VECTOR ENGINEERS

PLAN REVIEW ACCEPTANCE

FOR COMPLIANCE WITH THE APPLICABLE CONSTRUCTION CODES IDENTIFIED BELOW.

[X] BUILDING	[X] STRUCTURAL
[X] MECHANICAL	[X] PLUMBING
[X] ELECTRICAL	[X] ENERGY
[ ] ACCESSIBILITY	[ ] FIRE

PLAN REVIEW ACCEPTANCE OF DOCUMENTS DOES NOT AUTHORIZE CONSTRUCTION TO PROCEED IN VIOLATION OF ANY FEDERAL, STATE, OR LOCAL REGULATIONS.

BY: MEM DATE: 09/12/18

WEST COAST CODE CONSULTANTS, INC.

STRUCTURAL CALCULATIONS
for
RIDGE NEST 14

at
SUMMIT POWDER MOUNTAIN
EDEN, UT 84310
for
CIPRIAN MORAR

7/12/18

BY: **RUSSELL N. EMERY, S.E.**
PROJECT ENGINEER

PROJECT #: **U2784-001-181**

DATE: **July 12, 2018**

DESIGNED BY JBA; CHECKED BY RNE

Note:
The calculations presented in this package are intended for a single use at the location indicated above, for the client listed above. These calculations shall not be reproduced, reused, "card filed", sold to a third party, or altered in any way without the written authorization of Vector Structural Engineering, LLC and Ciprian Morar.

Design Criteria:

General:

Code: Structural design is based upon the International Building Code, 2015 Edition
Risk Category: II

Wind Criteria:

Analysis Procedure: ASCE 7-10, Chapter 28 - Envelope Procedure - Part 2
Basic Wind Speed - Ultimate (mph): 115 (3-sec gust)
Wind Exposure: C

Seismic Criteria:

Analysis Procedure: ASCE 7-10, Equivalent Lateral Force Procedure
Site Class: D
Seismic Importance Factor, I_E: 1.0
Mapped Spectral Response Accelerations:
S_S = 0.811 S_1 = 0.269
S_{DS} = 0.636 S_{D1} = 0.334
Seismic Design Category: D
Seismic Force Resisting System: Light-frame wood shear walls
Seismic Response Coefficient, C_s: 0.1
Seismic Base Shear, V (k): 16.2

Snow Load:

Ground Snow Load, p_g (psf): 264.9624549
Snow Importance Factor, I_S: 1
Flat Roof Snow Load, p_f (psf): 185
Sloped Roof Snow Load, p_s (psf): 185

Live Loads:

Roof Live Load (psf): 20
Floor Live Load (psf): 40

General Notes:

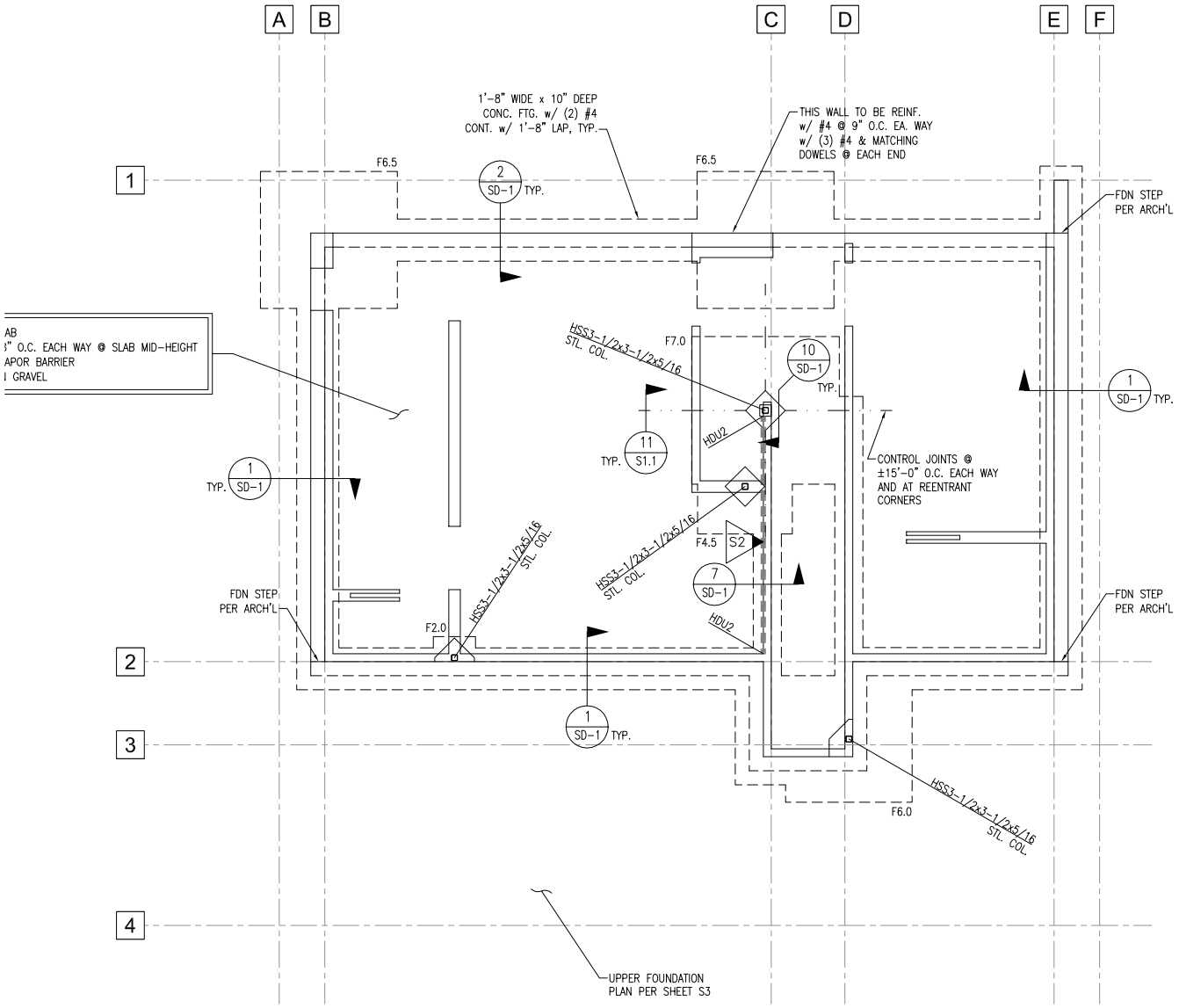
- The contractor shall verify dimensions, conditions and elevations before starting work. The engineer shall be notified immediately if any discrepancies are found.
- The typical notes and details shall apply in all cases unless specifically detailed elsewhere. Where no detail is shown, the construction shall be as shown for other similar work and as required by the building code.
- These calculations are limited to the structural members shown in these calculations only. The connection of the members shown in these calculations to any existing structure shall be by others.
- The contractor shall be responsible for compliance with local construction safety orders. Approval of shop drawings by the architect or structural engineer shall not be construed as accepting this responsibility.
- All structural framing members shall be adequately shored and braced during erection and until full lateral and vertical support is provided by adjoining members.

Structural Steel:

- All structural steel code checks based on the AISC 360-10 and AISC 341-10.
- All steel pipe shall be per ASTM A53 Gr B.
- All steel rectangular tubes (HSS) shall be per ASTM A500 GR. B (46 KSI), U.N.O.
- All steel wide flange shapes shall be per ASTM A992 (50 KSI), U.N.O.
- All other structural steel shapes & plates shall be per ASTM A36, U.N.O.
- All bolts for steel-to-steel connections shall be per ASTM A325N, U.N.O.
- All bolted connections shall be tightened to "snug tight" condition as defined by AISC, U.N.O.
- All welding shall be performed by certified welders in accordance with American Welding Society (AWS) D1.1, latest applicable edition.

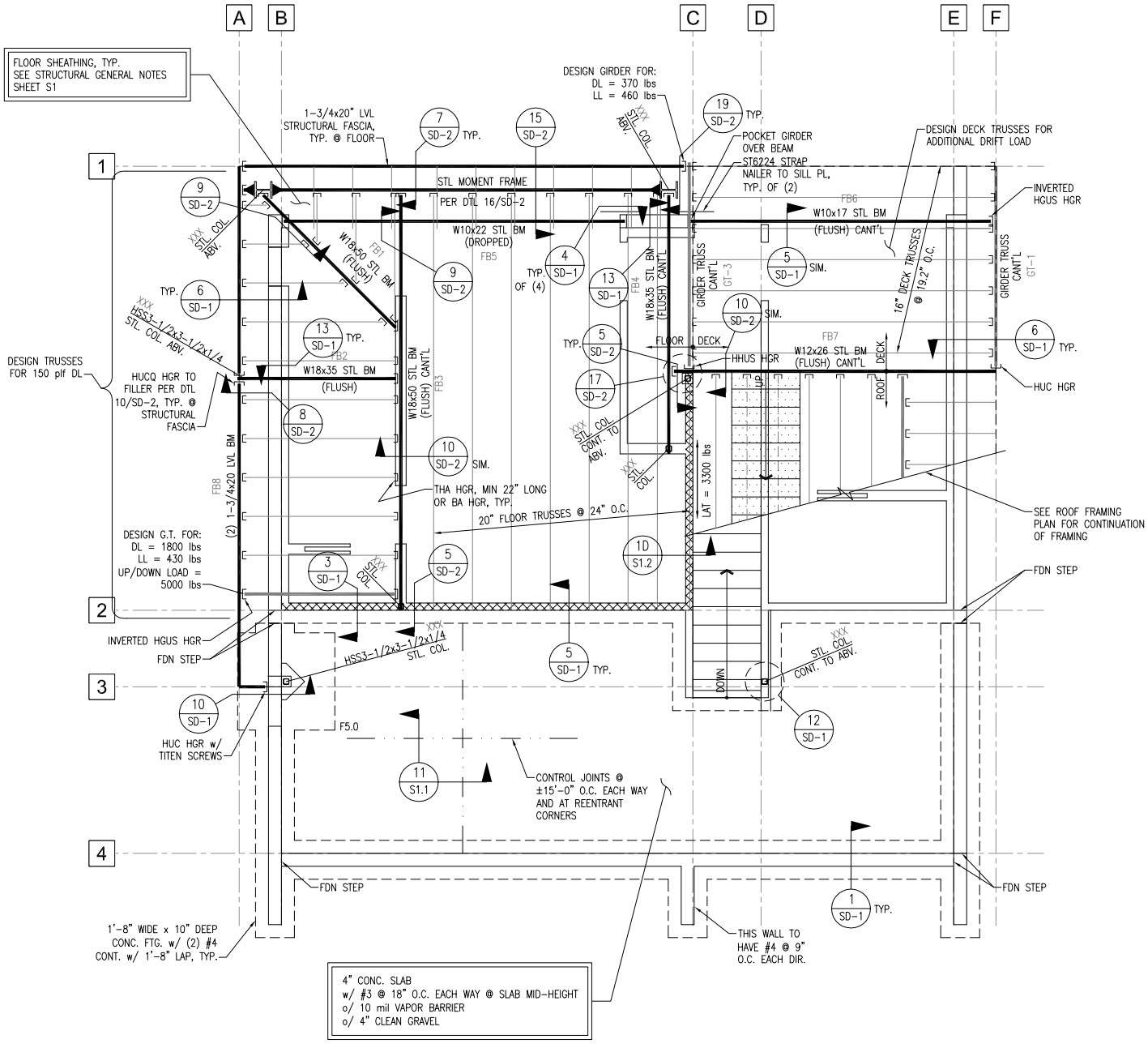
Foundation / Concrete:

- All concrete mixing, placement, forming, and reinforcing installation shall be performed in accordance with the requirements of “Building Code Requirements for Reinforced Concrete”, ACI 318, latest applicable edition.
- Foundation concrete shall have a minimum compressive strength of 3000 psi at 28 days.
- Cement for all concrete shall be Type I or II with a minimum of 6% entrained air. Maximum aggregate size shall be 3/4".
- Reinforcing steel shall be per ASTM A615 Gr. 60, U.N.O.
- Foundation design is based upon presumptive soil capacities. Vector Structural Engineering, LLC strongly recommends independent soils testing be performed by a licensed geotechnical engineer to verify soil capacites, slope stability, and any other related soil parameters.



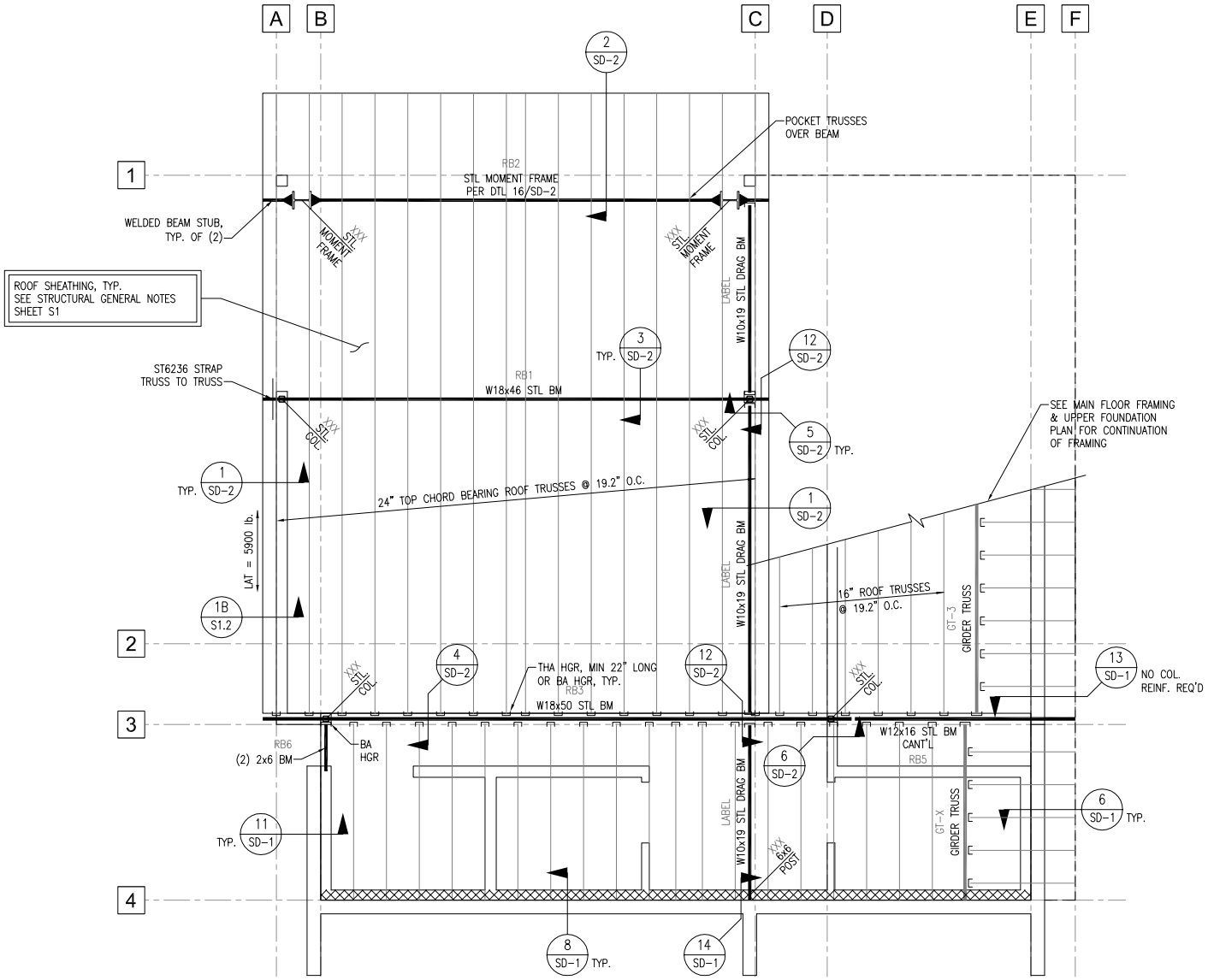
LOW FOUNDATION PLAN

1/8" = 1'-0"



MAIN FLOOR FRAMING & UPPER FOUNDATION PLAN

1/8" = 1'-0"



ROOF FRAMING PLAN

1/8" = 1'-0"

JOB NO.: U2784-001-181

PROJECT: Ridge Nest 14 **SUBJECT:** SNOW LOAD

Snow Load - State of Utah Building Code Amendments - Utah Code 15A-3-107

		A	Po	S	Ao	Pg
County	Weber	8.65	43	63	4.5	265.0
Site Elevation:	8650 ft					

Ground Snow Load, Pg:	265.0	psf	
Exposure Factor, Ce:	1		
Thermal Factor, Ct:	1.0		
Importance Factor, I:	1.0		
Flat Roof Snow Load, Pf:	185.5	psf	
Seismic Snow Load:	54.0	psf	Per item (2)
Roof Slope Factor, Cs:	1.0		
Sloped Roof Snow Load, Ps:	185.5	psf	

TABLE NO. 1608.1.2(B)
REQUIRED SNOW LOADS FOR SELECTED UTAH CITIES AND TOWNS1,2
The following jurisdictions require design snow load values that differ from the equation

County	City	Elevation	Ground Snow Load (psf)	Roof Snow Load (psf)
Carbon	Price3	5550	43	30
	All other county locations5	--	--	--
Davis	Fruit Heights3	4500 - 4850	57	40
Emery	Green River3	4070	36	25
Garfield	Panguitch3	6600	43	30
Rich	Woodruff3	6315	57	40
	Laketown4	6000	57	40
	Garden City5	--	--	--
	Randolph4	6300	57	40
San Juan	Monticello3	6820	50	35
Summit	Coalville3	5600	86	60
	Kamas4	6500	114	80
Tooele	Tooele3	5100	43	30
Utah	Orem3	4650	43	30
	Pleasant Grove4	5000	43	30
	Provo5	--	--	--
Wasatch	Heber5	--	--	--
Washington	Leeds3	3460	29	20
	Santa Clara3	2850	21	15
	St. George3	2750	21	15
	All other county locations5	--	--	--
Wayne	Loa3	7080	43	30

1. The IBC requires a minimum live load - See 1607.11.2.
2. This table is informational only in that actual site elevations may vary. Table is only valid if site elevation is within 100 feet of the listed elevation. Otherwise, contact the local Building Official.
3. Values adopted from Table VII of the Utah Snow Load Study.
4. Values based on site-specific study. Contact local Building Official for additional information.
5. Contact local Building Official.
6. Based on Ce =1.0, Ct =1.0 and Is =1.0

PROJECT: Ridge Nest 14 **JOB NO.:** U2784-001-181 **SUBJECT:** GRAVITY LOADS

ROOF			Increase due to pitch	Original loading
ROOF PITCH/12		3		
MEMBRANE		1.55	1.03	1.50
19/32" PLYWOOD		1.96	1.03	1.90
FRAMING		3.00		
INSULATION		2.00		
1/2" GYPSUM CLG.		2.20		
M, E & MISC		2.30		
GREEN ROOF SYSTEM		30.00		
	DL	43.00		
	LL	20.00		
	SNOW	185.00		
SNOW INCLUDED IN LATERAL		54.0		

2ND FLOOR (WHERE OCCURS)		
FLOOR COVERING W/GYPCRETE		17.00
3/4" T&G PLYWOOD		2.30
MFG TRUSSES / FRAMING		2.00
INSULATION		1.00
1/2" GYPSUM CEILING		2.20
PARTITION		2.00
M, E & MISC.		1.50
OTHER		0.00
	DL	28.00
	LL	40.00

EXTERIOR WALLS		
STUCCO/SIDING		3.50
2x6 FRAMING W/3 PLATES		1.30
INSULATION		1.00
1/2" GYPSUM		2.20
1/2" PLYWOOD		1.50
OTHER		0.50
	DL	10.00

OVERFILL		
ASPHALT SHINGLES		4.00
1/2" PLYWOOD		1.50
RAFTERS & MISC		3.50
OTHER		0.00
	DL	9.00
	LL	20.00

TYPICAL ROOF OVERBUILD MAX SPAN TABLE

Grade	Size	Spacing (ft)	L_{max} (ft)	C_r	C_D	$C_{F,V}$	M_{allow} (ft-lb)	V_{allow} (lb)	Ctrl'g factor
DFL#2	2X4	2	2.50	1.15	1.00	1.50	385	382	Moment
DFL#2	2X6	2	3.40	1.15	1.00	1.30	824	601	LL def
DFL#2	2X8	2	4.40	1.15	1.00	1.20	1322	792	LL def
DFL#2	2X10	2	5.80	1.15	1.00	1.10	1973	1011	Moment

PROJECT: Ridge Nest 14 **JOB NO.:** U2784-001-181 **SUBJECT:** BEAMS

DESIGN LOADS:

Load Types:	Snow*I_S	Live	Dead
Roof	185	20	48
Floor		40	32
Wall			11

Add .2*S_{DS} to dead load? Yes 0.12712 =.2*S_{DS}

CRITERIA (L/)	D_{TL}	D_{LL}	D_{DL}
$A_{(BLANK)}$	240	360	
B	240	480	
C	600		800

Abbrev	GRADES		F_{bxx} (psi)	F_{vxx} (psi)	E_{xx} (psi)		g (lb/ft^3)
DFL#1	DOUGLAS FIR LARCH #1		1,000	180	1700000		31.2
DFL#2	DOUGLAS FIR LARCH #2		875	180	1600000		31.2
DF1 (5x)	Douglas Fir Larch #1 5x & Larger		1,350	170	1700000		31.2
24F-V4	Glue Laminated Timber 24F-V4 D		2,400	265	1800000		39.9
24F-V8	Glue Laminated Timber 24F-V8 D		2,400	265	1800000		39.9
LVL (1.9)	MICROLLAM LVL (1.9E)		2,600	285	1900000		41.8
LVL (2.0)	VERSA-LAM (2.0E)		2,800	285	2000000		41.8
LSL	TIMBERSTRAND LSL (1.3E)		1,700	400	1300000		41.8
PSL	PARALLAM PSL (2.0E)		2,900	290	2000000		41.8
STL36	GRADE 36 STEEL		21,600	14,400	29,000,000		490
STL46	GRADE 46 STEEL		27,700	16,500	29,000,000		490
STL50	GRADE 50 STEEL		30,000	20,000	29,000,000		490

Label	Length 'L' (ft)	Roof Trib (ft)	Floor Trib (ft)	Wall Trib (ft)	Add'l Live Load (plf)	Add'l Dead Load (plf)	Point Load From	React (A,B)	Dist 'a' (ft)	Point Live Load 'P_{LL}' (lb)	Point Dead Load 'P_{DL}' (lb)	# PLIES	Grade	Size	"BM/HDR"	D CRITERIA	C_r	C_D	$C_{F,V}$	R_a (lb)	R_b (lb)	M_{max} (ft-lb)	M_{allow} (ft-lb)	V_{max} (lb)	V_{allow} (lb)	D_{TL} (in)	$D_{TLallow}$ (in)	D_{LL} (in) (SEE COND 'C')	$D_{LLallow}$ (in) (SEE COND 'C')	1.5DL GLB Camb	Check
RB1	22.33	13											STL50	W18x46	B		1.00	1.00	1.00	34401	34401	192042	226750	29764	130320	0.835	1.117	0.652	0.744		0.88 D
RB2	22.33	10.5											STL50	W10x88	B		1.00	1.00	1.00	28353	28353	158280	282500	26059	130680	0.917	1.117	0.702	0.744		0.94 D
RB3	24.5	12.3											STL50	W18x50	B		1.00	1.00	1.00	35648	35648	218343	252500	31285	127800	1.017	1.225	0.792	0.817		0.97 D
RB4	Not Used																1.00	####	1.00	######	######	######					#####		#####		
RB5	10	13							2				STL50	W14x22	B		1.00	1.00	1.00	14674	22011	35218	83000	12397	63020	0.108	0.500	0.009	0.333		0.42 M
	Cantilevered end conditions																			@ Support		-6114	-83000		@ end	-0.012	0.200	0.001	0.133		
RB5	10	SEE ATTACHED FOR LOADING INFORMATION											STL50	W14x22	B		1.00	1.00	1.00	8282	8282	20704	83000	6385	63020	0.065	0.500	0.005	0.333		0.25 M
RB6	2	2										(2)	DFL#2	2X6	B		1.00	1.00	1.30	471	471	235	1434	255	1980	0.003	0.100	0.002	0.067		0.16 M
																	1.00	1.00	1.00												
																	1.00	1.00	1.00												
FB1	SEE ATTACHED CALCULATIONS												STL50	W18x50			1.00	1.00	1.00												
FB2	SEE ATTACHED CALCULATIONS												STL50	W18x35			1.00	1.00	1.00												
FB3	SEE ATTACHED CALCULATIONS												STL50	W18x50			1.00	1.00	1.00												
FB4	SEE ATTACHED CALCULATIONS												STL50	W18x35			1.00	1.00	1.00												
FB5	SEE ATTACHED CALCULATIONS												STL50	W10x22			1.00	1.00	1.00												
FB6	13.75	1					GT1	B	2	5947	1558		STL50	W10x17	B		1.00	1.00	1.00	594	10856	-1674	46750	7795	48480	-0.048	0.688	-0.095	0.458		0.68 D
	Cantilevered end conditions																			@ Support		-15510	-46750		@ end	0.106	0.200	0.091	0.133		
FB7	SEE ATTACHED CALCULATIONS												STL50	W12x26			1.00	1.00	1.00												
FB8	SEE ATTACHED CALCULATIONS												STL50	W18x35			1.00	1.00	1.00												
																	1.00	1.00	1.00												
GT1	7.66	1							1.5	4126	1081						1.00	1.00	1.00	-160	7505	-2171					0.383		0.255		
	Cantilevered end conditions																			@ Support		-8072			@ end		0.150		0.100		
GT2	16	2.4															1.00	1.00	1.00	4483	4483	17931					0.800		0.533		
																	1.00	1.00	1.00												
																	1.00	1.00	1.00												
																	1.00	1.00	1.00												
Deck Tru	15.5	1.6															1.00	1.00	1.00	2895	2895	11218					0.775		0.517		
Roof trus	12	1.6															1.00	1.00	1.00	2241	2241	6724					0.600		0.400		

PROJECT: Ridge Nest 14 **JOB NO.:** U2784-001-181 **SUBJECT:** BEAMS

DESIGN LOADS:

Load Types:	Snow*I_S	Live	Dead
Roof	185	20	48
Floor		40	32
Wall			11

Add .2*S_{DS} to dead load? Yes 0.12712 =.2*S_{DS}

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DFL#2	DOUGLAS FIR LARCH #2		875	180	1600000		31.2
DF1 (5x)	Douglas Fir Larch #1 5x & Larger		1,350	170	1700000		31.2
24F-V4	Glue Laminated Timber 24F-V4 D		2,400	265	1800000		39.9
24F-V8	Glue Laminated Timber 24F-V8 D		2,400	265	1800000		39.9
LVL (1.9)	MICROLLAM LVL (1.9E)		2,600	285	1900000		41.8
LVL (2.0)	VERSA-LAM (2.0E)		2,800	285	2000000		41.8
LSL	TIMBERSTRAND LSL (1.3E)		1,700	400	1300000		41.8
PSL	PARALLAM PSL (2.0E)		2,900	290	2000000		41.8
STL36	GRADE 36 STEEL		21,600	14,400	29,000,000		490
STL46	GRADE 46 STEEL		27,700	16,500	29,000,000		490
STL50	GRADE 50 STEEL		30,000	20,000	29,000,000		490

Label	Length 'L' (ft)	Roof Trib (ft)	Floor Trib (ft)	Wall Trib (ft)	Add'l Live Load (plf)	Add'l Dead Load (plf)	Point Load From	React (A,B)	Dist 'a' (ft)	Point Live Load 'P_{LL}' (lb)	Point Dead Load 'P_{DL}' (lb)	# PLIES	Grade	Size	"BM/HDR"	D CRITERIA	C_r	C_D	$C_{F,V}$	R_a (lb)	R_b (lb)	M_{max} (ft-lb)	M_{allow} (ft-lb)	V_{max} (lb)	V_{allow} (lb)	D_{TL} (in)	$D_{TLallow}$ (in)	D_{LL} (in) (SEE COND 'C')	$D_{LLallow}$ (in) (SEE COND 'C')	1.5DL GLB Camb	Check
RB1	22.33	13											STL50	W18x46	B		1.00	1.00	1.00	34401	34401	192042	226750	29764	130320	0.835	1.117	0.652	0.744		0.88 D
RB2	22.33	10.5											STL50	W10x88	B		1.00	1.00	1.00	28353	28353	158280	282500	26059	130680	0.917	1.117	0.702	0.744		0.94 D
RB3	24.5	12.3											STL50	W18x50	B		1.00	1.00	1.00	35648	35648	218343	252500	31285	127800	1.017	1.225	0.792	0.817		0.97 D
RB4	Not Used																1.00	####	1.00	######	######	######					#####		#####		
RB5	10	13							2				STL50	W12x16	B		1.00	1.00	1.00	14645	21968	35149	50250	12817	52800	0.208	0.500	0.018	0.333		0.70 M
	Cantilevered end conditions																			@ Support	-6102	-50250		@ end	-0.023	0.200	0.002	0.133		
RB6	2	2										(2)	DFL#2	2X6	B		1.00	1.00	1.30	471	471	235	1434	255	1980	0.003	0.100	0.002	0.067		0.16 M
																	1.00	1.00	1.00											
																	1.00	1.00	1.00											
FB1	SEE ATTACHED CALCULATIONS												STL50	W18x50			1.00	1.00	1.00											
FB2	SEE ATTACHED CALCULATIONS												STL50	W18x35			1.00	1.00	1.00											
FB3	SEE ATTACHED CALCULATIONS												STL50	W18x50			1.00	1.00	1.00											
FB4	SEE ATTACHED CALCULATIONS												STL50	W18x35			1.00	1.00	1.00											
FB5	SEE ATTACHED CALCULATIONS												STL50	W10x22			1.00	1.00	1.00											
FB6	13.75	1					GT1	B	2	5947	1558		STL50	W10x17	B		1.00	1.00	1.00	594	10856	-1674	46750	7795	48480	-0.048	0.688	-0.095	0.458		0.68 D
	Cantilevered end conditions																			@ Support	-15510	-46750		@ end	0.106	0.200	0.091	0.133		
FB7	SEE ATTACHED CALCULATIONS												STL50	W12x26			1.00	1.00	1.00											
FB8	12		1	10			SEISMIC		4	3763		2	LVL (1.9)	1-3/4X20	B		1.00	1.60	1.00	-163	7199	-3779	80889	4240	21280	-0.034	0.600	-0.047	0.400		0.48 D
	Cantilevered end conditions																			@ Support	-16687	-80889		@ end	0.119	0.400	0.128	0.267		
																	1.00	1.00	1.00											
GT1	7.66	1							1.5	4126	1081						1.00	1.00	1.00	-160	7505	-2171					0.383		0.255		
	Cantilevered end conditions																			@ Support	-8072			@ end			0.150		0.100		
GT2	16	2.4															1.00	1.00	1.00	4483	4483	17931					0.800		0.533		
																	1.00	1.00	1.00											
																	1.00	1.00	1.00											
																	1.00	1.00	1.00											
Deck Tru	15.5	1.6															1.00	1.00	1.00	2895	2895	11218					0.775		0.517		
Roof trus	12	1.6															1.00	1.00	1.00	2241	2241	6724					0.600		0.400		

PROJECT: Ridge Nest 14 **JOB NO.:** U2784-001-181 **SUBJECT:** COLUMNS

NOTE: COLUMN CAPACITIES LISTED ARE INTENDED AS GENERAL REFERENCE ONLY AND MAY NOT CORRELATE WITH SPECIFIC CALL-OUTS ON PLANS.

GRADES		c	COV_E	F_c (psi)	E_{xx} (psi)
DF1 (5x)	Douglas Fir Larch	0.8	0.25	1,000	1,700,000
DFL#1	DOUGLAS FIR LA	0.8	0.25	1,450	1,700,000
DFL#2	DOUGLAS FIR LA	0.8	0.25	1,300	1,600,000
DFLSTUD	Douglas Fir Larch	0.8	0.25	825	1,400,000
24F-V4		0.9	0.10	1,650	1,800,000
24F-V8		0.9	0.10	1,650	1,800,000
LSL		0.9	0.10	1,400	1,300,000
LVL (1.9)		0.9	0.10	2,510	1,900,000
PSL		0.9	0.10	2,500	2,000,000
LVL (2.0)		0.9	0.10	2,510	2,000,000

Effect Length strong dir 'l_1' (ft)	Effect Length weak dir 'l_2' (ft)	Grade	Size	C_m	C_D	C_F	l_1/d	l_2/b	l/d control	K_f	K_{cE}	F_{cE} (psi)	F_c* (psi)	c	C_P	Column Area 'A' (in^2)	F_c' (psi)	Max allowable load 'P' (lb)	notes
10	2	DFLSTUD	(2)2X4	1.00	1.00	1.15	34.29	8.00	34.29	1	0.3	358	949	0.8	0.34	10.5	323.99	3,402	
10	2	DFLSTUD	(3)2X4	1.00	1.00	1.15	34.29	5.33	34.29	1	0.3	358	949	0.8	0.34	15.75	323.99	5,103	
10	2	DFLSTUD	(4)2X4	1.00	1.00	1.15	34.29	4.00	34.29	1	0.3	358	949	0.8	0.34	21	323.99	6,804	
10	2	DFLSTUD	(5)2X4	1.00	1.00	1.15	34.29	3.20	34.29	1	0.3	358	949	0.8	0.34	26.25	323.99	8,505	
10	2	DFLSTUD	(2)2X6	1.00	1.00	1.10	21.82	8.00	21.82	1	0.3	883	908	0.8	0.68	16.5	618.42	10,204	
10	2	DFLSTUD	(3)2X6	1.00	1.00	1.10	21.82	5.33	21.82	1	0.3	883	908	0.8	0.68	24.75	618.42	15,306	
10	2	DFLSTUD	(4)2X6	1.00	1.00	1.10	21.82	4.00	21.82	1	0.3	883	908	0.8	0.68	33	618.42	20,408	
10	2	DFLSTUD	(5)2X6	1.00	1.00	1.10	21.82	3.20	21.82	1	0.3	883	908	0.8	0.68	41.25	618.42	25,510	
10	10	DFL#2	4X4	1.00	1.00	1.15	34.29	34.29	34.29	1	0.3	409	1495	0.8	0.26	12.25	382.39	4,684	
10	10	DFL#2	4X6	1.00	1.00	1.10	21.82	34.29	34.29	1	0.3	409	1430	0.8	0.27	19.25	381	7,334	
10	10	DFL#2	4X8	1.00	1.00	1.05	16.55	34.29	34.29	1	0.3	409	1365	0.8	0.28	25.375	379.45	9,629	
10	10	DFL#2	4X10	1.00	1.00	1.00	12.97	34.29	34.29	1	0.3	409	1300	0.8	0.29	32.375	377.73	12,229	
10	10	DFL#2	4X12	1.00	1.00	1.00	10.67	34.29	34.29	1	0.3	409	1300	0.8	0.29	39.375	377.73	14,873	
10	10	DF1 (5x)	6X4	1.00	1.00	1.00	34.29	21.82	34.29	1	0.3	434	1000	0.8	0.39	19.25	385.76	7,426	
10	10	DF1 (5x)	6X6	1.00	1.00	1.00	21.82	21.82	21.82	1	0.3	1072	1000	0.8	0.71	30.25	714.54	21,615	
10	10	DF1 (5x)	6X8	1.00	1.00	1.00	16.00	21.82	21.82	1	0.3	1072	1000	0.8	0.71	41.25	714.54	29,475	
10	10	DF1 (5x)	6X10	1.00	1.00	1.00	12.63	21.82	21.82	1	0.3	1072	1000	0.8	0.71	52.25	714.54	37,335	
10	10	DF1 (5x)	6X12	1.00	1.00	1.00	10.43	21.82	21.82	1	0.3	1072	1000	0.8	0.71	63.25	714.54	45,194	

PROJECT: Ridge Nest 14 **JOB NO.:** U2784-001-181 **SUBJECT:** STUDS & OTHER MEMBERS

DESIGN LOADS (psf)

	Dead	Live	Snow
Roof	43	20	185
Floor	28	40	
Exterior Wall	10		
Interior Wall	8		

LOADING PARAMETERS	Label:	Typical Ext.
Wind/Wall Tributary (ft)		1.33
Bending Axis		Strong
Roof Tributary 1 (ft)		2
Roof Tributary 2 (ft)		1.33
Floor Tributary 1 (ft)		
Floor Tributary 2 (ft)		1.33
Additional Dead Load (lbs)		
Additional Floor Live Load (lbs)		
Additional Roof Live Load (lbs)		
Additional Snow Load (lbs)		
Location for Wind Loading		C&C Zone 5
Mean Roof Height (ft)		20
Axial Loads (lbs):		
Dead		189
Floor Live		0
Roof Live		53
Snow		492
Bending Load (plf):		
Wind		51.0
MEMBER PROPERTIES		
Strong-Axis Unbraced Length, l_1 (ft)		11.25
Weak-Axis Unbraced Length, l_2 (ft)		1
Compression Edge Unbraced Length, l_u (ft)		1
Grade		DFLSTUD
Size		2x6
Quantity of Members		1
SPECIAL CONDITIONS		
Moisture Category		Normal
Temperature Category		≤100°
Incising?		No
Repetitive Member Category		Rep. (Special)
Finish Type		Brittle
SECTION PROPERTIES		
Width, b (in)		1.5
Depth, d (in)		5.5
Moment of Inertia, I (in^4)		20.796875
Section Modulus, S (in^3)		7.5625
DESIGN VALUES		
F_{bx} (psi)		675
F_{by} (psi)		675
F_c (psi)		825
E_{xx} (psi)		1400000
E_{yy} (psi)		1400000
E_{minxx} (psi)		510000
E_{minyy} (psi)		510000
RESULTS		
D+L		4%
D+Lr		5%
D+S		15%
D+0.75L+0.75Lr		5%
D+0.75L+0.75S		12%
D+0.6W		55%
D+0.75L+0.42W+0.75Lr		39%
D+0.75L+0.42W+0.75S		42%
Deflection Limit (L/)		240
Deflection (L/)		688
Column Slenderness, l_e/d		24.5
Beam Slenderness, R_B		7.8
Unity Check		**55%**

PROJECT: Ridge Nest 14 **JOB NO.:** U2784-001-181 **SUBJECT:** FOOTINGS AND FOUNDATIONS

FOUNDATION WALLS

$$Mu = 1.7M_{max}$$

$$a = \frac{A_s F_y}{.85 f'_c} = 2.3529 A_s$$

$$\Phi M_n = \Phi A_s f_y \left[d - \frac{a}{2} \right]$$

EFP		35		psf
f'c		2500		psi
f_y		60000		psi

Note: bars are assumed to be located in center of wall.

VERTICAL REINFORCMENT

Wall Height (ft)	Backfill Height 'H' (ft)	Top React 'w' (plf)	M_{max} (ft lb)	M_u (in k)	Bar Size	Spacing (in)	Wall "t" (in)	d (in)	A_s (in^2/ft)	a (in)	ΦM_n (in k)
8	7	250.1	880.4	18.0	4	24	8	4	0.10	0.23	20.6
9	8	331.9	1295.3	26.4	4	18	8	4	0.13	0.31	27.2
10	7	200.1	1051.3	21.4	4	12	8	4	0.20	0.46	40.0
11	10	530.3	2476.4	50.5	5	12	8	4	0.31	0.72	60.3
12	11	647.0	3269.8	66.7	5	9	8	4	0.41	0.96	77.7

FOOTINGS

Assumed Soil Bearing Pressure

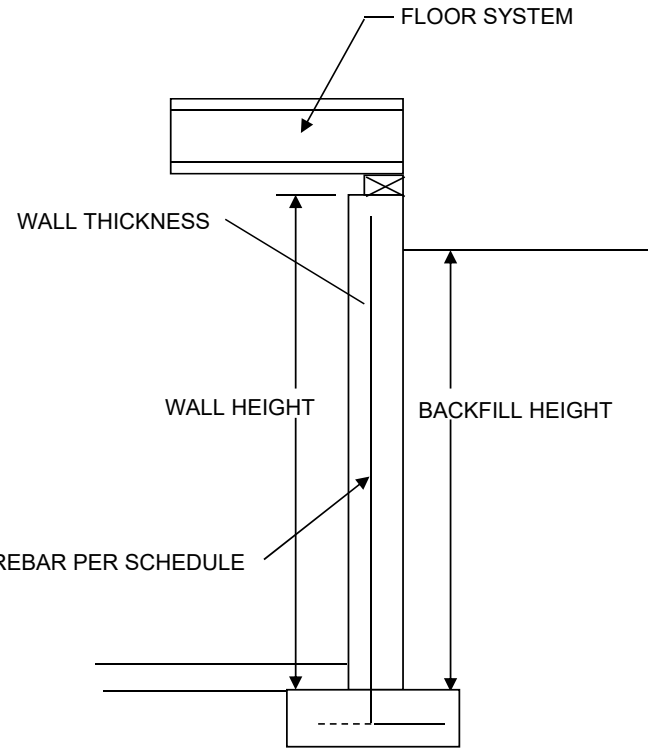
q= 1500 psf

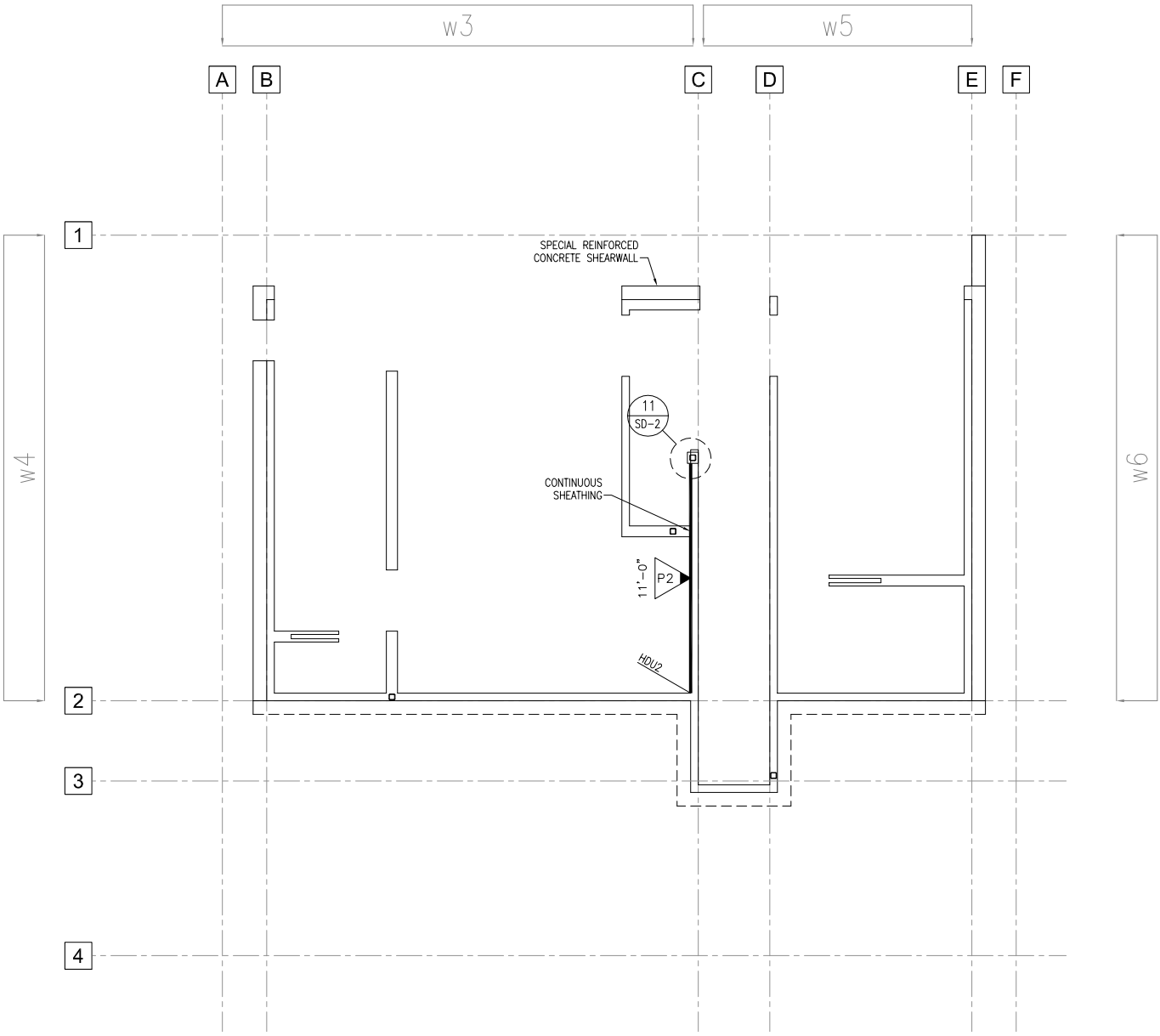
Continuous Footings:

Title	Width (in)	Depth (in)	Loads (plf)	#4 Bars
CF1.5	18	10	2250	2
CF1.8	20	10	2500	2
CF2.0	24	12	3000	3
CF2.5	30	12	3750	4
CF3.0	36	12	4500	4
CF3.5	42	12	5250	5
CF4.0	48	12	6000	6
CF4.5	54	12	6750	6
CF5.0	60	12	7500	7

Spread Footings

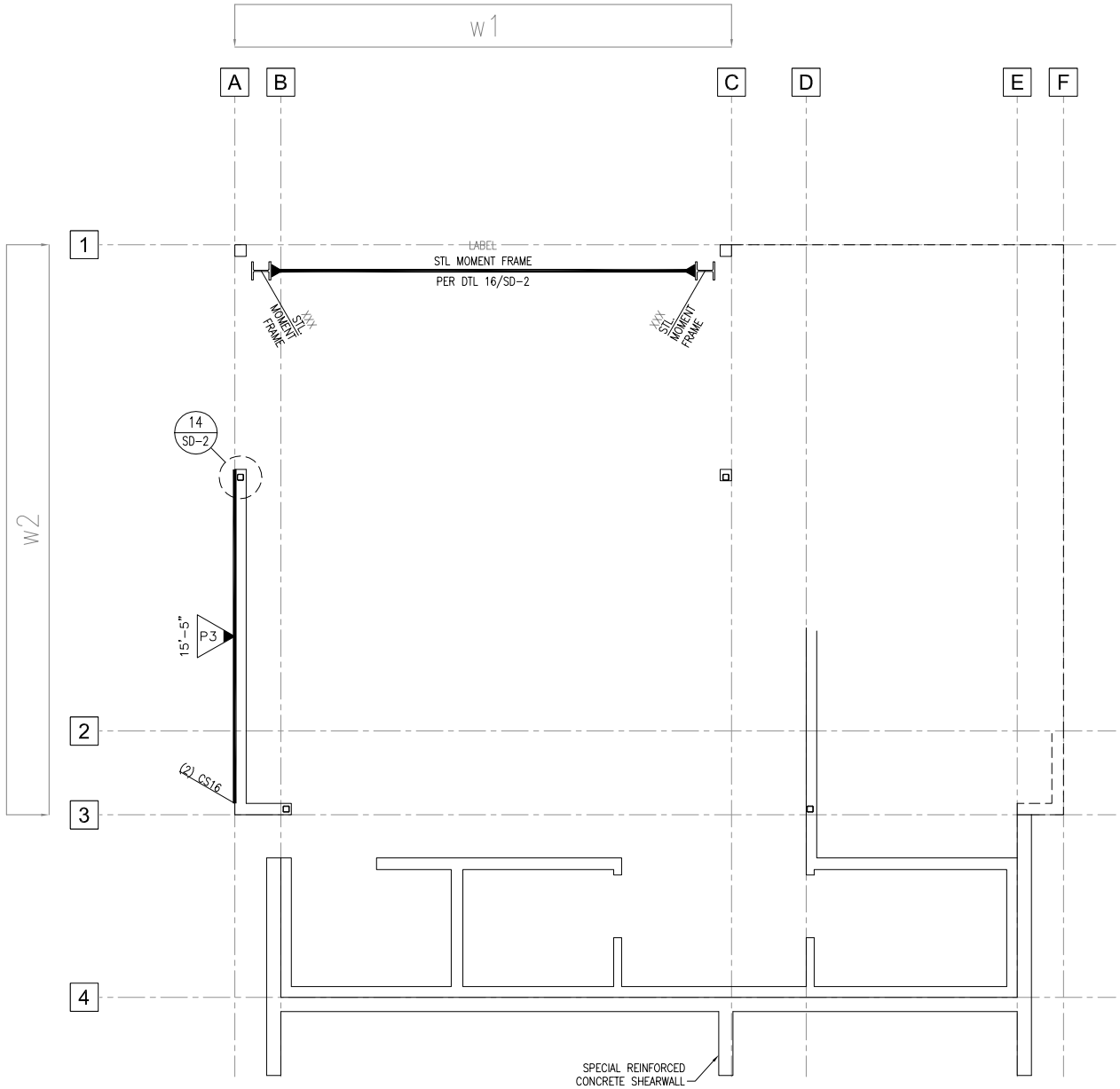
Title	Width (in)	Depth (in)	Loads (lb)	#4 Bars
F1.5	18	12	3375	2
F2.0	24	12	6000	3
F2.5	30	12	9375	4
F3.0	36	12	13500	4
F3.5	42	12	18375	5
F4.0	48	12	24000	6
F4.5	54	12	30375	6
F5.0	60	12	37500	7
F5.5	66	12	45375	8
F6.0	72	12	54000	8
F6.5	78	12	63375	9
F7.0	84	12	73500	10





LOWER LEVEL SHEAR WALL PLAN

N.T.S.



UPPER LEVEL SHEAR WALL PLAN

N.T.S.

PROJECT: Ridge Nest 14 **JOB NO.:** U2784-001-181 **SUBJECT:** LATERAL LOADS

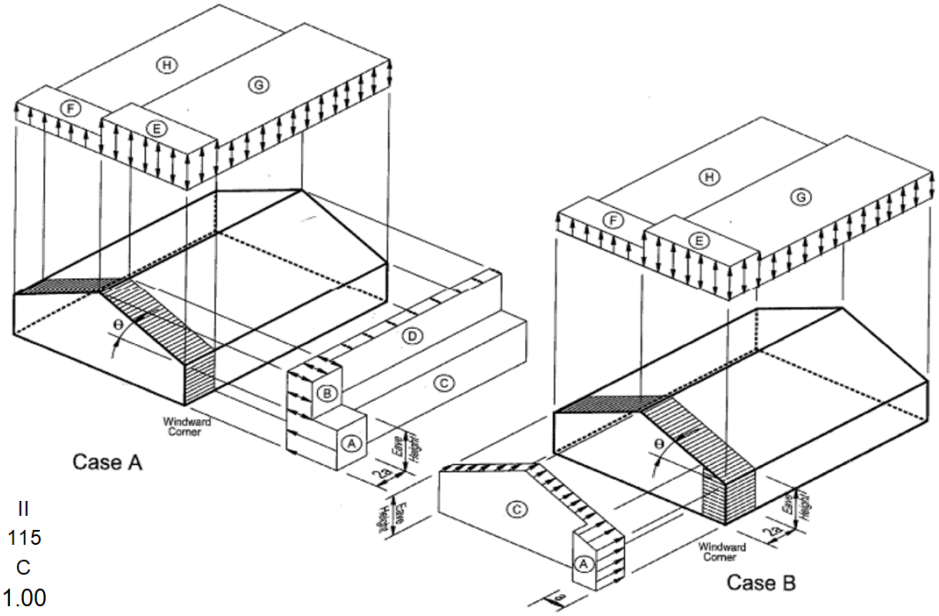
DESIGN OF ENCLOSED SIMPLE DIAPHRAGM LOW-RISE BUILDINGS FOR LATERAL LOADS

Seismic Parameters (ASCE 7-10 Chapters 11, 12, & 22)

Site Class:	D	S. 11.4.2	N =	2	S. 12.8.2.1	Determination of SDC:		
R =	6.5	T. 12.2-1	C_t =	0.02	T. 12.8-2	Per Table 11.6-1:	D	
S_s =	0.811	F. 22-1	h_n (ft) =	25	S. 12.8.2.1	Per Table 11.6-2:	D	
S_1 =	0.269	F. 22-2	x =	0.75	T. 12.8-2	SDC:	D	S. 11.6
F_a =	1.18	T. 11.4-1	T_a =	0.22	E. 12.8-7	I_E =	1.00	T. 1.5-2
F_v =	1.86	T. 11.4-2	T_0=	0.11	S. 11.4.5	C_{SMAX}=	0.230	E. 12.8-3,4
S_{MS} =	0.95	E. 11.4-1	T_S=	0.53	S. 11.4.5	C_S=	0.098	E. 12.8-2
S_{M1} =	0.50	E. 11.4-2	C_U=	1.40	T. 12.8-1	C_{SMIN}=	0.028	E. 12.8-5,6
S_{DS} =	0.636	E. 11.4-3	T_L=	8	F. 22-12	$C_{SCONTROL}$=	0.098	S. 12.8.1.1
S_{DI} =	0.334	E. 11.4-4	S_a=	0.636	S. 11.4.5	$C_{SCONTROL}$*.7=	0.068	S. 2.4.1
						Seismic Analysis Req'd?	Yes	IBC 1613.1
						Perform Seismic Analysis?	Yes	

Wind Parameters (ASCE 7-10 Chapter 28)

Wind areas labeled C and D are used for calculating line loads on the following sheet.



Risk Category:	II
Basic Wind Speed (mph):	115
Exposure Category:	C
K_{zt}:	1.00

MAIN WIND FORCE RESISTING SYSTEM - METHOD 2 FIGURE 28.6-1

SIMPLIFIED DESIGN WIND PRESSURE, P_{s30} (psf) *(Exposure B at h=30 feet)*

BASIC WIND SPEED (mph)	ROOF ANGLE (degrees)	LOAD CASE	Note: Wind load determined from pressures below will be multiplied by 0.6 (ASD load factor on wind loads) ZONES									
			HORIZONTAL PRESSURES				VERTICAL PRESSURES				OVERHANGS	
			A	B	C	D	E	F	G	H	E_{OH}	G_{OH}
115	0 to 5°	1	21.0	-10.9	13.9	-6.4	-25.2	-14.3	-17.5	-11.0	-35.3	-27.7
	10°	1	23.6	-9.8	15.7	-5.7	-25.2	-15.4	-17.5	-11.8	-35.3	-27.7
	15°	1	26.3	-8.7	17.5	-5.0	-25.2	-16.5	-17.5	-12.6	-35.3	-27.7
	20°	1	29.1	-7.7	19.3	-4.3	-25.2	-17.5	-17.5	-13.3	-35.3	-27.7
	25°	1	26.3	4.3	19.0	4.4	-11.7	-16.0	-8.4	-12.8	-21.8	-18.6
		2					-4.5	-8.6	-1.2	-5.6		
	30° to 45°	1	23.6	16.2	18.8	12.9	1.9	-14.3	0.7	-12.4	-8.3	-9.5
		2	23.6	16.2	18.8	12.9	9.1	-7.1	7.9	-5.0	-8.3	-9.5

PROJECT: Ridge Nest 14 **JOB NO.:** U2784-001-181 **SUBJECT:** LINE LOADS

Roof DL	43	psf
Seismic		
Snow	54	psf
Floor DL	28	psf
Wall DL	10	psf
Period, T	0.22	sec

Level Descriptions

Label	Height (ft)	$W_{control}$ (lb)	V_{norm} (lb)	V_{redist} (lb)	Redist Fact
Roof	25	100414	9819	12843	1.31
Upper Floor	10	64842	6341	3317	0.52
		0	0	0	1.00
		0	0	0	1.00
Total Weight (lb)		165256			
Total Base Shear (lb)		16160			

k= 1

$\Sigma w_i h_i^k$= 3158773

Estimated Total Weight in Longitudinal Direction 165256

Estimated Total Weight in Transverse Direction 165256

Percent difference in estimated weights 0.0%

Seismic Line Loads

Label	Width	Level	Direction	Number of times to include	Roof Trib (ft)	Floor Trib (ft)	Wall Trib Height (ft)	Ext Wall Length (ft)	Other Weight (lb/ft)	Total Weight (lb/ft)	Total Force (lb/ft)	Redist Factor	Revised Force (lb/ft)	Force Redist to 1
ω1	24.7	Roof	LONG	1	40		4.5	105		4072	398	1.31	521	NO
ω2	40	Roof	TRANS	1	24.7		4.5	105		2510	245	1.31	321	NO
ω3	23.3	Upper Floor	LONG	1		23.5	11	93.6		1100	108	0.52	56	NO
ω4	23.5	Upper Floor	TRANS	1		23.3	11	93.6		1091	107	0.52	56	NO
ω5	16	Upper Floor	LONG	1	23		4.5	78		2451	240	0.52	125	NO
ω6	23	Upper Floor	TRANS	1	16		4.5	78		1705	167	0.52	87	NO
ω7				1				0		0	0	1.00	0	NO
ω8				1				0		0	0	1.00	0	NO
ω9				1				0		0	0	1.00	0	NO
ω10				1				0		0	0	1.00	0	NO
ω11				1				0		0	0	1.00	0	NO
ω12				1				0		0	0	1.00	0	NO
ω13				1				0		0	0	1.00	0	NO
ω14				1				0		0	0	1.00	0	NO
ω15				1				0		0	0	1.00	0	NO
ω16				1				0		0	0	1.00	0	NO
ω17				1				0		0	0	1.00	0	NO
ω18				1				0		0	0	1.00	0	NO
ω19				1				0		0	0	1.00	0	NO
ω20				1				0		0	0	1.00	0	NO

Wind Line Loads *Surface type 'C' is flat wall and 'D' is sloped roof, 'CP1' and 'CP2' represent parapets on only one side and both sides of the structure, respectively*

Label	Roof Pitch /12	Mean Roof Height (ft)	Surface Type 1	Equiv Height Exposed (ft)	Surface Type 2	Equiv Height Exposed (ft)	Roof Angle (°)	Applied Interior Press 1 (psf)	Applied Interior Press 2 (psf)	Applied End Zone Press 1 (psf)	Applied End Zone Press 2 (psf)	Height & Exp Coeff, λ	Total Int Unif Load (plf)	Total End Zone Unif Load (plf)
ω1	3	25	C	8.5			14.0	23.16	0.00	34.83	0.00	1.35	196.83	296.04
ω2	3	25	C	5.3			14.0	23.16	0.00	34.83	0.00	1.35	121.57	182.85
ω3	3	25	C	15			14.0	23.16	0.00	34.83	0.00	1.35	347.35	522.43
ω4	3	25	C	10.5			14.0	23.16	0.00	34.83	0.00	1.35	242.41	364.59
ω5	3	15	C	6.75	D	2.5	14.0	20.76	0.00	31.22	0.00	1.21	140.10	210.71
ω6	3	15	C	10.5			14.0	20.76	0.00	31.22	0.00	1.21	217.93	327.77
ω7							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω8							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω9							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω10							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω11							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω12							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω13							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω14							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω15							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω16							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω17							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω18							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω19							0.0	0.00	0.00	0.00	0.00		0.00	0.00
ω20							0.0	0.00	0.00	0.00	0.00		0.00	0.00

PROJECT: PROJECT NAME **JOB NO.:** U27 **SUBJECT:** SHEAR WALL SHEET EXPLANATION

Global ρ value applied

Calculated ρ values and controlling locations

Aspect ratio limits

Loads applied along line, as calculated previously

Diaphragm shear calculations

PERF/ FTAO wall calcs where applicable

$\rho_{Applied}$ =	1	ρ_i	Loc
Min Diaphragm Width (ft) =	20	1.00	A-1ST
Allowable Seismic Aspect Ratio =	3.5	1.00	A-2ND
Allowable Wind Aspect Ratio =	3.5		
Comb. Overstrength Factors: (Ω-0.5)/1.2 =	2.08		

ρ calculated in accordance with ASCE 7-16 Section 12.3.4.1

Roof DL (psf) =	**44**	(includes seismic snow where occurs)
Floor DL (psf) =	**12**	

LINE: A 2ND STORY

Line Loads (plf)				Loads from above					Actual Applied Loads (plf unless noted otherwise)					Diaphragm Shear (plf)			Perf/FTAO Wall Info		
Load	Trib w (ft)	E.Z. Appl*	Span (ft)	Line	%	Location	Seis (lbs)	Wind (lbs)	ρ*Seis	Wind	E.Z. Wind	2a (ft)	E.Z. P (lb)	Drag (ft)	Seis (Load vs. Allow.)		(Not Applicable)		
ω1	10	Major	20		1.00	Offset			91.6	113.0	145.5	6	166	8	114	166			
		None			1.00	Offset								8					
					1.00	Above									Wind (Load vs. Allow.)				
						Total	916	**1296**							162	232			

Plate h (ft)= 10
Max opening height (ft)= 10
Apply 2w/l reduction? Yes
Opening elevation

100% Perforated SW? No
Force Transfer @ Openings? No

Include Ω for irregularities (above)?

Shear Length (ft)= 8
Wall DL (psf)= 10

Story V (K)= 1831
Max allow. drift (in) 3

Total seismic shear applied at level, for calculating ρ

Type of wind zone reaction, see below

Selection of wall type, 'No' for both means a segmented wall

Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Holdown Strap	HD Capacity (Stem 'w'-edge dist)	OTM (wind, seismic) (ft-lb)	.6*RM (ft-lb)	Aspect Ratio	2w/l Reduct.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Wall Cap. (plf)	Sill Plate Cap. (plf)	Tension (lb)	HD Capacity	Max Shear-Wall Δ (in)
3	2				P1	S1	CS16		4859	351	3.33	0.60	114	156	162	365	372	1502	1705	0.19
5	2				P1	S1	CS16		8098	976	2.00	1.00	114	260	162	365	372	1424	1705	0.18

Information on individual wall piers

Applied unit shears and unit shear capacities (reduced where appropriate)

Add'l Comments: Max: 0.19

LINE: A 1ST STORY

Line Loads (plf)				Loads from above					Actual Applied Loads (plf unless noted				~~m Shear (plf)~~				Perf/FTAO Wall Info		Rdl (ft)	
Load	Trib w (ft)	E.Z. Appl*	Span (ft)	Line	%	Location	Seis (lbs)	Wind (lbs)	ρ*Seis	Wind	E.Z. Wind	2a (ft)			~~is (Load vs. Allow.)~~		Ltotal (ft)	12	Fdl (ft)	5
ω3	10	Major	20		1.00	Offset			99.9	100.9	152.5	6				198			DL (plf)	160
		None			1.00	Offset											Wall type	P2	Opening (ft)	4
				A-2ND	1.00	Above	916	1296							oad vs. Allow.		HD	STHD10	8"-Corner	
						Total	1915	**2305**							126	276	T (lb)	1345	HD cap	2940
																	Seis (plf)	367	Cap (plf)	380
																	Wind (plf)	442	Cap (plf)	520
																	Strap (lb)	884		

Plate h (ft)= 10
Max opening height (ft)= 4
Apply 2w/l reduction? Yes
Opening elevation 2

50% Perforated SW? No
Force Transfer @ Openings? Yes

Include Ω for irregularities (above)?

Shear Length (ft)= 8
Wall DL (psf)= 10

Story V (K)= 383
Max allow. drift (in) 3

Perforated or FTAO calculations

Co factor when applicable

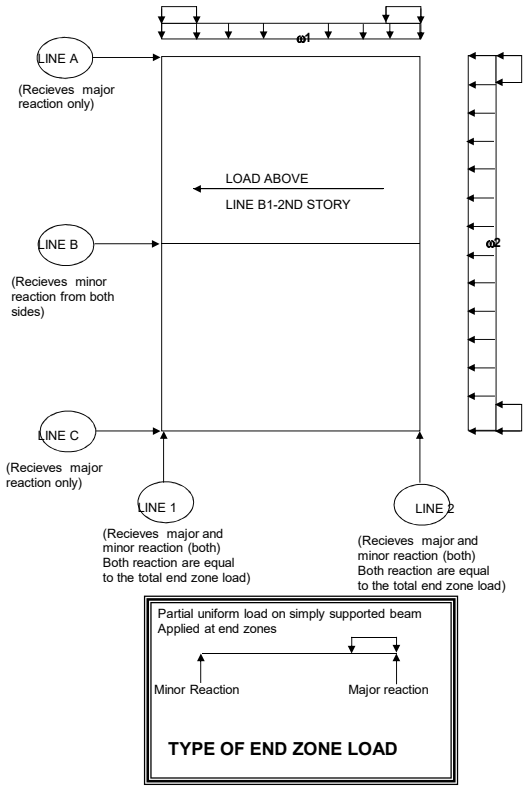
Hold down information for global wall overturning

Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Strap	HD Capacity (Stem 'w'-edge dist)	OTM (wind, seismic) (ft-lb)	.6*RM (ft-lb)	Aspect Ratio	2w/l Reduct.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Wall Cap. (plf)	Sill Plate Cap. (plf)	Tens (lb)	
3		PERF/FTAO SHEAR-WALL CALCULATIONS APPLY - SEE ABOVE									1.33	1.00							
5											0.80	1.00							

Required only for FTAO method

Maximum unit shear and strap forces calculated by Diekmann method for FTAO walls

Add'l Comments: Max: 0.00



PROJECT: Ridge Nest 14 **JOB NO.:** U2784-001-181 **SUBJECT:** SHEAR WALLS

$\rho_{Applied}$ =	1
Min Diaphragm Width (ft) =	16
Allowable Seismic Aspect Ratio =	3.5
Allowable Wind Aspect Ratio =	3.5
Comb. Overstrength Factors: (Ω-0.5)/1.2 =	2.08

ρ_i	Loc
1.00	1.2-1ST
1.00	1-2ND

Roof DL (psf) = 97 (includes seismic snow where occurs)
Floor DL (psf) = 28

ρ calculated in accordance with ASCE7-10 Section 12.3.4.1
No Exception in ASCE 7 12.3.4.2b met?

LINE: 1 2ND STORY

Line Loads (plf)				Loads from above					Actual Applied Loads (plf unless noted otherwise)					Diaphragm Shear (plf)			Perf/FTAO Wall Info			
Load	Trib w (ft)	E.Z. Appl*	Span (ft)	Line	%	Location	Seis (lbs)	Wind (lbs)	ρ*Seis	Wind	E.Z. Wind	2a (ft)	E.Z. P (lb)	Drag (ft)	Seis (Load vs. Allow.)		(Not Applicable)			
ω2	21.5	Major	43		1.00	Offset			321.1	72.9	109.7	8.6	285	23	300	294				
		None			1.00	Offset														
					1.00	Above									Wind (Load vs. Allow.)					
Plate h (ft)=						Total	5609	3088	Include Ω for irregularities (above)?				No		81	412				
Max opening height (ft)=																				
Apply aspect ratio reduction?				#DIV/0!	Perforated SW?		No		Shear Length (ft)=					Story V (K)=	12843					
Opening elevation				Force Transfer @ Openings?			No		Wall DL (psf)=		10			Max allow. drift (in)						

Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Holdown Strap	HD Capacity (Stem 'w'-edge dist)	OTM (**wind**, seismic) (ft-lb)	.6*RM (ft-lb)	Aspect Ratio	Aspect Ratio Reduc.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Wall Cap. (plf)	Sill Plate Cap. (plf)	Tension (lb)	HD Capacity	Max Shear-Wall δ (in)
SPECIAL MOMENT FRAME PER ATTACHED CALCULATIONS																				
Add'l Comments:																			Max:	

LINE: A 2ND STORY

Line Loads (plf)				Loads from above					Actual Applied Loads (plf unless noted otherwise)					Diaphragm Shear (plf)			Perf/FTAO Wall Info			
Load	Trib w (ft)	E.Z. Appl*	Span (ft)	Line	%	Location	Seis (lbs)	Wind (lbs)	ρ*Seis	Wind	E.Z. Wind	2a (ft)	E.Z. P (lb)	Drag (ft)	Seis (Load vs. Allow.)		(Not Applicable)			
ω1	12.33	Major	24.66		1.00	Offset			364.5	118.1	177.6	6	314	26	173	294				
		None			1.00	Offset								15.5						
					1.00	Above									Wind (Load vs. Allow.)					
Plate h (ft)=	10					Total	4495	1770	Include Ω for irregularities (above)?				No		68	412				
Max opening height (ft)=	10																			
Apply aspect ratio reduction?	Yes			100%	Perforated SW?		No		Shear Length (ft)=		15.5			Story V (K)=	12843					
Opening elevation				Force Transfer @ Openings?			No		Wall DL (psf)=		10			Max allow. drift (in)	3					

Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Holdown Strap	HD Capacity (Stem 'w'-edge dist)	OTM (**wind**, seismic) (ft-lb)	.6*RM (ft-lb)	Aspect Ratio	Aspect Ratio Reduc.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Wall Cap. (plf)	Sill Plate Cap. (plf)	Tension (lb)	HD Capacity	Max Shear-Wall δ (in)
15.5	2				P2		(2) CS16		44949	21193	0.65	1.00	290	380	114	520		1533	3410	0.24
Add'l Comments:																			Max:	0.24

LINE: C 2ND STORY

Line Loads (plf)				Loads from above					Actual Applied Loads (plf unless noted otherwise)					Diaphragm Shear (plf)			Perf/FTAO Wall Info			
Load	Trib w (ft)	E.Z. Appl*	Span (ft)	Line	%	Location	Seis (lbs)	Wind (lbs)	ρ*Seis	Wind	E.Z. Wind	2a (ft)	E.Z. P (lb)	Drag (ft)	Seis (Load vs. Allow.)		(Not Applicable)			
ω1	12.33	Minor	24.66		1.00	Offset			364.5	118.1	177.6	6	43	26	173	294				
		None			1.00	Offset														
					1.00	Above									Wind (Load vs. Allow.)					
Plate h (ft)=	9.5					Total	6421	1500	Include Ω for irregularities (above)?				No		58	412				
Max opening height (ft)=	9.5					8348 @R=5														
Apply aspect ratio reduction?	Yes			100%	Perforated SW?		No		Shear Length (ft)=					Story V (K)=	12843					
Opening elevation				Force Transfer @ Openings?			No		Wall DL (psf)=		10			Max allow. drift (in)	2.85					

Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Holdown Strap	HD Capacity (Stem 'w'-edge dist)	OTM (**wind**, seismic) (ft-lb)	.6*RM (ft-lb)	Aspect Ratio	Aspect Ratio Reduc.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Wall Cap. (plf)	Sill Plate Cap. (plf)	Tension (lb)	HD Capacity	Max Shear-Wall δ (in)
Drag beams and Special RC Shearwall see attached calcs														#VALUE!		#VALUE!				
Add'l Comments:																			Max:	

LINE: 1.2 1ST STORY

Line Loads (plf)				Loads from above					Actual Applied Loads (plf unless noted otherwise)					Diaphragm Shear (plf)			Perf/FTAO Wall Info			
Load	Trib w (ft)	E.Z. Appl*	Span (ft)	Line	%	Location	Seis (lbs)	Wind (lbs)	ρ*Seis	Wind	E.Z. Wind	2a (ft)	E.Z. P (lb)	Drag (ft)	Seis (Load vs. Allow.)		(Not Applicable)			
ω4	2.5	Major	5	1-2ND	1.00	Offset	6903	3088	55.8	145.4	218.8	6	176	36	244	294				
ω4	9.25	None	18.5		1.00	Offset			55.8	145.4	218.8	6		36	14					
					1.00	Above									Wind (Load vs. Allow.)					
Plate h (ft)=	10					Total	7558	4973	Include Ω for irregularities (above)?				No		101	412				
Max opening height (ft)=	10					9826 @R=5									37					
Apply aspect ratio reduction?	Yes			100%	Perforated SW?		No		Shear Length (ft)=					Story V (K)=	16160					
Opening elevation				Force Transfer @ Openings?			No		Wall DL (psf)=		10			Max allow. drift (in)	3					

Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Holdown Strap	HD Capacity (Stem 'w'-edge dist)	OTM (**wind**, seismic) (ft-lb)	.6*RM (ft-lb)	Aspect Ratio	Aspect Ratio Reduc.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Wall Cap. (plf)	Sill Plate Cap. (plf)	Tension (lb)	HD Capacity	Max Shear-Wall δ (in)
SPECIAL REINFORCED CONCRETE SHEARWALL, SEE CALCS																				
Add'l Comments:																			Max:	

PROJECT: Ridge Nest 14 **JOB NO.:** U2784-001-181 **SUBJECT:** SHEAR WALLS

$\rho_{Applied}$ =	1
Min Diaphragm Width (ft) =	16
Allowable Seismic Aspect Ratio =	3.5
Allowable Wind Aspect Ratio =	3.5
Comb. Overstrength Factors: (Ω-0.5)/1.2 =	2.08

ρ_i	Loc
1.00	1.2-1ST
1.00	1-2ND

Roof DL (psf) = 97 (includes seismic snow where occurs)
Floor DL (psf) = 28

ρ calculated in accordance with ASCE7-10 Section 12.3.4.1
No Exception in ASCE 7 12.3.4.2b met?

LINE: C 1ST STORY

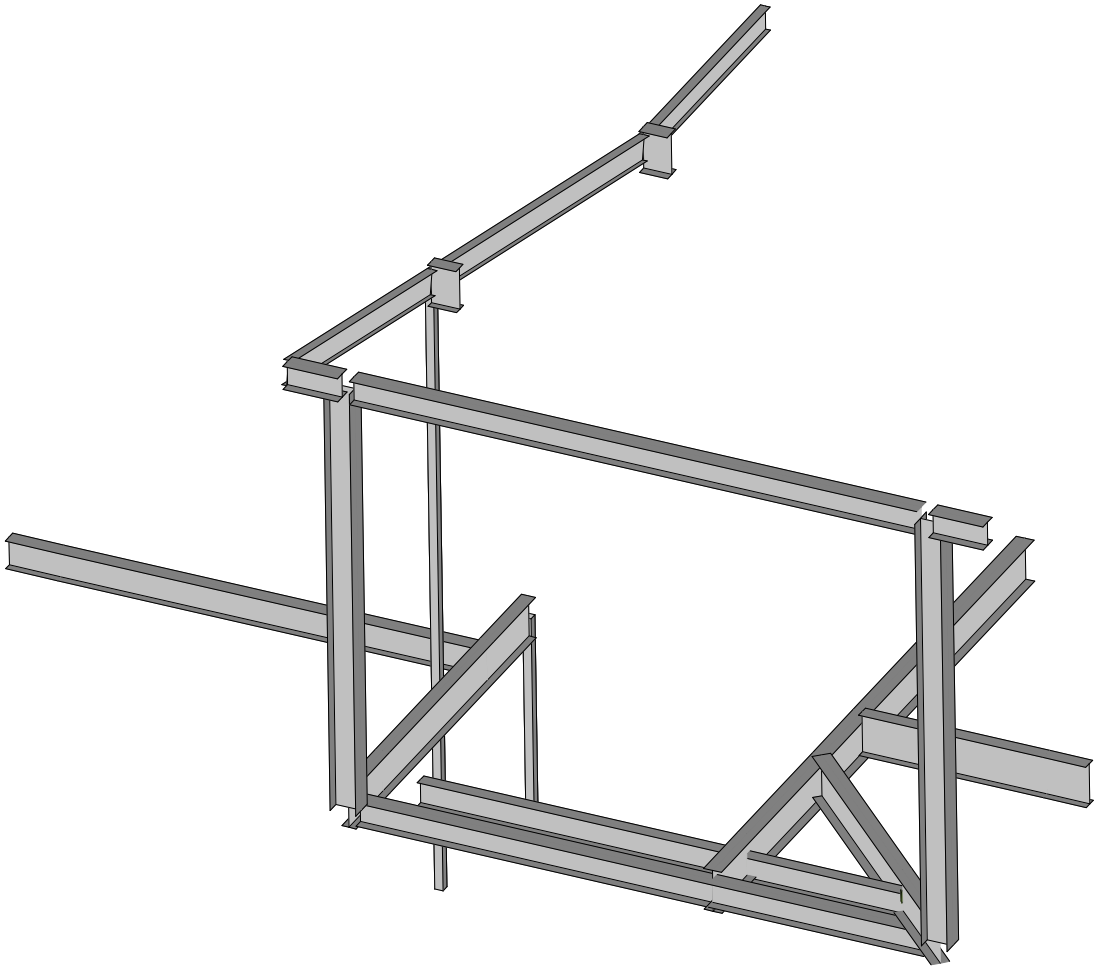
Line Loads (plf)				Loads from above					Actual Applied Loads (plf unless noted otherwise)					Diaphragm Shear (plf)			Perf/FTAO Wall Info			
Load	Trib w (ft)	E.Z. Appl*	Span (ft)	Line	%	Location	Seis (lbs)	Wind (lbs)	ρ*Seis	Wind	E.Z. Wind	2a (ft)	E.Z. P (lb)	Drag (ft)	Seis (Load vs. Allow.)		(Not Applicable)			
ω3	11.65	Minor	23.3		1.00	Offset			39.4	208.4	313.5	6	81	11.25	41	198				
ω5	8	Minor	16		1.00	Offset			87.8	84.1	126.4	6	48	11.25	62					
					1.00	Above									Wind (Load vs. Allow.)					
Plate h (ft)=		9				Total	1161	**3229**	Include Ω for irregularities (above)?				No		223	276				
Max opening height (ft)=		9													64					
Apply aspect ratio reduction?		Yes		100%	Perforated SW?		No		Shear Length (ft)=		11.25		Story V (K)=		16160					
Opening elevation				Force Transfer @ Openings?			No		Wall DL (psf)=		10		Max allow. drift (in)		2.7					

Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Holdown Strap	HD Capacity (Stem 'w'-edge dist)	OTM (**wind**, seismic) (ft-lb)	.6*RM (ft-lb)	Aspect Ratio	Aspect Ratio Reduc.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Wall Cap. (plf)	Sill Plate Cap. (plf)	Tension (lb)	HD Capacity	Max Shear-Wall δ (in)
11.25	3	1			P1	S1	HDU2		**29063**	9379	0.80	1.00	103	260	287	365	372	1750	3075	0.30
Add'l Comments:																			Max:	0.30

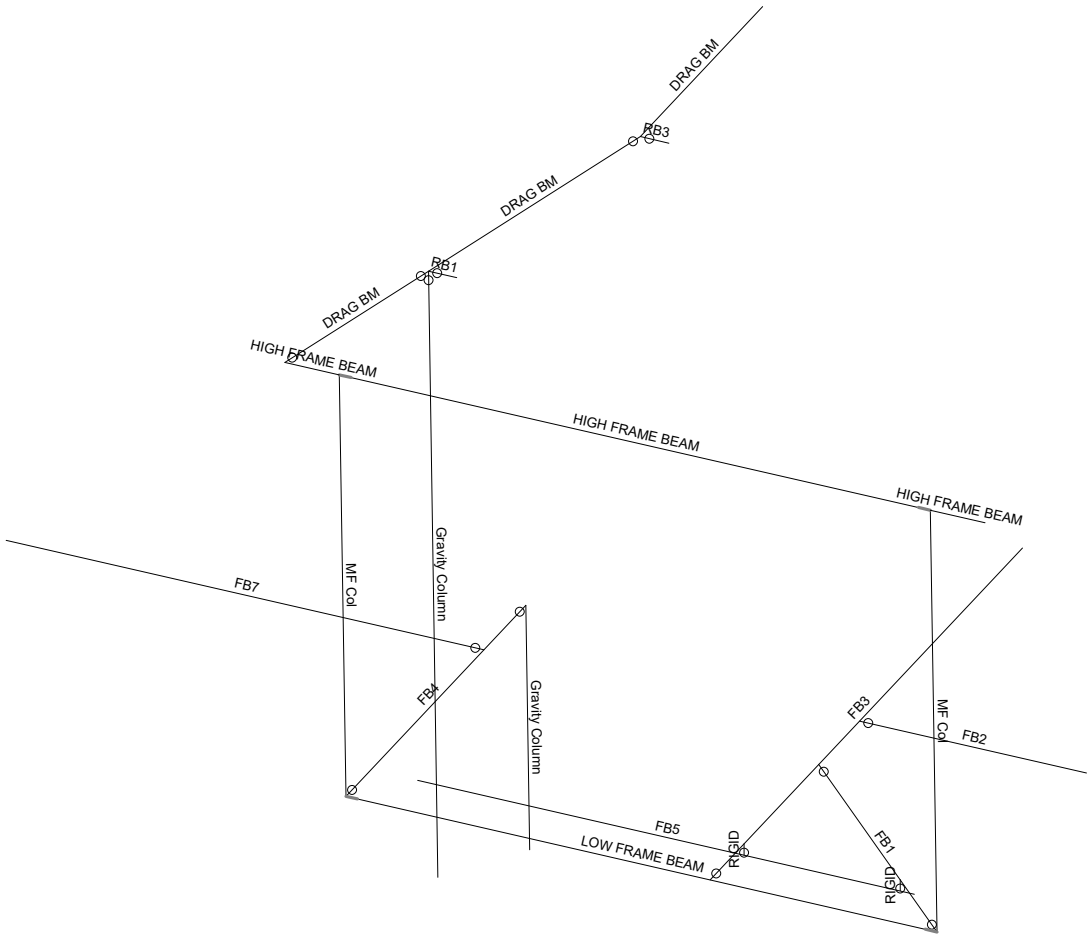
LINE: STORY

Line Loads (plf)				Loads from above					Actual Applied Loads (plf unless noted otherwise)					Diaphragm Shear (plf)			Perf/FTAO Wall Info			
Load	Trib w (ft)	E.Z. Appl*	Span (ft)	Line	%	Location	Seis (lbs)	Wind (lbs)	ρ*Seis	Wind	E.Z. Wind	2a (ft)	E.Z. P (lb)	Drag (ft)	Seis (Load vs. Allow.)		(Not Applicable)			
		None			1.00	Offset										#N/A				
		None			1.00	Offset														
					1.00	Above									Wind (Load vs. Allow.)					
Plate h (ft)=		10				Total			Include Ω for irregularities (above)?				No			#N/A				
Max opening height (ft)=		10																		
Apply aspect ratio reduction?		Yes		100%	Perforated SW?		No		Shear Length (ft)=				Story V (K)=							
Opening elevation				Force Transfer @ Openings?			No		Wall DL (psf)=		10		Max allow. drift (in)		3					

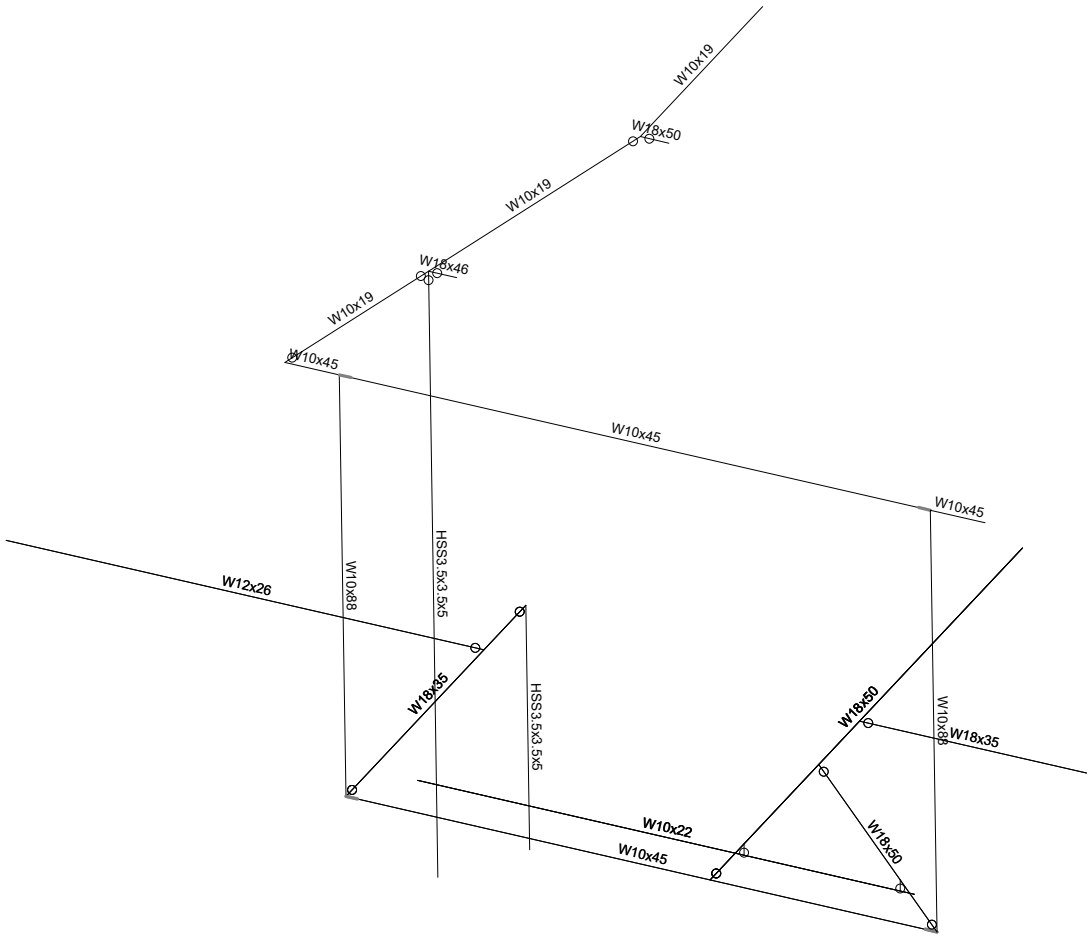
Shear-Wall Length (ft)	$Roof_{DL}$ 'w' (ft)	$Floor_{DL}$ 'w' (ft)	$Other_{DL}$ 'w' (plf)	Tension From Above (lb)	Wall Type	Sill Type	Holdown Strap	HD Capacity (Stem 'w'-edge dist)	OTM (**wind**, seismic) (ft-lb)	.6*RM (ft-lb)	Aspect Ratio	Aspect Ratio Reduc.	Seis. Shear (plf)	Seis. Wall Cap. (plf)	Wind Shear (plf)	Wind Wall Cap. (plf)	Sill Plate Cap. (plf)	Tension (lb)	HD Capacity	Max Shear-Wall δ (in)
														#VALUE!		#VALUE!				
Add'l Comments:																			Max:	



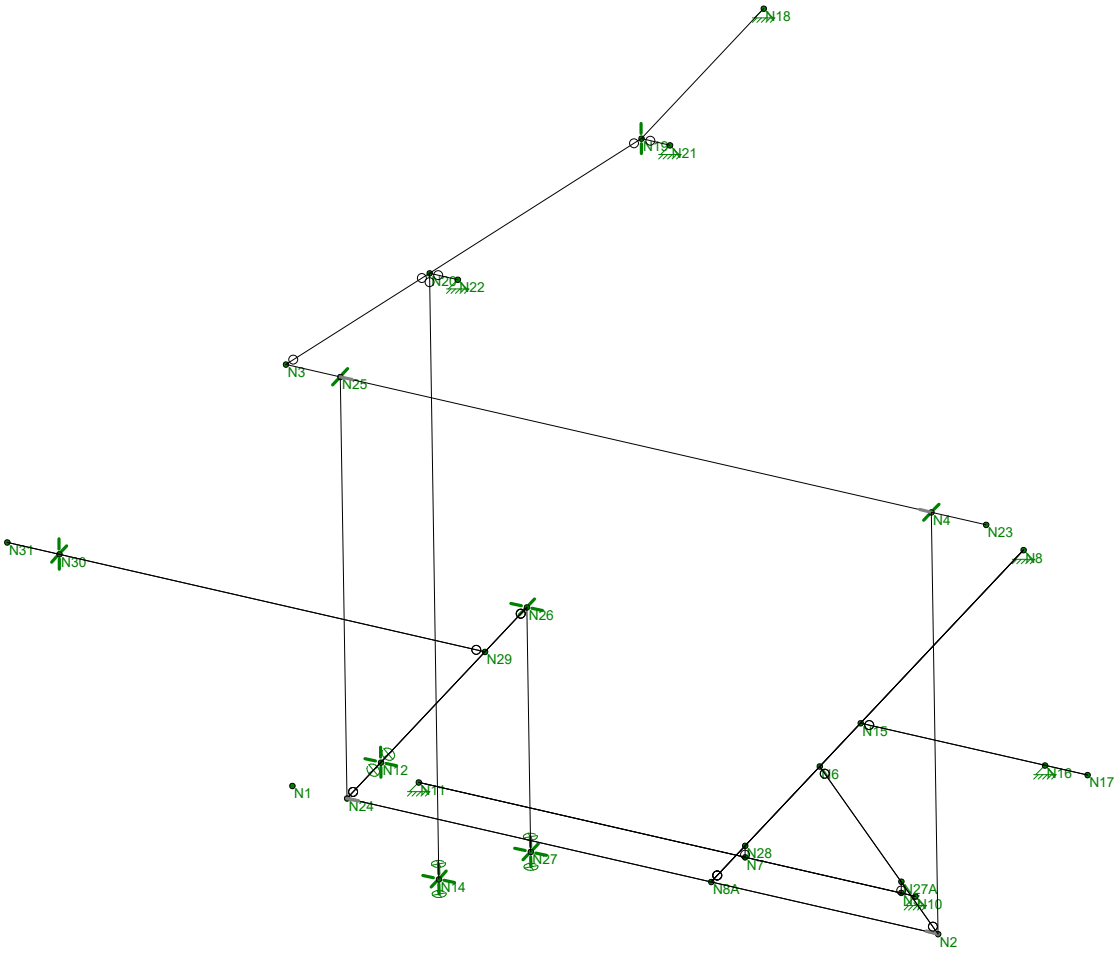
VSE	Summit Powder Mtn	SK - 1
JBA		July 2, 2018 at 9:52 AM
U2784-001-181		Moment Frame Special -- Relocate...



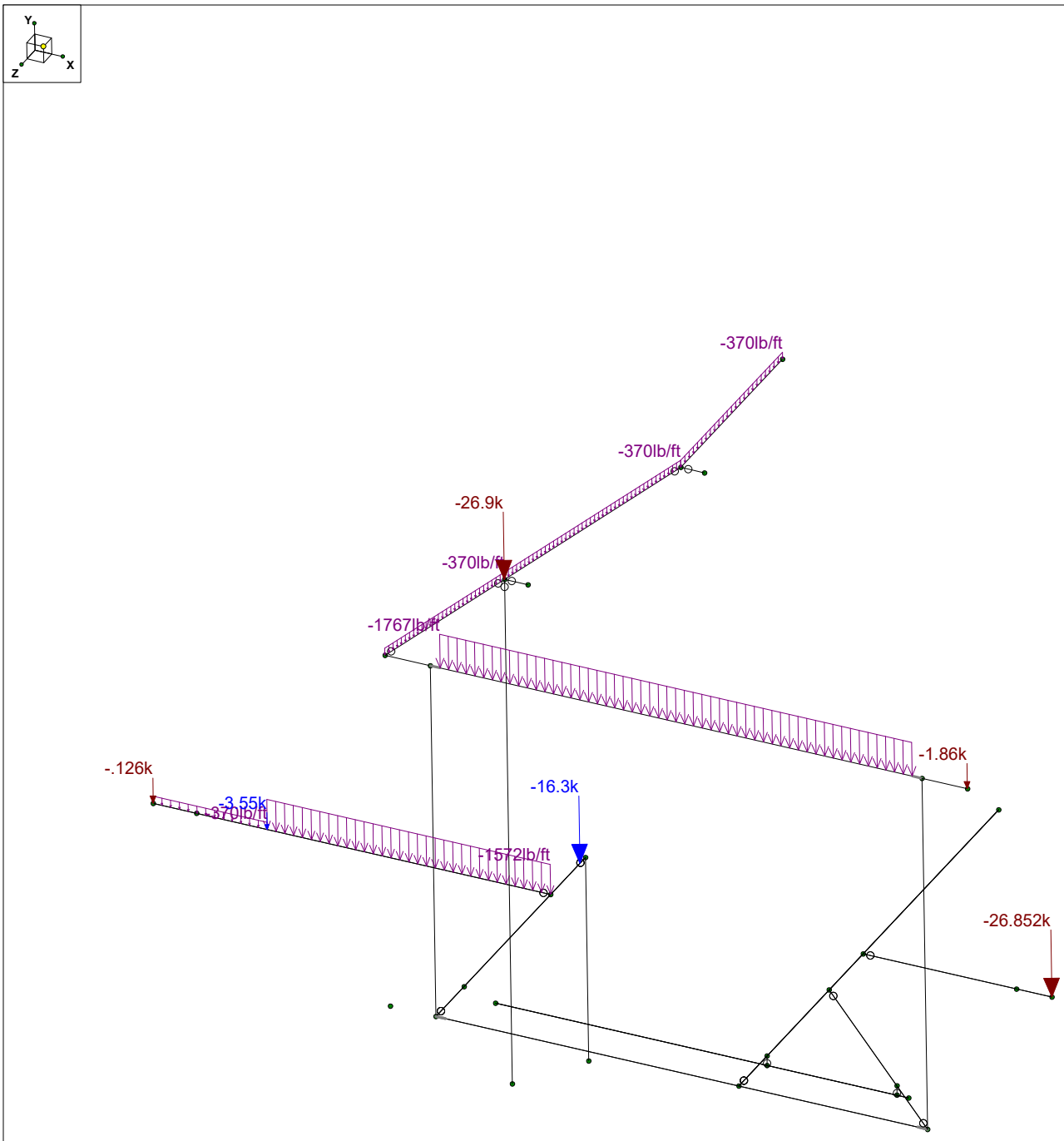
VSE	Summit Powder Mtn	SK - 2
JBA		July 2, 2018 at 9:52 AM
U2784-001-181		Moment Frame Special -- Relocate...



VSE	Summit Powder Mtn	SK - 3
JBA		July 2, 2018 at 9:53 AM
U2784-001-181		Moment Frame Special -- Relocate...

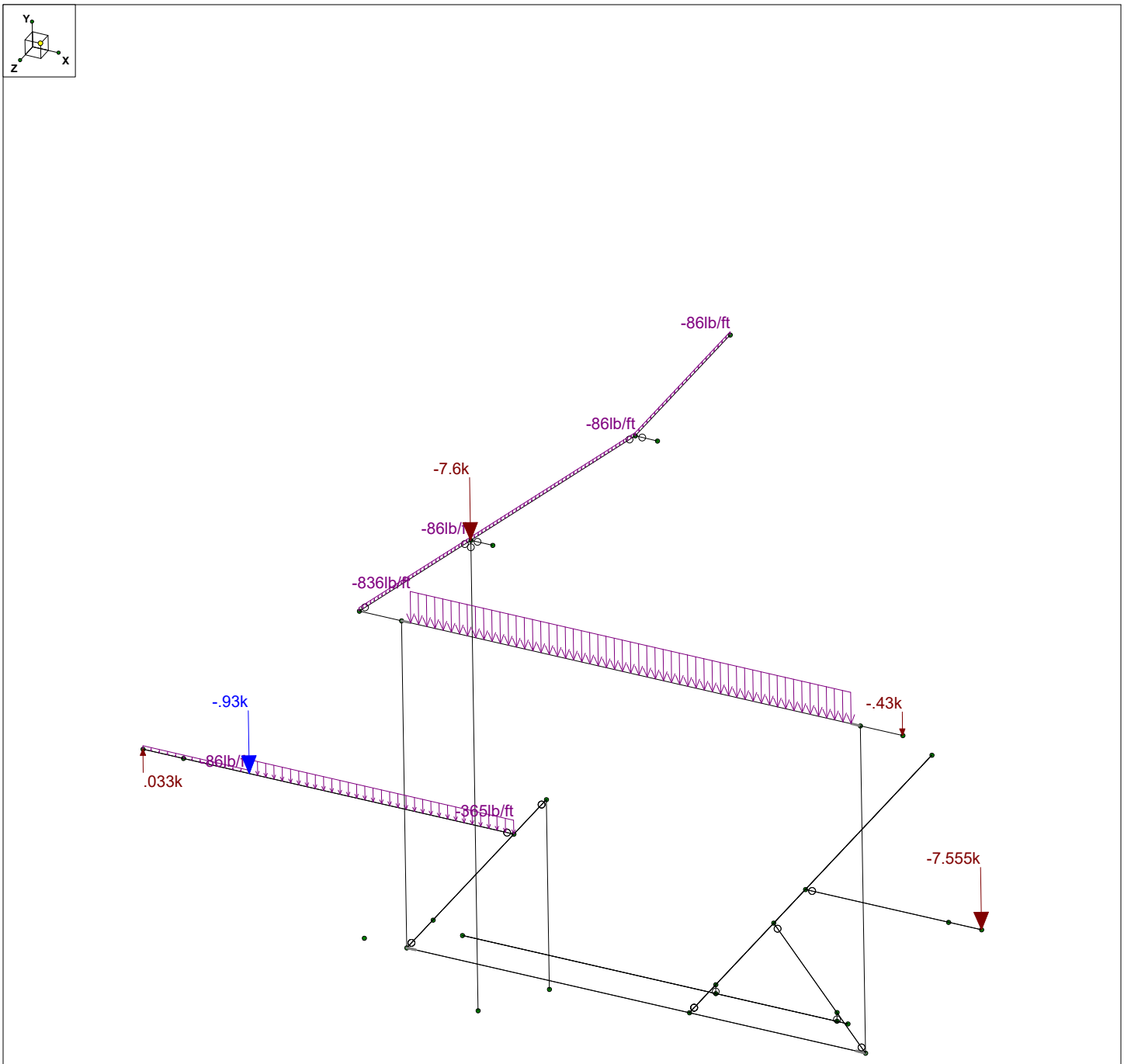


VSE	Summit Powder Mtn	SK - 4
JBA		July 2, 2018 at 9:53 AM
U2784-001-181		Moment Frame Special -- Relocate...



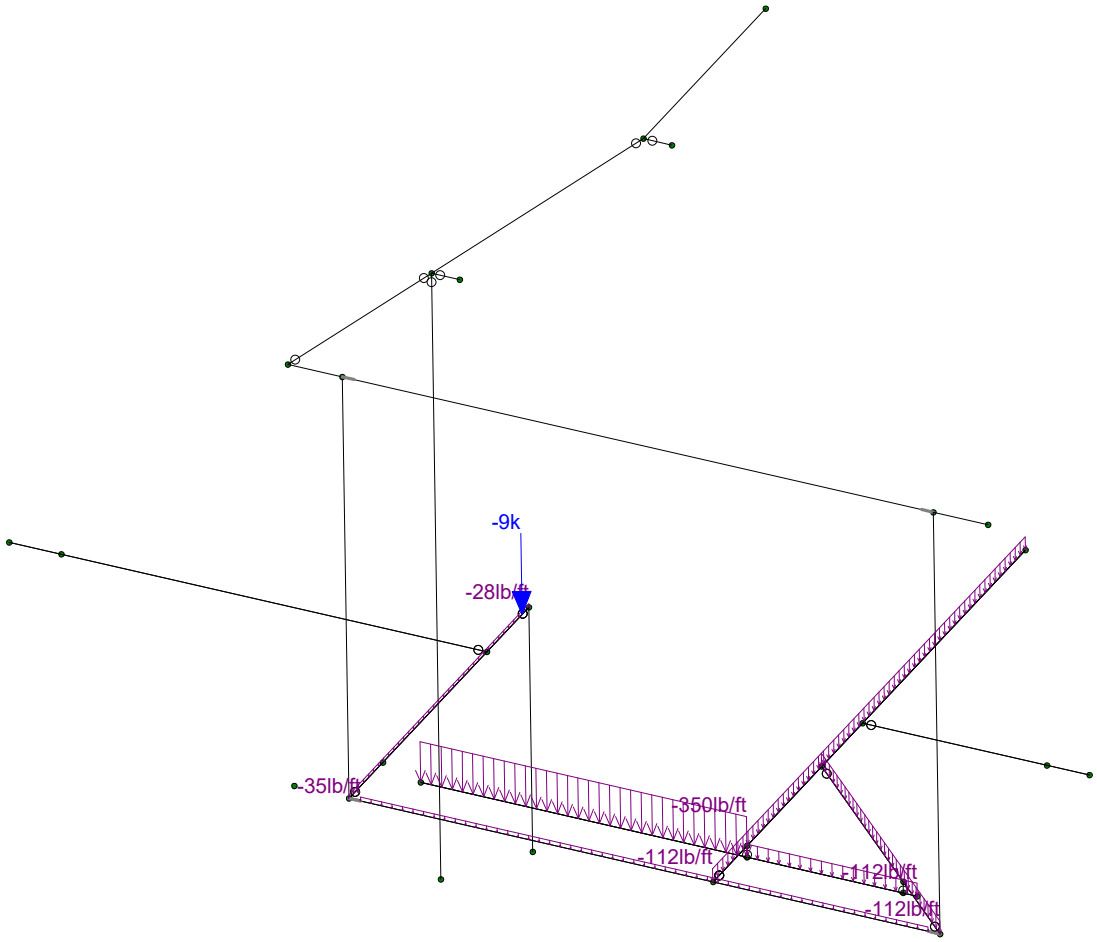
Loads: BLC 2, Snow

VSE	Summit Powder Mtn	SK - 5
JBA		July 2, 2018 at 9:54 AM
U2784-001-181		Moment Frame Special -- Relocate...



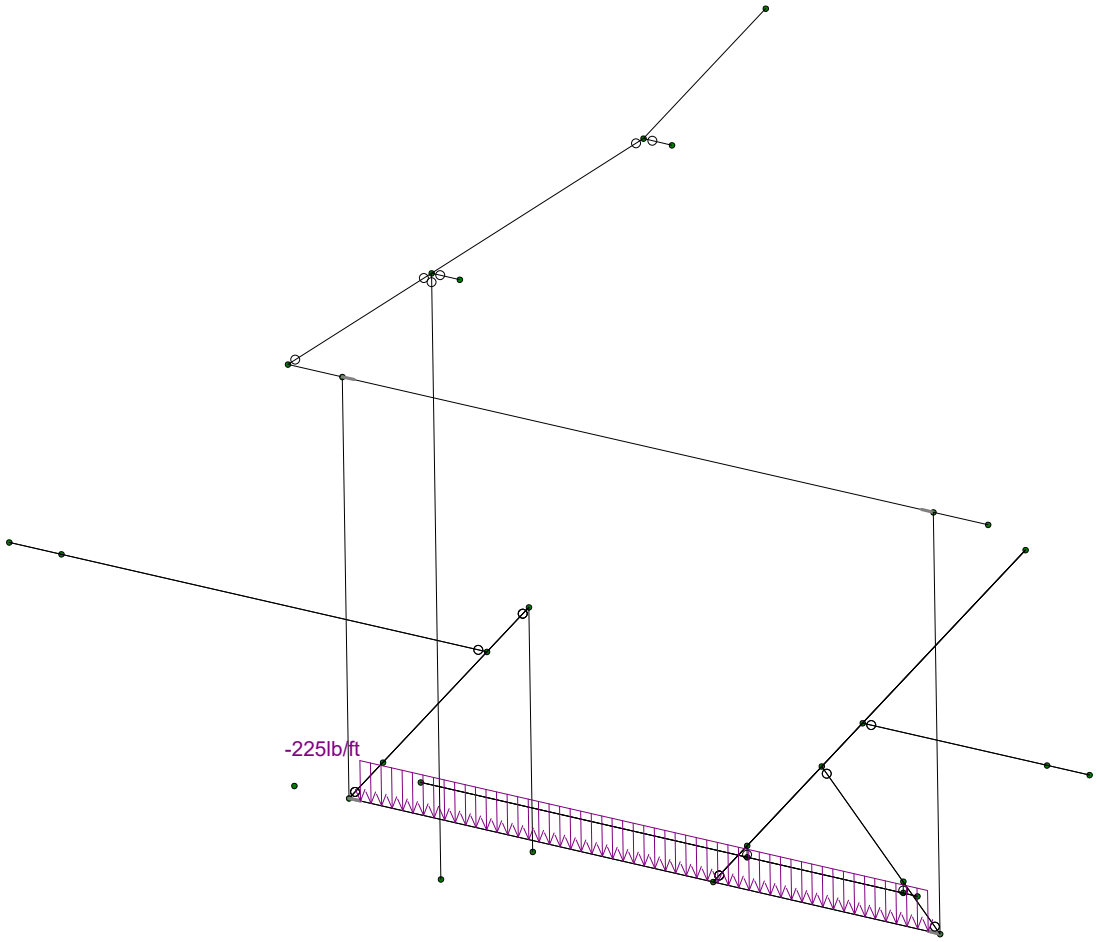
Loads: BLC 3, Roof Dead

VSE	Summit Powder Mtn	SK - 6
JBA		July 2, 2018 at 9:54 AM
U2784-001-181		Moment Frame Special -- Relocate...



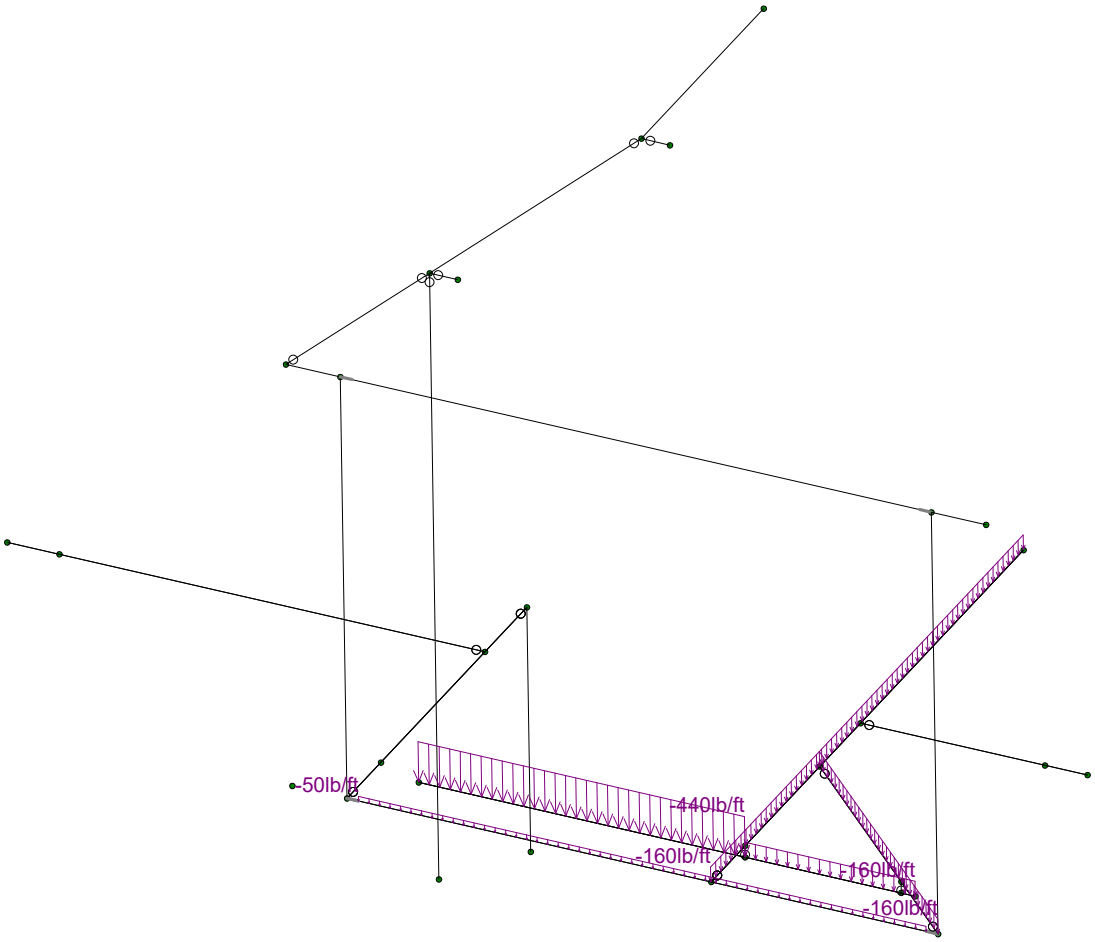
Loads: BLC 4, Floor Dead

VSE	Summit Powder Mtn	SK - 7
JBA		July 2, 2018 at 9:54 AM
U2784-001-181		Moment Frame Special -- Relocate...



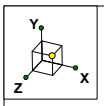
Loads: BLC 5, Wall Dead

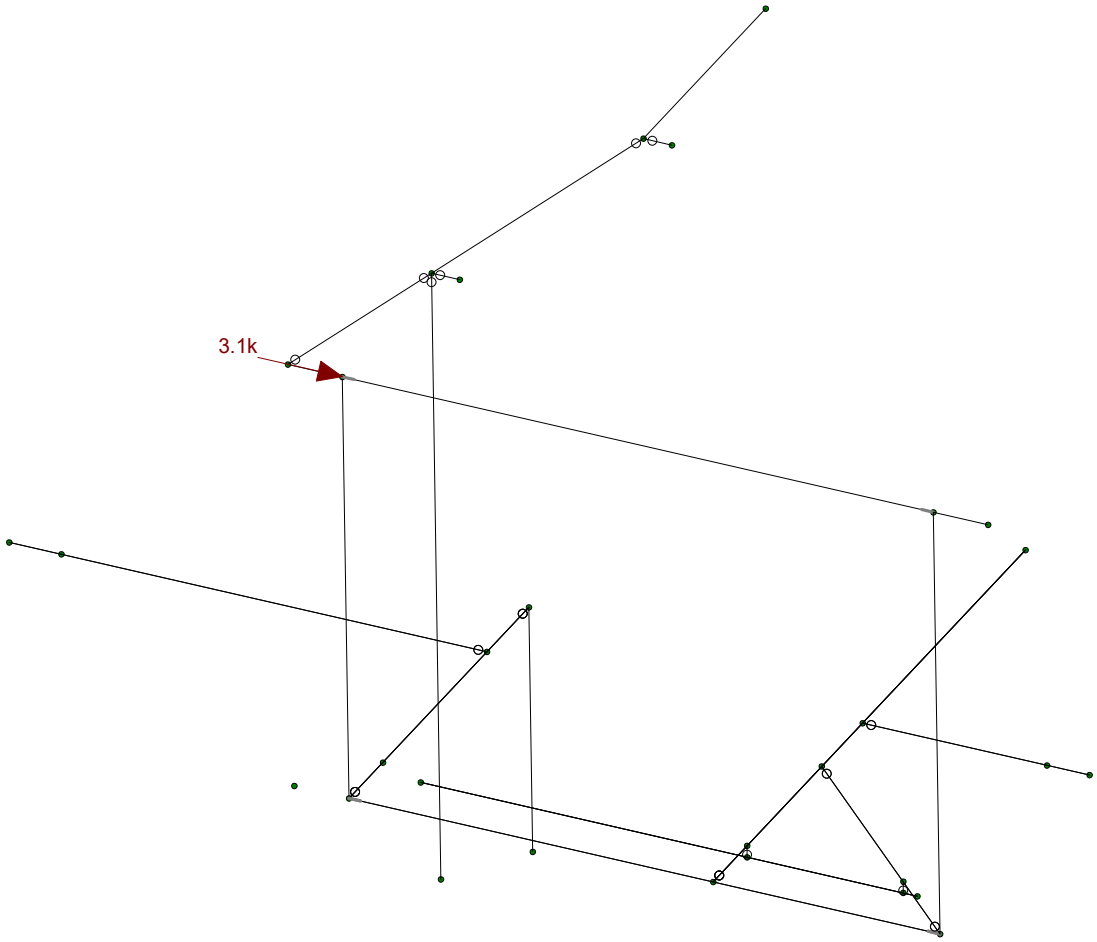
VSE	Summit Powder Mtn	SK - 8
JBA		July 2, 2018 at 9:54 AM
U2784-001-181		Moment Frame Special -- Relocate...



Loads: BLC 8, Live

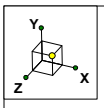
VSE	Summit Powder Mtn	SK - 9
JBA		July 2, 2018 at 9:55 AM
U2784-001-181		Moment Frame Special -- Relocate...

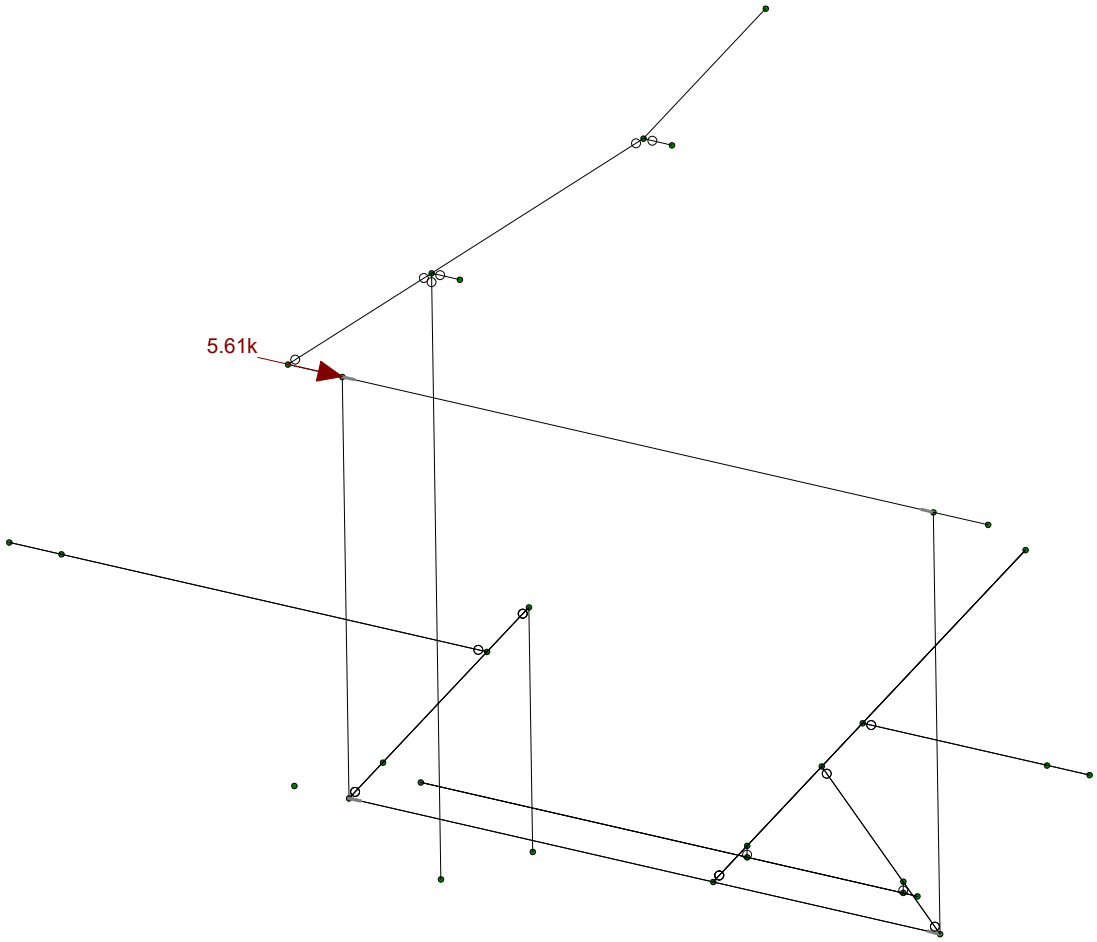




Loads: BLC 10, Wind X

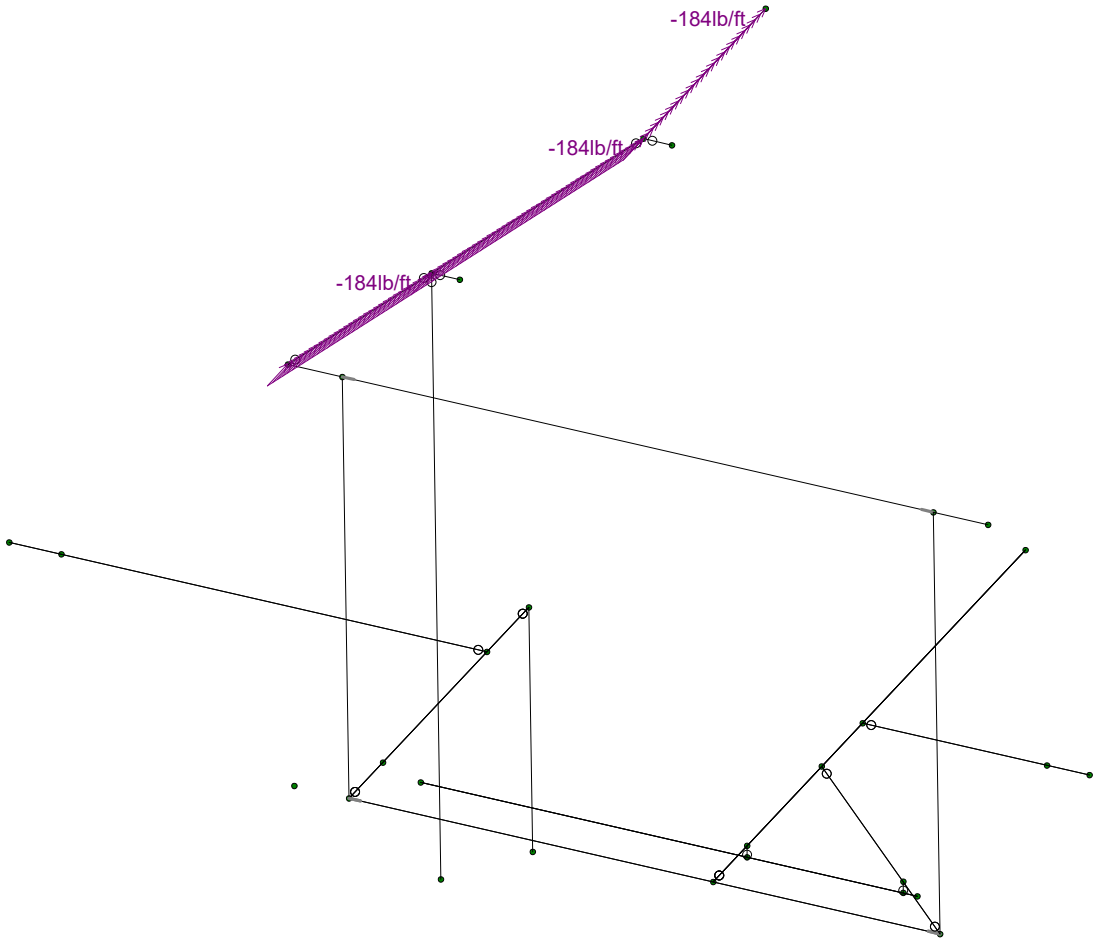
VSE	Summit Powder Mtn	SK - 10
JBA		July 2, 2018 at 9:55 AM
U2784-001-181		Moment Frame Special -- Relocate...





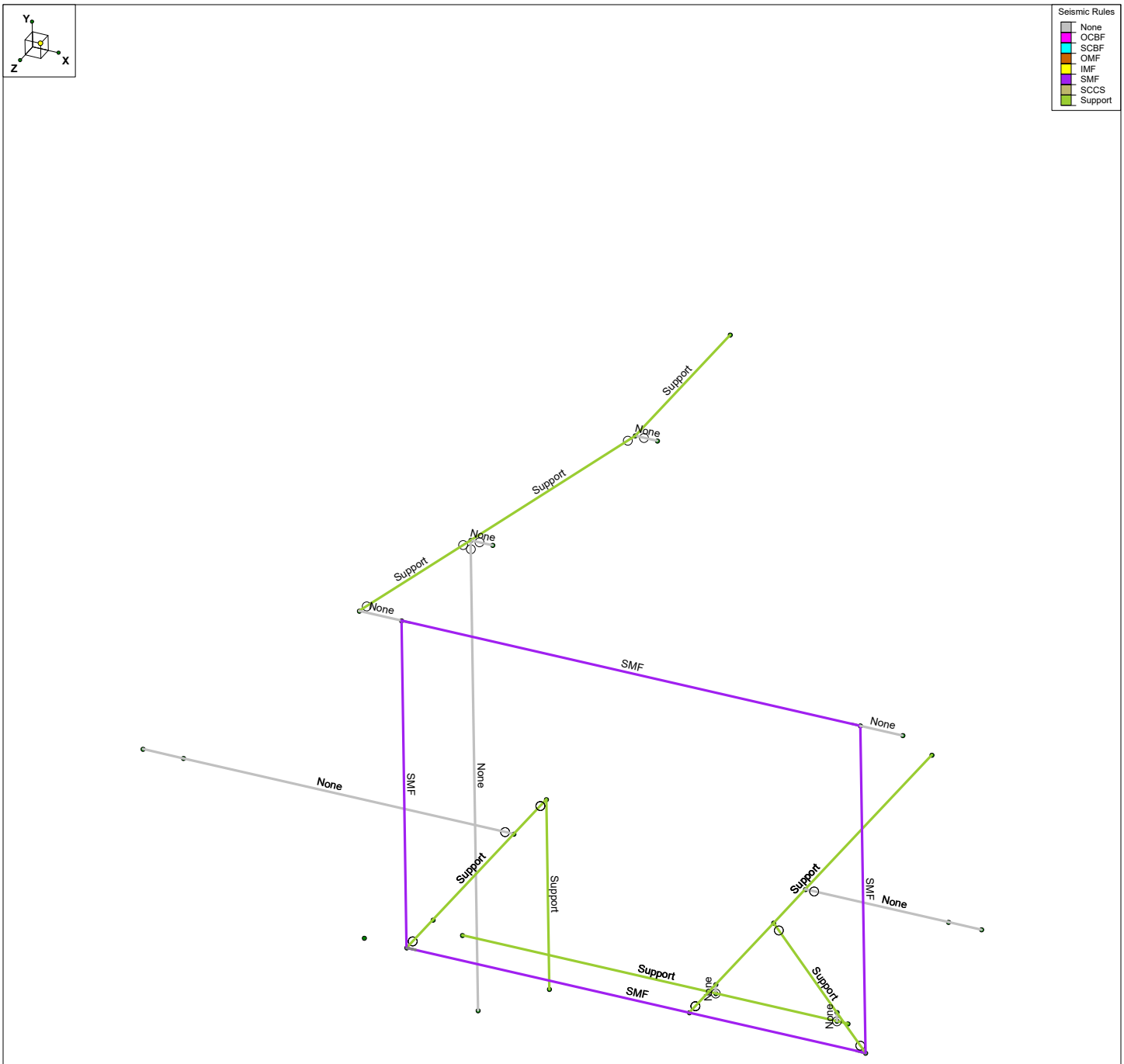
Loads: BLC 11, Seismic X

VSE	Summit Powder Mtn	SK - 11
JBA		July 2, 2018 at 9:55 AM
U2784-001-181		Moment Frame Special -- Relocate...



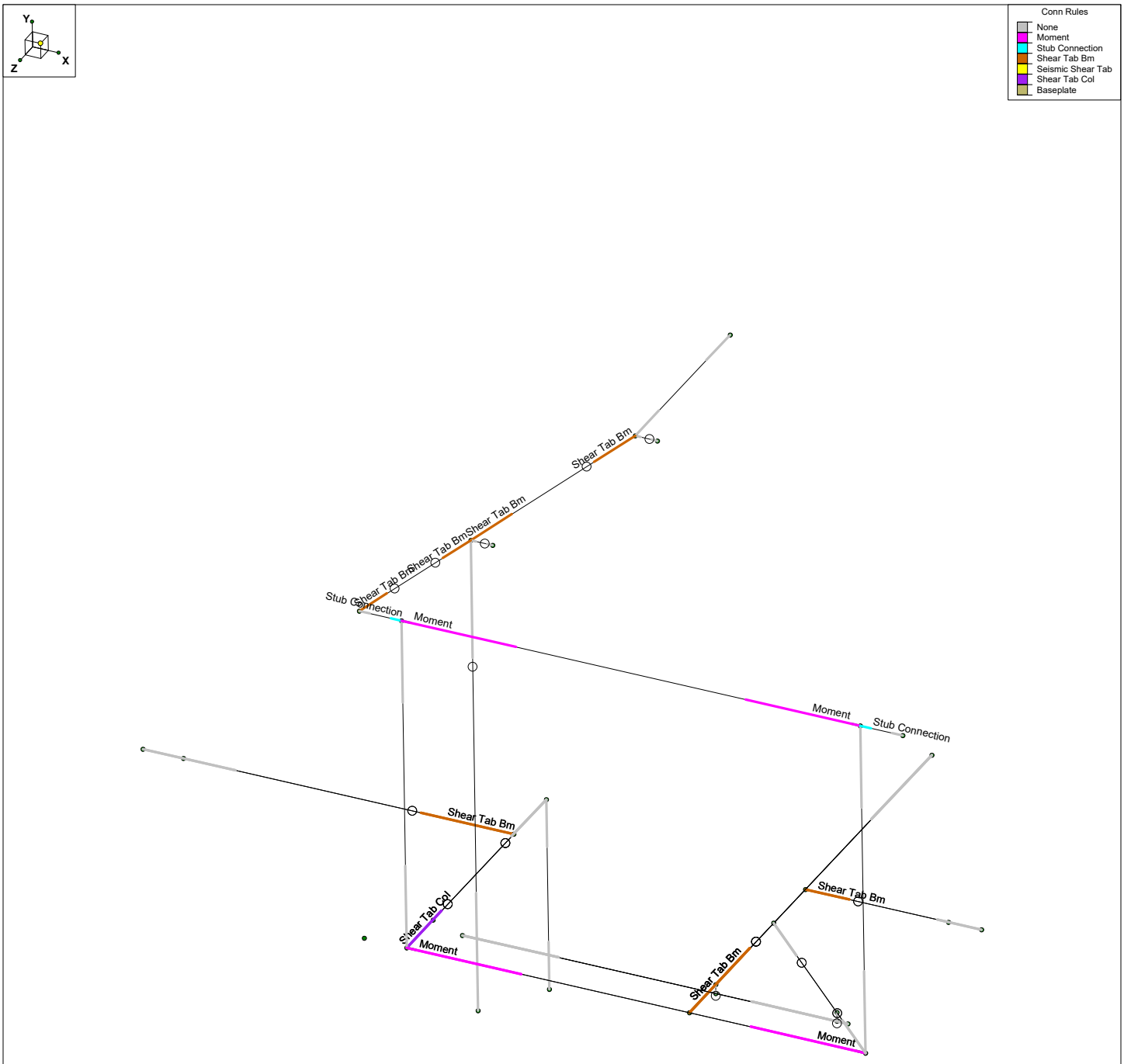
Loads: BLC 12, Seismic Z

VSE	Summit Powder Mtn	SK - 12
JBA		July 2, 2018 at 9:55 AM
U2784-001-181		Moment Frame Special -- Relocate...



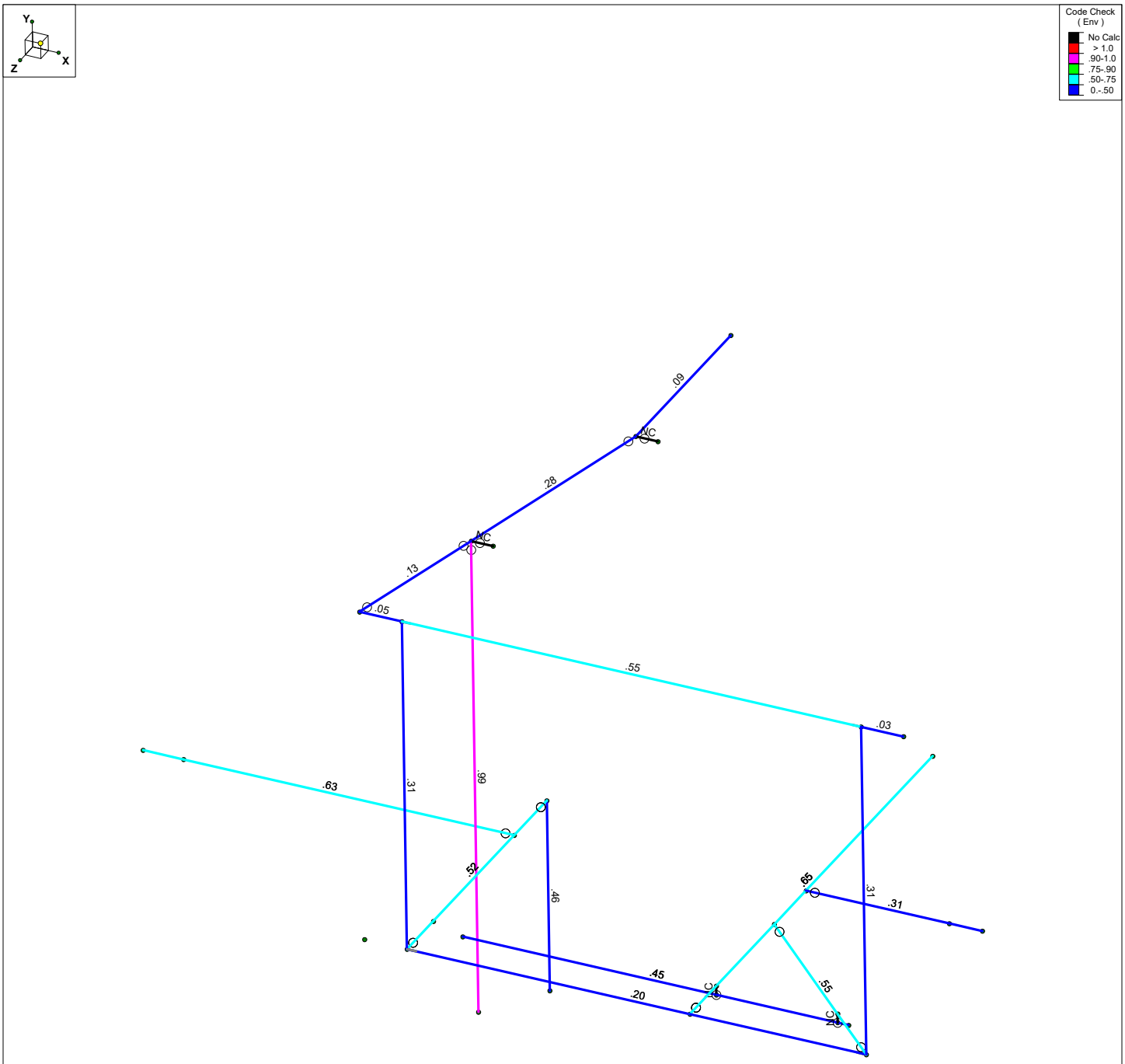
Member Seismic Design Rule Displayed

VSE	Summit Powder Mtn	SK - 13
JBA		July 2, 2018 at 9:56 AM
U2784-001-181		Moment Frame Special -- Relocate...



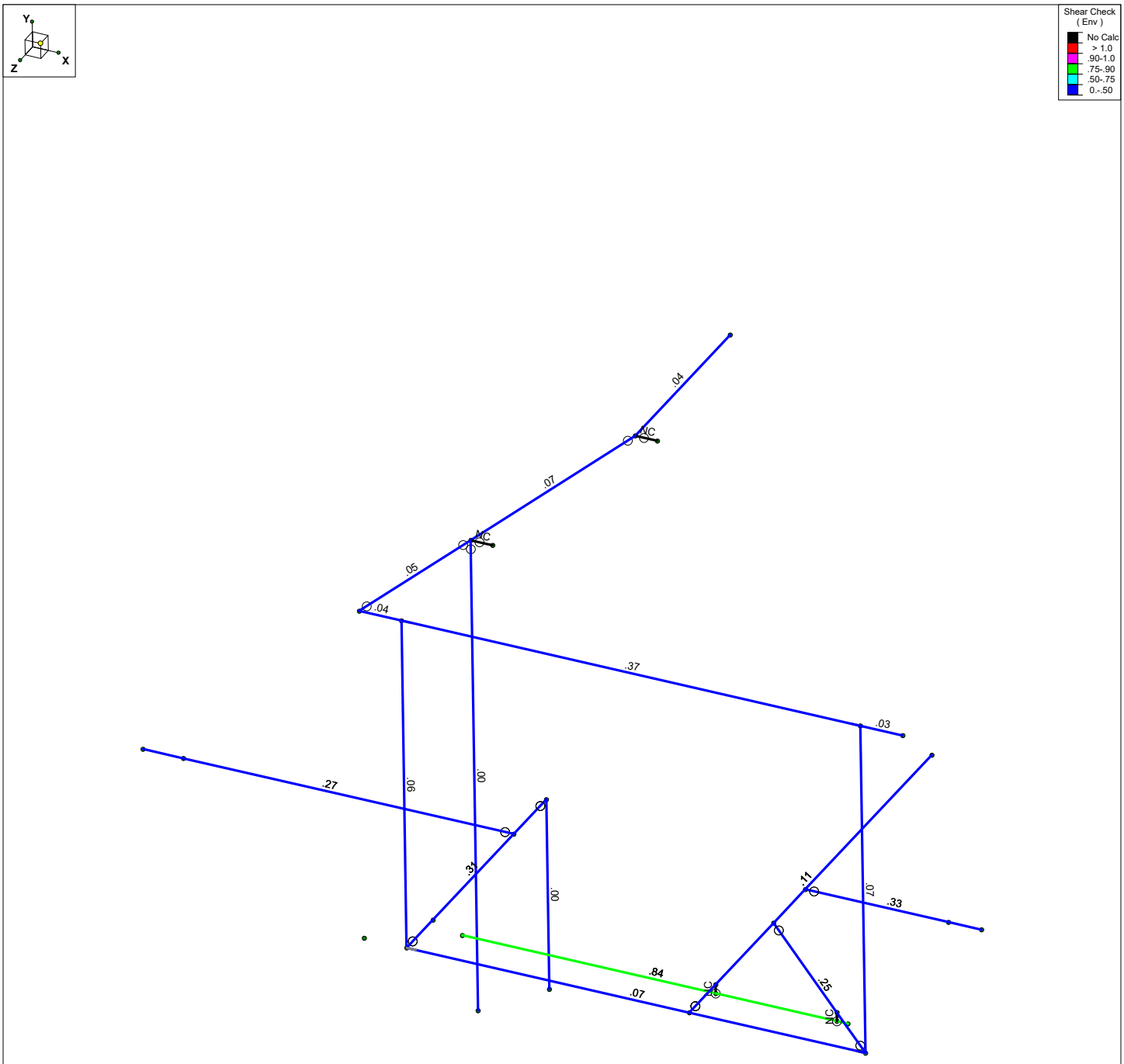
Member Connection Design Rule Displayed

VSE	Summit Powder Mtn	SK - 14
JBA		July 2, 2018 at 9:56 AM
U2784-001-181		Moment Frame Special -- Relocate...



Member Code Checks Displayed (Enveloped)
Results for LC 2, D

VSE	Summit Powder Mtn	SK - 15
JBA		July 2, 2018 at 9:56 AM
U2784-001-181		Moment Frame Special -- Relocate...



Member Shear Checks Displayed (Enveloped)
Results for LC 2, D

VSE	Summit Powder Mtn	SK - 16
JBA		July 2, 2018 at 9:57 AM
U2784-001-181		Moment Frame Special -- Relocate...

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Gravity Colu...	HSS3.5x3.5x5	Column	RECT	A500 Gr.B Rect	Typical	3.52	5.84	5.84	9.89
2	HIGH FRAM...	W10x45	Beam	SMF Wide Flange	A992	Typical	13.3	53.4	248	1.51
3	LOW FRAM...	W10x45	Beam	SMF Wide Flange	A992	Typical	13.3	53.4	248	1.51
4	RB1	W18x46	Beam	Wide Flange	A992	Typical	13.5	22.5	712	1.22
5	RB3	W18x50	Beam	Wide Flange	A992	Typical	14.7	40.1	800	1.24
6	MF Col	W10x88	Column	SMF Wide Flange	A992	Typical	26	179	534	7.53
7	FB1	W18x50	Beam	Wide Flange	A992	Typical	14.7	40.1	800	1.24
8	FB3	W18x50	Beam	Wide Flange	A992	Typical	14.7	40.1	800	1.24
9	FB5	W10x22	Beam	Wide Flange	A992	Typical	6.49	11.4	118	.239
10	FB4	W18x35	Beam	Wide Flange	A992	Typical	10.3	15.3	510	.506
11	FB2	W18x35	Beam	Wide Flange	A992	Typical	10.3	15.3	510	.506
12	FB7	W12x26	Beam	Wide Flange	A992	Typical	7.65	17.3	204	.3
13	DRAG BM	W10x19	Beam	Wide Flange	A992	Typical	5.62	4.29	96.3	.233

Frame / HR Column Seismic Design Rule

	Label	Frame Ductility	Overstrength Reqd
1	OCBF	Minimal	Yes
2	SCBF	High	Yes
3	OMF	Minimal	Yes
4	IMF	Moderate	Yes
5	SMF	High	Yes
6	SCCS	High	Yes
7	Support	Minimal	Yes

HR Beam Seismic Design Rule

	Label	Moment Connection	Overstrength Reqd	Z Factor	Hinge Location[in]
1	OCBF	Other/None			
2	SCBF	Other/None			
3	OMF	BFP			12
4	IMF	BFP	Yes		12
5	SMF	BFP			7.25
6	SCCS	BFP			
7	Support	Other/None	Yes		

Connection Rules

	Label	Conn Type	Type	Beam Conn	Col/Girder Conn
1	Moment	Moment	Column/Beam Seismic Moment	N/A	N/A
2	Stub Connection	Moment	Column/Beam Direct Weld Moment	Bolted	N/A
3	Shear Tab Bm	Shear	Girder/Beam Shear Tab Shear	Bolted	N/A
4	Seismic Shear Tab	Shear	Beam Shear Tab Splice	N/A	N/A

Connection Rules (Continued)

	Label	Conn Type	Type	Beam Conn	Col/Girder Conn
5	Shear Tab Col	Shear	Column/Beam Shear Tab Shear	Bolted	N/A
6	Baseplate	Baseplate	Single Column Baseplate	N/A	N/A

Drift Definitions

	Type	Floor/Diaphragm	Joint Label	Elevation[ft]
1	Joint	-	N25	15.5
2	Joint	-	N24	0

Load Combinations

	Description	Sol...	PDelta	SR...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	Serviceability																							
2	D	Yes	Y		DL	1																		
3	L	Yes	Y		LL	1	RLL	1																
4	D+L	Yes	Y		DL	1	LL	1	RLL	1														
5	WLX	Yes	Y		DL	1	LL	.5	WLX	.53														
6	S	Yes	Y		SL	1																		
7			Y		DL	1	LL	.5	WLX	-.53														
8	ELX	Yes	Y		DL	1.2...	ELX	1	LL	.5														
9			Y		DL	1.2...	ELX	-1	LL	.5														
10			Y		DL	.826	ELX	1																
11			Y		DL	.826	ELX	-1																
12																								
13	ASCE 7-10 Strength																							
14	1.4D	Yes	Y		DL	1.4																		
15	1.2D+1.6SL+.5L	Yes	Y		DL	1.2	SL	1.6	LL	.5														
16	1.2D+1.6SL+.5L+.5...	Yes	Y		DL	1.2	SL	1.6	WLX	.5														
17	1.2D+1.6SL-.5WLX	Yes	Y		DL	1.2	SL	1.6	WLX	-.5														
18	1.2D+WLX+.5SL	Yes	Y		DL	1.2	WLX	1	SL	.5														
19	1.2D-WLX+.5SL	Yes	Y		DL	1.2	WLX	-1	SL	.5														
20	1.2D+WLX+L+.5S	Yes	Y		DL	1.2	WLX	1	LL	1	SL	.5												
21	1.2D-WLX+L+.5S	Yes	Y		DL	1.2	WLX	-1	LL	1	SL	.5												
22	0.9D+WLX	Yes	Y		DL	.9	WLX	1																
23	0.9D-WLX	Yes	Y		DL	.9	WLX	-1																
24	1.2D+ELX+.5L+.37...	Yes	Y		DL	1.2	ELX	1	SL	.37	LL	.5	S...	.2										
25	1.2D-ELX+.5L+.37...	Yes	Y		DL	1.2	ELX	-1	SL	.37	LL	.5	S...	.2										
26	0.9D+ELX	Yes	Y		DL	.9	ELX	1					S...	-.2										
27	0.9D-ELX	Yes	Y		DL	.9	ELX	-1					S...	-.2										
28	1.2D+OmELX+.5L...	Yes	Y		DL	1.2	Om*...	1	SL	.37	LL	.5	S...	.2										
29	1.2D-OmELX+.5L+...	Yes	Y		DL	1.2	Om*...	-1	SL	.37	LL	.5	S...	.2										
30	0.9D+OmELX	Yes	Y		DL	.9	Om*...	1					S...	-.2										
31	0.9D-OmELX	Yes	Y		DL	.9	Om*...	-1					S...	-.2										
32	1.2D+ELZ+.5L+.37...	Yes	Y		DL	1.2	ELZ	1	SL	.37	LL	.5	S...	.2										
33	1.2D-ELZ+.5L+.37...	Yes	Y		DL	1.2	ELZ	-1	SL	.37	LL	.5	S...	.2										
34	0.9D+ELZ	Yes	Y		DL	.9	ELZ	1					S...	-.2										
35	0.9D-ELZ	Yes	Y		DL	.9	ELZ	-1					S...	-.2										
36	1.2D+.5L+OmELZ+...	Yes	Y		DL	1.2	Om*...	1	SL	.37	LL	.5	S...	.2										
37	1.2D+.5L-OmELZ+...	Yes	Y		DL	1.2	Om*...	-1	SL	.37	LL	.5	S...	.2										
38	0.9D+OmELZ	Yes	Y		DL	.9	Om*...	1					S...	-.2										
39	0.9D-OmELZ	Yes	Y		DL	.9	Om*...	-1					S...	-.2										

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N4	max	0	2	0	2	.08	17	0	2	0	2	0	2
2		min	0	2	0	2	0	3	0	2	0	2	0	2
3	N8	max	.13	25	1.87	3	.21	24	0	2	0	2	0	2
4		min	-.13	8	-9.03	16	-.39	25	0	2	0	2	0	2
5	N11	max	1.27	25	5.18	21	.14	25	0	2	0	2	0	2
6		min	-1.12	26	-.88	6	-.12	26	0	2	0	2	0	2
7	N10	max	4.99	25	61.7	15	.15	17	0	2	0	2	0	2
8		min	-5.46	24	5.92	3	-.07	27	0	2	0	2	0	2
9	N12	max	.85	25	66.96	17	0	2	0	2	0	2	.03	8
10		min	-.66	26	2.43	3	0	2	0	2	0	2	-.03	25
11	N14	max	0	17	62.11	16	0	16	0	2	.03	16	0	2
12		min	0	16	0	3	0	34	0	2	0	27	0	2
13	N16	max	1.5	24	64.26	17	0	25	0	2	0	2	0	2
14		min	-1.47	25	0	3	0	4	0	2	0	2	0	2
15	N18	max	0	33	3.24	15	6.8	32	0	2	0	2	0	2
16		min	0	32	0	3	-6.41	35	0	2	0	2	0	2
17	N19	max	0	2	9.13	17	0	2	0	2	0	2	0	2
18		min	0	2	0	3	0	2	0	2	0	2	0	2
19	N21	max	0	16	.04	14	0	32	0	2	0	2	0	2
20		min	0	27	0	3	0	33	0	2	0	2	0	2
21	N22	max	0	16	.03	14	0	17	0	2	0	2	0	2
22		min	0	25	0	6	0	16	0	2	0	2	0	2
23	N25	max	0	2	0	2	0	3	0	2	0	2	0	2
24		min	0	2	0	2	-.85	16	0	2	0	2	0	2
25	N26	max	.12	26	0	2	.12	25	0	2	0	2	0	2
26		min	-.16	25	0	2	-.11	26	0	2	0	2	0	2
27	N27	max	0	25	41.72	16	0	24	0	2	0	26	0	2
28		min	0	16	-.46	3	0	25	0	2	0	25	0	2
29	N30	max	0	2	23.33	15	0	26	0	2	0	2	0	2
30		min	0	2	0	3	0	23	0	2	0	2	0	2
31	Totals:	max	5.61	27	326.41	15	6.55	34						
32		min	-5.61	8	12.51	3	-6.55	33						

Envelope Joint Reactions - Overstrength

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N4	max	0	28	0	28	.04	29	0	28	0	28	0	28
2		min	0	28	0	28	0	38	0	28	0	28	0	28
3	N8	max	.31	29	.92	31	.88	28	0	28	0	28	0	28
4		min	-.33	28	-3.03	28	-.63	29	0	28	0	28	0	28
5	N11	max	3.05	31	4.74	29	.32	31	0	28	0	28	0	28
6		min	-2.87	30	1.09	30	-.32	30	0	28	0	28	0	28
7	N10	max	12.64	29	51.64	28	.11	37	0	28	0	28	0	28
8		min	-13.49	28	3.28	31	-.31	31	0	28	0	28	0	28
9	N12	max	1.92	29	50.37	29	0	28	0	28	0	28	.08	30
10		min	-1.74	30	1.52	30	0	28	0	28	0	28	-.08	29
11	N14	max	0	29	25.71	37	0	37	0	28	.03	28	0	28
12		min	0	28	5.66	38	0	36	0	28	-.01	31	0	28
13	N16	max	3.9	28	24.81	37	0	28	0	28	0	28	0	28
14		min	-3.53	29	7.32	30	0	38	0	28	0	28	0	28
15	N18	max	0	37	1.25	28	19.81	36	0	28	0	28	0	28
16		min	0	36	.37	30	-19.42	39	0	28	0	28	0	28
17	N19	max	0	28	5.7	36	0	28	0	28	0	28	0	28
18		min	0	28	-1.09	39	0	28	0	28	0	28	0	28
19	N21	max	0	28	.03	28	0	36	0	28	0	28	0	28

Envelope Joint Reactions - Overstrength (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
20		min	0	31	.02	30	0	37	0	28	0	28	0	28
21	N22	max	0	28	.03	28	0	37	0	28	0	28	0	28
22		min	0	29	.02	31	0	28	0	28	0	28	0	28
23	N25	max	0	28	0	28	.04	38	0	28	0	28	0	28
24		min	0	28	0	28	-.47	37	0	28	0	28	0	28
25	N26	max	.33	30	0	28	.28	29	0	28	0	28	0	28
26		min	-.36	29	0	28	-.27	30	0	28	0	28	0	28
27	N27	max	0	29	20.19	28	0	28	0	28	0	30	0	28
28		min	0	28	3.55	31	0	29	0	28	0	29	0	28
29	N30	max	0	28	8.67	28	0	28	0	28	0	28	0	28
30		min	0	28	2.41	31	0	29	0	28	0	28	0	28
31	Totals:	max	14.02	31	157.78	28	19.64	38						
32		min	-14.03	28	57.04	31	-19.64	37						

Envelope Story Drift - X-Direction, Strength

	Story (Elevation)		Story Drift[in]	Loc (Z,X)	LC	Drift Ratio (%)	Loc (Z,X)	LC	2nd/1st Ratio	Loc (Z,X)	LC
1	N25 (15.5 ft)	max	3.04	0, 1.92	24	1.63	0, 1.92	24	1.04	0, 1.92	16
2		min	-2.67	0, 1.92	27	.01	0, 1.92	14	1.01	0, 1.92	35
3	N24 (0 ft)	max	.4	0, 1.92	26	NC			1.12	0, 1.92	15
4		min	-.51	0, 1.92	25	NC			.96	0, 1.92	20

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Lo...	...	She...	Lo...	Dir	...	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y ...	phi*Mn z-z [k...	...	Eqn
1	M1	W10x88	.306	15.5	...	.063	7.67	y	...	810.24	1170	199.13	423.75	...	H1-1b
2	M2	W10x88	.312	15.5	...	.069	7.67	y	...	810.24	1170	199.13	423.75	...	H1-1b
3	M3	W10x45	.551	0	...	.373	20	y	...	477.54	598.5	76.13	205.88	...	H1-1b
4	M4	W18x50	.554	3.43	...	.248	3.43	y	...	401.21	661.5	62.25	378.75	...	H1-1b
5	M5	W18x50	.649	8.13	...	.107	7.9	y	...	561.71	661.5	62.25	191.6	...	H1-1b
6	M6	W10x22	.452	.53	...	.840	0	y	...	243.84	292.05	22.88	97.5	1	H1-1b
7	M7	W18x35	.524	10...	...	.307	10...	y	...	136.72	463.5	30.23	237.53	...	H1-1b
8	M9	W10x45	.205	0	...	.074	20	y	8	209.51	598.5	76.13	205.88	...	H1-1b
9	M10	W18x35	.312	6.46	...	.327	6.55	y	...	281.53	463.5	30.23	249.38	...	H1-1b
10	M11	W10x19	.275	7.84	...	.073	0	y	...	216.75	252.9	12.56	81	1	H1-1b
11	M12	W10x19	.092	4.45	...	.042	9	y	...	237.47	252.9	12.56	81	1	H1-1b
12	M13	HSS3.5...	.988	0	...	.002	0	y	...	62.87	145.73	14.28	14.28	1	H1-1a
13	M14	W10x19	.127	5.31	...	.053	10...	y	...	234.32	252.9	12.56	81	1	H1-1b
14	M17	W10x45	.033	0	...	.034	0	y	...	592.74	598.5	76.13	205.88	...	H1-1b
15	M18	HSS3.5...	.459	9	...	.000	0	y	2	90.82	145.73	14.28	14.28	1	H1-1a
16	M18A	W10x45	.055	0	...	.036	0	y	...	592.74	598.5	76.13	205.88	...	H1-1b
17	M21	W12x26	.634	7.65	...	.273	0	y	...	290.01	344.25	30.64	139.5	1	H1-1b

Seismic Detailing - Columns

	Label	Seismic ...	Ductilit...	UC M...	LC	Slenderness ...	Panel Zone ...	Panel Zone ...	Cont. Plate...	Cont. Plate ...	SC/WB ...	SC/W...	Misc. ...
1	M1	SMF	High	.31	17	Warning	Fail (M3)	360-10: Eqn ...	Yes (M3)	360-10: Eq...	1.27 (pa...	M3	Pass
2	M2	SMF	High	.31	16	Warning	Fail (M3)	360-10: Eqn ...	Yes (M3)	360-10: Eq...	1.27 (pa...	M3	Pass
3	M18	Support	Minimal	.46	16	Pass	N/A		No	N/A	N/A	N/A	Fail

Seismic Detailing - Beams

	Label	Seis...	Ductilit...	UC ...	LC	Slenderness C...	Type	Req'd Sh...	Req'd Mome...	SC/WB R...	SC/WB Col	Span/D...	Misc. Che...
1	M3	SMF	High	.55	17	Pass	BFP	65.93	329.2	1.27	M2	23.7 (p...	Pass
2	M7	Supp...	Minimal	.52	29	Pass	Other...	N/A	N/A	N/A	N/A	N/A	Fail
3	M9	SMF	High	.2	25	Pass	BFP	36.99	311.72	1.38	M2	23.7 (p...	Pass
4	M11	Supp...	Minimal	.28	16	Pass	Other...	N/A	N/A	N/A	N/A	N/A	Fail
5	M12	Supp...	Minimal	.09	15	Pass	Other...	27.44	108.9	N/A	N/A	N/A	Fail
6	M14	Supp...	Minimal	.13	15	Pass	Other...	N/A	N/A	N/A	N/A	N/A	Pass

Global Parameters - Description:

Project Title	Summit Powder Mtn
Company	VSE
Designer	JBA
Job Number	U2784-001-181
Notes	

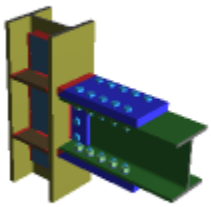
Global Parameters - Solution:

Design Method	AISC 14th (360-10): LRFD
Bolt Group Analysis Method	Center of Rotation
Weld Analysis Method	Center of Rotation
Consider Bolt Hole Deformation?	Yes
Check Weld Filler Material Matching?	Yes
Check Rotational Ductility?	Yes
Full Shear Eccentricity Considered?	No
Plastic Panel-Zone Shear Deformation Considered?	No

M3 I - M1: LRFD Results Report

LRFD

Column/Beam Flange Plate Moment Connection



Material Properties:

Column	W10x88	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Beam	W10x45	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Plate	P0.75x4.00x8.00	A36	Fy = 36.00 ksi	Fu = 58.00 ksi
Moment Plate	P1.50x8.00x16.50	A572 Gr.50	Fy = 50.00 ksi	Fu = 65.00 ksi
Doubler	P0.75x7.42x25.10	A36	Fy = 36.00 ksi	Fu = 58.00 ksi
Transverse Stiffener	P0.75x4.10x8.82	A36	Fy = 36.00 ksi	Fu = 58.00 ksi

Input Data:

Shear Load	23.62 kips	*User Input Shear Load*
Moment	-103.66 kips-ft	*User Input Moment*
Axial Load	25.17 kips	*User Input Axial Force (compression)*
Puf_c	119.81 kips	*Required Flange Force (compression)*
Puf_t	94.65 kips	*Required Flange Force (tension)*
Top Column Dist	0.00 in	*User Input Top Column Dist*
Column Force	0.00 kips	*User Input Column Force*
Story Shear	0.00 kips	*User Input Story Shear*

Seismic Detailing Input Data:

Seismic System	SMF (BFP)	*User Input Seismic System*
Gravity Shear, Vg	0.00 kips	*User Input Shear due to Gravity*
Clear Span, L	19.93 ft	*User Input Clear Span of Beam*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 29 - 1.2D-OmELX +.5L+.37S

Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Geometry Restrictions at Flange Beam				**PASS**
Shear Plate Weld at Column Limitations				**PASS**
Shear Plate Weld Strength at Column	23.62 kips	89.09 kips	**0.27**	**PASS**
Beam Web Shear Yield	23.62 kips	106.05 kips	**0.22**	**PASS**
Vert. Plate Shear Yield	23.62 kips	129.60 kips	**0.18**	**PASS**

Beam Web Shear Rupture	23.62 kips	76.53 kips	**0.31**	**PASS**
Vert. Plate Shear Rupture	23.62 kips	105.22 kips	**0.22**	**PASS**
Beam Web Block Shear	23.62 kips	114.18 kips	**0.21**	**PASS**
Vert. Plate Block Shear	23.62 kips	144.18 kips	**0.16**	**PASS**
Bolt Shear at Beam Web	23.62 kips	83.50 kips	**0.28**	**PASS**
Bolt Bearing at Beam Web	23.62 kips	83.50 kips	**0.28**	**PASS**
Bolt Bearing at Vert. Plate	23.62 kips	78.91 kips	**0.30**	**PASS**
Bolt Shear at Flange Plate	135.74 kips	278.33 kips	**0.49**	**PASS**
Bolt Bearing at Beam Flange	143.79 kips	278.33 kips	**0.52**	**PASS**
Bolt Bearing at Flange Plate	119.81 kips	278.33 kips	**0.43**	**PASS**
Beam Flange Block Shear	118.63 kips	393.53 kips	**0.30**	**PASS**
Flange Plate Block Shear	94.65 kips	950.62 kips	**0.10**	**PASS**
Flange Plate Tearout	94.65 kips	946.05 kips	**0.10**	**PASS**
Flange Plate Weld Strength at Column				**PASS**
Flange Plate Tensile Yield	94.65 kips	540.00 kips	**0.18**	**PASS**
Flange Plate Tensile Rupture	94.65 kips	457.03 kips	**0.21**	**PASS**
Flange Plate Compression	119.81 kips	540.00 kips	**0.22**	**PASS**
Column Flange Bending	94.65 kips	137.83 kips	**0.69**	**PASS**
Column Web Yielding	119.81 kips	299.13 kips	**0.40**	**PASS**
Column Web Buckling	119.81 kips	963.59 kips	**0.12**	**PASS**
Column Web Crippling	119.81 kips	455.34 kips	**0.26**	**PASS**
Column Panel Zone Shear	107.23 kips	176.42 kips	**0.61**	**PASS**
Doubler Shear Buckling				**PASS**
Doubler Plate Shear Yield	0.00 kips	174.96 kips	**0.00**	**PASS**
Doubler Weld at Column Web Limitations				**PASS**
Doubler Weld Strength at Column Flange				**PASS**
Doubler Weld Strength at Column Web	0.00 kips	123.94 kips	**0.00**	**n/a**
Seismic Material and Geometry Limitations				**PASS**
Seismic Width to Thickness Ratios				**PASS**
Seismic Moment at Face of Column		***326.19 kips-ft***		
Seismic Weld Limitations				**PASS**
Seismic Flange Bolt Limitations				**PASS**
Seismic Flange Plate Limitations				**PASS**
Seismic Column-Beam Moment Ratio				**PASS**
Seismic Flange Strength				**PASS**
Seismic Beam Web Checks			**0.43**	**PASS**
Seismic Flange Bolt Shear Strength	337.44 kips	333.99 kips	**1.01**	**FAIL**
Seismic Beam Web Bolt Checks				**PASS**
Seismic Vert. Plate Checks				**PASS**
Seismic Stiffener Plate Limitations				**PASS**

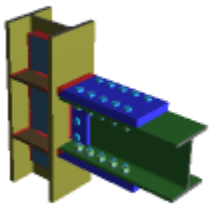
Given that this check is comparing reduced bolt strength against the strain-hardened maximum probable moment the beam can produce, we find within 1% acceptable

Seismic Panel Zone Limitations			**PASS**
Seismic Column Panel Zone Shear	305.24 kips	196.02 kips	**N/A**
Seismic Doubler Plate Strength			**PASS**

M3 J - M2: LRFD Results Report

LRFD

Column/Beam Flange Plate Moment Connection



Material Properties:

Column	W10x88	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Beam	W10x45	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Plate	P0.75x4.00x8.00	A36	Fy = 36.00 ksi	Fu = 58.00 ksi
Moment Plate	P1.50x8.00x16.50	A572 Gr.50	Fy = 50.00 ksi	Fu = 65.00 ksi
Doubler	P0.75x7.42x25.10	A36	Fy = 36.00 ksi	Fu = 58.00 ksi
Transverse Stiffener	P0.75x4.10x8.82	A36	Fy = 36.00 ksi	Fu = 58.00 ksi

Input Data:

Shear Load	-23.57 kips	*User Input Shear Load*
Moment	-102.64 kips-ft	*User Input Moment*
Axial Load	24.96 kips	*User Input Axial Force (compression)*
Puf_c	118.66 kips	*Required Flange Force (compression)*
Puf_t	93.70 kips	*Required Flange Force (tension)*
Top Column Dist	0.00 in	*User Input Top Column Dist*
Column Force	0.00 kips	*User Input Column Force*
Story Shear	0.00 kips	*User Input Story Shear*

Seismic Detailing Input Data:

Seismic System	SMF (BFP)	*User Input Seismic System*
Gravity Shear, Vg	0.00 kips	*User Input Shear due to Gravity*
Clear Span, L	19.93 ft	*User Input Clear Span of Beam*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 28 - 1.2D+OmELX +.5L+.37S

Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Geometry Restrictions at Flange Beam				**PASS**
Shear Plate Weld at Column Limitations				**PASS**
Shear Plate Weld Strength at Column	23.57 kips	89.09 kips	**0.26**	**PASS**
Beam Web Shear Yield	23.57 kips	106.05 kips	**0.22**	**PASS**
Vert. Plate Shear Yield	23.57 kips	129.60 kips	**0.18**	**PASS**
Beam Web Shear Rupture	23.57 kips	76.53 kips	**0.31**	**PASS**
Vert. Plate Shear Rupture	23.57 kips	105.22 kips	**0.22**	**PASS**
Beam Web Block Shear	23.57 kips	110.08 kips	**0.21**	**PASS**
Vert. Plate Block Shear	23.57 kips	144.18 kips	**0.16**	**PASS**
Bolt Shear at Beam Web	23.57 kips	83.50 kips	**0.28**	**PASS**
Bolt Bearing at Beam Web	23.57 kips	83.50 kips	**0.28**	**PASS**
Bolt Bearing at Vert. Plate	23.57 kips	78.91 kips	**0.30**	**PASS**
Bolt Shear at Flange Plate	134.43 kips	278.33 kips	**0.48**	**PASS**
Bolt Bearing at Beam Flange	142.40 kips	278.33 kips	**0.51**	**PASS**
Bolt Bearing at Flange Plate	118.66 kips	278.33 kips	**0.43**	**PASS**

Beam Flange Block Shear	117.44 kips	393.53 kips	**0.30**	**PASS**
Flange Plate Block Shear	93.70 kips	950.62 kips	**0.10**	**PASS**
Flange Plate Tearout	93.70 kips	946.05 kips	**0.10**	**PASS**
Flange Plate Weld Strength at Column				**PASS**
Flange Plate Tensile Yield	93.70 kips	540.00 kips	**0.17**	**PASS**
Flange Plate Tensile Rupture	93.70 kips	457.03 kips	**0.21**	**PASS**
Flange Plate Compression	118.66 kips	540.00 kips	**0.22**	**PASS**
Column Flange Bending	93.70 kips	137.83 kips	**0.68**	**PASS**
Column Web Yielding	118.66 kips	299.13 kips	**0.40**	**PASS**
Column Web Buckling	118.66 kips	963.59 kips	**0.12**	**PASS**
Column Web Crippling	118.66 kips	455.34 kips	**0.26**	**PASS**
Column Panel Zone Shear	106.18 kips	176.42 kips	**0.60**	**PASS**
Doubler Shear Buckling				**PASS**
Doubler Plate Shear Yield	0.00 kips	174.96 kips	**0.00**	**PASS**
Doubler Weld at Column Web Limitations				**PASS**
Doubler Weld Strength at Column Flange				**PASS**
Doubler Weld Strength at Column Web	0.00 kips	123.94 kips	**0.00**	**n/a**
Seismic Material and Geometry Limitations				**PASS**
Seismic Width to Thickness Ratios				**PASS**
Seismic Moment at Face of Column		***326.19 kips-ft***		
Seismic Weld Limitations				**PASS**
Seismic Flange Bolt Limitations				**PASS**
Seismic Flange Plate Limitations				**PASS**
Seismic Column-Beam Moment Ratio				**PASS**
Seismic Flange Strength				**PASS**
Seismic Beam Web Checks			**0.43**	**PASS**
Seismic Flange Bolt Shear Strength	337.44 kips	333.99 kips	**1.01**	**FAIL**
Seismic Beam Web Bolt Checks				**PASS**
Seismic Vert. Plate Checks				**PASS**
Seismic Stiffener Plate Limitations				**PASS**
Seismic Panel Zone Limitations				**PASS**
Seismic Column Panel Zone Shear	305.24 kips	196.02 kips		**N/A**
Seismic Doubler Plate Strength				**PASS**

Given that this check is comparing reduced bolt strength against the strain-hardened maximum probable moment the beam can produce, we find within 1% acceptable

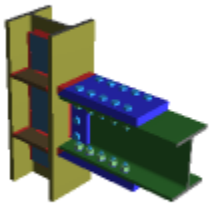
M9 I - M1: LRFD Results Report

LRFD

Column/Beam Flange Plate Moment Connection

Material Properties:

Column	W10x88	A992	F_y = 50.00 ksi	F_u = 65.00 ksi
Beam	W10x45	A992	F_y = 50.00 ksi	F_u = 65.00 ksi
Plate	P0.75x4.00x8.00	A36	F_y = 36.00 ksi	F_u = 58.00 ksi
Moment Plate	P1.50x8.00x16.50	A572	F_y = 50.00 ksi	F_u = 65.00 ksi



		Gr.50		
Doubler	P0.75x7.42x25.10	A36	Fy = 36.00 ksi	Fu = 58.00 ksi
Transverse Stiffener	P0.75x4.10x8.82	A36	Fy = 36.00 ksi	Fu = 58.00 ksi

Input Data:

Shear Load	10.55 kips	*User Input Shear Load*
Moment	-73.79 kips-ft	*User Input Moment*
Axial Load	27.08 kips	*User Input Axial Force (compression)*
Puf_c	89.88 kips	*Required Flange Force (compression)*
Puf_t	62.80 kips	*Required Flange Force (tension)*
Top Column Dist	0.00 in	*User Input Top Column Dist*
Column Force	27.06 kips	*User Input Column Force*
Story Shear	12.19 kips	*User Input Story Shear*

Seismic Detailing Input Data:

Seismic System	SMF (BFP)	*User Input Seismic System*
Gravity Shear, Vg	0.00 kips	*User Input Shear due to Gravity*
Clear Span, L	19.93 ft	*User Input Clear Span of Beam*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 29 - 1.2D-OmELX +.5L+.37S

Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Geometry Restrictions at Flange Beam				**PASS**
Shear Plate Weld at Column Limitations				**PASS**
Shear Plate Weld Strength at Column	10.55 kips	89.09 kips	**0.12**	**PASS**
Beam Web Shear Yield	10.55 kips	106.05 kips	**0.10**	**PASS**
Vert. Plate Shear Yield	10.55 kips	129.60 kips	**0.08**	**PASS**
Beam Web Shear Rupture	10.55 kips	76.53 kips	**0.14**	**PASS**
Vert. Plate Shear Rupture	10.55 kips	105.22 kips	**0.10**	**PASS**
Beam Web Block Shear	10.55 kips	114.18 kips	**0.09**	**PASS**
Vert. Plate Block Shear	10.55 kips	144.18 kips	**0.07**	**PASS**
Bolt Shear at Beam Web	10.55 kips	83.50 kips	**0.13**	**PASS**
Bolt Bearing at Beam Web	10.55 kips	83.50 kips	**0.13**	**PASS**
Bolt Bearing at Vert. Plate	10.55 kips	78.91 kips	**0.13**	**PASS**
Bolt Shear at Flange Plate	101.21 kips	278.33 kips	**0.36**	**PASS**
Bolt Bearing at Beam Flange	106.95 kips	278.33 kips	**0.38**	**PASS**
Bolt Bearing at Flange Plate	89.88 kips	278.33 kips	**0.32**	**PASS**
Beam Flange Block Shear	79.87 kips	393.53 kips	**0.20**	**PASS**
Flange Plate Block Shear	62.80 kips	950.62 kips	**0.07**	**PASS**
Flange Plate Tearout	62.80 kips	946.05 kips	**0.07**	**PASS**
Flange Plate Weld Strength at Column				**PASS**
Flange Plate Tensile Yield	62.80 kips	540.00 kips	**0.12**	**PASS**
Flange Plate Tensile Rupture	62.80 kips	457.03 kips	**0.14**	**PASS**
Flange Plate Compression	89.88 kips	540.00 kips	**0.17**	**PASS**
Column Flange Bending	62.80 kips	137.83 kips	**0.46**	**PASS**
Column Web Yielding	89.88 kips	299.13 kips	**0.30**	**PASS**
Column Web Buckling	89.88 kips	963.59 kips	**0.09**	**PASS**

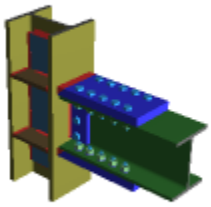
Column Web Crippling	89.88 kips	455.34 kips	**0.20**	**PASS**
Column Panel Zone Shear	64.15 kips	176.42 kips	**0.36**	**PASS**
Doubler Shear Buckling				**PASS**
Doubler Plate Shear Yield	0.00 kips	174.96 kips	**0.00**	**PASS**
Doubler Weld at Column Web Limitations				**PASS**
Doubler Weld Strength at Column Flange				**PASS**
Doubler Weld Strength at Column Web	0.00 kips	123.94 kips	**0.00**	**n/a**
Seismic Material and Geometry Limitations				**PASS**
Seismic Width to Thickness Ratios				**PASS**
Seismic Moment at Face of Column		***326.19 kips-ft***		
Seismic Weld Limitations				**PASS**
Seismic Flange Bolt Limitations				**PASS**
Seismic Flange Plate Limitations				**PASS**
Seismic Column-Beam Moment Ratio				**PASS**
Seismic Flange Strength				**PASS**
Seismic Beam Web Checks			**0.43**	**PASS**
Seismic Flange Bolt Shear Strength	337.44 kips	333.99 kips	**1.01**	**FAIL**
Seismic Beam Web Bolt Checks				**PASS**
Seismic Vert. Plate Checks				**PASS**
Seismic Stiffener Plate Limitations				**PASS**
Seismic Panel Zone Limitations				**PASS**
Seismic Column Panel Zone Shear	305.24 kips	196.02 kips		**N/A**
Seismic Doubler Plate Strength				**PASS**

Given that this check is comparing reduced bolt strength against the strain-hardened maximum probable moment the beam can produce, we find within 1% acceptable

M9 J - M2: LRFD Results Report

LRFD

Column/Beam Flange Plate Moment Connection



Material Properties:

Column	W10x88	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Beam	W10x45	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Plate	P0.75x4.00x8.00	A36	Fy = 36.00 ksi	Fu = 58.00 ksi
Moment Plate	P1.50x8.00x16.50	A572 Gr.50	Fy = 50.00 ksi	Fu = 65.00 ksi
Doubler	P0.75x7.42x25.10	A36	Fy = 36.00 ksi	Fu = 58.00 ksi
Transverse Stiffener	P0.75x4.10x8.82	A36	Fy = 36.00 ksi	Fu = 58.00 ksi

Input Data:

Shear Load	-9.80 kips	*User Input Shear Load*
Moment	-69.90 kips-ft	*User Input Moment*
Axial Load	26.87 kips	*User Input Axial Force (compression)*
Puf_c	85.75 kips	*Required Flange Force (compression)*
Puf_t	58.88 kips	*Required Flange Force (tension)*
Top Column Dist	0.00 in	*User Input Top Column Dist*
Column Force	26.85 kips	*User Input Column Force*
Story Shear	11.87 kips	*User Input Story Shear*

Seismic Detailing Input Data:

Seismic System	SMF (BFP)	*User Input Seismic System*
Gravity Shear, Vg	0.00 kips	*User Input Shear due to Gravity*

Clear Span, L	19.93 ft	*User Input Clear Span of Beam*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 28 - 1.2D+OmELX +.5L+.37S

Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Geometry Restrictions at Flange Beam				**PASS**
Shear Plate Weld at Column Limitations				**PASS**
Shear Plate Weld Strength at Column	9.80 kips	89.09 kips	**0.11**	**PASS**
Beam Web Shear Yield	9.80 kips	106.05 kips	**0.09**	**PASS**
Vert. Plate Shear Yield	9.80 kips	129.60 kips	**0.08**	**PASS**
Beam Web Shear Rupture	9.80 kips	76.53 kips	**0.13**	**PASS**
Vert. Plate Shear Rupture	9.80 kips	105.22 kips	**0.09**	**PASS**
Beam Web Block Shear	9.80 kips	110.08 kips	**0.09**	**PASS**
Vert. Plate Block Shear	9.80 kips	144.18 kips	**0.07**	**PASS**
Bolt Shear at Beam Web	9.80 kips	83.50 kips	**0.12**	**PASS**
Bolt Bearing at Beam Web	9.80 kips	83.50 kips	**0.12**	**PASS**
Bolt Bearing at Vert. Plate	9.80 kips	78.91 kips	**0.12**	**PASS**
Bolt Shear at Flange Plate	96.49 kips	278.33 kips	**0.35**	**PASS**
Bolt Bearing at Beam Flange	101.92 kips	278.33 kips	**0.37**	**PASS**
Bolt Bearing at Flange Plate	85.75 kips	278.33 kips	**0.31**	**PASS**
Beam Flange Block Shear	75.05 kips	393.53 kips	**0.19**	**PASS**
Flange Plate Block Shear	58.88 kips	950.62 kips	**0.06**	**PASS**
Flange Plate Tearout	58.88 kips	946.05 kips	**0.06**	**PASS**
Flange Plate Weld Strength at Column				**PASS**
Flange Plate Tensile Yield	58.88 kips	540.00 kips	**0.11**	**PASS**
Flange Plate Tensile Rupture	58.88 kips	457.03 kips	**0.13**	**PASS**
Flange Plate Compression	85.75 kips	540.00 kips	**0.16**	**PASS**
Column Flange Bending	58.88 kips	137.83 kips	**0.43**	**PASS**
Column Web Yielding	85.75 kips	299.13 kips	**0.29**	**PASS**
Column Web Buckling	85.75 kips	963.59 kips	**0.09**	**PASS**
Column Web Crippling	85.75 kips	455.34 kips	**0.19**	**PASS**
Column Panel Zone Shear	60.45 kips	176.42 kips	**0.34**	**PASS**
Doubler Shear Buckling				**PASS**
Doubler Plate Shear Yield	0.00 kips	174.96 kips	**0.00**	**PASS**
Doubler Weld at Column Web Limitations				**PASS**
Doubler Weld Strength at Column Flange				**PASS**
Doubler Weld Strength at Column Web	0.00 kips	123.94 kips	**0.00**	**n/a**
Seismic Material and Geometry Limitations				**PASS**
Seismic Width to Thickness Ratios				**PASS**
Seismic Moment at Face of Column		***326.19 kips-ft***		

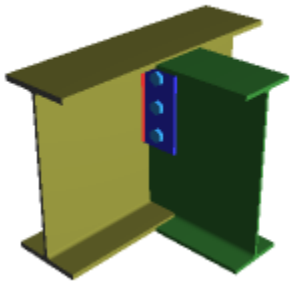
Seismic Weld Limitations				**PASS**
Seismic Flange Bolt Limitations				**PASS**
Seismic Flange Plate Limitations				**PASS**
Seismic Column-Beam Moment Ratio				**PASS**
Seismic Flange Strength				**PASS**
Seismic Beam Web Checks			**0.43**	**PASS**
Seismic Flange Bolt Shear Strength	337.44 kips	333.99 kips	**1.01**	**FAIL**
Seismic Beam Web Bolt Checks				**PASS**
Seismic Vert. Plate Checks				**PASS**
Seismic Stiffener Plate Limitations				**PASS**
Seismic Panel Zone Limitations				**PASS**
Seismic Column Panel Zone Shear	305.24 kips	196.02 kips		**N/A**
Seismic Doubler Plate Strength				**PASS**

Given that this check is comparing reduced bolt strength against the strain-hardened maximum probable moment the beam can produce, we find within 1% acceptable

M10 I - M5: LRFD Results Report

LRFD

Girder/Beam Shear Tab Shear Connection



Material Properties:

Girder	W18x50	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Beam	W18x35	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Plate	P0.31x4.00x9.00	A36	Fy = 36.00 ksi	Fu = 58.00 ksi

Input Data:

Shear Load	-4.46 kips	*User Input Shear Load*
Axial Load	-3.90 kips	*User Input Axial Force (tension)*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 28 - 1.2D+OmELX +.5L+.37S

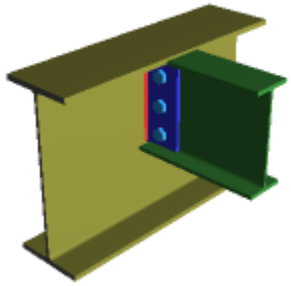
Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Girder Weld Limitations				**PASS**
Rotational Ductility, Erection Stability				**PASS**
Beam Shear Yield	4.46 kips	142.77 kips	**0.03**	**PASS**
Plate Shear Yield	4.46 kips	60.75 kips	**0.07**	**PASS**
Beam Shear Rupture	4.46 kips	116.16 kips	**0.04**	**PASS**
Plate Shear Rupture at Beam	4.46 kips	52.00 kips	**0.09**	**PASS**
Beam Axial Yield	3.90 kips	214.15 kips	**0.02**	**PASS**
Plate Axial Yield	3.90 kips	91.13 kips	**0.04**	**PASS**
Beam Tension Rupture	3.90 kips	193.61 kips	**0.02**	**PASS**
Plate Tension Rupture at Beam	3.90 kips	86.66 kips	**0.04**	**PASS**

Beam Block Shear	4.46 kips	111.68 kips	**0.04**	**PASS**
Plate Block Shear	4.46 kips	59.21 kips	**0.08**	**PASS**
Beam Tearout	3.90 kips	80.80 kips	**0.05**	**PASS**
Plate Tearout on Plate at Beam	3.90 kips	78.02 kips	**0.05**	**PASS**
Lateral Stability / Stabilizer Plates	5.92 kips	291.22 kips	**0.02**	**PASS**
Plate Flexural Yield			**0.03**	**PASS**
Plate Flexural Rupture			**0.03**	**PASS**
Plate Flexural Buckling	4.46 kips	50.44 kips	**0.09**	**PASS**
Coped Beam Flexural Rupture	4.46 kips	150.61 kips	**0.03**	**PASS**
Coped Beam Lateral Torsional Buckling	4.46 kips	139.02 kips	**0.03**	**PASS**
Bolt Bearing on Beam	5.92 kips	53.68 kips	**0.11**	**PASS**
Bolt Bearing on Plate at Beam	5.92 kips	53.68 kips	**0.11**	**PASS**
Bolt Shear at Beam	5.92 kips	48.71 kips	**0.12**	**PASS**
Bolt Group Eccentricity		***0.91***		
Girder Weld Strength	24999.08 lbs/ft	97980.58 lbs/ft	**0.26**	**PASS**

M11 I - M16: LRFD Results Report

LRFD

Girder/Beam Shear Tab Shear Connection



Material Properties:

Girder	W18x50	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Beam	W10x19	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Plate	P0.38x4.00x9.00	A36	Fy = 36.00 ksi	Fu = 58.00 ksi

Input Data:

Shear Load	-0.27 kips	*User Input Shear Load*
Axial Load	14.90 kips	*User Input Axial Force (compression)*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 38 - 0.9D+OmELZ

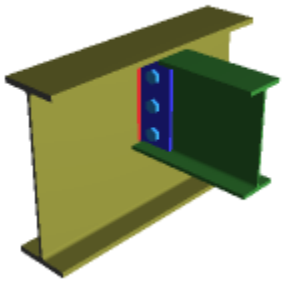
Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Girder Weld Limitations				**PASS**
Rotational Ductility, Erection Stability				**PASS**
Beam Shear Yield	0.27 kips	68.92 kips	**0.00**	**PASS**
Plate Shear Yield	0.27 kips	72.90 kips	**0.00**	**PASS**
Beam Shear Rupture	0.27 kips	48.01 kips	**0.01**	**PASS**
Plate Shear Rupture at Beam	0.27 kips	62.40 kips	**0.00**	**PASS**
Beam Axial Yield	14.90 kips	172.46 kips	**0.09**	**PASS**
Plate Axial Yield	14.90 kips	109.35 kips	**0.14**	**PASS**
Beam Block Shear	0.27 kips	82.87 kips	**0.00**	**PASS**

Plate Block Shear	0.27 kips	71.05 kips	**0.00**	**PASS**
Compression Buckling of the Plate	14.90 kips	109.35 kips	**0.14**	**PASS**
Lateral Stability / Stabilizer Plates	14.90 kips	503.22 kips	**0.03**	**PASS**
Plate Flexural Yield			**0.12**	**PASS**
Plate Flexural Rupture			**0.05**	**PASS**
Plate Flexural Buckling			**0.14**	**PASS**
Coped Beam Flexural Rupture	0.27 kips	63.71 kips	**0.00**	**PASS**
Coped Beam Local Web Buckling	0.27 kips	58.81 kips	**0.00**	**PASS**
Bolt Bearing on Beam	14.90 kips	53.68 kips	**0.28**	**PASS**
Bolt Bearing on Plate at Beam	14.90 kips	53.68 kips	**0.28**	**PASS**
Bolt Shear at Beam	14.90 kips	46.31 kips	**0.32**	**PASS**
Bolt Group Eccentricity		***0.86***		
Girder Weld Strength	14.90 kips	88.18 kips	**0.17**	**PASS**

M11 J - M15: LRFD Results Report

LRFD

Girder/Beam Shear Tab Shear Connection



Material Properties:

Girder	W18x46	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Beam	W10x19	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Plate	P0.38x4.00x9.00	A36	Fy = 36.00 ksi	Fu = 58.00 ksi

Input Data:

Shear Load	-3.06 kips	*User Input Shear Load*
Axial Load	-6.27 kips	*User Input Axial Force (tension)*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 37 - 1.2D+.5L-OmELZ+.37S

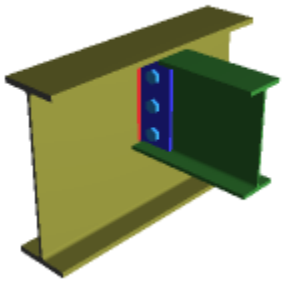
Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Girder Weld Limitations				**PASS**
Rotational Ductility, Erection Stability				**PASS**
Beam Shear Yield	3.06 kips	68.92 kips	**0.04**	**PASS**
Plate Shear Yield	3.06 kips	72.90 kips	**0.04**	**PASS**
Beam Shear Rupture	3.06 kips	48.01 kips	**0.06**	**PASS**
Plate Shear Rupture at Beam	3.06 kips	62.40 kips	**0.05**	**PASS**
Beam Axial Yield	6.27 kips	172.46 kips	**0.04**	**PASS**
Plate Axial Yield	6.27 kips	109.35 kips	**0.06**	**PASS**
Beam Tension Rupture	6.27 kips	154.84 kips	**0.04**	**PASS**
Plate Tension Rupture at Beam	6.27 kips	103.99 kips	**0.06**	**PASS**

Beam Block Shear	3.06 kips	82.87 kips	**0.04**	**PASS**
Plate Block Shear	3.06 kips	71.05 kips	**0.04**	**PASS**
Beam Tearout	6.27 kips	67.34 kips	**0.09**	**PASS**
Plate Tearout on Plate at Beam	6.27 kips	93.63 kips	**0.07**	**PASS**
Lateral Stability / Stabilizer Plates	6.97 kips	503.22 kips	**0.01**	**PASS**
Plate Flexural Yield			**0.03**	**PASS**
Plate Flexural Rupture			**0.03**	**PASS**
Plate Flexural Buckling	3.06 kips	60.52 kips	**0.05**	**PASS**
Coped Beam Flexural Rupture	3.06 kips	68.15 kips	**0.04**	**PASS**
Coped Beam Local Web Buckling	3.06 kips	62.91 kips	**0.05**	**PASS**
Bolt Bearing on Beam	6.97 kips	53.68 kips	**0.13**	**PASS**
Bolt Bearing on Plate at Beam	6.97 kips	53.68 kips	**0.13**	**PASS**
Bolt Shear at Beam	6.97 kips	46.62 kips	**0.15**	**PASS**
Bolt Group Eccentricity		***0.87***		
Girder Weld Strength	16583.99 lbs/ft	117576.70 lbs/ft	**0.14**	**PASS**

M14 I - M15: LRFD Results Report

LRFD

Girder/Beam Shear Tab Shear Connection



Material Properties:

Girder	W18x46	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Beam	W10x19	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Plate	P0.38x4.00x9.00	A36	Fy = 36.00 ksi	Fu = 58.00 ksi

Input Data:

Shear Load	0.84 kips	*User Input Shear Load*
Axial Load	6.41 kips	*User Input Axial Force (compression)*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 36 - 1.2D+.5L +OmELZ+.37S

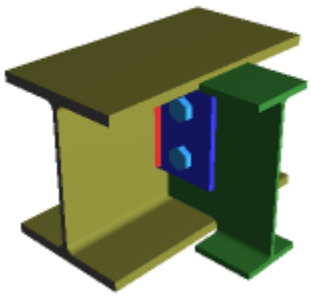
Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Girder Weld Limitations				**PASS**
Rotational Ductility, Erection Stability				**PASS**
Beam Shear Yield	0.84 kips	68.92 kips	**0.01**	**PASS**
Plate Shear Yield	0.84 kips	72.90 kips	**0.01**	**PASS**
Beam Shear Rupture	0.84 kips	48.01 kips	**0.02**	**PASS**
Plate Shear Rupture at Beam	0.84 kips	62.40 kips	**0.01**	**PASS**
Beam Axial Yield	6.41 kips	172.46 kips	**0.04**	**PASS**
Plate Axial Yield	6.41 kips	109.35 kips	**0.06**	**PASS**

Beam Block Shear	0.84 kips	51.80 kips	**0.02**	**PASS**
Plate Block Shear	0.84 kips	71.05 kips	**0.01**	**PASS**
Compression Buckling of the Plate	6.41 kips	109.35 kips	**0.06**	**PASS**
Lateral Stability / Stabilizer Plates	6.47 kips	503.22 kips	**0.01**	**PASS**
Plate Flexural Yield			**0.03**	**PASS**
Plate Flexural Rupture			**0.01**	**PASS**
Plate Flexural Buckling			**0.07**	**PASS**
Coped Beam Flexural Rupture	0.84 kips	68.15 kips	**0.01**	**PASS**
Coped Beam Local Web Buckling	0.84 kips	62.91 kips	**0.01**	**PASS**
Bolt Bearing on Beam	6.47 kips	53.68 kips	**0.12**	**PASS**
Bolt Bearing on Plate at Beam	6.47 kips	53.68 kips	**0.12**	**PASS**
Bolt Shear at Beam	6.47 kips	50.28 kips	**0.13**	**PASS**
Bolt Group Eccentricity		***0.94***		
Girder Weld Strength	6.47 kips	88.18 kips	**0.07**	**PASS**

M14 J - M18A: LRFD Results Report

LRFD

Girder/Beam Shear Tab Shear Connection



Material Properties:

Girder	W10x45	A992	F_y = 50.00 ksi	F_u = 65.00 ksi
Beam	W10x19	A992	F_y = 50.00 ksi	F_u = 65.00 ksi
Plate	P0.38x4.00x6.00	A36	F_y = 36.00 ksi	F_u = 58.00 ksi

Input Data:

Shear Load	-3.78 kips	*User Input Shear Load*
Axial Load	0.00 kips	*User Input Axial Force*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 15 - 1.2D+1.6SL +.5L

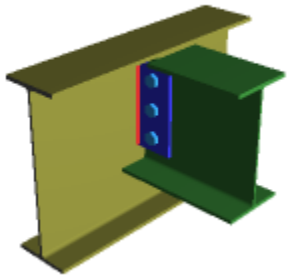
Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Girder Weld Limitations				**PASS**
Rotational Ductility, Erection Stability				**PASS**
Beam Shear Yield	3.78 kips	58.95 kips	**0.06**	**PASS**
Plate Shear Yield	3.78 kips	48.60 kips	**0.08**	**PASS**
Beam Shear Rupture	3.78 kips	44.68 kips	**0.08**	**PASS**
Plate Shear Rupture at Beam	3.78 kips	41.60 kips	**0.09**	**PASS**
Beam Block Shear	3.78 kips	48.72 kips	**0.08**	**PASS**
Plate Block Shear	3.78 kips	52.83 kips	**0.07**	**PASS**
Lateral Stability / Stabilizer Plates	3.78 kips	335.48 kips	**0.01**	**PASS**

Plate Flexural Yield			**0.01**	**PASS**
Plate Flexural Rupture			**0.01**	**PASS**
Plate Flexural Buckling	3.78 kips	56.50 kips	**0.07**	**PASS**
Coped Beam Flexural Rupture	3.78 kips	28.80 kips	**0.13**	**PASS**
Coped Beam Lateral Torsional Buckling	3.78 kips	26.58 kips	**0.14**	**PASS**
Bolt Bearing on Beam	3.78 kips	35.78 kips	**0.11**	**PASS**
Bolt Bearing on Plate at Beam	3.78 kips	35.78 kips	**0.11**	**PASS**
Bolt Shear at Beam	3.78 kips	29.23 kips	**0.13**	**PASS**
Bolt Group Eccentricity		***0.82***		
Girder Weld Strength	3.78 kips	46.58 kips	**0.08**	**PASS**

M21 I - M7: LRFD Results Report

LRFD

Girder/Beam Shear Tab Shear Connection



Material Properties:

Girder	W18x35	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Beam	W12x26	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Plate	P0.38x4.00x9.00	A36	Fy = 36.00 ksi	Fu = 58.00 ksi

Input Data:

Shear Load	22.98 kips	*User Input Shear Load*
Axial Load	0.00 kips	*User Input Axial Force*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 15 - 1.2D+1.6SL +.5L

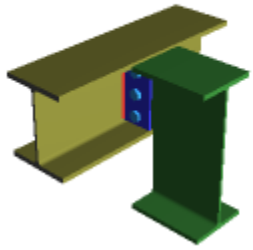
Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Girder Weld Limitations				**PASS**
Rotational Ductility, Erection Stability				**PASS**
Beam Shear Yield	22.98 kips	77.21 kips	**0.30**	**PASS**
Plate Shear Yield	22.98 kips	72.90 kips	**0.32**	**PASS**
Beam Shear Rupture	22.98 kips	57.62 kips	**0.40**	**PASS**
Plate Shear Rupture at Beam	22.98 kips	62.40 kips	**0.37**	**PASS**
Beam Block Shear	22.98 kips	50.95 kips	**0.45**	**PASS**
Plate Block Shear	22.98 kips	71.05 kips	**0.32**	**PASS**
Lateral Stability / Stabilizer Plates	22.98 kips	503.22 kips	**0.05**	**PASS**
Plate Flexural Yield			**0.11**	**PASS**
Plate Flexural Rupture			**0.14**	**PASS**
Plate Flexural Buckling	22.98 kips	121.05 kips	**0.19**	**PASS**
Coped Beam Flexural Rupture	22.98 kips	98.47 kips	**0.23**	**PASS**

Coped Beam Local Web Buckling	22.98 kips	90.90 kips	**0.25**	**PASS**
Bolt Bearing on Beam	22.98 kips	53.68 kips	**0.43**	**PASS**
Bolt Bearing on Plate at Beam	22.98 kips	53.68 kips	**0.43**	**PASS**
Bolt Shear at Beam	22.98 kips	48.57 kips	**0.47**	**PASS**
Bolt Group Eccentricity		***0.90***		
Girder Weld Strength	22.98 kips	81.47 kips	**0.28**	**PASS**

M5 I - M9: LRFD Results Report

LRFD

Girder/Beam Shear Tab Shear Connection



Material Properties:

Girder	W10x45	A992	F_y = 50.00 ksi	F_u = 65.00 ksi
Beam	W18x50	A992	F_y = 50.00 ksi	F_u = 65.00 ksi
Plate	P0.31x4.00x8.03	A36	F_y = 36.00 ksi	F_u = 58.00 ksi

Input Data:

Shear Load	-5.91 kips	*User Input Shear Load*
Axial Load	0.09 kips	*User Input Axial Force (compression)*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 16 - 1.2D+1.6SL +.5L+.5WLX

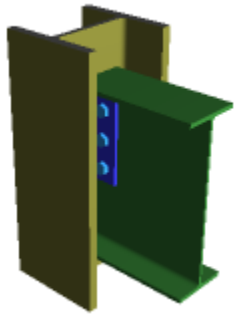
Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Girder Weld Limitations				**PASS**
Rotational Ductility, Erection Stability				**PASS**
Beam Shear Yield	5.91 kips	83.92 kips	**0.07**	**PASS**
Plate Shear Yield	5.91 kips	54.20 kips	**0.11**	**PASS**
Beam Shear Rupture	5.91 kips	54.57 kips	**0.11**	**PASS**
Plate Shear Rupture at Beam	5.91 kips	44.08 kips	**0.13**	**PASS**
Beam Block Shear	5.91 kips	63.17 kips	**0.09**	**PASS**
Plate Block Shear	5.91 kips	55.56 kips	**0.11**	**PASS**
Lateral Stability / Stabilizer Plates	5.91 kips	259.83 kips	**0.02**	**PASS**
Plate Flexural Yield			**0.02**	**PASS**
Plate Flexural Rupture			**0.02**	**PASS**
Plate Flexural Buckling	5.91 kips	37.32 kips	**0.16**	**PASS**
Coped Beam Flexural Rupture	5.91 kips	41.10 kips	**0.14**	**PASS**
Coped Beam Lateral Torsional Buckling	5.91 kips	37.94 kips	**0.16**	**PASS**
Bolt Bearing on Beam	5.91 kips	47.49 kips	**0.12**	**PASS**
Bolt Bearing on Plate at Beam	5.91 kips	49.55 kips	**0.12**	**PASS**
Bolt Shear at Beam	5.91 kips	38.26 kips	**0.15**	**PASS**

Bolt Group Eccentricity		***0.71***		
Girder Weld Strength	5.91 kips	58.72 kips	**0.10**	**PASS**

M7 J - M1: LRFD Results Report

LRFD

Column/Beam Shear Tab Shear Connection



Material Properties:

Column	W10x88	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Beam	W18x35	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Plate	P0.38x3.50x9.00	A36	Fy = 36.00 ksi	Fu = 58.00 ksi

Input Data:

Shear Load	47.06 kips	*User Input Shear Load*
Axial Load	0.03 kips	*User Input Axial Force (compression)*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 17 - 1.2D +1.6SL-.5WLX

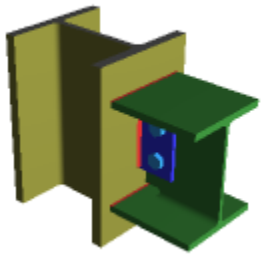
Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Column Weld Limitations				**PASS**
Rotational Ductility, Erection Stability				**PASS**
Beam Shear Yield	47.06 kips	159.30 kips	**0.30**	**PASS**
Plate Shear Yield	47.06 kips	72.90 kips	**0.65**	**PASS**
Beam Shear Rupture	47.06 kips	132.28 kips	**0.36**	**PASS**
Plate Shear Rupture at Beam	47.06 kips	62.40 kips	**0.75**	**PASS**
Beam Block Shear	47.06 kips	104.98 kips	**0.45**	**PASS**
Plate Block Shear	47.06 kips	62.89 kips	**0.75**	**PASS**
Lateral Stability / Stabilizer Plates	47.06 kips	503.22 kips	**0.09**	**PASS**
Plate Flexural Yield			**0.45**	**PASS**
Plate Flexural Rupture			**0.61**	**PASS**
Plate Flexural Buckling	47.06 kips	121.05 kips	**0.39**	**PASS**
Bolt Bearing on Beam	47.06 kips	67.59 kips	**0.70**	**PASS**
Bolt Bearing on Plate at Beam	47.06 kips	66.47 kips	**0.71**	**PASS**
Bolt Shear at Beam	47.06 kips	61.16 kips	**0.77**	**PASS**
Bolt Group Eccentricity		***0.90***		
Weld at Column	47.06 kips	81.47 kips	**0.58**	**PASS**

M17 I - M2: LRFD Results Report

LRFD

Column/Beam Direct Weld Moment Connection

Material Properties:



Column	W10x88	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Beam	W10x45	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Plate	P0.38x3.50x6.00	A36	Fy = 36.00 ksi	Fu = 58.00 ksi

Input Data:

Shear Load	3.60 kips	*User Input Shear Load*
Moment	-6.81 kips-ft	*User Input Moment*
Axial Load	0.00 kips	*User Input Axial Force*
Puf_c	8.62 kips	*Required Flange Force (compression)*
Puf_t	8.62 kips	*Required Flange Force (tension)*
Top Column Dist	0.00 in	*User Input Top Column Dist*
Column Force	0.00 kips	*User Input Column Force*
Story Shear	0.00 kips	*User Input Story Shear*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 15 - 1.2D+1.6SL +.5L

Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Column Weld Limitations				**PASS**
Flange Weld Limitations				**PASS**
Beam Web Shear Yield	3.60 kips	77.28 kips	**0.05**	**PASS**
Plate Shear Yield	3.60 kips	48.60 kips	**0.07**	**PASS**
Beam Web Shear Rupture	3.60 kips	57.43 kips	**0.06**	**PASS**
Plate Shear Rupture	3.60 kips	41.60 kips	**0.09**	**PASS**
Beam Block Shear	3.60 kips	50.76 kips	**0.07**	**PASS**
Plate Block Shear at Beam	3.60 kips	44.67 kips	**0.08**	**PASS**
Bolt Bearing at Beam Web	3.60 kips	35.78 kips	**0.10**	**PASS**
Bolt Bearing at Shear Plate	3.60 kips	35.78 kips	**0.10**	**PASS**
Bolt Shear at Beam Web	3.60 kips	35.78 kips	**0.10**	**PASS**
Column Weld Strength	3.60 kips	58.79 kips	**0.06**	**PASS**
Flange Weld Strength	8.62 kips	67.37 kips	**0.13**	**PASS**
Beam Flange Tensile Yield	8.62 kips	223.76 kips	**0.04**	**PASS**
Beam Flange Tensile Rupture	8.62 kips	242.40 kips	**0.04**	**PASS**
Beam Flange Compression	8.62 kips	223.76 kips	**0.04**	**PASS**
Column Flange Bending	8.62 kips	137.83 kips	**0.06**	**PASS**
Column Web Yielding	8.62 kips	123.37 kips	**0.07**	**PASS**
Column Web Buckling	8.62 kips	368.27 kips	**0.02**	**PASS**
Column Web Crippling	8.62 kips	177.08 kips	**0.05**	**PASS**
Column Panel Zone Shear	8.62 kips	176.42 kips	**0.05**	**PASS**

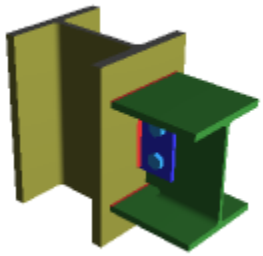
M18A I - M1: LRFD Results Report

LRFD

Column/Beam Direct Weld Moment Connection

Material Properties:

Column	W10x88	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Beam	W10x45	A992	Fy = 50.00 ksi	Fu = 65.00 ksi
Plate	P0.38x3.50x6.00	A36	Fy = 36.00 ksi	Fu = 58.00 ksi



Input Data:

Shear Load	3.80 kips	*User Input Shear Load*
Moment	-7.20 kips-ft	*User Input Moment*
Axial Load	0.00 kips	*User Input Axial Force (compression)*
Puf_c	9.12 kips	*Required Flange Force (compression)*
Puf_t	9.12 kips	*Required Flange Force (tension)*
Top Column Dist	0.00 in	*User Input Top Column Dist*
Column Force	0.00 kips	*User Input Column Force*
Story Shear	0.00 kips	*User Input Story Shear*

Note: Unless specified, all code references are from AISC 360-10

Governing LC: 3D - 16 - 1.2D+1.6SL +.5L+.5WLX

Limit State	Required	Available	Unity Check	Result
Geometry Restrictions at Beam				**PASS**
Column Weld Limitations				**PASS**
Flange Weld Limitations				**PASS**
Beam Web Shear Yield	3.80 kips	77.28 kips	**0.05**	**PASS**
Plate Shear Yield	3.80 kips	48.60 kips	**0.08**	**PASS**
Beam Web Shear Rupture	3.80 kips	57.43 kips	**0.07**	**PASS**
Plate Shear Rupture	3.80 kips	41.60 kips	**0.09**	**PASS**
Beam Block Shear	3.80 kips	50.76 kips	**0.07**	**PASS**
Plate Block Shear at Beam	3.80 kips	44.67 kips	**0.09**	**PASS**
Bolt Bearing at Beam Web	3.80 kips	35.78 kips	**0.11**	**PASS**
Bolt Bearing at Shear Plate	3.80 kips	35.78 kips	**0.11**	**PASS**
Bolt Shear at Beam Web	3.80 kips	35.78 kips	**0.11**	**PASS**
Column Weld Strength	3.80 kips	58.79 kips	**0.06**	**PASS**
Flange Weld Strength	9.12 kips	67.37 kips	**0.14**	**PASS**
Beam Flange Tensile Yield	9.12 kips	223.76 kips	**0.04**	**PASS**
Beam Flange Tensile Rupture	9.12 kips	242.40 kips	**0.04**	**PASS**
Beam Flange Compression	9.12 kips	223.76 kips	**0.04**	**PASS**
Column Flange Bending	9.12 kips	137.83 kips	**0.07**	**PASS**
Column Web Yielding	9.12 kips	123.37 kips	**0.07**	**PASS**
Column Web Buckling	9.12 kips	368.27 kips	**0.02**	**PASS**
Column Web Crippling	9.12 kips	177.08 kips	**0.05**	**PASS**
Column Panel Zone Shear	9.12 kips	176.42 kips	**0.05**	**PASS**

JOB NO.: U2784-001-181

PROJECT: Ridge Nest 14 **SUBJECT:** WELD GROUP ANALYSIS

WELDED CONNECTION WITH FILLET WELDS TREATED AS LINES

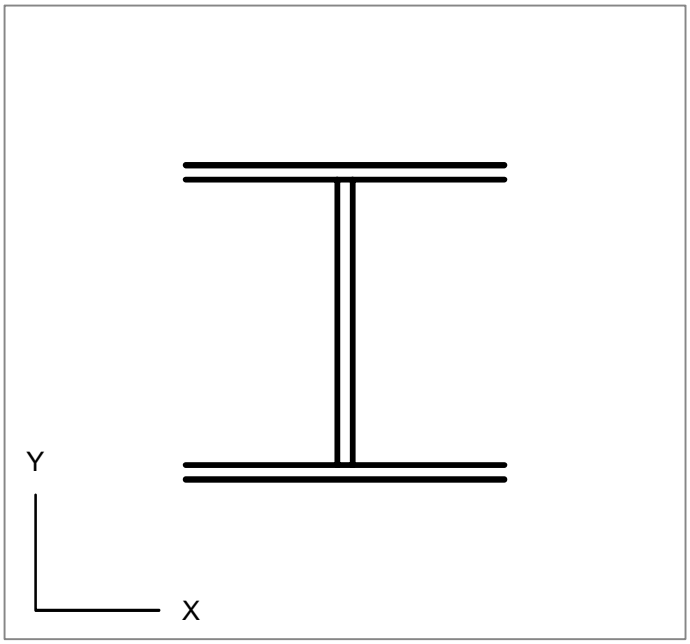
Description: Cap Plate Weld

Geometry

Weld Pattern:	Pattern around wideflange shape, strong axis	
b (in) =	10.25	(parallel to x-axis)
d (in) =	10.875	
S_{XWELD} (in^2) =	262.36	
S_{YWELD} (in^2) =	70.04	
Ip_{WELD} (in^3) =	1,785.54	
Lweld (in) =	62.75	
Torque arm (in) =	7.47	
Graphic Scale:	100%	

Results

Electrode Class Number (ksi):	70
Required leg size (in) =	0.241
Actual leg size (in) =	**1/4**
Stress ratio:	**96.4%**



Loads on Weld Group

Load Type:	LRFD
$Axial_{(Z)}$ (lb) =	
$Shear_X$ (lb) =	337000
$Shear_Y$ (lb) =	
$Moment_{XX}$ (ft-lb) =	
$Moment_{YY}$ (ft-lb) =	
$Torque_{(ZZ)}$ (ft-lb) =	

v_{axial} (lb/in) =	0
v_{shearx} (lb/in) =	5371
v_{sheary} (lb/in) =	0
$v_{momentxx}$ (lb/in) =	0
$v_{momentyy}$ (lb/in) =	0
v_{torque} (lb/in) =	0
v_{max} (lb/in) =	5371

Special RC Shear Wall Checks per 18.10 (C-2ND)

$f'c := 4500$ $f_y := 60 \cdot ksi$ $\lambda := 1$ $d_b := .5\ in$

$t_w := 8\ in$ $l_w := 8\ ft$ $h_w := 8\ ft$ $\frac{h_w}{l_w} = 1$ $\alpha_c := 3$

$A_{cv} := l_w \cdot h_w = 64\ ft^2$

$\rho_{wmin} := .0025$

$A_{req} := \frac{t_w \cdot 12\ in \cdot \rho_{wmin}}{\left(\frac{\pi \cdot d_b^{\,2}}{4}\right)} = 1.222$ bars/ft

$s := 9\ in$

$\rho_w := \frac{\frac{12\ in}{s} \cdot \frac{\pi \cdot d_b^{\,2}}{4}}{t_w \cdot 12\ in} = 0.0027$

$V_u := 8350\ lbf = 8.35\ kip$

$V_n := A_{cv} \cdot \left(\alpha_c \cdot \lambda \cdot \sqrt{f'c} \cdot psi + \rho_w \cdot f_y\right) = 3363\ kip$

$2 \cdot A_{cv} \cdot \lambda \cdot \sqrt{f'c} \cdot psi = 1236\ kip$ Greater than Vu, two curtains of reinf. not req. per 18.10.2.2

$S_{xw} := \frac{t_w \cdot l_w^{\,2}}{6} = 7.111\ ft^3$

$\sigma := \frac{V_u \cdot h_w}{S_{xw}} = 65.234\ psi$

$0.2 \cdot f'c \cdot psi = 900\ psi$ sigma<0.2f'c, no special boundary elements required

$T_w := \frac{V_u \cdot h_w}{l_w} = 8.35\ kip$

$A_{boundary} := \frac{T_w}{f_y \cdot .9} = 0.155\ in^2$

Special RC Shear Wall Checks per 18.10 (1.2-1ST)

$t_w := 8\ in$ $l_w := 3\ ft + 10\ in$ $h_w := 8\ ft$ $\frac{h_w}{l_w} = 2.087$ $\alpha_c := 3$

$A_{cv} := l_w \cdot h_w = 30.667\ ft^2$

$\rho_{wmin} := .0025$

$A_{req} := \frac{t_w \cdot 12\ in \cdot \rho_{wmin}}{\left(\frac{\pi \cdot d_b^{\,2}}{4}\right)} = 1.222$ bars/ft

$s := 9\ in$

$\rho_w := \frac{\frac{12\ in}{s} \cdot \frac{\pi \cdot d_b^{\,2}}{4}}{t_w \cdot 12\ in} = 0.0027$

$V_u := 9826\ lbf = 9.826\ kip$

$V_n := A_{cv} \cdot \left(\alpha_c \cdot \lambda \cdot \sqrt{f'c} \cdot psi + \rho_w \cdot f_y\right) = 1611\ kip$

$2 \cdot A_{cv} \cdot \lambda \cdot \sqrt{f'c} \cdot psi = 592\ kip$ Greater than Vu, two curtains of reinf. not req. per 18.10.2.2

$S_{xw} := \frac{t_w \cdot l_w^{\,2}}{6} = 1.633\ ft^3$

$\sigma := \frac{V_u \cdot h_w}{S_{xw}} = 334.344\ psi$

$0.2 \cdot f'c \cdot psi = 900\ psi$ sigma<0.2f'c, no special boundary elements required

$T_w := \frac{V_u \cdot h_w}{l_w} = 20.506\ kip$

$A_{boundary} := \frac{T_w}{f_y \cdot .9} = 0.38\ in^2$