

STRUCTURAL CALCULATIONS

PROJECT: **DR. HALE DENTAL OFFICE**
2825 WEST 2600 NORTH, PLAIN CITY, UT 84404

PROJECT No: **SCI241457**

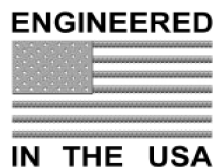
CLIENT: **JZW ARCHITECTS**

PREPARED BY: **E BRENCHLEY**

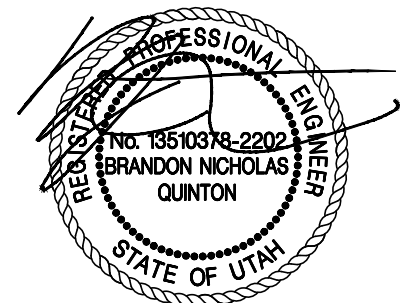
DATE: **March 18, 2026**

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03/18/2026

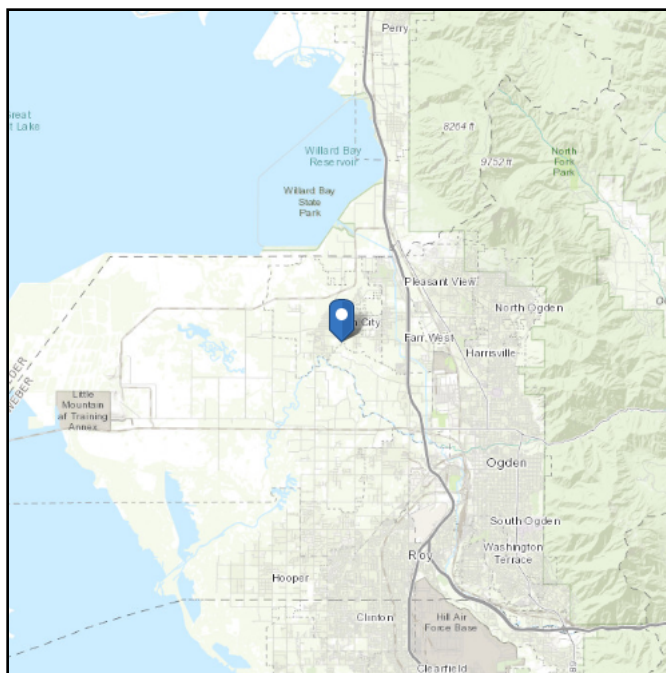
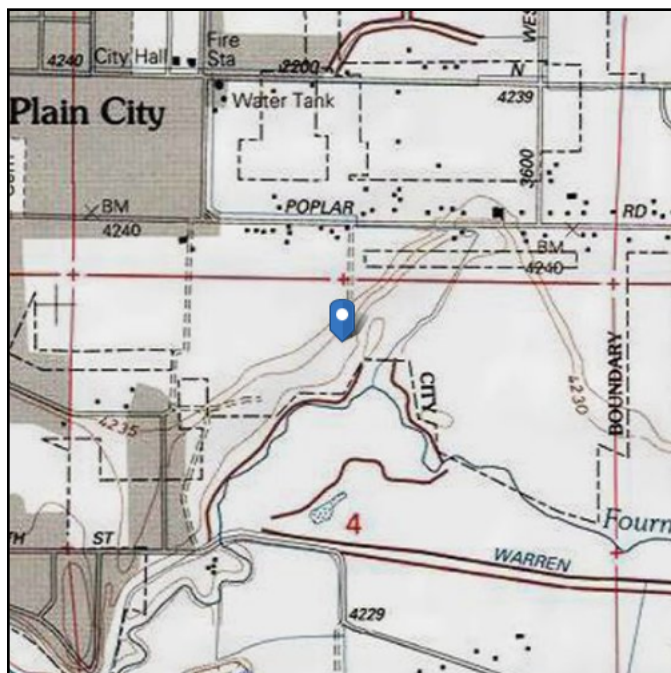
BASIS FOR DESIGN

- 1.1 BUILDING CODE: INTERNATIONAL BUILDING CODE 2018
 1.2 ROOF LIVE LOAD: 20 PSF (REDUCIBLE)
 1.3 FLOOR LIVE LOAD: 40 PSF TYP. FLOOR AND DECK
 60 PSF CANTILEVERED BALCONY OR DECK
- 1.4 WIND LOAD: REFER TO "DESIGN WIND LOADS" SHEET
 1.5 SEISMIC LOAD: REFER TO "DESIGN SEISMIC LOADS" SHEET
 1.6 SNOW LOAD: REFER TO "DESIGN SNOW LOADS" SHEET
- 2.1 FOUNDATION: DESIGNED PER RECOMMENDATIONS BY GSH GEOTECHNICAL, INC.; REPORT NO. 0960-27A-26;
 DATED AUGUST 1, 2025, AND UPDATE LETTER DATED FEBRUARY 6, 2026. ALL FOOTINGS SHALL
 EXTEND A MINIMUM OF 18 INCHES BELOW PAD GRADE. ALLOWABLE DEAD PLUS LIVE LOAD SOIL
 PRESSURE = 2000 PSF.
 BRACED FOUNDATION WALLS DESIGNED WITH SOIL PRESSURE DISTRIBUTION PER SOIL REPORT.
- 2.2 CONCRETE: ALL CONCRETE SHALL BE NORMAL WEIGHT OF 145 PCF USING HARDROCK AGGREGATES.
 MINIMUM 28-DAY COMPRESSIVE STRENGTH, f_c , USED FOR DESIGN = 2500 PSI.
- 2.3 REINFORCING STEEL: REBAR SHALL CONFORM TO ASTM A615 OR ASTM A706 (A706 REQ'D. FOR ALL REINFORCING TO BE
 WELDED) AND SHALL BE GRADE 60 ($f_y = 60$ KSI) DEFORMED BARS U.N.O. REINFORCING IN SLABS
 ON GRADE MAY BE GRADE 40 ($f_y = 40$ KSI) DEFORMED BARS FOR ALL BARS #4 AND SMALLER U.N.O.
 ON PLANS OR DETAILS. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185. PRESTRESSING
 STEEL SHALL CONFORM TO ASTM A416, GRADE 270, SEVEN-WIRE LOW RELAXATION STRAND WITH
 A GUARANTEED ULTIMATE TENSILE STRENGTH OF 41.3 KIPS. NOMINAL DIAMETER SHALL BE 1/2
 INCH AND NOMINAL AREA SHALL BE 0.153 SQ. INCHES.
- 3.1 STRUCTURAL STEEL: STANDARD AND YIELD STRENGTH SHALL BE AS FOLLOWS U.N.O.:
- | | | |
|------------------------------------|----------------------------------|--------|
| SHAPE: | STANDARD: | Fy: |
| ROLLED WIDE FLANGE SECTIONS | ASTM A992 | 50 KSI |
| OTHER STANDARD STEEL SHAPES | | |
| AND ROLLED SECTIONS | ASTM A36 | 36 KSI |
| BARS AND PLATES | ASTM A36 | 36 KSI |
| PIPES | ASTM A501 | 36 KSI |
| | OR ASTM A53 TYPE E OR S, GRADE B | 35 KSI |
| HOLLOW STRUCT. SECTIONS (RECT.) | ASTM A500, GRADE C | 50 KSI |
| HOLLOW STRUCT. SECTIONS (ROUND) | ASTM A500, GRADE C | 46 KSI |
| BOLTS (EXCEPT IN WOOD CONNECTIONS) | ASTM A325X | --- |
| NUTS | ASTM A563 | --- |
| WASHERS | ASTM F436 | --- |
| ANCHOR RODS | ASTM F1554, GRADE 36 | 36 KSI |
| | OR GRADE 55 WHERE NOTED | 55 KSI |
| | (GRADE 55 RODS SHALL COMPLY WITH | |
| | WELDABILITY SUPPLEMENT S1) | |
| WELDS | E-70 SERIES | --- |
| THREADED ROD, EPOXY BOLTS, STUDS | | |
| AND BOLTS IN WOOD CONNECTIONS | ASTM A307 | --- |
- 3.2 SAWN LUMBER: SPECIES AND MINIMUM GRADE SHALL BE AS FOLLOWS U.N.O.:
- | | |
|------------------------------------|----------------------|
| USE: | SPECIES AND GRADE: |
| 2X4 TOP PLATES | DOUGLAS FIR STANDARD |
| 2X4 STUDS (UP TO 10'-0"), BLOCKING | DOUGLAS FIR STUD |
| 2X4 STUDS (OVER 10'-0") | DOUGLAS FIR No. 2 |
| 2X6 TOP PLATES | DOUGLAS FIR No. 2 |
| 2X6 STUDS (OVER 10'-0") | DOUGLAS FIR No. 2 |
| 2X6 STUDS (UP TO 10'-0"), BLOCKING | DOUGLAS FIR STUD |
| 6X BEAMS AND 6X POSTS | DOUGLAS FIR No. 1 |
| JOISTS, AND ALL OTHER SAWN LUMBER | DOUGLAS FIR No. 2 |
- 3.3 GLB: GLULAM BEAMS (GLB) SHALL BE DOUGLAS FIR COMBINATION 24F-V4 U.N.O.
 3.4 PLYWOOD: C-D OR C-C SHEATHING CONFORMING TO THE FOLLOWING NOMINAL THICKNESS, SPAN RATING
 AND NAILING PATTERN U.N.O. NAILING IS ON CENTER SPACING:
- | | | | | | | | |
|------------|--------------|---------------|----------------|------------|--------------|---------------|----------------|
| THICKNESS: | SPAN RATING: | EDGE NAILING: | FIELD NAILING: | THICKNESS: | SPAN RATING: | EDGE NAILING: | FIELD NAILING: |
| 3/8" | 24/0 | 8d AT 6" | 8d AT 12" | 3/4" | 48/24 | 10d AT 6" | 10d AT 12" |
| 7/16" | 24/16 | 8d AT 6" | 8d AT 12" | 1" | 60/48 | 10d AT 6" | 10d AT 12" |
| 15/32" | 32/16 | 8d AT 6" | 8d AT 12" | 1 1/8" | 60/48 | 10d AT 6" | 10d AT 12" |
- 3.5 NAILS: ALL NAILS EXCEPT 16d NAILS SHALL BE COMMON NAILS U.N.O. 16d NAILS MAY BE 16d SINKER, 16d
 BOX OR 12d COMMON U.N.O.

Address:
1782 N 3900 W
Ogden, Utah
84404

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Latitude: 41.29055
Longitude: -112.073943
Elevation: 4238.988656553144 ft
(NAVD 88)



Wind

Results:

Wind Speed	103 Vmph
10-year MRI	74 Vmph
25-year MRI	80 Vmph
50-year MRI	84 Vmph
100-year MRI	89 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Wed Feb 18 2026

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 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

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

Site Soil Class: D - Stiff Soil
Results:

PER GSH SOILS REPORT:
SS = 1.405
S1 = 0.505

S_S :	1.299	S_{D1} :	N/A
S_1 :	0.464	T_L :	8
F_a :	1	PGA :	0.579
F_v :	N/A	PGA _M :	0.636
S_{MS} :	1.299	F_{PGA} :	1.1
S_{M1} :	N/A	I_e :	1
S_{DS} :	0.866	C_v :	1.36

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

Data Accessed: Wed Feb 18 2026

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

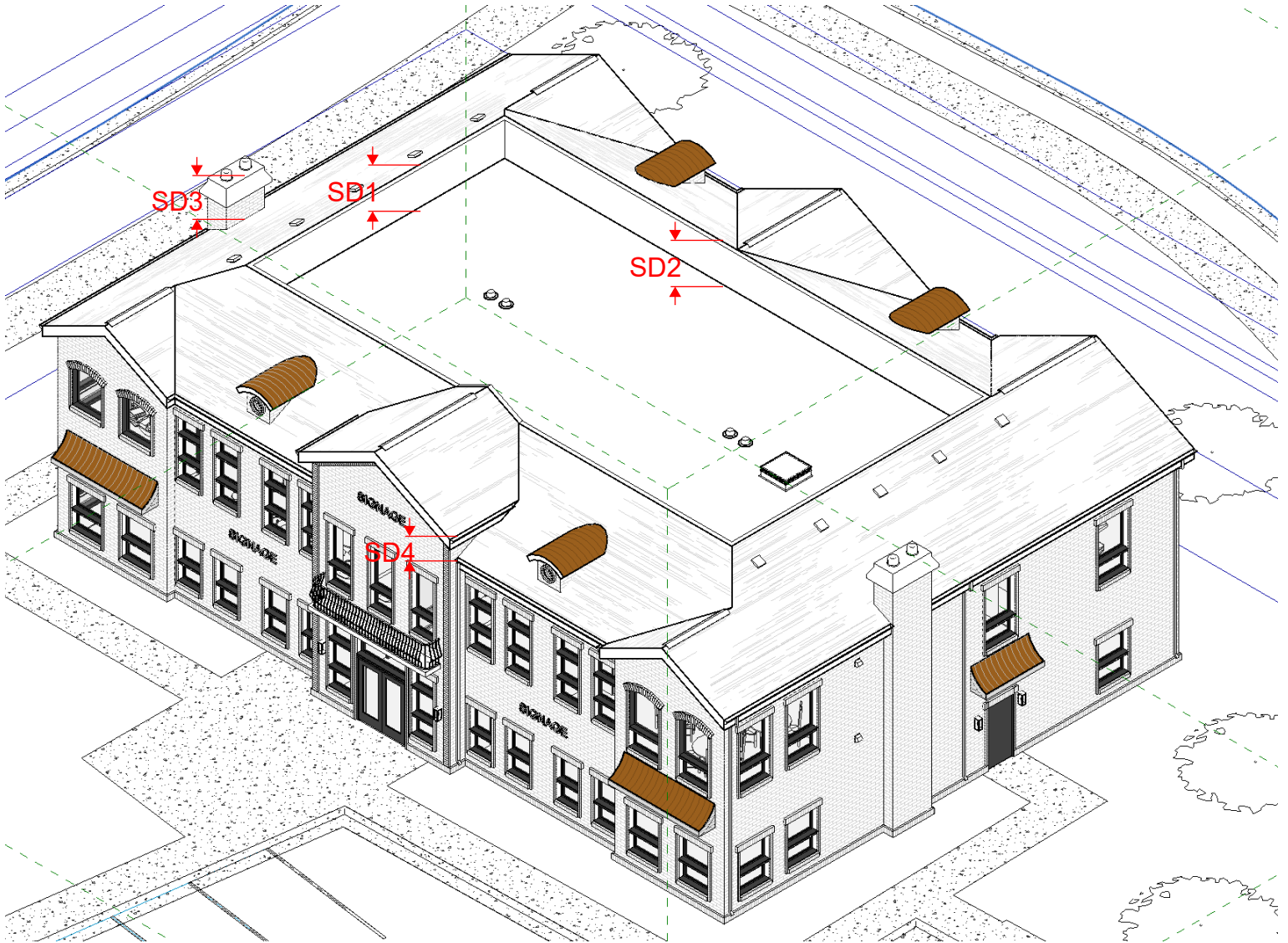
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WRIGHT
STRUCTURAL ENGINEERS

SNOW DRIFT KEYPLAN



DESIGN DEAD LOADS

SLOPING WOOD ROOF:

STANDING SEAM METAL ROOFING	2.0
1/2" PLYWD	1.7
TRUSSES OR RAFTERS AT 24" O.C.	3.0
R-19 INSULATION	1.5
5/8" GYPBD CEILING	2.8
MECH & MISC	4.0
DL (PSF) : 15.0	

WOOD OFFICE FLOOR:

FLOOR COVERING	1.5
1.5" GYPCRETE	14.5
1-1/8" PLYWOOD	3.6
TRUSSES OR JOISTS AT 24" O.C.	3.0
INSULATION	1.5
SPRINKLERS	1.5
5/8" GYPBD CEILING	2.8
MECH & MISC	2.6
DL (PSF) : 31.0	

PARITION LOAD FOR SEISMIC BASE SHEAR ADD (PSF DL): **10.0**

EXTERIOR WOOD WALLS:

2 1/2" BRICK VENEER	24.4
WALL SHEATHING	1.0
2x6 STUDS AT 16" O.C.	1.7
1/2" GYPBD	2.2
INSULATION	0.8
MISC.	1.0
DL (PSF) : 31	

INTERIOR WOOD WALLS:

1/2" GYPBD	2.0
2x6 STUDS AT 16" O.C.	1.7
1/2" GYPBD	2.0
MISC.	2.3
DL (PSF) : 8.0	

DESIGN LIVE LOADS

WOOD ROOF:	20 PSF
OFFICES:	65 PSF
LABORATORIES:	75 PSF
CORRIDORS	80 PSF
STAIRS	100 PSF

DESIGN SNOW LOADS

ASCE 7-16 CHAPTER 7

RISK CAT : II

I : 1.0

Ce : 1.0

Ct : 1.0

Cs : 1.0

P_g (psf): 36

P_f (psf): 25

P_s (psf): 25

SNOW DRIFT LOADS AT LOWER ROOFS AND PROJECTIONS

ASCE 7 SECTION 7.7, 7.8

γ (pcf) : 18.68

h_b (ft): 1.35

LOCATION	h_t (ft)	h_c (ft)	LENGTH OF UPPER ROOF l_u (ft)	LENGTH OF LOWER ROOF OR PROJECTION N / PARAPET l_u (ft)	WINDWARD		LEEWARD		CONTROLLING DRIFT PEAK PRESSURE AND WIDTH	
					h_d (ft)	p_d (psf)	h_d (ft)	p_d (psf)	p_d (psf)	w (ft)
SD1 (FLAT ROOF)	4.416666667	3.07		62.50	2.21	41.25	0.00	0.00	41.25	8.83
SD2 (FLAT ROOF)	4.416666667	3.07		32.75	1.56	29.18	0.00	0.00	29.18	6.25
SD3 (CHIMNEY)	4.33	2.98	2.50	11.50	0.77	14.40	0.02	0.37	14.40	3.08
SD4 (ENTRY)	3.583333333	2.23	19.75	18.50	1.10	20.48	1.53	28.52	28.52	6.11

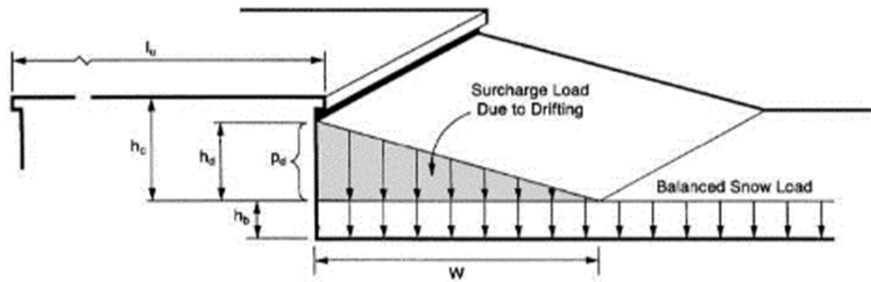


FIGURE 7.7-2 Configuration of Snowdrifts on Lower Roofs

UNBALANCED SNOW LOAD

(HIP & GABLE ROOFS) ASCE 7 SECTION 7.6.1

ROOF PITCH= 0:12

W (ft)	l_u (ft)	WINDWARD		LEEWARD	
		p_s (psf)	h_d (ft)	p_s (psf)	w (ft)
0	0.00	0.00	0.00	0.00	0.00

SLIDING SNOW

ASCE 7 SECTION 7.9

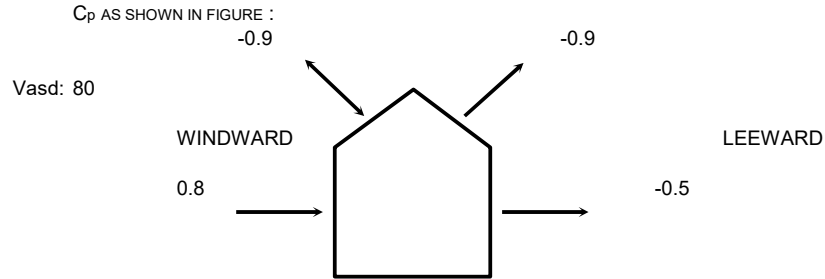
W (ft)	p_{slide} (psf)	w_{slide} (ft)
0	0.00	15.00

DESIGN WIND LOADS

MAIN WIND FORCE-RESISTING SYSTEM

ASCE 7-16, CHAPTER 27, DIRECTIONAL PROCEDURE - PART I

$p = qG C_p - q_i(G C_{pi})$
 $q_z = 0.00256 K_z K_{zt} K_d K_e V^2$
 Ground Elevation (ft): 4238
 MEAN ROOF HT, h (FT): 24.83333
 ROOF PITCH : 0:12
 EXPOSURE : C
 V (MPH): 103
 RISK CATEGORY : II
 $K_{zt} : 1.00$
 $K_d : 0.85$
 $K_e : 0.86$
 $G C_{pi} (+/-) : 0.18$
 $G : 0.85$
 SLOPE, θ (DEG) : 0.0
HORIZONTAL DIMENSIONS
 LEAST (FT) : 61
 GREATEST (FT) : 87



C_p OF WINDWARD WALL IS USED WITH q_z , ALL OTHER C_p ARE USED WITH q_h
 NOTE: THE NEGATIVE WINDWARD ROOF C_p IS THE MAXIMUM UPLIFT
 I.E. HORIZONTAL DISTANCE FROM WINDWARD EDGE FROM 0 TO h/2

LATERAL DESIGN PRESSURES

USING POSITIVE C_p AT WINDWARD ROOF

$K_h : 0.94$
LRFD ASD
 q_h (PSF) : 18.6 11.2
 LEEWARD WALL (PSF) : 7.9 4.7
 WINDWARD ROOF (PSF) : 0.0 0.0
 LEEWARD ROOF (PSF) : 14.2 8.5

 NET ROOF P (PSF) : 14.2 8.5
 INTERNAL P (PSF) : 3.3 2.0

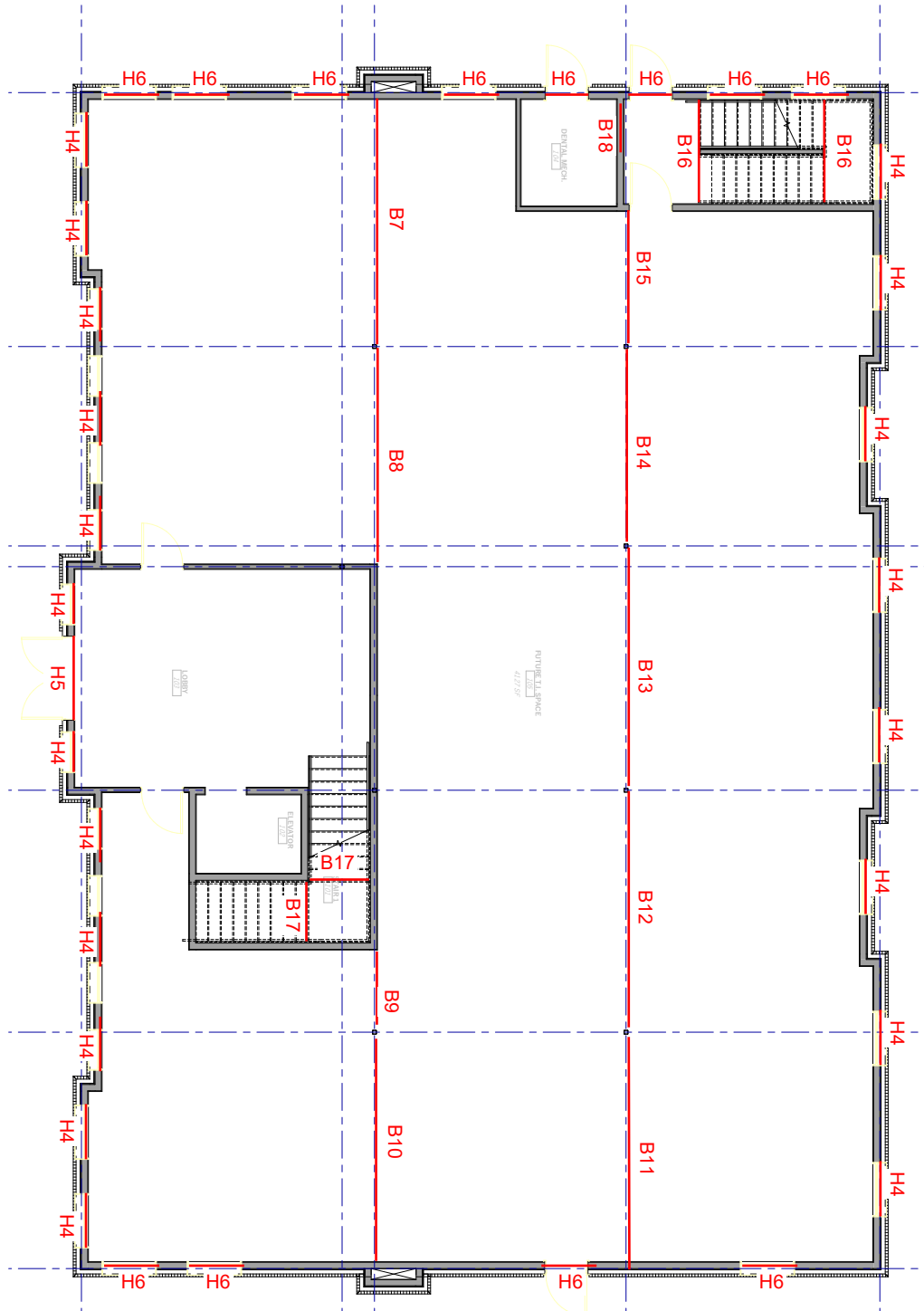
ELEV. (FT)	K _z	LRFD			ASD	
		Q _z (PSF)	WINDWARD WALL (PSF)	NET WALL P (PSF)	WINDWARD WALL (PSF)	NET WALL P (PSF)
15	0.85	16.83	11.4	19.3	6.9	11.6
20	0.90	17.82	12.1	20.0	7.3	12.0
25	0.94	18.61	12.7	20.6	7.6	12.3
30	0.98	19.41	13.2	21.1	7.9	12.7
40	1.04	20.59	14.0	21.9	8.4	13.1
50	1.09	21.58	14.7	22.6	8.8	13.5
60	1.13	22.38	15.2	23.1	9.1	13.9
70	1.17	23.17	15.8	23.7	9.5	14.2
80	1.21	23.96	16.3	24.2	9.8	14.5
90	1.24	24.55	16.7	24.6	10.0	14.8
100	1.26	24.95	17.0	24.9	10.2	14.9
120	1.31	25.94	17.6	25.5	10.6	15.3
140	1.36	26.93	18.3	26.2	11.0	15.7
160	1.39	27.52	18.7	26.6	11.2	16.0
180	1.43	28.32	19.3	27.2	11.6	16.3
200	1.46	28.91	19.7	27.6	11.8	16.5

VERTICAL DESIGN PRESSURES

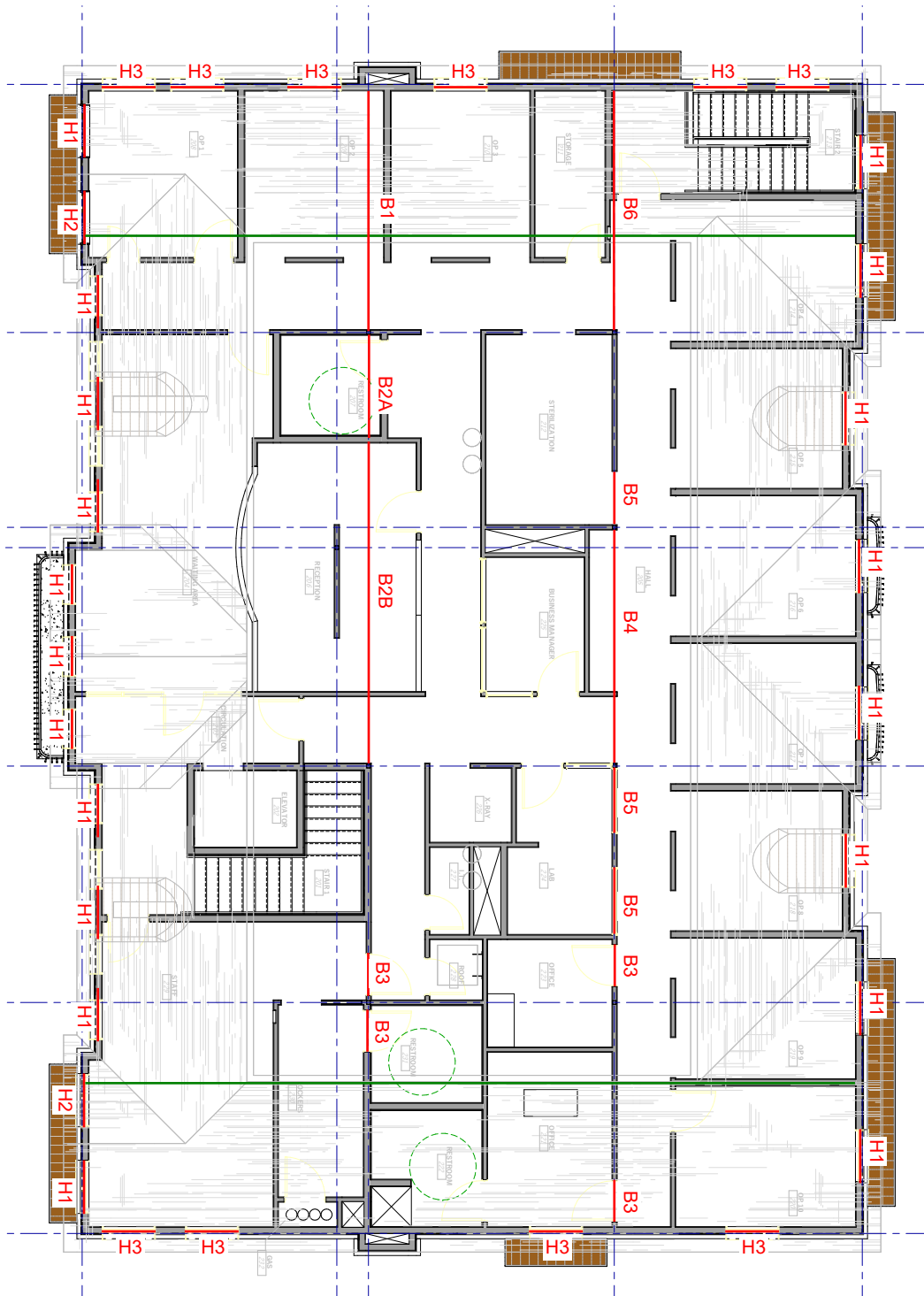
WIND NORMAL TO RIDGE
 $C_p : -0.9$
 LRFD P_{UPLIFT} (PSF) : 17.6
 ASD P_{UPLIFT} (PSF) : 10.5

FLAT ROOF OR WIND PARALLEL TO RIDGE
 $C_p : -0.9$
 LRFD P_{UPLIFT} (PSF) : 17.6
 ASD P_{UPLIFT} (PSF) : 10.5

BEAM KEYPLAN - FLOOR



BEAM KEYPLAN - ROOF



DESIGN SEISMIC LOADS (BUILDING STRUCTURES)

ASCE 7-16 SECTION 12.8 - EQUIVALENT LATERAL FORCE PROCEDURE

Risk Category: II	SFRS: Bearing Wall Systems	
Site Class: D	Light-framed walls sheathed with wood structural panels rated for shear or steel sheets	
I_E : 1.00		R : 6.50
S_S : 1.405		Ω_o , Rigid: 3.0
S_I : 0.505	C_t : 0.020	Ω_o , Flexible: 2.5
S_{MS} : 1.405	x : 0.750	C_d : 3.00
S_{M1} : 1.360	C_S : 0.144	Seismic Design Category: D
S_{DS} : 0.937	$C_{S\ MIN}$: 0.041	Design Base Shear: 0.144 W
S_{D1} : 0.906	$C_{S\ MAX}$: 0.627	
T_L (sec): 8		
T_a (sec): 0.222	ASCE 7-16 11.4.8 SUPPLEMENT 3 EXCEPTION 1 USED	
T_S (sec): 0.968		
F_a : 1.000		
F_v : 1.795		

F _a : 1.000 F _v : 1.795			PRIMARY SYSTEM		DIAPHRAGMS AND COLLECTORS		
			V (kips): 42.83		Diaphragms: 0.187 W		
			k: 1		Max: 0.375 W		
			Vertical Distribution F _x (kips)		Diaphragm, F _p (kips)		
LEVEL	WEIGHT (K)	ELEV (ft)	LRFD	ASD	12.10.1.1 Governing F _p	F _p / F _x	
ROOF	79.6	24.8	0.236 Wx	0.168 Wx	0.236 W	0.236 W	1.00
FLOOR 1	217.6	11.7	0.111 Wx	0.079 Wx	0.144 W	0.187 W	1.69

CONNECTIONS

ASCE 7 12.1.3

	LRFD	ASD
F_p :	0.125 Wp	0.089 Wp

ARCHITECTURAL, MECHANICAL & ELECTRICAL COMPONENT ANCHORAGE

ASCE 7 CHAPTER 13

				Fp (Eq. 13.1-1)	
Ip : 1.0	ap	Rp	z (ft)	LRFD	ASD
MAX : 1.499 Wp	1.0	2.5	24.83	0.450 Wp	0.321 Wp
MIN : 0.281 Wp	1.0	2.5	21.73	0.412 Wp	0.294 Wp
	1.0	2.5	18.63	0.375 Wp	0.268 Wp
	1.0	2.5	15.52	0.337 Wp	0.241 Wp
	1.0	2.5	12.42	0.300 Wp	0.214 Wp
	1.0	2.5	9.31	0.281 Wp	0.201 Wp
	1.0	2.5	6.21	0.281 Wp	0.201 Wp
	1.0	2.5	3.10	0.281 Wp	0.201 Wp

WOOD STUD WALL : TYPICAL STUD WALL, FLOOR 1 (EXTERIOR)

WOOD STUD DESIGN IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE

BUILDING CODE: 2021 IBC

STUD WALL PARAMETERS

STUD LENGTH (FT) : 10.21
INT. ZONE SPACING : **16" o.c.**
EDGE STRIP SPACING : **16" o.c.**
LUMBER GRADE : DF No. 2
STUD SIZE : **2 x 6**
TYPICAL STUD $\Delta < L / 360$
Le/d : 22.3 $\leq$ 50
INCISED? : FALSE

GRAVITY

	DL (PSF)	LL (PSF)	TRIB (FT)	e (IN)
SLOPING ROOF	15	20	10.5	0
FLAT ROOF	20	20	0	0
FLOOR	31	80	10.5	0
CORRIDOR	36	100	0	0
WALL SELF	31	---	25	---
MISC	20	0	0	0

DEFLECTION

	INTERIOR		EDGE	
EQ.	Δ (IN)	L / Δ	Δ (IN)	L / Δ (IN)
EQ-7*	0.083	1468	0.098	1255
EQ-8*	0.063	1958	0.073	1674

*42% C&C WIND LOAD PER TABLE 1604.3 FOOTNOTE F USED FOR CHECKS ABOVE.

FRAMING SUPPORTING GLASS DEFLECTION CHECKS

EQ.	Δ (IN)	MAX Δ (IN)	Δ (IN)	MAX Δ (IN)
EQ-7**	0.119	0.700	0.139	0.700
EQ-8**	0.089	0.700	0.105	0.700

**60% C&C WIND LOAD PER IBC 1604.3.7 USED FOR CHECKS ABOVE.

WIND

LEAST HORIZ. DIM. (FT) : 61
MEAN ROOF HT, h (FT) : 25
ROOF PITCH : 0:12
EXPOSURE : C
V (MPH) : 103
ELEVATION (FT) : 4244
Kz : 0.95
Kzt : 1.00
Kd : 0.85
Ke : 0.86
GC_{pi} (+/-) : 0.18
EFFECTIVE AREA : 34.7
qh,C&C (PSF) : 18.71
INT. ZONE GC_p : 0.90
EDGE STRIP GC_p : 1.09
INT. ZONE LOAD (PSF) : **20.3**
EDGE STRIP LOAD (PSF) : **23.7**
EDGE STRIP (FT) : 6.1

SNOW (APPLIED TO ROOF TRIB.)

ROOF SNOW LOAD (PSF) : **25.0**

SEISMIC

IE : 1.00
SDS : 0.937
SESMIC LOAD (PSF) : **11.6**

KING STUDS AND POSTS

RESIST ONLY HORIZONTAL LOAD
Cd : 1.6
Fb' (PSI) : 1872
MCAP (LB-FT) : 1180

KING STUD $\Delta < L / 360$

CRITERIA	INTERIOR	EDGE
Ma (ft) WIND :	7.69	6.61
Δa (ft) WIND :	5.62	4.83
Ma (ft) SEISMIC :	11.14	11.14
Δa (ft) SEISMIC :	5.70	5.70

MAX OPENING (FT)

KING STUD/POST	INTERIOR	EDGE
(1) 2x6	9'-11"	8'-4"
(2) 2x6	21'-5"	19'-11"
(3) 2x6	32'-10"	32'-5"
(4) 2x6	44'-3"	44'-3"
6x4 DF No.2	25'-3"	24'-0"
6x6 DF No.1	40'-5"	40'-5"
6x8 DF No.1	49'-11"	49'-11"
6x10 DF No.1	63'-7"	63'-7"

CRUSHING

SOLE PLATE Cb: 1.25
DF Fc' $\perp$ (psi): 781.3
fc/Fc': **0.43**

			COMPRESSION			BENDING			SHEAR			COMBINED COMP. & BEND.	
EQ.	BASIC LOAD COMBOS	Cd	Fc' (PSI)	INTERIOR fc (PSI)	EDGE fc (PSI)	Fb' (PSI)	INTERIOR fb (PSI)	EDGE fb (PSI)	Fv' (PSI)	INTERIOR fv (PSI)	EDGE fv (PSI)	INTERIOR	EDGE
EQ-1	D	0.90	760	203	203	1422	0	0	162	0.0	0.0	0.07	0.07
EQ-2	D + L	1.00	785	339	339	1580	0	0	180	0.0	0.0	0.19	0.19
EQ-3	D + S	1.15	813	246	246	1816	0	0	207	0.0	0.0	0.09	0.09
EQ-4	D + Lr	1.25	828	237	237	1974	0	0	225	0.0	0.0	0.08	0.08
EQ-5	D + 0.75L + 0.75S	1.15	813	337	337	1816	0	0	207	0.0	0.0	0.17	0.17
EQ-6	D + 0.75L + 0.75Lr	1.25	828	331	331	1974	0	0	225	0.0	0.0	0.16	0.16
EQ-7	D + 0.60W	1.60	863	203	203	2527	335	392	288	15.1	17.6	0.22	0.25
EQ-8	D + 0.75L + 0.75S + 0.45W	1.60	863	337	337	2527	252	294	288	11.3	13.2	0.31	0.33

WOOD STUD WALL : TYPICAL STUD WALL, FLOOR 1 (INTERIOR)

WOOD STUD DESIGN IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE

BUILDING CODE: 2021 IBC

STUD WALL PARAMETERS

STUD LENGTH (FT) : 10.21
INT. ZONE SPACING : **16" o.c.**
EDGE STRIP SPACING : **16" o.c.**
LUMBER GRADE : DF No. 2
STUD SIZE : **2 x 6**
TYPICAL STUD $\Delta < L / 360$
Le/d : 22.3 $\leq$ 50
INCISED? : FALSE

GRAVITY

	DL (PSF)	LL (PSF)	TRIB (FT)	e (IN)
SLOPING ROOF	15	20	20.5	0
FLAT ROOF	20	20	0	0
FLOOR	31	80	20.5	0
CORRIDOR	36	100	0	0
WALL SELF	8	---	25	---
MISC	20	0	0	0

DEFLECTION

	INTERIOR		EDGE	
EQ.	Δ (IN)	L / Δ	Δ (IN)	L / Δ (IN)
EQ-7*	0.021	5958	0.021	5958
EQ-8*	0.015	7944	0.015	7944

*42% C&C WIND LOAD PER TABLE 1604.3 FOOTNOTE F USED FOR CHECKS ABOVE.

FRAMING SUPPORTING GLASS DEFLECTION CHECKS

EQ.	Δ (IN)	MAX Δ (IN)	Δ (IN)	MAX Δ (IN)
EQ-7**	0.029	0.700	0.029	0.700
EQ-8**	0.022	0.700	0.022	0.700

**60% C&C WIND LOAD PER IBC 1604.3.7 USED FOR CHECKS ABOVE.

WIND

LEAST HORIZ. DIM. (FT) : 61
MEAN ROOF HT, h (FT) : 25
ROOF PITCH : 0:12
EXPOSURE : INTERIOR
V (MPH) : 103
ELEVATION (FT) : 4244
Kz : 1.13
Kzt : 1.00
Kd : 0.85
Ke : 0.86
GC_{pi} (+/-) : 0.18
EFFECTIVE AREA : 34.7
q_h, C&C (PSF) : N/A
INT. ZONE GC_p : N/A
EDGE STRIP GC_p : N/A
INT. ZONE LOAD (PSF) : **5.0**
EDGE STRIP LOAD (PSF) : **5.0**
EDGE STRIP (FT) : 6.1

SNOW (APPLIED TO ROOF TRIB.)

ROOF SNOW LOAD (PSF) : **25.0**

SEISMIC

IE : 1.00
SDS : 0.906
SESMIC LOAD (PSF) : **2.9**

KING STUDS AND POSTS

RESIST ONLY HORIZONTAL LOAD
Cd : 1.6
Fb' (PSI) : 1872
MCAP (LB-FT) : 1180

KING STUD $\Delta < L / 360$

CRITERIA	INTERIOR	EDGE
Ma (ft) WIND :	18.11	18.11
Δa (ft) WIND :	13.24	13.24
Ma (ft) SEISMIC :	44.63	44.63
Δa (ft) SEISMIC :	22.83	22.83

MAX OPENING (FT)

KING STUD/POST	INTERIOR	EDGE
(1) 2x6	25'-2"	25'-2"
(2) 2x6	51'-8"	51'-8"
(3) 2x6	78'-1"	78'-1"
(4) 2x6	104'-7"	104'-7"
6x4 DF No.2	60'-5"	60'-5"
6x6 DF No.1	95'-9"	95'-9"
6x8 DF No.1	117'-10"	117'-10"
6x10 DF No.1	149'-7"	149'-7"

CRUSHING

SOLE PLATE Cb: 1.25
DF Fc' $\perp$ (psi): 781.3
fc/Fc': **0.58**

			COMPRESSION			BENDING			SHEAR			COMBINED COMP. & BEND.	
EQ.	BASIC LOAD COMBOS	Cd	Fc' (PSI)	INTERIOR fc (PSI)	EDGE fc (PSI)	Fb' (PSI)	INTERIOR fb (PSI)	EDGE fb (PSI)	Fv' (PSI)	INTERIOR fv (PSI)	EDGE fv (PSI)	MAX : 1.00	
EQ-1	D	0.90	760	185	185	1422	0	0	162	0.0	0.0	0.06	0.06
EQ-2	D + L	1.00	785	450	450	1580	0	0	180	0.0	0.0	0.33	0.33
EQ-3	D + S	1.15	813	268	268	1816	0	0	207	0.0	0.0	0.11	0.11
EQ-4	D + Lr	1.25	828	251	251	1974	0	0	225	0.0	0.0	0.09	0.09
EQ-5	D + 0.75L + 0.75S	1.15	813	446	446	1816	0	0	207	0.0	0.0	0.30	0.30
EQ-6	D + 0.75L + 0.75Lr	1.25	828	433	433	1974	0	0	225	0.0	0.0	0.27	0.27
EQ-7	D + 0.60W	1.60	863	185	185	2527	83	83	288	3.7	3.7	0.09	0.09
EQ-8	D + 0.75L + 0.75S + 0.45W	1.60	863	446	446	2527	62	62	288	2.8	2.8	0.31	0.31

WOOD STUD WALL : TYPICAL STUD WALL, FLOOR 2 (INTERIOR 4x)

WOOD STUD DESIGN IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE

BUILDING CODE: 2021 IBC

STUD WALL PARAMETERS

STUD LENGTH (FT) : 13.50
INT. ZONE SPACING : **12" o.c.**
EDGE STRIP SPACING : **12" o.c.**
LUMBER GRADE : DF No. 2
STUD SIZE : **2 x 4**
TYPICAL STUD $\Delta < L / 360$
Le/d : 46.3 $\leq$ 50
INCISED? : FALSE

GRAVITY

	DL (PSF)	LL (PSF)	TRIB (FT)	e (IN)
SLOPING ROOF	15	20	19.5	0
FLAT ROOF	20	20	0	0
FLOOR	31	80	0	0
CORRIDOR	36	100	0	0
WALL SELF	8	---	14	---
MISC	20	0	0	0

DEFLECTION

	INTERIOR		EDGE	
EQ.	Δ (IN)	L / Δ	Δ (IN)	L / Δ (IN)
EQ-7*	0.183	885	0.183	885
EQ-8*	0.137	1180	0.137	1180

*42% C&C WIND LOAD PER TABLE 1604.3 FOOTNOTE F USED FOR CHECKS ABOVE.

FRAMING SUPPORTING GLASS DEFLECTION CHECKS

EQ.	Δ (IN)	MAX Δ (IN)	Δ (IN)	MAX Δ (IN)
EQ-7**	0.261	0.926	0.261	0.926
EQ-8**	0.196	0.926	0.196	0.926

**60% C&C WIND LOAD PER IBC 1604.3.7 USED FOR CHECKS ABOVE.

WIND

LEAST HORIZ. DIM. (FT) : 61
MEAN ROOF HT, h (FT) : 25
ROOF PITCH : 0:12
EXPOSURE : INTERIOR
V (MPH) : 103
ELEVATION (FT) : 4244
Kz : 1.13
Kzt : 1.00
Kd : 0.85
Ke : 0.86
GC_{pi} (+/-) : 0.18
EFFECTIVE AREA : 60.8
q_h, C&C (PSF) : N/A
INT. ZONE GC_p : N/A
EDGE STRIP GC_p : N/A
INT. ZONE LOAD (PSF) : **5.0**
EDGE STRIP LOAD (PSF) : **5.0**
EDGE STRIP (FT) : 6.1

SNOW (APPLIED TO ROOF TRIB.)

ROOF SNOW LOAD (PSF) : **25.0**

SEISMIC

IE : 1.00
SDS : 0.906
SEISMIC LOAD (PSF) : **2.9**

KING STUDS AND POSTS

RESIST ONLY HORIZONTAL LOAD
Cd : 1.6
Fb' (PSI) : 2160
MCAP (LB-FT) : 551

KING STUD $\Delta < L / 360$

CRITERIA	INTERIOR	EDGE
Ma (ft) WIND :	4.84	4.84
Δ a (ft) WIND :	1.48	1.48
Ma (ft) SEISMIC :	11.92	11.92
Δ a (ft) SEISMIC :	2.54	2.54

MAX OPENING (FT)

KING STUD/POST	INTERIOR	EDGE
(1) 2x4	1'-11"	1'-11"
(2) 2x4	4'-11"	4'-11"
(3) 2x4	7'-10"	7'-10"
(4) 2x4	10'-10"	10'-10"
4x4 DF No.2	5'-11"	5'-11"
4x6 DF No.2	9'-10"	9'-10"
4x8 DF No.2	13'-3"	13'-3"
4x10 DF No.2	17'-2"	17'-2"

CRUSHING

SOLE PLATE Cb: 1.25
DF Fc' $\perp$ (psi): 781.3
fc/Fc': **0.22**

			COMPRESSION			BENDING			SHEAR			COMBINED COMP. & BEND.	
EQ.	BASIC LOAD COMBOS	Cd	Fc' (PSI)	INTERIOR fc (PSI)	EDGE fc (PSI)	Fb' (PSI)	INTERIOR fb (PSI)	EDGE fb (PSI)	Fv' (PSI)	INTERIOR fv (PSI)	EDGE fv (PSI)	INTERIOR	EDGE
EQ-1	D	0.90	215	76	76	1823	0	0	162	0.0	0.0	0.13	0.13
EQ-2	D + L	1.00	216	76	76	2025	0	0	180	0.0	0.0	0.13	0.13
EQ-3	D + S	1.15	217	169	169	2329	0	0	207	0.0	0.0	0.61	0.61
EQ-4	D + Lr	1.25	217	151	151	2531	0	0	225	0.0	0.0	0.48	0.48
EQ-5	D + 0.75L + 0.75S	1.15	217	146	146	2329	0	0	207	0.0	0.0	0.45	0.45
EQ-6	D + 0.75L + 0.75Lr	1.25	217	132	132	2531	0	0	225	0.0	0.0	0.37	0.37
EQ-7	D + 0.60W	1.60	218	76	76	3240	268	268	288	5.8	5.8	0.25	0.25
EQ-8	D + 0.75L + 0.75S + 0.45W	1.60	218	146	146	3240	201	201	288	4.3	4.3	0.63	0.63

WOOD STUD WALL : FULL-HEIGHT INTERIOR AT STAIRS

WOOD STUD DESIGN IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE

BUILDING CODE: 2021 IBC

STUD WALL PARAMETERS

STUD LENGTH (FT) : 24.46
INT. ZONE SPACING : **16" o.c.**
EDGE STRIP SPACING : **16" o.c.**
LUMBER GRADE : DF No. 2
STUD SIZE : **2 x 8**
TYPICAL STUD $\Delta < L / 360$
Le/d : 40.5 $\leq$ 50
INCISED? : FALSE

GRAVITY

	DL (PSF)	LL (PSF)	TRIB (FT)	e (IN)
SLOPING ROOF	15	20	6.25	0
FLAT ROOF	20	20	0	0
FLOOR	31	80	2.5	0
CORRIDOR	36	100	0	0
WALL SELF	8	---	25	---
MISC	20	0	0	0

DEFLECTION

	INTERIOR		EDGE	
EQ.	Δ (IN)	L / Δ	Δ (IN)	L / Δ (IN)
EQ-7*	0.296	992	0.296	992
EQ-8*	0.222	1323	0.222	1323

*42% C&C WIND LOAD PER TABLE 1604.3 FOOTNOTE F USED FOR CHECKS ABOVE.

WIND

LEAST HORIZ. DIM. (FT) : 61
MEAN ROOF HT, h (FT) : 25
ROOF PITCH : 0:12
EXPOSURE : INTERIOR
V (MPH) : 103
ELEVATION (FT) : 4244
Kz : 1.13
Kzt : 1.00
Kd : 0.85
Ke : 0.86
GC_{pi} (+/-) : 0.18
EFFECTIVE AREA : 199.4
q_h, C&C (PSF) : N/A
INT. ZONE GC_p : N/A
EDGE STRIP GC_p : N/A
INT. ZONE LOAD (PSF) : **5.0**
EDGE STRIP LOAD (PSF) : **5.0**
EDGE STRIP (FT) : 6.1

SNOW (APPLIED TO ROOF TRIB.)

ROOF SNOW LOAD (PSF) : **25.0**

SEISMIC

IE : 1.00
SDS : 0.906
SESMIC LOAD (PSF) : **2.9**

KING STUDS AND POSTS

RESIST ONLY HORIZONTAL LOAD
Cd : 1.6
Fb' (PSI) : 266
MCAP (LB-FT) : 292

KING STUD $\Delta < L / 360$

CRITERIA	INTERIOR	EDGE
Ma (ft) WIND :	0.78	0.78
Δa (ft) WIND :	2.20	2.20
Ma (ft) SEISMIC :	1.92	1.92
Δa (ft) SEISMIC :	3.80	3.80

MAX OPENING (FT)

KING STUD/POST	INTERIOR	EDGE
(1) 2x8	0'-3"	0'-3"
(2) 2x8	1'-9"	1'-9"
(3) 2x8	3'-4"	3'-4"
(4) 2x8	4'-11"	4'-11"
6x4 DF No.2	3'-2"	3'-2"
6x6 DF No.1	5'-9"	5'-9"
6x8 DF No.1	7'-4"	7'-4"
6x10 DF No.1	9'-8"	9'-8"

CRUSHING

SOLE PLATE Cb: 1.25
DF Fc' $\perp$ (psi): 781.3
fc/Fc': **0.10**

			COMPRESSION			BENDING			SHEAR			COMBINED COMP. & BEND.	
EQ.	BASIC LOAD COMBOS	Cd	**REDUCED Fc' (PSI)	INTERIOR fc (PSI)	EDGE fc (PSI)	Fb' (PSI)	INTERIOR fb (PSI)	EDGE fb (PSI)	Fv' (PSI)	INTERIOR fv (PSI)	EDGE fv (PSI)	INTERIOR	EDGE
EQ-1	D	0.90	215	46	46	421	0	0	162	0.0	0.0	0.04	0.04
EQ-2	D + L	1.00	216	70	70	422	0	0	180	0.0	0.0	0.10	0.10
EQ-3	D + S	1.15	218	65	65	424	0	0	207	0.0	0.0	0.09	0.09
EQ-4	D + Lr	1.25	219	61	61	425	0	0	225	0.0	0.0	0.08	0.08
EQ-5	D + 0.75L + 0.75S	1.15	218	78	78	424	0	0	207	0.0	0.0	0.13	0.13
EQ-6	D + 0.75L + 0.75Lr	1.25	219	75	75	425	0	0	225	0.0	0.0	0.12	0.12
EQ-7	D + 0.60W	1.60	221	46	46	427	273	273	288	6.7	6.7	0.80	0.80
EQ-8	D + 0.75L + 0.75S + 0.45W	1.60	221	78	78	427	205	205	288	5.1	5.1	0.78	0.78

**FIREWALL: STUD COMPRESSION CAPACITY REDUCED BY 22% PER ESR-1194

**FIREWALL: STUD AXIAL LOAD LIMITED TO 1100 lbs PER ESR-1194

WOOD STUD WALL : FULL-HEIGHT EXTERIOR AT STAIR

WOOD STUD DESIGN IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE

BUILDING CODE: 2021 IBC

STUD WALL PARAMETERS

STUD LENGTH (FT) : 24.46
 INT. ZONE SPACING : **8" o.c.** OR (2) AT 16" o.c.
 EDGE STRIP SPACING : **8" o.c.** OR (2) AT 16" o.c.
 LUMBER GRADE : DF No. 2
 STUD SIZE : **3 x 8**
 TYPICAL STUD $\Delta < L / 360$
 $Le/d : 40.5 \leq 50$
 INCISED? : FALSE

GRAVITY

	DL (PSF)	LL (PSF)	TRIB (FT)	e (IN)
SLOPING ROOF	15	20	6	0
FLAT ROOF	20	20	0	0
FLOOR	31	80	2	0
CORRIDOR	36	100	0	0
WALL SELF	31	---	25	---
MISC	20	0	0	0

DEFLECTION

	INTERIOR		EDGE	
EQ.	Δ (IN)	L / Δ	Δ (IN)	L / Δ (IN)
EQ-7*	0.344	854	0.344	854
EQ-8*	0.258	1138	0.258	1138

*42% C&C WIND LOAD PER TABLE 1604.3 FOOTNOTE F USED FOR CHECKS ABOVE.

FRAMING SUPPORTING GLASS DEFLECTION CHECKS

EQ.	Δ (IN)	MAX Δ (IN)	Δ (IN)	MAX Δ (IN)
EQ-7**	0.457	1.473	0.487	1.473
EQ-8**	0.343	1.473	0.366	1.473

**60% C&C WIND LOAD PER IBC 1604.3.7 USED FOR CHECKS ABOVE.

WIND

LEAST HORIZ. DIM. (FT) : 61
 MEAN ROOF HT, h (FT) : 25
 ROOF PITCH : 0:12
 EXPOSURE : C
 V (MPH) : 103
 ELEVATION (FT) : 4244
 K_z : 0.95
 K_{zt} : 1.00
 K_d : 0.85
 K_e : 0.86
 GC_{pi} (+/-) : 0.18
 EFFECTIVE AREA : 199.4
 q_h , C&C (PSF) : 18.71
 INT. ZONE GC_p : 0.78
 EDGE STRIP GC_p : 0.85
 INT. ZONE LOAD (PSF) : **18.0**
 EDGE STRIP LOAD (PSF) : **19.2**
 EDGE STRIP (FT) : 6.1

SNOW (APPLIED TO ROOF TRIB.)

ROOF SNOW LOAD (PSF) : **25.0**

SEISMIC

I_E : 1.00
 S_{DS} : 0.937
 SESMIC LOAD (PSF) : **11.6**

KING STUDS AND POSTS

RESIST ONLY HORIZONTAL LOAD
 C_d : 1.6
 F_b' (PSI) : 1348
 $MCAP$ (LB-FT) : 2460

KING STUD $\Delta < L / 360$

CRITERIA	INTERIOR	EDGE
Ma (ft) WIND :	3.04	2.85
Δa (ft) WIND :	1.70	1.59
Ma (ft) SEISMIC :	4.04	4.04
Δa (ft) SEISMIC :	1.58	1.58

MAX OPENING (FT)

KING STUD/POST	INTERIOR	EDGE
(1) 3x8	2'-6"	2'-6"
(2) 3x8	5'-8"	5'-8"
(3) 3x8	8'-10"	8'-10"
(4) 3x8	12'-0"	12'-0"
6x4 DF No.2	1'-3"	1'-3"
6x6 DF No.1	2'-4"	2'-4"
6x8 DF No.1	3'-1"	3'-1"
6x10 DF No.1	4'-1"	4'-1"

CRUSHING

SOLE PLATE C_b : 1.08
 DF $F_c' \lfloor$ (psi) : 671.9
 f_c / F_c' : **0.06**

			COMPRESSION			BENDING			SHEAR			COMBINED COMP. & BEND.	
			**REDUCED F_c' (PSI)	INTERIOR f_c (PSI)	EDGE f_c (PSI)	INTERIOR F_b' (PSI)	EDGE f_b (PSI)	EDGE f_b (PSI)	INTERIOR F_v' (PSI)	EDGE f_v (PSI)	EDGE f_v (PSI)	MAX : 1.00	
EQ.	BASIC LOAD COMBOS	C_d										INTERIOR	EDGE
EQ-1	D	0.90	215	34	34	1215	0	0	162	0.0	0.0	0.03	0.03
EQ-2	D + L	1.00	216	40	40	1350	0	0	180	0.0	0.0	0.03	0.03
EQ-3	D + S	1.15	218	40	40	1553	0	0	207	0.0	0.0	0.03	0.03
EQ-4	D + Lr	1.25	219	39	39	1688	0	0	225	0.0	0.0	0.03	0.03
EQ-5	D + 0.75L + 0.75S	1.15	218	43	43	1553	0	0	207	0.0	0.0	0.04	0.04
EQ-6	D + 0.75L + 0.75Lr	1.25	219	42	42	1688	0	0	225	0.0	0.0	0.04	0.04
EQ-7	D + 0.60W	1.60	221	34	34	2160	296	315	288	7.3	7.8	0.18	0.19
EQ-8	D + 0.75L + 0.75S + 0.45W	1.60	221	43	43	2160	222	236	288	5.5	5.8	0.16	0.17

**FIREWALL: STUD COMPRESSION CAPACITY REDUCED BY 22% PER ESR-1194

**FIREWALL: STUD AXIAL LOAD LIMITED TO 1100 lbs PER ESR-1194

BEAM: H1 (ROOF)							REDUCED				POINT LOADS (LBS):										
SPAN (FT): 4.00							DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)		1	2	3	4	5	6		
UNBRACED L (FT): 4.00							ROOF	15	20	25	11.5	460	288	D							
ΔTL < L/ 240							FLOOR	31	80	80	0	0	0	S							
ΔLL < L/ 360							WALL	31	----	----	5	155	----	LL							
SNOW? [PSF]: 25							MISC	20	----	----	1	20	----	UP							
ROOF SLOPE : 0.12							UNIFORM LOAD (PLF) :						635	288	DN						
ARTRIB (SQ FT) : 0													TYPE								
AFTRIB (SQ FT) : 0													AT X								
LOAD COMBINATION REACTIONS							END REACTIONS BY CASE:						INITIAL DIR.								
LEFT (K) RIGHT (K) MOMENT (K-FT)							LEFT (LB) RIGHT (LB)														
D-1 0.70 0.70 0.70							D	695	695	CONTROLLING LC:		LC - 3	LC - 3	LC - 3		DL ONLY					
D+L-2 0.70 0.70 0.70							S	575	575	OPTIONS		f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.				
D+(Lr or S)-3 1.27 1.27 1.27							LL	0	0	(3) 2x 6		60	672	0.04	1310	0.02	43.5				
D+0.75(L+Lr or S)-4 1.13 1.13 1.13 (ASD) SEISMIC UP							0	0	6 x 4		85	1357	0.12	413	0.06	87.4					
D+(0.6W or 0.7E)-5 0.70 0.70 0.70 (ASD) SEISMIC DN							0	0	3 1/8 x 6 GLB		76	813	0.04	1329	0.02	56.5					
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6 1.13 1.13 1.13 (ASD) WIND UP							0	0	5 1/8 x 6 GLB		46	496	0.02	2179	0.01	47.9					
0.6D+(0.7E or 0.6W)-7 0.42 0.42 0.42 (ASD) WIND DN							0	0	6 3/4 x 7 1/2 GLB		26	241	0.01	5606	0.00	35.0					
(Deflection Only) L+Lr-8 0.58 0.58 0.58									3 1/2 x 4 3/8 LSL		102	1365	0.12	417	0.06	83.2					
3 1/2 x 5 1/2 LSL LAID FLAT: V, M, SIMPLE SPAN DEFL OK									(2) 1-3/4 x 5 1/2 LVL		77	864	0.04	1210	0.02	58.3					

BEAM: B3							REDUCED				POINT LOADS (LBS):										
SPAN (FT): 3.50							DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)		1	2	3	4	5	6		
UNBRACED L (FT): 3.50							ROOF	15	20	67	19.5	1599	1307	D							
ΔTL < L/ 240							FLOOR	31	80	80	0	0	0	S							
ΔLL < L/ 360							WALL	8	----	----	6	48	----	LL							
SNOW? [PSF]: 67							MISC	20	----	----	1	20	----	UP							
ROOF SLOPE : 0.12							UNIFORM LOAD (PLF) :						1667	1307	DN						
ARTRIB (SQ FT) : 0													TYPE								
AFTRIB (SQ FT) : 0													AT X								
LOAD COMBINATION REACTIONS							END REACTIONS BY CASE:						INITIAL DIR.								
LEFT (K) RIGHT (K) MOMENT (K-FT)							LEFT (LB) RIGHT (LB)														
D-1 0.63 0.63 0.55							D	631	631	CONTROLLING LC:		LC - 3	LC - 3	LC - 8		DL ONLY					
D+L-2 0.63 0.63 0.55							S	2286	2286	OPTIONS		f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.				
D+(Lr or S)-3 2.92 2.92 2.55							LL	0	0	(3) 2x 6		131	1350	0.04	950	0.01	87.4				
D+0.75(L+Lr or S)-4 2.35 2.35 2.05 (ASD) SEISMIC UP							0	0	6 x 6		107	1105	0.04	1162	0.01	71.3					
D+(0.6W or 0.7E)-5 0.63 0.63 0.55 (ASD) SEISMIC DN							0	0	3 1/8 x 6 GLB		168	1634	0.04	964	0.01	59.6					
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6 2.35 2.35 2.05 (ASD) WIND UP							0	0	5 1/8 x 6 GLB		102	996	0.03	1581	0.01	61.1					
0.6D+(0.7E or 0.6W)-7 0.38 0.38 0.33 (ASD) WIND DN							0	0	6 3/4 x 7 1/2 GLB		56	484	0.01	4067	0.00	44.6					
(Deflection Only) L+Lr-8 2.29 2.29 2.00									3 1/2 x 5 1/2 LSL		168	1736	0.07	601	0.02	91.2					
									(2) 1-3/4 x 5 1/2 LVL		168	1736	0.05	878	0.01	74.3					

BEAM: B4							REDUCED				POINT LOADS (LBS):										
SPAN (FT): 16.75							DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)		1	2	3	4	5	6		
UNBRACED L (FT): 16.75							ROOF	15	20	55	18.25	1278	1004	D							
ΔTL < L/ 240							FLOOR	31	80	80	0	0	0	S							
ΔLL < L/ 360							WALL	8	----	----	0	0	----	LL							
SNOW? [PSF]: 55							MISC	20	----	----	1	20	----	UP							
ROOF SLOPE : 0.12							UNIFORM LOAD (PLF) :						1298	1004	DN						
ARTRIB (SQ FT) : 0													TYPE								
AFTRIB (SQ FT) : 0													AT X								
LOAD COMBINATION REACTIONS							END REACTIONS BY CASE:						INITIAL DIR.								
LEFT (K) RIGHT (K) MOMENT (K-FT)							LEFT (LB) RIGHT (LB)														
D-1 2.46 2.46 10.30							D	2460	2460	CONTROLLING LC:		LC - 3	LC - 3	LC - 8		DL ONLY					
D+L-2 2.46 2.46 10.30							S	8406	8406	OPTIONS		f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.				
D+(Lr or S)-3 10.87 10.87 45.50							LL	0	0	(3) 1/8 x 36 GLB		94	809	0.08	2473	0.02	96.1				
D+0.75(L+Lr or S)-4 8.76 8.76 36.70 (ASD) SEISMIC UP							0	0	5 1/8 x 16 1/2 GLB		162	2348	0.51	390	0.15	97.3					
D+(0.6W or 0.7E)-5 2.46 2.46 10.30 (ASD) SEISMIC DN							0	0	6 3/4 x 15 GLB		138	2157	0.52	386	0.15	97.7					
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6 8.76 8.76 36.70 (ASD) WIND UP							0	0													
0.6D+(0.7E or 0.6W)-7 1.48 1.48 6.18 (ASD) WIND DN							0	0													
(Deflection Only) L+Lr-8 8.41 8.41 35.20																					

BEAM: B5				REDUCED						POINT LOADS (LBS):						
SPAN (FT) : 5.00				DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)	1	2	3	4	5	6	
UNBRACED L (FT) : 5.00				ROOF	15	20	55	18.5	1295	1018						D
ΔTL < L/ 240				FLOOR	31	80	80	0	0	0						S
ΔLL < L/ 360				WALL	8	----	----	0	0	----						LL
SNOW? [PSF] : 55				MISC	20	----	----	1	20	----						UP
ROOF SLOPE : 0.12				UNIFORM LOAD (PLF) : 1315 1018						DN						
ARTRIB (SQ FT) : 0										TYPE						
AFTRIB (SQ FT) : 0										AT X						
										INITIAL DIR.						
LOAD COMBINATION REACTIONS				END REACTIONS BY CASE:												
LEFT (K) RIGHT (K) MOMENT (K-FT)				LEFT (LB) RIGHT (LB)												
D-1	0.74	0.74	0.93	D	744	744	CONTROLLING LC:									
D+L-2	0.74	0.74	0.93	S	2544	2544	LC - 3 LC - 3 LC - 8									
D+(Lr or S)-3	<u>3.29</u>	<u>3.29</u>	<u>4.11</u>	LL	0	0	f _v (PSI) f _b (PSI) Δ (IN)									
D+0.75(L+Lr or S) -4	2.65	2.65	3.31 (ASD) SEISMIC UP	0	0	SPAN / Δ Δ (IN) % CAP.										
D+(0.6W or 0.7E)-5	0.74	0.74	0.93 (ASD) SEISMIC DN	0	0	6 x 8										
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6	2.65	2.65	3.31 (ASD) WIND UP	0	0	3 1/8 x 6 GLB										
0.6D+(0.7E or 0.6W)-7	0.45	0.45	0.56 (ASD) WIND DN	0	0	5 1/8 x 6 GLB										
(Deflection Only) L+Lr-8	2.54	2.54	3.18				6 3/4 x 7 1/2 GLB									
							3 1/2 x 7 1/4 LSL									
							(2) 1-3/4 x 5 1/2 LVL									
							210 2795 0.16 387 0.05 97.7									

BEAM: B7				REDUCED						POINT LOADS (LBS):															
SPAN (FT) : 18.50				DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)																
UNBRACED L (FT): 18.50				ROOF	15	20	20	0	0	0	D	1													
ΔTL < L/ 240				FLOOR	31	20	66	19.75	1920	1308	Lr	2													
ΔLL < L/ 360				WALL	8	----	----	0	0	----	LL	3													
SNOW? [PSF] : 0				MISC	20	----	----	1	20	----	UP	4													
ROOF SLOPE : 0.12				UNIFORM LOAD (PLF) : 1940 1308							DN	5													
ARTRIB (SQ FT) : 0											TYPE	6													
AFTRIB (SQ FT) : 365											AT X														
LOAD COMBINATION REACTIONS				END REACTIONS BY CASE:							INITIAL DIR.														
LEFT (K)				RIGHT (K)	MOMENT (K-FT)			LEFT (LB)		RIGHT (LB)															
D-1				5.85	5.85	27.05			D	5848	5848	CONTROLLING LC:													
D+L-2				17.95	17.95	83.00			Lr	0	0	LC - 2													
D+(Lr or S)-3				5.85	5.85	27.05			LL	12097	12097	LC - 2													
D+0.75(L+Lr or S) -4				14.92	14.92	69.01 (ASD)			SEISMIC UP	0	0	LC - 8													
D+(0.6W or 0.7E) -5				5.85	5.85	27.05 (ASD)			SEISMIC DN	0	0	Δ (IN)													
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6				14.92	14.92	69.01 (ASD)			WIND UP	0	0	SPAN / Δ													
0.6D+(0.7E or 0.6W)-7				3.51	3.51	16.23 (ASD)			WIND DN	0	0	Δ (IN)													
(Deflection Only) L+Lr-8				12.10	12.10	55.95							% CAP.												
												OPTIONS		f _v (PSI)		f _b (PSI)		Δ (IN)		SPAN / Δ		Δ (IN)		% CAP.	
														173		2024		0.32		684		0.16		95.9	
														156		2007		0.37		604		0.18		89.8	

BEAM: B8								POINT LOADS (LBS):						
SPAN (FT) : 16.50		DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	w _{TL} (PLF)	w _{LL} (PLF)	B2	2	3	4	5	6	
UNBRACED L (FT): 16.50	ROOF	15	20	20	0	0	0	D	5258					
ΔTL < L/ 240	FLOOR	31	80	69	19.25	1930	1333	Lr	8222					
ΔLL < L/ 360	WALL	8	----	----	0	0	----	LL						
SNOW? [PSF] : 0	MISC	20	----	----	1	20	----	UP						
ROOF SLOPE : 0:12	UNIFORM LOAD (PLF) :						1950	1333	DN					
ARTRIB (SQ FT) : 0								TYPE						
AFTRIB (SQ FT) : 318								AT X	8.0					
LOAD COMBINATION REACTIONS		END REACTIONS BY CASE:						INITIAL DIR.	DOWN					
	LEFT (K)	RIGHT (K)	MOMENT (K-FT)			LEFT (LB)	RIGHT (LB)							
D-1	7.80	7.64	42.63		D	7797	7638	CONTROLLING LC:	LC - 2	LC - 2	LC - 8		DL ONLY	
D+L-2	18.80	18.64	87.97		Lr	4236	3986		f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	
D+(Lr or S)-3	12.03	11.62	76.51		LL	11001	11001	OPTIONS					% CAP.	
D+0.75(L+Lr or S) -4	19.22	18.88	102.04		(ASD) SEISMIC UP	0	0							
D+(0.6W or 0.7E)-5	7.80	7.64	42.63		(ASD) SEISMIC DN	0	0							
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6	19.22	18.88	102.04		(ASD) WIND UP	0	0	5 1/8 x 24 GLB	182	2146	0.33	592	0.18	
0.6D+(0.7E or 0.6W)-7	4.68	4.58	25.58		(ASD) WIND DN	0	0	6 3/4 x 21 GLB	163	2128	0.38	523	0.20	
(Deflection Only) L+Lr-8	15.24	14.99	79.21											

BEAM: B9			REDUCED						POINT LOADS (LBS):						
SPAN (FT) : 6.00			DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)	1	2	3	4	5	6	
UNBRACED L (FT): 6.00	ROOF	15	20	25	19.125	765	478	D							
ΔTL < L/ 240	FLOOR	31	80	80	19.125	2123	1530	S							
ΔLL < L/ 360	WALL	8	----	----	13	104	----	LL							
SNOW? [PSF] : 25	MISC	20	----	----	1	20	----	UP							
ROOF SLOPE : 0.12	UNIFORM LOAD (PLF) : 3012 2008							DN							
ARTRIB (SQ FT) : 0								TYPE							
AFTRIB (SQ FT) : 115								AT X							
LOAD COMBINATION REACTIONS			END REACTIONS BY CASE:						INITIAL DIR.						
	LEFT (K)	RIGHT (K)	MOMENT (K-FT)		LEFT (LB)	RIGHT (LB)									
D-1	3.01	3.01	4.52	D	3011	3011	CONTROLLING LC:	LC - 2	LC - 2	LC - 8		DL ONLY			
D+L-2	7.60	7.60	11.40	S	1434	1434	OPTIONS	f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.		
D+(Lr or S)-3	4.45	4.45	6.67	LL	4590	4590	(3) 2x 16	96	784	0.03	2616	0.01	92.3		
D+0.75(L+Lr or S)-4	7.53	7.53	11.29 (ASD)	SEISMIC UP	0	0	6 x 12	124	1129	0.05	1371	0.03	84.1		
D+(0.6W or 0.7E)-5	3.01	3.01	4.52 (ASD)	SEISMIC DN	0	0	3 1/8 x 12 GLB	204	1824	0.07	996	0.04	78.3		
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6	7.53	7.53	11.29 (ASD)	WIND UP	0	0	5 1/8 x 9 GLB	185	1978	0.10	689	0.05	82.9		
0.6D+(0.7E or 0.6W)-7	1.81	1.81	2.71 (ASD)	WIND DN	0	0	6 3/4 x 7 1/2 GLB	180	2162	0.14	525	0.07	90.3		
(Deflection Only) L+Lr-8	6.02	6.02	9.04				3 1/2 x 11 1/4 LSL	200	1853	0.09	791	0.05	82.5		
							(2) 1-3/4 x 9 1/2 LVL	254	2599	0.12	584	0.06	99.4		

BEAM: B12			REDUCED						POINT LOADS (LBS):					
SPAN (FT) : 18.00			DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)	1	2	3	4	5	6
UNBRACED L (FT): 18.00			ROOF	15	20	25	18.25	730	456					
ΔTL < L/ 240			FLOOR	31	80	69	18.25	1817	1252					
ΔLL < L/ 360			WALL	8	----	----	13	104	----					
SNOW? [PSF] : 25			MISC	20	----	----	1	20	----					
ROOF SLOPE : 0.12			UNIFORM LOAD (PLF) : 2671 1708											
ARTRIB (SQ FT) : 0														
AFTRIB (SQ FT) : 329														
LOAD COMBINATION REACTIONS			END REACTIONS BY CASE:						INITIAL DIR.					
LEFT (K)			RIGHT (K)			MOMENT (K-FT)			LEFT (LB)			RIGHT (LB)		
D-1	8.67	8.67	39.02			D	8672	8672			CONTROLLING LC:			
D+L-2	19.94	19.94	89.71			S	4106	4106			LC - 2			
D+(Lr or S)-3	12.78	12.78	57.50			LL	11264	11264			LC - 2			
D+0.75(L+Lr or S)-4	20.20	20.20	90.90			(ASD) SEISMIC UP	0	0			LC - 8			
D+(0.6W or 0.7E)-5	8.67	8.67	39.02			(ASD) SEISMIC DN	0	0			SPAN / Δ			
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6	20.20	20.20	90.90			(ASD) WIND UP	0	0			Δ (IN)			
0.6D+(0.7E or 0.6W)-7	5.20	5.20	23.41			(ASD) WIND DN	0	0			Δ (IN)			
(Deflection Only) L+Lr-8	15.37	15.37	69.16									% CAP.		
									5 1/8 x 25 1/2 GLB					
									6 3/4 x 21 GLB					

BEAM: B13			REDUCED						POINT LOADS (LBS):					
SPAN (FT) : 16.50			DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)	1	2	3	4	5	6
UNBRACED L (FT): 16.50			ROOF	15	20	25	0	0	0					
ΔTL < L/ 240			FLOOR	31	80	70	18.25	1849	1283					
ΔLL < L/ 360			WALL	17	----	----	0	0	----					
SNOW? [PSF] : 25			MISC	20	----	----	1	20	----					
ROOF SLOPE : 0.12			UNIFORM LOAD (PLF) : 1869 1283											
ARTRIB (SQ FT) : 0			END REACTIONS BY CASE:											
AFTRIB (SQ FT) : 301			LOAD COMBINATION REACTIONS						CONTROLLING LC:					
			LEFT (K) RIGHT (K) MOMENT (K-FT)			LEFT (LB) RIGHT (LB)			OPTIONS					
D-1			4.83	4.83	19.93	D	4832	4832	LC - 2	LC - 2	LC - 8	DL ONLY		
D+L-2			15.42	15.42	63.61	S	0	0	f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.
D+(Lr or S)-3			4.83	4.83	19.93	LL	10589	10589						
D+0.75(L+Lr or S)-4			12.77	12.77	52.69	(ASD) SEISMIC UP	0	0						
D+(0.6W or 0.7E)-5			4.83	4.83	19.93	(ASD) SEISMIC DN	0	0	59	476	0.03	7413	0.01	97.9
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6			12.77	12.77	52.69	(ASD) WIND UP	0	0	170	2026	0.30	659	0.14	90.8
0.6D+(0.7E or 0.6W)-7			2.90	2.90	11.96	(ASD) WIND DN	0	0	156	2094	0.36	546	0.17	91.2
(Deflection Only) L+Lr-8			10.59	10.59	43.68									
			3 1/8 x 55 1/2 GLB											
			5 1/8 x 21 GLB											
			6 3/4 x 18 GLB											

BEAM: B14							POINT LOADS (LBS):						
REDUCED													
							1	2	3	4	5	6	

BEAM: B15							POINT LOADS (LBS):						
REDUCED													
SPAN (FT): 10.00							1	2	3	4	5	6	
	DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)							
UNBRACED L (FT): 10.00	ROOF	15	20	25	0	0	D						
ΔTL < L/ 240	FLOOR	31	80	78	18.25	1988	S						
ΔLL < L/ 360	WALL	17	----	----	0	0	LL						
SNOW? [PSF]: 25	MISC	20	----	----	1	20	UP						
ROOF SLOPE : 0.12	UNIFORM LOAD (PLF): 2008 1422						DN						
ARTRIB (SQ FT): 0							TYPE						
AFTRIB (SQ FT): 183							AT X						
LOAD COMBINATION REACTIONS							END REACTIONS BY CASE:						
LEFT (K) RIGHT (K) MOMENT (K-FT)							LEFT (LB) RIGHT (LB)						
D-1	2.93	2.93	7.32	D	2929	2929	CONTROLLING LC:	LC - 2	LC - 2	LC - 8		DL ONLY	
D+L-2	10.04	10.04	25.10	S	0	0	OPTIONS	f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN) % CAP.	
D+(Lr or S)-3	2.93	2.93	7.32	LL	7110	7110							
D+0.75(L+Lr or S) -4	8.26	8.26	20.65	(ASD) SEISMIC UP	0	0							
D+(0.6W or 0.7E)-5	2.93	2.93	7.32	(ASD) SEISMIC DN	0	0	3 1/8 x 18 GLB	187	1785	0.12	1025	0.05 89.1	
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6	8.26	8.26	20.65	(ASD) WIND UP	0	0	5 1/8 x 13 1/2 GLB	170	1935	0.17	709	0.07 82.0	
0.6D+(0.7E or 0.6W)-7	1.76	1.76	4.39	(ASD) WIND DN	0	0	6 3/4 x 12 GLB	149	1859	0.18	656	0.08 78.0	
(Deflection Only) L+Lr-8	7.11	7.11	17.78				3 1/2 x 18 LSL	167	1593	0.12	989	0.05 95.9	
							(2) 1-3/4 x 16 LVL	199	2017	0.14	851	0.06 94.6	

BEAM: H2 (ROOF)							POINT LOADS (LBS):								
REDUCED															
SPAN (FT) : 4.00		DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)	1	2	3	4	5	6		
UNBRACED L (FT): 4.00	ROOF	15	20	25	11.5	460	288	D	830						
ΔTL < L/ 240	FLOOR	31	80	80	0	0	0	S	1380						
ΔLL < L/ 360	WALL	31	----	----	5	155	----	LL							
SNOW? [PSF]: 25	MISC	20	----	----	1	20	----	UP							
ROOF SLOPE : 0.12	UNIFORM LOAD (PLF) :						635	288	DN						
ARTRIB (SQ FT) : 0									TYPE						
AFTRIB (SQ FT) : 0									AT X	3.3					
LOAD COMBINATION REACTIONS							END REACTIONS BY CASE:							INITIAL DIR. DOWN	
	LEFT (K)	RIGHT (K)	MOMENT (K-FT)		LEFT (LB)	RIGHT (LB)									
D-1	0.83	1.39	1.00	D	834	1386	CONTROLLING LC:	LC - 3	LC - 3	LC - 3		DL ONLY			
D+L-2	0.83	1.39	1.00	S	806	1724		f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.		
D+(Lr or S)-3	1.64	3.11	2.12	LL	0	0	OPTIONS								
D+0.75(L+Lr or S)-4	1.44	2.68	1.84	(ASD) SEISMIC UP	0	0	(3) 2x 6	172	1120	0.06	780	0.03	91.1		
D+(0.6W or 0.7E)-5	0.83	1.39	1.00	(ASD) SEISMIC DN	0	0	6 x 6	140	917	0.05	954	0.02	96.0		
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6	1.44	2.68	1.84	(ASD) WIND UP	0	0	3 1/8 x 6 GLB	224	1356	0.06	791	0.03	96.0		
0.6D+(0.7E or 0.6W)-7	0.50	0.83	0.60	(ASD) WIND DN	0	0	5 1/8 x 6 GLB	136	827	0.04	1298	0.02	57.0		
(Deflection Only) L+Lr-8	0.81	1.72	1.13				6 3/4 x 7 1/2 GLB	80	402	0.01	3339	0.01	41.6		
							3 1/2 x 5 1/2 LSL	221	1441	0.10	493	0.05	83.1		
							(2) 1-3/4 x 5 1/2 LVL	221	1441	0.07	721	0.03	96.0		

BEAM: H3 (ROOF)								POINT LOADS (LBS):							
REDUCED								1	2	3	4	5	6		
SPAN (FT): 4.00		DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)								
UNBRACED L (FT): 4.00		ROOF	15	20	25	6.5	260	163	D						
ΔTL < L/ 240		FLOOR	31	80	80	0	0	0	S						
ΔLL < L/ 360		WALL	17	----	----	5	85	----	LL						
SNOW? [PSF]: 25		MISC	20	----	----	1	20	----	UP						
ROOF SLOPE : 0.12		UNIFORM LOAD (PLF) :						365	163	DN					
ARtrib (SQ FT) : 0									TYPE						
AFtrib (SQ FT) : 0									AT X						
									INITIAL DIR.						
		LOAD COMBINATION REACTIONS			END REACTIONS BY CASE:										
		LEFT (K)	RIGHT (K)	MOMENT (K-FT)	LEFT (LB)	RIGHT (LB)									
D-1		0.41	0.41	0.41	D	405	405	CONTROLLING LC:							
D+L-2		0.41	0.41	0.41	S	325	325	OPTIONS							
D+(Lr or S)-3		0.73	0.73	0.73	LL	0	0	(STUD) (3) 2x 4	LC - 3	LC - 3	LC - 3		DL ONLY		
D+0.75(L+Lr or S) -4		0.65	0.65	0.65	(ASD) SEISMIC UP	0	0	6 x 4	f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.	
D+(0.6W or 0.7E)-5		0.41	0.41	0.41	(ASD) SEISMIC DN	0	0	3 1/8 x 6 GLB	60	953	0.08	587	0.05	93.7	
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6		0.65	0.65	0.65	(ASD) WIND UP	0	0	5 1/8 x 6 GLB	49	780	0.07	718	0.04	50.2	
0.6D+(0.7E or 0.6W)-7		0.24	0.24	0.24	(ASD) WIND DN	0	0	6 3/4 x 7 1/2 GLB	44	467	0.02	2312	0.01	47.0	
(Deflection Only) L+Lr-8		0.33	0.33	0.33				3 1/2 x 4 3/8 LSL	27	285	0.01	3791	0.01	39.9	
3 1/2 x 5 1/2 LSL LAID FLAT: V, M, SIMPLE SPAN DEFL OK								15	138	0.00	9752	0.00	29.1		
								59	785	0.07	725	0.04	69.2		
								44	496	0.02	2105	0.01	48.5		
								(2) 1-3/4 x 5 1/2 LVL							

BEAM: H4 (FLOOR)								POINT LOADS (LBS):							
REDUCED								1	2	3	4	5	6		
SPAN (FT): 4.00		DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)								
UNBRACED L (FT): 4.00		ROOF	15	20	25	0	0	0	D						
ΔTL < L/ 240		FLOOR	31	80	80	11	1221	880	S						
ΔLL < L/ 360		WALL	17	----	----	5	85	----	LL						
SNOW? [PSF]: 25		MISC	20	----	----	1	20	----	UP						
ROOF SLOPE : 0.12		UNIFORM LOAD (PLF) :						1326	880	DN					
ARtrib (SQ FT) : 0									TYPE						
AFtrib (SQ FT) : 44									AT X						
									INITIAL DIR.						
		LOAD COMBINATION REACTIONS			END REACTIONS BY CASE:										
		LEFT (K)	RIGHT (K)	MOMENT (K-FT)	LEFT (LB)	RIGHT (LB)									
D-1		0.89	0.89	0.89	D	892	892	CONTROLLING LC:							
D+L-2		2.65	2.65	2.65	S	0	0	OPTIONS							
D+(Lr or S)-3		0.89	0.89	0.89	LL	1760	1760	(3) 2x 8	LC - 2	LC - 2	LC - 2		DL ONLY		
D+0.75(L+Lr or S) -4		2.21	2.21	2.21	(ASD) SEISMIC UP	0	0	6 x 6	f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.	
D+(0.6W or 0.7E)-5		0.89	0.89	0.89	(ASD) SEISMIC DN	0	0	3 1/8 x 6 GLB	85	807	0.03	1437	0.01	65.2	
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6		2.21	2.21	2.21	(ASD) WIND UP	0	0	5 1/8 x 6 GLB	103	1148	0.06	767	0.02	85.2	
0.6D+(0.7E or 0.6W)-7		0.54	0.54	0.54	(ASD) WIND DN	0	0	6 3/4 x 7 1/2 GLB	159	1697	0.08	636	0.03	71.2	
(Deflection Only) L+Lr-8		1.76	1.76	1.76				3 1/2 x 5 1/2 LSL	97	1035	0.05	1044	0.02	43.2	
								54	503	0.02	2684	0.01	21.0		
								161	1803	0.12	396	0.04	99.7		
								161	1803	0.08	579	0.03	62.9		
								(2) 1-3/4 x 5 1/2 LVL							

BEAM: H5 (FLOOR)								POINT LOADS (LBS):							
REDUCED								H1	H1	3	4	5	6		
SPAN (FT): 6.00		DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)								
UNBRACED L (FT): 6.00		ROOF	15	20	25	0	0	0	D	695	695				
ΔTL < L/ 240		FLOOR	31	80	80	11	1221	880	S	575	575				
ΔLL < L/ 360		WALL	17	----	----	5	85	----	LL						
SNOW? [PSF]: 25		MISC	20	----	----	1	20	----	UP						
ROOF SLOPE : 0.12		UNIFORM LOAD (PLF) :						1326	880	DN					
ARtrib (SQ FT) : 0									TYPE						
AFtrib (SQ FT) : 66									AT X	1.5	4.5				
									INITIAL DIR.	DOWN	DOWN				
		LOAD COMBINATION REACTIONS			END REACTIONS BY CASE:										
		LEFT (K)	RIGHT (K)	MOMENT (K-FT)	LEFT (LB)	RIGHT (LB)									
D-1		1.89	1.89	2.84	D	1893	1893	CONTROLLING LC:							
D+L-2		4.53	4.53	6.80	S	575	575	OPTIONS							
D+(Lr or S)-3		2.47	2.47	3.70	LL	2640	2640	(3) 2x 12	LC - 2	LC - 2	LC - 8		DL ONLY		
D+0.75(L+Lr or S) -4		4.30	4.30	6.46	(ASD) SEISMIC UP	0	0	6 x 10	f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.	
D+(0.6W or 0.7E)-5		1.89	1.89	2.84	(ASD) SEISMIC DN	0	0	3 1/8 x 9 GLB	98	860	0.04	1934	0.02	83.5	
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6		4.30	4.30	6.46	(ASD) WIND UP	0	0	5 1/8 x 7 1/2 GLB	100	986	0.05	1423	0.03	73.4	
0.6D+(0.7E or 0.6W)-7		1.14	1.14	1.70	(ASD) WIND DN	0	0	6 3/4 x 7 1/2 GLB	189	1934	0.09	773	0.06	82.1	
(Deflection Only) L+Lr-8		3.22	3.22	4.82				3 1/2 x 9 1/4 LSL	146	1698	0.10	734	0.06	71.1	
								111	1289	0.07	967	0.04	53.9		
								164	1635	0.09	810	0.05	70.6		
								221	2661	0.15	478	0.09	97.2		
								(2) 1-3/4 x 7 1/4 LVL							

BEAM: H6 (FLOOR)								REDUCED								POINT LOADS (LBS):										
SPAN (FT): 4.00								DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)	123456												
UNBRACED L (FT): 4.00								ROOF	15	20	25	0	0	0	D											
ΔTL < L/ 240								FLOOR	31	80	80	2	222	160	S											
ΔLL < L/ 360								WALL	17	----	----	5	85	----	LL											
SNOW? [PSF]: 25								MISC	20	----	----	1	20	----	UP											
ROOF SLOPE : 0.12								UNIFORM LOAD (PLF) :								327	160	DN								
ARTRIB (SQ FT) : 0																TYPE										
AFTRIB (SQ FT) : 8																AT X										
LOAD COMBINATION REACTIONS								END REACTIONS BY CASE:								INITIAL DIR.										
LEFT (K) RIGHT (K) MOMENT (K-FT)								LEFT (LB) RIGHT (LB)																		
D-1 0.33 0.33 0.33								D	334	334	CONTROLLING LC:								LC - 2	LC - 2	LC - 2			DL ONLY		
D+L-2 0.65 0.65 0.65								S	0	0	OPTIONS								f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.		
D+(Lr or S)-3 0.33 0.33 0.33								LL	320	320	(STUD) (3) 2x 4								54	854	0.07	656	0.04	96.6		
D+0.75(L+Lr or S) -4 0.57 0.57 0.57 (ASD) SEISMIC UP								0	0	6 x 4								44	699	0.06	801	0.03	51.8			
D+(0.6W or 0.7E) -5 0.33 0.33 0.33 (ASD) SEISMIC DN								0	0	3 1/8 x 6 GLB								39	419	0.02	2580	0.01	45.3			
D+0.75(L+(Lr/S)+(0.6W/0.7E)) -6 0.57 0.57 0.57 (ASD) WIND UP								0	0	5 1/8 x 6 GLB								24	255	0.01	4232	0.01	38.4			
0.6D+(0.7E or 0.6W) -7 0.20 0.20 0.20 (ASD) WIND DN								0	0	6 3/4 x 7 1/2 GLB								13	124	0.00	10886	0.00	28.0			
(Deflection Only) L+Lr-8 0.32 0.32 0.32								3 1/2 x 4 3/8 LSL								53	703	0.06	809	0.03	66.7					
3 1/2 x 5 1/2 LSL LAID FLAT: V, M, SIMPLE SPAN DEFL OK								(2) 1-3/4 x 5 1/2 LVL								40	445	0.02	2350	0.01	46.7					

BEAM: B2A								REDUCED								POINT LOADS (LBS):										
SPAN (FT): 8.50								DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)	123456												
UNBRACED L (FT): 8.50								ROOF	15	20	25	19.5	780	488	D											
ΔTL < L/ 240								FLOOR	31	80	80	0	0	0	S											
ΔLL < L/ 360								WALL	8	----	----	0	0	----	LL											
SNOW? [PSF]: 25								MISC	20	----	----	1	20	----	UP											
ROOF SLOPE : 0.12								UNIFORM LOAD (PLF) :								800	488	DN								
ARTRIB (SQ FT) : 0																TYPE										
AFTRIB (SQ FT) : 0																AT X										
LOAD COMBINATION REACTIONS								END REACTIONS BY CASE:								INITIAL DIR.										
LEFT (K) RIGHT (K) MOMENT (K-FT)								LEFT (LB) RIGHT (LB)																		
D-1 1.33 1.33 2.82								D	1328	1328	CONTROLLING LC:								LC - 3	LC - 3	LC - 3			DL ONLY		
D+L-2 1.33 1.33 2.82								S	2072	2072	OPTIONS								f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.		
D+(Lr or S)-3 3.40 3.40 7.23								LL	0	0	(3) 2x 10								79	913	0.11	927	0.04	77.4		
D+0.75(L+Lr or S) -4 2.88 2.88 6.12 (ASD) SEISMIC UP								0	0	6 x 10								80	1048	0.15	683	0.06	68.0			
D+(0.6W or 0.7E) -5 1.33 1.33 2.82 (ASD) SEISMIC DN								0	0	3 1/8 x 9 GLB								151	2055	0.27	371	0.11	76.6			
D+0.75(L+(Lr/S)+(0.6W/0.7E)) -6 2.88 2.88 6.12 (ASD) WIND UP								0	0	5 1/8 x 7 1/2 GLB								114	1804	0.29	352	0.11	88.0			
0.6D+(0.7E or 0.6W) -7 0.80 0.80 1.69 (ASD) WIND DN								0	0	6 3/4 x 7 1/2 GLB								87	1370	0.22	464	0.09	80.3			
(Deflection Only) L+Lr-8 2.07 2.07 4.40								3 1/2 x 9 1/4 LSL								129	1737	0.26	388	0.10	85.2					
								(2) 1-3/4 x 9 1/2 LVL								126	1647	0.20	516	0.08	77.5					

BEAM: B2B								REDUCED								POINT LOADS (LBS):										
SPAN (FT): 24.00								DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)	123456												
UNBRACED L (FT): 24.00								ROOF	15	20	25	20.5	820	513	D											
ΔTL < L/ 240								FLOOR	31	80	80	0	0	0	S											
ΔLL < L/ 360								WALL	8	----	----	0	0	----	LL											
SNOW? [PSF]: 25								MISC	20	----	----	1	20	----	UP											
ROOF SLOPE : 0.12								UNIFORM LOAD (PLF) :								840	513	DN								
ARTRIB (SQ FT) : 0																TYPE										
AFTRIB (SQ FT) : 0																AT X										
LOAD COMBINATION REACTIONS								END REACTIONS BY CASE:								INITIAL DIR.										
LEFT (K) RIGHT (K) MOMENT (K-FT)								LEFT (LB) RIGHT (LB)																		
D-1 3.93 3.93 23.58								D	3930	3930	CONTROLLING LC:								LC - 3	LC - 3	LC - 3			DL ONLY		
D+L-2 3.93 3.93 23.58								S	6150	6150	OPTIONS								f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.		
D+(Lr or S)-3 10.08 10.08 60.48								LL	0	0																
D+0.75(L+Lr or S) -4 8.54 8.54 51.26 (ASD) SEISMIC UP								0	0																	
D+(0.6W or 0.7E) -5 3.93 3.93 23.58 (ASD) SEISMIC DN								0	0																	
D+0.75(L+(Lr/S)+(0.6W/0.7E)) -6 8.54 8.54 51.26 (ASD) WIND UP								0	0	5 1/8 x 19 1/2 GLB								132	2235	1.10	262	0.43	97.1			
0.6D+(0.7E or 0.6W) -7 2.36 2.36 14.15 (ASD) WIND DN								0	0	6 3/4 x 18 GLB								110	1991	1.06	271	0.41	96.0			
(Deflection Only) L+Lr-8 6.15 6.15 36.90																										

BEAM: B2A							POINT LOADS (LBS):												
SPAN (FT): 8.50							DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)	1	2	3	4	5	6	
UNBRACED L (FT): 8.50	ROOF	15	20	25	19.5	780	488	D											
ΔTL < L/ 240	FLOOR	31	80	80	0	0	0	S											
ΔLL < L/ 360	WALL	8	----	----	0	0	----	LL											
SNOW? [PSF]: 25	MISC	20	----	----	1	20	----	UP											
ROOF SLOPE : 0:12	UNIFORM LOAD (PLF) : 800 488												DN						
ARTRIB (SQ FT) : 0													TYPE						
AFTRIB (SQ FT) : 0													AT X						
LOAD COMBINATION REACTIONS												END REACTIONS BY CASE:				INITIAL DIR.			
	LEFT (K)	RIGHT (K)	MOMENT (K-FT)		LEFT (LB)	RIGHT (LB)													
D-1	1.33	1.33	2.82	D	1328	1328	CONTROLLING LC:												
D+L-2	1.33	1.33	2.82	S	2072	2072	OPTIONS												
D+(Lr or S)-3	3.40	3.40	7.23	LL	0	0	(3) 2x 12												
D+0.75(L+Lr or S) -4	2.88	2.88	6.12	(ASD) SEISMIC UP	0	0	6 x 10												
D+(0.6W or 0.7E)-5	1.33	1.33	2.82	(ASD) SEISMIC DN	0	0	3 1/8 x 9 GLB												
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6	2.88	2.88	6.12	(ASD) WIND UP	0	0	5 1/8 x 7 1/2 GLB												
0.6D+(0.7E or 0.6W)-7	0.80	0.80	1.69	(ASD) WIND DN	0	0	6 3/4 x 7 1/2 GLB												
(Deflection Only) L+Lr-8	2.07	2.07	4.40				3 1/2 x 9 1/4 LSL												
							(2) 1-3/4 x 9 1/2 LVL												
	LC - 3	LC - 3	LC - 3				LC - 3	LC - 3	LC - 3		DL ONLY								
	f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.													
	79	913	0.11	927	0.04	77.4													
	80	1048	0.15	683	0.06	68.0													
	151	2055	0.27	371	0.11	76.6													
	114	1804	0.29	352	0.11	88.0													
	87	1370	0.22	464	0.09	80.3													
	129	1737	0.26	388	0.10	85.2													
	126	1647	0.20	516	0.08	77.5													

BEAM: B2B							POINT LOADS (LBS):							
SPAN (FT): 24.00							1	2	3	4	5	6		
REDUCED														
	DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)								
UNBRACED L (FT): 24.00	15	20	25	20.5	820	513	D							
ΔTL < L/ 240	31	80	80	0	0	0	S							
ΔLL < L/ 360	8	----	----	0	0	----	LL							
SNOW? [PSF]: 25	20	----	----	1	20	----	UP							
ROOF SLOPE : 0:12	UNIFORM LOAD (PLF) :					840	513	DN						
ARTRIB (SQ FT): 0								TYPE						
AFTRIB (SQ FT): 0								AT X						
LOAD COMBINATION REACTIONS							INITIAL DIR.							
END REACTIONS BY CASE:														
	LEFT (K)	RIGHT (K)	MOMENT (K-FT)	LEFT (LB)	RIGHT (LB)									
D-1	3.93	3.93	23.58	D	3930	3930	CONTROLLING LC:	LC - 3	LC - 3	LC - 3		DL ONLY		
D+L-2	3.93	3.93	23.58	S	6150	6150	OPTIONS	f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)		
D+(Lr or S)-3	10.08	10.08	60.48	LL	0	0						% CAP.		
D+0.75(L+Lr or S)-4	8.54	8.54	51.26	(ASD) SEISMIC UP	0	0								
D+(0.6W or 0.7E)-5	3.93	3.93	23.58	(ASD) SEISMIC DN	0	0								
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6	8.54	8.54	51.26	(ASD) WIND UP	0	0	5 1/8 x 19 1/2 GLB	132	2235	1.10	262	0.43		
0.6D+(0.7E or 0.6W)-7	2.36	2.36	14.15	(ASD) WIND DN	0	0	6 3/4 x 18 GLB	110	1991	1.06	271	0.41		
(Deflection Only) L+Lr-8	6.15	6.15	36.90									96.0		

BEAM: B16 - LANDING								POINT LOADS (LBS):							
REDUCED								1	2	3	4	5	6		
SPAN (FT): 8.00		DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)								
UNBRACED L (FT): 8.00		ROOF	15	20	25	0	0	0	D						
ΔTL < L/ 240		FLOOR	31	100	100	7.5	983	750	S						
ΔLL < L/ 360		WALL	17	----	----	0	0	----	LL						
SNOW? [PSF]: 25		MISC	20	----	----	1	20	----	UP						
ROOF SLOPE: 0.12		UNIFORM LOAD (PLF):						1003	750	DN					
ARTRIB (SQ FT): 0										TYPE					
AFTRIB (SQ FT): 60										AT X					
		LOAD COMBINATION REACTIONS						END REACTIONS BY CASE:							
	LEFT (K)	RIGHT (K)	MOMENT (K-FT)			LEFT (LB)		RIGHT (LB)		INITIAL DIR.					
D-1	1.01	1.01	2.02			D	1010	1010	CONTROLLING LC:						
D+L-2	4.01	4.01	8.02			S	0	0	OPTIONS						
D+(Lr or S)-3	1.01	1.01	2.02			LL	3000	3000	(3) 2x 12						
D+0.75(L+Lr or S)-4	3.26	3.26	6.52			(ASD) SEISMIC UP	0	0	6 x 10						
D+(0.6W or 0.7E)-5	1.01	1.01	2.02			(ASD) SEISMIC DN	0	0	3 1/8 x 9 GLB						
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6	3.26	3.26	6.52			(ASD) WIND UP	0	0	5 1/8 x 7 1/2 GLB						
0.6D+(0.7E or 0.6W)-7	0.61	0.61	1.21			(ASD) WIND DN	0	0	6 3/4 x 7 1/2 GLB						
(Deflection Only) L+Lr-8	3.00	3.00	6.00						3 1/2 x 9 1/4 LSL						
									(2) 1-3/4 x 9 1/2 LVL						
									LC - 2	LC - 2	LC - 8		DL ONLY		
									f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.	
									91	1014	0.08	1187	0.03	98.7	
									93	1163	0.11	873	0.04	86.7	
									175	2281	0.20	475	0.07	97.6	
									133	2003	0.21	450	0.07	92.8	
									101	1521	0.16	593	0.05	84.7	
									150	1928	0.19	497	0.07	84.4	
									147	1828	0.15	660	0.05	70.7	

BEAM: B17 - LANDING								POINT LOADS (LBS):							
REDUCED								1	2	3	4	5	6		
SPAN (FT): 5.00		DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)								
UNBRACED L (FT): 5.00		ROOF	15	20	25	0	0	0	D						
ΔTL < L/ 240		FLOOR	31	100	100	6.5	852	650	S						
ΔLL < L/ 360		WALL	17	----	----	0	0	----	LL						
SNOW? [PSF]: 25		MISC	20	----	----	1	20	----	UP						
ROOF SLOPE: 0.12		UNIFORM LOAD (PLF):						872	650	DN					
ARTRIB (SQ FT): 0										TYPE					
AFTRIB (SQ FT): 33										AT X					
		LOAD COMBINATION REACTIONS						END REACTIONS BY CASE:							
	LEFT (K)	RIGHT (K)	MOMENT (K-FT)			LEFT (LB)		RIGHT (LB)		INITIAL DIR.					
D-1	0.55	0.55	0.69			D	554	554	CONTROLLING LC:						
D+L-2	2.18	2.18	2.72			S	0	0	OPTIONS						
D+(Lr or S)-3	0.55	0.55	0.69			LL	1625	1625	(3) 2x 8						
D+0.75(L+Lr or S)-4	1.77	1.77	2.22			(ASD) SEISMIC UP	0	0	6 x 6						
D+(0.6W or 0.7E)-5	0.55	0.55	0.69			(ASD) SEISMIC DN	0	0	3 1/8 x 6 GLB						
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6	1.77	1.77	2.22			(ASD) WIND UP	0	0	5 1/8 x 6 GLB						
0.6D+(0.7E or 0.6W)-7	0.33	0.33	0.42			(ASD) WIND DN	0	0	6 3/4 x 7 1/2 GLB						
(Deflection Only) L+Lr-8	1.63	1.63	2.03						3 1/2 x 7 1/4 LSL						
									(2) 1-3/4 x 5 1/2 LVL						
									LC - 2	LC - 2	LC - 8		DL ONLY		
									f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.	
									76	829	0.04	1501	0.01	66.9	
									89	1179	0.07	801	0.03	87.5	
									139	1743	0.09	665	0.03	73.3	
									85	1063	0.06	1090	0.02	69.1	
									48	516	0.02	2804	0.01	50.4	
									98	1066	0.06	948	0.02	77.9	
									139	1852	0.10	605	0.03	84.1	

BEAM: B18								POINT LOADS (LBS):							
REDUCED								1	2	3	4	5	6		
SPAN (FT): 3.50		DL (PSF)	LL (PSF)	LL (PSF)	TRIB (FT)	W _{TL} (PLF)	W _{LL} (PLF)								
UNBRACED L (FT): 3.50		ROOF	15	20	25	2	80	50	D						
ΔTL < L/ 240		FLOOR	31	80	80	12	1332	960	S						
ΔLL < L/ 360		WALL	8	----	----	20	160	----	LL						
SNOW? [PSF]: 25		MISC	20	----	----	1	20	----	UP						
ROOF SLOPE: 0.12		UNIFORM LOAD (PLF):						1592	1010	DN					
ARTRIB (SQ FT): 0										TYPE					
AFTRIB (SQ FT): 42										AT X					
		LOAD COMBINATION REACTIONS						END REACTIONS BY CASE:							
	LEFT (K)	RIGHT (K)	MOMENT (K-FT)			LEFT (LB)		RIGHT (LB)		INITIAL DIR.					
D-1	1.02	1.02	0.89			D	1019	1019	CONTROLLING LC:						
D+L-2	2.70	2.70	2.36			S	88	88	OPTIONS						
D+(Lr or S)-3	1.11	1.11	0.97			LL	1680	1680	(3) 2x 6						
D+0.75(L+Lr or S)-4	2.34	2.34	2.05			(ASD) SEISMIC UP	0	0	6 x 6						
D+(0.6W or 0.7E)-5	1.02	1.02	0.89			(ASD) SEISMIC DN	0	0	3 1/8 x 6 GLB						
D+0.75(L+(Lr/S)+(0.6W/0.7E))-6	2.34	2.34	2.05			(ASD) WIND UP	0	0	5 1/8 x 6 GLB						
0.6D+(0.7E or 0.6W)-7	0.61	0.61	0.53			(ASD) WIND DN	0	0	6 3/4 x 7 1/2 GLB						
(Deflection Only) L+Lr-8	1.77	1.77	1.55						3 1/2 x 5 1/2 LSL						
									(2) 1-3/4 x 5 1/2 LVL						
									LC - 2	LC - 2	LC - 2		DL ONLY		
									f _v (PSI)	f _b (PSI)	Δ (IN)	SPAN / Δ	Δ (IN)	% CAP.	
									121	1249	0.05	805	0.02	93.0	
									99	1022	0.04	984	0.02	75.8	
									155	1511	0.05	817	0.02	98.0	
									95	921	0.03	1340	0.01	38.5	
									52	448	0.01	3446	0.00	18.7	
									156	1606	0.08	509	0.03	94.1	
									156	1606	0.06	744	0.02	55.9	

JOIST : J1	SPAN (FT) : 4 SPACING (IN) : 24 $\Delta_{TL} < L/240$ $C_D : 1.00$ LUMBER GRADE : (DF LARCH No. 2)	JOIST LOADING DL (PSF) LL (PSF) TL (PSF) w_{TL} (PLF) 31 100 131 262	R (LB) : 524 M (LB-FT) : 524 Δ (IN) : 0.05	fv (PSI) @ d : 73 fb (PSI) : 831 SPAN / Δ : 1058
			J1 : 2 x 6 at 24	
JOIST : J2	SPAN (FT) : 10 SPACING (IN) : 24 $\Delta_{TL} < L/240$ $C_D : 1.25$ LUMBER GRADE : (DF LARCH No. 2)	JOIST LOADING DL (PSF) LL (PSF) TL (PSF) w_{TL} (PLF) 20 40 60 120	R (LB) : 600 M (LB-FT) : 1500 Δ (IN) : 0.35	fv (PSI) @ d : 73 fb (PSI) : 1370 SPAN / Δ : 339
			J2 : 2 x 8 at 24	
JOIST : J3	SPAN (FT) : 10 SPACING (IN) : 24 $\Delta_{TL} < L/240$ $C_D : 1.00$ LUMBER GRADE : (DF LARCH No. 2)	JOIST LOADING DL (PSF) LL (PSF) TL (PSF) w_{TL} (PLF) 20 40 60 120	R (LB) : 600 M (LB-FT) : 1500 Δ (IN) : 0.17	fv (PSI) @ d : 55 fb (PSI) : 841 SPAN / Δ : 704
			J3 : 2 x 10 at 24	
JOIST : J4	SPAN (FT) : 10 SPACING (IN) : 24 $\Delta_{TL} < L/240$ $C_D : 1.00$ LUMBER GRADE : (DF LARCH No. 2)	JOIST LOADING DL (PSF) LL (PSF) TL (PSF) w_{TL} (PLF) 20 40 60 120	R (LB) : 600 M (LB-FT) : 1500 Δ (IN) : 0.17	fv (PSI) @ d : 55 fb (PSI) : 841 SPAN / Δ : 704
			J4 : 2 x 10 at 24	
JOIST : J5	SPAN (FT) : 10 SPACING (IN) : 24 $\Delta_{TL} < L/240$ $C_D : 1.00$ LUMBER GRADE : (DF LARCH No. 2)	JOIST LOADING DL (PSF) LL (PSF) TL (PSF) w_{TL} (PLF) 20 40 60 120	R (LB) : 600 M (LB-FT) : 1500 Δ (IN) : 0.17	fv (PSI) @ d : 55 fb (PSI) : 841 SPAN / Δ : 704
			J5 : 2 x 10 at 24	
JOIST : J6	SPAN (FT) : 10 SPACING (IN) : 24 $\Delta_{TL} < L/240$ $C_D : 1.00$ LUMBER GRADE : (DF LARCH No. 2)	JOIST LOADING DL (PSF) LL (PSF) TL (PSF) w_{TL} (PLF) 20 40 60 120	R (LB) : 600 M (LB-FT) : 1500 Δ (IN) : 0.17	fv (PSI) @ d : 55 fb (PSI) : 841 SPAN / Δ : 704
			J6 : 2 x 10 at 24	

Wood Beam

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: G.T.

Code References

Governing Code : IBC 2018, CBC 2019
Referenced Design Standard(s) : NDS 2018
Load Combination Set : IBC 2021

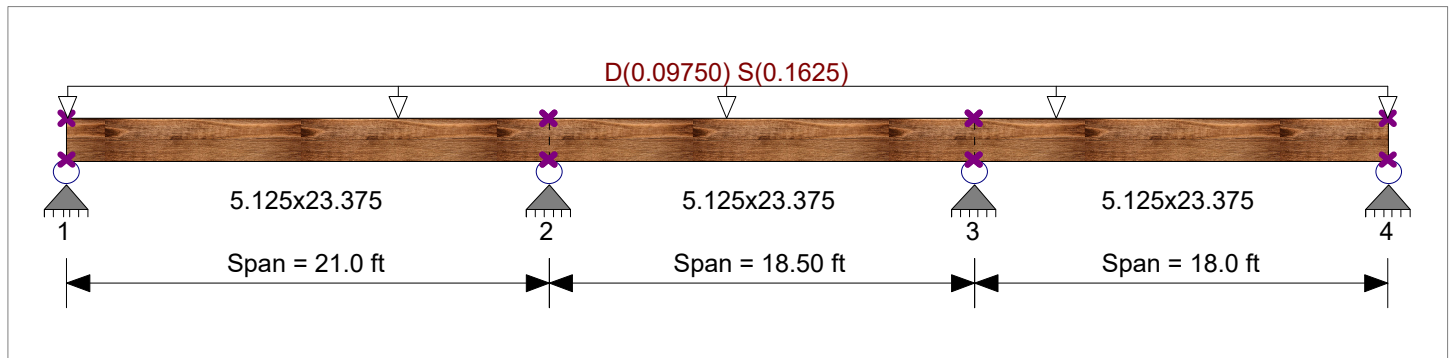
Material Properties

Analysis Method : Allowable Stress Design
Load Combination : IBC 2021

Wood Species : Douglas Fir-Larch
Wood Grade : No.2

Beam Bracing : Completely Unbraced

Fb + 900.0 psi E : Modulus of Elasticity
Fb - 900.0 psi Ebend- xx 1,600.0ksi
Fc - Prll 1,350.0 psi Eminbend - xx 580.0ksi
Fc - Perp 625.0 psi
Fv 180.0 psi
Ft 575.0 psi Density 31.210pcf



Applied Loads

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

Beam self weight NOT internally calculated and added

Loads on all spans...

Uniform Load on ALL spans : D = 0.0150, S = 0.0250 ksf, Tributary Width = 6.50 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio		=	0.292 : 1	Maximum Shear Stress Ratio		=	0.166 : 1
Section used for this span			5.125x23.375	Section used for this span			5.125x23.375
			NDS2018				NDS2018
fb: Actual	=	281.35 psi		f _v : Actual	=	34.39 psi	
F ^b	=	964.67 psi		F ^v	=	207.00 psi	
Load Combination				Load Combination			
			+D+S				+D+S
Location of maximum on span	=	21.000ft		Location of maximum on span	=	19.059 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection	0.045 in	Ratio =	5542 >=360	Span: 1 : S Only			
Max Upward Transient Deflection	-0.004 in	Ratio =	51780 >=360	Span: 2 : S Only			
Max Downward Total Deflection	0.073 in	Ratio =	3464 >=180	Span: 1 : +D+S			
Max Upward Total Deflection	-0.007 in	Ratio =	32362 >=180	Span: 2 : +D+S			

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CL _x	C _v	C _{fu}	C _i	C _r	M	fb	F ^b	V	f _v	F ^v
D Only																	
Length = 21.0 ft	1	0.136	0.080	0.90	1.00	1.00	0.96	0.967	1.00	1.00	1.00	4.10	105.5	774.8	1.03	12.9	162.0
Length = 18.50 ft	2	0.135	0.067	0.90	1.00	1.00	0.96	0.973	1.00	1.00	1.00	4.10	105.5	780.4	0.87	10.9	162.0
Length = 18.0 ft	3	0.099	0.067	0.90	1.00	1.00	0.96	0.975	1.00	1.00	1.00	3.02	77.7	781.5	0.87	10.9	162.0
+D+S																	
Length = 21.0 ft	1	0.292	0.166	1.15	1.00	1.00	0.93	0.967	1.00	1.00	1.00	10.94	281.4	964.7	2.75	34.4	207.0

Wood Beam

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: G.T.

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values		
			M	V	CD	CM	C _t	CLx	C _v	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
Length = 18.50 ft	2		0.288	0.140	1.15	1.00	1.00	0.94	0.973	1.00	1.00	1.00	10.94	281.4	977.6	2.32	29.0	207.0
Length = 18.0 ft	3		0.211	0.140	1.15	1.00	1.00	0.95	0.975	1.00	1.00	1.00	8.06	207.2	980.0	2.32	29.0	207.0
+D+0.750S						1.00	1.00	0.95	0.975	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 21.0 ft	1		0.246	0.140	1.15	1.00	1.00	0.93	0.967	1.00	1.00	1.00	9.23	237.4	964.7	2.32	29.0	207.0
Length = 18.50 ft	2		0.243	0.118	1.15	1.00	1.00	0.94	0.973	1.00	1.00	1.00	9.23	237.4	977.6	1.95	24.5	207.0
Length = 18.0 ft	3		0.178	0.118	1.15	1.00	1.00	0.95	0.975	1.00	1.00	1.00	6.80	174.8	980.0	1.95	24.5	207.0
+0.60D						1.00	1.00	0.95	0.975	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 21.0 ft	1		0.051	0.027	1.60	1.00	1.00	0.86	0.967	1.00	1.00	1.00	2.46	63.3	1,240.5	0.62	7.7	288.0
Length = 18.50 ft	2		0.049	0.023	1.60	1.00	1.00	0.89	0.973	1.00	1.00	1.00	2.46	63.3	1,283.6	0.52	6.5	288.0
Length = 18.0 ft	3		0.036	0.023	1.60	1.00	1.00	0.90	0.975	1.00	1.00	1.00	1.81	46.6	1,291.4	0.52	6.5	288.0

Overall Maximum Deflections

Span	Load Combination	Max. "L" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+S	0.0727	9.529		0.0000	0.000
2		0.0000	9.529	+D+S	-0.0069	3.420
3	+D+S	0.0388	9.983		0.0000	3.420

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Max Upward from all Load Conditions	2.209	5.812	5.037	1.892
Max Upward from Load Combinations	2.209	5.812	5.037	1.892
Max Upward from Load Cases	1.381	3.633	3.148	1.183
D Only	0.828	2.180	1.889	0.710
+D+S	2.209	5.812	5.037	1.892
+D+0.750S	1.864	4.904	4.250	1.597
+0.60D	0.497	1.308	1.133	0.426
S Only	1.381	3.633	3.148	1.183

Wood Beam

Project File: Dr Hale.ec6

LIC#: KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: B1

Code References

Governing Code : IBC 2018, CBC 2019
Referenced Design Standard(s) : NDS 2018
Load Combination Set : IBC 2021

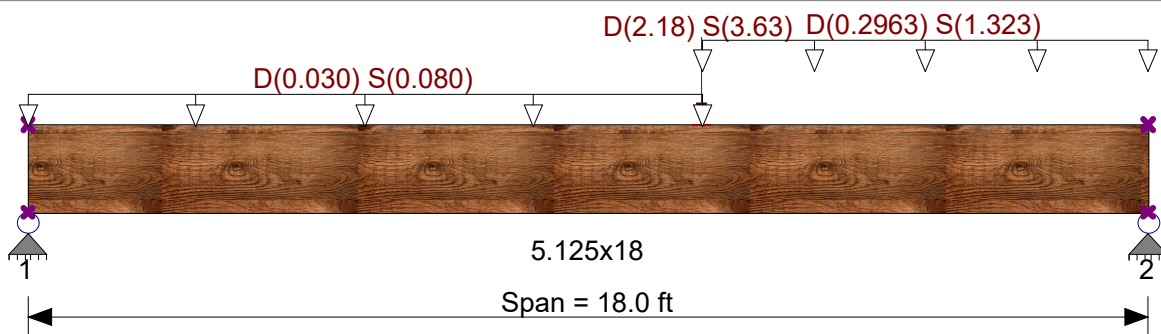
Material Properties

Analysis Method : Allowable Stress Design
Load Combination : IBC 2021

Wood Species : DF/DF
Wood Grade : 24F-V4

Beam Bracing : Completely Unbraced

Fb +	2,400.0 psi	E : Modulus of Elasticity	
Fb -	1,850.0 psi	Ebend- xx	1,800.0ksi
Fc - Prll	1,650.0 psi	Eminbend - xx	950.0ksi
Fc - Perp	650.0 psi	Ebend- yy	1,600.0ksi
Fv	265.0 psi	Eminbend - yy	850.0ksi
Ft	1,100.0 psi	Density	31.210pcf



Applied Loads

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

Beam self weight NOT internally calculated and added

Loads on all spans...

Partial Length Uniform Load : D = 0.0150, S = 0.040 ksf, Extent = 0.0 --> 10.830 ft, Tributary Width = 2.0 ft

Partial Length Uniform Load : D = 0.0150, S = 0.0670 ksf, Extent = 10.830 --> 18.0 ft, Tributary Width = 19.750 ft

Point Load : D = 2.180, S = 3.630 k @ 10.830 ft, (G.T.)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.868 : 1	Maximum Shear Stress Ratio	=	0.577 : 1
Section used for this span		5.125x18 NDS2018	Section used for this span		5.125x18 NDS2018
fb: Actual	=	2,283.60 psi	fv: Actual	=	175.81 psi
F'b	=	2,631.01 psi	F'v	=	304.75 psi
Load Combination		+D+S	Load Combination		+D+S
Location of maximum on span	=	10.839ft	Location of maximum on span	=	16.555 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection	0.431 in	Ratio = 501 >=360	Span: 1 : S Only		
Max Upward Transient Deflection	0 in	Ratio = 0 >=360	n/a		
Max Downward Total Deflection	0.592 in	Ratio = 364 >=180	Span: 1 : +D+S		
Max Upward Total Deflection	0 in	Ratio = 0 >=180	n/a		

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _v	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 18.0 ft	1	0.304	0.183	0.90	1.00	1.00	0.97	0.975	1.00	1.00	1.00	14.68	636.4	2,092.1	2.68	43.6	238.5
+D+S														0.0	0.00	0.0	0.0
Length = 18.0 ft	1	0.868	0.577	1.15	1.00	1.00	0.95	0.975	1.00	1.00	1.00	52.67	2,283.6	2,631.0	10.81	175.8	304.8
+D+0.750S														0.0	0.00	0.0	0.0

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Wood Beam

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: B1

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values		
			M	V	CD	CM	C _t	CLx	C _v	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
Length = 18.0 ft		1	0.711	0.468	1.15	1.00	1.00	0.95	0.975	1.00	1.00	1.00	43.17	1,871.8	2,631.0	8.78	142.8	304.8
+0.60D						1.00	1.00	0.95	0.975	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 18.0 ft		1	0.109	0.062	1.60	1.00	1.00	0.91	0.975	1.00	1.00	1.00	8.81	381.9	3,501.7	1.61	26.2	424.0

Overall Maximum Deflections

Span	Load Combination	Max. "." Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+S	0.5923	9.723		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	5.460	13.153
Max Upward from Load Combinations	5.460	13.153
Max Upward from Load Cases	3.941	10.043
D Only	1.519	3.110
+D+S	5.460	13.153
+D+0.750S	4.475	10.643
+0.60D	0.911	1.866
S Only	3.941	10.043

Wood Beam

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: B6

Code References

Governing Code : IBC 2018, CBC 2019
Referenced Design Standard(s) : NDS 2018
Load Combination Set : IBC 2021

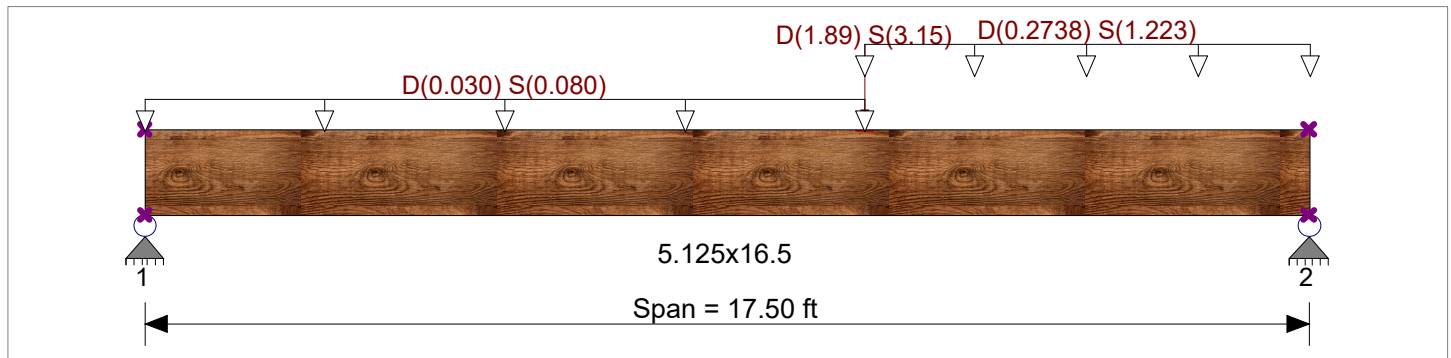
Material Properties

Analysis Method : Allowable Stress Design
Load Combination : IBC 2021

Wood Species : DF/DF
Wood Grade : 24F-V4

Beam Bracing : Completely Unbraced

Fb + 2,400.0 psi E : Modulus of Elasticity
Fb - 1,850.0 psi Ebend- xx 1,800.0ksi
Fc - Prll 1,650.0 psi Eminbend - xx 950.0ksi
Fc - Perp 650.0 psi Ebend- yy 1,600.0ksi
Fv 265.0 psi Eminbend - yy 850.0ksi
Ft 1,100.0 psi Density 31.210pcf



Applied Loads

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

Beam self weight NOT internally calculated and added

Loads on all spans...

Partial Length Uniform Load : D = 0.0150, S = 0.040 ksf, Extent = 0.0 --> 10.830 ft, Tributary Width = 2.0 ft

Partial Length Uniform Load : D = 0.0150, S = 0.0670 ksf, Extent = 10.830 --> 18.0 ft, Tributary Width = 18.250 ft

Point Load : D = 1.890, S = 3.150 k @ 10.830 ft, (G.T.)

DESIGN SUMMARY

				Design OK			
Maximum Bending Stress Ratio	=	0.852 : 1	Maximum Shear Stress Ratio	=	0.556 : 1		
Section used for this span		5.125x16.5 NDS2018	Section used for this span		5.125x16.5 NDS2018		
fb: Actual	=	2,261.19 psi	fv: Actual	=	169.58 psi		
F'b	=	2,654.92 psi	F'v	=	304.75 psi		
Load Combination		+D+S	Load Combination		+D+S		
Location of maximum on span	=	10.858ft	Location of maximum on span	=	16.159 ft		
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1		
Maximum Deflection							
Max Downward Transient Deflection	0.437 in	Ratio = 480 >= 360	Span: 1 : S Only				
Max Upward Transient Deflection	0 in	Ratio = 0 >= 360	n/a				
Max Downward Total Deflection	0.601 in	Ratio = 349 >= 180	Span: 1 : +D+S				
Max Upward Total Deflection	0 in	Ratio = 0 >= 180	n/a				

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _v	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 17.50 ft	1	0.300	0.177	0.90	1.00	1.00	0.97	0.986	1.00	1.00	1.00	12.21	630.3	2,103.4	2.38	42.2	238.5
+D+S														0.0	0.00	0.0	0.0
Length = 17.50 ft	1	0.852	0.556	1.15	1.00	1.00	0.96	0.986	1.00	1.00	1.00	43.82	2,261.2	2,654.9	9.56	169.6	304.8
+D+0.750S														0.0	0.00	0.0	0.0

Project Title:
 Engineer:
 Project ID:
 Project Descr:



Wood Beam

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: B6

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values		
			M	V	CD	CM	C _t	CLx	C _v	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
Length = 17.50 ft	1		0.698	0.452	1.15	1.00	1.00	0.96	0.986	1.00	1.00	1.00	35.92	1,853.5	2,654.9	7.77	137.7	304.8
+0.60D						1.00	1.00	0.96	0.986	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 17.50 ft	1		0.106	0.060	1.60	1.00	1.00	0.93	0.986	1.00	1.00	1.00	7.33	378.2	3,576.9	1.43	25.3	424.0

Overall Maximum Deflections

Span	Load Combination	Max. "." Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+S	0.6013	9.453		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	4.646	11.567
Max Upward from Load Combinations	4.646	11.567
Max Upward from Load Cases	3.353	8.819
D Only	1.293	2.748
+D+S	4.646	11.567
+D+0.750S	3.808	9.362
+0.60D	0.776	1.649
S Only	3.353	8.819

WRIGHT
STRUCTURAL ENGINEERS

Project File: Dr Hale.ec6

Wright Engineers

(c) ENERCALC, LLC 1982-2026

Code References

Governing Code : IBC 2018, CBC 2019
Referenced Design Standard(s) : NDS 2018
Load Combination Set : IBC 2021

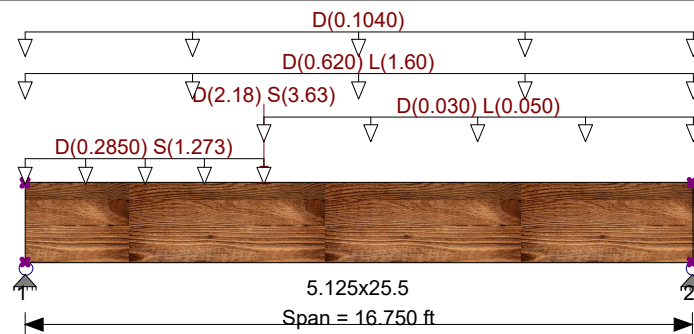
Material Properties

Analysis Method : Allowable Stress Design
Load Combination : IBC 2021

Wood Species : DF/DF
Wood Grade : 24F-V4

Beam Bracing : Completely Unbraced

Fb +	2,400.0 psi	<i>E : Modulus of Elasticity</i>	
Fb -	1,850.0 psi	Ebend- xx	1,800.0ksi
Fc - Prll	1,650.0 psi	Eminbend - xx	950.0ksi
Fc - Perp	650.0 psi	Ebend- yy	1,600.0ksi
Fv	265.0 psi	Eminbend - yy	850.0ksi
Ft	1,100.0 psi	Density	31.210pcf



Applied Loads

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

Beam self weight calculated and added to loading

Loads on all spans...

Partial Length Uniform Load : D = 0.0150, S = 0.0670 ksf, Extent = 0.0 --> 6.0 ft, Tributary Width = 19.0 ft

Partial Length Uniform Load : $D = 0.0150$, $L = 0.0250$ ksf, Extent = 6.0 -->> 16.750 ft, Tributary Width = 2.0 ft

Partial Length Uniform Load : $D = 0.620$, $L = 1.60$ k/ft, Extent = 0.0 -->> 16.750 ft

Partial Length Uniform Load : $D = 0.1040 \text{ k/ft}$, Extent = 0.0 --> 16.750 ft

Point Load : $D = 2.180$, $S = 3.630$ k @ 6.0 ft, (G.T.)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio		=	0.907 : 1	Maximum Shear Stress Ratio		=	0.749 : 1
Section used for this span			5.125x25.5 NDS2018	Section used for this span			5.125x25.5 NDS2018
fb: Actual		=	2,028.58 psi	fv: Actual		=	198.54 psi
F'b		=	2,236.78 psi	F'v		=	265.00 psi
Load Combination			+D+L	Load Combination			+D+L
Location of maximum on span		=	7.947 ft	Location of maximum on span		=	0.000 ft
Span # where maximum occurs		=	Span # 1	Span # where maximum occurs		=	Span # 1
Maximum Deflection							
Max Downward Transient Deflection		0.229 in	Ratio =	879 >=360	Span: 1 : L Only		
Max Upward Transient Deflection		0 in	Ratio =	0 >=360	n/a		
Max Downward Total Deflection		0.387 in	Ratio =	519 >=180	Span: 1 : +D+0.750L+0.750S		
Max Upward Total Deflection		0 in	Ratio =	0 >=180	n/a		

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _v	C _{fu}	C _i	C _r	M	f _b	F'b	V	f _v	F'v
D Only																	
Length = 16.750 ft	1	0.392	0.339	0.90	1.00	1.00	0.94	0.949	1.00	1.00	1.00	36.98	799.0	2,039.7	0.00	0.0	0.0
+D+L					1.00	1.00	0.94	0.949	1.00	1.00	1.00			0.0	0.00	0.0	0.0

Dr Hale Dental Office, Plain City, UT
PROJECT:

SCI241457
No:

SHEET: 33

Wood Beam

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: B10

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values		
			M	V	CD	CM	C _t	CLx	C _v	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
Length = 16.750 ft	1		0.907	0.749	1.00	1.00	1.00	0.93	0.949	1.00	1.00	1.00	93.89	2,028.6	2,236.8	17.30	198.5	265.0
+D+S						1.00	1.00	0.93	0.949	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 16.750 ft	1		0.561	0.490	1.15	1.00	1.00	0.91	0.949	1.00	1.00	1.00	65.22	1,409.1	2,509.9	13.00	149.3	304.8
+D+0.750L						1.00	1.00	0.91	0.949	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 16.750 ft	1		0.643	0.511	1.25	1.00	1.00	0.89	0.949	1.00	1.00	1.00	79.59	1,719.5	2,673.8	14.74	169.1	331.3
+D+0.750L+0.750S						1.00	1.00	0.89	0.949	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 16.750 ft	1		0.847	0.723	1.15	1.00	1.00	0.91	0.949	1.00	1.00	1.00	98.34	2,124.8	2,509.9	19.20	220.4	304.8
+0.60D						1.00	1.00	0.91	0.949	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 16.750 ft	1		0.154	0.115	1.60	1.00	1.00	0.81	0.949	1.00	1.00	1.00	22.19	479.4	3,108.7	4.23	48.6	424.0

Overall Maximum Deflections

Span	Load Combination	Max. "." Defl	Location in Span	Load Combination	Max. "." Defl	Location in Span
1	+D+0.750L+0.750S	0.3871	8.192		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	25.836	21.372
Max Upward from Load Combinations	25.836	21.372
Max Upward from Load Cases	13.572	13.765
D Only	9.207	7.607
+D+L	22.780	21.372
+D+S	17.807	10.275
+D+0.750L	19.386	17.931
+D+0.750L+0.750S	25.836	19.932
+0.60D	5.524	4.564
L Only	13.572	13.765
S Only	8.600	2.668

Wood Beam

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: B11

Code References

Governing Code : IBC 2018, CBC 2019
Referenced Design Standard(s) : NDS 2018
Load Combination Set : IBC 2021

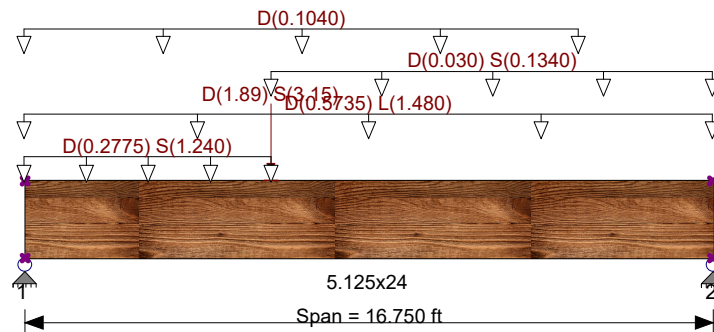
Material Properties

Analysis Method : Allowable Stress Design
Load Combination : IBC 2021

Wood Species : DF/DF
Wood Grade : 24F-V4

Beam Bracing : Completely Unbraced

Fb +	2,400.0 psi	E : Modulus of Elasticity	
Fb -	1,850.0 psi	Ebend- xx	1,800.0ksi
Fc - Prll	1,650.0 psi	Eminbend - xx	950.0ksi
Fc - Perp	650.0 psi	Ebend- yy	1,600.0ksi
Fv	265.0 psi	Eminbend - yy	850.0ksi
Ft	1,100.0 psi	Density	31.210pcf



Applied Loads

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

Beam self weight calculated and added to loading

Loads on all spans...

Partial Length Uniform Load : D = 0.0150, S = 0.0670 ksf, Extent = 0.0 --> 6.0 ft, Tributary Width = 18.50 ft

Uniform Load on ALL spans : D = 0.0310, L = 0.080 ksf, Tributary Width = 18.50 ft

Partial Length Uniform Load : D = 0.030, S = 0.1340 k/ft, Extent = 6.0 --> 16.750 ft

Partial Length Uniform Load : D = 0.1040 k/ft, Extent = 0.0 --> 13.50 ft

Point Load : D = 1.890, S = 3.150 k @ 6.0 ft, (G.T.)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio			Maximum Shear Stress Ratio		
Section used for this span			Section used for this span		
= 0.924 : 1			= 0.742 : 1		
5.125x24			5.125x24		
NDS2018			NDS2018		
fb: Actual			fv: Actual		
= 2,085.10 psi			= 196.67 psi		
F'b			F'v		
= 2,257.79 psi			= 265.00 psi		
Load Combination			Load Combination		
+D+L			+D+L		
Location of maximum on span			Location of maximum on span		
= 7.947 ft			= 0.000 ft		
Span # where maximum occurs			Span # where maximum occurs		
= Span # 1			= Span # 1		
Maximum Deflection					
Max Downward Transient Deflection		0.248 in	Ratio = 810	>=360 Span: 1 : L Only	
Max Upward Transient Deflection		0 in	Ratio = 0	>=360 n/a	
Max Downward Total Deflection		0.436 in	Ratio = 460	>=180 Span: 1 : +D+0.750L+0.750S	
Max Upward Total Deflection		0 in	Ratio = 0	>=180 n/a	

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C _t	CLx	C _v	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 16.750 ft	1	0.404	0.339	0.90	1.00	1.00	0.95	0.954	1.00	1.00	1.00	34.02	829.7	2,054.3	6.63	80.8	238.5
+D+L					1.00	1.00	0.95	0.954	1.00	1.00	1.00			0.0	0.00	0.0	0.0

Wood Beam

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: B11

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios										Moment Values			Shear Values		
			M	V	CD	CM	C _t	CLx	C _v	C _{fu}	C _i	C _r	M	fb	F'b	V	fv	F'v
Length = 16.750 ft	1		0.924	0.742	1.00	1.00	1.00	0.94	0.954	1.00	1.00	1.00	85.49	2,085.1	2,257.8	16.13	196.7	265.0
+D+S						1.00	1.00	0.94	0.954	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 16.750 ft	1		0.602	0.512	1.15	1.00	1.00	0.92	0.954	1.00	1.00	1.00	62.80	1,531.8	2,544.9	12.79	156.0	304.8
+D+0.750L						1.00	1.00	0.92	0.954	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 16.750 ft	1		0.650	0.506	1.25	1.00	1.00	0.91	0.954	1.00	1.00	1.00	72.56	1,769.7	2,721.3	13.75	167.7	331.3
+D+0.750L+0.750S						1.00	1.00	0.91	0.954	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 16.750 ft	1		0.884	0.735	1.15	1.00	1.00	0.92	0.954	1.00	1.00	1.00	92.26	2,250.4	2,544.9	18.38	224.1	304.8
+0.60D						1.00	1.00	0.92	0.954	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 16.750 ft	1		0.155	0.114	1.60	1.00	1.00	0.84	0.954	1.00	1.00	1.00	20.41	497.8	3,217.9	3.98	48.5	424.0

Overall Maximum Deflections

Span	Load Combination	Max. "L" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
1	+D+0.750L+0.750S	0.4363	8.192		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	24.286	19.181
Max Upward from Load Combinations	24.286	19.181
Max Upward from Load Cases	12.395	12.395
D Only	8.548	6.786
+D+L	20.943	19.181
+D+S	17.137	10.225
+D+0.750L	17.844	16.083
+D+0.750L+0.750S	24.286	18.662
+0.60D	5.129	4.072
L Only	12.395	12.395
S Only	8.589	3.439

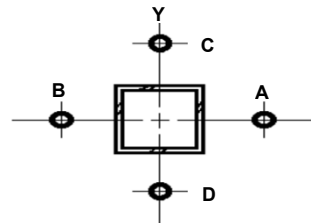
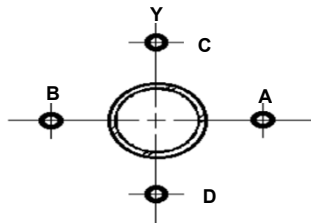
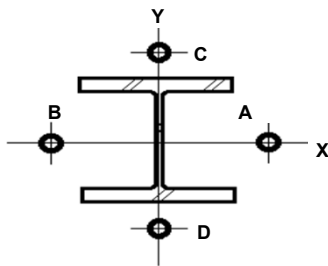
GRAVITY STEEL COLUMN DESIGN

PER AISC 360

COLUMN : A-2

DESIGN : LRFD
SECTION : HSS RECT.
STEEL : A500 GR. C
F_y (KSI) : 50
SELF WT. (PLF) : 15.6

LEVEL 2	LOADS	P _D (K)	P _L (K)	P _{Lr} (K)	P _S (K)	e _x (IN.)	e _y (IN.)	COMMENTS
EL. (FT) : 24.83	A	0.00	0.00	0.00	0.00	6.50	---	
	B	3.35	0.00	0.00	8.82	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
LEVEL 1	Σ	3.57	0.00	0.00	8.82			
EL. (FT) : 10.58	A	1.29	0.00	0.00	3.35	6.50	---	
	B	0.00	0.00	0.00	0.00	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
FOUNDATION	Σ	5.03	0.00	0.00	12.17			
EL. (FT) : 0.00								



A-2 : HSS5X5X1/4

LEVEL 2 :	L ₂ (FT.) :	14.25	K _x :	1.00	C _{mx} :	1.00	C _b :	1.00	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	1.00			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{xx} (K-FT.)	B _{1y}	M _{yy} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{xx} / M _{cx}	M _{yy} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LOAD	5 - 1.2D + L + 1.6S	18.40	1.13	0.00	1.13	11.13	109.0	28.5	28.5	0.17	0.00	0.39	0.47	H1-1b OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	4.29	1.03	0.00	1.03	2.24	109.0	28.5	28.5	0.04	0.00	0.08	0.10	H1-1b OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	4.29	1.03	0.00	1.03	2.24	109.0	28.5	28.5	0.04	0.00	0.08	0.10	H1-1b OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	4.29	1.03	0.00	1.03	2.24	109.0	28.5	28.5	0.04	0.00	0.08	0.10	H1-1b OK

LEVEL 1 :	L ₁ (FT.) :	10.58	K _x :	1.00	C _{mx} :	0.60	C _b :	1.67	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	0.60			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{xx} (K-FT.)	B _{1y}	M _{yy} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{xx} / M _{cx}	M _{yy} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LL	5 - 1.2D + L + 1.6S	25.50	1.00	0.00	1.00	3.74	141.0	28.5	28.5	0.18	0.00	0.13	0.22	H1-1b OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	6.03	1.00	0.00	1.00	0.84	141.0	28.5	28.5	0.04	0.00	0.03	0.05	H1-1b OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	6.03	1.00	0.00	1.00	0.84	141.0	28.5	28.5	0.04	0.00	0.03	0.05	H1-1b OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	6.03	1.00	0.00	1.00	0.84	141.0	28.5	28.5	0.04	0.00	0.03	0.05	H1-1b OK

BASE PLATE DESIGN

Force Base Plate to Be Square : Y

BASE PLATE F_y (KSI) : 36

Approx. Base Plate "X" Dim. (in) : 3

Approx. Base Plate "Y" Dim. (in) : 3

Actual Base Plate "X" Dim. (in) : 3

Actual Base Plate "Y" Dim. (in) : 3

Base Plate "B" Dimension (in) : 11.00

Base Plate "N" Dimension (in) : 11.00

n (in) : 3.13

m (in) : 3.13

X : 1.00

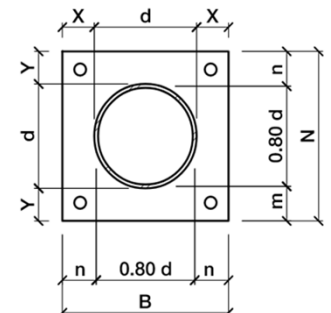
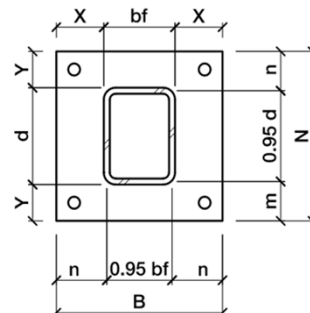
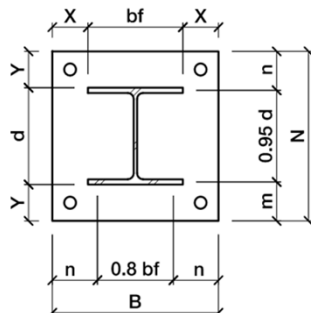
λ : 1.00

λ_n' (in) : 1.25

Governing Length (in) : 3.13

t_{min} (in) : 0.36

Plate t (in) : 0.50



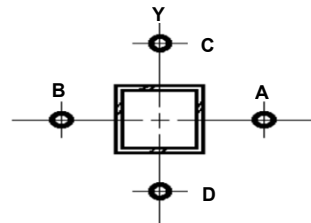
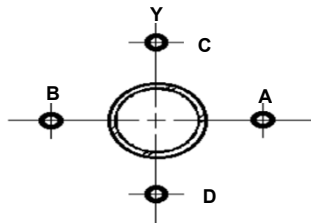
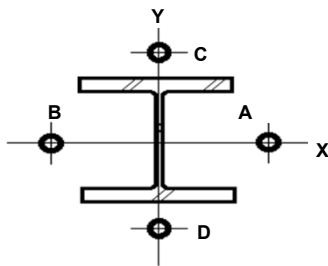
GRAVITY STEEL COLUMN DESIGN

PER AISC 360

COLUMN : B-2

DESIGN : LRFD
SECTION : HSS RECT.
STEEL : A500 GR. C
F_y (KSI) : 50
SELF WT. (PLF) : 15.6

LEVEL 2	LOADS	P _D (K)	P _L (K)	P _{Lr} (K)	P _S (K)	e _x (IN.)	e _y (IN.)	COMMENTS
EL. (FT) : 24.83	A	0.00	0.00	0.00	0.00	6.50	---	
	B	2.75	0.00	0.00	8.82	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
LEVEL 1	Σ	2.97	0.00	0.00	8.82			
EL. (FT) : 10.58	A	9.18	10.82	0.00	3.88	6.50	---	
	B	2.93	7.11	0.00	0.00	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
FOUNDATION	Σ	15.25	17.93	0.00	12.70			
EL. (FT) : 0.00								



B-2 : HSS5X5X1/4

LEVEL 2 :	L ₂ (FT.) :	14.25	K _x :	1.00	C _{mx} :	1.00	C _b :	1.00	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	1.00			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LOAD	5 - 1.2D + L + 1.6S	17.68	1.13	0.00	1.13	10.63	109.0	28.5	28.5	0.16	0.00	0.37	0.45	H1-1b OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	3.57	1.02	0.00	1.02	1.83	109.0	28.5	28.5	0.03	0.00	0.06	0.08	H1-1b OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	3.57	1.02	0.00	1.02	1.83	109.0	28.5	28.5	0.03	0.00	0.06	0.08	H1-1b OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	3.57	1.02	0.00	1.02	1.83	109.0	28.5	28.5	0.03	0.00	0.06	0.08	H1-1b OK

LEVEL 1 :	L ₁ (FT.) :	10.58	K _x :	1.00	C _{mx} :	0.60	C _b :	1.67	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	0.60			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LL	5 - 1.2D + L + 1.6S	56.55	1.00	0.00	1.00	9.44	141.0	28.5	28.5	0.40	0.00	0.33	0.69	H1-1a OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	35.61	1.00	0.00	1.00	13.44	141.0	28.5	28.5	0.25	0.00	0.47	0.67	H1-1a OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	46.99	1.00	0.00	1.00	7.28	141.0	28.5	28.5	0.33	0.00	0.26	0.56	H1-1a OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	35.61	1.00	0.00	1.00	13.44	141.0	28.5	28.5	0.25	0.00	0.47	0.67	H1-1a OK

BASE PLATE DESIGN

Force Base Plate to Be Square : Y

BASE PLATE F_y (KSI) : 36

Approx. Base Plate "X" Dim. (in) : 3

Approx. Base Plate "Y" Dim. (in) : 3

Actual Base Plate "X" Dim. (in) : 3

Actual Base Plate "Y" Dim. (in) : 3

Base Plate "B" Dimension (in) : 11.00

Base Plate "N" Dimension (in) : 11.00

n (in) : 3.13

m (in) : 3.13

X : 1.00

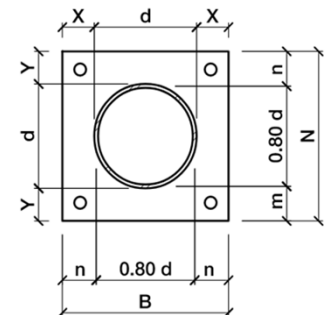
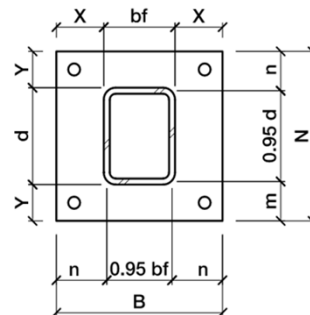
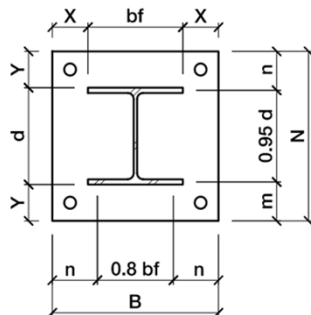
λ : 1.00

λ_n' (in) : 1.25

Governing Length (in) : 3.13

t_{min} (in) : 0.53

Plate t (in) : 0.75



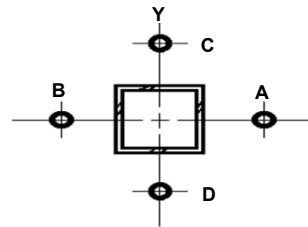
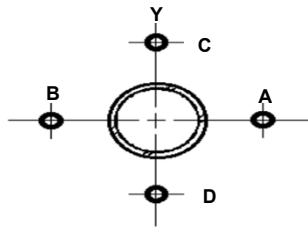
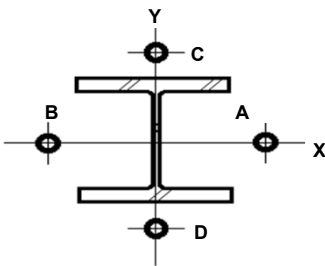
GRAVITY STEEL COLUMN DESIGN

PER AISC 360

COLUMN : C-2

DESIGN : LRFD
SECTION : HSS RECT.
STEEL : A500 GR. C
F_y (KSI) : 50
SELF WT. (PLF) : 15.6

LEVEL 2	LOADS	P _D (K)	P _L (K)	P _{Lr} (K)	P _S (K)	e _x (IN.)	e _y (IN.)	COMMENTS
EL. (FT) : 24.83	A	2.42	0.00	0.00	8.41	6.50	---	
	B	0.74	0.00	0.00	2.54	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
LEVEL 1	Σ	3.39	0.00	0.00	10.95			
EL. (FT) : 10.58	A	4.83	10.59	0.00	0.00	6.50	---	
	B	9.18	3.88	0.00	10.82	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
FOUNDATION	Σ	17.57	14.47	0.00	21.77			
EL. (FT) : 0.00								



C-2 : HSS5X5X1/4

LEVEL 2 :	L ₂ (FT.) :	14.25	K _x :	1.00	C _{mx} :	1.00	C _b :	1.00	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	1.00			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LOAD	5 - 1.2D + L + 1.6S	21.59	1.16	0.00	1.16	7.16	109.0	28.5	28.5	0.20	0.00	0.25	0.35	H1-1b OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	4.07	1.03	0.00	1.03	1.12	109.0	28.5	28.5	0.04	0.00	0.04	0.06	H1-1b OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	4.07	1.03	0.00	1.03	1.12	109.0	28.5	28.5	0.04	0.00	0.04	0.06	H1-1b OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	4.07	1.03	0.00	1.03	1.12	109.0	28.5	28.5	0.04	0.00	0.04	0.06	H1-1b OK

LEVEL 1 :	L ₁ (FT.) :	10.58	K _x :	1.00	C _{mx} :	0.60	C _b :	1.67	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	0.60			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LL	5 - 1.2D + L + 1.6S	70.39	1.00	0.00	1.00	8.57	141.0	28.5	28.5	0.50	0.00	0.30	0.77	H1-1a OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	38.03	1.00	0.00	1.00	6.35	141.0	28.5	28.5	0.27	0.00	0.22	0.47	H1-1a OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	44.23	1.00	0.00	1.00	2.99	141.0	28.5	28.5	0.31	0.00	0.10	0.41	H1-1a OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	38.03	1.00	0.00	1.00	6.35	141.0	28.5	28.5	0.27	0.00	0.22	0.47	H1-1a OK

BASE PLATE DESIGN

Force Base Plate to Be Square : Y

BASE PLATE F_y (KSI) : 36

Approx. Base Plate "X" Dim. (in) : 3

Approx. Base Plate "Y" Dim. (in) : 3

Actual Base Plate "X" Dim. (in) : 3

Actual Base Plate "Y" Dim. (in) : 3

Base Plate "B" Dimension (in) : 11.00

Base Plate "N" Dimension (in) : 11.00

n (in) : 3.13

m (in) : 3.13

X : 1.00

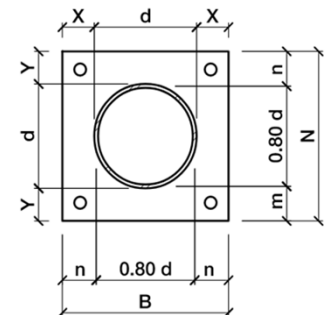
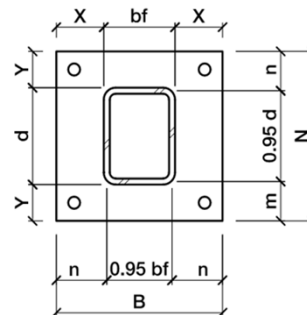
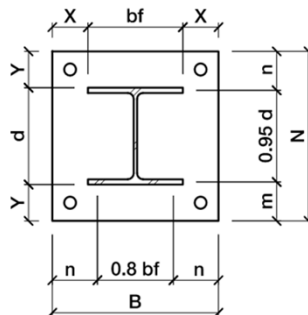
λ : 1.00

λ_n' (in) : 1.25

Governing Length (in) : 3.13

t_{min} (in) : 0.59

Plate t (in) : 0.75



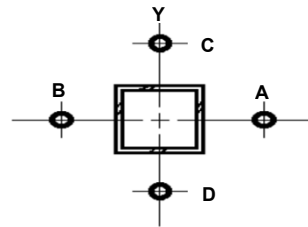
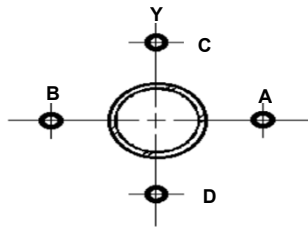
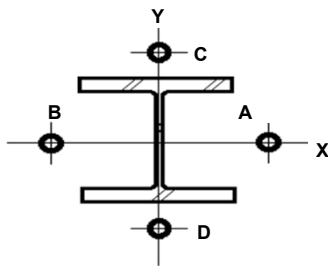
GRAVITY STEEL COLUMN DESIGN

PER AISC 360

COLUMN : D-2

DESIGN : LRFD
SECTION : HSS RECT.
STEEL : A500 GR. C
F_y (KSI) : 50
SELF WT. (PLF) : 15.6

LEVEL 2	LOADS	P _D (K)	P _L (K)	P _{Lr} (K)	P _S (K)	e _x (IN.)	e _y (IN.)	COMMENTS
EL. (FT) : 24.83	A	0.74	0.00	0.00	2.54	6.50	---	
	B	2.42	0.00	0.00	8.41	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
LEVEL 1	Σ	3.39	0.00	0.00	10.95			
EL. (FT) : 10.58	A	8.68	11.26	0.00	4.11	6.50	---	
	B	4.83	10.59	0.00	0.00	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
FOUNDATION	Σ	17.06	21.85	0.00	15.06			
EL. (FT) : 0.00								



D-2 : HSS5X5X1/4

LEVEL 2 :	L ₂ (FT.) :	14.25	K _x :	1.00	C _{mx} :	1.00	C _b :	1.00	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	1.00			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LOAD	5 - 1.2D + L + 1.6S	21.58	1.16	0.00	1.16	7.17	109.0	28.5	28.5	0.20	0.00	0.25	0.35	H1-1b OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	4.06	1.03	0.00	1.03	1.12	109.0	28.5	28.5	0.04	0.00	0.04	0.06	H1-1b OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	4.06	1.03	0.00	1.03	1.12	109.0	28.5	28.5	0.04	0.00	0.04	0.06	H1-1b OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	4.06	1.03	0.00	1.03	1.12	109.0	28.5	28.5	0.04	0.00	0.04	0.06	H1-1b OK

LEVEL 1 :	L ₁ (FT.) :	10.58	K _x :	1.00	C _{mx} :	0.60	C _b :	1.67	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	0.60			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LL	5 - 1.2D + L + 1.6S	66.42	1.00	0.00	1.00	6.43	141.0	28.5	28.5	0.47	0.00	0.23	0.67	H1-1a OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	38.50	1.00	0.00	1.00	12.26	141.0	28.5	28.5	0.27	0.00	0.43	0.66	H1-1a OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	55.44	1.00	0.00	1.00	3.09	141.0	28.5	28.5	0.39	0.00	0.11	0.49	H1-1a OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	38.50	1.00	0.00	1.00	12.26	141.0	28.5	28.5	0.27	0.00	0.43	0.66	H1-1a OK

BASE PLATE DESIGN

Force Base Plate to Be Square : Y

BASE PLATE F_y (KSI) : 36

Approx. Base Plate "X" Dim. (in) : 3

Approx. Base Plate "Y" Dim. (in) : 3

Actual Base Plate "X" Dim. (in) : 3

Actual Base Plate "Y" Dim. (in) : 3

Base Plate "B" Dimension (in) : 11.00

Base Plate "N" Dimension (in) : 11.00

n (in) : 3.13

m (in) : 3.13

X : 1.00

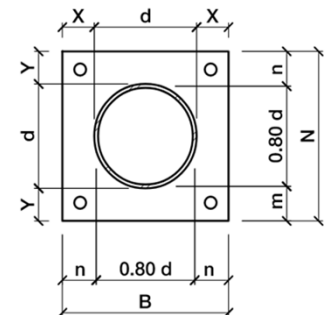
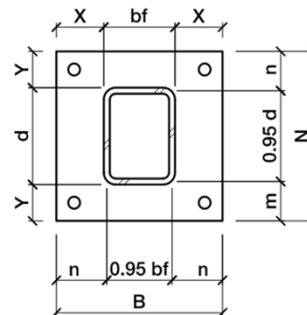
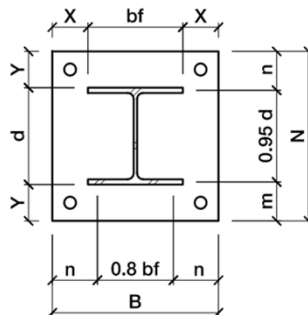
λ : 1.00

λ_n' (in) : 1.25

Governing Length (in) : 3.13

t_{min} (in) : 0.58

Plate t (in) : 0.75



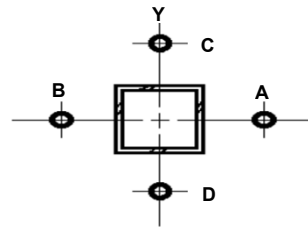
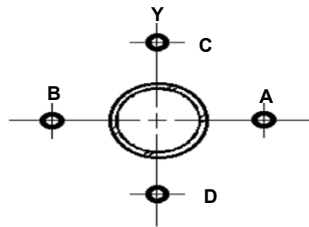
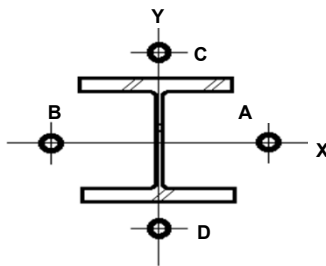
GRAVITY STEEL COLUMN DESIGN

PER AISC 360

COLUMN : E-2

DESIGN : LRFD
SECTION : HSS RECT.
STEEL : A500 GR. C
F_y (KSI) : 50
SELF WT. (PLF) : 15.6

LEVEL 2	LOADS	P _D (K)	P _L (K)	P _{Lr} (K)	P _S (K)	e _x (IN.)	e _y (IN.)	COMMENTS
EL. (FT) : 24.83	A	0.00	0.00	0.00	0.00	6.50	---	
	B	0.00	0.00	0.00	0.00	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
LEVEL 1	Σ	0.22	0.00	0.00	0.00			
EL. (FT) : 10.58	A	8.55	12.40	0.00	8.59	6.50	---	
	B	8.68	11.26	0.00	4.11	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
FOUNDATION	Σ	17.62	23.66	0.00	12.70			
EL. (FT) : 0.00								



E-2 : HSS5X5X1/4

LEVEL 2 :	L ₂ (FT.) :	14.25	K _x :	1.00	C _{mx} :	1.00	C _b :	1.00	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	1.00			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LOAD	1 - 1.4D	0.31	1.00	0.00	1.00	0.00	109.0	28.5	28.5	0.00	0.00	0.00	0.00	H1-1b OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	0.27	1.00	0.00	1.00	0.00	109.0	28.5	28.5	0.00	0.00	0.00	0.00	H1-1b OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	0.27	1.00	0.00	1.00	0.00	109.0	28.5	28.5	0.00	0.00	0.00	0.00	H1-1b OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	0.27	1.00	0.00	1.00	0.00	109.0	28.5	28.5	0.00	0.00	0.00	0.00	H1-1b OK

LEVEL 1 :	L ₁ (FT.) :	10.58	K _x :	1.00	C _{mx} :	0.60	C _b :	1.67	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	0.60			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LL	5 - 1.2D + L + 1.6S	65.12	1.00	0.00	1.00	4.42	141.0	28.5	28.5	0.46	0.00	0.15	0.60	H1-1a OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	40.98	1.00	0.00	1.00	10.66	141.0	28.5	28.5	0.29	0.00	0.37	0.62	H1-1a OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	59.00	1.00	0.00	1.00	0.90	141.0	28.5	28.5	0.42	0.00	0.03	0.45	H1-1a OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	40.98	1.00	0.00	1.00	10.66	141.0	28.5	28.5	0.29	0.00	0.37	0.62	H1-1a OK

BASE PLATE DESIGN

Force Base Plate to Be Square : Y

BASE PLATE F_y (KSI) : 36

Approx. Base Plate "X" Dim. (in) : 3

Approx. Base Plate "Y" Dim. (in) : 3

Actual Base Plate "X" Dim. (in) : 3

Actual Base Plate "Y" Dim. (in) : 3

Base Plate "B" Dimension (in) : 11.00

Base Plate "N" Dimension (in) : 11.00

n (in) : 3.13

m (in) : 3.13

X : 1.00

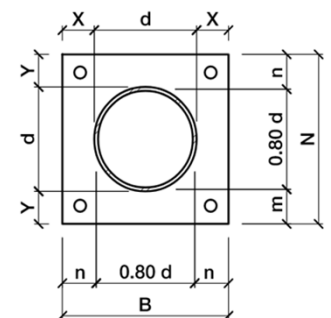
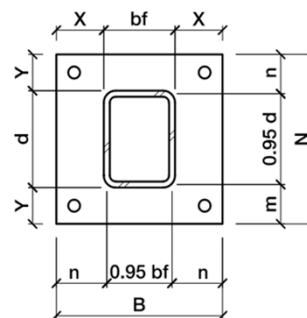
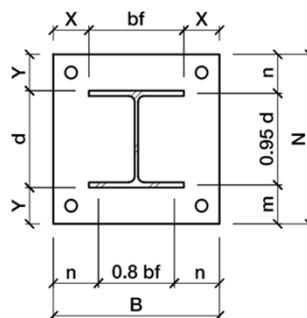
λ : 1.00

λ_n' (in) : 1.25

Governing Length (in) : 3.13

t_{min} (in) : 0.57

Plate t (in) : 0.75



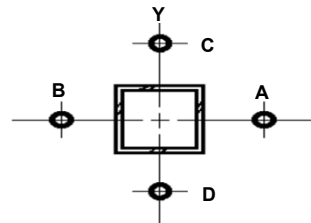
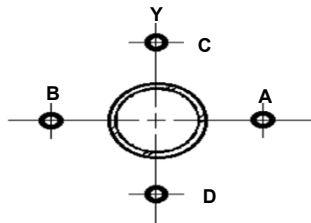
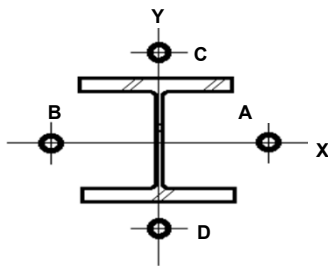
GRAVITY STEEL COLUMN DESIGN

PER AISC 360

COLUMN : F-2

DESIGN : LRFD
SECTION : HSS RECT.
STEEL : A500 GR. C
F_y (KSI) : 50
SELF WT. (PLF) : 15.6

LEVEL 2	LOADS	P _D (K)	P _L (K)	P _{Lr} (K)	P _S (K)	e _x (IN.)	e _y (IN.)	COMMENTS
EL. (FT) : 24.83	A	0.00	0.00	0.00	0.00	6.50	---	
	B	0.63	0.00	0.00	2.29	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
LEVEL 1	Σ	0.85	0.00	0.00	2.29			
EL. (FT) : 10.58	A	0.00	0.00	0.00	0.00	6.50	---	
	B	6.79	12.40	0.00	3.44	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
FOUNDATION	Σ	7.81	12.40	0.00	5.73			
EL. (FT) : 0.00								



F-2 : HSS5X5X1/4

LEVEL 2 :	L ₂ (FT.) :	14.25	K _x :	1.00	C _{mx} :	1.00	C _b :	1.00	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	1.00			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LOAD	5 - 1.2D + L + 1.6S	4.69	1.03	0.00	1.03	2.47	109.0	28.5	28.5	0.04	0.00	0.09	0.11	H1-1b OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	1.02	1.01	0.00	1.01	0.41	109.0	28.5	28.5	0.01	0.00	0.01	0.02	H1-1b OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	1.02	1.01	0.00	1.01	0.41	109.0	28.5	28.5	0.01	0.00	0.01	0.02	H1-1b OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	1.02	1.01	0.00	1.01	0.41	109.0	28.5	28.5	0.01	0.00	0.01	0.02	H1-1b OK

LEVEL 1 :	L ₁ (FT.) :	10.58	K _x :	1.00	C _{mx} :	0.60	C _b :	1.67	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	0.60			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LL	3 - 1.2D + 1.6L + 0.5S	32.07	1.00	0.00	1.00	16.09	141.0	28.5	28.5	0.23	0.00	0.56	0.73	H1-1a OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	29.21	1.00	0.00	1.00	15.16	141.0	28.5	28.5	0.21	0.00	0.53	0.68	H1-1a OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	29.21	1.00	0.00	1.00	15.16	141.0	28.5	28.5	0.21	0.00	0.53	0.68	H1-1a OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	29.21	1.00	0.00	1.00	15.16	141.0	28.5	28.5	0.21	0.00	0.53	0.68	H1-1a OK

BASE PLATE DESIGN

Force Base Plate to Be Square : Y

BASE PLATE F_y (KSI) : 36

Approx. Base Plate "X" Dim. (in) : 3

Approx. Base Plate "Y" Dim. (in) : 3

Actual Base Plate "X" Dim. (in) : 3

Actual Base Plate "Y" Dim. (in) : 3

Base Plate "B" Dimension (in) : 11.00

Base Plate "N" Dimension (in) : 11.00

n (in) : 3.13

m (in) : 3.13

X : 1.00

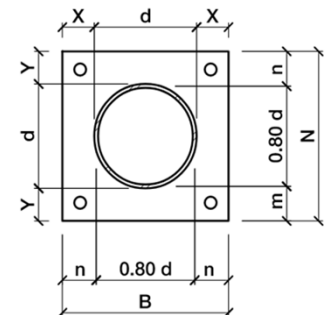
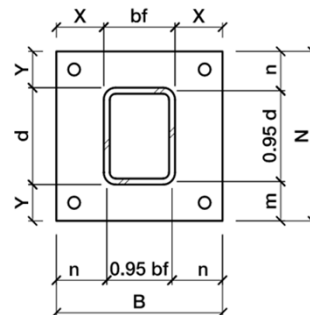
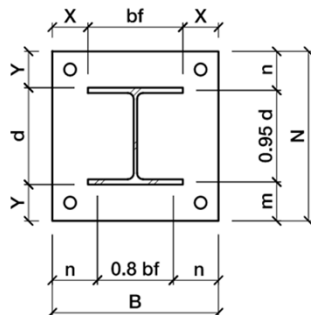
λ : 1.00

λ_n' (in) : 1.25

Governing Length (in) : 3.13

t_{min} (in) : 0.40

Plate t (in) : 0.50



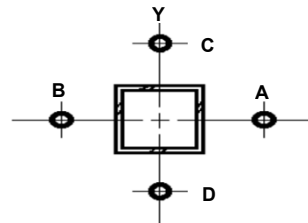
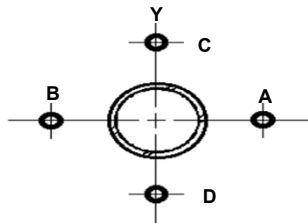
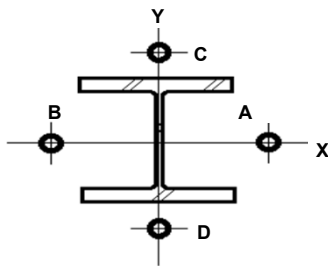
GRAVITY STEEL COLUMN DESIGN

PER AISC 360

COLUMN : A-3

DESIGN : LRFD
SECTION : HSS RECT.
STEEL : A500 GR. C
F_y (KSI) : 50
SELF WT. (PLF) : 15.6

LEVEL 2	LOADS	P _D (K)	P _L (K)	P _{Lr} (K)	P _S (K)	e _x (IN.)	e _y (IN.)	COMMENTS
EL. (FT) : 24.83	A	1.52	0.00	0.00	3.94	6.50	---	
	B	0.00	0.00	0.00	0.00	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
LEVEL 1	Σ	1.74	0.00	0.00	3.94			
EL. (FT) : 10.58	A	5.85	0.00	0.00	12.10	6.50	---	
	B	0.00	0.00	0.00	0.00	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
FOUNDATION	Σ	7.75	0.00	0.00	16.04			
EL. (FT) : 0.00								



A-3 : HSS5X5X1/4

LEVEL 2 :	L ₂ (FT.) :	14.25	K _x :	1.00	C _{mx} :	1.00	C _b :	1.00	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	1.00			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LOAD	5 - 1.2D + L + 1.6S	8.39	1.06	0.00	1.06	4.65	109.0	28.5	28.5	0.08	0.00	0.16	0.20	H1-1b OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	2.09	1.01	0.00	1.01	1.00	109.0	28.5	28.5	0.02	0.00	0.04	0.04	H1-1b OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	2.09	1.01	0.00	1.01	1.00	109.0	28.5	28.5	0.02	0.00	0.04	0.04	H1-1b OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	2.09	1.01	0.00	1.01	1.00	109.0	28.5	28.5	0.02	0.00	0.04	0.04	H1-1b OK

LEVEL 1 :	L ₁ (FT.) :	10.58	K _x :	1.00	C _{mx} :	0.60	C _b :	1.67	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	0.60			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LL	5 - 1.2D + L + 1.6S	34.97	1.00	0.00	1.00	14.29	141.0	28.5	28.5	0.25	0.00	0.50	0.69	H1-1a OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	9.31	1.00	0.00	1.00	3.80	141.0	28.5	28.5	0.07	0.00	0.13	0.17	H1-1b OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	9.31	1.00	0.00	1.00	3.80	141.0	28.5	28.5	0.07	0.00	0.13	0.17	H1-1b OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	9.31	1.00	0.00	1.00	3.80	141.0	28.5	28.5	0.07	0.00	0.13	0.17	H1-1b OK

BASE PLATE DESIGN

Force Base Plate to Be Square : Y

BASE PLATE F_y (KSI) : 36

Approx. Base Plate "X" Dim. (in) : 3

Approx. Base Plate "Y" Dim. (in) : 3

Actual Base Plate "X" Dim. (in) : 3

Actual Base Plate "Y" Dim. (in) : 3

Base Plate "B" Dimension (in) : 11.00

Base Plate "N" Dimension (in) : 11.00

n (in) : 3.13

m (in) : 3.13

X : 1.00

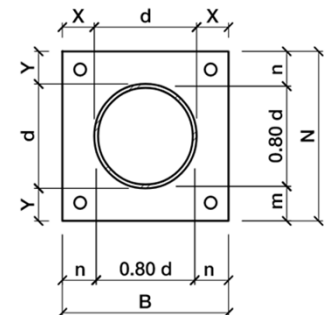
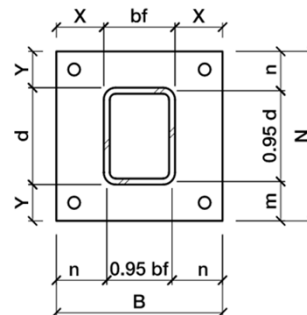
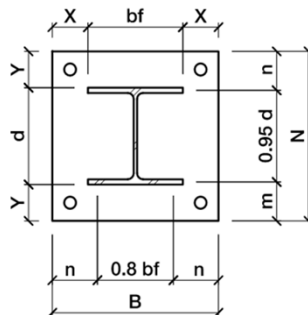
λ : 1.00

λ_n' (in) : 1.25

Governing Length (in) : 3.13

t_{min} (in) : 0.42

Plate t (in) : 0.50



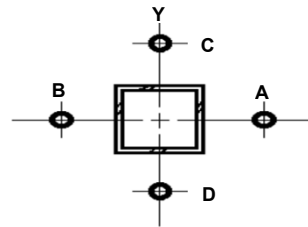
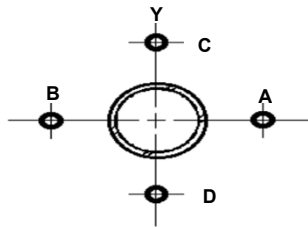
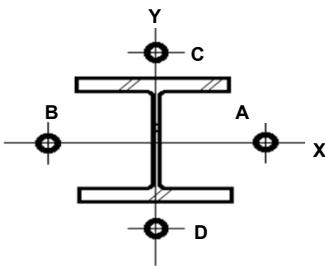
GRAVITY STEEL COLUMN DESIGN

PER AISC 360

COLUMN : B-3

DESIGN : LRFD
SECTION : HSS RECT.
STEEL : A500 GR. C
F_y (KSI) : 50
SELF WT. (PLF) : 15.6

LEVEL 2	LOADS	P _D (K)	P _L (K)	P _{Lr} (K)	P _S (K)	e _x (IN.)	e _y (IN.)	COMMENTS
EL. (FT) : 24.83	A	1.33	0.00	0.00	2.07	6.50	---	
	B	3.11	0.00	0.00	10.04	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
LEVEL 1	Σ	4.66	0.00	0.00	12.11			
EL. (FT) : 10.58	A	7.80	11.00	0.00	4.24	6.50	---	
	B	5.85	12.10	0.00	0.00	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
FOUNDATION	Σ	18.47	23.10	0.00	16.35			
EL. (FT) : 0.00								



B-3 : HSS5X5X1/4

LEVEL 2 :	L ₂ (FT.) :	14.25	K _x :	1.00	C _{mx} :	1.00	C _b :	1.00	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	1.00			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LOAD	5 - 1.2D + L + 1.6S	24.97	1.19	0.00	1.19	9.59	109.0	28.5	28.5	0.23	0.00	0.34	0.53	H1-1a OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	5.59	1.04	0.00	1.04	1.20	109.0	28.5	28.5	0.05	0.00	0.04	0.07	H1-1b OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	5.59	1.04	0.00	1.04	1.20	109.0	28.5	28.5	0.05	0.00	0.04	0.07	H1-1b OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	5.59	1.04	0.00	1.04	1.20	109.0	28.5	28.5	0.05	0.00	0.04	0.07	H1-1b OK

LEVEL 1 :	L ₁ (FT.) :	10.58	K _x :	1.00	C _{mx} :	0.60	C _b :	1.67	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	0.60			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LL	5 - 1.2D + L + 1.6S	71.42	1.00	0.00	1.00	4.34	141.0	28.5	28.5	0.51	0.00	0.15	0.64	H1-1a OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	39.77	1.00	0.00	1.00	10.80	141.0	28.5	28.5	0.28	0.00	0.38	0.62	H1-1a OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	59.12	1.00	0.00	1.00	0.32	141.0	28.5	28.5	0.42	0.00	0.01	0.43	H1-1a OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	39.77	1.00	0.00	1.00	10.80	141.0	28.5	28.5	0.28	0.00	0.38	0.62	H1-1a OK

BASE PLATE DESIGN

Force Base Plate to Be Square : Y

BASE PLATE F_y (KSI) : 36

Approx. Base Plate "X" Dim. (in) : 3

Approx. Base Plate "Y" Dim. (in) : 3

Actual Base Plate "X" Dim. (in) : 3

Actual Base Plate "Y" Dim. (in) : 3

Base Plate "B" Dimension (in) : 11.00

Base Plate "N" Dimension (in) : 11.00

n (in) : 3.13

m (in) : 3.13

X : 1.00

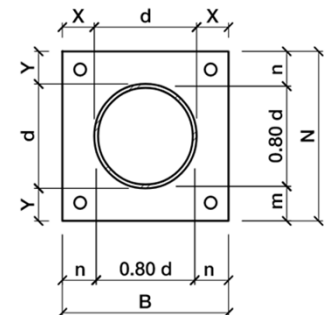
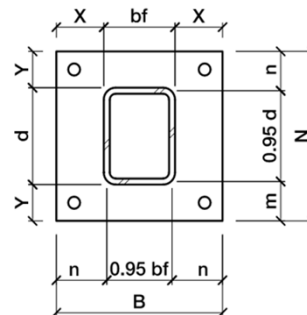
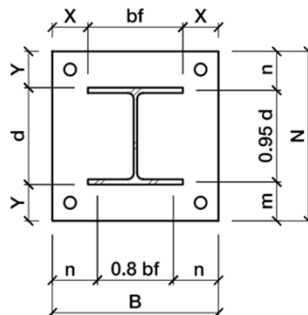
λ : 1.00

λ_n' (in) : 1.25

Governing Length (in) : 3.13

t_{min} (in) : 0.60

Plate t (in) : 0.75



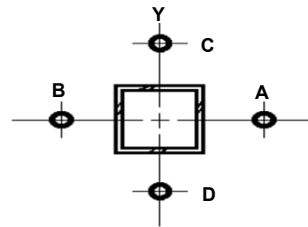
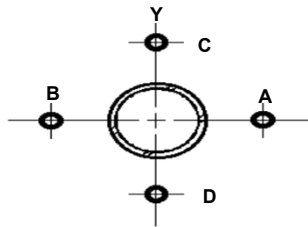
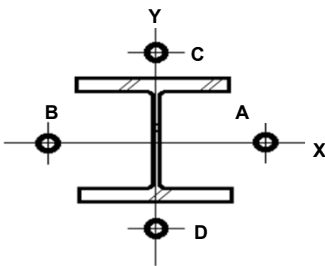
GRAVITY STEEL COLUMN DESIGN

PER AISC 360

COLUMN : E-3

DESIGN : LRFD
SECTION : HSS RECT.
STEEL : A500 GR. C
F_y (KSI) : 50
SELF WT. (PLF) : 15.6

LEVEL 2	LOADS	P _D (K)	P _L (K)	P _{Lr} (K)	P _S (K)	e _x (IN.)	e _y (IN.)	COMMENTS
EL. (FT) : 24.83	A	0.63	0.00	0.00	2.29	6.50	---	
	B	0.63	0.00	0.00	2.29	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
LEVEL 1	Σ	1.48	0.00	0.00	4.57			
EL. (FT) : 10.58	A	9.21	13.57	0.00	8.60	6.50	---	
	B	3.01	4.59	0.00	1.43	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
FOUNDATION	Σ	13.87	18.16	0.00	14.61			
EL. (FT) : 0.00								



E-3 : HSS5X5X1/4

LEVEL 2 :	L ₂ (FT.) :	14.25	K _x :	1.00	C _{mx} :	1.00	C _b :	1.00	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	1.00			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LOAD	5 - 1.2D + L + 1.6S	9.09	1.06	0.00	1.06	0.00	109.0	28.5	28.5	0.08	0.00	0.00	0.04	H1-1b OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	1.78	1.01	0.00	1.01	0.00	109.0	28.5	28.5	0.02	0.00	0.00	0.01	H1-1b OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	1.78	1.01	0.00	1.01	0.00	109.0	28.5	28.5	0.02	0.00	0.00	0.01	H1-1b OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	1.78	1.01	0.00	1.01	0.00	109.0	28.5	28.5	0.02	0.00	0.00	0.01	H1-1b OK

LEVEL 1 :	L ₁ (FT.) :	10.58	K _x :	1.00	C _{mx} :	0.60	C _b :	1.67	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	0.60			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LL	5 - 1.2D + L + 1.6S	58.17	1.00	0.00	1.00	15.10	141.0	28.5	28.5	0.41	0.00	0.53	0.88	H1-1a OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	38.35	1.00	0.00	1.00	15.79	141.0	28.5	28.5	0.27	0.00	0.55	0.76	H1-1a OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	45.70	1.00	0.00	1.00	11.81	141.0	28.5	28.5	0.32	0.00	0.41	0.69	H1-1a OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	38.35	1.00	0.00	1.00	15.79	141.0	28.5	28.5	0.27	0.00	0.55	0.76	H1-1a OK

BASE PLATE DESIGN

Force Base Plate to Be Square : Y

BASE PLATE F_y (KSI) : 36

Approx. Base Plate "X" Dim. (in) : 3

Approx. Base Plate "Y" Dim. (in) : 3

Actual Base Plate "X" Dim. (in) : 3

Actual Base Plate "Y" Dim. (in) : 3

Base Plate "B" Dimension (in) : 11.00

Base Plate "N" Dimension (in) : 11.00

n (in) : 3.13

m (in) : 3.13

X : 1.00

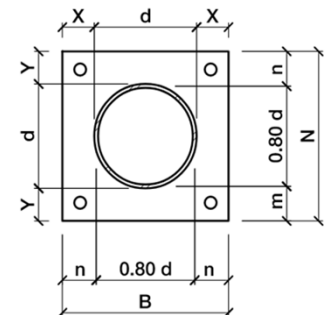
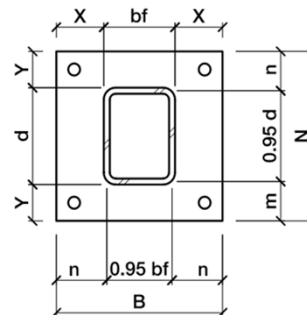
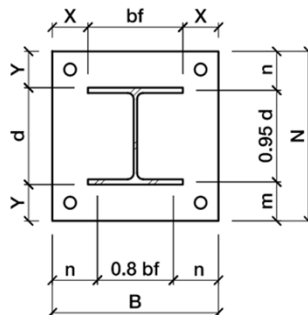
λ : 1.00

λ_n' (in) : 1.25

Governing Length (in) : 3.13

t_{min} (in) : 0.54

Plate t (in) : 0.75



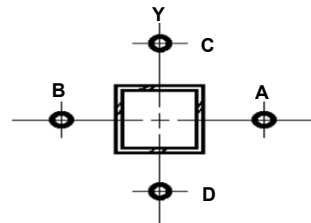
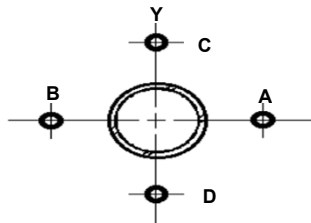
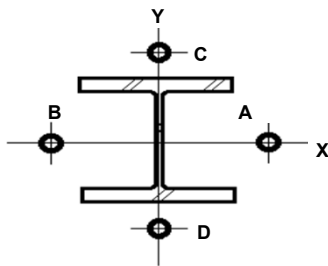
GRAVITY STEEL COLUMN DESIGN

PER AISC 360

COLUMN : F-3

DESIGN : LRFD
SECTION : HSS RECT.
STEEL : A500 GR. C
F_y (KSI) : 50
SELF WT. (PLF) : 15.6

LEVEL 2	LOADS	P _D (K)	P _L (K)	P _{Lr} (K)	P _S (K)	e _x (IN.)	e _y (IN.)	COMMENTS
EL. (FT) : 24.83	A	0.00	0.00	0.00	0.00	6.50	---	
	B	0.00	0.00	0.00	0.00	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
LEVEL 1	Σ	0.22	0.00	0.00	0.00			
EL. (FT) : 10.58	A	0.00	0.00	0.00	0.00	6.50	---	
	B	7.61	13.77	0.00	2.67	-6.50	---	
	C	0.00	0.00	0.00	0.00	---	6.50	
	D	0.00	0.00	0.00	0.00	---	-6.50	
FOUNDATION	Σ	8.00	13.77	0.00	2.67			
EL. (FT) : 0.00								



F-3 : HSS5X5X1/4

LEVEL 2 :	L ₂ (FT.) :	14.25	K _x :	1.00	C _{mx} :	1.00	C _b :	1.00	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	1.00			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LOAD	1 - 1.4D	0.31	1.00	0.00	1.00	0.00	109.0	28.5	28.5	0.00	0.00	0.00	0.00	H1-1b OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	0.27	1.00	0.00	1.00	0.00	109.0	28.5	28.5	0.00	0.00	0.00	0.00	H1-1b OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	0.27	1.00	0.00	1.00	0.00	109.0	28.5	28.5	0.00	0.00	0.00	0.00	H1-1b OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	0.27	1.00	0.00	1.00	0.00	109.0	28.5	28.5	0.00	0.00	0.00	0.00	H1-1b OK

LEVEL 1 :	L ₁ (FT.) :	10.58	K _x :	1.00	C _{mx} :	0.60	C _b :	1.67	φ :	0.90	[AXIAL]
			K _y :	1.00	C _{my} :	0.60			φ :	0.90	[BENDING]

CASE	GOV. COMBO	P _r (K)	B _{1x}	M _{rx} (K-FT.)	B _{1y}	M _{ry} (K-FT.)	P _c (K)	M _{cx} (K-FT.)	M _{cy} (K-FT.)	P _r / P _c	M _{rx} / M _{cx}	M _{ry} / M _{cy}	COMBINED RATIO	AISC EQ.
FULL LL	3 - 1.2D + 1.6L + 0.5S	32.96	1.00	0.00	1.00	17.60	141.0	28.5	28.5	0.23	0.00	0.62	0.78	H1-1a OK
UNBAL. LL ABT. X-AXIS	2 - 1.2D + 1.6L + 0.5L _r	31.63	1.00	0.00	1.00	16.88	141.0	28.5	28.5	0.22	0.00	0.59	0.75	H1-1a OK
UNBAL. LL ABT. Y-AXIS	2 - 1.2D + 1.6L + 0.5L _r	31.63	1.00	0.00	1.00	16.88	141.0	28.5	28.5	0.22	0.00	0.59	0.75	H1-1a OK
UNBAL. LL ABT. X- & Y-AXES	2 - 1.2D + 1.6L + 0.5L _r	31.63	1.00	0.00	1.00	16.88	141.0	28.5	28.5	0.22	0.00	0.59	0.75	H1-1a OK

BASE PLATE DESIGN

Force Base Plate to Be Square : Y

BASE PLATE F_y (KSI) : 36

Approx. Base Plate "X" Dim. (in) : 3

Approx. Base Plate "Y" Dim. (in) : 3

Actual Base Plate "X" Dim. (in) : 3

Actual Base Plate "Y" Dim. (in) : 3

Base Plate "B" Dimension (in) : 11.00

Base Plate "N" Dimension (in) : 11.00

n (in) : 3.13

m (in) : 3.13

X : 1.00

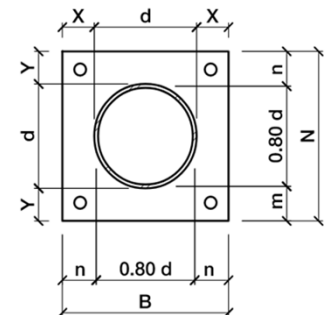
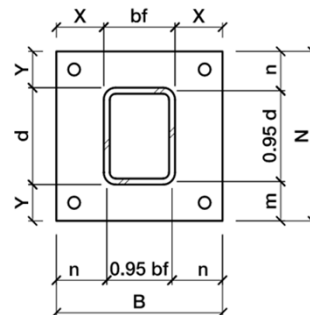
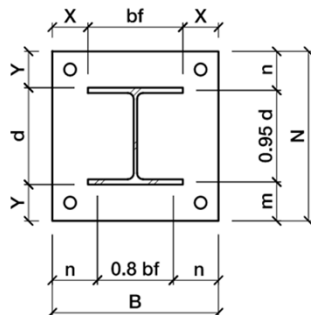
λ : 1.00

λ_n' (in) : 1.25

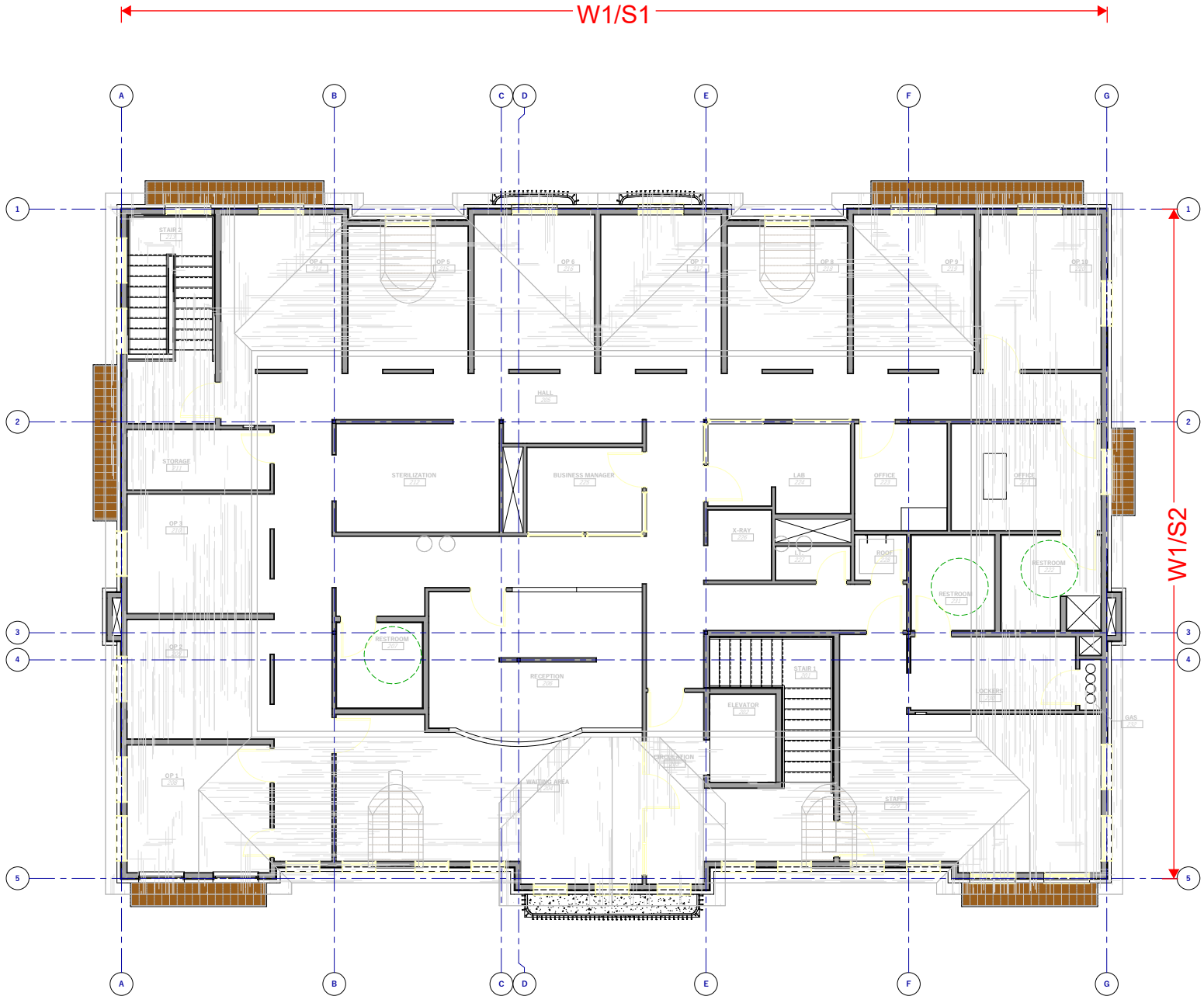
Governing Length (in) : 3.13

t_{min} (in) : 0.41

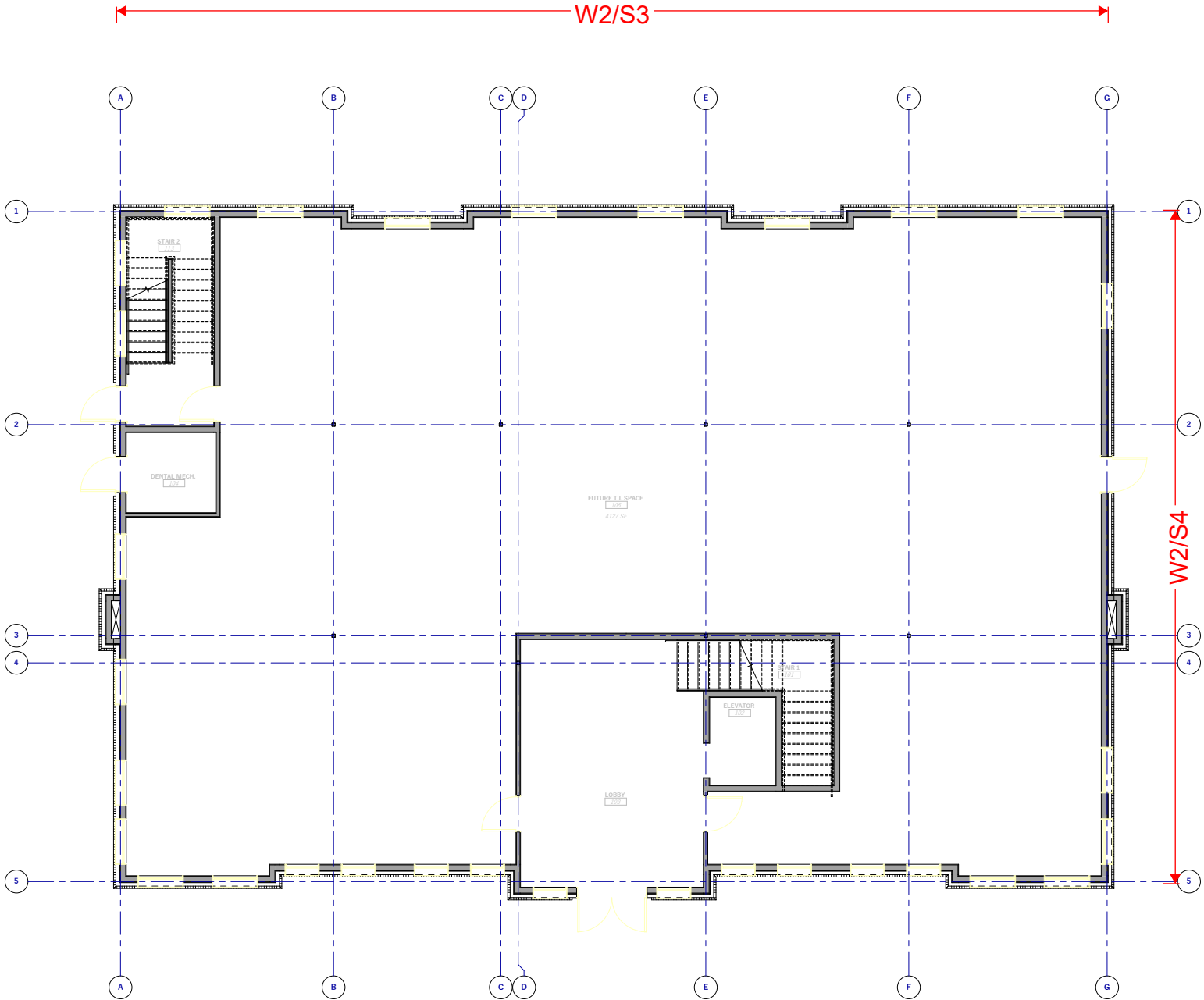
Plate t (in) : 0.50



**LATERAL KEYPLAN
(ROOF)**



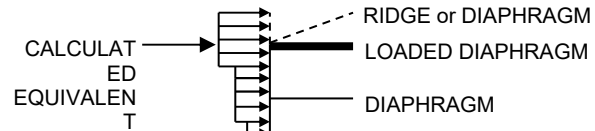
**LATERAL KEYPLAN
(FLOOR 1)**



FLEXIBLE DIAPHRAGM LOAD CALCULATIONS

DESIGN NET WIND PRESSURES (PSF)

WALL		
ELEV. (FT) / WINDWARD		
0	6.9	LEEWARD WALL : 4.7
15	6.9	WINDWARD ROOF : 0.0
20	7.3	LEEWARD ROOF : 8.5
25	7.6	WINDWARD PARAPET : 17.5
30	7.9	LEEWARD PARAPET : 11.6
40	8.4	MIN. NET WALL PRESSURE : 9.6
50	8.8	MIN. NET ROOF PRESSURE : 4.8
60	9.1	
70	9.5	
80	9.8	
90	10.0	
100	10.2	



WIND LOADS

	W1	W2
Elev. Ridge/Diaph. above (ft) :	30.25	24.8333
Elev. Loaded Diaph. (ft) :	24.833	11.6667
Elev. Low Diaph. (ft) :	11.667	0
Surface Type Above :	PITCHED	WALL
Diaph. Load (plf) :	126.4	145.9
Windward/Leeward/Both:	BOTH	BOTH
Cont. Across Diaph.?:	N	N

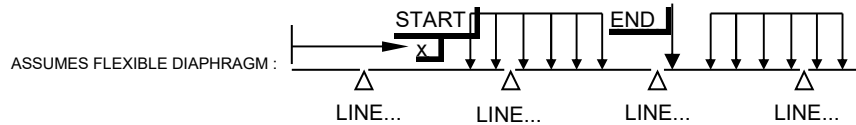
WIND LOAD CALCULATIONS

W1 : $11.6\text{psf}(0.4\text{ft})1 + 12.0\text{psf}(2.2\text{ft})1 + 12.3\text{psf}(3.9\text{ft})1 + 8.5\text{psf}(0.2\text{ft})1 + 8.5\text{psf}(2.5\text{ft})1 + 8.5\text{psf}(2.5\text{ft})1 + 8.5\text{psf}(0.2\text{ft})1 = 126.4\text{plf}$
W2 : $11.6\text{psf}(5.8\text{ft})1 + 11.6\text{psf}(2.9\text{ft})1 + 12.0\text{psf}(2.8\text{ft})1 + 12.3\text{psf}(0.9\text{ft})1 = 145.9\text{plf}$

SEISMIC LOADS

	S1	S2	S3	S4
SEISMIC COEFFICIENT :	0.168	0.168	0.079	0.079
DIAPH. DL (PSF) :	15	15	41	41
DIAPH. DEPTH (FT) :	60	86	60	86
WALL DL (PSF) :	31	31	31	31
WALL TRIB. (FT) :	26	26	25	25
DIAPH. LOAD (PLF) :	286.6	352.1	255.6	339.8

SEISMIC DIAPHRAGM LOAD = SEISMIC COEFFICIENT * (DIAPH. DL * DIAPH. DEPTH + WALL DL * WALL TRIB.)



DESCRIPTION: FRONT/BACK - ROOF

APPLIED DISTRIBUTED LOADS				APPLIED POINT LOADS				CALCULATED LINE LOADS			
WIND	EQ	START (ft)	END (ft)	LINE No.	LOC (ft)	W (LBS)	S (LBS)	LINE No.	OC, X (FT)	W _{FORCE}	S _{FORCE}
W1	S1	0	86					A	0	537	1218
								A.5	8.5	5435	12324
								F	86	4898	11106

DESCRIPTION: SIDE/SIDE - ROOF

APPLIED DISTRIBUTED LOADS				APPLIED POINT LOADS				CALCULATED LINE LOADS			
WIND	EQ	START (ft)	END (ft)	LINE No.	LOC (ft)	W (LBS)	S (LBS)	LINE No.	OC, X (FT)	W _{FORCE}	S _{FORCE}
W1	S2	0	60					1	0	2338	6514
								3	37	3792	10564
								5	60	1453	4049

DESCRIPTION: FRONT/BACK - FLOOR

APPLIED DISTRIBUTED LOADS				APPLIED POINT LOADS				CALCULATED LINE LOADS			
WIND	EQ	START (ft)	END (ft)	LINE No.	LOC (ft)	W (LBS)	S (LBS)	LINE No.	OC, X (FT)	W _{FORCE}	S _{FORCE}
W2	S3	0	86	A	0	537.16	1218.1	A	0	1157	2304
				A.5	8.5	5434.8	12324	A.5	8.5	11708	23313
				F	86	4897.6	11106	F	86	10551	21009

DESCRIPTION: SIDE/SIDE - FLOOR

APPLIED DISTRIBUTED LOADS				APPLIED POINT LOADS				CALCULATED LINE LOADS			
WIND	EQ	START (ft)	END (ft)	LINE No.	LOC (ft)	W (LBS)	S (LBS)	LINE No.	OC, X (FT)	W _{FORCE}	S _{FORCE}
W2	S4	0	60	1	0	2338.2	6514.4	1	0	5037	12800
				3	37	3791.7	10564	3	37	8168	20757
				5	60	1453.5	4049.5	5	60	3131	7957

DESCRIPTION: Side to Side

APPLIED DISTRIBUTED LOADS				APPLIED POINT LOADS				CALCULATED LINE LOADS			
WIND	EQ	START (ft)	END (ft)	LINE No.	LOC (ft)	W (LBS)	S (LBS)	LINE No.	OC, X (FT)	W _{FORCE}	S _{FORCE}

DIAPHRAGM FORCES

F_x - UNFACTORED FORCE FROM INPUT
 v - DIAPH. SHEAR (FACTORED FOR SEISMIC BASED ON F_p/F_x AND ρ FACTOR)
 NOTE: LEFT AND RIGHT DESIGNATE EACH SIDE OF SW LINE WITH CORRESPONDING FORCE

TYP. DIAPH. CAP. (PLF WIND) : 300 TYP. DIAPH. CAP. (PLF SEIS) : 215

DESCRIPTION: FRONT/BACK - ROOF

$F_p / F_x : 1$ $p : 1$

LINE	LOC, x (FT)	DIAPH. DEPTH		WIND LEFT		WIND RIGHT		SEISMIC LEFT		SEISMIC RIGHT	
		LEFT (FT)	RIGHT (FT)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)
A	0	0	40	0	0	537	13	0	0	1218	30
A.5	8.5	40	0	537	13	4898	0	1218	30	11106	0
F	86			4898		0		11106		0	

TYP. DIAPH. CAP. (PLF WIND) : 300 TYP. DIAPH. CAP. (PLF SEIS) : 215

DESCRIPTION: SIDE/SIDE - ROOF

$F_p / F_x : 1$ $p : 1$

LINE	LOC, x (FT)	DIAPH. DEPTH		WIND LEFT		WIND RIGHT		SEISMIC LEFT		SEISMIC RIGHT	
		LEFT (FT)	RIGHT (FT)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)
1	0			0		2338		0		6514	
3	37			2338		1453		6514		4049	
5	60			1453		0		4049		0	

TYP. DIAPH. CAP. (PLF WIND) : 300 TYP. DIAPH. CAP. (PLF SEIS) : 215

DESCRIPTION: FRONT/BACK - FLOOR

$F_p / F_x : 1$ $p : 1$

LINE	LOC, x (FT)	DIAPH. DEPTH		WIND LEFT		WIND RIGHT		SEISMIC LEFT		SEISMIC RIGHT	
		LEFT (FT)	RIGHT (FT)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)
A	0			0		620		0		1086	
A.5	8.5			620		5653		1086		9903	
F	86			5653		0		9903		0	

TYP. DIAPH. CAP. (PLF WIND) : 300 TYP. DIAPH. CAP. (PLF SEIS) : 215

DESCRIPTION: SIDE/SIDE - FLOOR

$F_p / F_x : 1$ $p : 1$

LINE	LOC, x (FT)	DIAPH. DEPTH		WIND LEFT		WIND RIGHT		SEISMIC LEFT		SEISMIC RIGHT	
		LEFT (FT)	RIGHT (FT)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)
1	0			0		2699		0		6286	
3	37			2699		1678		6286		3907	
5	60			1678		0		3907		0	

TYP. DIAPH. CAP. (PLF WIND) : 300 TYP. DIAPH. CAP. (PLF SEIS) : 215

DESCRIPTION: Side to Side

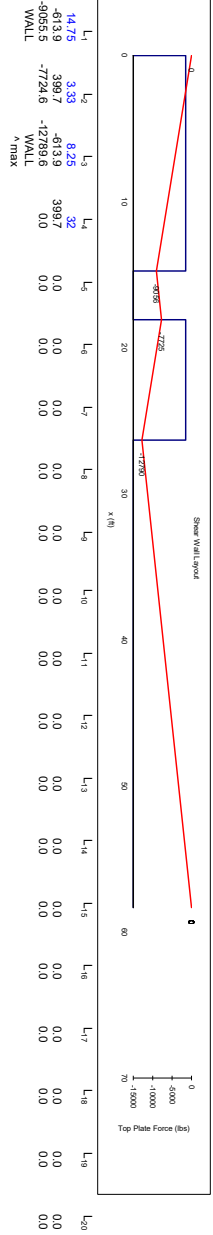
$F_p / F_x : 1$ $p : 1$

LINE	LOC, x (FT)	DIAPH. DEPTH		WIND LEFT		WIND RIGHT		SEISMIC LEFT		SEISMIC RIGHT	
		LEFT (FT)	RIGHT (FT)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)	F_x (LB)	v (PLF)

COLLECTOR FORCES

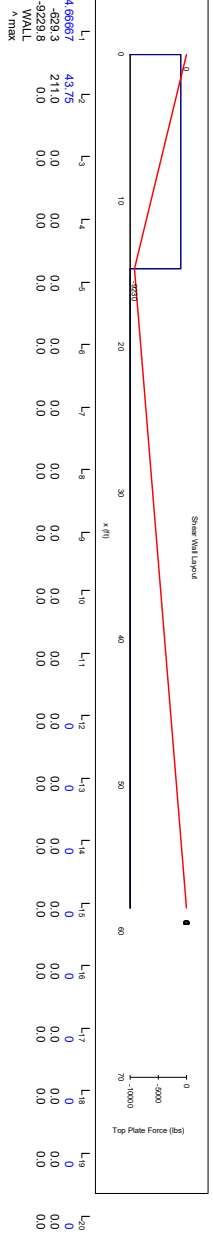
Location: **LINE A.5 AT FLOOR**
 Line Force (lbs): 233.13
 Line Length (ft): 58.33
 SW Length (ft): 23.00
 SW Unit Force (plf): 399.7
 Unit Force (plf): 101.35
 Shear Wall (plf): 47.33
 First wall type: Shear Wall

Wall Segment:
 Wall Segment Length (ft): 14.75
 Wall Segment Unit Shear Force (plf): -613.9
 Top Plate Axial Force (lbs): -9955.5
 WALL



Location: **LINE A.5 AT ROOF**
 Line Force (lbs): 14.67
 Line Length (ft): 58.42
 SW Length (ft): 14.67
 SW Unit Force (plf): 211.0
 Unit Force (plf): 840.3
 Difference (plf): 629.3
 First wall type: Shear Wall

Wall Segment:
 Wall Segment Length (ft): 14.67
 Wall Segment Unit Shear Force (plf): -629.3
 Top Plate Axial Force (lbs): -9224.0
 WALL



Location: **LINE 3 AT FLOOR**
 Line Force (lbs): 207.57
 Line Length (ft): 85.50
 SW Length (ft): 28.25
 SW Unit Force (plf): 242.8
 Unit Force (plf): 734.8
 Difference (plf): -492.0
 First wall type: Non-shear wall

Wall Segment:
 Wall Segment Length (ft): 34.25
 Wall Segment Unit Shear Force (plf): -242.8
 Top Plate Axial Force (lbs): 8314.9
 WALL

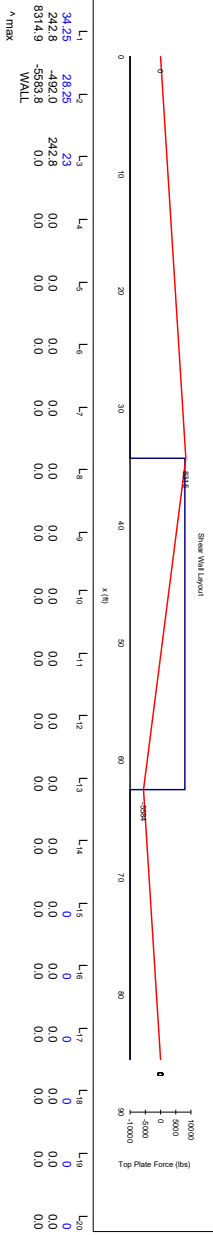


Figure 10 is a line graph showing the variation of the normalized top plate force (F/F_0) versus the normalized axial distance (x/l_0) for a simply supported beam. The x-axis represents the normalized axial distance x/l_0 and ranges from 0 to 100. The y-axis represents the normalized top plate force F/F_0 and ranges from -3000 to 2000. The curve starts at (0, 0), reaches a minimum value of -2223 at $x/l_0 = 50$, and returns to 0 at $x/l_0 = 100$. The graph is labeled "Simply Supported Beam" and "Top Plate Force (lbs)".

LINE : Line 1, Roof	SHEAR WALL SEGMENTS				TOTAL
WIND FORCE, ASD (LB) : 2,338	LENGTH (FT) :	7.08	7.08		14.17
SEISMIC FORCE, ASD (LB) : 6,514	HEIGHT (FT) :	11.63	11.63		
LINE FORCE MULTIPLIER : 1.00	ROOF TRIB (FT) :	0.00	0.00		
EFF. WIND FORCE, ASD (LB) : 2,338	FLOOR TRIB (FT) :	0.00	0.00		
EFF. SEISMIC FORCE, ASD (LB) : 6,514	HOLDOWN LOCATION :	ELEVATED	ELEVATED		
ROOF UPLIFT, ASD (PSF) : 10.5	END POST:	(2) 2 x 6 No 2	(2) 2 x 6 No 2		
ROOF PITCH : 0:12	[W] ADD'L UPLIFT (LB) :				
ROOF DL (PSF) : 15	[W] ADD'L DOWN (LB) :				
ROOF LL (PSF) : 20	[S] ADD'L UPLIFT (LB) :				
FLOOR DL (PSF) : 31	[S] ADD'L DOWN (LB) :				
FLOOR LL (PSF) : 80	[W] UPLIFT (LB) :	1195	1195		
WALL SELF (PSF) : 31	[W] DOWN (LB) :	2397	2397		
$p : 1.30$	[S] UPLIFT (LB) :	6564	6564		
$\Omega_o : 2.5$	[S] DOWN (LB) :	7488	7488		
fv WIND (PLF) : 165	CHECK BUCKLING:	OK	OK		
fv SEISMIC (PLF) : 598	CHECK TENSION:	OK	OK		
MIN. SHEARWALL No : SW16	ELEVATED :	CMST12	CMST12		
SHEAR WALL SELECTION : SW16	AT MIDWALL :	NG	NG		
SDC-D; SDS = 0.866; DF FRAMING; STUDS AT 16	AT CRNR :	NG	NG		
	AT ENDWALL :	NG	NG		
	A.B. OPTS :	HDU8	HDU8		
		HDU8	HDU8		
	HD12 - 4x8 1 1/8 AB	HD12 - 4x8 1 1/8 AB			

LINE : Line 1, Floor	SHEAR WALL SEGMENTS				TOTAL
WIND FORCE, ASD (LB) : 5,036	LENGTH (FT) :	7.08	7.08		14.17
SEISMIC FORCE, ASD (LB) : 12,800	HEIGHT (FT) :	10.58	10.58		
LINE FORCE MULTIPLIER : 1.00	ROOF TRIB (FT) :	0.00	0.00		
EFF. WIND FORCE, ASD (LB) : 5,036	FLOOR TRIB (FT) :	0.00	0.00		
EFF. SEISMIC FORCE, ASD (LB) : 12,800	HOLDOWN LOCATION :	8" STEM MIN.	8" STEM MIN.		
ROOF UPLIFT, ASD (PSF) : 10.5	END POST:	6 x 8 No 2	6 x 8 No 2		
ROOF PITCH : 0:12	[W] ADD'L UPLIFT (LB) :				
ROOF DL (PSF) : 15	[W] ADD'L DOWN (LB) :				
ROOF LL (PSF) : 20	[S] ADD'L UPLIFT (LB) :				
FLOOR DL (PSF) : 31	[S] ADD'L DOWN (LB) :				
FLOOR LL (PSF) : 80	[W] UPLIFT (LB) :	3362	3362		
WALL SELF (PSF) : 31	[W] DOWN (LB) :	4198	4198		
$p : 1.30$	[S] UPLIFT (LB) :	13010	13010		
$\Omega_o : 2.5$	[S] DOWN (LB) :	12922	12922		
fv WIND (PLF) : 355	CHECK BUCKLING:	OK	OK		
fv SEISMIC (PLF) : 1175	CHECK TENSION:	OK	OK		
MIN. SHEARWALL No : SW20	ELEVATED :	NG	NG		
SHEAR WALL SELECTION : SW20	AT MIDWALL :	NG	NG		
SDC-D; SDS = 0.866; DF FRAMING; STUDS AT 16	AT CRNR :	NG	NG		
	AT ENDWALL :	NG	NG		
	A.B. OPTS :	HDU14 - 4x8	HDU14 - 4x8		
		HHQ14 - 4x8	HHQ14 - 4x8		
	HD12 - 4x8 1 1/8 AB	HD12 - 4x8 1 1/8 AB			

2021 SDPWS, TABLE 4.3a, FOOTNOTE 10
8% REDUCTION APPLIED? $\checkmark$

LINE : Line 3, Roof		SHEAR WALL SEGMENTS					TOTAL
WIND FORCE, ASD (LB) :	3,791	LENGTH (FT) :	11.83				11.83
SEISMIC FORCE, ASD (LB) :	10,564	HEIGHT (FT) :	12.79				
LINE FORCE MULTIPLIER : 1.00		ROOF TRIB (FT) :	0.00				
EFF. WIND FORCE, ASD (LB) :	3,791	FLOOR TRIB (FT) :	0.00				
EFF. SEISMIC FORCE, ASD (LB) :	10,564	HOLDOWN LOCATION :	ELEVATED				
ROOF UPLIFT, ASD (PSF) :	10.5	END POST:	6 x 6 No 2				
ROOF PITCH : 0:12		[W] ADD'L UPLIFT (LB) :					
ROOF DL (PSF) : 15		[W] ADD'L DOWN (LB) :					
ROOF LL (PSF) : 20		[S] ADD'L UPLIFT (LB) :					
FLOOR DL (PSF) : 31		[S] ADD'L DOWN (LB) :					
FLOOR LL (PSF) : 80		[W] UPLIFT (LB) :	2799				
WALL SELF (PSF) : 31		[W] DOWN (LB) :	4625				
p : 1.30		[S] UPLIFT (LB) :	14264				
Ω_o : 2.5		[S] DOWN (LB) :	15439				
f_v WIND (PLF) : 320		CHECK BUCKLING:	OK				
f_v SEISMIC (PLF) : 1161		CHECK TENSION:	OK				
MIN. SHEARWALL No : SW20		ELEVATED:	NG				
SHEAR WALL SELECTION : SW20	82%	AT MIDWALL:	NG				
SDC-D; SDS = 0.866; DF STUDS AT 16		AT CRNR:	NG				
		AT ENDWALL:	NG				
		A.B. OPTS :	HDU14 - 4x8				
			NG				
			HD12 - 4x8 1 1/8 AB				

2021 SDPWS, TABLE 4.3a, FOOTNOTE 10
8% REDUCTION APPLIED?

LINE : Line 3, Floor		SHEAR WALL SEGMENTS					TOTAL
WIND FORCE, ASD (LB) :	8,167	LENGTH (FT) :	28.25				28.25
SEISMIC FORCE, ASD (LB) :	20,757	HEIGHT (FT) :	10.58				
LINE FORCE MULTIPLIER : 1.00		ROOF TRIB (FT) :	0.00				
EFF. WIND FORCE, ASD (LB) :	8,167	FLOOR TRIB (FT) :	0.00				
EFF. SEISMIC FORCE, ASD (LB) :	20,757	HOLDOWN LOCATION :	8" STEM MIN.				
ROOF UPLIFT, ASD (PSF) :	10.5	END POST:	(2) 2 x 6 No 2				
ROOF PITCH : 0:12		[W] ADD'L UPLIFT (LB) :					
ROOF DL (PSF) : 15		[W] ADD'L DOWN (LB) :					
ROOF LL (PSF) : 20		[S] ADD'L UPLIFT (LB) :					
FLOOR DL (PSF) : 31		[S] ADD'L DOWN (LB) :					
FLOOR LL (PSF) : 80		[W] UPLIFT (LB) :	282				
WALL SELF (PSF) : 31		[W] DOWN (LB) :	3494				
p : 1.30		[S] UPLIFT (LB) :	7953				
Ω_o : 2.5		[S] DOWN (LB) :	10596				
f_v WIND (PLF) : 289		CHECK BUCKLING:	OK				
f_v SEISMIC (PLF) : 955		CHECK TENSION:	OK				
MIN. SHEARWALL No : SW20		ELEVATED:	CMST12				
SHEAR WALL SELECTION : SW20	67%	AT MIDWALL:	NG				
SDC-D; SDS = 0.866; DF FRAMING; STUDS AT 16		AT CRNR:	NG				
		AT ENDWALL:	NG				
		A.B. OPTS :	HDU11 - 4x6				
			HDQ8 - (3) 2x				
			HD12 - 4x8 1 1/8 AB				

2021 SDPWS, TABLE 4.3a, FOOTNOTE 10
8% REDUCTION APPLIED?

LINE : Line 5, Roof		SHEAR WALL SEGMENTS				TOTAL	
WIND FORCE, ASD (LB) : 1,453	LENGTH (FT) : 5.50	5.50	5.50	5.50	5.50	22.00	
SEISMIC FORCE, ASD (LB) : 4,049	HEIGHT (FT) : 11.63	11.63	11.63	11.63	11.63		
LINE FORCE MULTIPLIER : 1.00	ROOF TRIB (FT) : 0.00	0.00	0.00	0.00	0.00		
EFF. WIND FORCE, ASD (LB) : 1,453	FLOOR TRIB (FT) : 0.00	0.00	0.00	0.00	0.00		
EFF. SEISMIC FORCE, ASD (LB) : 4,049	HOLDOWN LOCATION : ELEVATED	ELEVATED	ELEVATED	ELEVATED	ELEVATED		
ROOF UPLIFT, ASD (PSF) : 10.5	END POST: (2) 2 x 6 No 2	(2) 2 x 6 No 2	(2) 2 x 6 No 2	(2) 2 x 6 No 2	(2) 2 x 6 No 2		
ROOF PITCH : 0:12	[W] ADD'L UPLIFT (LB) :						
ROOF DL (PSF) : 15	[W] ADD'L DOWN (LB) :						
ROOF LL (PSF) : 20	[S] ADD'L UPLIFT (LB) :						
FLOOR DL (PSF) : 31	[S] ADD'L DOWN (LB) :						
FLOOR LL (PSF) : 80	[W] UPLIFT (LB) :	181	181	181	181		
WALL SELF (PSF) : 31	[W] DOWN (LB) :	1247	1247	1247	1247		
p : 1.30	[S] UPLIFT (LB) :	2411	2411	2411	2411		
Ωo : 2.5	[S] DOWN (LB) :	3320	3320	3320	3320		
fv WIND (PLF) : 70	CHECK BUCKLING:	OK	OK	OK	OK		
EFFECTIVE fv SEISMIC (PLF) : 253	CHECK TENSION:	OK	OK	OK	OK		
MIN. SHEARWALL No : SW9	ELEVATED :	CS14	CS14	CS14	CS14		
SHEAR WALL SELECTION : SW9	AT MIDWALL :	STHD10	STHD10	STHD10	STHD10		
	AT CRNR :	STHD10	STHD10	STHD10	STHD10		
	AT ENDWALL :	STHD14	STHD14	STHD14	STHD14		
	A.B. OPTS :	HDU2	HDU2	HDU2	HDU2		
		HDU2	HDU2	HDU2	HDU2		
		HTT4	HTT4	HTT4	HTT4		
Aspect ratio < 3.5:1 OK w/ capacity to resist lateral force reduced per IBC.							
	EFFECTIVE L :	5.20	5.20	5.20	5.20	TOTAL	
						20.82	

LINE : Line 5, Floor		SHEAR WALL SEGMENTS				TOTAL	
WIND FORCE, ASD (LB) :	3,131	LENGTH (FT) :	5.50	5.50	5.50	5.50	22.00
SEISMIC FORCE, ASD (LB) :	7,957	HEIGHT (FT) :	10.58	10.58	10.58	10.58	
LINE FORCE MULTIPLIER : 1.00		ROOF TRIB (FT) :	0.00	0.00	0.00	0.00	
EFF. WIND FORCE, ASD (LB) :	3,131	FLOOR TRIB (FT) :	0.00	0.00	0.00	0.00	
EFF. SEISMIC FORCE, ASD (LB) :	7,957	HOLDOWN LOCATION :	8" STEM MIN.	8" STEM MIN.	8" STEM MIN.	8" STEM MIN.	
ROOF UPLIFT, ASD (PSF) :	10.5	END POST:	(2) 2 x 6 No 2	(2) 2 x 6 No 2	(2) 2 x 6 No 2	(2) 2 x 6 No 2	
ROOF PITCH : 0:12		[W] ADD'L UPLIFT (LB) :					
ROOF DL (PSF) :	15	[W] ADD'L DOWN (LB) :					
ROOF LL (PSF) :	20	[S] ADD'L UPLIFT (LB) :					
FLOOR DL (PSF) :	31	[S] ADD'L DOWN (LB) :					
FLOOR LL (PSF) :	80	[W] UPLIFT (LB) :	1011	1011	1011	1011	
WALL SELF (PSF) :	31	[W] DOWN (LB) :	1942	1942	1942	1942	
p : 1.30		[S] UPLIFT (LB) :	4755	4755	4755	4755	
Ω_o : 2.5		[S] DOWN (LB) :	5467	5467	5467	5467	
f _v WIND (PLF) : 142		CHECK BUCKLING:	OK	OK	OK	OK	
f _v SEISMIC (PLF) : 470		CHECK TENSION:	OK	OK	OK	OK	
MIN. SHEARWALL No : SW13		ELEVATED :	CMST14	CMST14	CMST14	CMST14	
SHEAR WALL SELECTION : SW13	96%	AT MIDWALL :	NG	NG	NG	NG	
		AT CRNR :	NG	NG	NG	NG	
		AT ENDWALL :	NG	NG	NG	NG	
		A.B. OPTS :	HDU5	HDU5	HDU5	HDU5	
			HDU5	HDU5	HDU5	HDU5	
			HD12 - 4x8 1 1/8 AB	HD12 - 4x8 1 1/8 AB	HD12 - 4x8 1 1/8 AB	HD12 - 4x8 1 1/8 AB	

SDC-D; SDS = 0.866; DF FRAMING; STUDS AT 16

HOLDOWN OPTIONS

LINE : Line A, Roof		SHEAR WALL SEGMENTS		TOTAL
WIND FORCE, ASD (LB) :	537	LENGTH (FT) :	6.92	4.75
SEISMIC FORCE, ASD (LB) :	1,218	HEIGHT (FT) :	11.63	11.63
LINE FORCE MULTIPLIER : 1.00		ROOF TRIB (FT) :	0.00	0.00
EFF. WIND FORCE, ASD (LB) :	537	FLOOR TRIB (FT) :	0.00	0.00
EFF. SEISMIC FORCE, ASD (LB) :	1,218	HOLDOWN LOCATION :	ELEVATED	ELEVATED
ROOF UPLIFT, ASD (PSF) :	10.5	END POST:	(2) 2 x 6 No 2	(2) 2 x 6 No 2
ROOF PITCH : 0:12		[W] ADD'L UPLIFT (LB) :		
ROOF DL (PSF) :	15	[W] ADD'L DOWN (LB) :		
ROOF LL (PSF) :	20	[S] ADD'L UPLIFT (LB) :		
FLOOR DL (PSF) :	31	[S] ADD'L DOWN (LB) :		
FLOOR LL (PSF) :	80	[W] UPLIFT (LB) :	0	0
WALL SELF (PSF) :	31	[W] DOWN (LB) :	1057	951
$p : 1.30$		[S] UPLIFT (LB) :	1145	1032
$\Omega_o : 2.5$		[S] DOWN (LB) :	2245	1932
f_v WIND (PLF) :	50	CHECK BUCKLING:	OK	OK
EFFECTIVE f_v SEISMIC (PLF) :	147	CHECK TENSION:	OK	OK
MIN. SHEARWALL No : SW9		ELEVATED:	CSHP18	CSHP18
SHEAR WALL SELECTION : SW9	56%	AT MIDWALL:	LSTHD8	LSTHD8
SDC-D; SDS = 0.866; DF STUDS AT 16		AT CRNR:	LSTHD8	LSTHD8
		AT ENDWALL:	LSTHD8	LSTHD8
		A.B. OPTS:	HDU2	HDU2
			HDU2	HDU2
			LTT20B	LTT20B
		Aspect ratio < 3.5:1 OK w/ capacity to resist lateral force reduced per IBC.		
		EFFECTIVE L :	6.92	3.88
				TOTAL
				10.80

LINE : Line A, Floor		SHEAR WALL SEGMENTS		TOTAL
WIND FORCE, ASD (LB) :	1,157	LENGTH (FT) :	6.92	4.75
SEISMIC FORCE, ASD (LB) :	2,304	HEIGHT (FT) :	10.58	10.58
LINE FORCE MULTIPLIER : 1.00		ROOF TRIB (FT) :	0.00	0.00
EFF. WIND FORCE, ASD (LB) :	1,157	FLOOR TRIB (FT) :	0.00	0.00
EFF. SEISMIC FORCE, ASD (LB) :	2,304	HOLDOWN LOCATION :	8" STEM MIN.	8" STEM MIN.
ROOF UPLIFT, ASD (PSF) :	10.5	END POST:	(2) 2 x 6 No 2	(2) 2 x 6 No 2
ROOF PITCH : 0:12		[W] ADD'L UPLIFT (LB) :		
ROOF DL (PSF) :	15	[W] ADD'L DOWN (LB) :		
ROOF LL (PSF) :	20	[S] ADD'L UPLIFT (LB) :		
FLOOR DL (PSF) :	31	[S] ADD'L DOWN (LB) :		
FLOOR LL (PSF) :	80	[W] UPLIFT (LB) :	430	544
WALL SELF (PSF) :	31	[W] DOWN (LB) :	1530	1419
$p : 1.30$		[S] UPLIFT (LB) :	2372	2287
$\Omega_o : 2.5$		[S] DOWN (LB) :	3325	3035
f_v WIND (PLF) :	103	CHECK BUCKLING:	OK	OK
EFFECTIVE f_v SEISMIC (PLF) :	268	CHECK TENSION:	OK	OK
MIN. SHEARWALL No : SW11		ELEVATED:	CS14	CS14
SHEAR WALL SELECTION : SW11	77%	AT MIDWALL:	STHD10	STHD10
SDC-D; SDS = 0.866; DF FRAMING; STUDS AT 16		AT CRNR:	STHD10	STHD10
		AT ENDWALL:	STHD14	STHD14
		A.B. OPTS:	HDU2	HDU2
			HDU2	HDU2
			HTT4	HTT4
		Aspect ratio < 3.5:1 OK w/ capacity to resist lateral force reduced per IBC.		
		EFFECTIVE L :	6.92	4.27
				TOTAL
				11.18

LINE : Line A.5, Roof		SHEAR WALL SEGMENTS					TOTAL
WIND FORCE, ASD (LB) :	5,434	LENGTH (FT) :	14.67				14.67
SEISMIC FORCE, ASD (LB) :	12,324	HEIGHT (FT) :	12.79				
LINE FORCE MULTIPLIER : 1.00		ROOF TRIB (FT) :	0.00				
EFF. WIND FORCE, ASD (LB) :	5,434	FLOOR TRIB (FT) :	0.00				
EFF. SEISMIC FORCE, ASD (LB) :	12,324	HOLDOWN LOCATION :	ELEVATED				
ROOF UPLIFT, ASD (PSF) :	10.5	END POST:	(2) 2 x 6 No 2				
ROOF PITCH : 0:12		[W] ADD'L UPLIFT (LB) :					
ROOF DL (PSF) :	15	[W] ADD'L DOWN (LB) :					
ROOF LL (PSF) :	20	[S] ADD'L UPLIFT (LB) :					
FLOOR DL (PSF) :	31	[S] ADD'L DOWN (LB) :					
FLOOR LL (PSF) :	80	[W] UPLIFT (LB) :	3046				
WALL SELF (PSF) :	31	[W] DOWN (LB) :	5266				
p : 1.30		[S] UPLIFT (LB) :	12791				
Ω_o : 2.5		[S] DOWN (LB) :	14564				
fv WIND (PLF) :	371	CHECK BUCKLING:	OK				
fv SEISMIC (PLF) :	1092	CHECK TENSION:	OK				
MIN. SHEARWALL No : SW20		ELEVATED:	NG				
SHEAR WALL SELECTION : SW20	77%	AT MIDWALL:	NG				
SDC-D; SDS = 0.866; DF FRAMING; STUDS AT 16		AT CRNR:	NG				
		AT ENDWALL:	NG				
		A.B. OPTS:	HDU14 - 4x8				
			HHQ14 - 4x8				
			HD12 - 4x8 1 1/8 AB				

2021 SDPWS, TABLE 4.3a, FOOTNOTE 10
8% REDUCTION APPLIED?: ☒

LINE : Line A.5, Floor		SHEAR WALL SEGMENTS					TOTAL
WIND FORCE, ASD (LB) :	11,706	LENGTH (FT) :	14.75	8.25			23.00
SEISMIC FORCE, ASD (LB) :	23,313	HEIGHT (FT) :	10.58	10.58			
LINE FORCE MULTIPLIER : 1.00		ROOF TRIB (FT) :	0.00	0.00			
EFF. WIND FORCE, ASD (LB) :	11,706	FLOOR TRIB (FT) :	0.00	0.00			
EFF. SEISMIC FORCE, ASD (LB) :	23,313	HOLDOWN LOCATION :	8" STEM MIN.	8" STEM MIN.			
ROOF UPLIFT, ASD (PSF) :	10.5	END POST:	6 x 6 No 2	6 x 6 No 2			
ROOF PITCH : 0:12		[W] ADD'L UPLIFT (LB) :					
ROOF DL (PSF) :	15	[W] ADD'L DOWN (LB) :					
ROOF LL (PSF) :	20	[S] ADD'L UPLIFT (LB) :					
FLOOR DL (PSF) :	31	[S] ADD'L DOWN (LB) :					
FLOOR LL (PSF) :	80	[W] UPLIFT (LB) :	4061	4844			
WALL SELF (PSF) :	31	[W] DOWN (LB) :	5822	5822			
p : 1.30		[S] UPLIFT (LB) :	13188	14070			
Ω_o : 2.5		[S] DOWN (LB) :	14436	14436			
fv WIND (PLF) :	509	CHECK BUCKLING:	OK	OK			
fv SEISMIC (PLF) :	1318	CHECK TENSION:	OK	OK			
MIN. SHEARWALL No : SW20		ELEVATED:	NG	NG			
SHEAR WALL SELECTION : SW20	93%	AT MIDWALL:	NG	NG			
SDC-D; SDS = 0.866; DF FRAMING; STUDS AT 16		AT CRNR:	NG	NG			
		AT ENDWALL:	NG	NG			
		A.B. OPTS:	HDU14 - 4x8	HDU14 - 4x8			
			HHQ14 - 6x6	NG			
			HD12 - 4x8 1 1/8 AB	HD12 - 4x8 1 1/8 AB			

2021 SDPWS, TABLE 4.3a, FOOTNOTE 10
8% REDUCTION APPLIED?: ☒

LINE : Line F, Roof		SHEAR WALL SEGMENTS				TOTAL
WIND FORCE, ASD (LB) :	4,897	LENGTH (FT) :	21.75	10.75		32.50
SEISMIC FORCE, ASD (LB) :	11,106	HEIGHT (FT) :	11.63	11.63		
LINE FORCE MULTIPLIER :	1.00	ROOF TRIB (FT) :	0.00	0.00		
EFF. WIND FORCE, ASD (LB) :	4,897	FLOOR TRIB (FT) :	0.00	0.00		
EFF. SEISMIC FORCE, ASD (LB) :	11,106	HOLDOWN LOCATION :	ELEVATED	ELEVATED		
ROOF UPLIFT, ASD (PSF) :	10.5	END POST:	(2) 2 x 6 No 2	(2) 2 x 6 No 2		
ROOF PITCH :	0:12	[W] ADD'L UPLIFT (LB) :				
ROOF DL (PSF) :	15	[W] ADD'L DOWN (LB) :				
ROOF LL (PSF) :	20	[S] ADD'L UPLIFT (LB) :				
FLOOR DL (PSF) :	31	[S] ADD'L DOWN (LB) :				
FLOOR LL (PSF) :	80	[W] UPLIFT (LB) :	0	604		
WALL SELF (PSF) :	31	[W] DOWN (LB) :	2231	2231		
p :	1.30	[S] UPLIFT (LB) :	3322	4334		
Ω_o :	2.5	[S] DOWN (LB) :	5706	5706		
f_v WIND (PLF) :	151	CHECK BUCKLING:	OK	OK		
f_v SEISMIC (PLF) :	444	CHECK TENSION:	OK	OK		
MIN. SHEARWALL No : SW13		ELEVATED:	(2) CS16	CMSTC16 / (2)CS14		
SHEAR WALL SELECTION : SW13	91%	AT MIDWALL:	STHD14	NG		
SDC-D; SDS = 0.866; DF STUDS AT 16		AT CRNR:	STHD14	NG		
		AT ENDWALL:	NG	NG		
		A.B. OPTS :	HDU4	HDU4		
			HDU4	HDU4		
			HTT4	HTT5		

LINE : Line F, Floor		SHEAR WALL SEGMENTS				TOTAL
WIND FORCE, ASD (LB) :	10,549	LENGTH (FT) :	21.75	10.75		32.50
SEISMIC FORCE, ASD (LB) :	21,009	HEIGHT (FT) :	10.58	10.58		
LINE FORCE MULTIPLIER :	1.00	ROOF TRIB (FT) :	0.00	0.00		
EFF. WIND FORCE, ASD (LB) :	10,549	FLOOR TRIB (FT) :	0.00	0.00		
EFF. SEISMIC FORCE, ASD (LB) :	21,009	HOLDOWN LOCATION :	8" STEM MIN.	8" STEM MIN.		
ROOF UPLIFT, ASD (PSF) :	10.5	END POST:	(2) 2 x 6 No 2	(2) 2 x 6 No 2		
ROOF PITCH :	0:12	[W] ADD'L UPLIFT (LB) :				
ROOF DL (PSF) :	15	[W] ADD'L DOWN (LB) :				
ROOF LL (PSF) :	20	[S] ADD'L UPLIFT (LB) :				
FLOOR DL (PSF) :	31	[S] ADD'L DOWN (LB) :				
FLOOR LL (PSF) :	80	[W] UPLIFT (LB) :	1309	2433		
WALL SELF (PSF) :	31	[W] DOWN (LB) :	3870	3870		
p :	1.30	[S] UPLIFT (LB) :	7262	8234		
Ω_o :	2.5	[S] DOWN (LB) :	9382	9382		
f_v WIND (PLF) :	325	CHECK BUCKLING:	OK	OK		
f_v SEISMIC (PLF) :	840	CHECK TENSION:	OK	OK		
MIN. SHEARWALL No : SW20		ELEVATED:	CMST12	CMST12		
SHEAR WALL SELECTION : SW20	59%	AT MIDWALL:	NG	NG		
SDC-D; SDS = 0.866; DF FRAMING; STUDS AT 16		AT CRNR:	NG	NG		
		AT ENDWALL:	NG	NG		
		A.B. OPTS :	HDU8 - (3) 2x	HDU11 - 4x6		
			HDQ8 - (3) 2x	HDQ8 - (3) 2x		
			HD12 - 4x8 1 1/8 AB	HD12 - 4x8 1 1/8 AB		

2021 SDPWS, TABLE 4.3a, FOOTNOTE 10
8% REDUCTION APPLIED?

Spread Footing Design

(Design based on ACI 318-14)

Description: B-2

f_c (psi): 2500
 Conc. Wt. (pcf): 145
 F_y (ksi): 40
 Clr Cvr. Bot (in): 3
 Allow. Soil Bearing (psf): 2000
 Surcharge (psf): 0
 Snow (Y/N): Y
 f_t (IBC 1605.2.1): 0.5
 Light Wt. Conc. λ : 1

Column Type: Steel Column
 Column Length (in): 5
 Column Width (in): 5
 Base Plate Length (in): 12
 Base Plate Width (in): 12

$\rho T \& S$: 0.0020
 ρ_{max} : 0.0232
 β_1 : 0.85
 d (in): 14.25

ϕ Flexure: 0.90
 ϕ Shear: 0.75
 ϕ Bearing: 0.65

LOADING

DL (k): 15
 LL (k): 18
 RLL (k): 0
 SL(k): 13

REINFORCING DEVELOPMENT

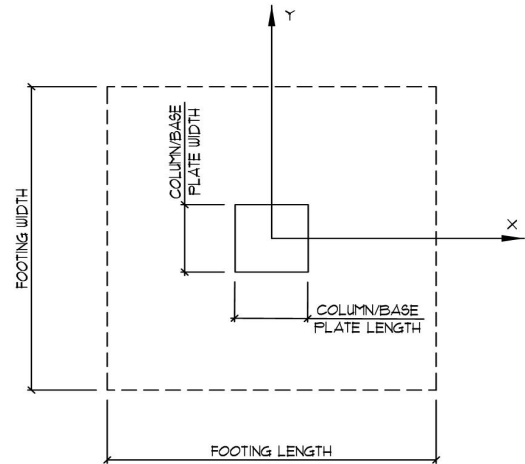
$\psi_t = 1.0$
 $\psi_e = 1.0$
 $\psi_s = 0.8$
 $l_d = 14.4$

FOOTING GEOMETRY

Min Dim. For Sq. Ftg. (ft): 4.64
 Length X-Dir. (ft): 5.50
 Width Y-Dir. (ft): 5.50
 Thickness (in): 18.00
 Min Ftg. Thickness (in): 9.32

FOOTING REINFORCING

X-Dir. Reinf.: (6) # 6
 Y-Dir. Reinf.: (6) # 6



SOIL BEARING

Load Combination	Max Bearing (psf)	Max/Allow.
1DL	722	0.36
1DL+1LL	1314	0.66
1DL+1SL	1141	0.57
1DL+0.75LL+0.75SL	1481	0.74

FOOTING FLEXURE DESIGN

Critical Section from Column Center X - Dir. (in): 4.25
 Critical Section from Column Center Y - Dir. (in): 4.25

Load Combination	Ultimate Bearing (psf)	Mu - YY (k-ft)	X-Dir. As Req'd - Strength (in^2)	X-Dir. As Req'd - T & S (in^2)	X-Dir. As Provided (in^2)	Mu - XX (k-ft)	Y-Dir. As Req'd - Strength (in^2)	Y-Dir. As Req'd - T & S (in^2)	Y-Dir. As Provided (in^2)
1.4DL	705.79	11.14	0.26	2.38	2.65	11.14	0.26	2.38	2.65
1.2DL+1.6LL+0.5SL	1763.24	27.83	0.66	2.38	2.65	27.83	0.66	2.38	2.65
1.2DL+0.5LL+1.6SL	1573.06	24.83	0.58	2.38	2.65	24.83	0.58	2.38	2.65

FOOTING SHEAR CHECK

Column α_s : 40
 β : 1

Two Way (Punching) ϕV_c (k): 194.5
 One Way (X-Dir. Cut) ϕV_c (k): 70.5
 One Way (Y-Dir. Cut) ϕV_c (k): 70.5

Critical Section from Column Center X - Dir. (in): 18.5
 Critical Section from Column Center Y - Dir. (in): 18.5

Load Combination	Punching Vu (k)	Punching Vu/ ϕV_c	X-Dir. Cut Vu (k)	X-Dir. Cut Vu/ ϕV_c	Y-Dir. Cut Vu (k)	Y-Dir. Cut Vu/ ϕV_c
1.4DL	18.81	0.097	4.69	0.066	4.69	0.066
1.2DL+1.6LL+0.5SL	47.00	0.242	11.72	0.166	11.72	0.166
1.2DL+0.5LL+1.6SL	41.93	0.216	10.45	0.148	10.45	0.148

CONCRETE BEARING CHECK

A_2/A_1 : 2.00
 Bearing Capacity ϕB_n (k): 397.8

Load Combination	Bu (k)	Bu/ ϕB_n
1.4DL	21.35	0.054
1.2DL+1.6LL+0.5SL	53.34	0.134
1.2DL+0.5LL+1.6SL	47.59	0.120

Spread Footing Design

(Design based on ACI 318-14)

Description: C-2

f_c (psi): 2500
 Conc. Wt. (pcf): 145
 F_y (ksi): 40
 Clr Cvr. Bot (in): 3
 Allow. Soil Bearing (psf): 2000
 Surcharge (psf): 0
 Snow (Y/N): Y
 f_t (IBC 1605.2.1): 0.5
 Light Wt. Conc. λ : 1

Column Type: Steel Column
 Column Length (in): 5
 Column Width (in): 5
 Base Plate Length (in): 12
 Base Plate Width (in): 12

$\rho T \& S$: 0.0020
 p_{max} : 0.0232
 β_1 : 0.85
 d (in): 14.50

ϕ Flexure: 0.90
 ϕ Shear: 0.75
 ϕ Bearing: 0.65

LOADING

DL (k): 18
 LL (k): 14
 RLL (k): 0
 SL(k): 22

REINFORCING DEVELOPMENT

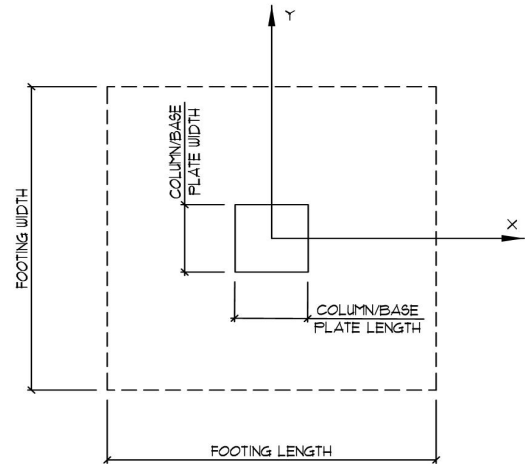
$\psi_t = 1.0$
 $\psi_e = 1.0$
 $\psi_s = 0.8$
 $l_d = 12.0$

FOOTING GEOMETRY

Min Dim. For Sq. Ftg. (ft): 5.02
 Length X-Dir. (ft): 5.50
 Width Y-Dir. (ft): 5.50
 Thickness (in): 18.00
 Min Ftg. Thickness (in): 9.77

FOOTING REINFORCING

X-Dir. Reinf.: (13) # 4
 Y-Dir. Reinf.: (13) # 4



SOIL BEARING

Load Combination	Max Bearing (psf)	Max/Allow.
1DL	798	0.40
1DL+1LL	1277	0.64
1DL+1SL	1518	0.76
1DL+0.75LL+0.75SL	1697	0.85

FOOTING FLEXURE DESIGN

Critical Section from Column Center X - Dir. (in): 4.25
 Critical Section from Column Center Y - Dir. (in): 4.25

Load Combination	Ultimate Bearing (psf)	Mu - YY (k-ft)	X-Dir. As Req'd - Strength (in^2)	X-Dir. As Req'd - T & S (in^2)	X-Dir. As Provided (in^2)	Mu - XX (k-ft)	Y-Dir. As Req'd - Strength (in^2)	Y-Dir. As Req'd - T & S (in^2)	Y-Dir. As Provided (in^2)
1.4DL	813.16	12.84	0.30	2.38	2.55	12.84	0.30	2.38	2.55
1.2DL+1.6LL+0.5SL	1822.18	28.76	0.67	2.38	2.55	28.76	0.67	2.38	2.55
1.2DL+0.5LL+1.6SL	2087.64	32.95	0.76	2.38	2.55	32.95	0.76	2.38	2.55

FOOTING SHEAR CHECK

Column α_s : 40
 β : 1

Two Way (Punching) ϕV_c (k): 200.1
 One Way (X-Dir. Cut) ϕV_c (k): 71.8
 One Way (Y-Dir. Cut) ϕV_c (k): 71.8

Critical Section from Column Center X - Dir. (in): 18.75
 Critical Section from Column Center Y - Dir. (in): 18.75

Load Combination	Punching Vu (k)	Punching Vu/ ϕV_c	X-Dir. Cut Vu (k)	X-Dir. Cut Vu/ ϕV_c	Y-Dir. Cut Vu (k)	Y-Dir. Cut Vu/ ϕV_c
1.4DL	21.61	0.108	5.31	0.074	5.31	0.074
1.2DL+1.6LL+0.5SL	48.43	0.242	11.90	0.166	11.90	0.166
1.2DL+0.5LL+1.6SL	55.48	0.277	13.63	0.190	13.63	0.190

CONCRETE BEARING CHECK

A_2/A_1 : 2.00
 Bearing Capacity ϕB_n (k): 397.8

Load Combination	Bu (k)	Bu/ ϕB_n
1.4DL	24.60	0.062
1.2DL+1.6LL+0.5SL	55.12	0.139
1.2DL+0.5LL+1.6SL	63.15	0.159

Spread Footing Design

(Design based on ACI 318-14)

Description: D-2

f_c (psi): 2500
 Conc. Wt. (pcf): 145
 F_y (ksi): 40
 Clr Cvr. Bot (in): 3
 Allow. Soil Bearing (psf): 2000
 Surcharge (psf): 0
 Snow (Y/N): Y
 f_t (IBC 1605.2.1) : 0.5
 Light Wt. Conc. λ : 1

Column Type: Steel Column
 Column Length (in): 5
 Column Width (in): 5
 Base Plate Length (in): 12
 Base Plate Width (in): 12

$\rho T \& S$: 0.0020
 ρ_{max} : 0.0232
 β_1 : 0.85
 d (in): 14.25

ϕ Flexure: 0.90
 ϕ Shear: 0.75
 ϕ Bearing: 0.65

LOADING

DL (k): 17
 LL (k): 22
 RLL (k): 0
 SL(k): 14

REINFORCING DEVELOPMENT

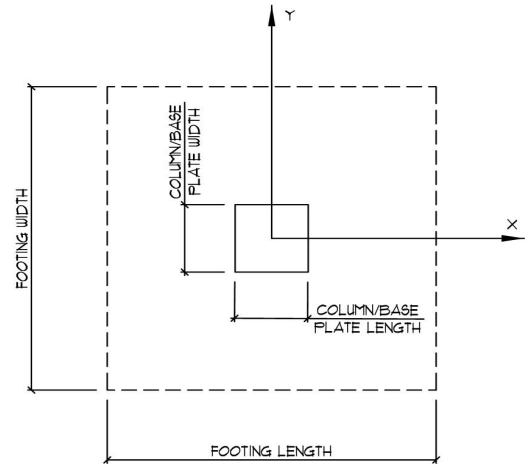
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 $\psi_e = 1.0$
 $\psi_s = 0.8$
 $l_d = 14.4$

FOOTING GEOMETRY

Min Dim. For Sq. Ftg. (ft): 4.97
 Length X-Dir. (ft): 5.50
 Width Y-Dir. (ft): 5.50
 Thickness (in): 18.00
 Min Ftg. Thickness (in): 9.98

FOOTING REINFORCING

X-Dir. Reinf.: (6) # 6
 Y-Dir. Reinf.: (6) # 6



SOIL BEARING

Load Combination	Max Bearing (psf)	Max/Allow.
1DL	781	0.39
1DL+1LL	1504	0.75
1DL+1SL	1246	0.62
1DL+0.75LL+0.75SL	1672	0.84

FOOTING FLEXURE DESIGN

Critical Section from Column Center X - Dir. (in): 4.25
 Critical Section from Column Center Y - Dir. (in): 4.25

Load Combination	Ultimate Bearing (psf)	Mu - YY (k-ft)	X-Dir. As Req'd - Strength (in^2)	X-Dir. As Req'd - T & S (in^2)	X-Dir. As Provided (in^2)	Mu - XX (k-ft)	Y-Dir. As Req'd - Strength (in^2)	Y-Dir. As Req'd - T & S (in^2)	Y-Dir. As Provided (in^2)
1.4DL	789.55	12.46	0.29	2.38	2.65	12.46	0.29	2.38	2.65
1.2DL+1.6LL+0.5SL	2064.86	32.59	0.77	2.38	2.65	32.59	0.77	2.38	2.65
1.2DL+0.5LL+1.6SL	1781.59	28.12	0.66	2.38	2.65	28.12	0.66	2.38	2.65

FOOTING SHEAR CHECK

Column α_s : 40
 β : 1

Two Way (Punching) ϕV_c (k): 194.5
 One Way (X-Dir. Cut) ϕV_c (k): 70.5
 One Way (Y-Dir. Cut) ϕV_c (k): 70.5

Critical Section from Column Center X - Dir. (in): 18.5
 Critical Section from Column Center Y - Dir. (in): 18.5

Load Combination	Punching Vu (k)	Punching Vu/ ϕV_c	X-Dir. Cut Vu (k)	X-Dir. Cut Vu/ ϕV_c	Y-Dir. Cut Vu (k)	Y-Dir. Cut Vu/ ϕV_c
1.4DL	21.05	0.108	5.25	0.074	5.25	0.074
1.2DL+1.6LL+0.5SL	55.04	0.283	13.72	0.195	13.72	0.195
1.2DL+0.5LL+1.6SL	47.49	0.244	11.84	0.168	11.84	0.168

CONCRETE BEARING CHECK

A_2/A_1 : 2.00
 Bearing Capacity ϕB_n (k): 397.8

Load Combination	Bu (k)	Bu/ ϕB_n
1.4DL	23.88	0.060
1.2DL+1.6LL+0.5SL	62.46	0.157
1.2DL+0.5LL+1.6SL	53.89	0.135

Spread Footing Design

(Design based on ACI 318-14)

Description: E-2

f_c (psi): 2500
 Conc. Wt. (pcf): 145
 F_y (ksi): 40
 Clr Cvr. Bot (in): 3
 Allow. Soil Bearing (psf): 2000
 Surcharge (psf): 0
 Snow (Y/N): Y
 f_1 (IBC 1605.2.1) : 0.5
 Light Wt. Conc. λ : 1

Column Type: Steel Column
 Column Length (in): 5
 Column Width (in): 5
 Base Plate Length (in): 12
 Base Plate Width (in): 12

$\rho T \& S$: 0.0020
 p_{max} : 0.0232
 β_1 : 0.85
 d (in): 14.50

ϕ Flexure: 0.90
 ϕ Shear: 0.75
 ϕ Bearing: 0.65

LOADING

DL (k): 18
 LL (k): 24
 RLL (k): 0
 SL(k): 13

REINFORCING DEVELOPMENT

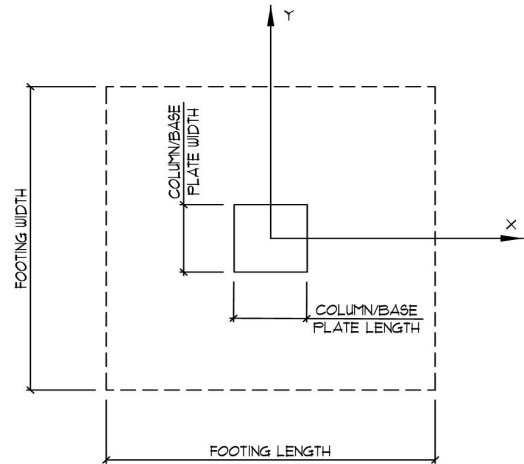
$\psi_t = 1.0$
 $\psi_e = 1.0$
 $\psi_s = 0.8$
 $l_d = 12.0$

FOOTING GEOMETRY

Min Dim. For Sq. Ftg. (ft): 5.02
 Length X-Dir. (ft): 5.50
 Width Y-Dir. (ft): 5.50
 Thickness (in): 18.00
 Min Ftg. Thickness (in): 9.92

FOOTING REINFORCING

X-Dir. Reinf.: (13) # 4
 Y-Dir. Reinf.: (13) # 4



SOIL BEARING

Load Combination	Max Bearing (psf)	Max/Allow.
1DL	800	0.40
1DL+1LL	1582	0.79
1DL+1SL	1220	0.61
1DL+0.75LL+0.75SL	1701	0.85

FOOTING FLEXURE DESIGN

Critical Section from Column Center X - Dir. (in): 4.25
 Critical Section from Column Center Y - Dir. (in): 4.25

Load Combination	Ultimate Bearing (psf)	Mu - YY (k-ft)	X-Dir. As Req'd - Strength (in^2)	X-Dir. As Req'd - T & S (in^2)	X-Dir. As Provided (in^2)	Mu - XX (k-ft)	Y-Dir. As Req'd - Strength (in^2)	Y-Dir. As Req'd - T & S (in^2)	Y-Dir. As Provided (in^2)
1.4DL	815.47	12.87	0.30	2.38	2.55	12.87	0.30	2.38	2.55
1.2DL+1.6LL+0.5SL	2160.33	34.10	0.79	2.38	2.55	34.10	0.79	2.38	2.55
1.2DL+0.5LL+1.6SL	1761.79	27.81	0.64	2.38	2.55	27.81	0.64	2.38	2.55

FOOTING SHEAR CHECK

Column α_s : 40
 β : 1

Two Way (Punching) ϕV_c (k): 200.1
 One Way (X-Dir. Cut) ϕV_c (k): 71.8
 One Way (Y-Dir. Cut) ϕV_c (k): 71.8

Critical Section from Column Center X - Dir. (in): 18.75
 Critical Section from Column Center Y - Dir. (in): 18.75

Load Combination	Punching Vu (k)	Punching Vu/ ϕV_c	X-Dir. Cut Vu (k)	X-Dir. Cut Vu/ ϕV_c	Y-Dir. Cut Vu (k)	Y-Dir. Cut Vu/ ϕV_c
1.4DL	21.67	0.108	5.33	0.074	5.33	0.074
1.2DL+1.6LL+0.5SL	57.41	0.287	14.11	0.197	14.11	0.197
1.2DL+0.5LL+1.6SL	46.82	0.234	11.51	0.160	11.51	0.160

CONCRETE BEARING CHECK

A_2/A_1 : 2.00
 Bearing Capacity ϕB_n (k): 397.8

Load Combination	Bu (k)	Bu/ ϕB_n
1.4DL	24.67	0.062
1.2DL+1.6LL+0.5SL	65.35	0.164
1.2DL+0.5LL+1.6SL	53.29	0.134

Spread Footing Design

(Design based on ACI 318-14)

Description: B-3

f_c (psi): **2500**
 Conc. Wt. (pcf): **145**
 F_y (ksi): **40**
 Clr Cvr. Bot (in): **3**
 Allow. Soil Bearing (psf): **2000**
 Surcharge (psf): **0**
 Snow (Y/N): **Y**
 f_t (IBC 1605.2.1) : **0.5**
 Light Wt. Conc. λ : **1**

Column Type: **Steel Column**
 Column Length (in): **5**
 Column Width (in): **5**
 Base Plate Length (in): **12**
 Base Plate Width (in): **12**

$\rho T \& S$: 0.0020
 p_{max} : 0.0232
 β_1 : 0.85
 d (in): 14.50

ϕ Flexure: **0.90**
 ϕ Shear: **0.75**
 ϕ Bearing: **0.65**

LOADING

DL (k): **18**
 LL (k): **23**
 RLL (k): **0**
 SL(k): **16**

REINFORCING DEVELOPMENT

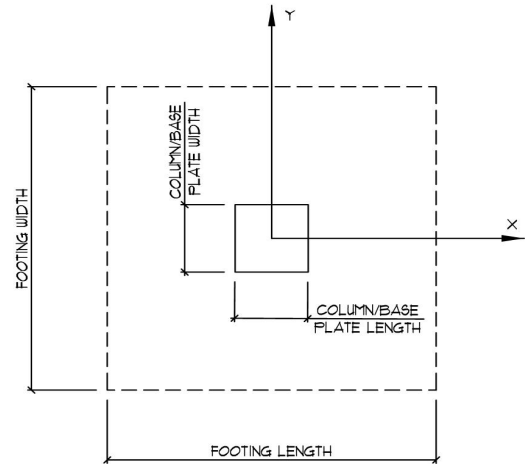
$\psi_t = 1.0$
 $\psi_e = 1.0$
 $\psi_s = 0.8$
 $l_d = 12.0$

FOOTING GEOMETRY

Min Dim. For Sq. Ftg. (ft): 5.20
 Length X-Dir. (ft): **5.50**
 Width Y-Dir. (ft): **5.50**
 Thickness (in): **18.00**
 Min Ftg. Thickness (in): 10.05

FOOTING REINFORCING

X-Dir. Reinf.: **(13) # 4**
 Y-Dir. Reinf.: **(13) # 4**



SOIL BEARING

Load Combination	Max Bearing (psf)	Max/Allow.
1DL	828	0.41
1DL+1LL	1592	0.80
1DL+1SL	1369	0.68
1DL+0.75LL+0.75SL	1806	0.90

FOOTING FLEXURE DESIGN

Critical Section from Column Center X - Dir. (in): 4.25
 Critical Section from Column Center Y - Dir. (in): 4.25

Load Combination	Ultimate Bearing (psf)	Mu - YY (k-ft)	X-Dir. As Req'd - Strength (in^2)	X-Dir. As Req'd - T & S (in^2)	X-Dir. As Provided (in^2)	Mu - XX (k-ft)	Y-Dir. As Req'd - Strength (in^2)	Y-Dir. As Req'd - T & S (in^2)	Y-Dir. As Provided (in^2)
1.4DL	854.81	13.49	0.31	2.38	2.55	13.49	0.31	2.38	2.55
1.2DL+1.6LL+0.5SL	2224.76	35.12	0.81	2.38	2.55	35.12	0.81	2.38	2.55
1.2DL+0.5LL+1.6SL	1979.31	31.24	0.72	2.38	2.55	31.24	0.72	2.38	2.55

FOOTING SHEAR CHECK

Column α_s : **40**
 β : 1

Two Way (Punching) ϕV_c (k): 200.1
 One Way (X-Dir. Cut) ϕV_c (k): 71.8
 One Way (Y-Dir. Cut) ϕV_c (k): 71.8

Critical Section from Column Center X - Dir. (in): 18.75
 Critical Section from Column Center Y - Dir. (in): 18.75

Load Combination	Punching Vu (k)	Punching Vu/ ϕV_c	X-Dir. Cut Vu (k)	X-Dir. Cut Vu/ ϕV_c	Y-Dir. Cut Vu (k)	Y-Dir. Cut Vu/ ϕV_c
1.4DL	22.72	0.114	5.58	0.078	5.58	0.078
1.2DL+1.6LL+0.5SL	59.13	0.295	14.53	0.202	14.53	0.202
1.2DL+0.5LL+1.6SL	52.60	0.263	12.93	0.180	12.93	0.180

CONCRETE BEARING CHECK

A_2/A_1 : 2.00
 Bearing Capacity ϕB_n (k): 397.8

Load Combination	Bu (k)	Bu/ ϕB_n
1.4DL	25.86	0.065
1.2DL+1.6LL+0.5SL	67.30	0.169
1.2DL+0.5LL+1.6SL	59.87	0.151

Spread Footing Design

(Design based on ACI 318-14)

Description: E-3

f_c (psi): **2500**
 Conc. Wt. (pcf): **145**
 F_y (ksi): **40**
 Clr Cvr. Bot (in): **3**
 Allow. Soil Bearing (psf): **2000**
 Surcharge (psf): **0**
 Snow (Y/N): **Y**
 f_1 (IBC 1605.2.1) : **0.5**
 Light Wt. Conc. λ : **1**

Column Type: **Steel Column**
 Column Length (in): **5**
 Column Width (in): **5**
 Base Plate Length (in): **12**
 Base Plate Width (in): **12**

$\rho T \& S$: 0.0020
 p_{max} : 0.0232
 β_1 : 0.85
 d (in): 14.38

ϕ Flexure: **0.90**
 ϕ Shear: **0.75**
 ϕ Bearing: **0.65**

LOADING

DL (k): **14**
 LL (k): **18**
 RLL (k): **0**
 SL(k): **15**

REINFORCING DEVELOPMENT

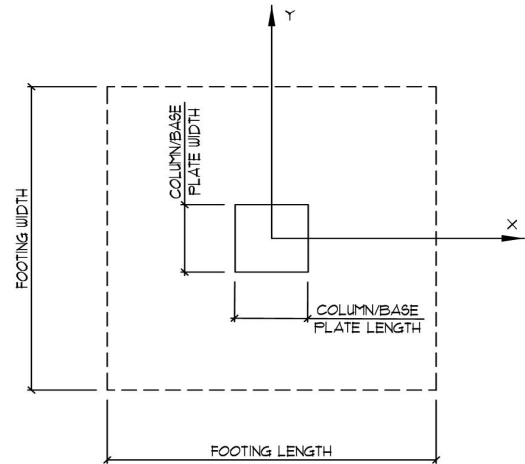
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 $\psi_e = 1.0$
 $\psi_s = 0.8$
 $l_d = 12.0$

FOOTING GEOMETRY

Min Dim. For Sq. Ftg. (ft): 4.65
 Length X-Dir. (ft): **5.50**
 Width Y-Dir. (ft): **5.50**
 Thickness (in): **18.00**
 Min Ftg. Thickness (in): 9.17

FOOTING REINFORCING

X-Dir. Reinf.: **(8) # 5**
 Y-Dir. Reinf.: **(8) # 5**



SOIL BEARING

Load Combination	Max Bearing (psf)	Max/Allow.
1DL	676	0.34
1DL+1LL	1276	0.64
1DL+1SL	1159	0.58
1DL+0.75LL+0.75SL	1488	0.74

FOOTING FLEXURE DESIGN

Critical Section from Column Center X - Dir. (in): 4.25
 Critical Section from Column Center Y - Dir. (in): 4.25

Load Combination	Ultimate Bearing (psf)	Mu - YY (k-ft)	X-Dir. As Req'd - Strength (in^2)	X-Dir. As Req'd - T & S (in^2)	X-Dir. As Provided (in^2)	Mu - XX (k-ft)	Y-Dir. As Req'd - Strength (in^2)	Y-Dir. As Req'd - T & S (in^2)	Y-Dir. As Provided (in^2)
1.4DL	641.92	10.13	0.24	2.38	2.45	10.13	0.24	2.38	2.45
1.2DL+1.6LL+0.5SL	1752.23	27.66	0.65	2.38	2.45	27.66	0.65	2.38	2.45
1.2DL+0.5LL+1.6SL	1623.14	25.62	0.60	2.38	2.45	25.62	0.60	2.38	2.45

FOOTING SHEAR CHECK

Column α_s : **40**
 β : 1

Two Way (Punching) ϕV_c (k): 197.3
 One Way (X-Dir. Cut) ϕV_c (k): 71.2
 One Way (Y-Dir. Cut) ϕV_c (k): 71.2

Critical Section from Column Center X - Dir. (in): 18.625
 Critical Section from Column Center Y - Dir. (in): 18.625

Load Combination	Punching Vu (k)	Punching Vu/ ϕV_c	X-Dir. Cut Vu (k)	X-Dir. Cut Vu/ ϕV_c	Y-Dir. Cut Vu (k)	Y-Dir. Cut Vu/ ϕV_c
1.4DL	17.09	0.087	4.23	0.059	4.23	0.059
1.2DL+1.6LL+0.5SL	46.64	0.236	11.54	0.162	11.54	0.162
1.2DL+0.5LL+1.6SL	43.20	0.219	10.69	0.150	10.69	0.150

CONCRETE BEARING CHECK

A_2/A_1 : 2.00
 Bearing Capacity ϕB_n (k): 397.8

Load Combination	Bu (k)	Bu/ ϕB_n
1.4DL	19.42	0.049
1.2DL+1.6LL+0.5SL	53.01	0.133
1.2DL+0.5LL+1.6SL	49.10	0.123

Spread Footing Design

(Design based on ACI 318-14)

Description: F4.0

f'_c (psi): 2500
 Conc. Wt. (pcf): 145
 F_y (ksi): 40
 Clr Cvr. Bot (in): 3
 Allow. Soil Bearing (psf): 2000
 Surcharge (psf): 0
 Snow (Y/N): Y
 f_1 (IBC 1605.2.1): 0.5
 Light Wt. Conc. λ : 1

Column Type: Steel Column
 Column Length (in): 5
 Column Width (in): 5
 Base Plate Length (in): 12
 Base Plate Width (in): 12

$\rho T \& S$: 0.0020
 p_{max} : 0.0232
 β_1 : 0.85
 d (in): 14.38

ϕ Flexure: 0.90
 ϕ Shear: 0.75
 ϕ Bearing: 0.65

LOADING

DL (k): 8
 LL (k): 14
 RLL (k): 0
 SL(k): 3

REINFORCING DEVELOPMENT

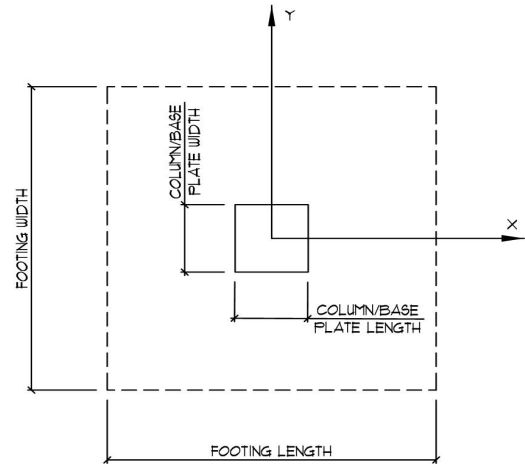
$\psi_t = 1.0$
 $\psi_e = 1.0$
 $\psi_s = 0.8$
 $l_d = 12.0$

FOOTING GEOMETRY

Min Dim. For Sq. Ftg. (ft): 3.48
 Length X-Dir. (ft): 4.00
 Width Y-Dir. (ft): 4.00
 Thickness (in): 18.00
 Min Ftg. Thickness (in): 7.14

FOOTING REINFORCING

X-Dir. Reinf.: (6) # 5
 Y-Dir. Reinf.: (6) # 5



SOIL BEARING

Load Combination	Max Bearing (psf)	Max/Allow.
1DL	706	0.35
1DL+1LL	1566	0.78
1DL+1SL	873	0.44
1DL+0.75LL+0.75SL	1476	0.74

FOOTING FLEXURE DESIGN

Critical Section from Column Center X - Dir. (in): 4.25
 Critical Section from Column Center Y - Dir. (in): 4.25

Load Combination	Ultimate Bearing (psf)	Mu - YY (k-ft)	X-Dir. As Req'd - Strength (in^2)	X-Dir. As Req'd - T & S (in^2)	X-Dir. As Provided (in^2)	Mu - XX (k-ft)	Y-Dir. As Req'd - Strength (in^2)	Y-Dir. As Req'd - T & S (in^2)	Y-Dir. As Provided (in^2)
1.4DL	683.38	3.70	0.09	1.73	1.84	3.70	0.09	1.73	1.84
1.2DL+1.6LL+0.5SL	2046.19	11.09	0.26	1.73	1.84	11.09	0.26	1.73	1.84
1.2DL+0.5LL+1.6SL	1283.06	6.95	0.16	1.73	1.84	6.95	0.16	1.73	1.84

FOOTING SHEAR CHECK

Column α_s : 40
 β : 1

Two Way (Punching) ϕV_c (k): 197.3
 One Way (X-Dir. Cut) ϕV_c (k): 51.8
 One Way (Y-Dir. Cut) ϕV_c (k): 51.8

Critical Section from Column Center X - Dir. (in): 18.625
 Critical Section from Column Center Y - Dir. (in): 18.625

Load Combination	Punching Vu (k)	Punching Vu/ ϕV_c	X-Dir. Cut Vu (k)	X-Dir. Cut Vu/ ϕV_c	Y-Dir. Cut Vu (k)	Y-Dir. Cut Vu/ ϕV_c
1.4DL	8.45	0.043	1.22	0.024	1.22	0.024
1.2DL+1.6LL+0.5SL	25.30	0.128	3.67	0.071	3.67	0.071
1.2DL+0.5LL+1.6SL	15.87	0.080	2.30	0.044	2.30	0.044

CONCRETE BEARING CHECK

A_2/A_1 : 2.00
 Bearing Capacity ϕB_n (k): 397.8

Load Combination	Bu (k)	Bu/ ϕB_n
1.4DL	10.93	0.027
1.2DL+1.6LL+0.5SL	32.74	0.082
1.2DL+0.5LL+1.6SL	20.53	0.052

Continuous Footing Design

(Design based on ACI 318-14)

Description: FC2.0

f_c (psi): 2500
 Conc. Wt. (pcf): 150
 F_y (ksi): 40
 Clr Cvr. Bot (in): 3
 Allow. Soil Bearing (psf): 2000
 Surcharge (psf): 0
 Snow (Y/N): N
 f_1 (IBC 1605.2.1): 0.5
 Light Wt. Conc. λ : 1
 SDC: D-F

Wall Type: Wood Wall
 Wall Width (in): 6
 Maximum Eccentricity (Y/N): N
 Eccentricity (in): 0
 ϕ Flexure: 0.90
 ϕ Shear: 0.75
 ϕ Bearing: 0.65

$\rho T \&S$: 0.0020
 ρ_{max} : 0.0232
 β_1 : 0.85
 d (in): 14.38

$\psi_t = 1.0$
 $\psi_e = 1.0$
 $\psi_s = 0.8$
 $l_d =$

LOADING	DL (PSF)	LL (PSF)	SNOW (PSF)	TRIB TRIB (FT)	w_{DL} (PLF)	w_{LL} (PLF)	w_{RLL} (PLF)	Snow (PLF)
ROOF	15	20	0	11	165	0	220	0
FLOOR	31	80	0	11	341	880	0	0
WALL	31	0	0	25	775	0	0	0
MISC	20	0	0	1	20	0	0	0
Uniform Load (PLF):					1301	880	220	0

FOOTING GEOMETRY

Min. Concentric Width (in): 14.8
 Width (in): 24.00
 Thickness (in): 18.00

FOOTING REINFORCING

Longitudinal. Reinf.: (3) # 5
 Bottom Transverse Reinf.:

SOIL BEARING

Load Combination	Max Bearing (psf)	Min Bearing (psf)	Max/Allow.
1DL	876	876	0.44
1DL+1LL	1316	1316	0.66
1DL+1RLL	986	986	0.49
1DL+0.75LL+0.75RLL	1288	1288	0.64

FOOTING FLEXURE DESIGN

Critical Section from Wall Center Line (in): 1.5

Load Combination	Ultimate Bearing (psf)	M_u Right Side (k-ft/ft)	M_u Left Side (k-ft/ft)	Transverse As Req'd - Strength (in ² /ft)	Transverse As Provided (in ² /ft)
1.4DL	911	0.35	0.35	No Trans. Req'd	0.00
1.2DL+1.6LL+0.5RLL	1540	0.59	0.59	No Trans. Req'd	0.00
1.2DL+0.5LL+1.6RLL	1177	0.45	0.45	No Trans. Req'd	0.00

FOOTING SHEAR CHECK

Critical Section from Wall Center Line (in): 17.375

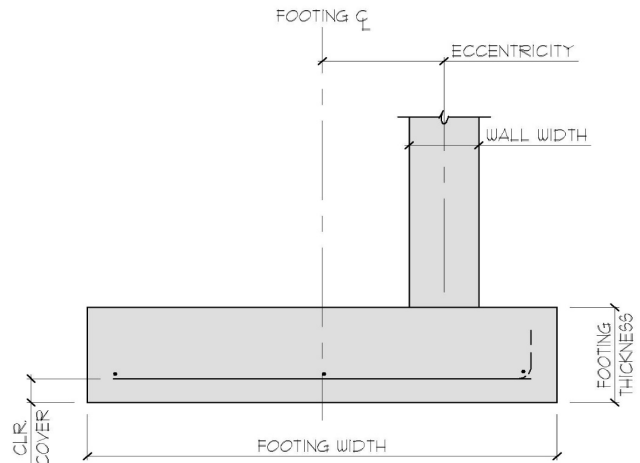
One Way (X-Dir. Cut) ϕV_c (k/ft): 12.9

Load Combination	Shear Right Side V_u (k/ft)	Shear Left Side V_u (k/ft)	$V_u/\phi V_c$
1.4DL	N/A	N/A	0.000
1.2DL+1.6LL+0.5RLL	N/A	N/A	0.000
1.2DL+0.5LL+1.6RLL	N/A	N/A	0.000

CONCRETE BEARING CHECK

Bearing Capacity ϕB_n (k): 99.5

Load Combination	B_u (k/ft)	$B_u/\phi B_n$
1.4DL	1.82	0.018
1.2DL+1.6LL+0.5RLL	3.08	0.031
1.2DL+0.5LL+1.6RLL	2.35	0.024



Continuous Footing Design

(Design based on ACI 318-14)

Description: FC3.5

f_c (psi): 2500
 Conc. Wt. (pcf): 150
 F_y (ksi): 40
 Clr Cvr. Bot (in): 3
 Allow. Soil Bearing (psf): 2000
 Surcharge (psf): 0
 Snow (Y/N): N
 f_1 (IBC 1605.2.1): 0.5
 Light Wt. Conc. λ : 1
 SDC: D-F

Wall Type: Wood Wall
 Wall Width (in): 6
 Maximum Eccentricity (Y/N): N
 Eccentricity (in): 0
 ϕ Flexure: 0.90
 ϕ Shear: 0.75
 ϕ Bearing: 0.65

$\rho T \&S$: 0.0020
 ρ_{max} : 0.0232
 β_1 : 0.85
 d (in): 20.38

$\psi_t = 1.0$
 $\psi_e = 1.0$
 $\psi_s = 0.8$
 $I_d =$

LOADING	DL (PSF)	LL (PSF)	SNOW (PSF)	TRIB TRIB (FT)	w_{DL} (PLF)	w_{LL} (PLF)	w_{RLL} (PLF)	Snow (PLF)
ROOF	15	20	0	21	315	0	420	0
FLOOR	31	80	0	21	651	1680	0	0
WALL	31	0	0	25	775	0	0	0
MISC	20	0	0	1	20	0	0	0
Uniform Load (PLF):					1761	1680	420	0

FOOTING GEOMETRY

Min. Concentric Width (in): 24.3
 Width (in): 36.00
 Thickness (in): 24.00

FOOTING REINFORCING

Longitudinal Reinf.: (6) # 5
 Bottom Transverse Reinf.:

SOIL BEARING

Load Combination	Max Bearing (psf)	Min Bearing (psf)	Max/Allow.
1DL	887	887	0.44
1DL+1LL	1447	1447	0.72
1DL+1RLL	1027	1027	0.51
1DL+0.75LL+0.75RLL	1412	1412	0.71

FOOTING FLEXURE DESIGN

Critical Section from Wall Center Line (in): 1.5

Load Combination	Ultimate Bearing (psf)	M_u Right Side (k-ft/ft)	M_u Left Side (k-ft/ft)	Transverse As Req'd - Strength (in ² /ft)	Transverse As Provided (in ² /ft)
1.4DL	822	0.78	0.78	No Trans. Req'd	0.00
1.2DL+1.6LL+0.5RLL	1670	1.58	1.58	No Trans. Req'd	0.00
1.2DL+0.5LL+1.6RLL	1208	1.14	1.14	No Trans. Req'd	0.00

FOOTING SHEAR CHECK

Critical Section from Wall Center Line (in): 23.375

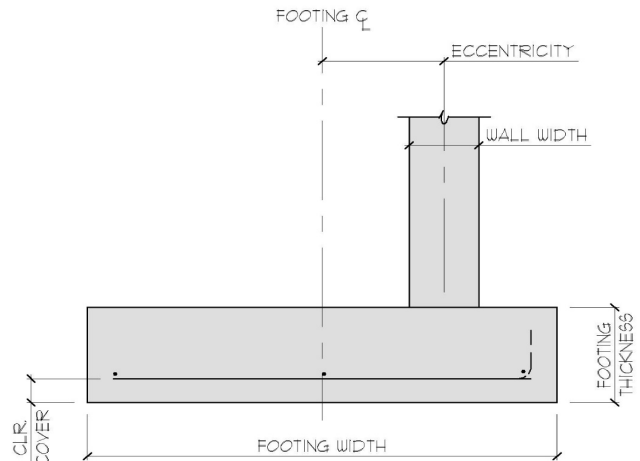
One Way (X-Dir. Cut) ϕV_c (k/ft): 18.3

Load Combination	Shear Right Side V_u (k/ft)	Shear Left Side V_u (k/ft)	$V_u/\phi V_c$
1.4DL	N/A	N/A	0.000
1.2DL+1.6LL+0.5RLL	N/A	N/A	0.000
1.2DL+0.5LL+1.6RLL	N/A	N/A	0.000

CONCRETE BEARING CHECK

Bearing Capacity ϕB_n (k): 99.5

Load Combination	B_u (k/ft)	$B_u/\phi B_n$
1.4DL	2.47	0.025
1.2DL+1.6LL+0.5RLL	5.01	0.050
1.2DL+0.5LL+1.6RLL	3.63	0.036



BEAM ON ELASTIC FOUNDATION

DESCRIPTION : **LINE A.5**

FOOTING INFORMATION:

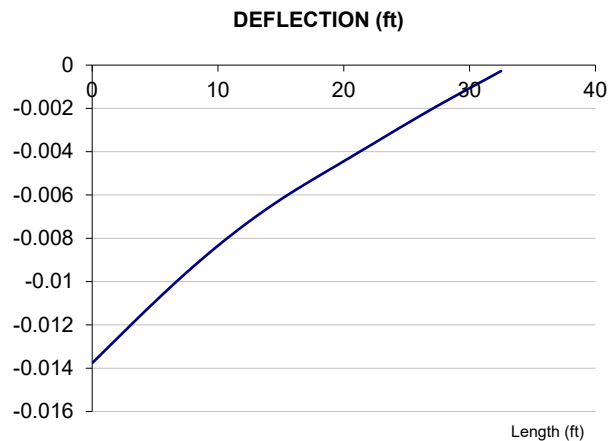
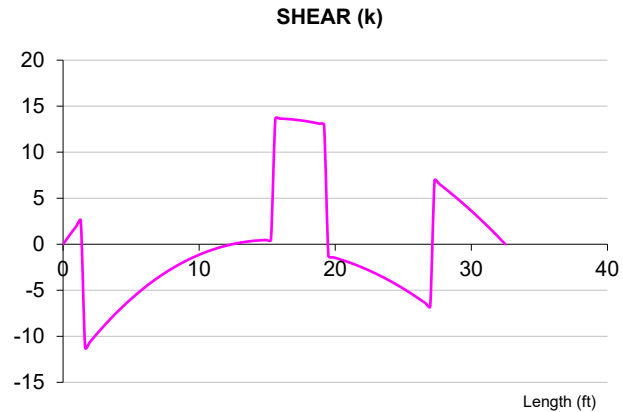
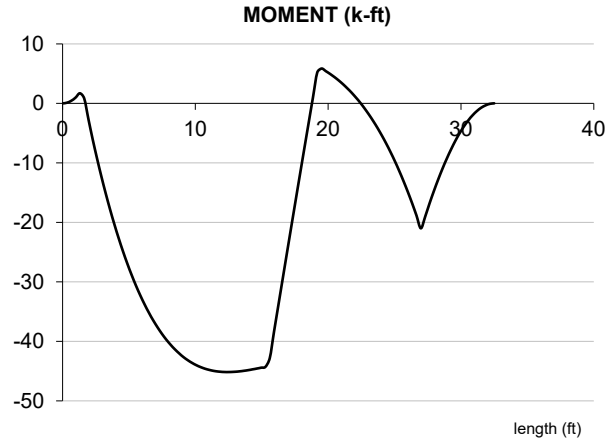
f'_c (PSI): **2500** I (FT⁴): 5.859
 q_a (PSF): **2000** E_c (KSF): 410400
 L (FT): **32.5** K_s (KSF/FT): 60
 FS : **2.5** K_s' (KSF): 270
 B (FT): **4.5** λ : 0.073
 D (FT): **2.5**
 $B.O.F.$ (FT): **2.5**

	LOAD (K)	LOCATION (ft)
P1:	14.436	1.5
P2:	-13.188	15.5
P3:	14.136	19.25
P4:	-14.07	27
P5:		
P6:		
P7:		
P8:		
P9:		
P10:		
P11:		
P12:		

x (ft)	y (ft)	V (k)	M (k-ft)
0	-0.01376	0.00	0.00
1.625	-0.01283	-11.25	0.84
3.25	-0.01190	-8.47	-15.13
4.875	-0.01099	-6.10	-26.92
6.5	-0.01011	-4.13	-35.19
8.125	-0.00926	-2.53	-40.55
9.75	-0.00846	-1.30	-43.61
11.375	-0.00771	-0.40	-44.95
13	-0.00700	0.17	-45.10
14.625	-0.00635	0.44	-44.57
16.25	-0.00574	13.63	-33.92
17.875	-0.00517	13.37	-11.96
19.5	-0.00461	-1.28	5.85
21.125	-0.00405	-2.03	3.20
22.75	-0.00348	-3.03	-0.87
24.375	-0.00292	-4.27	-6.77
26	-0.00236	-5.77	-14.89
27.625	-0.00182	6.57	-16.84
29.25	-0.00130	4.61	-7.73
30.875	-0.00079	2.42	-1.99
32.5	-0.00028	0.00	0.00

$-\Delta$ max (ft)	V max (k)	M+ max (k-ft)	M- max (k-ft)
0.014	13.660	5.852	-45.149
	14.614*	5.808*	-45.143*

* = SHEAR/MOMENT WITH WEIGHT OF FTG INCLUDED



BEAM ON ELASTIC FOUNDATION

DESCRIPTION : **LINE F**

FOOTING INFORMATION:

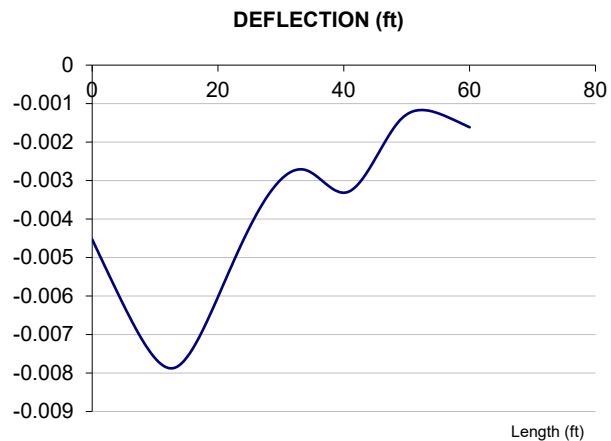
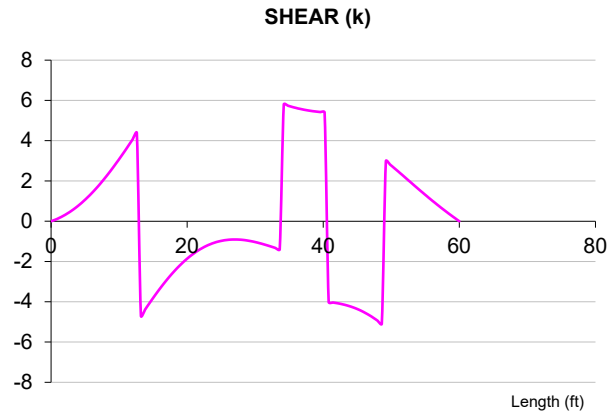
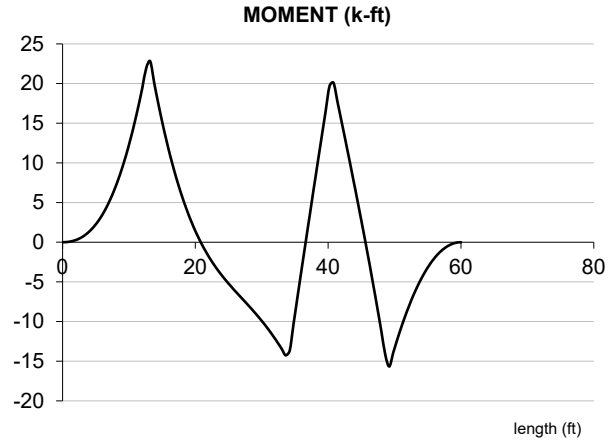
f'_c (PSI): **2500** I (FT⁴): 0.563
 q_a (PSF): **2000** E_c (KSF): 410400
 L (FT): **60** K_s (KSF/FT): 60
 FS : **2.5** K_s' (KSF): 120
 B (FT): **2** λ : 0.107
 D (FT): **1.5**
 $B.O.F.$ (FT): **1.5**

	LOAD (K)	LOCATION (ft)
P1:	9.382	13
P2:	-7.262	34
P3:	9.382	40.5
P4:	-8.234	49
P5:		
P6:		
P7:		
P8:		
P9:		
P10:		
P11:		
P12:		

x (ft)	y (ft)	V (k)	M (k-ft)
0	-0.00453	0.00	0.00
3	-0.00556	0.52	0.69
6	-0.00656	1.40	3.48
9	-0.00740	2.62	9.44
12	-0.00786	4.08	19.43
15	-0.00760	-3.81	15.17
18	-0.00674	-2.52	5.76
21	-0.00565	-1.59	-0.31
24	-0.00456	-1.07	-4.20
27	-0.00363	-0.91	-7.07
30	-0.00297	-1.03	-9.92
33	-0.00271	-1.33	-13.44
36	-0.00293	5.63	-3.39
39	-0.00328	5.44	13.19
42	-0.00314	-4.07	15.26
45	-0.00243	-4.36	2.69
48	-0.00162	-4.94	-11.19
51	-0.00120	2.48	-10.73
54	-0.00120	1.60	-4.63
57	-0.00139	0.76	-1.11
60	-0.00161	0.00	0.00

$-\Delta$ max (ft)	V max (k)	M+ max (k-ft)	M- max (k-ft)
0.008	5.800	22.812	-15.655
	6.324*	23.007*	-15.438*

* = SHEAR/MOMENT WITH WEIGHT OF FTG INCLUDED



BEAM ON ELASTIC FOUNDATION

DESCRIPTION : **LINE 5**

FOOTING INFORMATION:

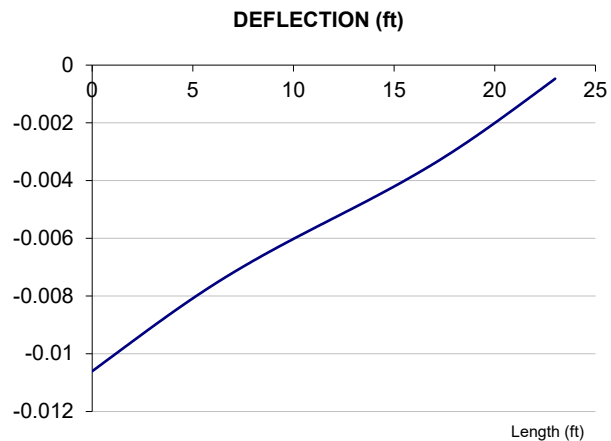
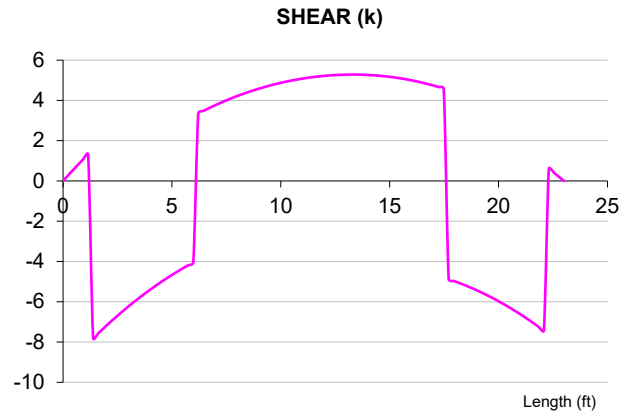
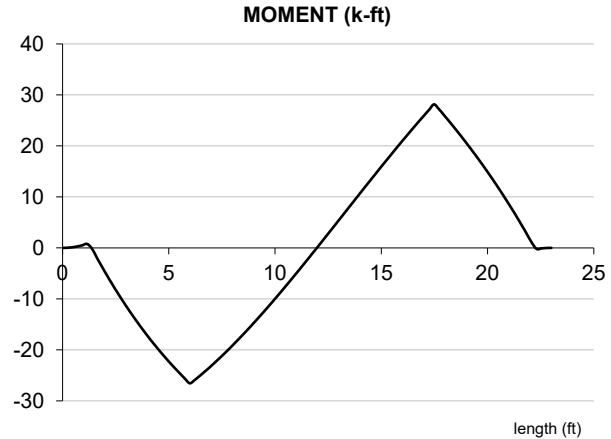
f'_c (PSI): **2500** I (FT⁴): 2.333
 q_a (PSF): **2000** E_c (KSF): 410400
 L (FT): **23** K_s (KSF/FT): 60
 FS : **2.5** K_s' (KSF): 210
 B (FT): **3.5** λ : 0.086
 D (FT): **2**
 $B.O.F.$ (FT): **2**

	LOAD (K)	LOCATION (ft)
P1:	9.382	1.25
P2:	-7.262	6
P3:	9.382	17.5
P4:	-8.234	22.25
P5:		
P6:		
P7:		
P8:		
P9:		
P10:		
P11:		
P12:		

x (ft)	y (ft)	V (k)	M (k-ft)
0	-0.01060	0.00	0.00
1.15	-0.01001	1.32	0.77
2.3	-0.00942	-6.88	-6.86
3.45	-0.00883	-5.84	-14.17
4.6	-0.00827	-4.95	-20.36
5.75	-0.00773	-4.18	-25.60
6.9	-0.00723	3.72	-23.49
8.05	-0.00676	4.24	-18.91
9.2	-0.00632	4.65	-13.78
10.35	-0.00589	4.96	-8.25
11.5	-0.00548	5.16	-2.42
12.65	-0.00507	5.27	3.58
13.8	-0.00465	5.27	9.65
14.95	-0.00422	5.18	15.67
16.1	-0.00377	4.98	21.52
17.25	-0.00329	4.66	27.08
18.4	-0.00278	-5.15	23.76
19.55	-0.00223	-5.72	17.52
20.7	-0.00165	-6.41	10.56
21.85	-0.00106	-7.25	2.72
23	-0.00047	0.00	0.00

$-\Delta$ max (ft)	V max (k)	M+ max (k-ft)	M- max (k-ft)
0.011	7.812	28.141	-26.543
	7.803*	28.164*	-26.521*

* = SHEAR/MOMENT WITH WEIGHT OF FTG INCLUDED



CONCRETE BASEMENT WALL

WALL : ELEVATOR PIT WALL

IBC 2021
ACI 318-19

TOTAL WALL H (FT) : 5.00
RETAINED SOIL Hr (FT) : 5.00
WALL THICKNESS (IN) 8
FOOTING THICKNESS (IN) 12
 f'_c (PSI) : 2500
REBAR F_y (KSI) : 60
CLEAR COVER (IN) : 1.5
POS. MOMENT d (IN) : 4.00
NEG. MOMENT d (IN) : 4.00
RISK CATEGORY: II
 S_{DS} : 0.937
 I_E : 1.00
 F_p : 0.375 W

SOIL EQUIV. FLUID (PCF) : 45
UNIF. SURCHARGE (PSF) : 0
 K_a : 0.35
SEISMIC SOIL LOAD DISTRIBUTION : POINT LOAD
SEISMIC SOIL LOAD : $10.0 H^2$
LOCATION OF RESULTANT FROM BOTTOM: $0.6 H$
GRAVITY LOAD (K/FT) : 0.0
e (IN) : 4
WALL SELF (PSF) : 100
SEISMIC LOAD - SELF WEIGHT (PSF) : 37

	DL	LL	Lr	SL
GRAVITY LOAD (K/FT) :	0.0	0.0	0.0	0.0

REINFORCING DESIGN:

REBAR LAYERS: 1
REBAR CENTERED? [Y/N] : Y

CENTER FACE REINFORCING

A_{smin} VERT (IN²/FT) : 0.17
 A_{smin} HORIZ (IN²/FT) : 0.19

VERTICAL REBAR SIZE #5

REBAR SPACING (IN) 12 " O.C. CENTERED.
EQUIV VERT A_s (IN²/FT) : 0.310 OK

HORIZONTAL REBAR SIZE #5

REBAR SPACING (IN) 12 " O.C. CENTERED.
EQUIV HORIZ A_s (IN²/FT) : 0.310 OK

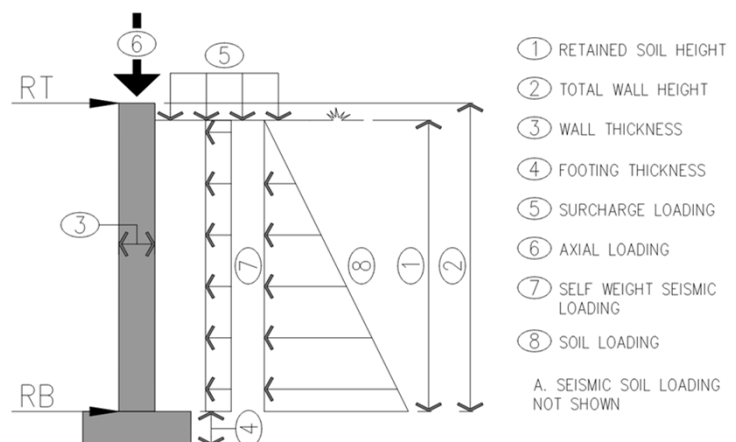
WALL DESIGN :

DESIGN SUMMARY

MAX V_{UT} (K/FT) : 0.54
MAX V_{UB} (K/FT) : 0.79
 ϕV_n (K/FT) : 3.21 OK
MAX M_{U+} (K-FT/FT) : 0.93
 ϕM_n + (K-FT/FT) : 5.07 OK
Max P_u (K) : 0.00
 ϕP_n (K) : 159.80 OK
MAX M_{U-} (K-FT/FT) : 0.13
 ϕM_n - (K-FT/FT) : 5.07 OK

GOVERNING LOAD COMBINATIONS

V_{UT} : LC - 13 - $1.4D + 0.2S + L + QE + 1.6H$
 V_{UB} : LC - 13 - $1.4D + 0.2S + L + QE + 1.6H$
 M_{U+} : LC - 13 - $1.4D + 0.2S + L + QE + 1.6H$
 P_U : LC - 1 - $1.4D + 1.6H$
 M_{U-} : LC - 16 - $1.4D + 0.2S + L - QE + 0.9H$



WRIGHT
STRUCTURAL ENGINEERS

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: GRIDLINE 1

Code References

Governing Code : IBC 2018, CBC 2019

Referenced Design Standard(s) : ACI 318-14

Load Combinations Used : IBC 2021

General Information

Material Properties

f_c : Concrete 28 day strength	2.50	ksi
f_y : Rebar Yield	60.0	ksi
E_c : Concrete Elastic Modulus	3,122.0	ksi
Concrete Density	145.0	pcf
ϕ : Phi Values		
	Flexure :	0.90
	Shear :	0.750

Analysis/Design Settings

Calculate footing weight as dead load ?	Yes
Calculate Pedestal weight as dead load ?	No
Min Steel Ratio per ACI 7.6.1.1 (ratio=Steel Area/Concrete Area)	0.0018
Min. Overturning Safety Factor	1.0: 1
Min. Sliding Safety Factor	1.0: 1

Soil Information

Allowable Soil Bearing	2.0	ksf	S
Increase Bearing By Footing Weight	No		
Soil Passive Sliding Resistance	250.0	pcf	
(Uses entry for "Footing base depth below soil surface" for force)			
Coefficient of Soil/Concrete Friction	0.30		

Soil Bearing Increase

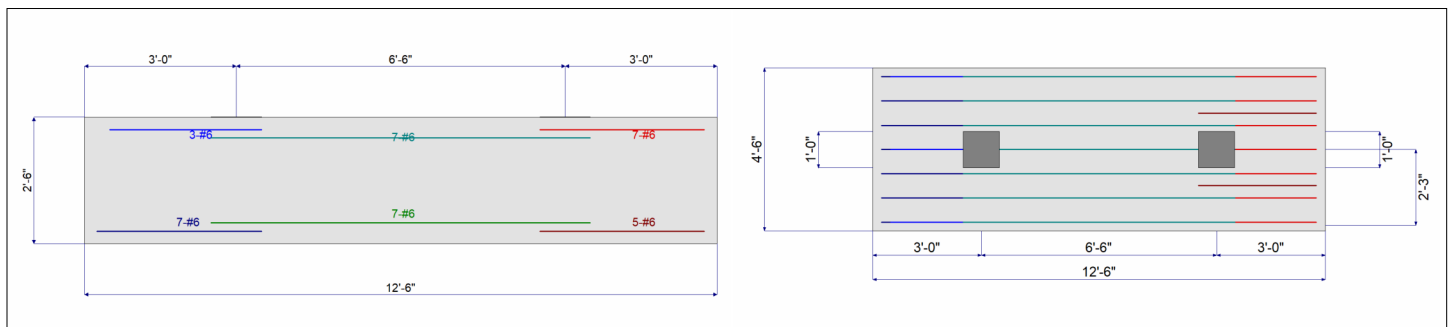
Footings base depth below soil surface	2.50 ft
Increases based on footing Depth	
Allowable pressure increase per foot	ksf
when base of footing is below	ft
Increases based on footing Width . . .	
Allowable pressure increase per foot	ksf
when maximum length or width is greater than	ft
Maximum Allowed Bearing Pressure	10.0 ksf
(A value of zero implies no limit)	
Adjusted Allowable Soil Bearing	2.0 ksf
(Allowable Soil Bearing adjusted for footing weight and depth & width increases as specified by user.)	

Dimensions & Reinforcing

Distance Left of Column #1	=	3.0 ft	Pedestal dimensions...	Col #1	Col #2	Bars left of Col #1	Count	Size #	As	As
Between Columns	=	6.50 ft							Provided	Req'd
Distance Right of Column #2	=	3.0 ft	Sq. Dim. = 12.0	12.0 in	in	Bars Btwn Cols	7.0	6	3.080	2.916 in^2
Total Footing Length	=	12.50 ft								
Footing Width	=	4.50 ft				Bars Right of Col #2	5.0	6	2.20	0.0 in^2
Footing Thickness	=	30.0 in					7.0	6	3.080	2.916 in^2
Rebar Center to Concrete Edge @ Top	=	3.0 in								
Rebar Center to Concrete Edge @ Bottom	=	3.0 in								

Applied Loads

Applied @ Left Column	D	Lr	L	S	W	E	H
Axial Load Downward	=					12.70	k
Moment (+CW)	=						k-ft
Shear (+X)	=						k
Applied @ Right Column							
Axial Load Downward	=					-13.290	k
Moment (+CW)	=						k-ft
Shear (+X)	=						k
Overburden	=						



Project Title:
Engineer:
Project ID:
Project Descr:

Combined Footing

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: GRIDLINE 1

DESIGN SUMMARY

Design OK

Factor of Safety	Item	Applied	Capacity	Governing Load Combination
PASS 1.167	Overturing	88.379 k-ft	103.135 k-ft	+0.60D+0.70E
PASS No Sliding	Sliding	0.0 k	9.633 k	No Sliding
PASS 2.271	Uplift	9.303 k	21.124 k	+0.60D+0.70E

Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS 0.6986	Soil Bearing	1.397 ksf	2.0 ksf	+0.60D+0.70E
PASS 0.03091	1-way Shear - Col #1	2.318 psi	75.0 psi	+0.90D+E
PASS 0.04434	1-way Shear - Col #2	3.325 psi	75.0 psi	+0.90D+E
PASS 0.01571	2-way Punching - Col #1	2.357 psi	150.0 psi	+0.90D+E
PASS 0.02735	2-way Punching - Col #2	4.102 psi	150.0 psi	+1.20D+E
PASS No Tension	Flexure - Left of Col #1 - Top	0.0 k-ft	0.0 k-ft	N/A
PASS 0.04289	Flexure - Left of Col #1 - Bottom	15.571 k-ft	363.060 k-ft	+0.90D+E
PASS 0.01472	Flexure - Between Cols - Top	-5.345 k-ft	363.060 k-ft	+1.20D+E
PASS 0.05663	Flexure - Between Cols - Bottom	20.561 k-ft	363.060 k-ft	+0.90D+E
PASS 0.01685	Flexure - Right of Col #2 - Top	-6.117 k-ft	363.060 k-ft	+1.20D+E
PASS No Tension	Flexure - Right of Col #2 - Bottom	0.0 k-ft	0.0 k-ft	N/A

Soil Bearing

Load Combination...	Total Bearing	Eccentricity from Ftg CL	Actual Soil Bearing Stress @ Left Edge	Actual Soil Bearing Stress @ Right Edge	Allowable	Actual / Allow Ratio
D Only	20.39 k	0.000 ft	0.36 ksf	0.36 ksf	2.00 ksf	0.181
+D+0.70E	19.98 k	-2.960 ft	0.90 ksf	0.00 ksf	2.00 ksf	0.449
+D+0.5250E	20.08 k	-2.208 ft	0.74 ksf	0.00 ksf	2.00 ksf	0.368
+0.60D	12.23 k	0.000 ft	0.22 ksf	0.22 ksf	2.00 ksf	0.109
+0.60D+0.70E	11.82 k	-5.002 ft	1.40 ksf	0.00 ksf	2.00 ksf	0.699

Overturing Stability

Load Combination...	Overturing	Resisting	Ratio	Overturing	Resisting	Ratio
D Only	0.00	0.00	999.000	0.00	0.00	999.000
+D+0.70E	88.38	154.11	1.744	27.91	211.90	7.592
+D+0.5250E	66.28	147.44	2.224	20.93	190.78	9.115
+0.60D	0.00	0.00	999.000	0.00	0.00	999.000
+0.60D+0.70E	88.38	103.13	1.167	27.91	160.92	5.766

Sliding Stability

Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio
D Only	0.00 k	9.63 k	999
+D+0.70E	0.00 k	9.51 k	999
+D+0.5250E	0.00 k	9.54 k	999
+0.60D	0.00 k	7.19 k	999
+0.60D+0.70E	0.00 k	7.06 k	999

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.60D+0.70E	0.000	0.000	0	0.000	0	0.000	0.000	0.000
+0.60D+0.70E	0.000	0.031	0	0.000	0	0.000	0.000	0.000
+0.90D+E	0.013	0.063	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+0.90D+E	0.028	0.094	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+0.90D+E	0.050	0.125	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+0.90D+E	0.078	0.156	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+0.90D+E	0.112	0.188	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+0.90D+E	0.151	0.219	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+0.90D+E	0.197	0.250	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+0.90D+E	0.249	0.281	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+0.90D+E	0.306	0.313	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+0.90D+E	0.369	0.344	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.001

Combined Footing

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: GRIDLINE 1

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.90D+E	0.438	0.375	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+0.90D+E	0.513	0.406	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+0.90D+E	0.593	0.438	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.002
+0.90D+E	0.679	0.469	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.002
+0.90D+E	0.770	0.500	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.002
+0.90D+E	0.867	0.531	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.002
+0.90D+E	0.969	0.563	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.003
+0.90D+E	1.076	0.594	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.003
+0.90D+E	1.189	0.625	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.003
+0.90D+E	1.307	0.656	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.004
+0.90D+E	1.430	0.688	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.004
+0.90D+E	1.558	0.719	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.004
+0.90D+E	1.691	0.750	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.005
+0.90D+E	1.830	0.781	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.005
+0.90D+E	1.973	0.813	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.005
+0.90D+E	2.121	0.844	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.006
+0.90D+E	2.274	0.875	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.006
+0.90D+E	2.432	0.906	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.007
+0.90D+E	2.594	0.938	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.007
+0.90D+E	2.761	0.969	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.008
+0.90D+E	2.933	1.000	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.008
+0.90D+E	3.110	1.031	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.009
+0.90D+E	3.291	1.063	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.009
+0.90D+E	3.476	1.094	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.010
+0.90D+E	3.666	1.125	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.010
+0.90D+E	3.860	1.156	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.011
+0.90D+E	4.058	1.188	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.011
+0.90D+E	4.261	1.219	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.012
+0.90D+E	4.468	1.250	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.012
+0.90D+E	4.679	1.281	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.013
+0.90D+E	4.894	1.313	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.013
+0.90D+E	5.114	1.344	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.014
+0.90D+E	5.337	1.375	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.015
+0.90D+E	5.564	1.406	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.015
+0.90D+E	5.795	1.438	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.016
+0.90D+E	6.030	1.469	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.017
+0.90D+E	6.268	1.500	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.017
+0.90D+E	6.511	1.531	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.018
+0.90D+E	6.757	1.563	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+0.90D+E	7.006	1.594	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+0.90D+E	7.259	1.625	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.020
+0.90D+E	7.516	1.656	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.021
+0.90D+E	7.776	1.688	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.021
+0.90D+E	8.040	1.719	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.022
+0.90D+E	8.307	1.750	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.023
+0.90D+E	8.577	1.781	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.024
+0.90D+E	8.850	1.813	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.024
+0.90D+E	9.126	1.844	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.025
+0.90D+E	9.406	1.875	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.026
+0.90D+E	9.689	1.906	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.027
+0.90D+E	9.974	1.938	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.027
+0.90D+E	10.263	1.969	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.028
+0.90D+E	10.555	2.000	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.029
+0.90D+E	10.849	2.031	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.030
+0.90D+E	11.146	2.063	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.031
+0.90D+E	11.446	2.094	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.032
+0.90D+E	11.749	2.125	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.032
+0.90D+E	12.054	2.156	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.033
+0.90D+E	12.362	2.188	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.034
+0.90D+E	12.673	2.219	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.035
+0.90D+E	12.986	2.250	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.036
+0.90D+E	13.301	2.281	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.037
+0.90D+E	13.618	2.313	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.038

Combined Footing

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: GRIDLINE 1

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.90D+E	13.938	2.344	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.038
+0.90D+E	14.261	2.375	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.039
+0.90D+E	14.585	2.406	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.040
+0.90D+E	14.912	2.438	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.041
+0.90D+E	15.240	2.469	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.042
+0.90D+E	15.571	2.500	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.043
+0.90D+E	15.898	2.531	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.044
+0.90D+E	16.214	2.563	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.045
+0.90D+E	16.519	2.594	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.046
+0.90D+E	16.814	2.625	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.046
+0.90D+E	17.099	2.656	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.047
+0.90D+E	17.372	2.688	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.048
+0.90D+E	17.635	2.719	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.049
+0.90D+E	17.887	2.750	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.049
+0.90D+E	18.129	2.781	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.050
+0.90D+E	18.359	2.813	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.051
+0.90D+E	18.578	2.844	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.051
+0.90D+E	18.787	2.875	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.052
+0.90D+E	18.984	2.906	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.052
+0.90D+E	19.170	2.938	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.053
+0.90D+E	19.346	2.969	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.053
+0.90D+E	19.509	3.000	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.054
+0.90D+E	19.662	3.031	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.054
+0.90D+E	19.803	3.063	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	19.933	3.094	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	20.052	3.125	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	20.158	3.156	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.254	3.188	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.338	3.219	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.410	3.250	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.470	3.281	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.519	3.313	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.057
+0.90D+E	20.556	3.344	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.057
+0.90D+E	20.581	3.375	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.057
+0.90D+E	20.594	3.406	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.057
+0.90D+E	20.595	3.438	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.057
+0.90D+E	20.584	3.469	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.057
+0.90D+E	20.561	3.500	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.057
+0.90D+E	20.532	3.531	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.057
+0.90D+E	20.503	3.563	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.475	3.594	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.446	3.625	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.418	3.656	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.389	3.688	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.361	3.719	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.332	3.750	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.303	3.781	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.274	3.813	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.245	3.844	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.215	3.875	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.185	3.906	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.155	3.938	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.056
+0.90D+E	20.124	3.969	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	20.092	4.000	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	20.060	4.031	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	20.027	4.063	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	19.994	4.094	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	19.960	4.125	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	19.925	4.156	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	19.889	4.188	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	19.852	4.219	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	19.814	4.250	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.055
+0.90D+E	19.775	4.281	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.054

Combined Footing

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: GRIDLINE 1

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.90D+E	19.735	4.313	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.054
+0.90D+E	19.694	4.344	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.054
+0.90D+E	19.652	4.375	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.054
+0.90D+E	19.609	4.406	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.054
+0.90D+E	19.564	4.438	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.054
+0.90D+E	19.518	4.469	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.054
+0.90D+E	19.470	4.500	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.054
+0.90D+E	19.421	4.531	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.053
+0.90D+E	19.371	4.563	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.053
+0.90D+E	19.319	4.594	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.053
+0.90D+E	19.266	4.625	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.053
+0.90D+E	19.211	4.656	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.053
+0.90D+E	19.155	4.688	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.053
+0.90D+E	19.097	4.719	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.053
+0.90D+E	19.038	4.750	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.052
+0.90D+E	18.978	4.781	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.052
+0.90D+E	18.916	4.813	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.052
+0.90D+E	18.852	4.844	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.052
+0.90D+E	18.788	4.875	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.052
+0.90D+E	18.721	4.906	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.052
+0.90D+E	18.654	4.938	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.051
+0.90D+E	18.585	4.969	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.051
+0.90D+E	18.514	5.000	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.051
+0.90D+E	18.442	5.031	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.051
+0.90D+E	18.369	5.063	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.051
+0.90D+E	18.294	5.094	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.050
+0.90D+E	18.218	5.125	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.050
+0.90D+E	18.140	5.156	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.050
+0.90D+E	18.061	5.188	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.050
+0.90D+E	17.980	5.219	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.050
+0.90D+E	17.898	5.250	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.049
+0.90D+E	17.815	5.281	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.049
+0.90D+E	17.730	5.313	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.049
+0.90D+E	17.644	5.344	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.049
+0.90D+E	17.556	5.375	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.048
+0.90D+E	17.467	5.406	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.048
+0.90D+E	17.376	5.438	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.048
+0.90D+E	17.284	5.469	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.048
+0.90D+E	17.191	5.500	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.047
+0.90D+E	17.096	5.531	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.047
+0.90D+E	17.000	5.563	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.047
+0.90D+E	16.902	5.594	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.047
+0.90D+E	16.803	5.625	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.046
+0.90D+E	16.702	5.656	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.046
+0.90D+E	16.600	5.688	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.046
+0.90D+E	16.497	5.719	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.045
+0.90D+E	16.392	5.750	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.045
+0.90D+E	16.286	5.781	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.045
+0.90D+E	16.178	5.813	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.045
+0.90D+E	16.069	5.844	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.044
+0.90D+E	15.958	5.875	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.044
+0.90D+E	15.846	5.906	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.044
+0.90D+E	15.732	5.938	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.043
+0.90D+E	15.617	5.969	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.043
+0.90D+E	15.501	6.000	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.043
+0.90D+E	15.383	6.031	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.042
+0.90D+E	15.264	6.063	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.042
+0.90D+E	15.143	6.094	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.042
+0.90D+E	15.021	6.125	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.041
+0.90D+E	14.898	6.156	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.041
+0.90D+E	14.773	6.188	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.041
+0.90D+E	14.646	6.219	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.040
+0.90D+E	14.518	6.250	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.040

Combined Footing

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DESCRIPTION: GRIDLINE 1

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.90D+E	14.389	6.281	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.040
+0.90D+E	14.258	6.313	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.039
+0.90D+E	14.126	6.344	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.039
+0.90D+E	13.993	6.375	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.039
+0.90D+E	13.857	6.406	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.038
+0.90D+E	13.721	6.438	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.038
+0.90D+E	13.583	6.469	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.037
+0.90D+E	13.444	6.500	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.037
+0.90D+E	13.303	6.531	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.037
+0.90D+E	13.161	6.563	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.036
+0.90D+E	13.017	6.594	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.036
+0.90D+E	12.872	6.625	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.035
+0.90D+E	12.726	6.656	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.035
+0.90D+E	12.578	6.688	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.035
+0.90D+E	12.428	6.719	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.034
+0.90D+E	12.278	6.750	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.034
+0.90D+E	12.125	6.781	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.033
+0.90D+E	11.972	6.813	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.033
+0.90D+E	11.817	6.844	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.033
+0.90D+E	11.660	6.875	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.032
+0.90D+E	11.502	6.906	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.032
+0.90D+E	11.343	6.938	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.031
+0.90D+E	11.182	6.969	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.031
+0.90D+E	11.020	7.000	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.030
+0.90D+E	10.856	7.031	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.030
+0.90D+E	10.691	7.063	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.029
+0.90D+E	10.524	7.094	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.029
+0.90D+E	10.356	7.125	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.029
+0.90D+E	10.187	7.156	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.028
+0.90D+E	10.016	7.188	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.028
+0.90D+E	9.844	7.219	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.027
+0.90D+E	9.670	7.250	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.027
+0.90D+E	9.495	7.281	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.026
+0.90D+E	9.318	7.313	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.026
+0.90D+E	9.140	7.344	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.025
+0.90D+E	8.961	7.375	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.025
+0.90D+E	8.780	7.406	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.024
+0.90D+E	8.597	7.438	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.024
+0.90D+E	8.414	7.469	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.023
+0.90D+E	8.229	7.500	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.023
+0.90D+E	8.042	7.531	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.022
+0.90D+E	7.854	7.563	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.022
+0.90D+E	7.664	7.594	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.021
+0.90D+E	7.473	7.625	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.021
+0.90D+E	7.281	7.656	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.020
+0.90D+E	7.087	7.688	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.020
+0.90D+E	6.892	7.719	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+0.90D+E	6.695	7.750	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.018
+0.90D+E	6.497	7.781	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.018
+0.90D+E	6.298	7.813	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.017
+0.90D+E	6.097	7.844	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.017
+0.90D+E	5.894	7.875	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.016
+0.90D+E	5.690	7.906	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.016
+0.90D+E	5.485	7.938	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.015
+0.90D+E	5.278	7.969	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.015
+0.90D+E	5.070	8.000	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.014
+0.90D+E	4.861	8.031	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.013
+0.90D+E	4.650	8.063	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.013
+0.90D+E	4.437	8.094	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.012
+0.90D+E	4.223	8.125	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.012
+0.90D+E	4.008	8.156	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.011
+0.90D+E	3.791	8.188	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.010
+0.90D+E	3.573	8.219	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.010

Combined Footing

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Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.90D+E	3.354	8.250	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.009
+0.90D+E	3.133	8.281	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.009
+0.90D+E	2.910	8.313	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.008
+0.90D+E	2.686	8.344	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.007
+0.90D+E	2.461	8.375	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.007
+0.90D+E	2.234	8.406	Bottom	2.916	ACI 7.6.1.1	3.080	363.060	0.006
+1.20D+E	-2.033	8.438	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.006
+1.20D+E	-2.200	8.469	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.006
+1.20D+E	-2.370	8.500	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.007
+1.20D+E	-2.542	8.531	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.007
+1.20D+E	-2.715	8.563	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.007
+1.20D+E	-2.890	8.594	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.008
+1.20D+E	-3.068	8.625	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.008
+1.20D+E	-3.247	8.656	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.009
+1.20D+E	-3.428	8.688	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.009
+1.20D+E	-3.611	8.719	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.010
+1.20D+E	-3.796	8.750	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.010
+1.20D+E	-3.983	8.781	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.011
+1.20D+E	-4.172	8.813	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.011
+1.20D+E	-4.363	8.844	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.012
+1.20D+E	-4.555	8.875	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.013
+1.20D+E	-4.750	8.906	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.013
+1.20D+E	-4.946	8.938	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.014
+1.20D+E	-5.144	8.969	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.014
+1.20D+E	-5.345	9.000	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.015
+1.20D+E	-5.540	9.031	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.015
+1.20D+E	-5.725	9.063	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.016
+1.20D+E	-5.899	9.094	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.016
+1.20D+E	-6.061	9.125	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.017
+1.20D+E	-6.212	9.156	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.017
+1.20D+E	-6.353	9.188	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.017
+1.20D+E	-6.482	9.219	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.018
+1.20D+E	-6.600	9.250	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.018
+1.20D+E	-6.707	9.281	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.018
+1.20D+E	-6.803	9.313	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+1.20D+E	-6.888	9.344	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+1.20D+E	-6.962	9.375	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+1.20D+E	-7.025	9.406	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+1.20D+E	-7.077	9.438	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+1.20D+E	-7.118	9.469	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.020
+1.20D+E	-7.147	9.500	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.020
+1.20D+E	-7.166	9.531	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.020
+1.20D+E	-7.174	9.563	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.020
+1.20D+E	-7.170	9.594	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.020
+1.20D+E	-7.156	9.625	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.020
+1.20D+E	-7.130	9.656	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.020
+1.20D+E	-7.093	9.688	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.020
+1.20D+E	-7.045	9.719	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+1.20D+E	-6.986	9.750	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+1.20D+E	-6.917	9.781	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+1.20D+E	-6.836	9.813	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+1.20D+E	-6.743	9.844	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.019
+1.20D+E	-6.640	9.875	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.018
+1.20D+E	-6.526	9.906	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.018
+1.20D+E	-6.401	9.938	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.018
+1.20D+E	-6.265	9.969	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.017
+1.20D+E	-6.117	10.000	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.017
+1.20D+E	-5.965	10.031	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.016
+1.20D+E	-5.815	10.063	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.016
+1.20D+E	-5.667	10.094	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.016
+1.20D+E	-5.521	10.125	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.015
+1.20D+E	-5.376	10.156	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.015
+1.20D+E	-5.234	10.188	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.014

Combined Footing

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: GRIDLINE 1

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+E	-5.094	10.219	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.014
+1.20D+E	-4.955	10.250	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.014
+1.20D+E	-4.818	10.281	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.013
+1.20D+E	-4.683	10.313	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.013
+1.20D+E	-4.551	10.344	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.013
+1.20D+E	-4.420	10.375	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.012
+1.20D+E	-4.291	10.406	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.012
+1.20D+E	-4.164	10.438	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.011
+1.20D+E	-4.038	10.469	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.011
+1.20D+E	-3.915	10.500	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.011
+1.20D+E	-3.794	10.531	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.010
+1.20D+E	-3.674	10.563	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.010
+1.20D+E	-3.557	10.594	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.010
+1.20D+E	-3.441	10.625	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.009
+1.20D+E	-3.327	10.656	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.009
+1.20D+E	-3.215	10.688	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.009
+1.20D+E	-3.105	10.719	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.009
+1.20D+E	-2.997	10.750	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.008
+1.20D+E	-2.891	10.781	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.008
+1.20D+E	-2.787	10.813	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.008
+1.20D+E	-2.685	10.844	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.007
+1.20D+E	-2.585	10.875	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.007
+1.20D+E	-2.486	10.906	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.007
+1.20D+E	-2.390	10.938	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.007
+1.20D+E	-2.295	10.969	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.006
+1.20D+E	-2.202	11.000	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.006
+1.20D+E	-2.111	11.031	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.006
+1.20D+E	-2.022	11.063	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.006
+1.20D+E	-1.936	11.094	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.005
+1.20D+E	-1.850	11.125	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.005
+1.20D+E	-1.767	11.156	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.005
+1.20D+E	-1.686	11.188	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.005
+1.20D+E	-1.607	11.219	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.004
+1.20D+E	-1.529	11.250	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.004
+1.20D+E	-1.454	11.281	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.004
+1.20D+E	-1.380	11.313	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.004
+1.20D+E	-1.309	11.344	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.004
+1.20D+E	-1.239	11.375	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.003
+1.20D+E	-1.171	11.406	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.003
+1.20D+E	-1.105	11.438	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.003
+1.20D+E	-1.041	11.469	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.003
+1.20D+E	-0.979	11.500	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.003
+1.20D+E	-0.919	11.531	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.003
+1.20D+E	-0.860	11.563	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.002
+1.20D+E	-0.804	11.594	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.002
+1.20D+E	-0.749	11.625	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.002
+1.20D+E	-0.697	11.656	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.002
+1.20D+E	-0.646	11.688	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.002
+1.20D+E	-0.597	11.719	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.002
+1.20D+E	-0.551	11.750	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.002
+1.20D+E	-0.506	11.781	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+1.20D+E	-0.463	11.813	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+1.20D+E	-0.422	11.844	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+1.20D+E	-0.382	11.875	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+1.20D+E	-0.345	11.906	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+1.20D+E	-0.310	11.938	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+1.20D+E	-0.276	11.969	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+1.20D+E	-0.245	12.000	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+1.20D+E	-0.215	12.031	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+1.20D+E	-0.187	12.063	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.001
+1.20D+E	-0.162	12.094	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+1.20D+E	-0.138	12.125	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+1.20D+E	-0.116	12.156	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.000

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Combined Footing

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: GRIDLINE 1

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+E	-0.096	12.188	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+1.20D+E	-0.077	12.219	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+1.20D+E	-0.061	12.250	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+1.20D+E	-0.047	12.281	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+1.20D+E	-0.034	12.313	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+1.20D+E	-0.024	12.344	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+1.20D+E	-0.015	12.375	Top	2.916	ACI 7.6.1.1	3.080	363.060	0.000
+1.20D+E	0.000	12.406	0	0.000	0	0.000	0.000	0.000
+1.20D+E	0.000	12.438	0	0.000	0	0.000	0.000	0.000
+1.20D+E	0.000	12.469	0	0.000	0	0.000	0.000	0.000
+1.20D+E	0.000	12.500	0	0.000	0	0.000	0.000	0.000

One Way Shear

Left of Column #1

Right of Column #1

Left of Column #2

Right of Column #2

Load Combination...	vu (psi)	Φ vn (psi)	vu / Φ vn	vu (psi)	Φ vn (psi)	vu / Φ vn	vu (psi)	Φ vn (psi)	vu / Φ vn	vu (psi)	Φ vn (psi)	vu / Φ vn
+1.40D	0.0	75.0	0.000	0.0	75.0	0.000	0.0	75.0	0.000	0.0	75.0	0.000
+1.20D	0.0	75.0	0.000	0.0	75.0	0.000	0.0	75.0	0.000	0.0	75.0	0.000
+1.20D+E	0.7	75.0	0.009	1.5	75.0	0.020	0.3	75.0	0.004	1.9	75.0	0.025
+0.90D	0.0	75.0	0.000	0.0	75.0	0.000	0.0	75.0	0.000	0.0	75.0	0.000
+0.90D+E	1.1	75.0	0.014	2.3	75.0	0.031	0.3	75.0	0.003	3.3	75.0	0.044

Two Way Shear

Column #1

Column #2

Load Combination...	vu (psi)	Φ vn (psi)	vu / Φ vn	vu (psi)	Φ vn (psi)	vu / Φ vn
+1.40D	0.0	150.0	0.000	0.0	150.0	0.000
+1.20D	0.0	150.0	0.000	0.0	150.0	0.000
+1.20D+E	2.0	150.0	0.013	4.1	150.0	0.027
+0.90D	0.0	150.0	0.000	0.0	150.0	0.000
+0.90D+E	2.4	150.0	0.016	3.8	150.0	0.026

Steel Column

Project File: Dr Hale.ec6

LIC#: KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: C-3 Column

Code References

Governing Code : IBC 2018, CBC 2019
 Referenced Design Standard(s) : AISC 360-16
 Load Combinations Used : IBC 2021

General Information

Steel Section Name : HSS5x5x1/4	Overall Column Height	10.830 ft
Analysis Method : Load Resistance Factor	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 36.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 14.25 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 14.25 ft, K = 1.0	

Applied Loads

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

Column self weight included : 169.165 lbs * Dead Load Factor

AXIAL LOADS . . .

Lower Floor Up/Dn: Axial Load at 10.830 ft, Xecc = 6.0 in, E = 10.880 k

B8: Axial Load at 10.830 ft, Xecc = 6.0 in, D = 7.797, L = 11.001, S = 4.236 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.9466** : 1
 Load Combination +1.20D+1.60L+0.50S
 Location of max.above base 10.830 ft
 At maximum location values are . . .
 Pu 29.279 k
 0.9 * Pn 92.158 k
 Mu-x 0.0 k-ft
 0.9 * Mn-x : 20.547 k-ft
 Mu-y -14.538 k-ft
 0.9 * Mn-y : 20.547 k-ft

Maximum Load Reactions . .
 Top along X-X 1.151 k
 Bottom along X-X 1.151 k
 Top along Y-Y 0.0 k
 Bottom along Y-Y 0.0 k

Maximum Load Deflections . . .
 Along Y-Y 0.0 in at 0.0 ft above base
 for load combination :
 Along X-X -0.3524 in at 6.324 ft above base
 for load combination : +D+0.750L+0.750S+0.5250E

PASS Maximum Shear Stress Ratia **0.04134** : 1
 Load Combination +1.20D+1.60L+0.50S
 Location of max.above base 0.0 ft
 At maximum location values are . . .
 Vu : Applied 1.342 k
 Vn * Phi : Allowable 32.469 k

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios			Cbx	Cby	KxLx/Rx	KyLy/Ry	Maximum Shear Ratios		
	Stress Ratio	Status	Location					Stress Ratio	Status	Location
+1.40D	0.326	PASS	10.83 ft	1.00	1.66	88.60	88.60	0.016	PASS	0.00 ft
+1.20D+1.60L	0.878	PASS	10.83 ft	1.00	1.66	88.60	88.60	0.038	PASS	0.00 ft
+1.20D+1.60L+0.50S	0.947	PASS	10.83 ft	1.00	1.66	88.60	88.60	0.041	PASS	0.00 ft
+1.20D+0.50L	0.443	PASS	10.83 ft	1.00	1.66	88.60	88.60	0.021	PASS	0.00 ft
+1.20D	0.280	PASS	10.83 ft	1.00	1.66	88.60	88.60	0.013	PASS	0.00 ft
+1.20D+0.50L+1.60S	0.705	PASS	10.83 ft	1.00	1.66	88.60	88.60	0.031	PASS	0.00 ft
+1.20D+1.60S	0.481	PASS	10.83 ft	1.00	1.66	88.60	88.60	0.023	PASS	0.00 ft
+1.20D+0.50L+0.50S	0.506	PASS	10.83 ft	1.00	1.66	88.60	88.60	0.024	PASS	0.00 ft
+1.20D+0.50L+0.70S+E	0.934	PASS	10.83 ft	1.00	1.66	88.60	88.60	0.041	PASS	0.00 ft
+0.90D	0.210	PASS	10.83 ft	1.00	1.66	88.60	88.60	0.010	PASS	0.00 ft
+0.90D+E	0.533	PASS	10.83 ft	1.00	1.66	88.60	88.60	0.025	PASS	0.00 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)		Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	7.966		0.360	-0.360						
+D+L	18.967		0.868	-0.868						
+D+S	12.202		0.556	-0.556						

Steel Column

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: C-3 Column

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)	Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
+D+0.750L	16.217	0.741	-0.741						
+D+0.750L+0.750S	19.394	0.888	-0.888						
+D+0.70E	15.582	0.712	-0.712						
+D+0.750L+0.750S+0.5250E	25.106	1.151	-1.151						
+0.60D	4.780	0.216	-0.216						
+0.60D+0.70E	12.396	0.568	-0.568						
L Only	11.001	0.508	-0.508						
S Only	4.236	0.196	-0.196						
E Only	10.880	0.502	-0.502						

Extreme Reactions

Item	Extreme Value	Axial (k)	Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial, Base Max		25.106								
Axial, Base Min		4.236								
Rx, Base Max			1.151							
Rx, Base Min			0.196							
Rx, Top Max				-0.196						
Rx, Top Min				-1.151						
Ry, Base Max										
Ry, Base Min										
Ry, Top Max										
Ry, Top Min										

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir		Distance	Max. Deflection in Y dir		Distance
D Only	-0.1102	in	6.324 ft	0.000	in	0.000 ft
+D+L	-0.2657	in	6.324 ft	0.000	in	0.000 ft
+D+S	-0.1701	in	6.324 ft	0.000	in	0.000 ft
+D+0.750L	-0.2268	in	6.324 ft	0.000	in	0.000 ft
+D+0.750L+0.750S	-0.2717	in	6.324 ft	0.000	in	0.000 ft
+D+0.70E	-0.2178	in	6.324 ft	0.000	in	0.000 ft
+D+0.750L+0.750S+0.5250E	-0.3524	in	6.324 ft	0.000	in	0.000 ft
+0.60D	-0.0661	in	6.324 ft	0.000	in	0.000 ft
+0.60D+0.70E	-0.1737	in	6.324 ft	0.000	in	0.000 ft
L Only	-0.1555	in	6.324 ft	0.000	in	0.000 ft
S Only	-0.0599	in	6.324 ft	0.000	in	0.000 ft
E Only	-0.1538	in	6.324 ft	0.000	in	0.000 ft
D Only	-0.1102	in	6.324 ft	0.000	in	0.000 ft
+D+L	-0.2657	in	6.324 ft	0.000	in	0.000 ft
+D+S	-0.1701	in	6.324 ft	0.000	in	0.000 ft
+D+0.750L	-0.2268	in	6.324 ft	0.000	in	0.000 ft
+D+0.750L+0.750S	-0.2717	in	6.324 ft	0.000	in	0.000 ft
+D+0.70E	-0.2178	in	6.324 ft	0.000	in	0.000 ft
+D+0.750L+0.750S+0.5250E	-0.3524	in	6.324 ft	0.000	in	0.000 ft
+0.60D	-0.0661	in	6.324 ft	0.000	in	0.000 ft
+0.60D+0.70E	-0.1737	in	6.324 ft	0.000	in	0.000 ft
L Only	-0.1555	in	6.324 ft	0.000	in	0.000 ft
S Only	-0.0599	in	6.324 ft	0.000	in	0.000 ft
E Only	-0.1538	in	6.324 ft	0.000	in	0.000 ft

Steel Section Properties : HSS5x5x1/4

Steel Section Properties : HSS5x5x1/4

Steel Column

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

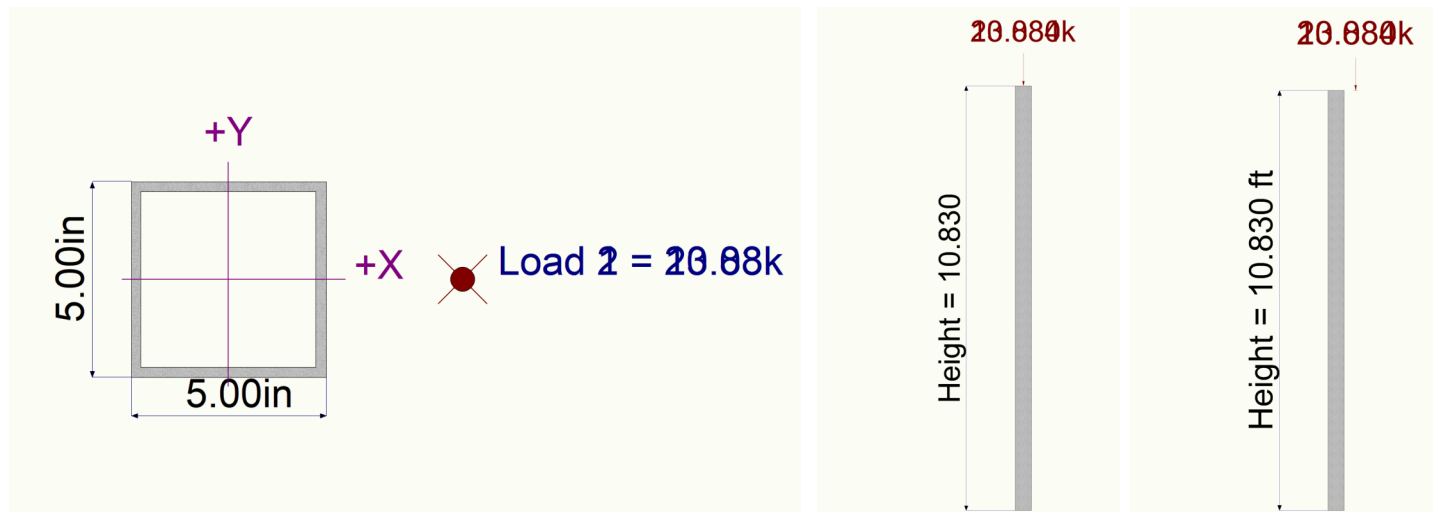
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DESCRIPTION: C-3 Column

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

Sketches



Steel Column

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: D-3 Column

Code References

Governing Code : IBC 2018, CBC 2019
 Referenced Design Standard(s) : AISC 360-16
 Load Combinations Used : IBC 2021

General Information

Steel Section Name : HSS5x5x1/4	Overall Column Height	24.830 ft
Analysis Method : Load Resistance Factor	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 36.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 14.25 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 14.25 ft, K = 1.0	

Applied Loads

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

Column self weight included : 387.845 lbs * Dead Load Factor
 AXIAL LOADS . . .
 B2: Axial Load at 24.830 ft, Xecc = -6.0 in, D = 3.930, S = 6.150 k
 Up/Dn Top Floor: Axial Load at 24.830 ft, Xecc = 6.0 in, E = 15.171 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio =	0.4584 : 1	Maximum Load Reactions . .	
Load Combination	+0.90D+E	Top along X-X	0.3055 k
Location of max.above base	24.830 ft	Bottom along X-X	0.3055 k
At maximum location values are . . .		Top along Y-Y	0.0 k
Pu	19.057 k	Bottom along Y-Y	0.0 k
0.9 * Pn	92.158 k	Maximum Load Deflections . . .	
Mu-x	0.0 k-ft	Along Y-Y	0.0 in at 0.0 ft above base
0.9 * Mn-x :	20.547 k-ft	for load combination :	
Mu-y	-5.817 k-ft	Along X-X	-1.127 in at 14.498 ft above base
0.9 * Mn-y :	20.547 k-ft	for load combination : E Only	
PASS Maximum Shear Stress Ratio	0.009027 : 1		
Load Combination	+1.20D+1.60S		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Vu : Applied	0.2931 k		
Vn * Phi : Allowable	32.469 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	0.167	PASS	24.83 ft	1.00	1.66	88.60	88.60	0.003 PASS 0.00 ft
+1.20D	0.143	PASS	24.83 ft	1.00	1.66	88.60	88.60	0.003 PASS 0.00 ft
+1.20D+0.50S	0.234	PASS	24.83 ft	1.00	1.66	88.60	88.60	0.005 PASS 0.00 ft
+1.20D+1.60S	0.436	PASS	24.83 ft	1.00	1.66	88.60	88.60	0.009 PASS 0.00 ft
+1.20D+0.70S+E	0.401	PASS	24.83 ft	1.00	1.66	88.60	88.60	0.004 PASS 0.00 ft
+0.90D	0.107	PASS	24.83 ft	1.00	1.66	88.60	88.60	0.002 PASS 0.00 ft
+0.90D+E	0.458	PASS	24.83 ft	1.00	1.66	88.60	88.60	0.007 PASS 0.00 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)		Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	4.318		-0.079	0.079						
+D+S	10.468		-0.203	0.203						
+D+0.750S	8.930		-0.172	0.172						
+D+0.70E	14.938		0.135	-0.135						
+D+0.750S+0.5250E	16.895		-0.012	0.012						
+0.60D	2.591		-0.047	0.047						
+0.60D+0.70E	13.210		0.166	-0.166						

Steel Column

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: D-3 Column

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)	Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
S Only	6.150	-0.124	0.124						
E Only	15.171	0.305	-0.305						

Extreme Reactions

Item	Extreme Value	Axial (k)	Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial, Base Max		16.895								
Axial, Base Min		2.591								
Rx, Base Max			0.305							
Rx, Base Min			-0.203							
Rx, Top Max				0.203						
Rx, Top Min				-0.305						
Ry, Base Max										
Ry, Base Min										
Ry, Top Max										
Ry, Top Min										

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir		Distance	Max. Deflection in Y dir		Distance
D Only	0.2919	in	14.498 ft	0.000	in	0.000 ft
+D+S	0.7488	in	14.498 ft	0.000	in	0.000 ft
+D+0.750S	0.6346	in	14.498 ft	0.000	in	0.000 ft
+D+0.70E	-0.4969	in	14.498 ft	0.000	in	0.000 ft
+D+0.750S+0.5250E	0.0429	in	14.498 ft	0.000	in	0.000 ft
+0.60D	0.1752	in	14.498 ft	0.000	in	0.000 ft
+0.60D+0.70E	-0.6137	in	14.498 ft	0.000	in	0.000 ft
S Only	0.4569	in	14.498 ft	0.000	in	0.000 ft
E Only	-1.1270	in	14.498 ft	0.000	in	0.000 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: Dr Hale.ec6

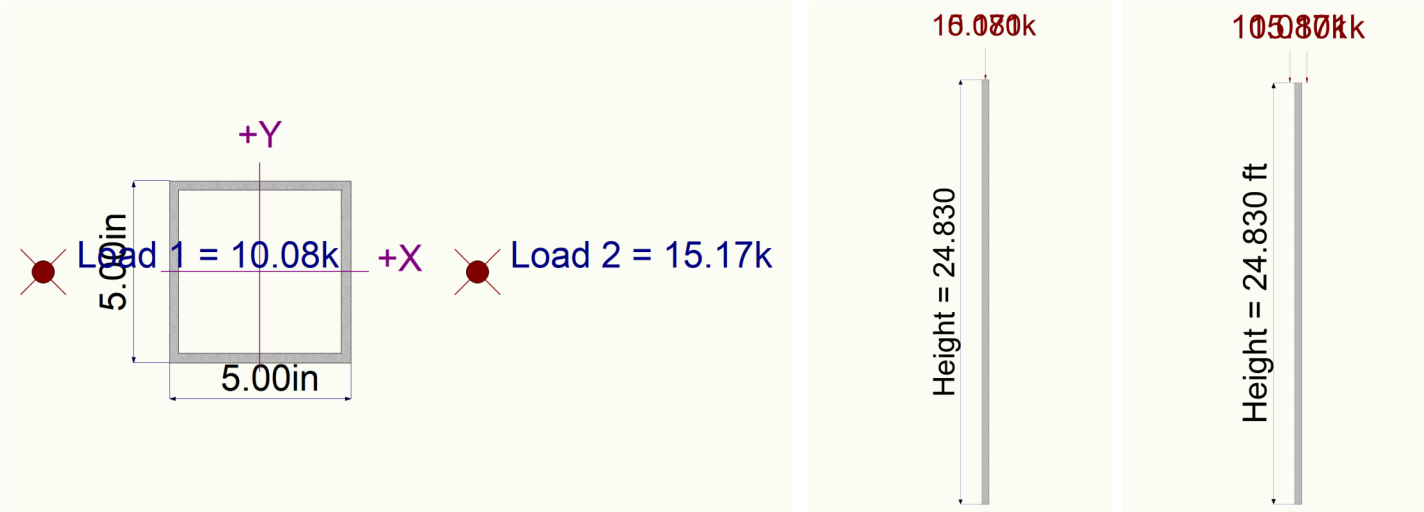
LIC# : KW-06019281, Build:20.25.09.04

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DESCRIPTION: D-3 Column

Sketches



Steel Column

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: D.5-3 Column

Code References

Governing Code : IBC 2018, CBC 2019
 Referenced Design Standard(s) : AISC 360-16
 Load Combinations Used : IBC 2021

General Information

Steel Section Name : HSS5x5x1/4	Overall Column Height	24.830 ft
Analysis Method : Load Resistance Factor	Top & Bottom Fixity	Top & Bottom Pinned
Steel Stress Grade	Brace condition :	
Fy : Steel Yield 36.0 ksi	Unbraced Length for buckling ABOUT X-X Axis = 14.25 ft, K = 1.0	
E : Elastic Bending Modulus 29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 14.25 ft, K = 1.0	

Applied Loads

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

Column self weight included : 387.845 lbs * Dead Load Factor

AXIAL LOADS . . .

Upper Floor Up/Dn: Axial Load at 24.830 ft, Xecc = -6.0 in, E = 15.097 k

Lower Floor Up/Dn: Axial Load at 10.830 ft, Xecc = 6.0 in, E = 10.880 k

B9: Axial Load at 10.830 ft, Xecc = 6.0 in, D = 3.362, L = 4.590, S = 1.434 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.4946** : 1
 Load Combination +1.20D+0.50L+0.70S+E
 Location of max.above base 10.832 ft
 At maximum location values are . . .
 Pu 15.562 k
 0.9 * Pn 92.158 k
 Mu-x 0.0 k-ft
 0.9 * Mn-x : 20.547 k-ft
 Mu-y 8.427 k-ft
 0.9 * Mn-y : 20.547 k-ft

Maximum Load Reactions . .

Top along X-X	0.1601 k
Bottom along X-X	0.1601 k
Top along Y-Y	0.0 k
Bottom along Y-Y	0.0 k

Maximum Load Deflections . . .

Along Y-Y	0.0 in at	0.0ft above base
for load combination :		
Along X-X	1.337 in at	14.665ft above base
for load combination : E Only		

PASS Maximum Shear Stress Ratir **0.007501** : 1
 Load Combination +1.20D+1.60L+0.50S
 Location of max.above base 0.0 ft
 At maximum location values are . . .
 Vu : Applied 0.2436 k
 Vn * Phi : Allowable 32.469 k

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				CbX	CbY	KxLx/Rx	KyLy/Ry	Maximum Shear Ratios		
	Stress Ratio	Status	Location						Stress Ratio	Status	Location
+1.40D	0.078	PASS	10.67 ft		1.00	1.27	88.60	88.60	0.003	PASS	0.00 ft
+1.20D+1.60L	0.183	PASS	10.67 ft		1.00	1.27	88.60	88.60	0.007	PASS	0.00 ft
+1.20D+1.60L+0.50S	0.195	PASS	10.67 ft		1.00	1.27	88.60	88.60	0.008	PASS	0.00 ft
+1.20D+0.50L	0.103	PASS	10.67 ft		1.00	1.27	88.60	88.60	0.004	PASS	0.00 ft
+1.20D	0.067	PASS	10.67 ft		1.00	1.27	88.60	88.60	0.003	PASS	0.00 ft
+1.20D+0.50L+1.60S	0.139	PASS	10.67 ft		1.00	1.27	88.60	88.60	0.005	PASS	0.00 ft
+1.20D+1.60S	0.103	PASS	10.67 ft		1.00	1.27	88.60	88.60	0.004	PASS	0.00 ft
+1.20D+0.50L+0.50S	0.114	PASS	10.67 ft		1.00	1.27	88.60	88.60	0.004	PASS	0.00 ft
+1.20D+0.50L+0.70S+E	0.495	PASS	10.83 ft		1.00	1.27	88.60	88.60	0.002	PASS	0.00 ft
+0.90D	0.050	PASS	10.67 ft		1.00	1.27	88.60	88.60	0.002	PASS	0.00 ft
+0.90D+E	0.451	PASS	24.83 ft		1.00	1.27	88.60	88.60	0.001	PASS	0.00 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)		Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base		@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
D Only	3.750		0.068	-0.068						
+D+L	8.340		0.160	-0.160						

Steel Column

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: D.5-3 Column

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial (k)	Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
	@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
+D+S	5.184	0.097	-0.097						
+D+0.750L	7.192	0.137	-0.137						
+D+0.750L+0.750S	8.268	0.159	-0.159						
+D+0.70E	21.934	0.008	-0.008						
+D+0.750L+0.750S+0.5250E	21.906	0.114	-0.114						
+0.60D	2.250	0.041	-0.041						
+0.60D+0.70E	20.434	-0.019	0.019						
L Only	4.590	0.092	-0.092						
S Only	1.434	0.029	-0.029						
E Only	25.977	-0.085	0.085						

Extreme Reactions

Item	Extreme Value	Axial (k)	Rx (k)		Ry (k)		Mx (k-ft)		My (k-ft)	
		@ Base	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
Axial, Base Max		25.977								
Axial, Base Min		1.434								
Rx, Base Max			0.160							
Rx, Base Min			-0.085							
Rx, Top Max				0.085						
Rx, Top Min				-0.160						
Ry, Base Max										
Ry, Base Min										
Ry, Top Max										
Ry, Top Min										

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir		Distance	Max. Deflection in Y dir		Distance
D Only	0.0672 in		15.331 ft	0.000 in		0.000 ft
+D+L	0.1590 in		15.331 ft	0.000 in		0.000 ft
+D+S	0.0959 in		15.331 ft	0.000 in		0.000 ft
+D+0.750L	0.1360 in		15.331 ft	0.000 in		0.000 ft
+D+0.750L+0.750S	0.1575 in		15.331 ft	0.000 in		0.000 ft
+D+0.70E	1.0027 in		14.831 ft	0.000 in		0.000 ft
+D+0.750L+0.750S+0.5250E	0.8587 in		14.831 ft	0.000 in		0.000 ft
+0.60D	0.0403 in		15.331 ft	0.000 in		0.000 ft
+0.60D+0.70E	0.9759 in		14.831 ft	0.000 in		0.000 ft
L Only	0.0918 in		15.331 ft	0.000 in		0.000 ft
S Only	0.0287 in		15.331 ft	0.000 in		0.000 ft
E Only	1.3369 in		14.665 ft	0.000 in		0.000 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: Dr Hale.ec6

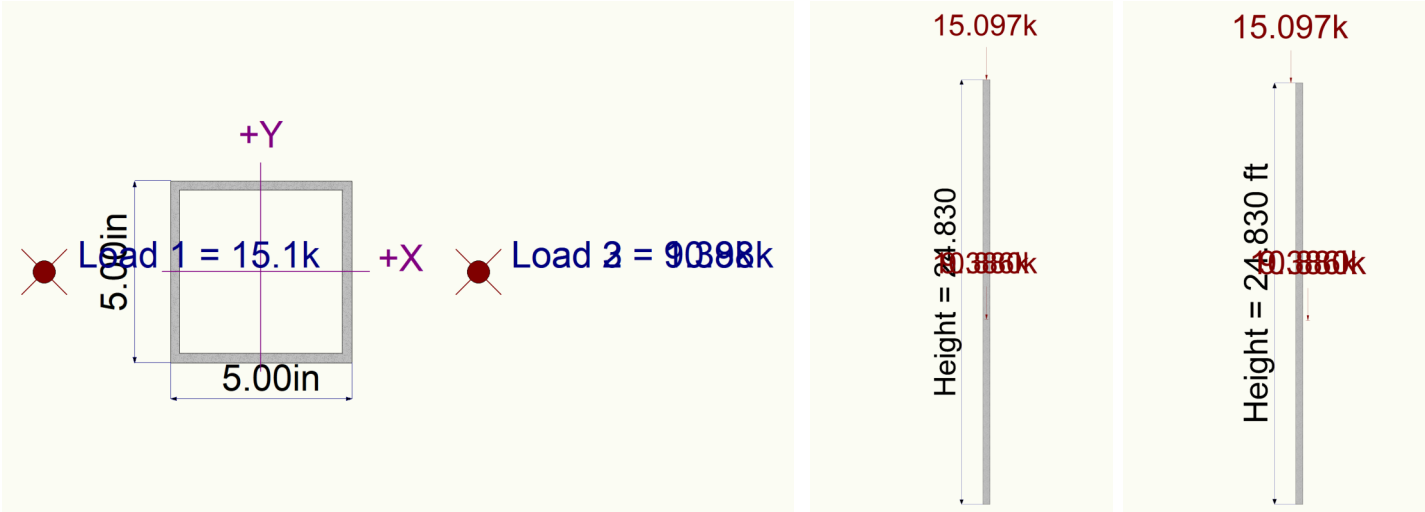
LIC# : KW-06019281, Build:20.25.09.04

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DESCRIPTION: D.5-3 Column

Sketches



General Footing

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: C-3, D-3, D.5-3

Code References

Governing Code : IBC 2018, CBC 2019
 Referenced Design Standard(s) : ACI 318-14
 Load Combinations Used : IBC 2018

General Information

Material Properties

f'_c : Concrete 28 day strength	=	2.50 ksi
f_y : Rebar Yield	=	60.0 ksi
E_c : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
ϕ Values Flexure	=	0.90
Shear	=	0.750

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Soil Design Values

Allowable Soil Bearing	=	2.0 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Increases based on footing Depth

Footing base depth below soil surface	=	ft
Allow press. increase per foot of depth when footing base is below	=	ksf

Increases based on footing plan dimension

Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf
	=	ft

Dimensions

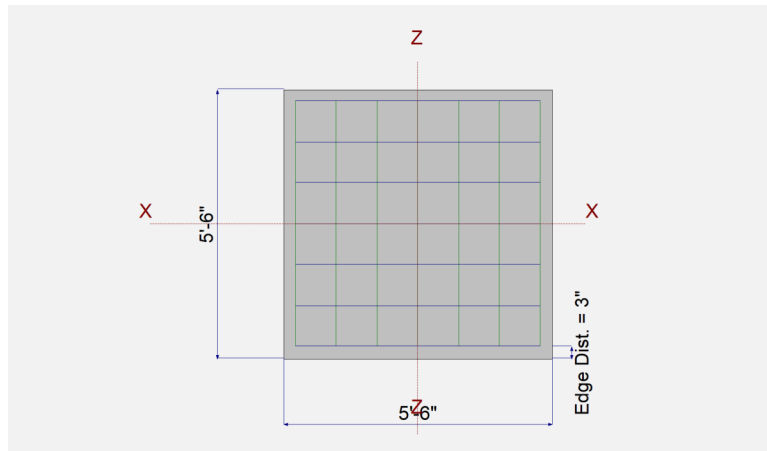
Width parallel to X-X Axis	=	5.50 ft
Length parallel to Z-Z Axis	=	5.50 ft
Footing Thickness	=	18.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a



Bottom Reinforcing

Bars parallel to X-X Axis (resisting Z Flexure)

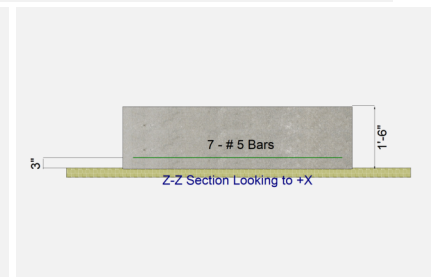
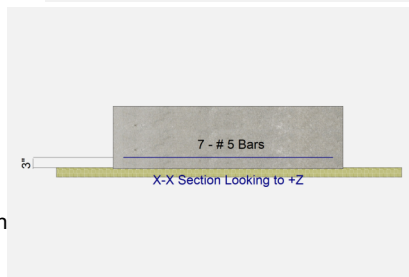
Number of Bars	=	7
Reinforcing Bar Size	=	# 5

Bars parallel to Z-Z Axis (resisting X Flexure)

Number of Bars	=	7
Reinforcing Bar Size	=	# 5

Rebar Centerline to Edge of Concrete...
 at Bottom of footing

= 3.0 in



Project Title:
Engineer:
Project ID:
Project Descr:

General Footing

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: C-3, D-3, D.5-3

Applied Loads

		D	Lr	L	S	W	E	H
P : Column Load	=	3.750		4.590	1.434		25.977	k
OB : Overburden	=							ksf
M-xx	=							k-ft
M-zz	=							k-ft
V-x	=							k
V-z	=							k

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.4713	Soil Bearing	0.9426 ksf	2.0 ksf	+D+0.70E about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1636	Z Flexure (+X) Bot Tens	4.222 k-ft/ft	25.808 k-ft/ft	+1.20D+0.50L+0.70S+E
PASS	0.1636	Z Flexure (-X) Bot Tens	4.222 k-ft/ft	25.808 k-ft/ft	+1.20D+0.50L+0.70S+E
PASS	0.985	Min Steel X Flexure Bottom	0.389 in2/ft	0.395 in2/ft	n/a
PASS	0.1636	X Flexure (+Z) Bot Tens	4.222 k-ft/ft	25.808 k-ft/ft	+1.20D+0.50L+0.70S+E
PASS	0.1636	X Flexure (-Z) Bot Tens	4.222 k-ft/ft	25.808 k-ft/ft	+1.20D+0.50L+0.70S+E
PASS	0.985	Min Steel Z Flexure Bottom	0.389 in2/ft	0.395 in2/ft	n/a
PASS	0.0	Z Flexure (+X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	Z Flexure (-X) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel X Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.0	X Flexure (+Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.0	X Flexure (-Z) Top Tens	0 k-ft/ft	0.0 k-ft/ft	
PASS	0.000	Min Steel Z Flexure Top	0.000 in2/ft	0.000 in2/ft	n/a
PASS	0.1228	1-way Shear (+X)	9.212 psi	75.0 psi	+1.20D+0.50L+0.70S+E
PASS	0.1228	1-way Shear (-X)	9.212 psi	75.0 psi	+1.20D+0.50L+0.70S+E
PASS	0.1228	1-way Shear (+Z)	9.212 psi	75.0 psi	+1.20D+0.50L+0.70S+E
PASS	0.1228	1-way Shear (-Z)	9.212 psi	75.0 psi	+1.20D+0.50L+0.70S+E
PASS	0.2381	2-way Punching	35.712 psi	150.0 psi	+1.20D+0.50L+0.70S+E

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc (in)	Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
				Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.0	n/a	0.0	0.3415	0.3415	n/a	n/a	0.171
X-X, +D+L	2.0	n/a	0.0	0.4932	0.4932	n/a	n/a	0.247
X-X, +D+S	2.0	n/a	0.0	0.3889	0.3889	n/a	n/a	0.195
X-X, +D+0.750L	2.0	n/a	0.0	0.4553	0.4553	n/a	n/a	0.228
X-X, +D+0.750L+0.750S	2.0	n/a	0.0	0.4908	0.4908	n/a	n/a	0.245
X-X, +D+0.70E	2.0	n/a	0.0	0.9426	0.9426	n/a	n/a	0.471
X-X, +D+0.750L+0.750S+0.5250E	2.0	n/a	0.0	0.9417	0.9417	n/a	n/a	0.471
X-X, +0.60D	2.0	n/a	0.0	0.2049	0.2049	n/a	n/a	0.103
X-X, +0.60D+0.70E	2.0	n/a	0.0	0.8060	0.8060	n/a	n/a	0.403
Z-Z, D Only	2.0	0.0	n/a	n/a	n/a	0.3415	0.3415	0.171
Z-Z, +D+L	2.0	0.0	n/a	n/a	n/a	0.4932	0.4932	0.247
Z-Z, +D+S	2.0	0.0	n/a	n/a	n/a	0.3889	0.3889	0.195
Z-Z, +D+0.750L	2.0	0.0	n/a	n/a	n/a	0.4553	0.4553	0.228
Z-Z, +D+0.750L+0.750S	2.0	0.0	n/a	n/a	n/a	0.4908	0.4908	0.245
Z-Z, +D+0.70E	2.0	0.0	n/a	n/a	n/a	0.9426	0.9426	0.471
Z-Z, +D+0.750L+0.750S+0.5250E	2.0	0.0	n/a	n/a	n/a	0.9417	0.9417	0.471
Z-Z, +0.60D	2.0	0.0	n/a	n/a	n/a	0.2049	0.2049	0.103
Z-Z, +0.60D+0.70E	2.0	0.0	n/a	n/a	n/a	0.8060	0.8060	0.403

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has No Overturning		SCI241457		92
PROJECT:		No:	SHEET:	

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Dr Hale.ecb

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: C-3, D-3, D.5-3

Sliding Stability

All units k

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
Footing Has NO Sliding				
Footing Flexure				

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.6563	+Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.40D	0.6563	-Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+1.60L	1.481	+Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+1.60L	1.481	-Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+1.60L+0.50S	1.570	+Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+1.60L+0.50S	1.570	-Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+0.50L	0.8494	+Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+0.50L	0.8494	-Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D	0.5625	+Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D	0.5625	-Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+0.50L+1.60S	1.136	+Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+0.50L+1.60S	1.136	-Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+1.60S	0.8493	+Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+1.60S	0.8493	-Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+0.50L+0.50S	0.9390	+Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+0.50L+0.50S	0.9390	-Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+0.50L+0.70S+E	4.222	+Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +1.20D+0.50L+0.70S+E	4.222	-Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +0.90D	0.4219	+Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +0.90D	0.4219	-Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +0.90D+E	3.669	+Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
X-X, +0.90D+E	3.669	-Z	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.40D	0.6563	-X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.40D	0.6563	+X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+1.60L	1.481	-X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+1.60L	1.481	+X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+1.60L+0.50S	1.570	-X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+1.60L+0.50S	1.570	+X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+0.50L	0.8494	-X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+0.50L	0.8494	+X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D	0.5625	-X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D	0.5625	+X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+0.50L+1.60S	1.136	-X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+0.50L+1.60S	1.136	+X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+1.60S	0.8493	-X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+1.60S	0.8493	+X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+0.50L+0.50S	0.9390	-X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+0.50L+0.50S	0.9390	+X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+0.50L+0.70S+E	4.222	-X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +1.20D+0.50L+0.70S+E	4.222	+X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +0.90D	0.4219	-X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +0.90D	0.4219	+X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +0.90D+E	3.669	-X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK
Z-Z, +0.90D+E	3.669	+X	Bottom	0.3888	ACI 7.6.1.1	0.3945	25.808	OK

One Way Shear X

Load Combination...	Vu @ -X	Vu @ +X	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	1.43 psi	1.43 psi	1.43 psi	75.00 psi	0.02	OK
+1.20D+1.60L	3.23 psi	3.23 psi	3.23 psi	75.00 psi	0.04	OK
+1.20D+1.60L+0.50S	3.43 psi	3.43 psi	3.43 psi	75.00 psi	0.05	OK
+1.20D+0.50L	1.85 psi	1.85 psi	1.85 psi	75.00 psi	0.02	OK
+1.20D	1.23 psi	1.23 psi	1.23 psi	75.00 psi	0.02	OK
+1.20D+0.50L+1.60S	2.48 psi	2.48 psi	2.48 psi	75.00 psi	0.03	OK
+1.20D+1.60S	1.85 psi	1.85 psi	1.85 psi	75.00 psi	0.02	OK
+1.20D+0.50L+0.50S	2.05 psi	2.05 psi	2.05 psi	75.00 psi	0.03	OK
+1.20D+0.50L+0.70S+E	9.21 psi	9.21 psi	9.21 psi	75.00 psi	0.12	OK
+0.90D	0.92 psi	0.92 psi	0.92 psi	75.00 psi	0.01	OK
+0.90D+E	8.01 psi	8.01 psi	8.01 psi	75.00 psi	0.11	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Dr Hale.ec6

LIC# : KW-06019281, Build:20.25.09.04

Wright Engineers

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DESCRIPTION: C-3, D-3, D.5-3

One Way Shear Z

Load Combination...	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	1.43 psi	1.43 psi	1.43 psi	75.00 psi	0.02	OK
+1.20D+1.60L	3.23 psi	3.23 psi	3.23 psi	75.00 psi	0.04	OK
+1.20D+1.60L+0.50S	3.43 psi	3.43 psi	3.43 psi	75.00 psi	0.05	OK
+1.20D+0.50L	1.85 psi	1.85 psi	1.85 psi	75.00 psi	0.02	OK
+1.20D	1.23 psi	1.23 psi	1.23 psi	75.00 psi	0.02	OK
+1.20D+0.50L+1.60S	2.48 psi	2.48 psi	2.48 psi	75.00 psi	0.03	OK
+1.20D+1.60S	1.85 psi	1.85 psi	1.85 psi	75.00 psi	0.02	OK
+1.20D+0.50L+0.50S	2.05 psi	2.05 psi	2.05 psi	75.00 psi	0.03	OK
+1.20D+0.50L+0.70S+E	9.21 psi	9.21 psi	9.21 psi	75.00 psi	0.12	OK
+0.90D	0.92 psi	0.92 psi	0.92 psi	75.00 psi	0.01	OK
+0.90D+E	8.01 psi	8.01 psi	8.01 psi	75.00 psi	0.11	OK

All units k

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	5.55 psi	150.00 psi	0.04	OK
+1.20D+1.60L	12.52 psi	150.00 psi	0.08	OK
+1.20D+1.60L+0.50S	13.28 psi	150.00 psi	0.09	OK
+1.20D+0.50L	7.19 psi	150.00 psi	0.05	OK
+1.20D	4.76 psi	150.00 psi	0.03	OK
+1.20D+0.50L+1.60S	9.61 psi	150.00 psi	0.06	OK
+1.20D+1.60S	7.18 psi	150.00 psi	0.05	OK
+1.20D+0.50L+0.50S	7.94 psi	150.00 psi	0.05	OK
+1.20D+0.50L+0.70S+E	35.71 psi	150.00 psi	0.24	OK
+0.90D	3.57 psi	150.00 psi	0.02	OK
+0.90D+E	31.04 psi	150.00 psi	0.21	OK