

# STRUCTURAL CALCULATIONS

For

LA PUENTE ACTIVITY CENTER

*Prepared For:*

WESTBERG + WHITE, Inc.

*Prepared By:*

MOBAYED CONSULTING GROUP

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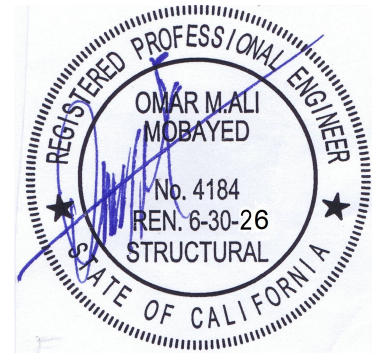
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**PROJECT NO.:** 23007-1.10

**DATE ISSUED:** 10/15/2025

**REVISION DATES:**





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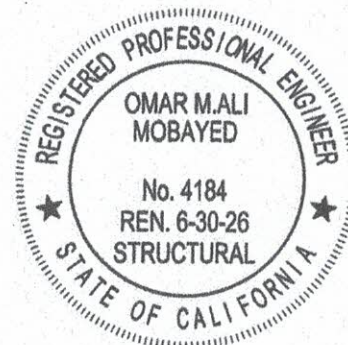
PROJECT LA PUENTE ACTIVITY CENTER  
SHEET No. \_\_\_\_\_ INDEX \_\_\_\_\_ OF \_\_\_\_\_  
CHECKED BY \_\_\_\_\_ O.M. \_\_\_\_\_ DATE 4/2025  
DRAWN BY \_\_\_\_\_ SCALE \_\_\_\_\_  
MCG PROJECT No. \_\_\_\_\_

**STRUCTURAL CALCULATIONS FOR:**

MCG # 23007

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**DESIGN CRITERIA**

- GOVERNING CODES: 2022 CBC  
2019 ACI-318  
15TH EDITION AISC
- SEISMIC DESIGN CATEGORY: "D"
- MAXIMUM SOIL BEARING: 2000 PSF
- MATERIAL AND DESIGN STRESSES:  
CONCRETE  $F'_c$  = 3000 PSI; STEEL REINFORCING  $F_y$  = 60 KSI  
STRUCTURAL STEEL  $F_y$  = 60 KSI  
BOLTED CONNECTION A307/H5  
MASONRY BLOCK  $F'_m$  = \_\_\_\_\_ PSI; STEEL REINFORCING  $F_y$  = \_\_\_\_\_ KSI  
SPECIAL INSPECTION: YES OR NO  
G.L.B. COMBINATION \_\_\_\_\_

**BASIC LIVE LOADS:**

ROOF: 20 PSF  
FLOORS: \_\_\_\_\_ PSF  
ATTICS: \_\_\_\_\_ PSF  
SPECIAL: \_\_\_\_\_ PSF





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JOB LA PUENTE ACTIVITY CENTER  
SHEET NO. D.1 OF \_\_\_\_\_  
CALCULATED BY OM DATE 4/2025  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
SCALE \_\_\_\_\_

## DESIGN LOADS:

### ROOF

ROOFING	2.5 psf
PLYWOOD/SHEATHING	2.0 psf
FRAMING	3.2 psf
RIGID INSULATION / GYP BD IF ANY	2.5 psf
DROP CLG.	1.8 psf
MPE	1.5 psf
MISL	1.5 psf
<hr/>	
TOTAL DL	15 psf
LL	20 psf REDUCIBLE

### EXT. WALLS:

EXT. WALLS	15 psf
INT. WALLS	8 psf

### FUTURE SOLAR PANELS ADDITION

ADD 5 psf TO ACCOUNT  
FOR FUTURE DL



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PROJECT LA PUENTE ACTIVITY CENTER  
SHEET No. D.2 OF \_\_\_\_\_  
CHECKED BY O.M. DATE 05/10/23  
DRAWN BY S.M. SCALE \_\_\_\_\_  
MCG PROJECT No. 23007

## DESIGN LOADS, CONT.

Seismic  
(per CBC 2022)

$$V = C_s W_d \quad \text{where:} \quad C_s = \frac{S_{Ds} I}{R} = \frac{1.163 \times 1.0}{6.5} = 0.18 \quad \dots \dots \text{GOVERNS}$$

$$\text{Max.} \quad C_s = \frac{S_{D1} I}{R T} = \frac{0.71 \times 1.0}{6.5 \times 0.189} = 0.377 > 0.127 \quad \dots \dots \text{N/A}$$

$$(T_s = C_t h^x = 0.02 \times 20^{0.75} = 0.19 < T_L = 0.8)$$

$$\text{Min.} \quad C_s = \underset{\text{MIN.}}{0.01} < 0.18 \quad (\text{see abv.}) \quad \dots \dots (\text{does not gov.})$$

$$\text{or} \quad C_s = \frac{0.5 S_{D1}}{R/I} \quad \dots \dots (\text{for structures where } S_1 \geq 0.6, S_1 = 0.625)$$

$$= \frac{0.5 \times 1.063}{6.5/1.0} = 0.08 < 0.18$$

$$S_{D1} = \frac{2}{3} S_M = 0.67 \times 1.063 = 0.71, \quad S_{Ds} = 1.163, \quad S_1 = \frac{S_M}{F_v} = 0.625, \quad S_s = \frac{S_{Ms}}{F_s} = 1.745, \quad S_{Ms} = 1.745$$

$$S_M = F_v S_1 = 1.7 \times 0.625 = 1.06, \quad F_v = 1.7 \dots (\text{PER SOILS REPORT}), \quad F_s = 1.0, \quad T_s = \frac{S_{D1}}{S_{Ds}} = \frac{1.063}{1.163} = 0.914$$

PER SOILS REPORT. SITE CLASS = D.  $R = 6.5$  (PLYWOOD SHEAR PANELS)

$$\boxed{1.5 T_s} = 1.5 \times 0.914$$

$$\boxed{\text{ASCE 7-16}} = 1.37$$

$$\boxed{11.4.8} > T = T_s = 0.189$$

$$\boxed{\text{exception (2)}}$$

$$\text{thus } C_s = \frac{S_{Ds}}{R/I}$$

$$V_{\text{strength}} = 0.18 W_d \quad \dots \dots \text{Plywood shear panels}$$

$$V_{\text{ASD}} = \boxed{0.13 W_d} \quad \dots \dots \text{Plywood shear panels}$$





## DESIGN LOADS, CONT.

Wind, Exp. C  
(per CBC 2022)

Frequency =  $1/T = \frac{1}{0.189} = 5.2 > 1.0$  . . . . . (not flexible. For T see seismic calculation above)

$P_{net} = 0.00256 V^2 k_z C_{net} k_{zt}$ , where:

- =  $0.00256 \times 85^2 \times 0.85 \times 0.94 \times 1.0$
- = 14.8 psf 0' to 15' (ASD)
- = 15.65 psf 15.1' to 20' (ASD)

$V = 110 \text{ mph} (= 85 \text{ mph, ASD})$

$k_{zt} = 1.0$

$k_z = 0.85$  (up to 15' high and exp. C)

$k_z = 0.9$  (15.1' to 20' high and exp. C)

$C = 0.51$  (leeward)

$C = 0.43$  (windward)

$C_{net} = 0.94$  (net)

exp. C

$$110 \sqrt{0.6} = 85$$

## Components and Cladding

$P_{net} = 0.00256 V^2 k_z C_{net} k_{zt}$ , where:  $C_{net} = -1.09$  (zone 4, 10 sq ft or less, 0' to 25', h ≤ 60')

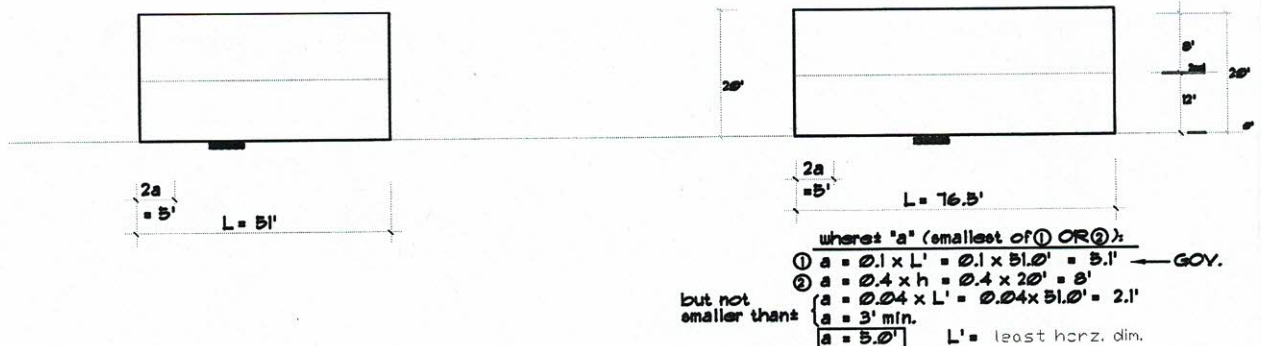
$C_{net} = -1.34$  (zone 5, 10 sq ft or less, 0' to 25', h ≤ 60')

$$= 0.00256 \times 85^2 \times 0.94 \times 1.09 \times 1.0$$

$$= \text{19 psf (ASD) . . . . . (zone 4, 10 sq ft or less, 0' to 25')}$$

$$= 0.00256 \times 85^2 \times 0.94 \times 1.34 \times 1.0$$

$$= \text{23.3 psf (ASD) . . . . . (zone 5, 10 sq ft or less, 0' to 25')}$$



RB-2

RB-1

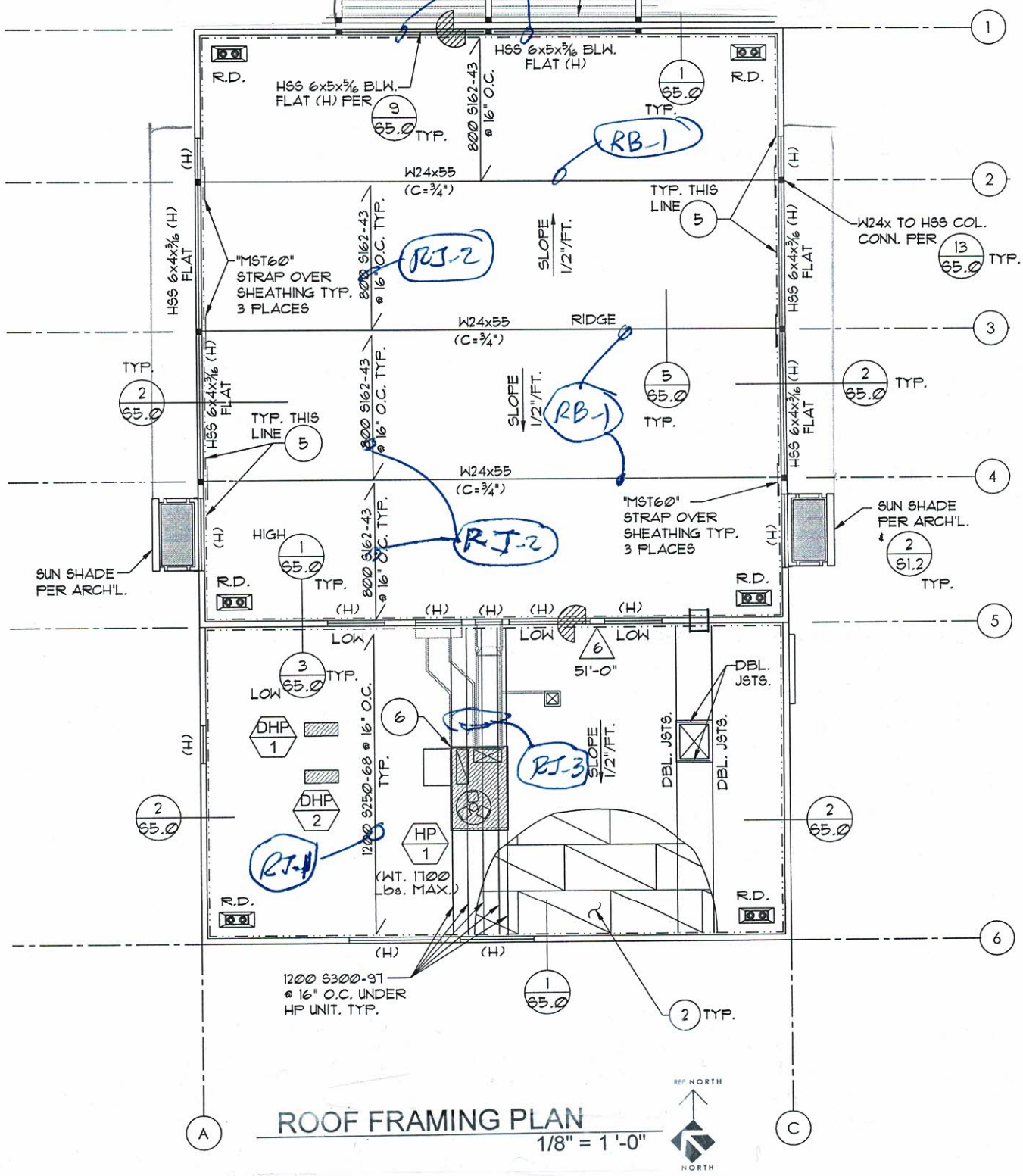
PI-2

RB-1

RJ-2

BJ-3 SLO 1/2"

RT-4



ROOF FRAMING PLAN

$$1/8'' = 1' - 0''$$




D.5/

(binder material) to be relatively impermeable and result in a stable subgrade when compacted. The imported materials should also be non-expansive, with an EI less than 35 and free of organic materials, debris, and cobbles larger than 3 inches, with no more than 25 percent of materials being larger than 2 inches in size and no more than 25 percent passing #200 sieve. Within the upper 2 feet of fills and utility trench backfills, the materials should be free of particles greater than 2 inches in size. A bulk sample of potential import material, weighing at least 30 pounds, should be submitted to the Geotechnical Consultant at least 48 hours before filling operations. The Geotechnical Consultant should approve all proposed import materials before being placed at the site.

### 6.3. SEISMIC DESIGN PARAMETERS

The site class per Section 1613.2.2 of the CBC 2019 is based on soil conditions. It is our opinion that Site Class D is most consistent with the subject site soil conditions. For the design of the structures based on the seismic provisions of the CBC 2019, we recommend the parameters in the following Table 1.

Table 1. Seismic Design Parameters

Seismic Item	Value	CBC Reference
Site Class	D	Section 1613.2.2
F <sub>a</sub>	1.0	Table 1613.2.3(1)
S <sub>s</sub>	1.745	Figure 1613.2.1(1)
S <sub>MS</sub>	1.745	Section 1613.2.3
S <sub>DS</sub>	1.163	Section 1613.2.4
F <sub>v</sub>	1.7	Table 1613.2.3(2)
S <sub>1</sub>	0.625	Figure 1613.2.1(2)
S <sub>M1</sub>	1.063	Section 1613.2.3
S <sub>D1</sub>	0.709	Section 1613.2.4

Site Coordinates: Latitude: 34.0266° N Longitude: 117.9520° W

### 6.4. FOUNDATION RECOMMENDATION

The proposed structure may be supported on shallow foundations. The spread and strip footings should be at least 24 and 18 inches wide, respectively, and embedded at least 18 inches below the





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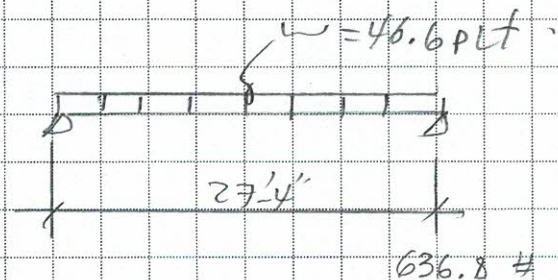
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JOB LA PUENTE ACTIVITY CENTERSHEET NO. R1 OF       CALCULATED BY DM DATE       CHECKED BY        DATE       SCALE       RI.1

SPAN 27'4"

$$W = (15 + 20) (133) \\ = 46.6 \text{ PLT}$$

$$M = 4350 \text{ \#} \\ = 52.2 \text{ K}$$



try 1200 S250-68 @ 16" o.c.  
(50 KS, steel)

$$M_R = 96.04 \text{ K} > 52.2 \text{ K} \quad \text{OK}$$

$$I_R = 23.6 \text{ in}^4$$

$$\Delta = \frac{20.2}{23.6} = 0.86" = \frac{L}{398} \quad \text{OK}$$

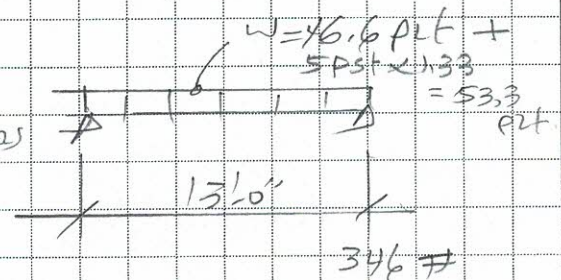
14 GA (4.3 PLT)  
USE 1200 S250-68 @ 16" o.c.

RI.2

SPAN 13'0"

W = 46.6 PLT see above  
PWS 5' OF FUTURE SOLAR PANELS

$$M = 1126 \text{ \#} \\ = 13.5 \text{ K}$$



try 800 S162-33 @ 16" o.c.  
(33 KS, steel)

$$M_R = 14.03 \text{ K} > 13.5 \text{ K}$$

$$I_R = 3.38 \text{ in}^4$$

$$\Delta = \frac{1.17}{3.38} = 0.34" \quad \text{Small!}$$

20 GA (1.4 PLT)  
USE 800 S162-33 @ 16" o.c.

PER PLAN USE  
18 GA JOISTS





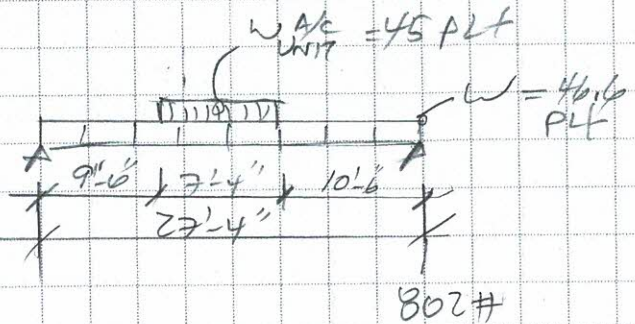
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RT-3

Span 27'-4"

$W = 46.6 \text{ PLF (see RT-1)}$   
 $W_{A/C} = 33 \text{ psf (1.33)} = 45 \text{ PLF}$   
 UNIF



SEE PAGE 55-1  
 UNIFORM UNIF  
 $M = 4352 \text{ #} + 2,253.7 \text{ #}$   
 $= 6,605.7 \text{ #}$   
 $= 79,268 \text{ #}$

USE DBL 1200 S250-68 @ 16" o.c.

$M_R = 90.04 \text{ K} \times 2 >> 79.3 \text{ K OK}$

$I_R = 23,614 \times 2 = 47,214$

UNIFORM A/C  
 $\Delta = \frac{20.2}{47.2} + \frac{8.35}{47.2} = 0.61" = \frac{L}{542} \text{ OK}$

ALTERNATE:

126A  
 try 1200 S300-97 @ 16" o.c. below A/C

$M_R = 141 \text{ K} >> 79.3 \text{ K}$

$I_R = 37.1 \times 10^4$

$\Delta = \frac{0.61 \times 47.2}{37.1} = 0.77" = \frac{L}{422} \text{ OK}$

USE 1200 S300-97 @ 16" o.c.



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SHEET NO. F3 OF         
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RB-1

SPAN 50.5'

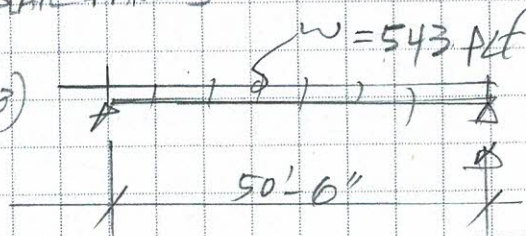
FUTURE  
SPAN PANELS

$$W = \overset{DL}{(15 + 16)} \overset{L}{\left(\frac{26}{2}\right)} + \overset{BM}{75} + 5 \text{ psf}(13)$$

$$= 478 \text{ PLF} + 65$$

$$= 543 \text{ PLF}$$

$$M = 173 \text{ K}$$



13.7 KIP

Try W24X50

$$M_R = 260 \text{ K} > 173 \text{ K} \quad \text{O.K.}$$

$$I_A = 984 \text{ in}^4$$

$$\Delta_{TL} = \frac{3,739}{984} = 2.78" = \frac{L}{217} \quad \text{H/OT DEFLEC.}$$

Try W24X55

$$M_R = 314 \text{ K} >> 173 \text{ K}$$

$$I_A = 1350 \text{ in}^4$$

$$\Delta = \frac{2739}{1350} = 2.0" < \begin{matrix} \Delta_{DL} = 1.0" \\ \Delta_{LL} = 1.0" \\ < 0.75" \text{ camber} \end{matrix}$$

$$\text{ACTUAL TOTAL DEFLECTION} = 1.25" = \frac{L}{484} \quad \text{O.K.}$$

USE W24X55  
w/ Camber UP 3/4"



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JOB \_\_\_\_\_

SHEET NO. \_\_\_\_\_

OF \_\_\_\_\_

CALCULATED BY \_\_\_\_\_

DATE \_\_\_\_\_

CHECKED BY \_\_\_\_\_

DATE \_\_\_\_\_

SCALE \_\_\_\_\_

RB-2

Span 13'-0"

Roof Load

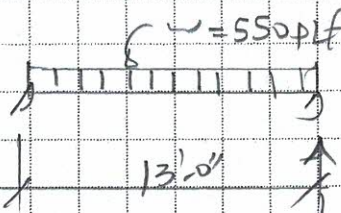
Snow Load

FOLDING  
DOOR

$$W = (15 + 20) \frac{13}{2} + 15 \times 15.5 + 10 \times 7$$

$$= 530 \text{ PLF}$$

SAY 550 PLF



$$M = 11,619 \text{ #'}^2$$

$$3575 \text{ #}$$

$$S_{req'd} = 5.4 \text{ in}^3 \quad \text{small}$$

per plan use 5/16

USE HSS 6x5x1/4 FLAT

$$S_{provided} = 18.2 \text{ in}^3$$

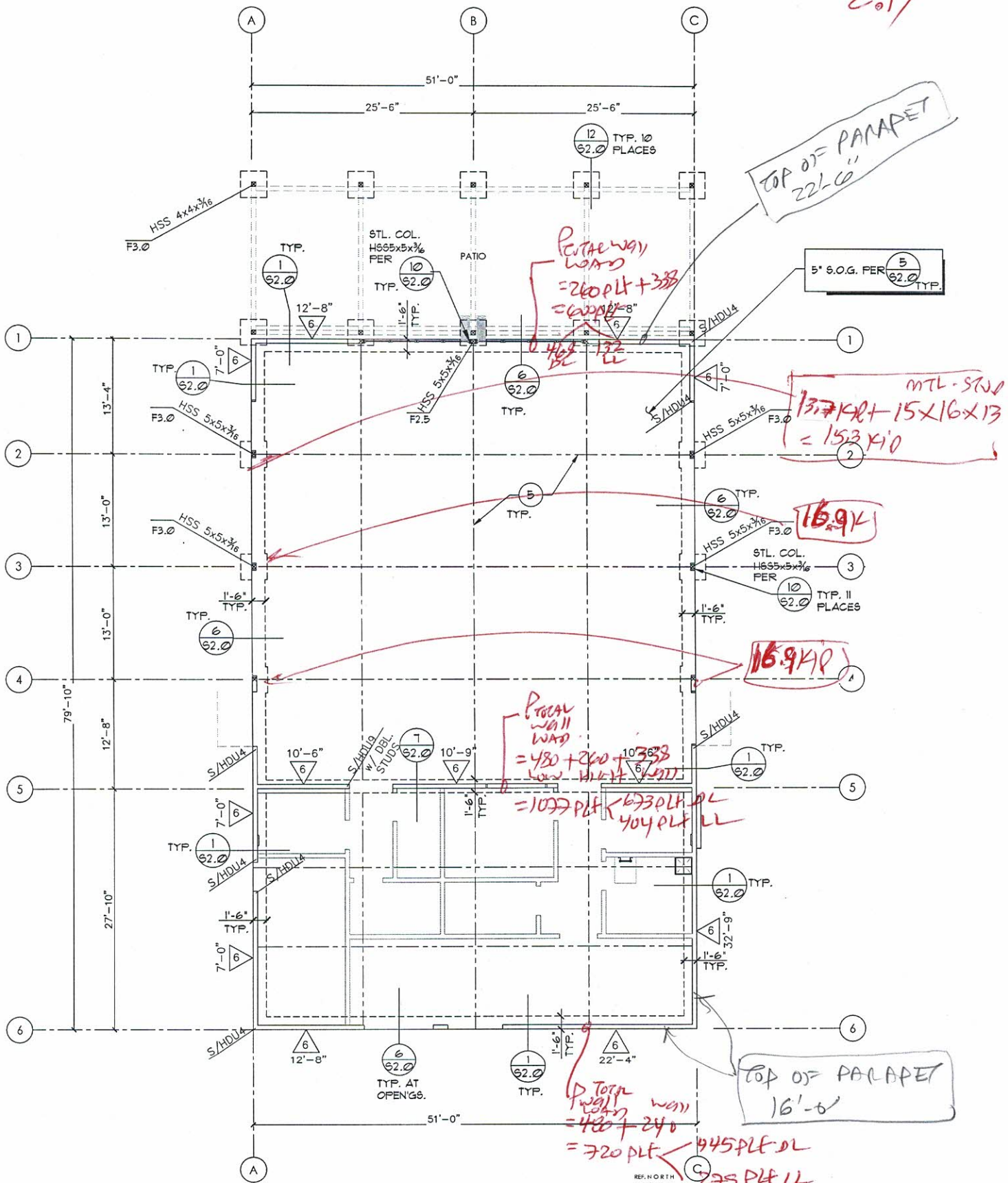
$$S_{yy} = 12.4 \text{ in}^3 > 5.4 \text{ in}^3$$

$$I_{xx} = 91.2 \text{ in}^4$$

$$I_{yy} = 31.1 \text{ in}^4 \quad \text{OK}$$

$$\Delta = \frac{12.2}{31.1} = 0.39" = \frac{L}{398} \quad \text{OK}$$

C01/



# FOUNDATION PLAN

1/8" = 1'-0"







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 SHEET NO. C2 OF \_\_\_\_\_  
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### STEEL COLUMN:

COL. HT 16'-0" max  
 $P = 15.3 \text{ kip}$

USE HSS 5x5x3/16

$$P_{capacity} = 47 \text{ kip} \gg 15.3 \text{ kip OK}$$

### BASE PLATE:

try 1/2" x 11" x 11" SLP

$$2n = (10 - 0.94T) = (10 - 0.9 \times 5) = 5.3$$

$$t = 2n \sqrt{\frac{F_u}{36}}$$

$$f_p = \frac{P}{A} = 0.13 \text{ ksi} < 0.35 F_u \text{ OK}$$

$$t = 5.3 \sqrt{\frac{0.13}{36}} = 0.32" < 1/2" \text{ OK}$$

USE 1/2" x 11" x 11" w/ 4-5/8" A.BOLTS

### FND:

allowable soils Pressure = 2000 psf  
 (CAN BE INCREASED  
 TO 3000 psf)

$$P = 16 \text{ kip max}$$

$$A_{req} = \frac{16}{2} = 8 \text{ ft}^2$$

USE 3'-0" x 3'-0" x 12" MIN  
 DEEP w/ 4#5 EA WAY





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SHEET NO. W1 OF         
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Grid Line 1 (HIGHT ROOF WALL)

$$P_{wall} = 15 \times 22.5 = 337.5 \text{ PLF}$$

$$P_{roof} = (15 + 5 + 20) \left( \frac{13}{2} \right) = 260 \text{ PLF}$$

$$\text{Total } P = 600 \text{ \#/ft} \begin{cases} 468 \text{ \#/ft DL} \\ 130 \text{ \#/ft LL} \end{cases}$$

$$W_1 = 23.3 \text{ PSF} \times 1.33 = 31.0 \text{ PLF}$$

$$W_2 = 35 \text{ PSF} \times 1.33 = 46.6 \text{ PLF}$$

try 6x14 GA STUOS @ 16" o.c.  
 $M_R = 26.8 \text{ K}$   
 $I_R = 3.6 \text{ in}^4$

$$\begin{aligned} R_1 &= 294 \text{ \#} \\ R_2 &= 470 \text{ \#} \end{aligned} \quad \left. \vphantom{\begin{aligned} R_1 &= 294 \text{ \#} \\ R_2 &= 470 \text{ \#} \end{aligned}} \right\} 764 \text{ \#}$$

$$\begin{aligned} M_{cant} &= 280 \text{ \#} \\ &= 3.36 \text{ K} \end{aligned}$$

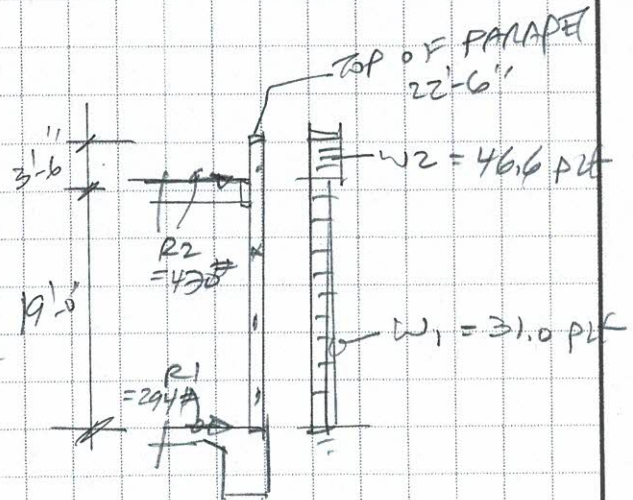
$$\begin{aligned} M_x &= 1390 \text{ \#} \\ &= 16.68 \text{ K} < 26.8 \text{ K} \end{aligned}$$

$$\Delta_{cant} = 0.52" = \frac{2L}{162} \quad \text{HIGHT.}$$

$$\Delta_x = 0.88" = \frac{L}{260} \quad \text{O.K.}$$

USE 600 #250-68 @ 16" o.c.	14 GA $M_R = 41.5 \text{ K} > 16.7 \text{ K}$ $I_R = 4.73 \text{ in}^4$
----------------------------	---

$$\Delta_{cant} = 0.39" \approx \frac{2L}{215} \approx \frac{2L}{240} = 0.35" \quad \text{O.K.}$$





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JOB LA PUENTE ACTIVITY CENTERSHEET NO. WZ OF       CALCULATED BY OM DATE 4/2025CHECKED BY        DATE       SCALE       EXTERIOR WALL DESIGNGRID LINE "C"

$$P_{wall} = 15 \times 16 = 240 \text{ PLF}$$

$$P_{roof} = 15 \times \frac{27.33}{2} = 205 \text{ PLF DL}$$
$$= 273 \text{ PLF LL}$$

478 PLF TOTAL

$$\text{TOTAL} = 720 \text{ PLF}$$

$$W_1 = 27.3 \text{ PSF} \times 1.33 = 31 \text{ PLF}$$

$$W_2 = 35 \text{ PSF} \times 1.33 = 46.6 \text{ PLF}$$

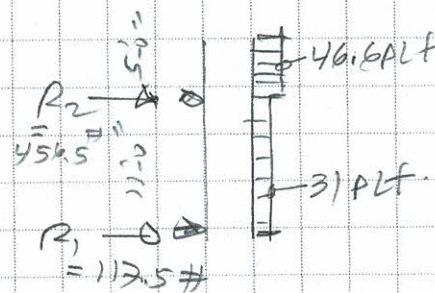
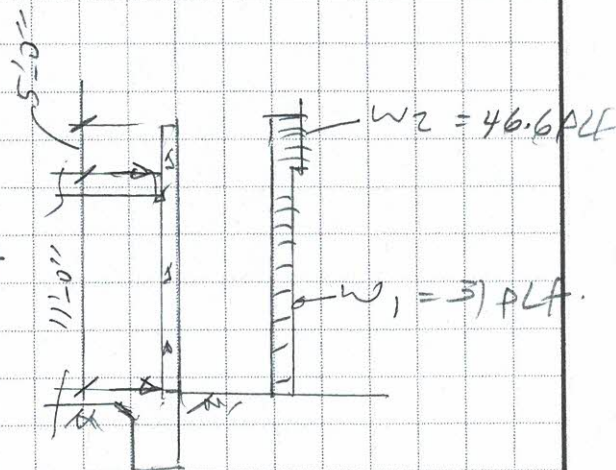
$$R_1 = 117.5 \#$$

$$R_2 = 456.5 \#$$

TOTAL 574 #

$$M_{max} = 221.5 \# = 2.6 \text{ K}$$

$$M_{cont} = 582 \# = 6.98 \text{ K}$$



for 6"x18 GA. STUDS @ 16" O.C.

$$M_R = 10.68 \text{ K} > 6.98 \text{ K} \text{ OK}$$

$$I_R = 2.32 \text{ in}^4$$

$$\text{Panel Capacity} = 1.6 \text{ Kip}$$

(BASED ON 25 PSF LATERAL &amp; AXIAL LOAD)

SUBSTITUTE

$$\frac{2.6}{10.68} + \frac{(205 + 240)(1.33)}{1580} = 0.53 < 1.0 \text{ OK}$$

$$\text{Deflect} - x = 0.2" = \frac{2L}{600}$$

$$\text{Deflect} - \text{cont} = 0.25" = \frac{2L}{528} \text{ OK}$$

USE 6"x18 GA. @ 16" O.C.  
(600 #162 - 43 @ 16" O.C.)Per plans  
USE 16 GA  
STUDS



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TEL: (858) 586-7855 FAX: (858) 586-7845

JOB LA PUENTE ACTIVITY CENTER  
SHEET NO. W3 OF \_\_\_\_\_  
CALCULATED BY OM DATE 4/2025  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
SCALE \_\_\_\_\_

CONT. FOOTINGS DESIGN:

$P_{wall}$  GRID LINE "1" = 600 PLT  
 $P_{wall}$  GRID LINE "5" = 1077 PLT  
 $P_{wall}$  GRID LINE "6" = 720 PLT ) See Page C.1

PER SOILS REPORT, THE ALLOWABLE  
SOILS PRESSURE = 2000 PSF.

$$\therefore W_{ftg} = \frac{1077}{2000} = 0.53 \text{ ft}$$

PER SOILS REPORT MIN. CONT. FTG.  
IS 18" WIDE.

USE 1'-6" WIDE CONT.  
FTG. W/ 2#5 CONT.  
TOP & BOTTOM





**MOBAYED CONSULTING GROUP**  
 CONSULTING STRUCTURAL ENGINEERS  
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JOB LA PUENTE ACTIVITY CENTER  
 SHEET NO. L01 OF         
 CALCULATED BY OM DATE 4/2025  
 CHECKED BY        DATE         
 SCALE       

## LATERAL ANALYSIS 3

### SEISMIC:

#### DIAPH ①:

Roof Wt = 15 (27.67 x 51)	21.14 kip
A/C UNIT	1.7 kip
EXT. WALLS 15 psf (10.25) (51 + 27.67 x 2)	16.4 kip
15 psf (19/2) (51)	7.3 kip
INT. WALLS 8 psf (10/2) (51 x 2)	4.1 kip
(NVS GORNS)	
<b>TOTAL</b>	<b>50.64 kip</b>

Base Shear = 0.13 WOL (see p. D.2)

$\therefore V = 0.13 (50.64)$   
 $V = 6.6 \text{ kip}$  (DIAPH ①)

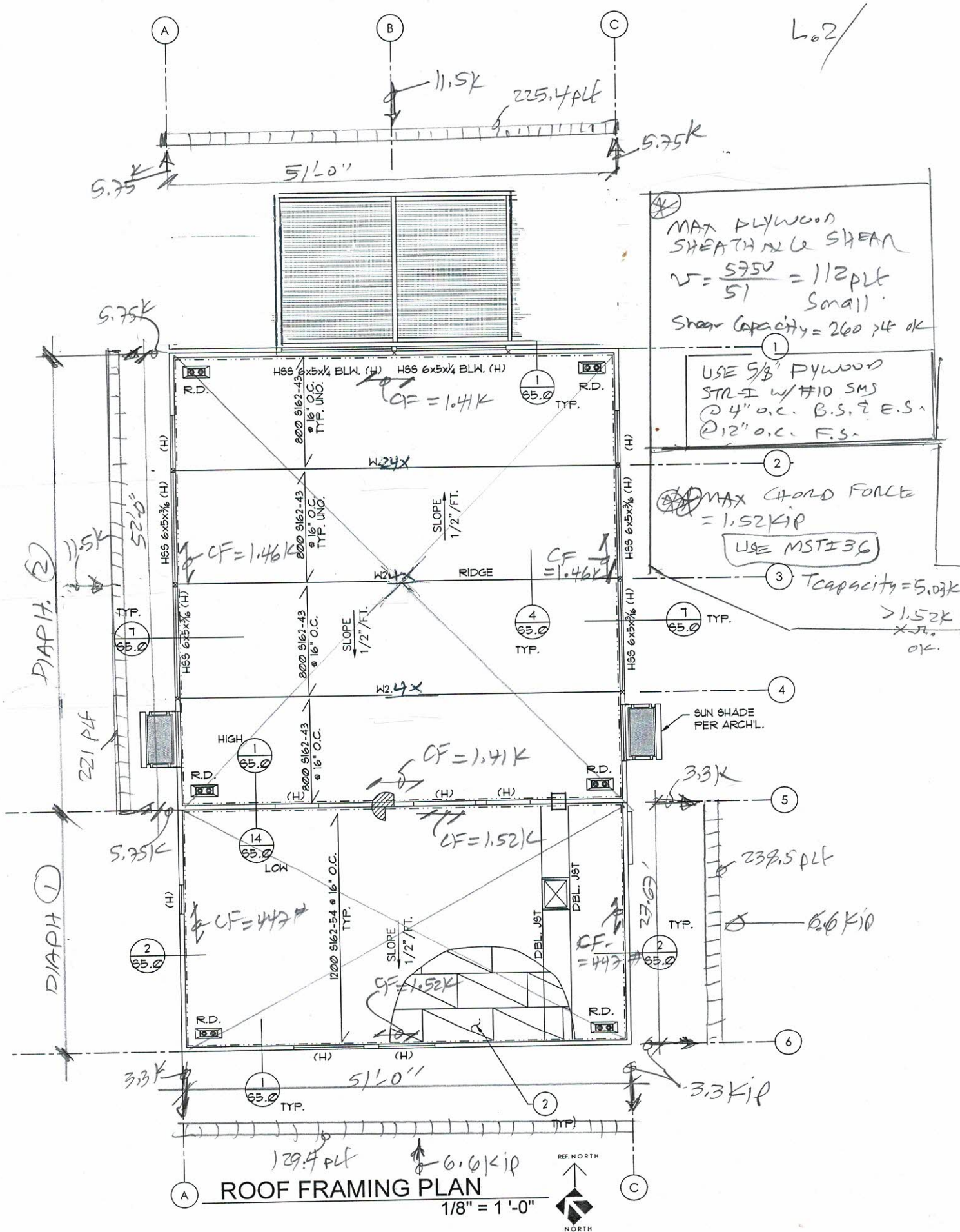
#### DIAPH ②:

Roof Wt = <sup>DL</sup> (15 + 5) (52 x 51)	53.0 kip
EXT. WALLS 15 psf (19/2 + 3.5) (51 + 52 x 2)	30.2 kip
15 psf (6.75) (51)	5.2 kip
Grip 5"	
<b>TOTAL</b>	<b>88.2 kip</b>

$\therefore V = 0.13 \times 88.2 = 11.5 \text{ kip}$

$V = 11.5 \text{ kip}$  (DIAPH ②)

L.2/



# ROOF FRAMING PLAN

1/8" = 1'-0"





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JOB \_\_\_\_\_  
SHEET NO. L.3 OF \_\_\_\_\_  
CALCULATED BY \_\_\_\_\_ DATE \_\_\_\_\_  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
SCALE \_\_\_\_\_

**SHEAR WALLS****DIAPH ①**

LINE LOCATION	"L" ft.	F=AV kip	SHEAR = $\frac{F}{L}$ PLF	HOLD FORCE = $(M_{01T} - 0.60 M_R) / L$ kip	SHEAR PANEL		HOLDOWN	
					USE "TYPE"	CAPACITY PLF	USE "TYPE"	CAPACITY
N/S A	16+9 =25'	3.3K	132 PLF	$M_{01T} = 132 \times 9' \times 12 = 14,33'K$ $M_R = 0.6 [15 \times 9 \times 16 + 15 \times 1.33/2$ $\times 10.67] \times 9/2 = 4.1K$ $C/T = 143 - 4.1 = 139 \times 12 = 1,668'K$		356	S/HD14	3.9KIP
	28.33	3.3K	116 PLF	SOLID LONG WALL, BY INSP. NO HD IS REQUIRED		356	/	/
E/W 5	10.5X2 10.75+ =31.75'	3.3+ 5.75 =9.1KIP	285 PLF	$M_{01T} = 104 \text{ PLF} \times 10.5 \times 12 + 181 \times 10.5 \times 19$ $= 49,23'K$ $M_R = 0.6 [15 \times 20.6 \times 13.5 + 15 \times 1.05$ $\times 10.5 \times 22.5] \times 10.5/2 = 24'K$ $C/T = 20 \times 12 \times 10.5 = 2,520'K$		356	S/HD16	6.0KIP
	22.33 +12.67 =35'	3.3K	95 PLF	$M_{01T} = 95 \times 12.67 \times 12 = 14,44'K$ $M_R = 0.6 [15 \times 12.67 \times 16 + 15 \times 1.05$ $\times 23/2 \times 17] \times 12.67/2 = 24.6K$ $M_R > M_{01T} - \text{NO HD}$		356	/	/





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JOB \_\_\_\_\_  
SHEET NO. L-4 OF \_\_\_\_\_  
CALCULATED BY \_\_\_\_\_ DATE \_\_\_\_\_  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
SCALE \_\_\_\_\_

## SHEAR WALLS

DIAPH. (2)

BAY =  $\frac{L}{H}$  (MIN 2 BAYS REQ'D.  $\downarrow$   $P=1.0$ ) OTHERWISE  $P=1.3$

LINE LOCATION	"L" ft.	F=AV kip	SHEAR = $\frac{F}{L}$ PLF	HOLD FORCE = $(M_{OIT} - 0.60 M_R) / L$ KIP	SHEAR PANEL		HOLDOWN	
					USE "TYPE"	CAPACITY PLF	USE "TYPE"	CAPACITY
N/S	A	9.33' 5.75K $\times 1.3$ 7.5K	801	$M_{OIT} = 7.5K \times 19 = 142.5K$ $M_R = 0.6 [15 \times 9.33 \times 12 + 15 \times 1.33/2 \times 12 \times 9.33/2] = 5K$ $C/T = 147.5K$			876	USE HSS 5X5
	C	9.33'	SAME AS LINE A				876	USE HSS 5X5
E/W	1	12.6' x 2' = 25.33' 5.75K	222	$M_{OIT} = 5.75K \times 19 = 109.25K$ $M_R = 0.6 [15 \times 12.67 \times 19.5 + 15 \times 1.3 \times 12 \times 19.5/2] = 210.3K$ $C/T = 219.25K$ $\times 1.3 = 285K$		356	S/H DUB	6 KIP
	5		SEE CALC. ON PAGE L-3			356	S/H 1/4"	—

BECAUSE OF MOVABLE DOOR



# Unit Report For 12.5-Ton PHP

Project: La Puente Activity Center  
Prepared By: Kody Frazier, PE

03/31/2025  
10:24AM

## HP-1

### Unit Parameters

Unit Model: 50FEQM14A2A5-0A0A0  
Unit Size: 14 (12.5 Tons)  
Volts-Phase-Hertz: 208-3-60  
Heating Type: Heat Pump  
Refrigerant: R-454B  
Heat Control: Two-Stage Cooling, Single Circuit  
Duct Cfg: Vertical Supply / Vertical Return

### Dimensions (ft. in.) & Weight (lb.) \*\*\*

Unit Length: 9' 7.875"  
Unit Width: 5' 3.375"  
Unit Height: 4' 9.375"  
Total Operating Weight: 1250 lb

\*\*\* Weights and Dimensions are approximate. Weight does not include unit packaging. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

### Lines and Filters

Return Air Filter Type: Throwaway  
Return Air Filter Quantity: 6  
Return Air Filter Size: 18 x 24 x 2

Selection includes construction throwaway filter into the base fan curve.

### Unit Configuration

Standard/Medium Static - EcoBlue Vane Axial Fan  
Al/Cu - Al/Cu  
Standard Electromechanical Controls (can be used with field installed economizers and dampers)  
Standard

### Warranty Information

1-Year parts (STD.)  
5-Year Compressor (std.)

No optional warranties were selected.

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

### Ordering Information

Part Number	Description	Quantity
50FEQM14A2A5-0A0A0	Rooftop Unit	1

WEIGHT + CURB (446#)

TOTAL WT = 1250 + 446  
= 1700 #

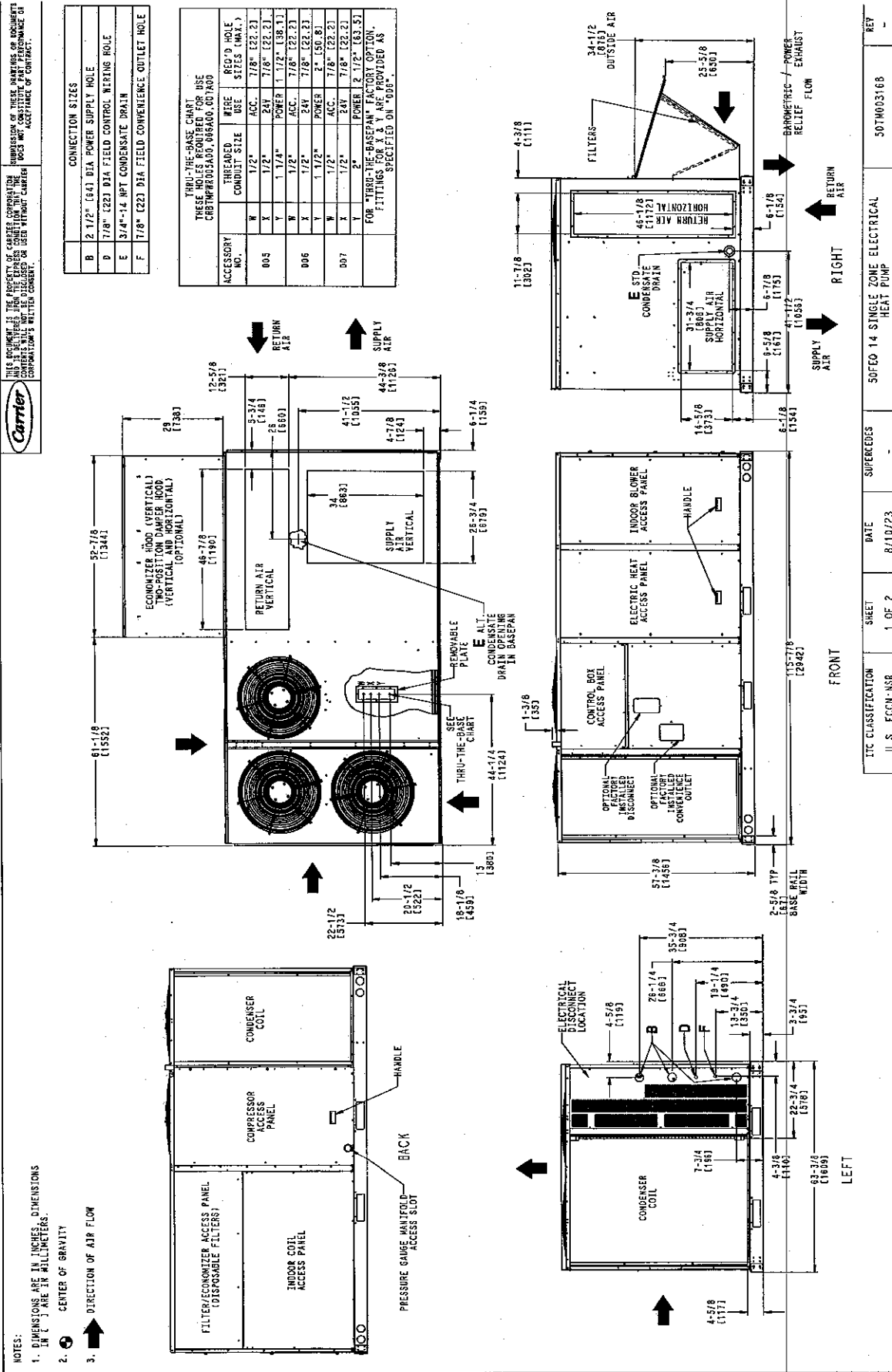
W = 1700  
9.67 x 5.33  
= 33 psf.

# Certified Drawing for 12.5-Ton PHP

Project: La Puente Activity Center  
Prepared By: Kody Frazier, PE

## HP-1

03/31/2025  
10:24AM





# Certified Drawing for 12.5-Ton PHP

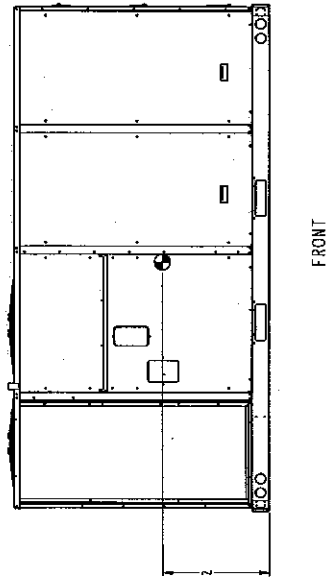
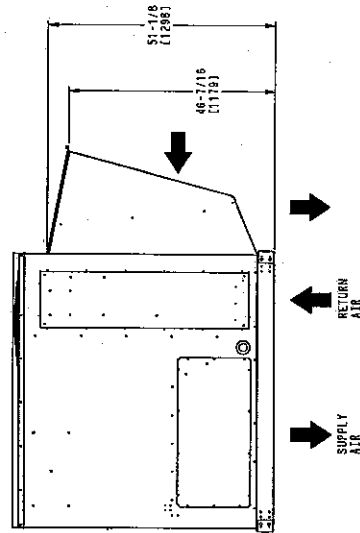
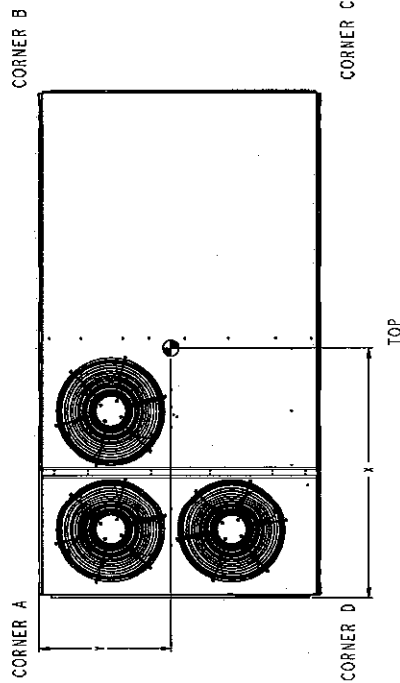
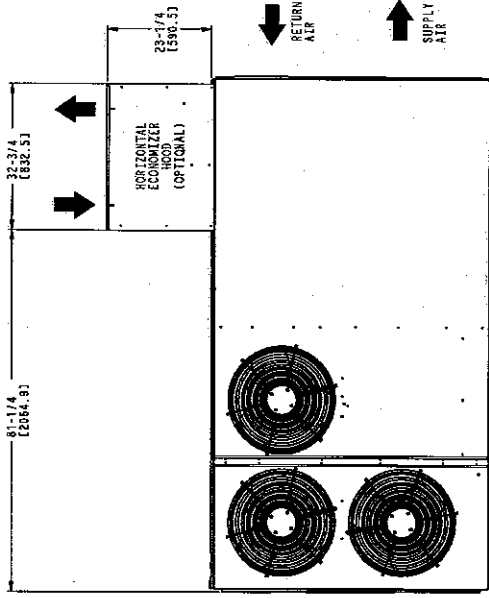
Project: La Puente Activity Center  
Prepared By: Kody Frazier, PE

03/31/2025  
10:24AM

## HP-1

UNIT	STD UNIT WEIGHT (LBS.)	CORNER WEIGHT (LBS.)	CORNER WEIGHT (KG.)	CORNER WEIGHT (LBS.)	CORNER WEIGHT (KG.)	CORNER WEIGHT (LBS.)	CORNER WEIGHT (KG.)	C.G.
SDRQ-14	1250	587	350	159	339	153	277	125 280 130
								37 [1448] 28 1/2 [1241] 24 [610]

STANDARD UNIT WEIGHT IS WITHOUT ELECTRIC HEAT & WITHOUT PACKAGING.  
FOR OPTIONS & ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.



HORIZONTAL ECONOMIZER

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	REV
U.S. ECCN: NSR	2 OF 2	8/10/23	50TH003168	50TH003168

# Performance Summary For 12.5-Ton PHP

Project: La Puente Activity Center  
Prepared By: Kody Frazier, PE

03/31/2025  
10:24AM

## HP-1

Part Number: 50FEQM14A2A5-0A0A0

Refrigerant: R-454B  
ARI EER: 10.60  
Application EER (Rooftop Unit only): 9.50  
IEER: 15.0

### Base Unit Dimensions

Unit Length: 115.9 in  
Unit Width: 63.4 in  
Unit Height: 57.4 in

### Operating Weight

Base Unit Weight: 1250 lb  
Total Operating Weight: 1250 lb

### Unit

Unit Voltage-Phase-Hertz: 208-3-60  
Air Discharge: Vertical  
Fan Drive Type: Vane Axial  
Actual Airflow: 5000 CFM  
Site Altitude: 0 ft

### Cooling Performance

Condenser Entering Air DB: 96.0 F  
Evaporator Entering Air DB: 78.0 F  
Evaporator Entering Air WB: 64.3 F  
Entering Air Enthalpy: 29.37 BTU/lb  
Evaporator Leaving Air DB: 56.4 F  
Evaporator Leaving Air WB: 54.6 F  
Evaporator Leaving Air Enthalpy: 22.88 BTU/lb  
Unit Discharge Air DB: 58.0 F  
Unit Discharge Air WB: 55.2 F  
Unit Discharge Air Enthalpy: 23.26 BTU/lb  
Gross Cooling Capacity: 146.12 MBH  
Net Cooling Capacity: 137.58 MBH  
Gross Sensible Capacity: 116.71 MBH  
Net Sensible Capacity: 108.18 MBH  
Compressor Power Input: 11.38 kW  
Coil Bypass Factor: 0.080

### Mixed Air

Outdoor Air Airflow: 500 CFM  
Outdoor Air DB: 96.0 F  
Outdoor Air WB: 67.0 F  
Outdoor Air Htg. Temp.: 31.0 F  
Return Air DB: 76.0 F  
Return Air WB: 64.0 F  
Return Air Htg. Temp.: 70.0 F

### Heating Performance

Outdoor Ambient Temperature: 31.0 F  
Entering Air Indoor Coil DB: 66.1 F  
Leaving Air Indoor Coil DB: 85.8 F  
Total Heating Capacity: 106.35 MBH  
Integrated Heating Capacity: 94.65 MBH  
Heating Power Input: 10.00 kW  
High Temperature COP: 3.30  
Low Temperature COP: 2.05

### Supply Fan

Packaged Rooftop Builder 1.79h



Date:  
RTU:

Part Number: CRBV-SRT34GA-1112-P20

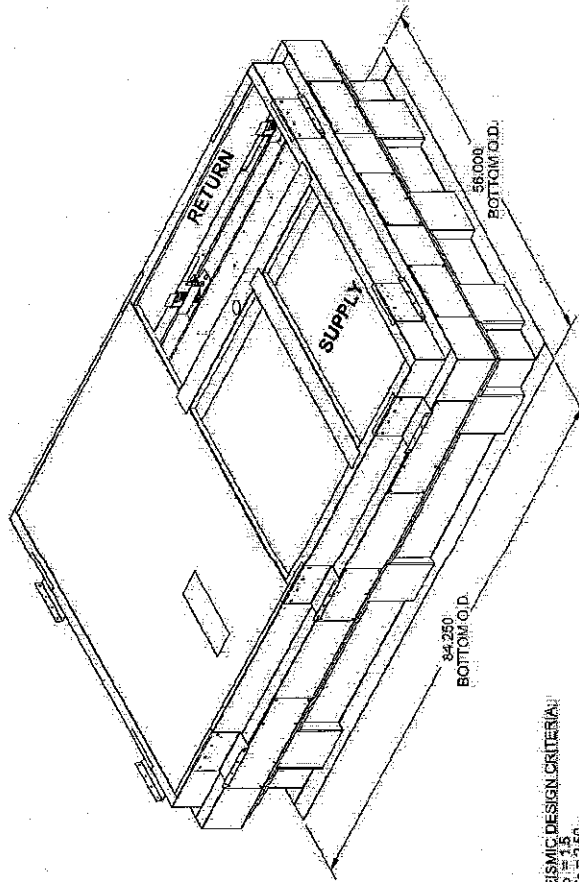
Weight: 446lbs (US) 202.3kg (Metric)

Submitted to:

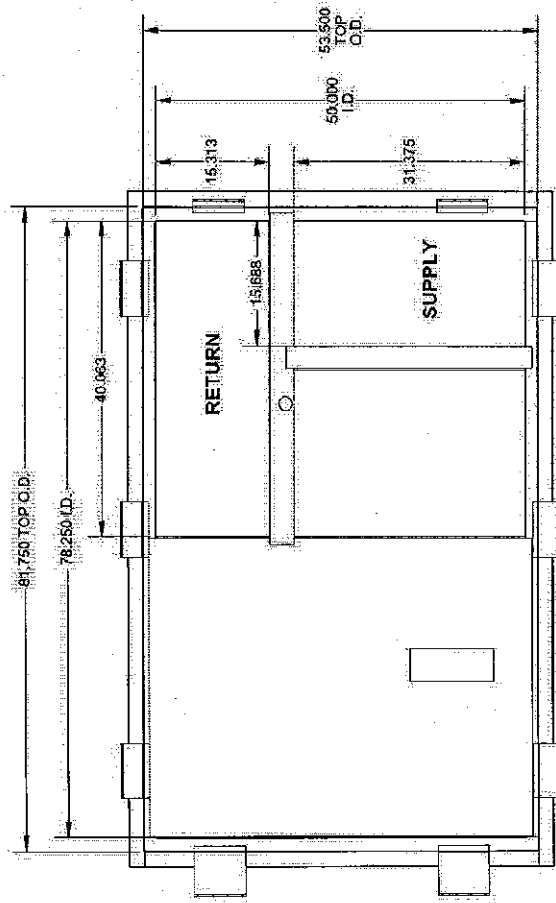
Approved by:

Notes:

Vibration Isolation - Structurally Calculated Curb 21 Inches Tall / 11 Inch Curb Base, Full Perimeter, Non Insulated, With Power Exhaust Option . The Adjustable Deflection Spring Housing Meets California CBC, Seismic Requirements



PLAN VIEW



SEISMIC DESIGN CRITERIA:  
-  $I_p = 1.5$   
-  $S_s = 2.50$   
-  $F_a = 1.2$

WIND DESIGN CRITERIA:  
- EXPOSURE C  
- 155 MPH, 3 SECOND GUST WIND SPEED  
- RISK CATEGORY II & IV  
- THE STANDARD PROTECTED DESIGN DOES NOT INCLUDE THROUGH THE SIDE SERVICE VALVES

CURE ISOLATOR STIFFENER MINIMUM REQUIREMENTS:  
- (3) STIFFENERS, (3) MICROHOLDS, (3) ISOLATORS PER LONG SIDE  
- (3) STIFFENERS, (2) MICROHOLDS, (3) ISOLATORS PER SHORT SIDE



Indianapolis, IN : (900) 662-4222

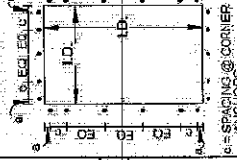
Sparks, NV: (800) 884-4662

Longview, TX: (409) 244-4899

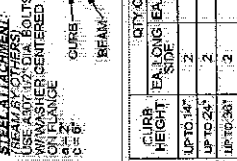
DRAWING BY: JR DATE: 08/25/2022

MEETS SEISMIC REQUIREMENTS FOR 2022 CBC & IBC  
MEETS REQUIREMENTS FOR 6" BUILD, 155 MPH, 3 SEC. GUST, EX C

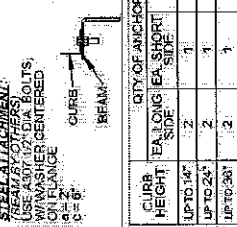
TYPICAL PLAN VIEW



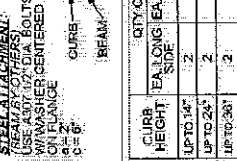
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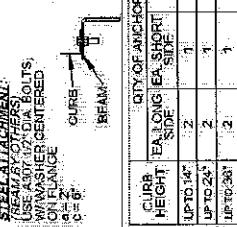
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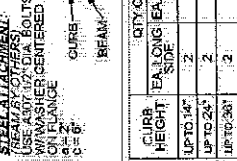
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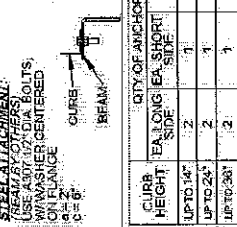
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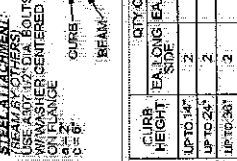
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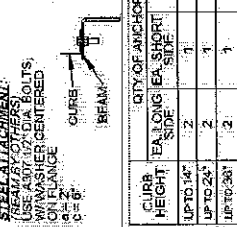
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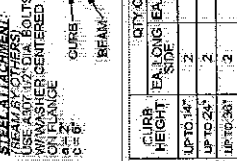
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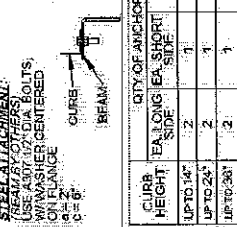
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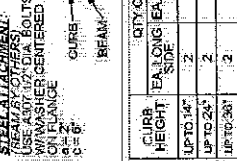
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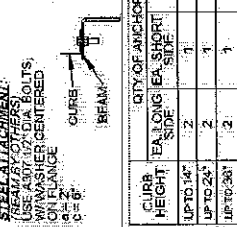
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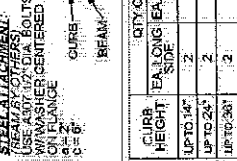
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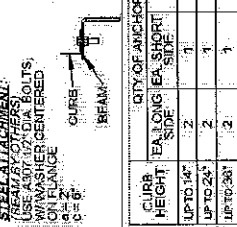
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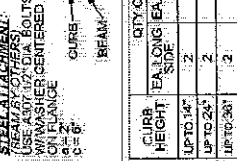
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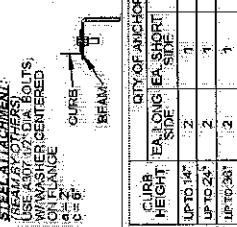
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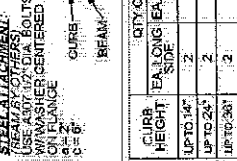
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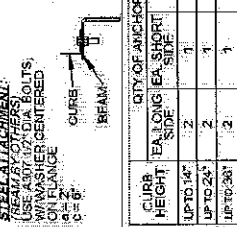
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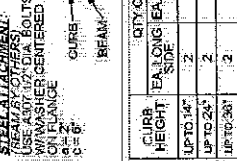
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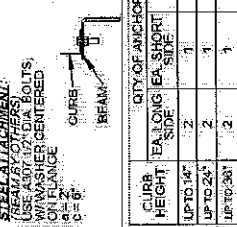
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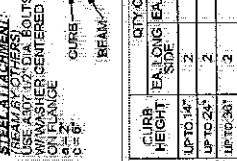
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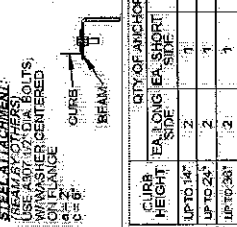
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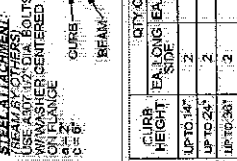
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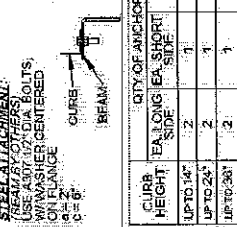
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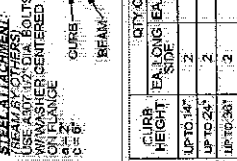
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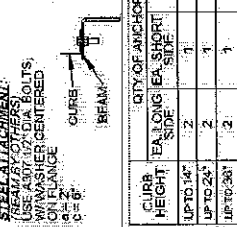
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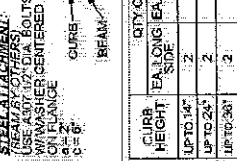
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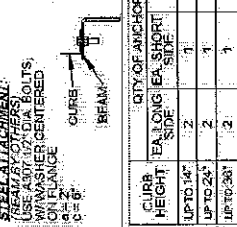
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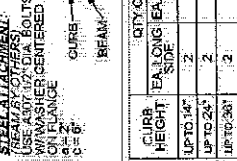
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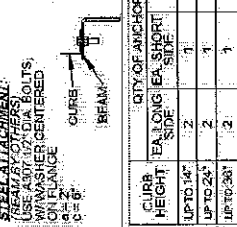
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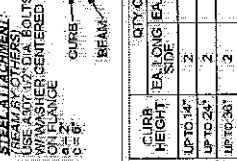
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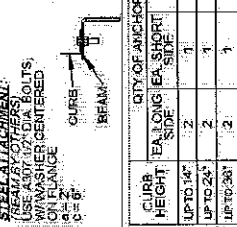
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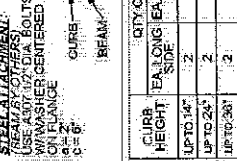
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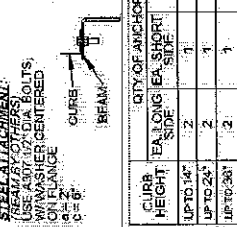
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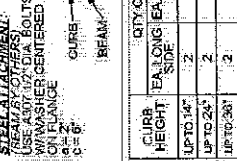
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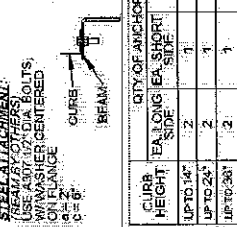
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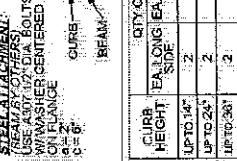
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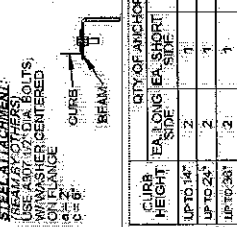
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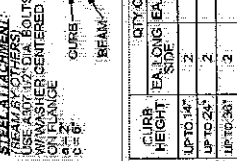
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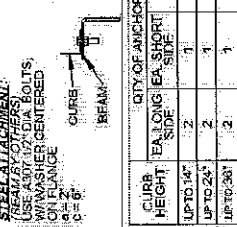
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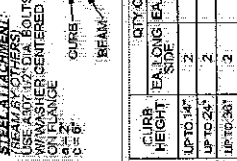
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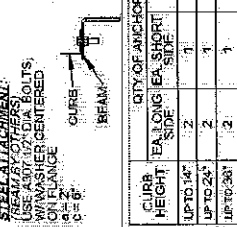
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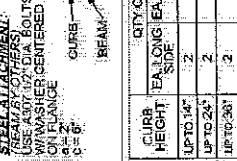
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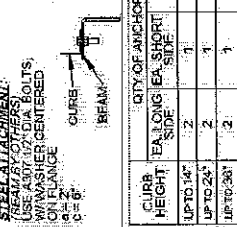
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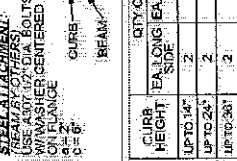
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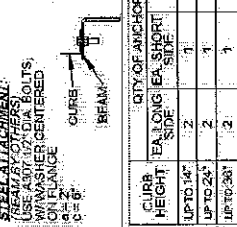
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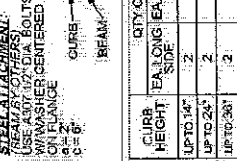
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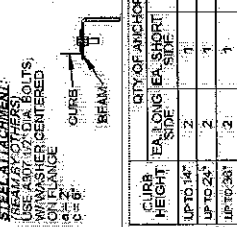
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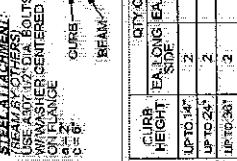
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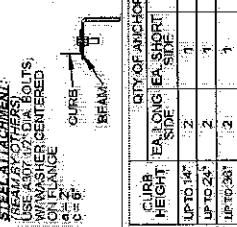
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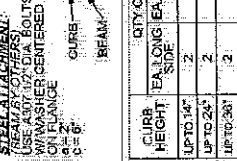
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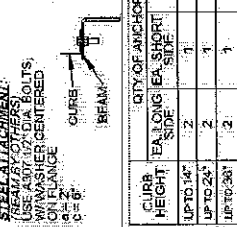
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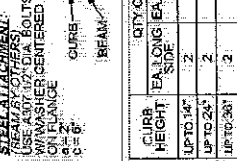
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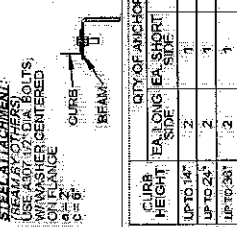
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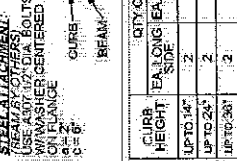
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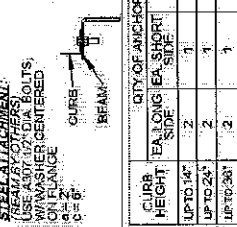
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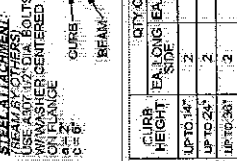
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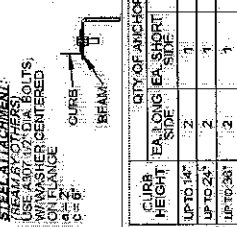
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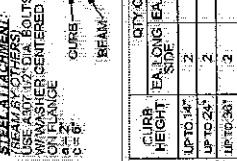
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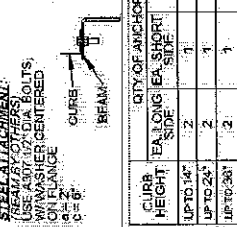
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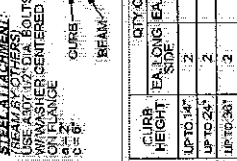
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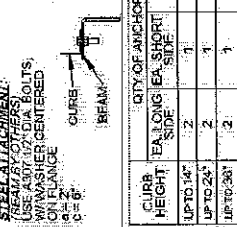
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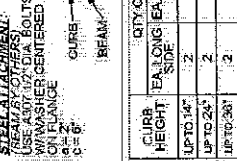
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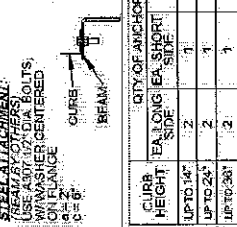
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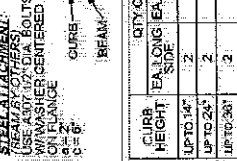
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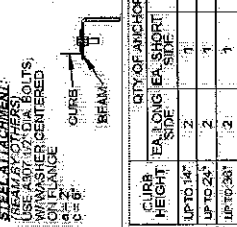
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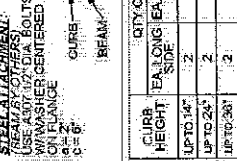
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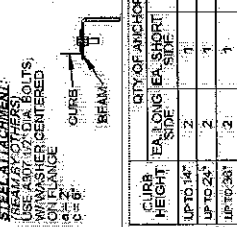
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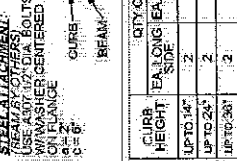
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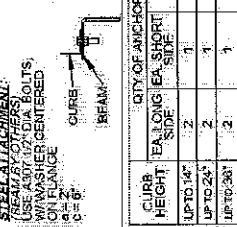
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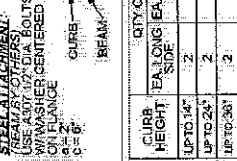
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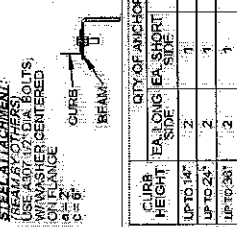
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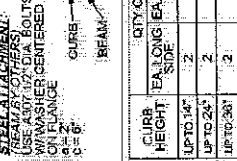
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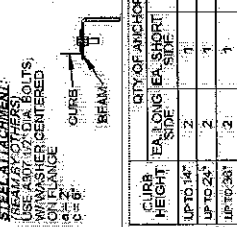
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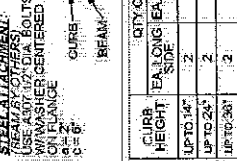
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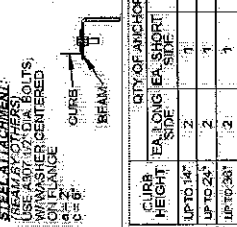
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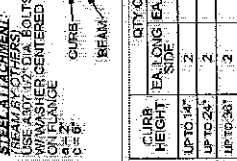
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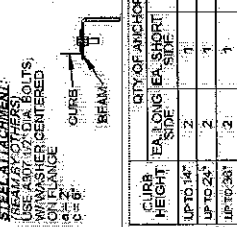
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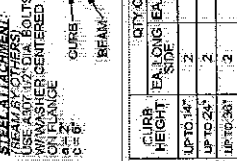
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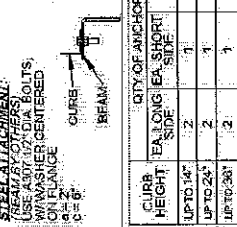
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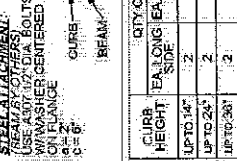
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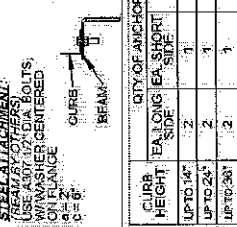
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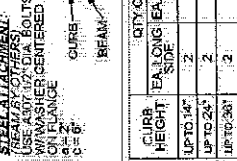
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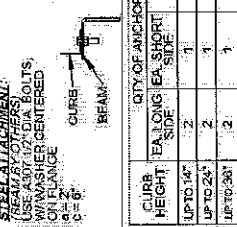
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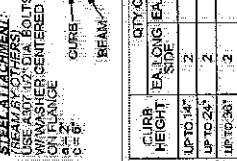
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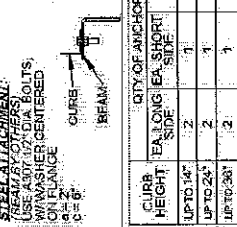
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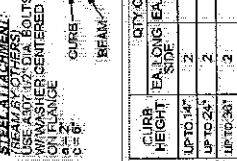
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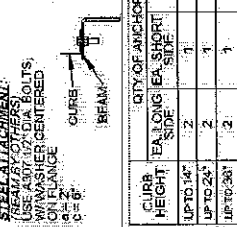
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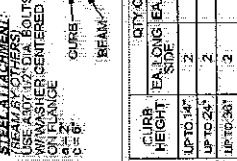
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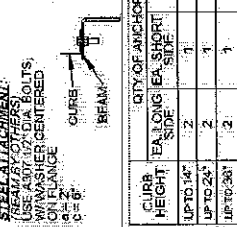
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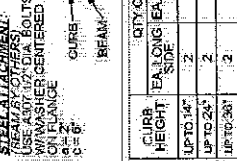
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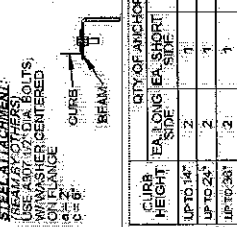
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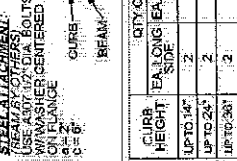
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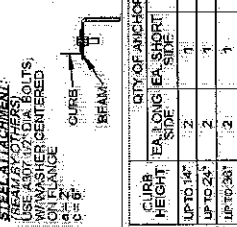
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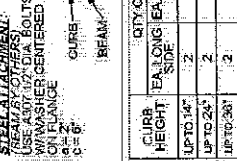
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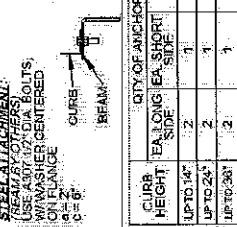
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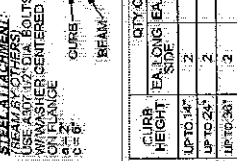
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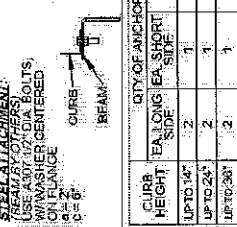
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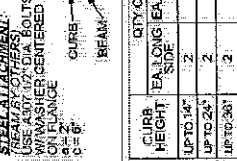
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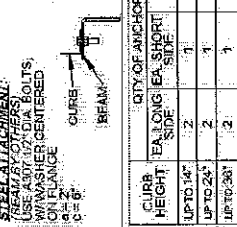
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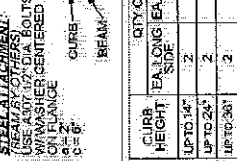
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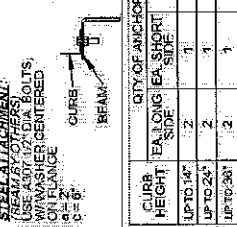
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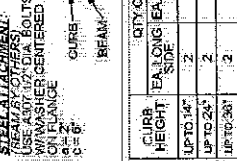
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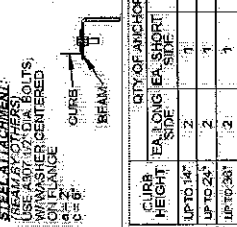
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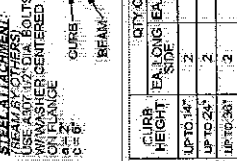
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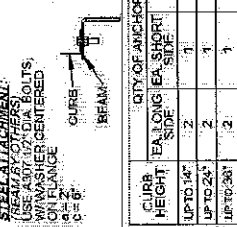
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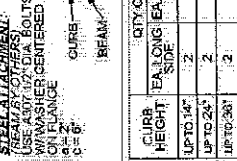
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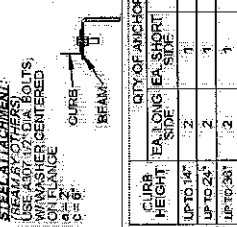
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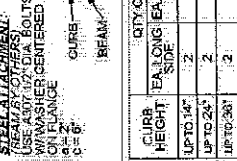
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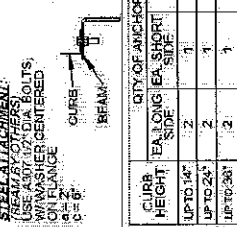
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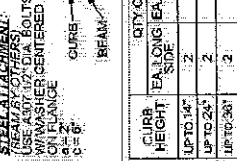
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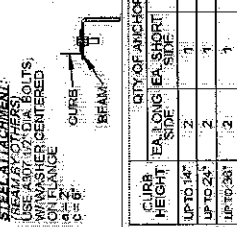
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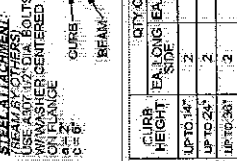
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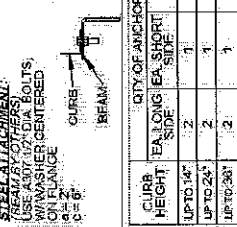
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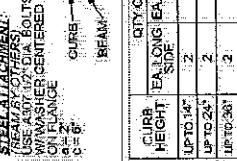
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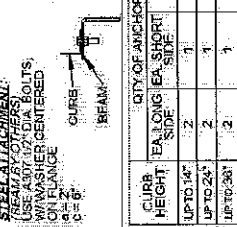
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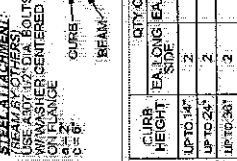
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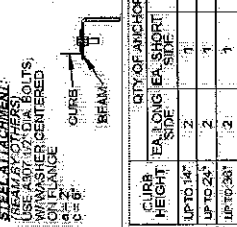
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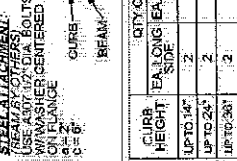
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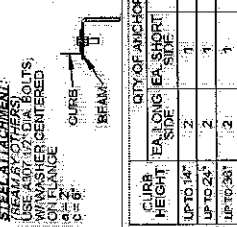
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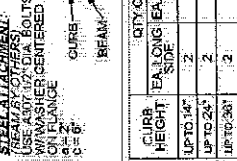
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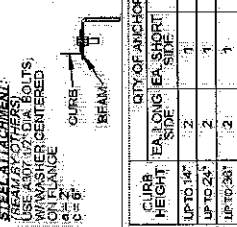
ANCHORAGE DETAILS TO ROOF



ANCHORAGE DETAILS TO ROOF



ANCHORAGE DETAILS TO ROOF





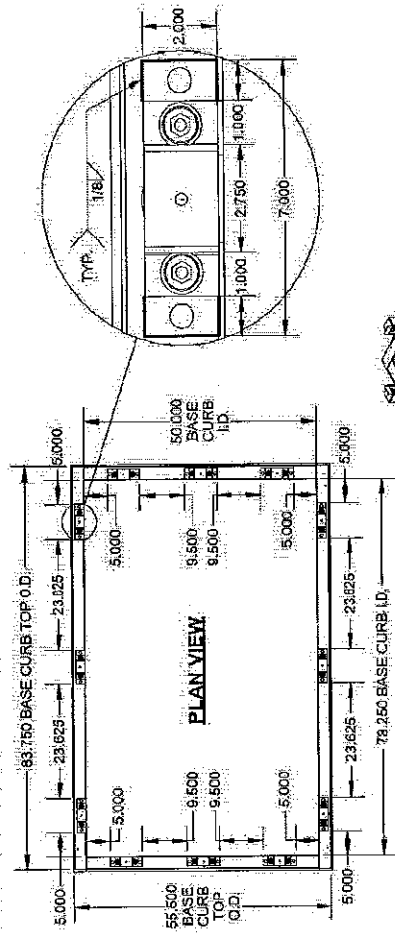
Submitted to:

**Approved by:**

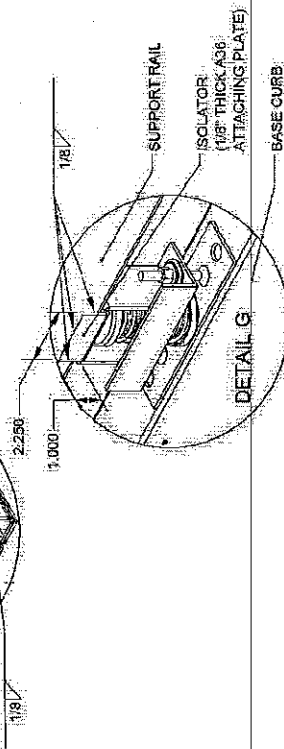
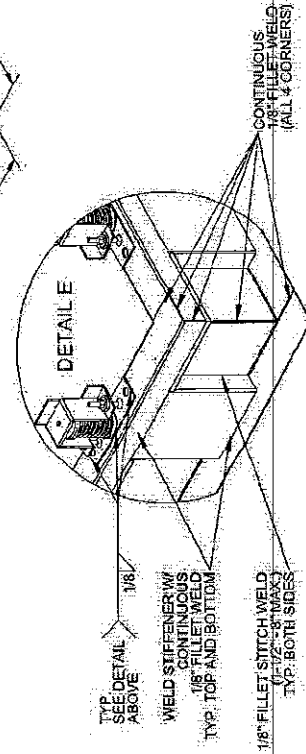
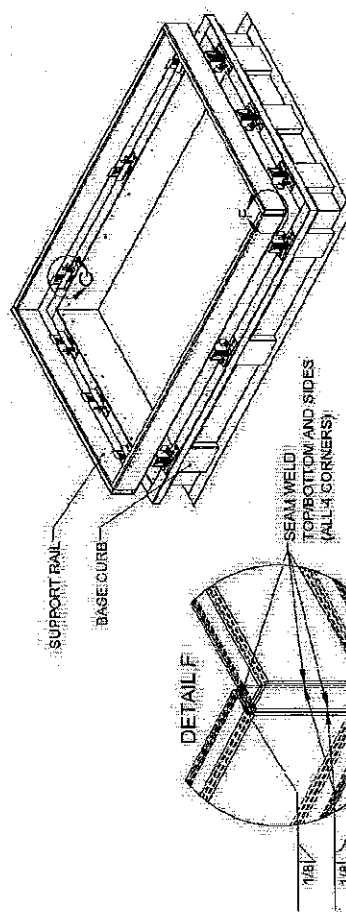
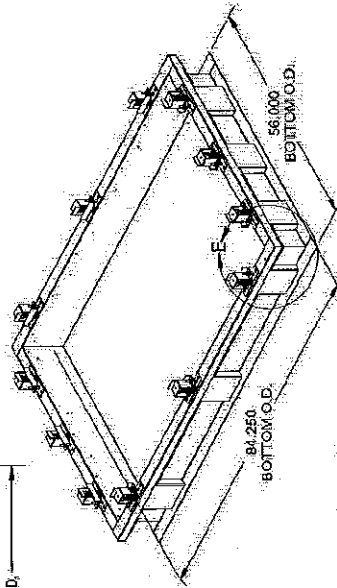
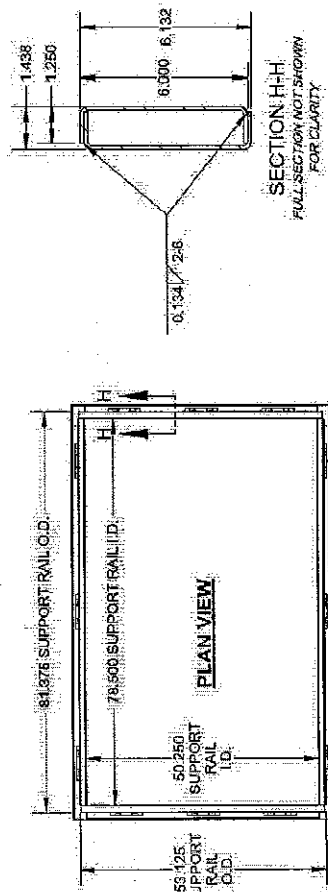
**Notes:**

Vibration Isolation - Structurally Calculated Curb 21 Inches Tall / 11 Inch Curb Base, Full Perimeter, Non Insulated, With Power Exhaust Option . The Adjustable Deflection Spring Housing Meets California CBC, Seismic Requirements

## BASE CURB WELDING DETAILS



## SUPPORT RAIL WELDING DETAILS



MicroMetl Corporation

Indianapolis, IN: (800) 662-4822.

Sparks, NV: (800) 884-4662

Longview, TX, (903) 248-4800.

# THE 12TH ANNUAL CONFERENCE OF THE AMERICAN SOCIETY OF CLIMATE ENGINEERS

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Master Revision 0001A

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# Track (T) Section Properties



Section	Design Thickness (in)	Gross Properties							Effective Prop. (33 ksi)				Effective Prop. (50 ksi)				Torsional Properties					
		Area (in²)	Weight (lb/ft)	I <sub>x</sub> (in⁴)	S <sub>x</sub> (in³)	R <sub>x</sub> (in)	I <sub>y</sub> (in⁴)	R <sub>y</sub> (in)	I <sub>xe</sub> (in⁴)	S <sub>xe</sub> (in³)	Ma (in-k)	V <sub>ag</sub> (lb)	I <sub>xe</sub> (in⁴)	S <sub>xe</sub> (in³)	Ma (in-k)	V <sub>ag</sub> (lb)	Jx1000 (in⁴)	C <sub>w</sub> (in⁶)	X <sub>o</sub> (in)	m (in)	R <sub>o</sub> (in)	β
600T150-43	0.0451	0.405	1.38	2.072	0.673	2.261	0.073	0.424	1.890	0.474	9.36	1377	-	-	-	-	0.275	0.504	-0.680	0.437	2.398	0.920
600T150-54	0.0566	0.509	1.73	2.611	0.843	2.266	0.091	0.422	2.473	0.689	13.62	2728	2.400	0.609	18.24	2728	0.543	0.632	-0.675	0.434	2.401	0.921
600T150-68	0.0713	0.641	2.18	3.309	1.059	2.273	0.113	0.419	3.262	0.963	19.03	4347	3.162	0.891	26.68	5350	1.086	0.797	-0.669	0.430	2.406	0.923
600T150-97	0.1017	0.913	3.11	4.778	1.504	2.288	0.156	0.413	4.778	1.504	29.71	7359	4.778	1.444	43.23	10885	3.148	1.138	-0.656	0.421	2.415	0.926
600T150-118	0.1242	1.115	3.79	5.886	1.829	2.298	0.186	0.409	-	-	-	-	5.886	1.829	61.64	13539	5.730	1.389	-0.647	0.415	2.422	0.929
600T200-33	0.0346	0.346	1.18	1.913	0.622	2.352	0.126	0.604	1.542	0.333	6.59	622	-	-	-	-	0.138	0.847	-1.048	0.655	2.645	0.843
600T200-43	0.0451	0.451	1.53	2.494	0.809	2.353	0.163	0.602	2.076	0.565	11.16	1377	-	-	-	-	0.305	1.098	-1.044	0.652	2.643	0.844
600T200-54	0.0566	0.565	1.92	3.145	1.015	2.359	0.203	0.600	2.759	0.759	15.00	2728	2.641	0.717	21.48	2728	0.604	1.381	-1.038	0.649	2.646	0.846
600T200-68	0.0713	0.712	2.42	3.990	1.277	2.367	0.254	0.597	3.696	1.034	20.42	4347	3.540	0.973	29.12	5350	1.206	1.746	-1.031	0.644	2.650	0.849
600T200-97	0.1017	1.015	3.45	5.773	1.816	2.385	0.354	0.591	5.758	1.667	32.95	7359	5.558	1.568	46.94	10885	3.499	2.510	-1.016	0.635	2.659	0.854
600T200-118	0.1242	1.239	4.21	7.122	2.214	2.398	0.426	0.586	-	-	-	-	7.122	2.051	61.42	13539	6.369	3.083	-1.006	0.628	2.665	0.858
600T250-43	0.0451	0.496	1.69	2.916	0.946	2.425	0.303	0.781	2.269	0.563	11.13	1377	-	-	-	-	0.336	2.004	-1.436	0.878	2.925	0.759
600T250-54	0.0566	0.622	2.12	3.678	1.187	2.432	0.377	0.779	3.014	0.794	15.68	2728	2.881	0.732	21.92	2728	0.664	2.523	-1.430	0.874	2.927	0.761
600T250-68	0.0713	0.783	2.67	4.670	1.495	2.442	0.472	0.776	4.065	1.085	21.45	4347	3.871	1.017	30.46	5350	1.327	3.198	-1.422	0.869	2.930	0.764
600T250-97	0.1017	1.117	3.80	6.767	2.129	2.462	0.662	0.770	6.441	1.775	35.08	7359	6.158	1.656	49.58	10885	3.849	4.616	-1.406	0.859	2.938	0.771
600T250-118	0.1242	1.363	4.64	8.359	2.598	2.477	0.798	0.765	8.306	2.343	46.30	8936	7.990	2.188	65.51	13539	7.008	5.686	-1.394	0.852	2.943	0.776
800T125-33 <sup>1</sup>	0.0346	0.363	1.24	2.895	0.711	2.824	0.036	0.313	2.441	0.407	8.03	465	-	-	-	-	0.145	0.456	-0.439	0.294	2.875	0.977
800T125-43	0.0451	0.473	1.61	3.773	0.924	2.824	0.046	0.311	3.484	0.640	12.65	1030	-	-	-	-	0.321	0.589	-0.436	0.292	2.874	0.977
800T125-54	0.0566	0.594	2.02	4.745	1.158	2.827	0.057	0.309	4.668	0.940	18.58	2039	4.426	0.824	24.66	2039	0.634	0.735	-0.432	0.289	2.877	0.977
800T125-68	0.0713	0.748	2.54	5.998	1.454	2.833	0.070	0.306	5.998	1.356	26.80	4087	5.956	1.216	36.39	4087	1.267	0.920	-0.427	0.286	2.881	0.978
800T125-97	0.1017	1.066	3.63	8.613	2.062	2.843	0.096	0.301	8.613	2.062	40.74	8843	8.613	2.062	61.72	10885	3.674	1.296	-0.417	0.279	2.889	0.979
800T125-118	0.1242	1.301	4.43	10.569	2.506	2.850	0.114	0.297	-	-	-	-	10.569	2.506	86.21	16235	6.688	1.567	-0.410	0.274	2.895	0.980
800T150-33 <sup>1</sup>	0.0346	0.380	1.29	3.180	0.781	2.891	0.060	0.397	2.569	0.414	8.18	465	-	-	-	-	0.152	0.751	-0.588	0.388	2.977	0.961
800T150-43	0.0451	0.496	1.69	4.144	1.015	2.891	0.077	0.395	3.689	0.655	12.95	1030	-	-	-	-	0.336	0.972	-0.584	0.386	2.976	0.961
800T150-54	0.0566	0.622	2.12	5.214	1.272	2.896	0.096	0.393	4.976	0.969	19.15	2039	4.692	0.844	25.27	2039	0.664	1.215	-0.580	0.383	2.979	0.962
800T150-68	0.0713	0.783	2.67	6.594	1.599	2.902	0.119	0.390	6.527	1.412	27.91	4087	6.361	1.255	37.58	4087	1.327	1.526	-0.575	0.379	2.984	0.963
800T150-97	0.1017	1.116	3.80	9.479	2.269	2.914	0.165	0.384	9.479	2.269	44.83	8843	9.479	2.192	65.62	10885	3.849	2.162	-0.564	0.372	2.993	0.965
800T150-118	0.1242	1.363	4.64	11.641	2.760	2.923	0.197	0.380	-	-	-	-	11.641	2.760	93.00	16235	7.008	2.627	-0.555	0.366	2.999	0.966
800T200-33 <sup>1</sup>	0.0346	0.415	1.41	3.749	0.921	3.005	0.135	0.571	2.788	0.424	8.37	465	-	-	-	-	0.166	1.638	-0.917	0.589	3.194	0.918
800T200-43	0.0451	0.541	1.84	4.887	1.197	3.006	0.175	0.569	4.043	0.676	13.35	1030	-	-	-	-	0.367	2.124	-0.913	0.587	3.193	0.918
800T200-54	0.0566	0.679	2.31	6.152	1.501	3.011	0.218	0.567	5.505	1.009	19.93	2039	5.149	0.871	26.09	2039	0.725	2.664	-0.908	0.584	3.196	0.919
800T200-68	0.0713	0.854	2.91	7.786	1.888	3.019	0.272	0.564	7.306	1.490	29.45	4087	7.051	1.310	39.22	4087	1.448	3.357	-0.902	0.580	3.201	0.921
800T200-97	0.1017	1.218	4.15	11.212	2.683	3.034	0.379	0.558	11.176	2.491	49.22	8843	10.833	2.347	70.27	10885	4.200	4.792	-0.889	0.571	3.210	0.923
800T200-118	0.1242	1.487	5.06	13.785	3.269	3.045	0.455	0.553	-	-	-	-	13.785	3.059	91.59	16235	7.646	5.854	-0.879	0.565	3.217	0.925
800T250-43	0.0451	0.586	1.99	5.629	1.380	3.100	0.326	0.746	4.593	0.739	14.60	1030	-	-	-	-	0.397	3.877	-1.274	0.801	3.433	0.862
800T250-54	0.0566	0.735	2.50	7.090	1.730	3.106	0.407	0.744	5.948	1.193	23.57	2039	5.816	0.959	28.71	2039	0.785	4.870	-1.268	0.798	3.436	0.864
800T250-68	0.0713	0.926	3.15	8.978	2.177	3.114	0.509	0.741	7.917	1.648	32.57	4087	7.588	1.560	46.72	4087	1.569	6.151	-1.261	0.793	3.441	0.866
800T250-97	0.1017	1.320	4.49	12.944	3.098	3.132	0.713	0.735	12.361	2.641	52.19	8843	11.872	2.487	74.47	10885	4.550	8.818	-1.247	0.784	3.450	0.869
800T250-118	0.1242	1.611	5.48	15.930	3.777	3.144	0.860	0.731	15.822	3.448	68.14	12009	15.272	3.248	97.26	16235	8.285	10.807	-1.236	0.777	3.457	0.872
1000T125-43 <sup>1</sup>	0.0451	0.563	1.92	6.630	1.305	3.431	0.047	0.290	5.886	0.819	16.19	822	-	-	-	-	0.382	0.973	-0.379	0.259	3.464	0.988
1000T125-54	0.0566	0.707	2.41	8.333	1.634	3.434	0.059	0.288	7.960	1.216	24.03	1628	7.479	1.055	31.59	1628	0.755	1.212	-0.376	0.256	3.466	0.988
1000T125-68	0.0713	0.890	3.03	10.522	2.053	3.438	0.073	0.286	10.452	1.781	35.19	3261	10.155	1.575	47.15	3261	1.508	1.515	-0			



Section	Design Thickness (in)	Fy (ksi)	Gross Properties							Effective Properties						Torsional Properties						Lu (in)
			Area (in <sup>2</sup> )	Weight (lb/ft)	I <sub>x</sub> (in <sup>4</sup> )	S <sub>x</sub> (in <sup>3</sup> )	R <sub>x</sub> (in)	I <sub>y</sub> (in <sup>4</sup> )	R <sub>y</sub> (in)	I <sub>xe</sub> (in <sup>4</sup> )	S <sub>xe</sub> (in <sup>3</sup> )	Mal (in-k)	Mad (in-k)	V <sub>ag</sub> (lb)	Vanet (lb)	Jx1000 (in <sup>4</sup> )	C <sub>w</sub> (in <sup>6</sup> )	X <sub>o</sub> (in)	m (in)	R <sub>o</sub> (in)	β	
400S250-43	0.0451	33	0.447	1.52	1.224	0.612	1.655	0.399	0.945	1.224	0.503	9.93	10.41	1739	810	0.303	1.486	-2.139	1.252	2.864	0.443	63.7
400S250-54	0.0566	33	0.556	1.89	1.512	0.756	1.649	0.49	0.938	1.512	0.653	12.9	13.91	2603	944	0.594	1.821	-2.124	1.244	2.848	0.444	63.8
400S250-54	0.0566	50	0.556	1.89	1.512	0.756	1.649	0.49	0.938	1.506	0.576	17.24	18.42	3372	1223	0.594	1.821	-2.124	1.244	2.848	0.444	51.6
400S250-68	0.0713	33	0.693	2.36	1.864	0.932	1.64	0.599	0.929	1.864	0.883	17.45	18.42	3215	895	1.174	2.225	-2.105	1.235	2.826	0.445	64
400S250-68	0.0713	50	0.693	2.36	1.864	0.932	1.64	0.599	0.929	1.864	0.775	23.19	24.76	4871	1356	1.174	2.225	-2.105	1.235	2.826	0.445	51.6
400S250-97	0.1017	33	0.966	3.29	2.541	1.271	1.622	0.801	0.911	2.541	1.253	28.31	28.7	4394	797	3.329	2.978	-2.066	1.214	2.78	0.448	60.3
400S250-97	0.1017	50	0.966	3.29	2.541	1.271	1.622	0.801	0.911	2.541	1.191	40.06	41.47	6658	1207	3.329	2.978	-2.066	1.214	2.78	0.448	48.8
400S300-54	0.0566	33	0.613	2.09	1.732	0.866	1.681	0.760	1.114	1.723	0.680	13.44	14.70	2603	944	0.655	2.802	-2.594	1.496	3.285	0.377	74.0
400S300-54	0.0566	50	0.613	2.09	1.732	0.866	1.681	0.760	1.114	1.637	0.592	17.72	19.25	3372	1223	0.655	2.802	-2.594	1.496	3.285	0.377	59.9
400S300-68	0.0713	33	0.764	2.60	2.139	1.070	1.673	0.933	1.105	2.139	0.914	18.06	19.68	3215	895	1.295	3.432	-2.574	1.486	3.263	0.378	74.3
400S300-68	0.0713	50	0.764	2.60	2.139	1.070	1.673	0.933	1.105	2.099	0.805	24.09	26.05	4871	1356	1.295	3.432	-2.574	1.486	3.263	0.378	60.0
400S300-97	0.1017	33	1.067	3.63	2.928	1.464	1.656	1.258	1.086	2.928	1.381	30.58	32.4	4394	797	3.679	4.619	-2.535	1.465	3.216	0.379	70.8
400S300-97	0.1017	50	1.067	3.63	2.928	1.464	1.656	1.258	1.086	2.897	1.307	39.12	40.72	6658	1207	3.679	4.619	-2.535	1.465	3.216	0.379	60.3
550S137-33	0.0346	33	0.301	1.02	1.283	0.467	2.064	0.067	0.472	1.283	0.453	8.95	7.48	699	699	0.12	0.411	-0.841	0.536	2.278	0.864	33.7
550S137-43	0.0451	33	0.391	1.33	1.655	0.602	2.059	0.085	0.467	1.655	0.592	13.08	11.6	1550	1199	0.265	0.52	-0.83	0.53	2.268	0.866	31.7
550S137-54	0.0566	33	0.486	1.65	2.039	0.741	2.049	0.103	0.46	2.039	0.741	16.77	15.9	2739	1666	0.519	0.632	-0.817	0.523	2.254	0.868	31.1
550S137-54	0.0566	50	0.486	1.65	2.039	0.741	2.049	0.103	0.46	2.039	0.714	24.03	20.88	3093	1881	0.519	0.632	-0.817	0.523	2.254	0.868	25.4
550S137-68	0.0713	33	0.604	2.05	2.503	0.91	2.036	0.123	0.451	2.503	0.91	21.22	21.22	4347	2057	1.023	0.764	-0.801	0.514	2.234	0.871	30.4
550S137-68	0.0713	50	0.604	2.05	2.503	0.91	2.036	0.123	0.451	2.503	0.909	31.42	28.89	5350	2532	1.023	0.764	-0.801	0.514	2.234	0.871	24.9
550S137-97	0.1017	33	0.838	2.85	3.38	1.229	2.008	0.155	0.43	3.38	1.229	30.35	30.35	6282	1997	2.891	0.997	-0.766	0.497	2.192	0.878	29.2
550S137-97	0.1017	50	0.838	2.85	3.38	1.229	2.008	0.155	0.43	3.38	1.229	44.72	44.72	9518	3026	2.891	0.997	-0.766	0.497	2.192	0.878	23.9
550S162-33	0.0346	33	0.327	1.11	1.458	0.530	2.112	0.113	0.589	1.458	0.512	10.11	8.63	699	699	0.130	0.713	-1.114	0.697	2.459	0.795	41.4
550S162-43	0.0451	33	0.424	1.44	1.883	0.685	2.107	0.145	0.584	1.883	0.681	14.79 <sup>2</sup>	13.14	1550	1199	0.288	0.905	-1.103	0.691	2.448	0.797	39.2
550S162-54	0.0566	33	0.528	1.80	2.324	0.845	2.098	0.176	0.577	2.324	0.845	18.76 <sup>2</sup>	17.87	2739	1666	0.564	1.105	-1.090	0.684	2.434	0.800	38.7
550S162-54	0.0566	50	0.528	1.80	2.324	0.845	2.098	0.176	0.577	2.324	0.811	26.86 <sup>2</sup>	23.52	3093	1881	0.564	1.105	-1.090	0.684	2.434	0.800	31.6
550S162-68	0.0713	33	0.657	2.24	2.861	1.040	2.086	0.212	0.568	2.861	1.040	23.72 <sup>2</sup>	23.72	4347	2057	1.114	1.342	-1.072	0.675	2.414	0.803	38.0
550S162-68	0.0713	50	0.657	2.24	2.861	1.040	2.086	0.212	0.568	2.861	1.031	34.94 <sup>2</sup>	32.28	5350	2532	1.114	1.342	-1.072	0.675	2.414	0.803	31.1
550S162-97	0.1017	33	0.915	3.11	3.886	1.413	2.061	0.276	0.549	3.886	1.413	33.91	33.91	6282	1997	3.154	1.775	-1.037	0.656	2.372	0.809	36.8
550S162-97	0.1017	50	0.915	3.11	3.886	1.413	2.061	0.276	0.549	3.886	1.413	50.13	50.13	9518	3026	3.154	1.775	-1.037	0.656	2.372	0.809	30
550S200-33	0.0346	33	0.362	1.23	1.694	0.616	2.164	0.204	0.751	1.678	0.559	11.05	9.80	699	699	0.144	1.326	-1.508	0.925	2.742	0.698	51.9
550S200-43	0.0451	33	0.469	1.60	2.189	0.796	2.159	0.261	0.746	2.189	0.776	15.33	13.96	1550	1199	0.318	1.691	-1.496	0.918	2.731	0.700	51.7
550S200-54	0.0566	33	0.585	1.99	2.706	0.984	2.152	0.32	0.739	2.706	0.984	21.41	19.98	2739	1666	0.624	2.072	-1.483	0.911	2.716	0.702	49.2
550S200-54	0.0566	50	0.585	1.99	2.706	0.984	2.152	0.32	0.739	2.706	0.901	26.98	24.84	3093	1881	0.624	2.072	-1.483	0.911	2.716	0.702	41.8
550S200-68	0.0713	33	0.729	2.48	3.341	1.215	2.141	0.389	0.731	3.341	1.215	27.03	27.03	4347	2057	1.235	2.531	-1.465	0.902	2.695	0.705	48.5
550S200-68	0.0713	50	0.729	2.48	3.341	1.215	2.141	0.389	0.731	3.341	1.17	38.83	35.92	5350	2532	1.235	2.531	-1.465	0.902	2.695	0.705	39.6
550S200-97	0.1017	33	1.016	3.46	4.563	1.659	2.119	0.515	0.712	4.563	1.659	38.58	38.58	6282	1997	3.504	3.384	-1.428	0.882	2.652	0.710	47.4
550S200-97	0.1017	50	1.016	3.46	4.563	1.659	2.119	0.515	0.712	4.563	1.659	57.25	57.25	9518	3026	3.504	3.384	-1.428	0.882	2.652	0.710	38.6
550S250-43	0.0451	33	0.515	1.75	2.524	0.918	2.215	0.445	0.93	2.524	0.817	16.15	14.74	1550	1199	0.349	2.837	-1.933	1.163	3.083	0.607	62.6
550S250-54	0.0566	33	0.641	2.18	3.126	1.137	2.208	0.547	0.923	3.126	1.033	20.40	19.87	2739	1666	0.685	3.486	-1.919	1.155	3.067	0.609	62.6
550S250-54	0.0566	50	0.641	2.18	3.126	1.137	2.208	0.547	0.923	3.084	0.95	28.44	26.11	3093	1881	0.685	3.486	-1.919	1.155	3.067	0.609	50.7
550S250-68	0.0713	33	0.800	2.72	3.866	1.406	2.198	0.669	0.914	3.866	1.345	29.28	28.52	4347	2057	1.356	4.274	-1.900	1.146	3.046	0.611	59.5
550S250-68	0.0713	50	0.800	2.72	3.866	1.406	2.198	0.669	0.914	3.864	1.233	36.91	35.43	5350	2532	1.356	4.274	-1.900	1.146	3.046	0.611	



# Structural (S) Section Properties



SSA

Section	Design Thickness (in)	Fy (ksi)	Gross Properties							Effective Properties						Torsional Properties						Lu (in)
			Area (in²)	Weight (lb/ft)	Ix (in⁴)	Sx (in³)	Rx (in)	Iy (in⁴)	Ry (in)	Ixe (in⁴)	Sxe (in³)	Mal (in-k)	Mad (in-k)	Vag (lb)	Vanet (lb)	Jx1000 (in⁴)	Cw (in⁶)	Xo (in)	m (in)	Ro (in)	β	
600S200-33	0.0346	33	0.379	1.29	2.075	0.692	2.340	0.209	0.743	2.058	0.621	12.28	10.77	638	638	0.151	1.593	-1.457	0.901	2.855	0.740	51.6
600S200-43	0.0451	33	0.492	1.67	2.683	0.894	2.335	0.268	0.739	2.683	0.873	17.24	15.39	1416	1240	0.334	2.033	-1.446	0.894	2.844	0.742	51.4
600S200-54	0.0566	33	0.613	2.09	3.319	1.106	2.327	0.328	0.732	3.319	1.106	24.07²	22.07	2739	1890	0.655	2.493	-1.432	0.887	2.829	0.744	48.9
600S200-54	0.0566	50	0.613	2.09	3.319	1.106	2.327	0.328	0.732	3.319	1.015	30.40	27.38	2823	1947	0.655	2.493	-1.432	0.887	2.829	0.744	41.6
600S200-68	0.0713	33	0.764	2.60	4.101	1.367	2.316	0.400	0.723	4.101	1.367	30.42²	29.97	4347	2339	1.295	3.047	-1.415	0.878	2.809	0.746	48.2
600S200-68	0.0713	50	0.764	2.60	4.101	1.367	2.316	0.400	0.723	4.101	1.317	43.71²	39.69	5350	2879	1.295	3.047	-1.415	0.878	2.809	0.746	39.3
600S200-97	0.1017	33	1.067	3.63	5.612	1.871	2.293	0.530	0.705	5.612	1.871	43.49²	43.49	6911	2512	3.679	4.080	-1.378	0.859	2.767	0.752	46.9
600S200-97	0.1017	50	1.067	3.63	5.612	1.871	2.293	0.530	0.705	5.612	1.871	64.53²	63.67	10472	3805	3.679	4.080	-1.378	0.859	2.767	0.752	38.3
600S200-118	0.1242	33	1.283	4.36	6.641	2.214	2.275	0.611	0.690	6.641	2.214	53.05²	53.05	8267	2391	6.595	4.753	-1.351	0.845	2.735	0.756	46.1
600S200-118	0.1242	50	1.283	4.36	6.641	2.214	2.275	0.611	0.690	6.641	2.214	78.44²	78.44	12526	3622	6.595	4.753	-1.351	0.845	2.735	0.756	37.6
600S250-43	0.0451	33	0.537	1.83	3.082	1.027	2.396	0.458	0.923	3.082	0.918	18.14	16.21	1416	1240	0.364	3.411	-1.874	1.136	3.179	0.652	62.4
600S250-54	0.0566	33	0.670	2.28	3.819	1.273	2.388	0.562	0.917	3.819	1.159	22.90	21.90	2739	1890	0.715	4.194	-1.860	1.129	3.163	0.654	62.3
600S250-54	0.0566	50	0.670	2.28	3.819	1.273	2.388	0.562	0.917	3.766	1.069	32.00	28.71	2823	1947	0.715	4.194	-1.860	1.129	3.163	0.654	50.5
600S250-68	0.0713	33	0.836	2.84	4.727	1.576	2.378	0.688	0.908	4.727	1.508	32.82²	31.50	4347	2339	1.416	5.145	-1.842	1.119	3.142	0.656	59.2
600S250-68	0.0713	50	0.836	2.84	4.727	1.576	2.378	0.688	0.908	4.723	1.386	41.49	39.07	5350	2879	1.416	5.145	-1.842	1.119	3.142	0.656	50.4
600S250-97	0.1017	33	1.169	3.98	6.496	2.165	2.357	0.923	0.889	6.496	2.161	48.81²	48.91	6911	2512	4.030	6.947	-1.803	1.100	3.098	0.661	58.0
600S250-97	0.1017	50	1.169	3.98	6.496	2.165	2.357	0.923	0.889	6.496	2.063	69.38²	66.81	10472	3805	4.030	6.947	-1.803	1.100	3.098	0.661	47.3
600S250-118	0.1242	33	1.407	4.79	7.713	2.571	2.342	1.075	0.874	7.713	2.571	59.58²	59.59	8267	2391	7.234	8.142	-1.775	1.085	3.066	0.665	57.3
600S250-118	0.1242	50	1.407	4.79	7.713	2.571	2.342	1.075	0.874	7.713	2.498	85.92²	86.83	12526	3622	7.234	8.142	-1.775	1.085	3.066	0.665	46.6
600S300-54	0.0566	33	0.726	2.47	4.319	1.440	2.439	0.875	1.098	4.269	1.211	23.93	22.80	2739	1890	0.775	6.452	-2.299	1.372	3.527	0.575	72.8
600S300-54	0.0566	50	0.726	2.47	4.319	1.440	2.439	0.875	1.098	4.014	1.106	33.13	29.62	2823	1947	0.775	6.452	-2.299	1.372	3.527	0.575	59.1
600S300-68	0.0713	33	0.907	3.09	5.354	1.785	2.430	1.075	1.089	5.344	1.581	31.23	30.88	4347	2339	1.537	7.937	-2.280	1.363	3.505	0.577	72.8
600S300-68	0.0713	50	0.907	3.09	5.354	1.785	2.430	1.075	1.089	5.221	1.446	43.30	40.53	5350	2879	1.537	7.937	-2.280	1.363	3.505	0.577	59.0
600S300-97	0.1017	33	1.271	4.32	7.381	2.460	2.410	1.454	1.070	7.381	2.352	52.07²	52.40	6911	2512	4.381	10.776	-2.241	1.343	3.461	0.581	68.8
600S300-97	0.1017	50	1.271	4.32	7.381	2.460	2.410	1.454	1.070	7.280	2.247	67.28	64.67	10472	3805	4.381	10.776	-2.241	1.343	3.461	0.581	58.8
600S300-118	0.1242	33	1.531	5.21	8.785	2.928	2.395	1.704	1.055	8.785	2.840	64.29²	66.28	8267	2391	7.872	12.683	-2.212	1.328	3.427	0.583	68.1
600S300-118	0.1242	50	1.531	5.21	8.785	2.928	2.395	1.704	1.055	8.713	2.797	94.24²	90.37	12526	3622	7.872	12.683	-2.212	1.328	3.427	0.583	55.3
600S350-54	0.0566	33	0.825	2.81	5.022	1.674	2.467	1.491	1.344	4.911	1.452	28.70	27.98	2739	1890	0.881	12.942	-3.037	1.787	4.137	0.461	91.8
600S350-54	0.0566	50	0.825	2.81	5.022	1.674	2.467	1.491	1.344	4.721	1.335	39.97	36.56	2823	1947	0.881	12.942	-3.037	1.787	4.137	0.461	74.4
600S350-68	0.0713	33	1.032	3.51	6.237	2.079	2.459	1.841	1.336	6.237	1.949	38.50	37.63	4347	2339	1.748	15.968	-3.018	1.777	4.115	0.462	91.8
600S350-68	0.0713	50	1.032	3.51	6.237	2.079	2.459	1.841	1.336	6.166	1.771	53.01	49.69	5350	2879	1.748	15.968	-3.018	1.777	4.115	0.462	74.4
600S350-97	0.1017	33	1.449	4.93	8.631	2.877	2.441	2.518	1.318	8.631	2.822	61.55²	62.49	6911	2512	4.994	21.811	-2.979	1.757	4.071	0.464	87.5
600S350-97	0.1017	50	1.449	4.93	8.631	2.877	2.441	2.518	1.318	8.631	2.593	77.64	78.36	10472	3805	4.994	21.811	-2.979	1.757	4.071	0.464	74.4
600S350-118	0.1242	33	1.748	5.95	10.304	3.435	2.428	2.978	1.305	10.304	3.435	76.39²	76.40	8267	2391	8.990	25.791	-2.951	1.742	4.038	0.466	86.9
600S350-118	0.1242	50	1.748	5.95	10.304	3.435	2.428	2.978	1.305	10.304	3.268	108.43²	107.66	12526	3622	8.990	25.791	-2.951	1.742	4.038	0.466	70.6
800S137-33	0.0346	33	0.388	1.32	3.198	0.799	2.873	0.073	0.435	2.998	0.622	12.30	10.71	474	474	0.155	0.957	-0.696	0.460	2.987	0.946	32.5
800S137-43	0.0451	33	0.503	1.71	4.134	1.033	2.866	0.093	0.430	4.001	0.896	17.70	15.78	1051	1051	0.341	1.214	-0.687	0.454	2.978	0.947	32.2
800S137-54	0.0566	33	0.627	2.13	5.110	1.277	2.855	0.112	0.423	5.077	1.179	23.29	21.74	2091	2091	0.670	1.478	-0.676	0.448	2.964	0.948	32.0
800S137-54	0.0566	50	0.627	2.13	5.110	1.277	2.855	0.112	0.423	4.974	1.083	32.42	28.47	2091	2091	0.670	1.478	-0.676	0.448	2.964	0.948	25.9
800S137-68	0.0713	33	0.782	2.66	6.303	1.576	2.839	0.134	0.414	6.303	1.541	30.45	29.75	4221	3367	1.325	1.789	-0.661	0.440	2.944	0.950	31.6
800S137-68	0.0713	50	0.782	2.66	6.303	1.576	2.839	0.134	0.414	6.285	1.468	43.96	39.57	4221	3367	1.325	1.789	-0.661	0.440	2.944	0.950	25.6
800S137-97	0.1017	33	1.093	3.72	8.597	2.149	2.805	0.169	0.394	8.597	2.149	53.09²	53.09	8843	4824	3.767	2.349	-0.630	0.423			





# Structural (S) Section Properties

SSMA

SS10/

Section	Design Thickness (in)	Fy (ksi)	Gross Properties							Effective Properties						Torsional Properties						Lu (in)
			Area (in²)	Weight (lb/ft)	Ix (in⁴)	Sx (in³)	Rx (in)	Iy (in⁴)	Ry (in)	Ixe (in⁴)	Sxe (in³)	Mal (in-k)	Mad (in-k)	Vag (lb)	Vanet (lb)	Jx1000 (in⁴)	Cw (in⁴)	Xo (in)	m (in)	Ro (in)	β	
800S250-43	0.0451	33	0.627	2.13	6.015	1.504	3.097	0.500	0.893	6.015	1.313	25.95	22.06	1051	1051	0.425	6.374	-1.675	1.043	3.632	0.787	61.5
800S250-54	0.0566	33	0.783	2.66	7.465	1.866	3.088	0.614	0.886	7.465	1.712	33.82	30.07	2091	2091	0.836	7.850	-1.661	1.036	3.617	0.789	61.4
800S250-54	0.0566	50	0.783	2.66	7.465	1.866	3.088	0.614	0.886	7.378	1.525	45.66	39.13	2091	2091	0.836	7.850	-1.661	1.036	3.617	0.789	49.8
800S250-68	0.0713	33	0.978	3.33	9.261	2.315	3.077	0.752	0.877	9.261	2.220	48.33²	43.63	4221	3367	1.658	9.652	-1.644	1.027	3.597	0.791	58.2
800S250-68	0.0713	50	0.978	3.33	9.261	2.315	3.077	0.752	0.877	9.240	2.059	61.65	53.75	4221	3367	1.658	9.652	-1.644	1.027	3.597	0.791	49.6
800S250-97	0.1017	33	1.372	4.67	12.789	3.197	3.053	1.009	0.857	12.789	3.191	72.07²	70.72	8843	4824	4.731	13.091	-1.607	1.008	3.555	0.796	56.8
800S250-97	0.1017	50	1.372	4.67	12.789	3.197	3.053	1.009	0.857	12.789	3.054	102.70²	93.42	10885	5938	4.731	13.091	-1.607	1.008	3.555	0.796	46.4
800S250-118	0.1242	33	1.655	5.63	15.242	3.810	3.035	1.175	0.843	15.242	3.810	88.31²	88.31	11341	4971	8.511	15.395	-1.580	0.994	3.524	0.799	55.9
800S250-118	0.1242	50	1.655	5.63	15.242	3.810	3.035	1.175	0.843	15.242	3.707	127.51²	122.92	16235	7115	8.511	15.395	-1.580	0.994	3.524	0.799	45.6
800S300-54	0.0566	33	0.839	2.86	8.358	2.090	3.156	0.960	1.069	8.249	1.785	35.28	31.13	2091	2091	0.896	12.076	-2.073	1.271	3.924	0.721	72.2
800S300-54	0.0566	50	0.839	2.86	8.358	2.090	3.156	0.960	1.069	7.862	1.535	45.96	40.22	2091	2091	0.896	12.076	-2.073	1.271	3.924	0.721	58.6
800S300-68	0.0713	33	1.050	3.57	10.382	2.595	3.145	1.179	1.060	10.351	2.321	45.86	42.54	4221	3367	1.779	14.888	-2.055	1.262	3.903	0.723	72.0
800S300-68	0.0713	50	1.050	3.57	10.382	2.595	3.145	1.179	1.060	10.082	2.145	64.21	55.47	4221	3367	1.779	14.888	-2.055	1.262	3.903	0.723	58.4
800S300-97	0.1017	33	1.474	5.02	14.375	3.594	3.123	1.595	1.040	14.375	3.443	76.21²	73.25	8843	4824	5.082	20.304	-2.017	1.243	3.860	0.727	67.7
800S300-97	0.1017	50	1.474	5.02	14.375	3.594	3.123	1.595	1.040	14.170	3.304	98.92	89.89	10885	5938	5.082	20.304	-2.017	1.243	3.860	0.727	58.1
800S300-118	0.1242	33	1.779	6.05	17.167	4.292	3.106	1.871	1.025	17.167	4.168	94.33²	95.78	11341	4971	9.149	23.979	-1.989	1.229	3.828	0.730	66.8
800S300-118	0.1242	50	1.779	6.05	17.167	4.292	3.106	1.871	1.025	17.022	4.108	138.41²	126.69	16235	7115	9.149	23.979	-1.989	1.229	3.828	0.730	54.5
800S350-54	0.0566	33	0.938	3.19	9.683	2.421	3.212	1.646	1.325	9.477	2.125	41.98	38.29	2091	2091	1.002	22.897	-2.766	1.668	4.441	0.612	90.0
800S350-54	0.0566	50	0.938	3.19	9.683	2.421	3.212	1.646	1.325	9.191	1.869	55.96	49.74	2091	2091	1.002	22.897	-2.766	1.668	4.441	0.612	73.1
800S350-68	0.0713	33	1.174	4.00	12.046	3.012	3.203	2.034	1.316	12.046	2.837	56.07	51.89	4221	3367	1.990	28.308	-2.748	1.658	4.421	0.614	89.9
800S350-68	0.0713	50	1.174	4.00	12.046	3.012	3.203	2.034	1.316	11.909	2.596	77.73	68.05	4221	3367	1.990	28.308	-2.748	1.658	4.421	0.614	72.9
800S350-97	0.1017	33	1.652	5.62	16.737	4.184	3.183	2.784	1.298	16.737	4.101	89.43²	87.25	8843	4824	5.696	38.834	-2.710	1.639	4.377	0.617	85.4
800S350-97	0.1017	50	1.652	5.62	16.737	4.184	3.183	2.784	1.298	16.737	3.785	113.34	108.67	10885	5938	5.696	38.834	-2.710	1.639	4.377	0.617	72.7
800S350-118	0.1242	33	1.997	6.79	20.041	5.010	3.168	3.295	1.285	20.041	5.010	111.44²	111.44	11341	4971	10.267	46.068	-2.682	1.624	4.345	0.619	84.6
800S350-118	0.1242	50	1.997	6.79	20.041	5.010	3.168	3.295	1.285	20.041	4.762	158.02²	150.37	16235	7115	10.267	46.068	-2.682	1.624	4.345	0.619	68.9
1000S162-43¹	0.0451	33	0.627	2.13	8.025	1.605	3.577	0.168	0.518	7.523	1.302	25.74	22.49	836	836	0.425	3.430	-0.823	0.545	3.707	0.951	38.8
1000S162-54	0.0566	33	0.783	2.66	9.950	1.990	3.565	0.204	0.511	9.627	1.722	34.02	31.11	1661	1661	0.836	4.198	-0.812	0.538	3.692	0.952	38.6
1000S162-54	0.0566	50	0.783	2.66	9.950	1.990	3.565	0.204	0.511	9.391	1.572	47.07	40.37	1661	1661	0.836	4.198	-0.812	0.538	3.692	0.952	31.3
1000S162-68	0.0713	33	0.978	3.33	12.325	2.465	3.550	0.246	0.502	12.256	2.276	44.98	42.91	3345	3345	1.658	5.121	-0.798	0.531	3.673	0.953	38.2
1000S162-68	0.0713	50	0.978	3.33	12.325	2.465	3.550	0.246	0.502	11.978	2.154	64.51	56.35	3345	3345	1.658	5.121	-0.798	0.531	3.673	0.953	31.0
1000S162-97	0.1017	33	1.372	4.67	16.967	3.393	3.516	0.320	0.483	16.967	3.393	67.06	67.05	8843	6434	4.731	6.827	-0.768	0.514	3.631	0.955	37.5
1000S162-97	0.1017	50	1.372	4.67	16.967	3.393	3.516	0.320	0.483	16.967	3.269	97.89	92.56	9864	7177	4.731	6.827	-0.768	0.514	3.631	0.955	30.4
1000S162-118	0.1242	33	1.655	5.63	20.169	4.034	3.491	0.363	0.468	20.169	4.034	100.24²	100.25	13189	7747	8.511	7.924	-0.746	0.502	3.600	0.957	32.9
1000S162-118	0.1242	50	1.655	5.63	20.169	4.034	3.491	0.363	0.468	20.169	4.034	120.77	120.34	16235	9536	8.511	7.924	-0.746	0.502	3.600	0.957	30.0
1000S200-43¹	0.0451	33	0.672	2.29	9.085	1.817	3.676	0.309	0.677	8.602	1.470	29.05	26.14	836	836	0.456	6.236	-1.147	0.743	3.910	0.914	49.3
1000S200-54	0.0566	33	0.839	2.86	11.278	2.256	3.666	0.378	0.671	10.953	1.984	39.20	35.86	1661	1661	0.896	7.665	-1.135	0.737	3.896	0.915	49.1
1000S200-54	0.0566	50	0.839	2.86	11.278	2.256	3.666	0.378	0.671	10.769	1.705	51.05	46.62	1661	1661	0.896	7.665	-1.135	0.737	3.896	0.915	39.8
1000S200-68	0.0713	33	1.050	3.57	13.994	2.799	3.652	0.460	0.662	13.920	2.607	51.51	49.07	3345	3345	1.779	9.401	-1.120	0.729	3.876	0.917	48.8
1000S200-68	0.0713	50	1.050	3.57	13.994	2.799	3.652	0.460	0.662	13.665	2.420	72.46	64.50	3345	3345	1.779	9.401	-1.120	0.729	3.876	0.917	39.6
1000S200-97	0.1017	33	1.474	5.02	19.336	3.867	3.622	0.609	0.643	19.336	3.867	76.42	76.42	8843	6434	5.082	12.679	-1.088	0.711	3.836	0.920	48.2
1000S200-97	0.1017	50	1.474	5.02	19.336	3.867	3.622	0.609	0.643	19.336	3.741	112.00	104.73	9864	7177	5.082	12.679	-1.088	0.711	3.836	0.920	39.0
1000S200-118	0																					



# Structural (S) Section Properties



SS11

Section	Design Thickness (in)	Fy (ksi)	Gross Properties							Effective Properties							Torsional Properties						
			Area (in <sup>2</sup> )	Weight (lb/ft)	I <sub>x</sub> (in <sup>4</sup> )	S <sub>x</sub> (in <sup>3</sup> )	R <sub>x</sub> (in)	I <sub>y</sub> (in <sup>4</sup> )	R <sub>y</sub> (in)	I <sub>xe</sub> (in <sup>4</sup> )	S <sub>xe</sub> (in <sup>3</sup> )	M <sub>al</sub> (in-k)	M <sub>ad</sub> (in-k)	V <sub>ag</sub> (lb)	Vanet (lb)	J <sub>x</sub> 1000 (in <sup>4</sup> )	C <sub>w</sub> (in <sup>6</sup> )	X <sub>o</sub> (in)	m (in)	R <sub>o</sub> (in)	β	L <sub>u</sub> (in)	
1200S162-54 <sup>1</sup>	0.0566	33	0.896	3.05	15.730	2.622	4.190	0.212	0.486	14.743	2.109	41.68	36.38	1377	1377	0.957	6.340	-0.732	0.493	4.281	0.971	37.5	
1200S162-54 <sup>1</sup>	0.0566	50	0.896	3.05	15.730	2.622	4.190	0.212	0.486	14.298	1.914	57.31	46.75	1377	1377	0.957	6.340	-0.732	0.493	4.281	0.971	30.5	
1200S162-68	0.0713	33	1.121	3.81	19.518	3.253	4.173	0.255	0.477	18.955	2.817	55.66	50.95	2771	2771	1.899	7.739	-0.719	0.485	4.261	0.972	37.2	
1200S162-68	0.0713	50	1.121	3.81	19.518	3.253	4.173	0.255	0.477	18.390	2.645	79.19	66.14	2771	2771	1.899	7.739	-0.719	0.485	4.261	0.972	30.2	
1200S162-97	0.1017	33	1.576	5.36	26.966	4.494	4.137	0.331	0.459	26.966	4.327	85.51	83.86	8147	7411	5.433	10.331	-0.691	0.470	4.219	0.973	36.4	
1200S162-97	0.1017	50	1.576	5.36	26.966	4.494	4.137	0.331	0.459	26.735	4.091	122.49	111.30	8147	7411	5.433	10.331	-0.691	0.470	4.219	0.973	29.5	
1200S162-118	0.1242	33	1.904	6.48	32.145	5.357	4.109	0.376	0.444	32.145	5.357	105.87	105.87	13189	9714	9.788	12.002	-0.670	0.459	4.187	0.974	35.8	
1200S162-118	0.1242	50	1.904	6.48	32.145	5.357	4.109	0.376	0.444	32.145	5.168	154.74	147.23	14986	11037	9.788	12.002	-0.670	0.459	4.187	0.974	29.0	
1200S200-54 <sup>1</sup>	0.0566	33	0.953	3.24	17.662	2.944	4.306	0.393	0.643	16.678	2.425	47.93	42.47	1377	1377	1.017	11.550	-1.032	0.681	4.474	0.947	48.0	
1200S200-54 <sup>1</sup>	0.0566	50	0.953	3.24	17.662	2.944	4.306	0.393	0.643	16.334	2.073	62.07	54.74	1377	1377	1.017	11.550	-1.032	0.681	4.474	0.947	39.0	
1200S200-68	0.0713	33	1.192	4.06	21.947	3.658	4.291	0.479	0.634	21.376	3.215	63.54	58.83	2771	2771	2.020	14.176	-1.017	0.673	4.455	0.948	47.7	
1200S200-68	0.0713	50	1.192	4.06	21.947	3.658	4.291	0.479	0.634	20.864	2.963	88.71	76.55	2771	2771	2.020	14.176	-1.017	0.673	4.455	0.948	38.7	
1200S200-97	0.1017	33	1.677	5.71	30.417	5.069	4.258	0.635	0.615	30.417	4.899	96.81	95.43	8147	7411	5.783	19.150	-0.987	0.656	4.414	0.950	47.0	
1200S200-97	0.1017	50	1.677	5.71	30.417	5.069	4.258	0.635	0.615	30.175	4.680	139.51	126.86	8147	7411	5.783	19.150	-0.987	0.656	4.414	0.950	38.1	
1200S200-118	0.1242	33	2.028	6.90	36.347	6.058	4.234	0.732	0.601	36.347	6.058	119.71	119.71	13189	9714	10.427	22.451	-0.964	0.644	4.384	0.952	46.5	
1200S200-118	0.1242	50	2.028	6.90	36.347	6.058	4.234	0.732	0.601	36.347	5.865	175.59	166.80	14986	11037	10.427	22.451	-0.964	0.644	4.384	0.952	37.7	
1200S250-54 <sup>1</sup>	0.0566	33	1.009	3.43	19.681	3.280	4.416	0.683	0.823	18.832	2.482	49.05	45.43	1377	1377	1.078	19.505	-1.378	0.892	4.699	0.914	59.6	
1200S250-54 <sup>1</sup>	0.0566	50	1.009	3.43	19.681	3.280	4.416	0.683	0.823	18.433	2.149	64.34	58.39	1377	1377	1.078	19.505	-1.378	0.892	4.699	0.914	48.3	
1200S250-68	0.0713	33	1.263	4.30	24.484	4.081	4.402	0.836	0.813	23.963	3.496	69.08	62.95	2771	2771	2.141	24.034	-1.362	0.884	4.679	0.915	59.2	
1200S250-68	0.0713	50	1.263	4.30	24.484	4.081	4.402	0.836	0.813	23.575	3.007	90.04	81.59	2771	2771	2.141	24.034	-1.362	0.884	4.679	0.915	48.1	
1200S250-97	0.1017	33	1.779	6.05	34.016	5.669	4.373	1.121	0.794	34.016	5.496	108.60	102.52	8147	7411	6.134	32.734	-1.329	0.867	4.639	0.918	58.6	
1200S250-97	0.1017	50	1.779	6.05	34.016	5.669	4.373	1.121	0.794	33.835	5.037	150.82	135.37	8147	7411	6.134	32.734	-1.329	0.867	4.639	0.918	47.5	
1200S250-118	0.1242	33	2.152	7.32	40.726	6.788	4.350	1.307	0.779	40.726	6.788	134.13	133.19	13189	9714	11.065	38.619	-1.305	0.854	4.608	0.920	58.2	
1200S250-118	0.1242	50	2.152	7.32	40.726	6.788	4.350	1.307	0.779	40.726	6.541	195.84	178.57	14986	11037	11.065	38.619	-1.305	0.854	4.608	0.920	47.1	
1200S300-54 <sup>1</sup>	0.0566	33	1.066	3.63	21.699	3.617	4.512	1.074	1.004	21.648	2.736	54.06	47.36	1377	1377	1.138	30.051	-1.743	1.111	4.940	0.876	70.8	
1200S300-54 <sup>1</sup>	0.0566	50	1.066	3.63	21.699	3.617	4.512	1.074	1.004	21.043	2.272	68.04	60.65	1377	1377	1.138	30.051	-1.743	1.111	4.940	0.876	57.4	
1200S300-68	0.0713	33	1.335	4.54	27.020	4.503	4.499	1.320	0.994	26.918	4.064	80.30	65.72	2771	2771	2.262	37.126	-1.726	1.103	4.921	0.877	70.5	
1200S300-68	0.0713	50	1.335	4.54	27.020	4.503	4.499	1.320	0.994	26.510	3.317	99.32	84.79	2771	2771	2.262	37.126	-1.726	1.103	4.921	0.877	57.2	
1200S300-97	0.1017	33	1.881	6.40	37.616	6.269	4.472	1.786	0.974	37.616	6.035	133.59 <sup>2</sup>	116.06	8147	7411	6.484	50.853	-1.691	1.085	4.880	0.880	66.0	
1200S300-97	0.1017	50	1.881	6.40	37.616	6.269	4.472	1.786	0.974	37.085	5.831	174.57	141.05	8147	7411	6.484	50.853	-1.691	1.085	4.880	0.880	56.7	
1200S300-118	0.1242	33	2.276	7.75	45.106	7.518	4.452	2.095	0.959	45.106	7.323	165.76 <sup>2</sup>	154.65	13189	9714	11.704	60.251	-1.666	1.071	4.849	0.882	64.9	
1200S300-118	0.1242	50	2.276	7.75	45.106	7.518	4.452	2.095	0.959	44.727	7.232	243.67 <sup>2</sup>	201.68	14986	11037	11.704	60.251	-1.666	1.071	4.849	0.882	53.0	
1200S350-54 <sup>1</sup>	0.0566	33	1.165	3.96	24.860	4.143	4.620	1.866	1.266	24.610	3.295	65.12	58.95	1377	1377	1.244	54.279	-2.363	1.478	5.341	0.804	88.0	
1200S350-54 <sup>1</sup>	0.0566	50	1.165	3.96	24.860	4.143	4.620	1.866	1.266	24.087	2.787	83.46	75.92	1377	1377	1.244	54.279	-2.363	1.478	5.341	0.804	71.4	
1200S350-68	0.0713	33	1.460	4.97	30.996	5.166	4.608	2.306	1.257	30.996	4.908	96.98	80.83	2771	2771	2.473	67.251	-2.346	1.469	5.322	0.806	87.7	
1200S350-68	0.0713	50	1.460	4.97	30.996	5.166	4.608	2.306	1.257	30.916	4.081	121.59	104.89	2771	2771	2.473	67.251	-2.346	1.469	5.322	0.806	71.2	
1200S350-97	0.1017	33	2.059	7.01	43.269	7.211	4.584	3.159	1.239	43.269	7.071	154.22 <sup>2</sup>	138.56	8147	7411	7.098	92.672	-2.310	1.450	5.281	0.809	83.0	
1200S350-97	0.1017	50	2.059	7.01	43.269	7.211	4.584	3.159	1.239	43.269	6.590	197.31	170.84	8147	7411	7.098	92.672	-2.310	1.450	5.281	0.809	70.8	
1200S350-118	0.1242	33	2.494	8.48	51.992	8.665	4.566	3.741	1.225	51.992	8.665	192.74 <sup>2</sup>	181.90	13189	9714	12.821	110.302	-2.284	1.436	5.250	0.811	81.9	
1200S350-118	0.1242	50	2																				



## 25 psf Lateral Load

Wall Height (ft)	Spacing (in) oc	600S137					600S162					600S200				
		33 ksi		50 ksi			33 ksi		50 ksi			33 ksi		50 ksi		
		33	43	54	68	97	33	43	54	68	97	33	43	54	68	97
8	12	1.31	2.06	3.43	4.68	7.22	1.87	2.89	5.14	6.99	10.94	2.29	3.71	6.86	9.41	15.09
	16	1.12	1.87	3.27	4.52	7.09	1.64	2.69	4.94	6.80	10.76	2.06	3.46	6.61	9.18	14.86
	24	0.75	1.51	2.96	4.22	6.83	1.21	2.28	4.56	6.43	10.39	1.60	2.98	6.12	8.72	14.40
9	12	1.15	1.90	3.29	4.54	7.10	1.68	2.71	4.96	6.81	10.77	2.08	3.46	6.54	9.07	14.66
	16	0.91	1.67	3.09	4.34	6.93	1.40	2.45	4.71	6.57	10.53	1.79	3.15	6.23	8.77	14.36
	24	0.46	1.21	2.70	3.95	6.59	0.86	1.95	4.22	6.09	10.05	1.23	2.55	5.61	8.19	13.77
10	12	0.97	1.72	3.13	4.38	6.96	1.46	2.51	4.75	6.61	10.56	1.84	3.18	6.17	8.67	14.14
	16	0.69	1.44	2.88	4.13	6.75	1.13	2.19	4.44	6.30	10.25	1.49	2.81	5.79	8.30	13.76
	24	0.14 <sup>4</sup>	0.89	2.40	3.65	6.32	0.48	1.58	3.84	5.71	9.65	0.82	2.08	5.05	7.59	13.03
12	12	0.58	1.32	2.75	3.99	6.61	0.97	2.01	4.20	6.09	10.01	1.31	2.55	5.30	7.68	12.83
	16	0.20 <sup>4</sup>	0.93	2.40	3.63	6.28	0.53 <sup>4</sup>	1.58	3.77	5.64	9.54	0.85	2.04	4.78	7.17	12.28
	24	-	0.20 <sup>3</sup>	1.73 <sup>4</sup>	2.95	5.66	-	0.76 <sup>4</sup>	2.94	4.79	8.66	-	1.10 <sup>4</sup>	3.79	6.20	11.25
14	12	0.16 <sup>3</sup>	0.86 <sup>4</sup>	2.30	3.51	6.14	0.45 <sup>3</sup>	1.44	3.44	5.21	9.22	0.76 <sup>4</sup>	1.85	4.31	6.51	11.20
	16	-	0.38 <sup>3</sup>	1.84 <sup>4</sup>	3.04	5.70	-	0.91 <sup>3</sup>	2.90 <sup>4</sup>	4.64	8.58	0.21 <sup>3</sup>	1.25 <sup>4</sup>	3.67	5.87	10.50
	24	-	-	1.00 <sup>3</sup>	2.16 <sup>3</sup>	4.86 <sup>4</sup>	-	-	1.92 <sup>3</sup>	3.60 <sup>3</sup>	7.39	-	0.14 <sup>3</sup>	2.52 <sup>3</sup>	4.70 <sup>4</sup>	9.21
16	12	-	0.39 <sup>3</sup>	1.80 <sup>3</sup>	2.96 <sup>4</sup>	5.56	-	0.87 <sup>3</sup>	2.64 <sup>4</sup>	4.22	7.74	0.23 <sup>3</sup>	1.18 <sup>3</sup>	3.31	5.28	9.42
	16	-	-	1.25 <sup>3</sup>	2.38 <sup>3</sup>	4.99 <sup>4</sup>	-	0.28 <sup>3</sup>	2.04 <sup>3</sup>	3.57 <sup>3</sup>	6.99	-	0.50 <sup>3</sup>	2.61 <sup>3</sup>	4.56 <sup>4</sup>	8.61
	24	-	-	0.28 <sup>2</sup>	1.35 <sup>2</sup>	3.95 <sup>3</sup>	-	-	0.98 <sup>2</sup>	2.42 <sup>3</sup>	5.67 <sup>3</sup>	-	-	1.37 <sup>3</sup>	3.28 <sup>3</sup>	7.16 <sup>4</sup>

## 25 psf Lateral Load

Wall Height (ft)	Spacing (in) oc	800S137				800S162					800S200				
		33 ksi		50 ksi		33 ksi		50 ksi			33 ksi		50 ksi		
		43	54	68	97	43	54	68	97	118	43	54	68	97	118
8	12	2.11	3.31	4.50	6.98	2.98	5.09	6.92	10.93	14.02	4.03	7.31	9.89	15.60	20.09
	16	1.98	3.21	4.40	6.89	2.82	4.95	6.78	10.80	13.91	3.85	7.14	9.73	15.45	19.94
	24	1.72	3.00	4.20	6.70	2.52	4.67	6.51	10.53	13.67	3.49	6.78	9.41	15.14	19.64
9	12	2.01	3.22	4.42	6.90	2.85	4.97	6.80	10.82	13.92	3.88	7.16	9.75	15.47	19.96
	16	1.84	3.09	4.29	6.78	2.65	4.79	6.62	10.64	13.77	3.65	6.93	9.54	15.27	19.76
	24	1.51	2.82	4.03	6.54	2.26	4.44	6.27	10.30	13.47	3.20	6.48	9.13	14.87	19.37
10	12	1.88	3.12	4.32	6.81	2.70	4.84	6.66	10.68	13.80	3.71	6.98	9.59	15.31	19.80
	16	1.68	2.96	4.16	6.66	2.46	4.61	6.44	10.46	13.61	3.42	6.70	9.33	15.05	19.55
	24	1.28	2.63	3.84	6.36	1.98	4.17	6.01	10.03	13.23	2.86	6.13	8.81	14.55	19.05
12	12	1.60	2.89	4.09	6.59	2.36	4.51	6.34	10.35	13.51	3.30	6.55	9.18	14.91	19.39
	16	1.31	2.65	3.86	6.37	2.01	4.18	6.02	10.03	13.22	2.89	6.13	8.80	14.53	19.01
	24	0.75	2.17	3.40	5.92	1.34	3.55	5.38	9.39	12.66	2.10	5.32	8.04	13.78	18.26
14	12	1.27	2.60	3.81	6.31	1.96	4.11	5.93	9.93	13.12	2.78	5.93	8.61	14.38	18.85
	16	0.89	2.28	3.49	6.00	1.49	3.66	5.49	9.48	12.72	2.24	5.37	8.08	13.83	18.30
	24	0.16 <sup>4</sup>	1.64	2.87	5.39	0.62	2.81	4.63	8.60	11.92	1.22	4.30	7.05	12.79	17.23
16	12	0.90	2.27	3.47	5.97	1.50	3.63	5.44	9.40	12.63	2.18	5.12	7.71	13.34	17.90
	16	0.42 <sup>4</sup>	1.85	3.06	5.56	0.93	3.07	4.86	8.79	12.08	1.53	4.43	7.04	12.64	17.16
	24	-	1.06 <sup>3</sup>	2.27 <sup>4</sup>	4.77	-	2.01 <sup>4</sup>	3.78	7.65	11.02	0.32 <sup>3</sup>	3.15	5.77	11.30	15.75

## 30 psf Lateral Load

Wall Height (ft)	Spacing (in) oc	350S162				362S137				362S162				362S200			
		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi		33 ksi		50 ksi	
		33	43	54	68	33	43	54	68	33	43	54	68	33	43	54	68
8	12	0.78	1.49	2.99	4.08	0.56 <sup>4</sup>	1.16	2.43	3.44	0.85	1.59	3.17	4.38	1.13	2.13	4.06	5.58
	16	0.43 <sup>3</sup>	1.11 <sup>4</sup>	2.64	3.72	0.24 <sup>3</sup>	0.81 <sup>4</sup>	2.11	3.10	0.50 <sup>4</sup>	1.21	2.82	4.01	0.74 <sup>4</sup>	1.71	3.65	5.18
	24	-	0.42 <sup>3</sup>	1.99 <sup>3</sup>	3.05	-	0.18 <sup>3</sup>	1.52 <sup>3</sup>	2.47 <sup>4</sup>	-	0.52 <sup>3</sup>	2.16 <sup>4</sup>	3.32	-	0.95 <sup>4</sup>	2.89	4.42
9	12	0.46 <sup>3</sup>	1.11 <sup>4</sup>	2.48	3.48	0.28 <sup>3</sup>	0.83 <sup>4</sup>	2.03	2.94	0.53 <sup>3</sup>	1.21	2.68	3.77	0.77 <sup>4</sup>	1.68	3.44	4.84
	16	-	0.69 <sup>3</sup>	2.08 <sup>4</sup>	3.06	-	0.44 <sup>3</sup>	1.66 <sup>3</sup>	2.55 <sup>4</sup>	0.13 <sup>3</sup>	0.78 <sup>3</sup>	2.27 <sup>4</sup>	3.34	0.32 <sup>3</sup>	1.21 <sup>4</sup>	2.97	4.37
	24	-	-	1.37 <sup>3</sup>	2.31 <sup>3</sup>	-	-	0.99 <sup>3</sup>	1.84 <sup>3</sup>	-	-	1.54 <sup>3</sup>	2.57 <sup>3</sup>	-	0.37 <sup>3</sup>	2.12 <sup>3</sup>	3.51 <sup>4</sup>
10	12	0.17 <sup>3</sup>	0.74 <sup>3</sup>	1.99 <sup>4</sup>	2.88	-	0.51 <sup>3</sup>	1.62 <sup>3</sup>	2.44 <sup>4</sup>	0.23 <sup>3</sup>	0.84 <sup>3</sup>	2.18 <sup>4</sup>	3.15	0.42 <sup>3</sup>	1.25 <sup>4</sup>	2.83	4.09
	16	-	0.29 <sup>3</sup>	1.56 <sup>3</sup>	2.43 <sup>3</sup>	-	-	1.22 <sup>3</sup>	2.01 <sup>3</sup>	-	0.38 <sup>3</sup>	1.74 <sup>3</sup>	2.69 <sup>4</sup>	-	0.74 <sup>3</sup>	2.32 <sup>3</sup>	3.58 <sup>4</sup>
	24	-	-	0.81 <sup>2</sup>	1.63 <sup>3</sup>	-	-	0.51 <sup>2</sup>	1.25 <sup>2</sup>	-	-	0.96 <sup>2</sup>	1.86 <sup>3</sup>	-	-	1.43 <sup>3</sup>	2.66 <sup>3</sup>
12	12	-	0.13 <sup>2</sup>	1.13 <sup>2</sup>	1.81 <sup>2</sup>	-	-	0.89 <sup>2</sup>	1.51 <sup>3</sup>	-	0.20 <sup>2</sup>	1.29 <sup>3</sup>	2.03 <sup>3</sup>	-	0.49 <sup>3</sup>	1.73 <sup>3</sup>	2.72 <sup>3</sup>
	16	-	-	0.70 <sup>2</sup>	1.35 <sup>2</sup>	-	-	0.48 <sup>2</sup>	1.06 <sup>2</sup>	-	-	0.84 <sup>2</sup>	1.55 <sup>2</sup>	-	-	1.21 <sup>2</sup>	2.19 <sup>3</sup>
	24	-	-	-	0.56 <sup>1</sup>	-	-	-	0.29 <sup>1</sup>	-	-	-	0.71 <sup>1</sup>	-	-	0.31 <sup>1</sup>	1.26 <sup>2</sup>
14	12	-	-	0.53 <sup>1</sup>	1.04 <sup>2</sup>	-	-	0.35 <sup>1</sup>	0.82 <sup>2</sup>	-	-	0.64 <sup>1</sup>	1.19 <sup>2</sup>	-	-	0.92 <sup>2</sup>	1.69 <sup>2</sup>
	16	-	-	0.13 <sup>1</sup>	0.60 <sup>1</sup>	-	-	-	0.39 <sup>1</sup>	-	-	0.21 <sup>1</sup>	0.73 <sup>1</sup>	-	-	0.43 <sup>1</sup>	1.18 <sup>2</sup>
	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.31 <sup>1</sup>
16	12	-	-	0.13 <sup>1</sup>	0.51 <sup>1</sup>	-	-	-	0.34 <sup>1</sup>	-	-	0.19 <sup>1</sup>	0.62 <sup>1</sup>	-	-	0.38 <sup>1</sup>	0.97 <sup>1</sup>
	16	-	-	-	0.11 <sup>1</sup>	-	-	-	-	-	-	-	0.19 <sup>1</sup>	-	-	-	0.50 <sup>1</sup>
	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

If no note, deflection meets L/720

<sup>1</sup>Deflection meets L/120

<sup>2</sup>Deflection meets L/240

<sup>3</sup>Deflection meets L/360

<sup>4</sup>Deflection meets L/600

See Table Notes on page 31.





April 14, 2025

Mr. John DiMario  
Development Services Director  
City of La Puente  
15900 E. Main Street  
La Puente, CA 91744

Subject: Update Letter, Geotechnical Investigation Report, Proposed Community Center Expansion, La Puente Park, 501 Glendora Avenue, La Puente, California

"Geotechnical Investigation Report, Proposed Community Center Expansion, La Puente Park, 501 Glendora Avenue, La Puente, California",  
Prepared by Willdan, Dated July 1, 2022, Willdan Project No. 111159-2010

Dear Mr. DiMario,

Willdan Engineering (Willdan) is pleased to submit this update letter for the subject project.

The above-referenced report's findings, conclusions, and recommendations are still applicable and may be used to design and construct the proposed Community Center Expansion. We appreciate the opportunity to assist you. If you have any questions, don't hesitate to contact us.

Respectfully submitted,  
**WILLDAN ENGINEERING**  
**GEOTECHNICAL GROUP**

Ross Khiabani, PE, GE  
Senior Geotechnical Engineer

Distribution: Addressee





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**GEOTECHNICAL INVESTIGATION REPORT  
PROPOSED COMMUNITY CENTER EXPANSION  
LA PUENTE PARK, 501 GLENDORA AVENUE  
LA PUENTE, CALIFORNIA**

PREPARED FOR

CITY OF LA PUENTE  
15900 EAST MAIN STREET  
LA PUENTE, CA 91744

PREPARED BY

WILLDAN ENGINEERING  
GEOTECHNICAL GROUP  
1515 SOUTH SUNKIST STREET, SUITE E  
ANAHEIM, CA 92806  
WILLDAN PROJECT NO. 111159-2010

JULY 1, 2022



July 1, 2022

SS/5/

Mr. John DiMario  
Development Services Director  
City of La Puente  
15900 E. Main Street  
La Puente, CA 91744

Subject: Geotechnical Investigation Report  
Proposed Community Center Expansion, La Puente Park,  
501 Glendora Avenue, La Puente, California  
Willdan Project No. 111159-2010

Dear Mr. DiMario,

Willdan Engineering (Willdan) is pleased to submit this geotechnical investigation report for the design and construction of the proposed Community Center Expansion within the La Puente City Park, 501 Glendora Avenue in La Puente, California. As we understand from the information and documents provided to us, the proposed project consists of addition of a Dressing Area, and an Activity Center (45'x52') among other improvements, northeast of the existing Community Center.

This report contains our findings, conclusions, and recommendations for the design and construction of the proposed developments. This geotechnical investigation was performed per our Proposal No. 21-037 dated December 4, 2021. Based on the results of our investigation, the proposed development is feasible from a geotechnical viewpoint, provided the recommendations in this report are followed.

We appreciate the opportunity to assist you and look forward to future projects. If you have any questions, please contact us.

Respectfully submitted,  
**WILLDAN ENGINEERING**  
**GEOTECHNICAL GROUP**



Ross Khiabani, PE, GE  
Senior Geotechnical Engineer

Distribution: Addressee



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(binder material) to be relatively impermeable and result in a stable subgrade when compacted. The imported materials should also be non-expansive, with an EI less than 35 and free of organic materials, debris, and cobbles larger than 3 inches, with no more than 25 percent of materials being larger than 2 inches in size and no more than 25 percent passing #200 sieve. Within the upper 2 feet of fills and utility trench backfills, the materials should be free of particles greater than 2 inches in size. A bulk sample of potential import material, weighing at least 30 pounds, should be submitted to the Geotechnical Consultant at least 48 hours before filling operations. The Geotechnical Consultant should approve all proposed import materials before being placed at the site.

### 6.3. SEISMIC DESIGN PARAMETERS

The site class per Section 1613.2.2 of the CBC 2019 is based on soil conditions. It is our opinion that Site Class D is most consistent with the subject site soil conditions. For the design of the structures based on the seismic provisions of the CBC 2019, we recommend the parameters in the following Table 1.

**Table 1. Seismic Design Parameters**

Seismic Item	Value	CBC Reference
Site Class	D	Section 1613.2.2
$F_a$	1.0	Table 1613.2.3(1)
$S_s$	1.745	Figure 1613.2.1(1)
$S_{MS}$	1.745	Section 1613.2.3
$S_{DS}$	1.163	Section 1613.2.4
$F_v$	1.7	Table 1613.2.3(2)
$S_1$	0.625	Figure 1613.2.1(2)
$S_{M1}$	1.063	Section 1613.2.3
$S_{D1}$	0.709	Section 1613.2.4

Site Coordinates:      Latitude: 34.0266° N      Longitude: 117.9520° W

### 6.4. FOUNDATION RECOMMENDATION

The proposed structure may be supported on shallow foundations. The spread and strip footings should be at least 24 and 18 inches wide, respectively, and embedded at least 18 inches below the





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lowest adjacent grade. The foundations supported on engineered fill may be designed for an allowable pressure of 2,000 psf due to dead plus live loads. The bearing capacity may be increased by one-third for transient loads such as seismic or wind. It is recommended that Willdan Geotechnical observe the footing excavations before placing the reinforcing steel or concrete to check that footings are founded on adequate bearing soil.

The above allowable bearing capacity may be increased by 250 psf for each additional foot of depth or width beyond the minimum footing dimensions, up to maximum 3,000 psf.

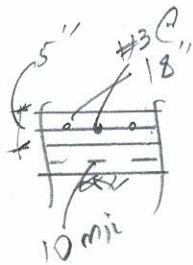
Footings adjacent to utility trenches or other footings should be deepened as necessary so that their bearing surfaces are below an imaginary plane with an inclination of 1H:1V, extending upward from the bottom edge of the adjacent trench or footing.

Lateral soil resistance will be provided by a combination of frictional resistance between the bottom of the footings and the underlying soils and by passive soil resistance acting against the side of the footing. For frictional resistance between concrete and soil, a frictional coefficient of 0.35 may be used. For passive resistance, an allowable fluid pressure of 320 pcf may be used for a level ground surface condition in front of the footing. When combining both frictional and passive resistance, the passive resistance should be reduced by one-third. The recommended value for passive resistance may be increased by one-third for short-term loading.

Based on the results of our investigation, and laboratory testing, the total settlements due to building loads are expected to be less than one (1) inch, and maximum differential settlements are expected to be of the order of ½ inch over a 50-foot span.

## 6.5. CONCRETE SLAB-ON-GRADE

Concrete slab-on-grade should be constructed on compacted fill prepared per recommendations provided in this report. The slab should be at least 5 inches thick and reinforced with a No. 3 rebar at 18 inches on center and may be designed using a maximum bearing pressure of 1,000 psf and modulus of subgrade reaction (Ks) of 120 pounds per cubic inch.



In areas where moisture-sensitive floor coverings (such as tile, hardwood floors, linoleum or carpeting) are planned, an impermeable membrane (vapor barrier) should be installed below the concrete slab or mat to reduce excess vapor drive through the slab. The membrane should be at least 10-mil thick and care should be taken to preserve the continuity and integrity of the membrane beneath the floor slab. At least 4 inches of free drainage gravel, with no more than 2 percent passing No. 200 sieve, should be placed below the vapor barrier to serve as a capillary break. The gravel layer shall be compacted to a minimum of 92% relative compaction per ASTM D1557. The gradation for the free drainage material used shall conform to the requirements for No. 3 Concrete Aggregates as specified in section 200-1.4 of the latest edition of Greenbook. The above is the minimum recommendation for moisture-sensitive floors and the project architects recommendations should review and if needed provide more restrictive recommendations.