



PRCTI20241072

The approved construction plans, documents, and all engineering must be posted on the job at all inspections in a visible and readily accessible location.  
Full sized legible color plans are required to be provided by the permittee on site for inspection.

Structural Calculations for:

# South Hill Center - Space 10 Commercial Tenant Improvements

4102 S Meridian  
Puyallup WA 98373



6/27/2024

City of Puyallup Development & Permitting Services ISSUED PERMIT	
Building	Planning
Engineering	Public Works
Fire	Traffic

Prepared for: Jackson Main Architecture  
Job #: 10993-2023-02  
Date: 6/27/20243



SEATTLE  
TACOMA

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# Criteria Sheet

## Codes

Structural IBC 2021  
 Loading ASCE 7-16  
 Wood: NDS 2018 / SDPWS 2021  
 Steel: AISC 360-16  
 Concrete: ACI 318-19  
 Masonry: TMS 402/602-16

## Project Location

Street & Number 4102 S Meridian  
 City: Puyallup State: WA  
 ZIP: 98373  
 Latitude: 47.1519 N  
 Longitude: -122.2952 W  
 Ground Elevation 459 ft

## Occupancy Category

Risk Category: II ASCE 7 Table 1.5-1

## Seismic Load Summary:

Analysis Procedure: Equivalent Lateral Force Procedure

Lateral System: Arch Components (Custom System)

R: 5.00  $C_d = 5$   
 $\Omega_o = 2$   
 $S_S = 1.261$   $S_I = 0.435$   
 $S_{DS} = 1.01$   $S_{DI} = 0.81$   
 $C_s = 0.202$   $I_E = 1.0$



## Story Information

# Stories Above Grade (Including Mezzanine Levels) 1

## Horizontal and Vertical Irregularities:

Is the building a "Regular Structure"? (No horizontal or vertical irregularities) No

## Wind Load Summary:

V = 98  $K_{ZT} = 1.00$   
 Exposure = B

## Dead Loads:

**Roof**  
 Roofing 2 psf  
 Framing 5 psf  
 Ceiling 3 psf  
 Misc 5 psf  
 . psf  
 . psf  
 15 psf  
 Use 15 psf

## Live Loads:

Roof 20 psf  
 Floor 40 psf

## Snow Loading Criteria:

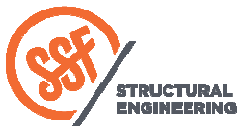
Ground Snow, $p_g$	20 psf	Flat Roof Snow Load, $p_f$	25.0 psf	Importance Factor, $I_s$	1.00
Exposure Factor, $C_e$	1.00	Sloped Roof Snow Load, $p_s$	25.0 psf		
Thermal Factor, $C_t$	1.00	Slope Factor, $C_s$	0.61		

## Soils:

Allowable Bearing 1500 psf  
 Sliding,  $\mu$  0.3  
 Passive 250 pcf

Soils Report Provided? No To be approved by the authority having jurisdiction, per 11.8.2 exception.

Site Specific Ground Motion Hazard Analysis Provided? No



South Hill Center  
 Criteria

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**Site Soil Class:** D - Default (see Section 11.4.3)

**Results:**

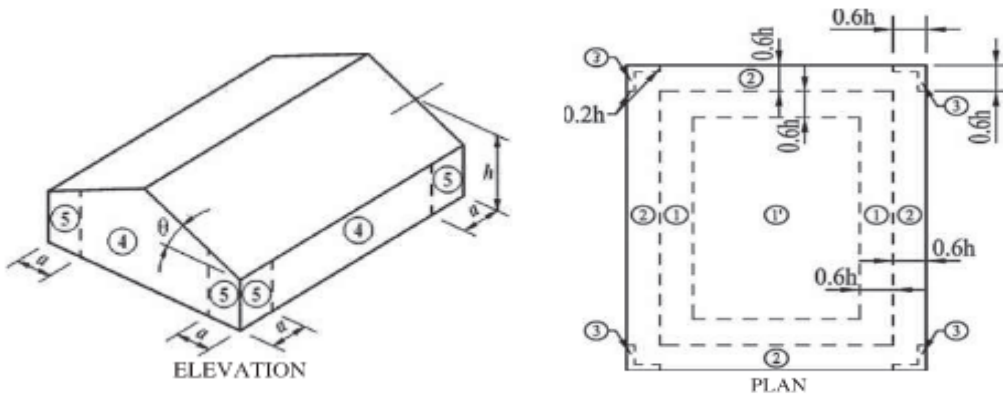
$S_s$ :	1.262	$S_{D1}$ :	N/A
$S_1$ :	0.435	$T_L$ :	6
$F_a$ :	1.2	PGA :	0.5
$F_v$ :	N/A	PGA <sub>M</sub> :	0.6
$S_{MS}$ :	1.514	$F_{PGA}$ :	1.2
$S_{M1}$ :	N/A	$I_e$ :	1
$S_{DS}$ :	1.009	$C_v$ :	1.352

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

**Data Accessed:** Mon Jun 03 2024

**Date Source:** [USGS Seismic Design Maps](#)

Project South Hill Center  
 V= 100 mph (Design Wind Speed)  
 Kzt= 1 (default 1.0)  
 Kd= 0.85 (default 1.0)  
 I= 1 (default 1.0)  
 Gcpi= 0.18 (+ or -)(default 0.18)  
 h= 40 ft (mean roof height above grade)  
 Exposure= B  
 hp= 8.5 ft (height of parapet)



ULTIMATE WIND PRESSURES - COMPONENTS AND CLADDING

ZONE	COMPONENT AREA	DESIGN PRESSURE (PSF)
①	10 SQFT (OR LESS)	-31
	500 SQFT (OR MORE)	-20
②	10 SQFT (OR LESS)	-41
	500 SQFT (OR MORE)	-26
③	10 SQFT (OR LESS)	-41
	500 SQFT (OR MORE)	-26
④	20 SQFT (OR LESS)	-21 / + 20
	500 SQFT (OR MORE)	-16 / + 13
⑤	20 SQFT (OR LESS)	-26 / + 20
	500 SQFT (OR MORE)	-16 / + 15

NOTES:

• PRESSURES MAY BE INTERPOLATED FOR COMPONENT AREAS BETWEEN AREA LIMITS AS LISTED

• a = 10% OF LEAST HORIZONTAL BUILDING DIMENSION (BUT NOT LESS THAN 3'-0")

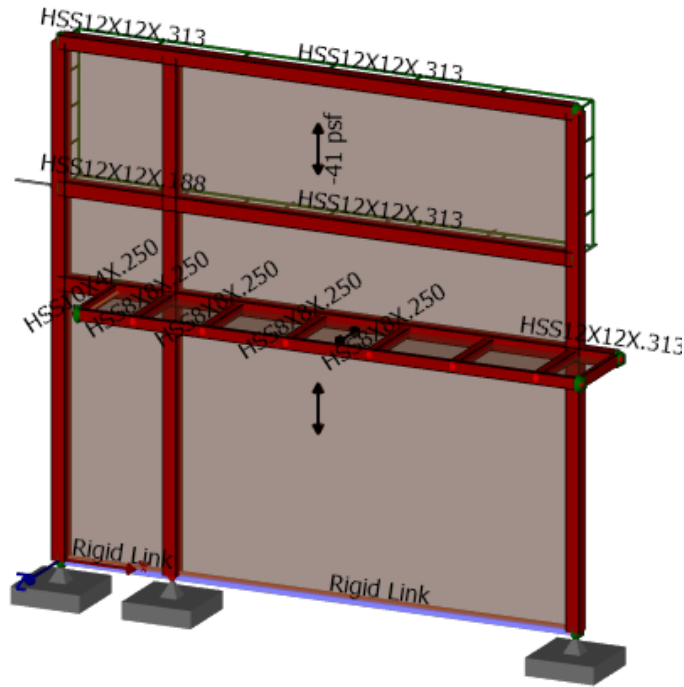
• POSITIVE VALUES INDICATE PRESSURE TOWARDS SURFACE, NEGATIVE VALUES INDICATE PRESSURE AWAY FROM SURFACE (SUCTION)

COMPONENT AND CLADDING WIND PRESSURE DIAGRAM

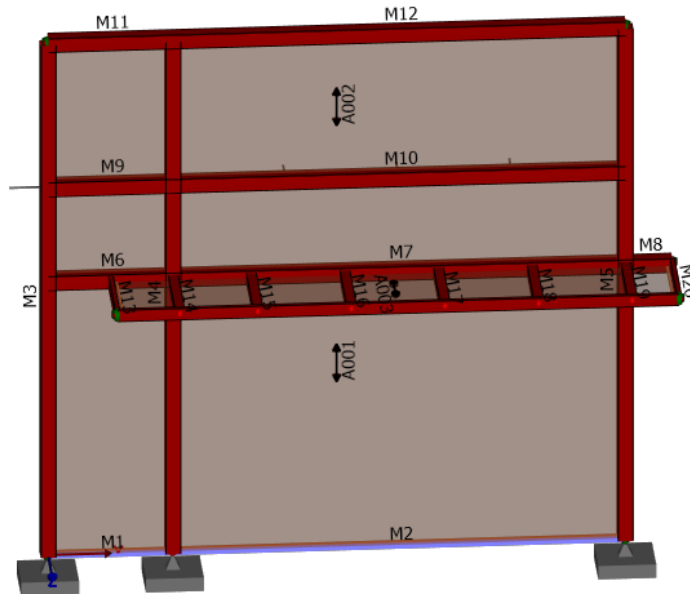
Parapet Component and Cladding Pressure (Slope < 7deg)

	Windward		Leeward			
	Atrib < 20sf	Atrib > 500sf	Atrib < 20sf	Atrib > 500sf		
Zone 4 / 2	p1=	20 psf	13 psf	p3=	20 psf	13 psf
	P2=	-41 psf	-26 psf	P4=	-21 psf	-16 psf
	p=	61 psf	39 psf	p=	41 psf	29 psf
Zone 3 / 5	p1=	20 psf	15 psf	p3=	20 psf	15 psf
	P2=	-41 psf	-26 psf	P4=	-26 psf	-16 psf
	p=	61 psf	41 psf	p=	46 psf	31 psf

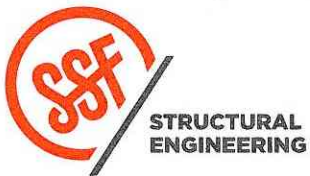
# EAST ENTRY FRAMING



## Member Sizing



## Member and Area Naming



South Hill Center  
 PROJECT \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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**Service Load Cases**

Name	Source	SelfWeight	Loads	Pattern
D	Dead Loads	Vertical Direction	11	0
S	Snow Loads	Exclude	1	0
W+X	Wind Pos X Loads	Exclude	1	0
W+Y	Wind Pos Y Loads	Exclude	1	0
W+Z	Wind Pos Z Loads	Exclude	2	0
W-X	Wind Neg X Loads	Exclude	1	0
W-Y	Wind Neg Y Loads	Exclude	1	0
W-Z	Wind Neg Z Loads	Exclude	2	0

**Factored Load Combinations**

Name	Code	Effective Equation	Design	Deflection
1. 1.4D	ASCE 7-16 LRFD	1.4D	Strength	Other
1. D	ASCE 7-16 ASD	D	Allowable	Other
2. 1.2D+1.6L+0.5Lr	ASCE 7-16 LRFD	1.2D	Strength	Other
2. 1.2D+1.6L+0.5S	ASCE 7-16 LRFD	1.2D + 0.5S	Strength	Other
3. 1.2D+1.6Lr+0.5W »+X	ASCE 7-16 LRFD	1.2D + 0.5W+X	Strength	Other
3. 1.2D+1.6Lr+0.5W »+Y	ASCE 7-16 LRFD	1.2D + 0.5W+Y	Strength	Other
3. 1.2D+1.6Lr+0.5W »+Z	ASCE 7-16 LRFD	1.2D + 0.5W+Z	Strength	Other
3. 1.2D+1.6Lr+0.5W »-X	ASCE 7-16 LRFD	1.2D + 0.5W-X	Strength	Other
3. 1.2D+1.6Lr+0.5W »-Y	ASCE 7-16 LRFD	1.2D + 0.5W-Y	Strength	Other
3. 1.2D+1.6Lr+0.5W »-Z	ASCE 7-16 LRFD	1.2D + 0.5W-Z	Strength	Other
3. 1.2D+1.6S+0.5W »+X	ASCE 7-16 LRFD	1.2D + 1.6S + 0.5W+X	Strength	Other
3. 1.2D+1.6S+0.5W »+Y	ASCE 7-16 LRFD	1.2D + 1.6S + 0.5W+Y	Strength	Other
3. 1.2D+1.6S+0.5W »+Z	ASCE 7-16 LRFD	1.2D + 1.6S + 0.5W+Z	Strength	Other
3. 1.2D+1.6S+0.5W »-X	ASCE 7-16 LRFD	1.2D + 1.6S + 0.5W-X	Strength	Other
3. 1.2D+1.6S+0.5W »-Y	ASCE 7-16 LRFD	1.2D + 1.6S + 0.5W-Y	Strength	Other
3. 1.2D+1.6S+0.5W »-Z	ASCE 7-16 LRFD	1.2D + 1.6S + 0.5W-Z	Strength	Other
3. 1.2D+1.6S+L	ASCE 7-16 LRFD	1.2D + 1.6S	Strength	Other
3. D+S	ASCE 7-16 ASD	D + S	Allowable	Other
4. 1.2D+0.5W+L+0.5S+Fa »+X	ASCE 7-16 LRFD	1.2D + 0.5S + 0.5W+X	Strength	Other
4. 1.2D+0.5W+L+0.5S+Fa »+Y	ASCE 7-16 LRFD	1.2D + 0.5S + 0.5W+Y	Strength	Other
4. 1.2D+0.5W+L+0.5S+Fa »+Z	ASCE 7-16 LRFD	1.2D + 0.5S + 0.5W+Z	Strength	Other
4. 1.2D+0.5W+L+0.5S+Fa »-X	ASCE 7-16 LRFD	1.2D + 0.5S + 0.5W-X	Strength	Other
4. 1.2D+0.5W+L+0.5S+Fa »-Y	ASCE 7-16 LRFD	1.2D + 0.5S + 0.5W-Y	Strength	Other
4. 1.2D+0.5W+L+0.5S+Fa »-Z	ASCE 7-16 LRFD	1.2D + 0.5S + 0.5W-Z	Strength	Other
4. 1.2D+W+L+0.5Lr »+X	ASCE 7-16 LRFD	1.2D + W+X	Strength	Other
4. 1.2D+W+L+0.5Lr »+Y	ASCE 7-16 LRFD	1.2D + W+Y	Strength	Other
4. 1.2D+W+L+0.5Lr »+Z	ASCE 7-16 LRFD	1.2D + W+Z	Strength	Other
4. 1.2D+W+L+0.5Lr »-X	ASCE 7-16 LRFD	1.2D + W-X	Strength	Other
4. 1.2D+W+L+0.5Lr »-Y	ASCE 7-16 LRFD	1.2D + W-Y	Strength	Other
4. 1.2D+W+L+0.5Lr »-Z	ASCE 7-16 LRFD	1.2D + W-Z	Strength	Other

**Factored Load Combinations (continued)**

Name	Code	Effective Equation	Design	Deflection
4. 1.2D+W+L+0.5S »+X	ASCE 7-16 LRFD	1.2D + 0.5S + W+X	Strength	Other
4. 1.2D+W+L+0.5S »+Y	ASCE 7-16 LRFD	1.2D + 0.5S + W+Y	Strength	Other
4. 1.2D+W+L+0.5S »+Z	ASCE 7-16 LRFD	1.2D + 0.5S + W+Z	Strength	Other
4. 1.2D+W+L+0.5S »-X	ASCE 7-16 LRFD	1.2D + 0.5S + W-X	Strength	Other
4. 1.2D+W+L+0.5S »-Y	ASCE 7-16 LRFD	1.2D + 0.5S + W-Y	Strength	Other
4. 1.2D+W+L+0.5S »-Z	ASCE 7-16 LRFD	1.2D + 0.5S + W-Z	Strength	Other
4. D+0.75(L+S)	ASCE 7-16 ASD	D + 0.75S	Allowable	Other
5. 0.9D+0.5W+Fa »+X	ASCE 7-16 LRFD	0.9D + 0.5W+X	Strength	Other
5. 0.9D+0.5W+Fa »+Y	ASCE 7-16 LRFD	0.9D + 0.5W+Y	Strength	Other
5. 0.9D+0.5W+Fa »+Z	ASCE 7-16 LRFD	0.9D + 0.5W+Z	Strength	Other
5. 0.9D+0.5W+Fa »-X	ASCE 7-16 LRFD	0.9D + 0.5W-X	Strength	Other
5. 0.9D+0.5W+Fa »-Y	ASCE 7-16 LRFD	0.9D + 0.5W-Y	Strength	Other
5. 0.9D+0.5W+Fa »-Z	ASCE 7-16 LRFD	0.9D + 0.5W-Z	Strength	Other
5. 0.9D+Di+Wi	ASCE 7-16 LRFD	0.9D	Strength	Other
5. 0.9D+W »+X	ASCE 7-16 LRFD	0.9D + W+X	Strength	Other
5. 0.9D+W »+Y	ASCE 7-16 LRFD	0.9D + W+Y	Strength	Other
5. 0.9D+W »+Z	ASCE 7-16 LRFD	0.9D + W+Z	Strength	Other
5. 0.9D+W »-X	ASCE 7-16 LRFD	0.9D + W-X	Strength	Other
5. 0.9D+W »-Y	ASCE 7-16 LRFD	0.9D + W-Y	Strength	Other
5. 0.9D+W »-Z	ASCE 7-16 LRFD	0.9D + W-Z	Strength	Other
5. D+0.6W »+X	ASCE 7-16 ASD	D + 0.6W+X	Allowable	Other
5. D+0.6W »+Y	ASCE 7-16 ASD	D + 0.6W+Y	Allowable	Other
5. D+0.6W »+Z	ASCE 7-16 ASD	D + 0.6W+Z	Allowable	Other
5. D+0.6W »-X	ASCE 7-16 ASD	D + 0.6W-X	Allowable	Other
5. D+0.6W »-Y	ASCE 7-16 ASD	D + 0.6W-Y	Allowable	Other
5. D+0.6W »-Z	ASCE 7-16 ASD	D + 0.6W-Z	Allowable	Other
6. 1.2D+E+L+0.2S	ASCE 7-16 LRFD	1.2D + 0.2S	Strength	Other
6. D+0.75(L+0.6W+Lr) »+X	ASCE 7-16 ASD	D + 0.45W+X	Allowable	Other
6. D+0.75(L+0.6W+Lr) »+Y	ASCE 7-16 ASD	D + 0.45W+Y	Allowable	Other
6. D+0.75(L+0.6W+Lr) »+Z	ASCE 7-16 ASD	D + 0.45W+Z	Allowable	Other
6. D+0.75(L+0.6W+Lr) »-X	ASCE 7-16 ASD	D + 0.45W-X	Allowable	Other
6. D+0.75(L+0.6W+Lr) »-Y	ASCE 7-16 ASD	D + 0.45W-Y	Allowable	Other
6. D+0.75(L+0.6W+Lr) »-Z	ASCE 7-16 ASD	D + 0.45W-Z	Allowable	Other
6. D+0.75(L+0.6W+S) »+X	ASCE 7-16 ASD	D + 0.75S + 0.45W+X	Allowable	Other
6. D+0.75(L+0.6W+S) »+Y	ASCE 7-16 ASD	D + 0.75S + 0.45W+Y	Allowable	Other
6. D+0.75(L+0.6W+S) »+Z	ASCE 7-16 ASD	D + 0.75S + 0.45W+Z	Allowable	Other
6. D+0.75(L+0.6W+S) »-X	ASCE 7-16 ASD	D + 0.75S + 0.45W-X	Allowable	Other
6. D+0.75(L+0.6W+S) »-Y	ASCE 7-16 ASD	D + 0.75S + 0.45W-Y	Allowable	Other
6. D+0.75(L+0.6W+S) »-Z	ASCE 7-16 ASD	D + 0.75S + 0.45W-Z	Allowable	Other
7. 0.6D+0.6W »+X	ASCE 7-16 ASD	0.6D + 0.6W+X	Allowable	Other
7. 0.6D+0.6W »+Y	ASCE 7-16 ASD	0.6D + 0.6W+Y	Allowable	Other



**Factored Load Combinations (continued)**

Name	Code	Effective Equation	Design	Deflection
7. 0.6D+0.6W »+Z	ASCE 7-16 ASD	0.6D + 0.6W+Z	Allowable	Other
7. 0.6D+0.6W »-X	ASCE 7-16 ASD	0.6D + 0.6W-X	Allowable	Other
7. 0.6D+0.6W »-Y	ASCE 7-16 ASD	0.6D + 0.6W-Y	Allowable	Other
7. 0.6D+0.6W »-Z	ASCE 7-16 ASD	0.6D + 0.6W-Z	Allowable	Other
7. 0.6D+0.7Di+0.7Wi	ASCE 7-16 ASD	0.6D	Allowable	Other
D+0.75(L+W) »+X	Deflection Checks	D + 0.75W+X	Deflections	Other
D+0.75(L+W) »+Y	Deflection Checks	D + 0.75W+Y	Deflections	Other
D+0.75(L+W) »+Z	Deflection Checks	D + 0.75W+Z	Deflections	Other
D+0.75(L+W) »-X	Deflection Checks	D + 0.75W-X	Deflections	Other
D+0.75(L+W) »-Y	Deflection Checks	D + 0.75W-Y	Deflections	Other
D+0.75(L+W) »-Z	Deflection Checks	D + 0.75W-Z	Deflections	Other
D+0.75L+0.45W »+X	Deflection (Strength Wind)	D + 0.45W+X	Deflections	Other
D+0.75L+0.45W »+Y	Deflection (Strength Wind)	D + 0.45W+Y	Deflections	Other
D+0.75L+0.45W »+Z	Deflection (Strength Wind)	D + 0.45W+Z	Deflections	Other
D+0.75L+0.45W »-X	Deflection (Strength Wind)	D + 0.45W-X	Deflections	Other
D+0.75L+0.45W »-Y	Deflection (Strength Wind)	D + 0.45W-Y	Deflections	Other
D+0.75L+0.45W »-Z	Deflection (Strength Wind)	D + 0.45W-Z	Deflections	Other
D+L	Deflection (Strength Wind)	D	Deflections	Other
D+L (1)	Deflection Checks	D	Deflections	Other
D+S	Deflection (Strength Wind)	D + S	Deflections	Other
D+S (1)	Deflection Checks	D + S	Deflections	Other
Snow	Deflection (Strength Wind)	S	Deflections	Wind Or Snow
Snow (1)	Deflection Checks	S	Deflections	Wind Or Snow
Wind »+X	Deflection (Strength Wind)	0.6W+X	Deflections	Wind Or Snow
Wind »+X (1)	Deflection Checks	W+X	Deflections	Wind Or Snow
Wind »+Y	Deflection (Strength Wind)	0.6W+Y	Deflections	Wind Or Snow
Wind »+Y (1)	Deflection Checks	W+Y	Deflections	Wind Or Snow
Wind »+Z	Deflection (Strength Wind)	0.6W+Z	Deflections	Wind Or Snow
Wind »+Z (1)	Deflection Checks	W+Z	Deflections	Wind Or Snow
Wind »-X	Deflection (Strength Wind)	0.6W-X	Deflections	Wind Or Snow
Wind »-X (1)	Deflection Checks	W-X	Deflections	Wind Or Snow
Wind »-Y	Deflection (Strength Wind)	0.6W-Y	Deflections	Wind Or Snow
Wind »-Y (1)	Deflection Checks	W-Y	Deflections	Wind Or Snow
Wind »-Z	Deflection (Strength Wind)	0.6W-Z	Deflections	Wind Or Snow
Wind »-Z (1)	Deflection Checks	W-Z	Deflections	Wind Or Snow

**Area Uniform Loads**

Area	Service Case	Applied To	Direction	Uniform Pressure psf
A001	W+Y	Members	Normal: -Z	20.000
A001	W+Z	Members	Normal: -Z	20.000

**Area Uniform Loads (continued)**

Area	Service Case	Applied To	Direction	Uniform Pressure psf
A001	W-Y	Members	Normal: -Z	-20.000
A001	W-Z	Members	Normal: -Z	-21.000
A002	W+X	Members	Normal: -Z	61.000
A002	W+Z	Members	Normal: -Z	61.000
A002	W-X	Members	Normal: -Z	-41.000
A002	W-Z	Members	Normal: -Z	-41.000
A003	D	Members	Normal: -Y	15.000
A003	S	Members	Normal: -Y	25.000

**HSS Column: Results**

Deflections - Strong (dy) Limit Type: Member Span Ratio L only: 360 W or S only: 360 D + L: 240 Other: 240	Deflections - Weak (dz) Limit Type: None	Axial Manual Kz: False Kz Sidesway?: False Manual Ky: False Ky Sidesway?: False
Size Constraints Limit Depth?: False Limit Width?: False	Overrides Override Fy?: False Override Cb?: False Override HSS t_des?: False Advanced Torsion: False	
Steel Material: ASTM A500 Grade C (Fy = 50ksi) Specification: AISC 360-22 LRFD Composite Beam?: False Seismic Compactness: Not Ductile Check Constrained Axis FTB?: False Overstrength?: False Live Load Reduction: None Disable Checks?: False Check Level: Each Limit State	Bracing Lateral Top (+y): Unbraced Lateral Bottom (-y): Unbraced Strong (z): Unbraced	Torsional Bracing Lateral Top (+y): True Lateral Bottom (-y): True Strong (z): True

**HSS Column: Strong Deflection Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand dy in	Capacity dy in	Code Reference	Unity Check	Details
M5	HSS12X12X.313	11.400	D+S (1)	-0.028	1.775	IBC 1604.3.1	<b>0.016</b>	L/Δ = 15432

**HSS Column: Torsion Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Tau Ksi	Capacity Tau Ksi	Code Reference	Unity Check	Details
M4	HSS12X12X.313	25.833	5. 0.9D+W »+X	1.362	27.000	H3-1	<b>0.050</b>	Tr = 9.047 K-ft, Venant Shear = 1.362 Ksi

**HSS Column: Combined Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand	Capacity	Code Reference	Unity Check	Details
M4	HSS12X12X.313	25.500	4. 1.2D+W+L+0.5S »+Z	0.339	1.000	H1-1b	<b>0.339</b>	KLz = 26.66 ft, KLy = 35.5 ft, KL(torsion) = 35.5 ft, Lb = 35.5 ft, Axial Unity = 0.0166, Mz Unity = 0.0652, My Unity = 0.2656, Kz = 0.751, Ky = 1, K(torsion) = 1, Cb = 2.979

**HSS Column: Axial Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Fx	Capacity Fx K	Code Reference	Unity Check	Details
M4	HSS12X12X.313	0.000	3. 1.2D+1.6S+0.5W »+Z	19.290	335.974	E3-2	<b>0.057</b>	KLz = 26.66 ft, KLy = 35.5 ft, KL(torsion) = 35.5 ft, Fn = 27.86 Ksi, Fe (E3-4) = 35.78 Ksi, Kz = 0.751, Ky = 1, K(torsion) = 1

**HSS Column: Strong Flexure Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Mz K-ft	Capacity Mz K-ft	Code Reference	Unity Check	Details
M5	HSS12X12X.313	19.217	3. 1.2D+1.6S+0.5W »-Z	-24.825	178.976	F7-3	<b>0.139</b>	Lb = 35.5 ft, Se (F7-4) = 47.73 in <sup>3</sup> , Cb = 2.859

**HSS Column: Weak Flexure Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand My	Capacity My K-ft	Code Reference	Unity Check	Details
M4	HSS12X12X.313	25.833	4. 1.2D+W+L+0.5S »+Z	-47.589	178.976	F7-3	<b>0.266</b>	Se (F7-4) = 47.73 in <sup>3</sup>

**HSS Column: Weak Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Vz K	Capacity Vz K	Code Reference	Unity Check	Details
M4	HSS12X12X.313	25.500	4. 1.2D+W+L+0.5S »-Z	5.877	174.850	G4-1	<b>0.034</b>	Shear Area = 6.476 in <sup>2</sup> , Cv = 1

**HSS Column: Strong Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Vy K	Capacity Vy K	Code Reference	Unity Check	Details
M5	HSS12X12X.313	25.500	3. 1.2D+1.6S+0.5W »-Z	6.012	174.850	G4-1	<b>0.034</b>	Shear Area = 6.476 in <sup>2</sup> , Cv = 1

**HSS Beam: Results**

Deflections - Strong (dy) Limit Type: Member Span Ratio L only: 360 W or S only: 360 D + L: 240 Other: 240	Deflections - Weak (dz) Limit Type: None	Axial Manual Kz: False Kz Sidesway?: False Manual Ky: False Ky Sidesway?: False
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**HSS Beam: Results (continued)**

Size Constraints Limit Depth?: False Limit Width?: False	Overrides Override Fy?: False Override Cb?: False Override HSS t_des?: False Advanced Torsion: False	
Steel Material: ASTM A500 Grade C (Fy = 50ksi) Specification: AISC 360-22 LRFD Composite Beam?: False Seismic Compactness: Not Ductile Check Constrained Axis FTB?: False Overstrength?: False Live Load Reduction: None Disable Checks?: False Check Level: Each Limit State	Bracing Lateral Top (+y): Unbraced Lateral Bottom (-y): Unbraced Strong (z): Unbraced	Torsional Bracing Lateral Top (+y): True Lateral Bottom (-y): True Strong (z): True

**HSS Beam: Strong Deflection Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand dy	Capacity dy in	Code Reference	Unity Check	Details
M7	HSS12X12X.313	14.600	D+S (1)	-0.187	1.450	IBC 1604.3.1	<b>0.129</b>	L/Δ = 1863

**HSS Beam: Torsion Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Tau Ksi	Capacity Tau Ksi	Code Reference	Unity Check	Details
M7	HSS12X12X.313	0.000	3. 1.2D+1.6S+0.5W »-Z	1.595	27.000	H3-1	<b>0.059</b>	Tr = 10.59 K-ft, Venant Shear = 1.595 Ksi

**HSS Beam: Combined Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand	Capacity	Code Reference	Unity Check	Details
M7	HSS12X12X.313	0.000	3. 1.2D+1.6S+0.5W »+Z	0.205	1.000	H1-1b	<b>0.205</b>	KLz = 29 ft, KLy = 29 ft, KL(torsion) = 29 ft, Lb = 29 ft, Axial Unity = 0.0095, Mz Unity = 0.2004, My Unity = 0, Kz = 1, Ky = 1, K(torsion) = 1, Cb = 2.037

**HSS Beam: Axial Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Fx K	Capacity Fx K	Code Reference	Unity Check	Details
M7	HSS12X12X.313	11.120	4. 1.2D+W+L+0.5S »+Z	7.418	603.000	D2-1	<b>0.012</b>	

**HSS Beam: Strong Flexure Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Mz	Capacity Mz K-ft	Code Reference	Unity Check	Details
M7	HSS12X12X.313	0.000	3. 1.2D+1.6S+0.5W »+Z	-35.874	178.976	F7-3	<b>0.200</b>	Lb = 29 ft, Se (F7-4) = 47.73 in <sup>3</sup> , Cb = 2.037

**HSS Beam: Weak Flexure Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand My K-ft	Capacity My K-ft	Code Reference	Unity Check	Details
M12	HSS12X12X.313	15.080	4. 1.2D+W+L+0.5Lr »+X	22.984	178.976	F7-3	<b>0.128</b>	Se (F7-4) = 47.73 in <sup>3</sup>

**HSS Beam: Weak Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Vz K	Capacity Vz K	Code Reference	Unity Check	Details
M9	HSS12X12X.188	8.000	4. 1.2D+W+L+0.5S »+Z	-3.160	96.847	G4-1	<b>0.033</b>	Shear Area = 3.994 in <sup>2</sup> , Cv = 0.898

**HSS Beam: Strong Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Vy K	Capacity Vy K	Code Reference	Unity Check	Details
M7	HSS12X12X.313	0.000	3. 1.2D+1.6S+0.5W »+X	7.588	174.850	G4-1	<b>0.043</b>	Shear Area = 6.476 in <sup>2</sup> , Cv = 1

**Canopy Int. Bm: Results**

Deflections - Strong (dy) Limit Type: Member Span Ratio L only: 360 W or S only: 360 D + L: 240 Other: 240	Deflections - Weak (dz) Limit Type: None	Axial Manual Kz: False Kz Sidesway?: False Manual Ky: False Ky Sidesway?: False
Size Constraints Limit Depth?: False Limit Width?: False	Overrides Override Fy?: False Override Cb?: False Override HSS t_des?: False Advanced Torsion: False	
Steel Material: ASTM A500 Grade C (Fy = 50ksi) Specification: AISC 360-22 LRFD Composite Beam?: False Seismic Compactness: Not Ductile Check Constrained Axis FTB?: False Overstrength?: False Live Load Reduction: None Disable Checks?: False Check Level: Each Limit State	Bracing Lateral Top (+y): Unbraced Lateral Bottom (-y): Unbraced Strong (z): Unbraced	Torsional Bracing Lateral Top (+y): True Lateral Bottom (-y): True Strong (z): True

**Canopy Int. Bm: Strong Deflection Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand dy in	Capacity dy in	Code Reference	Unity Check	Details
M14	HSS8X8X.250	2.600	D+S (1)	0.015	0.300	IBC 1604.3.1	<b>0.051</b>	L/Δ = 4701

**Canopy Int. Bm: Torsion Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Tau Ksi	Capacity Tau Ksi	Code Reference	Unity Check	Details
M19	HSS8X8X.250	0.000	3. 1.2D+1.6S+0.5W »+Z	1.062	27.000	H3-1	<b>0.039</b>	Tr = 2.484 K-ft, Venant Shear = 1.062 Ksi

**Canopy Int. Bm: Combined Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand	Capacity	Code Reference	Unity Check	Details
M15	HSS8X8X.250	6.000	4. 1.2D+W+L+0.5S »-Z	0.222	1.000	H1-1b	<b>0.222</b>	KLz = 6 ft, KLy = 6 ft, KL(torsion) = 6 ft, Lb = 6 ft, Axial Unity = 0.0026, Mz Unity = 0.0591, My Unity = 0.1619, Kz = 1, Ky = 1, K(torsion) = 1, Cb = 1.728

**Canopy Int. Bm: Axial Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Fx K	Capacity Fx K	Code Reference	Unity Check	Details
M14	HSS8X8X.250	0.000	4. 1.2D+W+L+0.5S »-Z	1.324	319.500	D2-1	<b>0.004</b>	

**Canopy Int. Bm: Strong Flexure Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Mz K-ft	Capacity Mz K-ft	Code Reference	Unity Check	Details
M14	HSS8X8X.250	0.000	3. 1.2D+1.6S+0.5W »-Z	-11.256	70.078	F7-2	<b>0.161</b>	Lb = 6 ft, Cb = 1.689

**Canopy Int. Bm: Weak Flexure Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand My K-ft	Capacity My K-ft	Code Reference	Unity Check	Details
M15	HSS8X8X.250	6.000	4. 1.2D+W+L+0.5S »-Z	11.349	70.078	F7-2	<b>0.162</b>	

**Canopy Int. Bm: Strong Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Vy K	Capacity Vy K	Code Reference	Unity Check	Details
M19	HSS8X8X.250	0.000	3. 1.2D+1.6S+0.5W »+Z	2.153	91.861	G4-1	<b>0.023</b>	Shear Area = 3.402 in <sup>2</sup> , Cv = 1

**Canopy Int. Bm: Weak Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Vz K	Capacity Vz K	Code Reference	Unity Check	Details
M15	HSS8X8X.250	6.000	4. 1.2D+W+L+0.5S »-Z	1.891	91.861	G4-1	<b>0.021</b>	Shear Area = 3.402 in <sup>2</sup> , Cv = 1

**Canopy Edge Bm: Results**

Deflections - Strong (dy) Limit Type: None	Deflections - Weak (dz) Limit Type: None	Axial Manual Kz: False Kz Sidesway?: False Manual Ky: False Ky Sidesway?: False
Size Constraints Limit Depth?: False Limit Width?: False	Overrides Override Fy?: False Override Cb?: False Override HSS t <sub>des</sub> ?: False Advanced Torsion: False	

**Canopy Edge Bm: Results (continued)**

<p style="text-align: center;">Steel</p> <p>Material: ASTM A500 Grade C (Fy = 50ksi) Specification: AISC 360-22 LRFD Composite Beam?: False Seismic Compactness: Not Ductile Check Constrained Axis FTB?: False Overstrength?: False Live Load Reduction: None Disable Checks?: False Check Level: Each Limit State</p>	<p style="text-align: center;">Bracing</p> <p>Lateral Top (+y): Unbraced Lateral Bottom (-y): Unbraced Strong (z): Unbraced</p>	<p style="text-align: center;">Torsional Bracing</p> <p>Lateral Top (+y): True Lateral Bottom (-y): True Strong (z): True</p>
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**Canopy Edge Bm: Torsion Shear Check** (extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Tau Ksi	Capacity Tau Ksi	Code Reference	Unity Check	Details
M21	HSS10X4X.250	33.060	3. 1.2D+1.6S+0.5W »+Z	0.955	27.000	H3-1	<b>0.035</b>	Tr = -1.36 K-ft, Venant Shear = 0.9546 Ksi

**Canopy Edge Bm: Combined Check** (extreme rows: max)

Member	Section	Offset ft	Result Case	Demand	Capacity	Code Reference	Unity Check	Details
M21	HSS10X4X.250	33.000	4. 1.2D+W+L+0.5S »+Z	0.162	1.000	H1-1b	<b>0.162</b>	KLz = 36 ft, KLy = 36 ft, KL(torsion) = 36 ft, Lb = 36 ft, Axial Unity = 0.0674, Mz Unity = 0.029, My Unity = 0.0989, Kz = 1, Ky = 1, K(torsion) = 1, Cb = 1.621

**Canopy Edge Bm: Axial Check** (extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Fx K	Capacity Fx K	Code Reference	Unity Check	Details
M21	HSS10X4X.250	15.120	4. 1.2D+W+L+0.5S »+Z	3.006	21.426	E3-3	<b>0.140</b>	KLz = 36 ft, KLy = 36 ft, KL(torsion) = 36 ft, Fn = 3.858 Ksi, Fe (E3-4) = 4.4 Ksi, Kz = 1, Ky = 1, K(torsion) = 1

**Canopy Edge Bm: Strong Flexure Check** (extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Mz K-ft	Capacity Mz K-ft	Code Reference	Unity Check	Details
M21	HSS10X4X.250	18.480	3. 1.2D+1.6S+0.5W »+Y	5.728	71.250	F7-1	<b>0.080</b>	Lb = 36 ft, Cb = 1.612

**Canopy Edge Bm: Weak Flexure Check** (extreme rows: max)

Member	Section	Offset ft	Result Case	Demand My K-ft	Capacity My K-ft	Code Reference	Unity Check	Details
M21	HSS10X4X.250	33.000	4. 1.2D+W+L+0.5Lr »-Y	3.337	30.103	F7-3	<b>0.111</b>	Se (F7-4) = 8.027 in^3

**Canopy Edge Bm: Weak Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Vz K	Capacity Vz K	Code Reference	Unity Check	Details
M21	HSS10X4X.250	33.000	4. 1.2D+W+L+0.5Lr »-Y	0.796	41.533	G4-1	<b>0.019</b>	Shear Area = 1.538 in <sup>2</sup> , Cv = 1

**Canopy Short Edge Bm: Results**

Deflections - Strong (dy) Limit Type: None	Deflections - Weak (dz) Limit Type: None	Axial Manual Kz: False Kz Sidesway?: False Manual Ky: False Ky Sidesway?: False
Size Constraints Limit Depth?: False Limit Width?: False	Overrides Override Fy?: False Override Cb?: False Override HSS t_des?: False Advanced Torsion: False	
Steel Material: ASTM A500 Grade C (Fy = 50ksi) Specification: AISC 360-22 LRFD Composite Beam?: False Seismic Compactness: Not Ductile Check Constrained Axis FTB?: False Overstrength?: False Live Load Reduction: None Disable Checks?: False Check Level: Each Limit State	Bracing Lateral Top (+y): Unbraced Lateral Bottom (-y): Unbraced Strong (z): Unbraced	Torsional Bracing Lateral Top (+y): True Lateral Bottom (-y): True Strong (z): True

**Canopy Short Edge Bm: Torsion Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Tau Ksi	Capacity Tau Ksi	Code Reference	Unity Check	Details
M13	HSS10X4X.250	0.000	3. 1.2D+1.6S+0.5W »+Y	0.839	27.000	H3-1	<b>0.031</b>	Tr = -1.195 K-ft, Venant Shear = 0.8386 Ksi

**Canopy Short Edge Bm: Combined Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand	Capacity	Code Reference	Unity Check	Details
M13	HSS10X4X.250	0.000	3. 1.2D+1.6S+0.5W »+Y	0.059	1.000	H1-1b	<b>0.059</b>	KLz = 6 ft, KLy = 6 ft, KL(torsion) = 6 ft, Lb = 6 ft, Axial Unity = 0.0007, Mz Unity = 0.041, My Unity = 0.0178, Kz = 1, Ky = 1, K(torsion) = 1, Cb = 1.743

**Canopy Short Edge Bm: Axial Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Fx K	Capacity Fx K	Code Reference	Unity Check	Details
M13	HSS10X4X.250	0.000	4. 1.2D+W+L+0.5S »-Z	0.614	232.247	E7-1	<b>0.003</b>	Ae = 5.89 in <sup>2</sup> , KLz = 6 ft, KLy = 6 ft, KL(torsion) = 6 ft, Fn (E3-2) = 43.81 Ksi, Fe (E3-4) = 158.4 Ksi, Kz = 1, Ky = 1, K(torsion) = 1



**Canopy Short Edge Bm: Strong Flexure Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Mz K-ft	Capacity Mz K-ft	Code Reference	Unity Check	Details
M13	HSS10X4X.250	0.000	3. 1.2D+1.6S+0.5W »+Y	-2.923	71.250	F7-1	<b>0.041</b>	Lb = 6 ft, Cb = 1.743

**Canopy Short Edge Bm: Weak Flexure Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand My K-ft	Capacity My K-ft	Code Reference	Unity Check	Details
M13	HSS10X4X.250	0.000	4. 1.2D+W+L+0.5S »+Y	0.767	30.103	F7-3	<b>0.025</b>	Se (F7-4) = 8.027 in <sup>3</sup>

**Canopy Short Edge Bm: Strong Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Vy K	Capacity Vy K	Code Reference	Unity Check	Details
M13	HSS10X4X.250	0.000	3. 1.2D+1.6S+0.5W »+Y	0.563	117.025	G4-1	<b>0.005</b>	Shear Area = 4.334 in <sup>2</sup> , Cv = 1

**Canopy Short Edge Bm: Weak Shear Check**

(extreme rows: max)

Member	Section	Offset ft	Result Case	Demand Vz K	Capacity Vz K	Code Reference	Unity Check	Details
M20	HSS10X4X.250	6.000	4. 1.2D+W+L+0.5S »+X	0.101	41.533	G4-1	<b>0.002</b>	Shear Area = 1.538 in <sup>2</sup> , Cv = 1