951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

ACC & ENGINEERING
Design | Engineering | Construction

STRUCTURAL CALCULATION REPORT

FOURSEASONS BUILDING PRODUCTS SHADE STRUCTURES

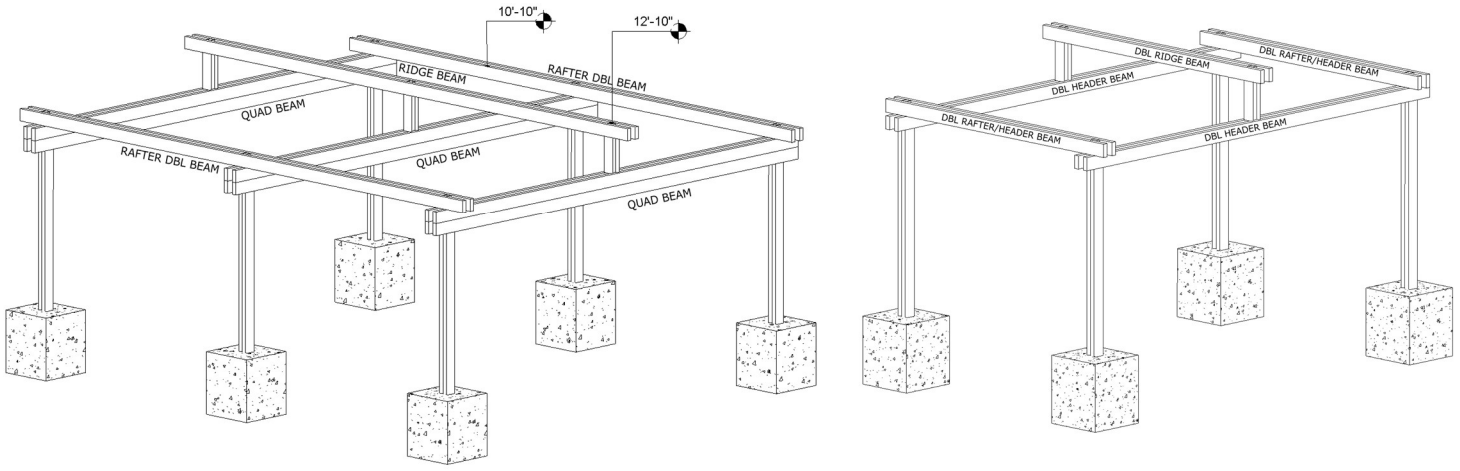
STRUCTURAL ANALYSIS

FOR PROJECT

RIVERSIDE COUNTY FIRE DEPARMENT ADMIN CENTER

PROJECT ADDRESS

403 E 4TH STREET. PERRIS, CA 92570



PER

ASCE 7-22

The shade structure is located in 403 E 4TH STREET. PERRIS, CA 92570, USA categorized as Exposure C (assumed to be homogeneous for the selected wind direction). The wind load calculation for the structure is based on the Directional Procedure (Chapter 27 Open Buildings with Monoslope Free Roofs) of ASCE 7-22. Moreover, the structure is classified as Risk Category " II " – Seismic Design Category "D" with a default site soil class D.

AFFILIATIONS

ASCE AMERICAN SOCIETY OF CIVIL ENGINEERS
SEI STRUCTURAL ENGINEERING INSTITUTE
AIA Member
AIA | 40742319
AWS American Welding Society
AFFILIATE COMPANY MEMBER
CSLB DEPARTMENT OF CONSUMER AFFAIRS CONTRACTORS STATE LICENSE BOARD

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

ACC & ENGINEERING
Design | Engineering | Construction

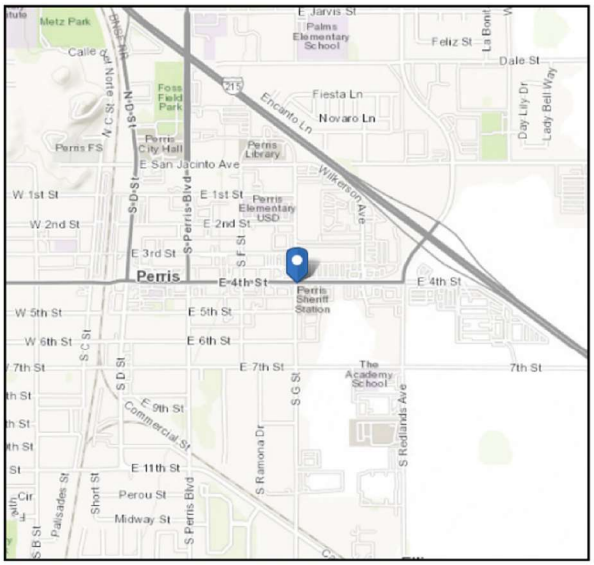
ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

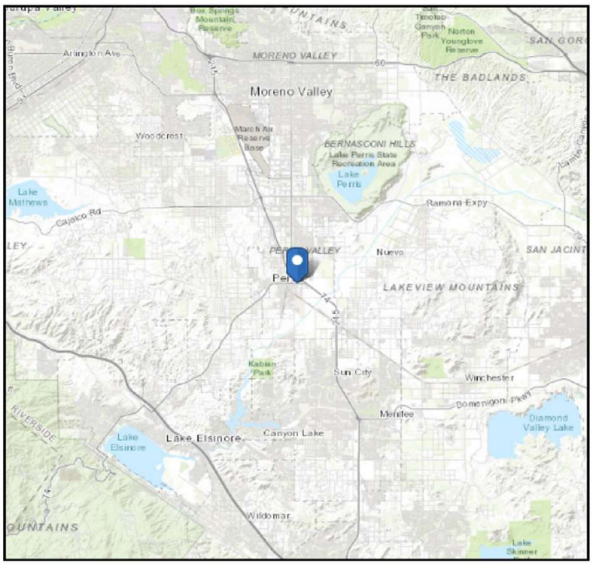
ASCE 7 Hazards Report

Address:
403 E 4th St
Perris, California
92570

Standard: ASCE/SEI 7-22
Risk Category: II
Soil Class: Default

Latitude: 33.782313
Longitude: -117.221671
Elevation: 1430.565486841086 ft (NAVD 88)





Wind

Results:

Wind Speed	96 Vmph
10-year MRI	66 Vmph
25-year MRI	72 Vmph
50-year MRI	77 Vmph
100-year MRI	82 Vmph
300-year MRI	90 Vmph
700-year MRI	96 Vmph
1,700-year MRI	102 Vmph
3,000-year MRI	107 Vmph
10,000-year MRI	116 Vmph
100,000-year MRI	133 Vmph
1,000,000-year MRI	152 Vmph

Data Source: ASCE/SEI 7-22, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Sat Dec 23 2023

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

ACC & ENGINEERING
Design | Engineering | Construction

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

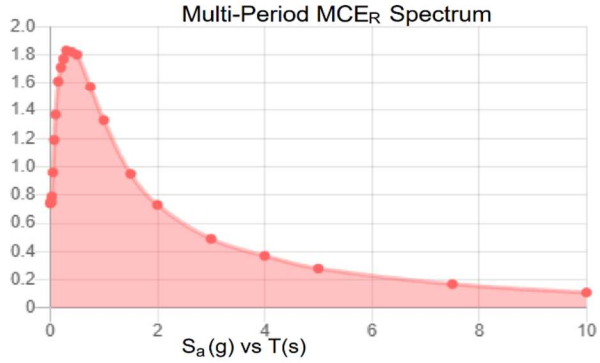
Seismic

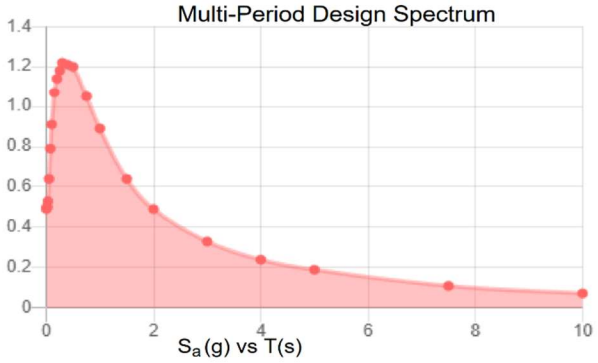
Site Soil Class: Default

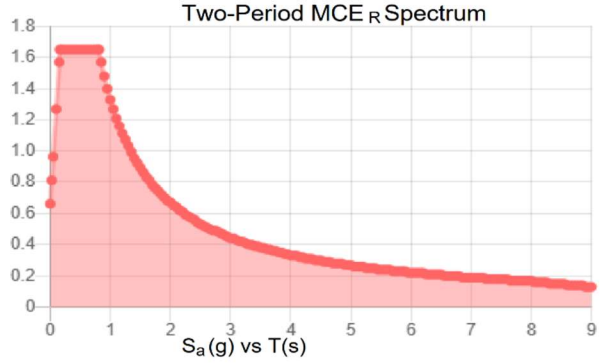
Results:

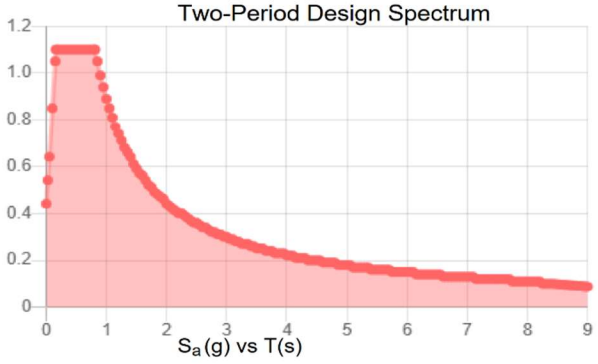
PGA_M :	0.56	T_L :	8
S_{MS} :	1.65	S_S :	1.5
S_{M1} :	1.33	S_1 :	0.53
S_{DS} :	1.1	V_{S30} :	260
S_{D1} :	0.89		

Seismic Design Category: D









MCER Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

ACC & ENGINEERING
Design | Engineering | Construction

Table 2.0 Building Loads Parameters (Shade Structure 30X35) 1500 sq.ft			
Total Aluminum Roof Weight	*1014.8 lbs*	*1.5 P.S.F*	*Core Panels + Skin Weight (See Hand Calcs)*
Total Beams Weight (Aluminum) 3"x8"	*581.46 lbs*	*1.1 P.L.F*	*12 Headers + 6 (Rafters & Ridge) (See Hand Calcs)*
Total Beam Weight (Steel Inserts) 2.5"x7.7"	*2364.53 lbs*	*4.47 P.L.F*	*12 Headers + 6(Rafters & Ridge) (See Hand Calcs)*
Total Columns Weight (Aluminum Side Plates) (2"x6.5")	*76 lbs*	*0.639 P.L.F*	*12 Posts at 6 lbs each & 6 Stub Posts(2 feet only) (2 posts side Plates at each Main column.) (See Hand Calcs)*
Total Columns Weight (Steel 4"x4") Main Posts	*910.8 lbs*	*11 P.L.F*	*6 Posts at 12.5 L.F & 3 Posts (stubs)at 2.6 L.F*
Total Weight (Roof + Beams + Columns)	*4947.59 lbs*	*4.71 P.S.F*	*Total Weight / Total Structure Tributary Area (30x35)*
MISC. Weight (Fans & Accessories)	*525 lbs*	*0.5 P.S.F*	*0.5 P.S.F x Total Structure Tributary Area (30x35)*
Design Dead Load Contributing to Seismic Force DL=	*5472.59 lbs*	*5.2 P.S.F*	
Design Live Load		*20 P.S.F*	
Design Dead Load without Columns	*4485.8 lbs*	*4.3 P.S.F*	

Table 2.1 Building Loads Parameters (Shade Structure 25X16) 400 sq.ft			
Total Aluminum Roof Weight	*387.8 lbs*	*1.5 P.S.F*	*Core Panels + Skin Weight (See Hand Calcs)*
Total Beams Weight (Aluminum) 3"x8"	*204.6lbs*	*1.1 P.L.F*	*4 Headers at 24 L.F + 6 (Rafters & Ridge) at 15 L.F (See Hand Calcs)*
Total Beam Weight (Steel Inserts) 2.5"x7.7"	*831.42 lbs*	*4.47 P.L.F*	*4 Headers + 6(Rafters & Ridge) (See Hand Calcs)*
Total Columns Weight (Aluminum Side Plates) (2"x6.5")	*49 lbs*	*0.639 P.L.F*	*8 Posts at 8 '10"each & 4 Stub Posts(2 feet only) (2 posts side Plates at each Main column.) (See Hand Calcs)*
Total Columns Weight (Steel 4"x4") Main Posts	*605 lbs*	*11 P.L.F*	*6 Posts at 12.5 L.F & 3 Posts (stubs)at 2.6 L.F*
Total Weight (Roof + Beams + Columns)	*2077.82 lbs*	*5.19 P.S.F*	*Total Weight / Total Structure Tributary Area (25x16)*
MISC. Weight (Fans & Accessories)	*200 lbs*	*0.5 P.S.F*	*0.5 P.S.F x Total Structure Tributary Area (25x16)*
Design Dead Load Contributing to Seismic Force DL=	*2277.82 lbs*	*6.19 P.S.F*	
Desing Live Load		*20 P.S.F*	

951-903-2284 www.accandengineering.com
714-844-2140 Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

ACC & ENGINEERING
Design | Engineering | Construction

Table 2.3 Seismic Load Parameters			
Site Classification= (Default)		D	ASCE 7-22 Section 11.4.2
Risk Category=		II	ASCE 7-22 Table 1.5-1
Seismic Design Category=		D	ASCE 7-22 Section 11.6
Importance Factor=	I=	1	ASCE 7-22 Section 11.5 Table 1.5-2
Response Modification Factor	R=	1.25	ASCE 7-22 Table 12.2-1 (Steel ordinary cantilever column system)
System Overstrength Factor	Ω_o=	1.25	ASCE 7-22 Table 12.2-1
Deflection Amplification Factor	C_d=	1.25	ASCE 7-22 Table 12.2-1
Rho Factor (ρ)	ρ=	1.3	ASCE 7-22 Section 12.3.4 Reliability Redundancy Factor
Approximate Fundamental Period	T=	0.14	ASCE 7-22 Section 12.8-2
Long Period	T_L=	8	ASCE 7-22 Figure 22-14 to 22-17 ASCE 7 Hazard Report
Spectral Response Short Period	S_s=	1.5	ASCE 7-22 Chapter 22 ASCE 7 Hazard Report
Spectral Response Long Period	S_1=	0.53	ASCE 7-22 Chapter 22 ASCE 7 Hazard Report
Short Period Site Coefficent	F_a=	1.1	ASCE 7-22 Section 11.4.4 Site Coefficients MCER
Long Period Site Coefficient	F_V=	2.5	ASCE 7-22 Section 11.4.4 Site Coefficients MCER
Spectral Response Accelerations Short	S_{MS}=FaS_s=	1.65	ASCE 7-22 Section 11.4.4 Site Coefficients MCE_R
Spectral Response Accelerations Long	S_{M1}=FvS_1=	1.33	ASCE 7-22 Section 11.4.4 Site Coefficients MCER
Spectral Response Short Period	S_{DS}=	1.1	ASCE 7-22 Section 11.4.5 Design Spectral Acceleration.
Spectral Response Long Period	S_{D1}=	0.89	ASCE 7-16 Section 11.4.5 Design Spectral Acceleration
T_s = (S_{D1} / S_{DS})	T_s=	0.809	ASCE 7-22 Section 11.4.6 .095<1.5xT_S=0.830*
Coefficient as determined from table 12.8-2	C_t =	0.02	ASCE 7-22 table 12.8-2
Structural Height as defined in section 11.2	h_n =	13	ASCE 7-22 table 12.8-2 (Height of Structure)
Coefficient as determined from table 12.8-2	x =	0.75	ASCE 7-22 Section 12.8-2
Approximate Fundamental Period	T_a = (C_t * h_n^x) =	0.136	ASCE 7-22 Section 12.8-8
Seismic Response Coefficient	**Cs =**	**0.88**	**ASCE 7-22 Eq. 12.8-2 Seismic Response Coefficient**
Minimum Seismic Response Coefficient S_{DS} = 1.1 R/I = 1.25/1= 1.25	$C_s = \frac{S_{DS}}{\left(\frac{R}{I_e}\right)}$	Cs1= 0.88	ASCE 7-22 Eq. 12.8-3 Minimum
Maximum Seismic Response Coefficient for $T \le T_L$ S_{D1}= 0.89 Ta = 0.136 R/I = 1.25/1= 1.25	$C_s = \frac{S_{D1}}{T\left(\frac{R}{I_e}\right)}$	Cs2. = 5.23	ASCE 7-22 Eq. 12.8-4 Maximum

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

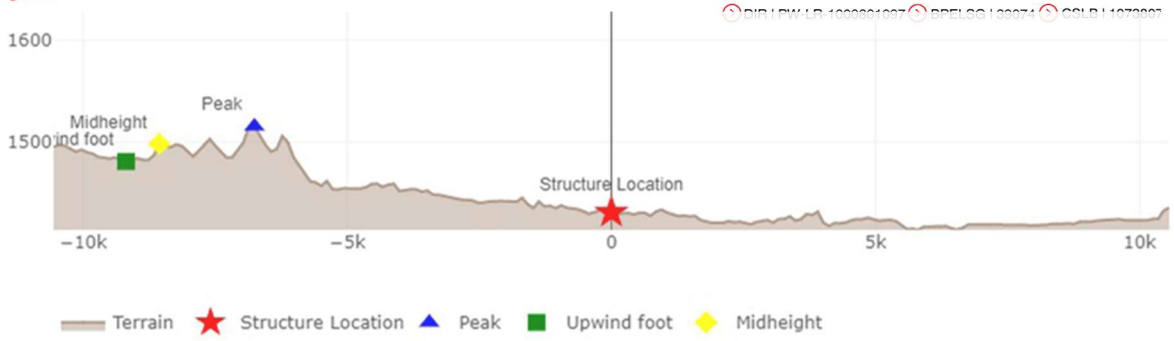
ACC & ENGINEERING
Design | Engineering | Construction

Seismic Calculations (30x35)

Total Dead Load	DL=	5.2 P.S.F	Area=1050 ft^2	See Table 2.0
Total Weight	W=	5460 LBS	5.46 K	See Table 2.0
Seismic Base Shear	V=	4804 LBS	4.80 K	V=Cs x W – See Table 2.0 & table 2.3 for Cs Value = 0.88
	V=	4.6 P.S.F		
Seismic Force Per Col. EQcol=		1201 LBS	1.20 K	Number of columns Resisting Seismic Force = 6 . Lateral Force Per moment Frame (middle Frame will See ½ of the Total Load & the outer Frames will see ¼ each; therefore one column will see ¼ of the total load EQcol=V/4

ACC & ENGINEERING
Design | Engineering | Construction

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806



Wind Load Parameters

Basic Wind Speed	V=	96 mph	Wind speed for the address is 96 mph for Risk Category II and was calculated using Triangular Interpolation Network (TIN) method from points with known wind speed values based on Figure 26.5-1 of ASCE 7-22
Wind Directionality Factor	Kd=	0.85	ASCE 7-22 Table 26.6-1
Topographic Factor	Kzt=	1	ASCE 7-22 Section 26.8.1 For the selected wind source direction, either the terrain is relatively a flat surface or the structure is outside t topographic zones.
Ground Elevation Factor $K_e = e^{-0.0000362\ E}$ Where E = Site Elevation = 1430.9 ft	Ke=	0.94952	ASCE 7-22 Section 26.9
Velocity Pressure Exposure Coefficient $K_z = 2.01 \times (z/z_g)^{2/\alpha}$	Kz=	1.0302	ASCE 7-22 Table 26.11-1 $\alpha = 11.5$ Table 26.11-1 $z_g = 700$ ft Section 26.10 K_z - Velocity Pressure Exposure Coefficient For $z < 15ft$
Velocity Pressure $q_z = 0.00256 \times K_z \times K_{zt} \times K_d \times K_e \times V^2$	qz=	19.617 P.S.F	ASCE 7-22 Section 26.10.2 Where K_z = Velocity Pressure Exposure Coefficient = 1.0302 K_{zt} = Topographic Factor = 1 K_d = Wind Directionality Factor = 0.85 V = Basic Wind Speed = 96 mi/h K_e = Ground Elevation Factor = 0.94952
Net Force Coefficients	Cf=	1.6	ASCE 7-22. Figure 29.4-2 The net force coefficients are calculated using. ASCE 7-22 Section 26.11.4 Equation 26.11-6
Gust-effect Factor $G = 0.925\ \frac{1 + 0.7\ g_Q\ I_{\bar{z}}\ Q}{1 + 0.7\ g_v\ I_{\bar{z}}}$	G=	0.914	Where g_Q = Peak Factor for Background Response = 3.4 g_v = Peak Factor for Wind Response = 3.4 $I_{\bar{z}}$ = Intensity of turbulence at height = 0.19126 Q = Background Response = 0.97019
Design Wind Pressure $p = q_z \times G \times C_f$	p=	28.688 P.S.F	Figure 29.4-2 Section 29.4 Equation 29.4-1
Design Wind Force $F = q_z \times G \times C_f \times A_f$			

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

ACC & ENGINEERING
Design | Engineering | Construction

Structural Member Load Check

Member	Loads	Result	Reference
Header Quad Beams 12 Guage Steel C Channel Frame (Checking Load per Each Steel member. Total Forces / 4	Dead Load = Tributary Area = 262.5 sq.ft x 4.2 p.s.f = 1102.2 / 4 = 275 lbs / Beam Length (27.5) = 10 lbs/ft = .01 K/ft Live Load = TA = 262.5 sq.ft x 15 p.s.f = 3937.5 /4 = 984.375 / Beam Length = 35.8 lbs/ft = 0.035 k/ft	O.K	See Ener-calc section report.
4"x4"x3/16" HSS Column	Axial Load = Tributary Area = 245 sq.ft x 4.2 p.s.f =1029 lbs / coloumn legnth = 82.32 lbs/ft = 0.082 k/ft Lateral wind =28.7x4.16 = 119.6 lbs/12.5 =9.5 lbs/ft = use 0.12 k/ft Lateral Seismic = 1200/12.5=96 lbs = .096 k/ft Reactions From Beams.	O.K	See Ener-calc report

Extreme Reactions (kips)

	D	Lr	Lf	S	W	E	H
Support #1	0.33	0.55			0.11	0.25	
Support #2	0.33	0.55			0.11	0.25	

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction @ Base	X-X Axis Reaction @ Base	@ Top	k	Y-Y Axis Reaction @ Base	@ Top	Mx - End Moments @ Base	@ Top	k-ft	My - End Moments @ Base	@ Top
D Only	0.318										
+D+Lr	0.798										
+D+0.750Lr	0.678										
+D+0.60W	0.318				0.450	0.450	-0.937	-0.937			

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

ACC & ENGINEERING
Design | Engineering | Construction

Total metal Roof weight (30 X 35)

per ICC ESR-2229 the nominal density @ 1.5 Pound per cubic Feet (P.C.F)

Total Roof Volume $_{EPS}$ $= (15.2' \times 35' \times \frac{4}{12}) \times 2$

$= 354.6\ ft^3$

Total Roof weight $_{EPS}$ $= 354.6\ ft^3 \times 1.5\ lb./ft^3$

$= 532$ pounds

Total Roof $_{Skin}$ Volume $= (15.2' \times 35' \times \frac{.032}{12}) \times 2$

$= 2.84\ ft^3$

per ICC ESR-2229 (3.2.1.2 panel Facing) material nominal density per 3105 - H14 Aluminum = 170 lb/ft^3

∴ Total Roof $_{Skin}$ weight $= 170 \times 2.84 =$ 482.8 lbs

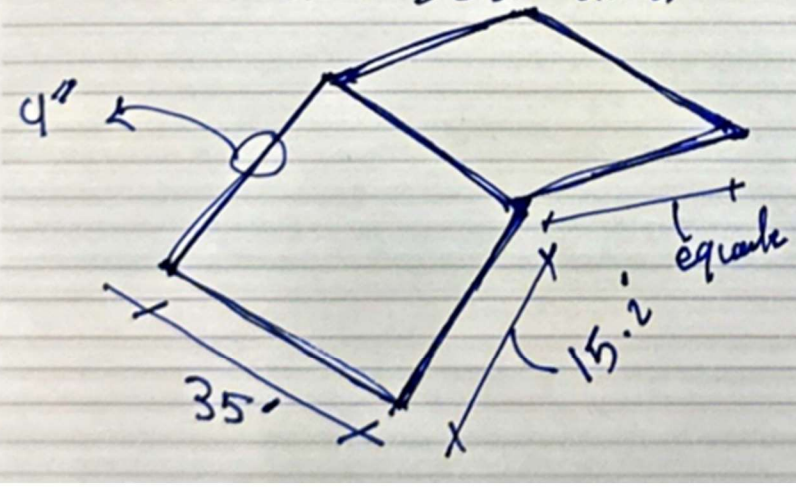
∴ Total Roof weight $= 482.8 + 532 =$ 1014.8 lbs

∴ Roof Dead load $= 0.96$ p.s.f.

Say 1 p.s.f

Misc load .5 p.s.f

Design Dead load (1.5 p.s.f)



ACC & ENGINEERING
Design | Engineering | Construction

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

Total metal weight Roof (25 X 16)

Core weight + skin weight

$= (V_{core} \times \rho_{core}) + (V_{skin} \times \rho_{skin})$

$= \left(12.71' \times 16' \times \frac{4'}{12}\right) \times 2 \times 1.5$

$+ \left(12.71' \times 16' \times \frac{.032'}{12}\right) \times 2 \times 170$

$= 203.4 \text{ lbs} + 184.4 \text{ lbs}$

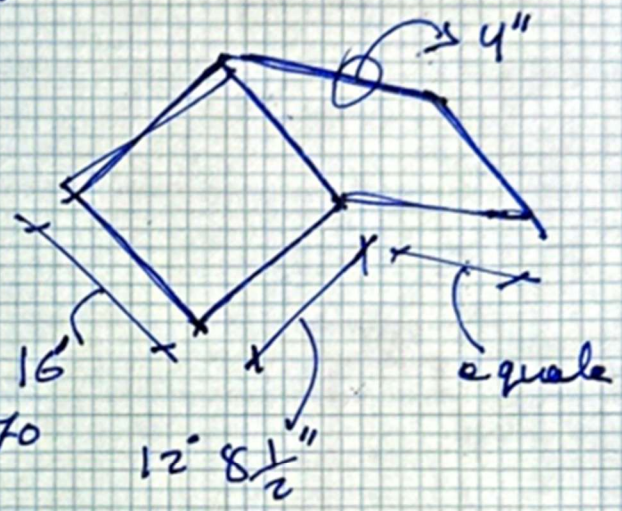
Total weight = 387.8 lbs

$= 0.96$ p.s.f

Say 1 p.s.f

misc load = .5 p.s.f

Design load 1.5 p.s.f



Core density 1.5 p.c.f

Skin density 170 lb/ft³

ACC & ENGINEERING
Design | Engineering | Construction

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

Total Alumin. Beams w/ steel inests (Headers) = 12

Total steel Insants in Headers = 12

Total Alum Beam w/ steel insants Rafters = 6

Total steel insants in Rafters = 6

Alumin Beam Header weight
$= A_v + B_v + C_v$
$= (3 \times 8 \times 0.042") \times 2 = 2.016"$

$+ (8" \times (27.5 \times 12) \times 0.042") \times 2 = 221.76"$

$+ (3" \times (27.5 \times 12) \times 0.042) \times 2 = 83.16"$

$= 306" = 0.1776\ ft^3$ ∴ weight = density x volume
$= 170 \times 0.1776 = 30.2$

$W_{A_B} = 30.2 / 27.5 = 1.1$ pounds per linear feet

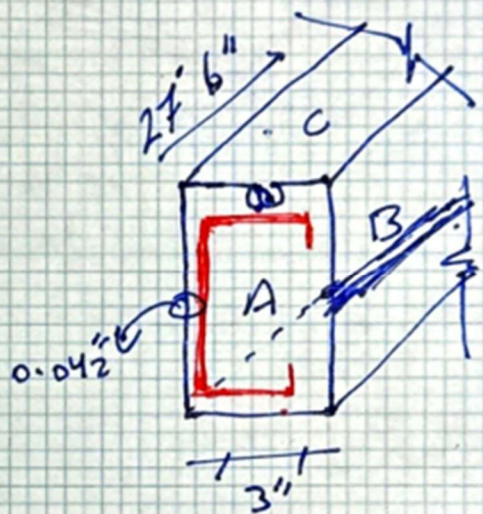
Total Alu Headers at 27.5' = 12 ∴ Total$_{lb}$ = 12 x 27.5 x 1.1
= 363 lbs

Total Alu Rafters at 33.1
= 6 x 33.1 x 1.1 = 218.46 lbs

∴ Total Alumin Beams weight Contributing to seismic load =

Total W_{AB}
581.46 lbs

Hdr Beam length 27'6"
Rafter ⟹ 33' 1"

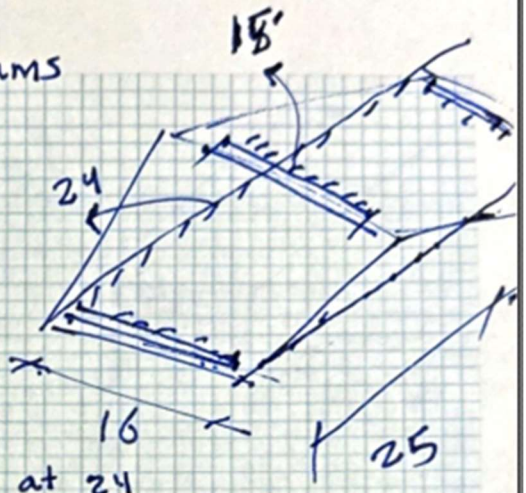


ACC & ENGINEERING
Design | Engineering | Construction

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

Design Engineer : Ben Hamed

Project: Shade structure (25 X 16) beams



Aluminum Headers 3" x 8" = 4 at 24'

" Rafters " " = 6 at 15'

W_{AB} = 1.1 pounds per linear feet

$\therefore$ 24 X 1.1 X 4 = 105.6 lbs

+ 15 X 1.1 X 6 = 99 lbs

Steel insents Headers 2.5" X 7.7" = 4 at 24

" " Rafters " " = 6 at 15

$\therefore W_{SB}$ = 4.47 p.l.f

AB = Alum. Beam

SB = steel Beam

$\therefore$ 24 X 4.47 X 4 = 429.12 lbs

+ 15 X 4.47 X 6 = 402.3 lbs

Total Alumin Beams weights = 204.6 lbs

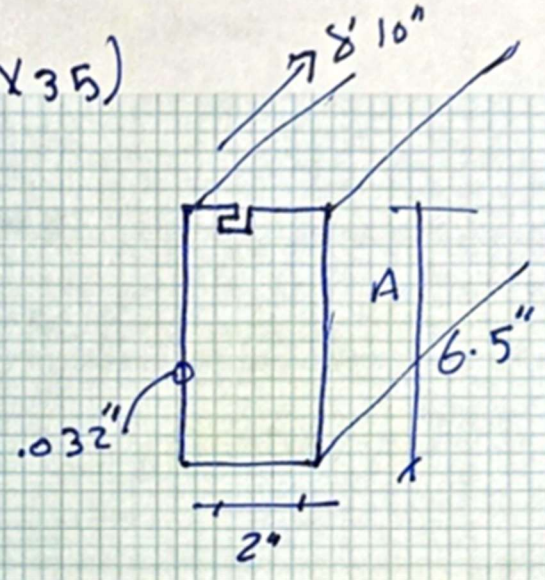
" steel inserts weight = 831.42 lbs

//

ACC & ENGINEERING
Design | Engineering | Construction

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

(30 X 35)



Alum. side plate post

total posts at 8' 10" = 12
" Stub post at 2' = 6

$W_{AP} = V \times D$

$V_A = [.032" \times (8.8 \times 12)" \times 6.5"] \times 2 = 43.92"$

$V_B = [.032 \times (8.8 \times 12)" \times 2"] \times 2 = 13.51"$

Total V = 57.43 in³ Alum H34 = 170 D

column weight = $\frac{57.43}{12^3} \times 170 = 5.65$ pounds

= 0.639 p.l.f

∴ weight of 12 side plates at 8.83'

= $12 \times 8.83' \times 0.639 \frac{lb}{ft} = 68$ pounds

weight of 6 Stub posts side plates at 2'

= $6 \times 2 \times 0.639 = 7.7$ pounds

total Alum. side plate columns weight = 76 pounds

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

ACC & ENGINEERING
Design | Engineering | Construction

Design Engineer: Ben Hamed
Project: Shade structure

(25 X 16)

- Aluminum posts (side plate) Columns
- Total post at 8'10" = 8 post P_1
- " stub post at 2' = 4 post P_2
- Aluminum weight at P_1 = 8 X 8.8 X 0.635 p.l.f
  = 44.7 lbs
- Aluminum weight at P_2 = 4 X 2 X 0.635 p.l.f
  = 5.08 pounds

Total Alumin side plate weight = 49.78 lbs

- Steel posts (4"X4") main posts
  - Total posts at 12.5' = 4 — P_3
  - " stub posts at 2.5' = 2 — P_4
  - Steel weight at P_3 = 4 X 12.5 X 11 p.l.f
    = 550 lbs
  - " " " P_4 = 2 X 2.5 X 11 p.l.f
    = 55 lbs

Total steel post weight = 605 lbs

ACC & ENGINEERING
Design | Engineering | Construction

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

(30X35)

Total posts at 12.5' = 6 posts

Total posts at 2.8' = 3 posts

$V = [0.188^{4} \times 4'' \times (12.5 \times 12)''] \times 4$

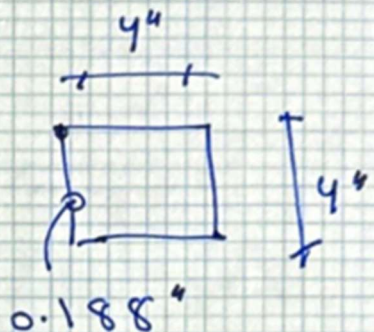
$= 451.2\ in^3$ per column

$= 0.26\ ft^3$

$\therefore$ weight per post $= V \times D = 0.26 \times 486.9$

$= 126.594$ pounds

Say $= 11$ p.s.f



weight at 12.5' for 6 posts

$= 6 \times 11 \times 12.5 = 825$ lbs

" " 2.8' for 3 posts

$= 3 \times 11 \times 2.6 = 85.8$ pounds

Total columns weight = 910.8 lbs

= 0.86 p.s.f

951-903-2284
714-844-2140
www.accandengineering.com
Ben@accandengineering.com
1130 N Kraemer Blvd #I, Anaheim, CA 92806
DIR | PW-LR-1000801097 BPELSG | 39074 CSLB | 1073807

ACC & ENGINEERING
Design | Engineering | Construction

+ $P_1 - P_2$ - BM-1 Forces act 300 ft^2 T.A

+ seismic = 4.6 p.s.f V
+ wind = 28.68 p.s.f P x A_f act $P_1 + P_2 + BM_1$
+ live load = 15 p.s.f L_r
+ Dead load = 4.8 p.s.f D

+ seismic design Force base shear (V) = 1380 lbs
+ wind Force = $W_p \times A$ = 17.2 + Quad header Area
= 17.2 + 38.24 = 55.44 X 10
+ live load = 15 X 300 + seismic governs //
= 4500 lbs
+ Dead load = 4.8 X 300 = 1440 lbs //

+ see enor calc For stud section check

+ P_3 - P_4 - BM-2 act 450 T.A

V = 4.6 X 450 = 2070 lbs = 2.07 Kips
W_F = 28.68 X 31.7 = 910 lbs + seismic governs
L_r = 15 X 450 = 6750 lbs = 6.75 kips
D = 4.8 X 450 = 2160 lbs = 2.16 kips

- act Quad Header each C-channel will see Force/4 x 1.2 For design.
- act posts each column will see Beam Reactions X4