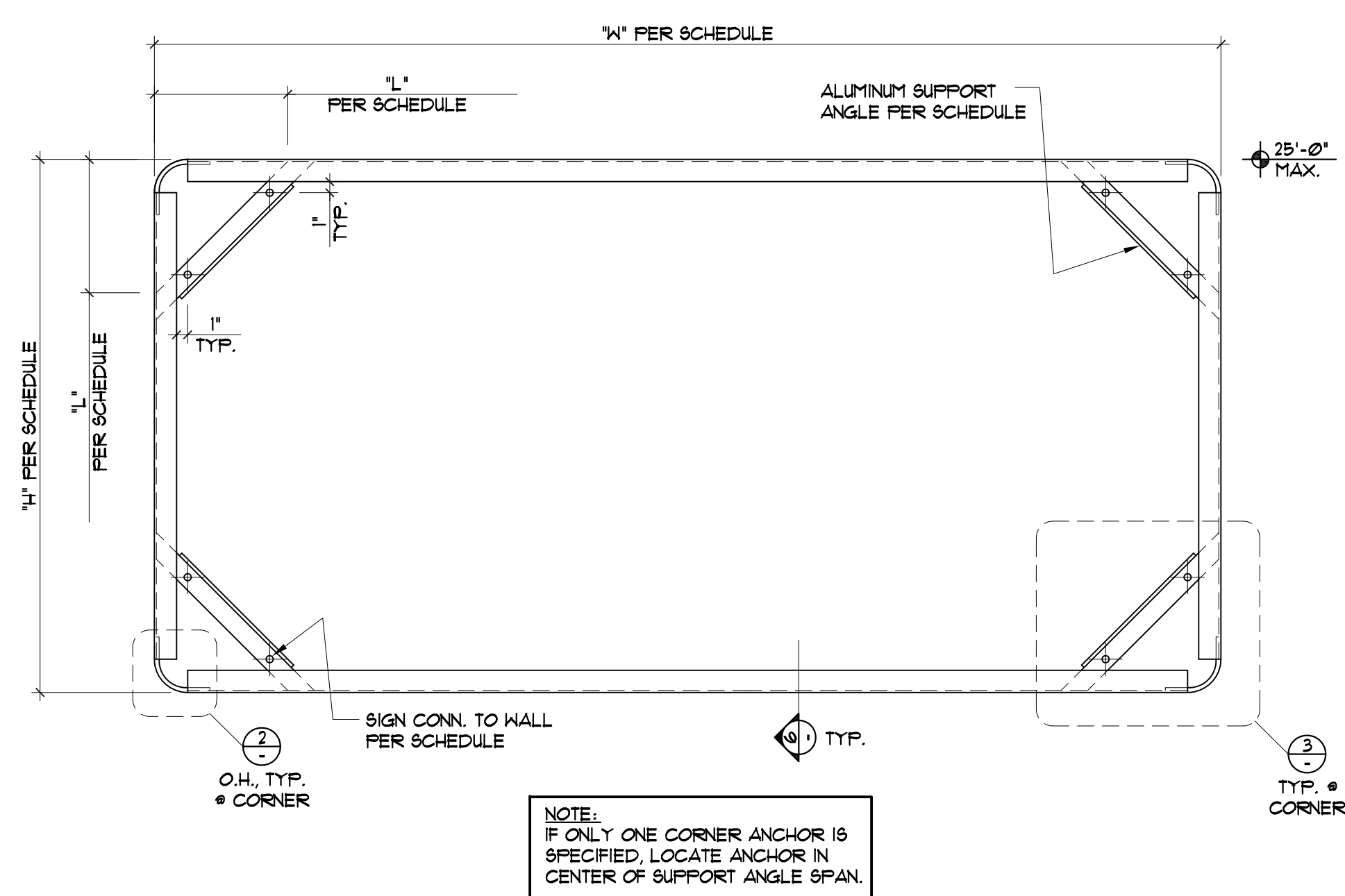


GENERAL NOTES AND SPECIFICATIONS:

- GOVERNING CODES:**
INTERNATIONAL BUILDING CODE 2009
INTERNATIONAL BUILDING CODE 2006
INTERNATIONAL BUILDING CODE 2003
CALIFORNIA BUILDING CODE 2010
FLORIDA BUILDING CODE 2001
- DESIGN LOADS:**
DEAD LOAD: $W_{t,extrusion} = 3 \text{ LB/FT}$
 $W_{t,sign} = 2.00 \text{ PSF}$
WIND LOAD: 150 MPH MAX. (3 SEC. GUST) EXPOSURE C
HEIGHT PRESSURE
0'-15' 63.44 PSF
15'-20' 69.23 PSF
20'-25' 72.31 PSF
- RESTRICTIONS:**
THE DESIGN LOADS ABOVE ARE BASED ON A HEIGHT ABOVE GROUND OF 25 FEET MAXIMUM.
THE EXISTING STRUCTURE AND ITS CAPACITY IS NOT A PART OF THIS SCOPE OF WORK.
- 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 MET 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.
- MATERIALS:**
A. ALL ALUMINUM MEMBERS GRADE 6061-T6 UNLESS NOTED OTHERWISE.
B. ALUMINUM EXTRUSIONS GRADE 6063-T5.
C. ROLLED STEEL ASTM A36.
D. PROVIDE ISOLATION OF DISSIMILAR MATERIALS FOR ALL ALUMINUM TO BE IN CONTACT WITH STEEL.
E. SIGN PANELS SHALL BE APPROVED BY UNDERWRITERS LABORATORY. USE ONLY APPROVED PLASTICS.
- ANCHORS:**
A. STAINLESS STEEL (S.S.) HILTI KB-TZ PER ESR-1919. SPECIAL INSPECTION REQUIRED.
B. STAINLESS STEEL (S.S.) HILTI KB3 PER ESR-1305. SPECIAL INSPECTION REQUIRED.
C. WALL ANCHORS SHALL BE LOCATED TO AVOID JOINTS IN WALL.
D. (E) CONCRETE DESIGN AS $f_c = 2500 \text{ PSI}$, MIN. SPECIAL INSPECTION NOT REQUIRED.
E. (E) MASONRY DESIGN AS $f_m = 1500 \text{ PSI}$, MIN. SOLID GROUT FILLED CMU. SPECIAL INSPECTION NOT REQUIRED.
- WORKMANSHIP:**
ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE LATEST EDITION OF THE GOVERNING CODE AND THE LOCAL BUILDING OFFICIAL.
- 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 D12 / D12H: 2008 STRUCTURAL ALUMINUM WELDING CODE.
- 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.
- ADDITIONAL ENGINEERING:**
SITE SPECIFIC CALCULATIONS CAN BE PROVIDED BY STRUCTURAL TECHNOLOGY CONSULTANTS. CONTACT STC AT (800) 601-8106.



SIGN SCHEDULE						
SIGN TYPE	SIGN SIZE (HxW)	L (INCHES)	ANGLE SIZE*	NO. OF ANCHORS** # EA. CORNER	ANCHOR INTO CONCRETE	ANCHOR INTO CMU
A	1'-6"x6'	6	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
B	1'-6"x8'	6	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
C	1'-6"x10'	6	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
D	1'-6"x12'	6	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
E	2'x6'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
F	2'x8'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
G	2'x10'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
H	2'x12'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
I	2'-8"x4'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
J	2'-8"x6'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
K	2'-8"x8'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
L	2'-8"x10'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
M	3'x4'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
N	3'x6'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
O	3'x8'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
P	3'x10'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
Q	3'x12'	8	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
R	4'x4'	12	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
S	4'x6'	12	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
T	4'x8'	12	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
U	4'x10'	12	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
V	4'x12'	12	L2x2x3/8	2	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
W	5'x6'	12	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
X	5'x8'	12	L2x2x3/8	2	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
Y	5'x10'	12	L2x2x3/8	2	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
Z	6'x6'	12	L2x2x3/8	1	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
AA	6'x8'	12	L2x2x3/8	2	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 2 1/2" MIN EMBED.
BB	6'x12'	20	L3x2x3/8	2	3/8" S.S. HILTI KB-TZ W/ 2" MIN EMBED.	3/8" S.S. HILTI KB3 W/ 3 1/2" MIN EMBED.

* ANGLE DESIGNATION: L (LEG TO BE INSERTED INTO EXTRUSION) x (2" LEG) x (THICKNESS) AS SHOWN IN DETAIL 4/-
** IF ONLY ONE CORNER ANCHOR IS SPECIFIED, LOCATE ANCHOR IN CENTER OF SUPPORT ANGLE SPAN.

SIGN ELEVATION AND SCHEDULE

ASCE 7-05 WIND LOADS (WORST CASE)

WORST CASE ASPECT RATIO: 1'-6"x12' SIGN

ALL UNITS LB, FT, PSF UNLESS NOTED OTHERWISE

6.5.14 $F = q_h K_d K_{zt} C_d$
6.5.10 $q_h = 0.00256 K_z K_{zt} K_d V^2 z^0.25$
 $K_d = 1.0$ (UNLESS UNUSUAL LANDSCAPE) $I = 1.0$ FOR STRUCTURAL CATEGORY II
 $K_z =$ TABLE 6-3 EXPOSURE C
 $K_{zt} = 0.85$ FOR SIGNS $I = 500$ (CONSTANT FOR L_z TABLE 6.2)
6.5.8 $G = 0.925 ((1.17 + 0.1z/Q) / (1.17 + 0.1z_0/Q))$ or 0.85 $c = 0.2$
 $I_z = c(33/z)^{1/6}$
 $z = \max(0.6z_h, z_{min})$ $z_{min} = 15$ $G = 0.2$
 $d_v = 3.4$ $d_s = 3.4$ **LOAD COMBINATION FACTOR = 1.0**

$Q = \sqrt{1.0 / (1.0 + 0.3(B/H) / L_z^{0.63})}$
 $L_z = 18z/33^0.63$

Height	K_z	q_h	G	s/h	B/s	C_d	PRESSURE
0'-15'	0.85	41.62	0.85	0.06	8.00	1.85	63.44
15'-20'	0.90	44.06	0.85	0.06	8.00	1.85	69.23
20'-25'	0.94	46.02	0.85	0.06	8.00	1.85	72.31

CHECK PERIMETER EXTRUSION (6x12 SIGN):

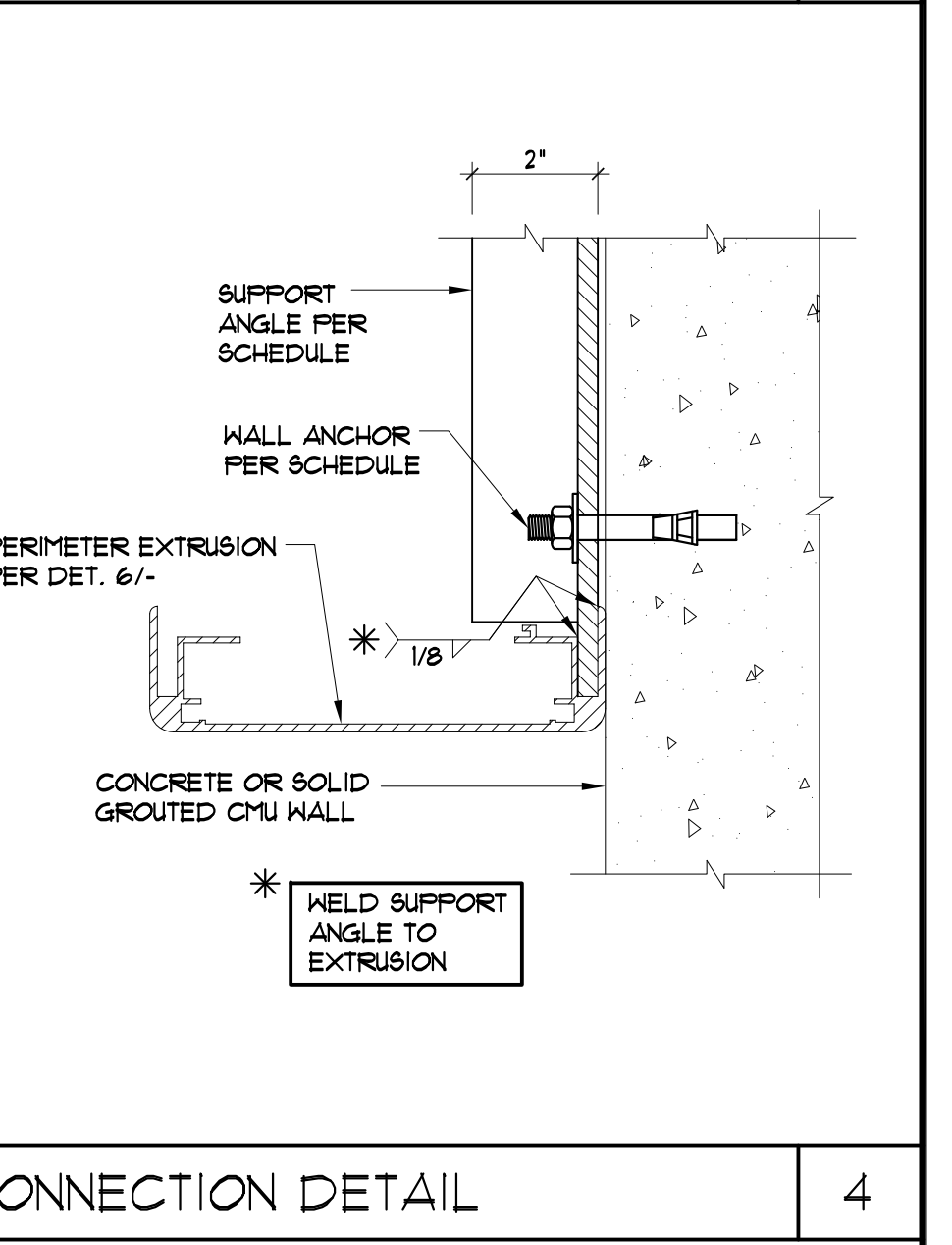
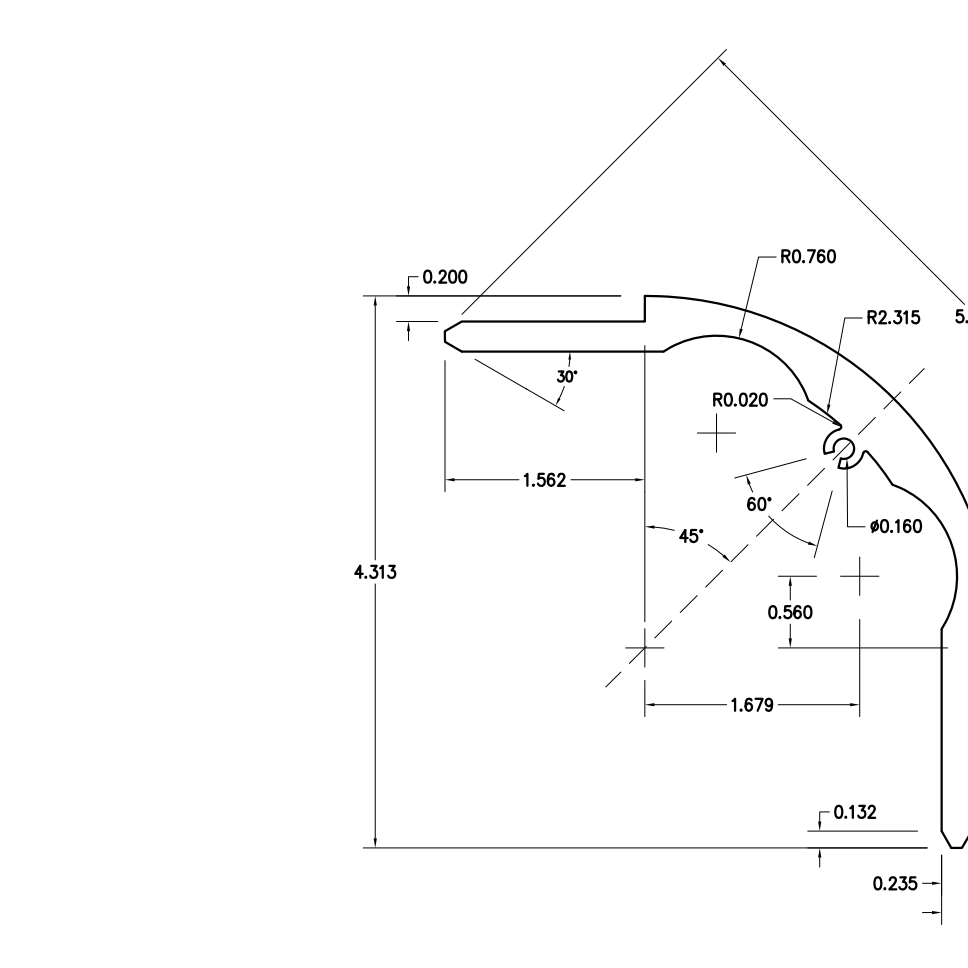
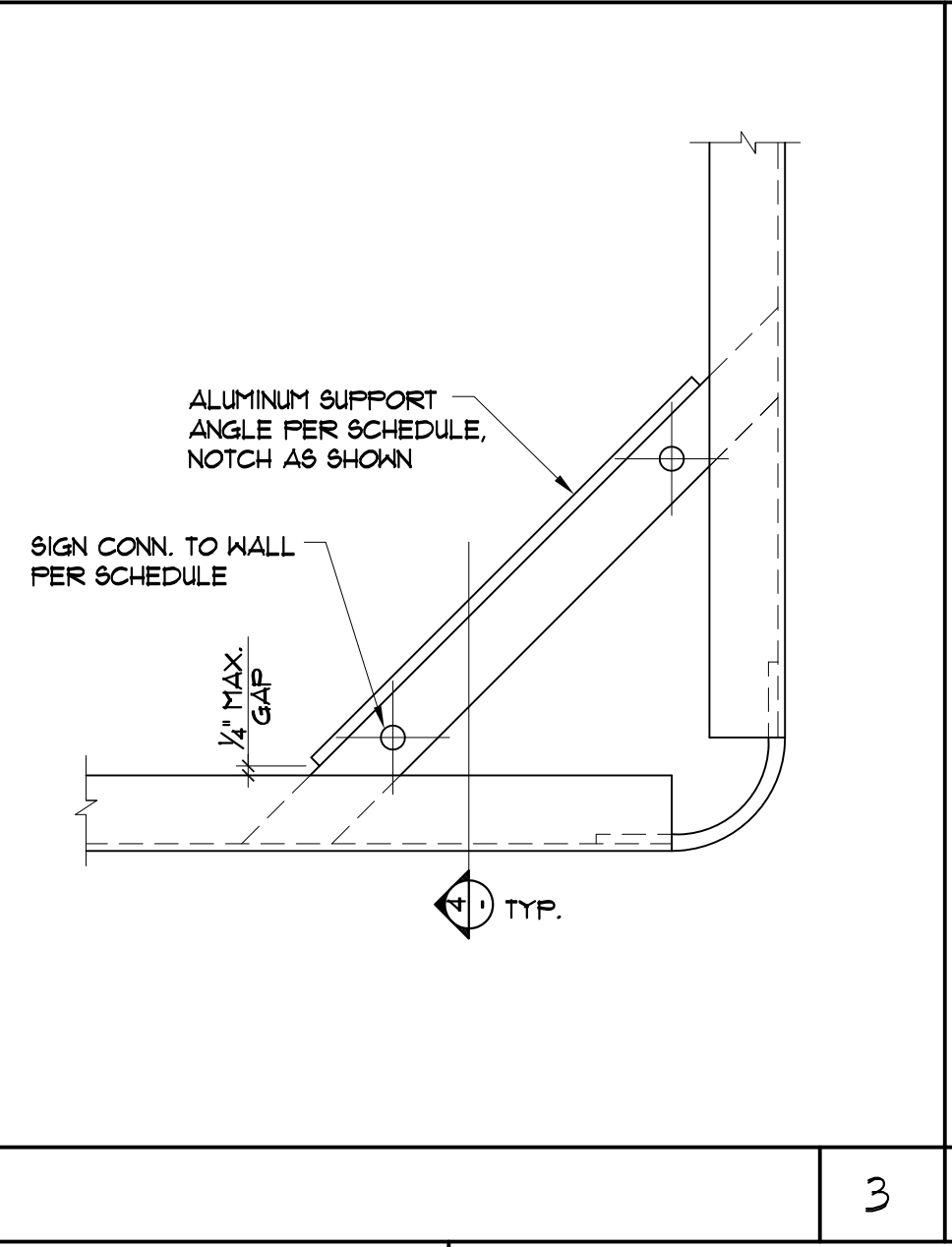
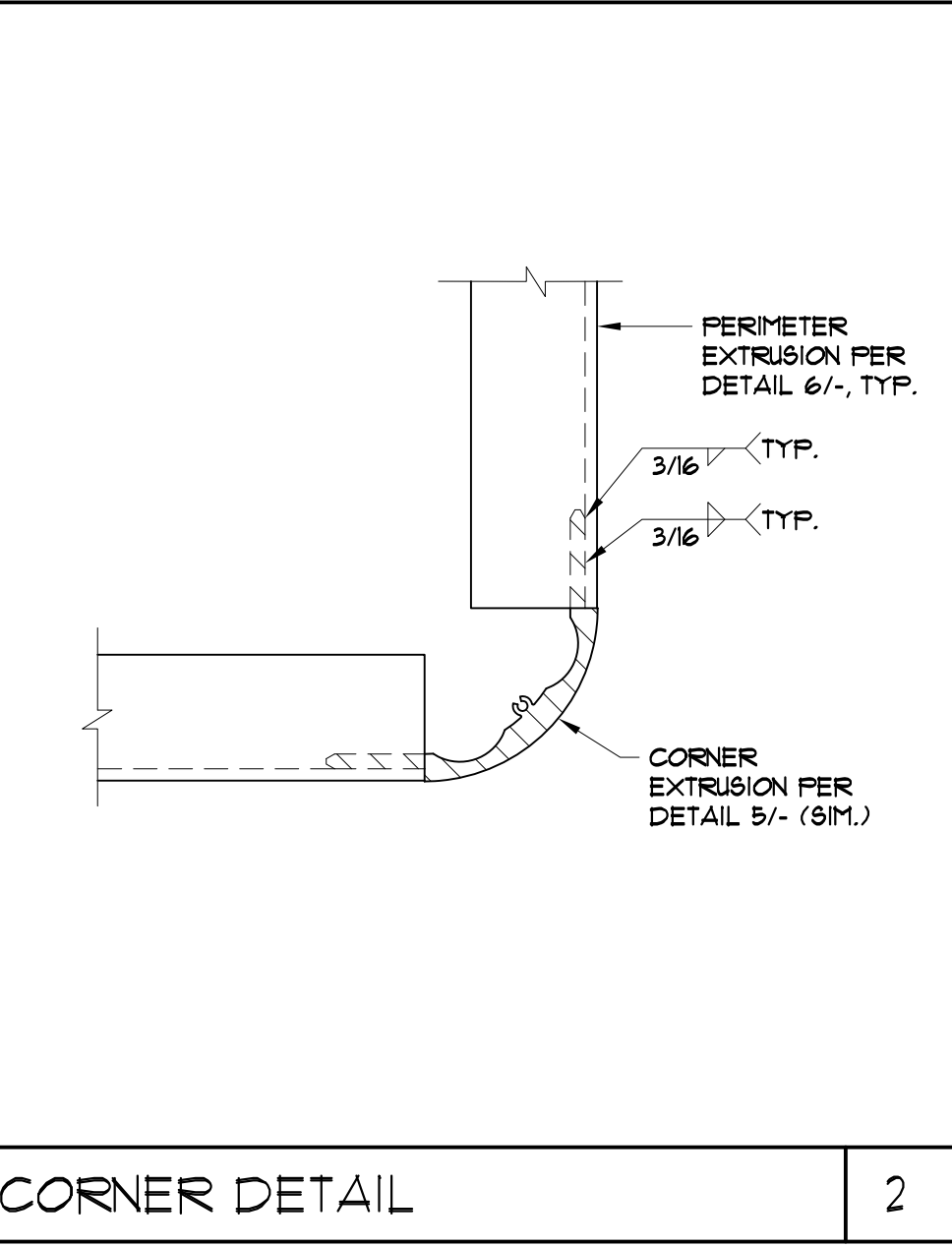
$L_{span} = 12' - (1.833' \times 2) = 8.33'$
 $H_{trans} = 3'$
 $w_{wk} = 3' \times 12.31 \text{ psf} = 217.11 \text{ lb/ft}$
 $w_{pl} = 3' \times 2.00 \text{ psf} + 3 \text{ lb/ft} = 9 \text{ lb/ft}$
 $M_{wk} = 217.11 \text{ lb/ft} \times (8.33')^2 / 8 = 1883 \text{ lb-ft}$
 $M_{pl} = 9 \text{ lb/ft} \times (8.33')^2 / 8 = 78 \text{ lb-ft}$
 $f_{wk} = (1883 \text{ lb-ft} \times 12 \text{ in/ft}) / (4.486 \text{ in}^3) = 5031 \text{ psi}$
 $f_{pl} = (78 \text{ lb-ft} \times 12 \text{ in/ft}) / (0.475 \text{ in}^3) = 1910 \text{ psi}$
UNITY CHECK: $(f_{wk}/F_{wk}) + (f_{pl}/F_{pl}) = (5031 \text{ psi} / 1300 \text{ psi}) + (1910 \text{ psi} / 10530 \text{ psi}) = 0.88 < 1.0$ OK

THE PERIMETER EXTRUSIONS FOR ALL OTHER SIGN SIZES SHOWN IN THE SIGN SCHEDULE WITH EQUAL OR LESSER UNSUPPORTED SPANS ARE OK BY COMPARISON.

CHECK WALL CONNECTION (6x12 SIGN):

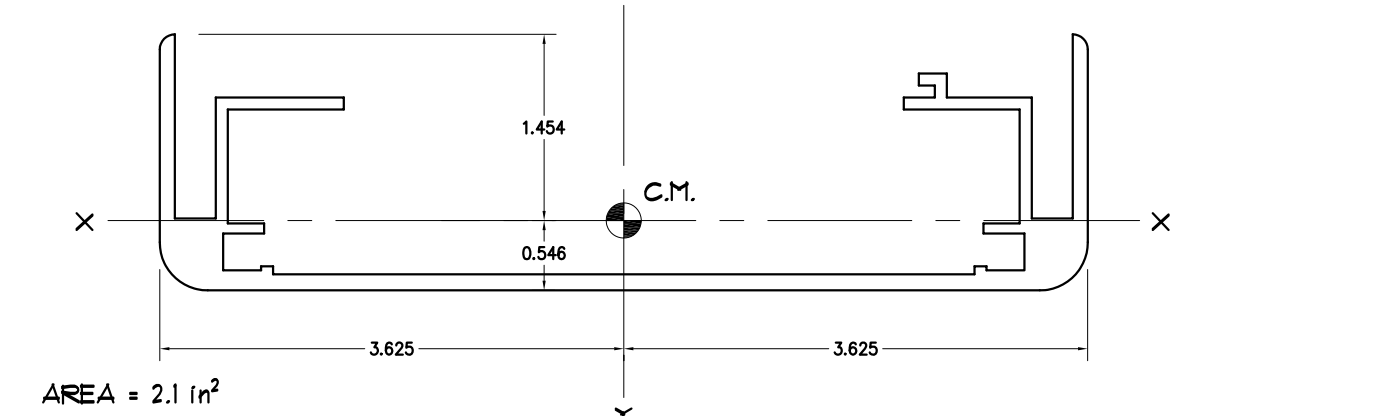
CHECK WALL ANCHOR
 $A_{reqd} = 6' \times 12' = 72 \text{ ft}^2$
 $M_U = 12 \text{ ft}^2 \times 12.31 \text{ psf} = 521 \text{ lb}$
 $D_U = 12 \text{ ft}^2 \times 2.00 \text{ psf} + 3 \text{ lb/ft} \times 36' = 252 \text{ lb}$
 $T_{max} = 521 \text{ lb} / 8 \text{ conn} = 65 \text{ lb/conn}$
 $V_{max} = 252 \text{ lb} / 8 \text{ conn} = 32 \text{ lb/conn}$
CONCRETE CONNECTION: USE 3/8" S.S. HILTI KB-TZ W/ 2" MIN. EMBED.
 $T_{allow} = 1066 \text{ lb}$ OK $V_{allow} = 2661 \text{ lb}$ OK (ESR-1917)
CMU CONNECTION: USE 1/2" S.S. HILTI KB3 W/ 3 1/2" MIN. EMBED.
 $T_{allow} = 124 \text{ lb}$ OK $V_{allow} = 840 \text{ lb}$ OK (ESR-1305)
CHECK L3x2x3/8" SUPPORT ANGLE (BENDING @ NOTCHED SECTION)
 $T_{max} = 651 \text{ lb}$
 $M_U = 651 \text{ lb} \times 1.25' = 814 \text{ lb-in}$
 $Z_{reqd} = (1.4 \times 3') \times (0.3125')^2 / 4 = 0.103 \text{ in}^3$
 $I_b = 814 \text{ lb-in} / 0.103 \text{ in}^3 = 7903 \text{ psi}$
 $F_b = 12000 \text{ psi}$ OK (6061-T6 ALUM. W. WELDED)

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.



GENERAL NOTES

PERIMETER EXTRUSION PROPERTIES:



AREA = 2.1 in²
X-X AXIS
 $I_x = 0.6915 \text{ in}^4$
 $S_{x(top)} = 0.6915 \text{ in}^3 / 1.454 \text{ in} = 0.475 \text{ in}^3$
 $S_{x(bot)} = 0.6915 \text{ in}^3 / 0.548 \text{ in} = 1.271 \text{ in}^3$
 $r_x = \sqrt{(0.6915 \text{ in}^4 / 2.1 \text{ in}^2)} = 0.574 \text{ in}$

Y-Y AXIS
 $I_y = 16.2629 \text{ in}^4$
 $S_{y(left)} = 16.2629 \text{ in}^3 / 3.625 \text{ in} = 4.486 \text{ in}^3$
 $S_{y(right)} = 16.2629 \text{ in}^3 / 3.625 \text{ in} = 4.486 \text{ in}^3$
 $r_y = \sqrt{(16.2629 \text{ in}^4 / 2.1 \text{ in}^2)} = 2.78 \text{ in}$

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

BENDING TENSION:
X-X AXIS: $F_b = 12.5 \text{ ksi}$ (SECTION 3.4.4)
Y-Y AXIS: $F_b = 9.5 \text{ ksi}$ (SECTION 3.4.2)

BENDING COMPRESSION:
X-X AXIS, FLANGES: $(S_1 = 12, S_2 = 29)$ (SECTION 3.4.17)
 $b/t = 2 \text{ in} / 0.118 \text{ in} = 16.9$
 $F_b = 17.1 - 0.389(b/t) = 17.1 - 0.389(16.9) = 10.53 \text{ ksi}$

Y-Y AXIS, FLANGES: $(S_1 = 8.1, S_2 = 16)$ (SECTION 3.4.15)
 $b/t = 2 \text{ in} / 0.118 \text{ in} = 16.9$
 $F_b = 11.8 - 0.266(b/t) = 11.8 - 0.266(16.9) = 7.3 \text{ ksi}$

Y-Y AXIS, WEB: $(S_1 = 23, S_2 = 119)$ (SECTION 3.4.11)
 $L_w/r_y = 120 \text{ in} / 2.78 \text{ in} = 43.2$
 $F_b = 10.5 - 0.036(L_w/r_y) = 10.5 - 0.036(43.2) = 8.94 \text{ ksi}$

EXTRUSION PROPERTIES

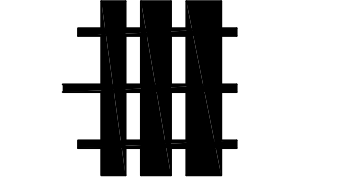
SAMPLE CALCULATION

CORNER EXTRUSION

PERIMETER EXTRUSION

REVISIONS	BY	DATE
	DH	04/26/11

STRUCTURAL TECHNOLOGY CONSULTANTS INCORPORATED
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SAN DIEGO, CA 92111
7827 CONVOY COURT, SUITE 406



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

WALL MOUNT SIGN
SIGN ELEVATION, EXTRUSIONS AND MISCELLANEOUS DETAILS

SIGN NAME
ADDRESS
CITY, STATE

DATE: 04-28-11
JOB NO.: 489-124
DESIGNED: DAH
DRAWN BY: DAH
APPROVED BY: DJG