

PRCNC20241090

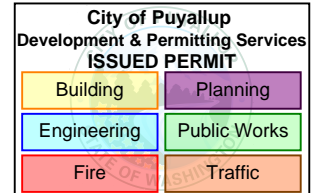
# STRUCTURAL CALCULATIONS

FOR

WASHINGTON STATE FAIR  
INTERNATIONAL VILLAGE  
110 9<sup>TH</sup> AVE SW  
PUYALLUP, WA 98371

**City of Puyallup  
Building  
REVIEWED  
FOR  
COMPLIANCE**

BSnowden  
08/12/2024  
9:01:37 AM



PREPARED BY  
**PCS STRUCTURAL SOLUTIONS**

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MAY 6, 2024  
24-318

# DESIGN CRITERIA



Project: WSF International Village Job Number: 24-318

Sheet: \_\_\_\_\_ of \_\_\_\_\_ Name: JMB

Originating Office: Tacoma Date: 2024-04-15

**DESIGN CRITERIA CHECKLIST**

CODE: IBC 2021, ASCE 7-16 LOCATION: PUYALLUP, WA  
RISK CATEGORY: III (Per ASCE 7-16 Table 1.5-1 & IBC Table 1604.5)

**VERTICAL DESIGN CRITERIA**

	DEAD	LIVE	PARTITION	CONCENTRATED
ROOF:	<u>60 PSF</u>	<u>100 PSF</u>		
UPPER ROOF:	<u>20 PSF</u>	<u>25 PSF</u>		

**WIND DESIGN CRITERIA**

BASIC WIND SPEED (V) = 110 MPH (Per ASCE 7-16 Sec. 26.5.1, Fig. 26.5-1A; 1B; 1C & 1D, or as required by Bld'g Dept.)  
 EXPOSURE CATEGORY: B (Per ASCE 7-16 Section 26.7.3)  
 DIRECTIONALITY FACTOR (K<sub>d</sub>): 0.85 (Per ASCE 7-16 Table 26.6-1)  
 GUST EFFECT FACTOR (G): 0.85 (Per ASCE 7-16 Section 26.11)  
 TOPOGRAPHIC FEATURE: None (See ASCE 7-16 Figure 26.8-1) \_\_\_\_\_  
 HILL HEIGHT (H): 0 FT (See ASCE 7-16 Figure 26.8-1)  
 UPWIND DISTANCE TO HALF HILL (L<sub>h</sub>): 0 FT (See ASCE 7-16 Figure 26.8-1)  
 DISTANCE FROM CREST TO SITE (x): 0 FT UPWIND (See ASCE 7-16 Figure 26.8-1)  
 MEAN ROOF HEIGHT: 20 FT (See ASCE 7-16 Section 26.2 - Definitions)  
 ELEVATION: 0 FT (See ASCE 7-16 Section 26.9)  
 ENCLOSURE CLASSIFICATION: Enclosed (See ASCE 7-16 Section 26.2 & Table 26.13-1)  
 ROOF TYPE: Monoslope (See ASCE 7-16 Figure 27.3-1)  
 ROOF SLOPE (∶12): 0.00:12 (Enter vertical rise in 12 horizontal units) θ (degrees): 0.00

**SEISMIC DESIGN CRITERIA**

SITE CLASS: E (Per IBC Section 1613.2.2, Assumed as "D" or per Geotech.)  
 IMPORTANCE FACTOR (I<sub>E</sub>): 1.25 (Per ASCE 7-16 Table 1.5-2)  
 STRUCTURAL SYSTEM (R): 6.5 (Per ASCE 7-16 Table 12.2-1)  
 OVERSTRENGTH FACTOR (Ω<sub>o</sub>): 2.5 (Per ASCE 7-16 Table 12.2-1)  
 INFORMATION BELOW FROM APPLIED TECHNOLOGY COUNCIL (ATC) "HAZARDS BY LOCATION"  
 LATITUDE: 47.182 S<sub>S</sub> = 1.271 F<sub>a</sub> = 1.200  
 LONGITUDE: -122.298 S<sub>1</sub> = 0.438 F<sub>v</sub> = 2.324

**DEFLECTION CRITERIA**

FLOOR (LIVE):	L/	<u>480</u>	ROOF (LIVE):	L/	<u>360</u>
FLOOR (TOTAL):	L/	<u>360</u>	ROOF (TOTAL):	L/	<u>240</u>
WALLS:	L/	<u>360</u>	SPECIAL:	L/	<u>_____</u>

**SOIL DESIGN CRITERIA**

REPORT: YES **GEOTECHNICAL ENGINEERING STUDY ES-9092 BY EARTH SOLUTIONS NW LLC DATED JANUARY 11, 2024**

BEARING: 2500 PSF  
 ACTIVE: 40 PCF  
 PASSIVE: 225 PCF  
 COEFFICIENT OF FRICTION: 0.35

PILE TYPE: NONE  
 VERTICAL CAPACITY: N/A  
 UPLIFT CAPACITY: N/A

MINIMUM FOOTING DIMENSIONS:  
 CONTINUOUS: 1'-4" ASSUMED  
 SPREAD: 1'-6" ASSUMED  
 FROST DEPTH: 1'-6"

LATERAL CAPACITY: N/A  
 SIZE: N/A



Project: WSF International Village

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Name: JMB

Originating Office: Tacoma

Date: 04-15-24

**MATERIALS**

**CONCRETE**

Footings/Piles:	3000 PSI	Columns:	4000 PSI
Slabs/Walls:	4000 PSI	Beams:	4000 PSI
-	-	-	-

**REINFORCING**

Steel Grade = 60  $f_y = 60$  KSI

**STRUCTURAL STEEL**

W-Flange Beams	ASTM A992	$f_y = 50$ KSI
Shapes & Plates	ASTM A36	$f_y = 36$ KSI
Pipes	ASTM A53, Grade B	$f_y = 35$ KSI
HSS Rect.	ASTM A500, Grade C	$f_y = 50$ KSI
HSS Round	ASTM A500, Grade C	$f_y = 46$ KSI

**MASONRY**

ASTM C90  $f_m = 1900$  PSI SOLID GROUTED

**GLULAM BEAMS**

Simple Spans	Grade =	Cantilevers
24F-V4		24F-V8
1.80E+06 PSI	E =	1.80E+06 PSI
2400 PSI	$F_b(BOTTOM) =$	2400 PSI
1850 PSI	$F_b(TOP) =$	2400 PSI
240 PSI	$F_v =$	240 PSI

**SCL PRODUCTS**

	2x SCL	1 1/4" SCL	3 1/2, 5 1/4 SCL
E =	1.30E+06 PSI	1.80E+06 PSI	2.00E+06 PSI
$F_b =$	1700 PSI	2600 PSI	2900 PSI
$F_v =$	285 PSI	285 PSI	285 PSI
$F_c =$	1400 PSI	2400 PSI	2600 PSI

**FRAMING LUMBER**

	2x DF #2	2x HF #1	-
<u>Joists &amp; Studs</u>			
E =	1.60E+06 PSI	1.50E+06 PSI	-
$F_b =$	900 PSI	975 PSI	-
$F_v =$	180 PSI	150 PSI	-
$F_c =$	1350 PSI	1350 PSI	-
<u>Beams &amp; Headers</u>	4x DF #2	4x HF #1	6x DF #1
E =	1.60E+06 PSI	1.50E+06 PSI	1.60E+06 PSI
$F_b =$	900 PSI	975 PSI	1350 PSI
$F_v =$	180 PSI	150 PSI	170 PSI
<u>Posts &amp; Timbers</u>	6x DF #1	-	-
E =	1.60E+06 PSI	-	-
$F_c =$	1000 PSI	-	-





**DESIGN CRITERIA - WIND**

BASIC WIND SPEED (V):	110 MPH	MEAN ROOF HEIGHT:	20 FT
RISK CATEGORY:	III	GROUND ELEVATION FACTOR (K <sub>e</sub> ):	1.00
EXPOSURE CATEGORY:	B	ENCLOSURE CLASSIFICATION:	Enclosed
DIRECTIONALITY FACTOR (K <sub>d</sub> ):	0.85	ROOF TYPE:	Monoslope
GUST EFFECT FACTOR (G):	0.85	ROOF SLOPE (____:12):	0.0:12
		θ (degrees):	0.00

ROOF PRESSURES (Figure 27.3-1)						
		External Pressures (q <sub>h</sub> *(GC <sub>p</sub> )):			Internal Pressures (±q <sub>i</sub> *(GC <sub>pi</sub> ))	
Wind Direction:	h/L:	Windward (Positive)	Windward (Negative)	Leeward	All Roofs	
Normal to Ridge for θ ≥ 10°	≤0.25	N/A	N/A	N/A	2.9	
	0.50	N/A	N/A	N/A		
	≥1.0	N/A	N/A	N/A		
Normal to Ridge for θ < 10° and Parallel to Ridge for All θ	h/L:	Horizontal Distance from Windward Edge	External Pressures (q*(GC <sub>p</sub> )):		Internal Pressures (±q <sub>i</sub> *(GC <sub>pi</sub> ))	
	≤0.5	0 to h	-2.5	Positive Pressure	Negative Pressure	2.9
		h to 2h		-12.5	-6.9	
		>2h	-4.2	-18.0		
		>h/2	-2.5	-9.7		

**ASCE 7-16 CHAPTER 27: WIND LOADS ON BUILDINGS: MWFRS (DIRECTIONAL PROCEDURE)  
PART 1: ENCLOSED AND PARTIALLY ENCLOSED BUILDINGS OF ALL HEIGHTS**

HORIZONTAL WALL PRESSURES (Figure 27.3-1)						
Windward External Pressures (q <sub>w</sub> *(GC <sub>p</sub> )):			Leeward & Sidewall External Pressures (q <sub>h</sub> *(GC <sub>p</sub> )):			Internal Pressures (±q <sub>i</sub> *(GC <sub>pi</sub> ))
Height Above Ground Level, z	K <sub>zt</sub>	Windward wall	L/B:	Leeward wall	Sidewall	All walls
15	1.00	10.2	0-1	-6.9	-9.7	2.9
20	1.00	11.1	2	-4.2		
25	1.00	11.8	≥4	-2.8		
30	1.00	12.5				
40	1.00	13.6				
50	1.00	14.5				
60	1.00	15.2				
70	1.00	15.9				
80	1.00	16.7				
90	1.00	17.2				
100	1.00	17.7				
120	1.00	18.6				
140	1.00	19.5				
160	1.00	20.2				
180	1.00	20.9				
200	1.00	21.5				
250	1.00	22.9				
300	1.00	24.2				
350	1.00	25.2				
400	1.00	26.3				
450	1.00	27.2				
500	1.00	27.9				

**NOTES:**

- Minimum Design Wind Loads (Per ASCE 7-16 27.1.5): The wind load used for design of the MWFRS shall not be less than 16 PSF multiplied by the wall area of the building, and 8 PSF multiplied by the roof area of the building projected on a vertical plane normal to the assumed wind direction. Wall and roof loads shall be applied simultaneously.
- q<sub>i</sub> has conservatively been taken equal to q<sub>h</sub>  
 K<sub>ht</sub> = 1.00  
 q<sub>h</sub> = 16.3 PSF



Project: WSF International Village

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**DESIGN CRITERIA - WIND**

BASIC WIND SPEED (V):	110 MPH	MEAN ROOF HEIGHT:	20 FT
RISK CATEGORY:	III	GROUND ELEVATION FACTOR (K <sub>e</sub> ):	1.00
EXPOSURE CATEGORY:	B	ENCLOSURE CLASSIFICATION:	Enclosed
DIRECTIONALITY FACTOR (K <sub>d</sub> ):	0.85	ROOF TYPE:	Monoslope
GUST EFFECT FACTOR (G):	0.85	ROOF SLOPE (∠:12):	0.0:12
		θ (degrees):	0.00

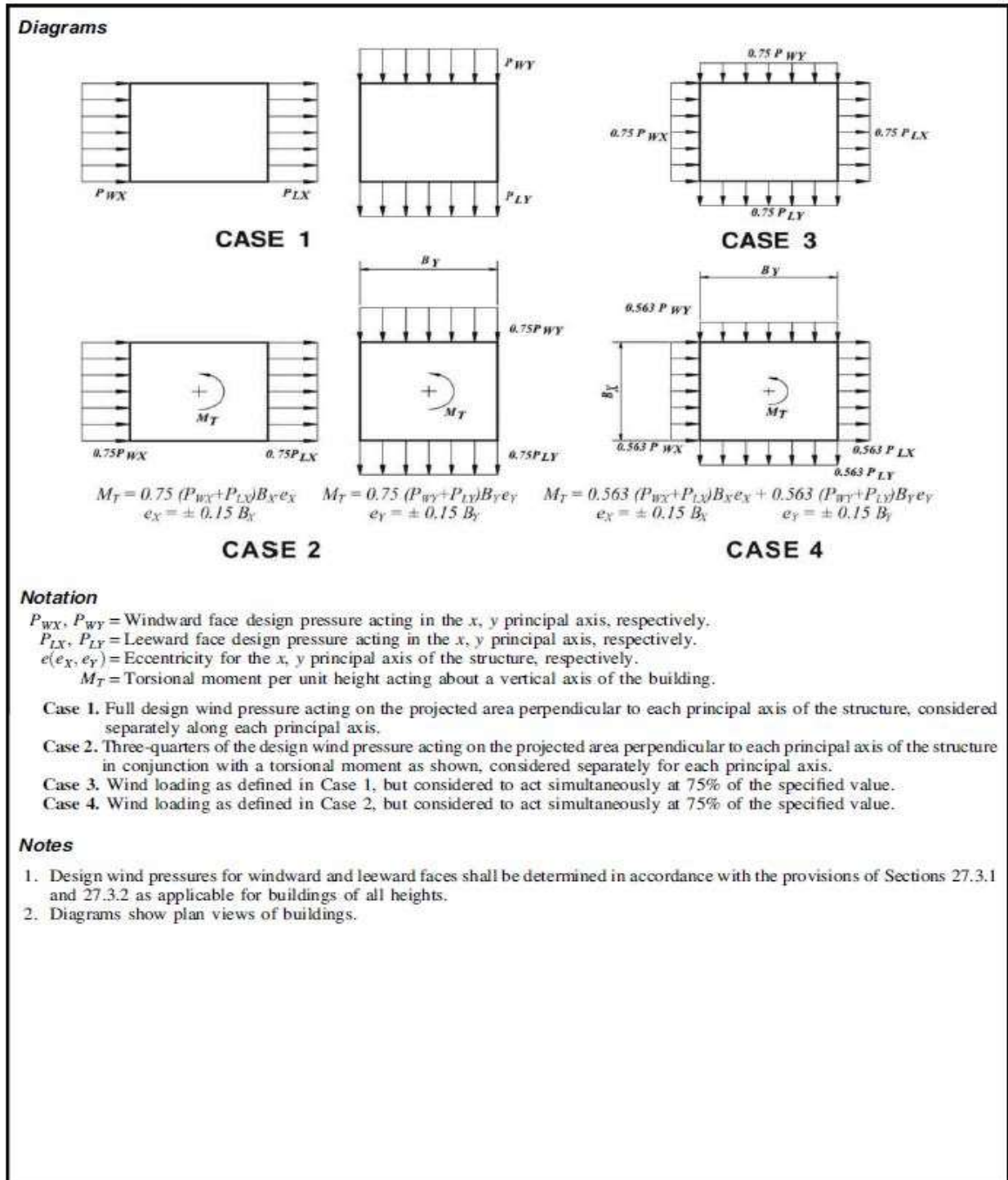
ASCE 7-16 CHAPTER 30: WIND LOADS: COMPONENTS AND CLADDING											
PART 1: LOW-RISE BUILDINGS (h≤60 ft)											
ROOF SURFACES											
Effective Wind Area	POSITIVE PRESSURES				NEGATIVE PRESSURES						
					ZONE						
	ALL ZONES				1'	1	2	3	N/A	N/A	
10 SF	16.0				-17.6	-30.7	-40.5	-55.2	N/A	N/A	
20 SF	16.0				-17.6	-28.7	-37.9	-50.0	N/A	N/A	
50 SF	16.0				-17.6	-26.0	-34.4	-43.1	N/A	N/A	
100 SF	16.0				-17.6	-24.0	-31.8	-37.9	N/A	N/A	
WALL SURFACES & ROOF OVERHANGS											
Effective Wind Area	WALL ZONES				ROOF OVERHANG ZONES						
	POSITIVE PRESSURES		NEGATIVE PRESSURES		NEGATIVE PRESSURES						
	4	5	4	5	1'	1	2	3	N/A	N/A	
10 SF	19.3	19.3	-20.9	-25.8	-27.8	-27.8	-37.5	-52.2	N/A	N/A	
20 SF	18.4	18.4	-20.0	-24.1	-27.3	-27.3	-34.1	-46.2	N/A	N/A	
50 SF	17.2	17.2	-18.9	-21.8	-26.6	-26.6	-29.5	-38.1	N/A	N/A	
100 SF	16.4	16.4	-18.0	-20.0	-26.1	-26.1	-26.0	-32.1	N/A	N/A	
500 SF	16.0	16.0	-16.0	-16.0	-25.0	-25.0	-18.0	-18.0	N/A	N/A	

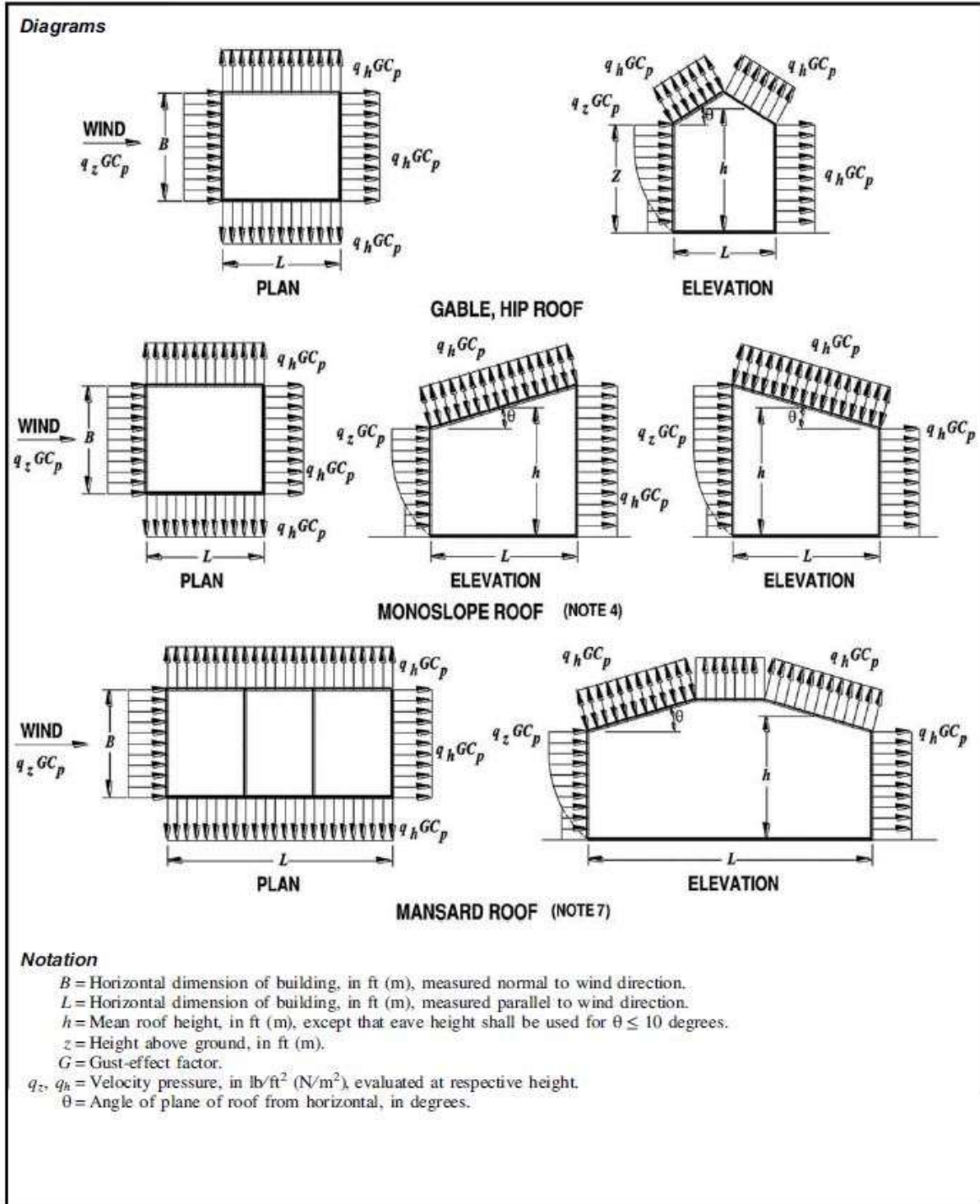
**NOTES:**

- ASCE 7-16 30.2.2: Minimum Design Wind Loads: The design wind pressure for C&C of buildings shall not be less than a net pressure of 16 PSF acting in either direction normal to the surface.
- q<sub>i</sub> has conservatively been taken equal to q<sub>h</sub>

$$K_{ht} = 1.00$$

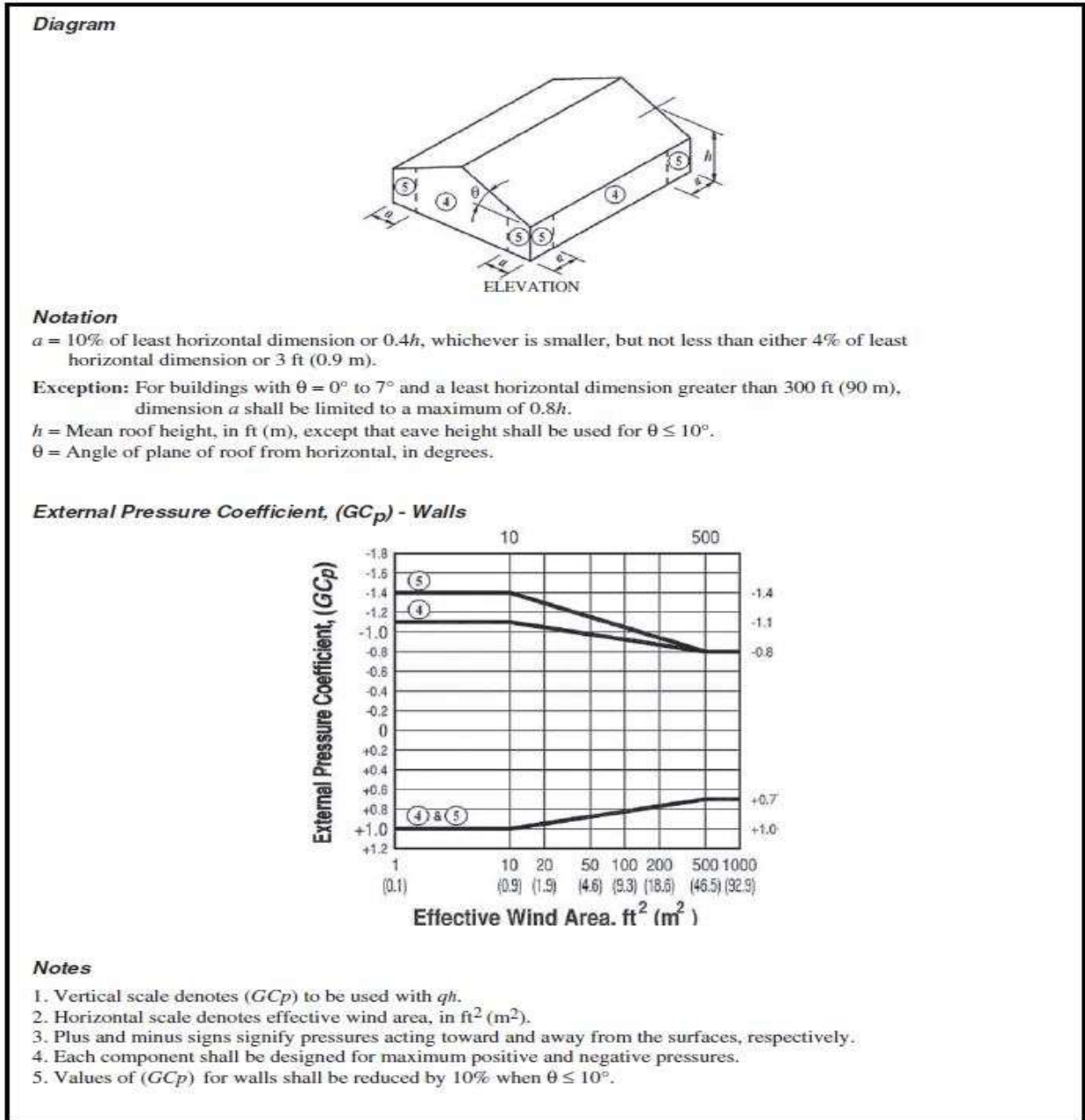
$$q_h = 16.3 \text{ PSF}$$

**DESIGN CRITERIA - WIND**
**FIGURE 27.3-8: Main Wind Force Resisting System, Part 1 (All Heights): Design Wind Load Cases per ASCE 7-16**

**FIGURE 27.3-8 Main Wind Force Resisting System, Part 1 (All Heights): Design Wind Load Cases**

**DESIGN CRITERIA - WIND**
**FIGURE 27.3-1 Main Wind Force Resisting System, Part 1 (All Heights): External Pressure Coefficients,  $C_p$ , for Enclosed and Partially Enclosed Buildings - Walls and Roofs per ASCE 7-16**

**FIGURE 27.3-1 Main Wind Force Resisting System, Part 1 (All Heights): External Pressure Coefficients,  $C_p$ , for Enclosed and Partially Enclosed Buildings—Walls and Roofs**

## DESIGN CRITERIA - WIND

**FIGURE 30.3-1: Components and Cladding [ $h \leq 60$  ft]: External Pressure Coefficients, ( $GC_p$ ), for Enclosed and Partially Enclosed Buildings - Walls**



**FIGURE 30.3-1 Components and Cladding [ $h \leq 60$  ft ( $h \leq 18.3$  m)]: External Pressure Coefficients, ( $GC_p$ ), for Enclosed and Partially Enclosed Buildings—Walls**



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Originating Office: Tacoma

Date: 04-15-24

**DESIGN CRITERIA - SEISMIC**

**ASCE 7-16 SECTION 12.8 - EQUIVALENT LATERAL FORCE PROCEDURE**

RISK CATEGORY:	III	LATITUDE:	47.182
SITE CLASS:	E	LONGITUDE:	-122.298
IMPORTANCE FACTOR (I <sub>E</sub> ):	1.25	S <sub>S</sub> =	1.271
STRUCTURAL SYSTEM (R):	6.5	S <sub>1</sub> =	0.438
OVERSTRENGTH FACTOR (Ω <sub>0</sub> ):	2.5	F <sub>a</sub> =	1.200
		F <sub>v</sub> =	2.324

**ASCE 7-16 SECTION 11.4 SEISMIC GROUND MOTION VALUES**

Section 11.4.4 - Coefficients and Risk-Targeted Maximum Considered Earthquake (MCER) Spectral Response Acceleration Parameters

$$S_{MS} = F_a * S_S = 1.525 \quad S_{M1} = F_v * S_1 = 1.018$$

Section 11.4.5 - Design Spectral Response Acceleration Parameters

$$S_{DS} = 2/3 * S_{MS} = 1.017 \quad S_{D1} = 2/3 * S_{M1} = 0.679$$

**ASCE 7-16 SECTION 11.6 - SEISMIC DESIGN CATEGORY - SECTION 12.8.2 - PERIOD DETERMINATION**

ASCE 7-16 TABLE 11.6-1			
SEISMIC DESIGN CATEGORY BASED ON S <sub>DS</sub>			
	RISK CATEGORY:		
	I & II	III	IV
< 0.167g	A	A	A
< 0.33g	B	B	C
< 0.50g	C	C	D
>= 0.50g	D	D	D
<b>D</b>			

ASCE 7-16 TABLE 11.6-2			
SEISMIC DESIGN CATEGORY BASED ON S <sub>D1</sub>			
	RISK CATEGORY:		
	I & II	III	IV
< 0.067g	A	A	A
< 0.133g	B	B	C
< 0.20g	C	C	D
>= 0.20g	D	D	D
<b>D</b>			

Each building and structure shall be assigned to the most severe Seismic Design Category in accordance with Table 11.6-1 or Table 11.6-2, irrespective of the fundamental period of vibration of the structure.

PERIOD DETERMINATION:	
C <sub>t</sub> =	0.02
h <sub>n</sub> =	21 FT
x =	0.75
T <sub>a</sub> = C <sub>t</sub> *h <sub>n</sub> <sup>x</sup> =	0.196

**ASCE 7-16 SECTION 12.8.1.1 - SEISMIC RESPONSE COEFFICIENT**

GENERAL EQUATION:	C <sub>S</sub> = S <sub>DS</sub> /(R/I) =	0.196	<--CONTROLS	EQ. 12.8-2
MAXIMUM:	C <sub>S</sub> = SD1/(T*(R/I)) =	0.665		EQ. 12.8-3
MINIMUM:	C <sub>S</sub> = 0.044*S <sub>DS</sub> *I > 0.01 =	0.056		EQ. 12.8-5
	For structures located where S <sub>1</sub> > 0.6g			
	C <sub>S</sub> = 0.5*S <sub>1</sub> /(R/I) =	0.000		EQ. 12.8-6

**ASCE 7-16 SECTION 12.8.1 - SEISMIC BASE SHEAR**

$$V = C_S * W = \mathbf{0.196 * W}$$

W = the total dead load and applicable portion of other loads as indicated in Section 12.7.2

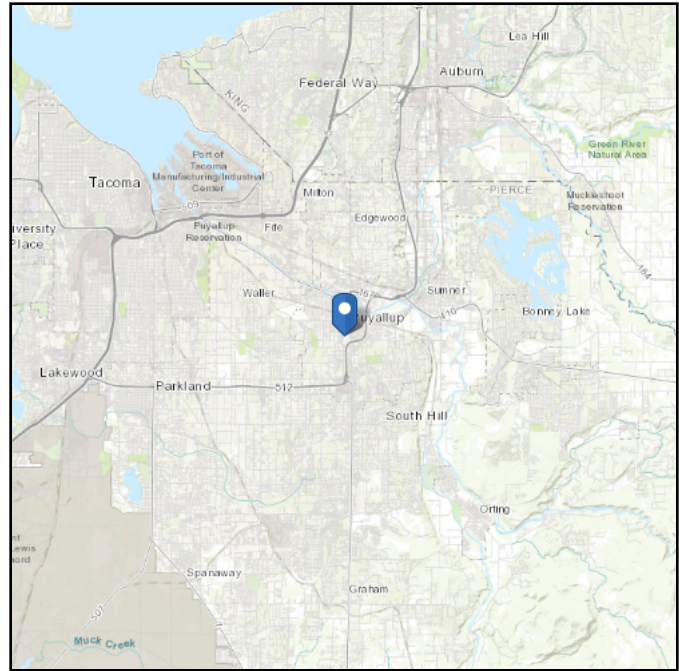
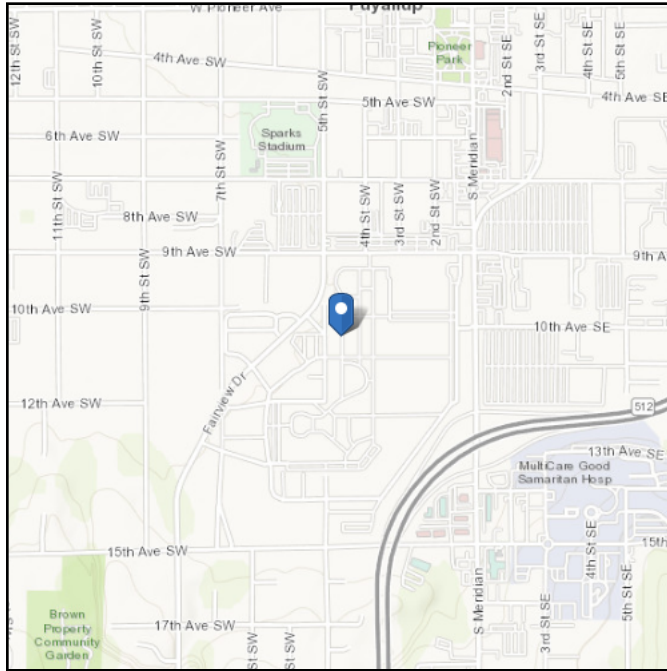


# ASCE Hazards Report

**Address:**  
No Address at This Location

**Standard:** ASCE/SEI 7-16  
**Risk Category:** III  
**Soil Class:** E - Soft Clay Soil

**Latitude:** 47.18243  
**Longitude:** -122.29838  
**Elevation:** 40.52650401010268 ft (NAVD 88)



## Wind

### Results:

Wind Speed	104 Vmph
10-year MRI	67 Vmph
25-year MRI	73 Vmph
50-year MRI	78 Vmph
100-year MRI	83 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1C and Figs. CC.2-1–CC.2-4, and Section 26.5.2  
Date Accessed: Mon Apr 15 2024

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

**Site Soil Class:** E - Soft Clay Soil

**Results:**

$S_s$ :	1.271	$S_{D1}$ :	N/A
$S_1$ :	0.438	$T_L$ :	6
$F_a$ :	N/A	PGA :	0.5
$F_v$ :	N/A	PGA <sub>M</sub> :	0.6
$S_{MS}$ :	N/A	$F_{PGA}$ :	1.2
$S_{M1}$ :	N/A	$I_e$ :	1.25
$S_{DS}$ :	N/A	$C_v$ :	N/A

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

**Data Accessed:** Mon Apr 15 2024

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



## Snow

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**Results:**

Ground Snow Load,  $p_g$  : 18 lb/ft<sup>2</sup>

Mapped Elevation: 40.5 ft

Data Source:

Date Accessed: Mon Apr 15 2024

Statutory requirements of the Authority Having Jurisdiction are not included.

Snow load values are mapped to a 0.5 mile resolution. This resolution can create a mismatch between the mapped elevation and the site-specific elevation in topographically complex areas. Engineers should consult the local authority having jurisdiction in locations where the reported 'elevation' and 'mapped elevation' differ significantly from each other.

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The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

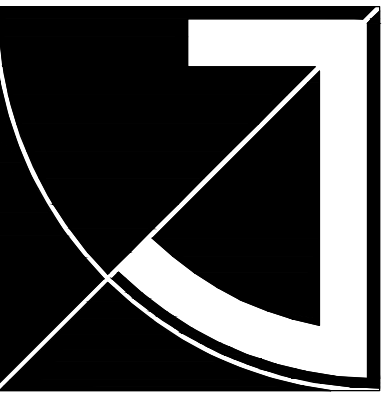
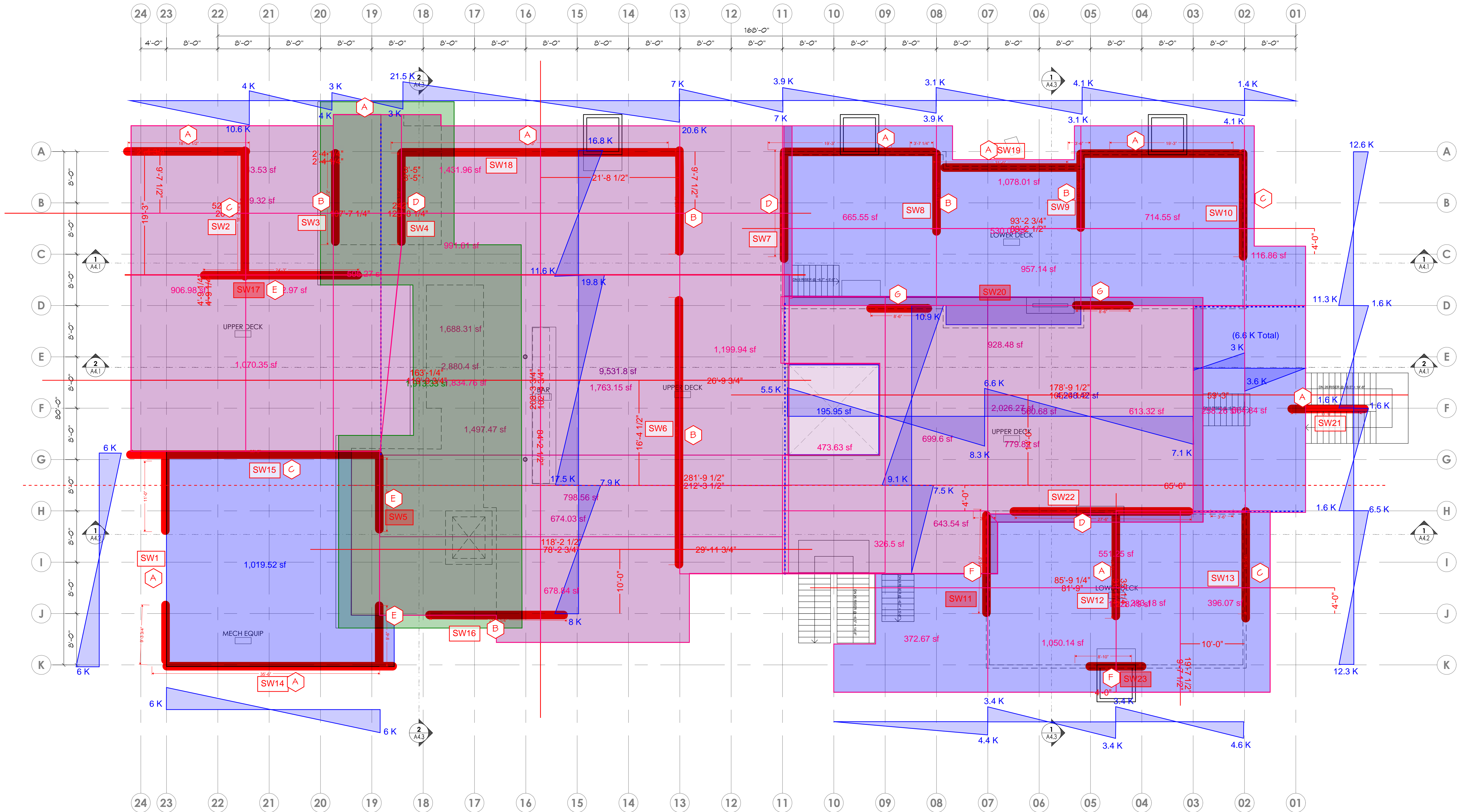
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LATERAL

# Lateral Maps

- All forces noted are ultimate level, seismic UNO

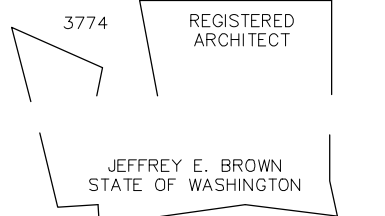


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TACOMA, WA 98444

**PROJECT LEAD**

JEFFREY E. BROWN  
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PROJECT NAME/ADDRESS

**INTERNATIONAL VILLAGE**  
110 9TH AVE SW  
PUYALLUP, WA 98371

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PROJECT NUMBER

23002

DRAWING TYPE

**PERMIT DOCUMENTS**

DATE ISSUE NO.

03.30.24

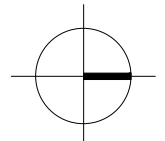
SHEET TITLE

**3RD FLOOR PLAN**

SHEET #

**A2.13**

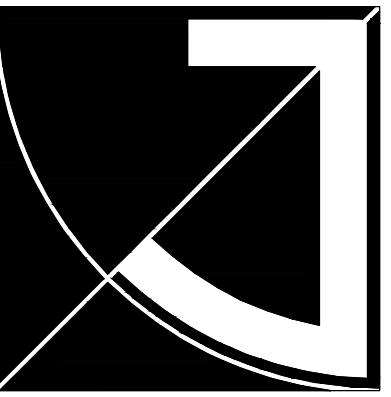
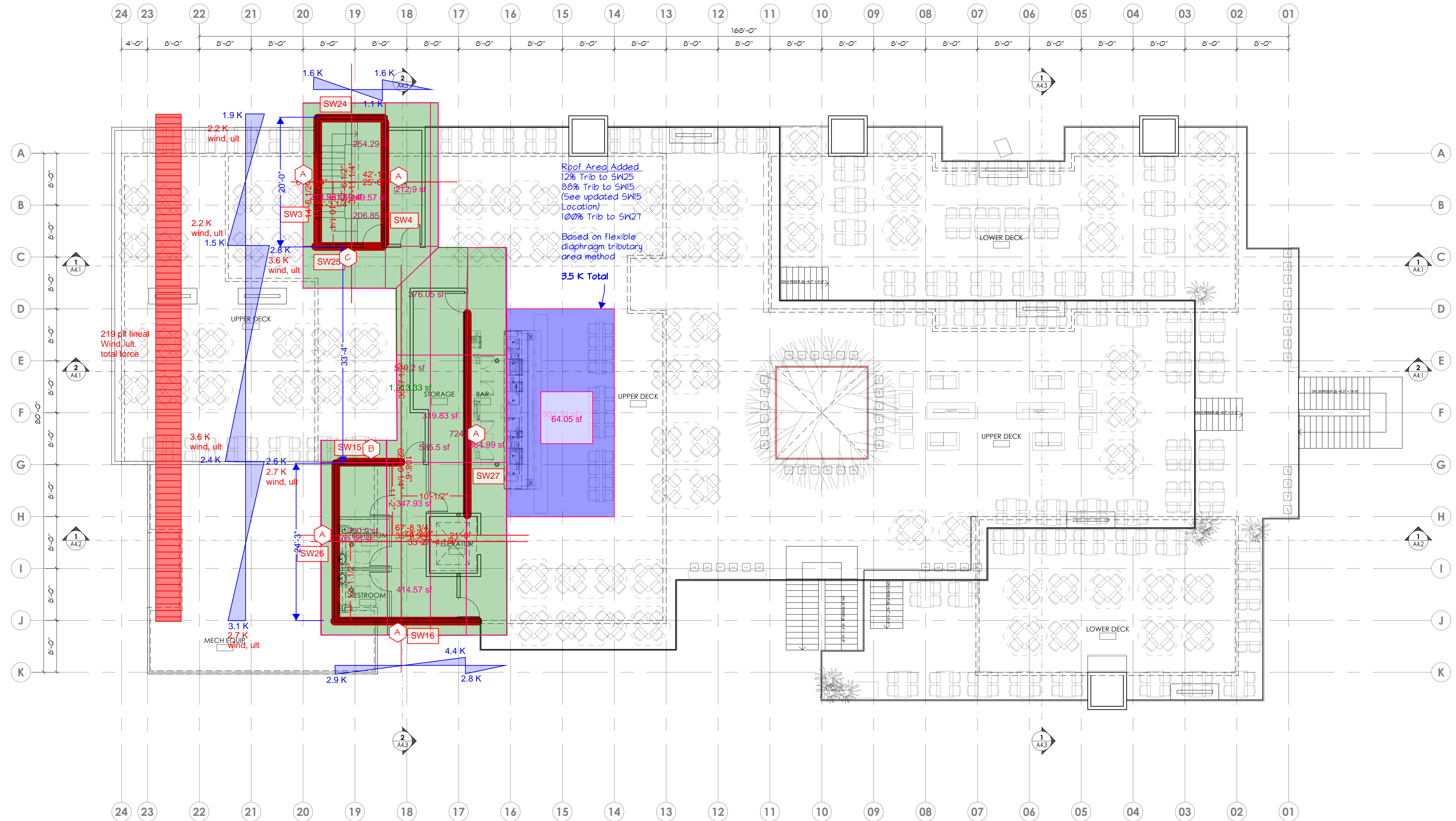
**ROOF PLAN**  
(11x17) SCALE: 1/16" = 1'-0"  
(22x34) SCALE: 1/8" = 1'-0"





# Lateral Maps

- All forces noted are ultimate level, seismic UNO
- Seismic forces increased by 52% for vertical distribution

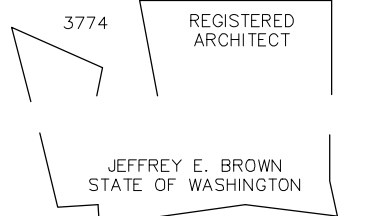


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PROJECT NUMBER

23002

DRAWING TYPE

**PERMIT DOCUMENTS**

DATE ISSUE NO.

03.30.24

SHEET TITLE

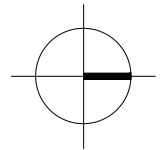
**UPPER FLOOR PLAN**

SHEET #

**A2.12**

**UPPER FLOOR PLAN**

(11x17) SCALE: 1/16" = 1'-0"  
(22x34) SCALE: 1/8" = 1'-0"





Project: NSF International Village Job Number: 24-318

Sheet:        of        Name: JMB

Originating Office: Tacoma Date: 05-02-24

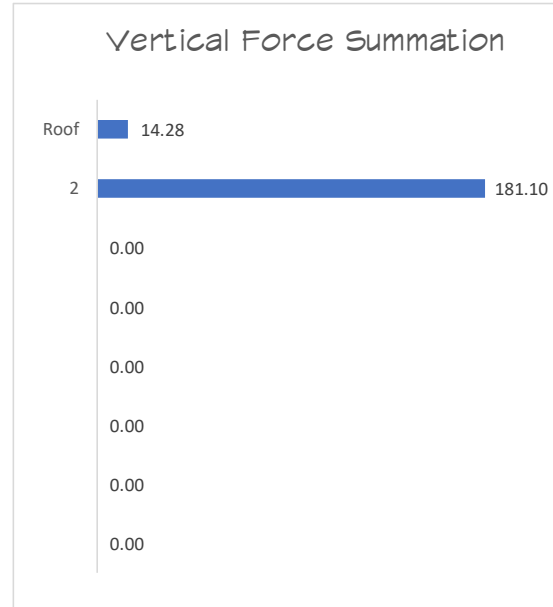
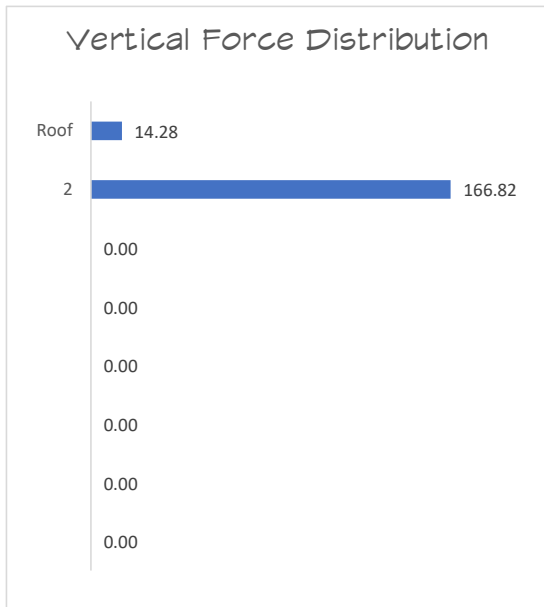
**VERTICAL DISTRIBUTION OF SEISMIC FORCES ASCE 7-16 SEC. 12.8.3**

CODE: IBC 2021, ASCE 7-16

LOCATION: PUYALLUP, WA

T = 0.196 Sec. ASCE 7-16 Sec. 12.8.2  
 k = 1 ASCE 7-16 Sec. 12.8.3  
 Base Shear, V = 181.1 k  
 # OF Floors = 3

LEVEL	$h_x$ (ft)	Floor Weight (k)	$Wh_n^k$ (k-ft)	$C_{vx}$	$F_x$ (k)	$\Sigma F_x$ (k)
Roof	<u>31</u>	<u>47.8</u>	1481.8	0.079	14.28	14.28
2	<u>19.75</u>	<u>876.4</u>	17308.9	0.921	166.82	181.10
$\Sigma$		924.2	18790.7			





Project: NSF International Village Job Number: 24-318

Sheet:        of        Name: JMB

Originating Office: Tacoma Date: 05-02-24

**DIAPHRAGM DESIGN FORCES** **ASCE 7-16 SEC. 12.10.1.1**

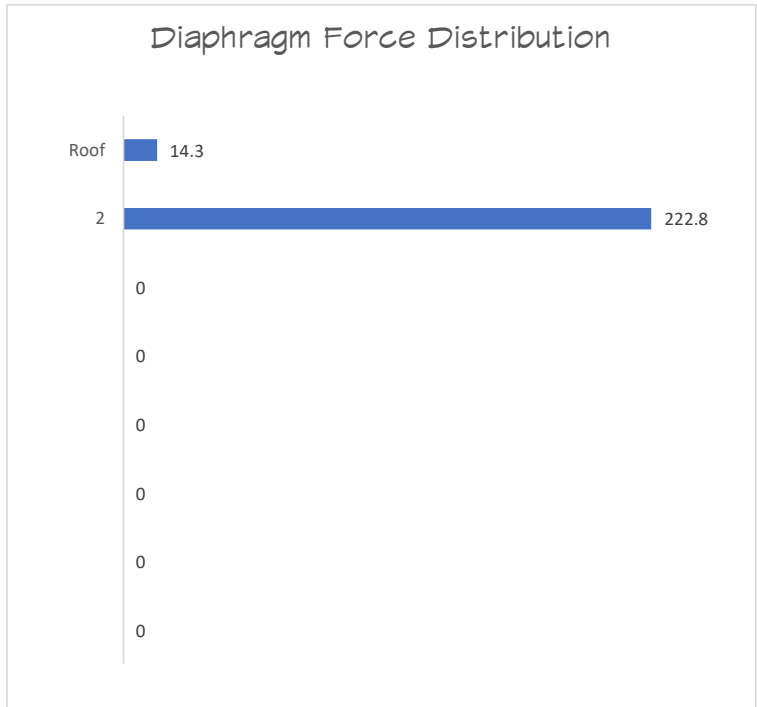
CODE: IBC 2021, ASCE 7-16

LOCATION: PUYALLUP, WA

$S_{DS} = 1.017$  ASCE 7-16 Sec. 11.4.5  
 $I_e = 1.25$  ASCE 7-16 Table 1.5-2

LEVEL	$\Sigma F_x$ (k)	$W_{px}$ (k-ft)	$\Sigma W_i$ (k)	$F_{px}$ (k)	$F_{pxMIN}$ (k)	$F_{pxMAX}$ (k)
Roof	14.28	47.8	47.8	14.3	12.2	24.3
2	181.10	876.4	924.2	171.7	222.8	445.6

LEVEL	$F_{px\ control}$ (k)
Roof	14.3
2	222.8





Project: WSF International Village Job No: 24-318

Subject: Lateral Sheet \_\_\_\_\_ Name: JMB

Originating Office:  Seattle  Tacoma  Portland Date: 2024-04-08

Rev. 2024-04-15

Rev. 2024-05-03

Seismic

Cs = 0.196 per Design Criteria

Effective Seismic Weight = 20 psf steel decking assembly + 40 psf paver system  
= 60 psf (conservative, includes tributary weight of walls)

Upper Deck Area = 9,532 sf - 196 sf opening = 9,336 sf x 60 psf = **560.2 K**

Lower Deck Area = 4,250 sf x 60 psf = **255 K**

Mech Equip Roof Area = 1,020 sf x 60 psf = **61.2 K** (Includes 40 psf mechanical allowance without pavers)

High Roof Area = 1,913 sf x 25 psf = **47.8 K**

*Added High Roof Area = 467 ft<sup>2</sup> x 25 psf = 11.7k*

*935.9 k*

**W = 924.2 K total** x 0.196

*183.4 k*

**V = 181.1 K total**

Wind

Consider Effective Wall Pressure Windward + Leeward = 11.8 psf - - 6.9 psf = 18.7 psf

At Parapets, Apply Additional Effective Pressure = 2.5 x 11.8 psf = 29.5 psf

Effective Wall Pressure at Pop-Up Roofs = 12.8 psf - - 6.9 psf = 19.7 psf

Broad Width of Building,  
Vw = (2914 sf x 0.5 x 18.7 psf)  
+ 750 sf x 19.7 psf  
+ 612 sf x 19.7 psf  
+ 581 sf x 29.5 psf  
+ 473 sf x 29.5 psf = 85.2 K

0.6 x W = 51.1 K <  
0.7 x EQ = 126.8 K Seismic Controls  
Primary LFRS

Wind will likely control design of broad face of pop-up roof:

Vw = 861 sf total area x 19.7 psf = **17 K total** at broad face of pop up roof

*Ww = 17k / 77.5' = 219 plf linear*

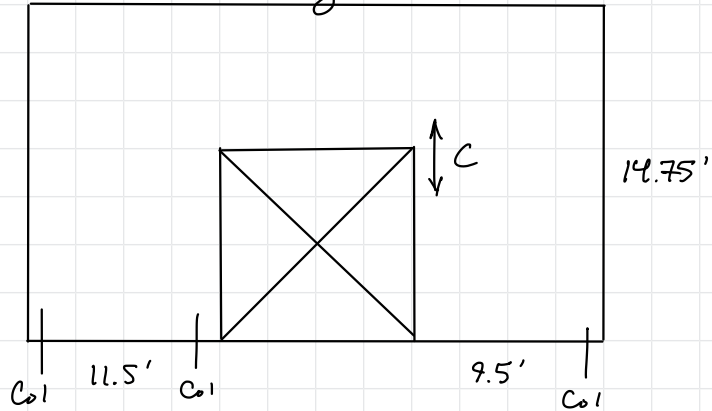
SW 1

$W_d = 0.14 \text{ klf}$  (Self wt. of wall only, beam aligned w/ wall top.)

6 k  
(EQ. ult.)

$$N_s = \frac{0.7 \cdot 6 \text{ k}}{21'}$$

$$= 200 \text{ plf}$$



$\therefore$  Use  $1\frac{5}{32}$  Steel I Blocked (4-Ply) }  $\frac{N_u}{\phi} = 287 \text{ plf OK}$   
 #8 @ 6" o.c.  
 33 mil Framing

$\phi_E$  scale by 2.5/1.8 for anchorage design typ.

$$M_{OT} = 0.7 \cdot 1.8 \cdot 6 \text{ k} \left( \frac{9.5}{21} \right) \cdot 14.75' = 50.5 \text{ k-ft} \rightarrow 70.1 \text{ k-ft}$$

$$M_{res} = (0.6 - 0.14 \cancel{S/S}) D = 0.458 \cdot 0.14 \text{ klf} \cdot \frac{(9.5')^2}{2} = 2.9 \text{ k-ft}$$

$$M_{diff} = \frac{67.2 \text{ k-ft}}{47.6 \text{ k-ft}}$$

$$HD = \frac{67.2 \text{ k-ft}}{8.5'} = \frac{7.9 \text{ K}}{5.6 \text{ k}} \text{ w/ } \phi = c$$

Per stud wall calcs,  $P_a = 3.2 \text{ k}$  each stud.

Typical Condition will have (2) Studs.

$$\Rightarrow P_a = 6.4 \text{ k} \text{ N.G.}$$

$\therefore$  Use ~~(2)~~ (3) Studs

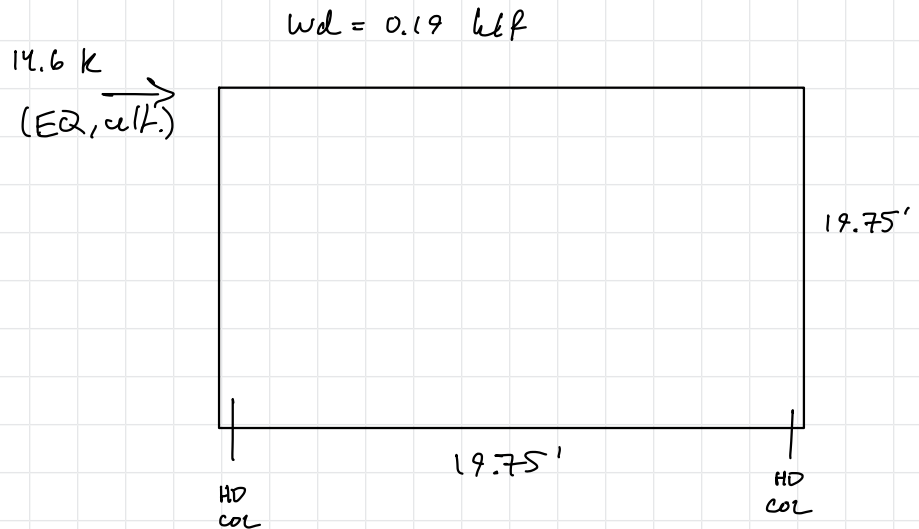
There will be (3) studs at wall corners per 2/S5.13  $\rightarrow$  OK



SW2

$$N_s = \frac{0.7 \cdot 14.6 \text{ k}}{19.75'}$$

$$= 519 \text{ plf}$$



∴ Use 1<sup>5</sup>/<sub>32</sub> Struct. I Blocked (4-ply) }  $\frac{N_u}{\Omega} = 639 \text{ plf Blk}$   
 #8 @ 3" o.c.  
 43 mil Framing

scale by 2.5/1.8 for anchorage design

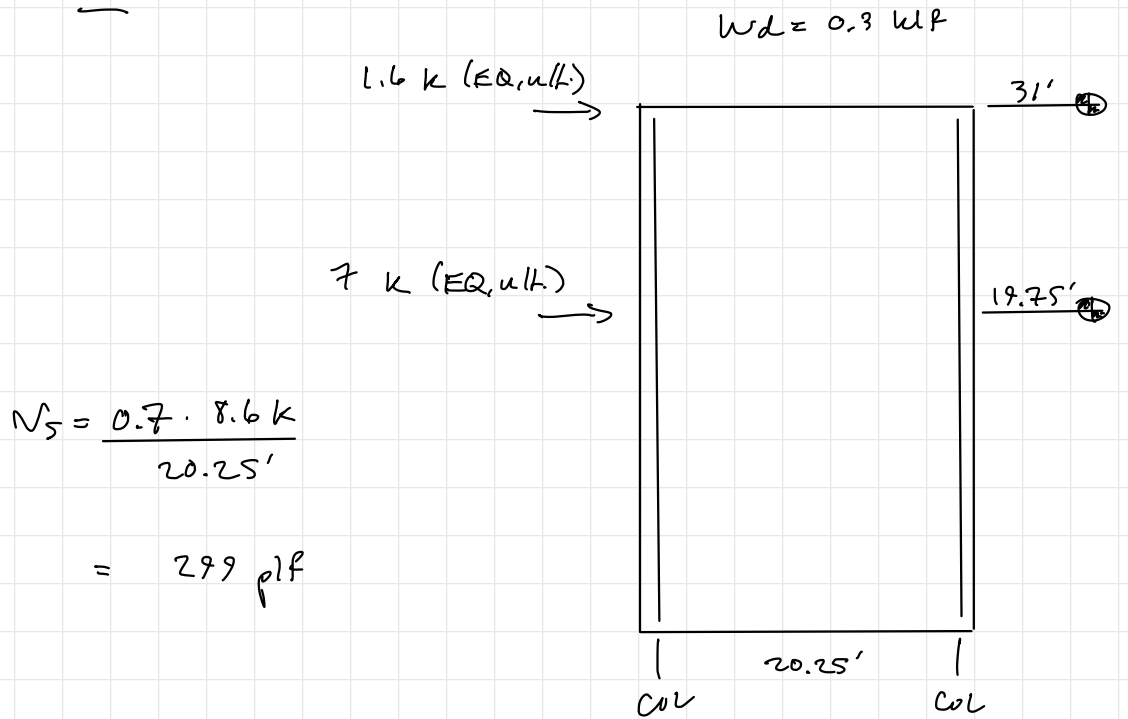
$$M_{OT} = 0.7 \cdot 1.8 \cdot 14.6 \text{ k} \cdot 19.75' = 364 \text{ K-ft} \quad 505.6 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.19 \text{ klf} \cdot \frac{(19.75')^2}{2} = 17 \text{ k-ft}$$

$$M_{di:FP} = \frac{488.6 \text{ k-ft}}{347}$$

$$HD = \frac{488.6 \text{ k-ft}}{18.75'} = \frac{26.1 \text{ K}}{18.5 \text{ k}} \text{ w/ } \Omega$$

SW3



$$N_s = \frac{0.7 \cdot 8.6 k}{20.25'}$$

$$= 299 \text{ plf}$$

∴ Use  $1\frac{1}{2}$  Steel I Blocked (4-Ply)  
 #8 @ 4" o.c.  
 33 mil Framing

}  $\frac{N_u}{\phi} = 356 \text{ plf Ok}$

scale by 2.5/1.8 for anchorage design

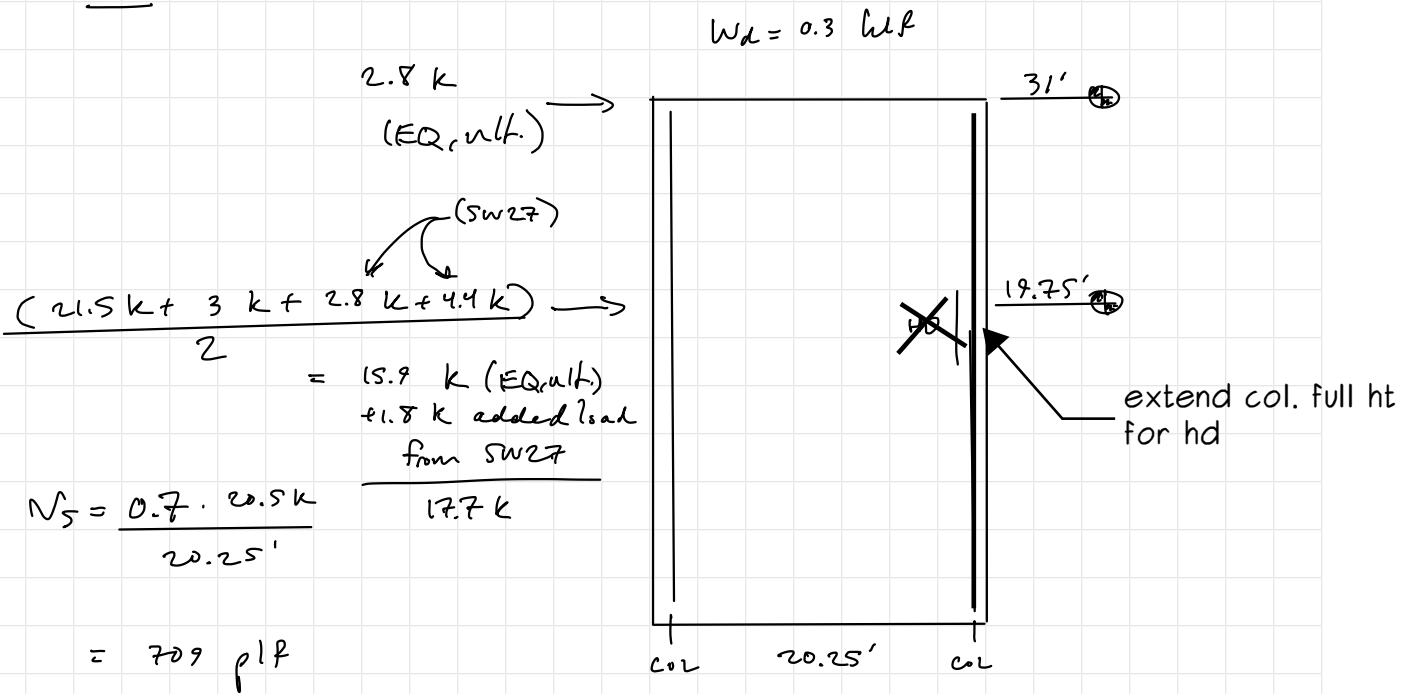
$$M_{OT} = 0.7 \cdot 1.8 (1.6 k \cdot 31' + 7 k \cdot 19.75') = 237.6 \text{ k-ft} \quad \swarrow \text{330 k-ft}$$

$$M_{res} = 0.458 \cdot 0.3 \text{ k/f} \cdot \frac{(20.25')^2}{2} = 28.2 \text{ k-ft}$$

$$M_{diff} = \frac{301.8}{209.4} \text{ k-ft}$$

$$FD = \frac{301.8}{19.25'} = \frac{15.7}{18.9} \text{ k w/ } \Omega$$

SW4



∴ Use  $1\frac{1}{2}$  Struc. I Blocked (4-ply)  
 #8 c 2" o.c.  
 43 mil Framing

$\left. \begin{array}{l} \\ \\ \end{array} \right\} \frac{N_u}{R} = 788 \text{ plf Ok}$

scale by 2.5/1.8 for anchorage design

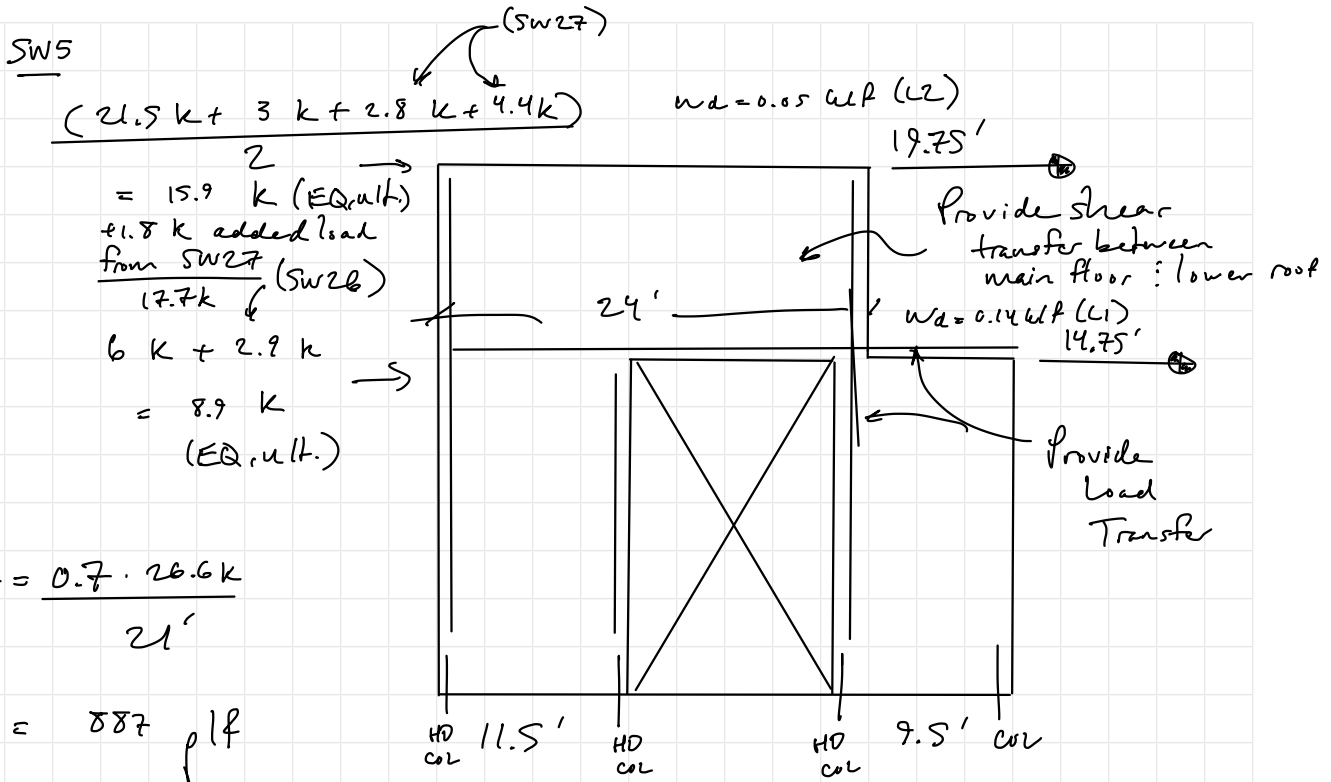
L1

$M_{OT} = 0.7 \cdot 1.8 (2.8 \text{ k} \cdot 31' + 17.7 \text{ k} \cdot 19.75') = 550 \text{ k-ft} \rightarrow 763.9 \text{ k-ft}$

$M_{res} = 0.458 \cdot 0.3 \text{ klf} \cdot \frac{(20.25')^2}{2} = 28.2 \text{ k-ft}$

$M_{diff} = \frac{735.7}{521.6} \text{ k-ft}$

$HD = \frac{735.7}{19.25'} = \frac{38.2}{27.1} \text{ k w/ } \Omega$



$N_5 = \frac{0.7 \cdot 26.6 k}{21'}$   
 $= 887$  p/f

∴ Use 15/32 Steel-I Blocked (4-ply) #8 @ 4" o.c. 43 mil Framing  
 $\frac{N_u}{\phi} = 479 \times 2 \text{ sides} = 958$  p/f Blk

\* [Sheathing (2) Sides]

scale by 2.5/1.8 for anchorage design

L2 Local  
 $M_{OT} = 0.7 \cdot 1.8 \cdot 17.7 k \cdot 5'$   
 $= 111.5 k-ft$  154.9 k-ft  
 $M_{res} = 0.458 \cdot 0.05 w_f \cdot (24')^2 / 2$   
 $= 6.6 k-ft$   
 $M_{diff} = \frac{104.9}{148.3} k-ft$   
 $HD = \frac{148.3}{23'} = \frac{6.4}{23'} k$  w/  $\phi$

L1 Local (9.5' Pier)  
 $M_{OT} = 0.7 \cdot 1.8 \cdot 26.6 k \left(\frac{9.5}{21}\right) \cdot 14.75'$   
 $= 223.6 k-ft$  310.6 k-ft  
 $M_{res} = 0.458 \cdot 0.14 w_f \cdot (8.5')^2 / 2$   
 $= 2.9 k-ft$   
 $M_{diff} = \frac{220.7}{307.7} k-ft$   
 $HD = \frac{307.7}{8.5'} = \frac{36.2}{8.5'} k$  w/  $\phi$

L2 Global  
 $M_{OT} = 0.7 \cdot 1.8 \cdot 17.7 k \cdot (19.75')$  440.5 k-ft  
 $611.8 k-ft$   
 $M_{res} = 6.6 k-ft$   
 $M_{diff} = \frac{605.2}{440.5} k-ft$   
 $HD = \frac{605.2}{23'} = \frac{26.3}{23'} k$  w/  $\phi$

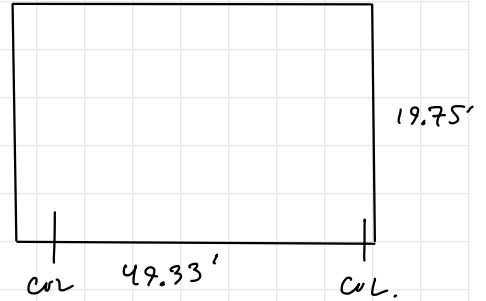
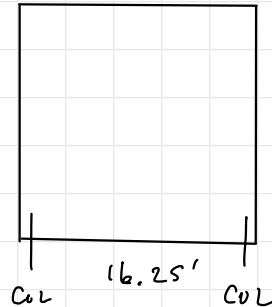
L2 Global  
 + L1 Local (9.5' Pier)  
 $HD = \frac{26.3}{23'} + \frac{36.2}{8.5'}$   
 $= \frac{26.3}{23'} + \frac{36.2}{8.5'}$   
 $= 62.5$  k w/  $\phi$

SW 6

(From SW 27 above)

$$27.6 \text{ k} + \frac{7.1 \text{ k}}{2} = 31.2 \text{ k (EQ. ult.)}$$

$w_d = 0.19 \text{ klf}$



$$N_s = \frac{0.7 \cdot 31.2 \text{ k}}{65.58'}$$

$$= 334 \text{ plf}$$

∴ Use 15/32 Steel I Blocked (4-PLY) }  $\frac{N_u}{\phi} = 356 \text{ plf Blk}$   
 #8 @ 4" o.c.  
 33 mil Framing

scale by 2.5/1.8 for anchorage design

$$M_{OT} = 0.7 \cdot 1.8 \cdot 31.2 \text{ k} \left( \frac{16.25'}{65.58} \right) \cdot 19.75' = 192.8 \text{ k-ft} \rightarrow 267.8 \text{ k-ft}$$

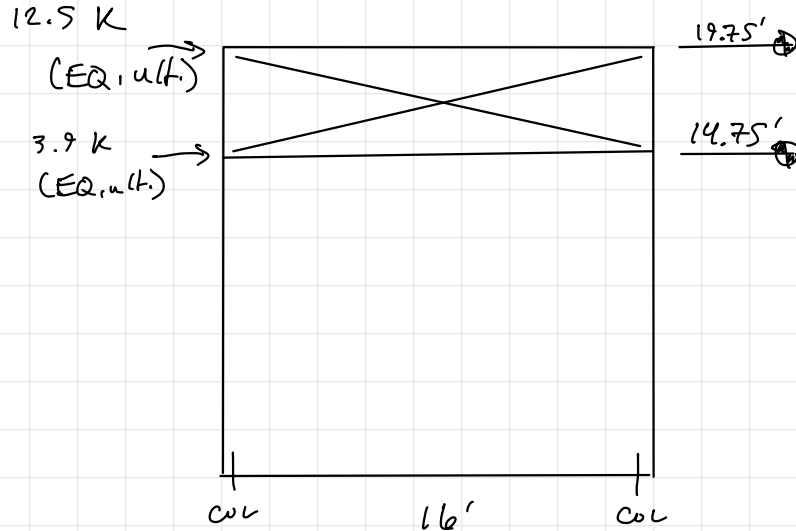
$$M_{res} = 0.458 \cdot 0.19 \text{ klf} \cdot \frac{(16.25')^2}{2} = 11.5 \text{ k-ft}$$

$$M_{diff} = \frac{256.3}{181.3} \text{ k-ft}$$

$$FD = \frac{\frac{256.3}{181.3}}{15.25'} = \frac{16.8}{11.9} \text{ k w/ } \Omega$$

SW7

$w_d = 0.14 \text{ klf}$



$$N_s = \frac{0.7 \cdot 16.4 \text{ k}}{16'}$$

$$= 716 \text{ plf}$$

$\therefore$  Use  $15/32$  Steel I Blocked (4-ply) }  $\frac{N_u}{\phi} = 788 \text{ plf Ok}$   
 #8 @ 2" o.c.  
 43 mil Framing

scale by 2.5/1.8 for anchorage design

$$M_{OT} = 0.7 \cdot 1.8 (12.5 \text{ k} \cdot 19.75' + 3.9 \text{ k} \cdot 14.75') = 383 \text{ k-ft} \rightarrow 531.9 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.14 \text{ klf} \cdot \frac{(16')^2}{2} = 8.2 \text{ k-ft}$$

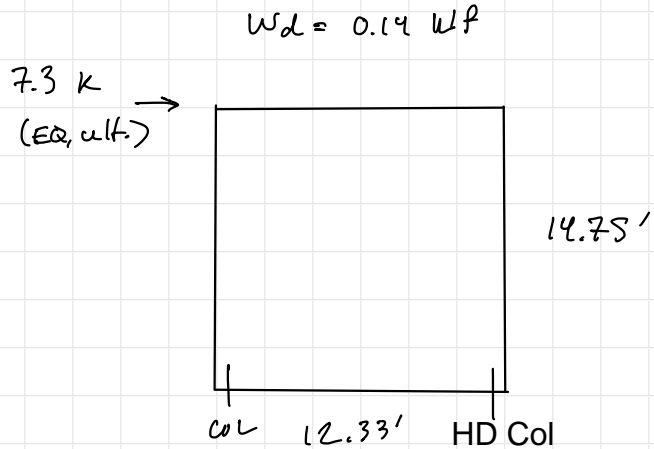
$$M_{di\phi\phi} = \frac{523.7}{374.9} \text{ k-ft}$$

$$HD = \frac{523.7}{374.9} = \frac{34.9}{25} \text{ k w/ } \phi$$

SW8 (SW & Sim)

$$N_s = \frac{0.7 \cdot 7.3 \text{ k}}{12.33'}$$

$$= 411 \text{ plf}$$



∴ Use 15/32 Strong I Blocked (4-PLY) }  $\frac{N_u}{\phi} = 479 \text{ plf Ok}$   
 #8 @ 4" o.c.  
 43 mil Framing

scale by 2.5/1.8 for anchorage design

$$M_{OT} = 0.7 \cdot 1.8 \cdot 7.3 \cdot 14.75' = 134.8 \text{ k-ft} \rightarrow 187.2 \text{ k-ft}$$

$$M_{res} = 0.458 - 0.14 \text{ klf} \cdot \frac{(12.33')^2}{2} = 4.2 \text{ k-ft}$$

$$M_{diff} = \frac{182.3}{\cancel{127.9}} \text{ k-ft}$$

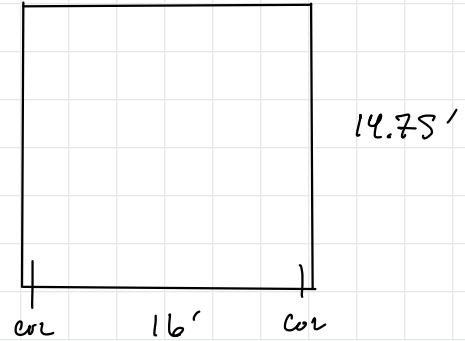
$$HD = \frac{\frac{182.3}{\cancel{127.9}}}{11.33'} = \frac{16.1}{4.5} \text{ k w/ } \Omega$$

SWID

$$8.4 \text{ k} + \frac{7.1 \text{ k}}{2} \rightarrow$$

$$= 12 \text{ k (EQ, ult.)}$$

$$W_d = 0.14 \text{ Wf}$$



$$V_s = \frac{0.7 \cdot 12 \text{ k}}{16'}$$

$$= 525 \text{ plf}$$

∴ Use  $1\frac{1}{2}$  Strong I Blocked (4-ply) }  $\frac{M_u}{\phi} = 639 \text{ plf Blk}$   
 #8 @ 3" o.c.  
 43 mil Framing

scale by 2.5/1.8 for anchorage design

$$M_{OT} = 0.7 \cdot 1.8 \cdot 12 \text{ k} \cdot 14.75' = 223 \text{ k-ft} \rightarrow 309.7 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.14 \text{ Wf} \cdot \frac{(16')^2}{2} = 8.2 \text{ k-ft}$$

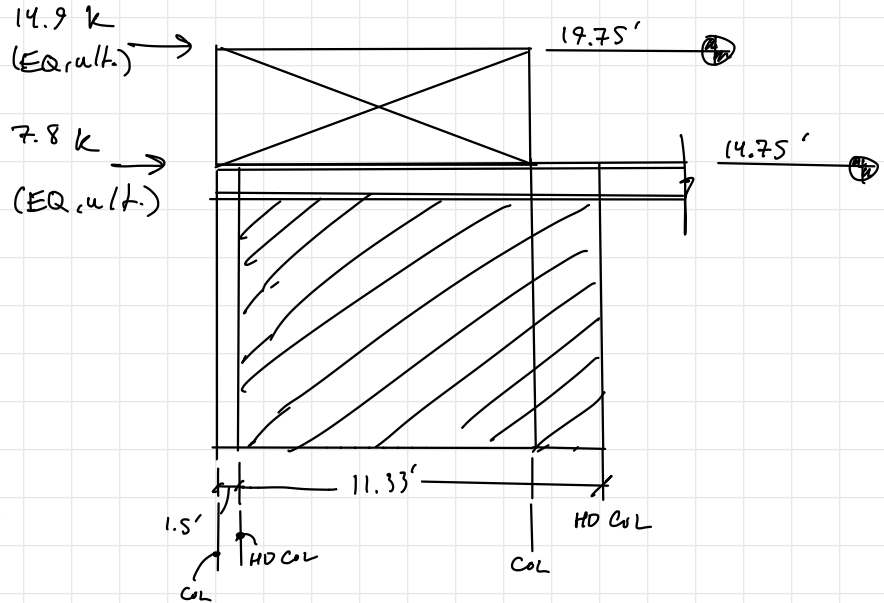
$$W_{diff} = \frac{301.5}{211.8} \text{ k-ft}$$

$$HD = \frac{301.5}{15'} = \frac{20.1}{11.3} \text{ k w/ l}$$



SW11

$W_d = 0.14 \text{ wlf}$



$$N_s = \frac{0.7 \cdot 22.7k}{11.33'}$$

$$= 1400 \text{ plf}$$

∴ Use  $1\frac{5}{32}$  Stone-I Blocked (4-Ply) }  $\frac{N_u}{\phi} = 788 \text{ plf} \times 2$   
 #8 @ 2" o.c. }  $= 1576 \text{ plf OK}$   
 43 mil Framing

★ [Sheathing (2) Sides]

scale by 2.5/1.8 for anchorage design

$$M_{OT} = 0.7 \cdot 1.8 \cdot (14.9k \cdot 19.75' + 7.8k \cdot 14.75') = 515.8 \text{ k-ft}$$

~~716.4 k-ft~~

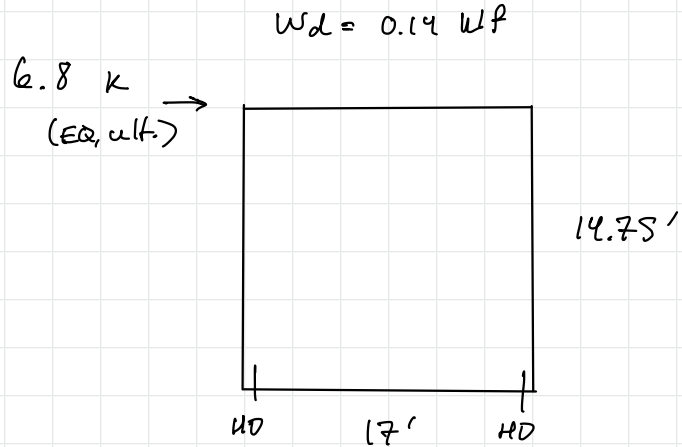
$$M_{res} = 0.458 \cdot 0.14 \text{ wlf} \cdot \frac{(11.33)^2}{2} = 4.1 \text{ k-ft}$$

$$M_{di\phi P} = \frac{712.3}{515.8} \text{ k-ft}$$

$$HD = \frac{712.3}{515.8} = \frac{62.9}{11.33} \text{ k w/ } \phi \text{ Shared between (4) Columns}$$

31.5 K each pair

SW12



$$V_s = \frac{0.7 \cdot 6.8 \text{ k}}{17'}$$

$$= 278 \text{ plf}$$

∴ Use 1<sup>5</sup>/<sub>32</sub> Struc. I Blocked (4-Ply) }  $\frac{V_u}{\phi} = 287 \text{ plf}$  Ok  
 #8 @ 6" o.c.  
 33 mil Framing

scale by 2.5/1.8 for anchorage design

$$M_{OT} = 0.7 \cdot 1.8 \cdot 6.8 \text{ k} \cdot 14.75' = 125.5 \text{ k-ft} \rightarrow 174.3 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.14 \text{ Wp} \cdot \frac{(17')^2}{2} = 9.3 \text{ k-ft}$$

$$M_{diff} = \frac{165}{16'} = 10.3 \text{ k w/ } \Omega$$

$$HD = \frac{165}{16'} = 10.3 \text{ k w/ } \Omega \rightarrow \text{S/HD15S} \rightarrow \text{Capacity} = 12.1 \text{ K w/ (2) 43 mil studs}$$

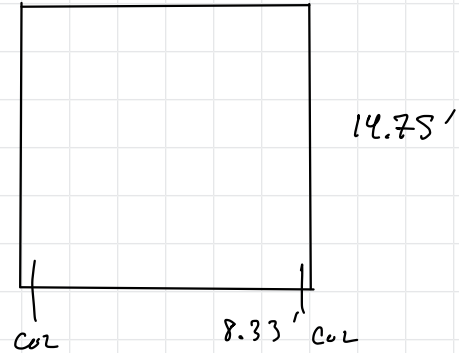
SW13

$$8.4 \text{ k} + \frac{7.1 \text{ k}}{2} \\ = 12 \text{ k (EQ, ult.)} \rightarrow$$

$$W_d = 0.14 \text{ wlf}$$

$$N_s = \frac{0.7 \cdot 12 \text{ k}}{8.33'}$$

$$= 1008 \text{ plf}$$



∴ Use 1 5/32 Struc. I Blocked (4-Ply)

#8 @ 3" o.c.

43 mil Framing

Sheathing (2) Sides

scale by 2.5/1.8 for anchorage design

$$\left. \begin{array}{l} \text{Use 1 5/32 Struc. I Blocked (4-Ply)} \\ \text{\#8 @ 3" o.c.} \\ \text{43 mil Framing} \\ \text{Sheathing (2) Sides} \end{array} \right\} \frac{N_u}{\phi} = 639 \times 2 = 1278 \text{ plf Blk}$$

$$M_{OT} = 0.7 \cdot 1.8 \cdot 12 \text{ k} \cdot 14.75' = 223 \text{ k-ft} \rightarrow 309.7 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.14 \text{ wlf} \cdot \frac{(8.33')^2}{2} = 2.2 \text{ k-ft}$$

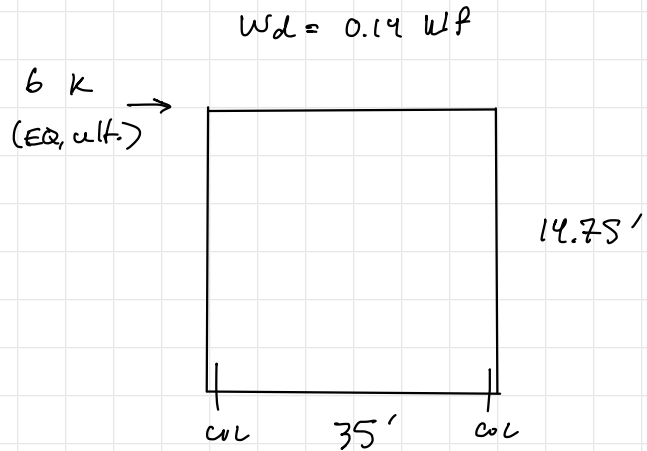
$$M_{diff} = \frac{307.5}{2.2} \text{ k-ft}$$

$$HD = \frac{307.5}{8'} = \frac{38.4 \text{ K}}{8'} \text{ w/ } \perp$$

SW14

$$V_s = \frac{0.7 \cdot 6}{35'}$$

$$= 120 \text{ plf}$$



∴ Use  $1\frac{5}{32}$  Strong I Blocked (4-ply) }  $\frac{M_u}{\Omega} = 287 \text{ plf Blk}$   
 #8 @ 6" o.c.  
 33 mil Framing

scale by 2.5/1.8 for anchorage design

$$M_{OT} = 0.7 \cdot 1.8 \cdot 6 \text{ k} \cdot 14.75' = 111.5 \text{ k-ft} \rightarrow 154.9 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.14 \text{ Wf} \cdot \frac{(35')^2}{2} = 39.3 \text{ k-ft}$$

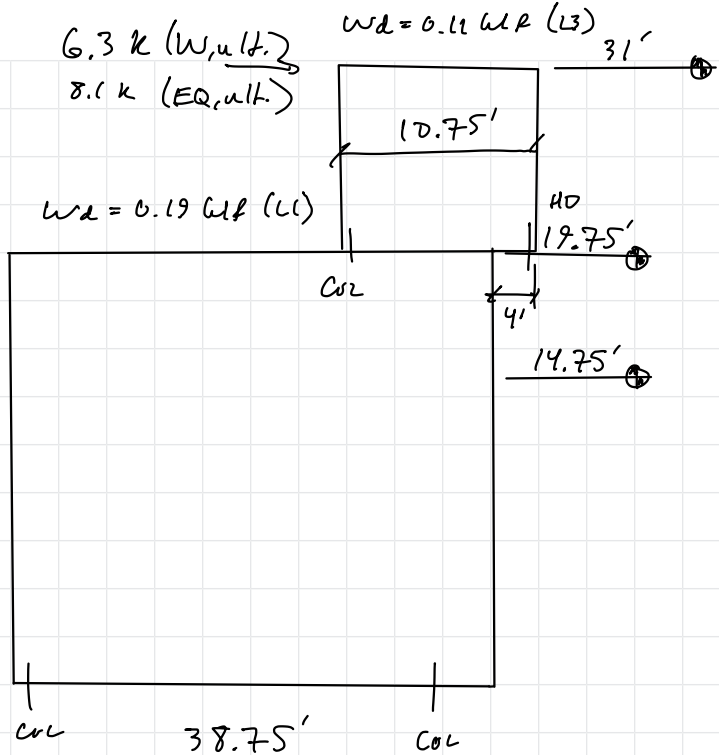
$$M_{diff} = \frac{115.6}{72.2} \text{ k-ft}$$

$$HD = \frac{115.6}{34} = \frac{3.4}{2.1} \text{ k w/ } \Omega$$

SWLS

$$\frac{42}{2} k = 21 k \text{ (EQ, ult.)} \rightarrow$$

6 k  $\rightarrow$   
(EQ, ult.)



Upper Wall:

$$V_s = \frac{0.7 \cdot 8.1 k}{8.33'} = 687 \text{ plf}$$

$\therefore$  Use  $1\frac{1}{2}$  Steel I Blocked (4-Ply) }  $\frac{N_u}{\phi} = 788 \text{ plf Blk}$   
 #8 @ 2" o.c.  
 43 mil Framing

Lower Wall:

$$V_s = \frac{0.7 \cdot 35.1 k}{38.75'} = 634 \text{ plf}$$

$\therefore$  Use  $1\frac{1}{2}$  Steel I Blocked (4-Ply) }  $\frac{N_u}{\phi} = 639 \text{ plf Blk}$   
 #8 @ 3" o.c.  
 43 mil Framing scale by 2.5/1.8 for anchorage design

[ For HD design, EQ  $\times$   $\phi$  Controls Design ]

L3

$$M_{OT} = 0.7 \cdot 1.8 \cdot 8.1 k \cdot 11.25' \cdot \frac{1}{2} = 115 \text{ k-ft} \quad 159.7 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.11 \text{ WLP} \cdot \frac{(10.75')^2}{2} = 2.9 \text{ k-ft}$$

$$M_{diff} = \frac{115}{156.8} \text{ k-ft}$$

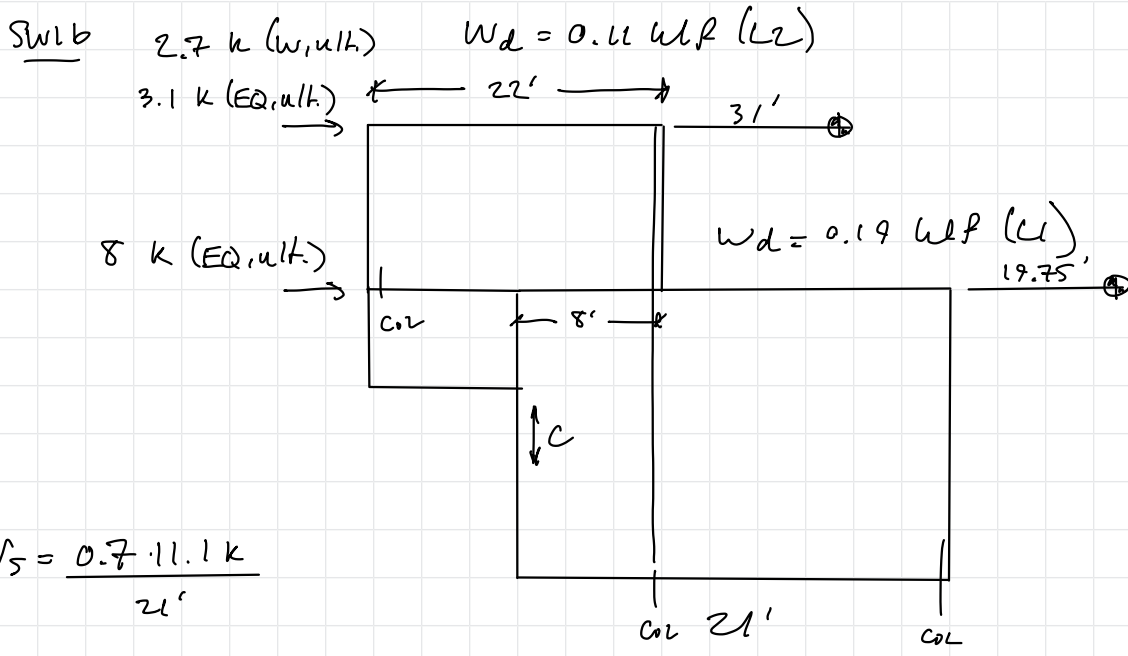
$$HD = \frac{156.8}{7.33} = 21.4 \text{ k w/ } \phi \text{ HD Column}$$

$$M_{OT} = 0.7 \cdot 1.8 (8.1 k \cdot 31' + 21 \cdot 19.75' + 6 k \cdot 14.75') = 950 \text{ k-ft} \quad 1319.4 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.19 \text{ WLP} \cdot \frac{(38.75')^2}{2} = 65.3 \text{ k-ft}$$

$$M_{diff} = \frac{950}{1254} \text{ k-ft}$$

$$HD = \frac{1254}{37.75} = 33.2 \text{ k w/ } \phi$$



$$N_s = \frac{0.7 \cdot 11.1 \text{ k}}{21'}$$

$$= 370 \text{ plf}$$

∴ Use  $1\frac{1}{2}$  Steel I Blocked (4-ply) }  $\frac{N_u}{\phi} = 479 \text{ plf Ok}$   
 #8 @ 4" o.c.  
 43 mil Framing }  
 scale by 2.5/1.8 for anchorage design

L2

$$M_{OT} = 0.7 \cdot 1.8 \cdot 3.1 \text{ k} \cdot 11.25' = 43.9 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.11 \text{ wlp} \cdot \frac{(22')^2}{2} = 12.2 \text{ k-ft}$$

$$M_{diff} = \frac{51.7}{48.8} \text{ k-ft}$$

$$HD = \frac{48.8}{21'} = \frac{2.3}{1.9} \text{ k w/ } \phi$$

L1

$$M_{OT} = 0.7 \cdot 1.8 \cdot (3.1 \text{ k} \cdot 31' + 8 \text{ k} \cdot 19.75') = 320 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.19 \text{ wlp} \cdot \frac{(21')^2}{2} = 19.2 \text{ k-ft}$$

$$M_{diff} = \frac{301}{425.2} \text{ k-ft}$$

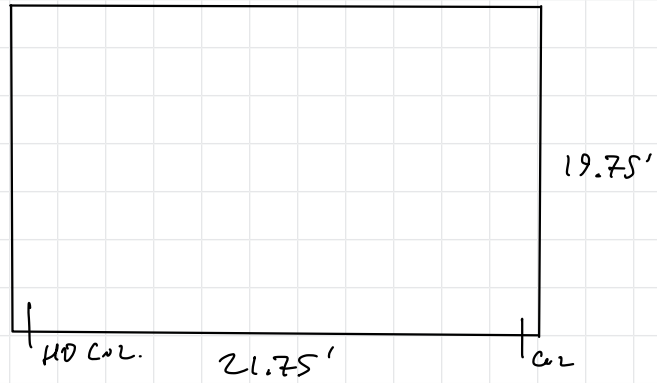
$$HD = \frac{425.2}{20} = \frac{21.3}{15.1} \text{ k w/ } \phi = C$$

SW17  
 $\frac{42.3 \text{ k}}{2} + 4.3 \text{ k}$   
 $= 25.5 \text{ k}$  (EQ. ult.)

(From SW25)

$W_d = 0.19 \text{ klf}$

$N_s = \frac{0.7 \cdot 25.5 \text{ k}}{21.75'}$   
 $= 816 \text{ plf}$



$\therefore$  Use  $1\frac{1}{2}$  Steel I Blocked (4-ply)  
 #8 @ 4" o.c.  
 43 mil Framing

$\left. \begin{array}{l} \text{Use } 1\frac{1}{2} \text{ Steel I Blocked (4-ply)} \\ \text{\#8 @ 4" o.c.} \\ \text{43 mil Framing} \end{array} \right\} \frac{N_u}{\phi} = 479 \times 2 = 958 \text{ plf Blk}$

\* [Sheathing (2) Sides] scale by 2.5/1.8 for anchorage design

$M_{OT} = 0.7 \cdot 1.8 \cdot 25.5 \text{ k} \cdot 19.75' = 631.5 \text{ k-ft}$   $\rightarrow$  877 k-ft

$M_{res} = 0.458 \cdot 0.19 \text{ klf} \cdot \frac{(21.75')^2}{2} = 20.6 \text{ k-ft}$

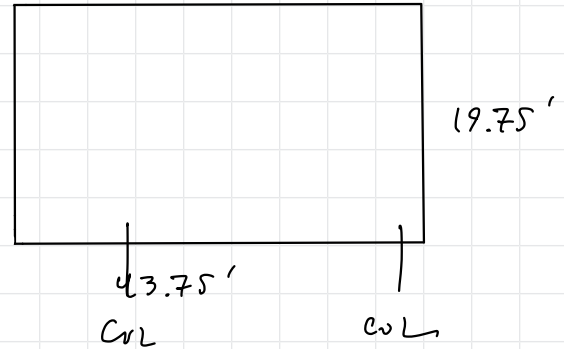
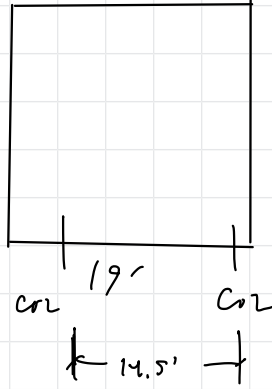
$M_{diff} = \frac{856.5}{20.75} \text{ k-ft}$

$HD = \frac{856.5}{20.75} = 41.3 \text{ k w/ } \phi$

SW18

$W_d = 0.19 \text{ wlf}$

16.8 k  
→  
(EQ, u(t))



$N_s = \frac{0.7 \cdot 16.8 \text{ k}}{62.75'}$

$= 186 \text{ plf}$

∴ Use  $1\frac{1}{2}$  Steel I Blocked (4-ply) }  $\frac{N_u}{\phi} = 287 \text{ plf Ok}$   
 #8 @ 6" o.c.  
 33 mil Framing

scale by 2.5/1.8 for anchorage design

$M_{OT} = 0.7 \cdot 1.8 \cdot 16.8 \text{ k} \left( \frac{19}{62.75} \right) \cdot 19.75' = 126.3 \text{ k-ft} \rightarrow 175.4 \text{ k-ft}$

$M_{res} = 0.458 \cdot 0.19 \text{ wlf} \cdot \frac{(19')^2}{2} = 15.7 \text{ k-ft}$

$M_{diff} = \frac{159.7}{10.6} \text{ k-ft}$

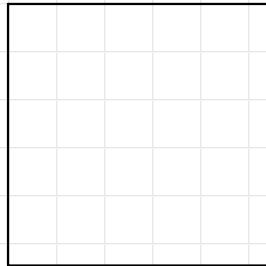
$HD = \frac{159.7}{14.5'} = \frac{11}{7.6} \text{ k w/ ft}$



SW19

$w_d = 0.14 \text{ klf}$

12.6 k  
(EQ, ult.)



24'



21.5'



19.25'



$$N_s = \frac{0.7 \cdot 12.6 \text{ k}}{64.75'}$$

$$= 136 \text{ plf}$$

∴ Use 15/32 Steel I Blocked (4-ply)  
 #8 @ 6" o.c.  
 33 mil Framing

$$\frac{N_u}{\phi} = 287 \text{ plf Ok}$$

scale by 2.5/1.8 for anchorage design

$$M_{OT} = 0.7 \cdot 1.8 \cdot 12.6 \text{ k} \left( \frac{19.25}{64.75} \right) \cdot 14.75' = 69.6 \text{ k-ft} \rightarrow 96.7 \text{ k-ft}$$

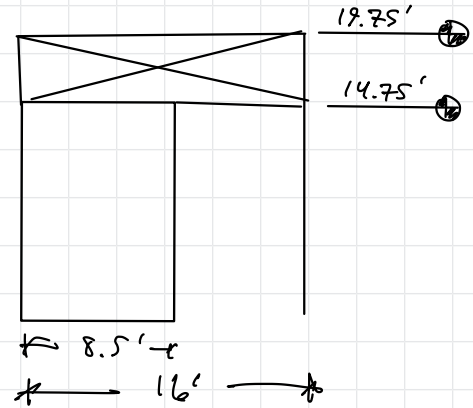
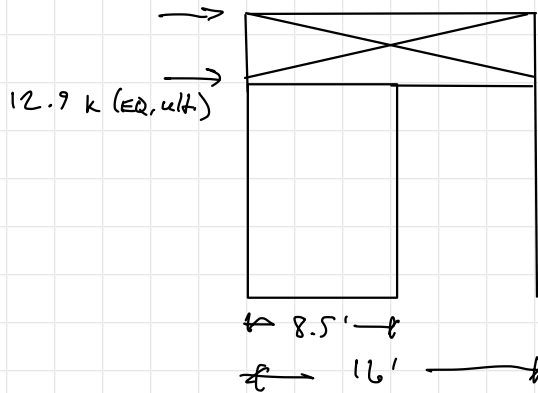
$$M_{res} = 0.458 \cdot 0.14 \text{ klf} \cdot \frac{(19.25)^2}{2} = 11.9 \text{ k-ft}$$

$$M_{diff} = \frac{84.8}{57.7} \text{ k-ft}$$

$$FD = \frac{84.8}{57.7} = \frac{4.6}{3.2} \text{ k w/ } \phi$$

SW2D

$$\frac{42.3 \text{ k}}{2} = 21.1 \text{ k (EQ, ult.)}$$



$$N_s = \frac{0.7 \cdot 34 \text{ k}}{17'}$$

$$= 1400 \text{ plf}$$

∴ Use 15/32 Steel-I Blocked (4-ply)  
 #8 @ 2" o.c.  
 43 mil Framing

$$\left. \begin{array}{l} \\ \\ \end{array} \right\} \frac{N_u}{\phi} = 788 \text{ plf} \times 2 = 1576 \text{ plf OK}$$

★ [Sheathing (2) Sides]

Global

scale by 2.5/1.8 for anchorage design

Local

$$M_{OT} = 0.7 \cdot 1.8 (21.1 \text{ k} \cdot 19.75' + 12.9 \text{ k} \cdot 14.75')$$

$$= 765 \text{ k-ft} / 2 = 383 \text{ k-ft} \quad 531.9 \text{ k-ft}$$

$$M_{OT} = 0.7 \cdot 1.8 \cdot 34 \text{ k} \cdot 14.75'$$

$$= 631.9 \text{ k-ft} / 2 = 316 \text{ k-ft} \quad 438.9 \text{ k-ft}$$

$$M_{res} = 0$$

$$M_{res} = 0$$

$$HD = \frac{531.9 \text{ k-ft}}{16'} = \frac{33.2}{27.9} \text{ k w/ } \perp$$

(ASD)

$$HD = \frac{438.9 \text{ k-ft}}{8'} = \frac{54.9}{39.5} \text{ k w/ } \perp$$

(ASD)

Global + Local

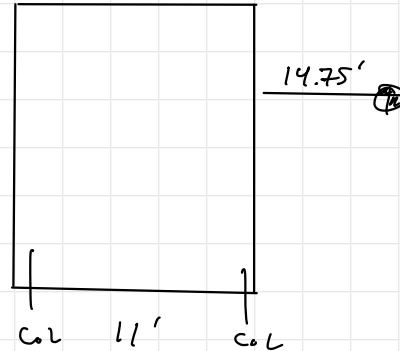
$$HD = \frac{33.2}{27.9} + \frac{54.9}{39.5} = \frac{88.1}{67.4} \text{ k w/ } \perp$$

(ASD)

SW21

$w_d = 0.14 \text{ klf}$

3.3 k  
→  
(EQ, rult)



$N_s = \frac{0.7 \cdot 3.3 \text{ k}}{11'}$

$= 206 \text{ plf}$

∴ Use 1 5/32 Strong I Blocked (4-ply) }  $\frac{N_u}{\phi} = 287 \text{ plf Ok}$   
 #8 @ 6" o.c.  
 33 mil Framing

scale by 2.5/1.8 for anchorage design

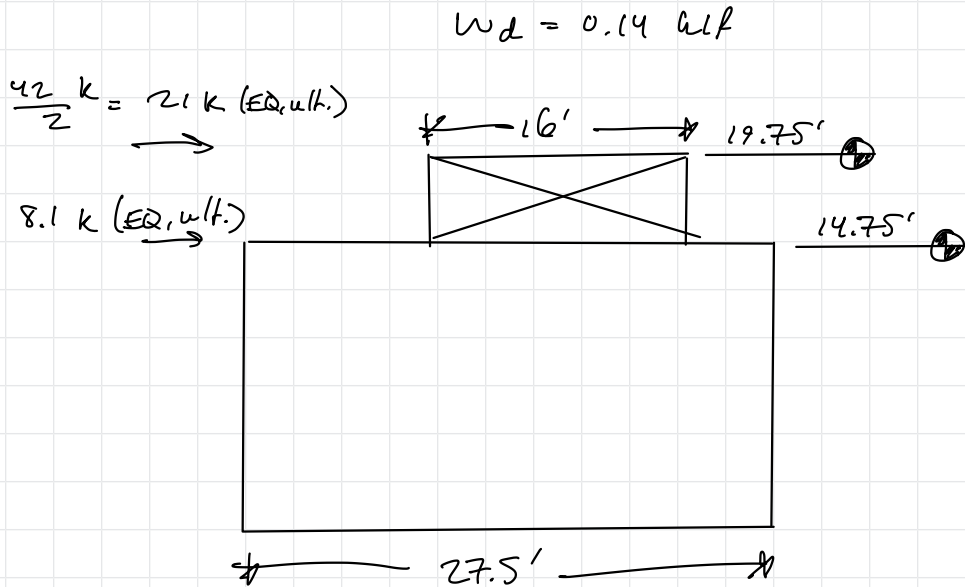
$M_{OT} = 0.7 \cdot 1.8 \cdot 3.3 \text{ k} \cdot 14.75' = 60.4 \text{ k-ft} \rightarrow 83.9 \text{ k-ft}$

$M_{res} = 0.458 \cdot 0.14 \text{ klf} \cdot \frac{(11')^2}{2} = 3.9 \text{ k-ft}$

$M_{diff} = \frac{80 \text{ k-ft}}{56.5} \text{ k-ft}$

$HD = \frac{80 \text{ k-ft}}{10'} = \frac{8}{56.5} \text{ k w/ } \phi$

SW22



$$N_s = \frac{0.7 \cdot 29.1k}{27.5'}$$

$$= 741 \text{ plf}$$

∴ Use 15/32 Stone-I Blocked (4-ply) #8 @ 2" o.c. 43 mil Framing scale by 2.5/1.8 for anchorage design }  $\frac{N_n}{\phi} = 788 \text{ plf Ok}$

L2

$$M_{OT} = 0.7 \cdot 1.8 \cdot 21 \text{ k} \cdot 5' \quad M_{OT} = 0.7 \cdot 1.8 (21 \text{ k} \cdot 19.75' + 8.1 \text{ k} \cdot 14.75')$$

$$= 132.3 \text{ k-ft} \quad 183.8 \text{ k-ft} \quad = 673.6 \text{ k-ft} \quad 935.6 \text{ k-ft}$$

$$M_{res} = 0$$

$$M_{res} = 0.458 \cdot 0.14 \text{ k/f} \cdot \frac{(27.5')^2}{2}$$

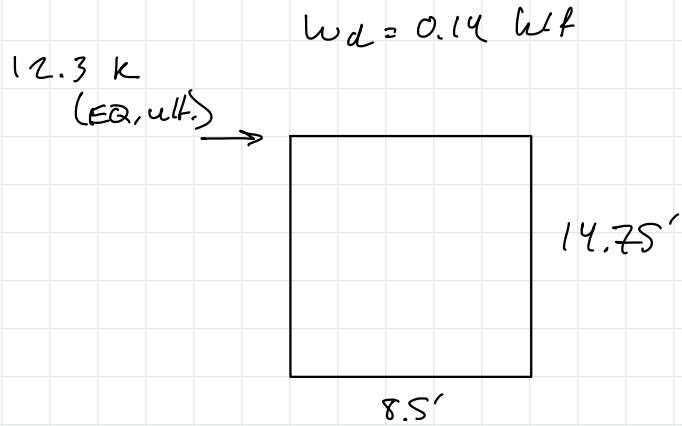
$$= 24.2 \text{ k-ft}$$

$$HD = \frac{183.8 \text{ k-ft}}{16} = \frac{11.5}{8.5} \text{ k w/ } \phi$$

$$M_{diff} = \frac{673.6}{911.4} \text{ k-ft}$$

$$HD = \frac{911.4}{26.5} = \frac{34.4}{29.5} \text{ k w/ } \phi$$

SW23



$$N_s = \frac{0.7 \cdot 12.3 \text{ k}}{8.5'}$$

$$= 1009 \text{ plf}$$

∴ Use  $1\frac{1}{2}$  Struc. I Blocked (4-ply) }  $\frac{N_u}{R} = 639 \times 2 = 1278$  plf Ok  
 #8 @ 3" o.c.  
 43 mil Framing  
 ↓  
 [Sheathing (2) Sides] scale by 2.5/1.8 for anchorage design

$$M_{OT} = 0.7 \cdot 1.8 \cdot 12.3 \text{ k} \cdot 14.75' = 227.6 \text{ k-ft} \quad \swarrow \quad 316.1 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.14 \text{ k/ft} \cdot \frac{(8.5')^2}{2} = 2.3 \text{ k-ft}$$

$$M_{diff} = \frac{313.8 \text{ k-ft}}{2.5} = 125.5 \text{ k-ft}$$

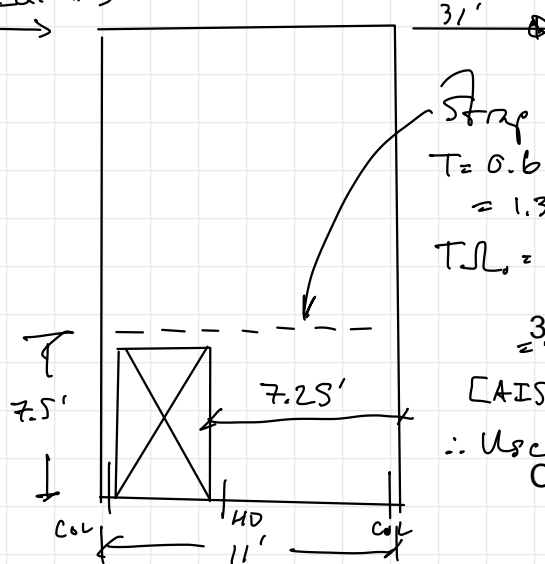
$$FD = \frac{313.8 \text{ k-ft}}{7.5} = 41.8 \text{ k w/ R}$$

SW24

2.2k (w, ult.)  
1.9k (EQ ult.)

$$V_s = \frac{0.7 \cdot 1.9k}{7.25' \cdot 0.71}$$

$$= 258 \text{ plf}$$



Strap  
 $T = 0.6 \cdot 2.2k = 1.3k$   
 $T_v = 0.7 \cdot 1.9k \times 1.825 = 2.3k$  Controls  
 [AISI S400 E1.3.3]  
 $\therefore$  Use ~~CS4~~ Strap ✓  
 CMSTC16

$$\left\{ \begin{array}{l} \text{Overall Aspect Ratio} = \frac{31'}{11'} = 2.82 \\ \text{Adjustment Factor} = \frac{2w}{h} = \frac{2 \cdot 11'}{31'} = 0.71 \end{array} \right.$$

$\therefore$  Use  $1\frac{1}{2}$  Steel I Blocked (4-Plly) }  $\frac{N_u}{\phi} = 287 \text{ plf}$  Ok  
 #8 @ 6" o.c.  
 33 mil Framing

[For HD design, EQ x  $\phi$  Controls Design]  
 scale by 2.5/1.8 for anchorage design

Global

$$M_{OT} = 0.7 \cdot 1.8 \cdot 1.9k \cdot 31' = 73.3 \text{ k-ft} \rightarrow 101.8 \text{ k-ft}$$

Local

$$M_{OT} = 0.7 \cdot 1.8 \cdot 1.9k \cdot 7.5' = 17.8 \text{ k-ft} \rightarrow 24.7 \text{ k-ft}$$

$M_{res} = 0$  assumed

$M_{res} = 0$

$$HD = \frac{101.8 \text{ k-ft}}{11} = \frac{9.3}{6.7} k \text{ w/ } \phi$$

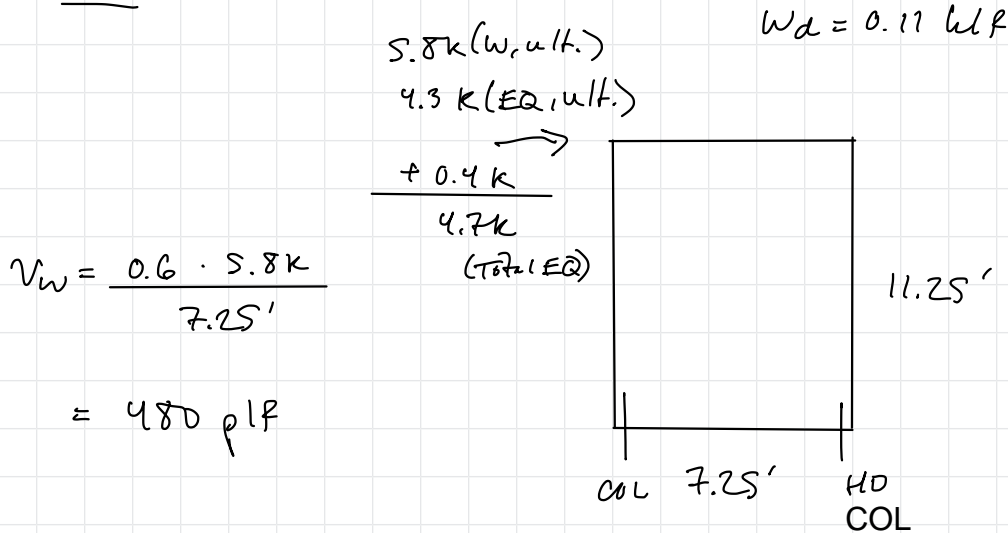
$$HD = \frac{24.7 \text{ k-ft}}{6.25} = \frac{4.0}{2.8} k \text{ w/ } \phi$$

S/HD8S  
~~S/HD11~~ OK

Global + Local

$$HD = \frac{9.3}{6.7} + \frac{4.0}{2.8} = \frac{13.3}{9.5} k \text{ w/ } \phi$$

SW2S



$$V_w = \frac{0.6 \cdot 5.8k}{7.25'}$$

$$= 480 \text{ plf}$$

∴ Use  $1\frac{1}{2}$  Steel-I Blocked (4-ply) }  $\frac{M_u}{\phi} = 639 \text{ plf Blk}$   
 #8 @ 3" o.c.  
 43 mil Framing

scale by 2.5/1.8 for anchorage design

[ For HD design, EQ x  $\phi$  Controls Design ]

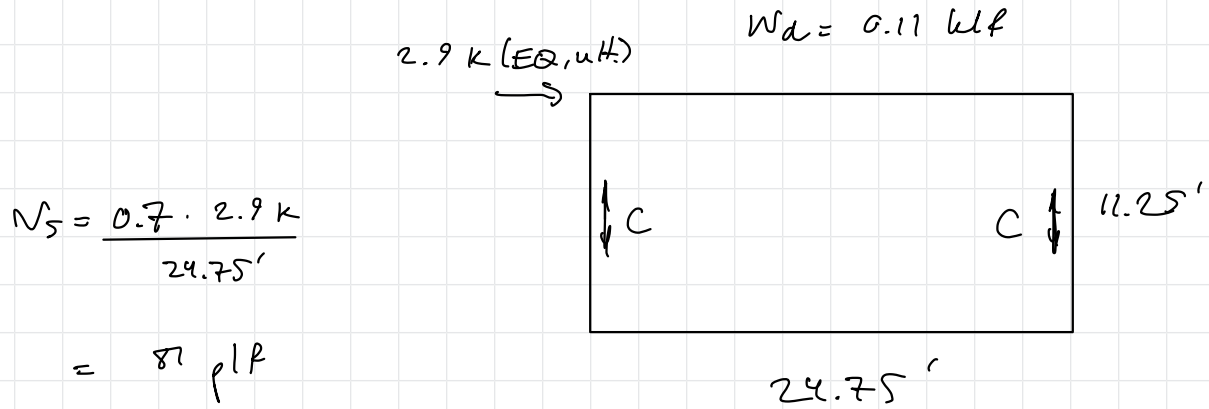
$$M_{OT} = 0.7 \cdot 1.8 \cdot 4.7k \cdot 11.25' = 66.6 \text{ k-ft } \rightarrow 92.5 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.11 \text{ klf} \cdot (7.25')^2 / 2 = 1.3 \text{ k-ft}$$

$$M_{diff} = \frac{91.2 \text{ k-ft}}{65} \text{ k-ft}$$

$$HD = \frac{91.2 \text{ k-ft}}{6.25'} = \frac{14.6}{6.25} \text{ k w/ } \phi$$

SW26



$$N_s = \frac{0.7 \cdot 2.9 \text{ k}}{24.75'}$$

$$= 81 \text{ plf}$$

∴ Use  $1\frac{5}{32}$  Steel I Blocked (4-ply) }  $\frac{N_u}{\phi} = 287 \text{ plf OK}$   
 #8 @ 6" o.c.  
 33 mil Framing

scale by 2.5/1.8 for anchorage design

$$M_{OT} = 0.7 \cdot 1.8 \cdot 2.9 \text{ k} \cdot 11.25' = 40.8 \text{ k-ft} \quad 56.7 \text{ k-ft}$$

$$M_{res} = 0.458 \cdot 0.11 \text{ klf} \cdot \left(\frac{24.75'}{2}\right)^2 = 15.4 \text{ k-ft}$$

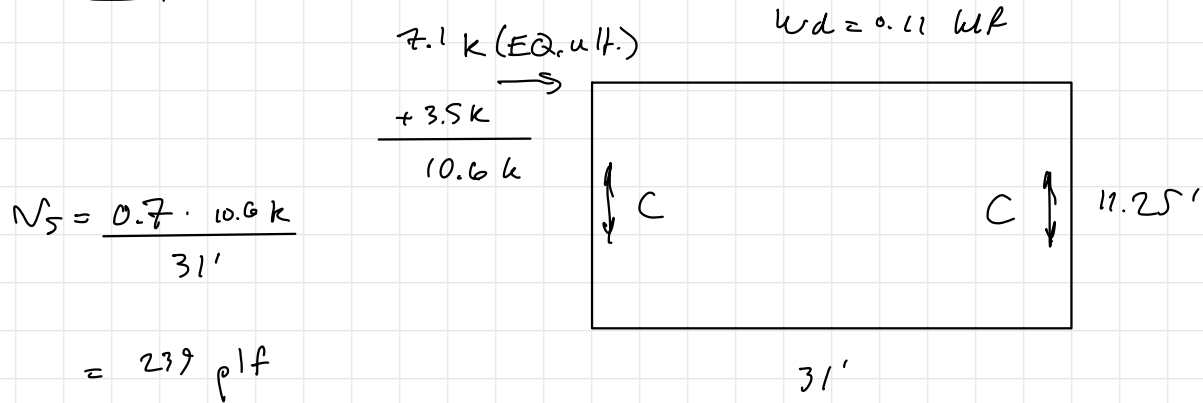
$$M_{diff} = \frac{41.3 \text{ k-ft}}{25.4} \text{ k-ft}$$

$$FD = \frac{41.3 \text{ k-ft}}{23.75'} = \frac{1.7}{1.1} \text{ k w/ } \Omega = C$$

↓  
 Per stud wall calcs,  $P_a = 3.2 \text{ k}$  each stud.  
 Typical Condition will have (2) Studs.  
 ∴  $P_a = 6.4 \text{ k OK}$   
 ∴ Use (2) Studs



SW27



$$N_s = \frac{0.7 \cdot 10.6 \text{ k}}{31'}$$

$$= 239 \text{ plf}$$

$\therefore$  Use  $1\frac{15}{32}$  Steel I Blocked (4-Ply)  
 #8 c 6" o.c.  
 33 mil Framing

$\left. \begin{array}{l} \\ \\ \end{array} \right\} \frac{N_u}{\phi} = 281 \text{ plf Ok}$

scale by 2.5/1.8 for anchorage design

$$M_{OT} = 0.7 \cdot 1.8 \cdot 10.6 \text{ k} \cdot 11.25' = 150 \text{ k-ft} \quad 208.3 \text{ k-ft}$$

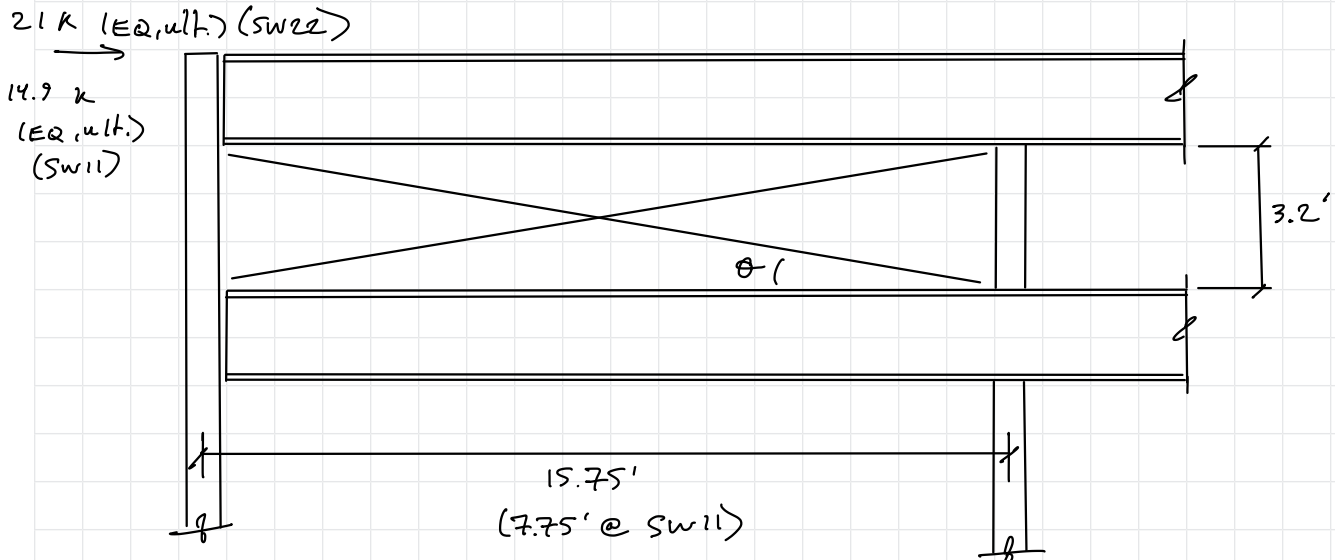
$$M_{res} = 0.458 \cdot 0.11 \text{ klf} \cdot \frac{(31')^2}{2} = 24.2 \text{ k-ft}$$

$$M_{diff} = \frac{184.1 \text{ k-ft}}{\cancel{150}} \text{ k-ft}$$

$$HD = \frac{184.1 \text{ k-ft}}{30} = \frac{6.1}{\cancel{4.2}} \text{ k w/ } \phi = C$$

↓  
 Per stud wall calcs,  $P_a = 3.2 \text{ k}$  each stud.  
 Typical Condition will have (2) Studs.  
 $\Rightarrow P_a = 6.4 \text{ k Ok}$   
 $\therefore$  Use (2) Studs

Typical Rod Bracing at Clerestory



45.75'

$$\theta = \tan^{-1} \left( \frac{3.2}{15.75} \right) = 11.5^\circ$$

$$T_{rod} = \frac{21 k}{\cos 11.5^\circ} = 21.4 k$$

$$\Omega T_{rod} = 2.5 \times 21.4 k = 53.6 k$$

$$A_s, req'd = \frac{53.6 k}{\phi \cdot F_y} = \frac{53.6 k}{0.9 \cdot 36 ksi} = 1.65 in^2 \quad (1\frac{1}{2}'' \phi A36 Min)$$

$$= \frac{53.6 k}{0.9 \cdot 50 ksi} = 1.19 in^2 \quad (1\frac{1}{4}'' \phi Gr. 50 Min)$$

7.75'

$$\theta = \tan^{-1} \left( \frac{3.2}{7.75} \right) = 22.4^\circ$$

$$L3\frac{1}{2} \times 3\frac{1}{2} \times \frac{3}{8} \Rightarrow A_g = 2.5 in^2 \quad (A36) OK$$

$$T_{rod} = \frac{14.9 k}{\cos 22.4^\circ} = 16.1 k < 21.4 k, \quad 15.75' \text{ bay is worst case}$$



Project: \_\_\_ WSF International Village  
 Subject: \_\_\_ Shear Wall Capacities  
 Originating Office:  Seattle  Tacoma  Portland

Job No: \_ 24-318  
 Name: \_ JMB  
 Date: \_\_\_ 2024-05-02

**ALLOWABLE SHEAR (PLF) FOR COLD FORMED STEEL STRUCTURAL PANEL SHEAR WALLS - WOOD SHEATHING**

15/32" STRUCT. 1 SHT'G - MIN. 18 GA. (43 MIL) STUDS													
Double or Single Sided Sht'g	Edge Attachment (in. O.C.)	Field Attachment (in. O.C.)	Allowable Shear (plf)	Seismic				Allow. Shear (plf)	Wind				
				5/8" Adhesive A.B. spacing (7" Embed Min.)		3/4" Adhesive A.B. spacing (7" Embed Min.)			5/8" Adhesive A.B. spacing (7" Embed Min.)		3/4" Adhesive A.B. spacing (7" Embed Min.)		
				Bottom Track		Bottom Track			Bottom Track		Bottom Track		
				43mil	54mil	43mil	54mil		43mil	54mil	43mil	54mil	
Single	#8 @ 6	#8 @ 12	<b>356 320</b>	32in. O.C.	32in. O.C.	32in. O.C.	32in. O.C.	<b>532</b>	16in. O.C.	32in. O.C.	#####	32in. O.C.	
Single	#8 @ 4	#8 @ 12	<b>532 479</b>	16in. O.C.	32in. O.C.	24in. O.C.	32in. O.C.	<b>705</b>	16in. O.C.	24in. O.C.	#####	24in. O.C.	
Single	#8 @ 3	#8 @ 12	<b>710 639</b>	16in. O.C.	24in. O.C.	16in. O.C.	24in. O.C.	<b>867</b>	8in. O.C.	16in. O.C.	8in. O.C.	24in. O.C.	
Single	#8 @ 2	#8 @ 12	<b>876 788</b>	8in. O.C.	16in. O.C.	8in. O.C.	24in. O.C.	<b>955</b>	8in. O.C.	16in. O.C.	8in. O.C.	16in. O.C.	

Capacities noted in green are for FRT plywood (0.9 reduction factor)

- Notes: 1. These values are for Type I shear walls that comply with AISI S400-15, Section E1.3.1.1 & AISI S240-15, Section B5.2.1  
 2. Maximum aspect ratio unless otherwise noted is 2:1  
 3. Shear walls shall be designed and installed in accordance with AISI S240-15 Section C3.6.1  
 4. Typical detail specified bottom track is 43mil or stud thickness, whichever is greater  
 5. A.B. capacities based on IBC 2018, Section 17.2.3.5.2  
 6. Per PCS Typical Detail - 3x3x1/4" Plate washer or track anchorage to concrete  
 7. If (2) sides shtg, add both together; if unequal materials, use the greater of 2x the weaker or 1x the stronger  
 \* Maximum Aspect Ratio 4:1

OT Anchorage Demands

(See SW Calcs)

- SW1 • Consider upward chord force on B5  $\Rightarrow$  See Emercalc.
- Consider uplift reactions @ Col. 5 & Col. 6  $\Rightarrow$  See Emercalc.

$$M_{OT} = \frac{70.1 \text{ k-ft}}{0.7} = 100.1 \text{ k-ft}$$

$$\frac{-2.9 \text{ k-ft Resist}}{97.2 \text{ k-ft}}$$

$$\div$$

$$8.5' = 11.4 \text{ k w/ } \Omega$$

- Grid 23 : G

$$\rightarrow \text{B4 Support RXN} = 1.49 \text{ k D} \times 0.6 = \underline{0.9 \text{ k}}$$

$$\text{Uplift}_{LRFD} = 11.4 - 0.9 \text{ k} = 10.5 \text{ k} \uparrow \text{ Design Anchorage w/ } \Omega$$

SW2 • HD Col Each End

$$\text{Uplift}_{LRFD} = \frac{26.1 \text{ k}}{0.7} = 37.3 \text{ k} \uparrow \text{ Design Anchorage w/ } \Omega$$

SW3 : SW4

- HD Col. Each End

$$\text{Uplift}_{LRFD} = \frac{\left( \frac{763.9}{0.7} - 28.2 \right)}{19.25} = 55.2 \text{ k} \uparrow$$

w/ Minimum Uplift Load

SW5 • LL Load

$$\text{Uplift LRFD} = \left( \frac{310.6}{0.7} - 2.9 \right) \div 8.5 = 51.9 \text{ k}$$

$$\text{• LL Bl. 6.1} = \frac{26.3 \text{ k}}{0.7} = 37.6 \text{ k}$$

• Grid G: 19.3

$$\Sigma = 89.5 \uparrow \text{ Design Anchorage w/ } \Omega$$

SW6 • Uplift (LRFD) =  $\left( \frac{267.8 \text{ k-ft}}{0.7} - 11.5 \right) \div 15.25' = 24.3 \text{ k } \uparrow$   
w/  $\Omega$

$$- (0.6 \times 16.6 \text{ k})$$

$$\frac{14.3 \text{ k } \uparrow}{\text{w/ } \Omega} \text{ Design Anchorage}$$

SW7 •  $\phi = 12.6 \text{ k}$  for C28

$$\text{• Uplift LRFD} = \frac{34.9 \text{ k}}{0.7} = 49.9 \text{ k} - 0.6 \cdot 12.6 \text{ k} = 42.3 \text{ k } \uparrow$$

w/  $\Omega$ .

Design Anchorage

SW8 : SW9

$$\text{• Uplift LRFD} = \frac{16.1 \text{ k}}{0.7} = 23 \text{ k } \uparrow$$

w/  $\Omega$   
Design Anchorage

SW10

$$\text{• Uplift LRFD} = \frac{20.1 \text{ k}}{0.7} = 28.7 \text{ k } \uparrow$$

w/  $\Omega$   
Design Anchorage  
w/ Minimal Dead Load

SW12 • 
$$Uplift_{LRFD} = \left( \frac{174.3 \text{ k-ft}}{0.7} - 9.3 \right) \div 16' = 15.0 \text{ k w/ft}$$
 Design Anchorage

SW13 • 
$$Uplift_{LRFD} = \left( \frac{309.7 \text{ k-ft}}{0.7} - 2.2 \right) \div 8' = 55 \text{ k w/ft}$$
 Design Anchorage

SW14 • 
$$Uplift_{LRFD} = \left( \frac{154.9 \text{ k-ft}}{0.7} - 39.3 \right) \div 39' = 5.4 \text{ k w/ft}$$

$C6, DL = 5.5 \text{ k} \times 0.6 = 3.3 \text{ k} \Rightarrow 5.4 - 3.3 = 2.1 \text{ k} \uparrow \text{ w/ft}$   
Design Anchorage

$C13, DL = 23 \text{ k} \times 0.6 = 13.8 \text{ k} > 5.4 \text{ k}$  No Uplift

SW15 • 
$$Uplift_{LRFD} = \left( \frac{1319.4 \text{ k-ft}}{0.7} - 65.3 \right) \div 37.75 = 48.2 \text{ k w/ft}$$

$C4, DL = 5.2 \text{ k} \times 0.6 = 3.1 \text{ k} \Rightarrow 48.2 - 3.1 = 45.1 \text{ k} \uparrow \text{ w/ft}$   
Design Anchorage

$C12, DL = 41.5 \text{ k} \times 0.6 = 24.9 \text{ k} \Rightarrow 48.2 - 24.9 = 23.3 \text{ k} \uparrow \text{ w/ft}$   
Design Anchorage

SW16 • 
$$Uplift_{LRFD} = \left( \frac{444.4 \text{ k-ft}}{0.7} - 19.2 \right) \div 20 = 30.8 \text{ k} \uparrow \text{ w/ft}$$
  
Use F4.0 for Downward Force

↳ Consider this loading on BS3 ↑ OK See Engr. calc.

BS3 RXN's • 
$$Uplift_{LRFD} \text{ @ Grid 19} = 12.8 \text{ k} \uparrow \text{ w/ft}$$

• 
$$Uplift_{LRFD} \text{ @ Grid 16.7} = 18 \text{ k} \uparrow \text{ w/ft}$$

↳ Consider Reaction on Beam 12 OK See Engr. calc.

$C20 \Rightarrow 0 = 17 \text{ k} \times 0.6 = 10.2 \text{ k} \Rightarrow 30.8 - 10.2 \Rightarrow 20.6 \text{ k Net Uplift w/ft}$   
Design Anchorage

SW17 •  $U_{LIFT} = \left( \frac{877 \text{ k-ft}}{0.7} - 20.6 \right) \div 20.75 = 59.4 \text{ k w/ft}$

CU DL =  $16.7 \text{ k} \times 0.6 = 10 \text{ k} \Rightarrow 59.4 - 10 = 49.4 \text{ k} \uparrow \text{ w/ft}$   
Design Anchorage

SW18 •  $U_{LIFT} = \left( \frac{175.4 \text{ k-ft}}{0.7} - 15.7 \right) \div 14.5' = 16.2 \text{ k} \uparrow \text{ w/ft}$   
Design Anchorage

CI R<sub>XN</sub>, DL =  $9.9 \text{ k} \times 0.6 = 5.9 \text{ k} \Rightarrow 16.2 \text{ k} - 5.9 \text{ k} = 10.3 \text{ k w/ft}$   
Design Anchorage

SW19 •  $U_{LIFT} = \left( \frac{96.7 \text{ k-ft}}{0.7} - 14.8 \right) \div 21.5' \Rightarrow 5.7 \text{ k} \uparrow \text{ w/ft}$

SW20 •  $U_{LIFT} = \frac{88.1 \text{ k}}{0.7} = 125.9 \text{ k}$   
Penetration In Floor

C33 R<sub>XN</sub>, DL =  $10 \text{ k} + 0.75 \cdot 12 \text{ k} = 19 \text{ k} \times 0.6 = 11.4 \text{ k}$

$\Rightarrow 125.9 \text{ k} - 11.4 \text{ k} = 114.5 \text{ k} \uparrow$

- Break into Local & Global Components

↳ Local:  $U_{LIFT} = \frac{54.9 \text{ k}}{0.7} = 78.4 \text{ k w/ft}$   
No DL Design Anchorage

↳ Global:  $U_{LIFT} = \frac{33.2 \text{ k}}{0.7} = 47.4 \text{ k w/ft}$

C31 R<sub>XN</sub>, DL =  $11.4 \text{ k} \Rightarrow 47.4 \text{ k} - 11.4 = 36 \text{ k} \uparrow \text{ w/ft}$   
Design Anchorage

SW21:  $U_{LIFT} = \left( \frac{83.9 \text{ k-ft}}{0.7} - 3.9 \right) \div 10' = 11.6 \uparrow \text{ w/ft}$   
Design Anchorage

SW22:  $U_{LIFT} = \left( \frac{935.6 \text{ k-ft}}{0.7} - 24.2 \right) \div 26.5 = 49.5 \text{ k} \uparrow \text{ w/ft}$   
Design Anchorage

SW23:  $U_{LIFT} = \left( \frac{316.1 \text{ k-ft}}{0.7} - 2.3 \right) \div 0.75 = 66.6 \text{ k} \uparrow \text{ w/ft}$  Design Anchorage  
 CU DL =  $28 \text{ k} \times 0.6 = 16.8 \text{ k} \Rightarrow 66.6 \text{ k} - 16.8 \text{ k} = 49.8 \text{ k} \uparrow \text{ w/ft}$  Design Anchorage



SW24 Refer to SW3: SW4 Calcs, by inspection, three forces  
control design.

At door jamb, 
$$U_{LRFD} = \frac{4.0 \text{ k}}{0.7} = 5.7 \text{ k} \rightarrow \text{Using Hold-down w/ } \phi \text{ LRFD}$$



Size Base Pl's for Uplift

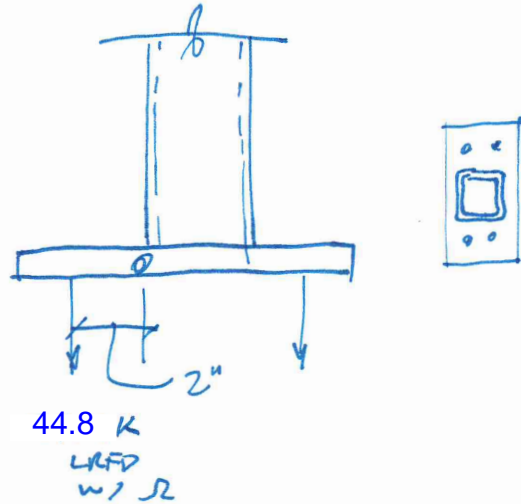
$$M_u = 44.8 \cdot 2''$$

$$= 89.6 \text{ k-in}$$

$$\phi_b M_n = F_y \frac{b d^2}{4} \cdot 0.9$$

$$= 50 \text{ ksi} \cdot \frac{5.5'' \cdot (1.25'')^2}{4} \cdot 0.9$$

$$= 96.7 \text{ k-in} > M_u \text{ OK}$$



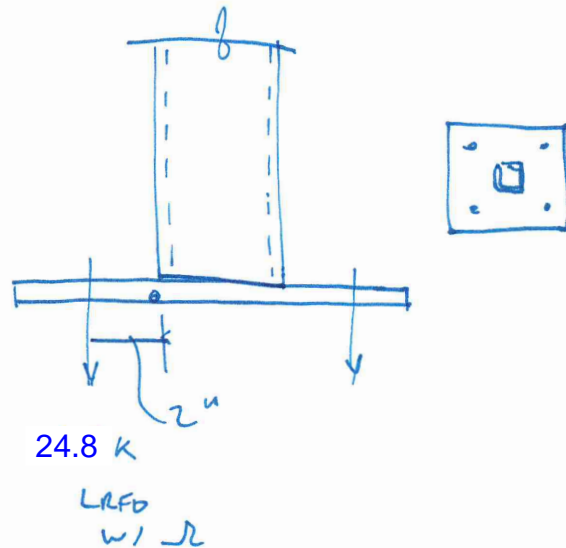
$$M_u = 24.8 \text{ K} \cdot 2''$$

$$= 49.6 \text{ k-in}$$

$$\phi_b M_n = F_y \frac{b d^2}{4} \cdot 0.9$$

$$= 36 \text{ ksi} \cdot \frac{13'' \cdot (3/4'')^2}{4} \cdot 0.9$$

$$= 59.2 \text{ k-in} > M_u \text{ OK}$$



Foundation OT - Based on OT Anchorage Calcs, the following SW's are of interest. Other SW's have minimal net OT: typical foundations provide sufficient resistance.

SW 2

25% Reduction  
[ASCE 7-16 (2.13.4)]

$$M_{OT} = \frac{364 \text{ k-ft}}{1.8} = 202.2 \text{ k-ft} \times 0.75 = 151.7 \text{ k-ft}$$

↑ Take out  $\Omega$  for FON checks.

$$M_{net} = 17 \text{ k-ft}$$

$$M_{diff} = 134.7 \text{ k-ft}$$

- Find Foundation Weight Required For OT

$$134.7 \text{ k-ft} = 0.458 \cdot \left[ \frac{w \cdot h^2}{2} + 0.25 \text{ klf} \cdot 8' \cdot h \right]$$

Perpendicular conversion footing weight.

$$\rightarrow w_{req} = 1.3 \text{ klf}$$

$\therefore$  Use 3' wide x 2' deep footing

SW3

$$M_{OT} = \left( \frac{0.75}{1.8} \right) \cdot 237.6 \text{ k-ft} = 99 \text{ k-ft}$$

ASD

$$M_{res} = 28.2 \text{ k-ft}$$

ASD

$$M_{d,RA} = 70.8 \text{ k-ft}$$

ASD

$$\Rightarrow 70.8 \text{ k-ft} = 0.458 \left[ \frac{w x^2}{2} + 0.25 \text{ klf} \cdot 5' \cdot x \right]$$

$20.25'$   $20.25'$

$$w_{req} = 0.63 \text{ klf}$$

SW4

$$M_{OT} = \left( \frac{0.75}{1.8} \right) \cdot 503 \text{ k-ft} = 209.6 \text{ k-ft}$$

$$M_{res} = 28.2 \text{ k-ft}$$

$$M_{diff} = 181.4 \text{ k-ft}$$

$$\Rightarrow 181.4 \text{ k-ft} = 0.458 \left[ \frac{w \ell^2}{2} + 0.25 w \ell \cdot 5' \cdot \ell \right]$$

$$w_{req} = 1.8 \text{ k/ft}$$

SW6

$$M_{OT} = \left( \frac{0.75}{1.8} \right) \cdot 192.8 \text{ k-ft} = 80.3 \text{ k-ft}$$

ASD

$$M_{res} = 11.5 \text{ k-ft}$$

ASD

$$M_{drp} = 68.8 \text{ k-ft} = 0.458 \left[ \frac{w k^2}{2} + 3.625 k \cdot \ell \right]$$

ASD

$16.25'$   $\swarrow$  FS.0 Footing Wt.  $\searrow$   $16.25'$

$$W_{req} = 0.7 \text{ klf}$$

SW7

$$M_{OT} = \left( \frac{0.7}{1.8} \right) \cdot 383 \text{ k-ft} = 148.9 \text{ k-ft}$$

$$M_{res} = 8.2 \text{ k-ft}$$

$$M_{diff} = 140.7 \text{ k-ft} = 0.458 \left[ \frac{w k^2}{2} + 3.628 k \cdot x \right]^{16'}$$

ES. 0 wt.

$$\rightarrow W_{req} = 1.95 \text{ WF}$$

SW8 : SW9

$$M_{OT} = \left( \frac{0.7}{1.8} \right) \cdot 134.8 \text{ k-ft} = 52.4 \text{ k-ft}$$

ASD

$$M_{net} = 4.9 \text{ k-ft}$$

ASD

$$M_{dipr} = 47.5 \text{ k-ft} = 0.458$$

ASD

$w_1$   
conventional ft. wt.

F4.0  
Isolated  
Footing wt

$$\times \left[ \frac{w_{req} \cdot (12.33')^2}{2} + \frac{2032 \text{ k}}{12.33'} \right]$$

$$w_{req} = 0.99 \text{ k/ft} + \text{F4.0 Footing Added}$$

SWID

$$M_{OT} = \left( \frac{0.7}{1.8} \right) \cdot 223 \text{ k-ft} = 86.7 \text{ k-ft}$$

$$M_{res} = 8.2 \text{ k-ft}$$

$$M_{diff} = 78.5 \text{ k-ft} = 0.458 \left[ w \frac{(16')^2}{2} + 2032 \text{ k} \cdot 16' \right]$$

↙ Eq. 0 wt.

$$w_{req} = 1.05 \text{ klf}$$



SW13

$$M_{OT} = \left( \frac{0.7}{1.8} \right) \cdot 223 \text{ k-ft} = 86.7 \text{ k-ft}$$

ASD

$$M_{res} = 2.2 \text{ k-ft}$$

ASD

$$M_{diff} = 84.5 \text{ k-ft} = 0.458 \left[ \frac{W \cdot 16^2}{2} \right]$$

ASD

✓ Try 16' grade beam

$$\Rightarrow W_{req} = 1.44 \text{ klf} \times 16' \text{ long grade beam}$$

SW12

$$M_{\text{top}} = \left( \frac{0.7}{1.8} \right) \cdot 125.5 \text{ k-ft} = 48.8 \text{ k-ft}$$

$$M_{\text{res}} = 9.3 \text{ k-ft}$$

$$M_{\text{diff}} = 39.5 \text{ k-ft} = 0.458 \left[ W_{\text{req}} \frac{(17')^2}{2} + 2.32 \text{ k} \cdot (17') \right]$$

Conventional Fly. F4.0 Fly. Wt

=

$$W_{\text{req}} = 0.32 \text{ k/ft} \quad \text{w/ F4.0 Footing}$$

SW11

$$M_{OT} = \left( \frac{0.7}{1.8} \right) \cdot 514.3 \text{ k-ft} = 200 \text{ k-ft}$$

$$M_{res} = 4.1 \text{ k-ft}$$

$$M_{dift} = 195.9 \text{ k-ft} = 0.458 \left[ w \cdot \left( \frac{20'}{2} \right)^2 \right] \therefore$$

↙ Try 20' long grade beam

$$\Rightarrow w_{req} = 2.1 \text{ klf in } 20' \text{ long grade beam}$$

SW 24

$$M_{OT} = \left( \frac{0.7}{1.8} \right) \cdot 73.3 \text{ k-ft} = 28.5 \text{ k-ft}$$

$$M_{NS} = 0 \text{ assumed}$$

$$M_{LIPF} = 28.5 \text{ k-ft} = 0.458 \left[ w \cdot \frac{(11)^2}{2} + 0.25 \text{ klf} \cdot 8' \cdot 11' \right]$$

Perpendicular  
 Cent.  
 FB.

$$\Rightarrow w_{eq} = 0.66 \text{ klf}$$

SW21

$$M_{OT} = \left( \frac{0.7}{1.8} \right) \cdot 60.4 \text{ k-ft} = 23.5 \text{ k-ft}$$

$$M_{res} = 3.7 \text{ k-ft}$$

$$M_{dofp} = 19.6 \text{ k-ft} = 0.458 \left[ \frac{0.25 \text{ kip (ft)}^2}{2} + X - 11' \right]$$

↙ Typical Ftg.
↘ Ftg. wt.

$$\Rightarrow X = 2.5 \text{ k}$$

4.0 Ftg.	+ Soil
	wt
2.3 k	ok
	> 0.2 k Ok

SW22

$$M_{OT} = \left( \frac{0.7}{1.8} \right) \cdot 673.6 \text{ k-ft} = 262 \text{ k-ft}$$

$$M_{res} = 29.2 \text{ k-ft}$$

$$M_{diA} = 237.8 \text{ k-ft} = 0.458 \left[ w \frac{(35.5)^2}{2} \right]$$

$$w_{req} = 0.82 \text{ k/ft @ grid H}$$

SW20

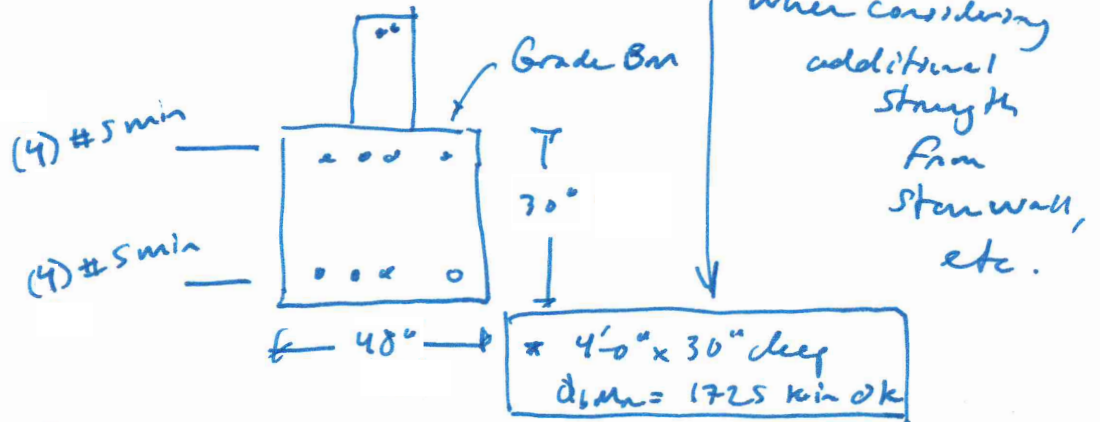
• Design Cont. Footing Along Grid O for Point Loads,

$f_p = 56.4 \text{ k Net w/ } \Omega \text{ LRFD}$

$M_{LRFD} = 56.4 \text{ k} \cdot \frac{1.5'}{1} = 134 \text{ k-ft}$   
 $= 1607 \text{ k-in}$

$\phi_b M_n = 0.9 A_s f_y \left( d - \frac{a}{2} \right)$  (0.31 x 3)  
 $= 0.9 \cdot A_s \cdot 60 \text{ ksi} \left( d - \frac{A_s f_y}{1.7 \cdot \rho' \cdot f_c'} \right)$  (0.31 x 3)  
 (0.31 x 3) 32" 60 ksi 4 ksi 36

$= 1595.6 \text{ k-in} \approx 1607 \text{ k-in}$  OK



$M_{OT_{ASD}} = \left( \frac{0.7}{1.5} \right) 383 \text{ k-ft} = 149 \text{ k-ft}$

$M_{diff_{ASD}} = 149 \text{ k-ft} \Rightarrow 0.458 \left[ 1.3 \text{ WLF} \cdot 9' \times 8' + 6.1 \text{ k} \cdot 16' \right]$   
 $= 234 \text{ k-ft}$  (OK)  
 (035 + 036 RxN)

SW17

$$M_{OT} = \left(\frac{0.7}{1.8}\right) 631.5 \text{ k-ft} = 248.6 \text{ k-ft}$$

$$M_{res} = 20.6 \text{ k-ft}$$

$$M_{diff} = 225 \text{ k-ft} = 0.458 \left[ \frac{0.25 (21.75)^2}{2} + 3 \text{ k} \cdot 21.75' + 16.67 \text{ k} \cdot 21.75' \right]$$

Conv. Footing      P1.5 Footing  
 ↑  
 C11 RKN

$$= 223 \text{ k-ft} \approx 225 \text{ k-ft}$$

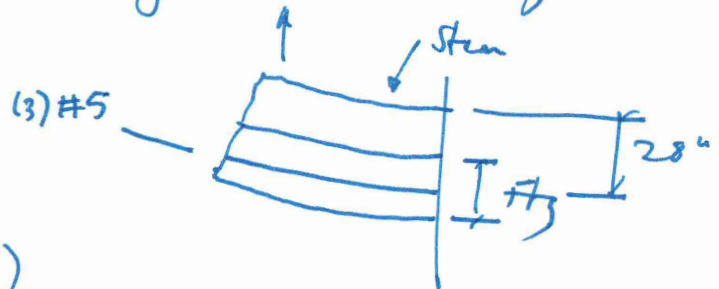
OK Considering add'l slab weight, stem wall weight etc.

Check Point Load @ End @ Grid 21.5.

$$P_P = 42.5 \text{ k} \cdot 2.25' = 95.6 \text{ k-ft}$$

$$= 1147.5 \text{ k-in}$$

Try 3'-0" wide x 24" deep for negative flexure strength



$$\phi_b M_n = 0.7 A_s f_y \left( d - \frac{a}{2} \right)$$

$$= 0.7 \cdot 0.93 \text{ in}^2 \cdot 560 \text{ ksi} \left( 28 \text{ in} - \frac{0.43 \text{ in}^2 \cdot 60}{1.7 \cdot 4 \text{ ksi} \cdot 14 \text{ in}} \right)$$

$$= 1377 \text{ k-in} \text{ OK}$$

> P<sub>P</sub>



SW16

$$M_{OT} = \left( \frac{0.7}{1.8} \right) \cdot 320 \text{ k-ft} = 124.4 \text{ k-ft}$$

$$M_{res} = 19.2 \text{ k-ft}$$

$$M_{dist} = 105.2 \text{ k-ft} = 0.458 \left[ \frac{0.25 \text{ klf} (32)^2}{2} + 203 \text{ k} \cdot 32' + 0.25 \text{ klf} \times 8' \times 32' \right]$$

$$= 121 \text{ k-ft OK}$$

Rep. Footing

44.0 wt

x 8'

x 32'

SWS

$$M_{OT} = 0.7 (15.9k \cdot 12.75' + 8.9k \cdot 14.75') = 311.7k-ft$$

ASD

Try 2'x2' Grade Beam  $\Rightarrow$  650 plf weight.

$$M_{res} = 0.458 \left[ \frac{0.65 \text{ klf} \cdot (32')^2}{2} \right] = 152 \text{ k-ft}$$

ASD

$$0.458 \left[ \begin{matrix} + \\ 3.6k \cdot 32' \end{matrix} \right] = 53 \text{ k-ft}$$

↑

$$0.458 \left[ \begin{matrix} F5.0 + \\ 23k \cdot 32' \end{matrix} \right] = 337 \text{ k-ft}$$

↑

43 RYN

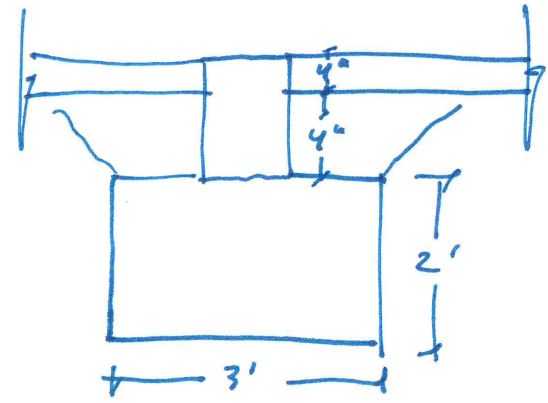
542 k-ft OK

Use 2'x2' Grade Beam.

Grade Beam Weights per Linear Foot  
(Foundation / Stem Wall)

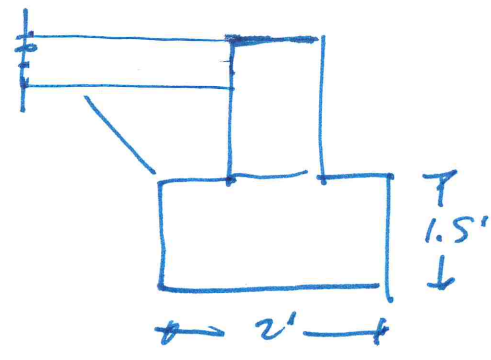
o 3' wide x 2' deep (Interior)

$$\begin{aligned}
 2 \times 3 \times 145 &= 870 \\
 0.5 \times 0.67 \times 145 &= 49 \\
 0.33 \times 2.5 \times 125 &= 103 \\
 0.37 \times 6 \times 145 &= 287 \\
 \hline
 &1309 \text{ plf}
 \end{aligned}$$



o 2' wide x 18" deep (Exterior)

$$\begin{aligned}
 2 \times 1.5 \times 145 &= 435 \\
 0.5 \times 0.67 \times 145 &= 49 \\
 0.33 \times 3 \times 145 &= 144 \\
 0.33 \times 0.75 \times 125 &= 31 \\
 \hline
 &659 \text{ plf}
 \end{aligned}$$



o 4' x 2.5' (Exterior)

$$\begin{aligned}
 4 \times 2.5 \times 145 &= 1450 \\
 0.5 \times 0.67 \times 145 &= 49 \\
 0.33 \times 4 \times 145 &= 192 \\
 0.33 \times 1.75 \times 125 &= 72 \\
 \hline
 &1.76 \text{ kip}
 \end{aligned}$$

• 2.5' x 2'

$$\begin{array}{rcl}
 2.5 \times 2 \times 145 & = & 725 \\
 0.5 \cdot 0.67 \cdot 145 & = & 49 \\
 0.33 \cdot 3 \times 145 & = & 144 \\
 1 \times 0.33 \times 125 & = & 41 \\
 \hline
 & & 0.96 \text{ wtf}
 \end{array}$$

• 6' x 2.5' Deep


$$\begin{array}{rcl}
 6 \times 2.5 \cdot 145 & = & 2175 \\
 0.5 \times 0.67 \cdot 145 & = & 49 \\
 0.33 \times 3 \times 145 & = & 144 \\
 2.75 \cdot 0.33 \cdot 125 & = & 113 \\
 \hline
 & & 2481 \text{ p17}
 \end{array}$$

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Company:	PCS Structural Solutions	Page:	1
Address:		Specifier:	JMB
Phone   Fax:		E-Mail:	
Design:	Typical Column Anchorage at Spread Footing	Date:	5/3/2024
Fastening point:			

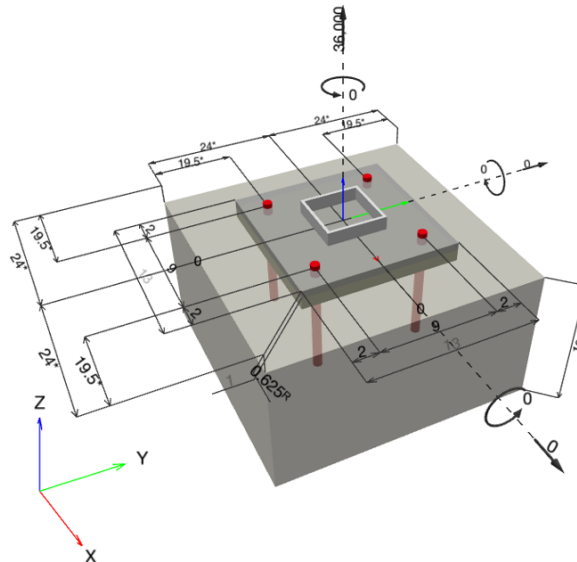
**Specifier's comments:**

**1 Input data**

<b>Anchor type and diameter:</b>	<b>Hex Head ASTM F 1554 GR. 55 3/4</b>	
Item number:	not available	
Effective embedment depth:	$h_{ef} = 8.000$ in.	
Material:	ASTM F 1554	
Evaluation Service Report:	Hilti Technical Data	
Issued   Valid:	-   -	
Proof:	Design Method ACI 318-14 / CIP	
Stand-off installation:	without clamping (anchor); restraint level (anchor plate): 2.00; $e_b = 1.000$ in.; $t = 0.625$ in. Hilti Grout: CB-G EG, epoxy, $f_{c,Grout} = 14,939$ psi	
Anchor plate <sup>R</sup> :	$l_x \times l_y \times t = 13.000$ in. x $13.000$ in. x $0.625$ in.; (Recommended plate thickness: not calculated)	
Profile:	Square HSS (AISC), HSS5X5X.250; (L x W x T) = $5.000$ in. x $5.000$ in. x $0.250$ in.	
Base material:	cracked concrete, 4000, $f_c' = 4,000$ psi; $h = 12.000$ in.	
Reinforcement:	tension: condition A, shear: condition A; edge reinforcement: none or < No. 4 bar	
Seismic loads (cat. C, D, E, or F)	Tension load: yes (17.2.3.4.3 (d)) Shear load: yes (17.2.3.5.3 (c))	

<sup>R</sup> - The anchor calculation is based on a rigid anchor plate assumption.

**Geometry [in.] & Loading [lb, in.lb]**





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Company:	PCS Structural Solutions	Page:	2
Address:		Specifier:	JMB
Phone   Fax:		E-Mail:	
Design:	Typical Column Anchorage at Spread Footing	Date:	5/3/2024
Fastening point:			

---

## 1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 36,000; $V_x = 0$ ; $V_y = 0$ ; $M_x = 0$ ; $M_y = 0$ ; $M_z = 0$ ;	yes	99



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Design:	Typical Column Anchorage at Spread Footing	Date:	5/3/2024
Fastening point:			

### 2 Proof I Utilization (Governing Cases)

Loading	Proof	Design values [lb]		Utilization	Status
		Load	Capacity	$\beta_N / \beta_V$ [%]	
Tension	Concrete Breakout Failure	36,000	36,525	99 / -	OK
Shear	-	-	-	- / -	N/A

Loading	$\beta_N$	$\beta_V$	$\zeta$	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	-	-	-	-	N/A

### 3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

**Fastening meets the design criteria!**



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Company:	PCS Structural Solutions	Page:	4
Address:		Specifier:	JMB
Phone   Fax:		E-Mail:	
Design:	Typical Column Anchorage at Spread Footing	Date:	5/3/2024
Fastening point:			

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#### 4 Remarks; Your Cooperation Duties

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Company:	PCS Structural Solutions	Page:	1
Address:		Specifier:	JMB
Phone   Fax:		E-Mail:	
Design:	Typical Column Anchorage at Top Of Stem Wall	Date:	5/3/2024
Fastening point:			

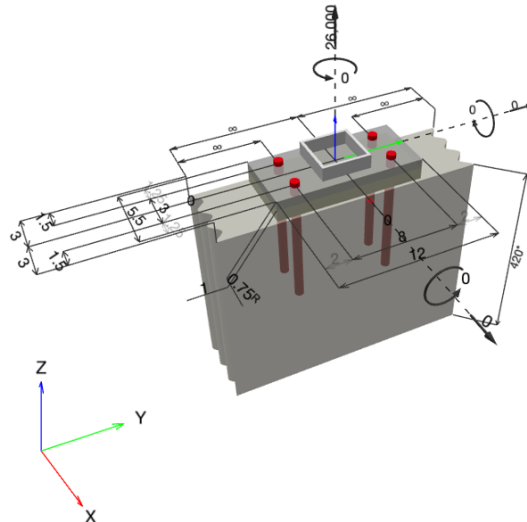
**Specifier's comments:**

**1 Input data**

<b>Anchor type and diameter:</b>	<b>Hex Head ASTM F 1554 GR. 55 3/4</b>	
Item number:	not available	
Additional plate or washer (17.4.2.8):	$d_{plate} = 0.100$ in., $t_{plate} = 0.100$ in.	
Effective embedment depth:	$h_{ef} = 9.000$ in., $h_{ef,17.4.2.8} = 0.000$ in.	
Material:	ASTM F 1554	
Evaluation Service Report:	Hilti Technical Data	
Issued   Valid:	-   -	
Proof:	Design Method ACI 318-14 / CIP	
Stand-off installation:	without clamping (anchor); restraint level (anchor plate): 2.00; $e_b = 1.000$ in.; $t = 0.750$ in. Hilti Grout: CB-G EG, epoxy, $f_{c,Grout} = 14,939$ psi	
Anchor plate <sup>R</sup> :	$l_x \times l_y \times t = 5.500$ in. x 12.000 in. x 0.750 in.; (Recommended plate thickness: not calculated)	
Profile:	Square HSS (AISC), HSS4X4X.25; (L x W x T) = 4.000 in. x 4.000 in. x 0.250 in.	
Base material:	cracked concrete, 4000, $f_c' = 4,000$ psi; $h = 420.000$ in.	
Reinforcement:	tension: condition A, shear: condition A; anchor reinforcement: tension edge reinforcement: > No. 4 bar	
Seismic loads (cat. C, D, E, or F)	Tension load: yes (17.2.3.4.3 (d)) Shear load: yes (17.2.3.5.3 (c))	

<sup>R</sup> - The anchor calculation is based on a rigid anchor plate assumption.

**Geometry [in.] & Loading [lb, in.lb]**





# Hilti PROFIS Engineering 3.0.94

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Company:	PCS Structural Solutions	Page:	2
Address:		Specifier:	JMB
Phone   Fax:		E-Mail:	
Design:	Typical Column Anchorage at Top Of Stem Wall	Date:	5/3/2024
Fastening point:			

---

## 1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 26,000; V <sub>x</sub> = 0; V <sub>y</sub> = 0; M <sub>x</sub> = 0; M <sub>y</sub> = 0; M <sub>z</sub> = 0;	yes	100



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Company:	PCS Structural Solutions	Page:	3
Address:		Specifier:	JMB
Phone   Fax:		E-Mail:	
Design:	Typical Column Anchorage at Top Of Stem Wall	Date:	5/3/2024
Fastening point:			

### 2 Proof I Utilization (Governing Cases)

Loading	Proof	Design values [lb]		Utilization	Status
		Load	Capacity	$\beta_N / \beta_V$ [%]	
Tension	Pullout Strength	6,500	10,987	60 / -	OK
Shear	-	-	-	- / -	N/A

Loading	$\beta_N$	$\beta_V$	$\zeta$	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	-	-	-	-	N/A

### 3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

**Fastening meets the design criteria!**



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Company:	PCS Structural Solutions	Page:	4
Address:		Specifier:	JMB
Phone   Fax:		E-Mail:	
Design:	Typical Column Anchorage at Top Of Stem Wall	Date:	5/3/2024
Fastening point:			

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Company:	PCS Structural Solutions	Page:	1
Address:		Specifier:	JMB
Phone   Fax:		E-Mail:	
Design:	Increased Depth Column Anchorage at Spread Footi	Date:	5/6/2024
Fastening point:			

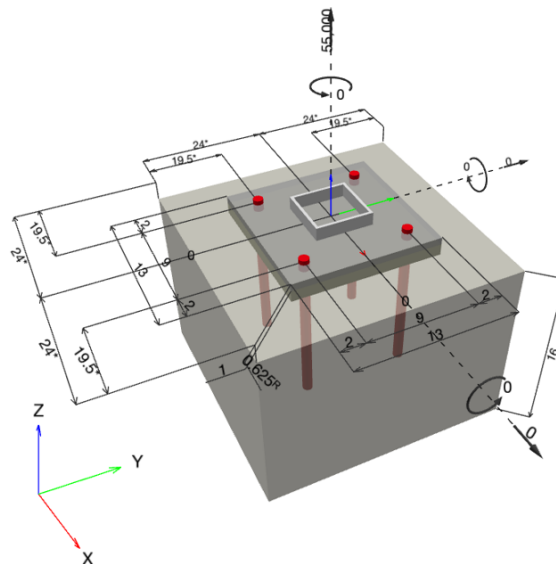
**Specifier's comments:**

**1 Input data**

<b>Anchor type and diameter:</b>	<b>Hex Head ASTM F 1554 GR. 55 7/8</b>	
Item number:	not available	
Effective embedment depth:	$h_{ef} = 12.000$ in.	
Material:	ASTM F 1554	
Evaluation Service Report:	Hilti Technical Data	
Issued   Valid:	-   -	
Proof:	Design Method ACI 318-14 / CIP	
Stand-off installation:	without clamping (anchor); restraint level (anchor plate): 2.00; $e_b = 1.000$ in.; $t = 0.625$ in. Hilti Grout: CB-G EG, epoxy, $f_{c,Grout} = 14,939$ psi	
Anchor plate <sup>R</sup> :	$l_x \times l_y \times t = 13.000$ in. x $13.000$ in. x $0.625$ in.; (Recommended plate thickness: not calculated)	
Profile:	Square HSS (AISC), HSS5X5X.250; (L x W x T) = $5.000$ in. x $5.000$ in. x $0.250$ in.	
Base material:	cracked concrete, 4000, $f_c' = 4,000$ psi; $h = 16.000$ in.	
Reinforcement:	tension: condition A, shear: condition A; edge reinforcement: none or < No. 4 bar	
Seismic loads (cat. C, D, E, or F)	Tension load: yes (17.2.3.4.3 (d)) Shear load: yes (17.2.3.5.3 (c))	

<sup>R</sup> - The anchor calculation is based on a rigid anchor plate assumption.

**Geometry [in.] & Loading [lb, in.lb]**





**Hilti PROFIS Engineering 3.0.94**

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Company:	PCS Structural Solutions	Page:	2
Address:		Specifier:	JMB
Phone   Fax:		E-Mail:	
Design:	Increased Depth Column Anchorage at Spread Footi	Date:	5/6/2024
Fastening point:			

---

**1.1 Design results**

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 55,000; V <sub>x</sub> = 0; V <sub>y</sub> = 0; M <sub>x</sub> = 0; M <sub>y</sub> = 0; M <sub>z</sub> = 0;	yes	99



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Company:	PCS Structural Solutions	Page:	3
Address:		Specifier:	JMB
Phone   Fax:		E-Mail:	
Design:	Increased Depth Column Anchorage at Spread Footi	Date:	5/6/2024
Fastening point:			

## 2 Proof I Utilization (Governing Cases)

Loading	Proof	Design values [lb]		Utilization	Status
		Load	Capacity	$\beta_N / \beta_V$ [%]	
Tension	Concrete Breakout Failure	55,000	55,939	99 / -	OK
Shear	-	-	-	- / -	N/A

Loading	$\beta_N$	$\beta_V$	$\zeta$	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	-	-	-	-	N/A

## 3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

**Fastening meets the design criteria!**



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Company:	PCS Structural Solutions	Page:	4
Address:		Specifier:	JMB
Phone   Fax:		E-Mail:	
Design:	Increased Depth Column Anchorage at Spread Footi	Date:	5/6/2024
Fastening point:			

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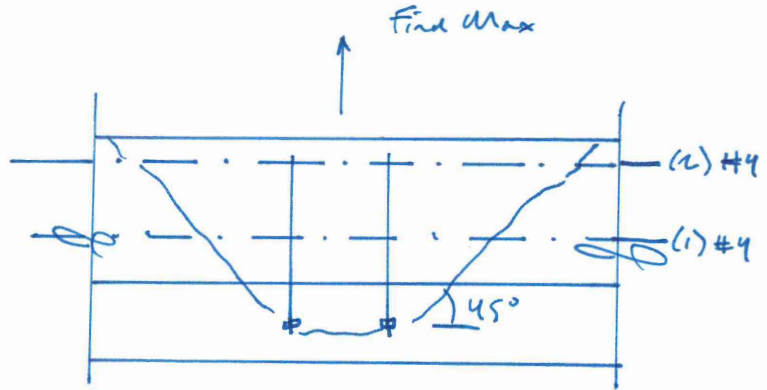
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Uplift where Anchors Extended Into Fly.

2x  
(3) #4 bars (horizontal)  
cross the breakout  
plane.  
- Shear Friction



$$\begin{aligned} \phi V_n &= A_{vf} f_y (\mu \sin \alpha + \cos \alpha) \\ &= 2.75 \cdot 2 \times 3 \times 0.2 \text{ in}^2 \cdot 60 \text{ ksi} (1.4 \sin 45 + \cos 45) \\ &= 91.6 \text{ k} = \text{Max Uplift (Some Verticals may also engage)} \end{aligned}$$

$$\begin{aligned} \phi T_n &= 0.75 \cdot 0.75 \cdot F_u \cdot A_f \cdot 4 \text{ bolts} \\ &= 0.75 \cdot 0.75 \cdot 75 \text{ ksi} \cdot 0.4 \text{ in}^2 \cdot 4 \text{ bolts} \\ &= 74 \text{ k OK,} \end{aligned}$$

{ Need up to 90 k @ SW5  
79 k @ SW20  
⇒ Use 7/8"  $\phi$  Anchors

$$\phi T_n = 0.75 \cdot 0.75 \cdot 75 \text{ ksi} \cdot 0.6 \text{ in}^2 \cdot 4 \text{ bolts} = 101.3 \text{ k OK}$$

WSF International Village
24318
JMB
2024-04-16
Diaphragm Calculations

\*Compare calculated diaphragm unit shears to attached diaphragm capacities

Location	Diaphragm Length (ft)	ELF Load (K)	Fp,min Factor	Load Factor (ASD)	25% Increase/Omega per ASCE 7-16 12.3.3.4	Unit Shear (plf, ASD)	Notes
SW1	32	6.0	1.34	0.7	1.25	219	
SW2 Left	19.75	10.6	1.34	0.7	1.25	629	
SW2 Right	19.75	4.0	1.34	0.7	1.25	237	
SW3 Left	22.75	4.0	1.34	0.7	1.25	205	
SW3 Right	4.75	3.0	1.34	0.7	1.25	738	
SW4 Left	4.75	3.0	1.34	0.7	1.25	738	
SW4 Right	22.75	14.3	1.34	0.7	1.25	735	
SW5 Left	32	8.9	1.34	0.7	2.5	648	
SW5 Right	24.5	14.3	1.34	0.7	1.25	683	
SW5 Left (Upper Diaph.)	33	1.5	1.34	0.7	1.25	53	
SW6 Left	56	20.6	1.34	0.7	1.25	430	
SW6 Right	56	7.0	1.34	0.7	1.25	146	
SW7 Left	16	7.0	1.34	0.7	1.25	511	
SW7 Right (Lower Diaph.)	24	3.9	1.34	0.7	1.25	189	
SW7 Right (Upper Diaph.)	16	5.5	1.34	0.7	1.25	402	
SW8 Left	12.33	3.9	1.34	0.7	1.25	367	
SW8 Right	10	3.1	1.34	0.7	1.25	365	
SW9 Left	10	3.1	1.34	0.7	1.25	365	
SW9 Right	12.33	4.1	1.34	0.7	1.25	391	
SW10 Left	27.5	9.5	1.34	0.7	2.5	807	
SW10 Right	8.5	1.9	1.34	0.7	1.25	258	
SW11 Left	14	4.4	1.34	0.7	1.25	365	
SW11 Right	24	3.4	1.34	0.7	1.25	164	
SW11 Left (Upper Diaph.)	40	8.3	1.34	0.7	1.25	241	
SW11 Right (Upper Diaph.)	32	6.6	1.34	0.7	1.25	242	
SW12 Left	17	3.4	1.34	0.7	1.25	232	
SW12 Right	17	3.4	1.34	0.7	1.25	232	
SW13 Left	36	9.5	1.34	0.7	2.5	617	
SW13 Right	3.5	1.9	1.34	0.7	1.25	626	
SW14	35	6.0	1.34	0.7	1.25	200	
SW15 Plan South	35	6.0	1.34	0.7	1.25	200	
SW15 Plan North	35.75	13.4	1.34	0.7	1.25	437	
SW15 Plan South (Upper Diaph.)	32	7.8	1.34	0.7	1.25	283	
SW16	21	8.0	1.34	0.7	1.25	445	
SW17 Plan South	67.5	15.4	1.34	0.7	1.25	266	
SW17 Plan North	67.5	10.1	1.34	0.7	2.5	351	
SW18	62.75	16.8	1.34	0.7	1.25	312	
SW19	69.5	12.6	1.34	0.7	1.25	212	
SW20 Plan South	64	15.4	1.34	0.7	1.25	281	
SW20 Plan North	64	11.3	1.34	0.7	1.25	205	
SW20 Plan North (Upper Diaph.)	32	5.9	1.34	0.7	1.25	215	
SW21 Plan South	16	1.6	1.34	0.7	1.25	119	
SW21 Plan North	16	1.6	1.34	0.7	1.25	119	
SW22 Plan South	32	6.5	1.34	0.7	1.25	237	
SW22 Plan North	32	13.4	1.34	0.7	1.25	488	
SW22 Plan South (Upper Diaph.)	32	7.8	1.34	0.7	1.25	283	
SW23	22.75	12.3	1.34	0.7	1.25	629	
SW24	10.5	1.9	1	0.7	1.25	156	Seismic Controlled
SW25 Plan South	10.5	2.8	1	0.7	1.25	229	Seismic Controlled
SW25 Plan North	10.5	1.5	1	0.7	1.25	125	Seismic Controlled
SW26	24	2.9	1	0.7	1.25	105	
SW27 Left	31	4.4	1	0.7	1.25	123	
SW27 Right	31	2.8	1	0.7	1.25	78	
SW3 High Roof	19.75	1.6	1	0.7	1.25	72	
SW4 High Roof Left	19.75	1.1	1	0.7	1.25	50	
SW4 High Roof Right	19.75	1.6	1	0.7	1.25	72	
SW15 High Roof Plan South	14	2.6	1	0.7	1.25	163	Seismic Controlled
SW15 High Roof Plan North	16	2.4	1	0.7	1.25	130	Seismic Controlled
SW16 High Roof	22	3.1	1	0.7	1.25	123	Seismic Controlled

## 20 ga PLN3™ Grade 50 Roof Deck

### Seismic Diaphragm Shear

For Both Ends Lapped Deck



5/8" Visible Dia. Arc Spot Weld Connections to Supports

32 / 5 / 3 Perpendicular Connection Pattern to Supports

PunchLok® Connection (VSC2) Sidelap Connections

Note: Support welds at interlocking sidelaps may be 3/8" x 1 1/4" arc seam welds in lieu of arc spot welds.

A992 GR50 Support Member or Equivalent

0.4 ≤ Support Thickness (in.)

3 in. Minimum Deck End Bearing Length

#### ASD Allowable Seismic Diaphragm Shear Strength $S_n/\Omega$ (plf)

2 Span Condition

Sidelap Connection Spacing (in.)	Span								
	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"
4	1068	1068	1068	1068	1068	1068	1068	874	708
6	1068	1068	1068	1068	1068	1068	1068	874	708
8	1068	1068	1068	1068	1068	1068	1068	874	708
12	1068	1042	1001	976	958	946	936	874	708
18	978	830	839	773	726	747	715	690	708
24	812	707	651	616	593	576	563	553	545
36	812	549	534	524	437	444	449	400	408

#### Average Connection Spacing to Supports at Parallel Chords & Collectors (in.)

Sidelap Connection Spacing (in.)	Span								
	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"
4	6	6	6	6	6	6	6	6	6
6	9	9	9	9	9	9	9	9	9
8	12	12	12	12	12	12	11	12	12
12	12	12	12	13	13	13	14	14	17
18	16	14	16	17	18	17	18	18	17
24	16	18	19	20	21	21	21	24	24
36	16	24	24	24	29	28	27	31	30

#### Seismic or Wind Diaphragm Shear Stiffness, $G'$ (kip/in.)

2 Span Condition

Sidelap Connection Spacing (in.)	Span								
	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"
4	208	206	205	204	204	204	204	204	203
6	190	187	186	185	184	184	184	183	183
8	177	173	171	170	169	168	167	167	167
12	158	152	149	147	145	144	143	143	142
18	145	132	133	127	122	124	121	118	121
24	128	118	113	109	107	105	103	102	101
36	128	102	100	99	88	88	89	82	83

# 20 ga PLN3™ Grade 50 Roof Deck

## Wind Diaphragm Shear

For Both Ends Lapped Deck



5/8" Visible Dia. Arc Spot Weld Connections to Supports

32 / 5 / 3 Perpendicular Connection Pattern to Supports

PunchLok II Connection (VSC2) Sidelap Connections

Note: Support welds at interlocking sidelaps may be 3/8" x 1 1/4" arc seam welds in lieu of arc spot welds.

A992 GR50 Support Member or Equivalent

0.4 ≤ Support Thickness (in.)

3 in. Minimum Deck End Bearing Length

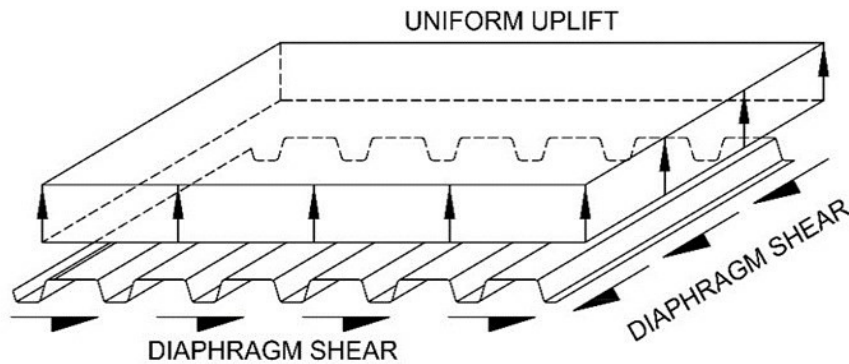
### ASD Allowable Wind Diaphragm Shear Strength $S_n/\Omega$ (plf)

2 Span Condition

Sidelap Connection Spacing (in.)	Span								
	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"
4	1068	1068	1068	1068	1068	1068	1068	874	708
6	1068	1068	1068	1068	1068	1068	1068	874	708
8	1068	1068	1068	1068	1068	1068	1068	874	708
12	1068	1068	1068	1068	1068	1068	1068	874	708
18	1068	1068	1068	1068	1014	1043	998	874	708
24	1068	986	908	860	827	804	786	772	708
36	1068	766	745	732	610	620	627	558	570

### Average Connection Spacing to Supports at Parallel Chords & Collectors (in.)

Sidelap Connection Spacing (in.)	Span								
	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"
4	6	6	6	6	6	6	6	6	6
6	9	9	9	9	9	9	9	9	9
8	12	12	12	12	12	12	12	12	12
12	16	18	16	17	16	17	16	18	18
18	16	18	16	17	18	17	18	20	24
24	16	18	19	20	21	21	21	24	24
36	16	24	24	24	29	28	27	31	30

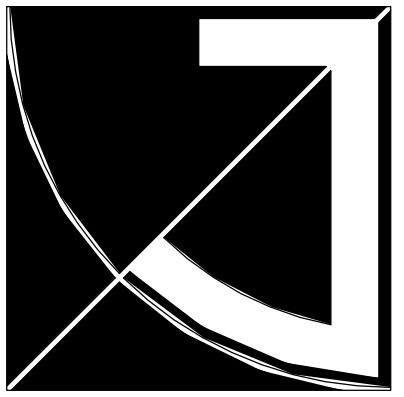


V1.0.4 of calculator based on AISI S100-16 (2020) w/S2-20 & AISI S310-16 as modified by IAPMO ER-2018 or ER-2022

Date: 4/11/2024

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VERTICAL



# JEFF BROWN ARCHITECTURE

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PROJECT NUMBER  
23002

DRAWING TYPE

## DESIGN DEVELOPMENT

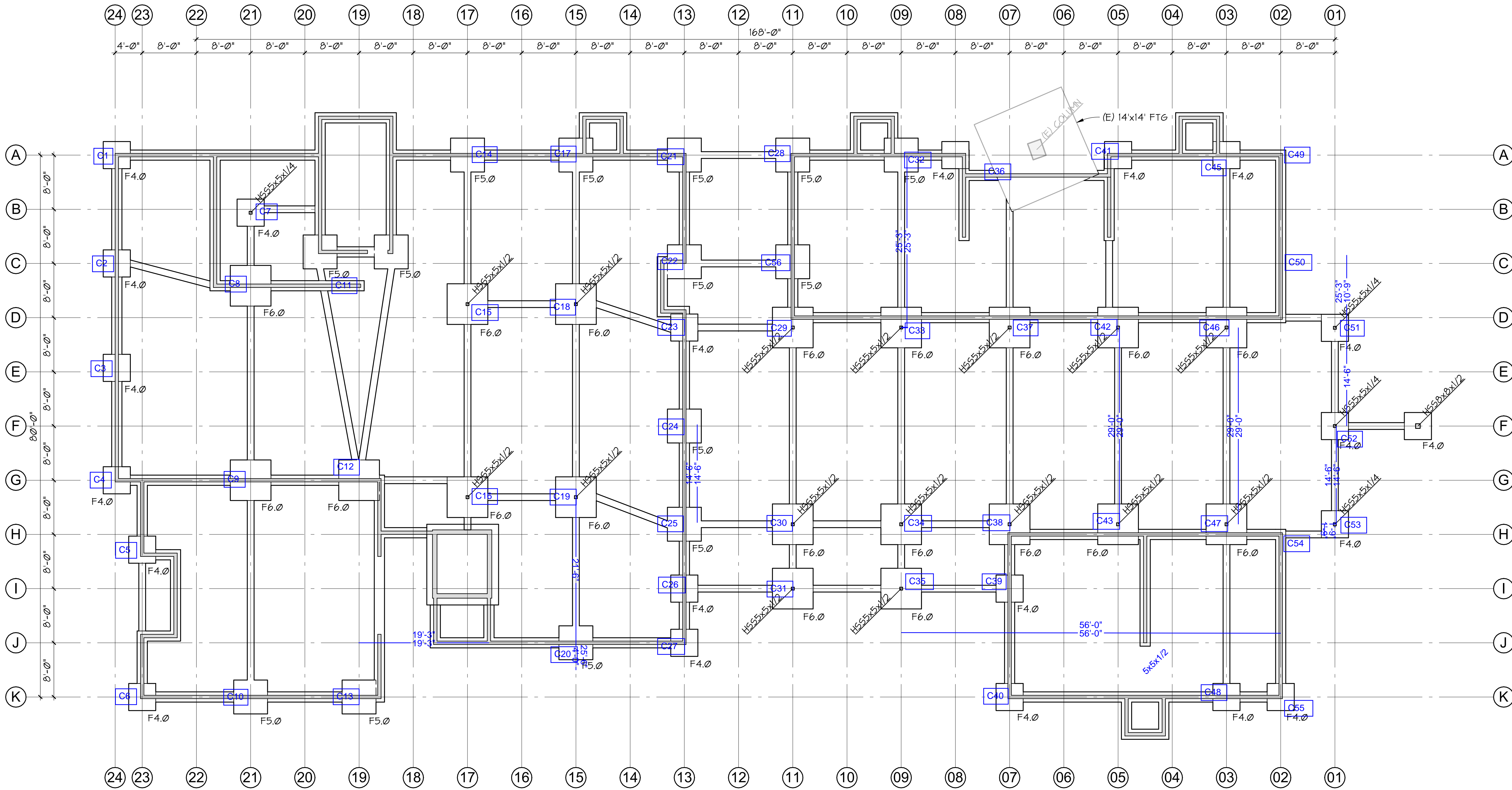
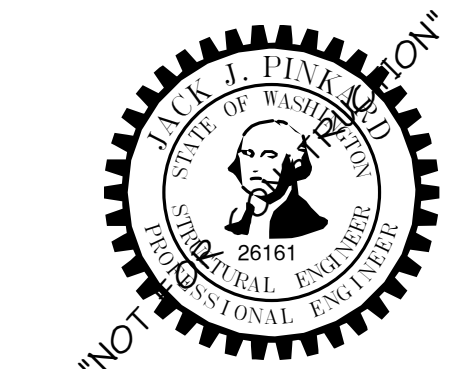
ISSUE DATE	ISSUE DESCRIP.	NO.
04.09.24	PROGRESS	

SHEET TITLE

## FOUNDATION PLAN

SHEET #

# S2.10



**1 FOUNDATION PLAN**  
S2.10 1/8" = 1'-0"

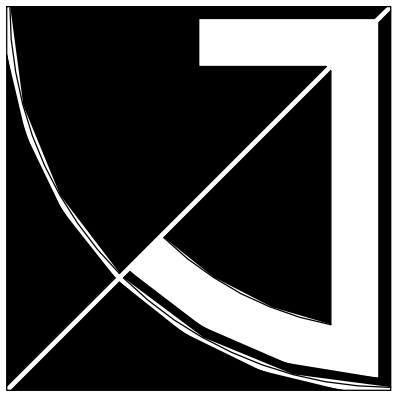
## Vertical Maps

- This map is for reference to location only and any sizes noted are preliminary.

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# JEFF BROWN ARCHITECTURE

JEFF BROWN ARCHITECTURE  
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PROJECT NAME/ADDRESS

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PROJECT NUMBER  
23002

DRAWING TYPE

## DESIGN DEVELOPMENT

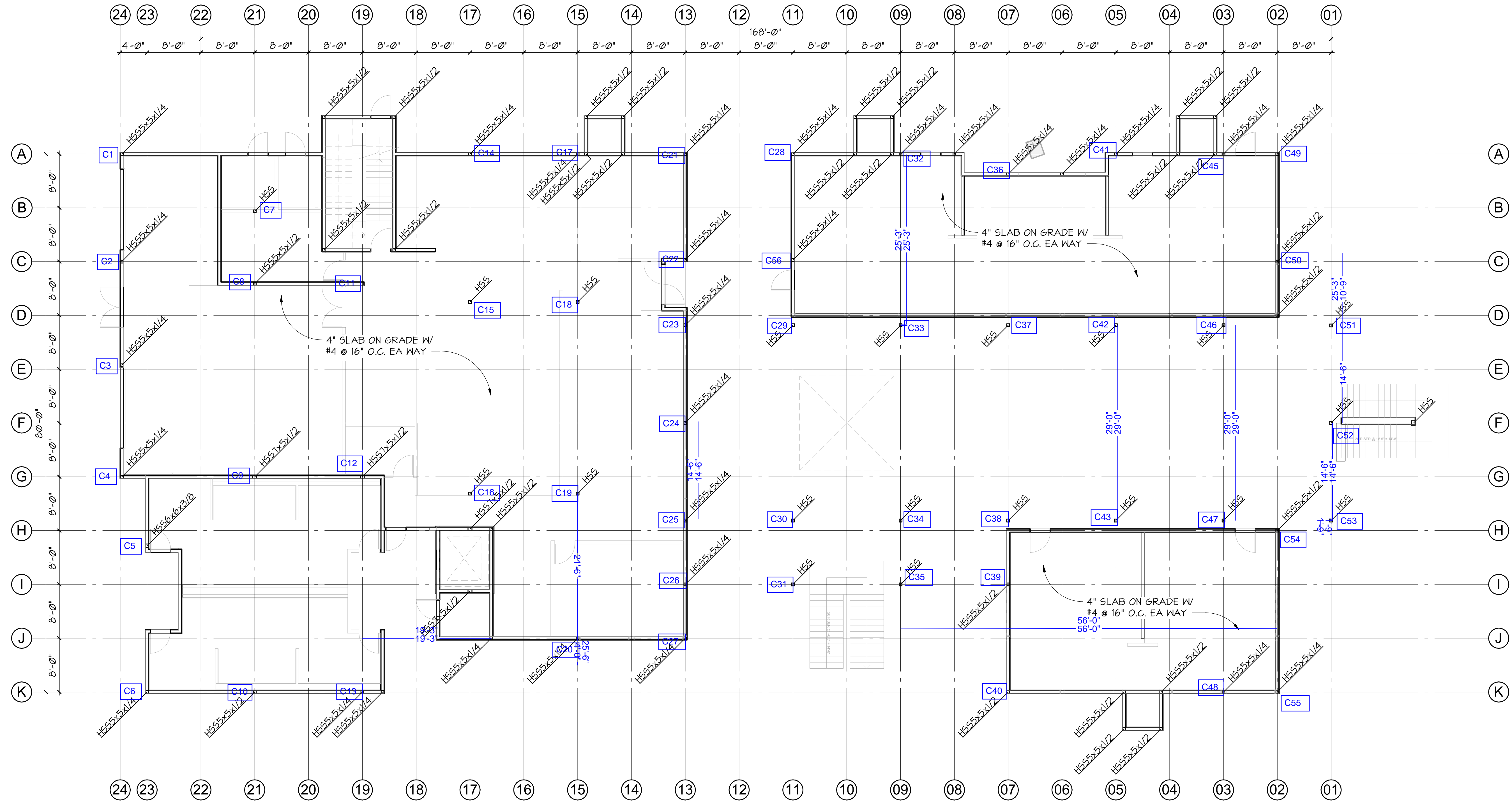
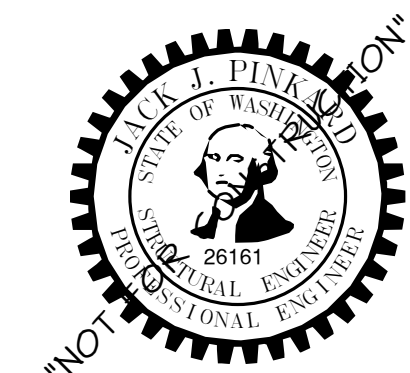
ISSUE DATE	ISSUE DESCRIP.	NO.
04.09.24	PROGRESS	

SHEET TITLE

## GRADE LEVEL FRAMING PLAN

SHEET #

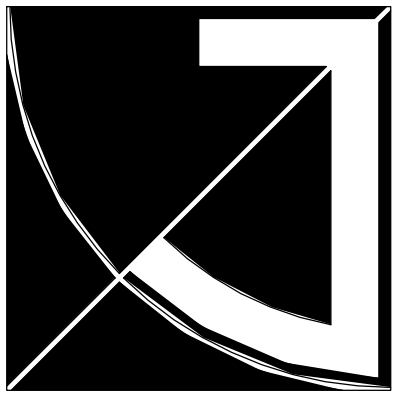
# S2.11



**GRADE LEVEL FRAMING PLAN**  
 1  
 S2.11 1/8" = 1'-0"

## Vertical Maps

- This map is for reference to location only and any sizes noted are preliminary.



# JEFF BROWN ARCHITECTURE

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PROJECT NAME/ADDRESS

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PROJECT NUMBER  
23002

DRAWING TYPE

## DESIGN DEVELOPMENT

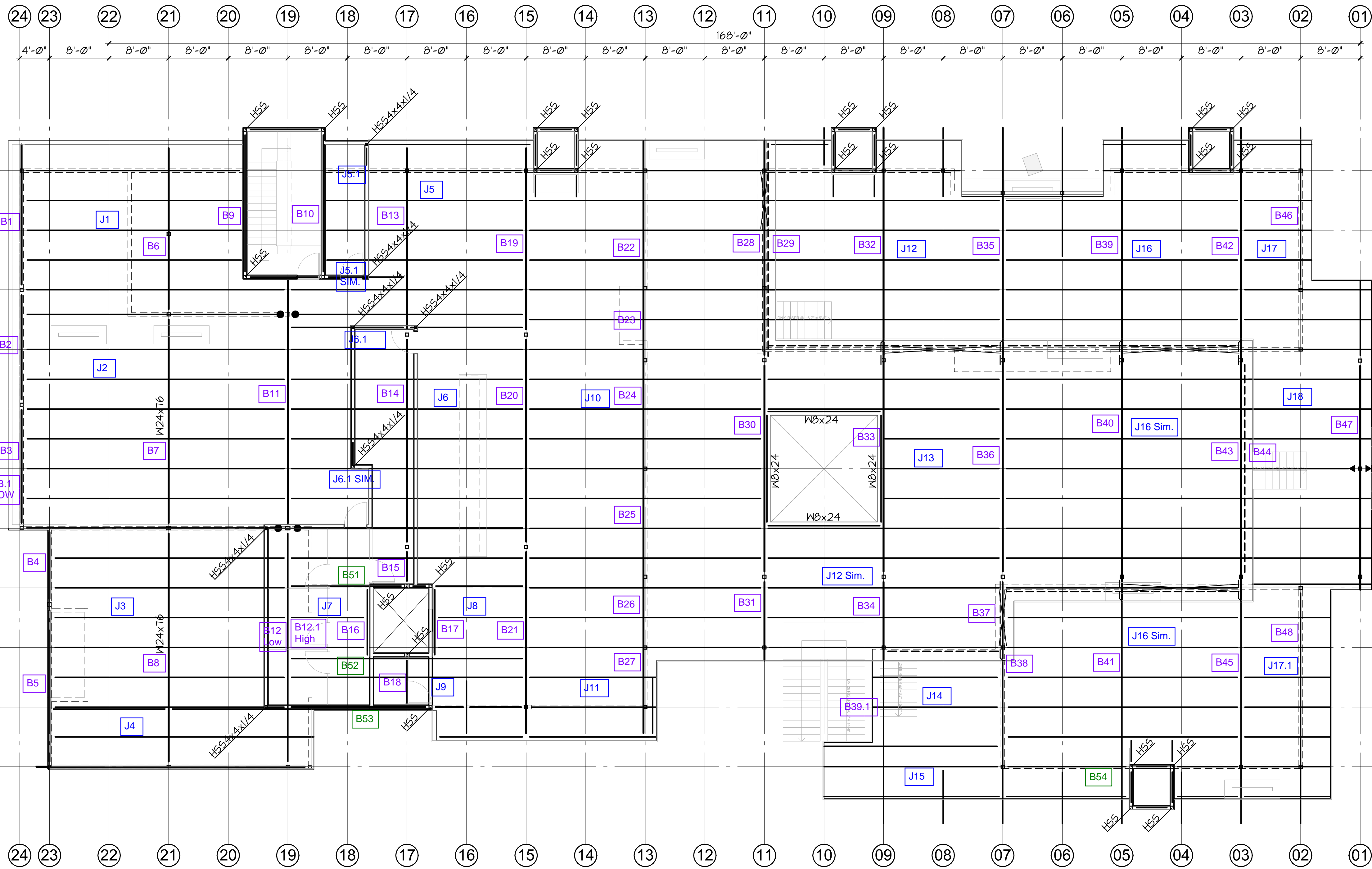
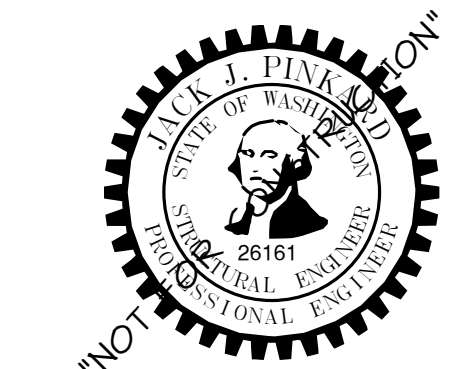
ISSUE DATE	ISSUE DESCRIP.	NO.
04.09.24	PROGRESS	

SHEET TITLE

## FLOOR FRAMING PLAN

SHEET #

# S2.12



**1 FLOOR FRAMING PLAN**  
S2.12 1/8" = 1'-0"

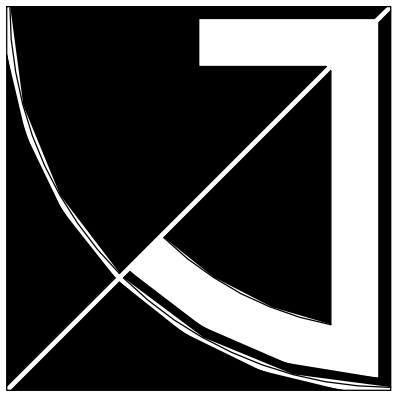
## Vertical Maps

- This map is for reference to location only and any sizes noted are preliminary.

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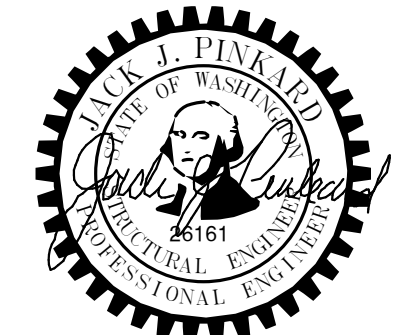


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PROJECT NAME/ADDRESS

WASHINGTON STATE FAIR  
INTERNATIONAL VILLAGE  
110 9TH AVE SW  
PUYALLUP, WA 98371

PROJECT NUMBER  
23002

DRAWING TYPE

PERMIT DOCUMENTS

ISSUE DATE ISSUE DESCRIP. NO.

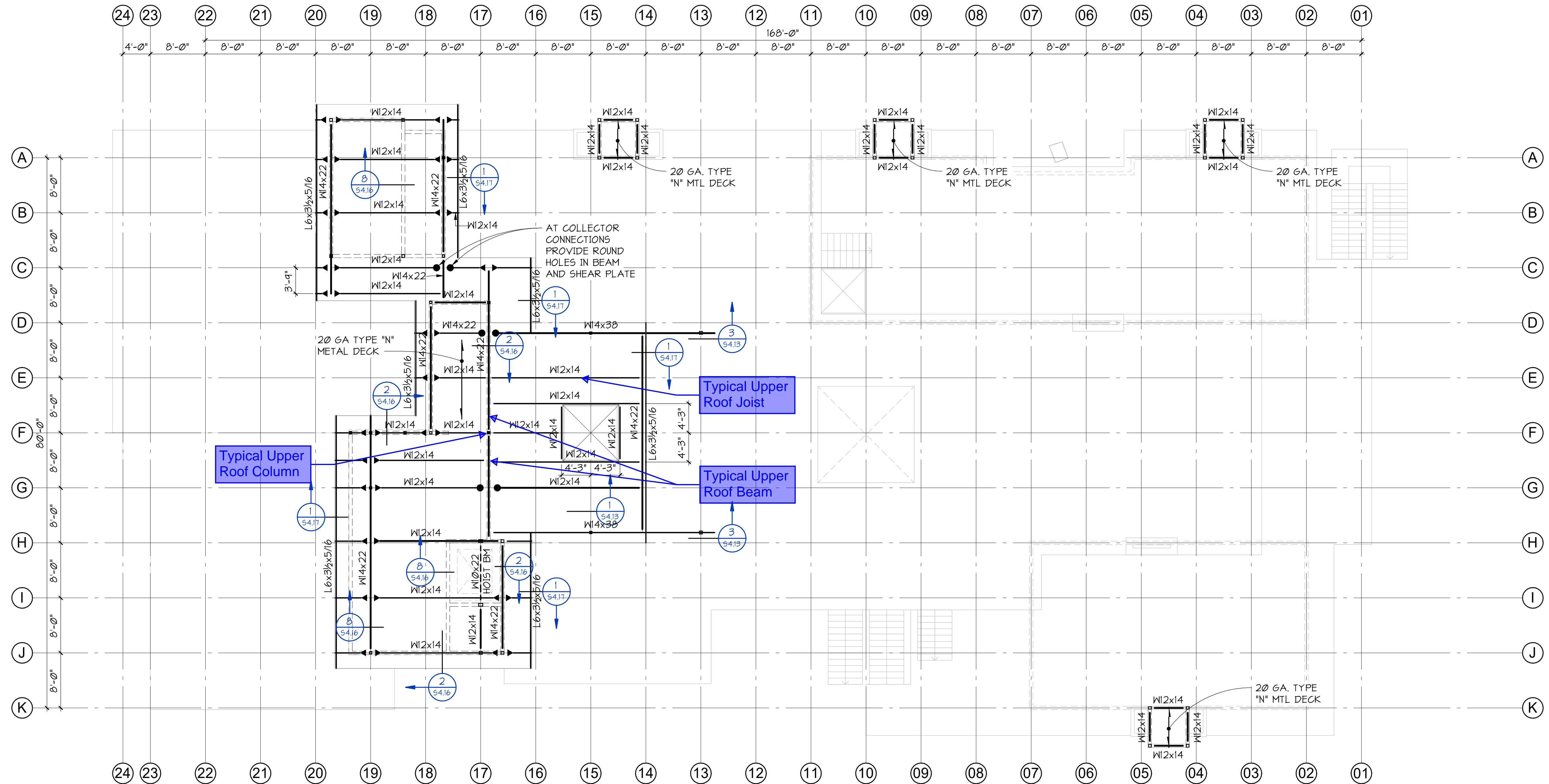
05.03.24 PERMIT

SHEET TITLE

UPPER ROOF FRAMING PLAN

SHEET #

S2.14



### UPPER ROOF FRAMING PLAN

1/8" = 1'-0"

#### ROOF FRAMING NOTES

- INDICATES LIGHT GAUGE METAL STUD WALL EXTENDING ABOVE ROOF TO FORM A PARAPET.
- INDICATES WALL BELOW EXTENDING TO ROOF STRUCTURE.
- INDICATES MECHANICAL UNIT BELOW HUNG FROM ROOF JOISTS WITH MAXIMUM WEIGHT SHOWN. SEE MECHANICAL FOR LOCATIONS.
- INDICATES DIRECTION OF SPAN FOR METAL DECK. FOR TYPICAL METAL DECK SEE SHEET S4.10.
- INDICATES PENETRATION IN ROOF. NOT ALL OPENINGS ARE SHOWN, FOR ADDITIONAL MISCELLANEOUS OPENINGS IN ROOF SEE ARCHITECTURAL AND MECHANICAL DRAWINGS. SEE 2/S4.10 & 3/S4.10 FOR TYPICAL SUPPORT AROUND OPENINGS.

6. FOR TYPICAL STEEL CONNECTION DETAILS SEE SHEET S4.11.

INDICATES BEAM/GIRDER CAMBER IN INCHES

INDICATES BEAM/GIRDER SIZE

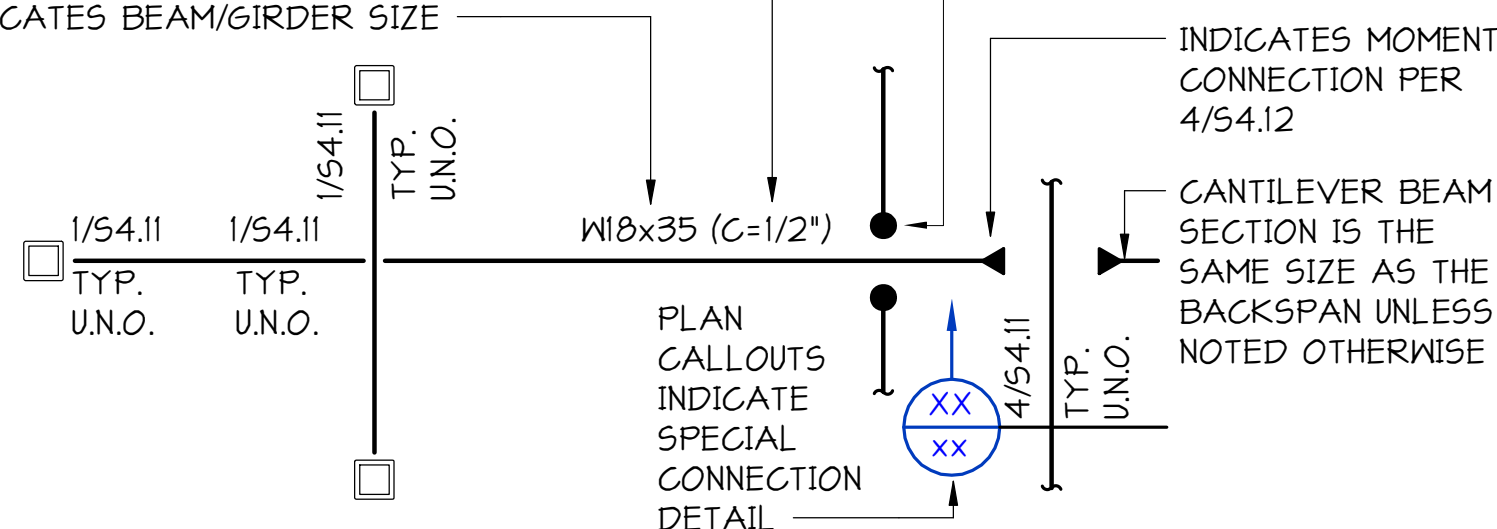
INDICATES A LATERAL CONNECTION. FOR DETAIL CALLOUT SEE PLANS. ASSOCIATED MEMBERS AND CONNECTIONS ARE PART OF THE LATERAL FORCE-RESISTING SYSTEM.

7. INDICATES TYPE OF CONTINUOUS COLUMN FROM LEVEL BELOW AND CONTINUING ON TO LEVEL ABOVE.

8. INDICATES STEEL COLUMN DISCONTINUING AT ROOF LEVEL.

9. SEE ARCHITECTURAL DRAWINGS FOR MISCELLANEOUS / ORNAMENTAL (NON-STRUCTURAL) STEEL THROUGHOUT THE BUILDING.

10. STEEL MEMBERS ARE EQUALLY SPACED BETWEEN DIMENSION POINTS UNLESS NOTED OTHERWISE.



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## Vertical Maps

- This map is for reference to location only and any sizes noted are preliminary.



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(C) ENERCALC INC 1983-2023

**DESCRIPTION: J1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 1.50 ft	1	0.012	0.042		-1.08	1.08	96.25	86.63	1.00	1.00	2.47	58.29	58.29
Dsgn. L = 19.75 ft	2	0.163	0.108	8.54	-14.11	14.11	96.25	86.63	1.00	1.00	6.28	58.29	58.29
Dsgn. L = 10.25 ft	3	0.163	0.108	6.50	-14.11	14.11	96.25	86.63	1.00	1.00	6.28	58.29	58.29
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.50 ft	1	0.012	0.135		-1.08	1.08	96.25	86.63	1.00	1.00	7.89	58.29	58.29
Dsgn. L = 19.75 ft	2	0.367	0.189	31.49	-31.78	31.78	96.25	86.63	1.00	1.00	11.00	58.29	58.29
Dsgn. L = 10.25 ft	3	0.367	0.081		-31.78	31.78	96.25	86.63	1.00	1.00	4.72	58.29	58.29
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.50 ft	1	0.012	0.133		-1.08	1.08	96.25	86.63	1.00	1.00	7.75	58.29	58.29
Dsgn. L = 19.75 ft	2	0.400	0.191	30.30	-34.65	34.65	96.25	86.63	1.00	1.00	11.15	58.29	58.29
Dsgn. L = 10.25 ft	3	0.400	0.142	1.21	-34.65	34.65	96.25	86.63	1.00	1.00	8.28	58.29	58.29
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.50 ft	1	0.005	0.048		-0.41	0.41	96.25	86.63	1.00	1.00	2.83	58.29	58.29
Dsgn. L = 19.75 ft	2	0.187	0.116	10.47	-16.16	16.16	96.25	86.63	1.00	1.00	6.74	58.29	58.29
Dsgn. L = 10.25 ft	3	0.187	0.116	6.38	-16.16	16.16	96.25	86.63	1.00	1.00	6.74	58.29	58.29
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.50 ft	1	0.005	0.142		-0.41	0.41	96.25	86.63	1.00	1.00	8.25	58.29	58.29
Dsgn. L = 19.75 ft	2	0.391	0.200	33.39	-33.83	33.83	96.25	86.63	1.00	1.00	11.63	58.29	58.29
Dsgn. L = 10.25 ft	3	0.391	0.089		-33.83	33.83	96.25	86.63	1.00	1.00	5.18	58.29	58.29
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.50 ft	1	0.005	0.139		-0.41	0.41	96.25	86.63	1.00	1.00	8.10	58.29	58.29
Dsgn. L = 19.75 ft	2	0.424	0.202	32.21	-36.70	36.70	96.25	86.63	1.00	1.00	11.78	58.29	58.29
Dsgn. L = 10.25 ft	3	0.424	0.150	1.24	-36.70	36.70	96.25	86.63	1.00	1.00	8.74	58.29	58.29
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.50 ft	1	0.013	0.052		-1.13	1.13	96.25	86.63	1.00	1.00	3.02	58.29	58.29
Dsgn. L = 19.75 ft	2	0.151	0.072	11.29	-13.05	13.05	96.25	86.63	1.00	1.00	4.23	58.29	58.29
Dsgn. L = 10.25 ft	3	0.151	0.054	0.50	-13.05	13.05	96.25	86.63	1.00	1.00	3.15	58.29	58.29
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.50 ft	1	0.013	0.049		-1.13	1.13	96.25	86.63	1.00	1.00	2.87	58.29	58.29
Dsgn. L = 19.75 ft	2	0.184	0.115	10.12	-15.92	15.92	96.25	86.63	1.00	1.00	6.71	58.29	58.29
Dsgn. L = 10.25 ft	3	0.184	0.115	6.46	-15.92	15.92	96.25	86.63	1.00	1.00	6.71	58.29	58.29
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.50 ft	1	0.013	0.142		-1.13	1.13	96.25	86.63	1.00	1.00	8.30	58.29	58.29
Dsgn. L = 19.75 ft	2	0.388	0.199	33.07	-33.59	33.59	96.25	86.63	1.00	1.00	11.59	58.29	58.29
Dsgn. L = 10.25 ft	3	0.388	0.088		-33.59	33.59	96.25	86.63	1.00	1.00	5.16	58.29	58.29
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.50 ft	1	0.013	0.140		-1.13	1.13	96.25	86.63	1.00	1.00	8.15	58.29	58.29
Dsgn. L = 19.75 ft	2	0.421	0.201	31.88	-36.46	36.46	96.25	86.63	1.00	1.00	11.73	58.29	58.29
Dsgn. L = 10.25 ft	3	0.421	0.150	1.28	-36.46	36.46	96.25	86.63	1.00	1.00	8.72	58.29	58.29
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.50 ft	1	0.004	0.042		-0.36	0.36	96.25	86.63	1.00	1.00	2.47	58.29	58.29
Dsgn. L = 19.75 ft	2	0.153	0.085	9.31	-13.27	13.27	96.25	86.63	1.00	1.00	4.97	58.29	58.29
Dsgn. L = 10.25 ft	3	0.153	0.085	3.95	-13.27	13.27	96.25	86.63	1.00	1.00	4.97	58.29	58.29
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.50 ft	1	0.004	0.101		-0.36	0.36	96.25	86.63	1.00	1.00	5.87	58.29	58.29
Dsgn. L = 19.75 ft	2	0.281	0.142	23.64	-24.31	24.31	96.25	86.63	1.00	1.00	8.29	58.29	58.29
Dsgn. L = 10.25 ft	3	0.281	0.069		-24.31	24.31	96.25	86.63	1.00	1.00	4.00	58.29	58.29
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.50 ft	1	0.004	0.099		-0.36	0.36	96.25	86.63	1.00	1.00	5.77	58.29	58.29
Dsgn. L = 19.75 ft	2	0.301	0.144	22.90	-26.11	26.11	96.25	86.63	1.00	1.00	8.38	58.29	58.29
Dsgn. L = 10.25 ft	3	0.301	0.107	0.89	-26.11	26.11	96.25	86.63	1.00	1.00	6.22	58.29	58.29
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.50 ft	1	0.009	0.045		-0.81	0.81	96.25	86.63	1.00	1.00	2.60	58.29	58.29
Dsgn. L = 19.75 ft	2	0.131	0.063	9.83	-11.32	11.32	96.25	86.63	1.00	1.00	3.66	58.29	58.29
Dsgn. L = 10.25 ft	3	0.131	0.047	0.42	-11.32	11.32	96.25	86.63	1.00	1.00	2.73	58.29	58.29
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.50 ft	1	0.009	0.043		-0.81	0.81	96.25	86.63	1.00	1.00	2.50	58.29	58.29
Dsgn. L = 19.75 ft	2	0.151	0.085	9.10	-13.12	13.12	96.25	86.63	1.00	1.00	4.95	58.29	58.29
Dsgn. L = 10.25 ft	3	0.151	0.085	4.00	-13.12	13.12	96.25	86.63	1.00	1.00	4.95	58.29	58.29
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.50 ft	1	0.009	0.101		-0.81	0.81	96.25	86.63	1.00	1.00	5.90	58.29	58.29
Dsgn. L = 19.75 ft	2	0.279	0.142	23.44	-24.16	24.16	96.25	86.63	1.00	1.00	8.26	58.29	58.29
Dsgn. L = 10.25 ft	3	0.279	0.068		-24.16	24.16	96.25	86.63	1.00	1.00	3.98	58.29	58.29

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: J1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 1.50 ft	1		0.009	0.100		-0.81	0.81	96.25	86.63	1.00	1.00	5.80	58.29	58.29
Dsgn. L = 19.75 ft	2		0.300	0.143	22.70	-25.96	25.96	96.25	86.63	1.00	1.00	8.35	58.29	58.29
Dsgn. L = 10.25 ft	3		0.300	0.106	0.91	-25.96	25.96	96.25	86.63	1.00	1.00	6.21	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 1.50 ft	1		0.004	0.044		-0.36	0.36	96.25	86.63	1.00	1.00	2.57	58.29	58.29
Dsgn. L = 19.75 ft	2		0.132	0.063	10.03	-11.47	11.47	96.25	86.63	1.00	1.00	3.69	58.29	58.29
Dsgn. L = 10.25 ft	3		0.132	0.047	0.40	-11.47	11.47	96.25	86.63	1.00	1.00	2.74	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 1.50 ft	1		0.004	0.044		-0.36	0.36	96.25	86.63	1.00	1.00	2.57	58.29	58.29
Dsgn. L = 19.75 ft	2		0.132	0.063	10.03	-11.47	11.47	96.25	86.63	1.00	1.00	3.69	58.29	58.29
Dsgn. L = 10.25 ft	3		0.132	0.047	0.40	-11.47	11.47	96.25	86.63	1.00	1.00	2.74	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 1.50 ft	1		0.004	0.044		-0.36	0.36	96.25	86.63	1.00	1.00	2.57	58.29	58.29
Dsgn. L = 19.75 ft	2		0.132	0.063	10.03	-11.47	11.47	96.25	86.63	1.00	1.00	3.69	58.29	58.29
Dsgn. L = 10.25 ft	3		0.132	0.047	0.40	-11.47	11.47	96.25	86.63	1.00	1.00	2.74	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 1.50 ft	1		0.004	0.044		-0.36	0.36	96.25	86.63	1.00	1.00	2.57	58.29	58.29
Dsgn. L = 19.75 ft	2		0.132	0.063	10.03	-11.47	11.47	96.25	86.63	1.00	1.00	3.69	58.29	58.29
Dsgn. L = 10.25 ft	3		0.132	0.047	0.40	-11.47	11.47	96.25	86.63	1.00	1.00	2.74	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 1.50 ft	1		0.004	0.044		-0.36	0.36	96.25	86.63	1.00	1.00	2.57	58.29	58.29
Dsgn. L = 19.75 ft	2		0.132	0.063	10.03	-11.47	11.47	96.25	86.63	1.00	1.00	3.69	58.29	58.29
Dsgn. L = 10.25 ft	3		0.132	0.047	0.40	-11.47	11.47	96.25	86.63	1.00	1.00	2.74	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 1.50 ft	1		0.004	0.044		-0.36	0.36	96.25	86.63	1.00	1.00	2.57	58.29	58.29
Dsgn. L = 19.75 ft	2		0.132	0.063	10.03	-11.47	11.47	96.25	86.63	1.00	1.00	3.69	58.29	58.29
Dsgn. L = 10.25 ft	3		0.132	0.047	0.40	-11.47	11.47	96.25	86.63	1.00	1.00	2.74	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 1.50 ft	1		0.006	0.065		-0.54	0.54	96.25	86.63	1.00	1.00	3.77	58.29	58.29
Dsgn. L = 19.75 ft	2		0.220	0.109	14.37	-19.06	19.06	96.25	86.63	1.00	1.00	6.35	58.29	58.29
Dsgn. L = 10.25 ft	3		0.220	0.109	3.96	-19.06	19.06	96.25	86.63	1.00	1.00	6.35	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 1.50 ft	1		0.006	0.123		-0.54	0.54	96.25	86.63	1.00	1.00	7.16	58.29	58.29
Dsgn. L = 19.75 ft	2		0.348	0.174	28.71	-30.11	30.11	96.25	86.63	1.00	1.00	10.16	58.29	58.29
Dsgn. L = 10.25 ft	3		0.348	0.092		-30.11	30.11	96.25	86.63	1.00	1.00	5.38	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 1.50 ft	1		0.006	0.121		-0.54	0.54	96.25	86.63	1.00	1.00	7.07	58.29	58.29
Dsgn. L = 19.75 ft	2		0.368	0.176	27.97	-31.90	31.90	96.25	86.63	1.00	1.00	10.25	58.29	58.29
Dsgn. L = 10.25 ft	3		0.368	0.130	1.09	-31.90	31.90	96.25	86.63	1.00	1.00	7.61	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 1.50 ft	1		0.011	0.067		-0.99	0.99	96.25	86.63	1.00	1.00	3.89	58.29	58.29
Dsgn. L = 19.75 ft	2		0.198	0.095	14.89	-17.12	17.12	96.25	86.63	1.00	1.00	5.53	58.29	58.29
Dsgn. L = 10.25 ft	3		0.198	0.071	0.63	-17.12	17.12	96.25	86.63	1.00	1.00	4.11	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 1.50 ft	1		0.011	0.065		-0.99	0.99	96.25	86.63	1.00	1.00	3.80	58.29	58.29
Dsgn. L = 19.75 ft	2		0.218	0.109	14.16	-18.91	18.91	96.25	86.63	1.00	1.00	6.34	58.29	58.29
Dsgn. L = 10.25 ft	3		0.218	0.109	4.00	-18.91	18.91	96.25	86.63	1.00	1.00	6.34	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 1.50 ft	1		0.011	0.123		-0.99	0.99	96.25	86.63	1.00	1.00	7.19	58.29	58.29
Dsgn. L = 19.75 ft	2		0.346	0.174	28.50	-29.96	29.96	96.25	86.63	1.00	1.00	10.13	58.29	58.29
Dsgn. L = 10.25 ft	3		0.346	0.092		-29.96	29.96	96.25	86.63	1.00	1.00	5.37	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 1.50 ft	1		0.011	0.122		-0.99	0.99	96.25	86.63	1.00	1.00	7.10	58.29	58.29
Dsgn. L = 19.75 ft	2		0.367	0.175	27.76	-31.75	31.75	96.25	86.63	1.00	1.00	10.22	58.29	58.29
Dsgn. L = 10.25 ft	3		0.367	0.130	1.11	-31.75	31.75	96.25	86.63	1.00	1.00	7.59	58.29	58.29
+1.20D+1.60S+0.50W+1.60H														
Dsgn. L = 1.50 ft	1		0.006	0.066		-0.54	0.54	96.25	86.63	1.00	1.00	3.86	58.29	58.29
Dsgn. L = 19.75 ft	2		0.199	0.095	15.10	-17.27	17.27	96.25	86.63	1.00	1.00	5.56	58.29	58.29



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 10.25 ft	3	0.199	0.071	0.60	-17.27	17.27	96.25	86.63	1.00	1.00	4.13	58.29	58.29
	Dsgn. L = 1.50 ft	1	0.004	0.042		-0.36	0.36	96.25	86.63	1.00	1.00	2.47	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.153	0.085	9.31	-13.27	13.27	96.25	86.63	1.00	1.00	4.97	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.153	0.085	3.95	-13.27	13.27	96.25	86.63	1.00	1.00	4.97	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.004	0.101		-0.36	0.36	96.25	86.63	1.00	1.00	5.87	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.281	0.142	23.64	-24.31	24.31	96.25	86.63	1.00	1.00	8.29	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.281	0.069		-24.31	24.31	96.25	86.63	1.00	1.00	4.00	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.004	0.099		-0.36	0.36	96.25	86.63	1.00	1.00	5.77	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.301	0.144	22.90	-26.11	26.11	96.25	86.63	1.00	1.00	8.38	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.301	0.107	0.89	-26.11	26.11	96.25	86.63	1.00	1.00	6.22	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.009	0.045		-0.81	0.81	96.25	86.63	1.00	1.00	2.60	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.131	0.063	9.83	-11.32	11.32	96.25	86.63	1.00	1.00	3.66	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.131	0.047	0.42	-11.32	11.32	96.25	86.63	1.00	1.00	2.73	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.009	0.043		-0.81	0.81	96.25	86.63	1.00	1.00	2.50	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.151	0.085	9.10	-13.12	13.12	96.25	86.63	1.00	1.00	4.95	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.151	0.085	4.00	-13.12	13.12	96.25	86.63	1.00	1.00	4.95	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.009	0.101		-0.81	0.81	96.25	86.63	1.00	1.00	5.90	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.279	0.142	23.44	-24.16	24.16	96.25	86.63	1.00	1.00	8.26	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.279	0.068		-24.16	24.16	96.25	86.63	1.00	1.00	3.98	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.009	0.100		-0.81	0.81	96.25	86.63	1.00	1.00	5.80	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.300	0.143	22.70	-25.96	25.96	96.25	86.63	1.00	1.00	8.35	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.300	0.106	0.91	-25.96	25.96	96.25	86.63	1.00	1.00	6.21	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.005	0.049		-0.41	0.41	96.25	86.63	1.00	1.00	2.88	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.174	0.093	10.89	-15.08	15.08	96.25	86.63	1.00	1.00	5.40	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.174	0.093	3.94	-15.08	15.08	96.25	86.63	1.00	1.00	5.40	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.005	0.108		-0.41	0.41	96.25	86.63	1.00	1.00	6.27	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.302	0.152	25.22	-26.12	26.12	96.25	86.63	1.00	1.00	8.87	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.302	0.076		-26.12	26.12	96.25	86.63	1.00	1.00	4.43	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.005	0.106		-0.41	0.41	96.25	86.63	1.00	1.00	6.18	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.322	0.154	24.49	-27.92	27.92	96.25	86.63	1.00	1.00	8.96	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.322	0.114	0.95	-27.92	27.92	96.25	86.63	1.00	1.00	6.65	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.010	0.051		-0.86	0.86	96.25	86.63	1.00	1.00	3.00	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.152	0.073	11.41	-13.14	13.14	96.25	86.63	1.00	1.00	4.24	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.152	0.054	0.49	-13.14	13.14	96.25	86.63	1.00	1.00	3.16	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.010	0.050		-0.86	0.86	96.25	86.63	1.00	1.00	2.91	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.172	0.092	10.68	-14.93	14.93	96.25	86.63	1.00	1.00	5.39	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.172	0.092	3.99	-14.93	14.93	96.25	86.63	1.00	1.00	5.39	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.010	0.108		-0.86	0.86	96.25	86.63	1.00	1.00	6.30	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.300	0.152	25.02	-25.98	25.98	96.25	86.63	1.00	1.00	8.84	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.300	0.076		-25.98	25.98	96.25	86.63	1.00	1.00	4.41	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.010	0.107		-0.86	0.86	96.25	86.63	1.00	1.00	6.21	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.321	0.153	24.28	-27.77	27.77	96.25	86.63	1.00	1.00	8.93	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.321	0.114	0.97	-27.77	27.77	96.25	86.63	1.00	1.00	6.64	58.29	58.29
+0.90D+W+1.60H	Dsgn. L = 1.50 ft	1	0.003	0.033		-0.27	0.27	96.25	86.63	1.00	1.00	1.92	58.29	58.29
	Dsgn. L = 19.75 ft	2	0.099	0.047	7.52	-8.60	8.60	96.25	86.63	1.00	1.00	2.77	58.29	58.29
	Dsgn. L = 10.25 ft	3	0.099	0.035	0.30	-8.60	8.60	96.25	86.63	1.00	1.00	2.06	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 1.50 ft	1	0.004	0.045		-0.38	0.38	96.25	86.63	1.00	1.00	2.64	58.29	58.29

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 19.75 ft	2		0.162	0.088	9.94	-13.99	13.99	96.25	86.63	1.00	1.00	5.14	58.29	58.29
Dsgn. L = 10.25 ft	3		0.162	0.088	3.94	-13.99	13.99	96.25	86.63	1.00	1.00	5.14	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L = 1.50 ft	1		0.004	0.103		-0.38	0.38	96.25	86.63	1.00	1.00	6.03	58.29	58.29
Dsgn. L = 19.75 ft	2		0.289	0.146	24.27	-25.04	25.04	96.25	86.63	1.00	1.00	8.52	58.29	58.29
Dsgn. L = 10.25 ft	3		0.289	0.072		-25.04	25.04	96.25	86.63	1.00	1.00	4.17	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L = 1.50 ft	1		0.004	0.102		-0.38	0.38	96.25	86.63	1.00	1.00	5.94	58.29	58.29
Dsgn. L = 19.75 ft	2		0.310	0.148	23.54	-26.83	26.83	96.25	86.63	1.00	1.00	8.62	58.29	58.29
Dsgn. L = 10.25 ft	3		0.310	0.110	0.91	-26.83	26.83	96.25	86.63	1.00	1.00	6.39	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L = 1.50 ft	1		0.010	0.047		-0.83	0.83	96.25	86.63	1.00	1.00	2.76	58.29	58.29
Dsgn. L = 19.75 ft	2		0.139	0.067	10.46	-12.05	12.05	96.25	86.63	1.00	1.00	3.89	58.29	58.29
Dsgn. L = 10.25 ft	3		0.139	0.050	0.45	-12.05	12.05	96.25	86.63	1.00	1.00	2.90	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L = 1.50 ft	1		0.010	0.046		-0.83	0.83	96.25	86.63	1.00	1.00	2.67	58.29	58.29
Dsgn. L = 19.75 ft	2		0.160	0.088	9.73	-13.84	13.84	96.25	86.63	1.00	1.00	5.13	58.29	58.29
Dsgn. L = 10.25 ft	3		0.160	0.088	3.99	-13.84	13.84	96.25	86.63	1.00	1.00	5.13	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L = 1.50 ft	1		0.010	0.104		-0.83	0.83	96.25	86.63	1.00	1.00	6.06	58.29	58.29
Dsgn. L = 19.75 ft	2		0.287	0.146	24.07	-24.89	24.89	96.25	86.63	1.00	1.00	8.49	58.29	58.29
Dsgn. L = 10.25 ft	3		0.287	0.071		-24.89	24.89	96.25	86.63	1.00	1.00	4.15	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L = 1.50 ft	1		0.010	0.102		-0.83	0.83	96.25	86.63	1.00	1.00	5.97	58.29	58.29
Dsgn. L = 19.75 ft	2		0.308	0.147	23.33	-26.68	26.68	96.25	86.63	1.00	1.00	8.59	58.29	58.29
Dsgn. L = 10.25 ft	3		0.308	0.109	0.93	-26.68	26.68	96.25	86.63	1.00	1.00	6.38	58.29	58.29
+0.90D+E+0.90H														
Dsgn. L = 1.50 ft	1		0.003	0.033		-0.27	0.27	96.25	86.63	1.00	1.00	1.92	58.29	58.29
Dsgn. L = 19.75 ft	2		0.099	0.047	7.52	-8.60	8.60	96.25	86.63	1.00	1.00	2.77	58.29	58.29
Dsgn. L = 10.25 ft	3		0.099	0.035	0.30	-8.60	8.60	96.25	86.63	1.00	1.00	2.06	58.29	58.29

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	+D+L+H	-0.1484	0.000
+D+L+H	2	0.5613	9.085		0.0000	0.000
	3	0.0000	9.085	+D+L+H	-0.0841	4.100

**Vertical Reactions**

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Max Upward from all Load Conditions		6.464	13.531	2.310
Max Upward from Load Combinations		6.464	13.531	2.310
Max Upward from Load Cases		3.930	8.169	1.889
Max Downward from all Load Conditions (Resis)		-0.091	-0.045	-1.253
Max Downward from Load Combinations (Resis)				-0.832
Max Downward from Load Cases (Resisting U <sub>r</sub> )		-0.091	-0.045	-1.253
+D+H		2.534	5.362	0.420
+D+L+H, LL Comb Run (**L)		2.443	7.678	2.295
+D+L+H, LL Comb Run (*L*)		5.834	11.215	-0.832
+D+L+H, LL Comb Run (*LL)		5.743	13.531	1.042
+D+L+H, LL Comb Run (L**)		3.164	5.317	0.435
+D+L+H, LL Comb Run (L*L)		3.073	7.633	2.310
+D+L+H, LL Comb Run (LL*)		6.464	11.170	-0.818
+D+L+H, LL Comb Run (LLL)		6.373	13.486	1.057
+D+Lr+H, LL Comb Run (**L)		2.534	5.362	0.420
+D+Lr+H, LL Comb Run (*L*)		2.534	5.362	0.420
+D+Lr+H, LL Comb Run (*LL)		2.534	5.362	0.420
+D+Lr+H, LL Comb Run (L**)		2.534	5.362	0.420
+D+Lr+H, LL Comb Run (L*L)		2.534	5.362	0.420
+D+Lr+H, LL Comb Run (LL*)		2.534	5.362	0.420
+D+Lr+H, LL Comb Run (LLL)		2.534	5.362	0.420
+D+S+H		3.494	7.393	0.579
+D+0.750Lr+0.750L+H, LL Comb Run (**L)		2.466	7.099	1.826
+D+0.750Lr+0.750L+H, LL Comb Run (*L*)		5.009	9.751	-0.519

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J1**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
+D+0.750Lr+0.750L+H, LL Comb Run (*LL)	4.941	11.488	0.887	
+D+0.750Lr+0.750L+H, LL Comb Run (L**)	3.007	5.328	0.431	
+D+0.750Lr+0.750L+H, LL Comb Run (L*L)	2.938	7.065	1.837	
+D+0.750Lr+0.750L+H, LL Comb Run (LL*)	5.482	9.718	-0.508	
+D+0.750Lr+0.750L+H, LL Comb Run (LLL)	5.413	11.455	0.898	
+D+0.750L+0.750S+H, LL Comb Run (**L)	3.186	8.622	1.946	
+D+0.750L+0.750S+H, LL Comb Run (L*L)	5.729	11.275	-0.400	
+D+0.750L+0.750S+H, LL Comb Run (*LL)	5.661	13.012	1.006	
+D+0.750L+0.750S+H, LL Comb Run (L**)	3.727	6.852	0.550	
+D+0.750L+0.750S+H, LL Comb Run (L*L)	3.658	8.589	1.957	
+D+0.750L+0.750S+H, LL Comb Run (LL*)	6.201	11.241	-0.389	
+D+0.750L+0.750S+H, LL Comb Run (LLL)	6.133	12.978	1.017	
+D+0.60W+H	2.534	5.362	0.420	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	2.466	7.099	1.826	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	5.009	9.751	-0.519	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	4.941	11.488	0.887	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.007	5.328	0.431	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	2.938	7.065	1.837	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	5.482	9.718	-0.508	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	5.413	11.455	0.898	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.186	8.622	1.946	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	5.729	11.275	-0.400	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	5.661	13.012	1.006	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.727	6.852	0.550	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.658	8.589	1.957	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	6.201	11.241	-0.389	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	6.133	12.978	1.017	
+0.60D+0.60W+0.60H	1.520	3.217	0.252	
+D+0.70E+0.60H	2.534	5.362	0.420	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.186	8.622	1.946	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	5.729	11.275	-0.400	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	5.661	13.012	1.006	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.727	6.852	0.550	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.658	8.589	1.957	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	6.201	11.241	-0.389	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	6.133	12.978	1.017	
+0.60D+0.70E+H	1.520	3.217	0.252	
D Only	2.534	5.362	0.420	
L Only, LL Comb Run (**L)	-0.091	2.316	1.875	
L Only, LL Comb Run (L*L)	3.300	5.853	-1.253	
L Only, LL Comb Run (*LL)	3.209	8.169	0.622	
L Only, LL Comb Run (L**)	0.630	-0.045	0.014	
L Only, LL Comb Run (L*L)	0.539	2.271	1.889	
L Only, LL Comb Run (LL*)	3.930	5.808	-1.238	
L Only, LL Comb Run (LLL)	3.839	8.124	0.637	
S Only	0.960	2.031	0.159	
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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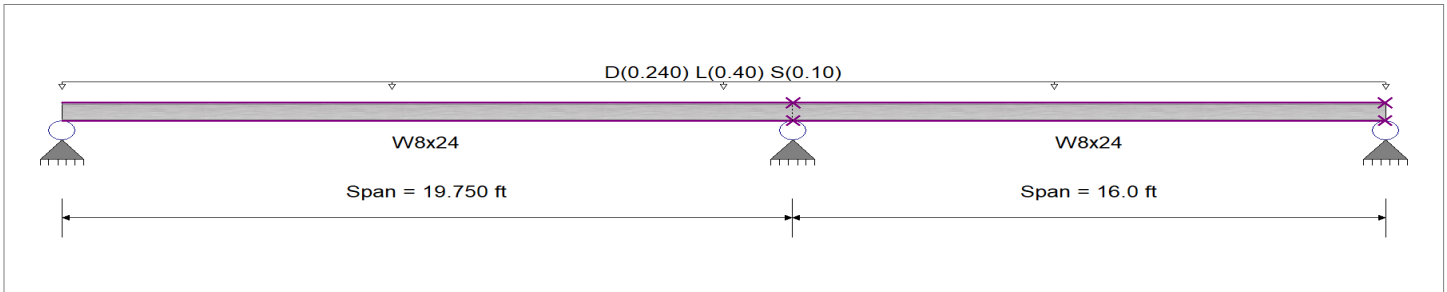
DESCRIPTION: **J2**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.480</b> : 1	Maximum Shear Stress Ratio =	<b>0.207</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	41.538 k-ft	Vu : Applied	12.045 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	19.750 ft
		Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.386 in Ratio = <b>613</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.129 in Ratio = <b>1,490</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.577 in Ratio = <b>411</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.108 in Ratio = <b>1785</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L = 19.75 ft	1		0.176	0.076	11.20	-15.25	15.25	96.25	86.63	1.00	1.00	4.42	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.176	0.067	5.43	-15.25	15.25	96.25	86.63	1.00	1.00	3.91	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 19.75 ft	1		0.257	0.155	6.33	-22.24	22.24	96.25	86.63	1.00	1.00	9.04	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.257	0.155	20.51	-22.24	22.24	96.25	86.63	1.00	1.00	9.04	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 19.75 ft	1		0.378	0.188	32.73	-30.31	32.73	96.25	86.63	1.00	1.00	10.98	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.350	0.076	0.65	-30.31	30.31	96.25	86.63	1.00	1.00	4.43	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 19.75 ft	1		0.456	0.196	29.00	-39.48	39.48	96.25	86.63	1.00	1.00	11.45	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.456	0.174	14.06	-39.48	39.48	96.25	86.63	1.00	1.00	10.12	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 19.75 ft	1		0.281	0.164	7.80	-24.30	24.30	96.25	86.63	1.00	1.00	9.57	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.281	0.164	21.21	-24.30	24.30	96.25	86.63	1.00	1.00	9.57	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 19.75 ft	1		0.395	0.199	34.24	-32.37	34.24	96.25	86.63	1.00	1.00	11.58	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.374	0.085	1.13	-32.37	32.37	96.25	86.63	1.00	1.00	4.96	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 19.75 ft	1		0.480	0.207	30.52	-41.54	41.54	96.25	86.63	1.00	1.00	12.05	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.480	0.183	14.80	-41.54	41.54	96.25	86.63	1.00	1.00	10.65	58.29	58.29	



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: J2**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 19.75 ft	1		0.217	0.119	7.48	-18.80	18.80	96.25	86.63	1.00	1.00	6.91	58.29	58.29
Dsgn. L = 16.00 ft	2		0.217	0.119	14.50	-18.80	18.80	96.25	86.63	1.00	1.00	6.91	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 19.75 ft	1		0.278	0.142	24.04	-23.84	24.04	96.25	86.63	1.00	1.00	8.29	58.29	58.29
Dsgn. L = 16.00 ft	2		0.275	0.069	1.72	-23.84	23.84	96.25	86.63	1.00	1.00	4.02	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 19.75 ft	1		0.341	0.147	21.73	-29.57	29.57	96.25	86.63	1.00	1.00	8.58	58.29	58.29
Dsgn. L = 16.00 ft	2		0.341	0.130	10.53	-29.57	29.57	96.25	86.63	1.00	1.00	7.58	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 19.75 ft	1		0.151	0.065	9.60	-13.07	13.07	96.25	86.63	1.00	1.00	3.79	58.29	58.29
Dsgn. L = 16.00 ft	2		0.151	0.057	4.66	-13.07	13.07	96.25	86.63	1.00	1.00	3.35	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 19.75 ft	1		0.151	0.065	9.60	-13.07	13.07	96.25	86.63	1.00	1.00	3.79	58.29	58.29
Dsgn. L = 16.00 ft	2		0.151	0.057	4.66	-13.07	13.07	96.25	86.63	1.00	1.00	3.35	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 19.75 ft	1		0.151	0.065	9.60	-13.07	13.07	96.25	86.63	1.00	1.00	3.79	58.29	58.29
Dsgn. L = 16.00 ft	2		0.151	0.057	4.66	-13.07	13.07	96.25	86.63	1.00	1.00	3.35	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 19.75 ft	1		0.293	0.148	12.28	-25.40	25.40	96.25	86.63	1.00	1.00	8.60	58.29	58.29
Dsgn. L = 16.00 ft	2		0.293	0.148	16.79	-25.40	25.40	96.25	86.63	1.00	1.00	8.60	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 19.75 ft	1		0.351	0.175	28.88	-30.45	30.45	96.25	86.63	1.00	1.00	10.20	58.29	58.29
Dsgn. L = 16.00 ft	2		0.351	0.098	3.83	-30.45	30.45	96.25	86.63	1.00	1.00	5.72	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 19.75 ft	1		0.418	0.180	26.58	-36.17	36.17	96.25	86.63	1.00	1.00	10.49	58.29	58.29
Dsgn. L = 16.00 ft	2		0.418	0.159	12.89	-36.17	36.17	96.25	86.63	1.00	1.00	9.28	58.29	58.29
+1.20D+1.60S+0.50W+1.60H														
Dsgn. L = 19.75 ft	1		0.227	0.098	14.45	-19.67	19.67	96.25	86.63	1.00	1.00	5.70	58.29	58.29
Dsgn. L = 16.00 ft	2		0.227	0.087	7.01	-19.67	19.67	96.25	86.63	1.00	1.00	5.04	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 19.75 ft	1		0.217	0.119	7.48	-18.80	18.80	96.25	86.63	1.00	1.00	6.91	58.29	58.29
Dsgn. L = 16.00 ft	2		0.217	0.119	14.50	-18.80	18.80	96.25	86.63	1.00	1.00	6.91	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 19.75 ft	1		0.278	0.142	24.04	-23.84	24.04	96.25	86.63	1.00	1.00	8.29	58.29	58.29
Dsgn. L = 16.00 ft	2		0.275	0.069	1.72	-23.84	23.84	96.25	86.63	1.00	1.00	4.02	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 19.75 ft	1		0.341	0.147	21.73	-29.57	29.57	96.25	86.63	1.00	1.00	8.58	58.29	58.29
Dsgn. L = 16.00 ft	2		0.341	0.130	10.53	-29.57	29.57	96.25	86.63	1.00	1.00	7.58	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 19.75 ft	1		0.241	0.128	8.97	-20.86	20.86	96.25	86.63	1.00	1.00	7.44	58.29	58.29
Dsgn. L = 16.00 ft	2		0.241	0.128	15.21	-20.86	20.86	96.25	86.63	1.00	1.00	7.44	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 19.75 ft	1		0.299	0.152	25.56	-25.91	25.91	96.25	86.63	1.00	1.00	8.88	58.29	58.29
Dsgn. L = 16.00 ft	2		0.299	0.078	2.36	-25.91	25.91	96.25	86.63	1.00	1.00	4.55	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 19.75 ft	1		0.365	0.157	23.24	-31.64	31.64	96.25	86.63	1.00	1.00	9.17	58.29	58.29
Dsgn. L = 16.00 ft	2		0.365	0.139	11.27	-31.64	31.64	96.25	86.63	1.00	1.00	8.11	58.29	58.29
+0.90D+W+1.60H														
Dsgn. L = 19.75 ft	1		0.113	0.049	7.20	-9.80	9.80	96.25	86.63	1.00	1.00	2.84	58.29	58.29
Dsgn. L = 16.00 ft	2		0.113	0.043	3.49	-9.80	9.80	96.25	86.63	1.00	1.00	2.51	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 19.75 ft	1		0.227	0.122	8.08	-19.62	19.62	96.25	86.63	1.00	1.00	7.12	58.29	58.29
Dsgn. L = 16.00 ft	2		0.227	0.122	14.79	-19.62	19.62	96.25	86.63	1.00	1.00	7.12	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 19.75 ft	1		0.285	0.146	24.65	-24.67	24.67	96.25	86.63	1.00	1.00	8.53	58.29	58.29
Dsgn. L = 16.00 ft	2		0.285	0.073	1.97	-24.67	24.67	96.25	86.63	1.00	1.00	4.24	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 19.75 ft	1		0.351	0.151	22.33	-30.40	30.40	96.25	86.63	1.00	1.00	8.82	58.29	58.29
Dsgn. L = 16.00 ft	2		0.351	0.134	10.83	-30.40	30.40	96.25	86.63	1.00	1.00	7.79	58.29	58.29
+0.90D+E+0.90H														
Dsgn. L = 19.75 ft	1		0.113	0.049	7.20	-9.80	9.80	96.25	86.63	1.00	1.00	2.84	58.29	58.29
Dsgn. L = 16.00 ft	2		0.113	0.043	3.49	-9.80	9.80	96.25	86.63	1.00	1.00	2.51	58.29	58.29



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: J2**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.5765	9.085		0.0000	0.000
+D+L+H	2	0.2206	8.896	+D+L+H	-0.0975	3.264

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	5.460	14.968	4.273
Max Upward from Load Combinations	5.460	14.968	4.273
Max Upward from Load Cases	3.404	9.017	2.842
Max Downward from all Load Conditions (Resis	-0.290		-0.673
Max Downward from Load Cases (Resisting Up	-0.290		-0.673
+D+H	2.056	5.951	1.431
+D+L+H, LL Comb Run (*L)	1.765	9.799	4.273
+D+L+H, LL Comb Run (L*)	5.460	11.120	0.758
+D+L+H, LL Comb Run (LL)	5.170	14.968	3.600
+D+Lr+H, LL Comb Run (*L)	2.056	5.951	1.431
+D+Lr+H, LL Comb Run (L*)	2.056	5.951	1.431
+D+Lr+H, LL Comb Run (LL)	2.056	5.951	1.431
+D+S+H	2.834	8.206	1.973
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	1.838	8.837	3.563
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	4.609	9.828	0.926
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	4.391	12.714	3.058
+D+0.750L+0.750S+H, LL Comb Run (*L)	2.422	10.528	3.969
+D+0.750L+0.750S+H, LL Comb Run (L*)	5.193	11.519	1.333
+D+0.750L+0.750S+H, LL Comb Run (LL)	4.975	14.405	3.464
+D+0.60W+H	2.056	5.951	1.431
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	1.838	8.837	3.563
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	4.609	9.828	0.926
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	4.391	12.714	3.058
+D+0.750L+0.750S+0.450W+H, LL Comb Run	2.422	10.528	3.969
+D+0.750L+0.750S+0.450W+H, LL Comb Run	5.193	11.519	1.333
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.975	14.405	3.464
+0.60D+0.60W+0.60H	1.233	3.571	0.859
+D+0.70E+0.60H	2.056	5.951	1.431
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	2.422	10.528	3.969
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	5.193	11.519	1.333
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	4.975	14.405	3.464
+0.60D+0.70E+H	1.233	3.571	0.859
D Only	2.056	5.951	1.431
L Only, LL Comb Run (*L)	-0.290	3.848	2.842
L Only, LL Comb Run (L*)	3.404	5.169	-0.673
L Only, LL Comb Run (LL)	3.114	9.017	2.169
S Only	0.779	2.254	0.542
H Only			

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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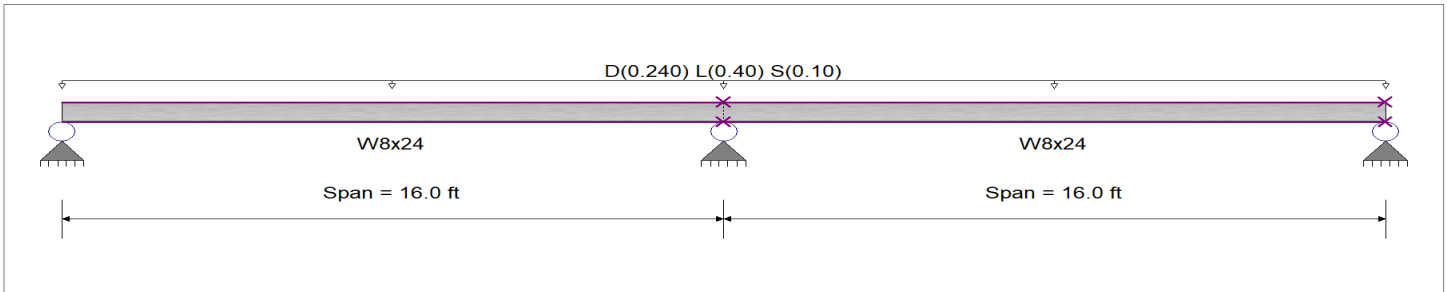
DESCRIPTION: **J3**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.372</b> : 1	Maximum Shear Stress Ratio =	<b>0.173</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	32.218 k-ft	Vu : Applied	10.068 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	16.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.174 in Ratio = <b>1,103</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.077 in Ratio = <b>2,509</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.241 in Ratio = <b>796</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.036 in Ratio = <b>5352</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L = 16.00 ft	1		0.137	0.063	6.65	-11.83	11.83	96.25	86.63	1.00	1.00	3.70	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.137	0.063	6.65	-11.83	11.83	96.25	86.63	1.00	1.00	3.70	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 16.00 ft	1		0.235	0.153	2.51	-20.38	20.38	96.25	86.63	1.00	1.00	8.93	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.246	0.153	21.28	-20.38	21.28	96.25	86.63	1.00	1.00	8.93	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 16.00 ft	1		0.246	0.153	21.28	-20.38	21.28	96.25	86.63	1.00	1.00	8.93	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.235	0.065	2.51	-20.38	20.38	96.25	86.63	1.00	1.00	3.81	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 16.00 ft	1		0.353	0.164	17.22	-30.62	30.62	96.25	86.63	1.00	1.00	9.57	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.353	0.164	17.22	-30.62	30.62	96.25	86.63	1.00	1.00	9.57	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 16.00 ft	1		0.254	0.162	3.32	-21.98	21.98	96.25	86.63	1.00	1.00	9.43	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.256	0.162	22.17	-21.98	22.17	96.25	86.63	1.00	1.00	9.43	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 16.00 ft	1		0.256	0.162	22.17	-21.98	22.17	96.25	86.63	1.00	1.00	9.43	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.254	0.074	3.32	-21.98	21.98	96.25	86.63	1.00	1.00	4.31	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 16.00 ft	1		0.372	0.173	18.12	-32.22	32.22	96.25	86.63	1.00	1.00	10.07	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.372	0.173	18.12	-32.22	32.22	96.25	86.63	1.00	1.00	10.07	58.29	58.29	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J3**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.191	0.116	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.061	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	3.57	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.250	0.144	6.35	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.250	0.144	18.27	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.250	0.144	18.27	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.250	0.089	6.35	-21.66	21.66	96.25	86.63	1.00	1.00	5.17	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.324	0.150	15.78	-28.06	28.06	96.25	86.63	1.00	1.00	8.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.324	0.150	15.78	-28.06	28.06	96.25	86.63	1.00	1.00	8.77	58.29	58.29
+1.20D+1.60S+0.50W+1.60H	Dsgn. L = 16.00 ft	1	0.176	0.082	8.58	-15.26	15.26	96.25	86.63	1.00	1.00	4.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.176	0.082	8.58	-15.26	15.26	96.25	86.63	1.00	1.00	4.77	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.191	0.116	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.061	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	3.57	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.209	0.125	4.42	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.209	0.125	16.31	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.209	0.125	16.31	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.209	0.070	4.42	-18.14	18.14	96.25	86.63	1.00	1.00	4.07	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.283	0.132	13.80	-24.54	24.54	96.25	86.63	1.00	1.00	7.67	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.283	0.132	13.80	-24.54	24.54	96.25	86.63	1.00	1.00	7.67	58.29	58.29
+0.90D+W+1.60H	Dsgn. L = 16.00 ft	1	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.198	0.120	3.90	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.198	0.120	15.77	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.198	0.120	15.77	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.198	0.065	3.90	-17.18	17.18	96.25	86.63	1.00	1.00	3.77	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.272	0.126	13.26	-23.58	23.58	96.25	86.63	1.00	1.00	7.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.272	0.126	13.26	-23.58	23.58	96.25	86.63	1.00	1.00	7.37	58.29	58.29
+0.90D+E+0.90H	Dsgn. L = 16.00 ft	1	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J3**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2413	7.360		0.0000	0.000
+D+L+H	2	0.2404	8.704	+D+L+H	-0.0016	0.064

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	4.384	13.280	4.384
Max Upward from Load Combinations	4.384	13.280	4.384
Max Upward from Load Cases	2.800	8.000	2.800
Max Downward from all Load Conditions (Resis	-0.400		-0.400
Max Downward from Load Cases (Resisting Up	-0.400		-0.400
+D+H	1.584	5.280	1.584
+D+L+H, LL Comb Run (*L)	1.184	9.280	4.384
+D+L+H, LL Comb Run (L*)	4.384	9.280	1.184
+D+L+H, LL Comb Run (LL)	3.984	13.280	3.984
+D+Lr+H, LL Comb Run (*L)	1.584	5.280	1.584
+D+Lr+H, LL Comb Run (L*)	1.584	5.280	1.584
+D+Lr+H, LL Comb Run (LL)	1.584	5.280	1.584
+D+S+H	2.184	7.280	2.184
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	1.284	8.280	3.684
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	3.684	8.280	1.284
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	3.384	11.280	3.384
+D+0.750L+0.750S+H, LL Comb Run (*L)	1.734	9.780	4.134
+D+0.750L+0.750S+H, LL Comb Run (L*)	4.134	9.780	1.734
+D+0.750L+0.750S+H, LL Comb Run (LL)	3.834	12.780	3.834
+D+0.60W+H	1.584	5.280	1.584
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	1.284	8.280	3.684
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	3.684	8.280	1.284
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	3.384	11.280	3.384
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.734	9.780	4.134
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.134	9.780	1.734
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.834	12.780	3.834
+0.60D+0.60W+0.60H	0.950	3.168	0.950
+D+0.70E+0.60H	1.584	5.280	1.584
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	1.734	9.780	4.134
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	4.134	9.780	1.734
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	3.834	12.780	3.834
+0.60D+0.70E+H	0.950	3.168	0.950
D Only	1.584	5.280	1.584
L Only, LL Comb Run (*L)	-0.400	4.000	2.800
L Only, LL Comb Run (L*)	2.800	4.000	-0.400
L Only, LL Comb Run (LL)	2.400	8.000	2.400
S Only	0.600	2.000	0.600
H Only			





**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J4**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 16.00 ft	1	1	0.253	0.152	21.89	-18.91	21.89	96.25	86.63	1.00	1.00	8.84	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.218	0.057	-0.00	-18.91	18.91	96.25	86.63	1.00	1.00	3.35	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.068	0.057		-5.86	5.86	96.25	86.63	1.00	1.00	3.35	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1	1	0.348	0.164	17.40	-30.13	30.13	96.25	86.63	1.00	1.00	9.54	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.348	0.162	16.20	-30.13	30.13	96.25	86.63	1.00	1.00	9.42	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1	1	0.337	0.163	17.78	-29.15	29.15	96.25	86.63	1.00	1.00	9.48	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.337	0.156	14.22	-29.15	29.15	96.25	86.63	1.00	1.00	9.11	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.068	0.057		-5.86	5.86	96.25	86.63	1.00	1.00	3.35	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1	1	0.118	0.061	7.19	-10.20	10.20	96.25	86.63	1.00	1.00	3.57	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.118	0.060	3.64	-10.20	10.20	96.25	86.63	1.00	1.00	3.52	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.071	0.060		-6.17	6.17	96.25	86.63	1.00	1.00	3.52	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1	1	0.247	0.159	3.47	-21.42	21.42	96.25	86.63	1.00	1.00	9.25	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.247	0.159	21.10	-21.42	21.42	96.25	86.63	1.00	1.00	9.25	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.026	0.022		-2.25	2.25	96.25	86.63	1.00	1.00	1.28	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1	1	0.236	0.153	3.74	-20.44	20.44	96.25	86.63	1.00	1.00	8.95	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.236	0.153	19.31	-20.44	20.44	96.25	86.63	1.00	1.00	8.95	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.071	0.060		-6.17	6.17	96.25	86.63	1.00	1.00	3.52	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1	1	0.259	0.161	22.40	-21.42	22.40	96.25	86.63	1.00	1.00	9.39	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.247	0.071	1.86	-21.42	21.42	96.25	86.63	1.00	1.00	4.13	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.026	0.022		-2.25	2.25	96.25	86.63	1.00	1.00	1.28	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1	1	0.263	0.160	22.81	-20.44	22.81	96.25	86.63	1.00	1.00	9.33	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.236	0.066	-0.00	-20.44	20.44	96.25	86.63	1.00	1.00	3.83	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.071	0.060		-6.17	6.17	96.25	86.63	1.00	1.00	3.52	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1	1	0.365	0.172	18.33	-31.66	31.66	96.25	86.63	1.00	1.00	10.03	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.365	0.170	16.94	-31.66	31.66	96.25	86.63	1.00	1.00	9.89	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.026	0.022		-2.25	2.25	96.25	86.63	1.00	1.00	1.28	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1	1	0.354	0.171	18.71	-30.68	30.68	96.25	86.63	1.00	1.00	9.97	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.354	0.164	14.96	-30.68	30.68	96.25	86.63	1.00	1.00	9.59	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.071	0.060		-6.17	6.17	96.25	86.63	1.00	1.00	3.52	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1	1	0.104	0.053	6.12	-9.04	9.04	96.25	86.63	1.00	1.00	3.10	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.104	0.048	3.56	-9.04	9.04	96.25	86.63	1.00	1.00	2.82	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.051	0.043		-4.39	4.39	96.25	86.63	1.00	1.00	2.51	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1	1	0.185	0.114	3.70	-16.05	16.05	96.25	86.63	1.00	1.00	6.62	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.185	0.114	14.48	-16.05	16.05	96.25	86.63	1.00	1.00	6.62	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1	1	0.178	0.110	3.89	-15.44	15.44	96.25	86.63	1.00	1.00	6.42	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.178	0.110	13.36	-15.44	15.44	96.25	86.63	1.00	1.00	6.42	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.051	0.043		-4.39	4.39	96.25	86.63	1.00	1.00	2.51	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1	1	0.185	0.116	15.61	-16.05	16.05	96.25	86.63	1.00	1.00	6.74	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.185	0.059	2.37	-16.05	16.05	96.25	86.63	1.00	1.00	3.42	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1	1	0.183	0.115	15.87	-15.44	15.87	96.25	86.63	1.00	1.00	6.70	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.178	0.055	0.97	-15.44	15.44	96.25	86.63	1.00	1.00	3.22	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.051	0.043		-4.39	4.39	96.25	86.63	1.00	1.00	2.51	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1	1	0.259	0.122	13.08	-22.45	22.45	96.25	86.63	1.00	1.00	7.14	58.29	58.29
Dsgn. L = 16.00 ft	2	2	0.259	0.120	11.89	-22.45	22.45	96.25	86.63	1.00	1.00	7.02	58.29	58.29
Dsgn. L = 3.50 ft	3	3	0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J4**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values							
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx				
+1.20D+1.60Lr+L+1.60H, LL Com																		
Dsgn. L = 16.00 ft	1		0.252	0.122	13.32	-21.84	21.84	96.25	86.63	1.00	1.00	7.10	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.252	0.117	10.65	-21.84	21.84	96.25	86.63	1.00	1.00	6.82	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.051	0.043		-4.39	4.39	96.25	86.63	1.00	1.00	2.51	58.29	58.29				
+1.20D+1.60Lr+0.50W+1.60H, LL																		
Dsgn. L = 16.00 ft	1		0.111	0.054	5.89	-9.65	9.65	96.25	86.63	1.00	1.00	3.14	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.111	0.052	4.71	-9.65	9.65	96.25	86.63	1.00	1.00	3.02	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29				
+1.20D+1.60Lr+0.50W+1.60H, LL																		
Dsgn. L = 16.00 ft	1		0.111	0.054	5.89	-9.65	9.65	96.25	86.63	1.00	1.00	3.14	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.111	0.052	4.71	-9.65	9.65	96.25	86.63	1.00	1.00	3.02	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29				
+1.20D+1.60Lr+0.50W+1.60H, LL																		
Dsgn. L = 16.00 ft	1		0.111	0.054	5.89	-9.65	9.65	96.25	86.63	1.00	1.00	3.14	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.111	0.052	4.71	-9.65	9.65	96.25	86.63	1.00	1.00	3.02	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29				
+1.20D+1.60Lr+0.50W+1.60H, LL																		
Dsgn. L = 16.00 ft	1		0.111	0.054	5.89	-9.65	9.65	96.25	86.63	1.00	1.00	3.14	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.111	0.052	4.71	-9.65	9.65	96.25	86.63	1.00	1.00	3.02	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29				
+1.20D+1.60Lr+0.50W+1.60H, LL																		
Dsgn. L = 16.00 ft	1		0.111	0.054	5.89	-9.65	9.65	96.25	86.63	1.00	1.00	3.14	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.111	0.052	4.71	-9.65	9.65	96.25	86.63	1.00	1.00	3.02	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29				
+1.20D+1.60Lr+0.50W+1.60H, LL																		
Dsgn. L = 16.00 ft	1		0.111	0.054	5.89	-9.65	9.65	96.25	86.63	1.00	1.00	3.14	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.111	0.052	4.71	-9.65	9.65	96.25	86.63	1.00	1.00	3.02	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29				
+1.20D+L+1.60S+1.60H, LL Com																		
Dsgn. L = 16.00 ft	1		0.161	0.080	9.09	-13.91	13.91	96.25	86.63	1.00	1.00	4.68	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.161	0.075	5.91	-13.91	13.91	96.25	86.63	1.00	1.00	4.35	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.062	0.053		-5.37	5.37	96.25	86.63	1.00	1.00	3.07	58.29	58.29				
+1.20D+L+1.60S+1.60H, LL Com																		
Dsgn. L = 16.00 ft	1		0.242	0.140	6.59	-20.93	20.93	96.25	86.63	1.00	1.00	8.14	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.242	0.140	16.86	-20.93	20.93	96.25	86.63	1.00	1.00	8.14	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.034	0.029		-2.92	2.92	96.25	86.63	1.00	1.00	1.67	58.29	58.29				
+1.20D+L+1.60S+1.60H, LL Com																		
Dsgn. L = 16.00 ft	1		0.235	0.136	6.79	-20.31	20.31	96.25	86.63	1.00	1.00	7.95	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.235	0.136	15.71	-20.31	20.31	96.25	86.63	1.00	1.00	7.95	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.062	0.053		-5.37	5.37	96.25	86.63	1.00	1.00	3.07	58.29	58.29				
+1.20D+L+1.60S+1.60H, LL Com																		
Dsgn. L = 16.00 ft	1		0.242	0.143	18.57	-20.93	20.93	96.25	86.63	1.00	1.00	8.32	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.242	0.085	4.66	-20.93	20.93	96.25	86.63	1.00	1.00	4.94	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.034	0.029		-2.92	2.92	96.25	86.63	1.00	1.00	1.67	58.29	58.29				
+1.20D+L+1.60S+1.60H, LL Com																		
Dsgn. L = 16.00 ft	1		0.235	0.142	18.82	-20.31	20.31	96.25	86.63	1.00	1.00	8.28	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.235	0.081	3.33	-20.31	20.31	96.25	86.63	1.00	1.00	4.75	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.062	0.053		-5.37	5.37	96.25	86.63	1.00	1.00	3.07	58.29	58.29				
+1.20D+L+1.60S+1.60H, LL Com																		
Dsgn. L = 16.00 ft	1		0.315	0.150	16.06	-27.33	27.33	96.25	86.63	1.00	1.00	8.72	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.315	0.147	14.26	-27.33	27.33	96.25	86.63	1.00	1.00	8.54	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.034	0.029		-2.92	2.92	96.25	86.63	1.00	1.00	1.67	58.29	58.29				
+1.20D+L+1.60S+1.60H, LL Com																		
Dsgn. L = 16.00 ft	1		0.308	0.149	16.29	-26.71	26.71	96.25	86.63	1.00	1.00	8.68	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.308	0.143	13.03	-26.71	26.71	96.25	86.63	1.00	1.00	8.35	58.29	58.29				
Dsgn. L = 3.50 ft	3		0.062	0.053		-5.37	5.37	96.25	86.63	1.00	1.00	3.07	58.29	58.29				
+1.20D+1.60S+0.50W+1.60H																		
Dsgn. L = 16.00 ft	1		0.168	0.081	8.86	-14.53	14.53	96.25	86.63	1.00	1.00	4.72	58.29	58.29				
Dsgn. L = 16.00 ft	2		0.168	0.078	7.09	-14.53	14.53	96.25	86.63	1.00	1.00	4.54	58.29	58.29				



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J4**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values					
	Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.50 ft	3		0.034	0.029		-2.92	2.92	96.25	86.63	1.00	1.00	1.67	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.104	0.053	6.12	-9.04	9.04	96.25	86.63	1.00	1.00	3.10	58.29	58.29
Dsgn. L = 16.00 ft	2		0.104	0.048	3.56	-9.04	9.04	96.25	86.63	1.00	1.00	2.82	58.29	58.29
Dsgn. L = 3.50 ft	3		0.051	0.043		-4.39	4.39	96.25	86.63	1.00	1.00	2.51	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.185	0.114	3.70	-16.05	16.05	96.25	86.63	1.00	1.00	6.62	58.29	58.29
Dsgn. L = 16.00 ft	2		0.185	0.114	14.48	-16.05	16.05	96.25	86.63	1.00	1.00	6.62	58.29	58.29
Dsgn. L = 3.50 ft	3		0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.178	0.110	3.89	-15.44	15.44	96.25	86.63	1.00	1.00	6.42	58.29	58.29
Dsgn. L = 16.00 ft	2		0.178	0.110	13.36	-15.44	15.44	96.25	86.63	1.00	1.00	6.42	58.29	58.29
Dsgn. L = 3.50 ft	3		0.051	0.043		-4.39	4.39	96.25	86.63	1.00	1.00	2.51	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.185	0.116	15.61	-16.05	16.05	96.25	86.63	1.00	1.00	6.74	58.29	58.29
Dsgn. L = 16.00 ft	2		0.185	0.059	2.37	-16.05	16.05	96.25	86.63	1.00	1.00	3.42	58.29	58.29
Dsgn. L = 3.50 ft	3		0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.183	0.115	15.87	-15.44	15.87	96.25	86.63	1.00	1.00	6.70	58.29	58.29
Dsgn. L = 16.00 ft	2		0.178	0.055	0.97	-15.44	15.44	96.25	86.63	1.00	1.00	3.22	58.29	58.29
Dsgn. L = 3.50 ft	3		0.051	0.043		-4.39	4.39	96.25	86.63	1.00	1.00	2.51	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.259	0.122	13.08	-22.45	22.45	96.25	86.63	1.00	1.00	7.14	58.29	58.29
Dsgn. L = 16.00 ft	2		0.259	0.120	11.89	-22.45	22.45	96.25	86.63	1.00	1.00	7.02	58.29	58.29
Dsgn. L = 3.50 ft	3		0.022	0.019		-1.94	1.94	96.25	86.63	1.00	1.00	1.11	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.252	0.122	13.32	-21.84	21.84	96.25	86.63	1.00	1.00	7.10	58.29	58.29
Dsgn. L = 16.00 ft	2		0.252	0.117	10.65	-21.84	21.84	96.25	86.63	1.00	1.00	6.82	58.29	58.29
Dsgn. L = 3.50 ft	3		0.051	0.043		-4.39	4.39	96.25	86.63	1.00	1.00	2.51	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.122	0.062	7.05	-10.56	10.56	96.25	86.63	1.00	1.00	3.59	58.29	58.29
Dsgn. L = 16.00 ft	2		0.122	0.057	4.29	-10.56	10.56	96.25	86.63	1.00	1.00	3.30	58.29	58.29
Dsgn. L = 3.50 ft	3		0.054	0.046		-4.70	4.70	96.25	86.63	1.00	1.00	2.68	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.203	0.122	4.59	-17.58	17.58	96.25	86.63	1.00	1.00	7.09	58.29	58.29
Dsgn. L = 16.00 ft	2		0.203	0.122	15.22	-17.58	17.58	96.25	86.63	1.00	1.00	7.09	58.29	58.29
Dsgn. L = 3.50 ft	3		0.026	0.022		-2.25	2.25	96.25	86.63	1.00	1.00	1.28	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.196	0.118	4.79	-16.96	16.96	96.25	86.63	1.00	1.00	6.90	58.29	58.29
Dsgn. L = 16.00 ft	2		0.196	0.118	14.09	-16.96	16.96	96.25	86.63	1.00	1.00	6.90	58.29	58.29
Dsgn. L = 3.50 ft	3		0.054	0.046		-4.70	4.70	96.25	86.63	1.00	1.00	2.68	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.203	0.124	16.54	-17.58	17.58	96.25	86.63	1.00	1.00	7.23	58.29	58.29
Dsgn. L = 16.00 ft	2		0.203	0.067	3.08	-17.58	17.58	96.25	86.63	1.00	1.00	3.89	58.29	58.29
Dsgn. L = 3.50 ft	3		0.026	0.022		-2.25	2.25	96.25	86.63	1.00	1.00	1.28	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.196	0.123	16.79	-16.96	16.96	96.25	86.63	1.00	1.00	7.19	58.29	58.29
Dsgn. L = 16.00 ft	2		0.196	0.063	1.71	-16.96	16.96	96.25	86.63	1.00	1.00	3.70	58.29	58.29
Dsgn. L = 3.50 ft	3		0.054	0.046		-4.70	4.70	96.25	86.63	1.00	1.00	2.68	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.277	0.131	14.01	-23.98	23.98	96.25	86.63	1.00	1.00	7.63	58.29	58.29
Dsgn. L = 16.00 ft	2		0.277	0.129	12.63	-23.98	23.98	96.25	86.63	1.00	1.00	7.49	58.29	58.29
Dsgn. L = 3.50 ft	3		0.026	0.022		-2.25	2.25	96.25	86.63	1.00	1.00	1.28	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.270	0.130	14.25	-23.36	23.36	96.25	86.63	1.00	1.00	7.59	58.29	58.29
Dsgn. L = 16.00 ft	2		0.270	0.125	11.39	-23.36	23.36	96.25	86.63	1.00	1.00	7.30	58.29	58.29
Dsgn. L = 3.50 ft	3		0.054	0.046		-4.70	4.70	96.25	86.63	1.00	1.00	2.68	58.29	58.29
+0.90D+W+1.60H														
Dsgn. L = 16.00 ft	1		0.084	0.040	4.41	-7.24	7.24	96.25	86.63	1.00	1.00	2.35	58.29	58.29
Dsgn. L = 16.00 ft	2		0.084	0.039	3.53	-7.24	7.24	96.25	86.63	1.00	1.00	2.26	58.29	58.29
Dsgn. L = 3.50 ft	3		0.017	0.014		-1.46	1.46	96.25	86.63	1.00	1.00	0.83	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.111	0.057	6.49	-9.65	9.65	96.25	86.63	1.00	1.00	3.30	58.29	58.29

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J4**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 16.00 ft	2		0.111	0.052	3.85	-9.65	9.65	96.25	86.63	1.00	1.00	3.02	58.29	58.29
Dsgn. L = 3.50 ft	3		0.052	0.044		-4.51	4.51	96.25	86.63	1.00	1.00	2.58	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL Cr														
Dsgn. L = 16.00 ft	1		0.192	0.117	4.06	-16.66	16.66	96.25	86.63	1.00	1.00	6.81	58.29	58.29
Dsgn. L = 16.00 ft	2		0.192	0.117	14.78	-16.66	16.66	96.25	86.63	1.00	1.00	6.81	58.29	58.29
Dsgn. L = 3.50 ft	3		0.024	0.020		-2.06	2.06	96.25	86.63	1.00	1.00	1.18	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL Cr														
Dsgn. L = 16.00 ft	1		0.185	0.114	4.25	-16.05	16.05	96.25	86.63	1.00	1.00	6.62	58.29	58.29
Dsgn. L = 16.00 ft	2		0.185	0.114	13.65	-16.05	16.05	96.25	86.63	1.00	1.00	6.62	58.29	58.29
Dsgn. L = 3.50 ft	3		0.052	0.044		-4.51	4.51	96.25	86.63	1.00	1.00	2.58	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL Cr														
Dsgn. L = 16.00 ft	1		0.192	0.119	15.98	-16.66	16.66	96.25	86.63	1.00	1.00	6.94	58.29	58.29
Dsgn. L = 16.00 ft	2		0.192	0.062	2.65	-16.66	16.66	96.25	86.63	1.00	1.00	3.61	58.29	58.29
Dsgn. L = 3.50 ft	3		0.024	0.020		-2.06	2.06	96.25	86.63	1.00	1.00	1.18	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL Cr														
Dsgn. L = 16.00 ft	1		0.187	0.118	16.24	-16.05	16.24	96.25	86.63	1.00	1.00	6.90	58.29	58.29
Dsgn. L = 16.00 ft	2		0.185	0.059	1.27	-16.05	16.05	96.25	86.63	1.00	1.00	3.42	58.29	58.29
Dsgn. L = 3.50 ft	3		0.052	0.044		-4.51	4.51	96.25	86.63	1.00	1.00	2.58	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL Cr														
Dsgn. L = 16.00 ft	1		0.266	0.126	13.46	-23.06	23.06	96.25	86.63	1.00	1.00	7.34	58.29	58.29
Dsgn. L = 16.00 ft	2		0.266	0.124	12.18	-23.06	23.06	96.25	86.63	1.00	1.00	7.21	58.29	58.29
Dsgn. L = 3.50 ft	3		0.024	0.020		-2.06	2.06	96.25	86.63	1.00	1.00	1.18	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL Cr														
Dsgn. L = 16.00 ft	1		0.259	0.125	13.69	-22.45	22.45	96.25	86.63	1.00	1.00	7.30	58.29	58.29
Dsgn. L = 16.00 ft	2		0.259	0.120	10.95	-22.45	22.45	96.25	86.63	1.00	1.00	7.02	58.29	58.29
Dsgn. L = 3.50 ft	3		0.052	0.044		-4.51	4.51	96.25	86.63	1.00	1.00	2.58	58.29	58.29
+0.90D+E+0.90H														
Dsgn. L = 16.00 ft	1		0.084	0.040	4.41	-7.24	7.24	96.25	86.63	1.00	1.00	2.35	58.29	58.29
Dsgn. L = 16.00 ft	2		0.084	0.039	3.53	-7.24	7.24	96.25	86.63	1.00	1.00	2.26	58.29	58.29
Dsgn. L = 3.50 ft	3		0.017	0.014		-1.46	1.46	96.25	86.63	1.00	1.00	0.83	58.29	58.29

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2539	7.467		0.0000	0.000
+D+L+H	2	0.2263	8.640	+D+L+H	-0.0166	0.640
	3	0.0000	8.640	+D+L+H	-0.1633	3.500

**Vertical Reactions**

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Max Upward from all Load Conditions	4.448	13.128	7.026	
Max Upward from Load Combinations	4.448	13.128	7.026	
Max Upward from Load Cases	2.838	8.000	4.391	
Max Downward from all Load Conditions (Resis)	-0.400	-0.230	-0.400	
Max Downward from Load Cases (Resisting Up)	-0.400	-0.230	-0.400	
+D+H	1.609	5.128	2.634	
+D+L+H, LL Comb Run (**L)	1.648	4.899	4.226	
+D+L+H, LL Comb Run (*L*)	1.209	9.128	5.434	
+D+L+H, LL Comb Run (*LL)	1.248	8.899	7.026	
+D+L+H, LL Comb Run (L**)	4.409	9.128	2.234	
+D+L+H, LL Comb Run (L*L)	4.448	8.899	3.826	
+D+L+H, LL Comb Run (LL*)	4.009	13.128	5.034	
+D+L+H, LL Comb Run (LLL)	4.048	12.899	6.626	
+D+Lr+H, LL Comb Run (**L)	1.609	5.128	2.634	
+D+Lr+H, LL Comb Run (*L*)	1.609	5.128	2.634	
+D+Lr+H, LL Comb Run (*LL)	1.609	5.128	2.634	
+D+Lr+H, LL Comb Run (L**)	1.609	5.128	2.634	
+D+Lr+H, LL Comb Run (L*L)	1.609	5.128	2.634	
+D+Lr+H, LL Comb Run (LL*)	1.609	5.128	2.634	
+D+Lr+H, LL Comb Run (LLL)	1.609	5.128	2.634	
+D+S+H	2.219	7.071	3.632	
+D+0.750Lr+0.750L+H, LL Comb Run (**L)	1.638	4.956	3.828	
+D+0.750Lr+0.750L+H, LL Comb Run (*L*)	1.309	8.128	4.734	
+D+0.750Lr+0.750L+H, LL Comb Run (*LL)	1.338	7.956	5.928	



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: J4**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
+D+0.750Lr+0.750L+H, LL Comb Run (L**)	3.709	8.128	2.334	
+D+0.750Lr+0.750L+H, LL Comb Run (L*L)	3.738	7.956	3.528	
+D+0.750Lr+0.750L+H, LL Comb Run (LL*)	3.409	11.128	4.434	
+D+0.750Lr+0.750L+H, LL Comb Run (LLL)	3.438	10.956	5.628	
+D+0.750L+0.750S+H, LL Comb Run (**L)	2.095	6.413	4.576	
+D+0.750L+0.750S+H, LL Comb Run (*L*)	1.766	9.585	5.483	
+D+0.750L+0.750S+H, LL Comb Run (*LL)	1.795	9.413	6.676	
+D+0.750L+0.750S+H, LL Comb Run (L**)	4.166	9.585	3.083	
+D+0.750L+0.750S+H, LL Comb Run (L*L)	4.195	9.413	4.276	
+D+0.750L+0.750S+H, LL Comb Run (LL*)	3.866	12.585	5.183	
+D+0.750L+0.750S+H, LL Comb Run (LLL)	3.895	12.413	6.376	
+D+0.60W+H	1.609	5.128	2.634	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.638	4.956	3.828	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.309	8.128	4.734	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.338	7.956	5.928	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.709	8.128	2.334	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.738	7.956	3.528	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.409	11.128	4.434	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.438	10.956	5.628	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	2.095	6.413	4.576	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.766	9.585	5.483	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.795	9.413	6.676	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.166	9.585	3.083	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.195	9.413	4.276	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.866	12.585	5.183	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.895	12.413	6.376	
+0.60D+0.60W+0.60H	0.966	3.077	1.581	
+D+0.70E+0.60H	1.609	5.128	2.634	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	2.095	6.413	4.576	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	1.766	9.585	5.483	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	1.795	9.413	6.676	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	4.166	9.585	3.083	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	4.195	9.413	4.276	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.866	12.585	5.183	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.895	12.413	6.376	
+0.60D+0.70E+H	0.966	3.077	1.581	
D Only	1.609	5.128	2.634	
L Only, LL Comb Run (**L)	0.038	-0.230	1.591	
L Only, LL Comb Run (*L*)	-0.400	4.000	2.800	
L Only, LL Comb Run (*LL)	-0.362	3.770	4.391	
L Only, LL Comb Run (L**)	2.800	4.000	-0.400	
L Only, LL Comb Run (L*L)	2.838	3.770	1.191	
L Only, LL Comb Run (LL*)	2.400	8.000	2.400	
L Only, LL Comb Run (LLL)	2.438	7.770	3.991	
S Only	0.610	1.943	0.998	
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **J5**

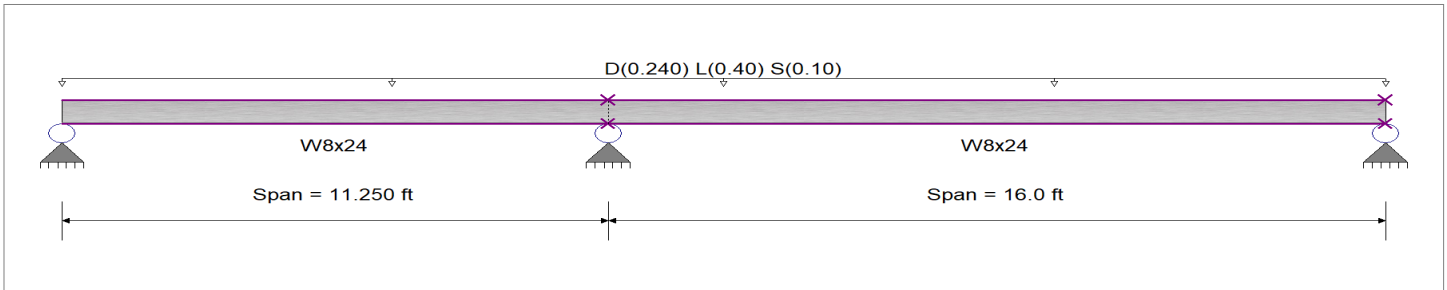
**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.294</b> : 1	Maximum Shear Stress Ratio =	<b>0.166</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	25.492 k-ft	Vu : Applied	9.648 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	11.250 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.161 in Ratio = <b>1,193</b> >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Upward Transient Deflection	-0.044 in Ratio = <b>3,054</b> >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Downward Total Deflection	0.248 in Ratio = <b>775</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (*L)	
Max Upward Total Deflection	-0.046 in Ratio = <b>2951</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (*L)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L = 11.25 ft	1		0.108	0.061	2.10	-9.36	9.36	96.25	86.63	1.00	1.00	3.54	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.108	0.061	7.61	-9.36	9.36	96.25	86.63	1.00	1.00	3.54	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 11.25 ft	1		0.231	0.153	-20.05	20.05	96.25	86.63	1.00	1.00	8.91	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.247	0.153	21.41	-20.05	21.41	96.25	86.63	1.00	1.00	8.91	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 11.25 ft	1		0.141	0.111	9.65	-12.20	12.20	96.25	86.63	1.00	1.00	6.47	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.141	0.057	4.95	-12.20	12.20	96.25	86.63	1.00	1.00	3.30	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 11.25 ft	1		0.280	0.157	5.45	-24.23	24.23	96.25	86.63	1.00	1.00	9.17	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.280	0.157	19.70	-24.23	24.23	96.25	86.63	1.00	1.00	9.17	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 11.25 ft	1		0.246	0.161	0.04	-21.31	21.31	96.25	86.63	1.00	1.00	9.39	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.259	0.161	22.44	-21.31	22.44	96.25	86.63	1.00	1.00	9.39	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 11.25 ft	1		0.155	0.118	9.91	-13.47	13.47	96.25	86.63	1.00	1.00	6.86	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.155	0.065	5.97	-13.47	13.47	96.25	86.63	1.00	1.00	3.78	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 11.25 ft	1		0.294	0.166	5.73	-25.49	25.49	96.25	86.63	1.00	1.00	9.65	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.294	0.166	20.73	-25.49	25.49	96.25	86.63	1.00	1.00	9.65	58.29	58.29	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J5**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 11.25 ft	1		0.179	0.115	0.25	-15.54	15.54	96.25	86.63	1.00	1.00	6.71	58.29	58.29
Dsgn. L = 16.00 ft	2		0.183	0.115	15.83	-15.54	15.83	96.25	86.63	1.00	1.00	6.71	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 11.25 ft	1		0.123	0.085	6.65	-10.63	10.63	96.25	86.63	1.00	1.00	4.98	58.29	58.29
Dsgn. L = 16.00 ft	2		0.123	0.055	5.52	-10.63	10.63	96.25	86.63	1.00	1.00	3.20	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 11.25 ft	1		0.210	0.118	4.08	-18.15	18.15	96.25	86.63	1.00	1.00	6.87	58.29	58.29
Dsgn. L = 16.00 ft	2		0.210	0.118	14.76	-18.15	18.15	96.25	86.63	1.00	1.00	6.87	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 11.25 ft	1		0.093	0.052	1.80	-8.02	8.02	96.25	86.63	1.00	1.00	3.04	58.29	58.29
Dsgn. L = 16.00 ft	2		0.093	0.052	6.52	-8.02	8.02	96.25	86.63	1.00	1.00	3.04	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 11.25 ft	1		0.093	0.052	1.80	-8.02	8.02	96.25	86.63	1.00	1.00	3.04	58.29	58.29
Dsgn. L = 16.00 ft	2		0.093	0.052	6.52	-8.02	8.02	96.25	86.63	1.00	1.00	3.04	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 11.25 ft	1		0.093	0.052	1.80	-8.02	8.02	96.25	86.63	1.00	1.00	3.04	58.29	58.29
Dsgn. L = 16.00 ft	2		0.093	0.052	6.52	-8.02	8.02	96.25	86.63	1.00	1.00	3.04	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 11.25 ft	1		0.226	0.141	0.93	-19.59	19.59	96.25	86.63	1.00	1.00	8.24	58.29	58.29
Dsgn. L = 16.00 ft	2		0.226	0.141	19.12	-19.59	19.59	96.25	86.63	1.00	1.00	8.24	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 11.25 ft	1		0.170	0.107	7.50	-14.69	14.69	96.25	86.63	1.00	1.00	6.24	58.29	58.29
Dsgn. L = 16.00 ft	2		0.170	0.081	8.80	-14.69	14.69	96.25	86.63	1.00	1.00	4.73	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 11.25 ft	1		0.256	0.144	4.99	-22.20	22.20	96.25	86.63	1.00	1.00	8.40	58.29	58.29
Dsgn. L = 16.00 ft	2		0.256	0.144	18.05	-22.20	22.20	96.25	86.63	1.00	1.00	8.40	58.29	58.29
+1.20D+1.60S+0.50W+1.60H														
Dsgn. L = 11.25 ft	1		0.139	0.078	2.71	-12.07	12.07	96.25	86.63	1.00	1.00	4.57	58.29	58.29
Dsgn. L = 16.00 ft	2		0.139	0.078	9.82	-12.07	12.07	96.25	86.63	1.00	1.00	4.57	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 11.25 ft	1		0.179	0.115	0.25	-15.54	15.54	96.25	86.63	1.00	1.00	6.71	58.29	58.29
Dsgn. L = 16.00 ft	2		0.183	0.115	15.83	-15.54	15.83	96.25	86.63	1.00	1.00	6.71	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 11.25 ft	1		0.123	0.085	6.65	-10.63	10.63	96.25	86.63	1.00	1.00	4.98	58.29	58.29
Dsgn. L = 16.00 ft	2		0.123	0.055	5.52	-10.63	10.63	96.25	86.63	1.00	1.00	3.20	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 11.25 ft	1		0.210	0.118	4.08	-18.15	18.15	96.25	86.63	1.00	1.00	6.87	58.29	58.29
Dsgn. L = 16.00 ft	2		0.210	0.118	14.76	-18.15	18.15	96.25	86.63	1.00	1.00	6.87	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 11.25 ft	1		0.194	0.123	0.44	-16.80	16.80	96.25	86.63	1.00	1.00	7.18	58.29	58.29
Dsgn. L = 16.00 ft	2		0.195	0.123	16.85	-16.80	16.85	96.25	86.63	1.00	1.00	7.18	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 11.25 ft	1		0.137	0.092	6.91	-11.90	11.90	96.25	86.63	1.00	1.00	5.37	58.29	58.29
Dsgn. L = 16.00 ft	2		0.137	0.063	6.54	-11.90	11.90	96.25	86.63	1.00	1.00	3.68	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 11.25 ft	1		0.224	0.126	4.37	-19.42	19.42	96.25	86.63	1.00	1.00	7.35	58.29	58.29
Dsgn. L = 16.00 ft	2		0.224	0.126	15.79	-19.42	19.42	96.25	86.63	1.00	1.00	7.35	58.29	58.29
+0.90D+W+1.60H														
Dsgn. L = 11.25 ft	1		0.069	0.039	1.35	-6.02	6.02	96.25	86.63	1.00	1.00	2.28	58.29	58.29
Dsgn. L = 16.00 ft	2		0.069	0.039	4.89	-6.02	6.02	96.25	86.63	1.00	1.00	2.28	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 11.25 ft	1		0.185	0.118	0.33	-16.04	16.04	96.25	86.63	1.00	1.00	6.90	58.29	58.29
Dsgn. L = 16.00 ft	2		0.187	0.118	16.24	-16.04	16.24	96.25	86.63	1.00	1.00	6.90	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 11.25 ft	1		0.129	0.088	6.75	-11.14	11.14	96.25	86.63	1.00	1.00	5.13	58.29	58.29
Dsgn. L = 16.00 ft	2		0.129	0.058	5.93	-11.14	11.14	96.25	86.63	1.00	1.00	3.39	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 11.25 ft	1		0.215	0.121	4.19	-18.66	18.66	96.25	86.63	1.00	1.00	7.06	58.29	58.29
Dsgn. L = 16.00 ft	2		0.215	0.121	15.17	-18.66	18.66	96.25	86.63	1.00	1.00	7.06	58.29	58.29
+0.90D+E+0.90H														
Dsgn. L = 11.25 ft	1		0.069	0.039	1.35	-6.02	6.02	96.25	86.63	1.00	1.00	2.28	58.29	58.29
Dsgn. L = 16.00 ft	2		0.069	0.039	4.89	-6.02	6.02	96.25	86.63	1.00	1.00	2.28	58.29	58.29



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J5**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0483	4.950	+D+L+H	-0.0457	7.290
+D+L+H	2	0.2477	8.704		0.0000	7.290

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	2.909	11.592	4.424
Max Upward from Load Combinations	2.909	11.592	4.424
Max Upward from Load Cases	2.018	6.983	2.730
Max Downward from all Load Conditions (Resis	-0.668		-0.163
Max Downward from Load Cases (Resisting Up	-0.668		-0.163
+D+H	0.891	4.609	1.694
+D+L+H, LL Comb Run (*L)	0.223	8.947	4.424
+D+L+H, LL Comb Run (L*)	2.909	7.254	1.531
+D+L+H, LL Comb Run (LL)	2.241	11.592	4.261
+D+Lr+H, LL Comb Run (*L)	0.891	4.609	1.694
+D+Lr+H, LL Comb Run (L*)	0.891	4.609	1.694
+D+Lr+H, LL Comb Run (LL)	0.891	4.609	1.694
+D+S+H	1.228	6.355	2.336
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	0.390	7.862	3.742
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	2.404	6.593	1.572
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	1.903	9.846	3.619
+D+0.750L+0.750S+H, LL Comb Run (*L)	0.643	9.172	4.223
+D+0.750L+0.750S+H, LL Comb Run (L*)	2.657	7.902	2.053
+D+0.750L+0.750S+H, LL Comb Run (LL)	2.156	11.156	4.101
+D+0.60W+H	0.891	4.609	1.694
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	0.390	7.862	3.742
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	2.404	6.593	1.572
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	1.903	9.846	3.619
+D+0.750L+0.750S+0.450W+H, LL Comb Run	0.643	9.172	4.223
+D+0.750L+0.750S+0.450W+H, LL Comb Run	2.657	7.902	2.053
+D+0.750L+0.750S+0.450W+H, LL Comb Run	2.156	11.156	4.101
+0.60D+0.60W+0.60H	0.534	2.765	1.017
+D+0.70E+0.60H	0.891	4.609	1.694
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	0.643	9.172	4.223
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	2.657	7.902	2.053
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	2.156	11.156	4.101
+0.60D+0.70E+H	0.534	2.765	1.017
D Only	0.891	4.609	1.694
L Only, LL Comb Run (*L)	-0.668	4.338	2.730
L Only, LL Comb Run (L*)	2.018	2.646	-0.163
L Only, LL Comb Run (LL)	1.350	6.983	2.567
S Only	0.337	1.746	0.642
H Only			







Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J5.1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 11.25 ft	11.25 ft	1	0.436	0.152	37.80	37.80	96.25	86.63	1.00	1.00	8.88	58.29	58.29
+0.90D+W+1.60H													
Dsgn. L = 11.25 ft	11.25 ft	1	0.189	0.062	16.42	16.42	96.25	86.63	1.00	1.00	3.59	58.29	58.29
+1.20D+L+0.20S+E+1.60H													
Dsgn. L = 11.25 ft	11.25 ft	1	0.370	0.133	32.05	32.05	96.25	86.63	1.00	1.00	7.77	58.29	58.29
+0.90D+E+0.90H													
Dsgn. L = 11.25 ft	11.25 ft	1	0.189	0.062	16.42	16.42	96.25	86.63	1.00	1.00	3.59	58.29	58.29

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.3044	5.657		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	8.438	8.438		
Max Upward from Load Combinations	8.438	8.438		
Max Upward from Load Cases	3.985	3.985		
+D+H	3.985	3.985		
+D+L+H	6.235	6.235		
+D+Lr+H	3.985	3.985		
+D+S+H	7.673	7.673		
+D+0.750Lr+0.750L+H	5.673	5.673		
+D+0.750L+0.750S+H	8.438	8.438		
+D+0.60W+H	3.985	3.985		
+D+0.750Lr+0.750L+0.450W+H	5.673	5.673		
+D+0.750L+0.750S+0.450W+H	8.438	8.438		
+0.60D+0.60W+0.60H	2.391	2.391		
+D+0.70E+0.60H	3.985	3.985		
+D+0.750L+0.750S+0.5250E+H	8.438	8.438		
+0.60D+0.70E+H	2.391	2.391		
D Only	3.985	3.985		
L Only	2.250	2.250		
S Only	3.688	3.688		
H Only				



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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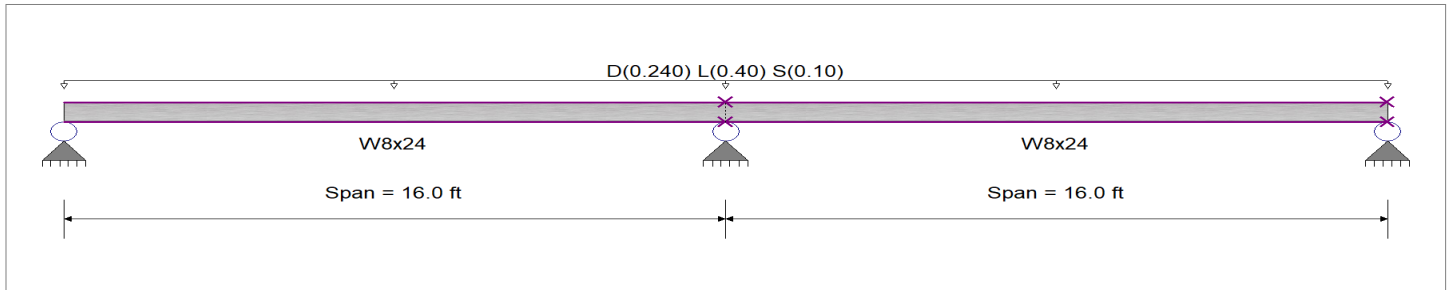
DESCRIPTION: **J6**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.372</b> : 1	Maximum Shear Stress Ratio =	<b>0.173</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	32.218 k-ft	Vu : Applied	10.068 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	16.000 ft
		Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.174 in Ratio = <b>1,103</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.077 in Ratio = <b>2,509</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.241 in Ratio = <b>796</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.036 in Ratio = <b>5352</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L = 16.00 ft	1		0.137	0.063	6.65	-11.83	11.83	96.25	86.63	1.00	1.00	3.70	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.137	0.063	6.65	-11.83	11.83	96.25	86.63	1.00	1.00	3.70	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 16.00 ft	1		0.235	0.153	2.51	-20.38	20.38	96.25	86.63	1.00	1.00	8.93	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.246	0.153	21.28	-20.38	21.28	96.25	86.63	1.00	1.00	8.93	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 16.00 ft	1		0.246	0.153	21.28	-20.38	21.28	96.25	86.63	1.00	1.00	8.93	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.235	0.065	2.51	-20.38	20.38	96.25	86.63	1.00	1.00	3.81	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 16.00 ft	1		0.353	0.164	17.22	-30.62	30.62	96.25	86.63	1.00	1.00	9.57	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.353	0.164	17.22	-30.62	30.62	96.25	86.63	1.00	1.00	9.57	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 16.00 ft	1		0.254	0.162	3.32	-21.98	21.98	96.25	86.63	1.00	1.00	9.43	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.256	0.162	22.17	-21.98	22.17	96.25	86.63	1.00	1.00	9.43	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 16.00 ft	1		0.256	0.162	22.17	-21.98	22.17	96.25	86.63	1.00	1.00	9.43	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.254	0.074	3.32	-21.98	21.98	96.25	86.63	1.00	1.00	4.31	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 16.00 ft	1		0.372	0.173	18.12	-32.22	32.22	96.25	86.63	1.00	1.00	10.07	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.372	0.173	18.12	-32.22	32.22	96.25	86.63	1.00	1.00	10.07	58.29	58.29	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J6**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.191	0.116	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.061	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	3.57	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.250	0.144	6.35	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.250	0.144	18.27	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.250	0.144	18.27	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.250	0.089	6.35	-21.66	21.66	96.25	86.63	1.00	1.00	5.17	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.324	0.150	15.78	-28.06	28.06	96.25	86.63	1.00	1.00	8.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.324	0.150	15.78	-28.06	28.06	96.25	86.63	1.00	1.00	8.77	58.29	58.29
+1.20D+1.60S+0.50W+1.60H	Dsgn. L = 16.00 ft	1	0.176	0.082	8.58	-15.26	15.26	96.25	86.63	1.00	1.00	4.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.176	0.082	8.58	-15.26	15.26	96.25	86.63	1.00	1.00	4.77	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.191	0.116	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.061	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	3.57	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.209	0.125	4.42	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.209	0.125	16.31	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.209	0.125	16.31	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.209	0.070	4.42	-18.14	18.14	96.25	86.63	1.00	1.00	4.07	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.283	0.132	13.80	-24.54	24.54	96.25	86.63	1.00	1.00	7.67	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.283	0.132	13.80	-24.54	24.54	96.25	86.63	1.00	1.00	7.67	58.29	58.29
+0.90D+W+1.60H	Dsgn. L = 16.00 ft	1	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.198	0.120	3.90	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.198	0.120	15.77	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.198	0.120	15.77	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.198	0.065	3.90	-17.18	17.18	96.25	86.63	1.00	1.00	3.77	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.272	0.126	13.26	-23.58	23.58	96.25	86.63	1.00	1.00	7.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.272	0.126	13.26	-23.58	23.58	96.25	86.63	1.00	1.00	7.37	58.29	58.29
+0.90D+E+0.90H	Dsgn. L = 16.00 ft	1	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: J6**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2413	7.360		0.0000	0.000
+D+L+H	2	0.2404	8.704	+D+L+H	-0.0016	0.064

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	4.384	13.280	4.384
Max Upward from Load Combinations	4.384	13.280	4.384
Max Upward from Load Cases	2.800	8.000	2.800
Max Downward from all Load Conditions (Resis	-0.400		-0.400
Max Downward from Load Cases (Resisting Up	-0.400		-0.400
+D+H	1.584	5.280	1.584
+D+L+H, LL Comb Run (*L)	1.184	9.280	4.384
+D+L+H, LL Comb Run (L*)	4.384	9.280	1.184
+D+L+H, LL Comb Run (LL)	3.984	13.280	3.984
+D+Lr+H, LL Comb Run (*L)	1.584	5.280	1.584
+D+Lr+H, LL Comb Run (L*)	1.584	5.280	1.584
+D+Lr+H, LL Comb Run (LL)	1.584	5.280	1.584
+D+S+H	2.184	7.280	2.184
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	1.284	8.280	3.684
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	3.684	8.280	1.284
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	3.384	11.280	3.384
+D+0.750L+0.750S+H, LL Comb Run (*L)	1.734	9.780	4.134
+D+0.750L+0.750S+H, LL Comb Run (L*)	4.134	9.780	1.734
+D+0.750L+0.750S+H, LL Comb Run (LL)	3.834	12.780	3.834
+D+0.60W+H	1.584	5.280	1.584
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.284	8.280	3.684
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.684	8.280	1.284
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.384	11.280	3.384
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.734	9.780	4.134
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.134	9.780	1.734
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.834	12.780	3.834
+0.60D+0.60W+0.60H	0.950	3.168	0.950
+D+0.70E+0.60H	1.584	5.280	1.584
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	1.734	9.780	4.134
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	4.134	9.780	1.734
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.834	12.780	3.834
+0.60D+0.70E+H	0.950	3.168	0.950
D Only	1.584	5.280	1.584
L Only, LL Comb Run (*L)	-0.400	4.000	2.800
L Only, LL Comb Run (L*)	2.800	4.000	-0.400
L Only, LL Comb Run (LL)	2.400	8.000	2.400
S Only	0.600	2.000	0.600
H Only			

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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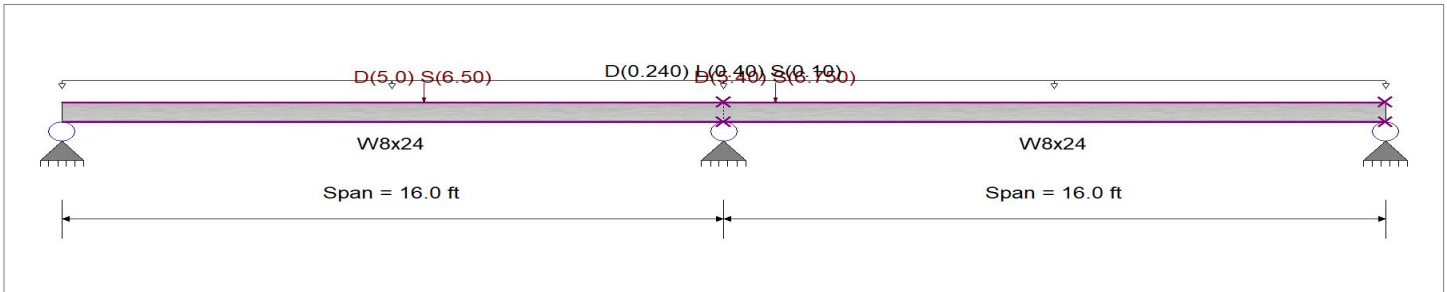
**DESCRIPTION: J6.1**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

Load(s) for Span Number 1

Point Load : D = 5.0, S = 6.50 k @ 8.750 ft, (Pop up Roof)

Load(s) for Span Number 2

Point Load : D = 5.40, S = 6.750 k @ 1.250 ft, (Pop up Roof)

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.725</b> : 1	Maximum Shear Stress Ratio =	<b>0.461</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	62.771 k-ft	Vu : Applied	26.868 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+L+1.60S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+L+1.60S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	16.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.263 in Ratio = <b>728</b> >=360.	Span: 2 : S Only	
Max Upward Transient Deflection	-0.077 in Ratio = <b>2,509</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.577 in Ratio = <b>333</b> >=240.	Span: 2 : +D+0.750L+0.750S+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.093 in Ratio = <b>2075</b> >=240.	Span: 2 : +D+0.750L+0.750S+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L = 16.00 ft	1		0.309	0.199	24.79	-26.75	26.75	96.25	86.63	1.00	1.00	11.60	58.29	58.29
Dsgn. L = 16.00 ft	2		0.309	0.199	4.76	-26.75	26.75	96.25	86.63	1.00	1.00	11.60	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.383	0.269	15.68	-33.17	33.17	96.25	86.63	1.00	1.00	15.70	58.29	58.29
Dsgn. L = 16.00 ft	2		0.383	0.269	19.37	-33.17	33.17	96.25	86.63	1.00	1.00	15.70	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.416	0.223	36.00	-33.17	36.00	96.25	86.63	1.00	1.00	13.01	58.29	58.29
Dsgn. L = 16.00 ft	2		0.383	0.182	1.48	-33.17	33.17	96.25	86.63	1.00	1.00	10.58	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.501	0.280	30.67	-43.41	43.41	96.25	86.63	1.00	1.00	16.34	58.29	58.29
Dsgn. L = 16.00 ft	2		0.501	0.280	15.51	-43.41	43.41	96.25	86.63	1.00	1.00	16.34	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.480	0.339	25.49	-41.62	41.62	96.25	86.63	1.00	1.00	19.74	58.29	58.29

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J6.1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 16.00 ft	2	0.480	0.339	19.23	-41.62	41.62	96.25	86.63	1.00	1.00	19.74	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.529	0.270	45.81	-41.62	45.81	96.25	86.63	1.00	1.00	15.71	58.29	58.29
Dsgn. L = 16.00 ft	2	0.480	0.251	1.66	-41.62	41.62	96.25	86.63	1.00	1.00	14.62	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.599	0.350	40.24	-51.86	51.86	96.25	86.63	1.00	1.00	20.38	58.29	58.29
Dsgn. L = 16.00 ft	2	0.599	0.350	15.48	-51.86	51.86	96.25	86.63	1.00	1.00	20.38	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com													
Dsgn. L = 16.00 ft	1	0.339	0.232	17.77	-29.33	29.33	96.25	86.63	1.00	1.00	13.54	58.29	58.29
Dsgn. L = 16.00 ft	2	0.339	0.232	13.55	-29.33	29.33	96.25	86.63	1.00	1.00	13.54	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com													
Dsgn. L = 16.00 ft	1	0.352	0.186	30.47	-29.33	30.47	96.25	86.63	1.00	1.00	10.85	58.29	58.29
Dsgn. L = 16.00 ft	2	0.339	0.177	2.30	-29.33	29.33	96.25	86.63	1.00	1.00	10.34	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com													
Dsgn. L = 16.00 ft	1	0.412	0.239	26.99	-35.73	35.73	96.25	86.63	1.00	1.00	13.94	58.29	58.29
Dsgn. L = 16.00 ft	2	0.412	0.239	11.20	-35.73	35.73	96.25	86.63	1.00	1.00	13.94	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 16.00 ft	1	0.265	0.171	21.25	-22.93	22.93	96.25	86.63	1.00	1.00	9.94	58.29	58.29
Dsgn. L = 16.00 ft	2	0.265	0.171	4.08	-22.93	22.93	96.25	86.63	1.00	1.00	9.94	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 16.00 ft	1	0.265	0.171	21.25	-22.93	22.93	96.25	86.63	1.00	1.00	9.94	58.29	58.29
Dsgn. L = 16.00 ft	2	0.265	0.171	4.08	-22.93	22.93	96.25	86.63	1.00	1.00	9.94	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 16.00 ft	1	0.265	0.171	21.25	-22.93	22.93	96.25	86.63	1.00	1.00	9.94	58.29	58.29
Dsgn. L = 16.00 ft	2	0.265	0.171	4.08	-22.93	22.93	96.25	86.63	1.00	1.00	9.94	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com													
Dsgn. L = 16.00 ft	1	0.651	0.454	49.16	-56.37	56.37	96.25	86.63	1.00	1.00	26.47	58.29	58.29
Dsgn. L = 16.00 ft	2	0.651	0.454	13.37	-56.37	56.37	96.25	86.63	1.00	1.00	26.47	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com													
Dsgn. L = 16.00 ft	1	0.714	0.399	61.86	-56.37	61.86	96.25	86.63	1.00	1.00	23.27	58.29	58.29
Dsgn. L = 16.00 ft	2	0.651	0.399	2.82	-56.37	56.37	96.25	86.63	1.00	1.00	23.27	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com													
Dsgn. L = 16.00 ft	1	0.725	0.461	58.37	-62.77	62.77	96.25	86.63	1.00	1.00	26.87	58.29	58.29
Dsgn. L = 16.00 ft	2	0.725	0.461	11.25	-62.77	62.77	96.25	86.63	1.00	1.00	26.87	58.29	58.29
+1.20D+1.60S+0.50W+1.60H													
Dsgn. L = 16.00 ft	1	0.608	0.392	52.64	-49.97	52.64	96.25	86.63	1.00	1.00	22.87	58.29	58.29
Dsgn. L = 16.00 ft	2	0.577	0.392	4.37	-49.97	49.97	96.25	86.63	1.00	1.00	22.87	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.339	0.232	17.77	-29.33	29.33	96.25	86.63	1.00	1.00	13.54	58.29	58.29
Dsgn. L = 16.00 ft	2	0.339	0.232	13.55	-29.33	29.33	96.25	86.63	1.00	1.00	13.54	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.352	0.186	30.47	-29.33	30.47	96.25	86.63	1.00	1.00	10.85	58.29	58.29
Dsgn. L = 16.00 ft	2	0.339	0.177	2.30	-29.33	29.33	96.25	86.63	1.00	1.00	10.34	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.412	0.239	26.99	-35.73	35.73	96.25	86.63	1.00	1.00	13.94	58.29	58.29
Dsgn. L = 16.00 ft	2	0.412	0.239	11.20	-35.73	35.73	96.25	86.63	1.00	1.00	13.94	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.436	0.302	27.58	-37.78	37.78	96.25	86.63	1.00	1.00	17.58	58.29	58.29
Dsgn. L = 16.00 ft	2	0.436	0.302	13.46	-37.78	37.78	96.25	86.63	1.00	1.00	17.58	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.465	0.247	40.28	-37.78	40.28	96.25	86.63	1.00	1.00	14.38	58.29	58.29
Dsgn. L = 16.00 ft	2	0.436	0.247	2.46	-37.78	37.78	96.25	86.63	1.00	1.00	14.38	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.510	0.308	36.80	-44.18	44.18	96.25	86.63	1.00	1.00	17.98	58.29	58.29
Dsgn. L = 16.00 ft	2	0.510	0.308	11.19	-44.18	44.18	96.25	86.63	1.00	1.00	17.98	58.29	58.29
+0.90D+W+1.60H													
Dsgn. L = 16.00 ft	1	0.198	0.128	15.94	-17.19	17.19	96.25	86.63	1.00	1.00	7.46	58.29	58.29
Dsgn. L = 16.00 ft	2	0.198	0.128	3.06	-17.19	17.19	96.25	86.63	1.00	1.00	7.46	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.378	0.260	21.69	-32.71	32.71	96.25	86.63	1.00	1.00	15.16	58.29	58.29
Dsgn. L = 16.00 ft	2	0.378	0.260	13.51	-32.71	32.71	96.25	86.63	1.00	1.00	15.16	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.397	0.205	34.39	-32.71	34.39	96.25	86.63	1.00	1.00	11.96	58.29	58.29

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J6.1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 16.00 ft	2		0.378	0.205	2.36	-32.71	32.71	96.25	86.63	1.00	1.00	11.96	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.451	0.267	30.91	-39.11	39.11	96.25	86.63	1.00	1.00	15.56	58.29	58.29
Dsgn. L = 16.00 ft	2		0.451	0.267	11.20	-39.11	39.11	96.25	86.63	1.00	1.00	15.56	58.29	58.29
+0.90D+E+0.90H														
Dsgn. L = 16.00 ft	1		0.198	0.128	15.94	-17.19	17.19	96.25	86.63	1.00	1.00	7.46	58.29	58.29
Dsgn. L = 16.00 ft	2		0.198	0.128	3.06	-17.19	17.19	96.25	86.63	1.00	1.00	7.46	58.29	58.29

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.5767	7.616		0.0000	0.000
+D+L+H	2	0.1963	9.024	+D+0.750L+0.750S+0.5250E+H	-0.0866	3.072

**Vertical Reactions**

Load Combination	Support notation : Far left is #			Values in KIPS		
	Support 1	Support 2	Support 3			
Max Upward from all Load Conditions	7.300	30.442	4.140			
Max Upward from Load Combinations	7.300	30.442	4.140			
Max Upward from Load Cases	3.184	14.325	2.800			
Max Downward from all Load Conditions (Resis	-0.400		-0.400			
Max Downward from Load Cases (Resisting U <sub>r</sub>	-0.400		-0.400			
+D+H	3.184	14.325	1.340			
+D+L+H, LL Comb Run (*L)	2.784	18.325	4.140			
+D+L+H, LL Comb Run (L*)	5.984	18.325	0.940			
+D+L+H, LL Comb Run (LL)	5.584	22.325	3.740			
+D+Lr+H, LL Comb Run (*L)	3.184	14.325	1.340			
+D+Lr+H, LL Comb Run (L*)	3.184	14.325	1.340			
+D+Lr+H, LL Comb Run (LL)	3.184	14.325	1.340			
+D+S+H	5.872	27.815	1.611			
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	2.884	17.325	3.440			
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	5.284	17.325	1.040			
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	4.984	20.325	3.140			
+D+0.750L+0.750S+H, LL Comb Run (*L)	4.900	27.442	3.643			
+D+0.750L+0.750S+H, LL Comb Run (L*)	7.300	27.442	1.243			
+D+0.750L+0.750S+H, LL Comb Run (LL)	7.000	30.442	3.343			
+D+0.60W+H	3.184	14.325	1.340			
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	2.884	17.325	3.440			
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	5.284	17.325	1.040			
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	4.984	20.325	3.140			
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.900	27.442	3.643			
+D+0.750L+0.750S+0.450W+H, LL Comb Run	7.300	27.442	1.243			
+D+0.750L+0.750S+0.450W+H, LL Comb Run	7.000	30.442	3.343			
+0.60D+0.60W+0.60H	1.910	8.595	0.804			
+D+0.70E+0.60H	3.184	14.325	1.340			
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	4.900	27.442	3.643			
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	7.300	27.442	1.243			
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	7.000	30.442	3.343			
+0.60D+0.70E+H	1.910	8.595	0.804			
D Only	3.184	14.325	1.340			
L Only, LL Comb Run (*L)	-0.400	4.000	2.800			
L Only, LL Comb Run (L*)	2.800	4.000	-0.400			
L Only, LL Comb Run (LL)	2.400	8.000	2.400			
S Only	2.689	13.490	0.271			
H Only						







Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J7**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 10.67 ft +0.90D+E+0.90H	10.67 ft	1	0.125	0.069	10.80	10.80	96.25	86.63	1.00	1.00	4.05	58.29	58.29
Dsgn. L = 10.67 ft	10.67 ft	1	0.040	0.022	3.48	3.48	96.25	86.63	1.00	1.00	1.30	58.29	58.29

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0836	5.365		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	3.649	3.649		
Max Upward from Load Combinations	3.649	3.649		
Max Upward from Load Cases	2.201	2.201		
+D+H	1.448	1.448		
+D+L+H	3.649	3.649		
+D+Lr+H	1.448	1.448		
+D+S+H	1.999	1.999		
+D+0.750Lr+0.750L+H	3.099	3.099		
+D+0.750L+0.750S+H	3.512	3.512		
+D+0.60W+H	1.448	1.448		
+D+0.750Lr+0.750L+0.450W+H	3.099	3.099		
+D+0.750L+0.750S+0.450W+H	3.512	3.512		
+0.60D+0.60W+0.60H	0.869	0.869		
+D+0.70E+0.60H	1.448	1.448		
+D+0.750L+0.750S+0.5250E+H	3.512	3.512		
+0.60D+0.70E+H	0.869	0.869		
D Only	1.448	1.448		
L Only	2.201	2.201		
S Only	0.550	0.550		
H Only				







Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J8**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 12.25 ft +0.90D+E+0.90H	12.25 ft	1	0.164	0.080	14.24	14.24	96.25	86.63	1.00	1.00	4.65	58.29	58.29
Dsgn. L = 12.25 ft	12.25 ft	1	0.053	0.026	4.58	4.58	96.25	86.63	1.00	1.00	1.50	58.29	58.29

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.1452	6.160		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	4.190	4.190
Max Upward from Load Combinations	4.190	4.190
Max Upward from Load Cases	2.527	2.527
+D+H	1.663	1.663
+D+L+H	4.190	4.190
+D+Lr+H	1.663	1.663
+D+S+H	2.295	2.295
+D+0.750Lr+0.750L+H	3.558	3.558
+D+0.750L+0.750S+H	4.032	4.032
+D+0.60W+H	1.663	1.663
+D+0.750Lr+0.750L+0.450W+H	3.558	3.558
+D+0.750L+0.750S+0.450W+H	4.032	4.032
+0.60D+0.60W+0.60H	0.998	0.998
+D+0.70E+0.60H	1.663	1.663
+D+0.750L+0.750S+0.5250E+H	4.032	4.032
+0.60D+0.70E+H	0.998	0.998
D Only	1.663	1.663
L Only	2.527	2.527
S Only	0.632	0.632
H Only		

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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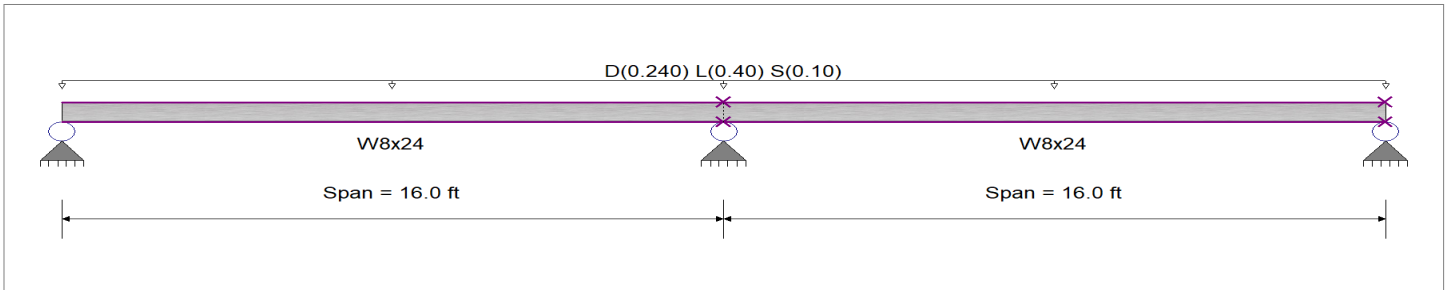
DESCRIPTION: **J9**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.372</b> : 1	Maximum Shear Stress Ratio =	<b>0.173</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	32.218 k-ft	Vu : Applied	10.068 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	16.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.174 in Ratio = <b>1,103</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.077 in Ratio = <b>2,509</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.241 in Ratio = <b>796</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.036 in Ratio = <b>5352</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L = 16.00 ft	1		0.137	0.063	6.65	-11.83	11.83	96.25	86.63	1.00	1.00	3.70	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.137	0.063	6.65	-11.83	11.83	96.25	86.63	1.00	1.00	3.70	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 16.00 ft	1		0.235	0.153	2.51	-20.38	20.38	96.25	86.63	1.00	1.00	8.93	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.246	0.153	21.28	-20.38	21.28	96.25	86.63	1.00	1.00	8.93	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 16.00 ft	1		0.246	0.153	21.28	-20.38	21.28	96.25	86.63	1.00	1.00	8.93	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.235	0.065	2.51	-20.38	20.38	96.25	86.63	1.00	1.00	3.81	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 16.00 ft	1		0.353	0.164	17.22	-30.62	30.62	96.25	86.63	1.00	1.00	9.57	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.353	0.164	17.22	-30.62	30.62	96.25	86.63	1.00	1.00	9.57	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 16.00 ft	1		0.254	0.162	3.32	-21.98	21.98	96.25	86.63	1.00	1.00	9.43	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.256	0.162	22.17	-21.98	22.17	96.25	86.63	1.00	1.00	9.43	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 16.00 ft	1		0.256	0.162	22.17	-21.98	22.17	96.25	86.63	1.00	1.00	9.43	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.254	0.074	3.32	-21.98	21.98	96.25	86.63	1.00	1.00	4.31	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 16.00 ft	1		0.372	0.173	18.12	-32.22	32.22	96.25	86.63	1.00	1.00	10.07	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.372	0.173	18.12	-32.22	32.22	96.25	86.63	1.00	1.00	10.07	58.29	58.29	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J9**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.191	0.116	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.061	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	3.57	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.250	0.144	6.35	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.250	0.144	18.27	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.250	0.144	18.27	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.250	0.089	6.35	-21.66	21.66	96.25	86.63	1.00	1.00	5.17	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.324	0.150	15.78	-28.06	28.06	96.25	86.63	1.00	1.00	8.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.324	0.150	15.78	-28.06	28.06	96.25	86.63	1.00	1.00	8.77	58.29	58.29
+1.20D+1.60S+0.50W+1.60H	Dsgn. L = 16.00 ft	1	0.176	0.082	8.58	-15.26	15.26	96.25	86.63	1.00	1.00	4.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.176	0.082	8.58	-15.26	15.26	96.25	86.63	1.00	1.00	4.77	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.191	0.116	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.061	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	3.57	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.209	0.125	4.42	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.209	0.125	16.31	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.209	0.125	16.31	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.209	0.070	4.42	-18.14	18.14	96.25	86.63	1.00	1.00	4.07	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.283	0.132	13.80	-24.54	24.54	96.25	86.63	1.00	1.00	7.67	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.283	0.132	13.80	-24.54	24.54	96.25	86.63	1.00	1.00	7.67	58.29	58.29
+0.90D+W+1.60H	Dsgn. L = 16.00 ft	1	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.198	0.120	3.90	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.198	0.120	15.77	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.198	0.120	15.77	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.198	0.065	3.90	-17.18	17.18	96.25	86.63	1.00	1.00	3.77	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.272	0.126	13.26	-23.58	23.58	96.25	86.63	1.00	1.00	7.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.272	0.126	13.26	-23.58	23.58	96.25	86.63	1.00	1.00	7.37	58.29	58.29
+0.90D+E+0.90H	Dsgn. L = 16.00 ft	1	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J9**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2413	7.360		0.0000	0.000
+D+L+H	2	0.2404	8.704	+D+L+H	-0.0016	0.064

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	4.384	13.280	4.384
Max Upward from Load Combinations	4.384	13.280	4.384
Max Upward from Load Cases	2.800	8.000	2.800
Max Downward from all Load Conditions (Resis	-0.400		-0.400
Max Downward from Load Cases (Resisting Up	-0.400		-0.400
+D+H	1.584	5.280	1.584
+D+L+H, LL Comb Run (*L)	1.184	9.280	4.384
+D+L+H, LL Comb Run (L*)	4.384	9.280	1.184
+D+L+H, LL Comb Run (LL)	3.984	13.280	3.984
+D+Lr+H, LL Comb Run (*L)	1.584	5.280	1.584
+D+Lr+H, LL Comb Run (L*)	1.584	5.280	1.584
+D+Lr+H, LL Comb Run (LL)	1.584	5.280	1.584
+D+S+H	2.184	7.280	2.184
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	1.284	8.280	3.684
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	3.684	8.280	1.284
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	3.384	11.280	3.384
+D+0.750L+0.750S+H, LL Comb Run (*L)	1.734	9.780	4.134
+D+0.750L+0.750S+H, LL Comb Run (L*)	4.134	9.780	1.734
+D+0.750L+0.750S+H, LL Comb Run (LL)	3.834	12.780	3.834
+D+0.60W+H	1.584	5.280	1.584
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	1.284	8.280	3.684
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	3.684	8.280	1.284
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	3.384	11.280	3.384
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.734	9.780	4.134
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.134	9.780	1.734
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.834	12.780	3.834
+0.60D+0.60W+0.60H	0.950	3.168	0.950
+D+0.70E+0.60H	1.584	5.280	1.584
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	1.734	9.780	4.134
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	4.134	9.780	1.734
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	3.834	12.780	3.834
+0.60D+0.70E+H	0.950	3.168	0.950
D Only	1.584	5.280	1.584
L Only, LL Comb Run (*L)	-0.400	4.000	2.800
L Only, LL Comb Run (L*)	2.800	4.000	-0.400
L Only, LL Comb Run (LL)	2.400	8.000	2.400
S Only	0.600	2.000	0.600
H Only			

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **J10**

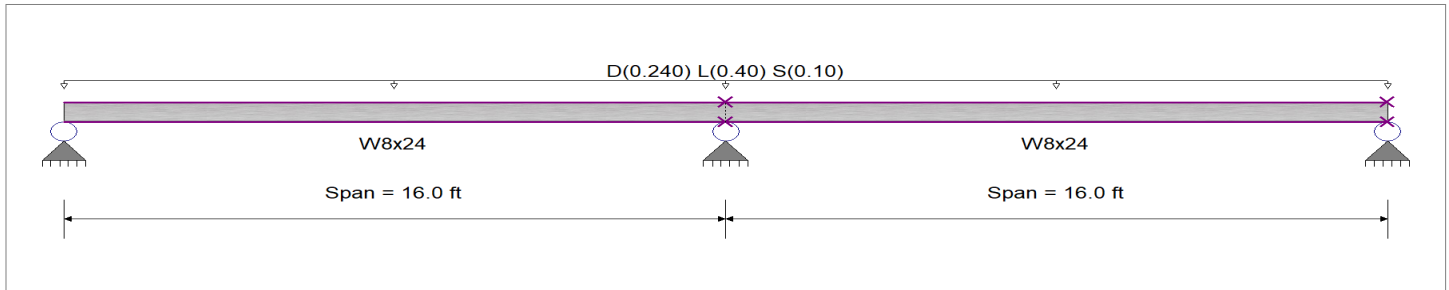
### CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.372</b> : 1	Maximum Shear Stress Ratio =	<b>0.173</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	32.218 k-ft	Vu : Applied	10.068 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	16.000 ft
		Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.174 in Ratio = <b>1,103</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.077 in Ratio = <b>2,509</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.241 in Ratio = <b>796</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.036 in Ratio = <b>5352</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L = 16.00 ft	1		0.137	0.063	6.65	-11.83	11.83	96.25	86.63	1.00	1.00	3.70	58.29	58.29
Dsgn. L = 16.00 ft	2		0.137	0.063	6.65	-11.83	11.83	96.25	86.63	1.00	1.00	3.70	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.235	0.153	2.51	-20.38	20.38	96.25	86.63	1.00	1.00	8.93	58.29	58.29
Dsgn. L = 16.00 ft	2		0.246	0.153	21.28	-20.38	21.28	96.25	86.63	1.00	1.00	8.93	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.246	0.153	21.28	-20.38	21.28	96.25	86.63	1.00	1.00	8.93	58.29	58.29
Dsgn. L = 16.00 ft	2		0.235	0.065	2.51	-20.38	20.38	96.25	86.63	1.00	1.00	3.81	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.353	0.164	17.22	-30.62	30.62	96.25	86.63	1.00	1.00	9.57	58.29	58.29
Dsgn. L = 16.00 ft	2		0.353	0.164	17.22	-30.62	30.62	96.25	86.63	1.00	1.00	9.57	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.254	0.162	3.32	-21.98	21.98	96.25	86.63	1.00	1.00	9.43	58.29	58.29
Dsgn. L = 16.00 ft	2		0.256	0.162	22.17	-21.98	22.17	96.25	86.63	1.00	1.00	9.43	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.256	0.162	22.17	-21.98	22.17	96.25	86.63	1.00	1.00	9.43	58.29	58.29
Dsgn. L = 16.00 ft	2		0.254	0.074	3.32	-21.98	21.98	96.25	86.63	1.00	1.00	4.31	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.372	0.173	18.12	-32.22	32.22	96.25	86.63	1.00	1.00	10.07	58.29	58.29
Dsgn. L = 16.00 ft	2		0.372	0.173	18.12	-32.22	32.22	96.25	86.63	1.00	1.00	10.07	58.29	58.29

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: J10**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.191	0.116	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.061	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	3.57	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.250	0.144	6.35	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.250	0.144	18.27	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.250	0.144	18.27	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.250	0.089	6.35	-21.66	21.66	96.25	86.63	1.00	1.00	5.17	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.324	0.150	15.78	-28.06	28.06	96.25	86.63	1.00	1.00	8.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.324	0.150	15.78	-28.06	28.06	96.25	86.63	1.00	1.00	8.77	58.29	58.29
+1.20D+1.60S+0.50W+1.60H	Dsgn. L = 16.00 ft	1	0.176	0.082	8.58	-15.26	15.26	96.25	86.63	1.00	1.00	4.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.176	0.082	8.58	-15.26	15.26	96.25	86.63	1.00	1.00	4.77	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.191	0.116	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.061	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	3.57	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.209	0.125	4.42	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.209	0.125	16.31	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.209	0.125	16.31	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.209	0.070	4.42	-18.14	18.14	96.25	86.63	1.00	1.00	4.07	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.283	0.132	13.80	-24.54	24.54	96.25	86.63	1.00	1.00	7.67	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.283	0.132	13.80	-24.54	24.54	96.25	86.63	1.00	1.00	7.67	58.29	58.29
+0.90D+W+1.60H	Dsgn. L = 16.00 ft	1	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.198	0.120	3.90	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.198	0.120	15.77	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.198	0.120	15.77	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.198	0.065	3.90	-17.18	17.18	96.25	86.63	1.00	1.00	3.77	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.272	0.126	13.26	-23.58	23.58	96.25	86.63	1.00	1.00	7.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.272	0.126	13.26	-23.58	23.58	96.25	86.63	1.00	1.00	7.37	58.29	58.29
+0.90D+E+0.90H	Dsgn. L = 16.00 ft	1	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29





Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J10**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2413	7.360		0.0000	0.000
+D+L+H	2	0.2404	8.704	+D+L+H	-0.0016	0.064

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	4.384	13.280	4.384
Max Upward from Load Combinations	4.384	13.280	4.384
Max Upward from Load Cases	2.800	8.000	2.800
Max Downward from all Load Conditions (Resis	-0.400		-0.400
Max Downward from Load Cases (Resisting Up	-0.400		-0.400
+D+H	1.584	5.280	1.584
+D+L+H, LL Comb Run (*L)	1.184	9.280	4.384
+D+L+H, LL Comb Run (L*)	4.384	9.280	1.184
+D+L+H, LL Comb Run (LL)	3.984	13.280	3.984
+D+Lr+H, LL Comb Run (*L)	1.584	5.280	1.584
+D+Lr+H, LL Comb Run (L*)	1.584	5.280	1.584
+D+Lr+H, LL Comb Run (LL)	1.584	5.280	1.584
+D+S+H	2.184	7.280	2.184
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	1.284	8.280	3.684
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	3.684	8.280	1.284
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	3.384	11.280	3.384
+D+0.750L+0.750S+H, LL Comb Run (*L)	1.734	9.780	4.134
+D+0.750L+0.750S+H, LL Comb Run (L*)	4.134	9.780	1.734
+D+0.750L+0.750S+H, LL Comb Run (LL)	3.834	12.780	3.834
+D+0.60W+H	1.584	5.280	1.584
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.284	8.280	3.684
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.684	8.280	1.284
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.384	11.280	3.384
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.734	9.780	4.134
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.134	9.780	1.734
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.834	12.780	3.834
+0.60D+0.60W+0.60H	0.950	3.168	0.950
+D+0.70E+0.60H	1.584	5.280	1.584
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	1.734	9.780	4.134
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	4.134	9.780	1.734
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.834	12.780	3.834
+0.60D+0.70E+H	0.950	3.168	0.950
D Only	1.584	5.280	1.584
L Only, LL Comb Run (*L)	-0.400	4.000	2.800
L Only, LL Comb Run (L*)	2.800	4.000	-0.400
L Only, LL Comb Run (LL)	2.400	8.000	2.400
S Only	0.600	2.000	0.600
H Only			



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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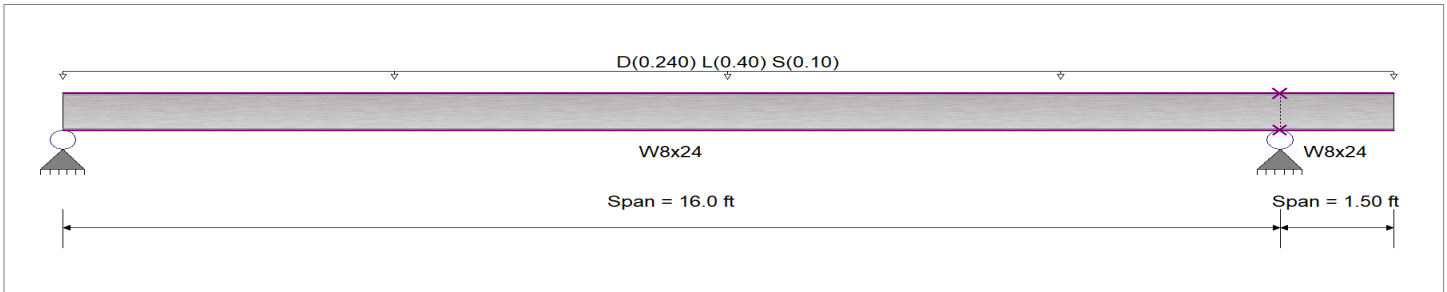
**DESCRIPTION: J11**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.370</b> : 1	Maximum Shear Stress Ratio =	<b>0.139</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	32.011 k-ft	Vu : Applied	8.125 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	16.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.247 in Ratio = <b>775</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.074 in Ratio = <b>487</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.407 in Ratio = <b>471</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.121 in Ratio = <b>298</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L = 16.00 ft	16.00 ft	1	0.134	0.051	11.62	-0.42	11.62	96.25	86.63	1.00	1.00	2.98	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.005	0.010		-0.42	0.42	96.25	86.63	1.00	1.00	0.55	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	16.00 ft	1	0.111	0.045	9.61	-1.08	9.61	96.25	86.63	1.00	1.00	2.60	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.012	0.025		-1.08	1.08	96.25	86.63	1.00	1.00	1.44	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	16.00 ft	1	0.351	0.132	30.44	-0.36	30.44	96.25	86.63	1.00	1.00	7.68	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	16.00 ft	1	0.347	0.132	30.08	-1.08	30.08	96.25	86.63	1.00	1.00	7.72	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.012	0.025		-1.08	1.08	96.25	86.63	1.00	1.00	1.44	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	16.00 ft	1	0.129	0.052	11.18	-1.13	11.18	96.25	86.63	1.00	1.00	3.01	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.013	0.026		-1.13	1.13	96.25	86.63	1.00	1.00	1.51	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	16.00 ft	1	0.370	0.139	32.01	-0.41	32.01	96.25	86.63	1.00	1.00	8.08	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.005	0.009		-0.41	0.41	96.25	86.63	1.00	1.00	0.55	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	16.00 ft	1	0.365	0.139	31.65	-1.13	31.65	96.25	86.63	1.00	1.00	8.13	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.013	0.026		-1.13	1.13	96.25	86.63	1.00	1.00	1.51	58.29	58.29

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: J11**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.112	0.044	9.74	-0.81	9.74	96.25	86.63	1.00	1.00	2.58	58.29	58.29
Dsgn. L = 1.50 ft	2		0.009	0.018		-0.81	0.81	96.25	86.63	1.00	1.00	1.08	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.263	0.099	22.76	-0.36	22.76	96.25	86.63	1.00	1.00	5.76	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.260	0.099	22.54	-0.81	22.54	96.25	86.63	1.00	1.00	5.78	58.29	58.29
Dsgn. L = 1.50 ft	2		0.009	0.018		-0.81	0.81	96.25	86.63	1.00	1.00	1.08	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.115	0.044	9.96	-0.36	9.96	96.25	86.63	1.00	1.00	2.56	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.115	0.044	9.96	-0.36	9.96	96.25	86.63	1.00	1.00	2.56	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.115	0.044	9.96	-0.36	9.96	96.25	86.63	1.00	1.00	2.56	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.170	0.067	14.77	-0.99	14.77	96.25	86.63	1.00	1.00	3.88	58.29	58.29
Dsgn. L = 1.50 ft	2		0.011	0.023		-0.99	0.99	96.25	86.63	1.00	1.00	1.32	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.321	0.121	27.79	-0.54	27.79	96.25	86.63	1.00	1.00	7.05	58.29	58.29
Dsgn. L = 1.50 ft	2		0.006	0.012		-0.54	0.54	96.25	86.63	1.00	1.00	0.72	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.318	0.121	27.57	-0.99	27.57	96.25	86.63	1.00	1.00	7.08	58.29	58.29
Dsgn. L = 1.50 ft	2		0.011	0.023		-0.99	0.99	96.25	86.63	1.00	1.00	1.32	58.29	58.29
+1.20D+1.60S+0.50W+1.60H														
Dsgn. L = 16.00 ft	1		0.173	0.066	14.99	-0.54	14.99	96.25	86.63	1.00	1.00	3.85	58.29	58.29
Dsgn. L = 1.50 ft	2		0.006	0.012		-0.54	0.54	96.25	86.63	1.00	1.00	0.72	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.112	0.044	9.74	-0.81	9.74	96.25	86.63	1.00	1.00	2.58	58.29	58.29
Dsgn. L = 1.50 ft	2		0.009	0.018		-0.81	0.81	96.25	86.63	1.00	1.00	1.08	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.263	0.099	22.76	-0.36	22.76	96.25	86.63	1.00	1.00	5.76	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.260	0.099	22.54	-0.81	22.54	96.25	86.63	1.00	1.00	5.78	58.29	58.29
Dsgn. L = 1.50 ft	2		0.009	0.018		-0.81	0.81	96.25	86.63	1.00	1.00	1.08	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.131	0.051	11.31	-0.86	11.31	96.25	86.63	1.00	1.00	2.99	58.29	58.29
Dsgn. L = 1.50 ft	2		0.010	0.020		-0.86	0.86	96.25	86.63	1.00	1.00	1.15	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.281	0.106	24.33	-0.41	24.33	96.25	86.63	1.00	1.00	6.16	58.29	58.29
Dsgn. L = 1.50 ft	2		0.005	0.009		-0.41	0.41	96.25	86.63	1.00	1.00	0.55	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.278	0.106	24.11	-0.86	24.11	96.25	86.63	1.00	1.00	6.19	58.29	58.29
Dsgn. L = 1.50 ft	2		0.010	0.020		-0.86	0.86	96.25	86.63	1.00	1.00	1.15	58.29	58.29
+0.90D+W+1.60H														
Dsgn. L = 16.00 ft	1		0.086	0.033	7.47	-0.27	7.47	96.25	86.63	1.00	1.00	1.92	58.29	58.29
Dsgn. L = 1.50 ft	2		0.003	0.006		-0.27	0.27	96.25	86.63	1.00	1.00	0.36	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.120	0.047	10.37	-0.83	10.37	96.25	86.63	1.00	1.00	2.75	58.29	58.29
Dsgn. L = 1.50 ft	2		0.010	0.019		-0.83	0.83	96.25	86.63	1.00	1.00	1.11	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.270	0.102	23.39	-0.38	23.39	96.25	86.63	1.00	1.00	5.92	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.009		-0.38	0.38	96.25	86.63	1.00	1.00	0.51	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.267	0.102	23.16	-0.83	23.16	96.25	86.63	1.00	1.00	5.95	58.29	58.29
Dsgn. L = 1.50 ft	2		0.010	0.019		-0.83	0.83	96.25	86.63	1.00	1.00	1.11	58.29	58.29
+0.90D+E+0.90H														
Dsgn. L = 16.00 ft	1		0.086	0.033	7.47	-0.27	7.47	96.25	86.63	1.00	1.00	1.92	58.29	58.29
Dsgn. L = 1.50 ft	2		0.003	0.006		-0.27	0.27	96.25	86.63	1.00	1.00	0.36	58.29	58.29



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: J11**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.4074	8.000	+D+L+H	0.0000	0.000
	2	0.0000	8.000		-0.1206	1.500

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	5.293	6.355	
Max Upward from Load Combinations	5.293	6.355	
Max Upward from Load Cases	3.200	3.828	
Max Downward from all Load Conditions (Resis	-0.028		
Max Downward from Load Cases (Resisting Up	-0.028		
+D+H	2.093	2.527	
+D+L+H, LL Comb Run (*L)	2.065	3.155	
+D+L+H, LL Comb Run (L*)	5.293	5.727	
+D+L+H, LL Comb Run (LL)	5.265	6.355	
+D+Lr+H, LL Comb Run (*L)	2.093	2.527	
+D+Lr+H, LL Comb Run (L*)	2.093	2.527	
+D+Lr+H, LL Comb Run (LL)	2.093	2.527	
+D+S+H	2.886	3.484	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	2.072	2.998	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	4.493	4.927	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	4.472	5.398	
+D+0.750L+0.750S+H, LL Comb Run (*L)	2.667	3.715	
+D+0.750L+0.750S+H, LL Comb Run (L*)	5.088	5.644	
+D+0.750L+0.750S+H, LL Comb Run (LL)	5.067	6.115	
+D+0.60W+H	2.093	2.527	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	2.072	2.998	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	4.493	4.927	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	4.472	5.398	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	2.667	3.715	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	5.088	5.644	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	5.067	6.115	
+0.60D+0.60W+0.60H	1.256	1.516	
+D+0.70E+0.60H	2.093	2.527	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	2.667	3.715	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	5.088	5.644	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	5.067	6.115	
+0.60D+0.70E+H	1.256	1.516	
D Only	2.093	2.527	
L Only, LL Comb Run (*L)	-0.028	0.628	
L Only, LL Comb Run (L*)	3.200	3.200	
L Only, LL Comb Run (LL)	3.172	3.828	
S Only	0.793	0.957	
H Only			

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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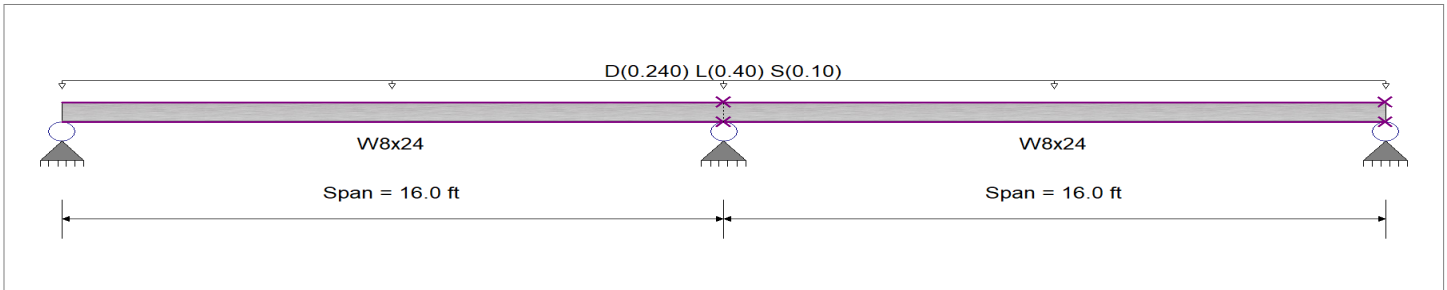
**DESCRIPTION: J12**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

**DESIGN SUMMARY**

**Design OK**

<b>Maximum Bending Stress Ratio =</b>	<b>0.372 : 1</b>	<b>Maximum Shear Stress Ratio =</b>	<b>0.173 : 1</b>
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	32.218 k-ft	Vu : Applied	10.068 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	16.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.174 in Ratio = <b>1,103</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.077 in Ratio = <b>2,509</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.241 in Ratio = <b>796</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.036 in Ratio = <b>5352</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L = 16.00 ft	1		0.137	0.063	6.65	-11.83	11.83	96.25	86.63	1.00	1.00	3.70	58.29	58.29
Dsgn. L = 16.00 ft	2		0.137	0.063	6.65	-11.83	11.83	96.25	86.63	1.00	1.00	3.70	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.235	0.153	2.51	-20.38	20.38	96.25	86.63	1.00	1.00	8.93	58.29	58.29
Dsgn. L = 16.00 ft	2		0.246	0.153	21.28	-20.38	21.28	96.25	86.63	1.00	1.00	8.93	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.246	0.153	21.28	-20.38	21.28	96.25	86.63	1.00	1.00	8.93	58.29	58.29
Dsgn. L = 16.00 ft	2		0.235	0.065	2.51	-20.38	20.38	96.25	86.63	1.00	1.00	3.81	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.353	0.164	17.22	-30.62	30.62	96.25	86.63	1.00	1.00	9.57	58.29	58.29
Dsgn. L = 16.00 ft	2		0.353	0.164	17.22	-30.62	30.62	96.25	86.63	1.00	1.00	9.57	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.254	0.162	3.32	-21.98	21.98	96.25	86.63	1.00	1.00	9.43	58.29	58.29
Dsgn. L = 16.00 ft	2		0.256	0.162	22.17	-21.98	22.17	96.25	86.63	1.00	1.00	9.43	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.256	0.162	22.17	-21.98	22.17	96.25	86.63	1.00	1.00	9.43	58.29	58.29
Dsgn. L = 16.00 ft	2		0.254	0.074	3.32	-21.98	21.98	96.25	86.63	1.00	1.00	4.31	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.372	0.173	18.12	-32.22	32.22	96.25	86.63	1.00	1.00	10.07	58.29	58.29
Dsgn. L = 16.00 ft	2		0.372	0.173	18.12	-32.22	32.22	96.25	86.63	1.00	1.00	10.07	58.29	58.29

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: J12**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.191	0.116	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
Dsgn. L = 16.00 ft	2		0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
Dsgn. L = 16.00 ft	2		0.191	0.061	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	3.57	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
Dsgn. L = 16.00 ft	2		0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
Dsgn. L = 16.00 ft	2		0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
Dsgn. L = 16.00 ft	2		0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
Dsgn. L = 16.00 ft	2		0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.250	0.144	6.35	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
Dsgn. L = 16.00 ft	2		0.250	0.144	18.27	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.250	0.144	18.27	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
Dsgn. L = 16.00 ft	2		0.250	0.089	6.35	-21.66	21.66	96.25	86.63	1.00	1.00	5.17	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.324	0.150	15.78	-28.06	28.06	96.25	86.63	1.00	1.00	8.77	58.29	58.29
Dsgn. L = 16.00 ft	2		0.324	0.150	15.78	-28.06	28.06	96.25	86.63	1.00	1.00	8.77	58.29	58.29
+1.20D+1.60S+0.50W+1.60H														
Dsgn. L = 16.00 ft	1		0.176	0.082	8.58	-15.26	15.26	96.25	86.63	1.00	1.00	4.77	58.29	58.29
Dsgn. L = 16.00 ft	2		0.176	0.082	8.58	-15.26	15.26	96.25	86.63	1.00	1.00	4.77	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.191	0.116	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
Dsgn. L = 16.00 ft	2		0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
Dsgn. L = 16.00 ft	2		0.191	0.061	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	3.57	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
Dsgn. L = 16.00 ft	2		0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.209	0.125	4.42	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
Dsgn. L = 16.00 ft	2		0.209	0.125	16.31	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.209	0.125	16.31	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
Dsgn. L = 16.00 ft	2		0.209	0.070	4.42	-18.14	18.14	96.25	86.63	1.00	1.00	4.07	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.283	0.132	13.80	-24.54	24.54	96.25	86.63	1.00	1.00	7.67	58.29	58.29
Dsgn. L = 16.00 ft	2		0.283	0.132	13.80	-24.54	24.54	96.25	86.63	1.00	1.00	7.67	58.29	58.29
+0.90D+W+1.60H														
Dsgn. L = 16.00 ft	1		0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
Dsgn. L = 16.00 ft	2		0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.198	0.120	3.90	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
Dsgn. L = 16.00 ft	2		0.198	0.120	15.77	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.198	0.120	15.77	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
Dsgn. L = 16.00 ft	2		0.198	0.065	3.90	-17.18	17.18	96.25	86.63	1.00	1.00	3.77	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.272	0.126	13.26	-23.58	23.58	96.25	86.63	1.00	1.00	7.37	58.29	58.29
Dsgn. L = 16.00 ft	2		0.272	0.126	13.26	-23.58	23.58	96.25	86.63	1.00	1.00	7.37	58.29	58.29
+0.90D+E+0.90H														
Dsgn. L = 16.00 ft	1		0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
Dsgn. L = 16.00 ft	2		0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J12**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2413	7.360		0.0000	0.000
+D+L+H	2	0.2404	8.704	+D+L+H	-0.0016	0.064

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	4.384	13.280	4.384
Max Upward from Load Combinations	4.384	13.280	4.384
Max Upward from Load Cases	2.800	8.000	2.800
Max Downward from all Load Conditions (Resis	-0.400		-0.400
Max Downward from Load Cases (Resisting Up	-0.400		-0.400
+D+H	1.584	5.280	1.584
+D+L+H, LL Comb Run (*L)	1.184	9.280	4.384
+D+L+H, LL Comb Run (L*)	4.384	9.280	1.184
+D+L+H, LL Comb Run (LL)	3.984	13.280	3.984
+D+Lr+H, LL Comb Run (*L)	1.584	5.280	1.584
+D+Lr+H, LL Comb Run (L*)	1.584	5.280	1.584
+D+Lr+H, LL Comb Run (LL)	1.584	5.280	1.584
+D+S+H	2.184	7.280	2.184
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	1.284	8.280	3.684
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	3.684	8.280	1.284
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	3.384	11.280	3.384
+D+0.750L+0.750S+H, LL Comb Run (*L)	1.734	9.780	4.134
+D+0.750L+0.750S+H, LL Comb Run (L*)	4.134	9.780	1.734
+D+0.750L+0.750S+H, LL Comb Run (LL)	3.834	12.780	3.834
+D+0.60W+H	1.584	5.280	1.584
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	1.284	8.280	3.684
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	3.684	8.280	1.284
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	3.384	11.280	3.384
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.734	9.780	4.134
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.134	9.780	1.734
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.834	12.780	3.834
+0.60D+0.60W+0.60H	0.950	3.168	0.950
+D+0.70E+0.60H	1.584	5.280	1.584
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	1.734	9.780	4.134
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	4.134	9.780	1.734
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	3.834	12.780	3.834
+0.60D+0.70E+H	0.950	3.168	0.950
D Only	1.584	5.280	1.584
L Only, LL Comb Run (*L)	-0.400	4.000	2.800
L Only, LL Comb Run (L*)	2.800	4.000	-0.400
L Only, LL Comb Run (LL)	2.400	8.000	2.400
S Only	0.600	2.000	0.600
H Only			







Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J13**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 16.00 ft +0.90D+E+0.90H	16.00 ft	1	0.272	0.101	23.58	23.58	96.25	86.63	1.00	1.00	5.89	58.29	58.29
Dsgn. L = 16.00 ft	16.00 ft	1	0.088	0.033	7.60	7.60	96.25	86.63	1.00	1.00	1.90	58.29	58.29

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.4101	8.046		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	5.312	5.312		
Max Upward from Load Combinations	5.312	5.312		
Max Upward from Load Cases	3.200	3.200		
+D+H	2.112	2.112		
+D+L+H	5.312	5.312		
+D+Lr+H	2.112	2.112		
+D+S+H	2.912	2.912		
+D+0.750Lr+0.750L+H	4.512	4.512		
+D+0.750L+0.750S+H	5.112	5.112		
+D+0.60W+H	2.112	2.112		
+D+0.750Lr+0.750L+0.450W+H	4.512	4.512		
+D+0.750L+0.750S+0.450W+H	5.112	5.112		
+0.60D+0.60W+0.60H	1.267	1.267		
+D+0.70E+0.60H	2.112	2.112		
+D+0.750L+0.750S+0.5250E+H	5.112	5.112		
+0.60D+0.70E+H	1.267	1.267		
D Only	2.112	2.112		
L Only	3.200	3.200		
S Only	0.800	0.800		
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J14**

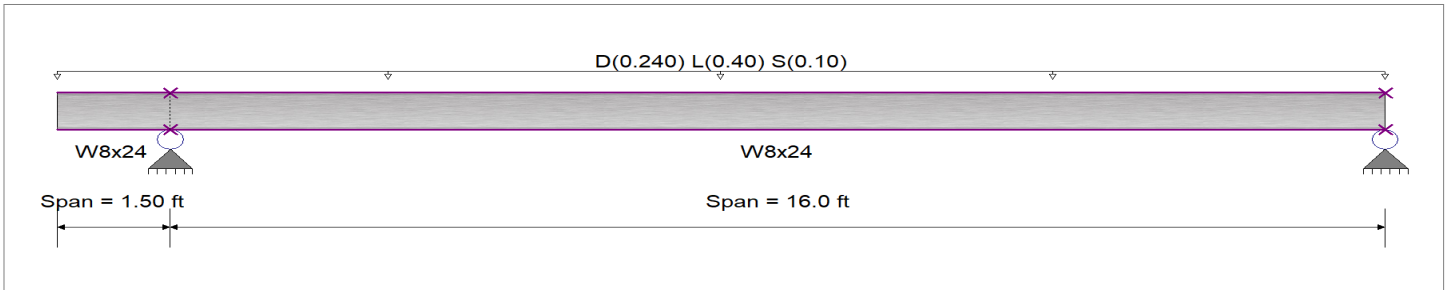
**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.370</b> : 1	Maximum Shear Stress Ratio =	<b>0.139</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	32.011 k-ft	Vu : Applied	8.125 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination: 1.20D+1.60L+0.50S+1.60H, LL Comb Run (*L)		Load Combination: 1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	
Span # where maximum occurs	Span # 2	Location of maximum on span	1.500 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.247 in Ratio = <b>775</b> >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Upward Transient Deflection	-0.074 in Ratio = <b>487</b> >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Downward Total Deflection	0.407 in Ratio = <b>471</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (*L)	
Max Upward Total Deflection	-0.121 in Ratio = <b>298</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (*L)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L = 1.50 ft	1		0.005	0.051		-0.42	0.42	96.25	86.63	1.00	1.00	2.98	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.134	0.051	11.62	-0.42	11.62	96.25	86.63	1.00	1.00	2.98	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 1.50 ft	1		0.004	0.132		-0.36	0.36	96.25	86.63	1.00	1.00	7.68	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.351	0.132	30.44	-0.36	30.44	96.25	86.63	1.00	1.00	7.68	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 1.50 ft	1		0.012	0.045		-1.08	1.08	96.25	86.63	1.00	1.00	2.60	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.111	0.045	9.61	-1.08	9.61	96.25	86.63	1.00	1.00	2.60	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 1.50 ft	1		0.012	0.132		-1.08	1.08	96.25	86.63	1.00	1.00	7.72	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.347	0.132	30.08	-1.08	30.08	96.25	86.63	1.00	1.00	7.72	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 1.50 ft	1		0.005	0.139		-0.41	0.41	96.25	86.63	1.00	1.00	8.08	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.370	0.139	32.01	-0.41	32.01	96.25	86.63	1.00	1.00	8.08	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 1.50 ft	1		0.013	0.052		-1.13	1.13	96.25	86.63	1.00	1.00	3.01	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.129	0.052	11.18	-1.13	11.18	96.25	86.63	1.00	1.00	3.01	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 1.50 ft	1		0.013	0.139		-1.13	1.13	96.25	86.63	1.00	1.00	8.13	58.29	58.29	
Dsgn. L = 16.00 ft	2		0.365	0.139	31.65	-1.13	31.65	96.25	86.63	1.00	1.00	8.13	58.29	58.29	



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J14**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values						
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx		
+1.20D+1.60Lr+L+1.60H, LL Com																
Dsgn. L = 1.50 ft	1		0.004	0.099		-0.36	0.36	96.25	86.63	1.00	1.00	5.76	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.263	0.099	22.76	-0.36	22.76	96.25	86.63	1.00	1.00	5.76	58.29	58.29		
+1.20D+1.60Lr+L+1.60H, LL Com																
Dsgn. L = 1.50 ft	1		0.009	0.044		-0.81	0.81	96.25	86.63	1.00	1.00	2.58	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.112	0.044	9.74	-0.81	9.74	96.25	86.63	1.00	1.00	2.58	58.29	58.29		
+1.20D+1.60Lr+L+1.60H, LL Com																
Dsgn. L = 1.50 ft	1		0.009	0.099		-0.81	0.81	96.25	86.63	1.00	1.00	5.78	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.260	0.099	22.54	-0.81	22.54	96.25	86.63	1.00	1.00	5.78	58.29	58.29		
+1.20D+1.60Lr+0.50W+1.60H, LL																
Dsgn. L = 1.50 ft	1		0.004	0.044		-0.36	0.36	96.25	86.63	1.00	1.00	2.56	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.115	0.044	9.96	-0.36	9.96	96.25	86.63	1.00	1.00	2.56	58.29	58.29		
+1.20D+1.60Lr+0.50W+1.60H, LL																
Dsgn. L = 1.50 ft	1		0.004	0.044		-0.36	0.36	96.25	86.63	1.00	1.00	2.56	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.115	0.044	9.96	-0.36	9.96	96.25	86.63	1.00	1.00	2.56	58.29	58.29		
+1.20D+1.60Lr+0.50W+1.60H, LL																
Dsgn. L = 1.50 ft	1		0.004	0.044		-0.36	0.36	96.25	86.63	1.00	1.00	2.56	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.115	0.044	9.96	-0.36	9.96	96.25	86.63	1.00	1.00	2.56	58.29	58.29		
+1.20D+L+1.60S+1.60H, LL Com																
Dsgn. L = 1.50 ft	1		0.006	0.121		-0.54	0.54	96.25	86.63	1.00	1.00	7.05	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.321	0.121	27.79	-0.54	27.79	96.25	86.63	1.00	1.00	7.05	58.29	58.29		
+1.20D+L+1.60S+1.60H, LL Com																
Dsgn. L = 1.50 ft	1		0.011	0.067		-0.99	0.99	96.25	86.63	1.00	1.00	3.88	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.170	0.067	14.77	-0.99	14.77	96.25	86.63	1.00	1.00	3.88	58.29	58.29		
+1.20D+L+1.60S+1.60H, LL Com																
Dsgn. L = 1.50 ft	1		0.011	0.121		-0.99	0.99	96.25	86.63	1.00	1.00	7.08	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.318	0.121	27.57	-0.99	27.57	96.25	86.63	1.00	1.00	7.08	58.29	58.29		
+1.20D+1.60S+0.50W+1.60H																
Dsgn. L = 1.50 ft	1		0.006	0.066		-0.54	0.54	96.25	86.63	1.00	1.00	3.85	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.173	0.066	14.99	-0.54	14.99	96.25	86.63	1.00	1.00	3.85	58.29	58.29		
+1.20D+0.50Lr+L+W+1.60H, LL C																
Dsgn. L = 1.50 ft	1		0.004	0.099		-0.36	0.36	96.25	86.63	1.00	1.00	5.76	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.263	0.099	22.76	-0.36	22.76	96.25	86.63	1.00	1.00	5.76	58.29	58.29		
+1.20D+0.50Lr+L+W+1.60H, LL C																
Dsgn. L = 1.50 ft	1		0.009	0.044		-0.81	0.81	96.25	86.63	1.00	1.00	2.58	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.112	0.044	9.74	-0.81	9.74	96.25	86.63	1.00	1.00	2.58	58.29	58.29		
+1.20D+0.50Lr+L+W+1.60H, LL C																
Dsgn. L = 1.50 ft	1		0.009	0.099		-0.81	0.81	96.25	86.63	1.00	1.00	5.78	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.260	0.099	22.54	-0.81	22.54	96.25	86.63	1.00	1.00	5.78	58.29	58.29		
+1.20D+L+0.50S+W+1.60H, LL C																
Dsgn. L = 1.50 ft	1		0.005	0.106		-0.41	0.41	96.25	86.63	1.00	1.00	6.16	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.281	0.106	24.33	-0.41	24.33	96.25	86.63	1.00	1.00	6.16	58.29	58.29		
+1.20D+L+0.50S+W+1.60H, LL C																
Dsgn. L = 1.50 ft	1		0.010	0.051		-0.86	0.86	96.25	86.63	1.00	1.00	2.99	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.131	0.051	11.31	-0.86	11.31	96.25	86.63	1.00	1.00	2.99	58.29	58.29		
+1.20D+L+0.50S+W+1.60H, LL C																
Dsgn. L = 1.50 ft	1		0.010	0.106		-0.86	0.86	96.25	86.63	1.00	1.00	6.19	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.278	0.106	24.11	-0.86	24.11	96.25	86.63	1.00	1.00	6.19	58.29	58.29		
+0.90D+W+1.60H																
Dsgn. L = 1.50 ft	1		0.003	0.033		-0.27	0.27	96.25	86.63	1.00	1.00	1.92	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.086	0.033	7.47	-0.27	7.47	96.25	86.63	1.00	1.00	1.92	58.29	58.29		
+1.20D+L+0.20S+E+1.60H, LL C																
Dsgn. L = 1.50 ft	1		0.004	0.102		-0.38	0.38	96.25	86.63	1.00	1.00	5.92	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.270	0.102	23.39	-0.38	23.39	96.25	86.63	1.00	1.00	5.92	58.29	58.29		
+1.20D+L+0.20S+E+1.60H, LL C																
Dsgn. L = 1.50 ft	1		0.010	0.047		-0.83	0.83	96.25	86.63	1.00	1.00	2.75	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.120	0.047	10.37	-0.83	10.37	96.25	86.63	1.00	1.00	2.75	58.29	58.29		
+1.20D+L+0.20S+E+1.60H, LL C																
Dsgn. L = 1.50 ft	1		0.010	0.102		-0.83	0.83	96.25	86.63	1.00	1.00	5.95	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.267	0.102	23.16	-0.83	23.16	96.25	86.63	1.00	1.00	5.95	58.29	58.29		
+0.90D+E+0.90H																
Dsgn. L = 1.50 ft	1		0.003	0.033		-0.27	0.27	96.25	86.63	1.00	1.00	1.92	58.29	58.29		
Dsgn. L = 16.00 ft	2		0.086	0.033	7.47	-0.27	7.47	96.25	86.63	1.00	1.00	1.92	58.29	58.29		



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J14**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	+D+L+H	-0.1206	0.000
+D+L+H	2	0.4074	8.064		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions		6.355	5.293
Max Upward from Load Combinations		6.355	5.293
Max Upward from Load Cases		3.828	3.200
Max Downward from all Load Conditions (Resis			-0.028
Max Downward from Load Cases (Resisting Up			-0.028
+D+H		2.527	2.093
+D+L+H, LL Comb Run (*L)		5.727	5.293
+D+L+H, LL Comb Run (L*)		3.155	2.065
+D+L+H, LL Comb Run (LL)		6.355	5.265
+D+Lr+H, LL Comb Run (*L)		2.527	2.093
+D+Lr+H, LL Comb Run (L*)		2.527	2.093
+D+Lr+H, LL Comb Run (LL)		2.527	2.093
+D+S+H		3.484	2.886
+D+0.750Lr+0.750L+H, LL Comb Run (*L)		4.927	4.493
+D+0.750Lr+0.750L+H, LL Comb Run (L*)		2.998	2.072
+D+0.750Lr+0.750L+H, LL Comb Run (LL)		5.398	4.472
+D+0.750L+0.750S+H, LL Comb Run (*L)		5.644	5.088
+D+0.750L+0.750S+H, LL Comb Run (L*)		3.715	2.667
+D+0.750L+0.750S+H, LL Comb Run (LL)		6.115	5.067
+D+0.60W+H		2.527	2.093
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run		4.927	4.493
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run		2.998	2.072
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run		5.398	4.472
+D+0.750L+0.750S+0.450W+H, LL Comb Run		5.644	5.088
+D+0.750L+0.750S+0.450W+H, LL Comb Run		3.715	2.667
+D+0.750L+0.750S+0.450W+H, LL Comb Run		6.115	5.067
+0.60D+0.60W+0.60H		1.516	1.256
+D+0.70E+0.60H		2.527	2.093
+D+0.750L+0.750S+0.5250E+H, LL Comb Run		5.644	5.088
+D+0.750L+0.750S+0.5250E+H, LL Comb Run		3.715	2.667
+D+0.750L+0.750S+0.5250E+H, LL Comb Run		6.115	5.067
+0.60D+0.70E+H		1.516	1.256
D Only		2.527	2.093
L Only, LL Comb Run (*L)		3.200	3.200
L Only, LL Comb Run (L*)		0.628	-0.028
L Only, LL Comb Run (LL)		3.828	3.172
S Only		0.957	0.793
H Only			

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J15**

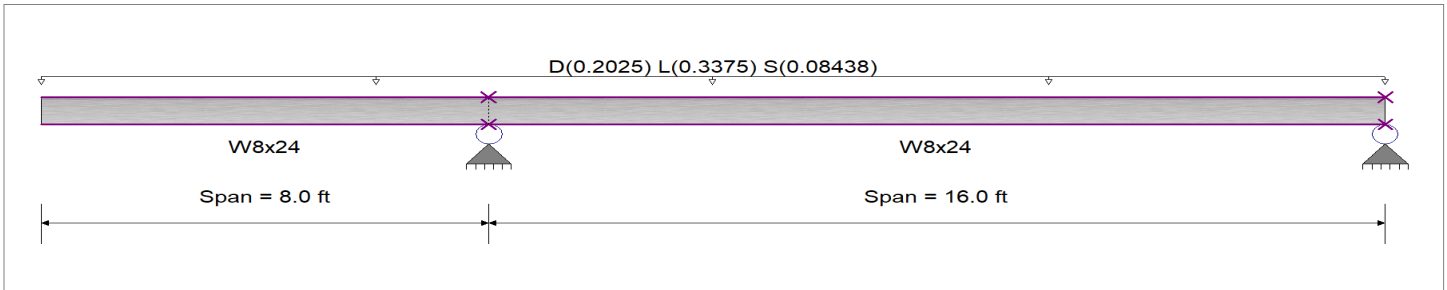
**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 3.375 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.315</b> : 1	Maximum Shear Stress Ratio =	<b>0.147</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	27.328 k-ft	Vu : Applied	8.540 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	8.000 ft
		Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.457 in Ratio = 420 >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.332 in Ratio = 578 >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Downward Total Deflection	0.541 in Ratio = 355 >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.248 in Ratio = 773 >=240.	Span: 2 : +D+L+H, LL Comb Run (*L)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L = 8.00 ft	8.00 ft	1	0.117	0.054		-10.15	10.15	96.25	86.63	1.00	1.00	3.17	58.29	58.29	
Dsgn. L = 16.00 ft	16.00 ft	2	0.117	0.054	5.71	-10.15	10.15	96.25	86.63	1.00	1.00	3.17	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 8.00 ft	8.00 ft	1	0.100	0.121		-8.70	8.70	96.25	86.63	1.00	1.00	7.04	58.29	58.29	
Dsgn. L = 16.00 ft	16.00 ft	2	0.252	0.121	21.81	-8.70	21.81	96.25	86.63	1.00	1.00	7.04	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 8.00 ft	8.00 ft	1	0.300	0.111		-25.98	25.98	96.25	86.63	1.00	1.00	6.49	58.29	58.29	
Dsgn. L = 16.00 ft	16.00 ft	2	0.300	0.065	0.56	-25.98	25.98	96.25	86.63	1.00	1.00	3.80	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 8.00 ft	8.00 ft	1	0.300	0.139		-25.98	25.98	96.25	86.63	1.00	1.00	8.12	58.29	58.29	
Dsgn. L = 16.00 ft	16.00 ft	2	0.300	0.139	14.61	-25.98	25.98	96.25	86.63	1.00	1.00	8.12	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 8.00 ft	8.00 ft	1	0.116	0.128		-10.05	10.05	96.25	86.63	1.00	1.00	7.46	58.29	58.29	
Dsgn. L = 16.00 ft	16.00 ft	2	0.260	0.128	22.53	-10.05	22.53	96.25	86.63	1.00	1.00	7.46	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 8.00 ft	8.00 ft	1	0.315	0.117		-27.33	27.33	96.25	86.63	1.00	1.00	6.83	58.29	58.29	
Dsgn. L = 16.00 ft	16.00 ft	2	0.315	0.072	1.03	-27.33	27.33	96.25	86.63	1.00	1.00	4.22	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 8.00 ft	8.00 ft	1	0.315	0.147		-27.33	27.33	96.25	86.63	1.00	1.00	8.54	58.29	58.29	
Dsgn. L = 16.00 ft	16.00 ft	2	0.315	0.147	15.37	-27.33	27.33	96.25	86.63	1.00	1.00	8.54	58.29	58.29	

### Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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#### DESCRIPTION: J15

#### Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com													
Dsgn. L = 8.00 ft	1	0.100	0.093		-8.70	8.70	96.25	86.63	1.00	1.00	5.42	58.29	58.29
Dsgn. L = 16.00 ft	2	0.178	0.093	15.39	-8.70	15.39	96.25	86.63	1.00	1.00	5.42	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com													
Dsgn. L = 8.00 ft	1	0.225	0.084		-19.50	19.50	96.25	86.63	1.00	1.00	4.87	58.29	58.29
Dsgn. L = 16.00 ft	2	0.225	0.058	1.68	-19.50	19.50	96.25	86.63	1.00	1.00	3.39	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com													
Dsgn. L = 8.00 ft	1	0.225	0.105		-19.50	19.50	96.25	86.63	1.00	1.00	6.09	58.29	58.29
Dsgn. L = 16.00 ft	2	0.225	0.105	10.97	-19.50	19.50	96.25	86.63	1.00	1.00	6.09	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 8.00 ft	1	0.100	0.047		-8.70	8.70	96.25	86.63	1.00	1.00	2.72	58.29	58.29
Dsgn. L = 16.00 ft	2	0.100	0.047	4.89	-8.70	8.70	96.25	86.63	1.00	1.00	2.72	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 8.00 ft	1	0.100	0.047		-8.70	8.70	96.25	86.63	1.00	1.00	2.72	58.29	58.29
Dsgn. L = 16.00 ft	2	0.100	0.047	4.89	-8.70	8.70	96.25	86.63	1.00	1.00	2.72	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 8.00 ft	1	0.100	0.047		-8.70	8.70	96.25	86.63	1.00	1.00	2.72	58.29	58.29
Dsgn. L = 16.00 ft	2	0.100	0.047	4.89	-8.70	8.70	96.25	86.63	1.00	1.00	2.72	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com													
Dsgn. L = 8.00 ft	1	0.150	0.116		-13.02	13.02	96.25	86.63	1.00	1.00	6.77	58.29	58.29
Dsgn. L = 16.00 ft	2	0.205	0.116	17.75	-13.02	17.75	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com													
Dsgn. L = 8.00 ft	1	0.275	0.102		-23.82	23.82	96.25	86.63	1.00	1.00	5.95	58.29	58.29
Dsgn. L = 16.00 ft	2	0.275	0.081	3.83	-23.82	23.82	96.25	86.63	1.00	1.00	4.74	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com													
Dsgn. L = 8.00 ft	1	0.275	0.128		-23.82	23.82	96.25	86.63	1.00	1.00	7.44	58.29	58.29
Dsgn. L = 16.00 ft	2	0.275	0.128	13.40	-23.82	23.82	96.25	86.63	1.00	1.00	7.44	58.29	58.29
+1.20D+1.60S+0.50W+1.60H													
Dsgn. L = 8.00 ft	1	0.150	0.070		-13.02	13.02	96.25	86.63	1.00	1.00	4.07	58.29	58.29
Dsgn. L = 16.00 ft	2	0.150	0.070	7.32	-13.02	13.02	96.25	86.63	1.00	1.00	4.07	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C													
Dsgn. L = 8.00 ft	1	0.100	0.093		-8.70	8.70	96.25	86.63	1.00	1.00	5.42	58.29	58.29
Dsgn. L = 16.00 ft	2	0.178	0.093	15.39	-8.70	15.39	96.25	86.63	1.00	1.00	5.42	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C													
Dsgn. L = 8.00 ft	1	0.225	0.084		-19.50	19.50	96.25	86.63	1.00	1.00	4.87	58.29	58.29
Dsgn. L = 16.00 ft	2	0.225	0.058	1.68	-19.50	19.50	96.25	86.63	1.00	1.00	3.39	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C													
Dsgn. L = 8.00 ft	1	0.225	0.105		-19.50	19.50	96.25	86.63	1.00	1.00	6.09	58.29	58.29
Dsgn. L = 16.00 ft	2	0.225	0.105	10.97	-19.50	19.50	96.25	86.63	1.00	1.00	6.09	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C													
Dsgn. L = 8.00 ft	1	0.116	0.100		-10.05	10.05	96.25	86.63	1.00	1.00	5.84	58.29	58.29
Dsgn. L = 16.00 ft	2	0.186	0.100	16.13	-10.05	16.13	96.25	86.63	1.00	1.00	5.84	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C													
Dsgn. L = 8.00 ft	1	0.241	0.089		-20.85	20.85	96.25	86.63	1.00	1.00	5.21	58.29	58.29
Dsgn. L = 16.00 ft	2	0.241	0.065	2.33	-20.85	20.85	96.25	86.63	1.00	1.00	3.81	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C													
Dsgn. L = 8.00 ft	1	0.241	0.112		-20.85	20.85	96.25	86.63	1.00	1.00	6.51	58.29	58.29
Dsgn. L = 16.00 ft	2	0.241	0.112	11.73	-20.85	20.85	96.25	86.63	1.00	1.00	6.51	58.29	58.29
+0.90D+W+1.60H													
Dsgn. L = 8.00 ft	1	0.075	0.035		-6.52	6.52	96.25	86.63	1.00	1.00	2.04	58.29	58.29
Dsgn. L = 16.00 ft	2	0.075	0.035	3.67	-6.52	6.52	96.25	86.63	1.00	1.00	2.04	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C													
Dsgn. L = 8.00 ft	1	0.107	0.096		-9.24	9.24	96.25	86.63	1.00	1.00	5.59	58.29	58.29
Dsgn. L = 16.00 ft	2	0.181	0.096	15.68	-9.24	15.68	96.25	86.63	1.00	1.00	5.59	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C													
Dsgn. L = 8.00 ft	1	0.231	0.086		-20.04	20.04	96.25	86.63	1.00	1.00	5.01	58.29	58.29
Dsgn. L = 16.00 ft	2	0.231	0.061	1.94	-20.04	20.04	96.25	86.63	1.00	1.00	3.56	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C													
Dsgn. L = 8.00 ft	1	0.231	0.107		-20.04	20.04	96.25	86.63	1.00	1.00	6.26	58.29	58.29
Dsgn. L = 16.00 ft	2	0.231	0.107	11.27	-20.04	20.04	96.25	86.63	1.00	1.00	6.26	58.29	58.29
+0.90D+E+0.90H													
Dsgn. L = 8.00 ft	1	0.075	0.035		-6.52	6.52	96.25	86.63	1.00	1.00	2.04	58.29	58.29
Dsgn. L = 16.00 ft	2	0.075	0.035	3.67	-6.52	6.52	96.25	86.63	1.00	1.00	2.04	58.29	58.29



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: J15**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.5406	0.000		0.0000	0.000
+D+L+H	2	0.2651	8.384	+D+L+H	-0.0027	0.064

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions		10.152	4.059
Max Upward from Load Combinations		10.152	4.059
Max Upward from Load Cases		6.075	2.700
Max Downward from all Load Conditions (Resis			-0.675
Max Downward from Load Cases (Resisting Up			-0.675
+D+H		4.077	1.359
+D+L+H, LL Comb Run (*L)		6.777	4.059
+D+L+H, LL Comb Run (L*)		7.452	0.684
+D+L+H, LL Comb Run (LL)		10.152	3.384
+D+Lr+H, LL Comb Run (*L)		4.077	1.359
+D+Lr+H, LL Comb Run (L*)		4.077	1.359
+D+Lr+H, LL Comb Run (LL)		4.077	1.359
+D+S+H		5.596	1.865
+D+0.750Lr+0.750L+H, LL Comb Run (*L)		6.102	3.384
+D+0.750Lr+0.750L+H, LL Comb Run (L*)		6.608	0.853
+D+0.750Lr+0.750L+H, LL Comb Run (LL)		8.633	2.878
+D+0.750L+0.750S+H, LL Comb Run (*L)		7.241	3.764
+D+0.750L+0.750S+H, LL Comb Run (L*)		7.747	1.232
+D+0.750L+0.750S+H, LL Comb Run (LL)		9.772	3.257
+D+0.60W+H		4.077	1.359
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run		6.102	3.384
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run		6.608	0.853
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run		8.633	2.878
+D+0.750L+0.750S+0.450W+H, LL Comb Run		7.241	3.764
+D+0.750L+0.750S+0.450W+H, LL Comb Run		7.747	1.232
+D+0.750L+0.750S+0.450W+H, LL Comb Run		9.772	3.257
+0.60D+0.60W+0.60H		2.446	0.815
+D+0.70E+0.60H		4.077	1.359
+D+0.750L+0.750S+0.5250E+H, LL Comb Run		7.241	3.764
+D+0.750L+0.750S+0.5250E+H, LL Comb Run		7.747	1.232
+D+0.750L+0.750S+0.5250E+H, LL Comb Run		9.772	3.257
+0.60D+0.70E+H		2.446	0.815
D Only		4.077	1.359
L Only, LL Comb Run (*L)		2.700	2.700
L Only, LL Comb Run (L*)		3.375	-0.675
L Only, LL Comb Run (LL)		6.075	2.025
S Only		1.519	0.506
H Only			







**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: J15 - Stair Support Condition**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 8.00 ft	1		0.078	0.045		-19.49	19.49	277.08	249.38	1.00	1.00	7.22	159.30	159.30
Dsgn. L = 16.00 ft	2		0.078	0.045	15.25	-19.49	19.49	277.08	249.38	1.00	1.00	7.22	159.30	159.30
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L = 8.00 ft	1		0.185	0.065		-46.17	46.17	277.08	249.38	1.00	1.00	10.36	159.30	159.30
Dsgn. L = 16.00 ft	2		0.185	0.036		-46.17	46.17	277.08	249.38	1.00	1.00	5.69	159.30	159.30
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L = 8.00 ft	1		0.185	0.065		-46.17	46.17	277.08	249.38	1.00	1.00	10.36	159.30	159.30
Dsgn. L = 16.00 ft	2		0.185	0.056	6.47	-46.17	46.17	277.08	249.38	1.00	1.00	8.89	159.30	159.30
+0.90D+E+0.90H														
Dsgn. L = 8.00 ft	1		0.055	0.019		-13.61	13.61	277.08	249.38	1.00	1.00	3.10	159.30	159.30
Dsgn. L = 16.00 ft	2		0.055	0.018	2.58	-13.61	13.61	277.08	249.38	1.00	1.00	2.83	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2474	0.000		0.0000	0.000
+D+L+H	2	0.0196	13.696	+D+L+H	-0.0547	6.144

**Vertical Reactions**

Load Combination	Support notation : Far left is #			Values in KIPS
	Support 1	Support 2	Support 3	
Max Upward from all Load Conditions		17.387	4.455	
Max Upward from Load Combinations		17.387	4.455	
Max Upward from Load Cases		10.801	3.200	
Max Downward from all Load Conditions (Resis)				-1.667
Max Downward from Load Combinations (Resis)				-0.413
Max Downward from Load Cases (Resisting U <sub>r</sub> )				-1.667
+D+H		6.586	1.255	
+D+L+H, LL Comb Run (*L)		9.786	4.455	
+D+L+H, LL Comb Run (L*)		14.187	-0.413	
+D+L+H, LL Comb Run (LL)		17.387	2.787	
+D+Lr+H, LL Comb Run (*L)		6.586	1.255	
+D+Lr+H, LL Comb Run (L*)		6.586	1.255	
+D+Lr+H, LL Comb Run (LL)		6.586	1.255	
+D+S+H		9.286	1.638	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)		8.986	3.655	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)		12.287	0.004	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)		14.687	2.404	
+D+0.750L+0.750S+H, LL Comb Run (*L)		11.011	3.942	
+D+0.750L+0.750S+H, LL Comb Run (L*)		14.312	0.291	
+D+0.750L+0.750S+H, LL Comb Run (LL)		16.712	2.691	
+D+0.60W+H		6.586	1.255	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run		8.986	3.655	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run		12.287	0.004	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run		14.687	2.404	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		11.011	3.942	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		14.312	0.291	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		16.712	2.691	
+0.60D+0.60W+0.60H		3.952	0.753	
+D+0.70E+0.60H		6.586	1.255	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run		11.011	3.942	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run		14.312	0.291	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run		16.712	2.691	
+0.60D+0.70E+H		3.952	0.753	
D Only		6.586	1.255	
L Only, LL Comb Run (*L)		3.200	3.200	
L Only, LL Comb Run (L*)		7.601	-1.667	
L Only, LL Comb Run (LL)		10.801	1.533	
S Only		2.700	0.383	
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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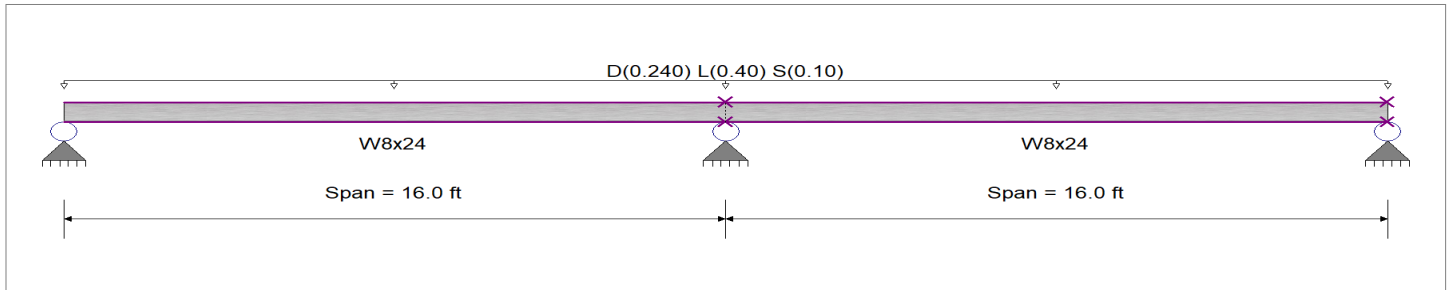
**DESCRIPTION: J16**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.372</b> : 1	Maximum Shear Stress Ratio =	<b>0.173</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	32.218 k-ft	Vu : Applied	10.068 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	16.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.174 in Ratio = <b>1,103</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.077 in Ratio = <b>2,509</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.241 in Ratio = <b>796</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.036 in Ratio = <b>5352</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L = 16.00 ft	1		0.137	0.063	6.65	-11.83	11.83	96.25	86.63	1.00	1.00	3.70	58.29	58.29
Dsgn. L = 16.00 ft	2		0.137	0.063	6.65	-11.83	11.83	96.25	86.63	1.00	1.00	3.70	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.235	0.153	2.51	-20.38	20.38	96.25	86.63	1.00	1.00	8.93	58.29	58.29
Dsgn. L = 16.00 ft	2		0.246	0.153	21.28	-20.38	21.28	96.25	86.63	1.00	1.00	8.93	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.246	0.153	21.28	-20.38	21.28	96.25	86.63	1.00	1.00	8.93	58.29	58.29
Dsgn. L = 16.00 ft	2		0.235	0.065	2.51	-20.38	20.38	96.25	86.63	1.00	1.00	3.81	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.353	0.164	17.22	-30.62	30.62	96.25	86.63	1.00	1.00	9.57	58.29	58.29
Dsgn. L = 16.00 ft	2		0.353	0.164	17.22	-30.62	30.62	96.25	86.63	1.00	1.00	9.57	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.254	0.162	3.32	-21.98	21.98	96.25	86.63	1.00	1.00	9.43	58.29	58.29
Dsgn. L = 16.00 ft	2		0.256	0.162	22.17	-21.98	22.17	96.25	86.63	1.00	1.00	9.43	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.256	0.162	22.17	-21.98	22.17	96.25	86.63	1.00	1.00	9.43	58.29	58.29
Dsgn. L = 16.00 ft	2		0.254	0.074	3.32	-21.98	21.98	96.25	86.63	1.00	1.00	4.31	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.372	0.173	18.12	-32.22	32.22	96.25	86.63	1.00	1.00	10.07	58.29	58.29
Dsgn. L = 16.00 ft	2		0.372	0.173	18.12	-32.22	32.22	96.25	86.63	1.00	1.00	10.07	58.29	58.29

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: J16**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.191	0.116	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.061	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	3.57	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 16.00 ft	1	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.117	0.054	5.70	-10.14	10.14	96.25	86.63	1.00	1.00	3.17	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.250	0.144	6.35	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.250	0.144	18.27	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.250	0.144	18.27	-21.66	21.66	96.25	86.63	1.00	1.00	8.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.250	0.089	6.35	-21.66	21.66	96.25	86.63	1.00	1.00	5.17	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 16.00 ft	1	0.324	0.150	15.78	-28.06	28.06	96.25	86.63	1.00	1.00	8.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.324	0.150	15.78	-28.06	28.06	96.25	86.63	1.00	1.00	8.77	58.29	58.29
+1.20D+1.60S+0.50W+1.60H	Dsgn. L = 16.00 ft	1	0.176	0.082	8.58	-15.26	15.26	96.25	86.63	1.00	1.00	4.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.176	0.082	8.58	-15.26	15.26	96.25	86.63	1.00	1.00	4.77	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.191	0.116	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.191	0.116	15.41	-16.54	16.54	96.25	86.63	1.00	1.00	6.77	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.191	0.061	3.55	-16.54	16.54	96.25	86.63	1.00	1.00	3.57	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.265	0.123	12.90	-22.94	22.94	96.25	86.63	1.00	1.00	7.17	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.209	0.125	4.42	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.209	0.125	16.31	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.209	0.125	16.31	-18.14	18.14	96.25	86.63	1.00	1.00	7.27	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.209	0.070	4.42	-18.14	18.14	96.25	86.63	1.00	1.00	4.07	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.283	0.132	13.80	-24.54	24.54	96.25	86.63	1.00	1.00	7.67	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.283	0.132	13.80	-24.54	24.54	96.25	86.63	1.00	1.00	7.67	58.29	58.29
+0.90D+W+1.60H	Dsgn. L = 16.00 ft	1	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.198	0.120	3.90	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.198	0.120	15.77	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.198	0.120	15.77	-17.18	17.18	96.25	86.63	1.00	1.00	6.97	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.198	0.065	3.90	-17.18	17.18	96.25	86.63	1.00	1.00	3.77	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 16.00 ft	1	0.272	0.126	13.26	-23.58	23.58	96.25	86.63	1.00	1.00	7.37	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.272	0.126	13.26	-23.58	23.58	96.25	86.63	1.00	1.00	7.37	58.29	58.29
+0.90D+E+0.90H	Dsgn. L = 16.00 ft	1	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29
	Dsgn. L = 16.00 ft	2	0.088	0.041	4.28	-7.60	7.60	96.25	86.63	1.00	1.00	2.38	58.29	58.29



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J16**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2413	7.360		0.0000	0.000
+D+L+H	2	0.2404	8.704	+D+L+H	-0.0016	0.064

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	4.384	13.280	4.384
Max Upward from Load Combinations	4.384	13.280	4.384
Max Upward from Load Cases	2.800	8.000	2.800
Max Downward from all Load Conditions (Resis	-0.400		-0.400
Max Downward from Load Cases (Resisting Up	-0.400		-0.400
+D+H	1.584	5.280	1.584
+D+L+H, LL Comb Run (*L)	1.184	9.280	4.384
+D+L+H, LL Comb Run (L*)	4.384	9.280	1.184
+D+L+H, LL Comb Run (LL)	3.984	13.280	3.984
+D+Lr+H, LL Comb Run (*L)	1.584	5.280	1.584
+D+Lr+H, LL Comb Run (L*)	1.584	5.280	1.584
+D+Lr+H, LL Comb Run (LL)	1.584	5.280	1.584
+D+S+H	2.184	7.280	2.184
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	1.284	8.280	3.684
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	3.684	8.280	1.284
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	3.384	11.280	3.384
+D+0.750L+0.750S+H, LL Comb Run (*L)	1.734	9.780	4.134
+D+0.750L+0.750S+H, LL Comb Run (L*)	4.134	9.780	1.734
+D+0.750L+0.750S+H, LL Comb Run (LL)	3.834	12.780	3.834
+D+0.60W+H	1.584	5.280	1.584
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.284	8.280	3.684
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.684	8.280	1.284
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.384	11.280	3.384
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.734	9.780	4.134
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.134	9.780	1.734
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.834	12.780	3.834
+0.60D+0.60W+0.60H	0.950	3.168	0.950
+D+0.70E+0.60H	1.584	5.280	1.584
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	1.734	9.780	4.134
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	4.134	9.780	1.734
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.834	12.780	3.834
+0.60D+0.70E+H	0.950	3.168	0.950
D Only	1.584	5.280	1.584
L Only, LL Comb Run (*L)	-0.400	4.000	2.800
L Only, LL Comb Run (L*)	2.800	4.000	-0.400
L Only, LL Comb Run (LL)	2.400	8.000	2.400
S Only	0.600	2.000	0.600
H Only			



## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **J17**

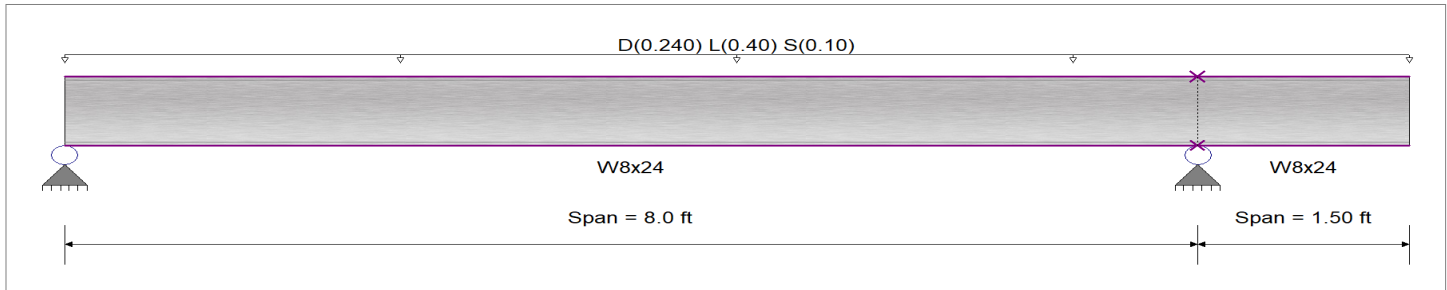
## CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

## Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



## Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

## DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.091</b> : 1	Maximum Shear Stress Ratio =	<b>0.072</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	7.849 k-ft	Vu : Applied	4.169 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination: 1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)		Load Combination: 1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	
Span # where maximum occurs	Span # 1	Location of maximum on span	8.000 ft
		Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.015 in Ratio = <b>6.205</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.009 in Ratio = <b>3.903</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.025 in Ratio = <b>3868</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.014 in Ratio = <b>2512</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

## Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L = 8.00 ft	8.00 ft	1	0.032	0.026	2.75	-0.42	2.75	96.25	86.63	1.00	1.00	1.53	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.005	0.010		-0.42	0.42	96.25	86.63	1.00	1.00	0.55	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 8.00 ft	8.00 ft	1	0.023	0.025	2.02	-1.08	2.02	96.25	86.63	1.00	1.00	1.44	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.012	0.025		-1.08	1.08	96.25	86.63	1.00	1.00	1.44	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 8.00 ft	8.00 ft	1	0.086	0.066	7.48	-0.36	7.48	96.25	86.63	1.00	1.00	3.87	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 8.00 ft	8.00 ft	1	0.082	0.068	7.13	-1.08	7.13	96.25	86.63	1.00	1.00	3.96	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.012	0.025		-1.08	1.08	96.25	86.63	1.00	1.00	1.44	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 8.00 ft	8.00 ft	1	0.028	0.028	2.40	-1.13	2.40	96.25	86.63	1.00	1.00	1.61	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.013	0.026		-1.13	1.13	96.25	86.63	1.00	1.00	1.51	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 8.00 ft	8.00 ft	1	0.091	0.070	7.85	-0.41	7.85	96.25	86.63	1.00	1.00	4.08	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.005	0.009		-0.41	0.41	96.25	86.63	1.00	1.00	0.55	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 8.00 ft	8.00 ft	1	0.087	0.072	7.50	-1.13	7.50	96.25	86.63	1.00	1.00	4.17	58.29	58.29
Dsgn. L = 1.50 ft	1.50 ft	2	0.013	0.026		-1.13	1.13	96.25	86.63	1.00	1.00	1.51	58.29	58.29



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J17**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 8.00 ft	1		0.025	0.023	2.15	-0.81	2.15	96.25	86.63	1.00	1.00	1.37	58.29	58.29
Dsgn. L = 1.50 ft	2		0.009	0.018		-0.81	0.81	96.25	86.63	1.00	1.00	1.08	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 8.00 ft	1		0.064	0.050	5.56	-0.36	5.56	96.25	86.63	1.00	1.00	2.91	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 8.00 ft	1		0.062	0.051	5.34	-0.81	5.34	96.25	86.63	1.00	1.00	2.97	58.29	58.29
Dsgn. L = 1.50 ft	2		0.009	0.018		-0.81	0.81	96.25	86.63	1.00	1.00	1.08	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 8.00 ft	1		0.027	0.023	2.36	-0.36	2.36	96.25	86.63	1.00	1.00	1.31	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 8.00 ft	1		0.027	0.023	2.36	-0.36	2.36	96.25	86.63	1.00	1.00	1.31	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 8.00 ft	1		0.027	0.023	2.36	-0.36	2.36	96.25	86.63	1.00	1.00	1.31	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 8.00 ft	1		0.039	0.035	3.34	-0.99	3.34	96.25	86.63	1.00	1.00	2.03	58.29	58.29
Dsgn. L = 1.50 ft	2		0.011	0.023		-0.99	0.99	96.25	86.63	1.00	1.00	1.32	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 8.00 ft	1		0.078	0.061	6.75	-0.54	6.75	96.25	86.63	1.00	1.00	3.57	58.29	58.29
Dsgn. L = 1.50 ft	2		0.006	0.012		-0.54	0.54	96.25	86.63	1.00	1.00	0.72	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 8.00 ft	1		0.075	0.062	6.53	-0.99	6.53	96.25	86.63	1.00	1.00	3.63	58.29	58.29
Dsgn. L = 1.50 ft	2		0.011	0.023		-0.99	0.99	96.25	86.63	1.00	1.00	1.32	58.29	58.29
+1.20D+1.60S+0.50W+1.60H														
Dsgn. L = 8.00 ft	1		0.041	0.034	3.55	-0.54	3.55	96.25	86.63	1.00	1.00	1.97	58.29	58.29
Dsgn. L = 1.50 ft	2		0.006	0.012		-0.54	0.54	96.25	86.63	1.00	1.00	0.72	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.025	0.023	2.15	-0.81	2.15	96.25	86.63	1.00	1.00	1.37	58.29	58.29
Dsgn. L = 1.50 ft	2		0.009	0.018		-0.81	0.81	96.25	86.63	1.00	1.00	1.08	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.064	0.050	5.56	-0.36	5.56	96.25	86.63	1.00	1.00	2.91	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.062	0.051	5.34	-0.81	5.34	96.25	86.63	1.00	1.00	2.97	58.29	58.29
Dsgn. L = 1.50 ft	2		0.009	0.018		-0.81	0.81	96.25	86.63	1.00	1.00	1.08	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.029	0.027	2.52	-0.86	2.52	96.25	86.63	1.00	1.00	1.58	58.29	58.29
Dsgn. L = 1.50 ft	2		0.010	0.020		-0.86	0.86	96.25	86.63	1.00	1.00	1.15	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.068	0.054	5.93	-0.41	5.93	96.25	86.63	1.00	1.00	3.12	58.29	58.29
Dsgn. L = 1.50 ft	2		0.005	0.009		-0.41	0.41	96.25	86.63	1.00	1.00	0.55	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.066	0.054	5.71	-0.86	5.71	96.25	86.63	1.00	1.00	3.18	58.29	58.29
Dsgn. L = 1.50 ft	2		0.010	0.020		-0.86	0.86	96.25	86.63	1.00	1.00	1.15	58.29	58.29
+0.90D+W+1.60H														
Dsgn. L = 8.00 ft	1		0.020	0.017	1.77	-0.27	1.77	96.25	86.63	1.00	1.00	0.98	58.29	58.29
Dsgn. L = 1.50 ft	2		0.003	0.006		-0.27	0.27	96.25	86.63	1.00	1.00	0.36	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.027	0.025	2.30	-0.83	2.30	96.25	86.63	1.00	1.00	1.45	58.29	58.29
Dsgn. L = 1.50 ft	2		0.010	0.019		-0.83	0.83	96.25	86.63	1.00	1.00	1.11	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.066	0.051	5.71	-0.38	5.71	96.25	86.63	1.00	1.00	2.99	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.009		-0.38	0.38	96.25	86.63	1.00	1.00	0.51	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.063	0.052	5.49	-0.83	5.49	96.25	86.63	1.00	1.00	3.05	58.29	58.29
Dsgn. L = 1.50 ft	2		0.010	0.019		-0.83	0.83	96.25	86.63	1.00	1.00	1.11	58.29	58.29
+0.90D+E+0.90H														
Dsgn. L = 8.00 ft	1		0.020	0.017	1.77	-0.27	1.77	96.25	86.63	1.00	1.00	0.98	58.29	58.29
Dsgn. L = 1.50 ft	2		0.003	0.006		-0.27	0.27	96.25	86.63	1.00	1.00	0.36	58.29	58.29



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J17**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0248	4.000	+D+L+H	0.0000	0.000
	2	0.0000	4.000		-0.0143	1.500

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	2.619	3.745	
Max Upward from Load Combinations	2.619	3.745	
Max Upward from Load Cases	1.600	2.256	
Max Downward from all Load Conditions (Resis	-0.056		
Max Downward from Load Cases (Resisting Up	-0.056		
+D+H	1.019	1.489	
+D+L+H, LL Comb Run (*L)	0.963	2.145	
+D+L+H, LL Comb Run (L*)	2.619	3.089	
+D+L+H, LL Comb Run (LL)	2.563	3.745	
+D+Lr+H, LL Comb Run (*L)	1.019	1.489	
+D+Lr+H, LL Comb Run (L*)	1.019	1.489	
+D+Lr+H, LL Comb Run (LL)	1.019	1.489	
+D+S+H	1.405	2.053	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	0.977	1.981	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	2.219	2.689	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	2.177	3.181	
+D+0.750L+0.750S+H, LL Comb Run (*L)	1.266	2.404	
+D+0.750L+0.750S+H, LL Comb Run (L*)	2.508	3.112	
+D+0.750L+0.750S+H, LL Comb Run (LL)	2.466	3.604	
+D+0.60W+H	1.019	1.489	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	0.977	1.981	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	2.219	2.689	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	2.177	3.181	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.266	2.404	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	2.508	3.112	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	2.466	3.604	
+0.60D+0.60W+0.60H	0.611	0.893	
+D+0.70E+0.60H	1.019	1.489	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	1.266	2.404	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	2.508	3.112	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	2.466	3.604	
+0.60D+0.70E+H	0.611	0.893	
D Only	1.019	1.489	
L Only, LL Comb Run (*L)	-0.056	0.656	
L Only, LL Comb Run (L*)	1.600	1.600	
L Only, LL Comb Run (LL)	1.544	2.256	
S Only	0.386	0.564	
H Only			

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(C) ENERCALC INC 1983-2023

DESCRIPTION: **J17.1**

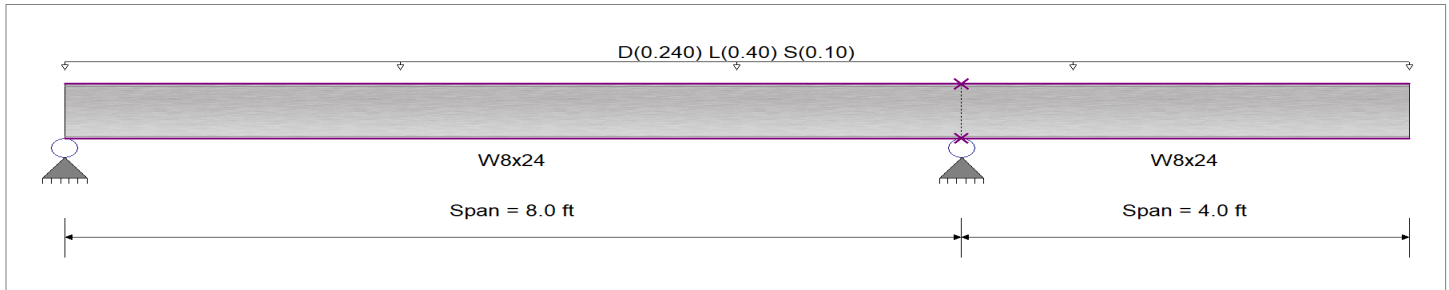
## CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

## Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



## Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

## DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.093</b> : 1	Maximum Shear Stress Ratio =	<b>0.086</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	8.054 k-ft	Vu : Applied	5.034 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	8.000 ft
		Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.034 in Ratio = <b>2,840</b> >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Upward Transient Deflection	-0.025 in Ratio = <b>3,903</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.040 in Ratio = <b>2408</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (*L)	
Max Upward Total Deflection	-0.019 in Ratio = <b>5183</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

## Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L = 8.00 ft	8.00 ft	1	0.034	0.032	1.66	-2.96	2.96	96.25	86.63	1.00	1.00	1.85	58.29	58.29	
Dsgn. L = 4.00 ft	4.00 ft	2	0.034	0.025		-2.96	2.96	96.25	86.63	1.00	1.00	1.48	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 8.00 ft	8.00 ft	1	0.088	0.066	0.15	-7.65	7.65	96.25	86.63	1.00	1.00	3.83	58.29	58.29	
Dsgn. L = 4.00 ft	4.00 ft	2	0.088	0.066		-7.65	7.65	96.25	86.63	1.00	1.00	3.83	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 8.00 ft	8.00 ft	1	0.074	0.071	6.44	-2.53	6.44	96.25	86.63	1.00	1.00	4.14	58.29	58.29	
Dsgn. L = 4.00 ft	4.00 ft	2	0.029	0.022		-2.53	2.53	96.25	86.63	1.00	1.00	1.27	58.29	58.29	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 8.00 ft	8.00 ft	1	0.088	0.082	4.31	-7.65	7.65	96.25	86.63	1.00	1.00	4.78	58.29	58.29	
Dsgn. L = 4.00 ft	4.00 ft	2	0.088	0.066		-7.65	7.65	96.25	86.63	1.00	1.00	3.83	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 8.00 ft	8.00 ft	1	0.093	0.069	0.29	-8.05	8.05	96.25	86.63	1.00	1.00	4.03	58.29	58.29	
Dsgn. L = 4.00 ft	4.00 ft	2	0.093	0.069		-8.05	8.05	96.25	86.63	1.00	1.00	4.03	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 8.00 ft	8.00 ft	1	0.077	0.075	6.65	-2.93	6.65	96.25	86.63	1.00	1.00	4.39	58.29	58.29	
Dsgn. L = 4.00 ft	4.00 ft	2	0.034	0.025		-2.93	2.93	96.25	86.63	1.00	1.00	1.47	58.29	58.29	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 8.00 ft	8.00 ft	1	0.093	0.086	4.53	-8.05	8.05	96.25	86.63	1.00	1.00	5.03	58.29	58.29	
Dsgn. L = 4.00 ft	4.00 ft	2	0.093	0.069		-8.05	8.05	96.25	86.63	1.00	1.00	4.03	58.29	58.29	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: J17.1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 8.00 ft	1		0.066	0.049	0.48	-5.73	5.73	96.25	86.63	1.00	1.00	2.87	58.29	58.29
Dsgn. L = 4.00 ft	2		0.066	0.049		-5.73	5.73	96.25	86.63	1.00	1.00	2.87	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 8.00 ft	1		0.052	0.055	4.54	-2.53	4.54	96.25	86.63	1.00	1.00	3.18	58.29	58.29
Dsgn. L = 4.00 ft	2		0.029	0.022		-2.53	2.53	96.25	86.63	1.00	1.00	1.27	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 8.00 ft	1		0.066	0.061	3.23	-5.73	5.73	96.25	86.63	1.00	1.00	3.58	58.29	58.29
Dsgn. L = 4.00 ft	2		0.066	0.049		-5.73	5.73	96.25	86.63	1.00	1.00	2.87	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 8.00 ft	1		0.029	0.027	1.43	-2.53	2.53	96.25	86.63	1.00	1.00	1.58	58.29	58.29
Dsgn. L = 4.00 ft	2		0.029	0.022		-2.53	2.53	96.25	86.63	1.00	1.00	1.27	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 8.00 ft	1		0.029	0.027	1.43	-2.53	2.53	96.25	86.63	1.00	1.00	1.58	58.29	58.29
Dsgn. L = 4.00 ft	2		0.029	0.022		-2.53	2.53	96.25	86.63	1.00	1.00	1.27	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 8.00 ft	1		0.029	0.027	1.43	-2.53	2.53	96.25	86.63	1.00	1.00	1.58	58.29	58.29
Dsgn. L = 4.00 ft	2		0.029	0.022		-2.53	2.53	96.25	86.63	1.00	1.00	1.27	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 8.00 ft	1		0.081	0.060	1.11	-7.01	7.01	96.25	86.63	1.00	1.00	3.51	58.29	58.29
Dsgn. L = 4.00 ft	2		0.081	0.060		-7.01	7.01	96.25	86.63	1.00	1.00	3.51	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 8.00 ft	1		0.060	0.068	5.24	-3.81	5.24	96.25	86.63	1.00	1.00	3.98	58.29	58.29
Dsgn. L = 4.00 ft	2		0.044	0.033		-3.81	3.81	96.25	86.63	1.00	1.00	1.91	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 8.00 ft	1		0.081	0.075	3.95	-7.01	7.01	96.25	86.63	1.00	1.00	4.38	58.29	58.29
Dsgn. L = 4.00 ft	2		0.081	0.060		-7.01	7.01	96.25	86.63	1.00	1.00	3.51	58.29	58.29
+1.20D+1.60S+0.50W+1.60H														
Dsgn. L = 8.00 ft	1		0.044	0.041	2.15	-3.81	3.81	96.25	86.63	1.00	1.00	2.38	58.29	58.29
Dsgn. L = 4.00 ft	2		0.044	0.033		-3.81	3.81	96.25	86.63	1.00	1.00	1.91	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.066	0.049	0.48	-5.73	5.73	96.25	86.63	1.00	1.00	2.87	58.29	58.29
Dsgn. L = 4.00 ft	2		0.066	0.049		-5.73	5.73	96.25	86.63	1.00	1.00	2.87	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.052	0.055	4.54	-2.53	4.54	96.25	86.63	1.00	1.00	3.18	58.29	58.29
Dsgn. L = 4.00 ft	2		0.029	0.022		-2.53	2.53	96.25	86.63	1.00	1.00	1.27	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.066	0.061	3.23	-5.73	5.73	96.25	86.63	1.00	1.00	3.58	58.29	58.29
Dsgn. L = 4.00 ft	2		0.066	0.049		-5.73	5.73	96.25	86.63	1.00	1.00	2.87	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.071	0.053	0.67	-6.13	6.13	96.25	86.63	1.00	1.00	3.07	58.29	58.29
Dsgn. L = 4.00 ft	2		0.071	0.053		-6.13	6.13	96.25	86.63	1.00	1.00	3.07	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.055	0.059	4.75	-2.93	4.75	96.25	86.63	1.00	1.00	3.43	58.29	58.29
Dsgn. L = 4.00 ft	2		0.034	0.025		-2.93	2.93	96.25	86.63	1.00	1.00	1.47	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.071	0.066	3.45	-6.13	6.13	96.25	86.63	1.00	1.00	3.83	58.29	58.29
Dsgn. L = 4.00 ft	2		0.071	0.053		-6.13	6.13	96.25	86.63	1.00	1.00	3.07	58.29	58.29
+0.90D+W+1.60H														
Dsgn. L = 8.00 ft	1		0.022	0.020	1.07	-1.90	1.90	96.25	86.63	1.00	1.00	1.19	58.29	58.29
Dsgn. L = 4.00 ft	2		0.022	0.016		-1.90	1.90	96.25	86.63	1.00	1.00	0.95	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.068	0.051	0.55	-5.89	5.89	96.25	86.63	1.00	1.00	2.95	58.29	58.29
Dsgn. L = 4.00 ft	2		0.068	0.051		-5.89	5.89	96.25	86.63	1.00	1.00	2.95	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.053	0.056	4.62	-2.69	4.62	96.25	86.63	1.00	1.00	3.28	58.29	58.29
Dsgn. L = 4.00 ft	2		0.031	0.023		-2.69	2.69	96.25	86.63	1.00	1.00	1.35	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 8.00 ft	1		0.068	0.063	3.32	-5.89	5.89	96.25	86.63	1.00	1.00	3.68	58.29	58.29
Dsgn. L = 4.00 ft	2		0.068	0.051		-5.89	5.89	96.25	86.63	1.00	1.00	2.95	58.29	58.29
+0.90D+E+0.90H														
Dsgn. L = 8.00 ft	1		0.022	0.020	1.07	-1.90	1.90	96.25	86.63	1.00	1.00	1.19	58.29	58.29
Dsgn. L = 4.00 ft	2		0.022	0.016		-1.90	1.90	96.25	86.63	1.00	1.00	0.95	58.29	58.29



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: J17.1**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0196	3.840		0.0000	0.000
+D+L+H	2	0.0399	4.000		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	2.392	5.976	
Max Upward from Load Combinations	2.392	5.976	
Max Upward from Load Cases	1.600	3.600	
Max Downward from all Load Conditions (Resis	-0.400		
Max Downward from Load Cases (Resisting Up	-0.400		
+D+H	0.792	2.376	
+D+L+H, LL Comb Run (*L)	0.392	4.376	
+D+L+H, LL Comb Run (L*)	2.392	3.976	
+D+L+H, LL Comb Run (LL)	1.992	5.976	
+D+Lr+H, LL Comb Run (*L)	0.792	2.376	
+D+Lr+H, LL Comb Run (L*)	0.792	2.376	
+D+Lr+H, LL Comb Run (LL)	0.792	2.376	
+D+S+H	1.092	3.276	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	0.492	3.876	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	1.992	3.576	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	1.692	5.076	
+D+0.750L+0.750S+H, LL Comb Run (*L)	0.717	4.551	
+D+0.750L+0.750S+H, LL Comb Run (L*)	2.217	4.251	
+D+0.750L+0.750S+H, LL Comb Run (LL)	1.917	5.751	
+D+0.60W+H	0.792	2.376	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	0.492	3.876	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	1.992	3.576	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	1.692	5.076	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	0.717	4.551	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	2.217	4.251	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.917	5.751	
+0.60D+0.60W+0.60H	0.475	1.426	
+D+0.70E+0.60H	0.792	2.376	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	0.717	4.551	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	2.217	4.251	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	1.917	5.751	
+0.60D+0.70E+H	0.475	1.426	
D Only	0.792	2.376	
L Only, LL Comb Run (*L)	-0.400	2.000	
L Only, LL Comb Run (L*)	1.600	1.600	
L Only, LL Comb Run (LL)	1.200	3.600	
S Only	0.300	0.900	
H Only			

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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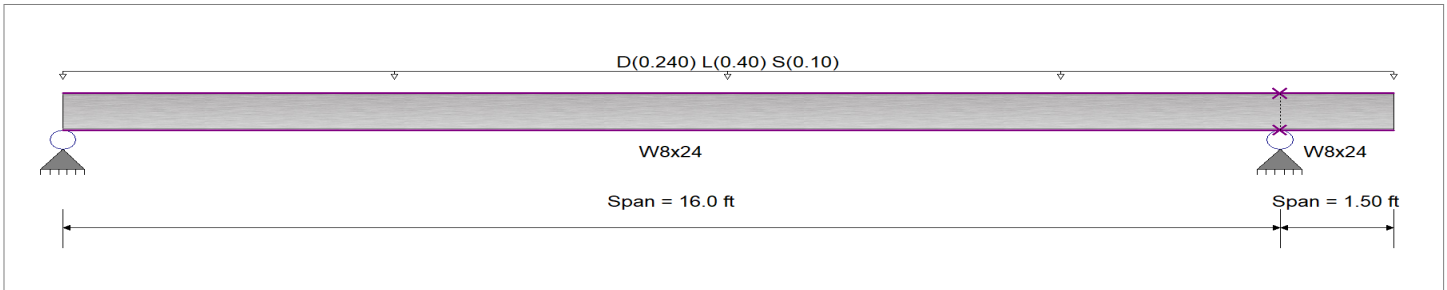
**DESCRIPTION: J18**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.370</b> : 1	Maximum Shear Stress Ratio =	<b>0.139</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	32.011 k-ft	Vu : Applied	8.125 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	16.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.247 in Ratio = <b>775</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.074 in Ratio = <b>487</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.407 in Ratio = <b>471</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.121 in Ratio = <b>298</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L = 16.00 ft	1		0.134	0.051	11.62	-0.42	11.62	96.25	86.63	1.00	1.00	2.98	58.29	58.29
Dsgn. L = 1.50 ft	2		0.005	0.010		-0.42	0.42	96.25	86.63	1.00	1.00	0.55	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.111	0.045	9.61	-1.08	9.61	96.25	86.63	1.00	1.00	2.60	58.29	58.29
Dsgn. L = 1.50 ft	2		0.012	0.025		-1.08	1.08	96.25	86.63	1.00	1.00	1.44	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.351	0.132	30.44	-0.36	30.44	96.25	86.63	1.00	1.00	7.68	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.347	0.132	30.08	-1.08	30.08	96.25	86.63	1.00	1.00	7.72	58.29	58.29
Dsgn. L = 1.50 ft	2		0.012	0.025		-1.08	1.08	96.25	86.63	1.00	1.00	1.44	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.129	0.052	11.18	-1.13	11.18	96.25	86.63	1.00	1.00	3.01	58.29	58.29
Dsgn. L = 1.50 ft	2		0.013	0.026		-1.13	1.13	96.25	86.63	1.00	1.00	1.51	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.370	0.139	32.01	-0.41	32.01	96.25	86.63	1.00	1.00	8.08	58.29	58.29
Dsgn. L = 1.50 ft	2		0.005	0.009		-0.41	0.41	96.25	86.63	1.00	1.00	0.55	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.365	0.139	31.65	-1.13	31.65	96.25	86.63	1.00	1.00	8.13	58.29	58.29
Dsgn. L = 1.50 ft	2		0.013	0.026		-1.13	1.13	96.25	86.63	1.00	1.00	1.51	58.29	58.29



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: J18**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.112	0.044	9.74	-0.81	9.74	96.25	86.63	1.00	1.00	2.58	58.29	58.29
Dsgn. L = 1.50 ft	2		0.009	0.018		-0.81	0.81	96.25	86.63	1.00	1.00	1.08	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.263	0.099	22.76	-0.36	22.76	96.25	86.63	1.00	1.00	5.76	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.260	0.099	22.54	-0.81	22.54	96.25	86.63	1.00	1.00	5.78	58.29	58.29
Dsgn. L = 1.50 ft	2		0.009	0.018		-0.81	0.81	96.25	86.63	1.00	1.00	1.08	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.115	0.044	9.96	-0.36	9.96	96.25	86.63	1.00	1.00	2.56	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.115	0.044	9.96	-0.36	9.96	96.25	86.63	1.00	1.00	2.56	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.115	0.044	9.96	-0.36	9.96	96.25	86.63	1.00	1.00	2.56	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.170	0.067	14.77	-0.99	14.77	96.25	86.63	1.00	1.00	3.88	58.29	58.29
Dsgn. L = 1.50 ft	2		0.011	0.023		-0.99	0.99	96.25	86.63	1.00	1.00	1.32	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.321	0.121	27.79	-0.54	27.79	96.25	86.63	1.00	1.00	7.05	58.29	58.29
Dsgn. L = 1.50 ft	2		0.006	0.012		-0.54	0.54	96.25	86.63	1.00	1.00	0.72	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 16.00 ft	1		0.318	0.121	27.57	-0.99	27.57	96.25	86.63	1.00	1.00	7.08	58.29	58.29
Dsgn. L = 1.50 ft	2		0.011	0.023		-0.99	0.99	96.25	86.63	1.00	1.00	1.32	58.29	58.29
+1.20D+1.60S+0.50W+1.60H														
Dsgn. L = 16.00 ft	1		0.173	0.066	14.99	-0.54	14.99	96.25	86.63	1.00	1.00	3.85	58.29	58.29
Dsgn. L = 1.50 ft	2		0.006	0.012		-0.54	0.54	96.25	86.63	1.00	1.00	0.72	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.112	0.044	9.74	-0.81	9.74	96.25	86.63	1.00	1.00	2.58	58.29	58.29
Dsgn. L = 1.50 ft	2		0.009	0.018		-0.81	0.81	96.25	86.63	1.00	1.00	1.08	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.263	0.099	22.76	-0.36	22.76	96.25	86.63	1.00	1.00	5.76	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.008		-0.36	0.36	96.25	86.63	1.00	1.00	0.48	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.260	0.099	22.54	-0.81	22.54	96.25	86.63	1.00	1.00	5.78	58.29	58.29
Dsgn. L = 1.50 ft	2		0.009	0.018		-0.81	0.81	96.25	86.63	1.00	1.00	1.08	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.131	0.051	11.31	-0.86	11.31	96.25	86.63	1.00	1.00	2.99	58.29	58.29
Dsgn. L = 1.50 ft	2		0.010	0.020		-0.86	0.86	96.25	86.63	1.00	1.00	1.15	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.281	0.106	24.33	-0.41	24.33	96.25	86.63	1.00	1.00	6.16	58.29	58.29
Dsgn. L = 1.50 ft	2		0.005	0.009		-0.41	0.41	96.25	86.63	1.00	1.00	0.55	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.278	0.106	24.11	-0.86	24.11	96.25	86.63	1.00	1.00	6.19	58.29	58.29
Dsgn. L = 1.50 ft	2		0.010	0.020		-0.86	0.86	96.25	86.63	1.00	1.00	1.15	58.29	58.29
+0.90D+W+1.60H														
Dsgn. L = 16.00 ft	1		0.086	0.033	7.47	-0.27	7.47	96.25	86.63	1.00	1.00	1.92	58.29	58.29
Dsgn. L = 1.50 ft	2		0.003	0.006		-0.27	0.27	96.25	86.63	1.00	1.00	0.36	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.120	0.047	10.37	-0.83	10.37	96.25	86.63	1.00	1.00	2.75	58.29	58.29
Dsgn. L = 1.50 ft	2		0.010	0.019		-0.83	0.83	96.25	86.63	1.00	1.00	1.11	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.270	0.102	23.39	-0.38	23.39	96.25	86.63	1.00	1.00	5.92	58.29	58.29
Dsgn. L = 1.50 ft	2		0.004	0.009		-0.38	0.38	96.25	86.63	1.00	1.00	0.51	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.267	0.102	23.16	-0.83	23.16	96.25	86.63	1.00	1.00	5.95	58.29	58.29
Dsgn. L = 1.50 ft	2		0.010	0.019		-0.83	0.83	96.25	86.63	1.00	1.00	1.11	58.29	58.29
+0.90D+E+0.90H														
Dsgn. L = 16.00 ft	1		0.086	0.033	7.47	-0.27	7.47	96.25	86.63	1.00	1.00	1.92	58.29	58.29
Dsgn. L = 1.50 ft	2		0.003	0.006		-0.27	0.27	96.25	86.63	1.00	1.00	0.36	58.29	58.29





Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: J18**

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.4074	8.000	+D+L+H	0.0000	0.000
	2	0.0000	8.000		-0.1206	1.500

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	5.293	6.355	
Max Upward from Load Combinations	5.293	6.355	
Max Upward from Load Cases	3.200	3.828	
Max Downward from all Load Conditions (Resis	-0.028		
Max Downward from Load Cases (Resisting Up	-0.028		
+D+H	2.093	2.527	
+D+L+H, LL Comb Run (*L)	2.065	3.155	
+D+L+H, LL Comb Run (L*)	5.293	5.727	
+D+L+H, LL Comb Run (LL)	5.265	6.355	
+D+Lr+H, LL Comb Run (*L)	2.093	2.527	
+D+Lr+H, LL Comb Run (L*)	2.093	2.527	
+D+Lr+H, LL Comb Run (LL)	2.093	2.527	
+D+S+H	2.886	3.484	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	2.072	2.998	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	4.493	4.927	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	4.472	5.398	
+D+0.750L+0.750S+H, LL Comb Run (*L)	2.667	3.715	
+D+0.750L+0.750S+H, LL Comb Run (L*)	5.088	5.644	
+D+0.750L+0.750S+H, LL Comb Run (LL)	5.067	6.115	
+D+0.60W+H	2.093	2.527	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	2.072	2.998	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	4.493	4.927	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	4.472	5.398	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	2.667	3.715	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	5.088	5.644	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	5.067	6.115	
+0.60D+0.60W+0.60H	1.256	1.516	
+D+0.70E+0.60H	2.093	2.527	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	2.667	3.715	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	5.088	5.644	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	5.067	6.115	
+0.60D+0.70E+H	1.256	1.516	
D Only	2.093	2.527	
L Only, LL Comb Run (*L)	-0.028	0.628	
L Only, LL Comb Run (L*)	3.200	3.200	
L Only, LL Comb Run (LL)	3.172	3.828	
S Only	0.793	0.957	
H Only			

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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DESCRIPTION: **B1**

**CODE REFERENCES**

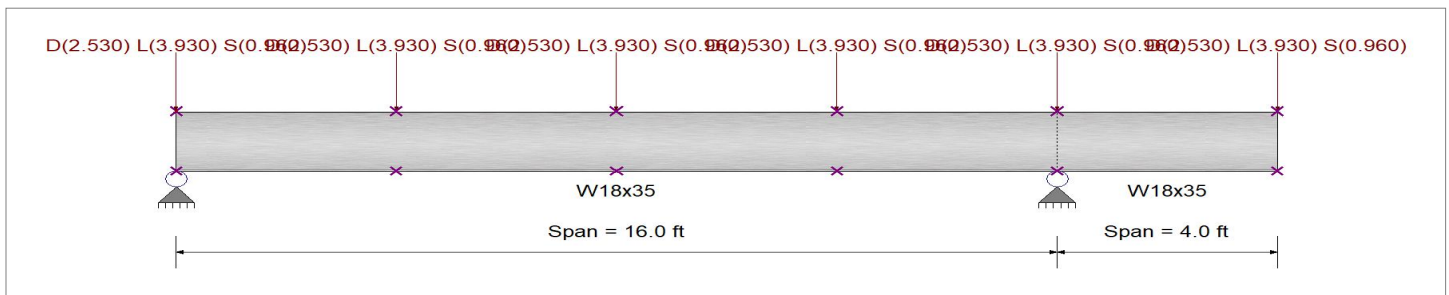
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 2.530, L = 3.930, S = 0.960 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.291</b> : 1	Maximum Shear Stress Ratio =	<b>0.110</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	72.576 k-ft	Vu : Applied	17.514 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	16.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.049 in Ratio = <b>1,961</b> >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Upward Transient Deflection	-0.073 in Ratio = <b>1,306</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.138 in Ratio = <b>1392</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.091 in Ratio = <b>1052</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.97 ft	1	0.075	0.030	18.64		18.64	277.08	249.38	1.67	1.00	4.80	159.30	159.30
Dsgn. L =	4.03 ft	1	0.091	0.029	22.62	18.64	22.62	277.08	249.38	1.07	1.00	4.60	159.30	159.30
Dsgn. L =	3.97 ft	1	0.091	0.018	22.62	11.60	22.62	277.08	249.38	1.24	1.00	2.88	159.30	159.30
Dsgn. L =	4.03 ft	1	0.058	0.042	11.60	-14.56	14.56	277.08	249.38	2.20	1.00	6.62	159.30	159.30
Dsgn. L =	4.00 ft	2	0.058	0.023		-14.56	14.56	277.08	249.38	1.00	1.00	3.74	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	3.97 ft	1	0.039	0.016	9.74		9.74	277.08	249.38	1.66	1.00	2.54	159.30	159.30
Dsgn. L =	4.03 ft	1	0.039	0.024	9.79	6.82	9.79	277.08	249.38	1.13	1.00	3.87	159.30	159.30
Dsgn. L =	3.97 ft	1	0.036	0.025	6.82	-8.87	8.87	277.08	249.38	2.24	1.00	4.04	159.30	159.30
Dsgn. L =	4.03 ft	1	0.151	0.060	-0.00	-37.63	37.63	277.08	249.38	1.44	1.00	9.49	159.30	159.30
Dsgn. L =	4.00 ft	2	0.151	0.060		-37.63	37.63	277.08	249.38	1.00	1.00	9.49	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	3.97 ft	1	0.214	0.085	53.40		53.40	277.08	249.38	1.68	1.00	13.54	159.30	159.30
Dsgn. L =	4.03 ft	1	0.279	0.084	69.70	53.40	69.70	277.08	249.38	1.10	1.00	13.38	159.30	159.30
Dsgn. L =	3.97 ft	1	0.279	0.035	69.70	47.77	69.70	277.08	249.38	1.14	1.00	5.61	159.30	159.30
Dsgn. L =	4.03 ft	1	0.192	0.095	47.77	-12.48	47.77	277.08	249.38	2.04	1.00	15.10	159.30	159.30
Dsgn. L =	4.00 ft	2	0.050	0.020		-12.48	12.48	277.08	249.38	1.00	1.00	3.20	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 3.97 ft	1	0.189	0.075	47.17		47.17	277.08	249.38	1.67	1.00	11.97	159.30	159.30
Dsgn. L = 4.03 ft	1	0.229	0.074	57.12	47.17	57.12	277.08	249.38	1.07	1.00	11.80	159.30	159.30
Dsgn. L = 3.97 ft	1	0.229	0.045	57.12	28.96	57.12	277.08	249.38	1.24	1.00	7.18	159.30	159.30
Dsgn. L = 4.03 ft	1	0.151	0.105	28.96	-37.63	37.63	277.08	249.38	2.19	1.00	16.67	159.30	159.30
Dsgn. L = 4.00 ft	2	0.151	0.060		-37.63	37.63	277.08	249.38	1.00	1.00	9.49	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 3.97 ft	1	0.049	0.020	12.12		12.12	277.08	249.38	1.67	1.00	3.14	159.30	159.30
Dsgn. L = 4.03 ft	1	0.049	0.027	12.20	9.70	12.20	277.08	249.38	1.08	1.00	4.23	159.30	159.30
Dsgn. L = 3.97 ft	1	0.039	0.028	9.70	-7.42	9.70	277.08	249.38	2.21	1.00	4.40	159.30	159.30
Dsgn. L = 4.03 ft	1	0.159	0.063	-0.00	-39.55	39.55	277.08	249.38	1.48	1.00	9.97	159.30	159.30
Dsgn. L = 4.00 ft	2	0.159	0.063		-39.55	39.55	277.08	249.38	1.00	1.00	9.97	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 3.97 ft	1	0.224	0.089	55.78		55.78	277.08	249.38	1.68	1.00	14.14	159.30	159.30
Dsgn. L = 4.03 ft	1	0.291	0.088	72.58	55.78	72.58	277.08	249.38	1.10	1.00	13.98	159.30	159.30
Dsgn. L = 3.97 ft	1	0.291	0.037	72.58	49.22	72.58	277.08	249.38	1.15	1.00	5.97	159.30	159.30
Dsgn. L = 4.03 ft	1	0.197	0.100	49.22	-14.40	49.22	277.08	249.38	2.09	1.00	15.94	159.30	159.30
Dsgn. L = 4.00 ft	2	0.058	0.023		-14.40	14.40	277.08	249.38	1.00	1.00	3.68	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 3.97 ft	1	0.199	0.079	49.55		49.55	277.08	249.38	1.67	1.00	12.57	159.30	159.30
Dsgn. L = 4.03 ft	1	0.241	0.078	60.00	49.55	60.00	277.08	249.38	1.07	1.00	12.40	159.30	159.30
Dsgn. L = 3.97 ft	1	0.241	0.047	60.00	30.41	60.00	277.08	249.38	1.24	1.00	7.54	159.30	159.30
Dsgn. L = 4.03 ft	1	0.159	0.110	30.41	-39.55	39.55	277.08	249.38	2.19	1.00	17.51	159.30	159.30
Dsgn. L = 4.00 ft	2	0.159	0.063		-39.55	39.55	277.08	249.38	1.00	1.00	9.97	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.97 ft	1	0.048	0.020	12.08		12.08	277.08	249.38	1.67	1.00	3.13	159.30	159.30
Dsgn. L = 4.03 ft	1	0.049	0.021	12.17	11.53	12.17	277.08	249.38	1.02	1.00	3.28	159.30	159.30
Dsgn. L = 3.97 ft	1	0.046	0.022	11.53	-1.82	11.53	277.08	249.38	1.83	1.00	3.45	159.30	159.30
Dsgn. L = 4.03 ft	1	0.113	0.045	-0.00	-28.20	28.20	277.08	249.38	1.59	1.00	7.13	159.30	159.30
Dsgn. L = 4.00 ft	2	0.113	0.045		-28.20	28.20	277.08	249.38	1.00	1.00	7.13	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.97 ft	1	0.158	0.063	39.37		39.37	277.08	249.38	1.67	1.00	10.01	159.30	159.30
Dsgn. L = 4.03 ft	1	0.204	0.062	50.83	39.37	50.83	277.08	249.38	1.10	1.00	9.84	159.30	159.30
Dsgn. L = 3.97 ft	1	0.204	0.028	50.83	33.59	50.83	277.08	249.38	1.15	1.00	4.43	159.30	159.30
Dsgn. L = 4.03 ft	1	0.135	0.073	33.59	-12.48	33.59	277.08	249.38	2.14	1.00	11.57	159.30	159.30
Dsgn. L = 4.00 ft	2	0.050	0.020		-12.48	12.48	277.08	249.38	1.00	1.00	3.20	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.97 ft	1	0.142	0.057	35.47		35.47	277.08	249.38	1.67	1.00	9.02	159.30	159.30
Dsgn. L = 4.03 ft	1	0.172	0.056	42.97	35.47	42.97	277.08	249.38	1.07	1.00	8.86	159.30	159.30
Dsgn. L = 3.97 ft	1	0.172	0.034	42.97	21.83	42.97	277.08	249.38	1.24	1.00	5.41	159.30	159.30
Dsgn. L = 4.03 ft	1	0.113	0.079	21.83	-28.20	28.20	277.08	249.38	2.19	1.00	12.55	159.30	159.30
Dsgn. L = 4.00 ft	2	0.113	0.045		-28.20	28.20	277.08	249.38	1.00	1.00	7.13	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.97 ft	1	0.064	0.026	15.98		15.98	277.08	249.38	1.67	1.00	4.11	159.30	159.30
Dsgn. L = 4.03 ft	1	0.078	0.025	19.39	15.98	19.39	277.08	249.38	1.07	1.00	3.94	159.30	159.30
Dsgn. L = 3.97 ft	1	0.078	0.015	19.39	9.94	19.39	277.08	249.38	1.24	1.00	2.46	159.30	159.30
Dsgn. L = 4.03 ft	1	0.050	0.036	9.94	-12.48	12.48	277.08	249.38	2.20	1.00	5.67	159.30	159.30
Dsgn. L = 4.00 ft	2	0.050	0.020		-12.48	12.48	277.08	249.38	1.00	1.00	3.20	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.97 ft	1	0.064	0.026	15.98		15.98	277.08	249.38	1.67	1.00	4.11	159.30	159.30
Dsgn. L = 4.03 ft	1	0.078	0.025	19.39	15.98	19.39	277.08	249.38	1.07	1.00	3.94	159.30	159.30
Dsgn. L = 3.97 ft	1	0.078	0.015	19.39	9.94	19.39	277.08	249.38	1.24	1.00	2.46	159.30	159.30
Dsgn. L = 4.03 ft	1	0.050	0.036	9.94	-12.48	12.48	277.08	249.38	2.20	1.00	5.67	159.30	159.30
Dsgn. L = 4.00 ft	2	0.050	0.020		-12.48	12.48	277.08	249.38	1.00	1.00	3.20	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.97 ft	1	0.079	0.032	19.70		19.70	277.08	249.38	1.67	1.00	5.05	159.30	159.30
Dsgn. L = 4.03 ft	1	0.083	0.031	20.75	19.70	20.75	277.08	249.38	1.02	1.00	4.88	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.97 ft	1	0.083	0.029	20.75	2.83	20.75	277.08	249.38	1.51	1.00	4.60	159.30	159.30
Dsgn. L = 4.03 ft	1	0.138	0.059	2.83	-34.34	34.34	277.08	249.38	1.75	1.00	9.34	159.30	159.30
Dsgn. L = 4.00 ft	2	0.138	0.054		-34.34	34.34	277.08	249.38	1.00	1.00	8.67	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.97 ft	1	0.188	0.075	46.99		46.99	277.08	249.38	1.67	1.00	11.93	159.30	159.30
Dsgn. L = 4.03 ft	1	0.241	0.074	60.05	46.99	60.05	277.08	249.38	1.09	1.00	11.76	159.30	159.30
Dsgn. L = 3.97 ft	1	0.241	0.035	60.05	38.23	60.05	277.08	249.38	1.17	1.00	5.58	159.30	159.30
Dsgn. L = 4.03 ft	1	0.153	0.089	38.23	-18.62	38.23	277.08	249.38	2.16	1.00	14.25	159.30	159.30
Dsgn. L = 4.00 ft	2	0.075	0.030		-18.62	18.62	277.08	249.38	1.00	1.00	4.74	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.97 ft	1	0.173	0.069	43.09		43.09	277.08	249.38	1.67	1.00	10.94	159.30	159.30
Dsgn. L = 4.03 ft	1	0.209	0.068	52.19	43.09	52.19	277.08	249.38	1.07	1.00	10.78	159.30	159.30
Dsgn. L = 3.97 ft	1	0.209	0.041	52.19	26.47	52.19	277.08	249.38	1.24	1.00	6.56	159.30	159.30
Dsgn. L = 4.03 ft	1	0.138	0.096	26.47	-34.34	34.34	277.08	249.38	2.19	1.00	15.24	159.30	159.30
Dsgn. L = 4.00 ft	2	0.138	0.054		-34.34	34.34	277.08	249.38	1.00	1.00	8.67	159.30	159.30
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 3.97 ft	1	0.095	0.038	23.60		23.60	277.08	249.38	1.67	1.00	6.03	159.30	159.30
Dsgn. L = 4.03 ft	1	0.115	0.037	28.61	23.60	28.61	277.08	249.38	1.07	1.00	5.86	159.30	159.30
Dsgn. L = 3.97 ft	1	0.115	0.023	28.61	14.59	28.61	277.08	249.38	1.24	1.00	3.62	159.30	159.30
Dsgn. L = 4.03 ft	1	0.075	0.052	14.59	-18.62	18.62	277.08	249.38	2.20	1.00	8.36	159.30	159.30
Dsgn. L = 4.00 ft	2	0.075	0.030		-18.62	18.62	277.08	249.38	1.00	1.00	4.74	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.97 ft	1	0.048	0.020	12.08		12.08	277.08	249.38	1.67	1.00	3.13	159.30	159.30
Dsgn. L = 4.03 ft	1	0.049	0.021	12.17	11.53	12.17	277.08	249.38	1.02	1.00	3.28	159.30	159.30
Dsgn. L = 3.97 ft	1	0.046	0.022	11.53	-1.82	11.53	277.08	249.38	1.83	1.00	3.45	159.30	159.30
Dsgn. L = 4.03 ft	1	0.113	0.045	-0.00	-28.20	28.20	277.08	249.38	1.59	1.00	7.13	159.30	159.30
Dsgn. L = 4.00 ft	2	0.113	0.045		-28.20	28.20	277.08	249.38	1.00	1.00	7.13	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.97 ft	1	0.158	0.063	39.37		39.37	277.08	249.38	1.67	1.00	10.01	159.30	159.30
Dsgn. L = 4.03 ft	1	0.204	0.062	50.83	39.37	50.83	277.08	249.38	1.10	1.00	9.84	159.30	159.30
Dsgn. L = 3.97 ft	1	0.204	0.028	50.83	33.59	50.83	277.08	249.38	1.15	1.00	4.43	159.30	159.30
Dsgn. L = 4.03 ft	1	0.135	0.073	33.59	-12.48	33.59	277.08	249.38	2.14	1.00	11.57	159.30	159.30
Dsgn. L = 4.00 ft	2	0.050	0.020		-12.48	12.48	277.08	249.38	1.00	1.00	3.20	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.97 ft	1	0.142	0.057	35.47		35.47	277.08	249.38	1.67	1.00	9.02	159.30	159.30
Dsgn. L = 4.03 ft	1	0.172	0.056	42.97	35.47	42.97	277.08	249.38	1.07	1.00	8.86	159.30	159.30
Dsgn. L = 3.97 ft	1	0.172	0.034	42.97	21.83	42.97	277.08	249.38	1.24	1.00	5.41	159.30	159.30
Dsgn. L = 4.03 ft	1	0.113	0.079	21.83	-28.20	28.20	277.08	249.38	2.19	1.00	12.55	159.30	159.30
Dsgn. L = 4.00 ft	2	0.113	0.045		-28.20	28.20	277.08	249.38	1.00	1.00	7.13	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 3.97 ft	1	0.058	0.023	14.46		14.46	277.08	249.38	1.67	1.00	3.73	159.30	159.30
Dsgn. L = 4.03 ft	1	0.059	0.023	14.60	14.41	14.60	277.08	249.38	1.00	1.00	3.64	159.30	159.30
Dsgn. L = 3.97 ft	1	0.058	0.024	14.41	-0.36	14.41	277.08	249.38	1.67	1.00	3.81	159.30	159.30
Dsgn. L = 4.03 ft	1	0.121	0.048	-0.00	-30.12	30.12	277.08	249.38	1.65	1.00	7.61	159.30	159.30
Dsgn. L = 4.00 ft	2	0.121	0.048		-30.12	30.12	277.08	249.38	1.00	1.00	7.61	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 3.97 ft	1	0.167	0.067	41.75		41.75	277.08	249.38	1.67	1.00	10.61	159.30	159.30
Dsgn. L = 4.03 ft	1	0.215	0.066	53.71	41.75	53.71	277.08	249.38	1.10	1.00	10.44	159.30	159.30
Dsgn. L = 3.97 ft	1	0.215	0.030	53.71	35.04	53.71	277.08	249.38	1.16	1.00	4.79	159.30	159.30
Dsgn. L = 4.03 ft	1	0.141	0.078	35.04	-14.40	35.04	277.08	249.38	2.15	1.00	12.41	159.30	159.30
Dsgn. L = 4.00 ft	2	0.058	0.023		-14.40	14.40	277.08	249.38	1.00	1.00	3.68	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 3.97 ft	1	0.152	0.060	37.85		37.85	277.08	249.38	1.67	1.00	9.62	159.30	159.30
Dsgn. L = 4.03 ft	1	0.184	0.059	45.85	37.85	45.85	277.08	249.38	1.07	1.00	9.46	159.30	159.30
Dsgn. L = 3.97 ft	1	0.184	0.036	45.85	23.28	45.85	277.08	249.38	1.24	1.00	5.77	159.30	159.30
Dsgn. L = 4.03 ft	1	0.121	0.084	23.28	-30.12	30.12	277.08	249.38	2.19	1.00	13.39	159.30	159.30
Dsgn. L = 4.00 ft	2	0.121	0.048		-30.12	30.12	277.08	249.38	1.00	1.00	7.61	159.30	159.30
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 3.97 ft	1	0.048	0.019	11.98		11.98	277.08	249.38	1.67	1.00	3.08	159.30	159.30
Dsgn. L = 4.03 ft	1	0.058	0.019	14.54	11.98	14.54	277.08	249.38	1.07	1.00	2.96	159.30	159.30
Dsgn. L = 3.97 ft	1	0.058	0.012	14.54	7.46	14.54	277.08	249.38	1.24	1.00	1.85	159.30	159.30
Dsgn. L = 4.03 ft	1	0.038	0.027	7.46	-9.36	9.36	277.08	249.38	2.20	1.00	4.25	159.30	159.30
Dsgn. L = 4.00 ft	2	0.038	0.015		-9.36	9.36	277.08	249.38	1.00	1.00	2.40	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>														
Dsgn. L =	3.97 ft	1	0.052	0.021	13.03		13.03	277.08	249.38	1.67	1.00	3.37	159.30	159.30
Dsgn. L =	4.03 ft	1	0.053	0.021	13.13	12.68	13.13	277.08	249.38	1.01	1.00	3.42	159.30	159.30
Dsgn. L =	3.97 ft	1	0.051	0.023	12.68	-1.24	12.68	277.08	249.38	1.76	1.00	3.59	159.30	159.30
Dsgn. L =	4.03 ft	1	0.116	0.046	-0.00	-28.97	28.97	277.08	249.38	1.61	1.00	7.33	159.30	159.30
Dsgn. L =	4.00 ft	2	0.116	0.046		-28.97	28.97	277.08	249.38	1.00	1.00	7.33	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>														
Dsgn. L =	3.97 ft	1	0.162	0.064	40.32		40.32	277.08	249.38	1.67	1.00	10.25	159.30	159.30
Dsgn. L =	4.03 ft	1	0.208	0.063	51.98	40.32	51.98	277.08	249.38	1.10	1.00	10.08	159.30	159.30
Dsgn. L =	3.97 ft	1	0.208	0.029	51.98	34.17	51.98	277.08	249.38	1.16	1.00	4.57	159.30	159.30
Dsgn. L =	4.03 ft	1	0.137	0.075	34.17	-13.25	34.17	277.08	249.38	2.15	1.00	11.90	159.30	159.30
Dsgn. L =	4.00 ft	2	0.053	0.021		-13.25	13.25	277.08	249.38	1.00	1.00	3.40	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>														
Dsgn. L =	3.97 ft	1	0.146	0.058	36.42		36.42	277.08	249.38	1.67	1.00	9.26	159.30	159.30
Dsgn. L =	4.03 ft	1	0.177	0.057	44.12	36.42	44.12	277.08	249.38	1.07	1.00	9.10	159.30	159.30
Dsgn. L =	3.97 ft	1	0.177	0.035	44.12	22.41	44.12	277.08	249.38	1.24	1.00	5.56	159.30	159.30
Dsgn. L =	4.03 ft	1	0.116	0.081	22.41	-28.97	28.97	277.08	249.38	2.19	1.00	12.88	159.30	159.30
Dsgn. L =	4.00 ft	2	0.116	0.046		-28.97	28.97	277.08	249.38	1.00	1.00	7.33	159.30	159.30
<b>+0.90D+E+0.90H</b>														
Dsgn. L =	3.97 ft	1	0.048	0.019	11.98		11.98	277.08	249.38	1.67	1.00	3.08	159.30	159.30
Dsgn. L =	4.03 ft	1	0.058	0.019	14.54	11.98	14.54	277.08	249.38	1.07	1.00	2.96	159.30	159.30
Dsgn. L =	3.97 ft	1	0.058	0.012	14.54	7.46	14.54	277.08	249.38	1.24	1.00	1.85	159.30	159.30
Dsgn. L =	4.03 ft	1	0.038	0.027	7.46	-9.36	9.36	277.08	249.38	2.20	1.00	4.25	159.30	159.30
Dsgn. L =	4.00 ft	2	0.038	0.015		-9.36	9.36	277.08	249.38	1.00	1.00	2.40	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.1380	7.872		0.0000	0.000
	2	0.0000	7.872	+D+L+H	-0.0912	4.000

**Vertical Reactions**

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	15.780	24.663	
Max Upward from Load Combinations	15.780	24.663	
Max Upward from Load Cases	9.825	14.738	
Max Downward from all Load Conditions (Resis	-0.983		
Max Downward from Load Cases (Resisting U <sub>r</sub>	-0.983		
+D+H	5.955	9.925	
+D+L+H, LL Comb Run (*L)	4.973	18.768	
+D+L+H, LL Comb Run (L*)	15.780	15.820	
+D+L+H, LL Comb Run (LL)	14.798	24.663	
+D+Lr+H, LL Comb Run (*L)	5.955	9.925	
+D+Lr+H, LL Comb Run (L*)	5.955	9.925	
+D+Lr+H, LL Comb Run (LL)	5.955	9.925	
+D+S+H	8.115	13.525	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	5.218	16.557	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	13.324	14.346	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	12.587	20.978	
+D+0.750L+0.750S+H, LL Comb Run (*L)	6.838	19.257	
+D+0.750L+0.750S+H, LL Comb Run (L*)	14.944	17.046	
+D+0.750L+0.750S+H, LL Comb Run (LL)	14.207	23.678	
+D+0.60W+H	5.955	9.925	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	5.218	16.557	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	13.324	14.346	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	12.587	20.978	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	6.838	19.257	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	14.944	17.046	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	14.207	23.678	
+0.60D+0.60W+0.60H	3.573	5.955	
+D+0.70E+0.60H	5.955	9.925	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	6.838	19.257	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	14.944	17.046	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	14.207	23.678	



Project Title: WSF International Village  
Engineer: JMB  
Project ID: 24-318  
Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B1**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
+0.60D+0.70E+H	3.573	5.955	
D Only	5.955	9.925	
L Only, LL Comb Run (*L)	-0.983	8.843	
L Only, LL Comb Run (L*)	9.825	5.895	
L Only, LL Comb Run (LL)	8.843	14.738	
S Only	2.160	3.600	
H Only			



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B2**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

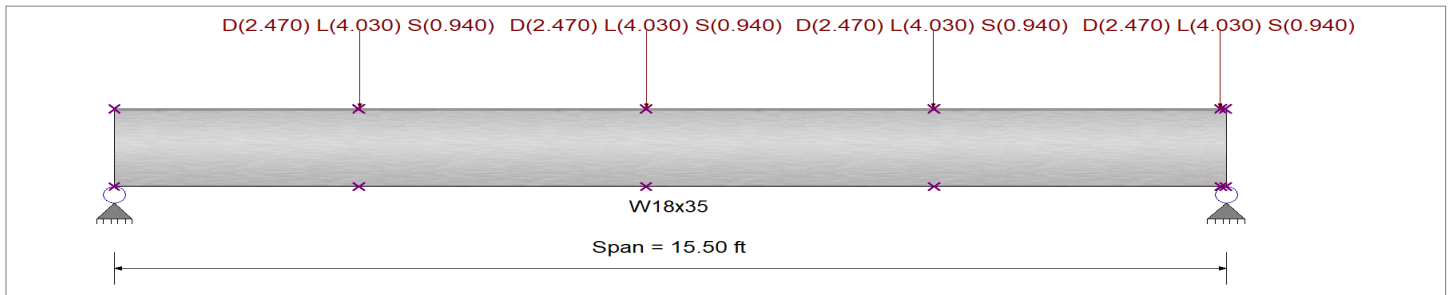
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 3.420 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 2.470, L = 4.030, S = 0.940 k, Starting at : 3.420 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.308</b> : 1	Maximum Shear Stress Ratio =	<b>0.153</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	76.695 k-ft	Vu : Applied	24.348 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	15.500 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.086 in Ratio = <b>2,158</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.142 in Ratio = <b>1309</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.41 ft	1	0.078	0.036	19.51		19.51	277.08	249.38	1.67	1.00	5.81	159.30	159.30
Dsgn. L =	3.99 ft	1	0.112	0.035	27.85	19.51	27.85	277.08	249.38	1.13	1.00	5.64	159.30	159.30
Dsgn. L =	3.99 ft	1	0.112	0.012	27.87	21.67	27.87	277.08	249.38	1.09	1.00	1.99	159.30	159.30
Dsgn. L =	4.03 ft	1	0.087	0.033	21.67	0.75	21.67	277.08	249.38	1.60	1.00	5.32	159.30	159.30
Dsgn. L =	0.04 ft	1	0.003	0.055	0.75	0.39	0.75	277.08	249.38	1.00	1.00	8.78	159.30	159.30
Dsgn. L =	0.04 ft	1	0.002	0.055	0.39		0.39	277.08	249.38	1.00	1.00	8.79	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	3.41 ft	1	0.205	0.095	51.22		51.22	277.08	249.38	1.68	1.00	15.09	159.30	159.30
Dsgn. L =	3.99 ft	1	0.293	0.094	73.06	51.22	73.06	277.08	249.38	1.14	1.00	14.95	159.30	159.30
Dsgn. L =	3.99 ft	1	0.293	0.034	73.11	56.84	73.11	277.08	249.38	1.10	1.00	5.37	159.30	159.30
Dsgn. L =	4.03 ft	1	0.228	0.087	56.84	1.97	56.84	277.08	249.38	1.61	1.00	13.79	159.30	159.30
Dsgn. L =	0.04 ft	1	0.008	0.146	1.97	1.03	1.97	277.08	249.38	1.00	1.00	23.20	159.30	159.30
Dsgn. L =	0.04 ft	1	0.004	0.146	1.03		1.03	277.08	249.38	1.00	1.00	23.21	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L =	3.41 ft	1	0.215	0.099	53.74		53.74	277.08	249.38	1.68	1.00	15.83	159.30	159.30
Dsgn. L =	3.99 ft	1	0.307	0.098	76.64	53.74	76.64	277.08	249.38	1.14	1.00	15.69	159.30	159.30
Dsgn. L =	3.99 ft	1	0.308	0.035	76.69	59.63	76.69	277.08	249.38	1.10	1.00	5.64	159.30	159.30



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B2**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.03 ft	1	0.239	0.091	59.63	2.07	59.63	277.08	249.38	1.61	1.00	14.46	159.30	159.30
Dsgn. L = 0.04 ft	1	0.008	0.153	2.07	1.08	2.07	277.08	249.38	1.00	1.00	24.35	159.30	159.30
Dsgn. L = 0.04 ft	1	0.004	0.153	1.08		1.08	277.08	249.38	1.00	1.00	24.35	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H</b>													
Dsgn. L = 3.41 ft	1	0.154	0.071	38.29		38.29	277.08	249.38	1.68	1.00	11.30	159.30	159.30
Dsgn. L = 3.99 ft	1	0.219	0.070	54.61	38.29	54.61	277.08	249.38	1.14	1.00	11.16	159.30	159.30
Dsgn. L = 3.99 ft	1	0.219	0.025	54.65	42.49	54.65	277.08	249.38	1.10	1.00	3.99	159.30	159.30
Dsgn. L = 4.03 ft	1	0.170	0.065	42.49	1.47	42.49	277.08	249.38	1.61	1.00	10.33	159.30	159.30
Dsgn. L = 0.04 ft	1	0.006	0.109	1.47	0.77	1.47	277.08	249.38	1.00	1.00	17.33	159.30	159.30
Dsgn. L = 0.04 ft	1	0.003	0.109	0.77		0.77	277.08	249.38	1.00	1.00	17.33	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H</b>													
Dsgn. L = 3.41 ft	1	0.067	0.031	16.72		16.72	277.08	249.38	1.67	1.00	4.98	159.30	159.30
Dsgn. L = 3.99 ft	1	0.096	0.030	23.87	16.72	23.87	277.08	249.38	1.13	1.00	4.83	159.30	159.30
Dsgn. L = 3.99 ft	1	0.096	0.011	23.89	18.58	23.89	277.08	249.38	1.09	1.00	1.70	159.30	159.30
Dsgn. L = 4.03 ft	1	0.074	0.029	18.58	0.64	18.58	277.08	249.38	1.60	1.00	4.56	159.30	159.30
Dsgn. L = 0.04 ft	1	0.003	0.047	0.64	0.33	0.64	277.08	249.38	1.00	1.00	7.53	159.30	159.30
Dsgn. L = 0.04 ft	1	0.001	0.047	0.33		0.33	277.08	249.38	1.00	1.00	7.53	159.30	159.30
<b>+1.20D+L+1.60S+1.60H</b>													
Dsgn. L = 3.41 ft	1	0.186	0.086	46.33		46.33	277.08	249.38	1.68	1.00	13.66	159.30	159.30
Dsgn. L = 3.99 ft	1	0.265	0.085	66.08	46.33	66.08	277.08	249.38	1.14	1.00	13.52	159.30	159.30
Dsgn. L = 3.99 ft	1	0.265	0.030	66.13	51.42	66.13	277.08	249.38	1.10	1.00	4.85	159.30	159.30
Dsgn. L = 4.03 ft	1	0.206	0.078	51.42	1.79	51.42	277.08	249.38	1.61	1.00	12.48	159.30	159.30
Dsgn. L = 0.04 ft	1	0.007	0.132	1.79	0.93	1.79	277.08	249.38	1.00	1.00	20.98	159.30	159.30
Dsgn. L = 0.04 ft	1	0.004	0.132	0.93		0.93	277.08	249.38	1.00	1.00	20.98	159.30	159.30
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 3.41 ft	1	0.099	0.046	24.77		24.77	277.08	249.38	1.68	1.00	7.34	159.30	159.30
Dsgn. L = 3.99 ft	1	0.142	0.045	35.34	24.77	35.34	277.08	249.38	1.13	1.00	7.19	159.30	159.30
Dsgn. L = 3.99 ft	1	0.142	0.016	35.37	27.50	35.37	277.08	249.38	1.09	1.00	2.56	159.30	159.30
Dsgn. L = 4.03 ft	1	0.110	0.042	27.50	0.95	27.50	277.08	249.38	1.61	1.00	6.72	159.30	159.30
Dsgn. L = 0.04 ft	1	0.004	0.070	0.95	0.50	0.95	277.08	249.38	1.00	1.00	11.19	159.30	159.30
Dsgn. L = 0.04 ft	1	0.002	0.070	0.50		0.50	277.08	249.38	1.00	1.00	11.19	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H</b>													
Dsgn. L = 3.41 ft	1	0.154	0.071	38.29		38.29	277.08	249.38	1.68	1.00	11.30	159.30	159.30
Dsgn. L = 3.99 ft	1	0.219	0.070	54.61	38.29	54.61	277.08	249.38	1.14	1.00	11.16	159.30	159.30
Dsgn. L = 3.99 ft	1	0.219	0.025	54.65	42.49	54.65	277.08	249.38	1.10	1.00	3.99	159.30	159.30
Dsgn. L = 4.03 ft	1	0.170	0.065	42.49	1.47	42.49	277.08	249.38	1.61	1.00	10.33	159.30	159.30
Dsgn. L = 0.04 ft	1	0.006	0.109	1.47	0.77	1.47	277.08	249.38	1.00	1.00	17.33	159.30	159.30
Dsgn. L = 0.04 ft	1	0.003	0.109	0.77		0.77	277.08	249.38	1.00	1.00	17.33	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H</b>													
Dsgn. L = 3.41 ft	1	0.164	0.076	40.80		40.80	277.08	249.38	1.68	1.00	12.04	159.30	159.30
Dsgn. L = 3.99 ft	1	0.233	0.075	58.20	40.80	58.20	277.08	249.38	1.14	1.00	11.89	159.30	159.30
Dsgn. L = 3.99 ft	1	0.234	0.027	58.24	45.28	58.24	277.08	249.38	1.10	1.00	4.26	159.30	159.30
Dsgn. L = 4.03 ft	1	0.182	0.069	45.28	1.57	45.28	277.08	249.38	1.61	1.00	11.00	159.30	159.30
Dsgn. L = 0.04 ft	1	0.006	0.116	1.57	0.82	1.57	277.08	249.38	1.00	1.00	18.47	159.30	159.30
Dsgn. L = 0.04 ft	1	0.003	0.116	0.82		0.82	277.08	249.38	1.00	1.00	18.47	159.30	159.30
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 3.41 ft	1	0.050	0.023	12.54		12.54	277.08	249.38	1.67	1.00	3.73	159.30	159.30
Dsgn. L = 3.99 ft	1	0.072	0.023	17.90	12.54	17.90	277.08	249.38	1.13	1.00	3.62	159.30	159.30
Dsgn. L = 3.99 ft	1	0.072	0.008	17.91	13.93	17.91	277.08	249.38	1.09	1.00	1.28	159.30	159.30
Dsgn. L = 4.03 ft	1	0.056	0.021	13.93	0.48	13.93	277.08	249.38	1.60	1.00	3.42	159.30	159.30
Dsgn. L = 0.04 ft	1	0.002	0.035	0.48	0.25	0.48	277.08	249.38	1.00	1.00	5.65	159.30	159.30
Dsgn. L = 0.04 ft	1	0.001	0.035	0.25		0.25	277.08	249.38	1.00	1.00	5.65	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H</b>													
Dsgn. L = 3.41 ft	1	0.158	0.073	39.29		39.29	277.08	249.38	1.68	1.00	11.59	159.30	159.30
Dsgn. L = 3.99 ft	1	0.225	0.072	56.05	39.29	56.05	277.08	249.38	1.14	1.00	11.45	159.30	159.30
Dsgn. L = 3.99 ft	1	0.225	0.026	56.08	43.61	56.08	277.08	249.38	1.10	1.00	4.10	159.30	159.30
Dsgn. L = 4.03 ft	1	0.175	0.067	43.61	1.51	43.61	277.08	249.38	1.61	1.00	10.60	159.30	159.30
Dsgn. L = 0.04 ft	1	0.006	0.112	1.51	0.79	1.51	277.08	249.38	1.00	1.00	17.78	159.30	159.30
Dsgn. L = 0.04 ft	1	0.003	0.112	0.79		0.79	277.08	249.38	1.00	1.00	17.78	159.30	159.30
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 3.41 ft	1	0.050	0.023	12.54		12.54	277.08	249.38	1.67	1.00	3.73	159.30	159.30
Dsgn. L = 3.99 ft	1	0.072	0.023	17.90	12.54	17.90	277.08	249.38	1.13	1.00	3.62	159.30	159.30
Dsgn. L = 3.99 ft	1	0.072	0.008	17.91	13.93	17.91	277.08	249.38	1.09	1.00	1.28	159.30	159.30



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B2**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	4.03 ft	1	0.056	0.021	13.93	0.48	13.93	277.08	249.38	1.60	1.00	3.42	159.30	159.30
Dsgn. L =	0.04 ft	1	0.002	0.035	0.48	0.25	0.48	277.08	249.38	1.00	1.00	5.65	159.30	159.30
Dsgn. L =	0.04 ft	1	0.001	0.035	0.25		0.25	277.08	249.38	1.00	1.00	5.65	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.1421	7.750		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	10.470	16.073
Max Upward from Load Combinations	10.470	16.073
Max Upward from Load Cases	6.323	9.797
+D+H	4.147	6.276
+D+L+H	10.470	16.073
+D+Lr+H	4.147	6.276
+D+S+H	5.622	8.561
+D+0.750Lr+0.750L+H	8.889	13.623
+D+0.750L+0.750S+H	9.995	15.337
+D+0.60W+H	4.147	6.276
+D+0.750Lr+0.750L+0.450W+H	8.889	13.623
+D+0.750L+0.750S+0.450W+H	9.995	15.337
+0.60D+0.60W+0.60H	2.488	3.765
+D+0.70E+0.60H	4.147	6.276
+D+0.750L+0.750S+0.5250E+H	9.995	15.337
+0.60D+0.70E+H	2.488	3.765
D Only	4.147	6.276
L Only	6.323	9.797
S Only	1.475	2.285
H Only		

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B3**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

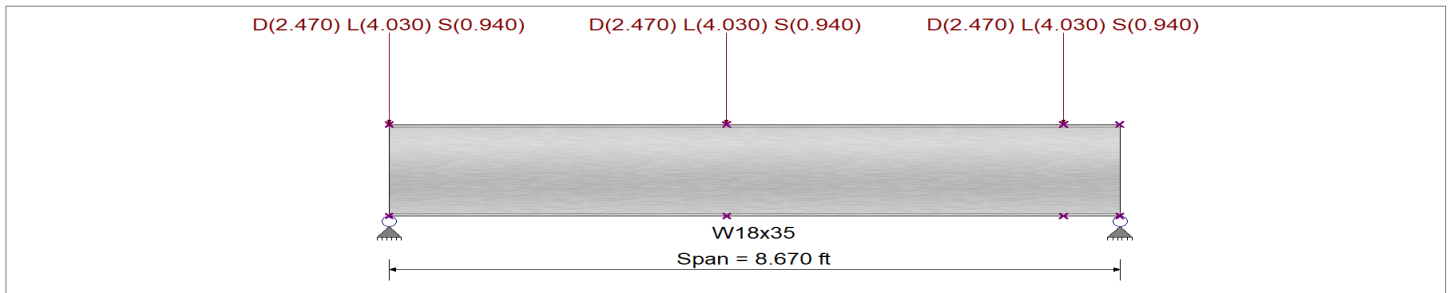
### Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

### Unbraced Lengths

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 2.470, L = 4.030, S = 0.940 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.099</b> : 1	Maximum Shear Stress Ratio =	<b>0.087</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	24.689 k-ft	Vu : Applied	13.860 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	8.670 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.008 in Ratio = <b>13,268</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.013 in Ratio = <b>8035</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L =	3.99 ft	1	0.036	0.015	8.95		8.95	277.08	249.38	1.65	1.00	2.34	159.30	159.30	
Dsgn. L =	3.99 ft	1	0.036	0.013	8.96	3.37	8.96	277.08	249.38	1.31	1.00	2.15	159.30	159.30	
Dsgn. L =	0.69 ft	1	0.014	0.031	3.37		3.37	277.08	249.38	1.64	1.00	5.00	159.30	159.30	
+1.20D+0.50Lr+1.60L+1.60H															
Dsgn. L =	3.99 ft	1	0.094	0.038	23.51		23.51	277.08	249.38	1.67	1.00	5.98	159.30	159.30	
Dsgn. L =	3.99 ft	1	0.094	0.036	23.53	8.93	23.53	277.08	249.38	1.32	1.00	5.81	159.30	159.30	
Dsgn. L =	0.69 ft	1	0.036	0.083	8.93		8.93	277.08	249.38	1.64	1.00	13.21	159.30	159.30	
+1.20D+1.60L+0.50S+1.60H															
Dsgn. L =	3.99 ft	1	0.099	0.039	24.67		24.67	277.08	249.38	1.67	1.00	6.27	159.30	159.30	
Dsgn. L =	3.99 ft	1	0.099	0.038	24.69	9.37	24.69	277.08	249.38	1.32	1.00	6.10	159.30	159.30	
Dsgn. L =	0.69 ft	1	0.038	0.087	9.37		9.37	277.08	249.38	1.64	1.00	13.86	159.30	159.30	
+1.20D+1.60Lr+L+1.60H															
Dsgn. L =	3.99 ft	1	0.070	0.028	17.57		17.57	277.08	249.38	1.67	1.00	4.49	159.30	159.30	
Dsgn. L =	3.99 ft	1	0.071	0.027	17.59	6.67	17.59	277.08	249.38	1.32	1.00	4.32	159.30	159.30	
Dsgn. L =	0.69 ft	1	0.027	0.062	6.67		6.67	277.08	249.38	1.64	1.00	9.86	159.30	159.30	
+1.20D+1.60Lr+0.50W+1.60H															
Dsgn. L =	3.99 ft	1	0.031	0.013	7.67		7.67	277.08	249.38	1.65	1.00	2.01	159.30	159.30	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B3**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+L+1.60S+1.60H	Dsgn. L = 3.99 ft	1	0.031	0.012	7.68	2.89	7.68	277.08	249.38	1.31	1.00	1.84	159.30	159.30
	Dsgn. L = 0.69 ft	1	0.012	0.027	2.89		2.89	277.08	249.38	1.64	1.00	4.28	159.30	159.30
+1.20D+1.60S+0.50W+1.60H	Dsgn. L = 3.99 ft	1	0.085	0.034	21.27		21.27	277.08	249.38	1.67	1.00	5.42	159.30	159.30
	Dsgn. L = 3.99 ft	1	0.085	0.033	21.29	8.07	21.29	277.08	249.38	1.32	1.00	5.25	159.30	159.30
	Dsgn. L = 0.69 ft	1	0.032	0.075	8.07		8.07	277.08	249.38	1.64	1.00	11.94	159.30	159.30
+1.20D+0.50Lr+L+W+1.60H	Dsgn. L = 3.99 ft	1	0.046	0.018	11.37		11.37	277.08	249.38	1.66	1.00	2.93	159.30	159.30
	Dsgn. L = 3.99 ft	1	0.046	0.017	11.38	4.30	11.38	277.08	249.38	1.32	1.00	2.77	159.30	159.30
	Dsgn. L = 0.69 ft	1	0.017	0.040	4.30		4.30	277.08	249.38	1.64	1.00	6.37	159.30	159.30
+1.20D+L+0.50S+W+1.60H	Dsgn. L = 3.99 ft	1	0.070	0.028	17.57		17.57	277.08	249.38	1.67	1.00	4.49	159.30	159.30
	Dsgn. L = 3.99 ft	1	0.071	0.027	17.59	6.67	17.59	277.08	249.38	1.32	1.00	4.32	159.30	159.30
	Dsgn. L = 0.69 ft	1	0.027	0.062	6.67		6.67	277.08	249.38	1.64	1.00	9.86	159.30	159.30
+0.90D+W+1.60H	Dsgn. L = 3.99 ft	1	0.023	0.009	5.75		5.75	277.08	249.38	1.65	1.00	1.51	159.30	159.30
	Dsgn. L = 3.99 ft	1	0.023	0.009	5.76	2.17	5.76	277.08	249.38	1.31	1.00	1.38	159.30	159.30
	Dsgn. L = 0.69 ft	1	0.009	0.020	2.17		2.17	277.08	249.38	1.64	1.00	3.21	159.30	159.30
+1.20D+L+0.20S+E+1.60H	Dsgn. L = 3.99 ft	1	0.072	0.029	18.03		18.03	277.08	249.38	1.67	1.00	4.61	159.30	159.30
	Dsgn. L = 3.99 ft	1	0.072	0.028	18.05	6.84	18.05	277.08	249.38	1.32	1.00	4.44	159.30	159.30
	Dsgn. L = 0.69 ft	1	0.027	0.064	6.84		6.84	277.08	249.38	1.64	1.00	10.12	159.30	159.30
+0.90D+E+0.90H	Dsgn. L = 3.99 ft	1	0.023	0.009	5.75		5.75	277.08	249.38	1.65	1.00	1.51	159.30	159.30
	Dsgn. L = 3.99 ft	1	0.023	0.009	5.76	2.17	5.76	277.08	249.38	1.31	1.00	1.38	159.30	159.30
	Dsgn. L = 0.69 ft	1	0.009	0.020	2.17		2.17	277.08	249.38	1.64	1.00	3.21	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0129	4.360		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	10.655	9.148		
Max Upward from Load Combinations	10.655	9.148		
Max Upward from Load Cases	6.512	5.578		
+D+H	4.143	3.570		
+D+L+H	10.655	9.148		
+D+Lr+H	4.143	3.570		
+D+S+H	5.662	4.871		
+D+0.750Lr+0.750L+H	9.027	7.754		
+D+0.750L+0.750S+H	10.166	8.730		
+D+0.60W+H	4.143	3.570		
+D+0.750Lr+0.750L+0.450W+H	9.027	7.754		
+D+0.750L+0.750S+0.450W+H	10.166	8.730		
+0.60D+0.60W+0.60H	2.486	2.142		
+D+0.70E+0.60H	4.143	3.570		
+D+0.750L+0.750S+0.5250E+H	10.166	8.730		
+0.60D+0.70E+H	2.486	2.142		
D Only	4.143	3.570		
L Only	6.512	5.578		
S Only	1.519	1.301		
H Only				





Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B3.1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
+0.90D+W+1.60H	Dsgn. L = 16.50 ft	1	0.614	0.125	116.42	116.42	210.62	189.55	1.22	1.00	24.48	195.48	195.48
+1.20D+L+0.20S+E+1.60H	Dsgn. L = 16.50 ft	1	0.189	0.039	35.86	35.86	210.44	189.40	1.22	1.00	7.54	195.48	195.48
+0.90D+E+0.90H	Dsgn. L = 16.50 ft	1	0.591	0.121	112.12	112.12	210.62	189.55	1.22	1.00	23.58	195.48	195.48
	Dsgn. L = 16.50 ft	1	0.189	0.039	35.86	35.86	210.44	189.40	1.22	1.00	7.54	195.48	195.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2151	8.250		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	22.608	21.301		
Max Upward from Load Combinations	22.608	21.301		
Max Upward from Load Cases	13.734	12.926		
+D+H	8.874	8.375		
+D+L+H	22.608	21.301		
+D+Lr+H	8.874	8.375		
+D+S+H	12.079	11.390		
+D+0.750Lr+0.750L+H	19.175	18.069		
+D+0.750L+0.750S+H	21.578	20.331		
+D+0.60W+H	8.874	8.375		
+D+0.750Lr+0.750L+0.450W+H	19.175	18.069		
+D+0.750L+0.750S+0.450W+H	21.578	20.331		
+0.60D+0.60W+0.60H	5.325	5.025		
+D+0.70E+0.60H	8.874	8.375		
+D+0.750L+0.750S+0.5250E+H	21.578	20.331		
+0.60D+0.70E+H	5.325	5.025		
D Only	8.874	8.375		
L Only	13.734	12.926		
S Only	3.204	3.016		
H Only				

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B4**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

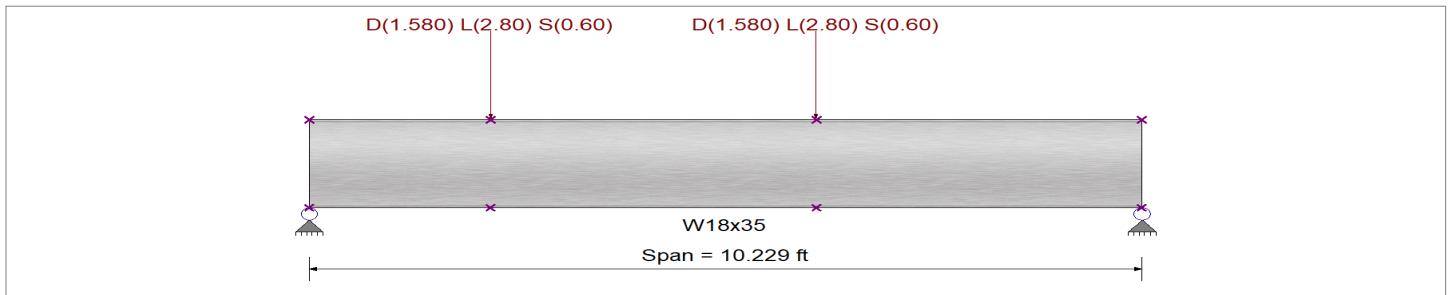
### Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

### Unbraced Lengths

First Brace starts at 2.230 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 1.580, L = 2.80, S = 0.60 k, Starting at : 2.230 ft and placed every 4.0 ft thereafter

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.091</b> : 1	Maximum Shear Stress Ratio =	<b>0.051</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	22.598 k-ft	Vu : Applied	8.045 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.011 in Ratio = <b>10,830</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.018 in Ratio = <b>6702</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L = 2.22 ft	2.22 ft	1	0.025	0.018	6.20		6.20	277.08	249.38	1.66	1.00	2.85	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	1	0.032	0.017	7.92	6.20	7.92	277.08	249.38	1.09	1.00	2.74	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	1	0.032	0.013	7.92		7.92	277.08	249.38	1.63	1.00	2.08	159.30	159.30	
+1.20D+0.50Lr+1.60L+1.60H															
Dsgn. L = 2.22 ft	2.22 ft	1	0.068	0.048	16.98		16.98	277.08	249.38	1.66	1.00	7.69	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	1	0.087	0.048	21.61	16.98	21.61	277.08	249.38	1.09	1.00	7.60	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	1	0.087	0.034	21.61		21.61	277.08	249.38	1.65	1.00	5.49	159.30	159.30	
+1.20D+1.60Lr+0.50S+1.60H															
Dsgn. L = 2.22 ft	2.22 ft	1	0.071	0.051	17.77		17.77	277.08	249.38	1.66	1.00	8.05	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	1	0.091	0.050	22.60	17.77	22.60	277.08	249.38	1.09	1.00	7.95	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	1	0.091	0.036	22.60		22.60	277.08	249.38	1.65	1.00	5.74	159.30	159.30	
+1.20D+1.60Lr+L+1.60H															
Dsgn. L = 2.22 ft	2.22 ft	1	0.051	0.036	12.61		12.61	277.08	249.38	1.66	1.00	5.72	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	1	0.064	0.035	16.05	12.61	16.05	277.08	249.38	1.09	1.00	5.63	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	1	0.064	0.026	16.05		16.05	277.08	249.38	1.65	1.00	4.10	159.30	159.30	
+1.20D+1.60Lr+0.50W+1.60H															
Dsgn. L = 2.22 ft	2.22 ft	1	0.021	0.015	5.31		5.31	277.08	249.38	1.66	1.00	2.44	159.30	159.30	



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B4**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	4.00 ft	1	0.027	0.015	6.79	5.31	6.79	277.08	249.38	1.09	1.00	2.35	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.027	0.011	6.79		6.79	277.08	249.38	1.63	1.00	1.78	159.30	159.30
<b>+1.20D+L+1.60S+1.60H</b>														
Dsgn. L = 2.22 ft	2.22 ft	1	0.061	0.043	15.11		15.11	277.08	249.38	1.66	1.00	6.85	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.077	0.042	19.23	15.11	19.23	277.08	249.38	1.09	1.00	6.76	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.077	0.031	19.23		19.23	277.08	249.38	1.65	1.00	4.89	159.30	159.30
<b>+1.20D+1.60S+0.50W+1.60H</b>														
Dsgn. L = 2.22 ft	2.22 ft	1	0.031	0.022	7.81		7.81	277.08	249.38	1.66	1.00	3.56	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.040	0.022	9.97	7.81	9.97	277.08	249.38	1.09	1.00	3.47	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.040	0.016	9.97		9.97	277.08	249.38	1.64	1.00	2.58	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H</b>														
Dsgn. L = 2.22 ft	2.22 ft	1	0.051	0.036	12.61		12.61	277.08	249.38	1.66	1.00	5.72	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.064	0.035	16.05	12.61	16.05	277.08	249.38	1.09	1.00	5.63	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.064	0.026	16.05		16.05	277.08	249.38	1.65	1.00	4.10	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H</b>														
Dsgn. L = 2.22 ft	2.22 ft	1	0.054	0.038	13.39		13.39	277.08	249.38	1.66	1.00	6.07	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.068	0.038	17.04	13.39	17.04	277.08	249.38	1.09	1.00	5.98	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.068	0.027	17.04		17.04	277.08	249.38	1.65	1.00	4.35	159.30	159.30
<b>+0.90D+W+1.60H</b>														
Dsgn. L = 2.22 ft	2.22 ft	1	0.016	0.011	3.98		3.98	277.08	249.38	1.66	1.00	1.83	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.020	0.011	5.09	3.98	5.09	277.08	249.38	1.09	1.00	1.76	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.020	0.008	5.09		5.09	277.08	249.38	1.63	1.00	1.34	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H</b>														
Dsgn. L = 2.22 ft	2.22 ft	1	0.052	0.037	12.92		12.92	277.08	249.38	1.66	1.00	5.86	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.066	0.036	16.45	12.92	16.45	277.08	249.38	1.09	1.00	5.77	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.066	0.026	16.45		16.45	277.08	249.38	1.65	1.00	4.20	159.30	159.30
<b>+0.90D+E+0.90H</b>														
Dsgn. L = 2.22 ft	2.22 ft	1	0.016	0.011	3.98		3.98	277.08	249.38	1.66	1.00	1.83	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.020	0.011	5.09	3.98	5.09	277.08	249.38	1.09	1.00	1.76	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.020	0.008	5.09		5.09	277.08	249.38	1.63	1.00	1.34	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0183	5.085		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	5.316	3.802		
Max Upward from Load Combinations	5.316	3.802		
Max Upward from Load Cases	3.284	2.316		
+D+H	2.032	1.486		
+D+L+H	5.316	3.802		
+D+Lr+H	2.032	1.486		
+D+S+H	2.736	1.982		
+D+0.750Lr+0.750L+H	4.495	3.223		
+D+0.750L+0.750S+H	5.023	3.595		
+D+0.60W+H	2.032	1.486		
+D+0.750Lr+0.750L+0.450W+H	4.495	3.223		
+D+0.750L+0.750S+0.450W+H	5.023	3.595		
+0.60D+0.60W+0.60H	1.219	0.891		
+D+0.70E+0.60H	2.032	1.486		
+D+0.750L+0.750S+0.5250E+H	5.023	3.595		
+0.60D+0.70E+H	1.219	0.891		
D Only	2.032	1.486		
L Only	3.284	2.316		
S Only	0.704	0.496		
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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DESCRIPTION: **B5**

**CODE REFERENCES**

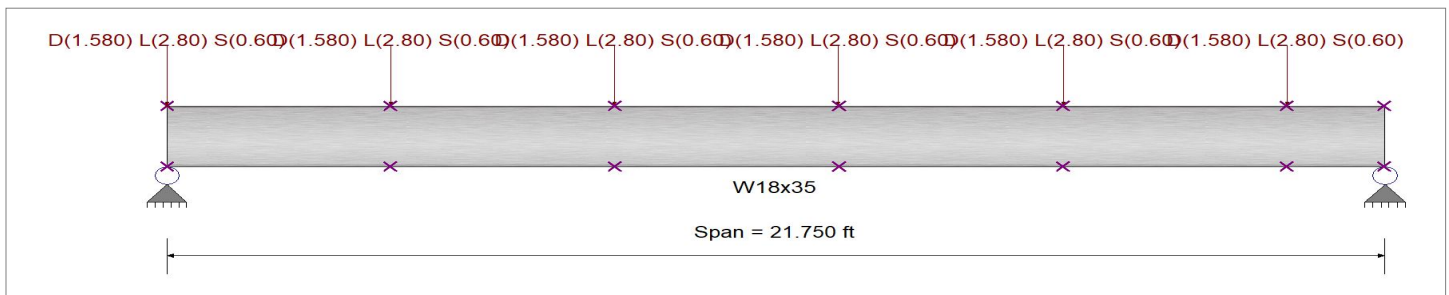
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 1.580, L = 2.80, S = 0.60 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.409</b> : 1	Maximum Shear Stress Ratio =	<b>0.118</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	101.896 k-ft	Vu : Applied	18.873 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	21.750 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.238 in Ratio = <b>1,098</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.384 in Ratio = <b>680</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.98 ft	1	0.086	0.034	21.45		21.45	277.08	249.38	1.66	1.00	5.49	159.30	159.30
Dsgn. L =	3.98 ft	1	0.134	0.033	33.38	21.45	33.38	277.08	249.38	1.16	1.00	5.30	159.30	159.30
Dsgn. L =	4.04 ft	1	0.144	0.018	35.81	33.38	35.81	277.08	249.38	1.03	1.00	2.89	159.30	159.30
Dsgn. L =	3.98 ft	1	0.144	0.012	35.81	28.55	35.81	277.08	249.38	1.09	1.00	1.93	159.30	159.30
Dsgn. L =	3.98 ft	1	0.114	0.027	28.55	11.76	28.55	277.08	249.38	1.30	1.00	4.33	159.30	159.30
Dsgn. L =	1.80 ft	1	0.047	0.042	11.76		11.76	277.08	249.38	1.62	1.00	6.63	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	3.98 ft	1	0.234	0.093	58.32		58.32	277.08	249.38	1.66	1.00	14.75	159.30	159.30
Dsgn. L =	3.98 ft	1	0.364	0.092	90.77	58.32	90.77	277.08	249.38	1.17	1.00	14.58	159.30	159.30
Dsgn. L =	4.04 ft	1	0.391	0.050	97.43	90.77	97.43	277.08	249.38	1.03	1.00	8.04	159.30	159.30
Dsgn. L =	3.98 ft	1	0.391	0.032	97.43	77.71	97.43	277.08	249.38	1.09	1.00	5.05	159.30	159.30
Dsgn. L =	3.98 ft	1	0.312	0.073	77.71	32.12	77.71	277.08	249.38	1.30	1.00	11.59	159.30	159.30
Dsgn. L =	1.80 ft	1	0.129	0.113	32.12		32.12	277.08	249.38	1.62	1.00	18.05	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L =	3.98 ft	1	0.245	0.097	61.00		61.00	277.08	249.38	1.66	1.00	15.42	159.30	159.30
Dsgn. L =	3.98 ft	1	0.381	0.096	94.93	61.00	94.93	277.08	249.38	1.17	1.00	15.25	159.30	159.30
Dsgn. L =	4.04 ft	1	0.409	0.053	101.90	94.93	101.90	277.08	249.38	1.03	1.00	8.41	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: B5**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.98 ft	1		0.409	0.033	101.90	81.28	101.90	277.08	249.38	1.09	1.00	5.28	159.30	159.30
Dsgn. L = 3.98 ft	1		0.326	0.076	81.28	33.60	81.28	277.08	249.38	1.30	1.00	12.12	159.30	159.30
Dsgn. L = 1.80 ft	1		0.135	0.118	33.60		33.60	277.08	249.38	1.62	1.00	18.87	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H</b>														
Dsgn. L = 3.98 ft	1		0.174	0.069	43.35		43.35	277.08	249.38	1.66	1.00	10.98	159.30	159.30
Dsgn. L = 3.98 ft	1		0.271	0.068	67.46	43.35	67.46	277.08	249.38	1.17	1.00	10.82	159.30	159.30
Dsgn. L = 4.04 ft	1		0.290	0.037	72.40	67.46	72.40	277.08	249.38	1.03	1.00	5.95	159.30	159.30
Dsgn. L = 3.98 ft	1		0.290	0.024	72.40	57.75	72.40	277.08	249.38	1.09	1.00	3.78	159.30	159.30
Dsgn. L = 3.98 ft	1		0.232	0.054	57.75	23.86	57.75	277.08	249.38	1.30	1.00	8.64	159.30	159.30
Dsgn. L = 1.80 ft	1		0.096	0.084	23.86		23.86	277.08	249.38	1.62	1.00	13.41	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H</b>														
Dsgn. L = 3.98 ft	1		0.074	0.030	18.39		18.39	277.08	249.38	1.66	1.00	4.71	159.30	159.30
Dsgn. L = 3.98 ft	1		0.115	0.028	28.61	18.39	28.61	277.08	249.38	1.16	1.00	4.54	159.30	159.30
Dsgn. L = 4.04 ft	1		0.123	0.016	30.70	28.61	30.70	277.08	249.38	1.03	1.00	2.48	159.30	159.30
Dsgn. L = 3.98 ft	1		0.123	0.010	30.70	24.47	30.70	277.08	249.38	1.09	1.00	1.65	159.30	159.30
Dsgn. L = 3.98 ft	1		0.098	0.023	24.47	10.08	24.47	277.08	249.38	1.30	1.00	3.72	159.30	159.30
Dsgn. L = 1.80 ft	1		0.040	0.036	10.08		10.08	277.08	249.38	1.62	1.00	5.69	159.30	159.30
<b>+1.20D+L+1.60S+1.60H</b>														
Dsgn. L = 3.98 ft	1		0.208	0.082	51.90		51.90	277.08	249.38	1.66	1.00	13.13	159.30	159.30
Dsgn. L = 3.98 ft	1		0.324	0.081	80.78	51.90	80.78	277.08	249.38	1.17	1.00	12.97	159.30	159.30
Dsgn. L = 4.04 ft	1		0.348	0.045	86.70	80.78	86.70	277.08	249.38	1.03	1.00	7.14	159.30	159.30
Dsgn. L = 3.98 ft	1		0.348	0.028	86.70	69.16	86.70	277.08	249.38	1.09	1.00	4.50	159.30	159.30
Dsgn. L = 3.98 ft	1		0.277	0.065	69.16	28.58	69.16	277.08	249.38	1.30	1.00	10.33	159.30	159.30
Dsgn. L = 1.80 ft	1		0.115	0.101	28.58		28.58	277.08	249.38	1.62	1.00	16.06	159.30	159.30
<b>+1.20D+1.60S+0.50W+1.60H</b>														
Dsgn. L = 3.98 ft	1		0.108	0.043	26.94		26.94	277.08	249.38	1.66	1.00	6.86	159.30	159.30
Dsgn. L = 3.98 ft	1		0.168	0.042	41.93	26.94	41.93	277.08	249.38	1.16	1.00	6.69	159.30	159.30
Dsgn. L = 4.04 ft	1		0.180	0.023	45.00	41.93	45.00	277.08	249.38	1.03	1.00	3.67	159.30	159.30
Dsgn. L = 3.98 ft	1		0.180	0.015	45.00	35.88	45.00	277.08	249.38	1.09	1.00	2.38	159.30	159.30
Dsgn. L = 3.98 ft	1		0.144	0.034	35.88	14.80	35.88	277.08	249.38	1.30	1.00	5.40	159.30	159.30
Dsgn. L = 1.80 ft	1		0.059	0.052	14.80		14.80	277.08	249.38	1.62	1.00	8.34	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H</b>														
Dsgn. L = 3.98 ft	1		0.174	0.069	43.35		43.35	277.08	249.38	1.66	1.00	10.98	159.30	159.30
Dsgn. L = 3.98 ft	1		0.271	0.068	67.46	43.35	67.46	277.08	249.38	1.17	1.00	10.82	159.30	159.30
Dsgn. L = 4.04 ft	1		0.290	0.037	72.40	67.46	72.40	277.08	249.38	1.03	1.00	5.95	159.30	159.30
Dsgn. L = 3.98 ft	1		0.290	0.024	72.40	57.75	72.40	277.08	249.38	1.09	1.00	3.78	159.30	159.30
Dsgn. L = 3.98 ft	1		0.232	0.054	57.75	23.86	57.75	277.08	249.38	1.30	1.00	8.64	159.30	159.30
Dsgn. L = 1.80 ft	1		0.096	0.084	23.86		23.86	277.08	249.38	1.62	1.00	13.41	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H</b>														
Dsgn. L = 3.98 ft	1		0.185	0.073	46.02		46.02	277.08	249.38	1.66	1.00	11.65	159.30	159.30
Dsgn. L = 3.98 ft	1		0.287	0.072	71.62	46.02	71.62	277.08	249.38	1.17	1.00	11.49	159.30	159.30
Dsgn. L = 4.04 ft	1		0.308	0.040	76.87	71.62	76.87	277.08	249.38	1.03	1.00	6.32	159.30	159.30
Dsgn. L = 3.98 ft	1		0.308	0.025	76.87	61.31	76.87	277.08	249.38	1.09	1.00	4.00	159.30	159.30
Dsgn. L = 3.98 ft	1		0.246	0.058	61.31	25.33	61.31	277.08	249.38	1.30	1.00	9.17	159.30	159.30
Dsgn. L = 1.80 ft	1		0.102	0.089	25.33		25.33	277.08	249.38	1.62	1.00	14.24	159.30	159.30
<b>+0.90D+W+1.60H</b>														
Dsgn. L = 3.98 ft	1		0.055	0.022	13.79		13.79	277.08	249.38	1.66	1.00	3.53	159.30	159.30
Dsgn. L = 3.98 ft	1		0.086	0.021	21.46	13.79	21.46	277.08	249.38	1.16	1.00	3.40	159.30	159.30
Dsgn. L = 4.04 ft	1		0.092	0.012	23.02	21.46	23.02	277.08	249.38	1.03	1.00	1.86	159.30	159.30
Dsgn. L = 3.98 ft	1		0.092	0.008	23.02	18.35	23.02	277.08	249.38	1.09	1.00	1.24	159.30	159.30
Dsgn. L = 3.98 ft	1		0.074	0.017	18.35	7.56	18.35	277.08	249.38	1.30	1.00	2.79	159.30	159.30
Dsgn. L = 1.80 ft	1		0.030	0.027	7.56		7.56	277.08	249.38	1.62	1.00	4.27	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H</b>														
Dsgn. L = 3.98 ft	1		0.178	0.071	44.42		44.42	277.08	249.38	1.66	1.00	11.25	159.30	159.30
Dsgn. L = 3.98 ft	1		0.277	0.070	69.12	44.42	69.12	277.08	249.38	1.17	1.00	11.08	159.30	159.30
Dsgn. L = 4.04 ft	1		0.298	0.038	74.19	69.12	74.19	277.08	249.38	1.03	1.00	6.10	159.30	159.30
Dsgn. L = 3.98 ft	1		0.298	0.024	74.19	59.17	74.19	277.08	249.38	1.09	1.00	3.87	159.30	159.30
Dsgn. L = 3.98 ft	1		0.237	0.056	59.17	24.45	59.17	277.08	249.38	1.30	1.00	8.85	159.30	159.30
Dsgn. L = 1.80 ft	1		0.098	0.086	24.45		24.45	277.08	249.38	1.62	1.00	13.74	159.30	159.30
<b>+0.90D+E+0.90H</b>														
Dsgn. L = 3.98 ft	1		0.055	0.022	13.79		13.79	277.08	249.38	1.66	1.00	3.53	159.30	159.30
Dsgn. L = 3.98 ft	1		0.086	0.021	21.46	13.79	21.46	277.08	249.38	1.16	1.00	3.40	159.30	159.30
Dsgn. L = 4.04 ft	1		0.092	0.012	23.02	21.46	23.02	277.08	249.38	1.03	1.00	1.86	159.30	159.30



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: B5**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.98 ft	1	0.092	0.008	23.02	18.35	23.02	277.08	249.38	1.09	1.00	1.24	159.30	159.30
Dsgn. L = 3.98 ft	1	0.074	0.017	18.35	7.56	18.35	277.08	249.38	1.30	1.00	2.79	159.30	159.30
Dsgn. L = 1.80 ft	1	0.030	0.027	7.56		7.56	277.08	249.38	1.62	1.00	4.27	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.3838	10.937		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	14.578	12.463		
Max Upward from Load Combinations	14.578	12.463		
Max Upward from Load Cases	9.076	7.724		
+D+H	5.502	4.739		
+D+L+H	14.578	12.463		
+D+Lr+H	5.502	4.739		
+D+S+H	7.447	6.394		
+D+0.750Lr+0.750L+H	12.309	10.532		
+D+0.750L+0.750S+H	13.768	11.774		
+D+0.60W+H	5.502	4.739		
+D+0.750Lr+0.750L+0.450W+H	12.309	10.532		
+D+0.750L+0.750S+0.450W+H	13.768	11.774		
+0.60D+0.60W+0.60H	3.301	2.844		
+D+0.70E+0.60H	5.502	4.739		
+D+0.750L+0.750S+0.5250E+H	13.768	11.774		
+0.60D+0.70E+H	3.301	2.844		
D Only	5.502	4.739		
L Only	9.076	7.724		
S Only	1.945	1.655		
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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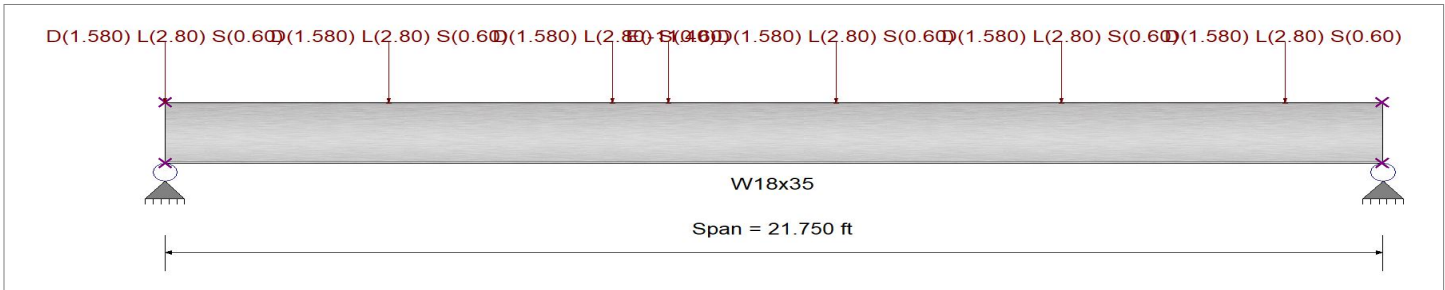
**DESCRIPTION:** B5 - Lateral Check

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Completely Unbraced  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 1.580, L = 2.80, S = 0.60 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : E = -11.40 k @ 9.0 ft, (SW1)

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.475</b> : 1	Maximum Shear Stress Ratio =	<b>0.063</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	36.059 k-ft	Vu : Applied	9.989 k
Mn * Phi : Allowable	75.922 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.403D+L+0.20S+E+1.60H	Load Combination	+1.403D+L+0.20S+E+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	21.750 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.238 in Ratio = <b>1,098</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	-0.276 in Ratio = <b>946</b> >=360.	Span: 1 : E Only	
Max Downward Total Deflection	0.384 in Ratio = <b>680</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	-0.106 in Ratio = <b>2466</b> >=240.	Span: 1 : +0.60D+0.70E+H	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Max Stress Ratios				Summary of Moment Values					Summary of Shear Values				
	Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.403D+L+0.20S+E+1.60H														
Dsgn. L = 21.75 ft	1		0.475	0.063	36.06		36.06	84.36	75.92	1.24	1.00	9.99	159.30	159.30
+0.6966D+E+0.90H														
Dsgn. L = 21.75 ft	1		0.455	0.040	-43.09	43.09	105.31	94.78	1.54	1.00		6.37	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.3838	10.937		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	14.578	12.463
Max Upward from Load Combinations	14.578	12.463
Max Upward from Load Cases	9.076	7.724
Max Downward from all Load Conditions (Resis)	-6.683	-4.717
Max Downward from Load Combinations (Resi)	-1.377	-0.459
Max Downward from Load Cases (Resisting U)	-6.683	-4.717
+D+H	5.502	4.739



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B5 - Lateral Check

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
+D+L+H	14.578	12.463
+D+Lr+H	5.502	4.739
+D+S+H	7.447	6.394
+D+0.750Lr+0.750L+H	12.309	10.532
+D+0.750L+0.750S+H	13.768	11.774
+D+0.60W+H	5.502	4.739
+D+0.750Lr+0.750L+0.450W+H	12.309	10.532
+D+0.750L+0.750S+0.450W+H	13.768	11.774
+0.60D+0.60W+0.60H	3.301	2.844
+D+0.70E+0.60H	0.824	1.437
+D+0.750L+0.750S+0.5250E+H	10.259	9.297
+0.60D+0.70E+H	-1.377	-0.459
D Only	5.502	4.739
L Only	9.076	7.724
S Only	1.945	1.655
E Only	-6.683	-4.717
H Only		

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **B6**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

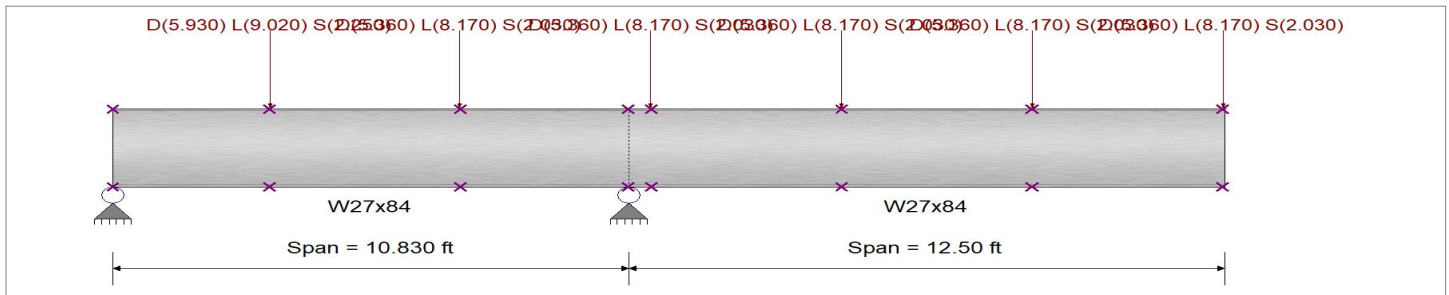
### Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

### Unbraced Lengths

First Brace starts at 3.30 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.360, L = 8.170, S = 2.030 k, Starting at : 7.30 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : D = 5.930, L = 9.020, S = 2.250 k @ 3.30 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.589</b> : 1	Maximum Shear Stress Ratio =	<b>0.226</b> : 1
Section used for this span	<b>W27x84</b>	Section used for this span	<b>W27x84</b>
Mu : Applied	538.907 k-ft	Vu : Applied	83.336 k
Mn * Phi : Allowable	915.000 k-ft	Vn * Phi : Allowable	368.460 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	10.830 ft
		Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.388 in Ratio = <b>773</b> >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Upward Transient Deflection	-0.033 in Ratio = <b>3,887</b> >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Downward Total Deflection	0.635 in Ratio = <b>473</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (*L)	
Max Upward Total Deflection	-0.051 in Ratio = <b>2542</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (*L)	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.29 ft	1	0.036	0.028		-33.31	33.31	1,016.67	915.00	1.00	1.00	10.31	368.46	368.46
Dsgn. L =	3.99 ft	1	0.118	0.052	-0.00	-108.37	108.37	1,016.67	915.00	1.39	1.00	19.08	368.46	368.46
Dsgn. L =	3.55 ft	1	0.222	0.085	-0.00	-203.39	203.39	1,016.67	915.00	1.23	1.00	31.49	368.46	368.46
Dsgn. L =	0.45 ft	2	0.222	0.085	-0.00	-203.39	203.39	1,016.67	915.00	1.00	1.00	31.49	368.46	368.46
Dsgn. L =	4.00 ft	2	0.207	0.085	-0.00	-189.23	189.23	1,016.67	915.00	1.00	1.00	31.43	368.46	368.46
Dsgn. L =	4.00 ft	2	0.103	0.064	-0.00	-94.31	94.31	1,016.67	915.00	1.00	1.00	23.46	368.46	368.46
Dsgn. L =	4.00 ft	2	0.034	0.042	-0.00	-31.28	31.28	1,016.67	915.00	1.00	1.00	15.48	368.46	368.46
Dsgn. L =	0.05 ft	2	0.000	0.020		-0.15	0.15	1,016.67	915.00	1.00	1.00	7.51	368.46	368.46
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	3.29 ft	1	0.144	0.109		-131.40	131.40	1,016.67	915.00	1.00	1.00	40.08	368.46	368.46
Dsgn. L =	3.99 ft	1	0.350	0.129	-0.00	-320.23	320.23	1,016.67	915.00	1.31	1.00	47.59	368.46	368.46
Dsgn. L =	3.55 ft	1	0.560	0.215	-0.00	-512.64	512.64	1,016.67	915.00	1.18	1.00	79.28	368.46	368.46
Dsgn. L =	0.45 ft	2	0.560	0.215	-0.00	-512.64	512.64	1,016.67	915.00	1.00	1.00	79.28	368.46	368.46



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B6**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	2		0.521	0.215	-0.00	-476.97	476.97	1,016.67	915.00	1.00	1.00	79.23	368.46	368.46
Dsgn. L = 4.00 ft	2		0.261	0.161	-0.00	-238.48	238.48	1,016.67	915.00	1.00	1.00	59.32	368.46	368.46
Dsgn. L = 4.00 ft	2		0.087	0.107	-0.00	-79.62	79.62	1,016.67	915.00	1.00	1.00	39.42	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.053		-0.39	0.39	1,016.67	915.00	1.00	1.00	19.51	368.46	368.46
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 3.29 ft	1		0.020	0.016	18.51		18.51	1,016.67	915.00	1.65	1.00	5.79	368.46	368.46
Dsgn. L = 3.99 ft	1		0.051	0.045	18.51	-46.26	46.26	1,016.67	915.00	2.16	1.00	16.49	368.46	368.46
Dsgn. L = 3.55 ft	1		0.191	0.099	-0.00	-174.34	174.34	1,016.67	915.00	1.42	1.00	36.36	368.46	368.46
Dsgn. L = 0.45 ft	2		0.191	0.073	-0.00	-174.34	174.34	1,016.67	915.00	1.00	1.00	26.99	368.46	368.46
Dsgn. L = 4.00 ft	2		0.177	0.073	-0.00	-162.20	162.20	1,016.67	915.00	1.00	1.00	26.94	368.46	368.46
Dsgn. L = 4.00 ft	2		0.088	0.055	-0.00	-80.84	80.84	1,016.67	915.00	1.00	1.00	20.11	368.46	368.46
Dsgn. L = 4.00 ft	2		0.029	0.036	-0.00	-26.81	26.81	1,016.67	915.00	1.00	1.00	13.27	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.017		-0.13	0.13	1,016.67	915.00	1.00	1.00	6.44	368.46	368.46
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 3.29 ft	1		0.092	0.070		-84.34	84.34	1,016.67	915.00	1.00	1.00	25.78	368.46	368.46
Dsgn. L = 3.99 ft	1		0.299	0.130	-0.00	-273.60	273.60	1,016.67	915.00	1.38	1.00	47.73	368.46	368.46
Dsgn. L = 3.55 ft	1		0.560	0.215	-0.00	-512.64	512.64	1,016.67	915.00	1.23	1.00	79.28	368.46	368.46
Dsgn. L = 0.45 ft	2		0.560	0.215	-0.00	-512.64	512.64	1,016.67	915.00	1.00	1.00	79.28	368.46	368.46
Dsgn. L = 4.00 ft	2		0.521	0.215	-0.00	-476.97	476.97	1,016.67	915.00	1.00	1.00	79.23	368.46	368.46
Dsgn. L = 4.00 ft	2		0.261	0.161	-0.00	-238.48	238.48	1,016.67	915.00	1.00	1.00	59.32	368.46	368.46
Dsgn. L = 4.00 ft	2		0.087	0.107	-0.00	-79.62	79.62	1,016.67	915.00	1.00	1.00	39.42	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.053		-0.39	0.39	1,016.67	915.00	1.00	1.00	19.51	368.46	368.46
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 3.29 ft	1		0.148	0.112		-135.72	135.72	1,016.67	915.00	1.00	1.00	41.39	368.46	368.46
Dsgn. L = 3.99 ft	1		0.365	0.136	-0.00	-334.26	334.26	1,016.67	915.00	1.31	1.00	50.03	368.46	368.46
Dsgn. L = 3.55 ft	1		0.589	0.226	-0.00	-538.91	538.91	1,016.67	915.00	1.18	1.00	83.34	368.46	368.46
Dsgn. L = 0.45 ft	2		0.589	0.226	-0.00	-538.91	538.91	1,016.67	915.00	1.00	1.00	83.34	368.46	368.46
Dsgn. L = 4.00 ft	2		0.548	0.226	-0.00	-501.42	501.42	1,016.67	915.00	1.00	1.00	83.29	368.46	368.46
Dsgn. L = 4.00 ft	2		0.274	0.169	-0.00	-250.73	250.73	1,016.67	915.00	1.00	1.00	62.37	368.46	368.46
Dsgn. L = 4.00 ft	2		0.092	0.112	-0.00	-83.72	83.72	1,016.67	915.00	1.00	1.00	41.45	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.056		-0.41	0.41	1,016.67	915.00	1.00	1.00	20.52	368.46	368.46
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 3.29 ft	1		0.016	0.012	14.19		14.19	1,016.67	915.00	1.65	1.00	4.48	368.46	368.46
Dsgn. L = 3.99 ft	1		0.066	0.051	14.19	-60.29	60.29	1,016.67	915.00	1.99	1.00	18.93	368.46	368.46
Dsgn. L = 3.55 ft	1		0.219	0.108	-0.00	-200.60	200.60	1,016.67	915.00	1.39	1.00	39.81	368.46	368.46
Dsgn. L = 0.45 ft	2		0.219	0.084	-0.00	-200.60	200.60	1,016.67	915.00	1.00	1.00	31.05	368.46	368.46
Dsgn. L = 4.00 ft	2		0.204	0.084	-0.00	-186.64	186.64	1,016.67	915.00	1.00	1.00	31.00	368.46	368.46
Dsgn. L = 4.00 ft	2		0.102	0.063	-0.00	-93.08	93.08	1,016.67	915.00	1.00	1.00	23.15	368.46	368.46
Dsgn. L = 4.00 ft	2		0.034	0.042	-0.00	-30.91	30.91	1,016.67	915.00	1.00	1.00	15.30	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.020		-0.15	0.15	1,016.67	915.00	1.00	1.00	7.45	368.46	368.46
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 3.29 ft	1		0.097	0.074		-88.66	88.66	1,016.67	915.00	1.00	1.00	27.09	368.46	368.46
Dsgn. L = 3.99 ft	1		0.314	0.136	-0.00	-287.63	287.63	1,016.67	915.00	1.38	1.00	50.17	368.46	368.46
Dsgn. L = 3.55 ft	1		0.589	0.226	-0.00	-538.91	538.91	1,016.67	915.00	1.23	1.00	83.34	368.46	368.46
Dsgn. L = 0.45 ft	2		0.589	0.226	-0.00	-538.91	538.91	1,016.67	915.00	1.00	1.00	83.34	368.46	368.46
Dsgn. L = 4.00 ft	2		0.548	0.226	-0.00	-501.42	501.42	1,016.67	915.00	1.00	1.00	83.29	368.46	368.46
Dsgn. L = 4.00 ft	2		0.274	0.169	-0.00	-250.73	250.73	1,016.67	915.00	1.00	1.00	62.37	368.46	368.46
Dsgn. L = 4.00 ft	2		0.092	0.112	-0.00	-83.72	83.72	1,016.67	915.00	1.00	1.00	41.45	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.056		-0.41	0.41	1,016.67	915.00	1.00	1.00	20.52	368.46	368.46
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 3.29 ft	1		0.101	0.077		-92.83	92.83	1,016.67	915.00	1.00	1.00	28.36	368.46	368.46
Dsgn. L = 3.99 ft	1		0.257	0.097	-0.00	-234.98	234.98	1,016.67	915.00	1.32	1.00	35.88	368.46	368.46
Dsgn. L = 3.55 ft	1		0.422	0.162	-0.00	-385.77	385.77	1,016.67	915.00	1.19	1.00	59.67	368.46	368.46
Dsgn. L = 0.45 ft	2		0.422	0.162	-0.00	-385.77	385.77	1,016.67	915.00	1.00	1.00	59.67	368.46	368.46
Dsgn. L = 4.00 ft	2		0.392	0.162	-0.00	-358.93	358.93	1,016.67	915.00	1.00	1.00	59.62	368.46	368.46
Dsgn. L = 4.00 ft	2		0.196	0.121	-0.00	-179.37	179.37	1,016.67	915.00	1.00	1.00	44.62	368.46	368.46
Dsgn. L = 4.00 ft	2		0.065	0.080	-0.00	-59.82	59.82	1,016.67	915.00	1.00	1.00	29.61	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.040		-0.29	0.29	1,016.67	915.00	1.00	1.00	14.61	368.46	368.46
+1.20D+1.60Lr+L+1.60H, LL Com														
Dsgn. L = 3.29 ft	1		0.001	0.001	0.86		0.86	1,016.67	915.00	1.41	1.00	0.43	368.46	368.46
Dsgn. L = 3.99 ft	1		0.070	0.045	0.86	-63.75	63.75	1,016.67	915.00	1.69	1.00	16.44	368.46	368.46
Dsgn. L = 3.55 ft	1		0.191	0.085	-0.00	-174.34	174.34	1,016.67	915.00	1.34	1.00	31.40	368.46	368.46
Dsgn. L = 0.45 ft	2		0.191	0.073	-0.00	-174.34	174.34	1,016.67	915.00	1.00	1.00	26.99	368.46	368.46



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B6**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	2	0.177	0.073	-0.00	-162.20	162.20	1,016.67	915.00	1.00	1.00	26.94	368.46	368.46
Dsgn. L = 4.00 ft	2	0.088	0.055	-0.00	-80.84	80.84	1,016.67	915.00	1.00	1.00	20.11	368.46	368.46
Dsgn. L = 4.00 ft	2	0.029	0.036	-0.00	-26.81	26.81	1,016.67	915.00	1.00	1.00	13.27	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.017		-0.13	0.13	1,016.67	915.00	1.00	1.00	6.44	368.46	368.46
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.29 ft	1	0.069	0.053		-63.42	63.42	1,016.67	915.00	1.00	1.00	19.43	368.46	368.46
Dsgn. L = 3.99 ft	1	0.225	0.098	-0.00	-205.83	205.83	1,016.67	915.00	1.38	1.00	35.97	368.46	368.46
Dsgn. L = 3.55 ft	1	0.422	0.162	-0.00	-385.77	385.77	1,016.67	915.00	1.23	1.00	59.67	368.46	368.46
Dsgn. L = 0.45 ft	2	0.422	0.162	-0.00	-385.77	385.77	1,016.67	915.00	1.00	1.00	59.67	368.46	368.46
Dsgn. L = 4.00 ft	2	0.392	0.162	-0.00	-358.93	358.93	1,016.67	915.00	1.00	1.00	59.62	368.46	368.46
Dsgn. L = 4.00 ft	2	0.196	0.121	-0.00	-179.37	179.37	1,016.67	915.00	1.00	1.00	44.62	368.46	368.46
Dsgn. L = 4.00 ft	2	0.065	0.080	-0.00	-59.82	59.82	1,016.67	915.00	1.00	1.00	29.61	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.040		-0.29	0.29	1,016.67	915.00	1.00	1.00	14.61	368.46	368.46
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.29 ft	1	0.031	0.024		-28.56	28.56	1,016.67	915.00	1.00	1.00	8.84	368.46	368.46
Dsgn. L = 3.99 ft	1	0.102	0.044	-0.00	-92.89	92.89	1,016.67	915.00	1.39	1.00	16.36	368.46	368.46
Dsgn. L = 3.55 ft	1	0.191	0.073	-0.00	-174.34	174.34	1,016.67	915.00	1.23	1.00	26.99	368.46	368.46
Dsgn. L = 0.45 ft	2	0.191	0.073	-0.00	-174.34	174.34	1,016.67	915.00	1.00	1.00	26.99	368.46	368.46
Dsgn. L = 4.00 ft	2	0.177	0.073	-0.00	-162.20	162.20	1,016.67	915.00	1.00	1.00	26.94	368.46	368.46
Dsgn. L = 4.00 ft	2	0.088	0.055	-0.00	-80.84	80.84	1,016.67	915.00	1.00	1.00	20.11	368.46	368.46
Dsgn. L = 4.00 ft	2	0.029	0.036	-0.00	-26.81	26.81	1,016.67	915.00	1.00	1.00	13.27	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.017		-0.13	0.13	1,016.67	915.00	1.00	1.00	6.44	368.46	368.46
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.29 ft	1	0.031	0.024		-28.56	28.56	1,016.67	915.00	1.00	1.00	8.84	368.46	368.46
Dsgn. L = 3.99 ft	1	0.102	0.044	-0.00	-92.89	92.89	1,016.67	915.00	1.39	1.00	16.36	368.46	368.46
Dsgn. L = 3.55 ft	1	0.191	0.073	-0.00	-174.34	174.34	1,016.67	915.00	1.23	1.00	26.99	368.46	368.46
Dsgn. L = 0.45 ft	2	0.191	0.073	-0.00	-174.34	174.34	1,016.67	915.00	1.00	1.00	26.99	368.46	368.46
Dsgn. L = 4.00 ft	2	0.177	0.073	-0.00	-162.20	162.20	1,016.67	915.00	1.00	1.00	26.94	368.46	368.46
Dsgn. L = 4.00 ft	2	0.088	0.055	-0.00	-80.84	80.84	1,016.67	915.00	1.00	1.00	20.11	368.46	368.46
Dsgn. L = 4.00 ft	2	0.029	0.036	-0.00	-26.81	26.81	1,016.67	915.00	1.00	1.00	13.27	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.017		-0.13	0.13	1,016.67	915.00	1.00	1.00	6.44	368.46	368.46
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.29 ft	1	0.031	0.024		-28.56	28.56	1,016.67	915.00	1.00	1.00	8.84	368.46	368.46
Dsgn. L = 3.99 ft	1	0.102	0.044	-0.00	-92.89	92.89	1,016.67	915.00	1.39	1.00	16.36	368.46	368.46
Dsgn. L = 3.55 ft	1	0.191	0.073	-0.00	-174.34	174.34	1,016.67	915.00	1.23	1.00	26.99	368.46	368.46
Dsgn. L = 0.45 ft	2	0.191	0.073	-0.00	-174.34	174.34	1,016.67	915.00	1.00	1.00	26.99	368.46	368.46
Dsgn. L = 4.00 ft	2	0.177	0.073	-0.00	-162.20	162.20	1,016.67	915.00	1.00	1.00	26.94	368.46	368.46
Dsgn. L = 4.00 ft	2	0.088	0.055	-0.00	-80.84	80.84	1,016.67	915.00	1.00	1.00	20.11	368.46	368.46
Dsgn. L = 4.00 ft	2	0.029	0.036	-0.00	-26.81	26.81	1,016.67	915.00	1.00	1.00	13.27	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.017		-0.13	0.13	1,016.67	915.00	1.00	1.00	6.44	368.46	368.46
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.29 ft	1	0.117	0.088		-106.66	106.66	1,016.67	915.00	1.00	1.00	32.56	368.46	368.46
Dsgn. L = 3.99 ft	1	0.306	0.119	-0.00	-279.86	279.86	1,016.67	915.00	1.33	1.00	43.68	368.46	368.46
Dsgn. L = 3.55 ft	1	0.513	0.197	-0.00	-469.83	469.83	1,016.67	915.00	1.19	1.00	72.66	368.46	368.46
Dsgn. L = 0.45 ft	2	0.513	0.197	-0.00	-469.83	469.83	1,016.67	915.00	1.00	1.00	72.66	368.46	368.46
Dsgn. L = 4.00 ft	2	0.478	0.197	-0.00	-437.15	437.15	1,016.67	915.00	1.00	1.00	72.61	368.46	368.46
Dsgn. L = 4.00 ft	2	0.239	0.148	-0.00	-218.54	218.54	1,016.67	915.00	1.00	1.00	54.36	368.46	368.46
Dsgn. L = 4.00 ft	2	0.080	0.098	-0.00	-72.94	72.94	1,016.67	915.00	1.00	1.00	36.11	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.048		-0.36	0.36	1,016.67	915.00	1.00	1.00	17.86	368.46	368.46
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.29 ft	1	0.014	0.011		-12.97	12.97	1,016.67	915.00	1.00	1.00	4.10	368.46	368.46
Dsgn. L = 3.99 ft	1	0.119	0.066	-0.00	-108.63	108.63	1,016.67	915.00	1.55	1.00	24.24	368.46	368.46
Dsgn. L = 3.55 ft	1	0.282	0.115	-0.00	-258.39	258.39	1,016.67	915.00	1.30	1.00	42.45	368.46	368.46
Dsgn. L = 0.45 ft	2	0.282	0.109	-0.00	-258.39	258.39	1,016.67	915.00	1.00	1.00	39.98	368.46	368.46
Dsgn. L = 4.00 ft	2	0.263	0.108	-0.00	-240.41	240.41	1,016.67	915.00	1.00	1.00	39.93	368.46	368.46
Dsgn. L = 4.00 ft	2	0.131	0.081	-0.00	-120.01	120.01	1,016.67	915.00	1.00	1.00	29.85	368.46	368.46
Dsgn. L = 4.00 ft	2	0.044	0.054	-0.00	-39.93	39.93	1,016.67	915.00	1.00	1.00	19.77	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.026		-0.19	0.19	1,016.67	915.00	1.00	1.00	9.69	368.46	368.46
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.29 ft	1	0.084	0.064		-77.25	77.25	1,016.67	915.00	1.00	1.00	23.63	368.46	368.46
Dsgn. L = 3.99 ft	1	0.274	0.119	-0.00	-250.72	250.72	1,016.67	915.00	1.38	1.00	43.77	368.46	368.46
Dsgn. L = 3.55 ft	1	0.513	0.197	-0.00	-469.83	469.83	1,016.67	915.00	1.23	1.00	72.66	368.46	368.46
Dsgn. L = 0.45 ft	2	0.513	0.197	-0.00	-469.83	469.83	1,016.67	915.00	1.00	1.00	72.66	368.46	368.46

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B6**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	2		0.478	0.197	-0.00	-437.15	437.15	1,016.67	915.00	1.00	1.00	72.61	368.46	368.46
Dsgn. L = 4.00 ft	2		0.239	0.148	-0.00	-218.54	218.54	1,016.67	915.00	1.00	1.00	54.36	368.46	368.46
Dsgn. L = 4.00 ft	2		0.080	0.098	-0.00	-72.94	72.94	1,016.67	915.00	1.00	1.00	36.11	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.048		-0.36	0.36	1,016.67	915.00	1.00	1.00	17.86	368.46	368.46
<b>+1.20D+1.60S+0.50W+1.60H</b>														
Dsgn. L = 3.29 ft	1		0.046	0.035		-42.38	42.38	1,016.67	915.00	1.00	1.00	13.04	368.46	368.46
Dsgn. L = 3.99 ft	1		0.151	0.066	-0.00	-137.78	137.78	1,016.67	915.00	1.39	1.00	24.16	368.46	368.46
Dsgn. L = 3.55 ft	1		0.282	0.109	-0.00	-258.39	258.39	1,016.67	915.00	1.23	1.00	39.98	368.46	368.46
Dsgn. L = 0.45 ft	2		0.282	0.109	-0.00	-258.39	258.39	1,016.67	915.00	1.00	1.00	39.98	368.46	368.46
Dsgn. L = 4.00 ft	2		0.263	0.108	-0.00	-240.41	240.41	1,016.67	915.00	1.00	1.00	39.93	368.46	368.46
Dsgn. L = 4.00 ft	2		0.131	0.081	-0.00	-120.01	120.01	1,016.67	915.00	1.00	1.00	29.85	368.46	368.46
Dsgn. L = 4.00 ft	2		0.044	0.054	-0.00	-39.93	39.93	1,016.67	915.00	1.00	1.00	19.77	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.026		-0.19	0.19	1,016.67	915.00	1.00	1.00	9.69	368.46	368.46
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>														
Dsgn. L = 3.29 ft	1		0.101	0.077		-92.83	92.83	1,016.67	915.00	1.00	1.00	28.36	368.46	368.46
Dsgn. L = 3.99 ft	1		0.257	0.097	-0.00	-234.98	234.98	1,016.67	915.00	1.32	1.00	35.88	368.46	368.46
Dsgn. L = 3.55 ft	1		0.422	0.162	-0.00	-385.77	385.77	1,016.67	915.00	1.19	1.00	59.67	368.46	368.46
Dsgn. L = 0.45 ft	2		0.422	0.162	-0.00	-385.77	385.77	1,016.67	915.00	1.00	1.00	59.67	368.46	368.46
Dsgn. L = 4.00 ft	2		0.392	0.162	-0.00	-358.93	358.93	1,016.67	915.00	1.00	1.00	59.62	368.46	368.46
Dsgn. L = 4.00 ft	2		0.196	0.121	-0.00	-179.37	179.37	1,016.67	915.00	1.00	1.00	44.62	368.46	368.46
Dsgn. L = 4.00 ft	2		0.065	0.080	-0.00	-59.82	59.82	1,016.67	915.00	1.00	1.00	29.61	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.040		-0.29	0.29	1,016.67	915.00	1.00	1.00	14.61	368.46	368.46
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>														
Dsgn. L = 3.29 ft	1		0.001	0.001	0.86		0.86	1,016.67	915.00	1.41	1.00	0.43	368.46	368.46
Dsgn. L = 3.99 ft	1		0.070	0.045	0.86	-63.75	63.75	1,016.67	915.00	1.69	1.00	16.44	368.46	368.46
Dsgn. L = 3.55 ft	1		0.191	0.085	-0.00	-174.34	174.34	1,016.67	915.00	1.34	1.00	31.40	368.46	368.46
Dsgn. L = 0.45 ft	2		0.191	0.073	-0.00	-174.34	174.34	1,016.67	915.00	1.00	1.00	26.99	368.46	368.46
Dsgn. L = 4.00 ft	2		0.177	0.073	-0.00	-162.20	162.20	1,016.67	915.00	1.00	1.00	26.94	368.46	368.46
Dsgn. L = 4.00 ft	2		0.088	0.055	-0.00	-80.84	80.84	1,016.67	915.00	1.00	1.00	20.11	368.46	368.46
Dsgn. L = 4.00 ft	2		0.029	0.036	-0.00	-26.81	26.81	1,016.67	915.00	1.00	1.00	13.27	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.017		-0.13	0.13	1,016.67	915.00	1.00	1.00	6.44	368.46	368.46
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>														
Dsgn. L = 3.29 ft	1		0.069	0.053		-63.42	63.42	1,016.67	915.00	1.00	1.00	19.43	368.46	368.46
Dsgn. L = 3.99 ft	1		0.225	0.098	-0.00	-205.83	205.83	1,016.67	915.00	1.38	1.00	35.97	368.46	368.46
Dsgn. L = 3.55 ft	1		0.422	0.162	-0.00	-385.77	385.77	1,016.67	915.00	1.23	1.00	59.67	368.46	368.46
Dsgn. L = 0.45 ft	2		0.422	0.162	-0.00	-385.77	385.77	1,016.67	915.00	1.00	1.00	59.67	368.46	368.46
Dsgn. L = 4.00 ft	2		0.392	0.162	-0.00	-358.93	358.93	1,016.67	915.00	1.00	1.00	59.62	368.46	368.46
Dsgn. L = 4.00 ft	2		0.196	0.121	-0.00	-179.37	179.37	1,016.67	915.00	1.00	1.00	44.62	368.46	368.46
Dsgn. L = 4.00 ft	2		0.065	0.080	-0.00	-59.82	59.82	1,016.67	915.00	1.00	1.00	29.61	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.040		-0.29	0.29	1,016.67	915.00	1.00	1.00	14.61	368.46	368.46
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L = 3.29 ft	1		0.106	0.081		-97.15	97.15	1,016.67	915.00	1.00	1.00	29.68	368.46	368.46
Dsgn. L = 3.99 ft	1		0.272	0.104	-0.00	-249.00	249.00	1,016.67	915.00	1.32	1.00	38.32	368.46	368.46
Dsgn. L = 3.55 ft	1		0.450	0.173	-0.00	-412.04	412.04	1,016.67	915.00	1.19	1.00	63.73	368.46	368.46
Dsgn. L = 0.45 ft	2		0.450	0.173	-0.00	-412.04	412.04	1,016.67	915.00	1.00	1.00	63.73	368.46	368.46
Dsgn. L = 4.00 ft	2		0.419	0.173	-0.00	-383.38	383.38	1,016.67	915.00	1.00	1.00	63.68	368.46	368.46
Dsgn. L = 4.00 ft	2		0.209	0.129	-0.00	-191.61	191.61	1,016.67	915.00	1.00	1.00	47.66	368.46	368.46
Dsgn. L = 4.00 ft	2		0.070	0.086	-0.00	-63.92	63.92	1,016.67	915.00	1.00	1.00	31.64	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.042		-0.31	0.31	1,016.67	915.00	1.00	1.00	15.62	368.46	368.46
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L = 3.29 ft	1		0.004	0.003		-3.46	3.46	1,016.67	915.00	1.00	1.00	1.22	368.46	368.46
Dsgn. L = 3.99 ft	1		0.085	0.051	-0.00	-77.77	77.77	1,016.67	915.00	1.63	1.00	18.88	368.46	368.46
Dsgn. L = 3.55 ft	1		0.219	0.095	-0.00	-200.60	200.60	1,016.67	915.00	1.33	1.00	34.86	368.46	368.46
Dsgn. L = 0.45 ft	2		0.219	0.084	-0.00	-200.60	200.60	1,016.67	915.00	1.00	1.00	31.05	368.46	368.46
Dsgn. L = 4.00 ft	2		0.204	0.084	-0.00	-186.64	186.64	1,016.67	915.00	1.00	1.00	31.00	368.46	368.46
Dsgn. L = 4.00 ft	2		0.102	0.063	-0.00	-93.08	93.08	1,016.67	915.00	1.00	1.00	23.15	368.46	368.46
Dsgn. L = 4.00 ft	2		0.034	0.042	-0.00	-30.91	30.91	1,016.67	915.00	1.00	1.00	15.30	368.46	368.46
Dsgn. L = 0.05 ft	2		0.000	0.020		-0.15	0.15	1,016.67	915.00	1.00	1.00	7.45	368.46	368.46
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L = 3.29 ft	1		0.074	0.056		-67.74	67.74	1,016.67	915.00	1.00	1.00	20.74	368.46	368.46
Dsgn. L = 3.99 ft	1		0.240	0.104	-0.00	-219.86	219.86	1,016.67	915.00	1.38	1.00	38.40	368.46	368.46
Dsgn. L = 3.55 ft	1		0.450	0.173	-0.00	-412.04	412.04	1,016.67	915.00	1.23	1.00	63.73	368.46	368.46
Dsgn. L = 0.45 ft	2		0.450	0.173	-0.00	-412.04	412.04	1,016.67	915.00	1.00	1.00	63.73	368.46	368.46

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B6**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	2	0.419	0.173	-0.00	-383.38	383.38	1,016.67	915.00	1.00	1.00	63.68	368.46	368.46
Dsgn. L = 4.00 ft	2	0.209	0.129	-0.00	-191.61	191.61	1,016.67	915.00	1.00	1.00	47.66	368.46	368.46
Dsgn. L = 4.00 ft	2	0.070	0.086	-0.00	-63.92	63.92	1,016.67	915.00	1.00	1.00	31.64	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.042		-0.31	0.31	1,016.67	915.00	1.00	1.00	15.62	368.46	368.46
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 3.29 ft	1	0.023	0.018		-21.42	21.42	1,016.67	915.00	1.00	1.00	6.63	368.46	368.46
Dsgn. L = 3.99 ft	1	0.076	0.033	-0.00	-69.67	69.67	1,016.67	915.00	1.39	1.00	12.27	368.46	368.46
Dsgn. L = 3.55 ft	1	0.143	0.055	-0.00	-130.75	130.75	1,016.67	915.00	1.23	1.00	20.24	368.46	368.46
Dsgn. L = 0.45 ft	2	0.143	0.055	-0.00	-130.75	130.75	1,016.67	915.00	1.00	1.00	20.24	368.46	368.46
Dsgn. L = 4.00 ft	2	0.133	0.055	-0.00	-121.65	121.65	1,016.67	915.00	1.00	1.00	20.21	368.46	368.46
Dsgn. L = 4.00 ft	2	0.066	0.041	-0.00	-60.63	60.63	1,016.67	915.00	1.00	1.00	15.08	368.46	368.46
Dsgn. L = 4.00 ft	2	0.022	0.027	-0.00	-20.11	20.11	1,016.67	915.00	1.00	1.00	9.95	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.013		-0.10	0.10	1,016.67	915.00	1.00	1.00	4.83	368.46	368.46
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 3.29 ft	1	0.103	0.078		-94.56	94.56	1,016.67	915.00	1.00	1.00	28.89	368.46	368.46
Dsgn. L = 3.99 ft	1	0.263	0.100	-0.00	-240.59	240.59	1,016.67	915.00	1.32	1.00	36.86	368.46	368.46
Dsgn. L = 3.55 ft	1	0.433	0.166	-0.00	-396.28	396.28	1,016.67	915.00	1.19	1.00	61.29	368.46	368.46
Dsgn. L = 0.45 ft	2	0.433	0.166	-0.00	-396.28	396.28	1,016.67	915.00	1.00	1.00	61.29	368.46	368.46
Dsgn. L = 4.00 ft	2	0.403	0.166	-0.00	-368.71	368.71	1,016.67	915.00	1.00	1.00	61.25	368.46	368.46
Dsgn. L = 4.00 ft	2	0.201	0.124	-0.00	-184.26	184.26	1,016.67	915.00	1.00	1.00	45.84	368.46	368.46
Dsgn. L = 4.00 ft	2	0.067	0.083	-0.00	-61.46	61.46	1,016.67	915.00	1.00	1.00	30.42	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.041		-0.30	0.30	1,016.67	915.00	1.00	1.00	15.01	368.46	368.46
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 3.29 ft	1	0.001	0.001		-0.87	0.87	1,016.67	915.00	1.00	1.00	0.43	368.46	368.46
Dsgn. L = 3.99 ft	1	0.076	0.047	-0.00	-69.36	69.36	1,016.67	915.00	1.66	1.00	17.42	368.46	368.46
Dsgn. L = 3.55 ft	1	0.202	0.089	-0.00	-184.84	184.84	1,016.67	915.00	1.34	1.00	32.78	368.46	368.46
Dsgn. L = 0.45 ft	2	0.202	0.078	-0.00	-184.84	184.84	1,016.67	915.00	1.00	1.00	28.61	368.46	368.46
Dsgn. L = 4.00 ft	2	0.188	0.078	-0.00	-171.98	171.98	1,016.67	915.00	1.00	1.00	28.57	368.46	368.46
Dsgn. L = 4.00 ft	2	0.094	0.058	-0.00	-85.73	85.73	1,016.67	915.00	1.00	1.00	21.33	368.46	368.46
Dsgn. L = 4.00 ft	2	0.031	0.038	-0.00	-28.45	28.45	1,016.67	915.00	1.00	1.00	14.08	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.019		-0.14	0.14	1,016.67	915.00	1.00	1.00	6.84	368.46	368.46
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 3.29 ft	1	0.071	0.054		-65.15	65.15	1,016.67	915.00	1.00	1.00	19.95	368.46	368.46
Dsgn. L = 3.99 ft	1	0.231	0.100	-0.00	-211.44	211.44	1,016.67	915.00	1.38	1.00	36.94	368.46	368.46
Dsgn. L = 3.55 ft	1	0.433	0.166	-0.00	-396.28	396.28	1,016.67	915.00	1.23	1.00	61.29	368.46	368.46
Dsgn. L = 0.45 ft	2	0.433	0.166	-0.00	-396.28	396.28	1,016.67	915.00	1.00	1.00	61.29	368.46	368.46
Dsgn. L = 4.00 ft	2	0.403	0.166	-0.00	-368.71	368.71	1,016.67	915.00	1.00	1.00	61.25	368.46	368.46
Dsgn. L = 4.00 ft	2	0.201	0.124	-0.00	-184.26	184.26	1,016.67	915.00	1.00	1.00	45.84	368.46	368.46
Dsgn. L = 4.00 ft	2	0.067	0.083	-0.00	-61.46	61.46	1,016.67	915.00	1.00	1.00	30.42	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.041		-0.30	0.30	1,016.67	915.00	1.00	1.00	15.01	368.46	368.46
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 3.29 ft	1	0.023	0.018		-21.42	21.42	1,016.67	915.00	1.00	1.00	6.63	368.46	368.46
Dsgn. L = 3.99 ft	1	0.076	0.033	-0.00	-69.67	69.67	1,016.67	915.00	1.39	1.00	12.27	368.46	368.46
Dsgn. L = 3.55 ft	1	0.143	0.055	-0.00	-130.75	130.75	1,016.67	915.00	1.23	1.00	20.24	368.46	368.46
Dsgn. L = 0.45 ft	2	0.143	0.055	-0.00	-130.75	130.75	1,016.67	915.00	1.00	1.00	20.24	368.46	368.46
Dsgn. L = 4.00 ft	2	0.133	0.055	-0.00	-121.65	121.65	1,016.67	915.00	1.00	1.00	20.21	368.46	368.46
Dsgn. L = 4.00 ft	2	0.066	0.041	-0.00	-60.63	60.63	1,016.67	915.00	1.00	1.00	15.08	368.46	368.46
Dsgn. L = 4.00 ft	2	0.022	0.027	-0.00	-20.11	20.11	1,016.67	915.00	1.00	1.00	9.95	368.46	368.46
Dsgn. L = 0.05 ft	2	0.000	0.013		-0.10	0.10	1,016.67	915.00	1.00	1.00	4.83	368.46	368.46

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0000	0.000	+D+L+H	-0.0511	6.368
	2	0.6346	12.500		0.0000	6.368

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	8.935	102.238	
Max Upward from Load Combinations	1.845	102.238	
Max Upward from Load Cases	8.935	60.459	
Max Downward from all Load Conditions (Resis)	-26.613		
Max Downward from Load Combinations (Resis)	-26.613		
Max Downward from Load Cases (Resisting U)	-19.524		



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B6**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
+D+H	-7.090	41.779	
+D+L+H, LL Comb Run (*L)	-26.613	93.983	
+D+L+H, LL Comb Run (L*)	1.845	50.035	
+D+L+H, LL Comb Run (LL)	-17.679	102.238	
+D+Lr+H, LL Comb Run (*L)	-7.090	41.779	
+D+Lr+H, LL Comb Run (L*)	-7.090	41.779	
+D+Lr+H, LL Comb Run (LL)	-7.090	41.779	
+D+S+H	-9.714	56.804	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	-21.732	80.932	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	-0.389	47.971	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	-15.031	87.123	
+D+0.750L+0.750S+H, LL Comb Run (*L)	-23.701	92.201	
+D+0.750L+0.750S+H, LL Comb Run (L*)	-2.357	59.240	
+D+0.750L+0.750S+H, LL Comb Run (LL)	-17.000	98.392	
+D+0.60W+H	-7.090	41.779	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	-21.732	80.932	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	-0.389	47.971	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	-15.031	87.123	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	-23.701	92.201	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	-2.357	59.240	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	-17.000	98.392	
+0.60D+0.60W+0.60H	-4.254	25.068	
+D+0.70E+0.60H	-7.090	41.779	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	-23.701	92.201	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	-2.357	59.240	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	-17.000	98.392	
+0.60D+0.70E+H	-4.254	25.068	
D Only	-7.090	41.779	
L Only, LL Comb Run (*L)	-19.524	52.204	
L Only, LL Comb Run (L*)	8.935	8.255	
L Only, LL Comb Run (LL)	-10.589	60.459	
S Only	-2.625	15.025	
H Only			



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B7**

**CODE REFERENCES**

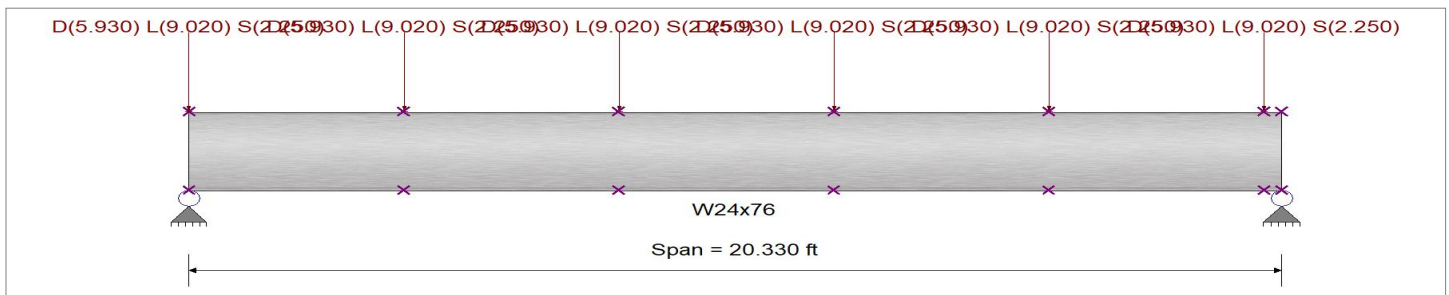
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.930, L = 9.020, S = 2.250 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.386</b> : 1	Maximum Shear Stress Ratio =	<b>0.215</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	289.851 k-ft	Vu : Applied	67.842 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	20.330 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.139 in Ratio = <b>1,748</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.236 in Ratio = <b>1034</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.95 ft	1	0.094	0.057	70.62		70.62	833.33	750.00	1.66	1.00	18.09	315.48	315.48
Dsgn. L =	4.01 ft	1	0.144	0.056	107.73	70.62	107.73	833.33	750.00	1.16	1.00	17.67	315.48	315.48
Dsgn. L =	4.01 ft	1	0.146	0.028	109.79	107.73	109.79	833.33	750.00	1.01	1.00	8.94	315.48	315.48
Dsgn. L =	4.01 ft	1	0.146	0.027	109.79	76.80	109.79	833.33	750.00	1.13	1.00	8.52	315.48	315.48
Dsgn. L =	4.01 ft	1	0.102	0.055	76.80	8.76	76.80	833.33	750.00	1.53	1.00	17.24	315.48	315.48
Dsgn. L =	0.35 ft	1	0.012	0.081	8.76		8.76	833.33	750.00	1.54	1.00	25.58	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	3.95 ft	1	0.236	0.143	177.32		177.32	833.33	750.00	1.67	1.00	45.07	315.48	315.48
Dsgn. L =	4.01 ft	1	0.361	0.142	270.51	177.32	270.51	833.33	750.00	1.16	1.00	44.71	315.48	315.48
Dsgn. L =	4.01 ft	1	0.368	0.072	275.70	270.51	275.70	833.33	750.00	1.01	1.00	22.80	315.48	315.48
Dsgn. L =	4.01 ft	1	0.368	0.067	275.70	192.89	275.70	833.33	750.00	1.13	1.00	21.03	315.48	315.48
Dsgn. L =	4.01 ft	1	0.257	0.136	192.89	22.08	192.89	833.33	750.00	1.53	1.00	42.94	315.48	315.48
Dsgn. L =	0.35 ft	1	0.029	0.205	22.08		22.08	833.33	750.00	1.54	1.00	64.52	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L =	3.95 ft	1	0.249	0.150	186.42		186.42	833.33	750.00	1.67	1.00	47.38	315.48	315.48
Dsgn. L =	4.01 ft	1	0.379	0.149	284.39	186.42	284.39	833.33	750.00	1.16	1.00	47.02	315.48	315.48
Dsgn. L =	4.01 ft	1	0.386	0.076	289.85	284.39	289.85	833.33	750.00	1.01	1.00	23.98	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B7**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	1	0.386	0.070	289.85	202.79	289.85	833.33	750.00	1.13	1.00	22.10	315.48	315.48
Dsgn. L = 4.01 ft	1	0.270	0.143	202.79	23.22	202.79	833.33	750.00	1.53	1.00	45.14	315.48	315.48
Dsgn. L = 0.35 ft	1	0.031	0.215	23.22		23.22	833.33	750.00	1.54	1.00	67.84	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H</b>													
Dsgn. L = 3.95 ft	1	0.178	0.108	133.52		133.52	833.33	750.00	1.66	1.00	33.98	315.48	315.48
Dsgn. L = 4.01 ft	1	0.272	0.107	203.69	133.52	203.69	833.33	750.00	1.16	1.00	33.62	315.48	315.48
Dsgn. L = 4.01 ft	1	0.277	0.054	207.60	203.69	207.60	833.33	750.00	1.01	1.00	17.12	315.48	315.48
Dsgn. L = 4.01 ft	1	0.277	0.050	207.60	145.24	207.60	833.33	750.00	1.13	1.00	15.88	315.48	315.48
Dsgn. L = 4.01 ft	1	0.194	0.103	145.24	16.62	145.24	833.33	750.00	1.53	1.00	32.38	315.48	315.48
Dsgn. L = 0.35 ft	1	0.022	0.154	16.62		16.62	833.33	750.00	1.54	1.00	48.55	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H</b>													
Dsgn. L = 3.95 ft	1	0.081	0.049	60.53		60.53	833.33	750.00	1.66	1.00	15.51	315.48	315.48
Dsgn. L = 4.01 ft	1	0.123	0.048	92.34	60.53	92.34	833.33	750.00	1.16	1.00	15.15	315.48	315.48
Dsgn. L = 4.01 ft	1	0.125	0.024	94.10	92.34	94.10	833.33	750.00	1.01	1.00	7.66	315.48	315.48
Dsgn. L = 4.01 ft	1	0.125	0.023	94.10	65.82	94.10	833.33	750.00	1.13	1.00	7.30	315.48	315.48
Dsgn. L = 4.01 ft	1	0.088	0.047	65.82	7.51	65.82	833.33	750.00	1.53	1.00	14.78	315.48	315.48
Dsgn. L = 0.35 ft	1	0.010	0.070	7.51		7.51	833.33	750.00	1.54	1.00	21.93	315.48	315.48
<b>+1.20D+L+1.60S+1.60H</b>													
Dsgn. L = 3.95 ft	1	0.217	0.131	162.65		162.65	833.33	750.00	1.67	1.00	41.36	315.48	315.48
Dsgn. L = 4.01 ft	1	0.331	0.130	248.14	162.65	248.14	833.33	750.00	1.16	1.00	41.00	315.48	315.48
Dsgn. L = 4.01 ft	1	0.337	0.066	252.90	248.14	252.90	833.33	750.00	1.01	1.00	20.90	315.48	315.48
Dsgn. L = 4.01 ft	1	0.337	0.061	252.90	176.93	252.90	833.33	750.00	1.13	1.00	19.30	315.48	315.48
Dsgn. L = 4.01 ft	1	0.236	0.125	176.93	20.25	176.93	833.33	750.00	1.53	1.00	39.41	315.48	315.48
Dsgn. L = 0.35 ft	1	0.027	0.188	20.25		20.25	833.33	750.00	1.54	1.00	59.17	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 3.95 ft	1	0.120	0.073	89.66		89.66	833.33	750.00	1.66	1.00	22.88	315.48	315.48
Dsgn. L = 4.01 ft	1	0.182	0.071	136.78		136.78	833.33	750.00	1.16	1.00	22.52	315.48	315.48
Dsgn. L = 4.01 ft	1	0.186	0.036	139.40	136.78	139.40	833.33	750.00	1.01	1.00	11.44	315.48	315.48
Dsgn. L = 4.01 ft	1	0.186	0.034	139.40	97.52	139.40	833.33	750.00	1.13	1.00	10.72	315.48	315.48
Dsgn. L = 4.01 ft	1	0.130	0.069	97.52	11.14	97.52	833.33	750.00	1.53	1.00	21.81	315.48	315.48
Dsgn. L = 0.35 ft	1	0.015	0.103	11.14		11.14	833.33	750.00	1.54	1.00	32.55	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H</b>													
Dsgn. L = 3.95 ft	1	0.178	0.108	133.52		133.52	833.33	750.00	1.66	1.00	33.98	315.48	315.48
Dsgn. L = 4.01 ft	1	0.272	0.107	203.69	133.52	203.69	833.33	750.00	1.16	1.00	33.62	315.48	315.48
Dsgn. L = 4.01 ft	1	0.277	0.054	207.60	203.69	207.60	833.33	750.00	1.01	1.00	17.12	315.48	315.48
Dsgn. L = 4.01 ft	1	0.277	0.050	207.60	145.24	207.60	833.33	750.00	1.13	1.00	15.88	315.48	315.48
Dsgn. L = 4.01 ft	1	0.194	0.103	145.24	16.62	145.24	833.33	750.00	1.53	1.00	32.38	315.48	315.48
Dsgn. L = 0.35 ft	1	0.022	0.154	16.62		16.62	833.33	750.00	1.54	1.00	48.55	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H</b>													
Dsgn. L = 3.95 ft	1	0.190	0.115	142.63		142.63	833.33	750.00	1.66	1.00	36.29	315.48	315.48
Dsgn. L = 4.01 ft	1	0.290	0.114	217.58	142.63	217.58	833.33	750.00	1.16	1.00	35.93	315.48	315.48
Dsgn. L = 4.01 ft	1	0.296	0.058	221.75	217.58	221.75	833.33	750.00	1.01	1.00	18.30	315.48	315.48
Dsgn. L = 4.01 ft	1	0.296	0.054	221.75	155.14	221.75	833.33	750.00	1.13	1.00	16.95	315.48	315.48
Dsgn. L = 4.01 ft	1	0.207	0.110	155.14	17.75	155.14	833.33	750.00	1.53	1.00	34.58	315.48	315.48
Dsgn. L = 0.35 ft	1	0.024	0.164	17.75		17.75	833.33	750.00	1.54	1.00	51.87	315.48	315.48
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 3.95 ft	1	0.061	0.037	45.40		45.40	833.33	750.00	1.66	1.00	11.63	315.48	315.48
Dsgn. L = 4.01 ft	1	0.092	0.036	69.25	45.40	69.25	833.33	750.00	1.16	1.00	11.36	315.48	315.48
Dsgn. L = 4.01 ft	1	0.094	0.018	70.58	69.25	70.58	833.33	750.00	1.01	1.00	5.75	315.48	315.48
Dsgn. L = 4.01 ft	1	0.094	0.017	70.58	49.37	70.58	833.33	750.00	1.13	1.00	5.47	315.48	315.48
Dsgn. L = 4.01 ft	1	0.066	0.035	49.37	5.63	49.37	833.33	750.00	1.53	1.00	11.09	315.48	315.48
Dsgn. L = 0.35 ft	1	0.008	0.052	5.63		5.63	833.33	750.00	1.54	1.00	16.45	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H</b>													
Dsgn. L = 3.95 ft	1	0.183	0.111	137.16		137.16	833.33	750.00	1.66	1.00	34.91	315.48	315.48
Dsgn. L = 4.01 ft	1	0.279	0.110	209.25	137.16	209.25	833.33	750.00	1.16	1.00	34.55	315.48	315.48
Dsgn. L = 4.01 ft	1	0.284	0.056	213.26	209.25	213.26	833.33	750.00	1.01	1.00	17.59	315.48	315.48
Dsgn. L = 4.01 ft	1	0.284	0.052	213.26	149.20	213.26	833.33	750.00	1.13	1.00	16.31	315.48	315.48
Dsgn. L = 4.01 ft	1	0.199	0.105	149.20	17.07	149.20	833.33	750.00	1.53	1.00	33.26	315.48	315.48
Dsgn. L = 0.35 ft	1	0.023	0.158	17.07		17.07	833.33	750.00	1.54	1.00	49.88	315.48	315.48
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 3.95 ft	1	0.061	0.037	45.40		45.40	833.33	750.00	1.66	1.00	11.63	315.48	315.48
Dsgn. L = 4.01 ft	1	0.092	0.036	69.25	45.40	69.25	833.33	750.00	1.16	1.00	11.36	315.48	315.48
Dsgn. L = 4.01 ft	1	0.094	0.018	70.58	69.25	70.58	833.33	750.00	1.01	1.00	5.75	315.48	315.48





Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B7**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	4.01 ft	1	0.094	0.017	70.58	49.37	70.58	833.33	750.00	1.13	1.00	5.47	315.48	315.48
Dsgn. L =	4.01 ft	1	0.066	0.035	49.37	5.63	49.37	833.33	750.00	1.53	1.00	11.09	315.48	315.48
Dsgn. L =	0.35 ft	1	0.008	0.052	5.63		5.63	833.33	750.00	1.54	1.00	16.45	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2360	10.223		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	46.351	44.895
Max Upward from Load Combinations	46.351	44.895
Max Upward from Load Cases	27.499	26.621
+D+H	18.851	18.274
+D+L+H	46.351	44.895
+D+Lr+H	18.851	18.274
+D+S+H	25.711	24.914
+D+0.750Lr+0.750L+H	39.476	38.239
+D+0.750L+0.750S+H	44.620	43.220
+D+0.60W+H	18.851	18.274
+D+0.750Lr+0.750L+0.450W+H	39.476	38.239
+D+0.750L+0.750S+0.450W+H	44.620	43.220
+0.60D+0.60W+0.60H	11.311	10.964
+D+0.70E+0.60H	18.851	18.274
+D+0.750L+0.750S+0.5250E+H	44.620	43.220
+0.60D+0.70E+H	11.311	10.964
D Only	18.851	18.274
L Only	27.499	26.621
S Only	6.860	6.640
H Only		

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B8**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

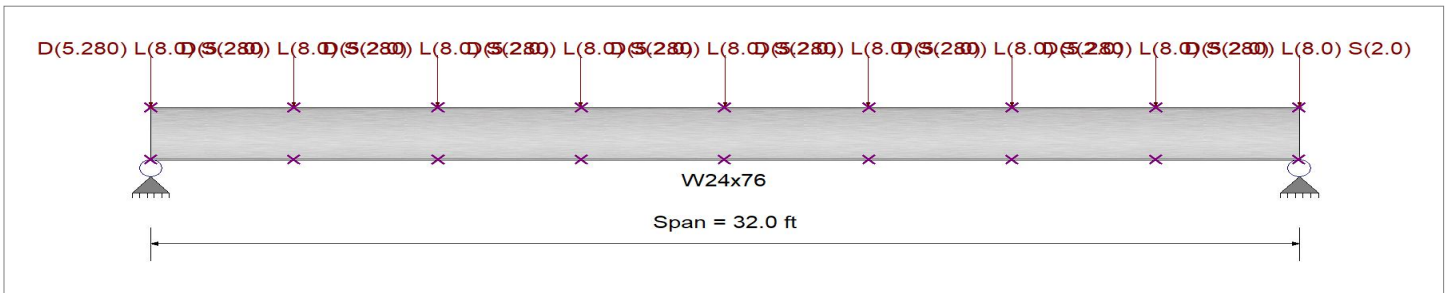
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.875</b> : 1	Maximum Shear Stress Ratio =	<b>0.228</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	656.026 k-ft	Vu : Applied	71.935 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.768 in Ratio =	499	>=360. Span: 1 : L Only
Max Upward Transient Deflection	0 in Ratio =	0	<360.0 n/a
Max Downward Total Deflection	1.305 in Ratio =	294	>=240. Span: 1 : +D+L+H
Max Upward Total Deflection	0 in Ratio =	0	<240.0 n/a

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
<b>+1.40D+1.60H</b>															
Dsgn. L =	3.93 ft	1	0.143	0.087	107.58		107.58	107.58	833.33	750.00	1.69	1.00	27.57	315.48	315.48
Dsgn. L =	4.02 ft	1	0.249	0.086	186.74	107.58	186.74	833.33	750.00	1.20	1.00	27.16	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.312	0.061	234.26	186.74	234.26	833.33	750.00	1.09	1.00	19.34	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.334	0.037	250.16	234.26	250.16	833.33	750.00	1.03	1.00	11.52	315.48	315.48	
Dsgn. L =	3.93 ft	1	0.334	0.013	250.16	234.81	250.16	833.33	750.00	1.02	1.00	4.11	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.313	0.038	234.81	188.17	234.81	833.33	750.00	1.09	1.00	11.93	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.251	0.063	188.17	109.90	188.17	833.33	750.00	1.20	1.00	19.75	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.147	0.087	109.90		109.90	833.33	750.00	1.66	1.00	27.57	315.48	315.48	
<b>+1.20D+0.50Lr+1.60L+1.60H</b>															
Dsgn. L =	3.93 ft	1	0.358	0.217	268.34		268.34	833.33	750.00	1.69	1.00	68.44	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.621	0.216	465.80	268.34	465.80	833.33	750.00	1.20	1.00	68.08	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.779	0.154	584.36	465.80	584.36	833.33	750.00	1.09	1.00	48.57	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.832	0.092	624.03	584.36	624.03	833.33	750.00	1.03	1.00	29.07	315.48	315.48	
Dsgn. L =	3.93 ft	1	0.832	0.031	624.03	585.70	624.03	833.33	750.00	1.02	1.00	9.93	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.781	0.093	585.70	469.36	585.70	833.33	750.00	1.09	1.00	29.43	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.626	0.155	469.36	274.13	469.36	833.33	750.00	1.20	1.00	48.93	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.366	0.217	274.13		274.13	833.33	750.00	1.66	1.00	68.44	315.48	315.48	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B8**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
<b>+1.20D+1.60L+0.50S+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.376	0.228	282.10		282.10	833.33	750.00	1.69	1.00	71.94	315.48	315.48
Dsgn. L = 4.02 ft	1	0.653	0.227	489.68	282.10	489.68	833.33	750.00	1.20	1.00	71.58	315.48	315.48
Dsgn. L = 4.02 ft	1	0.819	0.162	614.33	489.68	614.33	833.33	750.00	1.09	1.00	51.07	315.48	315.48
Dsgn. L = 4.02 ft	1	0.875	0.097	656.03	614.33	656.03	833.33	750.00	1.03	1.00	30.57	315.48	315.48
Dsgn. L = 3.93 ft	1	0.875	0.033	656.03	615.74	656.03	833.33	750.00	1.02	1.00	10.43	315.48	315.48
Dsgn. L = 4.02 ft	1	0.821	0.098	615.74	493.43	615.74	833.33	750.00	1.09	1.00	30.93	315.48	315.48
Dsgn. L = 4.02 ft	1	0.658	0.163	493.43	288.19	493.43	833.33	750.00	1.20	1.00	51.43	315.48	315.48
Dsgn. L = 4.02 ft	1	0.384	0.228	288.19		288.19	833.33	750.00	1.66	1.00	71.94	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.270	0.164	202.30		202.30	833.33	750.00	1.69	1.00	51.64	315.48	315.48
Dsgn. L = 4.02 ft	1	0.468	0.163	351.15	202.30	351.15	833.33	750.00	1.20	1.00	51.28	315.48	315.48
Dsgn. L = 4.02 ft	1	0.587	0.116	440.52	351.15	440.52	833.33	750.00	1.09	1.00	36.57	315.48	315.48
Dsgn. L = 4.02 ft	1	0.627	0.069	470.43	440.52	470.43	833.33	750.00	1.03	1.00	21.87	315.48	315.48
Dsgn. L = 3.93 ft	1	0.627	0.024	470.43	441.54	470.43	833.33	750.00	1.02	1.00	7.53	315.48	315.48
Dsgn. L = 4.02 ft	1	0.589	0.070	441.54	353.84	441.54	833.33	750.00	1.09	1.00	22.23	315.48	315.48
Dsgn. L = 4.02 ft	1	0.472	0.117	353.84	206.66	353.84	833.33	750.00	1.20	1.00	36.93	315.48	315.48
Dsgn. L = 4.02 ft	1	0.276	0.164	206.66		206.66	833.33	750.00	1.66	1.00	51.64	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.123	0.075	92.22		92.22	833.33	750.00	1.69	1.00	23.64	315.48	315.48
Dsgn. L = 4.02 ft	1	0.213	0.074	160.06	92.22	160.06	833.33	750.00	1.20	1.00	23.28	315.48	315.48
Dsgn. L = 4.02 ft	1	0.268	0.053	200.80	160.06	200.80	833.33	750.00	1.09	1.00	16.57	315.48	315.48
Dsgn. L = 4.02 ft	1	0.286	0.031	214.43	200.80	214.43	833.33	750.00	1.03	1.00	9.87	315.48	315.48
Dsgn. L = 3.93 ft	1	0.286	0.011	214.43	201.27	214.43	833.33	750.00	1.02	1.00	3.53	315.48	315.48
Dsgn. L = 4.02 ft	1	0.268	0.032	201.27	161.29	201.27	833.33	750.00	1.09	1.00	10.23	315.48	315.48
Dsgn. L = 4.02 ft	1	0.215	0.054	161.29	94.20	161.29	833.33	750.00	1.20	1.00	16.93	315.48	315.48
Dsgn. L = 4.02 ft	1	0.126	0.075	94.20		94.20	833.33	750.00	1.66	1.00	23.64	315.48	315.48
<b>+1.20D+L+1.60S+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.328	0.199	246.33		246.33	833.33	750.00	1.69	1.00	62.84	315.48	315.48
Dsgn. L = 4.02 ft	1	0.570	0.198	427.58	246.33	427.58	833.33	750.00	1.20	1.00	62.48	315.48	315.48
Dsgn. L = 4.02 ft	1	0.715	0.141	536.41	427.58	536.41	833.33	750.00	1.09	1.00	44.57	315.48	315.48
Dsgn. L = 4.02 ft	1	0.764	0.085	572.83	536.41	572.83	833.33	750.00	1.03	1.00	26.67	315.48	315.48
Dsgn. L = 3.93 ft	1	0.764	0.029	572.83	537.65	572.83	833.33	750.00	1.02	1.00	9.13	315.48	315.48
Dsgn. L = 4.02 ft	1	0.717	0.086	537.65	430.85	537.65	833.33	750.00	1.09	1.00	27.03	315.48	315.48
Dsgn. L = 4.02 ft	1	0.574	0.142	430.85	251.64	430.85	833.33	750.00	1.20	1.00	44.93	315.48	315.48
Dsgn. L = 4.02 ft	1	0.336	0.199	251.64		251.64	833.33	750.00	1.66	1.00	62.84	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.182	0.110	136.25		136.25	833.33	750.00	1.69	1.00	34.84	315.48	315.48
Dsgn. L = 4.02 ft	1	0.315	0.109	236.50	136.25	236.50	833.33	750.00	1.20	1.00	34.48	315.48	315.48
Dsgn. L = 4.02 ft	1	0.396	0.078	296.69	236.50	296.69	833.33	750.00	1.09	1.00	24.57	315.48	315.48
Dsgn. L = 4.02 ft	1	0.422	0.047	316.83	296.69	316.83	833.33	750.00	1.03	1.00	14.67	315.48	315.48
Dsgn. L = 3.93 ft	1	0.422	0.016	316.83	297.38	316.83	833.33	750.00	1.02	1.00	5.13	315.48	315.48
Dsgn. L = 4.02 ft	1	0.397	0.048	297.38	238.31	297.38	833.33	750.00	1.09	1.00	15.03	315.48	315.48
Dsgn. L = 4.02 ft	1	0.318	0.079	238.31	139.18	238.31	833.33	750.00	1.20	1.00	24.93	315.48	315.48
Dsgn. L = 4.02 ft	1	0.186	0.110	139.18		139.18	833.33	750.00	1.66	1.00	34.84	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.270	0.164	202.30		202.30	833.33	750.00	1.69	1.00	51.64	315.48	315.48
Dsgn. L = 4.02 ft	1	0.468	0.163	351.15	202.30	351.15	833.33	750.00	1.20	1.00	51.28	315.48	315.48
Dsgn. L = 4.02 ft	1	0.587	0.116	440.52	351.15	440.52	833.33	750.00	1.09	1.00	36.57	315.48	315.48
Dsgn. L = 4.02 ft	1	0.627	0.069	470.43	440.52	470.43	833.33	750.00	1.03	1.00	21.87	315.48	315.48
Dsgn. L = 3.93 ft	1	0.627	0.024	470.43	441.54	470.43	833.33	750.00	1.02	1.00	7.53	315.48	315.48
Dsgn. L = 4.02 ft	1	0.589	0.070	441.54	353.84	441.54	833.33	750.00	1.09	1.00	22.23	315.48	315.48
Dsgn. L = 4.02 ft	1	0.472	0.117	353.84	206.66	353.84	833.33	750.00	1.20	1.00	36.93	315.48	315.48
Dsgn. L = 4.02 ft	1	0.276	0.164	206.66		206.66	833.33	750.00	1.66	1.00	51.64	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.288	0.175	216.06		216.06	833.33	750.00	1.69	1.00	55.14	315.48	315.48
Dsgn. L = 4.02 ft	1	0.500	0.174	375.03	216.06	375.03	833.33	750.00	1.20	1.00	54.78	315.48	315.48
Dsgn. L = 4.02 ft	1	0.627	0.124	470.49	375.03	470.49	833.33	750.00	1.09	1.00	39.07	315.48	315.48
Dsgn. L = 4.02 ft	1	0.670	0.074	502.43	470.49	502.43	833.33	750.00	1.03	1.00	23.37	315.48	315.48
Dsgn. L = 3.93 ft	1	0.670	0.025	502.43	471.57	502.43	833.33	750.00	1.02	1.00	8.03	315.48	315.48
Dsgn. L = 4.02 ft	1	0.629	0.075	471.57	377.90	471.57	833.33	750.00	1.09	1.00	23.73	315.48	315.48
Dsgn. L = 4.02 ft	1	0.504	0.125	377.90	220.71	377.90	833.33	750.00	1.20	1.00	39.43	315.48	315.48
Dsgn. L = 4.02 ft	1	0.294	0.175	220.71		220.71	833.33	750.00	1.66	1.00	55.14	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B8**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+0.90D+W+1.60H</b>														
Dsgn. L = 3.93 ft	1		0.092	0.056	69.16		69.16	833.33	750.00	1.69	1.00	17.73	315.48	315.48
Dsgn. L = 4.02 ft	1		0.160	0.055	120.05	69.16	120.05	833.33	750.00	1.20	1.00	17.46	315.48	315.48
Dsgn. L = 4.02 ft	1		0.201	0.039	150.60	120.05	150.60	833.33	750.00	1.09	1.00	12.43	315.48	315.48
Dsgn. L = 4.02 ft	1		0.214	0.023	160.82	150.60	160.82	833.33	750.00	1.03	1.00	7.40	315.48	315.48
Dsgn. L = 3.93 ft	1		0.214	0.008	160.82	150.95	160.82	833.33	750.00	1.02	1.00	2.64	315.48	315.48
Dsgn. L = 4.02 ft	1		0.201	0.024	150.95	120.97	150.95	833.33	750.00	1.09	1.00	7.67	315.48	315.48
Dsgn. L = 4.02 ft	1		0.161	0.040	120.97	70.65	120.97	833.33	750.00	1.20	1.00	12.70	315.48	315.48
Dsgn. L = 4.02 ft	1		0.094	0.056	70.65		70.65	833.33	750.00	1.66	1.00	17.73	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H</b>														
Dsgn. L = 3.93 ft	1		0.277	0.168	207.80		207.80	833.33	750.00	1.69	1.00	53.04	315.48	315.48
Dsgn. L = 4.02 ft	1		0.481	0.167	360.70	207.80	360.70	833.33	750.00	1.20	1.00	52.68	315.48	315.48
Dsgn. L = 4.02 ft	1		0.603	0.119	452.51	360.70	452.51	833.33	750.00	1.09	1.00	37.57	315.48	315.48
Dsgn. L = 4.02 ft	1		0.644	0.071	483.23	452.51	483.23	833.33	750.00	1.03	1.00	22.47	315.48	315.48
Dsgn. L = 3.93 ft	1		0.644	0.024	483.23	453.55	483.23	833.33	750.00	1.02	1.00	7.73	315.48	315.48
Dsgn. L = 4.02 ft	1		0.605	0.072	453.55	363.46	453.55	833.33	750.00	1.09	1.00	22.83	315.48	315.48
Dsgn. L = 4.02 ft	1		0.485	0.120	363.46	212.28	363.46	833.33	750.00	1.20	1.00	37.93	315.48	315.48
Dsgn. L = 4.02 ft	1		0.283	0.168	212.28		212.28	833.33	750.00	1.66	1.00	53.04	315.48	315.48
<b>+0.90D+E+0.90H</b>														
Dsgn. L = 3.93 ft	1		0.092	0.056	69.16		69.16	833.33	750.00	1.69	1.00	17.73	315.48	315.48
Dsgn. L = 4.02 ft	1		0.160	0.055	120.05	69.16	120.05	833.33	750.00	1.20	1.00	17.46	315.48	315.48
Dsgn. L = 4.02 ft	1		0.201	0.039	150.60	120.05	150.60	833.33	750.00	1.09	1.00	12.43	315.48	315.48
Dsgn. L = 4.02 ft	1		0.214	0.023	160.82	150.60	160.82	833.33	750.00	1.03	1.00	7.40	315.48	315.48
Dsgn. L = 3.93 ft	1		0.214	0.008	160.82	150.95	160.82	833.33	750.00	1.02	1.00	2.64	315.48	315.48
Dsgn. L = 4.02 ft	1		0.201	0.024	150.95	120.97	150.95	833.33	750.00	1.09	1.00	7.67	315.48	315.48
Dsgn. L = 4.02 ft	1		0.161	0.040	120.97	70.65	120.97	833.33	750.00	1.20	1.00	12.70	315.48	315.48
Dsgn. L = 4.02 ft	1		0.094	0.056	70.65		70.65	833.33	750.00	1.66	1.00	17.73	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	1.3055	16.091		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	60.976	60.976
Max Upward from Load Combinations	60.976	60.976
Max Upward from Load Cases	36.000	36.000
+D+H	24.976	24.976
+D+L+H	60.976	60.976
+D+Lr+H	24.976	24.976
+D+S+H	33.976	33.976
+D+0.750Lr+0.750L+H	51.976	51.976
+D+0.750L+0.750S+H	58.726	58.726
+D+0.60W+H	24.976	24.976
+D+0.750Lr+0.750L+0.450W+H	51.976	51.976
+D+0.750L+0.750S+0.450W+H	58.726	58.726
+0.60D+0.60W+0.60H	14.986	14.986
+D+0.70E+0.60H	24.976	24.976
+D+0.750L+0.750S+0.5250E+H	58.726	58.726
+0.60D+0.70E+H	14.986	14.986
D Only	24.976	24.976
L Only	36.000	36.000
S Only	9.000	9.000
H Only		

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B9**

**CODE REFERENCES**

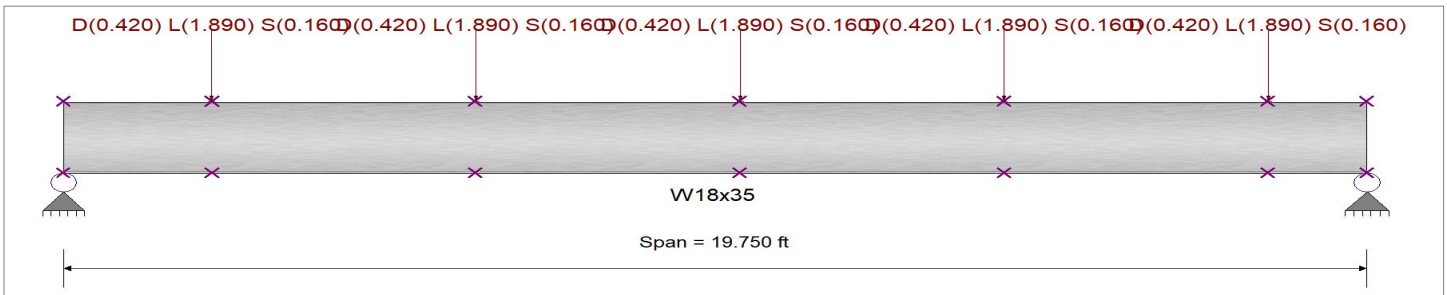
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 2.250 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 0.420, L = 1.890, S = 0.160 k, Starting at : 2.250 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.191</b> : 1	Maximum Shear Stress Ratio =	<b>0.061</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	47.650 k-ft	Vu : Applied	9.777 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	19.750 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.111 in Ratio = <b>2,125</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.144 in Ratio = <b>1641</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L = 2.20 ft	2.20 ft	1	0.016	0.012	4.06		4.06	277.08	249.38	1.68	1.00	1.90	159.30	159.30
Dsgn. L = 4.01 ft	4.01 ft	1	0.034	0.011	8.51	4.06	8.51	277.08	249.38	1.26	1.00	1.79	159.30	159.30
Dsgn. L = 4.01 ft	4.01 ft	1	0.039	0.006	9.82	8.51	9.82	277.08	249.38	1.05	1.00	1.01	159.30	159.30
Dsgn. L = 4.01 ft	4.01 ft	1	0.039	0.004	9.82	7.98	9.82	277.08	249.38	1.07	1.00	0.56	159.30	159.30
Dsgn. L = 4.01 ft	4.01 ft	1	0.032	0.008	7.98	2.99	7.98	277.08	249.38	1.31	1.00	1.35	159.30	159.30
Dsgn. L = 1.52 ft	1.52 ft	1	0.012	0.013	2.99		2.99	277.08	249.38	1.61	1.00	2.01	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L = 2.20 ft	2.20 ft	1	0.078	0.056	19.48		19.48	277.08	249.38	1.69	1.00	8.90	159.30	159.30
Dsgn. L = 4.01 ft	4.01 ft	1	0.162	0.055	40.47	19.48	40.47	277.08	249.38	1.26	1.00	8.81	159.30	159.30
Dsgn. L = 4.01 ft	4.01 ft	1	0.187	0.032	46.63	40.47	46.63	277.08	249.38	1.05	1.00	5.11	159.30	159.30
Dsgn. L = 4.01 ft	4.01 ft	1	0.187	0.014	46.64	37.95	46.64	277.08	249.38	1.08	1.00	2.28	159.30	159.30
Dsgn. L = 4.01 ft	4.01 ft	1	0.152	0.038	37.95	14.45	37.95	277.08	249.38	1.32	1.00	5.98	159.30	159.30
Dsgn. L = 1.52 ft	1.52 ft	1	0.058	0.060	14.45		14.45	277.08	249.38	1.62	1.00	9.57	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L = 2.20 ft	2.20 ft	1	0.080	0.057	19.91		19.91	277.08	249.38	1.69	1.00	9.09	159.30	159.30
Dsgn. L = 4.01 ft	4.01 ft	1	0.166	0.056	41.35	19.91	41.35	277.08	249.38	1.26	1.00	9.00	159.30	159.30
Dsgn. L = 4.01 ft	4.01 ft	1	0.191	0.033	47.64	41.35	47.64	277.08	249.38	1.05	1.00	5.22	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B9**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	1	0.191	0.015	47.65	38.78	47.65	277.08	249.38	1.08	1.00	2.33	159.30	159.30
Dsgn. L = 4.01 ft	1	0.155	0.038	38.78	14.76	38.78	277.08	249.38	1.32	1.00	6.11	159.30	159.30
Dsgn. L = 1.52 ft	1	0.059	0.061	14.76		14.76	277.08	249.38	1.62	1.00	9.78	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.054	0.039	13.48		13.48	277.08	249.38	1.69	1.00	6.17	159.30	159.30
Dsgn. L = 4.01 ft	1	0.112	0.038	28.03	13.48	28.03	277.08	249.38	1.26	1.00	6.08	159.30	159.30
Dsgn. L = 4.01 ft	1	0.130	0.022	32.30	28.03	32.30	277.08	249.38	1.05	1.00	3.52	159.30	159.30
Dsgn. L = 4.01 ft	1	0.130	0.010	32.30	26.29	32.30	277.08	249.38	1.08	1.00	1.61	159.30	159.30
Dsgn. L = 4.01 ft	1	0.105	0.026	26.29	9.99	26.29	277.08	249.38	1.32	1.00	4.17	159.30	159.30
Dsgn. L = 1.52 ft	1	0.040	0.042	9.99		9.99	277.08	249.38	1.62	1.00	6.63	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.014	0.010	3.48		3.48	277.08	249.38	1.68	1.00	1.63	159.30	159.30
Dsgn. L = 4.01 ft	1	0.029	0.010	7.29	3.48	7.29	277.08	249.38	1.26	1.00	1.53	159.30	159.30
Dsgn. L = 4.01 ft	1	0.034	0.005	8.41	7.29	8.41	277.08	249.38	1.05	1.00	0.86	159.30	159.30
Dsgn. L = 4.01 ft	1	0.034	0.003	8.42	6.84	8.42	277.08	249.38	1.07	1.00	0.48	159.30	159.30
Dsgn. L = 4.01 ft	1	0.027	0.007	6.84	2.56	6.84	277.08	249.38	1.31	1.00	1.15	159.30	159.30
Dsgn. L = 1.52 ft	1	0.010	0.011	2.56		2.56	277.08	249.38	1.61	1.00	1.72	159.30	159.30
<b>+1.20D+L+1.60S+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.059	0.043	14.84		14.84	277.08	249.38	1.69	1.00	6.79	159.30	159.30
Dsgn. L = 4.01 ft	1	0.124	0.042	30.84	14.84	30.84	277.08	249.38	1.26	1.00	6.70	159.30	159.30
Dsgn. L = 4.01 ft	1	0.142	0.024	35.53	30.84	35.53	277.08	249.38	1.05	1.00	3.88	159.30	159.30
Dsgn. L = 4.01 ft	1	0.143	0.011	35.54	28.92	35.54	277.08	249.38	1.08	1.00	1.76	159.30	159.30
Dsgn. L = 4.01 ft	1	0.116	0.029	28.92	11.00	28.92	277.08	249.38	1.32	1.00	4.58	159.30	159.30
Dsgn. L = 1.52 ft	1	0.044	0.046	11.00		11.00	277.08	249.38	1.62	1.00	7.29	159.30	159.30
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.019	0.014	4.83		4.83	277.08	249.38	1.69	1.00	2.24	159.30	159.30
Dsgn. L = 4.01 ft	1	0.041	0.013	10.10	4.83	10.10	277.08	249.38	1.26	1.00	2.15	159.30	159.30
Dsgn. L = 4.01 ft	1	0.047	0.008	11.65	10.10	11.65	277.08	249.38	1.05	1.00	1.22	159.30	159.30
Dsgn. L = 4.01 ft	1	0.047	0.004	11.65	9.47	11.65	277.08	249.38	1.07	1.00	0.63	159.30	159.30
Dsgn. L = 4.01 ft	1	0.038	0.010	9.47	3.57	9.47	277.08	249.38	1.31	1.00	1.56	159.30	159.30
Dsgn. L = 1.52 ft	1	0.014	0.015	3.57		3.57	277.08	249.38	1.62	1.00	2.39	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.054	0.039	13.48		13.48	277.08	249.38	1.69	1.00	6.17	159.30	159.30
Dsgn. L = 4.01 ft	1	0.112	0.038	28.03	13.48	28.03	277.08	249.38	1.26	1.00	6.08	159.30	159.30
Dsgn. L = 4.01 ft	1	0.130	0.022	32.30	28.03	32.30	277.08	249.38	1.05	1.00	3.52	159.30	159.30
Dsgn. L = 4.01 ft	1	0.130	0.010	32.30	26.29	32.30	277.08	249.38	1.08	1.00	1.61	159.30	159.30
Dsgn. L = 4.01 ft	1	0.105	0.026	26.29	9.99	26.29	277.08	249.38	1.32	1.00	4.17	159.30	159.30
Dsgn. L = 1.52 ft	1	0.040	0.042	9.99		9.99	277.08	249.38	1.62	1.00	6.63	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.056	0.040	13.91		13.91	277.08	249.38	1.69	1.00	6.36	159.30	159.30
Dsgn. L = 4.01 ft	1	0.116	0.039	28.91	13.91	28.91	277.08	249.38	1.26	1.00	6.27	159.30	159.30
Dsgn. L = 4.01 ft	1	0.134	0.023	33.31	28.91	33.31	277.08	249.38	1.05	1.00	3.63	159.30	159.30
Dsgn. L = 4.01 ft	1	0.134	0.010	33.32	27.11	33.32	277.08	249.38	1.08	1.00	1.65	159.30	159.30
Dsgn. L = 4.01 ft	1	0.109	0.027	27.11	10.31	27.11	277.08	249.38	1.32	1.00	4.30	159.30	159.30
Dsgn. L = 1.52 ft	1	0.041	0.043	10.31		10.31	277.08	249.38	1.62	1.00	6.83	159.30	159.30
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.010	0.008	2.61		2.61	277.08	249.38	1.68	1.00	1.22	159.30	159.30
Dsgn. L = 4.01 ft	1	0.022	0.007	5.47	2.61	5.47	277.08	249.38	1.26	1.00	1.15	159.30	159.30
Dsgn. L = 4.01 ft	1	0.025	0.004	6.31	5.47	6.31	277.08	249.38	1.05	1.00	0.65	159.30	159.30
Dsgn. L = 4.01 ft	1	0.025	0.002	6.31	5.13	6.31	277.08	249.38	1.07	1.00	0.36	159.30	159.30
Dsgn. L = 4.01 ft	1	0.021	0.005	5.13	1.92	5.13	277.08	249.38	1.31	1.00	0.87	159.30	159.30
Dsgn. L = 1.52 ft	1	0.008	0.008	1.92		1.92	277.08	249.38	1.61	1.00	1.29	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.055	0.039	13.65		13.65	277.08	249.38	1.69	1.00	6.25	159.30	159.30
Dsgn. L = 4.01 ft	1	0.114	0.039	28.38	13.65	28.38	277.08	249.38	1.26	1.00	6.16	159.30	159.30
Dsgn. L = 4.01 ft	1	0.131	0.022	32.70	28.38	32.70	277.08	249.38	1.05	1.00	3.56	159.30	159.30
Dsgn. L = 4.01 ft	1	0.131	0.010	32.71	26.61	32.71	277.08	249.38	1.08	1.00	1.63	159.30	159.30
Dsgn. L = 4.01 ft	1	0.107	0.026	26.61	10.12	26.61	277.08	249.38	1.32	1.00	4.22	159.30	159.30
Dsgn. L = 1.52 ft	1	0.041	0.042	10.12		10.12	277.08	249.38	1.62	1.00	6.71	159.30	159.30
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 2.20 ft	1	0.010	0.008	2.61		2.61	277.08	249.38	1.68	1.00	1.22	159.30	159.30
Dsgn. L = 4.01 ft	1	0.022	0.007	5.47	2.61	5.47	277.08	249.38	1.26	1.00	1.15	159.30	159.30
Dsgn. L = 4.01 ft	1	0.025	0.004	6.31	5.47	6.31	277.08	249.38	1.05	1.00	0.65	159.30	159.30





Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B9**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	1	0.025	0.002	6.31	5.13	6.31	277.08	249.38	1.07	1.00	0.36	159.30	159.30
Dsgn. L = 4.01 ft	1	0.021	0.005	5.13	1.92	5.13	277.08	249.38	1.31	1.00	0.87	159.30	159.30
Dsgn. L = 1.52 ft	1	0.008	0.008	1.92		1.92	277.08	249.38	1.61	1.00	1.29	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.1444	9.931		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	5.901	6.340
Max Upward from Load Combinations	5.901	6.340
Max Upward from Load Cases	4.546	4.904
+D+H	1.356	1.435
+D+L+H	5.901	6.340
+D+Lr+H	1.356	1.435
+D+S+H	1.741	1.851
+D+0.750Lr+0.750L+H	4.765	5.114
+D+0.750L+0.750S+H	5.054	5.425
+D+0.60W+H	1.356	1.435
+D+0.750Lr+0.750L+0.450W+H	4.765	5.114
+D+0.750L+0.750S+0.450W+H	5.054	5.425
+0.60D+0.60W+0.60H	0.813	0.861
+D+0.70E+0.60H	1.356	1.435
+D+0.750L+0.750S+0.5250E+H	5.054	5.425
+0.60D+0.70E+H	0.813	0.861
D Only	1.356	1.435
L Only	4.546	4.904
S Only	0.385	0.415
H Only		



## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **B10**

## CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

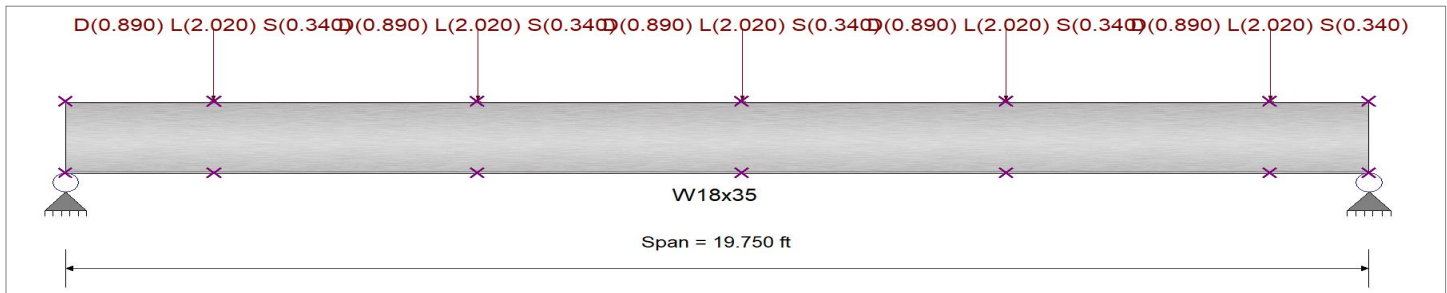
## Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

## Unbraced Lengths

First Brace starts at 2.250 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



## Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 0.890, L = 2.020, S = 0.340 k, Starting at : 2.250 ft and placed every 4.0 ft thereafter

## DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.235</b> : 1	Maximum Shear Stress Ratio =	<b>0.075</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	58.545 k-ft	Vu : Applied	12.014 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	19.750 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.119 in Ratio = <b>1,988</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.180 in Ratio = <b>1318</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

## Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	2.20 ft	1	0.030	0.022	7.54		7.54	277.08	249.38	1.69	1.00	3.48	159.30	159.30
Dsgn. L =	4.01 ft	1	0.063	0.021	15.73	7.54	15.73	277.08	249.38	1.26	1.00	3.37	159.30	159.30
Dsgn. L =	4.01 ft	1	0.073	0.012	18.13	15.73	18.13	277.08	249.38	1.05	1.00	1.93	159.30	159.30
Dsgn. L =	4.01 ft	1	0.073	0.006	18.13	14.75	18.13	277.08	249.38	1.07	1.00	0.95	159.30	159.30
Dsgn. L =	4.01 ft	1	0.059	0.015	14.75	5.58	14.75	277.08	249.38	1.32	1.00	2.40	159.30	159.30
Dsgn. L =	1.52 ft	1	0.022	0.023	5.58		5.58	277.08	249.38	1.62	1.00	3.72	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	2.20 ft	1	0.095	0.068	23.57		23.57	277.08	249.38	1.69	1.00	10.76	159.30	159.30
Dsgn. L =	4.01 ft	1	0.196	0.067	48.94	23.57	48.94	277.08	249.38	1.26	1.00	10.66	159.30	159.30
Dsgn. L =	4.01 ft	1	0.226	0.039	56.39	48.94	56.39	277.08	249.38	1.05	1.00	6.20	159.30	159.30
Dsgn. L =	4.01 ft	1	0.226	0.017	56.40	45.90	56.40	277.08	249.38	1.08	1.00	2.74	159.30	159.30
Dsgn. L =	4.01 ft	1	0.184	0.045	45.90	17.48	45.90	277.08	249.38	1.32	1.00	7.21	159.30	159.30
Dsgn. L =	1.52 ft	1	0.070	0.073	17.48		17.48	277.08	249.38	1.62	1.00	11.57	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L =	2.20 ft	1	0.098	0.070	24.47		24.47	277.08	249.38	1.69	1.00	11.17	159.30	159.30
Dsgn. L =	4.01 ft	1	0.204	0.070	50.81	24.47	50.81	277.08	249.38	1.26	1.00	11.07	159.30	159.30
Dsgn. L =	4.01 ft	1	0.235	0.040	58.53	50.81	58.53	277.08	249.38	1.05	1.00	6.43	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B10**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	1	0.235	0.018	58.55	47.65	58.55	277.08	249.38	1.08	1.00	2.84	159.30	159.30
Dsgn. L = 4.01 ft	1	0.191	0.047	47.65	18.15	47.65	277.08	249.38	1.32	1.00	7.48	159.30	159.30
Dsgn. L = 1.52 ft	1	0.073	0.075	18.15		18.15	277.08	249.38	1.62	1.00	12.01	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.069	0.049	17.16		17.16	277.08	249.38	1.69	1.00	7.84	159.30	159.30
Dsgn. L = 4.01 ft	1	0.143	0.049	35.65	17.16	35.65	277.08	249.38	1.26	1.00	7.75	159.30	159.30
Dsgn. L = 4.01 ft	1	0.165	0.028	41.07	35.65	41.07	277.08	249.38	1.05	1.00	4.49	159.30	159.30
Dsgn. L = 4.01 ft	1	0.165	0.013	41.08	33.43	41.08	277.08	249.38	1.08	1.00	2.02	159.30	159.30
Dsgn. L = 4.01 ft	1	0.134	0.033	33.43	12.72	33.43	277.08	249.38	1.32	1.00	5.28	159.30	159.30
Dsgn. L = 1.52 ft	1	0.051	0.053	12.72		12.72	277.08	249.38	1.62	1.00	8.43	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.026	0.019	6.46		6.46	277.08	249.38	1.69	1.00	2.98	159.30	159.30
Dsgn. L = 4.01 ft	1	0.054	0.018	13.48	6.46	13.48	277.08	249.38	1.26	1.00	2.89	159.30	159.30
Dsgn. L = 4.01 ft	1	0.062	0.010	15.54	13.48	15.54	277.08	249.38	1.05	1.00	1.65	159.30	159.30
Dsgn. L = 4.01 ft	1	0.062	0.005	15.54	12.64	15.54	277.08	249.38	1.07	1.00	0.82	159.30	159.30
Dsgn. L = 4.01 ft	1	0.051	0.013	12.64	4.78	12.64	277.08	249.38	1.32	1.00	2.05	159.30	159.30
Dsgn. L = 1.52 ft	1	0.019	0.020	4.78		4.78	277.08	249.38	1.62	1.00	3.19	159.30	159.30
<b>+1.20D+L+1.60S+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.080	0.057	20.03		20.03	277.08	249.38	1.69	1.00	9.15	159.30	159.30
Dsgn. L = 4.01 ft	1	0.167	0.057	41.61	20.03	41.61	277.08	249.38	1.26	1.00	9.06	159.30	159.30
Dsgn. L = 4.01 ft	1	0.192	0.033	47.94	41.61	47.94	277.08	249.38	1.05	1.00	5.26	159.30	159.30
Dsgn. L = 4.01 ft	1	0.192	0.015	47.95	39.02	47.95	277.08	249.38	1.08	1.00	2.34	159.30	159.30
Dsgn. L = 4.01 ft	1	0.156	0.039	39.02	14.86	39.02	277.08	249.38	1.32	1.00	6.14	159.30	159.30
Dsgn. L = 1.52 ft	1	0.060	0.062	14.86		14.86	277.08	249.38	1.62	1.00	9.84	159.30	159.30
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.037	0.027	9.34		9.34	277.08	249.38	1.69	1.00	4.29	159.30	159.30
Dsgn. L = 4.01 ft	1	0.078	0.026	19.45	9.34	19.45	277.08	249.38	1.26	1.00	4.20	159.30	159.30
Dsgn. L = 4.01 ft	1	0.090	0.015	22.42	19.45	22.42	277.08	249.38	1.05	1.00	2.42	159.30	159.30
Dsgn. L = 4.01 ft	1	0.090	0.007	22.42	18.24	22.42	277.08	249.38	1.08	1.00	1.14	159.30	159.30
Dsgn. L = 4.01 ft	1	0.073	0.018	18.24	6.92	18.24	277.08	249.38	1.32	1.00	2.92	159.30	159.30
Dsgn. L = 1.52 ft	1	0.028	0.029	6.92		6.92	277.08	249.38	1.62	1.00	4.60	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.069	0.049	17.16		17.16	277.08	249.38	1.69	1.00	7.84	159.30	159.30
Dsgn. L = 4.01 ft	1	0.143	0.049	35.65	17.16	35.65	277.08	249.38	1.26	1.00	7.75	159.30	159.30
Dsgn. L = 4.01 ft	1	0.165	0.028	41.07	35.65	41.07	277.08	249.38	1.05	1.00	4.49	159.30	159.30
Dsgn. L = 4.01 ft	1	0.165	0.013	41.08	33.43	41.08	277.08	249.38	1.08	1.00	2.02	159.30	159.30
Dsgn. L = 4.01 ft	1	0.134	0.033	33.43	12.72	33.43	277.08	249.38	1.32	1.00	5.28	159.30	159.30
Dsgn. L = 1.52 ft	1	0.051	0.053	12.72		12.72	277.08	249.38	1.62	1.00	8.43	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.072	0.052	18.06		18.06	277.08	249.38	1.69	1.00	8.25	159.30	159.30
Dsgn. L = 4.01 ft	1	0.150	0.051	37.51	18.06	37.51	277.08	249.38	1.26	1.00	8.16	159.30	159.30
Dsgn. L = 4.01 ft	1	0.173	0.030	43.22	37.51	43.22	277.08	249.38	1.05	1.00	4.73	159.30	159.30
Dsgn. L = 4.01 ft	1	0.173	0.013	43.23	35.18	43.23	277.08	249.38	1.08	1.00	2.12	159.30	159.30
Dsgn. L = 4.01 ft	1	0.141	0.035	35.18	13.39	35.18	277.08	249.38	1.32	1.00	5.55	159.30	159.30
Dsgn. L = 1.52 ft	1	0.054	0.056	13.39		13.39	277.08	249.38	1.62	1.00	8.87	159.30	159.30
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.019	0.014	4.85		4.85	277.08	249.38	1.69	1.00	2.24	159.30	159.30
Dsgn. L = 4.01 ft	1	0.041	0.014	10.11	4.85	10.11	277.08	249.38	1.26	1.00	2.17	159.30	159.30
Dsgn. L = 4.01 ft	1	0.047	0.008	11.66	10.11	11.66	277.08	249.38	1.05	1.00	1.24	159.30	159.30
Dsgn. L = 4.01 ft	1	0.047	0.004	11.66	9.48	11.66	277.08	249.38	1.07	1.00	0.61	159.30	159.30
Dsgn. L = 4.01 ft	1	0.038	0.010	9.48	3.59	9.48	277.08	249.38	1.32	1.00	1.54	159.30	159.30
Dsgn. L = 1.52 ft	1	0.014	0.015	3.59		3.59	277.08	249.38	1.62	1.00	2.39	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H</b>													
Dsgn. L = 2.20 ft	1	0.070	0.050	17.52		17.52	277.08	249.38	1.69	1.00	8.01	159.30	159.30
Dsgn. L = 4.01 ft	1	0.146	0.050	36.39	17.52	36.39	277.08	249.38	1.26	1.00	7.91	159.30	159.30
Dsgn. L = 4.01 ft	1	0.168	0.029	41.93	36.39	41.93	277.08	249.38	1.05	1.00	4.59	159.30	159.30
Dsgn. L = 4.01 ft	1	0.168	0.013	41.94	34.13	41.94	277.08	249.38	1.08	1.00	2.06	159.30	159.30
Dsgn. L = 4.01 ft	1	0.137	0.034	34.13	12.99	34.13	277.08	249.38	1.32	1.00	5.38	159.30	159.30
Dsgn. L = 1.52 ft	1	0.052	0.054	12.99		12.99	277.08	249.38	1.62	1.00	8.60	159.30	159.30
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 2.20 ft	1	0.019	0.014	4.85		4.85	277.08	249.38	1.69	1.00	2.24	159.30	159.30
Dsgn. L = 4.01 ft	1	0.041	0.014	10.11	4.85	10.11	277.08	249.38	1.26	1.00	2.17	159.30	159.30
Dsgn. L = 4.01 ft	1	0.047	0.008	11.66	10.11	11.66	277.08	249.38	1.05	1.00	1.24	159.30	159.30



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B10**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	4.01 ft	1	0.047	0.004	11.66	9.48	11.66	277.08	249.38	1.07	1.00	0.61	159.30	159.30
Dsgn. L =	4.01 ft	1	0.038	0.010	9.48	3.59	9.48	277.08	249.38	1.32	1.00	1.54	159.30	159.30
Dsgn. L =	1.52 ft	1	0.014	0.015	3.59		3.59	277.08	249.38	1.62	1.00	2.39	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.1798	9.931		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	7.344	7.897		
Max Upward from Load Combinations	7.344	7.897		
Max Upward from Load Cases	4.858	5.242		
+D+H	2.486	2.655		
+D+L+H	7.344	7.897		
+D+Lr+H	2.486	2.655		
+D+S+H	3.304	3.537		
+D+0.750Lr+0.750L+H	6.130	6.586		
+D+0.750L+0.750S+H	6.743	7.248		
+D+0.60W+H	2.486	2.655		
+D+0.750Lr+0.750L+0.450W+H	6.130	6.586		
+D+0.750L+0.750S+0.450W+H	6.743	7.248		
+0.60D+0.60W+0.60H	1.492	1.593		
+D+0.70E+0.60H	2.486	2.655		
+D+0.750L+0.750S+0.5250E+H	6.743	7.248		
+0.60D+0.70E+H	1.492	1.593		
D Only	2.486	2.655		
L Only	4.858	5.242		
S Only	0.818	0.882		
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **B11**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

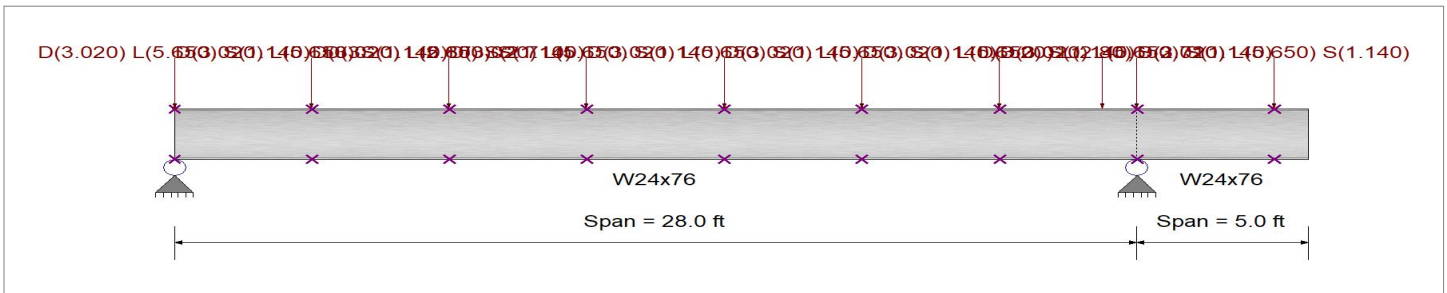
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 3.020, L = 5.650, S = 1.140 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : D = 3.20, L = 2.80, S = 2.710 k @ 8.0 ft, (J6.1 Reaction)

Point Load : D = 3.20, L = 2.80, S = 2.710 k @ 27.0 ft, (J6.1 Reaction)

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.489</b> : 1	Maximum Shear Stress Ratio =	<b>0.174</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	366.902 k-ft	Vu : Applied	55.004 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	+1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	28.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.349 in Ratio = <b>961</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.197 in Ratio = <b>610</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.555 in Ratio = <b>606</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.302 in Ratio = <b>397</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
<b>+1.40D+1.60H</b>															
Dsgn. L =	3.92 ft	1	0.087	0.054	65.36		65.36	65.36	833.33	750.00	1.69	1.00	16.88	315.48	315.48
Dsgn. L =	4.03 ft	1	0.152	0.052	114.17	65.36	114.17	833.33	750.00	1.20	1.00	16.47	315.48	315.48	
Dsgn. L =	4.03 ft	1	0.168	0.037	126.23	114.17	126.23	833.33	750.00	1.04	1.00	11.81	315.48	315.48	
Dsgn. L =	3.92 ft	1	0.168	0.008	126.23	119.37	126.23	833.33	750.00	1.02	1.00	2.67	315.48	315.48	
Dsgn. L =	4.03 ft	1	0.159	0.021	119.37	93.91	119.37	833.33	750.00	1.09	1.00	6.63	315.48	315.48	
Dsgn. L =	4.03 ft	1	0.125	0.036	93.91	49.53	93.91	833.33	750.00	1.23	1.00	11.29	315.48	315.48	
Dsgn. L =	4.03 ft	1	0.066	0.065	49.53	-18.24	49.53	833.33	750.00	2.03	1.00	20.43	315.48	315.48	
Dsgn. L =	4.00 ft	2	0.024	0.015	-0.00	-18.24	18.24	833.33	750.00	1.00	1.00	4.76	315.48	315.48	
Dsgn. L =	1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.11	315.48	315.48	
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>															
Dsgn. L =	3.92 ft	1	0.068	0.042	50.96		50.96	833.33	750.00	1.69	1.00	13.18	315.48	315.48	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B11**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.03 ft	1	0.117	0.041	87.59	50.96	87.59	833.33	750.00	1.20	1.00	12.82	315.48	315.48
Dsgn. L = 4.03 ft	1	0.124	0.028	92.72	87.59	92.72	833.33	750.00	1.02	1.00	8.83	315.48	315.48
Dsgn. L = 3.92 ft	1	0.124	0.009	92.72	81.78	92.72	833.33	750.00	1.05	1.00	2.98	315.48	315.48
Dsgn. L = 4.03 ft	1	0.109	0.022	81.78	54.75	81.78	833.33	750.00	1.15	1.00	6.98	315.48	315.48
Dsgn. L = 4.03 ft	1	0.073	0.035	54.75	11.50	54.75	833.33	750.00	1.45	1.00	10.97	315.48	315.48
Dsgn. L = 4.03 ft	1	0.069	0.060	11.50	-51.80	51.80	833.33	750.00	2.09	1.00	18.80	315.48	315.48
Dsgn. L = 4.00 ft	2	0.069	0.042	-0.00	-51.80	51.80	833.33	750.00	1.00	1.00	13.12	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 3.92 ft	1	0.234	0.142	175.50		175.50	833.33	750.00	1.70	1.00	44.95	315.48	315.48
Dsgn. L = 4.03 ft	1	0.406	0.141	304.51	175.50	304.51	833.33	750.00	1.20	1.00	44.59	315.48	315.48
Dsgn. L = 4.03 ft	1	0.463	0.100	347.43	304.51	347.43	833.33	750.00	1.05	1.00	31.56	315.48	315.48
Dsgn. L = 3.92 ft	1	0.463	0.032	347.43	337.31	347.43	833.33	750.00	1.01	1.00	10.21	315.48	315.48
Dsgn. L = 4.03 ft	1	0.450	0.050	337.31	275.38	337.31	833.33	750.00	1.08	1.00	15.84	315.48	315.48
Dsgn. L = 4.03 ft	1	0.367	0.092	275.38	160.51	275.38	833.33	750.00	1.20	1.00	28.88	315.48	315.48
Dsgn. L = 4.03 ft	1	0.214	0.159	160.51	-15.64	160.51	833.33	750.00	1.71	1.00	50.23	315.48	315.48
Dsgn. L = 4.00 ft	2	0.021	0.013	-0.00	-15.64	15.64	833.33	750.00	1.00	1.00	4.08	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 3.92 ft	1	0.227	0.138	170.44		170.44	833.33	750.00	1.70	1.00	43.66	315.48	315.48
Dsgn. L = 4.03 ft	1	0.392	0.137	294.24	170.44	294.24	833.33	750.00	1.20	1.00	43.30	315.48	315.48
Dsgn. L = 4.03 ft	1	0.443	0.096	331.95	294.24	331.95	833.33	750.00	1.05	1.00	30.27	315.48	315.48
Dsgn. L = 3.92 ft	1	0.443	0.028	331.95	316.77	331.95	833.33	750.00	1.02	1.00	8.92	315.48	315.48
Dsgn. L = 4.03 ft	1	0.422	0.054	316.77	249.64	316.77	833.33	750.00	1.09	1.00	17.14	315.48	315.48
Dsgn. L = 4.03 ft	1	0.333	0.096	249.64	129.55	249.64	833.33	750.00	1.24	1.00	30.17	315.48	315.48
Dsgn. L = 4.03 ft	1	0.173	0.163	129.55	-51.80	129.55	833.33	750.00	2.14	1.00	51.52	315.48	315.48
Dsgn. L = 4.00 ft	2	0.069	0.042	-0.00	-51.80	51.80	833.33	750.00	1.00	1.00	13.12	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 3.92 ft	1	0.082	0.050	61.33		61.33	833.33	750.00	1.69	1.00	15.82	315.48	315.48
Dsgn. L = 4.03 ft	1	0.142	0.049	106.37	61.33	106.37	833.33	750.00	1.20	1.00	15.47	315.48	315.48
Dsgn. L = 4.03 ft	1	0.150	0.035	112.19	106.37	112.19	833.33	750.00	1.02	1.00	10.90	315.48	315.48
Dsgn. L = 3.92 ft	1	0.150	0.011	112.19	99.62	112.19	833.33	750.00	1.04	1.00	3.40	315.48	315.48
Dsgn. L = 4.03 ft	1	0.133	0.025	99.62	68.65	99.62	833.33	750.00	1.14	1.00	7.97	315.48	315.48
Dsgn. L = 4.03 ft	1	0.092	0.040	68.65	19.15	68.65	833.33	750.00	1.40	1.00	12.53	315.48	315.48
Dsgn. L = 4.03 ft	1	0.072	0.071	19.15	-54.08	54.08	833.33	750.00	2.28	1.00	22.28	315.48	315.48
Dsgn. L = 4.00 ft	2	0.072	0.043	-0.00	-54.08	54.08	833.33	750.00	1.00	1.00	13.69	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 3.92 ft	1	0.248	0.151	185.87		185.87	833.33	750.00	1.70	1.00	47.60	315.48	315.48
Dsgn. L = 4.03 ft	1	0.431	0.150	323.29	185.87	323.29	833.33	750.00	1.20	1.00	47.24	315.48	315.48
Dsgn. L = 4.03 ft	1	0.489	0.107	366.90	323.29	366.90	833.33	750.00	1.05	1.00	33.64	315.48	315.48
Dsgn. L = 3.92 ft	1	0.489	0.033	366.90	355.14	366.90	833.33	750.00	1.01	1.00	10.36	315.48	315.48
Dsgn. L = 4.03 ft	1	0.474	0.053	355.14	289.28	355.14	833.33	750.00	1.08	1.00	16.83	315.48	315.48
Dsgn. L = 4.03 ft	1	0.386	0.096	289.28	168.15	289.28	833.33	750.00	1.20	1.00	30.44	315.48	315.48
Dsgn. L = 4.03 ft	1	0.224	0.170	168.15	-17.92	168.15	833.33	750.00	1.72	1.00	53.71	315.48	315.48
Dsgn. L = 4.00 ft	2	0.024	0.015	-0.00	-17.92	17.92	833.33	750.00	1.00	1.00	4.65	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 3.92 ft	1	0.241	0.147	180.81		180.81	833.33	750.00	1.70	1.00	46.30	315.48	315.48
Dsgn. L = 4.03 ft	1	0.417	0.146	313.02	180.81	313.02	833.33	750.00	1.20	1.00	45.95	315.48	315.48
Dsgn. L = 4.03 ft	1	0.469	0.103	351.43	313.02	351.43	833.33	750.00	1.04	1.00	32.34	315.48	315.48
Dsgn. L = 3.92 ft	1	0.469	0.029	351.43	334.61	351.43	833.33	750.00	1.02	1.00	9.07	315.48	315.48
Dsgn. L = 4.03 ft	1	0.446	0.057	334.61	263.54	334.61	833.33	750.00	1.09	1.00	18.13	315.48	315.48
Dsgn. L = 4.03 ft	1	0.351	0.101	263.54	137.20	263.54	833.33	750.00	1.24	1.00	31.73	315.48	315.48
Dsgn. L = 4.03 ft	1	0.183	0.174	137.20	-54.08	137.20	833.33	750.00	2.12	1.00	55.00	315.48	315.48
Dsgn. L = 4.00 ft	2	0.072	0.043	-0.00	-54.08	54.08	833.33	750.00	1.00	1.00	13.69	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.92 ft	1	0.070	0.043	52.86		52.86	833.33	750.00	1.69	1.00	13.66	315.48	315.48
Dsgn. L = 4.03 ft	1	0.122	0.042	91.44	52.86	91.44	833.33	750.00	1.20	1.00	13.31	315.48	315.48
Dsgn. L = 4.03 ft	1	0.131	0.030	98.52	91.44	98.52	833.33	750.00	1.03	1.00	9.31	315.48	315.48
Dsgn. L = 3.92 ft	1	0.131	0.008	98.52	89.48	98.52	833.33	750.00	1.04	1.00	2.50	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B11**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.03 ft	1	0.119	0.021	89.48	64.40	89.48	833.33	750.00	1.12	1.00	6.49	315.48	315.48
Dsgn. L = 4.03 ft	1	0.086	0.033	64.40	23.11	64.40	833.33	750.00	1.34	1.00	10.48	315.48	315.48
Dsgn. L = 4.03 ft	1	0.051	0.058	23.11	-38.24	38.24	833.33	750.00	2.35	1.00	18.31	315.48	315.48
Dsgn. L = 4.00 ft	2	0.051	0.031	-0.00	-38.24	38.24	833.33	750.00	1.00	1.00	9.73	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.92 ft	1	0.174	0.106	130.70		130.70	833.33	750.00	1.70	1.00	33.52	315.48	315.48
Dsgn. L = 4.03 ft	1	0.303	0.105	227.02	130.70	227.02	833.33	750.00	1.20	1.00	33.16	315.48	315.48
Dsgn. L = 4.03 ft	1	0.344	0.075	257.71	227.02	257.71	833.33	750.00	1.05	1.00	23.52	315.48	315.48
Dsgn. L = 3.92 ft	1	0.344	0.023	257.71	249.19	257.71	833.33	750.00	1.01	1.00	7.24	315.48	315.48
Dsgn. L = 4.03 ft	1	0.332	0.038	249.19	202.30	249.19	833.33	750.00	1.08	1.00	12.03	315.48	315.48
Dsgn. L = 4.03 ft	1	0.270	0.069	202.30	116.24	202.30	833.33	750.00	1.20	1.00	21.68	315.48	315.48
Dsgn. L = 4.03 ft	1	0.155	0.120	116.24	-15.64	116.24	833.33	750.00	1.75	1.00	37.96	315.48	315.48
Dsgn. L = 4.00 ft	2	0.021	0.013	-0.00	-15.64	15.64	833.33	750.00	1.00	1.00	4.08	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.92 ft	1	0.170	0.104	127.54		127.54	833.33	750.00	1.70	1.00	32.71	315.48	315.48
Dsgn. L = 4.03 ft	1	0.294	0.103	220.60	127.54	220.60	833.33	750.00	1.20	1.00	32.36	315.48	315.48
Dsgn. L = 4.03 ft	1	0.331	0.072	248.04	220.60	248.04	833.33	750.00	1.04	1.00	22.71	315.48	315.48
Dsgn. L = 3.92 ft	1	0.331	0.020	248.04	236.35	248.04	833.33	750.00	1.02	1.00	6.43	315.48	315.48
Dsgn. L = 4.03 ft	1	0.315	0.041	236.35	186.21	236.35	833.33	750.00	1.09	1.00	12.84	315.48	315.48
Dsgn. L = 4.03 ft	1	0.248	0.071	186.21	96.89	186.21	833.33	750.00	1.23	1.00	22.48	315.48	315.48
Dsgn. L = 4.03 ft	1	0.129	0.123	96.89	-38.24	96.89	833.33	750.00	2.12	1.00	38.76	315.48	315.48
Dsgn. L = 4.00 ft	2	0.051	0.031	-0.00	-38.24	38.24	833.33	750.00	1.00	1.00	9.73	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.92 ft	1	0.075	0.046	56.02		56.02	833.33	750.00	1.69	1.00	14.47	315.48	315.48
Dsgn. L = 4.03 ft	1	0.130	0.045	97.86	56.02	97.86	833.33	750.00	1.20	1.00	14.11	315.48	315.48
Dsgn. L = 4.03 ft	1	0.144	0.032	108.19	97.86	108.19	833.33	750.00	1.04	1.00	10.12	315.48	315.48
Dsgn. L = 3.92 ft	1	0.144	0.007	108.19	102.32	108.19	833.33	750.00	1.02	1.00	2.29	315.48	315.48
Dsgn. L = 4.03 ft	1	0.136	0.018	102.32	80.49	102.32	833.33	750.00	1.09	1.00	5.68	315.48	315.48
Dsgn. L = 4.03 ft	1	0.107	0.031	80.49	42.45	80.49	833.33	750.00	1.23	1.00	9.68	315.48	315.48
Dsgn. L = 4.03 ft	1	0.057	0.055	42.45	-15.64	42.45	833.33	750.00	2.03	1.00	17.51	315.48	315.48
Dsgn. L = 4.00 ft	2	0.021	0.013	-0.00	-15.64	15.64	833.33	750.00	1.00	1.00	4.08	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.92 ft	1	0.075	0.046	56.02		56.02	833.33	750.00	1.69	1.00	14.47	315.48	315.48
Dsgn. L = 4.03 ft	1	0.130	0.045	97.86	56.02	97.86	833.33	750.00	1.20	1.00	14.11	315.48	315.48
Dsgn. L = 4.03 ft	1	0.144	0.032	108.19	97.86	108.19	833.33	750.00	1.04	1.00	10.12	315.48	315.48
Dsgn. L = 3.92 ft	1	0.144	0.007	108.19	102.32	108.19	833.33	750.00	1.02	1.00	2.29	315.48	315.48
Dsgn. L = 4.03 ft	1	0.136	0.018	102.32	80.49	102.32	833.33	750.00	1.09	1.00	5.68	315.48	315.48
Dsgn. L = 4.03 ft	1	0.107	0.031	80.49	42.45	80.49	833.33	750.00	1.23	1.00	9.68	315.48	315.48
Dsgn. L = 4.03 ft	1	0.057	0.055	42.45	-15.64	42.45	833.33	750.00	2.03	1.00	17.51	315.48	315.48
Dsgn. L = 4.00 ft	2	0.021	0.013	-0.00	-15.64	15.64	833.33	750.00	1.00	1.00	4.08	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.92 ft	1	0.075	0.046	56.02		56.02	833.33	750.00	1.69	1.00	14.47	315.48	315.48
Dsgn. L = 4.03 ft	1	0.130	0.045	97.86	56.02	97.86	833.33	750.00	1.20	1.00	14.11	315.48	315.48
Dsgn. L = 4.03 ft	1	0.144	0.032	108.19	97.86	108.19	833.33	750.00	1.04	1.00	10.12	315.48	315.48
Dsgn. L = 3.92 ft	1	0.144	0.007	108.19	102.32	108.19	833.33	750.00	1.02	1.00	2.29	315.48	315.48
Dsgn. L = 4.03 ft	1	0.136	0.018	102.32	80.49	102.32	833.33	750.00	1.09	1.00	5.68	315.48	315.48
Dsgn. L = 4.03 ft	1	0.107	0.031	80.49	42.45	80.49	833.33	750.00	1.23	1.00	9.68	315.48	315.48
Dsgn. L = 4.03 ft	1	0.057	0.055	42.45	-15.64	42.45	833.33	750.00	2.03	1.00	17.51	315.48	315.48
Dsgn. L = 4.00 ft	2	0.021	0.013	-0.00	-15.64	15.64	833.33	750.00	1.00	1.00	4.08	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.92 ft	1	0.115	0.070	86.04		86.04	833.33	750.00	1.70	1.00	22.13	315.48	315.48
Dsgn. L = 4.03 ft	1	0.202	0.069	151.54	86.04	151.54	833.33	750.00	1.21	1.00	21.77	315.48	315.48
Dsgn. L = 4.03 ft	1	0.214	0.051	160.84	151.54	160.84	833.33	750.00	1.02	1.00	15.95	315.48	315.48
Dsgn. L = 3.92 ft	1	0.214	0.012	160.84	146.56	160.84	833.33	750.00	1.04	1.00	3.84	315.48	315.48
Dsgn. L = 4.03 ft	1	0.195	0.031	146.56	108.88	146.56	833.33	750.00	1.11	1.00	9.66	315.48	315.48
Dsgn. L = 4.03 ft	1	0.145	0.049	108.88	47.57	108.88	833.33	750.00	1.29	1.00	15.48	315.48	315.48
Dsgn. L = 4.03 ft	1	0.063	0.093	47.57	-45.53	47.57	833.33	750.00	2.22	1.00	29.47	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B11**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	2	0.061	0.037	-0.00	-45.53	45.53	833.33	750.00	1.00	1.00	11.55	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.92 ft	1	0.219	0.133	163.88		163.88	833.33	750.00	1.70	1.00	41.98	315.48	315.48
Dsgn. L = 4.03 ft	1	0.383	0.132	287.11	163.88	287.11	833.33	750.00	1.21	1.00	41.63	315.48	315.48
Dsgn. L = 4.03 ft	1	0.427	0.096	320.04	287.11	320.04	833.33	750.00	1.04	1.00	30.16	315.48	315.48
Dsgn. L = 3.92 ft	1	0.427	0.024	320.04	306.27	320.04	833.33	750.00	1.02	1.00	7.72	315.48	315.48
Dsgn. L = 4.03 ft	1	0.408	0.048	306.27	246.78	306.27	833.33	750.00	1.08	1.00	15.20	315.48	315.48
Dsgn. L = 4.03 ft	1	0.329	0.085	246.78	140.70	246.78	833.33	750.00	1.21	1.00	26.67	315.48	315.48
Dsgn. L = 4.03 ft	1	0.188	0.156	140.70	-22.93	140.70	833.33	750.00	1.76	1.00	49.11	315.48	315.48
Dsgn. L = 4.00 ft	2	0.031	0.019	-0.00	-22.93	22.93	833.33	750.00	1.00	1.00	5.90	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.92 ft	1	0.214	0.131	160.71		160.71	833.33	750.00	1.70	1.00	41.18	315.48	315.48
Dsgn. L = 4.03 ft	1	0.374	0.129	280.69	160.71	280.69	833.33	750.00	1.20	1.00	40.82	315.48	315.48
Dsgn. L = 4.03 ft	1	0.414	0.093	310.36	280.69	310.36	833.33	750.00	1.04	1.00	29.35	315.48	315.48
Dsgn. L = 3.92 ft	1	0.414	0.022	310.36	293.43	310.36	833.33	750.00	1.02	1.00	6.91	315.48	315.48
Dsgn. L = 4.03 ft	1	0.391	0.051	293.43	230.69	293.43	833.33	750.00	1.09	1.00	16.01	315.48	315.48
Dsgn. L = 4.03 ft	1	0.308	0.087	230.69	121.36	230.69	833.33	750.00	1.23	1.00	27.48	315.48	315.48
Dsgn. L = 4.03 ft	1	0.162	0.158	121.36	-45.53	121.36	833.33	750.00	2.05	1.00	49.92	315.48	315.48
Dsgn. L = 4.00 ft	2	0.061	0.037	-0.00	-45.53	45.53	833.33	750.00	1.00	1.00	11.55	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 3.92 ft	1	0.119	0.073	89.20		89.20	833.33	750.00	1.70	1.00	22.93	315.48	315.48
Dsgn. L = 4.03 ft	1	0.211	0.072	157.96	89.20	157.96	833.33	750.00	1.21	1.00	22.58	315.48	315.48
Dsgn. L = 4.03 ft	1	0.227	0.053	170.51	157.96	170.51	833.33	750.00	1.03	1.00	16.76	315.48	315.48
Dsgn. L = 3.92 ft	1	0.227	0.010	170.51	159.40	170.51	833.33	750.00	1.03	1.00	3.04	315.48	315.48
Dsgn. L = 4.03 ft	1	0.213	0.028	159.40	124.97	159.40	833.33	750.00	1.09	1.00	8.85	315.48	315.48
Dsgn. L = 4.03 ft	1	0.167	0.046	124.97	66.92	124.97	833.33	750.00	1.23	1.00	14.67	315.48	315.48
Dsgn. L = 4.03 ft	1	0.089	0.091	66.92	-22.93	66.92	833.33	750.00	1.94	1.00	28.66	315.48	315.48
Dsgn. L = 4.00 ft	2	0.031	0.019	-0.00	-22.93	22.93	833.33	750.00	1.00	1.00	5.90	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.92 ft	1	0.070	0.043	52.86		52.86	833.33	750.00	1.69	1.00	13.66	315.48	315.48
Dsgn. L = 4.03 ft	1	0.122	0.042	91.44	52.86	91.44	833.33	750.00	1.20	1.00	13.31	315.48	315.48
Dsgn. L = 4.03 ft	1	0.131	0.030	98.52	91.44	98.52	833.33	750.00	1.03	1.00	9.31	315.48	315.48
Dsgn. L = 3.92 ft	1	0.131	0.008	98.52	89.48	98.52	833.33	750.00	1.04	1.00	2.50	315.48	315.48
Dsgn. L = 4.03 ft	1	0.119	0.021	89.48	64.40	89.48	833.33	750.00	1.12	1.00	6.49	315.48	315.48
Dsgn. L = 4.03 ft	1	0.086	0.033	64.40	23.11	64.40	833.33	750.00	1.34	1.00	10.48	315.48	315.48
Dsgn. L = 4.03 ft	1	0.051	0.058	23.11	-38.24	38.24	833.33	750.00	2.35	1.00	18.31	315.48	315.48
Dsgn. L = 4.00 ft	2	0.051	0.031	-0.00	-38.24	38.24	833.33	750.00	1.00	1.00	9.73	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.92 ft	1	0.174	0.106	130.70		130.70	833.33	750.00	1.70	1.00	33.52	315.48	315.48
Dsgn. L = 4.03 ft	1	0.303	0.105	227.02	130.70	227.02	833.33	750.00	1.20	1.00	33.16	315.48	315.48
Dsgn. L = 4.03 ft	1	0.344	0.075	257.71	227.02	257.71	833.33	750.00	1.05	1.00	23.52	315.48	315.48
Dsgn. L = 3.92 ft	1	0.344	0.023	257.71	249.19	257.71	833.33	750.00	1.01	1.00	7.24	315.48	315.48
Dsgn. L = 4.03 ft	1	0.332	0.038	249.19	202.30	249.19	833.33	750.00	1.08	1.00	12.03	315.48	315.48
Dsgn. L = 4.03 ft	1	0.270	0.069	202.30	116.24	202.30	833.33	750.00	1.20	1.00	21.68	315.48	315.48
Dsgn. L = 4.03 ft	1	0.155	0.120	116.24	-15.64	116.24	833.33	750.00	1.75	1.00	37.96	315.48	315.48
Dsgn. L = 4.00 ft	2	0.021	0.013	-0.00	-15.64	15.64	833.33	750.00	1.00	1.00	4.08	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.92 ft	1	0.170	0.104	127.54		127.54	833.33	750.00	1.70	1.00	32.71	315.48	315.48
Dsgn. L = 4.03 ft	1	0.294	0.103	220.60	127.54	220.60	833.33	750.00	1.20	1.00	32.36	315.48	315.48
Dsgn. L = 4.03 ft	1	0.331	0.072	248.04	220.60	248.04	833.33	750.00	1.04	1.00	22.71	315.48	315.48
Dsgn. L = 3.92 ft	1	0.331	0.020	248.04	236.35	248.04	833.33	750.00	1.02	1.00	6.43	315.48	315.48
Dsgn. L = 4.03 ft	1	0.315	0.041	236.35	186.21	236.35	833.33	750.00	1.09	1.00	12.84	315.48	315.48
Dsgn. L = 4.03 ft	1	0.248	0.071	186.21	96.89	186.21	833.33	750.00	1.23	1.00	22.48	315.48	315.48
Dsgn. L = 4.03 ft	1	0.129	0.123	96.89	-38.24	96.89	833.33	750.00	2.12	1.00	38.76	315.48	315.48
Dsgn. L = 4.00 ft	2	0.051	0.031	-0.00	-38.24	38.24	833.33	750.00	1.00	1.00	9.73	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B11**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.92 ft	1	0.084	0.052	63.23		63.23	833.33	750.00	1.69	1.00	16.31	315.48	315.48
Dsgn. L = 4.03 ft	1	0.147	0.051	110.22	63.23	110.22	833.33	750.00	1.20	1.00	15.95	315.48	315.48
Dsgn. L = 4.03 ft	1	0.157	0.036	118.00	110.22	118.00	833.33	750.00	1.02	1.00	11.39	315.48	315.48
Dsgn. L = 3.92 ft	1	0.157	0.009	118.00	107.32	118.00	833.33	750.00	1.04	1.00	2.92	315.48	315.48
Dsgn. L = 4.03 ft	1	0.143	0.024	107.32	78.30	107.32	833.33	750.00	1.12	1.00	7.48	315.48	315.48
Dsgn. L = 4.03 ft	1	0.104	0.038	78.30	30.75	78.30	833.33	750.00	1.32	1.00	12.04	315.48	315.48
Dsgn. L = 4.03 ft	1	0.054	0.069	30.75	-40.52	40.52	833.33	750.00	2.43	1.00	21.80	315.48	315.48
Dsgn. L = 4.00 ft	2	0.054	0.033	-0.00	-40.52	40.52	833.33	750.00	1.00	1.00	10.30	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 3.92 ft	1	0.188	0.115	141.07		141.07	833.33	750.00	1.70	1.00	36.17	315.48	315.48
Dsgn. L = 4.03 ft	1	0.328	0.114	245.80	141.07	245.80	833.33	750.00	1.20	1.00	35.81	315.48	315.48
Dsgn. L = 4.03 ft	1	0.370	0.081	277.19	245.80	277.19	833.33	750.00	1.05	1.00	25.60	315.48	315.48
Dsgn. L = 3.92 ft	1	0.370	0.023	277.19	267.02	277.19	833.33	750.00	1.01	1.00	7.39	315.48	315.48
Dsgn. L = 4.03 ft	1	0.356	0.041	267.02	216.20	267.02	833.33	750.00	1.08	1.00	13.02	315.48	315.48
Dsgn. L = 4.03 ft	1	0.288	0.074	216.20	123.88	216.20	833.33	750.00	1.20	1.00	23.24	315.48	315.48
Dsgn. L = 4.03 ft	1	0.165	0.131	123.88	-17.92	123.88	833.33	750.00	1.75	1.00	41.44	315.48	315.48
Dsgn. L = 4.00 ft	2	0.024	0.015	-0.00	-17.92	17.92	833.33	750.00	1.00	1.00	4.65	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 3.92 ft	1	0.184	0.112	137.90		137.90	833.33	750.00	1.70	1.00	35.36	315.48	315.48
Dsgn. L = 4.03 ft	1	0.319	0.111	239.38	137.90	239.38	833.33	750.00	1.20	1.00	35.00	315.48	315.48
Dsgn. L = 4.03 ft	1	0.357	0.079	267.52	239.38	267.52	833.33	750.00	1.04	1.00	24.79	315.48	315.48
Dsgn. L = 3.92 ft	1	0.357	0.021	267.52	254.19	267.52	833.33	750.00	1.02	1.00	6.58	315.48	315.48
Dsgn. L = 4.03 ft	1	0.339	0.044	254.19	200.11	254.19	833.33	750.00	1.09	1.00	13.83	315.48	315.48
Dsgn. L = 4.03 ft	1	0.267	0.076	200.11	104.54	200.11	833.33	750.00	1.23	1.00	24.04	315.48	315.48
Dsgn. L = 4.03 ft	1	0.139	0.134	104.54	-40.52	104.54	833.33	750.00	2.09	1.00	42.25	315.48	315.48
Dsgn. L = 4.00 ft	2	0.054	0.033	-0.00	-40.52	40.52	833.33	750.00	1.00	1.00	10.30	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 3.92 ft	1	0.056	0.034	42.02		42.02	833.33	750.00	1.69	1.00	10.85	315.48	315.48
Dsgn. L = 4.03 ft	1	0.098	0.034	73.40	42.02	73.40	833.33	750.00	1.20	1.00	10.58	315.48	315.48
Dsgn. L = 4.03 ft	1	0.108	0.024	81.15	73.40	81.15	833.33	750.00	1.04	1.00	7.59	315.48	315.48
Dsgn. L = 3.92 ft	1	0.108	0.005	81.15	76.74	81.15	833.33	750.00	1.02	1.00	1.72	315.48	315.48
Dsgn. L = 4.03 ft	1	0.102	0.014	76.74	60.37	76.74	833.33	750.00	1.09	1.00	4.26	315.48	315.48
Dsgn. L = 4.03 ft	1	0.080	0.023	60.37	31.84	60.37	833.33	750.00	1.23	1.00	7.26	315.48	315.48
Dsgn. L = 4.03 ft	1	0.042	0.042	31.84	-11.73	31.84	833.33	750.00	2.03	1.00	13.13	315.48	315.48
Dsgn. L = 4.00 ft	2	0.016	0.010	-0.00	-11.73	11.73	833.33	750.00	1.00	1.00	3.06	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.03	0.03	833.33	750.00	1.00	1.00	0.07	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 3.92 ft	1	0.076	0.047	57.01		57.01	833.33	750.00	1.69	1.00	14.72	315.48	315.48
Dsgn. L = 4.03 ft	1	0.132	0.046	98.96	57.01	98.96	833.33	750.00	1.20	1.00	14.36	315.48	315.48
Dsgn. L = 4.03 ft	1	0.142	0.032	106.31	98.96	106.31	833.33	750.00	1.03	1.00	10.14	315.48	315.48
Dsgn. L = 3.92 ft	1	0.142	0.008	106.31	96.62	106.31	833.33	750.00	1.04	1.00	2.67	315.48	315.48
Dsgn. L = 4.03 ft	1	0.129	0.022	96.62	69.96	96.62	833.33	750.00	1.12	1.00	6.89	315.48	315.48
Dsgn. L = 4.03 ft	1	0.093	0.035	69.96	26.17	69.96	833.33	750.00	1.33	1.00	11.11	315.48	315.48
Dsgn. L = 4.03 ft	1	0.052	0.062	26.17	-39.15	39.15	833.33	750.00	2.38	1.00	19.71	315.48	315.48
Dsgn. L = 4.00 ft	2	0.052	0.032	-0.00	-39.15	39.15	833.33	750.00	1.00	1.00	9.96	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 3.92 ft	1	0.180	0.110	134.85		134.85	833.33	750.00	1.70	1.00	34.58	315.48	315.48
Dsgn. L = 4.03 ft	1	0.313	0.108	234.53	134.85	234.53	833.33	750.00	1.20	1.00	34.22	315.48	315.48
Dsgn. L = 4.03 ft	1	0.354	0.077	265.50	234.53	265.50	833.33	750.00	1.05	1.00	24.35	315.48	315.48
Dsgn. L = 3.92 ft	1	0.354	0.023	265.50	256.32	265.50	833.33	750.00	1.01	1.00	7.30	315.48	315.48
Dsgn. L = 4.03 ft	1	0.342	0.039	256.32	207.86	256.32	833.33	750.00	1.08	1.00	12.43	315.48	315.48
Dsgn. L = 4.03 ft	1	0.277	0.071	207.86	119.30	207.86	833.33	750.00	1.20	1.00	22.30	315.48	315.48
Dsgn. L = 4.03 ft	1	0.159	0.125	119.30	-16.55	119.30	833.33	750.00	1.75	1.00	39.35	315.48	315.48
Dsgn. L = 4.00 ft	2	0.022	0.014	-0.00	-16.55	16.55	833.33	750.00	1.00	1.00	4.31	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 3.92 ft	1	0.176	0.107	131.68		131.68	833.33	750.00	1.70	1.00	33.77	315.48	315.48
Dsgn. L = 4.03 ft	1	0.304	0.106	228.11	131.68	228.11	833.33	750.00	1.20	1.00	33.41	315.48	315.48
Dsgn. L = 4.03 ft	1	0.341	0.075	255.83	228.11	255.83	833.33	750.00	1.04	1.00	23.54	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B11**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 3.92 ft	1	0.341	0.021	255.83	243.48	255.83	833.33	750.00	1.02	1.00	6.49	315.48	315.48
Dsgn. L = 4.03 ft	1	0.325	0.042	243.48	191.77	243.48	833.33	750.00	1.09	1.00	13.24	315.48	315.48
Dsgn. L = 4.03 ft	1	0.256	0.073	191.77	99.95	191.77	833.33	750.00	1.23	1.00	23.11	315.48	315.48
Dsgn. L = 4.03 ft	1	0.133	0.127	99.95	-39.15	99.95	833.33	750.00	2.11	1.00	40.16	315.48	315.48
Dsgn. L = 4.00 ft	2	0.052	0.032	-0.00	-39.15	39.15	833.33	750.00	1.00	1.00	9.96	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.05	0.05	833.33	750.00	1.00	1.00	0.09	315.48	315.48
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 3.92 ft	1	0.056	0.034	42.02		42.02	833.33	750.00	1.69	1.00	10.85	315.48	315.48
Dsgn. L = 4.03 ft	1	0.098	0.034	73.40	42.02	73.40	833.33	750.00	1.20	1.00	10.58	315.48	315.48
Dsgn. L = 4.03 ft	1	0.108	0.024	81.15	73.40	81.15	833.33	750.00	1.04	1.00	7.59	315.48	315.48
Dsgn. L = 3.92 ft	1	0.108	0.005	81.15	76.74	81.15	833.33	750.00	1.02	1.00	1.72	315.48	315.48
Dsgn. L = 4.03 ft	1	0.102	0.014	76.74	60.37	76.74	833.33	750.00	1.09	1.00	4.26	315.48	315.48
Dsgn. L = 4.03 ft	1	0.080	0.023	60.37	31.84	60.37	833.33	750.00	1.23	1.00	7.26	315.48	315.48
Dsgn. L = 4.03 ft	1	0.042	0.042	31.84	-11.73	31.84	833.33	750.00	2.03	1.00	13.13	315.48	315.48
Dsgn. L = 4.00 ft	2	0.016	0.010	-0.00	-11.73	11.73	833.33	750.00	1.00	1.00	3.06	315.48	315.48
Dsgn. L = 1.00 ft	2	0.000	0.000		-0.03	0.03	833.33	750.00	1.00	1.00	0.07	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.5548	13.888	+D+L+H	0.0000	0.000
	2	0.0000	13.888		-0.3022	5.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	39.779	53.566	
Max Upward from Load Combinations	39.779	53.566	
Max Upward from Load Cases	24.700	32.557	
Max Downward from all Load Conditions (Resis	-0.807		
Max Downward from Load Cases (Resisting U <sub>r</sub>	-0.807		
+D+H	15.079	21.009	
+D+L+H, LL Comb Run (*L)	14.272	33.117	
+D+L+H, LL Comb Run (L*)	39.779	41.459	
+D+L+H, LL Comb Run (LL)	38.972	53.566	
+D+Lr+H, LL Comb Run (*L)	15.079	21.009	
+D+Lr+H, LL Comb Run (L*)	15.079	21.009	
+D+Lr+H, LL Comb Run (LL)	15.079	21.009	
+D+S+H	21.508	30.260	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	14.473	30.090	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	33.604	36.347	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	32.998	45.427	
+D+0.750L+0.750S+H, LL Comb Run (*L)	19.296	37.027	
+D+0.750L+0.750S+H, LL Comb Run (L*)	38.426	43.285	
+D+0.750L+0.750S+H, LL Comb Run (LL)	37.821	52.365	
+D+0.60W+H	15.079	21.009	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	14.473	30.090	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	33.604	36.347	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	32.998	45.427	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	19.296	37.027	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	38.426	43.285	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	37.821	52.365	
+0.60D+0.60W+0.60H	9.047	12.606	
+D+0.70E+0.60H	15.079	21.009	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	19.296	37.027	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	38.426	43.285	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	37.821	52.365	
+0.60D+0.70E+H	9.047	12.606	
D Only	15.079	21.009	
L Only, LL Comb Run (*L)	-0.807	12.107	
L Only, LL Comb Run (L*)	24.700	20.450	
L Only, LL Comb Run (LL)	23.893	32.557	
S Only	6.430	9.250	
H Only			

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: B12.1

**CODE REFERENCES**

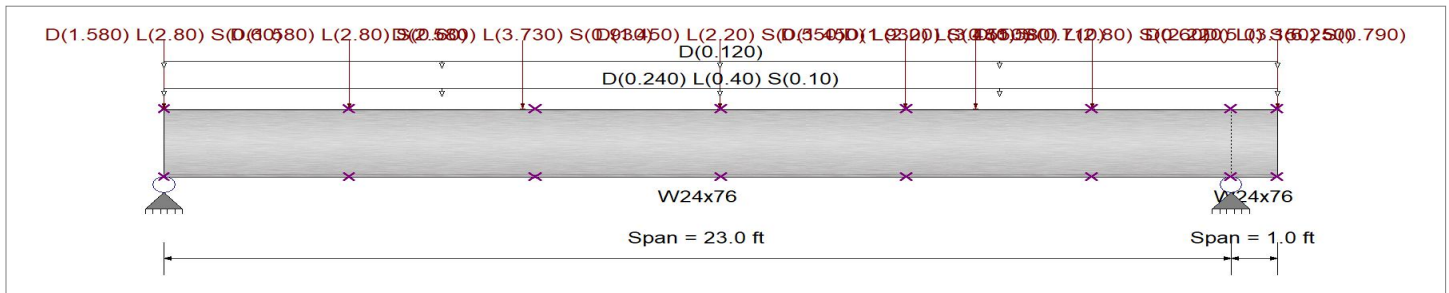
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design	Fy : Steel Yield :	50.0 ksi
Beam Bracing : Beam bracing is defined as a set spacing over all spans	E: Modulus :	29,000.0 ksi
Bending Axis : Major Axis Bending		

**Unbraced Lengths**

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

Uniform Load on ALL spans : D = 0.010 ksf, Tributary Width = 12.0 ft

Load(s) for Span Number 1

- Point Load : D = 1.580, L = 2.80, S = 0.60 k @ 20.0 ft, (J9)
- Point Load : D = 1.930, L = 3.480, S = 0.710 k @ 17.50 ft, (B52)
- Point Load : D = 1.450, L = 2.20, S = 0.550 k @ 16.0 ft, (J7)
- Point Load : D = 1.450, L = 2.20, S = 0.550 k @ 12.0 ft, (J7)
- Point Load : D = 2.580, L = 3.730, S = 0.930 k @ 7.750 ft, (B51)
- Point Load : D = 1.580, L = 2.80, S = 0.60 k @ 4.0 ft, (J6)
- Point Load : D = 1.580, L = 2.80, S = 0.60 k @ 0.0 ft, (J6)

Load(s) for Span Number 2

- Point Load : D = 2.220, L = 3.150, S = 0.790 k @ 1.0 ft, (B53)
- Point Load : D = 5.0, S = 6.250 k @ 1.0 ft, (Pop Up Roof)



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B12.1**

**DESIGN SUMMARY**

**Design OK**

<b>Maximum Bending Stress Ratio =</b>	<b>0.277 : 1</b>	<b>Maximum Shear Stress Ratio =</b>	<b>0.120 : 1</b>
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	207.661 k-ft	Vu : Applied	37.911 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	23.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.128 in Ratio = <b>2,156</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.018 in Ratio = <b>1,328</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.221 in Ratio = <b>1251</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.030 in Ratio = <b>792</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.96 ft	1	0.064	0.042	47.89		47.89	833.33	750.00	1.65	1.00	13.31	315.48	315.48
Dsgn. L =	3.96 ft	1	0.103	0.035	76.98	47.89	76.98	833.33	750.00	1.16	1.00	10.90	315.48	315.48
Dsgn. L =	4.05 ft	1	0.110	0.008	82.75	76.98	82.75	833.33	750.00	1.02	1.00	2.66	315.48	315.48
Dsgn. L =	3.96 ft	1	0.110	0.013	82.75	70.76	82.75	833.33	750.00	1.05	1.00	4.26	315.48	315.48
Dsgn. L =	4.05 ft	1	0.094	0.036	70.76	33.83	70.76	833.33	750.00	1.22	1.00	11.46	315.48	315.48
Dsgn. L =	3.04 ft	1	0.045	0.049	33.83	-10.41	33.83	833.33	750.00	2.06	1.00	15.52	315.48	315.48
Dsgn. L =	1.00 ft	2	0.014	0.034		-10.41	10.41	833.33	750.00	1.00	1.00	10.72	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	3.96 ft	1	0.053	0.035	40.12		40.12	833.33	750.00	1.65	1.00	11.18	315.48	315.48
Dsgn. L =	3.96 ft	1	0.086	0.029	64.14	40.12	64.14	833.33	750.00	1.16	1.00	9.11	315.48	315.48
Dsgn. L =	4.05 ft	1	0.091	0.006	68.14	64.14	68.14	833.33	750.00	1.01	1.00	2.05	315.48	315.48
Dsgn. L =	3.96 ft	1	0.091	0.012	68.14	56.95	68.14	833.33	750.00	1.06	1.00	3.88	315.48	315.48
Dsgn. L =	4.05 ft	1	0.076	0.032	56.95	24.34	56.95	833.33	750.00	1.24	1.00	10.06	315.48	315.48
Dsgn. L =	3.04 ft	1	0.032	0.047	24.34	-14.29	24.34	833.33	750.00	2.16	1.00	14.87	315.48	315.48
Dsgn. L =	1.00 ft	2	0.019	0.047		-14.29	14.29	833.33	750.00	1.00	1.00	14.87	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	3.96 ft	1	0.152	0.099	113.93		113.93	833.33	750.00	1.66	1.00	31.10	315.48	315.48
Dsgn. L =	3.96 ft	1	0.244	0.084	183.24	113.93	183.24	833.33	750.00	1.17	1.00	26.50	315.48	315.48
Dsgn. L =	4.05 ft	1	0.266	0.020	199.84	183.24	199.84	833.33	750.00	1.03	1.00	6.46	315.48	315.48
Dsgn. L =	3.96 ft	1	0.266	0.026	199.84	177.05	199.84	833.33	750.00	1.04	1.00	8.11	315.48	315.48
Dsgn. L =	4.05 ft	1	0.236	0.082	177.05	94.40	177.05	833.33	750.00	1.18	1.00	25.97	315.48	315.48
Dsgn. L =	3.04 ft	1	0.126	0.114	94.40	-8.93	94.40	833.33	750.00	1.76	1.00	35.87	315.48	315.48
Dsgn. L =	1.00 ft	2	0.012	0.029		-8.93	8.93	833.33	750.00	1.00	1.00	9.19	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	3.96 ft	1	0.151	0.098	113.00		113.00	833.33	750.00	1.66	1.00	30.87	315.48	315.48
Dsgn. L =	3.96 ft	1	0.242	0.083	181.39	113.00	181.39	833.33	750.00	1.17	1.00	26.26	315.48	315.48
Dsgn. L =	4.05 ft	1	0.263	0.020	197.05	181.39	197.05	833.33	750.00	1.02	1.00	6.22	315.48	315.48
Dsgn. L =	3.96 ft	1	0.263	0.026	197.05	173.34	197.05	833.33	750.00	1.04	1.00	8.35	315.48	315.48
Dsgn. L =	4.05 ft	1	0.231	0.083	173.34	89.75	173.34	833.33	750.00	1.19	1.00	26.20	315.48	315.48
Dsgn. L =	3.04 ft	1	0.120	0.114	89.75	-14.29	89.75	833.33	750.00	1.85	1.00	36.11	315.48	315.48
Dsgn. L =	1.00 ft	2	0.019	0.047		-14.29	14.29	833.33	750.00	1.00	1.00	14.87	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L =	3.96 ft	1	0.060	0.040	44.94		44.94	833.33	750.00	1.65	1.00	12.49	315.48	315.48
Dsgn. L =	3.96 ft	1	0.096	0.032	71.74	44.94	71.74	833.33	750.00	1.16	1.00	10.23	315.48	315.48
Dsgn. L =	4.05 ft	1	0.101	0.007	75.97	71.74	75.97	833.33	750.00	1.01	1.00	2.20	315.48	315.48
Dsgn. L =	3.96 ft	1	0.101	0.014	75.96	63.11	75.96	833.33	750.00	1.06	1.00	4.40	315.48	315.48
Dsgn. L =	4.05 ft	1	0.084	0.036	63.11	26.03	63.11	833.33	750.00	1.25	1.00	11.41	315.48	315.48
Dsgn. L =	3.04 ft	1	0.035	0.058	26.03	-17.83	26.03	833.33	750.00	2.18	1.00	18.44	315.48	315.48
Dsgn. L =	1.00 ft	2	0.024	0.058		-17.83	17.83	833.33	750.00	1.00	1.00	18.44	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L =	3.96 ft	1	0.158	0.103	118.74		118.74	833.33	750.00	1.66	1.00	32.42	315.48	315.48
Dsgn. L =	3.96 ft	1	0.254	0.088	190.84	118.74	190.84	833.33	750.00	1.17	1.00	27.62	315.48	315.48
Dsgn. L =	4.05 ft	1	0.277	0.021	207.66	190.84	207.66	833.33	750.00	1.03	1.00	6.61	315.48	315.48
Dsgn. L =	3.96 ft	1	0.277	0.027	207.66	183.22	207.66	833.33	750.00	1.04	1.00	8.63	315.48	315.48
Dsgn. L =	4.05 ft	1	0.244	0.087	183.22	96.09	183.22	833.33	750.00	1.19	1.00	27.32	315.48	315.48
Dsgn. L =	3.04 ft	1	0.128	0.119	96.09	-12.47	96.09	833.33	750.00	1.81	1.00	37.68	315.48	315.48
Dsgn. L =	1.00 ft	2	0.017	0.040		-12.47	12.47	833.33	750.00	1.00	1.00	12.76	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B12.1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 3.96 ft	1	0.157	0.102	117.82		117.82	833.33	750.00	1.66	1.00	32.18	315.48	315.48
Dsgn. L = 3.96 ft	1	0.252	0.087	188.99	117.82	188.99	833.33	750.00	1.17	1.00	27.38	315.48	315.48
Dsgn. L = 4.05 ft	1	0.273	0.020	204.87	188.99	204.87	833.33	750.00	1.02	1.00	6.38	315.48	315.48
Dsgn. L = 3.96 ft	1	0.273	0.028	204.87	179.51	204.87	833.33	750.00	1.04	1.00	8.87	315.48	315.48
Dsgn. L = 4.05 ft	1	0.239	0.087	179.51	91.44	179.51	833.33	750.00	1.20	1.00	27.55	315.48	315.48
Dsgn. L = 3.04 ft	1	0.122	0.120	91.44	-17.83	91.44	833.33	750.00	1.90	1.00	37.91	315.48	315.48
Dsgn. L = 1.00 ft	2	0.024	0.058		-17.83	17.83	833.33	750.00	1.00	1.00	18.44	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.96 ft	1	0.054	0.036	40.47		40.47	833.33	750.00	1.65	1.00	11.26	315.48	315.48
Dsgn. L = 3.96 ft	1	0.086	0.029	64.83	40.47	64.83	833.33	750.00	1.16	1.00	9.20	315.48	315.48
Dsgn. L = 4.05 ft	1	0.092	0.007	69.18	64.83	69.18	833.33	750.00	1.02	1.00	2.13	315.48	315.48
Dsgn. L = 3.96 ft	1	0.092	0.012	69.18	58.34	69.18	833.33	750.00	1.05	1.00	3.79	315.48	315.48
Dsgn. L = 4.05 ft	1	0.078	0.032	58.34	26.09	58.34	833.33	750.00	1.23	1.00	9.97	315.48	315.48
Dsgn. L = 3.04 ft	1	0.035	0.043	26.09	-12.28	26.09	833.33	750.00	2.14	1.00	13.45	315.48	315.48
Dsgn. L = 1.00 ft	2	0.016	0.040		-12.28	12.28	833.33	750.00	1.00	1.00	12.74	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.96 ft	1	0.115	0.075	86.60		86.60	833.33	750.00	1.65	1.00	23.72	315.48	315.48
Dsgn. L = 3.96 ft	1	0.186	0.064	139.27	86.60	139.27	833.33	750.00	1.17	1.00	20.06	315.48	315.48
Dsgn. L = 4.05 ft	1	0.202	0.015	151.50	139.27	151.50	833.33	750.00	1.02	1.00	4.89	315.48	315.48
Dsgn. L = 3.96 ft	1	0.202	0.020	151.50	133.40	151.50	833.33	750.00	1.04	1.00	6.44	315.48	315.48
Dsgn. L = 4.05 ft	1	0.178	0.063	133.40	69.87	133.40	833.33	750.00	1.19	1.00	19.91	315.48	315.48
Dsgn. L = 3.04 ft	1	0.093	0.087	69.87	-8.93	69.87	833.33	750.00	1.80	1.00	27.41	315.48	315.48
Dsgn. L = 1.00 ft	2	0.012	0.029		-8.93	8.93	833.33	750.00	1.00	1.00	9.19	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.96 ft	1	0.115	0.075	86.02		86.02	833.33	750.00	1.65	1.00	23.57	315.48	315.48
Dsgn. L = 3.96 ft	1	0.184	0.063	138.12	86.02	138.12	833.33	750.00	1.17	1.00	19.92	315.48	315.48
Dsgn. L = 4.05 ft	1	0.200	0.015	149.76	138.12	149.76	833.33	750.00	1.02	1.00	4.74	315.48	315.48
Dsgn. L = 3.96 ft	1	0.200	0.021	149.76	131.09	149.76	833.33	750.00	1.04	1.00	6.59	315.48	315.48
Dsgn. L = 4.05 ft	1	0.175	0.064	131.09	66.96	131.09	833.33	750.00	1.20	1.00	20.06	315.48	315.48
Dsgn. L = 3.04 ft	1	0.089	0.087	66.96	-12.28	66.96	833.33	750.00	1.88	1.00	27.56	315.48	315.48
Dsgn. L = 1.00 ft	2	0.016	0.040		-12.28	12.28	833.33	750.00	1.00	1.00	12.74	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.96 ft	1	0.055	0.036	41.05		41.05	833.33	750.00	1.65	1.00	11.41	315.48	315.48
Dsgn. L = 3.96 ft	1	0.088	0.030	65.99	41.05	65.99	833.33	750.00	1.16	1.00	9.34	315.48	315.48
Dsgn. L = 4.05 ft	1	0.095	0.007	70.93	65.99	70.93	833.33	750.00	1.02	1.00	2.28	315.48	315.48
Dsgn. L = 3.96 ft	1	0.095	0.012	70.93	60.66	70.93	833.33	750.00	1.05	1.00	3.65	315.48	315.48
Dsgn. L = 4.05 ft	1	0.081	0.031	60.66	28.99	60.66	833.33	750.00	1.22	1.00	9.82	315.48	315.48
Dsgn. L = 3.04 ft	1	0.039	0.042	28.99	-8.93	28.99	833.33	750.00	2.06	1.00	13.31	315.48	315.48
Dsgn. L = 1.00 ft	2	0.012	0.029		-8.93	8.93	833.33	750.00	1.00	1.00	9.19	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.96 ft	1	0.055	0.036	41.05		41.05	833.33	750.00	1.65	1.00	11.41	315.48	315.48
Dsgn. L = 3.96 ft	1	0.088	0.030	65.99	41.05	65.99	833.33	750.00	1.16	1.00	9.34	315.48	315.48
Dsgn. L = 4.05 ft	1	0.095	0.007	70.93	65.99	70.93	833.33	750.00	1.02	1.00	2.28	315.48	315.48
Dsgn. L = 3.96 ft	1	0.095	0.012	70.93	60.66	70.93	833.33	750.00	1.05	1.00	3.65	315.48	315.48
Dsgn. L = 4.05 ft	1	0.081	0.031	60.66	28.99	60.66	833.33	750.00	1.22	1.00	9.82	315.48	315.48
Dsgn. L = 3.04 ft	1	0.039	0.042	28.99	-8.93	28.99	833.33	750.00	2.06	1.00	13.31	315.48	315.48
Dsgn. L = 1.00 ft	2	0.012	0.029		-8.93	8.93	833.33	750.00	1.00	1.00	9.19	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.96 ft	1	0.075	0.049	55.88		55.88	833.33	750.00	1.65	1.00	15.48	315.48	315.48
Dsgn. L = 3.96 ft	1	0.119	0.040	89.15	55.88	89.15	833.33	750.00	1.16	1.00	12.77	315.48	315.48
Dsgn. L = 4.05 ft	1	0.126	0.008	94.22	89.15	94.22	833.33	750.00	1.01	1.00	2.63	315.48	315.48
Dsgn. L = 3.96 ft	1	0.126	0.017	94.21	78.07	94.21	833.33	750.00	1.06	1.00	5.46	315.48	315.48
Dsgn. L = 4.05 ft	1	0.104	0.045	78.07	31.49	78.07	833.33	750.00	1.26	1.00	14.29	315.48	315.48
Dsgn. L = 3.04 ft	1	0.042	0.077	31.49	-23.62	31.49	833.33	750.00	2.19	1.00	24.16	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B12.1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 1.00 ft	2		0.031	0.077		-23.62	23.62	833.33	750.00	1.00	1.00	24.16	315.48	315.48
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 3.96 ft	1		0.136	0.089	102.01		102.01	833.33	750.00	1.65	1.00	27.93	315.48	315.48
Dsgn. L = 3.96 ft	1		0.218	0.075	163.59	102.01	163.59	833.33	750.00	1.17	1.00	23.64	315.48	315.48
Dsgn. L = 4.05 ft	1		0.235	0.017	176.52	163.59	176.52	833.33	750.00	1.02	1.00	5.39	315.48	315.48
Dsgn. L = 3.96 ft	1		0.235	0.026	176.52	153.14	176.52	833.33	750.00	1.05	1.00	8.10	315.48	315.48
Dsgn. L = 4.05 ft	1		0.204	0.077	153.14	75.28	153.14	833.33	750.00	1.21	1.00	24.24	315.48	315.48
Dsgn. L = 3.04 ft	1		0.100	0.105	75.28	-20.27	75.28	833.33	750.00	2.01	1.00	33.18	315.48	315.48
Dsgn. L = 1.00 ft	2		0.027	0.065		-20.27	20.27	833.33	750.00	1.00	1.00	20.61	315.48	315.48
+1.20D+L+1.60S+1.60H, LL Com														
Dsgn. L = 3.96 ft	1		0.135	0.088	101.43		101.43	833.33	750.00	1.65	1.00	27.78	315.48	315.48
Dsgn. L = 3.96 ft	1		0.217	0.074	162.44	101.43	162.44	833.33	750.00	1.16	1.00	23.50	315.48	315.48
Dsgn. L = 4.05 ft	1		0.233	0.017	174.78	162.44	174.78	833.33	750.00	1.02	1.00	5.24	315.48	315.48
Dsgn. L = 3.96 ft	1		0.233	0.026	174.78	150.82	174.78	833.33	750.00	1.05	1.00	8.25	315.48	315.48
Dsgn. L = 4.05 ft	1		0.201	0.077	150.82	72.37	150.82	833.33	750.00	1.21	1.00	24.38	315.48	315.48
Dsgn. L = 3.04 ft	1		0.096	0.106	72.37	-23.62	72.37	833.33	750.00	2.10	1.00	33.33	315.48	315.48
Dsgn. L = 1.00 ft	2		0.031	0.077		-23.62	23.62	833.33	750.00	1.00	1.00	24.16	315.48	315.48
+1.20D+1.60S+0.50W+1.60H														
Dsgn. L = 3.96 ft	1		0.075	0.050	56.46		56.46	833.33	750.00	1.65	1.00	15.62	315.48	315.48
Dsgn. L = 3.96 ft	1		0.120	0.041	90.31	56.46	90.31	833.33	750.00	1.16	1.00	12.92	315.48	315.48
Dsgn. L = 4.05 ft	1		0.128	0.009	95.95	90.31	95.95	833.33	750.00	1.01	1.00	2.78	315.48	315.48
Dsgn. L = 3.96 ft	1		0.128	0.017	95.95	80.39	95.95	833.33	750.00	1.06	1.00	5.31	315.48	315.48
Dsgn. L = 4.05 ft	1		0.107	0.045	80.39	34.40	80.39	833.33	750.00	1.24	1.00	14.15	315.48	315.48
Dsgn. L = 3.04 ft	1		0.046	0.065	34.40	-20.27	34.40	833.33	750.00	2.16	1.00	20.61	315.48	315.48
Dsgn. L = 1.00 ft	2		0.027	0.065		-20.27	20.27	833.33	750.00	1.00	1.00	20.61	315.48	315.48
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 3.96 ft	1		0.054	0.036	40.47		40.47	833.33	750.00	1.65	1.00	11.26	315.48	315.48
Dsgn. L = 3.96 ft	1		0.086	0.029	64.83	40.47	64.83	833.33	750.00	1.16	1.00	9.20	315.48	315.48
Dsgn. L = 4.05 ft	1		0.092	0.007	69.18	64.83	69.18	833.33	750.00	1.02	1.00	2.13	315.48	315.48
Dsgn. L = 3.96 ft	1		0.092	0.012	69.18	58.34	69.18	833.33	750.00	1.05	1.00	3.79	315.48	315.48
Dsgn. L = 4.05 ft	1		0.078	0.032	58.34	26.09	58.34	833.33	750.00	1.23	1.00	9.97	315.48	315.48
Dsgn. L = 3.04 ft	1		0.035	0.043	26.09	-12.28	26.09	833.33	750.00	2.14	1.00	13.45	315.48	315.48
Dsgn. L = 1.00 ft	2		0.016	0.040		-12.28	12.28	833.33	750.00	1.00	1.00	12.74	315.48	315.48
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 3.96 ft	1		0.115	0.075	86.60		86.60	833.33	750.00	1.65	1.00	23.72	315.48	315.48
Dsgn. L = 3.96 ft	1		0.186	0.064	139.27	86.60	139.27	833.33	750.00	1.17	1.00	20.06	315.48	315.48
Dsgn. L = 4.05 ft	1		0.202	0.015	151.50	139.27	151.50	833.33	750.00	1.02	1.00	4.89	315.48	315.48
Dsgn. L = 3.96 ft	1		0.202	0.020	151.50	133.40	151.50	833.33	750.00	1.04	1.00	6.44	315.48	315.48
Dsgn. L = 4.05 ft	1		0.178	0.063	133.40	69.87	133.40	833.33	750.00	1.19	1.00	19.91	315.48	315.48
Dsgn. L = 3.04 ft	1		0.093	0.087	69.87	-8.93	69.87	833.33	750.00	1.80	1.00	27.41	315.48	315.48
Dsgn. L = 1.00 ft	2		0.012	0.029		-8.93	8.93	833.33	750.00	1.00	1.00	9.19	315.48	315.48
+1.20D+0.50Lr+L+W+1.60H, LL C														
Dsgn. L = 3.96 ft	1		0.115	0.075	86.02		86.02	833.33	750.00	1.65	1.00	23.57	315.48	315.48
Dsgn. L = 3.96 ft	1		0.184	0.063	138.12	86.02	138.12	833.33	750.00	1.17	1.00	19.92	315.48	315.48
Dsgn. L = 4.05 ft	1		0.200	0.015	149.76	138.12	149.76	833.33	750.00	1.02	1.00	4.74	315.48	315.48
Dsgn. L = 3.96 ft	1		0.200	0.021	149.76	131.09	149.76	833.33	750.00	1.04	1.00	6.59	315.48	315.48
Dsgn. L = 4.05 ft	1		0.175	0.064	131.09	66.96	131.09	833.33	750.00	1.20	1.00	20.06	315.48	315.48
Dsgn. L = 3.04 ft	1		0.089	0.087	66.96	-12.28	66.96	833.33	750.00	1.88	1.00	27.56	315.48	315.48
Dsgn. L = 1.00 ft	2		0.016	0.040		-12.28	12.28	833.33	750.00	1.00	1.00	12.74	315.48	315.48
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 3.96 ft	1		0.060	0.040	45.29		45.29	833.33	750.00	1.65	1.00	12.58	315.48	315.48
Dsgn. L = 3.96 ft	1		0.097	0.033	72.43	45.29	72.43	833.33	750.00	1.16	1.00	10.31	315.48	315.48
Dsgn. L = 4.05 ft	1		0.103	0.007	77.00	72.43	77.00	833.33	750.00	1.01	1.00	2.29	315.48	315.48
Dsgn. L = 3.96 ft	1		0.103	0.014	77.00	64.50	77.00	833.33	750.00	1.06	1.00	4.31	315.48	315.48
Dsgn. L = 4.05 ft	1		0.086	0.036	64.50	27.78	64.50	833.33	750.00	1.24	1.00	11.32	315.48	315.48
Dsgn. L = 3.04 ft	1		0.037	0.052	27.78	-15.82	27.78	833.33	750.00	2.16	1.00	16.31	315.48	315.48
Dsgn. L = 1.00 ft	2		0.021	0.052		-15.82	15.82	833.33	750.00	1.00	1.00	16.31	315.48	315.48
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 3.96 ft	1		0.122	0.079	91.41		91.41	833.33	750.00	1.65	1.00	25.03	315.48	315.48
Dsgn. L = 3.96 ft	1		0.196	0.067	146.87	91.41	146.87	833.33	750.00	1.17	1.00	21.18	315.48	315.48
Dsgn. L = 4.05 ft	1		0.212	0.016	159.32	146.87	159.32	833.33	750.00	1.02	1.00	5.05	315.48	315.48
Dsgn. L = 3.96 ft	1		0.212	0.022	159.32	139.57	159.32	833.33	750.00	1.04	1.00	6.96	315.48	315.48
Dsgn. L = 4.05 ft	1		0.186	0.067	139.57	71.56	139.57	833.33	750.00	1.19	1.00	21.26	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B12.1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	3.04 ft	1	0.095	0.093	71.56	-12.47	71.56	833.33	750.00	1.87	1.00	29.22	315.48	315.48
Dsgn. L =	1.00 ft	2	0.017	0.040		-12.47	12.47	833.33	750.00	1.00	1.00	12.76	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L =	3.96 ft	1	0.121	0.079	90.84		90.84	833.33	750.00	1.65	1.00	24.89	315.48	315.48
Dsgn. L =	3.96 ft	1	0.194	0.067	145.72	90.84	145.72	833.33	750.00	1.17	1.00	21.04	315.48	315.48
Dsgn. L =	4.05 ft	1	0.210	0.016	157.58	145.72	157.58	833.33	750.00	1.02	1.00	4.90	315.48	315.48
Dsgn. L =	3.96 ft	1	0.210	0.023	157.58	137.25	157.58	833.33	750.00	1.04	1.00	7.10	315.48	315.48
Dsgn. L =	4.05 ft	1	0.183	0.068	137.25	68.65	137.25	833.33	750.00	1.20	1.00	21.41	315.48	315.48
Dsgn. L =	3.04 ft	1	0.092	0.093	68.65	-15.82	68.65	833.33	750.00	1.95	1.00	29.36	315.48	315.48
Dsgn. L =	1.00 ft	2	0.021	0.052		-15.82	15.82	833.33	750.00	1.00	1.00	16.31	315.48	315.48
<b>+0.90D+W+1.60H</b>														
Dsgn. L =	3.96 ft	1	0.041	0.027	30.78		30.78	833.33	750.00	1.65	1.00	8.56	315.48	315.48
Dsgn. L =	3.96 ft	1	0.066	0.022	49.49	30.78	49.49	833.33	750.00	1.16	1.00	7.01	315.48	315.48
Dsgn. L =	4.05 ft	1	0.071	0.005	53.19	49.49	53.19	833.33	750.00	1.02	1.00	1.71	315.48	315.48
Dsgn. L =	3.96 ft	1	0.071	0.009	53.19	45.49	53.19	833.33	750.00	1.05	1.00	2.74	315.48	315.48
Dsgn. L =	4.05 ft	1	0.061	0.023	45.49	21.75	45.49	833.33	750.00	1.22	1.00	7.37	315.48	315.48
Dsgn. L =	3.04 ft	1	0.029	0.032	21.75	-6.69	21.75	833.33	750.00	2.06	1.00	9.98	315.48	315.48
Dsgn. L =	1.00 ft	2	0.009	0.022		-6.69	6.69	833.33	750.00	1.00	1.00	6.89	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L =	3.96 ft	1	0.057	0.037	42.40		42.40	833.33	750.00	1.65	1.00	11.79	315.48	315.48
Dsgn. L =	3.96 ft	1	0.090	0.031	67.87	42.40	67.87	833.33	750.00	1.16	1.00	9.64	315.48	315.48
Dsgn. L =	4.05 ft	1	0.096	0.007	72.31	67.87	72.31	833.33	750.00	1.01	1.00	2.20	315.48	315.48
Dsgn. L =	3.96 ft	1	0.096	0.013	72.31	60.80	72.31	833.33	750.00	1.06	1.00	4.00	315.48	315.48
Dsgn. L =	4.05 ft	1	0.081	0.033	60.80	26.76	60.80	833.33	750.00	1.24	1.00	10.51	315.48	315.48
Dsgn. L =	3.04 ft	1	0.036	0.045	26.76	-13.69	26.76	833.33	750.00	2.15	1.00	14.17	315.48	315.48
Dsgn. L =	1.00 ft	2	0.018	0.045		-13.69	13.69	833.33	750.00	1.00	1.00	14.17	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L =	3.96 ft	1	0.118	0.077	88.52		88.52	833.33	750.00	1.65	1.00	24.24	315.48	315.48
Dsgn. L =	3.96 ft	1	0.190	0.065	142.31	88.52	142.31	833.33	750.00	1.17	1.00	20.51	315.48	315.48
Dsgn. L =	4.05 ft	1	0.206	0.016	154.63	142.31	154.63	833.33	750.00	1.02	1.00	4.95	315.48	315.48
Dsgn. L =	3.96 ft	1	0.206	0.021	154.63	135.87	154.63	833.33	750.00	1.04	1.00	6.65	315.48	315.48
Dsgn. L =	4.05 ft	1	0.181	0.065	135.87	70.55	135.87	833.33	750.00	1.19	1.00	20.45	315.48	315.48
Dsgn. L =	3.04 ft	1	0.094	0.089	70.55	-10.34	70.55	833.33	750.00	1.83	1.00	28.13	315.48	315.48
Dsgn. L =	1.00 ft	2	0.014	0.034		-10.34	10.34	833.33	750.00	1.00	1.00	10.62	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L =	3.96 ft	1	0.117	0.076	87.95		87.95	833.33	750.00	1.65	1.00	24.10	315.48	315.48
Dsgn. L =	3.96 ft	1	0.188	0.065	141.16	87.95	141.16	833.33	750.00	1.17	1.00	20.37	315.48	315.48
Dsgn. L =	4.05 ft	1	0.204	0.015	152.88	141.16	152.88	833.33	750.00	1.02	1.00	4.81	315.48	315.48
Dsgn. L =	3.96 ft	1	0.204	0.022	152.88	133.55	152.88	833.33	750.00	1.04	1.00	6.79	315.48	315.48
Dsgn. L =	4.05 ft	1	0.178	0.065	133.55	67.64	133.55	833.33	750.00	1.20	1.00	20.60	315.48	315.48
Dsgn. L =	3.04 ft	1	0.090	0.090	67.64	-13.69	67.64	833.33	750.00	1.91	1.00	28.28	315.48	315.48
Dsgn. L =	1.00 ft	2	0.018	0.045		-13.69	13.69	833.33	750.00	1.00	1.00	14.17	315.48	315.48
<b>+0.90D+E+0.90H</b>														
Dsgn. L =	3.96 ft	1	0.041	0.027	30.78		30.78	833.33	750.00	1.65	1.00	8.56	315.48	315.48
Dsgn. L =	3.96 ft	1	0.066	0.022	49.49	30.78	49.49	833.33	750.00	1.16	1.00	7.01	315.48	315.48
Dsgn. L =	4.05 ft	1	0.071	0.005	53.19	49.49	53.19	833.33	750.00	1.02	1.00	1.71	315.48	315.48
Dsgn. L =	3.96 ft	1	0.071	0.009	53.19	45.49	53.19	833.33	750.00	1.05	1.00	2.74	315.48	315.48
Dsgn. L =	4.05 ft	1	0.061	0.023	45.49	21.75	45.49	833.33	750.00	1.22	1.00	7.37	315.48	315.48
Dsgn. L =	3.04 ft	1	0.029	0.032	21.75	-6.69	21.75	833.33	750.00	2.06	1.00	9.98	315.48	315.48
Dsgn. L =	1.00 ft	2	0.009	0.022		-6.69	6.69	833.33	750.00	1.00	1.00	6.89	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2206	11.592		0.0000	0.000
	2	0.0000	11.592	+D+L+H	-0.0303	1.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #'			Values in KIPS		
	Support 1	Support 2	Support 3			
Max Upward from all Load Conditions	26.194	40.156				
Max Upward from Load Combinations	26.194	40.156				
Max Upward from Load Cases	15.105	18.745				
Max Downward from all Load Conditions (Resis	-0.146					
Max Downward from Load Cases (Resisting Uf	-0.146					





Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B12.1

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
+D+H	11.089	18.745	
+D+L+H, LL Comb Run (*L)	10.943	22.441	
+D+L+H, LL Comb Run (L*)	26.194	32.850	
+D+L+H, LL Comb Run (LL)	26.049	36.545	
+D+Lr+H, LL Comb Run (*L)	11.089	18.745	
+D+Lr+H, LL Comb Run (L*)	11.089	18.745	
+D+Lr+H, LL Comb Run (LL)	11.089	18.745	
+D+S+H	14.321	29.493	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	10.980	21.517	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	22.418	29.324	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	22.309	32.095	
+D+0.750L+0.750S+H, LL Comb Run (*L)	13.404	29.577	
+D+0.750L+0.750S+H, LL Comb Run (L*)	24.842	37.384	
+D+0.750L+0.750S+H, LL Comb Run (LL)	24.733	40.156	
+D+0.60W+H	11.089	18.745	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	10.980	21.517	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	22.418	29.324	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	22.309	32.095	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	13.404	29.577	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	24.842	37.384	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	24.733	40.156	
+0.60D+0.60W+0.60H	6.653	11.247	
+D+0.70E+0.60H	11.089	18.745	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	13.404	29.577	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	24.842	37.384	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	24.733	40.156	
+0.60D+0.70E+H	6.653	11.247	
D Only	11.089	18.745	
L Only, LL Comb Run (*L)	-0.146	3.696	
L Only, LL Comb Run (L*)	15.105	14.105	
L Only, LL Comb Run (LL)	14.960	17.800	
S Only	3.233	10.748	
H Only			

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B12

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

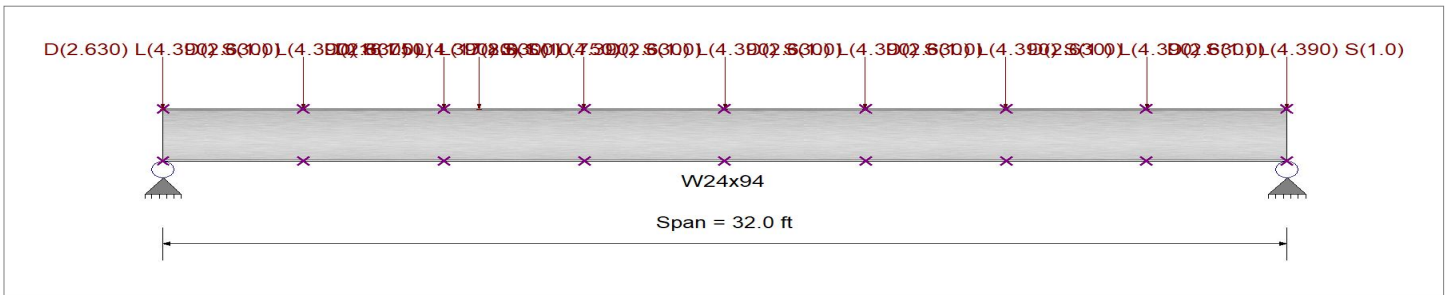
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 2.630, L = 4.390, S = 1.0 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : D = 18.750, L = 17.80, S = 10.750 k @ 9.0 ft, (B12.1)

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.683</b> : 1	Maximum Shear Stress Ratio =	<b>0.212</b> : 1
Section used for this span	<b>W24x94</b>	Section used for this span	<b>W24x94</b>
Mu : Applied	650.919 k-ft	Vu : Applied	79.690 k
Mn * Phi : Allowable	952.500 k-ft	Vn * Phi : Allowable	375.435 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.532 in Ratio = <b>721</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.989 in Ratio = <b>388</b> >=240.	Span: 1 : +D+0.750L+0.750S+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.93 ft	1	0.139	0.090	132.10		132.10	1,058.33	952.50	1.69	1.00	33.86	375.44	375.44
Dsgn. L =	4.02 ft	1	0.263	0.089	250.61	132.10	250.61	1,058.33	952.50	1.23	1.00	33.34	375.44	375.44
Dsgn. L =	4.02 ft	1	0.291	0.078	277.27	250.61	277.27	1,058.33	952.50	1.00	1.00	29.13	375.44	375.44
Dsgn. L =	4.02 ft	1	0.288	0.025	273.94	252.79	273.94	1,058.33	952.50	1.03	1.00	9.22	375.44	375.44
Dsgn. L =	3.93 ft	1	0.265	0.026	252.79	215.51	252.79	1,058.33	952.50	1.06	1.00	9.74	375.44	375.44
Dsgn. L =	4.02 ft	1	0.226	0.037	215.51	160.70	215.51	1,058.33	952.50	1.11	1.00	13.95	375.44	375.44
Dsgn. L =	4.02 ft	1	0.169	0.048	160.70	88.86	160.70	1,058.33	952.50	1.22	1.00	18.16	375.44	375.44
Dsgn. L =	4.02 ft	1	0.093	0.060	88.86		88.86	1,058.33	952.50	1.66	1.00	22.38	375.44	375.44
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	3.93 ft	1	0.305	0.197	290.36		290.36	1,058.33	952.50	1.69	1.00	74.08	375.44	375.44
Dsgn. L =	4.02 ft	1	0.573	0.196	545.40	290.36	545.40	1,058.33	952.50	1.23	1.00	73.63	375.44	375.44
Dsgn. L =	4.02 ft	1	0.636	0.168	605.67	545.40	605.67	1,058.33	952.50	1.01	1.00	63.00	375.44	375.44
Dsgn. L =	4.02 ft	1	0.636	0.052	605.67	569.61	605.67	1,058.33	952.50	1.02	1.00	19.43	375.44	375.44



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B12**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.93 ft	1	0.598	0.053	569.61	492.36	569.61	1,058.33	952.50	1.06	1.00	19.87	375.44	375.44
Dsgn. L = 4.02 ft	1	0.517	0.081	492.36	371.25	492.36	1,058.33	952.50	1.11	1.00	30.51	375.44	375.44
Dsgn. L = 4.02 ft	1	0.390	0.110	371.25	207.13	371.25	1,058.33	952.50	1.21	1.00	41.14	375.44	375.44
Dsgn. L = 4.02 ft	1	0.217	0.138	207.13		207.13	1,058.33	952.50	1.66	1.00	51.77	375.44	375.44
<b>+1.20D+1.60L+0.50S+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.328	0.212	312.42		312.42	1,058.33	952.50	1.69	1.00	79.69	375.44	375.44
Dsgn. L = 4.02 ft	1	0.617	0.211	588.08	312.42	588.08	1,058.33	952.50	1.23	1.00	79.25	375.44	375.44
Dsgn. L = 4.02 ft	1	0.683	0.181	650.92	588.08	650.92	1,058.33	952.50	1.00	1.00	68.11	375.44	375.44
Dsgn. L = 4.02 ft	1	0.683	0.056	650.92	609.80	650.92	1,058.33	952.50	1.03	1.00	21.19	375.44	375.44
Dsgn. L = 3.93 ft	1	0.640	0.058	609.80	525.62	609.80	1,058.33	952.50	1.06	1.00	21.63	375.44	375.44
Dsgn. L = 4.02 ft	1	0.552	0.087	525.62	395.45	525.62	1,058.33	952.50	1.11	1.00	32.77	375.44	375.44
Dsgn. L = 4.02 ft	1	0.415	0.117	395.45	220.24	395.45	1,058.33	952.50	1.21	1.00	43.90	375.44	375.44
Dsgn. L = 4.02 ft	1	0.231	0.147	220.24		220.24	1,058.33	952.50	1.66	1.00	55.03	375.44	375.44
<b>+1.20D+1.60Lr+L+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.235	0.152	223.93		223.93	1,058.33	952.50	1.69	1.00	57.18	375.44	375.44
Dsgn. L = 4.02 ft	1	0.442	0.151	421.43	223.93	421.43	1,058.33	952.50	1.23	1.00	56.74	375.44	375.44
Dsgn. L = 4.02 ft	1	0.490	0.130	466.59	421.43	466.59	1,058.33	952.50	1.00	1.00	48.74	375.44	375.44
Dsgn. L = 4.02 ft	1	0.490	0.040	466.59	437.26	466.59	1,058.33	952.50	1.03	1.00	15.11	375.44	375.44
Dsgn. L = 3.93 ft	1	0.459	0.041	437.26	377.00	437.26	1,058.33	952.50	1.06	1.00	15.55	375.44	375.44
Dsgn. L = 4.02 ft	1	0.396	0.063	377.00	283.68	377.00	1,058.33	952.50	1.11	1.00	23.55	375.44	375.44
Dsgn. L = 4.02 ft	1	0.298	0.084	283.68	158.02	283.68	1,058.33	952.50	1.21	1.00	31.55	375.44	375.44
Dsgn. L = 4.02 ft	1	0.166	0.105	158.02		158.02	1,058.33	952.50	1.66	1.00	39.55	375.44	375.44
<b>+1.20D+1.60Lr+0.50W+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.119	0.077	113.23		113.23	1,058.33	952.50	1.69	1.00	29.02	375.44	375.44
Dsgn. L = 4.02 ft	1	0.226	0.076	214.81	113.23	214.81	1,058.33	952.50	1.23	1.00	28.58	375.44	375.44
Dsgn. L = 4.02 ft	1	0.250	0.067	237.66	214.81	237.66	1,058.33	952.50	1.00	1.00	24.97	375.44	375.44
Dsgn. L = 4.02 ft	1	0.247	0.021	234.80	216.68	234.80	1,058.33	952.50	1.03	1.00	7.91	375.44	375.44
Dsgn. L = 3.93 ft	1	0.227	0.022	216.68	184.73	216.68	1,058.33	952.50	1.06	1.00	8.35	375.44	375.44
Dsgn. L = 4.02 ft	1	0.194	0.032	184.73	137.74	184.73	1,058.33	952.50	1.11	1.00	11.96	375.44	375.44
Dsgn. L = 4.02 ft	1	0.145	0.041	137.74	76.17	137.74	1,058.33	952.50	1.22	1.00	15.57	375.44	375.44
Dsgn. L = 4.02 ft	1	0.080	0.051	76.17		76.17	1,058.33	952.50	1.66	1.00	19.18	375.44	375.44
<b>+1.20D+L+1.60S+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.309	0.200	294.55		294.55	1,058.33	952.50	1.69	1.00	75.14	375.44	375.44
Dsgn. L = 4.02 ft	1	0.586	0.199	557.98	294.55	557.98	1,058.33	952.50	1.23	1.00	74.70	375.44	375.44
Dsgn. L = 4.02 ft	1	0.648	0.173	616.77	557.98	616.77	1,058.33	952.50	1.00	1.00	65.10	375.44	375.44
Dsgn. L = 4.02 ft	1	0.642	0.055	611.40	565.86	611.40	1,058.33	952.50	1.03	1.00	20.74	375.44	375.44
Dsgn. L = 3.93 ft	1	0.594	0.056	565.86	483.43	565.86	1,058.33	952.50	1.06	1.00	21.19	375.44	375.44
Dsgn. L = 4.02 ft	1	0.508	0.082	483.43	361.12	483.43	1,058.33	952.50	1.11	1.00	30.79	375.44	375.44
Dsgn. L = 4.02 ft	1	0.379	0.108	361.12	199.97	361.12	1,058.33	952.50	1.22	1.00	40.39	375.44	375.44
Dsgn. L = 4.02 ft	1	0.210	0.133	199.97		199.97	1,058.33	952.50	1.66	1.00	49.99	375.44	375.44
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.193	0.125	183.85		183.85	1,058.33	952.50	1.69	1.00	46.99	375.44	375.44
Dsgn. L = 4.02 ft	1	0.369	0.124	351.36	183.85	351.36	1,058.33	952.50	1.23	1.00	46.54	375.44	375.44
Dsgn. L = 4.02 ft	1	0.409	0.110	389.60	351.36	389.60	1,058.33	952.50	1.01	1.00	41.33	375.44	375.44
Dsgn. L = 4.02 ft	1	0.399	0.036	379.61	345.28	379.61	1,058.33	952.50	1.04	1.00	13.54	375.44	375.44
Dsgn. L = 3.93 ft	1	0.362	0.037	345.28	291.16	345.28	1,058.33	952.50	1.07	1.00	13.99	375.44	375.44
Dsgn. L = 4.02 ft	1	0.306	0.051	291.16	215.18	291.16	1,058.33	952.50	1.12	1.00	19.20	375.44	375.44
Dsgn. L = 4.02 ft	1	0.226	0.065	215.18	118.12	215.18	1,058.33	952.50	1.22	1.00	24.41	375.44	375.44
Dsgn. L = 4.02 ft	1	0.124	0.079	118.12		118.12	1,058.33	952.50	1.66	1.00	29.62	375.44	375.44
<b>+1.20D+0.50Lr+L+W+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.235	0.152	223.93		223.93	1,058.33	952.50	1.69	1.00	57.18	375.44	375.44
Dsgn. L = 4.02 ft	1	0.442	0.151	421.43	223.93	421.43	1,058.33	952.50	1.23	1.00	56.74	375.44	375.44
Dsgn. L = 4.02 ft	1	0.490	0.130	466.59	421.43	466.59	1,058.33	952.50	1.00	1.00	48.74	375.44	375.44
Dsgn. L = 4.02 ft	1	0.490	0.040	466.59	437.26	466.59	1,058.33	952.50	1.03	1.00	15.11	375.44	375.44
Dsgn. L = 3.93 ft	1	0.459	0.041	437.26	377.00	437.26	1,058.33	952.50	1.06	1.00	15.55	375.44	375.44
Dsgn. L = 4.02 ft	1	0.396	0.063	377.00	283.68	377.00	1,058.33	952.50	1.11	1.00	23.55	375.44	375.44
Dsgn. L = 4.02 ft	1	0.298	0.084	283.68	158.02	283.68	1,058.33	952.50	1.21	1.00	31.55	375.44	375.44
Dsgn. L = 4.02 ft	1	0.166	0.105	158.02		158.02	1,058.33	952.50	1.66	1.00	39.55	375.44	375.44
<b>+1.20D+L+0.50S+W+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.258	0.167	246.00		246.00	1,058.33	952.50	1.69	1.00	62.79	375.44	375.44
Dsgn. L = 4.02 ft	1	0.487	0.166	464.10	246.00	464.10	1,058.33	952.50	1.23	1.00	62.35	375.44	375.44
Dsgn. L = 4.02 ft	1	0.538	0.143	512.31	464.10	512.31	1,058.33	952.50	1.00	1.00	53.85	375.44	375.44
Dsgn. L = 4.02 ft	1	0.537	0.045	511.85	477.45	511.85	1,058.33	952.50	1.03	1.00	16.87	375.44	375.44

**Steel Beam**

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LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B12**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.93 ft	1	0.501	0.046	477.45	410.26	477.45	1,058.33	952.50	1.06	1.00	17.31	375.44	375.44
Dsgn. L = 4.02 ft	1	0.431	0.069	410.26	307.88	410.26	1,058.33	952.50	1.11	1.00	25.81	375.44	375.44
Dsgn. L = 4.02 ft	1	0.323	0.091	307.88	171.13	307.88	1,058.33	952.50	1.22	1.00	34.31	375.44	375.44
Dsgn. L = 4.02 ft	1	0.180	0.114	171.13		171.13	1,058.33	952.50	1.66	1.00	42.81	375.44	375.44
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.089	0.058	84.92		84.92	1,058.33	952.50	1.69	1.00	21.77	375.44	375.44
Dsgn. L = 4.02 ft	1	0.169	0.057	161.10	84.92	161.10	1,058.33	952.50	1.23	1.00	21.43	375.44	375.44
Dsgn. L = 4.02 ft	1	0.187	0.050	178.24	161.10	178.24	1,058.33	952.50	1.00	1.00	18.73	375.44	375.44
Dsgn. L = 4.02 ft	1	0.185	0.016	176.10	162.51	176.10	1,058.33	952.50	1.03	1.00	5.93	375.44	375.44
Dsgn. L = 3.93 ft	1	0.171	0.017	162.51	138.54	162.51	1,058.33	952.50	1.06	1.00	6.26	375.44	375.44
Dsgn. L = 4.02 ft	1	0.145	0.024	138.54	103.31	138.54	1,058.33	952.50	1.11	1.00	8.97	375.44	375.44
Dsgn. L = 4.02 ft	1	0.108	0.031	103.31	57.13	103.31	1,058.33	952.50	1.22	1.00	11.68	375.44	375.44
Dsgn. L = 4.02 ft	1	0.060	0.038	57.13		57.13	1,058.33	952.50	1.66	1.00	14.38	375.44	375.44
<b>+1.20D+L+0.20S+E+1.60H</b>													
Dsgn. L = 3.93 ft	1	0.244	0.158	232.76		232.76	1,058.33	952.50	1.69	1.00	59.43	375.44	375.44
Dsgn. L = 4.02 ft	1	0.460	0.157	438.50	232.76	438.50	1,058.33	952.50	1.23	1.00	58.98	375.44	375.44
Dsgn. L = 4.02 ft	1	0.509	0.135	484.69	438.50	484.69	1,058.33	952.50	1.00	1.00	50.78	375.44	375.44
Dsgn. L = 4.02 ft	1	0.509	0.042	484.69	453.34	484.69	1,058.33	952.50	1.03	1.00	15.81	375.44	375.44
Dsgn. L = 3.93 ft	1	0.476	0.043	453.34	390.30	453.34	1,058.33	952.50	1.06	1.00	16.26	375.44	375.44
Dsgn. L = 4.02 ft	1	0.410	0.065	390.30	293.36	390.30	1,058.33	952.50	1.11	1.00	24.46	375.44	375.44
Dsgn. L = 4.02 ft	1	0.308	0.087	293.36	163.26	293.36	1,058.33	952.50	1.21	1.00	32.66	375.44	375.44
Dsgn. L = 4.02 ft	1	0.171	0.109	163.26		163.26	1,058.33	952.50	1.66	1.00	40.85	375.44	375.44
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 3.93 ft	1	0.089	0.058	84.92		84.92	1,058.33	952.50	1.69	1.00	21.77	375.44	375.44
Dsgn. L = 4.02 ft	1	0.169	0.057	161.10	84.92	161.10	1,058.33	952.50	1.23	1.00	21.43	375.44	375.44
Dsgn. L = 4.02 ft	1	0.187	0.050	178.24	161.10	178.24	1,058.33	952.50	1.00	1.00	18.73	375.44	375.44
Dsgn. L = 4.02 ft	1	0.185	0.016	176.10	162.51	176.10	1,058.33	952.50	1.03	1.00	5.93	375.44	375.44
Dsgn. L = 3.93 ft	1	0.171	0.017	162.51	138.54	162.51	1,058.33	952.50	1.06	1.00	6.26	375.44	375.44
Dsgn. L = 4.02 ft	1	0.145	0.024	138.54	103.31	138.54	1,058.33	952.50	1.11	1.00	8.97	375.44	375.44
Dsgn. L = 4.02 ft	1	0.108	0.031	103.31	57.13	103.31	1,058.33	952.50	1.22	1.00	11.68	375.44	375.44
Dsgn. L = 4.02 ft	1	0.060	0.038	57.13		57.13	1,058.33	952.50	1.66	1.00	14.38	375.44	375.44

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.9891	15.269		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	60.397	43.374
Max Upward from Load Combinations	60.397	43.374
Max Upward from Load Cases	32.549	24.761
+D+H	26.816	18.612
+D+L+H	59.364	43.374
+D+Lr+H	26.816	18.612
+D+S+H	39.042	26.136
+D+0.750Lr+0.750L+H	51.227	37.183
+D+0.750L+0.750S+H	60.397	42.826
+D+0.60W+H	26.816	18.612
+D+0.750Lr+0.750L+0.450W+H	51.227	37.183
+D+0.750L+0.750S+0.450W+H	60.397	42.826
+0.60D+0.60W+0.60H	16.089	11.167
+D+0.70E+0.60H	26.816	18.612
+D+0.750L+0.750S+0.5250E+H	60.397	42.826
+0.60D+0.70E+H	16.089	11.167
D Only	26.816	18.612
L Only	32.549	24.761
S Only	12.227	7.523
H Only		

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B12 - Lateral Check

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

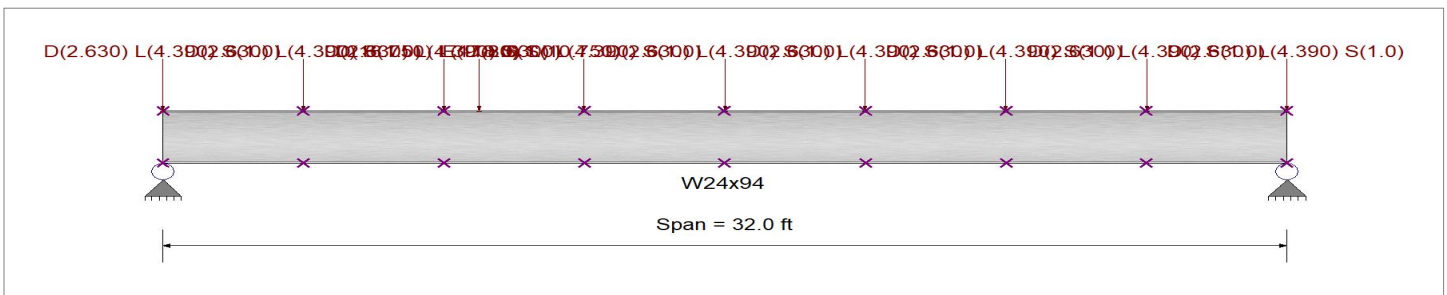
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 2.630, L = 4.390, S = 1.0 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : D = 18.750, L = 17.80, S = 10.750 k @ 9.0 ft, (B12.1)

Point Load : E = -18.0 k @ 9.0 ft, (B53 Uplift)

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.683</b> : 1	Maximum Shear Stress Ratio =	<b>0.212</b> : 1
Section used for this span	<b>W24x94</b>	Section used for this span	<b>W24x94</b>
Mu : Applied	650.919 k-ft	Vu : Applied	79.690 k
Mn * Phi : Allowable	952.500 k-ft	Vn * Phi : Allowable	375.435 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.532 in Ratio = <b>721</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	-0.209 in Ratio = <b>1,840</b> >=360.	Span: 1 : E Only	
Max Downward Total Deflection	0.989 in Ratio = <b>388</b> >=240.	Span: 1 : +D+0.750L+0.750S+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.93 ft	1	0.139	0.090	132.10		132.10	1,058.33	952.50	1.69	1.00	33.86	375.44	375.44
Dsgn. L =	4.02 ft	1	0.263	0.089	250.61	132.10	250.61	1,058.33	952.50	1.23	1.00	33.34	375.44	375.44
Dsgn. L =	4.02 ft	1	0.291	0.078	277.27	250.61	277.27	1,058.33	952.50	1.00	1.00	29.13	375.44	375.44
Dsgn. L =	4.02 ft	1	0.288	0.025	273.94	252.79	273.94	1,058.33	952.50	1.03	1.00	9.22	375.44	375.44
Dsgn. L =	3.93 ft	1	0.265	0.026	252.79	215.51	252.79	1,058.33	952.50	1.06	1.00	9.74	375.44	375.44
Dsgn. L =	4.02 ft	1	0.226	0.037	215.51	160.70	215.51	1,058.33	952.50	1.11	1.00	13.95	375.44	375.44
Dsgn. L =	4.02 ft	1	0.169	0.048	160.70	88.86	160.70	1,058.33	952.50	1.22	1.00	18.16	375.44	375.44
Dsgn. L =	4.02 ft	1	0.093	0.060	88.86		88.86	1,058.33	952.50	1.66	1.00	22.38	375.44	375.44
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	3.93 ft	1	0.305	0.197	290.36		290.36	1,058.33	952.50	1.69	1.00	74.08	375.44	375.44
Dsgn. L =	4.02 ft	1	0.573	0.196	545.40	290.36	545.40	1,058.33	952.50	1.23	1.00	73.63	375.44	375.44

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B12 - Lateral Check**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.02 ft	1	1	0.636	0.168	605.67	545.40	605.67	1,058.33	952.50	1.01	1.00	63.00	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.636	0.052	605.67	569.61	605.67	1,058.33	952.50	1.02	1.00	19.43	375.44	375.44
Dsgn. L = 3.93 ft	1	1	0.598	0.053	569.61	492.36	569.61	1,058.33	952.50	1.06	1.00	19.87	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.517	0.081	492.36	371.25	492.36	1,058.33	952.50	1.11	1.00	30.51	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.390	0.110	371.25	207.13	371.25	1,058.33	952.50	1.21	1.00	41.14	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.217	0.138	207.13		207.13	1,058.33	952.50	1.66	1.00	51.77	375.44	375.44
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L = 3.93 ft	1	1	0.328	0.212	312.42		312.42	1,058.33	952.50	1.69	1.00	79.69	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.617	0.211	588.08	312.42	588.08	1,058.33	952.50	1.23	1.00	79.25	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.683	0.181	650.92	588.08	650.92	1,058.33	952.50	1.00	1.00	68.11	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.683	0.056	650.92	609.80	650.92	1,058.33	952.50	1.03	1.00	21.19	375.44	375.44
Dsgn. L = 3.93 ft	1	1	0.640	0.058	609.80	525.62	609.80	1,058.33	952.50	1.06	1.00	21.63	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.552	0.087	525.62	395.45	525.62	1,058.33	952.50	1.11	1.00	32.77	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.415	0.117	395.45	220.24	395.45	1,058.33	952.50	1.21	1.00	43.90	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.231	0.147	220.24		220.24	1,058.33	952.50	1.66	1.00	55.03	375.44	375.44
<b>+1.20D+1.60Lr+L+1.60H</b>														
Dsgn. L = 3.93 ft	1	1	0.235	0.152	223.93		223.93	1,058.33	952.50	1.69	1.00	57.18	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.442	0.151	421.43	223.93	421.43	1,058.33	952.50	1.23	1.00	56.74	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.490	0.130	466.59	421.43	466.59	1,058.33	952.50	1.00	1.00	48.74	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.490	0.040	466.59	437.26	466.59	1,058.33	952.50	1.03	1.00	15.11	375.44	375.44
Dsgn. L = 3.93 ft	1	1	0.459	0.041	437.26	377.00	437.26	1,058.33	952.50	1.06	1.00	15.55	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.396	0.063	377.00	283.68	377.00	1,058.33	952.50	1.11	1.00	23.55	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.298	0.084	283.68	158.02	283.68	1,058.33	952.50	1.21	1.00	31.55	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.166	0.105	158.02		158.02	1,058.33	952.50	1.66	1.00	39.55	375.44	375.44
<b>+1.20D+1.60Lr+0.50W+1.60H</b>														
Dsgn. L = 3.93 ft	1	1	0.119	0.077	113.23		113.23	1,058.33	952.50	1.69	1.00	29.02	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.226	0.076	214.81	113.23	214.81	1,058.33	952.50	1.23	1.00	28.58	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.250	0.067	237.66	214.81	237.66	1,058.33	952.50	1.00	1.00	24.97	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.247	0.021	234.80	216.68	234.80	1,058.33	952.50	1.03	1.00	7.91	375.44	375.44
Dsgn. L = 3.93 ft	1	1	0.227	0.022	216.68	184.73	216.68	1,058.33	952.50	1.06	1.00	8.35	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.194	0.032	184.73	137.74	184.73	1,058.33	952.50	1.11	1.00	11.96	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.145	0.041	137.74	76.17	137.74	1,058.33	952.50	1.22	1.00	15.57	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.080	0.051	76.17		76.17	1,058.33	952.50	1.66	1.00	19.18	375.44	375.44
<b>+1.20D+L+1.60S+1.60H</b>														
Dsgn. L = 3.93 ft	1	1	0.309	0.200	294.55		294.55	1,058.33	952.50	1.69	1.00	75.14	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.586	0.199	557.98	294.55	557.98	1,058.33	952.50	1.23	1.00	74.70	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.648	0.173	616.77	557.98	616.77	1,058.33	952.50	1.00	1.00	65.10	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.642	0.055	611.40	565.86	611.40	1,058.33	952.50	1.03	1.00	20.74	375.44	375.44
Dsgn. L = 3.93 ft	1	1	0.594	0.056	565.86	483.43	565.86	1,058.33	952.50	1.06	1.00	21.19	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.508	0.082	483.43	361.12	483.43	1,058.33	952.50	1.11	1.00	30.79	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.379	0.108	361.12	199.97	361.12	1,058.33	952.50	1.22	1.00	40.39	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.210	0.133	199.97		199.97	1,058.33	952.50	1.66	1.00	49.99	375.44	375.44
<b>+1.20D+1.60S+0.50W+1.60H</b>														
Dsgn. L = 3.93 ft	1	1	0.193	0.125	183.85		183.85	1,058.33	952.50	1.69	1.00	46.99	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.369	0.124	351.36	183.85	351.36	1,058.33	952.50	1.23	1.00	46.54	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.409	0.110	389.60	351.36	389.60	1,058.33	952.50	1.01	1.00	41.33	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.399	0.036	379.61	345.28	379.61	1,058.33	952.50	1.04	1.00	13.54	375.44	375.44
Dsgn. L = 3.93 ft	1	1	0.362	0.037	345.28	291.16	345.28	1,058.33	952.50	1.07	1.00	13.99	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.306	0.051	291.16	215.18	291.16	1,058.33	952.50	1.12	1.00	19.20	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.226	0.065	215.18	118.12	215.18	1,058.33	952.50	1.22	1.00	24.41	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.124	0.079	118.12		118.12	1,058.33	952.50	1.66	1.00	29.62	375.44	375.44
<b>+1.20D+0.50Lr+L+W+1.60H</b>														
Dsgn. L = 3.93 ft	1	1	0.235	0.152	223.93		223.93	1,058.33	952.50	1.69	1.00	57.18	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.442	0.151	421.43	223.93	421.43	1,058.33	952.50	1.23	1.00	56.74	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.490	0.130	466.59	421.43	466.59	1,058.33	952.50	1.00	1.00	48.74	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.490	0.040	466.59	437.26	466.59	1,058.33	952.50	1.03	1.00	15.11	375.44	375.44
Dsgn. L = 3.93 ft	1	1	0.459	0.041	437.26	377.00	437.26	1,058.33	952.50	1.06	1.00	15.55	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.396	0.063	377.00	283.68	377.00	1,058.33	952.50	1.11	1.00	23.55	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.298	0.084	283.68	158.02	283.68	1,058.33	952.50	1.21	1.00	31.55	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.166	0.105	158.02		158.02	1,058.33	952.50	1.66	1.00	39.55	375.44	375.44
<b>+1.20D+L+0.50S+W+1.60H</b>														
Dsgn. L = 3.93 ft	1	1	0.258	0.167	246.00		246.00	1,058.33	952.50	1.69	1.00	62.79	375.44	375.44
Dsgn. L = 4.02 ft	1	1	0.487	0.166	464.10	246.00	464.10	1,058.33	952.50	1.23	1.00	62.35	375.44	375.44



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B12 - Lateral Check**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.02 ft	4.02 ft	1	0.538	0.143	512.31	464.10	512.31	1,058.33	952.50	1.00	1.00	53.85	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.537	0.045	511.85	477.45	511.85	1,058.33	952.50	1.03	1.00	16.87	375.44	375.44
Dsgn. L = 3.93 ft	3.93 ft	1	0.501	0.046	477.45	410.26	477.45	1,058.33	952.50	1.06	1.00	17.31	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.431	0.069	410.26	307.88	410.26	1,058.33	952.50	1.11	1.00	25.81	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.323	0.091	307.88	171.13	307.88	1,058.33	952.50	1.22	1.00	34.31	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.180	0.114	171.13		171.13	1,058.33	952.50	1.66	1.00	42.81	375.44	375.44
<b>+0.90D+W+1.60H</b>														
Dsgn. L = 3.93 ft	3.93 ft	1	0.089	0.058	84.92		84.92	1,058.33	952.50	1.69	1.00	21.77	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.169	0.057	161.10	84.92	161.10	1,058.33	952.50	1.23	1.00	21.43	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.187	0.050	178.24	161.10	178.24	1,058.33	952.50	1.00	1.00	18.73	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.185	0.016	176.10	162.51	176.10	1,058.33	952.50	1.03	1.00	5.93	375.44	375.44
Dsgn. L = 3.93 ft	3.93 ft	1	0.171	0.017	162.51	138.54	162.51	1,058.33	952.50	1.06	1.00	6.26	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.145	0.024	138.54	103.31	138.54	1,058.33	952.50	1.11	1.00	8.97	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.108	0.031	103.31	57.13	103.31	1,058.33	952.50	1.22	1.00	11.68	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.060	0.038	57.13		57.13	1,058.33	952.50	1.66	1.00	14.38	375.44	375.44
<b>+1.20D+L+0.20S+E+1.60H</b>														
Dsgn. L = 3.93 ft	3.93 ft	1	0.191	0.124	181.90		181.90	1,058.33	952.50	1.69	1.00	46.49	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.352	0.123	335.59	181.90	335.59	1,058.33	952.50	1.22	1.00	46.05	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.402	0.101	383.33	335.59	383.33	1,058.33	952.50	1.02	1.00	37.85	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.402	0.029	383.33	372.34	383.33	1,058.33	952.50	1.01	1.00	10.75	375.44	375.44
Dsgn. L = 3.93 ft	3.93 ft	1	0.391	0.030	372.34	329.20	372.34	1,058.33	952.50	1.05	1.00	11.19	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.346	0.052	329.20	252.63	329.20	1,058.33	952.50	1.10	1.00	19.39	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.265	0.073	252.63	142.90	252.63	1,058.33	952.50	1.21	1.00	27.59	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.150	0.095	142.90		142.90	1,058.33	952.50	1.66	1.00	35.79	375.44	375.44
<b>+0.90D+E+0.90H</b>														
Dsgn. L = 3.93 ft	3.93 ft	1	0.036	0.024	34.06		34.06	1,058.33	952.50	1.68	1.00	8.83	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.061	0.023	58.20	34.06	58.20	1,058.33	952.50	1.19	1.00	8.50	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.078	0.015	74.74	58.20	74.74	1,058.33	952.50	1.10	1.00	5.79	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.086	0.011	81.51	74.74	81.51	1,058.33	952.50	1.03	1.00	4.21	375.44	375.44
Dsgn. L = 3.93 ft	3.93 ft	1	0.086	0.003	81.51	77.45	81.51	1,058.33	952.50	1.02	1.00	1.20	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.081	0.010	77.45	62.58	77.45	1,058.33	952.50	1.08	1.00	3.91	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.066	0.018	62.58	36.76	62.58	1,058.33	952.50	1.19	1.00	6.61	375.44	375.44
Dsgn. L = 4.02 ft	4.02 ft	1	0.039	0.025	36.76		36.76	1,058.33	952.50	1.66	1.00	9.32	375.44	375.44

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.450W+H	1	0.9891	15.269		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	60.397	43.374		
Max Upward from Load Combinations	60.397	43.374		
Max Upward from Load Cases	32.549	24.761		
Max Downward from all Load Conditions (Resis)	-12.938	-5.063		
Max Downward from Load Cases (Resisting U <sub>r</sub> )	-12.938	-5.063		
+D+H	26.816	18.612		
+D+L+H	59.364	43.374		
+D+Lr+H	26.816	18.612		
+D+S+H	39.042	26.136		
+D+0.750Lr+0.750L+H	51.227	37.183		
+D+0.750L+0.750S+H	60.397	42.826		
+D+0.60W+H	26.816	18.612		
+D+0.750Lr+0.750L+0.450W+H	51.227	37.183		
+D+0.750L+0.750S+0.450W+H	60.397	42.826		
+0.60D+0.60W+0.60H	16.089	11.167		
+D+0.70E+0.60H	17.759	15.069		
+D+0.750L+0.750S+0.5250E+H	53.605	40.168		
+0.60D+0.70E+H	7.033	7.624		
D Only	26.816	18.612		
L Only	32.549	24.761		
S Only	12.227	7.523		
E Only	-12.938	-5.063		
H Only				



## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: B13

## CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

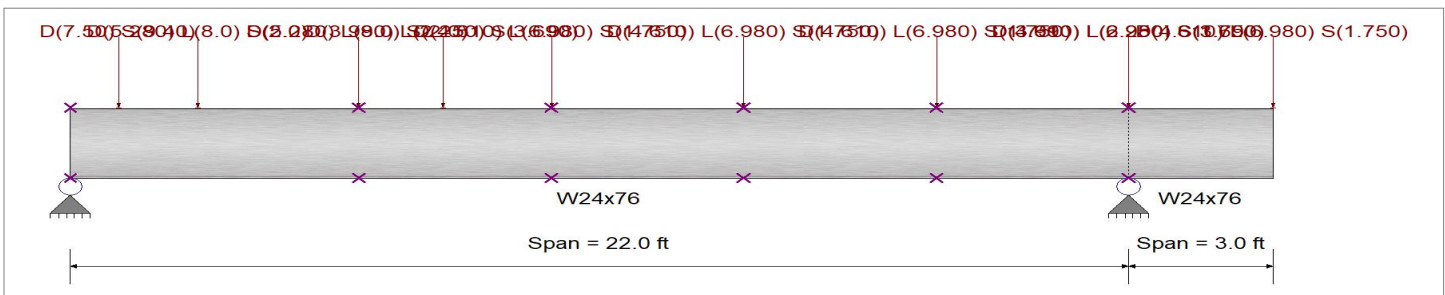
## Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

## Unbraced Lengths

First Brace starts at 6.0 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



## Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 4.610, L = 6.980, S = 1.750 k, Starting at : 10.0 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : D = 5.280, L = 8.0, S = 2.0 k @ 2.670 ft

Point Load : D = 5.280, L = 8.0, S = 2.0 k @ 6.0 ft

Point Load : D = 3.990, L = 2.250, S = 3.690 k @ 7.750 ft, (J5.1)

Point Load : D = 3.990, L = 2.250, S = 3.690 k @ 22.0 ft, (J5.1)

Point Load : D = 7.50, S = 9.40 k @ 1.0 ft

Load(s) for Span Number 2

Point Load : D = 4.610, L = 6.980, S = 1.750 k @ 3.0 ft

## DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	<b>0.445</b> : 1	Maximum Shear Stress Ratio =	<b>0.241</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	333.883 k-ft	Vu : Applied	76.044 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination: 1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)		Load Combination: 1.20D+L+1.60S+1.60H, LL Comb Run (L*)	
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.174 in Ratio = <b>1,512</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.074 in Ratio = <b>978</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.310 in Ratio = <b>852</b> >=240.	Span: 2 : +D+0.750L+0.750S+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.123 in Ratio = <b>587</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B13**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L = 5.98 ft	1		0.157	0.104	117.67		117.67	833.33	750.00	1.45	1.00	32.82	315.48	315.48
Dsgn. L = 3.96 ft	1		0.176	0.045	132.02	117.67	132.02	833.33	750.00	1.02	1.00	14.29	315.48	315.48
Dsgn. L = 4.05 ft	1		0.176	0.019	132.02	109.00	132.02	833.33	750.00	1.07	1.00	5.99	315.48	315.48
Dsgn. L = 3.96 ft	1		0.145	0.041	109.00	58.93	109.00	833.33	750.00	1.22	1.00	12.87	315.48	315.48
Dsgn. L = 4.05 ft	1		0.079	0.080	58.93	-19.84	58.93	833.33	750.00	2.10	1.00	25.34	315.48	315.48
Dsgn. L = 3.00 ft	2		0.026	0.021		-19.84	19.84	833.33	750.00	1.00	1.00	6.77	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L = 5.98 ft	1		0.122	0.084	91.74		91.74	833.33	750.00	1.44	1.00	26.61	315.48	315.48
Dsgn. L = 3.96 ft	1		0.133	0.034	99.43	91.74	99.43	833.33	750.00	1.01	1.00	10.73	315.48	315.48
Dsgn. L = 4.05 ft	1		0.131	0.021	98.02	72.12	98.02	833.33	750.00	1.11	1.00	6.66	315.48	315.48
Dsgn. L = 3.96 ft	1		0.096	0.040	72.12	23.17	72.12	833.33	750.00	1.36	1.00	12.55	315.48	315.48
Dsgn. L = 4.05 ft	1		0.067	0.074	23.17	-50.51	50.51	833.33	750.00	2.14	1.00	23.24	315.48	315.48
Dsgn. L = 3.00 ft	2		0.067	0.054		-50.51	50.51	833.33	750.00	1.00	1.00	16.97	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L = 5.98 ft	1		0.358	0.200	268.30		268.30	833.33	750.00	1.49	1.00	63.20	315.48	315.48
Dsgn. L = 3.96 ft	1		0.414	0.109	310.42	268.30	310.42	833.33	750.00	1.04	1.00	34.52	315.48	315.48
Dsgn. L = 4.05 ft	1		0.414	0.033	310.46	269.87	310.46	833.33	750.00	1.05	1.00	10.43	315.48	315.48
Dsgn. L = 3.96 ft	1		0.360	0.087	269.87	161.84	269.87	833.33	750.00	1.19	1.00	27.49	315.48	315.48
Dsgn. L = 4.05 ft	1		0.216	0.168	161.84	-17.01	161.84	833.33	750.00	1.78	1.00	52.95	315.48	315.48
Dsgn. L = 3.00 ft	2		0.023	0.018		-17.01	17.01	833.33	750.00	1.00	1.00	5.81	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L = 5.98 ft	1		0.346	0.196	259.19		259.19	833.33	750.00	1.49	1.00	61.68	315.48	315.48
Dsgn. L = 3.96 ft	1		0.394	0.105	295.27	259.19	295.27	833.33	750.00	1.04	1.00	33.00	315.48	315.48
Dsgn. L = 4.05 ft	1		0.394	0.038	295.27	248.56	295.27	833.33	750.00	1.07	1.00	11.96	315.48	315.48
Dsgn. L = 3.96 ft	1		0.331	0.092	248.56	134.50	248.56	833.33	750.00	1.22	1.00	29.02	315.48	315.48
Dsgn. L = 4.05 ft	1		0.179	0.173	134.50	-50.51	134.50	833.33	750.00	2.11	1.00	54.47	315.48	315.48
Dsgn. L = 3.00 ft	2		0.067	0.054		-50.51	50.51	833.33	750.00	1.00	1.00	16.97	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L = 5.98 ft	1		0.151	0.110	113.61		113.61	833.33	750.00	1.43	1.00	34.73	315.48	315.48
Dsgn. L = 3.96 ft	1		0.165	0.042	123.82	113.61	123.82	833.33	750.00	1.01	1.00	13.15	315.48	315.48
Dsgn. L = 4.05 ft	1		0.162	0.025	121.49	90.39	121.49	833.33	750.00	1.11	1.00	7.96	315.48	315.48
Dsgn. L = 3.96 ft	1		0.121	0.047	90.39	32.84	90.39	833.33	750.00	1.33	1.00	14.72	315.48	315.48
Dsgn. L = 4.05 ft	1		0.071	0.089	32.84	-53.14	53.14	833.33	750.00	2.16	1.00	28.13	315.48	315.48
Dsgn. L = 3.00 ft	2		0.071	0.057		-53.14	53.14	833.33	750.00	1.00	1.00	17.85	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L = 5.98 ft	1		0.387	0.226	290.17		290.17	833.33	750.00	1.48	1.00	71.33	315.48	315.48
Dsgn. L = 3.96 ft	1		0.445	0.117	333.88	290.17	333.88	833.33	750.00	1.04	1.00	36.94	315.48	315.48
Dsgn. L = 4.05 ft	1		0.445	0.037	333.88	288.13	333.88	833.33	750.00	1.06	1.00	11.73	315.48	315.48
Dsgn. L = 3.96 ft	1		0.384	0.094	288.13	171.51	288.13	833.33	750.00	1.19	1.00	29.67	315.48	315.48
Dsgn. L = 4.05 ft	1		0.229	0.183	171.51	-19.63	171.51	833.33	750.00	1.80	1.00	57.84	315.48	315.48
Dsgn. L = 3.00 ft	2		0.026	0.021		-19.63	19.63	833.33	750.00	1.00	1.00	6.68	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L = 5.98 ft	1		0.375	0.221	281.06		281.06	833.33	750.00	1.48	1.00	69.80	315.48	315.48
Dsgn. L = 3.96 ft	1		0.425	0.112	318.74	281.06	318.74	833.33	750.00	1.03	1.00	35.42	315.48	315.48
Dsgn. L = 4.05 ft	1		0.425	0.042	318.74	266.82	318.74	833.33	750.00	1.07	1.00	13.25	315.48	315.48
Dsgn. L = 3.96 ft	1		0.356	0.099	266.82	144.17	266.82	833.33	750.00	1.22	1.00	31.19	315.48	315.48
Dsgn. L = 4.05 ft	1		0.192	0.188	144.17	-53.14	144.17	833.33	750.00	2.11	1.00	59.37	315.48	315.48
Dsgn. L = 3.00 ft	2		0.071	0.057		-53.14	53.14	833.33	750.00	1.00	1.00	17.85	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L = 5.98 ft	1		0.127	0.086	95.16		95.16	833.33	750.00	1.44	1.00	27.18	315.48	315.48
Dsgn. L = 3.96 ft	1		0.139	0.036	103.89	95.16	103.89	833.33	750.00	1.01	1.00	11.30	315.48	315.48
Dsgn. L = 4.05 ft	1		0.138	0.019	103.70	80.11	103.70	833.33	750.00	1.10	1.00	6.09	315.48	315.48
Dsgn. L = 3.96 ft	1		0.107	0.038	80.11	33.43	80.11	833.33	750.00	1.29	1.00	11.98	315.48	315.48
Dsgn. L = 4.05 ft	1		0.051	0.072	33.43	-37.95	37.95	833.33	750.00	2.21	1.00	22.67	315.48	315.48
Dsgn. L = 3.00 ft	2		0.051	0.041		-37.95	37.95	833.33	750.00	1.00	1.00	12.79	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L = 5.98 ft	1		0.274	0.159	205.51		205.51	833.33	750.00	1.48	1.00	50.05	315.48	315.48
Dsgn. L = 3.96 ft	1		0.315	0.083	236.45	205.51	236.45	833.33	750.00	1.04	1.00	26.17	315.48	315.48
Dsgn. L = 4.05 ft	1		0.315	0.027	236.45	203.70	236.45	833.33	750.00	1.06	1.00	8.45	315.48	315.48
Dsgn. L = 3.96 ft	1		0.272	0.068	203.70	120.09	203.70	833.33	750.00	1.19	1.00	21.32	315.48	315.48
Dsgn. L = 4.05 ft	1		0.160	0.131	120.09	-17.01	120.09	833.33	750.00	1.83	1.00	41.24	315.48	315.48
Dsgn. L = 3.00 ft	2		0.023	0.018		-17.01	17.01	833.33	750.00	1.00	1.00	5.81	315.48	315.48



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B13**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 5.98 ft	1	0.266	0.156	199.81		199.81	833.33	750.00	1.48	1.00	49.10	315.48	315.48
Dsgn. L = 3.96 ft	1	0.303	0.080	226.98	199.81	226.98	833.33	750.00	1.03	1.00	25.22	315.48	315.48
Dsgn. L = 4.05 ft	1	0.303	0.030	226.98	190.38	226.98	833.33	750.00	1.07	1.00	9.40	315.48	315.48
Dsgn. L = 3.96 ft	1	0.254	0.071	190.38	103.00	190.38	833.33	750.00	1.22	1.00	22.27	315.48	315.48
Dsgn. L = 4.05 ft	1	0.137	0.134	103.00	-37.95	103.00	833.33	750.00	2.11	1.00	42.19	315.48	315.48
Dsgn. L = 3.00 ft	2	0.051	0.041		-37.95	37.95	833.33	750.00	1.00	1.00	12.79	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 5.98 ft	1	0.134	0.089	100.86		100.86	833.33	750.00	1.45	1.00	28.13	315.48	315.48
Dsgn. L = 3.96 ft	1	0.151	0.039	113.16	100.86	113.16	833.33	750.00	1.02	1.00	12.25	315.48	315.48
Dsgn. L = 4.05 ft	1	0.151	0.016	113.16	93.43	113.16	833.33	750.00	1.07	1.00	5.14	315.48	315.48
Dsgn. L = 3.96 ft	1	0.125	0.035	93.43	50.51	93.43	833.33	750.00	1.22	1.00	11.03	315.48	315.48
Dsgn. L = 4.05 ft	1	0.067	0.069	50.51	-17.01	50.51	833.33	750.00	2.10	1.00	21.72	315.48	315.48
Dsgn. L = 3.00 ft	2	0.023	0.018		-17.01	17.01	833.33	750.00	1.00	1.00	5.81	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 5.98 ft	1	0.134	0.089	100.86		100.86	833.33	750.00	1.45	1.00	28.13	315.48	315.48
Dsgn. L = 3.96 ft	1	0.151	0.039	113.16	100.86	113.16	833.33	750.00	1.02	1.00	12.25	315.48	315.48
Dsgn. L = 4.05 ft	1	0.151	0.016	113.16	93.43	113.16	833.33	750.00	1.07	1.00	5.14	315.48	315.48
Dsgn. L = 3.96 ft	1	0.125	0.035	93.43	50.51	93.43	833.33	750.00	1.22	1.00	11.03	315.48	315.48
Dsgn. L = 4.05 ft	1	0.067	0.069	50.51	-17.01	50.51	833.33	750.00	2.10	1.00	21.72	315.48	315.48
Dsgn. L = 3.00 ft	2	0.023	0.018		-17.01	17.01	833.33	750.00	1.00	1.00	5.81	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 5.98 ft	1	0.134	0.089	100.86		100.86	833.33	750.00	1.45	1.00	28.13	315.48	315.48
Dsgn. L = 3.96 ft	1	0.151	0.039	113.16	100.86	113.16	833.33	750.00	1.02	1.00	12.25	315.48	315.48
Dsgn. L = 4.05 ft	1	0.151	0.016	113.16	93.43	113.16	833.33	750.00	1.07	1.00	5.14	315.48	315.48
Dsgn. L = 3.96 ft	1	0.125	0.035	93.43	50.51	93.43	833.33	750.00	1.22	1.00	11.03	315.48	315.48
Dsgn. L = 4.05 ft	1	0.067	0.069	50.51	-17.01	50.51	833.33	750.00	2.10	1.00	21.72	315.48	315.48
Dsgn. L = 3.00 ft	2	0.023	0.018		-17.01	17.01	833.33	750.00	1.00	1.00	5.81	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 5.98 ft	1	0.220	0.169	165.14		165.14	833.33	750.00	1.42	1.00	53.17	315.48	315.48
Dsgn. L = 3.96 ft	1	0.243	0.060	181.89	165.14	181.89	833.33	750.00	1.01	1.00	19.05	315.48	315.48
Dsgn. L = 4.05 ft	1	0.238	0.032	178.79	138.56	178.79	833.33	750.00	1.10	1.00	10.24	315.48	315.48
Dsgn. L = 3.96 ft	1	0.185	0.060	138.56	64.37	138.56	833.33	750.00	1.26	1.00	18.93	315.48	315.48
Dsgn. L = 4.05 ft	1	0.086	0.121	64.37	-46.35	64.37	833.33	750.00	2.16	1.00	38.33	315.48	315.48
Dsgn. L = 3.00 ft	2	0.062	0.049		-46.35	46.35	833.33	750.00	1.00	1.00	15.59	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 5.98 ft	1	0.367	0.241	275.48		275.48	833.33	750.00	1.46	1.00	76.04	315.48	315.48
Dsgn. L = 3.96 ft	1	0.415	0.108	311.54	275.48	311.54	833.33	750.00	1.03	1.00	33.92	315.48	315.48
Dsgn. L = 4.05 ft	1	0.415	0.040	311.54	262.15	311.54	833.33	750.00	1.07	1.00	12.60	315.48	315.48
Dsgn. L = 3.96 ft	1	0.350	0.090	262.15	151.03	262.15	833.33	750.00	1.20	1.00	28.27	315.48	315.48
Dsgn. L = 4.05 ft	1	0.201	0.180	151.03	-25.41	151.03	833.33	750.00	1.87	1.00	56.89	315.48	315.48
Dsgn. L = 3.00 ft	2	0.034	0.027		-25.41	25.41	833.33	750.00	1.00	1.00	8.61	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 5.98 ft	1	0.360	0.238	269.79		269.79	833.33	750.00	1.45	1.00	75.09	315.48	315.48
Dsgn. L = 3.96 ft	1	0.403	0.105	302.08	269.79	302.08	833.33	750.00	1.02	1.00	32.97	315.48	315.48
Dsgn. L = 4.05 ft	1	0.403	0.043	302.08	248.83	302.08	833.33	750.00	1.07	1.00	13.55	315.48	315.48
Dsgn. L = 3.96 ft	1	0.332	0.093	248.83	133.94	248.83	833.33	750.00	1.22	1.00	29.22	315.48	315.48
Dsgn. L = 4.05 ft	1	0.179	0.183	133.94	-46.35	133.94	833.33	750.00	2.10	1.00	57.85	315.48	315.48
Dsgn. L = 3.00 ft	2	0.062	0.049		-46.35	46.35	833.33	750.00	1.00	1.00	15.59	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 5.98 ft	1	0.228	0.172	170.83		170.83	833.33	750.00	1.43	1.00	54.12	315.48	315.48
Dsgn. L = 3.96 ft	1	0.252	0.063	189.29	170.83	189.29	833.33	750.00	1.01	1.00	20.00	315.48	315.48
Dsgn. L = 4.05 ft	1	0.251	0.029	188.26	151.88	188.26	833.33	750.00	1.08	1.00	9.29	315.48	315.48
Dsgn. L = 3.96 ft	1	0.203	0.057	151.88	81.45	151.88	833.33	750.00	1.22	1.00	17.98	315.48	315.48
Dsgn. L = 4.05 ft	1	0.109	0.118	81.45	-25.41	81.45	833.33	750.00	2.09	1.00	37.37	315.48	315.48
Dsgn. L = 3.00 ft	2	0.034	0.027		-25.41	25.41	833.33	750.00	1.00	1.00	8.61	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 5.98 ft	1	0.127	0.086	95.16		95.16	833.33	750.00	1.44	1.00	27.18	315.48	315.48
Dsgn. L = 3.96 ft	1	0.139	0.036	103.89	95.16	103.89	833.33	750.00	1.01	1.00	11.30	315.48	315.48
Dsgn. L = 4.05 ft	1	0.138	0.019	103.70	80.11	103.70	833.33	750.00	1.10	1.00	6.09	315.48	315.48
Dsgn. L = 3.96 ft	1	0.107	0.038	80.11	33.43	80.11	833.33	750.00	1.29	1.00	11.98	315.48	315.48
Dsgn. L = 4.05 ft	1	0.051	0.072	33.43	-37.95	37.95	833.33	750.00	2.21	1.00	22.67	315.48	315.48
Dsgn. L = 3.00 ft	2	0.051	0.041		-37.95	37.95	833.33	750.00	1.00	1.00	12.79	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B13**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>														
Dsgn. L = 5.98 ft	1		0.274	0.159	205.51		205.51	833.33	750.00	1.48	1.00	50.05	315.48	315.48
Dsgn. L = 3.96 ft	1		0.315	0.083	236.45	205.51	236.45	833.33	750.00	1.04	1.00	26.17	315.48	315.48
Dsgn. L = 4.05 ft	1		0.315	0.027	236.45	203.70	236.45	833.33	750.00	1.06	1.00	8.45	315.48	315.48
Dsgn. L = 3.96 ft	1		0.272	0.068	203.70	120.09	203.70	833.33	750.00	1.19	1.00	21.32	315.48	315.48
Dsgn. L = 4.05 ft	1		0.160	0.131	120.09	-17.01	120.09	833.33	750.00	1.83	1.00	41.24	315.48	315.48
Dsgn. L = 3.00 ft	2		0.023	0.018		-17.01	17.01	833.33	750.00	1.00	1.00	5.81	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>														
Dsgn. L = 5.98 ft	1		0.266	0.156	199.81		199.81	833.33	750.00	1.48	1.00	49.10	315.48	315.48
Dsgn. L = 3.96 ft	1		0.303	0.080	226.98	199.81	226.98	833.33	750.00	1.03	1.00	25.22	315.48	315.48
Dsgn. L = 4.05 ft	1		0.303	0.030	226.98	190.38	226.98	833.33	750.00	1.07	1.00	9.40	315.48	315.48
Dsgn. L = 3.96 ft	1		0.254	0.071	190.38	103.00	190.38	833.33	750.00	1.22	1.00	22.27	315.48	315.48
Dsgn. L = 4.05 ft	1		0.137	0.134	103.00	-37.95	103.00	833.33	750.00	2.11	1.00	42.19	315.48	315.48
Dsgn. L = 3.00 ft	2		0.051	0.041		-37.95	37.95	833.33	750.00	1.00	1.00	12.79	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L = 5.98 ft	1		0.156	0.112	117.03		117.03	833.33	750.00	1.43	1.00	35.30	315.48	315.48
Dsgn. L = 3.96 ft	1		0.171	0.043	128.25	117.03	128.25	833.33	750.00	1.01	1.00	13.72	315.48	315.48
Dsgn. L = 4.05 ft	1		0.170	0.023	127.16	98.38	127.16	833.33	750.00	1.10	1.00	7.38	315.48	315.48
Dsgn. L = 3.96 ft	1		0.131	0.045	98.38	43.10	98.38	833.33	750.00	1.28	1.00	14.15	315.48	315.48
Dsgn. L = 4.05 ft	1		0.057	0.087	43.10	-40.57	43.10	833.33	750.00	2.19	1.00	27.56	315.48	315.48
Dsgn. L = 3.00 ft	2		0.054	0.043		-40.57	40.57	833.33	750.00	1.00	1.00	13.66	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L = 5.98 ft	1		0.303	0.184	227.38		227.38	833.33	750.00	1.47	1.00	58.17	315.48	315.48
Dsgn. L = 3.96 ft	1		0.347	0.091	259.91	227.38	259.91	833.33	750.00	1.03	1.00	28.59	315.48	315.48
Dsgn. L = 4.05 ft	1		0.347	0.031	259.91	221.97	259.91	833.33	750.00	1.06	1.00	9.74	315.48	315.48
Dsgn. L = 3.96 ft	1		0.296	0.074	221.97	129.76	221.97	833.33	750.00	1.19	1.00	23.49	315.48	315.48
Dsgn. L = 4.05 ft	1		0.173	0.146	129.76	-19.63	129.76	833.33	750.00	1.84	1.00	46.13	315.48	315.48
Dsgn. L = 3.00 ft	2		0.026	0.021		-19.63	19.63	833.33	750.00	1.00	1.00	6.68	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L = 5.98 ft	1		0.296	0.181	221.68		221.68	833.33	750.00	1.47	1.00	57.22	315.48	315.48
Dsgn. L = 3.96 ft	1		0.334	0.088	250.45	221.68	250.45	833.33	750.00	1.03	1.00	27.64	315.48	315.48
Dsgn. L = 4.05 ft	1		0.334	0.034	250.45	208.65	250.45	833.33	750.00	1.07	1.00	10.70	315.48	315.48
Dsgn. L = 3.96 ft	1		0.278	0.077	208.65	112.67	208.65	833.33	750.00	1.22	1.00	24.44	315.48	315.48
Dsgn. L = 4.05 ft	1		0.150	0.149	112.67	-40.57	112.67	833.33	750.00	2.11	1.00	47.08	315.48	315.48
Dsgn. L = 3.00 ft	2		0.054	0.043		-40.57	40.57	833.33	750.00	1.00	1.00	13.66	315.48	315.48
<b>+0.90D+W+1.60H</b>														
Dsgn. L = 5.98 ft	1		0.101	0.067	75.64		75.64	833.33	750.00	1.45	1.00	21.10	315.48	315.48
Dsgn. L = 3.96 ft	1		0.113	0.029	84.87	75.64	84.87	833.33	750.00	1.02	1.00	9.19	315.48	315.48
Dsgn. L = 4.05 ft	1		0.113	0.012	84.87	70.07	84.87	833.33	750.00	1.07	1.00	3.85	315.48	315.48
Dsgn. L = 3.96 ft	1		0.093	0.026	70.07	37.89	70.07	833.33	750.00	1.22	1.00	8.27	315.48	315.48
Dsgn. L = 4.05 ft	1		0.051	0.052	37.89	-12.75	37.89	833.33	750.00	2.10	1.00	16.29	315.48	315.48
Dsgn. L = 3.00 ft	2		0.017	0.014		-12.75	12.75	833.33	750.00	1.00	1.00	4.35	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L = 5.98 ft	1		0.139	0.096	103.91		103.91	833.33	750.00	1.44	1.00	30.43	315.48	315.48
Dsgn. L = 3.96 ft	1		0.152	0.039	113.63	103.91	113.63	833.33	750.00	1.01	1.00	12.27	315.48	315.48
Dsgn. L = 4.05 ft	1		0.151	0.021	113.08	87.42	113.08	833.33	750.00	1.10	1.00	6.61	315.48	315.48
Dsgn. L = 3.96 ft	1		0.117	0.041	87.42	37.29	87.42	833.33	750.00	1.29	1.00	12.85	315.48	315.48
Dsgn. L = 4.05 ft	1		0.052	0.078	37.29	-39.00	39.00	833.33	750.00	2.22	1.00	24.63	315.48	315.48
Dsgn. L = 3.00 ft	2		0.052	0.042		-39.00	39.00	833.33	750.00	1.00	1.00	13.14	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L = 5.98 ft	1		0.286	0.169	214.26		214.26	833.33	750.00	1.48	1.00	53.30	315.48	315.48
Dsgn. L = 3.96 ft	1		0.328	0.086	245.83	214.26	245.83	833.33	750.00	1.04	1.00	27.14	315.48	315.48
Dsgn. L = 4.05 ft	1		0.328	0.028	245.83	211.01	245.83	833.33	750.00	1.06	1.00	8.97	315.48	315.48
Dsgn. L = 3.96 ft	1		0.281	0.070	211.01	123.96	211.01	833.33	750.00	1.19	1.00	22.19	315.48	315.48
Dsgn. L = 4.05 ft	1		0.165	0.137	123.96	-18.06	123.96	833.33	750.00	1.84	1.00	43.20	315.48	315.48
Dsgn. L = 3.00 ft	2		0.024	0.020		-18.06	18.06	833.33	750.00	1.00	1.00	6.16	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L = 5.98 ft	1		0.278	0.166	208.56		208.56	833.33	750.00	1.48	1.00	52.35	315.48	315.48
Dsgn. L = 3.96 ft	1		0.315	0.083	236.37	208.56	236.37	833.33	750.00	1.03	1.00	26.19	315.48	315.48
Dsgn. L = 4.05 ft	1		0.315	0.031	236.37	197.69	236.37	833.33	750.00	1.07	1.00	9.92	315.48	315.48
Dsgn. L = 3.96 ft	1		0.264	0.073	197.69	106.87	197.69	833.33	750.00	1.22	1.00	23.14	315.48	315.48
Dsgn. L = 4.05 ft	1		0.142	0.140	106.87	-39.00	106.87	833.33	750.00	2.11	1.00	44.15	315.48	315.48
Dsgn. L = 3.00 ft	2		0.052	0.042		-39.00	39.00	833.33	750.00	1.00	1.00	13.14	315.48	315.48



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B13**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
<b>+0.90D+E+0.90H</b>															
Dsgn. L =	5.98 ft	1	0.101	0.067	75.64		75.64	833.33	750.00	1.45	1.00	21.10	315.48	315.48	
Dsgn. L =	3.96 ft	1	0.113	0.029	84.87	75.64	84.87	833.33	750.00	1.02	1.00	9.19	315.48	315.48	
Dsgn. L =	4.05 ft	1	0.113	0.012	84.87	70.07	84.87	833.33	750.00	1.07	1.00	3.85	315.48	315.48	
Dsgn. L =	3.96 ft	1	0.093	0.026	70.07	37.89	70.07	833.33	750.00	1.22	1.00	8.27	315.48	315.48	
Dsgn. L =	4.05 ft	1	0.051	0.052	37.89	-12.75	37.89	833.33	750.00	2.10	1.00	16.29	315.48	315.48	
Dsgn. L =	3.00 ft	2	0.017	0.014		-12.75	12.75	833.33	750.00	1.00	1.00	4.35	315.48	315.48	

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.3100	10.648		0.0000	0.000
	2	0.0000	10.648	+D+L+H	-0.1227	3.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	52.067	63.334	
Max Upward from Load Combinations	52.067	63.334	
Max Upward from Load Cases	23.444	34.433	
Max Downward from all Load Conditions (Resis	-0.952		
Max Downward from Load Cases (Resisting U <sub>r</sub>	-0.952		
+D+H	23.444	27.546	
+D+L+H, LL Comb Run (*L)	22.492	42.458	
+D+L+H, LL Comb Run (L*)	45.363	47.067	
+D+L+H, LL Comb Run (LL)	44.411	61.979	
+D+Lr+H, LL Comb Run (*L)	23.444	27.546	
+D+Lr+H, LL Comb Run (L*)	23.444	27.546	
+D+Lr+H, LL Comb Run (LL)	23.444	27.546	
+D+S+H	39.689	40.831	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	22.730	38.730	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	39.883	42.187	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	39.169	53.371	
+D+0.750L+0.750S+H, LL Comb Run (*L)	34.914	48.694	
+D+0.750L+0.750S+H, LL Comb Run (L*)	52.067	52.151	
+D+0.750L+0.750S+H, LL Comb Run (LL)	51.353	63.334	
+D+0.60W+H	23.444	27.546	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	22.730	38.730	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	39.883	42.187	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	39.169	53.371	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	34.914	48.694	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	52.067	52.151	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	51.353	63.334	
+0.60D+0.60W+0.60H	14.066	16.528	
+D+0.70E+0.60H	23.444	27.546	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	34.914	48.694	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	52.067	52.151	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	51.353	63.334	
+0.60D+0.70E+H	14.066	16.528	
D Only	23.444	27.546	
L Only, LL Comb Run (*L)	-0.952	14.912	
L Only, LL Comb Run (L*)	21.919	19.521	
L Only, LL Comb Run (LL)	20.967	34.433	
S Only	16.245	13.285	
H Only			



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B14**

**CODE REFERENCES**

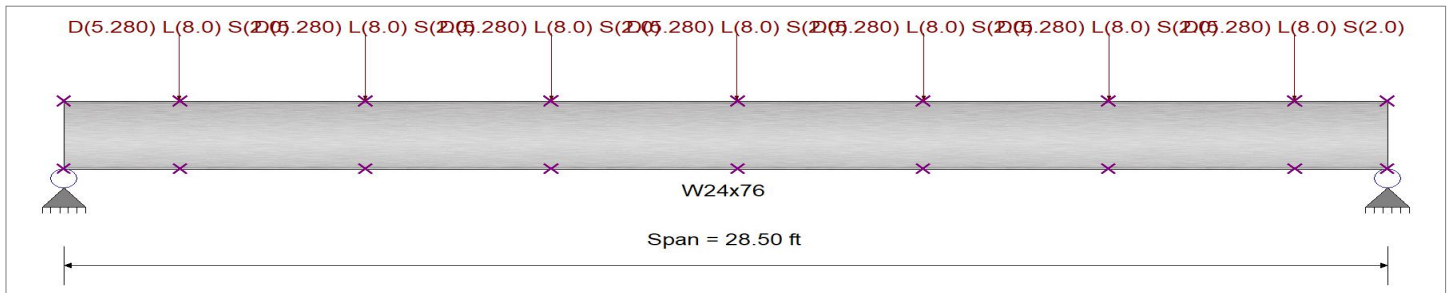
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 2.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 2.50 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.707</b> : 1	Maximum Shear Stress Ratio =	<b>0.231</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	529.916 k-ft	Vu : Applied	73.012 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	28.500 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.493 in Ratio =	<b>693</b> >=360.	Span: 1 : L Only
Max Upward Transient Deflection	0 in Ratio =	<b>0</b> <360.0	n/a
Max Downward Total Deflection	0.837 in Ratio =	<b>408</b> >=240.	Span: 1 : +D+L+H
Max Upward Total Deflection	0 in Ratio =	<b>0</b> <240.0	n/a

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
<b>+1.40D+1.60H</b>															
Dsgn. L =	2.44 ft	1	0.087	0.085	65.48		65.48	65.48	833.33	750.00	1.69	1.00	26.93	315.48	315.48
Dsgn. L =	3.99 ft	1	0.189	0.085	141.99	65.48	141.99	833.33	750.00	1.28	1.00	26.67	315.48	315.48	
Dsgn. L =	3.99 ft	1	0.250	0.060	187.39	141.99	187.39	833.33	750.00	1.11	1.00	18.86	315.48	315.48	
Dsgn. L =	4.07 ft	1	0.269	0.035	201.94	187.39	201.94	833.33	750.00	1.03	1.00	11.04	315.48	315.48	
Dsgn. L =	3.99 ft	1	0.269	0.015	201.94	184.47	201.94	833.33	750.00	1.03	1.00	4.60	315.48	315.48	
Dsgn. L =	3.99 ft	1	0.246	0.039	184.47	135.89	184.47	833.33	750.00	1.11	1.00	12.42	315.48	315.48	
Dsgn. L =	3.99 ft	1	0.181	0.064	135.89	56.19	135.89	833.33	750.00	1.30	1.00	20.23	315.48	315.48	
Dsgn. L =	2.04 ft	1	0.075	0.088	56.19		56.19	833.33	750.00	1.62	1.00	27.84	315.48	315.48	
<b>+1.20D+0.50Lr+1.60L+1.60H</b>															
Dsgn. L =	2.44 ft	1	0.218	0.213	163.65		163.65	833.33	750.00	1.69	1.00	67.10	315.48	315.48	
Dsgn. L =	3.99 ft	1	0.473	0.212	354.50	163.65	354.50	833.33	750.00	1.28	1.00	66.88	315.48	315.48	
Dsgn. L =	3.99 ft	1	0.624	0.150	467.75	354.50	467.75	833.33	750.00	1.11	1.00	47.38	315.48	315.48	
Dsgn. L =	4.07 ft	1	0.672	0.088	504.06	467.75	504.06	833.33	750.00	1.03	1.00	27.88	315.48	315.48	
Dsgn. L =	3.99 ft	1	0.672	0.035	504.06	460.49	504.06	833.33	750.00	1.04	1.00	11.13	315.48	315.48	
Dsgn. L =	3.99 ft	1	0.614	0.097	460.49	339.31	460.49	833.33	750.00	1.11	1.00	30.63	315.48	315.48	
Dsgn. L =	3.99 ft	1	0.452	0.159	339.31	140.51	339.31	833.33	750.00	1.30	1.00	50.13	315.48	315.48	
Dsgn. L =	2.04 ft	1	0.187	0.220	140.51		140.51	833.33	750.00	1.62	1.00	69.45	315.48	315.48	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B14**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
<b>+1.20D+1.60L+0.50S+1.60H</b>													
Dsgn. L = 2.44 ft	1	0.229	0.224	172.05		172.05	833.33	750.00	1.69	1.00	70.54	315.48	315.48
Dsgn. L = 3.99 ft	1	0.497	0.223	372.69	172.05	372.69	833.33	750.00	1.28	1.00	70.32	315.48	315.48
Dsgn. L = 3.99 ft	1	0.656	0.158	491.74	372.69	491.74	833.33	750.00	1.11	1.00	49.82	315.48	315.48
Dsgn. L = 4.07 ft	1	0.707	0.093	529.92	491.74	529.92	833.33	750.00	1.03	1.00	29.32	315.48	315.48
Dsgn. L = 3.99 ft	1	0.707	0.037	529.92	484.11	529.92	833.33	750.00	1.04	1.00	11.69	315.48	315.48
Dsgn. L = 3.99 ft	1	0.645	0.102	484.11	356.71	484.11	833.33	750.00	1.11	1.00	32.19	315.48	315.48
Dsgn. L = 3.99 ft	1	0.476	0.167	356.71	147.72	356.71	833.33	750.00	1.30	1.00	52.69	315.48	315.48
Dsgn. L = 2.04 ft	1	0.197	0.231	147.72		147.72	833.33	750.00	1.62	1.00	73.01	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H</b>													
Dsgn. L = 2.44 ft	1	0.164	0.160	123.33		123.33	833.33	750.00	1.69	1.00	50.60	315.48	315.48
Dsgn. L = 3.99 ft	1	0.356	0.160	267.20	123.33	267.20	833.33	750.00	1.28	1.00	50.37	315.48	315.48
Dsgn. L = 3.99 ft	1	0.470	0.113	352.57	267.20	352.57	833.33	750.00	1.11	1.00	35.67	315.48	315.48
Dsgn. L = 4.07 ft	1	0.507	0.066	379.94	352.57	379.94	833.33	750.00	1.03	1.00	20.97	315.48	315.48
Dsgn. L = 3.99 ft	1	0.507	0.027	379.94	347.10	379.94	833.33	750.00	1.04	1.00	8.43	315.48	315.48
Dsgn. L = 3.99 ft	1	0.463	0.073	347.10	255.74	347.10	833.33	750.00	1.11	1.00	23.13	315.48	315.48
Dsgn. L = 3.99 ft	1	0.341	0.120	255.74	105.88	255.74	833.33	750.00	1.30	1.00	37.83	315.48	315.48
Dsgn. L = 2.04 ft	1	0.141	0.166	105.88		105.88	833.33	750.00	1.62	1.00	52.36	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H</b>													
Dsgn. L = 2.44 ft	1	0.075	0.073	56.13		56.13	833.33	750.00	1.69	1.00	23.09	315.48	315.48
Dsgn. L = 3.99 ft	1	0.162	0.072	121.71	56.13	121.71	833.33	750.00	1.28	1.00	22.86	315.48	315.48
Dsgn. L = 3.99 ft	1	0.214	0.051	160.62	121.71	160.62	833.33	750.00	1.11	1.00	16.16	315.48	315.48
Dsgn. L = 4.07 ft	1	0.231	0.030	173.09	160.62	173.09	833.33	750.00	1.03	1.00	9.46	315.48	315.48
Dsgn. L = 3.99 ft	1	0.231	0.012	173.09	158.12	173.09	833.33	750.00	1.03	1.00	3.94	315.48	315.48
Dsgn. L = 3.99 ft	1	0.211	0.034	158.12	116.48	158.12	833.33	750.00	1.11	1.00	10.64	315.48	315.48
Dsgn. L = 3.99 ft	1	0.155	0.055	116.48	48.17	116.48	833.33	750.00	1.30	1.00	17.34	315.48	315.48
Dsgn. L = 2.04 ft	1	0.064	0.076	48.17		48.17	833.33	750.00	1.62	1.00	23.86	315.48	315.48
<b>+1.20D+L+1.60S+1.60H</b>													
Dsgn. L = 2.44 ft	1	0.200	0.195	150.21		150.21	833.33	750.00	1.69	1.00	61.60	315.48	315.48
Dsgn. L = 3.99 ft	1	0.434	0.195	325.40	150.21	325.40	833.33	750.00	1.28	1.00	61.38	315.48	315.48
Dsgn. L = 3.99 ft	1	0.572	0.138	429.36	325.40	429.36	833.33	750.00	1.11	1.00	43.48	315.48	315.48
Dsgn. L = 4.07 ft	1	0.617	0.081	462.69	429.36	462.69	833.33	750.00	1.03	1.00	25.58	315.48	315.48
Dsgn. L = 3.99 ft	1	0.617	0.032	462.69	422.69	462.69	833.33	750.00	1.04	1.00	10.23	315.48	315.48
Dsgn. L = 3.99 ft	1	0.564	0.089	422.69	311.45	422.69	833.33	750.00	1.11	1.00	28.13	315.48	315.48
Dsgn. L = 3.99 ft	1	0.415	0.146	311.45	128.97	311.45	833.33	750.00	1.30	1.00	46.03	315.48	315.48
Dsgn. L = 2.04 ft	1	0.172	0.202	128.97		128.97	833.33	750.00	1.62	1.00	63.75	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 2.44 ft	1	0.111	0.108	83.01		83.01	833.33	750.00	1.69	1.00	34.09	315.48	315.48
Dsgn. L = 3.99 ft	1	0.240	0.107	179.91	83.01	179.91	833.33	750.00	1.28	1.00	33.87	315.48	315.48
Dsgn. L = 3.99 ft	1	0.317	0.076	237.40	179.91	237.40	833.33	750.00	1.11	1.00	23.97	315.48	315.48
Dsgn. L = 4.07 ft	1	0.341	0.045	255.83	237.40	255.83	833.33	750.00	1.03	1.00	14.07	315.48	315.48
Dsgn. L = 3.99 ft	1	0.341	0.018	255.83	233.71	255.83	833.33	750.00	1.03	1.00	5.74	315.48	315.48
Dsgn. L = 3.99 ft	1	0.312	0.050	233.71	172.18	233.71	833.33	750.00	1.11	1.00	15.64	315.48	315.48
Dsgn. L = 3.99 ft	1	0.230	0.081	172.18	71.25	172.18	833.33	750.00	1.30	1.00	25.54	315.48	315.48
Dsgn. L = 2.04 ft	1	0.095	0.112	71.25		71.25	833.33	750.00	1.62	1.00	35.26	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H</b>													
Dsgn. L = 2.44 ft	1	0.164	0.160	123.33		123.33	833.33	750.00	1.69	1.00	50.60	315.48	315.48
Dsgn. L = 3.99 ft	1	0.356	0.160	267.20	123.33	267.20	833.33	750.00	1.28	1.00	50.37	315.48	315.48
Dsgn. L = 3.99 ft	1	0.470	0.113	352.57	267.20	352.57	833.33	750.00	1.11	1.00	35.67	315.48	315.48
Dsgn. L = 4.07 ft	1	0.507	0.066	379.94	352.57	379.94	833.33	750.00	1.03	1.00	20.97	315.48	315.48
Dsgn. L = 3.99 ft	1	0.507	0.027	379.94	347.10	379.94	833.33	750.00	1.04	1.00	8.43	315.48	315.48
Dsgn. L = 3.99 ft	1	0.463	0.073	347.10	255.74	347.10	833.33	750.00	1.11	1.00	23.13	315.48	315.48
Dsgn. L = 3.99 ft	1	0.341	0.120	255.74	105.88	255.74	833.33	750.00	1.30	1.00	37.83	315.48	315.48
Dsgn. L = 2.04 ft	1	0.141	0.166	105.88		105.88	833.33	750.00	1.62	1.00	52.36	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H</b>													
Dsgn. L = 2.44 ft	1	0.176	0.171	131.73		131.73	833.33	750.00	1.69	1.00	54.03	315.48	315.48
Dsgn. L = 3.99 ft	1	0.381	0.171	285.39	131.73	285.39	833.33	750.00	1.28	1.00	53.81	315.48	315.48
Dsgn. L = 3.99 ft	1	0.502	0.121	376.57	285.39	376.57	833.33	750.00	1.11	1.00	38.11	315.48	315.48
Dsgn. L = 4.07 ft	1	0.541	0.071	405.80	376.57	405.80	833.33	750.00	1.03	1.00	22.41	315.48	315.48
Dsgn. L = 3.99 ft	1	0.541	0.029	405.80	370.72	405.80	833.33	750.00	1.04	1.00	9.00	315.48	315.48
Dsgn. L = 3.99 ft	1	0.494	0.078	370.72	273.15	370.72	833.33	750.00	1.11	1.00	24.70	315.48	315.48
Dsgn. L = 3.99 ft	1	0.364	0.128	273.15	113.09	273.15	833.33	750.00	1.30	1.00	40.40	315.48	315.48
Dsgn. L = 2.04 ft	1	0.151	0.177	113.09		113.09	833.33	750.00	1.62	1.00	55.92	315.48	315.48





Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B14**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 2.44 ft	1	0.056	0.055	42.09		42.09	833.33	750.00	1.69	1.00	17.31	315.48	315.48
Dsgn. L = 3.99 ft	1	0.122	0.054	91.28	42.09	91.28	833.33	750.00	1.28	1.00	17.15	315.48	315.48
Dsgn. L = 3.99 ft	1	0.161	0.038	120.46	91.28	120.46	833.33	750.00	1.11	1.00	12.12	315.48	315.48
Dsgn. L = 4.07 ft	1	0.173	0.022	129.82	120.46	129.82	833.33	750.00	1.03	1.00	7.10	315.48	315.48
Dsgn. L = 3.99 ft	1	0.173	0.009	129.82	118.59	129.82	833.33	750.00	1.03	1.00	2.96	315.48	315.48
Dsgn. L = 3.99 ft	1	0.158	0.025	118.59	87.36	118.59	833.33	750.00	1.11	1.00	7.98	315.48	315.48
Dsgn. L = 3.99 ft	1	0.116	0.041	87.36	36.12	87.36	833.33	750.00	1.30	1.00	13.01	315.48	315.48
Dsgn. L = 2.04 ft	1	0.048	0.057	36.12		36.12	833.33	750.00	1.62	1.00	17.90	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H</b>													
Dsgn. L = 2.44 ft	1	0.169	0.165	126.69		126.69	833.33	750.00	1.69	1.00	51.97	315.48	315.48
Dsgn. L = 3.99 ft	1	0.366	0.164	274.48	126.69	274.48	833.33	750.00	1.28	1.00	51.75	315.48	315.48
Dsgn. L = 3.99 ft	1	0.483	0.116	362.17	274.48	362.17	833.33	750.00	1.11	1.00	36.65	315.48	315.48
Dsgn. L = 4.07 ft	1	0.520	0.068	390.29	362.17	390.29	833.33	750.00	1.03	1.00	21.55	315.48	315.48
Dsgn. L = 3.99 ft	1	0.520	0.027	390.29	356.55	390.29	833.33	750.00	1.04	1.00	8.66	315.48	315.48
Dsgn. L = 3.99 ft	1	0.475	0.075	356.55	262.71	356.55	833.33	750.00	1.11	1.00	23.76	315.48	315.48
Dsgn. L = 3.99 ft	1	0.350	0.123	262.71	108.77	262.71	833.33	750.00	1.30	1.00	38.86	315.48	315.48
Dsgn. L = 2.04 ft	1	0.145	0.170	108.77		108.77	833.33	750.00	1.62	1.00	53.78	315.48	315.48
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 2.44 ft	1	0.056	0.055	42.09		42.09	833.33	750.00	1.69	1.00	17.31	315.48	315.48
Dsgn. L = 3.99 ft	1	0.122	0.054	91.28	42.09	91.28	833.33	750.00	1.28	1.00	17.15	315.48	315.48
Dsgn. L = 3.99 ft	1	0.161	0.038	120.46	91.28	120.46	833.33	750.00	1.11	1.00	12.12	315.48	315.48
Dsgn. L = 4.07 ft	1	0.173	0.022	129.82	120.46	129.82	833.33	750.00	1.03	1.00	7.10	315.48	315.48
Dsgn. L = 3.99 ft	1	0.173	0.009	129.82	118.59	129.82	833.33	750.00	1.03	1.00	2.96	315.48	315.48
Dsgn. L = 3.99 ft	1	0.158	0.025	118.59	87.36	118.59	833.33	750.00	1.11	1.00	7.98	315.48	315.48
Dsgn. L = 3.99 ft	1	0.116	0.041	87.36	36.12	87.36	833.33	750.00	1.30	1.00	13.01	315.48	315.48
Dsgn. L = 2.04 ft	1	0.048	0.057	36.12		36.12	833.33	750.00	1.62	1.00	17.90	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.8374	14.331		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	46.748	48.378
Max Upward from Load Combinations	46.748	48.378
Max Upward from Load Cases	27.509	28.491
+D+H	19.239	19.887
+D+L+H	46.748	48.378
+D+Lr+H	19.239	19.887
+D+S+H	26.116	27.010
+D+0.750Lr+0.750L+H	39.870	41.256
+D+0.750L+0.750S+H	45.028	46.598
+D+0.60W+H	19.239	19.887
+D+0.750Lr+0.750L+0.450W+H	39.870	41.256
+D+0.750L+0.750S+0.450W+H	45.028	46.598
+0.60D+0.60W+0.60H	11.543	11.932
+D+0.70E+0.60H	19.239	19.887
+D+0.750L+0.750S+0.5250E+H	45.028	46.598
+0.60D+0.70E+H	11.543	11.932
D Only	19.239	19.887
L Only	27.509	28.491
S Only	6.877	7.123
H Only		

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B15

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

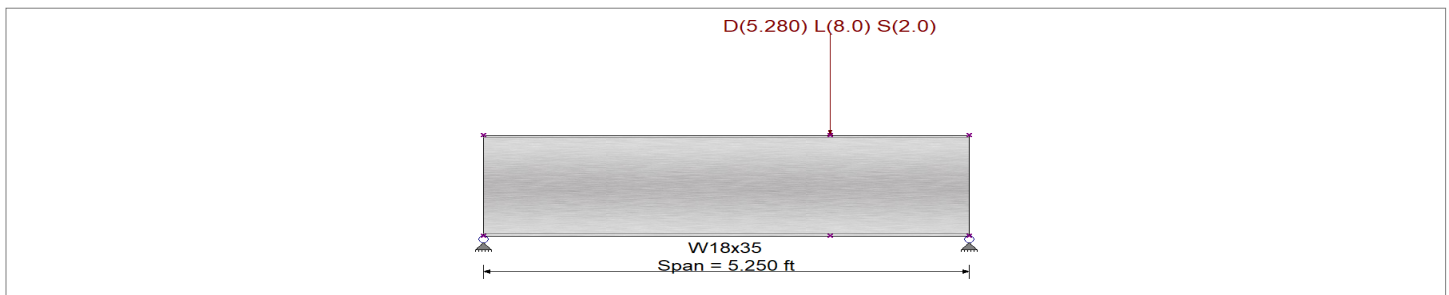
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 3.750 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 3.750 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.087</b> : 1	Maximum Shear Stress Ratio =	<b>0.091</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	21.692 k-ft	Vu : Applied	14.493 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	5.250 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.002 in Ratio = <b>28,764</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.004 in Ratio = <b>17139</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L = 3.75 ft	3.75 ft	1	0.032	0.014	8.06	8.06	277.08	249.38	1.65	1.00	2.24	159.30	159.30		
Dsgn. L = 1.50 ft	1.50 ft	1	0.032	0.034	8.06	8.06	277.08	249.38	1.66	1.00	5.41	159.30	159.30		
+1.20D+0.50Lr+1.60L+1.60H															
Dsgn. L = 3.75 ft	3.75 ft	1	0.083	0.035	20.62	20.62	277.08	249.38	1.66	1.00	5.58	159.30	159.30		
Dsgn. L = 1.50 ft	1.50 ft	1	0.083	0.086	20.62	20.62	277.08	249.38	1.67	1.00	13.78	159.30	159.30		
+1.20D+1.60L+0.50S+1.60H															
Dsgn. L = 3.75 ft	3.75 ft	1	0.087	0.037	21.69	21.69	277.08	249.38	1.66	1.00	5.86	159.30	159.30		
Dsgn. L = 1.50 ft	1.50 ft	1	0.087	0.091	21.69	21.69	277.08	249.38	1.67	1.00	14.49	159.30	159.30		
+1.20D+1.60Lr+L+1.60H															
Dsgn. L = 3.75 ft	3.75 ft	1	0.062	0.026	15.48	15.48	277.08	249.38	1.66	1.00	4.21	159.30	159.30		
Dsgn. L = 1.50 ft	1.50 ft	1	0.062	0.065	15.48	15.48	277.08	249.38	1.67	1.00	10.35	159.30	159.30		
+1.20D+1.60Lr+0.50W+1.60H															
Dsgn. L = 3.75 ft	3.75 ft	1	0.028	0.012	6.91	6.91	277.08	249.38	1.65	1.00	1.92	159.30	159.30		
Dsgn. L = 1.50 ft	1.50 ft	1	0.028	0.029	6.91	6.91	277.08	249.38	1.66	1.00	4.64	159.30	159.30		
+1.20D+L+1.60S+1.60H															
Dsgn. L = 3.75 ft	3.75 ft	1	0.076	0.032	18.91	18.91	277.08	249.38	1.66	1.00	5.12	159.30	159.30		
Dsgn. L = 1.50 ft	1.50 ft	1	0.076	0.079	18.91	18.91	277.08	249.38	1.67	1.00	12.64	159.30	159.30		

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: B15**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60S+0.50W+1.60H														
Dsgn. L = 3.75 ft		1	0.041	0.018	10.34	10.34	277.08	249.38	1.66	1.00	2.83	159.30	159.30	
Dsgn. L = 1.50 ft		1	0.041	0.043	10.34	10.34	277.08	249.38	1.67	1.00	6.92	159.30	159.30	
+1.20D+0.50Lr+L+W+1.60H														
Dsgn. L = 3.75 ft		1	0.062	0.026	15.48	15.48	277.08	249.38	1.66	1.00	4.21	159.30	159.30	
Dsgn. L = 1.50 ft		1	0.062	0.065	15.48	15.48	277.08	249.38	1.67	1.00	10.35	159.30	159.30	
+1.20D+L+0.50S+W+1.60H														
Dsgn. L = 3.75 ft		1	0.066	0.028	16.55	16.55	277.08	249.38	1.66	1.00	4.49	159.30	159.30	
Dsgn. L = 1.50 ft		1	0.066	0.069	16.55	16.55	277.08	249.38	1.67	1.00	11.06	159.30	159.30	
+0.90D+W+1.60H														
Dsgn. L = 3.75 ft		1	0.021	0.009	5.18	5.18	277.08	249.38	1.65	1.00	1.44	159.30	159.30	
Dsgn. L = 1.50 ft		1	0.021	0.022	5.18	5.18	277.08	249.38	1.66	1.00	3.48	159.30	159.30	
+1.20D+L+0.20S+E+1.60H														
Dsgn. L = 3.75 ft		1	0.064	0.027	15.91	15.91	277.08	249.38	1.66	1.00	4.32	159.30	159.30	
Dsgn. L = 1.50 ft		1	0.064	0.067	15.91	15.91	277.08	249.38	1.67	1.00	10.64	159.30	159.30	
+0.90D+E+0.90H														
Dsgn. L = 3.75 ft		1	0.021	0.009	5.18	5.18	277.08	249.38	1.65	1.00	1.44	159.30	159.30	
Dsgn. L = 1.50 ft		1	0.021	0.022	5.18	5.18	277.08	249.38	1.66	1.00	3.48	159.30	159.30	

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0037	2.910		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.886	9.578
Max Upward from Load Combinations	3.886	9.578
Max Upward from Load Cases	2.286	5.714
+D+H	1.600	3.863
+D+L+H	3.886	9.578
+D+Lr+H	1.600	3.863
+D+S+H	2.172	5.292
+D+0.750Lr+0.750L+H	3.315	8.149
+D+0.750L+0.750S+H	3.743	9.220
+D+0.60W+H	1.600	3.863
+D+0.750Lr+0.750L+0.450W+H	3.315	8.149
+D+0.750L+0.750S+0.450W+H	3.743	9.220
+0.60D+0.60W+0.60H	0.960	2.318
+D+0.70E+0.60H	1.600	3.863
+D+0.750L+0.750S+0.5250E+H	3.743	9.220
+0.60D+0.70E+H	0.960	2.318
D Only	1.600	3.863
L Only	2.286	5.714
S Only	0.571	1.429
H Only		

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION:** B16

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

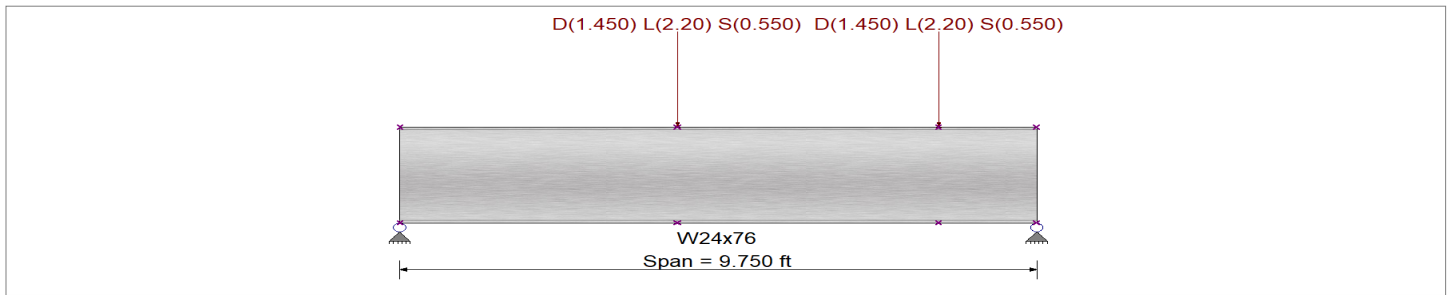
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 4.250 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 1.450, L = 2.20, S = 0.550 k, Starting at : 4.250 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.024 : 1</b>	Maximum Shear Stress Ratio =	<b>0.024 : 1</b>
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	17.936 k-ft	Vu : Applied	7.541 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	9.750 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.002 in Ratio = <b>67,894</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.003 in Ratio = <b>37573</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	4.23 ft	1	0.010	0.006	7.41		7.41	833.33	750.00	1.61	1.00	1.98	315.48	315.48
Dsgn. L =	4.01 ft	1	0.010	0.005	7.43	4.57	7.43	833.33	750.00	1.16	1.00	1.53	315.48	315.48
Dsgn. L =	1.50 ft	1	0.006	0.010	4.57		4.57	833.33	750.00	1.64	1.00	3.12	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	4.23 ft	1	0.023	0.013	17.06		17.06	833.33	750.00	1.64	1.00	4.22	315.48	315.48
Dsgn. L =	4.01 ft	1	0.023	0.012	17.10	10.69	17.10	833.33	750.00	1.17	1.00	3.83	315.48	315.48
Dsgn. L =	1.50 ft	1	0.014	0.023	10.69		10.69	833.33	750.00	1.65	1.00	7.19	315.48	315.48
<b>+1.20D+1.60Lr+0.50S+1.60H</b>														
Dsgn. L =	4.23 ft	1	0.024	0.014	17.89		17.89	833.33	750.00	1.65	1.00	4.42	315.48	315.48
Dsgn. L =	4.01 ft	1	0.024	0.013	17.94	11.22	17.94	833.33	750.00	1.17	1.00	4.03	315.48	315.48
Dsgn. L =	1.50 ft	1	0.015	0.024	11.22		11.22	833.33	750.00	1.65	1.00	7.54	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H</b>														
Dsgn. L =	4.23 ft	1	0.017	0.010	13.04		13.04	833.33	750.00	1.64	1.00	3.27	315.48	315.48
Dsgn. L =	4.01 ft	1	0.017	0.009	13.08	8.15	13.08	833.33	750.00	1.16	1.00	2.89	315.48	315.48
Dsgn. L =	1.50 ft	1	0.011	0.017	8.15		8.15	833.33	750.00	1.65	1.00	5.50	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H</b>														
Dsgn. L =	4.23 ft	1	0.008	0.005	6.35		6.35	833.33	750.00	1.61	1.00	1.69	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B16**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+L+1.60S+1.60H	Dsgn. L = 4.01 ft	1	0.008	0.004	6.37	3.91	6.37	833.33	750.00	1.16	1.00	1.31	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.005	0.008	3.91		3.91	833.33	750.00	1.64	1.00	2.68	315.48	315.48
	Dsgn. L = 4.23 ft	1	0.021	0.012	15.72		15.72	833.33	750.00	1.64	1.00	3.91	315.48	315.48
+1.20D+L+1.60S+0.50W+1.60H	Dsgn. L = 4.01 ft	1	0.021	0.011	15.76	9.84	15.76	833.33	750.00	1.17	1.00	3.52	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.013	0.021	9.84		9.84	833.33	750.00	1.65	1.00	6.62	315.48	315.48
	Dsgn. L = 4.23 ft	1	0.012	0.007	9.03		9.03	833.33	750.00	1.63	1.00	2.33	315.48	315.48
+1.20D+0.50Lr+L+W+1.60H	Dsgn. L = 4.01 ft	1	0.012	0.006	9.05	5.61	9.05	833.33	750.00	1.16	1.00	1.94	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.007	0.012	5.61		5.61	833.33	750.00	1.64	1.00	3.80	315.48	315.48
	Dsgn. L = 4.23 ft	1	0.017	0.010	13.04		13.04	833.33	750.00	1.64	1.00	3.27	315.48	315.48
+1.20D+L+0.50S+W+1.60H	Dsgn. L = 4.01 ft	1	0.017	0.009	13.08	8.15	13.08	833.33	750.00	1.16	1.00	2.89	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.011	0.017	8.15		8.15	833.33	750.00	1.65	1.00	5.50	315.48	315.48
	Dsgn. L = 4.23 ft	1	0.019	0.011	13.88		13.88	833.33	750.00	1.64	1.00	3.47	315.48	315.48
+0.90D+W+1.60H	Dsgn. L = 4.01 ft	1	0.019	0.010	13.91	8.68	13.91	833.33	750.00	1.16	1.00	3.08	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.012	0.019	8.68		8.68	833.33	750.00	1.65	1.00	5.85	315.48	315.48
	Dsgn. L = 4.23 ft	1	0.006	0.004	4.77		4.77	833.33	750.00	1.61	1.00	1.27	315.48	315.48
+1.20D+L+0.20S+E+1.60H	Dsgn. L = 4.01 ft	1	0.006	0.003	4.78	2.94	4.78	833.33	750.00	1.16	1.00	0.98	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.004	0.006	2.94		2.94	833.33	750.00	1.64	1.00	2.01	315.48	315.48
	Dsgn. L = 4.23 ft	1	0.018	0.011	13.38		13.38	833.33	750.00	1.64	1.00	3.35	315.48	315.48
+0.90D+E+0.90H	Dsgn. L = 4.01 ft	1	0.018	0.009	13.41	8.36	13.41	833.33	750.00	1.16	1.00	2.97	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.011	0.018	8.36		8.36	833.33	750.00	1.65	1.00	5.64	315.48	315.48
	Dsgn. L = 4.23 ft	1	0.006	0.004	4.77		4.77	833.33	750.00	1.61	1.00	1.27	315.48	315.48
	Dsgn. L = 4.01 ft	1	0.006	0.003	4.78	2.94	4.78	833.33	750.00	1.16	1.00	0.98	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.004	0.006	2.94		2.94	833.33	750.00	1.64	1.00	2.01	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0031	4.931		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	2.991	5.050		
Max Upward from Load Combinations	2.991	5.050		
Max Upward from Load Cases	1.579	2.821		
+D+H	1.412	2.229		
+D+L+H	2.991	5.050		
+D+Lr+H	1.412	2.229		
+D+S+H	1.806	2.935		
+D+0.750Lr+0.750L+H	2.596	4.345		
+D+0.750L+0.750S+H	2.892	4.874		
+D+0.60W+H	1.412	2.229		
+D+0.750Lr+0.750L+0.450W+H	2.596	4.345		
+D+0.750L+0.750S+0.450W+H	2.892	4.874		
+0.60D+0.60W+0.60H	0.847	1.338		
+D+0.70E+0.60H	1.412	2.229		
+D+0.750L+0.750S+0.5250E+H	2.892	4.874		
+0.60D+0.70E+H	0.847	1.338		
D Only	1.412	2.229		
L Only	1.579	2.821		
S Only	0.395	0.705		
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B17**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

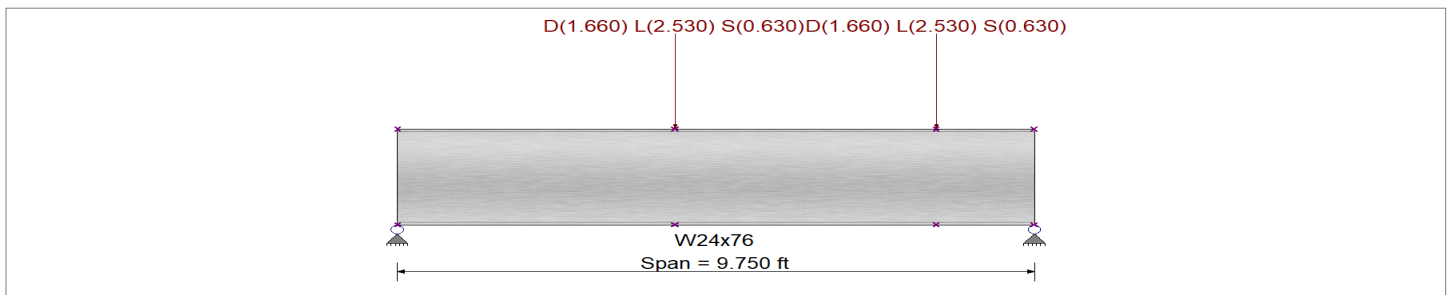
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 4.250 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 1.660, L = 2.530, S = 0.630 k, Starting at : 4.250 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.027</b> : 1	Maximum Shear Stress Ratio =	<b>0.027</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	20.436 k-ft	Vu : Applied	8.592 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	9.750 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.002 in Ratio = <b>59,038</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.004 in Ratio = <b>33079</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	4.23 ft	1	0.011	0.007	8.31		8.31	833.33	750.00	1.61	1.00	2.19	315.48	315.48
Dsgn. L =	4.01 ft	1	0.011	0.006	8.33	5.13	8.33	833.33	750.00	1.16	1.00	1.74	315.48	315.48
Dsgn. L =	1.50 ft	1	0.007	0.011	5.13		5.13	833.33	750.00	1.64	1.00	3.50	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	4.23 ft	1	0.026	0.015	19.43		19.43	833.33	750.00	1.65	1.00	4.78	315.48	315.48
Dsgn. L =	4.01 ft	1	0.026	0.014	19.48	12.19	19.48	833.33	750.00	1.17	1.00	4.39	315.48	315.48
Dsgn. L =	1.50 ft	1	0.016	0.026	12.19		12.19	833.33	750.00	1.65	1.00	8.19	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L =	4.23 ft	1	0.027	0.016	20.38		20.38	833.33	750.00	1.65	1.00	5.01	315.48	315.48
Dsgn. L =	4.01 ft	1	0.027	0.015	20.44	12.79	20.44	833.33	750.00	1.17	1.00	4.62	315.48	315.48
Dsgn. L =	1.50 ft	1	0.017	0.027	12.79		12.79	833.33	750.00	1.65	1.00	8.59	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H</b>														
Dsgn. L =	4.23 ft	1	0.020	0.012	14.81		14.81	833.33	750.00	1.64	1.00	3.69	315.48	315.48
Dsgn. L =	4.01 ft	1	0.020	0.010	14.85	9.27	14.85	833.33	750.00	1.16	1.00	3.30	315.48	315.48
Dsgn. L =	1.50 ft	1	0.012	0.020	9.27		9.27	833.33	750.00	1.65	1.00	6.24	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H</b>														
Dsgn. L =	4.23 ft	1	0.009	0.006	7.12		7.12	833.33	750.00	1.61	1.00	1.87	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: B17**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+L+1.60S+1.60H	Dsgn. L = 4.01 ft	1	0.010	0.005	7.14	4.40	7.14	833.33	750.00	1.16	1.00	1.49	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.006	0.010	4.40		4.40	833.33	750.00	1.64	1.00	3.00	315.48	315.48
+1.20D+L+1.60S+1.60H	Dsgn. L = 4.23 ft	1	0.024	0.014	17.88		17.88	833.33	750.00	1.65	1.00	4.41	315.48	315.48
	Dsgn. L = 4.01 ft	1	0.024	0.013	17.92	11.21	17.92	833.33	750.00	1.17	1.00	4.03	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.015	0.024	11.21		11.21	833.33	750.00	1.65	1.00	7.53	315.48	315.48
+1.20D+1.60S+0.50W+1.60H	Dsgn. L = 4.23 ft	1	0.014	0.008	10.18		10.18	833.33	750.00	1.63	1.00	2.60	315.48	315.48
	Dsgn. L = 4.01 ft	1	0.014	0.007	10.21	6.34	10.21	833.33	750.00	1.16	1.00	2.21	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.008	0.014	6.34		6.34	833.33	750.00	1.65	1.00	4.29	315.48	315.48
+1.20D+0.50Lr+L+W+1.60H	Dsgn. L = 4.23 ft	1	0.020	0.012	14.81		14.81	833.33	750.00	1.64	1.00	3.69	315.48	315.48
	Dsgn. L = 4.01 ft	1	0.020	0.010	14.85	9.27	14.85	833.33	750.00	1.16	1.00	3.30	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.012	0.020	9.27		9.27	833.33	750.00	1.65	1.00	6.24	315.48	315.48
+1.20D+L+0.50S+W+1.60H	Dsgn. L = 4.23 ft	1	0.021	0.012	15.77		15.77	833.33	750.00	1.64	1.00	3.92	315.48	315.48
	Dsgn. L = 4.01 ft	1	0.021	0.011	15.81	9.87	15.81	833.33	750.00	1.17	1.00	3.53	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.013	0.021	9.87		9.87	833.33	750.00	1.65	1.00	6.65	315.48	315.48
+0.90D+W+1.60H	Dsgn. L = 4.23 ft	1	0.007	0.004	5.34		5.34	833.33	750.00	1.61	1.00	1.41	315.48	315.48
	Dsgn. L = 4.01 ft	1	0.007	0.004	5.35	3.30	5.35	833.33	750.00	1.16	1.00	1.12	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.004	0.007	3.30		3.30	833.33	750.00	1.64	1.00	2.25	315.48	315.48
+1.20D+L+0.20S+E+1.60H	Dsgn. L = 4.23 ft	1	0.020	0.012	15.19		15.19	833.33	750.00	1.64	1.00	3.78	315.48	315.48
	Dsgn. L = 4.01 ft	1	0.020	0.011	15.23	9.51	15.23	833.33	750.00	1.16	1.00	3.40	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.013	0.020	9.51		9.51	833.33	750.00	1.65	1.00	6.40	315.48	315.48
+0.90D+E+0.90H	Dsgn. L = 4.23 ft	1	0.007	0.004	5.34		5.34	833.33	750.00	1.61	1.00	1.41	315.48	315.48
	Dsgn. L = 4.01 ft	1	0.007	0.004	5.35	3.30	5.35	833.33	750.00	1.16	1.00	1.12	315.48	315.48
	Dsgn. L = 1.50 ft	1	0.004	0.007	3.30		3.30	833.33	750.00	1.64	1.00	2.25	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0035	4.931		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	3.379	5.742		
Max Upward from Load Combinations	3.379	5.742		
Max Upward from Load Cases	1.816	3.244		
+D+H	1.562	2.499		
+D+L+H	3.379	5.742		
+D+Lr+H	1.562	2.499		
+D+S+H	2.015	3.306		
+D+0.750Lr+0.750L+H	2.925	4.931		
+D+0.750L+0.750S+H	3.264	5.537		
+D+0.60W+H	1.562	2.499		
+D+0.750Lr+0.750L+0.450W+H	2.925	4.931		
+D+0.750L+0.750S+0.450W+H	3.264	5.537		
+0.60D+0.60W+0.60H	0.937	1.499		
+D+0.70E+0.60H	1.562	2.499		
+D+0.750L+0.750S+0.5250E+H	3.264	5.537		
+0.60D+0.70E+H	0.937	1.499		
D Only	1.562	2.499		
L Only	1.816	3.244		
S Only	0.452	0.808		
H Only				



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION:** B18

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

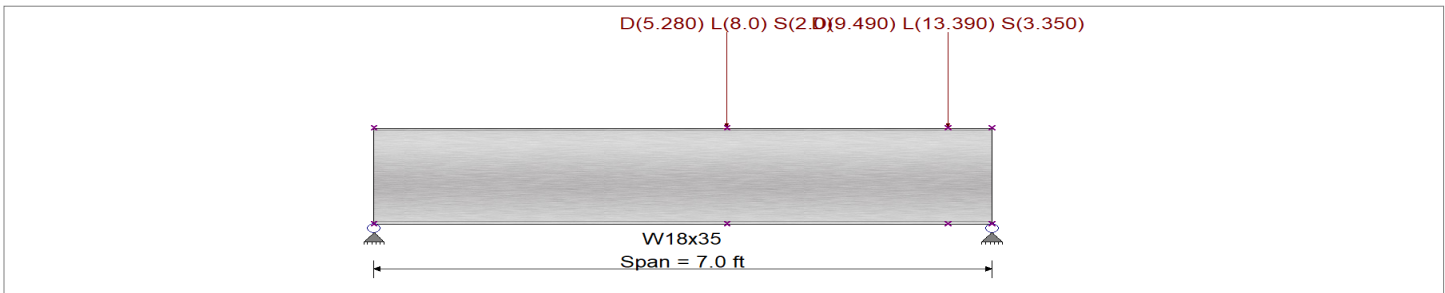
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 4.0 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 2.50 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 4.0 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : D = 9.490, L = 13.390, S = 3.350 k @ 6.50 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.179</b> : 1	Maximum Shear Stress Ratio =	<b>0.274</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	44.624 k-ft	Vu : Applied	43.677 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	7.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.009 in Ratio = <b>9,383</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.015 in Ratio = <b>5560</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L = 4.00 ft	4.00 ft	1	0.067	0.027	16.76		16.76	277.08	249.38	1.66	1.00	4.29	159.30	159.30
Dsgn. L = 2.50 ft	2.50 ft	1	0.067	0.021	16.76	8.36	16.76	277.08	249.38	1.25	1.00	3.42	159.30	159.30
Dsgn. L = 0.50 ft	0.50 ft	1	0.034	0.105	8.36		8.36	277.08	249.38	1.62	1.00	16.73	159.30	159.30
+1.20D+0.50Lr+1.60L+1.60H														
Dsgn. L = 4.00 ft	4.00 ft	1	0.170	0.067	42.43		42.43	277.08	249.38	1.66	1.00	10.69	159.30	159.30
Dsgn. L = 2.50 ft	2.50 ft	1	0.170	0.055	42.43	20.77	42.43	277.08	249.38	1.25	1.00	8.72	159.30	159.30
Dsgn. L = 0.50 ft	0.50 ft	1	0.083	0.261	20.77		20.77	277.08	249.38	1.62	1.00	41.55	159.30	159.30
+1.20D+1.60Lr+0.50S+1.60H														
Dsgn. L = 4.00 ft	4.00 ft	1	0.179	0.071	44.62		44.62	277.08	249.38	1.66	1.00	11.24	159.30	159.30
Dsgn. L = 2.50 ft	2.50 ft	1	0.179	0.058	44.62	21.83	44.62	277.08	249.38	1.25	1.00	9.17	159.30	159.30
Dsgn. L = 0.50 ft	0.50 ft	1	0.088	0.274	21.83		21.83	277.08	249.38	1.62	1.00	43.68	159.30	159.30
+1.20D+1.60Lr+L+1.60H														
Dsgn. L = 4.00 ft	4.00 ft	1	0.128	0.051	31.91		31.91	277.08	249.38	1.66	1.00	8.06	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B18**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 2.50 ft	1		0.128	0.041	31.91	15.67	31.91	277.08	249.38	1.25	1.00	6.55	159.30	159.30
Dsgn. L = 0.50 ft	1		0.063	0.197	15.67		15.67	277.08	249.38	1.62	1.00	31.35	159.30	159.30
+1.20D+1.60Lr+0.50W+1.60H														
Dsgn. L = 4.00 ft	1		0.058	0.023	14.37		14.37	277.08	249.38	1.66	1.00	3.68	159.30	159.30
Dsgn. L = 2.50 ft	1		0.058	0.018	14.37	7.17	14.37	277.08	249.38	1.25	1.00	2.93	159.30	159.30
Dsgn. L = 0.50 ft	1		0.029	0.090	7.17		7.17	277.08	249.38	1.62	1.00	14.34	159.30	159.30
+1.20D+L+1.60S+1.60H														
Dsgn. L = 4.00 ft	1		0.156	0.062	38.92		38.92	277.08	249.38	1.66	1.00	9.82	159.30	159.30
Dsgn. L = 2.50 ft	1		0.156	0.050	38.92	19.07	38.92	277.08	249.38	1.25	1.00	7.99	159.30	159.30
Dsgn. L = 0.50 ft	1		0.076	0.240	19.07		19.07	277.08	249.38	1.62	1.00	38.15	159.30	159.30
+1.20D+1.60S+0.50W+1.60H														
Dsgn. L = 4.00 ft	1		0.086	0.034	21.38		21.38	277.08	249.38	1.66	1.00	5.43	159.30	159.30
Dsgn. L = 2.50 ft	1		0.086	0.027	21.38	10.57	21.38	277.08	249.38	1.25	1.00	4.38	159.30	159.30
Dsgn. L = 0.50 ft	1		0.042	0.133	10.57		10.57	277.08	249.38	1.62	1.00	21.15	159.30	159.30
+1.20D+0.50Lr+L+W+1.60H														
Dsgn. L = 4.00 ft	1		0.128	0.051	31.91		31.91	277.08	249.38	1.66	1.00	8.06	159.30	159.30
Dsgn. L = 2.50 ft	1		0.128	0.041	31.91	15.67	31.91	277.08	249.38	1.25	1.00	6.55	159.30	159.30
Dsgn. L = 0.50 ft	1		0.063	0.197	15.67		15.67	277.08	249.38	1.62	1.00	31.35	159.30	159.30
+1.20D+L+0.50S+W+1.60H														
Dsgn. L = 4.00 ft	1		0.137	0.054	34.10		34.10	277.08	249.38	1.66	1.00	8.61	159.30	159.30
Dsgn. L = 2.50 ft	1		0.137	0.044	34.10	16.73	34.10	277.08	249.38	1.25	1.00	7.00	159.30	159.30
Dsgn. L = 0.50 ft	1		0.067	0.210	16.73		16.73	277.08	249.38	1.62	1.00	33.47	159.30	159.30
+0.90D+W+1.60H														
Dsgn. L = 4.00 ft	1		0.043	0.017	10.78		10.78	277.08	249.38	1.66	1.00	2.76	159.30	159.30
Dsgn. L = 2.50 ft	1		0.043	0.014	10.78	5.37	10.78	277.08	249.38	1.25	1.00	2.20	159.30	159.30
Dsgn. L = 0.50 ft	1		0.022	0.068	5.37		5.37	277.08	249.38	1.62	1.00	10.76	159.30	159.30
+1.20D+L+0.20S+E+1.60H														
Dsgn. L = 4.00 ft	1		0.131	0.052	32.78		32.78	277.08	249.38	1.66	1.00	8.28	159.30	159.30
Dsgn. L = 2.50 ft	1		0.131	0.042	32.78	16.09	32.78	277.08	249.38	1.25	1.00	6.73	159.30	159.30
Dsgn. L = 0.50 ft	1		0.065	0.202	16.09		16.09	277.08	249.38	1.62	1.00	32.20	159.30	159.30
+0.90D+E+0.90H														
Dsgn. L = 4.00 ft	1		0.043	0.017	10.78		10.78	277.08	249.38	1.66	1.00	2.76	159.30	159.30
Dsgn. L = 2.50 ft	1		0.043	0.014	10.78	5.37	10.78	277.08	249.38	1.25	1.00	2.20	159.30	159.30
Dsgn. L = 0.50 ft	1		0.022	0.068	5.37		5.37	277.08	249.38	1.62	1.00	10.76	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0151	3.740		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	7.448	28.957		
Max Upward from Load Combinations	7.448	28.957		
Max Upward from Load Cases	4.385	17.005		
+D+H	3.063	11.952		
+D+L+H	7.448	28.957		
+D+Lr+H	3.063	11.952		
+D+S+H	4.160	16.205		
+D+0.750Lr+0.750L+H	6.352	24.706		
+D+0.750L+0.750S+H	7.174	27.896		
+D+0.60W+H	3.063	11.952		
+D+0.750Lr+0.750L+0.450W+H	6.352	24.706		
+D+0.750L+0.750S+0.450W+H	7.174	27.896		
+0.60D+0.60W+0.60H	1.838	7.171		
+D+0.70E+0.60H	3.063	11.952		
+D+0.750L+0.750S+0.5250E+H	7.174	27.896		
+0.60D+0.70E+H	1.838	7.171		
D Only	3.063	11.952		
L Only	4.385	17.005		
S Only	1.096	4.254		
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION:** B19

**CODE REFERENCES**

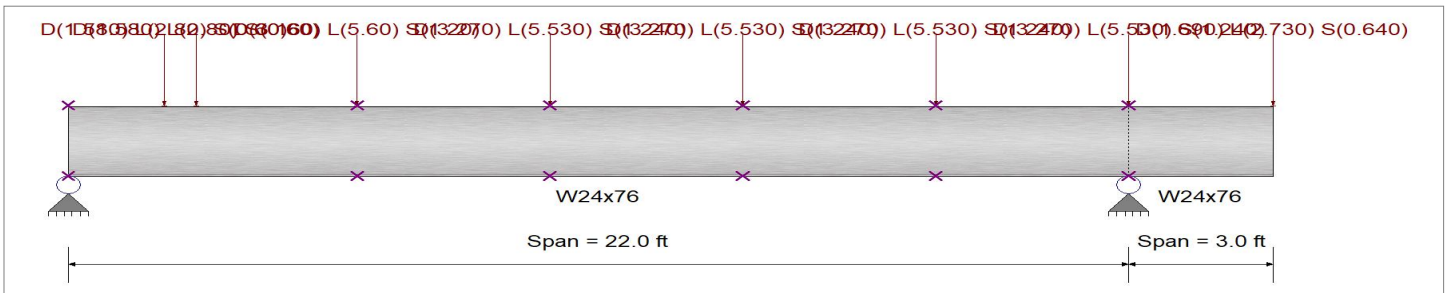
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 6.0 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 3.270, L = 5.530, S = 1.240 k, Starting at : 10.0 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : D = 3.160, L = 5.60, S = 1.20 k @ 6.0 ft

Point Load : D = 1.580, L = 2.80, S = 0.60 k @ 2.0 ft

Point Load : D = 1.580, L = 2.80, S = 0.60 k @ 2.670 ft

Load(s) for Span Number 2

Point Load : D = 1.690, L = 2.730, S = 0.640 k @ 3.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.278 : 1</b>	Maximum Shear Stress Ratio =	<b>0.117 : 1</b>
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	208.750 k-ft	Vu : Applied	36.919 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.122 in Ratio = <b>2,170</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.052 in Ratio = <b>1,382</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.194 in Ratio = <b>1357</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.082 in Ratio = <b>883</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L =	5.98 ft	1	0.080	0.041	59.70		59.70	833.33	750.00	1.52	1.00	12.99	315.48	315.48
Dsgn. L =	3.96 ft	1	0.097	0.025	72.82	59.70	72.82	833.33	750.00	1.08	1.00	7.93	315.48	315.48
Dsgn. L =	4.05 ft	1	0.097	0.010	72.95	66.17	72.95	833.33	750.00	1.04	1.00	3.09	315.48	315.48
Dsgn. L =	3.96 ft	1	0.088	0.022	66.17	39.63	66.17	833.33	750.00	1.18	1.00	6.92	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: B19**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.05 ft	1	0.053	0.038	39.63	-7.58	39.63	833.33	750.00	1.89	1.00	11.93	315.48	315.48
Dsgn. L = 3.00 ft	2	0.010	0.009		-7.58	7.58	833.33	750.00	1.00	1.00	2.69	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 5.98 ft	1	0.063	0.033	47.60		47.60	833.33	750.00	1.51	1.00	10.54	315.48	315.48
Dsgn. L = 3.96 ft	1	0.075	0.020	56.50	47.60	56.50	833.33	750.00	1.07	1.00	6.20	315.48	315.48
Dsgn. L = 4.05 ft	1	0.075	0.007	56.55	48.38	56.55	833.33	750.00	1.06	1.00	2.24	315.48	315.48
Dsgn. L = 3.96 ft	1	0.065	0.021	48.38	23.27	48.38	833.33	750.00	1.25	1.00	6.53	315.48	315.48
Dsgn. L = 4.05 ft	1	0.031	0.034	23.27	-19.60	23.27	833.33	750.00	2.17	1.00	10.82	315.48	315.48
Dsgn. L = 3.00 ft	2	0.026	0.021		-19.60	19.60	833.33	750.00	1.00	1.00	6.67	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 5.98 ft	1	0.218	0.112	163.15		163.15	833.33	750.00	1.52	1.00	35.31	315.48	315.48
Dsgn. L = 3.96 ft	1	0.266	0.070	199.33	163.15	199.33	833.33	750.00	1.08	1.00	22.02	315.48	315.48
Dsgn. L = 4.05 ft	1	0.266	0.028	199.70	183.63	199.70	833.33	750.00	1.03	1.00	8.90	315.48	315.48
Dsgn. L = 3.96 ft	1	0.245	0.055	183.63	115.66	183.63	833.33	750.00	1.17	1.00	17.37	315.48	315.48
Dsgn. L = 4.05 ft	1	0.154	0.097	115.66	-6.49	115.66	833.33	750.00	1.72	1.00	30.51	315.48	315.48
Dsgn. L = 3.00 ft	2	0.009	0.007		-6.49	6.49	833.33	750.00	1.00	1.00	2.30	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 5.98 ft	1	0.213	0.110	159.59		159.59	833.33	750.00	1.52	1.00	34.72	315.48	315.48
Dsgn. L = 3.96 ft	1	0.258	0.068	193.40	159.59	193.40	833.33	750.00	1.08	1.00	21.42	315.48	315.48
Dsgn. L = 4.05 ft	1	0.258	0.026	193.73	175.30	193.73	833.33	750.00	1.04	1.00	8.31	315.48	315.48
Dsgn. L = 3.96 ft	1	0.234	0.057	175.30	104.97	175.30	833.33	750.00	1.19	1.00	17.97	315.48	315.48
Dsgn. L = 4.05 ft	1	0.140	0.099	104.97	-19.60	104.97	833.33	750.00	1.89	1.00	31.11	315.48	315.48
Dsgn. L = 3.00 ft	2	0.026	0.021		-19.60	19.60	833.33	750.00	1.00	1.00	6.67	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 5.98 ft	1	0.073	0.038	55.02		55.02	833.33	750.00	1.51	1.00	12.15	315.48	315.48
Dsgn. L = 3.96 ft	1	0.087	0.023	65.53	55.02	65.53	833.33	750.00	1.07	1.00	7.21	315.48	315.48
Dsgn. L = 4.05 ft	1	0.087	0.008	65.60	56.58	65.60	833.33	750.00	1.05	1.00	2.46	315.48	315.48
Dsgn. L = 3.96 ft	1	0.075	0.023	56.58	28.17	56.58	833.33	750.00	1.24	1.00	7.36	315.48	315.48
Dsgn. L = 4.05 ft	1	0.038	0.039	28.17	-20.56	28.17	833.33	750.00	2.15	1.00	12.28	315.48	315.48
Dsgn. L = 3.00 ft	2	0.027	0.022		-20.56	20.56	833.33	750.00	1.00	1.00	6.99	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 5.98 ft	1	0.227	0.117	170.57		170.57	833.33	750.00	1.52	1.00	36.92	315.48	315.48
Dsgn. L = 3.96 ft	1	0.278	0.073	208.36	170.57	208.36	833.33	750.00	1.08	1.00	23.02	315.48	315.48
Dsgn. L = 4.05 ft	1	0.278	0.030	208.75	191.83	208.75	833.33	750.00	1.03	1.00	9.31	315.48	315.48
Dsgn. L = 3.96 ft	1	0.256	0.058	191.83	120.56	191.83	833.33	750.00	1.17	1.00	18.21	315.48	315.48
Dsgn. L = 4.05 ft	1	0.161	0.101	120.56	-7.45	120.56	833.33	750.00	1.73	1.00	31.97	315.48	315.48
Dsgn. L = 3.00 ft	2	0.010	0.008		-7.45	7.45	833.33	750.00	1.00	1.00	2.62	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 5.98 ft	1	0.223	0.115	167.01		167.01	833.33	750.00	1.52	1.00	36.32	315.48	315.48
Dsgn. L = 3.96 ft	1	0.270	0.071	202.44	167.01	202.44	833.33	750.00	1.08	1.00	22.43	315.48	315.48
Dsgn. L = 4.05 ft	1	0.270	0.028	202.77	183.50	202.77	833.33	750.00	1.04	1.00	8.71	315.48	315.48
Dsgn. L = 3.96 ft	1	0.245	0.060	183.50	109.87	183.50	833.33	750.00	1.19	1.00	18.80	315.48	315.48
Dsgn. L = 4.05 ft	1	0.146	0.103	109.87	-20.56	109.87	833.33	750.00	1.89	1.00	32.56	315.48	315.48
Dsgn. L = 3.00 ft	2	0.027	0.022		-20.56	20.56	833.33	750.00	1.00	1.00	6.99	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 5.98 ft	1	0.065	0.034	48.94		48.94	833.33	750.00	1.51	1.00	10.76	315.48	315.48
Dsgn. L = 3.96 ft	1	0.078	0.020	58.72	48.94	58.72	833.33	750.00	1.07	1.00	6.43	315.48	315.48
Dsgn. L = 4.05 ft	1	0.078	0.007	58.79	51.51	58.79	833.33	750.00	1.05	1.00	2.27	315.48	315.48
Dsgn. L = 3.96 ft	1	0.069	0.020	51.51	27.28	51.51	833.33	750.00	1.22	1.00	6.31	315.48	315.48
Dsgn. L = 4.05 ft	1	0.036	0.034	27.28	-14.68	27.28	833.33	750.00	2.13	1.00	10.60	315.48	315.48
Dsgn. L = 3.00 ft	2	0.020	0.016		-14.68	14.68	833.33	750.00	1.00	1.00	5.03	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 5.98 ft	1	0.162	0.083	121.16		121.16	833.33	750.00	1.52	1.00	26.25	315.48	315.48
Dsgn. L = 3.96 ft	1	0.197	0.052	147.99	121.16	147.99	833.33	750.00	1.08	1.00	16.31	315.48	315.48
Dsgn. L = 4.05 ft	1	0.198	0.021	148.26	136.04	148.26	833.33	750.00	1.03	1.00	6.56	315.48	315.48
Dsgn. L = 3.96 ft	1	0.181	0.041	136.04	85.02	136.04	833.33	750.00	1.17	1.00	13.08	315.48	315.48
Dsgn. L = 4.05 ft	1	0.113	0.073	85.02	-6.49	85.02	833.33	750.00	1.75	1.00	22.91	315.48	315.48
Dsgn. L = 3.00 ft	2	0.009	0.007		-6.49	6.49	833.33	750.00	1.00	1.00	2.30	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 5.98 ft	1	0.159	0.082	118.93		118.93	833.33	750.00	1.52	1.00	25.87	315.48	315.48
Dsgn. L = 3.96 ft	1	0.192	0.051	144.29	118.93	144.29	833.33	750.00	1.08	1.00	15.94	315.48	315.48
Dsgn. L = 4.05 ft	1	0.193	0.020	144.53	130.83	144.53	833.33	750.00	1.04	1.00	6.18	315.48	315.48
Dsgn. L = 3.96 ft	1	0.174	0.043	130.83	78.34	130.83	833.33	750.00	1.18	1.00	13.45	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B19**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.05 ft	1		0.104	0.074	78.34	-14.68	78.34	833.33	750.00	1.89	1.00	23.28	315.48	315.48
Dsgn. L = 3.00 ft	2		0.020	0.016		-14.68	14.68	833.33	750.00	1.00	1.00	5.03	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L = 5.98 ft	1		0.068	0.035	51.17		51.17	833.33	750.00	1.52	1.00	11.14	315.48	315.48
Dsgn. L = 3.96 ft	1		0.083	0.022	62.42	51.17	62.42	833.33	750.00	1.08	1.00	6.80	315.48	315.48
Dsgn. L = 4.05 ft	1		0.083	0.008	62.53	56.71	62.53	833.33	750.00	1.04	1.00	2.65	315.48	315.48
Dsgn. L = 3.96 ft	1		0.076	0.019	56.71	33.97	56.71	833.33	750.00	1.18	1.00	5.93	315.48	315.48
Dsgn. L = 4.05 ft	1		0.045	0.032	33.97	-6.49	33.97	833.33	750.00	1.89	1.00	10.23	315.48	315.48
Dsgn. L = 3.00 ft	2		0.009	0.007		-6.49	6.49	833.33	750.00	1.00	1.00	2.30	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L = 5.98 ft	1		0.068	0.035	51.17		51.17	833.33	750.00	1.52	1.00	11.14	315.48	315.48
Dsgn. L = 3.96 ft	1		0.083	0.022	62.42	51.17	62.42	833.33	750.00	1.08	1.00	6.80	315.48	315.48
Dsgn. L = 4.05 ft	1		0.083	0.008	62.53	56.71	62.53	833.33	750.00	1.04	1.00	2.65	315.48	315.48
Dsgn. L = 3.96 ft	1		0.076	0.019	56.71	33.97	56.71	833.33	750.00	1.18	1.00	5.93	315.48	315.48
Dsgn. L = 4.05 ft	1		0.045	0.032	33.97	-6.49	33.97	833.33	750.00	1.89	1.00	10.23	315.48	315.48
Dsgn. L = 3.00 ft	2		0.009	0.007		-6.49	6.49	833.33	750.00	1.00	1.00	2.30	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L = 5.98 ft	1		0.068	0.035	51.17		51.17	833.33	750.00	1.52	1.00	11.14	315.48	315.48
Dsgn. L = 3.96 ft	1		0.083	0.022	62.42	51.17	62.42	833.33	750.00	1.08	1.00	6.80	315.48	315.48
Dsgn. L = 4.05 ft	1		0.083	0.008	62.53	56.71	62.53	833.33	750.00	1.04	1.00	2.65	315.48	315.48
Dsgn. L = 3.96 ft	1		0.076	0.019	56.71	33.97	56.71	833.33	750.00	1.18	1.00	5.93	315.48	315.48
Dsgn. L = 4.05 ft	1		0.045	0.032	33.97	-6.49	33.97	833.33	750.00	1.89	1.00	10.23	315.48	315.48
Dsgn. L = 3.00 ft	2		0.009	0.007		-6.49	6.49	833.33	750.00	1.00	1.00	2.30	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L = 5.98 ft	1		0.097	0.050	72.68		72.68	833.33	750.00	1.51	1.00	15.90	315.48	315.48
Dsgn. L = 3.96 ft	1		0.117	0.031	87.62	72.68	87.62	833.33	750.00	1.07	1.00	9.64	315.48	315.48
Dsgn. L = 4.05 ft	1		0.117	0.011	87.75	77.74	87.75	833.33	750.00	1.05	1.00	3.57	315.48	315.48
Dsgn. L = 3.96 ft	1		0.104	0.028	77.74	42.96	77.74	833.33	750.00	1.21	1.00	8.98	315.48	315.48
Dsgn. L = 4.05 ft	1		0.057	0.048	42.96	-17.76	42.96	833.33	750.00	2.11	1.00	15.25	315.48	315.48
Dsgn. L = 3.00 ft	2		0.024	0.019		-17.76	17.76	833.33	750.00	1.00	1.00	6.06	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L = 5.98 ft	1		0.193	0.099	144.89		144.89	833.33	750.00	1.52	1.00	31.38	315.48	315.48
Dsgn. L = 3.96 ft	1		0.236	0.062	176.89	144.89	176.89	833.33	750.00	1.08	1.00	19.53	315.48	315.48
Dsgn. L = 4.05 ft	1		0.236	0.025	177.22	162.27	177.22	833.33	750.00	1.03	1.00	7.85	315.48	315.48
Dsgn. L = 3.96 ft	1		0.216	0.050	162.27	100.70	162.27	833.33	750.00	1.17	1.00	15.75	315.48	315.48
Dsgn. L = 4.05 ft	1		0.134	0.087	100.70	-9.57	100.70	833.33	750.00	1.77	1.00	27.56	315.48	315.48
Dsgn. L = 3.00 ft	2		0.013	0.011		-9.57	9.57	833.33	750.00	1.00	1.00	3.33	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L = 5.98 ft	1		0.190	0.098	142.67		142.67	833.33	750.00	1.52	1.00	31.01	315.48	315.48
Dsgn. L = 3.96 ft	1		0.231	0.061	173.19	142.67	173.19	833.33	750.00	1.08	1.00	19.15	315.48	315.48
Dsgn. L = 4.05 ft	1		0.231	0.024	173.48	157.07	173.48	833.33	750.00	1.04	1.00	7.48	315.48	315.48
Dsgn. L = 3.96 ft	1		0.209	0.051	157.07	94.02	157.07	833.33	750.00	1.19	1.00	16.13	315.48	315.48
Dsgn. L = 4.05 ft	1		0.125	0.089	94.02	-17.76	94.02	833.33	750.00	1.89	1.00	27.93	315.48	315.48
Dsgn. L = 3.00 ft	2		0.024	0.019		-17.76	17.76	833.33	750.00	1.00	1.00	6.06	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>														
Dsgn. L = 5.98 ft	1		0.100	0.052	74.90		74.90	833.33	750.00	1.52	1.00	16.27	315.48	315.48
Dsgn. L = 3.96 ft	1		0.122	0.032	91.32	74.90	91.32	833.33	750.00	1.08	1.00	10.02	315.48	315.48
Dsgn. L = 4.05 ft	1		0.122	0.012	91.48	82.95	91.48	833.33	750.00	1.04	1.00	3.94	315.48	315.48
Dsgn. L = 3.96 ft	1		0.111	0.027	82.95	49.64	82.95	833.33	750.00	1.18	1.00	8.60	315.48	315.48
Dsgn. L = 4.05 ft	1		0.066	0.047	49.64	-9.57	49.64	833.33	750.00	1.90	1.00	14.88	315.48	315.48
Dsgn. L = 3.00 ft	2		0.013	0.011		-9.57	9.57	833.33	750.00	1.00	1.00	3.33	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>														
Dsgn. L = 5.98 ft	1		0.065	0.034	48.94		48.94	833.33	750.00	1.51	1.00	10.76	315.48	315.48
Dsgn. L = 3.96 ft	1		0.078	0.020	58.72	48.94	58.72	833.33	750.00	1.07	1.00	6.43	315.48	315.48
Dsgn. L = 4.05 ft	1		0.078	0.007	58.79	51.51	58.79	833.33	750.00	1.05	1.00	2.27	315.48	315.48
Dsgn. L = 3.96 ft	1		0.069	0.020	51.51	27.28	51.51	833.33	750.00	1.22	1.00	6.31	315.48	315.48
Dsgn. L = 4.05 ft	1		0.036	0.034	27.28	-14.68	27.28	833.33	750.00	2.13	1.00	10.60	315.48	315.48
Dsgn. L = 3.00 ft	2		0.020	0.016		-14.68	14.68	833.33	750.00	1.00	1.00	5.03	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>														
Dsgn. L = 5.98 ft	1		0.162	0.083	121.16		121.16	833.33	750.00	1.52	1.00	26.25	315.48	315.48
Dsgn. L = 3.96 ft	1		0.197	0.052	147.99	121.16	147.99	833.33	750.00	1.08	1.00	16.31	315.48	315.48
Dsgn. L = 4.05 ft	1		0.198	0.021	148.26	136.04	148.26	833.33	750.00	1.03	1.00	6.56	315.48	315.48
Dsgn. L = 3.96 ft	1		0.181	0.041	136.04	85.02	136.04	833.33	750.00	1.17	1.00	13.08	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B19**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length		Span #		Max Stress Ratios		Summary of Moment Values					Summary of Shear Values		
	Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
	Dsgn. L = 4.05 ft	1	0.113	0.073	85.02	-6.49	85.02	833.33	750.00	1.75	1.00	22.91	315.48	315.48
	Dsgn. L = 3.00 ft	2	0.009	0.007		-6.49	6.49	833.33	750.00	1.00	1.00	2.30	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>														
	Dsgn. L = 5.98 ft	1	0.159	0.082	118.93		118.93	833.33	750.00	1.52	1.00	25.87	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.192	0.051	144.29	118.93	144.29	833.33	750.00	1.08	1.00	15.94	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.193	0.020	144.53	130.83	144.53	833.33	750.00	1.04	1.00	6.18	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.174	0.043	130.83	78.34	130.83	833.33	750.00	1.18	1.00	13.45	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.104	0.074	78.34	-14.68	78.34	833.33	750.00	1.89	1.00	23.28	315.48	315.48
	Dsgn. L = 3.00 ft	2	0.020	0.016		-14.68	14.68	833.33	750.00	1.00	1.00	5.03	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 5.98 ft	1	0.075	0.039	56.36		56.36	833.33	750.00	1.51	1.00	12.37	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.090	0.024	67.75	56.36	67.75	833.33	750.00	1.07	1.00	7.43	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.090	0.008	67.84	59.70	67.84	833.33	750.00	1.05	1.00	2.68	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.080	0.023	59.70	32.18	59.70	833.33	750.00	1.22	1.00	7.14	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.043	0.038	32.18	-15.64	32.18	833.33	750.00	2.12	1.00	12.05	315.48	315.48
	Dsgn. L = 3.00 ft	2	0.021	0.017		-15.64	15.64	833.33	750.00	1.00	1.00	5.35	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 5.98 ft	1	0.171	0.088	128.58		128.58	833.33	750.00	1.52	1.00	27.85	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.209	0.055	157.02	128.58	157.02	833.33	750.00	1.08	1.00	17.31	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.210	0.022	157.31	144.24	157.31	833.33	750.00	1.03	1.00	6.96	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.192	0.044	144.24	89.92	144.24	833.33	750.00	1.17	1.00	13.92	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.120	0.077	89.92	-7.45	89.92	833.33	750.00	1.75	1.00	24.36	315.48	315.48
	Dsgn. L = 3.00 ft	2	0.010	0.008		-7.45	7.45	833.33	750.00	1.00	1.00	2.62	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 5.98 ft	1	0.168	0.087	126.35		126.35	833.33	750.00	1.52	1.00	27.48	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.204	0.054	153.32	126.35	153.32	833.33	750.00	1.08	1.00	16.94	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.205	0.021	153.57	139.03	153.57	833.33	750.00	1.04	1.00	6.59	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.185	0.045	139.03	83.24	139.03	833.33	750.00	1.19	1.00	14.29	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.111	0.078	83.24	-15.64	83.24	833.33	750.00	1.89	1.00	24.73	315.48	315.48
	Dsgn. L = 3.00 ft	2	0.021	0.017		-15.64	15.64	833.33	750.00	1.00	1.00	5.35	315.48	315.48
<b>+0.90D+W+1.60H</b>														
	Dsgn. L = 5.98 ft	1	0.051	0.026	38.38		38.38	833.33	750.00	1.52	1.00	8.35	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.062	0.016	46.81	38.38	46.81	833.33	750.00	1.08	1.00	5.10	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.063	0.006	46.89	42.54	46.89	833.33	750.00	1.04	1.00	1.98	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.057	0.014	42.54	25.47	42.54	833.33	750.00	1.18	1.00	4.45	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.034	0.024	25.47	-4.87	25.47	833.33	750.00	1.89	1.00	7.67	315.48	315.48
	Dsgn. L = 3.00 ft	2	0.006	0.005		-4.87	4.87	833.33	750.00	1.00	1.00	1.73	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
	Dsgn. L = 5.98 ft	1	0.069	0.036	51.91		51.91	833.33	750.00	1.51	1.00	11.41	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.083	0.022	62.33	51.91	62.33	833.33	750.00	1.07	1.00	6.83	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.083	0.008	62.41	54.79	62.41	833.33	750.00	1.05	1.00	2.44	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.073	0.021	54.79	29.24	54.79	833.33	750.00	1.22	1.00	6.64	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.039	0.035	29.24	-15.07	29.24	833.33	750.00	2.12	1.00	11.18	315.48	315.48
	Dsgn. L = 3.00 ft	2	0.020	0.016		-15.07	15.07	833.33	750.00	1.00	1.00	5.16	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
	Dsgn. L = 5.98 ft	1	0.166	0.085	124.13		124.13	833.33	750.00	1.52	1.00	26.89	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.202	0.053	151.60	124.13	151.60	833.33	750.00	1.08	1.00	16.71	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.203	0.021	151.88	139.32	151.88	833.33	750.00	1.03	1.00	6.72	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.186	0.043	139.32	86.98	139.32	833.33	750.00	1.17	1.00	13.42	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.116	0.074	86.98	-6.88	86.98	833.33	750.00	1.75	1.00	23.49	315.48	315.48
	Dsgn. L = 3.00 ft	2	0.009	0.008		-6.88	6.88	833.33	750.00	1.00	1.00	2.43	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
	Dsgn. L = 5.98 ft	1	0.163	0.084	121.90		121.90	833.33	750.00	1.52	1.00	26.52	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.197	0.052	147.90	121.90	147.90	833.33	750.00	1.08	1.00	16.34	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.198	0.020	148.15	134.11	148.15	833.33	750.00	1.04	1.00	6.35	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.179	0.044	134.11	80.30	134.11	833.33	750.00	1.19	1.00	13.79	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.107	0.076	80.30	-15.07	80.30	833.33	750.00	1.89	1.00	23.86	315.48	315.48
	Dsgn. L = 3.00 ft	2	0.020	0.016		-15.07	15.07	833.33	750.00	1.00	1.00	5.16	315.48	315.48
<b>+0.90D+E+0.90H</b>														
	Dsgn. L = 5.98 ft	1	0.051	0.026	38.38		38.38	833.33	750.00	1.52	1.00	8.35	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.062	0.016	46.81	38.38	46.81	833.33	750.00	1.08	1.00	5.10	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.063	0.006	46.89	42.54	46.89	833.33	750.00	1.04	1.00	1.98	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.057	0.014	42.54	25.47	42.54	833.33	750.00	1.18	1.00	4.45	315.48	315.48



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B19**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.05 ft	1	0.034	0.024	25.47	-4.87	25.47	833.33	750.00	1.89	1.00	7.67	315.48	315.48
Dsgn. L = 3.00 ft	2	0.006	0.005		-4.87	4.87	833.33	750.00	1.00	1.00	1.73	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.1945	10.912	+D+L+H	0.0000	0.000
	2	0.0000	10.912		-0.0815	3.000

**Vertical Reactions**

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	24.391	35.021	
Max Upward from Load Combinations	24.391	35.021	
Max Upward from Load Cases	15.111	21.311	
Max Downward from all Load Conditions (Resis	-0.372		
Max Downward from Load Cases (Resisting U <sub>r</sub>	-0.372		
+D+H	9.280	13.710	
+D+L+H, LL Comb Run (*L)	8.908	22.342	
+D+L+H, LL Comb Run (L*)	24.391	26.389	
+D+L+H, LL Comb Run (LL)	24.019	35.021	
+D+Lr+H, LL Comb Run (*L)	9.280	13.710	
+D+Lr+H, LL Comb Run (L*)	9.280	13.710	
+D+Lr+H, LL Comb Run (LL)	9.280	13.710	
+D+S+H	12.491	18.499	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	9.001	20.184	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	20.613	23.219	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	20.334	29.693	
+D+0.750L+0.750S+H, LL Comb Run (*L)	11.409	23.776	
+D+0.750L+0.750S+H, LL Comb Run (L*)	23.021	26.811	
+D+0.750L+0.750S+H, LL Comb Run (LL)	22.742	33.285	
+D+0.60W+H	9.280	13.710	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	9.001	20.184	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	20.613	23.219	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	20.334	29.693	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	11.409	23.776	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	23.021	26.811	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	22.742	33.285	
+0.60D+0.60W+0.60H	5.568	8.226	
+D+0.70E+0.60H	9.280	13.710	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	11.409	23.776	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	23.021	26.811	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	22.742	33.285	
+0.60D+0.70E+H	5.568	8.226	
D Only	9.280	13.710	
L Only, LL Comb Run (*L)	-0.372	8.632	
L Only, LL Comb Run (L*)	15.111	12.679	
L Only, LL Comb Run (LL)	14.739	21.311	
S Only	3.211	4.789	
H Only			



## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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DESCRIPTION: **B20**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

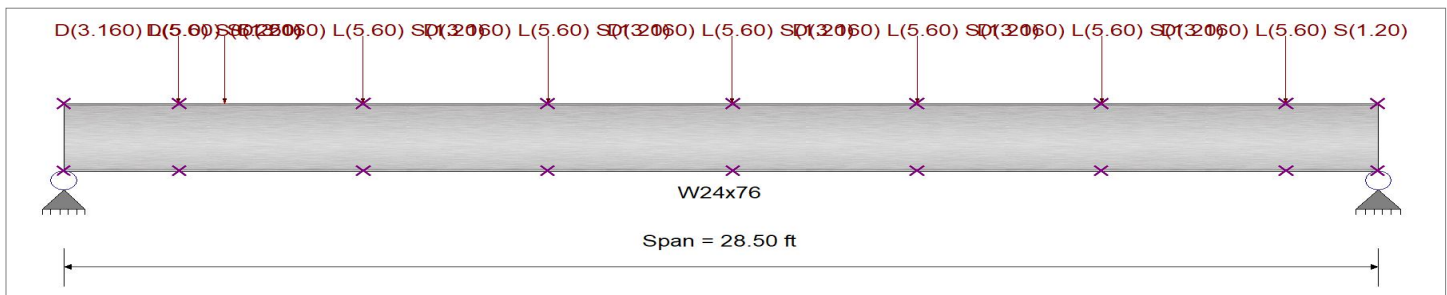
### Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

### Unbraced Lengths

First Brace starts at 2.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 3.160, L = 5.60, S = 1.20 k, Starting at : 2.50 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : D = 5.0, S = 6.250 k @ 3.50 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.494 : 1</b>	Maximum Shear Stress Ratio =	<b>0.175 : 1</b>
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	370.197 k-ft	Vu : Applied	55.216 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.345 in Ratio =	990	>=360.0 Span: 1 : L Only
Max Upward Transient Deflection	0 in Ratio =	0	<360.0 n/a
Max Downward Total Deflection	0.584 in Ratio =	586	>=240.0 Span: 1 : +D+L+H
Max Upward Total Deflection	0 in Ratio =	0	<240.0 n/a

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	2.44 ft	1	0.074	0.072	55.55		55.55	833.33	750.00	1.69	1.00	22.87	315.48	315.48
Dsgn. L =	3.99 ft	1	0.143	0.072	106.98	55.55	106.98	833.33	750.00	1.20	1.00	22.61	315.48	315.48
Dsgn. L =	3.99 ft	1	0.176	0.034	131.71	106.98	131.71	833.33	750.00	1.08	1.00	10.76	315.48	315.48
Dsgn. L =	4.07 ft	1	0.183	0.019	137.23	131.71	137.23	833.33	750.00	1.01	1.00	5.91	315.48	315.48
Dsgn. L =	3.99 ft	1	0.183	0.012	137.23	122.97	137.23	833.33	750.00	1.04	1.00	3.79	315.48	315.48
Dsgn. L =	3.99 ft	1	0.164	0.027	122.97	89.40	122.97	833.33	750.00	1.12	1.00	8.64	315.48	315.48
Dsgn. L =	3.99 ft	1	0.119	0.043	89.40	36.53	89.40	833.33	750.00	1.30	1.00	13.49	315.48	315.48
Dsgn. L =	2.04 ft	1	0.049	0.057	36.53		36.53	833.33	750.00	1.62	1.00	18.13	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	2.44 ft	1	0.164	0.160	122.88		122.88	833.33	750.00	1.69	1.00	50.41	315.48	315.48
Dsgn. L =	3.99 ft	1	0.340	0.159	254.66	122.88	254.66	833.33	750.00	1.25	1.00	50.19	315.48	315.48
Dsgn. L =	3.99 ft	1	0.437	0.098	327.89	254.66	327.89	833.33	750.00	1.10	1.00	31.07	315.48	315.48
Dsgn. L =	4.07 ft	1	0.466	0.057	349.31	327.89	349.31	833.33	750.00	1.02	1.00	17.96	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B20**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios				Summary of Moment Values						Summary of Shear Values		
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
Dsgn. L = 3.99 ft	1	0.466	0.026	349.31	317.06	349.31	833.33	750.00	1.04	1.00	8.28	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.423	0.068	317.06	232.61	317.06	833.33	750.00	1.12	1.00	21.40	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.310	0.109	232.61	95.95	232.61	833.33	750.00	1.30	1.00	34.51	315.48	315.48	
Dsgn. L = 2.04 ft	1	0.128	0.150	95.95		95.95	833.33	750.00	1.62	1.00	47.45	315.48	315.48	
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L = 2.44 ft	1	0.179	0.175	134.61		134.61	833.33	750.00	1.69	1.00	55.22	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.365	0.174	274.04	134.61	274.04	833.33	750.00	1.24	1.00	54.99	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.466	0.102	349.22	274.04	349.22	833.33	750.00	1.10	1.00	32.15	315.48	315.48	
Dsgn. L = 4.07 ft	1	0.494	0.058	370.20	349.22	370.20	833.33	750.00	1.02	1.00	18.44	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.494	0.029	370.20	335.08	370.20	833.33	750.00	1.04	1.00	9.00	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.447	0.072	335.08	245.37	335.08	833.33	750.00	1.12	1.00	22.72	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.327	0.115	245.37	101.06	245.37	833.33	750.00	1.30	1.00	36.43	315.48	315.48	
Dsgn. L = 2.04 ft	1	0.135	0.158	101.06		101.06	833.33	750.00	1.62	1.00	49.97	315.48	315.48	
<b>+1.20D+1.60Lr+L+1.60H</b>														
Dsgn. L = 2.44 ft	1	0.126	0.123	94.65		94.65	833.33	750.00	1.69	1.00	38.86	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.258	0.122	193.55	94.65	193.55	833.33	750.00	1.24	1.00	38.64	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.330	0.073	247.27	193.55	247.27	833.33	750.00	1.10	1.00	22.88	315.48	315.48	
Dsgn. L = 4.07 ft	1	0.350	0.042	262.43	247.27	262.43	833.33	750.00	1.02	1.00	13.12	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.350	0.020	262.43	237.69	262.43	833.33	750.00	1.04	1.00	6.40	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.317	0.051	237.69	174.12	237.69	833.33	750.00	1.12	1.00	16.15	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.232	0.082	174.12	71.71	174.12	833.33	750.00	1.30	1.00	25.91	315.48	315.48	
Dsgn. L = 2.04 ft	1	0.096	0.112	71.71		71.71	833.33	750.00	1.62	1.00	35.49	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H</b>														
Dsgn. L = 2.44 ft	1	0.063	0.062	47.61		47.61	833.33	750.00	1.69	1.00	19.60	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.122	0.061	91.70	47.61	91.70	833.33	750.00	1.20	1.00	19.38	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.151	0.029	112.90	91.70	112.90	833.33	750.00	1.08	1.00	9.22	315.48	315.48	
Dsgn. L = 4.07 ft	1	0.157	0.016	117.63	112.90	117.63	833.33	750.00	1.01	1.00	5.07	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.157	0.010	117.63	105.40	117.63	833.33	750.00	1.04	1.00	3.25	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.141	0.023	105.40	76.63	105.40	833.33	750.00	1.12	1.00	7.41	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.102	0.037	76.63	31.31	76.63	833.33	750.00	1.30	1.00	11.56	315.48	315.48	
Dsgn. L = 2.04 ft	1	0.042	0.049	31.31		31.31	833.33	750.00	1.62	1.00	15.54	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H</b>														
Dsgn. L = 2.44 ft	1	0.176	0.172	132.21		132.21	833.33	750.00	1.69	1.00	54.23	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.341	0.171	255.57	132.21	255.57	833.33	750.00	1.20	1.00	54.01	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.421	0.083	315.54	255.57	315.54	833.33	750.00	1.08	1.00	26.33	315.48	315.48	
Dsgn. L = 4.07 ft	1	0.439	0.046	329.27	315.54	329.27	833.33	750.00	1.02	1.00	14.66	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.439	0.028	329.27	295.34	329.27	833.33	750.00	1.04	1.00	8.70	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.394	0.065	295.34	214.94	295.34	833.33	750.00	1.12	1.00	20.38	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.287	0.102	214.94	88.06	214.94	833.33	750.00	1.30	1.00	32.05	315.48	315.48	
Dsgn. L = 2.04 ft	1	0.117	0.138	88.06		88.06	833.33	750.00	1.62	1.00	43.55	315.48	315.48	
<b>+1.20D+1.60S+0.50W+1.60H</b>														
Dsgn. L = 2.44 ft	1	0.114	0.111	85.17		85.17	833.33	750.00	1.69	1.00	34.98	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.205	0.110	153.72	85.17	153.72	833.33	750.00	1.16	1.00	34.75	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.242	0.040	181.17	153.72	181.17	833.33	750.00	1.06	1.00	12.68	315.48	315.48	
Dsgn. L = 4.07 ft	1	0.246	0.021	184.47	181.17	184.47	833.33	750.00	1.01	1.00	6.60	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.246	0.018	184.47	163.06	184.47	833.33	750.00	1.05	1.00	5.56	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.217	0.037	163.06	117.45	163.06	833.33	750.00	1.12	1.00	11.63	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.157	0.056	117.45	47.66	117.45	833.33	750.00	1.30	1.00	17.71	315.48	315.48	
Dsgn. L = 2.04 ft	1	0.064	0.075	47.66		47.66	833.33	750.00	1.62	1.00	23.61	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H</b>														
Dsgn. L = 2.44 ft	1	0.126	0.123	94.65		94.65	833.33	750.00	1.69	1.00	38.86	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.258	0.122	193.55	94.65	193.55	833.33	750.00	1.24	1.00	38.64	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.330	0.073	247.27	193.55	247.27	833.33	750.00	1.10	1.00	22.88	315.48	315.48	
Dsgn. L = 4.07 ft	1	0.350	0.042	262.43	247.27	262.43	833.33	750.00	1.02	1.00	13.12	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.350	0.020	262.43	237.69	262.43	833.33	750.00	1.04	1.00	6.40	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.317	0.051	237.69	174.12	237.69	833.33	750.00	1.12	1.00	16.15	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.232	0.082	174.12	71.71	174.12	833.33	750.00	1.30	1.00	25.91	315.48	315.48	
Dsgn. L = 2.04 ft	1	0.096	0.112	71.71		71.71	833.33	750.00	1.62	1.00	35.49	315.48	315.48	
<b>+1.20D+L+0.50S+W+1.60H</b>														
Dsgn. L = 2.44 ft	1	0.142	0.138	106.39		106.39	833.33	750.00	1.69	1.00	43.66	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.284	0.138	212.93	106.39	212.93	833.33	750.00	1.23	1.00	43.44	315.48	315.48	
Dsgn. L = 3.99 ft	1	0.358	0.076	268.60	212.93	268.60	833.33	750.00	1.09	1.00	23.96	315.48	315.48	
Dsgn. L = 4.07 ft	1	0.378	0.043	283.32	268.60	283.32	833.33	750.00	1.02	1.00	13.60	315.48	315.48	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: B20**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.99 ft	1	0.378	0.023	283.32	255.71	283.32	833.33	750.00	1.04	1.00	7.12	315.48	315.48
Dsgn. L = 3.99 ft	1	0.341	0.055	255.71	186.87	255.71	833.33	750.00	1.12	1.00	17.47	315.48	315.48
Dsgn. L = 3.99 ft	1	0.249	0.088	186.87	76.82	186.87	833.33	750.00	1.30	1.00	27.83	315.48	315.48
Dsgn. L = 2.04 ft	1	0.102	0.120	76.82		76.82	833.33	750.00	1.62	1.00	38.01	315.48	315.48
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 2.44 ft	1	0.048	0.047	35.71		35.71	833.33	750.00	1.69	1.00	14.70	315.48	315.48
Dsgn. L = 3.99 ft	1	0.092	0.046	68.77	35.71	68.77	833.33	750.00	1.20	1.00	14.53	315.48	315.48
Dsgn. L = 3.99 ft	1	0.113	0.022	84.67	68.77	84.67	833.33	750.00	1.08	1.00	6.92	315.48	315.48
Dsgn. L = 4.07 ft	1	0.118	0.012	88.22	84.67	88.22	833.33	750.00	1.01	1.00	3.80	315.48	315.48
Dsgn. L = 3.99 ft	1	0.118	0.008	88.22	79.05	88.22	833.33	750.00	1.04	1.00	2.44	315.48	315.48
Dsgn. L = 3.99 ft	1	0.105	0.018	79.05	57.47	79.05	833.33	750.00	1.12	1.00	5.56	315.48	315.48
Dsgn. L = 3.99 ft	1	0.077	0.027	57.47	23.48	57.47	833.33	750.00	1.30	1.00	8.67	315.48	315.48
Dsgn. L = 2.04 ft	1	0.031	0.037	23.48		23.48	833.33	750.00	1.62	1.00	11.66	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H</b>													
Dsgn. L = 2.44 ft	1	0.132	0.129	99.35		99.35	833.33	750.00	1.69	1.00	40.78	315.48	315.48
Dsgn. L = 3.99 ft	1	0.268	0.129	201.30	99.35	201.30	833.33	750.00	1.24	1.00	40.56	315.48	315.48
Dsgn. L = 3.99 ft	1	0.341	0.074	255.80	201.30	255.80	833.33	750.00	1.09	1.00	23.31	315.48	315.48
Dsgn. L = 4.07 ft	1	0.361	0.042	270.78	255.80	270.78	833.33	750.00	1.02	1.00	13.32	315.48	315.48
Dsgn. L = 3.99 ft	1	0.361	0.021	270.78	244.89	270.78	833.33	750.00	1.04	1.00	6.68	315.48	315.48
Dsgn. L = 3.99 ft	1	0.327	0.053	244.89	179.22	244.89	833.33	750.00	1.12	1.00	16.68	315.48	315.48
Dsgn. L = 3.99 ft	1	0.239	0.085	179.22	73.76	179.22	833.33	750.00	1.30	1.00	26.68	315.48	315.48
Dsgn. L = 2.04 ft	1	0.098	0.116	73.76		73.76	833.33	750.00	1.62	1.00	36.49	315.48	315.48
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 2.44 ft	1	0.048	0.047	35.71		35.71	833.33	750.00	1.69	1.00	14.70	315.48	315.48
Dsgn. L = 3.99 ft	1	0.092	0.046	68.77	35.71	68.77	833.33	750.00	1.20	1.00	14.53	315.48	315.48
Dsgn. L = 3.99 ft	1	0.113	0.022	84.67	68.77	84.67	833.33	750.00	1.08	1.00	6.92	315.48	315.48
Dsgn. L = 4.07 ft	1	0.118	0.012	88.22	84.67	88.22	833.33	750.00	1.01	1.00	3.80	315.48	315.48
Dsgn. L = 3.99 ft	1	0.118	0.008	88.22	79.05	88.22	833.33	750.00	1.04	1.00	2.44	315.48	315.48
Dsgn. L = 3.99 ft	1	0.105	0.018	79.05	57.47	79.05	833.33	750.00	1.12	1.00	5.56	315.48	315.48
Dsgn. L = 3.99 ft	1	0.077	0.027	57.47	23.48	57.47	833.33	750.00	1.30	1.00	8.67	315.48	315.48
Dsgn. L = 2.04 ft	1	0.031	0.037	23.48		23.48	833.33	750.00	1.62	1.00	11.66	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.5836	14.250		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	37.984	32.895
Max Upward from Load Combinations	37.984	32.895
Max Upward from Load Cases	19.256	19.944
+D+H	16.335	12.951
+D+L+H	35.591	32.895
+D+Lr+H	16.335	12.951
+D+S+H	25.944	17.992
+D+0.750Lr+0.750L+H	30.777	27.909
+D+0.750L+0.750S+H	37.984	31.690
+D+0.60W+H	16.335	12.951
+D+0.750Lr+0.750L+0.450W+H	30.777	27.909
+D+0.750L+0.750S+0.450W+H	37.984	31.690
+0.60D+0.60W+0.60H	9.801	7.771
+D+0.70E+0.60H	16.335	12.951
+D+0.750L+0.750S+0.5250E+H	37.984	31.690
+0.60D+0.70E+H	9.801	7.771
D Only	16.335	12.951
L Only	19.256	19.944
S Only	9.609	5.041
H Only		

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: B21

## CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

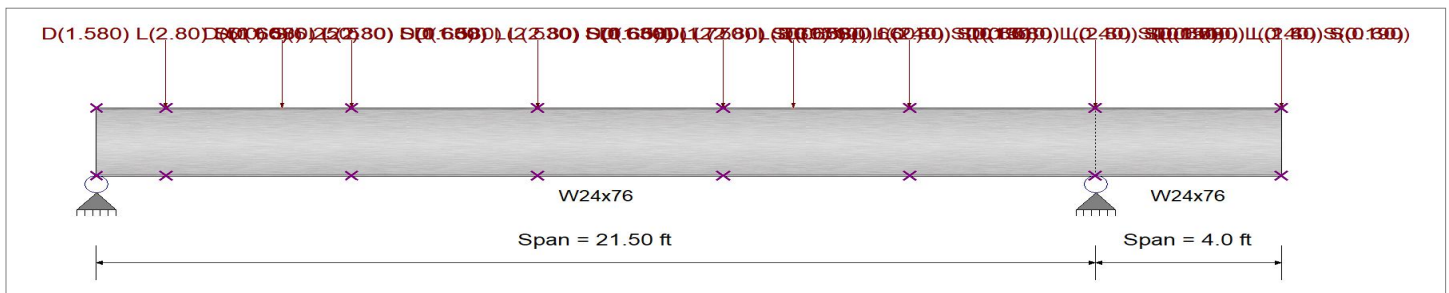
## Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

## Unbraced Lengths

First Brace starts at 1.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



## Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 1.580, L = 2.80, S = 0.60 k, Starting at : 1.50 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : D = 0.510, L = 0.40, S = 0.190 k @ 17.50 ft, (J11 Difference)

Point Load : D = 1.580, L = 2.80, S = 0.60 k @ 1.50 ft, (J6)

Point Load : D = 1.660, L = 2.530, S = 0.630 k @ 5.50 ft, (J8)

Point Load : D = 1.660, L = 2.530, S = 0.630 k @ 9.50 ft, (J8)

Point Load : D = 1.660, L = 2.530, S = 0.630 k @ 13.50 ft, (J8)

Point Load : D = 1.770, L = 3.30, S = 0.660 k @ 15.0 ft, (B52)

Point Load : D = 1.580, L = 2.80, S = 0.60 k @ 17.50 ft, (J9)

Point Load : D = 1.580, L = 2.80, S = 0.60 k @ 21.50 ft, (J9)

Point Load : D = 5.0, S = 6.250 k @ 4.0 ft, (Pop up Roof)

Load(s) for Span Number 2

Point Load : D = 0.510, L = 0.40, S = 0.190 k @ 4.0 ft, (J11 Difference)

Point Load : D = 0.510, L = 0.40, S = 0.190 k @ 0.0 ft, (J11 Difference)

Point Load : D = 0.790, L = 1.40, S = 0.30 k @ 4.0 ft

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B21**

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.310 : 1</b>	Maximum Shear Stress Ratio =	<b>0.149 : 1</b>
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	232.594 k-ft	Vu : Applied	47.067 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination: 1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)		Load Combination: 1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	
Span # where maximum occurs	Span # 1	Location of maximum on span	21.500 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.123 in Ratio = <b>2,097</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.074 in Ratio = <b>1,304</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.210 in Ratio = <b>1226</b> >=240.	Span: 2 : +D+0.750L+0.750S+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.117 in Ratio = <b>819</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values					
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx		
+1.40D+1.60H																
Dsgn. L = 1.46 ft	1	0.038	0.062	28.35	28.35	833.33	750.00	1.73	1.00	19.47	315.48	315.48				
Dsgn. L = 3.96 ft	1	0.102	0.061	76.65	28.35	76.65	833.33	750.00	1.27	1.00	19.31	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.117	0.024	88.00	76.65	88.00	833.33	750.00	1.05	1.00	7.47	315.48	315.48			
Dsgn. L = 3.96 ft	1	0.117	0.008	88.01	79.30	88.01	833.33	750.00	1.04	1.00	2.50	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.106	0.031	79.30	44.46	79.30	833.33	750.00	1.18	1.00	9.90	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.059	0.056	44.46	-16.98	44.46	833.33	750.00	2.14	1.00	17.68	315.48	315.48			
Dsgn. L = 4.00 ft	2	0.023	0.014	-16.98	16.98	833.33	750.00	1.00	1.00	4.46	315.48	315.48				
+1.20D+0.50Lr+1.60L+1.60H, LL																
Dsgn. L = 1.46 ft	1	0.030	0.049	22.30	22.30	833.33	750.00	1.73	1.00	15.32	315.48	315.48				
Dsgn. L = 3.96 ft	1	0.078	0.048	58.28	22.30	58.28	833.33	750.00	1.25	1.00	15.18	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.083	0.016	62.48	58.28	62.48	833.33	750.00	1.02	1.00	5.03	315.48	315.48			
Dsgn. L = 3.96 ft	1	0.083	0.011	62.48	49.60	62.48	833.33	750.00	1.09	1.00	3.47	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.066	0.031	49.60	14.20	49.60	833.33	750.00	1.34	1.00	9.86	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.059	0.052	14.20	-43.99	43.99	833.33	750.00	2.09	1.00	16.52	315.48	315.48			
Dsgn. L = 4.00 ft	2	0.059	0.035	-43.99	43.99	833.33	750.00	1.00	1.00	11.18	315.48	315.48				
+1.20D+0.50Lr+1.60L+1.60H, LL																
Dsgn. L = 1.46 ft	1	0.083	0.135	62.30	62.30	833.33	750.00	1.73	1.00	42.68	315.48	315.48				
Dsgn. L = 3.96 ft	1	0.229	0.135	171.45	62.30	171.45	833.33	750.00	1.32	1.00	42.55	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.288	0.074	216.27	171.45	216.27	833.33	750.00	1.09	1.00	23.44	315.48	315.48			
Dsgn. L = 3.96 ft	1	0.289	0.034	216.61	209.07	216.61	833.33	750.00	1.01	1.00	10.65	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.279	0.071	209.07	132.40	209.07	833.33	750.00	1.14	1.00	22.31	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.177	0.136	132.40	-14.55	132.40	833.33	750.00	1.82	1.00	43.06	315.48	315.48			
Dsgn. L = 4.00 ft	2	0.019	0.012	-14.55	14.55	833.33	750.00	1.00	1.00	3.82	315.48	315.48				
+1.20D+0.50Lr+1.60L+1.60H, LL																
Dsgn. L = 1.46 ft	1	0.080	0.131	60.30	60.30	833.33	750.00	1.73	1.00	41.31	315.48	315.48				
Dsgn. L = 3.96 ft	1	0.219	0.131	164.03	60.30	164.03	833.33	750.00	1.31	1.00	41.18	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.271	0.070	203.31	164.03	203.31	833.33	750.00	1.08	1.00	22.07	315.48	315.48			
Dsgn. L = 3.96 ft	1	0.271	0.029	203.54	190.70	203.54	833.33	750.00	1.02	1.00	9.28	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.254	0.075	190.70	108.49	190.70	833.33	750.00	1.17	1.00	23.68	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.145	0.141	108.49	-43.99	108.49	833.33	750.00	2.15	1.00	44.43	315.48	315.48			
Dsgn. L = 4.00 ft	2	0.059	0.035	-43.99	43.99	833.33	750.00	1.00	1.00	11.18	315.48	315.48				
+1.20D+1.60L+0.50S+1.60H, LL (																
Dsgn. L = 1.46 ft	1	0.038	0.062	28.52	28.52	833.33	750.00	1.73	1.00	19.58	315.48	315.48				
Dsgn. L = 3.96 ft	1	0.099	0.062	74.58	28.52	74.58	833.33	750.00	1.24	1.00	19.44	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.105	0.018	78.49	74.58	78.49	833.33	750.00	1.02	1.00	5.57	315.48	315.48			
Dsgn. L = 3.96 ft	1	0.105	0.013	78.49	62.89	78.49	833.33	750.00	1.08	1.00	4.17	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.084	0.036	62.89	21.43	62.89	833.33	750.00	1.31	1.00	11.50	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.062	0.061	21.43	-46.17	46.17	833.33	750.00	2.13	1.00	19.16	315.48	315.48			
Dsgn. L = 4.00 ft	2	0.062	0.037	-46.17	46.17	833.33	750.00	1.00	1.00	11.73	315.48	315.48				
+1.20D+1.60L+0.50S+1.60H, LL (																
Dsgn. L = 1.46 ft	1	0.091	0.149	68.53	68.53	833.33	750.00	1.73	1.00	46.94	315.48	315.48				
Dsgn. L = 3.96 ft	1	0.250	0.148	187.74	68.53	187.74	833.33	750.00	1.30	1.00	46.81	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.310	0.076	232.28	187.74	232.28	833.33	750.00	1.08	1.00	23.97	315.48	315.48			
Dsgn. L = 3.96 ft	1	0.310	0.034	232.59	222.36	232.59	833.33	750.00	1.02	1.00	10.57	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.296	0.076	222.36	139.63	222.36	833.33	750.00	1.14	1.00	23.95	315.48	315.48			
Dsgn. L = 4.04 ft	1	0.186	0.145	139.63	-16.73	139.63	833.33	750.00	1.83	1.00	45.70	315.48	315.48			
Dsgn. L = 4.00 ft	2	0.022	0.014	-16.73	16.73	833.33	750.00	1.00	1.00	4.37	315.48	315.48				



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B21**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.46 ft	1	0.089	0.144	66.53		66.53	833.33	750.00	1.73	1.00	45.57	315.48	315.48
Dsgn. L = 3.96 ft	1	0.240	0.144	180.32	66.53	180.32	833.33	750.00	1.30	1.00	45.44	315.48	315.48
Dsgn. L = 4.04 ft	1	0.292	0.072	219.33	180.32	219.33	833.33	750.00	1.08	1.00	22.60	315.48	315.48
Dsgn. L = 3.96 ft	1	0.293	0.029	219.52	203.99	219.52	833.33	750.00	1.03	1.00	9.20	315.48	315.48
Dsgn. L = 4.04 ft	1	0.272	0.080	203.99	115.72	203.99	833.33	750.00	1.17	1.00	25.32	315.48	315.48
Dsgn. L = 4.04 ft	1	0.154	0.149	115.72	-46.17	115.72	833.33	750.00	2.15	1.00	47.07	315.48	315.48
Dsgn. L = 4.00 ft	2	0.062	0.037		-46.17	46.17	833.33	750.00	1.00	1.00	11.73	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.46 ft	1	0.031	0.050	23.05		23.05	833.33	750.00	1.73	1.00	15.83	315.48	315.48
Dsgn. L = 3.96 ft	1	0.081	0.050	61.07	23.05	61.07	833.33	750.00	1.26	1.00	15.70	315.48	315.48
Dsgn. L = 4.04 ft	1	0.090	0.018	67.33	61.07	67.33	833.33	750.00	1.04	1.00	5.54	315.48	315.48
Dsgn. L = 3.96 ft	1	0.090	0.009	67.33	56.49	67.33	833.33	750.00	1.07	1.00	2.96	315.48	315.48
Dsgn. L = 4.04 ft	1	0.075	0.030	56.49	23.17	56.49	833.33	750.00	1.26	1.00	9.34	315.48	315.48
Dsgn. L = 4.04 ft	1	0.044	0.051	23.17	-32.95	32.95	833.33	750.00	2.17	1.00	16.01	315.48	315.48
Dsgn. L = 4.00 ft	2	0.044	0.027		-32.95	32.95	833.33	750.00	1.00	1.00	8.42	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.46 ft	1	0.064	0.104	48.05		48.05	833.33	750.00	1.73	1.00	32.93	315.48	315.48
Dsgn. L = 3.96 ft	1	0.176	0.104	131.79	48.05	131.79	833.33	750.00	1.31	1.00	32.80	315.48	315.48
Dsgn. L = 4.04 ft	1	0.218	0.054	163.45	131.79	163.45	833.33	750.00	1.08	1.00	17.05	315.48	315.48
Dsgn. L = 3.96 ft	1	0.218	0.024	163.67	156.16	163.67	833.33	750.00	1.02	1.00	7.46	315.48	315.48
Dsgn. L = 4.04 ft	1	0.208	0.054	156.16	97.04	156.16	833.33	750.00	1.15	1.00	17.13	315.48	315.48
Dsgn. L = 4.04 ft	1	0.129	0.103	97.04	-14.55	97.04	833.33	750.00	1.88	1.00	32.60	315.48	315.48
Dsgn. L = 4.00 ft	2	0.019	0.012		-14.55	14.55	833.33	750.00	1.00	1.00	3.82	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.46 ft	1	0.062	0.102	46.80		46.80	833.33	750.00	1.73	1.00	32.08	315.48	315.48
Dsgn. L = 3.96 ft	1	0.170	0.101	127.16	46.80	127.16	833.33	750.00	1.30	1.00	31.95	315.48	315.48
Dsgn. L = 4.04 ft	1	0.207	0.051	155.36	127.16	155.36	833.33	750.00	1.08	1.00	16.19	315.48	315.48
Dsgn. L = 3.96 ft	1	0.207	0.021	155.50	144.68	155.50	833.33	750.00	1.03	1.00	6.61	315.48	315.48
Dsgn. L = 4.04 ft	1	0.193	0.057	144.68	82.10	144.68	833.33	750.00	1.17	1.00	17.98	315.48	315.48
Dsgn. L = 4.04 ft	1	0.109	0.106	82.10	-32.95	82.10	833.33	750.00	2.15	1.00	33.45	315.48	315.48
Dsgn. L = 4.00 ft	2	0.044	0.027		-32.95	32.95	833.33	750.00	1.00	1.00	8.42	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.46 ft	1	0.032	0.053	24.30		24.30	833.33	750.00	1.73	1.00	16.69	315.48	315.48
Dsgn. L = 3.96 ft	1	0.088	0.052	65.70	24.30	65.70	833.33	750.00	1.27	1.00	16.55	315.48	315.48
Dsgn. L = 4.04 ft	1	0.101	0.020	75.43	65.70	75.43	833.33	750.00	1.05	1.00	6.40	315.48	315.48
Dsgn. L = 3.96 ft	1	0.101	0.007	75.44	67.97	75.44	833.33	750.00	1.04	1.00	2.14	315.48	315.48
Dsgn. L = 4.04 ft	1	0.091	0.027	67.97	38.11	67.97	833.33	750.00	1.18	1.00	8.49	315.48	315.48
Dsgn. L = 4.04 ft	1	0.051	0.048	38.11	-14.55	38.11	833.33	750.00	2.14	1.00	15.15	315.48	315.48
Dsgn. L = 4.00 ft	2	0.019	0.012		-14.55	14.55	833.33	750.00	1.00	1.00	3.82	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.46 ft	1	0.032	0.053	24.30		24.30	833.33	750.00	1.73	1.00	16.69	315.48	315.48
Dsgn. L = 3.96 ft	1	0.088	0.052	65.70	24.30	65.70	833.33	750.00	1.27	1.00	16.55	315.48	315.48
Dsgn. L = 4.04 ft	1	0.101	0.020	75.43	65.70	75.43	833.33	750.00	1.05	1.00	6.40	315.48	315.48
Dsgn. L = 3.96 ft	1	0.101	0.007	75.44	67.97	75.44	833.33	750.00	1.04	1.00	2.14	315.48	315.48
Dsgn. L = 4.04 ft	1	0.091	0.027	67.97	38.11	67.97	833.33	750.00	1.18	1.00	8.49	315.48	315.48
Dsgn. L = 4.04 ft	1	0.051	0.048	38.11	-14.55	38.11	833.33	750.00	2.14	1.00	15.15	315.48	315.48
Dsgn. L = 4.00 ft	2	0.019	0.012		-14.55	14.55	833.33	750.00	1.00	1.00	3.82	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.46 ft	1	0.057	0.093	42.97		42.97	833.33	750.00	1.73	1.00	29.46	315.48	315.48
Dsgn. L = 3.96 ft	1	0.151	0.093	113.21	42.97	113.21	833.33	750.00	1.23	1.00	29.33	315.48	315.48
Dsgn. L = 4.04 ft	1	0.158	0.023	118.59	113.21	118.59	833.33	750.00	1.02	1.00	7.25	315.48	315.48
Dsgn. L = 3.96 ft	1	0.158	0.016	118.59	99.02	118.59	833.33	750.00	1.07	1.00	5.19	315.48	315.48
Dsgn. L = 4.04 ft	1	0.132	0.046	99.02	46.31	99.02	833.33	750.00	1.23	1.00	14.59	315.48	315.48
Dsgn. L = 4.04 ft	1	0.062	0.077	46.31	-39.93	46.31	833.33	750.00	2.24	1.00	24.44	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B21**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 4.00 ft	2	0.053	0.032			-39.93	39.93	833.33	750.00	1.00	1.00	10.16	315.48	315.48
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 1.46 ft	1	0.091	0.148	67.98			67.98	833.33	750.00	1.73	1.00	46.56	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.245	0.147	183.93	67.98		183.93	833.33	750.00	1.27	1.00	46.43	315.48	315.48
	Dsgn. L = 4.04 ft	1	0.286	0.059	214.71	183.93	214.71	833.33	750.00	1.06	1.00	18.76	315.48	315.48	
	Dsgn. L = 3.96 ft	1	0.286	0.023	214.82	198.69	214.82	833.33	750.00	1.03	1.00	7.20	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.265	0.071	198.69	120.18	198.69	833.33	750.00	1.16	1.00	22.38	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.160	0.130	120.18	-21.53	120.18	833.33	750.00	1.92	1.00	41.03	315.48	315.48	
	Dsgn. L = 4.00 ft	2	0.029	0.018			-21.53	21.53	833.33	750.00	1.00	1.00	5.56	315.48	315.48
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 1.46 ft	1	0.089	0.145	66.73			66.73	833.33	750.00	1.73	1.00	45.71	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.239	0.144	179.30	66.73	179.30	833.33	750.00	1.27	1.00	45.57	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.275	0.057	206.61	179.30	206.61	833.33	750.00	1.05	1.00	17.90	315.48	315.48	
	Dsgn. L = 3.96 ft	1	0.276	0.020	206.65	187.21	206.65	833.33	750.00	1.04	1.00	6.35	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.250	0.074	187.21	105.24	187.21	833.33	750.00	1.18	1.00	23.23	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.140	0.133	105.24	-39.93	105.24	833.33	750.00	2.15	1.00	41.89	315.48	315.48	
	Dsgn. L = 4.00 ft	2	0.053	0.032			-39.93	39.93	833.33	750.00	1.00	1.00	10.16	315.48	315.48
+1.20D+1.60S+0.50W+1.60H	Dsgn. L = 1.46 ft	1	0.059	0.096	44.22			44.22	833.33	750.00	1.73	1.00	30.32	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.157	0.096	117.84	44.22	117.84	833.33	750.00	1.23	1.00	30.18	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.169	0.026	126.69	117.84	126.69	833.33	750.00	1.03	1.00	8.11	315.48	315.48	
	Dsgn. L = 3.96 ft	1	0.169	0.014	126.69	110.50	126.69	833.33	750.00	1.05	1.00	4.33	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.147	0.044	110.50	61.25	110.50	833.33	750.00	1.19	1.00	13.74	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.082	0.075	61.25	-21.53	61.25	833.33	750.00	2.14	1.00	23.59	315.48	315.48	
	Dsgn. L = 4.00 ft	2	0.029	0.018			-21.53	21.53	833.33	750.00	1.00	1.00	5.56	315.48	315.48
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 1.46 ft	1	0.031	0.050	23.05			23.05	833.33	750.00	1.73	1.00	15.83	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.081	0.050	61.07	23.05	61.07	833.33	750.00	1.26	1.00	15.70	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.090	0.018	67.33	61.07	67.33	833.33	750.00	1.04	1.00	5.54	315.48	315.48	
	Dsgn. L = 3.96 ft	1	0.090	0.009	67.33	56.49	67.33	833.33	750.00	1.07	1.00	2.96	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.075	0.030	56.49	23.17	56.49	833.33	750.00	1.26	1.00	9.34	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.044	0.051	23.17	-32.95	32.95	833.33	750.00	2.17	1.00	16.01	315.48	315.48	
	Dsgn. L = 4.00 ft	2	0.044	0.027			-32.95	32.95	833.33	750.00	1.00	1.00	8.42	315.48	315.48
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 1.46 ft	1	0.064	0.104	48.05			48.05	833.33	750.00	1.73	1.00	32.93	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.176	0.104	131.79	48.05	131.79	833.33	750.00	1.31	1.00	32.80	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.218	0.054	163.45	131.79	163.45	833.33	750.00	1.08	1.00	17.05	315.48	315.48	
	Dsgn. L = 3.96 ft	1	0.218	0.024	163.67	156.16	163.67	833.33	750.00	1.02	1.00	7.46	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.208	0.054	156.16	97.04	156.16	833.33	750.00	1.15	1.00	17.13	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.129	0.103	97.04	-14.55	97.04	833.33	750.00	1.88	1.00	32.60	315.48	315.48	
	Dsgn. L = 4.00 ft	2	0.019	0.012			-14.55	14.55	833.33	750.00	1.00	1.00	3.82	315.48	315.48
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 1.46 ft	1	0.062	0.102	46.80			46.80	833.33	750.00	1.73	1.00	32.08	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.170	0.101	127.16	46.80	127.16	833.33	750.00	1.30	1.00	31.95	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.207	0.051	155.36	127.16	155.36	833.33	750.00	1.08	1.00	16.19	315.48	315.48	
	Dsgn. L = 3.96 ft	1	0.207	0.021	155.50	144.68	155.50	833.33	750.00	1.03	1.00	6.61	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.193	0.057	144.68	82.10	144.68	833.33	750.00	1.17	1.00	17.98	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.109	0.106	82.10	-32.95	82.10	833.33	750.00	2.15	1.00	33.45	315.48	315.48	
	Dsgn. L = 4.00 ft	2	0.044	0.027			-32.95	32.95	833.33	750.00	1.00	1.00	8.42	315.48	315.48
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 1.46 ft	1	0.039	0.064	29.27			29.27	833.33	750.00	1.73	1.00	20.09	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.103	0.063	77.36	29.27	77.36	833.33	750.00	1.24	1.00	19.96	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.111	0.019	83.35	77.36	83.35	833.33	750.00	1.03	1.00	6.08	315.48	315.48	
	Dsgn. L = 3.96 ft	1	0.111	0.012	83.35	69.78	83.35	833.33	750.00	1.07	1.00	3.66	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.093	0.035	69.78	30.40	69.78	833.33	750.00	1.25	1.00	10.98	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.047	0.059	30.40	-35.13	35.13	833.33	750.00	2.20	1.00	18.65	315.48	315.48	
	Dsgn. L = 4.00 ft	2	0.047	0.028			-35.13	35.13	833.33	750.00	1.00	1.00	8.97	315.48	315.48
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 1.46 ft	1	0.072	0.118	54.28			54.28	833.33	750.00	1.73	1.00	37.19	315.48	315.48
	Dsgn. L = 3.96 ft	1	0.197	0.117	148.09	54.28	148.09	833.33	750.00	1.29	1.00	37.06	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.239	0.056	179.47	148.09	179.47	833.33	750.00	1.07	1.00	17.58	315.48	315.48	
	Dsgn. L = 3.96 ft	1	0.240	0.023	179.65	169.45	179.65	833.33	750.00	1.02	1.00	7.38	315.48	315.48	
	Dsgn. L = 4.04 ft	1	0.226	0.059	169.45	104.27	169.45	833.33	750.00	1.15	1.00	18.77	315.48	315.48	



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B21**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.04 ft	1	1	0.139	0.112	104.27	-16.73	104.27	833.33	750.00	1.89	1.00	35.23	315.48	315.48
Dsgn. L = 4.00 ft	2	2	0.022	0.014		-16.73	16.73	833.33	750.00	1.00	1.00	4.37	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L = 1.46 ft	1	1	0.071	0.115	53.03		53.03	833.33	750.00	1.73	1.00	36.34	315.48	315.48
Dsgn. L = 3.96 ft	1	1	0.191	0.115	143.45	53.03	143.45	833.33	750.00	1.29	1.00	36.20	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.228	0.053	171.37	143.45	171.37	833.33	750.00	1.07	1.00	16.73	315.48	315.48
Dsgn. L = 3.96 ft	1	1	0.229	0.021	171.48	157.97	171.48	833.33	750.00	1.03	1.00	6.52	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.211	0.062	157.97	89.33	157.97	833.33	750.00	1.18	1.00	19.62	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.119	0.114	89.33	-35.13	89.33	833.33	750.00	2.15	1.00	36.09	315.48	315.48
Dsgn. L = 4.00 ft	2	2	0.047	0.028		-35.13	35.13	833.33	750.00	1.00	1.00	8.97	315.48	315.48
<b>+0.90D+W+1.60H</b>														
Dsgn. L = 1.46 ft	1	1	0.024	0.040	18.22		18.22	833.33	750.00	1.73	1.00	12.51	315.48	315.48
Dsgn. L = 3.96 ft	1	1	0.066	0.039	49.28	18.22	49.28	833.33	750.00	1.27	1.00	12.41	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.075	0.015	56.57	49.28	56.57	833.33	750.00	1.05	1.00	4.80	315.48	315.48
Dsgn. L = 3.96 ft	1	1	0.075	0.005	56.58	50.98	56.58	833.33	750.00	1.04	1.00	1.61	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.068	0.020	50.98	28.58	50.98	833.33	750.00	1.18	1.00	6.36	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.038	0.036	28.58	-10.92	28.58	833.33	750.00	2.14	1.00	11.37	315.48	315.48
Dsgn. L = 4.00 ft	2	2	0.015	0.009		-10.92	10.92	833.33	750.00	1.00	1.00	2.87	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L = 1.46 ft	1	1	0.034	0.056	25.54		25.54	833.33	750.00	1.73	1.00	17.53	315.48	315.48
Dsgn. L = 3.96 ft	1	1	0.090	0.055	67.58	25.54	67.58	833.33	750.00	1.25	1.00	17.40	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.098	0.018	73.74	67.58	73.74	833.33	750.00	1.03	1.00	5.76	315.48	315.48
Dsgn. L = 3.96 ft	1	1	0.098	0.010	73.74	61.81	73.74	833.33	750.00	1.07	1.00	3.24	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.082	0.032	61.81	26.06	61.81	833.33	750.00	1.26	1.00	10.00	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.045	0.054	26.06	-33.83	33.83	833.33	750.00	2.18	1.00	17.06	315.48	315.48
Dsgn. L = 4.00 ft	2	2	0.045	0.027		-33.83	33.83	833.33	750.00	1.00	1.00	8.64	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L = 1.46 ft	1	1	0.067	0.110	50.54		50.54	833.33	750.00	1.73	1.00	34.64	315.48	315.48
Dsgn. L = 3.96 ft	1	1	0.184	0.109	138.31	50.54	138.31	833.33	750.00	1.30	1.00	34.50	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.226	0.055	169.86	138.31	169.86	833.33	750.00	1.08	1.00	17.26	315.48	315.48
Dsgn. L = 3.96 ft	1	1	0.227	0.024	170.06	161.48	170.06	833.33	750.00	1.02	1.00	7.43	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.215	0.056	161.48	99.93	161.48	833.33	750.00	1.15	1.00	17.78	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.133	0.107	99.93	-15.43	99.93	833.33	750.00	1.88	1.00	33.65	315.48	315.48
Dsgn. L = 4.00 ft	2	2	0.021	0.013		-15.43	15.43	833.33	750.00	1.00	1.00	4.04	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L = 1.46 ft	1	1	0.066	0.107	49.29		49.29	833.33	750.00	1.73	1.00	33.78	315.48	315.48
Dsgn. L = 3.96 ft	1	1	0.178	0.107	133.67	49.29	133.67	833.33	750.00	1.30	1.00	33.65	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.216	0.052	161.76	133.67	161.76	833.33	750.00	1.07	1.00	16.41	315.48	315.48
Dsgn. L = 3.96 ft	1	1	0.216	0.021	161.89	149.99	161.89	833.33	750.00	1.03	1.00	6.57	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.200	0.059	149.99	84.99	149.99	833.33	750.00	1.17	1.00	18.64	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.113	0.109	84.99	-33.83	84.99	833.33	750.00	2.15	1.00	34.51	315.48	315.48
Dsgn. L = 4.00 ft	2	2	0.045	0.027		-33.83	33.83	833.33	750.00	1.00	1.00	8.64	315.48	315.48
<b>+0.90D+E+0.90H</b>														
Dsgn. L = 1.46 ft	1	1	0.024	0.040	18.22		18.22	833.33	750.00	1.73	1.00	12.51	315.48	315.48
Dsgn. L = 3.96 ft	1	1	0.066	0.039	49.28	18.22	49.28	833.33	750.00	1.27	1.00	12.41	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.075	0.015	56.57	49.28	56.57	833.33	750.00	1.05	1.00	4.80	315.48	315.48
Dsgn. L = 3.96 ft	1	1	0.075	0.005	56.58	50.98	56.58	833.33	750.00	1.04	1.00	1.61	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.068	0.020	50.98	28.58	50.98	833.33	750.00	1.18	1.00	6.36	315.48	315.48
Dsgn. L = 4.04 ft	1	1	0.038	0.036	28.58	-10.92	28.58	833.33	750.00	2.14	1.00	11.37	315.48	315.48
Dsgn. L = 4.00 ft	2	2	0.015	0.009		-10.92	10.92	833.33	750.00	1.00	1.00	2.87	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.2104	10.578		0.0000	0.000
	2	0.0000	10.578	+D+L+H	-0.1172	4.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #'			Values in KIPS
	Support 1	Support 2	Support 3	
Max Upward from all Load Conditions	32.480	44.001		
Max Upward from Load Combinations	32.480	44.001		
Max Upward from Load Cases	16.248	26.098		
Max Downward from all Load Conditions (Resis)	-0.856			
Max Downward from Load Cases (Resisting Uf)	-0.856			

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B22

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

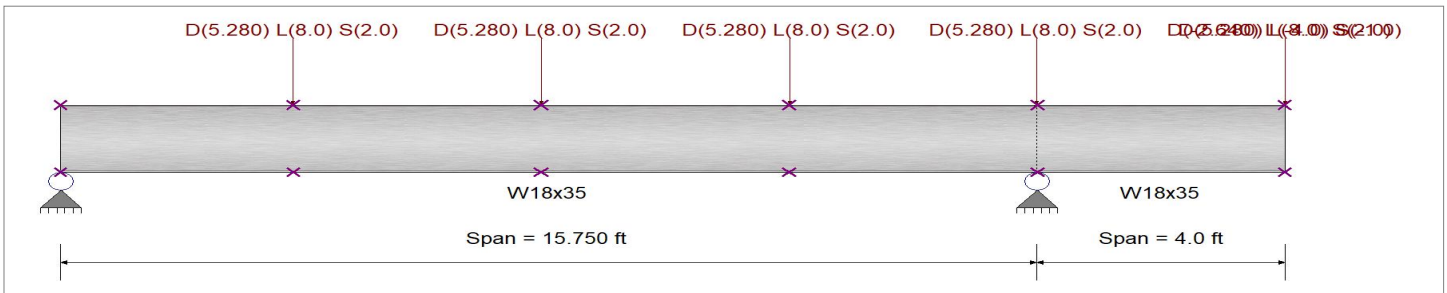
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 3.750 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 3.750 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 2

Point Load : D = -2.640, L = -4.0, S = -1.0 k @ 4.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.606</b> : 1	Maximum Shear Stress Ratio =	<b>0.205</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	151.160 k-ft	Vu : Applied	32.634 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	1.40D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.40D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Location of maximum on span	Span # 1	Location of maximum on span	15.750 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.180 in Ratio = <b>1,047</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.143 in Ratio = <b>669</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.283 in Ratio = <b>668</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.208 in Ratio = <b>462</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.72 ft	1	0.158	0.067	39.38		39.38	277.08	249.38	1.68	1.00	10.69	159.30	159.30
Dsgn. L =	4.03 ft	1	0.208	0.066	51.78	39.38	51.78	277.08	249.38	1.10	1.00	10.50	159.30	159.30
Dsgn. L =	3.97 ft	1	0.208	0.029	51.78	33.63	51.78	277.08	249.38	1.16	1.00	4.67	159.30	159.30
Dsgn. L =	4.03 ft	1	0.135	0.077	33.63	-15.18	33.63	277.08	249.38	2.15	1.00	12.26	159.30	159.30
Dsgn. L =	4.00 ft	2	0.061	0.024		-15.18	15.18	277.08	249.38	1.00	1.00	3.89	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	3.72 ft	1	0.111	0.047	27.71		27.71	277.08	249.38	1.68	1.00	7.53	159.30	159.30
Dsgn. L =	4.03 ft	1	0.127	0.046	31.78	27.71	31.78	277.08	249.38	1.05	1.00	7.38	159.30	159.30
Dsgn. L =	3.97 ft	1	0.127	0.035	31.78	9.78	31.78	277.08	249.38	1.37	1.00	5.63	159.30	159.30
Dsgn. L =	4.03 ft	1	0.155	0.076	9.78	-38.61	38.61	277.08	249.38	2.02	1.00	12.14	159.30	159.30
Dsgn. L =	4.00 ft	2	0.155	0.061		-38.61	38.61	277.08	249.38	1.00	1.00	9.74	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	3.72 ft	1	0.426	0.180	106.26		106.26	277.08	249.38	1.68	1.00	28.66	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B22**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Max Stress Ratios				Summary of Moment Values						Summary of Shear Values		
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.03 ft	1	0.579	0.179	144.34	106.26	144.34	277.08	249.38	1.12	1.00	28.51	159.30	159.30
Dsgn. L = 3.97 ft	1	0.579	0.063	144.34	104.60	144.34	277.08	249.38	1.12	1.00	10.10	159.30	159.30
Dsgn. L = 4.03 ft	1	0.419	0.185	104.60	-13.01	104.60	277.08	249.38	1.81	1.00	29.41	159.30	159.30
Dsgn. L = 4.00 ft	2	0.052	0.021		-13.01	13.01	277.08	249.38	1.00	1.00	3.34	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 3.72 ft	1	0.402	0.170	100.21		100.21	277.08	249.38	1.68	1.00	27.04	159.30	159.30
Dsgn. L = 4.03 ft	1	0.528	0.169	131.74	100.21	131.74	277.08	249.38	1.10	1.00	26.88	159.30	159.30
Dsgn. L = 3.97 ft	1	0.528	0.074	131.74	85.55	131.74	277.08	249.38	1.16	1.00	11.73	159.30	159.30
Dsgn. L = 4.03 ft	1	0.343	0.195	85.55	-38.61	85.55	277.08	249.38	2.15	1.00	31.03	159.30	159.30
Dsgn. L = 4.00 ft	2	0.155	0.061		-38.61	38.61	277.08	249.38	1.00	1.00	9.74	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 3.72 ft	1	0.132	0.056	32.91		32.91	277.08	249.38	1.68	1.00	8.93	159.30	159.30
Dsgn. L = 4.03 ft	1	0.155	0.055	38.61	32.91	38.61	277.08	249.38	1.06	1.00	8.78	159.30	159.30
Dsgn. L = 3.97 ft	1	0.155	0.039	38.61	14.21	38.61	277.08	249.38	1.33	1.00	6.23	159.30	159.30
Dsgn. L = 4.03 ft	1	0.163	0.086	14.21	-40.61	40.61	277.08	249.38	2.15	1.00	13.74	159.30	159.30
Dsgn. L = 4.00 ft	2	0.163	0.064		-40.61	40.61	277.08	249.38	1.00	1.00	10.24	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 3.72 ft	1	0.447	0.189	111.45		111.45	277.08	249.38	1.68	1.00	30.06	159.30	159.30
Dsgn. L = 4.03 ft	1	0.606	0.188	151.16	111.45	151.16	277.08	249.38	1.12	1.00	29.91	159.30	159.30
Dsgn. L = 3.97 ft	1	0.606	0.067	151.16	109.03	151.16	277.08	249.38	1.12	1.00	10.70	159.30	159.30
Dsgn. L = 4.03 ft	1	0.437	0.195	109.03	-15.01	109.03	277.08	249.38	1.83	1.00	31.01	159.30	159.30
Dsgn. L = 4.00 ft	2	0.060	0.024		-15.01	15.01	277.08	249.38	1.00	1.00	3.84	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 3.72 ft	1	0.423	0.179	105.41		105.41	277.08	249.38	1.68	1.00	28.44	159.30	159.30
Dsgn. L = 4.03 ft	1	0.556	0.178	138.56	105.41	138.56	277.08	249.38	1.10	1.00	28.28	159.30	159.30
Dsgn. L = 3.97 ft	1	0.556	0.077	138.56	89.98	138.56	277.08	249.38	1.16	1.00	12.33	159.30	159.30
Dsgn. L = 4.03 ft	1	0.361	0.205	89.98	-40.61	89.98	277.08	249.38	2.15	1.00	32.63	159.30	159.30
Dsgn. L = 4.00 ft	2	0.163	0.064		-40.61	40.61	277.08	249.38	1.00	1.00	10.24	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.72 ft	1	0.120	0.051	29.98		29.98	277.08	249.38	1.68	1.00	8.14	159.30	159.30
Dsgn. L = 4.03 ft	1	0.146	0.050	36.51	29.98	36.51	277.08	249.38	1.07	1.00	7.99	159.30	159.30
Dsgn. L = 3.97 ft	1	0.146	0.032	36.51	16.92	36.51	277.08	249.38	1.27	1.00	5.02	159.30	159.30
Dsgn. L = 4.03 ft	1	0.116	0.072	16.92	-29.01	29.01	277.08	249.38	2.20	1.00	11.53	159.30	159.30
Dsgn. L = 4.00 ft	2	0.116	0.046		-29.01	29.01	277.08	249.38	1.00	1.00	7.34	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.72 ft	1	0.317	0.134	79.07		79.07	277.08	249.38	1.68	1.00	21.35	159.30	159.30
Dsgn. L = 4.03 ft	1	0.428	0.133	106.85	79.07	106.85	277.08	249.38	1.11	1.00	21.19	159.30	159.30
Dsgn. L = 3.97 ft	1	0.428	0.049	106.85	76.18	106.85	277.08	249.38	1.13	1.00	7.81	159.30	159.30
Dsgn. L = 4.03 ft	1	0.305	0.140	76.18	-13.01	76.18	277.08	249.38	1.87	1.00	22.32	159.30	159.30
Dsgn. L = 4.00 ft	2	0.052	0.021		-13.01	13.01	277.08	249.38	1.00	1.00	3.34	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 3.72 ft	1	0.302	0.128	75.29		75.29	277.08	249.38	1.68	1.00	20.33	159.30	159.30
Dsgn. L = 4.03 ft	1	0.397	0.127	98.98	75.29	98.98	277.08	249.38	1.10	1.00	20.18	159.30	159.30
Dsgn. L = 3.97 ft	1	0.397	0.055	98.98	64.28	98.98	277.08	249.38	1.16	1.00	8.83	159.30	159.30
Dsgn. L = 4.03 ft	1	0.258	0.146	64.28	-29.01	64.28	277.08	249.38	2.15	1.00	23.34	159.30	159.30
Dsgn. L = 4.00 ft	2	0.116	0.046		-29.01	29.01	277.08	249.38	1.00	1.00	7.34	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.72 ft	1	0.135	0.057	33.76		33.76	277.08	249.38	1.68	1.00	9.16	159.30	159.30
Dsgn. L = 4.03 ft	1	0.178	0.057	44.38	33.76	44.38	277.08	249.38	1.10	1.00	9.00	159.30	159.30
Dsgn. L = 3.97 ft	1	0.178	0.025	44.38	28.82	44.38	277.08	249.38	1.16	1.00	4.00	159.30	159.30
Dsgn. L = 4.03 ft	1	0.116	0.066	28.82	-13.01	28.82	277.08	249.38	2.15	1.00	10.51	159.30	159.30
Dsgn. L = 4.00 ft	2	0.052	0.021		-13.01	13.01	277.08	249.38	1.00	1.00	3.34	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.72 ft	1	0.135	0.057	33.76		33.76	277.08	249.38	1.68	1.00	9.16	159.30	159.30
Dsgn. L = 4.03 ft	1	0.178	0.057	44.38	33.76	44.38	277.08	249.38	1.10	1.00	9.00	159.30	159.30
Dsgn. L = 3.97 ft	1	0.178	0.025	44.38	28.82	44.38	277.08	249.38	1.16	1.00	4.00	159.30	159.30
Dsgn. L = 4.03 ft	1	0.116	0.066	28.82	-13.01	28.82	277.08	249.38	2.15	1.00	10.51	159.30	159.30
Dsgn. L = 4.00 ft	2	0.052	0.021		-13.01	13.01	277.08	249.38	1.00	1.00	3.34	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.72 ft	1	0.135	0.057	33.76		33.76	277.08	249.38	1.68	1.00	9.16	159.30	159.30
Dsgn. L = 4.03 ft	1	0.178	0.057	44.38	33.76	44.38	277.08	249.38	1.10	1.00	9.00	159.30	159.30
Dsgn. L = 3.97 ft	1	0.178	0.025	44.38	28.82	44.38	277.08	249.38	1.16	1.00	4.00	159.30	159.30
Dsgn. L = 4.03 ft	1	0.116	0.066	28.82	-13.01	28.82	277.08	249.38	2.15	1.00	10.51	159.30	159.30
Dsgn. L = 4.00 ft	2	0.052	0.021		-13.01	13.01	277.08	249.38	1.00	1.00	3.34	159.30	159.30

**Steel Beam**

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LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B22**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	2	0.052	0.021		-13.01	13.01	277.08	249.38	1.00	1.00	3.34	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.72 ft	1	0.187	0.079	46.59		46.59	277.08	249.38	1.68	1.00	12.61	159.30	159.30
Dsgn. L = 4.03 ft	1	0.234	0.078	58.35	46.59	58.35	277.08	249.38	1.08	1.00	12.46	159.30	159.30
Dsgn. L = 3.97 ft	1	0.234	0.044	58.35	31.10	58.35	277.08	249.38	1.22	1.00	6.95	159.30	159.30
Dsgn. L = 4.03 ft	1	0.142	0.105	31.10	-35.41	35.41	277.08	249.38	2.25	1.00	16.66	159.30	159.30
Dsgn. L = 4.00 ft	2	0.142	0.056		-35.41	35.41	277.08	249.38	1.00	1.00	8.94	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.72 ft	1	0.384	0.162	95.68		95.68	277.08	249.38	1.68	1.00	25.82	159.30	159.30
Dsgn. L = 4.03 ft	1	0.516	0.161	128.69	95.68	128.69	277.08	249.38	1.11	1.00	25.66	159.30	159.30
Dsgn. L = 3.97 ft	1	0.516	0.061	128.69	90.37	128.69	277.08	249.38	1.13	1.00	9.74	159.30	159.30
Dsgn. L = 4.03 ft	1	0.362	0.172	90.37	-19.41	90.37	277.08	249.38	1.93	1.00	27.45	159.30	159.30
Dsgn. L = 4.00 ft	2	0.078	0.031		-19.41	19.41	277.08	249.38	1.00	1.00	4.94	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.72 ft	1	0.369	0.156	91.91		91.91	277.08	249.38	1.68	1.00	24.80	159.30	159.30
Dsgn. L = 4.03 ft	1	0.484	0.155	120.82	91.91	120.82	277.08	249.38	1.10	1.00	24.65	159.30	159.30
Dsgn. L = 3.97 ft	1	0.484	0.068	120.82	78.46	120.82	277.08	249.38	1.16	1.00	10.76	159.30	159.30
Dsgn. L = 4.03 ft	1	0.315	0.179	78.46	-35.41	78.46	277.08	249.38	2.15	1.00	28.47	159.30	159.30
Dsgn. L = 4.00 ft	2	0.142	0.056		-35.41	35.41	277.08	249.38	1.00	1.00	8.94	159.30	159.30
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 3.72 ft	1	0.202	0.086	50.37		50.37	277.08	249.38	1.68	1.00	13.63	159.30	159.30
Dsgn. L = 4.03 ft	1	0.266	0.085	66.22	50.37	66.22	277.08	249.38	1.10	1.00	13.47	159.30	159.30
Dsgn. L = 3.97 ft	1	0.266	0.037	66.22	43.01	66.22	277.08	249.38	1.16	1.00	5.93	159.30	159.30
Dsgn. L = 4.03 ft	1	0.172	0.098	43.01	-19.41	43.01	277.08	249.38	2.15	1.00	15.64	159.30	159.30
Dsgn. L = 4.00 ft	2	0.078	0.031		-19.41	19.41	277.08	249.38	1.00	1.00	4.94	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.72 ft	1	0.120	0.051	29.98		29.98	277.08	249.38	1.68	1.00	8.14	159.30	159.30
Dsgn. L = 4.03 ft	1	0.146	0.050	36.51	29.98	36.51	277.08	249.38	1.07	1.00	7.99	159.30	159.30
Dsgn. L = 3.97 ft	1	0.146	0.032	36.51	16.92	36.51	277.08	249.38	1.27	1.00	5.02	159.30	159.30
Dsgn. L = 4.03 ft	1	0.116	0.072	16.92	-29.01	29.01	277.08	249.38	2.20	1.00	11.53	159.30	159.30
Dsgn. L = 4.00 ft	2	0.116	0.046		-29.01	29.01	277.08	249.38	1.00	1.00	7.34	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.72 ft	1	0.317	0.134	79.07		79.07	277.08	249.38	1.68	1.00	21.35	159.30	159.30
Dsgn. L = 4.03 ft	1	0.428	0.133	106.85	79.07	106.85	277.08	249.38	1.11	1.00	21.19	159.30	159.30
Dsgn. L = 3.97 ft	1	0.428	0.049	106.85	76.18	106.85	277.08	249.38	1.13	1.00	7.81	159.30	159.30
Dsgn. L = 4.03 ft	1	0.305	0.140	76.18	-13.01	76.18	277.08	249.38	1.87	1.00	22.32	159.30	159.30
Dsgn. L = 4.00 ft	2	0.052	0.021		-13.01	13.01	277.08	249.38	1.00	1.00	3.34	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.72 ft	1	0.302	0.128	75.29		75.29	277.08	249.38	1.68	1.00	20.33	159.30	159.30
Dsgn. L = 4.03 ft	1	0.397	0.127	98.98	75.29	98.98	277.08	249.38	1.10	1.00	20.18	159.30	159.30
Dsgn. L = 3.97 ft	1	0.397	0.055	98.98	64.28	98.98	277.08	249.38	1.16	1.00	8.83	159.30	159.30
Dsgn. L = 4.03 ft	1	0.258	0.146	64.28	-29.01	64.28	277.08	249.38	2.15	1.00	23.34	159.30	159.30
Dsgn. L = 4.00 ft	2	0.116	0.046		-29.01	29.01	277.08	249.38	1.00	1.00	7.34	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 3.72 ft	1	0.141	0.060	35.17		35.17	277.08	249.38	1.68	1.00	9.54	159.30	159.30
Dsgn. L = 4.03 ft	1	0.174	0.059	43.33	35.17	43.33	277.08	249.38	1.08	1.00	9.38	159.30	159.30
Dsgn. L = 3.97 ft	1	0.174	0.035	43.33	21.35	43.33	277.08	249.38	1.25	1.00	5.62	159.30	159.30
Dsgn. L = 4.03 ft	1	0.124	0.082	21.35	-31.01	31.01	277.08	249.38	2.22	1.00	13.13	159.30	159.30
Dsgn. L = 4.00 ft	2	0.124	0.049		-31.01	31.01	277.08	249.38	1.00	1.00	7.84	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 3.72 ft	1	0.338	0.143	84.26		84.26	277.08	249.38	1.68	1.00	22.75	159.30	159.30
Dsgn. L = 4.03 ft	1	0.456	0.142	113.68	84.26	113.68	277.08	249.38	1.11	1.00	22.59	159.30	159.30
Dsgn. L = 3.97 ft	1	0.456	0.053	113.68	80.62	113.68	277.08	249.38	1.13	1.00	8.42	159.30	159.30
Dsgn. L = 4.03 ft	1	0.323	0.150	80.62	-15.01	80.62	277.08	249.38	1.89	1.00	23.92	159.30	159.30
Dsgn. L = 4.00 ft	2	0.060	0.024		-15.01	15.01	277.08	249.38	1.00	1.00	3.84	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 3.72 ft	1	0.323	0.136	80.48		80.48	277.08	249.38	1.68	1.00	21.73	159.30	159.30
Dsgn. L = 4.03 ft	1	0.424	0.135	105.80	80.48	105.80	277.08	249.38	1.10	1.00	21.58	159.30	159.30
Dsgn. L = 3.97 ft	1	0.424	0.059	105.80	68.71	105.80	277.08	249.38	1.16	1.00	9.43	159.30	159.30
Dsgn. L = 4.03 ft	1	0.276	0.157	68.71	-31.01	68.71	277.08	249.38	2.15	1.00	24.94	159.30	159.30
Dsgn. L = 4.00 ft	2	0.124	0.049		-31.01	31.01	277.08	249.38	1.00	1.00	7.84	159.30	159.30
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 3.72 ft	1	0.102	0.043	25.32		25.32	277.08	249.38	1.68	1.00	6.87	159.30	159.30



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B22**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.03 ft	1	1	0.133	0.042	33.28	25.32	33.28	277.08	249.38	1.10	1.00	6.75	159.30	159.30
Dsgn. L = 3.97 ft	1	1	0.133	0.019	33.28	21.62	33.28	277.08	249.38	1.16	1.00	3.00	159.30	159.30
Dsgn. L = 4.03 ft	1	1	0.087	0.049	21.62	-9.76	21.62	277.08	249.38	2.15	1.00	7.88	159.30	159.30
Dsgn. L = 4.00 ft	2	2	0.039	0.016		-9.76	9.76	277.08	249.38	1.00	1.00	2.50	159.30	159.30
+1.20D+L+0.20S+E+1.60H, LL Cr														
Dsgn. L = 3.72 ft	1	1	0.129	0.055	32.06		32.06	277.08	249.38	1.68	1.00	8.70	159.30	159.30
Dsgn. L = 4.03 ft	1	1	0.157	0.054	39.24	32.06	39.24	277.08	249.38	1.08	1.00	8.55	159.30	159.30
Dsgn. L = 3.97 ft	1	1	0.157	0.033	39.24	18.69	39.24	277.08	249.38	1.26	1.00	5.26	159.30	159.30
Dsgn. L = 4.03 ft	1	1	0.120	0.076	18.69	-29.81	29.81	277.08	249.38	2.20	1.00	12.17	159.30	159.30
Dsgn. L = 4.00 ft	2	2	0.120	0.047		-29.81	29.81	277.08	249.38	1.00	1.00	7.54	159.30	159.30
+1.20D+L+0.20S+E+1.60H, LL Cr														
Dsgn. L = 3.72 ft	1	1	0.325	0.138	81.15		81.15	277.08	249.38	1.68	1.00	21.91	159.30	159.30
Dsgn. L = 4.03 ft	1	1	0.439	0.137	109.58	81.15	109.58	277.08	249.38	1.11	1.00	21.75	159.30	159.30
Dsgn. L = 3.97 ft	1	1	0.439	0.051	109.58	77.96	109.58	277.08	249.38	1.13	1.00	8.06	159.30	159.30
Dsgn. L = 4.03 ft	1	1	0.313	0.144	77.96	-13.81	77.96	277.08	249.38	1.88	1.00	22.96	159.30	159.30
Dsgn. L = 4.00 ft	2	2	0.055	0.022		-13.81	13.81	277.08	249.38	1.00	1.00	3.54	159.30	159.30
+1.20D+L+0.20S+E+1.60H, LL Cr														
Dsgn. L = 3.72 ft	1	1	0.310	0.131	77.37		77.37	277.08	249.38	1.68	1.00	20.89	159.30	159.30
Dsgn. L = 4.03 ft	1	1	0.408	0.130	101.71	77.37	101.71	277.08	249.38	1.10	1.00	20.74	159.30	159.30
Dsgn. L = 3.97 ft	1	1	0.408	0.057	101.71	66.05	101.71	277.08	249.38	1.16	1.00	9.07	159.30	159.30
Dsgn. L = 4.03 ft	1	1	0.265	0.151	66.05	-29.81	66.05	277.08	249.38	2.15	1.00	23.98	159.30	159.30
Dsgn. L = 4.00 ft	2	2	0.120	0.047		-29.81	29.81	277.08	249.38	1.00	1.00	7.54	159.30	159.30
+0.90D+E+0.90H														
Dsgn. L = 3.72 ft	1	1	0.102	0.043	25.32		25.32	277.08	249.38	1.68	1.00	6.87	159.30	159.30
Dsgn. L = 4.03 ft	1	1	0.133	0.042	33.28	25.32	33.28	277.08	249.38	1.10	1.00	6.75	159.30	159.30
Dsgn. L = 3.97 ft	1	1	0.133	0.019	33.28	21.62	33.28	277.08	249.38	1.16	1.00	3.00	159.30	159.30
Dsgn. L = 4.03 ft	1	1	0.087	0.049	21.62	-9.76	21.62	277.08	249.38	2.15	1.00	7.88	159.30	159.30
Dsgn. L = 4.00 ft	2	2	0.039	0.016		-9.76	9.76	277.08	249.38	1.00	1.00	2.50	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2831	7.812		0.0000	0.000
	2	0.0000	7.812	+D+L+H	-0.2076	4.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	19.824	41.644	
Max Upward from Load Combinations	19.824	41.644	
Max Upward from Load Cases	12.190	24.825	
Max Downward from all Load Conditions (Resis)	-1.016		
Max Downward from Load Cases (Resisting Up)	-1.016		
+D+H	7.633	16.818	
+D+L+H, LL Comb Run (*L)	6.617	29.834	
+D+L+H, LL Comb Run (L*)	19.824	28.628	
+D+L+H, LL Comb Run (LL)	18.808	41.644	
+D+Lr+H, LL Comb Run (*L)	7.633	16.818	
+D+Lr+H, LL Comb Run (L*)	7.633	16.818	
+D+Lr+H, LL Comb Run (LL)	7.633	16.818	
+D+S+H	10.427	23.025	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	6.871	26.580	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	16.776	25.675	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	16.014	35.437	
+D+0.750L+0.750S+H, LL Comb Run (*L)	8.966	31.235	
+D+0.750L+0.750S+H, LL Comb Run (L*)	18.871	30.330	
+D+0.750L+0.750S+H, LL Comb Run (LL)	18.109	40.092	
+D+0.60W+H	7.633	16.818	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	6.871	26.580	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	16.776	25.675	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	16.014	35.437	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	8.966	31.235	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	18.871	30.330	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	18.109	40.092	
+0.60D+0.60W+0.60H	4.580	10.091	



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B22

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
+D+0.70E+0.60H	7.633	16.818	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	8.966	31.235	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	18.871	30.330	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	18.109	40.092	
+0.60D+0.70E+H	4.580	10.091	
D Only	7.633	16.818	
L Only, LL Comb Run (*L)	-1.016	13.016	
L Only, LL Comb Run (L*)	12.190	11.810	
L Only, LL Comb Run (LL)	11.175	24.825	
S Only	2.794	6.206	
H Only			



## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B23**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

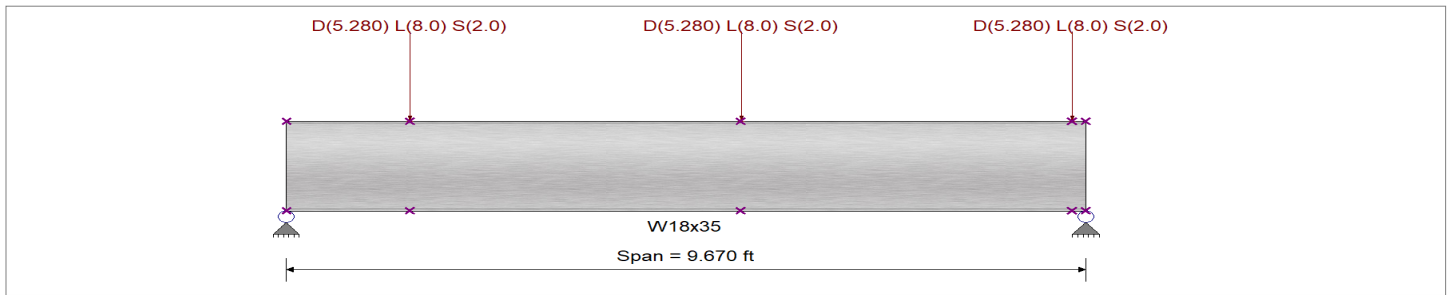
### Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

### Unbraced Lengths

First Brace starts at 1.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 1.50 ft and placed every 4.0 ft thereafter

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.253</b> : 1	Maximum Shear Stress Ratio =	<b>0.217</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	63.200 k-ft	Vu : Applied	34.561 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	9.670 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.026 in Ratio = <b>4,443</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.044 in Ratio = <b>2648</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	1.49 ft	1	0.058	0.062	14.57		14.57	277.08	249.38	1.68	1.00	9.80	159.30	159.30
Dsgn. L =	4.01 ft	1	0.095	0.061	23.59	14.57	23.59	277.08	249.38	1.18	1.00	9.73	159.30	159.30
Dsgn. L =	3.98 ft	1	0.095	0.034	23.59	2.31	23.59	277.08	249.38	1.56	1.00	5.45	159.30	159.30
Dsgn. L =	0.19 ft	1	0.009	0.081	2.31		2.31	277.08	249.38	1.45	1.00	12.85	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	1.49 ft	1	0.149	0.157	37.19		37.19	277.08	249.38	1.68	1.00	24.96	159.30	159.30
Dsgn. L =	4.01 ft	1	0.241	0.156	60.09	37.19	60.09	277.08	249.38	1.18	1.00	24.90	159.30	159.30
Dsgn. L =	3.98 ft	1	0.241	0.086	60.09	5.91	60.09	277.08	249.38	1.56	1.00	13.71	159.30	159.30
Dsgn. L =	0.19 ft	1	0.024	0.206	5.91		5.91	277.08	249.38	1.45	1.00	32.85	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L =	1.49 ft	1	0.157	0.165	39.12		39.12	277.08	249.38	1.68	1.00	26.25	159.30	159.30
Dsgn. L =	4.01 ft	1	0.253	0.164	63.20	39.12	63.20	277.08	249.38	1.18	1.00	26.19	159.30	159.30
Dsgn. L =	3.98 ft	1	0.253	0.091	63.20	6.21	63.20	277.08	249.38	1.56	1.00	14.42	159.30	159.30
Dsgn. L =	0.19 ft	1	0.025	0.217	6.21		6.21	277.08	249.38	1.45	1.00	34.56	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H</b>														
Dsgn. L =	1.49 ft	1	0.112	0.118	27.93		27.93	277.08	249.38	1.68	1.00	18.75	159.30	159.30
Dsgn. L =	4.01 ft	1	0.181	0.117	45.13	27.93	45.13	277.08	249.38	1.18	1.00	18.69	159.30	159.30



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B23**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	3.98 ft	1	0.181	0.065	45.13	4.43	45.13	277.08	249.38	1.56	1.00	10.32	159.30	159.30
Dsgn. L =	0.19 ft	1	0.018	0.155	4.43		4.43	277.08	249.38	1.45	1.00	24.66	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H</b>														
Dsgn. L =	1.49 ft	1	0.050	0.053	12.49		12.49	277.08	249.38	1.68	1.00	8.40	159.30	159.30
Dsgn. L =	4.01 ft	1	0.081	0.052	20.22	12.49	20.22	277.08	249.38	1.18	1.00	8.34	159.30	159.30
Dsgn. L =	3.98 ft	1	0.081	0.029	20.22	1.98	20.22	277.08	249.38	1.56	1.00	4.67	159.30	159.30
Dsgn. L =	0.19 ft	1	0.008	0.069	1.98		1.98	277.08	249.38	1.45	1.00	11.01	159.30	159.30
<b>+1.20D+L+1.60S+1.60H</b>														
Dsgn. L =	1.49 ft	1	0.137	0.144	34.10		34.10	277.08	249.38	1.68	1.00	22.89	159.30	159.30
Dsgn. L =	4.01 ft	1	0.221	0.143	55.10	34.10	55.10	277.08	249.38	1.18	1.00	22.83	159.30	159.30
Dsgn. L =	3.98 ft	1	0.221	0.079	55.10	5.42	55.10	277.08	249.38	1.56	1.00	12.58	159.30	159.30
Dsgn. L =	0.19 ft	1	0.022	0.189	5.42		5.42	277.08	249.38	1.45	1.00	30.12	159.30	159.30
<b>+1.20D+1.60S+0.50W+1.60H</b>														
Dsgn. L =	1.49 ft	1	0.075	0.079	18.66		18.66	277.08	249.38	1.68	1.00	12.54	159.30	159.30
Dsgn. L =	4.01 ft	1	0.121	0.078	30.18	18.66	30.18	277.08	249.38	1.18	1.00	12.48	159.30	159.30
Dsgn. L =	3.98 ft	1	0.121	0.044	30.18	2.96	30.18	277.08	249.38	1.56	1.00	6.93	159.30	159.30
Dsgn. L =	0.19 ft	1	0.012	0.103	2.96		2.96	277.08	249.38	1.45	1.00	16.47	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H</b>														
Dsgn. L =	1.49 ft	1	0.112	0.118	27.93		27.93	277.08	249.38	1.68	1.00	18.75	159.30	159.30
Dsgn. L =	4.01 ft	1	0.181	0.117	45.13	27.93	45.13	277.08	249.38	1.18	1.00	18.69	159.30	159.30
Dsgn. L =	3.98 ft	1	0.181	0.065	45.13	4.43	45.13	277.08	249.38	1.56	1.00	10.32	159.30	159.30
Dsgn. L =	0.19 ft	1	0.018	0.155	4.43		4.43	277.08	249.38	1.45	1.00	24.66	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H</b>														
Dsgn. L =	1.49 ft	1	0.120	0.126	29.86		29.86	277.08	249.38	1.68	1.00	20.04	159.30	159.30
Dsgn. L =	4.01 ft	1	0.193	0.125	48.25	29.86	48.25	277.08	249.38	1.18	1.00	19.98	159.30	159.30
Dsgn. L =	3.98 ft	1	0.193	0.069	48.25	4.74	48.25	277.08	249.38	1.56	1.00	11.03	159.30	159.30
Dsgn. L =	0.19 ft	1	0.019	0.166	4.74		4.74	277.08	249.38	1.45	1.00	26.37	159.30	159.30
<b>+0.90D+W+1.60H</b>														
Dsgn. L =	1.49 ft	1	0.038	0.040	9.36		9.36	277.08	249.38	1.68	1.00	6.30	159.30	159.30
Dsgn. L =	4.01 ft	1	0.061	0.039	15.16	9.36	15.16	277.08	249.38	1.18	1.00	6.25	159.30	159.30
Dsgn. L =	3.98 ft	1	0.061	0.022	15.16	1.49	15.16	277.08	249.38	1.56	1.00	3.50	159.30	159.30
Dsgn. L =	0.19 ft	1	0.006	0.052	1.49		1.49	277.08	249.38	1.45	1.00	8.26	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H</b>														
Dsgn. L =	1.49 ft	1	0.115	0.121	28.70		28.70	277.08	249.38	1.68	1.00	19.27	159.30	159.30
Dsgn. L =	4.01 ft	1	0.186	0.121	46.38	28.70	46.38	277.08	249.38	1.18	1.00	19.20	159.30	159.30
Dsgn. L =	3.98 ft	1	0.186	0.067	46.38	4.56	46.38	277.08	249.38	1.56	1.00	10.60	159.30	159.30
Dsgn. L =	0.19 ft	1	0.018	0.159	4.56		4.56	277.08	249.38	1.45	1.00	25.35	159.30	159.30
<b>+0.90D+E+0.90H</b>														
Dsgn. L =	1.49 ft	1	0.038	0.040	9.36		9.36	277.08	249.38	1.68	1.00	6.30	159.30	159.30
Dsgn. L =	4.01 ft	1	0.061	0.039	15.16	9.36	15.16	277.08	249.38	1.18	1.00	6.25	159.30	159.30
Dsgn. L =	3.98 ft	1	0.061	0.022	15.16	1.49	15.16	277.08	249.38	1.56	1.00	3.50	159.30	159.30
Dsgn. L =	0.19 ft	1	0.006	0.052	1.49		1.49	277.08	249.38	1.45	1.00	8.26	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0438	4.835		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS
	Support 1	Support 2	
Max Upward from all Load Conditions	17.349	22.829	
Max Upward from Load Combinations	17.349	22.829	
Max Upward from Load Cases	10.350	13.650	
+D+H	7.000	9.179	
+D+L+H	17.349	22.829	
+D+Lr+H	7.000	9.179	
+D+S+H	9.587	12.591	
+D+0.750Lr+0.750L+H	14.762	19.416	
+D+0.750L+0.750S+H	16.703	21.976	
+D+0.60W+H	7.000	9.179	
+D+0.750Lr+0.750L+0.450W+H	14.762	19.416	
+D+0.750L+0.750S+0.450W+H	16.703	21.976	
+0.60D+0.60W+0.60H	4.200	5.507	
+D+0.70E+0.60H	7.000	9.179	



Project Title: WSF International Village  
Engineer: JMB  
Project ID: 24-318  
Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B23

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
+D+0.750L+0.750S+0.5250E+H	16.703	21.976
+0.60D+0.70E+H	4.200	5.507
D Only	7.000	9.179
L Only	10.350	13.650
S Only	2.587	3.413
H Only		

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** B24

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

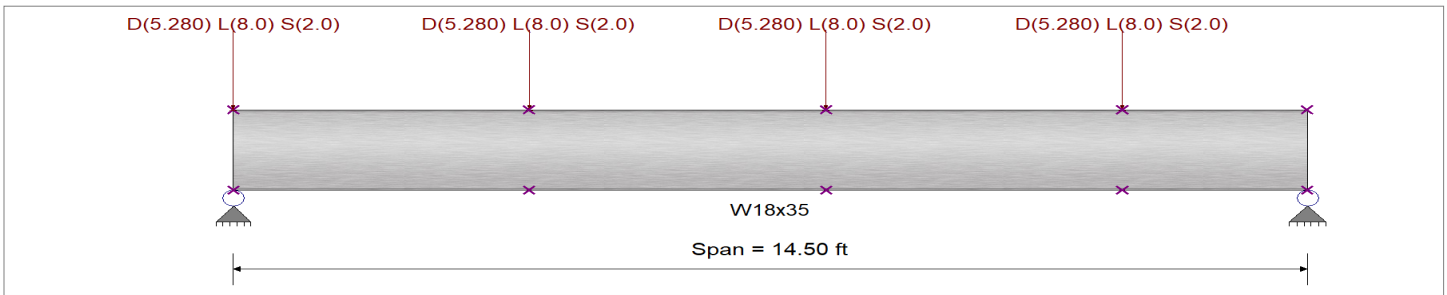
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.550</b> : 1	Maximum Shear Stress Ratio =	<b>0.211</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	137.154 k-ft	Vu : Applied	33.633 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	14.500 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.133 in Ratio = <b>1,311</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.223 in Ratio = <b>782</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.98 ft	1	0.163	0.065	40.56		40.56	277.08	249.38	1.66	1.00	10.30	159.30	159.30
Dsgn. L =	4.02 ft	1	0.205	0.063	51.22	40.56	51.22	277.08	249.38	1.09	1.00	10.10	159.30	159.30
Dsgn. L =	3.98 ft	1	0.205	0.032	51.22	31.46	51.22	277.08	249.38	1.18	1.00	5.07	159.30	159.30
Dsgn. L =	2.53 ft	1	0.126	0.079	31.46		31.46	277.08	249.38	1.64	1.00	12.59	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	3.98 ft	1	0.414	0.163	103.23		103.23	277.08	249.38	1.67	1.00	26.04	159.30	159.30
Dsgn. L =	4.02 ft	1	0.523	0.162	130.40	103.23	130.40	277.08	249.38	1.09	1.00	25.87	159.30	159.30
Dsgn. L =	3.98 ft	1	0.523	0.080	130.40	80.16	130.40	277.08	249.38	1.18	1.00	12.74	159.30	159.30
Dsgn. L =	2.53 ft	1	0.321	0.201	80.16		80.16	277.08	249.38	1.64	1.00	31.98	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L =	3.98 ft	1	0.435	0.172	108.58		108.58	277.08	249.38	1.67	1.00	27.38	159.30	159.30
Dsgn. L =	4.02 ft	1	0.550	0.171	137.15	108.58	137.15	277.08	249.38	1.09	1.00	27.22	159.30	159.30
Dsgn. L =	3.98 ft	1	0.550	0.084	137.15	84.31	137.15	277.08	249.38	1.18	1.00	13.39	159.30	159.30
Dsgn. L =	2.53 ft	1	0.338	0.211	84.31		84.31	277.08	249.38	1.64	1.00	33.63	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H</b>														
Dsgn. L =	3.98 ft	1	0.311	0.123	77.56		77.56	277.08	249.38	1.67	1.00	19.58	159.30	159.30
Dsgn. L =	4.02 ft	1	0.393	0.122	97.96	77.56	97.96	277.08	249.38	1.09	1.00	19.42	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B24**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+0.50W+1.60H	Dsgn. L = 3.98 ft	1	0.393	0.060	97.96	60.21	97.96	277.08	249.38	1.18	1.00	9.59	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.241	0.151	60.21		60.21	277.08	249.38	1.64	1.00	24.03	159.30	159.30
+1.20D+L+1.60S+1.60H	Dsgn. L = 3.98 ft	1	0.139	0.055	34.77		34.77	277.08	249.38	1.66	1.00	8.83	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.176	0.054	43.91	34.77	43.91	277.08	249.38	1.09	1.00	8.66	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.176	0.027	43.91	26.97	43.91	277.08	249.38	1.18	1.00	4.35	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.108	0.068	26.97		26.97	277.08	249.38	1.64	1.00	10.79	159.30	159.30
+1.20D+L+1.60S+W+1.60H	Dsgn. L = 3.98 ft	1	0.380	0.150	94.67		94.67	277.08	249.38	1.67	1.00	23.89	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.480	0.149	119.59	94.67	119.59	277.08	249.38	1.09	1.00	23.72	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.480	0.073	119.59	73.51	119.59	277.08	249.38	1.18	1.00	11.69	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.295	0.184	73.51		73.51	277.08	249.38	1.64	1.00	29.33	159.30	159.30
+1.20D+0.50Lr+L+W+1.60H	Dsgn. L = 3.98 ft	1	0.208	0.082	51.88		51.88	277.08	249.38	1.66	1.00	13.13	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.263	0.081	65.53	51.88	65.53	277.08	249.38	1.09	1.00	12.96	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.263	0.040	65.53	40.26	65.53	277.08	249.38	1.18	1.00	6.45	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.161	0.101	40.26		40.26	277.08	249.38	1.64	1.00	16.09	159.30	159.30
+1.20D+L+0.50S+W+1.60H	Dsgn. L = 3.98 ft	1	0.311	0.123	77.56		77.56	277.08	249.38	1.67	1.00	19.58	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.393	0.122	97.96	77.56	97.96	277.08	249.38	1.09	1.00	19.42	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.393	0.060	97.96	60.21	97.96	277.08	249.38	1.18	1.00	9.59	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.241	0.151	60.21		60.21	277.08	249.38	1.64	1.00	24.03	159.30	159.30
+0.90D+W+1.60H	Dsgn. L = 3.98 ft	1	0.332	0.131	82.90		82.90	277.08	249.38	1.67	1.00	20.93	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.420	0.130	104.72	82.90	104.72	277.08	249.38	1.09	1.00	20.76	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.420	0.064	104.72	64.37	104.72	277.08	249.38	1.18	1.00	10.25	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.258	0.161	64.37		64.37	277.08	249.38	1.64	1.00	25.69	159.30	159.30
+1.20D+L+0.20S+E+1.60H	Dsgn. L = 3.98 ft	1	0.105	0.042	26.08		26.08	277.08	249.38	1.66	1.00	6.62	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.132	0.041	32.93	26.08	32.93	277.08	249.38	1.09	1.00	6.49	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.132	0.020	32.93	20.22	32.93	277.08	249.38	1.18	1.00	3.26	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.081	0.051	20.22		20.22	277.08	249.38	1.64	1.00	8.09	159.30	159.30
+0.90D+E+0.90H	Dsgn. L = 3.98 ft	1	0.320	0.126	79.70		79.70	277.08	249.38	1.67	1.00	20.12	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.404	0.125	100.67	79.70	100.67	277.08	249.38	1.09	1.00	19.95	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.404	0.062	100.67	61.87	100.67	277.08	249.38	1.18	1.00	9.85	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.248	0.155	61.87		61.87	277.08	249.38	1.64	1.00	24.70	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2226	7.333		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	31.393	22.234
Max Upward from Load Combinations	31.393	22.234
Max Upward from Load Cases	18.759	13.241
+D+H	12.634	8.993
+D+L+H	31.393	22.234
+D+Lr+H	12.634	8.993
+D+S+H	17.324	12.303
+D+0.750Lr+0.750L+H	26.703	18.924
+D+0.750L+0.750S+H	30.221	21.407
+D+0.60W+H	12.634	8.993
+D+0.750Lr+0.750L+0.450W+H	26.703	18.924
+D+0.750L+0.750S+0.450W+H	30.221	21.407
+0.60D+0.60W+0.60H	7.581	5.396
+D+0.70E+0.60H	12.634	8.993



Project Title: WSF International Village  
Engineer: JMB  
Project ID: 24-318  
Project Descr: Vertical Framing

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B24

### Vertical Reactions

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
+D+0.750L+0.750S+0.5250E+H	30.221	21.407
+0.60D+0.70E+H	7.581	5.396
D Only	12.634	8.993
L Only	18.759	13.241
S Only	4.690	3.310
H Only		

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B25**

## CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

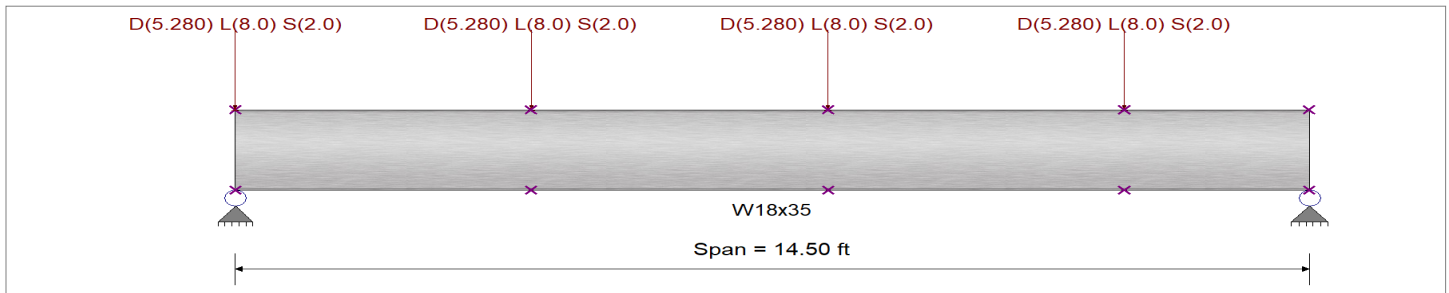
## Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

## Unbraced Lengths

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



## Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

## DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.550</b> : 1	Maximum Shear Stress Ratio =	<b>0.211</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	137.154 k-ft	Vu : Applied	33.633 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	14.500 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.133 in Ratio = <b>1,311</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.223 in Ratio = <b>782</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

## Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.98 ft	1	0.163	0.065	40.56		40.56	277.08	249.38	1.66	1.00	10.30	159.30	159.30
Dsgn. L =	4.02 ft	1	0.205	0.063	51.22	40.56	51.22	277.08	249.38	1.09	1.00	10.10	159.30	159.30
Dsgn. L =	3.98 ft	1	0.205	0.032	51.22	31.46	51.22	277.08	249.38	1.18	1.00	5.07	159.30	159.30
Dsgn. L =	2.53 ft	1	0.126	0.079	31.46		31.46	277.08	249.38	1.64	1.00	12.59	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	3.98 ft	1	0.414	0.163	103.23		103.23	277.08	249.38	1.67	1.00	26.04	159.30	159.30
Dsgn. L =	4.02 ft	1	0.523	0.162	130.40	103.23	130.40	277.08	249.38	1.09	1.00	25.87	159.30	159.30
Dsgn. L =	3.98 ft	1	0.523	0.080	130.40	80.16	130.40	277.08	249.38	1.18	1.00	12.74	159.30	159.30
Dsgn. L =	2.53 ft	1	0.321	0.201	80.16		80.16	277.08	249.38	1.64	1.00	31.98	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L =	3.98 ft	1	0.435	0.172	108.58		108.58	277.08	249.38	1.67	1.00	27.38	159.30	159.30
Dsgn. L =	4.02 ft	1	0.550	0.171	137.15	108.58	137.15	277.08	249.38	1.09	1.00	27.22	159.30	159.30
Dsgn. L =	3.98 ft	1	0.550	0.084	137.15	84.31	137.15	277.08	249.38	1.18	1.00	13.39	159.30	159.30
Dsgn. L =	2.53 ft	1	0.338	0.211	84.31		84.31	277.08	249.38	1.64	1.00	33.63	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H</b>														
Dsgn. L =	3.98 ft	1	0.311	0.123	77.56		77.56	277.08	249.38	1.67	1.00	19.58	159.30	159.30
Dsgn. L =	4.02 ft	1	0.393	0.122	97.96	77.56	97.96	277.08	249.38	1.09	1.00	19.42	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B25**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+0.50W+1.60H	Dsgn. L = 3.98 ft	1	0.393	0.060	97.96	60.21	97.96	277.08	249.38	1.18	1.00	9.59	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.241	0.151	60.21		60.21	277.08	249.38	1.64	1.00	24.03	159.30	159.30
+1.20D+L+1.60S+1.60H	Dsgn. L = 3.98 ft	1	0.139	0.055	34.77		34.77	277.08	249.38	1.66	1.00	8.83	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.176	0.054	43.91	34.77	43.91	277.08	249.38	1.09	1.00	8.66	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.176	0.027	43.91	26.97	43.91	277.08	249.38	1.18	1.00	4.35	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.108	0.068	26.97		26.97	277.08	249.38	1.64	1.00	10.79	159.30	159.30
+1.20D+L+1.60S+0.50W+1.60H	Dsgn. L = 3.98 ft	1	0.380	0.150	94.67		94.67	277.08	249.38	1.67	1.00	23.89	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.480	0.149	119.59	94.67	119.59	277.08	249.38	1.09	1.00	23.72	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.480	0.073	119.59	73.51	119.59	277.08	249.38	1.18	1.00	11.69	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.295	0.184	73.51		73.51	277.08	249.38	1.64	1.00	29.33	159.30	159.30
+1.20D+0.50Lr+W+1.60H	Dsgn. L = 3.98 ft	1	0.208	0.082	51.88		51.88	277.08	249.38	1.66	1.00	13.13	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.263	0.081	65.53	51.88	65.53	277.08	249.38	1.09	1.00	12.96	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.263	0.040	65.53	40.26	65.53	277.08	249.38	1.18	1.00	6.45	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.161	0.101	40.26		40.26	277.08	249.38	1.64	1.00	16.09	159.30	159.30
+1.20D+L+0.50S+W+1.60H	Dsgn. L = 3.98 ft	1	0.311	0.123	77.56		77.56	277.08	249.38	1.67	1.00	19.58	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.393	0.122	97.96	77.56	97.96	277.08	249.38	1.09	1.00	19.42	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.393	0.060	97.96	60.21	97.96	277.08	249.38	1.18	1.00	9.59	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.241	0.151	60.21		60.21	277.08	249.38	1.64	1.00	24.03	159.30	159.30
+0.90D+W+1.60H	Dsgn. L = 3.98 ft	1	0.332	0.131	82.90		82.90	277.08	249.38	1.67	1.00	20.93	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.420	0.130	104.72	82.90	104.72	277.08	249.38	1.09	1.00	20.76	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.420	0.064	104.72	64.37	104.72	277.08	249.38	1.18	1.00	10.25	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.258	0.161	64.37		64.37	277.08	249.38	1.64	1.00	25.69	159.30	159.30
+1.20D+L+0.20S+E+1.60H	Dsgn. L = 3.98 ft	1	0.105	0.042	26.08		26.08	277.08	249.38	1.66	1.00	6.62	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.132	0.041	32.93	26.08	32.93	277.08	249.38	1.09	1.00	6.49	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.132	0.020	32.93	20.22	32.93	277.08	249.38	1.18	1.00	3.26	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.081	0.051	20.22		20.22	277.08	249.38	1.64	1.00	8.09	159.30	159.30
+0.90D+E+0.90H	Dsgn. L = 3.98 ft	1	0.320	0.126	79.70		79.70	277.08	249.38	1.67	1.00	20.12	159.30	159.30
	Dsgn. L = 4.02 ft	1	0.404	0.125	100.67	79.70	100.67	277.08	249.38	1.09	1.00	19.95	159.30	159.30
	Dsgn. L = 3.98 ft	1	0.404	0.062	100.67	61.87	100.67	277.08	249.38	1.18	1.00	9.85	159.30	159.30
	Dsgn. L = 2.53 ft	1	0.248	0.155	61.87		61.87	277.08	249.38	1.64	1.00	24.70	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2226	7.333		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	31.393	22.234
Max Upward from Load Combinations	31.393	22.234
Max Upward from Load Cases	18.759	13.241
+D+H	12.634	8.993
+D+L+H	31.393	22.234
+D+Lr+H	12.634	8.993
+D+S+H	17.324	12.303
+D+0.750Lr+0.750L+H	26.703	18.924
+D+0.750L+0.750S+H	30.221	21.407
+D+0.60W+H	12.634	8.993
+D+0.750Lr+0.750L+0.450W+H	26.703	18.924
+D+0.750L+0.750S+0.450W+H	30.221	21.407
+0.60D+0.60W+0.60H	7.581	5.396
+D+0.70E+0.60H	12.634	8.993





Project Title: WSF International Village  
Engineer: JMB  
Project ID: 24-318  
Project Descr: Vertical Framing

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** B25

### Vertical Reactions

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
+D+0.750L+0.750S+0.5250E+H	30.221	21.407
+0.60D+0.70E+H	7.581	5.396
D Only	12.634	8.993
L Only	18.759	13.241
S Only	4.690	3.310
H Only		

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **B26**

## CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

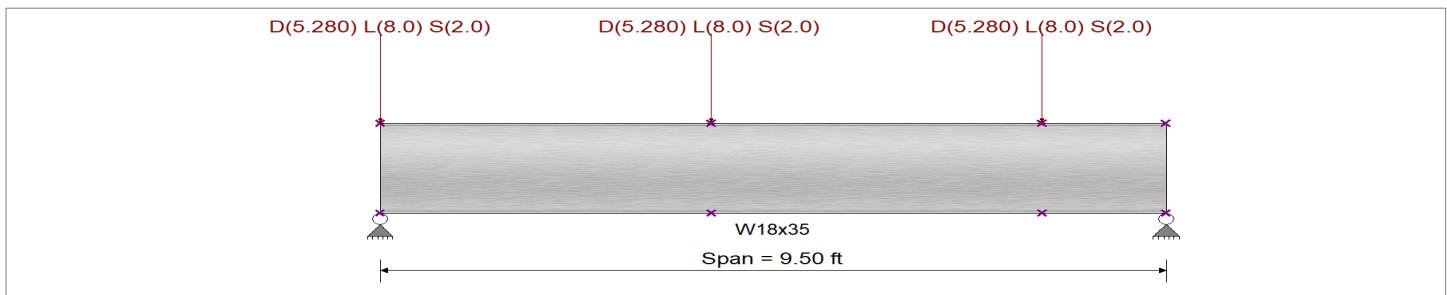
## Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

## Unbraced Lengths

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



## Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

## DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.239</b> : 1	Maximum Shear Stress Ratio =	<b>0.161</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	59.720 k-ft	Vu : Applied	25.634 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	9.500 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.024 in Ratio = <b>4,779</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.040 in Ratio = <b>2848</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

## Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L =	3.99 ft	1	0.089	0.036	22.27		22.27	277.08	249.38	1.67	1.00	5.68	159.30	159.30	
Dsgn. L =	3.99 ft	1	0.089	0.034	22.29	14.34	22.29	277.08	249.38	1.16	1.00	5.48	159.30	159.30	
Dsgn. L =	1.52 ft	1	0.058	0.060	14.34		14.34	277.08	249.38	1.65	1.00	9.57	159.30	159.30	
+1.20D+0.50Lr+1.60L+1.60H															
Dsgn. L =	3.99 ft	1	0.227	0.090	56.72		56.72	277.08	249.38	1.67	1.00	14.30	159.30	159.30	
Dsgn. L =	3.99 ft	1	0.228	0.089	56.78	36.61	56.78	277.08	249.38	1.16	1.00	14.13	159.30	159.30	
Dsgn. L =	1.52 ft	1	0.147	0.153	36.61		36.61	277.08	249.38	1.66	1.00	24.37	159.30	159.30	
+1.20D+1.60Lr+0.50S+1.60H															
Dsgn. L =	3.99 ft	1	0.239	0.094	59.66		59.66	277.08	249.38	1.67	1.00	15.04	159.30	159.30	
Dsgn. L =	3.99 ft	1	0.239	0.093	59.72	38.51	59.72	277.08	249.38	1.16	1.00	14.87	159.30	159.30	
Dsgn. L =	1.52 ft	1	0.154	0.161	38.51		38.51	277.08	249.38	1.66	1.00	25.63	159.30	159.30	
+1.20D+1.60Lr+L+1.60H															
Dsgn. L =	3.99 ft	1	0.171	0.068	42.61		42.61	277.08	249.38	1.67	1.00	10.76	159.30	159.30	
Dsgn. L =	3.99 ft	1	0.171	0.067	42.65	27.49	42.65	277.08	249.38	1.16	1.00	10.60	159.30	159.30	
Dsgn. L =	1.52 ft	1	0.110	0.115	27.49		27.49	277.08	249.38	1.65	1.00	18.31	159.30	159.30	
+1.20D+1.60Lr+0.50W+1.60H															
Dsgn. L =	3.99 ft	1	0.077	0.031	19.09		19.09	277.08	249.38	1.67	1.00	4.87	159.30	159.30	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B26**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+L+1.60S+1.60H	Dsgn. L = 3.99 ft	1	0.077	0.030	19.11	12.29	19.11	277.08	249.38	1.16	1.00	4.70	159.30	159.30
	Dsgn. L = 1.52 ft	1	0.049	0.051	12.29		12.29	277.08	249.38	1.65	1.00	8.20	159.30	159.30
+1.20D+L+1.60S+0.50W+1.60H	Dsgn. L = 3.99 ft	1	0.209	0.082	52.02		52.02	277.08	249.38	1.67	1.00	13.12	159.30	159.30
	Dsgn. L = 3.99 ft	1	0.209	0.081	52.07	33.57	52.07	277.08	249.38	1.16	1.00	12.95	159.30	159.30
	Dsgn. L = 1.52 ft	1	0.135	0.140	33.57		33.57	277.08	249.38	1.65	1.00	22.35	159.30	159.30
+1.20D+0.50Lr+L+W+1.60H	Dsgn. L = 3.99 ft	1	0.114	0.045	28.50		28.50	277.08	249.38	1.67	1.00	7.23	159.30	159.30
	Dsgn. L = 3.99 ft	1	0.114	0.044	28.53	18.37	28.53	277.08	249.38	1.16	1.00	7.06	159.30	159.30
	Dsgn. L = 1.52 ft	1	0.074	0.077	18.37		18.37	277.08	249.38	1.65	1.00	12.24	159.30	159.30
+1.20D+L+0.50S+W+1.60H	Dsgn. L = 3.99 ft	1	0.171	0.068	42.61		42.61	277.08	249.38	1.67	1.00	10.76	159.30	159.30
	Dsgn. L = 3.99 ft	1	0.171	0.067	42.65	27.49	42.65	277.08	249.38	1.16	1.00	10.60	159.30	159.30
	Dsgn. L = 1.52 ft	1	0.110	0.115	27.49		27.49	277.08	249.38	1.65	1.00	18.31	159.30	159.30
+0.90D+W+1.60H	Dsgn. L = 3.99 ft	1	0.057	0.023	14.32		14.32	277.08	249.38	1.67	1.00	3.65	159.30	159.30
	Dsgn. L = 3.99 ft	1	0.057	0.022	14.33	9.22	14.33	277.08	249.38	1.16	1.00	3.53	159.30	159.30
	Dsgn. L = 1.52 ft	1	0.037	0.039	9.22		9.22	277.08	249.38	1.65	1.00	6.15	159.30	159.30
+1.20D+L+0.20S+E+1.60H	Dsgn. L = 3.99 ft	1	0.176	0.069	43.79		43.79	277.08	249.38	1.67	1.00	11.06	159.30	159.30
	Dsgn. L = 3.99 ft	1	0.176	0.068	43.83	28.25	43.83	277.08	249.38	1.16	1.00	10.89	159.30	159.30
	Dsgn. L = 1.52 ft	1	0.113	0.118	28.25		28.25	277.08	249.38	1.65	1.00	18.81	159.30	159.30
+0.90D+E+0.90H	Dsgn. L = 3.99 ft	1	0.057	0.023	14.32		14.32	277.08	249.38	1.67	1.00	3.65	159.30	159.30
	Dsgn. L = 3.99 ft	1	0.057	0.022	14.33	9.22	14.33	277.08	249.38	1.16	1.00	3.53	159.30	159.30
	Dsgn. L = 1.52 ft	1	0.037	0.039	9.22		9.22	277.08	249.38	1.65	1.00	6.15	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0400	4.777		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	23.232	16.941		
Max Upward from Load Combinations	23.232	16.941		
Max Upward from Load Cases	13.895	10.105		
+D+H	9.337	6.836		
+D+L+H	23.232	16.941		
+D+Lr+H	9.337	6.836		
+D+S+H	12.810	9.362		
+D+0.750Lr+0.750L+H	19.758	14.415		
+D+0.750L+0.750S+H	22.363	16.309		
+D+0.60W+H	9.337	6.836		
+D+0.750Lr+0.750L+0.450W+H	19.758	14.415		
+D+0.750L+0.750S+0.450W+H	22.363	16.309		
+0.60D+0.60W+0.60H	5.602	4.101		
+D+0.70E+0.60H	9.337	6.836		
+D+0.750L+0.750S+0.5250E+H	22.363	16.309		
+0.60D+0.70E+H	5.602	4.101		
D Only	9.337	6.836		
L Only	13.895	10.105		
S Only	3.474	2.526		
H Only				

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **B27**

## CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

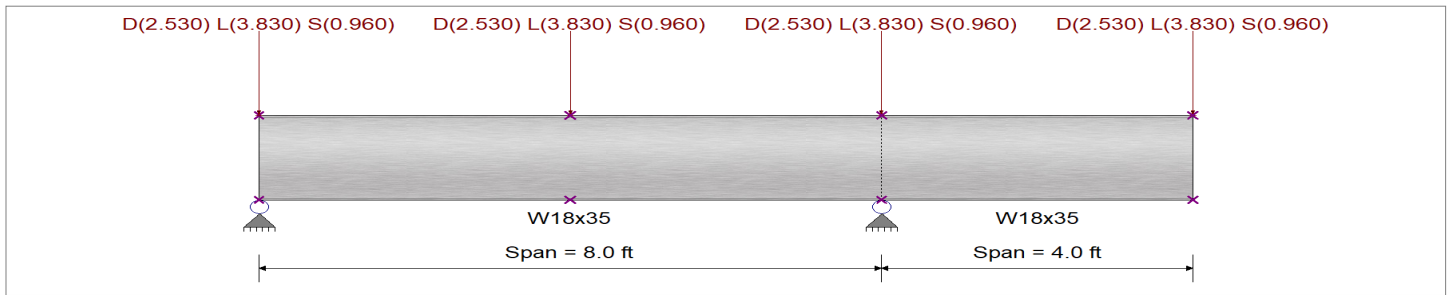
## Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

## Unbraced Lengths

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



## Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 2.530, L = 3.830, S = 0.960 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

## DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.156</b> : 1	Maximum Shear Stress Ratio =	<b>0.062</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	38.912 k-ft	Vu : Applied	9.854 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	8.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.029 in Ratio = <b>3,355</b> >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Upward Transient Deflection	-0.007 in Ratio = <b>12,995</b> >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Downward Total Deflection	0.043 in Ratio = <b>2237</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (*L)	
Max Upward Total Deflection	-0.009 in Ratio = <b>10464</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (*L)	

## Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+1.40D+1.60H															
Dsgn. L = 4.00 ft	4.00 ft	1	0.001	0.023	0.22		0.22	277.08	249.38	1.17	1.00	3.59	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	1	0.058	0.024	0.20	-14.56	14.56	277.08	249.38	1.69	1.00	3.79	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	2	0.058	0.023		-14.56	14.56	277.08	249.38	1.00	1.00	3.74	159.30	159.30	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 4.00 ft	4.00 ft	1	0.048	0.039		-12.09	12.09	277.08	249.38	1.00	1.00	6.14	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	1	0.148	0.059	-0.00	-36.99	36.99	277.08	249.38	1.37	1.00	9.33	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	2	0.148	0.059		-36.99	36.99	277.08	249.38	1.00	1.00	9.33	159.30	159.30	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 4.00 ft	4.00 ft	1	0.050	0.039	12.42		12.42	277.08	249.38	1.66	1.00	6.14	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	1	0.050	0.040	12.42	-12.48	12.48	277.08	249.38	2.26	1.00	6.31	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	2	0.050	0.020		-12.48	12.48	277.08	249.38	1.00	1.00	3.20	159.30	159.30	
+1.20D+0.50Lr+1.60L+1.60H, LL															
Dsgn. L = 4.00 ft	4.00 ft	1	0.001	0.058	0.19		0.19	277.08	249.38	1.17	1.00	9.21	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	1	0.148	0.059	0.17	-36.99	36.99	277.08	249.38	1.67	1.00	9.37	159.30	159.30	
Dsgn. L = 4.00 ft	4.00 ft	2	0.148	0.059		-36.99	36.99	277.08	249.38	1.00	1.00	9.33	159.30	159.30	
+1.20D+1.60L+0.50S+1.60H, LL (															
Dsgn. L = 4.00 ft	4.00 ft	1	0.048	0.042		-12.09	12.09	277.08	249.38	1.00	1.00	6.62	159.30	159.30	



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B27**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	4.00 ft	1	0.030	0.034		-7.49	7.49	277.08	249.38	1.00	1.00	5.47	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.119	0.047	-0.00	-29.72	29.72	277.08	249.38	1.43	1.00	7.51	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	2	0.119	0.047		-29.72	29.72	277.08	249.38	1.00	1.00	7.51	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L = 4.00 ft	4.00 ft	1	0.031	0.034	7.83		7.83	277.08	249.38	1.66	1.00	5.47	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.058	0.035	7.83	-14.40	14.40	277.08	249.38	2.18	1.00	5.64	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	2	0.058	0.023		-14.40	14.40	277.08	249.38	1.00	1.00	3.68	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L = 4.00 ft	4.00 ft	1	0.001	0.046	0.19		0.19	277.08	249.38	1.17	1.00	7.39	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.119	0.047	0.17	-29.72	29.72	277.08	249.38	1.68	1.00	7.56	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	2	0.119	0.047		-29.72	29.72	277.08	249.38	1.00	1.00	7.51	159.30	159.30
<b>+0.90D+W+1.60H</b>														
Dsgn. L = 4.00 ft	4.00 ft	1	0.001	0.014	0.14		0.14	277.08	249.38	1.17	1.00	2.31	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.038	0.015	0.13	-9.36	9.36	277.08	249.38	1.69	1.00	2.43	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	2	0.038	0.015		-9.36	9.36	277.08	249.38	1.00	1.00	2.40	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L = 4.00 ft	4.00 ft	1	0.030	0.033		-7.49	7.49	277.08	249.38	1.00	1.00	5.19	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.115	0.045	-0.00	-28.57	28.57	277.08	249.38	1.42	1.00	7.23	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	2	0.115	0.045		-28.57	28.57	277.08	249.38	1.00	1.00	7.23	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L = 4.00 ft	4.00 ft	1	0.031	0.033	7.83		7.83	277.08	249.38	1.66	1.00	5.19	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.053	0.034	7.83	-13.25	13.25	277.08	249.38	2.18	1.00	5.35	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	2	0.053	0.021		-13.25	13.25	277.08	249.38	1.00	1.00	3.40	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L = 4.00 ft	4.00 ft	1	0.001	0.045	0.19		0.19	277.08	249.38	1.17	1.00	7.10	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.115	0.046	0.17	-28.57	28.57	277.08	249.38	1.68	1.00	7.27	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	2	0.115	0.045		-28.57	28.57	277.08	249.38	1.00	1.00	7.23	159.30	159.30
<b>+0.90D+E+0.90H</b>														
Dsgn. L = 4.00 ft	4.00 ft	1	0.001	0.014	0.14		0.14	277.08	249.38	1.17	1.00	2.31	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	1	0.038	0.015	0.13	-9.36	9.36	277.08	249.38	1.69	1.00	2.43	159.30	159.30
Dsgn. L = 4.00 ft	4.00 ft	2	0.038	0.015		-9.36	9.36	277.08	249.38	1.00	1.00	2.40	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	+D+L+H	-0.0092	4.928
+D+L+H	2	0.0429	4.000		0.0000	4.928

**Vertical Reactions**

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	8.380	19.395	
Max Upward from Load Combinations	8.380	19.395	
Max Upward from Load Cases	5.745	11.490	
Max Downward from all Load Conditions (Resis)	-1.915		
Max Downward from Load Cases (Resisting Up)	-1.915		
+D+H	2.635	7.905	
+D+L+H, LL Comb Run (*L)	0.720	17.480	
+D+L+H, LL Comb Run (L*)	8.380	9.820	
+D+L+H, LL Comb Run (LL)	6.465	19.395	
+D+Lr+H, LL Comb Run (*L)	2.635	7.905	
+D+Lr+H, LL Comb Run (L*)	2.635	7.905	
+D+Lr+H, LL Comb Run (LL)	2.635	7.905	
+D+S+H	3.595	10.785	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	1.199	15.086	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	6.944	9.341	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	5.508	16.523	
+D+0.750L+0.750S+H, LL Comb Run (*L)	1.919	17.246	
+D+0.750L+0.750S+H, LL Comb Run (L*)	7.664	11.501	
+D+0.750L+0.750S+H, LL Comb Run (LL)	6.228	18.683	
+D+0.60W+H	2.635	7.905	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.199	15.086	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	6.944	9.341	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	5.508	16.523	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.919	17.246	



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B27

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
+D+0.750L+0.750S+0.450W+H, LL Comb Run	7.664	11.501	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	6.228	18.683	
+0.60D+0.60W+0.60H	1.581	4.743	
+D+0.70E+0.60H	2.635	7.905	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	1.919	17.246	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	7.664	11.501	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	6.228	18.683	
+0.60D+0.70E+H	1.581	4.743	
D Only	2.635	7.905	
L Only, LL Comb Run (*L)	-1.915	9.575	
L Only, LL Comb Run (L*)	5.745	1.915	
L Only, LL Comb Run (LL)	3.830	11.490	
S Only	0.960	2.880	
H Only			



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B28**

**CODE REFERENCES**

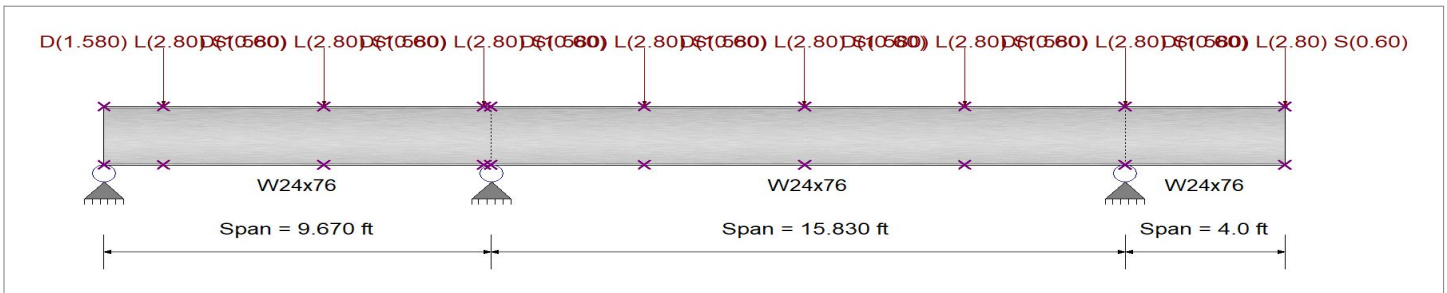
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 1.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 1.580, L = 2.80, S = 0.60 k, Starting at : 1.50 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.049 : 1</b>	Maximum Shear Stress Ratio =	<b>0.050 : 1</b>
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	36.887 k-ft	Vu : Applied	15.647 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.60D+1.60L+0.50S+1.60H, LL Comb Run (LL*)	Load Combination	+1.60D+1.60L+0.50S+1.60H, LL Comb Run (LL*)
Span # where maximum occurs	Span # 1	Location of maximum on span	9.670 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.008 in Ratio = <b>11,664</b> >=360.	Span: 3 : L Only, LL Comb Run (L*L)	
Max Upward Transient Deflection	-0.009 in Ratio = <b>11,283</b> >=360.	Span: 3 : L Only, LL Comb Run (*L*)	
Max Downward Total Deflection	0.008 in Ratio = <b>12687</b> >=240.	Span: 3 : +D+L+H, LL Comb Run (L*L)	
Max Upward Total Deflection	-0.009 in Ratio = <b>10467</b> >=240.	Span: 3 : +D+L+H, LL Comb Run (*L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	1.48 ft	1	0.004	0.007	3.05		3.05	833.33	750.00	1.70	1.00	2.13	315.48	315.48
Dsgn. L =	4.00 ft	1	0.004	0.006	3.07	1.29	3.07	833.33	750.00	1.22	1.00	1.98	315.48	315.48
Dsgn. L =	4.00 ft	1	0.015	0.010	1.29	-10.99	10.99	833.33	750.00	1.87	1.00	3.30	315.48	315.48
Dsgn. L =	0.19 ft	1	0.016	0.018	-0.00	-12.01	12.01	833.33	750.00	1.02	1.00	5.53	315.48	315.48
Dsgn. L =	3.80 ft	2	0.016	0.014	3.72	-12.01	12.01	833.33	750.00	2.15	1.00	4.34	315.48	315.48
Dsgn. L =	4.01 ft	2	0.013	0.012	9.85	3.72	9.85	833.33	750.00	1.31	1.00	3.94	315.48	315.48
Dsgn. L =	4.01 ft	2	0.013	0.004	9.85	5.38	9.85	833.33	750.00	1.19	1.00	1.34	315.48	315.48
Dsgn. L =	4.01 ft	2	0.013	0.013	5.38	-9.70	9.70	833.33	750.00	2.17	1.00	3.98	315.48	315.48
Dsgn. L =	4.00 ft	3	0.013	0.008	-9.70		9.70	833.33	750.00	1.00	1.00	2.64	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.48 ft	1	0.005	0.008	3.47		3.47	833.33	750.00	1.70	1.00	2.40	315.48	315.48
Dsgn. L =	4.00 ft	1	0.006	0.007	4.26	3.47	4.26	833.33	750.00	1.05	1.00	2.27	315.48	315.48
Dsgn. L =	4.00 ft	1	0.006	0.007	4.26	-3.97	4.26	833.33	750.00	2.18	1.00	2.25	315.48	315.48
Dsgn. L =	0.19 ft	1	0.006	0.013	-0.00	-4.73	4.73	833.33	750.00	1.05	1.00	4.17	315.48	315.48
Dsgn. L =	3.80 ft	2	0.006	0.007	3.11	-4.73	4.73	833.33	750.00	2.26	1.00	2.24	315.48	315.48
Dsgn. L =	4.01 ft	2	0.004	0.006	3.17	2.42	3.17	833.33	750.00	1.06	1.00	1.89	315.48	315.48
Dsgn. L =	4.01 ft	2	0.010	0.008	2.42	-7.36	7.36	833.33	750.00	2.18	1.00	2.63	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B28**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
	Span #		M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	4.01 ft	2	0.035	0.021	-0.00	-26.23	26.23	833.33	750.00	1.41	1.00	6.74	315.48	315.48
Dsgn. L =	4.00 ft	3	0.035	0.021		-26.23	26.23	833.33	750.00	1.00	1.00	6.74	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.48 ft	1	0.001	0.001		-0.54	0.54	833.33	750.00	1.00	1.00	0.43	315.48	315.48
Dsgn. L =	4.00 ft	1	0.014	0.009	-0.00	-10.56	10.56	833.33	750.00	1.66	1.00	2.70	315.48	315.48
Dsgn. L =	4.00 ft	1	0.039	0.016	-0.00	-29.60	29.60	833.33	750.00	1.36	1.00	4.96	315.48	315.48
Dsgn. L =	0.19 ft	1	0.041	0.037	-0.00	-30.88	30.88	833.33	750.00	1.01	1.00	11.81	315.48	315.48
Dsgn. L =	3.80 ft	2	0.041	0.037	13.34	-30.88	30.88	833.33	750.00	2.17	1.00	11.81	315.48	315.48
Dsgn. L =	4.01 ft	2	0.044	0.036	33.23	13.34	33.23	833.33	750.00	1.31	1.00	11.47	315.48	315.48
Dsgn. L =	4.01 ft	2	0.044	0.015	33.23	26.01	33.23	833.33	750.00	1.09	1.00	4.73	315.48	315.48
Dsgn. L =	4.01 ft	2	0.035	0.028	26.01	-8.31	26.01	833.33	750.00	2.09	1.00	8.76	315.48	315.48
Dsgn. L =	4.00 ft	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.48 ft	1	0.000	0.001	0.31		0.31	833.33	750.00	1.57	1.00	0.28	315.48	315.48
Dsgn. L =	4.00 ft	1	0.010	0.007	0.31	-7.41	7.41	833.33	750.00	1.78	1.00	2.12	315.48	315.48
Dsgn. L =	4.00 ft	1	0.032	0.014	-0.00	-24.15	24.15	833.33	750.00	1.40	1.00	4.38	315.48	315.48
Dsgn. L =	0.19 ft	1	0.034	0.033	-0.00	-25.32	25.32	833.33	750.00	1.01	1.00	10.33	315.48	315.48
Dsgn. L =	3.80 ft	2	0.034	0.033	13.27	-25.32	25.32	833.33	750.00	2.19	1.00	10.33	315.48	315.48
Dsgn. L =	4.01 ft	2	0.036	0.032	27.20	13.27	27.20	833.33	750.00	1.25	1.00	9.98	315.48	315.48
Dsgn. L =	4.01 ft	2	0.036	0.011	27.20	14.04	27.20	833.33	750.00	1.23	1.00	3.50	315.48	315.48
Dsgn. L =	4.01 ft	2	0.035	0.032	14.04	-26.23	26.23	833.33	750.00	2.15	1.00	10.24	315.48	315.48
Dsgn. L =	4.00 ft	3	0.035	0.021		-26.23	26.23	833.33	750.00	1.00	1.00	6.74	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.48 ft	1	0.014	0.023	10.49		10.49	833.33	750.00	1.71	1.00	7.14	315.48	315.48
Dsgn. L =	4.00 ft	1	0.017	0.022	12.38	10.49	12.38	833.33	750.00	1.05	1.00	7.01	315.48	315.48
Dsgn. L =	4.00 ft	1	0.017	0.021	12.38	-12.64	12.64	833.33	750.00	2.26	1.00	6.48	315.48	315.48
Dsgn. L =	0.19 ft	1	0.020	0.041	-0.00	-14.98	14.98	833.33	750.00	1.05	1.00	12.87	315.48	315.48
Dsgn. L =	3.80 ft	2	0.020	0.013	-0.00	-14.98	14.98	833.33	750.00	1.66	1.00	4.02	315.48	315.48
Dsgn. L =	4.01 ft	2	0.008	0.012	6.07	-0.37	6.07	833.33	750.00	1.69	1.00	3.67	315.48	315.48
Dsgn. L =	4.01 ft	2	0.008	0.004	6.07	3.42	6.07	833.33	750.00	1.17	1.00	1.41	315.48	315.48
Dsgn. L =	4.01 ft	2	0.011	0.010	3.42	-8.31	8.31	833.33	750.00	2.15	1.00	3.11	315.48	315.48
Dsgn. L =	4.00 ft	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.48 ft	1	0.015	0.024	11.34		11.34	833.33	750.00	1.71	1.00	7.72	315.48	315.48
Dsgn. L =	4.00 ft	1	0.021	0.024	15.54	11.34	15.54	833.33	750.00	1.11	1.00	7.58	315.48	315.48
Dsgn. L =	4.00 ft	1	0.021	0.019	15.54	-7.19	15.54	833.33	750.00	2.14	1.00	5.90	315.48	315.48
Dsgn. L =	0.19 ft	1	0.013	0.039	-0.00	-9.42	9.42	833.33	750.00	1.07	1.00	12.29	315.48	315.48
Dsgn. L =	3.80 ft	2	0.013	0.008	-0.00	-9.42	9.42	833.33	750.00	1.65	1.00	2.53	315.48	315.48
Dsgn. L =	4.01 ft	2	0.001	0.007	0.08	-0.45	0.45	833.33	750.00	3.00	1.00	2.19	315.48	315.48
Dsgn. L =	4.01 ft	2	0.011	0.007	0.05	-8.55	8.55	833.33	750.00	1.74	1.00	2.34	315.48	315.48
Dsgn. L =	4.01 ft	2	0.035	0.021	-0.00	-26.23	26.23	833.33	750.00	1.38	1.00	6.74	315.48	315.48
Dsgn. L =	4.00 ft	3	0.035	0.021		-26.23	26.23	833.33	750.00	1.00	1.00	6.74	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.48 ft	1	0.010	0.016	7.33		7.33	833.33	750.00	1.71	1.00	5.01	315.48	315.48
Dsgn. L =	4.00 ft	1	0.010	0.015	7.34	0.72	7.34	833.33	750.00	1.50	1.00	4.88	315.48	315.48
Dsgn. L =	4.00 ft	1	0.044	0.027	0.72	-32.82	32.82	833.33	750.00	1.72	1.00	8.60	315.48	315.48
Dsgn. L =	0.19 ft	1	0.047	0.048	-0.00	-35.57	35.57	833.33	750.00	1.02	1.00	15.00	315.48	315.48
Dsgn. L =	3.80 ft	2	0.047	0.038	9.78	-35.57	35.57	833.33	750.00	2.05	1.00	12.11	315.48	315.48
Dsgn. L =	4.01 ft	2	0.041	0.037	30.85	9.78	30.85	833.33	750.00	1.37	1.00	11.76	315.48	315.48
Dsgn. L =	4.01 ft	2	0.041	0.016	30.85	24.82	30.85	833.33	750.00	1.08	1.00	5.02	315.48	315.48
Dsgn. L =	4.01 ft	2	0.033	0.027	24.82	-8.31	24.82	833.33	750.00	2.09	1.00	8.46	315.48	315.48
Dsgn. L =	4.00 ft	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.48 ft	1	0.011	0.018	8.18		8.18	833.33	750.00	1.71	1.00	5.59	315.48	315.48
Dsgn. L =	4.00 ft	1	0.011	0.017	8.23	3.87	8.23	833.33	750.00	1.24	1.00	5.45	315.48	315.48
Dsgn. L =	4.00 ft	1	0.036	0.025	3.87	-27.37	27.37	833.33	750.00	1.88	1.00	8.03	315.48	315.48
Dsgn. L =	0.19 ft	1	0.040	0.046	-0.00	-30.00	30.00	833.33	750.00	1.03	1.00	14.42	315.48	315.48
Dsgn. L =	3.80 ft	2	0.040	0.034	9.71	-30.00	30.00	833.33	750.00	2.14	1.00	10.63	315.48	315.48
Dsgn. L =	4.01 ft	2	0.033	0.033	24.83	9.71	24.83	833.33	750.00	1.31	1.00	10.28	315.48	315.48
Dsgn. L =	4.01 ft	2	0.033	0.011	24.83	12.85	24.83	833.33	750.00	1.22	1.00	3.54	315.48	315.48
Dsgn. L =	4.01 ft	2	0.035	0.032	12.85	-26.23	26.23	833.33	750.00	2.14	1.00	9.94	315.48	315.48
Dsgn. L =	4.00 ft	3	0.035	0.021		-26.23	26.23	833.33	750.00	1.00	1.00	6.74	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B28**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios				Summary of Moment Values					Summary of Shear Values		
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 1.48 ft	1	0.005	0.008	3.84		3.84	833.33	750.00	1.70	1.00	2.66	315.48	315.48
Dsgn. L = 4.00 ft	1	0.006	0.008	4.45	3.84	4.45	833.33	750.00	1.03	1.00	2.52	315.48	315.48
Dsgn. L = 4.00 ft	1	0.007	0.008	4.45	-5.17	5.17	833.33	750.00	2.31	1.00	2.60	315.48	315.48
Dsgn. L = 0.19 ft	1	0.008	0.015	-0.00	-6.05	6.05	833.33	750.00	1.04	1.00	4.81	315.48	315.48
Dsgn. L = 3.80 ft	2	0.008	0.009	3.55	-6.05	6.05	833.33	750.00	2.23	1.00	2.70	315.48	315.48
Dsgn. L = 4.01 ft	2	0.005	0.007	3.75	3.52	3.75	833.33	750.00	1.01	1.00	2.35	315.48	315.48
Dsgn. L = 4.01 ft	2	0.009	0.009	3.52	-6.81	6.81	833.33	750.00	2.22	1.00	2.77	315.48	315.48
Dsgn. L = 4.01 ft	2	0.037	0.022	-0.00	-27.43	27.43	833.33	750.00	1.44	1.00	7.04	315.48	315.48
Dsgn. L = 4.00 ft	3	0.037	0.022		-27.43	27.43	833.33	750.00	1.00	1.00	7.04	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.48 ft	1	0.000	0.001		-0.17	0.17	833.33	750.00	1.00	1.00	0.18	315.48	315.48
Dsgn. L = 4.00 ft	1	0.014	0.009	-0.00	-10.37	10.37	833.33	750.00	1.70	1.00	2.74	315.48	315.48
Dsgn. L = 4.00 ft	1	0.041	0.017	-0.00	-30.80	30.80	833.33	750.00	1.38	1.00	5.30	315.48	315.48
Dsgn. L = 0.19 ft	1	0.043	0.039	-0.00	-32.20	32.20	833.33	750.00	1.01	1.00	12.28	315.48	315.48
Dsgn. L = 3.80 ft	2	0.043	0.039	13.78	-32.20	32.20	833.33	750.00	2.17	1.00	12.28	315.48	315.48
Dsgn. L = 4.01 ft	2	0.046	0.038	34.32	13.78	34.32	833.33	750.00	1.31	1.00	11.93	315.48	315.48
Dsgn. L = 4.01 ft	2	0.046	0.015	34.32	26.56	34.32	833.33	750.00	1.09	1.00	4.89	315.48	315.48
Dsgn. L = 4.01 ft	2	0.035	0.029	26.56	-9.51	26.56	833.33	750.00	2.10	1.00	9.20	315.48	315.48
Dsgn. L = 4.00 ft	3	0.013	0.008		-9.51	9.51	833.33	750.00	1.00	1.00	2.56	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.48 ft	1	0.001	0.002	0.68		0.68	833.33	750.00	1.65	1.00	0.53	315.48	315.48
Dsgn. L = 4.00 ft	1	0.010	0.007	0.68	-7.22	7.22	833.33	750.00	1.86	1.00	2.17	315.48	315.48
Dsgn. L = 4.00 ft	1	0.034	0.015	-0.00	-25.35	25.35	833.33	750.00	1.42	1.00	4.73	315.48	315.48
Dsgn. L = 0.19 ft	1	0.036	0.034	-0.00	-26.64	26.64	833.33	750.00	1.01	1.00	10.79	315.48	315.48
Dsgn. L = 3.80 ft	2	0.036	0.034	13.71	-26.64	26.64	833.33	750.00	2.19	1.00	10.79	315.48	315.48
Dsgn. L = 4.01 ft	2	0.038	0.033	28.30	13.71	28.30	833.33	750.00	1.25	1.00	10.45	315.48	315.48
Dsgn. L = 4.01 ft	2	0.038	0.012	28.30	14.59	28.30	833.33	750.00	1.23	1.00	3.64	315.48	315.48
Dsgn. L = 4.01 ft	2	0.037	0.034	14.59	-27.43	27.43	833.33	750.00	2.15	1.00	10.68	315.48	315.48
Dsgn. L = 4.00 ft	3	0.037	0.022		-27.43	27.43	833.33	750.00	1.00	1.00	7.04	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.48 ft	1	0.014	0.023	10.86		10.86	833.33	750.00	1.71	1.00	7.39	315.48	315.48
Dsgn. L = 4.00 ft	1	0.017	0.023	12.57	10.86	12.57	833.33	750.00	1.04	1.00	7.26	315.48	315.48
Dsgn. L = 4.00 ft	1	0.018	0.022	12.57	-13.84	13.84	833.33	750.00	2.28	1.00	6.82	315.48	315.48
Dsgn. L = 0.19 ft	1	0.022	0.043	-0.00	-16.30	16.30	833.33	750.00	1.05	1.00	13.52	315.48	315.48
Dsgn. L = 3.80 ft	2	0.022	0.014	0.06	-16.30	16.30	833.33	750.00	1.69	1.00	4.48	315.48	315.48
Dsgn. L = 4.01 ft	2	0.010	0.013	7.17	0.06	7.17	833.33	750.00	1.62	1.00	4.13	315.48	315.48
Dsgn. L = 4.01 ft	2	0.010	0.005	7.17	3.97	7.17	833.33	750.00	1.18	1.00	1.57	315.48	315.48
Dsgn. L = 4.01 ft	2	0.013	0.011	3.97	-9.51	9.51	833.33	750.00	2.15	1.00	3.55	315.48	315.48
Dsgn. L = 4.00 ft	3	0.013	0.008		-9.51	9.51	833.33	750.00	1.00	1.00	2.56	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.48 ft	1	0.016	0.025	11.71		11.71	833.33	750.00	1.71	1.00	7.97	315.48	315.48
Dsgn. L = 4.00 ft	1	0.021	0.025	15.72	11.71	15.72	833.33	750.00	1.10	1.00	7.83	315.48	315.48
Dsgn. L = 4.00 ft	1	0.021	0.020	15.72	-8.39	15.72	833.33	750.00	2.15	1.00	6.25	315.48	315.48
Dsgn. L = 0.19 ft	1	0.014	0.041	-0.00	-10.74	10.74	833.33	750.00	1.07	1.00	12.94	315.48	315.48
Dsgn. L = 3.80 ft	2	0.014	0.009	-0.00	-10.74	10.74	833.33	750.00	1.70	1.00	3.00	315.48	315.48
Dsgn. L = 4.01 ft	2	0.002	0.008	1.14	-0.01	1.14	833.33	750.00	1.38	1.00	2.65	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.008	1.14	-8.00	8.00	833.33	750.00	1.93	1.00	2.47	315.48	315.48
Dsgn. L = 4.01 ft	2	0.037	0.022	-0.00	-27.43	27.43	833.33	750.00	1.41	1.00	7.04	315.48	315.48
Dsgn. L = 4.00 ft	3	0.037	0.022		-27.43	27.43	833.33	750.00	1.00	1.00	7.04	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.48 ft	1	0.010	0.017	7.70		7.70	833.33	750.00	1.71	1.00	5.26	315.48	315.48
Dsgn. L = 4.00 ft	1	0.010	0.016	7.72	0.90	7.72	833.33	750.00	1.49	1.00	5.13	315.48	315.48
Dsgn. L = 4.00 ft	1	0.045	0.028	0.90	-34.02	34.02	833.33	750.00	1.72	1.00	8.95	315.48	315.48
Dsgn. L = 0.19 ft	1	0.049	0.050	-0.00	-36.89	36.89	833.33	750.00	1.02	1.00	15.65	315.48	315.48
Dsgn. L = 3.80 ft	2	0.049	0.040	10.22	-36.89	36.89	833.33	750.00	2.06	1.00	12.57	315.48	315.48
Dsgn. L = 4.01 ft	2	0.043	0.039	31.95	10.22	31.95	833.33	750.00	1.37	1.00	12.23	315.48	315.48
Dsgn. L = 4.01 ft	2	0.043	0.016	31.95	25.37	31.95	833.33	750.00	1.08	1.00	5.18	315.48	315.48
Dsgn. L = 4.01 ft	2	0.034	0.028	25.37	-9.51	25.37	833.33	750.00	2.10	1.00	8.90	315.48	315.48
Dsgn. L = 4.00 ft	3	0.013	0.008		-9.51	9.51	833.33	750.00	1.00	1.00	2.56	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.48 ft	1	0.011	0.019	8.56		8.56	833.33	750.00	1.71	1.00	5.84	315.48	315.48
Dsgn. L = 4.00 ft	1	0.011	0.018	8.61	4.05	8.61	833.33	750.00	1.24	1.00	5.70	315.48	315.48
Dsgn. L = 4.00 ft	1	0.038	0.027	4.05	-28.57	28.57	833.33	750.00	1.88	1.00	8.38	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B28**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 0.19 ft	1	0.042	0.048	-0.00	-31.32	31.32	833.33	750.00	1.03	1.00	15.07	315.48	315.48
Dsgn. L = 3.80 ft	2	0.042	0.035	10.15	-31.32	31.32	833.33	750.00	2.14	1.00	11.09	315.48	315.48
Dsgn. L = 4.01 ft	2	0.035	0.034	25.93	10.15	25.93	833.33	750.00	1.32	1.00	10.74	315.48	315.48
Dsgn. L = 4.01 ft	2	0.035	0.012	25.93	13.40	25.93	833.33	750.00	1.22	1.00	3.70	315.48	315.48
Dsgn. L = 4.01 ft	2	0.037	0.033	13.40	-27.43	27.43	833.33	750.00	2.14	1.00	10.38	315.48	315.48
Dsgn. L = 4.00 ft	3	0.037	0.022		-27.43	27.43	833.33	750.00	1.00	1.00	7.04	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.004	0.007	3.15		3.15	833.33	750.00	1.70	1.00	2.19	315.48	315.48
Dsgn. L = 4.00 ft	1	0.004	0.007	3.31	3.08	3.31	833.33	750.00	1.01	1.00	2.05	315.48	315.48
Dsgn. L = 4.00 ft	1	0.008	0.008	3.08	-6.02	6.02	833.33	750.00	2.23	1.00	2.47	315.48	315.48
Dsgn. L = 0.19 ft	1	0.009	0.014	-0.00	-6.82	6.82	833.33	750.00	1.03	1.00	4.38	315.48	315.48
Dsgn. L = 3.80 ft	2	0.009	0.009	3.14	-6.82	6.82	833.33	750.00	2.20	1.00	2.79	315.48	315.48
Dsgn. L = 4.01 ft	2	0.006	0.008	4.68	3.14	4.68	833.33	750.00	1.11	1.00	2.45	315.48	315.48
Dsgn. L = 4.01 ft	2	0.006	0.007	4.68	-2.87	4.68	833.33	750.00	2.13	1.00	2.08	315.48	315.48
Dsgn. L = 4.01 ft	2	0.026	0.016	-0.00	-19.51	19.51	833.33	750.00	1.53	1.00	5.06	315.48	315.48
Dsgn. L = 4.00 ft	3	0.026	0.016		-19.51	19.51	833.33	750.00	1.00	1.00	5.06	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.001	0.002	0.64		0.64	833.33	750.00	1.64	1.00	0.50	315.48	315.48
Dsgn. L = 4.00 ft	1	0.008	0.006	0.64	-6.18	6.18	833.33	750.00	1.88	1.00	1.90	315.48	315.48
Dsgn. L = 4.00 ft	1	0.029	0.013	-0.00	-22.03	22.03	833.33	750.00	1.42	1.00	4.16	315.48	315.48
Dsgn. L = 0.19 ft	1	0.031	0.028	-0.00	-23.16	23.16	833.33	750.00	1.01	1.00	8.78	315.48	315.48
Dsgn. L = 3.80 ft	2	0.031	0.028	9.54	-23.16	23.16	833.33	750.00	2.17	1.00	8.78	315.48	315.48
Dsgn. L = 4.01 ft	2	0.032	0.027	23.93	9.54	23.93	833.33	750.00	1.31	1.00	8.43	315.48	315.48
Dsgn. L = 4.01 ft	2	0.032	0.011	23.93	17.98	23.93	833.33	750.00	1.10	1.00	3.37	315.48	315.48
Dsgn. L = 4.01 ft	2	0.024	0.021	17.98	-8.31	17.98	833.33	750.00	2.11	1.00	6.75	315.48	315.48
Dsgn. L = 4.00 ft	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.002	0.003	1.17		1.17	833.33	750.00	1.68	1.00	0.86	315.48	315.48
Dsgn. L = 4.00 ft	1	0.006	0.005	1.17	-4.21	4.21	833.33	750.00	2.20	1.00	1.54	315.48	315.48
Dsgn. L = 4.00 ft	1	0.025	0.012	-0.00	-18.63	18.63	833.33	750.00	1.47	1.00	3.80	315.48	315.48
Dsgn. L = 0.19 ft	1	0.026	0.025	-0.00	-19.68	19.68	833.33	750.00	1.02	1.00	7.85	315.48	315.48
Dsgn. L = 3.80 ft	2	0.026	0.025	9.49	-19.68	19.68	833.33	750.00	2.18	1.00	7.85	315.48	315.48
Dsgn. L = 4.01 ft	2	0.027	0.024	20.17	9.49	20.17	833.33	750.00	1.26	1.00	7.51	315.48	315.48
Dsgn. L = 4.01 ft	2	0.027	0.008	20.17	10.50	20.17	833.33	750.00	1.22	1.00	2.62	315.48	315.48
Dsgn. L = 4.01 ft	2	0.026	0.024	10.50	-19.51	19.51	833.33	750.00	2.15	1.00	7.68	315.48	315.48
Dsgn. L = 4.00 ft	3	0.026	0.016		-19.51	19.51	833.33	750.00	1.00	1.00	5.06	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.010	0.016	7.53		7.53	833.33	750.00	1.71	1.00	5.15	315.48	315.48
Dsgn. L = 4.00 ft	1	0.011	0.016	8.17	7.53	8.17	833.33	750.00	1.01	1.00	5.01	315.48	315.48
Dsgn. L = 4.00 ft	1	0.015	0.016	8.16	-11.43	11.43	833.33	750.00	2.24	1.00	5.11	315.48	315.48
Dsgn. L = 0.19 ft	1	0.018	0.031	-0.00	-13.22	13.22	833.33	750.00	1.04	1.00	9.82	315.48	315.48
Dsgn. L = 3.80 ft	2	0.018	0.012	0.96	-13.22	13.22	833.33	750.00	1.78	1.00	3.91	315.48	315.48
Dsgn. L = 4.01 ft	2	0.009	0.011	6.96	0.96	6.96	833.33	750.00	1.49	1.00	3.56	315.48	315.48
Dsgn. L = 4.01 ft	2	0.009	0.004	6.96	3.87	6.96	833.33	750.00	1.18	1.00	1.30	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.010	3.87	-8.31	8.31	833.33	750.00	2.16	1.00	3.23	315.48	315.48
Dsgn. L = 4.00 ft	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.011	0.017	8.07		8.07	833.33	750.00	1.71	1.00	5.51	315.48	315.48
Dsgn. L = 4.00 ft	1	0.014	0.017	10.13	8.07	10.13	833.33	750.00	1.07	1.00	5.37	315.48	315.48
Dsgn. L = 4.00 ft	1	0.014	0.015	10.13	-8.03	10.13	833.33	750.00	2.19	1.00	4.75	315.48	315.48
Dsgn. L = 0.19 ft	1	0.013	0.030	-0.00	-9.75	9.75	833.33	750.00	1.05	1.00	9.46	315.48	315.48
Dsgn. L = 3.80 ft	2	0.013	0.009	0.92	-9.75	9.75	833.33	750.00	1.82	1.00	2.98	315.48	315.48
Dsgn. L = 4.01 ft	2	0.004	0.008	3.20	0.92	3.20	833.33	750.00	1.32	1.00	2.63	315.48	315.48
Dsgn. L = 4.01 ft	2	0.005	0.006	3.20	-3.61	3.61	833.33	750.00	2.34	1.00	1.89	315.48	315.48
Dsgn. L = 4.01 ft	2	0.026	0.016	-0.00	-19.51	19.51	833.33	750.00	1.50	1.00	5.06	315.48	315.48
Dsgn. L = 4.00 ft	3	0.026	0.016		-19.51	19.51	833.33	750.00	1.00	1.00	5.06	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.007	0.012	5.56		5.56	833.33	750.00	1.71	1.00	3.82	315.48	315.48
Dsgn. L = 4.00 ft	1	0.007	0.012	5.58	0.86	5.58	833.33	750.00	1.45	1.00	3.68	315.48	315.48
Dsgn. L = 4.00 ft	1	0.032	0.020	0.86	-24.04	24.04	833.33	750.00	1.74	1.00	6.44	315.48	315.48
Dsgn. L = 0.19 ft	1	0.035	0.035	-0.00	-26.09	26.09	833.33	750.00	1.02	1.00	11.15	315.48	315.48
Dsgn. L = 3.80 ft	2	0.035	0.028	7.31	-26.09	26.09	833.33	750.00	2.07	1.00	8.96	315.48	315.48
Dsgn. L = 4.01 ft	2	0.030	0.027	22.45	7.31	22.45	833.33	750.00	1.36	1.00	8.62	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B28**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	2	0.030	0.011	22.45	17.24	22.45	833.33	750.00	1.09	1.00	3.56	315.48	315.48
Dsgn. L = 4.01 ft	2	0.023	0.021	17.24	-8.31	17.24	833.33	750.00	2.11	1.00	6.57	315.48	315.48
Dsgn. L = 4.00 ft	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.008	0.013	6.09		6.09	833.33	750.00	1.71	1.00	4.18	315.48	315.48
Dsgn. L = 4.00 ft	1	0.008	0.013	6.13	2.83	6.13	833.33	750.00	1.24	1.00	4.04	315.48	315.48
Dsgn. L = 4.00 ft	1	0.028	0.019	2.83	-20.64	20.64	833.33	750.00	1.88	1.00	6.08	315.48	315.48
Dsgn. L = 0.19 ft	1	0.030	0.034	-0.00	-22.61	22.61	833.33	750.00	1.03	1.00	10.79	315.48	315.48
Dsgn. L = 3.80 ft	2	0.030	0.025	7.26	-22.61	22.61	833.33	750.00	2.14	1.00	8.04	315.48	315.48
Dsgn. L = 4.01 ft	2	0.025	0.024	18.69	7.26	18.69	833.33	750.00	1.31	1.00	7.69	315.48	315.48
Dsgn. L = 4.01 ft	2	0.025	0.008	18.69	9.76	18.69	833.33	750.00	1.22	1.00	2.63	315.48	315.48
Dsgn. L = 4.01 ft	2	0.026	0.024	9.76	-19.51	19.51	833.33	750.00	2.14	1.00	7.49	315.48	315.48
Dsgn. L = 4.00 ft	3	0.026	0.016		-19.51	19.51	833.33	750.00	1.00	1.00	5.06	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.48 ft	1	0.003	0.006	2.61		2.61	833.33	750.00	1.70	1.00	1.83	315.48	315.48
Dsgn. L = 4.00 ft	1	0.004	0.005	2.63	1.11	2.63	833.33	750.00	1.22	1.00	1.69	315.48	315.48
Dsgn. L = 4.00 ft	1	0.013	0.009	1.11	-9.42	9.42	833.33	750.00	1.87	1.00	2.83	315.48	315.48
Dsgn. L = 0.19 ft	1	0.014	0.015	-0.00	-10.29	10.29	833.33	750.00	1.02	1.00	4.74	315.48	315.48
Dsgn. L = 3.80 ft	2	0.014	0.012	3.19	-10.29	10.29	833.33	750.00	2.15	1.00	3.72	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.011	8.44	3.19	8.44	833.33	750.00	1.31	1.00	3.37	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.004	8.44	4.61	8.44	833.33	750.00	1.19	1.00	1.15	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.011	4.61	-8.31	8.31	833.33	750.00	2.17	1.00	3.41	315.48	315.48
Dsgn. L = 4.00 ft	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.48 ft	1	0.003	0.006	2.61		2.61	833.33	750.00	1.70	1.00	1.83	315.48	315.48
Dsgn. L = 4.00 ft	1	0.004	0.005	2.63	1.11	2.63	833.33	750.00	1.22	1.00	1.69	315.48	315.48
Dsgn. L = 4.00 ft	1	0.013	0.009	1.11	-9.42	9.42	833.33	750.00	1.87	1.00	2.83	315.48	315.48
Dsgn. L = 0.19 ft	1	0.014	0.015	-0.00	-10.29	10.29	833.33	750.00	1.02	1.00	4.74	315.48	315.48
Dsgn. L = 3.80 ft	2	0.014	0.012	3.19	-10.29	10.29	833.33	750.00	2.15	1.00	3.72	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.011	8.44	3.19	8.44	833.33	750.00	1.31	1.00	3.37	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.004	8.44	4.61	8.44	833.33	750.00	1.19	1.00	1.15	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.011	4.61	-8.31	8.31	833.33	750.00	2.17	1.00	3.41	315.48	315.48
Dsgn. L = 4.00 ft	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.48 ft	1	0.003	0.006	2.61		2.61	833.33	750.00	1.70	1.00	1.83	315.48	315.48
Dsgn. L = 4.00 ft	1	0.004	0.005	2.63	1.11	2.63	833.33	750.00	1.22	1.00	1.69	315.48	315.48
Dsgn. L = 4.00 ft	1	0.013	0.009	1.11	-9.42	9.42	833.33	750.00	1.87	1.00	2.83	315.48	315.48
Dsgn. L = 0.19 ft	1	0.014	0.015	-0.00	-10.29	10.29	833.33	750.00	1.02	1.00	4.74	315.48	315.48
Dsgn. L = 3.80 ft	2	0.014	0.012	3.19	-10.29	10.29	833.33	750.00	2.15	1.00	3.72	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.011	8.44	3.19	8.44	833.33	750.00	1.31	1.00	3.37	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.004	8.44	4.61	8.44	833.33	750.00	1.19	1.00	1.15	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.011	4.61	-8.31	8.31	833.33	750.00	2.17	1.00	3.41	315.48	315.48
Dsgn. L = 4.00 ft	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.48 ft	1	0.003	0.006	2.61		2.61	833.33	750.00	1.70	1.00	1.83	315.48	315.48
Dsgn. L = 4.00 ft	1	0.004	0.005	2.63	1.11	2.63	833.33	750.00	1.22	1.00	1.69	315.48	315.48
Dsgn. L = 4.00 ft	1	0.013	0.009	1.11	-9.42	9.42	833.33	750.00	1.87	1.00	2.83	315.48	315.48
Dsgn. L = 0.19 ft	1	0.014	0.015	-0.00	-10.29	10.29	833.33	750.00	1.02	1.00	4.74	315.48	315.48
Dsgn. L = 3.80 ft	2	0.014	0.012	3.19	-10.29	10.29	833.33	750.00	2.15	1.00	3.72	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.011	8.44	3.19	8.44	833.33	750.00	1.31	1.00	3.37	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.004	8.44	4.61	8.44	833.33	750.00	1.19	1.00	1.15	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.011	4.61	-8.31	8.31	833.33	750.00	2.17	1.00	3.41	315.48	315.48
Dsgn. L = 4.00 ft	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B28**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.48 ft	1	0.003	0.006	2.61		2.61	833.33	750.00	1.70	1.00	1.83	315.48	315.48
Dsgn. L = 4.00 ft	1	0.004	0.005	2.63	1.11	2.63	833.33	750.00	1.22	1.00	1.69	315.48	315.48
Dsgn. L = 4.00 ft	1	0.013	0.009	1.11	-9.42	9.42	833.33	750.00	1.87	1.00	2.83	315.48	315.48
Dsgn. L = 0.19 ft	1	0.014	0.015	-0.00	-10.29	10.29	833.33	750.00	1.02	1.00	4.74	315.48	315.48
Dsgn. L = 3.80 ft	2	0.014	0.012	3.19	-10.29	10.29	833.33	750.00	2.15	1.00	3.72	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.011	8.44	3.19	8.44	833.33	750.00	1.31	1.00	3.37	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.004	8.44	4.61	8.44	833.33	750.00	1.19	1.00	1.15	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.011	4.61	-8.31	8.31	833.33	750.00	2.17	1.00	3.41	315.48	315.48
Dsgn. L = 4.00 ft	3	0.011	0.007	-8.31	8.31	833.33	750.00	1.00	1.00		2.26	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.48 ft	1	0.003	0.006	2.61		2.61	833.33	750.00	1.70	1.00	1.83	315.48	315.48
Dsgn. L = 4.00 ft	1	0.004	0.005	2.63	1.11	2.63	833.33	750.00	1.22	1.00	1.69	315.48	315.48
Dsgn. L = 4.00 ft	1	0.013	0.009	1.11	-9.42	9.42	833.33	750.00	1.87	1.00	2.83	315.48	315.48
Dsgn. L = 0.19 ft	1	0.014	0.015	-0.00	-10.29	10.29	833.33	750.00	1.02	1.00	4.74	315.48	315.48
Dsgn. L = 3.80 ft	2	0.014	0.012	3.19	-10.29	10.29	833.33	750.00	2.15	1.00	3.72	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.011	8.44	3.19	8.44	833.33	750.00	1.31	1.00	3.37	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.004	8.44	4.61	8.44	833.33	750.00	1.19	1.00	1.15	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.011	4.61	-8.31	8.31	833.33	750.00	2.17	1.00	3.41	315.48	315.48
Dsgn. L = 4.00 ft	3	0.011	0.007	-8.31	8.31	833.33	750.00	1.00	1.00		2.26	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.006	0.009	4.34		4.34	833.33	750.00	1.71	1.00	2.99	315.48	315.48
Dsgn. L = 4.00 ft	1	0.006	0.009	4.39	3.67	4.39	833.33	750.00	1.04	1.00	2.86	315.48	315.48
Dsgn. L = 4.00 ft	1	0.013	0.011	3.67	-9.86	9.86	833.33	750.00	2.18	1.00	3.58	315.48	315.48
Dsgn. L = 0.19 ft	1	0.015	0.020	-0.00	-11.04	11.04	833.33	750.00	1.03	1.00	6.46	315.48	315.48
Dsgn. L = 3.80 ft	2	0.015	0.014	4.54	-11.04	11.04	833.33	750.00	2.18	1.00	4.27	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.012	8.19	4.54	8.19	833.33	750.00	1.19	1.00	3.93	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.008	8.19	-1.11	8.19	833.33	750.00	1.75	1.00	2.52	315.48	315.48
Dsgn. L = 4.01 ft	2	0.031	0.019	-0.00	-23.35	23.35	833.33	750.00	1.63	1.00	6.02	315.48	315.48
Dsgn. L = 4.00 ft	3	0.031	0.019	-23.35	23.35	833.33	750.00	1.00	1.00		6.02	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.002	0.004	1.83		1.83	833.33	750.00	1.69	1.00	1.30	315.48	315.48
Dsgn. L = 4.00 ft	1	0.007	0.007	1.83	-5.59	5.59	833.33	750.00	2.19	1.00	2.05	315.48	315.48
Dsgn. L = 4.00 ft	1	0.035	0.017	-0.00	-25.88	25.88	833.33	750.00	1.48	1.00	5.27	315.48	315.48
Dsgn. L = 0.19 ft	1	0.037	0.033	-0.00	-27.38	27.38	833.33	750.00	1.02	1.00	10.26	315.48	315.48
Dsgn. L = 3.80 ft	2	0.037	0.033	10.93	-27.38	27.38	833.33	750.00	2.16	1.00	10.26	315.48	315.48
Dsgn. L = 4.01 ft	2	0.037	0.031	27.44	10.93	27.44	833.33	750.00	1.31	1.00	9.91	315.48	315.48
Dsgn. L = 4.01 ft	2	0.037	0.012	27.44	19.75	27.44	833.33	750.00	1.12	1.00	3.89	315.48	315.48
Dsgn. L = 4.01 ft	2	0.026	0.026	19.75	-12.15	19.75	833.33	750.00	2.13	1.00	8.15	315.48	315.48
Dsgn. L = 4.00 ft	3	0.016	0.010	-12.15	12.15	833.33	750.00	1.00	1.00		3.22	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.003	0.005	2.37		2.37	833.33	750.00	1.70	1.00	1.66	315.48	315.48
Dsgn. L = 4.00 ft	1	0.005	0.005	2.37	-3.62	3.62	833.33	750.00	2.29	1.00	1.69	315.48	315.48
Dsgn. L = 4.00 ft	1	0.030	0.016	-0.00	-22.47	22.47	833.33	750.00	1.53	1.00	4.91	315.48	315.48
Dsgn. L = 0.19 ft	1	0.032	0.030	-0.00	-23.91	23.91	833.33	750.00	1.02	1.00	9.33	315.48	315.48
Dsgn. L = 3.80 ft	2	0.032	0.030	10.89	-23.91	23.91	833.33	750.00	2.18	1.00	9.33	315.48	315.48
Dsgn. L = 4.01 ft	2	0.032	0.028	23.68	10.89	23.68	833.33	750.00	1.27	1.00	8.99	315.48	315.48
Dsgn. L = 4.01 ft	2	0.032	0.010	23.68	12.27	23.68	833.33	750.00	1.22	1.00	3.06	315.48	315.48
Dsgn. L = 4.01 ft	2	0.031	0.029	12.27	-23.35	23.35	833.33	750.00	2.15	1.00	9.08	315.48	315.48
Dsgn. L = 4.00 ft	3	0.031	0.019	-23.35	23.35	833.33	750.00	1.00	1.00		6.02	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.012	0.019	8.73		8.73	833.33	750.00	1.71	1.00	5.95	315.48	315.48
Dsgn. L = 4.00 ft	1	0.012	0.018	8.97	8.73	8.97	833.33	750.00	1.00	1.00	5.82	315.48	315.48
Dsgn. L = 4.00 ft	1	0.020	0.020	8.75	-15.28	15.28	833.33	750.00	2.21	1.00	6.22	315.48	315.48
Dsgn. L = 0.19 ft	1	0.023	0.038	-0.00	-17.45	17.45	833.33	750.00	1.04	1.00	11.90	315.48	315.48
Dsgn. L = 3.80 ft	2	0.023	0.017	2.36	-17.45	17.45	833.33	750.00	1.85	1.00	5.39	315.48	315.48
Dsgn. L = 4.01 ft	2	0.014	0.016	10.47	2.36	10.47	833.33	750.00	1.43	1.00	5.04	315.48	315.48
Dsgn. L = 4.01 ft	2	0.014	0.006	10.47	5.63	10.47	833.33	750.00	1.20	1.00	1.82	315.48	315.48
Dsgn. L = 4.01 ft	2	0.016	0.015	5.63	-12.15	12.15	833.33	750.00	2.15	1.00	4.63	315.48	315.48
Dsgn. L = 4.00 ft	3	0.016	0.010	-12.15	12.15	833.33	750.00	1.00	1.00		3.22	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.012	0.020	9.26		9.26	833.33	750.00	1.71	1.00	6.31	315.48	315.48
Dsgn. L = 4.00 ft	1	0.014	0.020	10.72	9.26	10.72	833.33	750.00	1.04	1.00	6.18	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B28**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	1	1	0.016	0.019	10.72	-11.87	11.87	833.33	750.00	2.28	1.00	5.86	315.48	315.48
Dsgn. L = 0.19 ft	1	1	0.019	0.037	-0.00	-13.97	13.97	833.33	750.00	1.04	1.00	11.54	315.48	315.48
Dsgn. L = 3.80 ft	2	2	0.019	0.014	2.31	-13.97	13.97	833.33	750.00	1.90	1.00	4.46	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.009	0.013	6.71	2.31	6.71	833.33	750.00	1.32	1.00	4.11	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.009	0.007	6.71	-1.85	6.71	833.33	750.00	1.92	1.00	2.33	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.031	0.019	-0.00	-23.35	23.35	833.33	750.00	1.60	1.00	6.02	315.48	315.48
Dsgn. L = 4.00 ft	3	3	0.031	0.019		-23.35	23.35	833.33	750.00	1.00	1.00	6.02	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L = 1.48 ft	1	1	0.009	0.015	6.75		6.75	833.33	750.00	1.71	1.00	4.62	315.48	315.48
Dsgn. L = 4.00 ft	1	1	0.009	0.014	6.78	1.46	6.78	833.33	750.00	1.41	1.00	4.49	315.48	315.48
Dsgn. L = 4.00 ft	1	1	0.037	0.024	1.46	-27.89	27.89	833.33	750.00	1.76	1.00	7.55	315.48	315.48
Dsgn. L = 0.19 ft	1	1	0.040	0.042	-0.00	-30.31	30.31	833.33	750.00	1.02	1.00	13.23	315.48	315.48
Dsgn. L = 3.80 ft	2	2	0.040	0.033	8.71	-30.31	30.31	833.33	750.00	2.08	1.00	10.44	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.035	0.032	25.96	8.71	25.96	833.33	750.00	1.36	1.00	10.10	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.035	0.013	25.96	19.01	25.96	833.33	750.00	1.11	1.00	4.08	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.025	0.025	19.01	-12.15	19.01	833.33	750.00	2.13	1.00	7.97	315.48	315.48
Dsgn. L = 4.00 ft	3	3	0.016	0.010		-12.15	12.15	833.33	750.00	1.00	1.00	3.22	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L = 1.48 ft	1	1	0.010	0.016	7.29		7.29	833.33	750.00	1.71	1.00	4.98	315.48	315.48
Dsgn. L = 4.00 ft	1	1	0.010	0.015	7.33	3.43	7.33	833.33	750.00	1.24	1.00	4.85	315.48	315.48
Dsgn. L = 4.00 ft	1	1	0.033	0.023	3.43	-24.48	24.48	833.33	750.00	1.88	1.00	7.19	315.48	315.48
Dsgn. L = 0.19 ft	1	1	0.036	0.041	-0.00	-26.84	26.84	833.33	750.00	1.03	1.00	12.87	315.48	315.48
Dsgn. L = 3.80 ft	2	2	0.036	0.030	8.66	-26.84	26.84	833.33	750.00	2.14	1.00	9.52	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.030	0.029	22.20	8.66	22.20	833.33	750.00	1.31	1.00	9.17	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.030	0.010	22.20	11.53	22.20	833.33	750.00	1.22	1.00	3.15	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.031	0.028	11.53	-23.35	23.35	833.33	750.00	2.14	1.00	8.89	315.48	315.48
Dsgn. L = 4.00 ft	3	3	0.031	0.019		-23.35	23.35	833.33	750.00	1.00	1.00	6.02	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>														
Dsgn. L = 1.48 ft	1	1	0.005	0.008	3.81		3.81	833.33	750.00	1.70	1.00	2.63	315.48	315.48
Dsgn. L = 4.00 ft	1	1	0.005	0.008	3.83	1.70	3.83	833.33	750.00	1.23	1.00	2.50	315.48	315.48
Dsgn. L = 4.00 ft	1	1	0.018	0.012	1.70	-13.27	13.27	833.33	750.00	1.88	1.00	3.94	315.48	315.48
Dsgn. L = 0.19 ft	1	1	0.019	0.022	-0.00	-14.52	14.52	833.33	750.00	1.03	1.00	6.82	315.48	315.48
Dsgn. L = 3.80 ft	2	2	0.019	0.016	4.58	-14.52	14.52	833.33	750.00	2.15	1.00	5.20	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.016	0.015	11.95	4.58	11.95	833.33	750.00	1.31	1.00	4.85	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.016	0.005	11.95	6.38	11.95	833.33	750.00	1.21	1.00	1.63	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.016	0.015	6.38	-12.15	12.15	833.33	750.00	2.16	1.00	4.81	315.48	315.48
Dsgn. L = 4.00 ft	3	3	0.016	0.010		-12.15	12.15	833.33	750.00	1.00	1.00	3.22	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>														
Dsgn. L = 1.48 ft	1	1	0.004	0.007	3.15		3.15	833.33	750.00	1.70	1.00	2.19	315.48	315.48
Dsgn. L = 4.00 ft	1	1	0.004	0.007	3.31	3.08	3.31	833.33	750.00	1.01	1.00	2.05	315.48	315.48
Dsgn. L = 4.00 ft	1	1	0.008	0.008	3.08	-6.02	6.02	833.33	750.00	2.23	1.00	2.47	315.48	315.48
Dsgn. L = 0.19 ft	1	1	0.009	0.014	-0.00	-6.82	6.82	833.33	750.00	1.03	1.00	4.38	315.48	315.48
Dsgn. L = 3.80 ft	2	2	0.009	0.009	3.14	-6.82	6.82	833.33	750.00	2.20	1.00	2.79	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.006	0.008	4.68	3.14	4.68	833.33	750.00	1.11	1.00	2.45	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.006	0.007	4.68	-2.87	4.68	833.33	750.00	2.13	1.00	2.08	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.026	0.016	-0.00	-19.51	19.51	833.33	750.00	1.53	1.00	5.06	315.48	315.48
Dsgn. L = 4.00 ft	3	3	0.026	0.016		-19.51	19.51	833.33	750.00	1.00	1.00	5.06	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>														
Dsgn. L = 1.48 ft	1	1	0.001	0.002	0.64		0.64	833.33	750.00	1.64	1.00	0.50	315.48	315.48
Dsgn. L = 4.00 ft	1	1	0.008	0.006	0.64	-6.18	6.18	833.33	750.00	1.88	1.00	1.90	315.48	315.48
Dsgn. L = 4.00 ft	1	1	0.029	0.013	-0.00	-22.03	22.03	833.33	750.00	1.42	1.00	4.16	315.48	315.48
Dsgn. L = 0.19 ft	1	1	0.031	0.028	-0.00	-23.16	23.16	833.33	750.00	1.01	1.00	8.78	315.48	315.48
Dsgn. L = 3.80 ft	2	2	0.031	0.028	9.54	-23.16	23.16	833.33	750.00	2.17	1.00	8.78	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.032	0.027	23.93	9.54	23.93	833.33	750.00	1.31	1.00	8.43	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.032	0.011	23.93	17.98	23.93	833.33	750.00	1.10	1.00	3.37	315.48	315.48
Dsgn. L = 4.01 ft	2	2	0.024	0.021	17.98	-8.31	17.98	833.33	750.00	2.11	1.00	6.75	315.48	315.48
Dsgn. L = 4.00 ft	3	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>														
Dsgn. L = 1.48 ft	1	1	0.002	0.003	1.17		1.17	833.33	750.00	1.68	1.00	0.86	315.48	315.48
Dsgn. L = 4.00 ft	1	1	0.006	0.005	1.17	-4.21	4.21	833.33	750.00	2.20	1.00	1.54	315.48	315.48
Dsgn. L = 4.00 ft	1	1	0.025	0.012	-0.00	-18.63	18.63	833.33	750.00	1.47	1.00	3.80	315.48	315.48
Dsgn. L = 0.19 ft	1	1	0.026	0.025	-0.00	-19.68	19.68	833.33	750.00	1.02	1.00	7.85	315.48	315.48
Dsgn. L = 3.80 ft	2	2	0.026	0.025	9.49	-19.68	19.68	833.33	750.00	2.18	1.00	7.85	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B28**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	2	0.027	0.024	20.17	9.49	20.17	833.33	750.00	1.26	1.00	7.51	315.48	315.48
Dsgn. L = 4.01 ft	2	0.027	0.008	20.17	10.50	20.17	833.33	750.00	1.22	1.00	2.62	315.48	315.48
Dsgn. L = 4.01 ft	2	0.026	0.024	10.50	-19.51	19.51	833.33	750.00	2.15	1.00	7.68	315.48	315.48
Dsgn. L = 4.00 ft	3	0.026	0.016		-19.51	19.51	833.33	750.00	1.00	1.00	5.06	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.010	0.016	7.53		7.53	833.33	750.00	1.71	1.00	5.15	315.48	315.48
Dsgn. L = 4.00 ft	1	0.011	0.016	8.17	7.53	8.17	833.33	750.00	1.01	1.00	5.01	315.48	315.48
Dsgn. L = 4.00 ft	1	0.015	0.016	8.16	-11.43	11.43	833.33	750.00	2.24	1.00	5.11	315.48	315.48
Dsgn. L = 0.19 ft	1	0.018	0.031	-0.00	-13.22	13.22	833.33	750.00	1.04	1.00	9.82	315.48	315.48
Dsgn. L = 3.80 ft	2	0.018	0.012	0.96	-13.22	13.22	833.33	750.00	1.78	1.00	3.91	315.48	315.48
Dsgn. L = 4.01 ft	2	0.009	0.011	6.96	0.96	6.96	833.33	750.00	1.49	1.00	3.56	315.48	315.48
Dsgn. L = 4.01 ft	2	0.009	0.004	6.96	3.87	6.96	833.33	750.00	1.18	1.00	1.30	315.48	315.48
Dsgn. L = 4.01 ft	2	0.011	0.010	3.87	-8.31	8.31	833.33	750.00	2.16	1.00	3.23	315.48	315.48
Dsgn. L = 4.00 ft	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.011	0.017	8.07		8.07	833.33	750.00	1.71	1.00	5.51	315.48	315.48
Dsgn. L = 4.00 ft	1	0.014	0.017	10.13	8.07	10.13	833.33	750.00	1.07	1.00	5.37	315.48	315.48
Dsgn. L = 4.00 ft	1	0.014	0.015	10.13	-8.03	10.13	833.33	750.00	2.19	1.00	4.75	315.48	315.48
Dsgn. L = 0.19 ft	1	0.013	0.030	-0.00	-9.75	9.75	833.33	750.00	1.05	1.00	9.46	315.48	315.48
Dsgn. L = 3.80 ft	2	0.013	0.009	0.92	-9.75	9.75	833.33	750.00	1.82	1.00	2.98	315.48	315.48
Dsgn. L = 4.01 ft	2	0.004	0.008	3.20	0.92	3.20	833.33	750.00	1.32	1.00	2.63	315.48	315.48
Dsgn. L = 4.01 ft	2	0.005	0.006	3.20	-3.61	3.61	833.33	750.00	2.34	1.00	1.89	315.48	315.48
Dsgn. L = 4.01 ft	2	0.026	0.016	-0.00	-19.51	19.51	833.33	750.00	1.50	1.00	5.06	315.48	315.48
Dsgn. L = 4.00 ft	3	0.026	0.016		-19.51	19.51	833.33	750.00	1.00	1.00	5.06	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.007	0.012	5.56		5.56	833.33	750.00	1.71	1.00	3.82	315.48	315.48
Dsgn. L = 4.00 ft	1	0.007	0.012	5.58	0.86	5.58	833.33	750.00	1.45	1.00	3.68	315.48	315.48
Dsgn. L = 4.00 ft	1	0.032	0.020	0.86	-24.04	24.04	833.33	750.00	1.74	1.00	6.44	315.48	315.48
Dsgn. L = 0.19 ft	1	0.035	0.035	-0.00	-26.09	26.09	833.33	750.00	1.02	1.00	11.15	315.48	315.48
Dsgn. L = 3.80 ft	2	0.035	0.028	7.31	-26.09	26.09	833.33	750.00	2.07	1.00	8.96	315.48	315.48
Dsgn. L = 4.01 ft	2	0.030	0.027	22.45	7.31	22.45	833.33	750.00	1.36	1.00	8.62	315.48	315.48
Dsgn. L = 4.01 ft	2	0.030	0.011	22.45	17.24	22.45	833.33	750.00	1.09	1.00	3.56	315.48	315.48
Dsgn. L = 4.01 ft	2	0.023	0.021	17.24	-8.31	17.24	833.33	750.00	2.11	1.00	6.57	315.48	315.48
Dsgn. L = 4.00 ft	3	0.011	0.007		-8.31	8.31	833.33	750.00	1.00	1.00	2.26	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.008	0.013	6.09		6.09	833.33	750.00	1.71	1.00	4.18	315.48	315.48
Dsgn. L = 4.00 ft	1	0.008	0.013	6.13	2.83	6.13	833.33	750.00	1.24	1.00	4.04	315.48	315.48
Dsgn. L = 4.00 ft	1	0.028	0.019	2.83	-20.64	20.64	833.33	750.00	1.88	1.00	6.08	315.48	315.48
Dsgn. L = 0.19 ft	1	0.030	0.034	-0.00	-22.61	22.61	833.33	750.00	1.03	1.00	10.79	315.48	315.48
Dsgn. L = 3.80 ft	2	0.030	0.025	7.26	-22.61	22.61	833.33	750.00	2.14	1.00	8.04	315.48	315.48
Dsgn. L = 4.01 ft	2	0.025	0.024	18.69	7.26	18.69	833.33	750.00	1.31	1.00	7.69	315.48	315.48
Dsgn. L = 4.01 ft	2	0.025	0.008	18.69	9.76	18.69	833.33	750.00	1.22	1.00	2.63	315.48	315.48
Dsgn. L = 4.01 ft	2	0.026	0.024	9.76	-19.51	19.51	833.33	750.00	2.14	1.00	7.49	315.48	315.48
Dsgn. L = 4.00 ft	3	0.026	0.016		-19.51	19.51	833.33	750.00	1.00	1.00	5.06	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.005	0.008	3.52		3.52	833.33	750.00	1.70	1.00	2.44	315.48	315.48
Dsgn. L = 4.00 ft	1	0.005	0.007	3.62	3.26	3.62	833.33	750.00	1.01	1.00	2.31	315.48	315.48
Dsgn. L = 4.00 ft	1	0.010	0.009	3.26	-7.22	7.22	833.33	750.00	2.21	1.00	2.82	315.48	315.48
Dsgn. L = 0.19 ft	1	0.011	0.016	-0.00	-8.14	8.14	833.33	750.00	1.03	1.00	5.03	315.48	315.48
Dsgn. L = 3.80 ft	2	0.011	0.010	3.58	-8.14	8.14	833.33	750.00	2.19	1.00	3.26	315.48	315.48
Dsgn. L = 4.01 ft	2	0.008	0.009	5.78	3.58	5.78	833.33	750.00	1.15	1.00	2.91	315.48	315.48
Dsgn. L = 4.01 ft	2	0.008	0.007	5.78	-2.32	5.78	833.33	750.00	2.10	1.00	2.21	315.48	315.48
Dsgn. L = 4.01 ft	2	0.028	0.017	-0.00	-20.71	20.71	833.33	750.00	1.57	1.00	5.36	315.48	315.48
Dsgn. L = 4.00 ft	3	0.028	0.017		-20.71	20.71	833.33	750.00	1.00	1.00	5.36	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.001	0.002	1.01		1.01	833.33	750.00	1.67	1.00	0.75	315.48	315.48
Dsgn. L = 4.00 ft	1	0.008	0.006	1.01	-6.00	6.00	833.33	750.00	1.98	1.00	1.95	315.48	315.48
Dsgn. L = 4.00 ft	1	0.031	0.014	-0.00	-23.23	23.23	833.33	750.00	1.44	1.00	4.51	315.48	315.48
Dsgn. L = 0.19 ft	1	0.033	0.029	-0.00	-24.48	24.48	833.33	750.00	1.01	1.00	9.24	315.48	315.48
Dsgn. L = 3.80 ft	2	0.033	0.029	9.97	-24.48	24.48	833.33	750.00	2.17	1.00	9.24	315.48	315.48
Dsgn. L = 4.01 ft	2	0.033	0.028	25.03	9.97	25.03	833.33	750.00	1.31	1.00	8.90	315.48	315.48
Dsgn. L = 4.01 ft	2	0.033	0.011	25.03	18.54	25.03	833.33	750.00	1.11	1.00	3.53	315.48	315.48
Dsgn. L = 4.01 ft	2	0.025	0.023	18.54	-9.51	18.54	833.33	750.00	2.11	1.00	7.19	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B28**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	3		0.013	0.008		-9.51	9.51	833.33	750.00	1.00	1.00	2.56	315.48	315.48
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 1.48 ft	1		0.002	0.004	1.55		1.55	833.33	750.00	1.69	1.00	1.11	315.48	315.48
Dsgn. L = 4.00 ft	1		0.005	0.005	1.55	-4.03	4.03	833.33	750.00	2.23	1.00	1.59	315.48	315.48
Dsgn. L = 4.00 ft	1		0.026	0.013	-0.00	-19.83	19.83	833.33	750.00	1.49	1.00	4.15	315.48	315.48
Dsgn. L = 0.19 ft	1		0.028	0.026	-0.00	-21.00	21.00	833.33	750.00	1.02	1.00	8.31	315.48	315.48
Dsgn. L = 3.80 ft	2		0.028	0.026	9.93	-21.00	21.00	833.33	750.00	2.18	1.00	8.31	315.48	315.48
Dsgn. L = 4.01 ft	2		0.028	0.025	21.27	9.93	21.27	833.33	750.00	1.26	1.00	7.97	315.48	315.48
Dsgn. L = 4.01 ft	2		0.028	0.009	21.27	11.05	21.27	833.33	750.00	1.22	1.00	2.76	315.48	315.48
Dsgn. L = 4.01 ft	2		0.028	0.026	11.05	-20.71	20.71	833.33	750.00	2.15	1.00	8.12	315.48	315.48
Dsgn. L = 4.00 ft	3		0.028	0.017		-20.71	20.71	833.33	750.00	1.00	1.00	5.36	315.48	315.48
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 1.48 ft	1		0.011	0.017	7.91		7.91	833.33	750.00	1.71	1.00	5.40	315.48	315.48
Dsgn. L = 4.00 ft	1		0.011	0.017	8.39	7.91	8.39	833.33	750.00	1.01	1.00	5.27	315.48	315.48
Dsgn. L = 4.00 ft	1		0.017	0.017	8.34	-12.64	12.64	833.33	750.00	2.23	1.00	5.46	315.48	315.48
Dsgn. L = 0.19 ft	1		0.019	0.033	-0.00	-14.54	14.54	833.33	750.00	1.04	1.00	10.47	315.48	315.48
Dsgn. L = 3.80 ft	2		0.019	0.014	1.40	-14.54	14.54	833.33	750.00	1.81	1.00	4.37	315.48	315.48
Dsgn. L = 4.01 ft	2		0.011	0.013	8.06	1.40	8.06	833.33	750.00	1.46	1.00	4.02	315.48	315.48
Dsgn. L = 4.01 ft	2		0.011	0.005	8.06	4.42	8.06	833.33	750.00	1.19	1.00	1.46	315.48	315.48
Dsgn. L = 4.01 ft	2		0.013	0.012	4.42	-9.51	9.51	833.33	750.00	2.15	1.00	3.66	315.48	315.48
Dsgn. L = 4.00 ft	3		0.013	0.008		-9.51	9.51	833.33	750.00	1.00	1.00	2.56	315.48	315.48
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 1.48 ft	1		0.011	0.018	8.44		8.44	833.33	750.00	1.71	1.00	5.76	315.48	315.48
Dsgn. L = 4.00 ft	1		0.014	0.018	10.31	8.44	10.31	833.33	750.00	1.06	1.00	5.62	315.48	315.48
Dsgn. L = 4.00 ft	1		0.014	0.016	10.31	-9.23	10.31	833.33	750.00	2.21	1.00	5.10	315.48	315.48
Dsgn. L = 0.19 ft	1		0.015	0.032	-0.00	-11.07	11.07	833.33	750.00	1.05	1.00	10.11	315.48	315.48
Dsgn. L = 3.80 ft	2		0.015	0.011	1.35	-11.07	11.07	833.33	750.00	1.85	1.00	3.44	315.48	315.48
Dsgn. L = 4.01 ft	2		0.006	0.010	4.29	1.35	4.29	833.33	750.00	1.32	1.00	3.10	315.48	315.48
Dsgn. L = 4.01 ft	2		0.006	0.006	4.29	-3.06	4.29	833.33	750.00	2.14	1.00	2.03	315.48	315.48
Dsgn. L = 4.01 ft	2		0.028	0.017	-0.00	-20.71	20.71	833.33	750.00	1.53	1.00	5.36	315.48	315.48
Dsgn. L = 4.00 ft	3		0.028	0.017		-20.71	20.71	833.33	750.00	1.00	1.00	5.36	315.48	315.48
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 1.48 ft	1		0.008	0.013	5.93		5.93	833.33	750.00	1.71	1.00	4.07	315.48	315.48
Dsgn. L = 4.00 ft	1		0.008	0.012	5.95	1.05	5.95	833.33	750.00	1.43	1.00	3.93	315.48	315.48
Dsgn. L = 4.00 ft	1		0.034	0.022	1.05	-25.25	25.25	833.33	750.00	1.75	1.00	6.79	315.48	315.48
Dsgn. L = 0.19 ft	1		0.037	0.037	-0.00	-27.41	27.41	833.33	750.00	1.02	1.00	11.80	315.48	315.48
Dsgn. L = 3.80 ft	2		0.037	0.030	7.75	-27.41	27.41	833.33	750.00	2.07	1.00	9.43	315.48	315.48
Dsgn. L = 4.01 ft	2		0.031	0.029	23.55	7.75	23.55	833.33	750.00	1.36	1.00	9.08	315.48	315.48
Dsgn. L = 4.01 ft	2		0.031	0.012	23.55	17.79	23.55	833.33	750.00	1.10	1.00	3.72	315.48	315.48
Dsgn. L = 4.01 ft	2		0.024	0.022	17.79	-9.51	17.79	833.33	750.00	2.12	1.00	7.00	315.48	315.48
Dsgn. L = 4.00 ft	3		0.013	0.008		-9.51	9.51	833.33	750.00	1.00	1.00	2.56	315.48	315.48
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 1.48 ft	1		0.009	0.014	6.47		6.47	833.33	750.00	1.71	1.00	4.43	315.48	315.48
Dsgn. L = 4.00 ft	1		0.009	0.014	6.51	3.02	6.51	833.33	750.00	1.24	1.00	4.29	315.48	315.48
Dsgn. L = 4.00 ft	1		0.029	0.020	3.02	-21.84	21.84	833.33	750.00	1.88	1.00	6.43	315.48	315.48
Dsgn. L = 0.19 ft	1		0.032	0.036	-0.00	-23.93	23.93	833.33	750.00	1.03	1.00	11.44	315.48	315.48
Dsgn. L = 3.80 ft	2		0.032	0.027	7.70	-23.93	23.93	833.33	750.00	2.14	1.00	8.50	315.48	315.48
Dsgn. L = 4.01 ft	2		0.026	0.026	19.78	7.70	19.78	833.33	750.00	1.31	1.00	8.15	315.48	315.48
Dsgn. L = 4.01 ft	2		0.026	0.009	19.78	10.31	19.78	833.33	750.00	1.22	1.00	2.79	315.48	315.48
Dsgn. L = 4.01 ft	2		0.028	0.025	10.31	-20.71	20.71	833.33	750.00	2.14	1.00	7.93	315.48	315.48
Dsgn. L = 4.00 ft	3		0.028	0.017		-20.71	20.71	833.33	750.00	1.00	1.00	5.36	315.48	315.48
+0.90D+W+1.60H														
Dsgn. L = 1.48 ft	1		0.003	0.004	1.96		1.96	833.33	750.00	1.70	1.00	1.37	315.48	315.48
Dsgn. L = 4.00 ft	1		0.003	0.004	1.97	0.83	1.97	833.33	750.00	1.22	1.00	1.27	315.48	315.48
Dsgn. L = 4.00 ft	1		0.009	0.007	0.83	-7.07	7.07	833.33	750.00	1.87	1.00	2.12	315.48	315.48
Dsgn. L = 0.19 ft	1		0.010	0.011	-0.00	-7.72	7.72	833.33	750.00	1.02	1.00	3.56	315.48	315.48
Dsgn. L = 3.80 ft	2		0.010	0.009	2.39	-7.72	7.72	833.33	750.00	2.15	1.00	2.79	315.48	315.48
Dsgn. L = 4.01 ft	2		0.008	0.008	6.33	2.39	6.33	833.33	750.00	1.31	1.00	2.53	315.48	315.48
Dsgn. L = 4.01 ft	2		0.008	0.003	6.33	3.46	6.33	833.33	750.00	1.19	1.00	0.86	315.48	315.48
Dsgn. L = 4.01 ft	2		0.008	0.008	3.46	-6.24	6.24	833.33	750.00	2.17	1.00	2.56	315.48	315.48
Dsgn. L = 4.00 ft	3		0.008	0.005		-6.24	6.24	833.33	750.00	1.00	1.00	1.70	315.48	315.48
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 1.48 ft	1		0.004	0.007	3.29		3.29	833.33	750.00	1.70	1.00	2.29	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B28**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	1	0.005	0.007	3.43	3.15	3.43	833.33	750.00	1.01	1.00	2.15	315.48	315.48
Dsgn. L = 4.00 ft	1	0.009	0.008	3.15	-6.50	6.50	833.33	750.00	2.22	1.00	2.61	315.48	315.48
Dsgn. L = 0.19 ft	1	0.010	0.015	-0.00	-7.34	7.34	833.33	750.00	1.03	1.00	4.64	315.48	315.48
Dsgn. L = 3.80 ft	2	0.010	0.009	3.32	-7.34	7.34	833.33	750.00	2.20	1.00	2.98	315.48	315.48
Dsgn. L = 4.01 ft	2	0.007	0.008	5.12	3.32	5.12	833.33	750.00	1.13	1.00	2.63	315.48	315.48
Dsgn. L = 4.01 ft	2	0.007	0.007	5.12	-2.65	5.12	833.33	750.00	2.12	1.00	2.13	315.48	315.48
Dsgn. L = 4.01 ft	2	0.027	0.016	-0.00	-19.99	19.99	833.33	750.00	1.55	1.00	5.18	315.48	315.48
Dsgn. L = 4.00 ft	3	0.027	0.016	-0.00	-19.99	19.99	833.33	750.00	1.00	1.00	5.18	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.48 ft	1	0.001	0.002	0.79		0.79	833.33	750.00	1.66	1.00	0.60	315.48	315.48
Dsgn. L = 4.00 ft	1	0.008	0.006	0.79	-6.11	6.11	833.33	750.00	1.92	1.00	1.92	315.48	315.48
Dsgn. L = 4.00 ft	1	0.030	0.014	-0.00	-22.51	22.51	833.33	750.00	1.43	1.00	4.30	315.48	315.48
Dsgn. L = 0.19 ft	1	0.032	0.028	-0.00	-23.69	23.69	833.33	750.00	1.01	1.00	8.96	315.48	315.48
Dsgn. L = 3.80 ft	2	0.032	0.028	9.71	-23.69	23.69	833.33	750.00	2.17	1.00	8.96	315.48	315.48
Dsgn. L = 4.01 ft	2	0.032	0.027	24.37	9.71	24.37	833.33	750.00	1.31	1.00	8.62	315.48	315.48
Dsgn. L = 4.01 ft	2	0.032	0.011	24.37	18.20	24.37	833.33	750.00	1.10	1.00	3.44	315.48	315.48
Dsgn. L = 4.01 ft	2	0.024	0.022	18.20	-8.79	18.20	833.33	750.00	2.11	1.00	6.93	315.48	315.48
Dsgn. L = 4.00 ft	3	0.012	0.008	-8.79	8.79	8.79	833.33	750.00	1.00	1.00	2.38	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.48 ft	1	0.002	0.003	1.32		1.32	833.33	750.00	1.68	1.00	0.96	315.48	315.48
Dsgn. L = 4.00 ft	1	0.006	0.005	1.32	-4.14	4.14	833.33	750.00	2.21	1.00	1.56	315.48	315.48
Dsgn. L = 4.00 ft	1	0.025	0.012	-0.00	-19.11	19.11	833.33	750.00	1.48	1.00	3.94	315.48	315.48
Dsgn. L = 0.19 ft	1	0.027	0.025	-0.00	-20.21	20.21	833.33	750.00	1.02	1.00	8.04	315.48	315.48
Dsgn. L = 3.80 ft	2	0.027	0.025	9.66	-20.21	20.21	833.33	750.00	2.18	1.00	8.04	315.48	315.48
Dsgn. L = 4.01 ft	2	0.027	0.024	20.61	9.66	20.61	833.33	750.00	1.26	1.00	7.69	315.48	315.48
Dsgn. L = 4.01 ft	2	0.027	0.008	20.61	10.72	20.61	833.33	750.00	1.22	1.00	2.67	315.48	315.48
Dsgn. L = 4.01 ft	2	0.027	0.025	10.72	-19.99	19.99	833.33	750.00	2.15	1.00	7.85	315.48	315.48
Dsgn. L = 4.00 ft	3	0.027	0.016	-19.99	19.99	19.99	833.33	750.00	1.00	1.00	5.18	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.48 ft	1	0.010	0.017	7.68		7.68	833.33	750.00	1.71	1.00	5.25	315.48	315.48
Dsgn. L = 4.00 ft	1	0.011	0.016	8.25	7.68	8.25	833.33	750.00	1.01	1.00	5.11	315.48	315.48
Dsgn. L = 4.00 ft	1	0.016	0.017	8.23	-11.91	11.91	833.33	750.00	2.24	1.00	5.25	315.48	315.48
Dsgn. L = 0.19 ft	1	0.018	0.032	-0.00	-13.75	13.75	833.33	750.00	1.04	1.00	10.08	315.48	315.48
Dsgn. L = 3.80 ft	2	0.018	0.013	1.14	-13.75	13.75	833.33	750.00	1.79	1.00	4.09	315.48	315.48
Dsgn. L = 4.01 ft	2	0.010	0.012	7.40	1.14	7.40	833.33	750.00	1.48	1.00	3.74	315.48	315.48
Dsgn. L = 4.01 ft	2	0.010	0.004	7.40	4.09	7.40	833.33	750.00	1.19	1.00	1.36	315.48	315.48
Dsgn. L = 4.01 ft	2	0.012	0.011	4.09	-8.79	8.79	833.33	750.00	2.16	1.00	3.40	315.48	315.48
Dsgn. L = 4.00 ft	3	0.012	0.008	-8.79	8.79	8.79	833.33	750.00	1.00	1.00	2.38	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.48 ft	1	0.011	0.018	8.22		8.22	833.33	750.00	1.71	1.00	5.61	315.48	315.48
Dsgn. L = 4.00 ft	1	0.014	0.017	10.20	8.22	10.20	833.33	750.00	1.07	1.00	5.47	315.48	315.48
Dsgn. L = 4.00 ft	1	0.014	0.015	10.20	-8.51	10.20	833.33	750.00	2.20	1.00	4.89	315.48	315.48
Dsgn. L = 0.19 ft	1	0.014	0.031	-0.00	-10.27	10.27	833.33	750.00	1.05	1.00	9.72	315.48	315.48
Dsgn. L = 3.80 ft	2	0.014	0.010	1.09	-10.27	10.27	833.33	750.00	1.83	1.00	3.16	315.48	315.48
Dsgn. L = 4.01 ft	2	0.005	0.009	3.63	1.09	3.63	833.33	750.00	1.32	1.00	2.82	315.48	315.48
Dsgn. L = 4.01 ft	2	0.005	0.006	3.63	-3.39	3.63	833.33	750.00	2.17	1.00	1.95	315.48	315.48
Dsgn. L = 4.01 ft	2	0.027	0.016	-0.00	-19.99	19.99	833.33	750.00	1.51	1.00	5.18	315.48	315.48
Dsgn. L = 4.00 ft	3	0.027	0.016	-19.99	19.99	19.99	833.33	750.00	1.00	1.00	5.18	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.48 ft	1	0.008	0.012	5.71		5.71	833.33	750.00	1.71	1.00	3.92	315.48	315.48
Dsgn. L = 4.00 ft	1	0.008	0.012	5.73	0.94	5.73	833.33	750.00	1.44	1.00	3.78	315.48	315.48
Dsgn. L = 4.00 ft	1	0.033	0.021	0.94	-24.52	24.52	833.33	750.00	1.74	1.00	6.58	315.48	315.48
Dsgn. L = 0.19 ft	1	0.035	0.036	-0.00	-26.62	26.62	833.33	750.00	1.02	1.00	11.41	315.48	315.48
Dsgn. L = 3.80 ft	2	0.035	0.029	7.48	-26.62	26.62	833.33	750.00	2.07	1.00	9.15	315.48	315.48
Dsgn. L = 4.01 ft	2	0.031	0.028	22.89	7.48	22.89	833.33	750.00	1.36	1.00	8.80	315.48	315.48
Dsgn. L = 4.01 ft	2	0.031	0.011	22.89	17.46	22.89	833.33	750.00	1.09	1.00	3.62	315.48	315.48
Dsgn. L = 4.01 ft	2	0.023	0.021	17.46	-8.79	17.46	833.33	750.00	2.11	1.00	6.74	315.48	315.48
Dsgn. L = 4.00 ft	3	0.012	0.008	-8.79	8.79	8.79	833.33	750.00	1.00	1.00	2.38	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.48 ft	1	0.008	0.014	6.24		6.24	833.33	750.00	1.71	1.00	4.28	315.48	315.48
Dsgn. L = 4.00 ft	1	0.008	0.013	6.28	2.91	6.28	833.33	750.00	1.24	1.00	4.14	315.48	315.48
Dsgn. L = 4.00 ft	1	0.028	0.020	2.91	-21.12	21.12	833.33	750.00	1.88	1.00	6.22	315.48	315.48
Dsgn. L = 0.19 ft	1	0.031	0.035	-0.00	-23.14	23.14	833.33	750.00	1.03	1.00	11.05	315.48	315.48



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B28**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios				Summary of Moment Values					Summary of Shear Values		
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.80 ft	2	0.031	0.026	7.44	-23.14	23.14	833.33	750.00	2.14	1.00	8.22	315.48	315.48
Dsgn. L = 4.01 ft	2	0.025	0.025	19.12	7.44	19.12	833.33	750.00	1.31	1.00	7.88	315.48	315.48
Dsgn. L = 4.01 ft	2	0.025	0.009	19.12	9.98	19.12	833.33	750.00	1.22	1.00	2.69	315.48	315.48
Dsgn. L = 4.01 ft	2	0.027	0.024	9.98	-19.99	19.99	833.33	750.00	2.14	1.00	7.67	315.48	315.48
Dsgn. L = 4.00 ft	3	0.027	0.016		-19.99	19.99	833.33	750.00	1.00	1.00	5.18	315.48	315.48
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 1.48 ft	1	0.003	0.004	1.96		1.96	833.33	750.00	1.70	1.00	1.37	315.48	315.48
Dsgn. L = 4.00 ft	1	0.003	0.004	1.97	0.83	1.97	833.33	750.00	1.22	1.00	1.27	315.48	315.48
Dsgn. L = 4.00 ft	1	0.009	0.007	0.83	-7.07	7.07	833.33	750.00	1.87	1.00	2.12	315.48	315.48
Dsgn. L = 0.19 ft	1	0.010	0.011	-0.00	-7.72	7.72	833.33	750.00	1.02	1.00	3.56	315.48	315.48
Dsgn. L = 3.80 ft	2	0.010	0.009	2.39	-7.72	7.72	833.33	750.00	2.15	1.00	2.79	315.48	315.48
Dsgn. L = 4.01 ft	2	0.008	0.008	6.33	2.39	6.33	833.33	750.00	1.31	1.00	2.53	315.48	315.48
Dsgn. L = 4.01 ft	2	0.008	0.003	6.33	3.46	6.33	833.33	750.00	1.19	1.00	0.86	315.48	315.48
Dsgn. L = 4.01 ft	2	0.008	0.008	3.46	-6.24	6.24	833.33	750.00	2.17	1.00	2.56	315.48	315.48
Dsgn. L = 4.00 ft	3	0.008	0.005		-6.24	6.24	833.33	750.00	1.00	1.00	1.70	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0024	4.513	+D+L+H	-0.0023	6.189
+D+L+H	2	0.0136	8.337		0.0000	6.189
	3	0.0000	8.337	+D+L+H	-0.0092	4.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Max Upward from all Load Conditions	5.203	18.706	16.175	
Max Upward from Load Combinations	5.203	18.706	16.175	
Max Upward from Load Cases	3.679	11.654	9.869	
Max Downward from all Load Conditions (Resis)	-1.331	-1.287	-0.185	
Max Downward from Load Cases (Resisting U <sub>r</sub> )	-1.331	-1.287	-0.185	
+D+H	1.524	7.052	6.306	
+D+L+H, LL Comb Run (**L)	1.884	5.765	12.833	
+D+L+H, LL Comb Run (*L*)	0.194	13.440	9.648	
+D+L+H, LL Comb Run (*LL)	0.553	12.154	16.175	
+D+L+H, LL Comb Run (L**)	4.844	12.317	6.121	
+D+L+H, LL Comb Run (L*L)	5.203	11.031	12.648	
+D+L+H, LL Comb Run (LL*)	3.513	18.706	9.463	
+D+L+H, LL Comb Run (LLL)	3.873	17.419	15.990	
+D+Lr+H, LL Comb Run (**L)	1.524	7.052	6.306	
+D+Lr+H, LL Comb Run (*L*)	1.524	7.052	6.306	
+D+Lr+H, LL Comb Run (*LL)	1.524	7.052	6.306	
+D+Lr+H, LL Comb Run (L**)	1.524	7.052	6.306	
+D+Lr+H, LL Comb Run (L*L)	1.524	7.052	6.306	
+D+Lr+H, LL Comb Run (LL*)	1.524	7.052	6.306	
+D+Lr+H, LL Comb Run (LLL)	1.524	7.052	6.306	
+D+S+H	2.028	9.273	8.381	
+D+0.750Lr+0.750L+H, LL Comb Run (**L)	1.794	6.087	11.201	
+D+0.750Lr+0.750L+H, LL Comb Run (*L*)	0.526	11.843	8.812	
+D+0.750Lr+0.750L+H, LL Comb Run (*LL)	0.796	10.878	13.708	
+D+0.750Lr+0.750L+H, LL Comb Run (L**)	4.014	11.001	6.167	
+D+0.750Lr+0.750L+H, LL Comb Run (L*L)	4.284	10.036	11.062	
+D+0.750Lr+0.750L+H, LL Comb Run (LL*)	3.016	15.792	8.674	
+D+0.750Lr+0.750L+H, LL Comb Run (LLL)	3.286	14.827	13.569	
+D+0.750L+0.750S+H, LL Comb Run (**L)	2.171	7.753	12.758	
+D+0.750L+0.750S+H, LL Comb Run (*L*)	0.904	13.509	10.369	
+D+0.750L+0.750S+H, LL Comb Run (*LL)	1.173	12.544	15.264	
+D+0.750L+0.750S+H, LL Comb Run (L**)	4.391	12.667	7.724	
+D+0.750L+0.750S+H, LL Comb Run (L*L)	4.661	11.702	12.619	
+D+0.750L+0.750S+H, LL Comb Run (LL*)	3.393	17.458	10.230	
+D+0.750L+0.750S+H, LL Comb Run (LLL)	3.663	16.493	15.125	
+D+0.60W+H	1.524	7.052	6.306	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.794	6.087	11.201	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	0.526	11.843	8.812	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	0.796	10.878	13.708	



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B28**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	4.014	11.001	6.167	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	4.284	10.036	11.062	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.016	15.792	8.674	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.286	14.827	13.569	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	2.171	7.753	12.758	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	0.904	13.509	10.369	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.173	12.544	15.264	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.391	12.667	7.724	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.661	11.702	12.619	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.393	17.458	10.230	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.663	16.493	15.125	
+0.60D+0.60W+0.60H	0.915	4.231	3.784	
+D+0.70E+0.60H	1.524	7.052	6.306	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	2.171	7.753	12.758	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	0.904	13.509	10.369	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	1.173	12.544	15.264	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	4.391	12.667	7.724	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	4.661	11.702	12.619	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.393	17.458	10.230	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.663	16.493	15.125	
+0.60D+0.70E+H	0.915	4.231	3.784	
D Only	1.524	7.052	6.306	
L Only, LL Comb Run (**L)	0.360	-1.287	6.527	
L Only, LL Comb Run (*L*)	-1.331	6.389	3.342	
L Only, LL Comb Run (*LL)	-0.971	5.102	9.869	
L Only, LL Comb Run (L**)	3.320	5.265	-0.185	
L Only, LL Comb Run (L*L)	3.679	3.979	6.342	
L Only, LL Comb Run (LL*)	1.989	11.654	3.157	
L Only, LL Comb Run (LLL)	2.348	10.367	9.684	
S Only	0.503	2.222	2.075	
H Only				



## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B29**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

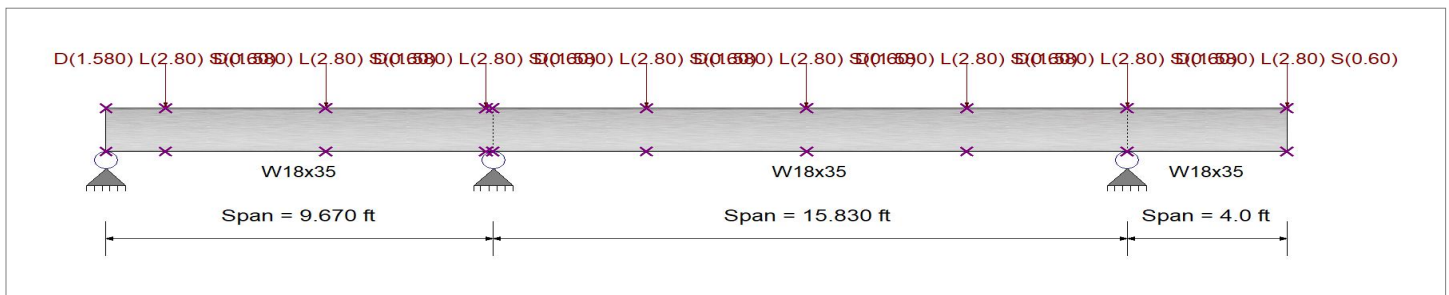
### Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

### Unbraced Lengths

First Brace starts at 1.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 1.580, L = 2.80, S = 0.60 k, Starting at : 1.50 ft and placed every 4.0 ft thereafter

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.144 : 1</b>	Maximum Shear Stress Ratio =	<b>0.096 : 1</b>
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	35.834 k-ft	Vu : Applied	15.30 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL*)
Span # where maximum occurs	Span # 1	Location of maximum on span	9.670 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.034 in Ratio = <b>2,832</b> >=360.	Span: 3 : L Only, LL Comb Run (L*L)	
Max Upward Transient Deflection	-0.035 in Ratio = <b>2,740</b> >=360.	Span: 3 : L Only, LL Comb Run (*L*)	
Max Downward Total Deflection	0.032 in Ratio = <b>2974</b> >=240.	Span: 3 : +D+L+H, LL Comb Run (L*L)	
Max Upward Total Deflection	-0.037 in Ratio = <b>2620</b> >=240.	Span: 3 : +D+L+H, LL Comb Run (*L*)	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	1.48 ft	1	0.012	0.012	2.89		2.89	277.08	249.38	1.71	1.00	1.98	159.30	159.30
Dsgn. L =	4.00 ft	1	0.012	0.012	2.91	1.33	2.91	277.08	249.38	1.23	1.00	1.91	159.30	159.30
Dsgn. L =	4.00 ft	1	0.039	0.018	1.33	-9.84	9.84	277.08	249.38	1.88	1.00	2.90	159.30	159.30
Dsgn. L =	0.19 ft	1	0.043	0.032	-0.00	-10.78	10.78	277.08	249.38	1.03	1.00	5.13	159.30	159.30
Dsgn. L =	3.80 ft	2	0.043	0.024	3.45	-10.78	10.78	277.08	249.38	2.14	1.00	3.84	159.30	159.30
Dsgn. L =	4.01 ft	2	0.036	0.023	8.90	3.45	8.90	277.08	249.38	1.31	1.00	3.65	159.30	159.30
Dsgn. L =	4.01 ft	2	0.036	0.008	8.90	4.67	8.90	277.08	249.38	1.22	1.00	1.24	159.30	159.30
Dsgn. L =	4.01 ft	2	0.037	0.022	4.67	-9.24	9.24	277.08	249.38	2.15	1.00	3.57	159.30	159.30
Dsgn. L =	4.00 ft	3	0.037	0.015	-9.24	9.24	9.24	277.08	249.38	1.00	1.00	2.41	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.48 ft	1	0.013	0.014	3.33		3.33	277.08	249.38	1.71	1.00	2.28	159.30	159.30
Dsgn. L =	4.00 ft	1	0.017	0.014	4.29	3.33	4.29	277.08	249.38	1.08	1.00	2.21	159.30	159.30
Dsgn. L =	4.00 ft	1	0.017	0.012	4.29	-2.99	4.29	277.08	249.38	2.17	1.00	1.91	159.30	159.30
Dsgn. L =	0.19 ft	1	0.015	0.024	-0.00	-3.68	3.68	277.08	249.38	1.06	1.00	3.82	159.30	159.30
Dsgn. L =	3.80 ft	2	0.015	0.011	2.88	-3.68	3.68	277.08	249.38	2.26	1.00	1.81	159.30	159.30
Dsgn. L =	4.01 ft	2	0.012	0.010	2.92	1.61	2.92	277.08	249.38	1.18	1.00	1.65	159.30	159.30
Dsgn. L =	4.01 ft	2	0.032	0.016	1.61	-7.97	7.97	277.08	249.38	1.99	1.00	2.48	159.30	159.30

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C4**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : **HSS5x5x1/4** Overall Column Height 17.830 ft  
 Analysis Method : Allowable Strength Top & Bottom Fixity Top & Bottom Pinned  
 Steel Stress Grade Brace condition :  
 Fy : Steel Yield 46.0 ksi Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0  
 E : Elastic Bending Modulus 29,000.0 ksi Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 278.505 lbs \* Dead Load Factor

AXIAL LOADS . . .

B3: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 4.140, L = 6.510, S = 1.520 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.3464** : 1  
 Load Combination +D+L  
 Location of max.above base 17.830 ft  
 At maximum location values are . . .  
 Pa : Axial 10.929 k  
 Pn / Omega : Allowabl 51.817 k  
 Ma-x : Applied -0.4438 k-ft  
 Mn-x / Omega : Allowable 17.468 k-ft  
 Ma-y : Applied -2.219 k-ft  
 Mn-y / Omega : Allowable 17.468 k-ft

**Maximum Load Reactions . . .**  
 Top along X-X 0.1244 k  
 Bottom along X-X 0.1244 k  
 Top along Y-Y 0.02489 k  
 Bottom along Y-Y 0.02489 k

**Maximum Load Deflections . . .**  
 Along Y-Y -0.0340 in at 10.411 ft above base  
 for load combination : +D+L  
 Along X-X -0.170 in at 10.411 ft above base  
 for load combination : +D+L

**PASS** Maximum Shear Stress Ratio = **0.003757** : 1  
 Load Combination +D+L  
 Location of max.above base 0.0 ft  
 At maximum location values are . . .  
 Va : Applied 0.1244 k  
 Vn / Omega : Allowable 33.124 k

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.102	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+L	0.346	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.004	PASS	0.00 ft
+D+S	0.138	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft
+D+0.750L	0.219	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.003	PASS	0.00 ft
+D+0.750L+0.750S	0.331	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.004	PASS	0.00 ft
+0.60D	0.061	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	4.419	0.048	0.048		-0.010	0.010				
+D+L	10.929	0.124	0.124		-0.025	0.025				
+D+S	5.939	0.066	0.066		-0.013	0.013				
+D+0.750L	9.301	0.105	0.105		-0.021	0.021				
+D+0.750L+0.750S	10.441	0.119	0.119		-0.024	0.024				
+0.60D	2.651	0.029	0.029		-0.006	0.006				
L Only	6.510	0.076	0.076		-0.015	0.015				
S Only	1.520	0.018	0.018		-0.004	0.004				



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B29**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 1.48 ft	1	0.015	0.016	3.70		3.70	277.08	249.38	1.71	1.00	2.53	159.30	159.30
Dsgn. L = 4.00 ft	1	0.018	0.015	4.48	3.70	4.48	277.08	249.38	1.06	1.00	2.46	159.30	159.30
Dsgn. L = 4.00 ft	1	0.018	0.014	4.48	-4.19	4.48	277.08	249.38	2.22	1.00	2.26	159.30	159.30
Dsgn. L = 0.19 ft	1	0.020	0.028	-0.00	-5.00	5.00	277.08	249.38	1.05	1.00	4.47	159.30	159.30
Dsgn. L = 3.80 ft	2	0.020	0.014	3.32	-5.00	5.00	277.08	249.38	2.23	1.00	2.27	159.30	159.30
Dsgn. L = 4.01 ft	2	0.014	0.013	3.38	2.70	3.38	277.08	249.38	1.06	1.00	2.11	159.30	159.30
Dsgn. L = 4.01 ft	2	0.030	0.016	2.70	-7.42	7.42	277.08	249.38	2.17	1.00	2.62	159.30	159.30
Dsgn. L = 4.01 ft	2	0.108	0.043	-0.00	-27.04	27.04	277.08	249.38	1.41	1.00	6.84	159.30	159.30
Dsgn. L = 4.00 ft	3	0.108	0.043		-27.04	27.04	277.08	249.38	1.00	1.00	6.84	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.48 ft	1	0.001	0.002		-0.31	0.31	277.08	249.38	1.00	1.00	0.24	159.30	159.30
Dsgn. L = 4.00 ft	1	0.041	0.016	-0.00	-10.34	10.34	277.08	249.38	1.66	1.00	2.60	159.30	159.30
Dsgn. L = 4.00 ft	1	0.120	0.031	-0.00	-29.81	29.81	277.08	249.38	1.36	1.00	4.97	159.30	159.30
Dsgn. L = 0.19 ft	1	0.125	0.074	-0.00	-31.15	31.15	277.08	249.38	1.01	1.00	11.85	159.30	159.30
Dsgn. L = 3.80 ft	2	0.125	0.074	13.55	-31.15	31.15	277.08	249.38	2.17	1.00	11.85	159.30	159.30
Dsgn. L = 4.01 ft	2	0.134	0.073	33.51	13.55	33.51	277.08	249.38	1.31	1.00	11.69	159.30	159.30
Dsgn. L = 4.01 ft	2	0.134	0.030	33.51	25.95	33.51	277.08	249.38	1.09	1.00	4.84	159.30	159.30
Dsgn. L = 4.01 ft	2	0.104	0.056	25.95	-9.12	25.95	277.08	249.38	2.10	1.00	8.85	159.30	159.30
Dsgn. L = 4.00 ft	3	0.037	0.015		-9.12	9.12	277.08	249.38	1.00	1.00	2.36	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.48 ft	1	0.002	0.002	0.54		0.54	277.08	249.38	1.68	1.00	0.40	159.30	159.30
Dsgn. L = 4.00 ft	1	0.029	0.013	0.54	-7.19	7.19	277.08	249.38	1.80	1.00	2.03	159.30	159.30
Dsgn. L = 4.00 ft	1	0.098	0.028	-0.00	-24.36	24.36	277.08	249.38	1.40	1.00	4.39	159.30	159.30
Dsgn. L = 0.19 ft	1	0.103	0.065	-0.00	-25.59	25.59	277.08	249.38	1.01	1.00	10.36	159.30	159.30
Dsgn. L = 3.80 ft	2	0.103	0.065	13.48	-25.59	25.59	277.08	249.38	2.18	1.00	10.36	159.30	159.30
Dsgn. L = 4.01 ft	2	0.110	0.064	27.49	13.48	27.49	277.08	249.38	1.25	1.00	10.20	159.30	159.30
Dsgn. L = 4.01 ft	2	0.110	0.022	27.49	13.98	27.49	277.08	249.38	1.23	1.00	3.49	159.30	159.30
Dsgn. L = 4.01 ft	2	0.108	0.065	13.98	-27.04	27.04	277.08	249.38	2.14	1.00	10.33	159.30	159.30
Dsgn. L = 4.00 ft	3	0.108	0.043		-27.04	27.04	277.08	249.38	1.00	1.00	6.84	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.48 ft	1	0.043	0.046	10.72		10.72	277.08	249.38	1.71	1.00	7.26	159.30	159.30
Dsgn. L = 4.00 ft	1	0.051	0.045	12.60	10.72	12.60	277.08	249.38	1.06	1.00	7.20	159.30	159.30
Dsgn. L = 4.00 ft	1	0.052	0.041	12.60	-12.86	12.86	277.08	249.38	2.28	1.00	6.49	159.30	159.30
Dsgn. L = 0.19 ft	1	0.061	0.083	-0.00	-15.25	15.25	277.08	249.38	1.05	1.00	13.17	159.30	159.30
Dsgn. L = 3.80 ft	2	0.061	0.025	-0.00	-15.25	15.25	277.08	249.38	1.66	1.00	4.05	159.30	159.30
Dsgn. L = 4.01 ft	2	0.025	0.024	6.35	-0.17	6.35	277.08	249.38	1.68	1.00	3.89	159.30	159.30
Dsgn. L = 4.01 ft	2	0.025	0.010	6.35	3.37	6.35	277.08	249.38	1.21	1.00	1.52	159.30	159.30
Dsgn. L = 4.01 ft	2	0.037	0.020	3.37	-9.12	9.12	277.08	249.38	2.12	1.00	3.20	159.30	159.30
Dsgn. L = 4.00 ft	3	0.037	0.015		-9.12	9.12	277.08	249.38	1.00	1.00	2.36	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.48 ft	1	0.046	0.049	11.58		11.58	277.08	249.38	1.71	1.00	7.84	159.30	159.30
Dsgn. L = 4.00 ft	1	0.063	0.049	15.75	11.58	15.75	277.08	249.38	1.11	1.00	7.78	159.30	159.30
Dsgn. L = 4.00 ft	1	0.063	0.037	15.75	-7.40	15.75	277.08	249.38	2.15	1.00	5.91	159.30	159.30
Dsgn. L = 0.19 ft	1	0.039	0.079	-0.00	-9.68	9.68	277.08	249.38	1.07	1.00	12.60	159.30	159.30
Dsgn. L = 3.80 ft	2	0.039	0.016	-0.00	-9.68	9.68	277.08	249.38	1.65	1.00	2.57	159.30	159.30
Dsgn. L = 4.01 ft	2	0.001	0.015	0.33	-0.24	0.33	277.08	249.38	1.80	1.00	2.41	159.30	159.30
Dsgn. L = 4.01 ft	2	0.034	0.015	0.33	-8.60	8.60	277.08	249.38	1.76	1.00	2.32	159.30	159.30
Dsgn. L = 4.01 ft	2	0.108	0.043	-0.00	-27.04	27.04	277.08	249.38	1.38	1.00	6.84	159.30	159.30
Dsgn. L = 4.00 ft	3	0.108	0.043		-27.04	27.04	277.08	249.38	1.00	1.00	6.84	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.48 ft	1	0.030	0.032	7.57		7.57	277.08	249.38	1.71	1.00	5.13	159.30	159.30
Dsgn. L = 4.00 ft	1	0.030	0.032	7.58	0.93	7.58	277.08	249.38	1.50	1.00	5.07	159.30	159.30
Dsgn. L = 4.00 ft	1	0.132	0.054	0.93	-33.03	33.03	277.08	249.38	1.72	1.00	8.62	159.30	159.30
Dsgn. L = 0.19 ft	1	0.144	0.096	-0.00	-35.83	35.83	277.08	249.38	1.02	1.00	15.30	159.30	159.30
Dsgn. L = 3.80 ft	2	0.144	0.076	9.99	-35.83	35.83	277.08	249.38	2.05	1.00	12.14	159.30	159.30
Dsgn. L = 4.01 ft	2	0.125	0.075	31.14	9.99	31.14	277.08	249.38	1.37	1.00	11.98	159.30	159.30
Dsgn. L = 4.01 ft	2	0.125	0.032	31.14	24.77	31.14	277.08	249.38	1.08	1.00	5.14	159.30	159.30
Dsgn. L = 4.01 ft	2	0.099	0.054	24.77	-9.12	24.77	277.08	249.38	2.10	1.00	8.55	159.30	159.30
Dsgn. L = 4.00 ft	3	0.037	0.015		-9.12	9.12	277.08	249.38	1.00	1.00	2.36	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.48 ft	1	0.034	0.036	8.42		8.42	277.08	249.38	1.71	1.00	5.71	159.30	159.30
Dsgn. L = 4.00 ft	1	0.034	0.035	8.47	4.09	8.47	277.08	249.38	1.24	1.00	5.65	159.30	159.30
Dsgn. L = 4.00 ft	1	0.111	0.050	4.09	-27.58	27.58	277.08	249.38	1.88	1.00	8.04	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B29**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 0.19 ft	1	0.121	0.092	-0.00	-30.27	30.27	277.08	249.38	1.03	1.00	14.72	159.30	159.30
Dsgn. L = 3.80 ft	2	0.121	0.067	9.92	-30.27	30.27	277.08	249.38	2.14	1.00	10.66	159.30	159.30
Dsgn. L = 4.01 ft	2	0.101	0.066	25.11	9.92	25.11	277.08	249.38	1.32	1.00	10.50	159.30	159.30
Dsgn. L = 4.01 ft	2	0.101	0.023	25.11	12.80	25.11	277.08	249.38	1.23	1.00	3.65	159.30	159.30
Dsgn. L = 4.01 ft	2	0.108	0.063	12.80	-27.04	27.04	277.08	249.38	2.13	1.00	10.03	159.30	159.30
Dsgn. L = 4.00 ft	3	0.108	0.043		-27.04	27.04	277.08	249.38	1.00	1.00	6.84	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.012	0.013	3.01		3.01	277.08	249.38	1.71	1.00	2.06	159.30	159.30
Dsgn. L = 4.00 ft	1	0.013	0.013	3.16	3.01	3.16	277.08	249.38	1.00	1.00	2.00	159.30	159.30
Dsgn. L = 4.00 ft	1	0.020	0.013	3.11	-5.03	5.03	277.08	249.38	2.23	1.00	2.13	159.30	159.30
Dsgn. L = 0.19 ft	1	0.023	0.025	-0.00	-5.76	5.76	277.08	249.38	1.04	1.00	4.03	159.30	159.30
Dsgn. L = 3.80 ft	2	0.023	0.015	2.91	-5.76	5.76	277.08	249.38	2.20	1.00	2.36	159.30	159.30
Dsgn. L = 4.01 ft	2	0.016	0.014	3.87	2.91	3.87	277.08	249.38	1.09	1.00	2.20	159.30	159.30
Dsgn. L = 4.01 ft	2	0.016	0.012	3.87	-3.48	3.87	277.08	249.38	2.21	1.00	1.93	159.30	159.30
Dsgn. L = 4.01 ft	2	0.077	0.031	-0.00	-19.12	19.12	277.08	249.38	1.49	1.00	4.86	159.30	159.30
Dsgn. L = 4.00 ft	3	0.077	0.031		-19.12	19.12	277.08	249.38	1.00	1.00	4.86	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.002	0.002	0.50		0.50	277.08	249.38	1.67	1.00	0.37	159.30	159.30
Dsgn. L = 4.00 ft	1	0.025	0.011	0.50	-6.15	6.15	277.08	249.38	1.81	1.00	1.76	159.30	159.30
Dsgn. L = 4.00 ft	1	0.084	0.024	-0.00	-21.05	21.05	277.08	249.38	1.41	1.00	3.82	159.30	159.30
Dsgn. L = 0.19 ft	1	0.089	0.052	-0.00	-22.11	22.11	277.08	249.38	1.01	1.00	8.35	159.30	159.30
Dsgn. L = 3.80 ft	2	0.089	0.052	9.31	-22.11	22.11	277.08	249.38	2.16	1.00	8.35	159.30	159.30
Dsgn. L = 4.01 ft	2	0.093	0.051	23.12	9.31	23.12	277.08	249.38	1.31	1.00	8.19	159.30	159.30
Dsgn. L = 4.01 ft	2	0.093	0.021	23.12	17.38	23.12	277.08	249.38	1.10	1.00	3.32	159.30	159.30
Dsgn. L = 4.01 ft	2	0.070	0.040	17.38	-7.92	17.38	277.08	249.38	2.11	1.00	6.40	159.30	159.30
Dsgn. L = 4.00 ft	3	0.032	0.013		-7.92	7.92	277.08	249.38	1.00	1.00	2.06	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.004	0.005	1.03		1.03	277.08	249.38	1.70	1.00	0.73	159.30	159.30
Dsgn. L = 4.00 ft	1	0.017	0.009	1.03	-4.18	4.18	277.08	249.38	2.09	1.00	1.40	159.30	159.30
Dsgn. L = 4.00 ft	1	0.071	0.022	-0.00	-17.64	17.64	277.08	249.38	1.45	1.00	3.46	159.30	159.30
Dsgn. L = 0.19 ft	1	0.075	0.047	-0.00	-18.63	18.63	277.08	249.38	1.02	1.00	7.42	159.30	159.30
Dsgn. L = 3.80 ft	2	0.075	0.047	9.26	-18.63	18.63	277.08	249.38	2.18	1.00	7.42	159.30	159.30
Dsgn. L = 4.01 ft	2	0.078	0.046	19.36	9.26	19.36	277.08	249.38	1.26	1.00	7.26	159.30	159.30
Dsgn. L = 4.01 ft	2	0.078	0.015	19.36	9.90	19.36	277.08	249.38	1.23	1.00	2.47	159.30	159.30
Dsgn. L = 4.01 ft	2	0.077	0.046	9.90	-19.12	19.12	277.08	249.38	2.14	1.00	7.33	159.30	159.30
Dsgn. L = 4.00 ft	3	0.077	0.031		-19.12	19.12	277.08	249.38	1.00	1.00	4.86	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.030	0.032	7.40		7.40	277.08	249.38	1.71	1.00	5.02	159.30	159.30
Dsgn. L = 4.00 ft	1	0.033	0.031	8.19	7.40	8.19	277.08	249.38	1.03	1.00	4.96	159.30	159.30
Dsgn. L = 4.00 ft	1	0.042	0.030	8.19	-10.45	10.45	277.08	249.38	2.24	1.00	4.77	159.30	159.30
Dsgn. L = 0.19 ft	1	0.049	0.059	-0.00	-12.17	12.17	277.08	249.38	1.04	1.00	9.47	159.30	159.30
Dsgn. L = 3.80 ft	2	0.049	0.022	0.73	-12.17	12.17	277.08	249.38	1.75	1.00	3.48	159.30	159.30
Dsgn. L = 4.01 ft	2	0.025	0.021	6.15	0.73	6.15	277.08	249.38	1.53	1.00	3.32	159.30	159.30
Dsgn. L = 4.01 ft	2	0.025	0.008	6.15	3.26	6.15	277.08	249.38	1.21	1.00	1.25	159.30	159.30
Dsgn. L = 4.01 ft	2	0.032	0.018	3.26	-7.92	7.92	277.08	249.38	2.13	1.00	2.88	159.30	159.30
Dsgn. L = 4.00 ft	3	0.032	0.013		-7.92	7.92	277.08	249.38	1.00	1.00	2.06	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.032	0.034	7.93		7.93	277.08	249.38	1.71	1.00	5.38	159.30	159.30
Dsgn. L = 4.00 ft	1	0.041	0.033	10.16	7.93	10.16	277.08	249.38	1.09	1.00	5.32	159.30	159.30
Dsgn. L = 4.00 ft	1	0.041	0.028	10.16	-7.04	10.16	277.08	249.38	2.19	1.00	4.41	159.30	159.30
Dsgn. L = 0.19 ft	1	0.035	0.057	-0.00	-8.69	8.69	277.08	249.38	1.06	1.00	9.11	159.30	159.30
Dsgn. L = 3.80 ft	2	0.035	0.016	0.69	-8.69	8.69	277.08	249.38	1.78	1.00	2.55	159.30	159.30
Dsgn. L = 4.01 ft	2	0.010	0.015	2.38	0.69	2.38	277.08	249.38	1.34	1.00	2.39	159.30	159.30
Dsgn. L = 4.01 ft	2	0.017	0.011	2.38	-4.22	4.22	277.08	249.38	2.22	1.00	1.74	159.30	159.30
Dsgn. L = 4.01 ft	2	0.077	0.031	-0.00	-19.12	19.12	277.08	249.38	1.46	1.00	4.86	159.30	159.30
Dsgn. L = 4.00 ft	3	0.077	0.031		-19.12	19.12	277.08	249.38	1.00	1.00	4.86	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.022	0.023	5.42		5.42	277.08	249.38	1.71	1.00	3.69	159.30	159.30
Dsgn. L = 4.00 ft	1	0.022	0.023	5.44	0.90	5.44	277.08	249.38	1.46	1.00	3.63	159.30	159.30
Dsgn. L = 4.00 ft	1	0.092	0.038	0.90	-23.06	23.06	277.08	249.38	1.74	1.00	6.10	159.30	159.30
Dsgn. L = 0.19 ft	1	0.100	0.068	-0.00	-25.04	25.04	277.08	249.38	1.02	1.00	10.80	159.30	159.30
Dsgn. L = 3.80 ft	2	0.100	0.054	7.08	-25.04	25.04	277.08	249.38	2.06	1.00	8.53	159.30	159.30
Dsgn. L = 4.01 ft	2	0.087	0.053	21.64	7.08	21.64	277.08	249.38	1.37	1.00	8.37	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B29**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	2	0.087	0.022	21.64	16.64	21.64	277.08	249.38	1.10	1.00	3.51	159.30	159.30
Dsgn. L = 4.01 ft	2	0.067	0.039	16.64	-7.92	16.64	277.08	249.38	2.12	1.00	6.22	159.30	159.30
Dsgn. L = 4.00 ft	3	0.032	0.013		-7.92	7.92	277.08	249.38	1.00	1.00	2.06	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.024	0.025	5.96		5.96	277.08	249.38	1.71	1.00	4.05	159.30	159.30
Dsgn. L = 4.00 ft	1	0.024	0.025	5.99		5.99	277.08	249.38	1.24	1.00	3.99	159.30	159.30
Dsgn. L = 4.00 ft	1	0.079	0.036	2.87	-19.65	19.65	277.08	249.38	1.88	1.00	5.74	159.30	159.30
Dsgn. L = 0.19 ft	1	0.086	0.066	-0.00	-21.56	21.56	277.08	249.38	1.03	1.00	10.45	159.30	159.30
Dsgn. L = 3.80 ft	2	0.086	0.048	7.03	-21.56	21.56	277.08	249.38	2.14	1.00	7.61	159.30	159.30
Dsgn. L = 4.01 ft	2	0.072	0.047	17.87	7.03	17.87	277.08	249.38	1.32	1.00	7.45	159.30	159.30
Dsgn. L = 4.01 ft	2	0.072	0.016	17.87	9.15	17.87	277.08	249.38	1.23	1.00	2.58	159.30	159.30
Dsgn. L = 4.01 ft	2	0.077	0.045	9.15	-19.12	19.12	277.08	249.38	2.13	1.00	7.15	159.30	159.30
Dsgn. L = 4.00 ft	3	0.077	0.031		-19.12	19.12	277.08	249.38	1.00	1.00	4.86	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.48 ft	1	0.010	0.011	2.47		2.47	277.08	249.38	1.71	1.00	1.70	159.30	159.30
Dsgn. L = 4.00 ft	1	0.010	0.010	2.49	1.14	2.49	277.08	249.38	1.23	1.00	1.64	159.30	159.30
Dsgn. L = 4.00 ft	1	0.034	0.016	1.14	-8.44	8.44	277.08	249.38	1.88	1.00	2.49	159.30	159.30
Dsgn. L = 0.19 ft	1	0.037	0.028	-0.00	-9.24	9.24	277.08	249.38	1.03	1.00	4.39	159.30	159.30
Dsgn. L = 3.80 ft	2	0.037	0.021	2.96	-9.24	9.24	277.08	249.38	2.14	1.00	3.29	159.30	159.30
Dsgn. L = 4.01 ft	2	0.031	0.020	7.63	2.96	7.63	277.08	249.38	1.31	1.00	3.13	159.30	159.30
Dsgn. L = 4.01 ft	2	0.031	0.007	7.63	4.00	7.63	277.08	249.38	1.22	1.00	1.07	159.30	159.30
Dsgn. L = 4.01 ft	2	0.032	0.019	4.00	-7.92	7.92	277.08	249.38	2.15	1.00	3.06	159.30	159.30
Dsgn. L = 4.00 ft	3	0.032	0.013		-7.92	7.92	277.08	249.38	1.00	1.00	2.06	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.48 ft	1	0.010	0.011	2.47		2.47	277.08	249.38	1.71	1.00	1.70	159.30	159.30
Dsgn. L = 4.00 ft	1	0.010	0.010	2.49	1.14	2.49	277.08	249.38	1.23	1.00	1.64	159.30	159.30
Dsgn. L = 4.00 ft	1	0.034	0.016	1.14	-8.44	8.44	277.08	249.38	1.88	1.00	2.49	159.30	159.30
Dsgn. L = 0.19 ft	1	0.037	0.028	-0.00	-9.24	9.24	277.08	249.38	1.03	1.00	4.39	159.30	159.30
Dsgn. L = 3.80 ft	2	0.037	0.021	2.96	-9.24	9.24	277.08	249.38	2.14	1.00	3.29	159.30	159.30
Dsgn. L = 4.01 ft	2	0.031	0.020	7.63	2.96	7.63	277.08	249.38	1.31	1.00	3.13	159.30	159.30
Dsgn. L = 4.01 ft	2	0.031	0.007	7.63	4.00	7.63	277.08	249.38	1.22	1.00	1.07	159.30	159.30
Dsgn. L = 4.01 ft	2	0.032	0.019	4.00	-7.92	7.92	277.08	249.38	2.15	1.00	3.06	159.30	159.30
Dsgn. L = 4.00 ft	3	0.032	0.013		-7.92	7.92	277.08	249.38	1.00	1.00	2.06	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.48 ft	1	0.010	0.011	2.47		2.47	277.08	249.38	1.71	1.00	1.70	159.30	159.30
Dsgn. L = 4.00 ft	1	0.010	0.010	2.49	1.14	2.49	277.08	249.38	1.23	1.00	1.64	159.30	159.30
Dsgn. L = 4.00 ft	1	0.034	0.016	1.14	-8.44	8.44	277.08	249.38	1.88	1.00	2.49	159.30	159.30
Dsgn. L = 0.19 ft	1	0.037	0.028	-0.00	-9.24	9.24	277.08	249.38	1.03	1.00	4.39	159.30	159.30
Dsgn. L = 3.80 ft	2	0.037	0.021	2.96	-9.24	9.24	277.08	249.38	2.14	1.00	3.29	159.30	159.30
Dsgn. L = 4.01 ft	2	0.031	0.020	7.63	2.96	7.63	277.08	249.38	1.31	1.00	3.13	159.30	159.30
Dsgn. L = 4.01 ft	2	0.031	0.007	7.63	4.00	7.63	277.08	249.38	1.22	1.00	1.07	159.30	159.30
Dsgn. L = 4.01 ft	2	0.032	0.019	4.00	-7.92	7.92	277.08	249.38	2.15	1.00	3.06	159.30	159.30
Dsgn. L = 4.00 ft	3	0.032	0.013		-7.92	7.92	277.08	249.38	1.00	1.00	2.06	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.48 ft	1	0.010	0.011	2.47		2.47	277.08	249.38	1.71	1.00	1.70	159.30	159.30
Dsgn. L = 4.00 ft	1	0.010	0.010	2.49	1.14	2.49	277.08	249.38	1.23	1.00	1.64	159.30	159.30
Dsgn. L = 4.00 ft	1	0.034	0.016	1.14	-8.44	8.44	277.08	249.38	1.88	1.00	2.49	159.30	159.30
Dsgn. L = 0.19 ft	1	0.037	0.028	-0.00	-9.24	9.24	277.08	249.38	1.03	1.00	4.39	159.30	159.30
Dsgn. L = 3.80 ft	2	0.037	0.021	2.96	-9.24	9.24	277.08	249.38	2.14	1.00	3.29	159.30	159.30
Dsgn. L = 4.01 ft	2	0.031	0.020	7.63	2.96	7.63	277.08	249.38	1.31	1.00	3.13	159.30	159.30
Dsgn. L = 4.01 ft	2	0.031	0.007	7.63	4.00	7.63	277.08	249.38	1.22	1.00	1.07	159.30	159.30
Dsgn. L = 4.01 ft	2	0.032	0.019	4.00	-7.92	7.92	277.08	249.38	2.15	1.00	3.06	159.30	159.30
Dsgn. L = 4.00 ft	3	0.032	0.013		-7.92	7.92	277.08	249.38	1.00	1.00	2.06	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B29**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.48 ft	1	0.010	0.011	2.47		2.47	277.08	249.38	1.71	1.00	1.70	159.30	159.30
Dsgn. L = 4.00 ft	1	0.010	0.010	2.49	1.14	2.49	277.08	249.38	1.23	1.00	1.64	159.30	159.30
Dsgn. L = 4.00 ft	1	0.034	0.016	1.14	-8.44	8.44	277.08	249.38	1.88	1.00	2.49	159.30	159.30
Dsgn. L = 0.19 ft	1	0.037	0.028	-0.00	-9.24	9.24	277.08	249.38	1.03	1.00	4.39	159.30	159.30
Dsgn. L = 3.80 ft	2	0.037	0.021	2.96	-9.24	9.24	277.08	249.38	2.14	1.00	3.29	159.30	159.30
Dsgn. L = 4.01 ft	2	0.031	0.020	7.63	2.96	7.63	277.08	249.38	1.31	1.00	3.13	159.30	159.30
Dsgn. L = 4.01 ft	2	0.031	0.007	7.63	4.00	7.63	277.08	249.38	1.22	1.00	1.07	159.30	159.30
Dsgn. L = 4.01 ft	2	0.032	0.019	4.00	-7.92	7.92	277.08	249.38	2.15	1.00	3.06	159.30	159.30
Dsgn. L = 4.00 ft	3	0.032	0.013		-7.92	7.92	277.08	249.38	1.00	1.00	2.06	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.48 ft	1	0.010	0.011	2.47		2.47	277.08	249.38	1.71	1.00	1.70	159.30	159.30
Dsgn. L = 4.00 ft	1	0.010	0.010	2.49	1.14	2.49	277.08	249.38	1.23	1.00	1.64	159.30	159.30
Dsgn. L = 4.00 ft	1	0.034	0.016	1.14	-8.44	8.44	277.08	249.38	1.88	1.00	2.49	159.30	159.30
Dsgn. L = 0.19 ft	1	0.037	0.028	-0.00	-9.24	9.24	277.08	249.38	1.03	1.00	4.39	159.30	159.30
Dsgn. L = 3.80 ft	2	0.037	0.021	2.96	-9.24	9.24	277.08	249.38	2.14	1.00	3.29	159.30	159.30
Dsgn. L = 4.01 ft	2	0.031	0.020	7.63	2.96	7.63	277.08	249.38	1.31	1.00	3.13	159.30	159.30
Dsgn. L = 4.01 ft	2	0.031	0.007	7.63	4.00	7.63	277.08	249.38	1.22	1.00	1.07	159.30	159.30
Dsgn. L = 4.01 ft	2	0.032	0.019	4.00	-7.92	7.92	277.08	249.38	2.15	1.00	3.06	159.30	159.30
Dsgn. L = 4.00 ft	3	0.032	0.013		-7.92	7.92	277.08	249.38	1.00	1.00	2.06	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.017	0.018	4.20		4.20	277.08	249.38	1.71	1.00	2.86	159.30	159.30
Dsgn. L = 4.00 ft	1	0.017	0.018	4.25	3.70	4.25	277.08	249.38	1.04	1.00	2.80	159.30	159.30
Dsgn. L = 4.00 ft	1	0.036	0.020	3.70	-8.87	8.87	277.08	249.38	2.17	1.00	3.25	159.30	159.30
Dsgn. L = 0.19 ft	1	0.040	0.038	-0.00	-9.99	9.99	277.08	249.38	1.03	1.00	6.11	159.30	159.30
Dsgn. L = 3.80 ft	2	0.040	0.024	4.31	-9.99	9.99	277.08	249.38	2.17	1.00	3.84	159.30	159.30
Dsgn. L = 4.01 ft	2	0.030	0.023	7.38	4.31	7.38	277.08	249.38	1.19	1.00	3.68	159.30	159.30
Dsgn. L = 4.01 ft	2	0.030	0.015	7.38	-1.71	7.38	277.08	249.38	1.90	1.00	2.37	159.30	159.30
Dsgn. L = 4.01 ft	2	0.092	0.037	-0.00	-22.96	22.96	277.08	249.38	1.60	1.00	5.82	159.30	159.30
Dsgn. L = 4.00 ft	3	0.092	0.037		-22.96	22.96	277.08	249.38	1.00	1.00	5.82	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.007	0.007	1.70		1.70	277.08	249.38	1.70	1.00	1.17	159.30	159.30
Dsgn. L = 4.00 ft	1	0.022	0.012	1.70	-5.56	5.56	277.08	249.38	2.16	1.00	1.91	159.30	159.30
Dsgn. L = 4.00 ft	1	0.100	0.031	-0.00	-24.89	24.89	277.08	249.38	1.46	1.00	4.94	159.30	159.30
Dsgn. L = 0.19 ft	1	0.106	0.062	-0.00	-26.33	26.33	277.08	249.38	1.02	1.00	9.83	159.30	159.30
Dsgn. L = 3.80 ft	2	0.106	0.062	10.70	-26.33	26.33	277.08	249.38	2.16	1.00	9.83	159.30	159.30
Dsgn. L = 4.01 ft	2	0.107	0.061	26.63	10.70	26.63	277.08	249.38	1.31	1.00	9.67	159.30	159.30
Dsgn. L = 4.01 ft	2	0.107	0.024	26.63	19.14	26.63	277.08	249.38	1.12	1.00	3.84	159.30	159.30
Dsgn. L = 4.01 ft	2	0.077	0.049	19.14	-11.76	19.14	277.08	249.38	2.14	1.00	7.80	159.30	159.30
Dsgn. L = 4.00 ft	3	0.047	0.019		-11.76	11.76	277.08	249.38	1.00	1.00	3.02	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.009	0.010	2.23		2.23	277.08	249.38	1.71	1.00	1.53	159.30	159.30
Dsgn. L = 4.00 ft	1	0.014	0.010	2.23	-3.59	3.59	277.08	249.38	2.24	1.00	1.55	159.30	159.30
Dsgn. L = 4.00 ft	1	0.086	0.029	-0.00	-21.48	21.48	277.08	249.38	1.52	1.00	4.58	159.30	159.30
Dsgn. L = 0.19 ft	1	0.092	0.056	-0.00	-22.86	22.86	277.08	249.38	1.02	1.00	8.90	159.30	159.30
Dsgn. L = 3.80 ft	2	0.092	0.056	10.66	-22.86	22.86	277.08	249.38	2.17	1.00	8.90	159.30	159.30
Dsgn. L = 4.01 ft	2	0.092	0.055	22.87	10.66	22.87	277.08	249.38	1.27	1.00	8.74	159.30	159.30
Dsgn. L = 4.01 ft	2	0.092	0.018	22.87	11.66	22.87	277.08	249.38	1.23	1.00	2.92	159.30	159.30
Dsgn. L = 4.01 ft	2	0.092	0.055	11.66	-22.96	22.96	277.08	249.38	2.14	1.00	8.73	159.30	159.30
Dsgn. L = 4.00 ft	3	0.092	0.037		-22.96	22.96	277.08	249.38	1.00	1.00	5.82	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.034	0.037	8.59		8.59	277.08	249.38	1.71	1.00	5.82	159.30	159.30
Dsgn. L = 4.00 ft	1	0.035	0.036	8.82	8.59	8.82	277.08	249.38	1.00	1.00	5.76	159.30	159.30
Dsgn. L = 4.00 ft	1	0.057	0.037	8.78	-14.29	14.29	277.08	249.38	2.21	1.00	5.89	159.30	159.30
Dsgn. L = 0.19 ft	1	0.066	0.072	-0.00	-16.39	16.39	277.08	249.38	1.04	1.00	11.55	159.30	159.30
Dsgn. L = 3.80 ft	2	0.066	0.031	2.13	-16.39	16.39	277.08	249.38	1.84	1.00	4.96	159.30	159.30
Dsgn. L = 4.01 ft	2	0.039	0.030	9.66	2.13	9.66	277.08	249.38	1.44	1.00	4.80	159.30	159.30
Dsgn. L = 4.01 ft	2	0.039	0.011	9.66	5.03	9.66	277.08	249.38	1.22	1.00	1.77	159.30	159.30
Dsgn. L = 4.01 ft	2	0.047	0.027	5.03	-11.76	11.76	277.08	249.38	2.13	1.00	4.28	159.30	159.30
Dsgn. L = 4.00 ft	3	0.047	0.019		-11.76	11.76	277.08	249.38	1.00	1.00	3.02	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.037	0.039	9.12		9.12	277.08	249.38	1.71	1.00	6.18	159.30	159.30
Dsgn. L = 4.00 ft	1	0.043	0.038	10.75	9.12	10.75	277.08	249.38	1.06	1.00	6.12	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B29**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	1	0.044	0.035	10.75	-10.89	10.89	277.08	249.38	2.26	1.00	5.53	159.30	159.30
Dsgn. L = 0.19 ft	1	0.052	0.070	-0.00	-12.92	12.92	277.08	249.38	1.05	1.00	11.19	159.30	159.30
Dsgn. L = 3.80 ft	2	0.052	0.025	2.08	-12.92	12.92	277.08	249.38	1.88	1.00	4.03	159.30	159.30
Dsgn. L = 4.01 ft	2	0.024	0.024	5.89	2.08	5.89	277.08	249.38	1.33	1.00	3.87	159.30	159.30
Dsgn. L = 4.01 ft	2	0.024	0.014	5.89	-2.45	5.89	277.08	249.38	2.13	1.00	2.18	159.30	159.30
Dsgn. L = 4.01 ft	2	0.092	0.037	-0.00	-22.96	22.96	277.08	249.38	1.56	1.00	5.82	159.30	159.30
Dsgn. L = 4.00 ft	3	0.092	0.037	-0.00	-22.96	22.96	277.08	249.38	1.00	1.00	5.82	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.027	0.028	6.62		6.62	277.08	249.38	1.71	1.00	4.49	159.30	159.30
Dsgn. L = 4.00 ft	1	0.027	0.028	6.64	1.49	6.64	277.08	249.38	1.42	1.00	4.43	159.30	159.30
Dsgn. L = 4.00 ft	1	0.108	0.045	1.49	-26.90	26.90	277.08	249.38	1.76	1.00	7.22	159.30	159.30
Dsgn. L = 0.19 ft	1	0.117	0.081	-0.00	-29.26	29.26	277.08	249.38	1.02	1.00	12.88	159.30	159.30
Dsgn. L = 3.80 ft	2	0.117	0.063	8.48	-29.26	29.26	277.08	249.38	2.07	1.00	10.01	159.30	159.30
Dsgn. L = 4.01 ft	2	0.101	0.062	25.15	8.48	25.15	277.08	249.38	1.36	1.00	9.85	159.30	159.30
Dsgn. L = 4.01 ft	2	0.101	0.025	25.15	18.40	25.15	277.08	249.38	1.11	1.00	4.03	159.30	159.30
Dsgn. L = 4.01 ft	2	0.074	0.048	18.40	-11.76	18.40	277.08	249.38	2.14	1.00	7.62	159.30	159.30
Dsgn. L = 4.00 ft	3	0.047	0.019	-0.00	-11.76	11.76	277.08	249.38	1.00	1.00	3.02	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.48 ft	1	0.029	0.030	7.15		7.15	277.08	249.38	1.71	1.00	4.85	159.30	159.30
Dsgn. L = 4.00 ft	1	0.029	0.030	7.19	3.46	7.19	277.08	249.38	1.24	1.00	4.79	159.30	159.30
Dsgn. L = 4.00 ft	1	0.094	0.043	3.46	-23.50	23.50	277.08	249.38	1.88	1.00	6.86	159.30	159.30
Dsgn. L = 0.19 ft	1	0.103	0.079	-0.00	-25.78	25.78	277.08	249.38	1.03	1.00	12.52	159.30	159.30
Dsgn. L = 3.80 ft	2	0.103	0.057	8.43	-25.78	25.78	277.08	249.38	2.14	1.00	9.09	159.30	159.30
Dsgn. L = 4.01 ft	2	0.086	0.056	21.38	8.43	21.38	277.08	249.38	1.32	1.00	8.93	159.30	159.30
Dsgn. L = 4.01 ft	2	0.086	0.019	21.38	10.92	21.38	277.08	249.38	1.23	1.00	3.10	159.30	159.30
Dsgn. L = 4.01 ft	2	0.092	0.054	10.92	-22.96	22.96	277.08	249.38	2.13	1.00	8.55	159.30	159.30
Dsgn. L = 4.00 ft	3	0.092	0.037	-0.00	-22.96	22.96	277.08	249.38	1.00	1.00	5.82	159.30	159.30
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 1.48 ft	1	0.015	0.016	3.67		3.67	277.08	249.38	1.71	1.00	2.51	159.30	159.30
Dsgn. L = 4.00 ft	1	0.015	0.015	3.69	1.73	3.69	277.08	249.38	1.24	1.00	2.44	159.30	159.30
Dsgn. L = 4.00 ft	1	0.049	0.023	1.73	-12.28	12.28	277.08	249.38	1.88	1.00	3.60	159.30	159.30
Dsgn. L = 0.19 ft	1	0.054	0.041	-0.00	-13.46	13.46	277.08	249.38	1.03	1.00	6.47	159.30	159.30
Dsgn. L = 3.80 ft	2	0.054	0.030	4.36	-13.46	13.46	277.08	249.38	2.14	1.00	4.77	159.30	159.30
Dsgn. L = 4.01 ft	2	0.045	0.029	11.14	4.36	11.14	277.08	249.38	1.31	1.00	4.61	159.30	159.30
Dsgn. L = 4.01 ft	2	0.045	0.010	11.14	5.77	11.14	277.08	249.38	1.22	1.00	1.59	159.30	159.30
Dsgn. L = 4.01 ft	2	0.047	0.028	5.77	-11.76	11.76	277.08	249.38	2.14	1.00	4.46	159.30	159.30
Dsgn. L = 4.00 ft	3	0.047	0.019	-0.00	-11.76	11.76	277.08	249.38	1.00	1.00	3.02	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.012	0.013	3.01		3.01	277.08	249.38	1.71	1.00	2.06	159.30	159.30
Dsgn. L = 4.00 ft	1	0.013	0.013	3.16	3.01	3.16	277.08	249.38	1.00	1.00	2.00	159.30	159.30
Dsgn. L = 4.00 ft	1	0.020	0.013	3.11	-5.03	5.03	277.08	249.38	2.23	1.00	2.13	159.30	159.30
Dsgn. L = 0.19 ft	1	0.023	0.025	-0.00	-5.76	5.76	277.08	249.38	1.04	1.00	4.03	159.30	159.30
Dsgn. L = 3.80 ft	2	0.023	0.015	2.91	-5.76	5.76	277.08	249.38	2.20	1.00	2.36	159.30	159.30
Dsgn. L = 4.01 ft	2	0.016	0.014	3.87	2.91	3.87	277.08	249.38	1.09	1.00	2.20	159.30	159.30
Dsgn. L = 4.01 ft	2	0.016	0.012	3.87	-3.48	3.87	277.08	249.38	2.21	1.00	1.93	159.30	159.30
Dsgn. L = 4.01 ft	2	0.077	0.031	-0.00	-19.12	19.12	277.08	249.38	1.49	1.00	4.86	159.30	159.30
Dsgn. L = 4.00 ft	3	0.077	0.031	-0.00	-19.12	19.12	277.08	249.38	1.00	1.00	4.86	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.002	0.002	0.50		0.50	277.08	249.38	1.67	1.00	0.37	159.30	159.30
Dsgn. L = 4.00 ft	1	0.025	0.011	0.50	-6.15	6.15	277.08	249.38	1.81	1.00	1.76	159.30	159.30
Dsgn. L = 4.00 ft	1	0.084	0.024	-0.00	-21.05	21.05	277.08	249.38	1.41	1.00	3.82	159.30	159.30
Dsgn. L = 0.19 ft	1	0.089	0.052	-0.00	-22.11	22.11	277.08	249.38	1.01	1.00	8.35	159.30	159.30
Dsgn. L = 3.80 ft	2	0.089	0.052	9.31	-22.11	22.11	277.08	249.38	2.16	1.00	8.35	159.30	159.30
Dsgn. L = 4.01 ft	2	0.093	0.051	23.12	9.31	23.12	277.08	249.38	1.31	1.00	8.19	159.30	159.30
Dsgn. L = 4.01 ft	2	0.093	0.021	23.12	17.38	23.12	277.08	249.38	1.10	1.00	3.32	159.30	159.30
Dsgn. L = 4.01 ft	2	0.070	0.040	17.38	-7.92	17.38	277.08	249.38	2.11	1.00	6.40	159.30	159.30
Dsgn. L = 4.00 ft	3	0.032	0.013	-0.00	-7.92	7.92	277.08	249.38	1.00	1.00	2.06	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.004	0.005	1.03		1.03	277.08	249.38	1.70	1.00	0.73	159.30	159.30
Dsgn. L = 4.00 ft	1	0.017	0.009	1.03	-4.18	4.18	277.08	249.38	2.09	1.00	1.40	159.30	159.30
Dsgn. L = 4.00 ft	1	0.071	0.022	-0.00	-17.64	17.64	277.08	249.38	1.45	1.00	3.46	159.30	159.30
Dsgn. L = 0.19 ft	1	0.075	0.047	-0.00	-18.63	18.63	277.08	249.38	1.02	1.00	7.42	159.30	159.30
Dsgn. L = 3.80 ft	2	0.075	0.047	9.26	-18.63	18.63	277.08	249.38	2.18	1.00	7.42	159.30	159.30



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B29**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	2	0.078	0.046	19.36	9.26	19.36	277.08	249.38	1.26	1.00	7.26	159.30	159.30
Dsgn. L = 4.01 ft	2	0.078	0.015	19.36	9.90	19.36	277.08	249.38	1.23	1.00	2.47	159.30	159.30
Dsgn. L = 4.01 ft	2	0.077	0.046	9.90	-19.12	19.12	277.08	249.38	2.14	1.00	7.33	159.30	159.30
Dsgn. L = 4.00 ft	3	0.077	0.031		-19.12	19.12	277.08	249.38	1.00	1.00	4.86	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.030	0.032	7.40		7.40	277.08	249.38	1.71	1.00	5.02	159.30	159.30
Dsgn. L = 4.00 ft	1	0.033	0.031	8.19	7.40	8.19	277.08	249.38	1.03	1.00	4.96	159.30	159.30
Dsgn. L = 4.00 ft	1	0.042	0.030	8.19	-10.45	10.45	277.08	249.38	2.24	1.00	4.77	159.30	159.30
Dsgn. L = 0.19 ft	1	0.049	0.059	-0.00	-12.17	12.17	277.08	249.38	1.04	1.00	9.47	159.30	159.30
Dsgn. L = 3.80 ft	2	0.049	0.022	0.73	-12.17	12.17	277.08	249.38	1.75	1.00	3.48	159.30	159.30
Dsgn. L = 4.01 ft	2	0.025	0.021	6.15	0.73	6.15	277.08	249.38	1.53	1.00	3.32	159.30	159.30
Dsgn. L = 4.01 ft	2	0.025	0.008	6.15	3.26	6.15	277.08	249.38	1.21	1.00	1.25	159.30	159.30
Dsgn. L = 4.01 ft	2	0.032	0.018	3.26	-7.92	7.92	277.08	249.38	2.13	1.00	2.88	159.30	159.30
Dsgn. L = 4.00 ft	3	0.032	0.013		-7.92	7.92	277.08	249.38	1.00	1.00	2.06	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.032	0.034	7.93		7.93	277.08	249.38	1.71	1.00	5.38	159.30	159.30
Dsgn. L = 4.00 ft	1	0.041	0.033	10.16	7.93	10.16	277.08	249.38	1.09	1.00	5.32	159.30	159.30
Dsgn. L = 4.00 ft	1	0.041	0.028	10.16	-7.04	10.16	277.08	249.38	2.19	1.00	4.41	159.30	159.30
Dsgn. L = 0.19 ft	1	0.035	0.057	-0.00	-8.69	8.69	277.08	249.38	1.06	1.00	9.11	159.30	159.30
Dsgn. L = 3.80 ft	2	0.035	0.016	0.69	-8.69	8.69	277.08	249.38	1.78	1.00	2.55	159.30	159.30
Dsgn. L = 4.01 ft	2	0.010	0.015	2.38	0.69	2.38	277.08	249.38	1.34	1.00	2.39	159.30	159.30
Dsgn. L = 4.01 ft	2	0.017	0.011	2.38	-4.22	4.22	277.08	249.38	2.22	1.00	1.74	159.30	159.30
Dsgn. L = 4.01 ft	2	0.077	0.031	-0.00	-19.12	19.12	277.08	249.38	1.46	1.00	4.86	159.30	159.30
Dsgn. L = 4.00 ft	3	0.077	0.031		-19.12	19.12	277.08	249.38	1.00	1.00	4.86	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.022	0.023	5.42		5.42	277.08	249.38	1.71	1.00	3.69	159.30	159.30
Dsgn. L = 4.00 ft	1	0.022	0.023	5.44	0.90	5.44	277.08	249.38	1.46	1.00	3.63	159.30	159.30
Dsgn. L = 4.00 ft	1	0.092	0.038	0.90	-23.06	23.06	277.08	249.38	1.74	1.00	6.10	159.30	159.30
Dsgn. L = 0.19 ft	1	0.100	0.068	-0.00	-25.04	25.04	277.08	249.38	1.02	1.00	10.80	159.30	159.30
Dsgn. L = 3.80 ft	2	0.100	0.054	7.08	-25.04	25.04	277.08	249.38	2.06	1.00	8.53	159.30	159.30
Dsgn. L = 4.01 ft	2	0.087	0.053	21.64	7.08	21.64	277.08	249.38	1.37	1.00	8.37	159.30	159.30
Dsgn. L = 4.01 ft	2	0.087	0.022	21.64	16.64	21.64	277.08	249.38	1.10	1.00	3.51	159.30	159.30
Dsgn. L = 4.01 ft	2	0.067	0.039	16.64	-7.92	16.64	277.08	249.38	2.12	1.00	6.22	159.30	159.30
Dsgn. L = 4.00 ft	3	0.032	0.013		-7.92	7.92	277.08	249.38	1.00	1.00	2.06	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.024	0.025	5.96		5.96	277.08	249.38	1.71	1.00	4.05	159.30	159.30
Dsgn. L = 4.00 ft	1	0.024	0.025	5.99	2.87	5.99	277.08	249.38	1.24	1.00	3.99	159.30	159.30
Dsgn. L = 4.00 ft	1	0.079	0.036	2.87	-19.65	19.65	277.08	249.38	1.88	1.00	5.74	159.30	159.30
Dsgn. L = 0.19 ft	1	0.086	0.066	-0.00	-21.56	21.56	277.08	249.38	1.03	1.00	10.45	159.30	159.30
Dsgn. L = 3.80 ft	2	0.086	0.048	7.03	-21.56	21.56	277.08	249.38	2.14	1.00	7.61	159.30	159.30
Dsgn. L = 4.01 ft	2	0.072	0.047	17.87	7.03	17.87	277.08	249.38	1.32	1.00	7.45	159.30	159.30
Dsgn. L = 4.01 ft	2	0.072	0.016	17.87	9.15	17.87	277.08	249.38	1.23	1.00	2.58	159.30	159.30
Dsgn. L = 4.01 ft	2	0.077	0.045	9.15	-19.12	19.12	277.08	249.38	2.13	1.00	7.15	159.30	159.30
Dsgn. L = 4.00 ft	3	0.077	0.031		-19.12	19.12	277.08	249.38	1.00	1.00	4.86	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.014	0.015	3.38		3.38	277.08	249.38	1.71	1.00	2.31	159.30	159.30
Dsgn. L = 4.00 ft	1	0.014	0.014	3.45	3.30	3.45	277.08	249.38	1.01	1.00	2.25	159.30	159.30
Dsgn. L = 4.00 ft	1	0.025	0.016	3.30	-6.23	6.23	277.08	249.38	2.20	1.00	2.48	159.30	159.30
Dsgn. L = 0.19 ft	1	0.028	0.029	-0.00	-7.08	7.08	277.08	249.38	1.04	1.00	4.68	159.30	159.30
Dsgn. L = 3.80 ft	2	0.028	0.018	3.35	-7.08	7.08	277.08	249.38	2.19	1.00	2.83	159.30	159.30
Dsgn. L = 4.01 ft	2	0.020	0.017	4.96	3.35	4.96	277.08	249.38	1.13	1.00	2.67	159.30	159.30
Dsgn. L = 4.01 ft	2	0.020	0.013	4.96	-2.93	4.96	277.08	249.38	2.15	1.00	2.06	159.30	159.30
Dsgn. L = 4.01 ft	2	0.081	0.032	-0.00	-20.32	20.32	277.08	249.38	1.53	1.00	5.16	159.30	159.30
Dsgn. L = 4.00 ft	3	0.081	0.032		-20.32	20.32	277.08	249.38	1.00	1.00	5.16	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.48 ft	1	0.004	0.004	0.87		0.87	277.08	249.38	1.69	1.00	0.62	159.30	159.30
Dsgn. L = 4.00 ft	1	0.024	0.011	0.87	-5.97	5.97	277.08	249.38	1.91	1.00	1.80	159.30	159.30
Dsgn. L = 4.00 ft	1	0.089	0.026	-0.00	-22.25	22.25	277.08	249.38	1.43	1.00	4.17	159.30	159.30
Dsgn. L = 0.19 ft	1	0.094	0.055	-0.00	-23.43	23.43	277.08	249.38	1.01	1.00	8.81	159.30	159.30
Dsgn. L = 3.80 ft	2	0.094	0.055	9.74	-23.43	23.43	277.08	249.38	2.16	1.00	8.81	159.30	159.30
Dsgn. L = 4.01 ft	2	0.097	0.054	24.22	9.74	24.22	277.08	249.38	1.31	1.00	8.65	159.30	159.30
Dsgn. L = 4.01 ft	2	0.097	0.022	24.22	17.93	24.22	277.08	249.38	1.11	1.00	3.49	159.30	159.30
Dsgn. L = 4.01 ft	2	0.072	0.043	17.93	-9.12	17.93	277.08	249.38	2.12	1.00	6.84	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B29**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	3		0.037	0.015		-9.12	9.12	277.08	249.38	1.00	1.00	2.36	159.30	159.30
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 1.48 ft	1		0.006	0.006	1.41		1.41	277.08	249.38	1.70	1.00	0.98	159.30	159.30
Dsgn. L = 4.00 ft	1		0.016	0.009	1.41	-4.00	4.00	277.08	249.38	2.18	1.00	1.45	159.30	159.30
Dsgn. L = 4.00 ft	1		0.076	0.024	-0.00	-18.84	18.84	277.08	249.38	1.48	1.00	3.81	159.30	159.30
Dsgn. L = 0.19 ft	1		0.080	0.049	-0.00	-19.95	19.95	277.08	249.38	1.02	1.00	7.88	159.30	159.30
Dsgn. L = 3.80 ft	2		0.080	0.049	9.70	-19.95	19.95	277.08	249.38	2.18	1.00	7.88	159.30	159.30
Dsgn. L = 4.01 ft	2		0.082	0.048	20.45	9.70	20.45	277.08	249.38	1.26	1.00	7.72	159.30	159.30
Dsgn. L = 4.01 ft	2		0.082	0.016	20.45	10.45	20.45	277.08	249.38	1.23	1.00	2.60	159.30	159.30
Dsgn. L = 4.01 ft	2		0.081	0.049	10.45	-20.32	20.32	277.08	249.38	2.14	1.00	7.77	159.30	159.30
Dsgn. L = 4.00 ft	3		0.081	0.032		-20.32	20.32	277.08	249.38	1.00	1.00	5.16	159.30	159.30
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 1.48 ft	1		0.031	0.033	7.77		7.77	277.08	249.38	1.71	1.00	5.27	159.30	159.30
Dsgn. L = 4.00 ft	1		0.034	0.033	8.37	7.77	8.37	277.08	249.38	1.02	1.00	5.21	159.30	159.30
Dsgn. L = 4.00 ft	1		0.047	0.032	8.37	-11.65	11.65	277.08	249.38	2.23	1.00	5.12	159.30	159.30
Dsgn. L = 0.19 ft	1		0.054	0.064	-0.00	-13.49	13.49	277.08	249.38	1.04	1.00	10.12	159.30	159.30
Dsgn. L = 3.80 ft	2		0.054	0.025	1.17	-13.49	13.49	277.08	249.38	1.78	1.00	3.94	159.30	159.30
Dsgn. L = 4.01 ft	2		0.029	0.024	7.24	1.17	7.24	277.08	249.38	1.49	1.00	3.78	159.30	159.30
Dsgn. L = 4.01 ft	2		0.029	0.009	7.24	3.81	7.24	277.08	249.38	1.21	1.00	1.41	159.30	159.30
Dsgn. L = 4.01 ft	2		0.037	0.021	3.81	-9.12	9.12	277.08	249.38	2.13	1.00	3.32	159.30	159.30
Dsgn. L = 4.00 ft	3		0.037	0.015		-9.12	9.12	277.08	249.38	1.00	1.00	2.36	159.30	159.30
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 1.48 ft	1		0.033	0.035	8.30		8.30	277.08	249.38	1.71	1.00	5.63	159.30	159.30
Dsgn. L = 4.00 ft	1		0.041	0.035	10.34	8.30	10.34	277.08	249.38	1.08	1.00	5.57	159.30	159.30
Dsgn. L = 4.00 ft	1		0.041	0.030	10.34	-8.24	10.34	277.08	249.38	2.21	1.00	4.76	159.30	159.30
Dsgn. L = 0.19 ft	1		0.040	0.061	-0.00	-10.01	10.01	277.08	249.38	1.05	1.00	9.76	159.30	159.30
Dsgn. L = 3.80 ft	2		0.040	0.019	1.12	-10.01	10.01	277.08	249.38	1.82	1.00	3.01	159.30	159.30
Dsgn. L = 4.01 ft	2		0.014	0.018	3.48	1.12	3.48	277.08	249.38	1.34	1.00	2.85	159.30	159.30
Dsgn. L = 4.01 ft	2		0.015	0.012	3.48	-3.67	3.67	277.08	249.38	2.29	1.00	1.88	159.30	159.30
Dsgn. L = 4.01 ft	2		0.081	0.032	-0.00	-20.32	20.32	277.08	249.38	1.50	1.00	5.16	159.30	159.30
Dsgn. L = 4.00 ft	3		0.081	0.032		-20.32	20.32	277.08	249.38	1.00	1.00	5.16	159.30	159.30
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 1.48 ft	1		0.023	0.025	5.80		5.80	277.08	249.38	1.71	1.00	3.94	159.30	159.30
Dsgn. L = 4.00 ft	1		0.023	0.024	5.81	1.08	5.81	277.08	249.38	1.44	1.00	3.88	159.30	159.30
Dsgn. L = 4.00 ft	1		0.097	0.040	1.08	-24.26	24.26	277.08	249.38	1.74	1.00	6.45	159.30	159.30
Dsgn. L = 0.19 ft	1		0.106	0.072	-0.00	-26.36	26.36	277.08	249.38	1.02	1.00	11.45	159.30	159.30
Dsgn. L = 3.80 ft	2		0.106	0.056	7.52	-26.36	26.36	277.08	249.38	2.07	1.00	9.00	159.30	159.30
Dsgn. L = 4.01 ft	2		0.091	0.055	22.73	7.52	22.73	277.08	249.38	1.36	1.00	8.84	159.30	159.30
Dsgn. L = 4.01 ft	2		0.091	0.023	22.73	17.19	22.73	277.08	249.38	1.10	1.00	3.67	159.30	159.30
Dsgn. L = 4.01 ft	2		0.069	0.042	17.19	-9.12	17.19	277.08	249.38	2.12	1.00	6.66	159.30	159.30
Dsgn. L = 4.00 ft	3		0.037	0.015		-9.12	9.12	277.08	249.38	1.00	1.00	2.36	159.30	159.30
+1.20D+L+0.50S+W+1.60H, LL C														
Dsgn. L = 1.48 ft	1		0.025	0.027	6.33		6.33	277.08	249.38	1.71	1.00	4.30	159.30	159.30
Dsgn. L = 4.00 ft	1		0.026	0.027	6.37	3.05	6.37	277.08	249.38	1.24	1.00	4.24	159.30	159.30
Dsgn. L = 4.00 ft	1		0.084	0.038	3.05	-20.85	20.85	277.08	249.38	1.88	1.00	6.09	159.30	159.30
Dsgn. L = 0.19 ft	1		0.092	0.070	-0.00	-22.88	22.88	277.08	249.38	1.03	1.00	11.09	159.30	159.30
Dsgn. L = 3.80 ft	2		0.092	0.051	7.47	-22.88	22.88	277.08	249.38	2.14	1.00	8.07	159.30	159.30
Dsgn. L = 4.01 ft	2		0.076	0.050	18.97	7.47	18.97	277.08	249.38	1.32	1.00	7.91	159.30	159.30
Dsgn. L = 4.01 ft	2		0.076	0.017	18.97	9.71	18.97	277.08	249.38	1.23	1.00	2.74	159.30	159.30
Dsgn. L = 4.01 ft	2		0.081	0.048	9.71	-20.32	20.32	277.08	249.38	2.13	1.00	7.58	159.30	159.30
Dsgn. L = 4.00 ft	3		0.081	0.032		-20.32	20.32	277.08	249.38	1.00	1.00	5.16	159.30	159.30
+0.90D+W+1.60H														
Dsgn. L = 1.48 ft	1		0.007	0.008	1.86		1.86	277.08	249.38	1.71	1.00	1.28	159.30	159.30
Dsgn. L = 4.00 ft	1		0.007	0.008	1.87	0.86	1.87	277.08	249.38	1.23	1.00	1.23	159.30	159.30
Dsgn. L = 4.00 ft	1		0.025	0.012	0.86	-6.33	6.33	277.08	249.38	1.88	1.00	1.87	159.30	159.30
Dsgn. L = 0.19 ft	1		0.028	0.021	-0.00	-6.93	6.93	277.08	249.38	1.03	1.00	3.30	159.30	159.30
Dsgn. L = 3.80 ft	2		0.028	0.015	2.22	-6.93	6.93	277.08	249.38	2.14	1.00	2.47	159.30	159.30
Dsgn. L = 4.01 ft	2		0.023	0.015	5.72	2.22	5.72	277.08	249.38	1.31	1.00	2.35	159.30	159.30
Dsgn. L = 4.01 ft	2		0.023	0.005	5.72	3.00	5.72	277.08	249.38	1.22	1.00	0.80	159.30	159.30
Dsgn. L = 4.01 ft	2		0.024	0.014	3.00	-5.94	5.94	277.08	249.38	2.15	1.00	2.30	159.30	159.30
Dsgn. L = 4.00 ft	3		0.024	0.010		-5.94	5.94	277.08	249.38	1.00	1.00	1.55	159.30	159.30
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 1.48 ft	1		0.013	0.014	3.16		3.16	277.08	249.38	1.71	1.00	2.16	159.30	159.30



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B29**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	1	0.013	0.013	3.27	3.16	3.27	277.08	249.38	1.00	1.00	2.10	159.30	159.30
Dsgn. L = 4.00 ft	1	0.022	0.014	3.19	-5.51	5.51	277.08	249.38	2.21	1.00	2.27	159.30	159.30
Dsgn. L = 0.19 ft	1	0.025	0.027	-0.00	-6.29	6.29	277.08	249.38	1.04	1.00	4.29	159.30	159.30
Dsgn. L = 3.80 ft	2	0.025	0.016	3.09	-6.29	6.29	277.08	249.38	2.19	1.00	2.55	159.30	159.30
Dsgn. L = 4.01 ft	2	0.017	0.015	4.30	3.09	4.30	277.08	249.38	1.11	1.00	2.39	159.30	159.30
Dsgn. L = 4.01 ft	2	0.017	0.012	4.30	-3.26	4.30	277.08	249.38	2.18	1.00	1.98	159.30	159.30
Dsgn. L = 4.01 ft	2	0.079	0.031	-0.00	-19.60	19.60	277.08	249.38	1.51	1.00	4.98	159.30	159.30
Dsgn. L = 4.00 ft	3	0.079	0.031	-0.00	-19.60	19.60	277.08	249.38	1.00	1.00	4.98	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.48 ft	1	0.003	0.003	0.65		0.65	277.08	249.38	1.68	1.00	0.47	159.30	159.30
Dsgn. L = 4.00 ft	1	0.024	0.011	0.65	-6.08	6.08	277.08	249.38	1.85	1.00	1.78	159.30	159.30
Dsgn. L = 4.00 ft	1	0.086	0.025	-0.00	-21.53	21.53	277.08	249.38	1.42	1.00	3.96	159.30	159.30
Dsgn. L = 0.19 ft	1	0.091	0.054	-0.00	-22.64	22.64	277.08	249.38	1.01	1.00	8.53	159.30	159.30
Dsgn. L = 3.80 ft	2	0.091	0.054	9.48	-22.64	22.64	277.08	249.38	2.16	1.00	8.53	159.30	159.30
Dsgn. L = 4.01 ft	2	0.094	0.053	23.56	9.48	23.56	277.08	249.38	1.31	1.00	8.37	159.30	159.30
Dsgn. L = 4.01 ft	2	0.094	0.021	23.56	17.60	23.56	277.08	249.38	1.11	1.00	3.39	159.30	159.30
Dsgn. L = 4.01 ft	2	0.071	0.041	17.60	-8.40	17.60	277.08	249.38	2.12	1.00	6.58	159.30	159.30
Dsgn. L = 4.00 ft	3	0.034	0.014	-8.40	8.40	8.40	277.08	249.38	1.00	1.00	2.18	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.48 ft	1	0.005	0.005	1.18		1.18	277.08	249.38	1.70	1.00	0.83	159.30	159.30
Dsgn. L = 4.00 ft	1	0.016	0.009	1.18	-4.11	4.11	277.08	249.38	2.16	1.00	1.42	159.30	159.30
Dsgn. L = 4.00 ft	1	0.073	0.023	-0.00	-18.12	18.12	277.08	249.38	1.46	1.00	3.60	159.30	159.30
Dsgn. L = 0.19 ft	1	0.077	0.048	-0.00	-19.16	19.16	277.08	249.38	1.02	1.00	7.61	159.30	159.30
Dsgn. L = 3.80 ft	2	0.077	0.048	9.43	-19.16	19.16	277.08	249.38	2.18	1.00	7.61	159.30	159.30
Dsgn. L = 4.01 ft	2	0.079	0.047	19.79	9.43	19.79	277.08	249.38	1.26	1.00	7.45	159.30	159.30
Dsgn. L = 4.01 ft	2	0.079	0.016	19.79	10.12	19.79	277.08	249.38	1.23	1.00	2.52	159.30	159.30
Dsgn. L = 4.01 ft	2	0.079	0.047	10.12	-19.60	19.60	277.08	249.38	2.14	1.00	7.51	159.30	159.30
Dsgn. L = 4.00 ft	3	0.079	0.031	-19.60	19.60	19.60	277.08	249.38	1.00	1.00	4.98	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.48 ft	1	0.030	0.032	7.55		7.55	277.08	249.38	1.71	1.00	5.12	159.30	159.30
Dsgn. L = 4.00 ft	1	0.033	0.032	8.26	7.55	8.26	277.08	249.38	1.03	1.00	5.06	159.30	159.30
Dsgn. L = 4.00 ft	1	0.044	0.031	8.26	-10.93	10.93	277.08	249.38	2.24	1.00	4.91	159.30	159.30
Dsgn. L = 0.19 ft	1	0.051	0.061	-0.00	-12.70	12.70	277.08	249.38	1.04	1.00	9.73	159.30	159.30
Dsgn. L = 3.80 ft	2	0.051	0.023	0.91	-12.70	12.70	277.08	249.38	1.76	1.00	3.66	159.30	159.30
Dsgn. L = 4.01 ft	2	0.026	0.022	6.59	0.91	6.59	277.08	249.38	1.51	1.00	3.50	159.30	159.30
Dsgn. L = 4.01 ft	2	0.026	0.008	6.59	3.48	6.59	277.08	249.38	1.21	1.00	1.32	159.30	159.30
Dsgn. L = 4.01 ft	2	0.034	0.019	3.48	-8.40	8.40	277.08	249.38	2.13	1.00	3.05	159.30	159.30
Dsgn. L = 4.00 ft	3	0.034	0.014	-8.40	8.40	8.40	277.08	249.38	1.00	1.00	2.18	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.48 ft	1	0.032	0.034	8.08		8.08	277.08	249.38	1.71	1.00	5.48	159.30	159.30
Dsgn. L = 4.00 ft	1	0.041	0.034	10.23	8.08	10.23	277.08	249.38	1.08	1.00	5.42	159.30	159.30
Dsgn. L = 4.00 ft	1	0.041	0.029	10.23	-7.52	10.23	277.08	249.38	2.19	1.00	4.55	159.30	159.30
Dsgn. L = 0.19 ft	1	0.037	0.059	-0.00	-9.22	9.22	277.08	249.38	1.06	1.00	9.37	159.30	159.30
Dsgn. L = 3.80 ft	2	0.037	0.017	0.86	-9.22	9.22	277.08	249.38	1.80	1.00	2.73	159.30	159.30
Dsgn. L = 4.01 ft	2	0.011	0.016	2.82	0.86	2.82	277.08	249.38	1.34	1.00	2.57	159.30	159.30
Dsgn. L = 4.01 ft	2	0.016	0.011	2.82	-4.00	4.00	277.08	249.38	2.25	1.00	1.80	159.30	159.30
Dsgn. L = 4.01 ft	2	0.079	0.031	-0.00	-19.60	19.60	277.08	249.38	1.47	1.00	4.98	159.30	159.30
Dsgn. L = 4.00 ft	3	0.079	0.031	-19.60	19.60	19.60	277.08	249.38	1.00	1.00	4.98	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.48 ft	1	0.022	0.024	5.57		5.57	277.08	249.38	1.71	1.00	3.79	159.30	159.30
Dsgn. L = 4.00 ft	1	0.022	0.023	5.59	0.97	5.59	277.08	249.38	1.45	1.00	3.73	159.30	159.30
Dsgn. L = 4.00 ft	1	0.094	0.039	0.97	-23.54	23.54	277.08	249.38	1.74	1.00	6.24	159.30	159.30
Dsgn. L = 0.19 ft	1	0.103	0.069	-0.00	-25.56	25.56	277.08	249.38	1.02	1.00	11.06	159.30	159.30
Dsgn. L = 3.80 ft	2	0.103	0.055	7.25	-25.56	25.56	277.08	249.38	2.06	1.00	8.72	159.30	159.30
Dsgn. L = 4.01 ft	2	0.089	0.054	22.08	7.25	22.08	277.08	249.38	1.37	1.00	8.56	159.30	159.30
Dsgn. L = 4.01 ft	2	0.089	0.022	22.08	16.86	22.08	277.08	249.38	1.10	1.00	3.57	159.30	159.30
Dsgn. L = 4.01 ft	2	0.068	0.040	16.86	-8.40	16.86	277.08	249.38	2.12	1.00	6.39	159.30	159.30
Dsgn. L = 4.00 ft	3	0.034	0.014	-8.40	8.40	8.40	277.08	249.38	1.00	1.00	2.18	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.48 ft	1	0.024	0.026	6.11		6.11	277.08	249.38	1.71	1.00	4.15	159.30	159.30
Dsgn. L = 4.00 ft	1	0.025	0.026	6.14	2.94	6.14	277.08	249.38	1.24	1.00	4.09	159.30	159.30
Dsgn. L = 4.00 ft	1	0.081	0.037	2.94	-20.13	20.13	277.08	249.38	1.88	1.00	5.88	159.30	159.30
Dsgn. L = 0.19 ft	1	0.089	0.067	-0.00	-22.09	22.09	277.08	249.38	1.03	1.00	10.70	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B29**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios				Summary of Moment Values					Summary of Shear Values		
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.80 ft	2	0.089	0.049	7.21	-22.09	22.09	277.08	249.38	2.14	1.00	7.79	159.30	159.30
Dsgn. L = 4.01 ft	2	0.073	0.048	18.31	7.21	18.31	277.08	249.38	1.32	1.00	7.63	159.30	159.30
Dsgn. L = 4.01 ft	2	0.073	0.017	18.31	9.37	18.31	277.08	249.38	1.23	1.00	2.65	159.30	159.30
Dsgn. L = 4.01 ft	2	0.079	0.046	9.37	-19.60	19.60	277.08	249.38	2.13	1.00	7.32	159.30	159.30
Dsgn. L = 4.00 ft	3	0.079	0.031		-19.60	19.60	277.08	249.38	1.00	1.00	4.98	159.30	159.30
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 1.48 ft	1	0.007	0.008	1.86		1.86	277.08	249.38	1.71	1.00	1.28	159.30	159.30
Dsgn. L = 4.00 ft	1	0.007	0.008	1.87	0.86	1.87	277.08	249.38	1.23	1.00	1.23	159.30	159.30
Dsgn. L = 4.00 ft	1	0.025	0.012	0.86	-6.33	6.33	277.08	249.38	1.88	1.00	1.87	159.30	159.30
Dsgn. L = 0.19 ft	1	0.028	0.021	-0.00	-6.93	6.93	277.08	249.38	1.03	1.00	3.30	159.30	159.30
Dsgn. L = 3.80 ft	2	0.028	0.015	2.22	-6.93	6.93	277.08	249.38	2.14	1.00	2.47	159.30	159.30
Dsgn. L = 4.01 ft	2	0.023	0.015	5.72	2.22	5.72	277.08	249.38	1.31	1.00	2.35	159.30	159.30
Dsgn. L = 4.01 ft	2	0.023	0.005	5.72	3.00	5.72	277.08	249.38	1.22	1.00	0.80	159.30	159.30
Dsgn. L = 4.01 ft	2	0.024	0.014	3.00	-5.94	5.94	277.08	249.38	2.15	1.00	2.30	159.30	159.30
Dsgn. L = 4.00 ft	3	0.024	0.010		-5.94	5.94	277.08	249.38	1.00	1.00	1.55	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0100	4.513	+D+L+H	-0.0092	6.124
+D+L+H	2	0.0541	8.337		0.0000	6.124
	3	0.0000	8.337	+D+L+H	-0.0366	4.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Max Upward from all Load Conditions	5.096	18.058	15.721	
Max Upward from Load Combinations	5.096	18.058	15.721	
Max Upward from Load Cases	3.679	11.654	9.869	
Max Downward from all Load Conditions (Resis)	-1.331	-1.287	-0.185	
Max Downward from Load Cases (Resisting U <sub>r</sub> )	-1.331	-1.287	-0.185	
+D+H	1.417	6.404	5.852	
+D+L+H, LL Comb Run (**L)	1.776	5.117	12.379	
+D+L+H, LL Comb Run (*L*)	0.086	12.792	9.194	
+D+L+H, LL Comb Run (*LL)	0.446	11.506	15.721	
+D+L+H, LL Comb Run (L**)	4.736	11.669	5.667	
+D+L+H, LL Comb Run (L*L)	5.096	10.382	12.194	
+D+L+H, LL Comb Run (LL*)	3.406	18.058	9.009	
+D+L+H, LL Comb Run (LLL)	3.765	16.771	15.536	
+D+Lr+H, LL Comb Run (**L)	1.417	6.404	5.852	
+D+Lr+H, LL Comb Run (*L*)	1.417	6.404	5.852	
+D+Lr+H, LL Comb Run (*LL)	1.417	6.404	5.852	
+D+Lr+H, LL Comb Run (L**)	1.417	6.404	5.852	
+D+Lr+H, LL Comb Run (L*L)	1.417	6.404	5.852	
+D+Lr+H, LL Comb Run (LL*)	1.417	6.404	5.852	
+D+Lr+H, LL Comb Run (LLL)	1.417	6.404	5.852	
+D+S+H	1.920	8.625	7.927	
+D+0.750Lr+0.750L+H, LL Comb Run (**L)	1.687	5.439	10.747	
+D+0.750Lr+0.750L+H, LL Comb Run (*L*)	0.419	11.195	8.359	
+D+0.750Lr+0.750L+H, LL Comb Run (*LL)	0.689	10.230	13.254	
+D+0.750Lr+0.750L+H, LL Comb Run (L**)	3.907	10.353	5.713	
+D+0.750Lr+0.750L+H, LL Comb Run (L*L)	4.176	9.388	10.609	
+D+0.750Lr+0.750L+H, LL Comb Run (LL*)	2.909	15.144	8.220	
+D+0.750Lr+0.750L+H, LL Comb Run (LLL)	3.178	14.179	13.115	
+D+0.750L+0.750S+H, LL Comb Run (**L)	2.064	7.105	12.304	
+D+0.750L+0.750S+H, LL Comb Run (*L*)	0.796	12.861	9.915	
+D+0.750L+0.750S+H, LL Comb Run (*LL)	1.066	11.896	14.810	
+D+0.750L+0.750S+H, LL Comb Run (L**)	4.284	12.019	7.270	
+D+0.750L+0.750S+H, LL Comb Run (L*L)	4.554	11.054	12.165	
+D+0.750L+0.750S+H, LL Comb Run (LL*)	3.286	16.810	9.776	
+D+0.750L+0.750S+H, LL Comb Run (LLL)	3.556	15.845	14.672	
+D+0.60W+H	1.417	6.404	5.852	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.687	5.439	10.747	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	0.419	11.195	8.359	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	0.689	10.230	13.254	



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B29**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.907	10.353	5.713	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	4.176	9.388	10.609	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	2.909	15.144	8.220	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.178	14.179	13.115	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	2.064	7.105	12.304	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	0.796	12.861	9.915	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.066	11.896	14.810	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.284	12.019	7.270	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.554	11.054	12.165	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.286	16.810	9.776	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.556	15.845	14.672	
+0.60D+0.60W+0.60H	0.850	3.842	3.511	
+D+0.70E+0.60H	1.417	6.404	5.852	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	2.064	7.105	12.304	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	0.796	12.861	9.915	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	1.066	11.896	14.810	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	4.284	12.019	7.270	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	4.554	11.054	12.165	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.286	16.810	9.776	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.556	15.845	14.672	
+0.60D+0.70E+H	0.850	3.842	3.511	
D Only	1.417	6.404	5.852	
L Only, LL Comb Run (**L)	0.360	-1.287	6.527	
L Only, LL Comb Run (*L*)	-1.331	6.389	3.342	
L Only, LL Comb Run (*LL)	-0.971	5.102	9.869	
L Only, LL Comb Run (L**)	3.320	5.265	-0.185	
L Only, LL Comb Run (L*L)	3.679	3.979	6.342	
L Only, LL Comb Run (LL*)	1.989	11.654	3.157	
L Only, LL Comb Run (LLL)	2.348	10.367	9.684	
S Only	0.503	2.222	2.075	
H Only				

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B30**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

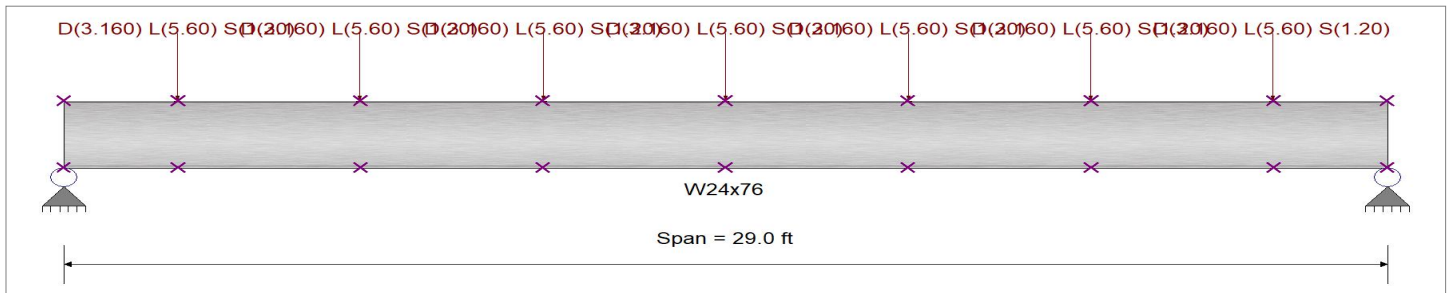
### Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

### Unbraced Lengths

First Brace starts at 2.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 3.160, L = 5.60, S = 1.20 k, Starting at : 2.50 ft and placed every 4.0 ft thereafter

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.489</b> : 1	Maximum Shear Stress Ratio =	<b>0.152</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	366.753 k-ft	Vu : Applied	48.054 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.370 in Ratio =	<b>941</b> >=360.	Span: 1 : L Only
Max Upward Transient Deflection	0 in Ratio =	<b>0</b> <360.0	n/a
Max Downward Total Deflection	0.598 in Ratio =	<b>582</b> >=240.	Span: 1 : +D+L+H
Max Upward Total Deflection	0 in Ratio =	<b>0</b> <240.0	n/a

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	2.49 ft	1	0.056	0.054	42.00		42.00	833.33	750.00	1.69	1.00	17.03	315.48	315.48
Dsgn. L =	3.98 ft	1	0.120	0.053	90.29	42.00	90.29	833.33	750.00	1.27	1.00	16.76	315.48	315.48
Dsgn. L =	3.98 ft	1	0.159	0.038	119.40	90.29	119.40	833.33	750.00	1.11	1.00	11.92	315.48	315.48
Dsgn. L =	4.06 ft	1	0.173	0.022	129.53	119.40	129.53	833.33	750.00	1.03	1.00	7.07	315.48	315.48
Dsgn. L =	3.98 ft	1	0.173	0.008	129.53	119.89	129.53	833.33	750.00	1.03	1.00	2.64	315.48	315.48
Dsgn. L =	3.98 ft	1	0.160	0.024	119.89	91.07	119.89	833.33	750.00	1.11	1.00	7.48	315.48	315.48
Dsgn. L =	3.98 ft	1	0.121	0.039	91.07	43.08	91.07	833.33	750.00	1.26	1.00	12.33	315.48	315.48
Dsgn. L =	2.57 ft	1	0.057	0.054	43.08		43.08	833.33	750.00	1.62	1.00	17.03	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	2.49 ft	1	0.152	0.146	113.95		113.95	833.33	750.00	1.69	1.00	45.95	315.48	315.48
Dsgn. L =	3.98 ft	1	0.326	0.145	244.56	113.95	244.56	833.33	750.00	1.27	1.00	45.73	315.48	315.48
Dsgn. L =	3.98 ft	1	0.431	0.103	323.30	244.56	323.30	833.33	750.00	1.11	1.00	32.61	315.48	315.48
Dsgn. L =	4.06 ft	1	0.468	0.062	350.70	323.30	350.70	833.33	750.00	1.03	1.00	19.50	315.48	315.48
Dsgn. L =	3.98 ft	1	0.468	0.021	350.70	324.62	350.70	833.33	750.00	1.03	1.00	6.74	315.48	315.48
Dsgn. L =	3.98 ft	1	0.433	0.063	324.62	246.68	324.62	833.33	750.00	1.11	1.00	19.85	315.48	315.48
Dsgn. L =	3.98 ft	1	0.329	0.105	246.68	116.86	246.68	833.33	750.00	1.26	1.00	32.97	315.48	315.48
Dsgn. L =	2.57 ft	1	0.156	0.146	116.86		116.86	833.33	750.00	1.62	1.00	45.95	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B30**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.159	0.152	119.17		119.17	833.33	750.00	1.69	1.00	48.05	315.48	315.48
Dsgn. L = 3.98 ft	1		0.341	0.152	255.75	119.17	255.75	833.33	750.00	1.27	1.00	47.83	315.48	315.48
Dsgn. L = 3.98 ft	1		0.451	0.108	338.10	255.75	338.10	833.33	750.00	1.11	1.00	34.11	315.48	315.48
Dsgn. L = 4.06 ft	1		0.489	0.065	366.75	338.10	366.75	833.33	750.00	1.03	1.00	20.40	315.48	315.48
Dsgn. L = 3.98 ft	1		0.489	0.022	366.75	339.48	366.75	833.33	750.00	1.03	1.00	7.04	315.48	315.48
Dsgn. L = 3.98 ft	1		0.453	0.066	339.48	257.97	339.48	833.33	750.00	1.11	1.00	20.75	315.48	315.48
Dsgn. L = 3.98 ft	1		0.344	0.109	257.97	122.21	257.97	833.33	750.00	1.26	1.00	34.47	315.48	315.48
Dsgn. L = 2.57 ft	1		0.163	0.152	122.21		122.21	833.33	750.00	1.62	1.00	48.05	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.113	0.108	84.72		84.72	833.33	750.00	1.69	1.00	34.19	315.48	315.48
Dsgn. L = 3.98 ft	1		0.242	0.108	181.87	84.72	181.87	833.33	750.00	1.27	1.00	33.97	315.48	315.48
Dsgn. L = 3.98 ft	1		0.321	0.077	240.44	181.87	240.44	833.33	750.00	1.11	1.00	24.21	315.48	315.48
Dsgn. L = 4.06 ft	1		0.348	0.046	260.82	240.44	260.82	833.33	750.00	1.03	1.00	14.46	315.48	315.48
Dsgn. L = 3.98 ft	1		0.348	0.016	260.82	241.43	260.82	833.33	750.00	1.03	1.00	5.06	315.48	315.48
Dsgn. L = 3.98 ft	1		0.322	0.047	241.43	183.45	241.43	833.33	750.00	1.11	1.00	14.81	315.48	315.48
Dsgn. L = 3.98 ft	1		0.245	0.078	183.45	86.89	183.45	833.33	750.00	1.26	1.00	24.57	315.48	315.48
Dsgn. L = 2.57 ft	1		0.116	0.108	86.89		86.89	833.33	750.00	1.62	1.00	34.19	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.048	0.046	36.00		36.00	833.33	750.00	1.69	1.00	14.59	315.48	315.48
Dsgn. L = 3.98 ft	1		0.103	0.046	77.39	36.00	77.39	833.33	750.00	1.27	1.00	14.37	315.48	315.48
Dsgn. L = 3.98 ft	1		0.136	0.032	102.35	77.39	102.35	833.33	750.00	1.11	1.00	10.21	315.48	315.48
Dsgn. L = 4.06 ft	1		0.148	0.019	111.02	102.35	111.02	833.33	750.00	1.03	1.00	6.06	315.48	315.48
Dsgn. L = 3.98 ft	1		0.148	0.007	111.02	102.76	111.02	833.33	750.00	1.03	1.00	2.26	315.48	315.48
Dsgn. L = 3.98 ft	1		0.137	0.020	102.76	78.06	102.76	833.33	750.00	1.11	1.00	6.41	315.48	315.48
Dsgn. L = 3.98 ft	1		0.104	0.033	78.06	36.93	78.06	833.33	750.00	1.26	1.00	10.57	315.48	315.48
Dsgn. L = 2.57 ft	1		0.049	0.046	36.93		36.93	833.33	750.00	1.62	1.00	14.59	315.48	315.48
<b>+1.20D+L+1.60S+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.135	0.130	101.42		101.42	833.33	750.00	1.69	1.00	40.91	315.48	315.48
Dsgn. L = 3.98 ft	1		0.290	0.129	217.69	101.42	217.69	833.33	750.00	1.27	1.00	40.69	315.48	315.48
Dsgn. L = 3.98 ft	1		0.384	0.092	287.79	217.69	287.79	833.33	750.00	1.11	1.00	29.01	315.48	315.48
Dsgn. L = 4.06 ft	1		0.416	0.055	312.18	287.79	312.18	833.33	750.00	1.03	1.00	17.34	315.48	315.48
Dsgn. L = 3.98 ft	1		0.416	0.019	312.18	288.97	312.18	833.33	750.00	1.03	1.00	6.02	315.48	315.48
Dsgn. L = 3.98 ft	1		0.385	0.056	288.97	219.58	288.97	833.33	750.00	1.11	1.00	17.69	315.48	315.48
Dsgn. L = 3.98 ft	1		0.293	0.093	219.58	104.02	219.58	833.33	750.00	1.26	1.00	29.37	315.48	315.48
Dsgn. L = 2.57 ft	1		0.139	0.130	104.02		104.02	833.33	750.00	1.62	1.00	40.91	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.070	0.068	52.70		52.70	833.33	750.00	1.69	1.00	21.31	315.48	315.48
Dsgn. L = 3.98 ft	1		0.151	0.067	113.21	52.70	113.21	833.33	750.00	1.27	1.00	21.09	315.48	315.48
Dsgn. L = 3.98 ft	1		0.200	0.048	149.69	113.21	149.69	833.33	750.00	1.11	1.00	15.01	315.48	315.48
Dsgn. L = 4.06 ft	1		0.217	0.028	162.38	149.69	162.38	833.33	750.00	1.03	1.00	8.94	315.48	315.48
Dsgn. L = 3.98 ft	1		0.217	0.010	162.38	150.30	162.38	833.33	750.00	1.03	1.00	3.22	315.48	315.48
Dsgn. L = 3.98 ft	1		0.200	0.029	150.30	114.19	150.30	833.33	750.00	1.11	1.00	9.29	315.48	315.48
Dsgn. L = 3.98 ft	1		0.152	0.049	114.19	54.06	114.19	833.33	750.00	1.26	1.00	15.37	315.48	315.48
Dsgn. L = 2.57 ft	1		0.072	0.068	54.06		54.06	833.33	750.00	1.62	1.00	21.31	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.113	0.108	84.72		84.72	833.33	750.00	1.69	1.00	34.19	315.48	315.48
Dsgn. L = 3.98 ft	1		0.242	0.108	181.87	84.72	181.87	833.33	750.00	1.27	1.00	33.97	315.48	315.48
Dsgn. L = 3.98 ft	1		0.321	0.077	240.44	181.87	240.44	833.33	750.00	1.11	1.00	24.21	315.48	315.48
Dsgn. L = 4.06 ft	1		0.348	0.046	260.82	240.44	260.82	833.33	750.00	1.03	1.00	14.46	315.48	315.48
Dsgn. L = 3.98 ft	1		0.348	0.016	260.82	241.43	260.82	833.33	750.00	1.03	1.00	5.06	315.48	315.48
Dsgn. L = 3.98 ft	1		0.322	0.047	241.43	183.45	241.43	833.33	750.00	1.11	1.00	14.81	315.48	315.48
Dsgn. L = 3.98 ft	1		0.245	0.078	183.45	86.89	183.45	833.33	750.00	1.26	1.00	24.57	315.48	315.48
Dsgn. L = 2.57 ft	1		0.116	0.108	86.89		86.89	833.33	750.00	1.62	1.00	34.19	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.120	0.115	89.94		89.94	833.33	750.00	1.69	1.00	36.29	315.48	315.48
Dsgn. L = 3.98 ft	1		0.257	0.114	193.06	89.94	193.06	833.33	750.00	1.27	1.00	36.07	315.48	315.48
Dsgn. L = 3.98 ft	1		0.340	0.082	255.24	193.06	255.24	833.33	750.00	1.11	1.00	25.71	315.48	315.48
Dsgn. L = 4.06 ft	1		0.369	0.049	276.87	255.24	276.87	833.33	750.00	1.03	1.00	15.36	315.48	315.48
Dsgn. L = 3.98 ft	1		0.369	0.017	276.87	256.28	276.87	833.33	750.00	1.03	1.00	5.36	315.48	315.48
Dsgn. L = 3.98 ft	1		0.342	0.050	256.28	194.74	256.28	833.33	750.00	1.11	1.00	15.71	315.48	315.48
Dsgn. L = 3.98 ft	1		0.260	0.083	194.74	92.24	194.74	833.33	750.00	1.26	1.00	26.07	315.48	315.48
Dsgn. L = 2.57 ft	1		0.123	0.115	92.24		92.24	833.33	750.00	1.62	1.00	36.29	315.48	315.48



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B30**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.036	0.035	27.00		27.00	833.33	750.00	1.69	1.00	10.95	315.48	315.48
Dsgn. L = 3.98 ft	1	0.077	0.034	58.04	27.00	58.04	833.33	750.00	1.27	1.00	10.78	315.48	315.48
Dsgn. L = 3.98 ft	1	0.102	0.024	76.76	58.04	76.76	833.33	750.00	1.11	1.00	7.66	315.48	315.48
Dsgn. L = 4.06 ft	1	0.111	0.014	83.27	76.76	83.27	833.33	750.00	1.03	1.00	4.54	315.48	315.48
Dsgn. L = 3.98 ft	1	0.111	0.005	83.27	77.07	83.27	833.33	750.00	1.03	1.00	1.69	315.48	315.48
Dsgn. L = 3.98 ft	1	0.103	0.015	77.07	58.55	77.07	833.33	750.00	1.11	1.00	4.81	315.48	315.48
Dsgn. L = 3.98 ft	1	0.078	0.025	58.55	27.69	58.55	833.33	750.00	1.26	1.00	7.93	315.48	315.48
Dsgn. L = 2.57 ft	1	0.037	0.035	27.69		27.69	833.33	750.00	1.62	1.00	10.95	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.116	0.111	86.80		86.80	833.33	750.00	1.69	1.00	35.03	315.48	315.48
Dsgn. L = 3.98 ft	1	0.248	0.110	186.35	86.80	186.35	833.33	750.00	1.27	1.00	34.81	315.48	315.48
Dsgn. L = 3.98 ft	1	0.328	0.079	246.36	186.35	246.36	833.33	750.00	1.11	1.00	24.81	315.48	315.48
Dsgn. L = 4.06 ft	1	0.356	0.047	267.24	246.36	267.24	833.33	750.00	1.03	1.00	14.82	315.48	315.48
Dsgn. L = 3.98 ft	1	0.356	0.016	267.24	247.37	267.24	833.33	750.00	1.03	1.00	5.18	315.48	315.48
Dsgn. L = 3.98 ft	1	0.330	0.048	247.37	187.96	247.37	833.33	750.00	1.11	1.00	15.17	315.48	315.48
Dsgn. L = 3.98 ft	1	0.251	0.080	187.96	89.03	187.96	833.33	750.00	1.26	1.00	25.17	315.48	315.48
Dsgn. L = 2.57 ft	1	0.119	0.111	89.03		89.03	833.33	750.00	1.62	1.00	35.03	315.48	315.48
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 2.49 ft	1	0.036	0.035	27.00		27.00	833.33	750.00	1.69	1.00	10.95	315.48	315.48
Dsgn. L = 3.98 ft	1	0.077	0.034	58.04	27.00	58.04	833.33	750.00	1.27	1.00	10.78	315.48	315.48
Dsgn. L = 3.98 ft	1	0.102	0.024	76.76	58.04	76.76	833.33	750.00	1.11	1.00	7.66	315.48	315.48
Dsgn. L = 4.06 ft	1	0.111	0.014	83.27	76.76	83.27	833.33	750.00	1.03	1.00	4.54	315.48	315.48
Dsgn. L = 3.98 ft	1	0.111	0.005	83.27	77.07	83.27	833.33	750.00	1.03	1.00	1.69	315.48	315.48
Dsgn. L = 3.98 ft	1	0.103	0.015	77.07	58.55	77.07	833.33	750.00	1.11	1.00	4.81	315.48	315.48
Dsgn. L = 3.98 ft	1	0.078	0.025	58.55	27.69	58.55	833.33	750.00	1.26	1.00	7.93	315.48	315.48
Dsgn. L = 2.57 ft	1	0.037	0.035	27.69		27.69	833.33	750.00	1.62	1.00	10.95	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.5984	14.583		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	31.762	31.762
Max Upward from Load Combinations	31.762	31.762
Max Upward from Load Cases	19.600	19.600
+D+H	12.162	12.162
+D+L+H	31.762	31.762
+D+Lr+H	12.162	12.162
+D+S+H	16.362	16.362
+D+0.750Lr+0.750L+H	26.862	26.862
+D+0.750L+0.750S+H	30.012	30.012
+D+0.60W+H	12.162	12.162
+D+0.750Lr+0.750L+0.450W+H	26.862	26.862
+D+0.750L+0.750S+0.450W+H	30.012	30.012
+0.60D+0.60W+0.60H	7.297	7.297
+D+0.70E+0.60H	12.162	12.162
+D+0.750L+0.750S+0.5250E+H	30.012	30.012
+0.60D+0.70E+H	7.297	7.297
D Only	12.162	12.162
L Only	19.600	19.600
S Only	4.200	4.200
H Only		



## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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DESCRIPTION: **B31**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

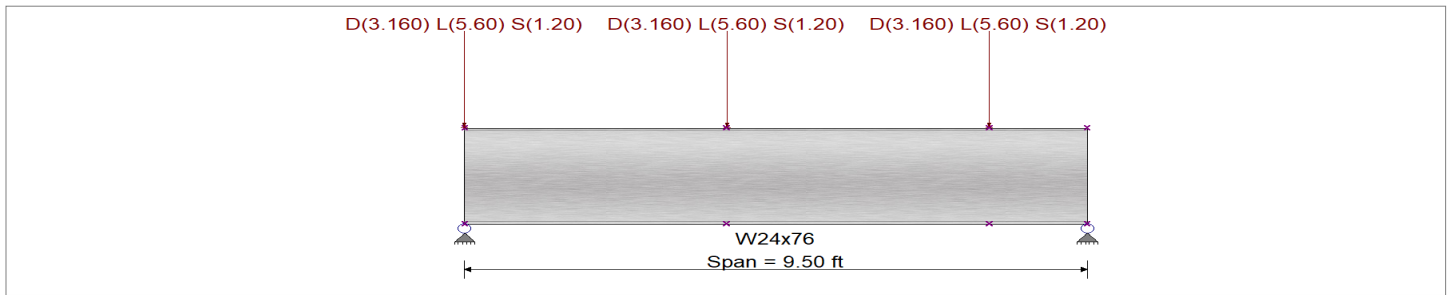
### Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

### Unbraced Lengths

First Brace starts at 0.0 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 3.160, L = 5.60, S = 1.20 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.054</b> : 1	Maximum Shear Stress Ratio =	<b>0.055</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	40.297 k-ft	Vu : Applied	17.299 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	9.500 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.004 in Ratio = <b>28,113</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.007 in Ratio = <b>17344</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.99 ft	1	0.019	0.012	14.18		14.18	833.33	750.00	1.65	1.00	3.77	315.48	315.48
Dsgn. L =	3.99 ft	1	0.019	0.011	14.19	9.05	14.19	833.33	750.00	1.15	1.00	3.34	315.48	315.48
Dsgn. L =	1.52 ft	1	0.012	0.019	9.05		9.05	833.33	750.00	1.65	1.00	6.09	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	3.99 ft	1	0.051	0.031	38.49		38.49	833.33	750.00	1.67	1.00	9.83	315.48	315.48
Dsgn. L =	3.99 ft	1	0.051	0.030	38.53	24.78	38.53	833.33	750.00	1.16	1.00	9.47	315.48	315.48
Dsgn. L =	1.52 ft	1	0.033	0.052	24.78		24.78	833.33	750.00	1.65	1.00	16.54	315.48	315.48
<b>+1.20D+1.60Lr+0.50S+1.60H</b>														
Dsgn. L =	3.99 ft	1	0.054	0.033	40.26		40.26	833.33	750.00	1.67	1.00	10.27	315.48	315.48
Dsgn. L =	3.99 ft	1	0.054	0.031	40.30	25.92	40.30	833.33	750.00	1.16	1.00	9.91	315.48	315.48
Dsgn. L =	1.52 ft	1	0.035	0.055	25.92		25.92	833.33	750.00	1.65	1.00	17.30	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H</b>														
Dsgn. L =	3.99 ft	1	0.038	0.023	28.61		28.61	833.33	750.00	1.66	1.00	7.35	315.48	315.48
Dsgn. L =	3.99 ft	1	0.038	0.022	28.64	18.40	28.64	833.33	750.00	1.16	1.00	6.99	315.48	315.48
Dsgn. L =	1.52 ft	1	0.025	0.039	18.40		18.40	833.33	750.00	1.65	1.00	12.30	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H</b>														
Dsgn. L =	3.99 ft	1	0.016	0.010	12.15		12.15	833.33	750.00	1.65	1.00	3.23	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B31**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+L+1.60S+1.60H	Dsgn. L = 3.99 ft	1	0.016	0.009	12.16	7.76	12.16	833.33	750.00	1.15	1.00	2.86	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.010	0.017	7.76		7.76	833.33	750.00	1.65	1.00	5.22	315.48	315.48
+1.20D+L+1.60S+1.60H	Dsgn. L = 3.99 ft	1	0.046	0.028	34.26		34.26	833.33	750.00	1.66	1.00	8.77	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.046	0.027	34.29	22.05	34.29	833.33	750.00	1.16	1.00	8.40	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.029	0.047	22.05		22.05	833.33	750.00	1.65	1.00	14.72	315.48	315.48
+1.20D+1.60S+0.50W+1.60H	Dsgn. L = 3.99 ft	1	0.024	0.015	17.80		17.80	833.33	750.00	1.66	1.00	4.64	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.024	0.014	17.81	11.41	17.81	833.33	750.00	1.16	1.00	4.28	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.015	0.024	11.41		11.41	833.33	750.00	1.65	1.00	7.65	315.48	315.48
+1.20D+0.50Lr+L+W+1.60H	Dsgn. L = 3.99 ft	1	0.038	0.023	28.61		28.61	833.33	750.00	1.66	1.00	7.35	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.038	0.022	28.64	18.40	28.64	833.33	750.00	1.16	1.00	6.99	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.025	0.039	18.40		18.40	833.33	750.00	1.65	1.00	12.30	315.48	315.48
+1.20D+L+0.50S+W+1.60H	Dsgn. L = 3.99 ft	1	0.041	0.025	30.38		30.38	833.33	750.00	1.66	1.00	7.80	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.041	0.024	30.41	19.54	30.41	833.33	750.00	1.16	1.00	7.43	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.026	0.041	19.54		19.54	833.33	750.00	1.65	1.00	13.05	315.48	315.48
+0.90D+W+1.60H	Dsgn. L = 3.99 ft	1	0.012	0.008	9.11		9.11	833.33	750.00	1.65	1.00	2.42	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.012	0.007	9.12	5.82	9.12	833.33	750.00	1.15	1.00	2.15	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.008	0.012	5.82		5.82	833.33	750.00	1.65	1.00	3.92	315.48	315.48
+1.20D+L+0.20S+E+1.60H	Dsgn. L = 3.99 ft	1	0.039	0.024	29.32		29.32	833.33	750.00	1.66	1.00	7.53	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.039	0.023	29.35	18.85	29.35	833.33	750.00	1.16	1.00	7.17	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.025	0.040	18.85		18.85	833.33	750.00	1.65	1.00	12.60	315.48	315.48
+0.90D+E+0.90H	Dsgn. L = 3.99 ft	1	0.012	0.008	9.11		9.11	833.33	750.00	1.65	1.00	2.42	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.012	0.007	9.12	5.82	9.12	833.33	750.00	1.15	1.00	2.15	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.008	0.012	5.82		5.82	833.33	750.00	1.65	1.00	3.92	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0066	4.777		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	15.576	11.426		
Max Upward from Load Combinations	15.576	11.426		
Max Upward from Load Cases	9.726	7.074		
+D+H	5.849	4.353		
+D+L+H	15.576	11.426		
+D+Lr+H	5.849	4.353		
+D+S+H	7.934	5.868		
+D+0.750Lr+0.750L+H	13.144	9.658		
+D+0.750L+0.750S+H	14.707	10.795		
+D+0.60W+H	5.849	4.353		
+D+0.750Lr+0.750L+0.450W+H	13.144	9.658		
+D+0.750L+0.750S+0.450W+H	14.707	10.795		
+0.60D+0.60W+0.60H	3.510	2.612		
+D+0.70E+0.60H	5.849	4.353		
+D+0.750L+0.750S+0.5250E+H	14.707	10.795		
+0.60D+0.70E+H	3.510	2.612		
D Only	5.849	4.353		
L Only	9.726	7.074		
S Only	2.084	1.516		
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B32**

**CODE REFERENCES**

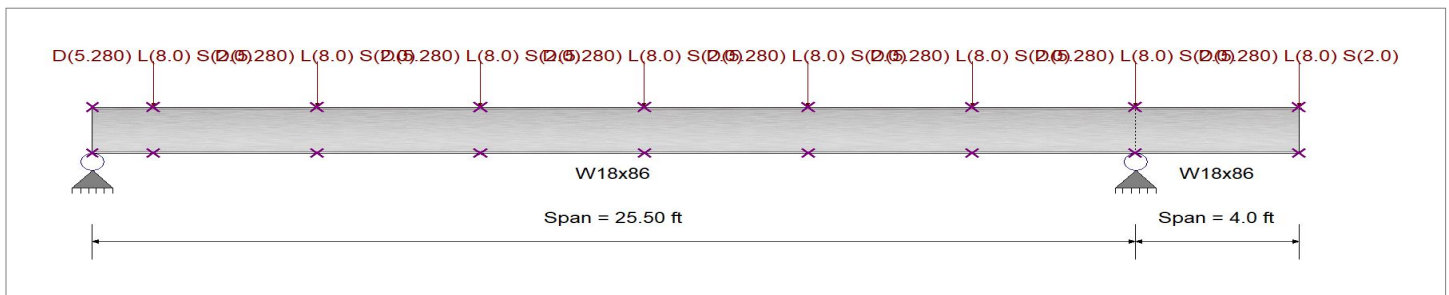
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 1.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 1.50 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.580</b> : 1	Maximum Shear Stress Ratio =	<b>0.251</b> : 1
Section used for this span	<b>W18x86</b>	Section used for this span	<b>W18x86</b>
Mu : Applied	404.415 k-ft	Vu : Applied	66.463 k
Mn * Phi : Allowable	697.500 k-ft	Vn * Phi : Allowable	264.960 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.429 in Ratio = <b>713</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.212 in Ratio = <b>451</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.696 in Ratio = <b>440</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.329 in Ratio = <b>292</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
<b>+1.40D+1.60H</b>															
Dsgn. L =	1.43 ft	1	0.050	0.093	35.13		35.13	35.13	775.00	697.50	1.71	1.00	24.69	264.96	264.96
Dsgn. L =	3.98 ft	1	0.147	0.093	102.83		102.83	102.83	775.00	697.50	1.36	1.00	24.52	264.96	264.96
Dsgn. L =	4.08 ft	1	0.201	0.063	140.28		102.83	140.28	775.00	697.50	1.12	1.00	16.65	264.96	264.96
Dsgn. L =	3.98 ft	1	0.208	0.033	144.88		140.28	144.88	775.00	697.50	1.01	1.00	8.76	264.96	264.96
Dsgn. L =	3.98 ft	1	0.208	0.026	144.88		118.33	144.88	775.00	697.50	1.08	1.00	6.98	264.96	264.96
Dsgn. L =	3.98 ft	1	0.170	0.056	118.33		60.63	118.33	775.00	697.50	1.23	1.00	14.85	264.96	264.96
Dsgn. L =	4.08 ft	1	0.087	0.086	60.63		-30.53	60.63	775.00	697.50	2.16	1.00	22.73	264.96	264.96
Dsgn. L =	4.00 ft	2	0.044	0.030			-30.53	30.53	775.00	697.50	1.00	1.00	7.87	264.96	264.96
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>															
Dsgn. L =	1.43 ft	1	0.039	0.072	27.25		27.25	27.25	775.00	697.50	1.71	1.00	19.15	264.96	264.96
Dsgn. L =	3.98 ft	1	0.111	0.072	77.29		27.25	77.29	775.00	697.50	1.35	1.00	19.01	264.96	264.96
Dsgn. L =	4.08 ft	1	0.145	0.046	101.19		77.29	101.19	775.00	697.50	1.10	1.00	12.26	264.96	264.96
Dsgn. L =	3.98 ft	1	0.145	0.021	101.19		97.15	101.19	775.00	697.50	1.01	1.00	5.50	264.96	264.96
Dsgn. L =	3.98 ft	1	0.139	0.030	97.15		66.40	97.15	775.00	697.50	1.14	1.00	7.99	264.96	264.96
Dsgn. L =	3.98 ft	1	0.095	0.056	66.40		8.96	66.40	775.00	697.50	1.50	1.00	14.74	264.96	264.96
Dsgn. L =	4.08 ft	1	0.111	0.081	8.96		-77.37	77.37	775.00	697.50	1.82	1.00	21.49	264.96	264.96
Dsgn. L =	4.00 ft	2	0.111	0.074			-77.37	77.37	775.00	697.50	1.00	1.00	19.55	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B32**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.129	0.239	90.32		90.32	775.00	697.50	1.72	1.00	63.33	264.96	264.96
Dsgn. L = 3.98 ft	1	0.381	0.238	266.09	90.32	266.09	775.00	697.50	1.37	1.00	63.18	264.96	264.96
Dsgn. L = 4.08 ft	1	0.526	0.165	366.97	266.09	366.97	775.00	697.50	1.12	1.00	43.63	264.96	264.96
Dsgn. L = 3.98 ft	1	0.554	0.091	386.07	366.97	386.07	775.00	697.50	1.02	1.00	24.07	264.96	264.96
Dsgn. L = 3.98 ft	1	0.554	0.057	386.07	327.83	386.07	775.00	697.50	1.06	1.00	15.02	264.96	264.96
Dsgn. L = 3.98 ft	1	0.470	0.130	327.83	192.26	327.83	775.00	697.50	1.19	1.00	34.56	264.96	264.96
Dsgn. L = 4.08 ft	1	0.276	0.204	192.26	-26.17	192.26	775.00	697.50	1.82	1.00	54.12	264.96	264.96
Dsgn. L = 4.00 ft	2	0.038	0.025		-26.17	26.17	775.00	697.50	1.00	1.00	6.75	264.96	264.96
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.125	0.231	87.46		87.46	775.00	697.50	1.72	1.00	61.32	264.96	264.96
Dsgn. L = 3.98 ft	1	0.366	0.231	255.23	87.46	255.23	775.00	697.50	1.36	1.00	61.17	264.96	264.96
Dsgn. L = 4.08 ft	1	0.499	0.157	347.92	255.23	347.92	775.00	697.50	1.12	1.00	41.62	264.96	264.96
Dsgn. L = 3.98 ft	1	0.515	0.083	359.03	347.92	359.03	775.00	697.50	1.01	1.00	22.07	264.96	264.96
Dsgn. L = 3.98 ft	1	0.515	0.064	359.03	292.81	359.03	775.00	697.50	1.08	1.00	17.03	264.96	264.96
Dsgn. L = 3.98 ft	1	0.420	0.138	292.81	149.25	292.81	775.00	697.50	1.23	1.00	36.57	264.96	264.96
Dsgn. L = 4.08 ft	1	0.214	0.212	149.25	-77.37	149.25	775.00	697.50	2.16	1.00	56.13	264.96	264.96
Dsgn. L = 4.00 ft	2	0.111	0.074		-77.37	77.37	775.00	697.50	1.00	1.00	19.55	264.96	264.96
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.43 ft	1	0.045	0.084	31.73		31.73	775.00	697.50	1.71	1.00	22.29	264.96	264.96
Dsgn. L = 3.98 ft	1	0.130	0.084	90.34	31.73	90.34	775.00	697.50	1.36	1.00	22.14	264.96	264.96
Dsgn. L = 4.08 ft	1	0.171	0.054	118.98	90.34	118.98	775.00	697.50	1.10	1.00	14.40	264.96	264.96
Dsgn. L = 3.98 ft	1	0.171	0.025	119.01	115.49	119.01	775.00	697.50	1.01	1.00	6.64	264.96	264.96
Dsgn. L = 3.98 ft	1	0.166	0.033	115.49	81.35	115.49	775.00	697.50	1.13	1.00	8.85	264.96	264.96
Dsgn. L = 3.98 ft	1	0.117	0.063	81.35	16.56	81.35	775.00	697.50	1.44	1.00	16.60	264.96	264.96
Dsgn. L = 4.08 ft	1	0.117	0.092	16.56	-81.37	81.37	775.00	697.50	1.95	1.00	24.36	264.96	264.96
Dsgn. L = 4.00 ft	2	0.117	0.078		-81.37	81.37	775.00	697.50	1.00	1.00	20.55	264.96	264.96
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.43 ft	1	0.136	0.251	94.80		94.80	775.00	697.50	1.72	1.00	66.46	264.96	264.96
Dsgn. L = 3.98 ft	1	0.400	0.250	279.14	94.80	279.14	775.00	697.50	1.37	1.00	66.32	264.96	264.96
Dsgn. L = 4.08 ft	1	0.552	0.173	384.76	279.14	384.76	775.00	697.50	1.12	1.00	45.77	264.96	264.96
Dsgn. L = 3.98 ft	1	0.580	0.095	404.41	384.76	404.41	775.00	697.50	1.02	1.00	25.21	264.96	264.96
Dsgn. L = 3.98 ft	1	0.580	0.060	404.41	342.78	404.41	775.00	697.50	1.06	1.00	15.88	264.96	264.96
Dsgn. L = 3.98 ft	1	0.491	0.137	342.78	199.86	342.78	775.00	697.50	1.19	1.00	36.43	264.96	264.96
Dsgn. L = 4.08 ft	1	0.287	0.215	199.86	-30.17	199.86	775.00	697.50	1.84	1.00	56.98	264.96	264.96
Dsgn. L = 4.00 ft	2	0.043	0.029		-30.17	30.17	775.00	697.50	1.00	1.00	7.75	264.96	264.96
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.43 ft	1	0.132	0.243	91.94		91.94	775.00	697.50	1.72	1.00	64.46	264.96	264.96
Dsgn. L = 3.98 ft	1	0.385	0.243	268.29	91.94	268.29	775.00	697.50	1.36	1.00	64.31	264.96	264.96
Dsgn. L = 4.08 ft	1	0.524	0.165	365.71	268.29	365.71	775.00	697.50	1.12	1.00	43.76	264.96	264.96
Dsgn. L = 3.98 ft	1	0.541	0.088	377.38	365.71	377.38	775.00	697.50	1.01	1.00	23.20	264.96	264.96
Dsgn. L = 3.98 ft	1	0.541	0.068	377.38	307.76	377.38	775.00	697.50	1.08	1.00	17.89	264.96	264.96
Dsgn. L = 3.98 ft	1	0.441	0.145	307.76	156.85	307.76	775.00	697.50	1.23	1.00	38.44	264.96	264.96
Dsgn. L = 4.08 ft	1	0.225	0.223	156.85	-81.37	156.85	775.00	697.50	2.16	1.00	58.99	264.96	264.96
Dsgn. L = 4.00 ft	2	0.117	0.078		-81.37	81.37	775.00	697.50	1.00	1.00	20.55	264.96	264.96
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.041	0.075	28.32		28.32	775.00	697.50	1.71	1.00	19.91	264.96	264.96
Dsgn. L = 3.98 ft	1	0.117	0.075	81.36	28.32	81.36	775.00	697.50	1.36	1.00	19.76	264.96	264.96
Dsgn. L = 4.08 ft	1	0.155	0.049	108.33	81.36	108.33	775.00	697.50	1.11	1.00	13.01	264.96	264.96
Dsgn. L = 3.98 ft	1	0.155	0.024	108.41	107.28	108.41	775.00	697.50	1.00	1.00	6.26	264.96	264.96
Dsgn. L = 3.98 ft	1	0.154	0.027	107.28	79.54	107.28	775.00	697.50	1.11	1.00	7.24	264.96	264.96
Dsgn. L = 3.98 ft	1	0.114	0.053	79.54	25.09	79.54	775.00	697.50	1.36	1.00	13.98	264.96	264.96
Dsgn. L = 4.08 ft	1	0.083	0.078	25.09	-58.17	58.17	775.00	697.50	2.17	1.00	20.74	264.96	264.96
Dsgn. L = 4.00 ft	2	0.083	0.056		-58.17	58.17	775.00	697.50	1.00	1.00	14.75	264.96	264.96
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.097	0.179	67.74		67.74	775.00	697.50	1.72	1.00	47.51	264.96	264.96
Dsgn. L = 3.98 ft	1	0.286	0.179	199.36	67.74	199.36	775.00	697.50	1.37	1.00	47.37	264.96	264.96
Dsgn. L = 4.08 ft	1	0.393	0.123	274.44	199.36	274.44	775.00	697.50	1.12	1.00	32.62	264.96	264.96
Dsgn. L = 3.98 ft	1	0.413	0.067	287.86	274.44	287.86	775.00	697.50	1.02	1.00	17.86	264.96	264.96
Dsgn. L = 3.98 ft	1	0.413	0.044	287.86	242.93	287.86	775.00	697.50	1.06	1.00	11.63	264.96	264.96
Dsgn. L = 3.98 ft	1	0.348	0.100	242.93	139.65	242.93	775.00	697.50	1.20	1.00	26.38	264.96	264.96
Dsgn. L = 4.08 ft	1	0.200	0.155	139.65	-26.17	139.65	775.00	697.50	1.89	1.00	41.13	264.96	264.96
Dsgn. L = 4.00 ft	2	0.038	0.025		-26.17	26.17	775.00	697.50	1.00	1.00	6.75	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B32**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.095	0.175	65.95		65.95	775.00	697.50	1.72	1.00	46.26	264.96	264.96
Dsgn. L = 3.98 ft	1	0.276	0.174	192.57	65.95	192.57	775.00	697.50	1.36	1.00	46.11	264.96	264.96
Dsgn. L = 4.08 ft	1	0.376	0.118	262.54	192.57	262.54	775.00	697.50	1.12	1.00	31.37	264.96	264.96
Dsgn. L = 3.98 ft	1	0.388	0.063	270.96	262.54	270.96	775.00	697.50	1.01	1.00	16.61	264.96	264.96
Dsgn. L = 3.98 ft	1	0.388	0.049	270.96	221.04	270.96	775.00	697.50	1.08	1.00	12.88	264.96	264.96
Dsgn. L = 3.98 ft	1	0.317	0.104	221.04	112.77	221.04	775.00	697.50	1.23	1.00	27.63	264.96	264.96
Dsgn. L = 4.08 ft	1	0.162	0.160	112.77	-58.17	112.77	775.00	697.50	2.16	1.00	42.39	264.96	264.96
Dsgn. L = 4.00 ft	2	0.083	0.056		-58.17	58.17	775.00	697.50	1.00	1.00	14.75	264.96	264.96
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.043	0.080	30.11		30.11	775.00	697.50	1.71	1.00	21.16	264.96	264.96
Dsgn. L = 3.98 ft	1	0.126	0.079	88.14	30.11	88.14	775.00	697.50	1.36	1.00	21.01	264.96	264.96
Dsgn. L = 4.08 ft	1	0.172	0.054	120.24	88.14	120.24	775.00	697.50	1.12	1.00	14.27	264.96	264.96
Dsgn. L = 3.98 ft	1	0.178	0.028	124.18	120.24	124.18	775.00	697.50	1.01	1.00	7.51	264.96	264.96
Dsgn. L = 3.98 ft	1	0.178	0.023	124.18	101.42	124.18	775.00	697.50	1.08	1.00	5.98	264.96	264.96
Dsgn. L = 3.98 ft	1	0.145	0.048	101.42	51.97	101.42	775.00	697.50	1.23	1.00	12.73	264.96	264.96
Dsgn. L = 4.08 ft	1	0.075	0.074	51.97	-26.17	51.97	775.00	697.50	2.16	1.00	19.49	264.96	264.96
Dsgn. L = 4.00 ft	2	0.038	0.025		-26.17	26.17	775.00	697.50	1.00	1.00	6.75	264.96	264.96
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.043	0.080	30.11		30.11	775.00	697.50	1.71	1.00	21.16	264.96	264.96
Dsgn. L = 3.98 ft	1	0.126	0.079	88.14	30.11	88.14	775.00	697.50	1.36	1.00	21.01	264.96	264.96
Dsgn. L = 4.08 ft	1	0.172	0.054	120.24	88.14	120.24	775.00	697.50	1.12	1.00	14.27	264.96	264.96
Dsgn. L = 3.98 ft	1	0.178	0.028	124.18	120.24	124.18	775.00	697.50	1.01	1.00	7.51	264.96	264.96
Dsgn. L = 3.98 ft	1	0.178	0.023	124.18	101.42	124.18	775.00	697.50	1.08	1.00	5.98	264.96	264.96
Dsgn. L = 3.98 ft	1	0.145	0.048	101.42	51.97	101.42	775.00	697.50	1.23	1.00	12.73	264.96	264.96
Dsgn. L = 4.08 ft	1	0.075	0.074	51.97	-26.17	51.97	775.00	697.50	2.16	1.00	19.49	264.96	264.96
Dsgn. L = 4.00 ft	2	0.038	0.025		-26.17	26.17	775.00	697.50	1.00	1.00	6.75	264.96	264.96
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.043	0.080	30.11		30.11	775.00	697.50	1.71	1.00	21.16	264.96	264.96
Dsgn. L = 3.98 ft	1	0.126	0.079	88.14	30.11	88.14	775.00	697.50	1.36	1.00	21.01	264.96	264.96
Dsgn. L = 4.08 ft	1	0.172	0.054	120.24	88.14	120.24	775.00	697.50	1.12	1.00	14.27	264.96	264.96
Dsgn. L = 3.98 ft	1	0.178	0.028	124.18	120.24	124.18	775.00	697.50	1.01	1.00	7.51	264.96	264.96
Dsgn. L = 3.98 ft	1	0.178	0.023	124.18	101.42	124.18	775.00	697.50	1.08	1.00	5.98	264.96	264.96
Dsgn. L = 3.98 ft	1	0.145	0.048	101.42	51.97	101.42	775.00	697.50	1.23	1.00	12.73	264.96	264.96
Dsgn. L = 4.08 ft	1	0.075	0.074	51.97	-26.17	51.97	775.00	697.50	2.16	1.00	19.49	264.96	264.96
Dsgn. L = 4.00 ft	2	0.038	0.025		-26.17	26.17	775.00	697.50	1.00	1.00	6.75	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.061	0.113	42.66		42.66	775.00	697.50	1.71	1.00	29.95	264.96	264.96
Dsgn. L = 3.98 ft	1	0.177	0.112	123.13	42.66	123.13	775.00	697.50	1.36	1.00	29.80	264.96	264.96
Dsgn. L = 4.08 ft	1	0.237	0.075	165.25	123.13	165.25	775.00	697.50	1.11	1.00	19.85	264.96	264.96
Dsgn. L = 3.98 ft	1	0.238	0.037	166.01	165.25	166.01	775.00	697.50	1.00	1.00	9.89	264.96	264.96
Dsgn. L = 3.98 ft	1	0.238	0.038	166.00	127.38	166.00	775.00	697.50	1.10	1.00	10.00	264.96	264.96
Dsgn. L = 3.98 ft	1	0.183	0.075	127.38	49.41	127.38	775.00	697.50	1.31	1.00	19.95	264.96	264.96
Dsgn. L = 4.08 ft	1	0.102	0.113	49.41	-70.97	70.97	775.00	697.50	2.22	1.00	29.90	264.96	264.96
Dsgn. L = 4.00 ft	2	0.102	0.068		-70.97	70.97	775.00	697.50	1.00	1.00	17.95	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.118	0.217	82.08		82.08	775.00	697.50	1.72	1.00	57.55	264.96	264.96
Dsgn. L = 3.98 ft	1	0.346	0.217	241.13	82.08	241.13	775.00	697.50	1.37	1.00	57.41	264.96	264.96
Dsgn. L = 4.08 ft	1	0.475	0.149	331.37	241.13	331.37	775.00	697.50	1.12	1.00	39.46	264.96	264.96
Dsgn. L = 3.98 ft	1	0.497	0.081	346.57	331.37	346.57	775.00	697.50	1.02	1.00	21.50	264.96	264.96
Dsgn. L = 3.98 ft	1	0.497	0.054	346.57	290.77	346.57	775.00	697.50	1.07	1.00	14.39	264.96	264.96
Dsgn. L = 3.98 ft	1	0.417	0.122	290.77	163.97	290.77	775.00	697.50	1.20	1.00	32.34	264.96	264.96
Dsgn. L = 4.08 ft	1	0.235	0.190	163.97	-38.97	163.97	775.00	697.50	1.96	1.00	50.29	264.96	264.96
Dsgn. L = 4.00 ft	2	0.056	0.038		-38.97	38.97	775.00	697.50	1.00	1.00	9.95	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.115	0.212	80.29		80.29	775.00	697.50	1.72	1.00	56.30	264.96	264.96
Dsgn. L = 3.98 ft	1	0.336	0.212	234.35	80.29	234.35	775.00	697.50	1.36	1.00	56.15	264.96	264.96
Dsgn. L = 4.08 ft	1	0.458	0.144	319.46	234.35	319.46	775.00	697.50	1.12	1.00	38.20	264.96	264.96
Dsgn. L = 3.98 ft	1	0.473	0.076	329.68	319.46	329.68	775.00	697.50	1.01	1.00	20.25	264.96	264.96
Dsgn. L = 3.98 ft	1	0.473	0.059	329.68	268.89	329.68	775.00	697.50	1.08	1.00	15.65	264.96	264.96
Dsgn. L = 3.98 ft	1	0.385	0.127	268.89	137.09	268.89	775.00	697.50	1.23	1.00	33.59	264.96	264.96
Dsgn. L = 4.08 ft	1	0.197	0.195	137.09	-70.97	137.09	775.00	697.50	2.16	1.00	51.55	264.96	264.96
Dsgn. L = 4.00 ft	2	0.102	0.068		-70.97	70.97	775.00	697.50	1.00	1.00	17.95	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B32**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 1.43 ft	1	0.064	0.118	44.45		44.45	775.00	697.50	1.72	1.00	31.20	264.96	264.96
Dsgn. L = 3.98 ft	1	0.186	0.117	129.91	44.45	129.91	775.00	697.50	1.36	1.00	31.05	264.96	264.96
Dsgn. L = 4.08 ft	1	0.254	0.080	177.16	129.91	177.16	775.00	697.50	1.12	1.00	21.11	264.96	264.96
Dsgn. L = 3.98 ft	1	0.262	0.042	182.89	177.16	182.89	775.00	697.50	1.01	1.00	11.15	264.96	264.96
Dsgn. L = 3.98 ft	1	0.262	0.033	182.89	149.27	182.89	775.00	697.50	1.08	1.00	8.74	264.96	264.96
Dsgn. L = 3.98 ft	1	0.214	0.071	149.27	76.29	149.27	775.00	697.50	1.23	1.00	18.69	264.96	264.96
Dsgn. L = 4.08 ft	1	0.109	0.108	76.29	-38.97	76.29	775.00	697.50	2.16	1.00	28.65	264.96	264.96
Dsgn. L = 4.00 ft	2	0.056	0.038		-38.97	38.97	775.00	697.50	1.00	1.00	9.95	264.96	264.96
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.041	0.075	28.32		28.32	775.00	697.50	1.71	1.00	19.91	264.96	264.96
Dsgn. L = 3.98 ft	1	0.117	0.075	81.36	28.32	81.36	775.00	697.50	1.36	1.00	19.76	264.96	264.96
Dsgn. L = 4.08 ft	1	0.155	0.049	108.33	81.36	108.33	775.00	697.50	1.11	1.00	13.01	264.96	264.96
Dsgn. L = 3.98 ft	1	0.155	0.024	108.41	107.28	108.41	775.00	697.50	1.00	1.00	6.26	264.96	264.96
Dsgn. L = 3.98 ft	1	0.154	0.027	107.28	79.54	107.28	775.00	697.50	1.11	1.00	7.24	264.96	264.96
Dsgn. L = 3.98 ft	1	0.114	0.053	79.54	25.09	79.54	775.00	697.50	1.36	1.00	13.98	264.96	264.96
Dsgn. L = 4.08 ft	1	0.083	0.078	25.09	-58.17	58.17	775.00	697.50	2.17	1.00	20.74	264.96	264.96
Dsgn. L = 4.00 ft	2	0.083	0.056		-58.17	58.17	775.00	697.50	1.00	1.00	14.75	264.96	264.96
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.097	0.179	67.74		67.74	775.00	697.50	1.72	1.00	47.51	264.96	264.96
Dsgn. L = 3.98 ft	1	0.286	0.179	199.36	67.74	199.36	775.00	697.50	1.37	1.00	47.37	264.96	264.96
Dsgn. L = 4.08 ft	1	0.393	0.123	274.44	199.36	274.44	775.00	697.50	1.12	1.00	32.62	264.96	264.96
Dsgn. L = 3.98 ft	1	0.413	0.067	287.86	274.44	287.86	775.00	697.50	1.02	1.00	17.86	264.96	264.96
Dsgn. L = 3.98 ft	1	0.413	0.044	287.86	242.93	287.86	775.00	697.50	1.06	1.00	11.63	264.96	264.96
Dsgn. L = 3.98 ft	1	0.348	0.100	242.93	139.65	242.93	775.00	697.50	1.20	1.00	26.38	264.96	264.96
Dsgn. L = 4.08 ft	1	0.200	0.155	139.65	-26.17	139.65	775.00	697.50	1.89	1.00	41.13	264.96	264.96
Dsgn. L = 4.00 ft	2	0.038	0.025		-26.17	26.17	775.00	697.50	1.00	1.00	6.75	264.96	264.96
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.095	0.175	65.95		65.95	775.00	697.50	1.72	1.00	46.26	264.96	264.96
Dsgn. L = 3.98 ft	1	0.276	0.174	192.57	65.95	192.57	775.00	697.50	1.36	1.00	46.11	264.96	264.96
Dsgn. L = 4.08 ft	1	0.376	0.118	262.54	192.57	262.54	775.00	697.50	1.12	1.00	31.37	264.96	264.96
Dsgn. L = 3.98 ft	1	0.388	0.063	270.96	262.54	270.96	775.00	697.50	1.01	1.00	16.61	264.96	264.96
Dsgn. L = 3.98 ft	1	0.388	0.049	270.96	221.04	270.96	775.00	697.50	1.08	1.00	12.88	264.96	264.96
Dsgn. L = 3.98 ft	1	0.317	0.104	221.04	112.77	221.04	775.00	697.50	1.23	1.00	27.63	264.96	264.96
Dsgn. L = 4.08 ft	1	0.162	0.160	112.77	-58.17	112.77	775.00	697.50	2.16	1.00	42.39	264.96	264.96
Dsgn. L = 4.00 ft	2	0.083	0.056		-58.17	58.17	775.00	697.50	1.00	1.00	14.75	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.047	0.087	32.80		32.80	775.00	697.50	1.71	1.00	23.04	264.96	264.96
Dsgn. L = 3.98 ft	1	0.135	0.086	94.41	32.80	94.41	775.00	697.50	1.36	1.00	22.90	264.96	264.96
Dsgn. L = 4.08 ft	1	0.181	0.057	126.12	94.41	126.12	775.00	697.50	1.11	1.00	15.15	264.96	264.96
Dsgn. L = 3.98 ft	1	0.181	0.028	126.24	125.63	126.24	775.00	697.50	1.00	1.00	7.39	264.96	264.96
Dsgn. L = 3.98 ft	1	0.180	0.031	125.63	94.49	125.63	775.00	697.50	1.11	1.00	8.10	264.96	264.96
Dsgn. L = 3.98 ft	1	0.135	0.060	94.49	32.69	94.49	775.00	697.50	1.34	1.00	15.85	264.96	264.96
Dsgn. L = 4.08 ft	1	0.089	0.089	32.69	-62.17	62.17	775.00	697.50	2.19	1.00	23.60	264.96	264.96
Dsgn. L = 4.00 ft	2	0.089	0.059		-62.17	62.17	775.00	697.50	1.00	1.00	15.75	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.104	0.191	72.22		72.22	775.00	697.50	1.72	1.00	50.65	264.96	264.96
Dsgn. L = 3.98 ft	1	0.305	0.191	212.41	72.22	212.41	775.00	697.50	1.37	1.00	50.50	264.96	264.96
Dsgn. L = 4.08 ft	1	0.419	0.131	292.23	212.41	292.23	775.00	697.50	1.12	1.00	34.76	264.96	264.96
Dsgn. L = 3.98 ft	1	0.439	0.072	306.21	292.23	306.21	775.00	697.50	1.02	1.00	19.00	264.96	264.96
Dsgn. L = 3.98 ft	1	0.439	0.047	306.21	257.88	306.21	775.00	697.50	1.06	1.00	12.49	264.96	264.96
Dsgn. L = 3.98 ft	1	0.370	0.107	257.88	147.25	257.88	775.00	697.50	1.20	1.00	28.24	264.96	264.96
Dsgn. L = 4.08 ft	1	0.211	0.166	147.25	-30.17	147.25	775.00	697.50	1.91	1.00	44.00	264.96	264.96
Dsgn. L = 4.00 ft	2	0.043	0.029		-30.17	30.17	775.00	697.50	1.00	1.00	7.75	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.101	0.186	70.43		70.43	775.00	697.50	1.72	1.00	49.40	264.96	264.96
Dsgn. L = 3.98 ft	1	0.295	0.186	205.63	70.43	205.63	775.00	697.50	1.36	1.00	49.25	264.96	264.96
Dsgn. L = 4.08 ft	1	0.402	0.126	280.33	205.63	280.33	775.00	697.50	1.12	1.00	33.50	264.96	264.96
Dsgn. L = 3.98 ft	1	0.415	0.067	289.31	280.33	289.31	775.00	697.50	1.01	1.00	17.75	264.96	264.96
Dsgn. L = 3.98 ft	1	0.415	0.052	289.31	235.99	289.31	775.00	697.50	1.08	1.00	13.75	264.96	264.96
Dsgn. L = 3.98 ft	1	0.338	0.111	235.99	120.37	235.99	775.00	697.50	1.23	1.00	29.49	264.96	264.96
Dsgn. L = 4.08 ft	1	0.173	0.171	120.37	-62.17	120.37	775.00	697.50	2.16	1.00	45.25	264.96	264.96
Dsgn. L = 4.00 ft	2	0.089	0.059		-62.17	62.17	775.00	697.50	1.00	1.00	15.75	264.96	264.96





Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B32**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+0.90D+W+1.60H</b>														
Dsgn. L =	1.43 ft	1	0.032	0.060	22.58		22.58	775.00	697.50	1.71	1.00	15.87	264.96	264.96
Dsgn. L =	3.98 ft	1	0.095	0.059	66.11	22.58	66.11	775.00	697.50	1.36	1.00	15.76	264.96	264.96
Dsgn. L =	4.08 ft	1	0.129	0.040	90.18	66.11	90.18	775.00	697.50	1.12	1.00	10.70	264.96	264.96
Dsgn. L =	3.98 ft	1	0.134	0.021	93.13	90.18	93.13	775.00	697.50	1.01	1.00	5.63	264.96	264.96
Dsgn. L =	3.98 ft	1	0.134	0.017	93.13	76.07	93.13	775.00	697.50	1.08	1.00	4.49	264.96	264.96
Dsgn. L =	3.98 ft	1	0.109	0.036	76.07	38.98	76.07	775.00	697.50	1.23	1.00	9.55	264.96	264.96
Dsgn. L =	4.08 ft	1	0.056	0.055	38.98	-19.63	38.98	775.00	697.50	2.16	1.00	14.61	264.96	264.96
Dsgn. L =	4.00 ft	2	0.028	0.019		-19.63	19.63	775.00	697.50	1.00	1.00	5.06	264.96	264.96
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>														
Dsgn. L =	1.43 ft	1	0.043	0.080	30.11		30.11	775.00	697.50	1.71	1.00	21.16	264.96	264.96
Dsgn. L =	3.98 ft	1	0.124	0.079	86.58	30.11	86.58	775.00	697.50	1.36	1.00	21.01	264.96	264.96
Dsgn. L =	4.08 ft	1	0.166	0.052	115.45	86.58	115.45	775.00	697.50	1.11	1.00	13.87	264.96	264.96
Dsgn. L =	3.98 ft	1	0.166	0.025	115.54	114.62	115.54	775.00	697.50	1.00	1.00	6.71	264.96	264.96
Dsgn. L =	3.98 ft	1	0.164	0.029	114.62	85.52	114.62	775.00	697.50	1.11	1.00	7.58	264.96	264.96
Dsgn. L =	3.98 ft	1	0.123	0.056	85.52	28.13	85.52	775.00	697.50	1.35	1.00	14.73	264.96	264.96
Dsgn. L =	4.08 ft	1	0.086	0.083	28.13	-59.77	59.77	775.00	697.50	2.18	1.00	21.89	264.96	264.96
Dsgn. L =	4.00 ft	2	0.086	0.057		-59.77	59.77	775.00	697.50	1.00	1.00	15.15	264.96	264.96
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>														
Dsgn. L =	1.43 ft	1	0.100	0.184	69.54		69.54	775.00	697.50	1.72	1.00	48.77	264.96	264.96
Dsgn. L =	3.98 ft	1	0.293	0.184	204.58	69.54	204.58	775.00	697.50	1.37	1.00	48.62	264.96	264.96
Dsgn. L =	4.08 ft	1	0.404	0.126	281.56	204.58	281.56	775.00	697.50	1.12	1.00	33.48	264.96	264.96
Dsgn. L =	3.98 ft	1	0.423	0.069	295.20	281.56	295.20	775.00	697.50	1.02	1.00	18.32	264.96	264.96
Dsgn. L =	3.98 ft	1	0.423	0.045	295.20	248.91	295.20	775.00	697.50	1.06	1.00	11.98	264.96	264.96
Dsgn. L =	3.98 ft	1	0.357	0.102	248.91	142.69	248.91	775.00	697.50	1.20	1.00	27.12	264.96	264.96
Dsgn. L =	4.08 ft	1	0.205	0.160	142.69	-27.77	142.69	775.00	697.50	1.90	1.00	42.28	264.96	264.96
Dsgn. L =	4.00 ft	2	0.040	0.027		-27.77	27.77	775.00	697.50	1.00	1.00	7.15	264.96	264.96
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>														
Dsgn. L =	1.43 ft	1	0.097	0.179	67.74		67.74	775.00	697.50	1.72	1.00	47.51	264.96	264.96
Dsgn. L =	3.98 ft	1	0.284	0.179	197.79	67.74	197.79	775.00	697.50	1.36	1.00	47.37	264.96	264.96
Dsgn. L =	4.08 ft	1	0.387	0.122	269.66	197.79	269.66	775.00	697.50	1.12	1.00	32.22	264.96	264.96
Dsgn. L =	3.98 ft	1	0.399	0.064	278.30	269.66	278.30	775.00	697.50	1.01	1.00	17.06	264.96	264.96
Dsgn. L =	3.98 ft	1	0.399	0.050	278.30	227.02	278.30	775.00	697.50	1.08	1.00	13.23	264.96	264.96
Dsgn. L =	3.98 ft	1	0.325	0.107	227.02	115.81	227.02	775.00	697.50	1.23	1.00	28.38	264.96	264.96
Dsgn. L =	4.08 ft	1	0.166	0.164	115.81	-59.77	115.81	775.00	697.50	2.16	1.00	43.53	264.96	264.96
Dsgn. L =	4.00 ft	2	0.086	0.057		-59.77	59.77	775.00	697.50	1.00	1.00	15.15	264.96	264.96
<b>+0.90D+E+0.90H</b>														
Dsgn. L =	1.43 ft	1	0.032	0.060	22.58		22.58	775.00	697.50	1.71	1.00	15.87	264.96	264.96
Dsgn. L =	3.98 ft	1	0.095	0.059	66.11	22.58	66.11	775.00	697.50	1.36	1.00	15.76	264.96	264.96
Dsgn. L =	4.08 ft	1	0.129	0.040	90.18	66.11	90.18	775.00	697.50	1.12	1.00	10.70	264.96	264.96
Dsgn. L =	3.98 ft	1	0.134	0.021	93.13	90.18	93.13	775.00	697.50	1.01	1.00	5.63	264.96	264.96
Dsgn. L =	3.98 ft	1	0.134	0.017	93.13	76.07	93.13	775.00	697.50	1.08	1.00	4.49	264.96	264.96
Dsgn. L =	3.98 ft	1	0.109	0.036	76.07	38.98	76.07	775.00	697.50	1.23	1.00	9.55	264.96	264.96
Dsgn. L =	4.08 ft	1	0.056	0.055	38.98	-19.63	38.98	775.00	697.50	2.16	1.00	14.61	264.96	264.96
Dsgn. L =	4.00 ft	2	0.028	0.019		-19.63	19.63	775.00	697.50	1.00	1.00	5.06	264.96	264.96

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.6962	12.648		0.0000	0.000
	2	0.0000	12.648	+D+L+H	-0.3286	4.000

**Vertical Reactions**

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	43.987	66.045	
Max Upward from Load Combinations	43.987	66.045	
Max Upward from Load Cases	26.353	38.902	
Max Downward from all Load Conditions (Resis)	-1.255		
Max Downward from Load Cases (Resisting U <sub>r</sub> )	-1.255		
+D+H	17.634	27.143	
+D+L+H, LL Comb Run (*L)	16.379	44.398	
+D+L+H, LL Comb Run (L*)	43.987	48.790	
+D+L+H, LL Comb Run (LL)	42.732	66.045	
+D+Lr+H, LL Comb Run (*L)	17.634	27.143	



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B32**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
+D+Lr+H, LL Comb Run (L*)	17.634	27.143	
+D+Lr+H, LL Comb Run (LL)	17.634	27.143	
+D+S+H	23.909	36.868	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	16.693	40.084	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	37.399	43.378	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	36.458	56.319	
+D+0.750L+0.750S+H, LL Comb Run (*L)	21.399	47.378	
+D+0.750L+0.750S+H, LL Comb Run (L*)	42.105	50.672	
+D+0.750L+0.750S+H, LL Comb Run (LL)	41.164	63.613	
+D+0.60W+H	17.634	27.143	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	16.693	40.084	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	37.399	43.378	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	36.458	56.319	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	21.399	47.378	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	42.105	50.672	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	41.164	63.613	
+0.60D+0.60W+0.60H	10.581	16.286	
+D+0.70E+0.60H	17.634	27.143	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	21.399	47.378	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	42.105	50.672	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	41.164	63.613	
+0.60D+0.70E+H	10.581	16.286	
D Only	17.634	27.143	
L Only, LL Comb Run (*L)	-1.255	17.255	
L Only, LL Comb Run (L*)	26.353	21.647	
L Only, LL Comb Run (LL)	25.098	38.902	
S Only	6.275	9.725	
H Only			



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B33

**CODE REFERENCES**

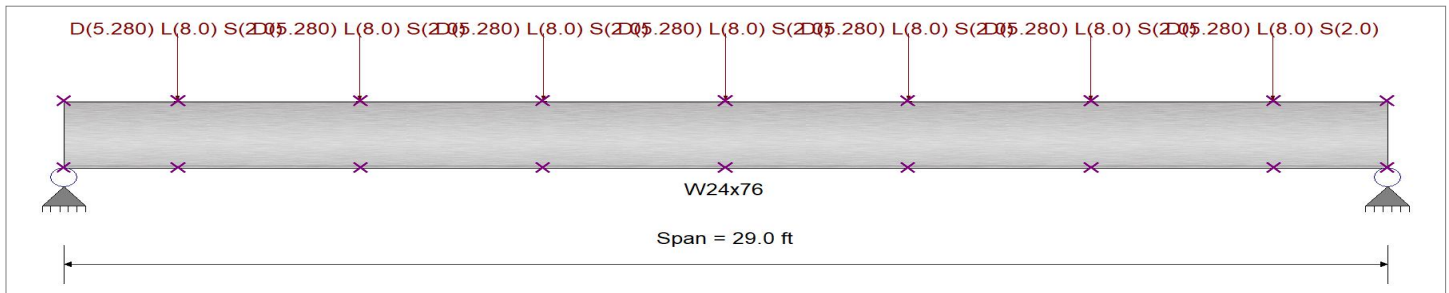
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 2.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 2.50 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.731</b> : 1	Maximum Shear Stress Ratio =	<b>0.228</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	548.225 k-ft	Vu : Applied	71.798 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	29.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.528 in Ratio =	<b>658</b> >=360.	Span: 1 : L Only
Max Upward Transient Deflection	0 in Ratio =	<b>0</b> <360.0	n/a
Max Downward Total Deflection	0.897 in Ratio =	<b>388</b> >=240.	Span: 1 : +D+L+H
Max Upward Total Deflection	0 in Ratio =	<b>0</b> <240.0	n/a

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
<b>+1.40D+1.60H</b>															
Dsgn. L =	2.49 ft	1	0.090	0.087	67.82		67.82	67.82	833.33	750.00	1.69	1.00	27.41	315.48	315.48
Dsgn. L =	3.98 ft	1	0.194	0.086	145.66		67.82	145.66	833.33	750.00	1.27	1.00	27.15	315.48	315.48
Dsgn. L =	3.98 ft	1	0.257	0.061	192.60	145.66	192.60	833.33	750.00	1.11	1.00	1.00	19.34	315.48	315.48
Dsgn. L =	4.06 ft	1	0.279	0.037	208.92	192.60	208.92	833.33	750.00	1.03	1.00	1.00	11.52	315.48	315.48
Dsgn. L =	3.98 ft	1	0.279	0.013	208.92	193.38	208.92	833.33	750.00	1.03	1.00	1.00	4.12	315.48	315.48
Dsgn. L =	3.98 ft	1	0.258	0.038	193.38	146.93	193.38	833.33	750.00	1.11	1.00	1.00	11.93	315.48	315.48
Dsgn. L =	3.98 ft	1	0.196	0.063	146.93	69.56	146.93	833.33	750.00	1.26	1.00	1.00	19.75	315.48	315.48
Dsgn. L =	2.57 ft	1	0.093	0.087	69.56		69.56	833.33	750.00	1.62	1.00	1.00	27.41	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H</b>															
Dsgn. L =	2.49 ft	1	0.226	0.216	169.49		169.49	833.33	750.00	1.69	1.00	1.00	68.30	315.48	315.48
Dsgn. L =	3.98 ft	1	0.485	0.216	363.66	169.49	363.66	833.33	750.00	1.27	1.00	1.00	68.07	315.48	315.48
Dsgn. L =	3.98 ft	1	0.641	0.154	480.73	363.66	480.73	833.33	750.00	1.11	1.00	1.00	48.57	315.48	315.48
Dsgn. L =	4.06 ft	1	0.695	0.092	521.48	480.73	521.48	833.33	750.00	1.03	1.00	1.00	29.07	315.48	315.48
Dsgn. L =	3.98 ft	1	0.695	0.031	521.48	482.70	521.48	833.33	750.00	1.03	1.00	1.00	9.93	315.48	315.48
Dsgn. L =	3.98 ft	1	0.644	0.093	482.70	366.81	482.70	833.33	750.00	1.11	1.00	1.00	29.43	315.48	315.48
Dsgn. L =	3.98 ft	1	0.489	0.155	366.81	173.82	366.81	833.33	750.00	1.26	1.00	1.00	48.93	315.48	315.48
Dsgn. L =	2.57 ft	1	0.232	0.216	173.82		173.82	833.33	750.00	1.62	1.00	1.00	68.30	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B33**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+1.60L+0.50S+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.238	0.228	178.19		178.19	833.33	750.00	1.69	1.00	71.80	315.48	315.48
Dsgn. L = 3.98 ft	1		0.510	0.227	382.32	178.19	382.32	833.33	750.00	1.27	1.00	71.57	315.48	315.48
Dsgn. L = 3.98 ft	1		0.674	0.162	505.39	382.32	505.39	833.33	750.00	1.11	1.00	51.07	315.48	315.48
Dsgn. L = 4.06 ft	1		0.731	0.097	548.23	505.39	548.23	833.33	750.00	1.03	1.00	30.57	315.48	315.48
Dsgn. L = 3.98 ft	1		0.731	0.033	548.23	507.46	548.23	833.33	750.00	1.03	1.00	10.43	315.48	315.48
Dsgn. L = 3.98 ft	1		0.677	0.098	507.46	385.63	507.46	833.33	750.00	1.11	1.00	30.93	315.48	315.48
Dsgn. L = 3.98 ft	1		0.514	0.163	385.63	182.74	385.63	833.33	750.00	1.27	1.00	51.43	315.48	315.48
Dsgn. L = 2.57 ft	1		0.244	0.228	182.74		182.74	833.33	750.00	1.62	1.00	71.80	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.170	0.163	127.73		127.73	833.33	750.00	1.69	1.00	51.50	315.48	315.48
Dsgn. L = 3.98 ft	1		0.365	0.163	274.11	127.73	274.11	833.33	750.00	1.27	1.00	51.27	315.48	315.48
Dsgn. L = 3.98 ft	1		0.483	0.116	362.36	274.11	362.36	833.33	750.00	1.11	1.00	36.57	315.48	315.48
Dsgn. L = 4.06 ft	1		0.524	0.069	393.08	362.36	393.08	833.33	750.00	1.03	1.00	21.87	315.48	315.48
Dsgn. L = 3.98 ft	1		0.524	0.024	393.08	363.85	393.08	833.33	750.00	1.03	1.00	7.53	315.48	315.48
Dsgn. L = 3.98 ft	1		0.485	0.070	363.85	276.49	363.85	833.33	750.00	1.11	1.00	22.23	315.48	315.48
Dsgn. L = 3.98 ft	1		0.369	0.117	276.49	130.99	276.49	833.33	750.00	1.26	1.00	36.93	315.48	315.48
Dsgn. L = 2.57 ft	1		0.175	0.163	130.99		130.99	833.33	750.00	1.62	1.00	51.50	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.078	0.074	58.13		58.13	833.33	750.00	1.69	1.00	23.50	315.48	315.48
Dsgn. L = 3.98 ft	1		0.166	0.074	124.85	58.13	124.85	833.33	750.00	1.27	1.00	23.27	315.48	315.48
Dsgn. L = 3.98 ft	1		0.220	0.053	165.08	124.85	165.08	833.33	750.00	1.11	1.00	16.57	315.48	315.48
Dsgn. L = 4.06 ft	1		0.239	0.031	179.08	165.08	179.08	833.33	750.00	1.03	1.00	9.87	315.48	315.48
Dsgn. L = 3.98 ft	1		0.239	0.011	179.08	165.75	179.08	833.33	750.00	1.03	1.00	3.53	315.48	315.48
Dsgn. L = 3.98 ft	1		0.221	0.032	165.75	125.94	165.75	833.33	750.00	1.11	1.00	10.23	315.48	315.48
Dsgn. L = 3.98 ft	1		0.168	0.054	125.94	59.62	125.94	833.33	750.00	1.26	1.00	16.93	315.48	315.48
Dsgn. L = 2.57 ft	1		0.079	0.074	59.62		59.62	833.33	750.00	1.62	1.00	23.50	315.48	315.48
<b>+1.20D+L+1.60S+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.207	0.199	155.57		155.57	833.33	750.00	1.69	1.00	62.70	315.48	315.48
Dsgn. L = 3.98 ft	1		0.445	0.198	333.81	155.57	333.81	833.33	750.00	1.27	1.00	62.47	315.48	315.48
Dsgn. L = 3.98 ft	1		0.588	0.141	441.27	333.81	441.27	833.33	750.00	1.11	1.00	44.57	315.48	315.48
Dsgn. L = 4.06 ft	1		0.638	0.085	478.68	441.27	478.68	833.33	750.00	1.03	1.00	26.67	315.48	315.48
Dsgn. L = 3.98 ft	1		0.638	0.029	478.68	443.08	478.68	833.33	750.00	1.03	1.00	9.13	315.48	315.48
Dsgn. L = 3.98 ft	1		0.591	0.086	443.08	336.70	443.08	833.33	750.00	1.11	1.00	27.03	315.48	315.48
Dsgn. L = 3.98 ft	1		0.449	0.142	336.70	159.54	336.70	833.33	750.00	1.26	1.00	44.93	315.48	315.48
Dsgn. L = 2.57 ft	1		0.213	0.199	159.54		159.54	833.33	750.00	1.62	1.00	62.70	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.115	0.110	85.97		85.97	833.33	750.00	1.69	1.00	34.70	315.48	315.48
Dsgn. L = 3.98 ft	1		0.246	0.109	184.56	85.97	184.56	833.33	750.00	1.27	1.00	34.47	315.48	315.48
Dsgn. L = 3.98 ft	1		0.325	0.078	243.99	184.56	243.99	833.33	750.00	1.11	1.00	24.57	315.48	315.48
Dsgn. L = 4.06 ft	1		0.353	0.047	264.68	243.99	264.68	833.33	750.00	1.03	1.00	14.67	315.48	315.48
Dsgn. L = 3.98 ft	1		0.353	0.016	264.68	244.99	264.68	833.33	750.00	1.03	1.00	5.13	315.48	315.48
Dsgn. L = 3.98 ft	1		0.327	0.048	244.99	186.16	244.99	833.33	750.00	1.11	1.00	15.03	315.48	315.48
Dsgn. L = 3.98 ft	1		0.248	0.079	186.16	88.17	186.16	833.33	750.00	1.26	1.00	24.93	315.48	315.48
Dsgn. L = 2.57 ft	1		0.118	0.110	88.17		88.17	833.33	750.00	1.62	1.00	34.70	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.170	0.163	127.73		127.73	833.33	750.00	1.69	1.00	51.50	315.48	315.48
Dsgn. L = 3.98 ft	1		0.365	0.163	274.11	127.73	274.11	833.33	750.00	1.27	1.00	51.27	315.48	315.48
Dsgn. L = 3.98 ft	1		0.483	0.116	362.36	274.11	362.36	833.33	750.00	1.11	1.00	36.57	315.48	315.48
Dsgn. L = 4.06 ft	1		0.524	0.069	393.08	362.36	393.08	833.33	750.00	1.03	1.00	21.87	315.48	315.48
Dsgn. L = 3.98 ft	1		0.524	0.024	393.08	363.85	393.08	833.33	750.00	1.03	1.00	7.53	315.48	315.48
Dsgn. L = 3.98 ft	1		0.485	0.070	363.85	276.49	363.85	833.33	750.00	1.11	1.00	22.23	315.48	315.48
Dsgn. L = 3.98 ft	1		0.369	0.117	276.49	130.99	276.49	833.33	750.00	1.26	1.00	36.93	315.48	315.48
Dsgn. L = 2.57 ft	1		0.175	0.163	130.99		130.99	833.33	750.00	1.62	1.00	51.50	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H</b>														
Dsgn. L = 2.49 ft	1		0.182	0.174	136.43		136.43	833.33	750.00	1.69	1.00	55.00	315.48	315.48
Dsgn. L = 3.98 ft	1		0.390	0.174	292.77	136.43	292.77	833.33	750.00	1.27	1.00	54.77	315.48	315.48
Dsgn. L = 3.98 ft	1		0.516	0.124	387.02	292.77	387.02	833.33	750.00	1.11	1.00	39.07	315.48	315.48
Dsgn. L = 4.06 ft	1		0.560	0.074	419.83	387.02	419.83	833.33	750.00	1.03	1.00	23.37	315.48	315.48
Dsgn. L = 3.98 ft	1		0.560	0.025	419.83	388.61	419.83	833.33	750.00	1.03	1.00	8.03	315.48	315.48
Dsgn. L = 3.98 ft	1		0.518	0.075	388.61	295.30	388.61	833.33	750.00	1.11	1.00	23.73	315.48	315.48
Dsgn. L = 3.98 ft	1		0.394	0.125	295.30	139.91	295.30	833.33	750.00	1.26	1.00	39.43	315.48	315.48
Dsgn. L = 2.57 ft	1		0.187	0.174	139.91		139.91	833.33	750.00	1.62	1.00	55.00	315.48	315.48



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B33**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.058	0.056	43.60		43.60	833.33	750.00	1.69	1.00	17.62	315.48	315.48
Dsgn. L = 3.98 ft	1	0.125	0.055	93.64	43.60	93.64	833.33	750.00	1.27	1.00	17.45	315.48	315.48
Dsgn. L = 3.98 ft	1	0.165	0.039	123.81	93.64	123.81	833.33	750.00	1.11	1.00	12.43	315.48	315.48
Dsgn. L = 4.06 ft	1	0.179	0.023	134.31	123.81	134.31	833.33	750.00	1.03	1.00	7.41	315.48	315.48
Dsgn. L = 3.98 ft	1	0.179	0.008	134.31	124.32	134.31	833.33	750.00	1.03	1.00	2.65	315.48	315.48
Dsgn. L = 3.98 ft	1	0.166	0.024	124.32	94.45	124.32	833.33	750.00	1.11	1.00	7.67	315.48	315.48
Dsgn. L = 3.98 ft	1	0.126	0.040	94.45	44.72	94.45	833.33	750.00	1.26	1.00	12.70	315.48	315.48
Dsgn. L = 2.57 ft	1	0.060	0.056	44.72		44.72	833.33	750.00	1.62	1.00	17.62	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.175	0.168	131.21		131.21	833.33	750.00	1.69	1.00	52.90	315.48	315.48
Dsgn. L = 3.98 ft	1	0.375	0.167	281.57	131.21	281.57	833.33	750.00	1.27	1.00	52.67	315.48	315.48
Dsgn. L = 3.98 ft	1	0.496	0.119	372.23	281.57	372.23	833.33	750.00	1.11	1.00	37.57	315.48	315.48
Dsgn. L = 4.06 ft	1	0.538	0.071	403.78	372.23	403.78	833.33	750.00	1.03	1.00	22.47	315.48	315.48
Dsgn. L = 3.98 ft	1	0.538	0.025	403.78	373.75	403.78	833.33	750.00	1.03	1.00	7.73	315.48	315.48
Dsgn. L = 3.98 ft	1	0.498	0.072	373.75	284.01	373.75	833.33	750.00	1.11	1.00	22.83	315.48	315.48
Dsgn. L = 3.98 ft	1	0.379	0.120	284.01	134.56	284.01	833.33	750.00	1.26	1.00	37.93	315.48	315.48
Dsgn. L = 2.57 ft	1	0.179	0.168	134.56		134.56	833.33	750.00	1.62	1.00	52.90	315.48	315.48
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 2.49 ft	1	0.058	0.056	43.60		43.60	833.33	750.00	1.69	1.00	17.62	315.48	315.48
Dsgn. L = 3.98 ft	1	0.125	0.055	93.64	43.60	93.64	833.33	750.00	1.27	1.00	17.45	315.48	315.48
Dsgn. L = 3.98 ft	1	0.165	0.039	123.81	93.64	123.81	833.33	750.00	1.11	1.00	12.43	315.48	315.48
Dsgn. L = 4.06 ft	1	0.179	0.023	134.31	123.81	134.31	833.33	750.00	1.03	1.00	7.41	315.48	315.48
Dsgn. L = 3.98 ft	1	0.179	0.008	134.31	124.32	134.31	833.33	750.00	1.03	1.00	2.65	315.48	315.48
Dsgn. L = 3.98 ft	1	0.166	0.024	124.32	94.45	124.32	833.33	750.00	1.11	1.00	7.67	315.48	315.48
Dsgn. L = 3.98 ft	1	0.126	0.040	94.45	44.72	94.45	833.33	750.00	1.26	1.00	12.70	315.48	315.48
Dsgn. L = 2.57 ft	1	0.060	0.056	44.72		44.72	833.33	750.00	1.62	1.00	17.62	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.8969	14.583		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	47.582	47.582
Max Upward from Load Combinations	47.582	47.582
Max Upward from Load Cases	28.000	28.000
+D+H	19.582	19.582
+D+L+H	47.582	47.582
+D+Lr+H	19.582	19.582
+D+S+H	26.582	26.582
+D+0.750Lr+0.750L+H	40.582	40.582
+D+0.750L+0.750S+H	45.832	45.832
+D+0.60W+H	19.582	19.582
+D+0.750Lr+0.750L+0.450W+H	40.582	40.582
+D+0.750L+0.750S+0.450W+H	45.832	45.832
+0.60D+0.60W+0.60H	11.749	11.749
+D+0.70E+0.60H	19.582	19.582
+D+0.750L+0.750S+0.5250E+H	45.832	45.832
+0.60D+0.70E+H	11.749	11.749
D Only	19.582	19.582
L Only	28.000	28.000
S Only	7.000	7.000
H Only		

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B34**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

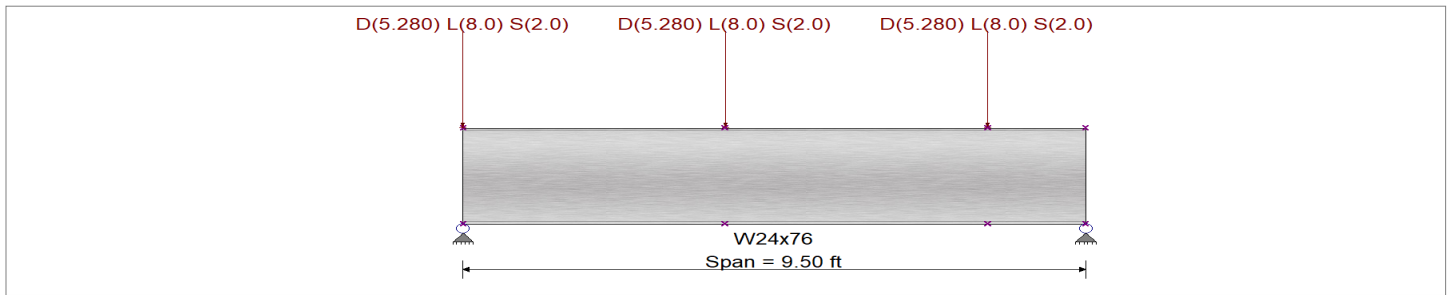
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.080</b> : 1	Maximum Shear Stress Ratio =	<b>0.082</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	60.262 k-ft	Vu : Applied	25.868 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	9.500 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.006 in Ratio = <b>19,679</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.010 in Ratio = <b>11578</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.99 ft	1	0.031	0.019	22.90		22.90	833.33	750.00	1.66	1.00	5.95	315.48	315.48
Dsgn. L =	3.99 ft	1	0.031	0.018	22.93	14.69	22.93	833.33	750.00	1.16	1.00	5.53	315.48	315.48
Dsgn. L =	1.52 ft	1	0.020	0.031	14.69		14.69	833.33	750.00	1.65	1.00	9.84	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	3.99 ft	1	0.076	0.046	57.26		57.26	833.33	750.00	1.67	1.00	14.53	315.48	315.48
Dsgn. L =	3.99 ft	1	0.076	0.045	57.32	36.91	57.32	833.33	750.00	1.16	1.00	14.17	315.48	315.48
Dsgn. L =	1.52 ft	1	0.049	0.078	36.91		36.91	833.33	750.00	1.65	1.00	24.60	315.48	315.48
<b>+1.20D+1.60Lr+0.50S+1.60H</b>														
Dsgn. L =	3.99 ft	1	0.080	0.048	60.20		60.20	833.33	750.00	1.67	1.00	15.27	315.48	315.48
Dsgn. L =	3.99 ft	1	0.080	0.047	60.26	38.81	60.26	833.33	750.00	1.16	1.00	14.91	315.48	315.48
Dsgn. L =	1.52 ft	1	0.052	0.082	38.81		38.81	833.33	750.00	1.65	1.00	25.87	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H</b>														
Dsgn. L =	3.99 ft	1	0.058	0.035	43.15		43.15	833.33	750.00	1.67	1.00	11.00	315.48	315.48
Dsgn. L =	3.99 ft	1	0.058	0.034	43.19	27.79	43.19	833.33	750.00	1.16	1.00	10.63	315.48	315.48
Dsgn. L =	1.52 ft	1	0.037	0.059	27.79		27.79	833.33	750.00	1.65	1.00	18.54	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H</b>														
Dsgn. L =	3.99 ft	1	0.026	0.016	19.63		19.63	833.33	750.00	1.66	1.00	5.10	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B34**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+L+1.60S+1.60H	Dsgn. L = 3.99 ft	1	0.026	0.015	19.65	12.59	19.65	833.33	750.00	1.16	1.00	4.74	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.017	0.027	12.59		12.59	833.33	750.00	1.65	1.00	8.44	315.48	315.48
+1.20D+L+1.60S+0.50W+1.60H	Dsgn. L = 3.99 ft	1	0.070	0.042	52.56		52.56	833.33	750.00	1.67	1.00	13.35	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.070	0.041	52.61	33.87	52.61	833.33	750.00	1.16	1.00	12.99	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.045	0.072	33.87		33.87	833.33	750.00	1.65	1.00	22.58	315.48	315.48
+1.20D+L+0.50Lr+W+1.60H	Dsgn. L = 3.99 ft	1	0.039	0.024	29.04		29.04	833.33	750.00	1.66	1.00	7.46	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.039	0.022	29.07	18.67	29.07	833.33	750.00	1.16	1.00	7.10	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.025	0.040	18.67		18.67	833.33	750.00	1.65	1.00	12.48	315.48	315.48
+1.20D+L+0.50S+W+1.60H	Dsgn. L = 3.99 ft	1	0.058	0.035	43.15		43.15	833.33	750.00	1.67	1.00	11.00	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.058	0.034	43.19	27.79	43.19	833.33	750.00	1.16	1.00	10.63	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.037	0.059	27.79		27.79	833.33	750.00	1.65	1.00	18.54	315.48	315.48
+0.90D+W+1.60H	Dsgn. L = 3.99 ft	1	0.020	0.012	14.72		14.72	833.33	750.00	1.66	1.00	3.83	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.020	0.011	14.74	9.44	14.74	833.33	750.00	1.16	1.00	3.55	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.013	0.020	9.44		9.44	833.33	750.00	1.65	1.00	6.33	315.48	315.48
+1.20D+L+0.20S+E+1.60H	Dsgn. L = 3.99 ft	1	0.059	0.036	44.33		44.33	833.33	750.00	1.67	1.00	11.29	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.059	0.035	44.37	28.55	44.37	833.33	750.00	1.16	1.00	10.93	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.038	0.060	28.55		28.55	833.33	750.00	1.65	1.00	19.05	315.48	315.48
+0.90D+E+0.90H	Dsgn. L = 3.99 ft	1	0.020	0.012	14.72		14.72	833.33	750.00	1.66	1.00	3.83	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.020	0.011	14.74	9.44	14.74	833.33	750.00	1.16	1.00	3.55	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.013	0.020	9.44		9.44	833.33	750.00	1.65	1.00	6.33	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0098	4.777		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	23.426	17.136		
Max Upward from Load Combinations	23.426	17.136		
Max Upward from Load Cases	13.895	10.105		
+D+H	9.532	7.030		
+D+L+H	23.426	17.136		
+D+Lr+H	9.532	7.030		
+D+S+H	13.005	9.557		
+D+0.750Lr+0.750L+H	19.953	14.609		
+D+0.750L+0.750S+H	22.558	16.504		
+D+0.60W+H	9.532	7.030		
+D+0.750Lr+0.750L+0.450W+H	19.953	14.609		
+D+0.750L+0.750S+0.450W+H	22.558	16.504		
+0.60D+0.60W+0.60H	5.719	4.218		
+D+0.70E+0.60H	9.532	7.030		
+D+0.750L+0.750S+0.5250E+H	22.558	16.504		
+0.60D+0.70E+H	5.719	4.218		
D Only	9.532	7.030		
L Only	13.895	10.105		
S Only	3.474	2.526		
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B35

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

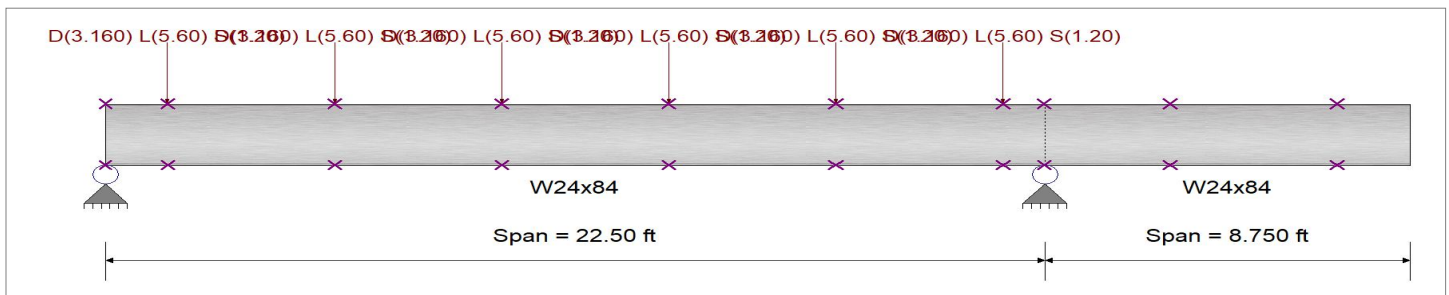
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 1.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading

Load(s) for Span Number 1

- Point Load : D = 3.160, L = 5.60, S = 1.20 k @ 1.50 ft
- Point Load : D = 3.160, L = 5.60, S = 1.20 k @ 5.50 ft
- Point Load : D = 3.160, L = 5.60, S = 1.20 k @ 9.50 ft
- Point Load : D = 3.160, L = 5.60, S = 1.20 k @ 13.50 ft
- Point Load : D = 3.160, L = 5.60, S = 1.20 k @ 17.50 ft
- Point Load : D = 3.160, L = 5.60, S = 1.20 k @ 21.50 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.258</b> : 1	Maximum Shear Stress Ratio =	<b>0.124</b> : 1
Section used for this span	<b>W24x84</b>	Section used for this span	<b>W24x84</b>
Mu : Applied	216.411 k-ft	Vu : Applied	42.252 k
Mn * Phi : Allowable	840.000 k-ft	Vn * Phi : Allowable	339.810 k
Load Combination	1.40D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.40D+1.60L+0.50S+1.60H, LL Comb Run (L*)
Span # where maximum occurs	Span # 1	Location of maximum on span	22.500 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.119 in Ratio = <b>2,268</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.147 in Ratio = <b>1,425</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.191 in Ratio = <b>1416</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.232 in Ratio = <b>904</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L =	1.44 ft	1	0.024	0.041	20.18		20.18	933.33	840.00	1.66	1.00	14.10	339.81	339.81
Dsgn. L =	4.05 ft	1	0.069	0.041	57.98	20.18	57.98	933.33	840.00	1.36	1.00	13.93	339.81	339.81
Dsgn. L =	3.96 ft	1	0.090	0.027	75.35	57.98	75.35	933.33	840.00	1.10	1.00	9.03	339.81	339.81
Dsgn. L =	4.05 ft	1	0.090	0.015	75.54	73.46	75.54	933.33	840.00	1.01	1.00	5.18	339.81	339.81





Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B35**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios				Summary of Moment Values					Summary of Shear Values		
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+0.50Lr+1.60L+1.60H, LL													
Dsgn. L = 3.96 ft	1	0.087	0.017	73.46	52.01	73.46	933.33	840.00	1.13	1.00	5.65	339.81	339.81
Dsgn. L = 3.96 ft	1	0.062	0.031	52.01	11.37	52.01	933.33	840.00	1.45	1.00	10.54	339.81	339.81
Dsgn. L = 1.08 ft	1	0.014	0.044	11.37	-4.50	11.37	933.33	840.00	2.11	1.00	15.09	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-4.50	4.50	933.33	840.00	1.00	1.00	1.03	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.96	1.96	933.33	840.00	1.00	1.00	0.68	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.18	0.18	0.18	933.33	840.00	1.00	1.00	0.21	339.81	339.81
+1.20D+0.50Lr+1.60L+1.60H, LL													
Dsgn. L = 1.44 ft	1	0.021	0.036	17.30		17.30	933.33	840.00	1.66	1.00	12.09	339.81	339.81
Dsgn. L = 4.05 ft	1	0.059	0.035	49.70	17.30	49.70	933.33	840.00	1.36	1.00	11.94	339.81	339.81
Dsgn. L = 3.96 ft	1	0.077	0.023	64.58	49.70	64.58	933.33	840.00	1.10	1.00	7.74	339.81	339.81
Dsgn. L = 4.05 ft	1	0.077	0.013	64.75	62.96	64.75	933.33	840.00	1.01	1.00	4.44	339.81	339.81
Dsgn. L = 3.96 ft	1	0.075	0.014	62.96	44.58	62.96	933.33	840.00	1.13	1.00	4.84	339.81	339.81
Dsgn. L = 3.96 ft	1	0.053	0.027	44.58	9.75	44.58	933.33	840.00	1.45	1.00	9.03	339.81	339.81
Dsgn. L = 1.08 ft	1	0.012	0.038	9.75	-3.86	9.75	933.33	840.00	2.11	1.00	12.93	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81
+1.20D+0.50Lr+1.60L+1.60H, LL													
Dsgn. L = 1.44 ft	1	0.066	0.113	55.15		55.15	933.33	840.00	1.67	1.00	38.37	339.81	339.81
Dsgn. L = 4.05 ft	1	0.188	0.112	158.24	55.15	158.24	933.33	840.00	1.36	1.00	38.22	339.81	339.81
Dsgn. L = 3.96 ft	1	0.246	0.074	206.33	158.24	206.33	933.33	840.00	1.10	1.00	25.06	339.81	339.81
Dsgn. L = 4.05 ft	1	0.246	0.041	206.89	202.74	206.89	933.33	840.00	1.01	1.00	14.00	339.81	339.81
Dsgn. L = 3.96 ft	1	0.241	0.042	202.74	146.51	202.74	933.33	840.00	1.12	1.00	14.40	339.81	339.81
Dsgn. L = 3.96 ft	1	0.174	0.081	146.51	38.71	146.51	933.33	840.00	1.41	1.00	27.55	339.81	339.81
Dsgn. L = 1.08 ft	1	0.046	0.119	38.71	-3.86	38.71	933.33	840.00	1.75	1.00	40.41	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81
+1.20D+0.50Lr+1.60L+1.60H, LL													
Dsgn. L = 1.44 ft	1	0.066	0.113	55.15		55.15	933.33	840.00	1.67	1.00	38.37	339.81	339.81
Dsgn. L = 4.05 ft	1	0.188	0.112	158.24	55.15	158.24	933.33	840.00	1.36	1.00	38.22	339.81	339.81
Dsgn. L = 3.96 ft	1	0.246	0.074	206.33	158.24	206.33	933.33	840.00	1.10	1.00	25.06	339.81	339.81
Dsgn. L = 4.05 ft	1	0.246	0.041	206.89	202.74	206.89	933.33	840.00	1.01	1.00	14.00	339.81	339.81
Dsgn. L = 3.96 ft	1	0.241	0.042	202.74	146.51	202.74	933.33	840.00	1.12	1.00	14.40	339.81	339.81
Dsgn. L = 3.96 ft	1	0.174	0.081	146.51	38.71	146.51	933.33	840.00	1.41	1.00	27.55	339.81	339.81
Dsgn. L = 1.08 ft	1	0.046	0.119	38.71	-3.86	38.71	933.33	840.00	1.75	1.00	40.41	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81
+1.20D+1.60L+0.50S+1.60H, LL (													
Dsgn. L = 1.44 ft	1	0.024	0.041	19.83		19.83	933.33	840.00	1.66	1.00	13.85	339.81	339.81
Dsgn. L = 4.05 ft	1	0.068	0.040	56.97	19.83	56.97	933.33	840.00	1.36	1.00	13.70	339.81	339.81
Dsgn. L = 3.96 ft	1	0.088	0.026	74.08	56.97	74.08	933.33	840.00	1.10	1.00	8.90	339.81	339.81
Dsgn. L = 4.05 ft	1	0.088	0.015	74.27	72.32	74.27	933.33	840.00	1.01	1.00	5.08	339.81	339.81
Dsgn. L = 3.96 ft	1	0.086	0.016	72.32	51.40	72.32	933.33	840.00	1.13	1.00	5.48	339.81	339.81
Dsgn. L = 3.96 ft	1	0.061	0.030	51.40	11.69	51.40	933.33	840.00	1.44	1.00	10.27	339.81	339.81
Dsgn. L = 1.08 ft	1	0.014	0.043	11.69	-3.86	11.69	933.33	840.00	2.08	1.00	14.77	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81
+1.20D+1.60L+0.50S+1.60H, LL (													
Dsgn. L = 1.44 ft	1	0.069	0.118	57.68		57.68	933.33	840.00	1.67	1.00	40.13	339.81	339.81
Dsgn. L = 4.05 ft	1	0.197	0.118	165.51	57.68	165.51	933.33	840.00	1.36	1.00	39.98	339.81	339.81
Dsgn. L = 3.96 ft	1	0.257	0.077	215.82	165.51	215.82	933.33	840.00	1.10	1.00	26.22	339.81	339.81
Dsgn. L = 4.05 ft	1	0.258	0.043	216.41	212.10	216.41	933.33	840.00	1.01	1.00	14.64	339.81	339.81
Dsgn. L = 3.96 ft	1	0.252	0.044	212.10	153.33	212.10	933.33	840.00	1.12	1.00	15.04	339.81	339.81
Dsgn. L = 3.96 ft	1	0.183	0.085	153.33	40.65	153.33	933.33	840.00	1.41	1.00	28.79	339.81	339.81
Dsgn. L = 1.08 ft	1	0.048	0.124	40.65	-3.86	40.65	933.33	840.00	1.75	1.00	42.25	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81
+1.20D+1.60L+0.50S+1.60H, LL (													
Dsgn. L = 1.44 ft	1	0.069	0.118	57.68		57.68	933.33	840.00	1.67	1.00	40.13	339.81	339.81

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B35**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.05 ft	1	0.197	0.118	165.51	57.68	165.51	933.33	840.00	1.36	1.00	39.98	339.81	339.81
Dsgn. L = 3.96 ft	1	0.257	0.077	215.82	165.51	215.82	933.33	840.00	1.10	1.00	26.22	339.81	339.81
Dsgn. L = 4.05 ft	1	0.258	0.043	216.41	212.10	216.41	933.33	840.00	1.01	1.00	14.64	339.81	339.81
Dsgn. L = 3.96 ft	1	0.252	0.044	212.10	153.33	212.10	933.33	840.00	1.12	1.00	15.04	339.81	339.81
Dsgn. L = 3.96 ft	1	0.183	0.085	153.33	40.65	153.33	933.33	840.00	1.41	1.00	28.79	339.81	339.81
Dsgn. L = 1.08 ft	1	0.048	0.124	40.65	-3.86	40.65	933.33	840.00	1.75	1.00	42.25	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.44 ft	1	0.021	0.036	17.30		17.30	933.33	840.00	1.66	1.00	12.09	339.81	339.81
Dsgn. L = 4.05 ft	1	0.059	0.035	49.70	17.30	49.70	933.33	840.00	1.36	1.00	11.94	339.81	339.81
Dsgn. L = 3.96 ft	1	0.077	0.023	64.58	49.70	64.58	933.33	840.00	1.10	1.00	7.74	339.81	339.81
Dsgn. L = 4.05 ft	1	0.077	0.013	64.75	62.96	64.75	933.33	840.00	1.01	1.00	4.44	339.81	339.81
Dsgn. L = 3.96 ft	1	0.075	0.014	62.96	44.58	62.96	933.33	840.00	1.13	1.00	4.84	339.81	339.81
Dsgn. L = 3.96 ft	1	0.053	0.027	44.58	9.75	44.58	933.33	840.00	1.45	1.00	9.03	339.81	339.81
Dsgn. L = 1.08 ft	1	0.012	0.038	9.75	-3.86	9.75	933.33	840.00	2.11	1.00	12.93	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.44 ft	1	0.049	0.084	40.95		40.95	933.33	840.00	1.67	1.00	28.51	339.81	339.81
Dsgn. L = 4.05 ft	1	0.140	0.083	117.54	40.95	117.54	933.33	840.00	1.36	1.00	28.37	339.81	339.81
Dsgn. L = 3.96 ft	1	0.182	0.055	153.18	117.54	153.18	933.33	840.00	1.10	1.00	18.57	339.81	339.81
Dsgn. L = 4.05 ft	1	0.183	0.031	153.59	150.32	153.59	933.33	840.00	1.01	1.00	10.42	339.81	339.81
Dsgn. L = 3.96 ft	1	0.179	0.032	150.32	108.28	150.32	933.33	840.00	1.13	1.00	10.82	339.81	339.81
Dsgn. L = 3.96 ft	1	0.129	0.061	108.28	27.85	108.28	933.33	840.00	1.42	1.00	20.61	339.81	339.81
Dsgn. L = 1.08 ft	1	0.033	0.089	27.85	-3.86	27.85	933.33	840.00	1.80	1.00	30.11	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.44 ft	1	0.049	0.084	40.95		40.95	933.33	840.00	1.67	1.00	28.51	339.81	339.81
Dsgn. L = 4.05 ft	1	0.140	0.083	117.54	40.95	117.54	933.33	840.00	1.36	1.00	28.37	339.81	339.81
Dsgn. L = 3.96 ft	1	0.182	0.055	153.18	117.54	153.18	933.33	840.00	1.10	1.00	18.57	339.81	339.81
Dsgn. L = 4.05 ft	1	0.183	0.031	153.59	150.32	153.59	933.33	840.00	1.01	1.00	10.42	339.81	339.81
Dsgn. L = 3.96 ft	1	0.179	0.032	150.32	108.28	150.32	933.33	840.00	1.13	1.00	10.82	339.81	339.81
Dsgn. L = 3.96 ft	1	0.129	0.061	108.28	27.85	108.28	933.33	840.00	1.42	1.00	20.61	339.81	339.81
Dsgn. L = 1.08 ft	1	0.033	0.089	27.85	-3.86	27.85	933.33	840.00	1.80	1.00	30.11	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.44 ft	1	0.021	0.036	17.30		17.30	933.33	840.00	1.66	1.00	12.09	339.81	339.81
Dsgn. L = 4.05 ft	1	0.059	0.035	49.70	17.30	49.70	933.33	840.00	1.36	1.00	11.94	339.81	339.81
Dsgn. L = 3.96 ft	1	0.077	0.023	64.58	49.70	64.58	933.33	840.00	1.10	1.00	7.74	339.81	339.81
Dsgn. L = 4.05 ft	1	0.077	0.013	64.75	62.96	64.75	933.33	840.00	1.01	1.00	4.44	339.81	339.81
Dsgn. L = 3.96 ft	1	0.075	0.014	62.96	44.58	62.96	933.33	840.00	1.13	1.00	4.84	339.81	339.81
Dsgn. L = 3.96 ft	1	0.053	0.027	44.58	9.75	44.58	933.33	840.00	1.45	1.00	9.03	339.81	339.81
Dsgn. L = 1.08 ft	1	0.012	0.038	9.75	-3.86	9.75	933.33	840.00	2.11	1.00	12.93	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.44 ft	1	0.021	0.036	17.30		17.30	933.33	840.00	1.66	1.00	12.09	339.81	339.81
Dsgn. L = 4.05 ft	1	0.059	0.035	49.70	17.30	49.70	933.33	840.00	1.36	1.00	11.94	339.81	339.81
Dsgn. L = 3.96 ft	1	0.077	0.023	64.58	49.70	64.58	933.33	840.00	1.10	1.00	7.74	339.81	339.81
Dsgn. L = 4.05 ft	1	0.077	0.013	64.75	62.96	64.75	933.33	840.00	1.01	1.00	4.44	339.81	339.81
Dsgn. L = 3.96 ft	1	0.075	0.014	62.96	44.58	62.96	933.33	840.00	1.13	1.00	4.84	339.81	339.81
Dsgn. L = 3.96 ft	1	0.053	0.027	44.58	9.75	44.58	933.33	840.00	1.45	1.00	9.03	339.81	339.81
Dsgn. L = 1.08 ft	1	0.012	0.038	9.75	-3.86	9.75	933.33	840.00	2.11	1.00	12.93	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B35**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 1.75 ft	2	0.000	0.001		-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81
	Dsgn. L = 1.44 ft	1	0.021	0.036	17.30		17.30	933.33	840.00	1.66	1.00	12.09	339.81	339.81
	Dsgn. L = 4.05 ft	1	0.059	0.035	49.70	17.30	49.70	933.33	840.00	1.36	1.00	11.94	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.077	0.023	64.58	49.70	64.58	933.33	840.00	1.10	1.00	7.74	339.81	339.81
	Dsgn. L = 4.05 ft	1	0.077	0.013	64.75	62.96	64.75	933.33	840.00	1.01	1.00	4.44	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.075	0.014	62.96	44.58	62.96	933.33	840.00	1.13	1.00	4.84	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.053	0.027	44.58	9.75	44.58	933.33	840.00	1.45	1.00	9.03	339.81	339.81
	Dsgn. L = 1.08 ft	1	0.012	0.038	9.75	-3.86	9.75	933.33	840.00	2.11	1.00	12.93	339.81	339.81
	Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
	Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
	Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 1.44 ft	1	0.030	0.052	25.41		25.41	933.33	840.00	1.67	1.00	17.72	339.81	339.81
	Dsgn. L = 4.05 ft	1	0.087	0.052	72.96	25.41	72.96	933.33	840.00	1.36	1.00	17.57	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.113	0.034	94.96	72.96	94.96	933.33	840.00	1.10	1.00	11.45	339.81	339.81
	Dsgn. L = 4.05 ft	1	0.113	0.019	95.21	92.92	95.21	933.33	840.00	1.01	1.00	6.49	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.111	0.020	92.92	66.42	92.92	933.33	840.00	1.13	1.00	6.89	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.079	0.038	66.42	15.95	66.42	933.33	840.00	1.43	1.00	13.00	339.81	339.81
	Dsgn. L = 1.08 ft	1	0.019	0.055	15.95	-3.86	15.95	933.33	840.00	1.94	1.00	18.82	339.81	339.81
	Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
	Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
	Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	
	+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 1.44 ft	1	0.058	0.100	49.06		49.06	933.33	840.00	1.67	1.00	34.14	339.81
	Dsgn. L = 4.05 ft	1	0.168	0.100	140.80	49.06	140.80	933.33	840.00	1.36	1.00	34.00	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.219	0.066	183.55	140.80	183.55	933.33	840.00	1.10	1.00	22.28	339.81	339.81
	Dsgn. L = 4.05 ft	1	0.219	0.037	184.05	180.28	184.05	933.33	840.00	1.01	1.00	12.46	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.215	0.038	180.28	130.13	180.28	933.33	840.00	1.12	1.00	12.86	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.155	0.072	130.13	34.05	130.13	933.33	840.00	1.41	1.00	24.57	339.81	339.81
	Dsgn. L = 1.08 ft	1	0.041	0.106	34.05	-3.86	34.05	933.33	840.00	1.77	1.00	36.00	339.81	339.81
	Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
	Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
	Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	
	+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 1.44 ft	1	0.058	0.100	49.06		49.06	933.33	840.00	1.67	1.00	34.14	339.81
	Dsgn. L = 4.05 ft	1	0.168	0.100	140.80	49.06	140.80	933.33	840.00	1.36	1.00	34.00	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.219	0.066	183.55	140.80	183.55	933.33	840.00	1.10	1.00	22.28	339.81	339.81
	Dsgn. L = 4.05 ft	1	0.219	0.037	184.05	180.28	184.05	933.33	840.00	1.01	1.00	12.46	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.215	0.038	180.28	130.13	180.28	933.33	840.00	1.12	1.00	12.86	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.155	0.072	130.13	34.05	130.13	933.33	840.00	1.41	1.00	24.57	339.81	339.81
	Dsgn. L = 1.08 ft	1	0.041	0.106	34.05	-3.86	34.05	933.33	840.00	1.77	1.00	36.00	339.81	339.81
	Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
	Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
	Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	
	+1.20D+1.60S+0.50W+1.60H	Dsgn. L = 1.44 ft	1	0.030	0.052	25.41		25.41	933.33	840.00	1.67	1.00	17.72	339.81
	Dsgn. L = 4.05 ft	1	0.087	0.052	72.96	25.41	72.96	933.33	840.00	1.36	1.00	17.57	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.113	0.034	94.96	72.96	94.96	933.33	840.00	1.10	1.00	11.45	339.81	339.81
	Dsgn. L = 4.05 ft	1	0.113	0.019	95.21	92.92	95.21	933.33	840.00	1.01	1.00	6.49	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.111	0.020	92.92	66.42	92.92	933.33	840.00	1.13	1.00	6.89	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.079	0.038	66.42	15.95	66.42	933.33	840.00	1.43	1.00	13.00	339.81	339.81
	Dsgn. L = 1.08 ft	1	0.019	0.055	15.95	-3.86	15.95	933.33	840.00	1.94	1.00	18.82	339.81	339.81
	Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
	Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
	Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	
	+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 1.44 ft	1	0.021	0.036	17.30		17.30	933.33	840.00	1.66	1.00	12.09	339.81
	Dsgn. L = 4.05 ft	1	0.059	0.035	49.70	17.30	49.70	933.33	840.00	1.36	1.00	11.94	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.077	0.023	64.58	49.70	64.58	933.33	840.00	1.10	1.00	7.74	339.81	339.81
	Dsgn. L = 4.05 ft	1	0.077	0.013	64.75	62.96	64.75	933.33	840.00	1.01	1.00	4.44	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.075	0.014	62.96	44.58	62.96	933.33	840.00	1.13	1.00	4.84	339.81	339.81
	Dsgn. L = 3.96 ft	1	0.053	0.027	44.58	9.75	44.58	933.33	840.00	1.45	1.00	9.03	339.81	339.81



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B35**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios				Summary of Moment Values					Summary of Shear Values		
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 1.08 ft	1	0.012	0.038	9.75	-3.86	9.75	933.33	840.00	2.11	1.00	12.93	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.44 ft	1	0.049	0.084	40.95		40.95	933.33	840.00	1.67	1.00	28.51	339.81	339.81
Dsgn. L = 4.05 ft	1	0.140	0.083	117.54	40.95	117.54	933.33	840.00	1.36	1.00	28.37	339.81	339.81
Dsgn. L = 3.96 ft	1	0.182	0.055	153.18	117.54	153.18	933.33	840.00	1.10	1.00	18.57	339.81	339.81
Dsgn. L = 4.05 ft	1	0.183	0.031	153.59	150.32	153.59	933.33	840.00	1.01	1.00	10.42	339.81	339.81
Dsgn. L = 3.96 ft	1	0.179	0.032	150.32	108.28	150.32	933.33	840.00	1.13	1.00	10.82	339.81	339.81
Dsgn. L = 3.96 ft	1	0.129	0.061	108.28	27.85	108.28	933.33	840.00	1.42	1.00	20.61	339.81	339.81
Dsgn. L = 1.08 ft	1	0.033	0.089	27.85	-3.86	27.85	933.33	840.00	1.80	1.00	30.11	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.44 ft	1	0.049	0.084	40.95		40.95	933.33	840.00	1.67	1.00	28.51	339.81	339.81
Dsgn. L = 4.05 ft	1	0.140	0.083	117.54	40.95	117.54	933.33	840.00	1.36	1.00	28.37	339.81	339.81
Dsgn. L = 3.96 ft	1	0.182	0.055	153.18	117.54	153.18	933.33	840.00	1.10	1.00	18.57	339.81	339.81
Dsgn. L = 4.05 ft	1	0.183	0.031	153.59	150.32	153.59	933.33	840.00	1.01	1.00	10.42	339.81	339.81
Dsgn. L = 3.96 ft	1	0.179	0.032	150.32	108.28	150.32	933.33	840.00	1.13	1.00	10.82	339.81	339.81
Dsgn. L = 3.96 ft	1	0.129	0.061	108.28	27.85	108.28	933.33	840.00	1.42	1.00	20.61	339.81	339.81
Dsgn. L = 1.08 ft	1	0.033	0.089	27.85	-3.86	27.85	933.33	840.00	1.80	1.00	30.11	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.44 ft	1	0.024	0.041	19.83		19.83	933.33	840.00	1.66	1.00	13.85	339.81	339.81
Dsgn. L = 4.05 ft	1	0.068	0.040	56.97	19.83	56.97	933.33	840.00	1.36	1.00	13.70	339.81	339.81
Dsgn. L = 3.96 ft	1	0.088	0.026	74.08	56.97	74.08	933.33	840.00	1.10	1.00	8.90	339.81	339.81
Dsgn. L = 4.05 ft	1	0.088	0.015	74.27	72.32	74.27	933.33	840.00	1.01	1.00	5.08	339.81	339.81
Dsgn. L = 3.96 ft	1	0.086	0.016	72.32	51.40	72.32	933.33	840.00	1.13	1.00	5.48	339.81	339.81
Dsgn. L = 3.96 ft	1	0.061	0.030	51.40	11.69	51.40	933.33	840.00	1.44	1.00	10.27	339.81	339.81
Dsgn. L = 1.08 ft	1	0.014	0.043	11.69	-3.86	11.69	933.33	840.00	2.08	1.00	14.77	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.44 ft	1	0.052	0.089	43.49		43.49	933.33	840.00	1.67	1.00	30.27	339.81	339.81
Dsgn. L = 4.05 ft	1	0.149	0.089	124.81	43.49	124.81	933.33	840.00	1.36	1.00	30.13	339.81	339.81
Dsgn. L = 3.96 ft	1	0.194	0.058	162.67	124.81	162.67	933.33	840.00	1.10	1.00	19.73	339.81	339.81
Dsgn. L = 4.05 ft	1	0.194	0.033	163.11	159.68	163.11	933.33	840.00	1.01	1.00	11.06	339.81	339.81
Dsgn. L = 3.96 ft	1	0.190	0.034	159.68	115.11	159.68	933.33	840.00	1.13	1.00	11.46	339.81	339.81
Dsgn. L = 3.96 ft	1	0.137	0.064	115.11	29.79	115.11	933.33	840.00	1.42	1.00	21.85	339.81	339.81
Dsgn. L = 1.08 ft	1	0.035	0.094	29.79	-3.86	29.79	933.33	840.00	1.79	1.00	31.95	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.44 ft	1	0.052	0.089	43.49		43.49	933.33	840.00	1.67	1.00	30.27	339.81	339.81
Dsgn. L = 4.05 ft	1	0.149	0.089	124.81	43.49	124.81	933.33	840.00	1.36	1.00	30.13	339.81	339.81
Dsgn. L = 3.96 ft	1	0.194	0.058	162.67	124.81	162.67	933.33	840.00	1.10	1.00	19.73	339.81	339.81
Dsgn. L = 4.05 ft	1	0.194	0.033	163.11	159.68	163.11	933.33	840.00	1.01	1.00	11.06	339.81	339.81
Dsgn. L = 3.96 ft	1	0.190	0.034	159.68	115.11	159.68	933.33	840.00	1.13	1.00	11.46	339.81	339.81
Dsgn. L = 3.96 ft	1	0.137	0.064	115.11	29.79	115.11	933.33	840.00	1.42	1.00	21.85	339.81	339.81
Dsgn. L = 1.08 ft	1	0.035	0.094	29.79	-3.86	29.79	933.33	840.00	1.79	1.00	31.95	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 1.44 ft	1	0.015	0.027	12.97		12.97	933.33	840.00	1.66	1.00	9.06	339.81	339.81
Dsgn. L = 4.05 ft	1	0.044	0.026	37.28	12.97	37.28	933.33	840.00	1.36	1.00	8.96	339.81	339.81
Dsgn. L = 3.96 ft	1	0.058	0.017	48.44	37.28	48.44	933.33	840.00	1.10	1.00	5.81	339.81	339.81

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B35**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.05 ft	1	0.058	0.010	48.56	47.22	48.56	933.33	840.00	1.01	1.00	3.33	339.81	339.81
Dsgn. L = 3.96 ft	1	0.056	0.011	47.22	33.43	47.22	933.33	840.00	1.13	1.00	3.63	339.81	339.81
Dsgn. L = 3.96 ft	1	0.040	0.020	33.43	7.31	33.43	933.33	840.00	1.45	1.00	6.78	339.81	339.81
Dsgn. L = 1.08 ft	1	0.009	0.029	7.31	-2.89	7.31	933.33	840.00	2.11	1.00	9.70	339.81	339.81
Dsgn. L = 2.98 ft	2	0.003	0.002	-0.00	-2.89	2.89	933.33	840.00	1.00	1.00	0.66	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.001	-0.00	-1.26	1.26	933.33	840.00	1.00	1.00	0.44	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.000	-0.12	0.12	933.33	840.00	1.00	1.00	0.13	339.81	339.81	339.81
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 1.44 ft	1	0.022	0.038	18.31		18.31	933.33	840.00	1.66	1.00	12.79	339.81	339.81
Dsgn. L = 4.05 ft	1	0.063	0.037	52.61	18.31	52.61	933.33	840.00	1.36	1.00	12.64	339.81	339.81
Dsgn. L = 3.96 ft	1	0.081	0.024	68.38	52.61	68.38	933.33	840.00	1.10	1.00	8.20	339.81	339.81
Dsgn. L = 4.05 ft	1	0.082	0.014	68.56	66.71	68.56	933.33	840.00	1.01	1.00	4.70	339.81	339.81
Dsgn. L = 3.96 ft	1	0.079	0.015	66.71	47.31	66.71	933.33	840.00	1.13	1.00	5.10	339.81	339.81
Dsgn. L = 3.96 ft	1	0.056	0.028	47.31	10.52	47.31	933.33	840.00	1.44	1.00	9.53	339.81	339.81
Dsgn. L = 1.08 ft	1	0.013	0.040	10.52	-3.86	10.52	933.33	840.00	2.11	1.00	13.67	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	339.81
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 1.44 ft	1	0.050	0.086	41.97		41.97	933.33	840.00	1.67	1.00	29.22	339.81	339.81
Dsgn. L = 4.05 ft	1	0.143	0.086	120.45	41.97	120.45	933.33	840.00	1.36	1.00	29.07	339.81	339.81
Dsgn. L = 3.96 ft	1	0.187	0.056	156.97	120.45	156.97	933.33	840.00	1.10	1.00	19.03	339.81	339.81
Dsgn. L = 4.05 ft	1	0.187	0.031	157.40	154.07	157.40	933.33	840.00	1.01	1.00	10.67	339.81	339.81
Dsgn. L = 3.96 ft	1	0.183	0.033	154.07	111.01	154.07	933.33	840.00	1.13	1.00	11.07	339.81	339.81
Dsgn. L = 3.96 ft	1	0.132	0.062	111.01	28.62	111.01	933.33	840.00	1.42	1.00	21.10	339.81	339.81
Dsgn. L = 1.08 ft	1	0.034	0.091	28.62	-3.86	28.62	933.33	840.00	1.80	1.00	30.84	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	339.81
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 1.44 ft	1	0.050	0.086	41.97		41.97	933.33	840.00	1.67	1.00	29.22	339.81	339.81
Dsgn. L = 4.05 ft	1	0.143	0.086	120.45	41.97	120.45	933.33	840.00	1.36	1.00	29.07	339.81	339.81
Dsgn. L = 3.96 ft	1	0.187	0.056	156.97	120.45	156.97	933.33	840.00	1.10	1.00	19.03	339.81	339.81
Dsgn. L = 4.05 ft	1	0.187	0.031	157.40	154.07	157.40	933.33	840.00	1.01	1.00	10.67	339.81	339.81
Dsgn. L = 3.96 ft	1	0.183	0.033	154.07	111.01	154.07	933.33	840.00	1.13	1.00	11.07	339.81	339.81
Dsgn. L = 3.96 ft	1	0.132	0.062	111.01	28.62	111.01	933.33	840.00	1.42	1.00	21.10	339.81	339.81
Dsgn. L = 1.08 ft	1	0.034	0.091	28.62	-3.86	28.62	933.33	840.00	1.80	1.00	30.84	339.81	339.81
Dsgn. L = 2.98 ft	2	0.005	0.003	-0.00	-3.86	3.86	933.33	840.00	1.00	1.00	0.88	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.002	-0.00	-1.68	1.68	933.33	840.00	1.00	1.00	0.58	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.001	-0.15	0.15	933.33	840.00	1.00	1.00	0.18	339.81	339.81	339.81
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 1.44 ft	1	0.015	0.027	12.97		12.97	933.33	840.00	1.66	1.00	9.06	339.81	339.81
Dsgn. L = 4.05 ft	1	0.044	0.026	37.28	12.97	37.28	933.33	840.00	1.36	1.00	8.96	339.81	339.81
Dsgn. L = 3.96 ft	1	0.058	0.017	48.44	37.28	48.44	933.33	840.00	1.10	1.00	5.81	339.81	339.81
Dsgn. L = 4.05 ft	1	0.058	0.010	48.56	47.22	48.56	933.33	840.00	1.01	1.00	3.33	339.81	339.81
Dsgn. L = 3.96 ft	1	0.056	0.011	47.22	33.43	47.22	933.33	840.00	1.13	1.00	3.63	339.81	339.81
Dsgn. L = 3.96 ft	1	0.040	0.020	33.43	7.31	33.43	933.33	840.00	1.45	1.00	6.78	339.81	339.81
Dsgn. L = 1.08 ft	1	0.009	0.029	7.31	-2.89	7.31	933.33	840.00	2.11	1.00	9.70	339.81	339.81
Dsgn. L = 2.98 ft	2	0.003	0.002	-0.00	-2.89	2.89	933.33	840.00	1.00	1.00	0.66	339.81	339.81
Dsgn. L = 4.03 ft	2	0.002	0.001	-0.00	-1.26	1.26	933.33	840.00	1.00	1.00	0.44	339.81	339.81
Dsgn. L = 1.75 ft	2	0.000	0.000	-0.12	0.12	933.33	840.00	1.00	1.00	0.13	339.81	339.81	339.81

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.1907	11.250	+D+L+H	0.0000	0.000
	2	0.0000	11.250		-0.2324	8.750

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	26.498	28.687	
Max Upward from Load Combinations	26.498	28.687	
Max Upward from Load Cases	16.427	17.173	
+D+H	10.071	11.514	





Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B35**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
+D+L+H, LL Comb Run (*L)	10.071	11.514	
+D+L+H, LL Comb Run (L*)	26.498	28.687	
+D+L+H, LL Comb Run (LL)	26.498	28.687	
+D+Lr+H, LL Comb Run (*L)	10.071	11.514	
+D+Lr+H, LL Comb Run (L*)	10.071	11.514	
+D+Lr+H, LL Comb Run (LL)	10.071	11.514	
+D+S+H	13.591	15.194	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	10.071	11.514	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	22.391	24.394	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	22.391	24.394	
+D+0.750L+0.750S+H, LL Comb Run (*L)	12.711	14.274	
+D+0.750L+0.750S+H, LL Comb Run (L*)	25.031	27.154	
+D+0.750L+0.750S+H, LL Comb Run (LL)	25.031	27.154	
+D+0.60W+H	10.071	11.514	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	10.071	11.514	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	22.391	24.394	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	22.391	24.394	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	12.711	14.274	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	25.031	27.154	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	25.031	27.154	
+0.60D+0.60W+0.60H	6.043	6.908	
+D+0.70E+0.60H	10.071	11.514	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	12.711	14.274	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	25.031	27.154	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	25.031	27.154	
+0.60D+0.70E+H	6.043	6.908	
D Only	10.071	11.514	
L Only, LL Comb Run (L*)	16.427	17.173	
L Only, LL Comb Run (LL)	16.427	17.173	
S Only	3.520	3.680	
H Only			



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B36**

**CODE REFERENCES**

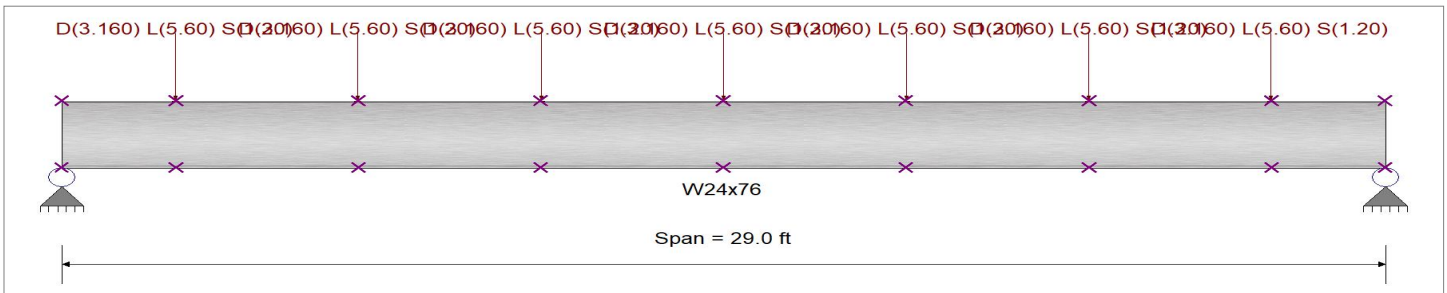
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 2.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 3.160, L = 5.60, S = 1.20 k, Starting at : 2.50 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.489</b> : 1	Maximum Shear Stress Ratio =	<b>0.152</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	366.753 k-ft	Vu : Applied	48.054 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.370 in Ratio = <b>941</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.598 in Ratio = <b>582</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	2.49 ft	1	0.056	0.054	42.00		42.00	833.33	750.00	1.69	1.00	17.03	315.48	315.48
Dsgn. L =	3.98 ft	1	0.120	0.053	90.29	42.00	90.29	833.33	750.00	1.27	1.00	16.76	315.48	315.48
Dsgn. L =	3.98 ft	1	0.159	0.038	119.40	90.29	119.40	833.33	750.00	1.11	1.00	11.92	315.48	315.48
Dsgn. L =	4.06 ft	1	0.173	0.022	129.53	119.40	129.53	833.33	750.00	1.03	1.00	7.07	315.48	315.48
Dsgn. L =	3.98 ft	1	0.173	0.008	129.53	119.89	129.53	833.33	750.00	1.03	1.00	2.64	315.48	315.48
Dsgn. L =	3.98 ft	1	0.160	0.024	119.89	91.07	119.89	833.33	750.00	1.11	1.00	7.48	315.48	315.48
Dsgn. L =	3.98 ft	1	0.121	0.039	91.07	43.08	91.07	833.33	750.00	1.26	1.00	12.33	315.48	315.48
Dsgn. L =	2.57 ft	1	0.057	0.054	43.08		43.08	833.33	750.00	1.62	1.00	17.03	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H</b>														
Dsgn. L =	2.49 ft	1	0.152	0.146	113.95		113.95	833.33	750.00	1.69	1.00	45.95	315.48	315.48
Dsgn. L =	3.98 ft	1	0.326	0.145	244.56	113.95	244.56	833.33	750.00	1.27	1.00	45.73	315.48	315.48
Dsgn. L =	3.98 ft	1	0.431	0.103	323.30	244.56	323.30	833.33	750.00	1.11	1.00	32.61	315.48	315.48
Dsgn. L =	4.06 ft	1	0.468	0.062	350.70	323.30	350.70	833.33	750.00	1.03	1.00	19.50	315.48	315.48
Dsgn. L =	3.98 ft	1	0.468	0.021	350.70	324.62	350.70	833.33	750.00	1.03	1.00	6.74	315.48	315.48
Dsgn. L =	3.98 ft	1	0.433	0.063	324.62	246.68	324.62	833.33	750.00	1.11	1.00	19.85	315.48	315.48
Dsgn. L =	3.98 ft	1	0.329	0.105	246.68	116.86	246.68	833.33	750.00	1.26	1.00	32.97	315.48	315.48
Dsgn. L =	2.57 ft	1	0.156	0.146	116.86		116.86	833.33	750.00	1.62	1.00	45.95	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B36**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
<b>+1.20D+1.60L+0.50S+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.159	0.152	119.17		119.17	833.33	750.00	1.69	1.00	48.05	315.48	315.48
Dsgn. L = 3.98 ft	1	0.341	0.152	255.75	119.17	255.75	833.33	750.00	1.27	1.00	47.83	315.48	315.48
Dsgn. L = 3.98 ft	1	0.451	0.108	338.10	255.75	338.10	833.33	750.00	1.11	1.00	34.11	315.48	315.48
Dsgn. L = 4.06 ft	1	0.489	0.065	366.75	338.10	366.75	833.33	750.00	1.03	1.00	20.40	315.48	315.48
Dsgn. L = 3.98 ft	1	0.489	0.022	366.75	339.48	366.75	833.33	750.00	1.03	1.00	7.04	315.48	315.48
Dsgn. L = 3.98 ft	1	0.453	0.066	339.48	257.97	339.48	833.33	750.00	1.11	1.00	20.75	315.48	315.48
Dsgn. L = 3.98 ft	1	0.344	0.109	257.97	122.21	257.97	833.33	750.00	1.26	1.00	34.47	315.48	315.48
Dsgn. L = 2.57 ft	1	0.163	0.152	122.21		122.21	833.33	750.00	1.62	1.00	48.05	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.113	0.108	84.72		84.72	833.33	750.00	1.69	1.00	34.19	315.48	315.48
Dsgn. L = 3.98 ft	1	0.242	0.108	181.87	84.72	181.87	833.33	750.00	1.27	1.00	33.97	315.48	315.48
Dsgn. L = 3.98 ft	1	0.321	0.077	240.44	181.87	240.44	833.33	750.00	1.11	1.00	24.21	315.48	315.48
Dsgn. L = 4.06 ft	1	0.348	0.046	260.82	240.44	260.82	833.33	750.00	1.03	1.00	14.46	315.48	315.48
Dsgn. L = 3.98 ft	1	0.348	0.016	260.82	241.43	260.82	833.33	750.00	1.03	1.00	5.06	315.48	315.48
Dsgn. L = 3.98 ft	1	0.322	0.047	241.43	183.45	241.43	833.33	750.00	1.11	1.00	14.81	315.48	315.48
Dsgn. L = 3.98 ft	1	0.245	0.078	183.45	86.89	183.45	833.33	750.00	1.26	1.00	24.57	315.48	315.48
Dsgn. L = 2.57 ft	1	0.116	0.108	86.89		86.89	833.33	750.00	1.62	1.00	34.19	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.048	0.046	36.00		36.00	833.33	750.00	1.69	1.00	14.59	315.48	315.48
Dsgn. L = 3.98 ft	1	0.103	0.046	77.39	36.00	77.39	833.33	750.00	1.27	1.00	14.37	315.48	315.48
Dsgn. L = 3.98 ft	1	0.136	0.032	102.35	77.39	102.35	833.33	750.00	1.11	1.00	10.21	315.48	315.48
Dsgn. L = 4.06 ft	1	0.148	0.019	111.02	102.35	111.02	833.33	750.00	1.03	1.00	6.06	315.48	315.48
Dsgn. L = 3.98 ft	1	0.148	0.007	111.02	102.76	111.02	833.33	750.00	1.03	1.00	2.26	315.48	315.48
Dsgn. L = 3.98 ft	1	0.137	0.020	102.76	78.06	102.76	833.33	750.00	1.11	1.00	6.41	315.48	315.48
Dsgn. L = 3.98 ft	1	0.104	0.033	78.06	36.93	78.06	833.33	750.00	1.26	1.00	10.57	315.48	315.48
Dsgn. L = 2.57 ft	1	0.049	0.046	36.93		36.93	833.33	750.00	1.62	1.00	14.59	315.48	315.48
<b>+1.20D+L+1.60S+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.135	0.130	101.42		101.42	833.33	750.00	1.69	1.00	40.91	315.48	315.48
Dsgn. L = 3.98 ft	1	0.290	0.129	217.69	101.42	217.69	833.33	750.00	1.27	1.00	40.69	315.48	315.48
Dsgn. L = 3.98 ft	1	0.384	0.092	287.79	217.69	287.79	833.33	750.00	1.11	1.00	29.01	315.48	315.48
Dsgn. L = 4.06 ft	1	0.416	0.055	312.18	287.79	312.18	833.33	750.00	1.03	1.00	17.34	315.48	315.48
Dsgn. L = 3.98 ft	1	0.416	0.019	312.18	288.97	312.18	833.33	750.00	1.03	1.00	6.02	315.48	315.48
Dsgn. L = 3.98 ft	1	0.385	0.056	288.97	219.58	288.97	833.33	750.00	1.11	1.00	17.69	315.48	315.48
Dsgn. L = 3.98 ft	1	0.293	0.093	219.58	104.02	219.58	833.33	750.00	1.26	1.00	29.37	315.48	315.48
Dsgn. L = 2.57 ft	1	0.139	0.130	104.02		104.02	833.33	750.00	1.62	1.00	40.91	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.070	0.068	52.70		52.70	833.33	750.00	1.69	1.00	21.31	315.48	315.48
Dsgn. L = 3.98 ft	1	0.151	0.067	113.21	52.70	113.21	833.33	750.00	1.27	1.00	21.09	315.48	315.48
Dsgn. L = 3.98 ft	1	0.200	0.048	149.69	113.21	149.69	833.33	750.00	1.11	1.00	15.01	315.48	315.48
Dsgn. L = 4.06 ft	1	0.217	0.028	162.38	149.69	162.38	833.33	750.00	1.03	1.00	8.94	315.48	315.48
Dsgn. L = 3.98 ft	1	0.217	0.010	162.38	150.30	162.38	833.33	750.00	1.03	1.00	3.22	315.48	315.48
Dsgn. L = 3.98 ft	1	0.200	0.029	150.30	114.19	150.30	833.33	750.00	1.11	1.00	9.29	315.48	315.48
Dsgn. L = 3.98 ft	1	0.152	0.049	114.19	54.06	114.19	833.33	750.00	1.26	1.00	15.37	315.48	315.48
Dsgn. L = 2.57 ft	1	0.072	0.068	54.06		54.06	833.33	750.00	1.62	1.00	21.31	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.113	0.108	84.72		84.72	833.33	750.00	1.69	1.00	34.19	315.48	315.48
Dsgn. L = 3.98 ft	1	0.242	0.108	181.87	84.72	181.87	833.33	750.00	1.27	1.00	33.97	315.48	315.48
Dsgn. L = 3.98 ft	1	0.321	0.077	240.44	181.87	240.44	833.33	750.00	1.11	1.00	24.21	315.48	315.48
Dsgn. L = 4.06 ft	1	0.348	0.046	260.82	240.44	260.82	833.33	750.00	1.03	1.00	14.46	315.48	315.48
Dsgn. L = 3.98 ft	1	0.348	0.016	260.82	241.43	260.82	833.33	750.00	1.03	1.00	5.06	315.48	315.48
Dsgn. L = 3.98 ft	1	0.322	0.047	241.43	183.45	241.43	833.33	750.00	1.11	1.00	14.81	315.48	315.48
Dsgn. L = 3.98 ft	1	0.245	0.078	183.45	86.89	183.45	833.33	750.00	1.26	1.00	24.57	315.48	315.48
Dsgn. L = 2.57 ft	1	0.116	0.108	86.89		86.89	833.33	750.00	1.62	1.00	34.19	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.120	0.115	89.94		89.94	833.33	750.00	1.69	1.00	36.29	315.48	315.48
Dsgn. L = 3.98 ft	1	0.257	0.114	193.06	89.94	193.06	833.33	750.00	1.27	1.00	36.07	315.48	315.48
Dsgn. L = 3.98 ft	1	0.340	0.082	255.24	193.06	255.24	833.33	750.00	1.11	1.00	25.71	315.48	315.48
Dsgn. L = 4.06 ft	1	0.369	0.049	276.87	255.24	276.87	833.33	750.00	1.03	1.00	15.36	315.48	315.48
Dsgn. L = 3.98 ft	1	0.369	0.017	276.87	256.28	276.87	833.33	750.00	1.03	1.00	5.36	315.48	315.48
Dsgn. L = 3.98 ft	1	0.342	0.050	256.28	194.74	256.28	833.33	750.00	1.11	1.00	15.71	315.48	315.48
Dsgn. L = 3.98 ft	1	0.260	0.083	194.74	92.24	194.74	833.33	750.00	1.26	1.00	26.07	315.48	315.48
Dsgn. L = 2.57 ft	1	0.123	0.115	92.24		92.24	833.33	750.00	1.62	1.00	36.29	315.48	315.48



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B36**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.036	0.035	27.00		27.00	833.33	750.00	1.69	1.00	10.95	315.48	315.48
Dsgn. L = 3.98 ft	1	0.077	0.034	58.04	27.00	58.04	833.33	750.00	1.27	1.00	10.78	315.48	315.48
Dsgn. L = 3.98 ft	1	0.102	0.024	76.76	58.04	76.76	833.33	750.00	1.11	1.00	7.66	315.48	315.48
Dsgn. L = 4.06 ft	1	0.111	0.014	83.27	76.76	83.27	833.33	750.00	1.03	1.00	4.54	315.48	315.48
Dsgn. L = 3.98 ft	1	0.111	0.005	83.27	77.07	83.27	833.33	750.00	1.03	1.00	1.69	315.48	315.48
Dsgn. L = 3.98 ft	1	0.103	0.015	77.07	58.55	77.07	833.33	750.00	1.11	1.00	4.81	315.48	315.48
Dsgn. L = 3.98 ft	1	0.078	0.025	58.55	27.69	58.55	833.33	750.00	1.26	1.00	7.93	315.48	315.48
Dsgn. L = 2.57 ft	1	0.037	0.035	27.69		27.69	833.33	750.00	1.62	1.00	10.95	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H</b>													
Dsgn. L = 2.49 ft	1	0.116	0.111	86.80		86.80	833.33	750.00	1.69	1.00	35.03	315.48	315.48
Dsgn. L = 3.98 ft	1	0.248	0.110	186.35	86.80	186.35	833.33	750.00	1.27	1.00	34.81	315.48	315.48
Dsgn. L = 3.98 ft	1	0.328	0.079	246.36	186.35	246.36	833.33	750.00	1.11	1.00	24.81	315.48	315.48
Dsgn. L = 4.06 ft	1	0.356	0.047	267.24	246.36	267.24	833.33	750.00	1.03	1.00	14.82	315.48	315.48
Dsgn. L = 3.98 ft	1	0.356	0.016	267.24	247.37	267.24	833.33	750.00	1.03	1.00	5.18	315.48	315.48
Dsgn. L = 3.98 ft	1	0.330	0.048	247.37	187.96	247.37	833.33	750.00	1.11	1.00	15.17	315.48	315.48
Dsgn. L = 3.98 ft	1	0.251	0.080	187.96	89.03	187.96	833.33	750.00	1.26	1.00	25.17	315.48	315.48
Dsgn. L = 2.57 ft	1	0.119	0.111	89.03		89.03	833.33	750.00	1.62	1.00	35.03	315.48	315.48
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 2.49 ft	1	0.036	0.035	27.00		27.00	833.33	750.00	1.69	1.00	10.95	315.48	315.48
Dsgn. L = 3.98 ft	1	0.077	0.034	58.04	27.00	58.04	833.33	750.00	1.27	1.00	10.78	315.48	315.48
Dsgn. L = 3.98 ft	1	0.102	0.024	76.76	58.04	76.76	833.33	750.00	1.11	1.00	7.66	315.48	315.48
Dsgn. L = 4.06 ft	1	0.111	0.014	83.27	76.76	83.27	833.33	750.00	1.03	1.00	4.54	315.48	315.48
Dsgn. L = 3.98 ft	1	0.111	0.005	83.27	77.07	83.27	833.33	750.00	1.03	1.00	1.69	315.48	315.48
Dsgn. L = 3.98 ft	1	0.103	0.015	77.07	58.55	77.07	833.33	750.00	1.11	1.00	4.81	315.48	315.48
Dsgn. L = 3.98 ft	1	0.078	0.025	58.55	27.69	58.55	833.33	750.00	1.26	1.00	7.93	315.48	315.48
Dsgn. L = 2.57 ft	1	0.037	0.035	27.69		27.69	833.33	750.00	1.62	1.00	10.95	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.5984	14.583		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	31.762	31.762		
Max Upward from Load Combinations	31.762	31.762		
Max Upward from Load Cases	19.600	19.600		
+D+H	12.162	12.162		
+D+L+H	31.762	31.762		
+D+Lr+H	12.162	12.162		
+D+S+H	16.362	16.362		
+D+0.750Lr+0.750L+H	26.862	26.862		
+D+0.750L+0.750S+H	30.012	30.012		
+D+0.60W+H	12.162	12.162		
+D+0.750Lr+0.750L+0.450W+H	26.862	26.862		
+D+0.750L+0.750S+0.450W+H	30.012	30.012		
+0.60D+0.60W+0.60H	7.297	7.297		
+D+0.70E+0.60H	12.162	12.162		
+D+0.750L+0.750S+0.5250E+H	30.012	30.012		
+0.60D+0.70E+H	7.297	7.297		
D Only	12.162	12.162		
L Only	19.600	19.600		
S Only	4.200	4.200		
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B37

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

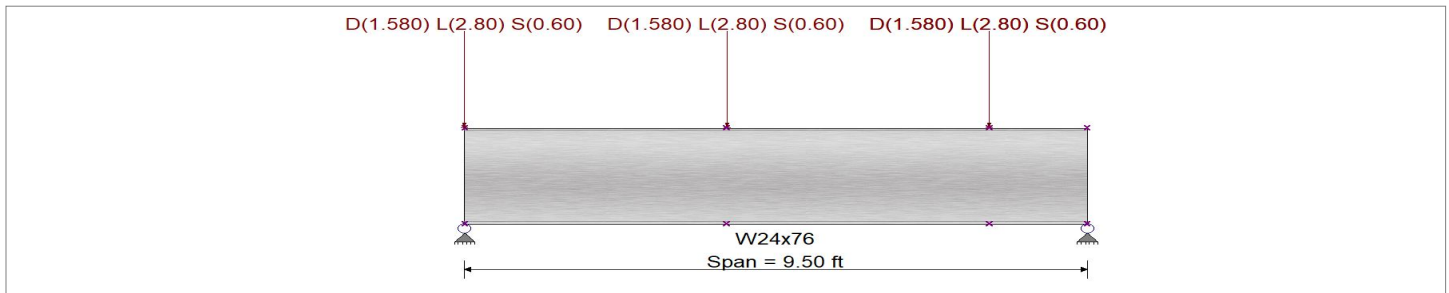
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 1.580, L = 2.80, S = 0.60 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : D = 1.580, L = 2.80, S = 0.60 k @ 8.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.033</b> : 1	Maximum Shear Stress Ratio =	<b>0.046</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	24.885 k-ft	Vu : Applied	14.488 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	9.500 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.003 in Ratio = <b>42,473</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.004 in Ratio = <b>25746</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L =	3.99 ft	1	0.012	0.008	9.07		9.07	833.33	750.00	1.63	1.00	2.48	315.48	315.48
Dsgn. L =	3.99 ft	1	0.012	0.007	9.08	7.64	9.08	833.33	750.00	1.05	1.00	2.06	315.48	315.48
Dsgn. L =	1.52 ft	1	0.010	0.016	7.64		7.64	833.33	750.00	1.65	1.00	5.16	315.48	315.48
+1.20D+0.50Lr+1.60L+1.60H														
Dsgn. L =	3.99 ft	1	0.032	0.019	23.76		23.76	833.33	750.00	1.66	1.00	6.14	315.48	315.48
Dsgn. L =	3.99 ft	1	0.032	0.018	23.81	20.70	23.81	833.33	750.00	1.05	1.00	5.77	315.48	315.48
Dsgn. L =	1.52 ft	1	0.028	0.044	20.70		20.70	833.33	750.00	1.65	1.00	13.86	315.48	315.48
+1.20D+1.60Lr+0.50S+1.60H														
Dsgn. L =	3.99 ft	1	0.033	0.020	24.84		24.84	833.33	750.00	1.66	1.00	6.41	315.48	315.48
Dsgn. L =	3.99 ft	1	0.033	0.019	24.89	21.65	24.89	833.33	750.00	1.05	1.00	6.04	315.48	315.48
Dsgn. L =	1.52 ft	1	0.029	0.046	21.65		21.65	833.33	750.00	1.65	1.00	14.49	315.48	315.48
+1.20D+1.60Lr+L+1.60H														
Dsgn. L =	3.99 ft	1	0.024	0.015	17.77		17.77	833.33	750.00	1.66	1.00	4.63	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B37**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.99 ft	1		0.024	0.014	17.80	15.39	17.80	833.33	750.00	1.05	1.00	4.27	315.48	315.48
Dsgn. L = 1.52 ft	1		0.021	0.033	15.39		15.39	833.33	750.00	1.65	1.00	10.32	315.48	315.48
+1.20D+1.60Lr+0.50W+1.60H														
Dsgn. L = 3.99 ft	1		0.010	0.007	7.77		7.77	833.33	750.00	1.63	1.00	2.13	315.48	315.48
Dsgn. L = 3.99 ft	1		0.010	0.006	7.79	6.54	7.79	833.33	750.00	1.05	1.00	1.77	315.48	315.48
Dsgn. L = 1.52 ft	1		0.009	0.014	6.54		6.54	833.33	750.00	1.65	1.00	4.42	315.48	315.48
+1.20D+L+1.60S+1.60H														
Dsgn. L = 3.99 ft	1		0.028	0.017	21.19		21.19	833.33	750.00	1.66	1.00	5.49	315.48	315.48
Dsgn. L = 3.99 ft	1		0.028	0.016	21.24	18.43	21.24	833.33	750.00	1.05	1.00	5.13	315.48	315.48
Dsgn. L = 1.52 ft	1		0.025	0.039	18.43		18.43	833.33	750.00	1.65	1.00	12.34	315.48	315.48
+1.20D+1.60S+0.50W+1.60H														
Dsgn. L = 3.99 ft	1		0.015	0.009	11.20		11.20	833.33	750.00	1.64	1.00	2.99	315.48	315.48
Dsgn. L = 3.99 ft	1		0.015	0.008	11.22	9.58	11.22	833.33	750.00	1.05	1.00	2.62	315.48	315.48
Dsgn. L = 1.52 ft	1		0.013	0.020	9.58		9.58	833.33	750.00	1.65	1.00	6.45	315.48	315.48
+1.20D+0.50Lr+L+W+1.60H														
Dsgn. L = 3.99 ft	1		0.024	0.015	17.77		17.77	833.33	750.00	1.66	1.00	4.63	315.48	315.48
Dsgn. L = 3.99 ft	1		0.024	0.014	17.80	15.39	17.80	833.33	750.00	1.05	1.00	4.27	315.48	315.48
Dsgn. L = 1.52 ft	1		0.021	0.033	15.39		15.39	833.33	750.00	1.65	1.00	10.32	315.48	315.48
+1.20D+L+0.50S+W+1.60H														
Dsgn. L = 3.99 ft	1		0.025	0.016	18.84		18.84	833.33	750.00	1.66	1.00	4.90	315.48	315.48
Dsgn. L = 3.99 ft	1		0.025	0.014	18.88	16.34	18.88	833.33	750.00	1.05	1.00	4.54	315.48	315.48
Dsgn. L = 1.52 ft	1		0.022	0.035	16.34		16.34	833.33	750.00	1.65	1.00	10.95	315.48	315.48
+0.90D+W+1.60H														
Dsgn. L = 3.99 ft	1		0.008	0.005	5.83		5.83	833.33	750.00	1.63	1.00	1.60	315.48	315.48
Dsgn. L = 3.99 ft	1		0.008	0.004	5.84	4.91	5.84	833.33	750.00	1.05	1.00	1.32	315.48	315.48
Dsgn. L = 1.52 ft	1		0.007	0.011	4.91		4.91	833.33	750.00	1.65	1.00	3.32	315.48	315.48
+1.20D+L+0.20S+E+1.60H														
Dsgn. L = 3.99 ft	1		0.024	0.015	18.20		18.20	833.33	750.00	1.66	1.00	4.74	315.48	315.48
Dsgn. L = 3.99 ft	1		0.024	0.014	18.23	15.77	18.23	833.33	750.00	1.05	1.00	4.38	315.48	315.48
Dsgn. L = 1.52 ft	1		0.021	0.034	15.77		15.77	833.33	750.00	1.65	1.00	10.57	315.48	315.48
+0.90D+E+0.90H														
Dsgn. L = 3.99 ft	1		0.008	0.005	5.83		5.83	833.33	750.00	1.63	1.00	1.60	315.48	315.48
Dsgn. L = 3.99 ft	1		0.008	0.004	5.84	4.91	5.84	833.33	750.00	1.05	1.00	1.32	315.48	315.48
Dsgn. L = 1.52 ft	1		0.007	0.011	4.91		4.91	833.33	750.00	1.65	1.00	3.32	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0044	4.940		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	8.660	9.582		
Max Upward from Load Combinations	8.660	9.582		
Max Upward from Load Cases	5.305	5.895		
+D+H	3.355	3.687		
+D+L+H	8.660	9.582		
+D+Lr+H	3.355	3.687		
+D+S+H	4.492	4.950		
+D+0.750Lr+0.750L+H	7.334	8.108		
+D+0.750L+0.750S+H	8.186	9.056		
+D+0.60W+H	3.355	3.687		
+D+0.750Lr+0.750L+0.450W+H	7.334	8.108		
+D+0.750L+0.750S+0.450W+H	8.186	9.056		
+0.60D+0.60W+0.60H	2.013	2.212		
+D+0.70E+0.60H	3.355	3.687		
+D+0.750L+0.750S+0.5250E+H	8.186	9.056		
+0.60D+0.70E+H	2.013	2.212		
D Only	3.355	3.687		
L Only	5.305	5.895		
S Only	1.137	1.263		
H Only				

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: B38

## CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

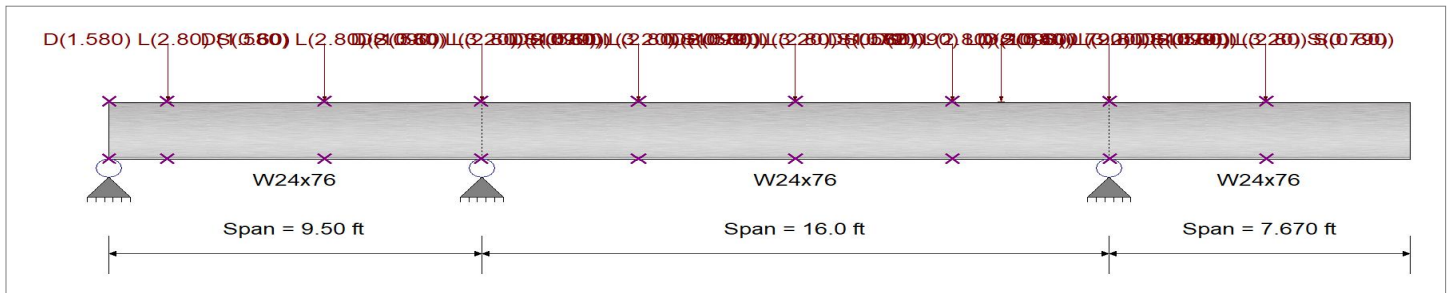
## Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

## Unbraced Lengths

First Brace starts at 1.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



## Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 1.580, L = 2.80, S = 0.60 k, Starting at : 1.50 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 2

Point Load : D = 2.090, L = 3.20, S = 0.790 k @ 0.0 ft

Point Load : D = 2.090, L = 3.20, S = 0.790 k @ 4.0 ft

Point Load : D = 2.090, L = 3.20, S = 0.790 k @ 8.0 ft

Point Load : D = 2.090, L = 3.20, S = 0.790 k @ 13.250 ft

Load(s) for Span Number 3

Point Load : D = 2.090, L = 3.20, S = 0.790 k @ 0.0 ft

Point Load : D = 2.090, L = 3.20, S = 0.790 k @ 4.0 ft

## DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.096</b> : 1	Maximum Shear Stress Ratio =	<b>0.079</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	72.198 k-ft	Vu : Applied	24.946 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination = 1.2D+1.60L+0.50S+1.60H, LL Comb Run (*L*)		Load Combination = 1.2D+1.60L+0.50S+1.60H, LL Comb Run (LL*)	
Span # where maximum occurs	Span # 2	Location of maximum on span	9.500 ft
		Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.034 in Ratio = <b>5,473</b> >=360.	Span: 3 : L Only, LL Comb Run (L*L)	
Max Upward Transient Deflection	-0.034 in Ratio = <b>5,342</b> >=360.	Span: 3 : L Only, LL Comb Run (*L*)	
Max Downward Total Deflection	0.034 in Ratio = <b>5339</b> >=240.	Span: 3 : +D+L+H, LL Comb Run (L*L)	
Max Upward Total Deflection	-0.034 in Ratio = <b>5477</b> >=240.	Span: 3 : +D+L+H, LL Comb Run (*L*)	



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B38**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
<b>+1.40D+1.60H</b>													
Dsgn. L = 1.46 ft	1	0.002	0.004	1.56		1.56	833.33	750.00	1.68	1.00	1.15	315.48	315.48
Dsgn. L = 3.99 ft	1	0.005	0.005	1.58	-4.06	4.06	833.33	750.00	2.24	1.00	1.64	315.48	315.48
Dsgn. L = 4.05 ft	1	0.027	0.026	-0.00	-20.45	20.45	833.33	750.00	1.49	1.00	8.13	315.48	315.48
Dsgn. L = 3.95 ft	2	0.027	0.026	10.80	-20.45	20.45	833.33	750.00	2.19	1.00	8.13	315.48	315.48
Dsgn. L = 4.05 ft	2	0.027	0.024	20.61	10.80	20.61	833.33	750.00	1.22	1.00	7.71	315.48	315.48
Dsgn. L = 3.95 ft	2	0.027	0.011	20.61	7.95	20.61	833.33	750.00	1.30	1.00	3.42	315.48	315.48
Dsgn. L = 4.05 ft	2	0.032	0.028	7.95	-23.68	23.68	833.33	750.00	2.19	1.00	8.99	315.48	315.48
Dsgn. L = 3.99 ft	3	0.032	0.019	-0.00	-23.68	23.68	833.33	750.00	1.00	1.00	5.95	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.018		-0.78	0.78	833.33	750.00	1.00	1.00	5.53	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.46 ft	1	0.004	0.007	3.18		3.18	833.33	750.00	1.70	1.00	2.25	315.48	315.48
Dsgn. L = 3.99 ft	1	0.005	0.007	3.54	3.18	3.54	833.33	750.00	1.01	1.00	2.12	315.48	315.48
Dsgn. L = 4.05 ft	1	0.007	0.012	3.43	-5.48	5.48	833.33	750.00	2.26	1.00	3.81	315.48	315.48
Dsgn. L = 3.95 ft	2	0.012	0.012	8.86	-5.48	8.86	833.33	750.00	2.22	1.00	3.81	315.48	315.48
Dsgn. L = 4.05 ft	2	0.012	0.018	8.99	4.49	8.99	833.33	750.00	1.22	1.00	5.72	315.48	315.48
Dsgn. L = 3.95 ft	2	0.025	0.019	4.49	-18.81	18.81	833.33	750.00	2.06	1.00	6.08	315.48	315.48
Dsgn. L = 4.05 ft	2	0.078	0.047	-0.00	-58.70	58.70	833.33	750.00	1.42	1.00	14.70	315.48	315.48
Dsgn. L = 3.99 ft	3	0.078	0.047	-0.00	-58.70	58.70	833.33	750.00	1.00	1.00	14.70	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.045		-0.78	0.78	833.33	750.00	1.00	1.00	14.34	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.46 ft	1	0.007	0.012		-5.33	5.33	833.33	750.00	1.00	1.00	3.72	315.48	315.48
Dsgn. L = 3.99 ft	1	0.038	0.019	-0.00	-28.39	28.39	833.33	750.00	1.51	1.00	5.98	315.48	315.48
Dsgn. L = 4.05 ft	1	0.081	0.075	-0.00	-60.97	60.97	833.33	750.00	1.28	1.00	23.68	315.48	315.48
Dsgn. L = 3.95 ft	2	0.081	0.075	31.78	-60.97	60.97	833.33	750.00	2.17	1.00	23.68	315.48	315.48
Dsgn. L = 4.05 ft	2	0.093	0.074	69.55	31.78	69.55	833.33	750.00	1.27	1.00	23.32	315.48	315.48
Dsgn. L = 3.95 ft	2	0.093	0.017	69.55	48.88	69.55	833.33	750.00	1.13	1.00	5.42	315.48	315.48
Dsgn. L = 4.05 ft	2	0.065	0.063	48.88	-20.30	48.88	833.33	750.00	1.92	1.00	19.79	315.48	315.48
Dsgn. L = 3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.015		-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.46 ft	1	0.005	0.008		-3.48	3.48	833.33	750.00	1.00	1.00	2.45	315.48	315.48
Dsgn. L = 3.99 ft	1	0.029	0.015	-0.00	-21.48	21.48	833.33	750.00	1.53	1.00	4.71	315.48	315.48
Dsgn. L = 4.05 ft	1	0.065	0.065	-0.00	-48.92	48.92	833.33	750.00	1.30	1.00	20.53	315.48	315.48
Dsgn. L = 3.95 ft	2	0.065	0.065	31.39	-48.92	48.92	833.33	750.00	2.20	1.00	20.53	315.48	315.48
Dsgn. L = 4.05 ft	2	0.075	0.064	56.37	31.39	56.37	833.33	750.00	1.21	1.00	20.17	315.48	315.48
Dsgn. L = 3.95 ft	2	0.075	0.027	56.37	23.26	56.37	833.33	750.00	1.29	1.00	8.57	315.48	315.48
Dsgn. L = 4.05 ft	2	0.078	0.073	23.26	-58.70	58.70	833.33	750.00	2.20	1.00	22.94	315.48	315.48
Dsgn. L = 3.99 ft	3	0.078	0.047	-0.00	-58.70	58.70	833.33	750.00	1.00	1.00	14.70	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.045		-0.78	0.78	833.33	750.00	1.00	1.00	14.34	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.46 ft	1	0.012	0.020	8.92		8.92	833.33	750.00	1.71	1.00	6.19	315.48	315.48
Dsgn. L = 3.99 ft	1	0.012	0.019	9.18	7.21	9.18	833.33	750.00	1.08	1.00	6.06	315.48	315.48
Dsgn. L = 4.05 ft	1	0.029	0.024	7.21	-21.80	21.80	833.33	750.00	2.16	1.00	7.43	315.48	315.48
Dsgn. L = 3.95 ft	2	0.029	0.023	6.04	-21.80	21.80	833.33	750.00	2.01	1.00	7.23	315.48	315.48
Dsgn. L = 4.05 ft	2	0.021	0.022	15.53	6.04	15.53	833.33	750.00	1.31	1.00	6.87	315.48	315.48
Dsgn. L = 3.95 ft	2	0.021	0.008	15.53	5.73	15.53	833.33	750.00	1.31	1.00	2.66	315.48	315.48
Dsgn. L = 4.05 ft	2	0.027	0.024	5.73	-20.30	20.30	833.33	750.00	2.18	1.00	7.44	315.48	315.48
Dsgn. L = 3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.015		-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.46 ft	1	0.014	0.024	10.77		10.77	833.33	750.00	1.71	1.00	7.46	315.48	315.48
Dsgn. L = 3.99 ft	1	0.019	0.023	14.12	10.77	14.12	833.33	750.00	1.09	1.00	7.33	315.48	315.48
Dsgn. L = 4.05 ft	1	0.019	0.020	14.12	-9.75	14.12	833.33	750.00	2.16	1.00	6.16	315.48	315.48
Dsgn. L = 3.95 ft	2	0.013	0.013	5.64	-9.75	9.75	833.33	750.00	2.21	1.00	4.08	315.48	315.48
Dsgn. L = 4.05 ft	2	0.008	0.017	5.80	2.36	5.80	833.33	750.00	1.26	1.00	5.46	315.48	315.48
Dsgn. L = 3.95 ft	2	0.027	0.018	2.36	-19.89	19.89	833.33	750.00	1.87	1.00	5.82	315.48	315.48
Dsgn. L = 4.05 ft	2	0.078	0.047	-0.00	-58.70	58.70	833.33	750.00	1.40	1.00	14.70	315.48	315.48
Dsgn. L = 3.99 ft	3	0.078	0.047	-0.00	-58.70	58.70	833.33	750.00	1.00	1.00	14.70	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.045		-0.78	0.78	833.33	750.00	1.00	1.00	14.34	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.46 ft	1	0.003	0.005	2.26		2.26	833.33	750.00	1.70	1.00	1.62	315.48	315.48
Dsgn. L = 3.99 ft	1	0.024	0.017	2.26	-17.69	17.69	833.33	750.00	1.89	1.00	5.25	315.48	315.48



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B38**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.05 ft	1	1	0.087	0.076	-0.00	-65.24	65.24	833.33	750.00	1.42	1.00	23.95	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.087	0.076	28.57	-65.24	65.24	833.33	750.00	2.16	1.00	23.95	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.090	0.075	67.41	28.57	67.41	833.33	750.00	1.30	1.00	23.59	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.090	0.016	67.41	47.80	67.41	833.33	750.00	1.13	1.00	5.15	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.064	0.062	47.80	-20.30	47.80	833.33	750.00	1.92	1.00	19.52	315.48	315.48
Dsgn. L = 3.99 ft	3	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
Dsgn. L = 3.68 ft	3	3	0.001	0.015		-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L = 1.46 ft	1	1	0.005	0.009	4.11		4.11	833.33	750.00	1.71	1.00	2.89	315.48	315.48
Dsgn. L = 3.99 ft	1	1	0.014	0.013	4.16	-10.79	10.79	833.33	750.00	2.19	1.00	3.98	315.48	315.48
Dsgn. L = 4.05 ft	1	1	0.071	0.066	-0.00	-53.19	53.19	833.33	750.00	1.48	1.00	20.80	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.071	0.066	28.17	-53.19	53.19	833.33	750.00	2.18	1.00	20.80	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.072	0.065	54.24	28.17	54.24	833.33	750.00	1.23	1.00	20.44	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.072	0.026	54.24	22.18	54.24	833.33	750.00	1.30	1.00	8.30	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.078	0.072	22.18	-58.70	58.70	833.33	750.00	2.19	1.00	22.68	315.48	315.48
Dsgn. L = 3.99 ft	3	3	0.078	0.047	-0.00	-58.70	58.70	833.33	750.00	1.00	1.00	14.70	315.48	315.48
Dsgn. L = 3.68 ft	3	3	0.001	0.045		-0.78	0.78	833.33	750.00	1.00	1.00	14.34	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L = 1.46 ft	1	1	0.004	0.007	3.34		3.34	833.33	750.00	1.70	1.00	2.36	315.48	315.48
Dsgn. L = 3.99 ft	1	1	0.005	0.007	3.44	2.84	3.44	833.33	750.00	1.04	1.00	2.23	315.48	315.48
Dsgn. L = 4.05 ft	1	1	0.011	0.015	2.84	-8.03	8.03	833.33	750.00	2.18	1.00	4.81	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.014	0.015	10.24	-8.03	10.24	833.33	750.00	2.27	1.00	4.81	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.014	0.019	10.45	7.14	10.45	833.33	750.00	1.12	1.00	6.12	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.024	0.021	7.14	-17.71	17.71	833.33	750.00	2.22	1.00	6.48	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.082	0.049	-0.00	-61.48	61.48	833.33	750.00	1.45	1.00	15.40	315.48	315.48
Dsgn. L = 3.99 ft	3	3	0.082	0.049	-0.00	-61.48	61.48	833.33	750.00	1.00	1.00	15.40	315.48	315.48
Dsgn. L = 3.68 ft	3	3	0.001	0.048		-0.79	0.79	833.33	750.00	1.00	1.00	15.03	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L = 1.46 ft	1	1	0.007	0.011		-5.16	5.16	833.33	750.00	1.00	1.00	3.61	315.48	315.48
Dsgn. L = 3.99 ft	1	1	0.039	0.020	-0.00	-28.97	28.97	833.33	750.00	1.51	1.00	6.17	315.48	315.48
Dsgn. L = 4.05 ft	1	1	0.085	0.078	-0.00	-63.52	63.52	833.33	750.00	1.28	1.00	24.68	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.085	0.078	33.17	-63.52	63.52	833.33	750.00	2.17	1.00	24.68	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.096	0.077	72.20	33.17	72.20	833.33	750.00	1.27	1.00	24.32	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.096	0.018	72.20	49.98	72.20	833.33	750.00	1.13	1.00	5.81	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.067	0.066	49.98	-23.08	49.98	833.33	750.00	1.92	1.00	20.88	315.48	315.48
Dsgn. L = 3.99 ft	3	3	0.031	0.018	-0.00	-23.08	23.08	833.33	750.00	1.00	1.00	5.80	315.48	315.48
Dsgn. L = 3.68 ft	3	3	0.001	0.017		-0.68	0.68	833.33	750.00	1.00	1.00	5.43	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L = 1.46 ft	1	1	0.004	0.007		-3.32	3.32	833.33	750.00	1.00	1.00	2.34	315.48	315.48
Dsgn. L = 3.99 ft	1	1	0.029	0.016	-0.00	-22.06	22.06	833.33	750.00	1.55	1.00	4.90	315.48	315.48
Dsgn. L = 4.05 ft	1	1	0.069	0.068	-0.00	-51.47	51.47	833.33	750.00	1.30	1.00	21.53	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.069	0.068	32.77	-51.47	51.47	833.33	750.00	2.20	1.00	21.53	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.079	0.067	59.02	32.77	59.02	833.33	750.00	1.21	1.00	21.17	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.079	0.028	59.02	24.36	59.02	833.33	750.00	1.29	1.00	8.96	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.082	0.076	24.36	-61.48	61.48	833.33	750.00	2.20	1.00	24.03	315.48	315.48
Dsgn. L = 3.99 ft	3	3	0.082	0.049	-0.00	-61.48	61.48	833.33	750.00	1.00	1.00	15.40	315.48	315.48
Dsgn. L = 3.68 ft	3	3	0.001	0.048		-0.79	0.79	833.33	750.00	1.00	1.00	15.03	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L = 1.46 ft	1	1	0.012	0.020	9.08		9.08	833.33	750.00	1.71	1.00	6.30	315.48	315.48
Dsgn. L = 3.99 ft	1	1	0.012	0.020	9.34	6.63	9.34	833.33	750.00	1.11	1.00	6.17	315.48	315.48
Dsgn. L = 4.05 ft	1	1	0.032	0.026	6.63	-24.35	24.35	833.33	750.00	2.08	1.00	8.23	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.032	0.026	7.42	-24.35	24.35	833.33	750.00	2.05	1.00	8.23	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.024	0.025	18.18	7.42	18.18	833.33	750.00	1.29	1.00	7.87	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.024	0.010	18.18	6.83	18.18	833.33	750.00	1.31	1.00	3.06	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.031	0.027	6.83	-23.08	23.08	833.33	750.00	2.19	1.00	8.53	315.48	315.48
Dsgn. L = 3.99 ft	3	3	0.031	0.018	-0.00	-23.08	23.08	833.33	750.00	1.00	1.00	5.80	315.48	315.48
Dsgn. L = 3.68 ft	3	3	0.001	0.017		-0.68	0.68	833.33	750.00	1.00	1.00	5.43	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L = 1.46 ft	1	1	0.015	0.024	10.93		10.93	833.33	750.00	1.71	1.00	7.57	315.48	315.48
Dsgn. L = 3.99 ft	1	1	0.018	0.024	13.54	10.93	13.54	833.33	750.00	1.06	1.00	7.44	315.48	315.48
Dsgn. L = 4.05 ft	1	1	0.018	0.021	13.54	-12.30	13.54	833.33	750.00	2.20	1.00	6.65	315.48	315.48
Dsgn. L = 3.95 ft	2	2	0.016	0.016	7.03	-12.30	12.30	833.33	750.00	2.20	1.00	5.08	315.48	315.48
Dsgn. L = 4.05 ft	2	2	0.010	0.019	7.26	5.00	7.26	833.33	750.00	1.11	1.00	5.85	315.48	315.48



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B38**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.95 ft	2	0.025	0.020	5.00	-18.79	18.79	833.33	750.00	2.11	1.00	6.21	315.48	315.48
Dsgn. L = 4.05 ft	2	0.082	0.049	-0.00	-61.48	61.48	833.33	750.00	1.43	1.00	15.40	315.48	315.48
Dsgn. L = 3.99 ft	3	0.082	0.049	-0.00	-61.48	61.48	833.33	750.00	1.00	1.00	15.40	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.048		-0.79	0.79	833.33	750.00	1.00	1.00	15.03	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.46 ft	1	0.003	0.005	2.42		2.42	833.33	750.00	1.70	1.00	1.73	315.48	315.48
Dsgn. L = 3.99 ft	1	0.024	0.017	2.42	-18.28	18.28	833.33	750.00	1.90	1.00	5.44	315.48	315.48
Dsgn. L = 4.05 ft	1	0.090	0.079	-0.00	-67.79	67.79	833.33	750.00	1.42	1.00	24.95	315.48	315.48
Dsgn. L = 3.95 ft	2	0.090	0.079	29.95	-67.79	67.79	833.33	750.00	2.16	1.00	24.95	315.48	315.48
Dsgn. L = 4.05 ft	2	0.093	0.078	70.06	29.95	70.06	833.33	750.00	1.29	1.00	24.59	315.48	315.48
Dsgn. L = 3.95 ft	2	0.093	0.018	70.06	48.90	70.06	833.33	750.00	1.13	1.00	5.54	315.48	315.48
Dsgn. L = 4.05 ft	2	0.065	0.065	48.90	-23.08	48.90	833.33	750.00	1.92	1.00	20.61	315.48	315.48
Dsgn. L = 3.99 ft	3	0.031	0.018	-0.00	-23.08	23.08	833.33	750.00	1.00	1.00	5.80	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.017		-0.68	0.68	833.33	750.00	1.00	1.00	5.43	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.46 ft	1	0.006	0.010	4.27		4.27	833.33	750.00	1.71	1.00	3.00	315.48	315.48
Dsgn. L = 3.99 ft	1	0.015	0.013	4.32	-11.37	11.37	833.33	750.00	2.18	1.00	4.17	315.48	315.48
Dsgn. L = 4.05 ft	1	0.074	0.069	-0.00	-55.74	55.74	833.33	750.00	1.48	1.00	21.79	315.48	315.48
Dsgn. L = 3.95 ft	2	0.074	0.069	29.56	-55.74	55.74	833.33	750.00	2.18	1.00	21.79	315.48	315.48
Dsgn. L = 4.05 ft	2	0.076	0.068	56.89	29.56	56.89	833.33	750.00	1.23	1.00	21.43	315.48	315.48
Dsgn. L = 3.95 ft	2	0.076	0.028	56.89	23.28	56.89	833.33	750.00	1.30	1.00	8.69	315.48	315.48
Dsgn. L = 4.05 ft	2	0.082	0.075	23.28	-61.48	61.48	833.33	750.00	2.19	1.00	23.76	315.48	315.48
Dsgn. L = 3.99 ft	3	0.082	0.049	-0.00	-61.48	61.48	833.33	750.00	1.00	1.00	15.40	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.048		-0.79	0.79	833.33	750.00	1.00	1.00	15.03	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.46 ft	1	0.003	0.006	2.49		2.49	833.33	750.00	1.70	1.00	1.78	315.48	315.48
Dsgn. L = 3.99 ft	1	0.003	0.005	2.56	0.84	2.56	833.33	750.00	1.27	1.00	1.64	315.48	315.48
Dsgn. L = 4.05 ft	1	0.013	0.016	0.84	-10.00	10.00	833.33	750.00	1.82	1.00	5.00	315.48	315.48
Dsgn. L = 3.95 ft	2	0.013	0.016	9.01	-10.00	10.00	833.33	750.00	2.27	1.00	5.00	315.48	315.48
Dsgn. L = 4.05 ft	2	0.013	0.015	9.54	9.01	9.54	833.33	750.00	1.00	1.00	4.64	315.48	315.48
Dsgn. L = 3.95 ft	2	0.013	0.016	9.43	-9.20	9.43	833.33	750.00	2.23	1.00	4.90	315.48	315.48
Dsgn. L = 4.05 ft	2	0.059	0.035	-0.00	-44.30	44.30	833.33	750.00	1.53	1.00	11.10	315.48	315.48
Dsgn. L = 3.99 ft	3	0.059	0.035	-0.00	-44.30	44.30	833.33	750.00	1.00	1.00	11.10	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.034		-0.74	0.74	833.33	750.00	1.00	1.00	10.74	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.46 ft	1	0.004	0.006		-2.83	2.83	833.33	750.00	1.00	1.00	2.01	315.48	315.48
Dsgn. L = 3.99 ft	1	0.025	0.014	-0.00	-19.05	19.05	833.33	750.00	1.55	1.00	4.27	315.48	315.48
Dsgn. L = 4.05 ft	1	0.060	0.055	-0.00	-44.68	44.68	833.33	750.00	1.30	1.00	17.41	315.48	315.48
Dsgn. L = 3.95 ft	2	0.060	0.055	23.34	-44.68	44.68	833.33	750.00	2.18	1.00	17.41	315.48	315.48
Dsgn. L = 4.05 ft	2	0.067	0.054	50.09	23.34	50.09	833.33	750.00	1.27	1.00	17.05	315.48	315.48
Dsgn. L = 3.95 ft	2	0.067	0.014	50.09	33.11	50.09	833.33	750.00	1.15	1.00	4.48	315.48	315.48
Dsgn. L = 4.05 ft	2	0.044	0.048	33.11	-20.30	33.11	833.33	750.00	1.92	1.00	15.26	315.48	315.48
Dsgn. L = 3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.015		-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.46 ft	1	0.002	0.004		-1.67	1.67	833.33	750.00	1.00	1.00	1.22	315.48	315.48
Dsgn. L = 3.99 ft	1	0.020	0.011	-0.00	-14.73	14.73	833.33	750.00	1.59	1.00	3.47	315.48	315.48
Dsgn. L = 4.05 ft	1	0.050	0.049	-0.00	-37.15	37.15	833.33	750.00	1.33	1.00	15.44	315.48	315.48
Dsgn. L = 3.95 ft	2	0.050	0.049	23.09	-37.15	37.15	833.33	750.00	2.20	1.00	15.44	315.48	315.48
Dsgn. L = 4.05 ft	2	0.056	0.048	41.86	23.09	41.86	833.33	750.00	1.21	1.00	15.08	315.48	315.48
Dsgn. L = 3.95 ft	2	0.056	0.020	41.86	17.09	41.86	833.33	750.00	1.29	1.00	6.45	315.48	315.48
Dsgn. L = 4.05 ft	2	0.059	0.055	17.09	-44.30	44.30	833.33	750.00	2.20	1.00	17.23	315.48	315.48
Dsgn. L = 3.99 ft	3	0.059	0.035	-0.00	-44.30	44.30	833.33	750.00	1.00	1.00	11.10	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.034		-0.74	0.74	833.33	750.00	1.00	1.00	10.74	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.46 ft	1	0.008	0.013	6.08		6.08	833.33	750.00	1.71	1.00	4.24	315.48	315.48
Dsgn. L = 3.99 ft	1	0.008	0.013	6.24	3.20	6.24	833.33	750.00	1.20	1.00	4.11	315.48	315.48
Dsgn. L = 4.05 ft	1	0.027	0.023	3.20	-20.20	20.20	833.33	750.00	1.90	1.00	7.13	315.48	315.48
Dsgn. L = 3.95 ft	2	0.027	0.023	7.24	-20.20	20.20	833.33	750.00	2.15	1.00	7.13	315.48	315.48
Dsgn. L = 4.05 ft	2	0.022	0.021	16.33	7.24	16.33	833.33	750.00	1.27	1.00	6.77	315.48	315.48
Dsgn. L = 3.95 ft	2	0.022	0.009	16.33	6.14	16.33	833.33	750.00	1.31	1.00	2.76	315.48	315.48
Dsgn. L = 4.05 ft	2	0.027	0.024	6.14	-20.30	20.30	833.33	750.00	2.19	1.00	7.54	315.48	315.48
Dsgn. L = 3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B38**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 3.68 ft	3	0.001	0.015		-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48
	Dsgn. L = 1.46 ft	1	0.010	0.016	7.23		7.23	833.33	750.00	1.71	1.00	5.03	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.010	0.016	7.66	7.23	7.66	833.33	750.00	1.00	1.00	4.90	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.017	0.017	7.52	-12.67	12.67	833.33	750.00	2.22	1.00	5.23	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.017	0.016	7.00	-12.67	12.67	833.33	750.00	2.20	1.00	5.16	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.011	0.015	8.10	7.00	8.10	833.33	750.00	1.03	1.00	4.80	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.013	0.015	8.10	-9.88	9.88	833.33	750.00	2.34	1.00	4.73	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.059	0.035	-0.00	-44.30	44.30	833.33	750.00	1.51	1.00	11.10	315.48	315.48
	Dsgn. L = 3.99 ft	3	0.059	0.035	-0.00	-44.30	44.30	833.33	750.00	1.00	1.00	11.10	315.48	315.48
	Dsgn. L = 3.68 ft	3	0.001	0.034		-0.74	0.74	833.33	750.00	1.00	1.00	10.74	315.48	315.48
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.46 ft	1	0.003	0.004	1.91		1.91	833.33	750.00	1.69	1.00	1.38	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.016	0.012	1.91	-12.36	12.36	833.33	750.00	1.95	1.00	3.81	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.063	0.056	-0.00	-47.35	47.35	833.33	750.00	1.43	1.00	17.58	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.063	0.056	21.33	-47.35	47.35	833.33	750.00	2.16	1.00	17.58	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.065	0.055	48.76	21.33	48.76	833.33	750.00	1.28	1.00	17.22	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.065	0.014	48.76	32.43	48.76	833.33	750.00	1.15	1.00	4.32	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.043	0.048	32.43	-20.30	32.43	833.33	750.00	1.92	1.00	15.09	315.48	315.48
	Dsgn. L = 3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
	Dsgn. L = 3.68 ft	3	0.001	0.015		-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.46 ft	1	0.004	0.007	3.07		3.07	833.33	750.00	1.70	1.00	2.17	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.011	0.010	3.10	-8.05	8.05	833.33	750.00	2.20	1.00	3.02	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.053	0.049	-0.00	-39.82	39.82	833.33	750.00	1.48	1.00	15.61	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.053	0.049	21.08	-39.82	39.82	833.33	750.00	2.18	1.00	15.61	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.054	0.048	40.52	21.08	40.52	833.33	750.00	1.23	1.00	15.25	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.054	0.020	40.52	16.42	40.52	833.33	750.00	1.30	1.00	6.29	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.059	0.054	16.42	-44.30	44.30	833.33	750.00	2.19	1.00	17.06	315.48	315.48
	Dsgn. L = 3.99 ft	3	0.059	0.035	-0.00	-44.30	44.30	833.33	750.00	1.00	1.00	11.10	315.48	315.48
	Dsgn. L = 3.68 ft	3	0.001	0.034		-0.74	0.74	833.33	750.00	1.00	1.00	10.74	315.48	315.48
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 1.46 ft	1	0.002	0.003	1.34		1.34	833.33	750.00	1.68	1.00	0.98	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.005	0.004	1.35	-3.48	3.48	833.33	750.00	2.24	1.00	1.41	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.023	0.022	-0.00	-17.53	17.53	833.33	750.00	1.49	1.00	6.97	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.023	0.022	9.26	-17.53	17.53	833.33	750.00	2.19	1.00	6.97	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.024	0.021	17.67	9.26	17.67	833.33	750.00	1.22	1.00	6.61	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.024	0.009	17.67	6.81	17.67	833.33	750.00	1.30	1.00	2.93	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.027	0.024	6.81	-20.30	20.30	833.33	750.00	2.19	1.00	7.70	315.48	315.48
	Dsgn. L = 3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
	Dsgn. L = 3.68 ft	3	0.001	0.015		-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 1.46 ft	1	0.002	0.003	1.34		1.34	833.33	750.00	1.68	1.00	0.98	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.005	0.004	1.35	-3.48	3.48	833.33	750.00	2.24	1.00	1.41	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.023	0.022	-0.00	-17.53	17.53	833.33	750.00	1.49	1.00	6.97	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.023	0.022	9.26	-17.53	17.53	833.33	750.00	2.19	1.00	6.97	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.024	0.021	17.67	9.26	17.67	833.33	750.00	1.22	1.00	6.61	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.024	0.009	17.67	6.81	17.67	833.33	750.00	1.30	1.00	2.93	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.027	0.024	6.81	-20.30	20.30	833.33	750.00	2.19	1.00	7.70	315.48	315.48
	Dsgn. L = 3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
	Dsgn. L = 3.68 ft	3	0.001	0.015		-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 1.46 ft	1	0.002	0.003	1.34		1.34	833.33	750.00	1.68	1.00	0.98	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B38**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	3.99 ft	1	0.005	0.004	1.35	-3.48	3.48	833.33	750.00	2.24	1.00	1.41	315.48	315.48
Dsgn. L =	4.05 ft	1	0.023	0.022	-0.00	-17.53	17.53	833.33	750.00	1.49	1.00	6.97	315.48	315.48
Dsgn. L =	3.95 ft	2	0.023	0.022	9.26	-17.53	17.53	833.33	750.00	2.19	1.00	6.97	315.48	315.48
Dsgn. L =	4.05 ft	2	0.024	0.021	17.67	9.26	17.67	833.33	750.00	1.22	1.00	6.61	315.48	315.48
Dsgn. L =	3.95 ft	2	0.024	0.009	17.67	6.81	17.67	833.33	750.00	1.30	1.00	2.93	315.48	315.48
Dsgn. L =	4.05 ft	2	0.027	0.024	6.81	-20.30	20.30	833.33	750.00	2.19	1.00	7.70	315.48	315.48
Dsgn. L =	3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
Dsgn. L =	3.68 ft	3	0.001	0.015	-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L =	1.46 ft	1	0.002	0.003	1.34		1.34	833.33	750.00	1.68	1.00	0.98	315.48	315.48
Dsgn. L =	3.99 ft	1	0.005	0.004	1.35	-3.48	3.48	833.33	750.00	2.24	1.00	1.41	315.48	315.48
Dsgn. L =	4.05 ft	1	0.023	0.022	-0.00	-17.53	17.53	833.33	750.00	1.49	1.00	6.97	315.48	315.48
Dsgn. L =	3.95 ft	2	0.023	0.022	9.26	-17.53	17.53	833.33	750.00	2.19	1.00	6.97	315.48	315.48
Dsgn. L =	4.05 ft	2	0.024	0.021	17.67	9.26	17.67	833.33	750.00	1.22	1.00	6.61	315.48	315.48
Dsgn. L =	3.95 ft	2	0.024	0.009	17.67	6.81	17.67	833.33	750.00	1.30	1.00	2.93	315.48	315.48
Dsgn. L =	4.05 ft	2	0.027	0.024	6.81	-20.30	20.30	833.33	750.00	2.19	1.00	7.70	315.48	315.48
Dsgn. L =	3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
Dsgn. L =	3.68 ft	3	0.001	0.015	-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L =	1.46 ft	1	0.002	0.003	1.34		1.34	833.33	750.00	1.68	1.00	0.98	315.48	315.48
Dsgn. L =	3.99 ft	1	0.005	0.004	1.35	-3.48	3.48	833.33	750.00	2.24	1.00	1.41	315.48	315.48
Dsgn. L =	4.05 ft	1	0.023	0.022	-0.00	-17.53	17.53	833.33	750.00	1.49	1.00	6.97	315.48	315.48
Dsgn. L =	3.95 ft	2	0.023	0.022	9.26	-17.53	17.53	833.33	750.00	2.19	1.00	6.97	315.48	315.48
Dsgn. L =	4.05 ft	2	0.024	0.021	17.67	9.26	17.67	833.33	750.00	1.22	1.00	6.61	315.48	315.48
Dsgn. L =	3.95 ft	2	0.024	0.009	17.67	6.81	17.67	833.33	750.00	1.30	1.00	2.93	315.48	315.48
Dsgn. L =	4.05 ft	2	0.027	0.024	6.81	-20.30	20.30	833.33	750.00	2.19	1.00	7.70	315.48	315.48
Dsgn. L =	3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
Dsgn. L =	3.68 ft	3	0.001	0.015	-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L =	1.46 ft	1	0.002	0.003	1.34		1.34	833.33	750.00	1.68	1.00	0.98	315.48	315.48
Dsgn. L =	3.99 ft	1	0.005	0.004	1.35	-3.48	3.48	833.33	750.00	2.24	1.00	1.41	315.48	315.48
Dsgn. L =	4.05 ft	1	0.023	0.022	-0.00	-17.53	17.53	833.33	750.00	1.49	1.00	6.97	315.48	315.48
Dsgn. L =	3.95 ft	2	0.023	0.022	9.26	-17.53	17.53	833.33	750.00	2.19	1.00	6.97	315.48	315.48
Dsgn. L =	4.05 ft	2	0.024	0.021	17.67	9.26	17.67	833.33	750.00	1.22	1.00	6.61	315.48	315.48
Dsgn. L =	3.95 ft	2	0.024	0.009	17.67	6.81	17.67	833.33	750.00	1.30	1.00	2.93	315.48	315.48
Dsgn. L =	4.05 ft	2	0.027	0.024	6.81	-20.30	20.30	833.33	750.00	2.19	1.00	7.70	315.48	315.48
Dsgn. L =	3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
Dsgn. L =	3.68 ft	3	0.001	0.015	-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L =	1.46 ft	1	0.004	0.007	3.00		3.00	833.33	750.00	1.70	1.00	2.13	315.48	315.48
Dsgn. L =	3.99 ft	1	0.004	0.006	3.07	-1.03	3.07	833.33	750.00	1.92	1.00	2.00	315.48	315.48
Dsgn. L =	4.05 ft	1	0.024	0.026	-0.00	-18.16	18.16	833.33	750.00	1.63	1.00	8.19	315.48	315.48
Dsgn. L =	3.95 ft	2	0.024	0.026	13.44	-18.16	18.16	833.33	750.00	2.23	1.00	8.19	315.48	315.48
Dsgn. L =	4.05 ft	2	0.024	0.025	17.91	13.44	17.91	833.33	750.00	1.09	1.00	7.83	315.48	315.48
Dsgn. L =	3.95 ft	2	0.024	0.020	17.91	-5.69	17.91	833.33	750.00	2.02	1.00	6.16	315.48	315.48
Dsgn. L =	4.05 ft	2	0.071	0.042	-0.00	-53.19	53.19	833.33	750.00	1.64	1.00	13.33	315.48	315.48
Dsgn. L =	3.99 ft	3	0.071	0.042	-0.00	-53.19	53.19	833.33	750.00	1.00	1.00	13.33	315.48	315.48
Dsgn. L =	3.68 ft	3	0.001	0.041	-0.76	0.76	833.33	750.00	1.00	1.00	12.96	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L =	1.46 ft	1	0.003	0.005		-2.31	2.31	833.33	750.00	1.00	1.00	1.65	315.48	315.48
Dsgn. L =	3.99 ft	1	0.028	0.015	-0.00	-20.91	20.91	833.33	750.00	1.59	1.00	4.87	315.48	315.48
Dsgn. L =	4.05 ft	1	0.070	0.065	-0.00	-52.84	52.84	833.33	750.00	1.33	1.00	20.60	315.48	315.48
Dsgn. L =	3.95 ft	2	0.070	0.065	27.77	-52.84	52.84	833.33	750.00	2.18	1.00	20.60	315.48	315.48
Dsgn. L =	4.05 ft	2	0.078	0.064	58.57	27.77	58.57	833.33	750.00	1.26	1.00	20.24	315.48	315.48
Dsgn. L =	3.95 ft	2	0.078	0.018	58.57	36.62	58.57	833.33	750.00	1.17	1.00	5.74	315.48	315.48
Dsgn. L =	4.05 ft	2	0.049	0.059	36.62	-29.19	36.62	833.33	750.00	1.93	1.00	18.74	315.48	315.48
Dsgn. L =	3.99 ft	3	0.039	0.023	-0.00	-29.19	29.19	833.33	750.00	1.00	1.00	7.33	315.48	315.48
Dsgn. L =	3.68 ft	3	0.001	0.022	-0.69	0.69	833.33	750.00	1.00	1.00	6.96	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L =	1.46 ft	1	0.002	0.003		-1.16	1.16	833.33	750.00	1.00	1.00	0.86	315.48	315.48
Dsgn. L =	3.99 ft	1	0.022	0.013	-0.00	-16.59	16.59	833.33	750.00	1.64	1.00	4.08	315.48	315.48
Dsgn. L =	4.05 ft	1	0.060	0.059	-0.00	-45.31	45.31	833.33	750.00	1.35	1.00	18.63	315.48	315.48
Dsgn. L =	3.95 ft	2	0.060	0.059	27.52	-45.31	45.31	833.33	750.00	2.19	1.00	18.63	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B38**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.05 ft	2	0.067	0.058	50.33	27.52	50.33	833.33	750.00	1.21	1.00	18.27	315.48	315.48
Dsgn. L = 3.95 ft	2	0.067	0.024	50.33	20.61	50.33	833.33	750.00	1.29	1.00	7.71	315.48	315.48
Dsgn. L = 4.05 ft	2	0.071	0.066	20.61	-53.19	53.19	833.33	750.00	2.20	1.00	20.71	315.48	315.48
Dsgn. L = 3.99 ft	3	0.071	0.042	-0.00	-53.19	53.19	833.33	750.00	1.00	1.00	13.33	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.041		-0.76	0.76	833.33	750.00	1.00	1.00	12.96	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.46 ft	1	0.009	0.015	6.59		6.59	833.33	750.00	1.71	1.00	4.59	315.48	315.48
Dsgn. L = 3.99 ft	1	0.009	0.014	6.76	1.34	6.76	833.33	750.00	1.42	1.00	4.46	315.48	315.48
Dsgn. L = 4.05 ft	1	0.038	0.033	1.34	-28.36	28.36	833.33	750.00	1.75	1.00	10.32	315.48	315.48
Dsgn. L = 3.95 ft	2	0.038	0.033	11.68	-28.36	28.36	833.33	750.00	2.16	1.00	10.32	315.48	315.48
Dsgn. L = 4.05 ft	2	0.033	0.032	24.81	11.68	24.81	833.33	750.00	1.26	1.00	9.96	315.48	315.48
Dsgn. L = 3.95 ft	2	0.033	0.013	24.81	9.65	24.81	833.33	750.00	1.30	1.00	4.02	315.48	315.48
Dsgn. L = 4.05 ft	2	0.039	0.035	9.65	-29.19	29.19	833.33	750.00	2.19	1.00	11.02	315.48	315.48
Dsgn. L = 3.99 ft	3	0.039	0.023	-0.00	-29.19	29.19	833.33	750.00	1.00	1.00	7.33	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.022		-0.69	0.69	833.33	750.00	1.00	1.00	6.96	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.46 ft	1	0.010	0.017	7.75		7.75	833.33	750.00	1.71	1.00	5.38	315.48	315.48
Dsgn. L = 3.99 ft	1	0.011	0.017	7.97	5.65	7.97	833.33	750.00	1.11	1.00	5.25	315.48	315.48
Dsgn. L = 4.05 ft	1	0.028	0.026	5.65	-20.83	20.83	833.33	750.00	2.09	1.00	8.35	315.48	315.48
Dsgn. L = 3.95 ft	2	0.028	0.026	11.43	-20.83	20.83	833.33	750.00	2.19	1.00	8.35	315.48	315.48
Dsgn. L = 4.05 ft	2	0.022	0.025	16.57	11.43	16.57	833.33	750.00	1.12	1.00	7.99	315.48	315.48
Dsgn. L = 3.95 ft	2	0.022	0.019	16.57	-6.36	16.57	833.33	750.00	2.13	1.00	5.99	315.48	315.48
Dsgn. L = 4.05 ft	2	0.071	0.042	-0.00	-53.19	53.19	833.33	750.00	1.63	1.00	13.33	315.48	315.48
Dsgn. L = 3.99 ft	3	0.071	0.042	-0.00	-53.19	53.19	833.33	750.00	1.00	1.00	13.33	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.041		-0.76	0.76	833.33	750.00	1.00	1.00	12.96	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.46 ft	1	0.003	0.005	2.43		2.43	833.33	750.00	1.70	1.00	1.73	315.48	315.48
Dsgn. L = 3.99 ft	1	0.019	0.014	2.43	-14.23	14.23	833.33	750.00	1.97	1.00	4.42	315.48	315.48
Dsgn. L = 4.05 ft	1	0.074	0.066	-0.00	-55.51	55.51	833.33	750.00	1.43	1.00	20.77	315.48	315.48
Dsgn. L = 3.95 ft	2	0.074	0.066	25.76	-55.51	55.51	833.33	750.00	2.16	1.00	20.77	315.48	315.48
Dsgn. L = 4.05 ft	2	0.076	0.065	57.23	25.76	57.23	833.33	750.00	1.28	1.00	20.41	315.48	315.48
Dsgn. L = 3.95 ft	2	0.076	0.018	57.23	35.94	57.23	833.33	750.00	1.17	1.00	5.57	315.48	315.48
Dsgn. L = 4.05 ft	2	0.048	0.059	35.94	-29.19	35.94	833.33	750.00	1.93	1.00	18.57	315.48	315.48
Dsgn. L = 3.99 ft	3	0.039	0.023	-0.00	-29.19	29.19	833.33	750.00	1.00	1.00	7.33	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.022		-0.69	0.69	833.33	750.00	1.00	1.00	6.96	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.46 ft	1	0.005	0.008	3.58		3.58	833.33	750.00	1.70	1.00	2.53	315.48	315.48
Dsgn. L = 3.99 ft	1	0.013	0.011	3.62	-9.91	9.91	833.33	750.00	2.19	1.00	3.63	315.48	315.48
Dsgn. L = 4.05 ft	1	0.064	0.060	-0.00	-47.98	47.98	833.33	750.00	1.48	1.00	18.80	315.48	315.48
Dsgn. L = 3.95 ft	2	0.064	0.060	25.51	-47.98	47.98	833.33	750.00	2.18	1.00	18.80	315.48	315.48
Dsgn. L = 4.05 ft	2	0.065	0.058	49.00	25.51	49.00	833.33	750.00	1.23	1.00	18.44	315.48	315.48
Dsgn. L = 3.95 ft	2	0.065	0.024	49.00	19.93	49.00	833.33	750.00	1.30	1.00	7.54	315.48	315.48
Dsgn. L = 4.05 ft	2	0.071	0.065	19.93	-53.19	53.19	833.33	750.00	2.19	1.00	20.54	315.48	315.48
Dsgn. L = 3.99 ft	3	0.071	0.042	-0.00	-53.19	53.19	833.33	750.00	1.00	1.00	13.33	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.041		-0.76	0.76	833.33	750.00	1.00	1.00	12.96	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 1.46 ft	1	0.002	0.004	1.85		1.85	833.33	750.00	1.69	1.00	1.34	315.48	315.48
Dsgn. L = 3.99 ft	1	0.007	0.006	1.87	-5.34	5.34	833.33	750.00	2.21	1.00	2.02	315.48	315.48
Dsgn. L = 4.05 ft	1	0.034	0.032	-0.00	-25.69	25.69	833.33	750.00	1.48	1.00	10.16	315.48	315.48
Dsgn. L = 3.95 ft	2	0.034	0.032	13.69	-25.69	25.69	833.33	750.00	2.18	1.00	10.16	315.48	315.48
Dsgn. L = 4.05 ft	2	0.035	0.031	26.14	13.69	26.14	833.33	750.00	1.22	1.00	9.80	315.48	315.48
Dsgn. L = 3.95 ft	2	0.035	0.013	26.14	10.33	26.14	833.33	750.00	1.30	1.00	4.19	315.48	315.48
Dsgn. L = 4.05 ft	2	0.039	0.035	10.33	-29.19	29.19	833.33	750.00	2.19	1.00	11.19	315.48	315.48
Dsgn. L = 3.99 ft	3	0.039	0.023	-0.00	-29.19	29.19	833.33	750.00	1.00	1.00	7.33	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.022		-0.69	0.69	833.33	750.00	1.00	1.00	6.96	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.46 ft	1	0.003	0.006	2.49		2.49	833.33	750.00	1.70	1.00	1.78	315.48	315.48
Dsgn. L = 3.99 ft	1	0.003	0.005	2.56	0.84	2.56	833.33	750.00	1.27	1.00	1.64	315.48	315.48
Dsgn. L = 4.05 ft	1	0.013	0.016	0.84	-10.00	10.00	833.33	750.00	1.82	1.00	5.00	315.48	315.48
Dsgn. L = 3.95 ft	2	0.013	0.016	9.01	-10.00	10.00	833.33	750.00	2.27	1.00	5.00	315.48	315.48
Dsgn. L = 4.05 ft	2	0.013	0.015	9.54	9.01	9.54	833.33	750.00	1.00	1.00	4.64	315.48	315.48
Dsgn. L = 3.95 ft	2	0.013	0.016	9.43	-9.20	9.43	833.33	750.00	2.23	1.00	4.90	315.48	315.48
Dsgn. L = 4.05 ft	2	0.059	0.035	-0.00	-44.30	44.30	833.33	750.00	1.53	1.00	11.10	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B38**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.99 ft	3	0.059	0.035	-0.00	-44.30	44.30	833.33	750.00	1.00	1.00	11.10	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.034		-0.74	0.74	833.33	750.00	1.00	1.00	10.74	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.46 ft	1	0.004	0.006		-2.83	2.83	833.33	750.00	1.00	1.00	2.01	315.48	315.48
Dsgn. L = 3.99 ft	1	0.025	0.014	-0.00	-19.05	19.05	833.33	750.00	1.55	1.00	4.27	315.48	315.48
Dsgn. L = 4.05 ft	1	0.060	0.055	-0.00	-44.68	44.68	833.33	750.00	1.30	1.00	17.41	315.48	315.48
Dsgn. L = 3.95 ft	2	0.060	0.055	23.34	-44.68	44.68	833.33	750.00	2.18	1.00	17.41	315.48	315.48
Dsgn. L = 4.05 ft	2	0.067	0.054	50.09	23.34	50.09	833.33	750.00	1.27	1.00	17.05	315.48	315.48
Dsgn. L = 3.95 ft	2	0.067	0.014	50.09	33.11	50.09	833.33	750.00	1.15	1.00	4.48	315.48	315.48
Dsgn. L = 4.05 ft	2	0.044	0.048	33.11	-20.30	33.11	833.33	750.00	1.92	1.00	15.26	315.48	315.48
Dsgn. L = 3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.015		-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.46 ft	1	0.002	0.004		-1.67	1.67	833.33	750.00	1.00	1.00	1.22	315.48	315.48
Dsgn. L = 3.99 ft	1	0.020	0.011	-0.00	-14.73	14.73	833.33	750.00	1.59	1.00	3.47	315.48	315.48
Dsgn. L = 4.05 ft	1	0.050	0.049	-0.00	-37.15	37.15	833.33	750.00	1.33	1.00	15.44	315.48	315.48
Dsgn. L = 3.95 ft	2	0.050	0.049	23.09	-37.15	37.15	833.33	750.00	2.20	1.00	15.44	315.48	315.48
Dsgn. L = 4.05 ft	2	0.056	0.048	41.86	23.09	41.86	833.33	750.00	1.21	1.00	15.08	315.48	315.48
Dsgn. L = 3.95 ft	2	0.056	0.020	41.86	17.09	41.86	833.33	750.00	1.29	1.00	6.45	315.48	315.48
Dsgn. L = 4.05 ft	2	0.059	0.055	17.09	-44.30	44.30	833.33	750.00	2.20	1.00	17.23	315.48	315.48
Dsgn. L = 3.99 ft	3	0.059	0.035	-0.00	-44.30	44.30	833.33	750.00	1.00	1.00	11.10	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.034		-0.74	0.74	833.33	750.00	1.00	1.00	10.74	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.46 ft	1	0.008	0.013	6.08		6.08	833.33	750.00	1.71	1.00	4.24	315.48	315.48
Dsgn. L = 3.99 ft	1	0.008	0.013	6.24	3.20	6.24	833.33	750.00	1.20	1.00	4.11	315.48	315.48
Dsgn. L = 4.05 ft	1	0.027	0.023	3.20	-20.20	20.20	833.33	750.00	1.90	1.00	7.13	315.48	315.48
Dsgn. L = 3.95 ft	2	0.027	0.023	7.24	-20.20	20.20	833.33	750.00	2.15	1.00	7.13	315.48	315.48
Dsgn. L = 4.05 ft	2	0.022	0.021	16.33	7.24	16.33	833.33	750.00	1.27	1.00	6.77	315.48	315.48
Dsgn. L = 3.95 ft	2	0.022	0.009	16.33	6.14	16.33	833.33	750.00	1.31	1.00	2.76	315.48	315.48
Dsgn. L = 4.05 ft	2	0.027	0.024	6.14	-20.30	20.30	833.33	750.00	2.19	1.00	7.54	315.48	315.48
Dsgn. L = 3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.015		-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.46 ft	1	0.010	0.016	7.23		7.23	833.33	750.00	1.71	1.00	5.03	315.48	315.48
Dsgn. L = 3.99 ft	1	0.010	0.016	7.66	7.23	7.66	833.33	750.00	1.00	1.00	4.90	315.48	315.48
Dsgn. L = 4.05 ft	1	0.017	0.017	7.52	-12.67	12.67	833.33	750.00	2.22	1.00	5.23	315.48	315.48
Dsgn. L = 3.95 ft	2	0.017	0.016	7.00	-12.67	12.67	833.33	750.00	2.20	1.00	5.16	315.48	315.48
Dsgn. L = 4.05 ft	2	0.011	0.015	8.10	7.00	8.10	833.33	750.00	1.03	1.00	4.80	315.48	315.48
Dsgn. L = 3.95 ft	2	0.013	0.015	8.10	-9.88	9.88	833.33	750.00	2.34	1.00	4.73	315.48	315.48
Dsgn. L = 4.05 ft	2	0.059	0.035	-0.00	-44.30	44.30	833.33	750.00	1.51	1.00	11.10	315.48	315.48
Dsgn. L = 3.99 ft	3	0.059	0.035	-0.00	-44.30	44.30	833.33	750.00	1.00	1.00	11.10	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.034		-0.74	0.74	833.33	750.00	1.00	1.00	10.74	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.46 ft	1	0.003	0.004	1.91		1.91	833.33	750.00	1.69	1.00	1.38	315.48	315.48
Dsgn. L = 3.99 ft	1	0.016	0.012	1.91	-12.36	12.36	833.33	750.00	1.95	1.00	3.81	315.48	315.48
Dsgn. L = 4.05 ft	1	0.063	0.056	-0.00	-47.35	47.35	833.33	750.00	1.43	1.00	17.58	315.48	315.48
Dsgn. L = 3.95 ft	2	0.063	0.056	21.33	-47.35	47.35	833.33	750.00	2.16	1.00	17.58	315.48	315.48
Dsgn. L = 4.05 ft	2	0.065	0.055	48.76	21.33	48.76	833.33	750.00	1.28	1.00	17.22	315.48	315.48
Dsgn. L = 3.95 ft	2	0.065	0.014	48.76	32.43	48.76	833.33	750.00	1.15	1.00	4.32	315.48	315.48
Dsgn. L = 4.05 ft	2	0.043	0.048	32.43	-20.30	32.43	833.33	750.00	1.92	1.00	15.09	315.48	315.48
Dsgn. L = 3.99 ft	3	0.027	0.016	-0.00	-20.30	20.30	833.33	750.00	1.00	1.00	5.10	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.015		-0.67	0.67	833.33	750.00	1.00	1.00	4.74	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.46 ft	1	0.004	0.007	3.07		3.07	833.33	750.00	1.70	1.00	2.17	315.48	315.48
Dsgn. L = 3.99 ft	1	0.011	0.010	3.10	-8.05	8.05	833.33	750.00	2.20	1.00	3.02	315.48	315.48
Dsgn. L = 4.05 ft	1	0.053	0.049	-0.00	-39.82	39.82	833.33	750.00	1.48	1.00	15.61	315.48	315.48
Dsgn. L = 3.95 ft	2	0.053	0.049	21.08	-39.82	39.82	833.33	750.00	2.18	1.00	15.61	315.48	315.48
Dsgn. L = 4.05 ft	2	0.054	0.048	40.52	21.08	40.52	833.33	750.00	1.23	1.00	15.25	315.48	315.48
Dsgn. L = 3.95 ft	2	0.054	0.020	40.52	16.42	40.52	833.33	750.00	1.30	1.00	6.29	315.48	315.48
Dsgn. L = 4.05 ft	2	0.059	0.054	16.42	-44.30	44.30	833.33	750.00	2.19	1.00	17.06	315.48	315.48
Dsgn. L = 3.99 ft	3	0.059	0.035	-0.00	-44.30	44.30	833.33	750.00	1.00	1.00	11.10	315.48	315.48
Dsgn. L = 3.68 ft	3	0.001	0.034		-0.74	0.74	833.33	750.00	1.00	1.00	10.74	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B38**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
	Dsgn. L = 1.46 ft	1	0.004	0.006	2.65		2.65	833.33	750.00	1.70	1.00	1.89	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.004	0.006	2.72	0.25	2.72	833.33	750.00	1.44	1.00	1.75	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.017	0.019	0.25	-12.55	12.55	833.33	750.00	1.73	1.00	5.99	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.017	0.019	10.39	-12.55	12.55	833.33	750.00	2.25	1.00	5.99	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.016	0.018	12.08	10.39	12.08	833.33	750.00	1.04	1.00	5.63	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.016	0.017	12.08	-8.10	12.08	833.33	750.00	2.18	1.00	5.29	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.063	0.037	-0.00	-47.08	47.08	833.33	750.00	1.57	1.00	11.80	315.48	315.48
	Dsgn. L = 3.99 ft	3	0.063	0.037	-0.00	-47.08	47.08	833.33	750.00	1.00	1.00	11.80	315.48	315.48
	Dsgn. L = 3.68 ft	3	0.001	0.036		-0.75	0.75	833.33	750.00	1.00	1.00	11.43	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 1.46 ft	1	0.004	0.006		-2.67	2.67	833.33	750.00	1.00	1.00	1.90	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.026	0.014	-0.00	-19.63	19.63	833.33	750.00	1.56	1.00	4.46	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.063	0.058	-0.00	-47.23	47.23	833.33	750.00	1.31	1.00	18.41	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.063	0.058	24.72	-47.23	47.23	833.33	750.00	2.18	1.00	18.41	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.070	0.057	52.74	24.72	52.74	833.33	750.00	1.26	1.00	18.05	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.070	0.015	52.74	34.21	52.74	833.33	750.00	1.16	1.00	4.88	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.046	0.052	34.21	-23.08	34.21	833.33	750.00	1.93	1.00	16.35	315.48	315.48
	Dsgn. L = 3.99 ft	3	0.031	0.018	-0.00	-23.08	23.08	833.33	750.00	1.00	1.00	5.80	315.48	315.48
	Dsgn. L = 3.68 ft	3	0.001	0.017		-0.68	0.68	833.33	750.00	1.00	1.00	5.43	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 1.46 ft	1	0.002	0.004		-1.51	1.51	833.33	750.00	1.00	1.00	1.10	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.020	0.012	-0.00	-15.31	15.31	833.33	750.00	1.61	1.00	3.66	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.053	0.052	-0.00	-39.70	39.70	833.33	750.00	1.33	1.00	16.44	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.053	0.052	24.47	-39.70	39.70	833.33	750.00	2.19	1.00	16.44	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.059	0.051	44.51	24.47	44.51	833.33	750.00	1.21	1.00	16.08	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.059	0.022	44.51	18.19	44.51	833.33	750.00	1.29	1.00	6.85	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.063	0.058	18.19	-47.08	47.08	833.33	750.00	2.20	1.00	18.32	315.48	315.48
	Dsgn. L = 3.99 ft	3	0.063	0.037	-0.00	-47.08	47.08	833.33	750.00	1.00	1.00	11.80	315.48	315.48
	Dsgn. L = 3.68 ft	3	0.001	0.036		-0.75	0.75	833.33	750.00	1.00	1.00	11.43	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 1.46 ft	1	0.008	0.014	6.24		6.24	833.33	750.00	1.71	1.00	4.35	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.009	0.013	6.41	2.62	6.41	833.33	750.00	1.27	1.00	4.22	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.030	0.026	2.62	-22.75	22.75	833.33	750.00	1.84	1.00	8.13	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.030	0.026	8.63	-22.75	22.75	833.33	750.00	2.16	1.00	8.13	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.025	0.025	18.98	8.63	18.98	833.33	750.00	1.26	1.00	7.77	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.025	0.010	18.98	7.23	18.98	833.33	750.00	1.31	1.00	3.16	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.031	0.027	7.23	-23.08	23.08	833.33	750.00	2.19	1.00	8.63	315.48	315.48
	Dsgn. L = 3.99 ft	3	0.031	0.018	-0.00	-23.08	23.08	833.33	750.00	1.00	1.00	5.80	315.48	315.48
	Dsgn. L = 3.68 ft	3	0.001	0.017		-0.68	0.68	833.33	750.00	1.00	1.00	5.43	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 1.46 ft	1	0.010	0.016	7.39		7.39	833.33	750.00	1.71	1.00	5.14	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.010	0.016	7.61	6.94	7.61	833.33	750.00	1.02	1.00	5.01	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.020	0.020	6.94	-15.22	15.22	833.33	750.00	2.19	1.00	6.16	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.020	0.020	8.38	-15.22	15.22	833.33	750.00	2.19	1.00	6.16	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.014	0.018	10.75	8.38	10.75	833.33	750.00	1.07	1.00	5.80	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.014	0.016	10.75	-8.78	10.75	833.33	750.00	2.20	1.00	5.13	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.063	0.037	-0.00	-47.08	47.08	833.33	750.00	1.55	1.00	11.80	315.48	315.48
	Dsgn. L = 3.99 ft	3	0.063	0.037	-0.00	-47.08	47.08	833.33	750.00	1.00	1.00	11.80	315.48	315.48
	Dsgn. L = 3.68 ft	3	0.001	0.036		-0.75	0.75	833.33	750.00	1.00	1.00	11.43	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 1.46 ft	1	0.003	0.005	2.08		2.08	833.33	750.00	1.69	1.00	1.49	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.017	0.013	2.08	-12.95	12.95	833.33	750.00	1.95	1.00	4.00	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.067	0.059	-0.00	-49.90	49.90	833.33	750.00	1.43	1.00	18.58	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.067	0.059	22.71	-49.90	49.90	833.33	750.00	2.16	1.00	18.58	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.069	0.058	51.41	22.71	51.41	833.33	750.00	1.28	1.00	18.22	315.48	315.48
	Dsgn. L = 3.95 ft	2	0.069	0.015	51.41	33.53	51.41	833.33	750.00	1.15	1.00	4.71	315.48	315.48
	Dsgn. L = 4.05 ft	2	0.045	0.051	33.53	-23.08	33.53	833.33	750.00	1.92	1.00	16.18	315.48	315.48
	Dsgn. L = 3.99 ft	3	0.031	0.018	-0.00	-23.08	23.08	833.33	750.00	1.00	1.00	5.80	315.48	315.48
	Dsgn. L = 3.68 ft	3	0.001	0.017		-0.68	0.68	833.33	750.00	1.00	1.00	5.43	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 1.46 ft	1	0.004	0.007	3.23		3.23	833.33	750.00	1.70	1.00	2.28	315.48	315.48
	Dsgn. L = 3.99 ft	1	0.012	0.010	3.27	-8.63	8.63	833.33	750.00	2.19	1.00	3.21	315.48	315.48
	Dsgn. L = 4.05 ft	1	0.056	0.053	-0.00	-42.37	42.37	833.33	750.00	1.48	1.00	16.61	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B38**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+0.90D+W+1.60H														
Dsgn. L =	3.95 ft	2	0.056	0.053	22.46	-42.37	42.37	833.33	750.00	2.18	1.00	16.61	315.48	315.48
Dsgn. L =	4.05 ft	2	0.058	0.051	43.17	22.46	43.17	833.33	750.00	1.23	1.00	16.25	315.48	315.48
Dsgn. L =	3.95 ft	2	0.058	0.021	43.17	17.52	43.17	833.33	750.00	1.30	1.00	6.68	315.48	315.48
Dsgn. L =	4.05 ft	2	0.063	0.058	17.52	-47.08	47.08	833.33	750.00	2.19	1.00	18.15	315.48	315.48
Dsgn. L =	3.99 ft	3	0.063	0.037	-0.00	-47.08	47.08	833.33	750.00	1.00	1.00	11.80	315.48	315.48
Dsgn. L =	3.68 ft	3	0.001	0.036		-0.75	0.75	833.33	750.00	1.00	1.00	11.43	315.48	315.48
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L =	1.46 ft	1	0.001	0.002	1.00		1.00	833.33	750.00	1.68	1.00	0.74	315.48	315.48
Dsgn. L =	3.99 ft	1	0.003	0.003	1.01	-2.61	2.61	833.33	750.00	2.24	1.00	1.06	315.48	315.48
Dsgn. L =	4.05 ft	1	0.018	0.017	-0.00	-13.15	13.15	833.33	750.00	1.49	1.00	5.22	315.48	315.48
Dsgn. L =	3.95 ft	2	0.018	0.017	6.94	-13.15	13.15	833.33	750.00	2.19	1.00	5.22	315.48	315.48
Dsgn. L =	4.05 ft	2	0.018	0.016	13.25	6.94	13.25	833.33	750.00	1.22	1.00	4.95	315.48	315.48
Dsgn. L =	3.95 ft	2	0.018	0.007	13.25	5.11	13.25	833.33	750.00	1.30	1.00	2.20	315.48	315.48
Dsgn. L =	4.05 ft	2	0.020	0.018	5.11	-15.22	15.22	833.33	750.00	2.19	1.00	5.78	315.48	315.48
Dsgn. L =	3.99 ft	3	0.020	0.012	-0.00	-15.22	15.22	833.33	750.00	1.00	1.00	3.83	315.48	315.48
Dsgn. L =	3.68 ft	3	0.001	0.011		-0.50	0.50	833.33	750.00	1.00	1.00	3.55	315.48	315.48
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L =	1.46 ft	1	0.003	0.006	2.55		2.55	833.33	750.00	1.70	1.00	1.82	315.48	315.48
Dsgn. L =	3.99 ft	1	0.003	0.005	2.62	0.60	2.62	833.33	750.00	1.34	1.00	1.69	315.48	315.48
Dsgn. L =	4.05 ft	1	0.015	0.017	0.60	-11.02	11.02	833.33	750.00	1.78	1.00	5.39	315.48	315.48
Dsgn. L =	3.95 ft	2	0.015	0.017	9.56	-11.02	11.02	833.33	750.00	2.26	1.00	5.39	315.48	315.48
Dsgn. L =	4.05 ft	2	0.014	0.016	10.49	9.56	10.49	833.33	750.00	1.02	1.00	5.03	315.48	315.48
Dsgn. L =	3.95 ft	2	0.014	0.016	10.49	-8.76	10.49	833.33	750.00	2.20	1.00	5.06	315.48	315.48
Dsgn. L =	4.05 ft	2	0.061	0.036	-0.00	-45.41	45.41	833.33	750.00	1.54	1.00	11.38	315.48	315.48
Dsgn. L =	3.99 ft	3	0.061	0.036	-0.00	-45.41	45.41	833.33	750.00	1.00	1.00	11.38	315.48	315.48
Dsgn. L =	3.68 ft	3	0.001	0.035		-0.74	0.74	833.33	750.00	1.00	1.00	11.02	315.48	315.48
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L =	1.46 ft	1	0.004	0.006		-2.76	2.76	833.33	750.00	1.00	1.00	1.96	315.48	315.48
Dsgn. L =	3.99 ft	1	0.026	0.014	-0.00	-19.28	19.28	833.33	750.00	1.55	1.00	4.34	315.48	315.48
Dsgn. L =	4.05 ft	1	0.061	0.056	-0.00	-45.70	45.70	833.33	750.00	1.31	1.00	17.81	315.48	315.48
Dsgn. L =	3.95 ft	2	0.061	0.056	23.89	-45.70	45.70	833.33	750.00	2.18	1.00	17.81	315.48	315.48
Dsgn. L =	4.05 ft	2	0.068	0.055	51.15	23.89	51.15	833.33	750.00	1.27	1.00	17.45	315.48	315.48
Dsgn. L =	3.95 ft	2	0.068	0.015	51.15	33.55	51.15	833.33	750.00	1.15	1.00	4.64	315.48	315.48
Dsgn. L =	4.05 ft	2	0.045	0.050	33.55	-21.41	33.55	833.33	750.00	1.92	1.00	15.69	315.48	315.48
Dsgn. L =	3.99 ft	3	0.029	0.017	-0.00	-21.41	21.41	833.33	750.00	1.00	1.00	5.38	315.48	315.48
Dsgn. L =	3.68 ft	3	0.001	0.016		-0.67	0.67	833.33	750.00	1.00	1.00	5.02	315.48	315.48
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L =	1.46 ft	1	0.002	0.004		-1.61	1.61	833.33	750.00	1.00	1.00	1.17	315.48	315.48
Dsgn. L =	3.99 ft	1	0.020	0.011	-0.00	-14.96	14.96	833.33	750.00	1.60	1.00	3.55	315.48	315.48
Dsgn. L =	4.05 ft	1	0.051	0.050	-0.00	-38.17	38.17	833.33	750.00	1.33	1.00	15.84	315.48	315.48
Dsgn. L =	3.95 ft	2	0.051	0.050	23.64	-38.17	38.17	833.33	750.00	2.20	1.00	15.84	315.48	315.48
Dsgn. L =	4.05 ft	2	0.057	0.049	42.92	23.64	42.92	833.33	750.00	1.21	1.00	15.48	315.48	315.48
Dsgn. L =	3.95 ft	2	0.057	0.021	42.92	17.53	42.92	833.33	750.00	1.29	1.00	6.61	315.48	315.48
Dsgn. L =	4.05 ft	2	0.061	0.056	17.53	-45.41	45.41	833.33	750.00	2.20	1.00	17.66	315.48	315.48
Dsgn. L =	3.99 ft	3	0.061	0.036	-0.00	-45.41	45.41	833.33	750.00	1.00	1.00	11.38	315.48	315.48
Dsgn. L =	3.68 ft	3	0.001	0.035		-0.74	0.74	833.33	750.00	1.00	1.00	11.02	315.48	315.48
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L =	1.46 ft	1	0.008	0.014	6.14		6.14	833.33	750.00	1.71	1.00	4.28	315.48	315.48
Dsgn. L =	3.99 ft	1	0.008	0.013	6.31	2.97	6.31	833.33	750.00	1.23	1.00	4.15	315.48	315.48
Dsgn. L =	4.05 ft	1	0.028	0.024	2.97	-21.22	21.22	833.33	750.00	1.88	1.00	7.53	315.48	315.48
Dsgn. L =	3.95 ft	2	0.028	0.024	7.80	-21.22	21.22	833.33	750.00	2.15	1.00	7.53	315.48	315.48
Dsgn. L =	4.05 ft	2	0.023	0.023	17.39	7.80	17.39	833.33	750.00	1.27	1.00	7.17	315.48	315.48
Dsgn. L =	3.95 ft	2	0.023	0.009	17.39	6.57	17.39	833.33	750.00	1.31	1.00	2.92	315.48	315.48
Dsgn. L =	4.05 ft	2	0.029	0.025	6.57	-21.41	21.41	833.33	750.00	2.19	1.00	7.97	315.48	315.48
Dsgn. L =	3.99 ft	3	0.029	0.017	-0.00	-21.41	21.41	833.33	750.00	1.00	1.00	5.38	315.48	315.48
Dsgn. L =	3.68 ft	3	0.001	0.016		-0.67	0.67	833.33	750.00	1.00	1.00	5.02	315.48	315.48
+1.20D+L+0.20S+E+1.60H, LL Cc														
Dsgn. L =	1.46 ft	1	0.010	0.016	7.30		7.30	833.33	750.00	1.71	1.00	5.08	315.48	315.48
Dsgn. L =	3.99 ft	1	0.010	0.016	7.59	7.29	7.59	833.33	750.00	1.01	1.00	4.94	315.48	315.48
Dsgn. L =	4.05 ft	1	0.018	0.018	7.29	-13.69	13.69	833.33	750.00	2.21	1.00	5.56	315.48	315.48
Dsgn. L =	3.95 ft	2	0.018	0.018	7.55	-13.69	13.69	833.33	750.00	2.20	1.00	5.56	315.48	315.48
Dsgn. L =	4.05 ft	2	0.012	0.016	9.16	7.55	9.16	833.33	750.00	1.05	1.00	5.20	315.48	315.48
Dsgn. L =	3.95 ft	2	0.013	0.016	9.16	-9.44	9.44	833.33	750.00	2.28	1.00	4.89	315.48	315.48



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B38**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.05 ft	2		0.061	0.036	-0.00	-45.41	45.41	833.33	750.00	1.53	1.00	11.38	315.48	315.48
Dsgn. L = 3.99 ft	3		0.061	0.036	-0.00	-45.41	45.41	833.33	750.00	1.00	1.00	11.38	315.48	315.48
Dsgn. L = 3.68 ft	3		0.001	0.035		-0.74	0.74	833.33	750.00	1.00	1.00	11.02	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>														
Dsgn. L = 1.46 ft	1		0.003	0.005	1.98		1.98	833.33	750.00	1.69	1.00	1.43	315.48	315.48
Dsgn. L = 3.99 ft	1		0.017	0.012	1.98	-12.60	12.60	833.33	750.00	1.95	1.00	3.89	315.48	315.48
Dsgn. L = 4.05 ft	1		0.064	0.057	-0.00	-48.37	48.37	833.33	750.00	1.43	1.00	17.98	315.48	315.48
Dsgn. L = 3.95 ft	2		0.064	0.057	21.88	-48.37	48.37	833.33	750.00	2.16	1.00	17.98	315.48	315.48
Dsgn. L = 4.05 ft	2		0.066	0.056	49.82	21.88	49.82	833.33	750.00	1.28	1.00	17.62	315.48	315.48
Dsgn. L = 3.95 ft	2		0.066	0.014	49.82	32.87	49.82	833.33	750.00	1.15	1.00	4.47	315.48	315.48
Dsgn. L = 4.05 ft	2		0.044	0.049	32.87	-21.41	32.87	833.33	750.00	1.92	1.00	15.53	315.48	315.48
Dsgn. L = 3.99 ft	3		0.029	0.017	-0.00	-21.41	21.41	833.33	750.00	1.00	1.00	5.38	315.48	315.48
Dsgn. L = 3.68 ft	3		0.001	0.016		-0.67	0.67	833.33	750.00	1.00	1.00	5.02	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>														
Dsgn. L = 1.46 ft	1		0.004	0.007	3.13		3.13	833.33	750.00	1.70	1.00	2.22	315.48	315.48
Dsgn. L = 3.99 ft	1		0.011	0.010	3.17	-8.28	8.28	833.33	750.00	2.19	1.00	3.09	315.48	315.48
Dsgn. L = 4.05 ft	1		0.054	0.051	-0.00	-40.84	40.84	833.33	750.00	1.48	1.00	16.01	315.48	315.48
Dsgn. L = 3.95 ft	2		0.054	0.051	21.63	-40.84	40.84	833.33	750.00	2.18	1.00	16.01	315.48	315.48
Dsgn. L = 4.05 ft	2		0.055	0.050	41.58	21.63	41.58	833.33	750.00	1.23	1.00	15.65	315.48	315.48
Dsgn. L = 3.95 ft	2		0.055	0.020	41.58	16.86	41.58	833.33	750.00	1.30	1.00	6.44	315.48	315.48
Dsgn. L = 4.05 ft	2		0.061	0.055	16.86	-45.41	45.41	833.33	750.00	2.19	1.00	17.50	315.48	315.48
Dsgn. L = 3.99 ft	3		0.061	0.036	-0.00	-45.41	45.41	833.33	750.00	1.00	1.00	11.38	315.48	315.48
Dsgn. L = 3.68 ft	3		0.001	0.035		-0.74	0.74	833.33	750.00	1.00	1.00	11.02	315.48	315.48
<b>+0.90D+E+0.90H</b>														
Dsgn. L = 1.46 ft	1		0.001	0.002	1.00		1.00	833.33	750.00	1.68	1.00	0.74	315.48	315.48
Dsgn. L = 3.99 ft	1		0.003	0.003	1.01	-2.61	2.61	833.33	750.00	2.24	1.00	1.06	315.48	315.48
Dsgn. L = 4.05 ft	1		0.018	0.017	-0.00	-13.15	13.15	833.33	750.00	1.49	1.00	5.22	315.48	315.48
Dsgn. L = 3.95 ft	2		0.018	0.017	6.94	-13.15	13.15	833.33	750.00	2.19	1.00	5.22	315.48	315.48
Dsgn. L = 4.05 ft	2		0.018	0.016	13.25	6.94	13.25	833.33	750.00	1.22	1.00	4.95	315.48	315.48
Dsgn. L = 3.95 ft	2		0.018	0.007	13.25	5.11	13.25	833.33	750.00	1.30	1.00	2.20	315.48	315.48
Dsgn. L = 4.05 ft	2		0.020	0.018	5.11	-15.22	15.22	833.33	750.00	2.19	1.00	5.78	315.48	315.48
Dsgn. L = 3.99 ft	3		0.020	0.012	-0.00	-15.22	15.22	833.33	750.00	1.00	1.00	3.83	315.48	315.48
Dsgn. L = 3.68 ft	3		0.001	0.011		-0.50	0.50	833.33	750.00	1.00	1.00	3.55	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	+D+L+H	-0.0056	5.700
+D+L+H	2	0.0286	8.320		0.0000	5.700
+D+L+H	3	0.0345	7.670	L Only	-0.0342	7.619

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Max Upward from all Load Conditions	4.868	34.354	35.867	
Max Upward from Load Combinations	4.868	34.354	35.867	
Max Upward from Load Cases	4.048	21.816	21.524	
Max Downward from all Load Conditions (Resis)	-2.858	-2.763	-0.167	
Max Downward from Load Combinations (Resis)	-2.039			
Max Downward from Load Cases (Resisting Uf)	-2.858	-2.763	-0.167	
+D+H	0.819	12.538	14.343	
+D+L+H, LL Comb Run (**L)	1.612	9.775	28.314	
+D+L+H, LL Comb Run (*L*)	-2.039	31.843	21.897	
+D+L+H, LL Comb Run (*LL)	-1.246	29.080	35.867	
+D+L+H, LL Comb Run (L**)	4.075	15.049	14.177	
+D+L+H, LL Comb Run (L*L)	4.868	12.286	28.147	
+D+L+H, LL Comb Run (LL*)	1.217	34.354	21.730	
+D+L+H, LL Comb Run (LLL)	2.010	31.591	35.700	
+D+Lr+H, LL Comb Run (**L)	0.819	12.538	14.343	
+D+Lr+H, LL Comb Run (*L*)	0.819	12.538	14.343	
+D+Lr+H, LL Comb Run (*LL)	0.819	12.538	14.343	
+D+Lr+H, LL Comb Run (L**)	0.819	12.538	14.343	
+D+Lr+H, LL Comb Run (L*L)	0.819	12.538	14.343	
+D+Lr+H, LL Comb Run (LL*)	0.819	12.538	14.343	
+D+Lr+H, LL Comb Run (LLL)	0.819	12.538	14.343	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: B38**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
+D+S+H	1.040	16.902	19.299	
+D+0.750Lr+0.750L+H, LL Comb Run (**L)	1.414	10.466	24.821	
+D+0.750Lr+0.750L+H, LL Comb Run (*L*)	-1.324	27.017	20.008	
+D+0.750Lr+0.750L+H, LL Comb Run (*LL)	-0.730	24.944	30.486	
+D+0.750Lr+0.750L+H, LL Comb Run (L**)	3.261	14.422	14.218	
+D+0.750Lr+0.750L+H, LL Comb Run (L*L)	3.856	12.349	24.696	
+D+0.750Lr+0.750L+H, LL Comb Run (LL*)	1.118	28.900	19.883	
+D+0.750Lr+0.750L+H, LL Comb Run (LLL)	1.712	26.828	30.361	
+D+0.750L+0.750S+H, LL Comb Run (**L)	1.579	13.739	28.538	
+D+0.750L+0.750S+H, LL Comb Run (*L*)	-1.158	30.289	23.725	
+D+0.750L+0.750S+H, LL Comb Run (*LL)	-0.564	28.217	34.203	
+D+0.750L+0.750S+H, LL Comb Run (L**)	3.427	17.694	17.935	
+D+0.750L+0.750S+H, LL Comb Run (L*L)	4.021	15.622	28.413	
+D+0.750L+0.750S+H, LL Comb Run (LL*)	1.283	32.173	23.600	
+D+0.750L+0.750S+H, LL Comb Run (LLL)	1.878	30.100	34.078	
+D+0.60W+H	0.819	12.538	14.343	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.414	10.466	24.821	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	-1.324	27.017	20.008	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	-0.730	24.944	30.486	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.261	14.422	14.218	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	3.856	12.349	24.696	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.118	28.900	19.883	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.712	26.828	30.361	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.579	13.739	28.538	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	-1.158	30.289	23.725	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	-0.564	28.217	34.203	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.427	17.694	17.935	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.021	15.622	28.413	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.283	32.173	23.600	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.878	30.100	34.078	
+0.60D+0.60W+0.60H	0.492	7.523	8.606	
+D+0.70E+0.60H	0.819	12.538	14.343	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	1.579	13.739	28.538	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	-1.158	30.289	23.725	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	-0.564	28.217	34.203	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.427	17.694	17.935	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	4.021	15.622	28.413	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	1.283	32.173	23.600	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	1.878	30.100	34.078	
+0.60D+0.70E+H	0.492	7.523	8.606	
D Only	0.819	12.538	14.343	
L Only, LL Comb Run (**L)	0.793	-2.763	13.971	
L Only, LL Comb Run (*L*)	-2.858	19.305	7.553	
L Only, LL Comb Run (*LL)	-2.065	16.542	21.524	
L Only, LL Comb Run (L**)	3.256	2.511	-0.167	
L Only, LL Comb Run (L*L)	4.048	-0.252	13.804	
L Only, LL Comb Run (LL*)	0.398	21.816	7.386	
L Only, LL Comb Run (LLL)	1.190	19.053	21.357	
S Only	0.221	4.364	4.955	
H Only				



### Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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DESCRIPTION: B39

### CODE REFERENCES

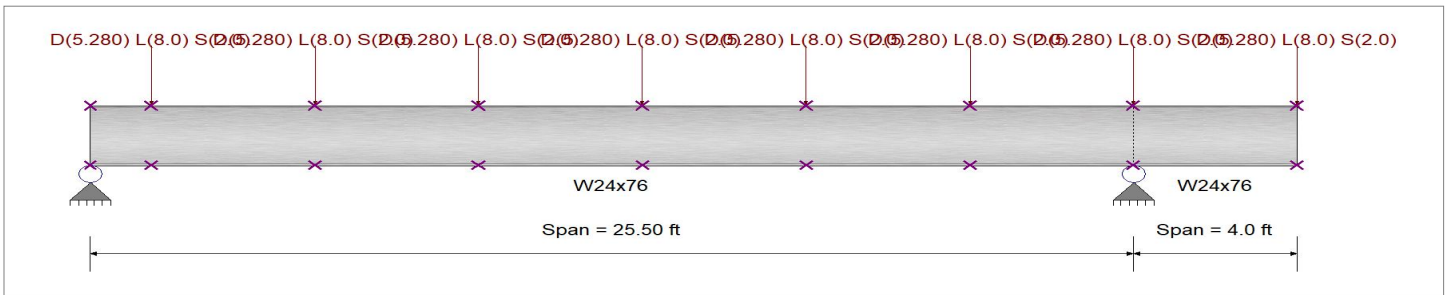
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

### Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

### Unbraced Lengths

First Brace starts at 1.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 1.50 ft and placed every 4.0 ft thereafter

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.538 : 1</b>	Maximum Shear Stress Ratio =	<b>0.210 : 1</b>
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	403.493 k-ft	Vu : Applied	66.314 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.313 in Ratio = 978 >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.155 in Ratio = 620 >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.506 in Ratio = 605 >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.239 in Ratio = 402 >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
<b>+1.40D+1.60H</b>															
Dsgn. L =	1.43 ft	1	0.047	0.078	34.90		34.90	34.90	833.33	750.00	1.71	1.00	24.51	315.48	315.48
Dsgn. L =	3.98 ft	1	0.136	0.077	102.09	34.90	102.09	833.33	750.00	1.36	1.00	24.36	315.48	315.48	
Dsgn. L =	4.08 ft	1	0.186	0.052	139.25	102.09	139.25	833.33	750.00	1.12	1.00	16.55	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.192	0.028	143.80	139.25	143.80	833.33	750.00	1.01	1.00	8.72	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.192	0.022	143.80	117.42	143.80	833.33	750.00	1.08	1.00	6.91	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.157	0.047	117.42	60.11	117.42	833.33	750.00	1.23	1.00	14.73	315.48	315.48	
Dsgn. L =	4.08 ft	1	0.080	0.071	60.11	-30.42	60.11	833.33	750.00	2.16	1.00	22.55	315.48	315.48	
Dsgn. L =	4.00 ft	2	0.041	0.025		-30.42	30.42	833.33	750.00	1.00	1.00	7.82	315.48	315.48	
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>															
Dsgn. L =	1.43 ft	1	0.036	0.060	27.04		27.04	833.33	750.00	1.71	1.00	19.00	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.102	0.060	76.65	27.04	76.65	833.33	750.00	1.35	1.00	18.87	315.48	315.48	
Dsgn. L =	4.08 ft	1	0.134	0.039	100.31	76.65	100.31	833.33	750.00	1.10	1.00	12.17	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.134	0.017	100.31	96.22	100.31	833.33	750.00	1.02	1.00	5.47	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.128	0.025	96.22	65.62	96.22	833.33	750.00	1.14	1.00	7.93	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.087	0.046	65.62	8.52	65.62	833.33	750.00	1.50	1.00	14.63	315.48	315.48	
Dsgn. L =	4.08 ft	1	0.103	0.068	8.52	-77.27	77.27	833.33	750.00	1.81	1.00	21.34	315.48	315.48	
Dsgn. L =	4.00 ft	2	0.103	0.062		-77.27	77.27	833.33	750.00	1.00	1.00	19.50	315.48	315.48	



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B39**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.120	0.200	90.12		90.12	833.33	750.00	1.72	1.00	63.18	315.48	315.48
Dsgn. L = 3.98 ft	1	0.354	0.200	265.45	90.12	265.45	833.33	750.00	1.37	1.00	63.05	315.48	315.48
Dsgn. L = 4.08 ft	1	0.488	0.138	366.09	265.45	366.09	833.33	750.00	1.12	1.00	43.55	315.48	315.48
Dsgn. L = 3.98 ft	1	0.514	0.076	385.15	366.09	385.15	833.33	750.00	1.02	1.00	24.04	315.48	315.48
Dsgn. L = 3.98 ft	1	0.514	0.047	385.15	327.05	385.15	833.33	750.00	1.06	1.00	14.96	315.48	315.48
Dsgn. L = 3.98 ft	1	0.436	0.109	327.05	191.81	327.05	833.33	750.00	1.19	1.00	34.46	315.48	315.48
Dsgn. L = 4.08 ft	1	0.256	0.171	191.81	-26.07	191.81	833.33	750.00	1.82	1.00	53.97	315.48	315.48
Dsgn. L = 4.00 ft	2	0.035	0.021		-26.07	26.07	833.33	750.00	1.00	1.00	6.70	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.116	0.194	87.26		87.26	833.33	750.00	1.72	1.00	61.17	315.48	315.48
Dsgn. L = 3.98 ft	1	0.339	0.193	254.60	87.26	254.60	833.33	750.00	1.36	1.00	61.04	315.48	315.48
Dsgn. L = 4.08 ft	1	0.463	0.132	347.05	254.60	347.05	833.33	750.00	1.12	1.00	41.54	315.48	315.48
Dsgn. L = 3.98 ft	1	0.477	0.070	358.11	347.05	358.11	833.33	750.00	1.01	1.00	22.03	315.48	315.48
Dsgn. L = 3.98 ft	1	0.477	0.054	358.11	292.03	358.11	833.33	750.00	1.08	1.00	16.97	315.48	315.48
Dsgn. L = 3.98 ft	1	0.389	0.116	292.03	148.81	292.03	833.33	750.00	1.23	1.00	36.46	315.48	315.48
Dsgn. L = 4.08 ft	1	0.198	0.177	148.81	-77.27	148.81	833.33	750.00	2.16	1.00	55.97	315.48	315.48
Dsgn. L = 4.00 ft	2	0.103	0.062		-77.27	77.27	833.33	750.00	1.00	1.00	19.50	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.43 ft	1	0.042	0.070	31.52		31.52	833.33	750.00	1.71	1.00	22.14	315.48	315.48
Dsgn. L = 3.98 ft	1	0.120	0.070	89.71	31.52	89.71	833.33	750.00	1.36	1.00	22.01	315.48	315.48
Dsgn. L = 4.08 ft	1	0.157	0.045	118.10	89.71	118.10	833.33	750.00	1.10	1.00	14.31	315.48	315.48
Dsgn. L = 3.98 ft	1	0.158	0.021	118.13	114.57	118.13	833.33	750.00	1.01	1.00	6.60	315.48	315.48
Dsgn. L = 3.98 ft	1	0.153	0.028	114.57	80.58	114.57	833.33	750.00	1.13	1.00	8.79	315.48	315.48
Dsgn. L = 3.98 ft	1	0.107	0.052	80.58	16.12	80.58	833.33	750.00	1.45	1.00	16.49	315.48	315.48
Dsgn. L = 4.08 ft	1	0.108	0.077	16.12	-81.27	81.27	833.33	750.00	1.94	1.00	24.20	315.48	315.48
Dsgn. L = 4.00 ft	2	0.108	0.065		-81.27	81.27	833.33	750.00	1.00	1.00	20.50	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.43 ft	1	0.126	0.210	94.60		94.60	833.33	750.00	1.72	1.00	66.31	315.48	315.48
Dsgn. L = 3.98 ft	1	0.371	0.210	278.51	94.60	278.51	833.33	750.00	1.37	1.00	66.18	315.48	315.48
Dsgn. L = 4.08 ft	1	0.512	0.145	383.88	278.51	383.88	833.33	750.00	1.12	1.00	45.68	315.48	315.48
Dsgn. L = 3.98 ft	1	0.538	0.080	403.49	383.88	403.49	833.33	750.00	1.02	1.00	25.18	315.48	315.48
Dsgn. L = 3.98 ft	1	0.538	0.050	403.49	342.00	403.49	833.33	750.00	1.06	1.00	15.82	315.48	315.48
Dsgn. L = 3.98 ft	1	0.456	0.115	342.00	199.41	342.00	833.33	750.00	1.19	1.00	36.32	315.48	315.48
Dsgn. L = 4.08 ft	1	0.266	0.180	199.41	-30.07	199.41	833.33	750.00	1.84	1.00	56.83	315.48	315.48
Dsgn. L = 4.00 ft	2	0.040	0.024		-30.07	30.07	833.33	750.00	1.00	1.00	7.70	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.43 ft	1	0.122	0.204	91.74		91.74	833.33	750.00	1.72	1.00	64.31	315.48	315.48
Dsgn. L = 3.98 ft	1	0.357	0.203	267.65	91.74	267.65	833.33	750.00	1.36	1.00	64.18	315.48	315.48
Dsgn. L = 4.08 ft	1	0.486	0.138	364.83	267.65	364.83	833.33	750.00	1.12	1.00	43.68	315.48	315.48
Dsgn. L = 3.98 ft	1	0.502	0.073	376.46	364.83	376.46	833.33	750.00	1.01	1.00	23.17	315.48	315.48
Dsgn. L = 3.98 ft	1	0.502	0.057	376.46	306.98	376.46	833.33	750.00	1.08	1.00	17.83	315.48	315.48
Dsgn. L = 3.98 ft	1	0.409	0.121	306.98	156.41	306.98	833.33	750.00	1.23	1.00	38.33	315.48	315.48
Dsgn. L = 4.08 ft	1	0.209	0.186	156.41	-81.27	156.41	833.33	750.00	2.16	1.00	58.84	315.48	315.48
Dsgn. L = 4.00 ft	2	0.108	0.065		-81.27	81.27	833.33	750.00	1.00	1.00	20.50	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.037	0.063	28.12		28.12	833.33	750.00	1.71	1.00	19.76	315.48	315.48
Dsgn. L = 3.98 ft	1	0.108	0.062	80.72	28.12	80.72	833.33	750.00	1.36	1.00	19.63	315.48	315.48
Dsgn. L = 4.08 ft	1	0.143	0.041	107.46	80.72	107.46	833.33	750.00	1.11	1.00	12.93	315.48	315.48
Dsgn. L = 3.98 ft	1	0.143	0.020	107.53	106.36	107.53	833.33	750.00	1.00	1.00	6.22	315.48	315.48
Dsgn. L = 3.98 ft	1	0.142	0.023	106.36	78.76	106.36	833.33	750.00	1.11	1.00	7.18	315.48	315.48
Dsgn. L = 3.98 ft	1	0.105	0.044	78.76	24.65	78.76	833.33	750.00	1.36	1.00	13.88	315.48	315.48
Dsgn. L = 4.08 ft	1	0.077	0.065	24.65	-58.07	58.07	833.33	750.00	2.17	1.00	20.58	315.48	315.48
Dsgn. L = 4.00 ft	2	0.077	0.047		-58.07	58.07	833.33	750.00	1.00	1.00	14.70	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.090	0.150	67.54		67.54	833.33	750.00	1.72	1.00	47.36	315.48	315.48
Dsgn. L = 3.98 ft	1	0.265	0.150	198.72	67.54	198.72	833.33	750.00	1.37	1.00	47.23	315.48	315.48
Dsgn. L = 4.08 ft	1	0.365	0.103	273.57	198.72	273.57	833.33	750.00	1.12	1.00	32.54	315.48	315.48
Dsgn. L = 3.98 ft	1	0.383	0.057	286.94	273.57	286.94	833.33	750.00	1.02	1.00	17.83	315.48	315.48
Dsgn. L = 3.98 ft	1	0.383	0.037	286.94	242.15	286.94	833.33	750.00	1.06	1.00	11.57	315.48	315.48
Dsgn. L = 3.98 ft	1	0.323	0.083	242.15	139.21	242.15	833.33	750.00	1.20	1.00	26.27	315.48	315.48
Dsgn. L = 4.08 ft	1	0.186	0.130	139.21	-26.07	139.21	833.33	750.00	1.89	1.00	40.98	315.48	315.48
Dsgn. L = 4.00 ft	2	0.035	0.021		-26.07	26.07	833.33	750.00	1.00	1.00	6.70	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B39**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.088	0.146	65.75	65.75	833.33	750.00	1.72	1.00	46.11	315.48	315.48	
Dsgn. L = 3.98 ft	1	0.256	0.146	191.94	65.75	191.94	833.33	750.00	1.36	1.00	45.98	315.48	315.48
Dsgn. L = 4.08 ft	1	0.349	0.099	261.66	191.94	261.66	833.33	750.00	1.12	1.00	31.28	315.48	315.48
Dsgn. L = 3.98 ft	1	0.360	0.053	270.04	261.66	270.04	833.33	750.00	1.01	1.00	16.57	315.48	315.48
Dsgn. L = 3.98 ft	1	0.360	0.041	270.04	220.26	270.04	833.33	750.00	1.08	1.00	12.82	315.48	315.48
Dsgn. L = 3.98 ft	1	0.294	0.087	220.26	112.33	220.26	833.33	750.00	1.23	1.00	27.52	315.48	315.48
Dsgn. L = 4.08 ft	1	0.150	0.134	112.33	-58.07	112.33	833.33	750.00	2.16	1.00	42.23	315.48	315.48
Dsgn. L = 4.00 ft	2	0.077	0.047	-58.07	58.07	833.33	750.00	1.00	1.00	14.70	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.040	0.067	29.91	29.91	833.33	750.00	1.71	1.00	21.01	315.48	315.48	
Dsgn. L = 3.98 ft	1	0.117	0.066	87.51	29.91	87.51	833.33	750.00	1.36	1.00	20.88	315.48	315.48
Dsgn. L = 4.08 ft	1	0.159	0.045	119.36	87.51	119.36	833.33	750.00	1.12	1.00	14.18	315.48	315.48
Dsgn. L = 3.98 ft	1	0.164	0.024	123.26	119.36	123.26	833.33	750.00	1.01	1.00	7.47	315.48	315.48
Dsgn. L = 3.98 ft	1	0.164	0.019	123.26	100.65	123.26	833.33	750.00	1.08	1.00	5.92	315.48	315.48
Dsgn. L = 3.98 ft	1	0.134	0.040	100.65	51.53	100.65	833.33	750.00	1.23	1.00	12.62	315.48	315.48
Dsgn. L = 4.08 ft	1	0.069	0.061	51.53	-26.07	51.53	833.33	750.00	2.16	1.00	19.33	315.48	315.48
Dsgn. L = 4.00 ft	2	0.035	0.021	-26.07	26.07	833.33	750.00	1.00	1.00	6.70	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.040	0.067	29.91	29.91	833.33	750.00	1.71	1.00	21.01	315.48	315.48	
Dsgn. L = 3.98 ft	1	0.117	0.066	87.51	29.91	87.51	833.33	750.00	1.36	1.00	20.88	315.48	315.48
Dsgn. L = 4.08 ft	1	0.159	0.045	119.36	87.51	119.36	833.33	750.00	1.12	1.00	14.18	315.48	315.48
Dsgn. L = 3.98 ft	1	0.164	0.024	123.26	119.36	123.26	833.33	750.00	1.01	1.00	7.47	315.48	315.48
Dsgn. L = 3.98 ft	1	0.164	0.019	123.26	100.65	123.26	833.33	750.00	1.08	1.00	5.92	315.48	315.48
Dsgn. L = 3.98 ft	1	0.134	0.040	100.65	51.53	100.65	833.33	750.00	1.23	1.00	12.62	315.48	315.48
Dsgn. L = 4.08 ft	1	0.069	0.061	51.53	-26.07	51.53	833.33	750.00	2.16	1.00	19.33	315.48	315.48
Dsgn. L = 4.00 ft	2	0.035	0.021	-26.07	26.07	833.33	750.00	1.00	1.00	6.70	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.040	0.067	29.91	29.91	833.33	750.00	1.71	1.00	21.01	315.48	315.48	
Dsgn. L = 3.98 ft	1	0.117	0.066	87.51	29.91	87.51	833.33	750.00	1.36	1.00	20.88	315.48	315.48
Dsgn. L = 4.08 ft	1	0.159	0.045	119.36	87.51	119.36	833.33	750.00	1.12	1.00	14.18	315.48	315.48
Dsgn. L = 3.98 ft	1	0.164	0.024	123.26	119.36	123.26	833.33	750.00	1.01	1.00	7.47	315.48	315.48
Dsgn. L = 3.98 ft	1	0.164	0.019	123.26	100.65	123.26	833.33	750.00	1.08	1.00	5.92	315.48	315.48
Dsgn. L = 3.98 ft	1	0.134	0.040	100.65	51.53	100.65	833.33	750.00	1.23	1.00	12.62	315.48	315.48
Dsgn. L = 4.08 ft	1	0.069	0.061	51.53	-26.07	51.53	833.33	750.00	2.16	1.00	19.33	315.48	315.48
Dsgn. L = 4.00 ft	2	0.035	0.021	-26.07	26.07	833.33	750.00	1.00	1.00	6.70	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.057	0.094	42.46	42.46	833.33	750.00	1.72	1.00	29.80	315.48	315.48	
Dsgn. L = 3.98 ft	1	0.163	0.094	122.50	42.46	122.50	833.33	750.00	1.36	1.00	29.67	315.48	315.48
Dsgn. L = 4.08 ft	1	0.219	0.063	164.38	122.50	164.38	833.33	750.00	1.11	1.00	19.77	315.48	315.48
Dsgn. L = 3.98 ft	1	0.220	0.031	165.08	164.38	165.08	833.33	750.00	1.00	1.00	9.86	315.48	315.48
Dsgn. L = 3.98 ft	1	0.220	0.032	165.07	126.60	165.07	833.33	750.00	1.10	1.00	9.94	315.48	315.48
Dsgn. L = 3.98 ft	1	0.169	0.063	126.60	48.97	126.60	833.33	750.00	1.31	1.00	19.84	315.48	315.48
Dsgn. L = 4.08 ft	1	0.094	0.094	48.97	-70.87	70.87	833.33	750.00	2.22	1.00	29.75	315.48	315.48
Dsgn. L = 4.00 ft	2	0.094	0.057	-70.87	70.87	833.33	750.00	1.00	1.00	17.90	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.109	0.182	81.88	81.88	833.33	750.00	1.72	1.00	57.40	315.48	315.48	
Dsgn. L = 3.98 ft	1	0.321	0.182	240.50	81.88	240.50	833.33	750.00	1.37	1.00	57.27	315.48	315.48
Dsgn. L = 4.08 ft	1	0.441	0.125	330.49	240.50	330.49	833.33	750.00	1.12	1.00	39.37	315.48	315.48
Dsgn. L = 3.98 ft	1	0.461	0.068	345.65	330.49	345.65	833.33	750.00	1.02	1.00	21.47	315.48	315.48
Dsgn. L = 3.98 ft	1	0.461	0.045	345.65	290.00	345.65	833.33	750.00	1.07	1.00	14.33	315.48	315.48
Dsgn. L = 3.98 ft	1	0.387	0.102	290.00	163.53	290.00	833.33	750.00	1.20	1.00	32.23	315.48	315.48
Dsgn. L = 4.08 ft	1	0.218	0.159	163.53	-38.87	163.53	833.33	750.00	1.96	1.00	50.14	315.48	315.48
Dsgn. L = 4.00 ft	2	0.052	0.031	-38.87	38.87	833.33	750.00	1.00	1.00	9.90	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.107	0.178	80.09	80.09	833.33	750.00	1.72	1.00	56.15	315.48	315.48	
Dsgn. L = 3.98 ft	1	0.312	0.178	233.71	80.09	233.71	833.33	750.00	1.36	1.00	56.02	315.48	315.48
Dsgn. L = 4.08 ft	1	0.425	0.121	318.59	233.71	318.59	833.33	750.00	1.12	1.00	38.12	315.48	315.48
Dsgn. L = 3.98 ft	1	0.438	0.064	328.75	318.59	328.75	833.33	750.00	1.01	1.00	20.21	315.48	315.48
Dsgn. L = 3.98 ft	1	0.438	0.049	328.75	268.11	328.75	833.33	750.00	1.08	1.00	15.59	315.48	315.48
Dsgn. L = 3.98 ft	1	0.357	0.106	268.11	136.65	268.11	833.33	750.00	1.23	1.00	33.48	315.48	315.48
Dsgn. L = 4.08 ft	1	0.182	0.163	136.65	-70.87	136.65	833.33	750.00	2.16	1.00	51.39	315.48	315.48
Dsgn. L = 4.00 ft	2	0.094	0.057	-70.87	70.87	833.33	750.00	1.00	1.00	17.90	315.48	315.48	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B39**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 1.43 ft	1	0.059	0.098	44.25		44.25	833.33	750.00	1.72	1.00	31.05	315.48	315.48
Dsgn. L = 3.98 ft	1	0.172	0.098	129.28	44.25	129.28	833.33	750.00	1.36	1.00	30.92	315.48	315.48
Dsgn. L = 4.08 ft	1	0.235	0.067	176.28	129.28	176.28	833.33	750.00	1.12	1.00	21.02	315.48	315.48
Dsgn. L = 3.98 ft	1	0.243	0.035	181.97	176.28	181.97	833.33	750.00	1.01	1.00	11.11	315.48	315.48
Dsgn. L = 3.98 ft	1	0.243	0.028	181.97	148.49	181.97	833.33	750.00	1.08	1.00	8.68	315.48	315.48
Dsgn. L = 3.98 ft	1	0.198	0.059	148.49	75.85	148.49	833.33	750.00	1.23	1.00	18.58	315.48	315.48
Dsgn. L = 4.08 ft	1	0.101	0.090	75.85	-38.87	75.85	833.33	750.00	2.16	1.00	28.49	315.48	315.48
Dsgn. L = 4.00 ft	2	0.052	0.031		-38.87	38.87	833.33	750.00	1.00	1.00	9.90	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.037	0.063	28.12		28.12	833.33	750.00	1.71	1.00	19.76	315.48	315.48
Dsgn. L = 3.98 ft	1	0.108	0.062	80.72	28.12	80.72	833.33	750.00	1.36	1.00	19.63	315.48	315.48
Dsgn. L = 4.08 ft	1	0.143	0.041	107.46	80.72	107.46	833.33	750.00	1.11	1.00	12.93	315.48	315.48
Dsgn. L = 3.98 ft	1	0.143	0.020	107.53	106.36	107.53	833.33	750.00	1.00	1.00	6.22	315.48	315.48
Dsgn. L = 3.98 ft	1	0.142	0.023	106.36	78.76	106.36	833.33	750.00	1.11	1.00	7.18	315.48	315.48
Dsgn. L = 3.98 ft	1	0.105	0.044	78.76	24.65	78.76	833.33	750.00	1.36	1.00	13.88	315.48	315.48
Dsgn. L = 4.08 ft	1	0.077	0.065	24.65	-58.07	58.07	833.33	750.00	2.17	1.00	20.58	315.48	315.48
Dsgn. L = 4.00 ft	2	0.077	0.047		-58.07	58.07	833.33	750.00	1.00	1.00	14.70	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.090	0.150	67.54		67.54	833.33	750.00	1.72	1.00	47.36	315.48	315.48
Dsgn. L = 3.98 ft	1	0.265	0.150	198.72	67.54	198.72	833.33	750.00	1.37	1.00	47.23	315.48	315.48
Dsgn. L = 4.08 ft	1	0.365	0.103	273.57	198.72	273.57	833.33	750.00	1.12	1.00	32.54	315.48	315.48
Dsgn. L = 3.98 ft	1	0.383	0.057	286.94	273.57	286.94	833.33	750.00	1.02	1.00	17.83	315.48	315.48
Dsgn. L = 3.98 ft	1	0.383	0.037	286.94	242.15	286.94	833.33	750.00	1.06	1.00	11.57	315.48	315.48
Dsgn. L = 3.98 ft	1	0.323	0.083	242.15	139.21	242.15	833.33	750.00	1.20	1.00	26.27	315.48	315.48
Dsgn. L = 4.08 ft	1	0.186	0.130	139.21	-26.07	139.21	833.33	750.00	1.89	1.00	40.98	315.48	315.48
Dsgn. L = 4.00 ft	2	0.035	0.021		-26.07	26.07	833.33	750.00	1.00	1.00	6.70	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.088	0.146	65.75		65.75	833.33	750.00	1.72	1.00	46.11	315.48	315.48
Dsgn. L = 3.98 ft	1	0.256	0.146	191.94	65.75	191.94	833.33	750.00	1.36	1.00	45.98	315.48	315.48
Dsgn. L = 4.08 ft	1	0.349	0.099	261.66	191.94	261.66	833.33	750.00	1.12	1.00	31.28	315.48	315.48
Dsgn. L = 3.98 ft	1	0.360	0.053	270.04	261.66	270.04	833.33	750.00	1.01	1.00	16.57	315.48	315.48
Dsgn. L = 3.98 ft	1	0.360	0.041	270.04	220.26	270.04	833.33	750.00	1.08	1.00	12.82	315.48	315.48
Dsgn. L = 3.98 ft	1	0.294	0.087	220.26	112.33	220.26	833.33	750.00	1.23	1.00	27.52	315.48	315.48
Dsgn. L = 4.08 ft	1	0.150	0.134	112.33	-58.07	112.33	833.33	750.00	2.16	1.00	42.23	315.48	315.48
Dsgn. L = 4.00 ft	2	0.077	0.047		-58.07	58.07	833.33	750.00	1.00	1.00	14.70	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.043	0.073	32.60		32.60	833.33	750.00	1.71	1.00	22.89	315.48	315.48
Dsgn. L = 3.98 ft	1	0.125	0.072	93.78	32.60	93.78	833.33	750.00	1.36	1.00	22.76	315.48	315.48
Dsgn. L = 4.08 ft	1	0.167	0.048	125.24	93.78	125.24	833.33	750.00	1.11	1.00	15.07	315.48	315.48
Dsgn. L = 3.98 ft	1	0.167	0.023	125.35	124.71	125.35	833.33	750.00	1.00	1.00	7.36	315.48	315.48
Dsgn. L = 3.98 ft	1	0.166	0.025	124.71	93.71	124.71	833.33	750.00	1.11	1.00	8.04	315.48	315.48
Dsgn. L = 3.98 ft	1	0.125	0.050	93.71	32.25	93.71	833.33	750.00	1.34	1.00	15.74	315.48	315.48
Dsgn. L = 4.08 ft	1	0.083	0.074	32.25	-62.07	62.07	833.33	750.00	2.18	1.00	23.45	315.48	315.48
Dsgn. L = 4.00 ft	2	0.083	0.050		-62.07	62.07	833.33	750.00	1.00	1.00	15.70	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.096	0.160	72.02		72.02	833.33	750.00	1.72	1.00	50.50	315.48	315.48
Dsgn. L = 3.98 ft	1	0.282	0.160	211.78	72.02	211.78	833.33	750.00	1.37	1.00	50.37	315.48	315.48
Dsgn. L = 4.08 ft	1	0.388	0.110	291.36	211.78	291.36	833.33	750.00	1.12	1.00	34.67	315.48	315.48
Dsgn. L = 3.98 ft	1	0.407	0.060	305.29	291.36	305.29	833.33	750.00	1.02	1.00	18.96	315.48	315.48
Dsgn. L = 3.98 ft	1	0.407	0.039	305.29	257.10	305.29	833.33	750.00	1.06	1.00	12.43	315.48	315.48
Dsgn. L = 3.98 ft	1	0.343	0.089	257.10	146.81	257.10	833.33	750.00	1.20	1.00	28.13	315.48	315.48
Dsgn. L = 4.08 ft	1	0.196	0.139	146.81	-30.07	146.81	833.33	750.00	1.92	1.00	43.84	315.48	315.48
Dsgn. L = 4.00 ft	2	0.040	0.024		-30.07	30.07	833.33	750.00	1.00	1.00	7.70	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.094	0.156	70.23		70.23	833.33	750.00	1.72	1.00	49.25	315.48	315.48
Dsgn. L = 3.98 ft	1	0.273	0.156	204.99	70.23	204.99	833.33	750.00	1.36	1.00	49.12	315.48	315.48
Dsgn. L = 4.08 ft	1	0.373	0.106	279.45	204.99	279.45	833.33	750.00	1.12	1.00	33.42	315.48	315.48
Dsgn. L = 3.98 ft	1	0.385	0.056	288.39	279.45	288.39	833.33	750.00	1.01	1.00	17.71	315.48	315.48
Dsgn. L = 3.98 ft	1	0.385	0.043	288.39	235.21	288.39	833.33	750.00	1.08	1.00	13.69	315.48	315.48
Dsgn. L = 3.98 ft	1	0.314	0.093	235.21	119.93	235.21	833.33	750.00	1.23	1.00	29.39	315.48	315.48
Dsgn. L = 4.08 ft	1	0.160	0.143	119.93	-62.07	119.93	833.33	750.00	2.16	1.00	45.09	315.48	315.48
Dsgn. L = 4.00 ft	2	0.083	0.050		-62.07	62.07	833.33	750.00	1.00	1.00	15.70	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B39**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+0.90D+W+1.60H</b>														
Dsgn. L =	1.43 ft	1	0.030	0.050	22.43		22.43	833.33	750.00	1.71	1.00	15.76	315.48	315.48
Dsgn. L =	3.98 ft	1	0.088	0.050	65.63	22.43	65.63	833.33	750.00	1.36	1.00	15.66	315.48	315.48
Dsgn. L =	4.08 ft	1	0.119	0.034	89.52	65.63	89.52	833.33	750.00	1.12	1.00	10.64	315.48	315.48
Dsgn. L =	3.98 ft	1	0.123	0.018	92.44	89.52	92.44	833.33	750.00	1.01	1.00	5.61	315.48	315.48
Dsgn. L =	3.98 ft	1	0.123	0.014	92.44	75.48	92.44	833.33	750.00	1.08	1.00	4.44	315.48	315.48
Dsgn. L =	3.98 ft	1	0.101	0.030	75.48	38.64	75.48	833.33	750.00	1.23	1.00	9.47	315.48	315.48
Dsgn. L =	4.08 ft	1	0.052	0.046	38.64	-19.56	38.64	833.33	750.00	2.16	1.00	14.50	315.48	315.48
Dsgn. L =	4.00 ft	2	0.026	0.016		-19.56	19.56	833.33	750.00	1.00	1.00	5.03	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>														
Dsgn. L =	1.43 ft	1	0.040	0.067	29.91		29.91	833.33	750.00	1.71	1.00	21.01	315.48	315.48
Dsgn. L =	3.98 ft	1	0.115	0.066	85.95	29.91	85.95	833.33	750.00	1.36	1.00	20.88	315.48	315.48
Dsgn. L =	4.08 ft	1	0.153	0.044	114.57	85.95	114.57	833.33	750.00	1.11	1.00	13.78	315.48	315.48
Dsgn. L =	3.98 ft	1	0.153	0.021	114.66	113.70	114.66	833.33	750.00	1.00	1.00	6.67	315.48	315.48
Dsgn. L =	3.98 ft	1	0.152	0.024	113.70	84.74	113.70	833.33	750.00	1.11	1.00	7.52	315.48	315.48
Dsgn. L =	3.98 ft	1	0.113	0.046	84.74	27.69	84.74	833.33	750.00	1.35	1.00	14.62	315.48	315.48
Dsgn. L =	4.08 ft	1	0.080	0.069	27.69	-59.67	59.67	833.33	750.00	2.17	1.00	21.73	315.48	315.48
Dsgn. L =	4.00 ft	2	0.080	0.048		-59.67	59.67	833.33	750.00	1.00	1.00	15.10	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>														
Dsgn. L =	1.43 ft	1	0.092	0.154	69.34		69.34	833.33	750.00	1.72	1.00	48.62	315.48	315.48
Dsgn. L =	3.98 ft	1	0.272	0.154	203.95	69.34	203.95	833.33	750.00	1.37	1.00	48.49	315.48	315.48
Dsgn. L =	4.08 ft	1	0.374	0.106	280.68	203.95	280.68	833.33	750.00	1.12	1.00	33.39	315.48	315.48
Dsgn. L =	3.98 ft	1	0.392	0.058	294.28	280.68	294.28	833.33	750.00	1.02	1.00	18.28	315.48	315.48
Dsgn. L =	3.98 ft	1	0.392	0.038	294.28	248.13	294.28	833.33	750.00	1.06	1.00	11.92	315.48	315.48
Dsgn. L =	3.98 ft	1	0.331	0.086	248.13	142.25	248.13	833.33	750.00	1.20	1.00	27.01	315.48	315.48
Dsgn. L =	4.08 ft	1	0.190	0.134	142.25	-27.67	142.25	833.33	750.00	1.90	1.00	42.12	315.48	315.48
Dsgn. L =	4.00 ft	2	0.037	0.023		-27.67	27.67	833.33	750.00	1.00	1.00	7.10	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>														
Dsgn. L =	1.43 ft	1	0.090	0.150	67.54		67.54	833.33	750.00	1.72	1.00	47.36	315.48	315.48
Dsgn. L =	3.98 ft	1	0.263	0.150	197.16	67.54	197.16	833.33	750.00	1.36	1.00	47.23	315.48	315.48
Dsgn. L =	4.08 ft	1	0.358	0.102	268.78	197.16	268.78	833.33	750.00	1.12	1.00	32.14	315.48	315.48
Dsgn. L =	3.98 ft	1	0.370	0.054	277.38	268.78	277.38	833.33	750.00	1.01	1.00	17.03	315.48	315.48
Dsgn. L =	3.98 ft	1	0.370	0.042	277.38	226.24	277.38	833.33	750.00	1.08	1.00	13.17	315.48	315.48
Dsgn. L =	3.98 ft	1	0.302	0.090	226.24	115.37	226.24	833.33	750.00	1.23	1.00	28.27	315.48	315.48
Dsgn. L =	4.08 ft	1	0.154	0.137	115.37	-59.67	115.37	833.33	750.00	2.16	1.00	43.38	315.48	315.48
Dsgn. L =	4.00 ft	2	0.080	0.048		-59.67	59.67	833.33	750.00	1.00	1.00	15.10	315.48	315.48
<b>+0.90D+E+0.90H</b>														
Dsgn. L =	1.43 ft	1	0.030	0.050	22.43		22.43	833.33	750.00	1.71	1.00	15.76	315.48	315.48
Dsgn. L =	3.98 ft	1	0.088	0.050	65.63	22.43	65.63	833.33	750.00	1.36	1.00	15.66	315.48	315.48
Dsgn. L =	4.08 ft	1	0.119	0.034	89.52	65.63	89.52	833.33	750.00	1.12	1.00	10.64	315.48	315.48
Dsgn. L =	3.98 ft	1	0.123	0.018	92.44	89.52	92.44	833.33	750.00	1.01	1.00	5.61	315.48	315.48
Dsgn. L =	3.98 ft	1	0.123	0.014	92.44	75.48	92.44	833.33	750.00	1.08	1.00	4.44	315.48	315.48
Dsgn. L =	3.98 ft	1	0.101	0.030	75.48	38.64	75.48	833.33	750.00	1.23	1.00	9.47	315.48	315.48
Dsgn. L =	4.08 ft	1	0.052	0.046	38.64	-19.56	38.64	833.33	750.00	2.16	1.00	14.50	315.48	315.48
Dsgn. L =	4.00 ft	2	0.026	0.016		-19.56	19.56	833.33	750.00	1.00	1.00	5.03	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.5057	12.648		0.0000	0.000
	2	0.0000	12.648	+D+L+H	-0.2387	4.000

**Vertical Reactions**

Support notation : Far left is #'

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	43.863	65.874	
Max Upward from Load Combinations	43.863	65.874	
Max Upward from Load Cases	26.353	38.902	
Max Downward from all Load Conditions (Resis)	-1.255		
Max Downward from Load Cases (Resisting U <sub>r</sub> )	-1.255		
+D+H	17.510	26.972	
+D+L+H, LL Comb Run (*L)	16.255	44.227	
+D+L+H, LL Comb Run (L*)	43.863	48.619	
+D+L+H, LL Comb Run (LL)	42.608	65.874	
+D+Lr+H, LL Comb Run (*L)	17.510	26.972	



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B39**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
+D+Lr+H, LL Comb Run (L*)	17.510	26.972	
+D+Lr+H, LL Comb Run (LL)	17.510	26.972	
+D+S+H	23.784	36.698	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	16.569	39.913	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	37.275	43.207	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	36.333	56.149	
+D+0.750L+0.750S+H, LL Comb Run (*L)	21.275	47.207	
+D+0.750L+0.750S+H, LL Comb Run (L*)	41.980	50.502	
+D+0.750L+0.750S+H, LL Comb Run (LL)	41.039	63.443	
+D+0.60W+H	17.510	26.972	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	16.569	39.913	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	37.275	43.207	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	36.333	56.149	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	21.275	47.207	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	41.980	50.502	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	41.039	63.443	
+0.60D+0.60W+0.60H	10.506	16.183	
+D+0.70E+0.60H	17.510	26.972	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	21.275	47.207	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	41.980	50.502	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	41.039	63.443	
+0.60D+0.70E+H	10.506	16.183	
D Only	17.510	26.972	
L Only, LL Comb Run (*L)	-1.255	17.255	
L Only, LL Comb Run (L*)	26.353	21.647	
L Only, LL Comb Run (LL)	25.098	38.902	
S Only	6.275	9.725	
H Only			



## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B39.1**

## CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

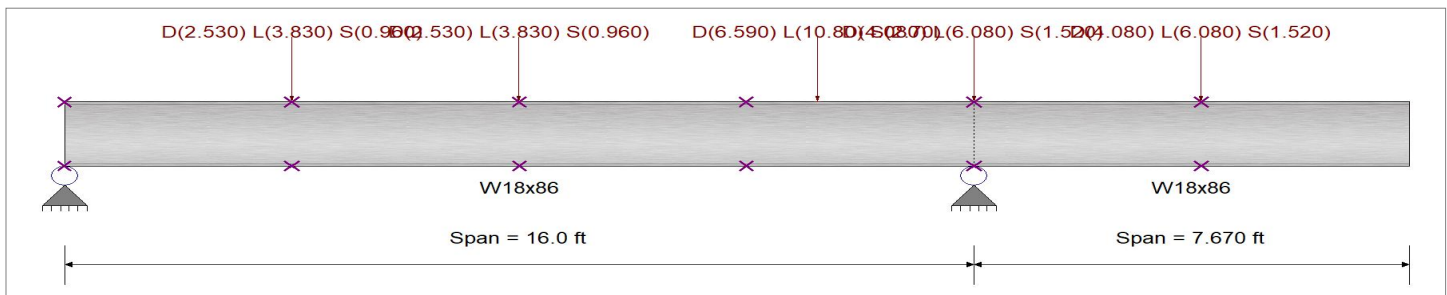
## Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

## Unbraced Lengths

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



## Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading

Load(s) for Span Number 1

Point Load : D = 2.530, L = 3.830, S = 0.960 k @ 4.0 ft, (J14)

Point Load : D = 2.530, L = 3.830, S = 0.960 k @ 8.0 ft, (J14)

Point Load : D = 6.590, L = 10.80, S = 2.70 k @ 13.250 ft, (J15 w/ Stair)

Point Load : D = 4.080, L = 6.080, S = 1.520 k @ 16.0 ft, (J15)

Load(s) for Span Number 2

Point Load : D = 4.080, L = 6.080, S = 1.520 k @ 4.0 ft, (J15)

## DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.122</b> : 1	Maximum Shear Stress Ratio =	<b>0.187</b> : 1
Section used for this span	<b>W18x86</b>	Section used for this span	<b>W18x86</b>
Mu : Applied	84.826 k-ft	Vu : Applied	49.455 k
Mn * Phi : Allowable	697.500 k-ft	Vn * Phi : Allowable	264.960 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	16.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.051 in Ratio = <b>3.629</b> >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Upward Transient Deflection	-0.066 in Ratio = <b>2.807</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.056 in Ratio = <b>3444</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.072 in Ratio = <b>2559</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

## Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L =	3.97 ft	1	0.029	0.020	20.19		20.19	775.00	697.50	1.66	1.00	5.33	264.96	264.96
Dsgn. L =	4.03 ft	1	0.035	0.018	24.60	20.19	24.60	775.00	697.50	1.07	1.00	4.85	264.96	264.96
Dsgn. L =	3.97 ft	1	0.035	0.012	24.60	12.85	24.60	775.00	697.50	1.22	1.00	3.20	264.96	264.96
Dsgn. L =	4.03 ft	1	0.038	0.070	12.85	-26.39	26.39	775.00	697.50	2.34	1.00	18.62	264.96	264.96
Dsgn. L =	3.99 ft	2	0.038	0.025	-0.00	-26.39	26.39	775.00	697.50	1.00	1.00	6.64	264.96	264.96



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B39.1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+0.50Lr+1.60L+1.60H, LL	Dsgn. L = 3.68 ft	2	0.001	0.023		-0.88	0.88	775.00	697.50	1.00	1.00	6.16	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.011	0.008	7.66		7.66	775.00	697.50	1.63	1.00	2.13	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.011	0.018	7.67	1.63	7.67	775.00	697.50	1.40	1.00	4.76	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.026	0.020	1.63	-18.09	18.09	775.00	697.50	1.81	1.00	5.17	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.088	0.069	-0.00	-61.53	61.53	775.00	697.50	1.51	1.00	18.39	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.088	0.058	-0.00	-61.53	61.53	775.00	697.50	1.00	1.00	15.42	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.057		-0.87	0.87	775.00	697.50	1.00	1.00	15.00	264.96	264.96
+1.20D+0.50Lr+1.60L+1.60H, LL	Dsgn. L = 3.97 ft	1	0.085	0.057	59.49		59.49	775.00	697.50	1.67	1.00	15.20	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.117	0.056	81.61	59.49	81.61	775.00	697.50	1.12	1.00	14.79	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.117	0.016	81.61	65.09	81.61	775.00	697.50	1.09	1.00	4.37	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.093	0.168	65.09	-22.62	65.09	775.00	697.50	1.60	1.00	44.60	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.032	0.021	-0.00	-22.62	22.62	775.00	697.50	1.00	1.00	5.69	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.020		-0.76	0.76	775.00	697.50	1.00	1.00	5.28	264.96	264.96
+1.20D+0.50Lr+1.60L+1.60H, LL	Dsgn. L = 3.97 ft	1	0.071	0.048	49.84		49.84	775.00	697.50	1.67	1.00	12.76	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.089	0.047	62.15	49.84	62.15	775.00	697.50	1.08	1.00	12.35	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.089	0.026	62.15	35.99	62.15	775.00	697.50	1.20	1.00	6.80	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.088	0.177	35.99	-61.53	61.53	775.00	697.50	2.25	1.00	47.03	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.088	0.058	-0.00	-61.53	61.53	775.00	697.50	1.00	1.00	15.42	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.057		-0.87	0.87	775.00	697.50	1.00	1.00	15.00	264.96	264.96
+1.20D+1.60L+0.50S+1.60H, LL (	Dsgn. L = 3.97 ft	1	0.015	0.010	10.20		10.20	775.00	697.50	1.64	1.00	2.78	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.015	0.019	10.24	4.84	10.24	775.00	697.50	1.24	1.00	5.08	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.023	0.021	4.84	-16.13	16.13	775.00	697.50	2.14	1.00	5.49	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.093	0.079	-0.00	-64.57	64.57	775.00	697.50	1.57	1.00	20.82	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.093	0.061	-0.00	-64.57	64.57	775.00	697.50	1.00	1.00	16.18	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.059		-0.88	0.88	775.00	697.50	1.00	1.00	15.76	264.96	264.96
+1.20D+1.60L+0.50S+1.60H, LL (	Dsgn. L = 3.97 ft	1	0.089	0.060	62.03		62.03	775.00	697.50	1.67	1.00	15.84	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.122	0.058	84.83	62.03	84.83	775.00	697.50	1.12	1.00	15.43	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.122	0.018	84.83	67.05	84.83	775.00	697.50	1.09	1.00	4.69	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.096	0.177	67.05	-25.66	67.05	775.00	697.50	1.63	1.00	47.02	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.037	0.024	-0.00	-25.66	25.66	775.00	697.50	1.00	1.00	6.45	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.023		-0.77	0.77	775.00	697.50	1.00	1.00	6.04	264.96	264.96
+1.20D+1.60L+0.50S+1.60H, LL (	Dsgn. L = 3.97 ft	1	0.075	0.051	52.38		52.38	775.00	697.50	1.67	1.00	13.41	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.094	0.049	65.37	52.38	65.37	775.00	697.50	1.08	1.00	13.00	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.094	0.027	65.37	37.94	65.37	775.00	697.50	1.20	1.00	7.12	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.093	0.187	37.94	-64.57	64.57	775.00	697.50	2.24	1.00	49.46	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.093	0.061	-0.00	-64.57	64.57	775.00	697.50	1.00	1.00	16.18	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.059		-0.88	0.88	775.00	697.50	1.00	1.00	15.76	264.96	264.96
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 3.97 ft	1	0.016	0.011	11.27		11.27	775.00	697.50	1.64	1.00	3.05	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.016	0.015	11.35	8.92	11.35	775.00	697.50	1.08	1.00	3.85	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.013	0.016	8.92	-7.17	8.92	775.00	697.50	2.20	1.00	4.26	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.067	0.066	-0.00	-46.94	46.94	775.00	697.50	1.70	1.00	17.48	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.067	0.044	-0.00	-46.94	46.94	775.00	697.50	1.00	1.00	11.77	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.043		-0.83	0.83	775.00	697.50	1.00	1.00	11.36	264.96	264.96
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 3.97 ft	1	0.063	0.042	43.67		43.67	775.00	697.50	1.67	1.00	11.21	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.084	0.041	58.91	43.67	58.91	775.00	697.50	1.11	1.00	10.80	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.084	0.014	58.91	44.82	58.91	775.00	697.50	1.10	1.00	3.76	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.064	0.128	44.82	-22.62	44.82	775.00	697.50	1.71	1.00	33.86	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.032	0.021	-0.00	-22.62	22.62	775.00	697.50	1.00	1.00	5.69	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.020		-0.76	0.76	775.00	697.50	1.00	1.00	5.28	264.96	264.96
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 3.97 ft	1	0.054	0.037	37.64		37.64	775.00	697.50	1.67	1.00	9.69	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.067	0.035	46.75	37.64	46.75	775.00	697.50	1.08	1.00	9.28	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.067	0.020	46.75	26.62	46.75	775.00	697.50	1.20	1.00	5.28	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.067	0.134	26.62	-46.94	46.94	775.00	697.50	2.29	1.00	35.38	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.067	0.044	-0.00	-46.94	46.94	775.00	697.50	1.00	1.00	11.77	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B39.1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 3.68 ft	2	0.001	0.043		-0.83	0.83	775.00	697.50	1.00	1.00	11.36	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.025	0.017	17.31		17.31	775.00	697.50	1.66	1.00	4.57	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.030	0.016	21.08	17.31	21.08	775.00	697.50	1.07	1.00	4.16	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.030	0.010	21.08	11.02	21.08	775.00	697.50	1.22	1.00	2.74	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.032	0.060	11.02	-22.62	22.62	775.00	697.50	2.34	1.00	15.96	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.032	0.021	-0.00	-22.62	22.62	775.00	697.50	1.00	1.00	5.69	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.020		-0.76	0.76	775.00	697.50	1.00	1.00	5.28	264.96	264.96
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 3.97 ft	1	0.025	0.017	17.31		17.31	775.00	697.50	1.66	1.00	4.57	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.030	0.016	21.08	17.31	21.08	775.00	697.50	1.07	1.00	4.16	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.030	0.010	21.08	11.02	21.08	775.00	697.50	1.22	1.00	2.74	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.032	0.060	11.02	-22.62	22.62	775.00	697.50	2.34	1.00	15.96	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.032	0.021	-0.00	-22.62	22.62	775.00	697.50	1.00	1.00	5.69	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.020		-0.76	0.76	775.00	697.50	1.00	1.00	5.28	264.96	264.96
+1.20D+1.60Lr+0.50W+1.60H, LL	Dsgn. L = 3.97 ft	1	0.025	0.017	17.31		17.31	775.00	697.50	1.66	1.00	4.57	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.030	0.016	21.08	17.31	21.08	775.00	697.50	1.07	1.00	4.16	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.030	0.010	21.08	11.02	21.08	775.00	697.50	1.22	1.00	2.74	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.032	0.060	11.02	-22.62	22.62	775.00	697.50	2.34	1.00	15.96	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.032	0.021	-0.00	-22.62	22.62	775.00	697.50	1.00	1.00	5.69	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.020		-0.76	0.76	775.00	697.50	1.00	1.00	5.28	264.96	264.96
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 3.97 ft	1	0.028	0.019	19.43		19.43	775.00	697.50	1.66	1.00	5.10	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.028	0.018	19.64	19.21	19.64	775.00	697.50	1.00	1.00	4.87	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.028	0.020	19.21	-0.92	19.21	775.00	697.50	1.69	1.00	5.28	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.081	0.095	-0.00	-56.67	56.67	775.00	697.50	1.94	1.00	25.25	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.081	0.054	-0.00	-56.67	56.67	775.00	697.50	1.00	1.00	14.20	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.052		-0.85	0.85	775.00	697.50	1.00	1.00	13.79	264.96	264.96
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 3.97 ft	1	0.074	0.050	51.82		51.82	775.00	697.50	1.67	1.00	13.26	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.099	0.049	69.20	51.82	69.20	775.00	697.50	1.11	1.00	12.85	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.099	0.018	69.20	51.07	69.20	775.00	697.50	1.11	1.00	4.77	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.073	0.157	51.07	-32.35	51.07	775.00	697.50	1.70	1.00	41.63	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.046	0.031	-0.00	-32.35	32.35	775.00	697.50	1.00	1.00	8.12	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.029		-0.78	0.78	775.00	697.50	1.00	1.00	7.71	264.96	264.96
+1.20D+L+1.60S+1.60H, LL Com	Dsgn. L = 3.97 ft	1	0.066	0.044	45.79		45.79	775.00	697.50	1.67	1.00	11.74	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.082	0.043	57.04	45.79	57.04	775.00	697.50	1.08	1.00	11.33	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.082	0.024	57.04	32.88	57.04	775.00	697.50	1.20	1.00	6.29	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.081	0.163	32.88	-56.67	56.67	775.00	697.50	2.26	1.00	43.15	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.081	0.054	-0.00	-56.67	56.67	775.00	697.50	1.00	1.00	14.20	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.052		-0.85	0.85	775.00	697.50	1.00	1.00	13.79	264.96	264.96
+1.20D+1.60S+0.50W+1.60H	Dsgn. L = 3.97 ft	1	0.036	0.025	25.46		25.46	775.00	697.50	1.66	1.00	6.62	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.045	0.023	31.37	25.46	31.37	775.00	697.50	1.08	1.00	6.21	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.045	0.014	31.37	17.27	31.37	775.00	697.50	1.21	1.00	3.76	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.046	0.090	17.27	-32.35	32.35	775.00	697.50	2.37	1.00	23.73	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.046	0.031	-0.00	-32.35	32.35	775.00	697.50	1.00	1.00	8.12	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.029		-0.78	0.78	775.00	697.50	1.00	1.00	7.71	264.96	264.96
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 3.97 ft	1	0.016	0.011	11.27		11.27	775.00	697.50	1.64	1.00	3.05	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.016	0.015	11.35	8.92	11.35	775.00	697.50	1.08	1.00	3.85	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.013	0.016	8.92	-7.17	8.92	775.00	697.50	2.20	1.00	4.26	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.067	0.066	-0.00	-46.94	46.94	775.00	697.50	1.70	1.00	17.48	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.067	0.044	-0.00	-46.94	46.94	775.00	697.50	1.00	1.00	11.77	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.043		-0.83	0.83	775.00	697.50	1.00	1.00	11.36	264.96	264.96
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 3.97 ft	1	0.063	0.042	43.67		43.67	775.00	697.50	1.67	1.00	11.21	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.084	0.041	58.91	43.67	58.91	775.00	697.50	1.11	1.00	10.80	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.084	0.014	58.91	44.82	58.91	775.00	697.50	1.10	1.00	3.76	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.064	0.128	44.82	-22.62	44.82	775.00	697.50	1.71	1.00	33.86	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.032	0.021	-0.00	-22.62	22.62	775.00	697.50	1.00	1.00	5.69	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B39.1**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+0.50Lr+L+W+1.60H, LL C	Dsgn. L = 3.68 ft	2	0.001	0.020		-0.76	0.76	775.00	697.50	1.00	1.00	5.28	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.054	0.037	37.64		37.64	775.00	697.50	1.67	1.00	9.69	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.067	0.035	46.75	37.64	46.75	775.00	697.50	1.08	1.00	9.28	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.067	0.020	46.75	26.62	46.75	775.00	697.50	1.20	1.00	5.28	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.067	0.134	26.62	-46.94	46.94	775.00	697.50	2.29	1.00	35.38	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.067	0.044	-0.00	-46.94	46.94	775.00	697.50	1.00	1.00	11.77	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.043		-0.83	0.83	775.00	697.50	1.00	1.00	11.36	264.96	264.96
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 3.97 ft	1	0.020	0.014	13.82		13.82	775.00	697.50	1.65	1.00	3.69	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.020	0.016	13.92	12.14	13.92	775.00	697.50	1.04	1.00	4.17	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.017	0.017	12.14	-5.22	12.14	775.00	697.50	2.14	1.00	4.58	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.072	0.075	-0.00	-49.98	49.98	775.00	697.50	1.78	1.00	19.91	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.072	0.047	-0.00	-49.98	49.98	775.00	697.50	1.00	1.00	12.53	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.046		-0.84	0.84	775.00	697.50	1.00	1.00	12.12	264.96	264.96
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 3.97 ft	1	0.066	0.045	46.22		46.22	775.00	697.50	1.67	1.00	11.85	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.089	0.043	62.13	46.22	62.13	775.00	697.50	1.11	1.00	11.44	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.089	0.015	62.13	46.77	62.13	775.00	697.50	1.11	1.00	4.08	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.067	0.137	46.77	-25.66	46.77	775.00	697.50	1.71	1.00	36.29	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.037	0.024	-0.00	-25.66	25.66	775.00	697.50	1.00	1.00	6.45	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.023		-0.77	0.77	775.00	697.50	1.00	1.00	6.04	264.96	264.96
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 3.97 ft	1	0.058	0.039	40.18		40.18	775.00	697.50	1.67	1.00	10.33	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.072	0.037	49.97	40.18	49.97	775.00	697.50	1.08	1.00	9.92	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.072	0.021	49.97	28.58	49.97	775.00	697.50	1.20	1.00	5.60	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.072	0.143	28.58	-49.98	49.98	775.00	697.50	2.28	1.00	37.81	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.072	0.047	-0.00	-49.98	49.98	775.00	697.50	1.00	1.00	12.53	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.046		-0.84	0.84	775.00	697.50	1.00	1.00	12.12	264.96	264.96
+0.90D+W+1.60H	Dsgn. L = 3.97 ft	1	0.019	0.013	12.98		12.98	775.00	697.50	1.66	1.00	3.42	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.023	0.012	15.81	12.98	15.81	775.00	697.50	1.07	1.00	3.12	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.023	0.008	15.81	8.26	15.81	775.00	697.50	1.22	1.00	2.06	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.024	0.045	8.26	-16.96	16.96	775.00	697.50	2.34	1.00	11.97	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.024	0.016	-0.00	-16.96	16.96	775.00	697.50	1.00	1.00	4.27	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.015		-0.57	0.57	775.00	697.50	1.00	1.00	3.96	264.96	264.96
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 3.97 ft	1	0.018	0.012	12.29		12.29	775.00	697.50	1.65	1.00	3.30	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.018	0.015	12.38	10.21	12.38	775.00	697.50	1.06	1.00	3.98	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.015	0.017	10.21	-6.39	10.21	775.00	697.50	2.17	1.00	4.39	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.069	0.070	-0.00	-48.16	48.16	775.00	697.50	1.73	1.00	18.45	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.069	0.046	-0.00	-48.16	48.16	775.00	697.50	1.00	1.00	12.07	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.044		-0.83	0.83	775.00	697.50	1.00	1.00	11.66	264.96	264.96
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 3.97 ft	1	0.064	0.043	44.69		44.69	775.00	697.50	1.67	1.00	11.47	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.086	0.042	60.20	44.69	60.20	775.00	697.50	1.11	1.00	11.06	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.086	0.015	60.20	45.60	60.20	775.00	697.50	1.10	1.00	3.88	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.065	0.131	45.60	-23.84	45.60	775.00	697.50	1.71	1.00	34.83	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.034	0.023	-0.00	-23.84	23.84	775.00	697.50	1.00	1.00	5.99	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.021		-0.76	0.76	775.00	697.50	1.00	1.00	5.58	264.96	264.96
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 3.97 ft	1	0.055	0.038	38.66		38.66	775.00	697.50	1.67	1.00	9.95	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.069	0.036	48.04	38.66	48.04	775.00	697.50	1.08	1.00	9.54	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.069	0.020	48.04	27.41	48.04	775.00	697.50	1.20	1.00	5.40	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.069	0.137	27.41	-48.16	48.16	775.00	697.50	2.28	1.00	36.35	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.069	0.046	-0.00	-48.16	48.16	775.00	697.50	1.00	1.00	12.07	264.96	264.96
	Dsgn. L = 3.68 ft	2	0.001	0.044		-0.83	0.83	775.00	697.50	1.00	1.00	11.66	264.96	264.96
+0.90D+E+0.90H	Dsgn. L = 3.97 ft	1	0.019	0.013	12.98		12.98	775.00	697.50	1.66	1.00	3.42	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.023	0.012	15.81	12.98	15.81	775.00	697.50	1.07	1.00	3.12	264.96	264.96
	Dsgn. L = 3.97 ft	1	0.023	0.008	15.81	8.26	15.81	775.00	697.50	1.22	1.00	2.06	264.96	264.96
	Dsgn. L = 4.03 ft	1	0.024	0.045	8.26	-16.96	16.96	775.00	697.50	2.34	1.00	11.97	264.96	264.96
	Dsgn. L = 3.99 ft	2	0.024	0.016	-0.00	-16.96	16.96	775.00	697.50	1.00	1.00	4.27	264.96	264.96



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** B39.1

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.68 ft	2	0.001	0.015		-0.57	0.57	775.00	697.50	1.00	1.00	3.96	264.96	264.96

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0558	8.064	+D+L+H	0.0000	0.000
	2	0.0000	8.064		-0.0719	7.670

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	10.449	43.537	
Max Upward from Load Combinations	10.449	43.537	
Max Upward from Load Cases	6.644	25.496	
Max Downward from all Load Conditions (Resis)	-1.520		
Max Downward from Load Cases (Resisting U <sub>r</sub> )	-1.520		
+D+H	3.805	18.041	
+D+L+H, LL Comb Run (*L)	2.285	25.641	
+D+L+H, LL Comb Run (L*)	10.449	35.937	
+D+L+H, LL Comb Run (LL)	8.929	43.537	
+D+Lr+H, LL Comb Run (*L)	3.805	18.041	
+D+Lr+H, LL Comb Run (L*)	3.805	18.041	
+D+Lr+H, LL Comb Run (LL)	3.805	18.041	
+D+S+H	5.089	24.417	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	2.665	23.741	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	8.788	31.463	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	7.648	37.163	
+D+0.750L+0.750S+H, LL Comb Run (*L)	3.628	28.523	
+D+0.750L+0.750S+H, LL Comb Run (L*)	9.751	36.245	
+D+0.750L+0.750S+H, LL Comb Run (LL)	8.611	41.945	
+D+0.60W+H	3.805	18.041	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	2.665	23.741	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	8.788	31.463	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	7.648	37.163	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	3.628	28.523	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	9.751	36.245	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	8.611	41.945	
+0.60D+0.60W+0.60H	2.283	10.824	
+D+0.70E+0.60H	3.805	18.041	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	3.628	28.523	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	9.751	36.245	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	8.611	41.945	
+0.60D+0.70E+H	2.283	10.824	
D Only	3.805	18.041	
L Only, LL Comb Run (*L)	-1.520	7.600	
L Only, LL Comb Run (L*)	6.644	17.896	
L Only, LL Comb Run (LL)	5.124	25.496	
S Only	1.284	6.376	
H Only			

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **B40**

**CODE REFERENCES**

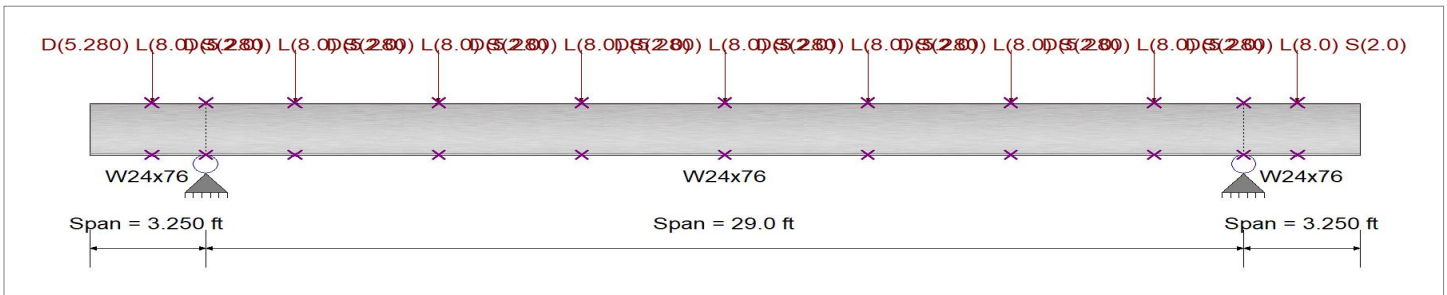
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 1.750 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 1.750 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.716 : 1</b>	Maximum Shear Stress Ratio =	<b>0.230 : 1</b>
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	536.740 k-ft	Vu : Applied	72.460 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (*L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL*)
Span # where maximum occurs	Span # 2	Location of maximum on span	3.250 ft
Span # where maximum occurs	Span # 2	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.531 in Ratio = 654 >=360.	Span: 3 : L Only, LL Comb Run (*L*)	
Max Upward Transient Deflection	-0.189 in Ratio = 413 >=360.	Span: 3 : L Only, LL Comb Run (*L*)	
Max Downward Total Deflection	0.877 in Ratio = 397 >=240.	Span: 3 : +D+L+H, LL Comb Run (*L*)	
Max Upward Total Deflection	-0.309 in Ratio = 252 >=240.	Span: 3 : +D+L+H, LL Comb Run (*L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	1.73 ft	1	0.000	0.001		-0.16	0.16	833.33	750.00	1.00	1.00	0.18	315.48	315.48
Dsgn. L =	1.52 ft	1	0.016	0.087	-0.00	-11.65	11.65	833.33	750.00	1.00	1.00	27.41	315.48	315.48
Dsgn. L =	2.32 ft	2	0.069	0.087	51.67	-11.65	51.67	833.33	750.00	1.96	1.00	27.41	315.48	315.48
Dsgn. L =	4.06 ft	2	0.177	0.086	132.41	51.67	132.41	833.33	750.00	1.33	1.00	27.17	315.48	315.48
Dsgn. L =	4.06 ft	2	0.241	0.061	180.95	132.41	180.95	833.33	750.00	1.12	1.00	19.34	315.48	315.48
Dsgn. L =	4.06 ft	2	0.263	0.037	197.27	180.95	197.27	833.33	750.00	1.03	1.00	11.52	315.48	315.48
Dsgn. L =	3.87 ft	2	0.263	0.013	197.27	182.18	197.27	833.33	750.00	1.03	1.00	4.11	315.48	315.48
Dsgn. L =	4.06 ft	2	0.243	0.038	182.18	135.61	182.18	833.33	750.00	1.10	1.00	11.93	315.48	315.48
Dsgn. L =	4.06 ft	2	0.181	0.063	135.61	56.82	135.61	833.33	750.00	1.28	1.00	19.76	315.48	315.48
Dsgn. L =	2.51 ft	2	0.076	0.087	56.82	-11.65	56.82	833.33	750.00	1.98	1.00	27.41	315.48	315.48
Dsgn. L =	1.50 ft	3	0.016	0.025	-0.00	-11.65	11.65	833.33	750.00	1.00	1.00	7.74	315.48	315.48
Dsgn. L =	1.76 ft	3	0.000	0.024		-0.20	0.20	833.33	750.00	1.00	1.00	7.58	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L =	1.52 ft	1	0.013	0.072	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	22.84	315.48	315.48
Dsgn. L =	2.32 ft	2	0.057	0.072	42.75	-9.99	42.75	833.33	750.00	1.97	1.00	22.84	315.48	315.48
Dsgn. L =	4.06 ft	2	0.146	0.072	109.27	42.75	109.27	833.33	750.00	1.33	1.00	22.62	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.06 ft	2	0.198	0.050	148.18	109.27	148.18	833.33	750.00	1.12	1.00	15.92	315.48	315.48
Dsgn. L = 4.06 ft	2	0.213	0.029	159.49	148.18	159.49	833.33	750.00	1.03	1.00	9.21	315.48	315.48
Dsgn. L = 3.87 ft	2	0.213	0.013	159.49	144.00	159.49	833.33	750.00	1.04	1.00	4.18	315.48	315.48
Dsgn. L = 4.06 ft	2	0.192	0.035	144.00	101.39	144.00	833.33	750.00	1.12	1.00	10.89	315.48	315.48
Dsgn. L = 4.06 ft	2	0.135	0.056	101.39	31.17	101.39	833.33	750.00	1.35	1.00	17.60	315.48	315.48
Dsgn. L = 2.51 ft	2	0.042	0.077	31.17	-29.19	31.17	833.33	750.00	2.16	1.00	24.16	315.48	315.48
Dsgn. L = 1.50 ft	3	0.039	0.062	-0.00	-29.19	29.19	833.33	750.00	1.00	1.00	19.43	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.061	-0.24	0.24	0.24	833.33	750.00	1.00	1.00	19.30	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.013	0.216	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	68.30	315.48	315.48
Dsgn. L = 2.32 ft	2	0.198	0.216	148.22	-9.99	148.22	833.33	750.00	1.74	1.00	68.30	315.48	315.48
Dsgn. L = 4.06 ft	2	0.466	0.216	349.65	148.22	349.65	833.33	750.00	1.31	1.00	68.09	315.48	315.48
Dsgn. L = 4.06 ft	2	0.628	0.154	470.74	349.65	470.74	833.33	750.00	1.12	1.00	48.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.682	0.092	511.49	470.74	511.49	833.33	750.00	1.03	1.00	29.07	315.48	315.48
Dsgn. L = 3.87 ft	2	0.682	0.031	511.49	473.81	511.49	833.33	750.00	1.03	1.00	9.92	315.48	315.48
Dsgn. L = 4.06 ft	2	0.632	0.093	473.81	357.64	473.81	833.33	750.00	1.10	1.00	29.43	315.48	315.48
Dsgn. L = 4.06 ft	2	0.477	0.155	357.64	161.13	357.64	833.33	750.00	1.26	1.00	48.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.215	0.216	161.13	-9.99	161.13	833.33	750.00	1.78	1.00	68.30	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.013	0.214	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	67.64	315.48	315.48
Dsgn. L = 2.32 ft	2	0.196	0.214	146.69	-9.99	146.69	833.33	750.00	1.75	1.00	67.64	315.48	315.48
Dsgn. L = 4.06 ft	2	0.461	0.214	345.43	146.69	345.43	833.33	750.00	1.31	1.00	67.42	315.48	315.48
Dsgn. L = 4.06 ft	2	0.618	0.152	463.83	345.43	463.83	833.33	750.00	1.12	1.00	47.92	315.48	315.48
Dsgn. L = 4.06 ft	2	0.669	0.090	501.89	463.83	501.89	833.33	750.00	1.03	1.00	28.41	315.48	315.48
Dsgn. L = 3.87 ft	2	0.669	0.034	501.89	461.65	501.89	833.33	750.00	1.03	1.00	10.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.616	0.095	461.65	342.79	461.65	833.33	750.00	1.11	1.00	30.09	315.48	315.48
Dsgn. L = 4.06 ft	2	0.457	0.157	342.79	143.59	342.79	833.33	750.00	1.28	1.00	49.60	315.48	315.48
Dsgn. L = 2.51 ft	2	0.191	0.219	143.59	-29.19	143.59	833.33	750.00	1.98	1.00	68.96	315.48	315.48
Dsgn. L = 1.50 ft	3	0.039	0.062	-0.00	-29.19	29.19	833.33	750.00	1.00	1.00	19.43	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.061	-0.24	0.24	0.24	833.33	750.00	1.00	1.00	19.30	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.039	0.077	-0.00	-29.19	29.19	833.33	750.00	1.00	1.00	24.16	315.48	315.48
Dsgn. L = 2.32 ft	2	0.039	0.077	26.62	-29.19	29.19	833.33	750.00	2.26	1.00	24.16	315.48	315.48
Dsgn. L = 4.06 ft	2	0.131	0.076	98.52	26.62	98.52	833.33	750.00	1.43	1.00	23.95	315.48	315.48
Dsgn. L = 4.06 ft	2	0.190	0.055	142.81	98.52	142.81	833.33	750.00	1.15	1.00	17.24	315.48	315.48
Dsgn. L = 4.06 ft	2	0.213	0.033	159.49	142.81	159.49	833.33	750.00	1.04	1.00	10.54	315.48	315.48
Dsgn. L = 3.87 ft	2	0.213	0.012	159.49	149.12	159.49	833.33	750.00	1.03	1.00	3.83	315.48	315.48
Dsgn. L = 4.06 ft	2	0.199	0.030	149.12	111.88	149.12	833.33	750.00	1.10	1.00	9.56	315.48	315.48
Dsgn. L = 4.06 ft	2	0.149	0.052	111.88	47.04	111.88	833.33	750.00	1.28	1.00	16.27	315.48	315.48
Dsgn. L = 2.51 ft	2	0.063	0.072	47.04	-9.99	47.04	833.33	750.00	1.99	1.00	22.84	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.039	0.074	-0.00	-29.19	29.19	833.33	750.00	1.00	1.00	23.50	315.48	315.48
Dsgn. L = 2.32 ft	2	0.039	0.074	25.09	-29.19	29.19	833.33	750.00	2.25	1.00	23.50	315.48	315.48
Dsgn. L = 4.06 ft	2	0.126	0.074	94.29	25.09	94.29	833.33	750.00	1.43	1.00	23.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.181	0.053	135.90	94.29	135.90	833.33	750.00	1.14	1.00	16.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.200	0.031	149.89	135.90	149.89	833.33	750.00	1.04	1.00	9.87	315.48	315.48
Dsgn. L = 3.87 ft	2	0.200	0.011	149.89	136.96	149.89	833.33	750.00	1.04	1.00	3.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.183	0.032	136.96	97.03	136.96	833.33	750.00	1.12	1.00	10.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.129	0.054	97.03	29.50	97.03	833.33	750.00	1.36	1.00	16.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.039	0.074	29.50	-29.19	29.50	833.33	750.00	2.09	1.00	23.50	315.48	315.48
Dsgn. L = 1.50 ft	3	0.039	0.062	-0.00	-29.19	29.19	833.33	750.00	1.00	1.00	19.43	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.061	-0.24	0.24	0.24	833.33	750.00	1.00	1.00	19.30	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.039	0.219	-0.00	-29.19	29.19	833.33	750.00	1.00	1.00	68.96	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	2.32 ft	2	0.174	0.219	130.56	-29.19	130.56	833.33	750.00	1.96	1.00	68.96	315.48	315.48
Dsgn. L =	4.06 ft	2	0.446	0.218	334.68	130.56	334.68	833.33	750.00	1.34	1.00	68.75	315.48	315.48
Dsgn. L =	4.06 ft	2	0.611	0.156	458.46	334.68	458.46	833.33	750.00	1.13	1.00	49.24	315.48	315.48
Dsgn. L =	4.06 ft	2	0.669	0.094	501.89	458.46	501.89	833.33	750.00	1.04	1.00	29.74	315.48	315.48
Dsgn. L =	3.87 ft	2	0.669	0.032	501.89	466.77	501.89	833.33	750.00	1.03	1.00	10.23	315.48	315.48
Dsgn. L =	4.06 ft	2	0.622	0.091	466.77	353.29	466.77	833.33	750.00	1.10	1.00	28.76	315.48	315.48
Dsgn. L =	4.06 ft	2	0.471	0.153	353.29	159.46	353.29	833.33	750.00	1.26	1.00	48.27	315.48	315.48
Dsgn. L =	2.51 ft	2	0.213	0.214	159.46	-9.99	159.46	833.33	750.00	1.78	1.00	67.64	315.48	315.48
Dsgn. L =	1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L =	1.76 ft	3	0.000	0.021	-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L =	1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L =	1.52 ft	1	0.039	0.216	-0.00	-29.19	29.19	833.33	750.00	1.00	1.00	68.30	315.48	315.48
Dsgn. L =	2.32 ft	2	0.172	0.216	129.02	-29.19	129.02	833.33	750.00	1.96	1.00	68.30	315.48	315.48
Dsgn. L =	4.06 ft	2	0.441	0.216	330.45	129.02	330.45	833.33	750.00	1.34	1.00	68.09	315.48	315.48
Dsgn. L =	4.06 ft	2	0.602	0.154	451.54	330.45	451.54	833.33	750.00	1.12	1.00	48.58	315.48	315.48
Dsgn. L =	4.06 ft	2	0.656	0.092	492.29	451.54	492.29	833.33	750.00	1.04	1.00	29.07	315.48	315.48
Dsgn. L =	3.87 ft	2	0.656	0.031	492.29	454.61	492.29	833.33	750.00	1.03	1.00	9.92	315.48	315.48
Dsgn. L =	4.06 ft	2	0.606	0.093	454.61	338.44	454.61	833.33	750.00	1.11	1.00	29.43	315.48	315.48
Dsgn. L =	4.06 ft	2	0.451	0.155	338.44	141.93	338.44	833.33	750.00	1.28	1.00	48.93	315.48	315.48
Dsgn. L =	2.51 ft	2	0.189	0.216	141.93	-29.19	141.93	833.33	750.00	1.98	1.00	68.30	315.48	315.48
Dsgn. L =	1.50 ft	3	0.039	0.062	-0.00	-29.19	29.19	833.33	750.00	1.00	1.00	19.43	315.48	315.48
Dsgn. L =	1.76 ft	3	0.000	0.061	-0.24	0.24	833.33	750.00	1.00	1.00	19.30	315.48	315.48	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L =	1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L =	1.52 ft	1	0.015	0.083	-0.00	-11.49	11.49	833.33	750.00	1.00	1.00	26.34	315.48	315.48
Dsgn. L =	2.32 ft	2	0.066	0.083	49.37	-11.49	49.37	833.33	750.00	1.97	1.00	26.34	315.48	315.48
Dsgn. L =	4.06 ft	2	0.168	0.083	126.22	49.37	126.22	833.33	750.00	1.33	1.00	26.12	315.48	315.48
Dsgn. L =	4.06 ft	2	0.228	0.058	171.34	126.22	171.34	833.33	750.00	1.12	1.00	18.42	315.48	315.48
Dsgn. L =	4.06 ft	2	0.246	0.034	184.74	171.34	184.74	833.33	750.00	1.03	1.00	10.71	315.48	315.48
Dsgn. L =	3.87 ft	2	0.246	0.015	184.74	167.32	184.74	833.33	750.00	1.04	1.00	4.68	315.48	315.48
Dsgn. L =	4.06 ft	2	0.223	0.039	167.32	118.75	167.32	833.33	750.00	1.12	1.00	12.39	315.48	315.48
Dsgn. L =	4.06 ft	2	0.158	0.064	118.75	38.45	118.75	833.33	750.00	1.34	1.00	20.10	315.48	315.48
Dsgn. L =	2.51 ft	2	0.051	0.088	38.45	-30.69	38.45	833.33	750.00	2.25	1.00	27.66	315.48	315.48
Dsgn. L =	1.50 ft	3	0.041	0.065	-0.00	-30.69	30.69	833.33	750.00	1.00	1.00	20.43	315.48	315.48
Dsgn. L =	1.76 ft	3	0.000	0.064	-0.24	0.24	833.33	750.00	1.00	1.00	20.30	315.48	315.48	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L =	1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L =	1.52 ft	1	0.015	0.228	-0.00	-11.49	11.49	833.33	750.00	1.00	1.00	71.80	315.48	315.48
Dsgn. L =	2.32 ft	2	0.206	0.228	154.84	-11.49	154.84	833.33	750.00	1.75	1.00	71.80	315.48	315.48
Dsgn. L =	4.06 ft	2	0.489	0.227	366.60	154.84	366.60	833.33	750.00	1.31	1.00	71.59	315.48	315.48
Dsgn. L =	4.06 ft	2	0.659	0.162	493.90	366.60	493.90	833.33	750.00	1.12	1.00	51.08	315.48	315.48
Dsgn. L =	4.06 ft	2	0.716	0.097	536.74	493.90	536.74	833.33	750.00	1.03	1.00	30.57	315.48	315.48
Dsgn. L =	3.87 ft	2	0.716	0.033	536.74	497.13	536.74	833.33	750.00	1.03	1.00	10.42	315.48	315.48
Dsgn. L =	4.06 ft	2	0.663	0.098	497.13	375.00	497.13	833.33	750.00	1.10	1.00	30.93	315.48	315.48
Dsgn. L =	4.06 ft	2	0.500	0.163	375.00	168.41	375.00	833.33	750.00	1.26	1.00	51.43	315.48	315.48
Dsgn. L =	2.51 ft	2	0.225	0.228	168.41	-11.49	168.41	833.33	750.00	1.78	1.00	71.80	315.48	315.48
Dsgn. L =	1.50 ft	3	0.015	0.024	-0.00	-11.49	11.49	833.33	750.00	1.00	1.00	7.63	315.48	315.48
Dsgn. L =	1.76 ft	3	0.000	0.024	-0.18	0.18	833.33	750.00	1.00	1.00	7.50	315.48	315.48	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L =	1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L =	1.52 ft	1	0.015	0.225	-0.00	-11.49	11.49	833.33	750.00	1.00	1.00	71.14	315.48	315.48
Dsgn. L =	2.32 ft	2	0.204	0.225	153.31	-11.49	153.31	833.33	750.00	1.75	1.00	71.14	315.48	315.48
Dsgn. L =	4.06 ft	2	0.483	0.225	362.38	153.31	362.38	833.33	750.00	1.31	1.00	70.92	315.48	315.48
Dsgn. L =	4.06 ft	2	0.649	0.160	486.99	362.38	486.99	833.33	750.00	1.12	1.00	50.42	315.48	315.48
Dsgn. L =	4.06 ft	2	0.703	0.095	527.14	486.99	527.14	833.33	750.00	1.03	1.00	29.91	315.48	315.48
Dsgn. L =	3.87 ft	2	0.703	0.035	527.14	484.97	527.14	833.33	750.00	1.03	1.00	11.08	315.48	315.48
Dsgn. L =	4.06 ft	2	0.647	0.100	484.97	360.15	484.97	833.33	750.00	1.11	1.00	31.59	315.48	315.48
Dsgn. L =	4.06 ft	2	0.480	0.165	360.15	150.88	360.15	833.33	750.00	1.28	1.00	52.10	315.48	315.48
Dsgn. L =	2.51 ft	2	0.201	0.230	150.88	-30.69	150.88	833.33	750.00	1.98	1.00	72.46	315.48	315.48
Dsgn. L =	1.50 ft	3	0.041	0.065	-0.00	-30.69	30.69	833.33	750.00	1.00	1.00	20.43	315.48	315.48
Dsgn. L =	1.76 ft	3	0.000	0.064	-0.24	0.24	833.33	750.00	1.00	1.00	20.30	315.48	315.48	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.041	0.088	-0.00	-30.69	30.69	833.33	750.00	1.00	1.00	27.66	315.48	315.48
Dsgn. L = 2.32 ft	2	0.044	0.088	33.24	-30.69	33.24	833.33	750.00	2.25	1.00	27.66	315.48	315.48
Dsgn. L = 4.06 ft	2	0.154	0.087	115.47	33.24	115.47	833.33	750.00	1.41	1.00	27.45	315.48	315.48
Dsgn. L = 4.06 ft	2	0.221	0.063	165.97	115.47	165.97	833.33	750.00	1.14	1.00	19.74	315.48	315.48
Dsgn. L = 4.06 ft	2	0.246	0.038	184.74	165.97	184.74	833.33	750.00	1.04	1.00	12.04	315.48	315.48
Dsgn. L = 3.87 ft	2	0.246	0.014	184.74	172.44	184.74	833.33	750.00	1.03	1.00	4.33	315.48	315.48
Dsgn. L = 4.06 ft	2	0.230	0.035	172.44	129.24	172.44	833.33	750.00	1.10	1.00	11.06	315.48	315.48
Dsgn. L = 4.06 ft	2	0.172	0.060	129.24	54.32	129.24	833.33	750.00	1.28	1.00	18.77	315.48	315.48
Dsgn. L = 2.51 ft	2	0.072	0.083	54.32	-11.49	54.32	833.33	750.00	1.99	1.00	26.34	315.48	315.48
Dsgn. L = 1.50 ft	3	0.015	0.024	-0.00	-11.49	11.49	833.33	750.00	1.00	1.00	7.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.024		-0.18	0.18	833.33	750.00	1.00	1.00	7.50	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.041	0.086	-0.00	-30.69	30.69	833.33	750.00	1.00	1.00	27.00	315.48	315.48
Dsgn. L = 2.32 ft	2	0.042	0.086	31.71	-30.69	31.71	833.33	750.00	2.26	1.00	27.00	315.48	315.48
Dsgn. L = 4.06 ft	2	0.148	0.085	111.24	31.71	111.24	833.33	750.00	1.42	1.00	26.79	315.48	315.48
Dsgn. L = 4.06 ft	2	0.212	0.060	159.06	111.24	159.06	833.33	750.00	1.14	1.00	19.08	315.48	315.48
Dsgn. L = 4.06 ft	2	0.234	0.036	175.14	159.06	175.14	833.33	750.00	1.04	1.00	11.37	315.48	315.48
Dsgn. L = 3.87 ft	2	0.234	0.013	175.14	160.28	175.14	833.33	750.00	1.03	1.00	4.02	315.48	315.48
Dsgn. L = 4.06 ft	2	0.214	0.037	160.28	114.39	160.28	833.33	750.00	1.12	1.00	11.73	315.48	315.48
Dsgn. L = 4.06 ft	2	0.153	0.062	114.39	36.78	114.39	833.33	750.00	1.34	1.00	19.43	315.48	315.48
Dsgn. L = 2.51 ft	2	0.049	0.086	36.78	-30.69	36.78	833.33	750.00	2.26	1.00	27.00	315.48	315.48
Dsgn. L = 1.50 ft	3	0.041	0.065	-0.00	-30.69	30.69	833.33	750.00	1.00	1.00	20.43	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.064		-0.24	0.24	833.33	750.00	1.00	1.00	20.30	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.041	0.230	-0.00	-30.69	30.69	833.33	750.00	1.00	1.00	72.46	315.48	315.48
Dsgn. L = 2.32 ft	2	0.183	0.230	137.18	-30.69	137.18	833.33	750.00	1.96	1.00	72.46	315.48	315.48
Dsgn. L = 4.06 ft	2	0.469	0.229	351.63	137.18	351.63	833.33	750.00	1.34	1.00	72.25	315.48	315.48
Dsgn. L = 4.06 ft	2	0.642	0.164	481.62	351.63	481.62	833.33	750.00	1.13	1.00	51.74	315.48	315.48
Dsgn. L = 4.06 ft	2	0.703	0.099	527.14	481.62	527.14	833.33	750.00	1.04	1.00	31.24	315.48	315.48
Dsgn. L = 3.87 ft	2	0.703	0.034	527.14	490.09	527.14	833.33	750.00	1.03	1.00	10.73	315.48	315.48
Dsgn. L = 4.06 ft	2	0.653	0.096	490.09	370.65	490.09	833.33	750.00	1.10	1.00	30.26	315.48	315.48
Dsgn. L = 4.06 ft	2	0.494	0.161	370.65	166.75	370.65	833.33	750.00	1.26	1.00	50.77	315.48	315.48
Dsgn. L = 2.51 ft	2	0.222	0.225	166.75	-11.49	166.75	833.33	750.00	1.79	1.00	71.14	315.48	315.48
Dsgn. L = 1.50 ft	3	0.015	0.024	-0.00	-11.49	11.49	833.33	750.00	1.00	1.00	7.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.024		-0.18	0.18	833.33	750.00	1.00	1.00	7.50	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.041	0.228	-0.00	-30.69	30.69	833.33	750.00	1.00	1.00	71.80	315.48	315.48
Dsgn. L = 2.32 ft	2	0.181	0.228	135.64	-30.69	135.64	833.33	750.00	1.96	1.00	71.80	315.48	315.48
Dsgn. L = 4.06 ft	2	0.463	0.227	347.40	135.64	347.40	833.33	750.00	1.34	1.00	71.59	315.48	315.48
Dsgn. L = 4.06 ft	2	0.633	0.162	474.70	347.40	474.70	833.33	750.00	1.12	1.00	51.08	315.48	315.48
Dsgn. L = 4.06 ft	2	0.690	0.097	517.54	474.70	517.54	833.33	750.00	1.04	1.00	30.57	315.48	315.48
Dsgn. L = 3.87 ft	2	0.690	0.033	517.54	477.93	517.54	833.33	750.00	1.03	1.00	10.42	315.48	315.48
Dsgn. L = 4.06 ft	2	0.637	0.098	477.93	355.80	477.93	833.33	750.00	1.11	1.00	30.93	315.48	315.48
Dsgn. L = 4.06 ft	2	0.474	0.163	355.80	149.21	355.80	833.33	750.00	1.28	1.00	51.43	315.48	315.48
Dsgn. L = 2.51 ft	2	0.199	0.228	149.21	-30.69	149.21	833.33	750.00	1.98	1.00	71.80	315.48	315.48
Dsgn. L = 1.50 ft	3	0.041	0.065	-0.00	-30.69	30.69	833.33	750.00	1.00	1.00	20.43	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.064		-0.24	0.24	833.33	750.00	1.00	1.00	20.30	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.013	0.073	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	23.08	315.48	315.48
Dsgn. L = 2.32 ft	2	0.058	0.073	43.33	-9.99	43.33	833.33	750.00	1.97	1.00	23.08	315.48	315.48
Dsgn. L = 4.06 ft	2	0.148	0.073	110.85	43.33	110.85	833.33	750.00	1.33	1.00	22.87	315.48	315.48
Dsgn. L = 4.06 ft	2	0.201	0.051	150.78	110.85	150.78	833.33	750.00	1.12	1.00	16.17	315.48	315.48
Dsgn. L = 4.06 ft	2	0.217	0.030	163.09	150.78	163.09	833.33	750.00	1.03	1.00	9.46	315.48	315.48
Dsgn. L = 3.87 ft	2	0.217	0.012	163.09	148.56	163.09	833.33	750.00	1.04	1.00	3.93	315.48	315.48
Dsgn. L = 4.06 ft	2	0.198	0.034	148.56	106.95	148.56	833.33	750.00	1.12	1.00	10.64	315.48	315.48
Dsgn. L = 4.06 ft	2	0.143	0.055	106.95	37.74	106.95	833.33	750.00	1.32	1.00	17.35	315.48	315.48
Dsgn. L = 2.51 ft	2	0.050	0.076	37.74	-21.99	37.74	833.33	750.00	2.21	1.00	23.91	315.48	315.48
Dsgn. L = 1.50 ft	3	0.029	0.046	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	14.63	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length		Span #		Max Stress Ratios		Summary of Moment Values					Summary of Shear Values		
	Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.76 ft	3	0.000	0.046		-0.21	0.21	833.33	750.00	1.00	1.00	14.50	315.48	315.48
	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.013	0.163	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	51.50	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.146	0.163	109.25	-9.99	109.25	833.33	750.00	1.77	1.00	51.50	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.348	0.163	261.09	109.25	261.09	833.33	750.00	1.31	1.00	51.29	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.470	0.116	352.38	261.09	352.38	833.33	750.00	1.12	1.00	36.58	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.511	0.069	383.09	352.38	383.09	833.33	750.00	1.03	1.00	21.87	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.511	0.024	383.09	354.69	383.09	833.33	750.00	1.03	1.00	7.52	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.473	0.070	354.69	267.11	354.69	833.33	750.00	1.10	1.00	22.23	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.356	0.117	267.11	118.97	267.11	833.33	750.00	1.26	1.00	36.93	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.159	0.163	118.97	-9.99	118.97	833.33	750.00	1.81	1.00	51.50	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.021		-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.013	0.162	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	51.08	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.144	0.162	108.29	-9.99	108.29	833.33	750.00	1.78	1.00	51.08	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.345	0.161	258.45	108.29	258.45	833.33	750.00	1.31	1.00	50.87	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.464	0.115	348.06	258.45	348.06	833.33	750.00	1.12	1.00	36.17	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.503	0.068	377.09	348.06	377.09	833.33	750.00	1.03	1.00	21.46	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.503	0.025	377.09	347.09	377.09	833.33	750.00	1.03	1.00	7.93	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.463	0.072	347.09	257.83	347.09	833.33	750.00	1.11	1.00	22.64	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.344	0.118	257.83	108.01	257.83	833.33	750.00	1.28	1.00	37.35	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.144	0.165	108.01	-21.99	108.01	833.33	750.00	1.98	1.00	51.91	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.029	0.046	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	14.63	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.046		-0.21	0.21	833.33	750.00	1.00	1.00	14.50	315.48	315.48
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.029	0.076	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	23.91	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.044	0.076	33.25	-21.99	33.25	833.33	750.00	2.20	1.00	23.91	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.139	0.075	104.13	33.25	104.13	833.33	750.00	1.39	1.00	23.70	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.197	0.054	147.42	104.13	147.42	833.33	750.00	1.14	1.00	16.99	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.217	0.033	163.09	147.42	163.09	833.33	750.00	1.04	1.00	10.29	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.217	0.011	163.09	151.76	163.09	833.33	750.00	1.03	1.00	3.58	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.202	0.031	151.76	113.51	151.76	833.33	750.00	1.10	1.00	9.81	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.151	0.052	113.51	47.66	113.51	833.33	750.00	1.28	1.00	16.52	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.064	0.073	47.66	-9.99	47.66	833.33	750.00	1.99	1.00	23.08	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.021		-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.029	0.074	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	23.50	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.043	0.074	32.29	-21.99	32.29	833.33	750.00	2.21	1.00	23.50	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.135	0.074	101.49	32.29	101.49	833.33	750.00	1.39	1.00	23.29	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.191	0.053	143.10	101.49	143.10	833.33	750.00	1.14	1.00	16.58	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.209	0.031	157.09	143.10	157.09	833.33	750.00	1.04	1.00	9.87	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.209	0.011	157.09	144.16	157.09	833.33	750.00	1.03	1.00	3.52	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.192	0.032	144.16	104.23	144.16	833.33	750.00	1.11	1.00	10.23	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.139	0.054	104.23	36.70	104.23	833.33	750.00	1.32	1.00	16.93	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.049	0.074	36.70	-21.99	36.70	833.33	750.00	2.21	1.00	23.50	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.029	0.046	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	14.63	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.046		-0.21	0.21	833.33	750.00	1.00	1.00	14.50	315.48	315.48
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.029	0.165	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	51.91	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.131	0.165	98.21	-21.99	98.21	833.33	750.00	1.96	1.00	51.91	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.336	0.164	251.73	98.21	251.73	833.33	750.00	1.34	1.00	51.70	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.460	0.117	344.70	251.73	344.70	833.33	750.00	1.12	1.00	36.99	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.503	0.071	377.09	344.70	377.09	833.33	750.00	1.04	1.00	22.29	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.503	0.024	377.09	350.29	377.09	833.33	750.00	1.03	1.00	7.58	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.467	0.069	350.29	264.39	350.29	833.33	750.00	1.10	1.00	21.81	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.353	0.116	264.39	117.93	264.39	833.33	750.00	1.26	1.00	36.52	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios				Summary of Moment Values					Summary of Shear Values		
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 2.51 ft	2	0.157	0.162	117.93	-9.99	117.93	833.33	750.00	1.81	1.00	51.08	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021		-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.029	0.163	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	51.50	315.48	315.48
Dsgn. L = 2.32 ft	2	0.130	0.163	97.25	-21.99	97.25	833.33	750.00	1.96	1.00	51.50	315.48	315.48
Dsgn. L = 4.06 ft	2	0.332	0.163	249.09	97.25	249.09	833.33	750.00	1.33	1.00	51.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.454	0.116	340.38	249.09	340.38	833.33	750.00	1.12	1.00	36.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.495	0.069	371.09	340.38	371.09	833.33	750.00	1.04	1.00	21.87	315.48	315.48
Dsgn. L = 3.87 ft	2	0.495	0.024	371.09	342.69	371.09	833.33	750.00	1.03	1.00	7.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.457	0.070	342.69	255.11	342.69	833.33	750.00	1.11	1.00	22.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.340	0.117	255.11	106.97	255.11	833.33	750.00	1.28	1.00	36.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.143	0.163	106.97	-21.99	106.97	833.33	750.00	1.98	1.00	51.50	315.48	315.48
Dsgn. L = 1.50 ft	3	0.029	0.046	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	14.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.046		-0.21	0.21	833.33	750.00	1.00	1.00	14.50	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.013	0.074	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	23.50	315.48	315.48
Dsgn. L = 2.32 ft	2	0.059	0.074	44.29	-9.99	44.29	833.33	750.00	1.96	1.00	23.50	315.48	315.48
Dsgn. L = 4.06 ft	2	0.151	0.074	113.49	44.29	113.49	833.33	750.00	1.33	1.00	23.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.207	0.053	155.10	113.49	155.10	833.33	750.00	1.12	1.00	16.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.225	0.031	169.09	155.10	169.09	833.33	750.00	1.03	1.00	9.87	315.48	315.48
Dsgn. L = 3.87 ft	2	0.225	0.011	169.09	156.16	169.09	833.33	750.00	1.03	1.00	3.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.208	0.032	156.16	116.23	156.16	833.33	750.00	1.10	1.00	10.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.155	0.054	116.23	48.70	116.23	833.33	750.00	1.28	1.00	16.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.065	0.074	48.70	-9.99	48.70	833.33	750.00	1.98	1.00	23.50	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021		-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.013	0.074	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	23.50	315.48	315.48
Dsgn. L = 2.32 ft	2	0.059	0.074	44.29	-9.99	44.29	833.33	750.00	1.96	1.00	23.50	315.48	315.48
Dsgn. L = 4.06 ft	2	0.151	0.074	113.49	44.29	113.49	833.33	750.00	1.33	1.00	23.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.207	0.053	155.10	113.49	155.10	833.33	750.00	1.12	1.00	16.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.225	0.031	169.09	155.10	169.09	833.33	750.00	1.03	1.00	9.87	315.48	315.48
Dsgn. L = 3.87 ft	2	0.225	0.011	169.09	156.16	169.09	833.33	750.00	1.03	1.00	3.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.208	0.032	156.16	116.23	156.16	833.33	750.00	1.10	1.00	10.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.155	0.054	116.23	48.70	116.23	833.33	750.00	1.28	1.00	16.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.065	0.074	48.70	-9.99	48.70	833.33	750.00	1.98	1.00	23.50	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021		-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.013	0.074	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	23.50	315.48	315.48
Dsgn. L = 2.32 ft	2	0.059	0.074	44.29	-9.99	44.29	833.33	750.00	1.96	1.00	23.50	315.48	315.48
Dsgn. L = 4.06 ft	2	0.151	0.074	113.49	44.29	113.49	833.33	750.00	1.33	1.00	23.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.207	0.053	155.10	113.49	155.10	833.33	750.00	1.12	1.00	16.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.225	0.031	169.09	155.10	169.09	833.33	750.00	1.03	1.00	9.87	315.48	315.48
Dsgn. L = 3.87 ft	2	0.225	0.011	169.09	156.16	169.09	833.33	750.00	1.03	1.00	3.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.208	0.032	156.16	116.23	156.16	833.33	750.00	1.10	1.00	10.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.155	0.054	116.23	48.70	116.23	833.33	750.00	1.28	1.00	16.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.065	0.074	48.70	-9.99	48.70	833.33	750.00	1.98	1.00	23.50	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021		-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.013	0.074	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	23.50	315.48	315.48
Dsgn. L = 2.32 ft	2	0.059	0.074	44.29	-9.99	44.29	833.33	750.00	1.96	1.00	23.50	315.48	315.48
Dsgn. L = 4.06 ft	2	0.151	0.074	113.49	44.29	113.49	833.33	750.00	1.33	1.00	23.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.207	0.053	155.10	113.49	155.10	833.33	750.00	1.12	1.00	16.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.225	0.031	169.09	155.10	169.09	833.33	750.00	1.03	1.00	9.87	315.48	315.48
Dsgn. L = 3.87 ft	2	0.225	0.011	169.09	156.16	169.09	833.33	750.00	1.03	1.00	3.52	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.06 ft	2	0.208	0.032	156.16	116.23	156.16	833.33	750.00	1.10	1.00	10.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.155	0.054	116.23	48.70	116.23	833.33	750.00	1.28	1.00	16.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.065	0.074	48.70	-9.99	48.70	833.33	750.00	1.98	1.00	23.50	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.013	0.074	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	23.50	315.48	315.48
Dsgn. L = 2.32 ft	2	0.059	0.074	44.29	-9.99	44.29	833.33	750.00	1.96	1.00	23.50	315.48	315.48
Dsgn. L = 4.06 ft	2	0.151	0.074	113.49	44.29	113.49	833.33	750.00	1.33	1.00	23.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.207	0.053	155.10	113.49	155.10	833.33	750.00	1.12	1.00	16.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.225	0.031	169.09	155.10	169.09	833.33	750.00	1.03	1.00	9.87	315.48	315.48
Dsgn. L = 3.87 ft	2	0.225	0.011	169.09	156.16	169.09	833.33	750.00	1.03	1.00	3.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.208	0.032	156.16	116.23	156.16	833.33	750.00	1.10	1.00	10.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.155	0.054	116.23	48.70	116.23	833.33	750.00	1.28	1.00	16.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.065	0.074	48.70	-9.99	48.70	833.33	750.00	1.98	1.00	23.50	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.013	0.074	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	23.50	315.48	315.48
Dsgn. L = 2.32 ft	2	0.059	0.074	44.29	-9.99	44.29	833.33	750.00	1.96	1.00	23.50	315.48	315.48
Dsgn. L = 4.06 ft	2	0.151	0.074	113.49	44.29	113.49	833.33	750.00	1.33	1.00	23.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.207	0.053	155.10	113.49	155.10	833.33	750.00	1.12	1.00	16.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.225	0.031	169.09	155.10	169.09	833.33	750.00	1.03	1.00	9.87	315.48	315.48
Dsgn. L = 3.87 ft	2	0.225	0.011	169.09	156.16	169.09	833.33	750.00	1.03	1.00	3.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.208	0.032	156.16	116.23	156.16	833.33	750.00	1.10	1.00	10.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.155	0.054	116.23	48.70	116.23	833.33	750.00	1.28	1.00	16.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.065	0.074	48.70	-9.99	48.70	833.33	750.00	1.98	1.00	23.50	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.013	0.074	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	23.50	315.48	315.48
Dsgn. L = 2.32 ft	2	0.059	0.074	44.29	-9.99	44.29	833.33	750.00	1.96	1.00	23.50	315.48	315.48
Dsgn. L = 4.06 ft	2	0.151	0.074	113.49	44.29	113.49	833.33	750.00	1.33	1.00	23.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.207	0.053	155.10	113.49	155.10	833.33	750.00	1.12	1.00	16.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.225	0.031	169.09	155.10	169.09	833.33	750.00	1.03	1.00	9.87	315.48	315.48
Dsgn. L = 3.87 ft	2	0.225	0.011	169.09	156.16	169.09	833.33	750.00	1.03	1.00	3.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.208	0.032	156.16	116.23	156.16	833.33	750.00	1.10	1.00	10.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.155	0.054	116.23	48.70	116.23	833.33	750.00	1.28	1.00	16.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.065	0.074	48.70	-9.99	48.70	833.33	750.00	1.98	1.00	23.50	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.020	0.109	-0.00	-14.79	14.79	833.33	750.00	1.00	1.00	34.28	315.48	315.48
Dsgn. L = 2.32 ft	2	0.086	0.109	64.51	-14.79	64.51	833.33	750.00	1.97	1.00	34.28	315.48	315.48
Dsgn. L = 4.06 ft	2	0.220	0.108	165.09	64.51	165.09	833.33	750.00	1.33	1.00	34.07	315.48	315.48
Dsgn. L = 4.06 ft	2	0.300	0.077	224.89	165.09	224.89	833.33	750.00	1.12	1.00	24.17	315.48	315.48
Dsgn. L = 4.06 ft	2	0.325	0.045	243.89	224.89	243.89	833.33	750.00	1.03	1.00	14.26	315.48	315.48
Dsgn. L = 3.87 ft	2	0.325	0.018	243.89	223.17	243.89	833.33	750.00	1.04	1.00	5.53	315.48	315.48
Dsgn. L = 4.06 ft	2	0.298	0.049	223.17	162.51	223.17	833.33	750.00	1.11	1.00	15.44	315.48	315.48
Dsgn. L = 4.06 ft	2	0.217	0.080	162.51	61.05	162.51	833.33	750.00	1.31	1.00	25.35	315.48	315.48
Dsgn. L = 2.51 ft	2	0.081	0.111	61.05	-26.79	61.05	833.33	750.00	2.18	1.00	35.11	315.48	315.48
Dsgn. L = 1.50 ft	3	0.036	0.057	-0.00	-26.79	26.79	833.33	750.00	1.00	1.00	17.83	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.056	-0.23	0.23	833.33	750.00	1.00	1.00	17.70	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.020	0.199	-0.00	-14.79	14.79	833.33	750.00	1.00	1.00	62.70	315.48	315.48
Dsgn. L = 2.32 ft	2	0.174	0.199	130.43	-14.79	130.43	833.33	750.00	1.80	1.00	62.70	315.48	315.48
Dsgn. L = 4.06 ft	2	0.420	0.198	315.33	130.43	315.33	833.33	750.00	1.32	1.00	62.49	315.48	315.48
Dsgn. L = 4.06 ft	2	0.569	0.141	426.49	315.33	426.49	833.33	750.00	1.12	1.00	44.58	315.48	315.48





Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 4.06 ft	2	0.619	0.085	463.89	426.49	463.89	833.33	750.00	1.03	1.00	26.67	315.48	315.48
Dsgn. L = 3.87 ft	2	0.619	0.029	463.89	429.31	463.89	833.33	750.00	1.03	1.00	9.12	315.48	315.48
Dsgn. L = 4.06 ft	2	0.572	0.086	429.31	322.67	429.31	833.33	750.00	1.10	1.00	27.03	315.48	315.48
Dsgn. L = 4.06 ft	2	0.430	0.142	322.67	142.27	322.67	833.33	750.00	1.27	1.00	44.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.190	0.199	142.27	-14.79	142.27	833.33	750.00	1.83	1.00	62.70	315.48	315.48
Dsgn. L = 1.50 ft	3	0.020	0.031	-0.00	-14.79	14.79	833.33	750.00	1.00	1.00	9.83	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.031	-0.19	0.19	833.33	750.00	1.00	1.00	9.70	315.48	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	315.48
Dsgn. L = 1.52 ft	1	0.020	0.197	-0.00	-14.79	14.79	833.33	750.00	1.00	1.00	62.28	315.48	315.48
Dsgn. L = 2.32 ft	2	0.173	0.197	129.47	-14.79	129.47	833.33	750.00	1.80	1.00	62.28	315.48	315.48
Dsgn. L = 4.06 ft	2	0.417	0.197	312.69	129.47	312.69	833.33	750.00	1.32	1.00	62.07	315.48	315.48
Dsgn. L = 4.06 ft	2	0.563	0.140	422.17	312.69	422.17	833.33	750.00	1.12	1.00	44.17	315.48	315.48
Dsgn. L = 4.06 ft	2	0.611	0.083	457.89	422.17	457.89	833.33	750.00	1.03	1.00	26.26	315.48	315.48
Dsgn. L = 3.87 ft	2	0.611	0.030	457.89	421.71	457.89	833.33	750.00	1.03	1.00	9.53	315.48	315.48
Dsgn. L = 4.06 ft	2	0.562	0.087	421.71	313.39	421.71	833.33	750.00	1.11	1.00	27.44	315.48	315.48
Dsgn. L = 4.06 ft	2	0.418	0.144	313.39	131.31	313.39	833.33	750.00	1.28	1.00	45.35	315.48	315.48
Dsgn. L = 2.51 ft	2	0.175	0.200	131.31	-26.79	131.31	833.33	750.00	1.98	1.00	63.11	315.48	315.48
Dsgn. L = 1.50 ft	3	0.036	0.057	-0.00	-26.79	26.79	833.33	750.00	1.00	1.00	17.83	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.056	-0.23	0.23	833.33	750.00	1.00	1.00	17.70	315.48	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	315.48
Dsgn. L = 1.52 ft	1	0.036	0.111	-0.00	-26.79	26.79	833.33	750.00	1.00	1.00	35.11	315.48	315.48
Dsgn. L = 2.32 ft	2	0.073	0.111	54.43	-26.79	54.43	833.33	750.00	2.17	1.00	35.11	315.48	315.48
Dsgn. L = 4.06 ft	2	0.211	0.111	158.37	54.43	158.37	833.33	750.00	1.37	1.00	34.90	315.48	315.48
Dsgn. L = 4.06 ft	2	0.295	0.079	221.53	158.37	221.53	833.33	750.00	1.13	1.00	24.99	315.48	315.48
Dsgn. L = 4.06 ft	2	0.325	0.048	243.89	221.53	243.89	833.33	750.00	1.04	1.00	15.09	315.48	315.48
Dsgn. L = 3.87 ft	2	0.325	0.016	243.89	226.37	243.89	833.33	750.00	1.03	1.00	5.18	315.48	315.48
Dsgn. L = 4.06 ft	2	0.302	0.046	226.37	169.07	226.37	833.33	750.00	1.10	1.00	14.61	315.48	315.48
Dsgn. L = 4.06 ft	2	0.225	0.078	169.07	70.97	169.07	833.33	750.00	1.28	1.00	24.52	315.48	315.48
Dsgn. L = 2.51 ft	2	0.095	0.109	70.97	-14.79	70.97	833.33	750.00	1.99	1.00	34.28	315.48	315.48
Dsgn. L = 1.50 ft	3	0.020	0.031	-0.00	-14.79	14.79	833.33	750.00	1.00	1.00	9.83	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.031	-0.19	0.19	833.33	750.00	1.00	1.00	9.70	315.48	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	315.48
Dsgn. L = 1.52 ft	1	0.036	0.110	-0.00	-26.79	26.79	833.33	750.00	1.00	1.00	34.70	315.48	315.48
Dsgn. L = 2.32 ft	2	0.071	0.110	53.47	-26.79	53.47	833.33	750.00	2.17	1.00	34.70	315.48	315.48
Dsgn. L = 4.06 ft	2	0.208	0.109	155.73	53.47	155.73	833.33	750.00	1.37	1.00	34.49	315.48	315.48
Dsgn. L = 4.06 ft	2	0.290	0.078	217.21	155.73	217.21	833.33	750.00	1.13	1.00	24.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.317	0.047	237.89	217.21	237.89	833.33	750.00	1.04	1.00	14.67	315.48	315.48
Dsgn. L = 3.87 ft	2	0.317	0.016	237.89	218.77	237.89	833.33	750.00	1.03	1.00	5.12	315.48	315.48
Dsgn. L = 4.06 ft	2	0.292	0.048	218.77	159.79	218.77	833.33	750.00	1.11	1.00	15.03	315.48	315.48
Dsgn. L = 4.06 ft	2	0.213	0.079	159.79	60.01	159.79	833.33	750.00	1.31	1.00	24.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.080	0.110	60.01	-26.79	60.01	833.33	750.00	2.18	1.00	34.70	315.48	315.48
Dsgn. L = 1.50 ft	3	0.036	0.057	-0.00	-26.79	26.79	833.33	750.00	1.00	1.00	17.83	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.056	-0.23	0.23	833.33	750.00	1.00	1.00	17.70	315.48	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	315.48
Dsgn. L = 1.52 ft	1	0.036	0.200	-0.00	-26.79	26.79	833.33	750.00	1.00	1.00	63.11	315.48	315.48
Dsgn. L = 2.32 ft	2	0.159	0.200	119.39	-26.79	119.39	833.33	750.00	1.96	1.00	63.11	315.48	315.48
Dsgn. L = 4.06 ft	2	0.408	0.199	305.97	119.39	305.97	833.33	750.00	1.34	1.00	62.90	315.48	315.48
Dsgn. L = 4.06 ft	2	0.558	0.143	418.81	305.97	418.81	833.33	750.00	1.12	1.00	44.99	315.48	315.48
Dsgn. L = 4.06 ft	2	0.611	0.086	457.89	418.81	457.89	833.33	750.00	1.04	1.00	27.09	315.48	315.48
Dsgn. L = 3.87 ft	2	0.611	0.029	457.89	424.91	457.89	833.33	750.00	1.03	1.00	9.18	315.48	315.48
Dsgn. L = 4.06 ft	2	0.567	0.084	424.91	319.95	424.91	833.33	750.00	1.10	1.00	26.61	315.48	315.48
Dsgn. L = 4.06 ft	2	0.427	0.141	319.95	141.23	319.95	833.33	750.00	1.27	1.00	44.52	315.48	315.48
Dsgn. L = 2.51 ft	2	0.188	0.197	141.23	-14.79	141.23	833.33	750.00	1.83	1.00	62.28	315.48	315.48
Dsgn. L = 1.50 ft	3	0.020	0.031	-0.00	-14.79	14.79	833.33	750.00	1.00	1.00	9.83	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.031	-0.19	0.19	833.33	750.00	1.00	1.00	9.70	315.48	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	315.48
Dsgn. L = 1.52 ft	1	0.036	0.199	-0.00	-26.79	26.79	833.33	750.00	1.00	1.00	62.70	315.48	315.48
Dsgn. L = 2.32 ft	2	0.158	0.199	118.43	-26.79	118.43	833.33	750.00	1.96	1.00	62.70	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.06 ft	2	0.404	0.198	303.33	118.43	303.33	833.33	750.00	1.34	1.00	62.49	315.48	315.48
Dsgn. L = 4.06 ft	2	0.553	0.141	414.49	303.33	414.49	833.33	750.00	1.12	1.00	44.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.603	0.085	451.89	414.49	451.89	833.33	750.00	1.04	1.00	26.67	315.48	315.48
Dsgn. L = 3.87 ft	2	0.603	0.029	451.89	417.31	451.89	833.33	750.00	1.03	1.00	9.12	315.48	315.48
Dsgn. L = 4.06 ft	2	0.556	0.086	417.31	310.67	417.31	833.33	750.00	1.11	1.00	27.03	315.48	315.48
Dsgn. L = 4.06 ft	2	0.414	0.142	310.67	130.27	310.67	833.33	750.00	1.28	1.00	44.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.174	0.199	130.27	-26.79	130.27	833.33	750.00	1.98	1.00	62.70	315.48	315.48
Dsgn. L = 1.50 ft	3	0.036	0.057	-0.00	-26.79	26.79	833.33	750.00	1.00	1.00	17.83	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.056	-0.23	0.23	833.33	750.00	1.00	1.00	17.70	315.48	315.48	
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.020	0.110	-0.00	-14.79	14.79	833.33	750.00	1.00	1.00	34.70	315.48	315.48
Dsgn. L = 2.32 ft	2	0.087	0.110	65.47	-14.79	65.47	833.33	750.00	1.96	1.00	34.70	315.48	315.48
Dsgn. L = 4.06 ft	2	0.224	0.109	167.73	65.47	167.73	833.33	750.00	1.33	1.00	34.49	315.48	315.48
Dsgn. L = 4.06 ft	2	0.306	0.078	229.21	167.73	229.21	833.33	750.00	1.12	1.00	24.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.333	0.047	249.89	229.21	249.89	833.33	750.00	1.03	1.00	14.67	315.48	315.48
Dsgn. L = 3.87 ft	2	0.333	0.016	249.89	230.77	249.89	833.33	750.00	1.03	1.00	5.12	315.48	315.48
Dsgn. L = 4.06 ft	2	0.308	0.048	230.77	171.79	230.77	833.33	750.00	1.10	1.00	15.03	315.48	315.48
Dsgn. L = 4.06 ft	2	0.229	0.079	171.79	72.01	171.79	833.33	750.00	1.28	1.00	24.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.096	0.110	72.01	-14.79	72.01	833.33	750.00	1.98	1.00	34.70	315.48	315.48
Dsgn. L = 1.50 ft	3	0.020	0.031	-0.00	-14.79	14.79	833.33	750.00	1.00	1.00	9.83	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.031	-0.19	0.19	833.33	750.00	1.00	1.00	9.70	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.013	0.073	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	23.08	315.48	315.48
Dsgn. L = 2.32 ft	2	0.058	0.073	43.33	-9.99	43.33	833.33	750.00	1.97	1.00	23.08	315.48	315.48
Dsgn. L = 4.06 ft	2	0.148	0.073	110.85	43.33	110.85	833.33	750.00	1.33	1.00	22.87	315.48	315.48
Dsgn. L = 4.06 ft	2	0.201	0.051	150.78	110.85	150.78	833.33	750.00	1.12	1.00	16.17	315.48	315.48
Dsgn. L = 4.06 ft	2	0.217	0.030	163.09	150.78	163.09	833.33	750.00	1.03	1.00	9.46	315.48	315.48
Dsgn. L = 3.87 ft	2	0.217	0.012	163.09	148.56	163.09	833.33	750.00	1.04	1.00	3.93	315.48	315.48
Dsgn. L = 4.06 ft	2	0.198	0.034	148.56	106.95	148.56	833.33	750.00	1.12	1.00	10.64	315.48	315.48
Dsgn. L = 4.06 ft	2	0.143	0.055	106.95	37.74	106.95	833.33	750.00	1.32	1.00	17.35	315.48	315.48
Dsgn. L = 2.51 ft	2	0.050	0.076	37.74	-21.99	37.74	833.33	750.00	2.21	1.00	23.91	315.48	315.48
Dsgn. L = 1.50 ft	3	0.029	0.046	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	14.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.046	-0.21	0.21	833.33	750.00	1.00	1.00	14.50	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.013	0.163	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	51.50	315.48	315.48
Dsgn. L = 2.32 ft	2	0.146	0.163	109.25	-9.99	109.25	833.33	750.00	1.77	1.00	51.50	315.48	315.48
Dsgn. L = 4.06 ft	2	0.348	0.163	261.09	109.25	261.09	833.33	750.00	1.31	1.00	51.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.470	0.116	352.38	261.09	352.38	833.33	750.00	1.12	1.00	36.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.511	0.069	383.09	352.38	383.09	833.33	750.00	1.03	1.00	21.87	315.48	315.48
Dsgn. L = 3.87 ft	2	0.511	0.024	383.09	354.69	383.09	833.33	750.00	1.03	1.00	7.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.473	0.070	354.69	267.11	354.69	833.33	750.00	1.10	1.00	22.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.356	0.117	267.11	118.97	267.11	833.33	750.00	1.26	1.00	36.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.159	0.163	118.97	-9.99	118.97	833.33	750.00	1.81	1.00	51.50	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.013	0.162	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	51.08	315.48	315.48
Dsgn. L = 2.32 ft	2	0.144	0.162	108.29	-9.99	108.29	833.33	750.00	1.78	1.00	51.08	315.48	315.48
Dsgn. L = 4.06 ft	2	0.345	0.161	258.45	108.29	258.45	833.33	750.00	1.31	1.00	50.87	315.48	315.48
Dsgn. L = 4.06 ft	2	0.464	0.115	348.06	258.45	348.06	833.33	750.00	1.12	1.00	36.17	315.48	315.48
Dsgn. L = 4.06 ft	2	0.503	0.068	377.09	348.06	377.09	833.33	750.00	1.03	1.00	21.46	315.48	315.48
Dsgn. L = 3.87 ft	2	0.503	0.025	377.09	347.09	377.09	833.33	750.00	1.03	1.00	7.93	315.48	315.48
Dsgn. L = 4.06 ft	2	0.463	0.072	347.09	257.83	347.09	833.33	750.00	1.11	1.00	22.64	315.48	315.48
Dsgn. L = 4.06 ft	2	0.344	0.118	257.83	108.01	257.83	833.33	750.00	1.28	1.00	37.35	315.48	315.48
Dsgn. L = 2.51 ft	2	0.144	0.165	108.01	-21.99	108.01	833.33	750.00	1.98	1.00	51.91	315.48	315.48
Dsgn. L = 1.50 ft	3	0.029	0.046	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	14.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.046	-0.21	0.21	833.33	750.00	1.00	1.00	14.50	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.52 ft	1	0.029	0.076	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	23.91	315.48	315.48
Dsgn. L = 2.32 ft	2	0.044	0.076	33.25	-21.99	33.25	833.33	750.00	2.20	1.00	23.91	315.48	315.48
Dsgn. L = 4.06 ft	2	0.139	0.075	104.13	33.25	104.13	833.33	750.00	1.39	1.00	23.70	315.48	315.48
Dsgn. L = 4.06 ft	2	0.197	0.054	147.42	104.13	147.42	833.33	750.00	1.14	1.00	16.99	315.48	315.48
Dsgn. L = 4.06 ft	2	0.217	0.033	163.09	147.42	163.09	833.33	750.00	1.04	1.00	10.29	315.48	315.48
Dsgn. L = 3.87 ft	2	0.217	0.011	163.09	151.76	163.09	833.33	750.00	1.03	1.00	3.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.202	0.031	151.76	113.51	151.76	833.33	750.00	1.10	1.00	9.81	315.48	315.48
Dsgn. L = 4.06 ft	2	0.151	0.052	113.51	47.66	113.51	833.33	750.00	1.28	1.00	16.52	315.48	315.48
Dsgn. L = 2.51 ft	2	0.064	0.073	47.66	-9.99	47.66	833.33	750.00	1.99	1.00	23.08	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.029	0.074	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	23.50	315.48	315.48
Dsgn. L = 2.32 ft	2	0.043	0.074	32.29	-21.99	32.29	833.33	750.00	2.21	1.00	23.50	315.48	315.48
Dsgn. L = 4.06 ft	2	0.135	0.074	101.49	32.29	101.49	833.33	750.00	1.39	1.00	23.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.191	0.053	143.10	101.49	143.10	833.33	750.00	1.14	1.00	16.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.209	0.031	157.09	143.10	157.09	833.33	750.00	1.04	1.00	9.87	315.48	315.48
Dsgn. L = 3.87 ft	2	0.209	0.011	157.09	144.16	157.09	833.33	750.00	1.03	1.00	3.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.192	0.032	144.16	104.23	144.16	833.33	750.00	1.11	1.00	10.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.139	0.054	104.23	36.70	104.23	833.33	750.00	1.32	1.00	16.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.049	0.074	36.70	-21.99	36.70	833.33	750.00	2.21	1.00	23.50	315.48	315.48
Dsgn. L = 1.50 ft	3	0.029	0.046	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	14.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.046	-0.21	0.21	833.33	750.00	1.00	1.00	14.50	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.029	0.165	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	51.91	315.48	315.48
Dsgn. L = 2.32 ft	2	0.131	0.165	98.21	-21.99	98.21	833.33	750.00	1.96	1.00	51.91	315.48	315.48
Dsgn. L = 4.06 ft	2	0.336	0.164	251.73	98.21	251.73	833.33	750.00	1.34	1.00	51.70	315.48	315.48
Dsgn. L = 4.06 ft	2	0.460	0.117	344.70	251.73	344.70	833.33	750.00	1.12	1.00	36.99	315.48	315.48
Dsgn. L = 4.06 ft	2	0.503	0.071	377.09	344.70	377.09	833.33	750.00	1.04	1.00	22.29	315.48	315.48
Dsgn. L = 3.87 ft	2	0.503	0.024	377.09	350.29	377.09	833.33	750.00	1.03	1.00	7.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.467	0.069	350.29	264.39	350.29	833.33	750.00	1.10	1.00	21.81	315.48	315.48
Dsgn. L = 4.06 ft	2	0.353	0.116	264.39	117.93	264.39	833.33	750.00	1.26	1.00	36.52	315.48	315.48
Dsgn. L = 2.51 ft	2	0.157	0.162	117.93	-9.99	117.93	833.33	750.00	1.81	1.00	51.08	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-9.99	9.99	833.33	750.00	1.00	1.00	6.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	833.33	750.00	1.00	1.00	6.50	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.029	0.163	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	51.50	315.48	315.48
Dsgn. L = 2.32 ft	2	0.130	0.163	97.25	-21.99	97.25	833.33	750.00	1.96	1.00	51.50	315.48	315.48
Dsgn. L = 4.06 ft	2	0.332	0.163	249.09	97.25	249.09	833.33	750.00	1.33	1.00	51.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.454	0.116	340.38	249.09	340.38	833.33	750.00	1.12	1.00	36.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.495	0.069	371.09	340.38	371.09	833.33	750.00	1.04	1.00	21.87	315.48	315.48
Dsgn. L = 3.87 ft	2	0.495	0.024	371.09	342.69	371.09	833.33	750.00	1.03	1.00	7.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.457	0.070	342.69	255.11	342.69	833.33	750.00	1.11	1.00	22.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.340	0.117	255.11	106.97	255.11	833.33	750.00	1.28	1.00	36.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.143	0.163	106.97	-21.99	106.97	833.33	750.00	1.98	1.00	51.50	315.48	315.48
Dsgn. L = 1.50 ft	3	0.029	0.046	-0.00	-21.99	21.99	833.33	750.00	1.00	1.00	14.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.046	-0.21	0.21	833.33	750.00	1.00	1.00	14.50	315.48	315.48	
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.015	0.084	-0.00	-11.49	11.49	833.33	750.00	1.00	1.00	26.58	315.48	315.48
Dsgn. L = 2.32 ft	2	0.067	0.084	49.95	-11.49	49.95	833.33	750.00	1.97	1.00	26.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.170	0.084	127.80	49.95	127.80	833.33	750.00	1.33	1.00	26.37	315.48	315.48
Dsgn. L = 4.06 ft	2	0.232	0.059	173.94	127.80	173.94	833.33	750.00	1.12	1.00	18.67	315.48	315.48
Dsgn. L = 4.06 ft	2	0.251	0.035	188.34	173.94	188.34	833.33	750.00	1.03	1.00	10.96	315.48	315.48
Dsgn. L = 3.87 ft	2	0.251	0.014	188.34	171.88	188.34	833.33	750.00	1.04	1.00	4.43	315.48	315.48
Dsgn. L = 4.06 ft	2	0.229	0.038	171.88	124.31	171.88	833.33	750.00	1.11	1.00	12.14	315.48	315.48
Dsgn. L = 4.06 ft	2	0.166	0.063	124.31	45.02	124.31	833.33	750.00	1.32	1.00	19.85	315.48	315.48
Dsgn. L = 2.51 ft	2	0.060	0.087	45.02	-23.49	45.02	833.33	750.00	2.20	1.00	27.41	315.48	315.48
Dsgn. L = 1.50 ft	3	0.031	0.050	-0.00	-23.49	23.49	833.33	750.00	1.00	1.00	15.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.049	-0.22	0.22	833.33	750.00	1.00	1.00	15.50	315.48	315.48	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.015	0.174	-0.00	-11.49	11.49	833.33	750.00	1.00	1.00	55.00	315.48	315.48
Dsgn. L = 2.32 ft	2	0.154	0.174	115.87	-11.49	115.87	833.33	750.00	1.78	1.00	55.00	315.48	315.48
Dsgn. L = 4.06 ft	2	0.371	0.174	278.04	115.87	278.04	833.33	750.00	1.32	1.00	54.79	315.48	315.48
Dsgn. L = 4.06 ft	2	0.501	0.124	375.54	278.04	375.54	833.33	750.00	1.12	1.00	39.08	315.48	315.48
Dsgn. L = 4.06 ft	2	0.544	0.074	408.34	375.54	408.34	833.33	750.00	1.03	1.00	23.37	315.48	315.48
Dsgn. L = 3.87 ft	2	0.544	0.025	408.34	378.01	408.34	833.33	750.00	1.03	1.00	8.02	315.48	315.48
Dsgn. L = 4.06 ft	2	0.504	0.075	378.01	284.47	378.01	833.33	750.00	1.10	1.00	23.73	315.48	315.48
Dsgn. L = 4.06 ft	2	0.379	0.125	284.47	126.25	284.47	833.33	750.00	1.27	1.00	39.43	315.48	315.48
Dsgn. L = 2.51 ft	2	0.168	0.174	126.25	-11.49	126.25	833.33	750.00	1.81	1.00	55.00	315.48	315.48
Dsgn. L = 1.50 ft	3	0.015	0.024	-0.00	-11.49	11.49	833.33	750.00	1.00	1.00	7.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.024		-0.18	0.18	833.33	750.00	1.00	1.00	7.50	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.015	0.173	-0.00	-11.49	11.49	833.33	750.00	1.00	1.00	54.58	315.48	315.48
Dsgn. L = 2.32 ft	2	0.153	0.173	114.91	-11.49	114.91	833.33	750.00	1.79	1.00	54.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.367	0.172	275.40	114.91	275.40	833.33	750.00	1.32	1.00	54.37	315.48	315.48
Dsgn. L = 4.06 ft	2	0.495	0.123	371.22	275.40	371.22	833.33	750.00	1.12	1.00	38.67	315.48	315.48
Dsgn. L = 4.06 ft	2	0.536	0.073	402.34	371.22	402.34	833.33	750.00	1.03	1.00	22.96	315.48	315.48
Dsgn. L = 3.87 ft	2	0.536	0.027	402.34	370.41	402.34	833.33	750.00	1.03	1.00	8.43	315.48	315.48
Dsgn. L = 4.06 ft	2	0.494	0.077	370.41	275.19	370.41	833.33	750.00	1.11	1.00	24.14	315.48	315.48
Dsgn. L = 4.06 ft	2	0.367	0.126	275.19	115.29	275.19	833.33	750.00	1.28	1.00	39.85	315.48	315.48
Dsgn. L = 2.51 ft	2	0.154	0.176	115.29	-23.49	115.29	833.33	750.00	1.98	1.00	55.41	315.48	315.48
Dsgn. L = 1.50 ft	3	0.031	0.050	-0.00	-23.49	23.49	833.33	750.00	1.00	1.00	15.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.049		-0.22	0.22	833.33	750.00	1.00	1.00	15.50	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.031	0.087	-0.00	-23.49	23.49	833.33	750.00	1.00	1.00	27.41	315.48	315.48
Dsgn. L = 2.32 ft	2	0.053	0.087	39.87	-23.49	39.87	833.33	750.00	2.19	1.00	27.41	315.48	315.48
Dsgn. L = 4.06 ft	2	0.161	0.086	121.08	39.87	121.08	833.33	750.00	1.38	1.00	27.20	315.48	315.48
Dsgn. L = 4.06 ft	2	0.227	0.062	170.58	121.08	170.58	833.33	750.00	1.14	1.00	19.49	315.48	315.48
Dsgn. L = 4.06 ft	2	0.251	0.037	188.34	170.58	188.34	833.33	750.00	1.04	1.00	11.79	315.48	315.48
Dsgn. L = 3.87 ft	2	0.251	0.013	188.34	175.08	188.34	833.33	750.00	1.03	1.00	4.08	315.48	315.48
Dsgn. L = 4.06 ft	2	0.233	0.036	175.08	130.87	175.08	833.33	750.00	1.10	1.00	11.31	315.48	315.48
Dsgn. L = 4.06 ft	2	0.174	0.060	130.87	54.94	130.87	833.33	750.00	1.28	1.00	19.02	315.48	315.48
Dsgn. L = 2.51 ft	2	0.073	0.084	54.94	-11.49	54.94	833.33	750.00	1.99	1.00	26.58	315.48	315.48
Dsgn. L = 1.50 ft	3	0.015	0.024	-0.00	-11.49	11.49	833.33	750.00	1.00	1.00	7.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.024		-0.18	0.18	833.33	750.00	1.00	1.00	7.50	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.031	0.086	-0.00	-23.49	23.49	833.33	750.00	1.00	1.00	27.00	315.48	315.48
Dsgn. L = 2.32 ft	2	0.052	0.086	38.91	-23.49	38.91	833.33	750.00	2.19	1.00	27.00	315.48	315.48
Dsgn. L = 4.06 ft	2	0.158	0.085	118.44	38.91	118.44	833.33	750.00	1.38	1.00	26.79	315.48	315.48
Dsgn. L = 4.06 ft	2	0.222	0.060	166.26	118.44	166.26	833.33	750.00	1.13	1.00	19.08	315.48	315.48
Dsgn. L = 4.06 ft	2	0.243	0.036	182.34	166.26	182.34	833.33	750.00	1.04	1.00	11.37	315.48	315.48
Dsgn. L = 3.87 ft	2	0.243	0.013	182.34	167.48	182.34	833.33	750.00	1.03	1.00	4.02	315.48	315.48
Dsgn. L = 4.06 ft	2	0.223	0.037	167.48	121.59	167.48	833.33	750.00	1.11	1.00	11.73	315.48	315.48
Dsgn. L = 4.06 ft	2	0.162	0.062	121.59	43.98	121.59	833.33	750.00	1.32	1.00	19.43	315.48	315.48
Dsgn. L = 2.51 ft	2	0.059	0.086	43.98	-23.49	43.98	833.33	750.00	2.20	1.00	27.00	315.48	315.48
Dsgn. L = 1.50 ft	3	0.031	0.050	-0.00	-23.49	23.49	833.33	750.00	1.00	1.00	15.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.049		-0.22	0.22	833.33	750.00	1.00	1.00	15.50	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.031	0.176	-0.00	-23.49	23.49	833.33	750.00	1.00	1.00	55.41	315.48	315.48
Dsgn. L = 2.32 ft	2	0.140	0.176	104.83	-23.49	104.83	833.33	750.00	1.96	1.00	55.41	315.48	315.48
Dsgn. L = 4.06 ft	2	0.358	0.175	268.68	104.83	268.68	833.33	750.00	1.34	1.00	55.20	315.48	315.48
Dsgn. L = 4.06 ft	2	0.490	0.125	367.86	268.68	367.86	833.33	750.00	1.12	1.00	39.49	315.48	315.48
Dsgn. L = 4.06 ft	2	0.536	0.075	402.34	367.86	402.34	833.33	750.00	1.04	1.00	23.79	315.48	315.48
Dsgn. L = 3.87 ft	2	0.536	0.026	402.34	373.61	402.34	833.33	750.00	1.03	1.00	8.08	315.48	315.48
Dsgn. L = 4.06 ft	2	0.498	0.074	373.61	281.75	373.61	833.33	750.00	1.10	1.00	23.31	315.48	315.48
Dsgn. L = 4.06 ft	2	0.376	0.124	281.75	125.21	281.75	833.33	750.00	1.27	1.00	39.02	315.48	315.48
Dsgn. L = 2.51 ft	2	0.167	0.173	125.21	-11.49	125.21	833.33	750.00	1.82	1.00	54.58	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 1.50 ft	3	0.015	0.024	-0.00	-11.49	11.49	833.33	750.00	1.00	1.00	7.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.024		-0.18	0.18	833.33	750.00	1.00	1.00	7.50	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.031	0.174	-0.00	-23.49	23.49	833.33	750.00	1.00	1.00	55.00	315.48	315.48
Dsgn. L = 2.32 ft	2	0.138	0.174	103.87	-23.49	103.87	833.33	750.00	1.96	1.00	55.00	315.48	315.48
Dsgn. L = 4.06 ft	2	0.355	0.174	266.04	103.87	266.04	833.33	750.00	1.33	1.00	54.79	315.48	315.48
Dsgn. L = 4.06 ft	2	0.485	0.124	363.54	266.04	363.54	833.33	750.00	1.12	1.00	39.08	315.48	315.48
Dsgn. L = 4.06 ft	2	0.528	0.074	396.34	363.54	396.34	833.33	750.00	1.04	1.00	23.37	315.48	315.48
Dsgn. L = 3.87 ft	2	0.528	0.025	396.34	366.01	396.34	833.33	750.00	1.03	1.00	8.02	315.48	315.48
Dsgn. L = 4.06 ft	2	0.488	0.075	366.01	272.47	366.01	833.33	750.00	1.11	1.00	23.73	315.48	315.48
Dsgn. L = 4.06 ft	2	0.363	0.125	272.47	114.25	272.47	833.33	750.00	1.28	1.00	39.43	315.48	315.48
Dsgn. L = 2.51 ft	2	0.152	0.174	114.25	-23.49	114.25	833.33	750.00	1.98	1.00	55.00	315.48	315.48
Dsgn. L = 1.50 ft	3	0.031	0.050	-0.00	-23.49	23.49	833.33	750.00	1.00	1.00	15.63	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.049		-0.22	0.22	833.33	750.00	1.00	1.00	15.50	315.48	315.48
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 1.73 ft	1	0.000	0.000		-0.10	0.10	833.33	750.00	1.00	1.00	0.12	315.48	315.48
Dsgn. L = 1.52 ft	1	0.010	0.056	-0.00	-7.49	7.49	833.33	750.00	1.00	1.00	17.62	315.48	315.48
Dsgn. L = 2.32 ft	2	0.044	0.056	33.21	-7.49	33.21	833.33	750.00	1.96	1.00	17.62	315.48	315.48
Dsgn. L = 4.06 ft	2	0.113	0.055	85.12	33.21	85.12	833.33	750.00	1.33	1.00	17.47	315.48	315.48
Dsgn. L = 4.06 ft	2	0.155	0.039	116.32	85.12	116.32	833.33	750.00	1.12	1.00	12.44	315.48	315.48
Dsgn. L = 4.06 ft	2	0.169	0.023	126.82	116.32	126.82	833.33	750.00	1.03	1.00	7.41	315.48	315.48
Dsgn. L = 3.87 ft	2	0.169	0.008	126.82	117.12	126.82	833.33	750.00	1.03	1.00	2.64	315.48	315.48
Dsgn. L = 4.06 ft	2	0.156	0.024	117.12	87.18	117.12	833.33	750.00	1.10	1.00	7.67	315.48	315.48
Dsgn. L = 4.06 ft	2	0.116	0.040	87.18	36.53	87.18	833.33	750.00	1.28	1.00	12.70	315.48	315.48
Dsgn. L = 2.51 ft	2	0.049	0.056	36.53	-7.49	36.53	833.33	750.00	1.98	1.00	17.62	315.48	315.48
Dsgn. L = 1.50 ft	3	0.010	0.016	-0.00	-7.49	7.49	833.33	750.00	1.00	1.00	4.97	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.015		-0.13	0.13	833.33	750.00	1.00	1.00	4.87	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.014	0.078	-0.00	-10.59	10.59	833.33	750.00	1.00	1.00	24.48	315.48	315.48
Dsgn. L = 2.32 ft	2	0.061	0.078	45.97	-10.59	45.97	833.33	750.00	1.97	1.00	24.48	315.48	315.48
Dsgn. L = 4.06 ft	2	0.157	0.077	117.63	45.97	117.63	833.33	750.00	1.33	1.00	24.27	315.48	315.48
Dsgn. L = 4.06 ft	2	0.213	0.054	160.04	117.63	160.04	833.33	750.00	1.12	1.00	17.17	315.48	315.48
Dsgn. L = 4.06 ft	2	0.231	0.032	173.19	160.04	173.19	833.33	750.00	1.03	1.00	10.06	315.48	315.48
Dsgn. L = 3.87 ft	2	0.231	0.013	173.19	157.89	173.19	833.33	750.00	1.04	1.00	4.13	315.48	315.48
Dsgn. L = 4.06 ft	2	0.211	0.036	157.89	113.90	157.89	833.33	750.00	1.12	1.00	11.24	315.48	315.48
Dsgn. L = 4.06 ft	2	0.152	0.058	113.90	40.65	113.90	833.33	750.00	1.32	1.00	18.35	315.48	315.48
Dsgn. L = 2.51 ft	2	0.054	0.080	40.65	-22.59	40.65	833.33	750.00	2.20	1.00	25.31	315.48	315.48
Dsgn. L = 1.50 ft	3	0.030	0.048	-0.00	-22.59	22.59	833.33	750.00	1.00	1.00	15.03	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.047		-0.21	0.21	833.33	750.00	1.00	1.00	14.90	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.014	0.168	-0.00	-10.59	10.59	833.33	750.00	1.00	1.00	52.90	315.48	315.48
Dsgn. L = 2.32 ft	2	0.149	0.168	111.89	-10.59	111.89	833.33	750.00	1.78	1.00	52.90	315.48	315.48
Dsgn. L = 4.06 ft	2	0.357	0.167	267.87	111.89	267.87	833.33	750.00	1.32	1.00	52.69	315.48	315.48
Dsgn. L = 4.06 ft	2	0.482	0.119	361.64	267.87	361.64	833.33	750.00	1.12	1.00	37.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.524	0.071	393.19	361.64	393.19	833.33	750.00	1.03	1.00	22.47	315.48	315.48
Dsgn. L = 3.87 ft	2	0.524	0.024	393.19	364.02	393.19	833.33	750.00	1.03	1.00	7.72	315.48	315.48
Dsgn. L = 4.06 ft	2	0.485	0.072	364.02	274.06	364.02	833.33	750.00	1.10	1.00	22.83	315.48	315.48
Dsgn. L = 4.06 ft	2	0.365	0.120	274.06	121.88	274.06	833.33	750.00	1.27	1.00	37.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.163	0.168	121.88	-10.59	121.88	833.33	750.00	1.81	1.00	52.90	315.48	315.48
Dsgn. L = 1.50 ft	3	0.014	0.022	-0.00	-10.59	10.59	833.33	750.00	1.00	1.00	7.03	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.022		-0.17	0.17	833.33	750.00	1.00	1.00	6.90	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.014	0.166	-0.00	-10.59	10.59	833.33	750.00	1.00	1.00	52.48	315.48	315.48
Dsgn. L = 2.32 ft	2	0.148	0.166	110.93	-10.59	110.93	833.33	750.00	1.78	1.00	52.48	315.48	315.48
Dsgn. L = 4.06 ft	2	0.354	0.166	265.23	110.93	265.23	833.33	750.00	1.31	1.00	52.27	315.48	315.48
Dsgn. L = 4.06 ft	2	0.476	0.118	357.32	265.23	357.32	833.33	750.00	1.12	1.00	37.17	315.48	315.48
Dsgn. L = 4.06 ft	2	0.516	0.070	387.19	357.32	387.19	833.33	750.00	1.03	1.00	22.06	315.48	315.48
Dsgn. L = 3.87 ft	2	0.516	0.026	387.19	356.42	387.19	833.33	750.00	1.03	1.00	8.13	315.48	315.48
Dsgn. L = 4.06 ft	2	0.475	0.074	356.42	264.78	356.42	833.33	750.00	1.11	1.00	23.24	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.06 ft	2	0.353	0.122	264.78	110.92	264.78	833.33	750.00	1.28	1.00	38.35	315.48	315.48
Dsgn. L = 2.51 ft	2	0.148	0.169	110.92	-22.59	110.92	833.33	750.00	1.98	1.00	53.31	315.48	315.48
Dsgn. L = 1.50 ft	3	0.030	0.048	-0.00	-22.59	22.59	833.33	750.00	1.00	1.00	15.03	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.047		-0.21	0.21	833.33	750.00	1.00	1.00	14.90	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.030	0.080	-0.00	-22.59	22.59	833.33	750.00	1.00	1.00	25.31	315.48	315.48
Dsgn. L = 2.32 ft	2	0.048	0.080	35.89	-22.59	35.89	833.33	750.00	2.20	1.00	25.31	315.48	315.48
Dsgn. L = 4.06 ft	2	0.148	0.080	110.91	35.89	110.91	833.33	750.00	1.38	1.00	25.10	315.48	315.48
Dsgn. L = 4.06 ft	2	0.209	0.057	156.68	110.91	156.68	833.33	750.00	1.14	1.00	17.99	315.48	315.48
Dsgn. L = 4.06 ft	2	0.231	0.035	173.19	156.68	173.19	833.33	750.00	1.04	1.00	10.89	315.48	315.48
Dsgn. L = 3.87 ft	2	0.231	0.012	173.19	161.09	173.19	833.33	750.00	1.03	1.00	3.78	315.48	315.48
Dsgn. L = 4.06 ft	2	0.215	0.033	161.09	120.46	161.09	833.33	750.00	1.10	1.00	10.41	315.48	315.48
Dsgn. L = 4.06 ft	2	0.161	0.056	120.46	50.57	120.46	833.33	750.00	1.28	1.00	17.52	315.48	315.48
Dsgn. L = 2.51 ft	2	0.067	0.078	50.57	-10.59	50.57	833.33	750.00	1.99	1.00	24.48	315.48	315.48
Dsgn. L = 1.50 ft	3	0.014	0.022	-0.00	-10.59	10.59	833.33	750.00	1.00	1.00	7.03	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.022		-0.17	0.17	833.33	750.00	1.00	1.00	6.90	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.030	0.079	-0.00	-22.59	22.59	833.33	750.00	1.00	1.00	24.90	315.48	315.48
Dsgn. L = 2.32 ft	2	0.047	0.079	34.93	-22.59	34.93	833.33	750.00	2.20	1.00	24.90	315.48	315.48
Dsgn. L = 4.06 ft	2	0.144	0.078	108.27	34.93	108.27	833.33	750.00	1.39	1.00	24.69	315.48	315.48
Dsgn. L = 4.06 ft	2	0.203	0.056	152.36	108.27	152.36	833.33	750.00	1.13	1.00	17.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.223	0.033	167.19	152.36	167.19	833.33	750.00	1.04	1.00	10.47	315.48	315.48
Dsgn. L = 3.87 ft	2	0.223	0.012	167.19	153.49	167.19	833.33	750.00	1.03	1.00	3.72	315.48	315.48
Dsgn. L = 4.06 ft	2	0.205	0.034	153.49	111.18	153.49	833.33	750.00	1.11	1.00	10.83	315.48	315.48
Dsgn. L = 4.06 ft	2	0.148	0.057	111.18	39.61	111.18	833.33	750.00	1.32	1.00	17.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.053	0.079	39.61	-22.59	39.61	833.33	750.00	2.21	1.00	24.90	315.48	315.48
Dsgn. L = 1.50 ft	3	0.030	0.048	-0.00	-22.59	22.59	833.33	750.00	1.00	1.00	15.03	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.047		-0.21	0.21	833.33	750.00	1.00	1.00	14.90	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.030	0.169	-0.00	-22.59	22.59	833.33	750.00	1.00	1.00	53.31	315.48	315.48
Dsgn. L = 2.32 ft	2	0.134	0.169	100.85	-22.59	100.85	833.33	750.00	1.96	1.00	53.31	315.48	315.48
Dsgn. L = 4.06 ft	2	0.345	0.168	258.51	100.85	258.51	833.33	750.00	1.34	1.00	53.10	315.48	315.48
Dsgn. L = 4.06 ft	2	0.472	0.120	353.96	258.51	353.96	833.33	750.00	1.12	1.00	37.99	315.48	315.48
Dsgn. L = 4.06 ft	2	0.516	0.073	387.19	353.96	387.19	833.33	750.00	1.04	1.00	22.89	315.48	315.48
Dsgn. L = 3.87 ft	2	0.516	0.025	387.19	359.62	387.19	833.33	750.00	1.03	1.00	7.78	315.48	315.48
Dsgn. L = 4.06 ft	2	0.479	0.071	359.62	271.34	359.62	833.33	750.00	1.10	1.00	22.41	315.48	315.48
Dsgn. L = 4.06 ft	2	0.362	0.119	271.34	120.84	271.34	833.33	750.00	1.26	1.00	37.52	315.48	315.48
Dsgn. L = 2.51 ft	2	0.161	0.166	120.84	-10.59	120.84	833.33	750.00	1.81	1.00	52.48	315.48	315.48
Dsgn. L = 1.50 ft	3	0.014	0.022	-0.00	-10.59	10.59	833.33	750.00	1.00	1.00	7.03	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.022		-0.17	0.17	833.33	750.00	1.00	1.00	6.90	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.030	0.168	-0.00	-22.59	22.59	833.33	750.00	1.00	1.00	52.90	315.48	315.48
Dsgn. L = 2.32 ft	2	0.133	0.168	99.89	-22.59	99.89	833.33	750.00	1.96	1.00	52.90	315.48	315.48
Dsgn. L = 4.06 ft	2	0.341	0.167	255.87	99.89	255.87	833.33	750.00	1.33	1.00	52.69	315.48	315.48
Dsgn. L = 4.06 ft	2	0.466	0.119	349.64	255.87	349.64	833.33	750.00	1.12	1.00	37.58	315.48	315.48
Dsgn. L = 4.06 ft	2	0.508	0.071	381.19	349.64	381.19	833.33	750.00	1.04	1.00	22.47	315.48	315.48
Dsgn. L = 3.87 ft	2	0.508	0.024	381.19	352.02	381.19	833.33	750.00	1.03	1.00	7.72	315.48	315.48
Dsgn. L = 4.06 ft	2	0.469	0.072	352.02	262.06	352.02	833.33	750.00	1.11	1.00	22.83	315.48	315.48
Dsgn. L = 4.06 ft	2	0.349	0.120	262.06	109.88	262.06	833.33	750.00	1.28	1.00	37.93	315.48	315.48
Dsgn. L = 2.51 ft	2	0.147	0.168	109.88	-22.59	109.88	833.33	750.00	1.98	1.00	52.90	315.48	315.48
Dsgn. L = 1.50 ft	3	0.030	0.048	-0.00	-22.59	22.59	833.33	750.00	1.00	1.00	15.03	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.047		-0.21	0.21	833.33	750.00	1.00	1.00	14.90	315.48	315.48
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 1.73 ft	1	0.000	0.000		-0.10	0.10	833.33	750.00	1.00	1.00	0.12	315.48	315.48
Dsgn. L = 1.52 ft	1	0.010	0.056	-0.00	-7.49	7.49	833.33	750.00	1.00	1.00	17.62	315.48	315.48
Dsgn. L = 2.32 ft	2	0.044	0.056	33.21	-7.49	33.21	833.33	750.00	1.96	1.00	17.62	315.48	315.48
Dsgn. L = 4.06 ft	2	0.113	0.055	85.12	33.21	85.12	833.33	750.00	1.33	1.00	17.47	315.48	315.48
Dsgn. L = 4.06 ft	2	0.155	0.039	116.32	85.12	116.32	833.33	750.00	1.12	1.00	12.44	315.48	315.48
Dsgn. L = 4.06 ft	2	0.169	0.023	126.82	116.32	126.82	833.33	750.00	1.03	1.00	7.41	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B40**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	3.87 ft	2	0.169	0.008	126.82	117.12	126.82	833.33	750.00	1.03	1.00	2.64	315.48	315.48
Dsgn. L =	4.06 ft	2	0.156	0.024	117.12	87.18	117.12	833.33	750.00	1.10	1.00	7.67	315.48	315.48
Dsgn. L =	4.06 ft	2	0.116	0.040	87.18	36.53	87.18	833.33	750.00	1.28	1.00	12.70	315.48	315.48
Dsgn. L =	2.51 ft	2	0.049	0.056	36.53	-7.49	36.53	833.33	750.00	1.98	1.00	17.62	315.48	315.48
Dsgn. L =	1.50 ft	3	0.010	0.016	-0.00	-7.49	7.49	833.33	750.00	1.00	1.00	4.97	315.48	315.48
Dsgn. L =	1.76 ft	3	0.000	0.015		-0.13	0.13	833.33	750.00	1.00	1.00	4.87	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	+D+L+H	-0.3089	0.000
+D+L+H	2	0.8772	14.693		0.0000	0.000
	3	0.0000	14.693	+D+L+H	-0.3089	3.250

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Max Upward from all Load Conditions		61.523	61.523	
Max Upward from Load Combinations		61.523	61.523	
Max Upward from Load Cases		36.414	36.414	
Max Downward from all Load Conditions (Resis		-0.414	-0.414	
Max Downward from Load Cases (Resisting U <sub>r</sub>		-0.414	-0.414	
+D+H		25.109	25.109	
+D+L+H, LL Comb Run (**L)		24.695	33.523	
+D+L+H, LL Comb Run (*L*)		53.109	53.109	
+D+L+H, LL Comb Run (*LL)		52.695	61.523	
+D+L+H, LL Comb Run (L**)		33.523	24.695	
+D+L+H, LL Comb Run (L*L)		33.109	33.109	
+D+L+H, LL Comb Run (LL*)		61.523	52.695	
+D+L+H, LL Comb Run (LLL)		61.109	61.109	
+D+Lr+H, LL Comb Run (**L)		25.109	25.109	
+D+Lr+H, LL Comb Run (*L*)		25.109	25.109	
+D+Lr+H, LL Comb Run (*LL)		25.109	25.109	
+D+Lr+H, LL Comb Run (L**)		25.109	25.109	
+D+Lr+H, LL Comb Run (L*L)		25.109	25.109	
+D+Lr+H, LL Comb Run (LL*)		25.109	25.109	
+D+Lr+H, LL Comb Run (LLL)		25.109	25.109	
+D+S+H		34.109	34.109	
+D+0.750Lr+0.750L+H, LL Comb Run (**L)		24.799	31.419	
+D+0.750Lr+0.750L+H, LL Comb Run (*L*)		46.109	46.109	
+D+0.750Lr+0.750L+H, LL Comb Run (*LL)		45.799	52.419	
+D+0.750Lr+0.750L+H, LL Comb Run (L**)		31.419	24.799	
+D+0.750Lr+0.750L+H, LL Comb Run (L*L)		31.109	31.109	
+D+0.750Lr+0.750L+H, LL Comb Run (LL*)		52.419	45.799	
+D+0.750Lr+0.750L+H, LL Comb Run (LLL)		52.109	52.109	
+D+0.750L+0.750S+H, LL Comb Run (**L)		31.549	38.169	
+D+0.750L+0.750S+H, LL Comb Run (*L*)		52.859	52.859	
+D+0.750L+0.750S+H, LL Comb Run (*LL)		52.549	59.169	
+D+0.750L+0.750S+H, LL Comb Run (L**)		38.169	31.549	
+D+0.750L+0.750S+H, LL Comb Run (L*L)		37.859	37.859	
+D+0.750L+0.750S+H, LL Comb Run (LL*)		59.169	52.549	
+D+0.750L+0.750S+H, LL Comb Run (LLL)		58.859	58.859	
+D+0.60W+H		25.109	25.109	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		24.799	31.419	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		46.109	46.109	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		45.799	52.419	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		31.419	24.799	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		31.109	31.109	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		52.419	45.799	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		52.109	52.109	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		31.549	38.169	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		52.859	52.859	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		52.549	59.169	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		38.169	31.549	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		37.859	37.859	





Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** B40

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
+D+0.750L+0.750S+0.450W+H, LL Comb Run		59.169	52.549	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		58.859	58.859	
+0.60D+0.60W+0.60H		15.065	15.065	
+D+0.70E+0.60H		25.109	25.109	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		31.549	38.169	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		52.859	52.859	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		52.549	59.169	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		38.169	31.549	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		37.859	37.859	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		59.169	52.549	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		58.859	58.859	
+0.60D+0.70E+H		15.065	15.065	
D Only		25.109	25.109	
L Only, LL Comb Run (**L)		-0.414	8.414	
L Only, LL Comb Run (*L*)		28.000	28.000	
L Only, LL Comb Run (*LL)		27.586	36.414	
L Only, LL Comb Run (L**)		8.414	-0.414	
L Only, LL Comb Run (L*L)		8.000	8.000	
L Only, LL Comb Run (LL*)		36.414	27.586	
L Only, LL Comb Run (LLL)		36.000	36.000	
S Only		9.000	9.000	
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B41**

**CODE REFERENCES**

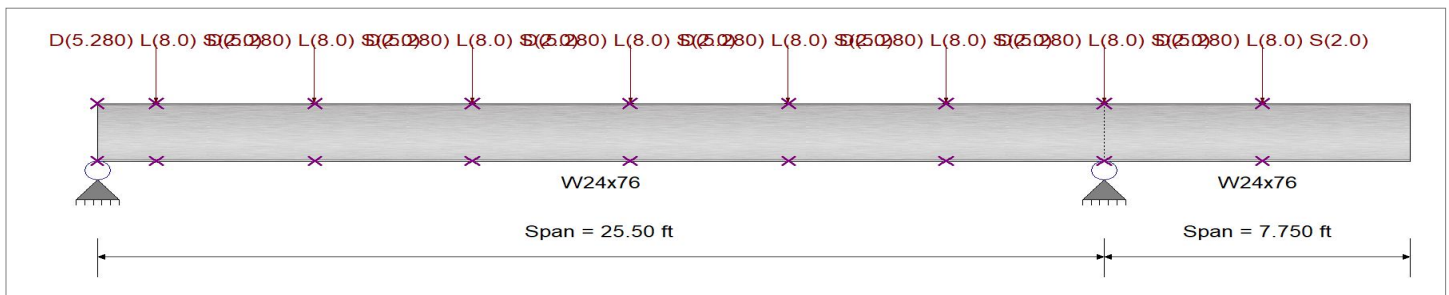
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 1.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 5.280, L = 8.0, S = 2.0 k, Starting at : 1.50 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.537 : 1</b>	Maximum Shear Stress Ratio =	<b>0.210 : 1</b>
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	402.432 k-ft	Vu : Applied	66.235 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.313 in Ratio = 978 >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.300 in Ratio = 620 >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.504 in Ratio = 607 >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.457 in Ratio = 407 >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	1.43 ft	1	0.046	0.077	34.77		34.77	833.33	750.00	1.71	1.00	24.42	315.48	315.48
Dsgn. L =	3.98 ft	1	0.135	0.077	101.60	34.77	101.60	833.33	750.00	1.36	1.00	24.27	315.48	315.48
Dsgn. L =	4.08 ft	1	0.185	0.052	138.38	101.60	138.38	833.33	750.00	1.12	1.00	16.45	315.48	315.48
Dsgn. L =	3.98 ft	1	0.190	0.027	142.56	138.38	142.56	833.33	750.00	1.01	1.00	8.63	315.48	315.48
Dsgn. L =	3.98 ft	1	0.190	0.022	142.56	115.82	142.56	833.33	750.00	1.08	1.00	7.00	315.48	315.48
Dsgn. L =	3.98 ft	1	0.154	0.047	115.82	58.14	115.82	833.33	750.00	1.24	1.00	14.82	315.48	315.48
Dsgn. L =	4.08 ft	1	0.078	0.072	58.14	-32.76	58.14	833.33	750.00	2.17	1.00	22.64	315.48	315.48
Dsgn. L =	4.00 ft	2	0.044	0.026	-0.00	-32.76	32.76	833.33	750.00	1.00	1.00	8.22	315.48	315.48
Dsgn. L =	3.75 ft	2	0.001	0.025		-0.76	0.76	833.33	750.00	1.00	1.00	7.79	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.43 ft	1	0.036	0.060	26.93		26.93	833.33	750.00	1.71	1.00	18.93	315.48	315.48
Dsgn. L =	3.98 ft	1	0.102	0.060	76.23	26.93	76.23	833.33	750.00	1.35	1.00	18.79	315.48	315.48
Dsgn. L =	4.08 ft	1	0.133	0.038	99.57	76.23	99.57	833.33	750.00	1.10	1.00	12.10	315.48	315.48
Dsgn. L =	3.98 ft	1	0.133	0.017	99.57	95.16	99.57	833.33	750.00	1.02	1.00	5.39	315.48	315.48
Dsgn. L =	3.98 ft	1	0.127	0.025	95.16	64.25	95.16	833.33	750.00	1.14	1.00	8.01	315.48	315.48
Dsgn. L =	3.98 ft	1	0.086	0.047	64.25	6.83	64.25	833.33	750.00	1.53	1.00	14.71	315.48	315.48
Dsgn. L =	4.08 ft	1	0.106	0.068	6.83	-79.28	79.28	833.33	750.00	1.78	1.00	21.42	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B41**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	2		0.106	0.063	-0.00	-79.28	79.28	833.33	750.00	1.00	1.00	19.84	315.48	315.48
Dsgn. L = 3.75 ft	2		0.001	0.062		-0.66	0.66	833.33	750.00	1.00	1.00	19.48	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L = 1.43 ft	1		0.120	0.200	90.01		90.01	833.33	750.00	1.72	1.00	63.10	315.48	315.48
Dsgn. L = 3.98 ft	1		0.353	0.200	265.03	90.01	265.03	833.33	750.00	1.37	1.00	62.97	315.48	315.48
Dsgn. L = 4.08 ft	1		0.487	0.138	365.35	265.03	365.35	833.33	750.00	1.12	1.00	43.47	315.48	315.48
Dsgn. L = 3.98 ft	1		0.512	0.076	384.08	365.35	384.08	833.33	750.00	1.02	1.00	23.96	315.48	315.48
Dsgn. L = 3.98 ft	1		0.512	0.048	384.08	325.68	384.08	833.33	750.00	1.06	1.00	15.04	315.48	315.48
Dsgn. L = 3.98 ft	1		0.434	0.109	325.68	190.13	325.68	833.33	750.00	1.19	1.00	34.54	315.48	315.48
Dsgn. L = 4.08 ft	1		0.254	0.171	190.13	-28.08	190.13	833.33	750.00	1.84	1.00	54.04	315.48	315.48
Dsgn. L = 4.00 ft	2		0.037	0.022	-0.00	-28.08	28.08	833.33	750.00	1.00	1.00	7.04	315.48	315.48
Dsgn. L = 3.75 ft	2		0.001	0.021		-0.65	0.65	833.33	750.00	1.00	1.00	6.68	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L = 1.43 ft	1		0.116	0.194	87.14		87.14	833.33	750.00	1.72	1.00	61.09	315.48	315.48
Dsgn. L = 3.98 ft	1		0.339	0.193	254.17	87.14	254.17	833.33	750.00	1.36	1.00	60.96	315.48	315.48
Dsgn. L = 4.08 ft	1		0.462	0.131	346.30	254.17	346.30	833.33	750.00	1.12	1.00	41.46	315.48	315.48
Dsgn. L = 3.98 ft	1		0.476	0.070	357.05	346.30	357.05	833.33	750.00	1.01	1.00	21.95	315.48	315.48
Dsgn. L = 3.98 ft	1		0.476	0.054	357.05	290.66	357.05	833.33	750.00	1.08	1.00	17.04	315.48	315.48
Dsgn. L = 3.98 ft	1		0.388	0.116	290.66	147.12	290.66	833.33	750.00	1.24	1.00	36.54	315.48	315.48
Dsgn. L = 4.08 ft	1		0.196	0.178	147.12	-79.28	147.12	833.33	750.00	2.17	1.00	56.05	315.48	315.48
Dsgn. L = 4.00 ft	2		0.106	0.063	-0.00	-79.28	79.28	833.33	750.00	1.00	1.00	19.84	315.48	315.48
Dsgn. L = 3.75 ft	2		0.001	0.062		-0.66	0.66	833.33	750.00	1.00	1.00	19.48	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L = 1.43 ft	1		0.042	0.070	31.41		31.41	833.33	750.00	1.71	1.00	22.06	315.48	315.48
Dsgn. L = 3.98 ft	1		0.119	0.070	89.28	31.41	89.28	833.33	750.00	1.36	1.00	21.93	315.48	315.48
Dsgn. L = 4.08 ft	1		0.156	0.045	117.35	89.28	117.35	833.33	750.00	1.10	1.00	14.23	315.48	315.48
Dsgn. L = 3.98 ft	1		0.156	0.021	117.37	113.51	117.37	833.33	750.00	1.01	1.00	6.53	315.48	315.48
Dsgn. L = 3.98 ft	1		0.151	0.028	113.51	79.20	113.51	833.33	750.00	1.13	1.00	8.87	315.48	315.48
Dsgn. L = 3.98 ft	1		0.106	0.053	79.20	14.43	79.20	833.33	750.00	1.46	1.00	16.57	315.48	315.48
Dsgn. L = 4.08 ft	1		0.111	0.077	14.43	-83.28	83.28	833.33	750.00	1.90	1.00	24.28	315.48	315.48
Dsgn. L = 4.00 ft	2		0.111	0.066	-0.00	-83.28	83.28	833.33	750.00	1.00	1.00	20.84	315.48	315.48
Dsgn. L = 3.75 ft	2		0.001	0.065		-0.66	0.66	833.33	750.00	1.00	1.00	20.48	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L = 1.43 ft	1		0.126	0.210	94.49		94.49	833.33	750.00	1.72	1.00	66.24	315.48	315.48
Dsgn. L = 3.98 ft	1		0.371	0.210	278.08	94.49	278.08	833.33	750.00	1.37	1.00	66.10	315.48	315.48
Dsgn. L = 4.08 ft	1		0.511	0.145	383.13	278.08	383.13	833.33	750.00	1.12	1.00	45.61	315.48	315.48
Dsgn. L = 3.98 ft	1		0.537	0.080	402.43	383.13	402.43	833.33	750.00	1.02	1.00	25.10	315.48	315.48
Dsgn. L = 3.98 ft	1		0.537	0.050	402.43	340.63	402.43	833.33	750.00	1.06	1.00	15.90	315.48	315.48
Dsgn. L = 3.98 ft	1		0.454	0.115	340.63	197.73	340.63	833.33	750.00	1.19	1.00	36.40	315.48	315.48
Dsgn. L = 4.08 ft	1		0.264	0.180	197.73	-32.08	197.73	833.33	750.00	1.86	1.00	56.91	315.48	315.48
Dsgn. L = 4.00 ft	2		0.043	0.025	-0.00	-32.08	32.08	833.33	750.00	1.00	1.00	8.04	315.48	315.48
Dsgn. L = 3.75 ft	2		0.001	0.024		-0.65	0.65	833.33	750.00	1.00	1.00	7.68	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L = 1.43 ft	1		0.122	0.204	91.62		91.62	833.33	750.00	1.72	1.00	64.23	315.48	315.48
Dsgn. L = 3.98 ft	1		0.356	0.203	267.23	91.62	267.23	833.33	750.00	1.36	1.00	64.10	315.48	315.48
Dsgn. L = 4.08 ft	1		0.485	0.138	364.09	267.23	364.09	833.33	750.00	1.12	1.00	43.60	315.48	315.48
Dsgn. L = 3.98 ft	1		0.501	0.073	375.40	364.09	375.40	833.33	750.00	1.01	1.00	23.09	315.48	315.48
Dsgn. L = 3.98 ft	1		0.501	0.057	375.40	305.61	375.40	833.33	750.00	1.08	1.00	17.91	315.48	315.48
Dsgn. L = 3.98 ft	1		0.407	0.122	305.61	154.72	305.61	833.33	750.00	1.24	1.00	38.41	315.48	315.48
Dsgn. L = 4.08 ft	1		0.206	0.187	154.72	-83.28	154.72	833.33	750.00	2.17	1.00	58.91	315.48	315.48
Dsgn. L = 4.00 ft	2		0.111	0.066	-0.00	-83.28	83.28	833.33	750.00	1.00	1.00	20.84	315.48	315.48
Dsgn. L = 3.75 ft	2		0.001	0.065		-0.66	0.66	833.33	750.00	1.00	1.00	20.48	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L = 1.43 ft	1		0.037	0.062	28.01		28.01	833.33	750.00	1.71	1.00	19.68	315.48	315.48
Dsgn. L = 3.98 ft	1		0.107	0.062	80.30	28.01	80.30	833.33	750.00	1.36	1.00	19.55	315.48	315.48
Dsgn. L = 4.08 ft	1		0.142	0.041	106.71	80.30	106.71	833.33	750.00	1.11	1.00	12.85	315.48	315.48
Dsgn. L = 3.98 ft	1		0.142	0.019	106.78	105.30	106.78	833.33	750.00	1.00	1.00	6.14	315.48	315.48
Dsgn. L = 3.98 ft	1		0.140	0.023	105.30	77.38	105.30	833.33	750.00	1.11	1.00	7.26	315.48	315.48
Dsgn. L = 3.98 ft	1		0.103	0.044	77.38	22.96	77.38	833.33	750.00	1.37	1.00	13.96	315.48	315.48
Dsgn. L = 4.08 ft	1		0.080	0.065	22.96	-60.08	60.08	833.33	750.00	2.16	1.00	20.66	315.48	315.48
Dsgn. L = 4.00 ft	2		0.080	0.048	-0.00	-60.08	60.08	833.33	750.00	1.00	1.00	15.04	315.48	315.48
Dsgn. L = 3.75 ft	2		0.001	0.047		-0.66	0.66	833.33	750.00	1.00	1.00	14.68	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B41**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	1.43 ft	1	0.090	0.150	67.43		67.43	833.33	750.00	1.72	1.00	47.29	315.48	315.48
Dsgn. L =	3.98 ft	1	0.264	0.149	198.30	67.43	198.30	833.33	750.00	1.37	1.00	47.16	315.48	315.48
Dsgn. L =	4.08 ft	1	0.364	0.103	272.82	198.30	272.82	833.33	750.00	1.12	1.00	32.46	315.48	315.48
Dsgn. L =	3.98 ft	1	0.381	0.056	285.88	272.82	285.88	833.33	750.00	1.02	1.00	17.75	315.48	315.48
Dsgn. L =	3.98 ft	1	0.381	0.037	285.88	240.78	285.88	833.33	750.00	1.06	1.00	11.65	315.48	315.48
Dsgn. L =	3.98 ft	1	0.321	0.084	240.78	137.52	240.78	833.33	750.00	1.20	1.00	26.35	315.48	315.48
Dsgn. L =	4.08 ft	1	0.183	0.130	137.52	-28.08	137.52	833.33	750.00	1.91	1.00	41.06	315.48	315.48
Dsgn. L =	4.00 ft	2	0.037	0.022	-0.00	-28.08	28.08	833.33	750.00	1.00	1.00	7.04	315.48	315.48
Dsgn. L =	3.75 ft	2	0.001	0.021		-0.65	0.65	833.33	750.00	1.00	1.00	6.68	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L =	1.43 ft	1	0.088	0.146	65.64		65.64	833.33	750.00	1.72	1.00	46.03	315.48	315.48
Dsgn. L =	3.98 ft	1	0.255	0.145	191.51	65.64	191.51	833.33	750.00	1.36	1.00	45.90	315.48	315.48
Dsgn. L =	4.08 ft	1	0.348	0.099	260.92	191.51	260.92	833.33	750.00	1.12	1.00	31.20	315.48	315.48
Dsgn. L =	3.98 ft	1	0.359	0.052	268.98	260.92	268.98	833.33	750.00	1.01	1.00	16.49	315.48	315.48
Dsgn. L =	3.98 ft	1	0.359	0.041	268.98	218.89	268.98	833.33	750.00	1.08	1.00	12.90	315.48	315.48
Dsgn. L =	3.98 ft	1	0.292	0.087	218.89	110.64	218.89	833.33	750.00	1.24	1.00	27.60	315.48	315.48
Dsgn. L =	4.08 ft	1	0.148	0.134	110.64	-60.08	110.64	833.33	750.00	2.17	1.00	42.31	315.48	315.48
Dsgn. L =	4.00 ft	2	0.080	0.048	-0.00	-60.08	60.08	833.33	750.00	1.00	1.00	15.04	315.48	315.48
Dsgn. L =	3.75 ft	2	0.001	0.047		-0.66	0.66	833.33	750.00	1.00	1.00	14.68	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L =	1.43 ft	1	0.040	0.066	29.80		29.80	833.33	750.00	1.71	1.00	20.93	315.48	315.48
Dsgn. L =	3.98 ft	1	0.116	0.066	87.08	29.80	87.08	833.33	750.00	1.36	1.00	20.80	315.48	315.48
Dsgn. L =	4.08 ft	1	0.158	0.045	118.61	87.08	118.61	833.33	750.00	1.12	1.00	14.10	315.48	315.48
Dsgn. L =	3.98 ft	1	0.163	0.023	122.20	118.61	122.20	833.33	750.00	1.01	1.00	7.40	315.48	315.48
Dsgn. L =	3.98 ft	1	0.163	0.019	122.20	99.27	122.20	833.33	750.00	1.08	1.00	6.00	315.48	315.48
Dsgn. L =	3.98 ft	1	0.132	0.040	99.27	49.84	99.27	833.33	750.00	1.24	1.00	12.70	315.48	315.48
Dsgn. L =	4.08 ft	1	0.066	0.062	49.84	-28.08	49.84	833.33	750.00	2.17	1.00	19.41	315.48	315.48
Dsgn. L =	4.00 ft	2	0.037	0.022	-0.00	-28.08	28.08	833.33	750.00	1.00	1.00	7.04	315.48	315.48
Dsgn. L =	3.75 ft	2	0.001	0.021		-0.65	0.65	833.33	750.00	1.00	1.00	6.68	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L =	1.43 ft	1	0.040	0.066	29.80		29.80	833.33	750.00	1.71	1.00	20.93	315.48	315.48
Dsgn. L =	3.98 ft	1	0.116	0.066	87.08	29.80	87.08	833.33	750.00	1.36	1.00	20.80	315.48	315.48
Dsgn. L =	4.08 ft	1	0.158	0.045	118.61	87.08	118.61	833.33	750.00	1.12	1.00	14.10	315.48	315.48
Dsgn. L =	3.98 ft	1	0.163	0.023	122.20	118.61	122.20	833.33	750.00	1.01	1.00	7.40	315.48	315.48
Dsgn. L =	3.98 ft	1	0.163	0.019	122.20	99.27	122.20	833.33	750.00	1.08	1.00	6.00	315.48	315.48
Dsgn. L =	3.98 ft	1	0.132	0.040	99.27	49.84	99.27	833.33	750.00	1.24	1.00	12.70	315.48	315.48
Dsgn. L =	4.08 ft	1	0.066	0.062	49.84	-28.08	49.84	833.33	750.00	2.17	1.00	19.41	315.48	315.48
Dsgn. L =	4.00 ft	2	0.037	0.022	-0.00	-28.08	28.08	833.33	750.00	1.00	1.00	7.04	315.48	315.48
Dsgn. L =	3.75 ft	2	0.001	0.021		-0.65	0.65	833.33	750.00	1.00	1.00	6.68	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L =	1.43 ft	1	0.056	0.094	42.34		42.34	833.33	750.00	1.72	1.00	29.72	315.48	315.48
Dsgn. L =	3.98 ft	1	0.163	0.094	122.07	42.34	122.07	833.33	750.00	1.36	1.00	29.59	315.48	315.48
Dsgn. L =	4.08 ft	1	0.218	0.062	163.63	122.07	163.63	833.33	750.00	1.11	1.00	19.69	315.48	315.48
Dsgn. L =	3.98 ft	1	0.219	0.031	164.09	163.63	164.09	833.33	750.00	1.00	1.00	9.78	315.48	315.48
Dsgn. L =	3.98 ft	1	0.219	0.032	164.01	125.23	164.01	833.33	750.00	1.10	1.00	10.02	315.48	315.48
Dsgn. L =	3.98 ft	1	0.167	0.063	125.23	47.28	125.23	833.33	750.00	1.32	1.00	19.92	315.48	315.48
Dsgn. L =	4.08 ft	1	0.097	0.095	47.28	-72.88	72.88	833.33	750.00	2.21	1.00	29.82	315.48	315.48
Dsgn. L =	4.00 ft	2	0.097	0.058	-0.00	-72.88	72.88	833.33	750.00	1.00	1.00	18.24	315.48	315.48
Dsgn. L =	3.75 ft	2	0.001	0.057		-0.66	0.66	833.33	750.00	1.00	1.00	17.88	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L =	1.43 ft	1	0.109	0.182	81.77		81.77	833.33	750.00	1.72	1.00	57.33	315.48	315.48
Dsgn. L =	3.98 ft	1	0.320	0.181	240.07	81.77	240.07	833.33	750.00	1.37	1.00	57.19	315.48	315.48
Dsgn. L =	4.08 ft	1	0.440	0.125	329.74	240.07	329.74	833.33	750.00	1.12	1.00	39.30	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B41**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.98 ft	1	0.459	0.068	344.59	329.74	344.59	833.33	750.00	1.02	1.00	21.39	315.48	315.48
Dsgn. L = 3.98 ft	1	0.459	0.046	344.59	288.62	344.59	833.33	750.00	1.07	1.00	14.41	315.48	315.48
Dsgn. L = 3.98 ft	1	0.385	0.102	288.62	161.84	288.62	833.33	750.00	1.20	1.00	32.31	315.48	315.48
Dsgn. L = 4.08 ft	1	0.216	0.159	161.84	-40.88	161.84	833.33	750.00	1.99	1.00	50.22	315.48	315.48
Dsgn. L = 4.00 ft	2	0.055	0.032	-0.00	-40.88	40.88	833.33	750.00	1.00	1.00	10.24	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.031	-0.65	0.65	833.33	750.00	1.00	1.00	9.88	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.107	0.178	79.98		79.98	833.33	750.00	1.72	1.00	56.07	315.48	315.48
Dsgn. L = 3.98 ft	1	0.311	0.177	233.29	79.98	233.29	833.33	750.00	1.36	1.00	55.94	315.48	315.48
Dsgn. L = 4.08 ft	1	0.424	0.121	317.84	233.29	317.84	833.33	750.00	1.12	1.00	38.04	315.48	315.48
Dsgn. L = 3.98 ft	1	0.437	0.064	327.69	317.84	327.69	833.33	750.00	1.01	1.00	20.13	315.48	315.48
Dsgn. L = 3.98 ft	1	0.437	0.050	327.69	266.73	327.69	833.33	750.00	1.08	1.00	15.66	315.48	315.48
Dsgn. L = 3.98 ft	1	0.356	0.106	266.73	134.96	266.73	833.33	750.00	1.24	1.00	33.56	315.48	315.48
Dsgn. L = 4.08 ft	1	0.180	0.163	134.96	-72.88	134.96	833.33	750.00	2.17	1.00	51.47	315.48	315.48
Dsgn. L = 4.00 ft	2	0.097	0.058	-0.00	-72.88	72.88	833.33	750.00	1.00	1.00	18.24	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.057	-0.66	0.66	833.33	750.00	1.00	1.00	17.88	315.48	315.48	
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 1.43 ft	1	0.059	0.098	44.14		44.14	833.33	750.00	1.72	1.00	30.97	315.48	315.48
Dsgn. L = 3.98 ft	1	0.172	0.098	128.86	44.14	128.86	833.33	750.00	1.36	1.00	30.84	315.48	315.48
Dsgn. L = 4.08 ft	1	0.234	0.066	175.53	128.86	175.53	833.33	750.00	1.12	1.00	20.94	315.48	315.48
Dsgn. L = 3.98 ft	1	0.241	0.035	180.91	175.53	180.91	833.33	750.00	1.01	1.00	11.04	315.48	315.48
Dsgn. L = 3.98 ft	1	0.241	0.028	180.91	147.12	180.91	833.33	750.00	1.08	1.00	8.76	315.48	315.48
Dsgn. L = 3.98 ft	1	0.196	0.059	147.12	74.16	147.12	833.33	750.00	1.24	1.00	18.66	315.48	315.48
Dsgn. L = 4.08 ft	1	0.099	0.091	74.16	-40.88	74.16	833.33	750.00	2.17	1.00	28.57	315.48	315.48
Dsgn. L = 4.00 ft	2	0.055	0.032	-0.00	-40.88	40.88	833.33	750.00	1.00	1.00	10.24	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.031	-0.65	0.65	833.33	750.00	1.00	1.00	9.88	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.037	0.062	28.01		28.01	833.33	750.00	1.71	1.00	19.68	315.48	315.48
Dsgn. L = 3.98 ft	1	0.107	0.062	80.30	28.01	80.30	833.33	750.00	1.36	1.00	19.55	315.48	315.48
Dsgn. L = 4.08 ft	1	0.142	0.041	106.71	80.30	106.71	833.33	750.00	1.11	1.00	12.85	315.48	315.48
Dsgn. L = 3.98 ft	1	0.142	0.019	106.78	105.30	106.78	833.33	750.00	1.00	1.00	6.14	315.48	315.48
Dsgn. L = 3.98 ft	1	0.140	0.023	105.30	77.38	105.30	833.33	750.00	1.11	1.00	7.26	315.48	315.48
Dsgn. L = 3.98 ft	1	0.103	0.044	77.38	22.96	77.38	833.33	750.00	1.37	1.00	13.96	315.48	315.48
Dsgn. L = 4.08 ft	1	0.080	0.065	22.96	-60.08	60.08	833.33	750.00	2.16	1.00	20.66	315.48	315.48
Dsgn. L = 4.00 ft	2	0.080	0.048	-0.00	-60.08	60.08	833.33	750.00	1.00	1.00	15.04	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.047	-0.66	0.66	833.33	750.00	1.00	1.00	14.68	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.090	0.150	67.43		67.43	833.33	750.00	1.72	1.00	47.29	315.48	315.48
Dsgn. L = 3.98 ft	1	0.264	0.149	198.30	67.43	198.30	833.33	750.00	1.37	1.00	47.16	315.48	315.48
Dsgn. L = 4.08 ft	1	0.364	0.103	272.82	198.30	272.82	833.33	750.00	1.12	1.00	32.46	315.48	315.48
Dsgn. L = 3.98 ft	1	0.381	0.056	285.88	272.82	285.88	833.33	750.00	1.02	1.00	17.75	315.48	315.48
Dsgn. L = 3.98 ft	1	0.381	0.037	285.88	240.78	285.88	833.33	750.00	1.06	1.00	11.65	315.48	315.48
Dsgn. L = 3.98 ft	1	0.321	0.084	240.78	137.52	240.78	833.33	750.00	1.20	1.00	26.35	315.48	315.48
Dsgn. L = 4.08 ft	1	0.183	0.130	137.52	-28.08	137.52	833.33	750.00	1.91	1.00	41.06	315.48	315.48
Dsgn. L = 4.00 ft	2	0.037	0.022	-0.00	-28.08	28.08	833.33	750.00	1.00	1.00	7.04	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.021	-0.65	0.65	833.33	750.00	1.00	1.00	6.68	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.088	0.146	65.64		65.64	833.33	750.00	1.72	1.00	46.03	315.48	315.48
Dsgn. L = 3.98 ft	1	0.255	0.145	191.51	65.64	191.51	833.33	750.00	1.36	1.00	45.90	315.48	315.48
Dsgn. L = 4.08 ft	1	0.348	0.099	260.92	191.51	260.92	833.33	750.00	1.12	1.00	31.20	315.48	315.48
Dsgn. L = 3.98 ft	1	0.359	0.052	268.98	260.92	268.98	833.33	750.00	1.01	1.00	16.49	315.48	315.48
Dsgn. L = 3.98 ft	1	0.359	0.041	268.98	218.89	268.98	833.33	750.00	1.08	1.00	12.90	315.48	315.48
Dsgn. L = 3.98 ft	1	0.292	0.087	218.89	110.64	218.89	833.33	750.00	1.24	1.00	27.60	315.48	315.48
Dsgn. L = 4.08 ft	1	0.148	0.134	110.64	-60.08	110.64	833.33	750.00	2.17	1.00	42.31	315.48	315.48
Dsgn. L = 4.00 ft	2	0.080	0.048	-0.00	-60.08	60.08	833.33	750.00	1.00	1.00	15.04	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.047	-0.66	0.66	833.33	750.00	1.00	1.00	14.68	315.48	315.48	
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.043	0.072	32.49		32.49	833.33	750.00	1.71	1.00	22.82	315.48	315.48
Dsgn. L = 3.98 ft	1	0.124	0.072	93.35	32.49	93.35	833.33	750.00	1.36	1.00	22.69	315.48	315.48
Dsgn. L = 4.08 ft	1	0.166	0.048	124.50	93.35	124.50	833.33	750.00	1.11	1.00	14.99	315.48	315.48
Dsgn. L = 3.98 ft	1	0.166	0.023	124.59	123.65	124.59	833.33	750.00	1.00	1.00	7.28	315.48	315.48
Dsgn. L = 3.98 ft	1	0.165	0.026	123.65	92.34	123.65	833.33	750.00	1.11	1.00	8.12	315.48	315.48
Dsgn. L = 3.98 ft	1	0.123	0.050	92.34	30.56	92.34	833.33	750.00	1.35	1.00	15.82	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B41**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios				Summary of Moment Values					Summary of Shear Values		
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.08 ft	1	0.085	0.075	30.56	-64.08	64.08	833.33	750.00	2.18	1.00	23.53	315.48	315.48
Dsgn. L = 4.00 ft	2	0.085	0.051	-0.00	-64.08	64.08	833.33	750.00	1.00	1.00	16.04	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.050		-0.66	0.66	833.33	750.00	1.00	1.00	15.68	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.096	0.160	71.91		71.91	833.33	750.00	1.72	1.00	50.42	315.48	315.48
Dsgn. L = 3.98 ft	1	0.282	0.159	211.35	71.91	211.35	833.33	750.00	1.37	1.00	50.29	315.48	315.48
Dsgn. L = 4.08 ft	1	0.387	0.110	290.61	211.35	290.61	833.33	750.00	1.12	1.00	34.59	315.48	315.48
Dsgn. L = 3.98 ft	1	0.406	0.060	304.22	290.61	304.22	833.33	750.00	1.02	1.00	18.89	315.48	315.48
Dsgn. L = 3.98 ft	1	0.406	0.040	304.22	255.73	304.22	833.33	750.00	1.07	1.00	12.51	315.48	315.48
Dsgn. L = 3.98 ft	1	0.341	0.089	255.73	145.12	255.73	833.33	750.00	1.20	1.00	28.21	315.48	315.48
Dsgn. L = 4.08 ft	1	0.193	0.139	145.12	-32.08	145.12	833.33	750.00	1.94	1.00	43.92	315.48	315.48
Dsgn. L = 4.00 ft	2	0.043	0.025	-0.00	-32.08	32.08	833.33	750.00	1.00	1.00	8.04	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.024		-0.65	0.65	833.33	750.00	1.00	1.00	7.68	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.093	0.156	70.12		70.12	833.33	750.00	1.72	1.00	49.17	315.48	315.48
Dsgn. L = 3.98 ft	1	0.273	0.155	204.57	70.12	204.57	833.33	750.00	1.36	1.00	49.04	315.48	315.48
Dsgn. L = 4.08 ft	1	0.372	0.106	278.70	204.57	278.70	833.33	750.00	1.12	1.00	33.34	315.48	315.48
Dsgn. L = 3.98 ft	1	0.383	0.056	287.33	278.70	287.33	833.33	750.00	1.01	1.00	17.63	315.48	315.48
Dsgn. L = 3.98 ft	1	0.383	0.044	287.33	233.84	287.33	833.33	750.00	1.08	1.00	13.77	315.48	315.48
Dsgn. L = 3.98 ft	1	0.312	0.093	233.84	118.24	233.84	833.33	750.00	1.24	1.00	29.47	315.48	315.48
Dsgn. L = 4.08 ft	1	0.158	0.143	118.24	-64.08	118.24	833.33	750.00	2.17	1.00	45.17	315.48	315.48
Dsgn. L = 4.00 ft	2	0.085	0.051	-0.00	-64.08	64.08	833.33	750.00	1.00	1.00	16.04	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.050		-0.66	0.66	833.33	750.00	1.00	1.00	15.68	315.48	315.48
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 1.43 ft	1	0.030	0.050	22.35		22.35	833.33	750.00	1.71	1.00	15.70	315.48	315.48
Dsgn. L = 3.98 ft	1	0.087	0.049	65.31	22.35	65.31	833.33	750.00	1.36	1.00	15.60	315.48	315.48
Dsgn. L = 4.08 ft	1	0.119	0.034	88.96	65.31	88.96	833.33	750.00	1.12	1.00	10.58	315.48	315.48
Dsgn. L = 3.98 ft	1	0.122	0.018	91.65	88.96	91.65	833.33	750.00	1.01	1.00	5.55	315.48	315.48
Dsgn. L = 3.98 ft	1	0.122	0.014	91.65	74.45	91.65	833.33	750.00	1.08	1.00	4.50	315.48	315.48
Dsgn. L = 3.98 ft	1	0.099	0.030	74.45	37.38	74.45	833.33	750.00	1.24	1.00	9.53	315.48	315.48
Dsgn. L = 4.08 ft	1	0.050	0.046	37.38	-21.06	37.38	833.33	750.00	2.17	1.00	14.56	315.48	315.48
Dsgn. L = 4.00 ft	2	0.028	0.017	-0.00	-21.06	21.06	833.33	750.00	1.00	1.00	5.28	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.016		-0.49	0.49	833.33	750.00	1.00	1.00	5.01	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.040	0.066	29.80		29.80	833.33	750.00	1.71	1.00	20.93	315.48	315.48
Dsgn. L = 3.98 ft	1	0.114	0.066	85.52	29.80	85.52	833.33	750.00	1.36	1.00	20.80	315.48	315.48
Dsgn. L = 4.08 ft	1	0.152	0.043	113.82	85.52	113.82	833.33	750.00	1.11	1.00	13.70	315.48	315.48
Dsgn. L = 3.98 ft	1	0.152	0.021	113.90	112.64	113.90	833.33	750.00	1.00	1.00	6.60	315.48	315.48
Dsgn. L = 3.98 ft	1	0.150	0.024	112.64	83.36	112.64	833.33	750.00	1.11	1.00	7.60	315.48	315.48
Dsgn. L = 3.98 ft	1	0.111	0.047	83.36	26.00	83.36	833.33	750.00	1.36	1.00	14.70	315.48	315.48
Dsgn. L = 4.08 ft	1	0.082	0.069	26.00	-61.68	61.68	833.33	750.00	2.17	1.00	21.81	315.48	315.48
Dsgn. L = 4.00 ft	2	0.082	0.049	-0.00	-61.68	61.68	833.33	750.00	1.00	1.00	15.44	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.048		-0.66	0.66	833.33	750.00	1.00	1.00	15.08	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.092	0.154	69.22		69.22	833.33	750.00	1.72	1.00	48.54	315.48	315.48
Dsgn. L = 3.98 ft	1	0.271	0.153	203.52	69.22	203.52	833.33	750.00	1.37	1.00	48.41	315.48	315.48
Dsgn. L = 4.08 ft	1	0.373	0.106	279.94	203.52	279.94	833.33	750.00	1.12	1.00	33.31	315.48	315.48
Dsgn. L = 3.98 ft	1	0.391	0.058	293.22	279.94	293.22	833.33	750.00	1.02	1.00	18.20	315.48	315.48
Dsgn. L = 3.98 ft	1	0.391	0.038	293.22	246.76	293.22	833.33	750.00	1.07	1.00	11.99	315.48	315.48
Dsgn. L = 3.98 ft	1	0.329	0.086	246.76	140.56	246.76	833.33	750.00	1.20	1.00	27.09	315.48	315.48
Dsgn. L = 4.08 ft	1	0.187	0.134	140.56	-29.68	140.56	833.33	750.00	1.92	1.00	42.20	315.48	315.48
Dsgn. L = 4.00 ft	2	0.040	0.024	-0.00	-29.68	29.68	833.33	750.00	1.00	1.00	7.44	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.022		-0.65	0.65	833.33	750.00	1.00	1.00	7.08	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.090	0.150	67.43		67.43	833.33	750.00	1.72	1.00	47.29	315.48	315.48
Dsgn. L = 3.98 ft	1	0.262	0.149	196.74	67.43	196.74	833.33	750.00	1.36	1.00	47.16	315.48	315.48
Dsgn. L = 4.08 ft	1	0.357	0.102	268.03	196.74	268.03	833.33	750.00	1.12	1.00	32.06	315.48	315.48
Dsgn. L = 3.98 ft	1	0.368	0.054	276.32	268.03	276.32	833.33	750.00	1.01	1.00	16.95	315.48	315.48
Dsgn. L = 3.98 ft	1	0.368	0.042	276.32	224.87	276.32	833.33	750.00	1.08	1.00	13.25	315.48	315.48
Dsgn. L = 3.98 ft	1	0.300	0.090	224.87	113.68	224.87	833.33	750.00	1.24	1.00	28.35	315.48	315.48
Dsgn. L = 4.08 ft	1	0.152	0.138	113.68	-61.68	113.68	833.33	750.00	2.17	1.00	43.46	315.48	315.48
Dsgn. L = 4.00 ft	2	0.082	0.049	-0.00	-61.68	61.68	833.33	750.00	1.00	1.00	15.44	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.048		-0.66	0.66	833.33	750.00	1.00	1.00	15.08	315.48	315.48





Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B41**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
<b>+0.90D+E+0.90H</b>															
Dsgn. L = 1.43 ft		1	0.030	0.050	22.35		22.35	833.33	750.00	1.71	1.00	15.70	315.48	315.48	
Dsgn. L = 3.98 ft		1	0.087	0.049	65.31	22.35	65.31	833.33	750.00	1.36	1.00	15.60	315.48	315.48	
Dsgn. L = 4.08 ft		1	0.119	0.034	88.96	65.31	88.96	833.33	750.00	1.12	1.00	10.58	315.48	315.48	
Dsgn. L = 3.98 ft		1	0.122	0.018	91.65	88.96	91.65	833.33	750.00	1.01	1.00	5.55	315.48	315.48	
Dsgn. L = 3.98 ft		1	0.122	0.014	91.65	74.45	91.65	833.33	750.00	1.08	1.00	4.50	315.48	315.48	
Dsgn. L = 3.98 ft		1	0.099	0.030	74.45	37.38	74.45	833.33	750.00	1.24	1.00	9.53	315.48	315.48	
Dsgn. L = 4.08 ft		1	0.050	0.046	37.38	-21.06	37.38	833.33	750.00	2.17	1.00	14.56	315.48	315.48	
Dsgn. L = 4.00 ft		2	0.028	0.017	-0.00	-21.06	21.06	833.33	750.00	1.00	1.00	5.28	315.48	315.48	
Dsgn. L = 3.75 ft		2	0.001	0.016		-0.49	0.49	833.33	750.00	1.00	1.00	5.01	315.48	315.48	

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.5038	12.648	+D+L+H	0.0000	0.000
	2	0.0000	12.648		-0.4570	7.750

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	43.797	66.225	
Max Upward from Load Combinations	43.797	66.225	
Max Upward from Load Cases	26.353	38.902	
Max Downward from all Load Conditions (Resis)	-1.255		
Max Downward from Load Cases (Resisting Up)	-1.255		
+D+H	17.444	27.323	
+D+L+H, LL Comb Run (*L)	16.189	44.578	
+D+L+H, LL Comb Run (L*)	43.797	48.970	
+D+L+H, LL Comb Run (LL)	42.542	66.225	
+D+Lr+H, LL Comb Run (*L)	17.444	27.323	
+D+Lr+H, LL Comb Run (L*)	17.444	27.323	
+D+Lr+H, LL Comb Run (LL)	17.444	27.323	
+D+S+H	23.719	37.048	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	16.503	40.264	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	37.209	43.558	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	36.268	56.499	
+D+0.750L+0.750S+H, LL Comb Run (*L)	21.209	47.558	
+D+0.750L+0.750S+H, LL Comb Run (L*)	41.915	50.852	
+D+0.750L+0.750S+H, LL Comb Run (LL)	40.974	63.793	
+D+0.60W+H	17.444	27.323	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	16.503	40.264	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	37.209	43.558	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	36.268	56.499	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	21.209	47.558	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	41.915	50.852	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	40.974	63.793	
+0.60D+0.60W+0.60H	10.467	16.394	
+D+0.70E+0.60H	17.444	27.323	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	21.209	47.558	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	41.915	50.852	
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	40.974	63.793	
+0.60D+0.70E+H	10.467	16.394	
D Only	17.444	27.323	
L Only, LL Comb Run (*L)	-1.255	17.255	
L Only, LL Comb Run (L*)	26.353	21.647	
L Only, LL Comb Run (LL)	25.098	38.902	
S Only	6.275	9.725	
H Only			

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **B42**

### CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

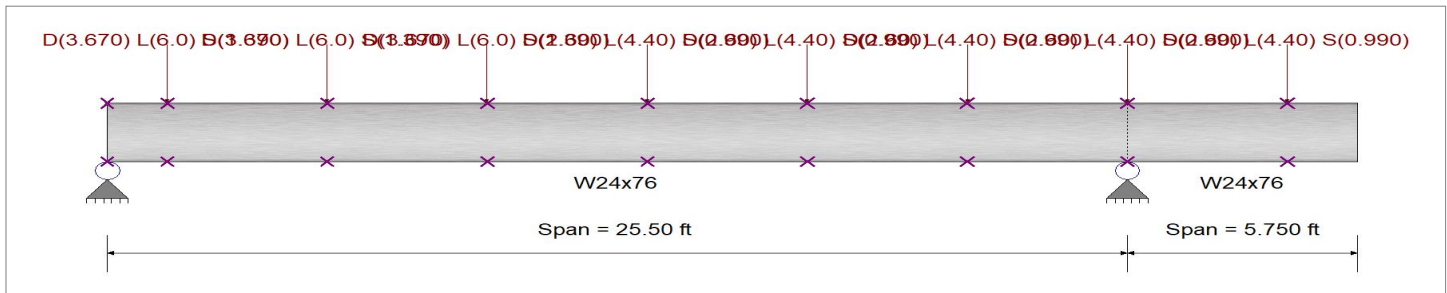
### Material Properties

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

### Unbraced Lengths

First Brace starts at 1.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 2.60, L = 4.40, S = 0.990 k, Starting at : 13.50 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : D = 3.670, L = 6.0, S = 1.390 k @ 5.50 ft

Point Load : D = 3.670, L = 6.0, S = 1.390 k @ 9.50 ft

Point Load : D = 3.670, L = 6.0, S = 1.390 k @ 1.50 ft

### DESIGN SUMMARY

**Design OK**

Maximum Bending Stress Ratio =	<b>0.331</b> : 1	Maximum Shear Stress Ratio =	<b>0.143</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	248.621 k-ft	Vu : Applied	45.151 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.199 in Ratio = <b>1,539</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.139 in Ratio = <b>993</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.317 in Ratio = <b>966</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.212 in Ratio = <b>651</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	1.43 ft	1	0.031	0.051	23.07		23.07	833.33	750.00	1.71	1.00	16.23	315.48	315.48
Dsgn. L =	3.98 ft	1	0.088	0.051	66.13	23.07	66.13	833.33	750.00	1.36	1.00	16.08	315.48	315.48
Dsgn. L =	4.08 ft	1	0.117	0.033	87.68	66.13	87.68	833.33	750.00	1.10	1.00	10.52	315.48	315.48
Dsgn. L =	3.98 ft	1	0.117	0.016	87.73	86.15	87.73	833.33	750.00	1.01	1.00	4.95	315.48	315.48
Dsgn. L =	3.98 ft	1	0.115	0.015	86.15	68.51	86.15	833.33	750.00	1.08	1.00	4.68	315.48	315.48
Dsgn. L =	3.98 ft	1	0.091	0.028	68.51	34.79	68.51	833.33	750.00	1.23	1.00	8.74	315.48	315.48
Dsgn. L =	4.08 ft	1	0.046	0.041	34.79	-16.32	34.79	833.33	750.00	2.15	1.00	12.82	315.48	315.48
Dsgn. L =	3.98 ft	2	0.022	0.013	-0.00	-16.32	16.32	833.33	750.00	1.00	1.00	4.25	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B42**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+0.50Lr+1.60L+1.60H, LL	Dsgn. L = 1.77 ft	2	0.000	0.012		-0.24	0.24	833.33	750.00	1.00	1.00	3.83	315.48	315.48
	Dsgn. L = 1.43 ft	1	0.024	0.041	18.20		18.20	833.33	750.00	1.71	1.00	12.81	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.068	0.040	50.71	18.20	50.71	833.33	750.00	1.35	1.00	12.68	315.48	315.48
	Dsgn. L = 4.08 ft	1	0.086	0.025	64.68	50.71	64.68	833.33	750.00	1.09	1.00	7.91	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.086	0.010	64.68	58.97	64.68	833.33	750.00	1.03	1.00	3.14	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.079	0.016	58.97	39.46	58.97	833.33	750.00	1.14	1.00	5.11	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.053	0.027	39.46	6.17	39.46	833.33	750.00	1.48	1.00	8.60	315.48	315.48
	Dsgn. L = 4.08 ft	1	0.056	0.038	6.17	-42.15	42.15	833.33	750.00	1.87	1.00	12.09	315.48	315.48
	Dsgn. L = 3.98 ft	2	0.056	0.034	-0.00	-42.15	42.15	833.33	750.00	1.00	1.00	10.68	315.48	315.48
	Dsgn. L = 1.77 ft	2	0.000	0.033		-0.36	0.36	833.33	750.00	1.00	1.00	10.32	315.48	315.48
+1.20D+0.50Lr+1.60L+1.60H, LL	Dsgn. L = 1.43 ft	1	0.082	0.137	61.49		61.49	833.33	750.00	1.72	1.00	43.13	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.236	0.136	177.11	61.49	177.11	833.33	750.00	1.36	1.00	43.00	315.48	315.48
	Dsgn. L = 4.08 ft	1	0.316	0.091	237.35	177.11	237.35	833.33	750.00	1.11	1.00	28.63	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.317	0.045	237.88	237.35	237.88	833.33	750.00	1.00	1.00	14.25	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.317	0.034	237.81	196.59	237.81	833.33	750.00	1.07	1.00	10.64	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.262	0.067	196.59	113.74	196.59	833.33	750.00	1.19	1.00	21.16	315.48	315.48
	Dsgn. L = 4.08 ft	1	0.152	0.100	113.74	-13.99	113.74	833.33	750.00	1.80	1.00	31.69	315.48	315.48
	Dsgn. L = 3.98 ft	2	0.019	0.012	-0.00	-13.99	13.99	833.33	750.00	1.00	1.00	3.64	315.48	315.48
	Dsgn. L = 1.77 ft	2	0.000	0.010		-0.21	0.21	833.33	750.00	1.00	1.00	3.28	315.48	315.48
+1.20D+0.50Lr+1.60L+1.60H, LL	Dsgn. L = 1.43 ft	1	0.080	0.133	59.92		59.92	833.33	750.00	1.72	1.00	42.02	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.228	0.133	171.14	59.92	171.14	833.33	750.00	1.36	1.00	41.89	315.48	315.48
	Dsgn. L = 4.08 ft	1	0.302	0.087	226.87	171.14	226.87	833.33	750.00	1.11	1.00	27.53	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.303	0.042	226.98	222.95	226.98	833.33	750.00	1.01	1.00	13.15	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.297	0.037	222.95	177.33	222.95	833.33	750.00	1.09	1.00	11.74	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.236	0.071	177.33	90.08	177.33	833.33	750.00	1.23	1.00	22.26	315.48	315.48
	Dsgn. L = 4.08 ft	1	0.120	0.104	90.08	-42.15	90.08	833.33	750.00	2.15	1.00	32.79	315.48	315.48
	Dsgn. L = 3.98 ft	2	0.056	0.034	-0.00	-42.15	42.15	833.33	750.00	1.00	1.00	10.68	315.48	315.48
	Dsgn. L = 1.77 ft	2	0.000	0.033		-0.36	0.36	833.33	750.00	1.00	1.00	10.32	315.48	315.48
+1.20D+1.60L+0.50S+1.60H, LL (	Dsgn. L = 1.43 ft	1	0.028	0.047	21.09		21.09	833.33	750.00	1.71	1.00	14.83	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.079	0.047	58.93	21.09	58.93	833.33	750.00	1.35	1.00	14.70	315.48	315.48
	Dsgn. L = 4.08 ft	1	0.101	0.029	75.55	58.93	75.55	833.33	750.00	1.09	1.00	9.24	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.101	0.012	75.55	69.61	75.55	833.33	750.00	1.03	1.00	3.77	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.093	0.018	69.61	47.91	69.61	833.33	750.00	1.14	1.00	5.67	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.064	0.031	47.91	10.46	47.91	833.33	750.00	1.43	1.00	9.65	315.48	315.48
	Dsgn. L = 4.08 ft	1	0.059	0.043	10.46	-44.13	44.13	833.33	750.00	2.00	1.00	13.64	315.48	315.48
	Dsgn. L = 3.98 ft	2	0.059	0.035	-0.00	-44.13	44.13	833.33	750.00	1.00	1.00	11.18	315.48	315.48
	Dsgn. L = 1.77 ft	2	0.000	0.034		-0.37	0.37	833.33	750.00	1.00	1.00	10.82	315.48	315.48
+1.20D+1.60L+0.50S+1.60H, LL (	Dsgn. L = 1.43 ft	1	0.086	0.143	64.38		64.38	833.33	750.00	1.72	1.00	45.15	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.247	0.143	185.34	64.38	185.34	833.33	750.00	1.36	1.00	45.02	315.48	315.48
	Dsgn. L = 4.08 ft	1	0.331	0.095	248.22	185.34	248.22	833.33	750.00	1.11	1.00	29.96	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.331	0.047	248.62	248.22	248.62	833.33	750.00	1.00	1.00	14.89	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.331	0.035	248.45	205.04	248.45	833.33	750.00	1.07	1.00	11.19	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.273	0.070	205.04	118.03	205.04	833.33	750.00	1.20	1.00	22.21	315.48	315.48
	Dsgn. L = 4.08 ft	1	0.157	0.105	118.03	-15.97	118.03	833.33	750.00	1.82	1.00	33.24	315.48	315.48
	Dsgn. L = 3.98 ft	2	0.021	0.013	-0.00	-15.97	15.97	833.33	750.00	1.00	1.00	4.14	315.48	315.48
	Dsgn. L = 1.77 ft	2	0.000	0.012		-0.22	0.22	833.33	750.00	1.00	1.00	3.78	315.48	315.48
+1.20D+1.60L+0.50S+1.60H, LL (	Dsgn. L = 1.43 ft	1	0.084	0.140	62.81		62.81	833.33	750.00	1.72	1.00	44.05	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.239	0.139	179.37	62.81	179.37	833.33	750.00	1.36	1.00	43.92	315.48	315.48
	Dsgn. L = 4.08 ft	1	0.317	0.091	237.74	179.37	237.74	833.33	750.00	1.11	1.00	28.85	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.317	0.044	237.86	233.59	237.86	833.33	750.00	1.01	1.00	13.78	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.311	0.039	233.59	185.78	233.59	833.33	750.00	1.09	1.00	12.30	315.48	315.48
	Dsgn. L = 3.98 ft	1	0.248	0.074	185.78	94.37	185.78	833.33	750.00	1.23	1.00	23.31	315.48	315.48
	Dsgn. L = 4.08 ft	1	0.126	0.109	94.37	-44.13	94.37	833.33	750.00	2.15	1.00	34.34	315.48	315.48
	Dsgn. L = 3.98 ft	2	0.059	0.035	-0.00	-44.13	44.13	833.33	750.00	1.00	1.00	11.18	315.48	315.48
	Dsgn. L = 1.77 ft	2	0.000	0.034		-0.37	0.37	833.33	750.00	1.00	1.00	10.82	315.48	315.48
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.43 ft	1	0.025	0.042	18.79		18.79	833.33	750.00	1.71	1.00	13.22	315.48	315.48



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B42**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.98 ft	1	0.071	0.042	52.95	18.79	52.95	833.33	750.00	1.35	1.00	13.09	315.48	315.48
Dsgn. L = 4.08 ft	1	0.091	0.026	68.60	52.95	68.60	833.33	750.00	1.10	1.00	8.33	315.48	315.48
Dsgn. L = 3.98 ft	1	0.091	0.011	68.60	64.55	68.60	833.33	750.00	1.02	1.00	3.55	315.48	315.48
Dsgn. L = 3.98 ft	1	0.086	0.015	64.55	46.68	64.55	833.33	750.00	1.12	1.00	4.70	315.48	315.48
Dsgn. L = 3.98 ft	1	0.062	0.026	46.68	15.04	46.68	833.33	750.00	1.35	1.00	8.18	315.48	315.48
Dsgn. L = 4.08 ft	1	0.042	0.037	15.04	-31.59	31.59	833.33	750.00	2.18	1.00	11.67	315.48	315.48
Dsgn. L = 3.98 ft	2	0.042	0.025	-0.00	-31.59	31.59	833.33	750.00	1.00	1.00	8.04	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.024	-0.30	0.30	833.33	750.00	1.00	1.00	7.68	315.48	315.48	
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.061	0.102	45.85		45.85	833.33	750.00	1.72	1.00	32.17	315.48	315.48
Dsgn. L = 3.98 ft	1	0.176	0.102	131.95	45.85	131.95	833.33	750.00	1.36	1.00	32.04	315.48	315.48
Dsgn. L = 4.08 ft	1	0.235	0.067	176.52	131.95	176.52	833.33	750.00	1.11	1.00	21.27	315.48	315.48
Dsgn. L = 3.98 ft	1	0.236	0.033	176.72	176.32	176.72	833.33	750.00	1.00	1.00	10.50	315.48	315.48
Dsgn. L = 3.98 ft	1	0.235	0.026	176.32	144.89	176.32	833.33	750.00	1.07	1.00	8.15	315.48	315.48
Dsgn. L = 3.98 ft	1	0.193	0.051	144.89	82.27	144.89	833.33	750.00	1.20	1.00	16.03	315.48	315.48
Dsgn. L = 4.08 ft	1	0.110	0.076	82.27	-13.99	82.27	833.33	750.00	1.86	1.00	23.93	315.48	315.48
Dsgn. L = 3.98 ft	2	0.019	0.012	-0.00	-13.99	13.99	833.33	750.00	1.00	1.00	3.64	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.010	-0.21	0.21	833.33	750.00	1.00	1.00	3.28	315.48	315.48	
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.060	0.100	44.86		44.86	833.33	750.00	1.72	1.00	31.48	315.48	315.48
Dsgn. L = 3.98 ft	1	0.171	0.099	128.22	44.86	128.22	833.33	750.00	1.36	1.00	31.35	315.48	315.48
Dsgn. L = 4.08 ft	1	0.227	0.065	169.98	128.22	169.98	833.33	750.00	1.11	1.00	20.58	315.48	315.48
Dsgn. L = 3.98 ft	1	0.227	0.031	170.06	167.03	170.06	833.33	750.00	1.01	1.00	9.81	315.48	315.48
Dsgn. L = 3.98 ft	1	0.223	0.028	167.03	132.85	167.03	833.33	750.00	1.09	1.00	8.84	315.48	315.48
Dsgn. L = 3.98 ft	1	0.177	0.053	132.85	67.48	132.85	833.33	750.00	1.23	1.00	16.72	315.48	315.48
Dsgn. L = 4.08 ft	1	0.090	0.078	67.48	-31.59	67.48	833.33	750.00	2.15	1.00	24.62	315.48	315.48
Dsgn. L = 3.98 ft	2	0.042	0.025	-0.00	-31.59	31.59	833.33	750.00	1.00	1.00	8.04	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.024	-0.30	0.30	833.33	750.00	1.00	1.00	7.68	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.026	0.044	19.77		19.77	833.33	750.00	1.71	1.00	13.91	315.48	315.48
Dsgn. L = 3.98 ft	1	0.076	0.044	56.68	19.77	56.68	833.33	750.00	1.36	1.00	13.78	315.48	315.48
Dsgn. L = 4.08 ft	1	0.100	0.029	75.15	56.68	75.15	833.33	750.00	1.10	1.00	9.02	315.48	315.48
Dsgn. L = 3.98 ft	1	0.100	0.013	75.20	73.84	75.20	833.33	750.00	1.01	1.00	4.24	315.48	315.48
Dsgn. L = 3.98 ft	1	0.098	0.013	73.84	58.72	73.84	833.33	750.00	1.08	1.00	4.01	315.48	315.48
Dsgn. L = 3.98 ft	1	0.078	0.024	58.72	29.82	58.72	833.33	750.00	1.23	1.00	7.49	315.48	315.48
Dsgn. L = 4.08 ft	1	0.040	0.035	29.82	-13.99	29.82	833.33	750.00	2.15	1.00	10.98	315.48	315.48
Dsgn. L = 3.98 ft	2	0.019	0.012	-0.00	-13.99	13.99	833.33	750.00	1.00	1.00	3.64	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.010	-0.21	0.21	833.33	750.00	1.00	1.00	3.28	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.026	0.044	19.77		19.77	833.33	750.00	1.71	1.00	13.91	315.48	315.48
Dsgn. L = 3.98 ft	1	0.076	0.044	56.68	19.77	56.68	833.33	750.00	1.36	1.00	13.78	315.48	315.48
Dsgn. L = 4.08 ft	1	0.100	0.029	75.15	56.68	75.15	833.33	750.00	1.10	1.00	9.02	315.48	315.48
Dsgn. L = 3.98 ft	1	0.100	0.013	75.20	73.84	75.20	833.33	750.00	1.01	1.00	4.24	315.48	315.48
Dsgn. L = 3.98 ft	1	0.098	0.013	73.84	58.72	73.84	833.33	750.00	1.08	1.00	4.01	315.48	315.48
Dsgn. L = 3.98 ft	1	0.078	0.024	58.72	29.82	58.72	833.33	750.00	1.23	1.00	7.49	315.48	315.48
Dsgn. L = 4.08 ft	1	0.040	0.035	29.82	-13.99	29.82	833.33	750.00	2.15	1.00	10.98	315.48	315.48
Dsgn. L = 3.98 ft	2	0.019	0.012	-0.00	-13.99	13.99	833.33	750.00	1.00	1.00	3.64	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.010	-0.21	0.21	833.33	750.00	1.00	1.00	3.28	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.037	0.062	28.04		28.04	833.33	750.00	1.71	1.00	19.70	315.48	315.48
Dsgn. L = 3.98 ft	1	0.106	0.062	79.27	28.04	79.27	833.33	750.00	1.35	1.00	19.57	315.48	315.48
Dsgn. L = 4.08 ft	1	0.138	0.040	103.40	79.27	103.40	833.33	750.00	1.10	1.00	12.58	315.48	315.48
Dsgn. L = 3.98 ft	1	0.138	0.018	103.40	98.59	103.40	833.33	750.00	1.02	1.00	5.58	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B42**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.98 ft	1	0.131	0.021	98.59	73.71	98.59	833.33	750.00	1.11	1.00	6.48	315.48	315.48
Dsgn. L = 3.98 ft	1	0.098	0.037	73.71	28.76	73.71	833.33	750.00	1.31	1.00	11.55	315.48	315.48
Dsgn. L = 4.08 ft	1	0.051	0.053	28.76	-37.92	37.92	833.33	750.00	2.23	1.00	16.62	315.48	315.48
Dsgn. L = 3.98 ft	2	0.051	0.031	-0.00	-37.92	37.92	833.33	750.00	1.00	1.00	9.63	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.029		-0.33	0.33	833.33	750.00	1.00	1.00	9.27	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.073	0.123	55.10		55.10	833.33	750.00	1.72	1.00	38.65	315.48	315.48
Dsgn. L = 3.98 ft	1	0.211	0.122	158.27	55.10	158.27	833.33	750.00	1.36	1.00	38.52	315.48	315.48
Dsgn. L = 4.08 ft	1	0.282	0.081	211.32	158.27	211.32	833.33	750.00	1.11	1.00	25.53	315.48	315.48
Dsgn. L = 3.98 ft	1	0.282	0.040	211.49	210.37	211.49	833.33	750.00	1.00	1.00	12.53	315.48	315.48
Dsgn. L = 3.98 ft	1	0.280	0.031	210.37	171.91	210.37	833.33	750.00	1.08	1.00	9.93	315.48	315.48
Dsgn. L = 3.98 ft	1	0.229	0.061	171.91	96.00	171.91	833.33	750.00	1.21	1.00	19.40	315.48	315.48
Dsgn. L = 4.08 ft	1	0.128	0.092	96.00	-20.32	96.00	833.33	750.00	1.92	1.00	28.87	315.48	315.48
Dsgn. L = 3.98 ft	2	0.027	0.017	-0.00	-20.32	20.32	833.33	750.00	1.00	1.00	5.23	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.015		-0.24	0.24	833.33	750.00	1.00	1.00	4.87	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.072	0.120	54.11		54.11	833.33	750.00	1.72	1.00	37.96	315.48	315.48
Dsgn. L = 3.98 ft	1	0.206	0.120	154.54	54.11	154.54	833.33	750.00	1.36	1.00	37.83	315.48	315.48
Dsgn. L = 4.08 ft	1	0.273	0.079	204.77	154.54	204.77	833.33	750.00	1.11	1.00	24.84	315.48	315.48
Dsgn. L = 3.98 ft	1	0.273	0.038	204.87	201.08	204.87	833.33	750.00	1.01	1.00	11.84	315.48	315.48
Dsgn. L = 3.98 ft	1	0.268	0.034	201.08	159.87	201.08	833.33	750.00	1.09	1.00	10.62	315.48	315.48
Dsgn. L = 3.98 ft	1	0.213	0.064	159.87	81.21	159.87	833.33	750.00	1.23	1.00	20.09	315.48	315.48
Dsgn. L = 4.08 ft	1	0.108	0.094	81.21	-37.92	81.21	833.33	750.00	2.15	1.00	29.56	315.48	315.48
Dsgn. L = 3.98 ft	2	0.051	0.031	-0.00	-37.92	37.92	833.33	750.00	1.00	1.00	9.63	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.029		-0.33	0.33	833.33	750.00	1.00	1.00	9.27	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 1.43 ft	1	0.039	0.065	29.02		29.02	833.33	750.00	1.71	1.00	20.39	315.48	315.48
Dsgn. L = 3.98 ft	1	0.111	0.064	83.00	29.02	83.00	833.33	750.00	1.36	1.00	20.26	315.48	315.48
Dsgn. L = 4.08 ft	1	0.147	0.042	109.95	83.00	109.95	833.33	750.00	1.11	1.00	13.27	315.48	315.48
Dsgn. L = 3.98 ft	1	0.147	0.020	110.01	107.89	110.01	833.33	750.00	1.01	1.00	6.27	315.48	315.48
Dsgn. L = 3.98 ft	1	0.144	0.018	107.89	85.74	107.89	833.33	750.00	1.09	1.00	5.79	315.48	315.48
Dsgn. L = 3.98 ft	1	0.114	0.034	85.74	43.55	85.74	833.33	750.00	1.23	1.00	10.86	315.48	315.48
Dsgn. L = 4.08 ft	1	0.058	0.051	43.55	-20.32	43.55	833.33	750.00	2.15	1.00	15.93	315.48	315.48
Dsgn. L = 3.98 ft	2	0.027	0.017	-0.00	-20.32	20.32	833.33	750.00	1.00	1.00	5.23	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.015		-0.24	0.24	833.33	750.00	1.00	1.00	4.87	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.025	0.042	18.79		18.79	833.33	750.00	1.71	1.00	13.22	315.48	315.48
Dsgn. L = 3.98 ft	1	0.071	0.042	52.95	18.79	52.95	833.33	750.00	1.35	1.00	13.09	315.48	315.48
Dsgn. L = 4.08 ft	1	0.091	0.026	68.60	52.95	68.60	833.33	750.00	1.10	1.00	8.33	315.48	315.48
Dsgn. L = 3.98 ft	1	0.091	0.011	68.60	64.55	68.60	833.33	750.00	1.02	1.00	3.55	315.48	315.48
Dsgn. L = 3.98 ft	1	0.086	0.015	64.55	46.68	64.55	833.33	750.00	1.12	1.00	4.70	315.48	315.48
Dsgn. L = 3.98 ft	1	0.062	0.026	46.68	15.04	46.68	833.33	750.00	1.35	1.00	8.18	315.48	315.48
Dsgn. L = 4.08 ft	1	0.042	0.037	15.04	-31.59	31.59	833.33	750.00	2.18	1.00	11.67	315.48	315.48
Dsgn. L = 3.98 ft	2	0.042	0.025	-0.00	-31.59	31.59	833.33	750.00	1.00	1.00	8.04	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.024		-0.30	0.30	833.33	750.00	1.00	1.00	7.68	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.061	0.102	45.85		45.85	833.33	750.00	1.72	1.00	32.17	315.48	315.48
Dsgn. L = 3.98 ft	1	0.176	0.102	131.95	45.85	131.95	833.33	750.00	1.36	1.00	32.04	315.48	315.48
Dsgn. L = 4.08 ft	1	0.235	0.067	176.52	131.95	176.52	833.33	750.00	1.11	1.00	21.27	315.48	315.48
Dsgn. L = 3.98 ft	1	0.236	0.033	176.72	176.32	176.72	833.33	750.00	1.00	1.00	10.50	315.48	315.48
Dsgn. L = 3.98 ft	1	0.235	0.026	176.32	144.89	176.32	833.33	750.00	1.07	1.00	8.15	315.48	315.48
Dsgn. L = 3.98 ft	1	0.193	0.051	144.89	82.27	144.89	833.33	750.00	1.20	1.00	16.03	315.48	315.48
Dsgn. L = 4.08 ft	1	0.110	0.076	82.27	-13.99	82.27	833.33	750.00	1.86	1.00	23.93	315.48	315.48
Dsgn. L = 3.98 ft	2	0.019	0.012	-0.00	-13.99	13.99	833.33	750.00	1.00	1.00	3.64	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.010		-0.21	0.21	833.33	750.00	1.00	1.00	3.28	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.060	0.100	44.86		44.86	833.33	750.00	1.72	1.00	31.48	315.48	315.48
Dsgn. L = 3.98 ft	1	0.171	0.099	128.22	44.86	128.22	833.33	750.00	1.36	1.00	31.35	315.48	315.48
Dsgn. L = 4.08 ft	1	0.227	0.065	169.98	128.22	169.98	833.33	750.00	1.11	1.00	20.58	315.48	315.48
Dsgn. L = 3.98 ft	1	0.227	0.031	170.06	167.03	170.06	833.33	750.00	1.01	1.00	9.81	315.48	315.48
Dsgn. L = 3.98 ft	1	0.223	0.028	167.03	132.85	167.03	833.33	750.00	1.09	1.00	8.84	315.48	315.48
Dsgn. L = 3.98 ft	1	0.177	0.053	132.85	67.48	132.85	833.33	750.00	1.23	1.00	16.72	315.48	315.48
Dsgn. L = 4.08 ft	1	0.090	0.078	67.48	-31.59	67.48	833.33	750.00	2.15	1.00	24.62	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B42**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.98 ft	2	0.042	0.025	-0.00	-31.59	31.59	833.33	750.00	1.00	1.00	8.04	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.024		-0.30	0.30	833.33	750.00	1.00	1.00	7.68	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.029	0.048	21.68		21.68	833.33	750.00	1.71	1.00	15.25	315.48	315.48
Dsgn. L = 3.98 ft	1	0.082	0.048	61.17	21.68	61.17	833.33	750.00	1.35	1.00	15.12	315.48	315.48
Dsgn. L = 4.08 ft	1	0.106	0.031	79.48	61.17	79.48	833.33	750.00	1.10	1.00	9.65	315.48	315.48
Dsgn. L = 3.98 ft	1	0.106	0.013	79.48	75.19	79.48	833.33	750.00	1.02	1.00	4.18	315.48	315.48
Dsgn. L = 3.98 ft	1	0.100	0.017	75.19	55.13	75.19	833.33	750.00	1.11	1.00	5.26	315.48	315.48
Dsgn. L = 3.98 ft	1	0.074	0.029	55.13	19.33	55.13	833.33	750.00	1.33	1.00	9.23	315.48	315.48
Dsgn. L = 4.08 ft	1	0.045	0.042	19.33	-33.57	33.57	833.33	750.00	2.20	1.00	13.22	315.48	315.48
Dsgn. L = 3.98 ft	2	0.045	0.027	-0.00	-33.57	33.57	833.33	750.00	1.00	1.00	8.54	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.026		-0.31	0.31	833.33	750.00	1.00	1.00	8.18	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.065	0.108	48.74		48.74	833.33	750.00	1.72	1.00	34.20	315.48	315.48
Dsgn. L = 3.98 ft	1	0.187	0.108	140.18	48.74	140.18	833.33	750.00	1.36	1.00	34.07	315.48	315.48
Dsgn. L = 4.08 ft	1	0.250	0.072	187.40	140.18	187.40	833.33	750.00	1.11	1.00	22.60	315.48	315.48
Dsgn. L = 3.98 ft	1	0.250	0.035	187.56	186.96	187.56	833.33	750.00	1.00	1.00	11.13	315.48	315.48
Dsgn. L = 3.98 ft	1	0.249	0.028	186.96	153.34	186.96	833.33	750.00	1.07	1.00	8.71	315.48	315.48
Dsgn. L = 3.98 ft	1	0.204	0.054	153.34	86.56	153.34	833.33	750.00	1.20	1.00	17.09	315.48	315.48
Dsgn. L = 4.08 ft	1	0.115	0.081	86.56	-15.97	86.56	833.33	750.00	1.88	1.00	25.47	315.48	315.48
Dsgn. L = 3.98 ft	2	0.021	0.013	-0.00	-15.97	15.97	833.33	750.00	1.00	1.00	4.14	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.012		-0.22	0.22	833.33	750.00	1.00	1.00	3.78	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.064	0.106	47.75		47.75	833.33	750.00	1.72	1.00	33.51	315.48	315.48
Dsgn. L = 3.98 ft	1	0.182	0.106	136.44	47.75	136.44	833.33	750.00	1.36	1.00	33.38	315.48	315.48
Dsgn. L = 4.08 ft	1	0.241	0.069	180.85	136.44	180.85	833.33	750.00	1.11	1.00	21.91	315.48	315.48
Dsgn. L = 3.98 ft	1	0.241	0.033	180.94	177.67	180.94	833.33	750.00	1.01	1.00	10.44	315.48	315.48
Dsgn. L = 3.98 ft	1	0.237	0.030	177.67	141.30	177.67	833.33	750.00	1.09	1.00	9.40	315.48	315.48
Dsgn. L = 3.98 ft	1	0.188	0.056	141.30	71.77	141.30	833.33	750.00	1.23	1.00	17.78	315.48	315.48
Dsgn. L = 4.08 ft	1	0.096	0.083	71.77	-33.57	71.77	833.33	750.00	2.15	1.00	26.16	315.48	315.48
Dsgn. L = 3.98 ft	2	0.045	0.027	-0.00	-33.57	33.57	833.33	750.00	1.00	1.00	8.54	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.026		-0.31	0.31	833.33	750.00	1.00	1.00	8.18	315.48	315.48
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 1.43 ft	1	0.020	0.033	14.83		14.83	833.33	750.00	1.71	1.00	10.43	315.48	315.48
Dsgn. L = 3.98 ft	1	0.057	0.033	42.51	14.83	42.51	833.33	750.00	1.36	1.00	10.34	315.48	315.48
Dsgn. L = 4.08 ft	1	0.075	0.021	56.36	42.51	56.36	833.33	750.00	1.10	1.00	6.76	315.48	315.48
Dsgn. L = 3.98 ft	1	0.075	0.010	56.40	55.38	56.40	833.33	750.00	1.01	1.00	3.18	315.48	315.48
Dsgn. L = 3.98 ft	1	0.074	0.010	55.38	44.04	55.38	833.33	750.00	1.08	1.00	3.01	315.48	315.48
Dsgn. L = 3.98 ft	1	0.059	0.018	44.04	22.37	44.04	833.33	750.00	1.23	1.00	5.62	315.48	315.48
Dsgn. L = 4.08 ft	1	0.030	0.026	22.37	-10.49	22.37	833.33	750.00	2.15	1.00	8.24	315.48	315.48
Dsgn. L = 3.98 ft	2	0.014	0.009	-0.00	-10.49	10.49	833.33	750.00	1.00	1.00	2.73	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.008		-0.16	0.16	833.33	750.00	1.00	1.00	2.46	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.027	0.044	19.95		19.95	833.33	750.00	1.71	1.00	14.03	315.48	315.48
Dsgn. L = 3.98 ft	1	0.075	0.044	56.24	19.95	56.24	833.33	750.00	1.35	1.00	13.90	315.48	315.48
Dsgn. L = 4.08 ft	1	0.097	0.028	72.95	56.24	72.95	833.33	750.00	1.10	1.00	8.86	315.48	315.48
Dsgn. L = 3.98 ft	1	0.097	0.012	72.95	68.80	72.95	833.33	750.00	1.02	1.00	3.80	315.48	315.48
Dsgn. L = 3.98 ft	1	0.092	0.016	68.80	50.06	68.80	833.33	750.00	1.12	1.00	4.92	315.48	315.48
Dsgn. L = 3.98 ft	1	0.067	0.027	50.06	16.75	50.06	833.33	750.00	1.34	1.00	8.60	315.48	315.48
Dsgn. L = 4.08 ft	1	0.043	0.039	16.75	-32.38	32.38	833.33	750.00	2.19	1.00	12.29	315.48	315.48
Dsgn. L = 3.98 ft	2	0.043	0.026	-0.00	-32.38	32.38	833.33	750.00	1.00	1.00	8.24	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.025		-0.31	0.31	833.33	750.00	1.00	1.00	7.88	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.063	0.105	47.00		47.00	833.33	750.00	1.72	1.00	32.98	315.48	315.48
Dsgn. L = 3.98 ft	1	0.180	0.104	135.24	47.00	135.24	833.33	750.00	1.36	1.00	32.85	315.48	315.48
Dsgn. L = 4.08 ft	1	0.241	0.069	180.87	135.24	180.87	833.33	750.00	1.11	1.00	21.81	315.48	315.48
Dsgn. L = 3.98 ft	1	0.241	0.034	181.05	180.58	181.05	833.33	750.00	1.00	1.00	10.75	315.48	315.48
Dsgn. L = 3.98 ft	1	0.241	0.027	180.58	148.27	180.58	833.33	750.00	1.07	1.00	8.37	315.48	315.48
Dsgn. L = 3.98 ft	1	0.198	0.052	148.27	83.98	148.27	833.33	750.00	1.20	1.00	16.45	315.48	315.48
Dsgn. L = 4.08 ft	1	0.112	0.078	83.98	-14.78	83.98	833.33	750.00	1.87	1.00	24.54	315.48	315.48
Dsgn. L = 3.98 ft	2	0.020	0.012	-0.00	-14.78	14.78	833.33	750.00	1.00	1.00	3.84	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.011		-0.21	0.21	833.33	750.00	1.00	1.00	3.48	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B42**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 1.43 ft	1	0.061	0.102	46.02		46.02	833.33	750.00	1.72	1.00	32.29	315.48	315.48
Dsgn. L = 3.98 ft	1	0.175	0.102	131.51	46.02	131.51	833.33	750.00	1.36	1.00	32.16	315.48	315.48
Dsgn. L = 4.08 ft	1	0.232	0.067	174.33	131.51	174.33	833.33	750.00	1.11	1.00	21.12	315.48	315.48
Dsgn. L = 3.98 ft	1	0.233	0.032	174.41	171.29	174.41	833.33	750.00	1.01	1.00	10.06	315.48	315.48
Dsgn. L = 3.98 ft	1	0.228	0.029	171.29	136.23	171.29	833.33	750.00	1.09	1.00	9.06	315.48	315.48
Dsgn. L = 3.98 ft	1	0.182	0.054	136.23	69.20	136.23	833.33	750.00	1.23	1.00	17.14	315.48	315.48
Dsgn. L = 4.08 ft	1	0.092	0.080	69.20	-32.38	69.20	833.33	750.00	2.15	1.00	25.23	315.48	315.48
Dsgn. L = 3.98 ft	2	0.043	0.026	-0.00	-32.38	32.38	833.33	750.00	1.00	1.00	8.24	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.025		-0.31	0.31	833.33	750.00	1.00	1.00	7.88	315.48	315.48
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 1.43 ft	1	0.020	0.033	14.83		14.83	833.33	750.00	1.71	1.00	10.43	315.48	315.48
Dsgn. L = 3.98 ft	1	0.057	0.033	42.51	14.83	42.51	833.33	750.00	1.36	1.00	10.34	315.48	315.48
Dsgn. L = 4.08 ft	1	0.075	0.021	56.36	42.51	56.36	833.33	750.00	1.10	1.00	6.76	315.48	315.48
Dsgn. L = 3.98 ft	1	0.075	0.010	56.40	55.38	56.40	833.33	750.00	1.01	1.00	3.18	315.48	315.48
Dsgn. L = 3.98 ft	1	0.074	0.010	55.38	44.04	55.38	833.33	750.00	1.08	1.00	3.01	315.48	315.48
Dsgn. L = 3.98 ft	1	0.059	0.018	44.04	22.37	44.04	833.33	750.00	1.23	1.00	5.62	315.48	315.48
Dsgn. L = 4.08 ft	1	0.030	0.026	22.37	-10.49	22.37	833.33	750.00	2.15	1.00	8.24	315.48	315.48
Dsgn. L = 3.98 ft	2	0.014	0.009	-0.00	-10.49	10.49	833.33	750.00	1.00	1.00	2.73	315.48	315.48
Dsgn. L = 1.77 ft	2	0.000	0.008		-0.16	0.16	833.33	750.00	1.00	1.00	2.46	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.3168	12.546		0.0000	0.000
	2	0.0000	12.546	+D+L+H	-0.2118	5.750

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	29.853	37.222	
Max Upward from Load Combinations	29.853	37.222	
Max Upward from Load Cases	18.259	22.431	
Max Downward from all Load Conditions (Resis)	-0.690		
Max Downward from Load Cases (Resisting U <sub>r</sub> )	-0.690		
+D+H	11.594	14.791	
+D+L+H, LL Comb Run (*L)	10.904	24.281	
+D+L+H, LL Comb Run (L*)	29.853	27.732	
+D+L+H, LL Comb Run (LL)	29.163	37.222	
+D+Lr+H, LL Comb Run (*L)	11.594	14.791	
+D+Lr+H, LL Comb Run (L*)	11.594	14.791	
+D+Lr+H, LL Comb Run (LL)	11.594	14.791	
+D+S+H	15.641	19.864	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	11.077	21.908	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	25.288	24.497	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	24.771	31.614	
+D+0.750L+0.750S+H, LL Comb Run (*L)	14.112	25.713	
+D+0.750L+0.750S+H, LL Comb Run (L*)	28.324	28.301	
+D+0.750L+0.750S+H, LL Comb Run (LL)	27.806	35.419	
+D+0.60W+H	11.594	14.791	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	11.077	21.908	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	25.288	24.497	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	24.771	31.614	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	14.112	25.713	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	28.324	28.301	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	27.806	35.419	
+0.60D+0.60W+0.60H	6.957	8.874	
+D+0.70E+0.60H	11.594	14.791	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	14.112	25.713	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	28.324	28.301	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	27.806	35.419	
+0.60D+0.70E+H	6.957	8.874	
D Only	11.594	14.791	
L Only, LL Comb Run (*L)	-0.690	9.490	
L Only, LL Comb Run (L*)	18.259	12.941	
L Only, LL Comb Run (LL)	17.569	22.431	



Project Title: WSF International Village  
Engineer: JMB  
Project ID: 24-318  
Project Descr: Vertical Framing

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** B42

### Vertical Reactions

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
S Only	4.047	5.073	
H Only			

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **B43**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

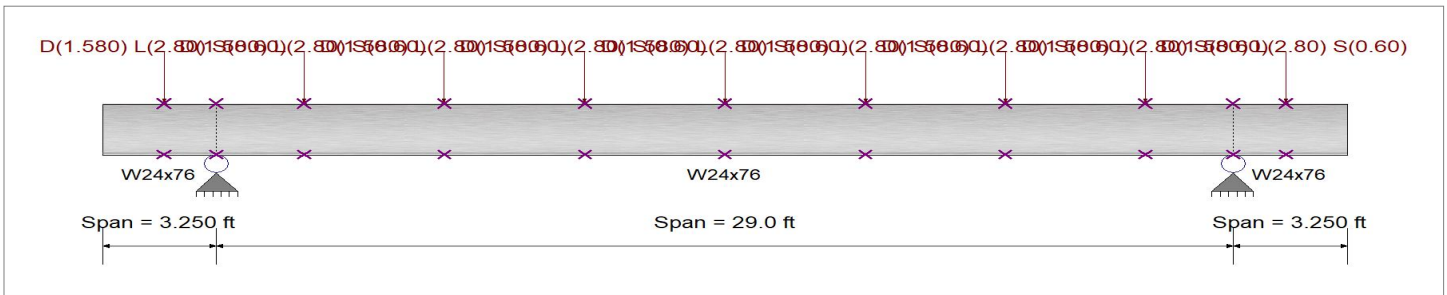
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 1.750 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 1.580, L = 2.80, S = 0.60 k, Starting at : 1.750 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.246</b> : 1	Maximum Shear Stress Ratio =	<b>0.079</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	184.395 k-ft	Vu : Applied	24.920 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (*L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL*)
Span # where maximum occurs	Span # 2	Location of maximum on span	3.250 ft
Span # where maximum occurs	Span # 2	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.186 in Ratio = <b>1,870</b> >=360.	Span: 3 : L Only, LL Comb Run (*L*)	
Max Upward Transient Deflection	-0.066 in Ratio = <b>1,180</b> >=360.	Span: 3 : L Only, LL Comb Run (*L*)	
Max Downward Total Deflection	0.303 in Ratio = <b>1150</b> >=240.	Span: 3 : +D+L+H, LL Comb Run (*L*)	
Max Upward Total Deflection	-0.107 in Ratio = <b>732</b> >=240.	Span: 3 : +D+L+H, LL Comb Run (*L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	1.73 ft	1	0.000	0.001		-0.16	0.16	833.33	750.00	1.00	1.00	0.18	315.48	315.48
Dsgn. L =	1.52 ft	1	0.005	0.029	-0.00	-3.88	3.88	833.33	750.00	1.00	1.00	9.28	315.48	315.48
Dsgn. L =	2.32 ft	2	0.023	0.029	17.37	-3.88	17.37	833.33	750.00	1.95	1.00	9.28	315.48	315.48
Dsgn. L =	4.06 ft	2	0.059	0.029	44.61	17.37	44.61	833.33	750.00	1.33	1.00	9.04	315.48	315.48
Dsgn. L =	4.06 ft	2	0.081	0.020	60.98	44.61	60.98	833.33	750.00	1.12	1.00	6.39	315.48	315.48
Dsgn. L =	4.06 ft	2	0.089	0.012	66.48	60.98	66.48	833.33	750.00	1.03	1.00	3.75	315.48	315.48
Dsgn. L =	3.87 ft	2	0.089	0.005	66.48	61.40	66.48	833.33	750.00	1.03	1.00	1.52	315.48	315.48
Dsgn. L =	4.06 ft	2	0.082	0.013	61.40	45.68	61.40	833.33	750.00	1.10	1.00	4.16	315.48	315.48
Dsgn. L =	4.06 ft	2	0.061	0.022	45.68	19.09	45.68	833.33	750.00	1.28	1.00	6.81	315.48	315.48
Dsgn. L =	2.51 ft	2	0.025	0.029	19.09	-3.88	19.09	833.33	750.00	1.97	1.00	9.28	315.48	315.48
Dsgn. L =	1.50 ft	3	0.005	0.008	-0.00	-3.88	3.88	833.33	750.00	1.00	1.00	2.56	315.48	315.48
Dsgn. L =	1.76 ft	3	0.000	0.008		-0.17	0.17	833.33	750.00	1.00	1.00	2.40	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L =	1.52 ft	1	0.004	0.024	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	7.73	315.48	315.48
Dsgn. L =	2.32 ft	2	0.019	0.024	14.35	-3.33	14.35	833.33	750.00	1.96	1.00	7.73	315.48	315.48
Dsgn. L =	4.06 ft	2	0.049	0.024	36.76	14.35	36.76	833.33	750.00	1.33	1.00	7.52	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B43**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.06 ft	2	0.066	0.017	49.85	36.76	49.85	833.33	750.00	1.12	1.00	5.25	315.48	315.48
Dsgn. L = 4.06 ft	2	0.071	0.009	53.62	49.85	53.62	833.33	750.00	1.03	1.00	2.98	315.48	315.48
Dsgn. L = 3.87 ft	2	0.071	0.005	53.62	48.38	53.62	833.33	750.00	1.04	1.00	1.53	315.48	315.48
Dsgn. L = 4.06 ft	2	0.065	0.012	48.38	33.96	48.38	833.33	750.00	1.12	1.00	3.80	315.48	315.48
Dsgn. L = 4.06 ft	2	0.045	0.019	33.96	10.23	33.96	833.33	750.00	1.35	1.00	6.06	315.48	315.48
Dsgn. L = 2.51 ft	2	0.014	0.026	10.23	-10.05	10.23	833.33	750.00	2.10	1.00	8.19	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-10.05	10.05	833.33	750.00	1.00	1.00	6.67	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	0.17	833.33	750.00	1.00	1.00	6.54	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.004	0.075	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	23.64	315.48	315.48
Dsgn. L = 2.32 ft	2	0.068	0.075	51.27	-3.33	51.27	833.33	750.00	1.74	1.00	23.64	315.48	315.48
Dsgn. L = 4.06 ft	2	0.161	0.074	120.89	51.27	120.89	833.33	750.00	1.31	1.00	23.43	315.48	315.48
Dsgn. L = 4.06 ft	2	0.217	0.053	162.74	120.89	162.74	833.33	750.00	1.12	1.00	16.68	315.48	315.48
Dsgn. L = 4.06 ft	2	0.236	0.031	176.82	162.74	176.82	833.33	750.00	1.03	1.00	9.93	315.48	315.48
Dsgn. L = 3.87 ft	2	0.236	0.011	176.82	163.81	176.82	833.33	750.00	1.03	1.00	3.54	315.48	315.48
Dsgn. L = 4.06 ft	2	0.218	0.033	163.81	123.65	163.81	833.33	750.00	1.10	1.00	10.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.165	0.054	123.65	55.71	123.65	833.33	750.00	1.26	1.00	17.03	315.48	315.48
Dsgn. L = 2.51 ft	2	0.074	0.075	55.71	-3.33	55.71	833.33	750.00	1.77	1.00	23.64	315.48	315.48
Dsgn. L = 1.50 ft	3	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007	-0.15	0.15	0.15	833.33	750.00	1.00	1.00	2.06	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.004	0.074	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	23.41	315.48	315.48
Dsgn. L = 2.32 ft	2	0.068	0.074	50.73	-3.33	50.73	833.33	750.00	1.74	1.00	23.41	315.48	315.48
Dsgn. L = 4.06 ft	2	0.159	0.074	119.41	50.73	119.41	833.33	750.00	1.31	1.00	23.20	315.48	315.48
Dsgn. L = 4.06 ft	2	0.214	0.052	160.32	119.41	160.32	833.33	750.00	1.12	1.00	16.45	315.48	315.48
Dsgn. L = 4.06 ft	2	0.231	0.031	173.46	160.32	173.46	833.33	750.00	1.03	1.00	9.70	315.48	315.48
Dsgn. L = 3.87 ft	2	0.231	0.012	173.46	159.56	173.46	833.33	750.00	1.03	1.00	3.77	315.48	315.48
Dsgn. L = 4.06 ft	2	0.213	0.033	159.56	118.45	159.56	833.33	750.00	1.11	1.00	10.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.158	0.055	118.45	49.57	118.45	833.33	750.00	1.28	1.00	17.26	315.48	315.48
Dsgn. L = 2.51 ft	2	0.066	0.076	49.57	-10.05	49.57	833.33	750.00	1.98	1.00	23.87	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-10.05	10.05	833.33	750.00	1.00	1.00	6.67	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	0.17	833.33	750.00	1.00	1.00	6.54	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.013	0.026	-0.00	-10.05	10.05	833.33	750.00	1.00	1.00	8.19	315.48	315.48
Dsgn. L = 2.32 ft	2	0.013	0.026	8.71	-10.05	10.05	833.33	750.00	2.26	1.00	8.19	315.48	315.48
Dsgn. L = 4.06 ft	2	0.044	0.025	32.99	8.71	32.99	833.33	750.00	1.43	1.00	7.98	315.48	315.48
Dsgn. L = 4.06 ft	2	0.064	0.018	47.96	32.99	47.96	833.33	750.00	1.14	1.00	5.71	315.48	315.48
Dsgn. L = 4.06 ft	2	0.071	0.011	53.62	47.96	53.62	833.33	750.00	1.04	1.00	3.45	315.48	315.48
Dsgn. L = 3.87 ft	2	0.071	0.004	53.62	50.17	53.62	833.33	750.00	1.02	1.00	1.18	315.48	315.48
Dsgn. L = 4.06 ft	2	0.067	0.011	50.17	37.63	50.17	833.33	750.00	1.10	1.00	3.34	315.48	315.48
Dsgn. L = 4.06 ft	2	0.050	0.018	37.63	15.78	37.63	833.33	750.00	1.28	1.00	5.60	315.48	315.48
Dsgn. L = 2.51 ft	2	0.021	0.024	15.78	-3.33	15.78	833.33	750.00	1.98	1.00	7.73	315.48	315.48
Dsgn. L = 1.50 ft	3	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007	-0.15	0.15	0.15	833.33	750.00	1.00	1.00	2.06	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.013	0.025	-0.00	-10.05	10.05	833.33	750.00	1.00	1.00	7.96	315.48	315.48
Dsgn. L = 2.32 ft	2	0.013	0.025	8.17	-10.05	10.05	833.33	750.00	2.25	1.00	7.96	315.48	315.48
Dsgn. L = 4.06 ft	2	0.042	0.025	31.52	8.17	31.52	833.33	750.00	1.43	1.00	7.75	315.48	315.48
Dsgn. L = 4.06 ft	2	0.061	0.017	45.55	31.52	45.55	833.33	750.00	1.14	1.00	5.48	315.48	315.48
Dsgn. L = 4.06 ft	2	0.067	0.010	50.26	45.55	50.26	833.33	750.00	1.04	1.00	3.21	315.48	315.48
Dsgn. L = 3.87 ft	2	0.067	0.004	50.26	45.91	50.26	833.33	750.00	1.03	1.00	1.30	315.48	315.48
Dsgn. L = 4.06 ft	2	0.061	0.011	45.91	32.44	45.91	833.33	750.00	1.12	1.00	3.57	315.48	315.48
Dsgn. L = 4.06 ft	2	0.043	0.018	32.44	9.64	32.44	833.33	750.00	1.36	1.00	5.83	315.48	315.48
Dsgn. L = 2.51 ft	2	0.013	0.025	9.64	-10.05	10.05	833.33	750.00	2.08	1.00	7.96	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-10.05	10.05	833.33	750.00	1.00	1.00	6.67	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	0.17	833.33	750.00	1.00	1.00	6.54	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.013	0.076	-0.00	-10.05	10.05	833.33	750.00	1.00	1.00	23.87	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B43**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 2.32 ft	2	0.060	0.076	45.09	-10.05	45.09	833.33	750.00	1.95	1.00	23.87	315.48	315.48
Dsgn. L = 4.06 ft	2	0.154	0.075	115.65	45.09	115.65	833.33	750.00	1.33	1.00	23.66	315.48	315.48
Dsgn. L = 4.06 ft	2	0.211	0.054	158.44	115.65	158.44	833.33	750.00	1.12	1.00	16.91	315.48	315.48
Dsgn. L = 4.06 ft	2	0.231	0.032	173.46	158.44	173.46	833.33	750.00	1.04	1.00	10.17	315.48	315.48
Dsgn. L = 3.87 ft	2	0.231	0.011	173.46	161.35	173.46	833.33	750.00	1.03	1.00	3.42	315.48	315.48
Dsgn. L = 4.06 ft	2	0.215	0.032	161.35	122.12	161.35	833.33	750.00	1.10	1.00	10.06	315.48	315.48
Dsgn. L = 4.06 ft	2	0.163	0.053	122.12	55.13	122.12	833.33	750.00	1.26	1.00	16.80	315.48	315.48
Dsgn. L = 2.51 ft	2	0.074	0.074	55.13	-3.33	55.13	833.33	750.00	1.77	1.00	23.41	315.48	315.48
Dsgn. L = 1.50 ft	3	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007	-0.15	0.15	833.33	750.00	1.00	1.00	2.06	315.48	315.48	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.013	0.075	-0.00	-10.05	10.05	833.33	750.00	1.00	1.00	23.64	315.48	315.48
Dsgn. L = 2.32 ft	2	0.059	0.075	44.55	-10.05	44.55	833.33	750.00	1.96	1.00	23.64	315.48	315.48
Dsgn. L = 4.06 ft	2	0.152	0.074	114.17	44.55	114.17	833.33	750.00	1.33	1.00	23.43	315.48	315.48
Dsgn. L = 4.06 ft	2	0.208	0.053	156.02	114.17	156.02	833.33	750.00	1.12	1.00	16.68	315.48	315.48
Dsgn. L = 4.06 ft	2	0.227	0.031	170.10	156.02	170.10	833.33	750.00	1.03	1.00	9.93	315.48	315.48
Dsgn. L = 3.87 ft	2	0.227	0.011	170.10	157.09	170.10	833.33	750.00	1.03	1.00	3.54	315.48	315.48
Dsgn. L = 4.06 ft	2	0.209	0.033	157.09	116.93	157.09	833.33	750.00	1.10	1.00	10.29	315.48	315.48
Dsgn. L = 4.06 ft	2	0.156	0.054	116.93	48.99	116.93	833.33	750.00	1.28	1.00	17.03	315.48	315.48
Dsgn. L = 2.51 ft	2	0.065	0.075	48.99	-10.05	48.99	833.33	750.00	1.98	1.00	23.64	315.48	315.48
Dsgn. L = 1.50 ft	3	0.013	0.021	-0.00	-10.05	10.05	833.33	750.00	1.00	1.00	6.67	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.021	-0.17	0.17	833.33	750.00	1.00	1.00	6.54	315.48	315.48	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.005	0.028	-0.00	-3.78	3.78	833.33	750.00	1.00	1.00	8.78	315.48	315.48
Dsgn. L = 2.32 ft	2	0.022	0.028	16.34	-3.78	16.34	833.33	750.00	1.96	1.00	8.78	315.48	315.48
Dsgn. L = 4.06 ft	2	0.056	0.027	41.84	16.34	41.84	833.33	750.00	1.33	1.00	8.57	315.48	315.48
Dsgn. L = 4.06 ft	2	0.076	0.019	56.79	41.84	56.79	833.33	750.00	1.12	1.00	6.00	315.48	315.48
Dsgn. L = 4.06 ft	2	0.082	0.011	61.19	56.79	61.19	833.33	750.00	1.03	1.00	3.43	315.48	315.48
Dsgn. L = 3.87 ft	2	0.082	0.005	61.19	55.37	61.19	833.33	750.00	1.04	1.00	1.68	315.48	315.48
Dsgn. L = 4.06 ft	2	0.074	0.013	55.37	39.17	55.37	833.33	750.00	1.12	1.00	4.25	315.48	315.48
Dsgn. L = 4.06 ft	2	0.052	0.022	39.17	12.41	39.17	833.33	750.00	1.34	1.00	6.81	315.48	315.48
Dsgn. L = 2.51 ft	2	0.017	0.029	12.41	-10.50	12.41	833.33	750.00	2.26	1.00	9.24	315.48	315.48
Dsgn. L = 1.50 ft	3	0.014	0.022	-0.00	-10.50	10.50	833.33	750.00	1.00	1.00	6.97	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.022	-0.17	0.17	833.33	750.00	1.00	1.00	6.84	315.48	315.48	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.005	0.078	-0.00	-3.78	3.78	833.33	750.00	1.00	1.00	24.69	315.48	315.48
Dsgn. L = 2.32 ft	2	0.071	0.078	53.26	-3.78	53.26	833.33	750.00	1.75	1.00	24.69	315.48	315.48
Dsgn. L = 4.06 ft	2	0.168	0.078	125.98	53.26	125.98	833.33	750.00	1.31	1.00	24.48	315.48	315.48
Dsgn. L = 4.06 ft	2	0.226	0.055	169.69	125.98	169.69	833.33	750.00	1.12	1.00	17.43	315.48	315.48
Dsgn. L = 4.06 ft	2	0.246	0.033	184.39	169.69	184.39	833.33	750.00	1.03	1.00	10.38	315.48	315.48
Dsgn. L = 3.87 ft	2	0.246	0.012	184.39	170.81	184.39	833.33	750.00	1.03	1.00	3.69	315.48	315.48
Dsgn. L = 4.06 ft	2	0.228	0.034	170.81	128.86	170.81	833.33	750.00	1.10	1.00	10.74	315.48	315.48
Dsgn. L = 4.06 ft	2	0.172	0.056	128.86	57.90	128.86	833.33	750.00	1.26	1.00	17.78	315.48	315.48
Dsgn. L = 2.51 ft	2	0.077	0.078	57.90	-3.78	57.90	833.33	750.00	1.78	1.00	24.69	315.48	315.48
Dsgn. L = 1.50 ft	3	0.005	0.008	-0.00	-3.78	3.78	833.33	750.00	1.00	1.00	2.49	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007	-0.15	0.15	833.33	750.00	1.00	1.00	2.36	315.48	315.48	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
Dsgn. L = 1.52 ft	1	0.005	0.078	-0.00	-3.78	3.78	833.33	750.00	1.00	1.00	24.46	315.48	315.48
Dsgn. L = 2.32 ft	2	0.070	0.078	52.72	-3.78	52.72	833.33	750.00	1.75	1.00	24.46	315.48	315.48
Dsgn. L = 4.06 ft	2	0.166	0.077	124.50	52.72	124.50	833.33	750.00	1.31	1.00	24.25	315.48	315.48
Dsgn. L = 4.06 ft	2	0.223	0.055	167.27	124.50	167.27	833.33	750.00	1.12	1.00	17.20	315.48	315.48
Dsgn. L = 4.06 ft	2	0.241	0.032	181.03	167.27	181.03	833.33	750.00	1.03	1.00	10.15	315.48	315.48
Dsgn. L = 3.87 ft	2	0.241	0.012	181.03	166.55	181.03	833.33	750.00	1.03	1.00	3.92	315.48	315.48
Dsgn. L = 4.06 ft	2	0.222	0.035	166.55	123.66	166.55	833.33	750.00	1.11	1.00	10.97	315.48	315.48
Dsgn. L = 4.06 ft	2	0.165	0.057	123.66	51.76	123.66	833.33	750.00	1.28	1.00	18.01	315.48	315.48
Dsgn. L = 2.51 ft	2	0.069	0.079	51.76	-10.50	51.76	833.33	750.00	1.98	1.00	24.92	315.48	315.48
Dsgn. L = 1.50 ft	3	0.014	0.022	-0.00	-10.50	10.50	833.33	750.00	1.00	1.00	6.97	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.022	-0.17	0.17	833.33	750.00	1.00	1.00	6.84	315.48	315.48	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B43**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.014	0.029	-0.00	-10.50	10.50	833.33	750.00	1.00	1.00	9.24	315.48	315.48
Dsgn. L = 2.32 ft	2	0.014	0.029	10.70	-10.50	10.70	833.33	750.00	2.26	1.00	9.24	315.48	315.48
Dsgn. L = 4.06 ft	2	0.051	0.029	38.08	10.70	38.08	833.33	750.00	1.42	1.00	9.03	315.48	315.48
Dsgn. L = 4.06 ft	2	0.073	0.020	54.91	38.08	54.91	833.33	750.00	1.14	1.00	6.46	315.48	315.48
Dsgn. L = 4.06 ft	2	0.082	0.012	61.19	54.91	61.19	833.33	750.00	1.04	1.00	3.90	315.48	315.48
Dsgn. L = 3.87 ft	2	0.082	0.004	61.19	57.16	61.19	833.33	750.00	1.03	1.00	1.33	315.48	315.48
Dsgn. L = 4.06 ft	2	0.076	0.012	57.16	42.84	57.16	833.33	750.00	1.10	1.00	3.79	315.48	315.48
Dsgn. L = 4.06 ft	2	0.057	0.020	42.84	17.97	42.84	833.33	750.00	1.28	1.00	6.35	315.48	315.48
Dsgn. L = 2.51 ft	2	0.024	0.028	17.97	-3.78	17.97	833.33	750.00	1.98	1.00	8.78	315.48	315.48
Dsgn. L = 1.50 ft	3	0.005	0.008	-0.00	-3.78	3.78	833.33	750.00	1.00	1.00	2.49	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.36	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.014	0.029	-0.00	-10.50	10.50	833.33	750.00	1.00	1.00	9.01	315.48	315.48
Dsgn. L = 2.32 ft	2	0.014	0.029	10.16	-10.50	10.50	833.33	750.00	2.28	1.00	9.01	315.48	315.48
Dsgn. L = 4.06 ft	2	0.049	0.028	36.60	10.16	36.60	833.33	750.00	1.42	1.00	8.80	315.48	315.48
Dsgn. L = 4.06 ft	2	0.070	0.020	52.49	36.60	52.49	833.33	750.00	1.14	1.00	6.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.077	0.012	57.83	52.49	57.83	833.33	750.00	1.04	1.00	3.66	315.48	315.48
Dsgn. L = 3.87 ft	2	0.077	0.005	57.83	52.91	57.83	833.33	750.00	1.03	1.00	1.45	315.48	315.48
Dsgn. L = 4.06 ft	2	0.071	0.013	52.91	37.64	52.91	833.33	750.00	1.12	1.00	4.02	315.48	315.48
Dsgn. L = 4.06 ft	2	0.050	0.021	37.64	11.83	37.64	833.33	750.00	1.34	1.00	6.58	315.48	315.48
Dsgn. L = 2.51 ft	2	0.016	0.029	11.83	-10.50	11.83	833.33	750.00	2.24	1.00	9.01	315.48	315.48
Dsgn. L = 1.50 ft	3	0.014	0.022	-0.00	-10.50	10.50	833.33	750.00	1.00	1.00	6.97	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.022		-0.17	0.17	833.33	750.00	1.00	1.00	6.84	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.014	0.079	-0.00	-10.50	10.50	833.33	750.00	1.00	1.00	24.92	315.48	315.48
Dsgn. L = 2.32 ft	2	0.063	0.079	47.07	-10.50	47.07	833.33	750.00	1.95	1.00	24.92	315.48	315.48
Dsgn. L = 4.06 ft	2	0.161	0.078	120.74	47.07	120.74	833.33	750.00	1.33	1.00	24.71	315.48	315.48
Dsgn. L = 4.06 ft	2	0.221	0.056	165.39	120.74	165.39	833.33	750.00	1.12	1.00	17.66	315.48	315.48
Dsgn. L = 4.06 ft	2	0.241	0.034	181.03	165.39	181.03	833.33	750.00	1.04	1.00	10.62	315.48	315.48
Dsgn. L = 3.87 ft	2	0.241	0.011	181.03	168.34	181.03	833.33	750.00	1.03	1.00	3.57	315.48	315.48
Dsgn. L = 4.06 ft	2	0.224	0.033	168.34	127.33	168.34	833.33	750.00	1.10	1.00	10.51	315.48	315.48
Dsgn. L = 4.06 ft	2	0.170	0.056	127.33	57.32	127.33	833.33	750.00	1.26	1.00	17.55	315.48	315.48
Dsgn. L = 2.51 ft	2	0.076	0.078	57.32	-3.78	57.32	833.33	750.00	1.78	1.00	24.46	315.48	315.48
Dsgn. L = 1.50 ft	3	0.005	0.008	-0.00	-3.78	3.78	833.33	750.00	1.00	1.00	2.49	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.36	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.014	0.078	-0.00	-10.50	10.50	833.33	750.00	1.00	1.00	24.69	315.48	315.48
Dsgn. L = 2.32 ft	2	0.062	0.078	46.54	-10.50	46.54	833.33	750.00	1.96	1.00	24.69	315.48	315.48
Dsgn. L = 4.06 ft	2	0.159	0.078	119.26	46.54	119.26	833.33	750.00	1.33	1.00	24.48	315.48	315.48
Dsgn. L = 4.06 ft	2	0.217	0.055	162.97	119.26	162.97	833.33	750.00	1.12	1.00	17.43	315.48	315.48
Dsgn. L = 4.06 ft	2	0.237	0.033	177.67	162.97	177.67	833.33	750.00	1.03	1.00	10.38	315.48	315.48
Dsgn. L = 3.87 ft	2	0.237	0.012	177.67	164.09	177.67	833.33	750.00	1.03	1.00	3.69	315.48	315.48
Dsgn. L = 4.06 ft	2	0.219	0.034	164.09	122.14	164.09	833.33	750.00	1.10	1.00	10.74	315.48	315.48
Dsgn. L = 4.06 ft	2	0.163	0.056	122.14	51.18	122.14	833.33	750.00	1.28	1.00	17.78	315.48	315.48
Dsgn. L = 2.51 ft	2	0.068	0.078	51.18	-10.50	51.18	833.33	750.00	1.98	1.00	24.69	315.48	315.48
Dsgn. L = 1.50 ft	3	0.014	0.022	-0.00	-10.50	10.50	833.33	750.00	1.00	1.00	6.97	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.022		-0.17	0.17	833.33	750.00	1.00	1.00	6.84	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.004	0.025	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	7.81	315.48	315.48
Dsgn. L = 2.32 ft	2	0.019	0.025	14.56	-3.33	14.56	833.33	750.00	1.96	1.00	7.81	315.48	315.48
Dsgn. L = 4.06 ft	2	0.050	0.024	37.31	14.56	37.31	833.33	750.00	1.33	1.00	7.60	315.48	315.48
Dsgn. L = 4.06 ft	2	0.068	0.017	50.75	37.31	50.75	833.33	750.00	1.12	1.00	5.34	315.48	315.48
Dsgn. L = 4.06 ft	2	0.073	0.010	54.88	50.75	54.88	833.33	750.00	1.03	1.00	3.07	315.48	315.48
Dsgn. L = 3.87 ft	2	0.073	0.005	54.88	49.97	54.88	833.33	750.00	1.04	1.00	1.45	315.48	315.48
Dsgn. L = 4.06 ft	2	0.067	0.012	49.97	35.91	49.97	833.33	750.00	1.11	1.00	3.71	315.48	315.48
Dsgn. L = 4.06 ft	2	0.048	0.019	35.91	12.53	35.91	833.33	750.00	1.32	1.00	5.98	315.48	315.48
Dsgn. L = 2.51 ft	2	0.017	0.026	12.53	-7.53	12.53	833.33	750.00	2.21	1.00	8.10	315.48	315.48
Dsgn. L = 1.50 ft	3	0.010	0.016	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	4.99	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B43**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.76 ft	3	0.000	0.015		-0.16	0.16	833.33	750.00	1.00	1.00	4.86	315.48	315.48
	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.004	0.056	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	17.76	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.050	0.056	37.63	-3.33	37.63	833.33	750.00	1.77	1.00	17.76	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.120	0.056	89.90	37.63	89.90	833.33	750.00	1.31	1.00	17.55	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.162	0.040	121.31	89.90	121.31	833.33	750.00	1.12	1.00	12.48	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.176	0.024	131.88	121.31	131.88	833.33	750.00	1.03	1.00	7.41	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.176	0.009	131.88	122.12	131.88	833.33	750.00	1.03	1.00	2.70	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.163	0.025	122.12	91.96	122.12	833.33	750.00	1.10	1.00	7.77	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.123	0.041	91.96	40.96	91.96	833.33	750.00	1.26	1.00	12.83	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.055	0.056	40.96	-3.33	40.96	833.33	750.00	1.80	1.00	17.76	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.06	315.48	315.48
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.004	0.056	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	17.61	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.050	0.056	37.29	-3.33	37.29	833.33	750.00	1.77	1.00	17.61	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.119	0.055	88.97	37.29	88.97	833.33	750.00	1.31	1.00	17.40	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.160	0.039	119.80	88.97	119.80	833.33	750.00	1.12	1.00	12.34	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.173	0.023	129.78	119.80	129.78	833.33	750.00	1.03	1.00	7.27	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.173	0.009	129.78	119.46	129.78	833.33	750.00	1.03	1.00	2.85	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.159	0.025	119.46	88.72	119.46	833.33	750.00	1.11	1.00	7.91	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.118	0.041	88.72	37.12	88.72	833.33	750.00	1.28	1.00	12.98	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.049	0.057	37.12	-7.53	37.12	833.33	750.00	1.98	1.00	17.90	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.010	0.016	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	4.99	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.015		-0.16	0.16	833.33	750.00	1.00	1.00	4.86	315.48	315.48
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.010	0.026	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	8.10	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.015	0.026	11.03	-7.53	11.03	833.33	750.00	2.20	1.00	8.10	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.047	0.025	34.96	11.03	34.96	833.33	750.00	1.39	1.00	7.89	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.066	0.018	49.58	34.96	49.58	833.33	750.00	1.14	1.00	5.63	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.073	0.011	54.88	49.58	54.88	833.33	750.00	1.04	1.00	3.36	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.073	0.004	54.88	51.09	54.88	833.33	750.00	1.03	1.00	1.16	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.068	0.011	51.09	38.20	51.09	833.33	750.00	1.10	1.00	3.42	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.051	0.018	38.20	16.00	38.20	833.33	750.00	1.28	1.00	5.69	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.021	0.025	16.00	-3.33	16.00	833.33	750.00	1.98	1.00	7.81	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.06	315.48	315.48
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.010	0.025	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	7.96	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.014	0.025	10.69	-7.53	10.69	833.33	750.00	2.20	1.00	7.96	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.045	0.025	34.04	10.69	34.04	833.33	750.00	1.39	1.00	7.75	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.064	0.017	48.07	34.04	48.07	833.33	750.00	1.13	1.00	5.48	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.070	0.010	52.78	48.07	52.78	833.33	750.00	1.04	1.00	3.21	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.070	0.004	52.78	48.43	52.78	833.33	750.00	1.03	1.00	1.30	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.065	0.011	48.43	34.96	48.43	833.33	750.00	1.11	1.00	3.57	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.047	0.018	34.96	12.16	34.96	833.33	750.00	1.32	1.00	5.83	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.016	0.025	12.16	-7.53	12.16	833.33	750.00	2.21	1.00	7.96	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.010	0.016	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	4.99	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.015		-0.16	0.16	833.33	750.00	1.00	1.00	4.86	315.48	315.48
+1.20D+1.60Lr+L+1.60H, LL Com	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.010	0.057	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	17.90	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.045	0.057	33.76	-7.53	33.76	833.33	750.00	1.95	1.00	17.90	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.115	0.056	86.62	33.76	86.62	833.33	750.00	1.33	1.00	17.69	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.158	0.040	118.63	86.62	118.63	833.33	750.00	1.12	1.00	12.63	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.173	0.024	129.78	118.63	129.78	833.33	750.00	1.04	1.00	7.56	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.173	0.008	129.78	120.58	129.78	833.33	750.00	1.03	1.00	2.56	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.161	0.024	120.58	91.01	120.58	833.33	750.00	1.10	1.00	7.62	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.121	0.040	91.01	40.59	91.01	833.33	750.00	1.26	1.00	12.69	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B43**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
	Dsgn. L =	2.51 ft	0.054	0.056	40.59	-3.33	40.59	833.33	750.00	1.80	1.00	17.61	315.48	315.48
	Dsgn. L =	1.50 ft	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
	Dsgn. L =	1.76 ft	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.06	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
	Dsgn. L =	1.73 ft	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L =	1.52 ft	0.010	0.056	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	17.76	315.48	315.48
	Dsgn. L =	2.32 ft	0.045	0.056	33.43	-7.53	33.43	833.33	750.00	1.96	1.00	17.76	315.48	315.48
	Dsgn. L =	4.06 ft	0.114	0.056	85.70	33.43	85.70	833.33	750.00	1.33	1.00	17.55	315.48	315.48
	Dsgn. L =	4.06 ft	0.156	0.040	117.11	85.70	117.11	833.33	750.00	1.12	1.00	12.48	315.48	315.48
	Dsgn. L =	4.06 ft	0.170	0.024	127.68	117.11	127.68	833.33	750.00	1.03	1.00	7.41	315.48	315.48
	Dsgn. L =	3.87 ft	0.170	0.009	127.68	117.92	127.68	833.33	750.00	1.03	1.00	2.70	315.48	315.48
	Dsgn. L =	4.06 ft	0.157	0.025	117.92	87.76	117.92	833.33	750.00	1.10	1.00	7.77	315.48	315.48
	Dsgn. L =	4.06 ft	0.117	0.041	87.76	36.76	87.76	833.33	750.00	1.28	1.00	12.83	315.48	315.48
	Dsgn. L =	2.51 ft	0.049	0.056	36.76	-7.53	36.76	833.33	750.00	1.98	1.00	17.76	315.48	315.48
	Dsgn. L =	1.50 ft	0.010	0.016	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	4.99	315.48	315.48
	Dsgn. L =	1.76 ft	0.000	0.015		-0.16	0.16	833.33	750.00	1.00	1.00	4.86	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
	Dsgn. L =	1.73 ft	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L =	1.52 ft	0.004	0.025	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	7.96	315.48	315.48
	Dsgn. L =	2.32 ft	0.020	0.025	14.89	-3.33	14.89	833.33	750.00	1.95	1.00	7.96	315.48	315.48
	Dsgn. L =	4.06 ft	0.051	0.025	38.24	14.89	38.24	833.33	750.00	1.33	1.00	7.75	315.48	315.48
	Dsgn. L =	4.06 ft	0.070	0.017	52.27	38.24	52.27	833.33	750.00	1.12	1.00	5.48	315.48	315.48
	Dsgn. L =	4.06 ft	0.076	0.010	56.98	52.27	56.98	833.33	750.00	1.03	1.00	3.21	315.48	315.48
	Dsgn. L =	3.87 ft	0.076	0.004	56.98	52.63	56.98	833.33	750.00	1.03	1.00	1.30	315.48	315.48
	Dsgn. L =	4.06 ft	0.070	0.011	52.63	39.16	52.63	833.33	750.00	1.10	1.00	3.57	315.48	315.48
	Dsgn. L =	4.06 ft	0.052	0.018	39.16	16.36	39.16	833.33	750.00	1.28	1.00	5.83	315.48	315.48
	Dsgn. L =	2.51 ft	0.022	0.025	16.36	-3.33	16.36	833.33	750.00	1.97	1.00	7.96	315.48	315.48
	Dsgn. L =	1.50 ft	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
	Dsgn. L =	1.76 ft	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.06	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
	Dsgn. L =	1.73 ft	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L =	1.52 ft	0.004	0.025	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	7.96	315.48	315.48
	Dsgn. L =	2.32 ft	0.020	0.025	14.89	-3.33	14.89	833.33	750.00	1.95	1.00	7.96	315.48	315.48
	Dsgn. L =	4.06 ft	0.051	0.025	38.24	14.89	38.24	833.33	750.00	1.33	1.00	7.75	315.48	315.48
	Dsgn. L =	4.06 ft	0.070	0.017	52.27	38.24	52.27	833.33	750.00	1.12	1.00	5.48	315.48	315.48
	Dsgn. L =	4.06 ft	0.076	0.010	56.98	52.27	56.98	833.33	750.00	1.03	1.00	3.21	315.48	315.48
	Dsgn. L =	3.87 ft	0.076	0.004	56.98	52.63	56.98	833.33	750.00	1.03	1.00	1.30	315.48	315.48
	Dsgn. L =	4.06 ft	0.070	0.011	52.63	39.16	52.63	833.33	750.00	1.10	1.00	3.57	315.48	315.48
	Dsgn. L =	4.06 ft	0.052	0.018	39.16	16.36	39.16	833.33	750.00	1.28	1.00	5.83	315.48	315.48
	Dsgn. L =	2.51 ft	0.022	0.025	16.36	-3.33	16.36	833.33	750.00	1.97	1.00	7.96	315.48	315.48
	Dsgn. L =	1.50 ft	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
	Dsgn. L =	1.76 ft	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.06	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
	Dsgn. L =	1.73 ft	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L =	1.52 ft	0.004	0.025	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	7.96	315.48	315.48
	Dsgn. L =	2.32 ft	0.020	0.025	14.89	-3.33	14.89	833.33	750.00	1.95	1.00	7.96	315.48	315.48
	Dsgn. L =	4.06 ft	0.051	0.025	38.24	14.89	38.24	833.33	750.00	1.33	1.00	7.75	315.48	315.48
	Dsgn. L =	4.06 ft	0.070	0.017	52.27	38.24	52.27	833.33	750.00	1.12	1.00	5.48	315.48	315.48
	Dsgn. L =	4.06 ft	0.076	0.010	56.98	52.27	56.98	833.33	750.00	1.03	1.00	3.21	315.48	315.48
	Dsgn. L =	3.87 ft	0.076	0.004	56.98	52.63	56.98	833.33	750.00	1.03	1.00	1.30	315.48	315.48
	Dsgn. L =	4.06 ft	0.070	0.011	52.63	39.16	52.63	833.33	750.00	1.10	1.00	3.57	315.48	315.48
	Dsgn. L =	4.06 ft	0.052	0.018	39.16	16.36	39.16	833.33	750.00	1.28	1.00	5.83	315.48	315.48
	Dsgn. L =	2.51 ft	0.022	0.025	16.36	-3.33	16.36	833.33	750.00	1.97	1.00	7.96	315.48	315.48
	Dsgn. L =	1.50 ft	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
	Dsgn. L =	1.76 ft	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.06	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B43**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 4.06 ft	2	0.070	0.011	52.63	39.16	52.63	833.33	750.00	1.10	1.00	3.57	315.48	315.48
Dsgn. L = 4.06 ft	2	0.052	0.018	39.16	16.36	39.16	833.33	750.00	1.28	1.00	5.83	315.48	315.48
Dsgn. L = 2.51 ft	2	0.022	0.025	16.36	-3.33	16.36	833.33	750.00	1.97	1.00	7.96	315.48	315.48
Dsgn. L = 1.50 ft	3	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007	-0.15	0.15	833.33	750.00	1.00	1.00		2.06	315.48	315.48
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00		0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.004	0.025	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	7.96	315.48	315.48
Dsgn. L = 2.32 ft	2	0.020	0.025	14.89	-3.33	14.89	833.33	750.00	1.95	1.00	7.96	315.48	315.48
Dsgn. L = 4.06 ft	2	0.051	0.025	38.24	14.89	38.24	833.33	750.00	1.33	1.00	7.75	315.48	315.48
Dsgn. L = 4.06 ft	2	0.070	0.017	52.27	38.24	52.27	833.33	750.00	1.12	1.00	5.48	315.48	315.48
Dsgn. L = 4.06 ft	2	0.076	0.010	56.98	52.27	56.98	833.33	750.00	1.03	1.00	3.21	315.48	315.48
Dsgn. L = 3.87 ft	2	0.076	0.004	56.98	52.63	56.98	833.33	750.00	1.03	1.00	1.30	315.48	315.48
Dsgn. L = 4.06 ft	2	0.070	0.011	52.63	39.16	52.63	833.33	750.00	1.10	1.00	3.57	315.48	315.48
Dsgn. L = 4.06 ft	2	0.052	0.018	39.16	16.36	39.16	833.33	750.00	1.28	1.00	5.83	315.48	315.48
Dsgn. L = 2.51 ft	2	0.022	0.025	16.36	-3.33	16.36	833.33	750.00	1.97	1.00	7.96	315.48	315.48
Dsgn. L = 1.50 ft	3	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007	-0.15	0.15	833.33	750.00	1.00	1.00		2.06	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00		0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.004	0.025	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	7.96	315.48	315.48
Dsgn. L = 2.32 ft	2	0.020	0.025	14.89	-3.33	14.89	833.33	750.00	1.95	1.00	7.96	315.48	315.48
Dsgn. L = 4.06 ft	2	0.051	0.025	38.24	14.89	38.24	833.33	750.00	1.33	1.00	7.75	315.48	315.48
Dsgn. L = 4.06 ft	2	0.070	0.017	52.27	38.24	52.27	833.33	750.00	1.12	1.00	5.48	315.48	315.48
Dsgn. L = 4.06 ft	2	0.076	0.010	56.98	52.27	56.98	833.33	750.00	1.03	1.00	3.21	315.48	315.48
Dsgn. L = 3.87 ft	2	0.076	0.004	56.98	52.63	56.98	833.33	750.00	1.03	1.00	1.30	315.48	315.48
Dsgn. L = 4.06 ft	2	0.070	0.011	52.63	39.16	52.63	833.33	750.00	1.10	1.00	3.57	315.48	315.48
Dsgn. L = 4.06 ft	2	0.052	0.018	39.16	16.36	39.16	833.33	750.00	1.28	1.00	5.83	315.48	315.48
Dsgn. L = 2.51 ft	2	0.022	0.025	16.36	-3.33	16.36	833.33	750.00	1.97	1.00	7.96	315.48	315.48
Dsgn. L = 1.50 ft	3	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007	-0.15	0.15	833.33	750.00	1.00	1.00		2.06	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00		0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.004	0.025	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	7.96	315.48	315.48
Dsgn. L = 2.32 ft	2	0.020	0.025	14.89	-3.33	14.89	833.33	750.00	1.95	1.00	7.96	315.48	315.48
Dsgn. L = 4.06 ft	2	0.051	0.025	38.24	14.89	38.24	833.33	750.00	1.33	1.00	7.75	315.48	315.48
Dsgn. L = 4.06 ft	2	0.070	0.017	52.27	38.24	52.27	833.33	750.00	1.12	1.00	5.48	315.48	315.48
Dsgn. L = 4.06 ft	2	0.076	0.010	56.98	52.27	56.98	833.33	750.00	1.03	1.00	3.21	315.48	315.48
Dsgn. L = 3.87 ft	2	0.076	0.004	56.98	52.63	56.98	833.33	750.00	1.03	1.00	1.30	315.48	315.48
Dsgn. L = 4.06 ft	2	0.070	0.011	52.63	39.16	52.63	833.33	750.00	1.10	1.00	3.57	315.48	315.48
Dsgn. L = 4.06 ft	2	0.052	0.018	39.16	16.36	39.16	833.33	750.00	1.28	1.00	5.83	315.48	315.48
Dsgn. L = 2.51 ft	2	0.022	0.025	16.36	-3.33	16.36	833.33	750.00	1.97	1.00	7.96	315.48	315.48
Dsgn. L = 1.50 ft	3	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007	-0.15	0.15	833.33	750.00	1.00	1.00		2.06	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00		0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.006	0.035	-0.00	-4.77	4.77	833.33	750.00	1.00	1.00	11.17	315.48	315.48
Dsgn. L = 2.32 ft	2	0.028	0.035	20.91	-4.77	20.91	833.33	750.00	1.96	1.00	11.17	315.48	315.48
Dsgn. L = 4.06 ft	2	0.071	0.035	53.58	20.91	53.58	833.33	750.00	1.33	1.00	10.96	315.48	315.48
Dsgn. L = 4.06 ft	2	0.097	0.025	72.99	53.58	72.99	833.33	750.00	1.12	1.00	7.74	315.48	315.48
Dsgn. L = 4.06 ft	2	0.105	0.014	79.12	72.99	79.12	833.33	750.00	1.03	1.00	4.51	315.48	315.48
Dsgn. L = 3.87 ft	2	0.105	0.006	79.12	72.36	79.12	833.33	750.00	1.03	1.00	1.93	315.48	315.48
Dsgn. L = 4.06 ft	2	0.096	0.016	72.36	52.57	72.36	833.33	750.00	1.11	1.00	5.15	315.48	315.48
Dsgn. L = 4.06 ft	2	0.070	0.027	52.57	19.52	52.57	833.33	750.00	1.31	1.00	8.38	315.48	315.48
Dsgn. L = 2.51 ft	2	0.026	0.036	19.52	-8.97	19.52	833.33	750.00	2.18	1.00	11.46	315.48	315.48
Dsgn. L = 1.50 ft	3	0.012	0.019	-0.00	-8.97	8.97	833.33	750.00	1.00	1.00	5.95	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.018	-0.17	0.17	833.33	750.00	1.00	1.00		5.82	315.48	315.48
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00		0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.006	0.067	-0.00	-4.77	4.77	833.33	750.00	1.00	1.00	21.12	315.48	315.48
Dsgn. L = 2.32 ft	2	0.059	0.067	43.98	-4.77	43.98	833.33	750.00	1.79	1.00	21.12	315.48	315.48
Dsgn. L = 4.06 ft	2	0.142	0.066	106.17	43.98	106.17	833.33	750.00	1.32	1.00	20.91	315.48	315.48
Dsgn. L = 4.06 ft	2	0.191	0.047	143.55	106.17	143.55	833.33	750.00	1.12	1.00	14.88	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B43**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
	Dsgn. L = 4.06 ft	2	0.208	0.028	156.12	143.55	156.12	833.33	750.00	1.03	1.00	8.85	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.208	0.010	156.12	144.50	156.12	833.33	750.00	1.03	1.00	3.18	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.193	0.029	144.50	108.63	144.50	833.33	750.00	1.10	1.00	9.21	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.145	0.048	108.63	47.95	108.63	833.33	750.00	1.27	1.00	15.23	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.064	0.067	47.95	-4.77	47.95	833.33	750.00	1.82	1.00	21.12	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.006	0.010	-0.00	-4.77	4.77	833.33	750.00	1.00	1.00	3.15	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.010	-0.15	0.15	833.33	750.00	1.00	1.00	3.02	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
	Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
	Dsgn. L = 1.52 ft	1	0.006	0.066	-0.00	-4.77	4.77	833.33	750.00	1.00	1.00	20.97	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.058	0.066	43.65	-4.77	43.65	833.33	750.00	1.79	1.00	20.97	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.140	0.066	105.24	43.65	105.24	833.33	750.00	1.32	1.00	20.76	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.189	0.047	142.04	105.24	142.04	833.33	750.00	1.12	1.00	14.74	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.205	0.028	154.02	142.04	154.02	833.33	750.00	1.03	1.00	8.71	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.205	0.011	154.02	141.84	154.02	833.33	750.00	1.03	1.00	3.33	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.189	0.030	141.84	105.38	141.84	833.33	750.00	1.11	1.00	9.35	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.141	0.049	105.38	44.11	105.38	833.33	750.00	1.28	1.00	15.38	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.059	0.067	44.11	-8.97	44.11	833.33	750.00	1.98	1.00	21.26	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.012	0.019	-0.00	-8.97	8.97	833.33	750.00	1.00	1.00	5.95	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.018	-0.17	0.17	833.33	750.00	1.00	1.00	5.82	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
	Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
	Dsgn. L = 1.52 ft	1	0.012	0.036	-0.00	-8.97	8.97	833.33	750.00	1.00	1.00	11.46	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.023	0.036	17.38	-8.97	17.38	833.33	750.00	2.17	1.00	11.46	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.068	0.036	51.23	17.38	51.23	833.33	750.00	1.37	1.00	11.25	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.096	0.025	71.81	51.23	71.81	833.33	750.00	1.13	1.00	8.03	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.105	0.015	79.12	71.81	79.12	833.33	750.00	1.04	1.00	4.80	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.105	0.005	79.12	73.48	79.12	833.33	750.00	1.03	1.00	1.64	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.098	0.015	73.48	54.87	73.48	833.33	750.00	1.10	1.00	4.86	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.073	0.026	54.87	22.99	54.87	833.33	750.00	1.28	1.00	8.09	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.031	0.035	22.99	-4.77	22.99	833.33	750.00	1.98	1.00	11.17	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.006	0.010	-0.00	-4.77	4.77	833.33	750.00	1.00	1.00	3.15	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.010	-0.15	0.15	833.33	750.00	1.00	1.00	3.02	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
	Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
	Dsgn. L = 1.52 ft	1	0.012	0.036	-0.00	-8.97	8.97	833.33	750.00	1.00	1.00	11.32	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.023	0.036	17.05	-8.97	17.05	833.33	750.00	2.17	1.00	11.32	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.067	0.035	50.31	17.05	50.31	833.33	750.00	1.37	1.00	11.11	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.094	0.025	70.30	50.31	70.30	833.33	750.00	1.13	1.00	7.88	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.103	0.015	77.02	70.30	77.02	833.33	750.00	1.04	1.00	4.65	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.103	0.006	77.02	70.82	77.02	833.33	750.00	1.03	1.00	1.78	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.094	0.016	70.82	51.62	70.82	833.33	750.00	1.11	1.00	5.01	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.069	0.026	51.62	19.16	51.62	833.33	750.00	1.31	1.00	8.23	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.026	0.036	19.16	-8.97	19.16	833.33	750.00	2.18	1.00	11.32	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.012	0.019	-0.00	-8.97	8.97	833.33	750.00	1.00	1.00	5.95	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.018	-0.17	0.17	833.33	750.00	1.00	1.00	5.82	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
	Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
	Dsgn. L = 1.52 ft	1	0.012	0.067	-0.00	-8.97	8.97	833.33	750.00	1.00	1.00	21.26	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.053	0.067	40.12	-8.97	40.12	833.33	750.00	1.95	1.00	21.26	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.137	0.067	102.89	40.12	102.89	833.33	750.00	1.33	1.00	21.05	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.188	0.048	140.86	102.89	140.86	833.33	750.00	1.12	1.00	15.03	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.205	0.029	154.02	140.86	154.02	833.33	750.00	1.04	1.00	9.00	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.205	0.010	154.02	142.96	154.02	833.33	750.00	1.03	1.00	3.04	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.191	0.029	142.96	107.68	142.96	833.33	750.00	1.10	1.00	9.06	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.144	0.048	107.68	47.58	107.68	833.33	750.00	1.27	1.00	15.09	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.063	0.066	47.58	-4.77	47.58	833.33	750.00	1.83	1.00	20.97	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.006	0.010	-0.00	-4.77	4.77	833.33	750.00	1.00	1.00	3.15	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.010	-0.15	0.15	833.33	750.00	1.00	1.00	3.02	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
	Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48	
	Dsgn. L = 1.52 ft	1	0.012	0.067	-0.00	-8.97	8.97	833.33	750.00	1.00	1.00	21.12	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.053	0.067	39.78	-8.97	39.78	833.33	750.00	1.96	1.00	21.12	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B43**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.06 ft	2	0.136	0.066	101.97	39.78	101.97	833.33	750.00	1.33	1.00	20.91	315.48	315.48
Dsgn. L = 4.06 ft	2	0.186	0.047	139.35	101.97	139.35	833.33	750.00	1.12	1.00	14.88	315.48	315.48
Dsgn. L = 4.06 ft	2	0.203	0.028	151.92	139.35	151.92	833.33	750.00	1.03	1.00	8.85	315.48	315.48
Dsgn. L = 3.87 ft	2	0.203	0.010	151.92	140.30	151.92	833.33	750.00	1.03	1.00	3.18	315.48	315.48
Dsgn. L = 4.06 ft	2	0.187	0.029	140.30	104.43	140.30	833.33	750.00	1.10	1.00	9.21	315.48	315.48
Dsgn. L = 4.06 ft	2	0.139	0.048	104.43	43.75	104.43	833.33	750.00	1.28	1.00	15.23	315.48	315.48
Dsgn. L = 2.51 ft	2	0.058	0.067	43.75	-8.97	43.75	833.33	750.00	1.98	1.00	21.12	315.48	315.48
Dsgn. L = 1.50 ft	3	0.012	0.019	-0.00	-8.97	8.97	833.33	750.00	1.00	1.00	5.95	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.018		-0.17	0.17	833.33	750.00	1.00	1.00	5.82	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.006	0.036	-0.00	-4.77	4.77	833.33	750.00	1.00	1.00	11.32	315.48	315.48
Dsgn. L = 2.32 ft	2	0.028	0.036	21.25	-4.77	21.25	833.33	750.00	1.95	1.00	11.32	315.48	315.48
Dsgn. L = 4.06 ft	2	0.073	0.035	54.51	21.25	54.51	833.33	750.00	1.33	1.00	11.11	315.48	315.48
Dsgn. L = 4.06 ft	2	0.099	0.025	74.50	54.51	74.50	833.33	750.00	1.12	1.00	7.88	315.48	315.48
Dsgn. L = 4.06 ft	2	0.108	0.015	81.22	74.50	81.22	833.33	750.00	1.03	1.00	4.65	315.48	315.48
Dsgn. L = 3.87 ft	2	0.108	0.006	81.22	75.02	81.22	833.33	750.00	1.03	1.00	1.78	315.48	315.48
Dsgn. L = 4.06 ft	2	0.100	0.016	75.02	55.82	75.02	833.33	750.00	1.10	1.00	5.01	315.48	315.48
Dsgn. L = 4.06 ft	2	0.074	0.026	55.82	23.36	55.82	833.33	750.00	1.28	1.00	8.23	315.48	315.48
Dsgn. L = 2.51 ft	2	0.031	0.036	23.36	-4.77	23.36	833.33	750.00	1.98	1.00	11.32	315.48	315.48
Dsgn. L = 1.50 ft	3	0.006	0.010	-0.00	-4.77	4.77	833.33	750.00	1.00	1.00	3.15	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.010		-0.15	0.15	833.33	750.00	1.00	1.00	3.02	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.004	0.025	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	7.81	315.48	315.48
Dsgn. L = 2.32 ft	2	0.019	0.025	14.56	-3.33	14.56	833.33	750.00	1.96	1.00	7.81	315.48	315.48
Dsgn. L = 4.06 ft	2	0.050	0.024	37.31	14.56	37.31	833.33	750.00	1.33	1.00	7.60	315.48	315.48
Dsgn. L = 4.06 ft	2	0.068	0.017	50.75	37.31	50.75	833.33	750.00	1.12	1.00	5.34	315.48	315.48
Dsgn. L = 4.06 ft	2	0.073	0.010	54.88	50.75	54.88	833.33	750.00	1.03	1.00	3.07	315.48	315.48
Dsgn. L = 3.87 ft	2	0.073	0.005	54.88	49.97	54.88	833.33	750.00	1.04	1.00	1.45	315.48	315.48
Dsgn. L = 4.06 ft	2	0.067	0.012	49.97	35.91	49.97	833.33	750.00	1.11	1.00	3.71	315.48	315.48
Dsgn. L = 4.06 ft	2	0.048	0.019	35.91	12.53	35.91	833.33	750.00	1.32	1.00	5.98	315.48	315.48
Dsgn. L = 2.51 ft	2	0.017	0.026	12.53	-7.53	12.53	833.33	750.00	2.21	1.00	8.10	315.48	315.48
Dsgn. L = 1.50 ft	3	0.010	0.016	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	4.99	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.015		-0.16	0.16	833.33	750.00	1.00	1.00	4.86	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.004	0.056	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	17.76	315.48	315.48
Dsgn. L = 2.32 ft	2	0.050	0.056	37.63	-3.33	37.63	833.33	750.00	1.77	1.00	17.76	315.48	315.48
Dsgn. L = 4.06 ft	2	0.120	0.056	89.90	37.63	89.90	833.33	750.00	1.31	1.00	17.55	315.48	315.48
Dsgn. L = 4.06 ft	2	0.162	0.040	121.31	89.90	121.31	833.33	750.00	1.12	1.00	12.48	315.48	315.48
Dsgn. L = 4.06 ft	2	0.176	0.024	131.88	121.31	131.88	833.33	750.00	1.03	1.00	7.41	315.48	315.48
Dsgn. L = 3.87 ft	2	0.176	0.009	131.88	122.12	131.88	833.33	750.00	1.03	1.00	2.70	315.48	315.48
Dsgn. L = 4.06 ft	2	0.163	0.025	122.12	91.96	122.12	833.33	750.00	1.10	1.00	7.77	315.48	315.48
Dsgn. L = 4.06 ft	2	0.123	0.041	91.96	40.96	91.96	833.33	750.00	1.26	1.00	12.83	315.48	315.48
Dsgn. L = 2.51 ft	2	0.055	0.056	40.96	-3.33	40.96	833.33	750.00	1.80	1.00	17.76	315.48	315.48
Dsgn. L = 1.50 ft	3	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.06	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.004	0.056	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	17.61	315.48	315.48
Dsgn. L = 2.32 ft	2	0.050	0.056	37.29	-3.33	37.29	833.33	750.00	1.77	1.00	17.61	315.48	315.48
Dsgn. L = 4.06 ft	2	0.119	0.055	88.97	37.29	88.97	833.33	750.00	1.31	1.00	17.40	315.48	315.48
Dsgn. L = 4.06 ft	2	0.160	0.039	119.80	88.97	119.80	833.33	750.00	1.12	1.00	12.34	315.48	315.48
Dsgn. L = 4.06 ft	2	0.173	0.023	129.78	119.80	129.78	833.33	750.00	1.03	1.00	7.27	315.48	315.48
Dsgn. L = 3.87 ft	2	0.173	0.009	129.78	119.46	129.78	833.33	750.00	1.03	1.00	2.85	315.48	315.48
Dsgn. L = 4.06 ft	2	0.159	0.025	119.46	88.72	119.46	833.33	750.00	1.11	1.00	7.91	315.48	315.48
Dsgn. L = 4.06 ft	2	0.118	0.041	88.72	37.12	88.72	833.33	750.00	1.28	1.00	12.98	315.48	315.48
Dsgn. L = 2.51 ft	2	0.049	0.057	37.12	-7.53	37.12	833.33	750.00	1.98	1.00	17.90	315.48	315.48
Dsgn. L = 1.50 ft	3	0.010	0.016	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	4.99	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.015		-0.16	0.16	833.33	750.00	1.00	1.00	4.86	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B43**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.52 ft	1	0.010	0.026	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	8.10	315.48	315.48
Dsgn. L = 2.32 ft	2	0.015	0.026	11.03	-7.53	11.03	833.33	750.00	2.20	1.00	8.10	315.48	315.48
Dsgn. L = 4.06 ft	2	0.047	0.025	34.96	11.03	34.96	833.33	750.00	1.39	1.00	7.89	315.48	315.48
Dsgn. L = 4.06 ft	2	0.066	0.018	49.58	34.96	49.58	833.33	750.00	1.14	1.00	5.63	315.48	315.48
Dsgn. L = 4.06 ft	2	0.073	0.011	54.88	49.58	54.88	833.33	750.00	1.04	1.00	3.36	315.48	315.48
Dsgn. L = 3.87 ft	2	0.073	0.004	54.88	51.09	54.88	833.33	750.00	1.03	1.00	1.16	315.48	315.48
Dsgn. L = 4.06 ft	2	0.068	0.011	51.09	38.20	51.09	833.33	750.00	1.10	1.00	3.42	315.48	315.48
Dsgn. L = 4.06 ft	2	0.051	0.018	38.20	16.00	38.20	833.33	750.00	1.28	1.00	5.69	315.48	315.48
Dsgn. L = 2.51 ft	2	0.021	0.025	16.00	-3.33	16.00	833.33	750.00	1.98	1.00	7.81	315.48	315.48
Dsgn. L = 1.50 ft	3	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007	-0.15	0.15	0.15	833.33	750.00	1.00	1.00	2.06	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.010	0.025	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	7.96	315.48	315.48
Dsgn. L = 2.32 ft	2	0.014	0.025	10.69	-7.53	10.69	833.33	750.00	2.20	1.00	7.96	315.48	315.48
Dsgn. L = 4.06 ft	2	0.045	0.025	34.04	10.69	34.04	833.33	750.00	1.39	1.00	7.75	315.48	315.48
Dsgn. L = 4.06 ft	2	0.064	0.017	48.07	34.04	48.07	833.33	750.00	1.13	1.00	5.48	315.48	315.48
Dsgn. L = 4.06 ft	2	0.070	0.010	52.78	48.07	52.78	833.33	750.00	1.04	1.00	3.21	315.48	315.48
Dsgn. L = 3.87 ft	2	0.070	0.004	52.78	48.43	52.78	833.33	750.00	1.03	1.00	1.30	315.48	315.48
Dsgn. L = 4.06 ft	2	0.065	0.011	48.43	34.96	48.43	833.33	750.00	1.11	1.00	3.57	315.48	315.48
Dsgn. L = 4.06 ft	2	0.047	0.018	34.96	12.16	34.96	833.33	750.00	1.32	1.00	5.83	315.48	315.48
Dsgn. L = 2.51 ft	2	0.016	0.025	12.16	-7.53	12.16	833.33	750.00	2.21	1.00	7.96	315.48	315.48
Dsgn. L = 1.50 ft	3	0.010	0.016	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	4.99	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.015	-0.16	0.16	0.16	833.33	750.00	1.00	1.00	4.86	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.010	0.057	-0.00	-7.53	7.53	833.33	750.00	1.00	1.00	17.90	315.48	315.48
Dsgn. L = 2.32 ft	2	0.045	0.057	33.76	-7.53	33.76	833.33	750.00	1.95	1.00	17.90	315.48	315.48
Dsgn. L = 4.06 ft	2	0.115	0.056	86.62	33.76	86.62	833.33	750.00	1.33	1.00	17.69	315.48	315.48
Dsgn. L = 4.06 ft	2	0.158	0.040	118.63	86.62	118.63	833.33	750.00	1.12	1.00	12.63	315.48	315.48
Dsgn. L = 4.06 ft	2	0.173	0.024	129.78	118.63	129.78	833.33	750.00	1.04	1.00	7.56	315.48	315.48
Dsgn. L = 3.87 ft	2	0.173	0.008	129.78	120.58	129.78	833.33	750.00	1.03	1.00	2.56	315.48	315.48
Dsgn. L = 4.06 ft	2	0.161	0.024	120.58	91.01	120.58	833.33	750.00	1.10	1.00	7.62	315.48	315.48
Dsgn. L = 4.06 ft	2	0.121	0.040	91.01	40.59	91.01	833.33	750.00	1.26	1.00	12.69	315.48	315.48
Dsgn. L = 2.51 ft	2	0.054	0.056	40.59	-3.33	40.59	833.33	750.00	1.80	1.00	17.61	315.48	315.48
Dsgn. L = 1.50 ft	3	0.004	0.007	-0.00	-3.33	3.33	833.33	750.00	1.00	1.00	2.19	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007	-0.15	0.15	0.15	833.33	750.00	1.00	1.00	2.06	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001	-0.14	0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.005	0.028	-0.00	-3.78	3.78	833.33	750.00	1.00	1.00	8.86	315.48	315.48
Dsgn. L = 2.32 ft	2	0.022	0.028	16.54	-3.78	16.54	833.33	750.00	1.96	1.00	8.86	315.48	315.48
Dsgn. L = 4.06 ft	2	0.057	0.027	42.40	16.54	42.40	833.33	750.00	1.33	1.00	8.65	315.48	315.48
Dsgn. L = 4.06 ft	2	0.077	0.019	57.70	42.40	57.70	833.33	750.00	1.12	1.00	6.09	315.48	315.48
Dsgn. L = 4.06 ft	2	0.083	0.011	62.45	57.70	62.45	833.33	750.00	1.03	1.00	3.52	315.48	315.48
Dsgn. L = 3.87 ft	2	0.083	0.005	62.45	56.97	62.45	833.33	750.00	1.03	1.00	1.60	315.48	315.48
Dsgn. L = 4.06 ft	2	0.076	0.013	56.97	41.12	56.97	833.33	750.00	1.11	1.00	4.16	315.48	315.48
Dsgn. L = 4.06 ft	2	0.055	0.021	41.12	14.71	41.12	833.33	750.00	1.32	1.00	6.73	315.48	315.48
Dsgn. L = 2.51 ft	2	0.020	0.029	14.71	-7.98	14.71	833.33	750.00	2.20	1.00	9.15	315.48	315.48
Dsgn. L = 1.50 ft	3	0.011	0.017	-0.00	-7.98	7.98	833.33	750.00	1.00	1.00	5.29	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.016	-0.17	0.17	0.17	833.33	750.00	1.00	1.00	5.16	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B43**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.005	0.060	-0.00	-3.78	3.78	833.33	750.00	1.00	1.00	18.81	315.48	315.48
Dsgn. L = 2.32 ft	2	0.053	0.060	39.61	-3.78	39.61	833.33	750.00	1.78	1.00	18.81	315.48	315.48
Dsgn. L = 4.06 ft	2	0.127	0.059	94.98	39.61	94.98	833.33	750.00	1.31	1.00	18.60	315.48	315.48
Dsgn. L = 4.06 ft	2	0.171	0.042	128.26	94.98	128.26	833.33	750.00	1.12	1.00	13.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.186	0.025	139.45	128.26	139.45	833.33	750.00	1.03	1.00	7.86	315.48	315.48
Dsgn. L = 3.87 ft	2	0.186	0.009	139.45	129.11	139.45	833.33	750.00	1.03	1.00	2.85	315.48	315.48
Dsgn. L = 4.06 ft	2	0.172	0.026	129.11	97.17	129.11	833.33	750.00	1.10	1.00	8.22	315.48	315.48
Dsgn. L = 4.06 ft	2	0.130	0.043	97.17	43.14	97.17	833.33	750.00	1.26	1.00	13.58	315.48	315.48
Dsgn. L = 2.51 ft	2	0.058	0.060	43.14	-3.78	43.14	833.33	750.00	1.81	1.00	18.81	315.48	315.48
Dsgn. L = 1.50 ft	3	0.005	0.008	-0.00	-3.78	3.78	833.33	750.00	1.00	1.00	2.49	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007	-0.15	-0.15	0.15	833.33	750.00	1.00	1.00	2.36	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.005	0.059	-0.00	-3.78	3.78	833.33	750.00	1.00	1.00	18.66	315.48	315.48
Dsgn. L = 2.32 ft	2	0.052	0.059	39.28	-3.78	39.28	833.33	750.00	1.78	1.00	18.66	315.48	315.48
Dsgn. L = 4.06 ft	2	0.125	0.058	94.06	39.28	94.06	833.33	750.00	1.31	1.00	18.45	315.48	315.48
Dsgn. L = 4.06 ft	2	0.169	0.041	126.75	94.06	126.75	833.33	750.00	1.12	1.00	13.09	315.48	315.48
Dsgn. L = 4.06 ft	2	0.183	0.024	137.35	126.75	137.35	833.33	750.00	1.03	1.00	7.72	315.48	315.48
Dsgn. L = 3.87 ft	2	0.183	0.009	137.35	126.45	137.35	833.33	750.00	1.03	1.00	3.00	315.48	315.48
Dsgn. L = 4.06 ft	2	0.169	0.027	126.45	93.92	126.45	833.33	750.00	1.11	1.00	8.36	315.48	315.48
Dsgn. L = 4.06 ft	2	0.125	0.044	93.92	39.31	93.92	833.33	750.00	1.28	1.00	13.73	315.48	315.48
Dsgn. L = 2.51 ft	2	0.052	0.060	39.31	-7.98	39.31	833.33	750.00	1.98	1.00	18.95	315.48	315.48
Dsgn. L = 1.50 ft	3	0.011	0.017	-0.00	-7.98	7.98	833.33	750.00	1.00	1.00	5.29	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.016	-0.17	-0.17	0.17	833.33	750.00	1.00	1.00	5.16	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.011	0.029	-0.00	-7.98	7.98	833.33	750.00	1.00	1.00	9.15	315.48	315.48
Dsgn. L = 2.32 ft	2	0.017	0.029	13.01	-7.98	13.01	833.33	750.00	2.19	1.00	9.15	315.48	315.48
Dsgn. L = 4.06 ft	2	0.053	0.028	40.05	13.01	40.05	833.33	750.00	1.38	1.00	8.94	315.48	315.48
Dsgn. L = 4.06 ft	2	0.075	0.020	56.53	40.05	56.53	833.33	750.00	1.13	1.00	6.38	315.48	315.48
Dsgn. L = 4.06 ft	2	0.083	0.012	62.45	56.53	62.45	833.33	750.00	1.04	1.00	3.81	315.48	315.48
Dsgn. L = 3.87 ft	2	0.083	0.004	62.45	58.09	62.45	833.33	750.00	1.03	1.00	1.31	315.48	315.48
Dsgn. L = 4.06 ft	2	0.077	0.012	58.09	43.41	58.09	833.33	750.00	1.10	1.00	3.87	315.48	315.48
Dsgn. L = 4.06 ft	2	0.058	0.020	43.41	18.18	43.41	833.33	750.00	1.28	1.00	6.44	315.48	315.48
Dsgn. L = 2.51 ft	2	0.024	0.028	18.18	-3.78	18.18	833.33	750.00	1.98	1.00	8.86	315.48	315.48
Dsgn. L = 1.50 ft	3	0.005	0.008	-0.00	-3.78	3.78	833.33	750.00	1.00	1.00	2.49	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007	-0.15	-0.15	0.15	833.33	750.00	1.00	1.00	2.36	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.011	0.029	-0.00	-7.98	7.98	833.33	750.00	1.00	1.00	9.01	315.48	315.48
Dsgn. L = 2.32 ft	2	0.017	0.029	12.68	-7.98	12.68	833.33	750.00	2.19	1.00	9.01	315.48	315.48
Dsgn. L = 4.06 ft	2	0.052	0.028	39.12	12.68	39.12	833.33	750.00	1.38	1.00	8.80	315.48	315.48
Dsgn. L = 4.06 ft	2	0.073	0.020	55.01	39.12	55.01	833.33	750.00	1.13	1.00	6.23	315.48	315.48
Dsgn. L = 4.06 ft	2	0.080	0.012	60.35	55.01	60.35	833.33	750.00	1.04	1.00	3.66	315.48	315.48
Dsgn. L = 3.87 ft	2	0.080	0.005	60.35	55.43	60.35	833.33	750.00	1.03	1.00	1.45	315.48	315.48
Dsgn. L = 4.06 ft	2	0.074	0.013	55.43	40.16	55.43	833.33	750.00	1.11	1.00	4.02	315.48	315.48
Dsgn. L = 4.06 ft	2	0.054	0.021	40.16	14.35	40.16	833.33	750.00	1.32	1.00	6.58	315.48	315.48
Dsgn. L = 2.51 ft	2	0.019	0.029	14.35	-7.98	14.35	833.33	750.00	2.20	1.00	9.01	315.48	315.48
Dsgn. L = 1.50 ft	3	0.011	0.017	-0.00	-7.98	7.98	833.33	750.00	1.00	1.00	5.29	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.016	-0.17	-0.17	0.17	833.33	750.00	1.00	1.00	5.16	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.011	0.060	-0.00	-7.98	7.98	833.33	750.00	1.00	1.00	18.95	315.48	315.48
Dsgn. L = 2.32 ft	2	0.048	0.060	35.75	-7.98	35.75	833.33	750.00	1.95	1.00	18.95	315.48	315.48
Dsgn. L = 4.06 ft	2	0.122	0.059	91.71	35.75	91.71	833.33	750.00	1.33	1.00	18.74	315.48	315.48
Dsgn. L = 4.06 ft	2	0.167	0.042	125.57	91.71	125.57	833.33	750.00	1.12	1.00	13.38	315.48	315.48
Dsgn. L = 4.06 ft	2	0.183	0.025	137.35	125.57	137.35	833.33	750.00	1.04	1.00	8.01	315.48	315.48
Dsgn. L = 3.87 ft	2	0.183	0.009	137.35	127.57	137.35	833.33	750.00	1.03	1.00	2.71	315.48	315.48
Dsgn. L = 4.06 ft	2	0.170	0.026	127.57	96.22	127.57	833.33	750.00	1.10	1.00	8.07	315.48	315.48
Dsgn. L = 4.06 ft	2	0.128	0.043	96.22	42.78	96.22	833.33	750.00	1.26	1.00	13.44	315.48	315.48
Dsgn. L = 2.51 ft	2	0.057	0.059	42.78	-3.78	42.78	833.33	750.00	1.81	1.00	18.66	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B43

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Max Stress Ratios		Summary of Moment Values							Summary of Shear Values				
	Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 1.50 ft	3	0.005	0.008	-0.00	-3.78	3.78	833.33	750.00	1.00	1.00	2.49	315.48	315.48
	Dsgn. L = 1.76 ft	3	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.36	315.48	315.48
+1.20D+L+0.50S+W+1.60H, LL C	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.011	0.060	-0.00	-7.98	7.98	833.33	750.00	1.00	1.00	18.81	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.047	0.060	35.41	-7.98	35.41	833.33	750.00	1.96	1.00	18.81	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.121	0.059	90.78	35.41	90.78	833.33	750.00	1.33	1.00	18.60	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.165	0.042	124.06	90.78	124.06	833.33	750.00	1.12	1.00	13.23	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.180	0.025	135.25	124.06	135.25	833.33	750.00	1.03	1.00	7.86	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.180	0.009	135.25	124.91	135.25	833.33	750.00	1.03	1.00	2.85	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.167	0.026	124.91	92.97	124.91	833.33	750.00	1.10	1.00	8.22	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.124	0.043	92.97	38.94	92.97	833.33	750.00	1.28	1.00	13.58	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.052	0.060	38.94	-7.98	38.94	833.33	750.00	1.98	1.00	18.81	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.011	0.017	-0.00	-7.98	7.98	833.33	750.00	1.00	1.00	5.29	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.016		-0.17	0.17	833.33	750.00	1.00	1.00	5.16	315.48	315.48	
+0.90D+W+1.60H	Dsgn. L = 1.73 ft	1	0.000	0.000		-0.10	0.10	833.33	750.00	1.00	1.00	0.12	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.003	0.019	-0.00	-2.49	2.49	833.33	750.00	1.00	1.00	5.97	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.015	0.019	11.17	-2.49	11.17	833.33	750.00	1.95	1.00	5.97	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.038	0.018	28.68	11.17	28.68	833.33	750.00	1.33	1.00	5.81	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.052	0.013	39.20	28.68	39.20	833.33	750.00	1.12	1.00	4.11	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.057	0.008	42.73	39.20	42.73	833.33	750.00	1.03	1.00	2.41	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.057	0.003	42.73	39.47	42.73	833.33	750.00	1.03	1.00	0.98	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.053	0.008	39.47	29.37	39.47	833.33	750.00	1.10	1.00	2.68	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.039	0.014	29.37	12.27	29.37	833.33	750.00	1.28	1.00	4.37	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.016	0.019	12.27	-2.49	12.27	833.33	750.00	1.97	1.00	5.97	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.003	0.005	-0.00	-2.49	2.49	833.33	750.00	1.00	1.00	1.64	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.005		-0.11	0.11	833.33	750.00	1.00	1.00	1.54	315.48	315.48	
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.005	0.026	-0.00	-3.51	3.51	833.33	750.00	1.00	1.00	8.23	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.020	0.026	15.35	-3.51	15.35	833.33	750.00	1.96	1.00	8.23	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.052	0.025	39.35	15.35	39.35	833.33	750.00	1.33	1.00	8.02	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.071	0.018	53.53	39.35	53.53	833.33	750.00	1.12	1.00	5.64	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.077	0.010	57.91	53.53	57.91	833.33	750.00	1.03	1.00	3.25	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.077	0.005	57.91	52.77	57.91	833.33	750.00	1.04	1.00	1.51	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.070	0.012	52.77	37.99	52.77	833.33	750.00	1.11	1.00	3.89	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.051	0.020	37.99	13.40	37.99	833.33	750.00	1.32	1.00	6.28	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.018	0.027	13.40	-7.71	13.40	833.33	750.00	2.20	1.00	8.52	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.010	0.016	-0.00	-7.71	7.71	833.33	750.00	1.00	1.00	5.11	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.016		-0.16	0.16	833.33	750.00	1.00	1.00	4.98	315.48	315.48	
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.005	0.058	-0.00	-3.51	3.51	833.33	750.00	1.00	1.00	18.18	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.051	0.058	38.42	-3.51	38.42	833.33	750.00	1.77	1.00	18.18	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.123	0.057	91.93	38.42	91.93	833.33	750.00	1.31	1.00	17.97	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.165	0.041	124.09	91.93	124.09	833.33	750.00	1.12	1.00	12.78	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.180	0.024	134.91	124.09	134.91	833.33	750.00	1.03	1.00	7.59	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.180	0.009	134.91	124.92	134.91	833.33	750.00	1.03	1.00	2.76	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.167	0.025	124.92	94.05	124.92	833.33	750.00	1.10	1.00	7.95	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.125	0.042	94.05	41.83	94.05	833.33	750.00	1.26	1.00	13.13	315.48	315.48
	Dsgn. L = 2.51 ft	2	0.056	0.058	41.83	-3.51	41.83	833.33	750.00	1.80	1.00	18.18	315.48	315.48
	Dsgn. L = 1.50 ft	3	0.005	0.007	-0.00	-3.51	3.51	833.33	750.00	1.00	1.00	2.31	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.18	315.48	315.48	
+1.20D+L+0.20S+E+1.60H, LL C	Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
	Dsgn. L = 1.52 ft	1	0.005	0.057	-0.00	-3.51	3.51	833.33	750.00	1.00	1.00	18.03	315.48	315.48
	Dsgn. L = 2.32 ft	2	0.051	0.057	38.09	-3.51	38.09	833.33	750.00	1.77	1.00	18.03	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.121	0.056	91.01	38.09	91.01	833.33	750.00	1.31	1.00	17.82	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.163	0.040	122.58	91.01	122.58	833.33	750.00	1.12	1.00	12.64	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.177	0.024	132.81	122.58	132.81	833.33	750.00	1.03	1.00	7.45	315.48	315.48
	Dsgn. L = 3.87 ft	2	0.177	0.009	132.81	122.26	132.81	833.33	750.00	1.03	1.00	2.91	315.48	315.48
	Dsgn. L = 4.06 ft	2	0.163	0.026	122.26	90.80	122.26	833.33	750.00	1.11	1.00	8.09	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B43**

**Maximum Forces & Stresses for Load Combinations**

Load Combination			Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.06 ft	2	0.121	0.042	90.80	37.99	90.80	833.33	750.00	1.28	1.00	13.28	315.48	315.48
Dsgn. L = 2.51 ft	2	0.051	0.058	37.99	-7.71	37.99	833.33	750.00	1.98	1.00	18.32	315.48	315.48
Dsgn. L = 1.50 ft	3	0.010	0.016	-0.00	-7.71	7.71	833.33	750.00	1.00	1.00	5.11	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.016		-0.16	0.16	833.33	750.00	1.00	1.00	4.98	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.010	0.027	-0.00	-7.71	7.71	833.33	750.00	1.00	1.00	8.52	315.48	315.48
Dsgn. L = 2.32 ft	2	0.016	0.027	11.82	-7.71	11.82	833.33	750.00	2.20	1.00	8.52	315.48	315.48
Dsgn. L = 4.06 ft	2	0.049	0.026	36.99	11.82	36.99	833.33	750.00	1.38	1.00	8.31	315.48	315.48
Dsgn. L = 4.06 ft	2	0.070	0.019	52.36	36.99	52.36	833.33	750.00	1.13	1.00	5.93	315.48	315.48
Dsgn. L = 4.06 ft	2	0.077	0.011	57.91	52.36	57.91	833.33	750.00	1.04	1.00	3.54	315.48	315.48
Dsgn. L = 3.87 ft	2	0.077	0.004	57.91	53.89	57.91	833.33	750.00	1.03	1.00	1.22	315.48	315.48
Dsgn. L = 4.06 ft	2	0.072	0.011	53.89	40.29	53.89	833.33	750.00	1.10	1.00	3.60	315.48	315.48
Dsgn. L = 4.06 ft	2	0.054	0.019	40.29	16.87	40.29	833.33	750.00	1.28	1.00	5.99	315.48	315.48
Dsgn. L = 2.51 ft	2	0.022	0.026	16.87	-3.51	16.87	833.33	750.00	1.98	1.00	8.23	315.48	315.48
Dsgn. L = 1.50 ft	3	0.005	0.007	-0.00	-3.51	3.51	833.33	750.00	1.00	1.00	2.31	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.18	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.010	0.027	-0.00	-7.71	7.71	833.33	750.00	1.00	1.00	8.38	315.48	315.48
Dsgn. L = 2.32 ft	2	0.015	0.027	11.49	-7.71	11.49	833.33	750.00	2.20	1.00	8.38	315.48	315.48
Dsgn. L = 4.06 ft	2	0.048	0.026	36.07	11.49	36.07	833.33	750.00	1.39	1.00	8.17	315.48	315.48
Dsgn. L = 4.06 ft	2	0.068	0.018	50.84	36.07	50.84	833.33	750.00	1.13	1.00	5.78	315.48	315.48
Dsgn. L = 4.06 ft	2	0.074	0.011	55.81	50.84	55.81	833.33	750.00	1.04	1.00	3.39	315.48	315.48
Dsgn. L = 3.87 ft	2	0.074	0.004	55.81	51.23	55.81	833.33	750.00	1.03	1.00	1.36	315.48	315.48
Dsgn. L = 4.06 ft	2	0.068	0.012	51.23	37.04	51.23	833.33	750.00	1.11	1.00	3.75	315.48	315.48
Dsgn. L = 4.06 ft	2	0.049	0.019	37.04	13.04	37.04	833.33	750.00	1.32	1.00	6.13	315.48	315.48
Dsgn. L = 2.51 ft	2	0.017	0.027	13.04	-7.71	13.04	833.33	750.00	2.20	1.00	8.38	315.48	315.48
Dsgn. L = 1.50 ft	3	0.010	0.016	-0.00	-7.71	7.71	833.33	750.00	1.00	1.00	5.11	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.016		-0.16	0.16	833.33	750.00	1.00	1.00	4.98	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.010	0.058	-0.00	-7.71	7.71	833.33	750.00	1.00	1.00	18.32	315.48	315.48
Dsgn. L = 2.32 ft	2	0.046	0.058	34.56	-7.71	34.56	833.33	750.00	1.95	1.00	18.32	315.48	315.48
Dsgn. L = 4.06 ft	2	0.118	0.057	88.65	34.56	88.65	833.33	750.00	1.33	1.00	18.11	315.48	315.48
Dsgn. L = 4.06 ft	2	0.162	0.041	121.40	88.65	121.40	833.33	750.00	1.12	1.00	12.93	315.48	315.48
Dsgn. L = 4.06 ft	2	0.177	0.025	132.81	121.40	132.81	833.33	750.00	1.04	1.00	7.74	315.48	315.48
Dsgn. L = 3.87 ft	2	0.177	0.008	132.81	123.38	132.81	833.33	750.00	1.03	1.00	2.62	315.48	315.48
Dsgn. L = 4.06 ft	2	0.165	0.025	123.38	93.09	123.38	833.33	750.00	1.10	1.00	7.80	315.48	315.48
Dsgn. L = 4.06 ft	2	0.124	0.041	93.09	41.47	93.09	833.33	750.00	1.26	1.00	12.99	315.48	315.48
Dsgn. L = 2.51 ft	2	0.055	0.057	41.47	-3.51	41.47	833.33	750.00	1.80	1.00	18.03	315.48	315.48
Dsgn. L = 1.50 ft	3	0.005	0.007	-0.00	-3.51	3.51	833.33	750.00	1.00	1.00	2.31	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.007		-0.15	0.15	833.33	750.00	1.00	1.00	2.18	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>													
Dsgn. L = 1.73 ft	1	0.000	0.001		-0.14	0.14	833.33	750.00	1.00	1.00	0.16	315.48	315.48
Dsgn. L = 1.52 ft	1	0.010	0.058	-0.00	-7.71	7.71	833.33	750.00	1.00	1.00	18.18	315.48	315.48
Dsgn. L = 2.32 ft	2	0.046	0.058	34.22	-7.71	34.22	833.33	750.00	1.96	1.00	18.18	315.48	315.48
Dsgn. L = 4.06 ft	2	0.117	0.057	87.73	34.22	87.73	833.33	750.00	1.33	1.00	17.97	315.48	315.48
Dsgn. L = 4.06 ft	2	0.160	0.041	119.89	87.73	119.89	833.33	750.00	1.12	1.00	12.78	315.48	315.48
Dsgn. L = 4.06 ft	2	0.174	0.024	130.71	119.89	130.71	833.33	750.00	1.03	1.00	7.59	315.48	315.48
Dsgn. L = 3.87 ft	2	0.174	0.009	130.71	120.72	130.71	833.33	750.00	1.03	1.00	2.76	315.48	315.48
Dsgn. L = 4.06 ft	2	0.161	0.025	120.72	89.85	120.72	833.33	750.00	1.10	1.00	7.95	315.48	315.48
Dsgn. L = 4.06 ft	2	0.120	0.042	89.85	37.63	89.85	833.33	750.00	1.28	1.00	13.13	315.48	315.48
Dsgn. L = 2.51 ft	2	0.050	0.058	37.63	-7.71	37.63	833.33	750.00	1.98	1.00	18.18	315.48	315.48
Dsgn. L = 1.50 ft	3	0.010	0.016	-0.00	-7.71	7.71	833.33	750.00	1.00	1.00	5.11	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.016		-0.16	0.16	833.33	750.00	1.00	1.00	4.98	315.48	315.48
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 1.73 ft	1	0.000	0.000		-0.10	0.10	833.33	750.00	1.00	1.00	0.12	315.48	315.48
Dsgn. L = 1.52 ft	1	0.003	0.019	-0.00	-2.49	2.49	833.33	750.00	1.00	1.00	5.97	315.48	315.48
Dsgn. L = 2.32 ft	2	0.015	0.019	11.17	-2.49	11.17	833.33	750.00	1.95	1.00	5.97	315.48	315.48
Dsgn. L = 4.06 ft	2	0.038	0.018	28.68	11.17	28.68	833.33	750.00	1.33	1.00	5.81	315.48	315.48
Dsgn. L = 4.06 ft	2	0.052	0.013	39.20	28.68	39.20	833.33	750.00	1.12	1.00	4.11	315.48	315.48
Dsgn. L = 4.06 ft	2	0.057	0.008	42.73	39.20	42.73	833.33	750.00	1.03	1.00	2.41	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B43**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.87 ft	2	0.057	0.003	42.73	39.47	42.73	833.33	750.00	1.03	1.00	0.98	315.48	315.48
Dsgn. L = 4.06 ft	2	0.053	0.008	39.47	29.37	39.47	833.33	750.00	1.10	1.00	2.68	315.48	315.48
Dsgn. L = 4.06 ft	2	0.039	0.014	29.37	12.27	29.37	833.33	750.00	1.28	1.00	4.37	315.48	315.48
Dsgn. L = 2.51 ft	2	0.016	0.019	12.27	-2.49	12.27	833.33	750.00	1.97	1.00	5.97	315.48	315.48
Dsgn. L = 1.50 ft	3	0.003	0.005	-0.00	-2.49	2.49	833.33	750.00	1.00	1.00	1.64	315.48	315.48
Dsgn. L = 1.76 ft	3	0.000	0.005		-0.11	0.11	833.33	750.00	1.00	1.00	1.54	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	+D+L+H	-0.1066	0.000
+D+L+H	2	0.3027	14.693		0.0000	0.000
	3	0.0000	14.693	+D+L+H	-0.1066	3.250

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Max Upward from all Load Conditions		21.204	21.204	
Max Upward from Load Combinations		21.204	21.204	
Max Upward from Load Cases		12.745	12.745	
Max Downward from all Load Conditions (Resis		-0.145	-0.145	
Max Downward from Load Cases (Resisting U <sub>r</sub>		-0.145	-0.145	
+D+H		8.459	8.459	
+D+L+H, LL Comb Run (**L)		8.314	11.404	
+D+L+H, LL Comb Run (*L*)		18.259	18.259	
+D+L+H, LL Comb Run (*LL)		18.114	21.204	
+D+L+H, LL Comb Run (L**)		11.404	8.314	
+D+L+H, LL Comb Run (L*L)		11.259	11.259	
+D+L+H, LL Comb Run (LL*)		21.204	18.114	
+D+L+H, LL Comb Run (LLL)		21.059	21.059	
+D+Lr+H, LL Comb Run (**L)		8.459	8.459	
+D+Lr+H, LL Comb Run (*L*)		8.459	8.459	
+D+Lr+H, LL Comb Run (*LL)		8.459	8.459	
+D+Lr+H, LL Comb Run (L**)		8.459	8.459	
+D+Lr+H, LL Comb Run (L*L)		8.459	8.459	
+D+Lr+H, LL Comb Run (LL*)		8.459	8.459	
+D+Lr+H, LL Comb Run (LLL)		8.459	8.459	
+D+S+H		11.159	11.159	
+D+0.750Lr+0.750L+H, LL Comb Run (**L)		8.350	10.668	
+D+0.750Lr+0.750L+H, LL Comb Run (*L*)		15.809	15.809	
+D+0.750Lr+0.750L+H, LL Comb Run (*LL)		15.700	18.018	
+D+0.750Lr+0.750L+H, LL Comb Run (L**)		10.668	8.350	
+D+0.750Lr+0.750L+H, LL Comb Run (L*L)		10.559	10.559	
+D+0.750Lr+0.750L+H, LL Comb Run (LL*)		18.018	15.700	
+D+0.750Lr+0.750L+H, LL Comb Run (LLL)		17.909	17.909	
+D+0.750L+0.750S+H, LL Comb Run (**L)		10.375	12.693	
+D+0.750L+0.750S+H, LL Comb Run (*L*)		17.834	17.834	
+D+0.750L+0.750S+H, LL Comb Run (*LL)		17.725	20.043	
+D+0.750L+0.750S+H, LL Comb Run (L**)		12.693	10.375	
+D+0.750L+0.750S+H, LL Comb Run (L*L)		12.584	12.584	
+D+0.750L+0.750S+H, LL Comb Run (LL*)		20.043	17.725	
+D+0.750L+0.750S+H, LL Comb Run (LLL)		19.934	19.934	
+D+0.60W+H		8.459	8.459	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		8.350	10.668	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		15.809	15.809	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		15.700	18.018	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		10.668	8.350	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		10.559	10.559	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		18.018	15.700	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		17.909	17.909	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		10.375	12.693	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		17.834	17.834	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		17.725	20.043	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		12.693	10.375	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		12.584	12.584	



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B43**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
+D+0.750L+0.750S+0.450W+H, LL Comb Run		20.043	17.725	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		19.934	19.934	
+0.60D+0.60W+0.60H		5.075	5.075	
+D+0.70E+0.60H		8.459	8.459	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		10.375	12.693	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		17.834	17.834	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		17.725	20.043	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		12.693	10.375	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		12.584	12.584	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		20.043	17.725	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		19.934	19.934	
+0.60D+0.70E+H		5.075	5.075	
D Only		8.459	8.459	
L Only, LL Comb Run (**L)		-0.145	2.945	
L Only, LL Comb Run (*L*)		9.800	9.800	
L Only, LL Comb Run (*LL)		9.655	12.745	
L Only, LL Comb Run (L**)		2.945	-0.145	
L Only, LL Comb Run (L*L)		2.800	2.800	
L Only, LL Comb Run (LL*)		12.745	9.655	
L Only, LL Comb Run (LLL)		12.600	12.600	
S Only		2.700	2.700	
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B44**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

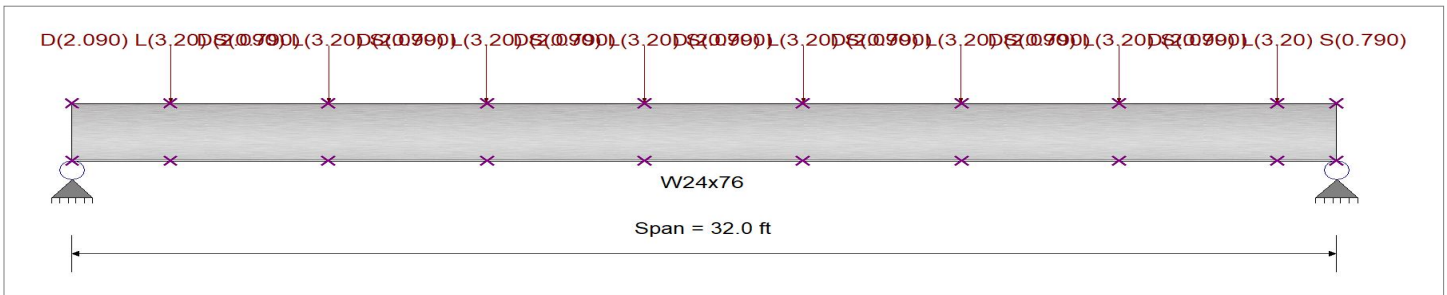
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 2.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 2.090, L = 3.20, S = 0.790 k, Starting at : 2.50 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.360 : 1</b>	Maximum Shear Stress Ratio =	<b>0.110 : 1</b>
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	269.779 k-ft	Vu : Applied	34.554 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	+1.20D+1.60L+0.50S+1.60H	Load Combination	+1.20D+1.60L+0.50S+1.60H
Span # where maximum occurs	Span # 1	Location of maximum on span	32.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.313 in Ratio = <b>1,227</b> >=360.	Span: 1 : L Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <360.0	n/a	
Max Downward Total Deflection	0.547 in Ratio = <b>702</b> >=240.	Span: 1 : +D+L+H	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <240.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
<b>+1.40D+1.60H</b>															
Dsgn. L =	2.47 ft	1	0.042	0.041	31.87		31.87	31.87	833.33	750.00	1.70	1.00	13.04	315.48	315.48
Dsgn. L =	4.02 ft	1	0.094	0.041	70.73	31.87	70.73	833.33	750.00	1.28	1.00	12.78	315.48	315.48	
Dsgn. L =	3.93 ft	1	0.127	0.030	95.48	70.73	95.48	833.33	750.00	1.12	1.00	9.42	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.143	0.019	107.53	95.48	107.53	833.33	750.00	1.05	1.00	6.08	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.144	0.009	107.67	106.02	107.67	833.33	750.00	1.01	1.00	2.73	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.141	0.013	106.02	90.96	106.02	833.33	750.00	1.06	1.00	3.98	315.48	315.48	
Dsgn. L =	3.93 ft	1	0.121	0.023	90.96	63.00	90.96	833.33	750.00	1.13	1.00	7.33	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.084	0.034	63.00	21.12	63.00	833.33	750.00	1.36	1.00	10.68	315.48	315.48	
Dsgn. L =	1.55 ft	1	0.028	0.044	21.12		21.12	833.33	750.00	1.59	1.00	13.77	315.48	315.48	
<b>+1.20D+0.50Lr+1.60L+1.60H</b>															
Dsgn. L =	2.47 ft	1	0.102	0.098	76.29		76.29	833.33	750.00	1.71	1.00	31.02	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.225	0.098	168.98	76.29	168.98	833.33	750.00	1.28	1.00	30.79	315.48	315.48	
Dsgn. L =	3.93 ft	1	0.304	0.072	227.98	168.98	227.98	833.33	750.00	1.12	1.00	22.80	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.342	0.047	256.73	227.98	256.73	833.33	750.00	1.05	1.00	14.81	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.343	0.022	257.07	253.14	257.07	833.33	750.00	1.01	1.00	6.82	315.48	315.48	
Dsgn. L =	4.02 ft	1	0.338	0.029	253.14	217.21	253.14	833.33	750.00	1.06	1.00	9.17	315.48	315.48	
Dsgn. L =	3.93 ft	1	0.290	0.054	217.21	150.52	217.21	833.33	750.00	1.14	1.00	17.16	315.48	315.48	



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B44**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.02 ft	1	0.201	0.080	150.52	50.65	150.52	833.33	750.00	1.36	1.00	25.15	315.48	315.48
Dsgn. L = 1.55 ft	1	0.068	0.104	50.65		50.65	833.33	750.00	1.59	1.00	32.92	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H</b>													
Dsgn. L = 2.47 ft	1	0.107	0.103	80.07		80.07	833.33	750.00	1.71	1.00	32.55	315.48	315.48
Dsgn. L = 4.02 ft	1	0.236	0.102	177.34	80.07	177.34	833.33	750.00	1.28	1.00	32.32	315.48	315.48
Dsgn. L = 3.93 ft	1	0.319	0.076	239.25	177.34	239.25	833.33	750.00	1.12	1.00	23.93	315.48	315.48
Dsgn. L = 4.02 ft	1	0.359	0.049	269.42	239.25	269.42	833.33	750.00	1.05	1.00	15.55	315.48	315.48
Dsgn. L = 4.02 ft	1	0.360	0.023	269.78	265.66	269.78	833.33	750.00	1.01	1.00	7.16	315.48	315.48
Dsgn. L = 4.02 ft	1	0.354	0.030	265.66	227.95	265.66	833.33	750.00	1.06	1.00	9.62	315.48	315.48
Dsgn. L = 3.93 ft	1	0.304	0.057	227.95	157.96	227.95	833.33	750.00	1.14	1.00	18.00	315.48	315.48
Dsgn. L = 4.02 ft	1	0.211	0.084	157.96	53.16	157.96	833.33	750.00	1.36	1.00	26.39	315.48	315.48
Dsgn. L = 1.55 ft	1	0.071	0.110	53.16		53.16	833.33	750.00	1.59	1.00	34.55	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H</b>													
Dsgn. L = 2.47 ft	1	0.077	0.075	57.93		57.93	833.33	750.00	1.71	1.00	23.58	315.48	315.48
Dsgn. L = 4.02 ft	1	0.171	0.074	128.35	57.93	128.35	833.33	750.00	1.28	1.00	23.35	315.48	315.48
Dsgn. L = 3.93 ft	1	0.231	0.055	173.18	128.35	173.18	833.33	750.00	1.12	1.00	17.28	315.48	315.48
Dsgn. L = 4.02 ft	1	0.260	0.036	195.02	173.18	195.02	833.33	750.00	1.05	1.00	11.21	315.48	315.48
Dsgn. L = 4.02 ft	1	0.260	0.016	195.28	192.29	195.28	833.33	750.00	1.01	1.00	5.14	315.48	315.48
Dsgn. L = 4.02 ft	1	0.256	0.022	192.29	164.99	192.29	833.33	750.00	1.06	1.00	7.01	315.48	315.48
Dsgn. L = 3.93 ft	1	0.220	0.041	164.99	114.32	164.99	833.33	750.00	1.14	1.00	13.08	315.48	315.48
Dsgn. L = 4.02 ft	1	0.152	0.061	114.32	38.44	114.32	833.33	750.00	1.36	1.00	19.15	315.48	315.48
Dsgn. L = 1.55 ft	1	0.051	0.079	38.44		38.44	833.33	750.00	1.59	1.00	25.00	315.48	315.48
<b>+1.20D+1.60Lr+0.50W+1.60H</b>													
Dsgn. L = 2.47 ft	1	0.036	0.035	27.32		27.32	833.33	750.00	1.70	1.00	11.18	315.48	315.48
Dsgn. L = 4.02 ft	1	0.081	0.035	60.63	27.32	60.63	833.33	750.00	1.28	1.00	10.95	315.48	315.48
Dsgn. L = 3.93 ft	1	0.109	0.026	81.84	60.63	81.84	833.33	750.00	1.12	1.00	8.08	315.48	315.48
Dsgn. L = 4.02 ft	1	0.123	0.017	92.17	81.84	92.17	833.33	750.00	1.05	1.00	5.21	315.48	315.48
Dsgn. L = 4.02 ft	1	0.123	0.007	92.29	90.88	92.29	833.33	750.00	1.01	1.00	2.34	315.48	315.48
Dsgn. L = 4.02 ft	1	0.121	0.011	90.88	77.96	90.88	833.33	750.00	1.06	1.00	3.41	315.48	315.48
Dsgn. L = 3.93 ft	1	0.104	0.020	77.96	54.00	77.96	833.33	750.00	1.13	1.00	6.28	315.48	315.48
Dsgn. L = 4.02 ft	1	0.072	0.029	54.00	18.10	54.00	833.33	750.00	1.36	1.00	9.15	315.48	315.48
Dsgn. L = 1.55 ft	1	0.024	0.037	18.10		18.10	833.33	750.00	1.59	1.00	11.80	315.48	315.48
<b>+1.20D+L+1.60S+1.60H</b>													
Dsgn. L = 2.47 ft	1	0.093	0.090	70.02		70.02	833.33	750.00	1.71	1.00	28.48	315.48	315.48
Dsgn. L = 4.02 ft	1	0.207	0.090	155.10	70.02	155.10	833.33	750.00	1.28	1.00	28.25	315.48	315.48
Dsgn. L = 3.93 ft	1	0.279	0.066	209.26	155.10	209.26	833.33	750.00	1.12	1.00	20.91	315.48	315.48
Dsgn. L = 4.02 ft	1	0.314	0.043	235.64	209.26	235.64	833.33	750.00	1.05	1.00	13.58	315.48	315.48
Dsgn. L = 4.02 ft	1	0.315	0.020	235.95	232.35	235.95	833.33	750.00	1.01	1.00	6.24	315.48	315.48
Dsgn. L = 4.02 ft	1	0.310	0.027	232.35	199.37	232.35	833.33	750.00	1.06	1.00	8.44	315.48	315.48
Dsgn. L = 3.93 ft	1	0.266	0.050	199.37	138.15	199.37	833.33	750.00	1.14	1.00	15.77	315.48	315.48
Dsgn. L = 4.02 ft	1	0.184	0.073	138.15	46.48	138.15	833.33	750.00	1.36	1.00	23.10	315.48	315.48
Dsgn. L = 1.55 ft	1	0.062	0.096	46.48		46.48	833.33	750.00	1.59	1.00	30.22	315.48	315.48
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 2.47 ft	1	0.053	0.051	39.41		39.41	833.33	750.00	1.71	1.00	16.08	315.48	315.48
Dsgn. L = 4.02 ft	1	0.117	0.050	87.38	39.41	87.38	833.33	750.00	1.28	1.00	15.85	315.48	315.48
Dsgn. L = 3.93 ft	1	0.157	0.037	117.92	87.38	117.92	833.33	750.00	1.12	1.00	11.71	315.48	315.48
Dsgn. L = 4.02 ft	1	0.177	0.024	132.80	117.92	132.80	833.33	750.00	1.05	1.00	7.58	315.48	315.48
Dsgn. L = 4.02 ft	1	0.177	0.011	132.97	130.94	132.97	833.33	750.00	1.01	1.00	3.44	315.48	315.48
Dsgn. L = 4.02 ft	1	0.175	0.015	130.94	112.34	130.94	833.33	750.00	1.06	1.00	4.84	315.48	315.48
Dsgn. L = 3.93 ft	1	0.150	0.028	112.34	77.83	112.34	833.33	750.00	1.14	1.00	8.97	315.48	315.48
Dsgn. L = 4.02 ft	1	0.104	0.042	77.83	26.14	77.83	833.33	750.00	1.36	1.00	13.10	315.48	315.48
Dsgn. L = 1.55 ft	1	0.035	0.054	26.14		26.14	833.33	750.00	1.59	1.00	17.02	315.48	315.48
<b>+1.20D+0.50Lr+L+W+1.60H</b>													
Dsgn. L = 2.47 ft	1	0.077	0.075	57.93		57.93	833.33	750.00	1.71	1.00	23.58	315.48	315.48
Dsgn. L = 4.02 ft	1	0.171	0.074	128.35	57.93	128.35	833.33	750.00	1.28	1.00	23.35	315.48	315.48
Dsgn. L = 3.93 ft	1	0.231	0.055	173.18	128.35	173.18	833.33	750.00	1.12	1.00	17.28	315.48	315.48
Dsgn. L = 4.02 ft	1	0.260	0.036	195.02	173.18	195.02	833.33	750.00	1.05	1.00	11.21	315.48	315.48
Dsgn. L = 4.02 ft	1	0.260	0.016	195.28	192.29	195.28	833.33	750.00	1.01	1.00	5.14	315.48	315.48
Dsgn. L = 4.02 ft	1	0.256	0.022	192.29	164.99	192.29	833.33	750.00	1.06	1.00	7.01	315.48	315.48
Dsgn. L = 3.93 ft	1	0.220	0.041	164.99	114.32	164.99	833.33	750.00	1.14	1.00	13.08	315.48	315.48
Dsgn. L = 4.02 ft	1	0.152	0.061	114.32	38.44	114.32	833.33	750.00	1.36	1.00	19.15	315.48	315.48
Dsgn. L = 1.55 ft	1	0.051	0.079	38.44		38.44	833.33	750.00	1.59	1.00	25.00	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H</b>													

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B44**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 2.47 ft	1	1	0.082	0.080	61.70		61.70	833.33	750.00	1.71	1.00	25.11	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.182	0.079	136.71	61.70	136.71	833.33	750.00	1.28	1.00	24.88	315.48	315.48
Dsgn. L = 3.93 ft	1	1	0.246	0.058	184.45	136.71	184.45	833.33	750.00	1.12	1.00	18.41	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.277	0.038	207.71	184.45	207.71	833.33	750.00	1.05	1.00	11.95	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.277	0.017	207.99	204.81	207.99	833.33	750.00	1.01	1.00	5.48	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.273	0.024	204.81	175.74	204.81	833.33	750.00	1.06	1.00	7.46	315.48	315.48
Dsgn. L = 3.93 ft	1	1	0.234	0.044	175.74	121.77	175.74	833.33	750.00	1.14	1.00	13.92	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.162	0.065	121.77	40.96	121.77	833.33	750.00	1.36	1.00	20.39	315.48	315.48
Dsgn. L = 1.55 ft	1	1	0.055	0.084	40.96		40.96	833.33	750.00	1.59	1.00	26.63	315.48	315.48
<b>+0.90D+W+1.60H</b>														
Dsgn. L = 2.47 ft	1	1	0.027	0.027	20.49		20.49	833.33	750.00	1.70	1.00	8.38	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.061	0.026	45.47	20.49	45.47	833.33	750.00	1.28	1.00	8.21	315.48	315.48
Dsgn. L = 3.93 ft	1	1	0.082	0.019	61.38	45.47	61.38	833.33	750.00	1.12	1.00	6.06	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.092	0.012	69.13	61.38	69.13	833.33	750.00	1.05	1.00	3.91	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.092	0.006	69.22	68.16	69.22	833.33	750.00	1.01	1.00	1.75	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.091	0.008	68.16	58.47	68.16	833.33	750.00	1.06	1.00	2.56	315.48	315.48
Dsgn. L = 3.93 ft	1	1	0.078	0.015	58.47	40.50	58.47	833.33	750.00	1.13	1.00	4.71	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.054	0.022	40.50	13.58	40.50	833.33	750.00	1.36	1.00	6.87	315.48	315.48
Dsgn. L = 1.55 ft	1	1	0.018	0.028	13.58		13.58	833.33	750.00	1.59	1.00	8.85	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H</b>														
Dsgn. L = 2.47 ft	1	1	0.079	0.077	59.44		59.44	833.33	750.00	1.71	1.00	24.19	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.176	0.076	131.69	59.44	131.69	833.33	750.00	1.28	1.00	23.96	315.48	315.48
Dsgn. L = 3.93 ft	1	1	0.237	0.056	177.69	131.69	177.69	833.33	750.00	1.12	1.00	17.73	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.267	0.036	200.10	177.69	200.10	833.33	750.00	1.05	1.00	11.51	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.267	0.017	200.36	197.30	200.36	833.33	750.00	1.01	1.00	5.27	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.263	0.023	197.30	169.29	197.30	833.33	750.00	1.06	1.00	7.19	315.48	315.48
Dsgn. L = 3.93 ft	1	1	0.226	0.043	169.29	117.30	169.29	833.33	750.00	1.14	1.00	13.42	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.156	0.062	117.30	39.45	117.30	833.33	750.00	1.36	1.00	19.65	315.48	315.48
Dsgn. L = 1.55 ft	1	1	0.053	0.081	39.45		39.45	833.33	750.00	1.59	1.00	25.66	315.48	315.48
<b>+0.90D+E+0.90H</b>														
Dsgn. L = 2.47 ft	1	1	0.027	0.027	20.49		20.49	833.33	750.00	1.70	1.00	8.38	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.061	0.026	45.47	20.49	45.47	833.33	750.00	1.28	1.00	8.21	315.48	315.48
Dsgn. L = 3.93 ft	1	1	0.082	0.019	61.38	45.47	61.38	833.33	750.00	1.12	1.00	6.06	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.092	0.012	69.13	61.38	69.13	833.33	750.00	1.05	1.00	3.91	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.092	0.006	69.22	68.16	69.22	833.33	750.00	1.01	1.00	1.75	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.091	0.008	68.16	58.47	68.16	833.33	750.00	1.06	1.00	2.56	315.48	315.48
Dsgn. L = 3.93 ft	1	1	0.078	0.015	58.47	40.50	58.47	833.33	750.00	1.13	1.00	4.71	315.48	315.48
Dsgn. L = 4.02 ft	1	1	0.054	0.022	40.50	13.58	40.50	833.33	750.00	1.36	1.00	6.87	315.48	315.48
Dsgn. L = 1.55 ft	1	1	0.018	0.028	13.58		13.58	833.33	750.00	1.59	1.00	8.85	315.48	315.48

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.5469	16.000		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	21.715	23.037
Max Upward from Load Combinations	21.715	23.037
Max Upward from Load Cases	12.400	13.200
+D+H	9.315	9.837
+D+L+H	21.715	23.037
+D+Lr+H	9.315	9.837
+D+S+H	12.376	13.096
+D+0.750Lr+0.750L+H	18.615	19.737
+D+0.750L+0.750S+H	20.911	22.181
+D+0.60W+H	9.315	9.837
+D+0.750Lr+0.750L+0.450W+H	18.615	19.737
+D+0.750L+0.750S+0.450W+H	20.911	22.181
+0.60D+0.60W+0.60H	5.589	5.902
+D+0.70E+0.60H	9.315	9.837
+D+0.750L+0.750S+0.5250E+H	20.911	22.181
+0.60D+0.70E+H	5.589	5.902
D Only	9.315	9.837



Project Title: WSF International Village  
Engineer: JMB  
Project ID: 24-318  
Project Descr: Vertical Framing

## Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** B44

### Vertical Reactions

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
L Only	12.400	13.200
S Only	3.061	3.259
H Only		

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **B45**

**CODE REFERENCES**

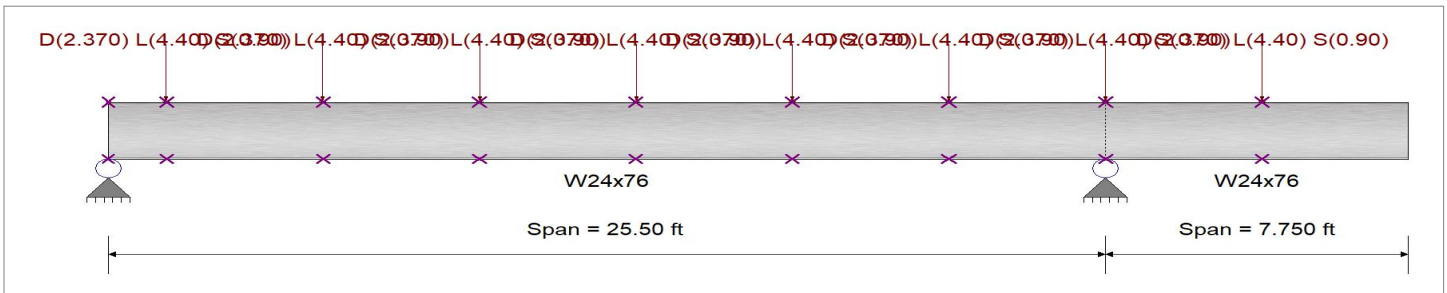
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 1.50 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 2.370, L = 4.40, S = 0.90 k, Starting at : 1.50 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.281</b> : 1	Maximum Shear Stress Ratio =	<b>0.110</b> : 1
Section used for this span	<b>W24x76</b>	Section used for this span	<b>W24x76</b>
Mu : Applied	210.420 k-ft	Vu : Applied	34.580 k
Mn * Phi : Allowable	750.000 k-ft	Vn * Phi : Allowable	315.480 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.172 in Ratio = <b>1,779</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.165 in Ratio = <b>1,127</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.263 in Ratio = <b>1164</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.239 in Ratio = <b>778</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values					
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
<b>+1.40D+1.60H</b>															
Dsgn. L =	1.43 ft	1	0.022	0.037	16.51		16.51	16.51	833.33	750.00	1.71	1.00	11.64	315.48	315.48
Dsgn. L =	3.98 ft	1	0.065	0.036	48.41	16.51	48.41	833.33	750.00	1.36	1.00	11.49	315.48	315.48	
Dsgn. L =	4.08 ft	1	0.088	0.025	65.91	48.41	65.91	833.33	750.00	1.11	1.00	7.75	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.090	0.013	67.81	65.91	67.81	833.33	750.00	1.01	1.00	4.00	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.090	0.011	67.81	54.90	67.81	833.33	750.00	1.08	1.00	3.49	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.073	0.023	54.90	27.18	54.90	833.33	750.00	1.24	1.00	7.23	315.48	315.48	
Dsgn. L =	4.08 ft	1	0.036	0.035	27.18	-16.47	27.18	833.33	750.00	2.17	1.00	10.98	315.48	315.48	
Dsgn. L =	4.00 ft	2	0.022	0.013	-0.00	-16.47	16.47	833.33	750.00	1.00	1.00	4.14	315.48	315.48	
Dsgn. L =	3.75 ft	2	0.001	0.012	-0.75	-0.75	0.75	833.33	750.00	1.00	1.00	3.72	315.48	315.48	
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>															
Dsgn. L =	1.43 ft	1	0.017	0.028	12.58		12.58	833.33	750.00	1.71	1.00	8.87	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.047	0.028	35.53	12.58	35.53	833.33	750.00	1.35	1.00	8.74	315.48	315.48	
Dsgn. L =	4.08 ft	1	0.061	0.018	46.02	35.53	46.02	833.33	750.00	1.09	1.00	5.54	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.061	0.007	46.02	43.26	46.02	833.33	750.00	1.02	1.00	2.32	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.058	0.013	43.26	27.80	43.26	833.33	750.00	1.16	1.00	4.09	315.48	315.48	
Dsgn. L =	3.98 ft	1	0.037	0.023	27.80	-0.36	27.80	833.33	750.00	1.63	1.00	7.30	315.48	315.48	
Dsgn. L =	4.08 ft	1	0.056	0.034	-0.00	-42.27	42.27	833.33	750.00	1.67	1.00	10.59	315.48	315.48	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B45**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	2	0.056	0.034	-0.00	-42.27	42.27	833.33	750.00	1.00	1.00	10.59	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.032		-0.65	0.65	833.33	750.00	1.00	1.00	10.23	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.063	0.105	47.27		47.27	833.33	750.00	1.72	1.00	33.17	315.48	315.48
Dsgn. L = 3.98 ft	1	0.186	0.105	139.37	47.27	139.37	833.33	750.00	1.37	1.00	33.04	315.48	315.48
Dsgn. L = 4.08 ft	1	0.256	0.072	192.20	139.37	192.20	833.33	750.00	1.12	1.00	22.79	315.48	315.48
Dsgn. L = 3.98 ft	1	0.270	0.040	202.16	192.20	202.16	833.33	750.00	1.02	1.00	12.54	315.48	315.48
Dsgn. L = 3.98 ft	1	0.270	0.025	202.16	171.58	202.16	833.33	750.00	1.06	1.00	7.96	315.48	315.48
Dsgn. L = 3.98 ft	1	0.229	0.058	171.58	100.46	171.58	833.33	750.00	1.19	1.00	18.21	315.48	315.48
Dsgn. L = 4.08 ft	1	0.134	0.090	100.46	-14.11	100.46	833.33	750.00	1.82	1.00	28.46	315.48	315.48
Dsgn. L = 4.00 ft	2	0.019	0.011	-0.00	-14.11	14.11	833.33	750.00	1.00	1.00	3.55	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.010		-0.64	0.64	833.33	750.00	1.00	1.00	3.19	315.48	315.48
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.43 ft	1	0.061	0.102	45.69		45.69	833.33	750.00	1.72	1.00	32.06	315.48	315.48
Dsgn. L = 3.98 ft	1	0.178	0.101	133.40	45.69	133.40	833.33	750.00	1.36	1.00	31.93	315.48	315.48
Dsgn. L = 4.08 ft	1	0.242	0.069	181.72	133.40	181.72	833.33	750.00	1.12	1.00	21.69	315.48	315.48
Dsgn. L = 3.98 ft	1	0.250	0.036	187.30	181.72	187.30	833.33	750.00	1.01	1.00	11.43	315.48	315.48
Dsgn. L = 3.98 ft	1	0.250	0.029	187.30	152.32	187.30	833.33	750.00	1.08	1.00	9.06	315.48	315.48
Dsgn. L = 3.98 ft	1	0.203	0.061	152.32	76.80	152.32	833.33	750.00	1.24	1.00	19.31	315.48	315.48
Dsgn. L = 4.08 ft	1	0.102	0.094	76.80	-42.27	76.80	833.33	750.00	2.17	1.00	29.57	315.48	315.48
Dsgn. L = 4.00 ft	2	0.056	0.034	-0.00	-42.27	42.27	833.33	750.00	1.00	1.00	10.59	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.032		-0.65	0.65	833.33	750.00	1.00	1.00	10.23	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.43 ft	1	0.019	0.033	14.59		14.59	833.33	750.00	1.71	1.00	10.29	315.48	315.48
Dsgn. L = 3.98 ft	1	0.055	0.032	41.40	14.59	41.40	833.33	750.00	1.35	1.00	10.15	315.48	315.48
Dsgn. L = 4.08 ft	1	0.072	0.021	54.03	41.40	54.03	833.33	750.00	1.10	1.00	6.50	315.48	315.48
Dsgn. L = 3.98 ft	1	0.072	0.009	54.03	51.51	54.03	833.33	750.00	1.02	1.00	2.83	315.48	315.48
Dsgn. L = 3.98 ft	1	0.069	0.014	51.51	34.53	51.51	833.33	750.00	1.14	1.00	4.48	315.48	315.48
Dsgn. L = 3.98 ft	1	0.046	0.026	34.53	3.06	34.53	833.33	750.00	1.54	1.00	8.14	315.48	315.48
Dsgn. L = 4.08 ft	1	0.059	0.037	3.06	-44.07	44.07	833.33	750.00	1.76	1.00	11.80	315.48	315.48
Dsgn. L = 4.00 ft	2	0.059	0.035	-0.00	-44.07	44.07	833.33	750.00	1.00	1.00	11.04	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.034		-0.65	0.65	833.33	750.00	1.00	1.00	10.68	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.43 ft	1	0.066	0.110	49.29		49.29	833.33	750.00	1.72	1.00	34.58	315.48	315.48
Dsgn. L = 3.98 ft	1	0.194	0.109	145.24	49.29	145.24	833.33	750.00	1.37	1.00	34.45	315.48	315.48
Dsgn. L = 4.08 ft	1	0.267	0.075	200.20	145.24	200.20	833.33	750.00	1.12	1.00	23.75	315.48	315.48
Dsgn. L = 3.98 ft	1	0.281	0.041	210.42	200.20	210.42	833.33	750.00	1.02	1.00	13.05	315.48	315.48
Dsgn. L = 3.98 ft	1	0.281	0.026	210.42	178.31	210.42	833.33	750.00	1.06	1.00	8.35	315.48	315.48
Dsgn. L = 3.98 ft	1	0.238	0.060	178.31	103.88	178.31	833.33	750.00	1.19	1.00	19.04	315.48	315.48
Dsgn. L = 4.08 ft	1	0.139	0.094	103.88	-15.91	103.88	833.33	750.00	1.84	1.00	29.75	315.48	315.48
Dsgn. L = 4.00 ft	2	0.021	0.013	-0.00	-15.91	15.91	833.33	750.00	1.00	1.00	4.00	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.012		-0.64	0.64	833.33	750.00	1.00	1.00	3.64	315.48	315.48
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.43 ft	1	0.064	0.106	47.71		47.71	833.33	750.00	1.72	1.00	33.48	315.48	315.48
Dsgn. L = 3.98 ft	1	0.186	0.106	139.27	47.71	139.27	833.33	750.00	1.36	1.00	33.35	315.48	315.48
Dsgn. L = 4.08 ft	1	0.253	0.072	189.73	139.27	189.73	833.33	750.00	1.12	1.00	22.65	315.48	315.48
Dsgn. L = 3.98 ft	1	0.261	0.038	195.55	189.73	195.55	833.33	750.00	1.01	1.00	11.94	315.48	315.48
Dsgn. L = 3.98 ft	1	0.261	0.030	195.55	159.05	195.55	833.33	750.00	1.08	1.00	9.45	315.48	315.48
Dsgn. L = 3.98 ft	1	0.212	0.064	159.05	80.22	159.05	833.33	750.00	1.24	1.00	20.15	315.48	315.48
Dsgn. L = 4.08 ft	1	0.107	0.098	80.22	-44.07	80.22	833.33	750.00	2.17	1.00	30.85	315.48	315.48
Dsgn. L = 4.00 ft	2	0.059	0.035	-0.00	-44.07	44.07	833.33	750.00	1.00	1.00	11.04	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.034		-0.65	0.65	833.33	750.00	1.00	1.00	10.68	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.018	0.029	13.17		13.17	833.33	750.00	1.71	1.00	9.29	315.48	315.48
Dsgn. L = 3.98 ft	1	0.050	0.029	37.77	13.17	37.77	833.33	750.00	1.36	1.00	9.16	315.48	315.48
Dsgn. L = 4.08 ft	1	0.067	0.019	49.95	37.77	49.95	833.33	750.00	1.10	1.00	5.95	315.48	315.48
Dsgn. L = 3.98 ft	1	0.067	0.009	49.98	48.83	49.98	833.33	750.00	1.01	1.00	2.73	315.48	315.48
Dsgn. L = 3.98 ft	1	0.065	0.012	48.83	35.02	48.83	833.33	750.00	1.12	1.00	3.68	315.48	315.48
Dsgn. L = 3.98 ft	1	0.047	0.022	35.02	8.51	35.02	833.33	750.00	1.41	1.00	6.89	315.48	315.48
Dsgn. L = 4.08 ft	1	0.042	0.032	8.51	-31.71	31.71	833.33	750.00	2.06	1.00	10.10	315.48	315.48
Dsgn. L = 4.00 ft	2	0.042	0.025	-0.00	-31.71	31.71	833.33	750.00	1.00	1.00	7.95	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.024		-0.65	0.65	833.33	750.00	1.00	1.00	7.59	315.48	315.48
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B45**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	1.43 ft	1	0.046	0.078	34.85		34.85	833.33	750.00	1.71	1.00	24.47	315.48	315.48
Dsgn. L =	3.98 ft	1	0.137	0.077	102.67	34.85	102.67	833.33	750.00	1.37	1.00	24.34	315.48	315.48
Dsgn. L =	4.08 ft	1	0.188	0.053	141.31	102.67	141.31	833.33	750.00	1.12	1.00	16.73	315.48	315.48
Dsgn. L =	3.98 ft	1	0.198	0.029	148.15	141.31	148.15	833.33	750.00	1.02	1.00	9.12	315.48	315.48
Dsgn. L =	3.98 ft	1	0.198	0.019	148.15	124.89	148.15	833.33	750.00	1.06	1.00	6.09	315.48	315.48
Dsgn. L =	3.98 ft	1	0.167	0.043	124.89	71.52	124.89	833.33	750.00	1.20	1.00	13.70	315.48	315.48
Dsgn. L =	4.08 ft	1	0.095	0.068	71.52	-14.11	71.52	833.33	750.00	1.90	1.00	21.32	315.48	315.48
Dsgn. L =	4.00 ft	2	0.019	0.011	-0.00	-14.11	14.11	833.33	750.00	1.00	1.00	3.55	315.48	315.48
Dsgn. L =	3.75 ft	2	0.001	0.010	-0.64	0.64	833.33	750.00	1.00	1.00	3.19	315.48	315.48	
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L =	1.43 ft	1	0.045	0.075	33.87		33.87	833.33	750.00	1.71	1.00	23.78	315.48	315.48
Dsgn. L =	3.98 ft	1	0.132	0.075	98.94	33.87	98.94	833.33	750.00	1.36	1.00	23.65	315.48	315.48
Dsgn. L =	4.08 ft	1	0.180	0.051	134.76	98.94	134.76	833.33	750.00	1.12	1.00	16.04	315.48	315.48
Dsgn. L =	3.98 ft	1	0.185	0.027	138.86	134.76	138.86	833.33	750.00	1.01	1.00	8.43	315.48	315.48
Dsgn. L =	3.98 ft	1	0.185	0.022	138.86	112.85	138.86	833.33	750.00	1.08	1.00	6.79	315.48	315.48
Dsgn. L =	3.98 ft	1	0.150	0.046	112.85	56.74	112.85	833.33	750.00	1.24	1.00	14.39	315.48	315.48
Dsgn. L =	4.08 ft	1	0.076	0.070	56.74	-31.71	56.74	833.33	750.00	2.17	1.00	22.01	315.48	315.48
Dsgn. L =	4.00 ft	2	0.042	0.025	-0.00	-31.71	31.71	833.33	750.00	1.00	1.00	7.95	315.48	315.48
Dsgn. L =	3.75 ft	2	0.001	0.024	-0.65	0.65	833.33	750.00	1.00	1.00	7.59	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L =	1.43 ft	1	0.019	0.032	14.16		14.16	833.33	750.00	1.71	1.00	9.98	315.48	315.48
Dsgn. L =	3.98 ft	1	0.055	0.031	41.50	14.16	41.50	833.33	750.00	1.36	1.00	9.85	315.48	315.48
Dsgn. L =	4.08 ft	1	0.075	0.021	56.50	41.50	56.50	833.33	750.00	1.11	1.00	6.64	315.48	315.48
Dsgn. L =	3.98 ft	1	0.078	0.011	58.13	56.50	58.13	833.33	750.00	1.01	1.00	3.42	315.48	315.48
Dsgn. L =	3.98 ft	1	0.078	0.009	58.13	47.06	58.13	833.33	750.00	1.08	1.00	2.99	315.48	315.48
Dsgn. L =	3.98 ft	1	0.063	0.020	47.06	23.30	47.06	833.33	750.00	1.24	1.00	6.20	315.48	315.48
Dsgn. L =	4.08 ft	1	0.031	0.030	23.30	-14.11	23.30	833.33	750.00	2.17	1.00	9.41	315.48	315.48
Dsgn. L =	4.00 ft	2	0.019	0.011	-0.00	-14.11	14.11	833.33	750.00	1.00	1.00	3.55	315.48	315.48
Dsgn. L =	3.75 ft	2	0.001	0.010	-0.64	0.64	833.33	750.00	1.00	1.00	3.19	315.48	315.48	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L =	1.43 ft	1	0.019	0.032	14.16		14.16	833.33	750.00	1.71	1.00	9.98	315.48	315.48
Dsgn. L =	3.98 ft	1	0.055	0.031	41.50	14.16	41.50	833.33	750.00	1.36	1.00	9.85	315.48	315.48
Dsgn. L =	4.08 ft	1	0.075	0.021	56.50	41.50	56.50	833.33	750.00	1.11	1.00	6.64	315.48	315.48
Dsgn. L =	3.98 ft	1	0.078	0.011	58.13	56.50	58.13	833.33	750.00	1.01	1.00	3.42	315.48	315.48
Dsgn. L =	3.98 ft	1	0.078	0.009	58.13	47.06	58.13	833.33	750.00	1.08	1.00	2.99	315.48	315.48
Dsgn. L =	3.98 ft	1	0.063	0.020	47.06	23.30	47.06	833.33	750.00	1.24	1.00	6.20	315.48	315.48
Dsgn. L =	4.08 ft	1	0.031	0.030	23.30	-14.11	23.30	833.33	750.00	2.17	1.00	9.41	315.48	315.48
Dsgn. L =	4.00 ft	2	0.019	0.011	-0.00	-14.11	14.11	833.33	750.00	1.00	1.00	3.55	315.48	315.48
Dsgn. L =	3.75 ft	2	0.001	0.010	-0.64	0.64	833.33	750.00	1.00	1.00	3.19	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L =	1.43 ft	1	0.026	0.044	19.62		19.62	833.33	750.00	1.71	1.00	13.81	315.48	315.48
Dsgn. L =	3.98 ft	1	0.075	0.043	56.56	19.62	56.56	833.33	750.00	1.36	1.00	13.67	315.48	315.48
Dsgn. L =	4.08 ft	1	0.101	0.029	75.56	56.56	75.56	833.33	750.00	1.11	1.00	9.03	315.48	315.48
Dsgn. L =	3.98 ft	1	0.101	0.014	75.67	75.25	75.67	833.33	750.00	1.00	1.00	4.37	315.48	315.48
Dsgn. L =	3.98 ft	1	0.100	0.016	75.25	56.55	75.25	833.33	750.00	1.10	1.00	4.92	315.48	315.48
Dsgn. L =	3.98 ft	1	0.075	0.030	56.55	19.46	56.55	833.33	750.00	1.34	1.00	9.57	315.48	315.48
Dsgn. L =	4.08 ft	1	0.050	0.045	19.46	-37.47	37.47	833.33	750.00	2.19	1.00	14.22	315.48	315.48
Dsgn. L =	4.00 ft	2	0.050	0.030	-0.00	-37.47	37.47	833.33	750.00	1.00	1.00	9.39	315.48	315.48
Dsgn. L =	3.75 ft	2	0.001	0.029	-0.65	0.65	833.33	750.00	1.00	1.00	9.03	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L =	1.43 ft	1	0.055	0.092	41.30		41.30	833.33	750.00	1.72	1.00	28.99	315.48	315.48
Dsgn. L =	3.98 ft	1	0.162	0.091	121.46	41.30	121.46	833.33	750.00	1.37	1.00	28.86	315.48	315.48
Dsgn. L =	4.08 ft	1	0.223	0.063	166.93	121.46	166.93	833.33	750.00	1.12	1.00	19.81	315.48	315.48



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B45**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Max Stress Ratios		Summary of Moment Values							Summary of Shear Values			
	Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 3.98 ft	1	0.233	0.034	174.57	166.93	174.57	833.33	750.00	1.02	1.00	10.76	315.48	315.48
Dsgn. L = 3.98 ft	1	0.233	0.023	174.57	146.42	174.57	833.33	750.00	1.07	1.00	7.34	315.48	315.48
Dsgn. L = 3.98 ft	1	0.195	0.052	146.42	82.47	146.42	833.33	750.00	1.20	1.00	16.38	315.48	315.48
Dsgn. L = 4.08 ft	1	0.110	0.081	82.47	-19.87	82.47	833.33	750.00	1.97	1.00	25.44	315.48	315.48
Dsgn. L = 4.00 ft	2	0.026	0.016	-0.00	-19.87	19.87	833.33	750.00	1.00	1.00	4.99	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.015	-0.65	0.65	833.33	750.00	1.00	1.00	4.63	315.48	315.48	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.43 ft	1	0.054	0.090	40.32		40.32	833.33	750.00	1.72	1.00	28.30	315.48	315.48
Dsgn. L = 3.98 ft	1	0.157	0.089	117.73	40.32	117.73	833.33	750.00	1.36	1.00	28.17	315.48	315.48
Dsgn. L = 4.08 ft	1	0.214	0.061	160.38	117.73	160.38	833.33	750.00	1.12	1.00	19.12	315.48	315.48
Dsgn. L = 3.98 ft	1	0.220	0.032	165.28	160.38	165.28	833.33	750.00	1.01	1.00	10.07	315.48	315.48
Dsgn. L = 3.98 ft	1	0.220	0.025	165.28	134.38	165.28	833.33	750.00	1.08	1.00	8.03	315.48	315.48
Dsgn. L = 3.98 ft	1	0.179	0.054	134.38	67.68	134.38	833.33	750.00	1.24	1.00	17.07	315.48	315.48
Dsgn. L = 4.08 ft	1	0.090	0.083	67.68	-37.47	67.68	833.33	750.00	2.17	1.00	26.13	315.48	315.48
Dsgn. L = 4.00 ft	2	0.050	0.030	-0.00	-37.47	37.47	833.33	750.00	1.00	1.00	9.39	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.029	-0.65	0.65	833.33	750.00	1.00	1.00	9.03	315.48	315.48	
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 1.43 ft	1	0.027	0.046	20.61		20.61	833.33	750.00	1.71	1.00	14.50	315.48	315.48
Dsgn. L = 3.98 ft	1	0.080	0.046	60.30	20.61	60.30	833.33	750.00	1.36	1.00	14.37	315.48	315.48
Dsgn. L = 4.08 ft	1	0.109	0.031	82.11	60.30	82.11	833.33	750.00	1.12	1.00	9.72	315.48	315.48
Dsgn. L = 3.98 ft	1	0.113	0.016	84.55	82.11	84.55	833.33	750.00	1.01	1.00	5.06	315.48	315.48
Dsgn. L = 3.98 ft	1	0.113	0.013	84.55	68.59	84.55	833.33	750.00	1.08	1.00	4.23	315.48	315.48
Dsgn. L = 3.98 ft	1	0.091	0.028	68.59	34.24	68.59	833.33	750.00	1.24	1.00	8.88	315.48	315.48
Dsgn. L = 4.08 ft	1	0.046	0.043	34.24	-19.87	34.24	833.33	750.00	2.17	1.00	13.53	315.48	315.48
Dsgn. L = 4.00 ft	2	0.026	0.016	-0.00	-19.87	19.87	833.33	750.00	1.00	1.00	4.99	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.015	-0.65	0.65	833.33	750.00	1.00	1.00	4.63	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.018	0.029	13.17		13.17	833.33	750.00	1.71	1.00	9.29	315.48	315.48
Dsgn. L = 3.98 ft	1	0.050	0.029	37.77	13.17	37.77	833.33	750.00	1.36	1.00	9.16	315.48	315.48
Dsgn. L = 4.08 ft	1	0.067	0.019	49.95	37.77	49.95	833.33	750.00	1.10	1.00	5.95	315.48	315.48
Dsgn. L = 3.98 ft	1	0.067	0.009	49.98	48.83	49.98	833.33	750.00	1.01	1.00	2.73	315.48	315.48
Dsgn. L = 3.98 ft	1	0.065	0.012	48.83	35.02	48.83	833.33	750.00	1.12	1.00	3.68	315.48	315.48
Dsgn. L = 3.98 ft	1	0.047	0.022	35.02	8.51	35.02	833.33	750.00	1.41	1.00	6.89	315.48	315.48
Dsgn. L = 4.08 ft	1	0.042	0.032	8.51	-31.71	31.71	833.33	750.00	2.06	1.00	10.10	315.48	315.48
Dsgn. L = 4.00 ft	2	0.042	0.025	-0.00	-31.71	31.71	833.33	750.00	1.00	1.00	7.95	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.024	-0.65	0.65	833.33	750.00	1.00	1.00	7.59	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.046	0.078	34.85		34.85	833.33	750.00	1.71	1.00	24.47	315.48	315.48
Dsgn. L = 3.98 ft	1	0.137	0.077	102.67	34.85	102.67	833.33	750.00	1.37	1.00	24.34	315.48	315.48
Dsgn. L = 4.08 ft	1	0.188	0.053	141.31	102.67	141.31	833.33	750.00	1.12	1.00	16.73	315.48	315.48
Dsgn. L = 3.98 ft	1	0.198	0.029	148.15	141.31	148.15	833.33	750.00	1.02	1.00	9.12	315.48	315.48
Dsgn. L = 3.98 ft	1	0.198	0.019	148.15	124.89	148.15	833.33	750.00	1.06	1.00	6.09	315.48	315.48
Dsgn. L = 3.98 ft	1	0.167	0.043	124.89	71.52	124.89	833.33	750.00	1.20	1.00	13.70	315.48	315.48
Dsgn. L = 4.08 ft	1	0.095	0.068	71.52	-14.11	71.52	833.33	750.00	1.90	1.00	21.32	315.48	315.48
Dsgn. L = 4.00 ft	2	0.019	0.011	-0.00	-14.11	14.11	833.33	750.00	1.00	1.00	3.55	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.010	-0.64	0.64	833.33	750.00	1.00	1.00	3.19	315.48	315.48	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.045	0.075	33.87		33.87	833.33	750.00	1.71	1.00	23.78	315.48	315.48
Dsgn. L = 3.98 ft	1	0.132	0.075	98.94	33.87	98.94	833.33	750.00	1.36	1.00	23.65	315.48	315.48
Dsgn. L = 4.08 ft	1	0.180	0.051	134.76	98.94	134.76	833.33	750.00	1.12	1.00	16.04	315.48	315.48
Dsgn. L = 3.98 ft	1	0.185	0.027	138.86	134.76	138.86	833.33	750.00	1.01	1.00	8.43	315.48	315.48
Dsgn. L = 3.98 ft	1	0.185	0.022	138.86	112.85	138.86	833.33	750.00	1.08	1.00	6.79	315.48	315.48
Dsgn. L = 3.98 ft	1	0.150	0.046	112.85	56.74	112.85	833.33	750.00	1.24	1.00	14.39	315.48	315.48
Dsgn. L = 4.08 ft	1	0.076	0.070	56.74	-31.71	56.74	833.33	750.00	2.17	1.00	22.01	315.48	315.48
Dsgn. L = 4.00 ft	2	0.042	0.025	-0.00	-31.71	31.71	833.33	750.00	1.00	1.00	7.95	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.024	-0.65	0.65	833.33	750.00	1.00	1.00	7.59	315.48	315.48	
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.020	0.034	15.19		15.19	833.33	750.00	1.71	1.00	10.70	315.48	315.48
Dsgn. L = 3.98 ft	1	0.058	0.034	43.64	15.19	43.64	833.33	750.00	1.36	1.00	10.57	315.48	315.48
Dsgn. L = 4.08 ft	1	0.077	0.022	57.95	43.64	57.95	833.33	750.00	1.10	1.00	6.91	315.48	315.48
Dsgn. L = 3.98 ft	1	0.077	0.010	58.00	57.09	58.00	833.33	750.00	1.00	1.00	3.25	315.48	315.48
Dsgn. L = 3.98 ft	1	0.076	0.013	57.09	41.75	57.09	833.33	750.00	1.11	1.00	4.07	315.48	315.48
Dsgn. L = 3.98 ft	1	0.056	0.024	41.75	11.93	41.75	833.33	750.00	1.38	1.00	7.72	315.48	315.48

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B45**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios				Summary of Moment Values					Summary of Shear Values		
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.08 ft	1	0.045	0.036	11.93	-33.51	33.51	833.33	750.00	2.16	1.00	11.39	315.48	315.48
Dsgn. L = 4.00 ft	2	0.045	0.027	-0.00	-33.51	33.51	833.33	750.00	1.00	1.00	8.40	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.025		-0.65	0.65	833.33	750.00	1.00	1.00	8.04	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.049	0.082	36.87		36.87	833.33	750.00	1.71	1.00	25.88	315.48	315.48
Dsgn. L = 3.98 ft	1	0.145	0.082	108.54	36.87	108.54	833.33	750.00	1.37	1.00	25.75	315.48	315.48
Dsgn. L = 4.08 ft	1	0.199	0.056	149.32	108.54	149.32	833.33	750.00	1.12	1.00	17.70	315.48	315.48
Dsgn. L = 3.98 ft	1	0.209	0.031	156.41	149.32	156.41	833.33	750.00	1.02	1.00	9.63	315.48	315.48
Dsgn. L = 3.98 ft	1	0.209	0.021	156.41	131.61	156.41	833.33	750.00	1.06	1.00	6.48	315.48	315.48
Dsgn. L = 3.98 ft	1	0.175	0.046	131.61	74.94	131.61	833.33	750.00	1.20	1.00	14.54	315.48	315.48
Dsgn. L = 4.08 ft	1	0.100	0.072	74.94	-15.91	74.94	833.33	750.00	1.92	1.00	22.61	315.48	315.48
Dsgn. L = 4.00 ft	2	0.021	0.013	-0.00	-15.91	15.91	833.33	750.00	1.00	1.00	4.00	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.012		-0.64	0.64	833.33	750.00	1.00	1.00	3.64	315.48	315.48
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.048	0.080	35.88		35.88	833.33	750.00	1.71	1.00	25.19	315.48	315.48
Dsgn. L = 3.98 ft	1	0.140	0.079	104.81	35.88	104.81	833.33	750.00	1.36	1.00	25.06	315.48	315.48
Dsgn. L = 4.08 ft	1	0.190	0.054	142.77	104.81	142.77	833.33	750.00	1.12	1.00	17.01	315.48	315.48
Dsgn. L = 3.98 ft	1	0.196	0.028	147.11	142.77	147.11	833.33	750.00	1.01	1.00	8.94	315.48	315.48
Dsgn. L = 3.98 ft	1	0.196	0.023	147.11	119.58	147.11	833.33	750.00	1.08	1.00	7.17	315.48	315.48
Dsgn. L = 3.98 ft	1	0.159	0.048	119.58	60.16	119.58	833.33	750.00	1.24	1.00	15.23	315.48	315.48
Dsgn. L = 4.08 ft	1	0.080	0.074	60.16	-33.51	60.16	833.33	750.00	2.17	1.00	23.30	315.48	315.48
Dsgn. L = 4.00 ft	2	0.045	0.027	-0.00	-33.51	33.51	833.33	750.00	1.00	1.00	8.40	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.025		-0.65	0.65	833.33	750.00	1.00	1.00	8.04	315.48	315.48
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 1.43 ft	1	0.014	0.024	10.62		10.62	833.33	750.00	1.71	1.00	7.48	315.48	315.48
Dsgn. L = 3.98 ft	1	0.041	0.023	31.12	10.62	31.12	833.33	750.00	1.36	1.00	7.39	315.48	315.48
Dsgn. L = 4.08 ft	1	0.056	0.016	42.37	31.12	42.37	833.33	750.00	1.11	1.00	4.98	315.48	315.48
Dsgn. L = 3.98 ft	1	0.058	0.008	43.59	42.37	43.59	833.33	750.00	1.01	1.00	2.57	315.48	315.48
Dsgn. L = 3.98 ft	1	0.058	0.007	43.59	35.29	43.59	833.33	750.00	1.08	1.00	2.24	315.48	315.48
Dsgn. L = 3.98 ft	1	0.047	0.015	35.29	17.47	35.29	833.33	750.00	1.24	1.00	4.65	315.48	315.48
Dsgn. L = 4.08 ft	1	0.023	0.022	17.47	-10.59	17.47	833.33	750.00	2.17	1.00	7.06	315.48	315.48
Dsgn. L = 4.00 ft	2	0.014	0.008	-0.00	-10.59	10.59	833.33	750.00	1.00	1.00	2.66	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.008		-0.48	0.48	833.33	750.00	1.00	1.00	2.39	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.019	0.031	13.98		13.98	833.33	750.00	1.71	1.00	9.85	315.48	315.48
Dsgn. L = 3.98 ft	1	0.053	0.031	40.12	13.98	40.12	833.33	750.00	1.36	1.00	9.72	315.48	315.48
Dsgn. L = 4.08 ft	1	0.071	0.020	53.15	40.12	53.15	833.33	750.00	1.10	1.00	6.34	315.48	315.48
Dsgn. L = 3.98 ft	1	0.071	0.009	53.19	52.14	53.19	833.33	750.00	1.01	1.00	2.94	315.48	315.48
Dsgn. L = 3.98 ft	1	0.070	0.012	52.14	37.71	52.14	833.33	750.00	1.12	1.00	3.83	315.48	315.48
Dsgn. L = 3.98 ft	1	0.050	0.023	37.71	9.88	37.71	833.33	750.00	1.39	1.00	7.22	315.48	315.48
Dsgn. L = 4.08 ft	1	0.043	0.034	9.88	-32.43	32.43	833.33	750.00	2.12	1.00	10.62	315.48	315.48
Dsgn. L = 4.00 ft	2	0.043	0.026	-0.00	-32.43	32.43	833.33	750.00	1.00	1.00	8.13	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.025		-0.65	0.65	833.33	750.00	1.00	1.00	7.77	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.048	0.079	35.66		35.66	833.33	750.00	1.71	1.00	25.04	315.48	315.48
Dsgn. L = 3.98 ft	1	0.140	0.079	105.02	35.66	105.02	833.33	750.00	1.37	1.00	24.91	315.48	315.48
Dsgn. L = 4.08 ft	1	0.193	0.054	144.51	105.02	144.51	833.33	750.00	1.12	1.00	17.12	315.48	315.48
Dsgn. L = 3.98 ft	1	0.202	0.030	151.45	144.51	151.45	833.33	750.00	1.02	1.00	9.32	315.48	315.48
Dsgn. L = 3.98 ft	1	0.202	0.020	151.45	127.58	151.45	833.33	750.00	1.06	1.00	6.25	315.48	315.48
Dsgn. L = 3.98 ft	1	0.170	0.044	127.58	72.89	127.58	833.33	750.00	1.20	1.00	14.04	315.48	315.48
Dsgn. L = 4.08 ft	1	0.097	0.069	72.89	-14.83	72.89	833.33	750.00	1.91	1.00	21.83	315.48	315.48
Dsgn. L = 4.00 ft	2	0.020	0.012	-0.00	-14.83	14.83	833.33	750.00	1.00	1.00	3.73	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.011		-0.64	0.64	833.33	750.00	1.00	1.00	3.37	315.48	315.48
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 1.43 ft	1	0.046	0.077	34.67		34.67	833.33	750.00	1.71	1.00	24.35	315.48	315.48
Dsgn. L = 3.98 ft	1	0.135	0.077	101.29	34.67	101.29	833.33	750.00	1.36	1.00	24.22	315.48	315.48
Dsgn. L = 4.08 ft	1	0.184	0.052	137.97	101.29	137.97	833.33	750.00	1.12	1.00	16.43	315.48	315.48
Dsgn. L = 3.98 ft	1	0.190	0.027	142.16	137.97	142.16	833.33	750.00	1.01	1.00	8.63	315.48	315.48
Dsgn. L = 3.98 ft	1	0.190	0.022	142.16	115.54	142.16	833.33	750.00	1.08	1.00	6.94	315.48	315.48
Dsgn. L = 3.98 ft	1	0.154	0.047	115.54	58.11	115.54	833.33	750.00	1.24	1.00	14.73	315.48	315.48
Dsgn. L = 4.08 ft	1	0.077	0.071	58.11	-32.43	58.11	833.33	750.00	2.17	1.00	22.52	315.48	315.48
Dsgn. L = 4.00 ft	2	0.043	0.026	-0.00	-32.43	32.43	833.33	750.00	1.00	1.00	8.13	315.48	315.48
Dsgn. L = 3.75 ft	2	0.001	0.025		-0.65	0.65	833.33	750.00	1.00	1.00	7.77	315.48	315.48



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B45**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx	
+0.90D+E+0.90H															
Dsgn. L = 1.43 ft		1	0.014	0.024	10.62		10.62	833.33	750.00	1.71	1.00	7.48	315.48	315.48	
Dsgn. L = 3.98 ft		1	0.041	0.023	31.12	10.62	31.12	833.33	750.00	1.36	1.00	7.39	315.48	315.48	
Dsgn. L = 4.08 ft		1	0.056	0.016	42.37	31.12	42.37	833.33	750.00	1.11	1.00	4.98	315.48	315.48	
Dsgn. L = 3.98 ft		1	0.058	0.008	43.59	42.37	43.59	833.33	750.00	1.01	1.00	2.57	315.48	315.48	
Dsgn. L = 3.98 ft		1	0.058	0.007	43.59	35.29	43.59	833.33	750.00	1.08	1.00	2.24	315.48	315.48	
Dsgn. L = 3.98 ft		1	0.047	0.015	35.29	17.47	35.29	833.33	750.00	1.24	1.00	4.65	315.48	315.48	
Dsgn. L = 4.08 ft		1	0.023	0.022	17.47	-10.59	17.47	833.33	750.00	2.17	1.00	7.06	315.48	315.48	
Dsgn. L = 4.00 ft		2	0.014	0.008	-0.00	-10.59	10.59	833.33	750.00	1.00	1.00	2.66	315.48	315.48	
Dsgn. L = 3.75 ft		2	0.001	0.008		-0.48	0.48	833.33	750.00	1.00	1.00	2.39	315.48	315.48	

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2629	12.648		0.0000	0.000
	2	0.0000	12.648	+D+L+H	-0.2389	7.750

**Vertical Reactions**

Load Combination	Support notation : Far left is #'			Values in KIPS
	Support 1	Support 2	Support 3	
Max Upward from all Load Conditions	22.809	34.568		
Max Upward from Load Combinations	22.809	34.568		
Max Upward from Load Cases	14.494	21.396		
Max Downward from all Load Conditions (Resis)	-0.690			
Max Downward from Load Cases (Resisting Up)	-0.690			
+D+H	8.315	13.172		
+D+L+H, LL Comb Run (*L)	7.625	22.662		
+D+L+H, LL Comb Run (L*)	22.809	25.078		
+D+L+H, LL Comb Run (LL)	22.119	34.568		
+D+Lr+H, LL Comb Run (*L)	8.315	13.172		
+D+Lr+H, LL Comb Run (L*)	8.315	13.172		
+D+Lr+H, LL Comb Run (LL)	8.315	13.172		
+D+S+H	11.138	17.549		
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	7.797	20.290		
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	19.185	22.102		
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	18.668	29.219		
+D+0.750L+0.750S+H, LL Comb Run (*L)	9.915	23.572		
+D+0.750L+0.750S+H, LL Comb Run (L*)	21.303	25.384		
+D+0.750L+0.750S+H, LL Comb Run (LL)	20.785	32.502		
+D+0.60W+H	8.315	13.172		
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	7.797	20.290		
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	19.185	22.102		
+D+0.750Lr+0.750L+0.450W+H, LL Comb Run	18.668	29.219		
+D+0.750L+0.750S+0.450W+H, LL Comb Run	9.915	23.572		
+D+0.750L+0.750S+0.450W+H, LL Comb Run	21.303	25.384		
+D+0.750L+0.750S+0.450W+H, LL Comb Run	20.785	32.502		
+0.60D+0.60W+0.60H	4.989	7.903		
+D+0.70E+0.60H	8.315	13.172		
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	9.915	23.572		
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	21.303	25.384		
+D+0.750L+0.750S+0.5250E+H, LL Comb Run	20.785	32.502		
+0.60D+0.70E+H	4.989	7.903		
D Only	8.315	13.172		
L Only, LL Comb Run (*L)	-0.690	9.490		
L Only, LL Comb Run (L*)	14.494	11.906		
L Only, LL Comb Run (LL)	13.804	21.396		
S Only	2.824	4.376		
H Only				

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B46**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

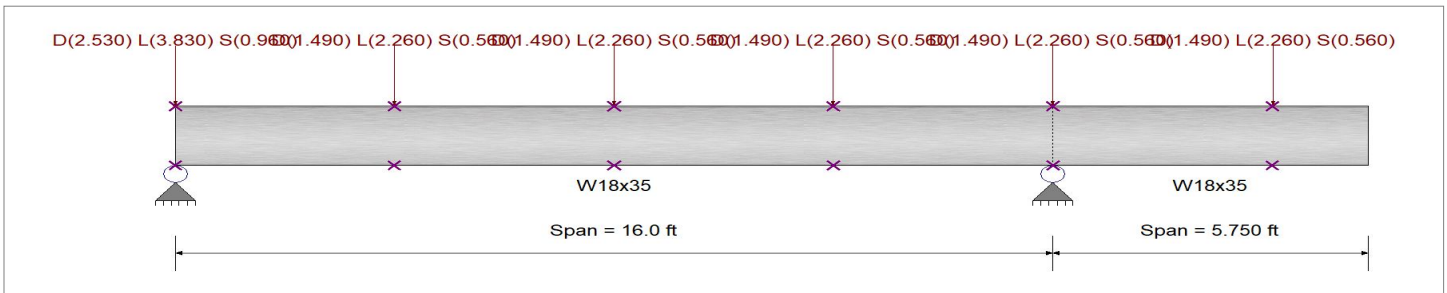
**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 4.0 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 1.490, L = 2.260, S = 0.560 k, Starting at : 4.0 ft and placed every 4.0 ft thereafter

Load(s) for Span Number 1

Point Load : D = 2.530, L = 3.830, S = 0.960 k @ 0.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.170</b> : 1	Maximum Shear Stress Ratio =	<b>0.065</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	42.333 k-ft	Vu : Applied	10.326 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Location of maximum on span	Span # 1	Location of maximum on span	16.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.042 in Ratio = <b>3,309</b> >=360.	Span: 2 : L Only, LL Comb Run (*L)	
Max Upward Transient Deflection	-0.061 in Ratio = <b>2,272</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.081 in Ratio = <b>2382</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.075 in Ratio = <b>1848</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	3.97 ft	1	0.045	0.019	11.32		11.32	277.08	249.38	1.66	1.00	2.95	159.30	159.30
Dsgn. L =	4.03 ft	1	0.055	0.017	13.68	11.32	13.68	277.08	249.38	1.07	1.00	2.75	159.30	159.30
Dsgn. L =	3.97 ft	1	0.055	0.011	13.68	6.88	13.68	277.08	249.38	1.24	1.00	1.81	159.30	159.30
Dsgn. L =	4.03 ft	1	0.037	0.026	6.88	-9.15	9.15	277.08	249.38	2.20	1.00	4.09	159.30	159.30
Dsgn. L =	3.98 ft	2	0.037	0.015	-0.00	-9.15	9.15	277.08	249.38	1.00	1.00	2.37	159.30	159.30
Dsgn. L =	1.77 ft	2	0.000	0.014		-0.12	0.12	277.08	249.38	1.00	1.00	2.17	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	3.97 ft	1	0.025	0.010	6.11		6.11	277.08	249.38	1.65	1.00	1.62	159.30	159.30
Dsgn. L =	4.03 ft	1	0.025	0.014	6.15	4.49	6.15	277.08	249.38	1.11	1.00	2.29	159.30	159.30
Dsgn. L =	3.97 ft	1	0.020	0.015	4.49	-4.92	4.92	277.08	249.38	2.28	1.00	2.46	159.30	159.30
Dsgn. L =	4.03 ft	1	0.089	0.035	-0.00	-22.31	22.31	277.08	249.38	1.45	1.00	5.65	159.30	159.30
Dsgn. L =	3.98 ft	2	0.089	0.035	-0.00	-22.31	22.31	277.08	249.38	1.00	1.00	5.65	159.30	159.30
Dsgn. L =	1.77 ft	2	0.001	0.034		-0.18	0.18	277.08	249.38	1.00	1.00	5.48	159.30	159.30



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B46**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	3.97 ft	1	0.125	0.050	31.22		31.22	277.08	249.38	1.67	1.00	7.95	159.30	159.30
Dsgn. L =	4.03 ft	1	0.163	0.049	40.65	31.22	40.65	277.08	249.38	1.10	1.00	7.78	159.30	159.30
Dsgn. L =	3.97 ft	1	0.163	0.021	40.65	27.65	40.65	277.08	249.38	1.14	1.00	3.36	159.30	159.30
Dsgn. L =	4.03 ft	1	0.111	0.056	27.65	-7.85	27.65	277.08	249.38	2.07	1.00	8.93	159.30	159.30
Dsgn. L =	3.98 ft	2	0.031	0.013	-0.00	-7.85	7.85	277.08	249.38	1.00	1.00	2.03	159.30	159.30
Dsgn. L =	1.77 ft	2	0.000	0.012	-0.10	0.10	277.08	249.38	1.00	1.00		1.86	159.30	159.30
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	3.97 ft	1	0.111	0.044	27.63		27.63	277.08	249.38	1.67	1.00	7.05	159.30	159.30
Dsgn. L =	4.03 ft	1	0.134	0.043	33.42	27.63	33.42	277.08	249.38	1.07	1.00	6.88	159.30	159.30
Dsgn. L =	3.97 ft	1	0.134	0.027	33.42	16.84	33.42	277.08	249.38	1.24	1.00	4.26	159.30	159.30
Dsgn. L =	4.03 ft	1	0.089	0.062	16.84	-22.31	22.31	277.08	249.38	2.19	1.00	9.84	159.30	159.30
Dsgn. L =	3.98 ft	2	0.089	0.035	-0.00	-22.31	22.31	277.08	249.38	1.00	1.00	5.65	159.30	159.30
Dsgn. L =	1.77 ft	2	0.001	0.034	-0.18	0.18	277.08	249.38	1.00	1.00		5.48	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L =	3.97 ft	1	0.030	0.012	7.50		7.50	277.08	249.38	1.66	1.00	1.97	159.30	159.30
Dsgn. L =	4.03 ft	1	0.030	0.016	7.55	6.17	7.55	277.08	249.38	1.07	1.00	2.50	159.30	159.30
Dsgn. L =	3.97 ft	1	0.025	0.017	6.17	-4.07	6.17	277.08	249.38	2.18	1.00	2.67	159.30	159.30
Dsgn. L =	4.03 ft	1	0.094	0.037	-0.00	-23.43	23.43	277.08	249.38	1.49	1.00	5.93	159.30	159.30
Dsgn. L =	3.98 ft	2	0.094	0.037	-0.00	-23.43	23.43	277.08	249.38	1.00	1.00	5.93	159.30	159.30
Dsgn. L =	1.77 ft	2	0.001	0.036	-0.19	0.19	277.08	249.38	1.00	1.00		5.76	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L =	3.97 ft	1	0.131	0.052	32.61		32.61	277.08	249.38	1.67	1.00	8.30	159.30	159.30
Dsgn. L =	4.03 ft	1	0.170	0.051	42.33	32.61	42.33	277.08	249.38	1.10	1.00	8.13	159.30	159.30
Dsgn. L =	3.97 ft	1	0.170	0.022	42.33	28.50	42.33	277.08	249.38	1.15	1.00	3.57	159.30	159.30
Dsgn. L =	4.03 ft	1	0.114	0.059	28.50	-8.97	28.50	277.08	249.38	2.13	1.00	9.42	159.30	159.30
Dsgn. L =	3.98 ft	2	0.036	0.014	-0.00	-8.97	8.97	277.08	249.38	1.00	1.00	2.31	159.30	159.30
Dsgn. L =	1.77 ft	2	0.000	0.013	-0.11	0.11	277.08	249.38	1.00	1.00		2.14	159.30	159.30
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>														
Dsgn. L =	3.97 ft	1	0.116	0.046	29.02		29.02	277.08	249.38	1.67	1.00	7.40	159.30	159.30
Dsgn. L =	4.03 ft	1	0.141	0.045	35.10	29.02	35.10	277.08	249.38	1.07	1.00	7.23	159.30	159.30
Dsgn. L =	3.97 ft	1	0.141	0.028	35.10	17.68	35.10	277.08	249.38	1.24	1.00	4.47	159.30	159.30
Dsgn. L =	4.03 ft	1	0.094	0.065	17.68	-23.43	23.43	277.08	249.38	2.19	1.00	10.33	159.30	159.30
Dsgn. L =	3.98 ft	2	0.094	0.037	-0.00	-23.43	23.43	277.08	249.38	1.00	1.00	5.93	159.30	159.30
Dsgn. L =	1.77 ft	2	0.001	0.036	-0.19	0.19	277.08	249.38	1.00	1.00		5.76	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L =	3.97 ft	1	0.030	0.012	7.46		7.46	277.08	249.38	1.66	1.00	1.96	159.30	159.30
Dsgn. L =	4.03 ft	1	0.030	0.012	7.51	7.20	7.51	277.08	249.38	1.01	1.00	1.95	159.30	159.30
Dsgn. L =	3.97 ft	1	0.029	0.013	7.20	-0.86	7.20	277.08	249.38	1.77	1.00	2.12	159.30	159.30
Dsgn. L =	4.03 ft	1	0.068	0.027	-0.00	-16.89	16.89	277.08	249.38	1.61	1.00	4.29	159.30	159.30
Dsgn. L =	3.98 ft	2	0.068	0.027	-0.00	-16.89	16.89	277.08	249.38	1.00	1.00	4.29	159.30	159.30
Dsgn. L =	1.77 ft	2	0.001	0.026	-0.15	0.15	277.08	249.38	1.00	1.00		4.12	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L =	3.97 ft	1	0.093	0.037	23.15		23.15	277.08	249.38	1.67	1.00	5.92	159.30	159.30
Dsgn. L =	4.03 ft	1	0.120	0.036	29.80	23.15	29.80	277.08	249.38	1.10	1.00	5.75	159.30	159.30
Dsgn. L =	3.97 ft	1	0.120	0.017	29.80	19.50	29.80	277.08	249.38	1.16	1.00	2.68	159.30	159.30
Dsgn. L =	4.03 ft	1	0.078	0.043	19.50	-7.85	19.50	277.08	249.38	2.15	1.00	6.90	159.30	159.30
Dsgn. L =	3.98 ft	2	0.031	0.013	-0.00	-7.85	7.85	277.08	249.38	1.00	1.00	2.03	159.30	159.30
Dsgn. L =	1.77 ft	2	0.000	0.012	-0.10	0.10	277.08	249.38	1.00	1.00		1.86	159.30	159.30
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L =	3.97 ft	1	0.084	0.034	20.91		20.91	277.08	249.38	1.67	1.00	5.35	159.30	159.30
Dsgn. L =	4.03 ft	1	0.101	0.033	25.28	20.91	25.28	277.08	249.38	1.07	1.00	5.19	159.30	159.30
Dsgn. L =	3.97 ft	1	0.101	0.020	25.28	12.74	25.28	277.08	249.38	1.24	1.00	3.25	159.30	159.30
Dsgn. L =	4.03 ft	1	0.068	0.047	12.74	-16.89	16.89	277.08	249.38	2.19	1.00	7.46	159.30	159.30
Dsgn. L =	3.98 ft	2	0.068	0.027	-0.00	-16.89	16.89	277.08	249.38	1.00	1.00	4.29	159.30	159.30
Dsgn. L =	1.77 ft	2	0.001	0.026	-0.15	0.15	277.08	249.38	1.00	1.00		4.12	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L =	3.97 ft	1	0.039	0.016	9.70		9.70	277.08	249.38	1.66	1.00	2.53	159.30	159.30
Dsgn. L =	4.03 ft	1	0.047	0.015	11.72	9.70	11.72	277.08	249.38	1.07	1.00	2.36	159.30	159.30
Dsgn. L =	3.97 ft	1	0.047	0.010	11.72	5.90	11.72	277.08	249.38	1.24	1.00	1.55	159.30	159.30
Dsgn. L =	4.03 ft	1	0.031	0.022	5.90	-7.85	7.85	277.08	249.38	2.20	1.00	3.51	159.30	159.30
Dsgn. L =	3.98 ft	2	0.031	0.013	-0.00	-7.85	7.85	277.08	249.38	1.00	1.00	2.03	159.30	159.30
Dsgn. L =	1.77 ft	2	0.000	0.012	-0.10	0.10	277.08	249.38	1.00	1.00		1.86	159.30	159.30





Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B46**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.97 ft	1	0.039	0.016	9.70		9.70	277.08	249.38	1.66	1.00	2.53	159.30	159.30
Dsgn. L = 4.03 ft	1	0.047	0.015	11.72	9.70	11.72	277.08	249.38	1.07	1.00	2.36	159.30	159.30
Dsgn. L = 3.97 ft	1	0.047	0.010	11.72	5.90	11.72	277.08	249.38	1.24	1.00	1.55	159.30	159.30
Dsgn. L = 4.03 ft	1	0.031	0.022	5.90	-7.85	7.85	277.08	249.38	2.20	1.00	3.51	159.30	159.30
Dsgn. L = 3.98 ft	2	0.031	0.013	-0.00	-7.85	7.85	277.08	249.38	1.00	1.00	2.03	159.30	159.30
Dsgn. L = 1.77 ft	2	0.000	0.012	-0.10	0.10	277.08	249.38	1.00	1.00		1.86	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.97 ft	1	0.039	0.016	9.70		9.70	277.08	249.38	1.66	1.00	2.53	159.30	159.30
Dsgn. L = 4.03 ft	1	0.047	0.015	11.72	9.70	11.72	277.08	249.38	1.07	1.00	2.36	159.30	159.30
Dsgn. L = 3.97 ft	1	0.047	0.010	11.72	5.90	11.72	277.08	249.38	1.24	1.00	1.55	159.30	159.30
Dsgn. L = 4.03 ft	1	0.031	0.022	5.90	-7.85	7.85	277.08	249.38	2.20	1.00	3.51	159.30	159.30
Dsgn. L = 3.98 ft	2	0.031	0.013	-0.00	-7.85	7.85	277.08	249.38	1.00	1.00	2.03	159.30	159.30
Dsgn. L = 1.77 ft	2	0.000	0.012	-0.10	0.10	277.08	249.38	1.00	1.00		1.86	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.97 ft	1	0.048	0.019	11.90		11.90	277.08	249.38	1.66	1.00	3.08	159.30	159.30
Dsgn. L = 4.03 ft	1	0.050	0.018	12.58	11.90	12.58	277.08	249.38	1.02	1.00	2.92	159.30	159.30
Dsgn. L = 3.97 ft	1	0.050	0.018	12.58	1.85	12.58	277.08	249.38	1.50	1.00	2.79	159.30	159.30
Dsgn. L = 4.03 ft	1	0.082	0.035	1.85	-20.47	20.47	277.08	249.38	1.77	1.00	5.64	159.30	159.30
Dsgn. L = 3.98 ft	2	0.082	0.033	-0.00	-20.47	20.47	277.08	249.38	1.00	1.00	5.19	159.30	159.30
Dsgn. L = 1.77 ft	2	0.001	0.032	-0.17	0.17	277.08	249.38	1.00	1.00		5.02	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.97 ft	1	0.111	0.044	27.59		27.59	277.08	249.38	1.67	1.00	7.04	159.30	159.30
Dsgn. L = 4.03 ft	1	0.141	0.043	35.18	27.59	35.18	277.08	249.38	1.09	1.00	6.87	159.30	159.30
Dsgn. L = 3.97 ft	1	0.141	0.021	35.18	22.21	35.18	277.08	249.38	1.17	1.00	3.35	159.30	159.30
Dsgn. L = 4.03 ft	1	0.089	0.053	22.21	-11.43	22.21	277.08	249.38	2.17	1.00	8.47	159.30	159.30
Dsgn. L = 3.98 ft	2	0.046	0.018	-0.00	-11.43	11.43	277.08	249.38	1.00	1.00	2.93	159.30	159.30
Dsgn. L = 1.77 ft	2	0.000	0.017	-0.12	0.12	277.08	249.38	1.00	1.00		2.76	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.97 ft	1	0.102	0.041	25.35		25.35	277.08	249.38	1.67	1.00	6.47	159.30	159.30
Dsgn. L = 4.03 ft	1	0.123	0.040	30.66	25.35	30.66	277.08	249.38	1.07	1.00	6.31	159.30	159.30
Dsgn. L = 3.97 ft	1	0.123	0.025	30.66	15.44	30.66	277.08	249.38	1.24	1.00	3.92	159.30	159.30
Dsgn. L = 4.03 ft	1	0.082	0.057	15.44	-20.47	20.47	277.08	249.38	2.19	1.00	9.03	159.30	159.30
Dsgn. L = 3.98 ft	2	0.082	0.033	-0.00	-20.47	20.47	277.08	249.38	1.00	1.00	5.19	159.30	159.30
Dsgn. L = 1.77 ft	2	0.001	0.032	-0.17	0.17	277.08	249.38	1.00	1.00		5.02	159.30	159.30
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 3.97 ft	1	0.057	0.023	14.14		14.14	277.08	249.38	1.67	1.00	3.65	159.30	159.30
Dsgn. L = 4.03 ft	1	0.069	0.022	17.10	14.14	17.10	277.08	249.38	1.07	1.00	3.48	159.30	159.30
Dsgn. L = 3.97 ft	1	0.069	0.014	17.10	8.61	17.10	277.08	249.38	1.24	1.00	2.22	159.30	159.30
Dsgn. L = 4.03 ft	1	0.046	0.032	8.61	-11.43	11.43	277.08	249.38	2.20	1.00	5.08	159.30	159.30
Dsgn. L = 3.98 ft	2	0.046	0.018	-0.00	-11.43	11.43	277.08	249.38	1.00	1.00	2.93	159.30	159.30
Dsgn. L = 1.77 ft	2	0.000	0.017	-0.12	0.12	277.08	249.38	1.00	1.00		2.76	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.97 ft	1	0.030	0.012	7.46		7.46	277.08	249.38	1.66	1.00	1.96	159.30	159.30
Dsgn. L = 4.03 ft	1	0.030	0.012	7.51	7.20	7.51	277.08	249.38	1.01	1.00	1.95	159.30	159.30
Dsgn. L = 3.97 ft	1	0.029	0.013	7.20	-0.86	7.20	277.08	249.38	1.77	1.00	2.12	159.30	159.30
Dsgn. L = 4.03 ft	1	0.068	0.027	-0.00	-16.89	16.89	277.08	249.38	1.61	1.00	4.29	159.30	159.30
Dsgn. L = 3.98 ft	2	0.068	0.027	-0.00	-16.89	16.89	277.08	249.38	1.00	1.00	4.29	159.30	159.30
Dsgn. L = 1.77 ft	2	0.001	0.026	-0.15	0.15	277.08	249.38	1.00	1.00		4.12	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.97 ft	1	0.093	0.037	23.15		23.15	277.08	249.38	1.67	1.00	5.92	159.30	159.30
Dsgn. L = 4.03 ft	1	0.120	0.036	29.80	23.15	29.80	277.08	249.38	1.10	1.00	5.75	159.30	159.30
Dsgn. L = 3.97 ft	1	0.120	0.017	29.80	19.50	29.80	277.08	249.38	1.16	1.00	2.68	159.30	159.30
Dsgn. L = 4.03 ft	1	0.078	0.043	19.50	-7.85	19.50	277.08	249.38	2.15	1.00	6.90	159.30	159.30
Dsgn. L = 3.98 ft	2	0.031	0.013	-0.00	-7.85	7.85	277.08	249.38	1.00	1.00	2.03	159.30	159.30
Dsgn. L = 1.77 ft	2	0.000	0.012	-0.10	0.10	277.08	249.38	1.00	1.00		1.86	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.97 ft	1	0.084	0.034	20.91		20.91	277.08	249.38	1.67	1.00	5.35	159.30	159.30
Dsgn. L = 4.03 ft	1	0.101	0.033	25.28	20.91	25.28	277.08	249.38	1.07	1.00	5.19	159.30	159.30
Dsgn. L = 3.97 ft	1	0.101	0.020	25.28	12.74	25.28	277.08	249.38	1.24	1.00	3.25	159.30	159.30
Dsgn. L = 4.03 ft	1	0.068	0.047	12.74	-16.89	16.89	277.08	249.38	2.19	1.00	7.46	159.30	159.30
Dsgn. L = 3.98 ft	2	0.068	0.027	-0.00	-16.89	16.89	277.08	249.38	1.00	1.00	4.29	159.30	159.30
Dsgn. L = 1.77 ft	2	0.001	0.026	-0.15	0.15	277.08	249.38	1.00	1.00		4.12	159.30	159.30



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B46**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L =	3.97 ft	1	0.035	0.015	8.85		8.85	277.08	249.38	1.66	1.00	2.31	159.30	159.30
Dsgn. L =	4.03 ft	1	0.036	0.014	8.98	8.85	8.98	277.08	249.38	1.00	1.00	2.16	159.30	159.30
Dsgn. L =	3.97 ft	1	0.036	0.015	8.88	-0.01	8.88	277.08	249.38	1.64	1.00	2.33	159.30	159.30
Dsgn. L =	4.03 ft	1	0.072	0.029	-0.00	-18.01	18.01	277.08	249.38	1.66	1.00	4.57	159.30	159.30
Dsgn. L =	3.98 ft	2	0.072	0.029	-0.00	-18.01	18.01	277.08	249.38	1.00	1.00	4.57	159.30	159.30
Dsgn. L =	1.77 ft	2	0.001	0.028	-0.16	0.16	277.08	249.38	1.00	1.00		4.40	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L =	3.97 ft	1	0.098	0.039	24.54		24.54	277.08	249.38	1.67	1.00	6.27	159.30	159.30
Dsgn. L =	4.03 ft	1	0.126	0.038	31.48	24.54	31.48	277.08	249.38	1.09	1.00	6.10	159.30	159.30
Dsgn. L =	3.97 ft	1	0.126	0.018	31.48	20.34	31.48	277.08	249.38	1.16	1.00	2.89	159.30	159.30
Dsgn. L =	4.03 ft	1	0.082	0.046	20.34	-8.97	20.34	277.08	249.38	2.15	1.00	7.39	159.30	159.30
Dsgn. L =	3.98 ft	2	0.036	0.014	-0.00	-8.97	8.97	277.08	249.38	1.00	1.00	2.31	159.30	159.30
Dsgn. L =	1.77 ft	2	0.000	0.013	-0.11	0.11	277.08	249.38	1.00	1.00		2.14	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
Dsgn. L =	3.97 ft	1	0.089	0.036	22.30		22.30	277.08	249.38	1.67	1.00	5.70	159.30	159.30
Dsgn. L =	4.03 ft	1	0.108	0.035	26.96	22.30	26.96	277.08	249.38	1.07	1.00	5.54	159.30	159.30
Dsgn. L =	3.97 ft	1	0.108	0.022	26.96	13.58	26.96	277.08	249.38	1.24	1.00	3.46	159.30	159.30
Dsgn. L =	4.03 ft	1	0.072	0.050	13.58	-18.01	18.01	277.08	249.38	2.19	1.00	7.95	159.30	159.30
Dsgn. L =	3.98 ft	2	0.072	0.029	-0.00	-18.01	18.01	277.08	249.38	1.00	1.00	4.57	159.30	159.30
Dsgn. L =	1.77 ft	2	0.001	0.028	-0.16	0.16	277.08	249.38	1.00	1.00		4.40	159.30	159.30
<b>+0.90D+W+1.60H</b>														
Dsgn. L =	3.97 ft	1	0.029	0.012	7.27		7.27	277.08	249.38	1.66	1.00	1.90	159.30	159.30
Dsgn. L =	4.03 ft	1	0.035	0.011	8.79	7.27	8.79	277.08	249.38	1.07	1.00	1.77	159.30	159.30
Dsgn. L =	3.97 ft	1	0.035	0.007	8.79	4.43	8.79	277.08	249.38	1.24	1.00	1.16	159.30	159.30
Dsgn. L =	4.03 ft	1	0.024	0.017	4.43	-5.88	5.88	277.08	249.38	2.20	1.00	2.63	159.30	159.30
Dsgn. L =	3.98 ft	2	0.024	0.010	-0.00	-5.88	5.88	277.08	249.38	1.00	1.00	1.52	159.30	159.30
Dsgn. L =	1.77 ft	2	0.000	0.009	-0.08	0.08	277.08	249.38	1.00	1.00		1.40	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L =	3.97 ft	1	0.032	0.013	8.01		8.01	277.08	249.38	1.66	1.00	2.10	159.30	159.30
Dsgn. L =	4.03 ft	1	0.032	0.013	8.09	7.88	8.09	277.08	249.38	1.00	1.00	2.03	159.30	159.30
Dsgn. L =	3.97 ft	1	0.032	0.014	7.88	-0.52	7.88	277.08	249.38	1.71	1.00	2.20	159.30	159.30
Dsgn. L =	4.03 ft	1	0.070	0.028	-0.00	-17.33	17.33	277.08	249.38	1.63	1.00	4.40	159.30	159.30
Dsgn. L =	3.98 ft	2	0.070	0.028	-0.00	-17.33	17.33	277.08	249.38	1.00	1.00	4.40	159.30	159.30
Dsgn. L =	1.77 ft	2	0.001	0.027	-0.15	0.15	277.08	249.38	1.00	1.00		4.23	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L =	3.97 ft	1	0.095	0.038	23.71		23.71	277.08	249.38	1.67	1.00	6.06	159.30	159.30
Dsgn. L =	4.03 ft	1	0.122	0.037	30.48	23.71	30.48	277.08	249.38	1.10	1.00	5.89	159.30	159.30
Dsgn. L =	3.97 ft	1	0.122	0.017	30.48	19.84	30.48	277.08	249.38	1.16	1.00	2.77	159.30	159.30
Dsgn. L =	4.03 ft	1	0.080	0.045	19.84	-8.29	19.84	277.08	249.38	2.15	1.00	7.09	159.30	159.30
Dsgn. L =	3.98 ft	2	0.033	0.013	-0.00	-8.29	8.29	277.08	249.38	1.00	1.00	2.14	159.30	159.30
Dsgn. L =	1.77 ft	2	0.000	0.012	-0.11	0.11	277.08	249.38	1.00	1.00		1.97	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>														
Dsgn. L =	3.97 ft	1	0.086	0.034	21.46		21.46	277.08	249.38	1.67	1.00	5.49	159.30	159.30
Dsgn. L =	4.03 ft	1	0.104	0.033	25.96	21.46	25.96	277.08	249.38	1.07	1.00	5.33	159.30	159.30
Dsgn. L =	3.97 ft	1	0.104	0.021	25.96	13.07	25.96	277.08	249.38	1.24	1.00	3.33	159.30	159.30
Dsgn. L =	4.03 ft	1	0.070	0.048	13.07	-17.33	17.33	277.08	249.38	2.19	1.00	7.66	159.30	159.30
Dsgn. L =	3.98 ft	2	0.070	0.028	-0.00	-17.33	17.33	277.08	249.38	1.00	1.00	4.40	159.30	159.30
Dsgn. L =	1.77 ft	2	0.001	0.027	-0.15	0.15	277.08	249.38	1.00	1.00		4.23	159.30	159.30
<b>+0.90D+E+0.90H</b>														
Dsgn. L =	3.97 ft	1	0.029	0.012	7.27		7.27	277.08	249.38	1.66	1.00	1.90	159.30	159.30
Dsgn. L =	4.03 ft	1	0.035	0.011	8.79	7.27	8.79	277.08	249.38	1.07	1.00	1.77	159.30	159.30
Dsgn. L =	3.97 ft	1	0.035	0.007	8.79	4.43	8.79	277.08	249.38	1.24	1.00	1.16	159.30	159.30
Dsgn. L =	4.03 ft	1	0.024	0.017	4.43	-5.88	5.88	277.08	249.38	2.20	1.00	2.63	159.30	159.30
Dsgn. L =	3.98 ft	2	0.024	0.010	-0.00	-5.88	5.88	277.08	249.38	1.00	1.00	1.52	159.30	159.30
Dsgn. L =	1.77 ft	2	0.000	0.009	-0.08	0.08	277.08	249.38	1.00	1.00		1.40	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0806	7.872	+D+L+H	0.0000	0.000
	2	0.0000	7.872		-0.0747	5.750



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B46**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	11.856	14.580	
Max Upward from Load Combinations	11.856	14.580	
Max Upward from Load Cases	7.220	8.475	
Max Downward from all Load Conditions (Resis	-0.565		
Max Downward from Load Cases (Resisting U <sub>r</sub>	-0.565		
+D+H	4.636	6.105	
+D+L+H, LL Comb Run (*L)	4.071	11.190	
+D+L+H, LL Comb Run (L*)	11.856	9.495	
+D+L+H, LL Comb Run (LL)	11.291	14.580	
+D+Lr+H, LL Comb Run (*L)	4.636	6.105	
+D+Lr+H, LL Comb Run (L*)	4.636	6.105	
+D+Lr+H, LL Comb Run (LL)	4.636	6.105	
+D+S+H	6.296	8.205	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	4.213	9.919	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	10.051	8.647	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	9.628	12.461	
+D+0.750L+0.750S+H, LL Comb Run (*L)	5.458	11.494	
+D+0.750L+0.750S+H, LL Comb Run (L*)	11.296	10.222	
+D+0.750L+0.750S+H, LL Comb Run (LL)	10.873	14.036	
+D+0.60W+H	4.636	6.105	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	4.213	9.919	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	10.051	8.647	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	9.628	12.461	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	5.458	11.494	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	11.296	10.222	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	10.873	14.036	
+0.60D+0.60W+0.60H	2.782	3.663	
+D+0.70E+0.60H	4.636	6.105	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	5.458	11.494	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	11.296	10.222	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	10.873	14.036	
+0.60D+0.70E+H	2.782	3.663	
D Only	4.636	6.105	
L Only, LL Comb Run (*L)	-0.565	5.085	
L Only, LL Comb Run (L*)	7.220	3.390	
L Only, LL Comb Run (LL)	6.655	8.475	
S Only	1.660	2.100	
H Only			

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B47**

**CODE REFERENCES**

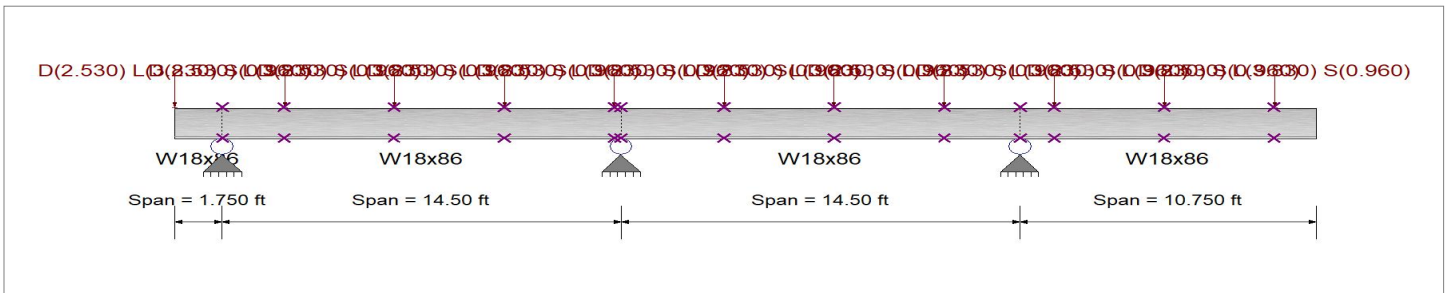
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 2.530, L = 3.830, S = 0.960 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.226 : 1</b>	Maximum Shear Stress Ratio =	<b>0.113 : 1</b>
Section used for this span	<b>W18x86</b>	Section used for this span	<b>W18x86</b>
Mu : Applied	157.856 k-ft	Vu : Applied	30.041 k
Mn * Phi : Allowable	697.500 k-ft	Vn * Phi : Allowable	264.960 k
Load Combination	1.60L+0.50S+1.60H, LL Comb Run (L**L)	Load Combination	1.60L+0.50S+1.60H, LL Comb Run (*L*L)
Span # where maximum occurs	Span # 3	Location of maximum on span	14.500 ft
Span # where maximum occurs	Span # 3	Span # where maximum occurs	Span # 3
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.188 in Ratio = <b>1,375</b> >=360.	Span: 4 : L Only, LL Comb Run (*L*L)	
Max Upward Transient Deflection	-0.009 in Ratio = <b>4,778</b> >=360.	Span: 4 : L Only, LL Comb Run (*L*L)	
Max Downward Total Deflection	0.297 in Ratio = <b>868</b> >=240.	Span: 4 : +D+L+H, LL Comb Run (*L*L)	
Max Upward Total Deflection	-0.012 in Ratio = <b>3402</b> >=240.	Span: 4 : +D+L+H, LL Comb Run (*L*L)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.40D+1.60H</b>														
Dsgn. L =	1.74 ft	1	0.009	0.014		-6.34	6.34	775.00	697.50	1.00	1.00	3.75	264.96	264.96
Dsgn. L =	2.24 ft	2	0.012	0.026	8.49	-6.38	8.49	775.00	697.50	2.35	1.00	6.83	264.96	264.96
Dsgn. L =	3.96 ft	2	0.028	0.025	19.60	8.49	19.60	775.00	697.50	1.29	1.00	6.56	264.96	264.96
Dsgn. L =	4.06 ft	2	0.028	0.010	19.72	14.75	19.72	775.00	697.50	1.10	1.00	2.54	264.96	264.96
Dsgn. L =	3.96 ft	2	0.021	0.021	14.75	-6.13	14.75	775.00	697.50	2.13	1.00	5.51	264.96	264.96
Dsgn. L =	0.29 ft	2	0.012	0.034	-0.00	-8.62	8.62	775.00	697.50	1.09	1.00	9.09	264.96	264.96
Dsgn. L =	3.67 ft	3	0.012	0.008	-0.00	-8.62	8.62	775.00	697.50	1.49	1.00	2.09	264.96	264.96
Dsgn. L =	4.06 ft	3	0.015	0.009	-0.00	-10.19	10.19	775.00	697.50	1.57	1.00	2.39	264.96	264.96
Dsgn. L =	3.96 ft	3	0.050	0.024	-0.00	-34.57	34.57	775.00	697.50	1.42	1.00	6.41	264.96	264.96
Dsgn. L =	2.80 ft	3	0.090	0.045	-0.00	-62.74	62.74	775.00	697.50	1.22	1.00	11.92	264.96	264.96
Dsgn. L =	1.22 ft	4	0.090	0.045	-0.00	-62.74	62.74	775.00	697.50	1.00	1.00	11.92	264.96	264.96
Dsgn. L =	4.01 ft	4	0.069	0.044	-0.00	-48.31	48.31	775.00	697.50	1.00	1.00	11.77	264.96	264.96
Dsgn. L =	4.01 ft	4	0.023	0.029	-0.00	-16.13	16.13	775.00	697.50	1.00	1.00	7.75	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.014	-0.15	-0.15	0.15	775.00	697.50	1.00	1.00	3.72	264.96	264.96
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L =	2.24 ft	2	0.016	0.028	10.98	-5.47	10.98	775.00	697.50	2.28	1.00	7.51	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	3.96 ft	2	0.039	0.027	27.09	10.98	27.09	775.00	697.50	1.31	1.00	7.28	264.96	264.96
Dsgn. L =	4.06 ft	2	0.043	0.014	29.70	27.09	29.70	775.00	697.50	1.03	1.00	3.84	264.96	264.96
Dsgn. L =	3.96 ft	2	0.043	0.012	29.70	18.39	29.70	775.00	697.50	1.17	1.00	3.06	264.96	264.96
Dsgn. L =	0.29 ft	2	0.026	0.025	18.39	16.74	18.39	775.00	697.50	1.05	1.00	6.53	264.96	264.96
Dsgn. L =	3.67 ft	3	0.024	0.026	16.74	-7.95	16.74	775.00	697.50	2.15	1.00	6.91	264.96	264.96
Dsgn. L =	4.06 ft	3	0.070	0.039	-0.00	-48.95	48.95	775.00	697.50	1.53	1.00	10.37	264.96	264.96
Dsgn. L =	3.96 ft	3	0.147	0.052	-0.00	-102.83	102.83	775.00	697.50	1.28	1.00	13.81	264.96	264.96
Dsgn. L =	2.80 ft	3	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.14	1.00	28.60	264.96	264.96
Dsgn. L =	1.22 ft	4	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.00	1.00	28.60	264.96	264.96
Dsgn. L =	4.01 ft	4	0.166	0.107	-0.00	-115.53	115.53	775.00	697.50	1.00	1.00	28.48	264.96	264.96
Dsgn. L =	4.01 ft	4	0.055	0.071	-0.00	-38.56	38.56	775.00	697.50	1.00	1.00	18.90	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.035	-0.16	0.16	775.00	697.50	1.00	1.00	9.32	264.96	264.96	
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L =	2.24 ft	2	0.008	0.017	4.28	-5.47	5.47	775.00	697.50	2.03	1.00	4.50	264.96	264.96
Dsgn. L =	3.96 ft	2	0.012	0.016	8.44	4.28	8.44	775.00	697.50	1.22	1.00	4.27	264.96	264.96
Dsgn. L =	4.06 ft	2	0.012	0.010	8.44	-1.19	8.44	775.00	697.50	1.74	1.00	2.63	264.96	264.96
Dsgn. L =	3.96 ft	2	0.035	0.023	-0.00	-24.44	24.44	775.00	697.50	1.66	1.00	6.07	264.96	264.96
Dsgn. L =	0.29 ft	2	0.039	0.044	-0.00	-26.97	26.97	775.00	697.50	1.03	1.00	11.70	264.96	264.96
Dsgn. L =	3.67 ft	3	0.039	0.044	15.30	-26.97	26.97	775.00	697.50	2.20	1.00	11.70	264.96	264.96
Dsgn. L =	4.06 ft	3	0.034	0.043	23.90	15.30	23.90	775.00	697.50	1.15	1.00	11.32	264.96	264.96
Dsgn. L =	3.96 ft	3	0.034	0.030	23.90	-6.20	23.90	775.00	697.50	1.93	1.00	7.84	264.96	264.96
Dsgn. L =	2.80 ft	3	0.077	0.065	-0.00	-53.78	53.78	775.00	697.50	1.55	1.00	17.29	264.96	264.96
Dsgn. L =	1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L =	4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L =	4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96	
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L =	2.24 ft	2	0.011	0.023	7.98	-5.47	7.98	775.00	697.50	2.33	1.00	6.16	264.96	264.96
Dsgn. L =	3.96 ft	2	0.027	0.022	18.74	7.98	18.74	775.00	697.50	1.29	1.00	5.93	264.96	264.96
Dsgn. L =	4.06 ft	2	0.027	0.009	18.88	15.86	18.88	775.00	697.50	1.06	1.00	2.49	264.96	264.96
Dsgn. L =	3.96 ft	2	0.023	0.017	15.86	-0.80	15.86	775.00	697.50	1.67	1.00	4.41	264.96	264.96
Dsgn. L =	0.29 ft	2	0.004	0.028	-0.00	-2.84	2.84	775.00	697.50	1.26	1.00	7.48	264.96	264.96
Dsgn. L =	3.67 ft	3	0.013	0.013	8.87	-2.84	8.87	775.00	697.50	2.10	1.00	3.38	264.96	264.96
Dsgn. L =	4.06 ft	3	0.023	0.025	8.97	-16.31	16.31	775.00	697.50	2.21	1.00	6.59	264.96	264.96
Dsgn. L =	3.96 ft	3	0.114	0.061	-0.00	-79.39	79.39	775.00	697.50	1.49	1.00	16.16	264.96	264.96
Dsgn. L =	2.80 ft	3	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.23	1.00	28.60	264.96	264.96
Dsgn. L =	1.22 ft	4	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.00	1.00	28.60	264.96	264.96
Dsgn. L =	4.01 ft	4	0.166	0.107	-0.00	-115.53	115.53	775.00	697.50	1.00	1.00	28.48	264.96	264.96
Dsgn. L =	4.01 ft	4	0.055	0.071	-0.00	-38.56	38.56	775.00	697.50	1.00	1.00	18.90	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.035	-0.16	0.16	775.00	697.50	1.00	1.00	9.32	264.96	264.96	
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L =	2.24 ft	2	0.040	0.057	27.74	-5.47	27.74	775.00	697.50	2.17	1.00	15.05	264.96	264.96
Dsgn. L =	3.96 ft	2	0.071	0.056	49.61	27.74	49.61	775.00	697.50	1.21	1.00	14.82	264.96	264.96
Dsgn. L =	4.06 ft	2	0.071	0.020	49.81	33.45	49.81	775.00	697.50	1.14	1.00	5.25	264.96	264.96
Dsgn. L =	3.96 ft	2	0.048	0.052	33.45	-20.82	33.45	775.00	697.50	2.18	1.00	13.91	264.96	264.96
Dsgn. L =	0.29 ft	2	0.039	0.087	-0.00	-27.15	27.15	775.00	697.50	1.07	1.00	23.10	264.96	264.96
Dsgn. L =	3.67 ft	3	0.039	0.012	-0.00	-27.15	27.15	775.00	697.50	1.19	1.00	3.15	264.96	264.96
Dsgn. L =	4.06 ft	3	0.026	0.010	-0.00	-17.96	17.96	775.00	697.50	1.05	1.00	2.77	264.96	264.96
Dsgn. L =	3.96 ft	3	0.048	0.016	-0.00	-33.46	33.46	775.00	697.50	1.24	1.00	4.13	264.96	264.96
Dsgn. L =	2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.18	1.00	10.22	264.96	264.96
Dsgn. L =	1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L =	4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L =	4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96	
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L =	2.24 ft	2	0.045	0.063	31.44	-5.47	31.44	775.00	697.50	2.13	1.00	16.72	264.96	264.96
Dsgn. L =	3.96 ft	2	0.086	0.062	59.90	31.44	59.90	775.00	697.50	1.24	1.00	16.49	264.96	264.96
Dsgn. L =	4.06 ft	2	0.086	0.026	60.26	50.50	60.26	775.00	697.50	1.06	1.00	6.91	264.96	264.96
Dsgn. L =	3.96 ft	2	0.072	0.046	50.50	2.82	50.50	775.00	697.50	1.58	1.00	12.24	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 0.29 ft	2	0.004	0.081	2.82	-3.02	3.02	775.00	697.50	1.59	1.00	21.44	264.96	264.96
Dsgn. L = 3.67 ft	3	0.033	0.021	-0.00	-22.71	22.71	775.00	697.50	1.56	1.00	5.55	264.96	264.96
Dsgn. L = 4.06 ft	3	0.083	0.034	-0.00	-58.17	58.17	775.00	697.50	1.34	1.00	9.00	264.96	264.96
Dsgn. L = 3.96 ft	3	0.153	0.047	-0.00	-106.65	106.65	775.00	697.50	1.23	1.00	12.45	264.96	264.96
Dsgn. L = 2.80 ft	3	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.13	1.00	28.60	264.96	264.96
Dsgn. L = 1.22 ft	4	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.00	1.00	28.60	264.96	264.96
Dsgn. L = 4.01 ft	4	0.166	0.107	-0.00	-115.53	115.53	775.00	697.50	1.00	1.00	28.48	264.96	264.96
Dsgn. L = 4.01 ft	4	0.055	0.071	-0.00	-38.56	38.56	775.00	697.50	1.00	1.00	18.90	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.035	-0.16	0.16	775.00	697.50	1.00	1.00	9.32	264.96	264.96	
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012	-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.035	0.052	24.74	-5.47	24.74	775.00	697.50	2.21	1.00	13.70	264.96	264.96
Dsgn. L = 3.96 ft	2	0.059	0.051	41.25	24.74	41.25	775.00	697.50	1.19	1.00	13.47	264.96	264.96
Dsgn. L = 4.06 ft	2	0.059	0.021	41.32	19.61	41.32	775.00	697.50	1.25	1.00	5.68	264.96	264.96
Dsgn. L = 3.96 ft	2	0.057	0.058	19.61	-40.01	40.01	775.00	697.50	2.23	1.00	15.26	264.96	264.96
Dsgn. L = 0.29 ft	2	0.067	0.092	-0.00	-46.73	46.73	775.00	697.50	1.04	1.00	24.45	264.96	264.96
Dsgn. L = 3.67 ft	3	0.067	0.049	0.55	-46.73	46.73	775.00	697.50	1.67	1.00	13.06	264.96	264.96
Dsgn. L = 4.06 ft	3	0.021	0.048	14.68	0.55	14.68	775.00	697.50	1.57	1.00	12.68	264.96	264.96
Dsgn. L = 3.96 ft	3	0.021	0.024	14.68	-10.02	14.68	775.00	697.50	2.17	1.00	6.48	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.060	-0.00	-53.78	53.78	775.00	697.50	1.48	1.00	15.93	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96	
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012	-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.041	0.058	28.44	-5.47	28.44	775.00	697.50	2.16	1.00	15.37	264.96	264.96
Dsgn. L = 3.96 ft	2	0.074	0.057	51.55	28.44	51.55	775.00	697.50	1.22	1.00	15.14	264.96	264.96
Dsgn. L = 4.06 ft	2	0.074	0.021	51.78	36.66	51.78	775.00	697.50	1.12	1.00	5.56	264.96	264.96
Dsgn. L = 3.96 ft	2	0.053	0.051	36.66	-16.37	36.66	775.00	697.50	2.15	1.00	13.59	264.96	264.96
Dsgn. L = 0.29 ft	2	0.032	0.086	-0.00	-22.60	22.60	775.00	697.50	1.09	1.00	22.79	264.96	264.96
Dsgn. L = 3.67 ft	3	0.032	0.018	-0.00	-22.60	22.60	775.00	697.50	1.42	1.00	4.74	264.96	264.96
Dsgn. L = 4.06 ft	3	0.037	0.020	-0.00	-25.54	25.54	775.00	697.50	1.49	1.00	5.22	264.96	264.96
Dsgn. L = 3.96 ft	3	0.119	0.056	-0.00	-83.21	83.21	775.00	697.50	1.40	1.00	14.80	264.96	264.96
Dsgn. L = 2.80 ft	3	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.22	1.00	28.60	264.96	264.96
Dsgn. L = 1.22 ft	4	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.00	1.00	28.60	264.96	264.96
Dsgn. L = 4.01 ft	4	0.166	0.107	-0.00	-115.53	115.53	775.00	697.50	1.00	1.00	28.48	264.96	264.96
Dsgn. L = 4.01 ft	4	0.055	0.071	-0.00	-38.56	38.56	775.00	697.50	1.00	1.00	18.90	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.035	-0.16	0.16	775.00	697.50	1.00	1.00	9.32	264.96	264.96	
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.023	0.035	-16.09	16.09	775.00	697.50	1.00	1.00	9.34	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.023	0.035	-0.00	-16.20	16.20	775.00	697.50	1.47	1.00	9.34	264.96	264.96
Dsgn. L = 3.96 ft	2	0.017	0.025	11.79	-1.39	11.79	775.00	697.50	1.80	1.00	6.55	264.96	264.96
Dsgn. L = 4.06 ft	2	0.017	0.012	12.00	11.39	12.00	775.00	697.50	1.01	1.00	3.10	264.96	264.96
Dsgn. L = 3.96 ft	2	0.016	0.014	11.39	-2.84	11.39	775.00	697.50	1.91	1.00	3.80	264.96	264.96
Dsgn. L = 0.29 ft	2	0.007	0.026	-0.00	-4.71	4.71	775.00	697.50	1.13	1.00	6.87	264.96	264.96
Dsgn. L = 3.67 ft	3	0.007	0.006	0.49	-4.71	4.71	775.00	697.50	1.85	1.00	1.60	264.96	264.96
Dsgn. L = 4.06 ft	3	0.011	0.008	0.54	-7.48	7.48	775.00	697.50	1.87	1.00	2.23	264.96	264.96
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.12	29.12	775.00	697.50	1.45	1.00	5.68	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.23	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96	
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.023	0.035	-16.09	16.09	775.00	697.50	1.00	1.00	9.34	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.023	0.035	2.31	-16.20	16.20	775.00	697.50	1.67	1.00	9.34	264.96	264.96
Dsgn. L = 3.96 ft	2	0.032	0.031	22.09	2.31	22.09	775.00	697.50	1.56	1.00	8.21	264.96	264.96
Dsgn. L = 4.06 ft	2	0.041	0.018	28.45	22.09	28.45	775.00	697.50	1.09	1.00	4.76	264.96	264.96
Dsgn. L = 3.96 ft	2	0.041	0.008	28.45	20.80	28.45	775.00	697.50	1.11	1.00	2.14	264.96	264.96
Dsgn. L = 0.29 ft	2	0.030	0.025	20.80	19.42	20.80	775.00	697.50	1.04	1.00	6.72	264.96	264.96
Dsgn. L = 3.67 ft	3	0.028	0.027	19.42	-5.95	19.42	775.00	697.50	2.03	1.00	7.10	264.96	264.96
Dsgn. L = 4.06 ft	3	0.068	0.040	-0.00	-47.70	47.70	775.00	697.50	1.56	1.00	10.55	264.96	264.96



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	3.96 ft	3	0.147	0.053	-0.00	-102.31	102.31	775.00	697.50	1.28	1.00	14.00	264.96	264.96
Dsgn. L =	2.80 ft	3	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.15	1.00	28.60	264.96	264.96
Dsgn. L =	1.22 ft	4	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.00	1.00	28.60	264.96	264.96
Dsgn. L =	4.01 ft	4	0.166	0.107	-0.00	-115.53	115.53	775.00	697.50	1.00	1.00	28.48	264.96	264.96
Dsgn. L =	4.01 ft	4	0.055	0.071	-0.00	-38.56	38.56	775.00	697.50	1.00	1.00	18.90	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.035		-0.16	0.16	775.00	697.50	1.00	1.00	9.32	264.96	264.96
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.74 ft	1	0.023	0.035		-16.09	16.09	775.00	697.50	1.00	1.00	9.34	264.96	264.96
Dsgn. L =	2.24 ft	2	0.023	0.035	-0.00	-16.20	16.20	775.00	697.50	1.34	1.00	9.34	264.96	264.96
Dsgn. L =	3.96 ft	2	0.006	0.020	3.44	-4.39	4.39	775.00	697.50	2.32	1.00	5.20	264.96	264.96
Dsgn. L =	4.06 ft	2	0.005	0.007	3.51	-2.44	3.51	775.00	697.50	2.08	1.00	1.75	264.96	264.96
Dsgn. L =	3.96 ft	2	0.032	0.019	-0.00	-22.03	22.03	775.00	697.50	1.59	1.00	5.15	264.96	264.96
Dsgn. L =	0.29 ft	2	0.035	0.043	-0.00	-24.29	24.29	775.00	697.50	1.03	1.00	11.51	264.96	264.96
Dsgn. L =	3.67 ft	3	0.035	0.043	17.30	-24.29	24.29	775.00	697.50	2.23	1.00	11.51	264.96	264.96
Dsgn. L =	4.06 ft	3	0.036	0.042	25.15	17.30	25.15	775.00	697.50	1.12	1.00	11.13	264.96	264.96
Dsgn. L =	3.96 ft	3	0.036	0.030	25.15	-5.68	25.15	775.00	697.50	1.89	1.00	8.02	264.96	264.96
Dsgn. L =	2.80 ft	3	0.077	0.066	-0.00	-53.78	53.78	775.00	697.50	1.56	1.00	17.48	264.96	264.96
Dsgn. L =	1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L =	4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L =	4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.74 ft	1	0.023	0.035		-16.09	16.09	775.00	697.50	1.00	1.00	9.34	264.96	264.96
Dsgn. L =	2.24 ft	2	0.023	0.035	-0.00	-16.20	16.20	775.00	697.50	1.51	1.00	9.34	264.96	264.96
Dsgn. L =	3.96 ft	2	0.020	0.026	13.73	-0.69	13.73	775.00	697.50	1.72	1.00	6.86	264.96	264.96
Dsgn. L =	4.06 ft	2	0.021	0.013	14.62	13.73	14.62	775.00	697.50	1.01	1.00	3.41	264.96	264.96
Dsgn. L =	3.96 ft	2	0.021	0.013	14.61	1.62	14.61	775.00	697.50	1.51	1.00	3.49	264.96	264.96
Dsgn. L =	0.29 ft	2	0.002	0.025	1.62	-0.16	1.62	775.00	697.50	2.08	1.00	6.55	264.96	264.96
Dsgn. L =	3.67 ft	3	0.016	0.012	10.87	-0.16	10.87	775.00	697.50	1.67	1.00	3.19	264.96	264.96
Dsgn. L =	4.06 ft	3	0.022	0.026	10.96	-15.06	15.06	775.00	697.50	2.25	1.00	6.77	264.96	264.96
Dsgn. L =	3.96 ft	3	0.113	0.062	-0.00	-78.87	78.87	775.00	697.50	1.50	1.00	16.34	264.96	264.96
Dsgn. L =	2.80 ft	3	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.23	1.00	28.60	264.96	264.96
Dsgn. L =	1.22 ft	4	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.00	1.00	28.60	264.96	264.96
Dsgn. L =	4.01 ft	4	0.166	0.107	-0.00	-115.53	115.53	775.00	697.50	1.00	1.00	28.48	264.96	264.96
Dsgn. L =	4.01 ft	4	0.055	0.071	-0.00	-38.56	38.56	775.00	697.50	1.00	1.00	18.90	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.035		-0.16	0.16	775.00	697.50	1.00	1.00	9.32	264.96	264.96
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.74 ft	1	0.023	0.035		-16.09	16.09	775.00	697.50	1.00	1.00	9.34	264.96	264.96
Dsgn. L =	2.24 ft	2	0.027	0.060	19.07	-16.20	19.07	775.00	697.50	2.25	1.00	15.98	264.96	264.96
Dsgn. L =	3.96 ft	2	0.064	0.059	44.60	19.07	44.60	775.00	697.50	1.30	1.00	15.75	264.96	264.96
Dsgn. L =	4.06 ft	2	0.064	0.023	44.89	32.20	44.89	775.00	697.50	1.12	1.00	6.17	264.96	264.96
Dsgn. L =	3.96 ft	2	0.046	0.049	32.20	-18.41	32.20	775.00	697.50	2.17	1.00	12.98	264.96	264.96
Dsgn. L =	0.29 ft	2	0.035	0.084	-0.00	-24.47	24.47	775.00	697.50	1.08	1.00	22.18	264.96	264.96
Dsgn. L =	3.67 ft	3	0.035	0.011	-0.00	-24.47	24.47	775.00	697.50	1.20	1.00	2.97	264.96	264.96
Dsgn. L =	4.06 ft	3	0.024	0.010	-0.00	-16.71	16.71	775.00	697.50	1.08	1.00	2.59	264.96	264.96
Dsgn. L =	3.96 ft	3	0.047	0.016	-0.00	-32.94	32.94	775.00	697.50	1.26	1.00	4.31	264.96	264.96
Dsgn. L =	2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.18	1.00	10.22	264.96	264.96
Dsgn. L =	1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L =	4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L =	4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>														
Dsgn. L =	1.74 ft	1	0.023	0.035		-16.09	16.09	775.00	697.50	1.00	1.00	9.34	264.96	264.96
Dsgn. L =	2.24 ft	2	0.033	0.067	22.77	-16.20	22.77	775.00	697.50	2.35	1.00	17.64	264.96	264.96
Dsgn. L =	3.96 ft	2	0.079	0.066	54.90	22.77	54.90	775.00	697.50	1.31	1.00	17.41	264.96	264.96
Dsgn. L =	4.06 ft	2	0.079	0.030	55.35	49.25	55.35	775.00	697.50	1.04	1.00	7.84	264.96	264.96
Dsgn. L =	3.96 ft	2	0.071	0.043	49.25	5.23	49.25	775.00	697.50	1.53	1.00	11.32	264.96	264.96
Dsgn. L =	0.29 ft	2	0.008	0.077	5.23	-0.34	5.23	775.00	697.50	2.08	1.00	20.51	264.96	264.96
Dsgn. L =	3.67 ft	3	0.030	0.022	-0.00	-20.70	20.70	775.00	697.50	1.68	1.00	5.73	264.96	264.96
Dsgn. L =	4.06 ft	3	0.082	0.035	-0.00	-56.92	56.92	775.00	697.50	1.36	1.00	9.19	264.96	264.96
Dsgn. L =	3.96 ft	3	0.152	0.048	-0.00	-106.13	106.13	775.00	697.50	1.24	1.00	12.63	264.96	264.96
Dsgn. L =	2.80 ft	3	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.13	1.00	28.60	264.96	264.96
Dsgn. L =	1.22 ft	4	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.00	1.00	28.60	264.96	264.96



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	4	0.166	0.107	-0.00	-115.53	115.53	775.00	697.50	1.00	1.00	28.48	264.96	264.96
Dsgn. L = 4.01 ft	4	0.055	0.071	-0.00	-38.56	38.56	775.00	697.50	1.00	1.00	18.90	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.035		-0.16	0.16	775.00	697.50	1.00	1.00	9.32	264.96	264.96
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.023	0.035		-16.09	16.09	775.00	697.50	1.00	1.00	9.34	264.96	264.96
Dsgn. L = 2.24 ft	2	0.023	0.055	16.07	-16.20	16.20	775.00	697.50	2.04	1.00	14.63	264.96	264.96
Dsgn. L = 3.96 ft	2	0.052	0.054	36.25	16.07	36.25	775.00	697.50	1.29	1.00	14.40	264.96	264.96
Dsgn. L = 4.06 ft	2	0.052	0.018	36.41	18.36	36.41	775.00	697.50	1.23	1.00	4.82	264.96	264.96
Dsgn. L = 3.96 ft	2	0.054	0.054	18.36	-37.60	37.60	775.00	697.50	2.23	1.00	14.33	264.96	264.96
Dsgn. L = 0.29 ft	2	0.063	0.089	-0.00	-44.05	44.05	775.00	697.50	1.04	1.00	23.53	264.96	264.96
Dsgn. L = 3.67 ft	3	0.063	0.049	2.55	-44.05	44.05	775.00	697.50	1.72	1.00	12.88	264.96	264.96
Dsgn. L = 4.06 ft	3	0.023	0.047	15.93	2.55	15.93	775.00	697.50	1.46	1.00	12.50	264.96	264.96
Dsgn. L = 3.96 ft	3	0.023	0.025	15.93	-9.50	15.93	775.00	697.50	2.15	1.00	6.66	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.061	-0.00	-53.78	53.78	775.00	697.50	1.49	1.00	16.11	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+0.50Lr+1.60L+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.023	0.035		-16.09	16.09	775.00	697.50	1.00	1.00	9.34	264.96	264.96
Dsgn. L = 2.24 ft	2	0.028	0.061	19.77	-16.20	19.77	775.00	697.50	2.29	1.00	16.29	264.96	264.96
Dsgn. L = 3.96 ft	2	0.067	0.061	46.54	19.77	46.54	775.00	697.50	1.30	1.00	16.06	264.96	264.96
Dsgn. L = 4.06 ft	2	0.067	0.024	46.86	35.41	46.86	775.00	697.50	1.10	1.00	6.49	264.96	264.96
Dsgn. L = 3.96 ft	2	0.051	0.048	35.41	-13.95	35.41	775.00	697.50	2.14	1.00	12.67	264.96	264.96
Dsgn. L = 0.29 ft	2	0.029	0.083	-0.00	-19.92	19.92	775.00	697.50	1.09	1.00	21.86	264.96	264.96
Dsgn. L = 3.67 ft	3	0.029	0.017	-0.00	-19.92	19.92	775.00	697.50	1.48	1.00	4.55	264.96	264.96
Dsgn. L = 4.06 ft	3	0.035	0.020	-0.00	-24.29	24.29	775.00	697.50	1.56	1.00	5.41	264.96	264.96
Dsgn. L = 3.96 ft	3	0.119	0.057	-0.00	-82.69	82.69	775.00	697.50	1.41	1.00	14.98	264.96	264.96
Dsgn. L = 2.80 ft	3	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.22	1.00	28.60	264.96	264.96
Dsgn. L = 1.22 ft	4	0.215	0.108	-0.00	-150.30	150.30	775.00	697.50	1.00	1.00	28.60	264.96	264.96
Dsgn. L = 4.01 ft	4	0.166	0.107	-0.00	-115.53	115.53	775.00	697.50	1.00	1.00	28.48	264.96	264.96
Dsgn. L = 4.01 ft	4	0.055	0.071	-0.00	-38.56	38.56	775.00	697.50	1.00	1.00	18.90	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.035		-0.16	0.16	775.00	697.50	1.00	1.00	9.32	264.96	264.96
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.74 ft	1	0.009	0.014		-6.27	6.27	775.00	697.50	1.00	1.00	3.70	264.96	264.96
Dsgn. L = 2.24 ft	2	0.017	0.031	11.96	-6.31	11.96	775.00	697.50	2.29	1.00	8.33	264.96	264.96
Dsgn. L = 3.96 ft	2	0.042	0.031	29.42	11.96	29.42	775.00	697.50	1.31	1.00	8.10	264.96	264.96
Dsgn. L = 4.06 ft	2	0.045	0.016	31.48	29.42	31.48	775.00	697.50	1.02	1.00	4.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.045	0.014	31.48	17.71	31.48	775.00	697.50	1.20	1.00	3.68	264.96	264.96
Dsgn. L = 0.29 ft	2	0.025	0.027	17.71	15.76	17.71	775.00	697.50	1.06	1.00	7.23	264.96	264.96
Dsgn. L = 3.67 ft	3	0.023	0.025	15.76	-8.14	15.76	775.00	697.50	2.16	1.00	6.69	264.96	264.96
Dsgn. L = 4.06 ft	3	0.072	0.040	-0.00	-50.17	50.17	775.00	697.50	1.53	1.00	10.63	264.96	264.96
Dsgn. L = 3.96 ft	3	0.153	0.055	-0.00	-106.98	106.98	775.00	697.50	1.28	1.00	14.55	264.96	264.96
Dsgn. L = 2.80 ft	3	0.226	0.113	-0.00	-157.86	157.86	775.00	697.50	1.15	1.00	30.04	264.96	264.96
Dsgn. L = 1.22 ft	4	0.226	0.113	-0.00	-157.86	157.86	775.00	697.50	1.00	1.00	30.04	264.96	264.96
Dsgn. L = 4.01 ft	4	0.174	0.113	-0.00	-121.33	121.33	775.00	697.50	1.00	1.00	29.92	264.96	264.96
Dsgn. L = 4.01 ft	4	0.058	0.075	-0.00	-40.50	40.50	775.00	697.50	1.00	1.00	19.86	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.037		-0.17	0.17	775.00	697.50	1.00	1.00	9.80	264.96	264.96
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.74 ft	1	0.009	0.014		-6.27	6.27	775.00	697.50	1.00	1.00	3.70	264.96	264.96
Dsgn. L = 2.24 ft	2	0.009	0.020	5.26	-6.31	6.31	775.00	697.50	2.03	1.00	5.32	264.96	264.96
Dsgn. L = 3.96 ft	2	0.015	0.019	10.77	5.26	10.77	775.00	697.50	1.24	1.00	5.09	264.96	264.96
Dsgn. L = 4.06 ft	2	0.015	0.010	10.77	0.59	10.77	775.00	697.50	1.54	1.00	2.77	264.96	264.96
Dsgn. L = 3.96 ft	2	0.036	0.025	0.59	-25.12	25.12	775.00	697.50	1.74	1.00	6.70	264.96	264.96
Dsgn. L = 0.29 ft	2	0.040	0.045	-0.00	-27.95	27.95	775.00	697.50	1.03	1.00	11.91	264.96	264.96
Dsgn. L = 3.67 ft	3	0.040	0.045	15.12	-27.95	27.95	775.00	697.50	2.19	1.00	11.91	264.96	264.96
Dsgn. L = 4.06 ft	3	0.033	0.044	22.68	15.12	22.68	775.00	697.50	1.13	1.00	11.53	264.96	264.96
Dsgn. L = 3.96 ft	3	0.033	0.032	22.68	-10.36	22.68	775.00	697.50	2.14	1.00	8.58	264.96	264.96
Dsgn. L = 2.80 ft	3	0.088	0.070	-0.00	-61.34	61.34	775.00	697.50	1.50	1.00	18.51	264.96	264.96
Dsgn. L = 1.22 ft	4	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.00	1.00	11.66	264.96	264.96
Dsgn. L = 4.01 ft	4	0.068	0.044	-0.00	-47.21	47.21	775.00	697.50	1.00	1.00	11.53	264.96	264.96
Dsgn. L = 4.01 ft	4	0.023	0.029	-0.00	-15.76	15.76	775.00	697.50	1.00	1.00	7.60	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.014		-0.13	0.13	775.00	697.50	1.00	1.00	3.67	264.96	264.96



Project Title: WSF International Village
Engineer: JMB
Project ID: 24-318
Project Descr: Vertical Framing

Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: B47

Maximum Forces & Stresses for Load Combinations

Table with columns: Load Combination, Segment Length, Span #, Max Stress Ratios (M, V), Summary of Moment Values (max Mu +, max Mu -, Mu Max, Mn, Phi\*Mn, Cb, Rm), Summary of Shear Values (VuMax, Vnx, Phi\*Vnx). Rows are grouped by load combination (+1.20D+1.60L+0.50S+1.60H, LL) and design length (1.74 ft to 1.51 ft).

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 3.96 ft	2	0.077	0.060	53.88	29.42	53.88	775.00	697.50	1.22	1.00	15.96	264.96	264.96
Dsgn. L = 4.06 ft	2	0.078	0.022	54.13	38.45	54.13	775.00	697.50	1.12	1.00	5.90	264.96	264.96
Dsgn. L = 3.96 ft	2	0.055	0.054	38.45	-17.05	38.45	775.00	697.50	2.15	1.00	14.21	264.96	264.96
Dsgn. L = 0.29 ft	2	0.034	0.090	-0.00	-23.58	23.58	775.00	697.50	1.09	1.00	23.89	264.96	264.96
Dsgn. L = 3.67 ft	3	0.034	0.019	-0.00	-23.58	23.58	775.00	697.50	1.42	1.00	4.96	264.96	264.96
Dsgn. L = 4.06 ft	3	0.038	0.021	-0.00	-26.76	26.76	775.00	697.50	1.49	1.00	5.49	264.96	264.96
Dsgn. L = 3.96 ft	3	0.125	0.059	-0.00	-87.37	87.37	775.00	697.50	1.40	1.00	15.54	264.96	264.96
Dsgn. L = 2.80 ft	3	0.226	0.113	-0.00	-157.86	157.86	775.00	697.50	1.22	1.00	30.04	264.96	264.96
Dsgn. L = 1.22 ft	4	0.226	0.113	-0.00	-157.86	157.86	775.00	697.50	1.00	1.00	30.04	264.96	264.96
Dsgn. L = 4.01 ft	4	0.174	0.113	-0.00	-121.33	121.33	775.00	697.50	1.00	1.00	29.92	264.96	264.96
Dsgn. L = 4.01 ft	4	0.058	0.075	-0.00	-40.50	40.50	775.00	697.50	1.00	1.00	19.86	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.037	-0.17	0.17	775.00	697.50	1.00	1.00	9.80	264.96	264.96	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.74 ft	1	0.024	0.037	-16.92	16.92	775.00	697.50	1.00	1.00	9.82	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.024	0.037	-0.00	-17.04	17.04	775.00	697.50	1.52	1.00	9.82	264.96	264.96
Dsgn. L = 3.96 ft	2	0.020	0.028	14.12	-0.41	14.12	775.00	697.50	1.69	1.00	7.36	264.96	264.96
Dsgn. L = 4.06 ft	2	0.021	0.013	14.34	13.18	14.34	775.00	697.50	1.02	1.00	3.44	264.96	264.96
Dsgn. L = 3.96 ft	2	0.019	0.017	13.18	-3.53	13.18	775.00	697.50	1.94	1.00	4.42	264.96	264.96
Dsgn. L = 0.29 ft	2	0.008	0.030	-0.00	-5.69	5.69	775.00	697.50	1.12	1.00	7.97	264.96	264.96
Dsgn. L = 3.67 ft	3	0.008	0.007	0.30	-5.69	5.69	775.00	697.50	1.77	1.00	1.82	264.96	264.96
Dsgn. L = 4.06 ft	3	0.012	0.009	0.37	-8.70	8.70	775.00	697.50	1.82	1.00	2.49	264.96	264.96
Dsgn. L = 3.96 ft	3	0.048	0.024	-0.00	-33.27	33.27	775.00	697.50	1.44	1.00	6.42	264.96	264.96
Dsgn. L = 2.80 ft	3	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.22	1.00	11.66	264.96	264.96
Dsgn. L = 1.22 ft	4	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.00	1.00	11.66	264.96	264.96
Dsgn. L = 4.01 ft	4	0.068	0.044	-0.00	-47.21	47.21	775.00	697.50	1.00	1.00	11.53	264.96	264.96
Dsgn. L = 4.01 ft	4	0.023	0.029	-0.00	-15.76	15.76	775.00	697.50	1.00	1.00	7.60	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.014	-0.13	0.13	775.00	697.50	1.00	1.00	3.67	264.96	264.96	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.74 ft	1	0.024	0.037	-16.92	16.92	775.00	697.50	1.00	1.00	9.82	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.024	0.037	3.29	-17.04	17.04	775.00	697.50	1.72	1.00	9.82	264.96	264.96
Dsgn. L = 3.96 ft	2	0.035	0.034	24.42	3.29	24.42	775.00	697.50	1.53	1.00	9.03	264.96	264.96
Dsgn. L = 4.06 ft	2	0.043	0.019	30.23	24.42	30.23	775.00	697.50	1.08	1.00	5.10	264.96	264.96
Dsgn. L = 3.96 ft	2	0.043	0.010	30.23	20.12	30.23	775.00	697.50	1.14	1.00	2.76	264.96	264.96
Dsgn. L = 0.29 ft	2	0.029	0.025	20.12	18.44	20.12	775.00	697.50	1.05	1.00	6.50	264.96	264.96
Dsgn. L = 3.67 ft	3	0.026	0.026	18.44	-6.13	18.44	775.00	697.50	2.08	1.00	6.88	264.96	264.96
Dsgn. L = 4.06 ft	3	0.070	0.041	-0.00	-48.92	48.92	775.00	697.50	1.56	1.00	10.81	264.96	264.96
Dsgn. L = 3.96 ft	3	0.153	0.056	-0.00	-106.46	106.46	775.00	697.50	1.29	1.00	14.74	264.96	264.96
Dsgn. L = 2.80 ft	3	0.226	0.113	-0.00	-157.86	157.86	775.00	697.50	1.15	1.00	30.04	264.96	264.96
Dsgn. L = 1.22 ft	4	0.226	0.113	-0.00	-157.86	157.86	775.00	697.50	1.00	1.00	30.04	264.96	264.96
Dsgn. L = 4.01 ft	4	0.174	0.113	-0.00	-121.33	121.33	775.00	697.50	1.00	1.00	29.92	264.96	264.96
Dsgn. L = 4.01 ft	4	0.058	0.075	-0.00	-40.50	40.50	775.00	697.50	1.00	1.00	19.86	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.037	-0.17	0.17	775.00	697.50	1.00	1.00	9.80	264.96	264.96	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.74 ft	1	0.024	0.037	-16.92	16.92	775.00	697.50	1.00	1.00	9.82	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.024	0.037	-0.00	-17.04	17.04	775.00	697.50	1.39	1.00	9.82	264.96	264.96
Dsgn. L = 3.96 ft	2	0.008	0.023	5.77	-3.41	5.77	775.00	697.50	2.18	1.00	6.01	264.96	264.96
Dsgn. L = 4.06 ft	2	0.008	0.008	5.85	-0.66	5.85	775.00	697.50	1.68	1.00	2.09	264.96	264.96
Dsgn. L = 3.96 ft	2	0.033	0.022	-0.00	-22.71	22.71	775.00	697.50	1.68	1.00	5.77	264.96	264.96
Dsgn. L = 0.29 ft	2	0.036	0.044	-0.00	-25.27	25.27	775.00	697.50	1.03	1.00	11.73	264.96	264.96
Dsgn. L = 3.67 ft	3	0.036	0.044	17.12	-25.27	25.27	775.00	697.50	2.22	1.00	11.73	264.96	264.96
Dsgn. L = 4.06 ft	3	0.034	0.043	23.93	17.12	23.93	775.00	697.50	1.11	1.00	11.35	264.96	264.96
Dsgn. L = 3.96 ft	3	0.034	0.033	23.93	-9.84	23.93	775.00	697.50	2.13	1.00	8.77	264.96	264.96
Dsgn. L = 2.80 ft	3	0.088	0.071	-0.00	-61.34	61.34	775.00	697.50	1.51	1.00	18.70	264.96	264.96
Dsgn. L = 1.22 ft	4	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.00	1.00	11.66	264.96	264.96
Dsgn. L = 4.01 ft	4	0.068	0.044	-0.00	-47.21	47.21	775.00	697.50	1.00	1.00	11.53	264.96	264.96
Dsgn. L = 4.01 ft	4	0.023	0.029	-0.00	-15.76	15.76	775.00	697.50	1.00	1.00	7.60	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.014	-0.13	0.13	775.00	697.50	1.00	1.00	3.67	264.96	264.96	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.74 ft	1	0.024	0.037	-16.92	16.92	775.00	697.50	1.00	1.00	9.82	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.024	0.037	0.29	-17.04	17.04	775.00	697.50	1.55	1.00	9.82	264.96	264.96
Dsgn. L = 3.96 ft	2	0.023	0.029	16.06	0.29	16.06	775.00	697.50	1.64	1.00	7.68	264.96	264.96
Dsgn. L = 4.06 ft	2	0.024	0.014	16.56	16.06	16.56	775.00	697.50	1.00	1.00	3.75	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.016	16.39	0.93	16.39	775.00	697.50	1.56	1.00	4.11	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 0.29 ft	2	0.002	0.029	0.93	-1.14	1.14	775.00	697.50	1.60	1.00	7.65	264.96	264.96
Dsgn. L = 3.67 ft	3	0.015	0.013	10.68	-1.14	10.68	775.00	697.50	1.78	1.00	3.41	264.96	264.96
Dsgn. L = 4.06 ft	3	0.023	0.027	10.78	-16.28	16.28	775.00	697.50	2.23	1.00	7.03	264.96	264.96
Dsgn. L = 3.96 ft	3	0.119	0.064	-0.00	-83.03	83.03	775.00	697.50	1.50	1.00	17.09	264.96	264.96
Dsgn. L = 2.80 ft	3	0.226	0.113	-0.00	-157.86	157.86	775.00	697.50	1.23	1.00	30.04	264.96	264.96
Dsgn. L = 1.22 ft	4	0.226	0.113	-0.00	-157.86	157.86	775.00	697.50	1.00	1.00	30.04	264.96	264.96
Dsgn. L = 4.01 ft	4	0.174	0.113	-0.00	-121.33	121.33	775.00	697.50	1.00	1.00	29.92	264.96	264.96
Dsgn. L = 4.01 ft	4	0.058	0.075	-0.00	-40.50	40.50	775.00	697.50	1.00	1.00	19.86	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.037	-0.17	0.17	775.00	697.50	1.00	1.00	9.80	264.96	264.96	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.74 ft	1	0.024	0.037	-16.92	16.92	775.00	697.50	1.00	1.00	9.82	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.029	0.063	20.05	-17.04	20.05	775.00	697.50	2.25	1.00	16.80	264.96	264.96
Dsgn. L = 3.96 ft	2	0.067	0.063	46.93	20.05	46.93	775.00	697.50	1.30	1.00	16.57	264.96	264.96
Dsgn. L = 4.06 ft	2	0.068	0.025	47.24	33.98	47.24	775.00	697.50	1.12	1.00	6.51	264.96	264.96
Dsgn. L = 3.96 ft	2	0.049	0.051	33.98	-19.09	33.98	775.00	697.50	2.17	1.00	13.60	264.96	264.96
Dsgn. L = 0.29 ft	2	0.036	0.088	-0.00	-25.45	25.45	775.00	697.50	1.08	1.00	23.28	264.96	264.96
Dsgn. L = 3.67 ft	3	0.036	0.012	-0.00	-25.45	25.45	775.00	697.50	1.21	1.00	3.18	264.96	264.96
Dsgn. L = 4.06 ft	3	0.026	0.011	-0.00	-17.93	17.93	775.00	697.50	1.10	1.00	2.80	264.96	264.96
Dsgn. L = 3.96 ft	3	0.053	0.019	-0.00	-37.09	37.09	775.00	697.50	1.28	1.00	5.06	264.96	264.96
Dsgn. L = 2.80 ft	3	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.19	1.00	11.66	264.96	264.96
Dsgn. L = 1.22 ft	4	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.00	1.00	11.66	264.96	264.96
Dsgn. L = 4.01 ft	4	0.068	0.044	-0.00	-47.21	47.21	775.00	697.50	1.00	1.00	11.53	264.96	264.96
Dsgn. L = 4.01 ft	4	0.023	0.029	-0.00	-15.76	15.76	775.00	697.50	1.00	1.00	7.60	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.014	-0.13	0.13	775.00	697.50	1.00	1.00	3.67	264.96	264.96	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.74 ft	1	0.024	0.037	-16.92	16.92	775.00	697.50	1.00	1.00	9.82	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.034	0.070	23.75	-17.04	23.75	775.00	697.50	2.35	1.00	18.46	264.96	264.96
Dsgn. L = 3.96 ft	2	0.082	0.069	57.23	23.75	57.23	775.00	697.50	1.31	1.00	18.23	264.96	264.96
Dsgn. L = 4.06 ft	2	0.083	0.031	57.69	51.03	57.69	775.00	697.50	1.04	1.00	8.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.073	0.045	51.03	4.55	51.03	775.00	697.50	1.54	1.00	11.94	264.96	264.96
Dsgn. L = 0.29 ft	2	0.007	0.082	4.55	-1.32	4.55	775.00	697.50	2.11	1.00	21.61	264.96	264.96
Dsgn. L = 3.67 ft	3	0.030	0.021	-0.00	-20.89	20.89	775.00	697.50	1.63	1.00	5.52	264.96	264.96
Dsgn. L = 4.06 ft	3	0.083	0.036	-0.00	-58.14	58.14	775.00	697.50	1.36	1.00	9.45	264.96	264.96
Dsgn. L = 3.96 ft	3	0.158	0.050	-0.00	-110.28	110.28	775.00	697.50	1.24	1.00	13.38	264.96	264.96
Dsgn. L = 2.80 ft	3	0.226	0.113	-0.00	-157.86	157.86	775.00	697.50	1.14	1.00	30.04	264.96	264.96
Dsgn. L = 1.22 ft	4	0.226	0.113	-0.00	-157.86	157.86	775.00	697.50	1.00	1.00	30.04	264.96	264.96
Dsgn. L = 4.01 ft	4	0.174	0.113	-0.00	-121.33	121.33	775.00	697.50	1.00	1.00	29.92	264.96	264.96
Dsgn. L = 4.01 ft	4	0.058	0.075	-0.00	-40.50	40.50	775.00	697.50	1.00	1.00	19.86	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.037	-0.17	0.17	775.00	697.50	1.00	1.00	9.80	264.96	264.96	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.74 ft	1	0.024	0.037	-16.92	16.92	775.00	697.50	1.00	1.00	9.82	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.024	0.058	17.05	-17.04	17.05	775.00	697.50	2.04	1.00	15.44	264.96	264.96
Dsgn. L = 3.96 ft	2	0.055	0.057	38.58	17.05	38.58	775.00	697.50	1.29	1.00	15.22	264.96	264.96
Dsgn. L = 4.06 ft	2	0.056	0.019	38.75	20.14	38.75	775.00	697.50	1.22	1.00	5.16	264.96	264.96
Dsgn. L = 3.96 ft	2	0.055	0.056	20.14	-38.28	38.28	775.00	697.50	2.24	1.00	14.95	264.96	264.96
Dsgn. L = 0.29 ft	2	0.065	0.093	-0.00	-45.03	45.03	775.00	697.50	1.04	1.00	24.63	264.96	264.96
Dsgn. L = 3.67 ft	3	0.065	0.049	2.36	-45.03	45.03	775.00	697.50	1.72	1.00	13.09	264.96	264.96
Dsgn. L = 4.06 ft	3	0.021	0.048	14.71	2.36	14.71	775.00	697.50	1.45	1.00	12.71	264.96	264.96
Dsgn. L = 3.96 ft	3	0.021	0.028	14.71	-13.66	14.71	775.00	697.50	2.21	1.00	7.40	264.96	264.96
Dsgn. L = 2.80 ft	3	0.088	0.065	-0.00	-61.34	61.34	775.00	697.50	1.45	1.00	17.34	264.96	264.96
Dsgn. L = 1.22 ft	4	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.00	1.00	11.66	264.96	264.96
Dsgn. L = 4.01 ft	4	0.068	0.044	-0.00	-47.21	47.21	775.00	697.50	1.00	1.00	11.53	264.96	264.96
Dsgn. L = 4.01 ft	4	0.023	0.029	-0.00	-15.76	15.76	775.00	697.50	1.00	1.00	7.60	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.014	-0.13	0.13	775.00	697.50	1.00	1.00	3.67	264.96	264.96	
<b>+1.20D+1.60L+0.50S+1.60H, LL (</b>													
Dsgn. L = 1.74 ft	1	0.024	0.037	-16.92	16.92	775.00	697.50	1.00	1.00	9.82	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.030	0.065	20.75	-17.04	20.75	775.00	697.50	2.29	1.00	17.11	264.96	264.96
Dsgn. L = 3.96 ft	2	0.070	0.064	48.87	20.75	48.87	775.00	697.50	1.30	1.00	16.88	264.96	264.96
Dsgn. L = 4.06 ft	2	0.071	0.026	49.21	37.19	49.21	775.00	697.50	1.10	1.00	6.83	264.96	264.96
Dsgn. L = 3.96 ft	2	0.053	0.050	37.19	-14.63	37.19	775.00	697.50	2.14	1.00	13.29	264.96	264.96
Dsgn. L = 0.29 ft	2	0.030	0.087	-0.00	-20.90	20.90	775.00	697.50	1.09	1.00	22.96	264.96	264.96
Dsgn. L = 3.67 ft	3	0.030	0.018	-0.00	-20.90	20.90	775.00	697.50	1.48	1.00	4.77	264.96	264.96
Dsgn. L = 4.06 ft	3	0.037	0.021	-0.00	-25.50	25.50	775.00	697.50	1.56	1.00	5.67	264.96	264.96



Steel Beam

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: B47

Maximum Forces & Stresses for Load Combinations

Table with columns: Load Combination, Segment Length, Span #, Max Stress Ratios (M, V), Summary of Moment Values (max Mu +, max Mu -, Mu Max, Mnx, Phi\*Mnx, Cb, Rm), Summary of Shear Values (VuMax, Vnx, Phi\*Vnx). Rows include combinations like +1.20D+1.60Lr+L+1.60H, LL Com and various design lengths (Dsgn. L = 1.74 ft to 4.01 ft).



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
	Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
	Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
	Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
	Dsgn. L = 2.24 ft	2	0.032	0.048	22.38	-5.47	22.38	775.00	697.50	2.21	1.00	12.64	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.063	0.047	43.74	22.38	43.74	775.00	697.50	1.24	1.00	12.41	264.96	264.96
	Dsgn. L = 4.06 ft	2	0.063	0.019	44.00	36.30	44.00	775.00	697.50	1.07	1.00	5.14	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.052	0.036	36.30	-0.21	36.30	775.00	697.50	1.64	1.00	9.42	264.96	264.96
	Dsgn. L = 0.29 ft	2	0.007	0.062	-0.00	-4.66	4.66	775.00	697.50	1.37	1.00	16.32	264.96	264.96
	Dsgn. L = 3.67 ft	3	0.021	0.011	-0.00	-14.76	14.76	775.00	697.50	1.40	1.00	2.94	264.96	264.96
	Dsgn. L = 4.06 ft	3	0.057	0.024	-0.00	-39.63	39.63	775.00	697.50	1.35	1.00	6.39	264.96	264.96
	Dsgn. L = 3.96 ft	3	0.111	0.037	-0.00	-77.77	77.77	775.00	697.50	1.26	1.00	9.84	264.96	264.96
	Dsgn. L = 2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.15	1.00	21.71	264.96	264.96
	Dsgn. L = 1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
	Dsgn. L = 1.51 ft	4	0.000	0.026		-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
	Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
	Dsgn. L = 2.24 ft	2	0.026	0.041	18.19	-5.47	18.19	775.00	697.50	2.23	1.00	10.76	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.046	0.040	32.08	18.19	32.08	775.00	697.50	1.21	1.00	10.53	264.96	264.96
	Dsgn. L = 4.06 ft	2	0.046	0.015	32.17	17.00	32.17	775.00	697.50	1.22	1.00	4.03	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.039	0.043	17.00	-26.98	26.98	775.00	697.50	2.27	1.00	11.31	264.96	264.96
	Dsgn. L = 0.29 ft	2	0.046	0.069	-0.00	-31.98	31.98	775.00	697.50	1.05	1.00	18.20	264.96	264.96
	Dsgn. L = 3.67 ft	3	0.046	0.033	-0.00	-31.98	31.98	775.00	697.50	1.65	1.00	8.83	264.96	264.96
	Dsgn. L = 4.06 ft	3	0.008	0.032	5.90	-0.23	5.90	775.00	697.50	1.56	1.00	8.45	264.96	264.96
	Dsgn. L = 3.96 ft	3	0.025	0.023	5.90	-17.38	17.38	775.00	697.50	2.21	1.00	6.11	264.96	264.96
	Dsgn. L = 2.80 ft	3	0.077	0.050	-0.00	-53.78	53.78	775.00	697.50	1.37	1.00	13.26	264.96	264.96
	Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
	Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
	Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
	Dsgn. L = 2.24 ft	2	0.029	0.045	20.50	-5.47	20.50	775.00	697.50	2.22	1.00	11.80	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.055	0.044	38.52	20.50	38.52	775.00	697.50	1.23	1.00	11.57	264.96	264.96
	Dsgn. L = 4.06 ft	2	0.055	0.016	38.70	27.66	38.70	775.00	697.50	1.12	1.00	4.29	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.040	0.039	27.66	-12.20	27.66	775.00	697.50	2.15	1.00	10.27	264.96	264.96
	Dsgn. L = 0.29 ft	2	0.024	0.065	-0.00	-16.90	16.90	775.00	697.50	1.09	1.00	17.16	264.96	264.96
	Dsgn. L = 3.67 ft	3	0.024	0.014	-0.00	-16.90	16.90	775.00	697.50	1.43	1.00	3.63	264.96	264.96
	Dsgn. L = 4.06 ft	3	0.028	0.015	-0.00	-19.24	19.24	775.00	697.50	1.50	1.00	4.03	264.96	264.96
	Dsgn. L = 3.96 ft	3	0.090	0.043	-0.00	-63.12	63.12	775.00	697.50	1.40	1.00	11.31	264.96	264.96
	Dsgn. L = 2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.22	1.00	21.71	264.96	264.96
	Dsgn. L = 1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
	Dsgn. L = 1.51 ft	4	0.000	0.026		-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
	Dsgn. L = 1.74 ft	1	0.017	0.027		-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96
	Dsgn. L = 2.24 ft	2	0.017	0.027	1.86	-12.17	12.17	775.00	697.50	1.68	1.00	7.05	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.020	0.023	13.67	1.86	13.67	775.00	697.50	1.52	1.00	6.20	264.96	264.96
	Dsgn. L = 4.06 ft	2	0.020	0.010	13.83	11.86	13.83	775.00	697.50	1.05	1.00	2.75	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.017	0.016	11.86	-3.75	11.86	775.00	697.50	2.01	1.00	4.15	264.96	264.96
	Dsgn. L = 0.29 ft	2	0.008	0.027	-0.00	-5.71	5.71	775.00	697.50	1.11	1.00	7.21	264.96	264.96
	Dsgn. L = 3.67 ft	3	0.008	0.006	-0.00	-5.71	5.71	775.00	697.50	1.66	1.00	1.67	264.96	264.96
	Dsgn. L = 4.06 ft	3	0.011	0.008	-0.00	-7.95	7.95	775.00	697.50	1.73	1.00	2.16	264.96	264.96
	Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.31	29.31	775.00	697.50	1.44	1.00	5.61	264.96	264.96
	Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96
	Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
	Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96





Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L =	1.74 ft	1	0.017	0.027		-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96
Dsgn. L =	2.24 ft	2	0.017	0.028	4.18	-12.17	12.17	775.00	697.50	1.89	1.00	7.47	264.96	264.96
Dsgn. L =	3.96 ft	2	0.029	0.027	20.10	4.18	20.10	775.00	697.50	1.46	1.00	7.24	264.96	264.96
Dsgn. L =	4.06 ft	2	0.032	0.014	22.52	20.10	22.52	775.00	697.50	1.04	1.00	3.79	264.96	264.96
Dsgn. L =	3.96 ft	2	0.032	0.012	22.52	11.03	22.52	775.00	697.50	1.24	1.00	3.11	264.96	264.96
Dsgn. L =	0.29 ft	2	0.016	0.023	11.03	9.37	11.03	775.00	697.50	1.08	1.00	6.17	264.96	264.96
Dsgn. L =	3.67 ft	3	0.013	0.015	9.37	-4.29	9.37	775.00	697.50	2.14	1.00	3.91	264.96	264.96
Dsgn. L =	4.06 ft	3	0.047	0.028	-0.00	-33.09	33.09	775.00	697.50	1.56	1.00	7.36	264.96	264.96
Dsgn. L =	3.96 ft	3	0.108	0.041	-0.00	-75.06	75.06	775.00	697.50	1.30	1.00	10.81	264.96	264.96
Dsgn. L =	2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.16	1.00	21.71	264.96	264.96
Dsgn. L =	1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
Dsgn. L =	4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
Dsgn. L =	4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.026		-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L =	1.74 ft	1	0.017	0.027		-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96
Dsgn. L =	2.24 ft	2	0.017	0.027	-0.00	-12.17	12.17	775.00	697.50	1.54	1.00	7.05	264.96	264.96
Dsgn. L =	3.96 ft	2	0.012	0.020	8.45	-0.01	8.45	775.00	697.50	1.64	1.00	5.35	264.96	264.96
Dsgn. L =	4.06 ft	2	0.012	0.007	8.53	3.22	8.53	775.00	697.50	1.29	1.00	1.91	264.96	264.96
Dsgn. L =	3.96 ft	2	0.023	0.019	3.22	-15.74	15.74	775.00	697.50	2.01	1.00	4.99	264.96	264.96
Dsgn. L =	0.29 ft	2	0.026	0.030	-0.00	-17.95	17.95	775.00	697.50	1.04	1.00	8.06	264.96	264.96
Dsgn. L =	3.67 ft	3	0.026	0.030	10.25	-17.95	17.95	775.00	697.50	2.20	1.00	7.87	264.96	264.96
Dsgn. L =	4.06 ft	3	0.018	0.028	12.44	10.25	12.44	775.00	697.50	1.05	1.00	7.49	264.96	264.96
Dsgn. L =	3.96 ft	3	0.021	0.027	12.44	-14.66	14.66	775.00	697.50	2.33	1.00	7.07	264.96	264.96
Dsgn. L =	2.80 ft	3	0.077	0.054	-0.00	-53.78	53.78	775.00	697.50	1.41	1.00	14.23	264.96	264.96
Dsgn. L =	1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L =	4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L =	4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L =	1.74 ft	1	0.017	0.027		-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96
Dsgn. L =	2.24 ft	2	0.017	0.027	2.30	-12.17	12.17	775.00	697.50	1.72	1.00	7.05	264.96	264.96
Dsgn. L =	3.96 ft	2	0.021	0.024	14.88	2.30	14.88	775.00	697.50	1.50	1.00	6.39	264.96	264.96
Dsgn. L =	4.06 ft	2	0.022	0.011	15.07	13.87	15.07	775.00	697.50	1.02	1.00	2.95	264.96	264.96
Dsgn. L =	3.96 ft	2	0.020	0.015	13.87	-0.96	13.87	775.00	697.50	1.69	1.00	3.95	264.96	264.96
Dsgn. L =	0.29 ft	2	0.004	0.026	-0.00	-2.87	2.87	775.00	697.50	1.23	1.00	7.02	264.96	264.96
Dsgn. L =	3.67 ft	3	0.009	0.010	6.23	-2.87	6.23	775.00	697.50	2.12	1.00	2.67	264.96	264.96
Dsgn. L =	4.06 ft	3	0.018	0.019	6.31	-12.69	12.69	775.00	697.50	2.21	1.00	5.00	264.96	264.96
Dsgn. L =	3.96 ft	3	0.087	0.046	-0.00	-60.41	60.41	775.00	697.50	1.49	1.00	12.27	264.96	264.96
Dsgn. L =	2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.23	1.00	21.71	264.96	264.96
Dsgn. L =	1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
Dsgn. L =	4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
Dsgn. L =	4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.026		-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L =	1.74 ft	1	0.017	0.027		-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96
Dsgn. L =	2.24 ft	2	0.021	0.046	14.65	-12.17	14.65	775.00	697.50	2.28	1.00	12.18	264.96	264.96
Dsgn. L =	3.96 ft	2	0.049	0.045	34.17	14.65	34.17	775.00	697.50	1.30	1.00	11.95	264.96	264.96
Dsgn. L =	4.06 ft	2	0.049	0.018	34.40	24.86	34.40	775.00	697.50	1.11	1.00	4.68	264.96	264.96
Dsgn. L =	3.96 ft	2	0.036	0.037	24.86	-13.48	24.86	775.00	697.50	2.16	1.00	9.88	264.96	264.96
Dsgn. L =	0.29 ft	2	0.026	0.063	-0.00	-18.07	18.07	775.00	697.50	1.08	1.00	16.78	264.96	264.96
Dsgn. L =	3.67 ft	3	0.026	0.010	-0.00	-18.07	18.07	775.00	697.50	1.24	1.00	2.53	264.96	264.96
Dsgn. L =	4.06 ft	3	0.020	0.008	-0.00	-13.72	13.72	775.00	697.50	1.17	1.00	2.15	264.96	264.96
Dsgn. L =	3.96 ft	3	0.045	0.018	-0.00	-31.70	31.70	775.00	697.50	1.31	1.00	4.75	264.96	264.96
Dsgn. L =	2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.20	1.00	10.22	264.96	264.96
Dsgn. L =	1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L =	4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L =	4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>														
Dsgn. L =	1.74 ft	1	0.017	0.027		-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96
Dsgn. L =	2.24 ft	2	0.024	0.050	16.96	-12.17	16.96	775.00	697.50	2.35	1.00	13.22	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 3.96 ft	2	0.058	0.049	40.61	16.96	40.61	775.00	697.50	1.30	1.00	12.99	264.96	264.96
Dsgn. L = 4.06 ft	2	0.059	0.022	40.93	35.52	40.93	775.00	697.50	1.05	1.00	5.72	264.96	264.96
Dsgn. L = 3.96 ft	2	0.051	0.033	35.52	1.30	35.52	775.00	697.50	1.59	1.00	8.84	264.96	264.96
Dsgn. L = 0.29 ft	2	0.004	0.059	1.30	-2.99	2.99	775.00	697.50	1.66	1.00	15.74	264.96	264.96
Dsgn. L = 3.67 ft	3	0.019	0.012	-0.00	-13.51	13.51	775.00	697.50	1.48	1.00	3.05	264.96	264.96
Dsgn. L = 4.06 ft	3	0.056	0.025	-0.00	-38.85	38.85	775.00	697.50	1.37	1.00	6.51	264.96	264.96
Dsgn. L = 3.96 ft	3	0.111	0.038	-0.00	-77.44	77.44	775.00	697.50	1.26	1.00	9.95	264.96	264.96
Dsgn. L = 2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.15	1.00	21.71	264.96	264.96
Dsgn. L = 1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
Dsgn. L = 4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
Dsgn. L = 4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.026	-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96	
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.017	0.027		-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96
Dsgn. L = 2.24 ft	2	0.018	0.043	12.77	-12.17	12.77	775.00	697.50	2.10	1.00	11.34	264.96	264.96
Dsgn. L = 3.96 ft	2	0.042	0.042	28.95	12.77	28.95	775.00	697.50	1.29	1.00	11.11	264.96	264.96
Dsgn. L = 4.06 ft	2	0.042	0.014	29.09	16.22	29.09	775.00	697.50	1.20	1.00	3.83	264.96	264.96
Dsgn. L = 3.96 ft	2	0.037	0.040	16.22	-25.47	25.47	775.00	697.50	2.27	1.00	10.73	264.96	264.96
Dsgn. L = 0.29 ft	2	0.043	0.067	-0.00	-30.30	30.30	775.00	697.50	1.05	1.00	17.62	264.96	264.96
Dsgn. L = 3.67 ft	3	0.043	0.033	1.02	-30.30	30.30	775.00	697.50	1.70	1.00	8.72	264.96	264.96
Dsgn. L = 4.06 ft	3	0.010	0.031	6.68	1.02	6.68	775.00	697.50	1.41	1.00	8.34	264.96	264.96
Dsgn. L = 3.96 ft	3	0.024	0.023	6.68	-17.05	17.05	775.00	697.50	2.22	1.00	6.22	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.050	-0.00	-53.78	53.78	775.00	697.50	1.38	1.00	13.38	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96	
<b>+1.20D+1.60Lr+L+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.017	0.027		-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96
Dsgn. L = 2.24 ft	2	0.022	0.047	15.09	-12.17	15.09	775.00	697.50	2.32	1.00	12.38	264.96	264.96
Dsgn. L = 3.96 ft	2	0.051	0.046	35.39	15.09	35.39	775.00	697.50	1.30	1.00	12.15	264.96	264.96
Dsgn. L = 4.06 ft	2	0.051	0.018	35.63	26.87	35.63	775.00	697.50	1.10	1.00	4.87	264.96	264.96
Dsgn. L = 3.96 ft	2	0.039	0.037	26.87	-10.69	26.87	775.00	697.50	2.14	1.00	9.69	264.96	264.96
Dsgn. L = 0.29 ft	2	0.022	0.063	-0.00	-15.22	15.22	775.00	697.50	1.09	1.00	16.58	264.96	264.96
Dsgn. L = 3.67 ft	3	0.022	0.013	-0.00	-15.22	15.22	775.00	697.50	1.48	1.00	3.52	264.96	264.96
Dsgn. L = 4.06 ft	3	0.026	0.016	-0.00	-18.45	18.45	775.00	697.50	1.56	1.00	4.15	264.96	264.96
Dsgn. L = 3.96 ft	3	0.090	0.043	-0.00	-62.80	62.80	775.00	697.50	1.41	1.00	11.42	264.96	264.96
Dsgn. L = 2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.22	1.00	21.71	264.96	264.96
Dsgn. L = 1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
Dsgn. L = 4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
Dsgn. L = 4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.026	-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: B47

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.00	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.00	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.00	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.00	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Max Stress Ratios		Summary of Moment Values							Summary of Shear Values				
	Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96	
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96	
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96	
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96	
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96	
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00		3.19	264.96	264.96	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96	
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96	
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96	
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96	
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96	
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96	
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96	
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96	
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96	
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96	
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96	
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96	
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00		3.19	264.96	264.96	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96	
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96	
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96	
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96	
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96	
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96	
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96	
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96	
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96	
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96	
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96	
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96	
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00		3.19	264.96	264.96	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96	
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96	
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96	
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96	
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96	
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96	
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96	
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96	
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96	
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96	
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96	
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96	
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00		3.19	264.96	264.96	
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>														
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96	
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96	
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96	
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96	
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96	
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96	
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96	
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96	
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96	
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96	



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.010	0.022	7.28	-5.47	7.28	775.00	697.50	2.35	1.00	5.85	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.021	16.80	7.28	16.80	775.00	697.50	1.29	1.00	5.62	264.96	264.96
Dsgn. L = 4.06 ft	2	0.024	0.008	16.90	12.65	16.90	775.00	697.50	1.10	1.00	2.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.018	12.65	-5.26	12.65	775.00	697.50	2.13	1.00	4.72	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.029	-0.00	-7.39	7.39	775.00	697.50	1.09	1.00	7.79	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.007	-0.00	-7.39	7.39	775.00	697.50	1.49	1.00	1.79	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.008	-0.00	-8.74	8.74	775.00	697.50	1.57	1.00	2.05	264.96	264.96
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.63	29.63	775.00	697.50	1.42	1.00	5.49	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.012	0.018		-8.10	8.10	775.00	697.50	1.00	1.00	4.75	264.96	264.96
Dsgn. L = 2.24 ft	2	0.018	0.036	12.72	-8.16	12.72	775.00	697.50	2.32	1.00	9.51	264.96	264.96
Dsgn. L = 3.96 ft	2	0.044	0.035	30.69	12.72	30.69	775.00	697.50	1.31	1.00	9.28	264.96	264.96
Dsgn. L = 4.06 ft	2	0.044	0.016	30.95	29.01	30.95	775.00	697.50	1.02	1.00	4.30	264.96	264.96
Dsgn. L = 3.96 ft	2	0.042	0.021	29.01	7.34	29.01	775.00	697.50	1.40	1.00	5.68	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.039	7.34	4.55	7.34	775.00	697.50	1.24	1.00	10.28	264.96	264.96
Dsgn. L = 3.67 ft	3	0.009	0.012	4.55	-6.13	6.13	775.00	697.50	2.27	1.00	3.10	264.96	264.96
Dsgn. L = 4.06 ft	3	0.054	0.031	-0.00	-37.77	37.77	775.00	697.50	1.53	1.00	8.09	264.96	264.96
Dsgn. L = 3.96 ft	3	0.127	0.049	-0.00	-88.68	88.68	775.00	697.50	1.31	1.00	13.07	264.96	264.96
Dsgn. L = 2.80 ft	3	0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.17	1.00	26.32	264.96	264.96
Dsgn. L = 1.22 ft	4	0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.00	1.00	26.32	264.96	264.96
Dsgn. L = 4.01 ft	4	0.152	0.099	-0.00	-106.31	106.31	775.00	697.50	1.00	1.00	26.19	264.96	264.96
Dsgn. L = 4.01 ft	4	0.051	0.066	-0.00	-35.49	35.49	775.00	697.50	1.00	1.00	17.37	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.032		-0.16	0.16	775.00	697.50	1.00	1.00	8.56	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.012	0.018		-8.10	8.10	775.00	697.50	1.00	1.00	4.75	264.96	264.96
Dsgn. L = 2.24 ft	2	0.012	0.029	8.54	-8.16	8.54	775.00	697.50	2.10	1.00	7.62	264.96	264.96
Dsgn. L = 3.96 ft	2	0.027	0.028	19.03	8.54	19.03	775.00	697.50	1.28	1.00	7.39	264.96	264.96
Dsgn. L = 4.06 ft	2	0.027	0.010	19.11	9.70	19.11	775.00	697.50	1.22	1.00	2.58	264.96	264.96
Dsgn. L = 3.96 ft	2	0.028	0.029	9.70	-19.43	19.43	775.00	697.50	2.24	1.00	7.56	264.96	264.96
Dsgn. L = 0.29 ft	2	0.033	0.046	-0.00	-22.77	22.77	775.00	697.50	1.04	1.00	12.16	264.96	264.96
Dsgn. L = 3.67 ft	3	0.033	0.033	8.40	-22.77	22.77	775.00	697.50	2.16	1.00	8.67	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.031	9.04	7.76	9.04	775.00	697.50	1.04	1.00	8.30	264.96	264.96
Dsgn. L = 3.96 ft	3	0.041	0.035	7.76	-28.29	28.29	775.00	697.50	2.12	1.00	9.34	264.96	264.96
Dsgn. L = 2.80 ft	3	0.112	0.068	-0.00	-77.97	77.97	775.00	697.50	1.34	1.00	18.03	264.96	264.96
Dsgn. L = 1.22 ft	4	0.112	0.056	-0.00	-77.97	77.97	775.00	697.50	1.00	1.00	14.83	264.96	264.96
Dsgn. L = 4.01 ft	4	0.086	0.055	-0.00	-59.99	59.99	775.00	697.50	1.00	1.00	14.70	264.96	264.96
Dsgn. L = 4.01 ft	4	0.029	0.037	-0.00	-20.03	20.03	775.00	697.50	1.00	1.00	9.71	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.018		-0.14	0.14	775.00	697.50	1.00	1.00	4.73	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.012	0.018		-8.10	8.10	775.00	697.50	1.00	1.00	4.75	264.96	264.96
Dsgn. L = 2.24 ft	2	0.016	0.033	10.85	-8.16	10.85	775.00	697.50	2.35	1.00	8.66	264.96	264.96
Dsgn. L = 3.96 ft	2	0.037	0.032	25.47	10.85	25.47	775.00	697.50	1.30	1.00	8.43	264.96	264.96
Dsgn. L = 4.06 ft	2	0.037	0.013	25.65	20.36	25.65	775.00	697.50	1.08	1.00	3.45	264.96	264.96
Dsgn. L = 3.96 ft	2	0.029	0.025	20.36	-4.65	20.36	775.00	697.50	1.90	1.00	6.52	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.042	-0.00	-7.69	7.69	775.00	697.50	1.13	1.00	11.12	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.013	4.38	-7.69	7.69	775.00	697.50	2.22	1.00	3.47	264.96	264.96
Dsgn. L = 4.06 ft	3	0.025	0.022	4.51	-17.37	17.37	775.00	697.50	2.13	1.00	5.73	264.96	264.96
Dsgn. L = 3.96 ft	3	0.106	0.055	-0.00	-74.03	74.03	775.00	697.50	1.46	1.00	14.54	264.96	264.96
Dsgn. L = 2.80 ft	3	0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.23	1.00	26.32	264.96	264.96
Dsgn. L = 1.22 ft	4	0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.00	1.00	26.32	264.96	264.96
Dsgn. L = 4.01 ft	4	0.152	0.099	-0.00	-106.31	106.31	775.00	697.50	1.00	1.00	26.19	264.96	264.96
Dsgn. L = 4.01 ft	4	0.051	0.066	-0.00	-35.49	35.49	775.00	697.50	1.00	1.00	17.37	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.032		-0.16	0.16	775.00	697.50	1.00	1.00	8.56	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.012	0.018		-8.10	8.10	775.00	697.50	1.00	1.00	4.75	264.96	264.96
Dsgn. L = 2.24 ft	2	0.033	0.054	23.20	-8.16	23.20	775.00	697.50	2.24	1.00	14.22	264.96	264.96



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.96 ft	2	0.064	0.053	44.76	23.20	44.76	775.00	697.50	1.24	1.00	13.99	264.96	264.96
Dsgn. L = 4.06 ft	2	0.064	0.020	44.98	31.35	44.98	775.00	697.50	1.13	1.00	5.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.045	0.047	31.35	-17.17	31.35	775.00	697.50	2.17	1.00	12.45	264.96	264.96
Dsgn. L = 0.29 ft	2	0.033	0.079	-0.00	-22.88	22.88	775.00	697.50	1.08	1.00	20.89	264.96	264.96
Dsgn. L = 3.67 ft	3	0.033	0.013	-0.00	-22.88	22.88	775.00	697.50	1.26	1.00	3.33	264.96	264.96
Dsgn. L = 4.06 ft	3	0.026	0.011	-0.00	-18.40	18.40	775.00	697.50	1.21	1.00	2.95	264.96	264.96
Dsgn. L = 3.96 ft	3	0.065	0.026	-0.00	-45.32	45.32	775.00	697.50	1.33	1.00	7.02	264.96	264.96
Dsgn. L = 2.80 ft	3	0.112	0.056	-0.00	-77.97	77.97	775.00	697.50	1.20	1.00	14.83	264.96	264.96
Dsgn. L = 1.22 ft	4	0.112	0.056	-0.00	-77.97	77.97	775.00	697.50	1.00	1.00	14.83	264.96	264.96
Dsgn. L = 4.01 ft	4	0.086	0.055	-0.00	-59.99	59.99	775.00	697.50	1.00	1.00	14.70	264.96	264.96
Dsgn. L = 4.01 ft	4	0.029	0.037	-0.00	-20.03	20.03	775.00	697.50	1.00	1.00	9.71	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.018	-0.14	0.14	775.00	697.50	1.00	1.00	4.73	264.96	264.96	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.012	0.018	-8.10	8.10	775.00	697.50	1.00	1.00	4.75	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.037	0.058	25.51	-8.16	25.51	775.00	697.50	2.24	1.00	15.26	264.96	264.96
Dsgn. L = 3.96 ft	2	0.073	0.057	51.19	25.51	51.19	775.00	697.50	1.25	1.00	15.03	264.96	264.96
Dsgn. L = 4.06 ft	2	0.074	0.023	51.51	42.01	51.51	775.00	697.50	1.07	1.00	6.22	264.96	264.96
Dsgn. L = 3.96 ft	2	0.060	0.043	42.01	-2.39	42.01	775.00	697.50	1.69	1.00	11.41	264.96	264.96
Dsgn. L = 0.29 ft	2	0.011	0.075	-0.00	-7.80	7.80	775.00	697.50	1.25	1.00	19.85	264.96	264.96
Dsgn. L = 3.67 ft	3	0.022	0.008	-0.00	-15.35	15.35	775.00	697.50	1.26	1.00	2.25	264.96	264.96
Dsgn. L = 4.06 ft	3	0.062	0.027	-0.00	-43.53	43.53	775.00	697.50	1.37	1.00	7.24	264.96	264.96
Dsgn. L = 3.96 ft	3	0.131	0.046	-0.00	-91.07	91.07	775.00	697.50	1.28	1.00	12.22	264.96	264.96
Dsgn. L = 2.80 ft	3	0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.16	1.00	26.32	264.96	264.96
Dsgn. L = 1.22 ft	4	0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.00	1.00	26.32	264.96	264.96
Dsgn. L = 4.01 ft	4	0.152	0.099	-0.00	-106.31	106.31	775.00	697.50	1.00	1.00	26.19	264.96	264.96
Dsgn. L = 4.01 ft	4	0.051	0.066	-0.00	-35.49	35.49	775.00	697.50	1.00	1.00	17.37	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.032	-0.16	0.16	775.00	697.50	1.00	1.00	8.56	264.96	264.96	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.012	0.018	-8.10	8.10	775.00	697.50	1.00	1.00	4.75	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.031	0.050	21.32	-8.16	21.32	775.00	697.50	2.25	1.00	13.38	264.96	264.96
Dsgn. L = 3.96 ft	2	0.057	0.050	39.54	21.32	39.54	775.00	697.50	1.22	1.00	13.15	264.96	264.96
Dsgn. L = 4.06 ft	2	0.057	0.017	39.68	22.71	39.68	775.00	697.50	1.19	1.00	4.49	264.96	264.96
Dsgn. L = 3.96 ft	2	0.042	0.050	22.71	-29.16	29.16	775.00	697.50	2.30	1.00	13.30	264.96	264.96
Dsgn. L = 0.29 ft	2	0.050	0.082	-0.00	-35.12	35.12	775.00	697.50	1.05	1.00	21.73	264.96	264.96
Dsgn. L = 3.67 ft	3	0.050	0.036	-0.00	-35.12	35.12	775.00	697.50	1.63	1.00	9.53	264.96	264.96
Dsgn. L = 4.06 ft	3	0.003	0.035	2.00	-0.82	2.00	775.00	697.50	1.59	1.00	9.15	264.96	264.96
Dsgn. L = 3.96 ft	3	0.044	0.032	2.00	-30.68	30.68	775.00	697.50	1.80	1.00	8.48	264.96	264.96
Dsgn. L = 2.80 ft	3	0.112	0.065	-0.00	-77.97	77.97	775.00	697.50	1.32	1.00	17.18	264.96	264.96
Dsgn. L = 1.22 ft	4	0.112	0.056	-0.00	-77.97	77.97	775.00	697.50	1.00	1.00	14.83	264.96	264.96
Dsgn. L = 4.01 ft	4	0.086	0.055	-0.00	-59.99	59.99	775.00	697.50	1.00	1.00	14.70	264.96	264.96
Dsgn. L = 4.01 ft	4	0.029	0.037	-0.00	-20.03	20.03	775.00	697.50	1.00	1.00	9.71	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.018	-0.14	0.14	775.00	697.50	1.00	1.00	4.73	264.96	264.96	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.012	0.018	-8.10	8.10	775.00	697.50	1.00	1.00	4.75	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.034	0.054	23.64	-8.16	23.64	775.00	697.50	2.24	1.00	14.42	264.96	264.96
Dsgn. L = 3.96 ft	2	0.066	0.054	45.97	23.64	45.97	775.00	697.50	1.24	1.00	14.19	264.96	264.96
Dsgn. L = 4.06 ft	2	0.066	0.020	46.21	33.36	46.21	775.00	697.50	1.12	1.00	5.37	264.96	264.96
Dsgn. L = 3.96 ft	2	0.048	0.046	33.36	-14.38	33.36	775.00	697.50	2.15	1.00	12.26	264.96	264.96
Dsgn. L = 0.29 ft	2	0.029	0.078	-0.00	-20.04	20.04	775.00	697.50	1.09	1.00	20.69	264.96	264.96
Dsgn. L = 3.67 ft	3	0.029	0.016	-0.00	-20.04	20.04	775.00	697.50	1.44	1.00	4.33	264.96	264.96
Dsgn. L = 4.06 ft	3	0.033	0.018	-0.00	-23.13	23.13	775.00	697.50	1.51	1.00	4.87	264.96	264.96
Dsgn. L = 3.96 ft	3	0.110	0.052	-0.00	-76.42	76.42	775.00	697.50	1.41	1.00	13.68	264.96	264.96
Dsgn. L = 2.80 ft	3	0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.22	1.00	26.32	264.96	264.96
Dsgn. L = 1.22 ft	4	0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.00	1.00	26.32	264.96	264.96
Dsgn. L = 4.01 ft	4	0.152	0.099	-0.00	-106.31	106.31	775.00	697.50	1.00	1.00	26.19	264.96	264.96
Dsgn. L = 4.01 ft	4	0.051	0.066	-0.00	-35.49	35.49	775.00	697.50	1.00	1.00	17.37	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.032	-0.16	0.16	775.00	697.50	1.00	1.00	8.56	264.96	264.96	
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.021	0.032	-14.76	14.76	775.00	697.50	1.00	1.00	8.58	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.021	0.034	4.99	-14.86	14.86	775.00	697.50	1.88	1.00	9.05	264.96	264.96
Dsgn. L = 3.96 ft	2	0.030	0.033	21.12	4.99	21.12	775.00	697.50	1.44	1.00	8.82	264.96	264.96
Dsgn. L = 4.06 ft	2	0.031	0.014	21.34	17.57	21.34	775.00	697.50	1.07	1.00	3.83	264.96	264.96
Dsgn. L = 3.96 ft	2	0.025	0.023	17.57	-5.93	17.57	775.00	697.50	2.06	1.00	6.14	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 0.29 ft	2	0.013	0.041	-0.00	-8.86	8.86	775.00	697.50	1.10	1.00	10.74	264.96	264.96
Dsgn. L = 3.67 ft	3	0.013	0.009	-0.00	-8.86	8.86	775.00	697.50	1.58	1.00	2.37	264.96	264.96
Dsgn. L = 4.06 ft	3	0.017	0.011	-0.00	-11.85	11.85	775.00	697.50	1.67	1.00	3.00	264.96	264.96
Dsgn. L = 3.96 ft	3	0.061	0.030	-0.00	-42.61	42.61	775.00	697.50	1.43	1.00	7.98	264.96	264.96
Dsgn. L = 2.80 ft	3	0.112	0.056	-0.00	-77.97	77.97	775.00	697.50	1.22	1.00	14.83	264.96	264.96
Dsgn. L = 1.22 ft	4	0.112	0.056	-0.00	-77.97	77.97	775.00	697.50	1.00	1.00	14.83	264.96	264.96
Dsgn. L = 4.01 ft	4	0.086	0.055	-0.00	-59.99	59.99	775.00	697.50	1.00	1.00	14.70	264.96	264.96
Dsgn. L = 4.01 ft	4	0.029	0.037	-0.00	-20.03	20.03	775.00	697.50	1.00	1.00	9.71	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.018		-0.14	0.14	775.00	697.50	1.00	1.00	4.73	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.021	0.032		-14.76	14.76	775.00	697.50	1.00	1.00	8.58	264.96	264.96
Dsgn. L = 2.24 ft	2	0.021	0.038	7.31	-14.86	14.86	775.00	697.50	2.01	1.00	10.09	264.96	264.96
Dsgn. L = 3.96 ft	2	0.040	0.037	27.56	7.31	27.56	775.00	697.50	1.42	1.00	9.86	264.96	264.96
Dsgn. L = 4.06 ft	2	0.041	0.018	28.29	27.56	28.29	775.00	697.50	1.00	1.00	4.87	264.96	264.96
Dsgn. L = 3.96 ft	2	0.040	0.019	28.23	8.85	28.23	775.00	697.50	1.36	1.00	5.10	264.96	264.96
Dsgn. L = 0.29 ft	2	0.013	0.037	8.85	6.23	8.85	775.00	697.50	1.18	1.00	9.70	264.96	264.96
Dsgn. L = 3.67 ft	3	0.009	0.012	6.23	-4.88	6.23	775.00	697.50	2.19	1.00	3.21	264.96	264.96
Dsgn. L = 4.06 ft	3	0.053	0.031	-0.00	-36.99	36.99	775.00	697.50	1.56	1.00	8.20	264.96	264.96
Dsgn. L = 3.96 ft	3	0.127	0.050	-0.00	-88.35	88.35	775.00	697.50	1.32	1.00	13.18	264.96	264.96
Dsgn. L = 2.80 ft	3	0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.17	1.00	26.32	264.96	264.96
Dsgn. L = 1.22 ft	4	0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.00	1.00	26.32	264.96	264.96
Dsgn. L = 4.01 ft	4	0.152	0.099	-0.00	-106.31	106.31	775.00	697.50	1.00	1.00	26.19	264.96	264.96
Dsgn. L = 4.01 ft	4	0.051	0.066	-0.00	-35.49	35.49	775.00	697.50	1.00	1.00	17.37	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.032		-0.16	0.16	775.00	697.50	1.00	1.00	8.56	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.021	0.032		-14.76	14.76	775.00	697.50	1.00	1.00	8.58	264.96	264.96
Dsgn. L = 2.24 ft	2	0.021	0.032	3.12	-14.86	14.86	775.00	697.50	1.74	1.00	8.58	264.96	264.96
Dsgn. L = 3.96 ft	2	0.023	0.030	15.90	3.12	15.90	775.00	697.50	1.47	1.00	7.97	264.96	264.96
Dsgn. L = 4.06 ft	2	0.023	0.011	16.04	8.92	16.04	775.00	697.50	1.19	1.00	2.99	264.96	264.96
Dsgn. L = 3.96 ft	2	0.026	0.026	8.92	-17.92	17.92	775.00	697.50	2.24	1.00	6.98	264.96	264.96
Dsgn. L = 0.29 ft	2	0.030	0.044	-0.00	-21.09	21.09	775.00	697.50	1.04	1.00	11.58	264.96	264.96
Dsgn. L = 3.67 ft	3	0.030	0.032	9.65	-21.09	21.09	775.00	697.50	2.18	1.00	8.56	264.96	264.96
Dsgn. L = 4.06 ft	3	0.015	0.031	10.28	8.55	10.28	775.00	697.50	1.05	1.00	8.18	264.96	264.96
Dsgn. L = 3.96 ft	3	0.040	0.036	8.55	-27.96	27.96	775.00	697.50	2.18	1.00	9.45	264.96	264.96
Dsgn. L = 2.80 ft	3	0.112	0.068	-0.00	-77.97	77.97	775.00	697.50	1.34	1.00	18.14	264.96	264.96
Dsgn. L = 1.22 ft	4	0.112	0.056	-0.00	-77.97	77.97	775.00	697.50	1.00	1.00	14.83	264.96	264.96
Dsgn. L = 4.01 ft	4	0.086	0.055	-0.00	-59.99	59.99	775.00	697.50	1.00	1.00	14.70	264.96	264.96
Dsgn. L = 4.01 ft	4	0.029	0.037	-0.00	-20.03	20.03	775.00	697.50	1.00	1.00	9.71	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.018		-0.14	0.14	775.00	697.50	1.00	1.00	4.73	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.021	0.032		-14.76	14.76	775.00	697.50	1.00	1.00	8.58	264.96	264.96
Dsgn. L = 2.24 ft	2	0.021	0.035	5.43	-14.86	14.86	775.00	697.50	1.92	1.00	9.24	264.96	264.96
Dsgn. L = 3.96 ft	2	0.032	0.034	22.34	5.43	22.34	775.00	697.50	1.43	1.00	9.01	264.96	264.96
Dsgn. L = 4.06 ft	2	0.032	0.015	22.57	19.58	22.57	775.00	697.50	1.05	1.00	4.03	264.96	264.96
Dsgn. L = 3.96 ft	2	0.028	0.022	19.58	-3.14	19.58	775.00	697.50	1.80	1.00	5.94	264.96	264.96
Dsgn. L = 0.29 ft	2	0.009	0.040	-0.00	-6.01	6.01	775.00	697.50	1.16	1.00	10.54	264.96	264.96
Dsgn. L = 3.67 ft	3	0.009	0.013	5.63	-6.01	6.01	775.00	697.50	2.31	1.00	3.36	264.96	264.96
Dsgn. L = 4.06 ft	3	0.024	0.022	5.75	-16.59	16.59	775.00	697.50	2.17	1.00	5.84	264.96	264.96
Dsgn. L = 3.96 ft	3	0.106	0.055	-0.00	-73.71	73.71	775.00	697.50	1.47	1.00	14.65	264.96	264.96
Dsgn. L = 2.80 ft	3	0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.23	1.00	26.32	264.96	264.96
Dsgn. L = 1.22 ft	4	0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.00	1.00	26.32	264.96	264.96
Dsgn. L = 4.01 ft	4	0.152	0.099	-0.00	-106.31	106.31	775.00	697.50	1.00	1.00	26.19	264.96	264.96
Dsgn. L = 4.01 ft	4	0.051	0.066	-0.00	-35.49	35.49	775.00	697.50	1.00	1.00	17.37	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.032		-0.16	0.16	775.00	697.50	1.00	1.00	8.56	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 1.74 ft	1	0.021	0.032		-14.76	14.76	775.00	697.50	1.00	1.00	8.58	264.96	264.96
Dsgn. L = 2.24 ft	2	0.025	0.056	17.78	-14.86	17.78	775.00	697.50	2.27	1.00	14.80	264.96	264.96
Dsgn. L = 3.96 ft	2	0.060	0.055	41.63	17.78	41.63	775.00	697.50	1.30	1.00	14.57	264.96	264.96
Dsgn. L = 4.06 ft	2	0.060	0.022	41.91	30.57	41.91	775.00	697.50	1.11	1.00	5.76	264.96	264.96
Dsgn. L = 3.96 ft	2	0.044	0.045	30.57	-15.66	30.57	775.00	697.50	2.16	1.00	11.88	264.96	264.96
Dsgn. L = 0.29 ft	2	0.030	0.077	-0.00	-21.21	21.21	775.00	697.50	1.08	1.00	20.31	264.96	264.96
Dsgn. L = 3.67 ft	3	0.030	0.012	-0.00	-21.21	21.21	775.00	697.50	1.27	1.00	3.22	264.96	264.96
Dsgn. L = 4.06 ft	3	0.025	0.011	-0.00	-17.62	17.62	775.00	697.50	1.23	1.00	2.84	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination			Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
	Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.96 ft	3		0.065	0.027	-0.00	-45.00	45.00	775.00	697.50	1.34	1.00	7.13	264.96	264.96
Dsgn. L = 2.80 ft	3		0.112	0.056	-0.00	-77.97	77.97	775.00	697.50	1.20	1.00	14.83	264.96	264.96
Dsgn. L = 1.22 ft	4		0.112	0.056	-0.00	-77.97	77.97	775.00	697.50	1.00	1.00	14.83	264.96	264.96
Dsgn. L = 4.01 ft	4		0.086	0.055	-0.00	-59.99	59.99	775.00	697.50	1.00	1.00	14.70	264.96	264.96
Dsgn. L = 4.01 ft	4		0.029	0.037	-0.00	-20.03	20.03	775.00	697.50	1.00	1.00	9.71	264.96	264.96
Dsgn. L = 1.51 ft	4		0.000	0.018		-0.14	0.14	775.00	697.50	1.00	1.00	4.73	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L = 1.74 ft	1		0.021	0.032		-14.76	14.76	775.00	697.50	1.00	1.00	8.58	264.96	264.96
Dsgn. L = 2.24 ft	2		0.029	0.060	20.09	-14.86	20.09	775.00	697.50	2.36	1.00	15.84	264.96	264.96
Dsgn. L = 3.96 ft	2		0.069	0.059	48.06	20.09	48.06	775.00	697.50	1.31	1.00	15.61	264.96	264.96
Dsgn. L = 4.06 ft	2		0.069	0.026	48.44	41.23	48.44	775.00	697.50	1.06	1.00	6.80	264.96	264.96
Dsgn. L = 3.96 ft	2		0.059	0.041	41.23	-0.88	41.23	775.00	697.50	1.65	1.00	10.84	264.96	264.96
Dsgn. L = 0.29 ft	2		0.009	0.073	-0.00	-6.13	6.13	775.00	697.50	1.32	1.00	19.27	264.96	264.96
Dsgn. L = 3.67 ft	3		0.020	0.009	-0.00	-14.10	14.10	775.00	697.50	1.31	1.00	2.36	264.96	264.96
Dsgn. L = 4.06 ft	3		0.061	0.028	-0.00	-42.75	42.75	775.00	697.50	1.39	1.00	7.35	264.96	264.96
Dsgn. L = 3.96 ft	3		0.130	0.047	-0.00	-90.74	90.74	775.00	697.50	1.28	1.00	12.33	264.96	264.96
Dsgn. L = 2.80 ft	3		0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.16	1.00	26.32	264.96	264.96
Dsgn. L = 1.22 ft	4		0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.00	1.00	26.32	264.96	264.96
Dsgn. L = 4.01 ft	4		0.152	0.099	-0.00	-106.31	106.31	775.00	697.50	1.00	1.00	26.19	264.96	264.96
Dsgn. L = 4.01 ft	4		0.051	0.066	-0.00	-35.49	35.49	775.00	697.50	1.00	1.00	17.37	264.96	264.96
Dsgn. L = 1.51 ft	4		0.000	0.032		-0.16	0.16	775.00	697.50	1.00	1.00	8.56	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L = 1.74 ft	1		0.021	0.032		-14.76	14.76	775.00	697.50	1.00	1.00	8.58	264.96	264.96
Dsgn. L = 2.24 ft	2		0.023	0.053	15.91	-14.86	15.91	775.00	697.50	2.12	1.00	13.95	264.96	264.96
Dsgn. L = 3.96 ft	2		0.052	0.052	36.41	15.91	36.41	775.00	697.50	1.29	1.00	13.72	264.96	264.96
Dsgn. L = 4.06 ft	2		0.052	0.019	36.60	21.92	36.60	775.00	697.50	1.18	1.00	4.91	264.96	264.96
Dsgn. L = 3.96 ft	2		0.040	0.048	21.92	-27.65	27.65	775.00	697.50	2.31	1.00	12.72	264.96	264.96
Dsgn. L = 0.29 ft	2		0.048	0.080	-0.00	-33.44	33.44	775.00	697.50	1.05	1.00	21.15	264.96	264.96
Dsgn. L = 3.67 ft	3		0.048	0.036	0.43	-33.44	33.44	775.00	697.50	1.67	1.00	9.41	264.96	264.96
Dsgn. L = 4.06 ft	3		0.004	0.034	2.78	0.43	2.78	775.00	697.50	1.25	1.00	9.03	264.96	264.96
Dsgn. L = 3.96 ft	3		0.044	0.032	2.78	-30.35	30.35	775.00	697.50	1.83	1.00	8.60	264.96	264.96
Dsgn. L = 2.80 ft	3		0.112	0.065	-0.00	-77.97	77.97	775.00	697.50	1.32	1.00	17.29	264.96	264.96
Dsgn. L = 1.22 ft	4		0.112	0.056	-0.00	-77.97	77.97	775.00	697.50	1.00	1.00	14.83	264.96	264.96
Dsgn. L = 4.01 ft	4		0.086	0.055	-0.00	-59.99	59.99	775.00	697.50	1.00	1.00	14.70	264.96	264.96
Dsgn. L = 4.01 ft	4		0.029	0.037	-0.00	-20.03	20.03	775.00	697.50	1.00	1.00	9.71	264.96	264.96
Dsgn. L = 1.51 ft	4		0.000	0.018		-0.14	0.14	775.00	697.50	1.00	1.00	4.73	264.96	264.96
<b>+1.20D+L+1.60S+1.60H, LL Com</b>														
Dsgn. L = 1.74 ft	1		0.021	0.032		-14.76	14.76	775.00	697.50	1.00	1.00	8.58	264.96	264.96
Dsgn. L = 2.24 ft	2		0.026	0.057	18.22	-14.86	18.22	775.00	697.50	2.30	1.00	14.99	264.96	264.96
Dsgn. L = 3.96 ft	2		0.061	0.056	42.84	18.22	42.84	775.00	697.50	1.30	1.00	14.76	264.96	264.96
Dsgn. L = 4.06 ft	2		0.062	0.022	43.14	32.58	43.14	775.00	697.50	1.10	1.00	5.95	264.96	264.96
Dsgn. L = 3.96 ft	2		0.047	0.044	32.58	-12.87	32.58	775.00	697.50	2.14	1.00	11.68	264.96	264.96
Dsgn. L = 0.29 ft	2		0.026	0.076	-0.00	-18.36	18.36	775.00	697.50	1.09	1.00	20.11	264.96	264.96
Dsgn. L = 3.67 ft	3		0.026	0.016	-0.00	-18.36	18.36	775.00	697.50	1.48	1.00	4.21	264.96	264.96
Dsgn. L = 4.06 ft	3		0.032	0.019	-0.00	-22.35	22.35	775.00	697.50	1.56	1.00	4.99	264.96	264.96
Dsgn. L = 3.96 ft	3		0.109	0.052	-0.00	-76.10	76.10	775.00	697.50	1.41	1.00	13.80	264.96	264.96
Dsgn. L = 2.80 ft	3		0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.22	1.00	26.32	264.96	264.96
Dsgn. L = 1.22 ft	4		0.198	0.099	-0.00	-138.29	138.29	775.00	697.50	1.00	1.00	26.32	264.96	264.96
Dsgn. L = 4.01 ft	4		0.152	0.099	-0.00	-106.31	106.31	775.00	697.50	1.00	1.00	26.19	264.96	264.96
Dsgn. L = 4.01 ft	4		0.051	0.066	-0.00	-35.49	35.49	775.00	697.50	1.00	1.00	17.37	264.96	264.96
Dsgn. L = 1.51 ft	4		0.000	0.032		-0.16	0.16	775.00	697.50	1.00	1.00	8.56	264.96	264.96
<b>+1.20D+1.60S+0.50W+1.60H</b>														
Dsgn. L = 1.74 ft	1		0.012	0.018		-8.10	8.10	775.00	697.50	1.00	1.00	4.75	264.96	264.96
Dsgn. L = 2.24 ft	2		0.015	0.032	10.41	-8.16	10.41	775.00	697.50	2.36	1.00	8.47	264.96	264.96
Dsgn. L = 3.96 ft	2		0.035	0.031	24.25	10.41	24.25	775.00	697.50	1.29	1.00	8.24	264.96	264.96
Dsgn. L = 4.06 ft	2		0.035	0.012	24.41	18.35	24.41	775.00	697.50	1.10	1.00	3.26	264.96	264.96
Dsgn. L = 3.96 ft	2		0.026	0.025	18.35	-7.44	18.35	775.00	697.50	2.13	1.00	6.72	264.96	264.96
Dsgn. L = 0.29 ft	2		0.015	0.043	-0.00	-10.53	10.53	775.00	697.50	1.09	1.00	11.32	264.96	264.96
Dsgn. L = 3.67 ft	3		0.015	0.009	-0.00	-10.53	10.53	775.00	697.50	1.48	1.00	2.48	264.96	264.96
Dsgn. L = 4.06 ft	3		0.018	0.011	-0.00	-12.63	12.63	775.00	697.50	1.56	1.00	2.89	264.96	264.96
Dsgn. L = 3.96 ft	3		0.062	0.030	-0.00	-42.93	42.93	775.00	697.50	1.42	1.00	7.87	264.96	264.96
Dsgn. L = 2.80 ft	3		0.112	0.056	-0.00	-77.97	77.97	775.00	697.50	1.22	1.00	14.83	264.96	264.96
Dsgn. L = 1.22 ft	4		0.112	0.056	-0.00	-77.97	77.97	775.00	697.50	1.00	1.00	14.83	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	4	0.086	0.055	-0.00	-59.99	59.99	775.00	697.50	1.00	1.00	14.70	264.96	264.96
Dsgn. L = 4.01 ft	4	0.029	0.037	-0.00	-20.03	20.03	775.00	697.50	1.00	1.00	9.71	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.018		-0.14	0.14	775.00	697.50	1.00	1.00	4.73	264.96	264.96
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.014	0.026	9.59	-5.47	9.59	775.00	697.50	2.30	1.00	6.89	264.96	264.96
Dsgn. L = 3.96 ft	2	0.033	0.025	23.23	9.59	23.23	775.00	697.50	1.30	1.00	6.66	264.96	264.96
Dsgn. L = 4.06 ft	2	0.034	0.012	23.58	23.23	23.58	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 3.96 ft	2	0.033	0.014	23.30	9.52	23.30	775.00	697.50	1.29	1.00	3.68	264.96	264.96
Dsgn. L = 0.29 ft	2	0.014	0.025	9.52	7.69	9.52	775.00	697.50	1.11	1.00	6.75	264.96	264.96
Dsgn. L = 3.67 ft	3	0.011	0.014	7.69	-5.54	7.69	775.00	697.50	2.18	1.00	3.79	264.96	264.96
Dsgn. L = 4.06 ft	3	0.049	0.027	-0.00	-33.87	33.87	775.00	697.50	1.53	1.00	7.25	264.96	264.96
Dsgn. L = 3.96 ft	3	0.108	0.040	-0.00	-75.38	75.38	775.00	697.50	1.30	1.00	10.69	264.96	264.96
Dsgn. L = 2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.16	1.00	21.71	264.96	264.96
Dsgn. L = 1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
Dsgn. L = 4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
Dsgn. L = 4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.026		-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.008	0.019	5.40	-5.47	5.47	775.00	697.50	2.04	1.00	5.01	264.96	264.96
Dsgn. L = 3.96 ft	2	0.017	0.018	11.58	5.40	11.58	775.00	697.50	1.26	1.00	4.78	264.96	264.96
Dsgn. L = 4.06 ft	2	0.017	0.008	11.60	4.00	11.60	775.00	697.50	1.32	1.00	2.12	264.96	264.96
Dsgn. L = 3.96 ft	2	0.025	0.021	4.00	-17.25	17.25	775.00	697.50	2.05	1.00	5.57	264.96	264.96
Dsgn. L = 0.29 ft	2	0.028	0.033	-0.00	-19.63	19.63	775.00	697.50	1.04	1.00	8.63	264.96	264.96
Dsgn. L = 3.67 ft	3	0.028	0.030	9.00	-19.63	19.63	775.00	697.50	2.18	1.00	7.98	264.96	264.96
Dsgn. L = 4.06 ft	3	0.017	0.029	11.66	9.00	11.66	775.00	697.50	1.07	1.00	7.60	264.96	264.96
Dsgn. L = 3.96 ft	3	0.021	0.026	11.66	-14.99	14.99	775.00	697.50	2.32	1.00	6.96	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.053	-0.00	-53.78	53.78	775.00	697.50	1.41	1.00	14.11	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.011	0.023	7.72	-5.47	7.72	775.00	697.50	2.34	1.00	6.05	264.96	264.96
Dsgn. L = 3.96 ft	2	0.026	0.022	18.01	7.72	18.01	775.00	697.50	1.29	1.00	5.82	264.96	264.96
Dsgn. L = 4.06 ft	2	0.026	0.009	18.14	14.66	18.14	775.00	697.50	1.07	1.00	2.37	264.96	264.96
Dsgn. L = 3.96 ft	2	0.021	0.017	14.66	-2.47	14.66	775.00	697.50	1.81	1.00	4.53	264.96	264.96
Dsgn. L = 0.29 ft	2	0.007	0.029	-0.00	-4.55	4.55	775.00	697.50	1.15	1.00	7.59	264.96	264.96
Dsgn. L = 3.67 ft	3	0.007	0.010	4.97	-4.55	4.97	775.00	697.50	2.20	1.00	2.78	264.96	264.96
Dsgn. L = 4.06 ft	3	0.019	0.018	5.07	-13.47	13.47	775.00	697.50	2.18	1.00	4.88	264.96	264.96
Dsgn. L = 3.96 ft	3	0.087	0.046	-0.00	-60.73	60.73	775.00	697.50	1.48	1.00	12.16	264.96	264.96
Dsgn. L = 2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.23	1.00	21.71	264.96	264.96
Dsgn. L = 1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
Dsgn. L = 4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
Dsgn. L = 4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.026		-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.029	0.044	20.07	-5.47	20.07	775.00	697.50	2.22	1.00	11.60	264.96	264.96
Dsgn. L = 3.96 ft	2	0.053	0.043	37.30	20.07	37.30	775.00	697.50	1.23	1.00	11.37	264.96	264.96
Dsgn. L = 4.06 ft	2	0.054	0.015	37.47	25.65	37.47	775.00	697.50	1.13	1.00	4.10	264.96	264.96
Dsgn. L = 3.96 ft	2	0.037	0.039	25.65	-14.99	25.65	775.00	697.50	2.17	1.00	10.46	264.96	264.96
Dsgn. L = 0.29 ft	2	0.028	0.066	-0.00	-19.74	19.74	775.00	697.50	1.07	1.00	17.36	264.96	264.96
Dsgn. L = 3.67 ft	3	0.028	0.010	-0.00	-19.74	19.74	775.00	697.50	1.23	1.00	2.64	264.96	264.96
Dsgn. L = 4.06 ft	3	0.021	0.009	-0.00	-14.50	14.50	775.00	697.50	1.14	1.00	2.26	264.96	264.96
Dsgn. L = 3.96 ft	3	0.046	0.018	-0.00	-32.02	32.02	775.00	697.50	1.30	1.00	4.64	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.19	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.032	0.048	22.38	-5.47	22.38	775.00	697.50	2.21	1.00	12.64	264.96	264.96
Dsgn. L = 3.96 ft	2	0.063	0.047	43.74	22.38	43.74	775.00	697.50	1.24	1.00	12.41	264.96	264.96
Dsgn. L = 4.06 ft	2	0.063	0.019	44.00	36.30	44.00	775.00	697.50	1.07	1.00	5.14	264.96	264.96
Dsgn. L = 3.96 ft	2	0.052	0.036	36.30	-0.21	36.30	775.00	697.50	1.64	1.00	9.42	264.96	264.96
Dsgn. L = 0.29 ft	2	0.007	0.062	-0.00	-4.66	4.66	775.00	697.50	1.37	1.00	16.32	264.96	264.96
Dsgn. L = 3.67 ft	3	0.021	0.011	-0.00	-14.76	14.76	775.00	697.50	1.40	1.00	2.94	264.96	264.96
Dsgn. L = 4.06 ft	3	0.057	0.024	-0.00	-39.63	39.63	775.00	697.50	1.35	1.00	6.39	264.96	264.96
Dsgn. L = 3.96 ft	3	0.111	0.037	-0.00	-77.77	77.77	775.00	697.50	1.26	1.00	9.84	264.96	264.96
Dsgn. L = 2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.15	1.00	21.71	264.96	264.96
Dsgn. L = 1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
Dsgn. L = 4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
Dsgn. L = 4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.026		-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.026	0.041	18.19	-5.47	18.19	775.00	697.50	2.23	1.00	10.76	264.96	264.96
Dsgn. L = 3.96 ft	2	0.046	0.040	32.08	18.19	32.08	775.00	697.50	1.21	1.00	10.53	264.96	264.96
Dsgn. L = 4.06 ft	2	0.046	0.015	32.17	17.00	32.17	775.00	697.50	1.22	1.00	4.03	264.96	264.96
Dsgn. L = 3.96 ft	2	0.039	0.043	17.00	-26.98	26.98	775.00	697.50	2.27	1.00	11.31	264.96	264.96
Dsgn. L = 0.29 ft	2	0.046	0.069	-0.00	-31.98	31.98	775.00	697.50	1.05	1.00	18.20	264.96	264.96
Dsgn. L = 3.67 ft	3	0.046	0.033	-0.00	-31.98	31.98	775.00	697.50	1.65	1.00	8.83	264.96	264.96
Dsgn. L = 4.06 ft	3	0.008	0.032	5.90	-0.23	5.90	775.00	697.50	1.56	1.00	8.45	264.96	264.96
Dsgn. L = 3.96 ft	3	0.025	0.023	5.90	-17.38	17.38	775.00	697.50	2.21	1.00	6.11	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.050	-0.00	-53.78	53.78	775.00	697.50	1.37	1.00	13.26	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.008	0.012		-5.43	5.43	775.00	697.50	1.00	1.00	3.22	264.96	264.96
Dsgn. L = 2.24 ft	2	0.029	0.045	20.50	-5.47	20.50	775.00	697.50	2.22	1.00	11.80	264.96	264.96
Dsgn. L = 3.96 ft	2	0.055	0.044	38.52	20.50	38.52	775.00	697.50	1.23	1.00	11.57	264.96	264.96
Dsgn. L = 4.06 ft	2	0.055	0.016	38.70	27.66	38.70	775.00	697.50	1.12	1.00	4.29	264.96	264.96
Dsgn. L = 3.96 ft	2	0.040	0.039	27.66	-12.20	27.66	775.00	697.50	2.15	1.00	10.27	264.96	264.96
Dsgn. L = 0.29 ft	2	0.024	0.065	-0.00	-16.90	16.90	775.00	697.50	1.09	1.00	17.16	264.96	264.96
Dsgn. L = 3.67 ft	3	0.024	0.014	-0.00	-16.90	16.90	775.00	697.50	1.43	1.00	3.63	264.96	264.96
Dsgn. L = 4.06 ft	3	0.028	0.015	-0.00	-19.24	19.24	775.00	697.50	1.50	1.00	4.03	264.96	264.96
Dsgn. L = 3.96 ft	3	0.090	0.043	-0.00	-63.12	63.12	775.00	697.50	1.40	1.00	11.31	264.96	264.96
Dsgn. L = 2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.22	1.00	21.71	264.96	264.96
Dsgn. L = 1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
Dsgn. L = 4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
Dsgn. L = 4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.026		-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.017	0.027		-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96
Dsgn. L = 2.24 ft	2	0.017	0.027	1.86	-12.17	12.17	775.00	697.50	1.68	1.00	7.05	264.96	264.96
Dsgn. L = 3.96 ft	2	0.020	0.023	13.67	1.86	13.67	775.00	697.50	1.52	1.00	6.20	264.96	264.96
Dsgn. L = 4.06 ft	2	0.020	0.010	13.83	11.86	13.83	775.00	697.50	1.05	1.00	2.75	264.96	264.96
Dsgn. L = 3.96 ft	2	0.017	0.016	11.86	-3.75	11.86	775.00	697.50	2.01	1.00	4.15	264.96	264.96
Dsgn. L = 0.29 ft	2	0.008	0.027	-0.00	-5.71	5.71	775.00	697.50	1.11	1.00	7.21	264.96	264.96
Dsgn. L = 3.67 ft	3	0.008	0.006	-0.00	-5.71	5.71	775.00	697.50	1.66	1.00	1.67	264.96	264.96
Dsgn. L = 4.06 ft	3	0.011	0.008	-0.00	-7.95	7.95	775.00	697.50	1.73	1.00	2.16	264.96	264.96
Dsgn. L = 3.96 ft	3	0.042	0.021	-0.00	-29.31	29.31	775.00	697.50	1.44	1.00	5.61	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.22	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012		-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.017	0.027		-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96
Dsgn. L = 2.24 ft	2	0.017	0.028	4.18	-12.17	12.17	775.00	697.50	1.89	1.00	7.47	264.96	264.96



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 3.96 ft	2	0.029	0.027	20.10	4.18	20.10	775.00	697.50	1.46	1.00	7.24	264.96	264.96
Dsgn. L = 4.06 ft	2	0.032	0.014	22.52	20.10	22.52	775.00	697.50	1.04	1.00	3.79	264.96	264.96
Dsgn. L = 3.96 ft	2	0.032	0.012	22.52	11.03	22.52	775.00	697.50	1.24	1.00	3.11	264.96	264.96
Dsgn. L = 0.29 ft	2	0.016	0.023	11.03	9.37	11.03	775.00	697.50	1.08	1.00	6.17	264.96	264.96
Dsgn. L = 3.67 ft	3	0.013	0.015	9.37	-4.29	9.37	775.00	697.50	2.14	1.00	3.91	264.96	264.96
Dsgn. L = 4.06 ft	3	0.047	0.028	-0.00	-33.09	33.09	775.00	697.50	1.56	1.00	7.36	264.96	264.96
Dsgn. L = 3.96 ft	3	0.108	0.041	-0.00	-75.06	75.06	775.00	697.50	1.30	1.00	10.81	264.96	264.96
Dsgn. L = 2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.16	1.00	21.71	264.96	264.96
Dsgn. L = 1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
Dsgn. L = 4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
Dsgn. L = 4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.026	-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.017	0.027	-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.017	0.027	-0.00	-12.17	12.17	775.00	697.50	1.54	1.00	7.05	264.96	264.96
Dsgn. L = 3.96 ft	2	0.012	0.020	8.45	-0.01	8.45	775.00	697.50	1.64	1.00	5.35	264.96	264.96
Dsgn. L = 4.06 ft	2	0.012	0.007	8.53	3.22	8.53	775.00	697.50	1.29	1.00	1.91	264.96	264.96
Dsgn. L = 3.96 ft	2	0.023	0.019	3.22	-15.74	15.74	775.00	697.50	2.01	1.00	4.99	264.96	264.96
Dsgn. L = 0.29 ft	2	0.026	0.030	-0.00	-17.95	17.95	775.00	697.50	1.04	1.00	8.06	264.96	264.96
Dsgn. L = 3.67 ft	3	0.026	0.030	10.25	-17.95	17.95	775.00	697.50	2.20	1.00	7.87	264.96	264.96
Dsgn. L = 4.06 ft	3	0.018	0.028	12.44	10.25	12.44	775.00	697.50	1.05	1.00	7.49	264.96	264.96
Dsgn. L = 3.96 ft	3	0.021	0.027	12.44	-14.66	14.66	775.00	697.50	2.33	1.00	7.07	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.054	-0.00	-53.78	53.78	775.00	697.50	1.41	1.00	14.23	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.017	0.027	-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.017	0.027	2.30	-12.17	12.17	775.00	697.50	1.72	1.00	7.05	264.96	264.96
Dsgn. L = 3.96 ft	2	0.021	0.024	14.88	2.30	14.88	775.00	697.50	1.50	1.00	6.39	264.96	264.96
Dsgn. L = 4.06 ft	2	0.022	0.011	15.07	13.87	15.07	775.00	697.50	1.02	1.00	2.95	264.96	264.96
Dsgn. L = 3.96 ft	2	0.020	0.015	13.87	-0.96	13.87	775.00	697.50	1.69	1.00	3.95	264.96	264.96
Dsgn. L = 0.29 ft	2	0.004	0.026	-0.00	-2.87	2.87	775.00	697.50	1.23	1.00	7.02	264.96	264.96
Dsgn. L = 3.67 ft	3	0.009	0.010	6.23	-2.87	6.23	775.00	697.50	2.12	1.00	2.67	264.96	264.96
Dsgn. L = 4.06 ft	3	0.018	0.019	6.31	-12.69	12.69	775.00	697.50	2.21	1.00	5.00	264.96	264.96
Dsgn. L = 3.96 ft	3	0.087	0.046	-0.00	-60.41	60.41	775.00	697.50	1.49	1.00	12.27	264.96	264.96
Dsgn. L = 2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.23	1.00	21.71	264.96	264.96
Dsgn. L = 1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
Dsgn. L = 4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
Dsgn. L = 4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.026	-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.017	0.027	-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.021	0.046	14.65	-12.17	14.65	775.00	697.50	2.28	1.00	12.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.049	0.045	34.17	14.65	34.17	775.00	697.50	1.30	1.00	11.95	264.96	264.96
Dsgn. L = 4.06 ft	2	0.049	0.018	34.40	24.86	34.40	775.00	697.50	1.11	1.00	4.68	264.96	264.96
Dsgn. L = 3.96 ft	2	0.036	0.037	24.86	-13.48	24.86	775.00	697.50	2.16	1.00	9.88	264.96	264.96
Dsgn. L = 0.29 ft	2	0.026	0.063	-0.00	-18.07	18.07	775.00	697.50	1.08	1.00	16.78	264.96	264.96
Dsgn. L = 3.67 ft	3	0.026	0.010	-0.00	-18.07	18.07	775.00	697.50	1.24	1.00	2.53	264.96	264.96
Dsgn. L = 4.06 ft	3	0.020	0.008	-0.00	-13.72	13.72	775.00	697.50	1.17	1.00	2.15	264.96	264.96
Dsgn. L = 3.96 ft	3	0.045	0.018	-0.00	-31.70	31.70	775.00	697.50	1.31	1.00	4.75	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.20	1.00	10.22	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.017	0.027	-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.024	0.050	16.96	-12.17	16.96	775.00	697.50	2.35	1.00	13.22	264.96	264.96
Dsgn. L = 3.96 ft	2	0.058	0.049	40.61	16.96	40.61	775.00	697.50	1.30	1.00	12.99	264.96	264.96
Dsgn. L = 4.06 ft	2	0.059	0.022	40.93	35.52	40.93	775.00	697.50	1.05	1.00	5.72	264.96	264.96
Dsgn. L = 3.96 ft	2	0.051	0.033	35.52	1.30	35.52	775.00	697.50	1.59	1.00	8.84	264.96	264.96



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 0.29 ft	2	0.004	0.059	1.30	-2.99	2.99	775.00	697.50	1.66	1.00	15.74	264.96	264.96
Dsgn. L = 3.67 ft	3	0.019	0.012	-0.00	-13.51	13.51	775.00	697.50	1.48	1.00	3.05	264.96	264.96
Dsgn. L = 4.06 ft	3	0.056	0.025	-0.00	-38.85	38.85	775.00	697.50	1.37	1.00	6.51	264.96	264.96
Dsgn. L = 3.96 ft	3	0.111	0.038	-0.00	-77.44	77.44	775.00	697.50	1.26	1.00	9.95	264.96	264.96
Dsgn. L = 2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.15	1.00	21.71	264.96	264.96
Dsgn. L = 1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
Dsgn. L = 4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
Dsgn. L = 4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.026	-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.017	0.027	-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.018	0.043	12.77	-12.17	12.77	775.00	697.50	2.10	1.00	11.34	264.96	264.96
Dsgn. L = 3.96 ft	2	0.042	0.042	28.95	12.77	28.95	775.00	697.50	1.29	1.00	11.11	264.96	264.96
Dsgn. L = 4.06 ft	2	0.042	0.014	29.09	16.22	29.09	775.00	697.50	1.20	1.00	3.83	264.96	264.96
Dsgn. L = 3.96 ft	2	0.037	0.040	16.22	-25.47	25.47	775.00	697.50	2.27	1.00	10.73	264.96	264.96
Dsgn. L = 0.29 ft	2	0.043	0.067	-0.00	-30.30	30.30	775.00	697.50	1.05	1.00	17.62	264.96	264.96
Dsgn. L = 3.67 ft	3	0.043	0.033	1.02	-30.30	30.30	775.00	697.50	1.70	1.00	8.72	264.96	264.96
Dsgn. L = 4.06 ft	3	0.010	0.031	6.68	1.02	6.68	775.00	697.50	1.41	1.00	8.34	264.96	264.96
Dsgn. L = 3.96 ft	3	0.024	0.023	6.68	-17.05	17.05	775.00	697.50	2.22	1.00	6.22	264.96	264.96
Dsgn. L = 2.80 ft	3	0.077	0.050	-0.00	-53.78	53.78	775.00	697.50	1.38	1.00	13.38	264.96	264.96
Dsgn. L = 1.22 ft	4	0.077	0.039	-0.00	-53.78	53.78	775.00	697.50	1.00	1.00	10.22	264.96	264.96
Dsgn. L = 4.01 ft	4	0.059	0.038	-0.00	-41.41	41.41	775.00	697.50	1.00	1.00	10.09	264.96	264.96
Dsgn. L = 4.01 ft	4	0.020	0.025	-0.00	-13.83	13.83	775.00	697.50	1.00	1.00	6.64	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.012	-0.13	0.13	775.00	697.50	1.00	1.00	3.19	264.96	264.96	
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.017	0.027	-12.09	12.09	775.00	697.50	1.00	1.00	7.05	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.022	0.047	15.09	-12.17	15.09	775.00	697.50	2.32	1.00	12.38	264.96	264.96
Dsgn. L = 3.96 ft	2	0.051	0.046	35.39	15.09	35.39	775.00	697.50	1.30	1.00	12.15	264.96	264.96
Dsgn. L = 4.06 ft	2	0.051	0.018	35.63	26.87	35.63	775.00	697.50	1.10	1.00	4.87	264.96	264.96
Dsgn. L = 3.96 ft	2	0.039	0.037	26.87	-10.69	26.87	775.00	697.50	2.14	1.00	9.69	264.96	264.96
Dsgn. L = 0.29 ft	2	0.022	0.063	-0.00	-15.22	15.22	775.00	697.50	1.09	1.00	16.58	264.96	264.96
Dsgn. L = 3.67 ft	3	0.022	0.013	-0.00	-15.22	15.22	775.00	697.50	1.48	1.00	3.52	264.96	264.96
Dsgn. L = 4.06 ft	3	0.026	0.016	-0.00	-18.45	18.45	775.00	697.50	1.56	1.00	4.15	264.96	264.96
Dsgn. L = 3.96 ft	3	0.090	0.043	-0.00	-62.80	62.80	775.00	697.50	1.41	1.00	11.42	264.96	264.96
Dsgn. L = 2.80 ft	3	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.22	1.00	21.71	264.96	264.96
Dsgn. L = 1.22 ft	4	0.164	0.082	-0.00	-114.10	114.10	775.00	697.50	1.00	1.00	21.71	264.96	264.96
Dsgn. L = 4.01 ft	4	0.126	0.081	-0.00	-87.73	87.73	775.00	697.50	1.00	1.00	21.58	264.96	264.96
Dsgn. L = 4.01 ft	4	0.042	0.054	-0.00	-29.29	29.29	775.00	697.50	1.00	1.00	14.30	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.026	-0.15	0.15	775.00	697.50	1.00	1.00	7.02	264.96	264.96	
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.009	0.014	-6.27	6.27	775.00	697.50	1.00	1.00	3.70	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.015	0.029	10.57	-6.31	10.57	775.00	697.50	2.31	1.00	7.71	264.96	264.96
Dsgn. L = 3.96 ft	2	0.037	0.028	25.56	10.57	25.56	775.00	697.50	1.30	1.00	7.48	264.96	264.96
Dsgn. L = 4.06 ft	2	0.037	0.013	25.79	25.09	25.79	775.00	697.50	1.01	1.00	3.55	264.96	264.96
Dsgn. L = 3.96 ft	2	0.036	0.016	25.09	8.84	25.09	775.00	697.50	1.33	1.00	4.31	264.96	264.96
Dsgn. L = 0.29 ft	2	0.013	0.030	8.84	6.71	8.84	775.00	697.50	1.14	1.00	7.85	264.96	264.96
Dsgn. L = 3.67 ft	3	0.010	0.013	6.71	-5.72	6.71	775.00	697.50	2.20	1.00	3.57	264.96	264.96
Dsgn. L = 4.06 ft	3	0.050	0.028	-0.00	-35.09	35.09	775.00	697.50	1.53	1.00	7.51	264.96	264.96
Dsgn. L = 3.96 ft	3	0.114	0.043	-0.00	-79.54	79.54	775.00	697.50	1.30	1.00	11.43	264.96	264.96
Dsgn. L = 2.80 ft	3	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.16	1.00	23.15	264.96	264.96
Dsgn. L = 1.22 ft	4	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.00	1.00	23.15	264.96	264.96
Dsgn. L = 4.01 ft	4	0.134	0.087	-0.00	-93.54	93.54	775.00	697.50	1.00	1.00	23.02	264.96	264.96
Dsgn. L = 4.01 ft	4	0.045	0.058	-0.00	-31.22	31.22	775.00	697.50	1.00	1.00	15.26	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.028	-0.15	0.15	775.00	697.50	1.00	1.00	7.50	264.96	264.96	
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.009	0.014	-6.27	6.27	775.00	697.50	1.00	1.00	3.70	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.009	0.022	6.38	-6.31	6.38	775.00	697.50	2.06	1.00	5.82	264.96	264.96
Dsgn. L = 3.96 ft	2	0.020	0.021	13.91	6.38	13.91	775.00	697.50	1.26	1.00	5.59	264.96	264.96
Dsgn. L = 4.06 ft	2	0.020	0.009	13.95	5.78	13.95	775.00	697.50	1.27	1.00	2.27	264.96	264.96
Dsgn. L = 3.96 ft	2	0.026	0.023	5.78	-17.93	17.93	775.00	697.50	2.20	1.00	6.19	264.96	264.96
Dsgn. L = 0.29 ft	2	0.030	0.037	-0.00	-20.61	20.61	775.00	697.50	1.04	1.00	9.74	264.96	264.96
Dsgn. L = 3.67 ft	3	0.030	0.031	8.81	-20.61	20.61	775.00	697.50	2.17	1.00	8.20	264.96	264.96
Dsgn. L = 4.06 ft	3	0.015	0.030	10.44	8.81	10.44	775.00	697.50	1.03	1.00	7.82	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
	Dsgn. L = 3.96 ft	3	0.027	0.029	10.44	-19.14	19.14	775.00	697.50	2.25	1.00	7.70	264.96	264.96
	Dsgn. L = 2.80 ft	3	0.088	0.058	-0.00	-61.34	61.34	775.00	697.50	1.38	1.00	15.34	264.96	264.96
	Dsgn. L = 1.22 ft	4	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.00	1.00	11.66	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.068	0.044	-0.00	-47.21	47.21	775.00	697.50	1.00	1.00	11.53	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.023	0.029	-0.00	-15.76	15.76	775.00	697.50	1.00	1.00	7.60	264.96	264.96
	Dsgn. L = 1.51 ft	4	0.000	0.014		-0.13	0.13	775.00	697.50	1.00	1.00	3.67	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 1.74 ft	1	0.009	0.014		-6.27	6.27	775.00	697.50	1.00	1.00	3.70	264.96	264.96
	Dsgn. L = 2.24 ft	2	0.012	0.026	8.70	-6.31	8.70	775.00	697.50	2.34	1.00	6.86	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.029	0.025	20.34	8.70	20.34	775.00	697.50	1.29	1.00	6.63	264.96	264.96
	Dsgn. L = 4.06 ft	2	0.029	0.010	20.48	16.44	20.48	775.00	697.50	1.07	1.00	2.71	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.024	0.019	16.44	-3.15	16.44	775.00	697.50	1.84	1.00	5.15	264.96	264.96
	Dsgn. L = 0.29 ft	2	0.008	0.033	-0.00	-5.53	5.53	775.00	697.50	1.14	1.00	8.70	264.96	264.96
	Dsgn. L = 3.67 ft	3	0.008	0.011	4.79	-5.53	5.53	775.00	697.50	2.30	1.00	3.00	264.96	264.96
	Dsgn. L = 4.06 ft	3	0.021	0.019	4.89	-14.69	14.69	775.00	697.50	2.17	1.00	5.15	264.96	264.96
	Dsgn. L = 3.96 ft	3	0.093	0.049	-0.00	-64.89	64.89	775.00	697.50	1.47	1.00	12.90	264.96	264.96
	Dsgn. L = 2.80 ft	3	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.23	1.00	23.15	264.96	264.96
	Dsgn. L = 1.22 ft	4	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.00	1.00	23.15	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.134	0.087	-0.00	-93.54	93.54	775.00	697.50	1.00	1.00	23.02	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.045	0.058	-0.00	-31.22	31.22	775.00	697.50	1.00	1.00	15.26	264.96	264.96
	Dsgn. L = 1.51 ft	4	0.000	0.028		-0.15	0.15	775.00	697.50	1.00	1.00	7.50	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 1.74 ft	1	0.009	0.014		-6.27	6.27	775.00	697.50	1.00	1.00	3.70	264.96	264.96
	Dsgn. L = 2.24 ft	2	0.030	0.047	21.05	-6.31	21.05	775.00	697.50	2.23	1.00	12.42	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.057	0.046	39.63	21.05	39.63	775.00	697.50	1.23	1.00	12.19	264.96	264.96
	Dsgn. L = 4.06 ft	2	0.057	0.017	39.82	27.43	39.82	775.00	697.50	1.13	1.00	4.44	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.039	0.042	27.43	-15.67	27.43	775.00	697.50	2.17	1.00	11.08	264.96	264.96
	Dsgn. L = 0.29 ft	2	0.030	0.070	-0.00	-20.72	20.72	775.00	697.50	1.07	1.00	18.46	264.96	264.96
	Dsgn. L = 3.67 ft	3	0.030	0.011	-0.00	-20.72	20.72	775.00	697.50	1.24	1.00	2.86	264.96	264.96
	Dsgn. L = 4.06 ft	3	0.023	0.009	-0.00	-15.72	15.72	775.00	697.50	1.16	1.00	2.48	264.96	264.96
	Dsgn. L = 3.96 ft	3	0.052	0.020	-0.00	-36.18	36.18	775.00	697.50	1.31	1.00	5.38	264.96	264.96
	Dsgn. L = 2.80 ft	3	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.20	1.00	11.66	264.96	264.96
	Dsgn. L = 1.22 ft	4	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.00	1.00	11.66	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.068	0.044	-0.00	-47.21	47.21	775.00	697.50	1.00	1.00	11.53	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.023	0.029	-0.00	-15.76	15.76	775.00	697.50	1.00	1.00	7.60	264.96	264.96
	Dsgn. L = 1.51 ft	4	0.000	0.014		-0.13	0.13	775.00	697.50	1.00	1.00	3.67	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 1.74 ft	1	0.009	0.014		-6.27	6.27	775.00	697.50	1.00	1.00	3.70	264.96	264.96
	Dsgn. L = 2.24 ft	2	0.033	0.051	23.36	-6.31	23.36	775.00	697.50	2.22	1.00	13.46	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.066	0.050	46.07	23.36	46.07	775.00	697.50	1.25	1.00	13.23	264.96	264.96
	Dsgn. L = 4.06 ft	2	0.066	0.021	46.35	38.09	46.35	775.00	697.50	1.07	1.00	5.48	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.055	0.038	38.09	-0.89	38.09	775.00	697.50	1.65	1.00	10.04	264.96	264.96
	Dsgn. L = 0.29 ft	2	0.008	0.066	-0.00	-5.64	5.64	775.00	697.50	1.31	1.00	17.42	264.96	264.96
	Dsgn. L = 3.67 ft	3	0.021	0.010	-0.00	-14.95	14.95	775.00	697.50	1.35	1.00	2.72	264.96	264.96
	Dsgn. L = 4.06 ft	3	0.059	0.025	-0.00	-40.85	40.85	775.00	697.50	1.36	1.00	6.66	264.96	264.96
	Dsgn. L = 3.96 ft	3	0.117	0.040	-0.00	-81.92	81.92	775.00	697.50	1.26	1.00	10.58	264.96	264.96
	Dsgn. L = 2.80 ft	3	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.15	1.00	23.15	264.96	264.96
	Dsgn. L = 1.22 ft	4	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.00	1.00	23.15	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.134	0.087	-0.00	-93.54	93.54	775.00	697.50	1.00	1.00	23.02	264.96	264.96
	Dsgn. L = 4.01 ft	4	0.045	0.058	-0.00	-31.22	31.22	775.00	697.50	1.00	1.00	15.26	264.96	264.96
	Dsgn. L = 1.51 ft	4	0.000	0.028		-0.15	0.15	775.00	697.50	1.00	1.00	7.50	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>														
	Dsgn. L = 1.74 ft	1	0.009	0.014		-6.27	6.27	775.00	697.50	1.00	1.00	3.70	264.96	264.96
	Dsgn. L = 2.24 ft	2	0.027	0.044	19.17	-6.31	19.17	775.00	697.50	2.24	1.00	11.58	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.049	0.043	34.41	19.17	34.41	775.00	697.50	1.21	1.00	11.35	264.96	264.96
	Dsgn. L = 4.06 ft	2	0.049	0.016	34.51	18.78	34.51	775.00	697.50	1.21	1.00	4.17	264.96	264.96
	Dsgn. L = 3.96 ft	2	0.040	0.045	18.78	-27.66	27.66	775.00	697.50	2.28	1.00	11.93	264.96	264.96
	Dsgn. L = 0.29 ft	2	0.047	0.073	-0.00	-32.96	32.96	775.00	697.50	1.05	1.00	19.30	264.96	264.96
	Dsgn. L = 3.67 ft	3	0.047	0.034	-0.00	-32.96	32.96	775.00	697.50	1.65	1.00	9.05	264.96	264.96
	Dsgn. L = 4.06 ft	3	0.007	0.033	4.68	-0.41	4.68	775.00	697.50	1.57	1.00	8.67	264.96	264.96
	Dsgn. L = 3.96 ft	3	0.031	0.026	4.68	-21.53	21.53	775.00	697.50	2.03	1.00	6.85	264.96	264.96
	Dsgn. L = 2.80 ft	3	0.088	0.055	-0.00	-61.34	61.34	775.00	697.50	1.35	1.00	14.48	264.96	264.96
	Dsgn. L = 1.22 ft	4	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.00	1.00	11.66	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	4	0.068	0.044	-0.00	-47.21	47.21	775.00	697.50	1.00	1.00	11.53	264.96	264.96
Dsgn. L = 4.01 ft	4	0.023	0.029	-0.00	-15.76	15.76	775.00	697.50	1.00	1.00	7.60	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.014		-0.13	0.13	775.00	697.50	1.00	1.00	3.67	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.009	0.014		-6.27	6.27	775.00	697.50	1.00	1.00	3.70	264.96	264.96
Dsgn. L = 2.24 ft	2	0.031	0.048	21.48	-6.31	21.48	775.00	697.50	2.23	1.00	12.62	264.96	264.96
Dsgn. L = 3.96 ft	2	0.059	0.047	40.85	21.48	40.85	775.00	697.50	1.23	1.00	12.39	264.96	264.96
Dsgn. L = 4.06 ft	2	0.059	0.017	41.05	29.44	41.05	775.00	697.50	1.12	1.00	4.63	264.96	264.96
Dsgn. L = 3.96 ft	2	0.042	0.041	29.44	-12.88	29.44	775.00	697.50	2.15	1.00	10.89	264.96	264.96
Dsgn. L = 0.29 ft	2	0.026	0.069	-0.00	-17.88	17.88	775.00	697.50	1.09	1.00	18.26	264.96	264.96
Dsgn. L = 3.67 ft	3	0.026	0.015	-0.00	-17.88	17.88	775.00	697.50	1.43	1.00	3.85	264.96	264.96
Dsgn. L = 4.06 ft	3	0.029	0.016	-0.00	-20.45	20.45	775.00	697.50	1.51	1.00	4.29	264.96	264.96
Dsgn. L = 3.96 ft	3	0.096	0.045	-0.00	-67.28	67.28	775.00	697.50	1.40	1.00	12.05	264.96	264.96
Dsgn. L = 2.80 ft	3	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.22	1.00	23.15	264.96	264.96
Dsgn. L = 1.22 ft	4	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.00	1.00	23.15	264.96	264.96
Dsgn. L = 4.01 ft	4	0.134	0.087	-0.00	-93.54	93.54	775.00	697.50	1.00	1.00	23.02	264.96	264.96
Dsgn. L = 4.01 ft	4	0.045	0.058	-0.00	-31.22	31.22	775.00	697.50	1.00	1.00	15.26	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.028		-0.15	0.15	775.00	697.50	1.00	1.00	7.50	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.019	0.028		-12.93	12.93	775.00	697.50	1.00	1.00	7.53	264.96	264.96
Dsgn. L = 2.24 ft	2	0.019	0.028	2.84	-13.01	13.01	775.00	697.50	1.75	1.00	7.53	264.96	264.96
Dsgn. L = 3.96 ft	2	0.023	0.026	16.00	2.84	16.00	775.00	697.50	1.48	1.00	7.02	264.96	264.96
Dsgn. L = 4.06 ft	2	0.023	0.012	16.18	13.65	16.18	775.00	697.50	1.06	1.00	3.09	264.96	264.96
Dsgn. L = 3.96 ft	2	0.020	0.018	13.65	-4.43	13.65	775.00	697.50	2.03	1.00	4.77	264.96	264.96
Dsgn. L = 0.29 ft	2	0.010	0.031	-0.00	-6.70	6.70	775.00	697.50	1.11	1.00	8.31	264.96	264.96
Dsgn. L = 3.67 ft	3	0.010	0.007	-0.00	-6.70	6.70	775.00	697.50	1.63	1.00	1.89	264.96	264.96
Dsgn. L = 4.06 ft	3	0.013	0.009	-0.00	-9.17	9.17	775.00	697.50	1.71	1.00	2.42	264.96	264.96
Dsgn. L = 3.96 ft	3	0.048	0.024	-0.00	-33.47	33.47	775.00	697.50	1.43	1.00	6.35	264.96	264.96
Dsgn. L = 2.80 ft	3	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.22	1.00	11.66	264.96	264.96
Dsgn. L = 1.22 ft	4	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.00	1.00	11.66	264.96	264.96
Dsgn. L = 4.01 ft	4	0.068	0.044	-0.00	-47.21	47.21	775.00	697.50	1.00	1.00	11.53	264.96	264.96
Dsgn. L = 4.01 ft	4	0.023	0.029	-0.00	-15.76	15.76	775.00	697.50	1.00	1.00	7.60	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.014		-0.13	0.13	775.00	697.50	1.00	1.00	3.67	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.019	0.028		-12.93	12.93	775.00	697.50	1.00	1.00	7.53	264.96	264.96
Dsgn. L = 2.24 ft	2	0.019	0.031	5.15	-13.01	13.01	775.00	697.50	1.96	1.00	8.29	264.96	264.96
Dsgn. L = 3.96 ft	2	0.032	0.030	22.43	5.15	22.43	775.00	697.50	1.44	1.00	8.06	264.96	264.96
Dsgn. L = 4.06 ft	2	0.035	0.016	24.30	22.43	24.30	775.00	697.50	1.02	1.00	4.13	264.96	264.96
Dsgn. L = 3.96 ft	2	0.035	0.014	24.30	10.35	24.30	775.00	697.50	1.28	1.00	3.73	264.96	264.96
Dsgn. L = 0.29 ft	2	0.015	0.027	10.35	8.38	10.35	775.00	697.50	1.11	1.00	7.27	264.96	264.96
Dsgn. L = 3.67 ft	3	0.012	0.014	8.38	-4.47	8.38	775.00	697.50	2.15	1.00	3.69	264.96	264.96
Dsgn. L = 4.06 ft	3	0.049	0.029	-0.00	-34.31	34.31	775.00	697.50	1.56	1.00	7.62	264.96	264.96
Dsgn. L = 3.96 ft	3	0.114	0.044	-0.00	-79.21	79.21	775.00	697.50	1.31	1.00	11.55	264.96	264.96
Dsgn. L = 2.80 ft	3	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.16	1.00	23.15	264.96	264.96
Dsgn. L = 1.22 ft	4	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.00	1.00	23.15	264.96	264.96
Dsgn. L = 4.01 ft	4	0.134	0.087	-0.00	-93.54	93.54	775.00	697.50	1.00	1.00	23.02	264.96	264.96
Dsgn. L = 4.01 ft	4	0.045	0.058	-0.00	-31.22	31.22	775.00	697.50	1.00	1.00	15.26	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.028		-0.15	0.15	775.00	697.50	1.00	1.00	7.50	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.019	0.028		-12.93	12.93	775.00	697.50	1.00	1.00	7.53	264.96	264.96
Dsgn. L = 2.24 ft	2	0.019	0.028	0.97	-13.01	13.01	775.00	697.50	1.61	1.00	7.53	264.96	264.96
Dsgn. L = 3.96 ft	2	0.015	0.023	10.78	0.97	10.78	775.00	697.50	1.55	1.00	6.17	264.96	264.96
Dsgn. L = 4.06 ft	2	0.016	0.008	10.88	5.00	10.88	775.00	697.50	1.24	1.00	2.25	264.96	264.96
Dsgn. L = 3.96 ft	2	0.024	0.021	5.00	-16.42	16.42	775.00	697.50	2.19	1.00	5.61	264.96	264.96
Dsgn. L = 0.29 ft	2	0.027	0.035	-0.00	-18.93	18.93	775.00	697.50	1.04	1.00	9.16	264.96	264.96
Dsgn. L = 3.67 ft	3	0.027	0.031	10.06	-18.93	18.93	775.00	697.50	2.19	1.00	8.08	264.96	264.96
Dsgn. L = 4.06 ft	3	0.016	0.029	11.24	10.06	11.24	775.00	697.50	1.01	1.00	7.70	264.96	264.96
Dsgn. L = 3.96 ft	3	0.027	0.030	11.23	-18.82	18.82	775.00	697.50	2.27	1.00	7.82	264.96	264.96
Dsgn. L = 2.80 ft	3	0.088	0.058	-0.00	-61.34	61.34	775.00	697.50	1.38	1.00	15.45	264.96	264.96
Dsgn. L = 1.22 ft	4	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.00	1.00	11.66	264.96	264.96
Dsgn. L = 4.01 ft	4	0.068	0.044	-0.00	-47.21	47.21	775.00	697.50	1.00	1.00	11.53	264.96	264.96
Dsgn. L = 4.01 ft	4	0.023	0.029	-0.00	-15.76	15.76	775.00	697.50	1.00	1.00	7.60	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.014		-0.13	0.13	775.00	697.50	1.00	1.00	3.67	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.019	0.028		-12.93	12.93	775.00	697.50	1.00	1.00	7.53	264.96	264.96
Dsgn. L = 2.24 ft	2	0.019	0.028	3.28	-13.01	13.01	775.00	697.50	1.78	1.00	7.53	264.96	264.96
Dsgn. L = 3.96 ft	2	0.025	0.027	17.21	3.28	17.21	775.00	697.50	1.47	1.00	7.21	264.96	264.96
Dsgn. L = 4.06 ft	2	0.025	0.012	17.41	15.66	17.41	775.00	697.50	1.03	1.00	3.29	264.96	264.96
Dsgn. L = 3.96 ft	2	0.022	0.017	15.66	-1.64	15.66	775.00	697.50	1.73	1.00	4.57	264.96	264.96
Dsgn. L = 0.29 ft	2	0.006	0.031	-0.00	-3.85	3.85	775.00	697.50	1.19	1.00	8.12	264.96	264.96
Dsgn. L = 3.67 ft	3	0.009	0.011	6.04	-3.85	6.04	775.00	697.50	2.16	1.00	2.88	264.96	264.96
Dsgn. L = 4.06 ft	3	0.020	0.020	6.13	-13.91	13.91	775.00	697.50	2.19	1.00	5.26	264.96	264.96
Dsgn. L = 3.96 ft	3	0.093	0.049	-0.00	-64.57	64.57	775.00	697.50	1.48	1.00	13.02	264.96	264.96
Dsgn. L = 2.80 ft	3	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.23	1.00	23.15	264.96	264.96
Dsgn. L = 1.22 ft	4	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.00	1.00	23.15	264.96	264.96
Dsgn. L = 4.01 ft	4	0.134	0.087	-0.00	-93.54	93.54	775.00	697.50	1.00	1.00	23.02	264.96	264.96
Dsgn. L = 4.01 ft	4	0.045	0.058	-0.00	-31.22	31.22	775.00	697.50	1.00	1.00	15.26	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.028		-0.15	0.15	775.00	697.50	1.00	1.00	7.50	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.019	0.028		-12.93	12.93	775.00	697.50	1.00	1.00	7.53	264.96	264.96
Dsgn. L = 2.24 ft	2	0.022	0.049	15.63	-13.01	15.63	775.00	697.50	2.27	1.00	13.00	264.96	264.96
Dsgn. L = 3.96 ft	2	0.052	0.048	36.50	15.63	36.50	775.00	697.50	1.30	1.00	12.77	264.96	264.96
Dsgn. L = 4.06 ft	2	0.053	0.019	36.74	26.65	36.74	775.00	697.50	1.11	1.00	5.01	264.96	264.96
Dsgn. L = 3.96 ft	2	0.038	0.040	26.65	-14.16	26.65	775.00	697.50	2.16	1.00	10.51	264.96	264.96
Dsgn. L = 0.29 ft	2	0.027	0.067	-0.00	-19.05	19.05	775.00	697.50	1.08	1.00	17.88	264.96	264.96
Dsgn. L = 3.67 ft	3	0.027	0.010	-0.00	-19.05	19.05	775.00	697.50	1.25	1.00	2.74	264.96	264.96
Dsgn. L = 4.06 ft	3	0.021	0.009	-0.00	-14.94	14.94	775.00	697.50	1.19	1.00	2.36	264.96	264.96
Dsgn. L = 3.96 ft	3	0.051	0.021	-0.00	-35.85	35.85	775.00	697.50	1.32	1.00	5.50	264.96	264.96
Dsgn. L = 2.80 ft	3	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.20	1.00	11.66	264.96	264.96
Dsgn. L = 1.22 ft	4	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.00	1.00	11.66	264.96	264.96
Dsgn. L = 4.01 ft	4	0.068	0.044	-0.00	-47.21	47.21	775.00	697.50	1.00	1.00	11.53	264.96	264.96
Dsgn. L = 4.01 ft	4	0.023	0.029	-0.00	-15.76	15.76	775.00	697.50	1.00	1.00	7.60	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.014		-0.13	0.13	775.00	697.50	1.00	1.00	3.67	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.019	0.028		-12.93	12.93	775.00	697.50	1.00	1.00	7.53	264.96	264.96
Dsgn. L = 2.24 ft	2	0.026	0.053	17.94	-13.01	17.94	775.00	697.50	2.35	1.00	14.04	264.96	264.96
Dsgn. L = 3.96 ft	2	0.062	0.052	42.94	17.94	42.94	775.00	697.50	1.31	1.00	13.81	264.96	264.96
Dsgn. L = 4.06 ft	2	0.062	0.023	43.28	37.30	43.28	775.00	697.50	1.05	1.00	6.05	264.96	264.96
Dsgn. L = 3.96 ft	2	0.053	0.036	37.30	0.62	37.30	775.00	697.50	1.61	1.00	9.47	264.96	264.96
Dsgn. L = 0.29 ft	2	0.006	0.064	0.62	-3.97	3.97	775.00	697.50	1.49	1.00	16.84	264.96	264.96
Dsgn. L = 3.67 ft	3	0.020	0.011	-0.00	-13.69	13.69	775.00	697.50	1.42	1.00	2.84	264.96	264.96
Dsgn. L = 4.06 ft	3	0.057	0.026	-0.00	-40.07	40.07	775.00	697.50	1.38	1.00	6.77	264.96	264.96
Dsgn. L = 3.96 ft	3	0.117	0.040	-0.00	-81.60	81.60	775.00	697.50	1.27	1.00	10.70	264.96	264.96
Dsgn. L = 2.80 ft	3	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.15	1.00	23.15	264.96	264.96
Dsgn. L = 1.22 ft	4	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.00	1.00	23.15	264.96	264.96
Dsgn. L = 4.01 ft	4	0.134	0.087	-0.00	-93.54	93.54	775.00	697.50	1.00	1.00	23.02	264.96	264.96
Dsgn. L = 4.01 ft	4	0.045	0.058	-0.00	-31.22	31.22	775.00	697.50	1.00	1.00	15.26	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.028		-0.15	0.15	775.00	697.50	1.00	1.00	7.50	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.019	0.028		-12.93	12.93	775.00	697.50	1.00	1.00	7.53	264.96	264.96
Dsgn. L = 2.24 ft	2	0.020	0.046	13.75	-13.01	13.75	775.00	697.50	2.11	1.00	12.15	264.96	264.96
Dsgn. L = 3.96 ft	2	0.045	0.045	31.28	13.75	31.28	775.00	697.50	1.29	1.00	11.92	264.96	264.96
Dsgn. L = 4.06 ft	2	0.045	0.016	31.44	18.00	31.44	775.00	697.50	1.19	1.00	4.17	264.96	264.96
Dsgn. L = 3.96 ft	2	0.037	0.043	18.00	-26.15	26.15	775.00	697.50	2.28	1.00	11.35	264.96	264.96
Dsgn. L = 0.29 ft	2	0.045	0.071	-0.00	-31.28	31.28	775.00	697.50	1.05	1.00	18.73	264.96	264.96
Dsgn. L = 3.67 ft	3	0.045	0.034	0.84	-31.28	31.28	775.00	697.50	1.69	1.00	8.93	264.96	264.96
Dsgn. L = 4.06 ft	3	0.008	0.032	5.46	0.84	5.46	775.00	697.50	1.38	1.00	8.56	264.96	264.96
Dsgn. L = 3.96 ft	3	0.030	0.026	5.46	-21.21	21.21	775.00	697.50	2.10	1.00	6.96	264.96	264.96
Dsgn. L = 2.80 ft	3	0.088	0.055	-0.00	-61.34	61.34	775.00	697.50	1.35	1.00	14.60	264.96	264.96
Dsgn. L = 1.22 ft	4	0.088	0.044	-0.00	-61.34	61.34	775.00	697.50	1.00	1.00	11.66	264.96	264.96
Dsgn. L = 4.01 ft	4	0.068	0.044	-0.00	-47.21	47.21	775.00	697.50	1.00	1.00	11.53	264.96	264.96
Dsgn. L = 4.01 ft	4	0.023	0.029	-0.00	-15.76	15.76	775.00	697.50	1.00	1.00	7.60	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.014		-0.13	0.13	775.00	697.50	1.00	1.00	3.67	264.96	264.96
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 1.74 ft	1	0.019	0.028		-12.93	12.93	775.00	697.50	1.00	1.00	7.53	264.96	264.96
Dsgn. L = 2.24 ft	2	0.023	0.050	16.07	-13.01	16.07	775.00	697.50	2.31	1.00	13.19	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 3.96 ft	2	0.054	0.049	37.72	16.07	37.72	775.00	697.50	1.30	1.00	12.96	264.96	264.96
Dsgn. L = 4.06 ft	2	0.054	0.020	37.98	28.66	37.98	775.00	697.50	1.10	1.00	5.21	264.96	264.96
Dsgn. L = 3.96 ft	2	0.041	0.039	28.66	-11.37	28.66	775.00	697.50	2.14	1.00	10.31	264.96	264.96
Dsgn. L = 0.29 ft	2	0.023	0.067	-0.00	-16.20	16.20	775.00	697.50	1.09	1.00	17.69	264.96	264.96
Dsgn. L = 3.67 ft	3	0.023	0.014	-0.00	-16.20	16.20	775.00	697.50	1.48	1.00	3.73	264.96	264.96
Dsgn. L = 4.06 ft	3	0.028	0.017	-0.00	-19.67	19.67	775.00	697.50	1.56	1.00	4.41	264.96	264.96
Dsgn. L = 3.96 ft	3	0.096	0.046	-0.00	-66.95	66.95	775.00	697.50	1.41	1.00	12.16	264.96	264.96
Dsgn. L = 2.80 ft	3	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.22	1.00	23.15	264.96	264.96
Dsgn. L = 1.22 ft	4	0.174	0.087	-0.00	-121.66	121.66	775.00	697.50	1.00	1.00	23.15	264.96	264.96
Dsgn. L = 4.01 ft	4	0.134	0.087	-0.00	-93.54	93.54	775.00	697.50	1.00	1.00	23.02	264.96	264.96
Dsgn. L = 4.01 ft	4	0.045	0.058	-0.00	-31.22	31.22	775.00	697.50	1.00	1.00	15.26	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.028	-0.15	0.15	775.00	697.50	1.00	1.00	7.50	264.96	264.96	
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 1.74 ft	1	0.006	0.009	-4.08	4.08	775.00	697.50	1.00	1.00	2.41	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.008	0.017	5.46	-4.10	5.46	775.00	697.50	2.35	1.00	4.39	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.016	12.60	5.46	12.60	775.00	697.50	1.29	1.00	4.22	264.96	264.96
Dsgn. L = 4.06 ft	2	0.018	0.006	12.68	9.48	12.68	775.00	697.50	1.10	1.00	1.63	264.96	264.96
Dsgn. L = 3.96 ft	2	0.014	0.013	9.48	-3.94	9.48	775.00	697.50	2.13	1.00	3.54	264.96	264.96
Dsgn. L = 0.29 ft	2	0.008	0.022	-0.00	-5.54	5.54	775.00	697.50	1.09	1.00	5.84	264.96	264.96
Dsgn. L = 3.67 ft	3	0.008	0.005	-0.00	-5.54	5.54	775.00	697.50	1.49	1.00	1.34	264.96	264.96
Dsgn. L = 4.06 ft	3	0.009	0.006	-0.00	-6.55	6.55	775.00	697.50	1.57	1.00	1.53	264.96	264.96
Dsgn. L = 3.96 ft	3	0.032	0.016	-0.00	-22.23	22.23	775.00	697.50	1.42	1.00	4.12	264.96	264.96
Dsgn. L = 2.80 ft	3	0.058	0.029	-0.00	-40.34	40.34	775.00	697.50	1.22	1.00	7.66	264.96	264.96
Dsgn. L = 1.22 ft	4	0.058	0.029	-0.00	-40.34	40.34	775.00	697.50	1.00	1.00	7.66	264.96	264.96
Dsgn. L = 4.01 ft	4	0.045	0.029	-0.00	-31.06	31.06	775.00	697.50	1.00	1.00	7.57	264.96	264.96
Dsgn. L = 4.01 ft	4	0.015	0.019	-0.00	-10.37	10.37	775.00	697.50	1.00	1.00	4.98	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.009	-0.10	0.10	775.00	697.50	1.00	1.00	2.39	264.96	264.96	
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.74 ft	1	0.008	0.013	-5.77	5.77	775.00	697.50	1.00	1.00	3.41	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.014	0.027	9.98	-5.81	9.98	775.00	697.50	2.30	1.00	7.22	264.96	264.96
Dsgn. L = 3.96 ft	2	0.035	0.026	24.16	9.98	24.16	775.00	697.50	1.30	1.00	6.99	264.96	264.96
Dsgn. L = 4.06 ft	2	0.035	0.013	24.44	24.02	24.44	775.00	697.50	1.00	1.00	3.35	264.96	264.96
Dsgn. L = 3.96 ft	2	0.034	0.015	24.02	9.25	24.02	775.00	697.50	1.31	1.00	3.93	264.96	264.96
Dsgn. L = 0.29 ft	2	0.013	0.027	9.25	7.30	9.25	775.00	697.50	1.12	1.00	7.19	264.96	264.96
Dsgn. L = 3.67 ft	3	0.010	0.014	7.30	-5.61	7.30	775.00	697.50	2.19	1.00	3.70	264.96	264.96
Dsgn. L = 4.06 ft	3	0.049	0.028	-0.00	-34.36	34.36	775.00	697.50	1.53	1.00	7.35	264.96	264.96
Dsgn. L = 3.96 ft	3	0.110	0.041	-0.00	-77.04	77.04	775.00	697.50	1.30	1.00	10.99	264.96	264.96
Dsgn. L = 2.80 ft	3	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.16	1.00	22.28	264.96	264.96
Dsgn. L = 1.22 ft	4	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.00	1.00	22.28	264.96	264.96
Dsgn. L = 4.01 ft	4	0.129	0.084	-0.00	-90.05	90.05	775.00	697.50	1.00	1.00	22.16	264.96	264.96
Dsgn. L = 4.01 ft	4	0.043	0.055	-0.00	-30.06	30.06	775.00	697.50	1.00	1.00	14.69	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.027	-0.15	0.15	775.00	697.50	1.00	1.00	7.21	264.96	264.96	
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.74 ft	1	0.008	0.013	-5.77	5.77	775.00	697.50	1.00	1.00	3.41	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.008	0.020	5.80	-5.81	5.81	775.00	697.50	2.04	1.00	5.33	264.96	264.96
Dsgn. L = 3.96 ft	2	0.018	0.019	12.51	5.80	12.51	775.00	697.50	1.26	1.00	5.10	264.96	264.96
Dsgn. L = 4.06 ft	2	0.018	0.008	12.54	4.71	12.54	775.00	697.50	1.30	1.00	2.18	264.96	264.96
Dsgn. L = 3.96 ft	2	0.025	0.022	4.71	-17.52	17.52	775.00	697.50	2.12	1.00	5.82	264.96	264.96
Dsgn. L = 0.29 ft	2	0.029	0.034	-0.00	-20.02	20.02	775.00	697.50	1.04	1.00	9.07	264.96	264.96
Dsgn. L = 3.67 ft	3	0.029	0.030	8.92	-20.02	20.02	775.00	697.50	2.18	1.00	8.07	264.96	264.96
Dsgn. L = 4.06 ft	3	0.016	0.029	11.17	8.92	11.17	775.00	697.50	1.05	1.00	7.69	264.96	264.96
Dsgn. L = 3.96 ft	3	0.024	0.027	11.17	-16.65	16.65	775.00	697.50	2.29	1.00	7.25	264.96	264.96
Dsgn. L = 2.80 ft	3	0.081	0.055	-0.00	-56.80	56.80	775.00	697.50	1.39	1.00	14.60	264.96	264.96
Dsgn. L = 1.22 ft	4	0.081	0.041	-0.00	-56.80	56.80	775.00	697.50	1.00	1.00	10.79	264.96	264.96
Dsgn. L = 4.01 ft	4	0.063	0.040	-0.00	-43.73	43.73	775.00	697.50	1.00	1.00	10.67	264.96	264.96
Dsgn. L = 4.01 ft	4	0.021	0.027	-0.00	-14.60	14.60	775.00	697.50	1.00	1.00	7.03	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.013	-0.13	0.13	775.00	697.50	1.00	1.00	3.38	264.96	264.96	
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.74 ft	1	0.008	0.013	-5.77	5.77	775.00	697.50	1.00	1.00	3.41	264.96	264.96	
Dsgn. L = 2.24 ft	2	0.012	0.024	8.11	-5.81	8.11	775.00	697.50	2.34	1.00	6.37	264.96	264.96
Dsgn. L = 3.96 ft	2	0.027	0.023	18.94	8.11	18.94	775.00	697.50	1.29	1.00	6.14	264.96	264.96
Dsgn. L = 4.06 ft	2	0.027	0.009	19.08	15.37	19.08	775.00	697.50	1.07	1.00	2.51	264.96	264.96
Dsgn. L = 3.96 ft	2	0.022	0.018	15.37	-2.74	15.37	775.00	697.50	1.82	1.00	4.78	264.96	264.96



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 0.29 ft	2	0.007	0.030	-0.00	-4.94	4.94	775.00	697.50	1.14	1.00	8.03	264.96	264.96
Dsgn. L = 3.67 ft	3	0.007	0.011	4.90	-4.94	4.94	775.00	697.50	2.23	1.00	2.87	264.96	264.96
Dsgn. L = 4.06 ft	3	0.020	0.019	5.00	-13.96	13.96	775.00	697.50	2.18	1.00	4.99	264.96	264.96
Dsgn. L = 3.96 ft	3	0.089	0.047	-0.00	-62.40	62.40	775.00	697.50	1.47	1.00	12.46	264.96	264.96
Dsgn. L = 2.80 ft	3	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.23	1.00	22.28	264.96	264.96
Dsgn. L = 1.22 ft	4	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.00	1.00	22.28	264.96	264.96
Dsgn. L = 4.01 ft	4	0.129	0.084	-0.00	-90.05	90.05	775.00	697.50	1.00	1.00	22.16	264.96	264.96
Dsgn. L = 4.01 ft	4	0.043	0.055	-0.00	-30.06	30.06	775.00	697.50	1.00	1.00	14.69	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.027	-0.15	0.15	775.00	697.50	1.00	1.00	7.21	264.96	264.96	
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.74 ft	1	0.008	0.013		-5.77	5.77	775.00	697.50	1.00	1.00	3.41	264.96	264.96
Dsgn. L = 2.24 ft	2	0.029	0.045	20.46	-5.81	20.46	775.00	697.50	2.22	1.00	11.93	264.96	264.96
Dsgn. L = 3.96 ft	2	0.055	0.044	38.23	20.46	38.23	775.00	697.50	1.23	1.00	11.70	264.96	264.96
Dsgn. L = 4.06 ft	2	0.055	0.016	38.41	26.36	38.41	775.00	697.50	1.13	1.00	4.23	264.96	264.96
Dsgn. L = 3.96 ft	2	0.038	0.040	26.36	-15.26	26.36	775.00	697.50	2.17	1.00	10.71	264.96	264.96
Dsgn. L = 0.29 ft	2	0.029	0.067	-0.00	-20.13	20.13	775.00	697.50	1.07	1.00	17.80	264.96	264.96
Dsgn. L = 3.67 ft	3	0.029	0.010	-0.00	-20.13	20.13	775.00	697.50	1.23	1.00	2.73	264.96	264.96
Dsgn. L = 4.06 ft	3	0.021	0.009	-0.00	-14.99	14.99	775.00	697.50	1.15	1.00	2.35	264.96	264.96
Dsgn. L = 3.96 ft	3	0.048	0.019	-0.00	-33.68	33.68	775.00	697.50	1.30	1.00	4.94	264.96	264.96
Dsgn. L = 2.80 ft	3	0.081	0.041	-0.00	-56.80	56.80	775.00	697.50	1.20	1.00	10.79	264.96	264.96
Dsgn. L = 1.22 ft	4	0.081	0.041	-0.00	-56.80	56.80	775.00	697.50	1.00	1.00	10.79	264.96	264.96
Dsgn. L = 4.01 ft	4	0.063	0.040	-0.00	-43.73	43.73	775.00	697.50	1.00	1.00	10.67	264.96	264.96
Dsgn. L = 4.01 ft	4	0.021	0.027	-0.00	-14.60	14.60	775.00	697.50	1.00	1.00	7.03	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.013	-0.13	0.13	775.00	697.50	1.00	1.00	3.38	264.96	264.96	
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.74 ft	1	0.008	0.013		-5.77	5.77	775.00	697.50	1.00	1.00	3.41	264.96	264.96
Dsgn. L = 2.24 ft	2	0.033	0.049	22.77	-5.81	22.77	775.00	697.50	2.22	1.00	12.97	264.96	264.96
Dsgn. L = 3.96 ft	2	0.064	0.048	44.67	22.77	44.67	775.00	697.50	1.24	1.00	12.74	264.96	264.96
Dsgn. L = 4.06 ft	2	0.064	0.020	44.94	37.02	44.94	775.00	697.50	1.07	1.00	5.27	264.96	264.96
Dsgn. L = 3.96 ft	2	0.053	0.037	37.02	-0.48	37.02	775.00	697.50	1.64	1.00	9.67	264.96	264.96
Dsgn. L = 0.29 ft	2	0.007	0.063	-0.00	-5.05	5.05	775.00	697.50	1.35	1.00	16.76	264.96	264.96
Dsgn. L = 3.67 ft	3	0.021	0.011	-0.00	-14.83	14.83	775.00	697.50	1.38	1.00	2.85	264.96	264.96
Dsgn. L = 4.06 ft	3	0.058	0.025	-0.00	-40.12	40.12	775.00	697.50	1.36	1.00	6.50	264.96	264.96
Dsgn. L = 3.96 ft	3	0.114	0.038	-0.00	-79.43	79.43	775.00	697.50	1.26	1.00	10.14	264.96	264.96
Dsgn. L = 2.80 ft	3	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.15	1.00	22.28	264.96	264.96
Dsgn. L = 1.22 ft	4	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.00	1.00	22.28	264.96	264.96
Dsgn. L = 4.01 ft	4	0.129	0.084	-0.00	-90.05	90.05	775.00	697.50	1.00	1.00	22.16	264.96	264.96
Dsgn. L = 4.01 ft	4	0.043	0.055	-0.00	-30.06	30.06	775.00	697.50	1.00	1.00	14.69	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.027	-0.15	0.15	775.00	697.50	1.00	1.00	7.21	264.96	264.96	
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.74 ft	1	0.008	0.013		-5.77	5.77	775.00	697.50	1.00	1.00	3.41	264.96	264.96
Dsgn. L = 2.24 ft	2	0.027	0.042	18.58	-5.81	18.58	775.00	697.50	2.23	1.00	11.09	264.96	264.96
Dsgn. L = 3.96 ft	2	0.047	0.041	33.01	18.58	33.01	775.00	697.50	1.21	1.00	10.86	264.96	264.96
Dsgn. L = 4.06 ft	2	0.047	0.015	33.11	17.71	33.11	775.00	697.50	1.21	1.00	4.09	264.96	264.96
Dsgn. L = 3.96 ft	2	0.039	0.044	17.71	-27.25	27.25	775.00	697.50	2.27	1.00	11.56	264.96	264.96
Dsgn. L = 0.29 ft	2	0.046	0.070	-0.00	-32.37	32.37	775.00	697.50	1.05	1.00	18.64	264.96	264.96
Dsgn. L = 3.67 ft	3	0.046	0.034	-0.00	-32.37	32.37	775.00	697.50	1.65	1.00	8.92	264.96	264.96
Dsgn. L = 4.06 ft	3	0.008	0.032	5.41	-0.30	5.41	775.00	697.50	1.57	1.00	8.54	264.96	264.96
Dsgn. L = 3.96 ft	3	0.027	0.024	5.41	-19.04	19.04	775.00	697.50	2.16	1.00	6.40	264.96	264.96
Dsgn. L = 2.80 ft	3	0.081	0.052	-0.00	-56.80	56.80	775.00	697.50	1.36	1.00	13.75	264.96	264.96
Dsgn. L = 1.22 ft	4	0.081	0.041	-0.00	-56.80	56.80	775.00	697.50	1.00	1.00	10.79	264.96	264.96
Dsgn. L = 4.01 ft	4	0.063	0.040	-0.00	-43.73	43.73	775.00	697.50	1.00	1.00	10.67	264.96	264.96
Dsgn. L = 4.01 ft	4	0.021	0.027	-0.00	-14.60	14.60	775.00	697.50	1.00	1.00	7.03	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.013	-0.13	0.13	775.00	697.50	1.00	1.00	3.38	264.96	264.96	
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.74 ft	1	0.008	0.013		-5.77	5.77	775.00	697.50	1.00	1.00	3.41	264.96	264.96
Dsgn. L = 2.24 ft	2	0.030	0.046	20.90	-5.81	20.90	775.00	697.50	2.22	1.00	12.13	264.96	264.96
Dsgn. L = 3.96 ft	2	0.057	0.045	39.45	20.90	39.45	775.00	697.50	1.23	1.00	11.90	264.96	264.96
Dsgn. L = 4.06 ft	2	0.057	0.017	39.64	28.37	39.64	775.00	697.50	1.12	1.00	4.43	264.96	264.96
Dsgn. L = 3.96 ft	2	0.041	0.040	28.37	-12.47	28.37	775.00	697.50	2.15	1.00	10.52	264.96	264.96
Dsgn. L = 0.29 ft	2	0.025	0.066	-0.00	-17.29	17.29	775.00	697.50	1.09	1.00	17.60	264.96	264.96
Dsgn. L = 3.67 ft	3	0.025	0.014	-0.00	-17.29	17.29	775.00	697.50	1.43	1.00	3.72	264.96	264.96
Dsgn. L = 4.06 ft	3	0.028	0.016	-0.00	-19.72	19.72	775.00	697.50	1.50	1.00	4.14	264.96	264.96



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L =	3.96 ft	3	0.093	0.044	-0.00	-64.78	64.78	775.00	697.50	1.40	1.00	11.60	264.96	264.96
Dsgn. L =	2.80 ft	3	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.22	1.00	22.28	264.96	264.96
Dsgn. L =	1.22 ft	4	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.00	1.00	22.28	264.96	264.96
Dsgn. L =	4.01 ft	4	0.129	0.084	-0.00	-90.05	90.05	775.00	697.50	1.00	1.00	22.16	264.96	264.96
Dsgn. L =	4.01 ft	4	0.043	0.055	-0.00	-30.06	30.06	775.00	697.50	1.00	1.00	14.69	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.027		-0.15	0.15	775.00	697.50	1.00	1.00	7.21	264.96	264.96
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>														
Dsgn. L =	1.74 ft	1	0.018	0.027		-12.43	12.43	775.00	697.50	1.00	1.00	7.24	264.96	264.96
Dsgn. L =	2.24 ft	2	0.018	0.027	2.25	-12.51	12.51	775.00	697.50	1.71	1.00	7.24	264.96	264.96
Dsgn. L =	3.96 ft	2	0.021	0.025	14.60	2.25	14.60	775.00	697.50	1.50	1.00	6.53	264.96	264.96
Dsgn. L =	4.06 ft	2	0.021	0.011	14.77	12.58	14.77	775.00	697.50	1.05	1.00	2.89	264.96	264.96
Dsgn. L =	3.96 ft	2	0.018	0.017	12.58	-4.02	12.58	775.00	697.50	2.02	1.00	4.40	264.96	264.96
Dsgn. L =	0.29 ft	2	0.009	0.029	-0.00	-6.11	6.11	775.00	697.50	1.11	1.00	7.65	264.96	264.96
Dsgn. L =	3.67 ft	3	0.009	0.007	-0.00	-6.11	6.11	775.00	697.50	1.64	1.00	1.76	264.96	264.96
Dsgn. L =	4.06 ft	3	0.012	0.009	-0.00	-8.44	8.44	775.00	697.50	1.72	1.00	2.27	264.96	264.96
Dsgn. L =	3.96 ft	3	0.044	0.022	-0.00	-30.97	30.97	775.00	697.50	1.44	1.00	5.90	264.96	264.96
Dsgn. L =	2.80 ft	3	0.081	0.041	-0.00	-56.80	56.80	775.00	697.50	1.22	1.00	10.79	264.96	264.96
Dsgn. L =	1.22 ft	4	0.081	0.041	-0.00	-56.80	56.80	775.00	697.50	1.00	1.00	10.79	264.96	264.96
Dsgn. L =	4.01 ft	4	0.063	0.040	-0.00	-43.73	43.73	775.00	697.50	1.00	1.00	10.67	264.96	264.96
Dsgn. L =	4.01 ft	4	0.021	0.027	-0.00	-14.60	14.60	775.00	697.50	1.00	1.00	7.03	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.013		-0.13	0.13	775.00	697.50	1.00	1.00	3.38	264.96	264.96
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>														
Dsgn. L =	1.74 ft	1	0.018	0.027		-12.43	12.43	775.00	697.50	1.00	1.00	7.24	264.96	264.96
Dsgn. L =	2.24 ft	2	0.018	0.029	4.57	-12.51	12.51	775.00	697.50	1.92	1.00	7.80	264.96	264.96
Dsgn. L =	3.96 ft	2	0.030	0.029	21.03	4.57	21.03	775.00	697.50	1.46	1.00	7.57	264.96	264.96
Dsgn. L =	4.06 ft	2	0.033	0.015	23.23	21.03	23.23	775.00	697.50	1.03	1.00	3.93	264.96	264.96
Dsgn. L =	3.96 ft	2	0.033	0.013	23.23	10.76	23.23	775.00	697.50	1.26	1.00	3.36	264.96	264.96
Dsgn. L =	0.29 ft	2	0.015	0.025	10.76	8.97	10.76	775.00	697.50	1.09	1.00	6.61	264.96	264.96
Dsgn. L =	3.67 ft	3	0.013	0.014	8.97	-4.36	8.97	775.00	697.50	2.14	1.00	3.82	264.96	264.96
Dsgn. L =	4.06 ft	3	0.048	0.028	-0.00	-33.58	33.58	775.00	697.50	1.56	1.00	7.47	264.96	264.96
Dsgn. L =	3.96 ft	3	0.110	0.042	-0.00	-76.72	76.72	775.00	697.50	1.30	1.00	11.10	264.96	264.96
Dsgn. L =	2.80 ft	3	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.16	1.00	22.28	264.96	264.96
Dsgn. L =	1.22 ft	4	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.00	1.00	22.28	264.96	264.96
Dsgn. L =	4.01 ft	4	0.129	0.084	-0.00	-90.05	90.05	775.00	697.50	1.00	1.00	22.16	264.96	264.96
Dsgn. L =	4.01 ft	4	0.043	0.055	-0.00	-30.06	30.06	775.00	697.50	1.00	1.00	14.69	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.027		-0.15	0.15	775.00	697.50	1.00	1.00	7.21	264.96	264.96
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>														
Dsgn. L =	1.74 ft	1	0.018	0.027		-12.43	12.43	775.00	697.50	1.00	1.00	7.24	264.96	264.96
Dsgn. L =	2.24 ft	2	0.018	0.027	0.38	-12.51	12.51	775.00	697.50	1.57	1.00	7.24	264.96	264.96
Dsgn. L =	3.96 ft	2	0.013	0.021	9.38	0.38	9.38	775.00	697.50	1.60	1.00	5.68	264.96	264.96
Dsgn. L =	4.06 ft	2	0.014	0.008	9.47	3.93	9.47	775.00	697.50	1.27	1.00	2.04	264.96	264.96
Dsgn. L =	3.96 ft	2	0.023	0.020	3.93	-16.01	16.01	775.00	697.50	2.08	1.00	5.24	264.96	264.96
Dsgn. L =	0.29 ft	2	0.026	0.032	-0.00	-18.34	18.34	775.00	697.50	1.04	1.00	8.50	264.96	264.96
Dsgn. L =	3.67 ft	3	0.026	0.030	10.17	-18.34	18.34	775.00	697.50	2.20	1.00	7.95	264.96	264.96
Dsgn. L =	4.06 ft	3	0.017	0.029	11.96	10.17	11.96	775.00	697.50	1.03	1.00	7.57	264.96	264.96
Dsgn. L =	3.96 ft	3	0.023	0.028	11.96	-16.33	16.33	775.00	697.50	2.30	1.00	7.37	264.96	264.96
Dsgn. L =	2.80 ft	3	0.081	0.056	-0.00	-56.80	56.80	775.00	697.50	1.40	1.00	14.72	264.96	264.96
Dsgn. L =	1.22 ft	4	0.081	0.041	-0.00	-56.80	56.80	775.00	697.50	1.00	1.00	10.79	264.96	264.96
Dsgn. L =	4.01 ft	4	0.063	0.040	-0.00	-43.73	43.73	775.00	697.50	1.00	1.00	10.67	264.96	264.96
Dsgn. L =	4.01 ft	4	0.021	0.027	-0.00	-14.60	14.60	775.00	697.50	1.00	1.00	7.03	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.013		-0.13	0.13	775.00	697.50	1.00	1.00	3.38	264.96	264.96
<b>+1.20D+L+0.20S+E+1.60H, LL Cc</b>														
Dsgn. L =	1.74 ft	1	0.018	0.027		-12.43	12.43	775.00	697.50	1.00	1.00	7.24	264.96	264.96
Dsgn. L =	2.24 ft	2	0.018	0.027	2.69	-12.51	12.51	775.00	697.50	1.74	1.00	7.24	264.96	264.96
Dsgn. L =	3.96 ft	2	0.023	0.025	15.81	2.69	15.81	775.00	697.50	1.49	1.00	6.72	264.96	264.96
Dsgn. L =	4.06 ft	2	0.023	0.012	16.00	14.59	16.00	775.00	697.50	1.03	1.00	3.08	264.96	264.96
Dsgn. L =	3.96 ft	2	0.021	0.016	14.59	-1.23	14.59	775.00	697.50	1.71	1.00	4.20	264.96	264.96
Dsgn. L =	0.29 ft	2	0.005	0.028	-0.00	-3.26	3.26	775.00	697.50	1.21	1.00	7.46	264.96	264.96
Dsgn. L =	3.67 ft	3	0.009	0.010	6.15	-3.26	6.15	775.00	697.50	2.14	1.00	2.75	264.96	264.96
Dsgn. L =	4.06 ft	3	0.019	0.019	6.24	-13.18	13.18	775.00	697.50	2.20	1.00	5.10	264.96	264.96
Dsgn. L =	3.96 ft	3	0.089	0.047	-0.00	-62.07	62.07	775.00	697.50	1.48	1.00	12.57	264.96	264.96
Dsgn. L =	2.80 ft	3	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.23	1.00	22.28	264.96	264.96
Dsgn. L =	1.22 ft	4	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.00	1.00	22.28	264.96	264.96



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.01 ft	4	0.129	0.084	-0.00	-90.05	90.05	775.00	697.50	1.00	1.00	22.16	264.96	264.96
Dsgn. L = 4.01 ft	4	0.043	0.055	-0.00	-30.06	30.06	775.00	697.50	1.00	1.00	14.69	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.027		-0.15	0.15	775.00	697.50	1.00	1.00	7.21	264.96	264.96
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.74 ft	1	0.018	0.027		-12.43	12.43	775.00	697.50	1.00	1.00	7.24	264.96	264.96
Dsgn. L = 2.24 ft	2	0.022	0.047	15.04	-12.51	15.04	775.00	697.50	2.28	1.00	12.51	264.96	264.96
Dsgn. L = 3.96 ft	2	0.050	0.046	35.11	15.04	35.11	775.00	697.50	1.30	1.00	12.28	264.96	264.96
Dsgn. L = 4.06 ft	2	0.051	0.018	35.34	25.58	35.34	775.00	697.50	1.11	1.00	4.81	264.96	264.96
Dsgn. L = 3.96 ft	2	0.037	0.038	25.58	-13.75	25.58	775.00	697.50	2.16	1.00	10.13	264.96	264.96
Dsgn. L = 0.29 ft	2	0.026	0.065	-0.00	-18.46	18.46	775.00	697.50	1.08	1.00	17.22	264.96	264.96
Dsgn. L = 3.67 ft	3	0.026	0.010	-0.00	-18.46	18.46	775.00	697.50	1.24	1.00	2.61	264.96	264.96
Dsgn. L = 4.06 ft	3	0.020	0.008	-0.00	-14.21	14.21	775.00	697.50	1.18	1.00	2.23	264.96	264.96
Dsgn. L = 3.96 ft	3	0.048	0.019	-0.00	-33.36	33.36	775.00	697.50	1.32	1.00	5.05	264.96	264.96
Dsgn. L = 2.80 ft	3	0.081	0.041	-0.00	-56.80	56.80	775.00	697.50	1.20	1.00	10.79	264.96	264.96
Dsgn. L = 1.22 ft	4	0.081	0.041	-0.00	-56.80	56.80	775.00	697.50	1.00	1.00	10.79	264.96	264.96
Dsgn. L = 4.01 ft	4	0.063	0.040	-0.00	-43.73	43.73	775.00	697.50	1.00	1.00	10.67	264.96	264.96
Dsgn. L = 4.01 ft	4	0.021	0.027	-0.00	-14.60	14.60	775.00	697.50	1.00	1.00	7.03	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.013		-0.13	0.13	775.00	697.50	1.00	1.00	3.38	264.96	264.96
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.74 ft	1	0.018	0.027		-12.43	12.43	775.00	697.50	1.00	1.00	7.24	264.96	264.96
Dsgn. L = 2.24 ft	2	0.025	0.051	17.35	-12.51	17.35	775.00	697.50	2.35	1.00	13.55	264.96	264.96
Dsgn. L = 3.96 ft	2	0.060	0.050	41.54	17.35	41.54	775.00	697.50	1.30	1.00	13.32	264.96	264.96
Dsgn. L = 4.06 ft	2	0.060	0.022	41.87	36.23	41.87	775.00	697.50	1.05	1.00	5.85	264.96	264.96
Dsgn. L = 3.96 ft	2	0.052	0.034	36.23	1.03	36.23	775.00	697.50	1.60	1.00	9.09	264.96	264.96
Dsgn. L = 0.29 ft	2	0.005	0.061	1.03	-3.38	3.38	775.00	697.50	1.59	1.00	16.18	264.96	264.96
Dsgn. L = 3.67 ft	3	0.019	0.011	-0.00	-13.58	13.58	775.00	697.50	1.46	1.00	2.97	264.96	264.96
Dsgn. L = 4.06 ft	3	0.056	0.025	-0.00	-39.34	39.34	775.00	697.50	1.37	1.00	6.61	264.96	264.96
Dsgn. L = 3.96 ft	3	0.113	0.039	-0.00	-79.11	79.11	775.00	697.50	1.26	1.00	10.25	264.96	264.96
Dsgn. L = 2.80 ft	3	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.15	1.00	22.28	264.96	264.96
Dsgn. L = 1.22 ft	4	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.00	1.00	22.28	264.96	264.96
Dsgn. L = 4.01 ft	4	0.129	0.084	-0.00	-90.05	90.05	775.00	697.50	1.00	1.00	22.16	264.96	264.96
Dsgn. L = 4.01 ft	4	0.043	0.055	-0.00	-30.06	30.06	775.00	697.50	1.00	1.00	14.69	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.027		-0.15	0.15	775.00	697.50	1.00	1.00	7.21	264.96	264.96
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.74 ft	1	0.018	0.027		-12.43	12.43	775.00	697.50	1.00	1.00	7.24	264.96	264.96
Dsgn. L = 2.24 ft	2	0.019	0.044	13.17	-12.51	13.17	775.00	697.50	2.10	1.00	11.66	264.96	264.96
Dsgn. L = 3.96 ft	2	0.043	0.043	29.89	13.17	29.89	775.00	697.50	1.29	1.00	11.43	264.96	264.96
Dsgn. L = 4.06 ft	2	0.043	0.015	30.03	16.93	30.03	775.00	697.50	1.20	1.00	3.97	264.96	264.96
Dsgn. L = 3.96 ft	2	0.037	0.041	16.93	-25.74	25.74	775.00	697.50	2.27	1.00	10.98	264.96	264.96
Dsgn. L = 0.29 ft	2	0.044	0.068	-0.00	-30.70	30.70	775.00	697.50	1.05	1.00	18.07	264.96	264.96
Dsgn. L = 3.67 ft	3	0.044	0.033	0.95	-30.70	30.70	775.00	697.50	1.69	1.00	8.80	264.96	264.96
Dsgn. L = 4.06 ft	3	0.009	0.032	6.19	0.95	6.19	775.00	697.50	1.40	1.00	8.43	264.96	264.96
Dsgn. L = 3.96 ft	3	0.027	0.025	6.19	-18.72	18.72	775.00	697.50	2.20	1.00	6.52	264.96	264.96
Dsgn. L = 2.80 ft	3	0.081	0.052	-0.00	-56.80	56.80	775.00	697.50	1.37	1.00	13.87	264.96	264.96
Dsgn. L = 1.22 ft	4	0.081	0.041	-0.00	-56.80	56.80	775.00	697.50	1.00	1.00	10.79	264.96	264.96
Dsgn. L = 4.01 ft	4	0.063	0.040	-0.00	-43.73	43.73	775.00	697.50	1.00	1.00	10.67	264.96	264.96
Dsgn. L = 4.01 ft	4	0.021	0.027	-0.00	-14.60	14.60	775.00	697.50	1.00	1.00	7.03	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.013		-0.13	0.13	775.00	697.50	1.00	1.00	3.38	264.96	264.96
<b>+1.20D+L+0.20S+E+1.60H, LL Cr</b>													
Dsgn. L = 1.74 ft	1	0.018	0.027		-12.43	12.43	775.00	697.50	1.00	1.00	7.24	264.96	264.96
Dsgn. L = 2.24 ft	2	0.022	0.048	15.48	-12.51	15.48	775.00	697.50	2.31	1.00	12.70	264.96	264.96
Dsgn. L = 3.96 ft	2	0.052	0.047	36.32	15.48	36.32	775.00	697.50	1.30	1.00	12.47	264.96	264.96
Dsgn. L = 4.06 ft	2	0.052	0.019	36.57	27.59	36.57	775.00	697.50	1.10	1.00	5.01	264.96	264.96
Dsgn. L = 3.96 ft	2	0.040	0.038	27.59	-10.96	27.59	775.00	697.50	2.14	1.00	9.94	264.96	264.96
Dsgn. L = 0.29 ft	2	0.022	0.064	-0.00	-15.61	15.61	775.00	697.50	1.09	1.00	17.03	264.96	264.96
Dsgn. L = 3.67 ft	3	0.022	0.014	-0.00	-15.61	15.61	775.00	697.50	1.48	1.00	3.60	264.96	264.96
Dsgn. L = 4.06 ft	3	0.027	0.016	-0.00	-18.94	18.94	775.00	697.50	1.56	1.00	4.25	264.96	264.96
Dsgn. L = 3.96 ft	3	0.092	0.044	-0.00	-64.46	64.46	775.00	697.50	1.41	1.00	11.72	264.96	264.96
Dsgn. L = 2.80 ft	3	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.22	1.00	22.28	264.96	264.96
Dsgn. L = 1.22 ft	4	0.168	0.084	-0.00	-117.13	117.13	775.00	697.50	1.00	1.00	22.28	264.96	264.96
Dsgn. L = 4.01 ft	4	0.129	0.084	-0.00	-90.05	90.05	775.00	697.50	1.00	1.00	22.16	264.96	264.96
Dsgn. L = 4.01 ft	4	0.043	0.055	-0.00	-30.06	30.06	775.00	697.50	1.00	1.00	14.69	264.96	264.96
Dsgn. L = 1.51 ft	4	0.000	0.027		-0.15	0.15	775.00	697.50	1.00	1.00	7.21	264.96	264.96

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+0.90D+E+0.90H														
Dsgn. L =	1.74 ft	1	0.006	0.009		-4.08	4.08	775.00	697.50	1.00	1.00	2.41	264.96	264.96
Dsgn. L =	2.24 ft	2	0.008	0.017	5.46	-4.10	5.46	775.00	697.50	2.35	1.00	4.39	264.96	264.96
Dsgn. L =	3.96 ft	2	0.018	0.016	12.60	5.46	12.60	775.00	697.50	1.29	1.00	4.22	264.96	264.96
Dsgn. L =	4.06 ft	2	0.018	0.006	12.68	9.48	12.68	775.00	697.50	1.10	1.00	1.63	264.96	264.96
Dsgn. L =	3.96 ft	2	0.014	0.013	9.48	-3.94	9.48	775.00	697.50	2.13	1.00	3.54	264.96	264.96
Dsgn. L =	0.29 ft	2	0.008	0.022	-0.00	-5.54	5.54	775.00	697.50	1.09	1.00	5.84	264.96	264.96
Dsgn. L =	3.67 ft	3	0.008	0.005	-0.00	-5.54	5.54	775.00	697.50	1.49	1.00	1.34	264.96	264.96
Dsgn. L =	4.06 ft	3	0.009	0.006	-0.00	-6.55	6.55	775.00	697.50	1.57	1.00	1.53	264.96	264.96
Dsgn. L =	3.96 ft	3	0.032	0.016	-0.00	-22.23	22.23	775.00	697.50	1.42	1.00	4.12	264.96	264.96
Dsgn. L =	2.80 ft	3	0.058	0.029	-0.00	-40.34	40.34	775.00	697.50	1.22	1.00	7.66	264.96	264.96
Dsgn. L =	1.22 ft	4	0.058	0.029	-0.00	-40.34	40.34	775.00	697.50	1.00	1.00	7.66	264.96	264.96
Dsgn. L =	4.01 ft	4	0.045	0.029	-0.00	-31.06	31.06	775.00	697.50	1.00	1.00	7.57	264.96	264.96
Dsgn. L =	4.01 ft	4	0.015	0.019	-0.00	-10.37	10.37	775.00	697.50	1.00	1.00	4.98	264.96	264.96
Dsgn. L =	1.51 ft	4	0.000	0.009		-0.10	0.10	775.00	697.50	1.00	1.00	2.39	264.96	264.96

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	+D+L+H	-0.0123	0.000
+D+L+H	2	0.0336	7.250		0.0000	0.000
	3	0.0000	7.250	+D+L+H	-0.0418	8.797
+D+L+H	4	0.2972	10.750		0.0000	8.797

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4	Support 5
Max Upward from all Load Conditions		18.755	25.439	37.964	
Max Upward from Load Combinations		18.755	25.439	37.964	
Max Upward from Load Cases		11.199	17.457	22.103	
Max Downward from all Load Conditions (Resis)		-0.844	-6.934	-0.852	
Max Downward from Load Cases (Resisting Uf		-0.844	-6.934	-0.852	
+D+H		7.556	7.982	15.861	
+D+L+H, LL Comb Run (**L)		8.596	1.742	32.551	
+D+L+H, LL Comb Run (**L*)		6.712	15.019	21.158	
+D+L+H, LL Comb Run (**LL)		7.752	8.779	37.848	
+D+L+H, LL Comb Run (*L**)		13.307	18.403	15.009	
+D+L+H, LL Comb Run (*L*L)		14.347	12.162	31.699	
+D+L+H, LL Comb Run (*LL*)		12.463	25.439	20.306	
+D+L+H, LL Comb Run (*LLL)		13.504	19.199	36.996	
+D+L+H, LL Comb Run (L***)		11.964	7.289	15.976	
+D+L+H, LL Comb Run (L**L)		13.004	1.049	32.667	
+D+L+H, LL Comb Run (L*L*)		11.120	14.326	21.274	
+D+L+H, LL Comb Run (L*LL)		12.160	8.085	37.964	
+D+L+H, LL Comb Run (LL**)		17.715	17.709	15.125	
+D+L+H, LL Comb Run (LL*L)		18.755	11.469	31.815	
+D+L+H, LL Comb Run (LLL*)		16.871	24.746	20.422	
+D+L+H, LL Comb Run (LLLL)		17.911	18.506	37.112	
+D+Lr+H, LL Comb Run (**L)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (**L*)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (**LL)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (*L**)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (*L*L)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (*LL*)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (*LLL)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (L***)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (L**L)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (L*L*)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (L*LL)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (LL**)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (LL*L)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (LLL*)		7.556	7.982	15.861	
+D+Lr+H, LL Comb Run (LLLL)		7.556	7.982	15.861	
+D+S+H		10.151	10.620	21.187	
+D+0.750Lr+0.750L+H, LL Comb Run (**L)		8.336	3.302	28.378	

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4	Support 5
+D+0.750Lr+0.750L+H, LL Comb Run (**L*)		6.923	13.260	19.834	
+D+0.750Lr+0.750L+H, LL Comb Run (**LL)		7.703	8.580	32.351	
+D+0.750Lr+0.750L+H, LL Comb Run (*L**)		11.869	15.798	15.222	
+D+0.750Lr+0.750L+H, LL Comb Run (*L*L)		12.650	11.117	27.740	
+D+0.750Lr+0.750L+H, LL Comb Run (*LL*)		11.237	21.075	19.195	
+D+0.750Lr+0.750L+H, LL Comb Run (*LLL)		12.017	16.395	31.713	
+D+0.750Lr+0.750L+H, LL Comb Run (L***)		10.862	7.462	15.947	
+D+0.750Lr+0.750L+H, LL Comb Run (L**L)		11.642	2.782	28.465	
+D+0.750Lr+0.750L+H, LL Comb Run (L*L*)		10.229	12.740	19.920	
+D+0.750Lr+0.750L+H, LL Comb Run (L*LL)		11.009	8.060	32.438	
+D+0.750Lr+0.750L+H, LL Comb Run (LL**)		15.175	15.278	15.309	
+D+0.750Lr+0.750L+H, LL Comb Run (LL*L)		15.955	10.597	27.826	
+D+0.750Lr+0.750L+H, LL Comb Run (LLL*)		14.542	20.555	19.282	
+D+0.750Lr+0.750L+H, LL Comb Run (LLLL)		15.322	15.875	31.799	
+D+0.750L+0.750S+H, LL Comb Run (**L)		10.283	5.280	32.373	
+D+0.750L+0.750S+H, LL Comb Run (**L*)		8.870	15.238	23.829	
+D+0.750L+0.750S+H, LL Comb Run (**LL)		9.650	10.558	36.346	
+D+0.750L+0.750S+H, LL Comb Run (*L**)		13.816	17.776	19.217	
+D+0.750L+0.750S+H, LL Comb Run (*L*L)		14.596	13.096	31.735	
+D+0.750L+0.750S+H, LL Comb Run (*LL*)		13.183	23.053	23.190	
+D+0.750L+0.750S+H, LL Comb Run (*LLL)		13.963	18.373	35.708	
+D+0.750L+0.750S+H, LL Comb Run (L***)		12.808	9.441	19.942	
+D+0.750L+0.750S+H, LL Comb Run (L**L)		13.588	4.760	32.460	
+D+0.750L+0.750S+H, LL Comb Run (L*L*)		12.175	14.718	23.915	
+D+0.750L+0.750S+H, LL Comb Run (L*LL)		12.955	10.038	36.433	
+D+0.750L+0.750S+H, LL Comb Run (LL**)		17.122	17.256	19.304	
+D+0.750L+0.750S+H, LL Comb Run (LL*L)		17.902	12.576	31.821	
+D+0.750L+0.750S+H, LL Comb Run (LLL*)		16.489	22.533	23.277	
+D+0.750L+0.750S+H, LL Comb Run (LLLL)		17.269	17.853	35.794	
+D+0.60W+H		7.556	7.982	15.861	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		8.336	3.302	28.378	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		6.923	13.260	19.834	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		7.703	8.580	32.351	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		11.869	15.798	15.222	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		12.650	11.117	27.740	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		11.237	21.075	19.195	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		12.017	16.395	31.713	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		10.862	7.462	15.947	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		11.642	2.782	28.465	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		10.229	12.740	19.920	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		11.009	8.060	32.438	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		15.175	15.278	15.309	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		15.955	10.597	27.826	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		14.542	20.555	19.282	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur		15.322	15.875	31.799	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		10.283	5.280	32.373	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		8.870	15.238	23.829	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		9.650	10.558	36.346	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		13.816	17.776	19.217	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		14.596	13.096	31.735	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		13.183	23.053	23.190	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		13.963	18.373	35.708	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		12.808	9.441	19.942	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		13.588	4.760	32.460	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		12.175	14.718	23.915	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		12.955	10.038	36.433	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		17.122	17.256	19.304	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		17.902	12.576	31.821	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		16.489	22.533	23.277	
+D+0.750L+0.750S+0.450W+H, LL Comb Run		17.269	17.853	35.794	
+0.60D+0.60W+0.60H		4.533	4.789	9.516	
+D+0.70E+0.60H		7.556	7.982	15.861	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		10.283	5.280	32.373	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		8.870	15.238	23.829	



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B47**

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4	Support 5
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		9.650	10.558	36.346	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		13.816	17.776	19.217	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		14.596	13.096	31.735	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		13.183	23.053	23.190	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		13.963	18.373	35.708	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		12.808	9.441	19.942	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		13.588	4.760	32.460	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		12.175	14.718	23.915	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		12.955	10.038	36.433	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		17.122	17.256	19.304	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		17.902	12.576	31.821	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		16.489	22.533	23.277	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur		17.269	17.853	35.794	
+0.60D+0.70E+H		4.533	4.789	9.516	
D Only		7.556	7.982	15.861	
L Only, LL Comb Run (**L)		1.040	-6.240	16.690	
L Only, LL Comb Run (**L*)		-0.844	7.037	5.297	
L Only, LL Comb Run (**LL)		0.196	0.796	21.988	
L Only, LL Comb Run (*L**)		5.752	10.420	-0.852	
L Only, LL Comb Run (*L*L)		6.792	4.180	15.838	
L Only, LL Comb Run (*LL*)		4.908	17.457	4.445	
L Only, LL Comb Run (*LLL)		5.948	11.217	21.136	
L Only, LL Comb Run (L**)		4.408	-0.693	0.116	
L Only, LL Comb Run (L*L)		5.448	-6.934	16.806	
L Only, LL Comb Run (L*L*)		3.564	6.343	5.413	
L Only, LL Comb Run (L*LL)		4.604	0.103	22.103	
L Only, LL Comb Run (LL**)		10.159	9.727	-0.736	
L Only, LL Comb Run (LL*L)		11.199	3.487	15.954	
L Only, LL Comb Run (LLL*)		9.316	16.763	4.561	
L Only, LL Comb Run (LLLL)		10.356	10.523	21.251	
S Only		2.596	2.638	5.327	
H Only					



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: **B48**

**CODE REFERENCES**

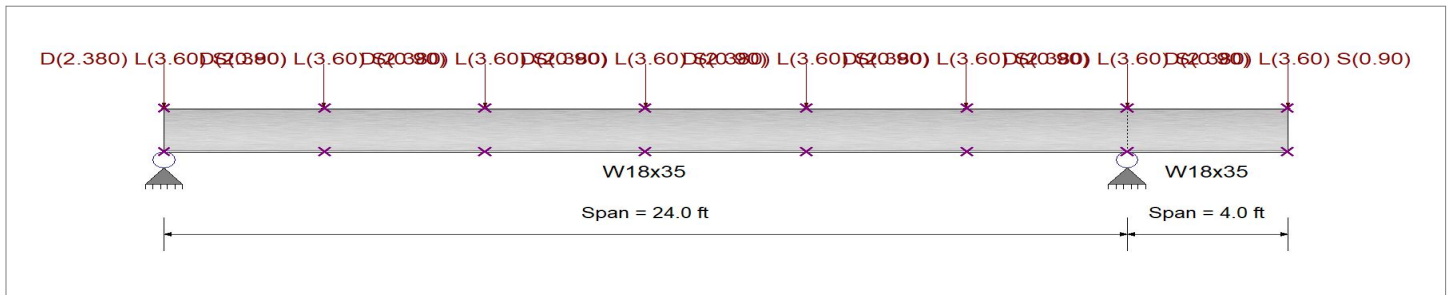
Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam bracing is defined as a set spacing over all spans  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi

**Unbraced Lengths**

First Brace starts at 4.0 ft from Left-Most support  
 Regular spacing of lateral supports on length of beam = 4.0 ft



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Point Load : D = 2.380, L = 3.60, S = 0.90 k, Starting at : 0.0 ft and placed every 4.0 ft thereafter

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.639</b> : 1	Maximum Shear Stress Ratio =	<b>0.155</b> : 1
Section used for this span	<b>W18x35</b>	Section used for this span	<b>W18x35</b>
Mu : Applied	159.432 k-ft	Vu : Applied	24.694 k
Mn * Phi : Allowable	249.375 k-ft	Vn * Phi : Allowable	159.30 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (L*)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	24.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.447 in Ratio = <b>644</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.236 in Ratio = <b>407</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.719 in Ratio = <b>401</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.358 in Ratio = <b>268</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values					Summary of Shear Values				
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L =	3.94 ft	1	0.130	0.052	32.47		32.47	277.08	249.38	1.69	1.00	8.35	159.30	159.30
Dsgn. L =	4.03 ft	1	0.207	0.051	51.73	32.47	51.73	277.08	249.38	1.17	1.00	8.15	159.30	159.30
Dsgn. L =	4.03 ft	1	0.227	0.029	56.64	51.73	56.64	277.08	249.38	1.03	1.00	4.62	159.30	159.30
Dsgn. L =	3.94 ft	1	0.227	0.015	56.64	47.46	56.64	277.08	249.38	1.07	1.00	2.43	159.30	159.30
Dsgn. L =	4.03 ft	1	0.190	0.037	47.46	24.04	47.46	277.08	249.38	1.24	1.00	5.96	159.30	159.30
Dsgn. L =	4.03 ft	1	0.096	0.060	24.04	-13.72	24.04	277.08	249.38	2.13	1.00	9.49	159.30	159.30
Dsgn. L =	4.00 ft	2	0.055	0.022		-13.72	13.72	277.08	249.38	1.00	1.00	3.53	159.30	159.30
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L =	3.94 ft	1	0.096	0.039	24.05		24.05	277.08	249.38	1.69	1.00	6.19	159.30	159.30
Dsgn. L =	4.03 ft	1	0.147	0.038	36.69	24.05	36.69	277.08	249.38	1.16	1.00	6.03	159.30	159.30
Dsgn. L =	4.03 ft	1	0.149	0.019	37.04	36.69	37.04	277.08	249.38	1.00	1.00	3.00	159.30	159.30
Dsgn. L =	3.94 ft	1	0.148	0.019	37.03	25.38	37.03	277.08	249.38	1.14	1.00	3.04	159.30	159.30
Dsgn. L =	4.03 ft	1	0.102	0.038	25.38	1.43	25.38	277.08	249.38	1.58	1.00	6.07	159.30	159.30
Dsgn. L =	4.03 ft	1	0.140	0.057	1.43	-34.80	34.80	277.08	249.38	1.72	1.00	9.09	159.30	159.30
Dsgn. L =	4.00 ft	2	0.140	0.055		-34.80	34.80	277.08	249.38	1.00	1.00	8.78	159.30	159.30
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L =	3.94 ft	1	0.339	0.135	84.51		84.51	277.08	249.38	1.69	1.00	21.55	159.30	159.30





**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B48**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 3.94 ft	1	0.112	0.045	27.83		27.83	277.08	249.38	1.69	1.00	7.15	159.30	159.30
Dsgn. L = 4.03 ft	1	0.178	0.044	44.34	27.83	44.34	277.08	249.38	1.17	1.00	6.99	159.30	159.30
Dsgn. L = 4.03 ft	1	0.195	0.025	48.55	44.34	48.55	277.08	249.38	1.03	1.00	3.96	159.30	159.30
Dsgn. L = 3.94 ft	1	0.195	0.013	48.55	40.68	48.55	277.08	249.38	1.07	1.00	2.08	159.30	159.30
Dsgn. L = 4.03 ft	1	0.163	0.032	40.68	20.60	40.68	277.08	249.38	1.24	1.00	5.11	159.30	159.30
Dsgn. L = 4.03 ft	1	0.083	0.051	20.60	-11.76	20.60	277.08	249.38	2.13	1.00	8.13	159.30	159.30
Dsgn. L = 4.00 ft	2	0.047	0.019		-11.76	11.76	277.08	249.38	1.00	1.00	3.02	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.94 ft	1	0.112	0.045	27.83		27.83	277.08	249.38	1.69	1.00	7.15	159.30	159.30
Dsgn. L = 4.03 ft	1	0.178	0.044	44.34	27.83	44.34	277.08	249.38	1.17	1.00	6.99	159.30	159.30
Dsgn. L = 4.03 ft	1	0.195	0.025	48.55	44.34	48.55	277.08	249.38	1.03	1.00	3.96	159.30	159.30
Dsgn. L = 3.94 ft	1	0.195	0.013	48.55	40.68	48.55	277.08	249.38	1.07	1.00	2.08	159.30	159.30
Dsgn. L = 4.03 ft	1	0.163	0.032	40.68	20.60	40.68	277.08	249.38	1.24	1.00	5.11	159.30	159.30
Dsgn. L = 4.03 ft	1	0.083	0.051	20.60	-11.76	20.60	277.08	249.38	2.13	1.00	8.13	159.30	159.30
Dsgn. L = 4.00 ft	2	0.047	0.019		-11.76	11.76	277.08	249.38	1.00	1.00	3.02	159.30	159.30
<b>+1.20D+1.60Lr+0.50W+1.60H, LL</b>													
Dsgn. L = 3.94 ft	1	0.112	0.045	27.83		27.83	277.08	249.38	1.69	1.00	7.15	159.30	159.30
Dsgn. L = 4.03 ft	1	0.178	0.044	44.34	27.83	44.34	277.08	249.38	1.17	1.00	6.99	159.30	159.30
Dsgn. L = 4.03 ft	1	0.195	0.025	48.55	44.34	48.55	277.08	249.38	1.03	1.00	3.96	159.30	159.30
Dsgn. L = 3.94 ft	1	0.195	0.013	48.55	40.68	48.55	277.08	249.38	1.07	1.00	2.08	159.30	159.30
Dsgn. L = 4.03 ft	1	0.163	0.032	40.68	20.60	40.68	277.08	249.38	1.24	1.00	5.11	159.30	159.30
Dsgn. L = 4.03 ft	1	0.083	0.051	20.60	-11.76	20.60	277.08	249.38	2.13	1.00	8.13	159.30	159.30
Dsgn. L = 4.00 ft	2	0.047	0.019		-11.76	11.76	277.08	249.38	1.00	1.00	3.02	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.94 ft	1	0.155	0.062	38.70		38.70	277.08	249.38	1.69	1.00	9.91	159.30	159.30
Dsgn. L = 4.03 ft	1	0.243	0.061	60.61	38.70	60.61	277.08	249.38	1.17	1.00	9.75	159.30	159.30
Dsgn. L = 4.03 ft	1	0.258	0.033	64.39	60.61	64.39	277.08	249.38	1.02	1.00	5.28	159.30	159.30
Dsgn. L = 3.94 ft	1	0.258	0.023	64.39	50.38	64.39	277.08	249.38	1.09	1.00	3.64	159.30	159.30
Dsgn. L = 4.03 ft	1	0.202	0.051	50.38	18.30	50.38	277.08	249.38	1.33	1.00	8.11	159.30	159.30
Dsgn. L = 4.03 ft	1	0.128	0.079	18.30	-31.92	31.92	277.08	249.38	2.15	1.00	12.57	159.30	159.30
Dsgn. L = 4.00 ft	2	0.128	0.051		-31.92	31.92	277.08	249.38	1.00	1.00	8.06	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.94 ft	1	0.307	0.122	76.48		76.48	277.08	249.38	1.69	1.00	19.51	159.30	159.30
Dsgn. L = 4.03 ft	1	0.493	0.121	122.82	76.48	122.82	277.08	249.38	1.18	1.00	19.35	159.30	159.30
Dsgn. L = 4.03 ft	1	0.547	0.071	136.39	122.82	136.39	277.08	249.38	1.04	1.00	11.28	159.30	159.30
Dsgn. L = 3.94 ft	1	0.547	0.030	136.39	117.65	136.39	277.08	249.38	1.06	1.00	4.84	159.30	159.30
Dsgn. L = 4.03 ft	1	0.472	0.081	117.65	66.45	117.65	277.08	249.38	1.20	1.00	12.91	159.30	159.30
Dsgn. L = 4.03 ft	1	0.266	0.132	66.45	-17.52	66.45	277.08	249.38	2.01	1.00	20.97	159.30	159.30
Dsgn. L = 4.00 ft	2	0.070	0.028		-17.52	17.52	277.08	249.38	1.00	1.00	4.46	159.30	159.30
<b>+1.20D+L+1.60S+1.60H, LL Com</b>													
Dsgn. L = 3.94 ft	1	0.297	0.119	74.12		74.12	277.08	249.38	1.69	1.00	18.91	159.30	159.30
Dsgn. L = 4.03 ft	1	0.473	0.118	118.04	74.12	118.04	277.08	249.38	1.18	1.00	18.75	159.30	159.30
Dsgn. L = 4.03 ft	1	0.518	0.067	129.19	118.04	129.19	277.08	249.38	1.04	1.00	10.68	159.30	159.30
Dsgn. L = 3.94 ft	1	0.518	0.034	129.19	108.09	129.19	277.08	249.38	1.07	1.00	5.44	159.30	159.30
Dsgn. L = 4.03 ft	1	0.433	0.085	108.09	54.47	108.09	277.08	249.38	1.24	1.00	13.51	159.30	159.30
Dsgn. L = 4.03 ft	1	0.218	0.135	54.47	-31.92	54.47	277.08	249.38	2.14	1.00	21.57	159.30	159.30
Dsgn. L = 4.00 ft	2	0.128	0.051		-31.92	31.92	277.08	249.38	1.00	1.00	8.06	159.30	159.30
<b>+1.20D+1.60S+0.50W+1.60H</b>													
Dsgn. L = 3.94 ft	1	0.165	0.066	41.06		41.06	277.08	249.38	1.69	1.00	10.51	159.30	159.30
Dsgn. L = 4.03 ft	1	0.262	0.065	65.40	41.06	65.40	277.08	249.38	1.17	1.00	10.35	159.30	159.30
Dsgn. L = 4.03 ft	1	0.287	0.037	71.59	65.40	71.59	277.08	249.38	1.04	1.00	5.88	159.30	159.30
Dsgn. L = 3.94 ft	1	0.287	0.019	71.59	59.94	71.59	277.08	249.38	1.07	1.00	3.04	159.30	159.30
Dsgn. L = 4.03 ft	1	0.240	0.047	59.94	30.28	59.94	277.08	249.38	1.24	1.00	7.51	159.30	159.30
Dsgn. L = 4.03 ft	1	0.121	0.075	30.28	-17.52	30.28	277.08	249.38	2.14	1.00	11.97	159.30	159.30
Dsgn. L = 4.00 ft	2	0.070	0.028		-17.52	17.52	277.08	249.38	1.00	1.00	4.46	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.94 ft	1	0.102	0.041	25.47		25.47	277.08	249.38	1.69	1.00	6.55	159.30	159.30
Dsgn. L = 4.03 ft	1	0.159	0.040	39.56	25.47	39.56	277.08	249.38	1.16	1.00	6.39	159.30	159.30
Dsgn. L = 4.03 ft	1	0.166	0.021	41.35	39.56	41.35	277.08	249.38	1.02	1.00	3.36	159.30	159.30
Dsgn. L = 3.94 ft	1	0.166	0.017	41.35	31.12	41.35	277.08	249.38	1.11	1.00	2.68	159.30	159.30
Dsgn. L = 4.03 ft	1	0.125	0.036	31.12	8.62	31.12	277.08	249.38	1.39	1.00	5.71	159.30	159.30
Dsgn. L = 4.03 ft	1	0.105	0.055	8.62	-26.16	26.16	277.08	249.38	2.11	1.00	8.73	159.30	159.30
Dsgn. L = 4.00 ft	2	0.105	0.042		-26.16	26.16	277.08	249.38	1.00	1.00	6.62	159.30	159.30

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B48**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.94 ft	1	0.254	0.101	63.26		63.26	277.08	249.38	1.69	1.00	16.15	159.30	159.30
Dsgn. L = 4.03 ft	1	0.408	0.100	101.76	63.26	101.76	277.08	249.38	1.18	1.00	15.99	159.30	159.30
Dsgn. L = 4.03 ft	1	0.455	0.059	113.35	101.76	113.35	277.08	249.38	1.04	1.00	9.36	159.30	159.30
Dsgn. L = 3.94 ft	1	0.455	0.024	113.35	98.39	113.35	277.08	249.38	1.05	1.00	3.88	159.30	159.30
Dsgn. L = 4.03 ft	1	0.395	0.066	98.39	56.78	98.39	277.08	249.38	1.20	1.00	10.51	159.30	159.30
Dsgn. L = 4.03 ft	1	0.228	0.108	56.78	-11.76	56.78	277.08	249.38	1.93	1.00	17.13	159.30	159.30
Dsgn. L = 4.00 ft	2	0.047	0.019		-11.76	11.76	277.08	249.38	1.00	1.00	3.02	159.30	159.30
<b>+1.20D+0.50Lr+L+W+1.60H, LL C</b>													
Dsgn. L = 3.94 ft	1	0.244	0.098	60.90		60.90	277.08	249.38	1.69	1.00	15.55	159.30	159.30
Dsgn. L = 4.03 ft	1	0.389	0.097	96.98	60.90	96.98	277.08	249.38	1.18	1.00	15.39	159.30	159.30
Dsgn. L = 4.03 ft	1	0.426	0.055	106.15	96.98	106.15	277.08	249.38	1.04	1.00	8.76	159.30	159.30
Dsgn. L = 3.94 ft	1	0.426	0.028	106.15	88.83	106.15	277.08	249.38	1.07	1.00	4.48	159.30	159.30
Dsgn. L = 4.03 ft	1	0.356	0.070	88.83	44.80	88.83	277.08	249.38	1.24	1.00	11.11	159.30	159.30
Dsgn. L = 4.03 ft	1	0.180	0.111	44.80	-26.16	44.80	277.08	249.38	2.14	1.00	17.73	159.30	159.30
Dsgn. L = 4.00 ft	2	0.105	0.042		-26.16	26.16	277.08	249.38	1.00	1.00	6.62	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 3.94 ft	1	0.119	0.048	29.60		29.60	277.08	249.38	1.69	1.00	7.60	159.30	159.30
Dsgn. L = 4.03 ft	1	0.185	0.047	46.14	29.60	46.14	277.08	249.38	1.17	1.00	7.44	159.30	159.30
Dsgn. L = 4.03 ft	1	0.195	0.025	48.55	46.14	48.55	277.08	249.38	1.02	1.00	3.96	159.30	159.30
Dsgn. L = 3.94 ft	1	0.195	0.019	48.55	37.14	48.55	277.08	249.38	1.10	1.00	2.98	159.30	159.30
Dsgn. L = 4.03 ft	1	0.149	0.041	37.14	11.65	37.14	277.08	249.38	1.36	1.00	6.46	159.30	159.30
Dsgn. L = 4.03 ft	1	0.112	0.062	11.65	-27.96	27.96	277.08	249.38	2.13	1.00	9.93	159.30	159.30
Dsgn. L = 4.00 ft	2	0.112	0.044		-27.96	27.96	277.08	249.38	1.00	1.00	7.07	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 3.94 ft	1	0.270	0.108	67.39		67.39	277.08	249.38	1.69	1.00	17.20	159.30	159.30
Dsgn. L = 4.03 ft	1	0.434	0.107	108.35	67.39	108.35	277.08	249.38	1.18	1.00	17.04	159.30	159.30
Dsgn. L = 4.03 ft	1	0.483	0.063	120.55	108.35	120.55	277.08	249.38	1.04	1.00	9.96	159.30	159.30
Dsgn. L = 3.94 ft	1	0.483	0.026	120.55	104.41	120.55	277.08	249.38	1.06	1.00	4.18	159.30	159.30
Dsgn. L = 4.03 ft	1	0.419	0.071	104.41	59.80	104.41	277.08	249.38	1.20	1.00	11.26	159.30	159.30
Dsgn. L = 4.03 ft	1	0.240	0.115	59.80	-13.56	59.80	277.08	249.38	1.95	1.00	18.33	159.30	159.30
Dsgn. L = 4.00 ft	2	0.054	0.022		-13.56	13.56	277.08	249.38	1.00	1.00	3.47	159.30	159.30
<b>+1.20D+L+0.50S+W+1.60H, LL C</b>													
Dsgn. L = 3.94 ft	1	0.261	0.104	65.03		65.03	277.08	249.38	1.69	1.00	16.60	159.30	159.30
Dsgn. L = 4.03 ft	1	0.415	0.103	103.56	65.03	103.56	277.08	249.38	1.18	1.00	16.44	159.30	159.30
Dsgn. L = 4.03 ft	1	0.455	0.059	113.35	103.56	113.35	277.08	249.38	1.04	1.00	9.36	159.30	159.30
Dsgn. L = 3.94 ft	1	0.455	0.030	113.35	94.85	113.35	277.08	249.38	1.07	1.00	4.78	159.30	159.30
Dsgn. L = 4.03 ft	1	0.380	0.074	94.85	47.82	94.85	277.08	249.38	1.24	1.00	11.86	159.30	159.30
Dsgn. L = 4.03 ft	1	0.192	0.119	47.82	-27.96	47.82	277.08	249.38	2.14	1.00	18.93	159.30	159.30
Dsgn. L = 4.00 ft	2	0.112	0.044		-27.96	27.96	277.08	249.38	1.00	1.00	7.07	159.30	159.30
<b>+0.90D+W+1.60H</b>													
Dsgn. L = 3.94 ft	1	0.084	0.034	20.87		20.87	277.08	249.38	1.69	1.00	5.37	159.30	159.30
Dsgn. L = 4.03 ft	1	0.133	0.033	33.25	20.87	33.25	277.08	249.38	1.17	1.00	5.24	159.30	159.30
Dsgn. L = 4.03 ft	1	0.146	0.019	36.41	33.25	36.41	277.08	249.38	1.03	1.00	2.97	159.30	159.30
Dsgn. L = 3.94 ft	1	0.146	0.010	36.41	30.51	36.41	277.08	249.38	1.07	1.00	1.56	159.30	159.30
Dsgn. L = 4.03 ft	1	0.122	0.024	30.51	15.45	30.51	277.08	249.38	1.24	1.00	3.83	159.30	159.30
Dsgn. L = 4.03 ft	1	0.062	0.038	15.45	-8.82	15.45	277.08	249.38	2.13	1.00	6.10	159.30	159.30
Dsgn. L = 4.00 ft	2	0.035	0.014		-8.82	8.82	277.08	249.38	1.00	1.00	2.27	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 3.94 ft	1	0.109	0.044	27.12		27.12	277.08	249.38	1.69	1.00	6.97	159.30	159.30
Dsgn. L = 4.03 ft	1	0.169	0.043	42.19	27.12	42.19	277.08	249.38	1.17	1.00	6.81	159.30	159.30
Dsgn. L = 4.03 ft	1	0.177	0.023	44.23	42.19	44.23	277.08	249.38	1.02	1.00	3.60	159.30	159.30
Dsgn. L = 3.94 ft	1	0.177	0.018	44.23	33.52	44.23	277.08	249.38	1.10	1.00	2.80	159.30	159.30
Dsgn. L = 4.03 ft	1	0.134	0.038	33.52	9.83	33.52	277.08	249.38	1.38	1.00	6.01	159.30	159.30
Dsgn. L = 4.03 ft	1	0.108	0.058	9.83	-26.88	26.88	277.08	249.38	2.12	1.00	9.21	159.30	159.30
Dsgn. L = 4.00 ft	2	0.108	0.043		-26.88	26.88	277.08	249.38	1.00	1.00	6.80	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 3.94 ft	1	0.260	0.104	64.91		64.91	277.08	249.38	1.69	1.00	16.57	159.30	159.30
Dsgn. L = 4.03 ft	1	0.419	0.103	104.40	64.91	104.40	277.08	249.38	1.18	1.00	16.41	159.30	159.30
Dsgn. L = 4.03 ft	1	0.466	0.060	116.23	104.40	116.23	277.08	249.38	1.04	1.00	9.60	159.30	159.30
Dsgn. L = 3.94 ft	1	0.466	0.025	116.23	100.80	116.23	277.08	249.38	1.05	1.00	4.00	159.30	159.30
Dsgn. L = 4.03 ft	1	0.404	0.068	100.80	57.99	100.80	277.08	249.38	1.20	1.00	10.81	159.30	159.30
Dsgn. L = 4.03 ft	1	0.233	0.111	57.99	-12.48	57.99	277.08	249.38	1.94	1.00	17.61	159.30	159.30



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B48**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 4.00 ft	2	0.050	0.020		-12.48	12.48	277.08	249.38	1.00	1.00	3.20	159.30	159.30
<b>+1.20D+L+0.20S+E+1.60H, LL C</b>													
Dsgn. L = 3.94 ft	1	0.251	0.100	62.55		62.55	277.08	249.38	1.69	1.00	15.97	159.30	159.30
Dsgn. L = 4.03 ft	1	0.399	0.099	99.62	62.55	99.62	277.08	249.38	1.18	1.00	15.81	159.30	159.30
Dsgn. L = 4.03 ft	1	0.437	0.057	109.03	99.62	109.03	277.08	249.38	1.04	1.00	9.00	159.30	159.30
Dsgn. L = 3.94 ft	1	0.437	0.029	109.03	91.24	109.03	277.08	249.38	1.07	1.00	4.60	159.30	159.30
Dsgn. L = 4.03 ft	1	0.366	0.072	91.24	46.01	91.24	277.08	249.38	1.24	1.00	11.41	159.30	159.30
Dsgn. L = 4.03 ft	1	0.184	0.114	46.01	-26.88	46.01	277.08	249.38	2.14	1.00	18.21	159.30	159.30
Dsgn. L = 4.00 ft	2	0.108	0.043		-26.88	26.88	277.08	249.38	1.00	1.00	6.80	159.30	159.30
<b>+0.90D+E+0.90H</b>													
Dsgn. L = 3.94 ft	1	0.084	0.034	20.87		20.87	277.08	249.38	1.69	1.00	5.37	159.30	159.30
Dsgn. L = 4.03 ft	1	0.133	0.033	33.25	20.87	33.25	277.08	249.38	1.17	1.00	5.24	159.30	159.30
Dsgn. L = 4.03 ft	1	0.146	0.019	36.41	33.25	36.41	277.08	249.38	1.03	1.00	2.97	159.30	159.30
Dsgn. L = 3.94 ft	1	0.146	0.010	36.41	30.51	36.41	277.08	249.38	1.07	1.00	1.56	159.30	159.30
Dsgn. L = 4.03 ft	1	0.122	0.024	30.51	15.45	30.51	277.08	249.38	1.24	1.00	3.83	159.30	159.30
Dsgn. L = 4.03 ft	1	0.062	0.038	15.45	-8.82	15.45	277.08	249.38	2.13	1.00	6.10	159.30	159.30
Dsgn. L = 4.00 ft	2	0.035	0.014		-8.82	8.82	277.08	249.38	1.00	1.00	2.27	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.7189	12.000	+D+L+H	0.0000	0.000
	2	0.0000	12.000		-0.3580	4.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	20.942	28.478	
Max Upward from Load Combinations	20.942	28.478	
Max Upward from Load Cases	12.600	16.800	
Max Downward from all Load Conditions (Resis	-0.600		
Max Downward from Load Cases (Resisting U	-0.600		
+D+H	8.342	11.678	
+D+L+H, LL Comb Run (*L)	7.742	19.478	
+D+L+H, LL Comb Run (L*)	20.942	20.678	
+D+L+H, LL Comb Run (LL)	20.342	28.478	
+D+Lr+H, LL Comb Run (*L)	8.342	11.678	
+D+Lr+H, LL Comb Run (L*)	8.342	11.678	
+D+Lr+H, LL Comb Run (LL)	8.342	11.678	
+D+S+H	11.342	15.878	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	7.892	17.528	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	17.792	18.428	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	17.342	24.278	
+D+0.750L+0.750S+H, LL Comb Run (*L)	10.142	20.678	
+D+0.750L+0.750S+H, LL Comb Run (L*)	20.042	21.578	
+D+0.750L+0.750S+H, LL Comb Run (LL)	19.592	27.428	
+D+0.60W+H	8.342	11.678	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	7.892	17.528	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	17.792	18.428	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	17.342	24.278	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	10.142	20.678	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	20.042	21.578	
+D+0.750L+0.750S+0.450W+H, LL Comb Run	19.592	27.428	
+0.60D+0.60W+0.60H	5.005	7.007	
+D+0.70E+0.60H	8.342	11.678	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	10.142	20.678	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	20.042	21.578	
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	19.592	27.428	
+0.60D+0.70E+H	5.005	7.007	
D Only	8.342	11.678	
L Only, LL Comb Run (*L)	-0.600	7.800	
L Only, LL Comb Run (L*)	12.600	9.000	
L Only, LL Comb Run (LL)	12.000	16.800	
S Only	3.000	4.200	
H Only			





Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: B51**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 16.00 ft	16.00 ft	1	0.401	0.145	34.71	34.71	96.25	86.63	1.00	1.00	8.44	58.29	58.29
+0.90D+W+1.60H													
Dsgn. L = 16.00 ft	16.00 ft	1	0.131	0.047	11.38	11.38	96.25	86.63	1.00	1.00	2.74	58.29	58.29
+1.20D+L+0.20S+E+1.60H													
Dsgn. L = 16.00 ft	16.00 ft	1	0.386	0.139	33.41	33.41	96.25	86.63	1.00	1.00	8.12	58.29	58.29
+0.90D+E+0.90H													
Dsgn. L = 16.00 ft	16.00 ft	1	0.131	0.047	11.38	11.38	96.25	86.63	1.00	1.00	2.74	58.29	58.29

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.5683	8.229		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	6.314	7.300		
Max Upward from Load Combinations	6.314	7.300		
Max Upward from Load Cases	3.729	4.251		
+D+H	2.584	3.050		
+D+L+H	6.314	7.300		
+D+Lr+H	2.584	3.050		
+D+S+H	3.515	4.109		
+D+0.750Lr+0.750L+H	5.381	6.238		
+D+0.750L+0.750S+H	6.079	7.032		
+D+0.60W+H	2.584	3.050		
+D+0.750Lr+0.750L+0.450W+H	5.381	6.238		
+D+0.750L+0.750S+0.450W+H	6.079	7.032		
+0.60D+0.60W+0.60H	1.551	1.830		
+D+0.70E+0.60H	2.584	3.050		
+D+0.750L+0.750S+0.5250E+H	6.079	7.032		
+0.60D+0.70E+H	1.551	1.830		
D Only	2.584	3.050		
L Only	3.729	4.251		
S Only	0.931	1.059		
H Only				



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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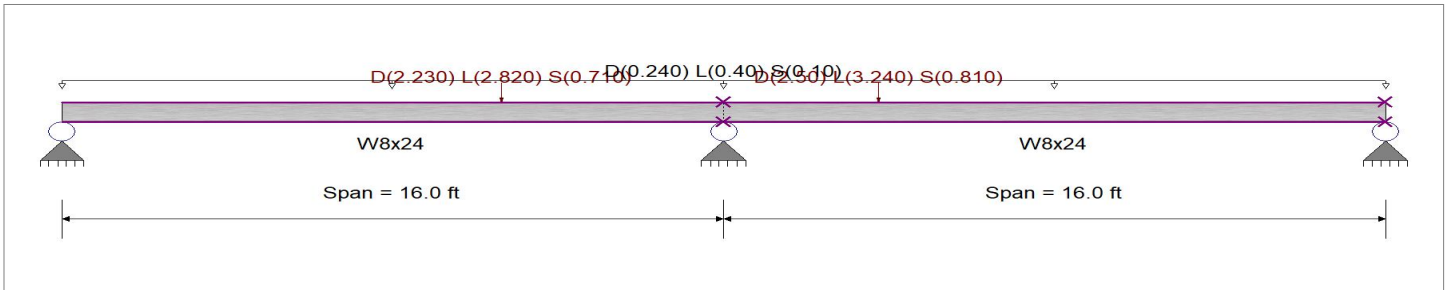
DESCRIPTION: **B52**

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Loads on all spans...

Uniform Load on ALL spans : D = 0.060, L = 0.10, S = 0.0250 ksf, Tributary Width = 4.0 ft

Load(s) for Span Number 1

Point Load : D = 2.230, L = 2.820, S = 0.710 k @ 10.640 ft

Load(s) for Span Number 2

Point Load : D = 2.50, L = 3.240, S = 0.810 k @ 3.750 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.627</b> : 1	Maximum Shear Stress Ratio =	<b>0.309</b> : 1
Section used for this span	<b>W8x24</b>	Section used for this span	<b>W8x24</b>
Mu : Applied	54.294 k-ft	Vu : Applied	18.024 k
Mn * Phi : Allowable	86.625 k-ft	Vn * Phi : Allowable	58.286 k
Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)	Load Combination	1.20D+1.60L+0.50S+1.60H, LL Comb Run (LL)
Span # where maximum occurs	Span # 1	Location of maximum on span	16.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.274 in Ratio = <b>700</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Upward Transient Deflection	-0.126 in Ratio = <b>1,517</b> >=360.	Span: 2 : L Only, LL Comb Run (L*)	
Max Downward Total Deflection	0.383 in Ratio = <b>501</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	
Max Upward Total Deflection	-0.061 in Ratio = <b>3161</b> >=240.	Span: 2 : +D+L+H, LL Comb Run (L*)	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D+1.60H														
Dsgn. L = 16.00 ft	1		0.241	0.119	9.84	-20.89	20.89	96.25	86.63	1.00	1.00	6.94	58.29	58.29
Dsgn. L = 16.00 ft	2		0.241	0.119	8.26	-20.89	20.89	96.25	86.63	1.00	1.00	6.94	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.401	0.276	2.51	-34.72	34.72	96.25	86.63	1.00	1.00	16.09	58.29	58.29
Dsgn. L = 16.00 ft	2		0.401	0.276	28.64	-34.72	34.72	96.25	86.63	1.00	1.00	16.09	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.402	0.251	32.49	-34.84	34.84	96.25	86.63	1.00	1.00	14.61	58.29	58.29
Dsgn. L = 16.00 ft	2		0.402	0.120	1.77	-34.84	34.84	96.25	86.63	1.00	1.00	7.01	58.29	58.29
+1.20D+0.50Lr+1.60L+1.60H, LL														
Dsgn. L = 16.00 ft	1		0.596	0.294	24.41	-51.65	51.65	96.25	86.63	1.00	1.00	17.15	58.29	58.29
Dsgn. L = 16.00 ft	2		0.596	0.294	21.03	-51.65	51.65	96.25	86.63	1.00	1.00	17.15	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL (														
Dsgn. L = 16.00 ft	1		0.431	0.291	3.55	-37.36	37.36	96.25	86.63	1.00	1.00	16.97	58.29	58.29

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: B52**

**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
Segment Length	Span #	M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 16.00 ft	2	0.431	0.291	29.69	-37.36	37.36	96.25	86.63	1.00	1.00	16.97	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.433	0.264	33.71	-37.48	37.48	96.25	86.63	1.00	1.00	15.41	58.29	58.29
Dsgn. L = 16.00 ft	2	0.433	0.135	2.63	-37.48	37.48	96.25	86.63	1.00	1.00	7.88	58.29	58.29
+1.20D+1.60L+0.50S+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.627	0.309	25.66	-54.29	54.29	96.25	86.63	1.00	1.00	18.02	58.29	58.29
Dsgn. L = 16.00 ft	2	0.627	0.309	22.12	-54.29	54.29	96.25	86.63	1.00	1.00	18.02	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com													
Dsgn. L = 16.00 ft	1	0.328	0.211	4.32	-28.42	28.42	96.25	86.63	1.00	1.00	12.29	58.29	58.29
Dsgn. L = 16.00 ft	2	0.328	0.211	20.50	-28.42	28.42	96.25	86.63	1.00	1.00	12.29	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com													
Dsgn. L = 16.00 ft	1	0.329	0.192	23.42	-28.49	28.49	96.25	86.63	1.00	1.00	11.17	58.29	58.29
Dsgn. L = 16.00 ft	2	0.329	0.113	3.35	-28.49	28.49	96.25	86.63	1.00	1.00	6.61	58.29	58.29
+1.20D+1.60Lr+L+1.60H, LL Com													
Dsgn. L = 16.00 ft	1	0.450	0.222	18.41	-39.00	39.00	96.25	86.63	1.00	1.00	12.95	58.29	58.29
Dsgn. L = 16.00 ft	2	0.450	0.222	15.80	-39.00	39.00	96.25	86.63	1.00	1.00	12.95	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 16.00 ft	1	0.207	0.102	8.43	-17.91	17.91	96.25	86.63	1.00	1.00	5.95	58.29	58.29
Dsgn. L = 16.00 ft	2	0.207	0.102	7.08	-17.91	17.91	96.25	86.63	1.00	1.00	5.95	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 16.00 ft	1	0.207	0.102	8.43	-17.91	17.91	96.25	86.63	1.00	1.00	5.95	58.29	58.29
Dsgn. L = 16.00 ft	2	0.207	0.102	7.08	-17.91	17.91	96.25	86.63	1.00	1.00	5.95	58.29	58.29
+1.20D+1.60Lr+0.50W+1.60H, LL													
Dsgn. L = 16.00 ft	1	0.207	0.102	8.43	-17.91	17.91	96.25	86.63	1.00	1.00	5.95	58.29	58.29
Dsgn. L = 16.00 ft	2	0.207	0.102	7.08	-17.91	17.91	96.25	86.63	1.00	1.00	5.95	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com													
Dsgn. L = 16.00 ft	1	0.426	0.259	8.15	-36.86	36.86	96.25	86.63	1.00	1.00	15.09	58.29	58.29
Dsgn. L = 16.00 ft	2	0.426	0.259	23.92	-36.86	36.86	96.25	86.63	1.00	1.00	15.09	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com													
Dsgn. L = 16.00 ft	1	0.426	0.236	27.36	-36.94	36.94	96.25	86.63	1.00	1.00	13.73	58.29	58.29
Dsgn. L = 16.00 ft	2	0.426	0.161	6.62	-36.94	36.94	96.25	86.63	1.00	1.00	9.41	58.29	58.29
+1.20D+L+1.60S+1.60H, LL Com													
Dsgn. L = 16.00 ft	1	0.548	0.270	22.42	-47.45	47.45	96.25	86.63	1.00	1.00	15.75	58.29	58.29
Dsgn. L = 16.00 ft	2	0.548	0.270	19.28	-47.45	47.45	96.25	86.63	1.00	1.00	15.75	58.29	58.29
+1.20D+1.60S+0.50W+1.60H													
Dsgn. L = 16.00 ft	1	0.304	0.150	12.44	-26.36	26.36	96.25	86.63	1.00	1.00	8.75	58.29	58.29
Dsgn. L = 16.00 ft	2	0.304	0.150	10.56	-26.36	26.36	96.25	86.63	1.00	1.00	8.75	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.328	0.211	4.32	-28.42	28.42	96.25	86.63	1.00	1.00	12.29	58.29	58.29
Dsgn. L = 16.00 ft	2	0.328	0.211	20.50	-28.42	28.42	96.25	86.63	1.00	1.00	12.29	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.329	0.192	23.42	-28.49	28.49	96.25	86.63	1.00	1.00	11.17	58.29	58.29
Dsgn. L = 16.00 ft	2	0.329	0.113	3.35	-28.49	28.49	96.25	86.63	1.00	1.00	6.61	58.29	58.29
+1.20D+0.50Lr+L+W+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.450	0.222	18.41	-39.00	39.00	96.25	86.63	1.00	1.00	12.95	58.29	58.29
Dsgn. L = 16.00 ft	2	0.450	0.222	15.80	-39.00	39.00	96.25	86.63	1.00	1.00	12.95	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.359	0.226	5.50	-31.06	31.06	96.25	86.63	1.00	1.00	13.16	58.29	58.29
Dsgn. L = 16.00 ft	2	0.359	0.226	21.56	-31.06	31.06	96.25	86.63	1.00	1.00	13.16	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.359	0.205	24.65	-31.13	31.13	96.25	86.63	1.00	1.00	11.97	58.29	58.29
Dsgn. L = 16.00 ft	2	0.359	0.128	4.35	-31.13	31.13	96.25	86.63	1.00	1.00	7.49	58.29	58.29
+1.20D+L+0.50S+W+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.481	0.237	19.67	-41.64	41.64	96.25	86.63	1.00	1.00	13.82	58.29	58.29
Dsgn. L = 16.00 ft	2	0.481	0.237	16.89	-41.64	41.64	96.25	86.63	1.00	1.00	13.82	58.29	58.29
+0.90D+W+1.60H													
Dsgn. L = 16.00 ft	1	0.155	0.077	6.32	-13.43	13.43	96.25	86.63	1.00	1.00	4.46	58.29	58.29
Dsgn. L = 16.00 ft	2	0.155	0.077	5.31	-13.43	13.43	96.25	86.63	1.00	1.00	4.46	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.340	0.217	4.79	-29.47	29.47	96.25	86.63	1.00	1.00	12.64	58.29	58.29
Dsgn. L = 16.00 ft	2	0.340	0.217	20.92	-29.47	29.47	96.25	86.63	1.00	1.00	12.64	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C													
Dsgn. L = 16.00 ft	1	0.341	0.197	23.91	-29.55	29.55	96.25	86.63	1.00	1.00	11.49	58.29	58.29

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: B52**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 16.00 ft	2		0.341	0.119	3.75	-29.55	29.55	96.25	86.63	1.00	1.00	6.96	58.29	58.29
+1.20D+L+0.20S+E+1.60H, LL C														
Dsgn. L = 16.00 ft	1		0.462	0.228	18.92	-40.06	40.06	96.25	86.63	1.00	1.00	13.30	58.29	58.29
Dsgn. L = 16.00 ft	2		0.462	0.228	16.24	-40.06	40.06	96.25	86.63	1.00	1.00	13.30	58.29	58.29
+0.90D+E+0.90H														
Dsgn. L = 16.00 ft	1		0.155	0.077	6.32	-13.43	13.43	96.25	86.63	1.00	1.00	4.46	58.29	58.29
Dsgn. L = 16.00 ft	2		0.155	0.077	5.31	-13.43	13.43	96.25	86.63	1.00	1.00	4.46	58.29	58.29

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.3829	7.680		0.0000	0.000
+D+L+H	2	0.3470	8.320	+D+L+H	-0.0052	0.128

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions	5.409	22.879	5.068
Max Upward from Load Combinations	5.409	22.879	5.068
Max Upward from Load Cases	3.483	13.392	3.303
Max Downward from all Load Conditions (Resis	-0.657		-0.661
Max Downward from Load Cases (Resisting U <sub>r</sub>	-0.657		-0.661
+D+H	1.926	9.487	1.765
+D+L+H, LL Comb Run (*L)	1.270	16.481	5.068
+D+L+H, LL Comb Run (L*)	5.409	15.885	1.104
+D+L+H, LL Comb Run (LL)	4.753	22.879	4.406
+D+Lr+H, LL Comb Run (*L)	1.926	9.487	1.765
+D+Lr+H, LL Comb Run (L*)	1.926	9.487	1.765
+D+Lr+H, LL Comb Run (LL)	1.926	9.487	1.765
+D+S+H	2.634	12.839	2.425
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	1.434	14.732	4.242
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	4.539	14.285	1.269
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	4.046	19.531	3.746
+D+0.750L+0.750S+H, LL Comb Run (*L)	1.965	17.246	4.737
+D+0.750L+0.750S+H, LL Comb Run (L*)	5.070	16.800	1.764
+D+0.750L+0.750S+H, LL Comb Run (LL)	4.577	22.045	4.241
+D+0.60W+H	1.926	9.487	1.765
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	1.434	14.732	4.242
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	4.539	14.285	1.269
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	4.046	19.531	3.746
+D+0.750L+0.750S+0.450W+H, LL Comb Run	1.965	17.246	4.737
+D+0.750L+0.750S+0.450W+H, LL Comb Run	5.070	16.800	1.764
+D+0.750L+0.750S+0.450W+H, LL Comb Run	4.577	22.045	4.241
+0.60D+0.60W+0.60H	1.156	5.692	1.059
+D+0.70E+0.60H	1.926	9.487	1.765
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	1.965	17.246	4.737
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	5.070	16.800	1.764
+D+0.750L+0.750S+0.5250E+H, LL Comb Rur	4.577	22.045	4.241
+0.60D+0.70E+H	1.156	5.692	1.059
D Only	1.926	9.487	1.765
L Only, LL Comb Run (*L)	-0.657	6.994	3.303
L Only, LL Comb Run (L*)	3.483	6.398	-0.661
L Only, LL Comb Run (LL)	2.827	13.392	2.641
S Only	0.708	3.352	0.660
H Only			





Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: B53**

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
+0.90D+W+1.60H	Dsgn. L = 19.25 ft	1	0.160	0.076	39.79	39.79	277.08	249.38	1.00	1.00	12.15	159.30	159.30
+1.20D+L+0.20S+E+1.60H	Dsgn. L = 19.25 ft	1	0.053	0.025	13.12	13.12	277.08	249.38	1.00	1.00	4.00	159.30	159.30
+0.90D+E+0.90H	Dsgn. L = 19.25 ft	1	0.154	0.073	38.30	38.30	277.08	249.38	1.00	1.00	11.70	159.30	159.30
	Dsgn. L = 19.25 ft	1	0.053	0.025	13.12	13.12	277.08	249.38	1.00	1.00	4.00	159.30	159.30

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.1564	10.175		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	5.470	10.504		
Max Upward from Load Combinations	5.470	10.504		
Max Upward from Load Cases	3.147	6.055		
+D+H	2.323	4.449		
+D+L+H	5.470	10.504		
+D+Lr+H	2.323	4.449		
+D+S+H	3.110	5.965		
+D+0.750Lr+0.750L+H	4.683	8.990		
+D+0.750L+0.750S+H	5.274	10.127		
+D+0.60W+H	2.323	4.449		
+D+0.750Lr+0.750L+0.450W+H	4.683	8.990		
+D+0.750L+0.750S+0.450W+H	5.274	10.127		
+0.60D+0.60W+0.60H	1.394	2.669		
+D+0.70E+0.60H	2.323	4.449		
+D+0.750L+0.750S+0.5250E+H	5.274	10.127		
+0.60D+0.70E+H	1.394	2.669		
D Only	2.323	4.449		
L Only	3.147	6.055		
S Only	0.787	1.516		
H Only				







Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B53 - Lateral Check

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
Dsgn. L = 19.25 ft	19.25 ft	1	0.269	0.059	37.86		37.86	156.19	140.57	1.13	1.00	11.52	195.48	195.48
+1.20D+L+0.50S+W+1.60H														
Dsgn. L = 19.25 ft	19.25 ft	1	0.287	0.063	40.34		40.34	156.19	140.57	1.13	1.00	12.28	195.48	195.48
+0.90D+W+1.60H														
Dsgn. L = 19.25 ft	19.25 ft	1	0.096	0.021	13.54		13.54	155.92	140.33	1.13	1.00	4.10	195.48	195.48
+1.403D+L+0.20S+E+1.60H														
Dsgn. L = 19.25 ft	19.25 ft	1	0.536	0.095	-102.13	102.13	211.81	190.63	1.53	1.00	18.65	195.48	195.48	
+0.6966D+E+0.90H														
Dsgn. L = 19.25 ft	19.25 ft	1	0.759	0.093	-133.23	133.23	195.07	175.56	1.41	1.00	18.15	195.48	195.48	

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	E Only	-0.3704	10.120

**Vertical Reactions**

Load Combination	Support notation : Far left is #'		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	5.576	10.610		
Max Upward from Load Combinations	5.576	10.610		
Max Upward from Load Cases	3.147	6.055		
Max Downward from all Load Conditions (Resis)	-12.800	-18.000		
Max Downward from Load Combinations (Resi)	-7.503	-9.867		
Max Downward from Load Cases (Resisting Up)	-12.800	-18.000		
+D+H	2.428	4.555		
+D+L+H	5.576	10.610		
+D+Lr+H	2.428	4.555		
+D+S+H	3.216	6.070		
+D+0.750Lr+0.750L+H	4.789	9.096		
+D+0.750L+0.750S+H	5.379	10.233		
+D+0.60W+H	2.428	4.555		
+D+0.750Lr+0.750L+0.450W+H	4.789	9.096		
+D+0.750L+0.750S+0.450W+H	5.379	10.233		
+0.60D+0.60W+0.60H	1.457	2.733		
+D+0.70E+0.60H	-6.532	-8.045		
+D+0.750L+0.750S+0.5250E+H	-1.341	0.783		
+0.60D+0.70E+H	-7.503	-9.867		
D Only	2.428	4.555		
L Only	3.147	6.055		
S Only	0.787	1.516		
E Only	-12.800	-18.000		
H Only				





Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** B54

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
Dsgn. L = 17.25 ft	17.25 ft	1	0.140	0.295	97.42	97.42	775.00	697.50	1.00	1.00	78.26	264.96	264.96
+0.90D+W+1.60H													
Dsgn. L = 17.25 ft	17.25 ft	1	0.045	0.096	31.69	31.69	775.00	697.50	1.00	1.00	25.34	264.96	264.96
+1.20D+L+0.20S+E+1.60H													
Dsgn. L = 17.25 ft	17.25 ft	1	0.134	0.284	93.74	93.74	775.00	697.50	1.00	1.00	75.29	264.96	264.96
+0.90D+E+0.90H													
Dsgn. L = 17.25 ft	17.25 ft	1	0.045	0.096	31.69	31.69	775.00	697.50	1.00	1.00	25.34	264.96	264.96

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0935	9.463		0.0000	0.000

**Vertical Reactions**

Load Combination	Support notation : Far left is #		Values in KIPS	
	Support 1	Support 2		
Max Upward from all Load Conditions	11.060	67.683		
Max Upward from Load Combinations	11.060	67.683		
Max Upward from Load Cases	6.269	39.531		
+D+H	4.791	28.152		
+D+L+H	11.060	67.683		
+D+Lr+H	4.791	28.152		
+D+S+H	6.359	38.039		
+D+0.750Lr+0.750L+H	9.493	57.800		
+D+0.750L+0.750S+H	10.669	65.216		
+D+0.60W+H	4.791	28.152		
+D+0.750Lr+0.750L+0.450W+H	9.493	57.800		
+D+0.750L+0.750S+0.450W+H	10.669	65.216		
+0.60D+0.60W+0.60H	2.875	16.891		
+D+0.70E+0.60H	4.791	28.152		
+D+0.750L+0.750S+0.5250E+H	10.669	65.216		
+0.60D+0.70E+H	2.875	16.891		
D Only	4.791	28.152		
L Only	6.269	39.531		
S Only	1.568	9.887		
H Only				

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C1**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : **HSS5x5x1/4** Overall Column Height 17.830 ft  
 Analysis Method : Allowable Strength Top & Bottom Fixity Top & Bottom Pinned  
 Steel Stress Grade Brace condition :  
 Fy : Steel Yield 46.0 ksi Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0  
 E : Elastic Bending Modulus 29,000.0 ksi Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 278.505 lbs \* Dead Load Factor

AXIAL LOADS . . .

B1: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 9.930, L = 14.740, S = 3.60 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.5861** : 1  
 Load Combination +D+L  
 Location of max.above base 17.830 ft  
 At maximum location values are . . .  
 Pa : Axial 24.949 k  
 Pn / Omega : Allowabl 51.817 k  
 Ma-x : Applied -1.028 k-ft  
 Mn-x / Omega : Allowable 17.468 k-ft  
 Ma-y : Applied -1.028 k-ft  
 Mn-y / Omega : Allowable 17.468 k-ft

**Maximum Load Reactions . . .**  
 Top along X-X 0.05765 k  
 Bottom along X-X 0.05765 k  
 Top along Y-Y 0.05765 k  
 Bottom along Y-Y 0.05765 k

**Maximum Load Deflections . . .**  
 Along Y-Y -0.07875 in at 10.411 ft above base  
 for load combination : +D+L  
 Along X-X -0.07875 in at 10.411 ft above base  
 for load combination : +D+L

**PASS** Maximum Shear Stress Ratio **0.001740** : 1  
 Load Combination +D+L  
 Location of max.above base 0.0 ft  
 At maximum location values are . . .  
 Va : Applied 0.05765 k  
 Vn / Omega : Allowable 33.124 k

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.197	PASS	0.00 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+L	0.586	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft
+D+S	0.324	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+0.750L	0.499	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+0.750L+0.750S	0.563	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft
+0.60D	0.118	PASS	0.00 ft	1.66	1.66	110.86	110.86	0.000	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	10.209	0.023	0.023		-0.023	0.023				
+D+L	24.949	0.058	0.058		-0.058	0.058				
+D+S	13.809	0.032	0.032		-0.032	0.032				
+D+0.750L	21.264	0.049	0.049		-0.049	0.049				
+D+0.750L+0.750S	23.964	0.055	0.055		-0.055	0.055				
+0.60D	6.125	0.014	0.014		-0.014	0.014				
L Only	14.740	0.034	0.034		-0.034	0.034				
S Only	3.600	0.008	0.008		-0.008	0.008				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C1**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	24.949	0.058	0.058	-0.058	0.058	-1.028		-1.028	
"	Minimum	3.600	0.008	0.008	-0.008	0.008	-0.150		-0.150	
Reaction, X-X Axis Base	Maximum	24.949	0.058	0.058	-0.058	0.058	-1.028		-1.028	
"	Minimum	3.600	0.008	0.008	-0.008	0.008	-0.150		-0.150	
Reaction, Y-Y Axis Base	Maximum	3.600	0.008	0.008	-0.008	0.008	-0.150		-0.150	
"	Minimum	24.949	0.058	0.058	-0.058	0.058	-1.028		-1.028	
Reaction, X-X Axis Top	Maximum	24.949	0.058	0.058	-0.058	0.058	-1.028		-1.028	
"	Minimum	3.600	0.008	0.008	-0.008	0.008	-0.150		-0.150	
Reaction, Y-Y Axis Top	Maximum	24.949	0.058	0.058	-0.058	0.058	-1.028		-1.028	
"	Minimum	3.600	0.008	0.008	-0.008	0.008	-0.150		-0.150	
Moment, X-X Axis Base	Maximum	10.209		0.023	-0.023	0.023	-0.414		-0.414	
"	Minimum	10.209		0.023	-0.023	0.023	-0.414		-0.414	
Moment, Y-Y Axis Base	Maximum	10.209	0.023	0.023	-0.023	0.023	-0.414		-0.414	
"	Minimum	10.209	0.023	0.023	-0.023	0.023	-0.414		-0.414	
Moment, X-X Axis Top	Maximum	3.600	0.008	0.008	-0.008	0.008	-0.150		-0.150	
"	Minimum	24.949	0.058	0.058	-0.058	0.058	-1.028		-1.028	
Moment, Y-Y Axis Top	Maximum	3.600	0.008	0.008	-0.008	0.008	-0.150		-0.150	
"	Minimum	24.949	0.058	0.058	-0.058	0.058	-1.028		-1.028	

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0317 in	10.411 ft	-0.032 in	10.411 ft
+D+L	-0.0787 in	10.411 ft	-0.079 in	10.411 ft
+D+S	-0.0432 in	10.411 ft	-0.043 in	10.411 ft
+D+0.750L	-0.0670 in	10.411 ft	-0.067 in	10.411 ft
+D+0.750L+0.750S	-0.0756 in	10.411 ft	-0.076 in	10.411 ft
+0.60D	-0.0190 in	10.411 ft	-0.019 in	10.411 ft
L Only	-0.0471 in	10.411 ft	-0.047 in	10.411 ft
S Only	-0.0115 in	10.411 ft	-0.011 in	10.411 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

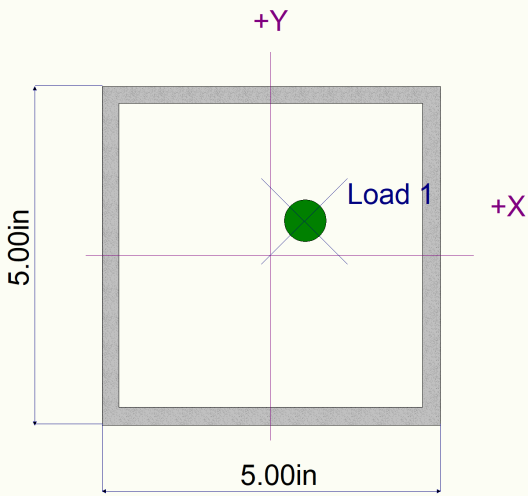
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C1

**Sketches**





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** C2

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 278.505 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B1: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 5.960, L = 9.830, S = 2.160 k  
 B2: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 6.280, L = 9.80, S = 2.290 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.6918</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.005659 k
Location of max.above base	17.830 ft	Bottom along X-X	0.005659 k
At maximum location values are . . .		Top along Y-Y	0.07448 k
Pa : Axial	32.149 k	Bottom along Y-Y	0.07448 k
Pn / Omega : Allowable	51.817 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-1.328 k-ft	Along Y-Y -0.1017 in at	10.411ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	0.07382 k-ft	Along X-X 0.007729 in at	10.411ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+S	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.002248</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.07448 k		
Vn / Omega : Allowable	33.124 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios						
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location	
D Only	0.271	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft	
+D+L	0.692	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft	
+D+S	0.368	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft	
+D+0.750L	0.587	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft	
+D+0.750L+0.750S	0.659	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft	
+0.60D	0.145	PASS	0.00 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft	

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	12.519	-0.004	-0.004	-0.029	0.029				
+D+L	32.149	-0.004	-0.004	-0.074	0.074				
+D+S	16.969	-0.006	-0.006	-0.039	0.039				
+D+0.750L	27.241	-0.004	-0.004	-0.063	0.063				
+D+0.750L+0.750S	30.579	-0.005	-0.005	-0.071	0.071				
+0.60D	7.511	-0.002	-0.002	-0.017	0.017				
L Only	19.630	-0.000	-0.000	-0.046	0.046				
S Only	4.450	-0.002	-0.002	-0.010	0.010				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C2

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	32.149	-0.004	-0.004	-0.074	0.074	-1.328			0.074
"	Minimum	4.450	-0.002	-0.002	-0.010	0.010	-0.185			0.029
Reaction, X-X Axis Base	Maximum	19.630	-0.000	-0.000	-0.046	0.046	-0.818			0.002
"	Minimum	16.969	-0.006	-0.006	-0.039	0.039	-0.695			0.101
Reaction, Y-Y Axis Base	Maximum	4.450	-0.002	-0.002	-0.010	0.010	-0.185			0.029
"	Minimum	32.149	-0.004	-0.004	-0.074	0.074	-1.328			0.074
Reaction, X-X Axis Top	Maximum	19.630	-0.000	-0.000	-0.046	0.046	-0.818			0.002
"	Minimum	16.969	-0.006	-0.006	-0.039	0.039	-0.695			0.101
Reaction, Y-Y Axis Top	Maximum	12.519	-0.004	-0.004	-0.029	0.029	-0.510			0.072
"	Minimum	4.450	-0.002	-0.002	-0.010	0.010	-0.185			0.029
Moment, X-X Axis Base	Maximum	12.519		-0.004	-0.029	0.029	-0.510			0.072
"	Minimum	12.519		-0.004	-0.029	0.029	-0.510			0.072
Moment, Y-Y Axis Base	Maximum	12.519	-0.004	-0.004	-0.029	0.029	0.072			-0.510
"	Minimum	12.519	-0.004	-0.004	-0.029	0.029	0.072			-0.510
Moment, X-X Axis Top	Maximum	4.450	-0.002	-0.002	-0.010	0.010	-0.185			0.029
"	Minimum	32.149	-0.004	-0.004	-0.074	0.074	-1.328			0.074
Moment, Y-Y Axis Top	Maximum	16.969	-0.006	-0.006	-0.039	0.039	-0.695			0.101
"	Minimum	19.630	-0.000	-0.000	-0.046	0.046	-0.818			0.002

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.0055 in	10.411 ft	-0.039 in	10.411 ft
+D+L	0.0057 in	10.411 ft	-0.102 in	10.411 ft
+D+S	0.0077 in	10.411 ft	-0.053 in	10.411 ft
+D+0.750L	0.0056 in	10.411 ft	-0.086 in	10.411 ft
+D+0.750L+0.750S	0.0073 in	10.411 ft	-0.097 in	10.411 ft
+0.60D	0.0033 in	10.411 ft	-0.023 in	10.411 ft
L Only	0.0001 in	10.411 ft	-0.063 in	10.411 ft
S Only	0.0022 in	10.411 ft	-0.014 in	10.411 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

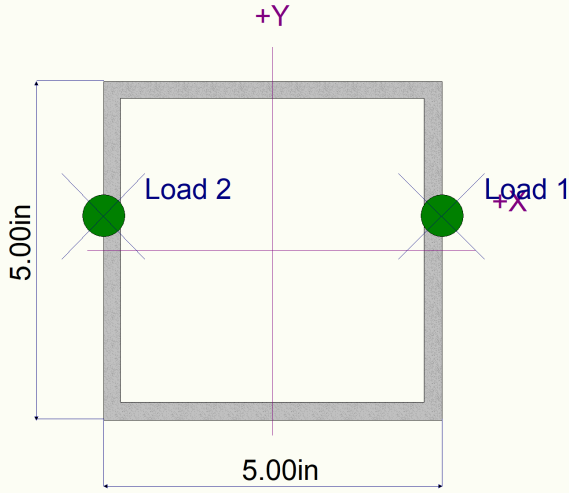
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C2

**Sketches**



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C3**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 278.505 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B3: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 6.280, L = 9.770, S = 2.280 k  
 B2: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 4.150, L = 6.320, S = 1.470 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.6321</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.06471 k
Location of max.above base	17.830 ft	Bottom along X-X	0.06471 k
At maximum location values are . . .		Top along Y-Y	0.06197 k
Pa : Axial	26.799 k	Bottom along Y-Y	0.06197 k
Pn / Omega : Allowable	51.817 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-1.105 k-ft	Along Y-Y -0.08465 in at	10.411ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	-1.154 k-ft	Along X-X -0.08839 in at	10.411ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.001954</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.06471 k		
Vn / Omega : Allowable	33.124 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.251	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+L	0.632	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft
+D+S	0.340	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+0.750L	0.537	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft
+D+0.750L+0.750S	0.604	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft
+0.60D	0.124	PASS	0.00 ft	1.66	1.66	110.86	110.86	0.000	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	10.709	0.025	0.025	-0.024	0.024				
+D+L	26.799	0.065	0.065	-0.062	0.062				
+D+S	14.459	0.034	0.034	-0.033	0.033				
+D+0.750L	22.776	0.055	0.055	-0.053	0.053				
+D+0.750L+0.750S	25.589	0.062	0.062	-0.059	0.059				
+0.60D	6.425	0.015	0.015	-0.015	0.015				
L Only	16.090	0.040	0.040	-0.038	0.038				
S Only	3.750	0.009	0.009	-0.009	0.009				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C3

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	26.799	0.065	0.065	-0.062	0.062	-1.105		-1.154	
"	Minimum	3.750	0.009	0.009	-0.009	0.009	-0.156		-0.168	
Reaction, X-X Axis Base	Maximum	26.799	0.065	0.065	-0.062	0.062	-1.105		-1.154	
"	Minimum	3.750	0.009	0.009	-0.009	0.009	-0.156		-0.168	
Reaction, Y-Y Axis Base	Maximum	3.750	0.009	0.009	-0.009	0.009	-0.156		-0.168	
"	Minimum	26.799	0.065	0.065	-0.062	0.062	-1.105		-1.154	
Reaction, X-X Axis Top	Maximum	26.799	0.065	0.065	-0.062	0.062	-1.105		-1.154	
"	Minimum	3.750	0.009	0.009	-0.009	0.009	-0.156		-0.168	
Reaction, Y-Y Axis Top	Maximum	26.799	0.065	0.065	-0.062	0.062	-1.105		-1.154	
"	Minimum	3.750	0.009	0.009	-0.009	0.009	-0.156		-0.168	
Moment, X-X Axis Base	Maximum	10.709		0.025	-0.024	0.024	-0.435		-0.440	
"	Minimum	10.709		0.025	-0.024	0.024	-0.435		-0.440	
Moment, Y-Y Axis Base	Maximum	10.709	0.025	0.025	-0.024	0.024	-0.440		-0.435	
"	Minimum	10.709	0.025	0.025	-0.024	0.024	-0.440		-0.435	
Moment, X-X Axis Top	Maximum	3.750	0.009	0.009	-0.009	0.009	-0.156		-0.168	
"	Minimum	26.799	0.065	0.065	-0.062	0.062	-1.105		-1.154	
Moment, Y-Y Axis Top	Maximum	3.750	0.009	0.009	-0.009	0.009	-0.156		-0.168	
"	Minimum	26.799	0.065	0.065	-0.062	0.062	-1.105		-1.154	

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0337 in	10.411 ft	-0.033 in	10.411 ft
+D+L	-0.0884 in	10.411 ft	-0.085 in	10.411 ft
+D+S	-0.0466 in	10.411 ft	-0.045 in	10.411 ft
+D+0.750L	-0.0747 in	10.411 ft	-0.072 in	10.411 ft
+D+0.750L+0.750S	-0.0844 in	10.411 ft	-0.081 in	10.411 ft
+0.60D	-0.0202 in	10.411 ft	-0.020 in	10.411 ft
L Only	-0.0547 in	10.411 ft	-0.051 in	10.411 ft
S Only	-0.0128 in	10.411 ft	-0.012 in	10.411 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

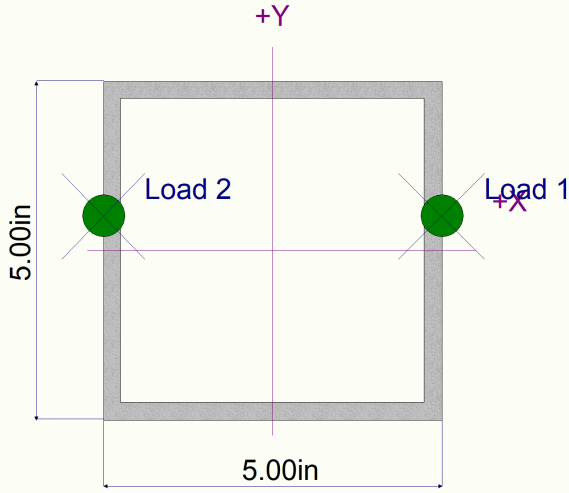
LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: C3**

**Sketches**



18.840k

Height = 17.830

11.810k

Height = 17.830 ft



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: C4**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : **HSS5x5x1/4** Overall Column Height 17.830 ft  
 Analysis Method : Allowable Strength Top & Bottom Fixity Top & Bottom Pinned  
 Steel Stress Grade Brace condition :  
 Fy : Steel Yield 46.0 ksi Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0  
 E : Elastic Bending Modulus 29,000.0 ksi Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 278.505 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B3: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 4.140, L = 6.510, S = 1.520 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.3464** : 1  
 Load Combination +D+L  
 Location of max.above base 17.830 ft  
 At maximum location values are . . .  
 Pa : Axial 10.929 k  
 Pn / Omega : Allowabl 51.817 k  
 Ma-x : Applied -0.4438 k-ft  
 Mn-x / Omega : Allowable 17.468 k-ft  
 Ma-y : Applied -2.219 k-ft  
 Mn-y / Omega : Allowable 17.468 k-ft

**Maximum Load Reactions . . .**  
 Top along X-X 0.1244 k  
 Bottom along X-X 0.1244 k  
 Top along Y-Y 0.02489 k  
 Bottom along Y-Y 0.02489 k

**Maximum Load Deflections . . .**  
 Along Y-Y -0.0340 in at 10.411 ft above base  
 for load combination : +D+L  
 Along X-X -0.170 in at 10.411 ft above base  
 for load combination : +D+L

**PASS** Maximum Shear Stress Ratio = **0.003757** : 1  
 Load Combination +D+L  
 Location of max.above base 0.0 ft  
 At maximum location values are . . .  
 Va : Applied 0.1244 k  
 Vn / Omega : Allowable 33.124 k

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.102	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+L	0.346	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.004	PASS	0.00 ft
+D+S	0.138	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft
+D+0.750L	0.219	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.003	PASS	0.00 ft
+D+0.750L+0.750S	0.331	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.004	PASS	0.00 ft
+0.60D	0.061	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	4.419	0.048	0.048		-0.010	0.010				
+D+L	10.929	0.124	0.124		-0.025	0.025				
+D+S	5.939	0.066	0.066		-0.013	0.013				
+D+0.750L	9.301	0.105	0.105		-0.021	0.021				
+D+0.750L+0.750S	10.441	0.119	0.119		-0.024	0.024				
+0.60D	2.651	0.029	0.029		-0.006	0.006				
L Only	6.510	0.076	0.076		-0.015	0.015				
S Only	1.520	0.018	0.018		-0.004	0.004				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C4

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	10.929	0.124	0.124			-0.025	0.025		-0.444		-2.219
"	Minimum	1.520	0.018	0.018			-0.004	0.004		-0.063		-0.317
Reaction, X-X Axis Base	Maximum	10.929	0.124	0.124			-0.025	0.025		-0.444		-2.219
"	Minimum	1.520	0.018	0.018			-0.004	0.004		-0.063		-0.317
Reaction, Y-Y Axis Base	Maximum	1.520	0.018	0.018			-0.004	0.004		-0.063		-0.317
"	Minimum	10.929	0.124	0.124			-0.025	0.025		-0.444		-2.219
Reaction, X-X Axis Top	Maximum	10.929	0.124	0.124			-0.025	0.025		-0.444		-2.219
"	Minimum	1.520	0.018	0.018			-0.004	0.004		-0.063		-0.317
Reaction, Y-Y Axis Top	Maximum	1.520	0.018	0.018			-0.004	0.004		-0.063		-0.317
"	Minimum	4.419	0.048	0.048			-0.010	0.010		-0.173		-0.862
Moment, X-X Axis Base	Maximum	4.419		0.048			-0.010	0.010		-0.173		-0.862
"	Minimum	4.419		0.048			-0.010	0.010		-0.173		-0.862
Moment, Y-Y Axis Base	Maximum	4.419	0.048	0.048			-0.010	0.010		-0.862		-0.173
"	Minimum	4.419	0.048	0.048			-0.010	0.010		-0.862		-0.173
Moment, X-X Axis Top	Maximum	1.520	0.018	0.018			-0.004	0.004		-0.063		-0.317
"	Minimum	10.929	0.124	0.124			-0.025	0.025		-0.444		-2.219
Moment, Y-Y Axis Top	Maximum	1.520	0.018	0.018			-0.004	0.004		-0.063		-0.317
"	Minimum	10.929	0.124	0.124			-0.025	0.025		-0.444		-2.219

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0661 in	10.411 ft	-0.013 in	10.411 ft
+D+L	-0.1700 in	10.411 ft	-0.034 in	10.411 ft
+D+S	-0.0903 in	10.411 ft	-0.018 in	10.411 ft
+D+0.750L	-0.1440 in	10.411 ft	-0.029 in	10.411 ft
+D+0.750L+0.750S	-0.1622 in	10.411 ft	-0.032 in	10.411 ft
+0.60D	-0.0396 in	10.411 ft	-0.008 in	10.411 ft
L Only	-0.1039 in	10.411 ft	-0.021 in	10.411 ft
S Only	-0.0243 in	10.411 ft	-0.005 in	10.411 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

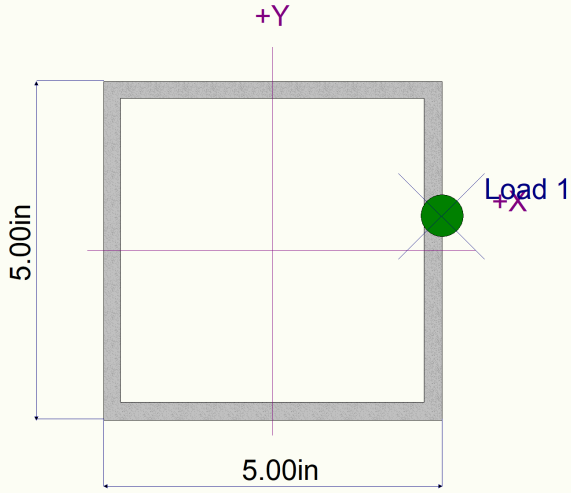
LIC# : KW-06014122, Build:20.24.02.27

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DESCRIPTION: C4

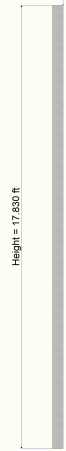
**Sketches**



12.170k



12.170k



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: C5**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	12.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 200.405 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B4: Axial Load at 12.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 2.030, L = 3.280, S = 0.70 k  
 B5: Axial Load at 12.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 5.50, L = 9.080, S = 1.940, E = -4.750 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.4004</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.1515 k
Location of max.above base	12.744 ft	Bottom along X-X	0.1515 k
At maximum location values are . . .		Top along Y-Y	0.06460 k
Pa : Axial	20.090 k	Bottom along Y-Y	0.06460 k
Pn / Omega : Allowable	77.198 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-0.8232 k-ft	Along Y-Y -0.03287 in at	7.491 ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	1.930 k-ft	Along X-X 0.07709 in at	7.491 ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.004573</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.1515 k		
Vn / Omega : Allowable	33.124 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.109	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.002	PASS	0.00 ft
+D+L	0.400	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.005	PASS	0.00 ft
+D+S	0.147	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.002	PASS	0.00 ft
+D+0.750L	0.338	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.004	PASS	0.00 ft
+D+0.750L+0.750S	0.378	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.004	PASS	0.00 ft
+0.60D	0.066	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.001	PASS	0.00 ft
+1.142D+0.70E	0.071	PASS	0.00 ft	1.66	1.66	79.77	79.77	0.001	PASS	0.00 ft
+1.107D+0.750L+0.750S+	0.331	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.003	PASS	0.00 ft
+0.4576D+0.70E	0.022	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction		X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	7.730		-0.057	-0.057	-0.024	0.024				
+D+L	20.090		-0.151	-0.151	-0.065	0.065				
+D+S	10.370		-0.077	-0.077	-0.033	0.033				
+D+0.750L	17.000		-0.128	-0.128	-0.055	0.055				
+D+0.750L+0.750S	18.980		-0.143	-0.143	-0.061	0.061				
+0.60D	4.638		-0.034	-0.034	-0.015	0.015				

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: C5**

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
+D+0.70E	4.405	-0.002	-0.002		-0.014	0.014				
+D+0.750L+0.750S+0.5250E	16.487	-0.102	-0.102		-0.053	0.053				
+0.60D+0.70E	1.313	0.020	0.020		-0.004	0.004				
L Only	12.360	-0.095	-0.095		-0.040	0.040				
S Only	2.640	-0.020	-0.020		-0.009	0.009				
E Only	-4.750	0.077	0.077		0.015	-0.015				

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	20.090	-0.151	-0.151		-0.065	0.065				
"	Minimum	-4.750	0.077	0.077		0.015	-0.015				
Reaction, X-X Axis Base	Maximum	-4.750	0.077	0.077		0.015	-0.015				
"	Minimum	20.090	-0.151	-0.151		-0.065	0.065				
Reaction, Y-Y Axis Base	Maximum	-4.750	0.077	0.077		0.015	-0.015				
"	Minimum	20.090	-0.151	-0.151		-0.065	0.065				
Reaction, X-X Axis Top	Maximum	-4.750	0.077	0.077		0.015	-0.015				
"	Minimum	20.090	-0.151	-0.151		-0.065	0.065				
Reaction, Y-Y Axis Top	Maximum	-4.750	0.077	0.077		0.015	-0.015				
"	Minimum	2.640	-0.020	-0.020		-0.009	0.009				
Moment, X-X Axis Base	Maximum	7.730		-0.057		-0.024	0.024				
"	Minimum	7.730		-0.057		-0.024	0.024				
Moment, Y-Y Axis Base	Maximum	7.730	-0.057	-0.057		-0.024	0.024				
"	Minimum	7.730	-0.057	-0.057		-0.024	0.024				
Moment, X-X Axis Top	Maximum	7.730	-0.057	-0.057		-0.024	0.024				
"	Minimum	7.730	-0.057	-0.057		-0.024	0.024				
Moment, Y-Y Axis Top	Maximum	7.730	-0.057	-0.057		-0.024	0.024				
"	Minimum	7.730	-0.057	-0.057		-0.024	0.024				

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.0289 in	7.491 ft	-0.012 in	7.491 ft
+D+L	0.0771 in	7.491 ft	-0.033 in	7.491 ft
+D+S	0.0392 in	7.491 ft	-0.017 in	7.491 ft
+D+0.750L	0.0650 in	7.491 ft	-0.028 in	7.491 ft
+D+0.750L+0.750S	0.0728 in	7.491 ft	-0.031 in	7.491 ft
+0.60D	0.0173 in	7.491 ft	-0.007 in	7.491 ft
+D+0.70E	0.0013 in	7.491 ft	-0.007 in	7.491 ft
+D+0.750L+0.750S+0.5250E	0.0521 in	7.491 ft	-0.027 in	7.491 ft
+0.60D+0.70E	-0.0103 in	7.491 ft	-0.002 in	7.491 ft
L Only	0.0482 in	7.491 ft	-0.020 in	7.491 ft
S Only	0.0103 in	7.491 ft	-0.004 in	7.491 ft
E Only	-0.0394 in	7.491 ft	0.008 in	7.491 ft

**Steel Section Properties : HSS5x5x1/4**

**Steel Section Properties : HSS5x5x1/4**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

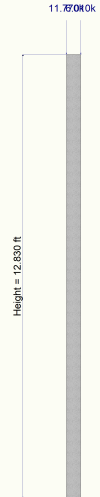
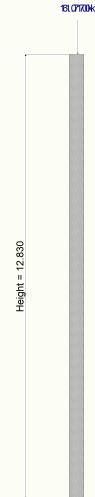
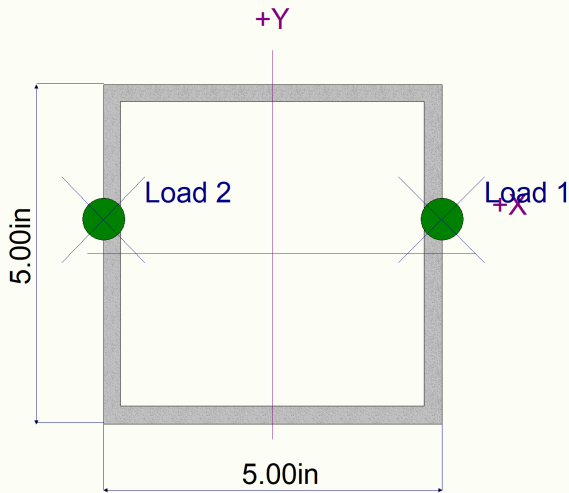
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**DESCRIPTION: C5**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Sketches**





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C6**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	12.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 200.405 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B5: Axial Load at 12.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 5.50, L = 9.080, S = 1.940, E = -4.750 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.3037</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.2377 k
Location of max.above base	12.744 ft	Bottom along X-X	0.2377 k
At maximum location values are . . .		Top along Y-Y	0.04735 k
Pa : Axial	14.780 k	Bottom along Y-Y	0.04735 k
Pn / Omega : Allowabl	77.198 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-0.6034 k-ft	Along Y-Y -0.02410 in at	7.491 ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	3.029 k-ft	Along X-X 0.1210 in at	7.491 ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.007176</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.2377 k		
Vn / Omega : Allowable	33.124 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.115	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.003	PASS	0.00 ft
+D+L	0.304	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.007	PASS	0.00 ft
+D+S	0.156	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.004	PASS	0.00 ft
+D+0.750L	0.257	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.006	PASS	0.00 ft
+D+0.750L+0.750S	0.287	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.007	PASS	0.00 ft
+0.60D	0.069	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.002	PASS	0.00 ft
+1.142D+0.70E	0.063	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.001	PASS	0.00 ft
+1.107D+0.750L+0.750S+	0.247	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.006	PASS	0.00 ft
+0.4576D+0.70E	0.016	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.000	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction		X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	5.700		-0.090	-0.090	-0.018	0.018				
+D+L	14.780		-0.238	-0.238	-0.047	0.047				
+D+S	7.640		-0.121	-0.121	-0.024	0.024				
+D+0.750L	12.510		-0.201	-0.201	-0.040	0.040				
+D+0.750L+0.750S	13.965		-0.224	-0.224	-0.045	0.045				
+0.60D	3.420		-0.054	-0.054	-0.011	0.011				
+D+0.70E	2.375		-0.035	-0.035	-0.007	0.007				

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: C6**

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
+D+0.750L+0.750S+0.5250E	11.472	-0.184	-0.184		-0.037	0.037				
+0.60D+0.70E	0.095	0.000	0.000		0.000	-0.000				
L Only	9.080	-0.148	-0.148		-0.029	0.029				
S Only	1.940	-0.032	-0.032		-0.006	0.006				
E Only	-4.750	0.077	0.077		0.015	-0.015				

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	14.780	-0.238	-0.238		-0.047	0.047				
"	Minimum	-4.750	0.077	0.077		0.015	-0.015				
Reaction, X-X Axis Base	Maximum	-4.750	0.077	0.077		0.015	-0.015				
"	Minimum	14.780	-0.238	-0.238		-0.047	0.047				
Reaction, Y-Y Axis Base	Maximum	-4.750	0.077	0.077		0.015	-0.015				
"	Minimum	14.780	-0.238	-0.238		-0.047	0.047				
Reaction, X-X Axis Top	Maximum	-4.750	0.077	0.077		0.015	-0.015				
"	Minimum	14.780	-0.238	-0.238		-0.047	0.047				
Reaction, Y-Y Axis Top	Maximum	-4.750	0.077	0.077		0.015	-0.015				
"	Minimum	1.940	-0.032	-0.032		-0.006	0.006				
Moment, X-X Axis Base	Maximum	5.700		-0.090		-0.018	0.018				
"	Minimum	5.700		-0.090		-0.018	0.018				
Moment, Y-Y Axis Base	Maximum	5.700	-0.090	-0.090		-0.018	0.018				
"	Minimum	5.700	-0.090	-0.090		-0.018	0.018				
Moment, X-X Axis Top	Maximum	5.700	-0.090	-0.090		-0.018	0.018				
"	Minimum	5.700	-0.090	-0.090		-0.018	0.018				
Moment, Y-Y Axis Top	Maximum	5.700	-0.090	-0.090		-0.018	0.018				
"	Minimum	5.700	-0.090	-0.090		-0.018	0.018				

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.0456 in	7.491 ft	-0.009 in	7.491 ft
+D+L	0.1210 in	7.491 ft	-0.024 in	7.491 ft
+D+S	0.0617 in	7.491 ft	-0.012 in	7.491 ft
+D+0.750L	0.1021 in	7.491 ft	-0.020 in	7.491 ft
+D+0.750L+0.750S	0.1142 in	7.491 ft	-0.023 in	7.491 ft
+0.60D	0.0274 in	7.491 ft	-0.005 in	7.491 ft
+D+0.70E	0.0180 in	7.491 ft	-0.004 in	7.491 ft
+D+0.750L+0.750S+0.5250E	0.0935 in	7.491 ft	-0.019 in	7.491 ft
+0.60D+0.70E	-0.0002 in	7.491 ft	0.000 in	7.491 ft
L Only	0.0753 in	7.491 ft	-0.015 in	7.491 ft
S Only	0.0161 in	7.491 ft	-0.003 in	7.491 ft
E Only	-0.0394 in	7.491 ft	0.008 in	7.491 ft

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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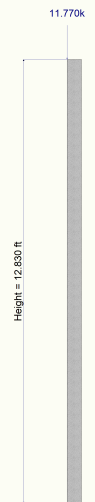
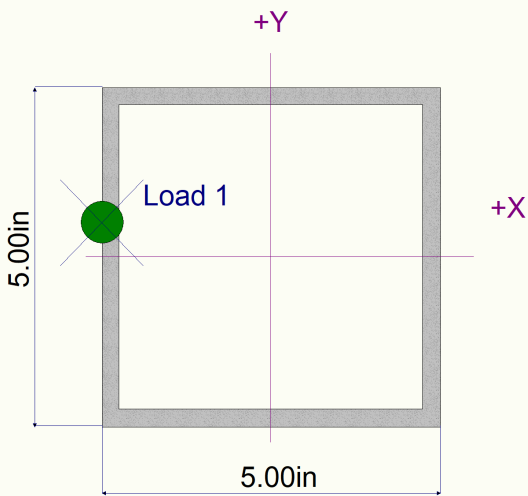
**DESCRIPTION: C6**

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			

Ycg = 0.000 in

**Sketches**



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C7**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS7x5x1/2</b>	Overall Column Height	16.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 16.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 16.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 593.09 lbs \* Dead Load Factor

AXIAL LOADS . . .

B6: Axial Load at 16.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 41.780, L = 60.460, S = 15.020 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.9838</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.2531 k
Location of max.above base	16.830 ft	Bottom along X-X	0.2531 k
At maximum location values are . . .		Top along Y-Y	0.2531 k
Pa : Axial	102.833 k	Bottom along Y-Y	0.2531 k
Pn / Omega : Allowabl	126.465 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-4.260 k-ft	Along Y-Y -0.07677 in at	9.827ft above base
Mn-x / Omega : Allowable	50.269 k-ft	for load combination : +D+L	
Ma-y : Applied	-4.260 k-ft	Along X-X -0.1307 in at	9.827ft above base
Mn-y / Omega : Allowable	39.711 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.004568</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.2531 k		
Vn / Omega : Allowable	55.409 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.405	PASS	16.83 ft	1.66	1.66	80.78	105.74	0.002	PASS	0.00 ft
+D+L	0.984	PASS	16.83 ft	1.66	1.66	80.78	105.74	0.005	PASS	0.00 ft
+D+S	0.549	PASS	16.83 ft	1.66	1.66	80.78	105.74	0.003	PASS	0.00 ft
+D+0.750L	0.839	PASS	16.83 ft	1.66	1.66	80.78	105.74	0.004	PASS	0.00 ft
+D+0.750L+0.750S	0.947	PASS	16.83 ft	1.66	1.66	80.78	105.74	0.004	PASS	0.00 ft
+0.60D	0.243	PASS	16.83 ft	1.66	1.66	80.78	105.74	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	42.373	0.103	0.103	-0.103	0.103				
+D+L	102.833	0.253	0.253	-0.253	0.253				
+D+S	57.393	0.141	0.141	-0.141	0.141				
+D+0.750L	87.718	0.216	0.216	-0.216	0.216				
+D+0.750L+0.750S	98.983	0.244	0.244	-0.244	0.244				
+0.60D	25.424	0.062	0.062	-0.062	0.062				
L Only	60.460	0.150	0.150	-0.150	0.150				
S Only	15.020	0.037	0.037	-0.037	0.037				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C7

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	102.833	0.253	0.253	-0.253	0.253	-4.260	-4.260	-4.260	-4.260		
"	Minimum	15.020	0.037	0.037	-0.037	0.037	-0.626	-0.626	-0.626	-0.626		
Reaction, X-X Axis Base	Maximum	102.833	0.253	0.253	-0.253	0.253	-4.260	-4.260	-4.260	-4.260		
"	Minimum	15.020	0.037	0.037	-0.037	0.037	-0.626	-0.626	-0.626	-0.626		
Reaction, Y-Y Axis Base	Maximum	15.020	0.037	0.037	-0.037	0.037	-0.626	-0.626	-0.626	-0.626		
"	Minimum	102.833	0.253	0.253	-0.253	0.253	-4.260	-4.260	-4.260	-4.260		
Reaction, X-X Axis Top	Maximum	102.833	0.253	0.253	-0.253	0.253	-4.260	-4.260	-4.260	-4.260		
"	Minimum	15.020	0.037	0.037	-0.037	0.037	-0.626	-0.626	-0.626	-0.626		
Reaction, Y-Y Axis Top	Maximum	102.833	0.253	0.253	-0.253	0.253	-4.260	-4.260	-4.260	-4.260		
"	Minimum	15.020	0.037	0.037	-0.037	0.037	-0.626	-0.626	-0.626	-0.626		
Moment, X-X Axis Base	Maximum	42.373		0.103	-0.103	0.103	-1.741	-1.741	-1.741	-1.741		
"	Minimum	42.373		0.103	-0.103	0.103	-1.741	-1.741	-1.741	-1.741		
Moment, Y-Y Axis Base	Maximum	42.373	0.103	0.103	-0.103	0.103	-1.741	-1.741	-1.741	-1.741		
"	Minimum	42.373	0.103	0.103	-0.103	0.103	-1.741	-1.741	-1.741	-1.741		
Moment, X-X Axis Top	Maximum	15.020	0.037	0.037	-0.037	0.037	-0.626	-0.626	-0.626	-0.626		
"	Minimum	102.833	0.253	0.253	-0.253	0.253	-4.260	-4.260	-4.260	-4.260		
Moment, Y-Y Axis Top	Maximum	15.020	0.037	0.037	-0.037	0.037	-0.626	-0.626	-0.626	-0.626		
"	Minimum	102.833	0.253	0.253	-0.253	0.253	-4.260	-4.260	-4.260	-4.260		

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0534 in	9.827 ft	-0.031 in	9.827 ft
+D+L	-0.1307 in	9.827 ft	-0.077 in	9.827 ft
+D+S	-0.0726 in	9.827 ft	-0.043 in	9.827 ft
+D+0.750L	-0.1114 in	9.827 ft	-0.065 in	9.827 ft
+D+0.750L+0.750S	-0.1258 in	9.827 ft	-0.074 in	9.827 ft
+0.60D	-0.0320 in	9.827 ft	-0.019 in	9.827 ft
L Only	-0.0773 in	9.827 ft	-0.045 in	9.827 ft
S Only	-0.0192 in	9.827 ft	-0.011 in	9.827 ft

**Steel Section Properties : HSS7x5x1/2**

Depth	=	7.000 in	I xx	=	60.60 in^4	J	=	75.800 in^4
Design Thick	=	0.465 in	S xx	=	17.30 in^3	Cw	=	27.20 in^6
Width	=	5.000 in	R xx	=	2.500 in			
Wall Thick	=	0.500 in	Zx	=	21.900 in^3			
Area	=	9.740 in^2	I yy	=	35.600 in^4	C	=	27.200 in^3
Weight	=	35.240 plf	S yy	=	14.200 in^3			
			R yy	=	1.910 in			
			Zy	=	17.300 in^3			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

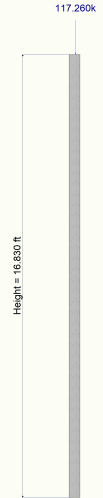
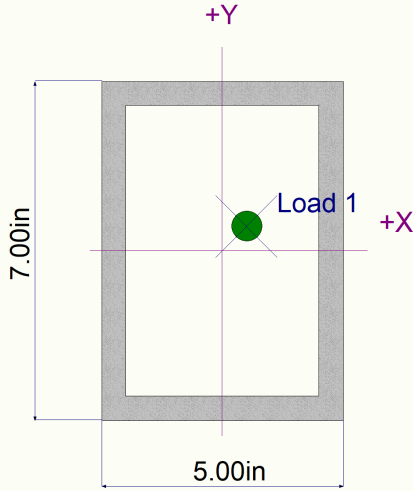
LIC# : KW-06014122, Build:20.24.02.27

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DESCRIPTION: C7

**Sketches**





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C8**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/2</b>	Overall Column Height	16.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 16.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 16.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 478.477 lbs \* Dead Load Factor

AXIAL LOADS . . .

B6: Axial Load at 16.830 ft, Xecc = 0.50 in, Yecc = 2.50 in, D = -7.090, L = -19.520, S = -2.620 k

B7: Axial Load at 16.830 ft, Xecc = 0.50 in, Yecc = -2.510 in, D = 24.260, L = 35.240, S = 8.790 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.9243** : 1

Load Combination	+D+L
Location of max.above base	16.830 ft
At maximum location values are . . .	
Pa : Axial	33.368 k
Pn / Omega : Allowable	94.806 k
Ma-x : Applied	17.989 k-ft
Mn-x / Omega : Allowable	30.070 k-ft
Ma-y : Applied	-1.370 k-ft
Mn-y / Omega : Allowable	30.070 k-ft

**Maximum Load Reactions . .**

Top along X-X	0.08315 k
Bottom along X-X	0.08315 k
Top along Y-Y	1.069 k
Bottom along Y-Y	1.069 k

**Maximum Load Deflections . . .**

Along Y-Y	0.7556 in at	9.827ft	above base
for load combination : +D+L			
Along X-X	-0.05878 in at	9.827ft	above base
for load combination : +D+0.750L+0.750S			

**PASS** Maximum Shear Stress Ratio = **0.01929** : 1

Load Combination	+D+L
Location of max.above base	0.0 ft
At maximum location values are . . .	
Va : Applied	1.069 k
Vn / Omega : Allowable	55.409 k

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios						
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location	
D Only	0.335	PASS	16.83 ft	1.66	1.66	110.97	110.97	0.007	PASS	0.00 ft	
+D+L	0.924	PASS	16.83 ft	1.66	1.66	110.97	110.97	0.019	PASS	0.00 ft	
+D+S	0.544	PASS	16.83 ft	1.66	1.66	110.97	110.97	0.010	PASS	0.00 ft	
+D+0.750L	0.793	PASS	16.83 ft	1.66	1.66	110.97	110.97	0.016	PASS	0.00 ft	
+D+0.750L+0.750S	0.901	PASS	16.83 ft	1.66	1.66	110.97	110.97	0.018	PASS	0.00 ft	
+0.60D	0.201	PASS	16.83 ft	1.66	1.66	110.97	110.97	0.004	PASS	0.00 ft	

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	17.648	0.043	0.043	0.389	-0.389				
+D+L	33.368	0.081	0.081	1.069	-1.069				
+D+S	23.818	0.058	0.058	0.531	-0.531				
+D+0.750L	29.438	0.072	0.072	0.899	-0.899				
+D+0.750L+0.750S	34.066	0.083	0.083	1.005	-1.005				
+0.60D	10.589	0.026	0.026	0.234	-0.234				
L Only	15.720	0.039	0.039	0.680	-0.680				
S Only	6.170	0.015	0.015	0.142	-0.142				



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C8**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Axial @ Base	Maximum	34.066	0.083	0.083			1.005	-1.005		16.918			-1.399
"	Minimum	6.170	0.015	0.015			0.142	-0.142		2.384			-0.257
Reaction, X-X Axis Base	Maximum	34.066	0.083	0.083			1.005	-1.005		16.918			-1.399
"	Minimum	6.170	0.015	0.015			0.142	-0.142		2.384			-0.257
Reaction, Y-Y Axis Base	Maximum	33.368	0.081	0.081			1.069	-1.069		17.989			-1.370
"	Minimum	6.170	0.015	0.015			0.142	-0.142		2.384			-0.257
Reaction, X-X Axis Top	Maximum	34.066	0.083	0.083			1.005	-1.005		16.918			-1.399
"	Minimum	6.170	0.015	0.015			0.142	-0.142		2.384			-0.257
Reaction, Y-Y Axis Top	Maximum	6.170	0.015	0.015			0.142	-0.142		2.384			-0.257
"	Minimum	17.648	0.043	0.043			0.389	-0.389		6.551			-0.715
Moment, X-X Axis Base	Maximum	17.648		0.043			0.389	-0.389		6.551			-0.715
"	Minimum	17.648		0.043			0.389	-0.389		6.551			-0.715
Moment, Y-Y Axis Base	Maximum	17.648	0.043	0.043			0.389	-0.389		-0.715			6.551
"	Minimum	17.648	0.043	0.043			0.389	-0.389		-0.715			6.551
Moment, X-X Axis Top	Maximum	33.368	0.081	0.081			1.069	-1.069		17.989			-1.370
"	Minimum	6.170	0.015	0.015			0.142	-0.142		2.384			-0.257
Moment, Y-Y Axis Top	Maximum	6.170	0.015	0.015			0.142	-0.142		2.384			-0.257
"	Minimum	34.066	0.083	0.083			1.005	-1.005		16.918			-1.399

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0301 in	9.827 ft	0.275 in	9.827 ft
+D+L	-0.0576 in	9.827 ft	0.756 in	9.827 ft
+D+S	-0.0408 in	9.827 ft	0.375 in	9.827 ft
+D+0.750L	-0.0507 in	9.827 ft	0.636 in	9.827 ft
+D+0.750L+0.750S	-0.0588 in	9.827 ft	0.711 in	9.827 ft
+0.60D	-0.0180 in	9.827 ft	0.165 in	9.827 ft
L Only	-0.0275 in	9.827 ft	0.480 in	9.827 ft
S Only	-0.0108 in	9.827 ft	0.100 in	9.827 ft

**Steel Section Properties : HSS5x5x1/2**

Depth	=	5.000 in	I xx	=	26.00 in <sup>4</sup>	J	=	44.600 in <sup>4</sup>
Design Thick	=	0.465 in	S xx	=	10.40 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.820 in			
Wall Thick	=	0.500 in	Zx	=	13.100 in <sup>3</sup>			
Area	=	7.880 in <sup>2</sup>	I yy	=	26.000 in <sup>4</sup>	C	=	18.700 in <sup>3</sup>
Weight	=	28.430 plf	S yy	=	10.400 in <sup>3</sup>			
			R yy	=	1.820 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

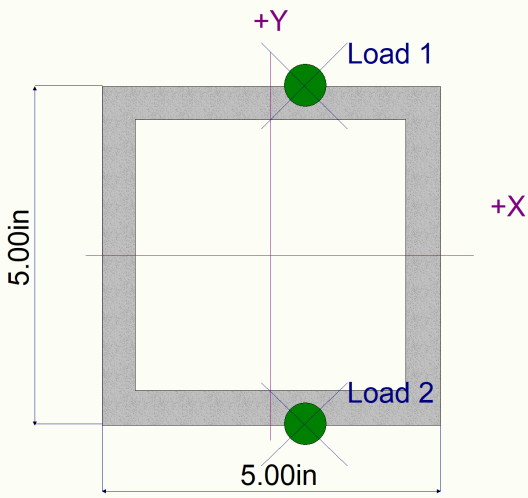
LIC# : KW-06014122, Build:20.24.02.27

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DESCRIPTION: C8

**Sketches**



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C9

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : **HSS7x5x1/2** Overall Column Height 17.830 ft  
 Analysis Method : Load Resistance Factor Top & Bottom Fixity Top & Bottom Pinned  
 Steel Stress Grade Brace condition :  
 Fy : Steel Yield 46.0 ksi Unbraced Length for buckling ABOUT X-X Axis = 12.83 ft, K = 1.0  
 E : Elastic Bending Modulus 29,000.0 ksi Unbraced Length for buckling ABOUT Y-Y Axis = 12.83 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 628.33 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B8: Axial Load at 12.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 24.980, L = 36.0, S = 9.0 k  
 B7: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 25.360, L = 36.920, S = 9.210 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.7886** : 1  
 Load Combination +1.20D+1.60L+0.50S  
 Location of max.above base 12.804 ft  
 At maximum location values are . . .  
 Pu 186.939 k  
 0.9 \* Pn 260.459 k  
 Mu-x -5.571 k-ft  
 0.9 \* Mn-x : 75.555 k-ft  
 Mu-y 0.3605 k-ft  
 0.9 \* Mn-y : 59.685 k-ft

**Maximum Load Reactions . .**  
 Top along X-X 0.01810 k  
 Bottom along X-X 0.01810 k  
 Top along Y-Y 0.2880 k  
 Bottom along Y-Y 0.2880 k

**Maximum Load Deflections . . .**  
 Along Y-Y -0.08629 in at 9.693ft above base  
 for load combination : +D+L  
 Along X-X 0.2072 in at 13.522ft above base  
 for load combination : +D+L

**PASS** Maximum Shear Stress Ratio **0.004032** : 1  
 Load Combination +1.20D+1.60L+0.50S  
 Location of max.above base 0.0 ft  
 At maximum location values are . . .  
 Vu : Applied 0.4351 k  
 Vn \* Phi : Allowable 107.902 k

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Cb <sub>x</sub>	Cb <sub>y</sub>	K <sub>x</sub> L <sub>x</sub> /R <sub>x</sub>	K <sub>y</sub> L <sub>y</sub> /R <sub>y</sub>	Maximum Shear Ratios		
	Stress Ratio	Status	Location	Stress Ratio					Status	Location	
+1.40D	0.300	PASS	12.80 ft	1.69	2.25	61.58	80.61	0.002	PASS	0.00 ft	
+1.20D+1.60L	0.750	PASS	12.80 ft	1.69	2.25	61.58	80.61	0.004	PASS	0.00 ft	
+1.20D+1.60L+0.50S	0.789	PASS	12.80 ft	1.69	2.25	61.58	80.61	0.004	PASS	0.00 ft	
+1.20D+L	0.565	PASS	12.80 ft	1.69	2.25	61.58	80.61	0.003	PASS	0.00 ft	
+1.20D	0.257	PASS	12.80 ft	1.69	2.25	61.58	80.61	0.001	PASS	0.00 ft	
+1.20D+L+1.60S	0.688	PASS	12.80 ft	1.69	2.25	61.58	80.61	0.004	PASS	0.00 ft	
+1.20D+1.60S	0.380	PASS	12.80 ft	1.69	2.25	61.58	80.61	0.002	PASS	0.00 ft	
+1.20D+L+0.50S	0.604	PASS	12.80 ft	1.69	2.25	61.58	80.61	0.003	PASS	0.00 ft	
+0.90D	0.176	PASS	0.00 ft	1.69	2.25	61.58	80.61	0.001	PASS	0.00 ft	
+1.20D+L+0.20S	0.581	PASS	12.80 ft	1.69	2.25	61.58	80.61	0.003	PASS	0.00 ft	

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		M <sub>x</sub> - End Moments		M <sub>y</sub> - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	50.968	-0.006	-0.006	-0.118	0.118				
+D+L	123.888	-0.018	-0.018	-0.288	0.288				
+D+S	69.178	-0.009	-0.009	-0.160	0.160				
+D+0.750L	105.658	-0.015	-0.015	-0.245	0.245				
+D+0.750L+0.750S	119.316	-0.017	-0.017	-0.277	0.277				



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

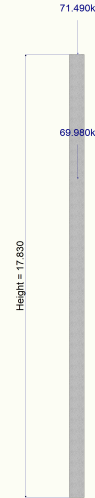
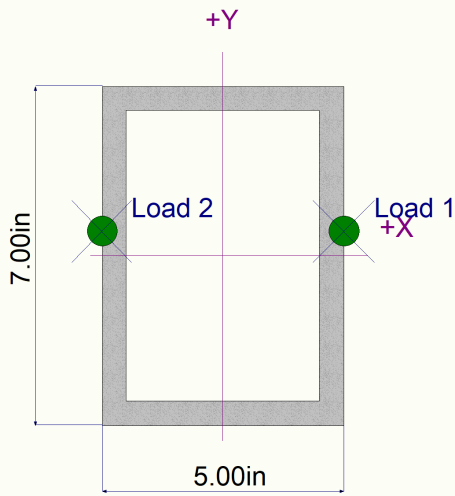
LIC# : KW-06014122, Build:20.24.02.27

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DESCRIPTION: C9

**Sketches**





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: C10**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/2</b>	Overall Column Height	12.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 364.757 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B8: Axial Load at 12.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 24.980, L = 36.0, S = 9.0 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.9065</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.9942 k
Location of max.above base	12.744 ft	Bottom along X-X	0.9942 k
At maximum location values are . . .		Top along Y-Y	0.1980 k
Pa : Axial	61.345 k	Bottom along Y-Y	0.1980 k
Pn / Omega : Allowabl	134.125 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-2.524 k-ft	Along Y-Y -0.06202 in at	7.491 ft above base
Mn-x / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
Ma-y : Applied	12.669 k-ft	Along X-X 0.3114 in at	7.491 ft above base
Mn-y / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.01794</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.9942 k		
Vn / Omega : Allowable	55.409 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.301	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.007	PASS	0.00 ft
+D+L	0.906	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.018	PASS	0.00 ft
+D+S	0.506	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.010	PASS	0.00 ft
+D+0.750L	0.773	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.015	PASS	0.00 ft
+D+0.750L+0.750S	0.873	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.017	PASS	0.00 ft
+0.60D	0.181	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.004	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	25.345	-0.407	-0.407	-0.081	0.081				
+D+L	61.345	-0.994	-0.994	-0.198	0.198				
+D+S	34.345	-0.554	-0.554	-0.110	0.110				
+D+0.750L	52.345	-0.847	-0.847	-0.169	0.169				
+D+0.750L+0.750S	59.095	-0.957	-0.957	-0.191	0.191				
+0.60D	15.207	-0.244	-0.244	-0.049	0.049				
L Only	36.000	-0.587	-0.587	-0.117	0.117				
S Only	9.000	-0.147	-0.147	-0.029	0.029				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C10**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Axial @ Base	Maximum	61.345		-0.994	-0.994		-0.198	0.198					
"	Minimum	9.000		-0.147	-0.147		-0.029	0.029					
Reaction, X-X Axis Base	Maximum	9.000		-0.147	-0.147		-0.029	0.029					
"	Minimum	61.345		-0.994	-0.994		-0.198	0.198					
Reaction, Y-Y Axis Base	Maximum	9.000		-0.147	-0.147		-0.029	0.029					
"	Minimum	61.345		-0.994	-0.994		-0.198	0.198					
Reaction, X-X Axis Top	Maximum	9.000		-0.147	-0.147		-0.029	0.029					
"	Minimum	61.345		-0.994	-0.994		-0.198	0.198					
Reaction, Y-Y Axis Top	Maximum	25.345		-0.407	-0.407		-0.081	0.081					
"	Minimum	9.000		-0.147	-0.147		-0.029	0.029					
Moment, X-X Axis Base	Maximum	25.345			-0.407		-0.081	0.081					
"	Minimum	25.345			-0.407		-0.081	0.081					
Moment, Y-Y Axis Base	Maximum	25.345		-0.407	-0.407		-0.081	0.081					
"	Minimum	25.345		-0.407	-0.407		-0.081	0.081					
Moment, X-X Axis Top	Maximum	25.345		-0.407	-0.407		-0.081	0.081					
"	Minimum	25.345		-0.407	-0.407		-0.081	0.081					
Moment, Y-Y Axis Top	Maximum	25.345		-0.407	-0.407		-0.081	0.081					
"	Minimum	25.345		-0.407	-0.407		-0.081	0.081					

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.1275 in	7.491 ft	-0.025 in	7.491 ft
+D+L	0.3114 in	7.491 ft	-0.062 in	7.491 ft
+D+S	0.1735 in	7.491 ft	-0.035 in	7.491 ft
+D+0.750L	0.2654 in	7.491 ft	-0.053 in	7.491 ft
+D+0.750L+0.750S	0.2999 in	7.491 ft	-0.060 in	7.491 ft
+0.60D	0.0765 in	7.491 ft	-0.015 in	7.491 ft
L Only	0.1838 in	7.491 ft	-0.037 in	7.491 ft
S Only	0.0460 in	7.491 ft	-0.009 in	7.491 ft

**Steel Section Properties : HSS5x5x1/2**

Depth	=	5.000 in	I xx	=	26.00 in <sup>4</sup>	J	=	44.600 in <sup>4</sup>
Design Thick	=	0.465 in	S xx	=	10.40 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.820 in			
Wall Thick	=	0.500 in	Zx	=	13.100 in <sup>3</sup>			
Area	=	7.880 in <sup>2</sup>	I yy	=	26.000 in <sup>4</sup>	C	=	18.700 in <sup>3</sup>
Weight	=	28.430 plf	S yy	=	10.400 in <sup>3</sup>			
			R yy	=	1.820 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

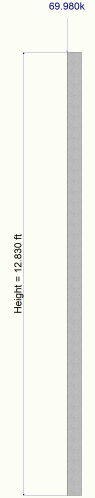
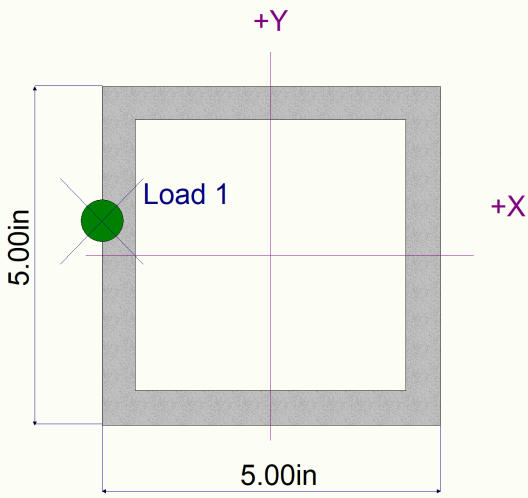
LIC# : KW-06014122, Build:20.24.02.27

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DESCRIPTION: C10

**Sketches**



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C11**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x5/16</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 340.196 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B11: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 16.670, L = 28.380, S = 5.730 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.8939</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.1053 k
Location of max.above base	17.830 ft	Bottom along X-X	0.1053 k
At maximum location values are . . .		Top along Y-Y	0.1053 k
Pa : Axial	45.390 k	Bottom along Y-Y	0.1053 k
Pn / Omega : Allowabl	61.739 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-1.877 k-ft	Along Y-Y	-0.1211 in at 10.411 ft above base
Mn-x / Omega : Allowable	21.026 k-ft	for load combination : +D+L	
Ma-y : Applied	-1.877 k-ft	Along X-X	-0.1211 in at 10.411 ft above base
Mn-y / Omega : Allowable	21.026 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.002652</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.1053 k		
Vn / Omega : Allowable	39.696 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.334	PASS	17.83 ft	1.66	1.66	112.61	112.61	0.001	PASS	0.00 ft
+D+L	0.894	PASS	17.83 ft	1.66	1.66	112.61	112.61	0.003	PASS	0.00 ft
+D+S	0.447	PASS	17.83 ft	1.66	1.66	112.61	112.61	0.001	PASS	0.00 ft
+D+0.750L	0.754	PASS	17.83 ft	1.66	1.66	112.61	112.61	0.002	PASS	0.00 ft
+D+0.750L+0.750S	0.839	PASS	17.83 ft	1.66	1.66	112.61	112.61	0.002	PASS	0.00 ft
+0.60D	0.165	PASS	0.00 ft	1.66	1.66	112.61	112.61	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	17.010	0.039	0.039		-0.039	0.039				
+D+L	45.390	0.105	0.105		-0.105	0.105				
+D+S	22.740	0.052	0.052		-0.052	0.052				
+D+0.750L	38.295	0.089	0.089		-0.089	0.089				
+D+0.750L+0.750S	42.593	0.099	0.099		-0.099	0.099				
+0.60D	10.206	0.023	0.023		-0.023	0.023				
L Only	28.380	0.066	0.066		-0.066	0.066				
S Only	5.730	0.013	0.013		-0.013	0.013				



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C11**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Axial @ Base	Maximum	45.390	0.105	0.105	-0.105	0.105	-1.877	-1.877					
"	Minimum	5.730	0.013	0.013	-0.013	0.013	-0.239	-0.239					
Reaction, X-X Axis Base	Maximum	45.390	0.105	0.105	-0.105	0.105	-1.877	-1.877					
"	Minimum	5.730	0.013	0.013	-0.013	0.013	-0.239	-0.239					
Reaction, Y-Y Axis Base	Maximum	5.730	0.013	0.013	-0.013	0.013	-0.239	-0.239					
"	Minimum	45.390	0.105	0.105	-0.105	0.105	-1.877	-1.877					
Reaction, X-X Axis Top	Maximum	45.390	0.105	0.105	-0.105	0.105	-1.877	-1.877					
"	Minimum	5.730	0.013	0.013	-0.013	0.013	-0.239	-0.239					
Reaction, Y-Y Axis Top	Maximum	45.390	0.105	0.105	-0.105	0.105	-1.877	-1.877					
"	Minimum	5.730	0.013	0.013	-0.013	0.013	-0.239	-0.239					
Moment, X-X Axis Base	Maximum	17.010		0.039	-0.039	0.039	-0.695	-0.695					
"	Minimum	17.010		0.039	-0.039	0.039	-0.695	-0.695					
Moment, Y-Y Axis Base	Maximum	17.010	0.039	0.039	-0.039	0.039	-0.695	-0.695					
"	Minimum	17.010	0.039	0.039	-0.039	0.039	-0.695	-0.695					
Moment, X-X Axis Top	Maximum	5.730	0.013	0.013	-0.013	0.013	-0.239	-0.239					
"	Minimum	45.390	0.105	0.105	-0.105	0.105	-1.877	-1.877					
Moment, Y-Y Axis Top	Maximum	5.730	0.013	0.013	-0.013	0.013	-0.239	-0.239					
"	Minimum	45.390	0.105	0.105	-0.105	0.105	-1.877	-1.877					

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0448 in	10.411 ft	-0.045 in	10.411 ft
+D+L	-0.1211 in	10.411 ft	-0.121 in	10.411 ft
+D+S	-0.0602 in	10.411 ft	-0.060 in	10.411 ft
+D+0.750L	-0.1020 in	10.411 ft	-0.102 in	10.411 ft
+D+0.750L+0.750S	-0.1136 in	10.411 ft	-0.114 in	10.411 ft
+0.60D	-0.0269 in	10.411 ft	-0.027 in	10.411 ft
L Only	-0.0763 in	10.411 ft	-0.076 in	10.411 ft
S Only	-0.0154 in	10.411 ft	-0.015 in	10.411 ft

**Steel Section Properties : HSS5x5x16**

Depth	=	5.000 in	I xx	=	19.00 in <sup>4</sup>	J	=	31.200 in <sup>4</sup>
Design Thick	=	0.291 in	S xx	=	7.62 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.900 in			
Wall Thick	=	0.313 in	Zx	=	9.160 in <sup>3</sup>			
Area	=	5.260 in <sup>2</sup>	I yy	=	19.000 in <sup>4</sup>	C	=	12.800 in <sup>3</sup>
Weight	=	19.080 plf	S yy	=	7.620 in <sup>3</sup>			
			R yy	=	1.900 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

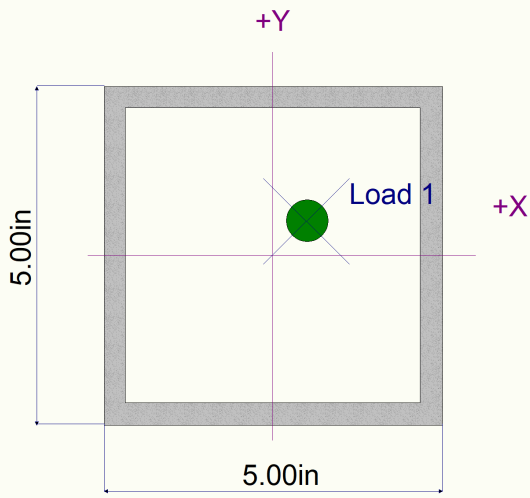
LIC# : KW-06014122, Build:20.24.02.27

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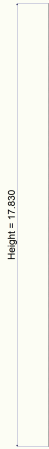
DESCRIPTION: C11

**Sketches**



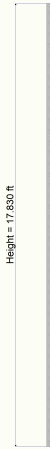
50.780k

Height = 17.830



50.780k

Height = 17.830 ft





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: C12**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS7x5x1/2</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.83 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.83 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 628.33 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

- B12: Axial Load at 12.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 17.140, L = 24.760, S = 5.690 k
- B11: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 13.070, L = 23.130, S = 4.530 k
- B12.1: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 11.310, L = 15.110, S = 3.50 k
- Pop Up Roof: Axial Load at 17.830 ft, D = 5.0, S = 6.250 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.7980</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.3736 k
Location of max.above base	12.804 ft	Bottom along X-X	0.3736 k
At maximum location values are . . .		Top along Y-Y	0.2443 k
Pa : Axial	110.148 k	Bottom along Y-Y	0.2443 k
Pn / Omega : Allowable	173.293 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-3.127 k-ft	Along Y-Y -0.07593 in at	9.812ft above base
Mn-x / Omega : Allowable	50.269 k-ft	for load combination : +D+L	
Ma-y : Applied	-4.784 k-ft	Along X-X -0.1319 in at	8.616ft above base
Mn-y / Omega : Allowable	39.711 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.006743</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.3736 k		
Vn / Omega : Allowable	55.409 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.345	PASS	12.80 ft	1.60	1.44	61.58	80.61	0.003	PASS	0.00 ft
+D+L	0.798	PASS	12.80 ft	1.60	1.44	61.58	80.61	0.007	PASS	0.00 ft
+D+S	0.483	PASS	12.80 ft	1.60	1.44	61.58	80.61	0.004	PASS	0.00 ft
+D+0.750L	0.685	PASS	12.80 ft	1.60	1.44	61.58	80.61	0.006	PASS	0.00 ft
+D+0.750L+0.750S	0.788	PASS	12.80 ft	1.60	1.44	61.58	80.61	0.007	PASS	0.00 ft
+0.60D	0.163	PASS	0.00 ft	1.60	1.44	61.58	80.61	0.002	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	47.148	0.179	0.179	-0.097	0.097				
+D+L	110.148	0.374	0.374	-0.244	0.244				
+D+S	67.118	0.233	0.233	-0.129	0.129				
+D+0.750L	94.398	0.325	0.325	-0.207	0.207				
+D+0.750L+0.750S	109.376	0.366	0.366	-0.231	0.231				
+0.60D	28.289	0.107	0.107	-0.058	0.058				
L Only	63.000	0.195	0.195	-0.147	0.147				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C12**

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
S Only	19.970	0.054	0.054	-0.032	0.032				

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	110.148	0.374	0.374	-0.244	0.244	-2.609			2.068
"	Minimum	19.970	0.054	0.054	-0.032	0.032	-0.335			0.218
Reaction, X-X Axis Base	Maximum	110.148	0.374	0.374	-0.244	0.244	-2.609			2.068
"	Minimum	19.970	0.054	0.054	-0.032	0.032	-0.335			0.218
Reaction, Y-Y Axis Base	Maximum	19.970	0.054	0.054	-0.032	0.032	-0.335			0.218
"	Minimum	110.148	0.374	0.374	-0.244	0.244	-2.609			2.068
Reaction, X-X Axis Top	Maximum	110.148	0.374	0.374	-0.244	0.244	-2.609			2.068
"	Minimum	19.970	0.054	0.054	-0.032	0.032	-0.335			0.218
Reaction, Y-Y Axis Top	Maximum	109.376	0.366	0.366	-0.231	0.231	-2.462			1.809
"	Minimum	19.970	0.054	0.054	-0.032	0.032	-0.335			0.218
Moment, X-X Axis Base	Maximum	47.148		0.179	-0.097	0.097	-1.016			0.378
"	Minimum	47.148		0.179	-0.097	0.097	-1.016			0.378
Moment, Y-Y Axis Base	Maximum	47.148	0.179	0.179	-0.097	0.097	0.378			-1.016
"	Minimum	47.148	0.179	0.179	-0.097	0.097	0.378			-1.016
Moment, X-X Axis Top	Maximum	19.970	0.054	0.054	-0.032	0.032	-0.335			0.218
"	Minimum	110.148	0.374	0.374	-0.244	0.244	-2.609			2.068
Moment, Y-Y Axis Top	Maximum	110.148	0.374	0.374	-0.244	0.244	-2.609			2.068
"	Minimum	19.970	0.054	0.054	-0.032	0.032	-0.335			0.218

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0696 in	8.855 ft	-0.030 in	9.812 ft
+D+L	-0.1319 in	8.616 ft	-0.076 in	9.812 ft
+D+S	-0.0895 in	8.855 ft	-0.040 in	9.812 ft
+D+0.750L	-0.1163 in	8.616 ft	-0.064 in	9.812 ft
+D+0.750L+0.750S	-0.1313 in	8.616 ft	-0.072 in	9.812 ft
+0.60D	-0.0417 in	8.855 ft	-0.018 in	9.812 ft
L Only	-0.0626 in	8.377 ft	-0.046 in	9.812 ft
S Only	-0.0200 in	8.736 ft	-0.010 in	9.812 ft

**Steel Section Properties : HSS7x5x1/2**

Depth	=	7.000 in	I xx	=	60.60 in^4	J	=	75.800 in^4
Design Thick	=	0.465 in	S xx	=	17.30 in^3	Cw	=	27.20 in^6
Width	=	5.000 in	R xx	=	2.500 in			
Wall Thick	=	0.500 in	Zx	=	21.900 in^3			
Area	=	9.740 in^2	I yy	=	35.600 in^4	C	=	27.200 in^3
Weight	=	35.240 plf	S yy	=	14.200 in^3			
			R yy	=	1.910 in			
			Zy	=	17.300 in^3			

Ycg = 0.000 in

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

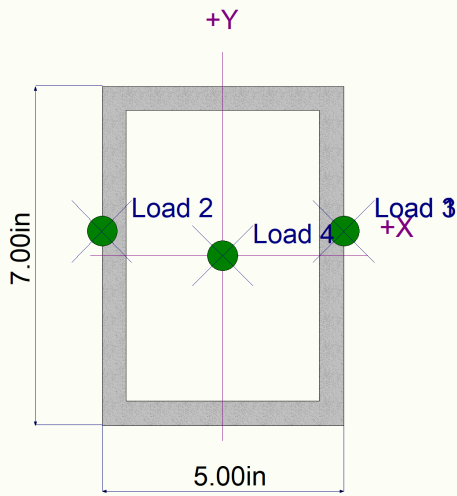
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C12

**Sketches**



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: C13**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/2</b>	Overall Column Height	12.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 364.757 lbs \* Dead Load Factor

AXIAL LOADS . . .

B12: Axial Load at 12.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 23.060, L = 32.550, S = 7.540 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.8269</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.9066 k
Location of max.above base	12.744 ft	Bottom along X-X	0.9066 k
At maximum location values are . . .		Top along Y-Y	0.1806 k
Pa : Axial	55.975 k	Bottom along Y-Y	0.1806 k
Pn / Omega : Allowabl	134.125 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-2.302 k-ft	Along Y-Y -0.05656 in at	7.491 ft above base
Mn-x / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
Ma-y : Applied	11.554 k-ft	Along X-X 0.2839 in at	7.491 ft above base
Mn-y / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.01636</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.9066 k		
Vn / Omega : Allowable	55.409 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.278	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.007	PASS	0.00 ft
+D+L	0.827	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.016	PASS	0.00 ft
+D+S	0.456	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.009	PASS	0.00 ft
+D+0.750L	0.706	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.014	PASS	0.00 ft
+D+0.750L+0.750S	0.790	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.016	PASS	0.00 ft
+0.60D	0.167	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.004	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	23.425	-0.376	-0.376	-0.075	0.075				
+D+L	55.975	-0.907	-0.907	-0.181	0.181				
+D+S	30.965	-0.499	-0.499	-0.099	0.099				
+D+0.750L	47.837	-0.774	-0.774	-0.154	0.154				
+D+0.750L+0.750S	53.492	-0.866	-0.866	-0.173	0.173				
+0.60D	14.055	-0.226	-0.226	-0.045	0.045				
L Only	32.550	-0.531	-0.531	-0.106	0.106				
S Only	7.540	-0.123	-0.123	-0.024	0.024				



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C13**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	55.975	-0.907	-0.907	-0.181	0.181				
"	Minimum	7.540	-0.123	-0.123	-0.024	0.024				
Reaction, X-X Axis Base	Maximum	7.540	-0.123	-0.123	-0.024	0.024				
"	Minimum	55.975	-0.907	-0.907	-0.181	0.181				
Reaction, Y-Y Axis Base	Maximum	7.540	-0.123	-0.123	-0.024	0.024				
"	Minimum	55.975	-0.907	-0.907	-0.181	0.181				
Reaction, X-X Axis Top	Maximum	7.540	-0.123	-0.123	-0.024	0.024				
"	Minimum	55.975	-0.907	-0.907	-0.181	0.181				
Reaction, Y-Y Axis Top	Maximum	23.425	-0.376	-0.376	-0.075	0.075				
"	Minimum	7.540	-0.123	-0.123	-0.024	0.024				
Moment, X-X Axis Base	Maximum	23.425		-0.376	-0.075	0.075				
"	Minimum	23.425		-0.376	-0.075	0.075				
Moment, Y-Y Axis Base	Maximum	23.425	-0.376	-0.376	-0.075	0.075				
"	Minimum	23.425	-0.376	-0.376	-0.075	0.075				
Moment, X-X Axis Top	Maximum	23.425	-0.376	-0.376	-0.075	0.075				
"	Minimum	23.425	-0.376	-0.376	-0.075	0.075				
Moment, Y-Y Axis Top	Maximum	23.425	-0.376	-0.376	-0.075	0.075				
"	Minimum	23.425	-0.376	-0.376	-0.075	0.075				

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.1177 in	7.491 ft	-0.023 in	7.491 ft
+D+L	0.2839 in	7.491 ft	-0.057 in	7.491 ft
+D+S	0.1562 in	7.491 ft	-0.031 in	7.491 ft
+D+0.750L	0.2424 in	7.491 ft	-0.048 in	7.491 ft
+D+0.750L+0.750S	0.2713 in	7.491 ft	-0.054 in	7.491 ft
+0.60D	0.0706 in	7.491 ft	-0.014 in	7.491 ft
L Only	0.1662 in	7.491 ft	-0.033 in	7.491 ft
S Only	0.0385 in	7.491 ft	-0.008 in	7.491 ft

**Steel Section Properties : HSS5x5x1/2**

Depth	=	5.000 in	I xx	=	26.00 in <sup>4</sup>	J	=	44.600 in <sup>4</sup>
Design Thick	=	0.465 in	S xx	=	10.40 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.820 in			
Wall Thick	=	0.500 in	Zx	=	13.100 in <sup>3</sup>			
Area	=	7.880 in <sup>2</sup>	I yy	=	26.000 in <sup>4</sup>	C	=	18.700 in <sup>3</sup>
Weight	=	28.430 plf	S yy	=	10.400 in <sup>3</sup>			
			R yy	=	1.820 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

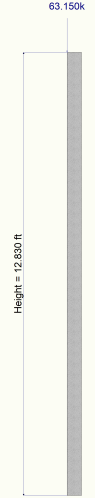
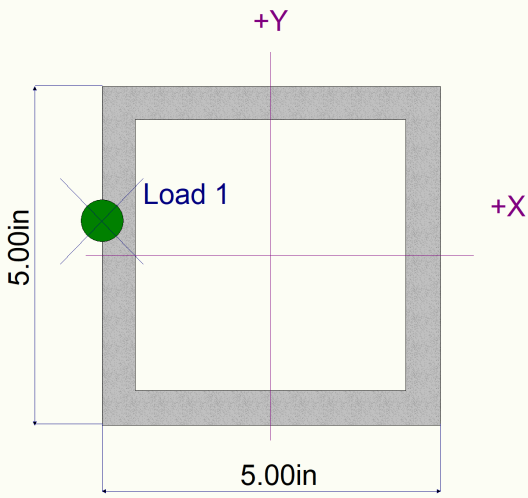
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C13

**Sketches**





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C14**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : **HSS5x5x1/2** Overall Column Height 17.830 ft  
 Analysis Method : Allowable Strength Top & Bottom Fixity Top & Bottom Pinned  
 Steel Stress Grade Brace condition :  
 Fy : Steel Yield 46.0 ksi Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0  
 E : Elastic Bending Modulus 29,000.0 ksi Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 506.91 lbs \* Dead Load Factor

AXIAL LOADS . . .

B13: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 27.210, L = 34.430, S = 12.860 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.8920** : 1  
 Load Combination +D+0.750L+0.750S  
 Location of max.above base 17.830 ft  
 At maximum location values are . . .  
 Pa : Axial 63.184 k  
 Pn / Omega : Allowabl 85.667 k  
 Ma-x : Applied -2.612 k-ft  
 Mn-x / Omega : Allowable 30.070 k-ft  
 Ma-y : Applied -2.612 k-ft  
 Mn-y / Omega : Allowable 30.070 k-ft

**Maximum Load Reactions . .**  
 Top along X-X 0.1465 k  
 Bottom along X-X 0.1465 k  
 Top along Y-Y 0.1465 k  
 Bottom along Y-Y 0.1465 k

**Maximum Load Deflections . . .**  
 Along Y-Y -0.1231 in at 10.411 ft above base  
 for load combination : +D+0.750L+0.750S  
 Along X-X -0.1231 in at 10.411 ft above base  
 for load combination : +D+0.750L+0.750S

**PASS** Maximum Shear Stress Ratio **0.002643** : 1  
 Load Combination +D+0.750L+0.750S  
 Location of max.above base 0.0 ft  
 At maximum location values are . . .  
 Va : Applied 0.1465 k  
 Vn / Omega : Allowable 55.409 k

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.391	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.001	PASS	0.00 ft
+D+L	0.877	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.003	PASS	0.00 ft
+D+S	0.572	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.002	PASS	0.00 ft
+D+0.750L	0.756	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.002	PASS	0.00 ft
+D+0.750L+0.750S	0.892	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.003	PASS	0.00 ft
+0.60D	0.194	PASS	0.00 ft	1.66	1.66	117.56	117.56	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	27.717	0.064	0.064		-0.064	0.064				
+D+L	62.147	0.144	0.144		-0.144	0.144				
+D+S	40.577	0.094	0.094		-0.094	0.094				
+D+0.750L	53.539	0.124	0.124		-0.124	0.124				
+D+0.750L+0.750S	63.184	0.146	0.146		-0.146	0.146				
+0.60D	16.630	0.038	0.038		-0.038	0.038				
L Only	34.430	0.080	0.080		-0.080	0.080				
S Only	12.860	0.030	0.030		-0.030	0.030				



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C14**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Axial @ Base	Maximum	63.184	0.146	0.146			-0.146	0.146				-2.612	-2.612
"	Minimum	12.860	0.030	0.030			-0.030	0.030				-0.536	-0.536
Reaction, X-X Axis Base	Maximum	63.184	0.146	0.146			-0.146	0.146				-2.612	-2.612
"	Minimum	12.860	0.030	0.030			-0.030	0.030				-0.536	-0.536
Reaction, Y-Y Axis Base	Maximum	12.860	0.030	0.030			-0.030	0.030				-0.536	-0.536
"	Minimum	63.184	0.146	0.146			-0.146	0.146				-2.612	-2.612
Reaction, X-X Axis Top	Maximum	63.184	0.146	0.146			-0.146	0.146				-2.612	-2.612
"	Minimum	12.860	0.030	0.030			-0.030	0.030				-0.536	-0.536
Reaction, Y-Y Axis Top	Maximum	63.184	0.146	0.146			-0.146	0.146				-2.612	-2.612
"	Minimum	12.860	0.030	0.030			-0.030	0.030				-0.536	-0.536
Moment, X-X Axis Base	Maximum	27.717		0.064			-0.064	0.064				-1.134	-1.134
"	Minimum	27.717		0.064			-0.064	0.064				-1.134	-1.134
Moment, Y-Y Axis Base	Maximum	27.717	0.064	0.064			-0.064	0.064				-1.134	-1.134
"	Minimum	27.717	0.064	0.064			-0.064	0.064				-1.134	-1.134
Moment, X-X Axis Top	Maximum	12.860	0.030	0.030			-0.030	0.030				-0.536	-0.536
"	Minimum	63.184	0.146	0.146			-0.146	0.146				-2.612	-2.612
Moment, Y-Y Axis Top	Maximum	12.860	0.030	0.030			-0.030	0.030				-0.536	-0.536
"	Minimum	63.184	0.146	0.146			-0.146	0.146				-2.612	-2.612

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0534 in	10.411 ft	-0.053 in	10.411 ft
+D+L	-0.1211 in	10.411 ft	-0.121 in	10.411 ft
+D+S	-0.0787 in	10.411 ft	-0.079 in	10.411 ft
+D+0.750L	-0.1042 in	10.411 ft	-0.104 in	10.411 ft
+D+0.750L+0.750S	-0.1231 in	10.411 ft	-0.123 in	10.411 ft
+0.60D	-0.0321 in	10.411 ft	-0.032 in	10.411 ft
L Only	-0.0676 in	10.411 ft	-0.068 in	10.411 ft
S Only	-0.0253 in	10.411 ft	-0.025 in	10.411 ft

**Steel Section Properties : HSS5x5x1/2**

Depth	=	5.000 in	I xx	=	26.00 in <sup>4</sup>	J	=	44.600 in <sup>4</sup>
Design Thick	=	0.465 in	S xx	=	10.40 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.820 in			
Wall Thick	=	0.500 in	Zx	=	13.100 in <sup>3</sup>			
Area	=	7.880 in <sup>2</sup>	I yy	=	26.000 in <sup>4</sup>	C	=	18.700 in <sup>3</sup>
Weight	=	28.430 plf	S yy	=	10.400 in <sup>3</sup>			
			R yy	=	1.820 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

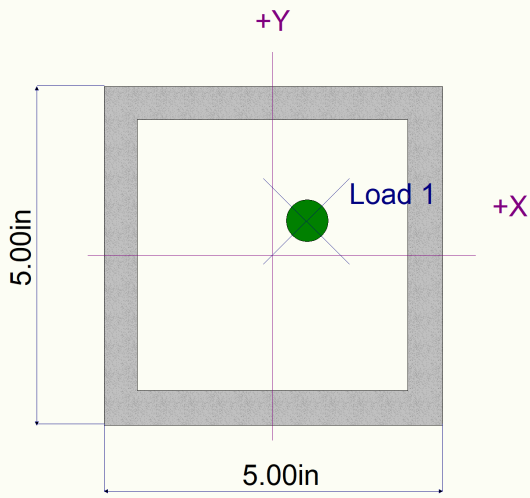
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C14

**Sketches**



## Steel Column

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C15

### Code References

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

### General Information

Steel Section Name : <b>HSS7x5x1/2</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0	

### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 628.33 lbs \* Dead Load Factor

AXIAL LOADS . . .

B13: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 23.440, L = 21.920, S = 16.250 k  
 B14: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 19.890, L = 28.490, S = 7.120 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

**PASS** Max. Axial+Bending Stress Ratio = **0.9582** : 1

Load Combination	+D+0.750L+0.750S
Location of max.above base	17.830 ft
At maximum location values are . . .	
Pa : Axial	99.293 k
Pn / Omega : Allowable	115.346 k
Ma-x : Applied	-4.111 k-ft
Mn-x / Omega : Allowable	50.269 k-ft
Ma-y : Applied	-1.101 k-ft
Mn-y / Omega : Allowable	39.711 k-ft

**Maximum Load Reactions . .**

Top along X-X	0.1469 k
Bottom along X-X	0.1469 k
Top along Y-Y	0.2306 k
Bottom along Y-Y	0.2306 k

**Maximum Load Deflections . . .**

Along Y-Y	-0.08315 in at	10.411ft	above base
for load combination : +D+0.750L+0.750S			
Along X-X	-0.09018 in at	10.411ft	above base
for load combination : +D+S			

**PASS** Maximum Shear Stress Ratio = **0.002676** : 1

Load Combination	+D+0.750L+0.750S
Location of max.above base	0.0 ft
At maximum location values are . . .	
Va : Applied	0.2306 k
Vn / Omega : Allowable	86.149 k

### Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios						
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location	
D Only	0.429	PASS	17.83 ft	1.66	1.66	85.58	112.02	0.001	PASS	0.00 ft	
+D+L	0.902	PASS	17.83 ft	1.66	1.66	85.58	112.02	0.003	PASS	0.00 ft	
+D+S	0.691	PASS	17.83 ft	1.66	1.66	85.58	112.02	0.003	PASS	0.00 ft	
+D+0.750L	0.776	PASS	17.83 ft	1.66	1.66	85.58	112.02	0.002	PASS	0.00 ft	
+D+0.750L+0.750S	0.958	PASS	17.83 ft	1.66	1.66	85.58	112.02	0.003	PASS	0.00 ft	
+0.60D	0.258	PASS	17.83 ft	1.66	1.66	85.58	112.02	0.001	PASS	0.00 ft	

### Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	43.958	0.041	0.041	-0.101	0.101				
+D+L	94.368	-0.038	-0.038	-0.219	0.219				
+D+S	67.328	0.147	0.147	-0.156	0.156				
+D+0.750L	81.766	-0.018	-0.018	-0.190	0.190				
+D+0.750L+0.750S	99.293	0.062	0.062	-0.231	0.231				
+0.60D	26.375	0.024	0.024	-0.061	0.061				
L Only	50.410	-0.078	-0.078	-0.118	0.118				
S Only	23.370	0.106	0.106	-0.055	0.055				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C15**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	99.293	0.062	0.062	-0.231	0.231	-4.111		-1.101	
"	Minimum	23.370	0.106	0.106	-0.055	0.055	-0.974		-1.896	
Reaction, X-X Axis Base	Maximum	67.328	0.147	0.147	-0.156	0.156	-2.779		-2.619	
"	Minimum	50.410	-0.078	-0.078	-0.118	0.118	-2.100		1.392	
Reaction, Y-Y Axis Base	Maximum	23.370	0.106	0.106	-0.055	0.055	-0.974		-1.896	
"	Minimum	99.293	0.062	0.062	-0.231	0.231	-4.111		-1.101	
Reaction, X-X Axis Top	Maximum	67.328	0.147	0.147	-0.156	0.156	-2.779		-2.619	
"	Minimum	50.410	-0.078	-0.078	-0.118	0.118	-2.100		1.392	
Reaction, Y-Y Axis Top	Maximum	67.328	0.147	0.147	-0.156	0.156	-2.779		-2.619	
"	Minimum	23.370	0.106	0.106	-0.055	0.055	-0.974		-1.896	
Moment, X-X Axis Base	Maximum	43.958		0.041	-0.101	0.101	-1.805		-0.723	
"	Minimum	43.958		0.041	-0.101	0.101	-1.805		-0.723	
Moment, Y-Y Axis Base	Maximum	43.958	0.041	0.041	-0.101	0.101	-0.723		-1.805	
"	Minimum	43.958	0.041	0.041	-0.101	0.101	-0.723		-1.805	
Moment, X-X Axis Top	Maximum	23.370	0.106	0.106	-0.055	0.055	-0.974		-1.896	
"	Minimum	99.293	0.062	0.062	-0.231	0.231	-4.111		-1.101	
Moment, Y-Y Axis Top	Maximum	50.410	-0.078	-0.078	-0.118	0.118	-2.100		1.392	
"	Minimum	67.328	0.147	0.147	-0.156	0.156	-2.779		-2.619	

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0249 in	10.411 ft	-0.037 in	10.411 ft
+D+L	0.0231 in	10.411 ft	-0.079 in	10.411 ft
+D+S	-0.0902 in	10.411 ft	-0.056 in	10.411 ft
+D+0.750L	0.0111 in	10.411 ft	-0.068 in	10.411 ft
+D+0.750L+0.750S	-0.0379 in	10.411 ft	-0.083 in	10.411 ft
+0.60D	-0.0149 in	10.411 ft	-0.022 in	10.411 ft
L Only	0.0479 in	10.411 ft	-0.042 in	10.411 ft
S Only	-0.0653 in	10.411 ft	-0.020 in	10.411 ft

**Steel Section Properties : HSS7x5x1/2**

Depth	=	7.000 in	I xx	=	60.60 in^4	J	=	75.800 in^4
Design Thick	=	0.465 in	S xx	=	17.30 in^3	Cw	=	27.20 in^6
Width	=	5.000 in	R xx	=	2.500 in			
Wall Thick	=	0.500 in	Zx	=	21.900 in^3			
Area	=	9.740 in^2	I yy	=	35.600 in^4	C	=	27.200 in^3
Weight	=	35.240 plf	S yy	=	14.200 in^3			
			R yy	=	1.910 in			
			Zy	=	17.300 in^3			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

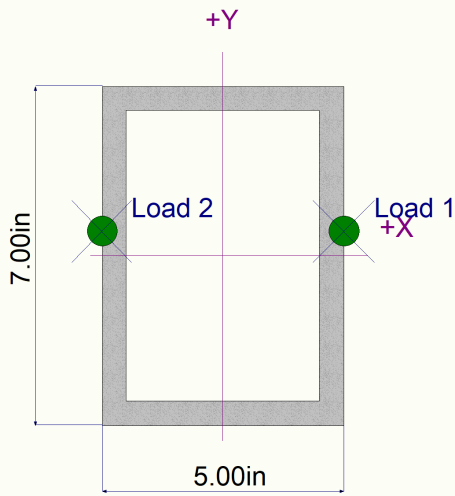
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C15

**Sketches**





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C16**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/2</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 506.91 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B15: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 3.970, L = 5.710, S = 1.430 k  
 B14: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 19.890, L = 28.490, S = 7.120 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.9947</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.4544 k
Location of max.above base	17.830 ft	Bottom along X-X	0.4544 k
At maximum location values are . . .		Top along Y-Y	0.1357 k
Pa : Axial	58.567 k	Bottom along Y-Y	0.1357 k
Pn / Omega : Allowable	85.667 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-2.419 k-ft	Along Y-Y -0.1141 in at	10.411ft above base
Mn-x / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
Ma-y : Applied	8.103 k-ft	Along X-X 0.3820 in at	10.411ft above base
Mn-y / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.008202</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.4544 k		
Vn / Omega : Allowable	55.409 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.412	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.003	PASS	0.00 ft
+D+L	0.995	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.008	PASS	0.00 ft
+D+S	0.558	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.005	PASS	0.00 ft
+D+0.750L	0.849	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.007	PASS	0.00 ft
+D+0.750L+0.750S	0.958	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.008	PASS	0.00 ft
+0.60D	0.172	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.002	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	24.367	-0.187	-0.187	-0.056	0.056				
+D+L	58.567	-0.454	-0.454	-0.136	0.136				
+D+S	32.917	-0.254	-0.254	-0.076	0.076				
+D+0.750L	50.017	-0.388	-0.388	-0.116	0.116				
+D+0.750L+0.750S	56.429	-0.438	-0.438	-0.131	0.131				
+0.60D	14.620	-0.112	-0.112	-0.033	0.033				
L Only	34.200	-0.268	-0.268	-0.080	0.080				
S Only	8.550	-0.067	-0.067	-0.020	0.020				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C16**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	58.567	-0.454	-0.454	-0.136	0.136	-2.419			8.103
"	Minimum	8.550	-0.067	-0.067	-0.020	0.020	-0.356			1.191
Reaction, X-X Axis Base	Maximum	8.550	-0.067	-0.067	-0.020	0.020	-0.356			1.191
"	Minimum	58.567	-0.454	-0.454	-0.136	0.136	-2.419			8.103
Reaction, Y-Y Axis Base	Maximum	8.550	-0.067	-0.067	-0.020	0.020	-0.356			1.191
"	Minimum	58.567	-0.454	-0.454	-0.136	0.136	-2.419			8.103
Reaction, X-X Axis Top	Maximum	8.550	-0.067	-0.067	-0.020	0.020	-0.356			1.191
"	Minimum	58.567	-0.454	-0.454	-0.136	0.136	-2.419			8.103
Reaction, Y-Y Axis Top	Maximum	24.367	-0.187	-0.187	-0.056	0.056	-0.994			3.333
"	Minimum	8.550	-0.067	-0.067	-0.020	0.020	-0.356			1.191
Moment, X-X Axis Base	Maximum	24.367		-0.187	-0.056	0.056	-0.994			3.333
"	Minimum	24.367		-0.187	-0.056	0.056	-0.994			3.333
Moment, Y-Y Axis Base	Maximum	24.367	-0.187	-0.187	-0.056	0.056	3.333			-0.994
"	Minimum	24.367	-0.187	-0.187	-0.056	0.056	3.333			-0.994
Moment, X-X Axis Top	Maximum	8.550	-0.067	-0.067	-0.020	0.020	-0.356			1.191
"	Minimum	58.567	-0.454	-0.454	-0.136	0.136	-2.419			8.103
Moment, Y-Y Axis Top	Maximum	58.567	-0.454	-0.454	-0.136	0.136	-2.419			8.103
"	Minimum	8.550	-0.067	-0.067	-0.020	0.020	-0.356			1.191

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.1571 in	10.411 ft	-0.047 in	10.411 ft
+D+L	0.3820 in	10.411 ft	-0.114 in	10.411 ft
+D+S	0.2133 in	10.411 ft	-0.064 in	10.411 ft
+D+0.750L	0.3258 in	10.411 ft	-0.097 in	10.411 ft
+D+0.750L+0.750S	0.3679 in	10.411 ft	-0.110 in	10.411 ft
+0.60D	0.0943 in	10.411 ft	-0.028 in	10.411 ft
L Only	0.2249 in	10.411 ft	-0.067 in	10.411 ft
S Only	0.0562 in	10.411 ft	-0.017 in	10.411 ft

**Steel Section Properties : HSS5x5x1/2**

Depth	=	5.000 in	I xx	=	26.00 in <sup>4</sup>	J	=	44.600 in <sup>4</sup>
Design Thick	=	0.465 in	S xx	=	10.40 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.820 in			
Wall Thick	=	0.500 in	Zx	=	13.100 in <sup>3</sup>			
Area	=	7.880 in <sup>2</sup>	I yy	=	26.000 in <sup>4</sup>	C	=	18.700 in <sup>3</sup>
Weight	=	28.430 plf	S yy	=	10.400 in <sup>3</sup>			
			R yy	=	1.820 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

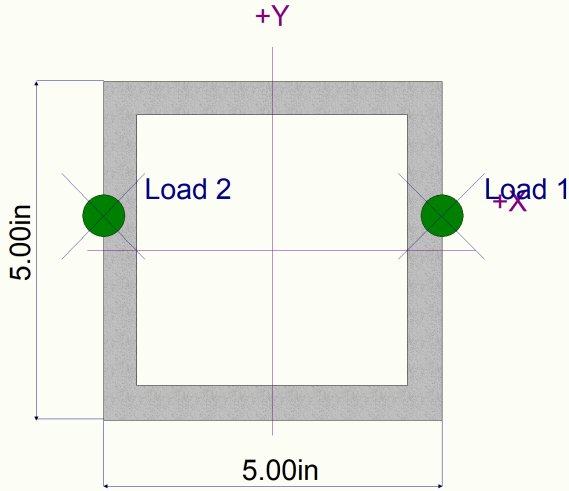
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

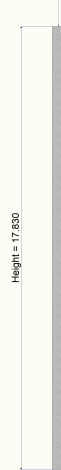
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DESCRIPTION: C16

**Sketches**



S5.530k



S5.530k



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: C17**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 278.505 lbs \* Dead Load Factor

AXIAL LOADS . . .

B19: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 13.710, L = 21.310, S = 4.790 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.8297</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.08184 k
Location of max.above base	17.830 ft	Bottom along X-X	0.08184 k
At maximum location values are . . .		Top along Y-Y	0.08184 k
Pa : Axial	35.299 k	Bottom along Y-Y	0.08184 k
Pn / Omega : Allowabl	51.817 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-1.459 k-ft	Along Y-Y	-0.1118 in at 10.411 ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	-1.459 k-ft	Along X-X	-0.1118 in at 10.411 ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.002471</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.08184 k		
Vn / Omega : Allowable	33.124 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.328	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+L	0.830	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft
+D+S	0.441	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+0.750L	0.704	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft
+D+0.750L+0.750S	0.789	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft
+0.60D	0.162	PASS	0.00 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	13.989	0.032	0.032		-0.032	0.032				
+D+L	35.299	0.082	0.082		-0.082	0.082				
+D+S	18.779	0.043	0.043		-0.043	0.043				
+D+0.750L	29.971	0.069	0.069		-0.069	0.069				
+D+0.750L+0.750S	33.564	0.078	0.078		-0.078	0.078				
+0.60D	8.393	0.019	0.019		-0.019	0.019				
L Only	21.310	0.050	0.050		-0.050	0.050				
S Only	4.790	0.011	0.011		-0.011	0.011				



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: C17**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	35.299	0.082	0.082	-0.082	0.082	-1.459		-1.459	
"	Minimum	4.790	0.011	0.011	-0.011	0.011	-0.200		-0.200	
Reaction, X-X Axis Base	Maximum	35.299	0.082	0.082	-0.082	0.082	-1.459		-1.459	
"	Minimum	4.790	0.011	0.011	-0.011	0.011	-0.200		-0.200	
Reaction, Y-Y Axis Base	Maximum	4.790	0.011	0.011	-0.011	0.011	-0.200		-0.200	
"	Minimum	35.299	0.082	0.082	-0.082	0.082	-1.459		-1.459	
Reaction, X-X Axis Top	Maximum	35.299	0.082	0.082	-0.082	0.082	-1.459		-1.459	
"	Minimum	4.790	0.011	0.011	-0.011	0.011	-0.200		-0.200	
Reaction, Y-Y Axis Top	Maximum	35.299	0.082	0.082	-0.082	0.082	-1.459		-1.459	
"	Minimum	4.790	0.011	0.011	-0.011	0.011	-0.200		-0.200	
Moment, X-X Axis Base	Maximum	13.989		0.032	-0.032	0.032	-0.571		-0.571	
"	Minimum	13.989		0.032	-0.032	0.032	-0.571		-0.571	
Moment, Y-Y Axis Base	Maximum	13.989	0.032	0.032	-0.032	0.032	-0.571		-0.571	
"	Minimum	13.989	0.032	0.032	-0.032	0.032	-0.571		-0.571	
Moment, X-X Axis Top	Maximum	4.790	0.011	0.011	-0.011	0.011	-0.200		-0.200	
"	Minimum	35.299	0.082	0.082	-0.082	0.082	-1.459		-1.459	
Moment, Y-Y Axis Top	Maximum	4.790	0.011	0.011	-0.011	0.011	-0.200		-0.200	
"	Minimum	35.299	0.082	0.082	-0.082	0.082	-1.459		-1.459	

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0438 in	10.411 ft	-0.044 in	10.411 ft
+D+L	-0.1118 in	10.411 ft	-0.112 in	10.411 ft
+D+S	-0.0591 in	10.411 ft	-0.059 in	10.411 ft
+D+0.750L	-0.0948 in	10.411 ft	-0.095 in	10.411 ft
+D+0.750L+0.750S	-0.1062 in	10.411 ft	-0.106 in	10.411 ft
+0.60D	-0.0263 in	10.411 ft	-0.026 in	10.411 ft
L Only	-0.0680 in	10.411 ft	-0.068 in	10.411 ft
S Only	-0.0153 in	10.411 ft	-0.015 in	10.411 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

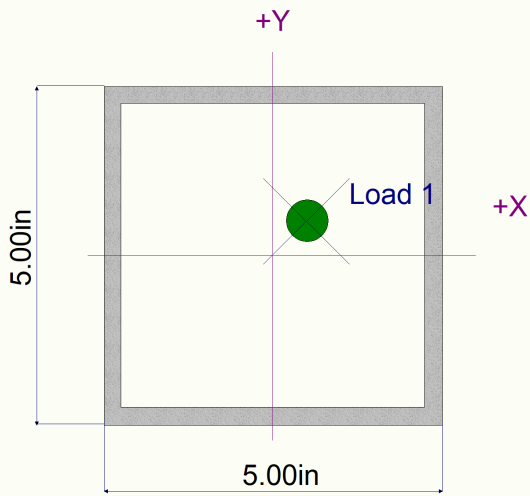
LIC# : KW-06014122, Build:20.24.02.27

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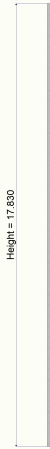
DESCRIPTION: C17

**Sketches**



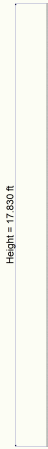
39.810k

Height = 17.830



39.810k

Height = 17.830





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION: C18**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x3/8</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 398.857 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B19: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 9.280, L = 15.110, S = 3.210 k  
 B20: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 12.340, L = 19.940, S = 4.270 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.9561</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.09370 k
Location of max.above base	17.830 ft	Bottom along X-X	0.09370 k
At maximum location values are . . .		Top along Y-Y	0.1324 k
Pa : Axial	57.069 k	Bottom along Y-Y	0.1324 k
Pn / Omega : Allowable	70.564 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-2.361 k-ft	Along Y-Y -0.1334 in at	10.411ft above base
Mn-x / Omega : Allowable	24.331 k-ft	for load combination : +D+L	
Ma-y : Applied	1.671 k-ft	Along X-X 0.09437 in at	10.411ft above base
Mn-y / Omega : Allowable	24.331 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.002904</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.1324 k		
Vn / Omega : Allowable	45.601 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.369	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft
+D+L	0.956	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.003	PASS	0.00 ft
+D+S	0.494	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft
+D+0.750L	0.809	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.002	PASS	0.00 ft
+D+0.750L+0.750S	0.903	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.003	PASS	0.00 ft
+0.60D	0.187	PASS	0.00 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	22.019	-0.036	-0.036	-0.051	0.051				
+D+L	57.069	-0.094	-0.094	-0.132	0.132				
+D+S	29.499	-0.049	-0.049	-0.068	0.068				
+D+0.750L	48.306	-0.079	-0.079	-0.112	0.112				
+D+0.750L+0.750S	53.916	-0.089	-0.089	-0.125	0.125				
+0.60D	13.211	-0.022	-0.022	-0.030	0.030				
L Only	35.050	-0.057	-0.057	-0.082	0.082				
S Only	7.480	-0.013	-0.013	-0.017	0.017				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C18**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	57.069	-0.094	-0.094	-0.132	0.132	-2.361			1.671
"	Minimum	7.480	-0.013	-0.013	-0.017	0.017	-0.312			0.224
Reaction, X-X Axis Base	Maximum	7.480	-0.013	-0.013	-0.017	0.017	-0.312			0.224
"	Minimum	57.069	-0.094	-0.094	-0.132	0.132	-2.361			1.671
Reaction, Y-Y Axis Base	Maximum	7.480	-0.013	-0.013	-0.017	0.017	-0.312			0.224
"	Minimum	57.069	-0.094	-0.094	-0.132	0.132	-2.361			1.671
Reaction, X-X Axis Top	Maximum	7.480	-0.013	-0.013	-0.017	0.017	-0.312			0.224
"	Minimum	57.069	-0.094	-0.094	-0.132	0.132	-2.361			1.671
Reaction, Y-Y Axis Top	Maximum	22.019	-0.036	-0.036	-0.051	0.051	-0.901			0.648
"	Minimum	7.480	-0.013	-0.013	-0.017	0.017	-0.312			0.224
Moment, X-X Axis Base	Maximum	22.019		-0.036	-0.051	0.051	-0.901			0.648
"	Minimum	22.019		-0.036	-0.051	0.051	-0.901			0.648
Moment, Y-Y Axis Base	Maximum	22.019	-0.036	-0.036	-0.051	0.051	0.648			-0.901
"	Minimum	22.019	-0.036	-0.036	-0.051	0.051	0.648			-0.901
Moment, X-X Axis Top	Maximum	7.480	-0.013	-0.013	-0.017	0.017	-0.312			0.224
"	Minimum	57.069	-0.094	-0.094	-0.132	0.132	-2.361			1.671
Moment, Y-Y Axis Top	Maximum	57.069	-0.094	-0.094	-0.132	0.132	-2.361			1.671
"	Minimum	7.480	-0.013	-0.013	-0.017	0.017	-0.312			0.224

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.0366 in	10.411 ft	-0.051 in	10.411 ft
+D+L	0.0944 in	10.411 ft	-0.133 in	10.411 ft
+D+S	0.0493 in	10.411 ft	-0.068 in	10.411 ft
+D+0.750L	0.0799 in	10.411 ft	-0.113 in	10.411 ft
+D+0.750L+0.750S	0.0894 in	10.411 ft	-0.126 in	10.411 ft
+0.60D	0.0220 in	10.411 ft	-0.031 in	10.411 ft
L Only	0.0578 in	10.411 ft	-0.082 in	10.411 ft
S Only	0.0127 in	10.411 ft	-0.018 in	10.411 ft

**Steel Section Properties : HSS5x5x3/8**

Depth	=	5.000 in	I xx	=	21.70 in <sup>4</sup>	J	=	36.100 in <sup>4</sup>
Design Thick	=	0.349 in	S xx	=	8.68 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.870 in			
Wall Thick	=	0.375 in	Zx	=	10.600 in <sup>3</sup>			
Area	=	6.180 in <sup>2</sup>	I yy	=	21.700 in <sup>4</sup>	C	=	14.900 in <sup>3</sup>
Weight	=	22.370 plf	S yy	=	8.680 in <sup>3</sup>			
			R yy	=	1.870 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

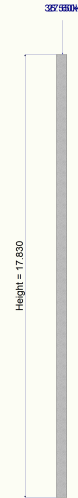
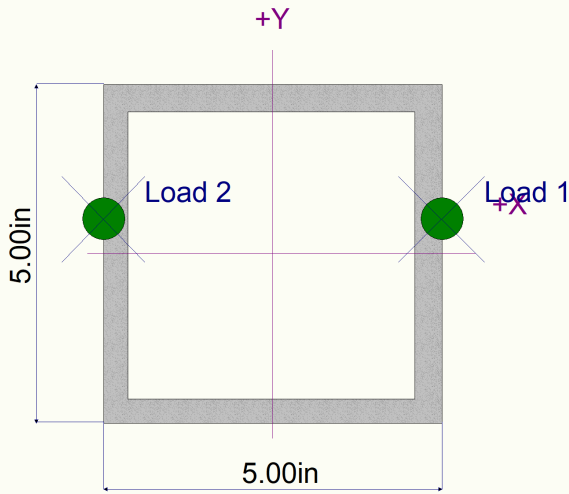
LIC# : KW-06014122, Build:20.24.02.27

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DESCRIPTION: C18

**Sketches**



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C19**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x3/8</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 398.857 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B21: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 9.840, L = 16.250, S = 3.430 k  
 B20: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 12.340, L = 19.940, S = 4.270 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.9698</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.07384 k
Location of max.above base	17.830 ft	Bottom along X-X	0.07384 k
At maximum location values are . . .		Top along Y-Y	0.1364 k
Pa : Axial	58.769 k	Bottom along Y-Y	0.1364 k
Pn / Omega : Allowable	70.564 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-2.432 k-ft	Along Y-Y -0.1374 in at	10.411ft above base
Mn-x / Omega : Allowable	24.331 k-ft	for load combination : +D+L	
Ma-y : Applied	1.316 k-ft	Along X-X 0.07436 in at	10.411ft above base
Mn-y / Omega : Allowable	24.331 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.002991</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.1364 k		
Vn / Omega : Allowable	45.601 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.373	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft
+D+L	0.970	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.003	PASS	0.00 ft
+D+S	0.501	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.002	PASS	0.00 ft
+D+0.750L	0.821	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.003	PASS	0.00 ft
+D+0.750L+0.750S	0.916	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.003	PASS	0.00 ft
+0.60D	0.192	PASS	0.00 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	22.579	-0.030	-0.030	-0.052	0.052				
+D+L	58.769	-0.074	-0.074	-0.136	0.136				
+D+S	30.279	-0.040	-0.040	-0.070	0.070				
+D+0.750L	49.721	-0.063	-0.063	-0.115	0.115				
+D+0.750L+0.750S	55.496	-0.070	-0.070	-0.129	0.129				
+0.60D	13.547	-0.018	-0.018	-0.031	0.031				
L Only	36.190	-0.044	-0.044	-0.085	0.085				
S Only	7.700	-0.010	-0.010	-0.018	0.018				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C19

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	58.769	-0.074	-0.074	-0.136	0.136	-2.432			1.316
"	Minimum	7.700	-0.010	-0.010	-0.018	0.018	-0.321			0.179
Reaction, X-X Axis Base	Maximum	7.700	-0.010	-0.010	-0.018	0.018	-0.321			0.179
"	Minimum	58.769	-0.074	-0.074	-0.136	0.136	-2.432			1.316
Reaction, Y-Y Axis Base	Maximum	7.700	-0.010	-0.010	-0.018	0.018	-0.321			0.179
"	Minimum	58.769	-0.074	-0.074	-0.136	0.136	-2.432			1.316
Reaction, X-X Axis Top	Maximum	7.700	-0.010	-0.010	-0.018	0.018	-0.321			0.179
"	Minimum	58.769	-0.074	-0.074	-0.136	0.136	-2.432			1.316
Reaction, Y-Y Axis Top	Maximum	22.579	-0.030	-0.030	-0.052	0.052	-0.924			0.531
"	Minimum	7.700	-0.010	-0.010	-0.018	0.018	-0.321			0.179
Moment, X-X Axis Base	Maximum	22.579		-0.030	-0.052	0.052	-0.924			0.531
"	Minimum	22.579		-0.030	-0.052	0.052	-0.924			0.531
Moment, Y-Y Axis Base	Maximum	22.579	-0.030	-0.030	-0.052	0.052	0.531			-0.924
"	Minimum	22.579	-0.030	-0.030	-0.052	0.052	0.531			-0.924
Moment, X-X Axis Top	Maximum	7.700	-0.010	-0.010	-0.018	0.018	-0.321			0.179
"	Minimum	58.769	-0.074	-0.074	-0.136	0.136	-2.432			1.316
Moment, Y-Y Axis Top	Maximum	58.769	-0.074	-0.074	-0.136	0.136	-2.432			1.316
"	Minimum	7.700	-0.010	-0.010	-0.018	0.018	-0.321			0.179

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.0300 in	10.411 ft	-0.052 in	10.411 ft
+D+L	0.0744 in	10.411 ft	-0.137 in	10.411 ft
+D+S	0.0401 in	10.411 ft	-0.070 in	10.411 ft
+D+0.750L	0.0633 in	10.411 ft	-0.116 in	10.411 ft
+D+0.750L+0.750S	0.0708 in	10.411 ft	-0.130 in	10.411 ft
+0.60D	0.0180 in	10.411 ft	-0.031 in	10.411 ft
L Only	0.0444 in	10.411 ft	-0.085 in	10.411 ft
S Only	0.0101 in	10.411 ft	-0.018 in	10.411 ft

**Steel Section Properties : HSS5x5x3/8**

Depth	=	5.000 in	I xx	=	21.70 in^4	J	=	36.100 in^4
Design Thick	=	0.349 in	S xx	=	8.68 in^3			
Width	=	5.000 in	R xx	=	1.870 in			
Wall Thick	=	0.375 in	Zx	=	10.600 in^3			
Area	=	6.180 in^2	I yy	=	21.700 in^4	C	=	14.900 in^3
Weight	=	22.370 plf	S yy	=	8.680 in^3			
			R yy	=	1.870 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

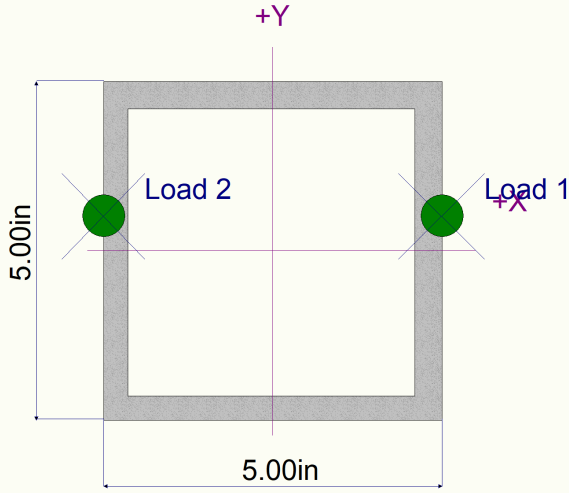
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

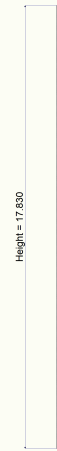
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DESCRIPTION: C19

**Sketches**



28.580k



3625680k





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C20

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	16.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 16.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 16.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 262.885 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B21: Axial Load at 16.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 16.970, L = 26.10, S = 5.990 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.9468</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.1066 k
Location of max.above base	16.830 ft	Bottom along X-X	0.1066 k
At maximum location values are . . .		Top along Y-Y	0.1066 k
Pa : Axial	43.333 k	Bottom along Y-Y	0.1066 k
Pn / Omega : Allowabl	56.704 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-1.795 k-ft	Along Y-Y -0.1225 in at	9.827ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	-1.795 k-ft	Along X-X -0.1225 in at	9.827ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.003219</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.1066 k		
Vn / Omega : Allowable	33.124 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.376	PASS	16.83 ft	1.66	1.66	104.64	104.64	0.001	PASS	0.00 ft
+D+L	0.947	PASS	16.83 ft	1.66	1.66	104.64	104.64	0.003	PASS	0.00 ft
+D+S	0.507	PASS	16.83 ft	1.66	1.66	104.64	104.64	0.002	PASS	0.00 ft
+D+0.750L	0.804	PASS	16.83 ft	1.66	1.66	104.64	104.64	0.003	PASS	0.00 ft
+D+0.750L+0.750S	0.902	PASS	16.83 ft	1.66	1.66	104.64	104.64	0.003	PASS	0.00 ft
+0.60D	0.182	PASS	0.00 ft	1.66	1.66	104.64	104.64	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	17.233	0.042	0.042	-0.042	0.042				
+D+L	43.333	0.107	0.107	-0.107	0.107				
+D+S	23.223	0.057	0.057	-0.057	0.057				
+D+0.750L	36.808	0.090	0.090	-0.090	0.090				
+D+0.750L+0.750S	41.300	0.102	0.102	-0.102	0.102				
+0.60D	10.340	0.025	0.025	-0.025	0.025				
L Only	26.100	0.065	0.065	-0.065	0.065				
S Only	5.990	0.015	0.015	-0.015	0.015				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C20**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	43.333	0.107	0.107	-0.107	0.107	-1.795		-1.795	
"	Minimum	5.990	0.015	0.015	-0.015	0.015	-0.250		-0.250	
Reaction, X-X Axis Base	Maximum	43.333	0.107	0.107	-0.107	0.107	-1.795		-1.795	
"	Minimum	5.990	0.015	0.015	-0.015	0.015	-0.250		-0.250	
Reaction, Y-Y Axis Base	Maximum	5.990	0.015	0.015	-0.015	0.015	-0.250		-0.250	
"	Minimum	43.333	0.107	0.107	-0.107	0.107	-1.795		-1.795	
Reaction, X-X Axis Top	Maximum	43.333	0.107	0.107	-0.107	0.107	-1.795		-1.795	
"	Minimum	5.990	0.015	0.015	-0.015	0.015	-0.250		-0.250	
Reaction, Y-Y Axis Top	Maximum	43.333	0.107	0.107	-0.107	0.107	-1.795		-1.795	
"	Minimum	5.990	0.015	0.015	-0.015	0.015	-0.250		-0.250	
Moment, X-X Axis Base	Maximum	17.233		0.042	-0.042	0.042	-0.707		-0.707	
"	Minimum	17.233		0.042	-0.042	0.042	-0.707		-0.707	
Moment, Y-Y Axis Base	Maximum	17.233	0.042	0.042	-0.042	0.042	-0.707		-0.707	
"	Minimum	17.233	0.042	0.042	-0.042	0.042	-0.707		-0.707	
Moment, X-X Axis Top	Maximum	5.990	0.015	0.015	-0.015	0.015	-0.250		-0.250	
"	Minimum	43.333	0.107	0.107	-0.107	0.107	-1.795		-1.795	
Moment, Y-Y Axis Top	Maximum	5.990	0.015	0.015	-0.015	0.015	-0.250		-0.250	
"	Minimum	43.333	0.107	0.107	-0.107	0.107	-1.795		-1.795	

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0483 in	9.827 ft	-0.048 in	9.827 ft
+D+L	-0.1225 in	9.827 ft	-0.122 in	9.827 ft
+D+S	-0.0653 in	9.827 ft	-0.065 in	9.827 ft
+D+0.750L	-0.1039 in	9.827 ft	-0.104 in	9.827 ft
+D+0.750L+0.750S	-0.1167 in	9.827 ft	-0.117 in	9.827 ft
+0.60D	-0.0290 in	9.827 ft	-0.029 in	9.827 ft
L Only	-0.0742 in	9.827 ft	-0.074 in	9.827 ft
S Only	-0.0170 in	9.827 ft	-0.017 in	9.827 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

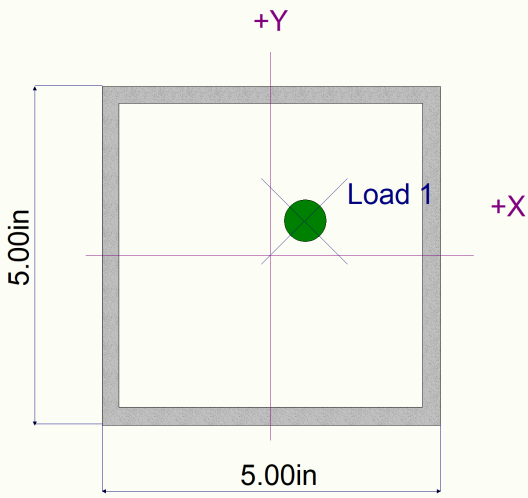
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C20

**Sketches**



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C21

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x3/8</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 398.857 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B22: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 20.640, L = 29.840, S = 7.460 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.8747</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.1180 k
Location of max.above base	17.830 ft	Bottom along X-X	0.1180 k
At maximum location values are . . .		Top along Y-Y	0.1180 k
Pa : Axial	50.879 k	Bottom along Y-Y	0.1180 k
Pn / Omega : Allowabl	70.564 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-2.103 k-ft	Along Y-Y	-0.1188 in at 10.411 ft above base
Mn-x / Omega : Allowable	24.331 k-ft	for load combination : +D+L	
Ma-y : Applied	-2.103 k-ft	Along X-X	-0.1188 in at 10.411 ft above base
Mn-y / Omega : Allowable	24.331 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.002587</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.1180 k		
Vn / Omega : Allowable	45.601 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.361	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft
+D+L	0.875	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.003	PASS	0.00 ft
+D+S	0.489	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft
+D+0.750L	0.746	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.002	PASS	0.00 ft
+D+0.750L+0.750S	0.843	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.002	PASS	0.00 ft
+0.60D	0.179	PASS	0.00 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	21.039	0.048	0.048		-0.048	0.048				
+D+L	50.879	0.118	0.118		-0.118	0.118				
+D+S	28.499	0.066	0.066		-0.066	0.066				
+D+0.750L	43.419	0.101	0.101		-0.101	0.101				
+D+0.750L+0.750S	49.014	0.114	0.114		-0.114	0.114				
+0.60D	12.623	0.029	0.029		-0.029	0.029				
L Only	29.840	0.070	0.070		-0.070	0.070				
S Only	7.460	0.017	0.017		-0.017	0.017				



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C21**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Axial @ Base	Maximum	50.879	0.118	0.118			-0.118	0.118				-2.103	-2.103
"	Minimum	7.460	0.017	0.017			-0.017	0.017				-0.311	-0.311
Reaction, X-X Axis Base	Maximum	50.879	0.118	0.118			-0.118	0.118				-2.103	-2.103
"	Minimum	7.460	0.017	0.017			-0.017	0.017				-0.311	-0.311
Reaction, Y-Y Axis Base	Maximum	7.460	0.017	0.017			-0.017	0.017				-0.311	-0.311
"	Minimum	50.879	0.118	0.118			-0.118	0.118				-2.103	-2.103
Reaction, X-X Axis Top	Maximum	50.879	0.118	0.118			-0.118	0.118				-2.103	-2.103
"	Minimum	7.460	0.017	0.017			-0.017	0.017				-0.311	-0.311
Reaction, Y-Y Axis Top	Maximum	50.879	0.118	0.118			-0.118	0.118				-2.103	-2.103
"	Minimum	7.460	0.017	0.017			-0.017	0.017				-0.311	-0.311
Moment, X-X Axis Base	Maximum	21.039		0.048			-0.048	0.048				-0.860	-0.860
"	Minimum	21.039		0.048			-0.048	0.048				-0.860	-0.860
Moment, Y-Y Axis Base	Maximum	21.039	0.048	0.048			-0.048	0.048				-0.860	-0.860
"	Minimum	21.039	0.048	0.048			-0.048	0.048				-0.860	-0.860
Moment, X-X Axis Top	Maximum	7.460	0.017	0.017			-0.017	0.017				-0.311	-0.311
"	Minimum	50.879	0.118	0.118			-0.118	0.118				-2.103	-2.103
Moment, Y-Y Axis Top	Maximum	7.460	0.017	0.017			-0.017	0.017				-0.311	-0.311
"	Minimum	50.879	0.118	0.118			-0.118	0.118				-2.103	-2.103

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0486 in	10.411 ft	-0.049 in	10.411 ft
+D+L	-0.1188 in	10.411 ft	-0.119 in	10.411 ft
+D+S	-0.0661 in	10.411 ft	-0.066 in	10.411 ft
+D+0.750L	-0.1013 in	10.411 ft	-0.101 in	10.411 ft
+D+0.750L+0.750S	-0.1144 in	10.411 ft	-0.114 in	10.411 ft
+0.60D	-0.0291 in	10.411 ft	-0.029 in	10.411 ft
L Only	-0.0702 in	10.411 ft	-0.070 in	10.411 ft
S Only	-0.0176 in	10.411 ft	-0.018 in	10.411 ft

**Steel Section Properties : HSS5x5x3/8**

Depth	=	5.000 in	I xx	=	21.70 in <sup>4</sup>	J	=	36.100 in <sup>4</sup>
Design Thick	=	0.349 in	S xx	=	8.68 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.870 in			
Wall Thick	=	0.375 in	Zx	=	10.600 in <sup>3</sup>			
Area	=	6.180 in <sup>2</sup>	I yy	=	21.700 in <sup>4</sup>	C	=	14.900 in <sup>3</sup>
Weight	=	22.370 plf	S yy	=	8.680 in <sup>3</sup>			
			R yy	=	1.870 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

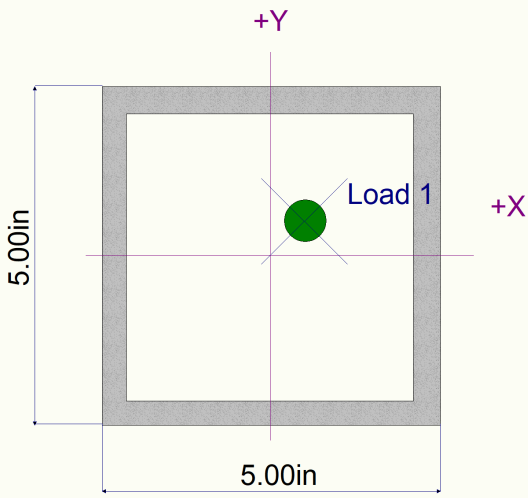
LIC# : KW-06014122, Build:20.24.02.27

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DESCRIPTION: C21

**Sketches**





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C22

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : **HSS5x5x1/4** Overall Column Height 17.830 ft  
 Analysis Method : Allowable Strength Top & Bottom Fixity Top & Bottom Pinned  
 Steel Stress Grade Brace condition :  
 Fy : Steel Yield 46.0 ksi Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0  
 E : Elastic Bending Modulus 29,000.0 ksi Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 278.505 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B22: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 7.260, L = 12.190, S = 2.540 k  
 B23: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 9.380, L = 13.650, S = 3.410 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.9542** : 1  
 Load Combination +D+L  
 Location of max.above base 17.830 ft  
 At maximum location values are . . .  
 Pa : Axial 42.759 k  
 Pn / Omega : Allowable 51.817 k  
 Ma-x : Applied -1.770 k-ft  
 Mn-x / Omega : Allowable 17.468 k-ft  
 Ma-y : Applied 0.7650 k-ft  
 Mn-y / Omega : Allowable 17.468 k-ft

**PASS** Maximum Shear Stress Ratio = **0.002997** : 1  
 Load Combination +D+L  
 Location of max.above base 0.0 ft  
 At maximum location values are . . .  
 Va : Applied 0.09927 k  
 Vn / Omega : Allowable 33.124 k

**Maximum Load Reactions . .**

Top along X-X 0.04623 k  
 Bottom along X-X 0.04623 k  
 Top along Y-Y 0.09927 k  
 Bottom along Y-Y 0.09927 k

**Maximum Load Deflections . . .**

Along Y-Y -0.1356 in at 10.411ft above base  
 for load combination : +D+L  
 Along X-X 0.06314 in at 10.411ft above base  
 for load combination : +D+0.750L+0.750S

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios						
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location	
D Only	0.385	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft	
+D+L	0.954	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.003	PASS	0.00 ft	
+D+S	0.521	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft	
+D+0.750L	0.812	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.003	PASS	0.00 ft	
+D+0.750L+0.750S	0.914	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.003	PASS	0.00 ft	
+0.60D	0.196	PASS	0.00 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft	

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	16.919	-0.025	-0.025	-0.039	0.039				
+D+L	42.759	-0.043	-0.043	-0.099	0.099				
+D+S	22.869	-0.036	-0.036	-0.053	0.053				
+D+0.750L	36.299	-0.038	-0.038	-0.084	0.084				
+D+0.750L+0.750S	40.761	-0.046	-0.046	-0.095	0.095				
+0.60D	10.151	-0.015	-0.015	-0.023	0.023				
L Only	25.840	-0.018	-0.018	-0.060	0.060				
S Only	5.950	-0.010	-0.010	-0.014	0.014				



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: C22**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	42.759	-0.043	-0.043	-0.099	0.099	-1.770			0.765
"	Minimum	5.950	-0.010	-0.010	-0.014	0.014	-0.248			0.184
Reaction, X-X Axis Base	Maximum	5.950	-0.010	-0.010	-0.014	0.014	-0.248			0.184
"	Minimum	40.761	-0.046	-0.046	-0.095	0.095	-1.687			0.824
Reaction, Y-Y Axis Base	Maximum	5.950	-0.010	-0.010	-0.014	0.014	-0.248			0.184
"	Minimum	42.759	-0.043	-0.043	-0.099	0.099	-1.770			0.765
Reaction, X-X Axis Top	Maximum	5.950	-0.010	-0.010	-0.014	0.014	-0.248			0.184
"	Minimum	40.761	-0.046	-0.046	-0.095	0.095	-1.687			0.824
Reaction, Y-Y Axis Top	Maximum	16.919	-0.025	-0.025	-0.039	0.039	-0.693			0.449
"	Minimum	5.950	-0.010	-0.010	-0.014	0.014	-0.248			0.184
Moment, X-X Axis Base	Maximum	16.919		-0.025	-0.039	0.039	-0.693			0.449
"	Minimum	16.919		-0.025	-0.039	0.039	-0.693			0.449
Moment, Y-Y Axis Base	Maximum	16.919	-0.025	-0.025	-0.039	0.039	0.449			-0.693
"	Minimum	16.919	-0.025	-0.025	-0.039	0.039	0.449			-0.693
Moment, X-X Axis Top	Maximum	5.950	-0.010	-0.010	-0.014	0.014	-0.248			0.184
"	Minimum	42.759	-0.043	-0.043	-0.099	0.099	-1.770			0.765
Moment, Y-Y Axis Top	Maximum	40.761	-0.046	-0.046	-0.095	0.095	-1.687			0.824
"	Minimum	5.950	-0.010	-0.010	-0.014	0.014	-0.248			0.184

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.0344 in	10.411 ft	-0.053 in	10.411 ft
+D+L	0.0586 in	10.411 ft	-0.136 in	10.411 ft
+D+S	0.0485 in	10.411 ft	-0.072 in	10.411 ft
+D+0.750L	0.0526 in	10.411 ft	-0.115 in	10.411 ft
+D+0.750L+0.750S	0.0631 in	10.411 ft	-0.129 in	10.411 ft
+0.60D	0.0207 in	10.411 ft	-0.032 in	10.411 ft
L Only	0.0242 in	10.411 ft	-0.082 in	10.411 ft
S Only	0.0141 in	10.411 ft	-0.019 in	10.411 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

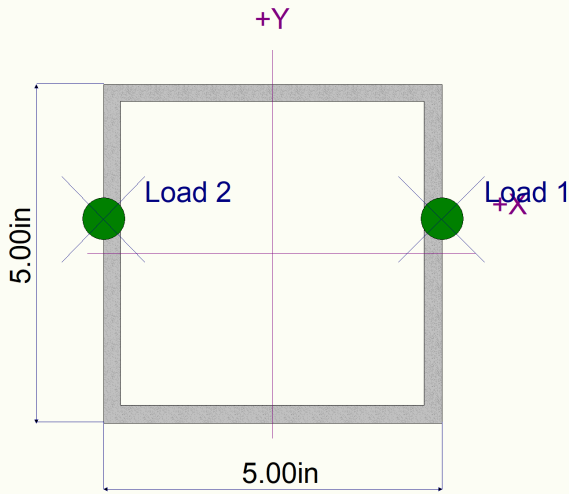
LIC# : KW-06014122, Build:20.24.02.27

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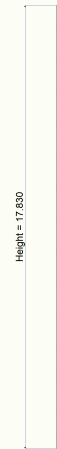
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DESCRIPTION: C22

**Sketches**



262#4060k



262#4060k



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C24

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x3/8</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 398.857 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B24: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.250 in, D = 12.930, L = 18.670, S = 4.690 k  
 B25: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.250 in, D = 12.930, L = 18.670, S = 4.690 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.9504</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.001477 k
Location of max.above base	17.830 ft	Bottom along X-X	0.001477 k
At maximum location values are . . .		Top along Y-Y	0.07385 k
Pa : Axial	63.599 k	Bottom along Y-Y	0.07385 k
Pn / Omega : Allowable	70.564 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-1.317 k-ft	Along Y-Y -0.07437 in at	10.411ft above base
Mn-x / Omega : Allowable	24.331 k-ft	for load combination : +D+L	
Ma-y : Applied	0.02633 k-ft	Along X-X 0.001487 in at	10.411ft above base
Mn-y / Omega : Allowable	24.331 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.001619</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.07385 k		
Vn / Omega : Allowable	45.601 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.392	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft
+D+L	0.950	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.002	PASS	0.00 ft
+D+S	0.532	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft
+D+0.750L	0.811	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft
+D+0.750L+0.750S	0.916	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.002	PASS	0.00 ft
+0.60D	0.235	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.000	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	26.259	-0.001	-0.001	-0.030	0.030				
+D+L	63.599	-0.001	-0.001	-0.074	0.074				
+D+S	35.639	-0.001	-0.001	-0.041	0.041				
+D+0.750L	54.264	-0.001	-0.001	-0.063	0.063				
+D+0.750L+0.750S	61.299	-0.001	-0.001	-0.071	0.071				
+0.60D	15.755	-0.000	-0.000	-0.018	0.018				
L Only	37.340	-0.001	-0.001	-0.044	0.044				
S Only	9.380	-0.000	-0.000	-0.011	0.011				

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

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**DESCRIPTION: C24**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	63.599	-0.001	-0.001	-0.074	0.074	-1.317			0.026
"	Minimum	9.380	-0.000	-0.000	-0.011	0.011	-0.195			0.004
Reaction, X-X Axis Base	Maximum	9.380	-0.000	-0.000	-0.011	0.011	-0.195			0.004
"	Minimum	63.599	-0.001	-0.001	-0.074	0.074	-1.317			0.026
Reaction, Y-Y Axis Base	Maximum	9.380	-0.000	-0.000	-0.011	0.011	-0.195			0.004
"	Minimum	63.599	-0.001	-0.001	-0.074	0.074	-1.317			0.026
Reaction, X-X Axis Top	Maximum	9.380	-0.000	-0.000	-0.011	0.011	-0.195			0.004
"	Minimum	63.599	-0.001	-0.001	-0.074	0.074	-1.317			0.026
Reaction, Y-Y Axis Top	Maximum	26.259	-0.001	-0.001	-0.030	0.030	-0.539			0.011
"	Minimum	9.380	-0.000	-0.000	-0.011	0.011	-0.195			0.004
Moment, X-X Axis Base	Maximum	26.259		-0.001	-0.030	0.030	-0.539			0.011
"	Minimum	26.259		-0.001	-0.030	0.030	-0.539			0.011
Moment, Y-Y Axis Base	Maximum	26.259	-0.001	-0.001	-0.030	0.030	0.011			-0.539
"	Minimum	26.259	-0.001	-0.001	-0.030	0.030	0.011			-0.539
Moment, X-X Axis Top	Maximum	9.380	-0.000	-0.000	-0.011	0.011	-0.195			0.004
"	Minimum	63.599	-0.001	-0.001	-0.074	0.074	-1.317			0.026
Moment, Y-Y Axis Top	Maximum	63.599	-0.001	-0.001	-0.074	0.074	-1.317			0.026
"	Minimum	9.380	-0.000	-0.000	-0.011	0.011	-0.195			0.004

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.0006 in	10.411 ft	-0.030 in	10.411 ft
+D+L	0.0015 in	10.411 ft	-0.074 in	10.411 ft
+D+S	0.0008 in	10.411 ft	-0.041 in	10.411 ft
+D+0.750L	0.0013 in	10.411 ft	-0.063 in	10.411 ft
+D+0.750L+0.750S	0.0014 in	10.411 ft	-0.072 in	10.411 ft
+0.60D	0.0004 in	10.411 ft	-0.018 in	10.411 ft
L Only	0.0009 in	10.411 ft	-0.044 in	10.411 ft
S Only	0.0002 in	10.411 ft	-0.011 in	10.411 ft

**Steel Section Properties : HSS5x5x3/8**

Depth	=	5.000 in	I xx	=	21.70 in <sup>4</sup>	J	=	36.100 in <sup>4</sup>
Design Thick	=	0.349 in	S xx	=	8.68 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.870 in			
Wall Thick	=	0.375 in	Zx	=	10.600 in <sup>3</sup>			
Area	=	6.180 in <sup>2</sup>	I yy	=	21.700 in <sup>4</sup>	C	=	14.900 in <sup>3</sup>
Weight	=	22.370 plf	S yy	=	8.680 in <sup>3</sup>			
			R yy	=	1.870 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

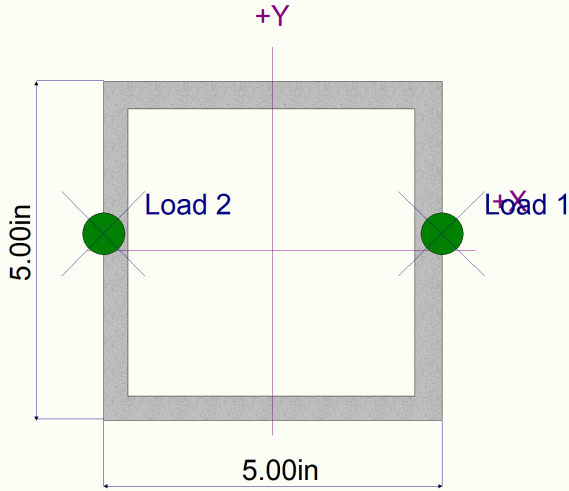
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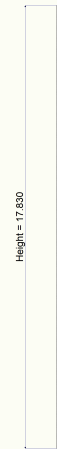
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DESCRIPTION: C24

**Sketches**



36.290k



36.290k





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

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**DESCRIPTION:** C23 & C25

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : **HSS5x5x3/8** Overall Column Height 17.830 ft  
 Analysis Method : Allowable Strength Top & Bottom Fixity Top & Bottom Pinned  
 Steel Stress Grade Brace condition :  
 Fy : Steel Yield 46.0 ksi Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0  
 E : Elastic Bending Modulus 29,000.0 ksi Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 398.857 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B23: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 8.670, L = 12.50, S = 3.140 k  
 B24: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 12.930, L = 18.670, S = 4.690 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.9142** : 1  
 Load Combination +D+L  
 Location of max.above base 17.830 ft  
 At maximum location values are . . .  
 Pa : Axial 53.169 k  
 Pn / Omega : Allowable 70.564 k  
 Ma-x : Applied -2.199 k-ft  
 Mn-x / Omega : Allowable 24.331 k-ft  
 Ma-y : Applied 2.199 k-ft  
 Mn-y / Omega : Allowable 24.331 k-ft

**Maximum Load Reactions . . .**  
 Top along X-X 0.1233 k  
 Bottom along X-X 0.1233 k  
 Top along Y-Y 0.1233 k  
 Bottom along Y-Y 0.1233 k

**Maximum Load Deflections . . .**  
 Along Y-Y -0.1242 in at 10.411 ft above base  
 for load combination : +D+L  
 Along X-X 0.1242 in at 10.411 ft above base  
 for load combination : +D+L

**PASS** Maximum Shear Stress Ratio = **0.002705** : 1  
 Load Combination +D+L  
 Location of max.above base 0.0 ft  
 At maximum location values are . . .  
 Va : Applied 0.1233 k  
 Vn / Omega : Allowable 45.601 k

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios						
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location	
D Only	0.377	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft	
+D+L	0.914	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.003	PASS	0.00 ft	
+D+S	0.512	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.002	PASS	0.00 ft	
+D+0.750L	0.780	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.002	PASS	0.00 ft	
+D+0.750L+0.750S	0.881	PASS	17.83 ft	1.66	1.66	114.42	114.42	0.003	PASS	0.00 ft	
+0.60D	0.187	PASS	0.00 ft	1.66	1.66	114.42	114.42	0.001	PASS	0.00 ft	

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	21.999	-0.050	-0.050	-0.050	0.050				
+D+L	53.169	-0.123	-0.123	-0.123	0.123				
+D+S	29.829	-0.069	-0.069	-0.069	0.069				
+D+0.750L	45.376	-0.105	-0.105	-0.105	0.105				
+D+0.750L+0.750S	51.249	-0.119	-0.119	-0.119	0.119				
+0.60D	13.199	-0.030	-0.030	-0.030	0.030				
L Only	31.170	-0.073	-0.073	-0.073	0.073				
S Only	7.830	-0.018	-0.018	-0.018	0.018				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C23 & C25**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	53.169	-0.123	-0.123	-0.123	0.123	-2.199			2.199
"	Minimum	7.830	-0.018	-0.018	-0.018	0.018	-0.326			0.327
Reaction, X-X Axis Base	Maximum	7.830	-0.018	-0.018	-0.018	0.018	-0.326			0.327
"	Minimum	53.169	-0.123	-0.123	-0.123	0.123	-2.199			2.199
Reaction, Y-Y Axis Base	Maximum	7.830	-0.018	-0.018	-0.018	0.018	-0.326			0.327
"	Minimum	53.169	-0.123	-0.123	-0.123	0.123	-2.199			2.199
Reaction, X-X Axis Top	Maximum	7.830	-0.018	-0.018	-0.018	0.018	-0.326			0.327
"	Minimum	53.169	-0.123	-0.123	-0.123	0.123	-2.199			2.199
Reaction, Y-Y Axis Top	Maximum	21.999	-0.050	-0.050	-0.050	0.050	-0.900			0.898
"	Minimum	7.830	-0.018	-0.018	-0.018	0.018	-0.326			0.327
Moment, X-X Axis Base	Maximum	21.999		-0.050	-0.050	0.050	-0.900			0.898
"	Minimum	21.999		-0.050	-0.050	0.050	-0.900			0.898
Moment, Y-Y Axis Base	Maximum	21.999	-0.050	-0.050	-0.050	0.050	0.898			-0.900
"	Minimum	21.999	-0.050	-0.050	-0.050	0.050	0.898			-0.900
Moment, X-X Axis Top	Maximum	7.830	-0.018	-0.018	-0.018	0.018	-0.326			0.327
"	Minimum	53.169	-0.123	-0.123	-0.123	0.123	-2.199			2.199
Moment, Y-Y Axis Top	Maximum	53.169	-0.123	-0.123	-0.123	0.123	-2.199			2.199
"	Minimum	7.830	-0.018	-0.018	-0.018	0.018	-0.326			0.327

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.0507 in	10.411 ft	-0.051 in	10.411 ft
+D+L	0.1242 in	10.411 ft	-0.124 in	10.411 ft
+D+S	0.0692 in	10.411 ft	-0.069 in	10.411 ft
+D+0.750L	0.1059 in	10.411 ft	-0.106 in	10.411 ft
+D+0.750L+0.750S	0.1197 in	10.411 ft	-0.120 in	10.411 ft
+0.60D	0.0304 in	10.411 ft	-0.031 in	10.411 ft
L Only	0.0735 in	10.411 ft	-0.073 in	10.411 ft
S Only	0.0185 in	10.411 ft	-0.018 in	10.411 ft

**Steel Section Properties : HSS5x5x3/8**

Depth	=	5.000 in	I xx	=	21.70 in <sup>4</sup>	J	=	36.100 in <sup>4</sup>
Design Thick	=	0.349 in	S xx	=	8.68 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.870 in			
Wall Thick	=	0.375 in	Zx	=	10.600 in <sup>3</sup>			
Area	=	6.180 in <sup>2</sup>	I yy	=	21.700 in <sup>4</sup>	C	=	14.900 in <sup>3</sup>
Weight	=	22.370 plf	S yy	=	8.680 in <sup>3</sup>			
			R yy	=	1.870 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

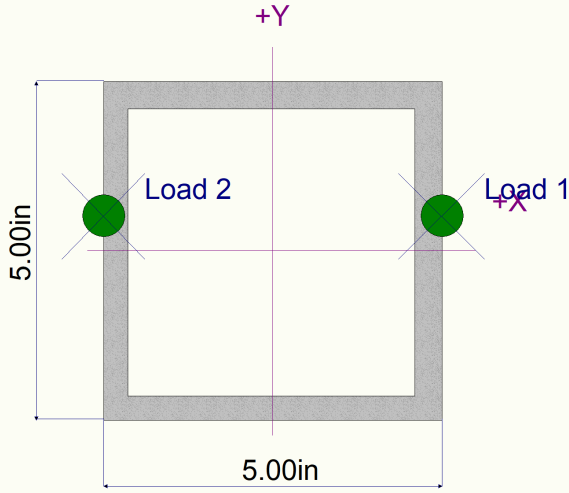
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C23 & C25

**Sketches**



38.290k



36280k



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** C26

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : **HSS5x5x1/4** Overall Column Height 17.830 ft  
 Analysis Method : Allowable Strength Top & Bottom Fixity Top & Bottom Pinned  
 Steel Stress Grade Brace condition :  
 Fy : Steel Yield 46.0 ksi Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0  
 E : Elastic Bending Modulus 29,000.0 ksi Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 278.505 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B26: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 7.030, L = 10.110, S = 2.530 k  
 B27: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.50 in, D = 2.760, L = 5.750, S = 0.960 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.6459** : 1  
 Load Combination +D+L  
 Location of max.above base 17.830 ft  
 At maximum location values are . . .  
 Pa : Axial 25.929 k  
 Pn / Omega : Allowable 51.817 k  
 Ma-x : Applied -1.069 k-ft  
 Mn-x / Omega : Allowable 17.468 k-ft  
 Ma-y : Applied -1.791 k-ft  
 Mn-y / Omega : Allowable 17.468 k-ft

**Maximum Load Reactions . .**  
 Top along X-X 0.1015 k  
 Bottom along X-X 0.1015 k  
 Top along Y-Y 0.05994 k  
 Bottom along Y-Y 0.05994 k

**Maximum Load Deflections . . .**  
 Along Y-Y -0.08188 in at 10.411ft above base  
 for load combination : +D+L  
 Along X-X -0.1386 in at 10.411ft above base  
 for load combination : +D+0.750L+0.750S

**PASS** Maximum Shear Stress Ratio = **0.003064** : 1  
 Load Combination +D+0.750L+0.750S  
 Location of max.above base 0.0 ft  
 At maximum location values are . . .  
 Va : Applied 0.1015 k  
 Vn / Omega : Allowable 33.124 k

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.194	PASS	0.00 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft
+D+L	0.646	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.003	PASS	0.00 ft
+D+S	0.352	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.002	PASS	0.00 ft
+D+0.750L	0.549	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.003	PASS	0.00 ft
+D+0.750L+0.750S	0.618	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.003	PASS	0.00 ft
+0.60D	0.117	PASS	0.00 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	10.069	0.050	0.050	-0.023	0.023				
+D+L	25.929	0.100	0.100	-0.060	0.060				
+D+S	13.559	0.068	0.068	-0.031	0.031				
+D+0.750L	21.964	0.088	0.088	-0.051	0.051				
+D+0.750L+0.750S	24.581	0.101	0.101	-0.057	0.057				
+0.60D	6.041	0.030	0.030	-0.014	0.014				
L Only	15.860	0.051	0.051	-0.037	0.037				
S Only	3.490	0.018	0.018	-0.008	0.008				



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C26**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Axial @ Base	Maximum	25.929	0.100	0.100			-0.060	0.060				-1.069	-1.791
"	Minimum	3.490	0.018	0.018			-0.008	0.008				-0.145	-0.326
Reaction, X-X Axis Base	Maximum	24.581	0.101	0.101			-0.057	0.057				-1.013	-1.810
"	Minimum	3.490	0.018	0.018			-0.008	0.008				-0.145	-0.326
Reaction, Y-Y Axis Base	Maximum	3.490	0.018	0.018			-0.008	0.008				-0.145	-0.326
"	Minimum	25.929	0.100	0.100			-0.060	0.060				-1.069	-1.791
Reaction, X-X Axis Top	Maximum	24.581	0.101	0.101			-0.057	0.057				-1.013	-1.810
"	Minimum	3.490	0.018	0.018			-0.008	0.008				-0.145	-0.326
Reaction, Y-Y Axis Top	Maximum	24.581	0.101	0.101			-0.057	0.057				-1.013	-1.810
"	Minimum	3.490	0.018	0.018			-0.008	0.008				-0.145	-0.326
Moment, X-X Axis Base	Maximum	10.069		0.050			-0.023	0.023				-0.408	-0.887
"	Minimum	10.069		0.050			-0.023	0.023				-0.408	-0.887
Moment, Y-Y Axis Base	Maximum	10.069	0.050	0.050			-0.023	0.023				-0.887	-0.408
"	Minimum	10.069	0.050	0.050			-0.023	0.023				-0.887	-0.408
Moment, X-X Axis Top	Maximum	3.490	0.018	0.018			-0.008	0.008				-0.145	-0.326
"	Minimum	25.929	0.100	0.100			-0.060	0.060				-1.069	-1.791
Moment, Y-Y Axis Top	Maximum	3.490	0.018	0.018			-0.008	0.008				-0.145	-0.326
"	Minimum	24.581	0.101	0.101			-0.057	0.057				-1.013	-1.810

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0680 in	10.411 ft	-0.031 in	10.411 ft
+D+L	-0.1372 in	10.411 ft	-0.082 in	10.411 ft
+D+S	-0.0930 in	10.411 ft	-0.042 in	10.411 ft
+D+0.750L	-0.1199 in	10.411 ft	-0.069 in	10.411 ft
+D+0.750L+0.750S	-0.1386 in	10.411 ft	-0.078 in	10.411 ft
+0.60D	-0.0408 in	10.411 ft	-0.019 in	10.411 ft
L Only	-0.0692 in	10.411 ft	-0.051 in	10.411 ft
S Only	-0.0250 in	10.411 ft	-0.011 in	10.411 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

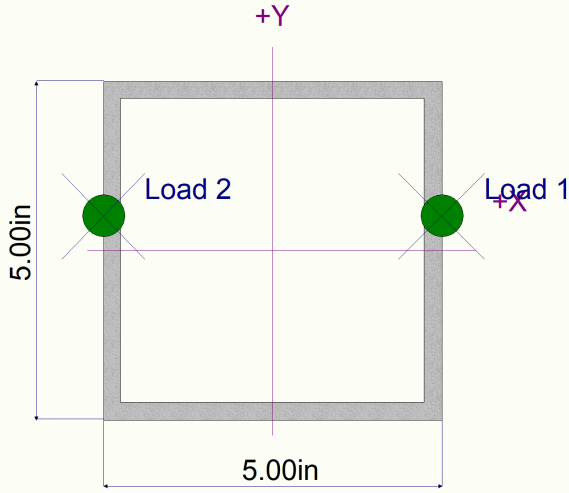
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: C26

**Sketches**



18.4970k



9.49870k





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** C27

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : **HSS5x5x1/4** Overall Column Height 17.830 ft  
 Analysis Method : Allowable Strength Top & Bottom Fixity Top & Bottom Pinned  
 Steel Stress Grade Brace condition :  
 Fy : Steel Yield 46.0 ksi Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0  
 E : Elastic Bending Modulus 29,000.0 ksi Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 278.505 lbs \* Dead Load Factor

AXIAL LOADS . . .

B27: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 8.270, L = 11.490, S = 2.880 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.4705** : 1  
 Load Combination +D+L  
 Location of max.above base 17.830 ft  
 At maximum location values are . . .  
 Pa : Axial 20.039 k  
 Pn / Omega : Allowabl 51.817 k  
 Ma-x : Applied -0.8233 k-ft  
 Mn-x / Omega : Allowable 17.468 k-ft  
 Ma-y : Applied -0.8233 k-ft  
 Mn-y / Omega : Allowable 17.468 k-ft

**Maximum Load Reactions . . .**  
 Top along X-X 0.04618 k  
 Bottom along X-X 0.04618 k  
 Top along Y-Y 0.04618 k  
 Bottom along Y-Y 0.04618 k

**Maximum Load Deflections . . .**  
 Along Y-Y -0.06308 in at 10.411 ft above base  
 for load combination : +D+L  
 Along X-X -0.06308 in at 10.411 ft above base  
 for load combination : +D+L

**PASS** Maximum Shear Stress Ratio **0.001394** : 1  
 Load Combination +D+L  
 Location of max.above base 0.0 ft  
 At maximum location values are . . .  
 Va : Applied 0.04618 k  
 Vn / Omega : Allowable 33.124 k

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.165	PASS	0.00 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+L	0.471	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+S	0.268	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+0.750L	0.403	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+D+0.750L+0.750S	0.454	PASS	17.83 ft	1.66	1.66	110.86	110.86	0.001	PASS	0.00 ft
+0.60D	0.099	PASS	0.00 ft	1.66	1.66	110.86	110.86	0.000	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	8.549	0.019	0.019		-0.019	0.019				
+D+L	20.039	0.046	0.046		-0.046	0.046				
+D+S	11.429	0.026	0.026		-0.026	0.026				
+D+0.750L	17.166	0.039	0.039		-0.039	0.039				
+D+0.750L+0.750S	19.326	0.045	0.045		-0.045	0.045				
+0.60D	5.129	0.012	0.012		-0.012	0.012				
L Only	11.490	0.027	0.027		-0.027	0.027				
S Only	2.880	0.007	0.007		-0.007	0.007				



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C27

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	20.039	0.046	0.046	-0.046	0.046	-0.823		-0.823	
"	Minimum	2.880	0.007	0.007	-0.007	0.007	-0.120		-0.120	
Reaction, X-X Axis Base	Maximum	20.039	0.046	0.046	-0.046	0.046	-0.823		-0.823	
"	Minimum	2.880	0.007	0.007	-0.007	0.007	-0.120		-0.120	
Reaction, Y-Y Axis Base	Maximum	2.880	0.007	0.007	-0.007	0.007	-0.120		-0.120	
"	Minimum	20.039	0.046	0.046	-0.046	0.046	-0.823		-0.823	
Reaction, X-X Axis Top	Maximum	20.039	0.046	0.046	-0.046	0.046	-0.823		-0.823	
"	Minimum	2.880	0.007	0.007	-0.007	0.007	-0.120		-0.120	
Reaction, Y-Y Axis Top	Maximum	20.039	0.046	0.046	-0.046	0.046	-0.823		-0.823	
"	Minimum	2.880	0.007	0.007	-0.007	0.007	-0.120		-0.120	
Moment, X-X Axis Base	Maximum	8.549		0.019	-0.019	0.019	-0.345		-0.345	
"	Minimum	8.549		0.019	-0.019	0.019	-0.345		-0.345	
Moment, Y-Y Axis Base	Maximum	8.549	0.019	0.019	-0.019	0.019	-0.345		-0.345	
"	Minimum	8.549	0.019	0.019	-0.019	0.019	-0.345		-0.345	
Moment, X-X Axis Top	Maximum	2.880	0.007	0.007	-0.007	0.007	-0.120		-0.120	
"	Minimum	20.039	0.046	0.046	-0.046	0.046	-0.823		-0.823	
Moment, Y-Y Axis Top	Maximum	2.880	0.007	0.007	-0.007	0.007	-0.120		-0.120	
"	Minimum	20.039	0.046	0.046	-0.046	0.046	-0.823		-0.823	

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0264 in	10.411 ft	-0.026 in	10.411 ft
+D+L	-0.0631 in	10.411 ft	-0.063 in	10.411 ft
+D+S	-0.0356 in	10.411 ft	-0.036 in	10.411 ft
+D+0.750L	-0.0539 in	10.411 ft	-0.054 in	10.411 ft
+D+0.750L+0.750S	-0.0608 in	10.411 ft	-0.061 in	10.411 ft
+0.60D	-0.0158 in	10.411 ft	-0.016 in	10.411 ft
L Only	-0.0367 in	10.411 ft	-0.037 in	10.411 ft
S Only	-0.0092 in	10.411 ft	-0.009 in	10.411 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

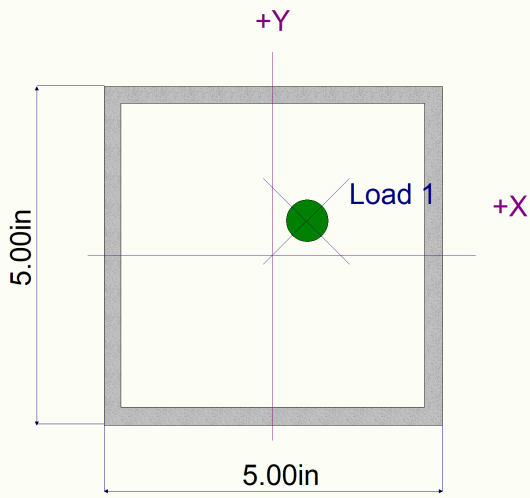
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C27

**Sketches**



## Steel Column

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **C28**

### Code References

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

### General Information

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.83 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.83 ft, K = 1.0	

### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 278.505 lbs \* Dead Load Factor

AXIAL LOADS . . .

B29: Axial Load at 12.830 ft, Xecc = 0.50 in, Yecc = -2.510 in, D = 6.310, L = 9.870, S = 2.080 k

B28: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = -0.50 in, D = 6.310, L = 9.870, S = 2.080 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.6204</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.07562 k
Location of max.above base	12.804 ft	Bottom along X-X	0.07562 k
At maximum location values are . . .		Top along Y-Y	0.2276 k
Pa : Axial	32.639 k	Bottom along Y-Y	0.2276 k
Pn / Omega : Allowable	77.198 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	2.914 k-ft	Along Y-Y 0.2241 in at	9.334ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	-0.9683 k-ft	Along X-X -0.08562 in at	9.693ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.006872</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.2276 k		
Vn / Omega : Allowable	33.124 k		

### Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.170	PASS	12.80 ft	1.87	1.69	79.77	79.77	0.003	PASS	0.00 ft
+D+L	0.620	PASS	12.80 ft	1.87	1.69	79.77	79.77	0.007	PASS	0.00 ft
+D+S	0.323	PASS	12.80 ft	1.87	1.69	79.77	79.77	0.004	PASS	0.00 ft
+D+0.750L	0.526	PASS	12.80 ft	1.87	1.69	79.77	79.77	0.006	PASS	0.00 ft
+D+0.750L+0.750S	0.586	PASS	12.80 ft	1.87	1.69	79.77	79.77	0.006	PASS	0.00 ft
+0.60D	0.102	PASS	12.80 ft	1.87	1.69	79.77	79.77	0.002	PASS	0.00 ft

### Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	12.899	0.029	0.029	0.089	-0.089				
+D+L	32.639	0.076	0.076	0.228	-0.228				
+D+S	17.059	0.039	0.039	0.118	-0.118				
+D+0.750L	27.704	0.064	0.064	0.193	-0.193				
+D+0.750L+0.750S	30.824	0.071	0.071	0.215	-0.215				
+0.60D	7.739	0.018	0.018	0.053	-0.053				
L Only	19.740	0.046	0.046	0.139	-0.139				
S Only	4.160	0.010	0.010	0.029	-0.029				

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C28**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	32.639	0.076	0.076	0.228	-0.228	0.674			-0.674
"	Minimum	4.160	0.010	0.010	0.029	-0.029	0.087			-0.087
Reaction, X-X Axis Base	Maximum	32.639	0.076	0.076	0.228	-0.228	0.674			-0.674
"	Minimum	4.160	0.010	0.010	0.029	-0.029	0.087			-0.087
Reaction, Y-Y Axis Base	Maximum	32.639	0.076	0.076	0.228	-0.228	0.674			-0.674
"	Minimum	4.160	0.010	0.010	0.029	-0.029	0.087			-0.087
Reaction, X-X Axis Top	Maximum	32.639	0.076	0.076	0.228	-0.228	0.674			-0.674
"	Minimum	4.160	0.010	0.010	0.029	-0.029	0.087			-0.087
Reaction, Y-Y Axis Top	Maximum	4.160	0.010	0.010	0.029	-0.029	0.087			-0.087
"	Minimum	12.899	0.029	0.029	0.089	-0.089	0.263			-0.263
Moment, X-X Axis Base	Maximum	12.899		0.029	0.089	-0.089	0.263			-0.263
"	Minimum	12.899		0.029	0.089	-0.089	0.263			-0.263
Moment, Y-Y Axis Base	Maximum	12.899	0.029	0.029	0.089	-0.089	-0.263			0.263
"	Minimum	12.899	0.029	0.029	0.089	-0.089	-0.263			0.263
Moment, X-X Axis Top	Maximum	32.639	0.076	0.076	0.228	-0.228	0.674			-0.674
"	Minimum	4.160	0.010	0.010	0.029	-0.029	0.087			-0.087
Moment, Y-Y Axis Top	Maximum	4.160	0.010	0.010	0.029	-0.029	0.087			-0.087
"	Minimum	32.639	0.076	0.076	0.228	-0.228	0.674			-0.674

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0334 in	9.693 ft	0.087 in	9.334 ft
+D+L	-0.0856 in	9.693 ft	0.224 in	9.334 ft
+D+S	-0.0444 in	9.693 ft	0.116 in	9.334 ft
+D+0.750L	-0.0726 in	9.693 ft	0.190 in	9.334 ft
+D+0.750L+0.750S	-0.0808 in	9.693 ft	0.212 in	9.334 ft
+0.60D	-0.0200 in	9.693 ft	0.052 in	9.334 ft
L Only	-0.0522 in	9.693 ft	0.137 in	9.334 ft
S Only	-0.0110 in	9.693 ft	0.029 in	9.334 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

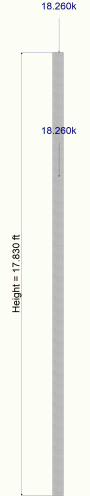
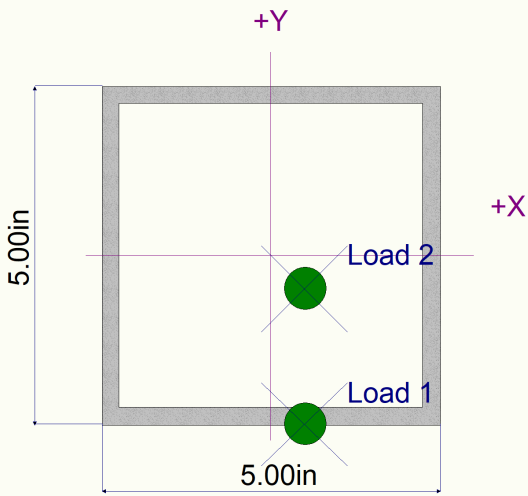
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C28

**Sketches**





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION: C29**

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : **HSS5x5x3/8** Overall Column Height 17.830 ft  
 Analysis Method : Allowable Strength Top & Bottom Fixity Top & Bottom Pinned  
 Steel Stress Grade Brace condition :  
 Fy : Steel Yield 46.0 ksi Unbraced Length for buckling ABOUT X-X Axis = 12.83 ft, K = 1.0  
 E : Elastic Bending Modulus 29,000.0 ksi Unbraced Length for buckling ABOUT Y-Y Axis = 12.83 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 398.857 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

- B29: Axial Load at 12.830 ft, Xecc = 0.50 in, Yecc = 2.50 in, D = 1.520, L = 3.680, S = 0.50 k
- B30: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = -2.510 in, D = 12.160, L = 19.60, S = 4.20 k
- B28: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = 2.50 in, D = 1.520, L = 3.680, S = 0.50 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.6056** : 1  
 Load Combination +D+L  
 Location of max.above base 17.830 ft  
 At maximum location values are . . .  
 Pa : Axial 37.359 k  
 Pn / Omega : Allowable 107.895 k  
 Ma-x : Applied 5.560 k-ft  
 Mn-x / Omega : Allowable 24.331 k-ft  
 Ma-y : Applied -1.540 k-ft  
 Mn-y / Omega : Allowable 24.331 k-ft

**Maximum Load Reactions . .**  
 Top along X-X 0.09852 k  
 Bottom along X-X 0.09852 k  
 Top along Y-Y 0.2511 k  
 Bottom along Y-Y 0.2511 k

**Maximum Load Deflections . . .**  
 Along Y-Y 0.2748 in at 10.650ft above base  
 for load combination : +D+L  
 Along X-X -0.09494 in at 10.171ft above base  
 for load combination : +D+L

**PASS** Maximum Shear Stress Ratio = **0.005506** : 1  
 Load Combination +D+L  
 Location of max.above base 0.0 ft  
 At maximum location values are . . .  
 Va : Applied 0.2511 k  
 Vn / Omega : Allowable 45.601 k

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Cb <sub>x</sub>	Cb <sub>y</sub>	K <sub>x</sub> L <sub>x</sub> /R <sub>x</sub>	K <sub>y</sub> L <sub>y</sub> /R <sub>y</sub>	Maximum Shear Ratios		
	Stress Ratio	Status	Location	Stress Ratio					Status	Location	
D Only	0.180	PASS	17.83 ft	1.76	1.60	82.33	82.33	0.002	PASS	0.00 ft	
+D+L	0.606	PASS	17.83 ft	1.76	1.60	82.33	82.33	0.006	PASS	0.00 ft	
+D+S	0.242	PASS	17.83 ft	1.76	1.60	82.33	82.33	0.003	PASS	0.00 ft	
+D+0.750L	0.512	PASS	17.83 ft	1.76	1.60	82.33	82.33	0.005	PASS	0.00 ft	
+D+0.750L+0.750S	0.572	PASS	17.83 ft	1.76	1.60	82.33	82.33	0.005	PASS	0.00 ft	
+0.60D	0.108	PASS	17.83 ft	1.76	1.60	82.33	82.33	0.001	PASS	0.00 ft	

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		M <sub>x</sub> - End Moments		M <sub>y</sub> - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	15.599	0.036	0.036	0.107	-0.107				
+D+L	42.559	0.099	0.099	0.251	-0.251				
+D+S	20.799	0.048	0.048	0.145	-0.145				
+D+0.750L	35.819	0.083	0.083	0.215	-0.215				
+D+0.750L+0.750S	39.719	0.092	0.092	0.243	-0.243				
+0.60D	9.359	0.021	0.021	0.064	-0.064				
L Only	26.960	0.063	0.063	0.144	-0.144				
S Only	5.200	0.012	0.012	0.038	-0.038				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C29

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	42.559	0.099	0.099	0.251	-0.251			5.560			-1.540
"	Minimum	5.200	0.012	0.012	0.038	-0.038			0.774			-0.196
Reaction, X-X Axis Base	Maximum	42.559	0.099	0.099	0.251	-0.251			5.560			-1.540
"	Minimum	5.200	0.012	0.012	0.038	-0.038			0.774			-0.196
Reaction, Y-Y Axis Base	Maximum	42.559	0.099	0.099	0.251	-0.251			5.560			-1.540
"	Minimum	5.200	0.012	0.012	0.038	-0.038			0.774			-0.196
Reaction, X-X Axis Top	Maximum	42.559	0.099	0.099	0.251	-0.251			5.560			-1.540
"	Minimum	5.200	0.012	0.012	0.038	-0.038			0.774			-0.196
Reaction, Y-Y Axis Top	Maximum	5.200	0.012	0.012	0.038	-0.038			0.774			-0.196
"	Minimum	15.599	0.036	0.036	0.107	-0.107			2.227			-0.570
Moment, X-X Axis Base	Maximum	15.599		0.036	0.107	-0.107			2.227			-0.570
"	Minimum	15.599		0.036	0.107	-0.107			2.227			-0.570
Moment, Y-Y Axis Base	Maximum	15.599	0.036	0.036	0.107	-0.107			-0.570			2.227
"	Minimum	15.599	0.036	0.036	0.107	-0.107			-0.570			2.227
Moment, X-X Axis Top	Maximum	42.559	0.099	0.099	0.251	-0.251			5.560			-1.540
"	Minimum	5.200	0.012	0.012	0.038	-0.038			0.774			-0.196
Moment, Y-Y Axis Top	Maximum	5.200	0.012	0.012	0.038	-0.038			0.774			-0.196
"	Minimum	42.559	0.099	0.099	0.251	-0.251			5.560			-1.540

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0345 in	10.291 ft	0.114 in	10.530 ft
+D+L	-0.0949 in	10.171 ft	0.275 in	10.650 ft
+D+S	-0.0463 in	10.291 ft	0.154 in	10.530 ft
+D+0.750L	-0.0798 in	10.171 ft	0.235 in	10.650 ft
+D+0.750L+0.750S	-0.0887 in	10.171 ft	0.265 in	10.650 ft
+0.60D	-0.0207 in	10.291 ft	0.069 in	10.530 ft
L Only	-0.0604 in	10.171 ft	0.161 in	10.770 ft
S Only	-0.0118 in	10.291 ft	0.040 in	10.530 ft

**Steel Section Properties : HSS5x5x3/8**

Depth	=	5.000 in	I xx	=	21.70 in <sup>4</sup>	J	=	36.100 in <sup>4</sup>
Design Thick	=	0.349 in	S xx	=	8.68 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.870 in			
Wall Thick	=	0.375 in	Zx	=	10.600 in <sup>3</sup>			
Area	=	6.180 in <sup>2</sup>	I yy	=	21.700 in <sup>4</sup>	C	=	14.900 in <sup>3</sup>
Weight	=	22.370 plf	S yy	=	8.680 in <sup>3</sup>			
			R yy	=	1.870 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

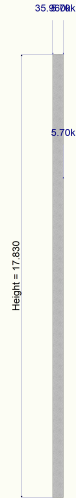
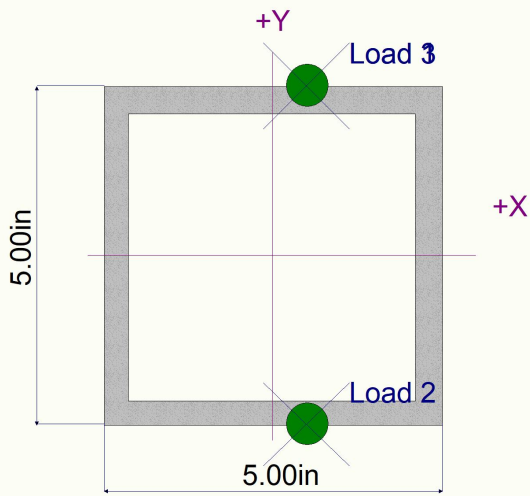
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C29

**Sketches**



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C30 & C34

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/2</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 506.91 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B33: Axial Load at 17.830 ft, Xecc = 2.50 in, Yecc = 0.250 in, D = 19.580, L = 28.0, S = 7.0 k  
 B34: Axial Load at 17.830 ft, Xecc = -2.510 in, Yecc = 0.250 in, D = 7.030, L = 10.110, S = 2.530 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.9883</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.3549 k
Location of max.above base	17.830 ft	Bottom along X-X	0.3549 k
At maximum location values are . . .		Top along Y-Y	0.07562 k
Pa : Axial	65.227 k	Bottom along Y-Y	0.07562 k
Pn / Omega : Allowable	85.667 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-1.348 k-ft	Along Y-Y -0.06357 in at	10.411ft above base
Mn-x / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
Ma-y : Applied	-6.327 k-ft	Along X-X -0.2983 in at	10.411ft above base
Mn-y / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.006405</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.3549 k		
Vn / Omega : Allowable	55.409 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.410	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.003	PASS	0.00 ft
+D+L	0.988	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.006	PASS	0.00 ft
+D+S	0.555	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.004	PASS	0.00 ft
+D+0.750L	0.844	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.005	PASS	0.00 ft
+D+0.750L+0.750S	0.952	PASS	17.83 ft	1.66	1.66	117.56	117.56	0.006	PASS	0.00 ft
+0.60D	0.190	PASS	0.00 ft	1.66	1.66	117.56	117.56	0.002	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	27.117	0.146	0.146	-0.031	0.031				
+D+L	65.227	0.355	0.355	-0.076	0.076				
+D+S	36.647	0.198	0.198	-0.042	0.042				
+D+0.750L	55.699	0.303	0.303	-0.064	0.064				
+D+0.750L+0.750S	62.847	0.342	0.342	-0.073	0.073				
+0.60D	16.270	0.088	0.088	-0.019	0.019				
L Only	38.110	0.209	0.209	-0.045	0.045				
S Only	9.530	0.052	0.052	-0.011	0.011				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C30 & C34**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	65.227	0.355	0.355	-0.076	0.076	-1.348	-6.327				
"	Minimum	9.530	0.052	0.052	-0.011	0.011	-0.199	-0.929				
Reaction, X-X Axis Base	Maximum	65.227	0.355	0.355	-0.076	0.076	-1.348	-6.327				
"	Minimum	9.530	0.052	0.052	-0.011	0.011	-0.199	-0.929				
Reaction, Y-Y Axis Base	Maximum	9.530	0.052	0.052	-0.011	0.011	-0.199	-0.929				
"	Minimum	65.227	0.355	0.355	-0.076	0.076	-1.348	-6.327				
Reaction, X-X Axis Top	Maximum	65.227	0.355	0.355	-0.076	0.076	-1.348	-6.327				
"	Minimum	9.530	0.052	0.052	-0.011	0.011	-0.199	-0.929				
Reaction, Y-Y Axis Top	Maximum	9.530	0.052	0.052	-0.011	0.011	-0.199	-0.929				
"	Minimum	27.117	0.146	0.146	-0.031	0.031	-0.554	-2.609				
Moment, X-X Axis Base	Maximum	27.117		0.146	-0.031	0.031	-0.554	-2.609				
"	Minimum	27.117		0.146	-0.031	0.031	-0.554	-2.609				
Moment, Y-Y Axis Base	Maximum	27.117	0.146	0.146	-0.031	0.031	-2.609	-0.554				
"	Minimum	27.117	0.146	0.146	-0.031	0.031	-2.609	-0.554				
Moment, X-X Axis Top	Maximum	9.530	0.052	0.052	-0.011	0.011	-0.199	-0.929				
"	Minimum	65.227	0.355	0.355	-0.076	0.076	-1.348	-6.327				
Moment, Y-Y Axis Top	Maximum	9.530	0.052	0.052	-0.011	0.011	-0.199	-0.929				
"	Minimum	65.227	0.355	0.355	-0.076	0.076	-1.348	-6.327				

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.1230 in	10.411 ft	-0.026 in	10.411 ft
+D+L	-0.2983 in	10.411 ft	-0.064 in	10.411 ft
+D+S	-0.1668 in	10.411 ft	-0.035 in	10.411 ft
+D+0.750L	-0.2545 in	10.411 ft	-0.054 in	10.411 ft
+D+0.750L+0.750S	-0.2873 in	10.411 ft	-0.061 in	10.411 ft
+0.60D	-0.0738 in	10.411 ft	-0.016 in	10.411 ft
L Only	-0.1753 in	10.411 ft	-0.037 in	10.411 ft
S Only	-0.0438 in	10.411 ft	-0.009 in	10.411 ft

**Steel Section Properties : HSS5x5x1/2**

Depth	=	5.000 in	I xx	=	26.00 in <sup>4</sup>	J	=	44.600 in <sup>4</sup>
Design Thick	=	0.465 in	S xx	=	10.40 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.820 in			
Wall Thick	=	0.500 in	Zx	=	13.100 in <sup>3</sup>			
Area	=	7.880 in <sup>2</sup>	I yy	=	26.000 in <sup>4</sup>	C	=	18.700 in <sup>3</sup>
Weight	=	28.430 plf	S yy	=	10.400 in <sup>3</sup>			
			R yy	=	1.820 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

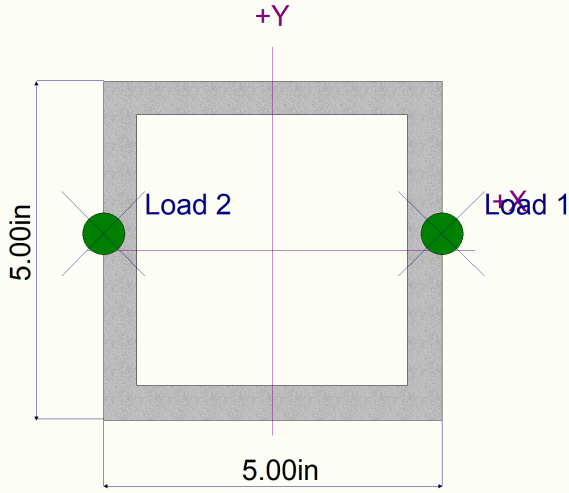
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C30 & C34

**Sketches**



59.680k



19827680k





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C31 & C35

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 17.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 17.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 278.505 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B34: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 9.530, L = 13.890, S = 3.470 k  
 B39.1: Axial Load at 12.830 ft, Yecc = 2.50 in, D = 3.370, L = 5.830, S = 1.080 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.7763</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.05473 k
Location of max.above base	12.804 ft	Bottom along X-X	0.05473 k
At maximum location values are . . .		Top along Y-Y	0.1622 k
Pa : Axial	32.899 k	Bottom along Y-Y	0.1622 k
Pn / Omega : Allowable	51.817 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-2.077 k-ft	Along Y-Y -0.1718 in at	9.573ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	-0.7008 k-ft	Along X-X -0.07476 in at	10.411ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.004897</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.1622 k		
Vn / Omega : Allowable	33.124 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.309	PASS	12.80 ft	1.86	1.66	110.86	110.86	0.002	PASS	0.00 ft
+D+L	0.776	PASS	12.80 ft	1.86	1.66	110.86	110.86	0.005	PASS	0.00 ft
+D+S	0.416	PASS	12.80 ft	1.86	1.66	110.86	110.86	0.002	PASS	0.00 ft
+D+0.750L	0.659	PASS	12.80 ft	1.86	1.66	110.86	110.86	0.004	PASS	0.00 ft
+D+0.750L+0.750S	0.739	PASS	12.80 ft	1.86	1.66	110.86	110.86	0.005	PASS	0.00 ft
+0.60D	0.153	PASS	0.00 ft	1.86	1.66	110.86	110.86	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	13.179	0.022	0.022	-0.062	0.062				
+D+L	32.899	0.055	0.055	-0.162	0.162				
+D+S	17.729	0.030	0.030	-0.082	0.082				
+D+0.750L	27.969	0.047	0.047	-0.137	0.137				
+D+0.750L+0.750S	31.381	0.053	0.053	-0.153	0.153				
+0.60D	7.907	0.013	0.013	-0.037	0.037				
L Only	19.720	0.032	0.032	-0.101	0.101				
S Only	4.550	0.008	0.008	-0.021	0.021				



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C31 & C35**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Axial @ Base	Maximum	32.899	0.055	0.055	-0.162	0.162	-0.976	-0.976					
"	Minimum	4.550	0.008	0.008	-0.021	0.021	-0.145	-0.145					
Reaction, X-X Axis Base	Maximum	32.899	0.055	0.055	-0.162	0.162	-0.976	-0.976					
"	Minimum	4.550	0.008	0.008	-0.021	0.021	-0.145	-0.145					
Reaction, Y-Y Axis Base	Maximum	4.550	0.008	0.008	-0.021	0.021	-0.145	-0.145					
"	Minimum	32.899	0.055	0.055	-0.162	0.162	-0.976	-0.976					
Reaction, X-X Axis Top	Maximum	32.899	0.055	0.055	-0.162	0.162	-0.976	-0.976					
"	Minimum	4.550	0.008	0.008	-0.021	0.021	-0.145	-0.145					
Reaction, Y-Y Axis Top	Maximum	13.179	0.022	0.022	-0.062	0.062	-0.397	-0.397					
"	Minimum	4.550	0.008	0.008	-0.021	0.021	-0.145	-0.145					
Moment, X-X Axis Base	Maximum	13.179		0.022	-0.062	0.062	-0.397	-0.397					
"	Minimum	13.179		0.022	-0.062	0.062	-0.397	-0.397					
Moment, Y-Y Axis Base	Maximum	13.179	0.022	0.022	-0.062	0.062	-0.397	-0.397					
"	Minimum	13.179	0.022	0.022	-0.062	0.062	-0.397	-0.397					
Moment, X-X Axis Top	Maximum	4.550	0.008	0.008	-0.021	0.021	-0.145	-0.145					
"	Minimum	32.899	0.055	0.055	-0.162	0.162	-0.976	-0.976					
Moment, Y-Y Axis Top	Maximum	4.550	0.008	0.008	-0.021	0.021	-0.145	-0.145					
"	Minimum	32.899	0.055	0.055	-0.162	0.162	-0.976	-0.976					

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0304 in	10.411 ft	-0.066 in	9.573 ft
+D+L	-0.0748 in	10.411 ft	-0.172 in	9.573 ft
+D+S	-0.0415 in	10.411 ft	-0.088 in	9.573 ft
+D+0.750L	-0.0637 in	10.411 ft	-0.145 in	9.573 ft
+D+0.750L+0.750S	-0.0720 in	10.411 ft	-0.162 in	9.573 ft
+0.60D	-0.0183 in	10.411 ft	-0.040 in	9.573 ft
L Only	-0.0443 in	10.411 ft	-0.106 in	9.453 ft
S Only	-0.0111 in	10.411 ft	-0.022 in	9.573 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

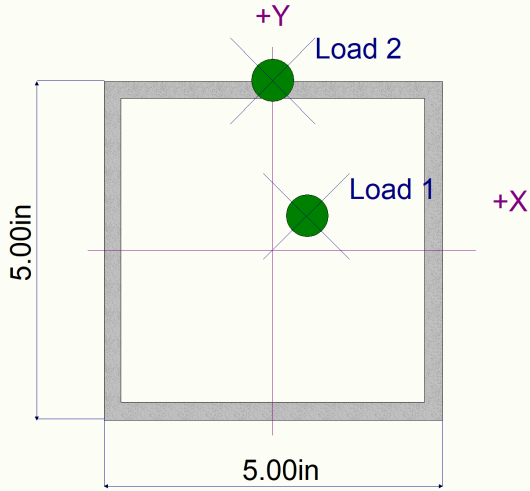
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C31 & C35

**Sketches**



## Steel Column

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** C32 & C36 & C41 & C45 & C49 & C40 & C48 & C55

### Code References

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

### General Information

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	11.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 11.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 11.830 ft, K = 1.0	

### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 184.785 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B41: Axial Load at 11.830 ft, Xecc = 0.250 in, Yecc = 0.250 in, D = 27.320, L = 38.90, S = 9.730 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.9472</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.1166 k
Location of max.above base	11.830 ft	Bottom along X-X	0.1166 k
At maximum location values are . . .		Top along Y-Y	0.1166 k
Pa : Axial	66.405 k	Bottom along Y-Y	0.1166 k
Pn / Omega : Allowabl	82.310 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-1.380 k-ft	Along Y-Y -0.04653 in at	6.907ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	-1.380 k-ft	Along X-X -0.04653 in at	6.907ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.003521</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.1166 k		
Vn / Omega : Allowable	33.124 k		

### Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.392	PASS	11.83 ft	1.66	1.66	73.55	73.55	0.001	PASS	0.00 ft
+D+L	0.947	PASS	11.83 ft	1.66	1.66	73.55	73.55	0.004	PASS	0.00 ft
+D+S	0.531	PASS	11.83 ft	1.66	1.66	73.55	73.55	0.002	PASS	0.00 ft
+D+0.750L	0.808	PASS	11.83 ft	1.66	1.66	73.55	73.55	0.003	PASS	0.00 ft
+D+0.750L+0.750S	0.913	PASS	11.83 ft	1.66	1.66	73.55	73.55	0.003	PASS	0.00 ft
+0.60D	0.235	PASS	11.83 ft	1.66	1.66	73.55	73.55	0.001	PASS	0.00 ft

### Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	27.505	0.048	0.048	-0.048	0.048				
+D+L	66.405	0.117	0.117	-0.117	0.117				
+D+S	37.235	0.065	0.065	-0.065	0.065				
+D+0.750L	56.680	0.099	0.099	-0.099	0.099				
+D+0.750L+0.750S	63.977	0.112	0.112	-0.112	0.112				
+0.60D	16.503	0.029	0.029	-0.029	0.029				
L Only	38.900	0.069	0.069	-0.069	0.069				
S Only	9.730	0.017	0.017	-0.017	0.017				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C32 & C36 & C41 & C45 & C49 & C40 & C48 & C55

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	66.405	0.117	0.117	-0.117	0.117	-1.380	-1.380	-1.380	-1.380		
"	Minimum	9.730	0.017	0.017	-0.017	0.017	-0.203	-0.203	-0.203	-0.203		
Reaction, X-X Axis Base	Maximum	66.405	0.117	0.117	-0.117	0.117	-1.380	-1.380	-1.380	-1.380		
"	Minimum	9.730	0.017	0.017	-0.017	0.017	-0.203	-0.203	-0.203	-0.203		
Reaction, Y-Y Axis Base	Maximum	9.730	0.017	0.017	-0.017	0.017	-0.203	-0.203	-0.203	-0.203		
"	Minimum	66.405	0.117	0.117	-0.117	0.117	-1.380	-1.380	-1.380	-1.380		
Reaction, X-X Axis Top	Maximum	66.405	0.117	0.117	-0.117	0.117	-1.380	-1.380	-1.380	-1.380		
"	Minimum	9.730	0.017	0.017	-0.017	0.017	-0.203	-0.203	-0.203	-0.203		
Reaction, Y-Y Axis Top	Maximum	66.405	0.117	0.117	-0.117	0.117	-1.380	-1.380	-1.380	-1.380		
"	Minimum	9.730	0.017	0.017	-0.017	0.017	-0.203	-0.203	-0.203	-0.203		
Moment, X-X Axis Base	Maximum	27.505		0.048	-0.048	0.048	-0.569	-0.569	-0.569	-0.569		
"	Minimum	27.505		0.048	-0.048	0.048	-0.569	-0.569	-0.569	-0.569		
Moment, Y-Y Axis Base	Maximum	27.505	0.048	0.048	-0.048	0.048	-0.569	-0.569	-0.569	-0.569		
"	Minimum	27.505	0.048	0.048	-0.048	0.048	-0.569	-0.569	-0.569	-0.569		
Moment, X-X Axis Top	Maximum	9.730	0.017	0.017	-0.017	0.017	-0.203	-0.203	-0.203	-0.203		
"	Minimum	66.405	0.117	0.117	-0.117	0.117	-1.380	-1.380	-1.380	-1.380		
Moment, Y-Y Axis Top	Maximum	9.730	0.017	0.017	-0.017	0.017	-0.203	-0.203	-0.203	-0.203		
"	Minimum	66.405	0.117	0.117	-0.117	0.117	-1.380	-1.380	-1.380	-1.380		

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0192 in	6.907 ft	-0.019 in	6.907 ft
+D+L	-0.0465 in	6.907 ft	-0.047 in	6.907 ft
+D+S	-0.0260 in	6.907 ft	-0.026 in	6.907 ft
+D+0.750L	-0.0397 in	6.907 ft	-0.040 in	6.907 ft
+D+0.750L+0.750S	-0.0448 in	6.907 ft	-0.045 in	6.907 ft
+0.60D	-0.0115 in	6.907 ft	-0.012 in	6.907 ft
L Only	-0.0273 in	6.907 ft	-0.027 in	6.907 ft
S Only	-0.0068 in	6.907 ft	-0.007 in	6.907 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

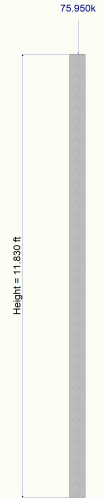
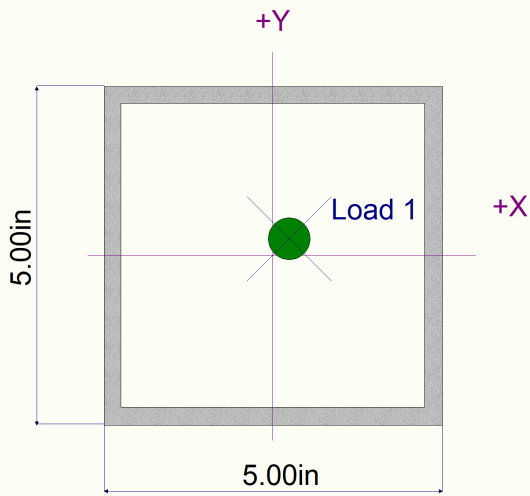
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C32 & C36 & C41 & C45 & C49 & C40 & C48 & C55

**Sketches**





## Steel Column

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **C48.1**

### Code References

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

### General Information

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	11.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 11.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 11.830 ft, K = 1.0	

### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 184.785 lbs \* Dead Load Factor

AXIAL LOADS . . .

B39.1: Axial Load at 11.830 ft, Xecc = 0.250 in, Yecc = 0.250 in, D = 15.960, L = 21.590, S = 5.40 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.5381</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.06613 k
Location of max.above base	11.830 ft	Bottom along X-X	0.06613 k
At maximum location values are . . .		Top along Y-Y	0.06613 k
Pa : Axial	37.735 k	Bottom along Y-Y	0.06613 k
Pn / Omega : Allowabl	82.310 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-0.7823 k-ft	Along Y-Y	-0.02638 in at 6.907ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	-0.7823 k-ft	Along X-X	-0.02638 in at 6.907ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.001996</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.06613 k		
Vn / Omega : Allowable	33.124 k		

### Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.196	PASS	0.00 ft	1.66	1.66	73.55	73.55	0.001	PASS	0.00 ft
+D+L	0.538	PASS	11.83 ft	1.66	1.66	73.55	73.55	0.002	PASS	0.00 ft
+D+S	0.307	PASS	11.83 ft	1.66	1.66	73.55	73.55	0.001	PASS	0.00 ft
+D+0.750L	0.461	PASS	11.83 ft	1.66	1.66	73.55	73.55	0.002	PASS	0.00 ft
+D+0.750L+0.750S	0.519	PASS	11.83 ft	1.66	1.66	73.55	73.55	0.002	PASS	0.00 ft
+0.60D	0.118	PASS	0.00 ft	1.66	1.66	73.55	73.55	0.001	PASS	0.00 ft

### Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	16.145	0.028	0.028		-0.028	0.028				
+D+L	37.735	0.066	0.066		-0.066	0.066				
+D+S	21.545	0.038	0.038		-0.038	0.038				
+D+0.750L	32.337	0.057	0.057		-0.057	0.057				
+D+0.750L+0.750S	36.387	0.064	0.064		-0.064	0.064				
+0.60D	9.687	0.017	0.017		-0.017	0.017				
L Only	21.590	0.038	0.038		-0.038	0.038				
S Only	5.400	0.010	0.010		-0.010	0.010				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C48.1**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	37.735	0.066	0.066	-0.066	0.066	-0.782		-0.782	
"	Minimum	5.400	0.010	0.010	-0.010	0.010	-0.113		-0.113	
Reaction, X-X Axis Base	Maximum	37.735	0.066	0.066	-0.066	0.066	-0.782		-0.782	
"	Minimum	5.400	0.010	0.010	-0.010	0.010	-0.113		-0.113	
Reaction, Y-Y Axis Base	Maximum	5.400	0.010	0.010	-0.010	0.010	-0.113		-0.113	
"	Minimum	37.735	0.066	0.066	-0.066	0.066	-0.782		-0.782	
Reaction, X-X Axis Top	Maximum	37.735	0.066	0.066	-0.066	0.066	-0.782		-0.782	
"	Minimum	5.400	0.010	0.010	-0.010	0.010	-0.113		-0.113	
Reaction, Y-Y Axis Top	Maximum	37.735	0.066	0.066	-0.066	0.066	-0.782		-0.782	
"	Minimum	5.400	0.010	0.010	-0.010	0.010	-0.113		-0.113	
Moment, X-X Axis Base	Maximum	16.145		0.028	-0.028	0.028	-0.333		-0.333	
"	Minimum	16.145		0.028	-0.028	0.028	-0.333		-0.333	
Moment, Y-Y Axis Base	Maximum	16.145	0.028	0.028	-0.028	0.028	-0.333		-0.333	
"	Minimum	16.145	0.028	0.028	-0.028	0.028	-0.333		-0.333	
Moment, X-X Axis Top	Maximum	5.400	0.010	0.010	-0.010	0.010	-0.113		-0.113	
"	Minimum	37.735	0.066	0.066	-0.066	0.066	-0.782		-0.782	
Moment, Y-Y Axis Top	Maximum	5.400	0.010	0.010	-0.010	0.010	-0.113		-0.113	
"	Minimum	37.735	0.066	0.066	-0.066	0.066	-0.782		-0.782	

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0112 in	6.907 ft	-0.011 in	6.907 ft
+D+L	-0.0264 in	6.907 ft	-0.026 in	6.907 ft
+D+S	-0.0150 in	6.907 ft	-0.015 in	6.907 ft
+D+0.750L	-0.0226 in	6.907 ft	-0.023 in	6.907 ft
+D+0.750L+0.750S	-0.0254 in	6.907 ft	-0.025 in	6.907 ft
+0.60D	-0.0067 in	6.907 ft	-0.007 in	6.907 ft
L Only	-0.0152 in	6.907 ft	-0.015 in	6.907 ft
S Only	-0.0038 in	6.907 ft	-0.004 in	6.907 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in^4	J	=	25.800 in^4
Design Thick	=	0.233 in	S xx	=	6.41 in^3			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in^3			
Area	=	4.300 in^2	I yy	=	16.000 in^4	C	=	10.500 in^3
Weight	=	15.620 plf	S yy	=	6.410 in^3			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

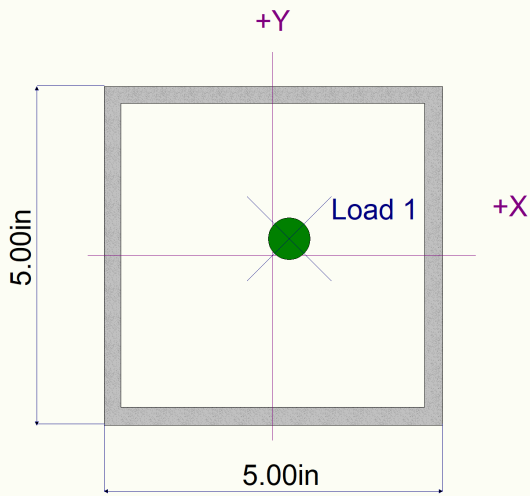
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C48.1

**Sketches**



42.950k



42.950k



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** C40

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	12.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 200.405 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B38: Axial Load at 12.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 14.340, L = 21.520, S = 4.960 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.6182</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.1165 k
Location of max.above base	12.744 ft	Bottom along X-X	0.1165 k
At maximum location values are . . .		Top along Y-Y	0.1165 k
Pa : Axial	36.060 k	Bottom along Y-Y	0.1165 k
Pn / Omega : Allowabl	77.198 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-1.484 k-ft	Along Y-Y -0.05927 in at	7.491 ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	-1.484 k-ft	Along X-X -0.05927 in at	7.491 ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.003516</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.1165 k		
Vn / Omega : Allowable	33.124 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.188	PASS	0.00 ft	1.66	1.66	79.77	79.77	0.001	PASS	0.00 ft
+D+L	0.618	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.004	PASS	0.00 ft
+D+S	0.334	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.002	PASS	0.00 ft
+D+0.750L	0.526	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.003	PASS	0.00 ft
+D+0.750L+0.750S	0.590	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.003	PASS	0.00 ft
+0.60D	0.113	PASS	0.00 ft	1.66	1.66	79.77	79.77	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	14.540	0.047	0.047	-0.047	0.047				
+D+L	36.060	0.116	0.116	-0.116	0.116				
+D+S	19.500	0.063	0.063	-0.063	0.063				
+D+0.750L	30.680	0.099	0.099	-0.099	0.099				
+D+0.750L+0.750S	34.400	0.111	0.111	-0.111	0.111				
+0.60D	8.724	0.028	0.028	-0.028	0.028				
L Only	21.520	0.070	0.070	-0.070	0.070				
S Only	4.960	0.016	0.016	-0.016	0.016				

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C40

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	36.060	0.116	0.116	-0.116	0.116				
"	Minimum	4.960	0.016	0.016	-0.016	0.016				
Reaction, X-X Axis Base	Maximum	36.060	0.116	0.116	-0.116	0.116				
"	Minimum	4.960	0.016	0.016	-0.016	0.016				
Reaction, Y-Y Axis Base	Maximum	4.960	0.016	0.016	-0.016	0.016				
"	Minimum	36.060	0.116	0.116	-0.116	0.116				
Reaction, X-X Axis Top	Maximum	36.060	0.116	0.116	-0.116	0.116				
"	Minimum	4.960	0.016	0.016	-0.016	0.016				
Reaction, Y-Y Axis Top	Maximum	36.060	0.116	0.116	-0.116	0.116				
"	Minimum	4.960	0.016	0.016	-0.016	0.016				
Moment, X-X Axis Base	Maximum	14.540		0.047	-0.047	0.047				
"	Minimum	14.540		0.047	-0.047	0.047				
Moment, Y-Y Axis Base	Maximum	14.540	0.047	0.047	-0.047	0.047				
"	Minimum	14.540	0.047	0.047	-0.047	0.047				
Moment, X-X Axis Top	Maximum	14.540	0.047	0.047	-0.047	0.047				
"	Minimum	14.540	0.047	0.047	-0.047	0.047				
Moment, Y-Y Axis Top	Maximum	14.540	0.047	0.047	-0.047	0.047				
"	Minimum	14.540	0.047	0.047	-0.047	0.047				

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0237 in	7.491 ft	-0.024 in	7.491 ft
+D+L	-0.0593 in	7.491 ft	-0.059 in	7.491 ft
+D+S	-0.0319 in	7.491 ft	-0.032 in	7.491 ft
+D+0.750L	-0.0504 in	7.491 ft	-0.050 in	7.491 ft
+D+0.750L+0.750S	-0.0565 in	7.491 ft	-0.057 in	7.491 ft
+0.60D	-0.0142 in	7.491 ft	-0.014 in	7.491 ft
L Only	-0.0356 in	7.491 ft	-0.036 in	7.491 ft
S Only	-0.0082 in	7.491 ft	-0.008 in	7.491 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

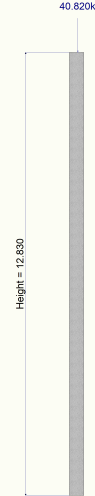
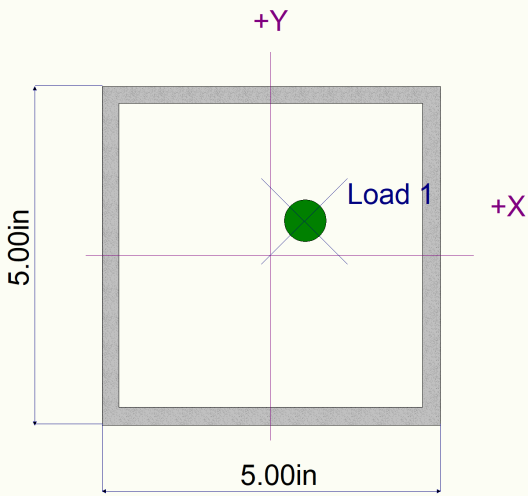
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C40

**Sketches**





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C44

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/2</b>	Overall Column Height	12.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.830 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 364.757 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B54: Axial Load at 12.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 28.150, L = 39.530, S = 9.890 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.6729</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.2198 k
Location of max.above base	12.744 ft	Bottom along X-X	0.2198 k
At maximum location values are . . .		Top along Y-Y	0.2198 k
Pa : Axial	68.045 k	Bottom along Y-Y	0.2198 k
Pn / Omega : Allowabl	134.125 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-2.801 k-ft	Along Y-Y -0.06884 in at	7.491 ft above base
Mn-x / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
Ma-y : Applied	-2.801 k-ft	Along X-X -0.06884 in at	7.491 ft above base
Mn-y / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.003967</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.2198 k		
Vn / Omega : Allowable	55.409 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.281	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.002	PASS	0.00 ft
+D+L	0.673	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.004	PASS	0.00 ft
+D+S	0.379	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.002	PASS	0.00 ft
+D+0.750L	0.575	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.003	PASS	0.00 ft
+D+0.750L+0.750S	0.649	PASS	12.74 ft	1.66	1.66	84.59	84.59	0.004	PASS	0.00 ft
+0.60D	0.128	PASS	0.00 ft	1.66	1.66	84.59	84.59	0.001	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	28.515	0.091	0.091		-0.091	0.091				
+D+L	68.045	0.220	0.220		-0.220	0.220				
+D+S	38.405	0.124	0.124		-0.124	0.124				
+D+0.750L	58.162	0.188	0.188		-0.188	0.188				
+D+0.750L+0.750S	65.580	0.212	0.212		-0.212	0.212				
+0.60D	17.109	0.055	0.055		-0.055	0.055				
L Only	39.530	0.128	0.128		-0.128	0.128				
S Only	9.890	0.032	0.032		-0.032	0.032				



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C44**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	68.045	0.220	0.220	-0.220	0.220				
"	Minimum	9.890	0.032	0.032	-0.032	0.032				
Reaction, X-X Axis Base	Maximum	68.045	0.220	0.220	-0.220	0.220				
"	Minimum	9.890	0.032	0.032	-0.032	0.032				
Reaction, Y-Y Axis Base	Maximum	9.890	0.032	0.032	-0.032	0.032				
"	Minimum	68.045	0.220	0.220	-0.220	0.220				
Reaction, X-X Axis Top	Maximum	68.045	0.220	0.220	-0.220	0.220				
"	Minimum	9.890	0.032	0.032	-0.032	0.032				
Reaction, Y-Y Axis Top	Maximum	68.045	0.220	0.220	-0.220	0.220				
"	Minimum	9.890	0.032	0.032	-0.032	0.032				
Moment, X-X Axis Base	Maximum	28.515		0.091	-0.091	0.091				
"	Minimum	28.515		0.091	-0.091	0.091				
Moment, Y-Y Axis Base	Maximum	28.515	0.091	0.091	-0.091	0.091				
"	Minimum	28.515	0.091	0.091	-0.091	0.091				
Moment, X-X Axis Top	Maximum	28.515	0.091	0.091	-0.091	0.091				
"	Minimum	28.515	0.091	0.091	-0.091	0.091				
Moment, Y-Y Axis Top	Maximum	28.515	0.091	0.091	-0.091	0.091				
"	Minimum	28.515	0.091	0.091	-0.091	0.091				

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0286 in	7.491 ft	-0.029 in	7.491 ft
+D+L	-0.0688 in	7.491 ft	-0.069 in	7.491 ft
+D+S	-0.0387 in	7.491 ft	-0.039 in	7.491 ft
+D+0.750L	-0.0588 in	7.491 ft	-0.059 in	7.491 ft
+D+0.750L+0.750S	-0.0663 in	7.491 ft	-0.066 in	7.491 ft
+0.60D	-0.0172 in	7.491 ft	-0.017 in	7.491 ft
L Only	-0.0402 in	7.491 ft	-0.040 in	7.491 ft
S Only	-0.0101 in	7.491 ft	-0.010 in	7.491 ft

**Steel Section Properties : HSS5x5x1/2**

Depth	=	5.000 in	I xx	=	26.00 in <sup>4</sup>	J	=	44.600 in <sup>4</sup>
Design Thick	=	0.465 in	S xx	=	10.40 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.820 in			
Wall Thick	=	0.500 in	Zx	=	13.100 in <sup>3</sup>			
Area	=	7.880 in <sup>2</sup>	I yy	=	26.000 in <sup>4</sup>	C	=	18.700 in <sup>3</sup>
Weight	=	28.430 plf	S yy	=	10.400 in <sup>3</sup>			
			R yy	=	1.820 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

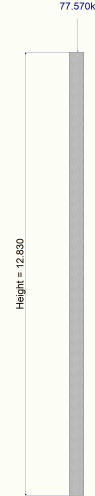
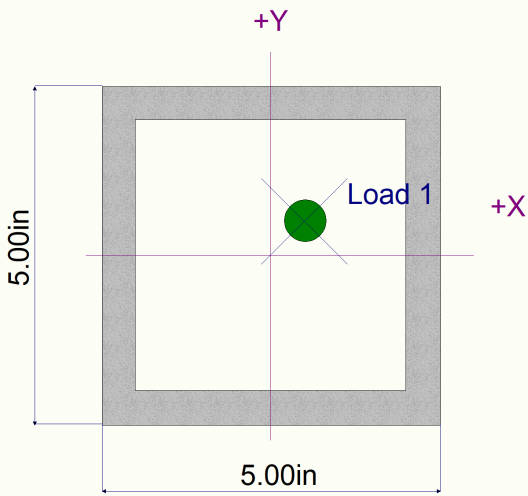
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C44

**Sketches**



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C33 & C37 & C42 & C43

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : <b>HSS5x5x1/2</b>	Overall Column Height	16.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.83 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.83 ft, K = 1.0	

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 478.477 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B39: Axial Load at 12.830 ft, Yecc = 2.50 in, D = 17.510, L = 26.350, S = 6.270 k  
 B40: Axial Load at 16.830 ft, D = 25.110, L = 36.410, S = 9.0 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.9941</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.0 k
Location of max.above base	12.764 ft	Bottom along X-X	0.0 k
At maximum location values are . . .		Top along Y-Y	0.5429 k
Pa : Axial	105.858 k	Bottom along Y-Y	0.5429 k
Pn / Omega : Allowable	134.125 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-6.930 k-ft	Along Y-Y	-0.2908 in at 8.923ft above base
Mn-x / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
Ma-y : Applied	0.0 k-ft	Along X-X	0.0 in at 0.0ft above base
Mn-y / Omega : Allowable	30.070 k-ft	for load combination :	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.009799</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.5429 k		
Vn / Omega : Allowable	55.409 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.403	PASS	12.76 ft	1.37	1.00	84.59	84.59	0.004	PASS	0.00 ft
+D+L	0.994	PASS	12.76 ft	1.37	1.00	84.59	84.59	0.010	PASS	0.00 ft
+D+S	0.546	PASS	12.76 ft	1.37	1.00	84.59	84.59	0.005	PASS	0.00 ft
+D+0.750L	0.846	PASS	12.76 ft	1.37	1.00	84.59	84.59	0.008	PASS	0.00 ft
+D+0.750L+0.750S	0.954	PASS	12.76 ft	1.37	1.00	84.59	84.59	0.009	PASS	0.00 ft
+0.60D	0.193	PASS	0.00 ft	1.37	1.00	84.59	84.59	0.002	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	43.098			-0.217	0.217				
+D+L	105.858			-0.543	0.543				
+D+S	58.368			-0.294	0.294				
+D+0.750L	90.168			-0.461	0.461				
+D+0.750L+0.750S	101.621			-0.520	0.520				
+0.60D	25.859			-0.130	0.130				
L Only	62.760			-0.326	0.326				
S Only	15.270			-0.078	0.078				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C33 & C37 & C42 & C43

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Axial @ Base	Maximum	105.858				-0.543	0.543					
"	Minimum	15.270				-0.078	0.078					
Reaction, X-X Axis Base	Maximum	43.098				-0.217	0.217					
"	Minimum	43.098				-0.217	0.217					
Reaction, Y-Y Axis Base	Maximum	15.270				-0.078	0.078					
"	Minimum	105.858				-0.543	0.543					
Reaction, X-X Axis Top	Maximum	43.098				-0.217	0.217					
"	Minimum	43.098				-0.217	0.217					
Reaction, Y-Y Axis Top	Maximum	43.098				-0.217	0.217					
"	Minimum	15.270				-0.078	0.078					
Moment, X-X Axis Base	Maximum	43.098				-0.217	0.217					
"	Minimum	43.098				-0.217	0.217					
Moment, Y-Y Axis Base	Maximum	43.098				-0.217	0.217					
"	Minimum	43.098				-0.217	0.217					
Moment, X-X Axis Top	Maximum	43.098				-0.217	0.217					
"	Minimum	43.098				-0.217	0.217					
Moment, Y-Y Axis Top	Maximum	43.098				-0.217	0.217					
"	Minimum	43.098				-0.217	0.217					

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	0.0000 in	0.000 ft	-0.116 in	8.923 ft
+D+L	0.0000 in	0.000 ft	-0.291 in	8.923 ft
+D+S	0.0000 in	0.000 ft	-0.158 in	8.923 ft
+D+0.750L	0.0000 in	0.000 ft	-0.247 in	8.923 ft
+D+0.750L+0.750S	0.0000 in	0.000 ft	-0.278 in	8.923 ft
+0.60D	0.0000 in	0.000 ft	-0.070 in	8.923 ft
L Only	0.0000 in	0.000 ft	-0.175 in	8.923 ft
S Only	0.0000 in	0.000 ft	-0.042 in	8.923 ft

**Steel Section Properties : HSS5x5x1/2**

Depth	=	5.000 in	I xx	=	26.00 in <sup>4</sup>	J	=	44.600 in <sup>4</sup>
Design Thick	=	0.465 in	S xx	=	10.40 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.820 in			
Wall Thick	=	0.500 in	Zx	=	13.100 in <sup>3</sup>			
Area	=	7.880 in <sup>2</sup>	I yy	=	26.000 in <sup>4</sup>	C	=	18.700 in <sup>3</sup>
Weight	=	28.430 plf	S yy	=	10.400 in <sup>3</sup>			
			R yy	=	1.820 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

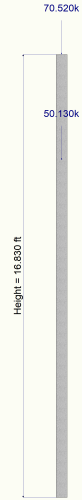
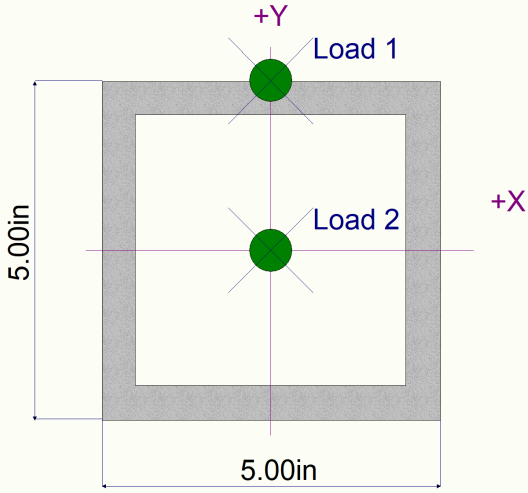
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C33 & C37 & C42 & C43

**Sketches**





## Steel Column

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** C51 & C52 & C53

### Code References

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

### General Information

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	12.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.830 ft, K = 1.0	

### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 200.405 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B47: Axial Load at 12.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 15.650, L = 22.10, S = 5.330 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.6506</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.1226 k
Location of max.above base	12.744 ft	Bottom along X-X	0.1226 k
At maximum location values are . . .		Top along Y-Y	0.1226 k
Pa : Axial	37.950 k	Bottom along Y-Y	0.1226 k
Pn / Omega : Allowabl	77.198 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-1.562 k-ft	Along Y-Y -0.06239 in at	7.491 ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	-1.562 k-ft	Along X-X -0.06239 in at	7.491 ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.003701</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.1226 k		
Vn / Omega : Allowable	33.124 k		

### Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.271	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.002	PASS	0.00 ft
+D+L	0.651	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.004	PASS	0.00 ft
+D+S	0.363	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.002	PASS	0.00 ft
+D+0.750L	0.556	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.003	PASS	0.00 ft
+D+0.750L+0.750S	0.624	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.004	PASS	0.00 ft
+0.60D	0.123	PASS	0.00 ft	1.66	1.66	79.77	79.77	0.001	PASS	0.00 ft

### Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	15.850	0.051	0.051		-0.051	0.051				
+D+L	37.950	0.123	0.123		-0.123	0.123				
+D+S	21.180	0.068	0.068		-0.068	0.068				
+D+0.750L	32.425	0.105	0.105		-0.105	0.105				
+D+0.750L+0.750S	36.423	0.118	0.118		-0.118	0.118				
+0.60D	9.510	0.030	0.030		-0.030	0.030				
L Only	22.100	0.072	0.072		-0.072	0.072				
S Only	5.330	0.017	0.017		-0.017	0.017				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C51 & C52 & C53**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	
Axial @ Base	Maximum	37.950	0.123	0.123	-0.123	0.123					
"	Minimum	5.330	0.017	0.017	-0.017	0.017					
Reaction, X-X Axis Base	Maximum	37.950	0.123	0.123	-0.123	0.123					
"	Minimum	5.330	0.017	0.017	-0.017	0.017					
Reaction, Y-Y Axis Base	Maximum	5.330	0.017	0.017	-0.017	0.017					
"	Minimum	37.950	0.123	0.123	-0.123	0.123					
Reaction, X-X Axis Top	Maximum	37.950	0.123	0.123	-0.123	0.123					
"	Minimum	5.330	0.017	0.017	-0.017	0.017					
Reaction, Y-Y Axis Top	Maximum	37.950	0.123	0.123	-0.123	0.123					
"	Minimum	5.330	0.017	0.017	-0.017	0.017					
Moment, X-X Axis Base	Maximum	15.850		0.051	-0.051	0.051					
"	Minimum	15.850		0.051	-0.051	0.051					
Moment, Y-Y Axis Base	Maximum	15.850	0.051	0.051	-0.051	0.051					
"	Minimum	15.850	0.051	0.051	-0.051	0.051					
Moment, X-X Axis Top	Maximum	15.850	0.051	0.051	-0.051	0.051					
"	Minimum	15.850	0.051	0.051	-0.051	0.051					
Moment, Y-Y Axis Top	Maximum	15.850	0.051	0.051	-0.051	0.051					
"	Minimum	15.850	0.051	0.051	-0.051	0.051					

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0259 in	7.491 ft	-0.026 in	7.491 ft
+D+L	-0.0624 in	7.491 ft	-0.062 in	7.491 ft
+D+S	-0.0347 in	7.491 ft	-0.035 in	7.491 ft
+D+0.750L	-0.0533 in	7.491 ft	-0.053 in	7.491 ft
+D+0.750L+0.750S	-0.0599 in	7.491 ft	-0.060 in	7.491 ft
+0.60D	-0.0155 in	7.491 ft	-0.016 in	7.491 ft
L Only	-0.0365 in	7.491 ft	-0.037 in	7.491 ft
S Only	-0.0088 in	7.491 ft	-0.009 in	7.491 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in^4	J	=	25.800 in^4
Design Thick	=	0.233 in	S xx	=	6.41 in^3			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in^3			
Area	=	4.300 in^2	I yy	=	16.000 in^4	C	=	10.500 in^3
Weight	=	15.620 plf	S yy	=	6.410 in^3			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

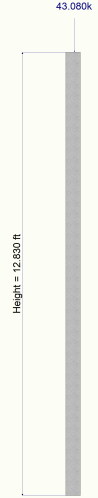
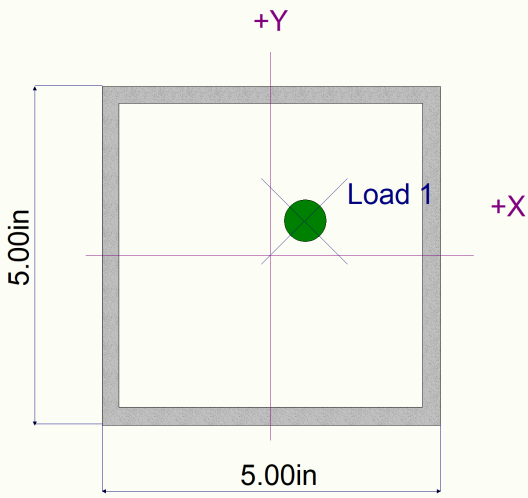
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C51 & C52 & C53

**Sketches**



**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C50 & C54

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : **HSS5x5x1/4** Overall Column Height 12.830 ft  
 Analysis Method : Allowable Strength Top & Bottom Fixity Top & Bottom Pinned  
 Steel Stress Grade Brace condition :  
 Fy : Steel Yield 46.0 ksi Unbraced Length for buckling ABOUT X-X Axis = 12.830 ft, K = 1.0  
 E : Elastic Bending Modulus 29,000.0 ksi Unbraced Length for buckling ABOUT Y-Y Axis = 12.830 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 200.405 lbs \* Dead Load Factor

AXIAL LOADS . . .

B48: Axial Load at 12.830 ft, Xecc = 2.50 in, Yecc = 0.50 in, D = 8.750, L = 12.60, S = 3.0 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.5489** : 1  
 Load Combination +D+L  
 Location of max.above base 12.744 ft  
 At maximum location values are . . .  
 Pa : Axial 21.550 k  
 Pn / Omega : Allowabl 77.198 k  
 Ma-x : Applied -0.8836 k-ft  
 Mn-x / Omega : Allowable 17.468 k-ft  
 Ma-y : Applied -4.418 k-ft  
 Mn-y / Omega : Allowable 17.468 k-ft

**Maximum Load Reactions . . .**  
 Top along X-X 0.3467 k  
 Bottom along X-X 0.3467 k  
 Top along Y-Y 0.06934 k  
 Bottom along Y-Y 0.06934 k

**Maximum Load Deflections . . .**  
 Along Y-Y -0.03529 in at 7.491 ft above base  
 for load combination : +D+L  
 Along X-X -0.1764 in at 7.491 ft above base  
 for load combination : +D+L

**PASS** Maximum Shear Stress Ratio = **0.01047** : 1  
 Load Combination +D+L  
 Location of max.above base 0.0 ft  
 At maximum location values are . . .  
 Va : Applied 0.3467 k  
 Vn / Omega : Allowable 33.124 k

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.182	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.004	PASS	0.00 ft
+D+L	0.549	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.010	PASS	0.00 ft
+D+S	0.244	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.006	PASS	0.00 ft
+D+0.750L	0.468	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.009	PASS	0.00 ft
+D+0.750L+0.750S	0.526	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.010	PASS	0.00 ft
+0.60D	0.109	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.003	PASS	0.00 ft

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	8.950	0.142	0.142		-0.028	0.028				
+D+L	21.550	0.347	0.347		-0.069	0.069				
+D+S	11.950	0.191	0.191		-0.038	0.038				
+D+0.750L	18.400	0.296	0.296		-0.059	0.059				
+D+0.750L+0.750S	20.650	0.332	0.332		-0.066	0.066				
+0.60D	5.370	0.085	0.085		-0.017	0.017				
L Only	12.600	0.205	0.205		-0.041	0.041				
S Only	3.000	0.049	0.049		-0.010	0.010				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C50 & C54

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Axial @ Base	Maximum	21.550	0.347	0.347	-0.069	0.069							
"	Minimum	3.000	0.049	0.049	-0.010	0.010							
Reaction, X-X Axis Base	Maximum	21.550	0.347	0.347	-0.069	0.069							
"	Minimum	3.000	0.049	0.049	-0.010	0.010							
Reaction, Y-Y Axis Base	Maximum	3.000	0.049	0.049	-0.010	0.010							
"	Minimum	21.550	0.347	0.347	-0.069	0.069							
Reaction, X-X Axis Top	Maximum	21.550	0.347	0.347	-0.069	0.069							
"	Minimum	3.000	0.049	0.049	-0.010	0.010							
Reaction, Y-Y Axis Top	Maximum	3.000	0.049	0.049	-0.010	0.010							
"	Minimum	8.950	0.142	0.142	-0.028	0.028							
Moment, X-X Axis Base	Maximum	8.950		0.142	-0.028	0.028							
"	Minimum	8.950		0.142	-0.028	0.028							
Moment, Y-Y Axis Base	Maximum	8.950	0.142	0.142	-0.028	0.028							
"	Minimum	8.950	0.142	0.142	-0.028	0.028							
Moment, X-X Axis Top	Maximum	8.950	0.142	0.142	-0.028	0.028							
"	Minimum	8.950	0.142	0.142	-0.028	0.028							
Moment, Y-Y Axis Top	Maximum	8.950	0.142	0.142	-0.028	0.028							
"	Minimum	8.950	0.142	0.142	-0.028	0.028							

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0723 in	7.491 ft	-0.014 in	7.491 ft
+D+L	-0.1764 in	7.491 ft	-0.035 in	7.491 ft
+D+S	-0.0971 in	7.491 ft	-0.019 in	7.491 ft
+D+0.750L	-0.1504 in	7.491 ft	-0.030 in	7.491 ft
+D+0.750L+0.750S	-0.1690 in	7.491 ft	-0.034 in	7.491 ft
+0.60D	-0.0434 in	7.491 ft	-0.009 in	7.491 ft
L Only	-0.1041 in	7.491 ft	-0.021 in	7.491 ft
S Only	-0.0248 in	7.491 ft	-0.005 in	7.491 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

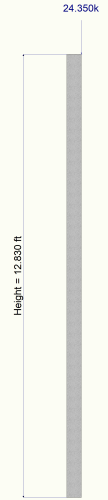
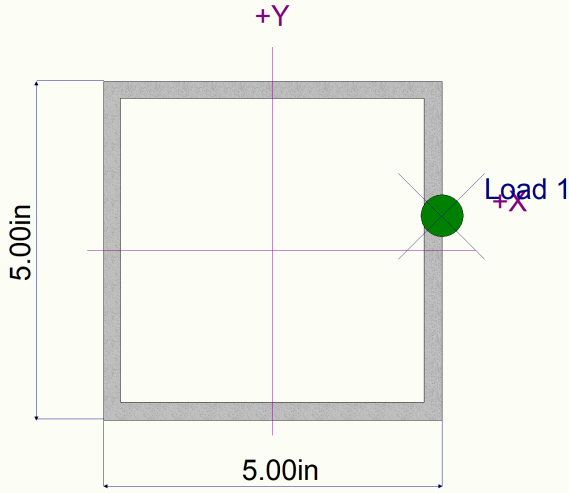
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C50 & C54

**Sketches**





**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** C46 & C47

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name : **HSS5x5x1/2** Overall Column Height 17.830 ft  
 Analysis Method : Allowable Strength Top & Bottom Fixity Top & Bottom Pinned  
 Steel Stress Grade Brace condition :  
 Fy : Steel Yield 46.0 ksi Unbraced Length for buckling ABOUT X-X Axis = 12.83 ft, K = 1.0  
 E : Elastic Bending Modulus 29,000.0 ksi Unbraced Length for buckling ABOUT Y-Y Axis = 12.83 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 506.91 lbs \* Dead Load Factor  
 AXIAL LOADS . . .

B42: Axial Load at 12.830 ft, Xecc = 0.50 in, Yecc = 2.50 in, D = 11.590, L = 18.260, S = 4.050 k  
 B44: Axial Load at 12.830 ft, Xecc = 0.50 in, Yecc = -2.510 in, D = 9.840, L = 13.20, S = 3.260 k  
 B43: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 8.460, L = 12.740, S = 2.70 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

**PASS** Max. Axial+Bending Stress Ratio = **0.6702** : 1  
 Load Combination +D+L  
 Location of max.above base 12.804 ft  
 At maximum location values are . . .  
 Pa : Axial 74.597 k  
 Pn / Omega : Allowable 134.125 k  
 Ma-x : Applied -1.639 k-ft  
 Mn-x / Omega : Allowable 30.070 k-ft  
 Ma-y : Applied -2.217 k-ft  
 Mn-y / Omega : Allowable 30.070 k-ft

**Maximum Load Reactions . .**  
 Top along X-X 0.1731 k  
 Bottom along X-X 0.1731 k  
 Top along Y-Y 0.1280 k  
 Bottom along Y-Y 0.1280 k

**Maximum Load Deflections . . .**  
 Along Y-Y -0.08521 in at 9.573ft above base  
 for load combination : +D+L  
 Along X-X -0.1105 in at 9.453ft above base  
 for load combination : +D+L

**PASS** Maximum Shear Stress Ratio = **0.003125** : 1  
 Load Combination +D+L  
 Location of max.above base 0.0 ft  
 At maximum location values are . . .  
 Va : Applied 0.1731 k  
 Vn / Omega : Allowable 55.409 k

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Cb <sub>x</sub>	Cb <sub>y</sub>	K <sub>x</sub> L <sub>x</sub> /R <sub>x</sub>	K <sub>y</sub> L <sub>y</sub> /R <sub>y</sub>	Maximum Shear Ratios		
	Stress Ratio	Status	Location	Stress Ratio					Status	Location	
D Only	0.268	PASS	12.80 ft	1.81	1.92	84.59	84.59	0.001	PASS	0.00 ft	
+D+L	0.670	PASS	12.80 ft	1.81	1.92	84.59	84.59	0.003	PASS	0.00 ft	
+D+S	0.357	PASS	12.80 ft	1.81	1.92	84.59	84.59	0.002	PASS	0.00 ft	
+D+0.750L	0.570	PASS	12.80 ft	1.81	1.92	84.59	84.59	0.003	PASS	0.00 ft	
+D+0.750L+0.750S	0.637	PASS	12.80 ft	1.81	1.92	84.59	84.59	0.003	PASS	0.00 ft	
+0.60D	0.136	PASS	0.00 ft	1.81	1.92	84.59	84.59	0.001	PASS	0.00 ft	

**Maximum Reactions**

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		M <sub>x</sub> - End Moments		M <sub>y</sub> - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	30.397	0.070	0.070	-0.040	0.040				
+D+L	74.597	0.173	0.173	-0.128	0.128				
+D+S	40.407	0.093	0.093	-0.055	0.055				
+D+0.750L	63.547	0.147	0.147	-0.106	0.106				
+D+0.750L+0.750S	71.054	0.165	0.165	-0.118	0.118				
+0.60D	18.238	0.042	0.042	-0.024	0.024				
L Only	44.200	0.103	0.103	-0.088	0.088				
S Only	10.010	0.023	0.023	-0.015	0.015				



Project Title: **WSF International Village**  
 Engineer: **JMB**  
 Project ID: **24-318**  
 Project Descr: **Vertical Framing**

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C46 & C47**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	74.597	0.173	0.173	-0.128	0.128	-0.883	-0.883	-0.883	-0.883		
"	Minimum	10.010	0.023	0.023	-0.015	0.015	-0.113	-0.113	-0.113	-0.113		
Reaction, X-X Axis Base	Maximum	74.597	0.173	0.173	-0.128	0.128	-0.883	-0.883	-0.883	-0.883		
"	Minimum	10.010	0.023	0.023	-0.015	0.015	-0.113	-0.113	-0.113	-0.113		
Reaction, Y-Y Axis Base	Maximum	10.010	0.023	0.023	-0.015	0.015	-0.113	-0.113	-0.113	-0.113		
"	Minimum	74.597	0.173	0.173	-0.128	0.128	-0.883	-0.883	-0.883	-0.883		
Reaction, X-X Axis Top	Maximum	74.597	0.173	0.173	-0.128	0.128	-0.883	-0.883	-0.883	-0.883		
"	Minimum	10.010	0.023	0.023	-0.015	0.015	-0.113	-0.113	-0.113	-0.113		
Reaction, Y-Y Axis Top	Maximum	71.054	0.165	0.165	-0.118	0.118	-0.835	-0.835	-0.835	-0.835		
"	Minimum	10.010	0.023	0.023	-0.015	0.015	-0.113	-0.113	-0.113	-0.113		
Moment, X-X Axis Base	Maximum	30.397		0.070	-0.040	0.040	-0.352	-0.352	-0.352	-0.352		
"	Minimum	30.397		0.070	-0.040	0.040	-0.352	-0.352	-0.352	-0.352		
Moment, Y-Y Axis Base	Maximum	30.397	0.070	0.070	-0.040	0.040	-0.352	-0.352	-0.352	-0.352		
"	Minimum	30.397	0.070	0.070	-0.040	0.040	-0.352	-0.352	-0.352	-0.352		
Moment, X-X Axis Top	Maximum	10.010	0.023	0.023	-0.015	0.015	-0.113	-0.113	-0.113	-0.113		
"	Minimum	74.597	0.173	0.173	-0.128	0.128	-0.883	-0.883	-0.883	-0.883		
Moment, Y-Y Axis Top	Maximum	10.010	0.023	0.023	-0.015	0.015	-0.113	-0.113	-0.113	-0.113		
"	Minimum	74.597	0.173	0.173	-0.128	0.128	-0.883	-0.883	-0.883	-0.883		

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0445 in	9.453 ft	-0.028 in	9.693 ft
+D+L	-0.1105 in	9.453 ft	-0.085 in	9.573 ft
+D+S	-0.0593 in	9.453 ft	-0.038 in	9.693 ft
+D+0.750L	-0.0940 in	9.453 ft	-0.071 in	9.573 ft
+D+0.750L+0.750S	-0.1051 in	9.453 ft	-0.079 in	9.573 ft
+0.60D	-0.0267 in	9.453 ft	-0.017 in	9.693 ft
L Only	-0.0660 in	9.453 ft	-0.058 in	9.573 ft
S Only	-0.0148 in	9.453 ft	-0.010 in	9.573 ft

**Steel Section Properties : HSS5x5x1/2**

Depth	=	5.000 in	I xx	=	26.00 in^4	J	=	44.600 in^4
Design Thick	=	0.465 in	S xx	=	10.40 in^3			
Width	=	5.000 in	R xx	=	1.820 in			
Wall Thick	=	0.500 in	Zx	=	13.100 in^3			
Area	=	7.880 in^2	I yy	=	26.000 in^4	C	=	18.700 in^3
Weight	=	28.430 plf	S yy	=	10.400 in^3			
			R yy	=	1.820 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

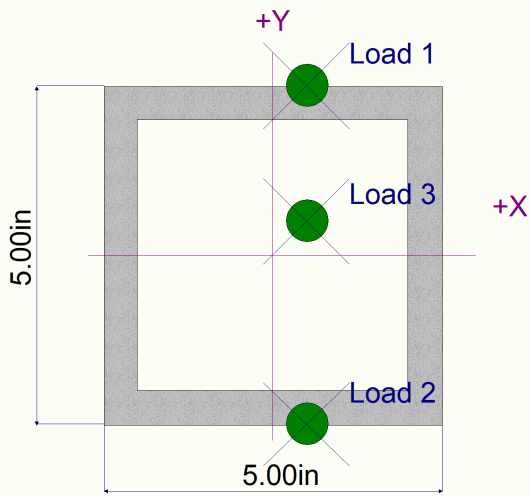
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C46 & C47

**Sketches**



## Steel Column

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

DESCRIPTION: **C38**

### Code References

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

### General Information

Steel Section Name : <b>HSS5x5x1/2</b>	Overall Column Height	17.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.83 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.83 ft, K = 1.0	

### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 506.91 lbs \* Dead Load Factor

AXIAL LOADS . . .

B38: Axial Load at 12.830 ft, Xecc = 0.50 in, Yecc = 2.50 in, D = 0.820, L = 4.050, S = 0.220 k

B36: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = -2.510 in, D = 12.160, L = 19.60, S = 4.20 k

B37: Axial Load at 17.830 ft, Xecc = 0.50 in, Yecc = 2.50 in, D = 3.690, L = 5.890, S = 1.260 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.5003</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.1080 k
Location of max.above base	17.830 ft	Bottom along X-X	0.1080 k
At maximum location values are . . .		Top along Y-Y	0.2037 k
Pa : Axial	41.847 k	Bottom along Y-Y	0.2037 k
Pn / Omega : Allowable	134.125 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	4.647 k-ft	Along Y-Y 0.1884 in at	10.650ft above base
Mn-x / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
Ma-y : Applied	-1.723 k-ft	Along X-X -0.08742 in at	10.171ft above base
Mn-y / Omega : Allowable	30.070 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.003677</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.2037 k		
Vn / Omega : Allowable	55.409 k		

### Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Cb <sub>x</sub>	Cb <sub>y</sub>	K <sub>x</sub> L <sub>x</sub> /R <sub>x</sub>	K <sub>y</sub> L <sub>y</sub> /R <sub>y</sub>	Maximum Shear Ratios		
	Stress Ratio	Status	Location	Stress Ratio					Status	Location	
D Only	0.142	PASS	17.83 ft	1.77	1.61	84.59	84.59	0.002	PASS	0.00 ft	
+D+L	0.500	PASS	17.83 ft	1.77	1.61	84.59	84.59	0.004	PASS	0.00 ft	
+D+S	0.190	PASS	17.83 ft	1.77	1.61	84.59	84.59	0.002	PASS	0.00 ft	
+D+0.750L	0.424	PASS	17.83 ft	1.77	1.61	84.59	84.59	0.003	PASS	0.00 ft	
+D+0.750L+0.750S	0.473	PASS	17.83 ft	1.77	1.61	84.59	84.59	0.004	PASS	0.00 ft	
+0.60D	0.085	PASS	17.83 ft	1.77	1.61	84.59	84.59	0.001	PASS	0.00 ft	

### Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		M <sub>x</sub> - End Moments		M <sub>y</sub> - End Moments	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	17.177	0.039	0.039	0.090	-0.090				
+D+L	46.717	0.108	0.108	0.204	-0.204				
+D+S	22.857	0.052	0.052	0.122	-0.122				
+D+0.750L	39.332	0.091	0.091	0.175	-0.175				
+D+0.750L+0.750S	43.592	0.101	0.101	0.199	-0.199				
+0.60D	10.306	0.023	0.023	0.054	-0.054				
L Only	29.540	0.069	0.069	0.114	-0.114				
S Only	5.680	0.013	0.013	0.032	-0.032				



Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C38

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	46.717	0.108	0.108	0.204	-0.204	4.647	-1.723				
"	Minimum	5.680	0.013	0.013	0.032	-0.032	0.616	-0.228				
Reaction, X-X Axis Base	Maximum	46.717	0.108	0.108	0.204	-0.204	4.647	-1.723				
"	Minimum	5.680	0.013	0.013	0.032	-0.032	0.616	-0.228				
Reaction, Y-Y Axis Base	Maximum	46.717	0.108	0.108	0.204	-0.204	4.647	-1.723				
"	Minimum	5.680	0.013	0.013	0.032	-0.032	0.616	-0.228				
Reaction, X-X Axis Top	Maximum	46.717	0.108	0.108	0.204	-0.204	4.647	-1.723				
"	Minimum	5.680	0.013	0.013	0.032	-0.032	0.616	-0.228				
Reaction, Y-Y Axis Top	Maximum	5.680	0.013	0.013	0.032	-0.032	0.616	-0.228				
"	Minimum	17.177	0.039	0.039	0.090	-0.090	1.775	-0.660				
Moment, X-X Axis Base	Maximum	17.177		0.039	0.090	-0.090	1.775	-0.660				
"	Minimum	17.177		0.039	0.090	-0.090	1.775	-0.660				
Moment, Y-Y Axis Base	Maximum	17.177	0.039	0.039	0.090	-0.090	-0.660	1.775				
"	Minimum	17.177	0.039	0.039	0.090	-0.090	-0.660	1.775				
Moment, X-X Axis Top	Maximum	46.717	0.108	0.108	0.204	-0.204	4.647	-1.723				
"	Minimum	5.680	0.013	0.013	0.032	-0.032	0.616	-0.228				
Moment, Y-Y Axis Top	Maximum	5.680	0.013	0.013	0.032	-0.032	0.616	-0.228				
"	Minimum	46.717	0.108	0.108	0.204	-0.204	4.647	-1.723				

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0322 in	10.291 ft	0.078 in	10.530 ft
+D+L	-0.0874 in	10.171 ft	0.188 in	10.650 ft
+D+S	-0.0432 in	10.291 ft	0.106 in	10.530 ft
+D+0.750L	-0.0736 in	10.291 ft	0.161 in	10.650 ft
+D+0.750L+0.750S	-0.0819 in	10.291 ft	0.182 in	10.650 ft
+0.60D	-0.0193 in	10.291 ft	0.047 in	10.530 ft
L Only	-0.0552 in	10.171 ft	0.110 in	10.889 ft
S Only	-0.0110 in	10.291 ft	0.028 in	10.411 ft

**Steel Section Properties : HSS5x5x1/2**

Depth	=	5.000 in	I xx	=	26.00 in <sup>4</sup>	J	=	44.600 in <sup>4</sup>
Design Thick	=	0.465 in	S xx	=	10.40 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.820 in			
Wall Thick	=	0.500 in	Zx	=	13.100 in <sup>3</sup>			
Area	=	7.880 in <sup>2</sup>	I yy	=	26.000 in <sup>4</sup>	C	=	18.700 in <sup>3</sup>
Weight	=	28.430 plf	S yy	=	10.400 in <sup>3</sup>			
			R yy	=	1.820 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

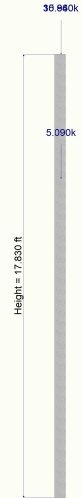
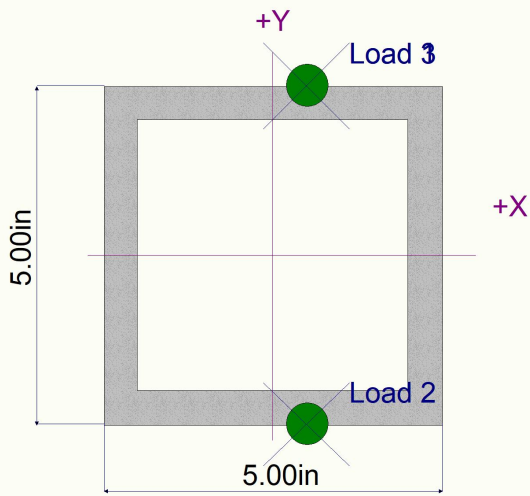
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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DESCRIPTION: C38

**Sketches**



## Steel Column

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** C39 & C56

### Code References

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

### General Information

Steel Section Name : <b>HSS5x5x1/4</b>	Overall Column Height	12.830 ft
Analysis Method : Allowable Strength	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 12.830 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 12.830 ft, K = 1.0	

### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 200.405 lbs \* Dead Load Factor

AXIAL LOADS . . .

B37 & B38: Axial Load at 12.830 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 15.890, L = 27.130, S = 5.50 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.7411</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+D+L	Top along X-X	0.1397 k
Location of max.above base	12.744 ft	Bottom along X-X	0.1397 k
At maximum location values are . . .		Top along Y-Y	0.1397 k
Pa : Axial	43.220 k	Bottom along Y-Y	0.1397 k
Pn / Omega : Allowabl	77.198 k	<b>Maximum Load Deflections . . .</b>	
Ma-x : Applied	-1.780 k-ft	Along Y-Y -0.07110 in at	7.491 ft above base
Mn-x / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
Ma-y : Applied	-1.780 k-ft	Along X-X -0.07110 in at	7.491 ft above base
Mn-y / Omega : Allowable	17.468 k-ft	for load combination : +D+L	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.004218</b> : 1		
Load Combination	+D+L		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Va : Applied	0.1397 k		
Vn / Omega : Allowable	33.124 k		

### Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
D Only	0.275	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.002	PASS	0.00 ft
+D+L	0.741	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.004	PASS	0.00 ft
+D+S	0.370	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.002	PASS	0.00 ft
+D+0.750L	0.625	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.004	PASS	0.00 ft
+D+0.750L+0.750S	0.695	PASS	12.74 ft	1.66	1.66	79.77	79.77	0.004	PASS	0.00 ft
+0.60D	0.125	PASS	0.00 ft	1.66	1.66	79.77	79.77	0.001	PASS	0.00 ft

### Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	16.090	0.052	0.052		-0.052	0.052				
+D+L	43.220	0.140	0.140		-0.140	0.140				
+D+S	21.590	0.069	0.069		-0.069	0.069				
+D+0.750L	36.438	0.118	0.118		-0.118	0.118				
+D+0.750L+0.750S	40.563	0.131	0.131		-0.131	0.131				
+0.60D	9.654	0.031	0.031		-0.031	0.031				
L Only	27.130	0.088	0.088		-0.088	0.088				
S Only	5.500	0.018	0.018		-0.018	0.018				





Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION: C39 & C56**

**Extreme Reactions**

Item	Extreme Value	Axial Reaction	X-X Axis Reaction		Y-Y Axis Reaction		Mx - End Moments		My - End Moments	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	43.220	0.140	0.140	-0.140	0.140				
"	Minimum	5.500	0.018	0.018	-0.018	0.018				
Reaction, X-X Axis Base	Maximum	43.220	0.140	0.140	-0.140	0.140				
"	Minimum	5.500	0.018	0.018	-0.018	0.018				
Reaction, Y-Y Axis Base	Maximum	5.500	0.018	0.018	-0.018	0.018				
"	Minimum	43.220	0.140	0.140	-0.140	0.140				
Reaction, X-X Axis Top	Maximum	43.220	0.140	0.140	-0.140	0.140				
"	Minimum	5.500	0.018	0.018	-0.018	0.018				
Reaction, Y-Y Axis Top	Maximum	43.220	0.140	0.140	-0.140	0.140				
"	Minimum	5.500	0.018	0.018	-0.018	0.018				
Moment, X-X Axis Base	Maximum	16.090		0.052	-0.052	0.052				
"	Minimum	16.090		0.052	-0.052	0.052				
Moment, Y-Y Axis Base	Maximum	16.090	0.052	0.052	-0.052	0.052				
"	Minimum	16.090	0.052	0.052	-0.052	0.052				
Moment, X-X Axis Top	Maximum	16.090	0.052	0.052	-0.052	0.052				
"	Minimum	16.090	0.052	0.052	-0.052	0.052				
Moment, Y-Y Axis Top	Maximum	16.090	0.052	0.052	-0.052	0.052				
"	Minimum	16.090	0.052	0.052	-0.052	0.052				

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0263 in	7.491 ft	-0.026 in	7.491 ft
+D+L	-0.0711 in	7.491 ft	-0.071 in	7.491 ft
+D+S	-0.0354 in	7.491 ft	-0.035 in	7.491 ft
+D+0.750L	-0.0599 in	7.491 ft	-0.060 in	7.491 ft
+D+0.750L+0.750S	-0.0667 in	7.491 ft	-0.067 in	7.491 ft
+0.60D	-0.0158 in	7.491 ft	-0.016 in	7.491 ft
L Only	-0.0448 in	7.491 ft	-0.045 in	7.491 ft
S Only	-0.0091 in	7.491 ft	-0.009 in	7.491 ft

**Steel Section Properties : HSS5x5x1/4**

Depth	=	5.000 in	I xx	=	16.00 in <sup>4</sup>	J	=	25.800 in <sup>4</sup>
Design Thick	=	0.233 in	S xx	=	6.41 in <sup>3</sup>			
Width	=	5.000 in	R xx	=	1.930 in			
Wall Thick	=	0.250 in	Zx	=	7.610 in <sup>3</sup>			
Area	=	4.300 in <sup>2</sup>	I yy	=	16.000 in <sup>4</sup>	C	=	10.500 in <sup>3</sup>
Weight	=	15.620 plf	S yy	=	6.410 in <sup>3</sup>			
			R yy	=	1.930 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

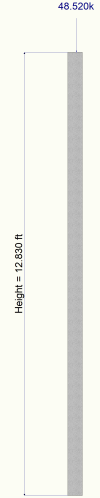
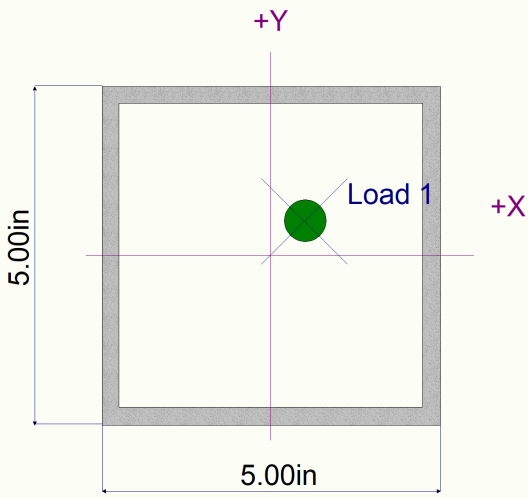
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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**DESCRIPTION:** C39 & C56

**Sketches**



**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

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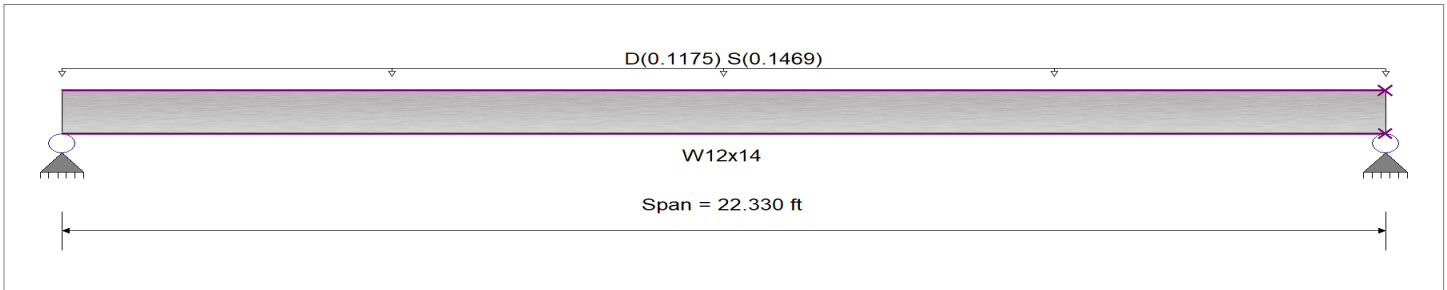
**DESCRIPTION:** Typical Upper Roof Joist

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Uniform Load : D = 0.020, S = 0.0250 ksf, Tributary Width = 5.875 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.375 : 1</b>	Maximum Shear Stress Ratio =	<b>0.068 : 1</b>
Section used for this span	<b>W12x14</b>	Section used for this span	<b>W12x14</b>
Mu : Applied	24.483 k-ft	Vu : Applied	4.386 k
Mn * Phi : Allowable	65.250 k-ft	Vn * Phi : Allowable	64.260 k
Load Combination	+1.20D+1.60S	Load Combination	+1.20D+1.60S
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.321 in Ratio = <b>834</b> >=240.	Span: 1 : S Only	
Max Upward Transient Deflection	0 in Ratio = <b>0</b> <240.0	n/a	
Max Downward Total Deflection	0.609 in Ratio = <b>440</b> >=180.	Span: 1 : +D+S	
Max Upward Total Deflection	0 in Ratio = <b>0</b> <180.0	n/a	

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx	Phi*Vnx
+1.40D	Dsgn. L = 22.33 ft	1	0.176	0.032	11.47		11.47	72.50	65.25	1.00	1.00	2.06	71.40	64.26
+1.20D	Dsgn. L = 22.33 ft	1	0.151	0.027	9.84		9.84	72.50	65.25	1.00	1.00	1.76	71.40	64.26
+1.20D+0.50S	Dsgn. L = 22.33 ft	1	0.221	0.040	14.41		14.41	72.50	65.25	1.00	1.00	2.58	71.40	64.26
+1.20D+1.60S	Dsgn. L = 22.33 ft	1	0.375	0.068	24.48		24.48	72.50	65.25	1.00	1.00	4.39	71.40	64.26
+0.90D	Dsgn. L = 22.33 ft	1	0.113	0.021	7.38		7.38	72.50	65.25	1.00	1.00	1.32	71.40	64.26
+1.20D+0.20S	Dsgn. L = 22.33 ft	1	0.179	0.033	11.67		11.67	72.50	65.25	1.00	1.00	2.09	71.40	64.26

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.6089	11.229		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.108	3.108
Max Upward from Load Combinations	3.108	3.108
Max Upward from Load Cases	1.640	1.640



Project Title: WSF International Village  
Engineer: JMB  
Project ID: 24-318  
Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** Typical Upper Roof Joist

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
D Only	1.468	1.468
+D+S	3.108	3.108
+D+0.750S	2.698	2.698
+0.60D	0.881	0.881
S Only	1.640	1.640

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

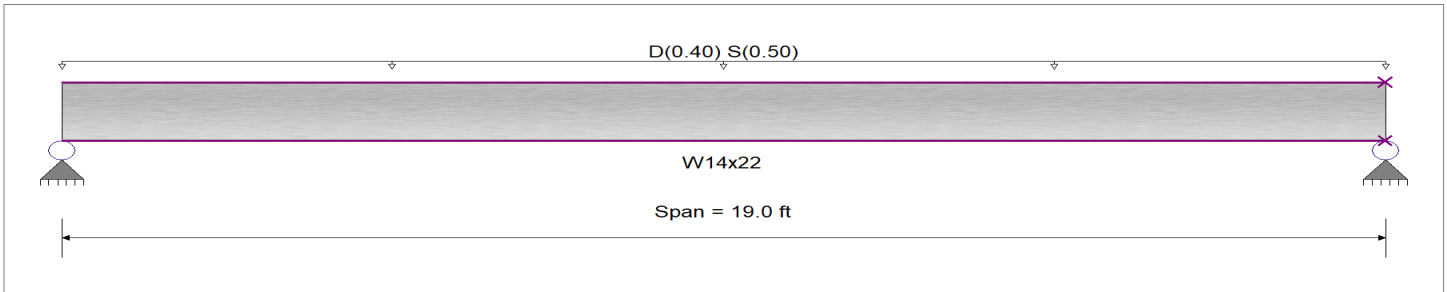
**DESCRIPTION:** Typical Upper Roof Beam

**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combination Set : ASCE 7-16

**Material Properties**

Analysis Method Load Resistance Factor Design  
 Beam Bracing : Beam is Fully Braced against lateral-torsional buckling  
 Bending Axis : Major Axis Bending  
 Fy : Steel Yield : 50.0 ksi  
 E: Modulus : 29,000.0 ksi



**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading  
 Uniform Load : D = 0.020, S = 0.0250 ksf, Tributary Width = 20.0 ft

**DESIGN SUMMARY**

**Design OK**

Maximum Bending Stress Ratio =	<b>0.474 : 1</b>	Maximum Shear Stress Ratio =	<b>0.131 : 1</b>
Section used for this span	<b>W14x22</b>	Section used for this span	<b>W14x22</b>
Mu : Applied	58.951 k-ft	Vu : Applied	12.411 k
Mn * Phi : Allowable	124.500 k-ft	Vn * Phi : Allowable	94.530 k
Load Combination	+1.20D+1.60S	Load Combination	+1.20D+1.60S
Span # where maximum occurs	Span # 1	Location of maximum on span	0.000 ft
		Span # where maximum occurs	Span # 1
<b>Maximum Deflection</b>			
Max Downward Transient Deflection	0.255 in Ratio =	893	>=240. Span: 1 : S Only
Max Upward Transient Deflection	0 in Ratio =	0	<240.0 n/a
Max Downward Total Deflection	0.471 in Ratio =	484	>=180. Span: 1 : +D+S
Max Upward Total Deflection	0 in Ratio =	0	<180.0 n/a

**Maximum Forces & Stresses for Load Combinations**

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values		
			M	V	max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	VuMax	Vnx
+1.40D	Dsgn. L = 19.00 ft	1	0.214	0.059	26.66	26.66	138.33	124.50	1.00	1.00	5.61	94.53	94.53
+1.20D	Dsgn. L = 19.00 ft	1	0.184	0.051	22.85	22.85	138.33	124.50	1.00	1.00	4.81	94.53	94.53
+1.20D+0.50S	Dsgn. L = 19.00 ft	1	0.274	0.076	34.13	34.13	138.33	124.50	1.00	1.00	7.19	94.53	94.53
+1.20D+1.60S	Dsgn. L = 19.00 ft	1	0.474	0.131	58.95	58.95	138.33	124.50	1.00	1.00	12.41	94.53	94.53
+0.90D	Dsgn. L = 19.00 ft	1	0.138	0.038	17.14	17.14	138.33	124.50	1.00	1.00	3.61	94.53	94.53
+1.20D+0.20S	Dsgn. L = 19.00 ft	1	0.220	0.061	27.36	27.36	138.33	124.50	1.00	1.00	5.76	94.53	94.53

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.4706	9.554		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	8.759	8.759
Max Upward from Load Combinations	8.759	8.759
Max Upward from Load Cases	4.750	4.750



Project Title: WSF International Village  
Engineer: JMB  
Project ID: 24-318  
Project Descr: Vertical Framing

**Steel Beam**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** Typical Upper Roof Beam

**Vertical Reactions**

Support notation : Far left is #

Values in KIPS

Load Combination	Support 1	Support 2
D Only	4.009	4.009
+D+S	8.759	8.759
+D+0.750S	7.572	7.572
+0.60D	2.405	2.405
S Only	4.750	4.750

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC#: KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** Typical Upper Roof Column

**Code References**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16  
 Load Combinations Used : ASCE 7-16

**General Information**

Steel Section Name :	<b>HSS4x4x1/4</b>	Overall Column Height	11.25 ft
Analysis Method :	Load Resistance Factor	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade		Brace condition :	
Fy : Steel Yield	46.0 ksi	Unbraced Length for buckling ABOUT X-X Axis =	11.25 ft, K = 1.0
E : Elastic Bending Modulus	29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis =	11.25 ft, K = 1.0

**Applied Loads**

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 137.363 lbs \* Dead Load Factor

AXIAL LOADS . . .

Axial Load at 11.250 ft, Xecc = 0.50 in, Yecc = 0.50 in, D = 5.40, S = 6.750 k

**DESIGN SUMMARY**

**Bending & Shear Check Results**

<b>PASS</b> Max. Axial+Bending Stress Ratio =	<b>0.2911</b> : 1	<b>Maximum Load Reactions . .</b>	
Load Combination	+1.20D+1.60S	Top along X-X	0.0450 k
Location of max.above base	11.175 ft	Bottom along X-X	0.0450 k
At maximum location values are . . .		Top along Y-Y	0.0450 k
Pu	17.445 k	Bottom along Y-Y	0.0450 k
0.9 * Pn	82.070 k	<b>Maximum Load Deflections . . .</b>	
Mu-x	-0.7152 k-ft	Along Y-Y	-0.03167 in at 6.569ft above base
0.9 * Mn-x :	16.181 k-ft	for load combination : +D+S	
Mu-y	-0.7152 k-ft	Along X-X	-0.03167 in at 6.569ft above base
0.9 * Mn-y :	16.181 k-ft	for load combination : +D+S	
<b>PASS</b> Maximum Shear Stress Ratio	<b>0.002010</b> : 1		
Load Combination	+1.20D+1.60S		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Vu : Applied	0.0640 k		
Vn * Phi : Allowable	31.842 k		

**Load Combination Results**

Load Combination	Maximum Axial + Bending Stress Ratios				Maximum Shear Ratios					
	Stress Ratio	Status	Location	Cbx	Cby	KxLx/Rx	KyLy/Ry	Stress Ratio	Status	Location
+1.40D	0.094	PASS	0.00 ft	1.66	1.66	88.82	88.82	0.001	PASS	0.00 ft
+1.20D	0.081	PASS	0.00 ft	1.66	1.66	88.82	88.82	0.001	PASS	0.00 ft
+1.20D+0.50S	0.122	PASS	0.00 ft	1.66	1.66	88.82	88.82	0.001	PASS	0.00 ft
+1.20D+1.60S	0.291	PASS	11.17 ft	1.66	1.66	88.82	88.82	0.002	PASS	0.00 ft
+0.90D	0.061	PASS	0.00 ft	1.66	1.66	88.82	88.82	0.001	PASS	0.00 ft
+1.20D+0.20S	0.097	PASS	0.00 ft	1.66	1.66	88.82	88.82	0.001	PASS	0.00 ft

**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		My - End Moments @ Base @ Top	
		@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	5.537	0.020	0.020		-0.020	0.020				
+D+S	12.287	0.045	0.045		-0.045	0.045				
+D+0.750S	10.600	0.039	0.039		-0.039	0.039				
+0.60D	3.322	0.012	0.012		-0.012	0.012				
S Only	6.750	0.025	0.025		-0.025	0.025				

**Extreme Reactions**

Item	Extreme Value	Axial Reaction @ Base @ Top		k	Y-Y Axis Reaction @ Base @ Top		Mx - End Moments @ Base @ Top		My - End Moments @ Base @ Top	
		@ Base	@ Top		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial @ Base	Maximum	12.287	0.045	0.045	-0.045	0.045				
"	Minimum	3.322	0.012	0.012	-0.012	0.012				





Project Title: WSF International Village  
 Engineer: JMB  
 Project ID: 24-318  
 Project Descr: Vertical Framing

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** Typical Upper Roof Column

**Extreme Reactions**

Item	Extreme Value	Axial Reaction		X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
Reaction, X-X Axis Base	Maximum	12.287	0.045	0.045	-0.045	0.045							
"	Minimum	3.322	0.012	0.012	-0.012	0.012							
Reaction, Y-Y Axis Base	Maximum	3.322	0.012	0.012	-0.012	0.012							
"	Minimum	12.287	0.045	0.045	-0.045	0.045							
Reaction, X-X Axis Top	Maximum	12.287	0.045	0.045	-0.045	0.045							
"	Minimum	3.322	0.012	0.012	-0.012	0.012							
Reaction, Y-Y Axis Top	Maximum	12.287	0.045	0.045	-0.045	0.045							
"	Minimum	3.322	0.012	0.012	-0.012	0.012							
Moment, X-X Axis Base	Maximum	5.537		0.020	-0.020	0.020							
"	Minimum	5.537		0.020	-0.020	0.020							
Moment, Y-Y Axis Base	Maximum	5.537	0.020	0.020	-0.020	0.020							
"	Minimum	5.537	0.020	0.020	-0.020	0.020							
Moment, X-X Axis Top	Maximum	5.537	0.020	0.020	-0.020	0.020							
"	Minimum	5.537	0.020	0.020	-0.020	0.020							
Moment, Y-Y Axis Top	Maximum	5.537	0.020	0.020	-0.020	0.020							
"	Minimum	5.537	0.020	0.020	-0.020	0.020							

**Maximum Deflections for Load Combinations**

Load Combination	Max. Deflection in X dir	Distance	Max. Deflection in Y dir	Distance
D Only	-0.0141 in	6.569 ft	-0.014 in	6.569 ft
+D+S	-0.0317 in	6.569 ft	-0.032 in	6.569 ft
+D+0.750S	-0.0273 in	6.569 ft	-0.027 in	6.569 ft
+0.60D	-0.0084 in	6.569 ft	-0.008 in	6.569 ft
S Only	-0.0176 in	6.569 ft	-0.018 in	6.569 ft

**Steel Section Properties : HSS4x4x1/4**

Depth	=	4.000 in	I xx	=	7.80 in^4	J	=	12.800 in^4
Design Thick	=	0.233 in	S xx	=	3.90 in^3			
Width	=	4.000 in	R xx	=	1.520 in			
Wall Thick	=	0.250 in	Zx	=	4.690 in^3			
Area	=	3.370 in^2	I yy	=	7.800 in^4	C	=	6.560 in^3
Weight	=	12.210 plf	S yy	=	3.900 in^3			
			R yy	=	1.520 in			
Ycg	=	0.000 in						

**Steel Column**

Project File: 24318 enercalc 2024-04-12 jmb.ec6

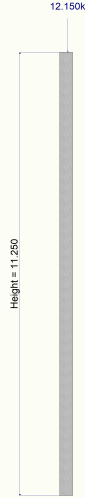
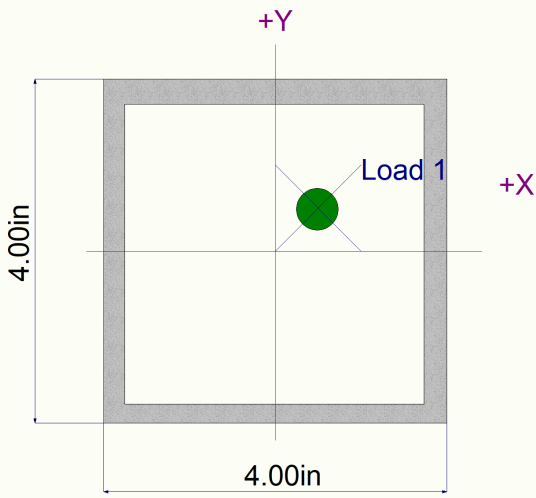
LIC# : KW-06014122, Build:20.24.02.27

PCS STRUCTURAL SOLUTIONS

(c) ENERCALC INC 1983-2023

**DESCRIPTION:** Typical Upper Roof Column

**Sketches**



Project ID: WSF International Village  
 Project # : 24318  
 Bay ID : Low Deck

**VIBRATION ANALYSIS:**

Activity: Dancing  
 Affected Occupancy: None  
 Evaluation Criterion: Rhythmic  
 References: Murray, T.M., Allen, D.E., Ungar, E.E., Davis, D.B.  
 "Vibrations of Steel-Framed Structural Systems  
 Due To Human Activity", AISC Design Guide #11 2<sup>nd</sup> Ed, 2016  
 Murray, T.M., and Davis, B.,  
 "Vibration of Steel Joist-Concrete Floor Systems",  
 SJI Technical Digest No. 5, 2014

Step Frequency Range,  $f_1 = 1.50$  Hz to  $3.00$  Hz  
 Modal Damping Ratio,  $\beta = 0.060$   
 Acceleration Limit,  $a_o/g = 7.00$  %  
 Column Deflection = 0.0000 in

**EVALUATION:**

Maximum  $a_m = 2.76$  % gravity (at  $f_1 = 3.00$  Hz) < 7.00 % gravity  
 The system SATISFIES THE CRITERION. *< 2.5 TO 5 % GRAVITY OK*

**PARAMETER SUMMARY:**

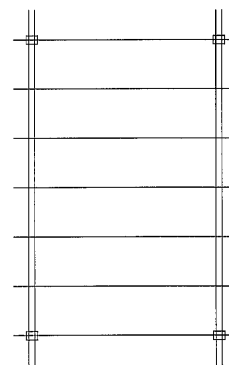
Parameter	Beam	Left Girder	Right Girder
Member	W8X24	W18X86	W18X86
Uniform Load, plf	205.7	875.8	875.8
Effective I, in <sup>4</sup>	138.3	2844.4	2844.4
Frequency, Hz	12.86	11.58	11.58
			8.60

**FRAMING:**

Girder Span = 25.00 ft  
 Beam Spans:  
 Left = 16.00 ft  
 Center = 16.00 ft  
 Right = 16.00 ft

Girders/Walls:  
 Left -W18X86  
 Right-W18X86

Beam -W8X24  
 Left connection:  
 Web Shear Connection  
 Right connection:  
 Web Shear Connection  
 6 spaces at 50.00 in



Concrete:  $d_c = 2.25$  in  
 $f'_c = 3.50$  ksi  
 $wt. = 145.0$  pcf  
 Deck Height = 2.00 in

Loading: Dead = 4.00 psf  
 Live = 12.50 psf  
 Collateral = 10.00 psf

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Note: The user has elected to ignore the following condition(s):

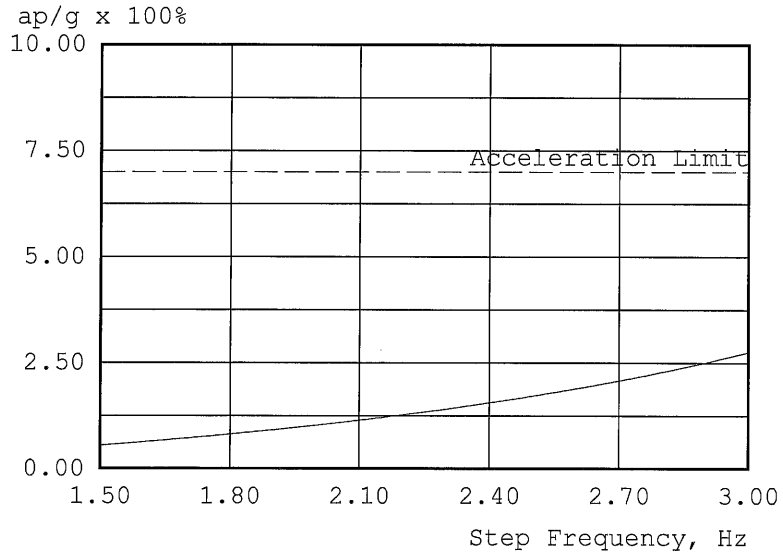
SHEET OF

DATE: 4/17/2024

PAGE: 2 BY: JJP

The concrete depth above the deck is  $d_c - h_r = 2.25 \text{ in.} - 2.00 \text{ in.} = 0.25 \text{ in.}$ , which may be insufficient.

Note: For composite construction, the AISC *Specification for Structural Steel Buildings* (ANSI/AISC 360-16) Section 13.2c.1(c) requires a minimum of 2 in. of concrete **above** the deck.



Project ID: WSF International Village  
 Project # : 24318  
 Bay ID : Low Deck

**VIBRATION ANALYSIS:**

Activity: Walking  
 Occupancy Category: Shopping Mall  
 Evaluation Criterion: Walking  
 References: Murray, T.M., Allen, D.E., Ungar, E.E, Davis, D.B.  
 "Vibrations of Steel-Framed Structural Systems  
 Due To Human Activity", AISC Design Guide #11 2<sup>nd</sup> Ed, 2016  
 Murray, T.M., and Davis, B.,  
 "Vibration of Steel Joist-Concrete Floor Systems",  
 SJI Technical Digest No. 5, 2014

Constant Force,  $P_o = 65.1b$   
 Modal Damping Ratio,  $\beta = 0.020$   
 Acceleration Limit,  $a_o/g \times 100\% = 1.50 \%$   
 Girders are not continuous at columns

**EVALUATION:** Combined Mode  $a_p/g = 0.482 \%$   $\leq 1.50 \%$   
 The system SATISFIES THE CRITERION.

**PARAMETER SUMMARY:**

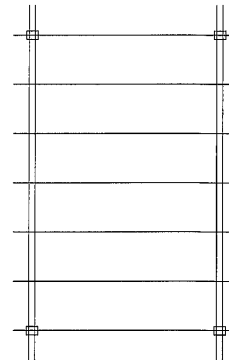
Parameter	Beam Panel	Left Girder Panel	Right Girder Panel	System
Member	W8X24	W18X86	W18X86	
Uniform Load, plf	153.6	675.8	675.8	
Effective I, in <sup>4</sup>	138.3	2844.4	2844.4	
Frequency, Hz	14.88	13.18	13.18	9.87
Panel Width, ft	9.84	29.58	29.58	
Panel Weight, k	8.7	31.2	31.2	21.3

**FRAMING:**

Girder Span = 25.00 ft  
 Beam Spans:  
 Left = 16.00 ft  
 Center = 16.00 ft  
 Right = 16.00 ft

Girders/Walls:  
 Left -W18X86  
 Right -W18X86

Beam -W8X24  
 Left connection:  
 Web Shear Connection  
 Right connection:  
 Web Shear Connection  
 6 spaces at 50.00 in



Floor Width = 25.00 ft  
 Floor Length = 48.00 ft

Concrete:  $d_c = 2.25$  in  
 $f'_c = 3.50$  ksi  
 $wt. = 145.0$  pcf  
 Deck Height = 2.00 in

Loading: Dead = 4.00 psf  
 Live = 0.00 psf  
 Collateral = 10.00 psf

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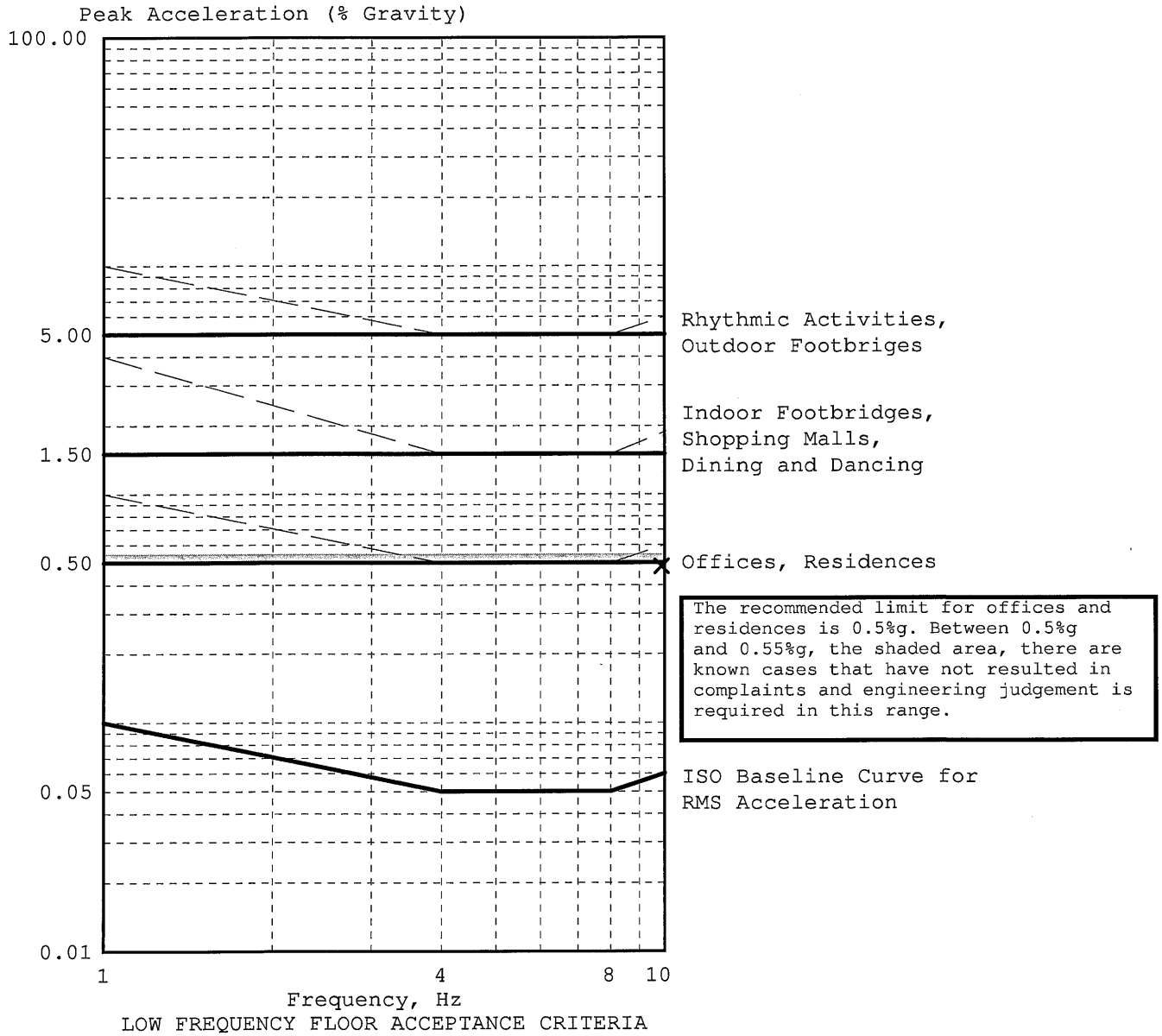
SHEET        OF  
DATE: 4/17/2024  
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Note: The user has elected to ignore the following condition(s):

The concrete depth above the deck is  $d_c - h_r = 2.25 \text{ in.} - 2.00 \text{ in.} = 0.25 \text{ in.}$ , which may be insufficient.

Note: For composite construction, the AISC *Specification for Structural Steel Buildings* (ANSI/AISC 360-16) Section 13.2c.1(c) requires a minimum of 2 in. of concrete **above** the deck.





Note: Floors with a frequency below 3 Hz are not recommended

Project ID: WSF International Village  
 Project # : 24318  
 Bay ID : Upper Deck

**VIBRATION ANALYSIS:**

Activity: Dancing  
 Affected Occupancy: None  
 Evaluation Criterion: Rhythmic  
 References: Murray, T.M., Allen, D.E. Ungar, E.E., Davis, D.B.  
 "Vibrations of Steel-Framed Structural Systems  
 Due To Human Activity", AISC Design Guide #11 2<sup>nd</sup> Ed, 2016  
 Murray, T.M., and Davis, B.,  
 "Vibration of Steel Joist-Concrete Floor Systems",  
 SJI Technical Digest No. 5, 2014

Step Frequency Range,  $f_i$  = 1.50 Hz to 3.00 Hz  
 Modal Damping Ratio,  $\beta$  = 0.060  
 Acceleration Limit,  $a_o/g$  = 7.00 %  
 Column Deflection = 0.0000 in

**EVALUATION:**

Maximum  $a_m$  = 2.60 % gravity (at  $f_i$  = 3.00 Hz) < 7.00 % gravity  
 The system SATISFIES THE CRITERION.

*< 2.5 TO 5% GRAVITY OK*

**PARAMETER SUMMARY:**

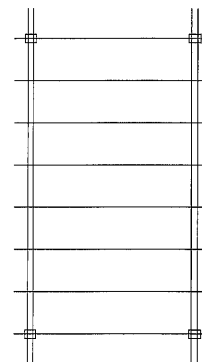
Parameter	Beam	Left Girder	Right Girder
Member	W8X24	W24X94	W24X94
Uniform Load, plf	201.5	886.0	886.0
Effective I, in <sup>4</sup>	137.3	5111.6	5111.6
Frequency, Hz	12.94	11.87	11.87
			8.75

**FRAMING:**

Girder Span = 28.50 ft  
 Beam Spans:  
 Left = 16.00 ft  
 Center = 16.00 ft  
 Right = 16.00 ft

Girders/Walls:  
 Left -W24X94  
 Right-W24X94

Beam -W8X24  
 Left connection:  
 Web Shear Connection  
 Right connection:  
 Web Shear Connection  
 7 spaces at 48.86 in



Concrete:  $d_c$  = 2.25 in  
 $f'_c$  = 3.50 ksi  
 wt. = 145.0 pcf  
 Deck Height = 2.00 in

Loading: Dead = 4.00 psf  
 Live = 12.50 psf  
 Collateral = 10.00 psf

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Note: The user has elected to ignore the following condition(s):

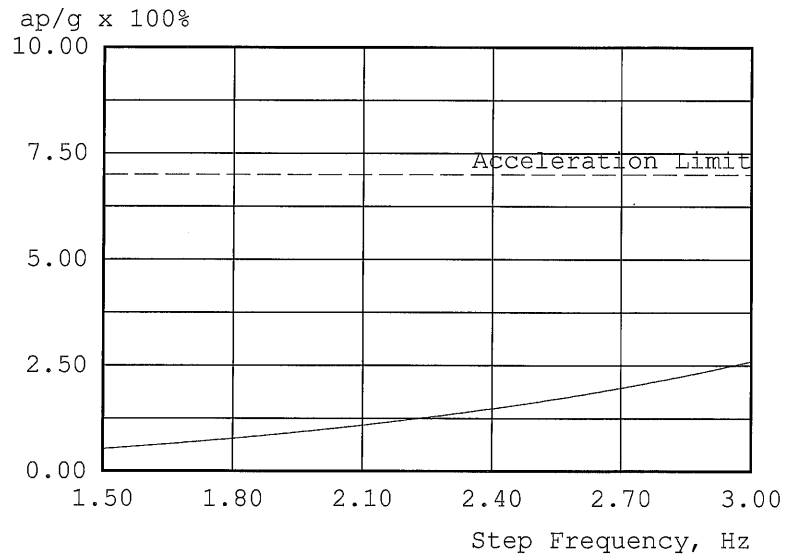
SHEET OF

DATE: 4/17/2024

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The concrete depth above the deck is  $d_c - h_r = 2.25 \text{ in.} - 2.00 \text{ in.} = 0.25 \text{ in.}$ , which may be insufficient.

Note: For composite construction, the AISC *Specification for Structural Steel Buildings* (ANSI/AISC 360-16) Section 13.2c.1(c) requires a minimum of 2 in. of concrete **above** the deck.



Project ID: WSF International Village  
 Project # : 24318  
 Bay ID : Upper Deck

**VIBRATION ANALYSIS:**

Activity: Walking  
 Occupancy Category: Shopping Mall  
 Evaluation Criterion: Walking  
 References: Murray, T.M., Allen, D.E., Ungar, E.E, Davis, D.B.  
 "Vibrations of Steel-Framed Structural Systems  
 Due To Human Activity", AISC Design Guide #11 2<sup>nd</sup> Ed, 2016  
 Murray, T.M., and Davis, B.,  
 "Vibration of Steel Joist-Concrete Floor Systems",  
 SJI Technical Digest No. 5, 2014

Constant Force,  $P_o = 65.1b$   
 Modal Damping Ratio,  $\beta = 0.020$   
 Acceleration Limit,  $a_o/g \times 100\% = 1.50 \%$   
 Girders are not continuous at columns

**EVALUATION:** Combined Mode  $a_p/g = 0.412 \%$   $\leq 1.50 \%$   
 The system SATISFIES THE CRITERION.

**PARAMETER SUMMARY:**

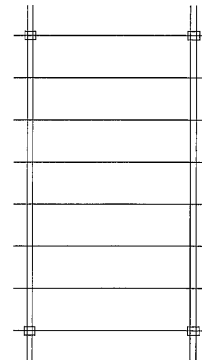
Parameter	Beam Panel	Left Girder Panel	Right Girder Panel	System
Member	W8X24	W24X94	W24X94	
Uniform Load, plf	150.6	686.0	686.0	
Effective I, in <sup>4</sup>	137.3	5111.6	5111.6	
Frequency, Hz	14.97	13.49	13.49	10.02
Panel Width, ft	9.80	29.24	29.24	
Panel Weight, k	8.7	35.7	35.7	23.6

**FRAMING:**

Girder Span = 28.50 ft  
 Beam Spans:  
 Left = 16.00 ft  
 Center = 16.00 ft  
 Right = 16.00 ft

Girders/Walls:  
 Left -W24X94  
 Right-W24X94

Beam -W8X24  
 Left connection:  
 Web Shear Connection  
 Right connection:  
 Web Shear Connection  
 7 spaces at 48.86 in



Floor Width = 85.50 ft  
 Floor Length= 48.00 ft

Concrete:  $d_c = 2.25$  in  
 $f'_c = 3.50$  ksi  
 $wt. = 145.0$  pcf  
 Deck Height = 2.00 in

Loading: Dead = 4.00 psf  
 Live = 0.00 psf  
 Collateral = 10.00 psf

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PAGE: 2    BY: JJP

Note: The user has elected to ignore the following condition(s):

The concrete depth above the deck is  $d_c - h_x = 2.25 \text{ in.} - 2.00 \text{ in.} = 0.25 \text{ in.}$ , which may be insufficient.

Note: For composite construction, the AISC *Specification for Structural Steel Buildings* (ANSI/AISC 360-16) Section 13.2c.1(c) requires a minimum of 2 in. of concrete **above** the deck.

Spread Footing Vertical Capacities

$f_a = 2,500 \text{ p.s.f.} = 2.5 \text{ ksf}$  allowable soil bearing per Geotech

F2.0  $\Rightarrow P_a = 2.5 \text{ ksf} \times 2 \times 2 = \underline{10 \text{ K}}$

F2.5  $P_a = 15.6 \text{ K}$

F3.0  $P_a = 22.5 \text{ K}$

F3.5  $P_a = 30.6 \text{ K}$

F4.0  $P_a = 40 \text{ K}$

F4.5  $P_a = 50.6 \text{ K}$

F5.0  $P_a = 62.5 \text{ K}$

F5.5  $P_a = 75.6 \text{ K}$

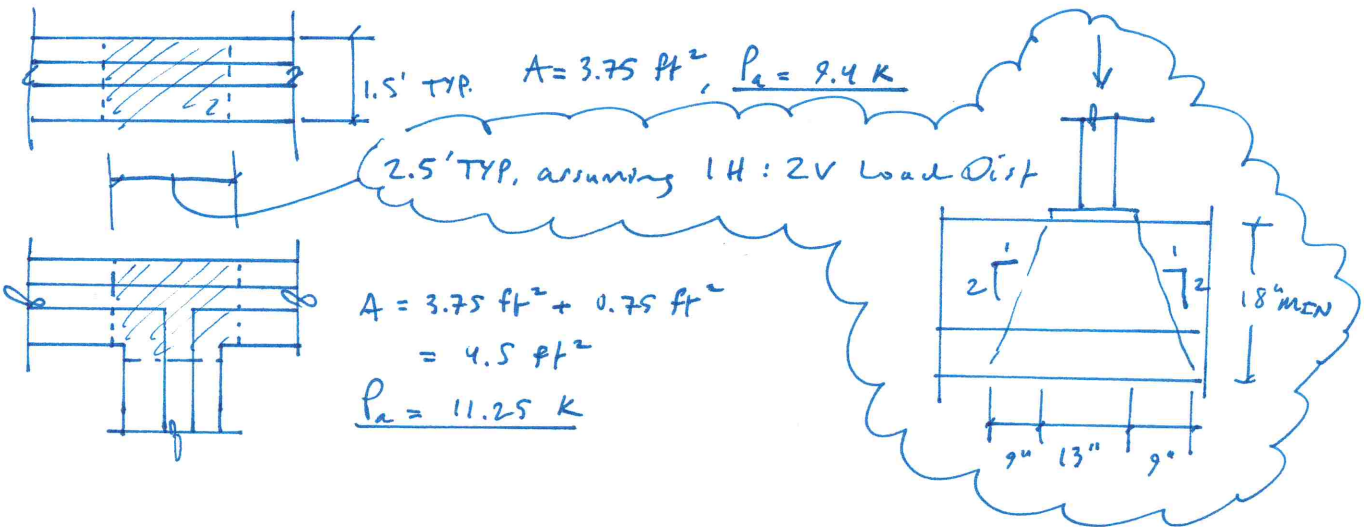
F6.0  $P_a = 90 \text{ K}$

F6.5  $P_a = 105.6 \text{ K}$

F7.0  $P_a = 122.5 \text{ K}$

F7.5  $P_a = 140.6 \text{ K}$

- Continuous Footings  
Point Load Capacity



\* Compare capacities to reactions per Enercalc.



MISCELLANEOUS



Project: \_\_\_\_\_ Job No: \_\_\_\_\_  
Subject: \_\_\_\_\_ Sheet \_\_\_\_\_ Name: \_\_\_\_\_  
Originating Office:  Seattle  Tacoma  Portland Date: \_\_\_\_\_

C.F.S. WALL FRAMING

EXTERIOR METAL STUDS

BUILD STUDS TIGHT TO UNDERSIDE OF ROOF BEAMS

STUDS WILL SUPPORT LOAD FROM PAVERS - 30 PSF D

A NO LIVE LOAD - 100 PSF L

STUDS RESIST WIND LOAD

FOR 17' TALL WALLS

$$A_{eff} = 17' \left( \frac{17'}{3} \right) = 96 \text{ FT}^2$$

$$p = 20 \text{ PSF MAX}$$

FOR 12' TALL WALLS

$$A_{eff} = 12' \left( \frac{12'}{3} \right) = 48 \text{ SF}$$

$$p = 22 \text{ PSF MAX}$$

KITCHEN

TYPICAL STUD ALONG (13) - SIMILAR ALONG (23), (24)

$$h = 17'$$

$$D = 30 \text{ psf} (16') (1.33') = 638 \#$$

$$L = 100 \text{ psf} (16') (1.33') = 2128 \# \quad 0.75L = 1596 \#$$

CLADDING LOAD = 10 psf

WIND = 20 psf

$$0.6W = 12 \text{ psf}$$

$$.75(0.6W) = 9 \text{ psf}$$

D+L

$$P = 2766 \#$$

D+0.6W

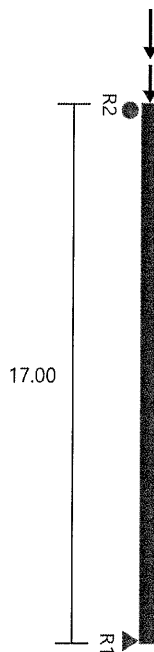
$$P = 638 \#$$

$$0.6W = 12 \text{ psf}$$

D+.75(0.6W) + .75L

$$P = 2234 \#$$

$$0.75(0.6W) = 9 \text{ psf}$$



**Section :** 600S162-54 (50 ksi) @ 16" o.c. Single C Stud (punched)  
**Maxo =** 2527.1 ft-lb      **Va =** 2822.9 lb      **I =** 2.86 in<sup>4</sup>

Loads have not been modified for strength checks  
 Loads have been multiplied by 0.70 for deflection calculations

**Bridging Connectors - Design Method =AISI S100**

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	Sheathed, Sheathed	Full, 204.0"	N/A	-

**Web Crippling**

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	0.0	--Shear Connection w/ clip--				NO
R1	0.0	--Stud/Track Design, Ref Connectors--				NO

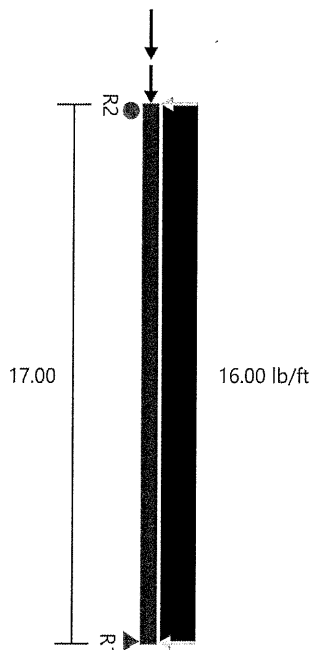
**Gravity Load**

Type	Load (lb)
Uniform	13.33plf
P1y	2766lb @ 17ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	2992.7(c)	3222.2(c)	93%	KΦ=0.00 lb-in/in
	Max. Shear, lbs	0.0	1947.4	0%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	0.0	2158.3	0%	Ma-dist (control), KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	0.0	2527.1	0%	
	Shear/Moment	0.00	1.00	0%	Shear 0.0, Moment 0.0
	Axial/Moment	0.93	1.00	93%	Axial 2992.7(c), Moment 0.0
	Deflection Span, in	0.000	--meets L/0--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	0.0	0.0	SCB45.5(2) & (2) #12-24 SST X or XL to A36 Steel	0.00 %	0.00 %
R1	0.0	2992.7	600T125-33 (33) & (2) .157" SST PDPA/PDPAT-62KP to steel (3/16" to 1/2" thickness)	0.00 %	0.00 %

\* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



**Section :** 600S162-54 (50 ksi) @ 16" o.c. Single C Stud (punched)

**Maxo =** 2527.1 ft-lb      **Va =** 2822.9 lb      **I =** 2.86 in<sup>4</sup>

Loads have not been modified for strength checks  
 Loads have been multiplied by 0.70 for deflection calculations

**Bridging Connectors - Design Method =AISI S100**

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	Sheathed, Sheathed	Full, 204.0"	N/A	-

**Web Crippling**

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	136.0	--Shear Connection w/ clip--				NO
R1	136.0	--Stud/Track Design, Ref Connectors--				NO

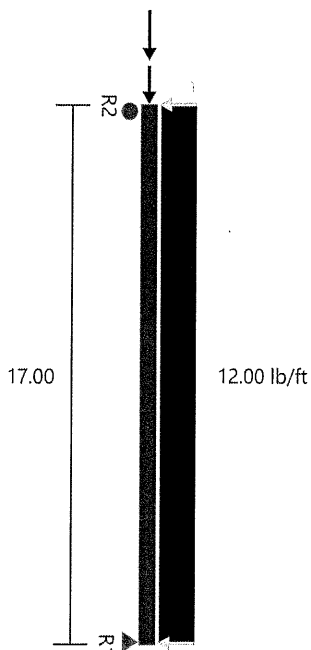
**Gravity Load**

Type	Load (lb)
Uniform	13.33plf
P1y	638lb @ 17ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	864.7(c)	3222.2(c)	27%	KΦ=0.00 lb-in/in
	Max. Shear, lbs	136.0	1947.4	7%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	578.0	2158.3	27%	Ma-dist (control), KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	578.0	2527.1	23%	
	Shear/Moment	0.23	1.00	23%	Shear 0.0, Moment 578.0
	Axial/Moment	0.52	1.00	52%	Axial 758.8(c), Moment 575.5
	Deflection Span, in	0.249	--meets L/818--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	136.0	0.0	SCB45.5(2) & (2) #12-24 SST X or XL to A36 Steel	17.89 %	12.20 %
R1	136.0	864.7	600T125-33 (33) & (2) .157" SST PDPA/PDPAT-62KP to steel (3/16" to 1/2" thickness)	19.77 %	30.88 %

\* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



**Section :** 600S162-54 (50 ksi) @ 16" o.c. Single C Stud (punched)  
**Maxo =** 2527.1 ft-lb      **Va =** 2822.9 lb      **I =** 2.86 in<sup>4</sup>

Loads have not been modified for strength checks  
 Loads have been multiplied by 0.70 for deflection calculations

**Bridging Connectors - Design Method =AISI S100**

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	Sheathed, Sheathed	Full, 204.0"	N/A	-

**Web Crippling**

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	102.0	--Shear Connection w/ clip--				NO
R1	102.0	--Stud/Track Design, Ref Connectors--				NO

**Gravity Load**

Type	Load (lb)
Uniform	13.33plf
P1y	2234lb @ 17ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	2460.7(c)	3222.2(c)	76%	KΦ=0.00 lb-in/in
	Max. Shear, lbs	102.0	1947.4	5%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	433.5	2158.3	20%	Ma-dist (control), KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	433.5	2527.1	17%	
	Shear/Moment	0.17	1.00	17%	Shear 0.0, Moment 433.5
	Axial/Moment	0.98	1.00	98%	Axial 2355.9(c), Moment 431.0
	Deflection Span, in	0.187	--meets L/1090--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	102.0	0.0	SCB45.5(2) & (2) #12-24 SST X or XL to A36 Steel	13.42 %	9.15 %
R1	102.0	2460.7	600T125-33 (33) & (2) .157" SST PDPA/PDPAT-62KP to steel (3/16" to 1/2" thickness)	14.83 %	23.16 %

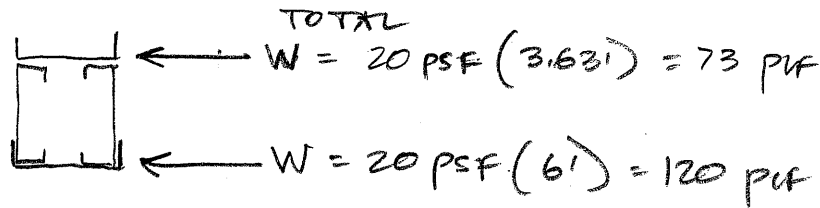
\* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



OPENINGS AT EXTERIOR WALLS ALONG (29), (23), (13)

12' opening

TRY (2) 600S162-54 & 54 MILL TRACKS



$$0.6W = 0.6(120 \text{ plf}) = 72 \text{ plf}$$

$$M = \frac{72(12)^2}{8} = 1296 \#'' = 15,552 \#''$$

$$I_{reqd} = \frac{5(0.7)(72)(12)^4}{384(29 \times 10^6)} = 1.4 \text{ in}^4$$

600T120-54 OK

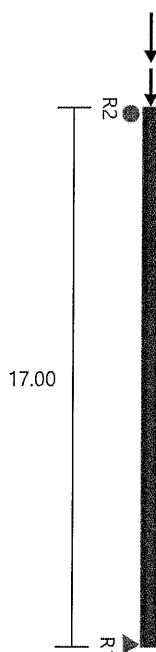
JAMB STUDS

$$D = 30 \text{ psf}(10') \left( \frac{12+1.33}{2} \right) + 10 \text{ psf}(8') \left( \frac{12+1.33}{2} \right) = 2533 \#$$

$$L = 100 \text{ psf}(10') \left( \frac{12+1.33}{2} \right) = 6665 \#$$

$$0.6W = 0.6(20 \text{ psf}) \left( \frac{12+1.33}{2} \right) = 80 \text{ plf}$$

TRY (3) 600S162-54	N.G.	→	(4) 600S162-54
EACH RESISTS	$D = \frac{2533}{3} = 844 \#$		$D = 633 \#$
	$L = \frac{6665}{3} = 2222 \#$		$L = 1666 \#$
	$0.6W = 27 \text{ plf}$		$0.6W = 20 \text{ plf}$



**Section :** 600S162-54 (50 ksi) @ 12" o.c. Single C Stud (punched)  
**Maxo =** 2527.1 ft-lb      **Va =** 2822.9 lb      **I =** 2.86 in<sup>4</sup>

Loads have not been modified for strength checks  
 Loads have been multiplied by 0.70 for deflection calculations

**Bridging Connectors - Design Method =AISI S100**

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	Sheathed, Sheathed	Full, 204.0"	N/A	-

**Web Crippling**

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	0.0	--Shear Connection w/ clip--				NO
R1	0.0	--Stud/Track Design, Ref Connectors--				NO

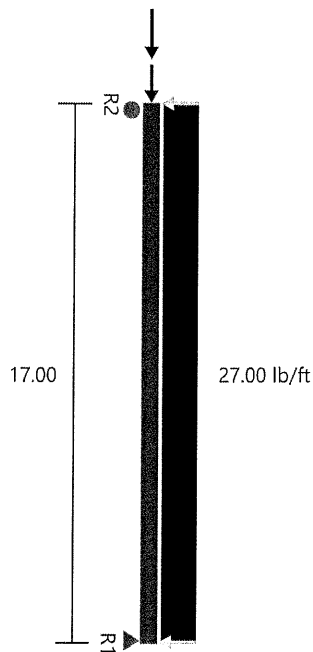
**Gravity Load**

Type	Load (lb)
Uniform	10.00plf
P1y	3066lb @ 17ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	3236.0(c)	3222.2(c)	100%	KΦ=0.00 lb-in/in
	Max. Shear, lbs	0.0	1947.4	0%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	0.0	2158.3	0%	Ma-dist (control), KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	0.0	2527.1	0%	
	Shear/Moment	0.00	1.00	0%	Shear 0.0, Moment 0.0
	Axial/Moment	1.00	1.00	100%	Axial 3236.0(c), Moment 0.0
	Deflection Span, in	0.000	--meets L/0--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	0.0	0.0	SCB45.5(3) & (2) #12-24 SST X or XL to A36 Steel	0.00 %	0.00 %
R1	0.0	3236.0	600T125-43 (33) & (3) .157" SST PDPA/PDPAT-62KP to steel (3/16" to 1/2" thickness)	0.00 %	0.00 %

\* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



**Section :** 600S162-54 (50 ksi) @ 12" o.c. Single C Stud (punched)

**Maxo =** 2527.1 ft-lb      **Va =** 2822.9 lb      **I =** 2.86 in<sup>4</sup>

Loads have not been modified for strength checks  
 Loads have been multiplied by 0.70 for deflection calculations

**Bridging Connectors - Design Method =AISI S100**

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	Sheathed, Sheathed	Full, 204.0"	N/A	-

**Web Crippling**

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	229.5	--Shear Connection w/ clip--				NO
R1	229.5	--Stud/Track Design, Ref Connectors--				NO

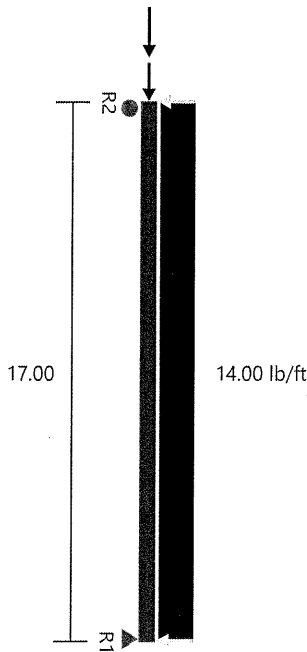
**Gravity Load**

Type	Load (lb)
Uniform	10.00plf
P1y	844lb @ 17ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	1014.0(c)	3222.2(c)	31%	KΦ=0.00 lb-in/in
	Max. Shear, lbs	229.5	1947.4	12%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	975.4	2158.3	45%	Ma-dist (control), KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	975.4	2527.1	39%	
	Shear/Moment	0.39	1.00	39%	Shear 0.0, Moment 975.4
	Axial/Moment	0.78	1.00	78%	Axial 931.6(c), Moment 974.5
	Deflection Span, in	0.421	--meets L/485--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	229.5	0.0	SCB45.5(3) & (2) #12-24 SST X or XL to A36 Steel	23.18 %	20.58 %
R1	229.5	1014.0	600T125-43 (33) & (3) .157" SST PDPA/PDPAT-62KP to steel (3/16" to 1/2" thickness)	24.67 %	26.70 %

\* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



**Section :** 600S162-54 (50 ksi) @ 12" o.c. Single C Stud (punched)  
**Maxo =** 2527.1 ft-lb      **Va =** 2822.9 lb      **I =** 2.86 in<sup>4</sup>

Loads have not been modified for strength checks  
 Loads have been multiplied by 0.70 for deflection calculations

**Bridging Connectors - Design Method =AISI S100**

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	Sheathed, Sheathed	Full, 204.0"	N/A	-

**Web Crippling**

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	119.0	--Shear Connection w/ clip--				NO
R1	119.0	--Stud/Track Design, Ref Connectors--				NO

**Gravity Load**

Type	Load (lb)
Uniform	10.00plf
P1y	1883lb @ 17ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	2053.0(c)	3222.2(c)	64%	KΦ=0.00 lb-in/in
	Max. Shear, lbs	119.0	1947.4	6%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	505.8	2158.3	23%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	505.8	2527.1	20%	
	Shear/Moment	0.20	1.00	20%	Shear 0.0, Moment 505.8
	Axial/Moment	0.90	1.00	90%	Axial 1972.3(c), Moment 504.5
	Deflection Span, in	0.218	--meets L/935--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	119.0	0.0	SCB45.5(3) & (2) #12-24 SST X or XL to A36 Steel	12.02 %	10.67 %
R1	119.0	2053.0	600T125-43 (33) & (3) .157" SST PDPA/PDPAT-62KP to steel (3/16" to 1/2" thickness)	12.79 %	13.85 %

\* Reference catalog for connector and anchor requirement notes as well as screw placement requirements

WALL STUDS ALONG (A), (E), (J)

$h = 18.4'$

$D = 30 \text{ psf} (4') (133') = 160\#$

$L = 100 \text{ psf} (4') (133') = 532\#$

$.75L = 399\#$

CLADDING LOAD = 10 psf

WIND = 20 psf

$0.6W = 0.6(20 \text{ psf}) = 12 \text{ psf}$       $.75(0.6W) = 9 \text{ psf}$

D+L

$P = 160 + 532 = 692\#$

5 psf LATERAL

D+0.6W

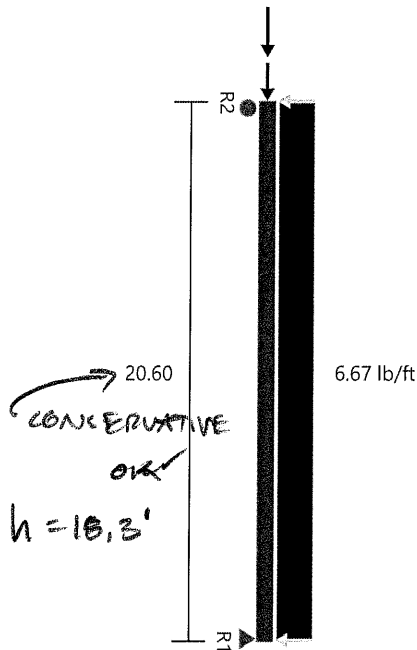
$P = 160\#$

$0.6W = 12 \text{ psf}$

D+.75(0.6W) + .75L

$P = 160 + 399 = 559\#$

$0.75(0.6W) = 9 \text{ psf}$



**Section :** 600S162-54 (50 ksi) @ 16" o.c. Single C Stud (punched)  
**Maxo =** 2527.1 ft-lb      **Va =** 2822.9 lb      **I =** 2.86 in<sup>4</sup>

Loads have not been modified for strength checks  
 Loads have been multiplied by 0.70 for deflection calculations

**Bridging Connectors - Design Method = AISI S100**

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	Sheathed, Sheathed	Full, 247.2"	N/A	-

**Web Crippling**

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	68.7	--Shear Connection w/ clip--				NO
R1	68.7	--Stud/Track Design, Ref Connectors--				NO

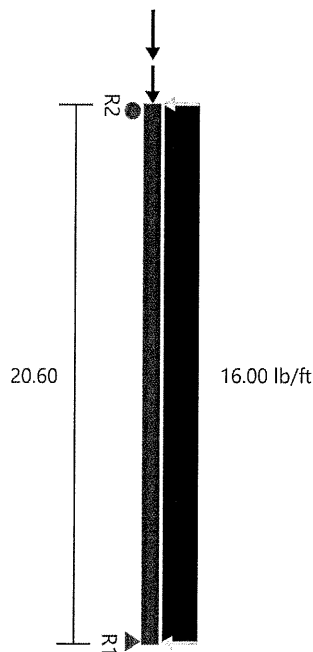
**Gravity Load**

Type	Load (lb)
Uniform	13.33plf
P1y	692lb @ 20.6ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	966.7(c)	3222.2(c)	30%	KΦ=0.00 lb-in/in
	Max. Shear, lbs	68.7	1947.4	4%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	353.6	2158.3	16%	Ma-dist (control), KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	353.6	2527.1	14%	
	Shear/Moment	0.14	1.00	14%	Shear 0.0, Moment 353.6
	Axial/Moment	0.44	1.00	44%	Axial 846.6(c), Moment 348.0
	Deflection Span, in	0.224	--meets L/1103--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	68.7	0.0	SCB45.5(3) & (2) #12-24 SST X or XL to A36 Steel	6.94 %	6.16 %
R1	68.7	966.7	600T125-43 (33) & (3) .157" SST PDPA/PDPAT-62KP to steel (3/16" to 1/2" thickness)	7.38 %	7.99 %

\* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



**Section :** 600S162-54 (50 ksi) @ 16" o.c. Single C Stud (punched)

**Maxo =** 2527.1 ft-lb      **Va =** 2822.9 lb      **I =** 2.86 in<sup>4</sup>

Loads have not been modified for strength checks  
 Loads have been multiplied by 0.70 for deflection calculations

**Bridging Connectors - Design Method =AISI S100**

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	Sheathed, Sheathed	Full, 247.2"	N/A	-

**Web Crippling**

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	164.8	--Shear Connection w/ clip--				NO
R1	164.8	--Stud/Track Design, Ref Connectors--				NO

**Gravity Load**

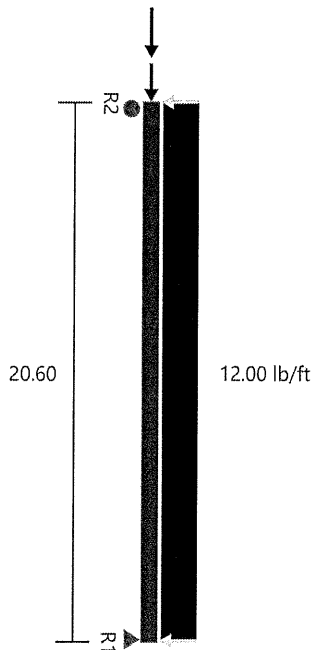
Type	Load (lb)
Uniform	13.33plf
P1y	160lb @ 20.6ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	434.7(c)	3222.2(c)	13%	KΦ=0.00 lb-in/in
	Max. Shear, lbs	164.8	1947.4	8%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	848.7	2158.3	39%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	848.7	2527.1	34%	
	Shear/Moment	0.34	1.00	34%	Shear 0.0, Moment 848.7
	Axial/Moment	0.49	1.00	49%	Axial 304.7(c), Moment 846.2
	Deflection Span, in	0.538	--meets L/460--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	164.8	0.0	SCB45.5(3) & (2) #12-24 SST X or XL to A36 Steel	16.65 %	14.78 %
R1	164.8	434.7	600T125-43 (33) & (3) .157" SST PDPA/PDPAT-62KP to steel (3/16" to 1/2" thickness)	17.71 %	19.18 %

\* Reference catalog for connector and anchor requirement notes as well as screw placement requirements





**Section :** 600S162-54 (50 ksi) @ 16" o.c. Single C Stud (punched)

**Maxo =** 2527.1 ft-lb      **Va =** 2822.9 lb      **I =** 2.86 in<sup>4</sup>

Loads have not been modified for strength checks  
 Loads have been multiplied by 0.70 for deflection calculations

**Bridging Connectors - Design Method =AISI S100**

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	Sheathed, Sheathed	Full, 247.2"	N/A	-

**Web Crippling**

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	123.6	--Shear Connection w/ clip--				NO
R1	123.6	--Stud/Track Design, Ref Connectors--				NO

**Gravity Load**

Type	Load (lb)
Uniform	13.33plf
P1y	559lb @ 20.6ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	833.7(c)	3222.2(c)	26%	KΦ=0.00 lb-in/in
	Max. Shear, lbs	123.6	1947.4	6%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	636.5	2158.3	29%	Ma-dist (control), KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	636.5	2527.1	25%	
	Shear/Moment	0.25	1.00	25%	Shear 0.0, Moment 636.5
	Axial/Moment	0.54	1.00	54%	Axial 706.8(c), Moment 632.9
	Deflection Span, in	0.403	--meets L/613--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	123.6	0.0	SCB45.5(3) & (2) #12-24 SST X or XL to A36 Steel	12.48 %	11.09 %
R1	123.6	833.7	600T125-43 (33) & (3) .157" SST PDPA/PDPAT-62KP to steel (3/16" to 1/2" thickness)	13.28 %	14.38 %

\* Reference catalog for connector and anchor requirement notes as well as screw placement requirements

VENDOR BUILDINGS

TYPICAL WALL STUD

$$h = 12'$$

$$D = 638\#$$

$$L = 2128\# \quad .75L = 1596\#$$

$$\text{CLADDING LOAD} = 10 \text{ PSF}$$

$$\text{WIND} = 20 \text{ PSF}$$

$$0.6W = 12 \text{ PSF} \quad .75(0.6W) = 9 \text{ PSF}$$

D+L

$$P = 2766\#$$

D+0.6W

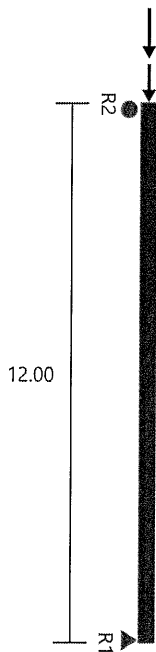
$$P = 638\#$$

$$0.6W = 12 \text{ PSF}$$

D+.75(0.6W) +.75L

$$P = 2234\#$$

$$0.75(0.6W) = 9 \text{ PSF}$$



**Section :** 600S162-43 (33 ksi) @ 16" o.c. Single C Stud (punched)  
**Maxo =** 1390.0 ft-lb      **Va =** 1415.7 lb      **I =** 2.32 in<sup>4</sup>

Loads have not been modified for strength checks  
 Loads have been multiplied by 0.70 for deflection calculations

**Bridging Connectors - Design Method =AISI S100**

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	Sheathed, Sheathed	Full, 144.0"	N/A	-

**Web Crippling**

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	0.0	--Shear Connection w/ clip--				NO
R1	0.0	--Stud/Track Design, Ref Connectors--				NO

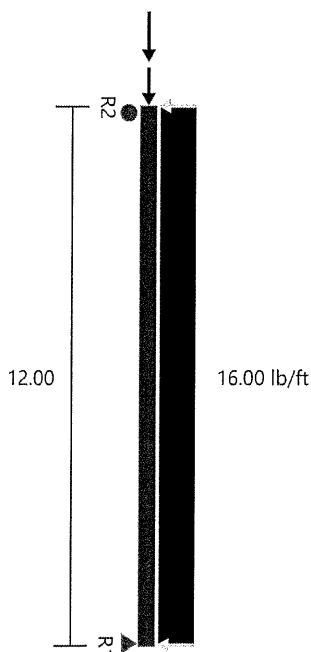
**Gravity Load**

Type	Load (lb)
Uniform	13.33plf
P1y	2766lb @ 12ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	2926.0(c)	3222.2(c)	91%	KΦ=0.00 lb-in/in
	Max. Shear, lbs	0.0	1240.3	0%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	0.0	1205.1	0%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	0.0	1390.0	0%	
	Shear/Moment	0.00	1.00	0%	Shear 0.0, Moment 0.0
	Axial/Moment	0.91	1.00	91%	Axial 2926.0(c), Moment 0.0
	Deflection Span, in	0.000	--meets L/0--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	0.0	0.0	SCB45.5(2) & (2) #12-24 SST X or XL to A36 Steel	0.00 %	0.00 %
R1	0.0	2926.0	600T125-33 (33) & (2) .157" SST PDPA/PDPAT-62KP to steel (3/16" to 1/2" thickness)	0.00 %	0.00 %

\* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



**Section :** 600S162-43 (33 ksi) @ 16" o.c. Single C Stud (punched)  
**Maxo =** 1390.0 ft-lb      **Va =** 1415.7 lb      **I =** 2.32 in<sup>4</sup>

Loads have not been modified for strength checks  
 Loads have been multiplied by 0.70 for deflection calculations

**Bridging Connectors - Design Method =AISI S100**

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	Sheathed, Sheathed	Full, 144.0"	N/A	-

**Web Crippling**

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	96.0	--Shear Connection w/ clip--				NO
R1	96.0	--Stud/Track Design, Ref Connectors--				NO

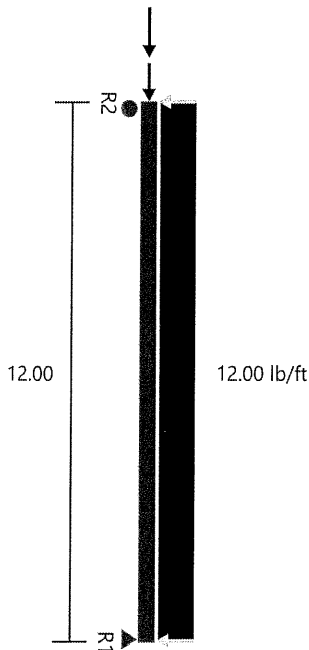
**Gravity Load**

Type	Load (lb)
Uniform	13.33plf
P1y	638lb @ 12ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	798.0(c)	3222.2(c)	25%	KΦ=0.00 lb-in/in
	Max. Shear, lbs	96.0	1240.3	8%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	288.0	1205.1	24%	Ma-dist (control), KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	288.0	1390.0	21%	
	Shear/Moment	0.21	1.00	21%	Shear 0.0, Moment 288.0
	Axial/Moment	0.47	1.00	47%	Axial 722.2(c), Moment 287.2
	Deflection Span, in	0.076	--meets L/1883--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	96.0	0.0	SCB45.5(2) & (2) #12-24 SST X or XL to A36 Steel	15.74 %	8.61 %
R1	96.0	798.0	600T125-33 (33) & (2) .157" SST PDPA/PDPAT-62KP to steel (3/16" to 1/2" thickness)	23.41 %	21.80 %

\* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



**Section :** 600S162-43 (33 ksi) @ 16" o.c. Single C Stud (punched)

**Maxo =** 1390.0 ft-lb      **Va =** 1415.7 lb      **I =** 2.32 in<sup>4</sup>

Loads have not been modified for strength checks  
 Loads have been multiplied by 0.70 for deflection calculations

**Bridging Connectors - Design Method =AISI S100**

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	Sheathed, Sheathed	Full, 144.0"	N/A	-

**Web Crippling**

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	72.0	--Shear Connection w/ clip--				NO
R1	72.0	--Stud/Track Design, Ref Connectors--				NO

**Gravity Load**

Type	Load (lb)
Uniform	13.33plf
P1y	2234lb @ 12ft

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	2394.0(c)	3222.2(c)	74%	KΦ=0.00 lb-in/in
	Max. Shear, lbs	72.0	1240.3	6%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	216.0	1205.1	18%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	216.0	1390.0	16%	
	Shear/Moment	0.16	1.00	16%	Shear 0.0, Moment 216.0
	Axial/Moment	0.92	1.00	92%	Axial 2319.0(c), Moment 215.2
	Deflection Span, in	0.057	--meets L/2510--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	72.0	0.0	SCB45.5(2) & (2) #12-24 SST X or XL to A36 Steel	11.80 %	6.46 %
R1	72.0	2394.0	600T125-33 (33) & (2) .157" SST PDPA/PDPAT-62KP to steel (3/16" to 1/2" thickness)	17.56 %	16.35 %

\* Reference catalog for connector and anchor requirement notes as well as screw placement requirements

## Foundation Ties

◦ Design Foundation Ties per ASCE 7-16 12.13.8.2

→ Foundation Ties, Each Direction

$$\begin{aligned}
 T_{ult} &= 0.1 S_{DS} (1.2 P_D + 1.6 P_L) \\
 &= 0.1 \cdot 1.017 \cdot (187 \text{ k}) \\
 &= 19 \text{ k}
 \end{aligned}$$

↑ c.g. LRFD Reaction ⇒ See Enercalc

Try (2) #4 Bars in Tension

$$\phi P_n = 0.9 \cdot 0.2 \text{ in}^2 \cdot 2 \text{ bars} \times 60 \text{ ksi} = 21.6 \text{ k} > T_{ult}$$

∴ (2) #4 bars OK TYP.  
min for tension

∴ Use 12" x 12" Concrete Tie Beams w/ (4) #5 : #3 ties @ 10" o.c. OK



Project: \_\_\_\_\_ Job No: \_\_\_\_\_

Subject: \_\_\_\_\_ Sheet \_\_\_\_\_ Name: \_\_\_\_\_

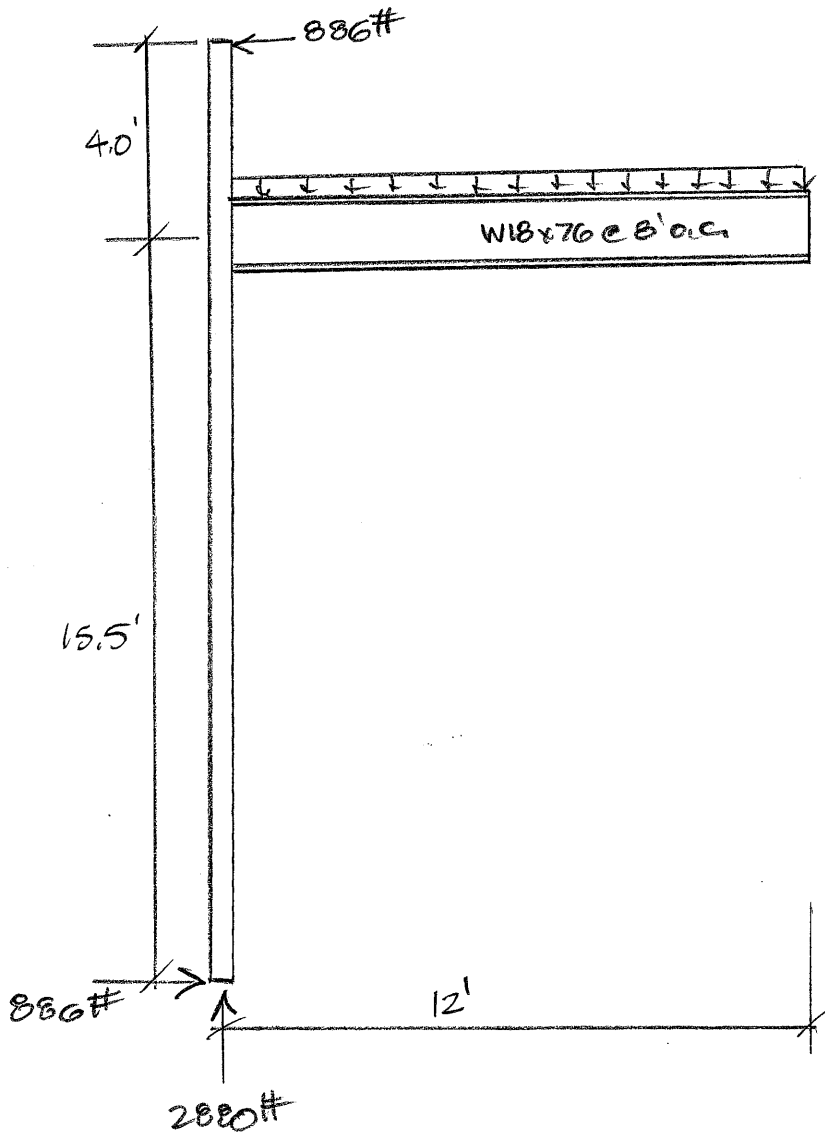
Originating Office:  Seattle  Tacoma  Portland Date: \_\_\_\_\_

CANOPY - BETWEEN (13) & (18.5)  
ALONG (J)



CANOPY - BTWN (13) - (18.5) ALONG (1)

D.L. = 10 PSF  
L.L. = 20 PSF



BEAM

$$M = \frac{30 \text{ PSF} (8')^2}{2}$$

$$= 17,280 \#'$$

W18x

$$S_{reqd} = \frac{17280 (12)}{.6 (50000)}$$

$$= 6.9 \text{ IN}^3$$

HSS

W18x76

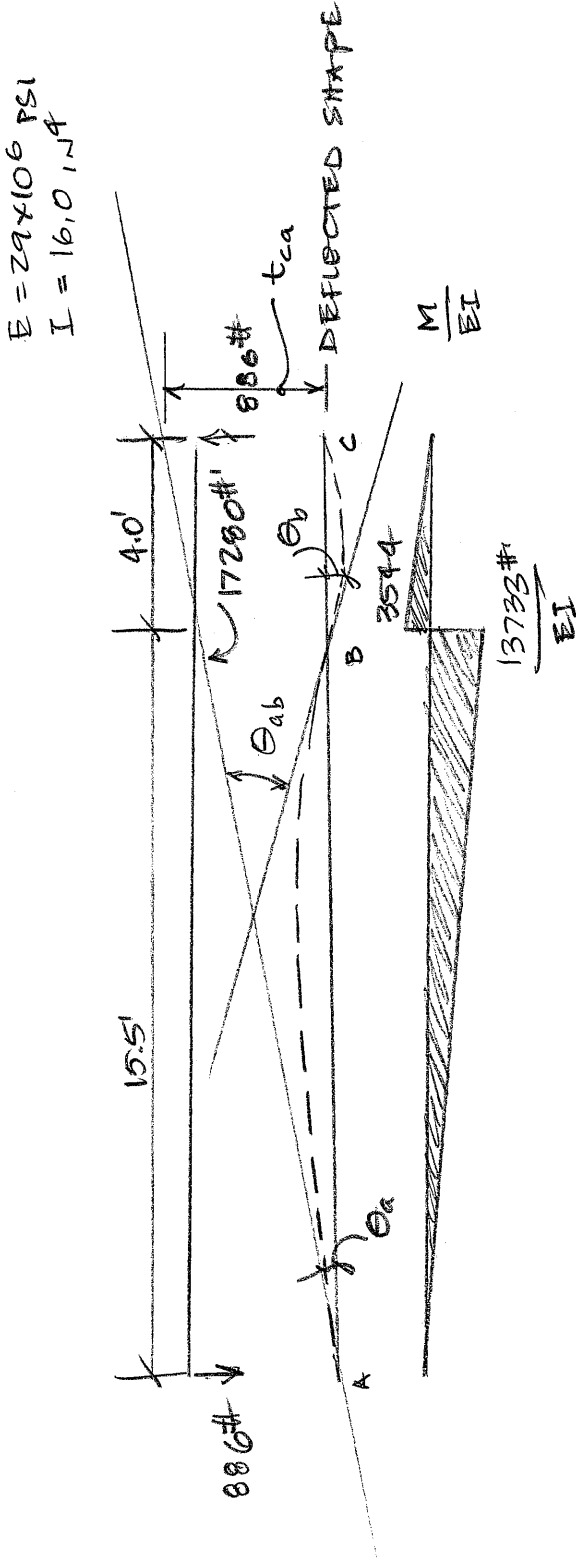
$$M = 886 \# (15.5')$$

$$= 13,733 \#'$$

$$S_{reqd} = \frac{13733 (12)}{.6 (46000)}$$

$$= 6.0 \text{ IN}^3$$

HSS5x5x1/4



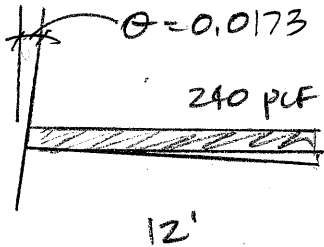
$$t_{ca} = \left[ \frac{13733(12)(15.5) \left( \frac{15.3}{3} + 4 \right)}{2EI} + \frac{3544(12)(4) \left( \frac{2}{3} \right)(4)}{2(EI)} \right] (144) = 3.68 \text{ in}$$

$$\theta_a = \frac{t_{ca}}{19.5(12/1)} = \frac{3.68}{19.5(12)} = 0.0157$$

$$\theta_{ab} = \frac{13733(15.5)}{2EI} (144) = 0.0330$$

$$\theta_b = 0.0157 - 0.0330 = -0.0173 \quad \text{SLOPE AT FACE OF HSS}$$

BEAM DEFLECTION



$$\begin{aligned} \Delta_{\text{END}} &= 0.0173(12)(12) + \frac{240(12)^4 1728}{8(29 \times 10^6) 1330} \\ &= 2.49 + 0.03 \\ &= 2.52'' = \frac{2L}{288} \end{aligned}$$

$$\Delta_{\text{DIL. ONLY}} = \frac{10}{30} 2.52'' = 0.84''$$

USE HSS 5x5x1/2 I = 26

$$\begin{aligned} \Delta_{\text{TOTAL}} &= 2.49 \frac{16}{26} + 0.03 \\ &= 1.53 + 0.03 \\ &= 1.56 \end{aligned}$$

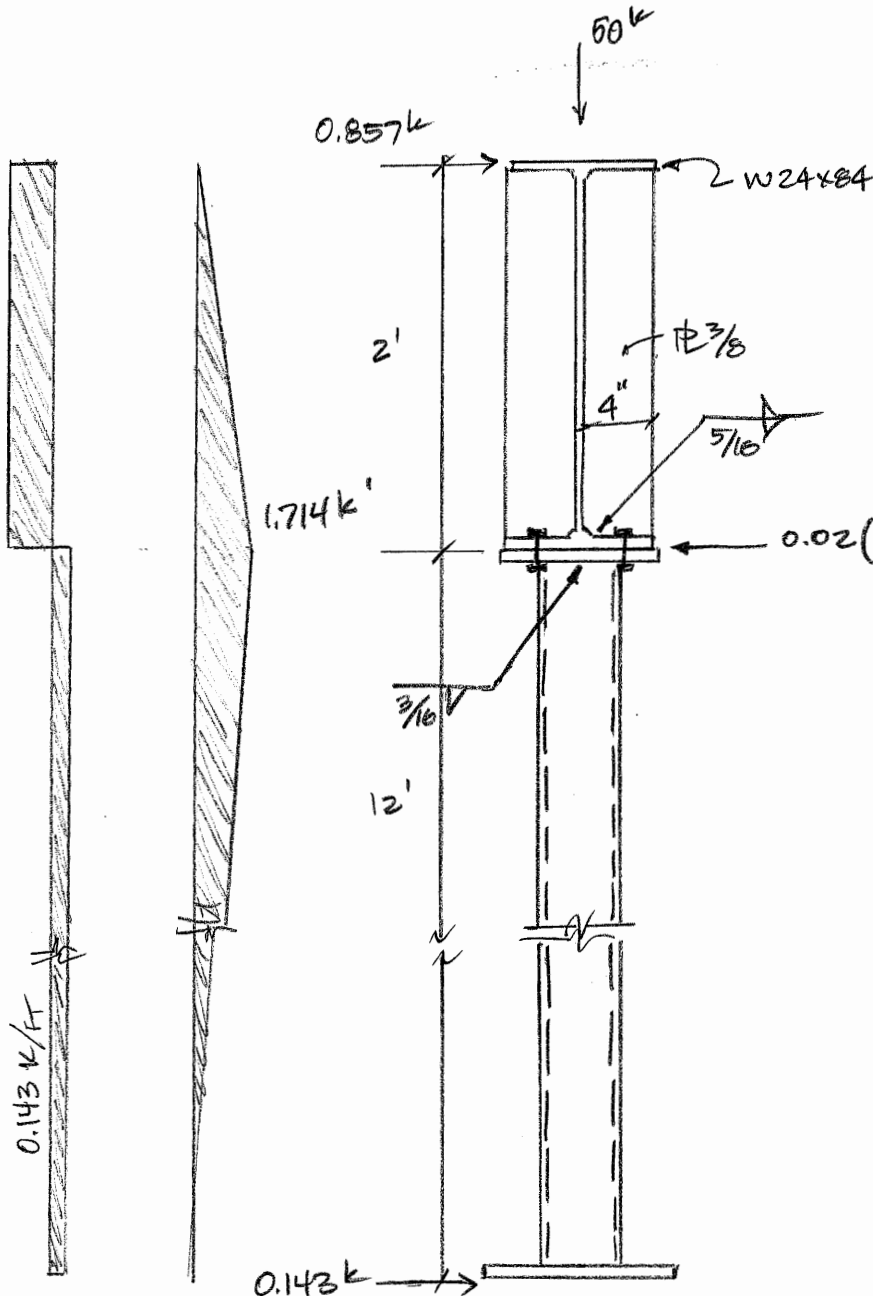
$$\Delta_{\text{DIL. ONLY}} = \frac{10}{30} 1.56'' = 0.51''$$

CONN TO COLUMN

$$S_{\text{reqd}} = \frac{17280(12)}{.6(36000)} = 9.6 \text{ in}^3 = \frac{t(12)^2}{6}$$

$$t_{\text{reqd}} = 0.40''$$

BEAM BRACE



$$M_{\text{STIFFENER PL}} = 1.714k'$$

$$= \frac{1.714k'}{2} = 0.86k'/\text{PLATE}$$

$$f = \frac{0.86k'(12\prime)}{(3.75)(4)^2/6} = 10.3 \text{ ksi}$$

$$\frac{1.714k'(12\prime)}{5.5\prime} = 3.7k$$

USE (2)  $\frac{3}{4}$ "  $\phi$  A307 BOLTS

$$M_{\text{PLATE}} = \frac{3.7k(2\prime)}{2} = 3.7k\prime\prime$$

$$f_b = \frac{3.7k\prime\prime}{2\prime(1\prime)^2/6} = 11.1 \text{ ksi } \checkmark$$

$$M_{\text{FLANGE}} = \frac{3.7k(1.35\prime)}{2} = 2.5k\prime\prime$$

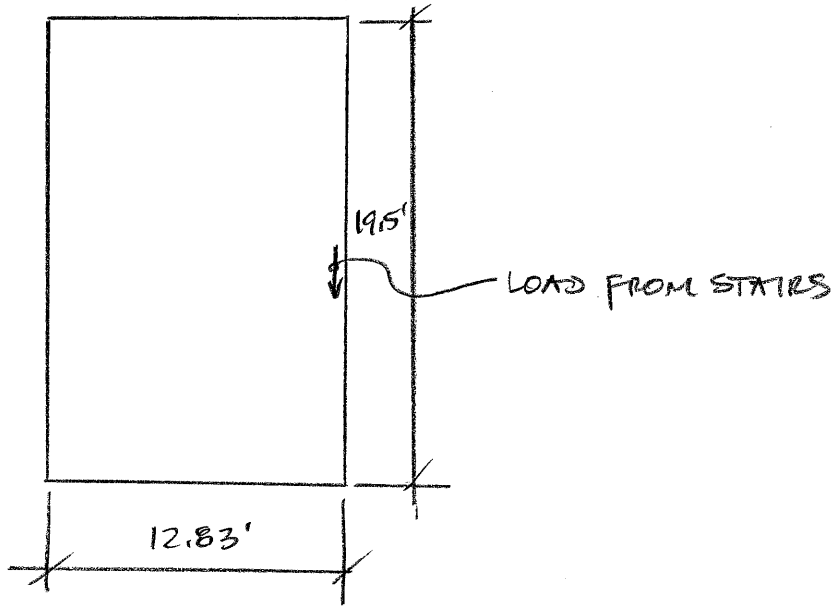
$$f_b = \frac{2.5k\prime\prime}{2(0.7\prime)^2/6} = 12.6 \text{ ksi } \checkmark$$



Project: \_\_\_\_\_ Job No: \_\_\_\_\_  
Subject: \_\_\_\_\_ Sheet \_\_\_\_\_ Name: \_\_\_\_\_  
Originating Office:  Seattle  Tacoma  Portland Date: \_\_\_\_\_

FEATURE WALL

FEATURE WALL



WIND

$$F = q_h G C_f A_s$$

$$q_h = 0.00256 K_z K_{zt} K_d K_e V^2$$

$$K_z = 0.62$$

$$K_{zt} = 1.0$$

$$K_d = 0.85$$

$$K_e = 1.0$$

$$V = 110 \text{ mph}$$

$$= 0.00256 (0.62) (1.0) (0.85) (1.0) (110)^2$$

$$= 16.3 \text{ psf}$$

$$G = 0.85$$

$C_f$  #

$$B = 12.83'$$

$$h = 19.5$$

$$S = 19.5$$

$$\frac{B}{S} = \frac{12.83}{19.5} = 0.66$$

$$\frac{S}{h} = 1.0$$

$$C_f = 1.5$$

$$A_s = 12.83' (19.5')$$

$$= 250 \text{ FT}^2$$

$$F = 16.3 \text{ psf} (0.85) (1.5) (250 \text{ FT}^2)$$

$$= 5196 \#$$



COLUMN 1

DEAD LOAD & LIVE LOAD

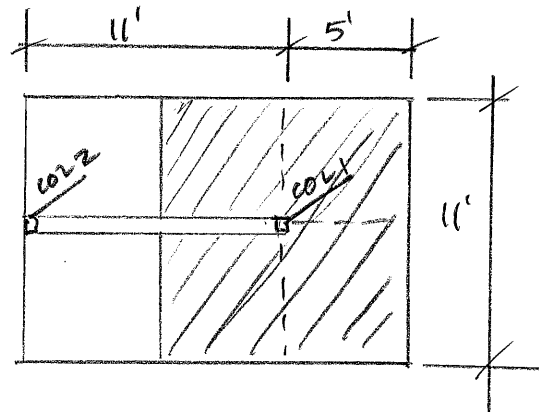
WALL:

- (2) LAYERS METAL STUDS  $2 \times 2 \text{ psf} = 4 \text{ psf}$
  - (2) LAYERS  $\frac{1}{2}$ " SHEET G  $2 \times 3 \text{ psf} = 6 \text{ psf}$
  - (2) LAYERS SIDING  $2 \times 3 \text{ psf} = 6 \text{ psf}$
- 16 psf

$$D = 16 \text{ psf} (250 \text{ FT}^2) = 4000\#$$

STAIRS -

LOAD APPLIED TO  
COLUMN

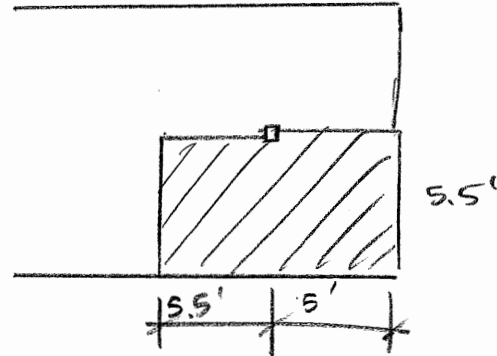


$$D = 50 \text{ psf} (11') (10.5') = 5775\#$$

$$W / M_x = 50 \text{ psf} (5') (11') (2.5') = 6875\#'$$

$$L = 100 \text{ psf} (11') (10.5') = 11,550\#$$

$$W / M_x = 100 \text{ psf} (5') (11') (2.5') = 13,750\#'$$



$$L = 100 \text{ psf} (5.5) (10.5) = 5775 \#$$

$$w/ M_x = 100 \text{ psf} (5') (5.5') (2.5') = 6875 \#'$$

$$M_y = 100 \text{ psf} (5.5') (10.5') (2.75') = 15881 \#'$$

SEISMIC

$$F_p = \frac{0.4 a_p S_{DS} W_p (1 + 2 \frac{z}{h})}{R_p / I_p}$$

$$a_p = 2.5$$

$$S_{DS} = 1.017$$

$$W_p = 4000 \# + 5775 \# = 9775 \#$$

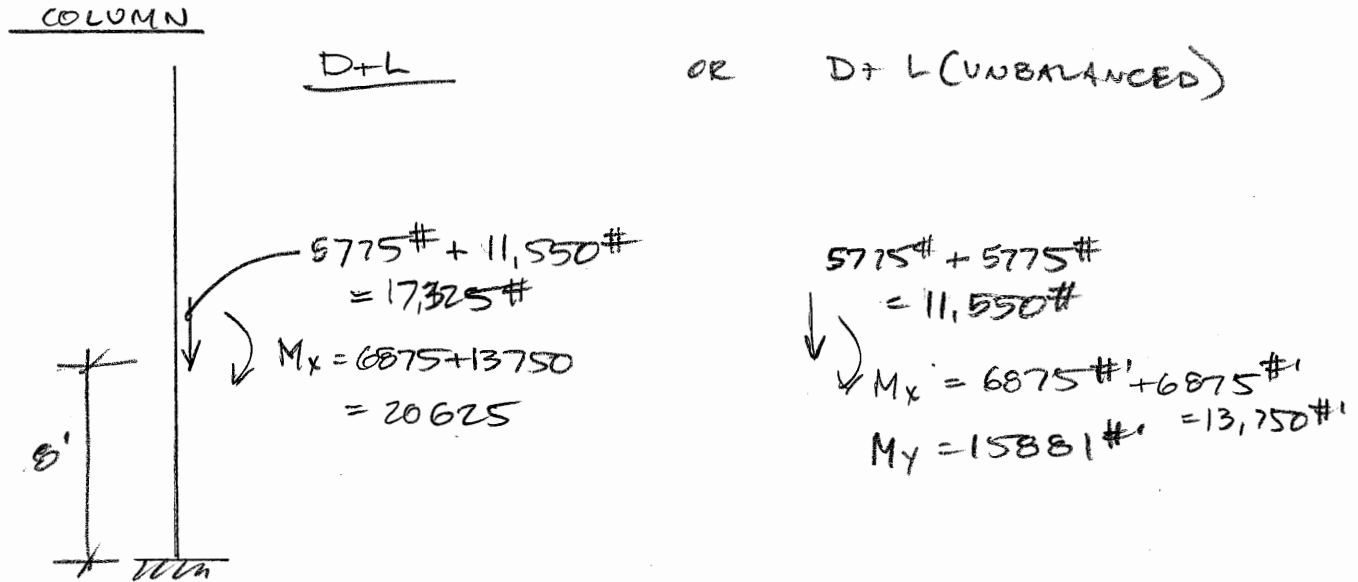
$$z = 0 \therefore z/h = 0$$

$$R_p = 2.5$$

$$I_p = 1.5 \quad \text{EGRESS STAIR}$$

$$= \frac{0.4 (2.5) (1.017) (9775 \#) (1 + 2(0))}{2.5 / 1.5}$$

$$= 5965 \#$$



TRY HSS 8x8x1/2 - 50 KSI

$$L_c = 2.10(8') = 16.8'$$

$$\frac{P_n}{\Omega_c} = \frac{291k}{1.67} = 174k$$

$$M_n = F_y Z$$

$$= 50 \text{ KSI}(37.5)$$

$$= 1875 \text{ k"}$$

$$= 156 \text{ k'}$$

$$\frac{17.1}{2(174)} + \frac{20.6}{(156/1.67)} \leq 1.0$$

$$0.05 + 0.22 \leq 1.0$$

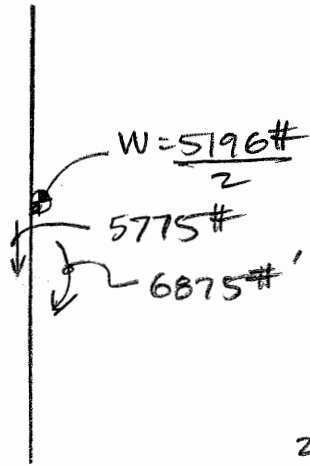
$$0.27 \leq 1.0 \quad \text{OK}$$

$$\frac{11.5}{2(174)} + \frac{13.8 + 15.9}{(156/1.67)} \leq 1.0$$

$$0.03 + 0.32 \leq 1.0$$

$$0.35 \leq 1.0 \quad \text{OK}$$

D + .6W



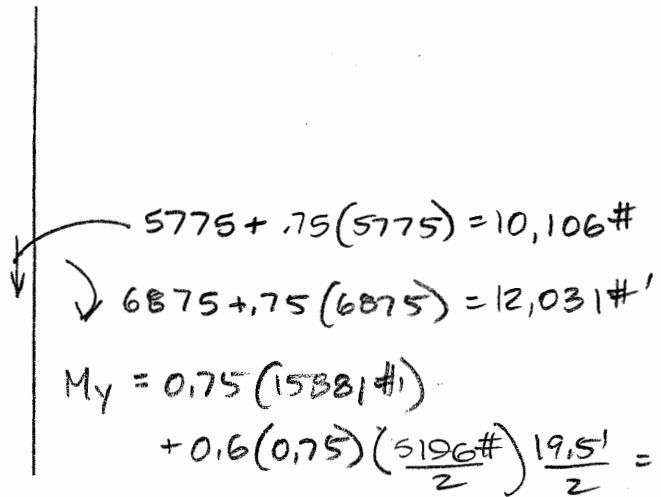
$W = \frac{5196\#}{2}$   
 $D = 5775\#$   
 $M_x = 6875\#'$   
 $M_y = 0.6 \left( \frac{5196\#}{2} \right) \frac{19.5'}{2} = 15198\#'$

$$\frac{5.8}{2(174)} + \frac{6.9 + 15.2}{156/1.67} \leq 1.0$$

$$0.02 + 0.24 \leq 1.0$$

$$0.26 \leq 1.0 \quad \underline{OK}$$

D + .6(.75)W + .75L (UNBALANCED)



$$\frac{10.1}{2(174)} + \frac{12.0 + 23.3}{156/1.67} \leq 1.0$$

$$0.03 + 0.38 \leq 1.0$$

$$0.41 \leq 1.0 \quad \underline{OK}$$

D+ 0.7E

5775#  
 ↓  
 6675#

$$0.7(5965\#) = 4176\# \quad M_y = 4176\#(81) = 33904\#'$$

$$\frac{5.8}{2(174)} + \frac{6.9 + 33.4}{156/11.67} \leq 1.0$$

$$0.02 + 0.43 \leq 1.0$$

$$0.45 \leq 1.0 \quad \text{OK}$$

HSS8x8x1/2 OK

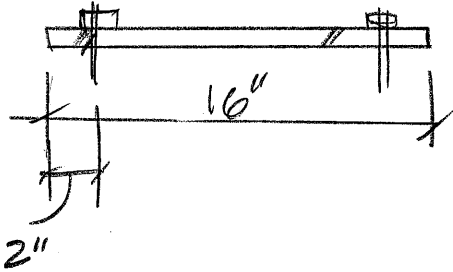
HSS10x10x3/8 BETTER - OK

BASE PLATE ANCHORAGE - LRFD  $(0.9 - 0.20S_{DS})D + 1.2E$

$$(0.9 - 0.20S_{DS})D = 0.70(5775\#) = 4043\#$$

$$\left[ 0.70(6875\#') + 5965\#(0') \right] 2.5 = 131,331\#'$$

$$\rightarrow 5965\#(2.5) = 14913\#$$



SEE CALC



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### 1. Project information

Customer company:  
Customer contact name:  
Customer e-mail:  
Comment:

Project description:  
Location:  
Fastening description:

### 2. Input Data & Anchor Parameters

#### General

Design method: ACI 318-19  
Units: Imperial units

#### Anchor Information:

Anchor type: Cast-in-place  
Material: F1554 Grade 36  
Diameter (inch): 1.000  
Effective Embedment depth,  $h_{ef}$  (inch): 15.000  
Anchor category: -  
Anchor ductility: Yes  
 $h_{min}$  (inch): 16.75  
 $C_{min}$  (inch): 6.00  
 $S_{min}$  (inch): 6.00

#### Base Material

Concrete: Normal-weight  
Concrete thickness,  $h$  (inch): 18.00  
State: Cracked  
Compressive strength,  $f'_c$  (psi): 4000  
 $\Psi_{e,v}$ : 1.0  
Reinforcement condition: Supplementary reinforcement present  
Supplemental edge reinforcement: Not applicable  
Reinforcement provided at corners: No  
Ignore concrete breakout in tension: No  
Ignore concrete breakout in shear: No  
Ignore 6do requirement: No  
Build-up grout pad: No

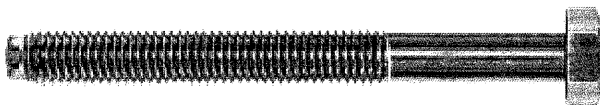
#### Base Plate

Length x Width x Thickness (inch): 24.00 x 24.00 x 2.00  
Yield stress: 36000 psi

Profile type/size: HSS10X10X3/8

#### Recommended Anchor

Anchor Name: Heavy Hex Bolt - 1"Ø Heavy Hex Bolt, F1554 Gr. 36





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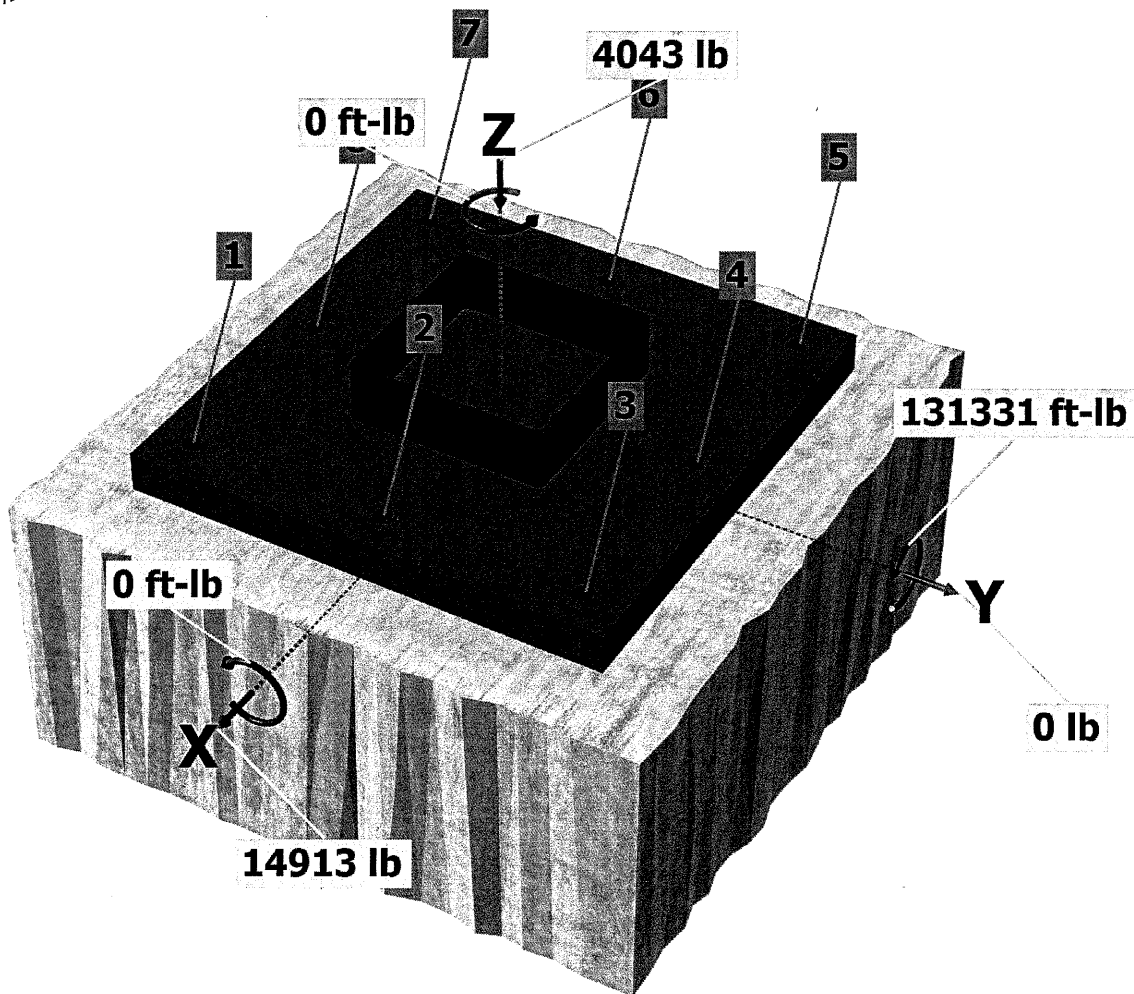
**Load and Geometry**

Load factor source: ACI 318 Section 5.3  
 Load combination: not set  
 Seismic design: Yes  
 Anchors subjected to sustained tension: Not applicable  
 Ductility section for tension: 17.10.5.3 (d) is satisfied  
 Ductility section for shear: 17.10.6.3 (c) is satisfied  
 $\Omega_0$  factor: not set  
 Apply entire shear load at front row: No  
 Anchors only resisting wind and/or seismic loads: Yes

Strength level loads:

$N_{ua}$  [lb]: -4043  
 $V_{uax}$  [lb]: 14913  
 $V_{uay}$  [lb]: 0  
 $M_{ux}$  [ft-lb]: 0  
 $M_{uy}$  [ft-lb]: 131331  
 $M_{uz}$  [ft-lb]: 0

<Figure 1>

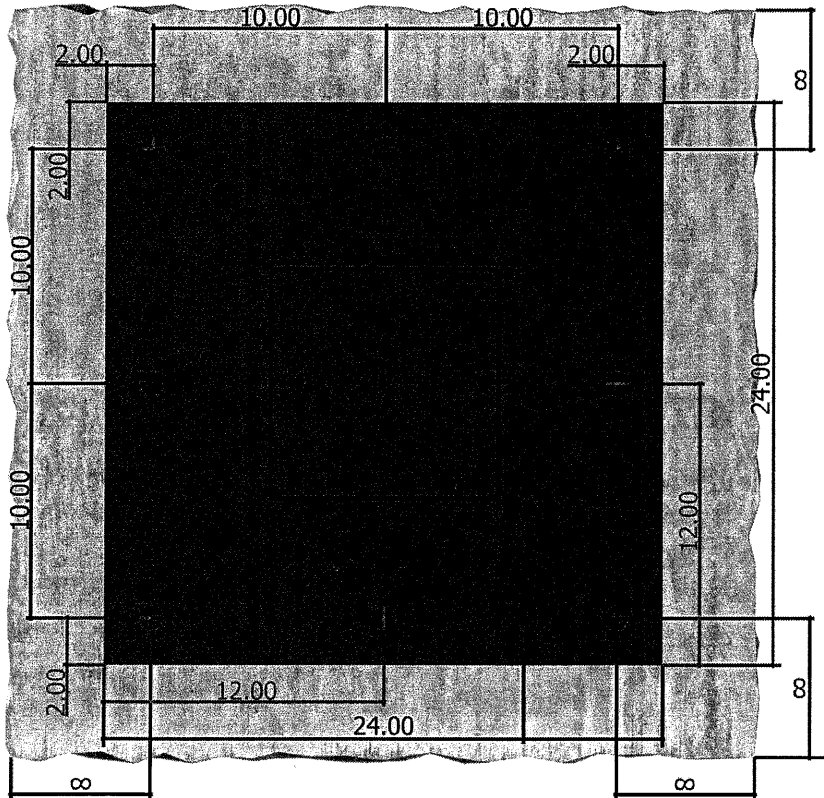




Anchor Designer™  
Software  
Version 3.2.2309.2

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<Figure 2>





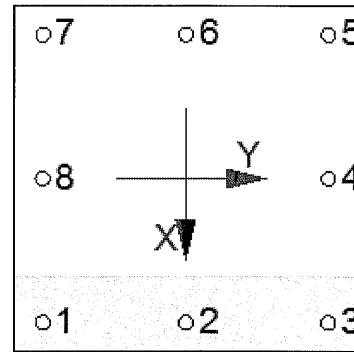
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### 3. Resulting Anchor Forces

Anchor	Tension load, N <sub>ua</sub> (lb)	Shear load x, V <sub>uax</sub> (lb)	Shear load y, V <sub>uay</sub> (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	0.0	1864.1	0.0	1864.1
2	0.0	1864.1	0.0	1864.1
3	0.0	1864.1	0.0	1864.1
4	8978.2	1864.1	0.0	1864.1
5	22212.8	1864.1	0.0	1864.1
6	22212.8	1864.1	0.0	1864.1
7	22212.8	1864.1	0.0	1864.1
8	8978.2	1864.1	0.0	1864.1
Sum	84594.8	14913.0	0.0	14913.0

Maximum concrete compression strain (%): 0.33  
 Maximum concrete compression stress (psi): 1416  
 Resultant tension force (lb): 84595  
 Resultant compression force (lb): 88638  
 Eccentricity of resultant tension forces in x-axis, e'<sub>Nx</sub> (inch): 0.00  
 Eccentricity of resultant tension forces in y-axis, e'<sub>Ny</sub> (inch): 1.88  
 Eccentricity of resultant shear forces in x-axis, e'<sub>Vx</sub> (inch): 0.00  
 Eccentricity of resultant shear forces in y-axis, e'<sub>Vy</sub> (inch): 0.00

<Figure 3>



### 4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N <sub>sa</sub> (lb)	φ	φN <sub>sa</sub> (lb)
35150	0.75	26363

### 5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$N_b = 16\lambda_a \sqrt{f_c} h_{ef}^{1.5}$  (Eq. 17.6.2.2.1)

λ <sub>a</sub>	f <sub>c</sub> (psi)	h <sub>ef</sub> (in)	N <sub>b</sub> (lb)
1.00	4000	15.000	92321

$0.75\phi N_{cbg} = 0.75\phi (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{cp,N} N_b$  (Sec. 17.5.1.2 & Eq. 17.6.2.1a)

A <sub>Nc</sub> (in <sup>2</sup> )	A <sub>Nco</sub> (in <sup>2</sup> )	c <sub>a,min</sub> (in)	Ψ <sub>ec,N</sub>	Ψ <sub>ed,N</sub>	Ψ <sub>cp,N</sub>	N <sub>b</sub> (lb)	φ	0.75φN <sub>cbg</sub> (lb)
3575.00	2025.00	-	0.923	1.000	1.000	92321	0.75	84620

### 6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$0.75\phi N_{pn} = 0.75\phi \Psi_{c,P} N_p = 0.75\phi \Psi_{c,P} 8A_{brg} f_c$  (Sec. 17.5.1.2, Eq. 17.6.3.1 & 17.6.3.2.2a)

Ψ <sub>c,P</sub>	A <sub>brg</sub> (in <sup>2</sup> )	f <sub>c</sub> (psi)	φ	0.75φN <sub>pn</sub> (lb)
1.0	1.50	4000	0.70	25217



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**8. Steel Strength of Anchor in Shear (Sec. 17.7.1)**

$V_{sa}$ (lb)	$\phi_{grout}$	$\phi$	$\phi_{grout}\phi V_{sa}$ (lb)
21090	1.0	0.65	13709

**10. Concrete Pryout Strength of Anchor in Shear (Sec. 17.7.3)**

$\phi V_{cp} = \phi K_{cp} N_{cbg} = \phi K_{cp} (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b$  (Sec. 17.5.1.2 & Eq. 17.7.3.1b)

$K_{cp}$	$A_{Nc}$ (in <sup>2</sup> )	$A_{Nco}$ (in <sup>2</sup> )	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	$N_b$ (lb)	$\phi$	$\phi V_{cp}$ (lb)
2.0	4225.00	2025.00	1.000	1.000	1.000	1.000	92321	0.70	269669

**11. Results**

**Interaction of Tensile and Shear Forces (Sec. 17.8)**

Tension	Factored Load, $N_{ua}$ (lb)	Design Strength, $\phi N_n$ (lb)	Ratio	Status	
Steel	22213	26363	0.84	Pass	
<b>Concrete breakout</b>	<b>84595</b>	<b>84620</b>	<b>1.00</b>	<b>Pass (Governs)</b>	
Pullout	22213	25217	0.88	Pass	
Shear	Factored Load, $V_{ua}$ (lb)	Design Strength, $\phi V_n$ (lb)	Ratio	Status	
<b>Steel</b>	<b>1864</b>	<b>13709</b>	<b>0.14</b>	<b>Pass (Governs)</b>	
Pryout	14913	269669	0.06	Pass	
Interaction check	$N_{ua}/\phi N_n$	$V_{ua}/\phi V_n$	Combined Ratio	Permissible	Status
Sec. 17.8.1	1.00	0.00	100.0%	1.0	Pass

**1"Ø Heavy Hex Bolt, F1554 Gr. 36 with hef = 15.000 inch meets the selected design criteria.**



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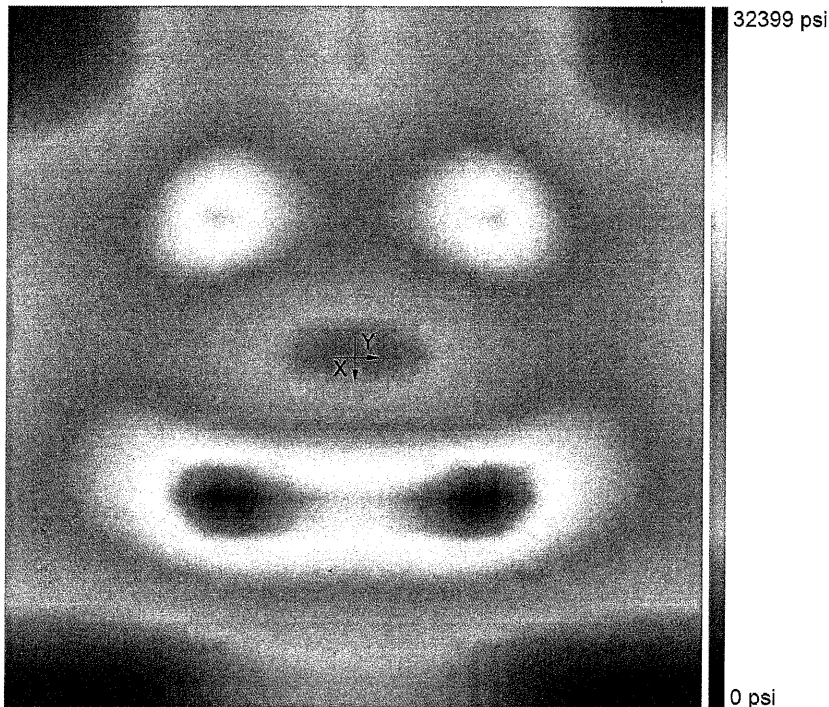
### Base Plate Thickness

Required base plate thickness: 2.005 inch

Warning: input base plate thickness does not meet required base plate thickness.

Steel	<b>36000 psi</b>
Maximum stress	<b>32399 psi</b>
Calculated plate thickness	<b>2.005 inch</b>

### Stress distribution



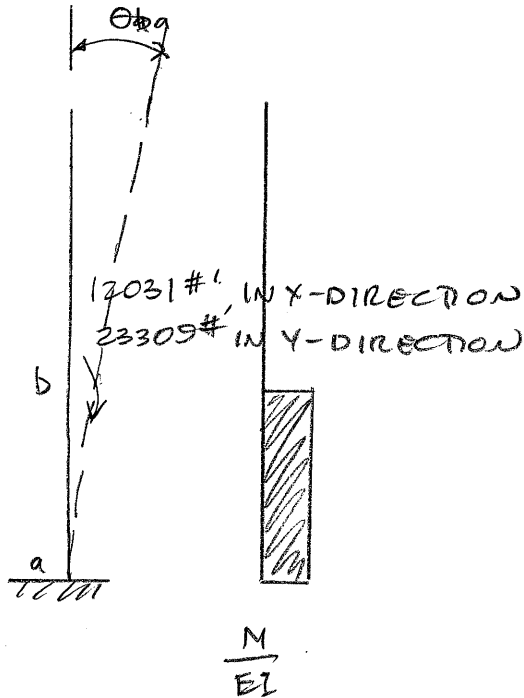
For ACI and CSA design methods, maximum base plate stress is limited to 0.9 times yield stress.  
For ETAG design method, maximum base plate stress is limited to yield stress divide by 1.5.  
Plate stress is derived using Von Mises theory.

### 12. Warnings

- Per designer input, ductility requirements for tension have been determined to be satisfied – designer to verify.
- Per designer input, ductility requirements for shear have been determined to be satisfied – designer to verify.
- Designer must exercise own judgement to determine if this design is suitable.

COLUMN ROTATION UNDER UNBALANCED U.L.

HSS10x10x3/8  
 $I = 202$



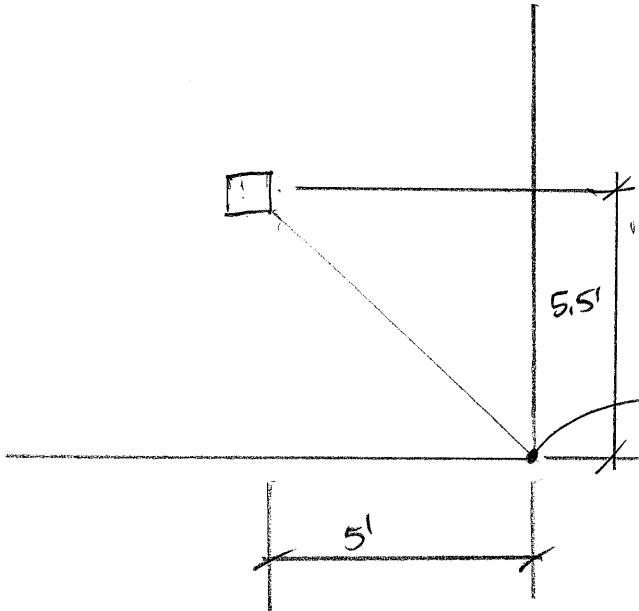
$$\theta_{Ba} = \text{AREA UNDER } \frac{M}{EI} \text{ DIAGRAM}$$

$$= \frac{23309 \#1 (12''/1') (8') (12''/1')}{29 \times 10^6 (202)}$$

$$= 0.0046 \quad \text{IN Y-DIRECTION}$$

$$= 0.0046 \left( \frac{12031}{23309} \right) = 0.0024 \text{ IN X-DIRECTION}$$

ESTIMATED DEFLECTION AT CORNER OF STAIRS DUE TO BENDING OF COLUMN



$$\Delta = 0.0046(5.5') (12''/1') + 0.0024(5') (12''/1') = 0.45''$$

$$L = \sqrt{5^2 + 5.5^2} = 7.43'$$

$$\Delta = \frac{2L}{x} = 0.45''$$

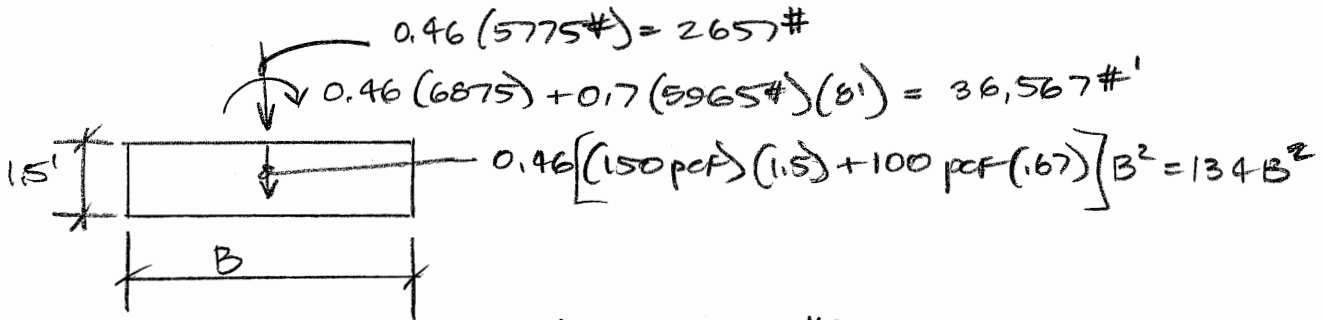
$$= \frac{2(7.43') (12''/1')}{x} = 0.45$$

$$\therefore \frac{2L}{396} \text{ OK } \checkmark$$



FOOTING

$$(0.6 - 0.14 S_{DS}) D + 0.7 E$$



$$M_{OT} = 36567\#'$$

REDUCE 25%<sub>20</sub>

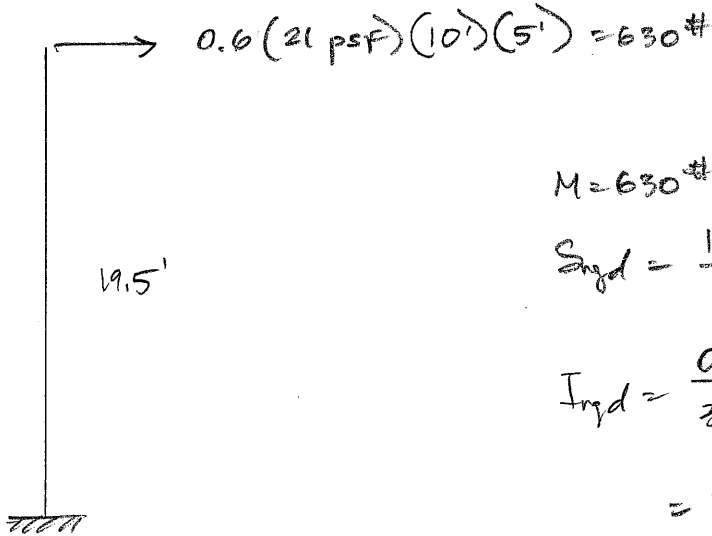
$$M_R = 2657 \frac{B}{2} + 134 B^2 \frac{B}{2}$$

$$M_{OT} = 24,378\#'$$

$$= 1329 B + 67 B^3$$

$$B_{reqd} = 7'$$

COLUMN C2



$$M = 630 \# (19.5') = 12285 \#'$$

$$S_{reqd} = \frac{12285 (12)}{.6 (50000)} = 4.9 \text{ in}^3$$

$$I_{reqd} = \frac{0.7 (630 \#) (19.5')^3 1728}{3 (29 \times 10^6) 2 \frac{(19.5) (12)}{240}} = 33 \text{ in}^4$$

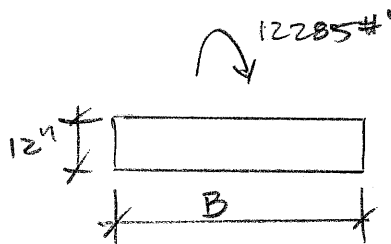
HSS 6 x 6 x 3/8  
 HSS 10 x 10 x 1/4

BASE PLATE - LRFD W

$$V_u = 21 \text{ psf} (10') (5') = 1050 \#$$

$$M_u = 1050 \# (19.5') = 20,475 \#'$$

FOOTING



$$M_e = 0.6 (150 (1) + 100 (.67)) \frac{B^3}{2} = 65 B^3$$

$$B_{reqd} = 5.7'$$

USE 6.0 x 6.0 FTG



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### 1. Project information

Customer company:  
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Customer e-mail:  
Comment:

Project description:  
Location:  
Fastening description:

### 2. Input Data & Anchor Parameters

#### General

Design method: ACI 318-19  
Units: Imperial units

#### Anchor Information:

Anchor type: Cast-in-place  
Material: F1554 Grade 36  
Diameter (inch): 1.000  
Effective Embedment depth,  $h_{ef}$  (inch): 9.000  
Anchor category: -  
Anchor ductility: Yes  
 $h_{min}$  (inch): 10.75  
 $C_{min}$  (inch): 6.00  
 $S_{min}$  (inch): 6.00

#### Base Material

Concrete: Normal-weight  
Concrete thickness,  $h$  (inch): 12.00  
State: Uncracked  
Compressive strength,  $f'_c$  (psi): 4000  
 $\Psi_{c,v}$ : 1.4  
Reinforcement condition: Supplementary reinforcement not present  
Supplemental edge reinforcement: No  
Reinforcement provided at corners: No  
Ignore concrete breakout in tension: No  
Ignore concrete breakout in shear: No  
Ignore 6do requirement: No  
Build-up grout pad: No

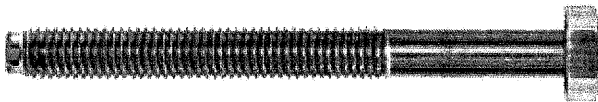
#### Base Plate

Length x Width x Thickness (inch): 18.00 x 18.00 x 0.75  
Yield stress: 36000 psi

Profile type/size: HSS10X10X1/4

#### Recommended Anchor

Anchor Name: Heavy Hex Bolt - 1"Ø Heavy Hex Bolt, F1554 Gr. 36





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**Load and Geometry**

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: Yes

Anchors subjected to sustained tension: Not applicable

Ductility section for tension: 17.10.5.2 not applicable

Ductility section for shear: 17.10.6.2 not applicable

$\Omega_0$  factor: not set

Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: Yes

**Strength level loads:**

$N_{ua}$  [lb]: 0

$V_{uax}$  [lb]: 1050

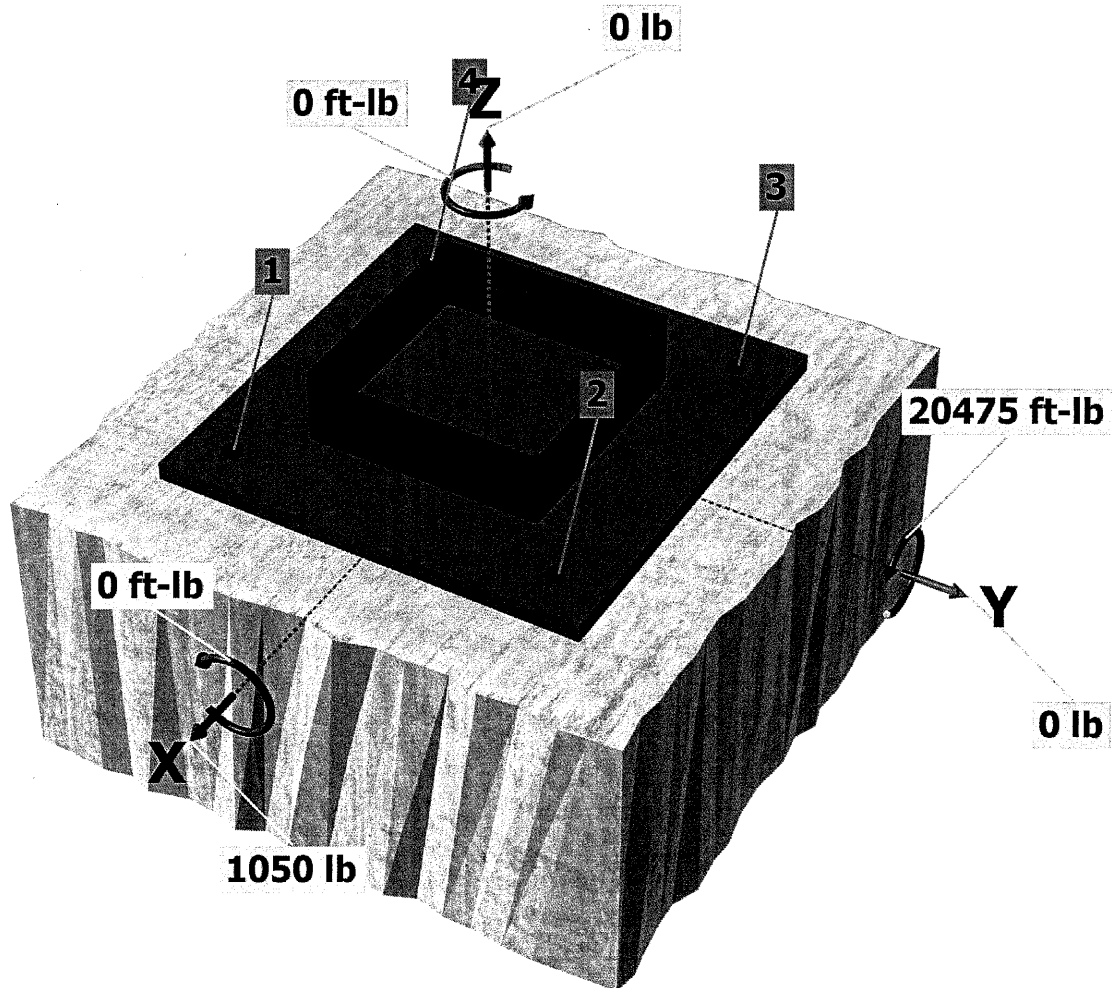
$V_{uay}$  [lb]: 0

$M_{ux}$  [ft-lb]: 0

$M_{uy}$  [ft-lb]: 20475

$M_{uz}$  [ft-lb]: 0

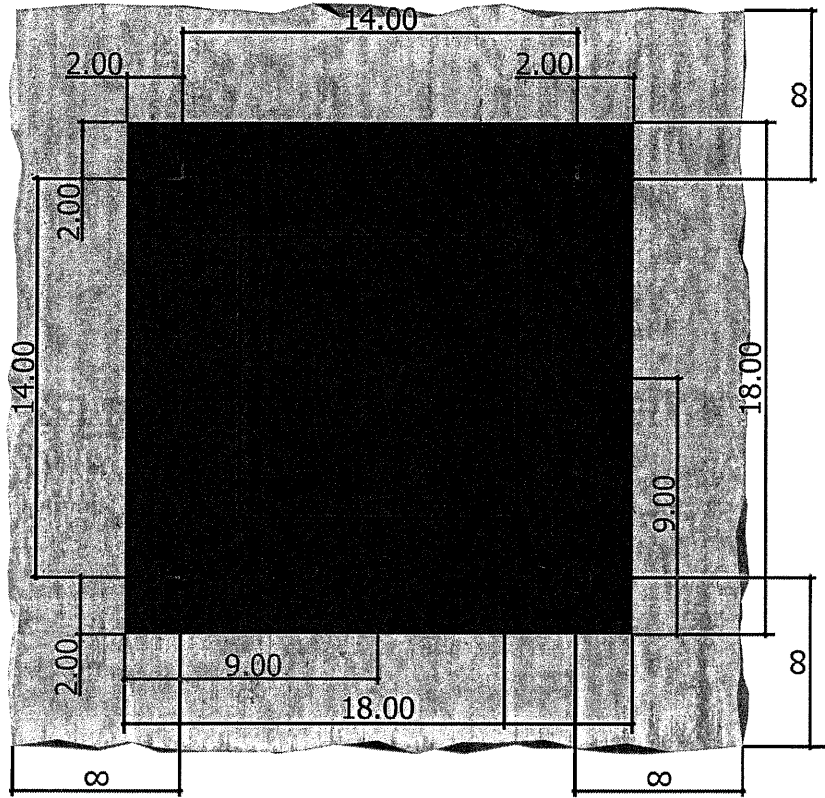
<Figure 1>





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<Figure 2>





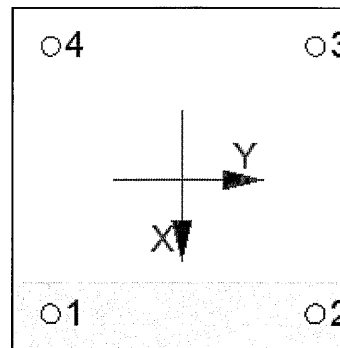
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### 3. Resulting Anchor Forces

Anchor	Tension load, N <sub>ua</sub> (lb)	Shear load x, V <sub>uax</sub> (lb)	Shear load y, V <sub>uay</sub> (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	0.0	262.5	0.0	262.5
2	0.0	262.5	0.0	262.5
3	8311.0	262.5	0.0	262.5
4	8311.0	262.5	0.0	262.5
Sum	16622.1	1050.0	0.0	1050.0

Maximum concrete compression strain (‰): 0.12  
 Maximum concrete compression stress (psi): 505  
 Resultant tension force (lb): 16622  
 Resultant compression force (lb): 16622  
 Eccentricity of resultant tension forces in x-axis, e'<sub>Nx</sub> (inch): 0.00  
 Eccentricity of resultant tension forces in y-axis, e'<sub>Ny</sub> (inch): 0.00  
 Eccentricity of resultant shear forces in x-axis, e'<sub>Vx</sub> (inch): 0.00  
 Eccentricity of resultant shear forces in y-axis, e'<sub>Vy</sub> (inch): 0.00

<Figure 3>



### 4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N <sub>sa</sub> (lb)	φ	φN <sub>sa</sub> (lb)
35150	0.75	26363

### 5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$$N_b = k_c \lambda_a \sqrt{f_c} h_{ef}^{1.5} \text{ (Eq. 17.6.2.2.1)}$$

k <sub>c</sub>	λ <sub>a</sub>	f <sub>c</sub> (psi)	h <sub>ef</sub> (in)	N <sub>b</sub> (lb)
24.0	1.00	4000	9.000	40983

$$0.75 \phi N_{cbg} = 0.75 \phi (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.5.1.2 \& Eq. 17.6.2.1a)}$$

A <sub>Nc</sub> (in <sup>2</sup> )	A <sub>Nco</sub> (in <sup>2</sup> )	C <sub>a,min</sub> (in)	Ψ <sub>ec,N</sub>	Ψ <sub>ed,N</sub>	Ψ <sub>c,N</sub>	Ψ <sub>cp,N</sub>	N <sub>b</sub> (lb)	φ	0.75 φN <sub>cbg</sub> (lb)
1107.00	729.00	-	1.000	1.000	1.25	1.000	40983	0.70	40841

### 6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$$0.75 \phi N_{pn} = 0.75 \phi \Psi_{c,P} N_p = 0.75 \phi \Psi_{c,P} 8 A_{brg} f_c \text{ (Sec. 17.5.1.2, Eq. 17.6.3.1 \& 17.6.3.2.2a)}$$

Ψ <sub>c,P</sub>	A <sub>brg</sub> (in <sup>2</sup> )	f <sub>c</sub> (psi)	φ	0.75 φN <sub>pn</sub> (lb)
1.4	1.50	4000	0.70	35304



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**8. Steel Strength of Anchor in Shear (Sec. 17.7.1)**

$V_{sa}$ (lb)	$\phi_{grou}$	$\phi$	$\phi_{grou}\phi V_{sa}$ (lb)
21090	1.0	0.65	13709

**10. Concrete Pryout Strength of Anchor in Shear (Sec. 17.7.3)**

$\phi V_{cp} = \phi k_{cp} N_{cbg} = \phi k_{cp} (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b$  (Sec. 17.5.1.2 & Eq. 17.7.3.1b)

$k_{cp}$	$A_{Nc}$ (in <sup>2</sup> )	$A_{Nco}$ (in <sup>2</sup> )	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	$N_b$ (lb)	$\phi$	$\phi V_{cp}$ (lb)
2.0	1681.00	729.00	1.000	1.000	1.250	1.000	40983	0.70	165380

**11. Results**

**Interaction of Tensile and Shear Forces (Sec. 17.8)**

Tension	Factored Load, $N_{ua}$ (lb)	Design Strength, $\phi N_n$ (lb)	Ratio	Status
Steel	8311	26363	0.32	Pass
<b>Concrete breakout</b>	<b>16622</b>	<b>40841</b>	<b>0.41</b>	<b>Pass (Governs)</b>
Pullout	8311	35304	0.24	Pass

Shear	Factored Load, $V_{ua}$ (lb)	Design Strength, $\phi V_n$ (lb)	Ratio	Status
<b>Steel</b>	<b>263</b>	<b>13709</b>	<b>0.02</b>	<b>Pass (Governs)</b>
Pryout	1050	165380	0.01	Pass

Interaction check	$N_{ua}/\phi N_n$	$V_{ua}/\phi V_n$	Combined Ratio	Permissible	Status
Sec. 17.8.1	0.41	0.00	40.7%	1.0	Pass

**1"Ø Heavy Hex Bolt, F1554 Gr. 36 with hef = 9.000 inch meets the selected design criteria.**

**12. Warnings**

- Per designer input, the tensile component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor tensile force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.5.2 for tension need not be satisfied – designer to verify.
- Per designer input, the shear component of the strength-level earthquake force applied to anchors does not exceed 20 percent of the total factored anchor shear force associated with the same load combination. Therefore the ductility requirements of ACI 318 17.10.6.2 for shear need not be satisfied – designer to verify.
- Designer must exercise own judgement to determine if this design is suitable.

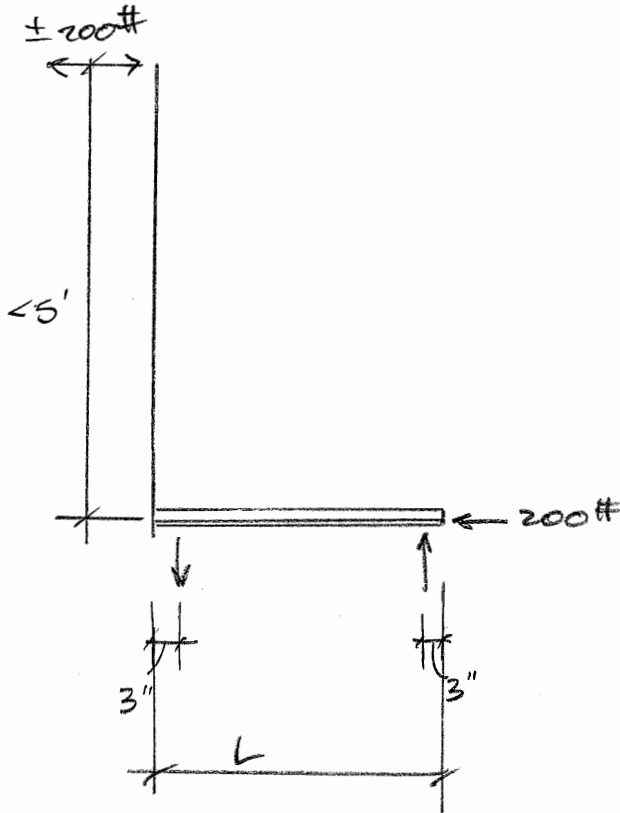




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Subject: \_\_\_\_\_ Sheet \_\_\_\_\_ Name: \_\_\_\_\_  
Originating Office:  Seattle  Tacoma  Portland Date: \_\_\_\_\_

GUARDRAIL SUPPORT

GUARDRAIL



$$M = 200\#(5') = 1000\#'$$

$$S_{reqd} = \frac{1000\#'(12\frac{1}{2}')}{.6(36000)} = 0.56\text{ IN}^3$$

L3x3x1/4

$$= \frac{1000\#'(12\frac{1}{2}')}{.6(50000)} = 0.40\text{ IN}^3$$

WT3x6

w/ (2) #10 SCREWS EA LOCATION

$$T_{allow} = 84\#(2) = 168\#$$

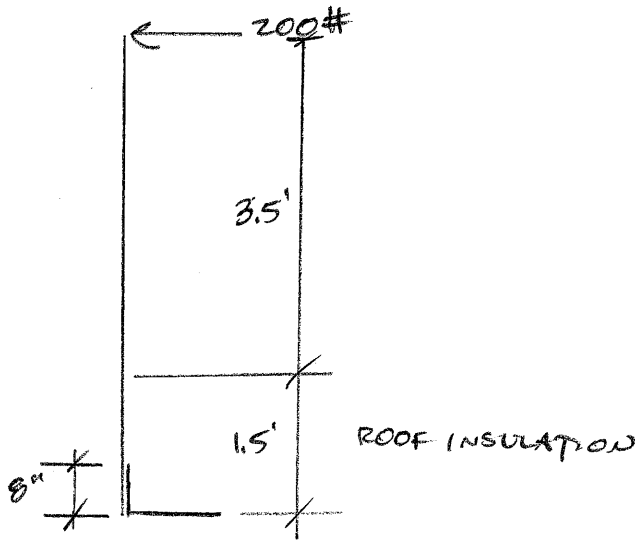
$$168 = \frac{1000\#'(12\frac{1}{2}')}{(L-3)}$$

$$L_{reqd} = 74'$$

w/ (4) #10 SCREWS

$$L_{reqd} = 39''$$

GUARDRAIL



$$M = 200\# (5') = 1000\#\prime$$

$$S_{reqd} = \frac{1000\#\prime (12\prime/1)}{0.6 (36000 \text{ psi})}$$

$$= 0.56 \text{ IN}^3$$

SAY 2\*H EFFECTIVE

$$\therefore 2 \times 8\prime = 16\prime \text{ EFFECTIVE}$$

$$S = \frac{16 t^2}{6} = 0.56$$

$$t_{reqd} = 0.46\prime$$

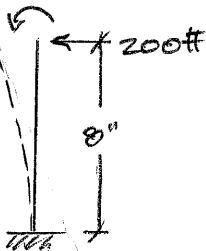
USE # 1/2

CHECK STIFFNESS OF 1/2" PLATE

$$200(4.33)$$

$$= 866\#\prime$$

$$= 10,392\#\prime\prime$$



$$\frac{10,392\#\prime\prime}{EI}$$

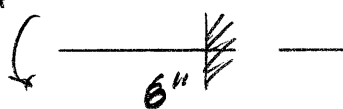
$$\frac{12000\#\prime\prime}{EI}$$

$$EI = 29 \times 10^6 \left( \frac{16 (0.5)^3}{12} \right) = 4.83 \times 10^6$$

$$\phi = \frac{10392(B)}{EI} + \frac{\frac{1}{2}(1608)(B)}{EI} = 0.0185$$

$$\Delta = \frac{10392(B)(4) + \frac{1}{2}(1608)(B)(5.33)}{EI} = 0.076\prime\prime$$

$$12000\#\prime\prime$$



$$\phi = \frac{12000(B)}{EI} = 0.0149$$

$$\text{TOTAL SLOPE} = 0.0185 + 0.0149$$

$$= 0.0334$$

DEFLECTION AT TOP OF RAIL DUE TO BENT PL AT BASE

$$\begin{aligned}\Delta &= 0.076'' \left( \frac{60''}{8''} \right) + 0.0334 (60'') \\ &= 0.57 + 2.00 \\ &= 2.57'' \quad \text{TOO MUCH}\end{aligned}$$

TRY  $\frac{3}{4}''$  BENT PL

$$\Delta \approx 2.57'' \left( \frac{.5}{.75} \right)^3 = 0.76'' = \frac{2L}{158}$$

OR ADD STIFFENERS