

SUNAIR AWNINGS & SCREENS  
RIALTO PERGOLA UNITS

Engineering Report published revision 1/10/18

CALCULATIONS ENGINEERED BY  
*Sullaway Engineering*



# Pergola Engineering Request

Determine what you need from Sunair

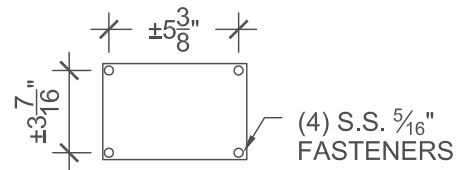
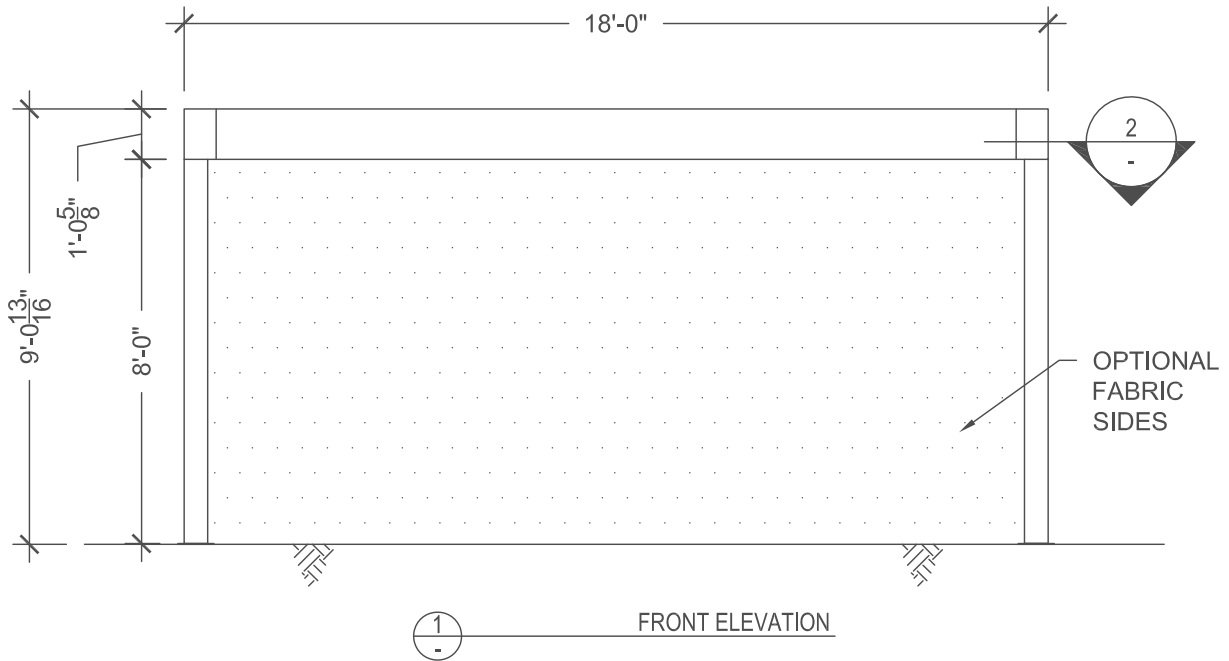
Options available:

- You may use the enclosed documents in conjunction with you existing or future efforts to obtain your permit.
- You may have the enclosed document stamped, with your state and project referenced, for a flat fee of \$340.00 which you will pay directly to Sullaway Engineering to the contact below. *(price may change, contact Sullaway Eng. directly for costing)*
- If you need a full site specific engineering package done for your project you will need to contact Sullaway Engineering and reference project ID #16017. They will then price your job and you will work directly with them.
  - Sullaway Engineering : Attn Pruthvi (Raji) Chauhan  
10815 Rancho Bernardo Rd, Ste 260 San Diego, CA  
92198 phone: 858-312-5150

These signed engineering calculations may be utilized by your engineer to certify your Sunair/Pratic Pergola Awning system project. In order to secure your permit this engineering report may also require alterations or recalculations by a local engineer in your state. Any such alterations and costs is the responsibility of the customer. Neither Sunair Awnings or Pratic will be liable for the use of these calculations to certify and secure permits for your project. Sunair or Pratic will not be liable for the performance of subject Pergola structures in the field using any calculations we provide. It is up to each customer to do site specific engineering calculations for each project signed by a local engineer licensed in the state in which the project resides. Sunair is not responsible for any lack of or unsuitability of structure to properly fasten the Pergola to the customer's existing structure, walls, decking, floors or footers. Sunair's current Pergola warranty and current "Sales Terms" also applies to all projects and these engineering calculations. The most recent revisions of engineered drawings apply.

PROJECT: RIALTO CANOPY  
 PROJECT #: 13264B-1  
 CLIENT: SUNAIR AWNINGS & SOLAR SCREENS

DATE: 01-16-2017  
 ENGINEER: MV  
 LAST REVISED: 02-09-2017



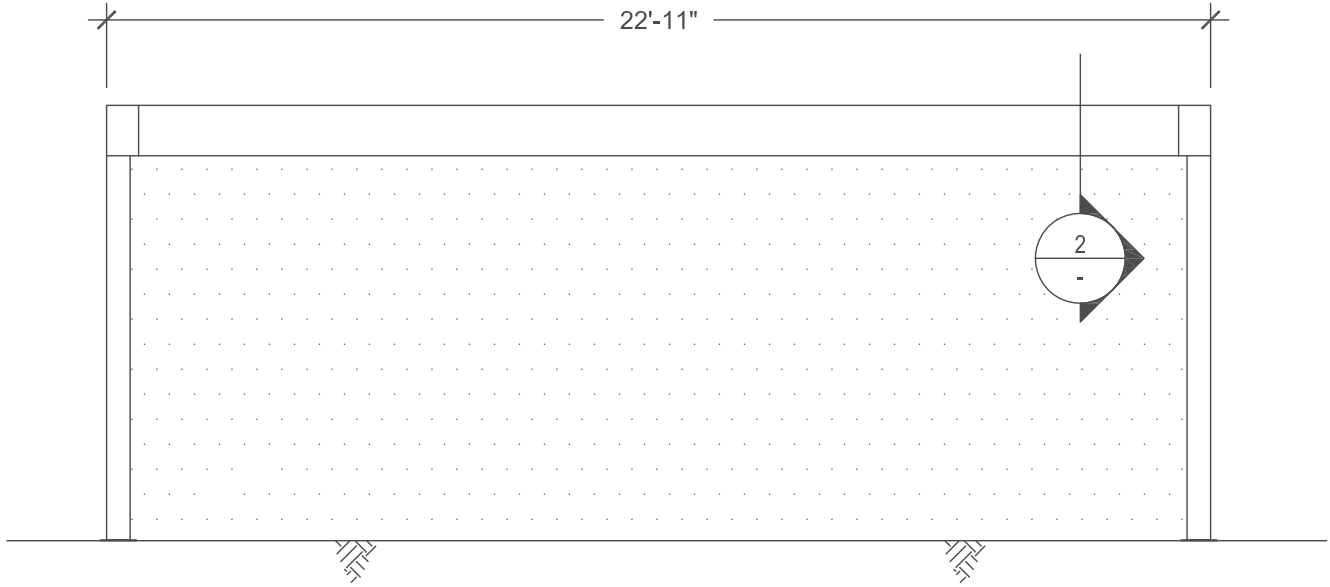
2 COLUMN - GUIDE CONNECTION

**GENERAL NOTES**

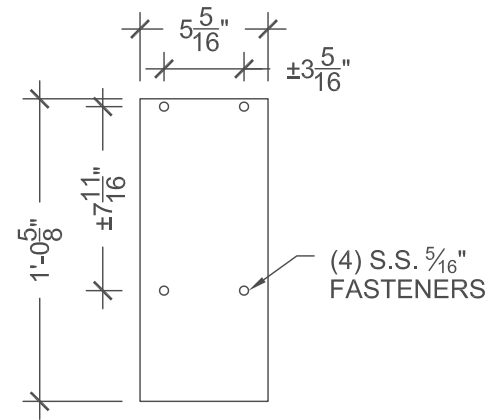
1. DESIGN CODE: IBC 2012
2. DESIGN LOADS: ASCE 7-10
3. WIND VELOCITY 150 MPH EXPOSURE C (WITH SIDES OPEN)
4. WIND VELOCITY 170 MPH EXPOSURE C (WITH SIDES ENCLOSED)
5. BOLT STEEL ASTM A307
6. PLATE STEEL ASTM A36
7. ALUMINUM ELEMENTS 6060-T6 (F<sub>y</sub> = 20 KSI MIN.)
8. STAINLESS STEEL FASTENERS GR. A2-70 (F<sub>u</sub> = 100 KSI MIN.)
9. PROVIDE PROTECTION AGAINST DISSIMILAR METALS
10. GENERAL CONTRACTOR SHALL VERIFY THAT EXISTING CONDITIONS ARE ADEQUATELY SUPPORTED AND CONNECTED BEFORE SIGN INSTALLATION
11. ALL EXISTING CONDITIONS SHALL BE VERIFIED IN FIELD PRIOR TO INSTALLATION

PROJECT: RIALTO CANOPY  
PROJECT #: 13264B-1  
CLIENT: SUNAIR AWNINGS & SOLAR SCREENS

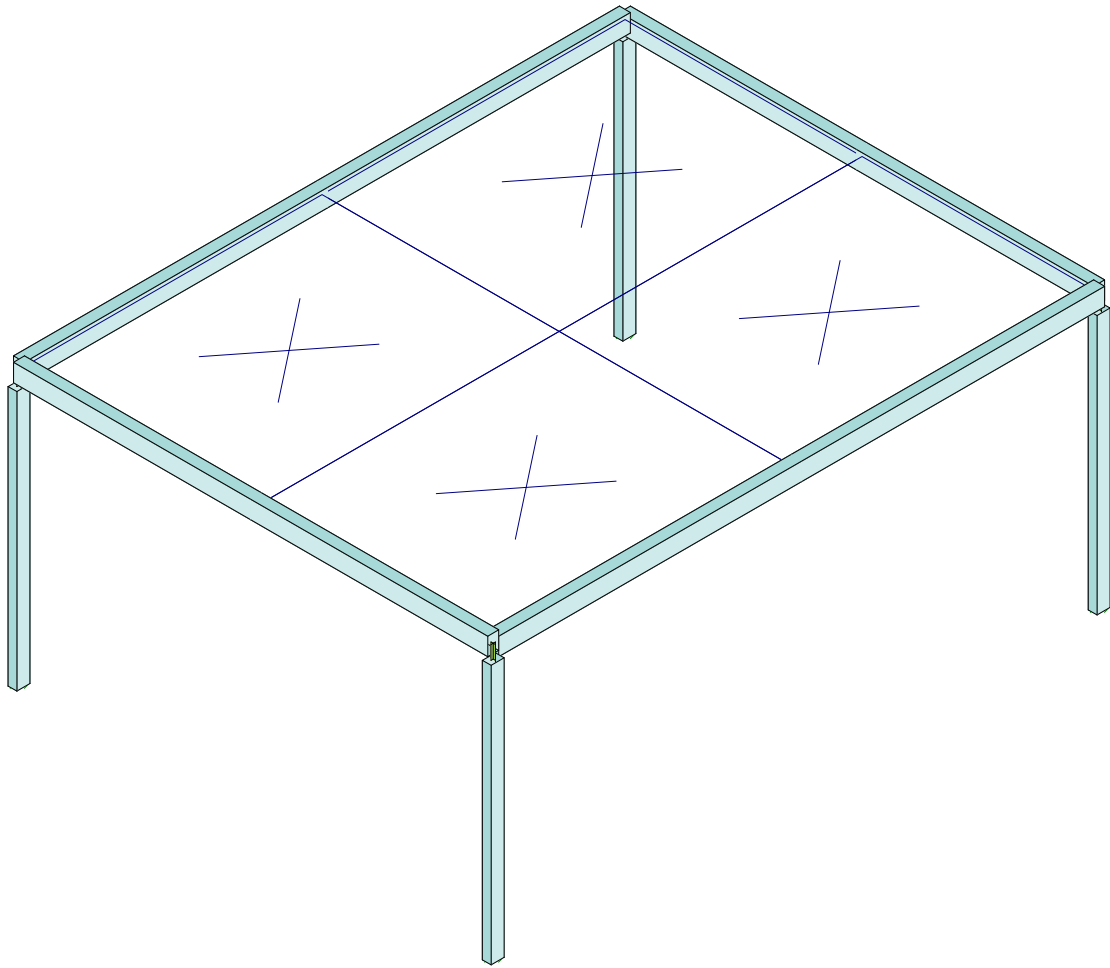
DATE: 01-16-2017  
ENGINEER: MV  
LAST REVISED: 02-09-2017

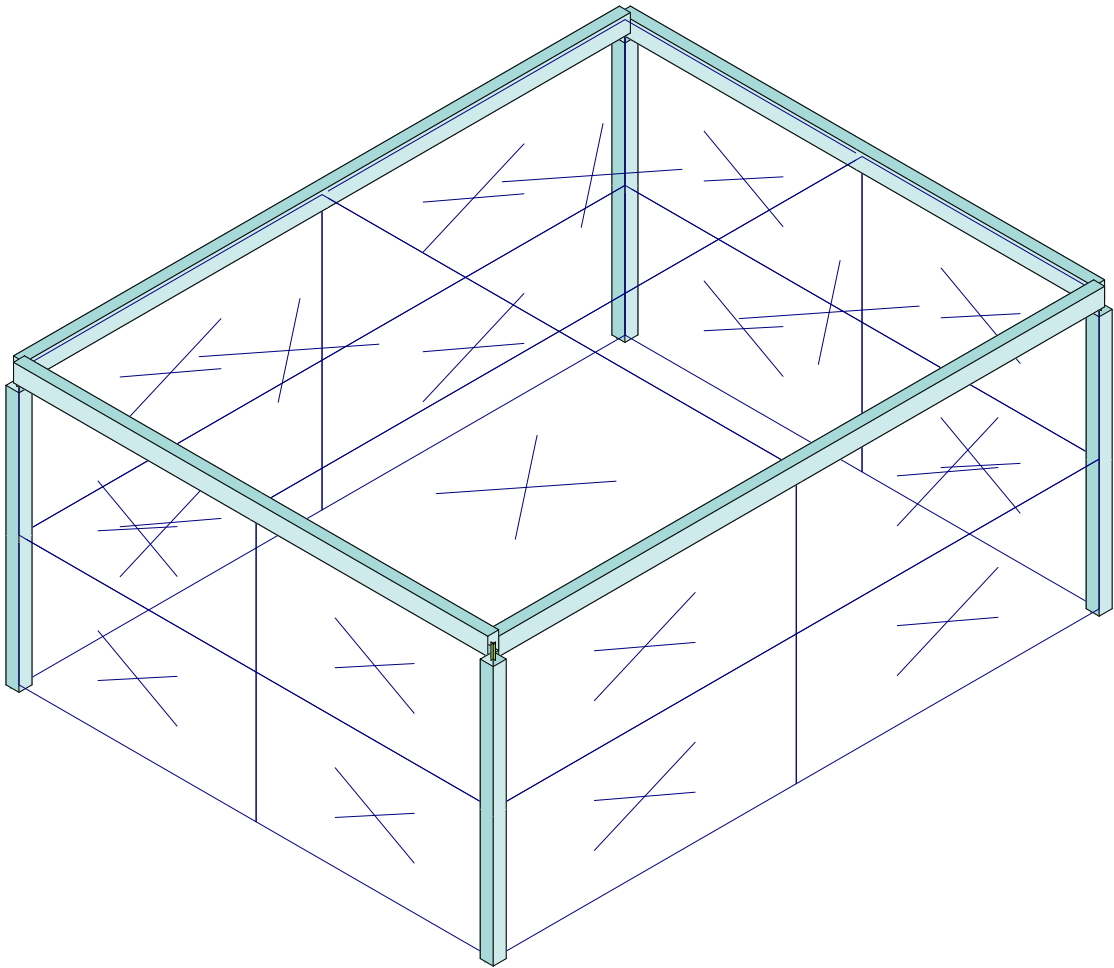


① — SIDE ELEVATION



② — GUIDE-CROSSBAR CONNECTION





PROJECT: RIALTO CANOPY  
 PROJ. NO.: 13264A  
 CLIENT: SUNAIR AWNINGS

 DATE: 1/16/2017  
 ENGINEER: MV

building code; IBC 2012

units; pounds, feet unless noted otherwise

**Applied Wind Loads; from ASCE 7-10**

$$qz = 0.00256 KzKztKdV^2 \quad (\text{ASCE eq'n. 27.3-1})$$

$$qz = 41.62 \text{ psf}$$

$$p = qzGC_p$$

Valence Pressure = 28.30 psf

Roof: Mono

$\gamma = 0^\circ$

wind: clr

$$C_{NW} = \quad p = \quad C_{NL} = \quad p =$$

Case A      1.20   42.45   0.30   10.61

Case B      -1.10   -38.91   -0.10   -3.54

$\gamma = 180^\circ$

wind: clr

$$C_{NW} = \quad p = \quad C_{NL} = \quad p =$$

Case A      1.20   42.45   0.30   10.61

Case B      -1.10   -38.91   -0.10   -3.54

$Kd = 0.85 \quad (\text{sec. 26.6})$

$Kz = 0.85 \quad (\text{Table 27.3-1})$

$Kzt = 1 \quad (\text{sec. 26.8})$

$V = 150 \text{ mph}$

$\theta = 0.00^\circ$

$C_p = 0.80 \quad (\text{Table 26.11})$

$G = 0.85 \quad (\text{Sec. 26.9})$

$\gamma = 90^\circ \quad C_N = \quad p =$

$\leq h$       Case A   -0.8   -28.30

Case B    0.8    28.30

$<h, \leq 2h$       Case A   -0.6   -21.22

Case B    0.5    17.69

$> 2h$       Case A   -0.3   -10.61

Case B    0.3    10.61

Check column to guide connection - (4) 1/4" screws

$FY = 4466.7 \text{ lbs}$

$d = 0.25 \text{ in}$

$FZ = 283.4 \text{ lbs}$

$Fu = 100 \text{ ksi}$

$FX = 280.4 \text{ lbs}$

$Fnt = 75 \text{ ksi}$

$Fnv = 45 \text{ ksi}$

$T = FY / 4 = 1116.7 \text{ lbs}$

$A = 0.05 \text{ in}^2$

$V = (FZ^2 + FX^2)^{1/2} / 4 = 99.67 \text{ lbs}$

$\phi = 0.75$

$Tcap = \phi Fnt A = 2761 \text{ lbs}$

OK

$Vcap = \phi Fnv A = 1657 \text{ lbs}$

OK

Check guide to crossbar - (4) 5/16" screws

$FX = 126.7 \text{ lbs}$

$d = 0.31 \text{ in}$

$FY = 1320.6 \text{ lbs}$

$A = 0.08 \text{ in}^2$

$FZ = 32 \text{ lbs}$

$s = 7.63 \text{ in}$

$Mz = 4.1668 \text{ k-ft}$

$Fu = 100 \text{ ksi}$

$Fnt = 75 \text{ ksi}$

$Fnv = 45 \text{ ksi}$

$\phi = 0.75$

$T = FX / 4 + Mz / s / 2 = 3308 \text{ lbs}$

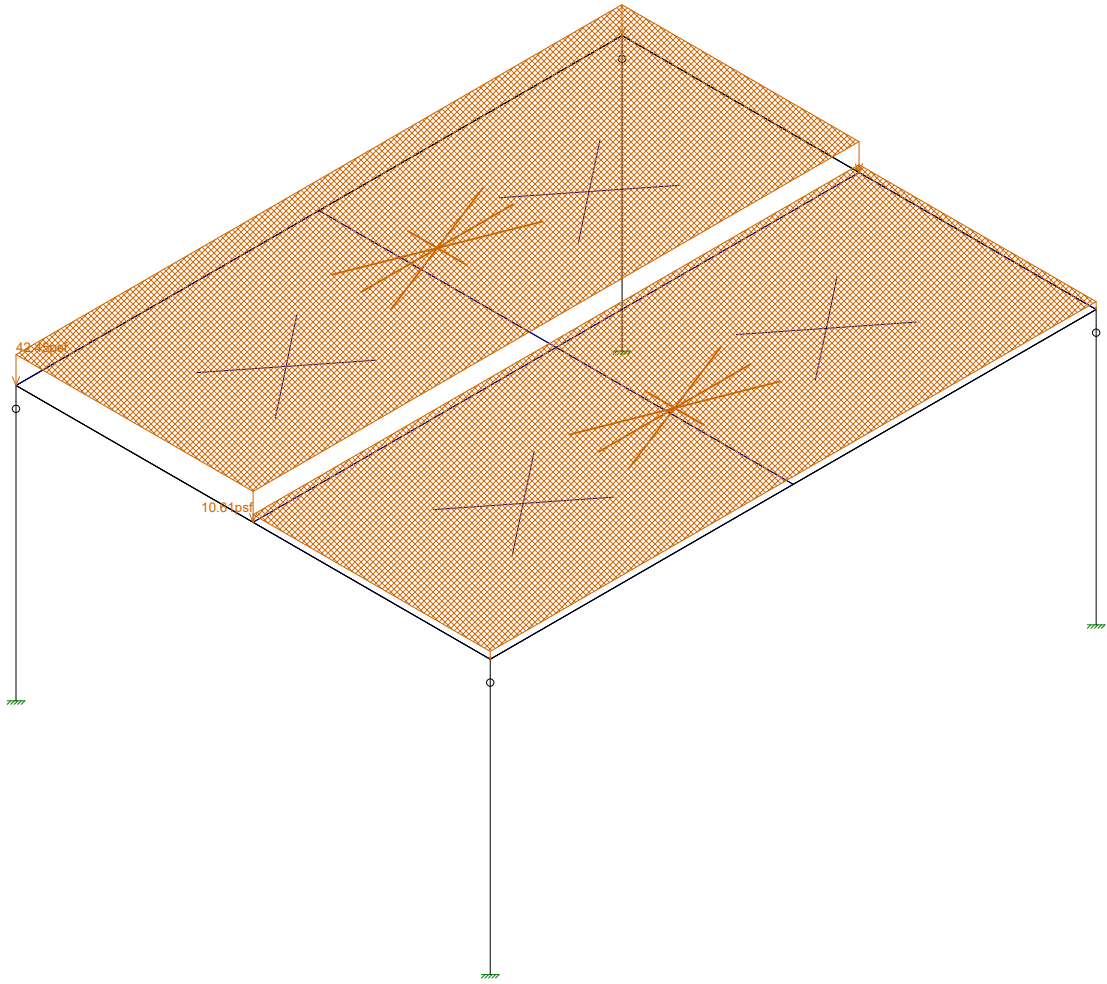
$V = (FZ^2 + FY^2)^{1/2} / 4 = 330 \text{ lbs}$

$Tcap = \phi Fnt A = 4314 \text{ lbs}$

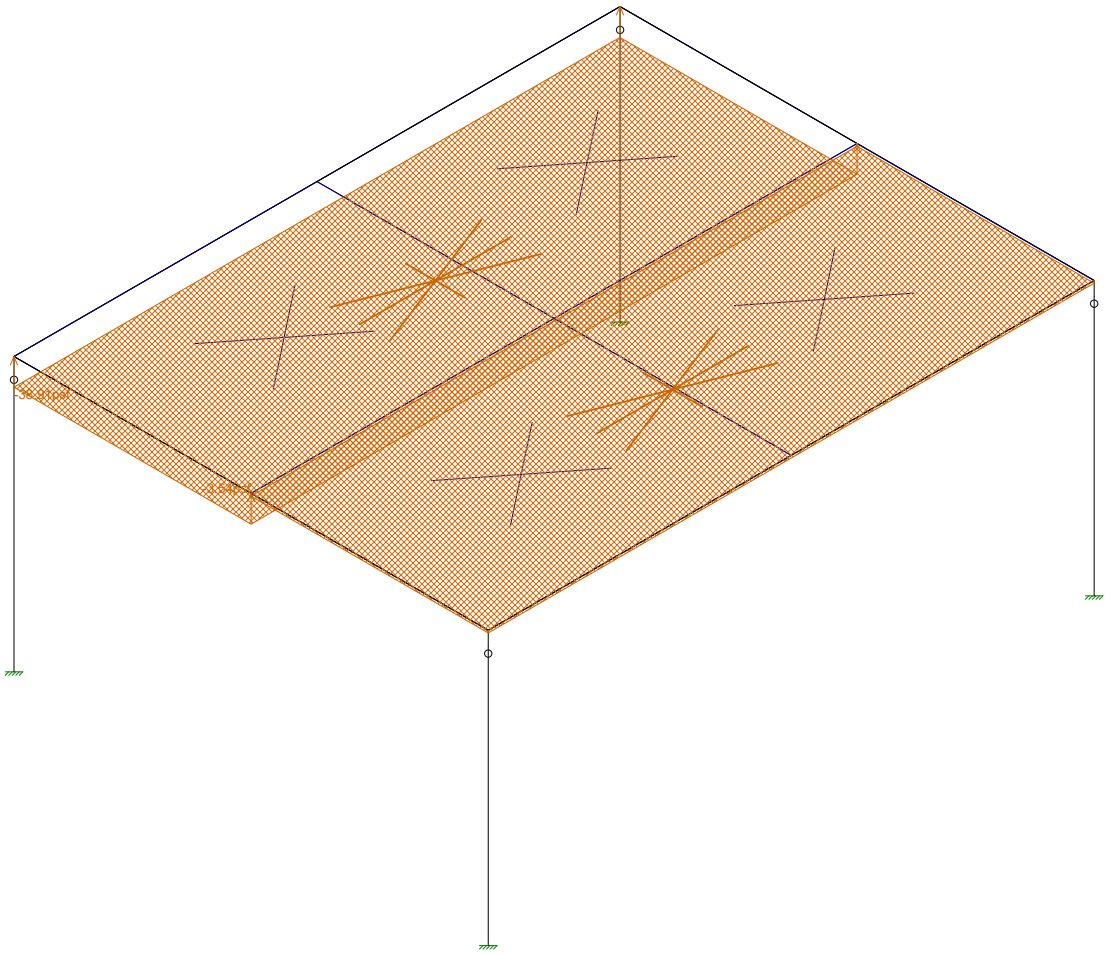
OK

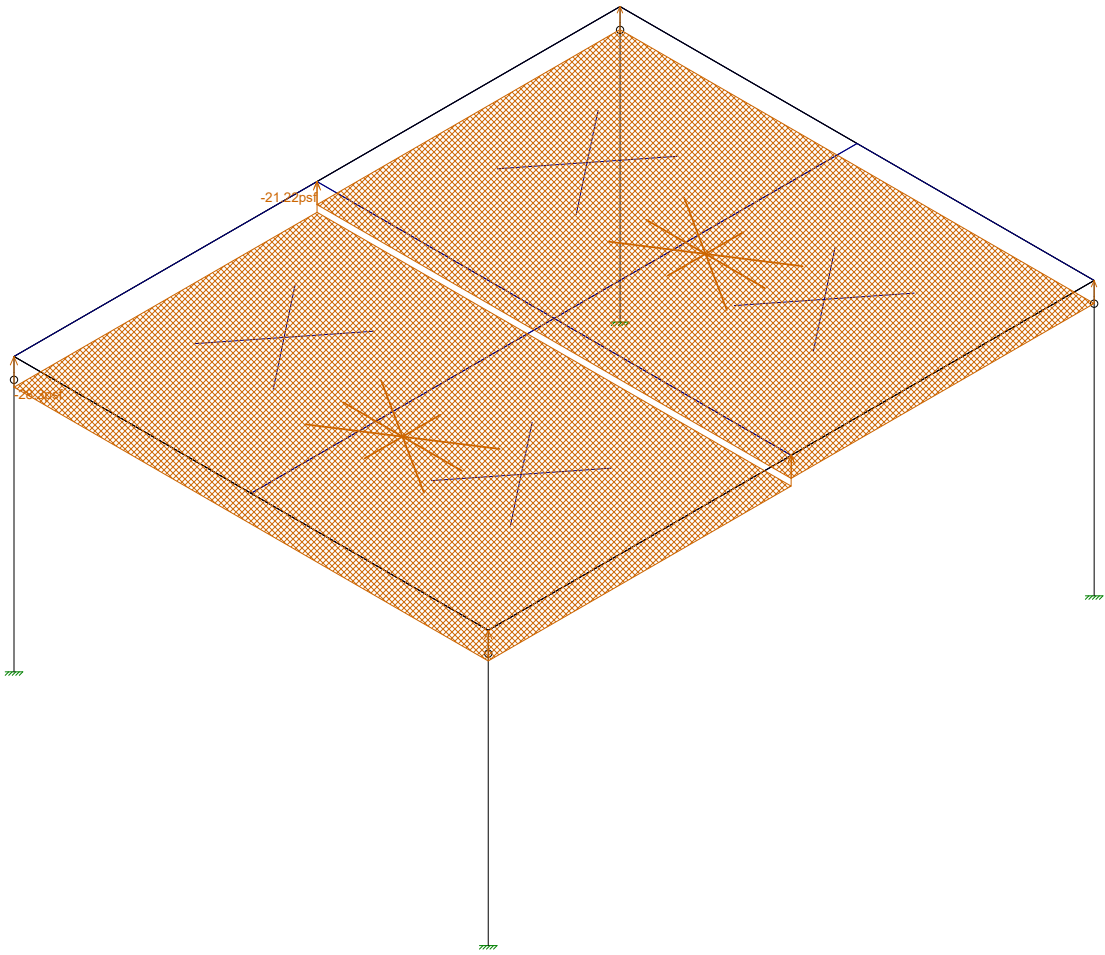
$Vcap = \phi Fnv A = 2589 \text{ lbs}$

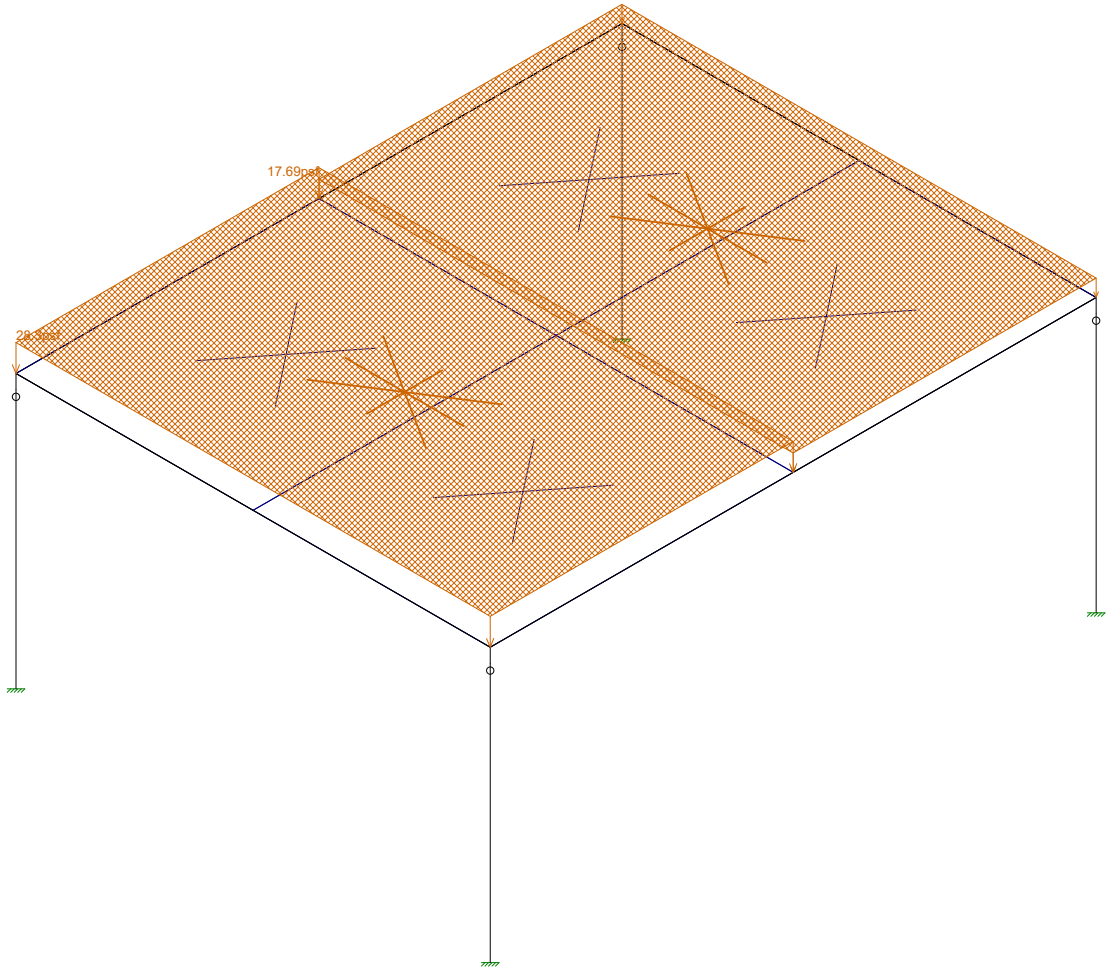
OK

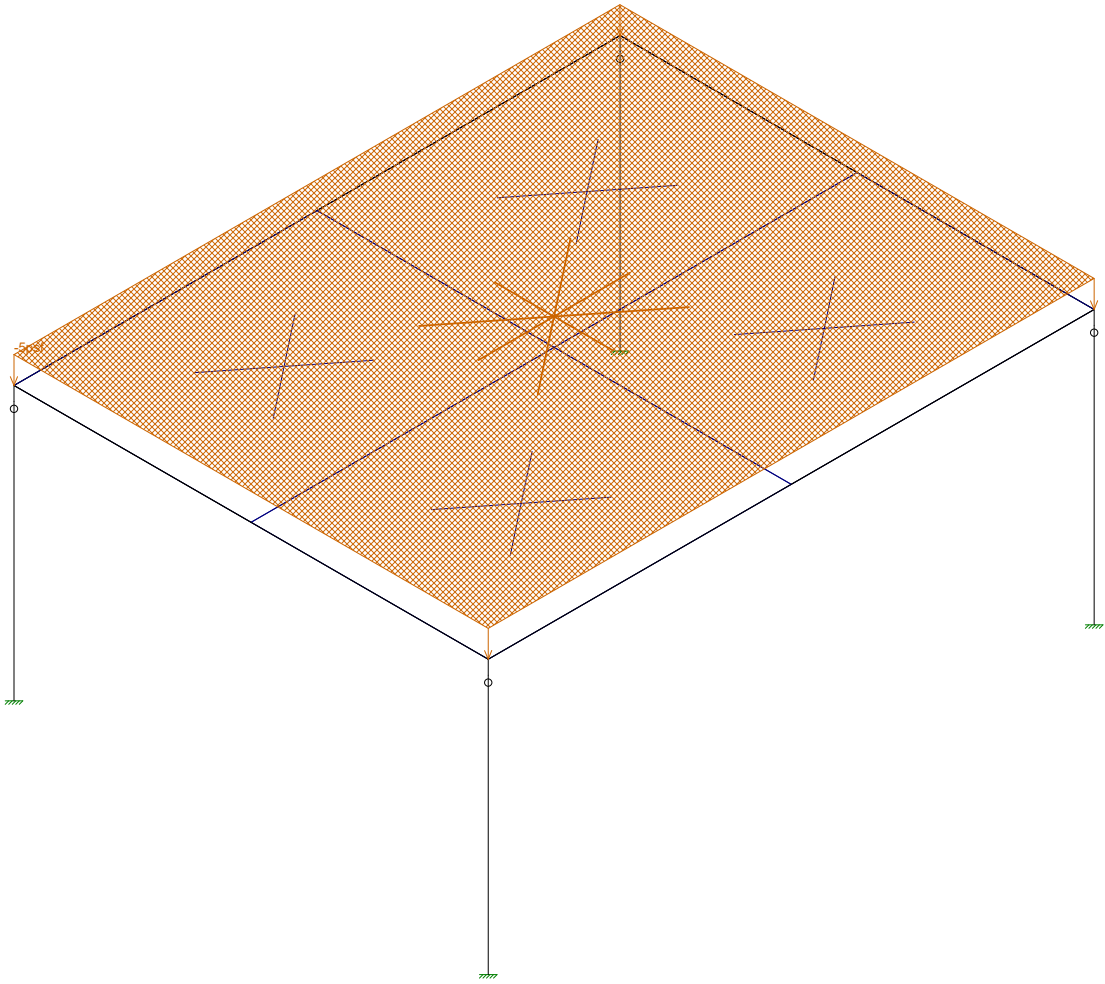












PROJECT: RIALTO CANOPY  
PROJ. NO.: 13264B  
CLIENT: SUNAIR AWNINGS

DATE: 1/16/2017  
ENGINEER: MV

building code; IBC 2012

units; pounds, feet unless noted otherwise

**Applied Wind Loads; from ASCE 7-10**

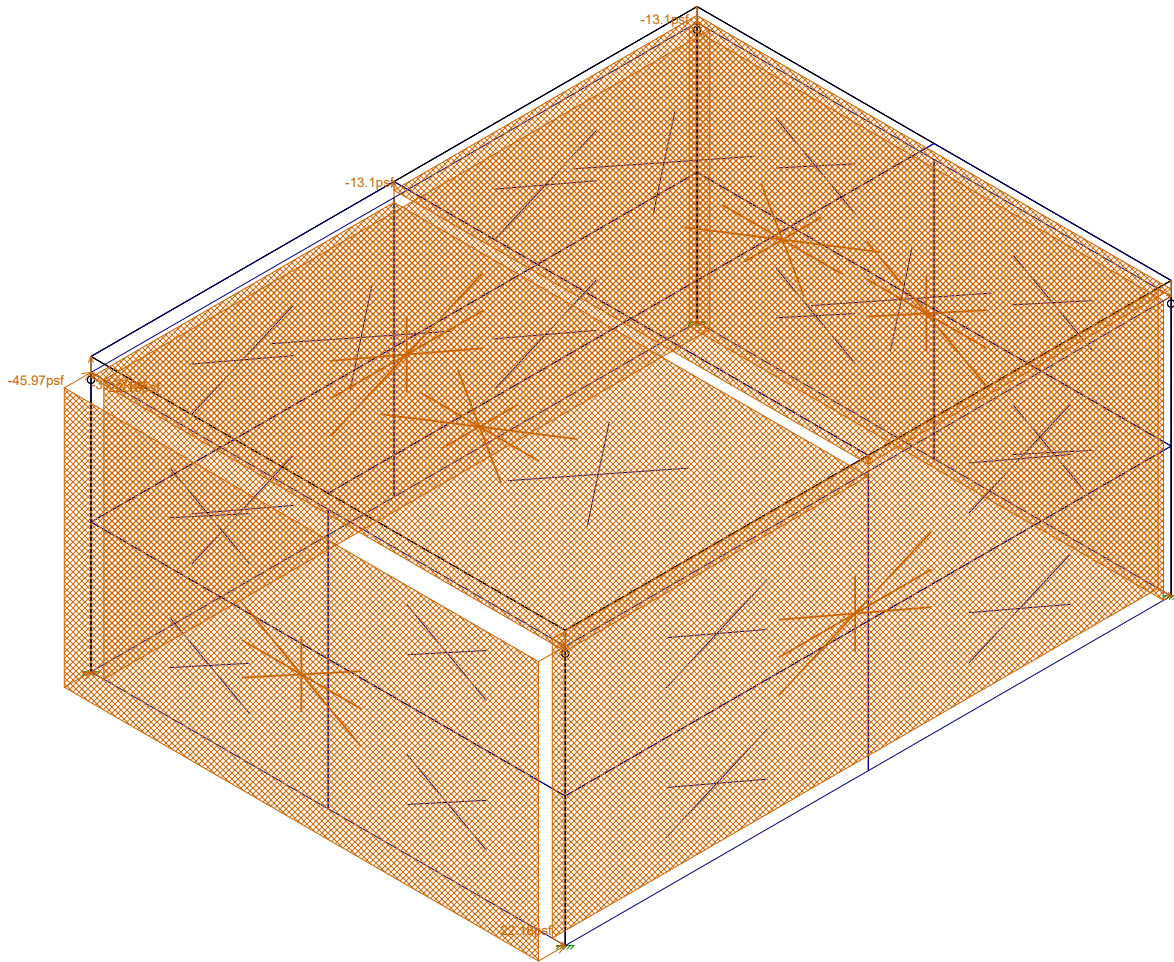
$qz = 0.00256 KzKztKdV^2$ (ASCE eq'n. 27.3-1)		$Kd = 0.85$ (sec. 26.6)
$qz = 53.45$ psf		$Kz = 0.85$ (Table 27.3-1)
$24.46$		$Kzt = 1$ (sec. 26.8)
		$V = 170$ mph
$P = qGCp - q(GCpi)$		$\theta = 0.00^\circ$
		$Cp = 0.80$ (Table 26.11)
$(GCpi) = 0.18 \quad -0.18$		$G = 0.85$ (Sec. 26.9)
$\gamma = 0^\circ, 90^\circ$	$C_p = + GCpi \quad - GCpi$	$C_p \quad + GCpi \quad - GCpi$
$\leq h$	Case A $-0.9 \quad -31.27 \quad -50.51$	Windward $0.8 \quad 45.97 \quad 26.73$
	Case B $-0.18 \quad 1.44 \quad -17.80$	Leeward $-0.5 \quad -13.10 \quad -32.34$
$<h, \leq 2h$	Case A $-0.5 \quad -13.10 \quad -32.34$	Sides $-0.7 \quad -22.18 \quad -41.43$
	Case B $-0.18 \quad 1.44 \quad -17.80$	
$> 2h$	Case A $-0.3 \quad -4.01 \quad -23.25$	
	Case B $-0.18 \quad 1.44 \quad -17.80$	

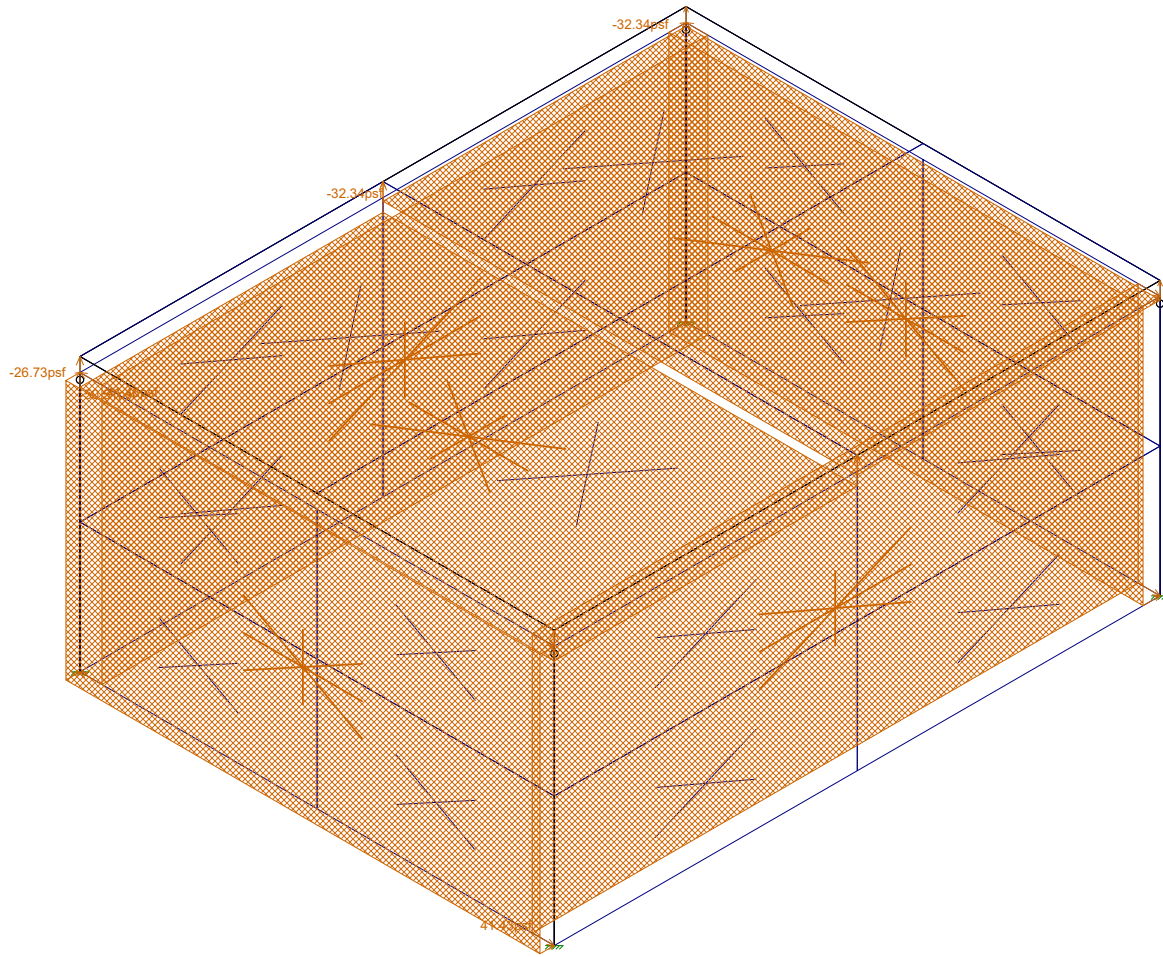
Check column to guide connection - (4) 5/16" screws

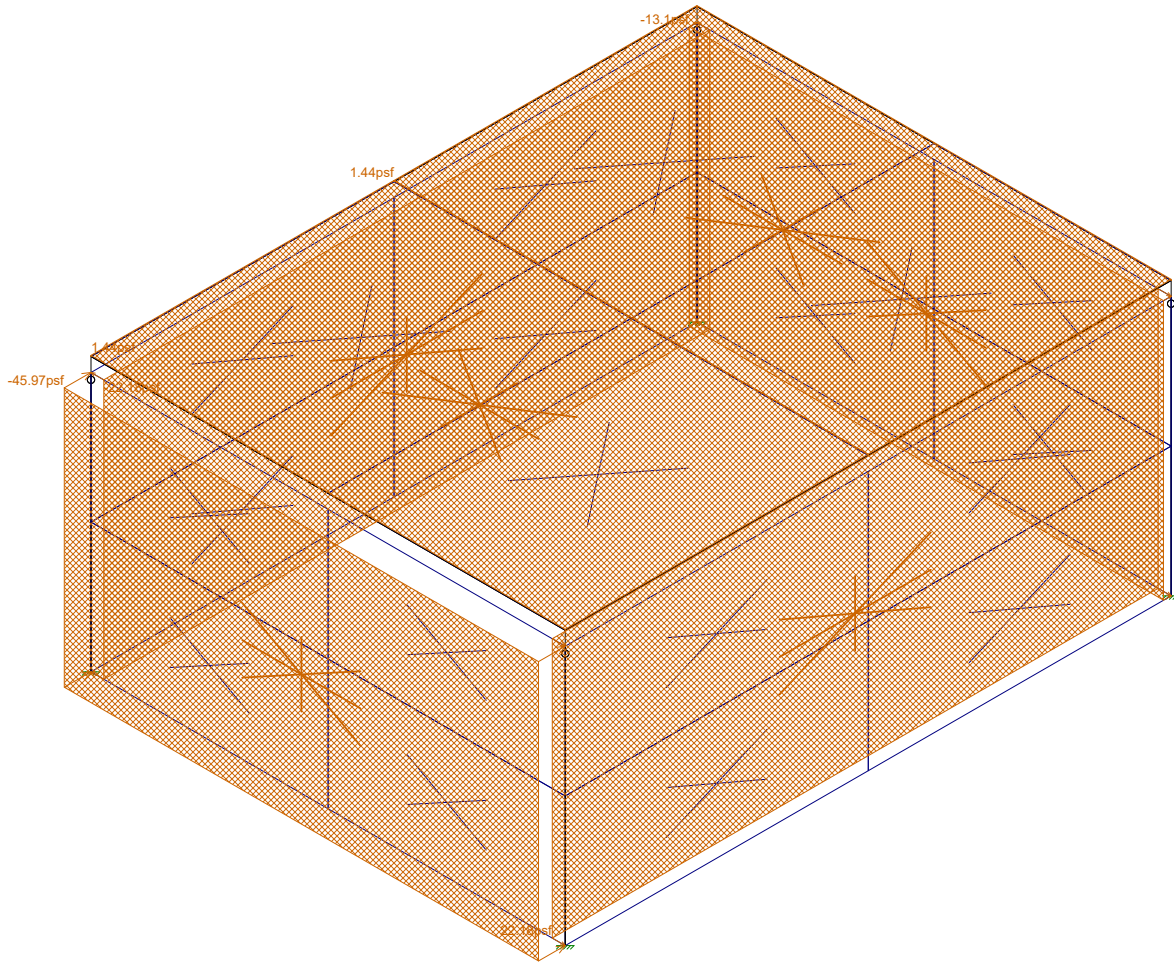
Check guide to crossbar - (4) 1/4" screws

$FY = 4834$ lbs	$d = 0.31$ in
$FZ = 4933$ lbs	$Fu = 100$ ksi
$FX = 4091$ lbs	$Fnt = 51.1$ ksi
	$Fnv = 45$ ksi
$T = FY / 4 = 1208.5$ lbs	$A = 0.08$ in <sup>2</sup>
$V = (FZ^2 + FX^2)^{1/2} / 4 = 1602.2$ lbs	$\phi = 0.75$
$Tcap = \phi Fnt A = 2938$ lbs	OK
$Vcap = \phi Fnv A = 2589$ lbs	OK

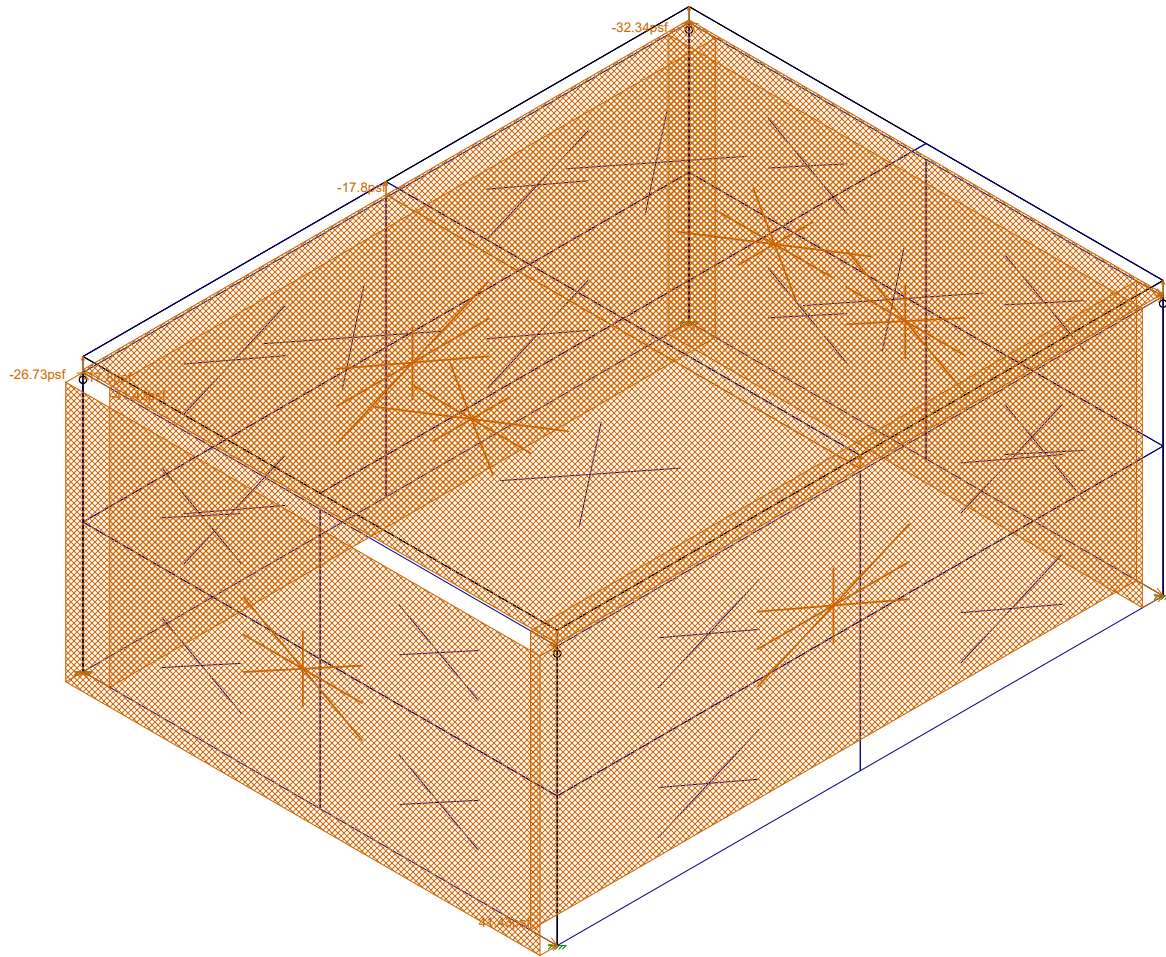
$FX = 1755$ lbs	$d = 0.24$ in
$FY = 1414$ lbs	$A = 0.04$ in <sup>2</sup>
$FZ = 1355$ lbs	$s = 7.625$ in
$Mz = 1.2$ k-ft	$Fu = 100$ ksi
	$Fnt = 72.67$ ksi
	$Fnv = 45$ ksi
	$\phi = 0.75$
$T = FX / 4 + Mz / s / 2 = 1383$ lbs	
$V = (FZ^2 + FY^2)^{1/2} / 4 = 490$ lbs	
$Tcap = \phi Fnt A = 2389$ lbs	OK
$Vcap = \phi Fnv A = 1479$ lbs	OK

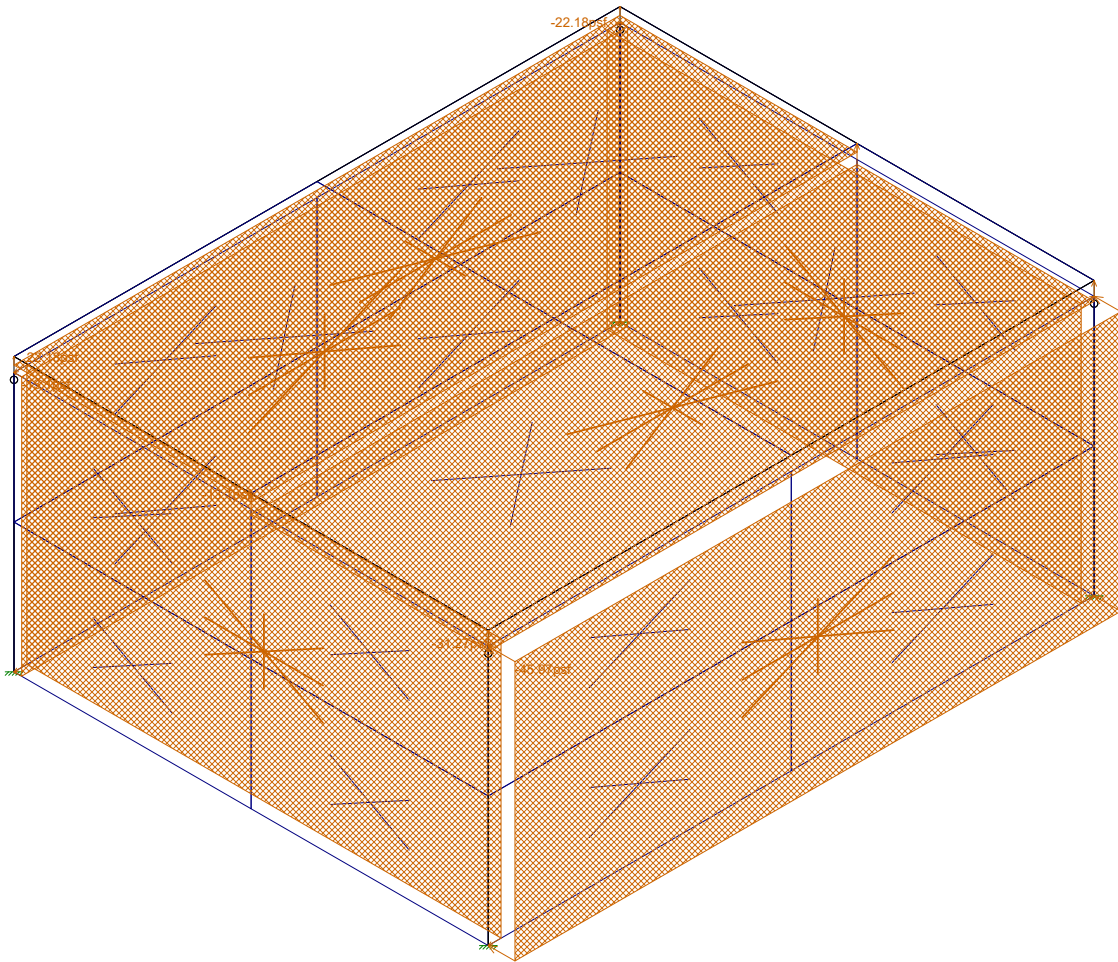


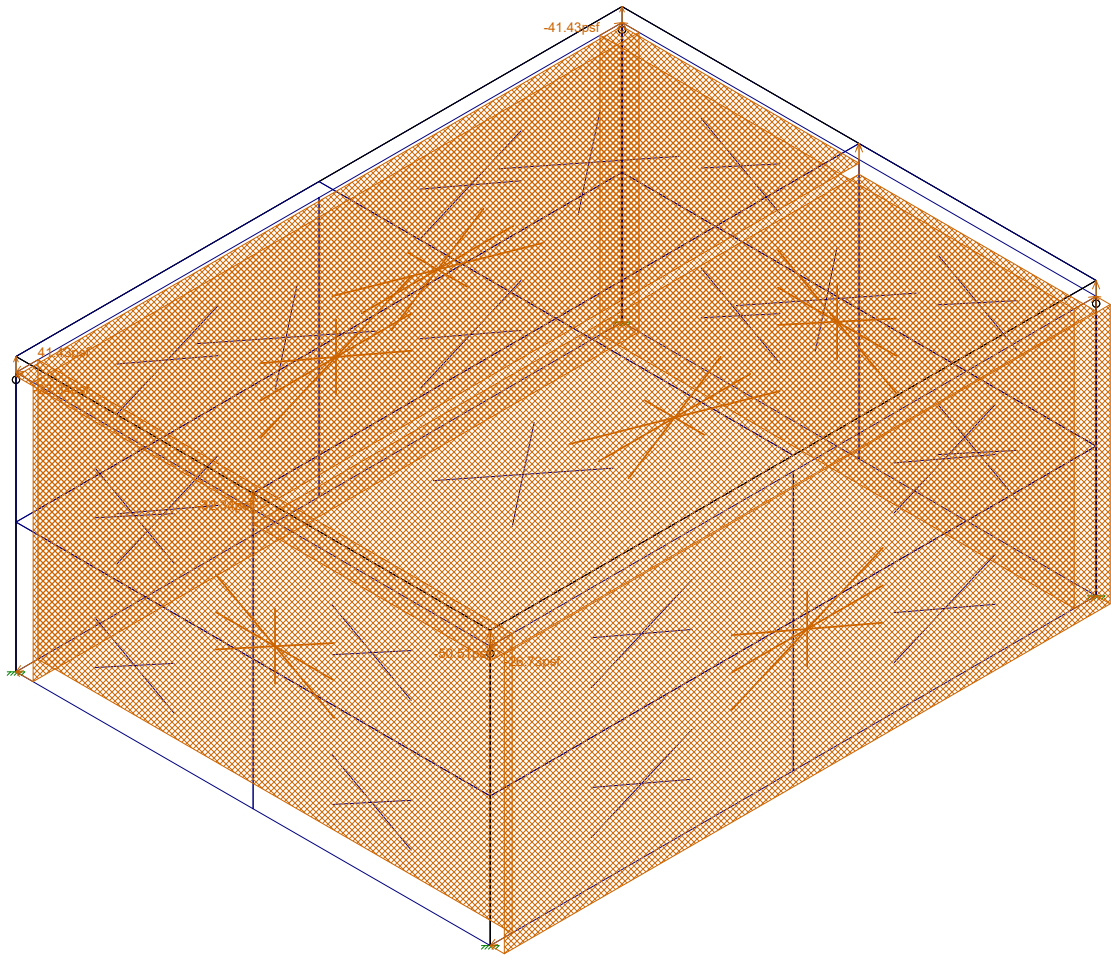


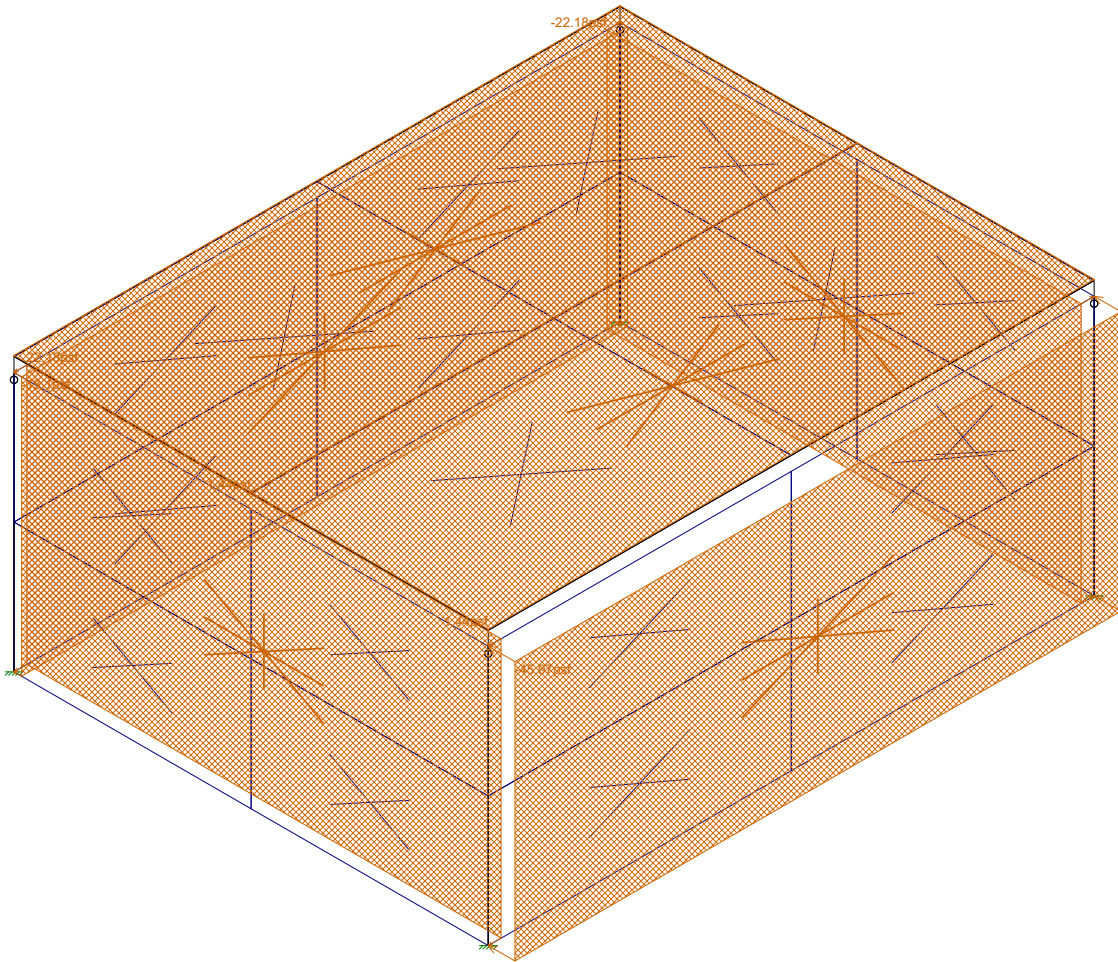


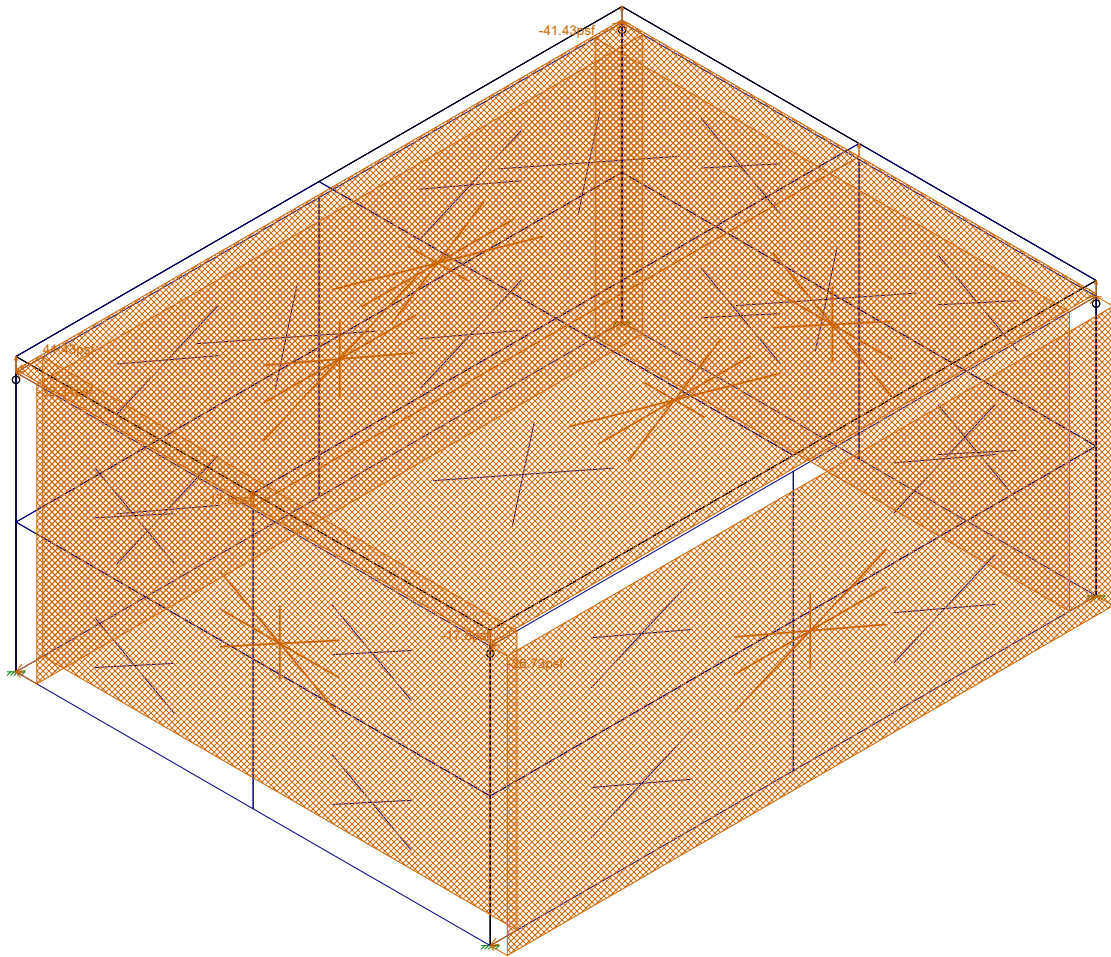


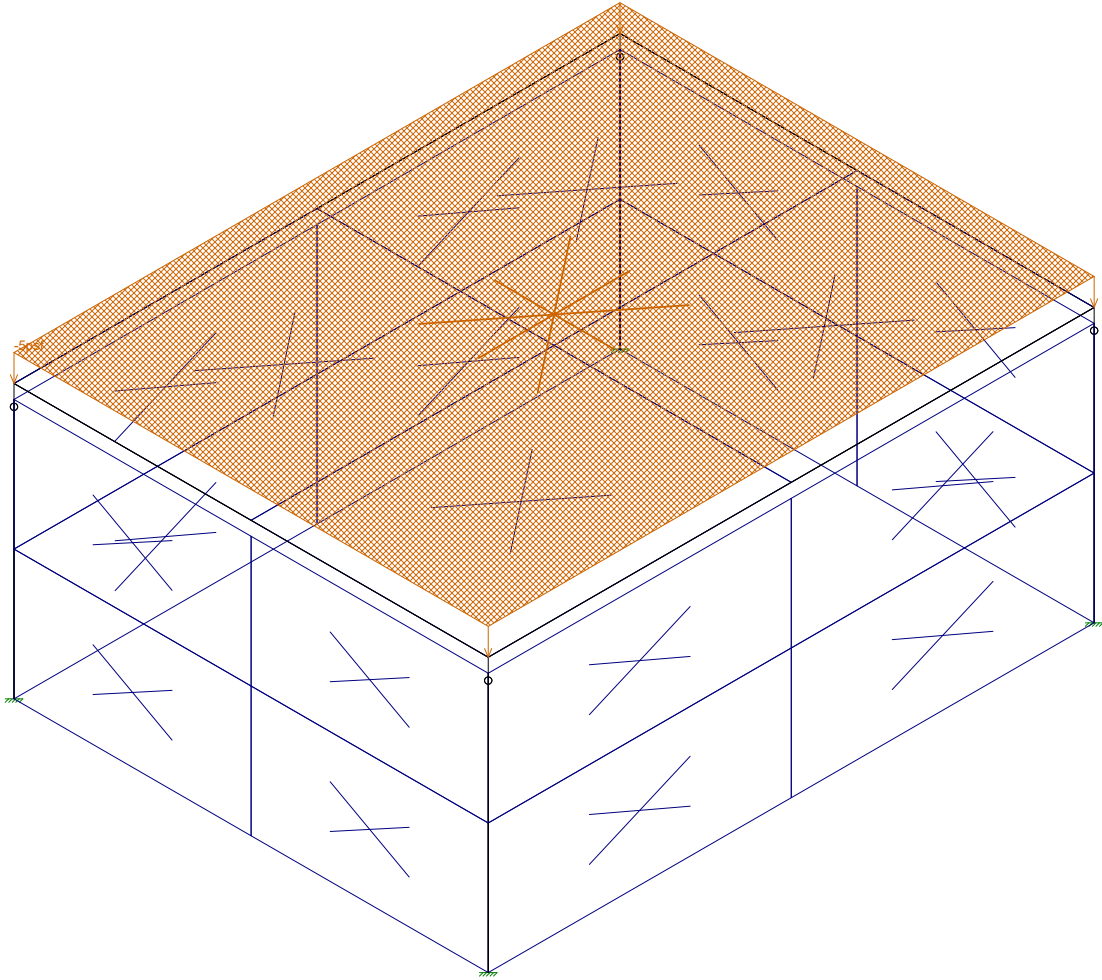












**Aluminum Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (...	Density[lb/ft^3]	Table B.4	kt	Ftu[psi]	Fty[psi]	Fcy[psi]	Fsu[psi]	Ct
1	3003-H14	10100	3787.5	.33	1.3	172.8	Table B.4-1	1	19000	16000	13000	12000	141
2	6061-T6	10100	3787.5	.33	1.3	172.8	Table B.4-2	1	38000	35000	35000	24000	141
3	6063-T5	10100	3787.5	.33	1.3	172.8	Table B.4-2	1	22000	16000	16000	13000	141
4	6063-T6	10100	3787.5	.33	1.3	172.8	Table B.4-2	1	30000	25000	25000	19000	141
5	5052-H34	10200	3787.5	.33	1.3	172.8	Table B.4-1	1	34000	26000	24000	20000	141
6	6061-T6 W	10100	3787.5	.33	1.3	172.8	Table B.4-1	1	24000	15000	15000	15000	141
7	6060-T6	10100	3787.5	.33	1.3	172.8	Table B.4-1	1	25000	20000	20000	15000	141

**Aluminum Section Sets**

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Column	rialto column	Column	A-N Wide Flange	6060-T6	Typical	2.398	6.41	11.992	12.654
2	Guide / Crossbar	nomo crossb...	Beam	Rectangular Tubes	6060-T6	Typical	5.506	14	46.109	29.534

**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Member)	Surface...
1	D	DL		-1						
2	W1	WL							2	
3	W2	WL							2	
4	W3	WL							2	
5	W4	WL							2	
6	W5	WL								
7	W6	WL								
8	LR	RLL							1	
9	SL	SL								
10	Ex	EL	1.24							
11	Ez	EL			1.24					
12	BLC 8 Transient A...	None						76		
13	BLC 2 Transient A...	None						88		
14	BLC 3 Transient A...	None						88		
15	BLC 4 Transient A...	None						80		
16	BLC 5 Transient A...	None						80		

**Load Combinations**

	Description	Sol...	PDelta	SRSS	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
1	1.4D	Yes	Y		1	1.4							
2	1.2D+0.5Lr	Yes	Y		1	1.2	8	.5					
3	1.2D+0.5S	Yes	Y		1	1.2	9	.5					
4	1.2D+1.6Lr+0.5W1	Yes	Y		1	1.2	8	1.6	2	.5			
5	1.2D+1.6Lr+0.5W2	Yes	Y		1	1.2	8	1.6	3	.5			
6	1.2D+1.6Lr+0.5W3	Yes	Y		1	1.2	8	1.6	4	.5			
7	1.2D+1.6Lr+0.5W4	Yes	Y		1	1.2	8	1.6	5	.5			
8	1.2D+1.6Lr+0.5W5	Yes	Y		1	1.2	8	1.6	6	.5			
9	1.2D+1.6Lr+0.5W6	Yes	Y		1	1.2	8	1.6	7	.5			
10	1.2D+1.6SL+0.5W1	Yes	Y		1	1.2	9	1.6	2	.5			
11	1.2D+1.6SL+0.5W2	Yes	Y		1	1.2	9	1.6	3	.5			
12	1.2D+1.6SL+0.5W3	Yes	Y		1	1.2	9	1.6	4	.5			
13	1.2D+1.6SL+0.5W4	Yes	Y		1	1.2	9	1.6	5	.5			
14	1.2D+1.6SL+0.5W5	Yes	Y		1	1.2	9	1.6	6	.5			
15	1.2D+1.6SL+0.5W6	Yes	Y		1	1.2	9	1.6	7	.5			
16	1.2D+1.0W1+0.5Lr	Yes	Y		1	1.2	2	1	8	.5			
17	1.2D+1.0W2+0.5Lr	Yes	Y		1	1.2	3	1	8	.5			
18	1.2D+1.0W3+0.5Lr	Yes	Y		1	1.2	4	1	8	.5			
19	1.2D+1.0W4+0.5Lr	Yes	Y		1	1.2	5	1	8	.5			
20	1.2D+1.0W5+0.5Lr	Yes	Y		1	1.2	6	1	8	.5			

**Load Combinations (Continued)**

	Description	Sol...	PDelta	SRSS	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
21	1.2D+1.0W6+0.5Lr	Yes	Y		1	1.2	7	1	8	.5							
22	1.2D+1.0W1+0.5SL	Yes	Y		1	1.2	2	1	9	.5							
23	1.2D+1.0W2+0.5SL	Yes	Y		1	1.2	3	1	9	.5							
24	1.2D+1.0W3+0.5SL	Yes	Y		1	1.2	4	1	9	.5							
25	1.2D+1.0W4+0.5SL	Yes	Y		1	1.2	5	1	9	.5							
26	1.2D+1.0W5+0.5SL	Yes	Y		1	1.2	6	1	9	.5							
27	1.2D+1.0W6+0.5SL	Yes	Y		1	1.2	7	1	9	.5							
28	1.2D+0.2S	Yes	Y		1	1.2	9	.2									
29	0.9D+1.0W1	Yes	Y		1	.9	2	1									
30	0.9D+1.0W2	Yes	Y		1	.9	3	1									
31	0.9D+1.0W3	Yes	Y		1	.9	4	1									
32	0.9D+1.0W4	Yes	Y		1	.9	5	1									
33	0.9D+1.0W5	Yes	Y		1	.9	6	1									
34	0.9D+1.0W6	Yes	Y		1	.9	7	1									
35	1.2D + 1.0Ex	Yes	Y		1	1.2	10	1									
36	1.2D - 1.0Ex	Yes	Y		1	1.2	10	-1									
37	1.2D + 1.0Ez	Yes	Y		1	1.2	11	1									
38	1.2D - 1.0Ez	Yes	Y		1	1.2	11	-1									

**Member Area Loads (BLC 2 : W1)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N7	N5	N12	N10	z	Two Way	42.45
2	N10	N12	N6	N8	z	Two Way	10.61

**Member Area Loads (BLC 3 : W2)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N7	N5	N12	N10	z	Two Way	-38.91
2	N10	N12	N6	N8	z	Two Way	-3.54

**Member Area Loads (BLC 4 : W3)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N7	N9	N11	N8	z	Two Way	-28.3
2	N9	N5	N6	N11	z	Two Way	-21.22

**Member Area Loads (BLC 5 : W4)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N7	N9	N11	N8	z	Two Way	28.3
2	N9	N5	N6	N11	z	Two Way	17.69

**Member Area Loads (BLC 8 : LR)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N7	N5	N6	N8	V	Two Way	-5

**Envelope Joint Reactions**

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N3	max	314.5486	36	4500.6991	16	311.0773	38	2.9271	38	.0056	35	2.9855	35
2		min	-313.5959	35	-3295.6172	30	-317.0933	37	-2.9907	37	-.0056	36	-3.0039	36
3	N1	max	314.5486	36	4500.6991	16	317.0932	38	2.9907	38	.0056	36	2.9855	35
4		min	-313.5959	35	-3295.6172	30	-311.0774	37	-2.9271	37	-.0056	35	-3.0039	36
5	N2	max	313.5959	36	2608.4057	19	317.0932	38	2.9907	38	.0056	36	3.0039	35
6		min	-314.5486	35	-2110.8528	31	-311.0774	37	-2.9271	37	-.0056	35	-2.9855	36
7	N4	max	313.5959	36	3276.9608	19	311.0773	38	2.9271	38	.0056	35	3.0039	35
8		min	-314.5486	35	-2558.5403	31	-317.0933	37	-2.9907	37	-.0056	36	-2.9855	36
9	Totals:	max	1256.289	36	13234.223	16	1256.3411	38						



**Envelope Joint Reactions (Continued)**

Joint	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
10	min	-1256.289	35	-9338.7863	31	-1256.3413	37					

**Envelope AA ADM1-10: LRFD - Building Aluminum Code Checks**

Member	Shape	Code C...	Loc[in]	LC Shear ...	Loc[in]	Dir	LC	phi*Pnc...	phi*Pnt[...	phi*Mn...	phi*Mn...	phi*Vny...	phi*Vnz...	Cb	Eqn
1	M1	rialto colu...	.857	0	36	.035	0	z	36	24262....	43166.25	3.5815	5.7894	14726....	9617.4 1...H.1-1
2	M2	rialto colu...	.857	0	36	.035	0	z	36	24262....	43166.25	3.5815	5.7894	14726....	9617.4 1...H.1-1
3	M3	rialto colu...	.857	0	35	.035	0	z	35	24262....	43166.25	3.5815	5.7894	14726....	9617.4 1...H.1-1
4	M4	rialto colu...	.857	0	35	.035	0	z	35	24262....	43166.25	3.5815	5.7894	14726....	9617.4 1...H.1-1
5	M5	nomo cro...	.985	77.625	16	.114	138	y	16	14014....	99102.78	4.45	14.1842	17498....	12487.5 1...H.1-1
6	M6	nomo cro...	.455	60.75	16	.272	108	y	16	22882....	99102.78	4.45	14.1842	17498....	12487.5 1...H.1-1
7	M7	nomo cro...	.672	77.625	19	.105	138	y	19	14014....	99102.78	4.45	14.1842	17498....	12487.5 1...H.1-1
8	M8	nomo cro...	.455	155.25	16	.272	108	y	16	22882....	99102.78	4.45	14.1842	17498....	12487.5 1...H.1-1

**Aluminum Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (1...	Density[lb/ft^3]	Table B.4	kt	Ftu[psi]	Fty[psi]	Fcy[psi]	Fsu[psi]	Ct
1	3003-H14	10100	3787.5	.33	1.3	172.8	Table B.4-1	1	19000	16000	13000	12000	141
2	6061-T6	10100	3787.5	.33	1.3	172.8	Table B.4-2	1	38000	35000	35000	24000	141
3	6063-T5	10100	3787.5	.33	1.3	172.8	Table B.4-2	1	22000	16000	16000	13000	141
4	6063-T6	10100	3787.5	.33	1.3	172.8	Table B.4-2	1	30000	25000	25000	19000	141
5	5052-H34	10200	3787.5	.33	1.3	172.8	Table B.4-1	1	34000	26000	24000	20000	141
6	6061-T6 W	10100	3787.5	.33	1.3	172.8	Table B.4-1	1	24000	15000	15000	15000	141
7	6060-T6	10100	3787.5	.33	1.3	172.8	Table B.4-1	1	25000	20000	20000	15000	141

**Aluminum Section Sets**

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Column	rialto column	Column	A-N Wide Flange	6060-T6	Typical	2.398	6.41	11.992	12.654
2	Guide / Crossbar	nomo crossb...	Beam	Rectangular Tubes	6060-T6	Typical	5.506	14	46.109	29.534

**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Member)	Surface...
1	D	DL		-1						
2	W1	WL							6	
3	W2	WL							6	
4	W3	WL							6	
5	W4	WL							6	
6	W5	WL							6	
7	W6	WL							6	
8	W7	WL							6	
9	W8	WL							6	
10	LR	RLL							1	
11	SL	SL							1	
12	Ex	EL	1.24							
13	Ez	EL			1.24					
14	BLC 10 Transient ...	None						76		
15	BLC 11 Transient ...	None						76		
16	BLC 2 Transient A...	None						236		
17	BLC 3 Transient A...	None						236		
18	BLC 4 Transient A...	None						236		
19	BLC 5 Transient A...	None						236		
20	BLC 6 Transient A...	None						244		
21	BLC 7 Transient A...	None						244		
22	BLC 8 Transient A...	None						244		
23	BLC 9 Transient A...	None						244		

**Load Combinations**

	Description	Sol...	PDelta	SRSS	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
1	1.4D	Yes	Y		1	1.4							
2	1.2D+0.5Lr	Yes	Y		1	1.2	10	.5					
3	1.2D+0.5S	Yes	Y		1	1.2	11	.5					
4	1.2D+1.6Lr+0.5W1	Yes	Y		1	1.2	10	1.6	2	.5			
5	1.2D+1.6Lr+0.5W2	Yes	Y		1	1.2	10	1.6	3	.5			
6	1.2D+1.6Lr+0.5W3	Yes	Y		1	1.2	10	1.6	4	.5			
7	1.2D+1.6Lr+0.5W4	Yes	Y		1	1.2	10	1.6	5	.5			
8	1.2D+1.6Lr+0.5W5	Yes	Y		1	1.2	10	1.6	6	.5			
9	1.2D+1.6Lr+0.5W6	Yes	Y		1	1.2	10	1.6	7	.5			
10	1.2D+1.6Lr+0.5W7	Yes	Y		1	1.2	10	1.6	8	.5			
11	1.2D+1.6Lr+0.5W8	Yes	Y		1	1.2	10	1.6	9	.5			
12	1.2D+1.6SL+0.5W1	Yes	Y		1	1.2	11	1.6	2	.5			
13	1.2D+1.6SL+0.5W2	Yes	Y		1	1.2	11	1.6	3	.5			

**Load Combinations (Continued)**

	Description	Sol...	PDelta	SRSS	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
14	1.2D+1.6SL+0.5W3	Yes	Y		1	1.2	11	1.6	4	.5							
15	1.2D+1.6SL+0.5W4	Yes	Y		1	1.2	11	1.6	5	.5							
16	1.2D+1.6SL+0.5W5	Yes	Y		1	1.2	11	1.6	6	.5							
17	1.2D+1.6SL+0.5W6	Yes	Y		1	1.2	11	1.6	7	.5							
18	1.2D+1.6SL+0.5W7	Yes	Y		1	1.2	11	1.6	8	.5							
19	1.2D+1.6SL+0.5W8	Yes	Y		1	1.2	11	1.6	9	.5							
20	1.2D+1.0W1+0.5Lr	Yes	Y		1	1.2	2	1	10	.5							
21	1.2D+1.0W2+0.5Lr	Yes	Y		1	1.2	3	1	10	.5							
22	1.2D+1.0W3+0.5Lr	Yes	Y		1	1.2	4	1	10	.5							
23	1.2D+1.0W4+0.5Lr	Yes	Y		1	1.2	5	1	10	.5							
24	1.2D+1.0W5+0.5Lr	Yes	Y		1	1.2	6	1	10	.5							
25	1.2D+1.0W6+0.5Lr	Yes	Y		1	1.2	7	1	10	.5							
26	1.2D+1.0W7+0.5Lr	Yes	Y		1	1.2	8	1	10	.5							
27	1.2D+1.0W8+0.5Lr	Yes	Y		1	1.2	9	1	10	.5							
28	1.2D+1.0W1+0.5SL	Yes	Y		1	1.2	2	1	11	.5							
29	1.2D+1.0W2+0.5SL	Yes	Y		1	1.2	3	1	11	.5							
30	1.2D+1.0W3+0.5SL	Yes	Y		1	1.2	4	1	11	.5							
31	1.2D+1.0W4+0.5SL	Yes	Y		1	1.2	5	1	11	.5							
32	1.2D+1.0W5+0.5SL	Yes	Y		1	1.2	6	1	11	.5							
33	1.2D+1.0W6+0.5SL	Yes	Y		1	1.2	7	1	11	.5							
34	1.2D+1.0W7+0.5SL	Yes	Y		1	1.2	8	1	11	.5							
35	1.2D+1.0W8+0.5SL	Yes	Y		1	1.2	9	1	11	.5							
36	1.2D+0.2S	Yes	Y		1	1.2	11	.2									
37	0.9D+1.0W1	Yes	Y		1	.9	2	1									
38	0.9D+1.0W2	Yes	Y		1	.9	3	1									
39	0.9D+1.0W3	Yes	Y		1	.9	4	1									
40	0.9D+1.0W4	Yes	Y		1	.9	5	1									
41	0.9D+1.0W5	Yes	Y		1	.9	6	1									
42	0.9D+1.0W6	Yes	Y		1	.9	7	1									
43	0.9D+1.0W7	Yes	Y		1	.9	8	1									
44	0.9D+1.0W8	Yes	Y		1	.9	9	1									
45	1.2D + 1.0Ex	Yes	Y		1	1.2	12	1									
46	1.2D - 1.0Ex	Yes	Y		1	1.2	12	-1									
47	1.2D + 1.0Ez	Yes	Y		1	1.2	13	1									
48	1.2D - 1.0Ez	Yes	Y		1	1.2	13	-1									

**Member Area Loads (BLC 2 : W1)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N14	N3	N4	N17	H	Two Way	-45.97
2	N15	N1	N2	N16	H	Two Way	-13.1
3	N14	N3	N1	N15	L	Two Way	-22.18
4	N4	N17	N16	N2	L	Two Way	22.18
5	N7	N9	N11	N8	z	Two Way	-31.27
6	N9	N5	N6	N11	z	Two Way	-13.1

**Member Area Loads (BLC 3 : W2)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N14	N3	N4	N17	H	Two Way	-26.73
2	N15	N1	N2	N16	H	Two Way	-32.34
3	N14	N3	N1	N15	L	Two Way	-41.43
4	N4	N17	N16	N2	L	Two Way	41.43
5	N7	N9	N11	N8	z	Two Way	-50.51
6	N9	N5	N6	N11	z	Two Way	-32.34

**Member Area Loads (BLC 4 : W3)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N14	N3	N4	N17	H	Two Way	-45.97

**Member Area Loads (BLC 4 : W3) (Continued)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
2	N15	N1	N2	N16	H	Two Way	-13.1
3	N14	N3	N1	N15	L	Two Way	-22.18
4	N4	N17	N16	N2	L	Two Way	22.18
5	N7	N9	N11	N8	z	Two Way	1.44
6	N9	N5	N6	N11	z	Two Way	1.44

**Member Area Loads (BLC 5 : W4)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N14	N3	N4	N17	H	Two Way	-26.73
2	N15	N1	N2	N16	H	Two Way	-32.34
3	N14	N3	N1	N15	L	Two Way	-41.43
4	N4	N17	N16	N2	L	Two Way	41.43
5	N7	N9	N11	N8	z	Two Way	-17.8
6	N9	N5	N6	N11	z	Two Way	-17.8

**Member Area Loads (BLC 6 : W5)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N17	N4	N2	N16	L	Two Way	-45.97
2	N14	N3	N1	N15	L	Two Way	-13.1
3	N15	N1	N2	N16	H	Two Way	-22.18
4	N14	N3	N4	N17	H	Two Way	22.18
5	N8	N10	N12	N6	z	Two Way	-31.27
6	N10	N7	N5	N12	z	Two Way	-13.1

**Member Area Loads (BLC 7 : W6)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N17	N4	N2	N16	L	Two Way	-26.73
2	N14	N3	N1	N15	L	Two Way	-32.34
3	N15	N1	N2	N16	H	Two Way	-41.43
4	N14	N3	N4	N17	H	Two Way	41.43
5	N8	N10	N12	N6	z	Two Way	-50.51
6	N10	N7	N5	N12	z	Two Way	-32.34

**Member Area Loads (BLC 8 : W7)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N17	N4	N2	N16	L	Two Way	-45.97
2	N14	N3	N1	N15	L	Two Way	-13.1
3	N15	N1	N2	N16	H	Two Way	-22.18
4	N14	N3	N4	N17	H	Two Way	22.18
5	N8	N10	N12	N6	z	Two Way	1.44
6	N10	N7	N5	N12	z	Two Way	1.44

**Member Area Loads (BLC 9 : W8)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N17	N4	N2	N16	L	Two Way	-26.73
2	N14	N3	N1	N15	L	Two Way	-32.34
3	N15	N1	N2	N16	H	Two Way	-41.43
4	N14	N3	N4	N17	H	Two Way	41.43
5	N8	N10	N12	N6	z	Two Way	-17.8
6	N10	N7	N5	N12	z	Two Way	-17.8

**Member Area Loads (BLC 10 : LR)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N7	N5	N6	N8	V	Two Way	-5

**Member Area Loads (BLC 11 : SL)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N7	N5	N6	N8	V	Two Way	-16.8

**Envelope Joint Reactions**

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N3	max	4610.4746	42	4625.1086	18	3585.4974	30	6.8171	14	.1905	45	2.8776	14
2		min	-582.2149	45	-5854.5898	38	-2586.5438	42	-7.2545	38	-.1905	46	-6.2686	38
3	N1	max	4610.4746	42	4625.1087	18	4431.0588	38	8.2579	38	.1905	46	2.8818	14
4		min	-582.2149	45	-1950.2995	38	-951.7473	18	-5.8032	18	-.1905	45	-5.5603	42
5	N2	max	4097.3174	34	4029.7878	14	4431.0588	38	10.2718	42	.1905	46	4.2031	38
6		min	-2025.6413	38	-7136.0981	42	-1018.9037	18	-5.8318	18	-.1905	45	-4.0099	18
7	N4	max	4097.3174	34	2710.1931	14	3585.4974	30	6.8171	14	.1905	45	6.2686	38
8		min	-2514.9991	38	-7136.0981	42	-3233.3588	42	-10.2718	42	-.1905	46	-4.0099	18
9	Totals:	max	13372.1421	42	13479.9618	18	10465.1541	30						
10		min	-2122.014	45	-15609.7787	38	-2122.0138	47						

**Envelope AA ADM1-10: LRFD - Building Aluminum Code Checks**

Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc...	phi*Pnt[...	phi*Mn...	phi*Mn...	phi*Vny...	phi*Vnz...	Cb	Eqn
1	M1	rialto colu...	.386	59.05...	38	.128	0	z	38	24262....	43166.25	3.5815	5.7894	14726....	9617.4	1....H.1-1
2	M2	rialto colu...	.357	0	38	.110	0	z	38	24262....	43166.25	3.5815	5.7894	14726....	9617.4	1....H.1-1
3	M3	rialto colu...	.398	59.05...	42	.137	0	z	34	24262....	43166.25	3.5815	5.7894	14726....	9617.4	1....H.1-1
4	M4	rialto colu...	.398	59.05...	42	.137	0	z	34	24262....	43166.25	3.5815	5.7894	14726....	9617.4	1....H.1-1
5	M5	nomo cro...	.952	138	38	.167	138	z	21	14014....	99102.78	4.45	14.1842	17498....	12487.5	1....H.1-1
6	M6	nomo cro...	.508	108	37	.118	108	z	30	22882....	99102.78	4.45	14.1842	17498....	12487.5	1....H.1-1
7	M7	nomo cro...	.983	138	34	.182	138	z	24	14014....	99102.78	4.45	14.1842	17498....	12487.5	1....H.1-1
8	M8	nomo cro...	.452	108	42	.108	108	z	33	22882....	99102.78	4.45	14.1842	17498....	12487.5	1....H.1-1