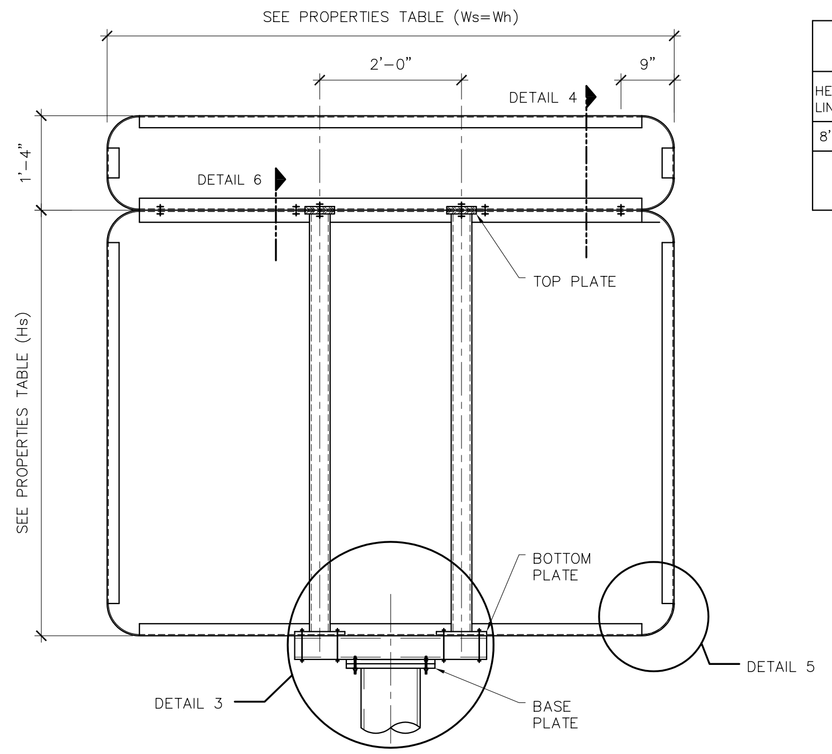
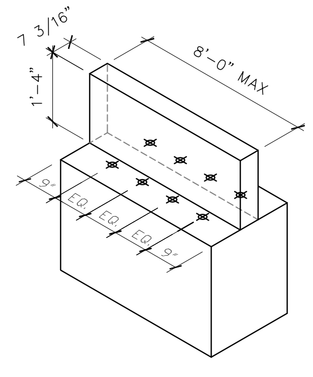
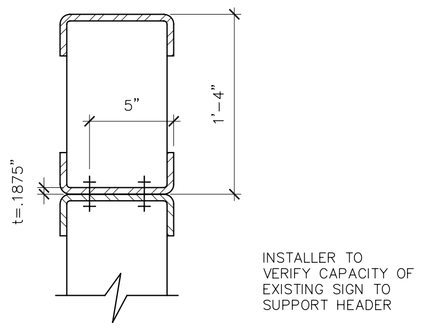


PROPERTIES SCHEDULE					
HEAD-LINER (Wh)	SIGN (Hs x Ws)	EXTRUSION	PIPE SIZE	TOP PLATE	BOTTOM PLATE
8'-0"	4'x8'	E	(2)-3" ø STD	PL 3/8"x 5"x 8½" W/ (4)-1/2"ø BOLTS	PL 1/2"x 5"x 8½" W/ (4)-5/8"ø BOLTS
	5'x8'	C	(2)-3" ø XS	PL 3/8"x 5"x 8½" W/ (4)-1/2"ø BOLTS	PL 5/8"x 5"x 8½" W/ (4)-5/8"ø BOLTS
	6'x8'	C	(2)-3 1/2" ø XS	PL 3/8"x 5"x 8½" W/ (4)-1/2"ø BOLTS	PL 1"x 5"x 8½" W/ (4)-3/4"ø BOLTS





INSTALLER TO VERIFY CAPACITY OF EXISTING SIGN TO SUPPORT HEADER

SIGN ELEVATION N.T.S. 1

GENERAL NOTES & SPECIFICATIONS

1. GOVERNING CODES:

SOUTH FLORIDA BUILDING CODE (ASCE 7-98)	120 MPH, EXP. C
SOUTHERN STANDARD BUILDING CODE	138 MPH
UNIFORM BUILDING CODE, 1997	124 MPH, EXP. C

2. DESIGN LOADS:

DEAD LOAD	6 LBS. PER SQ. FT.
WIND LOAD	66 LBS. PER SQ. FT.

3. RESTRICTIONS:

A. THE DESIGN LOADS ABOVE ARE BASED ON A HEIGHT ABOVE GROUND OF 25 FEET MAXIMUM.

4. LIMITATIONS:

THE DESIGN AND CONSTRUCTION OF THE SIGN SHOWN HEREON CONFORMS 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 SIGNED IN INK BY THE ENGINEER. THE METHOD OF ATTACHMENT TO SUPPORTS (POLES, WALLS, ETC.) IS NOT A PART OF THIS WORK AND MUST BE DESIGNED AND DETAILED BY OTHERS.

5. MATERIALS:

A. ALUMINUM -	ALLOY 6061-T6 OR 6005-T5
BOLTS -	TENSILE STRENGTH > 90KSI, ASTM F593
SIGN PANELS -	TO BE UNDERWRITERS LABORATORY APPROVED. USE ONLY APPROVED PLASTICS.
PLATE STEEL -	ASTM A572
PIPE -	ASTM A53, GRADE B
TUBE -	ASTM A500, GRADE B

B. PROVIDE ISOLATION OF DISSIMILAR MATERIALS.

6. WORKMANSHIP:

ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE GOVERNING CODE (LATEST EDITION) AND THE LOCAL BUILDING OFFICIAL. WELDING SHALL CONFORM TO ALL APLICABLE CODES. CERTIFIED WELDERS ARE REQUIRED.

7. WELD SPECIFICATIONS:

STEEL WELDING
ALL WELDING SHOULD BE PERFORMED BY CERTIFIED WELDERS. WELDS USING E70 ELECTRODES OR WIRES AND AWS APPROVED SYSTEMS AND PROCEDURES ARE ACCEPTABLE. PROVIDE PERIODIC SPECIAL INSPECTION FOR FIELD WELDING IN ACCORDANCE WITH UBC SECTION 1701.5.

ALUMINUM WELDING
ALL WELDING SHALL BE DONE IN ACCORDANCE WITH LATEST EDITION OF THE AMERICAN WELDING SOCIETY D1.2 STRUCTURAL WELDING CODE ALUMINUM.

6'x8' SIGN w/ 8' HEADLINER

POLE:
FORCE (SIGN) = 66 x 6 x 8 = 3168 LB
FORCE (H.L.) = 66 x 1.33 x 8 = 704 LB
FORCE (TOTAL) = 3872 LB
M = 3168 x 6/2 + 704 x (6 + 1.33/2) = 14200 FT-LB
S = 14200 x 12 / (1.33 x .6 x 36000) = 5.94 IN^3

USE (2) - 3 1/2"ø EXTRA STRONG PIPES

TOP PLATE (1 OF 2 PLATES):

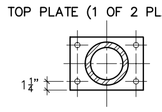


PLATE 3/8"x 5"x 8 1/2"

BOLT TENSION:
T = 235 x 12 / (.99 x 3.5) = 814 LB (4 BOLTS)

BOLT AREA:
A = 814 / (1.33 x 30000 x 2) = 0.011 IN^2

BOLTS (4)-1/2"ø S. S.

BOTTOM PLATE (1 OF 2 PLATES):

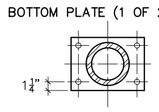


PLATE 1"x 5"x 8 1/2"

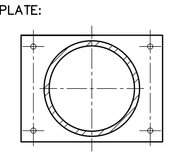
BOLT TENSION:
T = 7100 x 12 / (.99 x 3.5) = 24589 LB (4 BOLTS)

BOLT AREA:
A = 24589 / (1.33 x 30000 x 2) = 0.308 IN^2

BOLTS (4)-3/4"ø S. S.

CHECK TORSION:
M = 7.33 x 8 x 66 x 4 = 15490 FT-LB
CHECK TS 6x4x1/2:
fv = 15490 x 12 / (2 x 5.5 x 3.5 x .5) = 9657 PSI
Fb = 46000 x 1.33 x 0.4 = 24472 > 9657 O.K.

BASE PLATE:



DETAIL 7

8' x 1'-4" HEADER SIGN

WIND:
W = 66 x 8 x1.33 = 704 LB

TOTAL MOMENT:
M = 704 x 0.667 x 12 = 5632 IN.-LB

MOMENT PER INCH:
M(1) = 5632 IN-LB / 96 IN. = 58.7 IN-LB /IN.

MOMENT PER BOLT:
M(b) = 58.7 IN-LB/IN. x 26 IN. = 1527 IN-LB

TENSION IN BOLT:
1527 IN-LB / 5.0 IN. = 306 LB

SHEAR IN 1 BOLT:
P(s) =704 LB / 2 x 5 = 70.4 LB

USE 5/8" ø S.S. BOLTS

CHECK EXTRUSION BENDING:
M = P(s) x 16" = 304 LB x 16" = 4864 IN-LB

SECTION MODULUS S = 0.490 IN^3
f(b) = M/S = 9930 PSI < 28000 PSI O.K.

5'x8' SIGN w/ 8' HEADLINER

POLE:
FORCE (TOTAL) = 3344 LB
M = 10590 FT-LB
S = 4.43 IN^3

USE (2) - 3"ø EXTRA STRONG PIPES

TOP PLATE:

PLATE 3/8"x 5"x 8 1/2"

BOTTOM PLATE:

PLATE 5/8"x 5"x 8 1/2"

BOLT TENSION:
T = 5295 x 12 / (.99 x 3.5) = 18338 LB (4 BOLTS)

BOLT AREA:
A = 18338 / (1.33 x 30000 x 2) = 0.230 IN^2

BOLTS (4)-5/8"ø S. S.

CHECK TORSION:
M = 6.33 x 8 x 66 x 3.5 = 11704 FT-LB
CHECK TS 6x4x1/2:
fv = 11704 x 12 / (2 x 5.5 x 3.5 x .5) = 7296 PSI
Fb = 46000 x 1.33 x 0.4 = 24472 > 7296 O.K.

BASE PLATE:

PLATE 3/4"x 15"x 1'-0"

4'x8' SIGN w/ 8' HEADLINER

POLE:
FORCE (TOTAL) = 2816 LB
M = 7510 FT-LB
S = 3.14 IN^3

USE (2) - 3"ø STANDARD PIPES

TOP PLATE:

PLATE 3/8"x 5"x 8 1/2"

BOTTOM PLATE:

PLATE 1/2"x 5"x 8 1/2"

BOLT TENSION:
T = 3755 x 12 / (.99 x 3.5) = 13005 LB (4 BOLTS)

BOLT AREA:
A = 13005 / (1.33 x 30000 x 2) = 0.163 IN^2

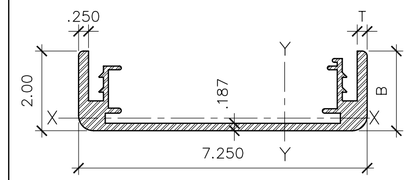
BOLTS (4)-5/8"ø S. S.

CHECK TORSION:
M = 5.33 x 8 x 66 x 3 = 8443 FT-LB
CHECK TS 6x4x1/2:
fv = 8443 x 12 / (2 x 5.5 x 3.5 x .5) = 5264 PSI
Fb = 46000 x 1.33 x 0.4 = 24472 > 5264 O.K.

BASE PLATE:

PLATE 3/4"x 15"x 1'-0"

EXTRUSION "C"



X-X AXIS
A = 2.50
I = 1.03
S = 1.845 BOTTOM
S = 0.630 TOP

Y-Y AXIS
A = 2.50
I = 18.23
S = 5.028 LEFT
S = 5.028 RIGHT

ALLOWABLE STRESSES:

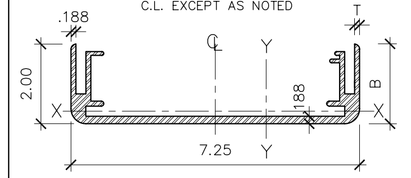
BENDING TENSION:
X-X AXIS
Fb = 28 KSI
Y-Y AXIS
Fb = 19 KSI

BENDING COMPRESSION:
X-X AXIS
FLANGES:
b/t = 2.00 / .250 = 8.0 < 9.8
Fb = 28 KSI

Y-Y AXIS
FLANGES:
b / t = 2.00 / .250 = 8.0
Fb = 27.3 - 0.93 b / t = 19.9 KSI
WEB:
Lb / ry = $\frac{12 \times 12}{2.78}$ = 51.86
Fb = 23.9 - 0.124 $\frac{Lb}{ry}$ = 17.5 KSI

EXTRUSION "E"

SYMMETRICAL ABOUT C.L. EXCEPT AS NOTED



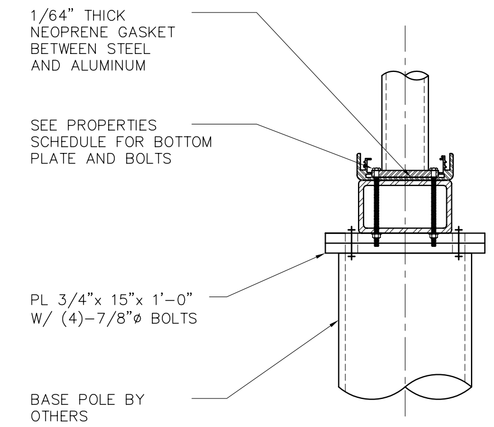
X-X AXIS
A = 2.50
I = 0.83
S = 1.728 BOTTOM
S = 0.490 TOP

Y-Y AXIS
A = 2.50
I = 15.43
S = 4.239 LEFT
S = 4.239 RIGHT

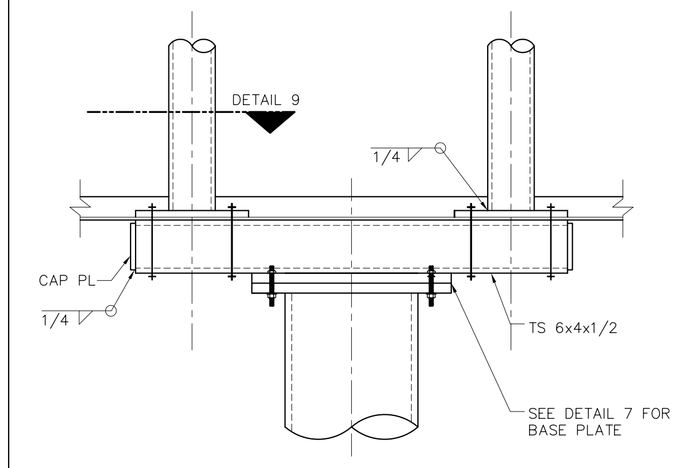
ALLOWABLE STRESSES:

BENDING TENSION:
X-X AXIS
Fb = 28 KSI
Y-Y AXIS
Fb = 19 KSI

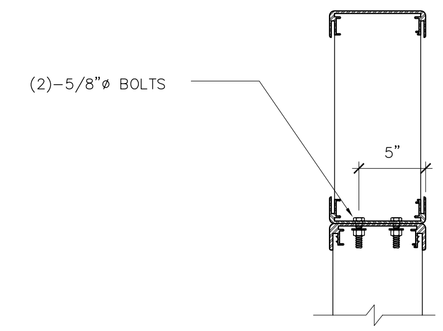
BENDING COMPRESSION:
X-X AXIS
FLANGES:
b/t = 2.00 / .1875 = 10.67
Fb = 40.5 - 1.41 b / t = 25.46 KSI
Y-Y AXIS
FLANGES:
b / t = 2.00 / .1875 = 10.67
Fb = 27.3 - 0.93 b / t = 17.4 KSI
WEB:
Lb / ry = $\frac{8 \times 12}{2.701}$ = 35.6
Fb = 23.9 - 0.124 $\frac{Lb}{ry}$ = 19.5 KSI



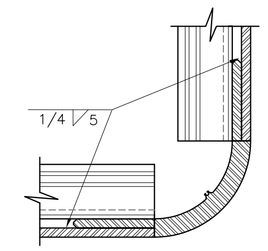
SECTION AT SIGN BOTTOM SCALE: 1½"=1'-0" 2



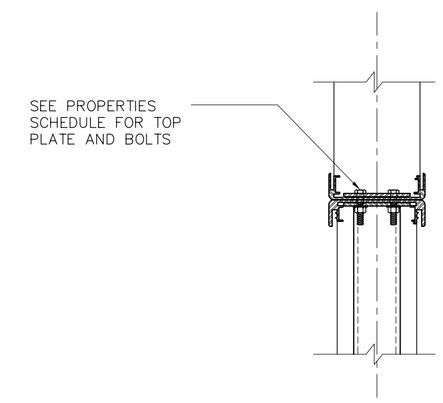
CONN. AT SIGN BOTTOM SCALE: 1½"=1'-0" 3



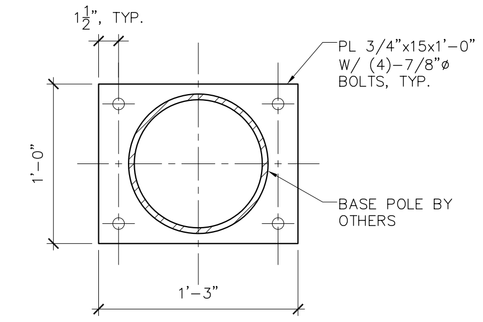
CONNECTION AT HEADLINER SCALE: 1½"=1'-0" 4



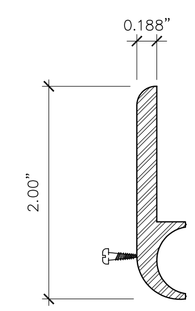
CORNER DETAIL SCALE: N.T.S. 5



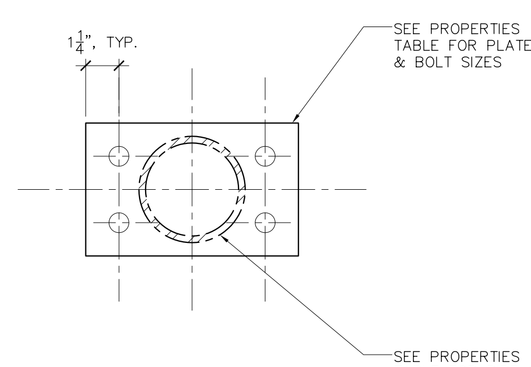
CONNECTION AT HEADLINER SCALE: 1½"=1'-0" 6



BASE PLATE, TYP. SCALE: 1½"=1'-0" 7



EXTRUSION "D" SCALE: 1"=1" 8



BOTTOM PLATE SCALE: 3"=1'-0" 9

REVISIONS	BY	DATE

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CONSULTANTS INCORPORATED
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SAN DIEGO, CA 92103

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

4x8, 5x8, 6x8
SIGN + HEADLINER

DATE:	
JOB No.	489
DESIGNED:	WTN
DRAWN BY:	TD
APPROVED BY:	WTN

SHEET 11 OF 15