C. ROLLED STEEL ASTM A36.
   D. BOLT STEEL ASTM A307.
   E. PROVIDE ISOLATION OF DISSIMILAR MATERIALS FOR ALL ALUMINUM TO BE IN CONTACT WITH STEEL.
   F. SIGN PANELS SHALL BE APPROVED BY UNDERWRITERS LABORATORY. USE ONLY APPROVED PLASTICS.

6. WORKMANSHIP:

   ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE LATEST EDITION OF THE GOVERNING CODE AND THE LOCAL BUILDING OFFICIAL.

7. WELDING:

   STEEL WELDING:
   ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS USING E70 ELECTRODES OR WIRES AND AWS APPROVED SYSTEMS AND PROCEDURES.

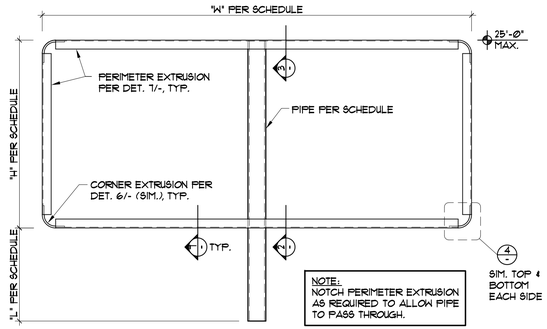
   ALUMINUM WELDING:
   ALL WELDING TO CONFORM TO AWS D1.2 / D1.2M: 2008 STRUCTURAL ALUMINUM WELDING CODE.

8. NOTES:

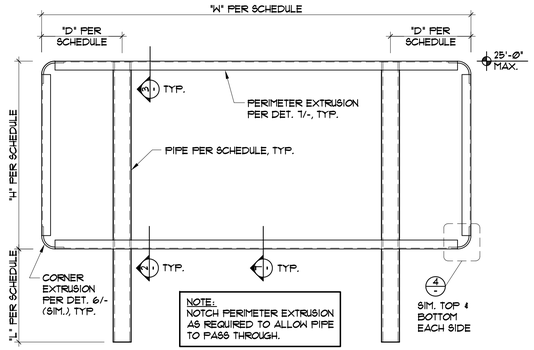
   SIGN INSTALLER SHALL FIELD VERIFY THAT SITE CONDITIONS ARE CONSISTENT WITH THESE DRAWINGS PRIOR TO SIGN INSTALLATION. NOTIFY ENGINEER OF RECORD IMMEDIATELY IF SITE CONDITIONS VARY FROM THESE DRAWINGS.

9. ADDITIONAL ENGINEERING

   SITE SPECIFIC CALCULATIONS CAN BE PROVIDED BY STRUCTURAL TECHNOLOGY CONSULTANTS. CONTACT STC AT (800) 681-8106.



CONFIGURATION A
(SINGLE POLE)

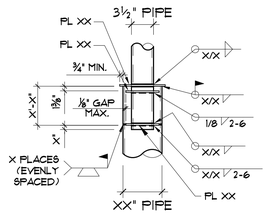


CONFIGURATION B
(DOUBLE POLE)

SIGN SCHEDULE

SIGN TYPE	SIGN SIZE (HxW)	SIGN CONFIGURATION	PIPE SIZE	PIPE EXTENSION LENGTH, L	EDGE DISTANCE, D
A	2'x6'	A	3½" X-STRONG (t=Ø.318)	20"	N/A
B	2'x8'	A	3½" X-STRONG (t=Ø.318)	20"	N/A
C	2'x10'	A	3½" X-STRONG (t=Ø.318)	20"	N/A
D	2'x12'	A	3½" X-STRONG (t=Ø.318)	20"	N/A
E	2'-6"x6'	A	3½" X-STRONG (t=Ø.318)	20"	N/A
F	2'-6"x8'	A	3½" X-STRONG (t=Ø.318)	20"	N/A
G	2'-6"x12'	A	3½" X-STRONG (t=Ø.318)	20"	N/A
H	3'x4'	A	3½" X-STRONG (t=Ø.318)	24"	N/A
I	3'x6'	A	3½" X-STRONG (t=Ø.318)	24"	N/A
J	3'x8'	A	3½" X-STRONG (t=Ø.318)	24"	N/A
K	3'x10'	A	3½" X-STRONG (t=Ø.318)	24"	N/A
L	3'x12'	A	3½" X-STRONG (t=Ø.318)	24"	N/A
M	3'x16'	B	(2) - 3½" X-STRONG (t=Ø.318)	24"	24"
N	4'x4'	A	3½" X-STRONG (t=Ø.318)	24"	N/A
O	4'x5'	A	3½" X-STRONG (t=Ø.318)	24"	N/A
P	4'x6'	A	3½" X-STRONG (t=Ø.318)	24"	N/A
Q	4'x8'	A	3½" X-STRONG (t=Ø.318)	24"	N/A
R	4x12'	B	(2) - 3½" X-STRONG (t=Ø.318)	24"	12"
S	4x16'	B	(2) - 4" X-STRONG (t=Ø.337)	24"	33"
T	4x20'	B	(2) - 4" XX-STRONG (t=Ø.674)	30"	51"
U	5x6'	A	4" X-STRONG (t=Ø.337)	24"	N/A
V	5'x8'	A	4" XX-STRONG (t=Ø.674)	24"	N/A
W	5'x10'	B	(2) - 4" X-STRONG (t=Ø.337)	24"	12"
X	6'x6'	A	4" XX-STRONG (t=Ø.674)	24"	N/A
Y	6'x8'	A	4" XX-STRONG (t=Ø.674)	24"	N/A
Z	6'x12'	B	(2) - 4" XX-STRONG (t=Ø.674)	26"	21"

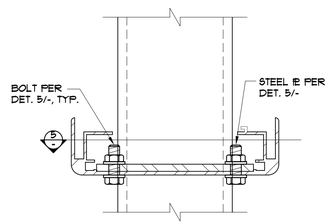
SIGN ELEVATION | 1



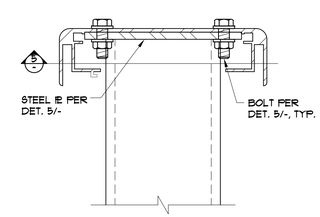
NOTE:
THE SPLICE DETAIL SHOWN REPRESENTS A TYPICAL SLEEVE SPLICE BELOW THE CABINET. THE DESIGN OF THIS SPLICE IS NOT PART OF THIS WORK. THE CONFIGURATION AND SIZES SHOWN ARE FOR REFERENCE ONLY. CASE SPECIFIC SIZING OF WELDS, PIPES AND PLATES SHALL BE DESIGNED BY A LICENSED ENGINEER.

GENERAL NOTES

TYPICAL SPLICE BELOW CABINET

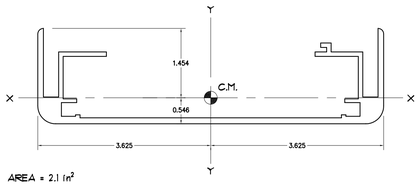


BOTTOM SADDLE DETAIL | 2



TOP SADDLE DETAIL | 3

PERIMETER EXTRUSION PROPERITIES:



AREA = 2.1 in^2

X-X AXIS
I_X = Ø.6915 in^4
$S_{X(TOP)}$ = Ø.6915 in^4 / 1.4544 in = Ø.475 in^3
$S_{X(BOT)}$ = Ø.6915 in^4 / Ø.5456in = 1.27 in^3
r_X = sqrt(Ø.6915 in^4 / 2.1 in^2) = Ø.574 in

Y-Y AXIS
I_Y = 16.2629 in^4
$S_{Y(LEFT)}$ = 16.2629 in^4 / 3.625 in = 4.486 in^3
$S_{Y(RIGHT)}$ = 16.2629 in^4 / 3.625in = 4.486 in^3
r_Y = sqrt(16.2629 in^4 / 2.1 in^2) = 2.78 in

ALLOWABLE STRESSES FOR 6063-T5 ALUMINUM PER 2005 ALUMINUM DESIGN MANNUAL, TABLE 2-23:

BENDING TENSION:

X-X AXIS: F_b = 12.5 ksi (SECTION 3.4.4)
Y-Y AXIS: F_b = 9.5 ksi (SECTION 3.4.2)

BENDING COMPRESSION:

X-X AXIS, FLANGES: (S_1 = 12, S_2 = 29) (SECTION 3.4.17)
b/t = 2 in / Ø.118 in = 16.9
F_b = 17.1-Ø.389(b/t) = 17.1-Ø.389(16.9)
F_b = 10.53 ksi

Y-Y AXIS, FLANGES: (S_1 = 8.1, S_2 = 16) (SECTION 3.4.15)
b/t = 2 in / Ø.118 in = 16.9
F_b = 11.8-Ø.266(b/t) = 11.8-Ø.266(16.9)
F_b = 7.3 ksi

Y-Y AXIS, WEB: (S_1 = 23, S_2 = 119) (SECTION 3.4.11)
L_b/r_Y = 120 in / 2.78 in = 43.2
F_b = 10.5-Ø.036(L_b/r_Y) = 10.5-Ø.036(43.2)
F_b = 8.94 ksi

EXTRUSION PROPERTIES

ASCE 7-05 WIND LOADS (WORST CASE)

WORST CASE ASPECT RATIO: 2'x12' SIGN

ALL UNITS LB, FT, PSF UNLESS NOTED OTHERWISE

6.5.14 $F = q_h * G * C_f * A_s$
6.5.10 $q_h = Ø.00256 * K_h * K_{zt} * K_d * V^2 * I$
K_{zt} = 1.Ø (UNLESS UNUSUAL LANDSCAPE) I = 1.Ø FOR STRUCTURAL CATEGORY II
K_h = TABLE 6-3 EXPOSURE C
K_d = Ø.85 FOR SIGNS I = 5Ø0 (CONSTANT FOR L_z TABLE 6.2)
V = 150 MPH α = Ø.2
6.5.8 G = Ø.925 ((1+1.7g_q*I_z*Q) / (1+1.7*g_v*I_z)) or Ø.85 c = Ø.2
I_z = c*(33/z$^{1/6}$)
z = max(Ø.6*h, z_{MIN})
z_{MIN} = 15 LOAD COMBINATION FACTOR = 1.Ø
g_v = 3.4
g_q = 3.4

Q = SQRT(1.Ø / (1+Ø.63*(B+h) / $L_z$$^{Ø.63}$))
L_z = l*(z/33)^{α}

Height	K_h	q_h	G	s/h	B/s	C_f	PRESSURE
0'-15'	Ø.85	41.62	Ø.85	Ø.Ø8	6.Ø	1.85	65.44
15'-20'	Ø.9Ø	44.Ø6	Ø.85	Ø.Ø8	6.Ø	1.85	69.29
20'-25'	Ø.94	46.Ø2	Ø.85	Ø.Ø8	6.Ø	1.85	72.37

CHECK 4x8 SIGN:

CHECK CABINET POLE (WORST CASE: 150 MPH @ 25' O.A.H.)

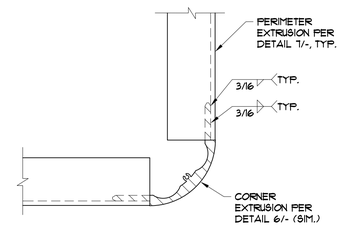
A_{SIGN} = 4' x 8' = 32 ft^2
WL = 32 ft^2 x 72.37 psf = 2316 lb
M_{WL} = 2316 lb x 2' = 4632 lb-ft
USE 3½" X-STRONG PIPE, t=Ø.318", Θ = 2.97 in^3
f_b = (4632 lb-ft x 12 in/ft) / 2.97 in^3 = 18715 psi
F_b = Ø.6 x 35000 psi = 21000 psi OK

CHECK PERIMETER EXTRUSION (WORST CASE: 150 MPH @ 25' O.A.H.)

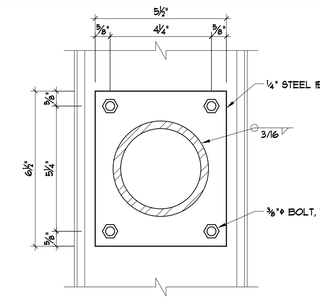
$L_{CANTILEVER}$ = 4'
$H_{TRIB.}$ = 2'
w_{WL} = 2' x 72.37 psf = 144.74 lb/ft
w_{DL} = 2' x 2.Ø0 psf + 3 lb/ft = 7 lb/ft
M_{WL} = 144.74 lb/ft x (4')^2 / 2 = 1158 lb-ft
M_{DL} = 7 lb/ft x (4')^2 / 2 = 56 lb-ft
f_{bY} = (1158 lb-ft x 12 in/ft) / 4.486 in^3 = 3098 psi
f_{bX} = (56 lb-ft x 12 in/ft) / Ø.475 in^3 = 1415 psi
UNITY CHECK: (f_{bY}/F_{bY}) + (f_{bX}/F_{bX})
(3098 psi / 7300 psi) + (1415 psi / 10530 psi) = Ø.56 < 1.Ø OK

NOTE:
THIS CALCULATION IS REPRESENTATIVE OF THE CALCULATIONS FOR EACH SIGN TYPE. EACH CASE HAS BEEN DESIGNED INDEPENDENTLY. IF REQUIRED, CONTACT STC TO RECEIVE A COPY OF CASE SPECIFIC CALCULATIONS.

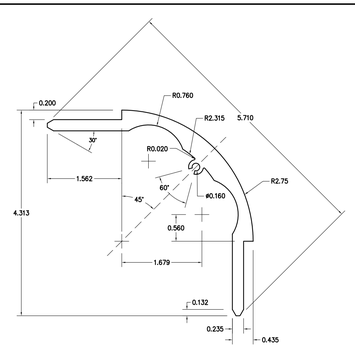
SAMPLE CALCULATION



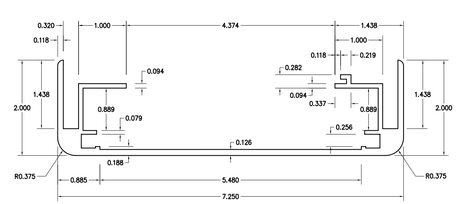
CORNER DETAIL | 4



TYPICAL SADDLE DETAIL | 5



CORNER EXTRUSION | 6



PERIMETER EXTRUSION | 7

REVISIONS	BY	DATE
	DH	05/03/11
	DH	03/31/11
	VH	01/21/08
	VH	06/20/07

STRUCTURAL TECHNOLOGY CONSULTANTS INCORPORATED
858.278.2400
7627 CONVOY COURT, SUITE 406 SAN DIEGO, CA 92111

SIGNTRONIX
1445 W. SEPULVEDA BLVD. TORRANCE CA. 90509
(310) 534-7500

SINGLE INTERNAL POLE

SIGN ELEVATION, EXTRUSIONS AND MISCELLANEOUS DETAILS

SIGN NAME
ADDRESS
CITY, STATE

DATE:	03-31-11
JOB No.	489-110.2
DESIGNED:	DAH
DRAWN BY:	DAH
APPROVED BY:	DJG

SHEET
5
5 OF 18